



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AN0049266(5) Date : 06 Sep 2011

Application No. : LN018169(3)

Applicant : Ten Forward Limited
Rm. 606, 6/F., Sunwise Industrial Bldg.,
16-26 Wang Wo Tsai Street, Tsuen Wan,
N.T., Hong Kong

Sample Description : One(1) item of submitted sample stated to be Self-Powered AM/FM/Weather Alarm Clock Radio of Model No. TF-82W
Rating : 3 x 1.5V AA size batteries
1 x 4.8V rechargeable battery
DC in 9V
No. of submitted sample : One (1) piece (s)

Date Received : 16 Jun 2011.

Test Period : 17 Jun 2011 to 29 Jul 2011.

Test Requested : FCC Part 15 Certification.

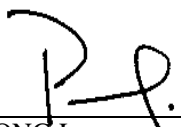
Test Method : 47 CFR Part 15 (10-1-09 Edition)
ANSI C63.4 – 2009

Test Result : See attached sheet(s) from page 2 to 20.

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 : _____


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

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1 General Information

1.1 General Description

The equipment under test (EUT) is a AM/FM/Weather radio receiver for Self-Powered AM/FM/Weather Alarm Clock Radio. The EUT is powered by 3 x 1.5V AA size batteries, 1 x 4.8V rechargeable battery or AC/DV 9V adaptor.

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 – 2009. 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 – 2009. A shielded room is located at :

Ground Floor, Yan Hing Centre,
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	16 Mar 2012
Broadband Antenna	Schaffner	CBL6112B	2718	31 Oct 2012
Coaxial Cable	Schaffner	RG 213/U	R/A	03 Aug 2012
Coaxial Cable	Suhner	RG 214/U	R/A	03 Aug 2012
Signal Generator	IFR	2023B	202302/938	16 Mar 2012

Support equipment: (supplied by client)

1. AC/DC adaptor

Model: KU2B-090-0250D

1.4 Measurement Uncertainty

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.63dB
30MHz ~ 200MHz (Vertical)	4.64dB
200MHz ~ 1000MHz (Horizontal)	4.65dB
200MHz ~ 1000MHz (Vertical)	4.64dB

Conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz ~ 30MHz	3.04dB



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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 – 2009.

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.

A signal generator was used to radiate radio signal to the EUT during FM and weather radio measurement.

2.2 Test Result

The frequencies from 30MHz to 2000MHz were investigated, and emissions more 20dB below limit were not reported. Thus, those highest emissions were presented in next page (section 2.3).

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.



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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	23	° C
Relative humidity:	58	%

Mode: FM Radio

Frequency: 88MHz

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
98.636	V	26.0	9.9	35.9	43.5	- 7.6
690.437	V	18.6	22.0	40.6	46.0	- 5.4
887.700	H	18.4	23.7	42.1	46.0	- 3.9
986.325	H	19.0	24.5	43.5	54.0	- 10.5

Frequency: 98MHz

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
108.656	H	19.6	11.8	31.4	43.5	- 12.1
217.319	V	28.8	11.0	39.8	46.0	- 6.2
543.281	V	16.5	20.6	37.1	46.0	- 8.9
869.255	H	18.7	23.7	42.4	46.0	- 3.6

Frequency: 108MHz

Frequency	Polarity	Reading at	Antenna	Field Strength	Limit at 3m	Margin
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(MHz)	(H/V)	3m (dBμV)	Factor and Cable Loss (dB/m)	at 3m (dBμV/m)	(dBμV/m)	(dB)
118.730	V	23.6	11.8	35.4	43.5	- 8.1
949.820	H	18.7	24.5	43.2	46.0	- 2.8

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Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	23	° C
Relative humidity:	58	%

Mode: Weather Radio

Channel: CH1

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
151.700	V	17.9	12.9	30.8	43.5	- 12.7
455.092	V	20.3	18.8	39.1	46.0	- 6.9
606.788	V	22.1	22.0	44.1	46.0	- 1.9

Channel: CH4

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
151.780	V	18.9	12.9	31.8	43.5	- 11.7
303.562	V	16.9	15.9	32.8	46.0	- 13.2
455.319	H	17.9	18.8	36.7	46.0	- 9.3
606.097	V	20.9	22.0	42.9	46.0	- 3.1



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Channel: CH7

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
151.848	H	18.7	12.9	31.6	43.5	- 11.9
303.700	V	19.0	15.9	34.9	46.0	- 11.1
607.392	V	20.2	22.0	42.2	46.0	- 3.8



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Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	23	° C
Relative humidity:	58	%

Mode: Weather Alert

Channel: CH1

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
151.697	V	15.1	12.9	28.0	43.5	- 15.5
303.394	V	14.7	15.9	30.6	46.0	- 15.4
455.091	H	16.4	18.8	35.2	46.0	- 10.8
606.790	V	21.9	22.0	43.9	46.0	- 2.1

Channel: CH4

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
151.773	H	14.8	12.9	27.7	43.5	- 15.8
455.320	H	15.9	18.8	34.7	46.0	- 11.3
608.084	V	21.4	22.0	43.4	46.0	- 2.6



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Channel: CH7

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
32.600	V	12.2	21.1	33.3	46.0	- 6.7
455.550	H	14.8	18.8	33.6	46.0	- 12.4
607.388	V	21.7	22.0	43.7	46.0	- 2.3



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Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	23	° C
Relative humidity:	58	%

Mode: Alarm

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
49.440	H	10.7	12.6	23.3	40.0	- 16.7
92.106	H	12.6	9.9	22.5	43.5	- 21.0
119.306	V	27.4	11.8	39.2	43.5	- 4.3
147.723	H	12.5	12.9	25.4	43.5	- 18.1
239.185	V	21.0	11.0	32.0	46.0	- 14.0
358.797	V	12.1	15.9	28.0	46.0	- 18.0
478.430	V	12.6	18.8	31.4	46.0	- 14.6
598.062	V	11.6	20.6	32.2	46.0	- 13.8
717.686	V	8.6	22.8	31.4	46.0	- 14.6
837.343	V	9.9	23.7	33.6	46.0	- 12.4



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Radiated emission

pursuant to

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Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	23	° C
Relative humidity:	58	%

Mode: Aux-In

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
98.964	V	14.3	9.9	24.2	43.5	- 19.3
120.028	H	12.7	13.7	26.4	43.5	- 17.1
151.880	H	11.2	12.9	24.1	43.5	- 19.4
174.028	H	12.4	11.6	24.0	43.5	- 19.5
203.720	H	12.8	11.0	23.8	43.5	- 19.7
242.600	H	16.9	11.0	27.9	46.0	- 18.1
276.641	H	12.1	14.9	27.0	46.0	- 19.0
315.128	H	12.0	15.9	27.9	46.0	- 18.1
360.266	H	14.6	15.9	30.5	46.0	- 15.5
379.502	H	15.7	15.9	31.6	46.0	- 14.4



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Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	23	° C
Relative humidity:	58	%

Mode: Siren

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
113.423	H	13.6	11.8	25.4	43.5	- 18.1
151.850	H	16.9	12.9	29.8	43.5	- 13.7
179.380	H	12.0	11.6	23.6	43.5	- 19.9
228.183	H	15.3	11.0	26.3	46.0	- 19.7
280.267	H	12.9	14.9	27.8	46.0	- 18.2
303.693	V	12.7	15.9	28.6	46.0	- 17.4
361.600	H	14.5	15.9	30.4	46.0	- 15.6
408.300	H	13.8	18.8	32.6	46.0	- 13.4
491.720	H	15.4	18.8	34.2	46.0	- 11.8
607.392	V	16.4	22.0	38.4	46.0	- 7.6



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Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	23	° C
Relative humidity:	58	%

Mode: Charge-Out

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
87.084	H	13.6	7.9	21.5	40.0	- 18.5
107.762	H	13.5	11.8	25.3	43.5	- 18.2
119.888	H	14.7	11.8	26.5	43.5	- 17.0
137.849	H	11.5	13.7	25.2	43.5	- 18.3
146.300	H	12.6	12.9	25.5	43.5	- 18.0
218.860	H	13.2	11.0	24.2	46.0	- 21.8
250.645	H	12.2	14.9	27..1	46.0	- 18.9
264.746	H	11.9	14.9	26.8	46.0	- 19.2
282.606	H	12.9	14.9	27.8	46.0	- 18.2
326.782	V	12.1	15.9	28.0	46.0	- 18.0



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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 – 2009. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

The FM radio, weather radio, weather alert, alarm, Aux-in and Siren modes have been tested under the EUT in powered by AC/DC 9V adaptor.

It was found that the EUT meet the FCC requirement.

3.3 Graph and Table of Conducted Emission Measurement Data

For electronic filling, the document is saved with filename TestRpt2.pdf.



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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 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 ExPho3.jpg and InPho1.jpg to InPho21.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

Not Applicable

5.2 Duty cycle

Not Applicable

5.3 Transmission time

Not Applicable



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6 Appendices

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A2	Photos of the set-up of Conducted Emissions	2	pages
A3	Photos of External Configurations	2	pages
A4	Photos of Internal Configurations	11	pages
A5	ID Label/Location	1	page
A6	Conducted Emission Measurement Data	6	pages
A7	Block Diagram	1	page
A8	Schematics	3	pages
A9	User Manual	6	pages
A10	Operation Description	1	page

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