



TEST REPORT

Report No. : AF006543-001 Date : 2005 April 14

Application No. : LF204287(1)

Applicant : Enertec Enterprises Ltd.
Room 1017, Chinachem Golden Plaza,
77 Mody Road, Tsim Sha Tsui East,
Kowloon, Hong Kong.

Sample Description : One(1) submitted sample stated to be 27MHz R/C Car Flash Tracker
of Model No. 11959
Rating : 1 x 9V battery
No. of sample(s) : One (1) set ***

Date Received : 2005 March 15.

Test Period : 2005 March 15 – 2005 March 31.

Test Requested : FCC Part 15 Certification

Test Method : FCC Rules and Regulations Part 15 – July 2004
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 : All eight models 11949, 11959, 12049, 12059, 12069, 12079, 12089 and 12109
are the same in circuitry and components, and therefore model 11959 was chosen
to be the representative of the test sample.

For and on behalf of
CMA Testing and Certification Laboratories

Authorized Signature : _____

Danny Chui
EMC Engineer - EL. Division

Page 1 of 11

FCC ID : OGM11959TX-27



TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

Table of Contents

1	General Information	3
1.1	General Description	3
1.2	Related Submittal Grants	3
1.3	Location of the test site	4
1.4	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	8
3.1	Test Procedure	8
3.2	Test Result	8
3.3	Graph and Table of Conducted Emission Measurement Data	8
4	Photograph	9
4.1	Photographs of the Test Setup for Radiated Emission and Conduction Emission.....	9
4.2	Photographs of the External and Internal Configurations of the EUT	9
5	Supplementary document	10
5.1	Bandwidth	10
5.2	Duty cycle.....	10
6	Appendices	11



TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for 27 MHz R/C Car. Operating at 27.145 MHz which is controlled by a crystal. The EUT is powered by 9V battery. There are two control trigger in the EUT. When the forward, backward, turn left and turn right trigger is pressed once. It will transmit a difference radio signal for receiver go difference direction.

The brief circuit description is listed as follows :

- IC1 and associated circuit act as encoder
- Q1, Tx and associated circuit act as oscillator
- Q2 and associated circuit act as amplifier
- D1 and associated circuit act as voltage readjustment

1.2 Related Submittal Grants

This is a single application for certification of a transmitter.

The receiver for this transmitter is exempted from the Part 15 technical rules per 15.101(b).



TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

1.3 Location of the test site

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2001. An Open Area Testing Site is set up for investigation and located at :

Top of the Roof, 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 – 2001. A double shielded room is located at :

Roof Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
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TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

1.4 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Certification No.
EMI Test Receiver	R&S	ESCS30	100001	S21141
Broadband Antenna	Schaffner	CBL6113B	2718	AC1753
Signal Generator	IFR	2023B	202302/938	Nil
LISN	R&S	ESH3-Z5	100038	S21142
Pulse Limiter	R&S	ESH3-Z2	100001	20-73194
Biconical Antenna	R&S	HK116	837414/004	4000.7752.02



TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

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 – 2001.

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.

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.

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

It was found that the EUT meet the FCC requirement.



TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

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)	Averaging factor (-dB)	Field Strength (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
27.146	V	62.9	16.4	5.3	74.0	80.0	-6.0
54.293	V	14.4	8.8	-	23.2	40.0	-16.8
81.437	H	17.7	7.9	-	25.6	40.0	-14.4
* 108.586	H	9.3	11.9	-	21.2	43.5	-22.3
* 135.731	H	11.2	13.1	-	24.3	43.5	-19.2
* 162.878	H	19.1	11.4	-	30.5	43.5	-13.0
190.024	H	22.0	10.1	-	32.1	43.5	-11.4
217.169	H	13.2	10.8	-	24.0	46.0	-22.0
* 244.317	H	15.9	10.8	-	26.7	46.0	-19.3
* 271.462	H	11.6	14.3	-	25.9	46.0	-20.1



TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

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 – 2001. 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



TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

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.



TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

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. It also shows that the band edge met the 15.209 requirement at 26.9599 and 27.2801 MHz

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

The duration of one cycle = 23.5ms

Effective period of the cycle = (1.4ms x 4) + (0.45 ms x 16)
= 12.8 ms

Duty Cycle = 12.8ms/ 23.5ms
= 0.545

Therefore, the average factor is found by $20 \log_{10} 0.545 = -5.3 \text{ dB}$



TEST REPORT

Report No. : AF006543-001

Date : 2005 April 14

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	1 page
A6.	Average Factor	2 pages
A7.	Block Diagram	1 page
A8.	Schematics	1 page
A9.	User Manual	4 pages
A10.	Operation Description	1 page

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