



**CMA Testing
and Certification
Laboratories**

廠商會檢定中心

TEST REPORT

Report No. : AR0017472(0) Date : 12 Apr 2013

Application No. : LR004124(0)

Applicant : Mattel Asia Pacific Sourcing Ltd.
1301, South Tower, World Finance Centre,
Harbour City, Tsimshatsui, Hong Kong

Sample Description : One(1) item of submitted sample stated to be TILT N FLY DUSTY 27MHz
of Model No. Y3154
Sample registration No. : RR011559-001
Radio Frequency : 27.145MHz Transmitter
Rating : 2 x 1.5V AAA size batteries
No. of submitted sample : Two (2) piece (s)

Date Received : 02 Apr 2013.

Test Period : 02 Apr 2013 to 12 Apr 2013.

Test Requested : FCC Part 15 Certification.

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

Test Result : See attached sheet(s) from page 2 to 21.

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

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


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

Page 1 of 22

FCC ID: PIYX7272-12A2T

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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

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
1.4	Measurement Uncertainty	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 Conducted 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
5.3	Transmission time.....	11
6	Appendices.....	12

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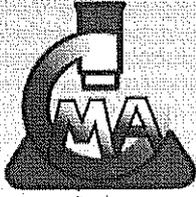
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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for Tilt N Fly Dusty. It operates at 27.145MHz and the oscillation of radio control is generated by a crystal. The EUT is powered by 2 x 1.5V AAA size batteries. There are one button and one motion sensor on the EUT. When the button is pressed or the EUT is moved, it will transmit radio control signal to receiver.

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

The brief circuit description is listed as follows:

- Y1 and its associated circuit act as oscillator.
- U1 and its associated circuit act as encoder, modulation and RF amplifier.
- U2 and its associated circuit act as CPU.

FCC ID: PIYY3154-13A2T

Page 3 of 22

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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

1.2 Location of the test site

FCC Registered Test Site Number: 552221

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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Page 4 of 22

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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date
EMI Test Receiver	R&S	ESCI	100152	28 May 2013
Broadband Antenna	Schaffner	CBL6112B	2718	16 Jan 2014
Loop Antenna	EMCO	6502	00056620	15 Sep 2013
Coaxial Cable	Schaffner	RG 213/U	N/A	28 May 2013
Coaxial Cable	Subner	RG 214/U	N/A	28 May 2013

1.4 Measurement Uncertainty

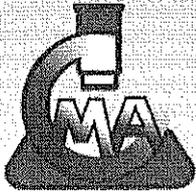
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.83dB
30MHz ~ 200MHz (Vertical)	4.84dB
200MHz ~ 1000MHz (Horizontal)	4.66dB
200MHz ~ 1000MHz (Vertical)	4.65dB

Conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz~30MHz	3.02dB



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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

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.

The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement for Radiated Emission 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 the tenth harmonics were investigated, and emissions more 20dB below limit 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.

FCC ID: PIYY3154-13A2T

Page 6 of 22



CMA Testing and Certification Laboratories

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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	23	° C
Relative humidity:	73	%

Detector: Peak (Fundamental frequency), Quasi-peak (outside operation band)

RBW: 120kHz

VBW: 300kHz

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBµV)	Antenna Factor and Cable Loss (dB/m)	Average Factor (dB)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
27.145	V	64.5	9.9	- 6.5	67.9	80.0	- 12.1
54.291	V	22.0	10.2	-	32.2	40.0	- 7.8
81.437	V	10.5	8.6	-	19.1	40.0	- 20.9
# 108.582	V	10.9	1.4	-	23.3	43.5	- 20.2
# 135.727	V	10.2	14.7	-	24.9	43.5	- 18.6
# 162.871	V	9.6	12.0	-	21.6	43.5	- 21.9
190.045	V	10.1	11.2	-	21.3	43.5	- 22.2
217.085	H	10.2	11.9	-	22.1	46.0	- 23.9
244.372	H	12.1	11.9	-	24.0	46.0	- 22.0
271.470	H	9.4	15.0	-	24.4	46.0	- 21.6

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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

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

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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Page 8 of 22

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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

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 ExPho4.jpg and InPho1.jpg to InPho4.jpg.

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Page 9 of 22

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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

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.

Emission at 26.96MHz = 17.72 dBuV/m

Emission at 27.28MHz = 17.61 dBuV/m

5.2 Duty cycle

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

The duration of one cycle = 24.058ms

Duration of pulse 1 = 405.8us

Duration of pulse 2 = 811.6us

Number of pulse 1 = 16

Number of pulse 2 = 6

Effective period of the cycle = $(16 \times 405.8\mu\text{s}) + (6 \times 811.6\mu\text{s})$
= 11.3624.ms

Duty Cycle = $11.3624 / 24.058$
= 0.472

Therefore, the average factor is found by $20 \log_{10} 0.472 = -6.5\text{dB}$

FCC ID: PIYY3154-13A2T

Page 10 of 22



**CMA Testing
and Certification
Laboratories**

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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

5.3 Transmission time

Not Applicable

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Page 11 of 22

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TEST REPORT

Report No. : AR0017472(0)

Date : 12 Apr 2013

6 Appendices

A1.	Photos of the set-up of Radiated Emissions	1	page
A2.	Photos of External Configurations	2	Pages
A3.	Photos of Internal Configurations	2	pages
A4.	ID Label/Location	2	page
A5.	Bandwidth Plot	1	page
A6.	Average Factor	2	pages
A7.	Block Diagram	1	page
A8.	Schematics Diagram	1	page
A9.	User Manual	4	pages
A10.	Operation Description	1	page

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Page 12 of 22

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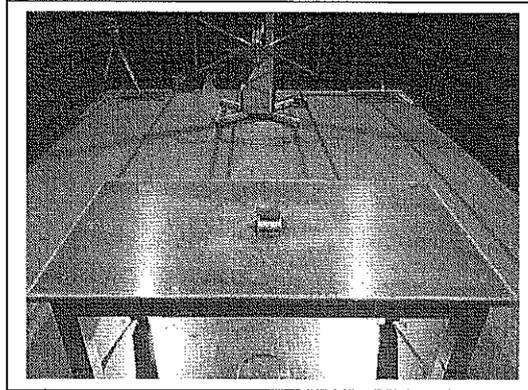
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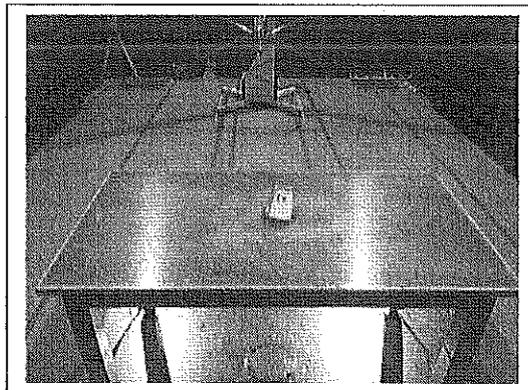
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A1. Photos of the set-up of Radiated Emissions



(Front view)



(Back view)

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Reviewed by:

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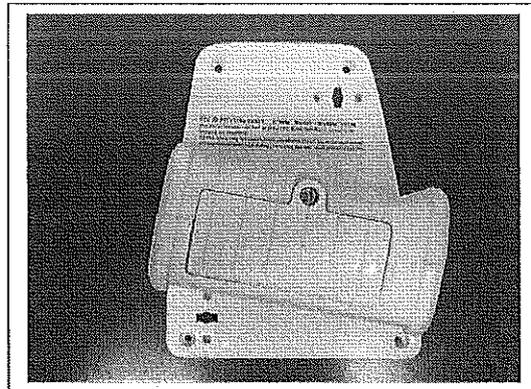
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A2. Photos of External Configurations



External Configuration 1



External Configuration 2

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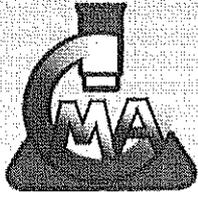
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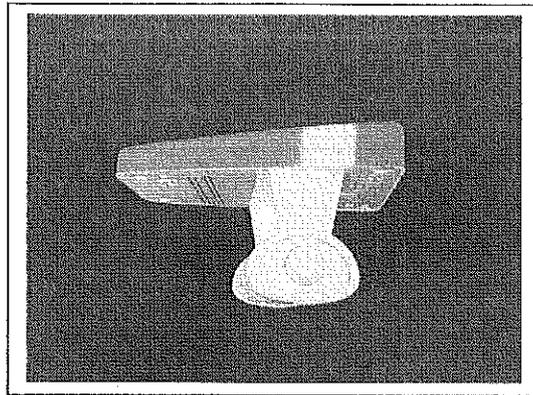
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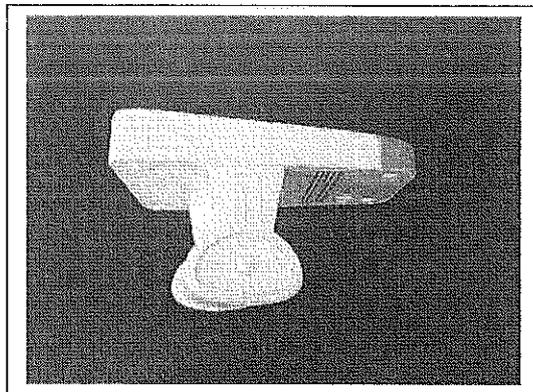
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A2. Photos of External Configurations



External Configuration 3



External Configuration 4

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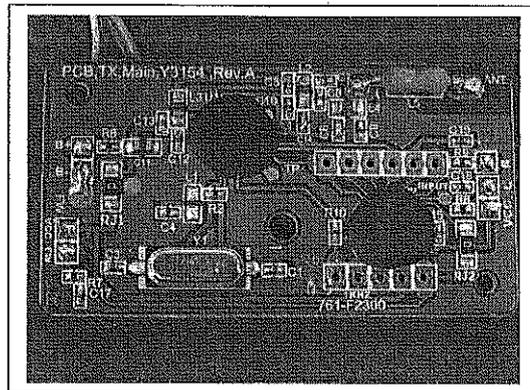
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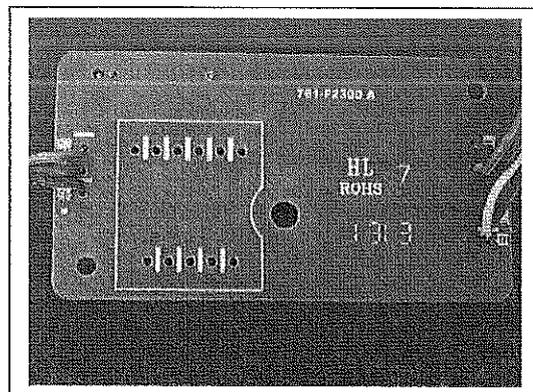
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A3. Photos of Internal Configurations



Internal Configuration 1



Internal Configuration 2

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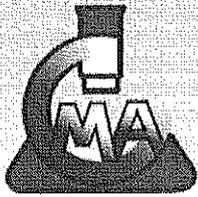
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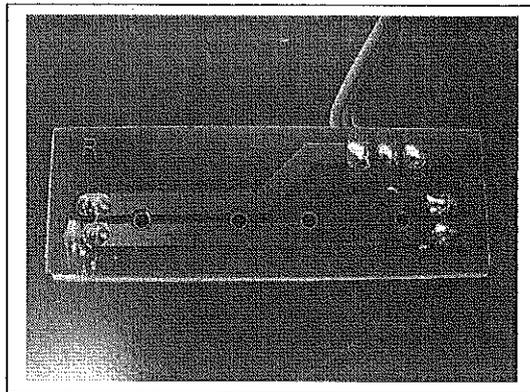
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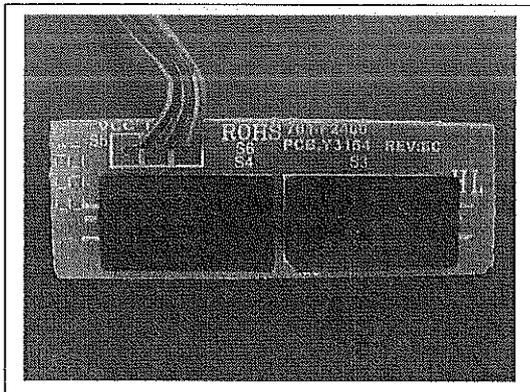
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A4. Photos of Internal Configurations



Internal Configuration 3



Internal Configuration 4

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Page 17 of 22

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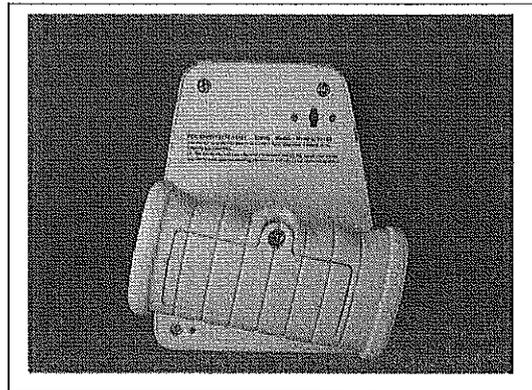
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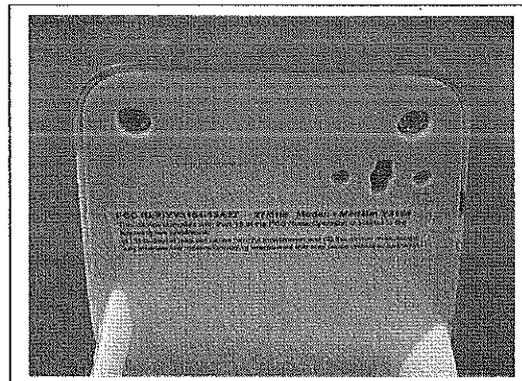
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A4. ID Label / Location



ID Label 1



ID Label 2

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Page 18 of 22

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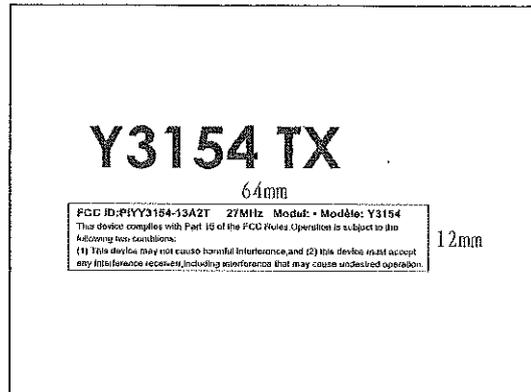
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A4. ID Label / Location



ID Label 3

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Page 19 of 22