



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0029193(2) Date : May 31, 2019

Application No. : LY014803(5)

Client : Kidztech Toys Manufacturing Limited
Room 1201, 12/F., Inter-Continental Plaza,
94 Granville Road, Tsim Sha Tsui East,
Kowloon, Hong Kong

Sample Description : One(1) item of submitted sample stated to be:

Sample Description	Model No.
1/16 R/C Cars	85021, other models see page 3 in detail

Radio Frequency : 49.860MHz
Rating : 1 x 9V battery
No. of submitted sample : One (1) piece (s)
Sample registration No. : RY008983-001

Date Received : May 17, 2019

Test Period : May 17 2019 – 31 May 2019

Test Requested : FCC 47CFR Part 15 Certification.


Test Method : 47 CFR Part 15 (10-1-18 Edition)
ANSI C63.10 – 2013

Test Result : See attached sheet(s) from page 2 to 15.

Conclusion : The submitted sample was found to comply with requirement of FCC 47CFR Part 15 Subpart C.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Mr. WONG Lap-pong, Andrew
Manager

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1 General Information

1.1 General Description

The equipment under test (EUT) model 85021 is a remote controlled toys. It operates at frequency band 49.86MHz for transmitter. The oscillation of radio control is generated by a 49.860MHz crystal (Y1) and modulated by encoder PT977. The EUT is powered by one 9V battery. The EUT contains two control levers to control moving direction and a ON/OFF switch (K1).

The extendable antenna is used in EUT and the radio output power is unable to adjust.

Models: 85021 / 85022 / 85025 / 85051 / 85052 / 85055 / 85071 / 85072 / 85075 / 85091 / 85092 / 85095 / 85101 / 85102 / 85105 / 85111 / 85112 / 85115 / 85121 / 85122 / 85125 / 85131 / 85132 / 85135 / 85181 / 85182 / 85185 / 85221 / 85222 / 85225 / 85231 / 85232 / 85235 / 85241 / 85242 / 85245 / 85281 / 85282 / 85285 / 85301 / 85302 / 85305 / 85311 / 85312 / 85315 / 85331 / 85332 / 85335 / 85341 / 85342 / 85345 / 85351 / 85352 / 85355 / 85361 / 85362 / 85365 / 85381 / 85382 / 85385 / 85391 / 85392 / 85395 / 85411 / 85412 / 85415 / 85421 / 85422 / 85425 / 85431 / 85432 / 85435 / 85471 / 85472 / 85475 / 85511 / 85512 / 85515 / 85076 / 85126 / 85136 / 85226 / 85246 / 85286 / 85346 / 5F62D85 / 5F62D86 / 5F62DB7 / AD15452 are identical in cosmetics, material PCB layout, electrical, mechanical and physical design, including software/firmware and they are difference in non-conductive outer casing of receiver only.

Therefore, only model, 85021, is selected as representative for testing only.

The brief circuit description is listed as follows:

- | | |
|----------------------|--|
| - S1, S2 and K1 | and its associated circuit act as switch and control lever. |
| - U1 | and its associated circuit act as Encoder. |
| - Y1 | and its associated circuit act as oscillation clock. |
| - Q1 | and its associated circuit act as modulator. |
| - Q2 | and its associated circuit act as RF amplifier. |
| - C1, C2, C3, T1, L1 | and its associated circuit act as Filter and Antenna matching. |
| - ZD1 | and its associated circuit act as Regulator circuit |

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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 – 2014. 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 – 2014. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

FCC Accredited Lab (Designation Number: HK0004)
Conformity Assessment Body Identifier (CABID: HK0002)

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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	Rohde & Schwarz	ESCI	100152	31 May 2020	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100964	11 Sep 2019	1Year
Loop Antenna	EMCO	6502	00056620	29 Oct 2020	2Years
Biconical Antenna	Rohde & Schwarz	HK116	837414/004	08 Oct 2020	2Years
Log Periodic Antenna	TESEQ	UPA6109	43666	08 Oct 2019	2Years
Coaxial Cable	Humber+Suhner	RG 213/U	N/A	08 May 2020	1Year
Coaxial Cable	Humber+Suhner	RG 214/U	N/A	08 May 2020	1Year

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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)	4.59dB
30MHz ~ 200MHz (Vertical)	4.49dB
200MHz ~ 1000MHz (Horizontal)	4.94dB
200MHz ~ 1000MHz (Vertical)	4.97dB
1GHz ~ 6GHz	4.52dB

1.5 Test Summary

TEST ITEM	FCC REFERANCE	RESULT
Fundamental emission	15.235(a)	Comply
Out-band emission	15.235(b)	Comply
Bandwidth	15.215(c)	Comply

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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 C63.10 – 2013.

A non-conductive turntable with dimensions of 1.5m x 0.4m x 0.8m (L x W x H) placed above the reference ground plane. The equipment under test (EUT) was placed at 0.8m height for below 1GHz measurement and 1.5m height for above 1GHz measurement. The test distance is 3m between EUT and receiving antenna. A broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was 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. Additional absorbing material will be placed between the EUT and receiving antenna for above 1GHz measurement.

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.

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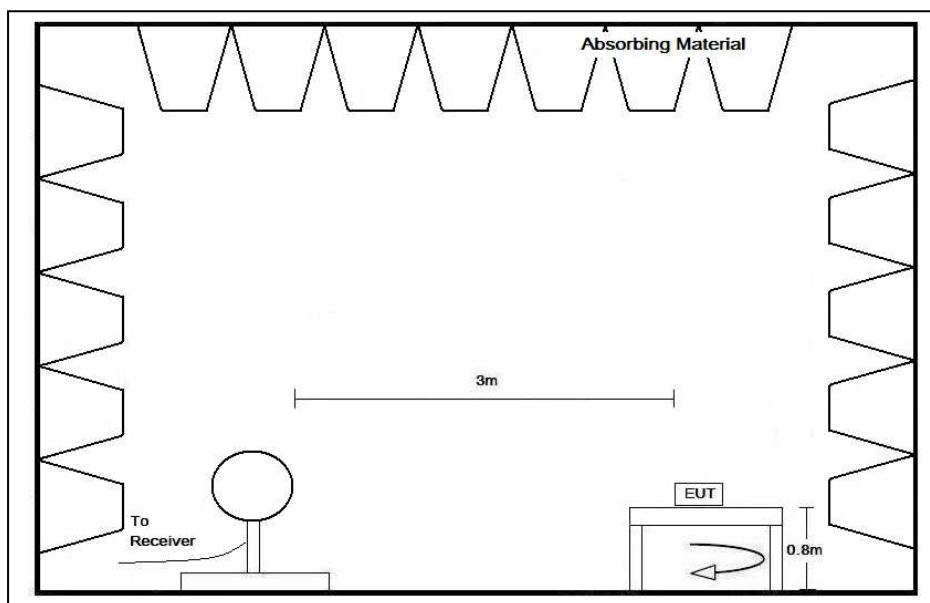
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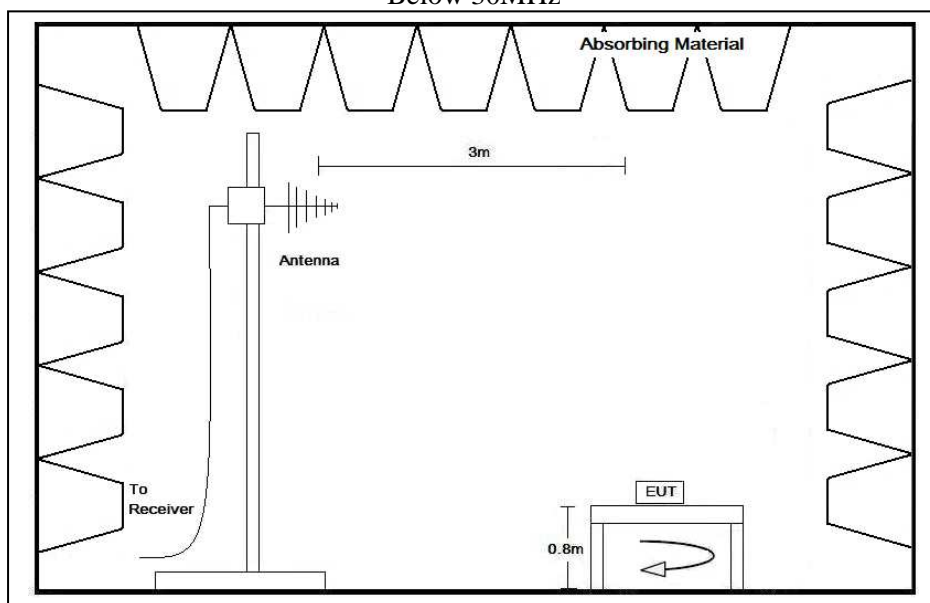
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2.2 Test Setup



Below 30MHz



30MHz – 1GHz

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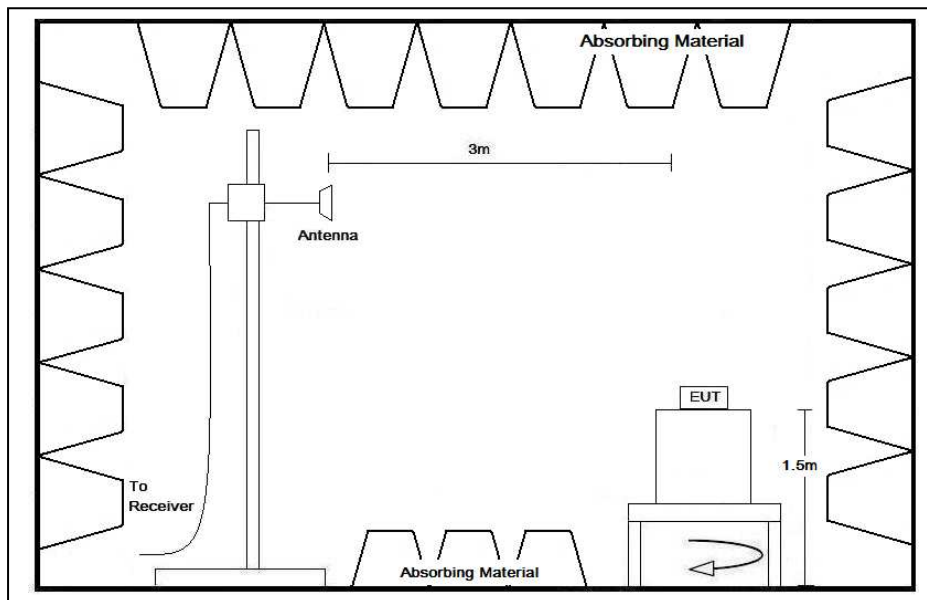
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2.2 Test Setup



Above 1GHz

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2.3 Test Result

Peak Detector data was measured unless otherwise stated.

The radiated emissions are measured from 9kHz to 500MHz (the tenth harmonics)

The worst case configuration is shown on the worst case configuration of test setup photo.

The frequencies from fundamental up to tenth harmonics were investigated, and emissions more 20dB below limit were not reported. Thus, those highest emissions were presented in next pages.

The EUT has been tested in Transmission mode and antenna is fully extended.

It was found that the EUT meet the FCC requirement.

The Receiver (CAR) for this Transmitter (Remove) is under Supplier's Declaration of Conformity procedure.

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2.4 Radiated Emission Measurement Data

Radiated emission

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	23.2	° C
Relative humidity:	61.2	%

Polarization	Frequency (MHz)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Detector Type
H	49.860	52.9	11.3	64.2	80.0	-15.8	PK
H	49.860	62.0	11.3	73.3	80.0	-6.7	PK
V	99.695	12.9	10.2	23.1	43.5	-20.4	QP
H	149.849	9.7	13.5	23.2	43.5	-20.3	QP
V	199.388	7.5	15.3	22.8	43.5	-20.7	QP
H	249.307	11.8	14.5	26.3	46.0	-19.7	QP
H	299.114	13.3	14.5	27.8	46.0	-18.2	QP
H	349.090	13.0	16.9	29.9	46.0	-16.1	QP
H	398.826	14.9	16.9	31.8	46.0	-14.2	QP
H	488.736	11.2	20.9	32.1	46.0	-13.9	QP
H	498.662	11.5	20.9	32.4	46.0	-13.6	QP

Remark: All other emission below the limit more than 20dB are not reported in this report.

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3 Description of the Line-conducted Test

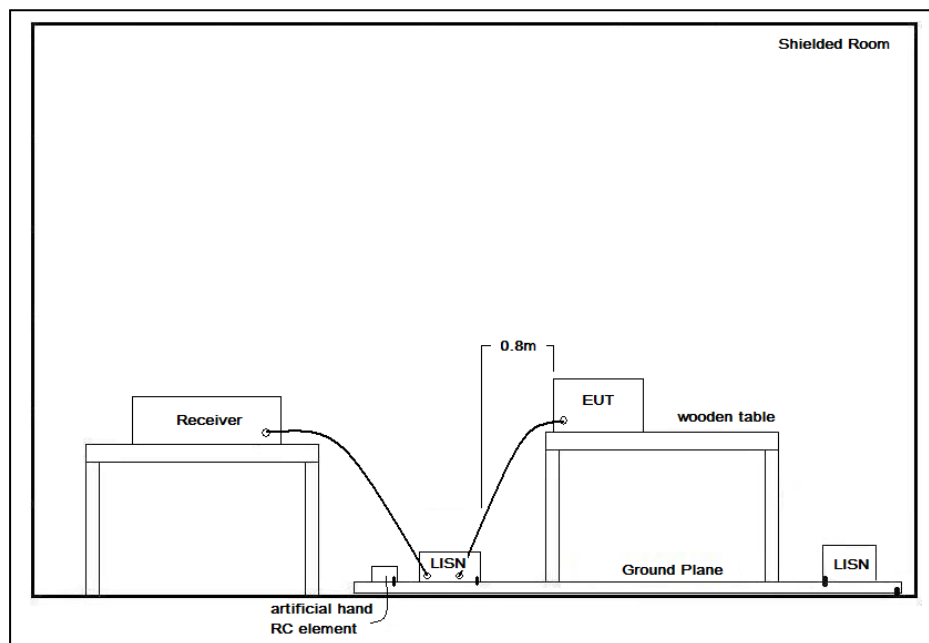
3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.10 – 2013. 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 Test Setup



3.4 Graph and Table of Conducted Emission Measurement Data

Not Applicable

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4 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	Label Artwork and Location.pdf
Block Diagram	Block Diagram.pdf
Schematic Diagram	Schematic.pdf
Users Manual	User Manual.pdf
Operational Description	Operation Description.pdf

4.1 Bandwidth

Appendices A1 is shown the fundamental emission is confined in the specified band. 20dB bandwidth is 6.43kHz and 20dB bandwidth are within the assigned band. It shows that the EUT meets the FCC Part 15.215(c).

And the in-band emission is more than 26dBc within the band 49.81 – 49.91MHz. It shows that the EUT meets the FCC Part 15.235(b).

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5 Appendices

A1. Bandwidth Plot 1 page(s)

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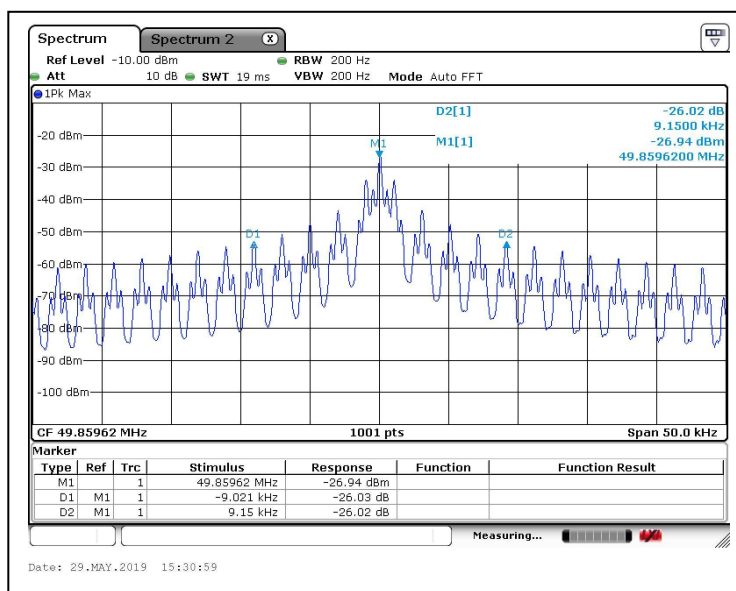
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A1. Bandwidth Plot



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