FCC TEST REPORT

Test report
On Behalf of
Synergistic Industrial Limited
For
RC SUPER SPEED RACING HOVERCRAFT
Model No.: 6681, 6764336, AGW1W

FCC ID: 2AEJP-SYN-2018

Prepared for :	**Synergistic Industrial Limited** **Unit 5 21/F Max Trade Centre No. 23 Luk Hop Street San Po Kong, Kowloon, Hong Kong, 999077, China**
Prepared By :	**Shenzhen HUAK Testing Technology Co., Ltd.** **1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street,** **Bao'an District, Shenzhen City, China**
Date of Test:	**Jul. 15, 2018 ~ Jul. 30, 2018**
Date of Report:	**Jul. 30, 2018**
Report Number:	**HUAK180723597E**

TEST RESULT CERTIFICATION

Applicant's name	:	Synergistic Industrial Limited
Address	:	Unit 5 21/F Max Trade Centre No. 23 Luk Hop Street San Po Kong, Kowloon, Hong Kong, 999077, China
Manufacture's Name	:	ZhiHui industrial plastic toys co., LTD
Address	:	Area A, Xiehe Workshop, Fengxin 2nd Road,Fengxiang Street, Chenghai District, Shantou City,Guangdong Province, China(Zip Code:515800)

Product description

Trade Mark:		N/A
Product name	:	RC SUPER SPEED RACING HOVERCRAFT
Model and/or type reference	:	6681, 6764336, AGW1W
Standards	:	FCC Rules and Regulations Part 15 Subpart C Section 15.235 ANSI C63.10: 2013

Date of Test	:	
Date (s) of performance of tests	:	Jul. 15, 2018 ~ Jul. 30, 2018
Date of Issue	:	Jul. 30, 2018
Test Result	:	**Pass**

Testing Engineer : 

(Gary Qian)

Technical Manager : 

(Eden Hu)

Authorized Signatory : 

(Jason Zhou)

Table of Contents **Page**

1. TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

FCC Rules	Description Of Test	Result
15.215	20 dB Bandwidth	Compliant
15.235(b)	Band Edges	Compliant
15.235(a) &15.209	Radiated Emission	Compliant
15.207	Conducted Emission	N/A

1.2 TEST FACILITY

Test Firm : Shenzhen HUAK Testing Technology Co., Ltd.

Address : 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China

Designation Number: : CN1229

Test Firm Registration Number : 616276

1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	RC SUPER SPEED RACING HOVERCRAFT
Model Name	6681
Serial No.	6764336, AGW1W
Trade Mark	N/A
Model Difference	All the same except for the appearance color.
FCC ID	**2AEJP-SYN-2018**
Antenna Type	Integral Antenna
Antenna Gain	20dBi
Operation frequency	49.86MHz
Number of Channels	1CH
Modulation Type	ASK
Power Source	DC 9V by battery(6F22)

2.2 Carrier Frequency of Channels

Channel List	
Channel	**Frequency (MHz)**
01	49.86

2.3 Operation of EUT during testing

Operating Mode
The mode is used: **Transmitting mode**
Channel: 49.86MHz

2.4 DESCRIPTION OF TEST SETUP

Operation of EUT during Radiation and Above1GHz Radiation testing:

EUT

● Adapter information
N/A

2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	Dec. 28, 2017	N/A
2.	Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 28, 2017	1 Year
3.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 28, 2017	1 Year
4.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 28, 2017	1 Year
5.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 28, 2017	1 Year
6.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 28, 2017	1 Year
7.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 28, 2017	1 Year

3. RADIATED EMISSIONS AND BAND EDGES

3.1 Applicable Standard

FCC 15.235(a)

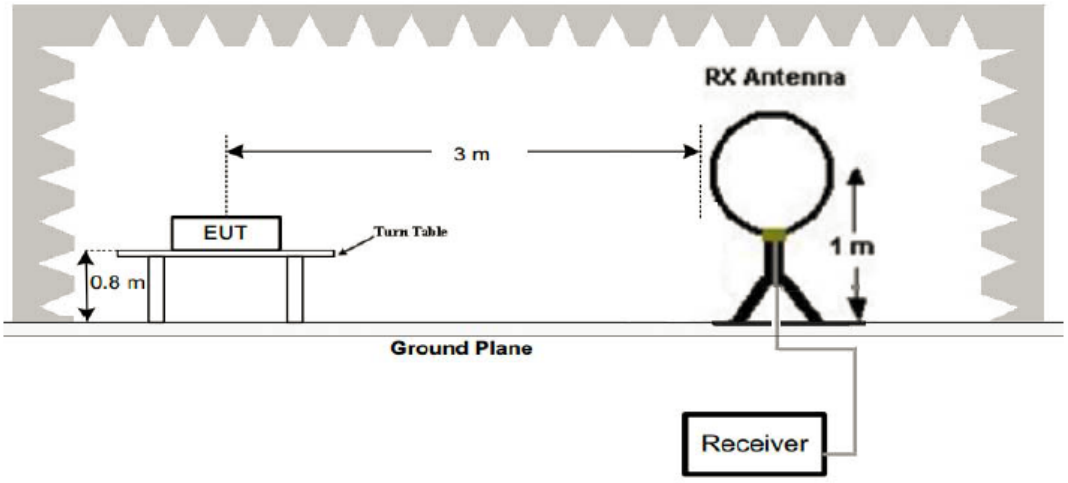
The field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

FCC 15.235(b)

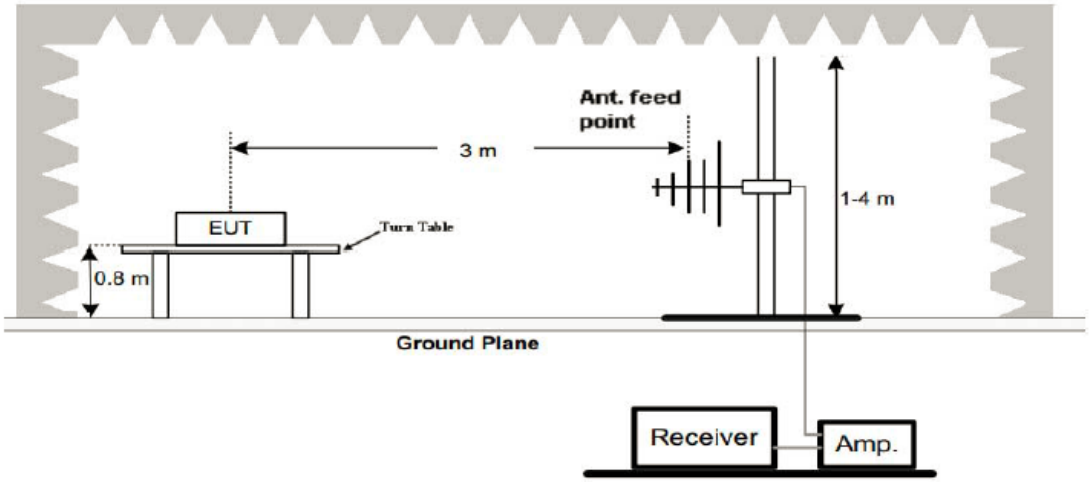
The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in §15.209, whichever permits the higher emission levels. The field strength of any emissions removed by more than 10 kHz from the band edges shall not exceed the general radiated emission limits in §15.209. All signals exceeding 20 microvolts/meter at 3 meters shall be reported in the application for certification.

3.2 Test Setup

（1）Radiated Emission Test-Up Frequency Below 30MHz



（2）Radiated Emission Test-Up Frequency 30MHz~1GHz



3.3 EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP

3.4 Test Procedure

1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

Note:
For battery operated equipment, the equipment tests shall be performed using a new battery.

3.5 Test Result

Result:PASS

Spurious Emissions
Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)		Limit@3m (dBμV/m)	
- -	- -	- -	- -	- -
- -	- -	- -	- -	- -
- -	- -	- -	- -	- -

Note: 1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

According to the data in the following table, the EUT complied with the FCC Part 15.235(a) & 15.235 (b) &15.209, with the worst margin reading of:

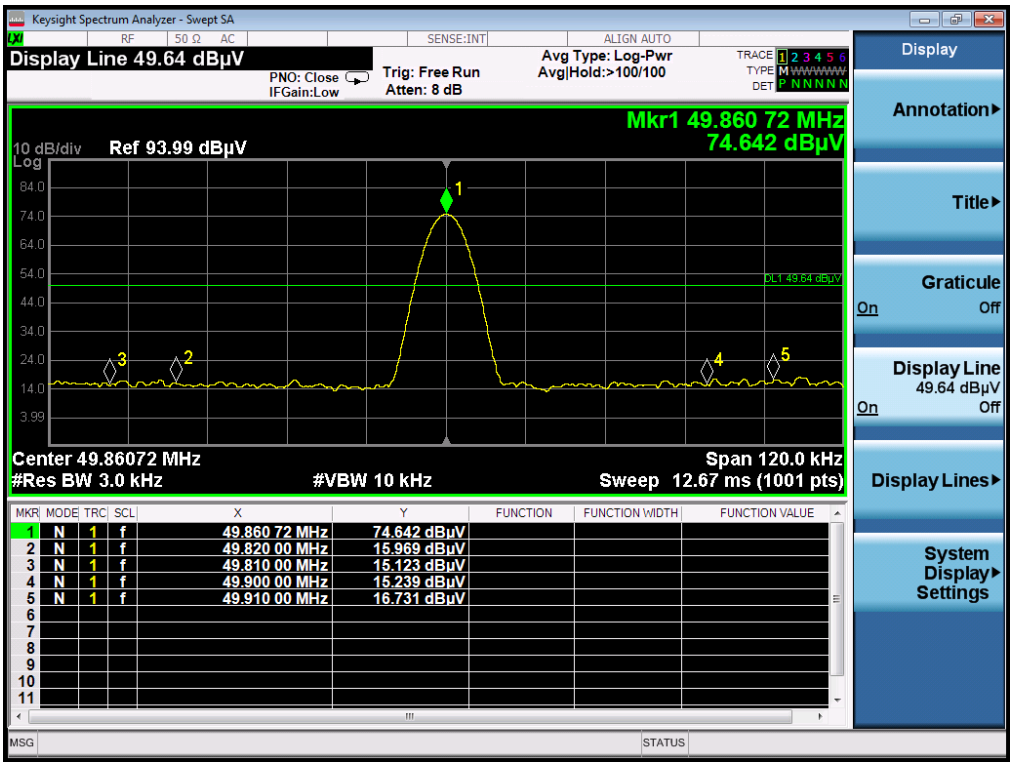
-7.55 dB at 99.72 MHz in the Horizontal polarization

Test Mode: Transmitting

Frequency (MHz)	Receiver		Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	limit (dBμV/m)	Margin (dB)	Remark
	Reading (dBμV)	Detector (PK/QP/Ave.)	Height (m)	Polar (H/V)					
49.86	88.34	PK	1.2	H	-14.4	73.94	100	-26.06	Fundamental
49.86	80.41	Ave	1.2	H	-14.4	66.01	80	-13.99	
49.86	88.67	PK	1.1	V	-14.4	74.27	100	-25.73	
49.86	82.73	Ave	1.1	V	-14.4	68.33	80	-11.67	
99.72	43.65	QP	1.2	H	-11.2	32.45	40	-7.55	Spurious emission
99.72	41.36	QP	1.1	V	-11.2	30.16	40	-9.84	

Note:
Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor（RX）+cable loss － amplifier factor
Margin = Corr. Amplitude - Limit
All signals exceeding 20 microvolts/meter at 3 meters have been recorded.

BAND EDGE



Note: The cable loss and antenna factor are considered in the spectrum.

4 20dB EMISSION BANDWIDTH

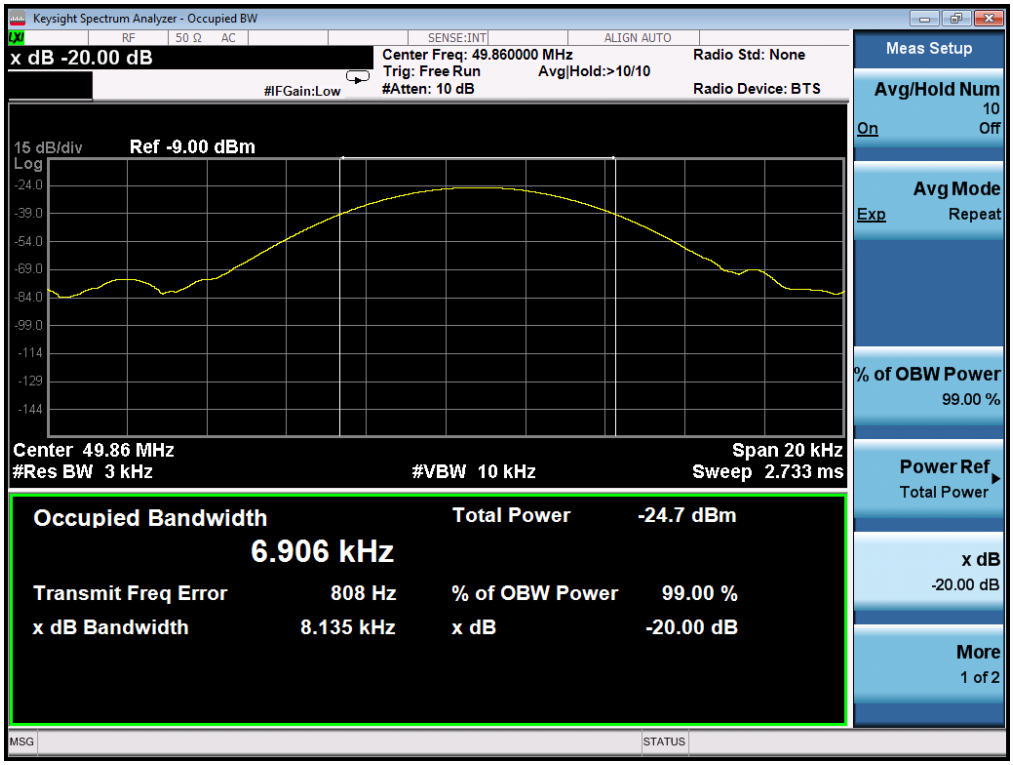
4.1 Applicable Standard

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.2 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

4.3 Test Result

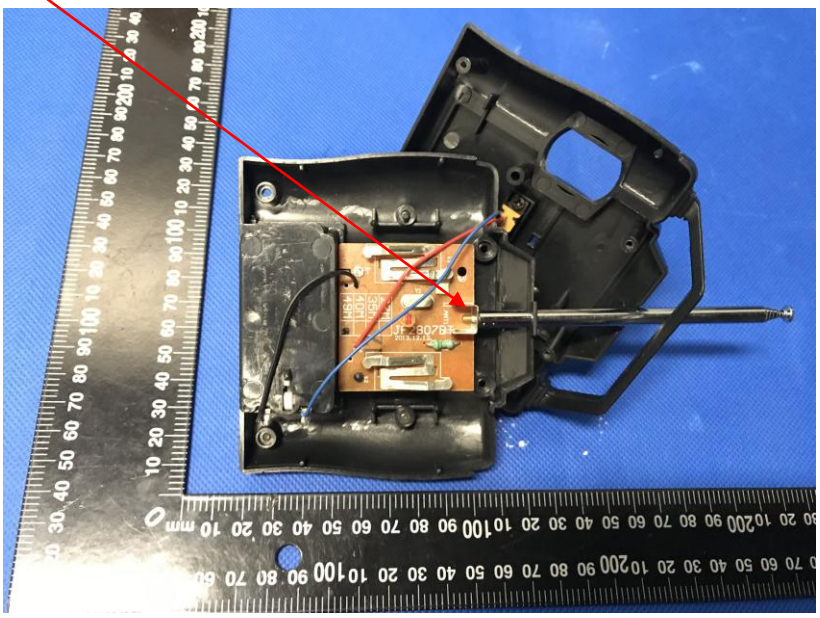


5 ANTENNA REQUIREMENT

Applicable Standard
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

Antenna Connector Construction
The EUT has a helical antenna arrangement, which was permanently attached and the antenna gain is 20 dBi; fulfill the requirement of this section. Please refer to EUT photos.

ANTENNA



6 PHOTOGRAPH OF TEST

Radiated Emission

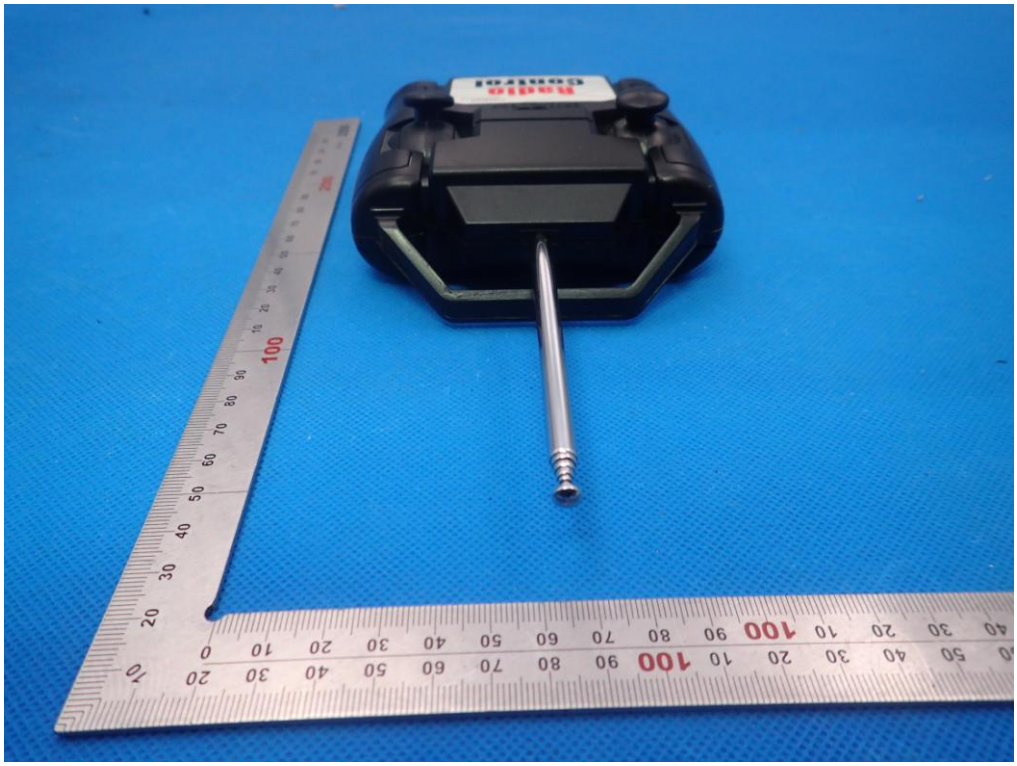
7 PHOTOGRAPH OF EUT

ALL VEIW OF EUT

TOP VIEW OF EUT

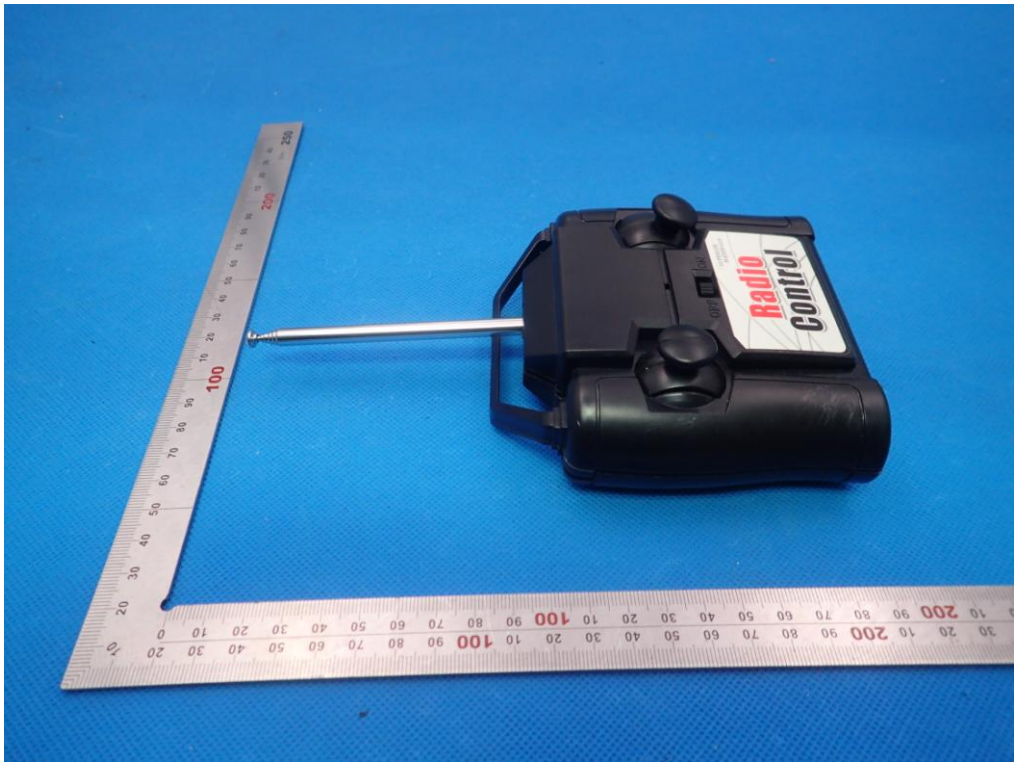
BOTTOM VIEW OF EUT

FRONT VIEW OF EUT



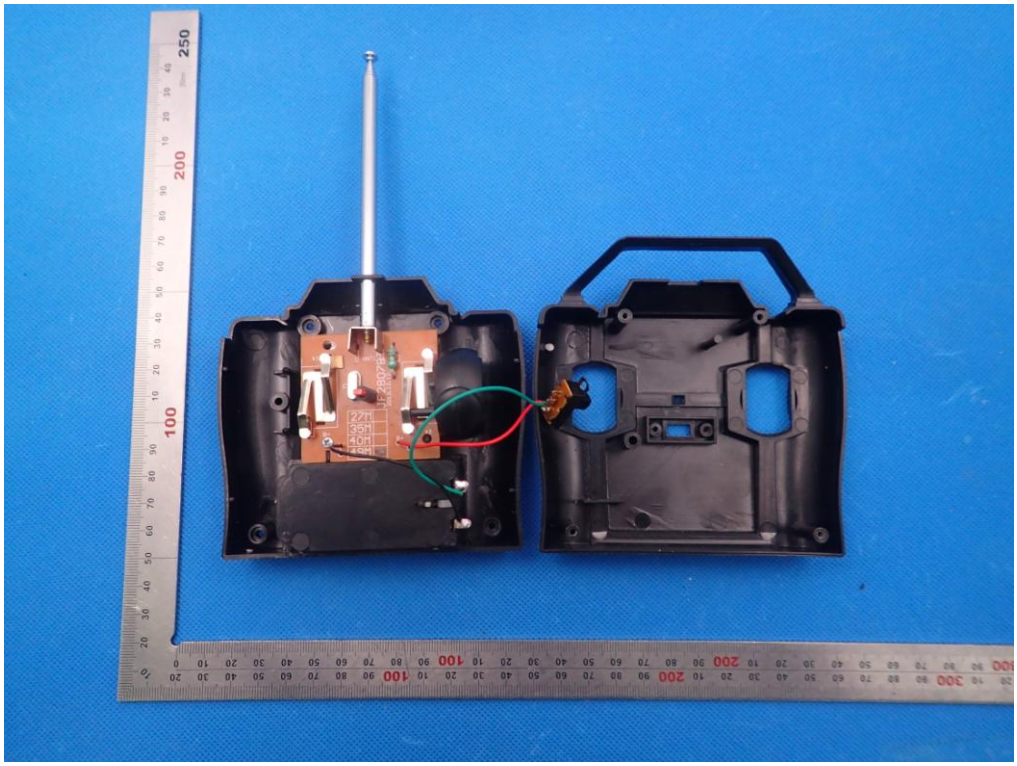
BACK VIEW OF EUT

LEFT VIEW OF EUT

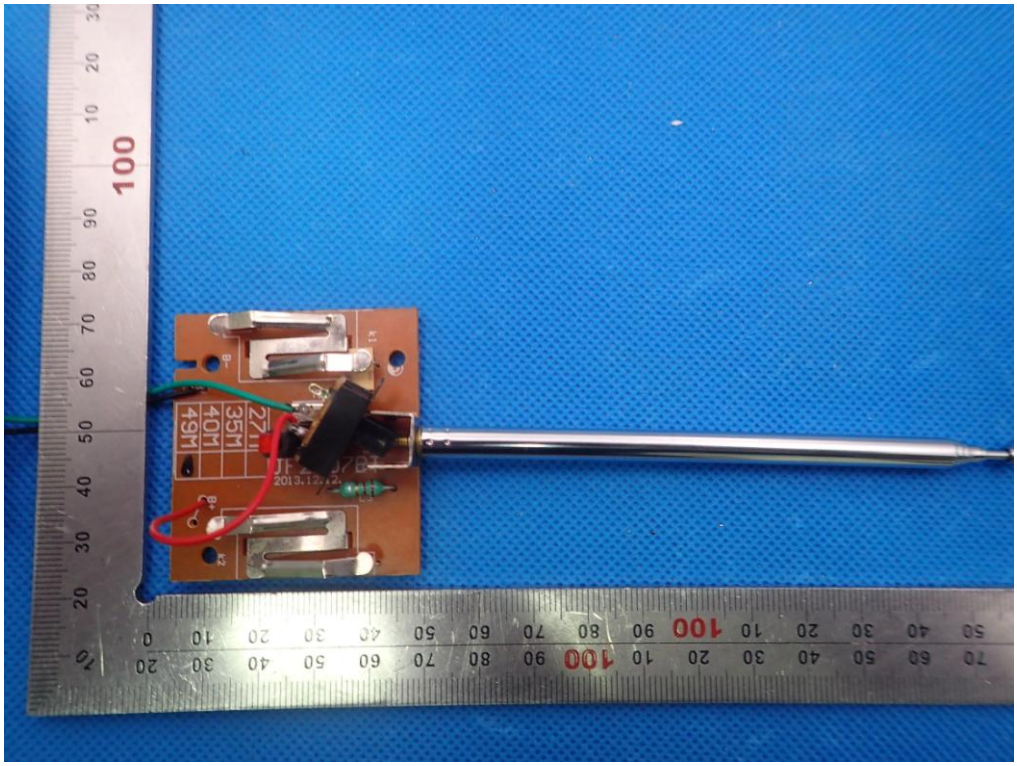


RIGHT VIEW OF EUT

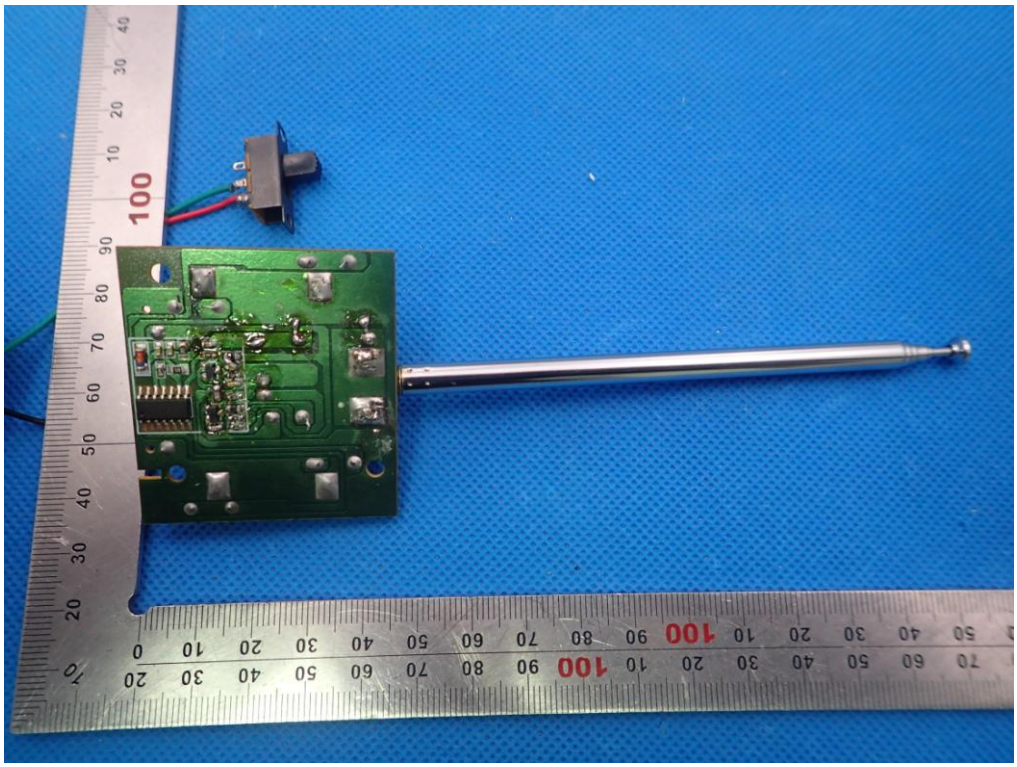
OPEN VIEW-1 OF EUT



INTERNAL VIEW-1 OF EUT



INTERNAL VIEW-2 OF EUT



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