FCC Test Report

Report No.: AGC04532150401FE03

FCC ID	:	2AEN6U207
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Remote controlled flying saucer
BRAND NAME	:	
MODEL NAME	:	U107, U207, NH-002, MQ4C-24/6485, 132487, 133772, 134682, TCTC-12/6501
CLIENT	:	New Feel Hobby
DATE OF ISSUE	:	May.23,2015
STANDARD(S) **TEST PROCEDURE(S)**	:	FCC Part 15 Rules
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	May.23,2015	Valid	Original Report

TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY 4
2. GENERAL INFORMATION 5
2.1. PRODUCT DESCRIPTION 5
2.2. TABLE OF CARRIER FREQUENCYS 5
3. MEASUREMENT UNCERTAINTY 6
4. DESCRIPTION OF TEST MODES 6
5. SYSTEM TEST CONFIGURATION 7
5.1. CONFIGURATION OF EUT SYSTEM 7
5.2. EQUIPMENT USED IN EUT SYSTEM 7
5.3. SUMMARY OF TEST RESULTS 7
6. TEST FACILITY 8
7 ALL TEST EQUIPMENT LIST 8
8. RADIATED EMISSION 9
8.1TEST LIMIT 9
8.2. MEASUREMENT PROCEDURE 10
8.3. TEST SETUP 12
8.4. TEST RESULT 14
9. BAND EDGE EMISSION 19
9.1. MEASUREMENT PROCEDURE 19
9.2 TEST SETUP 19
9.3 RADIATED TEST RESULT 20
APPENDIX A: PHOTOGRAPHS OF TEST SETUP 22
APPENDIX B: PHOTOGRAPHS OF EUT 23

1. VERIFICATION OF CONFORMITY

Applicant	New Feel Hobby
Address	Floor 3 Fengze Printery ,chenghai district ,shantou ,Guangdong
Manufacturer	New Feel Hobby
Address	Floor 3 Fengze Printery ,chenghai district ,shantou ,Guangdong
Product Designation	Remote controlled flying saucer
Brand Name	
Test Model	U207
Series Model	U107, NH-002, MQ4C-24/6485, 132487, 133772, 134682, TCTC-12/6501
Different Description	All the same except the model name and color.
Date of test	May.22,2015
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-BR/RF

We hereby certify that:

The above equipment was tested by Compliance Certification Services(Shenzhen) Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.249.

Prepared By	Max Zhang	May.23,2015
Checked By	Kidd Yang	May.23,2015
Authorized By	Solger Zhang	May.23,2015

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	2405MHz-2475MHz
Maximum field strength	66.36dBuV/m@3m(AV)
Modulation	GFSK
Number of channels	3
Hardware Version	JR-NH107T
Software Version	JR-NH107T
Antenna Designation	Component Antenna (Met 15.203 Antenna requirement)
Antenna Gain	0dBi
Power Supply	DC3V by battery

2.2. TABLE OF CARRIER FREQUENCYS

Low Channel	Middle Channel	High Channel
2405MHz	2445MHz	2475MHz

3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %。

No.	Item	Uncertainty
1	Conducted Emission Test	±3.18dB
2	All emissions,radiated	±3.91dB
3	Temperature	±0.5°C
4	Humidity	±2%

4. DESCRIPTION OF TEST MODES

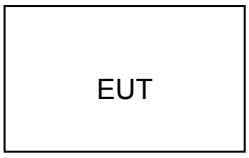
NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX
4	Link Mode

Note:
1. All the test modes can be supply by battery, only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure :



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Remote controlled flying saucer	U207	N/A	EUT

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249	Radiated Emission	Compliant
§15.249	Band Edges	Compliant

6. TEST FACILITY

Site	Compliance Certification Services(Shenzhen) Inc.
Location	Building 10-1, Mingkeda logistics park, huanguan South Road, guanlan town, Baoan District, Shenzhen, Guangdong, P.R.China
FCC Registration No.	441872
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009.

7 ALL TEST EQUIPMENT LIST

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Universal Radio Communication Tester	R&S	CMU200	112012	2014.10.25	2015.10.24
Bilog Antenna	TESEQ	CBL6111D	34678	2014.10.25	2015.10.24
Low frequency cable	MURATA	R-03	130627	2014.10.25	2015.10.24
High frequency cable	HARBOUR	R-02	FL0000175	2014.10.25	2015.10.24
EMI Test Receiver	R&S	ESCI	101427	2014.10.25	2015.10.24
Antenna Mast	EM	SC100_1	N/A	N/A	N/A
Turn Table	EM	SC100	060531	N/A	N/A
50Ω Switch	Anritsu Corp	MP59B	6200983705	2014.07.06	2015.07.05
Spectrum Analyzer	Aglient	E4407B	MY50140340	2014.10.25	2015.10.24
Horn Antenna	Schwarbeck	BBHA 9120D	9120D-963	2014.10.25	2015.10.24
Pre-Amplifier	DASY 5	NO. WL-42W	9638	2014.10.25	2015.10.24

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
EMI Test Receiver	R&S	ESPI	102086	2014.10.25	2015.10.24
LISN	R&S	ENV216	101242	2014.10.25	2015.10.24
LISN	EMCO	3810/2NM	000-23625	2014.10.25	2015.10.24
Absorbing clamp	R&S	MDS-21	100668	2014.10.27	2015.10.26
Temperature & Humitidy Chamber	Mieo	HH660	N/A	2014.10.27	2015.10.26
Conduction Cable	EM	C01	N/A	2014.10.25	2015.10.24
Clamp Cable	EM	C02	N/A	2014.10.25	2015.10.24

8. RADIATED EMISSION

8.1TEST LIMIT

Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

Standard FCC 15.209

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		μ V/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark: (1) Emission level dB μ V = 20 log Emission level μ V/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

8.2. MEASUREMENT PROCEDURE

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

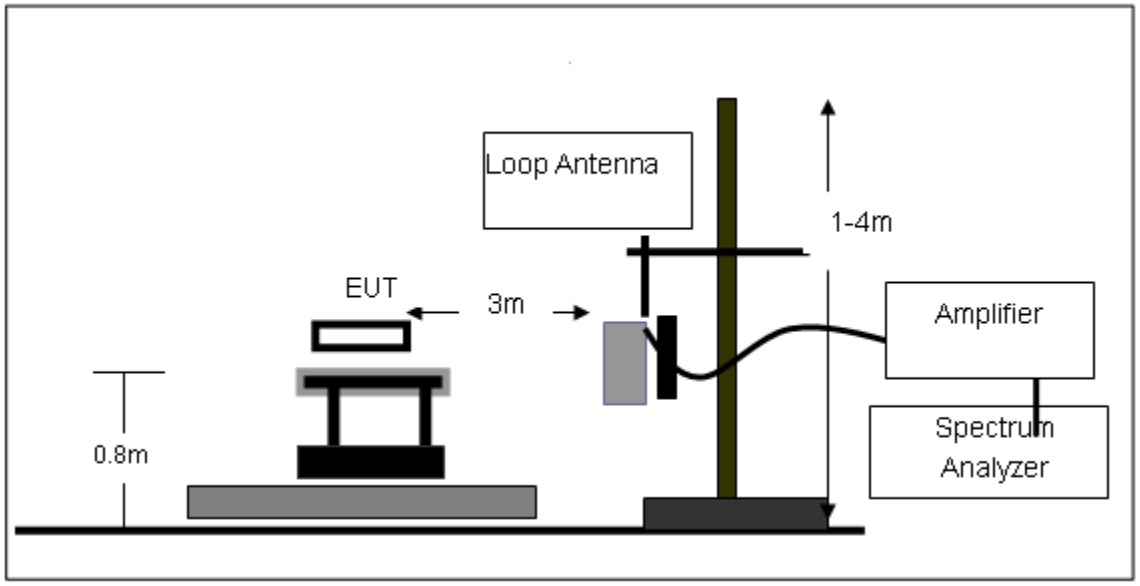
The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/1MHz for Peak, 1MHz/10Hz for Average

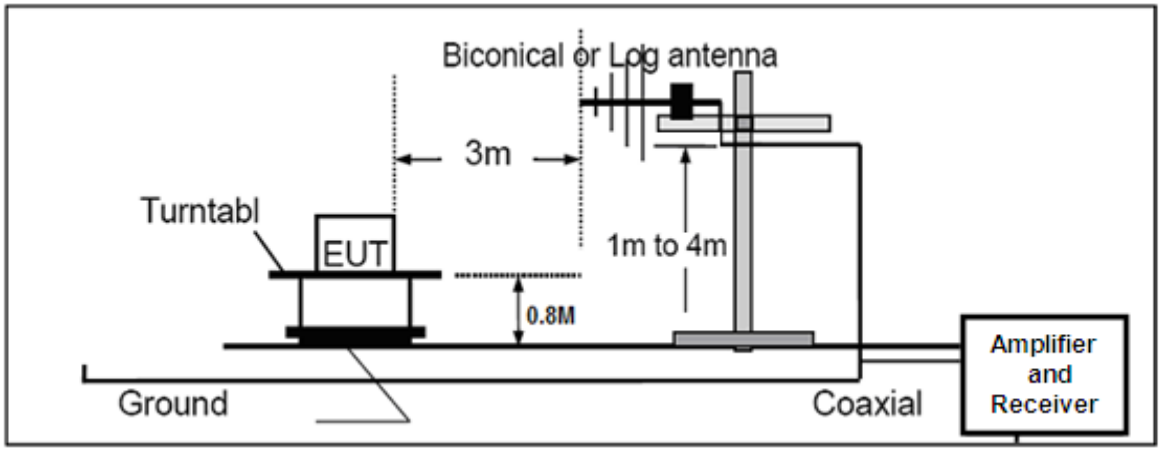
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

8.3. TEST SETUP

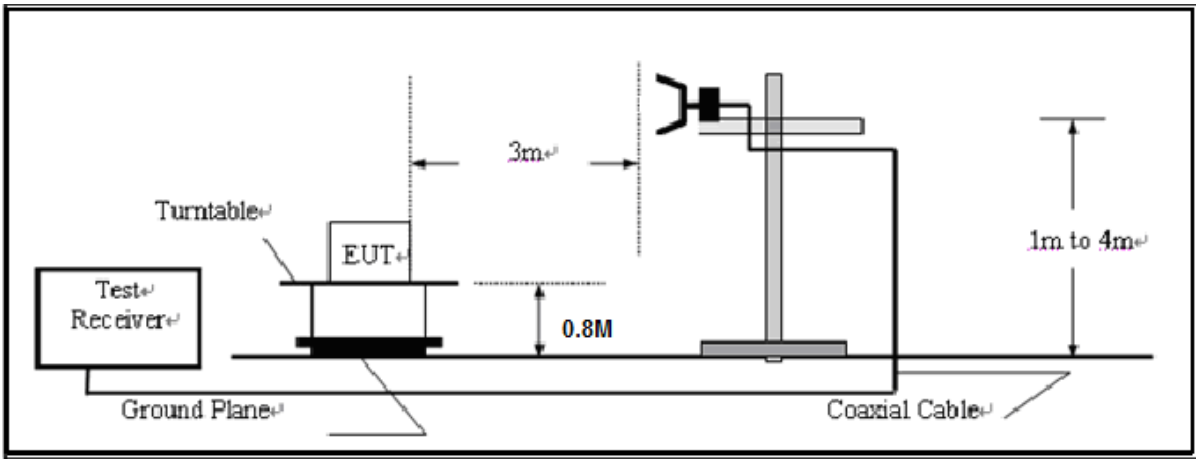
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



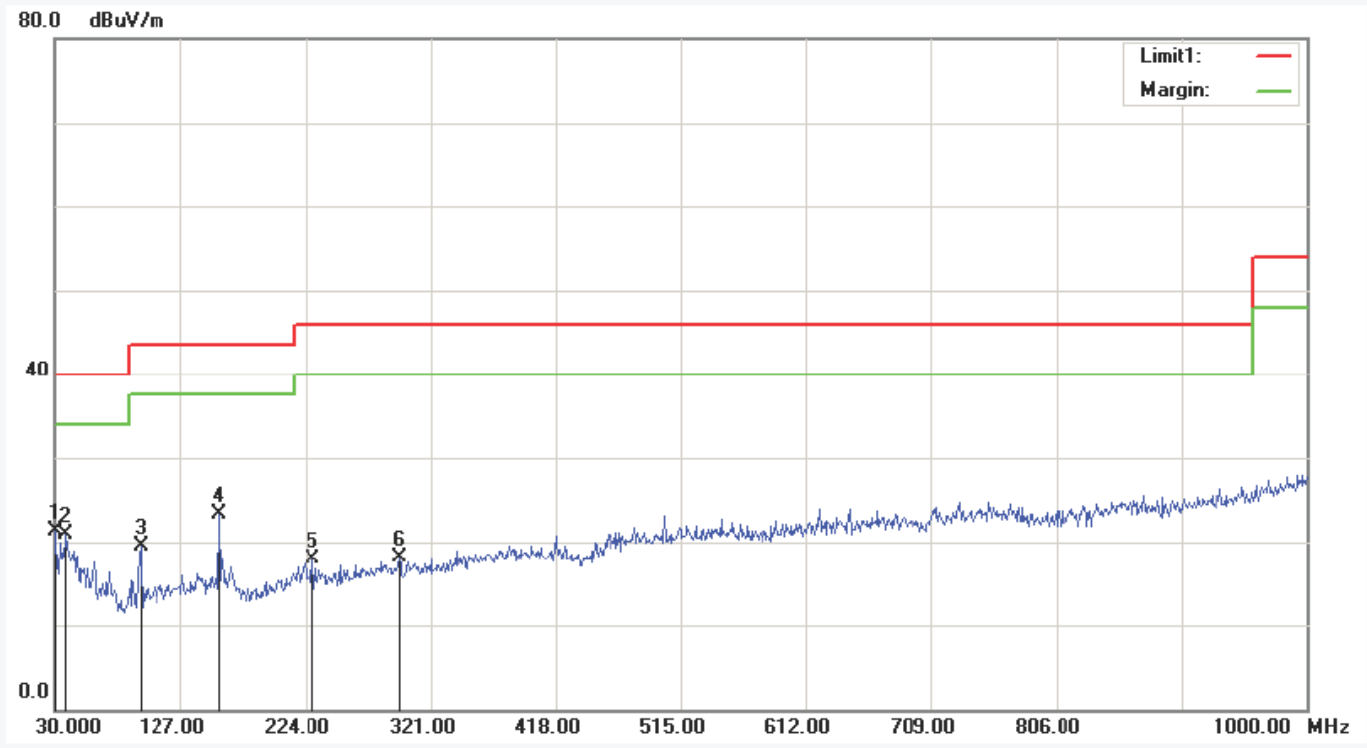
8.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION 30MHz- 1GHZ

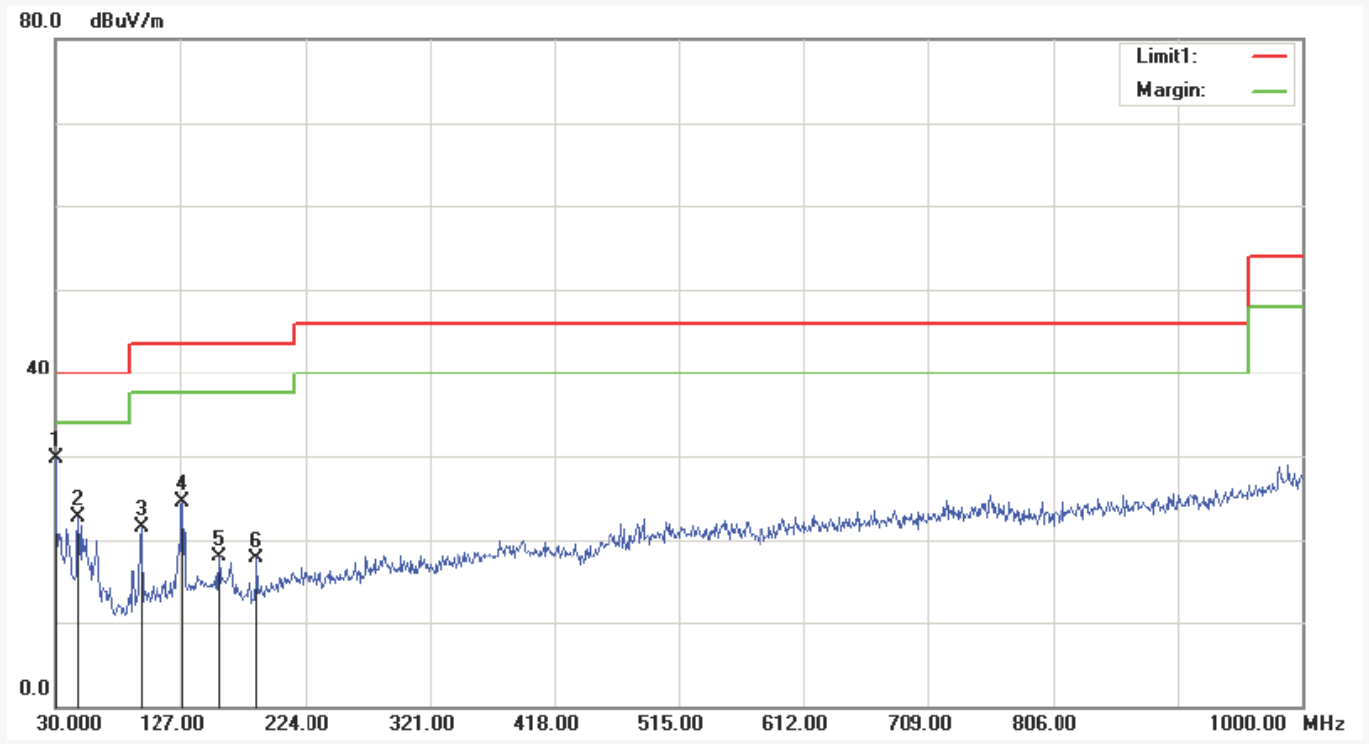
EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	Link mode	Polarization :	Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1*	30.0000	32.86	-11.50	21.36	40.00	-18.64			peak
2	38.7300	32.18	-11.27	20.91	40.00	-19.09			peak
3	95.9600	33.98	-14.52	19.46	43.50	-24.04			peak
4	157.0700	35.00	-11.79	23.21	43.50	-20.29			peak
5	229.8200	28.68	-10.84	17.84	46.00	-28.16			peak
6	296.7500	28.14	-9.96	18.18	46.00	-27.82			peak

RESULT: PASS

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	Link mode	Polarization :	Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1*	30.0000	41.26	-11.50	29.76	40.00	-10.24			peak
2	47.4600	34.66	-12.02	22.64	40.00	-17.36			peak
3	95.9600	36.08	-14.52	21.56	43.50	-21.94			peak
4	128.9400	36.99	-12.54	24.45	43.50	-19.05			peak
5	157.0700	29.67	-11.79	17.88	43.50	-25.62			peak
6	186.1700	30.94	-13.26	17.68	43.50	-25.82			peak

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Result-Limit.

2. The “Factor” value can be calculated automatically by software of measurement system.

RADIATED EMISSION ABOVE 1GHZ

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	Low Channel TX	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2405.021	80.36	-6.62	73.74	114	-40.26	peak
2405.021	70.15	-6.62	63.53	94	-30.47	AVG
4810.042	43.52	1.72	45.24	74	-28.76	peak
4810.042	33.31	1.72	35.03	54	-18.97	AVG
7215.063	40.25	8.11	48.36	74	-25.64	peak
7215.063	30.04	8.11	38.15	54	-15.85	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	Low Channel TX	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2405.021	81.64	-6.62	75.02	114	-38.98	peak
2405.021	71.43	-6.62	64.81	94	-29.19	AVG
4810.042	43.79	1.72	45.51	74	-28.49	peak
4810.042	33.58	1.72	35.3	54	-18.7	AVG
7215.063	40.54	8.11	48.65	74	-25.35	peak
7215.063	30.33	8.11	38.44	54	-15.56	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	Middle Channel TX	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2445.034	82.26	-6.41	75.85	114	-38.15	peak
2445.034	72.05	-6.41	65.64	94	-28.36	AVG
4890.068	42.57	1.98	44.55	74	-29.45	peak
4890.068	32.36	1.98	34.34	54	-19.66	AVG
7335.102	39.68	8.35	48.03	74	-25.97	peak
7335.102	29.47	8.35	37.82	54	-16.18	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	Middle Channel TX	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2445.034	82.98	-6.41	76.57	114	-37.43	peak
2445.034	72.77	-6.41	66.36	94	-27.64	AVG
4890.068	43.15	1.98	45.13	74	-28.87	peak
4890.068	32.94	1.98	34.92	54	-19.08	AVG
7335.102	40.23	8.35	48.58	74	-25.42	peak
7335.102	30.02	8.35	38.37	54	-15.63	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	High Channel TX	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2475.018	80.98	-6.28	74.7	114	-39.3	peak
2475.018	70.77	-6.28	64.49	94	-29.51	AVG
4950.036	42.36	2.01	44.37	74	-29.63	peak
4950.036	32.15	2.01	34.16	54	-19.84	AVG
7425.054	39.63	8.41	48.04	74	-25.96	peak
7425.054	29.42	8.41	37.83	54	-16.17	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	High Channel TX	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2475.018	81.05	-6.28	74.77	114	-39.23	peak
2475.018	70.84	-6.28	64.56	94	-29.44	AVG
4950.036	41.32	2.01	43.33	74	-30.67	peak
4950.036	31.11	2.01	33.12	54	-20.88	AVG
7425.054	38.69	8.41	47.1	74	-26.9	peak
7425.054	28.48	8.41	36.89	54	-17.11	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Note: 8~25GHz at least have 20dB margin. No recording in the test report.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.

The “Factor” value can be calculated automatically by software of measurement system.

9. BAND EDGE EMISSION

9.1. MEASUREMENT PROCEDURE

1The EUT operates at hopping-off test mode. The lowest or highest channels are tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

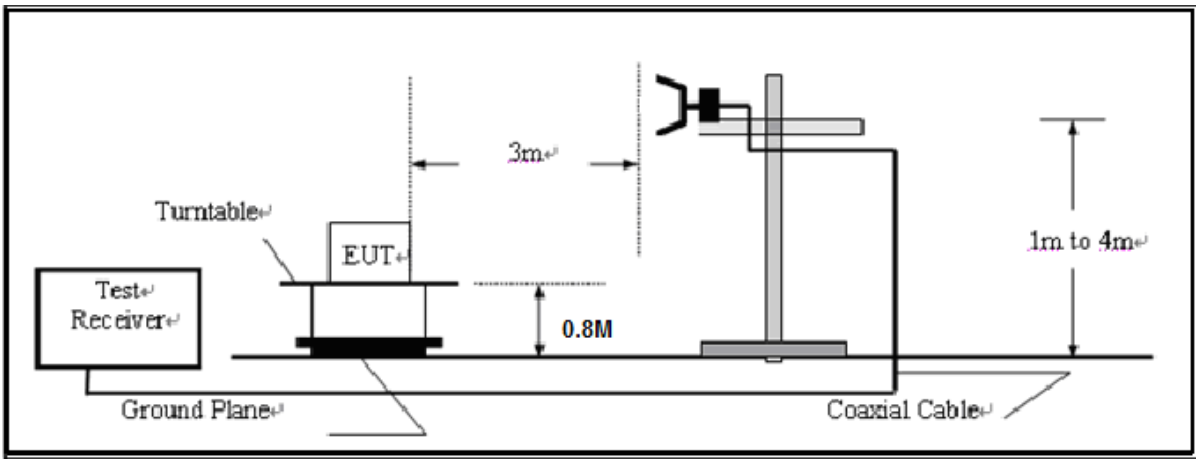
2Max hold the trace of the setp 1,and the EUT operates at hopping-on test mode to verify the largest spurious emissions power.

3Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

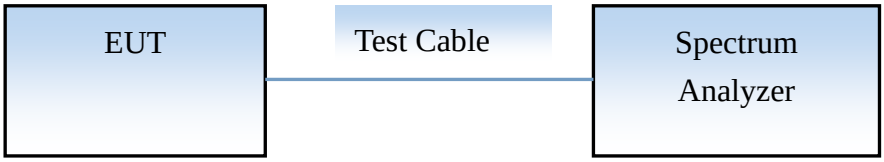
(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO

9.2 TEST SETUP

RADIATED EMISSION TEST SETUP



CONDUCTED TEST SETUP



9.3 RADIATED TEST RESULT

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	Low Channel TX	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	58.31	-6.64	51.67	74	-22.33	peak
2399.900	42.56	-6.64	35.92	54	-18.08	AVG
2400.000	58.45	-6.63	51.82	74	-22.18	peak
2400.000	43.37	-6.63	36.74	54	-17.26	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	Low Channel TX	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	57.65	-6.64	51.01	74	-22.99	peak
2399.900	45.28	-6.64	38.64	54	-15.36	AVG
2400.000	57.89	-6.63	51.26	74	-22.74	peak
2400.000	46.03	-6.63	39.4	54	-14.6	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	High Channel TX	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	57.34	-6.28	51.06	74	-22.94	peak
2483.500	45.28	-6.28	39	54	-15	AVG
2483.600	56.48	-6.29	50.19	74	-23.81	peak
2483.600	42.31	-6.29	36.02	54	-17.98	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Remote controlled flying saucer	Model Name. ：	U207
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC3V
Test Mode ：	High Channel TX	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	57.39	-6.28	51.11	74	-22.89	peak
2483.500	45.32	-6.28	39.04	54	-14.96	AVG
2483.600	56.37	-6.29	50.08	74	-23.92	peak
2483.600	43.08	-6.29	36.79	54	-17.21	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Note: Factor=Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The “Factor” value can be calculated automatically by software of measurement system.

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC RADIATED EMISSION TEST SETUP

APPENDIX B: PHOTOGRAPHS OF EUT

VIEW OF EUT-1

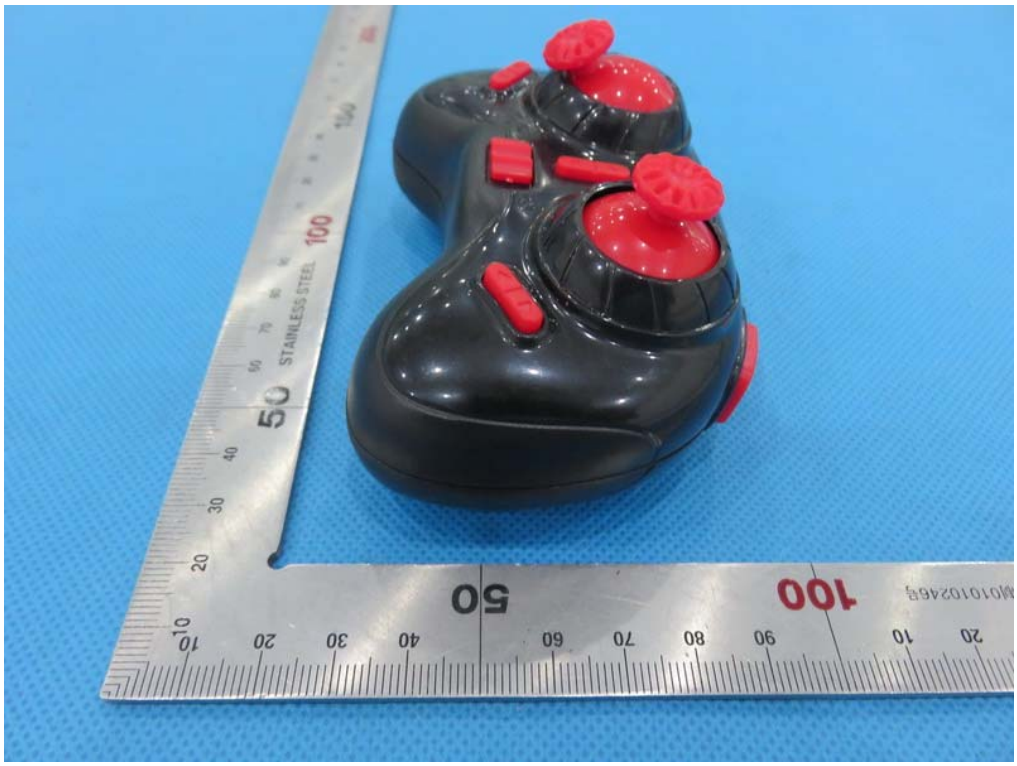
VIEW OF EUT-2

VIEW OF EUT-3

VIEW OF EUT-4

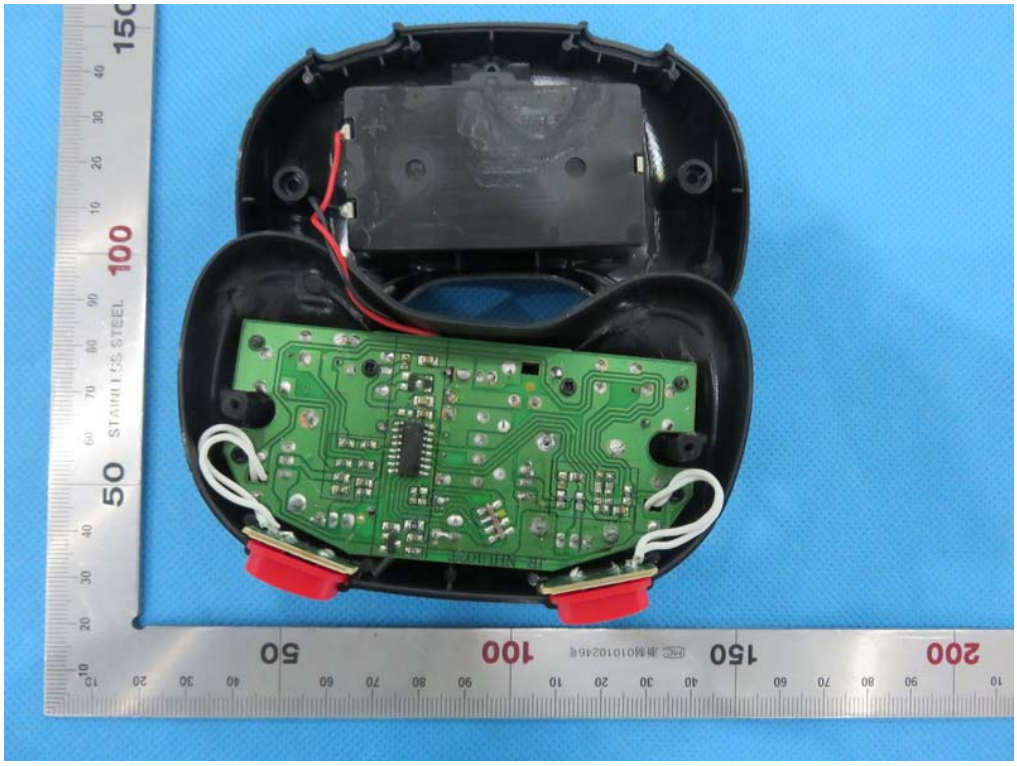
VIEW OF EUT-5

VIEW OF EUT-6

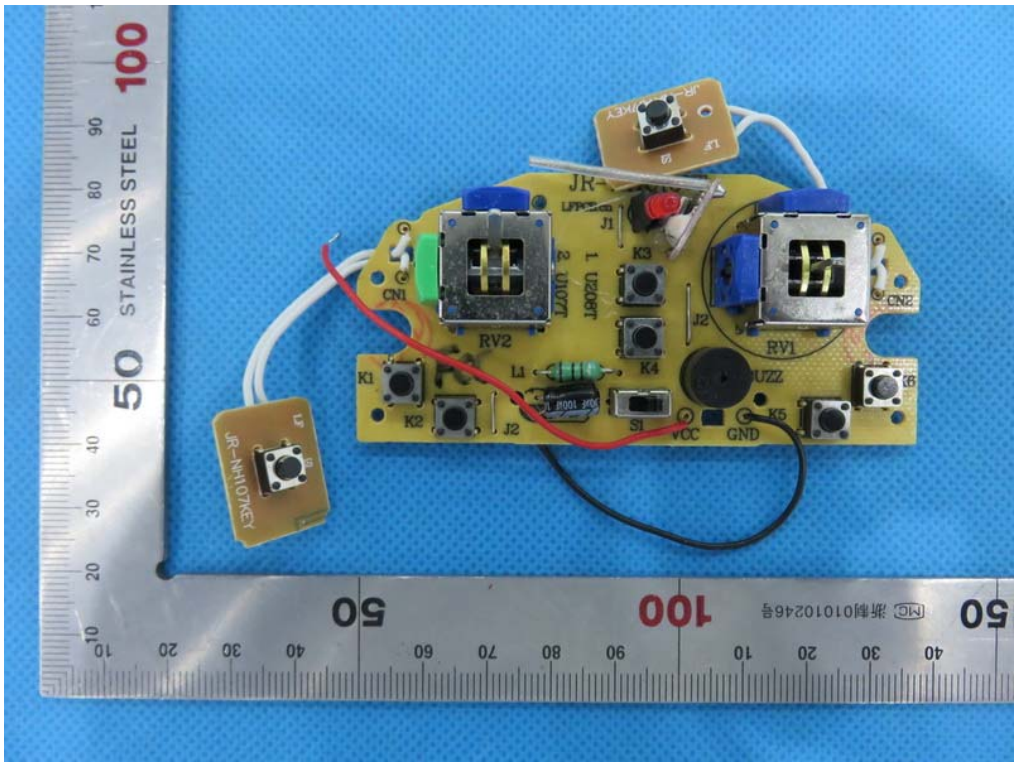


Open VIEW OF EUT

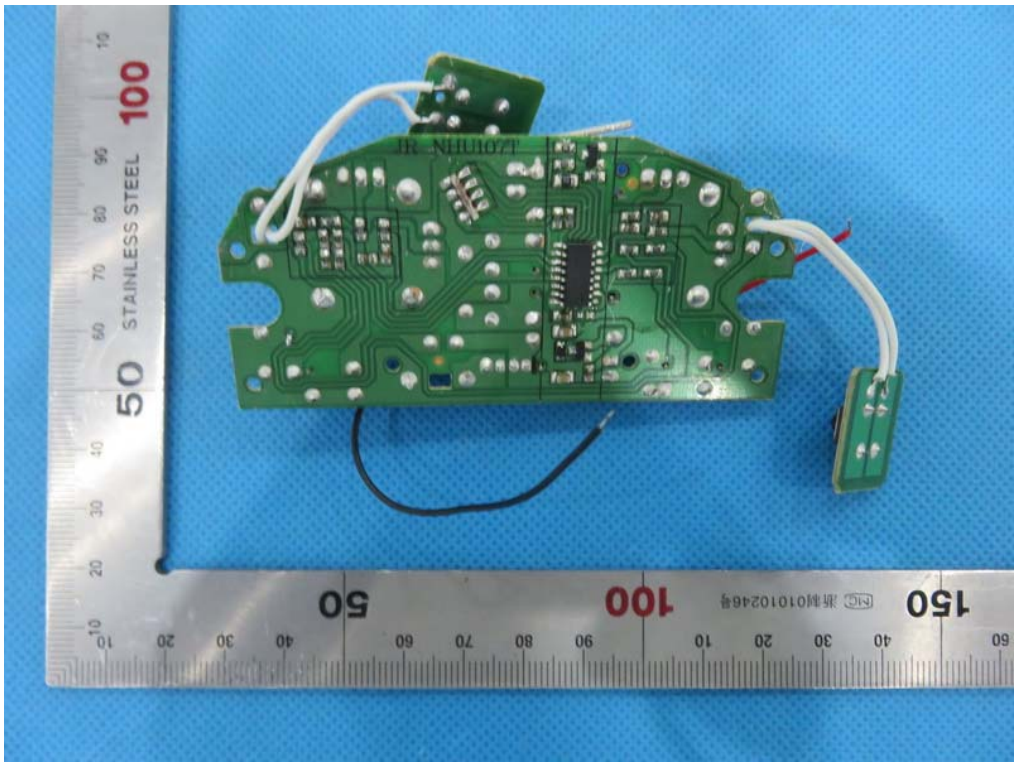
INTERNAL VIEW OF EUT-1



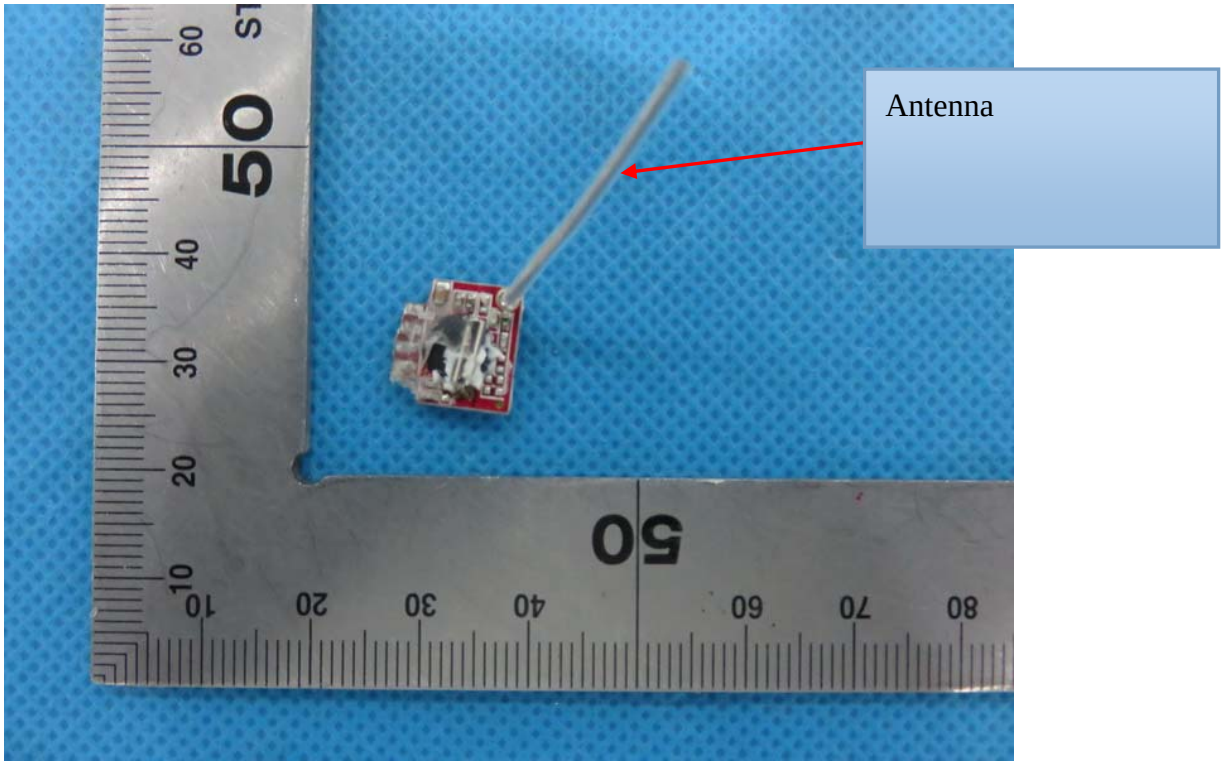
INTERNAL VIEW OF EUT-2



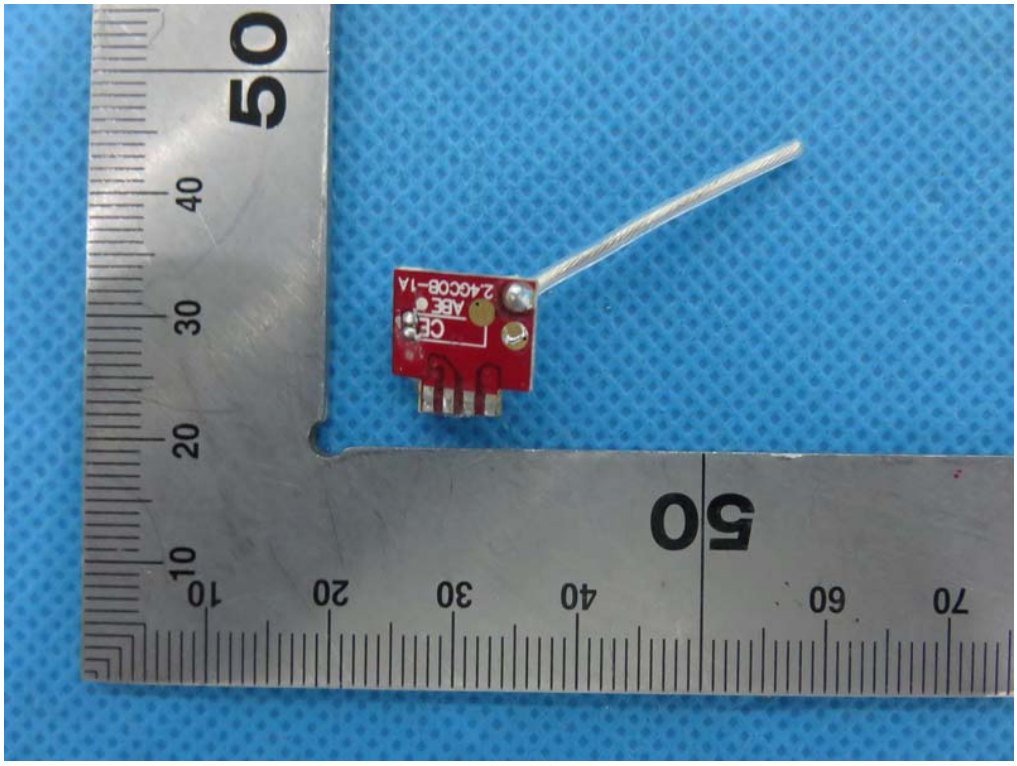
INTERNAL VIEW OF EUT-3



INTERNAL VIEW OF EUT-4



INTERNAL VIEW OF EUT-5



----END OF REPORT----