

# TEST REPORT

**Reference No.** ..... : WTS15S1136731E  
**FCC ID** ..... : ZRH20150915  
**Applicant**..... : SHENZHEN YUXINXIN ELECTRONICS CO.,LTD.  
**Address**..... : Building 7, Xinxing Industrial Park, Fuyong Town Bao'an District,  
Shenzhen, Guangdong, China  
**Manufacturer** ..... : SHENZHEN YUXINXIN ELECTRONICS CO.,LTD.  
**Address**..... : Building 7, Xinxing Industrial Park, Fuyong Town Bao'an District,  
Shenzhen, Guangdong, China  
**Product Name**..... : Wireless headphone(TX)  
**Model No.**..... : YU-EW218, YU-RF1200, YU-RF1100, DD518, DD519, YU-EW219,  
RF1000, RF1006, RF1008, RF1009, RF1102, RF8131  
**Standards**..... : FCC CFR47 Part 15 Section 15.249: 2014  
**Date of Receipt sample** .... : Nov. 06, 2015  
**Date of Test** ..... : Nov. 06 - 10, 2015  
**Date of Issue**..... : Nov. 18, 2015  
**Test Result**..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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## 2 Test Summary

Test Items	Test Requirement	Result
Conducted Emissions	15.207	PASS
Radiated Emission	15.249(a) 15.209 15.205(a)	PASS
Periodic Operation	15.35(c)	PASS
Outside of Band Emission	15.249 15.205 15.209	PASS
20dB Bandwidth	15:215(c)	PASS
Antenna Requirement	15.203	PASS

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## 4 General Information

### 4.1 General Description of E.U.T.

Product Name	:Wireless headphone(TX)
Model No.	:YU-EW218, YU-RF1200, YU-RF1100, DD518, DD519, YU-EW219, RF1000, RF1006, RF1008, RF1009, RF1102, RF8131
Model Differences	:Only the appearance color is different.
Type of Modulation	: FM
Transmitter Frequency Range	: 915.5-916.5MHz
The Lowest Oscillator	: 7.6MHz
Antenna installation	: integrated Antenna
Remark	: The model YU-EW218 is the tested sample.

### 4.2 Details of E.U.T.

Technical Data	: DC 4.5V, 200mA powered by adapter Input: 120V~60Hz (Adapter Model:GPU350450200WD00)
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### 4.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **IC – Registration No.:7760A-1**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A-1, Oct 15, 2015.

- **FCC Test Site 1#– Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 328995, December 3, 2014.

#### 4.3.1 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Test mode	Lower channel	Middle channel	Upper channel
Transmitting	915.5MHz	916MHz	916.5MHz

## 5 Equipment Used during Test

### 5.1 Equipments List

RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY4511494 3	Sep.15,2015	Sep.14,2016
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	Sep.15,2015	Sep.14,2016
3.	Humidity Chamber	GF	GTH-225-40- 1P	IAA061213	May 16,2015	May 15,2016

3m Semi-anechoic Chamber for Radiation						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Spectrum Analyzer	R&S	FSP	836079/035	May-07-2015	May-06-2016
2	EMI Test Receiver	R&S	ESVB	825471/005	May-07-2015	May-06-2016
3	Pre-amplifier	Agilent	8447F	3113A06717	May-07-2015	May-06-2016
4	Pre-amplifier	Compliance Direction	PAP-0118	24002	May-07-2015	May-06-2016
5	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	Apr-20-2015	Apr-19-2016
6	Horn Antenna	ETS	3117	00086197	Apr-20-2015	Apr-19-2016
7	Horn Antenna	ETS	3116B	00088203	Apr-20-2015	Apr-19-2016
8	Loop Antenna	SCHWARZECK	HFRA 5165	9365	Apr-20-2015	Apr-19-2016

Conducted Emissions Test Site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	100947	Sep.15,2015	Sep.14,2016
2.	LISN	R&S	ENV216	101215	Sep.15,2015	Sep.14,2016
3.	Cable	Top	TYPE16(3.5M)	-	Sep.15,2015	Sep.14,2016

Conducted Emissions Test Site 2#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101155	Sep.15,2015	Sep.14,2016
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Sep.15,2015	Sep.14,2016
3.	Limitter	York	MTS-IMP-136	261115-001- 0024	Sep.15,2015	Sep.14,2016

4.	Cable	LARGE	RF300	-	Sep.15,2015	Sep.14,2016
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## 5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-6}$
RF Power	$\pm 1.0$ dB
RF Power Density	$\pm 2.2$ dB
Radiated Spurious Emissions test	$\pm 5.03$ dB (Bilog antenna 30M~1000MHz)
	$\pm 5.47$ dB (Horn antenna 1000M~25000MHz)

## 5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

## 6 Conducted Emission

Test Requirement:	FCC CFR 47 Part 15 Section 15.207
Test Method:	ANSI C63.4:2014
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class/Severity:	Class B
Limit:	66-56 dB $\mu$ V between 0.15MHz & 0.5MHz 56 dB $\mu$ V between 0.5MHz & 5MHz 60 dB $\mu$ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)

### 6.1 E.U.T. Operation

Operating Environment :

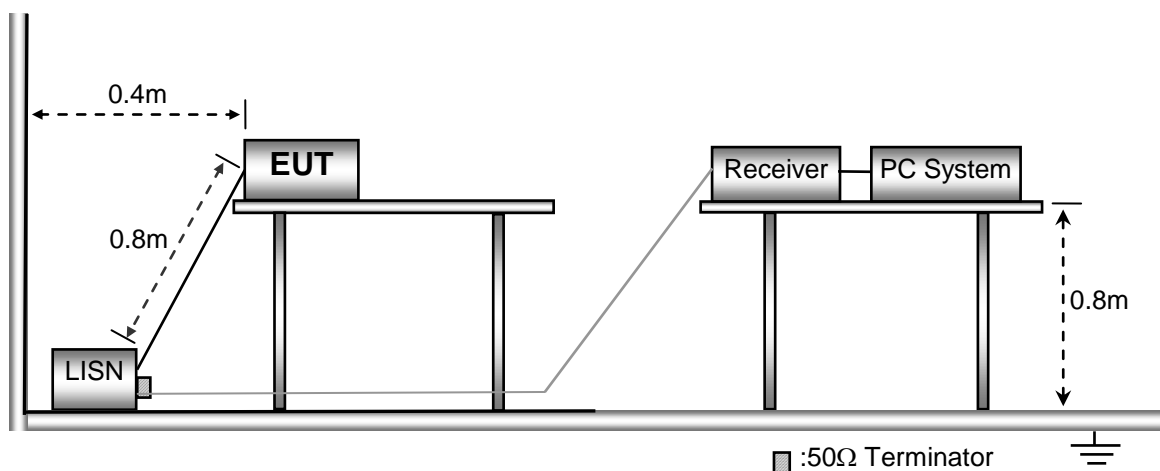
Temperature:	25.5 °C
Humidity:	51 % RH
Atmospheric Pressure:	101.2kPa

EUT Operation :

The test was performed in transmitting mode, the test data were shown in the report.

### 6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4.

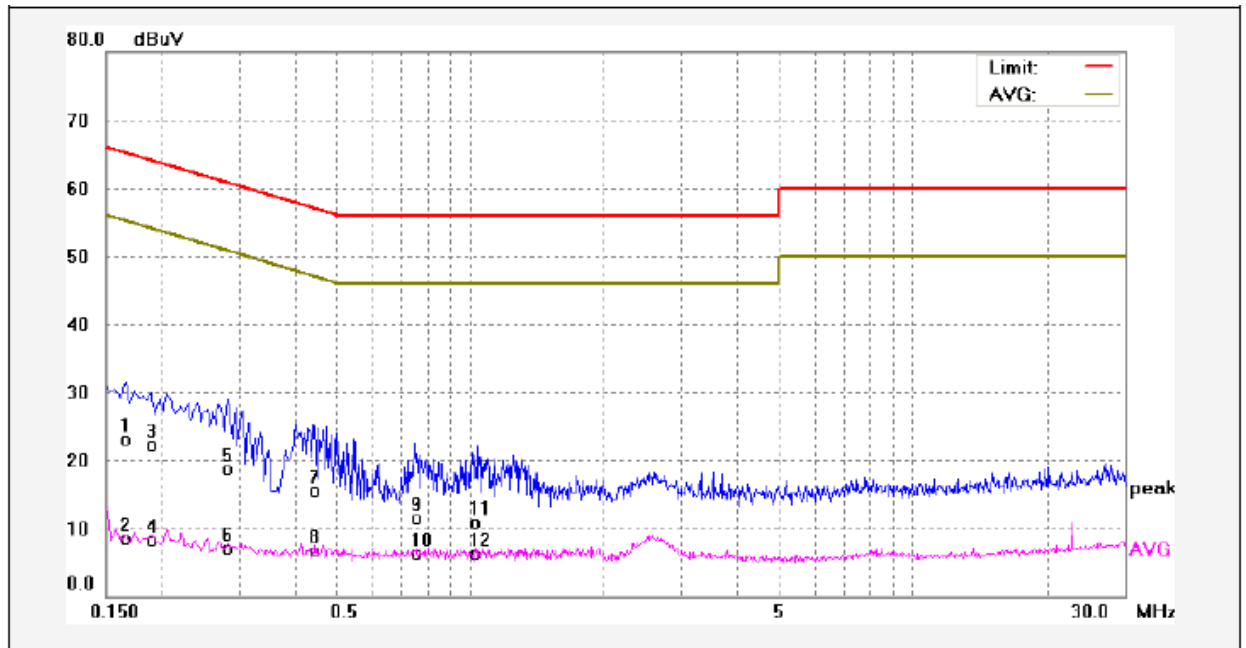


### 6.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

## 6.4 Test Result

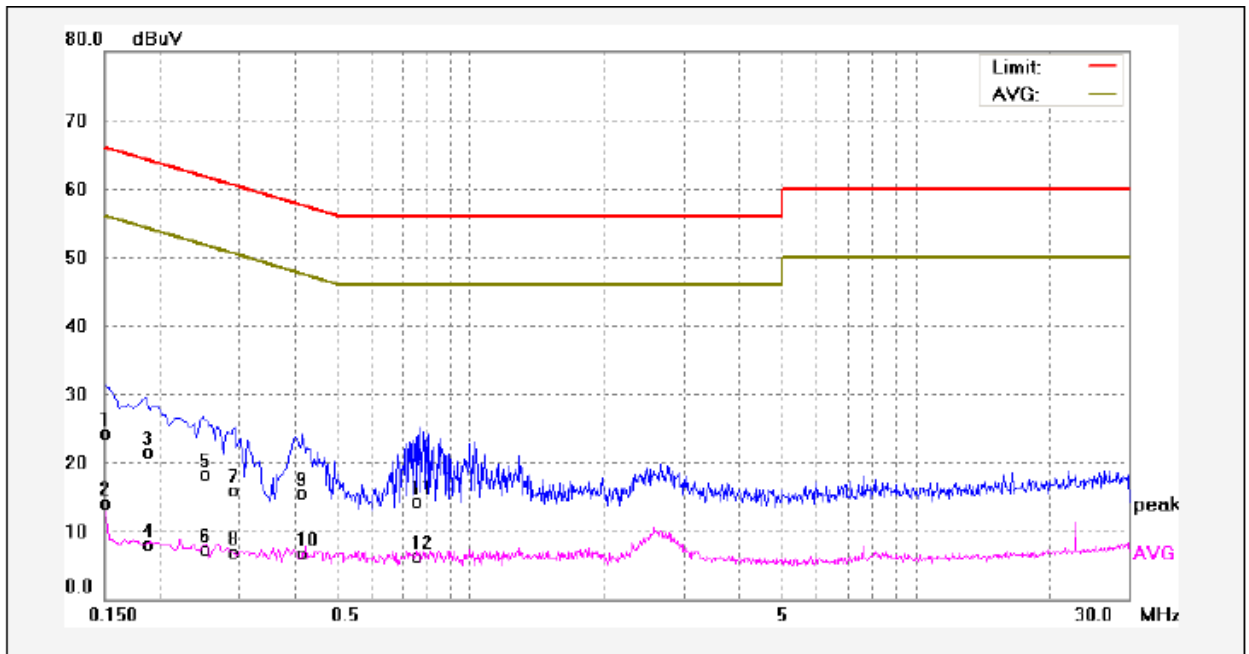
Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1660	12.87	10.14	23.01	65.15	-42.14	QP	
2	0.1660	-1.62	10.14	8.52	55.15	-46.63	AVG	
3	0.1900	12.08	10.15	22.23	64.03	-41.80	QP	
4	0.1900	-1.89	10.15	8.26	54.03	-45.77	AVG	
5	0.2819	8.57	10.16	18.73	60.76	-42.03	QP	
6	0.2819	-3.01	10.16	7.15	50.76	-43.61	AVG	
7	0.4420	5.38	10.18	15.56	57.02	-41.46	QP	
8	0.4420	-3.49	10.18	6.69	47.02	-40.33	AVG	
9	0.7500	1.38	10.21	11.59	56.00	-44.41	QP	
10	0.7500	-3.93	10.21	6.28	46.00	-39.72	AVG	
11	1.0420	0.63	10.22	10.85	56.00	-45.15	QP	
12	1.0420	-3.94	10.22	6.28	46.00	-39.72	AVG	



Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	14.16	10.13	24.29	65.99	-41.70	QP	
2	0.1500	3.94	10.13	14.07	55.99	-41.92	AVG	
3	0.1860	11.45	10.14	21.59	64.21	-42.62	QP	
4	0.1860	-1.94	10.14	8.20	54.21	-46.01	AVG	
5	0.2500	8.24	10.16	18.40	61.75	-43.35	QP	
6	0.2500	-2.85	10.16	7.31	51.75	-44.44	AVG	
7	0.2940	5.80	10.16	15.96	60.41	-44.45	QP	
8	0.2940	-3.28	10.16	6.88	50.41	-43.53	AVG	
9	0.4180	5.38	10.18	15.56	57.49	-41.93	QP	
10	0.4180	-3.56	10.18	6.62	47.49	-40.87	AVG	
11	0.7660	4.03	10.21	14.24	56.00	-41.76	QP	
12	0.7660	-3.82	10.21	6.39	46.00	-39.61	AVG	

## 7 Radiation Emission Test

Test Requirement: FCC Part15 Paragraph 15.249

Test Method: ANSI 63.4: 2014

Measurement Distance: 3m

Test Result: PASS

15.249(a)Limit:

Fundamental frequency	Field strength of fundamental		Field strength of harmonics	
	mV/m	dBuV/m	uV/m	dBuV/m
902-928 MHz	50	94	500	54
2400-2483.5 MHz	50	94	500	54
5725-5875 MHz	50	94	500	54
24.0-24.25 GHz	250	108	2500	68

15.209 Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

**Note:** RF Voltage(dBuV)=20 log<sub>10</sub> RF Voltage(uV)

### 7.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 51.1 % RH

Atmospheric Pressure: 101.2kPa

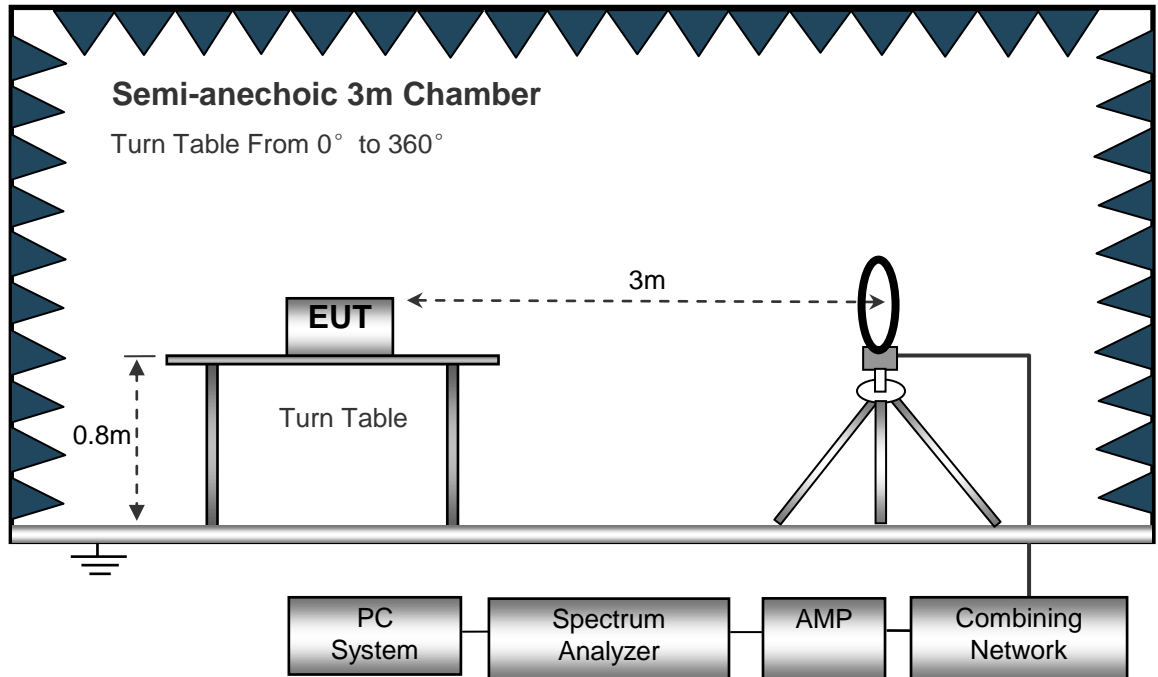
EUT Operation :

The test was performed in transmitting mode, the test data were shown in the report.

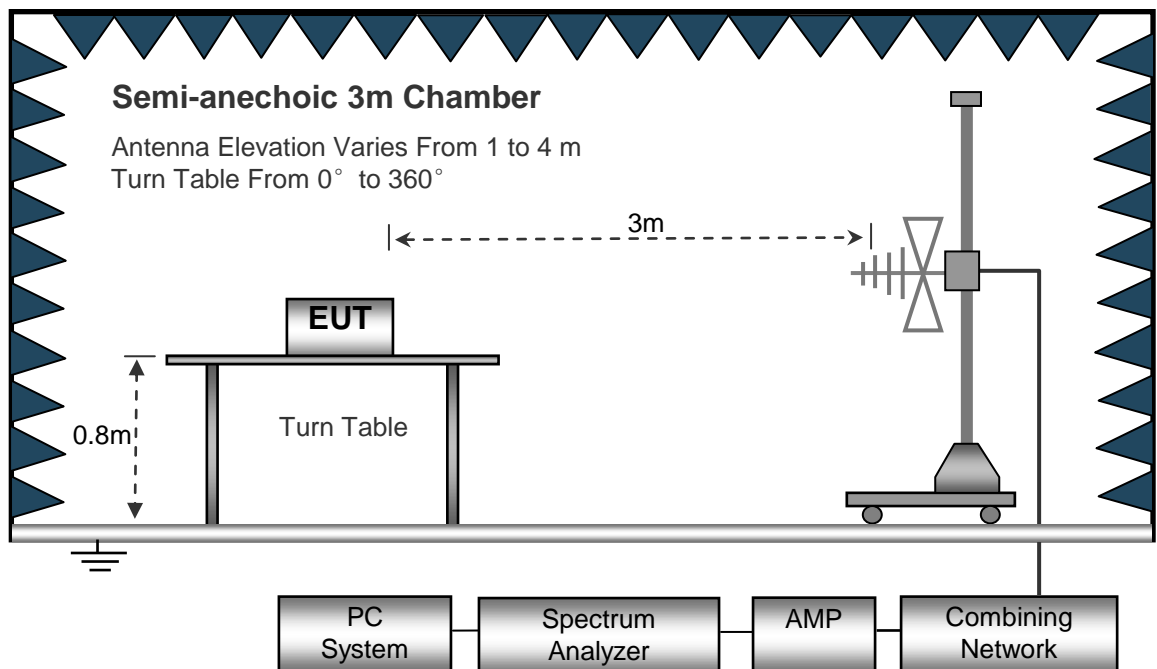
## 7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4.

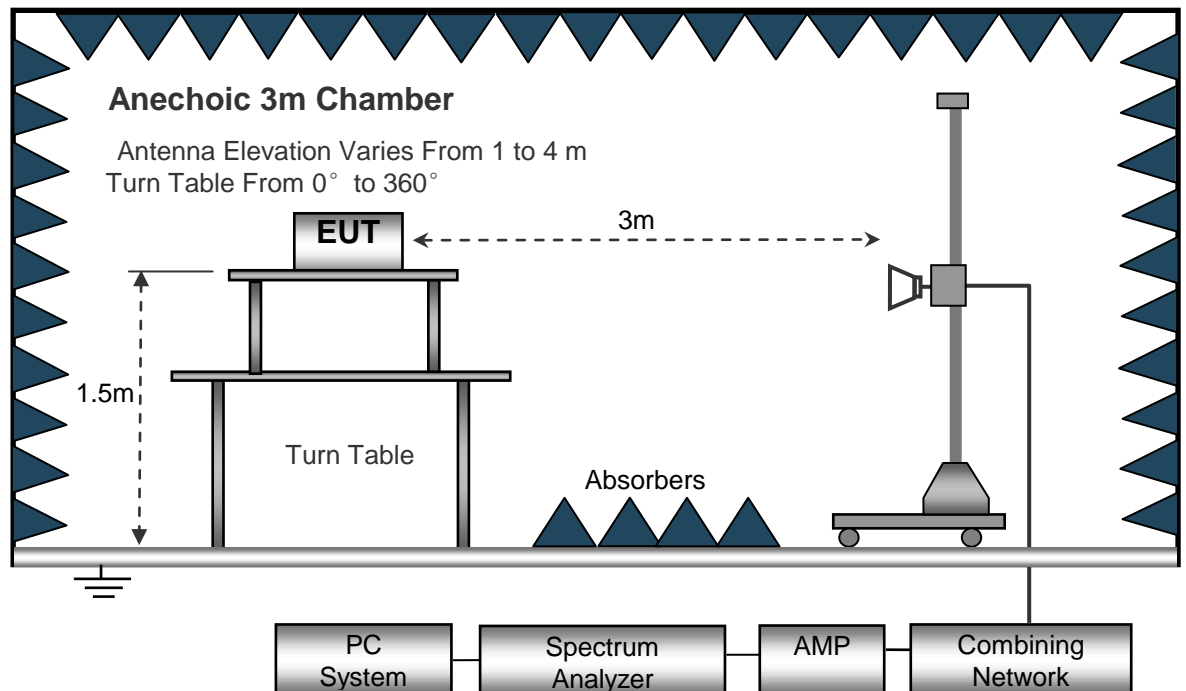
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30MHz to 1GHz.



The test setup for emission measurement above 1 GHz.



### 7.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed ..... Auto  
 IF Bandwidth ..... 10kHz  
 Video Bandwidth ..... 10kHz  
 Resolution Bandwidth ..... 10kHz

30MHz ~ 1GHz

Sweep Speed ..... Auto  
 Detector ..... PK  
 Resolution Bandwidth ..... 100kHz  
 Video Bandwidth ..... 300kHz

Above 1GHz

Sweep Speed ..... Auto  
 Detector ..... PK  
 Resolution Bandwidth ..... 1MHz  
 Video Bandwidth ..... 3MHz  
 Detector ..... Ave.  
 Resolution Bandwidth ..... 1MHz  
 Video Bandwidth ..... 10Hz

## 7.4 Test Procedure

1. The EUT is placed on a turntable. For below 1GHz, the EUT is 0.8m above ground plane; For above 1GHz, the EUT 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 moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
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 radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

## 7.5 Test Result

AV = Peak +20Log10(duty cycle) =PK+XX [refer to section 8 for more detail]

Test Frequency :Below 30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency: 30MHz ~ 18GHz

channel Transmitting

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.249/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)
302.56	39.20	QP	326	1.1	V	-11.40	27.80	40.00	-12.20
916.00	72.54	PK	70	1.3	H	0.97	73.51	114.00	-40.49
916.00	61.77	PK	40	1.5	V	0.97	62.74	114.00	-51.26
1832.00	61.20	PK	68	1.1	H	-13.21	47.99	74.00	-26.01
1832.00	60.61	PK	141	1.8	V	-13.21	47.40	74.00	-26.60
2748.00	58.47	PK	111	1.3	H	-13.08	45.39	74.00	-28.61
2748.00	56.52	PK	203	1.0	V	-13.08	43.44	74.00	-30.56
3664.00	59.67	PK	289	1.7	H	-9.08	50.59	74.00	-23.41
3664.00	55.68	PK	185	1.9	V	-9.08	46.60	74.00	-27.40

Frequency	PK	Turn table Angle	RX Antenna		Duty cycle Factor	AV	FCC Part 15.249/209/205	
			Height	Polar			Limit	Margin
(MHz)	(dBμV/m)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
916.00	73.51	88	1.4	H	0.00	73.51	94.00	-20.49
916.00	62.74	223	1.6	V	0.00	62.74	94.00	-31.26
1832.00	47.99	283	1.2	H	0.00	47.99	54.00	-6.01
1832.00	47.40	248	1.6	V	0.00	47.40	54.00	-6.60
2748.00	45.39	12	1.5	H	0.00	45.39	54.00	-8.61
2748.00	43.44	125	1.0	V	0.00	43.44	54.00	-10.56
3664.00	50.59	60	1.9	H	0.00	50.59	54.00	-3.41
3664.00	46.60	242	1.2	V	0.00	46.60	54.00	-7.40

Test Frequency :From 18GHz to 25GHz

The measurements were more than 20 dB below the limit and not reported.

Waltek Services (Shenzhen) Co.,Ltd.

<http://www.waltek.com.cn>

## 8 Periodic Operation

The duty cycle was determined by the following equation:

To calculate the actual field intensity, the duty cycle correction factor in decibel is needed for later use and can be obtained from following conversion

$$\text{Duty Cycle(\%)} = \frac{\text{Total On interval in a complete pulse train}}{\text{Length of a complete pulse train}} * \%$$

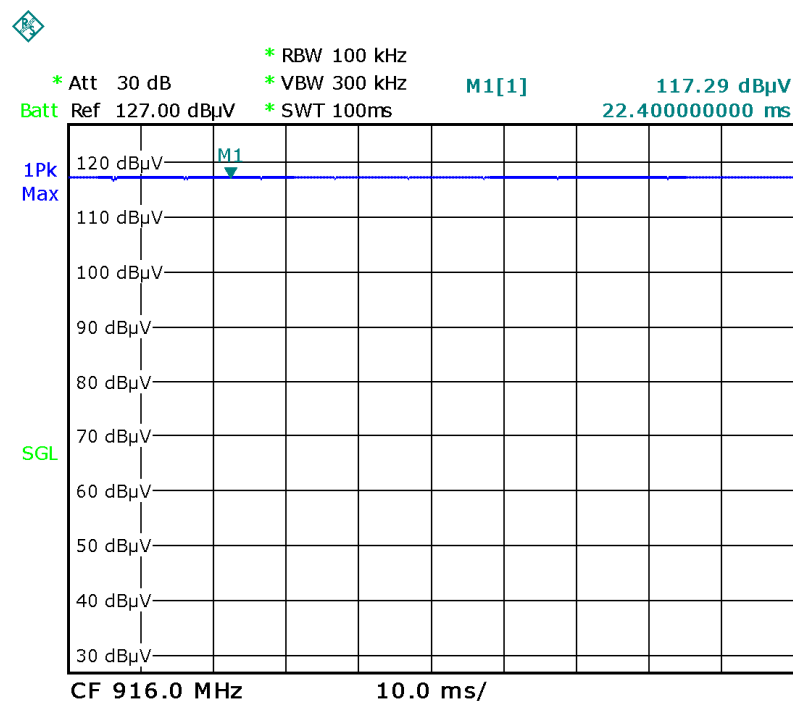
$$\text{Duty Cycle Correction Factor(dB)} = 20 * \text{Log}_{10}(\text{Duty Cycle(\%)})$$

Total transmission time(ms)	100
Length of a complete transmission period(ms)	100
Duty Cycle(%)	1.00
Duty Cycle Correction Factor(dB)	0.00

Refer to the duty cycle plot (as below), This device meets the FCC requirement.

Length of a complete pulse train:

Remark: FCC part15.35(c) required that a complete pulse train is more than 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 value.



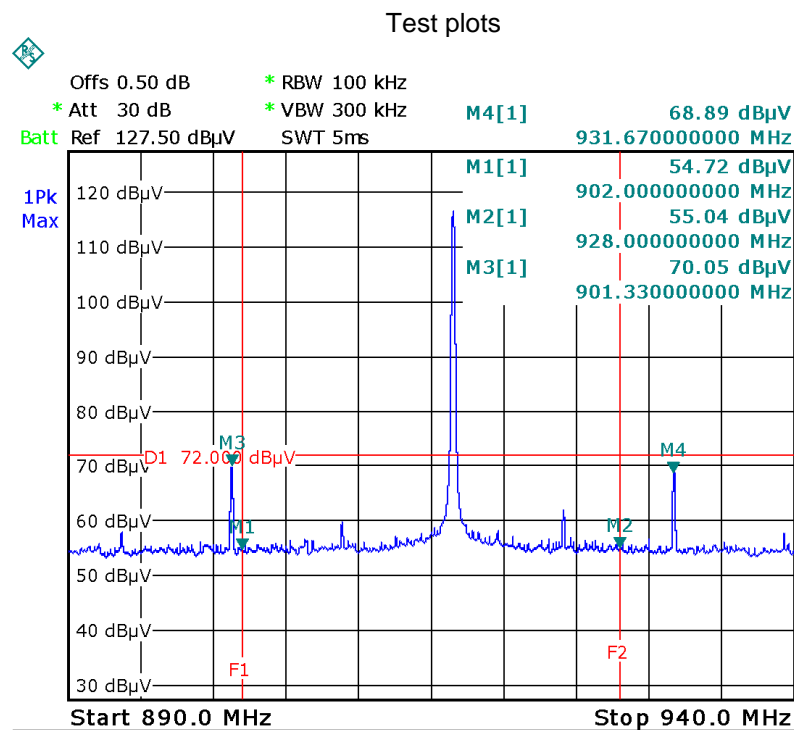
## 9 Outside of Band Emission

Test Requirement:	15.249(d):Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.
Test Method:	ANSI C63.10:2013
Test Mode:	Transmitting

### 9.1 Test Procedure

Refer to section 7.4 of this test report.

### 9.2 Test Result





## 10 20 dB Bandwidth Measurement

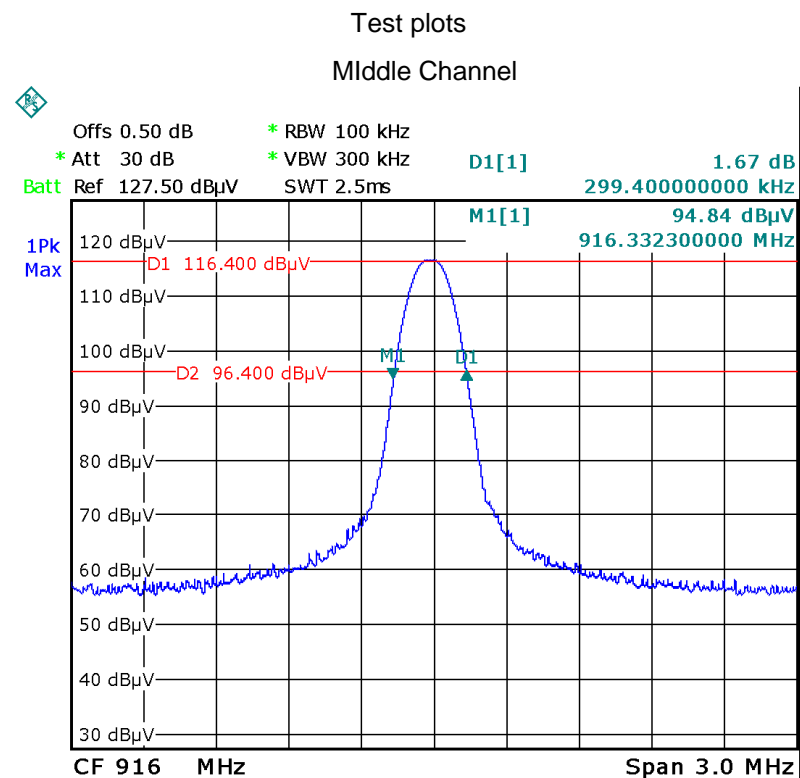
Test Requirement:	FCC CFR47 Part 15 Section 15.215(c)
Test Method:	ANSI C63.10:2013
Test Mode:	Transmitting

### 10.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

### 10.2 Test Result

Test Channel	Bandwidth
FSK	299.4kHz



## **11 Antenna Requirement**

According to the FCC Part 15 Paragraph 15.203, 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. This product has a integrated Antenna, fulfil the requirement of this section.

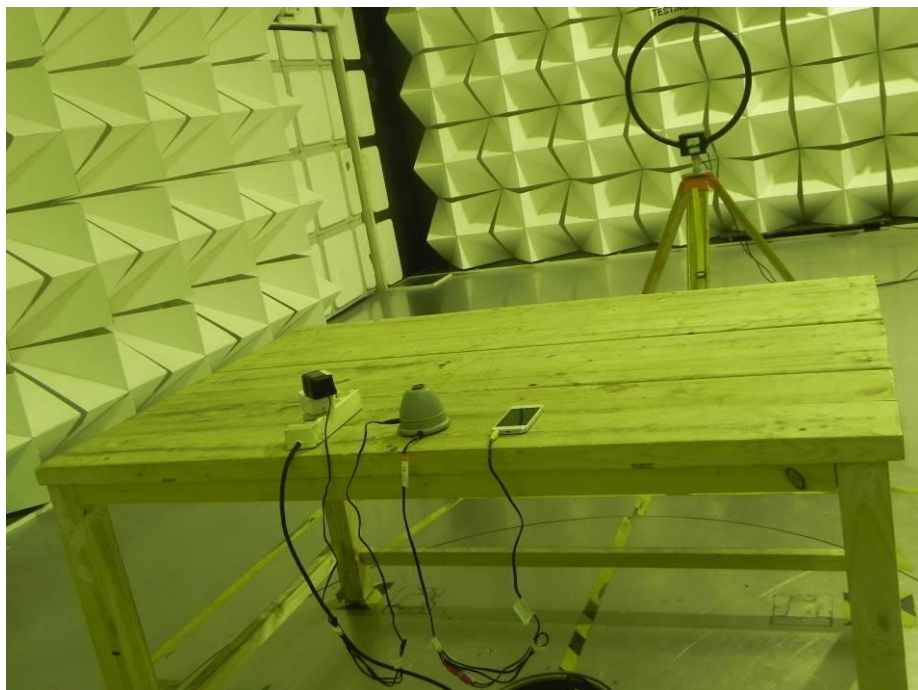
## 12 Photographs – Model YU-EW218 Test Setup

### 12.1 Photograph – Conducted Emission Test Setup at Test Site 1#

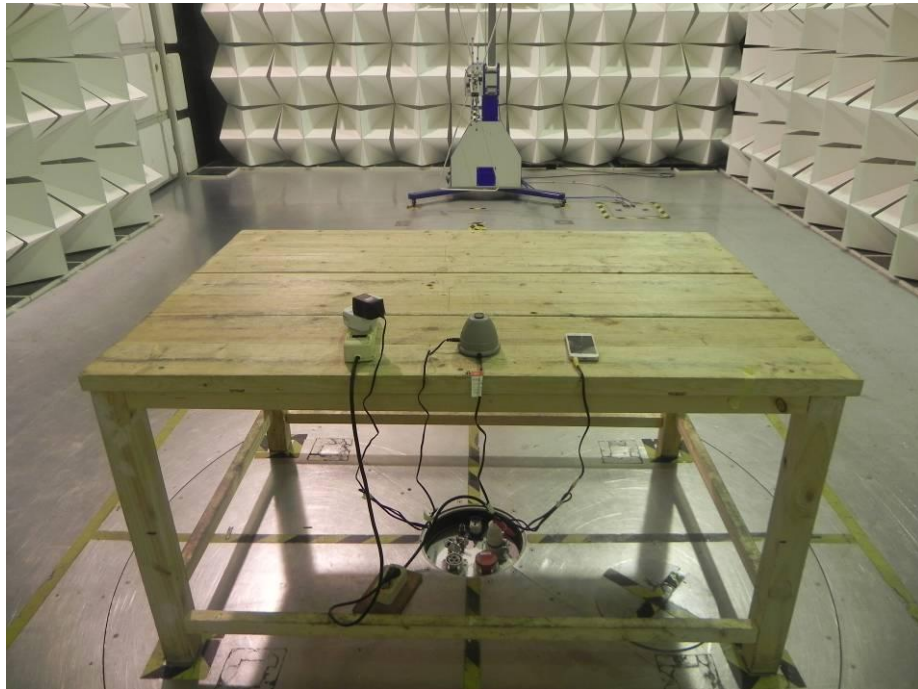


### 12.2 Photograph – Radiation Spurious Emission Test Setup

Below 30MHz at Test Site



30MHz-1GHz at Test Site



Above 1GHz at Test Site



## 13 Photographs - Constructional Details

### 13.1 Model YU-EW218-External View



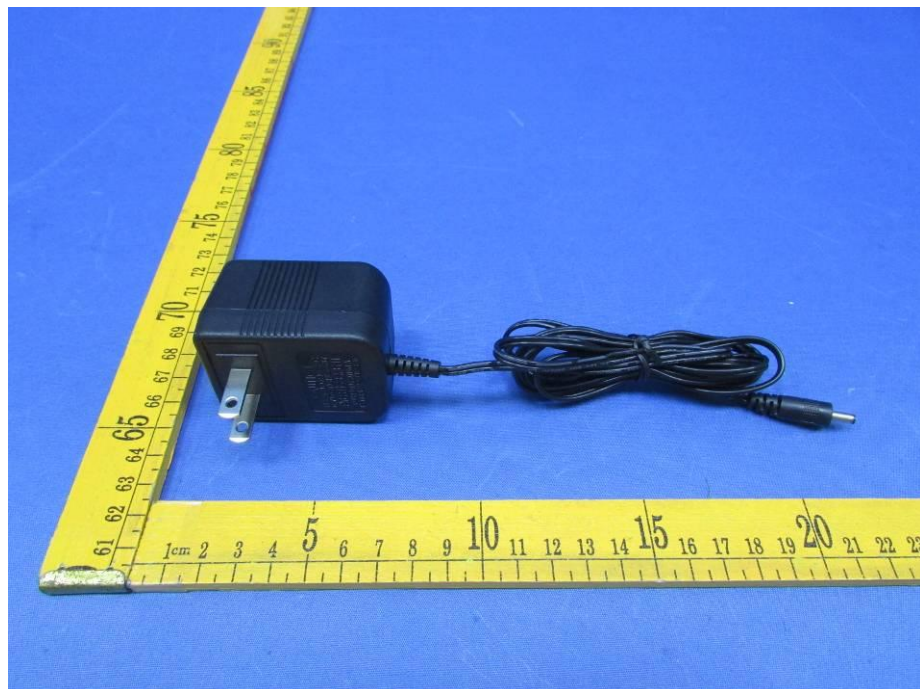






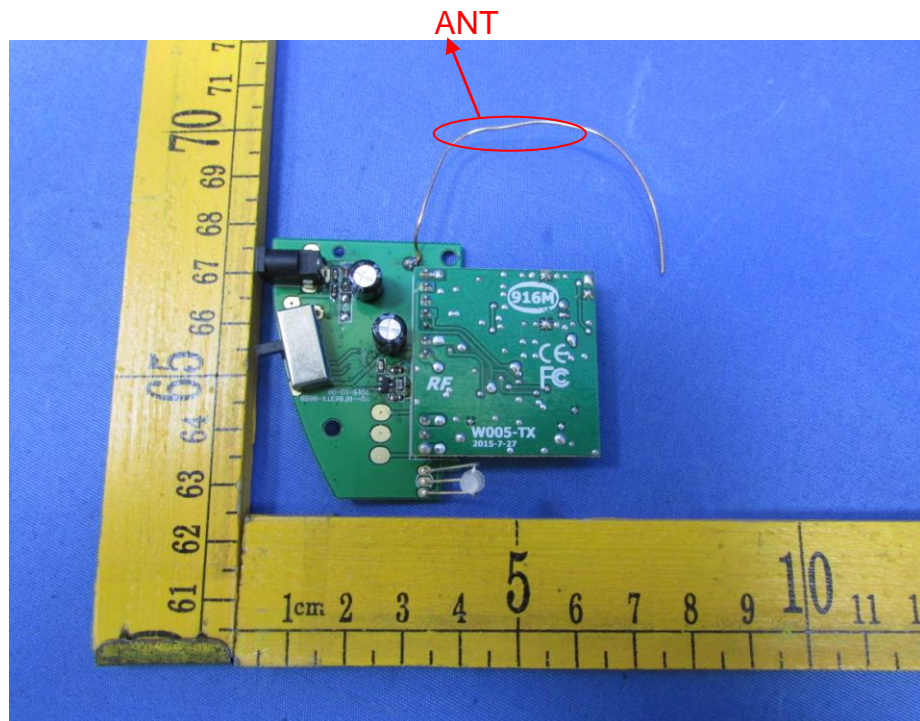




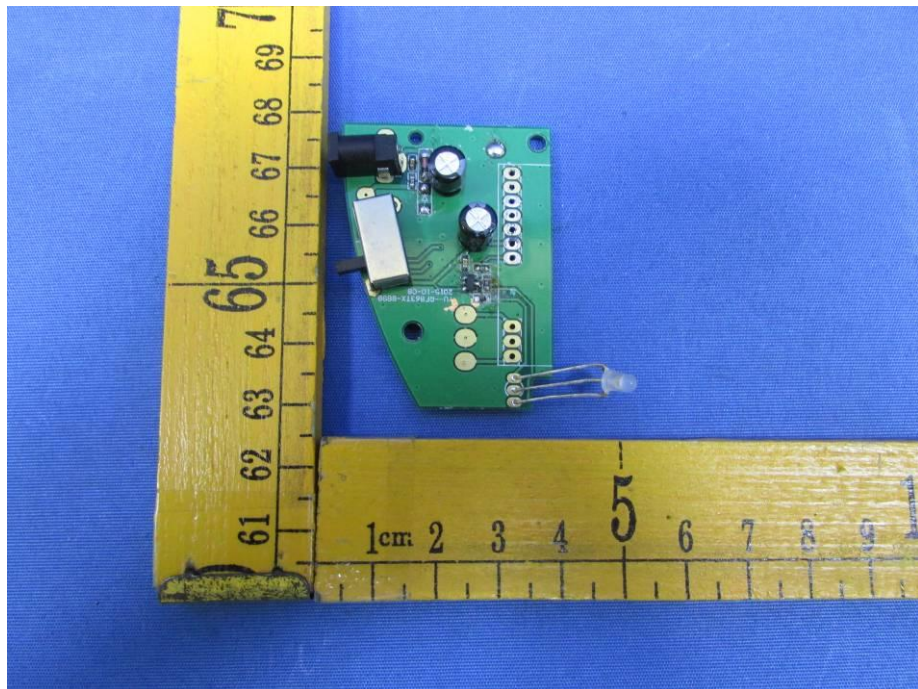
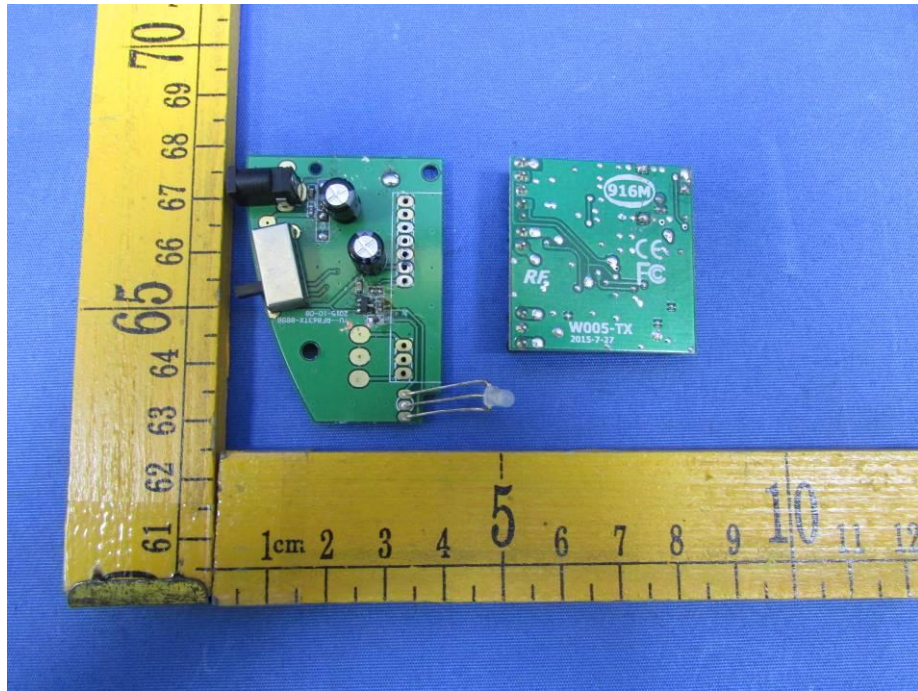


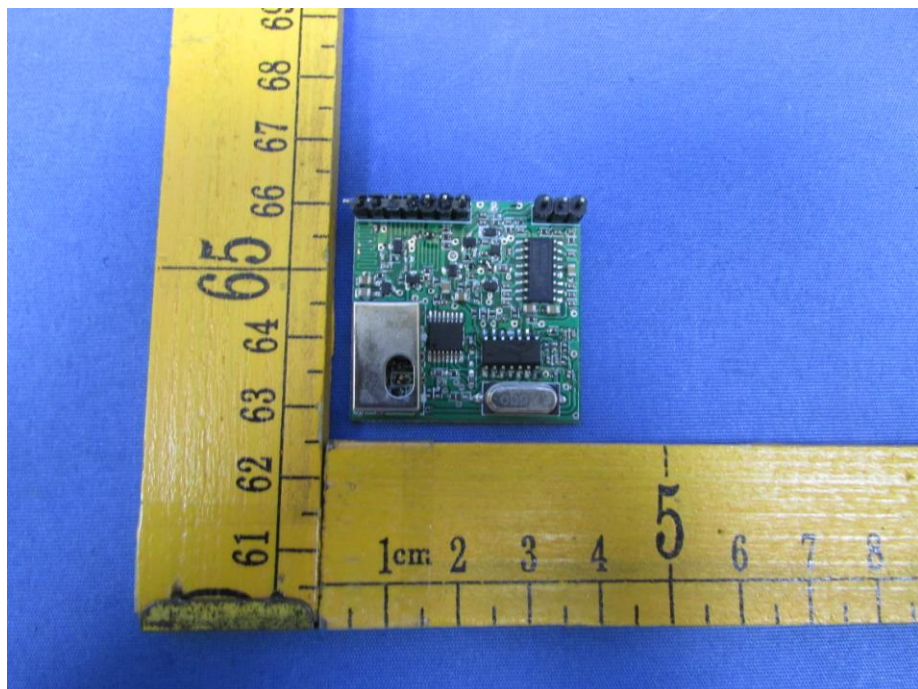
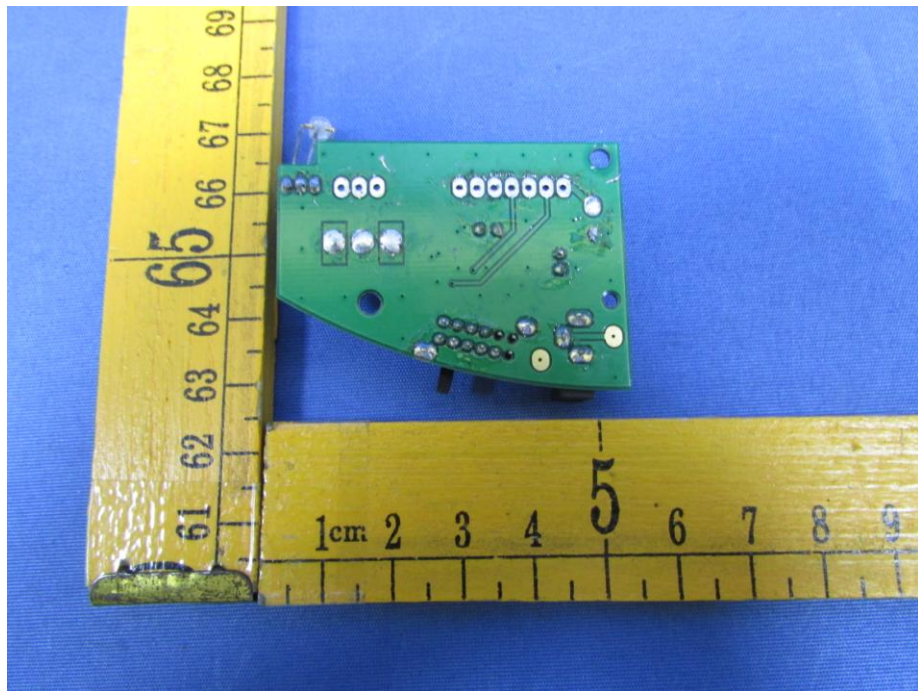


### 13.2 Model YU-EW218-Internal View

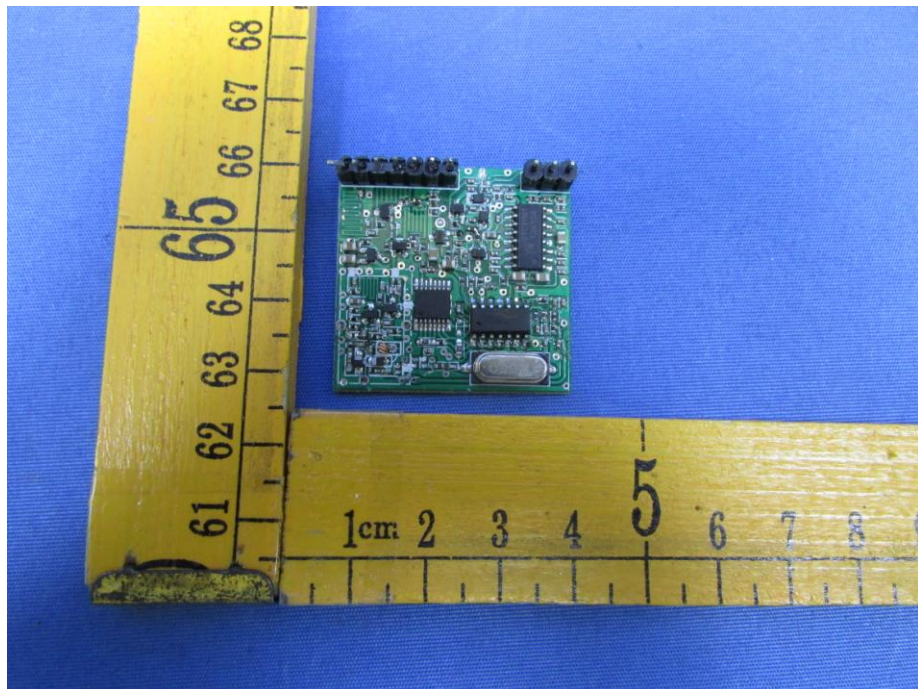
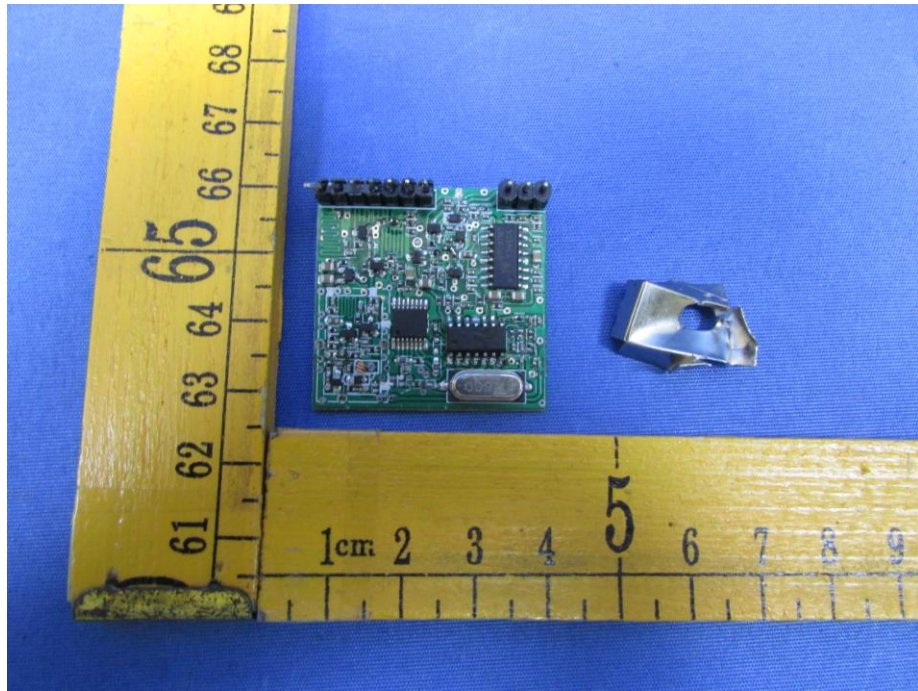


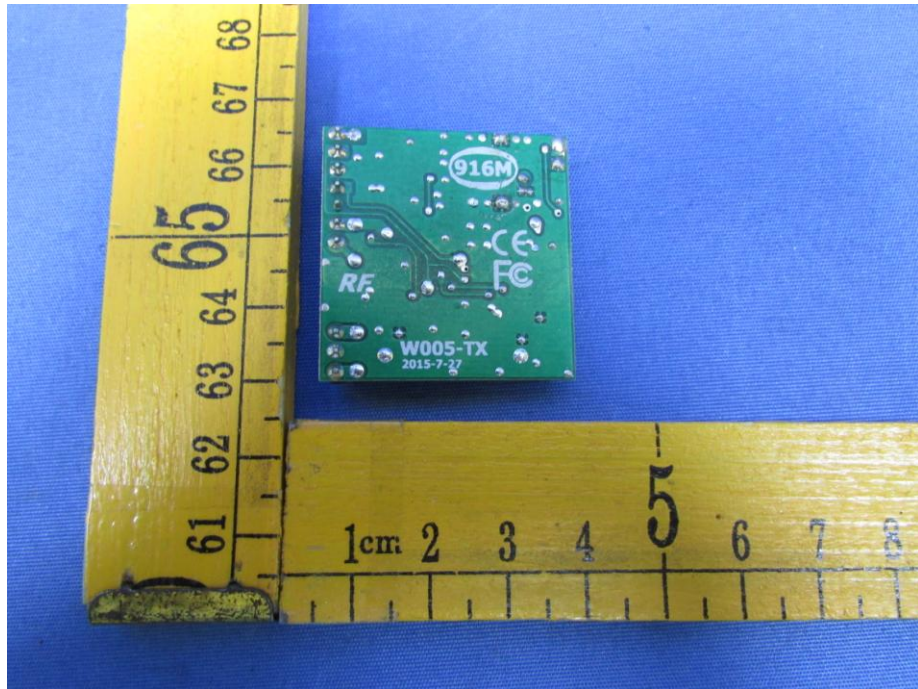












===== End of Report =====