FCC ID: XBD-FM4

FCC TEST REPORT

FCC ID : XBD-FM4

Applicant : AAMP of Flordia, dba AAMP of America

Address : 13160 56th court Clearwater Florida United States

Equipment Under Test (EUT):

Product description: FM Transmitter

Model No. : ISFM31,FM3,FM19,FM19V2

Standards : FCC 15 Paragraph 15.239

Date of Test : January 28~February 2,2010

Project Engineer: Forrest Lei

Reviewed By : This zhous

Prepared By:

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3 Test Summary

Test Items	Test Requirement	Standard Paragraph	Result
Radiated Emission (0.009MHz to 1080MHZ)	FCC PART 15: 2008	FCC PART 15.209&15.239	Compliance
Conducted Emission (150KHz to 30MHz)	FCC PART 15: 2008	FCC PART 15.207	Not applicable
Bandwidth requirement	FCC PART 15: 2008	FCC PART 15.239a	Compliance
Band edge requirement	FCC PART 15: 2008	FCC PART 15.239a	Compliance
Antenna requirement	FCC PART15:2008	FCC PART 15.203	Compliance

Note: denote that for more details of the EUT, please refer to the relating test items as below.

Remark: the methods of measurement in all the test items were according to the ANSI C63.4: 2009.

In this whole report, TX(or tx) means Transmitter

4 General Information

4.1 Client Information

Applicant: AAMP of Flordia, dba AAMP of America

Address of Applicant: 13160 56th court Clearwater Florida United States

Manufacturer: Shenzhen Adition Audio Science&Technology Co., ltd.
Address: Mingzhuo Industry Park, Lou Village, Gongming Town,

Bao'an District, Shenzhen, China

4.2 General Description of E.U.T.

Product description: FM Transmitter

Modulation: FM

Frequency range: 88.1~107.9MHZ
Maximum power: 48.98dBuV/m

Model No.: ISFM31,FM3,FM19,FM19V2

Model difference: The models have same schematic ,PCB layout and structure.

As a matter of fact, the models only an one product and for

different client.

4.3 Details of E.U.T.

Power Supply: DC12V

4.4 Description of Support Units

iPod is a only support unit during test.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a FM Transmitter. The standards used were FCC Part 15 Paragraph 15.239, Paragraph 15.209, Paragraph 15.203, Paragraph 15.33, Paragraph 15.35.

4.6 Test Facility

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

• FCC – 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, June 24, 2008.

• IC – Registration No.: 7760A

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 IC7760A,July 24, 2008.

4.7 Test Location

All Emissions tests were performed at:-

1/F, Fukangtai Building, West Baima Rd., Songgang Street, Bao'an District, Shenzhen 518105, Guangdong, China.

5 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY451149 43	W2008001	9k-26.5GHz	Aug-09	Aug-10	Wws200 81596	±1dB
Trilog Broadband Antenne 30-3000 MHz	SCHWARZB ECK MESS-ELEK TROM/ VULB9163	336	W2008002	30-3000 MHz	Aug-09	Aug-10		±1dB
Broad-band Horn Antenna 1-18 GHz	SCHWARZB ECK MESS-ELEK TROM/ VULB9163	667	W2008003	1-18GHz	Aug-09	Aug-10		f<10 GHz: ±1dB 10GHz <f< 18 GHz: ±1.5dB</f<
Broadband Preamplifie r 0.5-18 GHz	SCHWARZB ECK MESS-ELEK TROM/ BBV 9718	9718-148	W2008004	0.5-18GHz	Aug-09	Aug-10		±1.2dB
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZB ECK MESS-ELEK TROM/ AK 9515 H	-	-	-	Aug-09	Aug-10		-
10m 50 Ohm Coaxial Cable with N-plug,indi vidual length,usab le up to 3(5)GHz, Connector	SCHWARZB ECK MESS-ELEK TROM/ AK 9513				Aug-09	Aug-10		
Positioning Controller	C&C LAB/ CC-C-IF				N/A	N/A		
Color Monitor	SUNSPO/ SP-14C				N/A	N/A		
Test Receiver	ROHDE&SC HWARZ/ ESPI	101155	W2005001	9k-3GHz	Aug-09	Aug-10	Wws200 80942	±1dB
EMI Receiver	Beijingkehua n	KH3931		9k-1GHz	Aug-09	Aug-10		
Two-Line V-Network	ROHDE&SC HWARZ/ ENV216	100115	W2005002	50Ω/50μΗ	Aug-09	Aug-10	Wws200 80941	±10%
Absorbing Clamp	ROHDE&SC HWARZ/ MDS-21	100205	W2005003	impandance50 Ω loss : 17 dB	Aug-09	Aug-10	Wws200 80943	±1dB

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
10m 50 Ohm Coaxial Cable with N-plug,indi vidual length,usab le up to 3(5)GHz, Connectors	SCHWARZB ECK MESS-ELEK TROM/ AK 9514				Aug-09	Aug-10		
Digital Power Analyzer	Em Test AG/Switzerla nd/ DPA 500	V07451 03095	W2008012	Power: 2000VA Vol-range: 0-300V Freq_range: 10-80Hz	Aug-09	Aug-10	Wwd200 81185	Voltage distinguish:0 .025% Power_freq
Power Source	Em Test AG/Switzerla nd/ ACS 500	V07451 03096	W2008013	Vol-range: 0-300V Power_freq: 10-80Hz				distinguish:0 .02Hz
Electrostati c Discharge Simulator	Em Test AG/Switzerla nd/DITO	V07451 03094	W2008005	Contact discharge: 500V-10KV Air diacharge: 500V-16.5KV	Aug-09	Aug-10	Wwc200 82400	7.5A current will be changed in V _m =1.5V
RF Generator	TESEQ GmbH/ NSG4070	25781	W2008008	Fraq-range: 9K-1GHz RF voltage: -60 dBm-+10dBm	Aug-09	Aug-10	Wws200 81890	Power_freq distinguish0. 1Hz RFeletricity distinguish 0.1 B
CDN M-Type	TESEQ GmbH/ CDN M016	25112	W2008009	Voltage correct factor 9.5 dB	Aug-09	Aug-10	Wwc200 82396	150K-80MH z: ±1dB 80-230MHz: -2-+3dB
EM-Clamp	TESEQ GmbH/ KEMZ 801	25453	W2008010	Freq_range: 0.15-1000 MHz	Aug-09	Aug-10	Wwc200 82397	0.3-400 MHz: ±4dB Other freq: ±5dB
Attenuator 6dB	TESEQ GmbH/ ATN6050	25365			Aug-09	Aug-10	Wws200 81597	
All Modules Generator	SCHAFFNE R/6150	34579	W2008006	voltage:200V- 4.4KV Pulse current: 100A-2.2KA	Aug-09	Aug-10	Wwc200 82401	voltage: ±10% Pulse current: ±10%
Capacitive Coupling Clamp	SCHAFFNE R/ CDN 8014	25311			Aug-09	Aug-10	Wwc200 82398	-
Signal and Data Line Coupling Network	SCHAFFNE R/ CDN 117	25627	W2008011	1.2/50μS	Aug-09	Aug-10	Wwc200 82399	-

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Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
AC Power Supply	TONGYUN/ DTDGC-4				Aug-09	Aug-10	Wws200 80944	-
Exposure Level Tester ELT-400	Narda Safety TEST Solutions/230 4/03	M-0155	w2008022	Test freq range: 1— 400kHz			Wwd200	Test uncertainly: 1— 120kHz:±1.8 3%, 120 kHz-400 kHz: ±4.06%
Magnetic Field Probe 100cm ²	Narda Safety TEST Solutions/230 0/90.10	M-1070	w2008021	Test freq range: 1— 400kHz	Aug-09	9 Aug-10	81191	Test uncertainly: 1Hz-10Hz: ±16.2%, 10Hz -120kHz:±2. 2%, 120 kHz-400 kHz: ±4.7%
Active Loop Antenna Charger 10kHz-30 MHz	Beijing Dazhi / ZN30900A	-	-	10kHz-30MHz	Aug-09	Aug-10		±1dB

6 Radiation Emission Test

Product Name: FM Transmitter

Test Requirement: FCC Part15 Paragraph 15.209&15.239

Test Method: ANSI C63.4:2009 Test Date: February 1,2010

Frequency Range: 30MHZ to 1080MHZ

Measurement Distance: 3m

Detector: Peak for pre-scan (120kHz resolution bandwidth)

Quasi-Peak if maximised peak within 6dB of limit

6.1 Test Equipment

Please refer to Section 5 this report.

6.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase centre variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

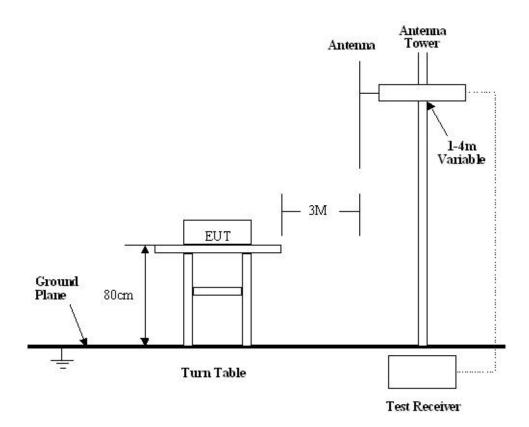
Based on ANSI C63.4: 2009, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is \pm 5.03dB.

6.3 Test Procedure

- 1. New battery were installed in the equipment under test for radiated emissions test.
- 2.This is a handhold device, The radiation emission should be 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.
- 3. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
- 4. All data was recorded in the peak and average detection mode for fundamental frequencies and Quasi-peak detection mode for other frequencies.
- 5. The EUT was under FM Transmit modulation with signals mode during the final qualification test and the configuration was used to represent the worst case results.

6.4 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2009, The specification used in this report was the FCC Part15 Paragraph 15.209 and Paragraph 15.239 limits.



6.5 Spectrum Analyzer Setup

According to FCC Part15 Paragraph 15.239 Rules, the system was tested to 1000 MHz.

Start Frequency	30 MHz
Stop Frequency	1000 MHz
Sweep Speed Auto	
IF Bandwidth	100 kHz
Video Bandwidth	100KHz
Quasi-Peak Adapter Bandwidth	120 kHz
Quasi-Peak Adapter Mode	Normal
Resolution Bandwidth	100KHz

6.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of $-7dB\mu V$ means the emission is $7dB\mu V$ below the maximum limit for Class B. The equation for margin calculation is as follows:

6.7 Summary of Test Results

According to the data in section 7.10, the EUT complied with the FCC Part15 Paragraph 15.239 standards.

6.8 EUT Operating Condition

Same as section 6.4 of this report. Compliance test was performed in the transmitter operation Mode.

6.9 Radiated Emissions Limit

A. FCC Part 15 subpart C Paragraph 15.239 Limit

Fundamental	Field Stre	ength of Fundamental
Frequency(MHZ)	uV/m	dBuV/m
88-108	250	48

Note:

- (1) RF Voltage(dBuV)=20 log RF Voltage(uV)
- (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- (3) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. Measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency(MHZ)	Distance(m)	Field strength(dBuV/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- (1) RF Voltage(dBuV)=20 log RF Voltage(uV)
- (2) In the Above Table, the tighter limit applies at the band edges.
- (3) Distance refers to the distance in meters between the measuring instrument antenna.

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

6.10 Radiated Emissions Test Result

Formula of conversion factors:the field strength at 3m was egtablished by adding The meter reading of the spectrum analyer (which is set to read in units of dBuV) To the antenna correction factor supplied by the antenna manufacturer. The antenna Correction factors are stared in terms of dB. The gain of the pressletor was accounted For in the spectrum analyser meter reading.

Example:

Freq(MHz) Meter Reading +ACF=FS

33 20dBuV+10.36dB=30.36dBuV/m @3m

Radiated Emission Test Data

A. Test Item: Radiated Emission Test Data

Test Voltage: DC 12.0V
Test Mode: TX ON
Temperature: 25.5°C
Humidity: 51%RH
Test Result: PASS

The below is the Fundamental and Harmonic

Frequency (MHz)	Dete ctor	Antenna Polarizat ion	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
	r		Low Fr	equency	T		
88.10	AV	Vertical	40.20	48.00	7.80	1.1	50
176.20	AV	Vertical	37.20	43.50	8.30	1.1	50
246.30	AV	Vertical	36.00	46.00	8.00	1.2	20
352.40	AV	Vertical	35.36	46.00	10.64	1.3	150
440.50	AV	Vertical	35.02	46.00	10.98	1.2	150
528.60	AV	Vertical	35.01	46.00	10.99	1.2	0
616.70	AV	Vertical	34.85	46.00	11.15	1.1	30
704.80	AV	Vertical	34.00	46.00	12.00	1.2	180
792.90	AV	Vertical	34.00	54.00	12.00	1.2	140
881.00	AV	Vertical	34.11	54.00	11.89	1.2	15
88.10	AV	Horizontal	43.25	48.00	4.75	1.1	0
176.20	AV	Horizontal	40.50	43.50	3.00	1.1	20
246.30	AV	Horizontal	39.60	46.00	6.40	1.2	60

352.40 440.50 528.60 616.70	AV AV AV AV	Horizontal Horizontal Horizonta	40.20	46.00 46.00	5.80 4.98	1.1 1.1	140 15
528.60	AV AV	Horizonta		46.00	4.98	11	15
	AV		40.00			1.1	1.0
616 70		TT	40.00	46.00	6.00	1.0	60
010.70	ΑV	Horizontal	39.96	46.00	6.04	1.1	10
704.80	1	Horizontal	36.62	46.00	9.38	1.2	20
792.90	AV	Horizontal	34.65	54.00	9.35	1.2	80
881.00	AV	Horizontal	32.75	54.00	11.25	1.0	0
88.10	PK	Vertical	48.50	68.00	19.50	1.2	0
176.20	PK	Vertical	45.23	63.50	18.27	1.2	10
246.30	PK	Vertical	39.68	66.00	26.32	1.2	120
352.40	PK	Vertical	37.42	66.00	28.58	1.2	120
440.50	PK	Vertical	35.63	66.00	30.37	1.0	180
528.60	PK	Vertical	36.22	66.00	29.78	1.5	0
616.70	PK	Vertical	35.89	66.00	30.11	1.0	120
704.80	PK	Vertical	35.67	66.00	30.33	1.2	0
792.90	PK	Vertical	35.20	74.00	38.80	1.3	50
881.00	PK	Vertical	33.82	74.00	40.18	1.2	140
88.10	PK	Horizontal	47.56	68.00	20.44	1.3	0
176.20	PK	Horizontal	41.26	63.50	32.74	1.2	40
246.30	PK	Horizontal	39.69	66.00	27.31	1.1	100
352.40	PK	Horizontal	38.65	66.00	27.35	1.2	190
440.50	PK	Horizontal	36.84	66.00	29.16	1.0	60
528.60	PK	Horizontal	36.35	66.00	29.65	1.2	60
616.70	PK	Horizontal	34.85	66.00	31.15	1.2	110
704.80	PK	Horizontal	33.57	66.00	32.43	1.3	10
792.90	PK	Horizontal	34.00	74.00	40.00	1.2	0
881.00	PK	Horizontal	34.00	74.00	40.00	1.3	10
		,	Middle F	requency	ı	ı	
98.10	AV	Vertical	43.23	48.00	4.77	1.2	0
196.20	AV	Vertical	40.40	43.50	3.10	1.2	0
294.30	AV	Vertical	39.30	46.00	6.70	1.1	60
392.40	AV	Vertical	39.00	46.00	7.00	1.1	10
490.50	AV	Vertical	38.00	46.00	8.00	1.2	120
588.60	AV	Vertical	38.40	46.00	7.60	1.2	0
686.70	AV	Vertical	36.30	46.00	9.70	1.1	10
784.80	AV	Vertical	35.39	46.00	10.61	1.6	20
882.90	AV	Vertical	32.68	54.00	21.32	1.5	100

980.00 AV Vertical 29.89 54.00 24.11 1.2 45 98.10 AV Horizontal 43.66 48.00 4.34 1.4 0 196.20 AV Horizontal 41.00 43.50 2.50 1.0 10 294.30 AV Horizontal 41.02 46.00 5.98 1.2 60 392.40 AV Horizontal 40.58 46.00 5.98 1.2 60 392.40 AV Horizontal 38.70 46.00 7.30 1.8 135 588.60 AV Horizontal 38.70 46.00 7.30 1.0 60 686.70 AV Horizontal 36.62 46.00 9.38 1.0 90 882.90 AV Horizontal 34.61 54.00 19.39 1.5 60 980.00 AV Horizontal 35.00 54.00 19.00 1.0 10 98.10								
196.20	980.00	AV	Vertical	29.89	54.00	24.11	1.2	45
294.30 AV Horizontal 41.02 46.00 5.98 1.2 60 392.40 AV Horizontal 40.58 46.00 5.42 1.0 40 490.50 AV Horizontal 38.70 46.00 7.30 1.8 135 588.60 AV Horizontal 37.70 46.00 8.30 1.3 10 686.70 AV Horizontal 36.62 46.00 9.38 1.0 90 882.90 AV Horizontal 36.62 46.00 19.39 1.5 60 980.00 AV Horizontal 35.00 54.00 19.39 1.5 60 981.0 PK Vertical 49.63 68.00 18.37 1.2 0 196.20 PK Vertical 46.00 63.50 17.50 1.1 10 294.30 PK Vertical 33.00 66.00 23.00 1.2 120 388.60	98.10	AV	Horizontal	43.66	48.00	4.34	1.4	0
392.40 AV Horizontal 40.58 46.00 5.42 1.0 40	196.20	AV	Horizontal	41.00	43.50	2.50	1.0	10
490.50 AV Horizontal 38.70 46.00 7.30 1.8 135 588.60 AV Horizontal 38.70 46.00 7.30 1.0 60 686.70 AV Horizontal 37.70 46.00 8.30 1.3 10 784.80 AV Horizontal 36.62 46.00 9.38 1.0 90 882.90 AV Horizontal 36.62 46.00 19.39 1.5 60 980.00 AV Horizontal 35.00 54.00 19.00 1.0 10 98.10 PK Vertical 49.63 68.00 18.37 1.2 0 196.20 PK Vertical 46.00 63.50 17.50 1.1 10 294.30 PK Vertical 43.00 66.00 23.00 1.2 120 392.40 PK Vertical 38.63 66.00 27.37 1.0 180 588.60	294.30	AV	Horizontal	41.02	46.00	5.98	1.2	60
588.60 AV Horizontal 38.70 46.00 7.30 1.0 60 686.70 AV Horizontal 37.70 46.00 8.30 1.3 10 784.80 AV Horizontal 36.62 46.00 9.38 1.0 90 882.90 AV Horizontal 34.61 54.00 19.39 1.5 60 980.00 AV Horizontal 35.00 54.00 19.00 1.0 10 98.10 PK Vertical 49.63 68.00 18.37 1.2 0 196.20 PK Vertical 46.00 63.50 17.50 1.1 10 294.30 PK Vertical 43.00 66.00 23.00 1.2 120 392.40 PK Vertical 38.63 66.00 27.37 1.0 180 588.60 PK Vertical 36.22 66.00 29.78 1.5 20 686.70 PK	392.40	AV	Horizontal	40.58	46.00	5.42	1.0	40
686.70 AV Horizontal 37.70 46.00 8.30 1.3 10 784.80 AV Horizontal 36.62 46.00 9.38 1.0 90 882.90 AV Horizontal 34.61 54.00 19.39 1.5 60 980.00 AV Horizontal 35.00 54.00 19.00 1.0 10 98.10 PK Vertical 49.63 68.00 18.37 1.2 0 196.20 PK Vertical 46.00 63.50 17.50 1.1 10 294.30 PK Vertical 43.00 66.00 23.00 1.2 120 392.40 PK Vertical 38.63 66.00 26.01 1.3 120 490.50 PK Vertical 36.22 66.00 29.78 1.5 20 686.70 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK	490.50	AV	Horizontal	38.70	46.00	7.30	1.8	135
784.80 AV Horizontal 36.62 46.00 9.38 1.0 90 882.90 AV Horizontal 34.61 54.00 19.39 1.5 60 980.00 AV Horizontal 35.00 54.00 19.00 1.0 10 98.10 PK Vertical 49.63 68.00 18.37 1.2 0 196.20 PK Vertical 46.00 63.50 17.50 1.1 10 294.30 PK Vertical 43.00 66.00 23.00 1.2 120 392.40 PK Vertical 39.99 66.00 26.01 1.3 120 490.50 PK Vertical 38.63 66.00 27.37 1.0 180 588.60 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK Vertical 34.66 66.00 31.34 1.2 30 882.90 PK	588.60	AV	Horizonta	38.70	46.00	7.30	1.0	60
882.90 AV Horizontal 34.61 54.00 19.39 1.5 60 980.00 AV Horizontal 35.00 54.00 19.00 1.0 10 98.10 PK Vertical 49.63 68.00 18.37 1.2 0 196.20 PK Vertical 46.00 63.50 17.50 1.1 10 294.30 PK Vertical 39.99 66.00 23.00 1.2 120 392.40 PK Vertical 39.99 66.00 26.01 1.3 120 490.50 PK Vertical 38.63 66.00 27.37 1.0 180 588.60 PK Vertical 36.22 66.00 29.78 1.5 20 686.70 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK Vertical 33.00 74.00 41.98 1.2 20 98.10 PK </td <td>686.70</td> <td>AV</td> <td>Horizontal</td> <td>37.70</td> <td>46.00</td> <td>8.30</td> <td>1.3</td> <td>10</td>	686.70	AV	Horizontal	37.70	46.00	8.30	1.3	10
980.00 AV Horizontal 35.00 54.00 19.00 1.0 10 98.10 PK Vertical 49.63 68.00 18.37 1.2 0 196.20 PK Vertical 46.00 63.50 17.50 1.1 10 294.30 PK Vertical 43.00 66.00 23.00 1.2 120 392.40 PK Vertical 39.99 66.00 26.01 1.3 120 490.50 PK Vertical 38.63 66.00 27.37 1.0 180 588.60 PK Vertical 36.22 66.00 29.78 1.5 20 686.70 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK Vertical 33.00 74.00 41.00 1.1 10 980.00 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK <td>784.80</td> <td>AV</td> <td>Horizontal</td> <td>36.62</td> <td>46.00</td> <td>9.38</td> <td>1.0</td> <td>90</td>	784.80	AV	Horizontal	36.62	46.00	9.38	1.0	90
98.10 PK Vertical 49.63 68.00 18.37 1.2 0 196.20 PK Vertical 46.00 63.50 17.50 1.1 10 294.30 PK Vertical 43.00 66.00 23.00 1.2 120 392.40 PK Vertical 39.99 66.00 26.01 1.3 120 490.50 PK Vertical 38.63 66.00 27.37 1.0 180 588.60 PK Vertical 36.22 66.00 29.78 1.5 20 686.70 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK Vertical 34.66 66.00 31.34 1.2 30 882.90 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK <td>882.90</td> <td>AV</td> <td>Horizontal</td> <td>34.61</td> <td>54.00</td> <td>19.39</td> <td>1.5</td> <td>60</td>	882.90	AV	Horizontal	34.61	54.00	19.39	1.5	60
196.20	980.00	AV	Horizontal	35.00	54.00	19.00	1.0	10
294.30 PK Vertical 43.00 66.00 23.00 1.2 120 392.40 PK Vertical 39.99 66.00 26.01 1.3 120 490.50 PK Vertical 38.63 66.00 27.37 1.0 180 588.60 PK Vertical 36.22 66.00 29.78 1.5 20 686.70 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK Vertical 34.66 66.00 31.34 1.2 30 882.90 PK Vertical 33.00 74.00 41.00 1.1 10 98.00 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK	98.10	PK	Vertical	49.63	68.00	18.37	1.2	0
392.40 PK Vertical 39.99 66.00 26.01 1.3 120 490.50 PK Vertical 38.63 66.00 27.37 1.0 180 588.60 PK Vertical 36.22 66.00 29.78 1.5 20 686.70 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK Vertical 34.66 66.00 31.34 1.2 30 882.90 PK Vertical 33.00 74.00 41.00 1.1 10 98.00 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 37.33 66.00 28.67 1.0 90 490.50 P	196.20	PK	Vertical	46.00	63.50	17.50	1.1	10
490.50 PK Vertical 38.63 66.00 27.37 1.0 180 588.60 PK Vertical 36.22 66.00 29.78 1.5 20 686.70 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK Vertical 34.66 66.00 31.34 1.2 30 882.90 PK Vertical 33.00 74.00 41.00 1.1 10 98.00 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK Horizontal 41.30 63.50 32.20 1.2 40 294.30 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 36.19 66.00 28.67 1.0 90 490.50	294.30	PK	Vertical	43.00	66.00	23.00	1.2	120
588.60 PK Vertical 36.22 66.00 29.78 1.5 20 686.70 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK Vertical 34.66 66.00 31.34 1.2 30 882.90 PK Vertical 33.00 74.00 41.00 1.1 10 980.00 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK Horizontal 41.30 63.50 32.20 1.2 40 294.30 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 36.19 66.00 29.81 1.0 60 588.60 PK Horizontal 33.73 66.00 30.37 1.1 0 686.70 <td< td=""><td>392.40</td><td>PK</td><td>Vertical</td><td>39.99</td><td>66.00</td><td>26.01</td><td>1.3</td><td>120</td></td<>	392.40	PK	Vertical	39.99	66.00	26.01	1.3	120
686.70 PK Vertical 35.89 66.00 30.11 1.0 120 784.80 PK Vertical 34.66 66.00 31.34 1.2 30 882.90 PK Vertical 33.00 74.00 41.00 1.1 10 980.00 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK Horizontal 41.30 63.50 32.20 1.2 40 294.30 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 36.19 66.00 28.67 1.0 90 490.50 PK Horizontal 35.63 66.00 29.81 1.0 60 588.60 PK Horizontal 33.73 66.00 32.27 1.2 10 784.80	490.50	PK	Vertical	38.63	66.00	27.37	1.0	180
784.80 PK Vertical 34.66 66.00 31.34 1.2 30 882.90 PK Vertical 33.00 74.00 41.00 1.1 10 980.00 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK Horizontal 41.30 63.50 32.20 1.2 40 294.30 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 37.33 66.00 28.67 1.0 90 490.50 PK Horizontal 35.63 66.00 29.81 1.0 60 588.60 PK Horizontal 33.73 66.00 30.37 1.1 0 784.80 PK Horizontal 33.57 66.00 32.43 1.3 30 882.90	588.60	PK	Vertical	36.22	66.00	29.78	1.5	20
882.90 PK Vertical 33.00 74.00 41.00 1.1 10 980.00 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK Horizontal 41.30 63.50 32.20 1.2 40 294.30 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 37.33 66.00 28.67 1.0 90 490.50 PK Horizontal 36.19 66.00 29.81 1.0 60 588.60 PK Horizontal 35.63 66.00 30.37 1.1 0 686.70 PK Horizontal 33.73 66.00 32.27 1.2 10 784.80 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00	686.70	PK	Vertical	35.89	66.00	30.11	1.0	120
980.00 PK Vertical 32.02 74.00 41.98 1.2 20 98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK Horizontal 41.30 63.50 32.20 1.2 40 294.30 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 37.33 66.00 28.67 1.0 90 490.50 PK Horizontal 36.19 66.00 29.81 1.0 60 588.60 PK Horizontal 33.63 66.00 30.37 1.1 0 686.70 PK Horizontal 33.57 66.00 32.27 1.2 10 784.80 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency<	784.80	PK	Vertical	34.66	66.00	31.34	1.2	30
98.10 PK Horizontal 47.99 68.00 20.01 1.3 10 196.20 PK Horizontal 41.30 63.50 32.20 1.2 40 294.30 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 37.33 66.00 28.67 1.0 90 490.50 PK Horizontal 36.19 66.00 29.81 1.0 60 588.60 PK Horizontal 35.63 66.00 30.37 1.1 0 686.70 PK Horizontal 33.73 66.00 32.27 1.2 10 784.80 PK Horizontal 30.01 74.00 43.99 1.3 30 882.90 PK Horizontal 30.00 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 H	882.90	PK	Vertical	33.00	74.00	41.00	1.1	10
196.20 PK Horizontal 41.30 63.50 32.20 1.2 40 294.30 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 37.33 66.00 28.67 1.0 90 490.50 PK Horizontal 36.19 66.00 29.81 1.0 60 588.60 PK Horizontal 35.63 66.00 30.37 1.1 0 686.70 PK Horizontal 33.73 66.00 32.27 1.2 10 784.80 PK Horizontal 33.57 66.00 32.43 1.3 30 882.90 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency 107.90 AV Vertical 42.62 48.00 5.38 1.2 0 <	980.00	PK	Vertical	32.02	74.00	41.98	1.2	20
294.30 PK Horizontal 38.25 66.00 27.75 1.5 100 392.40 PK Horizontal 37.33 66.00 28.67 1.0 90 490.50 PK Horizontal 36.19 66.00 29.81 1.0 60 588.60 PK Horizontal 35.63 66.00 30.37 1.1 0 686.70 PK Horizontal 33.73 66.00 32.27 1.2 10 784.80 PK Horizontal 33.57 66.00 32.43 1.3 30 882.90 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency High Frequency 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70	98.10	PK	Horizontal	47.99	68.00	20.01	1.3	10
392.40 PK Horizontal 37.33 66.00 28.67 1.0 90 490.50 PK Horizontal 36.19 66.00 29.81 1.0 60 588.60 PK Horizontal 35.63 66.00 30.37 1.1 0 686.70 PK Horizontal 33.73 66.00 32.27 1.2 10 784.80 PK Horizontal 33.57 66.00 32.43 1.3 30 882.90 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency 107.90 AV Vertical 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 <t< td=""><td>196.20</td><td>PK</td><td>Horizontal</td><td>41.30</td><td>63.50</td><td>32.20</td><td>1.2</td><td>40</td></t<>	196.20	PK	Horizontal	41.30	63.50	32.20	1.2	40
490.50 PK Horizontal 36.19 66.00 29.81 1.0 60 588.60 PK Horizontal 35.63 66.00 30.37 1.1 0 686.70 PK Horizontal 33.73 66.00 32.27 1.2 10 784.80 PK Horizontal 33.57 66.00 32.43 1.3 30 882.90 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency 107.90 AV Vertical 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 1	294.30	PK	Horizontal	38.25	66.00	27.75	1.5	100
588.60 PK Horizontal 35.63 66.00 30.37 1.1 0 686.70 PK Horizontal 33.73 66.00 32.27 1.2 10 784.80 PK Horizontal 33.57 66.00 32.43 1.3 30 882.90 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency 107.90 AV Vertical 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 120	392.40	PK	Horizontal	37.33	66.00	28.67	1.0	90
686.70 PK Horizontal 33.73 66.00 32.27 1.2 10 784.80 PK Horizontal 33.57 66.00 32.43 1.3 30 882.90 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency 107.90 AV Vertical 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 120	490.50	PK	Horizontal	36.19	66.00	29.81	1.0	60
784.80 PK Horizontal 33.57 66.00 32.43 1.3 30 882.90 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency 107.90 AV Vertical 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 120	588.60	PK	Horizontal	35.63	66.00	30.37	1.1	0
882.90 PK Horizontal 30.01 74.00 43.99 1.3 90 980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency 107.90 AV Vertical 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 120	686.70	PK	Horizontal	33.73	66.00	32.27	1.2	10
980.00 PK Horizontal 30.00 74.00 44.00 1.1 330 High Frequency 107.90 AV Vertical 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 120	784.80	PK	Horizontal	33.57	66.00	32.43	1.3	30
High Frequency 107.90 AV Vertical 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 120	882.90	PK	Horizontal	30.01	74.00	43.99	1.3	90
107.90 AV Vertical 42.62 48.00 5.38 1.2 0 215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 120	980.00	PK	Horizontal	30.00	74.00	44.00	1.1	330
215.80 AV Vertical 40.01 43.50 3.49 1.2 100 323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 120		ı	1	High Fr	equency	T		Γ
323.70 AV Vertical 41.25 46.00 4.75 1.2 60 431.60 AV Vertical 40.40 46.00 5.60 1.5 120	107.90	AV	Vertical	42.62	48.00	5.38	1.2	0
431.60 AV Vertical 40.40 46.00 5.60 1.5 120	215.80	AV	Vertical	40.01	43.50	3.49	1.2	100
	323.70	AV	Vertical	41.25	46.00	4.75	1.2	60
539.50 AV Vertical 40.70 46.00 5.30 1.5 120	431.60	AV	Vertical	40.40	46.00	5.60	1.5	120
	539.50	AV	Vertical	40.70	46.00	5.30	1.5	120

647.40	AV	Vertical	38.42	46.00	7.58	1.2	90
755.30	AV	Vertical	36.30	46.00	9.70	1.2	10
863.20	AV	Vertical	35.39	46.00	10.61	1.3	120
971.10	AV	Vertical	32.68	54.00	21.32	1.1	100
107.90	AV	Horizontal	41.60	48.00	6.40	1.4	100
215.80	AV	Horizontal	40.00	43.50	3.50	1.6	10
323.70	AV	Horizontal	40.00	46.00	6.00	1.4	60
431.60	AV	Horizontal	39.36	46.00	6.64	1.0	40
539.50	AV	Horizontal	38.70	46.00	7.30	1.2	135
647.40	AV	Horizonta	38.70	46.00	7.30	1.0	60
755.30	AV	Horizontal	37.70	46.00	8.30	1.2	0
863.20	AV	Horizontal	36.62	46.00	9.38	1.5	90
971.10	AV	Horizontal	40.11	54.00	13.89	1.5	60
107.90	PK	Vertical	47.20	68.00	20.80	1.2	0
215.80	PK	Vertical	46.00	63.50	17.50	1.1	10
323.70	PK	Vertical	38.01	66.00	27.99	1.4	120
431.60	PK	Vertical	37.42	66.00	28.58	1.2	120
539.50	PK	Vertical	35.63	66.00	30.37	1.0	180
647.40	PK	Vertical	36.22	66.00	29.78	1.5	0
755.30	PK	Vertical	35.89	66.00	30.11	1.0	120
863.20	PK	Vertical	38.67	66.00	27.33	1.3	0
971.10	PK	Vertical	38.78	74.00	35.22	1.5	0
107.90	PK	Horizontal	46.80	68.00	21.20	1.3	0
215.80	PK	Horizontal	41.26	63.50	32.74	1.2	40
323.70	PK	Horizontal	36.25	66.00	27.75	1.5	100
431.60	PK	Horizontal	37.33	66.00	28.67	1.0	90
539.50	PK	Horizontal	33.19	66.00	32.81	1.0	60
647.40	PK	Horizontal	33.62	66.00	32.38	1.5	60
755.30	PK	Horizontal	30.73	66.00	35.27	1.3	110
863.20	PK	Horizontal	33.57	66.00	32.43	1.3	180
971.10	PK	Horizontal	34.00	74.00	40.00	1.1	0

Remark: the result of peak and average were reading by spectrum analyzer of the peak detector and average detector.

7 Band Edge

7.1 Test Equipment

Please refer to Section 5 this report.

7.2 Test Procedure

- 1.The EUT, peripherals were put on the turntable which table size is 1mX1.5m, table high 0.8m. All set up is according to ANSI C63.4:2009.
- 2. The antenna high were varied from 1m to 4m high to find the maximum emission for each frequency.
- 3. The field strength of any emissions radiated on any frequency outside of the specified 200KHz band shall not exceed the general radiated emission limits in Section 15.209.
- 4. The market sample was tested for frequency testing at 88.1 MHz.,98.1 MHz.,107.9 MHz.

7.3 Band Edge Test Result

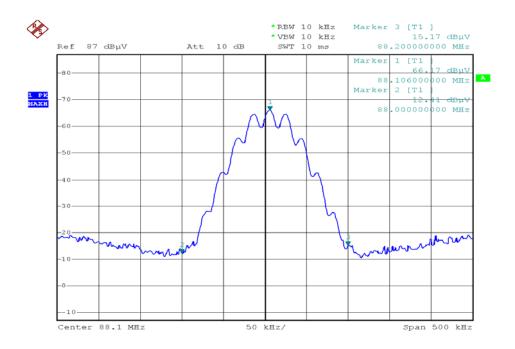
Test Item: Band Edge Test

Test Voltage: DC 12.0V

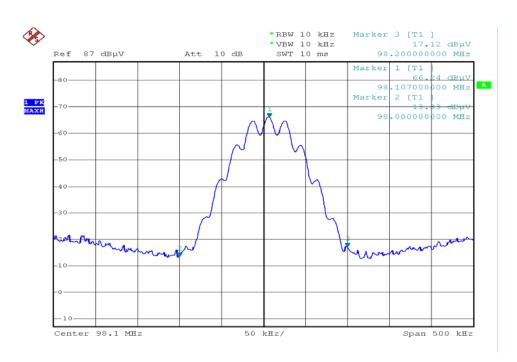
Test Mode: TX ON
Temperature: 25.5°C

Humidity: 51%RH

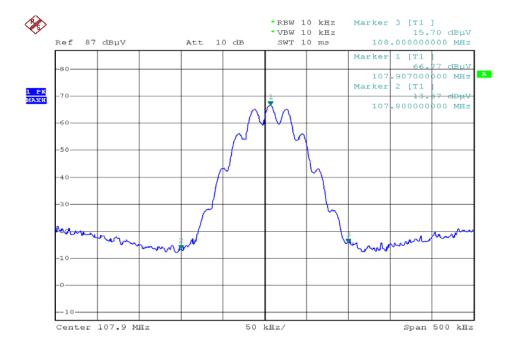
88.1 MHz.



98.1 MHz.



107.9 MHz



Note: (1) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.

(2) The average measurement was not performed when the peak measured data under

8 Antenna Requirement

8.1 Standard requirement

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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

8.2 Result

The device is integral antenna, it's comply with the standard requirement.

9 Photographs - Constructional Details

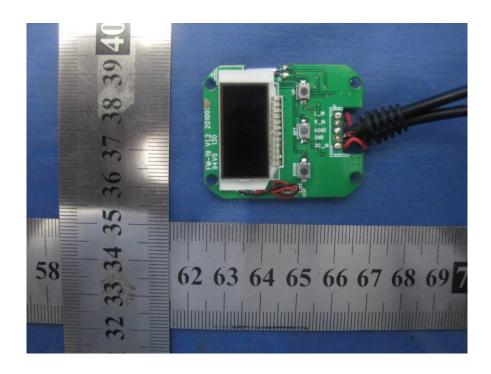
9.1 EUT-Top View



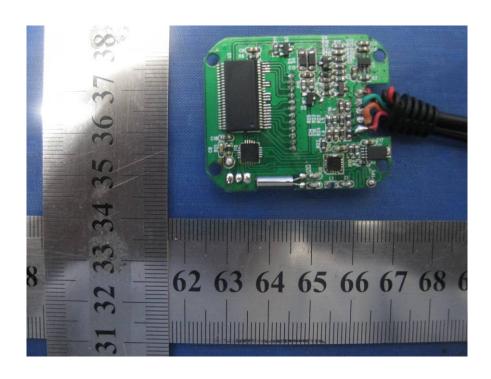
9.2 EUT-Bottom View



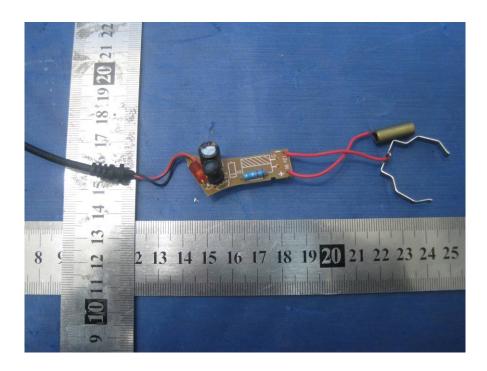
9.3 PCB1-Top View



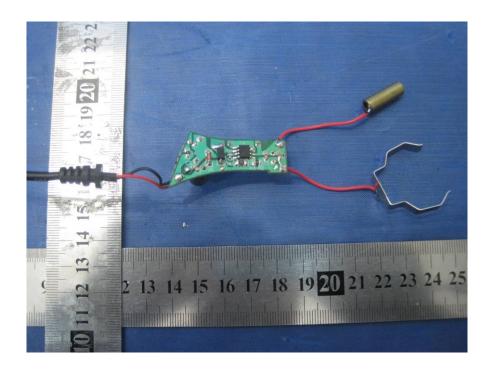
9.4 PCB1-Bottom View



9.5 PCB2-Top View



9.6 PCB2-Bottom View



10 FCC ID Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

