



Report No:

FCC 1605258-01

File reference No:

2016-06-29

Applicant:

Shenzhen Guang Xin Yi Electronics Co., Ltd.

Product:

Bluetooth In-Car Speakerphone

Model No:

G7,G7S,Q7,Q7S,GT86,GT86S,ZNB01,ZNB02,SW01,YHZ01

Trademark:

N/A

Test Standards:

FCC Part 15 Subpart C, Paragraph 15.239

Test result:

It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.239 regulations for the evaluation of electromagnetic compatibility

Approved By

*Jack Chung*

Jack Chung  
Manager

Dated:

June 29,2016

**Results appearing herein relate only to the sample tested**

**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

### **SHENZHEN TIMEWAY TESTING LABORATORIES**

Room 512-519, 5/F., East Tower, Building 4, Anhua Industrial Zone, Futian District, Shenzhen, Guangdong, China

Tel (755) 83448688 Fax (755) 83442996, E-Mail:info@timeway-lab.com



### **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

#### **CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

#### **FCC-Registration No.: 899988**

The 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 No.:899988.

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Test Report Conclusion  
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## 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.  
Address: Room 512-519, 5/F., East Tower, Building 4, Anhua Industrial Zone, Futian District, Shenzhen, Guangdong, China  
Telephone: (755) 83448688  
Fax: (755) 83442996  
Site on File with the Federal Communications Commission – United States  
Registration Number: 899988  
For 3m & 10 m OATS  
Site Listed with Industry Canada of Ottawa, Canada  
Registration Number: IC: 5205A-02  
For 3m & 10 m OATS

### 1.2 Applicant Details

Applicant: Shenzhen Guang Xin Yi Electronics Co., Ltd.  
Address: F5, Building 2, Shang tang Yu Feng Industrial Zone, Minzhi Street, Longhua New District, Shenzhen City.  
Telephone: 13510067584  
Fax: 0755 23099491

### 1.3 Description of EUT

Product: Bluetooth In-Car Speakerphone  
Brand Name: N/A  
Model Number: G7  
Additional Model Name: G7S, Q7, Q7S, GT86, GT86S, ZNB01, ZNB02, SW01, YHZ01  
**Remark:** These models are identical in interior structure, electrical circuits and components, different model names for the marketing requirement.  
Input Voltage: DC12-24V (Note; DC24V input voltage was selected to do all tests. And it was the worse case.  
Operation Frequency: 881.MHz-107.9MHz  
Channel Spacing: 0.1MHz  
Frequency Tuning: The frequency tuning controls have been manually adjusted to the highest and lowest TX frequency. The center frequencies of the tuning range are within 88.1MHz to 107.9MHz.  
Type of Modulation: FM  
Antenna Designation: Integral antenna, which is built-in, designed as an indispensable part of the EUT.

### 1.4 Submitted Sample: 2 Sample

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1.5 Test Duration

2016-05-26 to 2016-06-28

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

*Terry Tang*

The sample tested by \_\_\_\_\_

Print Name: Terry Tang

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<b>2.0 Test Equipments</b>					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2015-08-22	2016-08-21
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2015-08-22	2016-08-21
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2015-08-22	2016-08-21
Ultra Broadband ANT	R&S	HL562	100157	2015-08-23	2016-08-22
ESDV Test Receiver	R&S	ESDV	100008	2015-08-22	2016-08-21
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2015-08-22	2016-08-21
System Controller	CT	SC100	-	--	--
Printer	EPSON	PHOTO EX3	CFNH234850	--	--
Computer	IBM	8434	1S8434KCE99BLXLO*	-	-
Loop Antenna	EMCO	6502	00042960	2015-08-23	2016-08-22
ESPI Test Receiver	R&S	ESI26	838786/013	2015-08-22	2016-08-23
3m OATS	--	--	N/A	2015-08-24	2016-08-23
Horn Antenna	R&S	BBHA 9170	BBHA9170265	2015-08-24	2016-08-23
Horn Antenna	R&S	BBHA 9120D	9120D-631	2015-08-24	2016-08-23
Power meter	Anritsu	ML2487A	6K00003613	2015-08-22	2016-08-21
Power sensor	Anritsu	MA2491A	32263	2015-08-22	2016-08-21
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2015-08-23	2016-08-21
LISN	AFJ	LS16C	10010947251	2015-08-22	2016-08-21
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2015-08-23	2016-08-22
9*6*6 Anechoic	--	--	N/A	2015-08-24	2016-08-23
EMI Test Receiver	RS	ESCS30	100139	2015-08-22	2016-08-21

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### 3.0 Technical Details

#### 3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Emission Test	N/A	N/A
FCC Part 15 Subpart C Paragraph 15.239 Limit	Field Strength of Fundamental	PASS	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	PASS	Meets Class B Limit
According to §15.239 (a) Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz	20dB Bandwidth Tests	PASS	Complies

#### 3.2 Test Standards

**FCC Part 15 Subpart C, Paragraph 15.239**

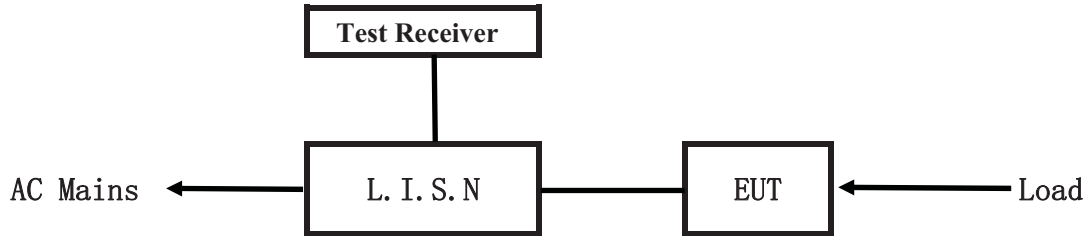
#### 4.0 EUT Modification

**No modification by SHENZHEN TIMEWAY TESTING LABORATORIES**



## 5. Power Line Conducted Emission Test

### 5.1 Schematics of the test

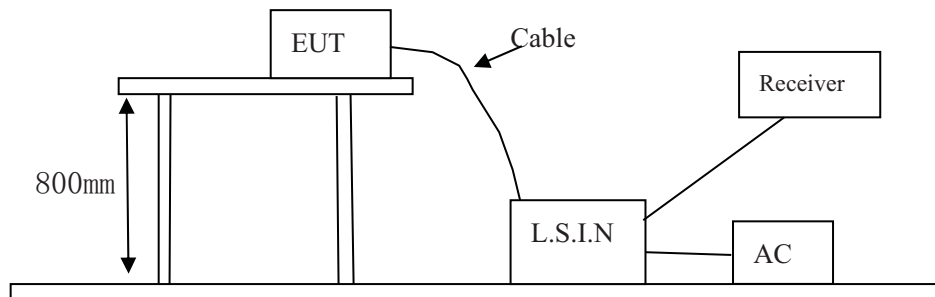


EUT: Equipment Under Test

### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2014. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2014.

Block diagram of Test setup



### 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2014. All interface ports were connected to the Appropriate peripherals. All peripherals and cables are listed below.

Note: EUT can be powered by vehicle with 12-24V electrical system or batteries. During radiated emission test, EUT power by a regulated DC power supply because it produced more emission at this time.

#### A. EUT

Device	Manufacturer	Model	FCC ID
Bluetooth In-Car Speakerphone	Shenzhen Guang Xin Yi Electronics Co., Ltd.	G7,G7S,Q7,Q7S,GT86,GT86S,ZNB01,ZNB02,SW01,YHZ01	2AIFLGXYHOYN-8888

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B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
U-disk	Kinston	--	DOC	--
	--	--	--	--

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2014.

A Setup the EUT and simulators as shown on follow

B the frequency tuning controls have been manually adjusted to the highest and lowest TX frequency.  
The center frequencies of the tuning range are within 88.1MHz to 107.9MHz.

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Class A Limits (dB $\mu$ V)		Class B Limits (dB $\mu$ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	73.0	60.0	56.0	46.0
5.00 ~ 30.00	73.0	60.0	60.0	50.0

Notes: 1. \*Decreasing linearly with logarithm of frequency.  
2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

**Note: EUT Used in a vehicle. This test item note applicable.**

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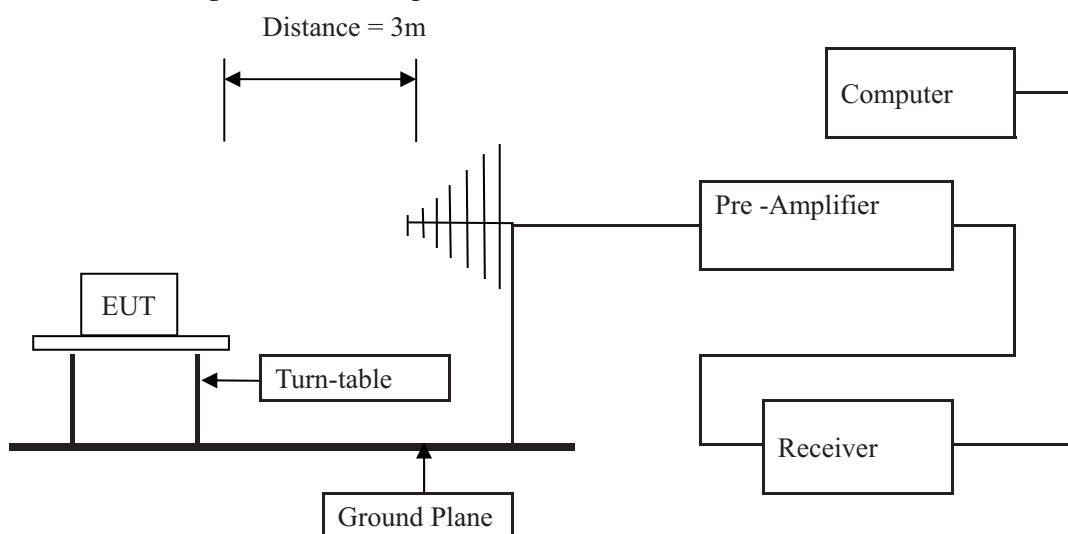


## 6 Radiated Emission Test

### 6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2014. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2014.
- (3) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

#### Block diagram of Test setup



### 6.2 Configuration of The EUT

Same as section 5.3 of this report

### 6.3 EUT Operating Condition

Same as section 5.4 of this report.

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#### 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

##### A FCC Part 15 Subpart C Paragraph 15.239 Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)	
	uV/m	dBuV/m
88 to 108	250	47.96

- Note:
1. RF Field Strength (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.

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

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/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 and the EUT



## 6.5 Test result

### A Fundamental Radiated Emission Data

Product:	Bluetooth In-Car Speakerphone	Test Mode:	FM88.1MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25℃
Test Voltage:	DC24V	Humidity:	56%
Test Result:	Pass		

Frequency (MHz)	Emission PK/AV (dBuV/m)	Horiz / Vert	Limits PK/AV (dBuV/m)	Margin (dB)
88.1	43.9 (PK)/40.8 (AV)	Vertical	67.96/47.96	-24.06/-7.16
88.1	47.8 (PK)/ 45.9(AV)	Horizontal	67.96/47.96	-20.16/-2.06

Product:	Bluetooth In-Car Speakerphone	Test Mode:	FM98MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25℃
Test Voltage:	DC24V	Humidity:	56%
Test Result:	Pass		

Frequency (MHz)	Emission PK/AV (dBuV/m)	Horiz / Vert	Limits PK/AV (dBuV/m)	Margin (dB)
98	46.3 (PK)/42.0 (AV)	Vertical	67.96/47.96	-21.66/-5.96
98	46.2 (PK)/ 41.9(AV)	Horizontal	67.96/47.96	-21.76/-6.06

Product:	Bluetooth In-Car Speakerphone	Test Mode:	FM107.9MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25℃
Test Voltage:	DC24V	Humidity:	56%
Test Result:	Pass		

Frequency (MHz)	Emission PK/AV (dBuV/m)	Horiz / Vert	Limits PK/AV (dBuV/m)	Margin (dB)
107.9	46.4 (PK)/44.0 (AV)	Vertical	67.96/47.96	-21.56/-3.96
107.9	48.4 (PK)/ 44.9(AV)	Horizontal	67.96/47.96	-19.56/-3.06

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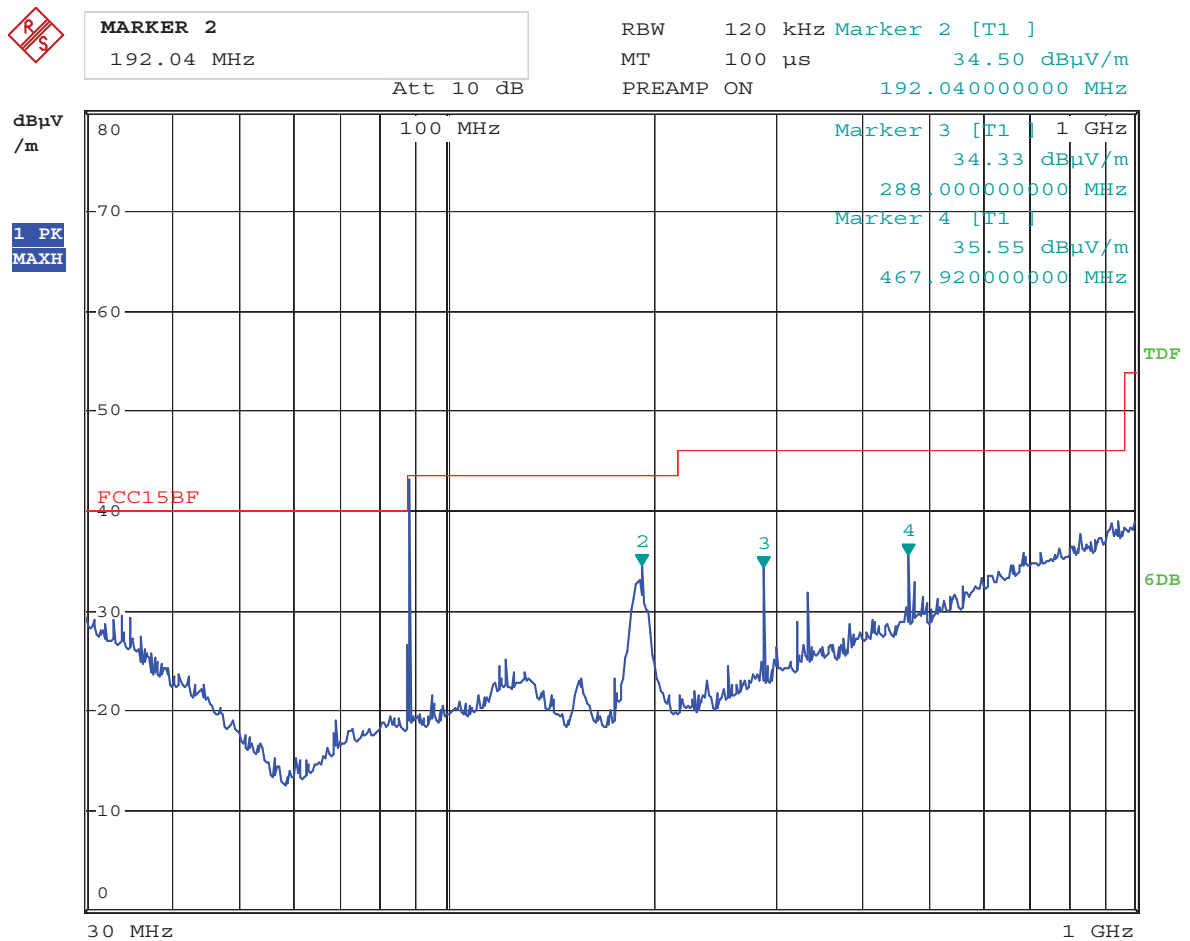
# A. General Radiated Emission Data and Harmonics Radiated Emission Data

## Radiated Emission In Horizontal (30MHz---1000MHz)

EUT set Condition: FM88.1MHz

Results: Pass

Please refer to following diagram for individual



Date: 28.JUN.2016 11:21:11

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
192.04	34.50	H	43.50
288.00	34.33	H	46.00
467.92	35.55	H	46.00
88.00	30.32	H	40.00

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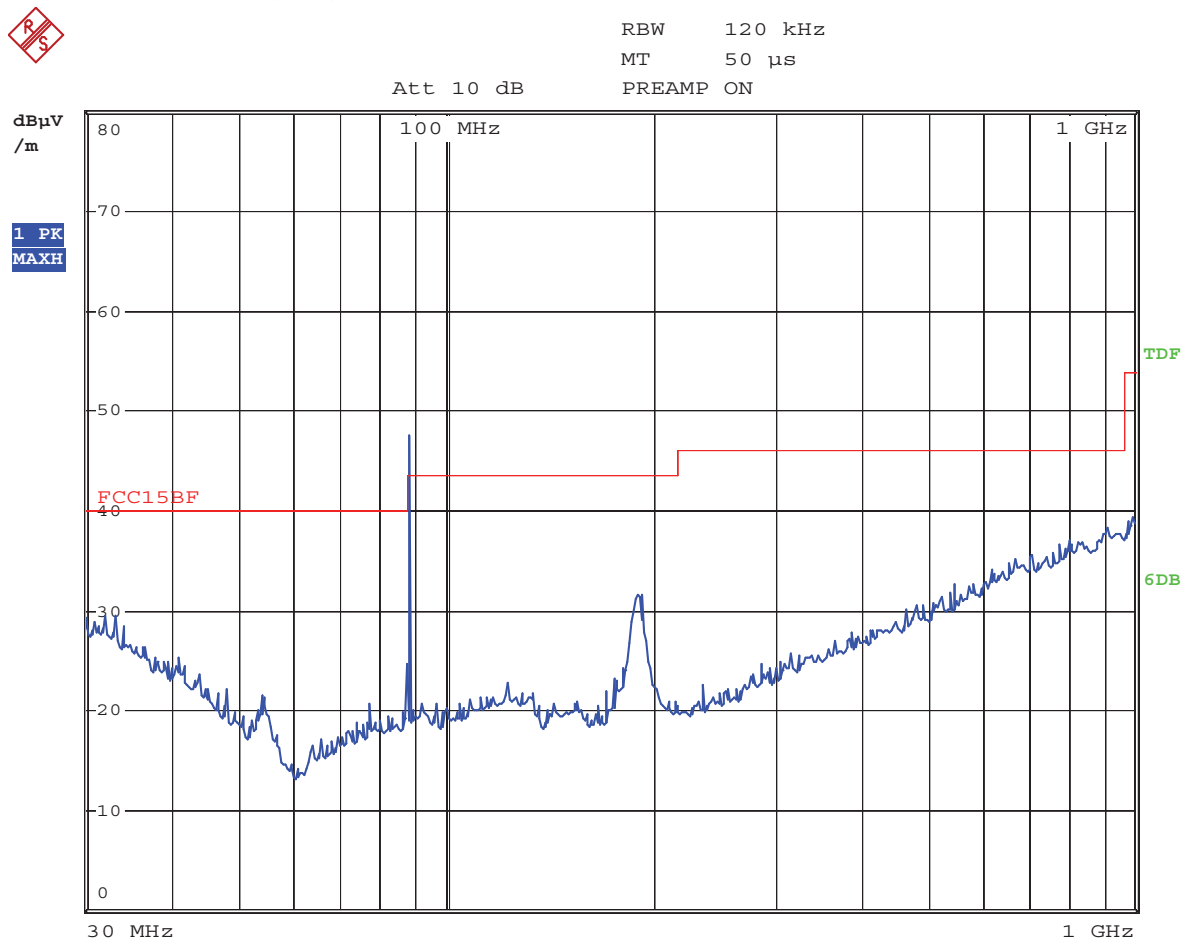
## B. General Radiated Emission Data and Harmonics Radiated Emission Data

### Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: FM88.1MHz

**Results: Pass**

Please refer to following diagram for individual



Date: 28.JUN.2016 11:14:25

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
88.00	26.76	V	40.00

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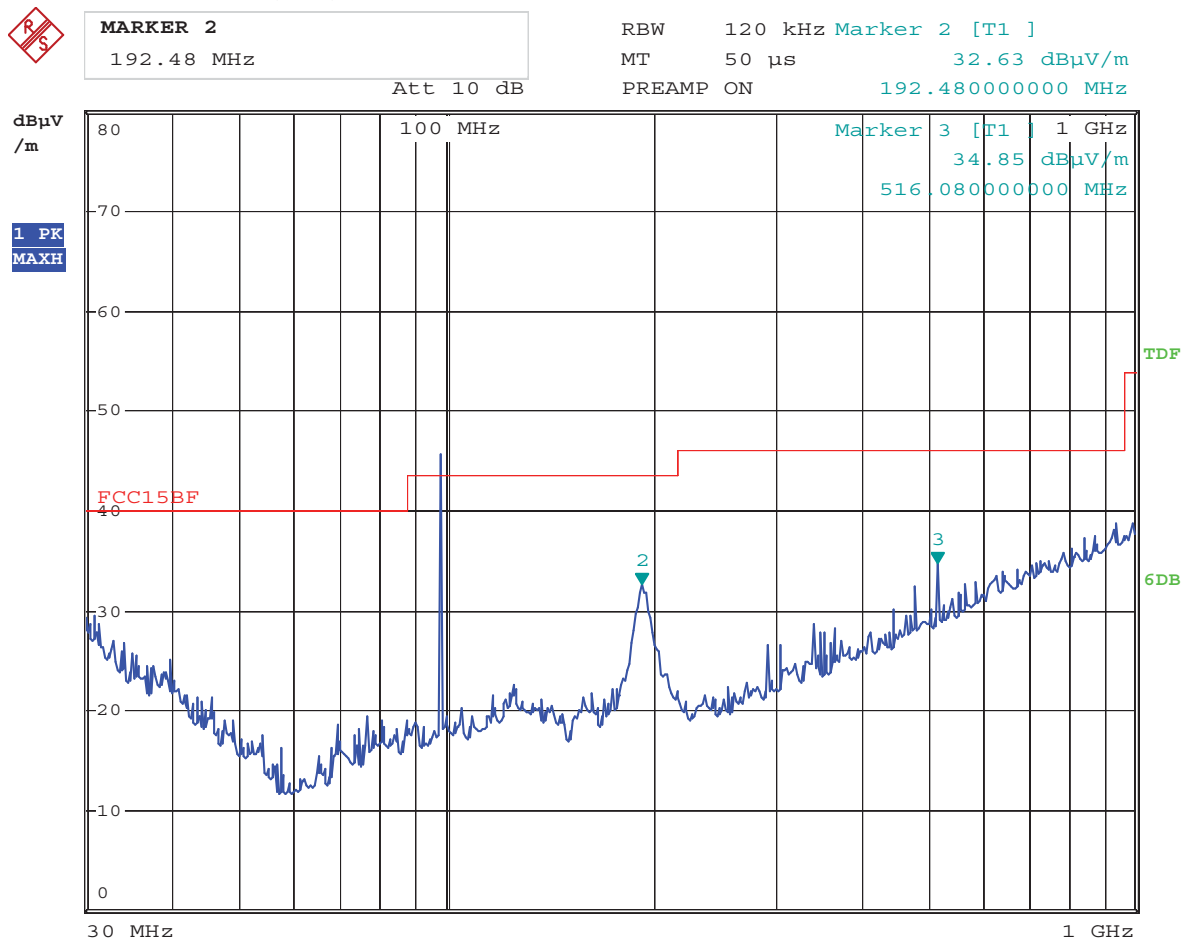
### C. General Radiated Emission Data and Harmonics Radiated Emission Data

#### Radiated Emission In Horizontal (30MHz---1000MHz)

EUT set Condition: FM98MHz

**Results: Pass**

Please refer to following diagram for individual



Date: 28.JUN.2016 14:00:19

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
192.48	32.63	H	43.50
516.08	34.85	H	46.00

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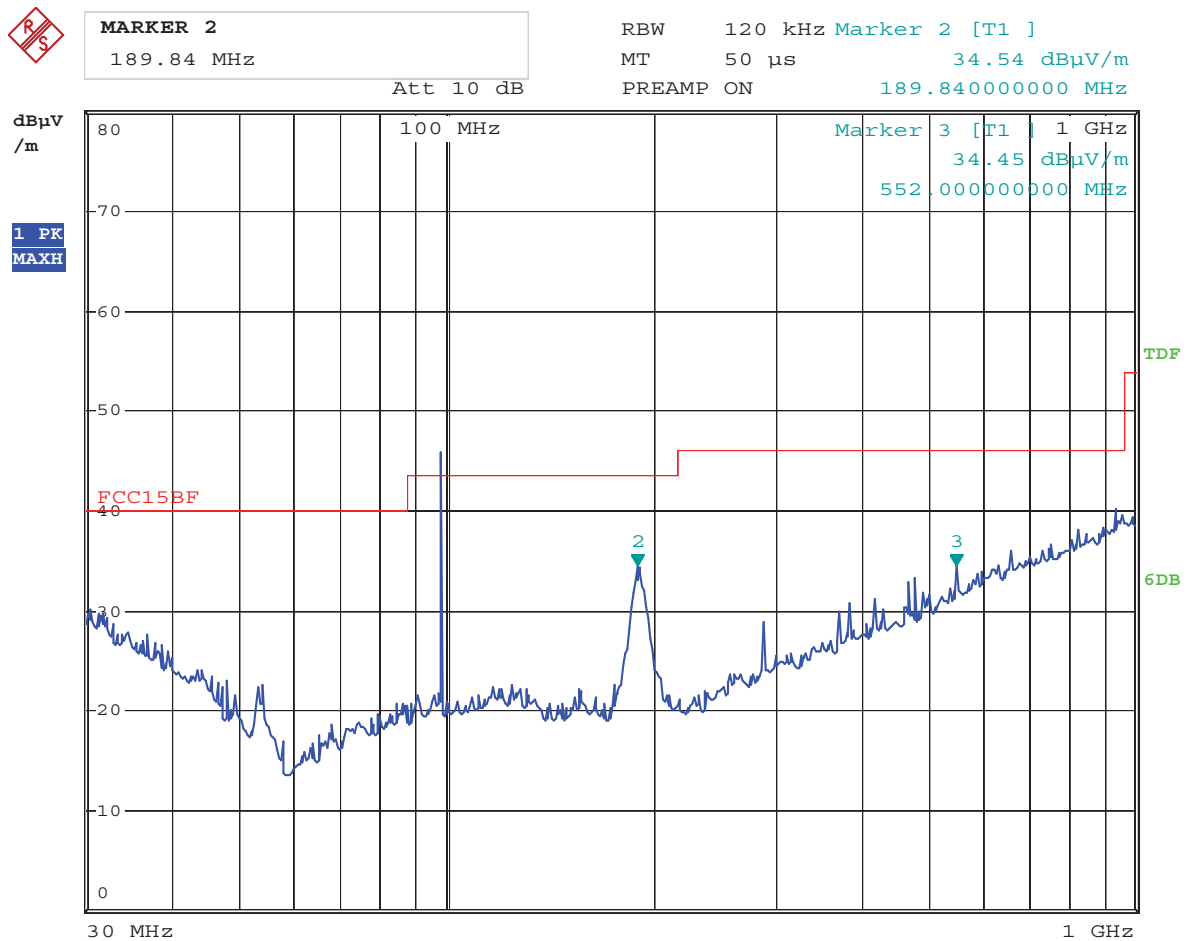
#### D. General Radiated Emission Data and Harmonics Radiated Emission Data

##### Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: FM98MHz

**Results: Pass**

Please refer to following diagram for individual



Date: 28.JUN.2016 14:03:13

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
189.84	34.54	V	43.50
552.00	34.45	V	46.00

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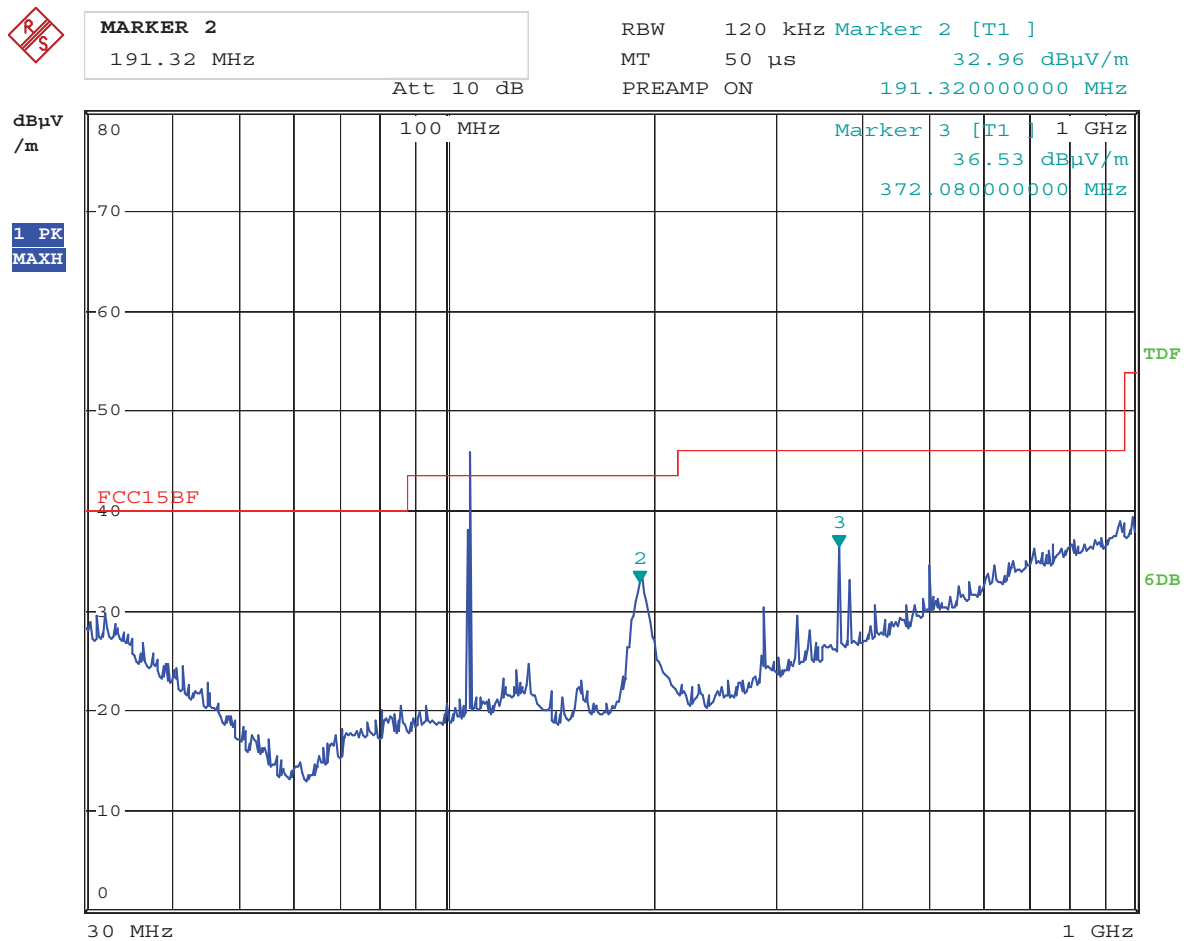
# E. General Radiated Emission Data and Harmonics Radiated Emission Data

## Radiated Emission In Horizontal (30MHz---1000MHz)

EUT set Condition: FM107.9MHz

Results: Pass

Please refer to following diagram for individual



Date: 28.JUN.2016 13:51:38

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
191.32	32.96	H	43.50
372.08	36.53	H	46.00
108.00	32.02	H	43.50

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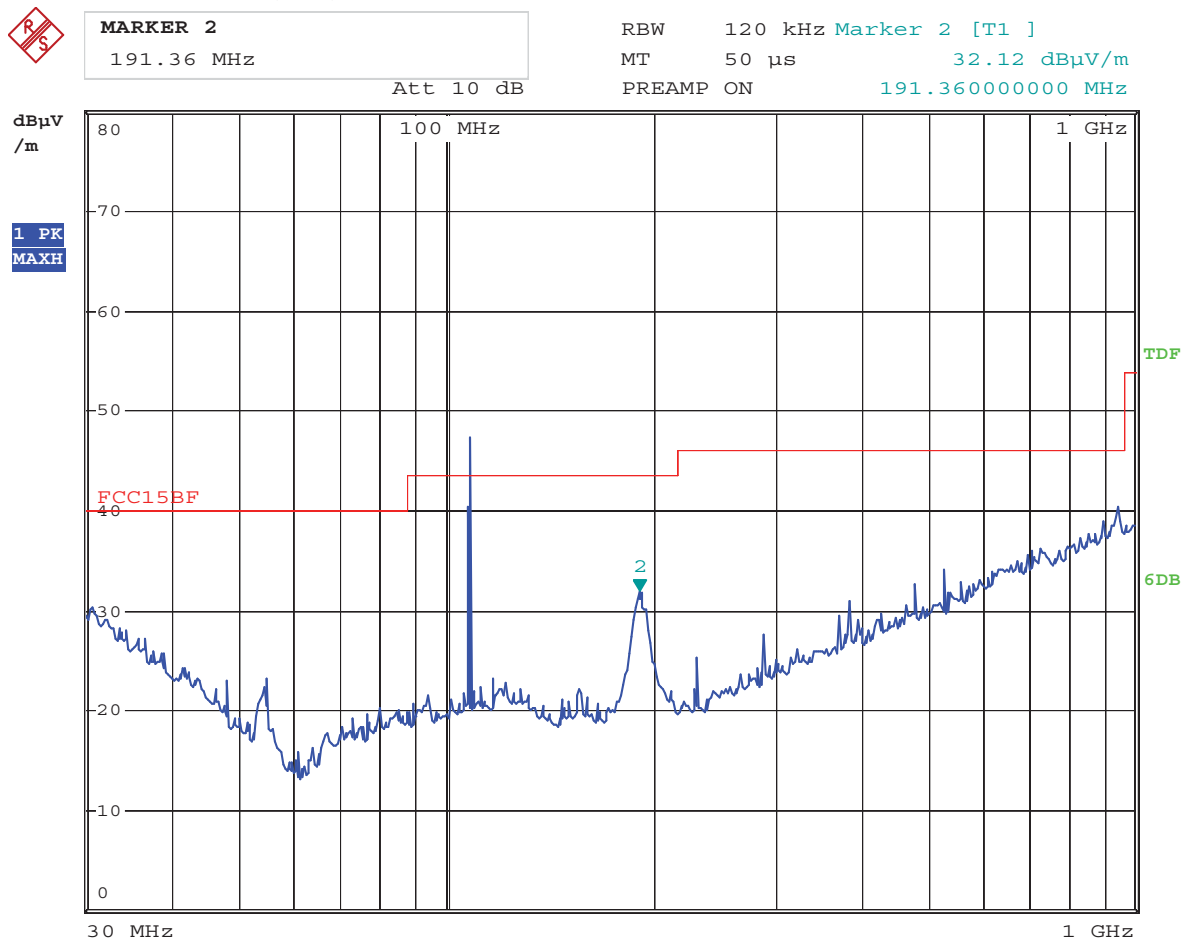
F. **General Radiated Emission Data and Harmonics Radiated Emission Data**

**Radiated Emission In Vertical (30MHz----1000MHz)**

EUT set Condition: FM107.9MHz

**Results: Pass**

Please refer to following diagram for individual



Date: 28.JUN.2016 12:09:13

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
191.36	32.12	V	43.50
108.00	29.17	V	43.50

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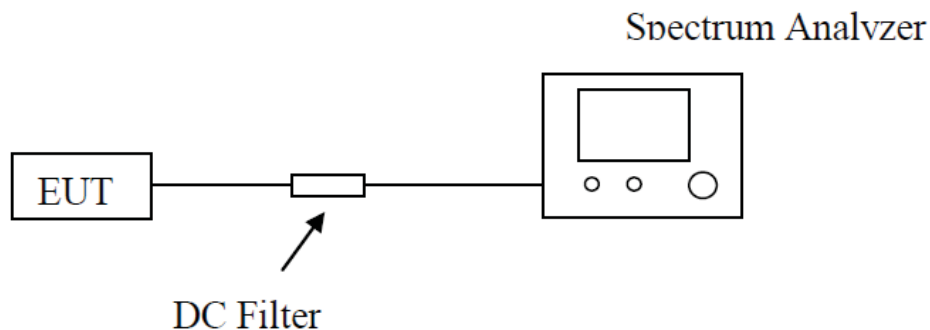


## 7. 20dB Bandwidth

### 7.1 Test Method and test Procedure:

- (1) Span = approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
- (2)  $RBW \geq 1\%$  of the 20dB bandwidth,  $VBW \geq RBW$ .
- (3) Detector function = peak.
- (4) Trace = max hold.

### 7.2 Block Diagram of Test Setup



For the actual test configuration , please refer to the related items – Photos of Testing

### 7.3 Limit

According to §15.239 (a) Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz

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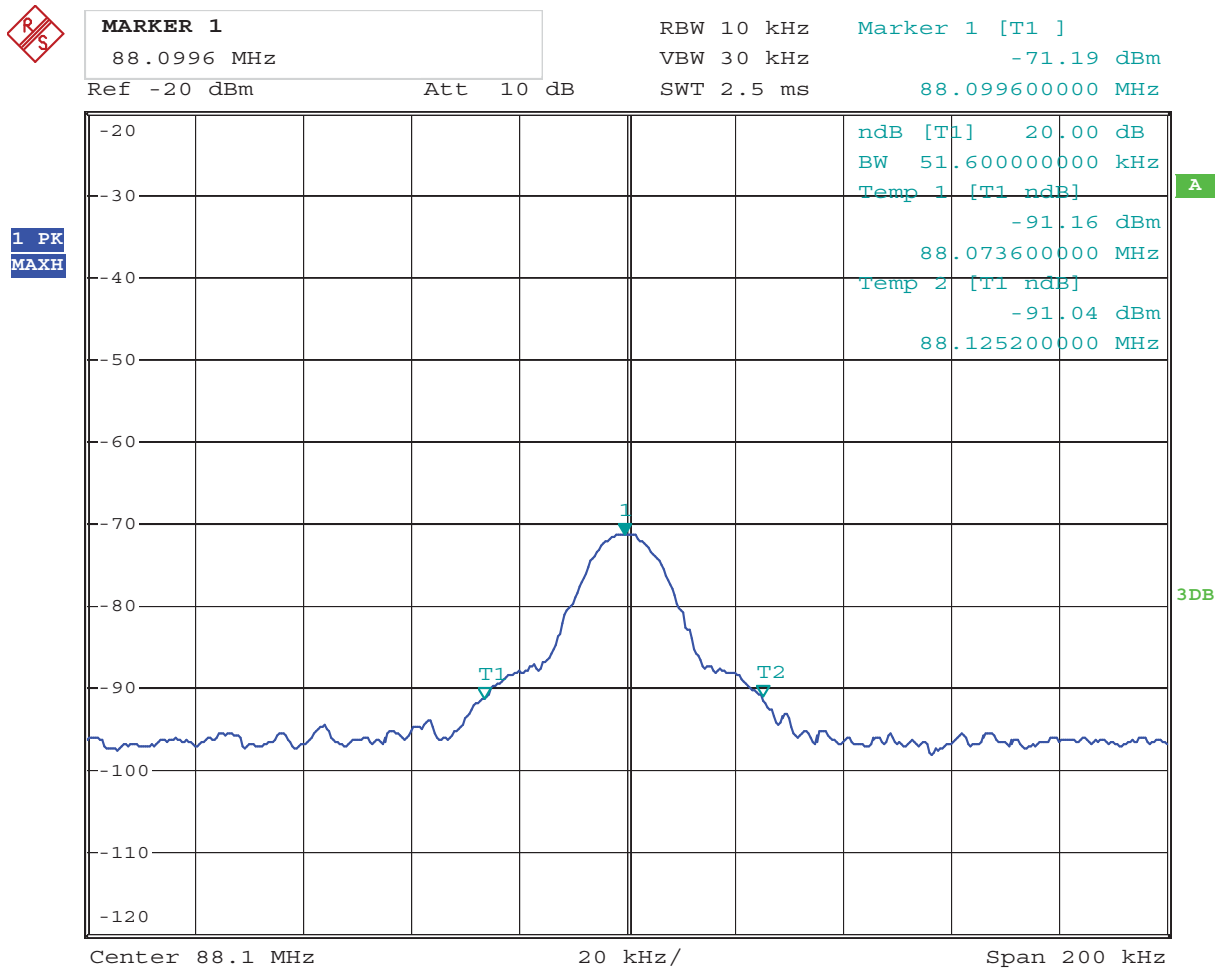
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#### 7.4 Test Result

Product:	Bluetooth In-Car Speakerphone	Test Mode:	FM88.1MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25°C
Test Voltage:	DC24V	Humidity:	56%
20dB Bandwidth	51.6kHz	Test Result:	Pass

#### Test Figure:



Date: 28.JUN.2016 16:01:14

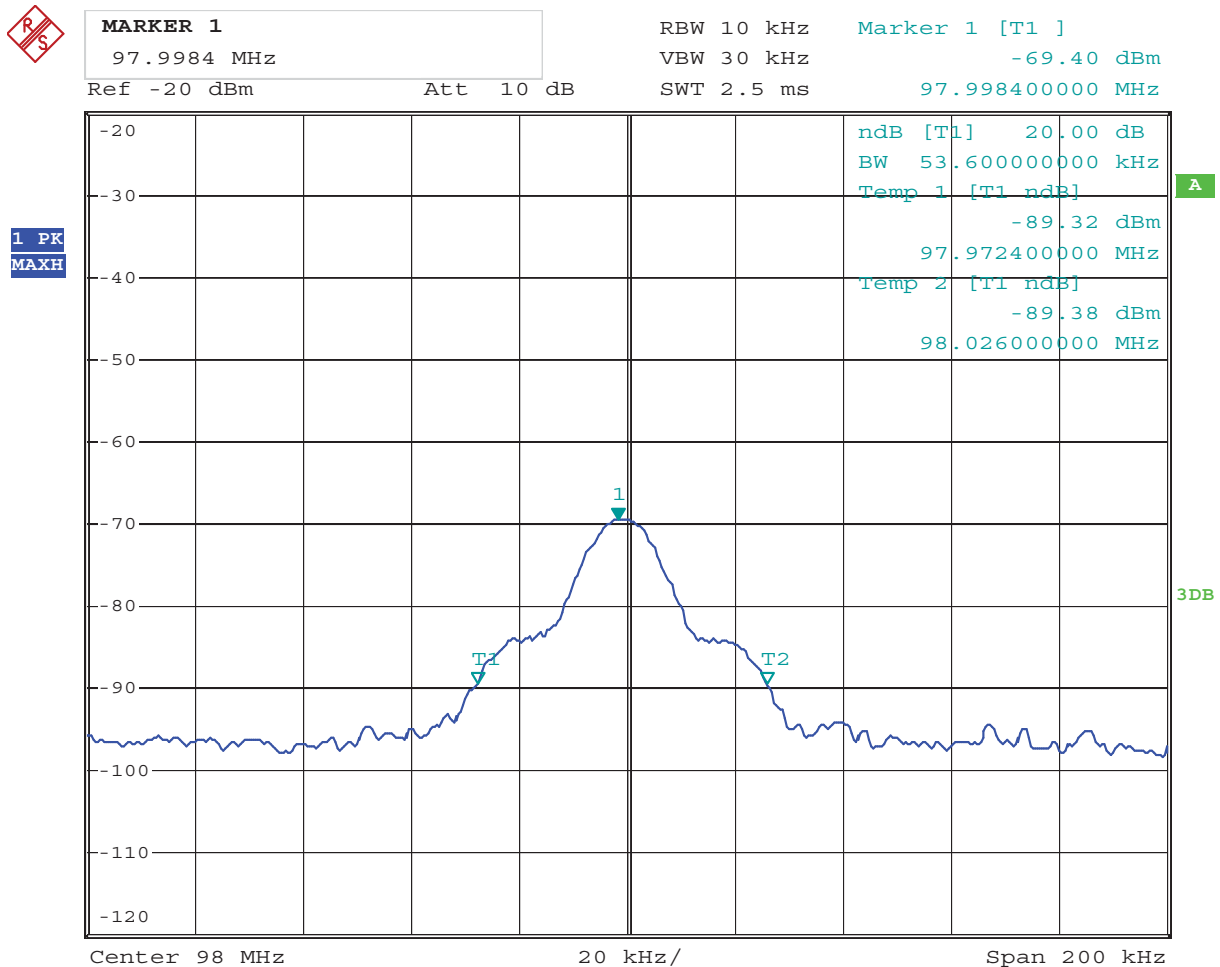
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#### 7.4 Test Result

Product:	Bluetooth In-Car Speakerphone	Test Mode:	FM98MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25°C
Test Voltage:	DC24V	Humidity:	56%
20dB Bandwidth	53.6kHz	Test Result:	Pass

#### Test Figure:



Date: 28.JUN.2016 16:02:52

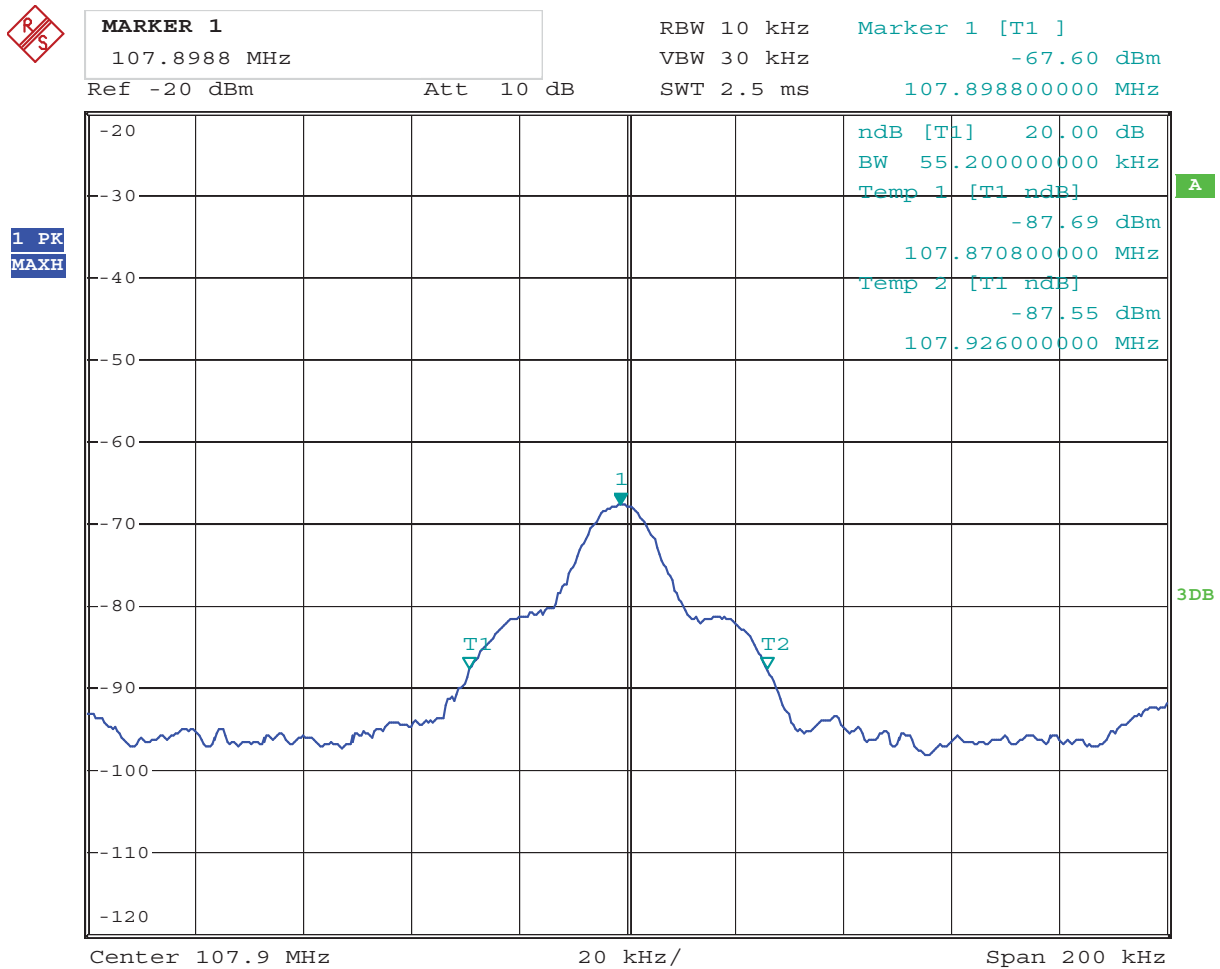
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#### 7.4 Test Result

Product:	Bluetooth In-Car Speakerphone	Test Mode:	FM107.9MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25°C
Test Voltage:	DC24V	Humidity:	56%
20dB Bandwidth	55.2kHz	Test Result:	Pass

#### Test Figure:



Date: 28.JUN.2016 15:58:56

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## 8.0 FCC ID Label

**FCC ID: 2AIFLGXYHOYN-8888**

**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 label. 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.

### Mark Location:



FCC ID Label Location

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## 9.0 Photo of testing

9.1 Conducted test View—N/A

9.2 Radiated emission test view



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### 9.3 Photo for the EUT

External View



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External View



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External View



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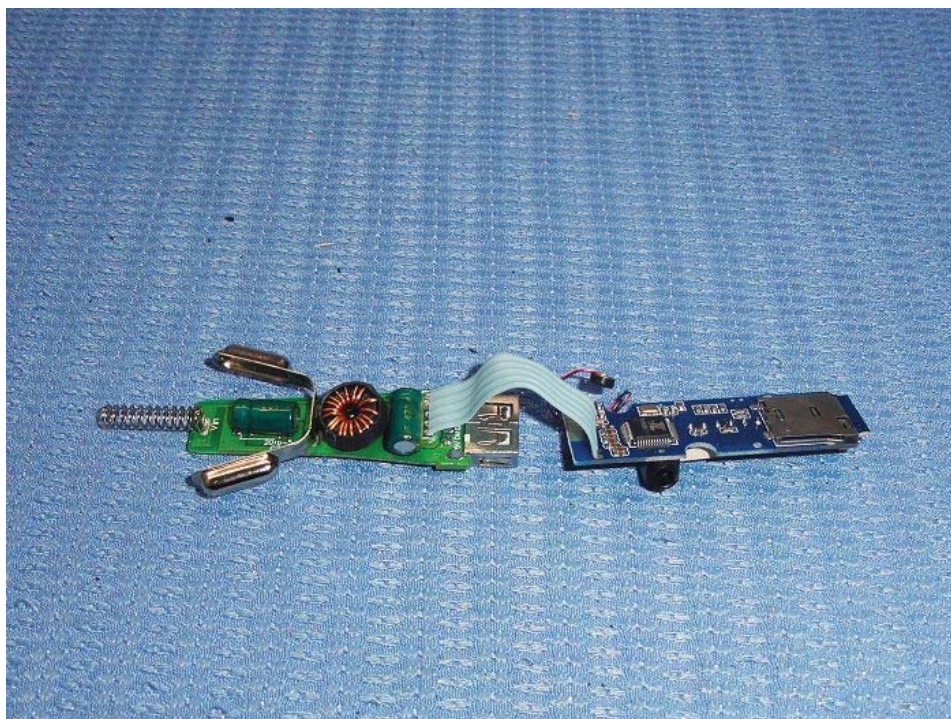
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### Interior View



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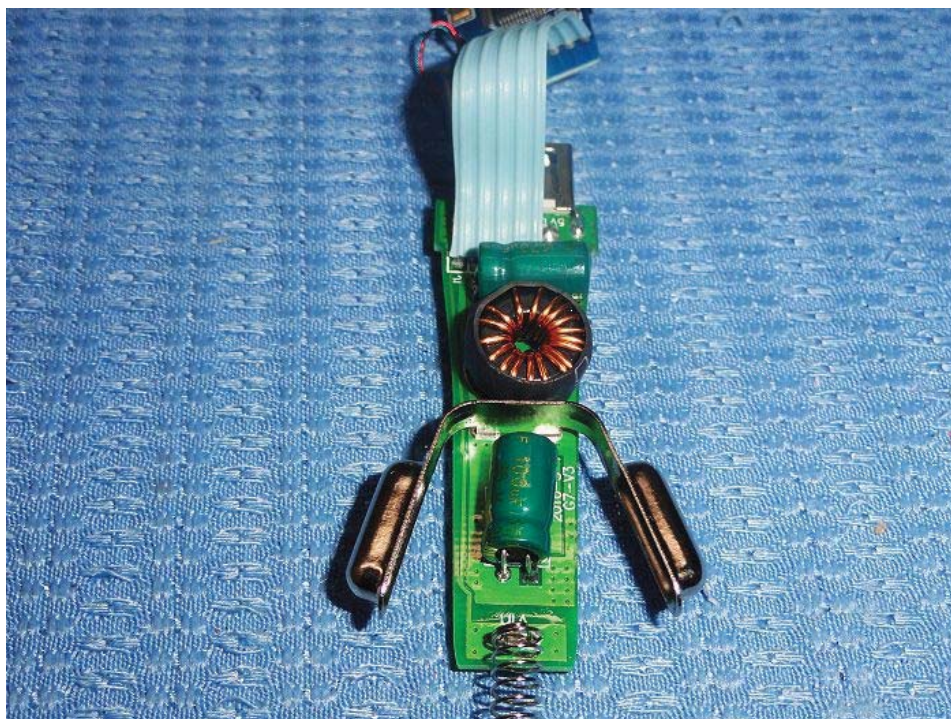
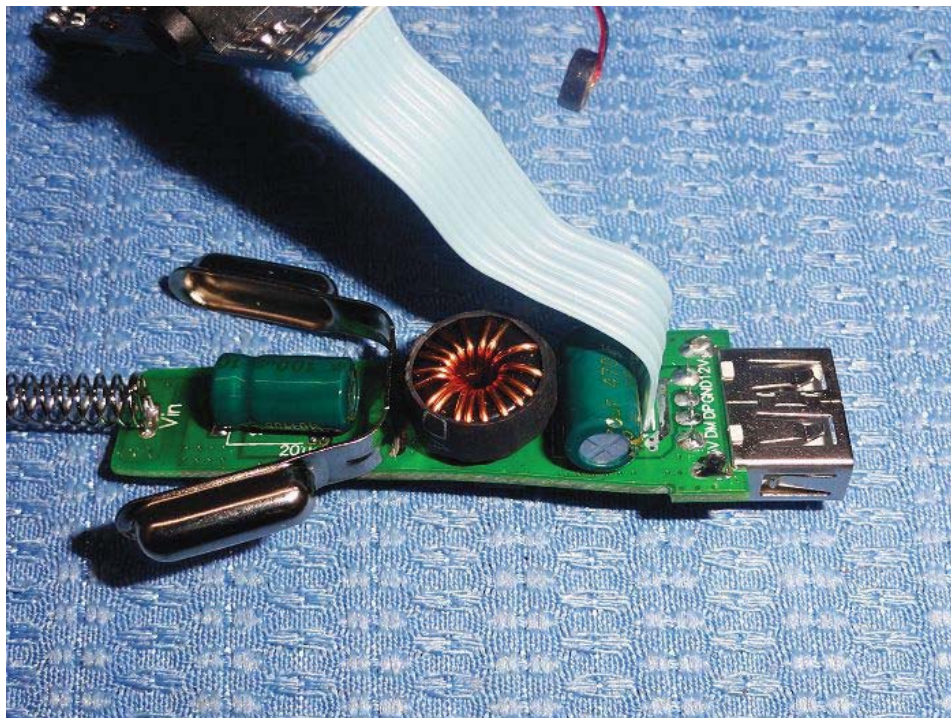
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Interior View



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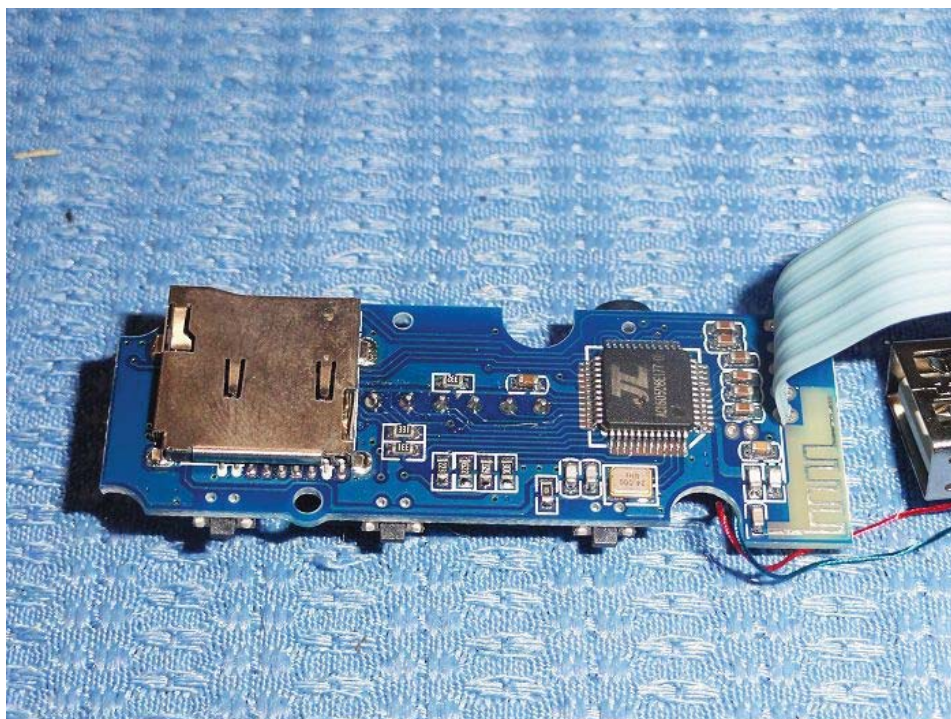
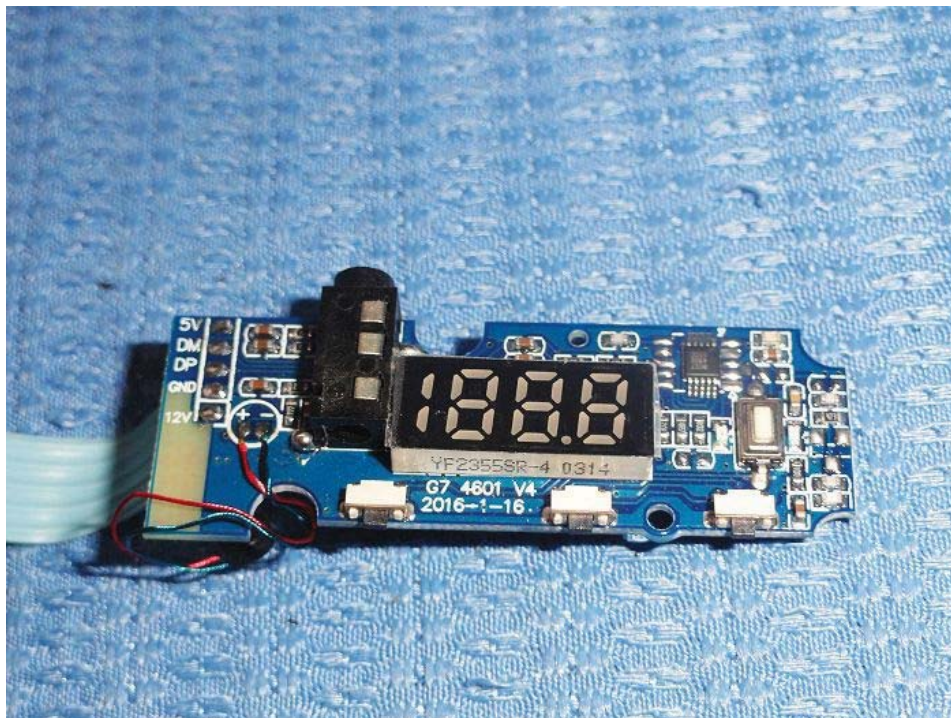
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Interior View



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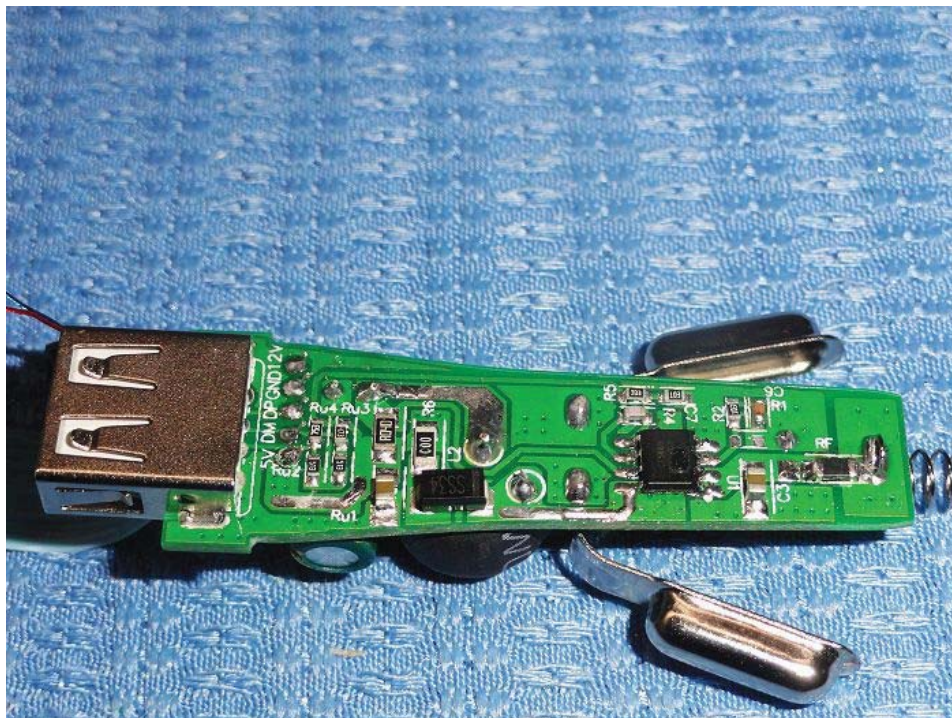
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Interior View



**End of the report**

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