TECHNICAL REPORT

ISO/IEC17025Accredited Lab.

Report No: FCC 1501176
File reference No: 2015-01-27

Applicant: Calford Technology Ltd

Product: 9 channel FM wireless intercom

Model No: AF388, AF388A, AF388B

Trademark: N/A

Test Standards: FCC Part 95, Subpart B and Subpart E;

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4, FCC Part 95, Subpart B and Subpart E; regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung
Manager

Dated: January 27, 2015

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 TECHNOLOGY CONSULTING CO LTD

5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timewaytech.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 17025:1999 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.

IC- Registration No.: IC5205A-02

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration No.: IC 5205A-02.

Test Report Conclusion

Content

1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD

Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Telephone: (755) 83448688

Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

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: Calford Technology Ltd.

Address: Room 14, 3 FLR., Sing Win Fty. Building, 15 – 17 Shing Yip St., Kowloon, Hong Kong.

Telephone: 852-23307330

Fax: 852-23307713

1.3 Description of EUT

Product: 9 channel FM wireless intercom

Manufacturer: Guangdong Samzuk Technology Development Co., Ltd

Address: High-Tech Zone Xinggong Avenue East Heyuan City（2/F of Minghuang Electrical Engineering Company Building）

Brand Name: N/A

Additional Brand Name: N/A

Model Number: AF388

Additional Model Number: AF388A, AF388B

Type of Modulation FM

Frequency range 462.5625MHz, 462.5875MHz, 462.6125MHz, 462.6375MHz, 462.6625MHz, 462.6875MHz, 462.7125MHz, 467.5625MHz, 467.5875MHz

Antenna: Integral antenna with Gain 2.0 dBi

Rating: Input: DC6V, 0.8A

Power Supply: Model No.: NLA080060W1A1
Input: 100-240V, 50/60Hz, 0.2A Max; Output: 6V, 800mA

1.4 Submitted Sample: 2 Samples

1.5 Test Duration

2015-01-05 to 2015-01-26

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

The sample tested by Terry Tang

Print Name: Terry Tang

2.0 Test Equipments					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2014-08-21	2015-08-20
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2014-08-22	2015-08-21
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2014-08-22	2015-08-21
Ultra Broadband ANT	R&S	HL562	100157	2014-08-23	2015-08-22
ESDV Test Receiver	R&S	ESDV	100008	2014-08-22	2015-08-21
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2014-08-21	2015-08-20
System Controller	CT	SC100	-	--	--
Printer	EPSON	PHOTO EX3	CFNH234850	--	--
Computer	IBM	8434	1S8434KCE99BLXLO*	-	-
Loop Antenna	EMCO	6502	00042960	2014-08-22	2015-08-21
ESPI Test Receiver	R&S	ESI26	838786/013	2014-08-22	2015-08-21
3m OATS	--	--	N/A	2014-08-21	2015-08-20
Horn Antenna	R&S	BBHA 9170	BBHA9170265	2014-08-23	2015-08-22
Horn Antenna	R&S	BBHA 9120D	9120D-631	2014-08-23	2015-08-22
Power meter	Anritsu	ML2487A	6K00003613	2014-08-22	2015-08-21
Power sensor	Anritsu	MA2491A	32263	2014-08-22	2015-08-21
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2014-08-23	2015-08-22
LISN	AFJ	LS16C	10010947251	2014-08-21	2015-08-20
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2014-08-22	2015-08-21
9*6*6 Anechoic	--	--	N/A	2014-08-21	2015-08-20
EMI Test Receiver	RS	ESCS30	100139	2014-08-22	2015-08-21
Modulation Analyzer	HP	8901B	3104A03367	2014-06-15	2015-06-14

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 15.207	Conducted Emission	Pass	**Complies**
FCC Part 95.639	Maximum Transmitter Power	Pass	**Complies**
FCC Part 95.635	Spurious Radiated Emissions	Pass	**Complies**

Note: No modification to the RF part, so only part tests as shown above was conduced.

3.2 Test Standards

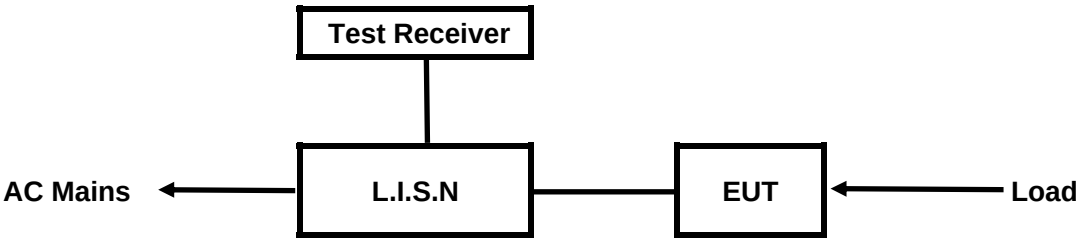
FCC Part 95, Subpart B and Subpart E

4.0 EUT Modification

No modification by Shenzhen Timeway Technology Consulting Co., Ltd

5. Power Line Conducted Emission Test

5.1 Schematics of the test



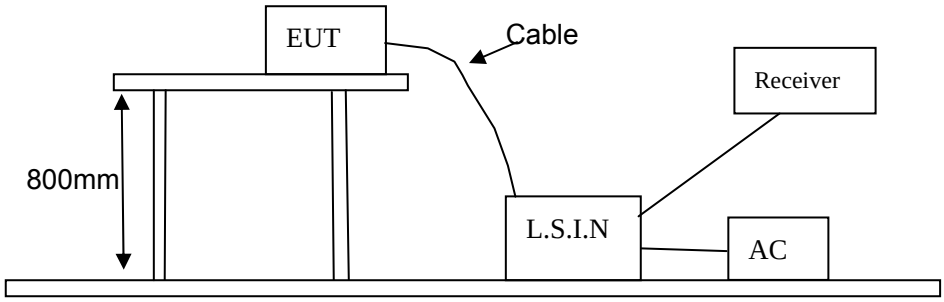
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003.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 –2003.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the

appropriate peripherals. All peripherals and cables are listed below.

One channels are provided to the EUT

A. EUT

Device	Manufacturer	Model	FCC ID
9 channel FM wireless intercom	Guangdong Samzuk Technology Development Co., Ltd.	AF388 AF388A, AF388B	2AAYF-AF388

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency(MHz)	Class A Limits (dBμV)		Class B Limits (dBμV)	
	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

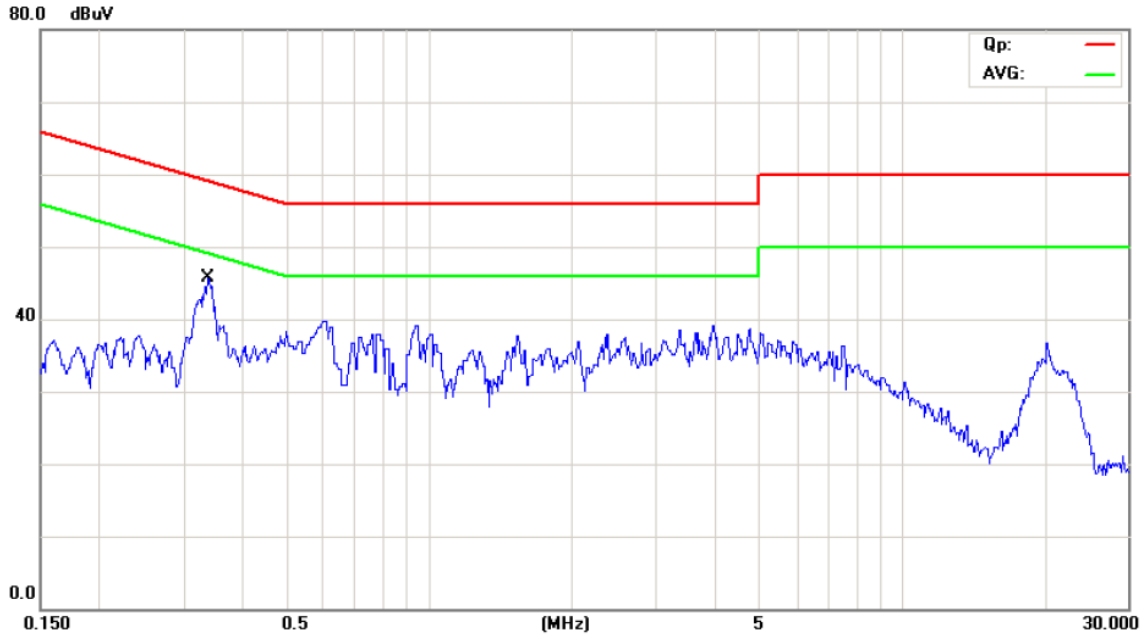
The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Keep Transmitting

Results: **Pass**

Please refer to following diagram for individual



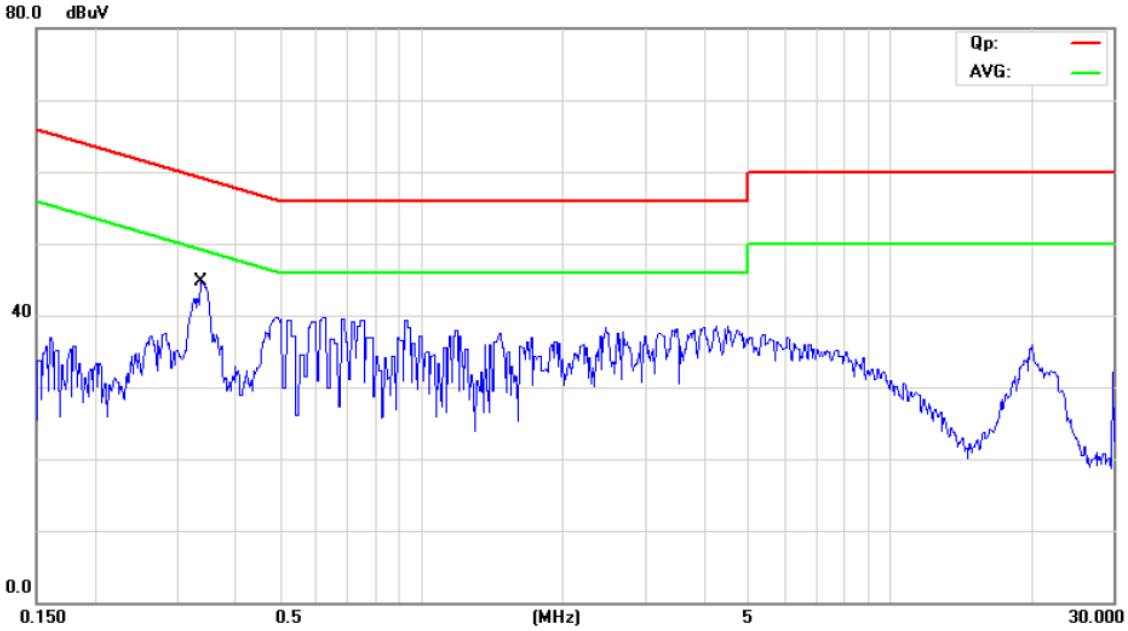
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3393	31.60	11.20	42.80	59.22	-16.42	QP	
2	*	0.3393	25.70	11.20	36.90	49.22	-12.32	AVG	

B **Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)**

EUT set Condition: Keep Transmitting

Results: **Pass**

Please refer to following diagram for individual



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3362	27.60	11.20	38.80	59.30	-20.50	QP	
2	*	0.3362	18.50	11.20	29.70	49.30	-19.60	AVG	

Note: AF388B was tested, and it was the worse case.

6. UNWANTED RADIATION

6.1 PROVISIONS APPLICABLE

FCC §2.1053 and §95.635

6.2 MEASUREMENT PROCEDURE (Radiated Emissions)

(1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.

(2). The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.

(3). The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.

(4). The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

(5). The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.

(6). The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

(7). The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.

(8). The maximum signal level detected by the measuring receiver shall be noted.

(9). The measurement shall be repeated with the test antenna set to horizontal polarization.

(10). Replace the antenna with a proper Antenna (substitution antenna).

(11). The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.

(12). The substitution antenna shall be connected to a calibrated signal generator.

(13). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

(14). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

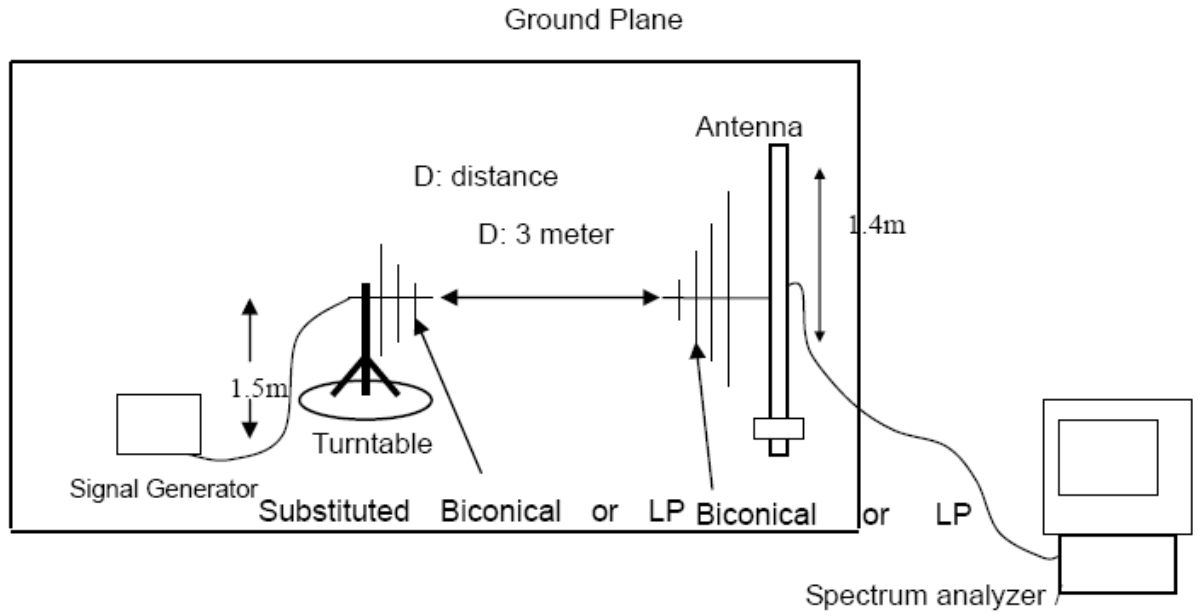
(15). The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.

(16). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

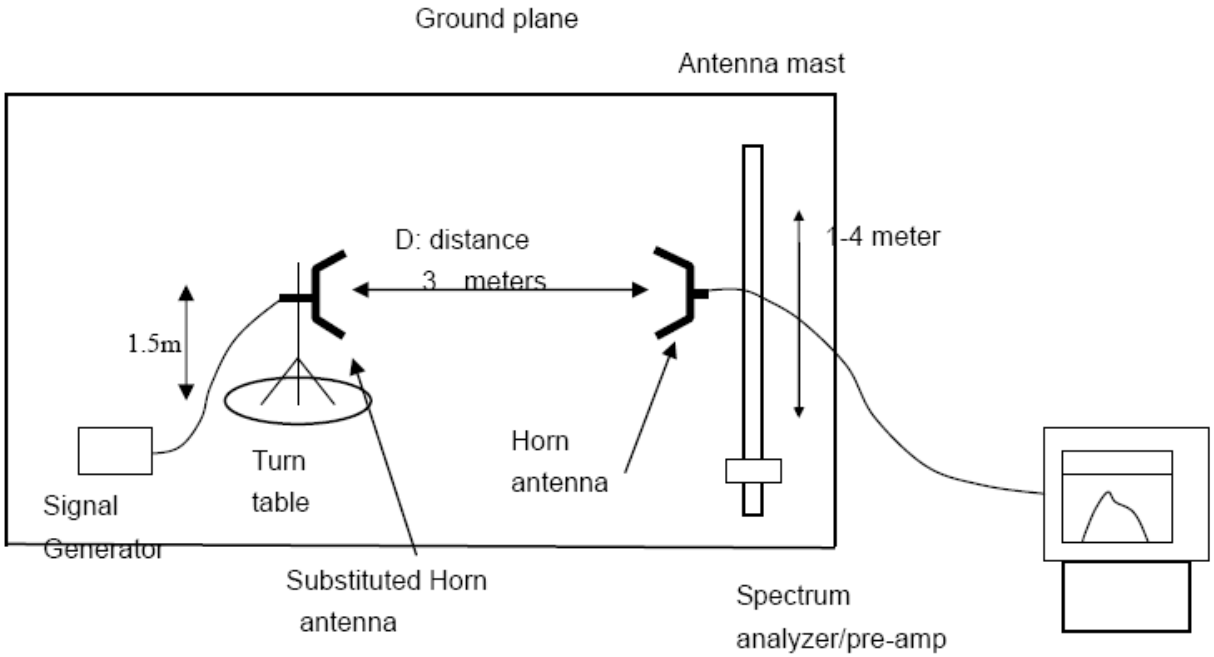
(17). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

6.3 Substitution Method: (Radiated Emissions)

Radiated Below 1GHz



Radiated Above 1 GHz



6.4 MEASUREMENT RESULTS:

Calculation: Limit (dBm)= EL-43-10log10 (T)=-13dBm

Notes: EL is the emission level of the Output Power expressed in dBm, in this application, the EL is 27 dBm

CH1 (462.5625MHz)

Frequency (MHz)	Antennal Polarity	Emission (dBm)	Limit (dBm)
925.125	Vertical	-38.60	-13
1387.688	Vertical	-44.94	-13
1850.25	Vertical	-47.52	-13
925.125	Horizontal	-46.39	-13
1387.688	Horizontal	-49.96	-13

CH9(467.5875MHz)

Frequency (MHz)	Antennal Polarity	Emission (dBm)	Limit (dBm)
935.175	Vertical	-38.85	-13
1402.763	Vertical	-44.26	-13
1870.35	Vertical	-48.71	-13
935.175	Horizontal	-43.39	-13
1402.763	Horizontal	-47.07	-13

Note: 1.ERP was recorded.

2. AF388B was tested, and it was the worse case.

7. MAXIMUM TRANSMITTER POWER

7.1 PROVISIONS APPLICABLE

Per FCC §2.1046 and §95.639(d), No FRS Unit, under any condition of modulation, shall exceed a 0.5 W effective radiated power (ERP).

7.2 TEST PROCEDURE

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the emissions were measured by the substitution.

7.3 TEST RESULT

Power Measurement Results	
Channel	Measurement Result (dBm)
CH1 (462.5625MHz)	23.19
CH9(467.5875MHz)	23.46

Note: 1 ERP was recorded.

2. AF388B was tested, and it was the worse case.

8. Radiated Emission on Receiving Mode

8.1 Provisions Applicable

FCC Part 15 Subpart B Section 15.109

8.2 TEST METHOD

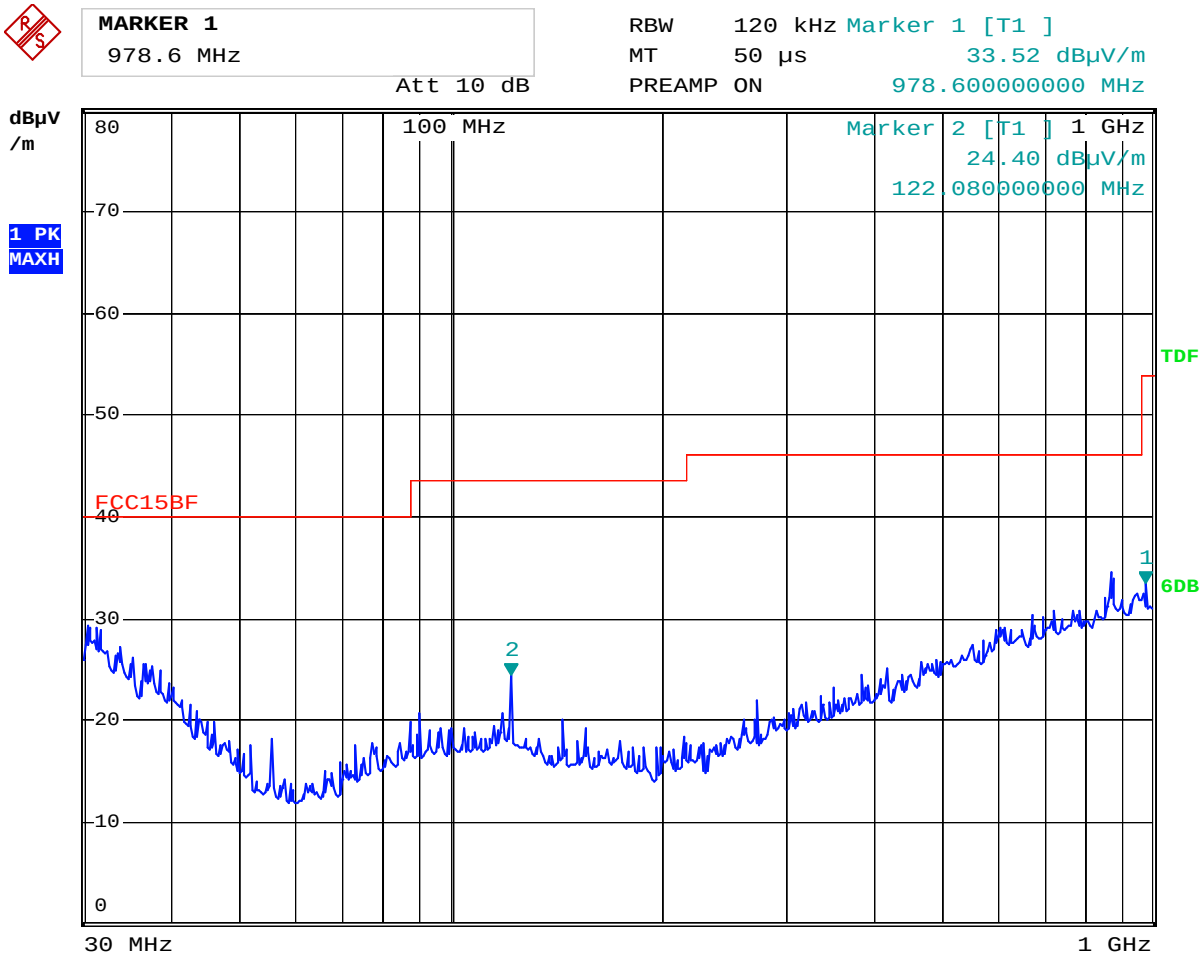
ANSI C 63.4: 2003

8.4 MEASURE RESULT (MEASURED AT 3M USING FCC PART15 B LIMITS)

A Radiated Disturbance In Vertical (30MHz----1000MHz)

EUT set Condition: **Receiving**
Level: **Class B**
Results: **PASS**

Please refer to following diagram for individual

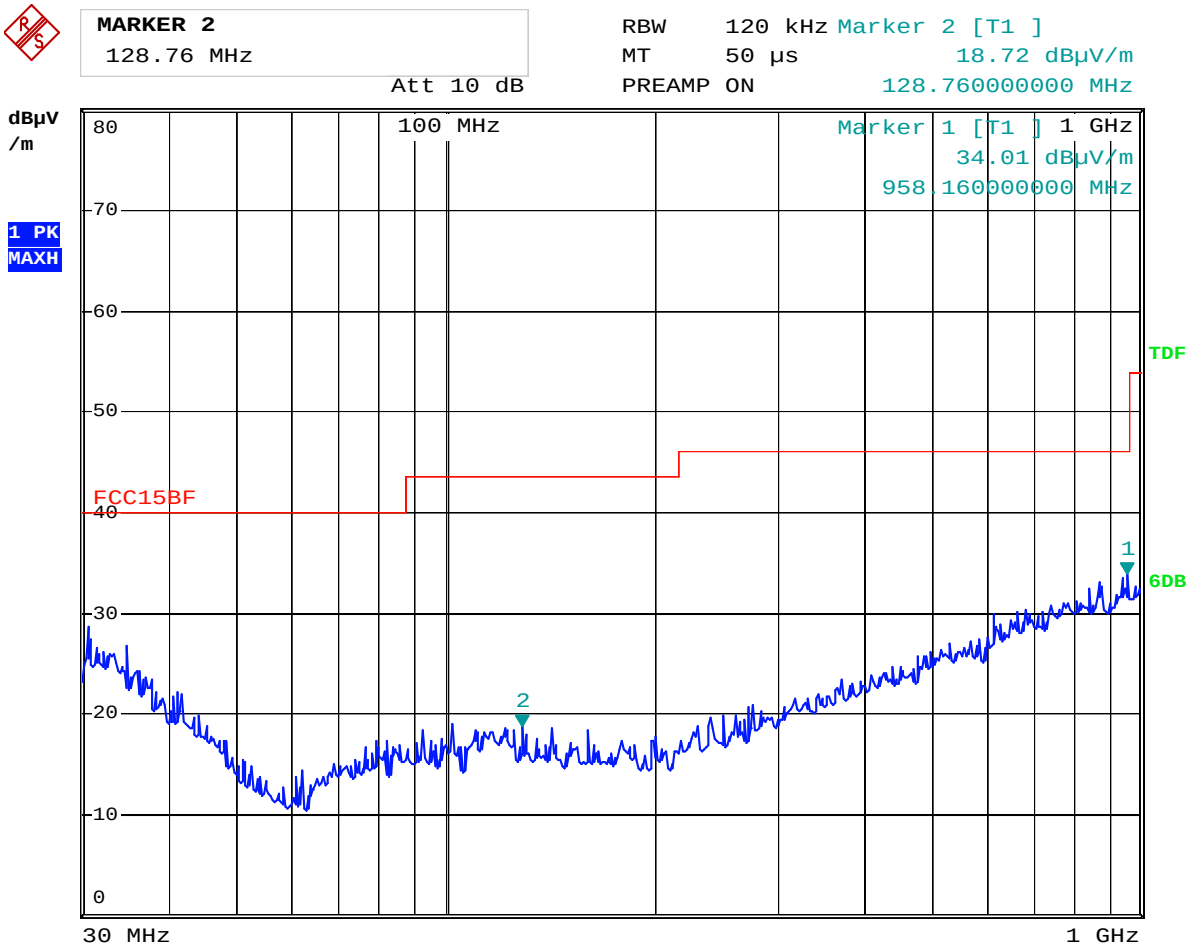


Date: 26.JAN.2015 10:12:55

B Radiated Disturbance In Horizontal (30MHz----1000MHz)

EUT set Condition: **Receiving**
Level: **Class B**
Results: **PASS**

Please refer to following diagram for individual



Date: 26.JAN.2015 10:15:13

Note: AF388B was tested, and it was the worse case.

9.0 FCC ID Label

FCC ID: 2AAYF-AF388

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:

10.0 Photo of testing

10.1 Conducted test View--

10.2 Radiated emission test view

Outside View (for model AF388A and AF388B)

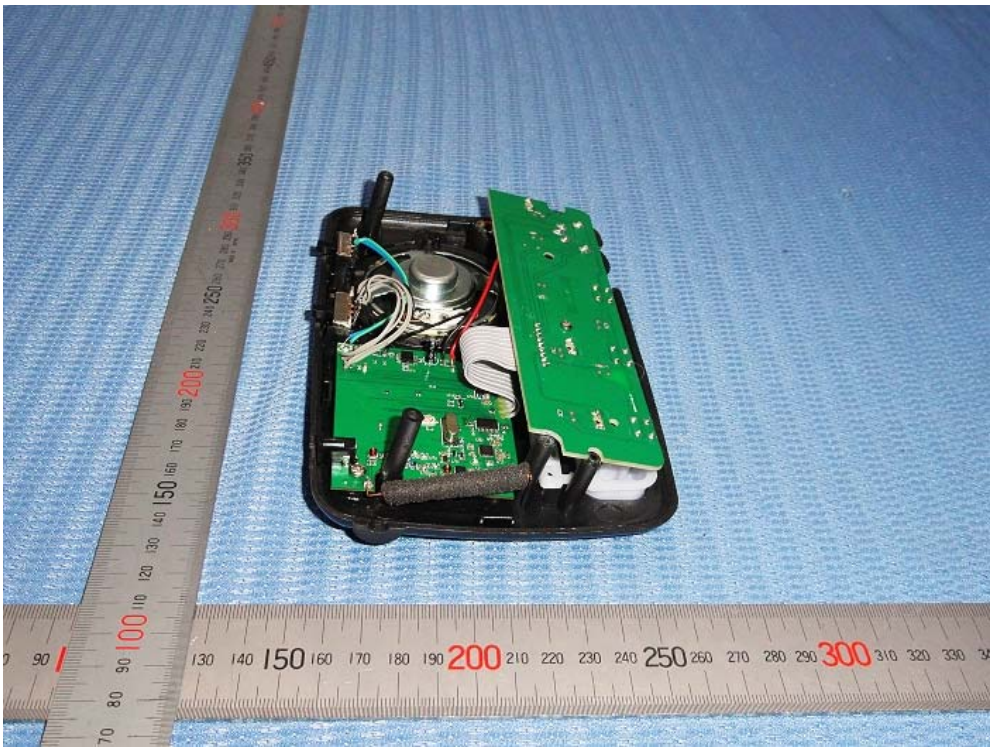
Outside View (for model AF388A and AF388B)

Outside View (for model AF388B)

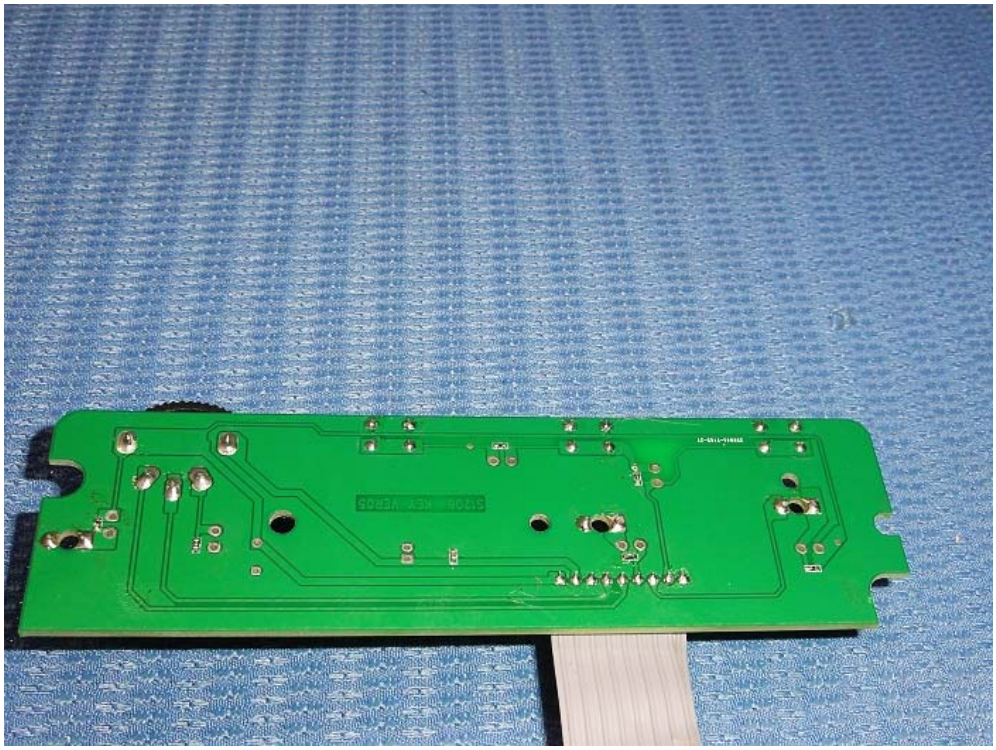
(for model AF388A)

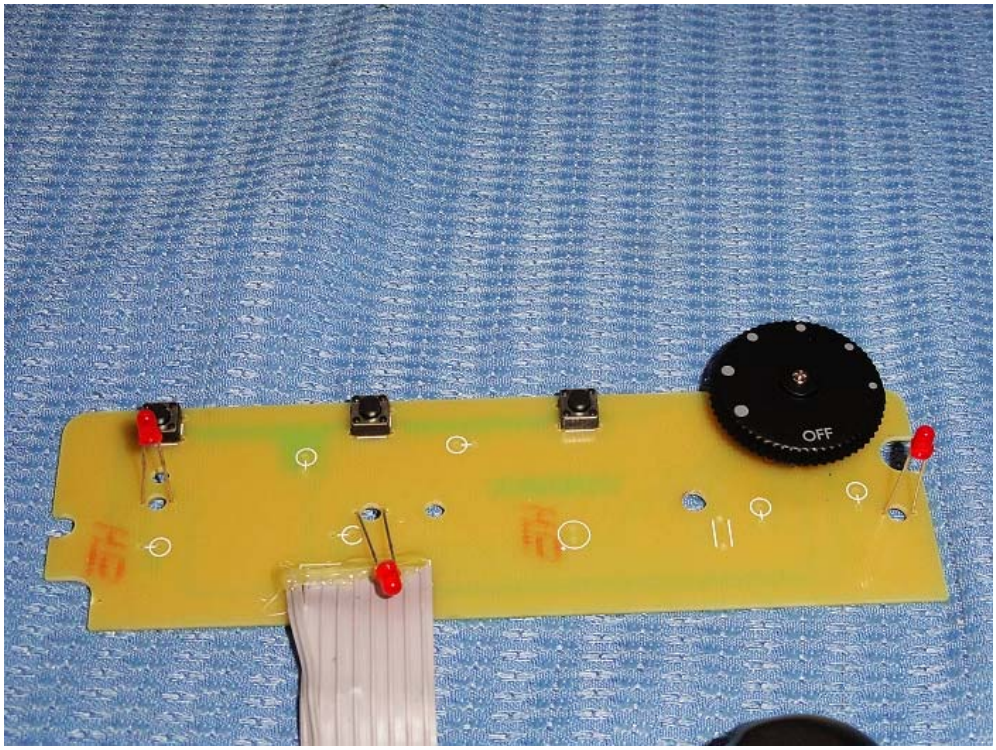
Power Supply

Inside View (for AF388B)

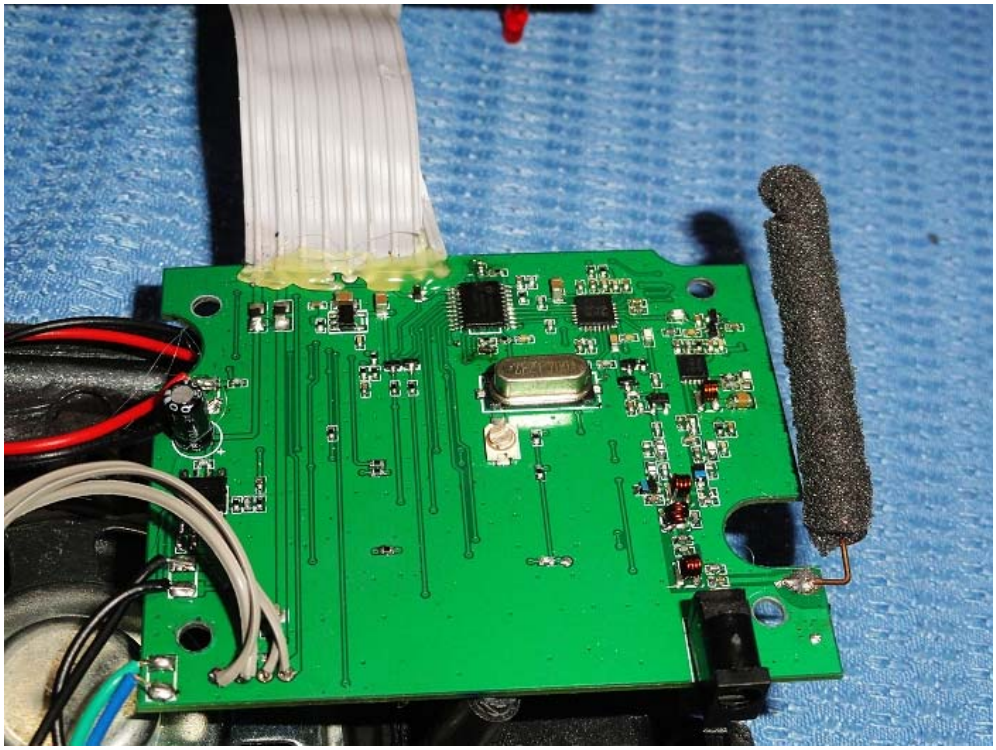


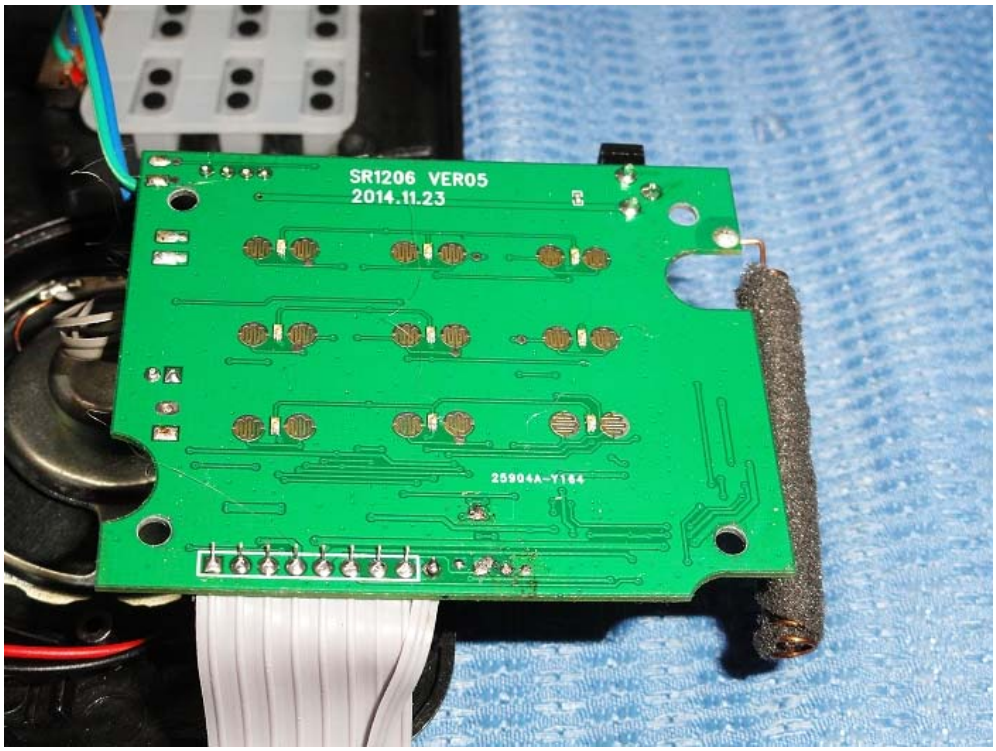
Interior View (for AF388B)



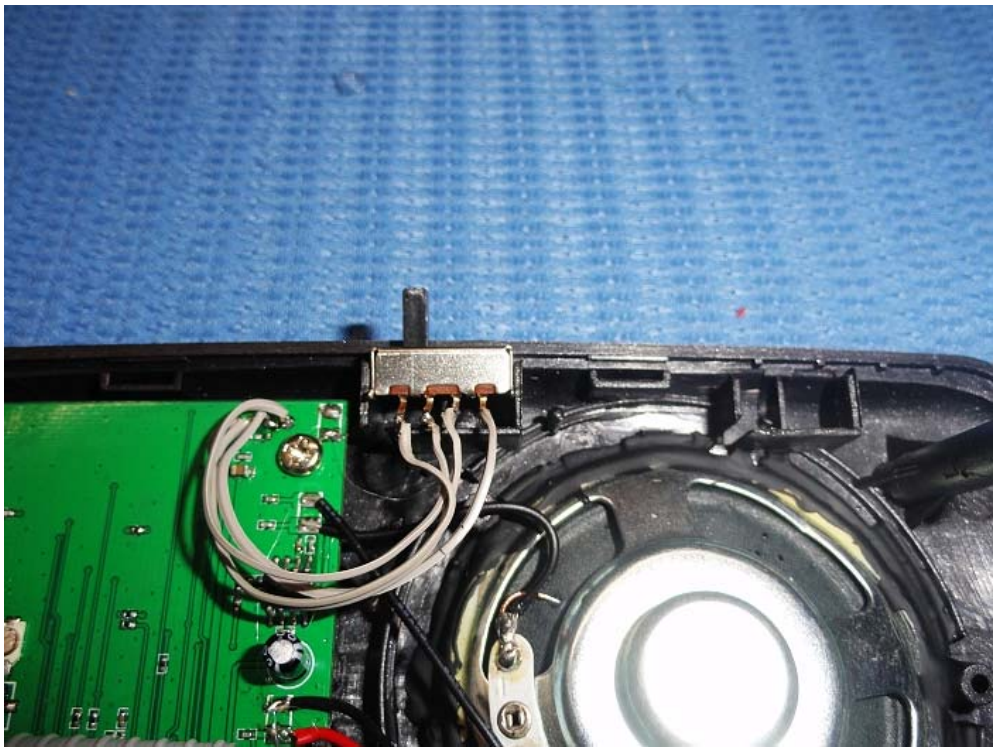


Interior View (for AF388B)





Interior View (Special for AF388A)



End of the report