FCC Part 74
Test Report

Report No.: AGC00737131101FE02

FCC ID	:	2ABFAMISC-D
PRODUCT DESIGNATION	:	Public Address Amplifier Set
BRAND NAME	:	N/A
MODEL NAME	:	MISC-D
CLIENT	:	WESTMINSTER INC.
DATE OF ISSUE	:	Nov.14, 2013
STANDARD(S)	:	FCC Part 74 Rules
REPORT VERSION	:	V 1.0

Attestation of ***G***lobal ***C***ompliance (Shenzhen) Co., Ltd.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov.14, 2013	Valid	Original Report

VERIFICATION OF COMPLIANCE

Applicant:	WESTMINSTER INC.
	159 Armour Drive Atlanta GA 30324
Manufacturer:	Guangzhou ITC Electronic Technology Limited
	Nr 165 Zhong Ping Cha Road Zhongcun Town Panyu District Guangzhou City China
Product Designation:	Public Address Amplifier Set
Brand Name:	N/A
Model Name:	MISC-D
Hardware Version:	N/A
Software Version:	N/A
Date of Test:	Nov.11, 2013 to Nov.13, 2013

WE HEREBY CERTIFY THAT:

The above equipment was tested by Shenzhen Attestation of Global Compliance (Shenzhen) Science & Technology Co., Ltd. The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C 63.4:2003 and TIA/EIA 603. The sample tested as described in this report is in compliance with the FCC Rules Part 97.

The test results of this report relate only to the tested sample identified in this report.

Prepared By	Wall Huang	Nov.14, 2013
Checked By	Kidd Yang	Nov.14, 2013
Authorized By	Solger Zhang	Nov.14, 2013

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Communication Type	Voice / Tone only
Modulation	FM
Emission Bandwidth	100KHz
Peak Frequency Deviation	48.74KHz
Audio Frequency Response	12KHz
Carrier Power	1.14mW(Max)
Power Supply	DC 9V by battery
Operation Frequency	215.2MHz
Frequency Tolerance	0.00075%

NOTE: *1. Please refer to Appendix Ⅰ for the photographs of the EUT.*
2. For more information, please refer to User's Manual.

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended **FCC ID: 2ABFAMISC-D** filing to comply with the FCC Part 74 requirements.

1.3 TEST METHODOLOGY

The radiated emission testing was performed according to the procedures of ANSI C 63.4: 2003; TIA/EIA 603 and FCC CFR 47 Rules of 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

1.4 TEST FACILITY

The test site used to collect the radiated data is located on the address of Attestation of Global Compliance (Shenzhen) Co., Ltd. 2/F., Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003 and IC requirements in documents RS212.
FCC register No.: 259865

1.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

1.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT EXERCISE

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.3 CONFIGURATION OF TESTED SYSTEM

Fig. 2-1 Configuration of Tested System

Table 2-1 Equipment Used in Tested System

Item	Equipment	Model No.	Note
1	Public Address Amplifier Set	MISC-D	EUT

3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§74.861 (e)-1	Carrier Power	Compliant
§74.861 (e)-3	Frequency Deviation	Compliant
§74.861 (e)-4	Frequency Tolerance	Compliant
§74.861 (e)-5	Operating Bandwidth	Compliant
§74.861 (e)-6	Unwanted Radiation	Compliant

4. DESCRIPTION OF TEST MODES

The EUT (Public Address Amplifier Set) has been tested under normal operating condition.

NO.	TEST MODE DESCRIPTION
1	215.2MHz TX

Note: Only the result of the worst case was recorded in the report.

5. MAXIMUMN TRANSMITTER POWER

5.1 PROVISIONS APPLICABLE

According to FCC Part 74 Section 74.861(e) – 1: The power of the measured unmodulated carrier power at the output of the transmitter power amplifier may not exceed 50mW

5.2 MEASUREMENT PROCEDURE

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

10).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.

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

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

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

14).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.

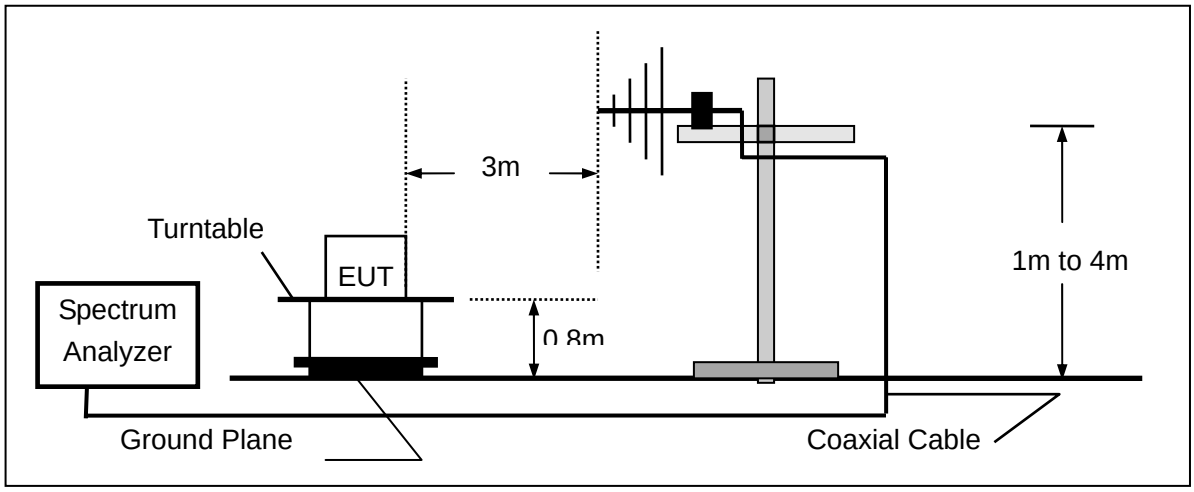
15).The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

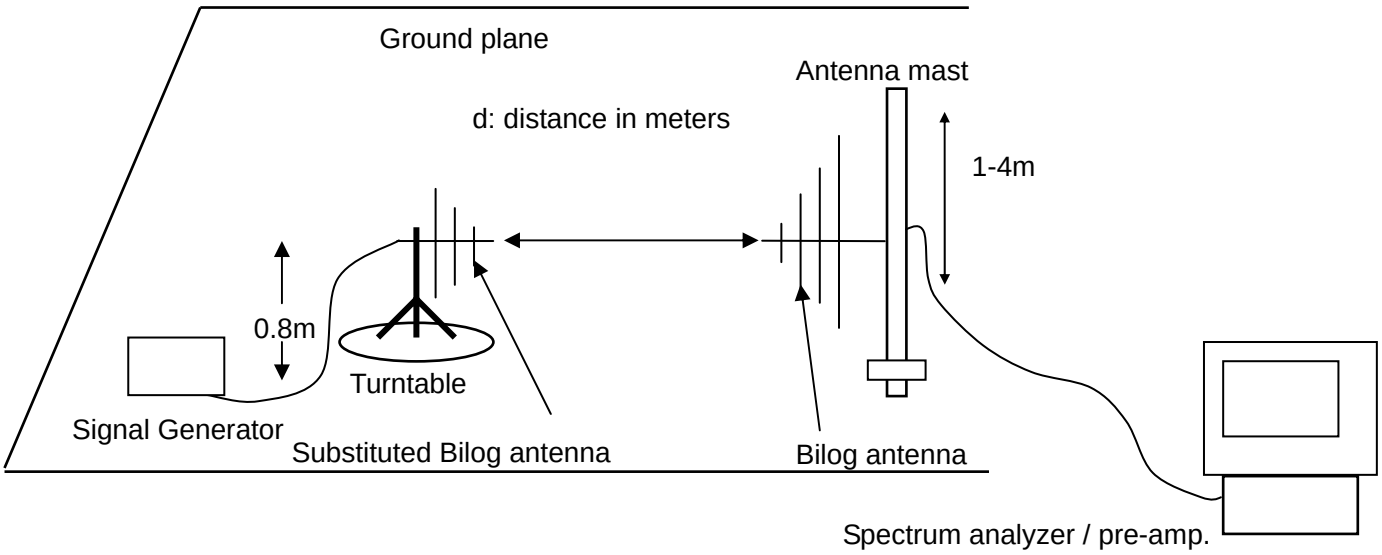
16).The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

17).The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

5.3 TEST SETUP BLOCK DAIGRAM

TEST SETUP OF SUBSTITUTION METHOD





5.4 MEASUREMENT EQUIPMENT USED

EQUIPMENT TYPE	MFR	MODEL NO.	SERIAL NO.	CAL DATE.	NEXT CAL DAT.
EMI Test Receiver	R&S	ESCS30	100307	07/17/2013	07/16/2014
Amplifier	HP	8447D	2944A07999	07/17/2013	07/16/2014
Horn Antenna	EM	EM-AH-10180	67	04/21/2013	04/20/2014
Horn Antenna	A.H. Systems Inc.	SAS-574	--	07/17/2013	07/16/2014
Biological Antenna	A.H. Systems Inc.	SAS-521-4	26	06/07/2013	06/06/2014

5.5 TEST RESULT

TEST RESULT @215.2MHz

Freq. (MHz)	Antenna Polarity	Reading (dBm)	SG O/P (dBm)	Ant. Gain (dB)	Dipole Gain (dBi)	Cable Loss (dB)	Corrected Power		Limit (mW)
							(dBm)	(mW)	
215.200	V	-8.37	-13.22	15.21	0	1.41	0.58	1.14	50
215.200	H	-7.34	-13.04	14.87	0	1.32	0.51	1.12	50

Note: The Cable Loss =SG + Ant.Gain+ Dipole Gain - Cable Loss.

6. MODULATION CHARACTERISTICS

6.1 PROVISIONS APPLICABLE

a).According to CFR 47 section 2.1047(a), for Voice Modulation Communication Equipment, the frequency response of the audio modulation circuit over a range of 100 to 5000Hz shall be measured.

b). According to CFR 47 section 74.861(e)-3, any form of modulation may be used. A maximum deviation of ±75 KHz is permitted when frequency modulation is employed.

6.2 MEASUREMENT METHOD

6.2.1 MODULATION LIMIT

1). Configure the EUT as shown in figure 6-1, adjust the audio input for 60% of rated system deviation at 1KHz using this level as a reference (0dB) and vary the input level from –20 to +20dB. Record the frequency deviation obtained as a function of the input level.

2). Repeat step 1 with input frequency changing to 300, 1000, 3000, and 12000 Hz in sequence.

6.2.2 AUDIO FREQUENCY RESPONSE

1). Configure the EUT as shown in figure 6-1.

2). Adjust the audio input for 20% of rated system deviation at 1 KHz using this level as a reference (0 dB).

3). Vary the Audio frequency from 100 Hz to 30 KHz and record the frequency deviation.

4). Audio Frequency Response = 20log10 (Deviation of test frequency/Deviation of 1 KHz reference).

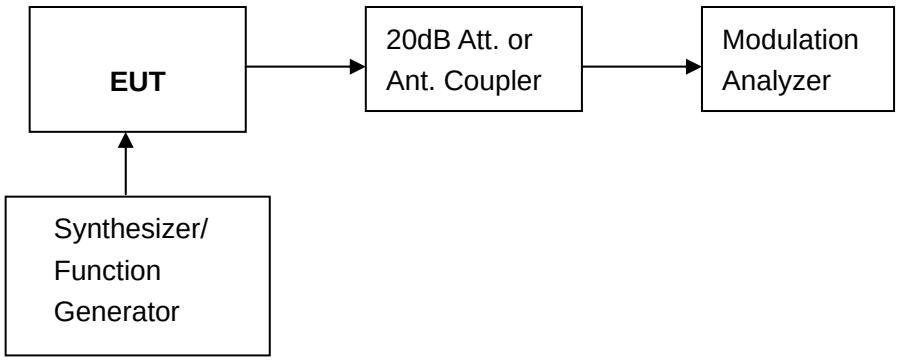


Figure 6-1: Modulation Characteristic Measurement Configuration

6.3 MEASUREMENT INSTRUMENTS

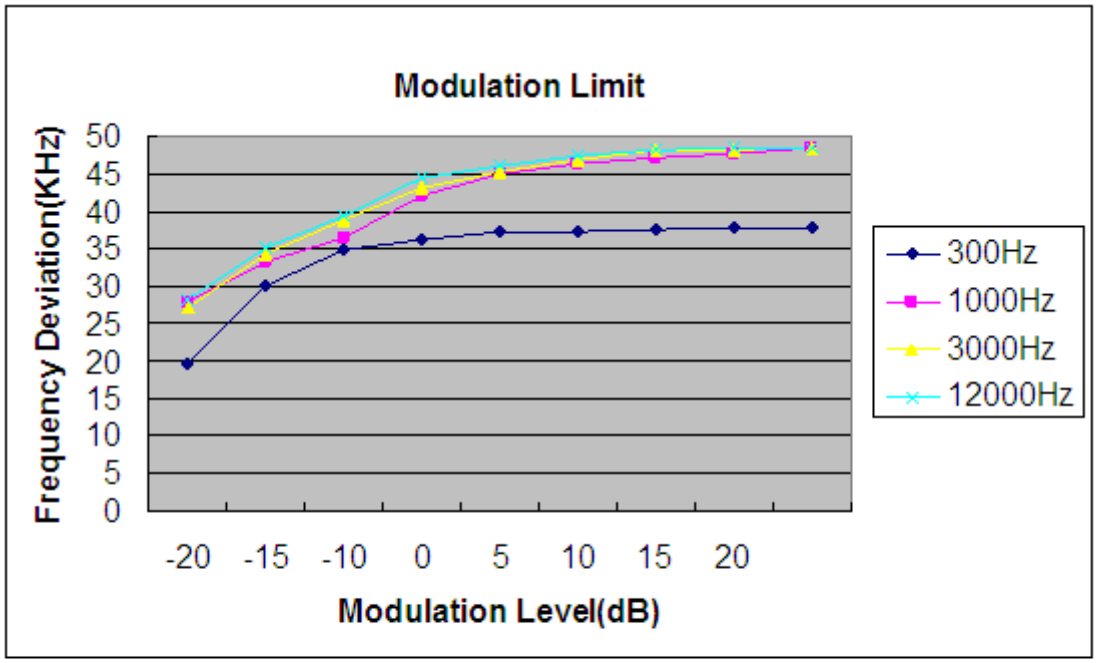
EQUIPMENT TYPE	MFR	MODEL NUMBER	CAL DATE.	NEXT CAL DAT.
Audio Signal Generator	HP	3325A	07/17/2013	07/16/2014
Modulation Analyzer	HP	8920B	07/17/2013	07/16/2014
Attenuator	MINI CIRCUITS	MCL BW-S20W2	N/A	N/A

6.4 TEST RESULT

a). Modulation Limit:

TEST RESULT @ 215.2MHz

Modulation Level (dB)	Peak Freq. Deviation At 300 Hz (KHz)	Peak Freq. Deviation At 1000 Hz (KHz)	Peak Freq. Deviation At 3000 Hz (KHz)	Peak Freq. Deviation At 12000 Hz (KHz)
-20	19.53	28.81	27.33	28.41
-15	30.27	33.02	34.51	33.67
-10	35.27	36.31	38.89	37.18
-5	36.15	41.41	43.27	45.31
0	36.25	45.16	45.56	46.44
+5	37.34	45.18	46.61	47.34
+10	37.48	47.42	48.27	48.46
+15	37.69	48.16	48.33	48.51
+20	37.91	48.54	48.59	48.74

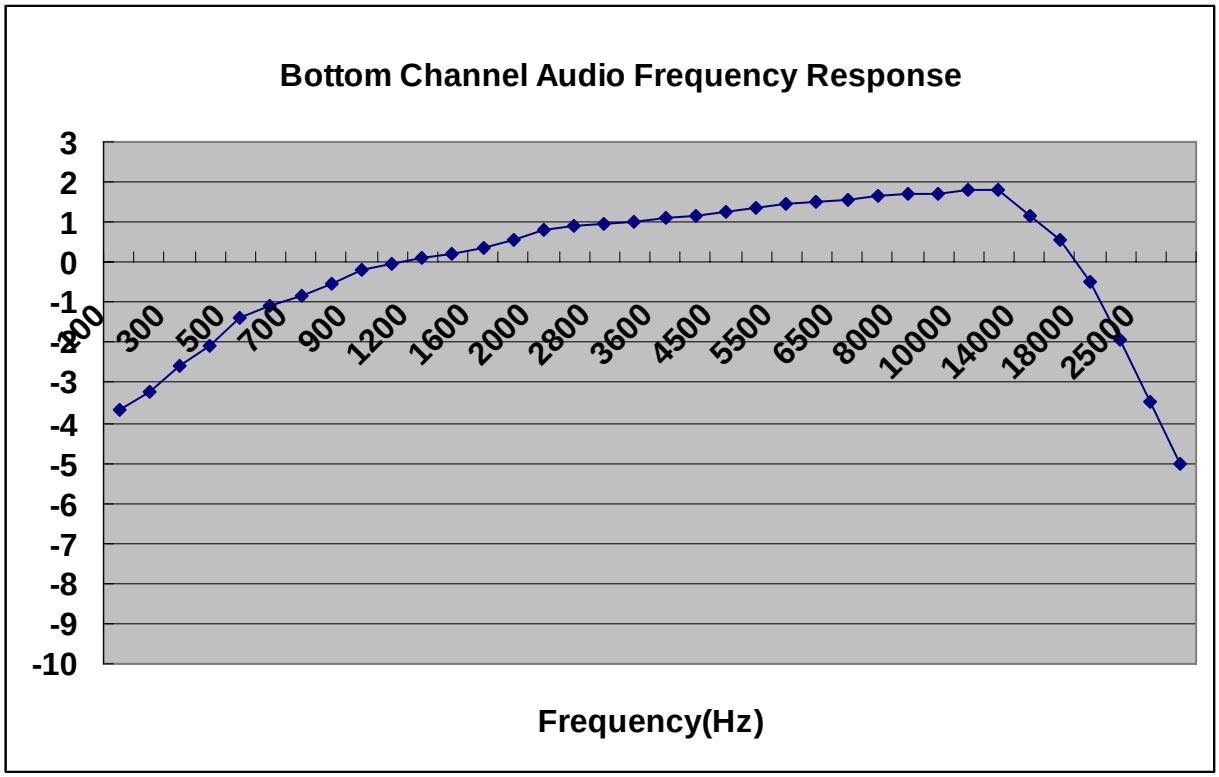

Modulation Limit
Frequency Deviation(KHz)
50
45
40
35
30
25
20
15
10
5
0
-20
-15
-10
0
5
10
15
20
Modulation Level(dB)
300Hz
1000Hz
3000Hz
12000Hz

b). Audio Frequency Response:

TEST RESULT @ 215.2MHz

Frequency (Hz)	Deviation (KHz)
100	10.33
200	10.51
300	11.24
400	11.81
500	12.83
600	12.29
700	13.44
800	14.20
900	14.74
1000	15.14
1200	15.48
1400	15.52
1600	15.74
1800	16.26
2000	16.59
2400	16.64
2800	16.81
3200	16.48
3600	17.22
4000	17.15
4500	17.37
5000	17.85
5500	17.89
6000	17.84
6500	18.11
7000	18.26
8000	18.33
9000	18.41
10000	18.49
12000	18.53
14000	17.21
16000	16.44
18000	14.23
20000	12.22
25000	10.05
30000	9.13

TEST RESULT @215.2MHz



7. FREQUENCY TOLERANCE

7.1 PROVISIONS APPLICABLE

a). According to FCC Part 2 Section 2.1055(a)(1), the frequency stability shall be measured with variation of ambient temperature from –30℃ to +50℃ centigrade.

b). According to FCC Part 2 Section 2.1055(d)(2), for hand carried battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.

c). According to FCC Part 74 Section 74.861(e)-4, the frequency tolerance must be maintained within 0.005%.

7.2 MEASUREMENT PROCEDURE

7.2.1 FREQUENCY STABILITY VERSUS ENVIRONMENTAL TEMPERATURE

1) Setup the configuration per figure 7-1 for frequencies measurement inside an environment chamber, install new battery in the EUT.
2) Turn on EUT and set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1KHz and Video Resolution Bandwidth to 1KHz and Frequency Span to 50KHz.Record this frequency as reference frequency.
3) Set the temperature of chamber to 50℃. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4) Repeat step 2 with a 10℃ decreased per stage until the lowest temperature -30℃ is measured, record all measured frequencies on each temperature step.

7.2.2 FREQUENCY STABILITY VERSUS INPUT VOLTAGE

1) Setup the configuration per figure 7-1 for frequencies measured at temperature if it is within 15℃ to 25℃. Otherwise, an environment chamber set for a temperature of 20℃ shall be used. Install new battery in the EUT.
2) Set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1 KHz and Video Resolution Bandwidth to 1KHz. Record this frequency as reference frequency.
3) For battery operated only device, supply the EUT primary voltage at the operating end point which is specified by manufacturer and record the frequency.

7.3 TEST SETUP BLOCK DIAGRAM

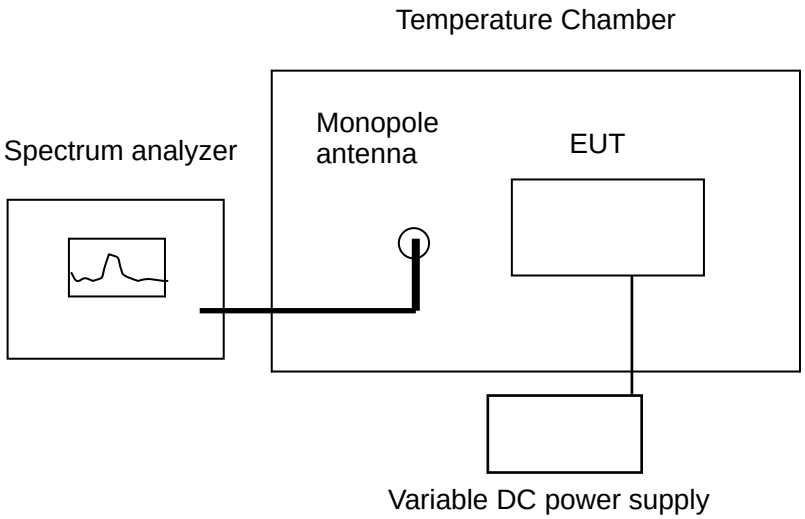


Figure 7-1

7.4 TEST EQUIPMENT USED

EQUIPMENT TYPE	MFR	MODEL NO.	SERIAL NO.	CAL DATE.	NEXT CAL DAT.
EMI Test Receiver	R&S	ESCS30	100307	07/17/2013	07/16/2014
Temperature Chamber	SHIHIN	BM50-CB	908	07/17/2013	07/16/2014
DC Power Supply	LONGWEI	WYK-605	N/A	07/17/2013	07/16/2014

7.5 TEST RESULT

a) Frequency stability versus input voltage (battery operation end point voltage is 5.00 V)

Wireless Microphone	Reference Frequency (MHz)	Frequency Measured at End Point Voltage	Frequency Error (%)	Limit (%)
Normal Frequency	215.2	215.201421	0.00066	0.005

b) Frequency stability versus ambient temperature

TEST RESULT @ 215.2MHz

Reference Frequency: 215.2MHz			Limit: ±0.005%
Environment Temperature (℃)	Power Supply	Frequency deviation measured with time Elapsed (30 minutes)	
		(MHz)	%
50	DC 9V	215.201568	0.00073
40	DC 9V	215.201467	0.00068
30	DC 9V	215.201422	0.00066
20	DC 9V	215.201418	-0.00066
10	DC 9V	215.201485	0.00069
0	DC 9V	215.201523	0.00071
-10	DC 9V	215.201558	0.00074
-20	DC 9V	215.201587	0.00074
-30	DC 9V	215.201612	0.00075

8. EMISSION BANDWIDTH

8.1 PROVISIONS APPLICABLE

According to FCC Part 74 Section 74.861(e)-5: The operation bandwidth shall not exceed 200 KHz

8.2 MEASUREMENT PROCEDURE

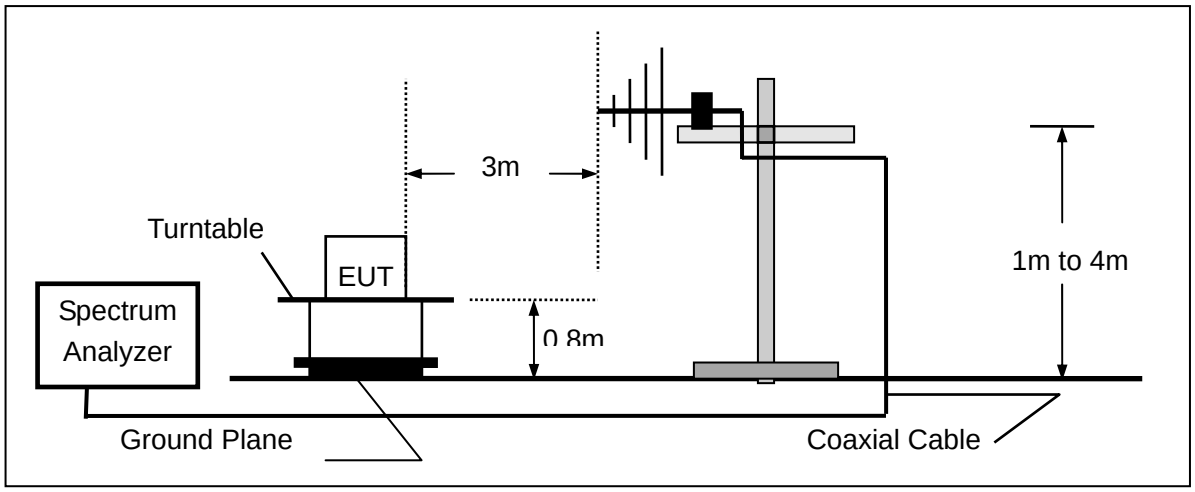
1). The EUT was placed on a turn table which is 0.8m above ground plane.

2). Set EUT as normal operation

3). Set SPA Center Frequency = fundamental frequency, RBW=10KHz, VBW=30KHz, Span =600 KHz.

4). Set SPA Max hold. Mark peak, -26dB.

8.3 TEST SETUP BLOCK DIAGRAM



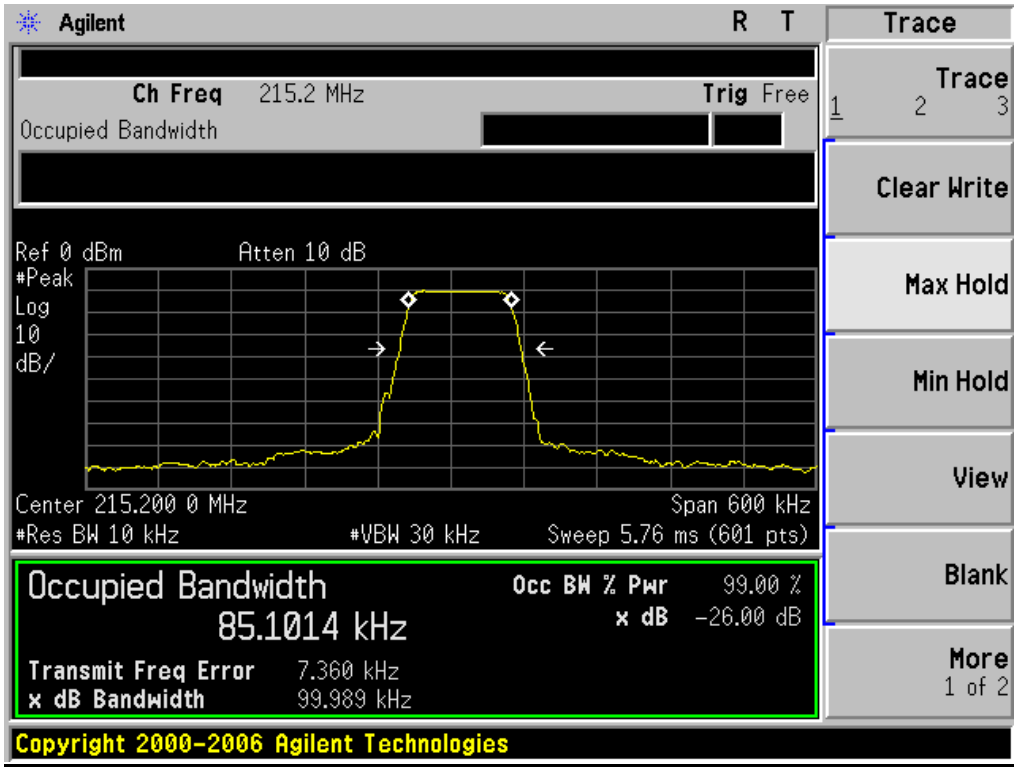
8.4 MEASUREMENT EQUIPMENT USED

EQUIPMENT TYPE	MFR	MODEL NO.	SERIAL NO.	CAL DATE.	NEXT CAL DAT.
EMI Test Receiver	R&S	ESCS30	100307	07/17/2013	07/16/2014
Amplifier	HP	8447D	2944A07999	07/17/2013	07/16/2014
Horn Antenna	EM	EM-AH-10180	67	04/21/2013	04/20/2014
Horn Antenna	A.H. Systems Inc.	SAS-574	--	07/17/2013	07/16/2014
Biological Antenna	A.H. Systems Inc.	SAS-521-4	26	06/07/2013	06/06/2014

8.5 TEST RESULT

26 dB Test Result			
Operation Channel	Test Data	Limit	Result
Normal Channel	100KHz	⩽200 KHz	Pass

TEST RESULT @ 215.2MHz



9. UNWANTED RADIATION

9.1 PROVISIONS APPLICABLE

According to Section 74.861(e)-6, the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

1).On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;

2).On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;

3).On any frequency removed form the operating frequency by more than 250 percent of the authorized bandwidth:
at least 43 + 10 log10 (TP) dB

9.2 MEASUREMENT PROCEDURE

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.

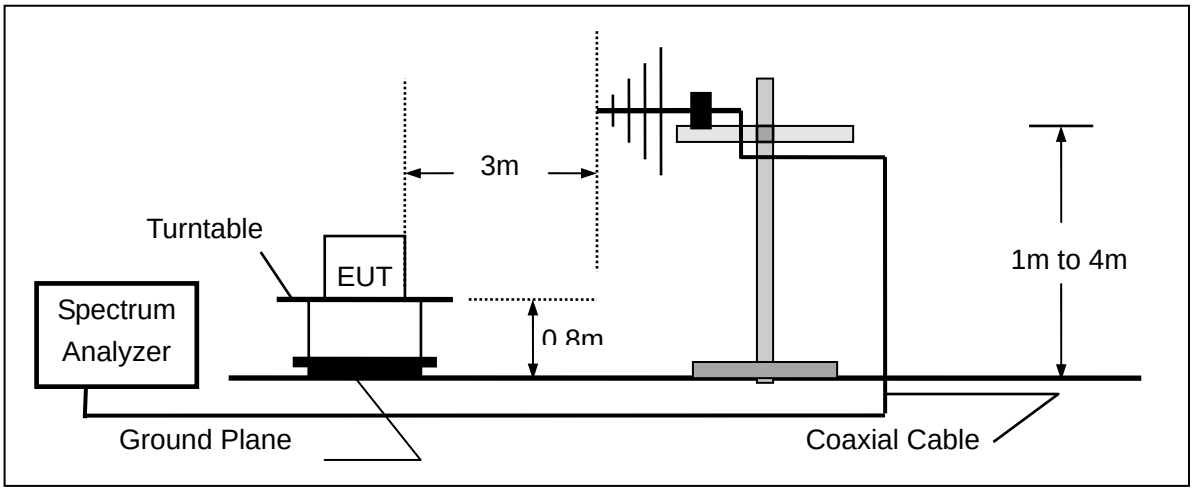
14).The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

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.

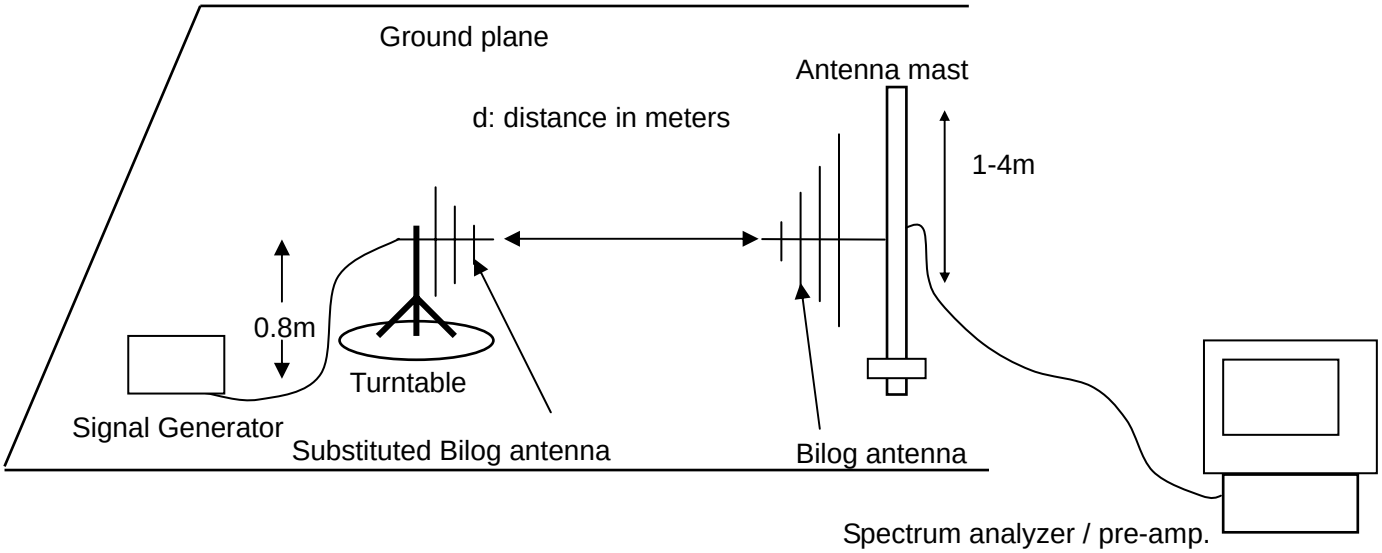
17). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

9.3 TEST SETUP BLOCK DIAGRAM

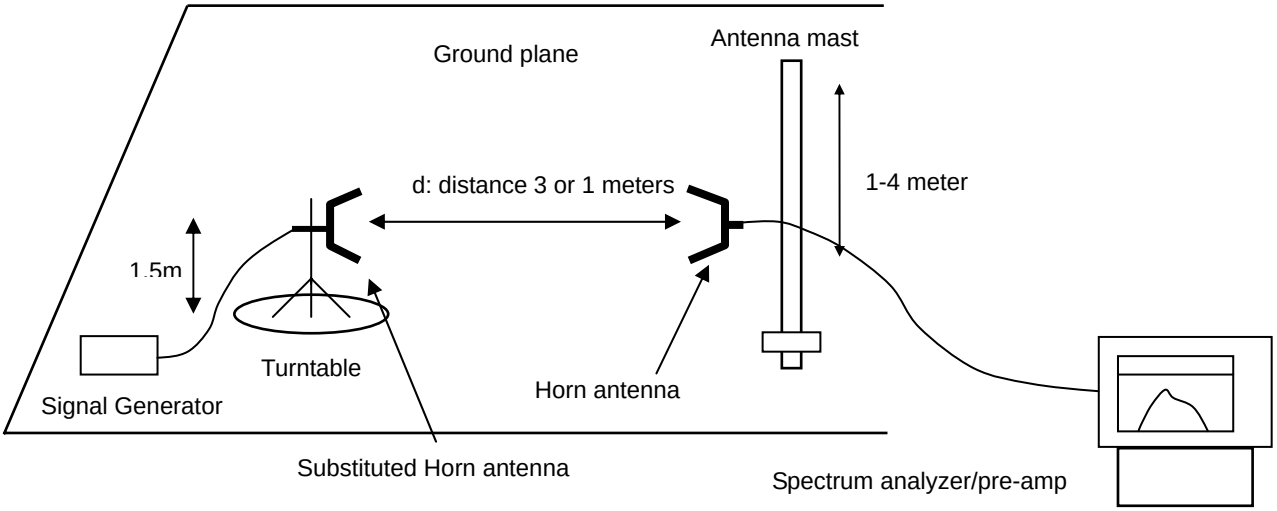


Substitution Method:

Radiation below 1GHz



Radiation above 1GHz



9.4 MEASUREMENT EQUIPMENT USED

EQUIPMENT TYPE	MFR	MODEL NO.	SERIAL NO.	CAL DATE.	NEXT CAL DAT.
EMI Test Receiver	R&S	ESCS30	100307	07/17/2013	07/16/2014
Amplifier	HP	8447D	2944A07999	07/17/2013	07/16/2014
Horn Antenna	EM	EM-AH-10180	67	04/21/2013	04/20/2014
Horn Antenna	A.H. Systems Inc.	SAS-574	--	07/17/2013	07/16/2014
Biological Antenna	A.H. Systems Inc.	SAS-521-4	26	06/07/2013	06/06/2014

9.5 TEST RESULTS

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

Notes: EL is the emission level of the Output Power expressed in dBm, in this application, the EL is 1.72 dBm.

Limit (dBm)=1.72-43-10log 10 (0.00149) = -13 (dBm)

TEST RESULT @ 215.2MHz

Frequency (MHz)	Reading Level (dBm)	Antenna Polarization	S.G. (dBm) (dBm)	Cabel Loss (dB)	Ant.Gain (dB)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
107.6	-65.93	H	-56.25	1.47	13.37	-44.35	-13	-31.35
107.6	-62.54	V	-57.74	1.47	13.37	-45.84	-13	-32.84
322.6	-64.46	H	-61.73	1.52	13.42	-49.83	-13	-36.83
322.6	-61.17	V	-62.34	1.52	13.42	-50.44	-13	-37.44
430.9	-65.55	H	-56.03	1.58	13.67	-43.94	-13	-30.94
430.9	-61.39	V	-57.12	1.58	13.67	-45.03	-13	-32.03
861.0	-80.34	H	-61.34	1.61	13.83	-49.12	-13	-36.12
861.0	-75.37	V	-61.57	1.61	13.83	-49.35	-13	-36.35
585.0	-81.26	H	-63.25	1.64	13.87	-51.02	-13	-38.02
585.0	-79.14	V	-61.24	1.64	13.87	-49.01	-13	-36.01
969.3	-82.43	H	-63.34	1.69	13.95	-51.08	-13	-38.08
969.3	-80.33	V	-61.43	1.69	13.95	-49.17	-13	-36.17
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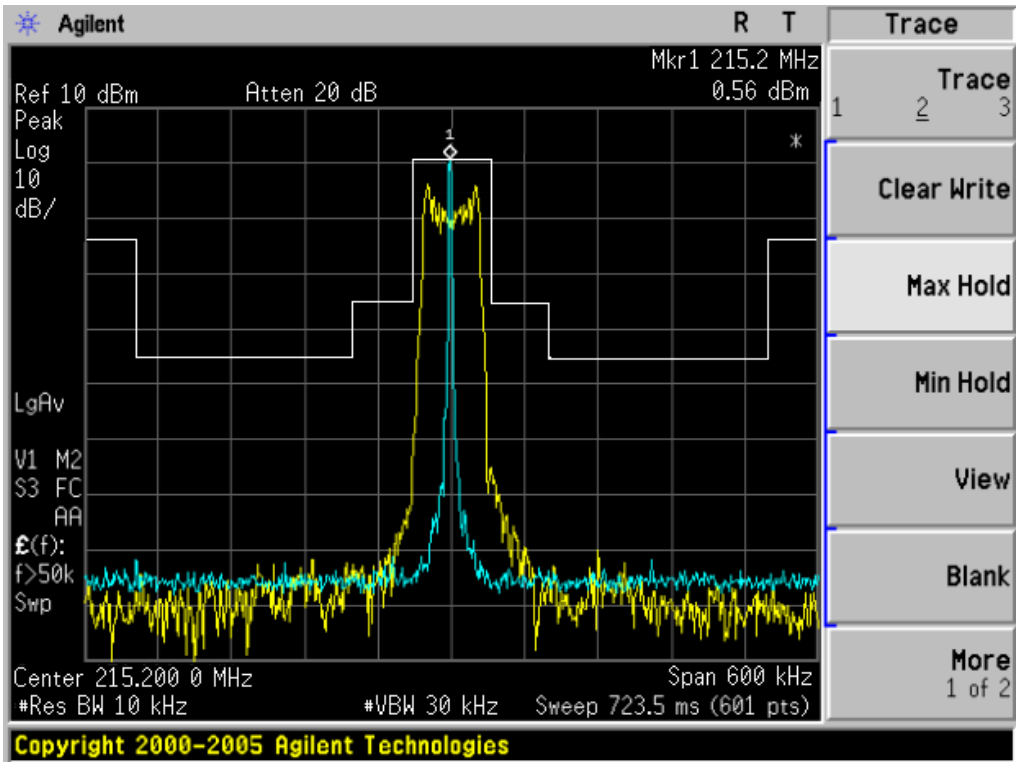
Note: 1. The Emission Level = S.G + Cable Loss+ Ant.Gain

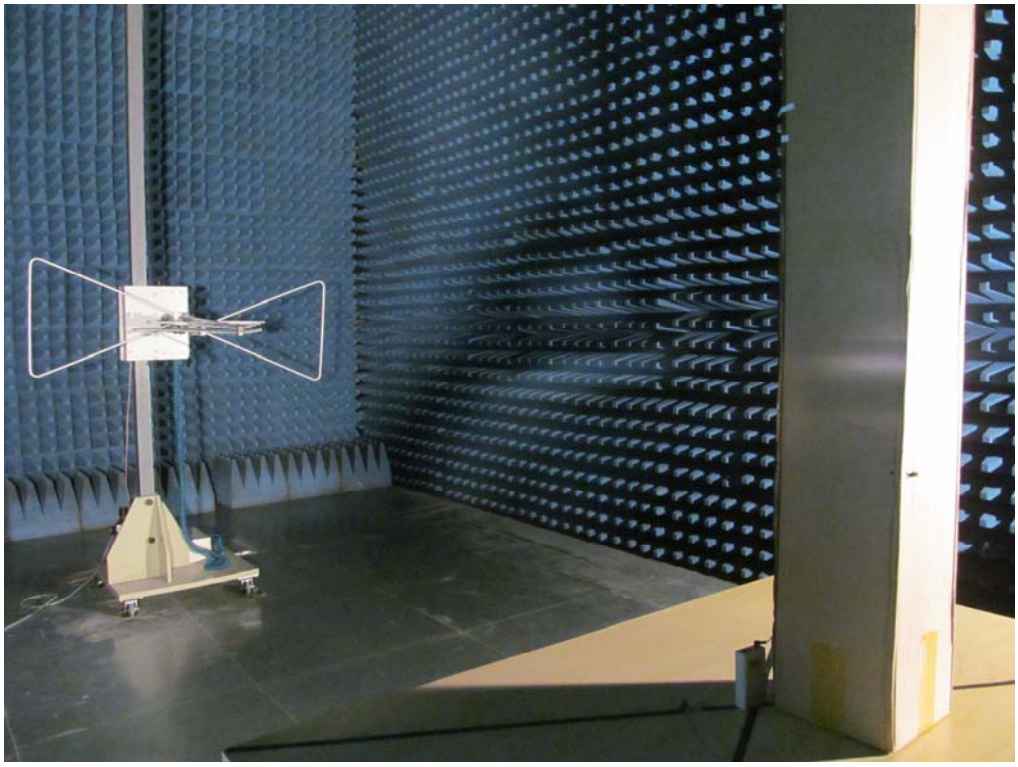
2. "--"means the output power of all the spurious frequency is at least 20dB down to the limit.

TEST RESULT @ 215.2 MHz



APPENDIX I
PHOTOGRAPHS OF SETUP

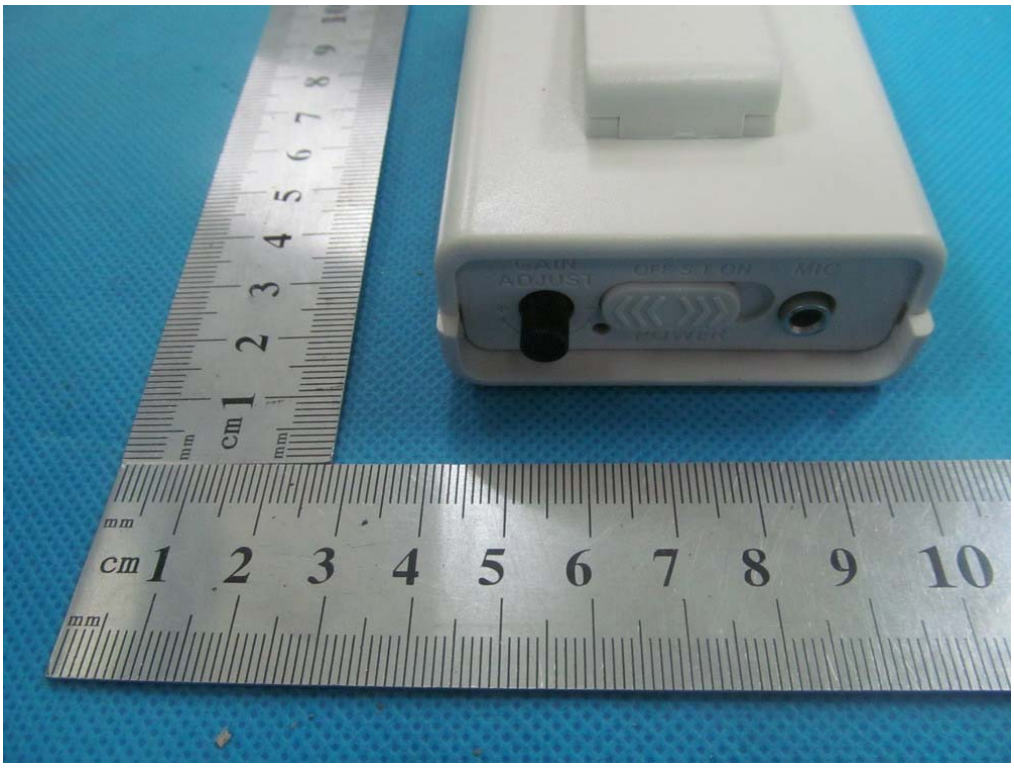
RADIATED TEST SETUP



APPENDIX II: EXTERNAL VIEW OF EUT

ALL VIEW OF EUT

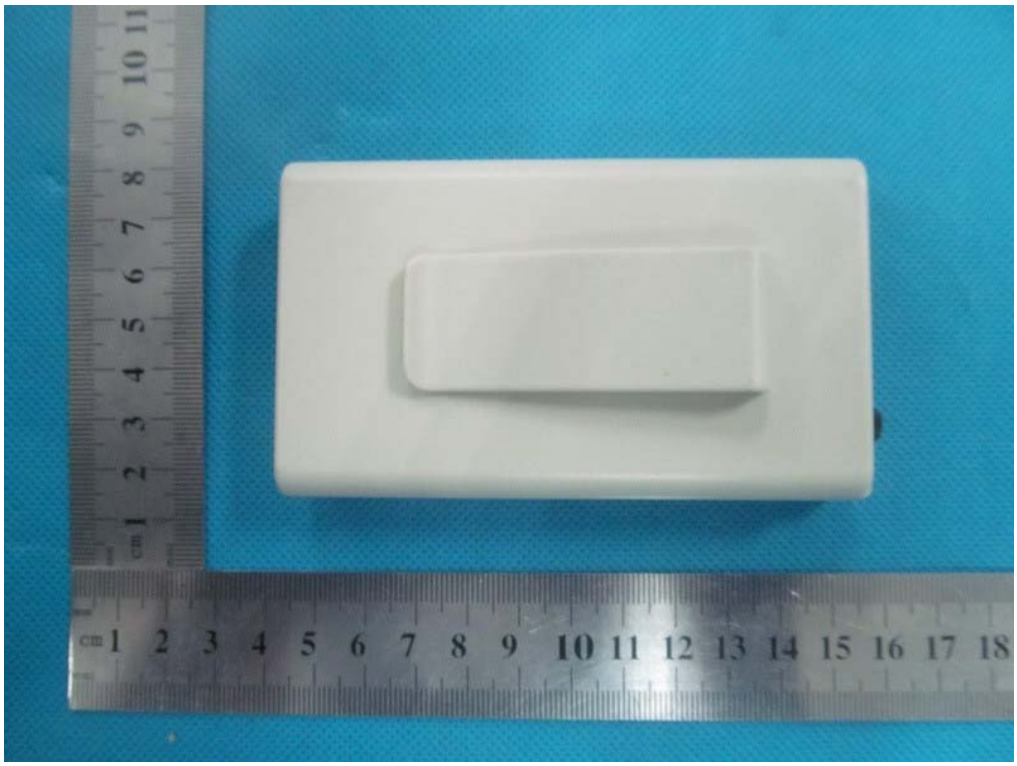
TOP VIEW OF EUT



BOTTOM VIEW OF EUT

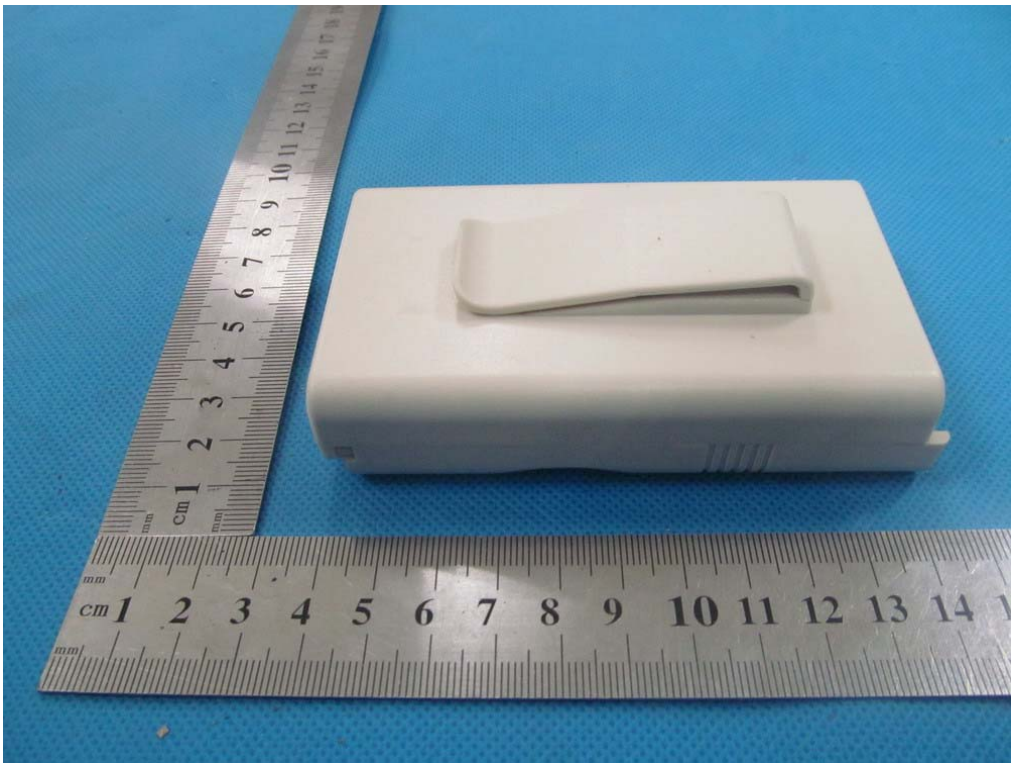
FRONT VIEW OF EUT

BACK VIEW OF EUT

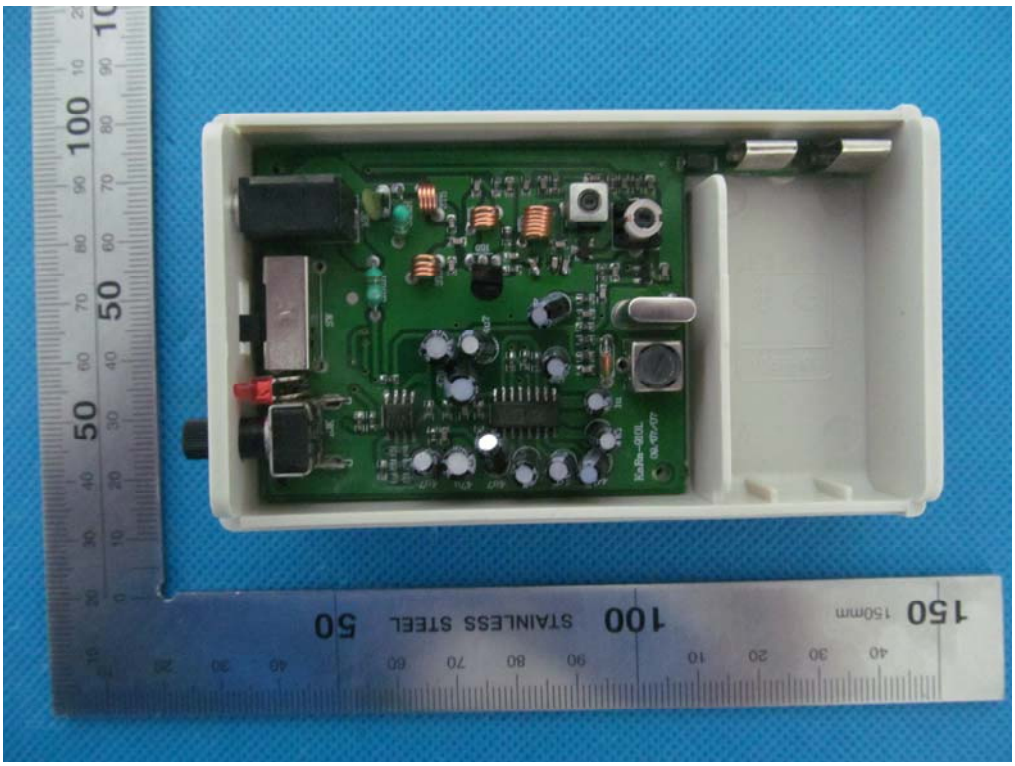


LEFT VIEW OF EUT

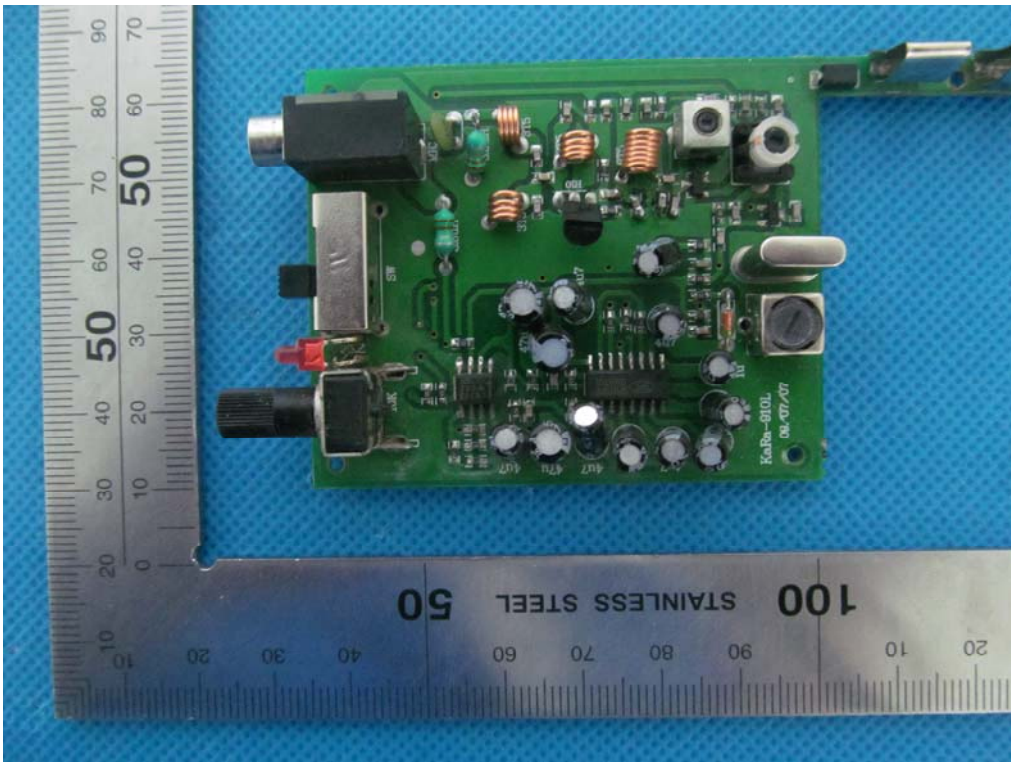
RIGHT VIEW OF EUT



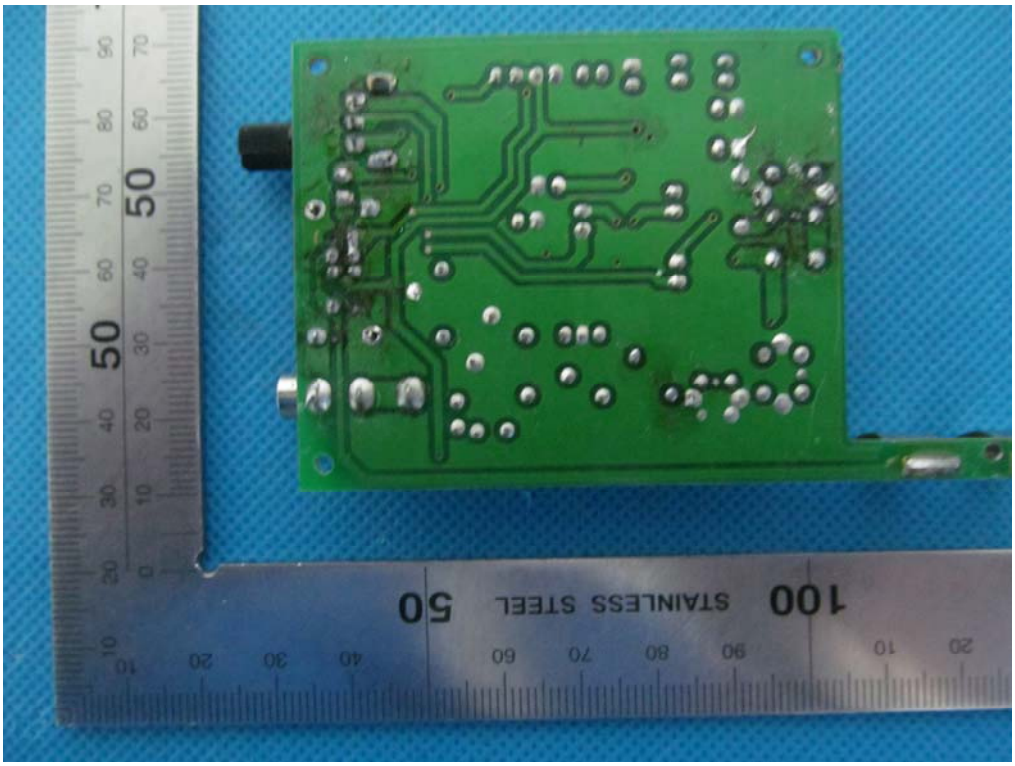
OPEN VIEW-1 OF EUT



INTERNAL VIEW-1 OF EUT



INTERNAL VIEW-2 OF EUT



----END OF REPORT----