Ke Mei Ou Lab Corp.

E506, 5th Floor, No.39 Keji Middle 2nd Rd, Science & Technology Park, Nanshan District, Shenzhen, P. R. China
Tel: + 86 755 83642690 Fax: + 86 755 83297077
www.kmolab.com

FCC TEST REPORT

Under

FCC Part 74 Subpart H

Prepared For:

Enping city heng sheng electronic hardware co., LTD

C5-1 industrial four-way, enping industrial transfer park, Jiangmen, China

FCC ID: 2ADBCMS-102V
EUT: VHF Wireless Microphone
Model: MS-102V

March 12, 2015 **Issue Date:**
Original Report **Report Type:**
Eric Guo **Test Engineer:** Eric Guo
Apollo Liu **Review By:** Apollo Liu / Manager

TABLE OF CONTENTS

1. General Information

1. 1 Notes

The test results of this report relate exclusively to the test item specified in 1.5. The KMO Lab does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the KMO Lab.

1. 2 Testing Laboratory

Ke Mei Ou Laboratory Co., Ltd.

ANSI-ASQ National Accreditation Board/ACLASS ISO/IEC 17025 Accredited Lab for telecommunication standards. The Registration Number is AT-1532. The testing quality system meets with ISO/IEC-17025 requirements, This approval results is accepted by MRA of ILAC.
FCC Test Site Registration Number: 962205
IC Test Site Registration Number: 4986A-2
Email: kmo@kmolab.com
Internet: www.kmolab.com

1. 3 Details of Applicant

Name : Enping city heng sheng electronic hardware co., LTD
Address : C5-1 industrial four-way, enping industrial transfer park, Jiangmen, China

1. 4 Application Details

Date of Receipt of Application	: December 29, 2014
Date of Receipt of Test Item	: December 29, 2014
Date of Test	: January 22~February 3, 2015

1. 5 Test Item

Manufacturer	: Same as applicant
Address	: Same as applicant
Trade Name	: N/A
Model No.(Base)	: MS-102V
Model No.(Extension)	: MS-101V, MS-103V,MS-105V,MS-106V,MS-201,MS-202,MS-203, MS-206
Description	: VHF Wireless microphone

Additional Information

Frequency	: VHF: 183.570MHz~209.150MHz
Modulation Mode	: FM
Nominal Deviation	: ±40KHz
Audio Frequency Response	: 40Hz to 20KHz
S/N Ratio	: =100dB
T.H.D	: ≤0.5%
Service Areas	: N/A
Power	: DC 3V(AA 1.5V*2)
Antenna	: Internal 0dBi

1. 6 Test Standards

FCC Part 74 Subpart H

Note: All radiated measurements were made in all three orthogonal planes. The values reported are the maximum values.

2. Technical Test

2. 1 Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Limit	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Test	FCC15.207(a)	N/A	Power by DC
FCC Part 74, Paragraph 74.861(e)(1)(i)	Output Power Measurement	74.861 e) 1) 54–72, 76–88 & 174–216 MHz bands, 50 mW 470–608 and 614–806 MHz bands, 250 mW	PASS	Complies.
FCC Part 2, Paragraph 2.1047(a)	Modulation Characteristics	74.861 e) 3) Within 75kHz	PASS	Complies.
FCC Part 2, Paragraph 2.1049 (c)(1)	Occupied Bandwidth of Emission	74.861 e) 5) Within 200kHz	PASS	Complies.
FCC Part 2, Paragraph 2.1053 & FCC Part 74, Paragraph 74.861(e)(6)	Field Strength of Emission	74.861 e) 6) within the mask & 74.861 d) 3) < 43+10lgP(W) dB	PASS	Complies.
FCC Part 2, Paragraph 2.1055 (a)(1)(d)(2) & FCC Part 74, Paragraph 74.861(e)(4).	Frequency Stability	74.861 e) 4) <0.005% 50 ppm	PASS	Complies.

3. EUT Modifications

No modification by test lab.

4. Conducted Power Line Test

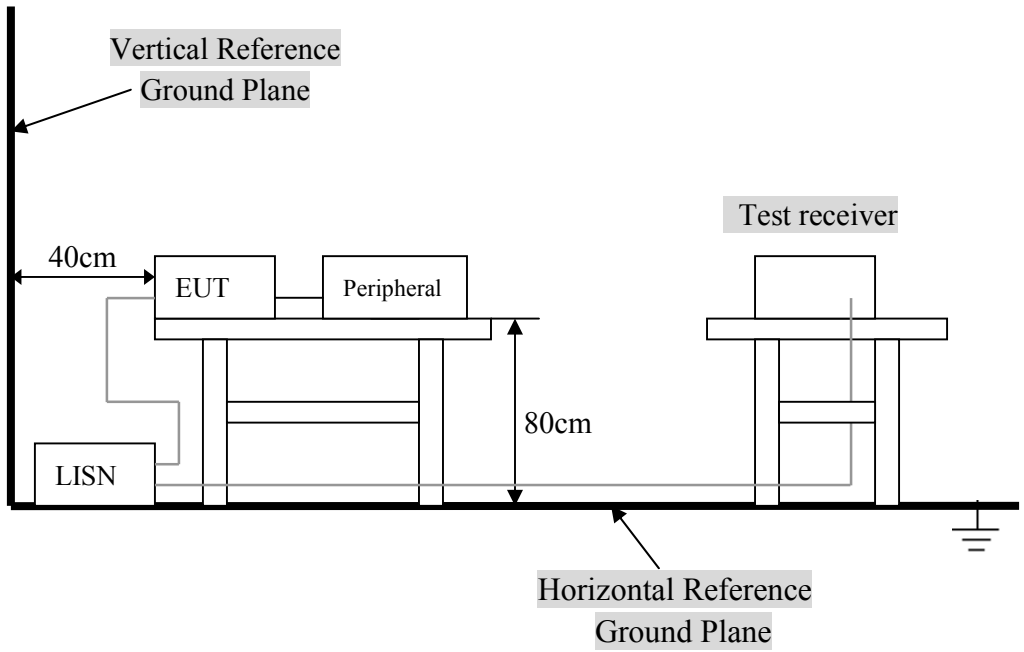
4. 1 Test Equipment

Please refer to Section 12 this report.

4. 2 Test Procedure

The EUT was tested according to ANSI C63.4 - 2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 u-Henry as specified by section 5.1 of ANSI C63.4 - 2003.cables and peripherals were moved to find the maximum emission levels for each frequency.

4. 3 Test Setup



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

4. 4 Configuration of The EUT

Two frequencies are provided by EUT. The 2 frequencies of 183.570MHz, 209.150MHz were for test.
Note:
1) Below 1GHz, the frequency 183.570MHz, 209.150MHz were pre-tested in chamber.
2) Above 1GHz, the frequency 183.570MHz, 209.150MHz were tested individually.

A. EUT

Device	Manufacturer	Model #	FCC ID
VHF Wireless microphone	Same as applicant	MS-102V	2ADBCMS-102V

B. Internal Devices

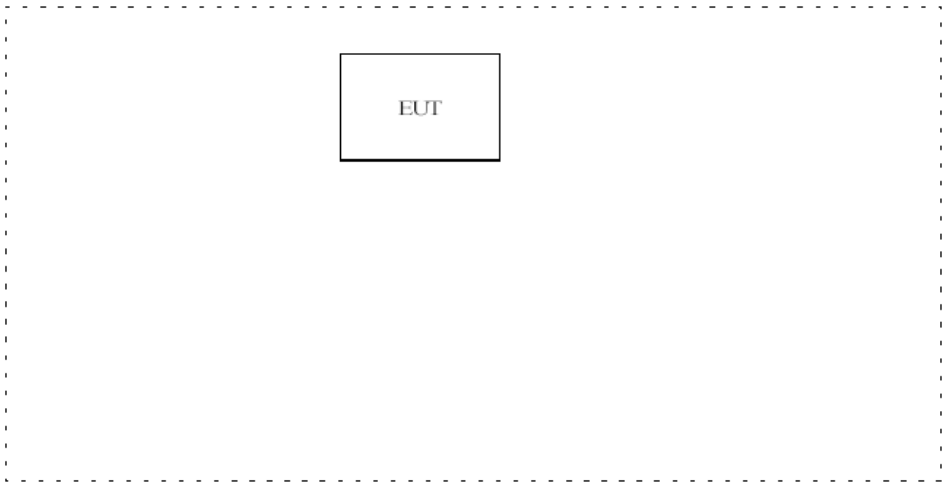
Device	Manufacturer	Model #	FCCID / DoC
N/A			

C. Peripherals

Device	Manufacturer	Model # Serial #	FCC ID/ DoC	Cable
N/A				

4. 5 EUT Operating Condition

Operating condition is according to ANSI C63.4 - 2003.
A. Setup the EUT and simulators as shown on follow.
B. Enable RF signal and confirm EUT active.
C. Modulate output capacity of EUT up to specification.



4. 6 Conducted Power Line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuV)		
Frequency Range (MHz)	**Class A QP/AV**	**Class B QP/AV**
0.15 – 0.5	79/66	66-56/56-46
0.5 – 5.0	73/60	56/46
5.0 - 30	73/60	60/50

NOTE ：In the above table, the tighter limit applies at the band edges.

4. 7 Conducted Power Line Test Result

Results

Power Line (L,N)	**Eut Operating mode or operating mode no.**	**Detector** (Peak, AV,QP)	**Additional** (scan-) information (e.g. Pre-test Fastscan, Maxhold, Final measurement.)	**Result (Passed / Failed)**
L+N	--	QP&AV	Normal	**N/A**

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

· Temperature ： 26 ℃

· Humidity ： 53 % RH

FCC 15.207							
Frequency (MHz)	**Emission (dBuV) QP**	**AV**	**LINE/ NEUTRAL**	**Limit (dBuV) QP**	**AV**	**Margin (dB) QP**	**AV**
N/A			Line				
			Neutral				
			Line				
			Neutral				
			Line				
			Neutral				

Note: NF = No Significant Peak was Found.

Remarks：

1.Uncertainty in conducted emission measured is <+/ -2dB.
2.QP and AV are abbreviations of quasi-peak and average individually.
3.The emission levels of other frequencies were very low against the limit.
4.The Quasi-peak emission level also meets average limit and measurement with the average detector is unnecessary.
5.Margin Value= Emission Level – Limit Value.

5. Output Power Measurement

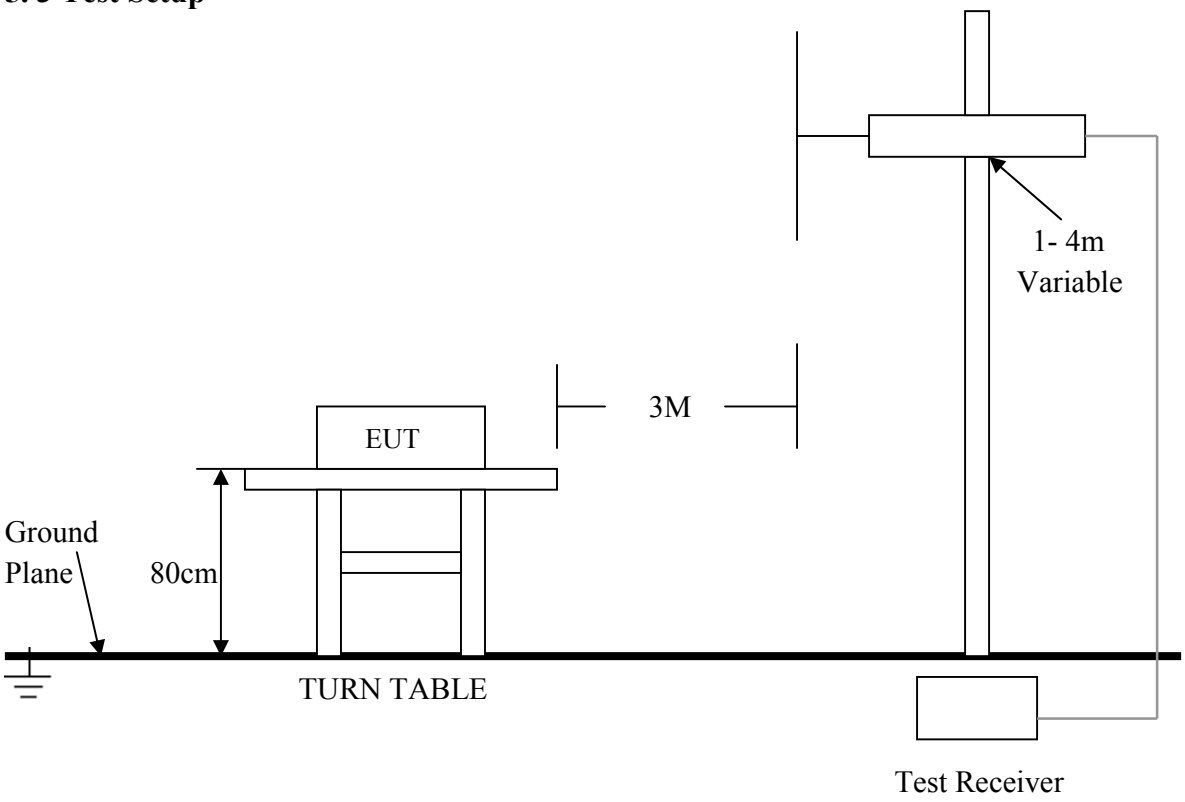
5. 1 Test Equipment

Please refer to Section 12 this report.

5. 2 Test Procedure

1. Setup the configuration as section 5.3 this report test setup for frequencies measured below and above 1GHz respectively. adjusting the input voltage to produce the maximum power as measured.
2. Adjust the analyzer for each frequency measured in chapter 6 on a 1MHz frequency span and 1MHz resolution bandwidth.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on test receiver, then change the orientation of EUT on test table over a range from 0 degree to 360 degree, and record the highest value indicated on test receiver as reference value.
4. Repeat step 3 until all frequencies need to be measured were complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Replace the EUT with a tuned dipole antenna (horn antenna for above 1GHz) relative to each frequency in horizontally polarized orientation and as the same polarized orientation with search antenna. Connect the tuned dipole antenna to a standard signal generator(SG) via a low loss cable. Power on the SG and tune the right frequency in measuring as well as set SG at a appreciated output level. Rise and lower the search antenna to get the highest value on test receiver, and then hold this position. Adjust the SG output to get a identical value derived from step 3 on test receiver. Record this value for result calculated.
7. Repeat step 6 until all frequencies need to be measured were complete.
8. Repeat step 7 with both dipole antenna (horn antenna for above 1 GHz) and search antenna in vertical polarized orientations.

5. 3 Test Setup



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

5. 4 Configuration of The EUT
Same as section 4 . 4 of this report

5. 5 EUT Operating Condition
Same as section 4 . 5 of this report.

5. 6 Rules and Specification Limits
According to § 74.861(e)(1)(i), the output power shall not exceed 50 milliwatts.

5. 7 Output Power Test Result

Product	: VHF Wireless microphone	Test Mode	: CH Low ~ CH High
Test Item	: Output Power Measurement	Temperature	: 25 ℃
Test Voltage	: DC 3V(AA 1.5V*2)	Humidity	: 56%RH
Test Result	: **PASS**		

ERP

Frequency. (MHz)	Result (dBm)	Output Power (mW)	Limit (mW)
183.570	-0.54	0.88	50.0
209.150	-0.06	0.99	50.0
-			
-			

Note: For measured frequency below 1GHz, a tuned dipole antenna is used.

5. 8 Result Calculation

Result calculation is as following:
Result = SG Reading + Cable Loss + Antenna Gain Corrected
Antenna Gain Corrected: is used for antenna other than dipole to convert radiated power to ERP.

$$mW = \log^{-1}[\frac{Result(dBm)}{10}]$$

5. 9 RF Exposure Requirements

5.9.1 Test Equipment

Please refer to Section 12 this report.

5.9.2 Limit

According to FCC Part 1.1307, 2.1091, and 2.1093, Systems operating under provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commissions guidelines. According to KDB 447498 D01 General RF Exposure v05r02, section 4.3.1, the 1-g SAR test exclusion thresholds at test separation distance ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] • [√ f(GHz)] ≤ 3.0

Frequency Range		Maximum measured transmitter power frequency(MHz)	Threshold value
Low Frequency(MHz)	High Frequency(MHz)		
183.570	209.150	209.150	3.0

5.9.3 Test Result

Product	: VHF Wireless microphone	Test Mode	: CH Low ~ CH High
Test Item	: RF Exposure	Temperature	: 25 ℃
Test Voltage	: DC 3V(AA 1.5V*2)	Humidity	: 56%RH
Test Result	: **PASS**		

RF Exposure Requirements	Compliance with FCC Rules
[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] • [√ f(GHz)] The min. test separation distance (mm) is 5 mm,	The max. average power of channel, including tune-up tolerance(mW) is -0.06 dBm = 0.99 mW@209.150MHz With Tune-up tolerance), Prediction distance: 5 mm The threshold value is 0.09 <3.0 (with Tune-up tolerance) Therefore, standalone SAR measurements are not required for both head and body.

6. Modulation Characteristics

6. 1 Test Equipment

Please refer to Section 12 this report.

6. 2 Test Procedure

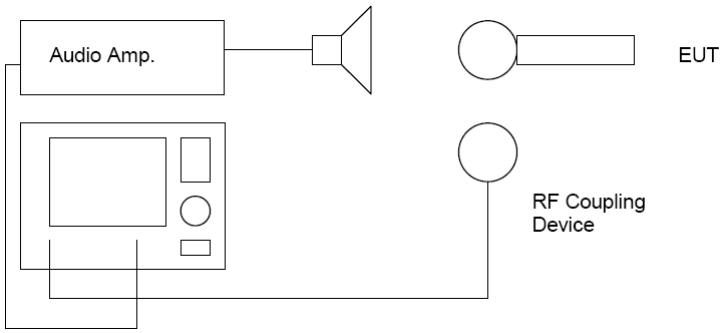
A. Audio Frequency Response

1) The audio signal was coupled to the microphone via a calibrated loudspeaker.
2) The audio signal was adjusted for 20% nominal modulation at 1 kHz. This was taken as 0 dB reference.
3) With input level held constant, the audio signal was varied from 100Hz to 30kHz.
4) The response was measured and recorded with a CMS54 Radio communication Tester.

B. Modulation Limit

1) The audio signal was coupled to the microphone via a calibrated loudspeaker.
2) The modulation response was measured for 100Hz to 15kHz including the frequency with maximum response found during "Audio Frequency Response Test".
3) The input level was varied from 30% modulation to 20 dB higher than the saturation point. The resulting deviation was measured with a CMS54 Radio communication Tester.
4) Measurements were performed for positive and negative deviation.

6. 3 Test Setup

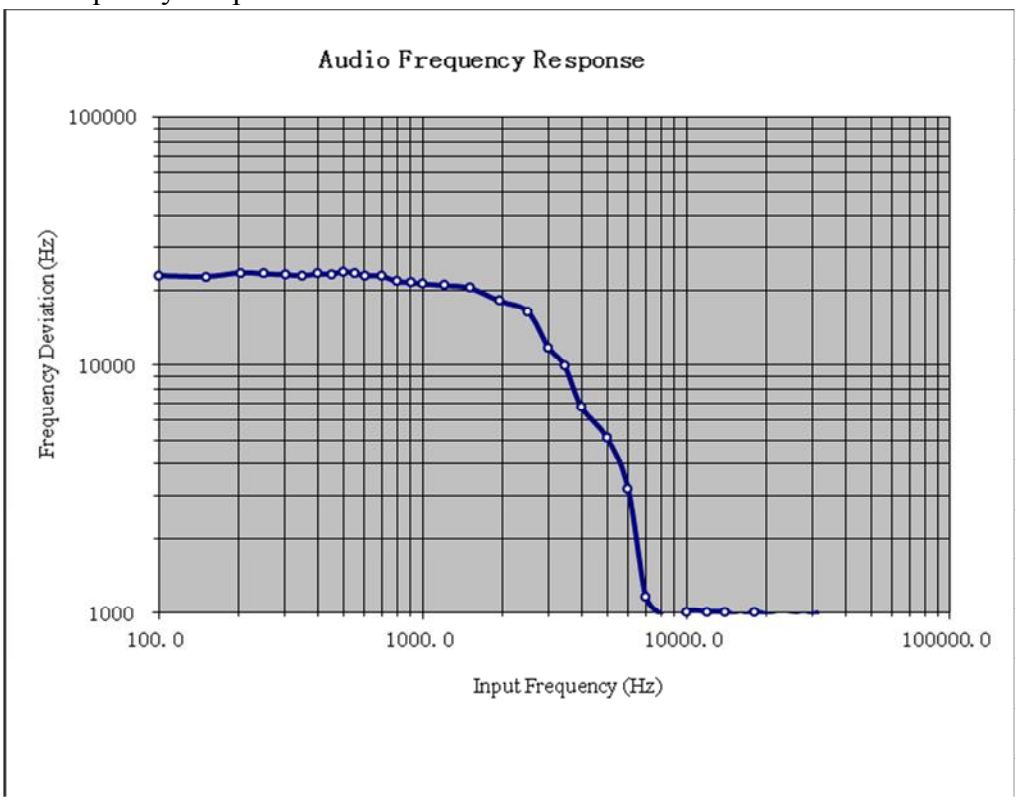


6.4 Rules and Specification Limits

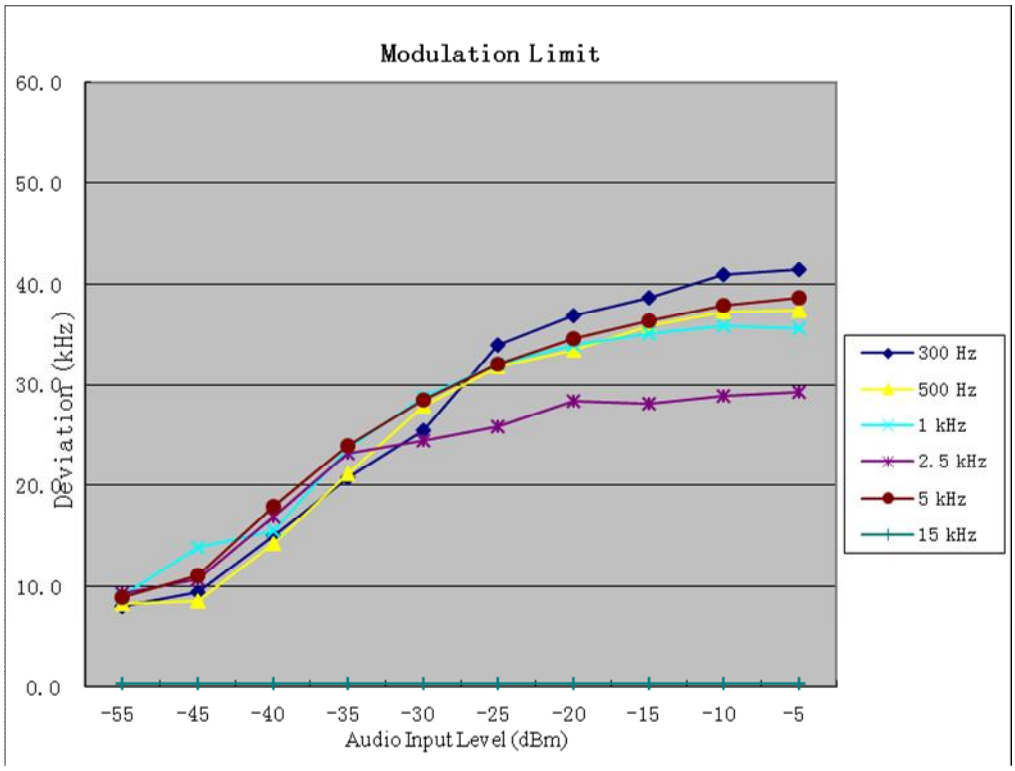
According to § 2.1047 (a), for Voice Modulated Communication Equipment, the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be measured.

6. 5 Test Result

A. Audio Frequency Response



B. Modulation Limit



7. Occupied Bandwidth of Emission

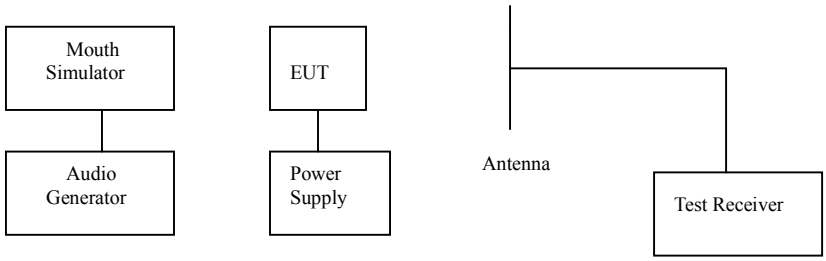
7. 1 Test Equipment

Please refer to Section 12 this report.

7. 2 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Set the output of the signal generator to 15KHz. Increase the amplitude of the signal, while monitoring the modulation meter. Until modulation is maximum measure the bandwidth under 26dB compared to the unmodulated fundamental carrier peak level of the modulated signal displayed on the test receiver

7. 3 Test Setup



7. 4 Rules and Specification Limits

According to § 2.1049 (c)(1): ANSI / TIA / EIA-603-1992, Paragraph 2.2.11

According to § 74.861 (e)(3), Any form of modulation may be used. A maximum deviation of ±75 KHz is permitted when frequency modulation is employed.

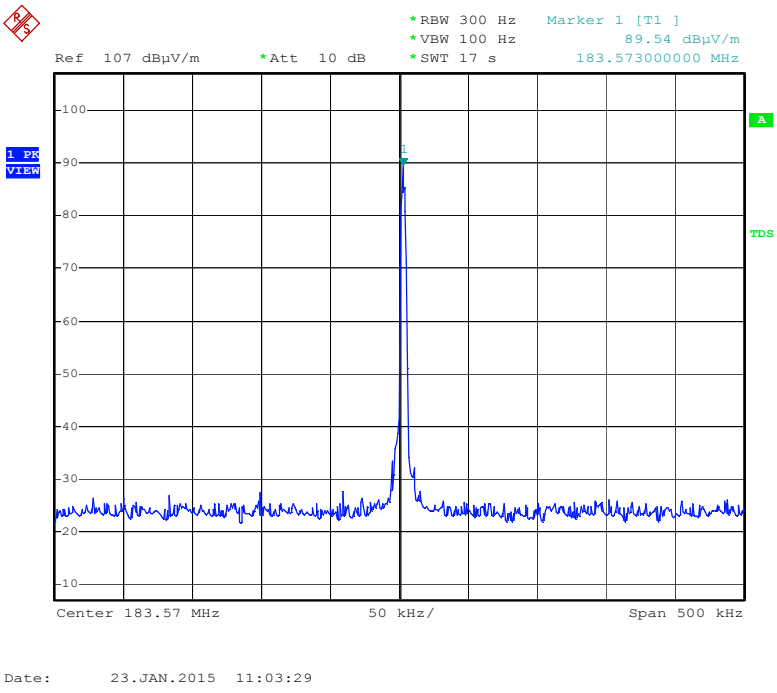
According to § 74.861 (e)(5), The operation bandwidth shall not exceed 200KHz.

7. 5 Occupied Bandwidth Test Result

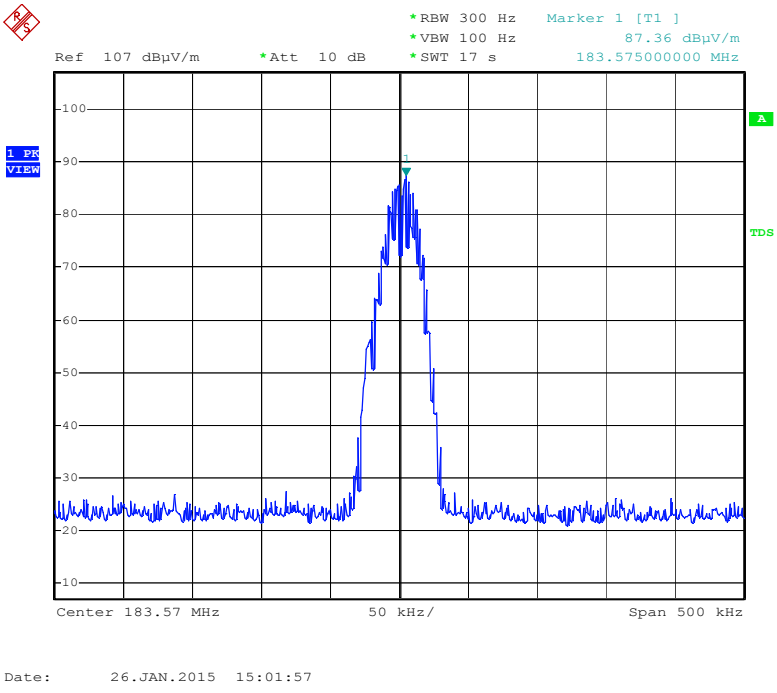
The occupied bandwidth's plot is presented on following pager, which illustrates compliance with the rules.
Calculation of Necessary Bandwidth (Bn)
Bn = 2M +2DK
M = Max. Modulation Frequency = 15 KHz
D = Peak Frequency Deviation = 41.5 KHz
K = 1
Bn = 113 KHz

Product	: VHF Wireless microphone	Test Mode	: CH Low ~ CH High
Test Item	: Occupied Bandwidth Measurement	Temperature	: 25 ℃
Test Voltage	: DC 3V(AA 1.5V*2)	Humidity	: 56%RH
Test Result	: **PASS**		

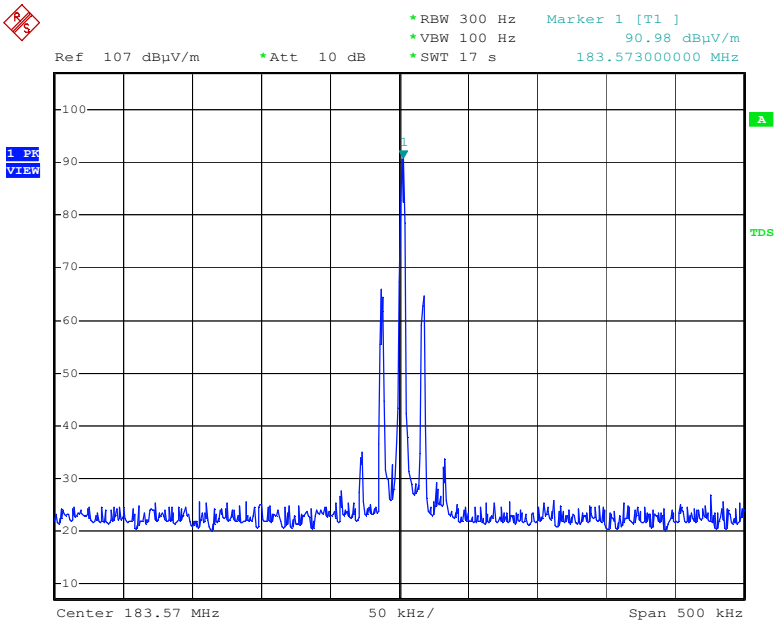
Unmodulated



2.5 kHz Modulation



15 KHz modulation



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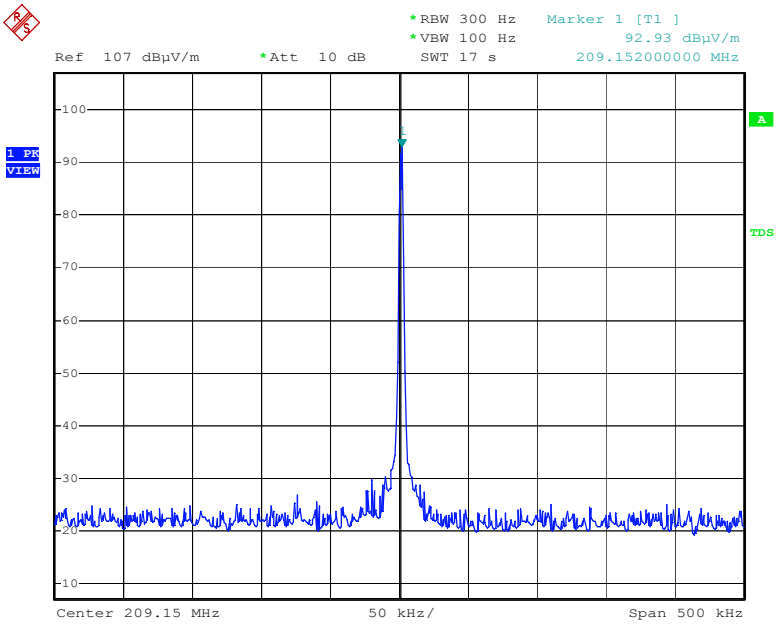
Unmodulated



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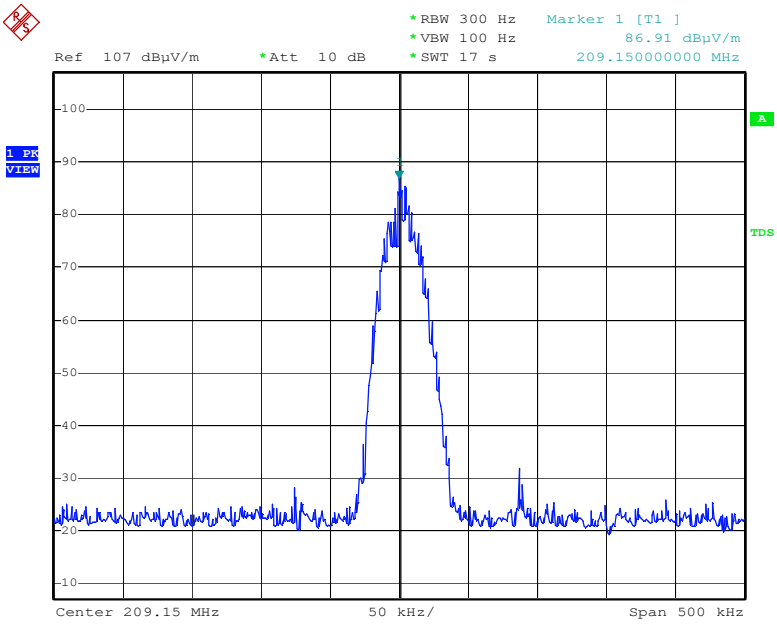
2.5 kHz Modulation



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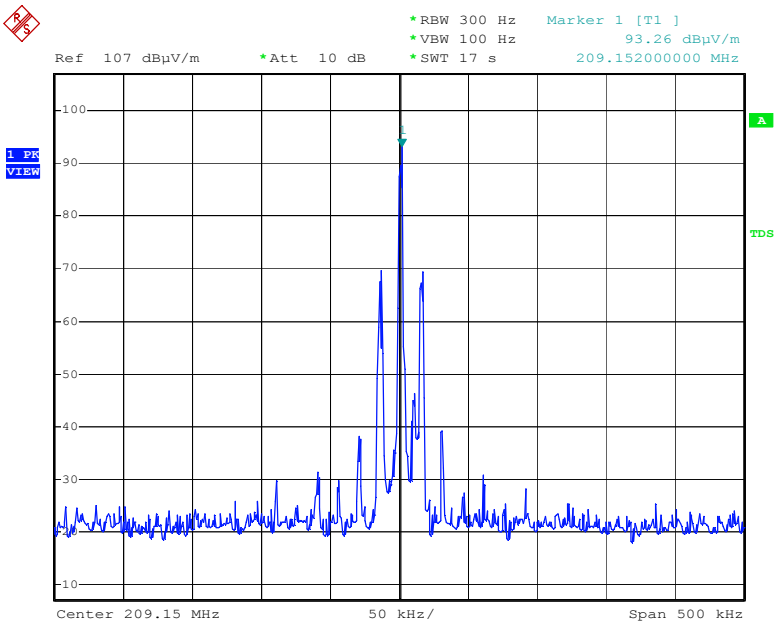
15 KHz modulation



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8. Field Strength of Emission

8. 1 Test Equipment

Please refer to Section 12 this report.

8. 2 Test Procedure

1. Setup the configuration in Section 5.3 this report for frequencies measured below and above 1GHz respectively, adjusting the input voltage to produce the maximum power as measured in Section 5 this report.
2. Adjust the test receiver for each frequency measured on a 1MHz frequency span and 1MHz resolution bandwidth.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on test receiver. Then change the orientation of EUT on test table over a range from 0 degree to 360 degree, and record the highest value indicated on test receiver as reference value.
4. Repeat step 3 until all frequencies need to be measured were complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Replace the EUT with a tuned dipole antenna (horn antenna for above 1GHz) relative to each frequency in horizontally polarized orientation and as the same polarized orientation with search antenna. Connect the tuned dipole antenna to a standard signal generator (SG) via a low loss cable. Power on the SG and tune right frequency in measuring as well as set SG at a appreciated output level. Rise and lower the search antenna to get the highest value on test receiver, and then hold this position. Adjust the SG output to get a identical value derived from step 3 on test receiver. Record this value for result calculated.
7. Repeat step 6 until all frequency need to be measured were complete.
8. Repeat step 7 with both dipole antenna (horn antenna for above 1GHz) and search antenna in vertical polarized orientations.

8. 3 Rules and Specification Limits

According to § 2.1053(a): ANSI/ TIA/ EIA-603-1992, Paragraph 2.2.12,

Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, Power leads, or intermediate circuit elements under normal conditions of installation and operation.

According to § 74.861 (e)(6)(iii):

Spurious and harmonics must be at least 43 + 10log(Output Power) below the carrier peak.

According to § 2.1057:

In all measurements set forth, the test receiver should be investigated from the lowest radio frequency generated in the equipment up to at least the 10^{th} harmonic of the carrier frequency.

8. 4 Test Result

Product	: VHF Wireless microphone	Test Mode	: 183.570MHz
Test Item	: Field Strength of Emission	Temperature	: 25 ℃
Test Voltage	: DC 3V(AA 1.5V*2)	Humidity	: 56%RH
Test Result	: **PASS**		

Unmodulated carrier output power is -0.54dBm, or 0.88 mW(ERP). The limit of spurious or harmonics is calculated as following:

-0.54dBm –[43+10log(carrier output power in W)]

183.570 MHz

Frequency (MHz)	Result (dBm) Hori. / Vert.		Limit (dBm)	Margin (dB) Hori. / Vert.	
91.800	-49.13	-49.46	-12.98	-36.15	-36.48
275.360	-35.67	-48.00	-12.98	-22.69	-35.02
367.160	-47.16	-59.43	-12.98	-34.18	-46.45
458.920	-59.56	-58.23	-12.98	-46.58	-45.25
550.720	-44.46	-51.32	-12.98	-31.48	-38.34
1835.700	-53.66	-54.91	-12.98	-40.68	-41.93

Note: a. For measured frequency below 1GHz, a tuned dipole antenna is used.
b. Result calculation is as following:
Result = SG Reading + Cable Loss + Antenna Gain Corrected.
Antenna Gain Corrected: is used for antenna other than dipole to convert radiated power to ERP.
c. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60dB from limit value.

Product	: VHF Wireless microphone	Test Mode	: 209.150MHz
Test Item	: Field Strength of Emission	Temperature	: 25 ℃
Test Voltage	: DC 3V(AA 1.5V*2)	Humidity	: 56%RH
Test Result	: **PASS**		

Unmodulated carrier output power is –0.06 dBm, or 0.99 mW(ERP). The limit of spurious or harmonics is calculated as following:

-0.06 –[43+10log(carrier output power in W)]

209.150 MHz

Frequency (MHz)	Result (dBm) Hori. / Vert.		Limit (dBm)	Margin (dB) Hori. / Vert.	
104.560	-45.06	-43.01	-13.02	-32.04	-29.99
261.440	-36.99	-50.29	-13.02	-23.97	-37.27
313.720	-38.01	-50.36	-13.02	-24.99	-37.34
418.320	-40.15	-49.91	-13.02	-27.13	-36.89
522.880	-28.46	-33.30	-13.02	-15.44	-20.28
2091.500	-49.76	-52.29	-13.02	-36.74	-39.27

Note: a. For measured frequency below 1GHz, a tuned dipole antenna is used.
b. Result calculation is as following:
Result = SG Reading + Cable Loss + Antenna Gain Corrected.
Antenna Gain Corrected: is used for antenna other than dipole to convert radiated power to ERP.
c. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60dB from limit value.

9. Frequency Stability Measurement

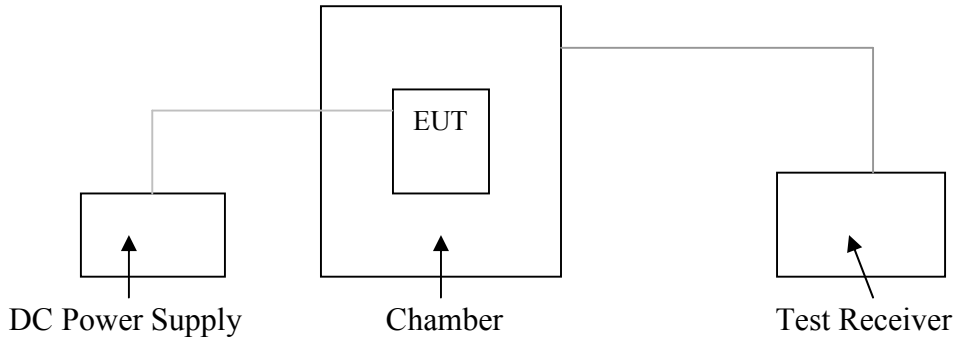
9. 1 Test Equipment

Please refer to Section 12 this report.

9. 2 Test Procedure

1. Place the EUT in the chamber, powered in its normal operation.
2. Set the temperature of the chamber –30 degree Centigrade. Allow the equipment to stabilize at that temperature.
3. Measurement the carrier frequency using preamplifier and frequency counter.
4. Repeated procedures 1 to 3 from –20 to 50 degree Centigrade at internals of 10 degree.

9. 3 Test Setup



9. 4 Rules and Specification Limits

According to § 2.1055 (a)(1), The frequency stability shall be measured with variation of ambient temperature from -30℃ to + 50℃ centigrade, and according to § 2.1055 (d)(2), the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point which is specified by the manufacturer.

According to § 74.861(e)(4): The frequency tolerance of the transmitter shall be 0.005 percent.

9. 5 Test Result

Frequency stability versus environment temperature
Wireless Microphone Transmitter: DC 3V

Environment Temperature (℃)	Power Supplied (Vdc)	Frequency Measured (MHz)	Frequency Tolerance (ppm)	Nominal Frequency	Limit (ppm)
50	New Batt.	183.5638	33.7746	183.570	50
40	New Batt.	183.5652	26.1481	183.570	50
30	New Batt.	183.5665	19.0663	183.570	50
20	New Batt.	183.5683	9.2608	183.570	50
10	New Batt.	183.5698	1.0895	183.570	50
0	New Batt.	183.5709	4.9028	183.570	50
-10	New Batt.	183.5717	9.2608	183.570	50
-20	New Batt.	183.5728	15.2530	183.570	50
-30	New Batt.	183.5841	22.3348	183.570	50

Frequency stability versus end-point supplied voltage (DC 2.55V)

Environment Temperature (℃)	Power Supplied (Vdc)	Frequency Measured (MHz)	Frequency Tolerance (ppm)	Nominal Frequency	Limit (ppm)
25	End-Point	183.5716	8.7160	183.570	50

Frequency stability versus environment temperature
Wireless Microphone Transmitter: DC 3V

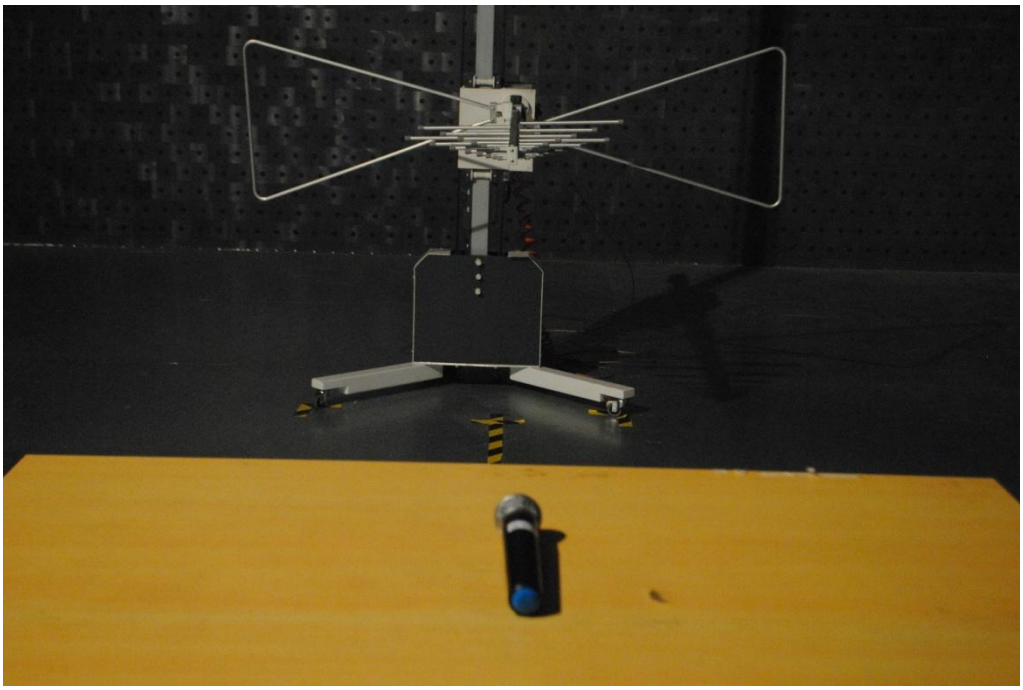
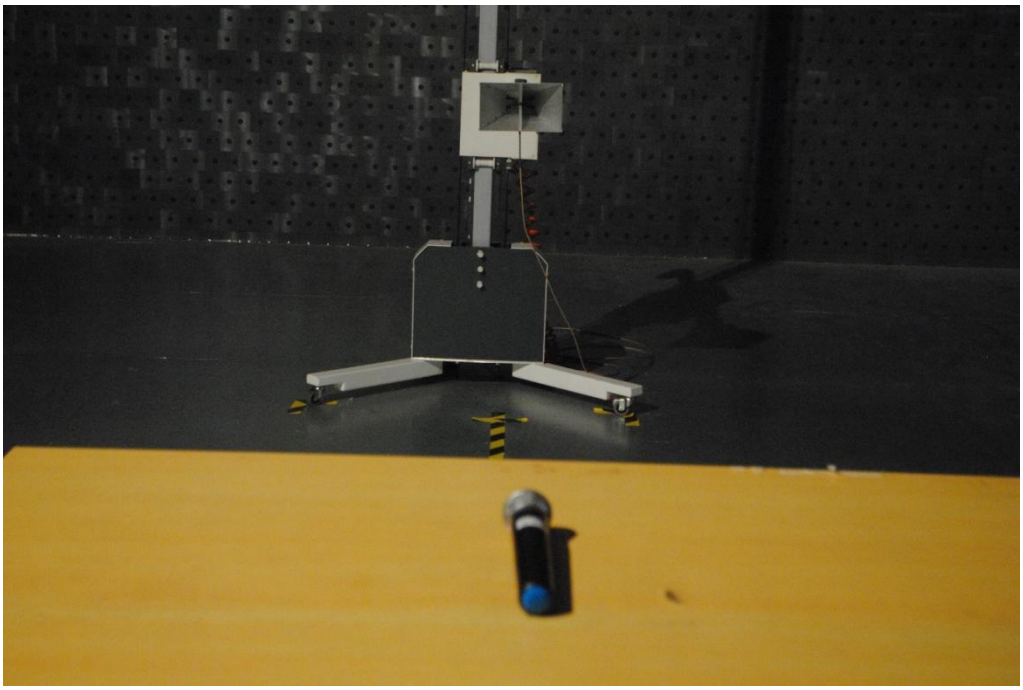
Environment Temperature (℃)	Power Supplied (Vdc)	Frequency Measured (MHz)	Frequency Tolerance (ppm)	Nominal Frequency	Limit (ppm)
50	New Batt.	209.1435	31.0782	209.150	50
40	New Batt.	209.1448	24.8625	209.150	50
30	New Batt.	209.1462	18.1688	209.150	50
20	New Batt.	209.1487	6.2156	209.150	50
10	New Batt.	209.1499	0.4781	209.150	50
0	New Batt.	209.1510	4.7813	209.150	50
-10	New Batt.	209.1521	10.0406	209.150	50
-20	New Batt.	209.1532	15.3000	209.150	50
-30	New Batt.	209.1541	19.6031	209.150	50

Frequency stability versus end-point supplied voltage (DC 2.55V)

Environment Temperature (℃)	Power Supplied (Vdc)	Frequency Measured (MHz)	Frequency Tolerance (ppm)	Nominal Frequency	Limit (ppm)
25	End-Point	209.1518	8.6063	209.150	50

10. Photos of Testing

10. 1 EUT Test Photographs

Radiated Emission test view(Frequency from 30MHz to 1GHz)

Radiated Emission test view(Frequency above 1GHz)


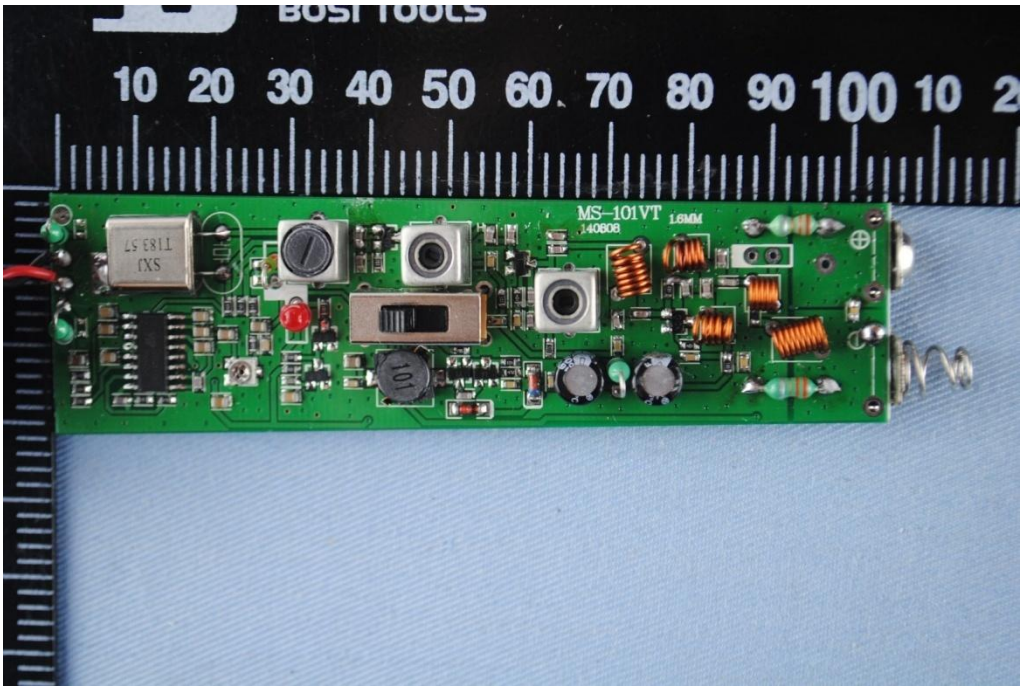
10. 2 EUT Detailed Photographs

VHF TX1 EUT top view

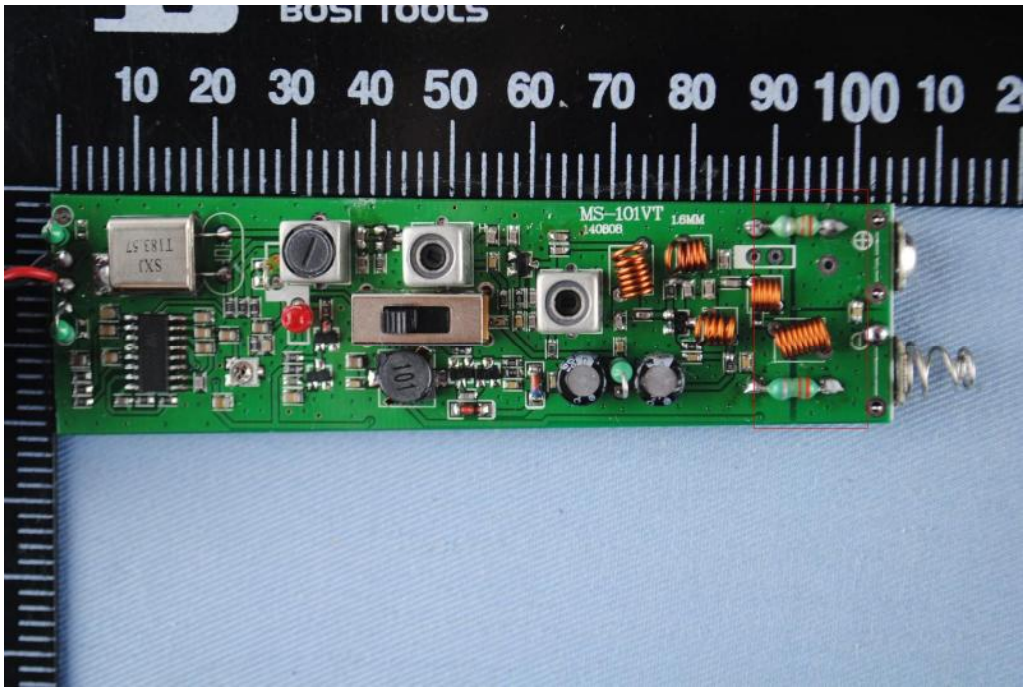

EUT bottom view


EUT inside whole view

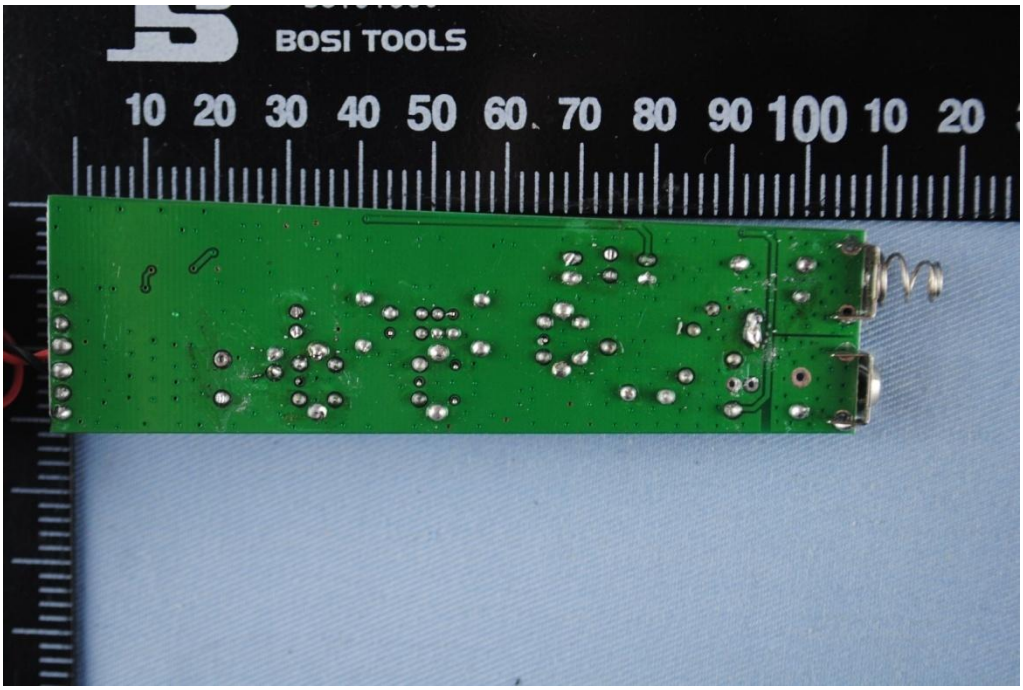
Main board component side



Antenna Location



Main board solder side



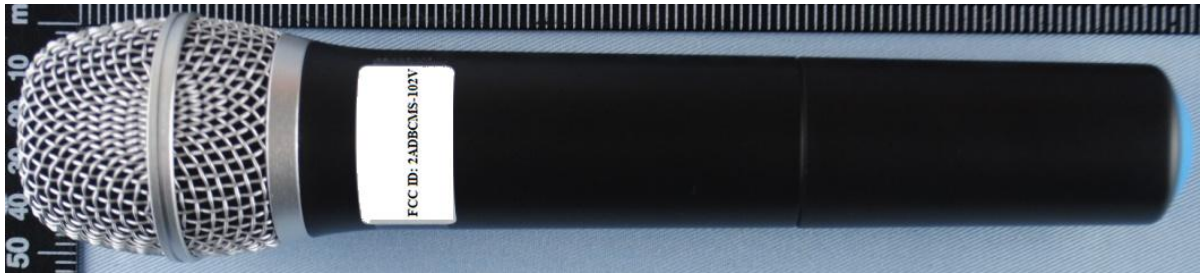
11. FCC ID Label

FCC ID: 2ADBCMS-102V

This device complies with Part 74 of the FCC Rules.

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.

Proposed Label Location on EUT



12. Test Equipment

The following test equipments were used during the radiated & conducted emission test:

Equipment/ Facilities	Manufacturer	Model #	Serial No.	Due Date
Turntable	Innco systems GmbH	CT-0801	KMO-SZ114	NCR
Antenna Tower	Innco systems GmbH	MM4000-PP	KMO-SZ115	NCR
Controller	Innco systems GmbH	CO2000	KMO-SZ116	NCR
Pre-Amplifier	Agilent	87405C	KMO-SZ155	Dec.6, 2015
Pre-Amplifier	Com-Power	PAM-840	KMO-SZ156	Dec.6, 2015
Horn Antenna	Com-Power	AH-840	KMO-SZ157	Dec.6, 2015
EMI Test Receiver	Rohde & Schwarz	ESPI7	KMO-SZ002	June 27, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP40	KMO-SZ003	June 27, 2015
Signal Generator	FLUKE	PM5418+Y/C	KMO-SZ020	May 27, 2015
Loop Antenna	Rohde & Schwarz	HFH2-Z2	KMO-SZ004	Jan. 30, 2016
Trilog-Super Broadband Antenna	SCHWARZBECK	VULB9161	KMO-SZ005	Sep.18, 2015
Trilog-Super Broadband Antenna	SCHWARZBECK	VULB9161	KMO-SZ006	Sep.18, 2015
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9120D	KMO-SZ007	Sep.18, 2015
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9120D	KMO-SZ008	Sep.18, 2015
AMN	Rohde & Schwarz	ESH3-Z5	KMO-SZ009	June 27, 2015
Pulse Limiter	SCHWARZBECK	VTSD 9561-F	KMO-SZ077	Nov.29, 2015
ISN	SCHWARZBECK	NTFM 8158 CAT3	KMO-SZ070	Nov.19, 2015
ISN	SCHWARZBECK	NTFM 8158 CAT5	KMO-SZ071	Nov.19, 2015
ISN	SCHWARZBECK	NTFM 8158 CAT6	KMO-SZ072	Nov.19, 2015
KMO Shielded Room	KMO	KMO-001	KMO-SZ036	NCR
Coaxial Cable with N-Connectors	SCHWARZBECK	AK9515H	KMO-SZ037	Sep.18, 2015
AC Power Source / Analyzer	Agilent	6813B	KMO-SZ166	July 22, 2015
Digital Radio Communication Tester	Rohde & Schwarz	CMD60	KMO-SZ169	April 10, 2015
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	KMO-SZ170	April 10, 2015
Program Control Telephone Exchanger	Excelltel	CDX8000-M	KMO-SZ221	NCR
3m Anechoic Chamber	KMO	KMO-3AC	KMO-3AC-1	Nov.12, 2016
Temperature Chamber	TABAI	PSL-4GTW	N/A	Feb.10, 2016