FCC PART 74

EMI MEASUREMENT AND TEST REPORT

For

FANGGE ACOUSTICS TECHNOLOGY CO.,LTD.

No.2, F District, Foreign Capital& Private-Owned Industrial Zone

FCC ID: WWCFV-303

Nov. 20, 2008

This Report Concerns: Original Report	Equipment Type： Wireless Microphone
Test Engineer:	Eric Li
Report No.:	F08111201A
Receive EUT Date/Test Date:	Nov.18,2008/ Nov.18-20,2008
Reviewed By:	Christina
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1. GENERAL INFORMATION

1.1. Report information

1.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

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Test Facility -
The test site used to collect the radiated data is located on the address of Solid Industrial Co., Ltd. (FCC Registered Test Site Number: 759397) on 333 Bulong Highway Buji, Longgang Shenzhen, Guangdong, China
The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

Available upon request.

2. PRODUCT DESCRIPTION

2.1. EUT Description

Description	:	Wireless Microphone
Applicant	:	FANGGE ACOUSTICS TECHNOLOGY CO.,LTD. No.2, F District, Foreign Capital& Private-Owned Industrial Zone, Enping, Guangdong, China
Model Number	:	FV-303, FV-400, FV-201, FV-210, FV-212, FV-216, FV-228, FV-237, FV-300, FV-301, FV-302, FV-304, FV-306, FV-505, FV-506, FV-507, FV-508, FV-509, FV-600, FV-601, FV-602, FV-603, FV-710, FV-711, FV-712, FV-713, FV-717, FV-718, FV-719, FV-811, FV-812, FV-813, FV-817, FV-819

Additonal Information

Frequency	:	174~216MHz
Power Supply	:	DC9V（Supplied by battery）
Maximum Range	:	N/A
Transmitter Antenna	:	The transmitter has a built in antenna and solder on the PCB
Current Consumption		N/A

2.2. Block Diagram of EUT Configuration

2.3. Support Equipment List

1.	--	-----
2.	--	------
3.	--	------

2.4. Test Conditions

Temperature: 23~25℃
Relative Humidity: 55~63 %

3. FCC ID LABEL

FCC ID: WWCFV-303

Label Location on EUT

EUT Bottom View/ FCC ID Label Location

4. TEST RESULTS SUMMARY

Test Items	Test Standards	Test Results
Carrier Radiated Power	74.861 e) 1) 174M-216M--50mW	Pass
Modulation Deviation	74.861 e) 3) Within 75kHz	Pass
Frequency Stability	74.861 e) 4) <0.005% 50 ppm	Pass
Operating Bandwidth	74.861 e) 5) Within 200kHz	Pass
Unwanted Radiation	74.861 e) 6) within the mask	Pass
Radiated Spurious Emission	74.861 d) 3) < 43+10lgP(W) dB	Pass

Remark: “N/A” means “Not applicable.”

Modifications

No modification was made.

5. TEST EQUIPMENT USED

Equipment/Facilities	Manufacturer	Model #	Serial no.	Date of Cal.	Cal. Interval
Cable	Resenberger	N/A	NO.1	Mar 10，2008	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 10，2008	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 10，2008	1 Year
LISN	Rohde＆Schwarz	ESH3-Z5	100305	Mar 10，2008	1 Year
50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10, 2008	1 Year
EMI Test Receiver	Rohde＆Schwarz	ESP13	100180	Oct.18,2008	1 Year
Spectrum Analyzer	Rohde＆Schwarz	FSP40	100273	Sep.10,2008	1 Year
3m Semi-Anechoic Chamber	Albatross Projects	9m×6m×6m	N/A	Feb.20,2008	1 Year
Signal Generator	FLUKE	PM5418 + Y/C	LO747012	Feb.20,2008	1 Year
Signal Generator	FLUKE	PM5418TX	LO738007	Feb.20,2008	1 Year
Loop Antenna	SCHWARZBECK	FMZB1516	113	Jan.30,2008	1 Year
Trilog-Super Broadband Antenna	SCHWARZBECK	VULB9161	9161-4079	Sep.22,2008	1 Year
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-564	Sep.22,2008	1 Year
Ultra Broadband Antenna	Rohde＆Schwarz	HL-562	100110	June.15,2008	1 Year
AMN	Rohde＆Schwarz	ESH3-Z5	100196	Oct.11,2008	1 Year
AMN	Rohde＆Schwarz	ESH3-Z5	100197	Oct.11,2008	1 Year
Pulse Limiter	Rohde＆Schwarz	ESH3-Z2	N/A	N/A	N/A
Power Meter	Rohde＆Schwarz	NRVD	100041	Feb.20,2008	1 Year
EMI Test Receiver	Rohde＆Schwarz	ESCS30	100003	Feb.20,2008	1 Year
Coaxial Cable with N-connectors	SCHWARZBECK	AK9515H	95549	Sep.22,2008	1 Year
Radio Communication Test Set	Rohde＆Schwarz	CMS 54	846621/024	Feb.20,2008	1 Year
Modulation Analyzer	Hewlett-Packard	8901B	2303A00362	Feb.20,2008	1 Year
Absorbing clamp	Rohde＆Schwarz	MDS-21	N/A	Oct.29,2008	1 Year

6. TEST RESULTS

6.1. E.U.T. Operation Condition

Operating Environment:
Temperature: 20.0 ° C~25 ° C
Humidity: 56 ~68% RH
Atmospheric Pressure: 980~1012 mbar
EUT Operation: Test the EUT in transmitting mode.

6.2. Test Procedure & Measurement Data

6.2.1.Carrier Radiated Power & Radiated Spurious Emissions

Test Requirement: FCC CFR 47 Part 74.861 e) 1) & d) 3)

Test Method: EIA/TIA 603-C:2004 section 2.2,

FCC CFR 47 Part 2.1047 & 1053

Test Date: Nov. 19, 2008

Measurement Distance: 3m (Semi-Anechoic Chamber)

Test Requirement:

(d) For low power auxiliary stations operating in the bands other than those allocated for TV broadcasting, the following technical requirements are imposed.

(3) The occupied bandwidth shall not be greater than that necessary for satisfactory transmission and, in any event, an emission appearing on any discrete frequency outside the authorized band shall be attenuated, at least, 43+10 log 10 (mean output power, in watts) dB below the mean output power of the transmitting unit.

(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:

(1) The power of the measured unmodulated carrier power at the output of the transmitter power amplifier (antenna input power) may not exceed the following:

(i) 54–72, 76–88, and 174–216 MHz bands—50 mW

(ii) 470–608 and 614–806 MHz bands—250 mW

Test Procedure:

The procedure used was EIA/TIA 603-C:2004. The receive was scanned from 30MHz to 5.0GHz.When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes.

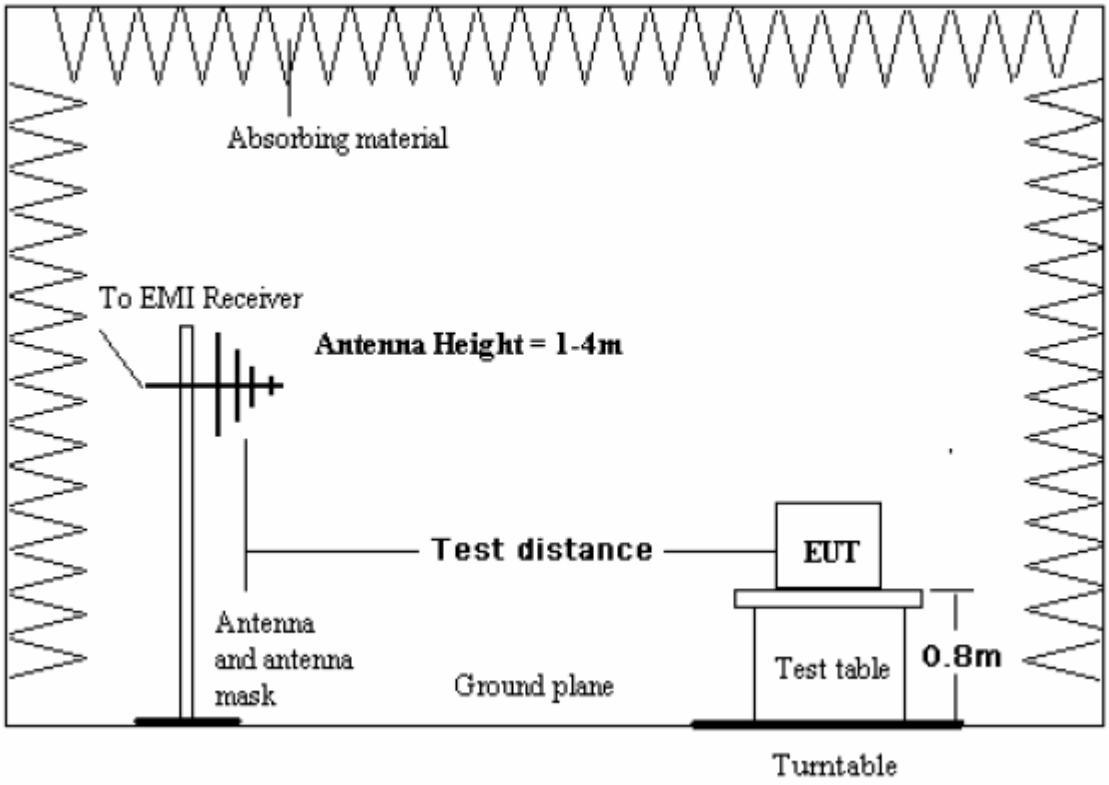
The field strength is calculated by adding the Antenna Factor, Cable Factor &Peramplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading+Antenna Factor+Cable Factor–Peramlifer Factor

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bilog antenna with 2 orthogonal polarities

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 Carrier Radiated Power and spurious emissions were measured by the substitution.



Test Result:

Carrier Frequency (MHz)	Factual Level dBm (mW)	Limit in 74.861 e) 1)
174.000	-6.61 dBm(i.e. 0.20mW)	17 dBm (i.e. 50 mW)
195.000	-6.71 dBm(i.e. 0.20mW)	17 dBm (i.e. 50 mW)
216.000	-6.69 dBm(i.e. 0.22mW)	17 dBm (i.e. 50 mW)

Radiated spurious emissions:

Spurious Emission Frequency (MHz)	Factual Level Horizontal (dBm)	Factual Level Vertical (dBm)	Limits (dBm)	Min Margin (dB)
174.000 MHz				
86.140	-36.2	-40.5	-13.0	23.2
217.342	-36.4	-47.3	-13.0	23.4
272.560	-35.3	-45.0	-13.0	22.3
346.431	-35.4	-51.2	-13.0	23.6
611.102	-46.2	-52.1	-13.0	33.2
783.658	-36.2	-47.2	-13.0	23.2
195.000 MHz				
95.441	-36.2	-41.8	-13.0	23.2
293.570	-29.7	-41.9	-13.0	16.7
386.075	-32.3	-45.2	-13.0	19.3
487.367	-35.8	-49.2	-13.0	22.8
585.053	-26.4	-37.9	-13.0	13.4
780.030	-31.4	-39.7	-13.0	18.4
216.000 MHz				
106.131	<-33.0	<-33.0	-13.0	>20
325.381	<-33.0	<-33.0	-13.0	>20
432.705	<-33.0	<-33.0	-13.0	>20
575.120	<-33.0	<-33.0	-13.0	>20
648.520	<-33.0	<-33.0	-13.0	>20
755.643	<-33.0	<-33.0	-13.0	>20

TEST RESULTS: The unit does meet the FCC requirements.

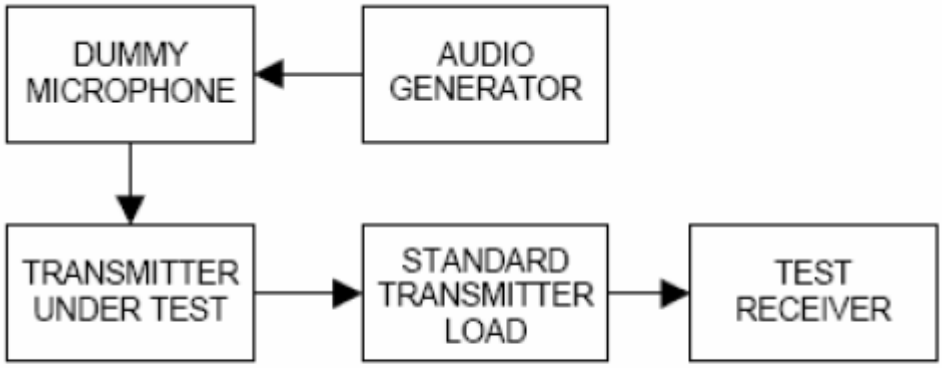
6.2.2.Occupied Bandwidth

Test Requirement: FCC CFR 47 Part 74.e) 5) & 6)
Test Method: FCC CFR 47 Part 2.1049
Test Date: Nov. 19, 2008
Requirements:

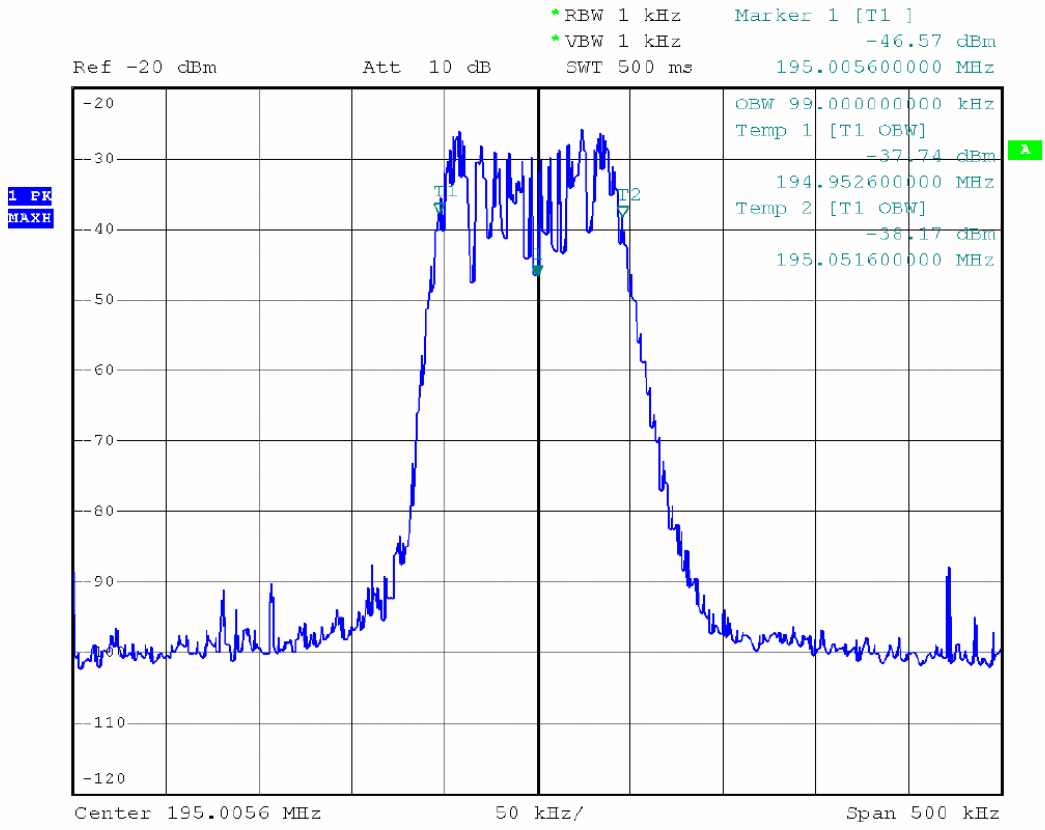
(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:
(5) The operating bandwidth shall not exceed 200 kHz.
(6) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:
(i) 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 25dB;
(ii) 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 35dB;
(iii) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least 43+10log10 (mean output power in watts) dB.

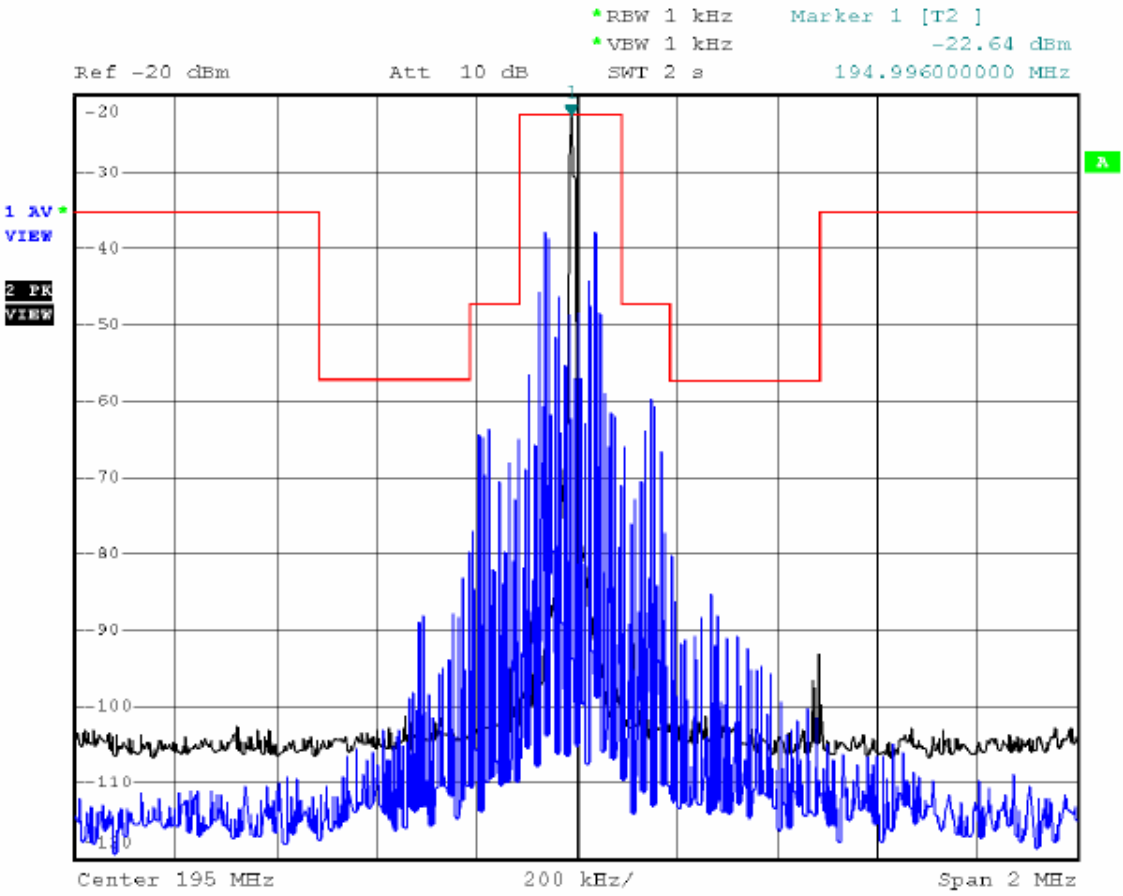
Test Procedure

Input 2500Hz signal to the microphone, find the 50% rated deviation, add the level 16dB, test this status the 99% occupied bandwidth and record it.



Test Result: The graph as below, represents the emissions take for this device.
Occupied Bandwidth (99% of total power): 99.0 KHz.





Test results: The unit does meet the FCC requirements.

6.2.3.Frequency Stability

Test Requirement: FCC CFR 47 Part 74.e) 4)
Test Method: FCC CFR 47 Part 2.1055
Test Date: Nov. 19, 2008
Requirements: +/-50 ppm

(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:
(4) The frequency tolerance of the transmitter shall be 0.005 percent.

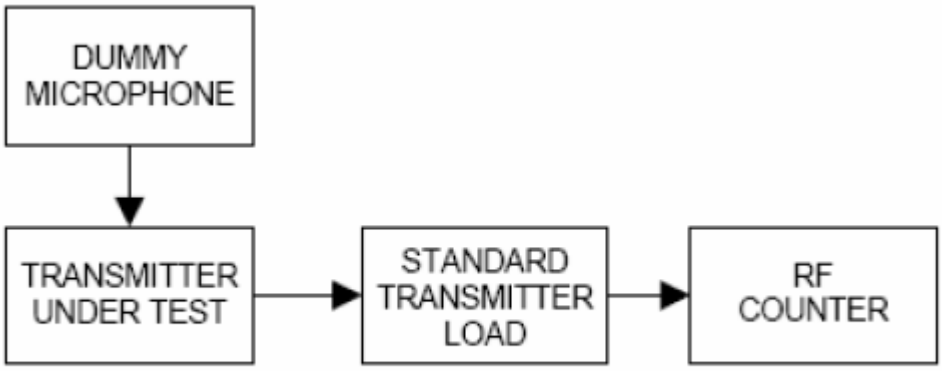
Test Procedure:

Frequency stability versus Environmental Temperature

The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber. After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.

Frequency Stability versus Input Voltage

At room temperature (25±5°C), an external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage. For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Result:

Assigned Frequency: 187.900 MHz,		
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within +/- 9.75kHz
50	9.0	-3.58
40	9.0	-2.76
30	9.0	-2.4
20	9.0	-1.1
10	9.0	+0.1
0	9.0	+1.1
-10	9.0	+1.0
-20	9.0	+0.9
-30	9.0	+0.9
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed Total emission within Max +/- 9.75kHz
25	9.0	-1.9
25	7.55	-8.1
25	6.8	-8.7

The results: The unit does meet the FCC requirements.

6.2.4.Modulation Characteristics

Test Requirement: FCC CFR 47 Part 74.e) 3)
Test Method: FCC CFR 47 Part 2.1047
Test Date: Nov. 19, 2008

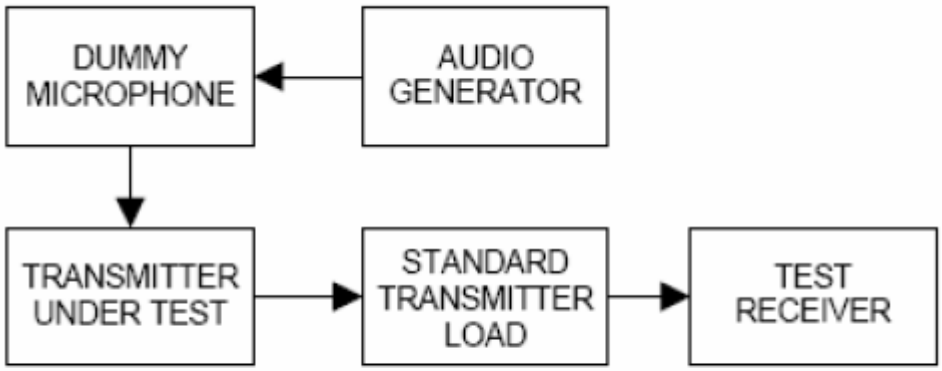
Requirements:

(e) For low power auxiliary stations operating in the bands allocated for TV broadcasting, the following technical requirements apply:
(3) Any form of modulation may be used. A maximum deviation of ±75 kHz is permitted when frequency modulation is employed.

Test Procedure:

Audio Frequency Response

The RF output of the transceiver was connected to the input of FSP 30 with FM deviation module through sufficient attenuation so as not to overload the meter or distort the reading. An audio signal generator was connected to the audio input of microphone.
The audio signal input level was adjusted to obtain **20% of the maximum rated system deviation at 1 kHz**, and recorded as DEV . With the audio signal generator level unchanged, set the generator frequency between 100 to 5000 Hz. The transmitter deviations (DEV_{FREQ}) were measured and the audio frequency response was calculated as 20log10 [DEV_{FREQ} / DEV_{REF}]



The plot(s) of Audio Frequency Response is presented hereinafter as reference.

0dB=12mV at 1kHz (20% of the maximum rated system deviation).

Modulation Limiting

a) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.

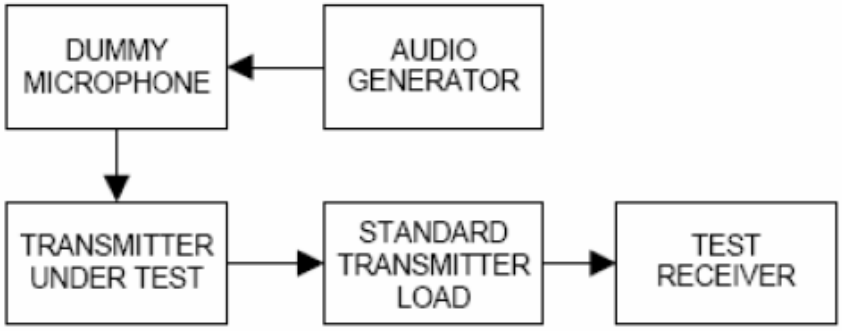
b) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤0.25 Hz to ≥15,000 Hz. Turn the de-emphasis function off.

c) Apply a 1000 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain **60% of full rated system deviation**.

d) Increase the level from the audio frequency generator by 20 dB in one step (rise time between the 10% and 90% points shall be 0.1 second maximum).

e) Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level.

f) With the level from the audio frequency generator held constant at the level obtained in step e), slowly vary the audio frequency from 100 to 5000 Hz and observe the steady-state deviation. Record the maximum deviation.



Test at five different modulating frequencies (100Hz, 300Hz, 500Hz, 1 KHz, 2.5 KHz, 5kHz), the output level of the audio generator was varied and the FM deviation level was recorded.

Positive peak deviation