



TEST REPORT

For

Applicant : JIUYI ELECTRONICS (HK) CO., LTD

Address : Unit A1,7/F,Cheuk Nang Plaza, 250 Hennessy Road,
Wanchai, Hong Kong

Product Name : Wireless Microphone

Model Name : PDWMKHRD22WM, PDWMKRH20, HM-66, HT-U10

Remark : Only Difference In model name.

Brand Name : PYLE USA, JYE, Highmic

FCC Number : FCC ID: 2AMZ9-PDWMKRH20

Report No. : MTE/CEC/B17061270

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Issued by : Most Technology Service Co., Limited.

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2. GENERAL INFORMATION

2.1 Product Information

Product	Wireless Microphone
Brand Name	PYLE USA、JYE、Highmic
Model Number	PDWMKHRD22WM
Series Model Name:	PDWMKRH20, HM-66, HT-U10
Series Model Difference description:	Only Difference In model name.
Power Supply	DC 3V by Battery
Frequency Range	494MHz-608MHz
Modulation Type:	FM
Channel Number	30
Antenna Type	Internal Antenna, Antenna Gain :0dBi

NOTE:

1. For a more detailed features description about the EUT, please refer to User's Manual.

2.2 Objective

The objective of the report is to perform tests according to FCC Part 74 Subpart H for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 74	Radio Frequency Devices
2	ANSI/TIA-603-D-2010	Test Procedure
3	KDB 971168 D01 V02R02	Test Procedure

2.3 Test Standards and Results

No.	Section	Test Items	Result	Date of Test
1	FCC Part 74.861 e) 1)	Carrier Radiated Power	PASS	2017-06-11
2	FCC Part 74.861 e) 3)	Modulation Deviation	PASS	2017-06-11
3	FCC Part 74.861 e) 4)	Frequency Stability	PASS	2017-06-11
4	FCC Part 74.861 e) 5)	Operating Bandwidth	PASS	2017-06-11
5	FCC Part 74.861 e) 6)	Unwanted Radiation	PASS	2017-06-12
6	FCC Part 74.861 d) 3)	Radiated Spurious Emission	PASS	2017-06-12

Note:

1. The test result judgment is decided by the limit of measurement standard
2. The information of measurement uncertainty is available upon the customer's request.
3. The EUT has one channel, which is located in the range 494.000 MHz to 608.000MHz.
Only test result of a sample in channels 494.2 MHz, 556.5 MHz and 607.8 MHz were recorded in this report.

2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

EUT Operation: Test the EUT in transmitting mode. Performed Carrier Radiated Power & Radiated Spurious Emissions testing in highest/ middle / lowest frequency Spots within the range, and performed Occupied Bandwidth, Frequency Stability & Modulation Characteristics in middle frequency spot.

3. TEST METHODOLOGY

3.1 TEST FACILITY

Test Site:	Most Technology Service Co., Ltd
Location:	No.5, Langshan 2nd Rd., North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong, China
Description:	<p>There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.10:2013 and CISPR 16 requirements.</p> <p>The FCC Registration Number is 490827. The IC Registration Number is 7103A-1.</p>
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument	All measuring equipment is in accord with ANSI C63.4:2014 and CISPR 16
Tolerance:	requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

4. SETUP OF EQUIPMENT UNDER TEST

4.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

4.2 SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
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Remark:

All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.3 TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at Most for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

No.	Equipment	Manufacturer	Model No.	S/N	Calibration date	Calibration Interval
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2017/03/10	1 Year
2	Single loop antenna	Beijing Da Ze	ZN30900C	16024	2017/03/19	1 Year
3	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2017/03/07	1 Year
4	Terminator	Hubersuhner	50Ω	No.1	2017/03/07	1 Year
5	RF Cable	SchwarzBeck	N/A	No.1	2017/03/07	1 Year
6	Test Receiver	Rohde & Schwarz	ESPI	101202	2017/03/10	1 Year
7	Bilog Antenna	Sunol	JB3	A121206	2017/03/14	1 Year
8	Horn Antenna	SCHWARZBECK	BBHA9120D	756	2017/03/14	1 Year
9	Horn Antenna	Penn Engineering	9034	8376	2017/03/14	1 Year
10	Cable	Resenberger	N/A	NO.1	2017/03/07	1 Year
11	Cable	SchwarzBeck	N/A	NO.2	2017/03/07	1 Year
12	Cable	SchwarzBeck	N/A	NO.3	2017/03/07	1 Year
13	DC Power Filter	DuoJi	DL2×30B	N/A	2017/03/07	1 Year
14	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2017/03/07	1 Year
15	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	2017/03/07	1 Year
16	Test Receiver	Rohde & Schwarz	ESCI	100492	2017/03/10	1 Year
17	Absorbing Clamp	Luthi	MDS21	3635	2017/03/12	1 Year
18	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2017/03/07	1 Year
19	AC Power Source	Kikusui	AC40MA	LM003232	2017/03/10	1 Year
20	Test Analyzer	Kikusui	KHA1000	LM003720	2017/03/10	1 Year
21	Line Impedance Network	Kikusui	LIN40MA-PCR-L	LM002352	2017/03/10	1 Year
22	Pre-amplifier	Agilent Technologies	8447D	N/A	2017/03/10	1 Year
23	EMC PRO System	EM Test	UCS-500-M4	V0648102026	2017/03/10	1 Year
24	Signal Generator	IFR	2032	203002/100	2017/03/10	1 Year
25	Amplifier	A&R	150W1000	301584	2017/03/14	1 Year
26	CDN	FCC	FCC-801-M2-25	47	2017/03/10	1 Year
27	CDN	FCC	FCC-801-M3-25	107	2017/03/10	1 Year
28	EM Injection Clamp	FCC	F-203I-23mm	403	2017/03/10	1 Year
29	RF Cable	MIYAZAKI	N/A	No.1/No.2	2017/03/10	1 Year
30	Universal Radio Communication Tester	ROHDE&SCHWARZ	CMU200	0304789	2017/03/10	1 Year
31	Telecommunication Antenna	European Antennas	PSA 75301R/170	0304213	2017/03/10	1 Year
32	Telecommunication Test Equipment	R&S	CMU200	N/A	2017/03/07	1 Year
33	8 Loop Antenna	ARA	PLA-1030/B	1029	2017/01/10	1 Year
34	Power Meter	Anritsu	ML2495A	1204008	2017/03/10	1 Year

NOTE: Equipments listed above have been calibrated and are in the period of validation.

5. Test Procedure & Measurement Data

5.1 Carrier Radiated Power & Radiated Spurious Emissions

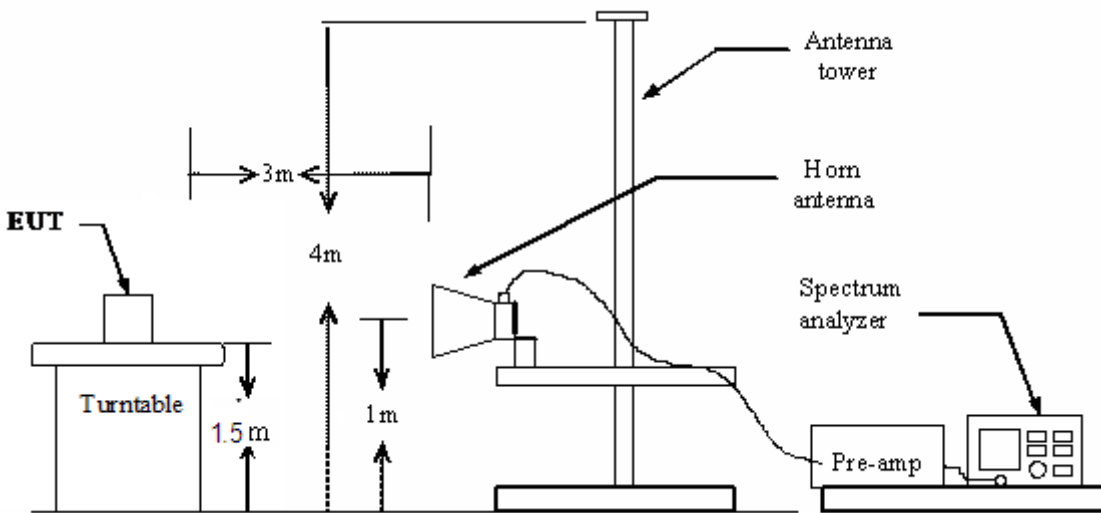
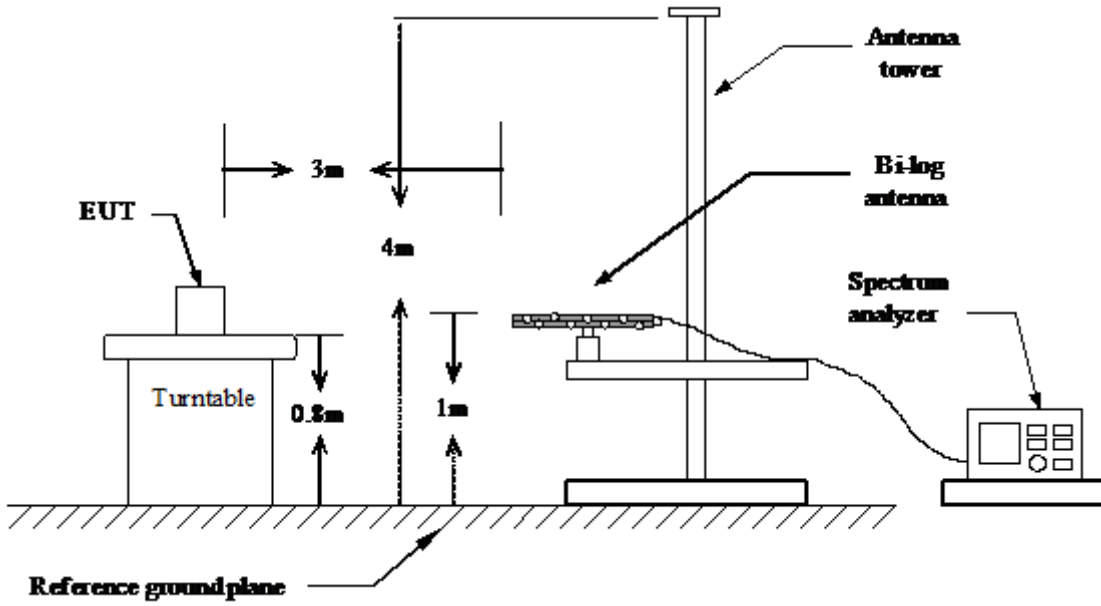
Test Requirement:

(e) For low power auxiliary stations operating in the 600 MHz duplex gap and the bands allocated for TV broadcasting, the following technical requirements apply:

- (1) The power may not exceed the following values.
 - (ii) 470-608 and 614-698: 250 mW conducted power

Test Procedure:

- ANSI/TIA-603-D-2010, clause 2.2.1
- ANSI/TIA-603-D-2010, clause 2.2.12



Carrier Radiated Power:

Carrier Frequency (MHz)	Factual Level dBm (mW)	Limit in 74.861 e) 1) (ii)
494.200	0.2 dBm (i.e. 1.047 mW)	24 dBm (250 mW)
556.500	-0.4 dBm (i.e. 0.91 mW)	24 dBm (250 mW)
607.800	-0.5 dBm (i.e. 0.89 mW)	24 dBm (250 mW)

Radiated spurious emissions:

494.200 MHz				
Spurious Emission Frequency (MHz)	Factual Level Horizontal (dBm)	Factual Level Vertical (dBm)	Limit (dBm)	Min Margin (dB)
988.4	-33.5	-24.6	-13.0	11.6
1482.6	<-33	<-33	-13.0	>20
1976.8	<-33	<-33	-13.0	>20
2471.0	<-33	<-33	-13.0	>20
556.500 MHz				
1113.0	-34.2	-23.6	-13.0	10.6
1669.5	<-33	<-33	-13.0	>20
2226.0	<-33	<-33	-13.0	>20
2782.5	<-33	<-33	-13.0	>20
607.800 MHz				
1215.6	-33.7	-25.2	-13.0	12.2
1823.4	<-33	<-33	-13.0	>20
2431.2	<-33	<-33	-13.0	>20
3039.0	<-33	<-33	-13.0	>20

The peak emission of other frequency in rang from 30MHz up to 10 times carrier were 20dB lower than the limit, hence no data was recorded in the report.

NA: Not applicable, since the level is over 20dB lower than the limit.

TEST RESULTS: The unit does meet the FCC requirements.

5.2 Occupied Bandwidth

Test Requirement:

(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:

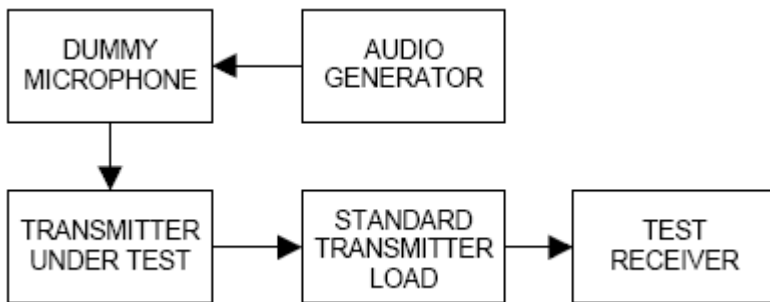
(i) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;

(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 35 dB;

(iii) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least $43 + 10\log_{10}$ (mean output power in watts) dB.

Test Procedure:

ANSI/TIA-603-D-2010, clause 2.2.11



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.

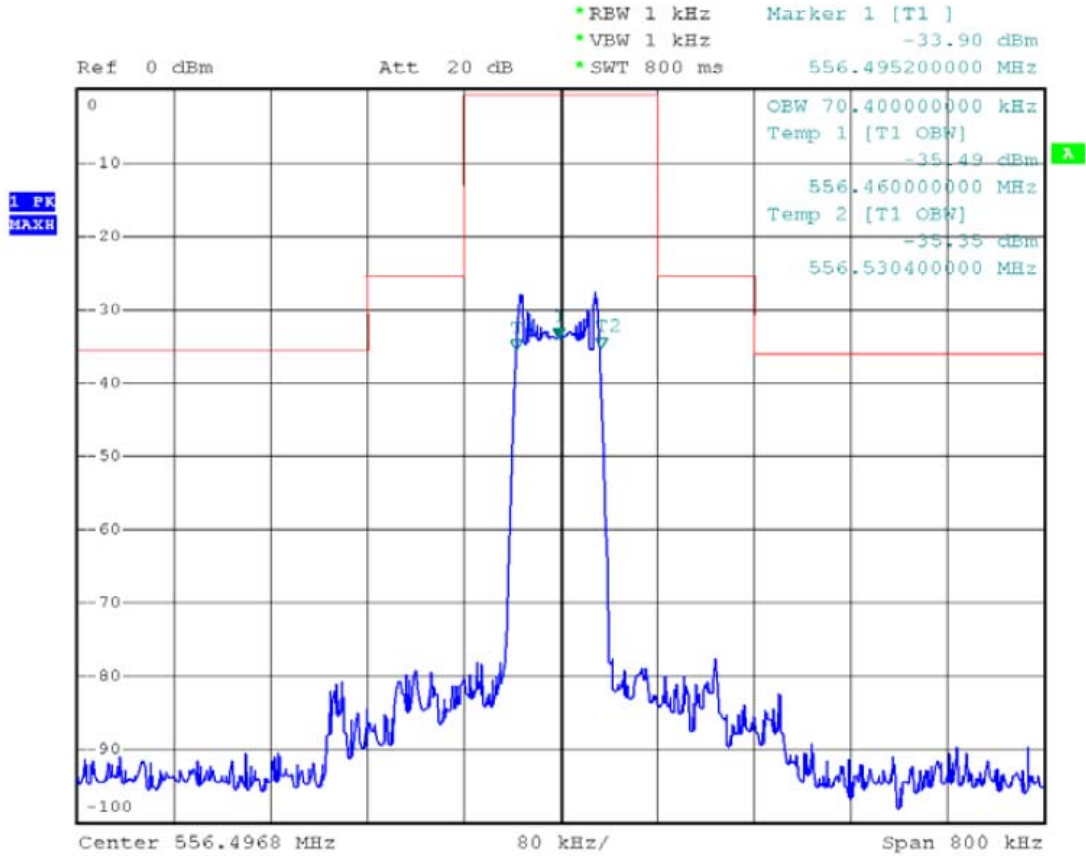
Test Result:

Pass

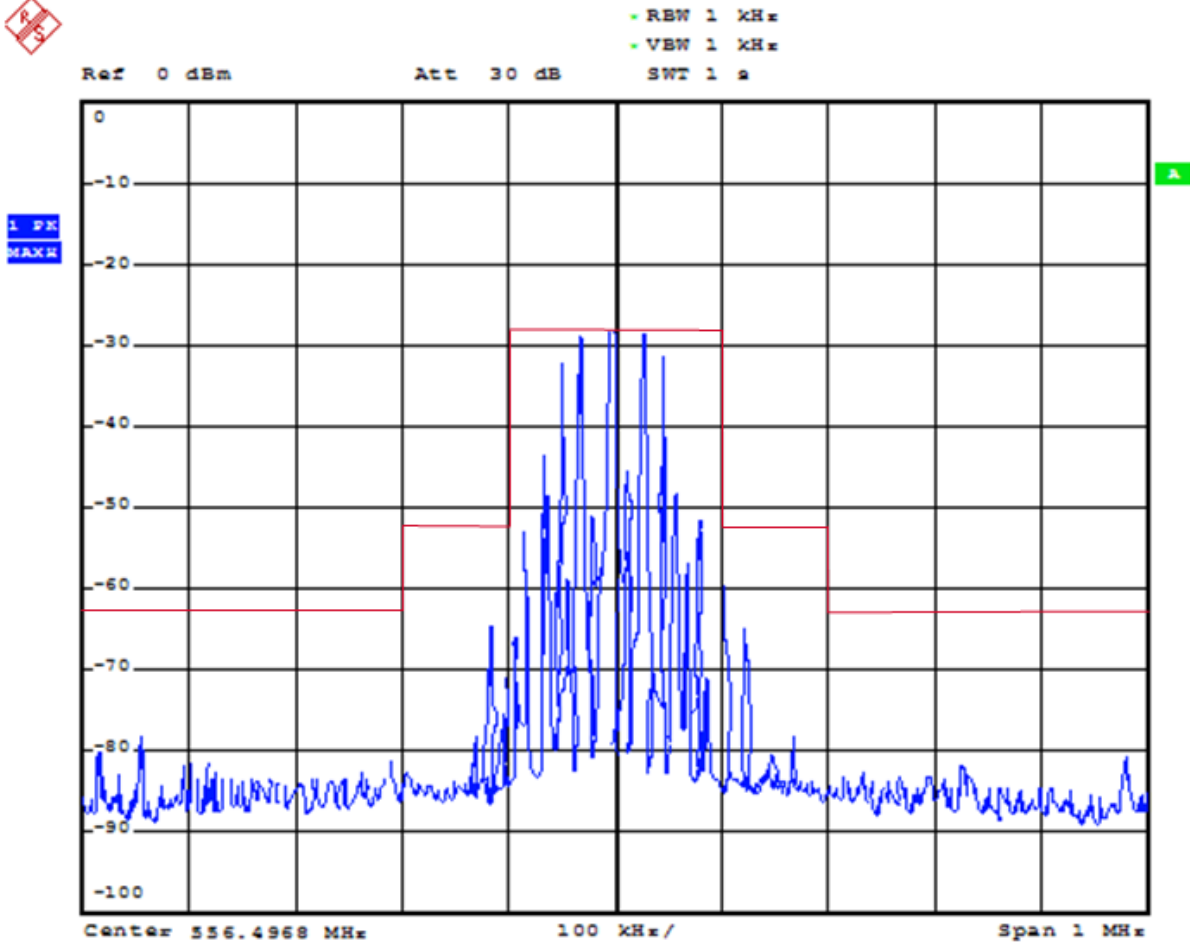
Note: All test modes are performed, only the worst case is recorded in this report.

Please refer the following pages.

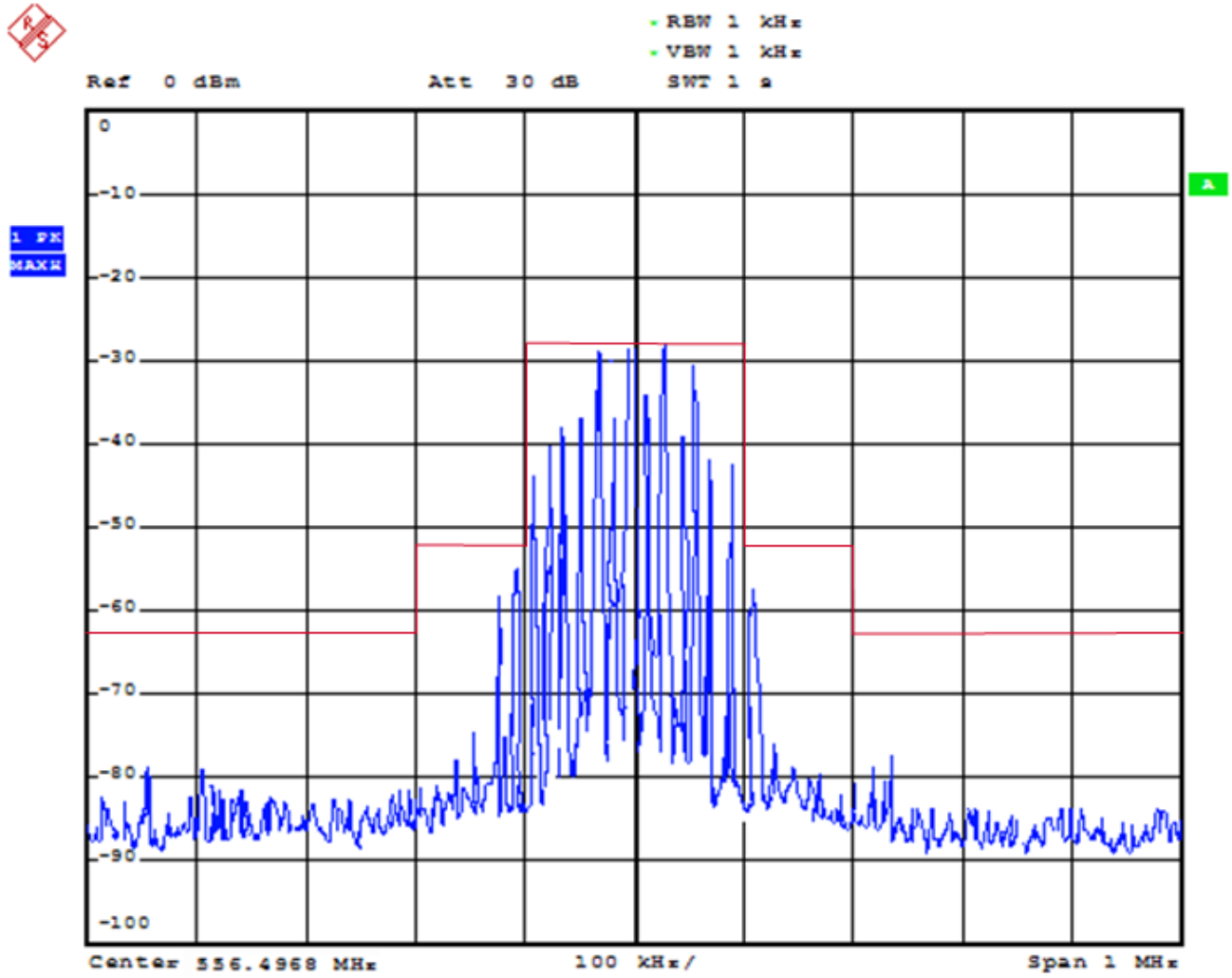
Occupied Bandwidth (99% of total power): 70.4 kHz.



Emission Mask: input with 10 kHz AF, 50% modulation + 16dB.



Emission Mask: input with 15 kHz AF, 50% modulation + 16dB.



Test results: The unit does meet the FCC requirements.

5.3 Frequency Stability

Test Requirements:

+/-50 ppm

(e) For low power auxiliary stations operating in the 600 MHz duplex gap and the bands allocated for TV broadcasting, the following technical requirements apply:

(4) The frequency tolerance of the transmitter shall be 0.005 percent.

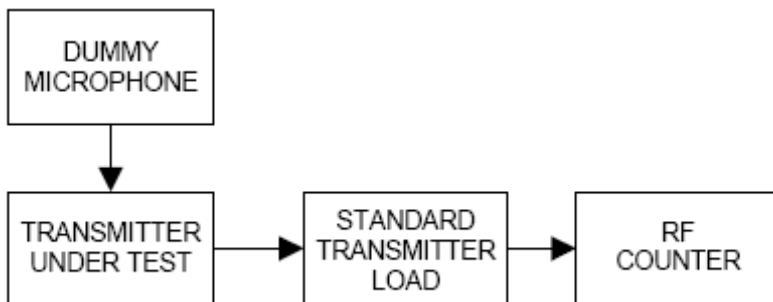
Test Procedure:

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 ($25 \pm 5^{\circ}\text{C}$), 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: 556.500 MHz,			
Environment Temperature (°C)	Power Supplied (Vdc)	Level (PPM)	Margin (PPM)
50	3.0	-34.541	15.5
40	3.0	-14.803	35.2
30	3.0	-4.934	45.1
20	3.0	1.645	48.4
10	3.0	24.672	25.3
0	3.0	34.541	15.5
-10	3.0	42.765	7.2
-20	3.0	44.410	5.6
-30	3.0	24.672	25.3
Environment Temperature (°C)	Power Supplied (Vdc)	Level (PPM)	Margin (PPM)
25	3.0	1.159	48.8
25	2.7	4.365	45.6
25	2.55	-11.252	38.7
25	1.8	38.125	11.875

Battery end point: 1.8V

The results: The unit does meet the FCC requirements.

5.4 Modulation Characteristics

Requirements:

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

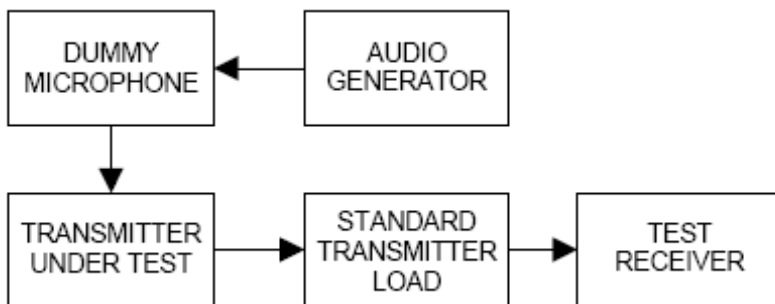
(3) Any form of modulation may be used. A maximum deviation of ± 75 kHz is permitted when frequency modulation is employed.

Test Procedure:

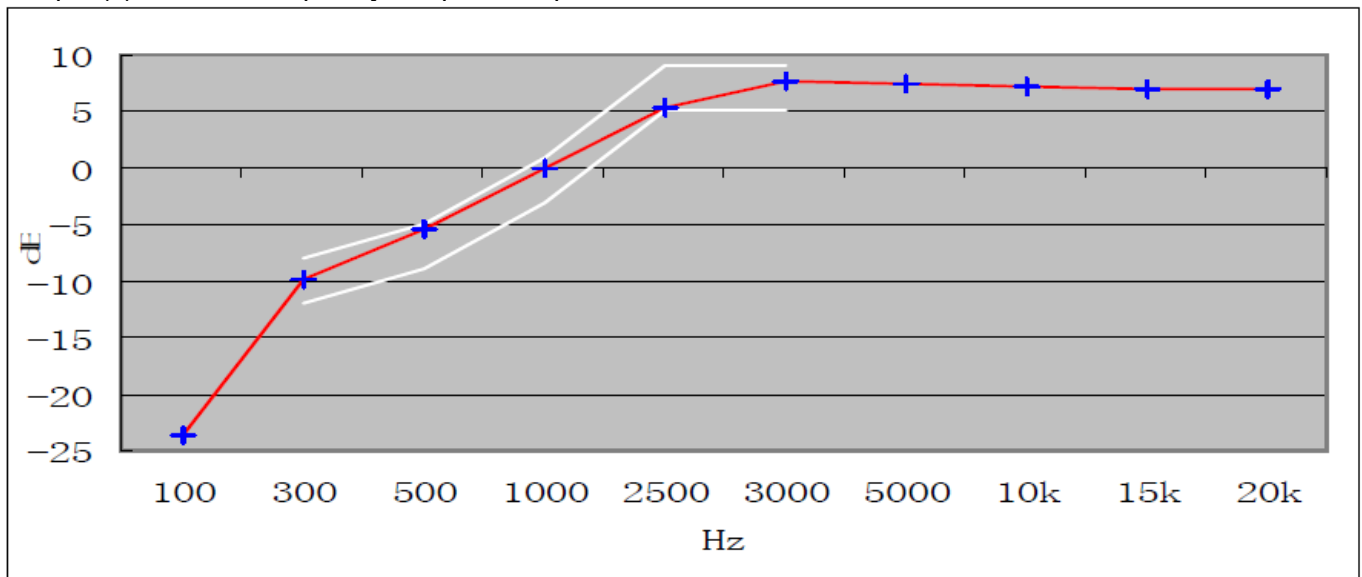
Audio Frequency Response

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_{REF} . 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 $20\log_{10} [DEV_{FREQ} / DEV_{REF}]$



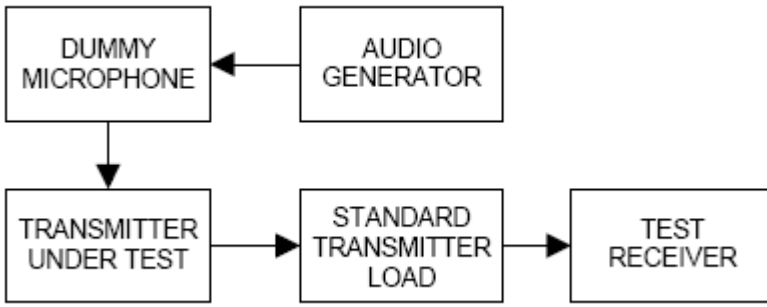
The plot(s) of Audio Frequency Response is presented hereinafter as reference.



0dB=10mV at 1kHz (20% of the maximum rated system deviation).

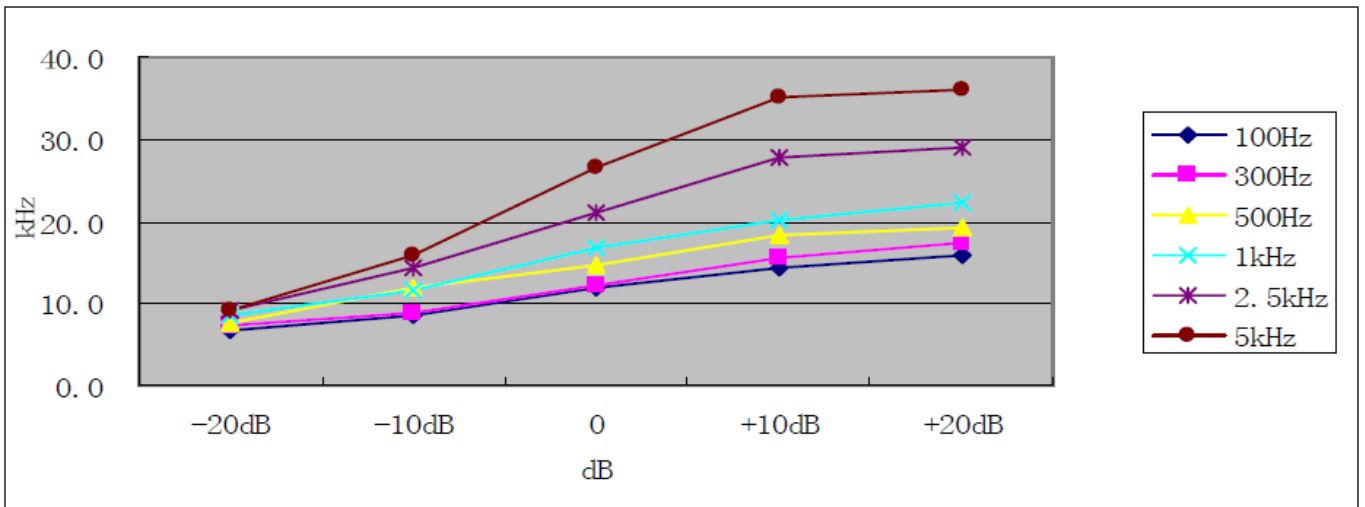
Modulation Limiting

- Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
- Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤ 0.25 Hz to $\geq 15,000$ Hz. Turn the de-emphasis function off.
- 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**.
- 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).
- Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level.
- 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, 1kHz, 2.5kHz, 5kHz), the output level of the audio generator was varied up to 1V and the FM deviation level was recorded.

Positive peak deviation



End of Report