



FCC TEST REPORT

**Test report
On Behalf of**

Hongkong Mcoplus Technology Co., Ltd

**For
microphone**

**Model No.: WMU96, WMU99, WMU48, WMU-MINI, WMV-PLUS,
WM-P2, WM-NET, WMU-CLA, WM-GII100, WM-GII200, WM-MIX**

FCC ID: 2AXSC-WMU96

Prepared for : Hongkong Mcoplus Technology Co., Ltd
1105 building A, no.339, bulong road, bantian st., longgang district, shenzhen,
China

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Date of Test: Sept. 18, 2020 ~ Sept. 25, 2020

Date of Report: Sept. 25, 2020

Report Number: HK2009112747-E



TEST RESULT CERTIFICATION

Applicant's name: Hongkong Mcoplus Technology Co.,Ltd
Address: 1105 building A, no.339, bulong road, bantian st., longgang district, shenzhen, China
Manufacture's Name: Hongkong Mcoplus Technology Co.,Ltd
Address: 1105 building A, no.339, bulong road, bantian st., longgang district, shenzhen, China

Product description

Trade Mark: **Mcoplus**
Product name: microphone
Model and/or type reference : WMU96, WMU99, WMU48, WMU-MINI, WMV-PLUS, WM-P2, WM-NET, WMU-CLA, WM-GII100, WM-GII200, WM-MIX
Standards: FCC Rules and Regulations Part 15 Subpart C Section 15.236
ANSI C63.4: 2014

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Date of Test :
Date (s) of performance of tests : Sept. 18, 2020 ~ Sept. 25, 2020
Date of Issue : Sept. 25, 2020
Test Result : **Pass**

Testing Engineer :

(Gary Qian)

Technical Manager :

(Eden Hu)

Authorized Signatory :

(Jason Zhou)



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1 TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

Requirement	CFR 47 Section	Result
Conducted Emission	15.207	N/A
Conducted Peak Output Power	15.236(d)(1)	PASS
Occupied Bandwidth Emission	15.236(f)(2)	PASS
Radiated Spurious Emission	15.236(g)	PASS
Frequency Stability	15.236(f)(3)	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

1.2 TEST FACILITY

Test Firm : Shenzhen HUAKE Testing Technology Co., Ltd.

Address 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China

1.3 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	$\pm 2.71\text{dB}$
2	RF power, conducted	$\pm 0.37\text{dB}$
3	Spurious emissions, conducted	$\pm 0.11\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.90\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.28\text{dB}$
6	Temperature	$\pm 0.1^{\circ}\text{C}$
7	Humidity	$\pm 1.0\%$



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	microphone
Model Name	WMU96
Serial No.	WMU99, WMU48, WMU-MINI, WMV-PLUS, WM-P2, WM-NET, WMU-CLA, WM-GII100, WM-GII200, WM-MIX
Model Difference	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: WMU96
Trade Mark	mcoplus
FCC ID	2AXSC-WMU96
Hardware Version:	V0.2
Software Version:	V0.2
Operation frequency	Frequency band 1: 520.250MHz –554.450MHz Frequency band 2: 556.100MHz –590.300MHz
Number of Channels	192
Antenna Type	External antenna
Antenna Gain	0dBi
Modulation Type	FM
Power Source	DC 3V from Battery



2.2 Carrier Frequency of Channels

Frequency band 1

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	520.250	20	527.450	40	534.650	60	541.850	80	549.050
1	520.610	21	527.810	41	535.010	61	542.210	81	549.410
2	520.970	22	528.170	42	535.370	62	542.570	82	549.770
3	521.330	23	528.530	43	535.730	63	542.930	83	550.130
4	521.690	24	528.890	44	536.090	64	543.290	84	550.490
5	522.050	25	529.250	45	536.450	65	543.650	85	550.850
6	522.410	26	529.610	46	536.810	66	544.010	86	551.210
7	522.770	27	529.970	47	537.170	67	544.370	87	551.570
8	523.130	28	530.330	48	537.530	68	544.730	88	551.930
9	523.490	29	530.690	49	537.890	69	545.090	89	552.290
10	523.850	30	531.050	50	538.250	70	545.450	90	552.650
11	524.210	31	531.410	51	538.610	71	545.810	91	553.010
12	524.570	32	531.770	52	538.970	72	546.170	92	553.370
13	524.930	33	532.130	53	539.330	73	546.530	93	553.730
14	525.290	34	532.490	54	539.690	74	546.890	94	554.090
15	525.650	35	532.850	55	540.050	75	547.250	95	554.450
16	526.010	36	533.210	56	540.410	76	547.610		
17	526.370	37	533.570	57	540.770	77	547.970		
18	526.730	38	533.930	58	541.130	78	548.330		
19	527.090	39	534.290	59	541.490	79	548.690		

Frequency band 2

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	556.100	20	563.300	40	570.500	60	577.700	80	584.900
1	556.460	21	563.660	41	570.860	61	578.060	81	585.260
2	556.820	22	564.020	42	571.220	62	578.420	82	585.620
3	557.180	23	564.380	43	571.580	63	578.780	83	585.980
4	557.540	24	564.740	44	571.940	64	579.140	84	586.340
5	557.900	25	565.100	45	572.300	65	579.500	85	586.700
6	558.260	26	565.460	46	572.660	66	579.860	86	587.060
7	558.620	27	565.820	47	573.020	67	580.220	87	587.420
8	558.980	28	566.180	48	573.380	68	580.580	88	587.780
9	559.340	29	566.540	49	573.740	69	580.940	89	588.140
10	559.700	30	566.900	50	574.100	70	581.300	90	588.500
11	560.060	31	567.260	51	574.460	71	581.660	91	588.860
12	560.420	32	567.620	52	574.820	72	582.020	92	589.220
13	560.780	33	567.980	53	575.180	73	582.380	93	589.580
14	561.140	34	568.340	54	575.540	74	582.740	94	589.940
15	561.500	35	568.700	55	575.900	75	583.100	95	590.300
16	561.860	36	569.060	56	576.260	76	583.460		
17	562.220	37	569.420	57	576.620	77	583.820		
18	562.580	38	533.930	58	576.980	78	584.180		
19	562.940	39	534.290	59	577.340	79	584.540		



2.3 Operation of EUT during testing

Operating Mode

The mode is used: **Transmitting mode**

Low Channel: CH00: 520.250MHz

Middle Channel: CH48: 537.530MHz

High Channel: CH95: 554.450MHz

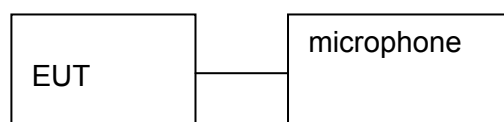
Low Channel: CH00: 556.100MHz

Middle Channel: CH48: 573.380MHz

High Channel: CH95: 590.300MHz

2.4 DESCRIPTION OF TEST SETUP

Operation of EUT during below 1GHz Radiation testing:



Operation of EUT during Above 1GHz Radiation testing



The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position



2.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Description	Model No.	Manufacturer	Remark	Certificate
/	/	/	/	/
/	/	/	/	/

Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*
- 3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.*



2.6 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 26, 2019	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 26, 2019	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 26, 2019	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 26, 2019	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 26, 2019	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 26, 2019	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 26, 2019	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 26, 2019	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519B	HKE-014	Dec. 26, 2019	1 Year
10.	Horn Antenna	Schewarzbeck	9120D	HKE-013	Dec. 26, 2019	1 Year
11.	Pre-amplifier	EMCI	EMC051845SE	HKE-015	Dec. 26, 2019	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 26, 2019	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	Dec. 26, 2019	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Dec. 26, 2019	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 26, 2019	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Dec. 26, 2019	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Dec. 26, 2019	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 26, 2019	1 Year
19.	Power Meter	R&S	NRVD	SEL0069	Dec. 26, 2019	1 Year
20.	High Gain Antenna	Schewarzbeck	LB-180400KF	HKE-054	Dec. 26, 2019	1 Year



3 TEST RESULTS AND MEASUREMENT DATA

3.1 CONDUCTED EMISSIONS TEST

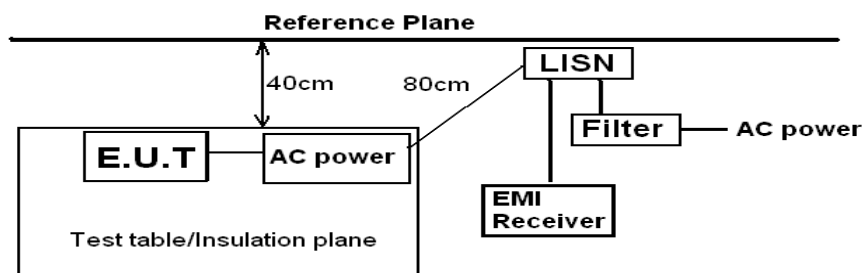
LIMIT

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207 and RSS Gen 8.8, AC Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus as below:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



Remark:
E.U.T: Equipment Under Test
LISN: Line Impedance Stabilization Network
Test table height=0.8m

TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.



TEST RESULTS

Not applicable for service which is DC Power supply.

3.2 RADIATED EMISSION TEST

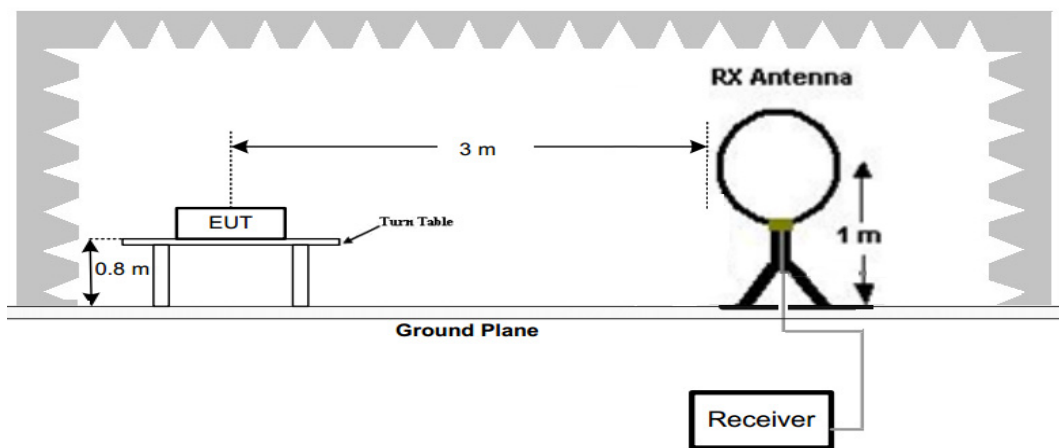
Limit

Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08).

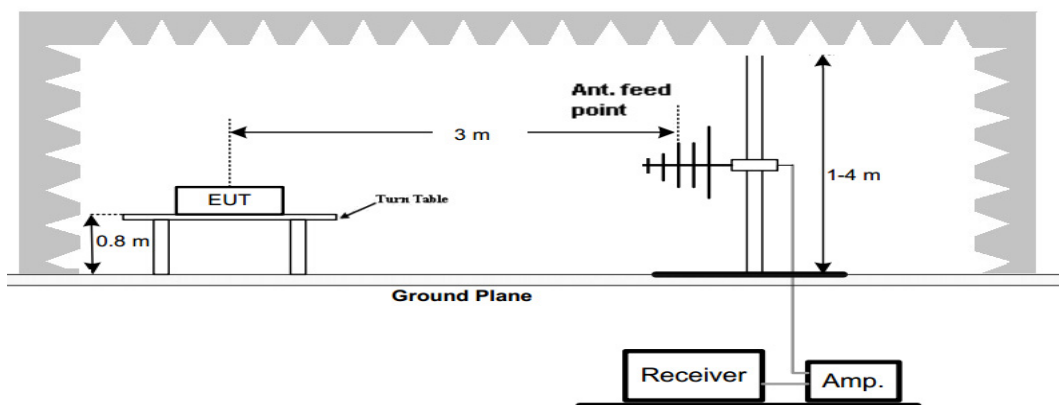
Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

TEST CONFIGURATION

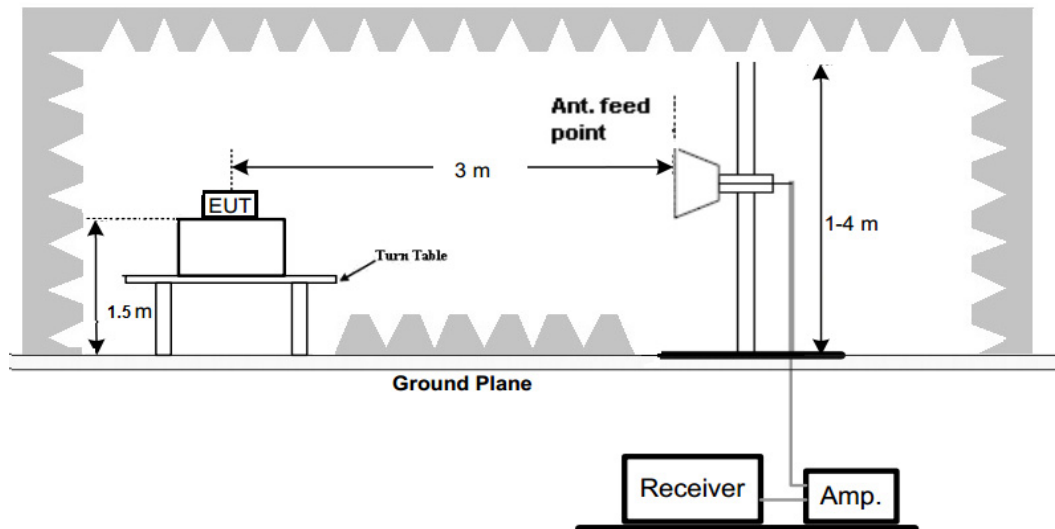
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = QP

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

QP Detector function = AV

Test Procedure

1.The setup of EUT is according with per TIA/EIA Standard 603 and ANSI C63.4-2014 measurement procedure.

2.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.

3.The frequency range up to tenth harmonic of the fundamental frequency was investigated.

4.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 spurious emissions were measured by the substitution.

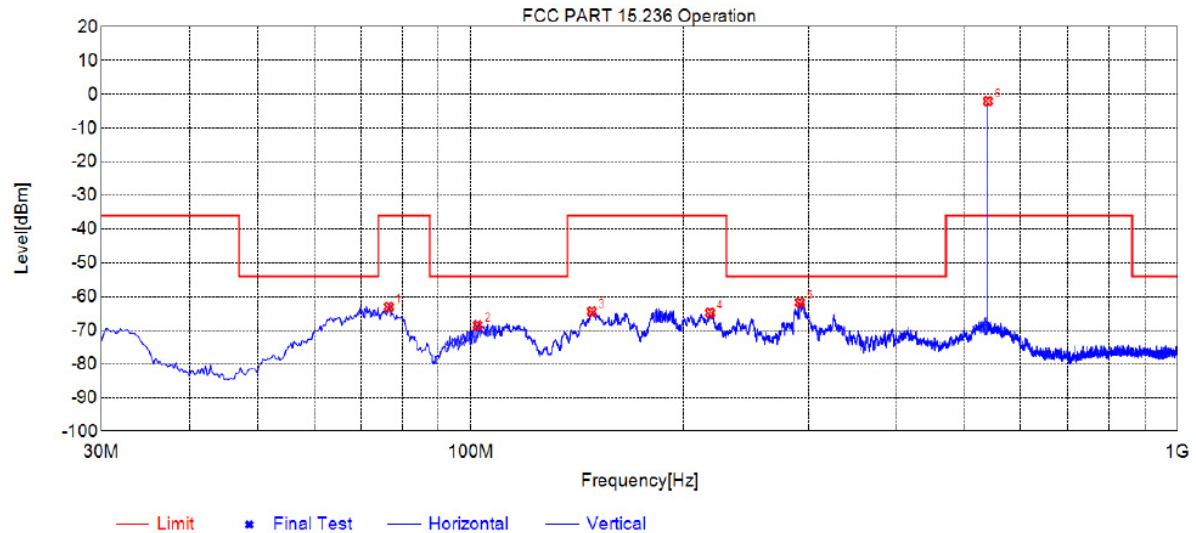
$$\text{Spurious attenuation limit in dB} = 43 + 10 \log_{10} (\text{power in Watts})$$



TEST RESULTS

Below 1GHz Test Results:(Show only the worst test results with Frequency band 2)

Antenna polarity: H

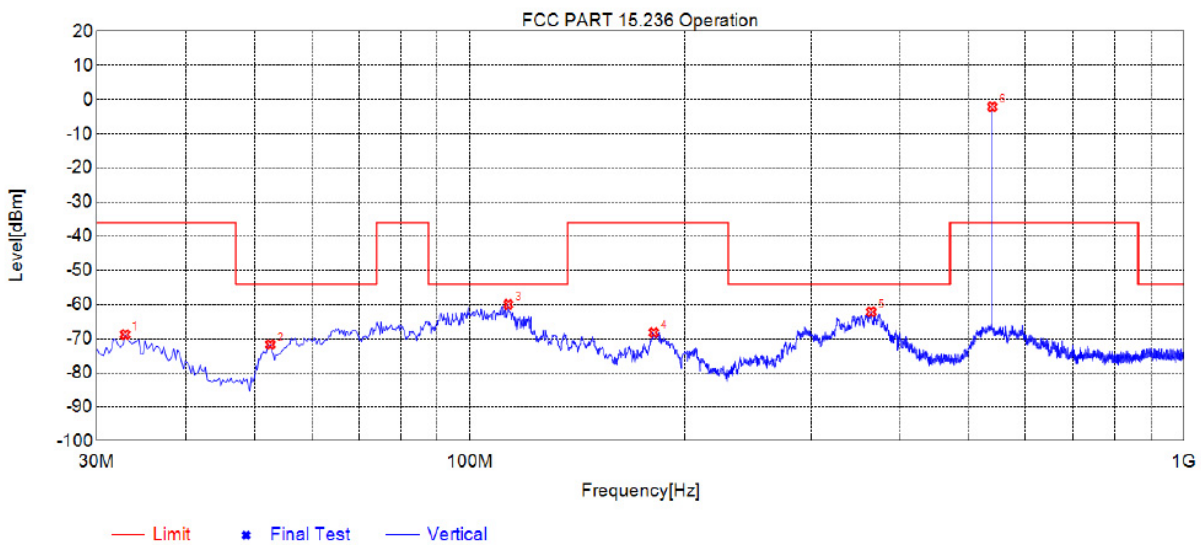


NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	76.5600	-65.95	-63.04	-36.00	27.04	2.91	Horizontal
2	102.265	-70.00	-68.45	-54.00	14.45	1.55	Horizontal
3	148.340	-66.75	-64.40	-36.00	28.40	2.35	Horizontal
4	217.937	-68.12	-64.79	-36.00	28.79	3.33	Horizontal
5	292.142	-64.72	-61.74	-54.00	7.74	2.98	Horizontal
6	539.007	-6.89	-2.03	-36.00	-33.97	4.86	Horizontal

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



Antenna polarity: V



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	32.9100	-70.73	-68.81	-36.00	32.81	1.92	Vertical
2	52.5525	-67.36	-71.74	-54.00	17.74	-4.38	Vertical
3	113.177	-70.61	-59.96	-54.00	5.96	10.65	Vertical
4	180.835	-64.84	-68.23	-36.00	32.23	-3.39	Vertical
5	364.650	-63.88	-62.16	-54.00	8.16	1.72	Vertical
6	538.765	-6.24	-2.08	-36.00	-33.92	4.16	Vertical

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Remark:

- (1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz was verified, and no any emission was found except system noise floor.
- (2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

Harmonics and Spurious Emissions

Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note: 1. Emission Level = Reading + Cable loss + Antenna factor - Amp factor

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement



Above 1GHz Test Results:(Show only the worst test results)
Transmitting at 520.250MHz

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
1040.50	-35.46	-5.81	-41.27	-30	-11.27	Horizontal
1040.50	-36.11	-5.81	-41.92	-30	-11.92	Vertical
1560.75	-33.72	-6.06	-39.78	-30	-9.78	peak
1560.75	-34.16	-5.81	-39.97	-30	-9.97	Horizontal
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Transmitting at 537.530MHz

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
1075.06	-35.46	-5.81	-41.27	-30	-11.27	Horizontal
1075.06	-36.35	-5.81	-42.16	-30	-12.16	Vertical
1612.59	-33.52	-6.06	-39.58	-30	-9.58	peak
1612.59	-34.14	-5.81	-39.95	-30	-9.95	Horizontal
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Transmitting at 554.450MHz

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
1108.90	-35.39	-5.81	-41.2	-30	-11.2	Horizontal
1108.90	-36.20	-5.81	-42.01	-30	-12.01	Vertical
1663.35	-33.68	-6.06	-39.74	-30	-9.74	peak
1663.35	-34.14	-5.81	-39.95	-30	-9.95	Horizontal
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Transmitting at 556.100MHz

Transmitting at 556.100MHz

Transmitting at 556.100MHz

Transmitting at 556.100MHz

Transmitting at 556.100MHz

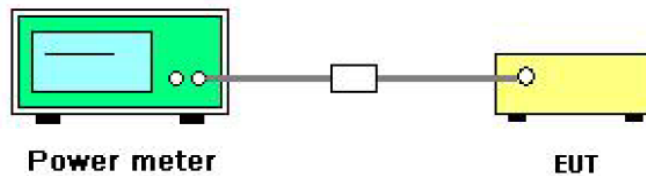


3.4 Conducted Output Power

Limit

According to FCC 15.236(d)(1), for low power auxiliary station operating in the 470-608, and 614-698 MHz bands, In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP

TEST CONFIGURATION



Test Procedure:

1. The maximum peak output power was measured with a Spectrum Analyzer connected to the antenna terminal while EUT was operating in unmodulated situation.
2. Power was supplied to the battery input connector a power supply. The power supply was set for +3.0VDC. The Spectrum Analyzer was connected at antenna terminal to measure RF power of the carrier.
3. A Multimeter was connected in series with final RF Stage to measure the current; A Multimeter was used to measure final RF Stage supply voltage. Then the voltage v.s. current of the final RF Stage can be showed.

Test Results:

Frequency band 1

Test Channel	frequency (MHz)	Conducted Output Power (dBm)	ANT Gain (dBi)	EIRP (dBm)	Limit (dBm)	Result
CH00	520.250	-6.48	0	-6.48	17	PASS
CH48	537.530	-6.21	0	-6.21		PASS
CH95	554.450	-6.01	0	-6.01		PASS

Frequency band 2

Test Channel	frequency (MHz)	Conducted Output Power (dBm)	ANT Gain (dBi)	EIRP (dBm)	Limit (dBm)	Result
CH00	556.100	-6.35	0	-6.35	17	PASS
CH48	573.380	-6.02	0	-6.02		PASS
CH95	590.300	-5.88	0	-5.88		PASS



3.5OCCUPIED BANDWIDTH MEASUREMENT

Limit

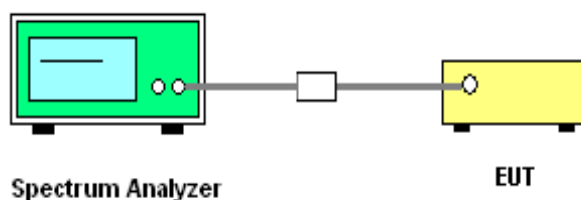
According to FCC 15.236(f)(2), The operating frequency within a permissible band of operation as defined in paragraph (c) must comply with the following requirements.

- (1) The frequency selection shall be offset from the upper or lower band limits by 25 kHz or an integral multiple thereof.
- (2) One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200kHz.

Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in Section 8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08) (incorporated by reference, see §15.38). Emissions outside this band shall comply with the limit specified at the edges of the

ETSI mask

TEST CONFIGURATION



Test Procedure:

According to TIA-603 for additional Test Set-Up procedures, the occupied bandwidth of emission was measured with a Spectrum Analyzer connected to the antenna terminal while EUT was operating in 2.5kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation. Then mark the -26dB Bandwidth and record it.

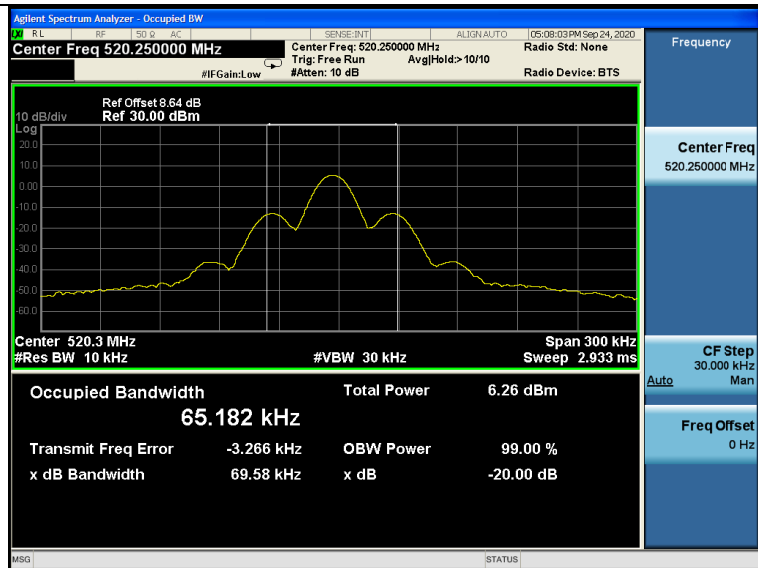
Test Results:

Frequency band 1

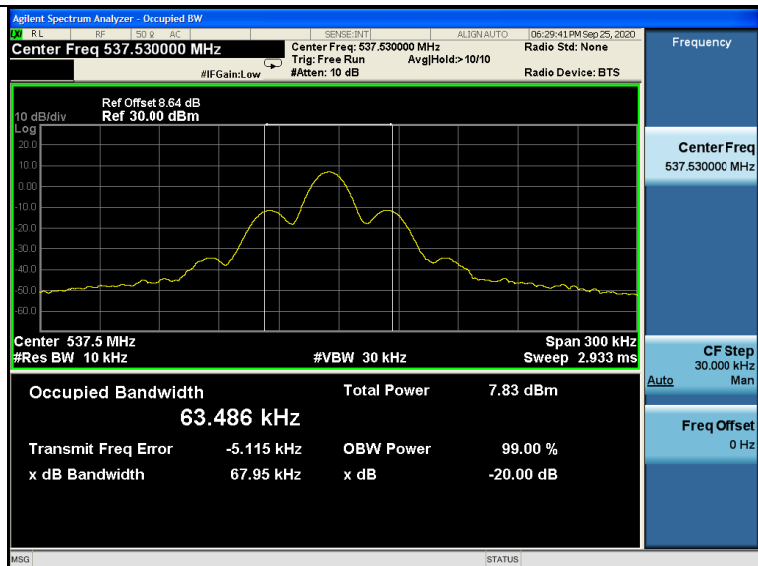
Test Channel	frequency (MHz)	-20Bandwidth (kHz)	99%Bandwidth (kHz)	Limit (kHz)	Result
CH00	520.250	69.58	65.182	200	PASS
CH48	537.530	67.27	63.088		PASS
CH95	554.450	68.75	64.507		PASS



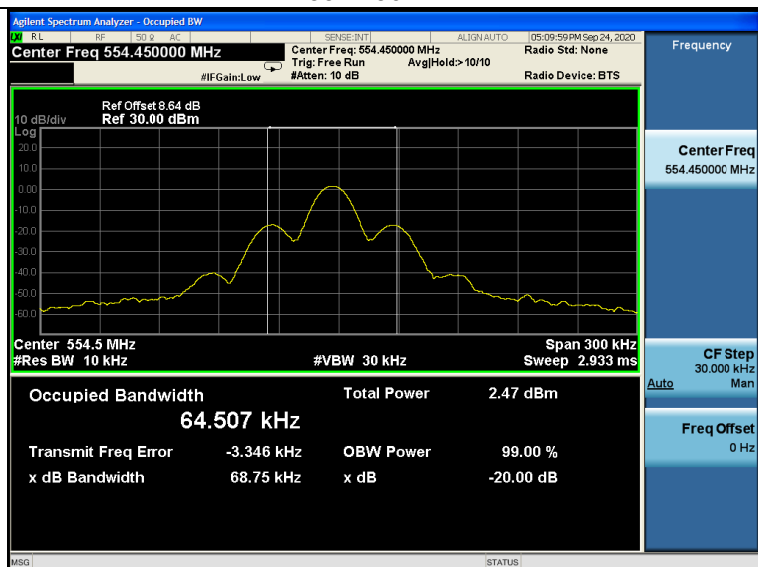
520.250MHz



537.530MHz



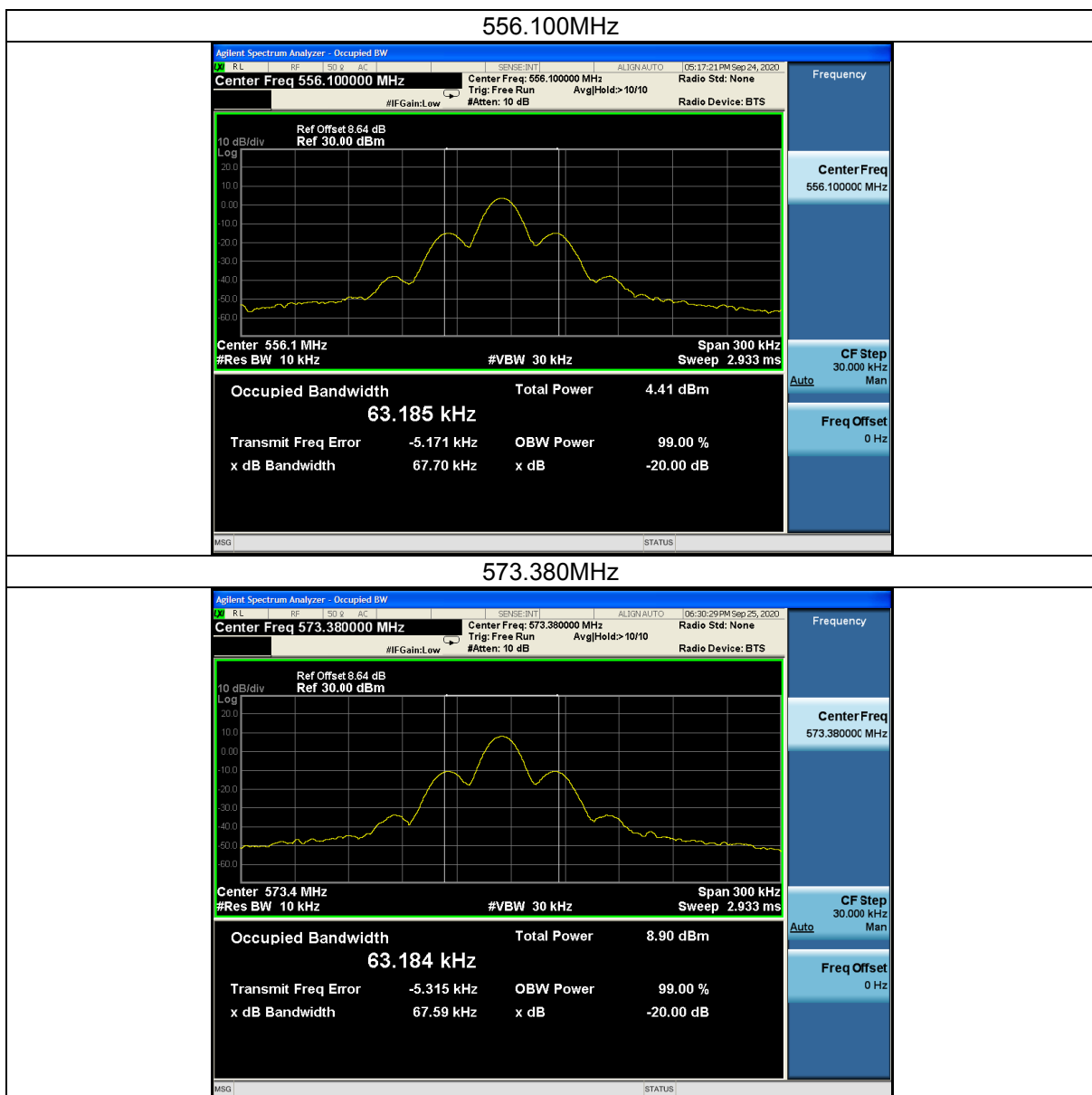
554.450MHz

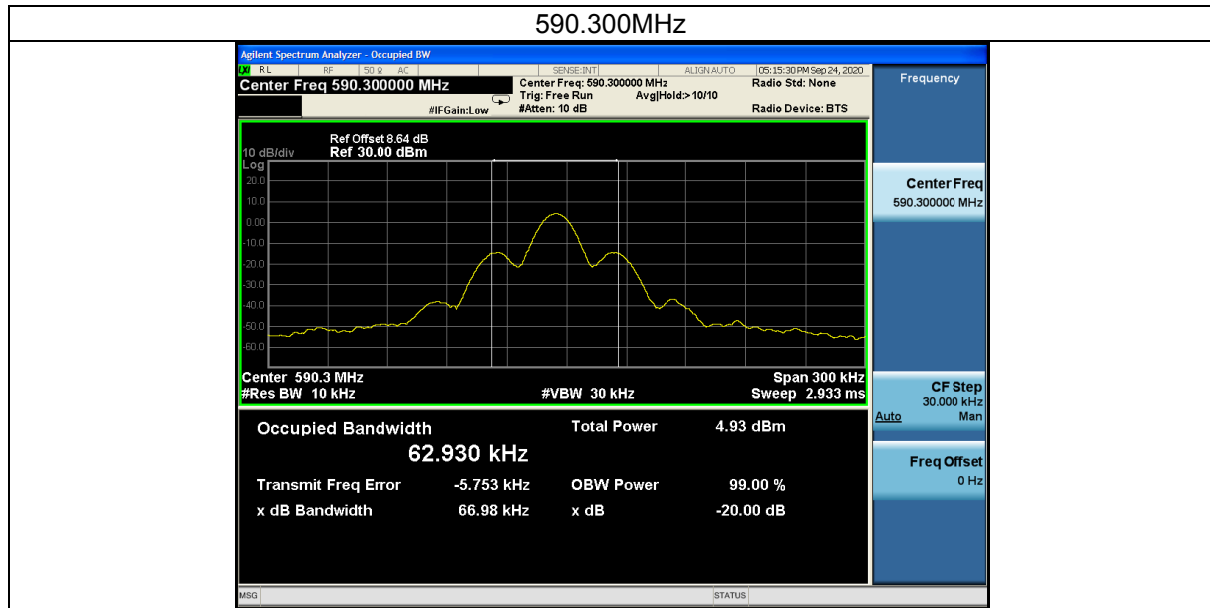




Frequency band 2

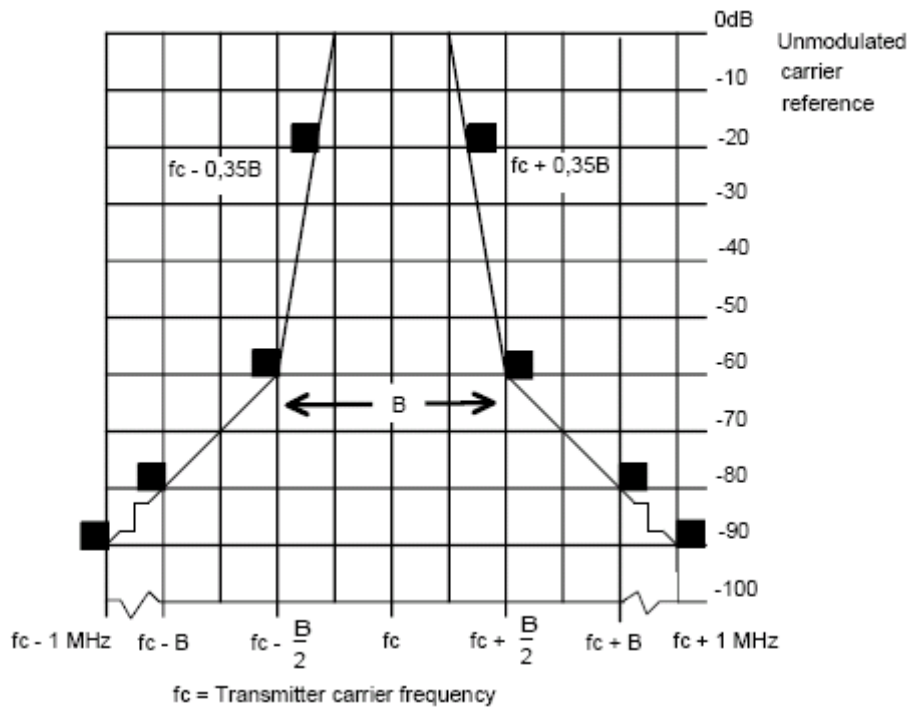
Test Channel	frequency (MHz)	-20Bandwidth (kHz)	99%Bandwidth (kHz)	Limit (kHz)	Result
CH00	556.100	67.70	63.185	200	PASS
CH48	573.380	67.63	63.344		PASS
CH95	590.300	66.98	62.930		PASS





3.5 Necessary bandwidth

Limit

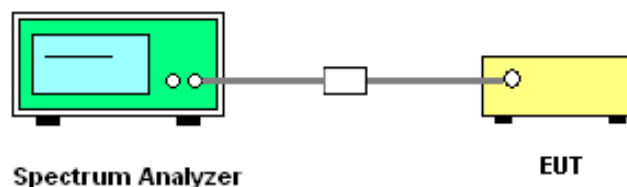


Standard Applicable

According to §15.236 (g) Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), Electromagnetic compatibility and Radio spectrum Matters (ERM); microphones in the 25 MHz to 3GHz frequency range; Part 1: Technical characteristics and methods of measurement. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

According to ETSI EN 300 422-2 V2.1.1 section 8.3, the transmitter output spectrum shall be within the mask defined in the following figure.

TEST CONFIGURATION



Test Procedure:

The arrangement of test equipment as shown in figure B.1 shall be used. Note that the noise meter conforms to (quasipeak) without weighting filter (flat).

With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the DUT shall be adjusted to 8 dB below the limiting threshold (-8 dB (lim)) as declared by the manufacturer.

The corresponding audio output level from the demodulator shall be measured and recorded.



The input impedance of the noise meter shall be sufficiently high to avoid more than 0,1 dB change in input level when the meter is switched between input and output.

The audio input level shall be increased by 20 dB, i.e. to +12 dB (lim), and the corresponding change in output level shall be measured.

It shall be checked that the audio output level has increased by ≤ 10 dB.

If this condition is not met, the initial audio input level shall be increased from -8 dB (lim) in 1 dB steps until the above condition is fulfilled, and the input level recorded in the test report. This level replaces the value derived from the manufacturer's declaration and is defined as -8 dB (lim).

Measure the input level at the transmitter required to give +12 dB (lim).

The LF generator shall be replaced with the weighted noise source to Recommendation ITU-R BS.559-2 [i.3], band-limited to 15 kHz as described in IEC 60244-13 [2], and the level shall be adjusted such that the measured input to the transmitter corresponds to +12 dB (lim).

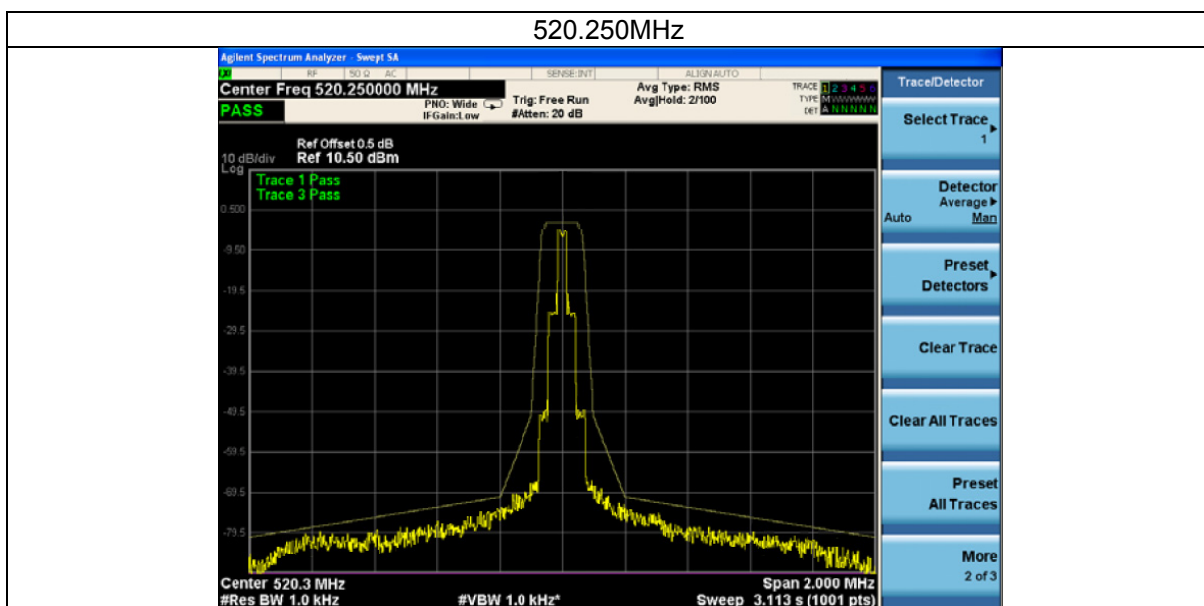
If the transmitter incorporates any ancillary coding or signalling channels (e.g. pilot-tones), these shall be enabled prior to any spectral measurements.

If the transmitter incorporates more than one audio input, e.g. stereo systems, the second and subsequent channels shall be simultaneously driven from the same noise source, attenuated to a level of -6 dB (lim).

- centre frequency: f_c : Transmitter (Tx) nominal frequency;
- dispersion (Span): $f_c - 1$ MHz to $f_c + 1$ MHz;
- Resolution BandWidth (RBW): 1 kHz;
- Video BandWidth (VBW): 1 kHz;
- detector: Peak hold.

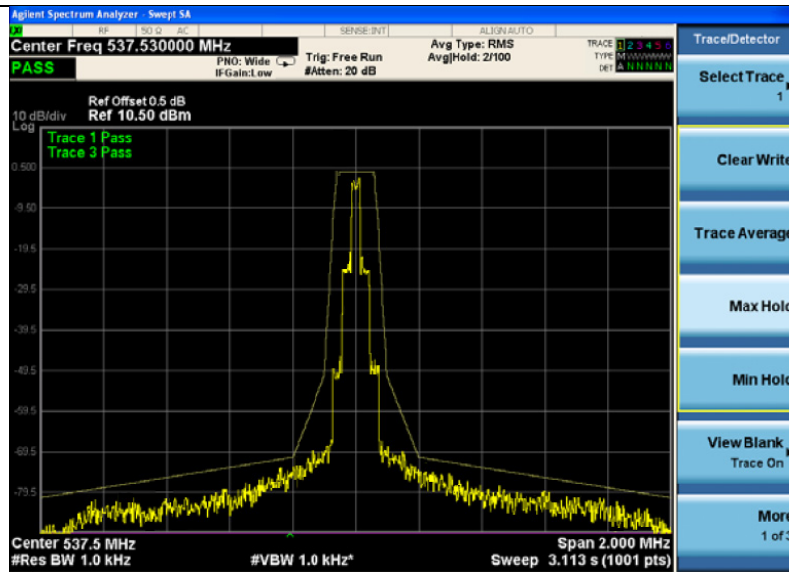
Test Result

Frequency band 1

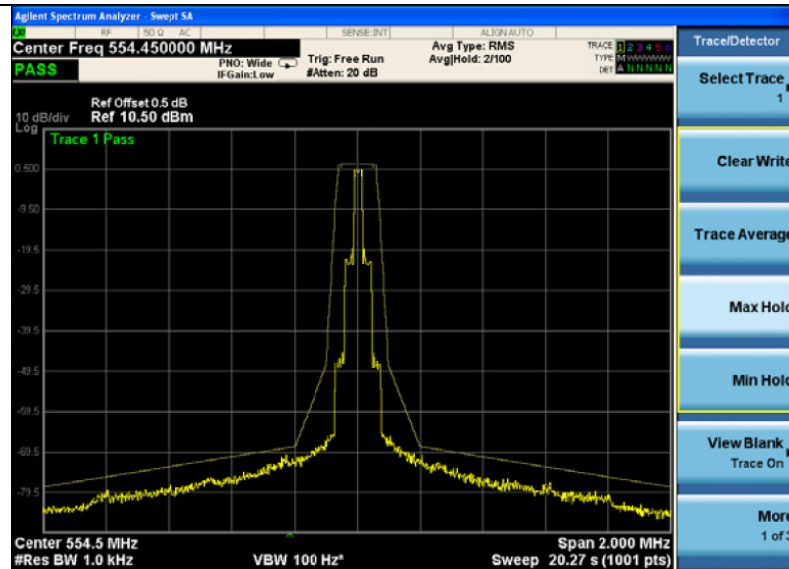




537.530MHz

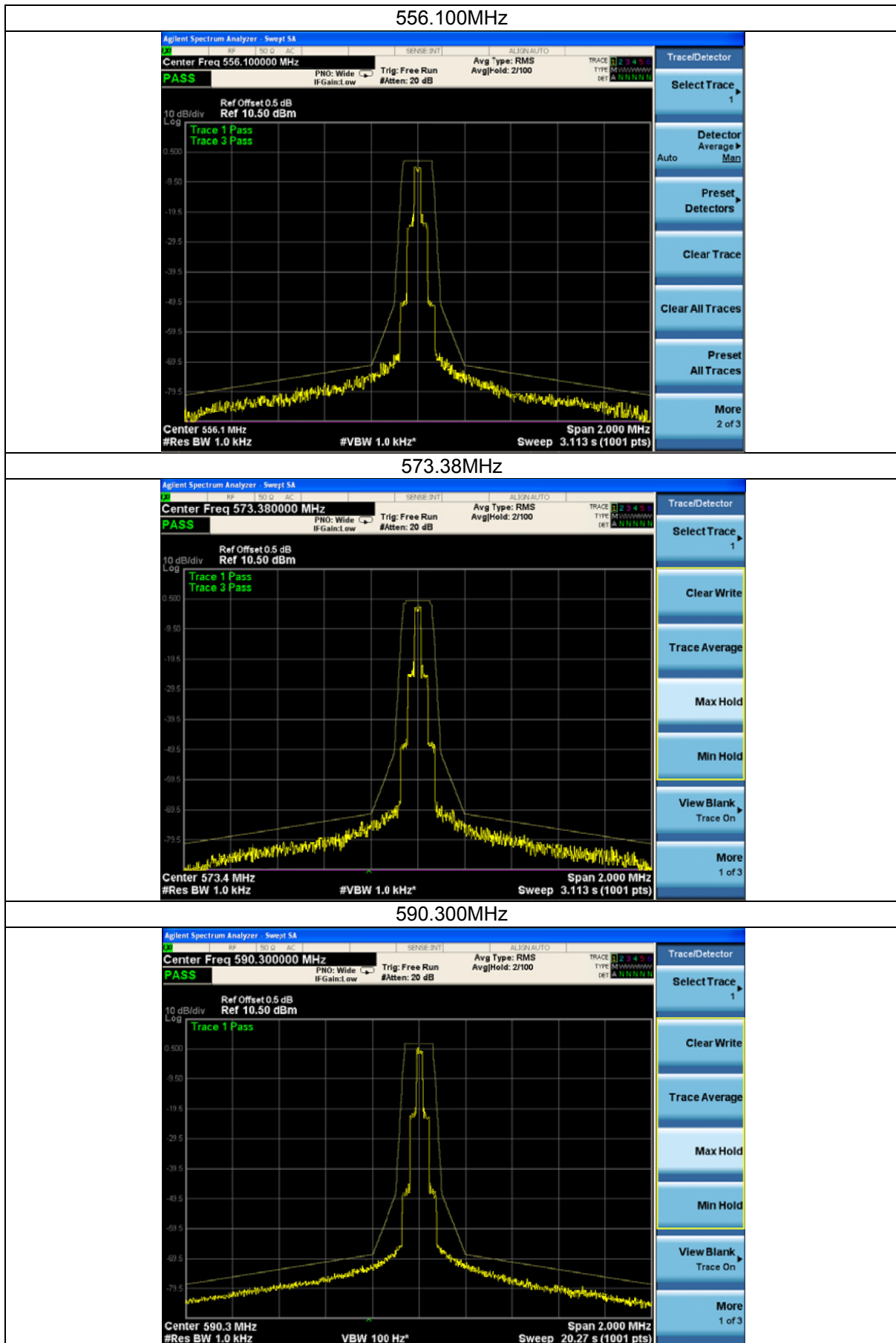


554.450MHz





Frequency band 2





3.6 FREQUENCY STABILITY

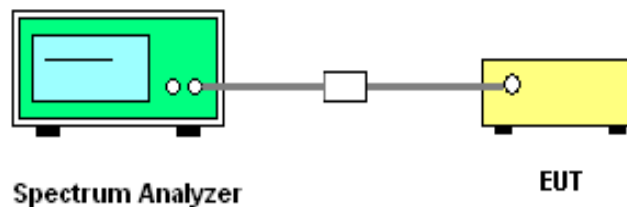
Limit

$\pm 50\text{ppm}$

Standard Applicable

According to FCC 15.236(f)(3), The frequency tolerance of the carrier signal shall be maintained within $\pm 0.005\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

TEST CONFIGURATION



Test Procedure:

1. Setup the configuration of the ambient temperature from -20°C to 50°C with sufficient time. And measure the different power of the EUT with an artificial power from highest to end point voltage.
2. Set frequency counter center frequency to the right frequency needs to be measured band.

Test Result

Frequency band 1

Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature ($^{\circ}\text{C}$)	(MHz)	(MHz)	ppm	ppm	
520.250MHz	N	N	520.2467	-0.0033	-6.34	$\pm 50\text{ppm}$	PASS
		L	520.2758	0.0258	-49.59		
		H	520.2469	-0.0031	-5.96		
	L	N	520.2536	0.0036	6.92		
		L	520.2342	-0.0158	-30.37		
		H	520.2562	0.0062	11.92		
	H	N	520.2551	0.0051	9.80		
		L	520.2413	-0.0087	-16.72		
		H	520.2466	-0.0034	-6.54		



Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (°C)	(MHz)	(MHz)	ppm	ppm	
537.530MHz	N	N	537.5430	0.013	24.18	±50ppm	PASS
		L	537.5401	0.0101	18.79		
		H	537.5166	-0.0134	-24.93		
	L	N	537.5260	-0.004	-7.44		
		L	537.5172	-0.0128	-23.81		
		H	537.5511	0.0211	39.25		
	H	N	537.5484	0.0184	34.23		
		L	537.5511	0.0211	39.25		
		H	537.5097	-0.0203	-37.77		

Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (°C)	(MHz)	(MHz)	ppm	ppm	
554.450MHz	N	N	554.4422	-0.0078	-14.07	±50ppm	PASS
		L	554.4739	0.0239	43.10		
		H	554.4644	0.0144	25.97		
	L	N	554.4400	-0.0100	-18.04		
		L	554.4333	-0.0167	-30.12		
		H	554.4543	0.0043	7.76		
	H	N	554.4664	0.0164	29.58		
		L	554.4613	0.0113	20.38		
		H	554.4651	0.0151	27.23		

Frequency band 2

Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (°C)	(MHz)	(MHz)	ppm	ppm	
556.10MHz	N	N	556.1254	0.0254	45.67	±50ppm	PASS
		L	556.1068	0.0068	12.23		
		H	556.1130	0.0130	23.38		
	L	N	556.0891	-0.0109	-19.60		
		L	556.0988	-0.0012	-2.16		
		H	556.1121	0.0121	21.76		
	H	N	556.0897	-0.0103	-18.52		
		L	556.0905	-0.0095	-17.08		
		H	556.1022	0.0022	3.96		

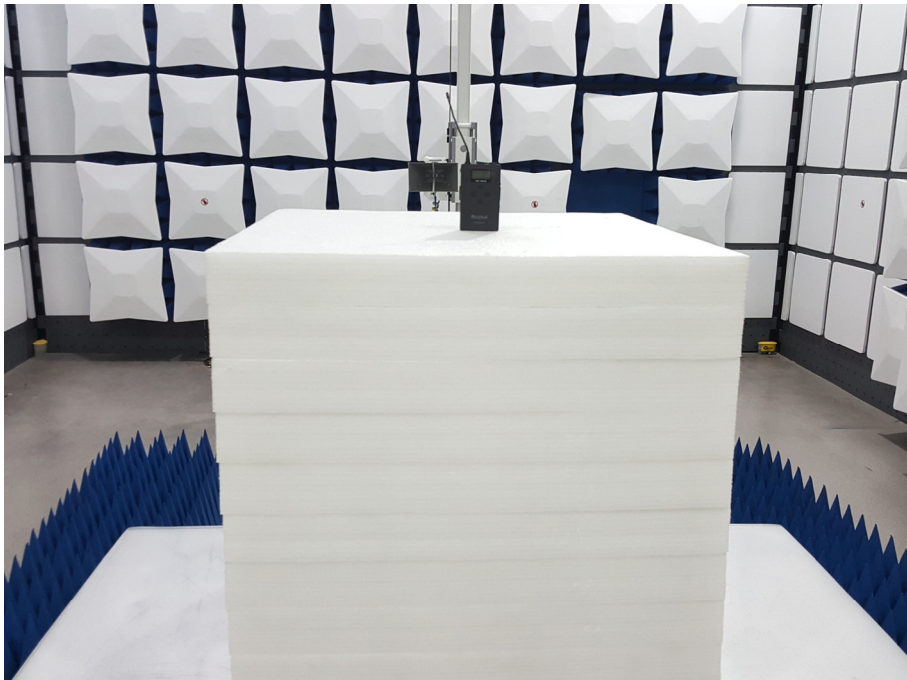
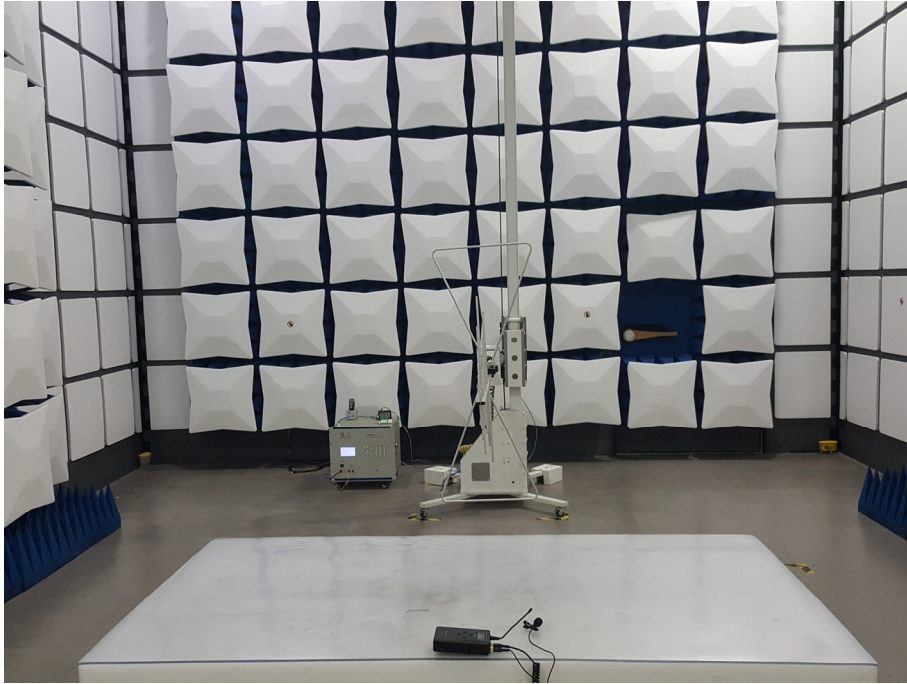


Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (°C)	(MHz)	(MHz)	ppm	ppm	
573.380MHz	N	N	573.3970	0.017	29.65	± 50ppm	PASS
		L	573.3794	-0.0006	-1.05		
		H	573.3543	-0.0257	-44.82		
	L	N	573.3898	0.0098	17.09		
		L	573.3813	0.0013	2.27		
		H	573.4048	0.0248	43.25		
	H	N	573.3600	-0.0200	-34.88		
		L	573.3838	0.0038	6.63		
		H	573.3749	-0.0051	-8.89		

Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (°C)	(MHz)	(MHz)	ppm	ppm	
590.300MHz	N	N	590.3093	0.0093	15.75	± 50ppm	PASS
		L	590.3152	0.0152	25.75		
		H	590.3144	0.0144	24.39		
	L	N	590.2799	-0.0201	-34.05		
		L	590.2800	-0.0200	-33.88		
		H	590.3203	0.0203	34.39		
	H	N	590.3061	0.0061	10.33		
		L	590.287	-0.013	-22.02		
		H	590.2915	-0.0085	-14.40		

4 PHOTOGRAPH OF TEST

Radiated Emission





PHOTOGRAPH OF EUT

Reference to the reporter : ANNEX A of external photos and ANNEX B of internal photos

-----End of test report-----