

FCC TEST REPORT

FCC ID:2A6H6-V15

Report Number..... : ZKT-220419L2518E

Date of Test..... Apr. 16, 2022 to May 05, 2022

Date of issue..... : May 05, 2022

Total number of pages..... 31

Test Result : PASS

Testing Laboratory..... : Shenzhen ZKT Technology Co., Ltd.

Address : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name : Shenzhen Hengmaoyuan Electronic Technology Co., Ltd.

Address : 4-401,Houhai Industrial Park, Liyuhe Industrial Zone, Loucun Xinqu Street, Guangming District,Shenzhen Guangdong

Manufacturer's name : Shenzhen Hengmaoyuan Electronic Technology Co., Ltd.

Address : 4-401,Houhai Industrial Park, Liyuhe Industrial Zone, Loucun Xinqu Street, Guangming District,Shenzhen Guangdong

Test specification:

Standard..... : FCC CFR Title 47 Part 15 Subpart C Section 15.236
ANSI C63.10:2013

Test procedure..... : /

Non-standard test method : N/A

Test Report Form No..... : TRF-EL-108_V0

Test Report Form(s) Originator..... : ZKT Testing

Master TRF : Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Product name..... : Wireless Microphone

Trademark : N/A

Model/Type reference..... : V15

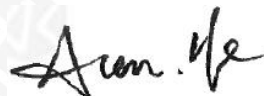
Ratings..... : DC 5V from adapter for charging or DC 3.7V from battery

Testing procedure and testing location:

Testing Laboratory.....: **Shenzhen ZKT Technology Co., Ltd.**

Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Tested by (name + signature).....: Alen He



Reviewer (name + signature).....: Joe Liu



Approved (name + signature).....: Lake Xie



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1. VERSION

Report No.	Version	Description	Approved
ZKT-220419L2518E	Rev.01	Initial issue of report	May 05, 2022

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.236) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.203	Antenna Requirement	PASS	
15.207	Conducted Emission	PASS	
15.236(d)(2)	Conducted Peak Output Power	PASS	
15.236(g)	Radiated Spurious Emission Measurement	PASS	
15.236(g)	Spurious Emission at Antenna Port	PASS	
15.236(f)(2)	Occupied Bandwidth Emission	PASS	
15.236(f)(3)	Frequency Stability	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225
Designation Number: CN1299
IC Registered No.: 27033

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$ · where expanded 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	Uncertainty
1	AC Conduced Emission Test	$\pm 1.38\text{dB}$
2	3m camber Radiated spurious emission(9KHz-30MHz)	$U=4.5\text{dB}$
3	3m camber Radiated spurious emission(30MHz-1GHz)	$U=4.8\text{dB}$
4	3m chamber Radiated spurious emission(1GHz-18GHz)	$U=4.9\text{dB}$
5	3m chamber Radiated spurious emission(18GHz-40GHz)	$U=5.0\text{dB}$
6	Conducted Adjacent channel power	$U=1.38\text{dB}$
7	Conducted output power uncertainty Above 1G	$U=1.576\text{dB}$
8	Conducted output power uncertainty below 1G	$U=1.28\text{dB}$
9	humidity uncertainty	$U=5.3\%$
10	Temperature uncertainty	$U=0.59^{\circ}\text{C}$

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Microphone
Trade Name	N/A
Model Name	V15
Serial Model	N/A
Model Difference	N/A
Hardware version	V1.2
Software version	V1.0
Operation Frequency:	658.8MHz
Modulation Type:	FM
Antenna Type:	Internal Antenna
Antenna Gain:	0dBi
Ratings	DC 3.7V from battery

Operation Frequency each of channel	
Channel	Frequency
1	658.8MHz

3.2 DESCRIPTION OF TEST MODES

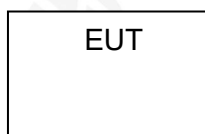
For All Emission	
Final Test Mode	Description
Transmitting mode	Keep the EUT in continuously transmitting mode

Note:

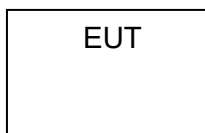
- (1) Fully-charged battery is used during the test

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Spurious emissions



3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Wireless Microphone	N/A	V15	N/A	EUT
E-2	adapter	Adapter	N/A	PD-014	N/A

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS
Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY45109572	Sep. 22, 2021	Sep. 21, 2022
2	Test Receiver (9kHz-7GHz)	R&S	ESC17	101169	Sep. 22, 2021	Sep. 21, 2022
3	Bilog Antenna (30MHz-1400MHz)	Schwarzbeck	VULB9168	00877	Sep. 22, 2021	Sep. 21, 2022
4	Horn Antenna (1GHz-18GHz)	SCHWARZBEC K	BBHA9120D	1541	Sep. 22, 2021	Sep. 21, 2022
5	Horn Antenna (18GHz-40GHz)	A.H. System	SAS-574	588	Sep. 22, 2021	Sep. 21, 2022
6	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	N/A	Sep. 22, 2021	Sep. 21, 2022
7	Amplifier (1GHz-40GHz)	全聚达	DLE-161	097	Sep. 22, 2021	Sep. 21, 2022
8	Loop Antenna (9kHz-30MHz)	SCHWARZBEC K	FMZB1519B	014	Sep. 22, 2021	Sep. 21, 2022
9	RF cables1 (9kHz-30MHz)	N/A	9kHz-30MHz	N/A	Sep. 22, 2021	Sep. 21, 2022
10	RF cables2 (30MHz-1GHz)	N/A	30MHz-1GHz	N/A	Sep. 22, 2021	Sep. 21, 2022
11	RF cables3 (1GHz-40GHz)	N/A	1GHz-40GHz	N/A	Sep. 22, 2021	Sep. 21, 2022
12	CMW500 Test	R&S	CMW500	106504	Sep. 22, 2021	Sep. 21, 2022
13	ESG Signal Generator	Agilent	E4421B	GB40051203	Sep. 22, 2021	Sep. 21, 2022
14	Signal Generator	Agilent	N5182A	MY47420215	Sep. 22, 2021	Sep. 21, 2022
15	D.C. Power Supply	LongWei	TPR-6405D	\	\	\
16	Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	Sep. 22, 2021	Sep. 21, 2022
2	LISN	CYBERTEK	EM5040A	E18504001 49	Sep. 22, 2021	Sep. 21, 2022
3	Test Cable	N/A	C01	N/A	Sep. 22, 2021	Sep. 21, 2022
4	Test Cable	N/A	C02	N/A	Sep. 22, 2021	Sep. 21, 2022
5	EMI Test Receiver	R&S	ESRP3	101946	Sep. 22, 2021	Sep. 21, 2022
6	Absorbing Clamp	DZ	ZN23201	N/A	Sep. 22, 2021	Sep. 21, 2022

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS

(Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

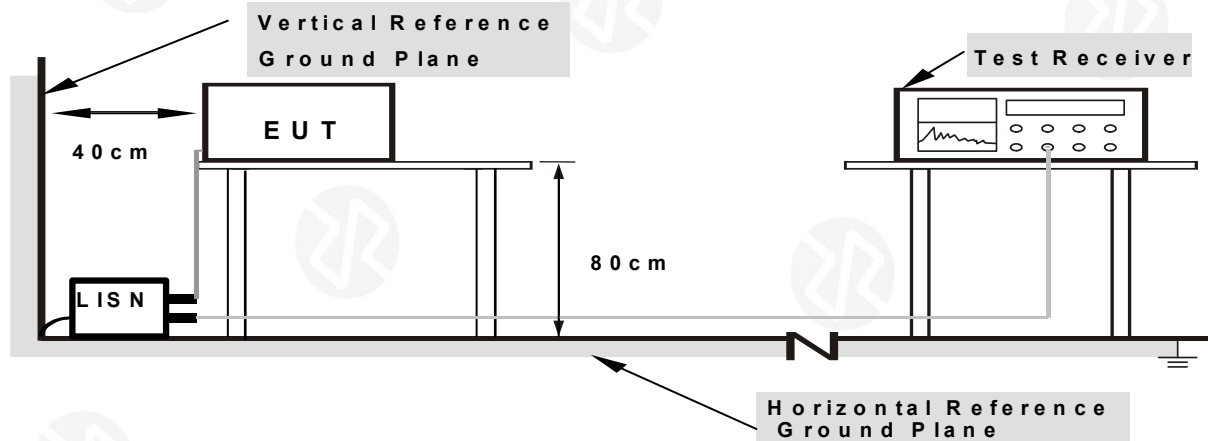
4.1.2 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



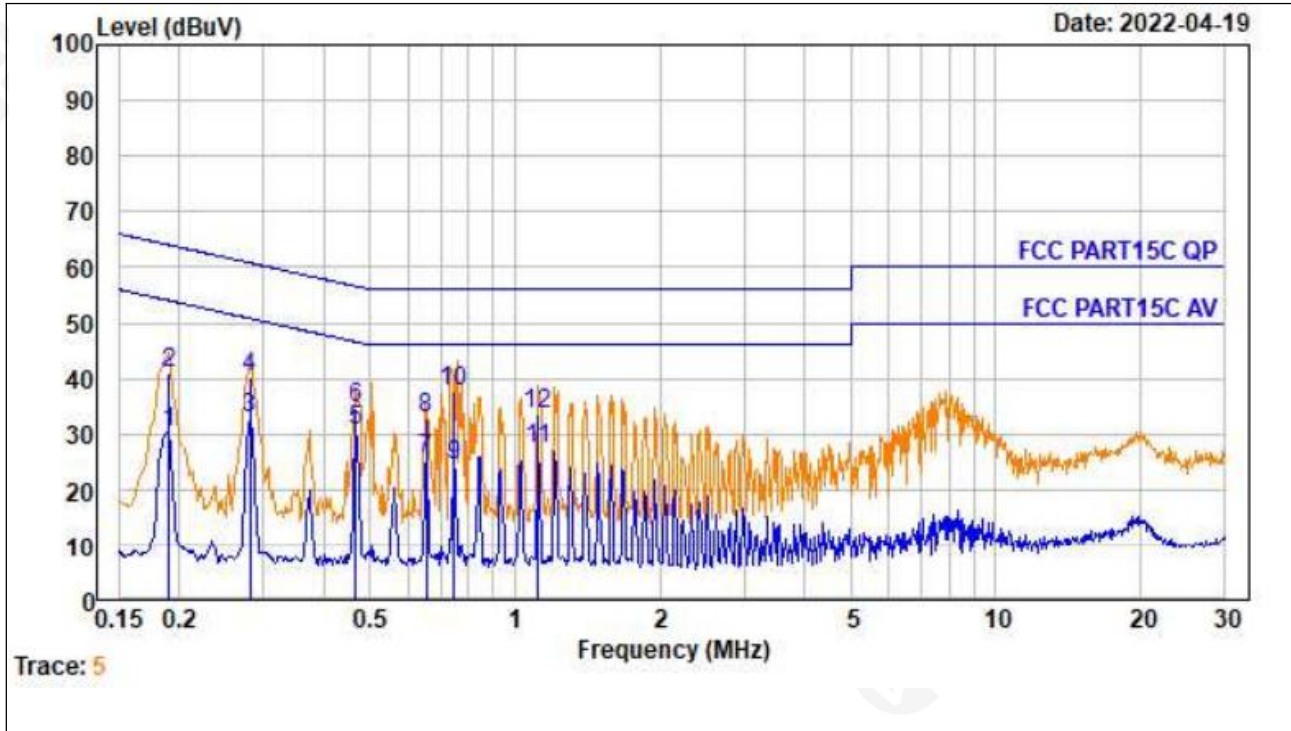
**Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.1.6 TEST RESULTS

Temperature :	26°C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz		

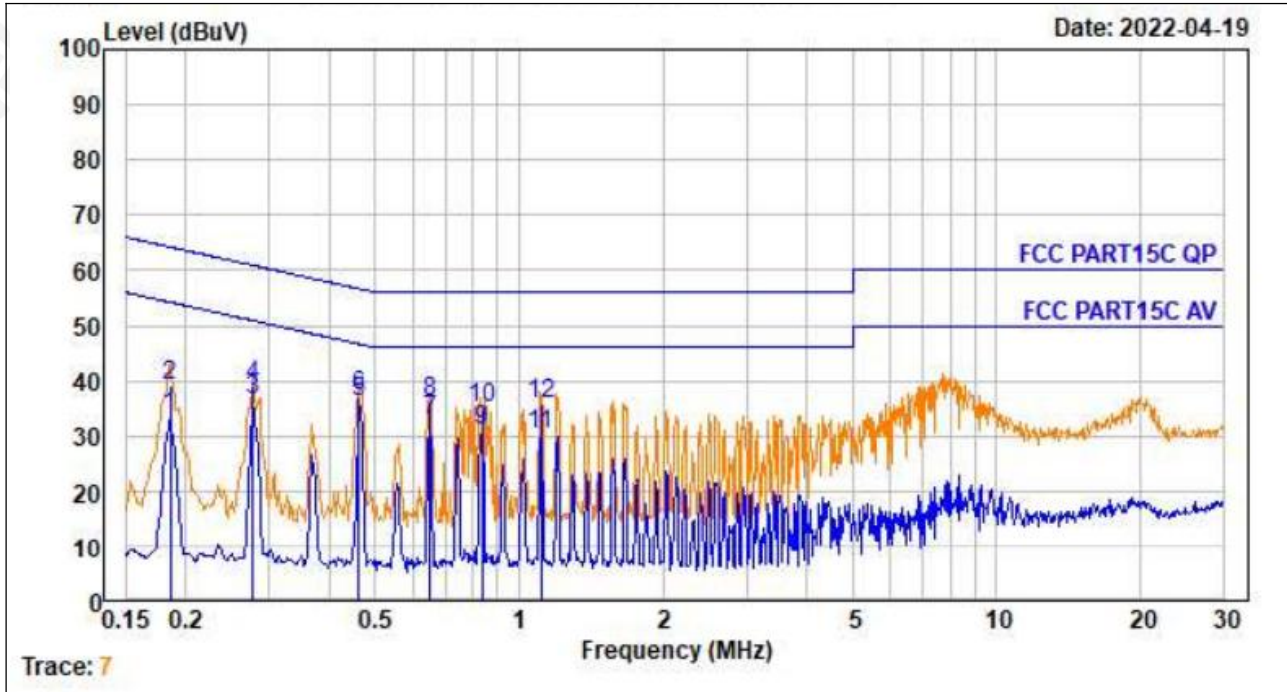


No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBμV	Emission Level dBμV	Limit dBμV	Over Limit dB	Remark
1	0.190	0.27	9.60	20.44	30.31	54.02	-23.71	Average
2	0.190	0.27	9.60	31.18	41.05	64.02	-22.97	QP
3	0.282	0.36	9.69	22.71	32.76	50.76	-18.00	Average
4	0.282	0.36	9.69	30.34	40.39	60.76	-20.37	QP
5	0.466	0.42	9.80	20.29	30.51	46.58	-16.07	Average
6	0.466	0.42	9.80	24.40	34.62	56.58	-21.96	QP
7	0.654	0.44	9.83	15.30	25.57	46.00	-20.43	Average
8	0.654	0.44	9.83	22.57	32.84	56.00	-23.16	QP
9	0.747	0.44	9.83	14.10	24.37	46.00	-21.63	Average
10	0.747	0.44	9.83	27.25	37.52	56.00	-18.48	QP
11	1.117	0.46	9.85	17.14	27.45	46.00	-18.55	Average
12	1.117	0.46	9.85	23.17	33.48	56.00	-22.52	QP

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor

Temperature :	26°C	Relative Humidity :	54%
Pressure :	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz		



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBμV	Emission Level dBμV	Limit dBμV	Over Limit dB	Remark
1	0.186	0.26	9.57	23.72	33.55	54.20	-20.65	Average
2	0.186	0.26	9.57	29.13	38.96	64.20	-25.24	QP
3	0.277	0.35	9.66	26.40	36.41	50.90	-14.49	Average
4	0.277	0.35	9.66	29.23	39.24	60.90	-21.66	QP
5	0.461	0.42	9.76	25.92	36.10	46.67	-10.57	Average
6	0.461	0.42	9.76	26.95	37.13	56.67	-19.54	QP
7	0.651	0.44	9.80	22.47	32.71	46.00	-13.29	Average
8	0.651	0.44	9.80	25.97	36.21	56.00	-19.79	QP
9	0.835	0.45	9.81	20.72	30.98	46.00	-15.02	Average
10	0.835	0.45	9.81	24.93	35.19	56.00	-20.81	QP
11	1.111	0.46	9.82	20.12	30.40	46.00	-15.60	Average
12	1.111	0.46	9.82	25.53	35.81	56.00	-20.19	QP

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor

4.2 RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Peak		1MHz	10Hz	Average	

4.2.1 RADIATED EMISSION LIMITS

According to 15.236(g)

Table 3: Limits for spurious emissions

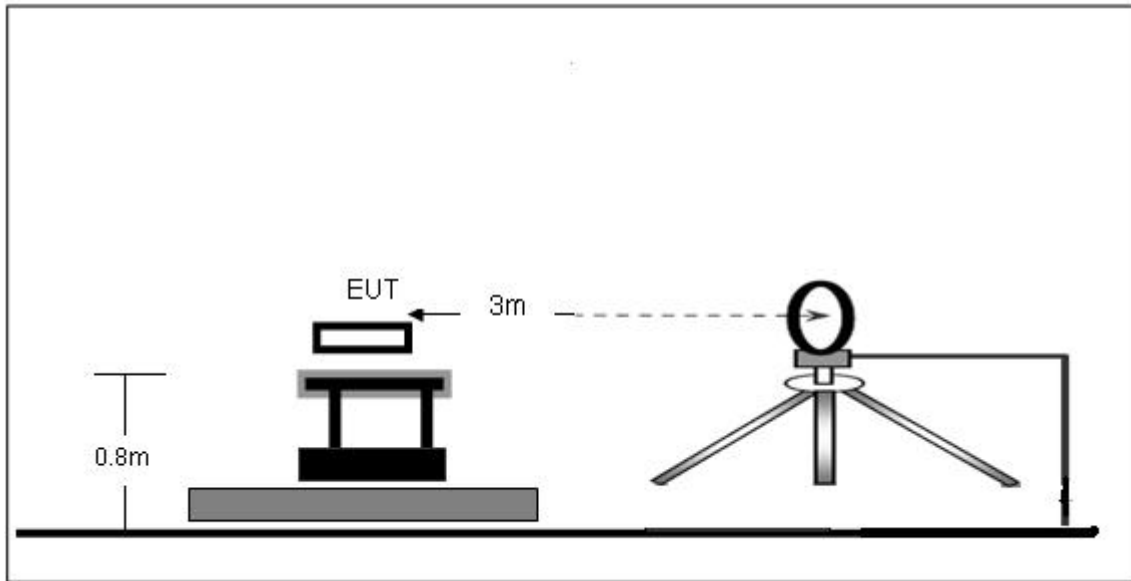
State	Frequency		
	47 MHz to 74 MHz 87,5 MHz to 137 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other Frequencies below 1 000 MHz	Frequencies above 1 000 MHz
Operation	4 nW	250 nW	1 μW
Standby	2 nW	2 nW	20 nW

4.2.2 DEVIATION FROM TEST STANDARD

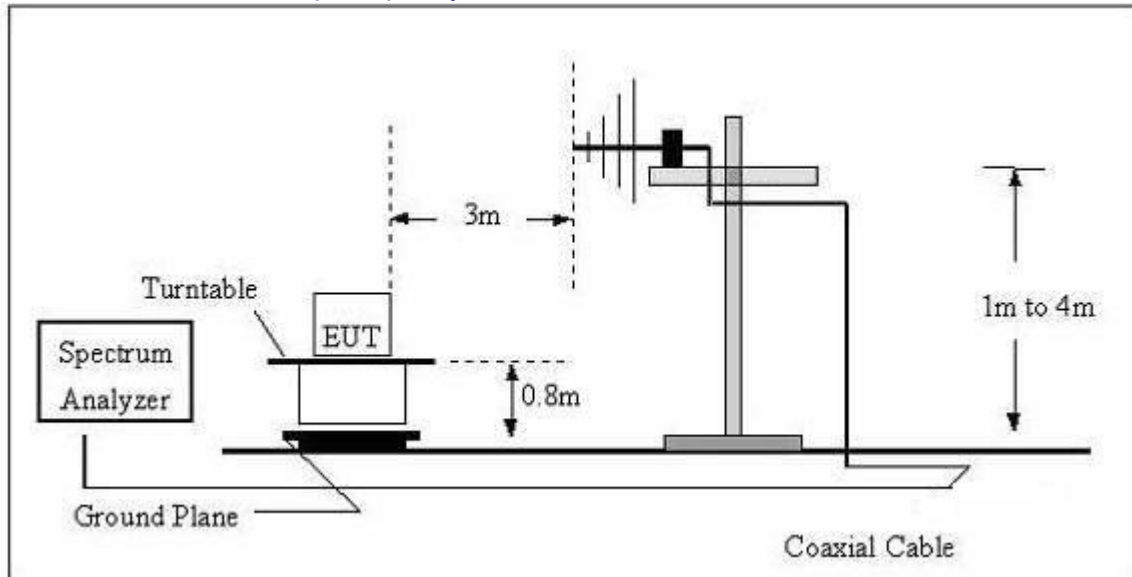
No deviation

4.2.3 TEST SETUP

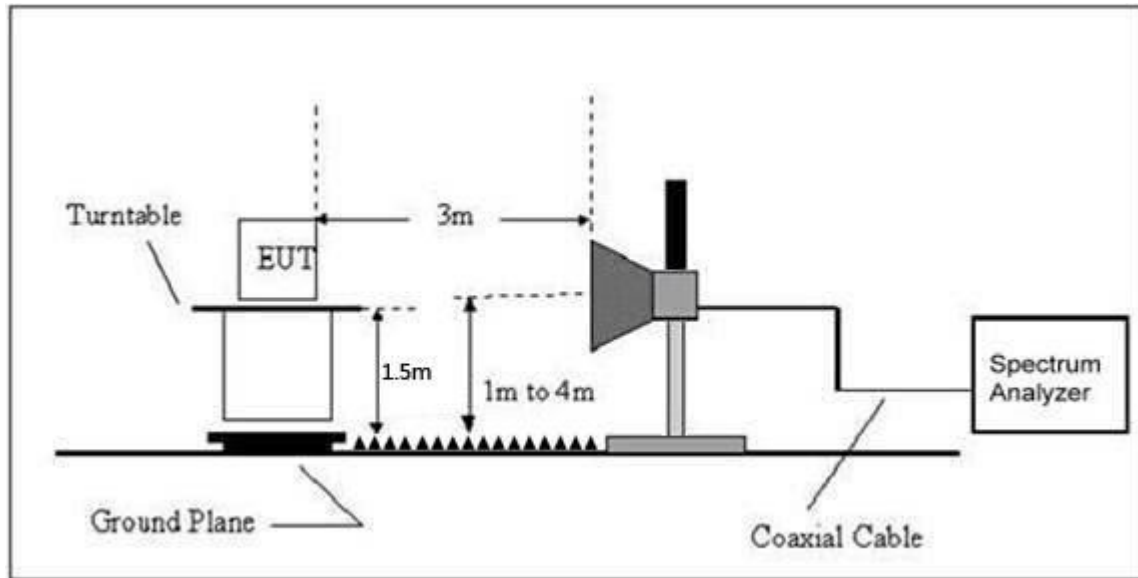
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



Frequency :9kHz-30MHz
RBW=10KHz,
VBW =30KHz
Sweep time= Auto
Trace = max hold
Detector function = peak

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 = peak, AV

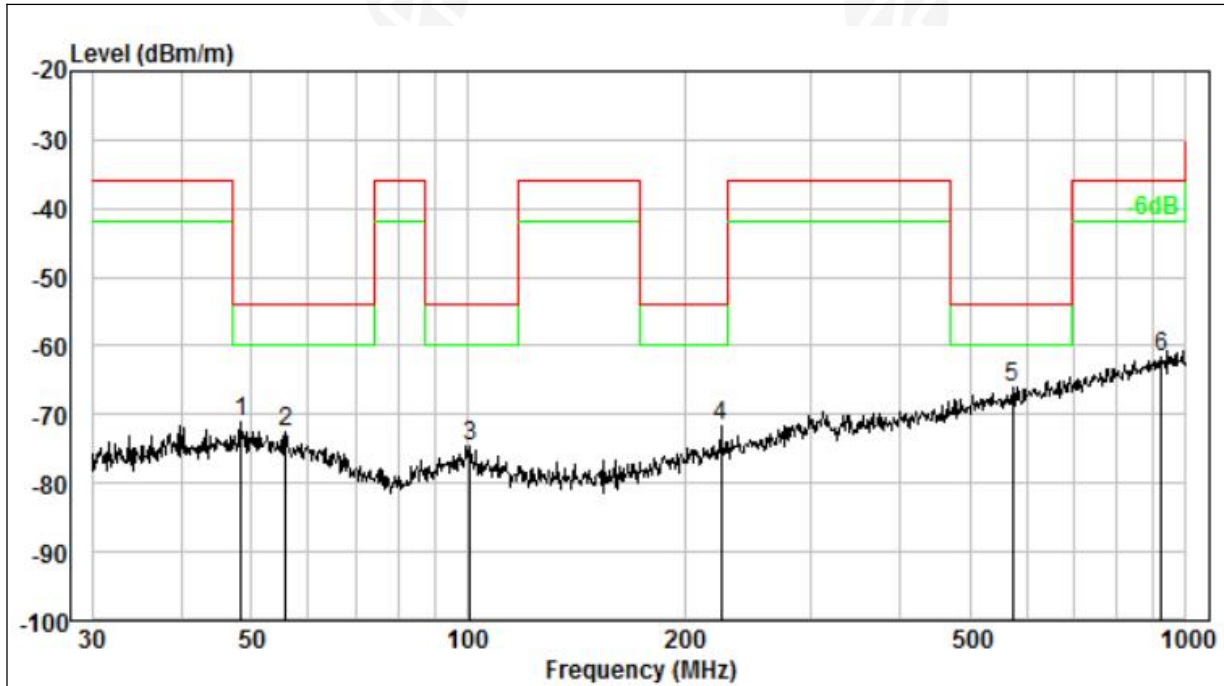
4.2.4 TEST PROCEDURE

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.

4.2.5 TEST RESULTS

Radiated Spurious Emission (Between 30MHz – 1GHz)

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101 kPa	Polarization :	Horizontal
Test Voltage :	DC 3.7V		
Test Mode :	TX Mode		

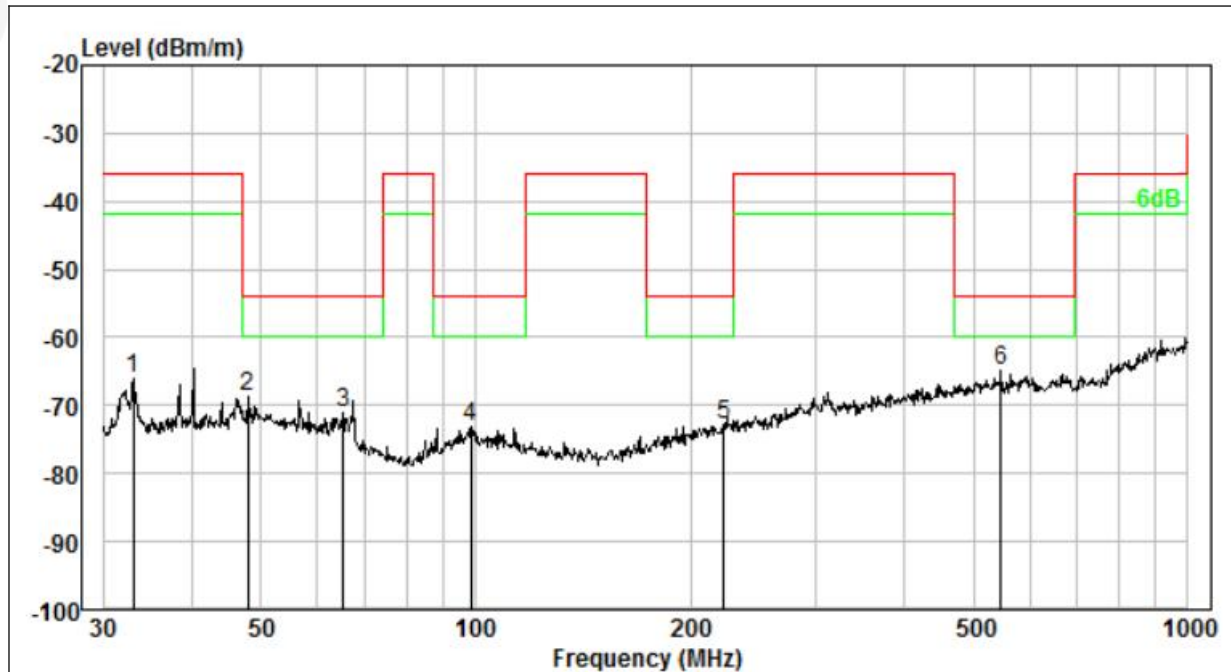


No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBμV	Preamp Gain dB	Emission Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
1	48.332	0.14	13.12	-64.91	19.51	-71.16	-53.99	-17.17	Peak
2	55.805	0.23	12.60	-65.81	19.51	-72.49	-53.99	-18.50	Peak
3	100.934	0.40	10.90	-66.37	19.54	-74.61	-53.99	-20.62	Peak
4	225.308	0.70	11.61	-64.52	19.60	-71.81	-53.99	-17.82	Peak
5	574.626	1.27	18.27	-65.82	19.78	-66.06	-53.99	-12.07	Peak
6	925.756	1.45	22.71	-65.70	19.96	-61.50	-35.99	-25.51	Peak

Remarks:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Note: a filter is used during the test.

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101 kPa	Polarization :	Vertical
Test Voltage :	DC 3.7V		
Test Mode :	TX Mode		



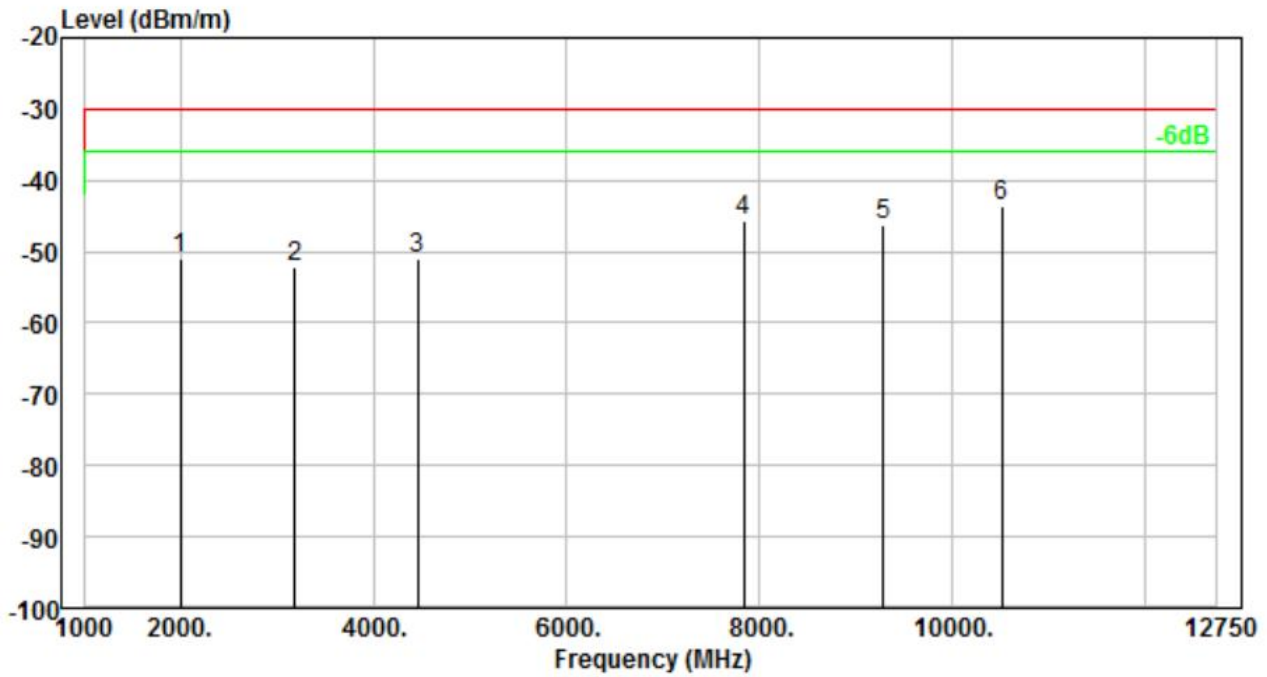
No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBμV	Preamp Gain dB	Emission Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
1	33.095	0.03	10.89	-57.53	19.50	-66.11	-35.99	-30.12	Peak
2	47.826	0.13	13.06	-62.27	19.51	-68.59	-53.99	-14.60	Peak
3	65.114	0.28	10.46	-62.18	19.52	-70.96	-53.99	-16.97	Peak
4	98.487	0.40	10.73	-64.87	19.54	-73.28	-53.99	-19.29	Peak
5	222.950	0.69	11.53	-65.59	19.60	-72.97	-53.99	-18.98	Peak
6	547.098	1.24	17.80	-64.18	19.77	-64.91	-53.99	-10.92	Peak

Remarks:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Note: a filter is used during the test.

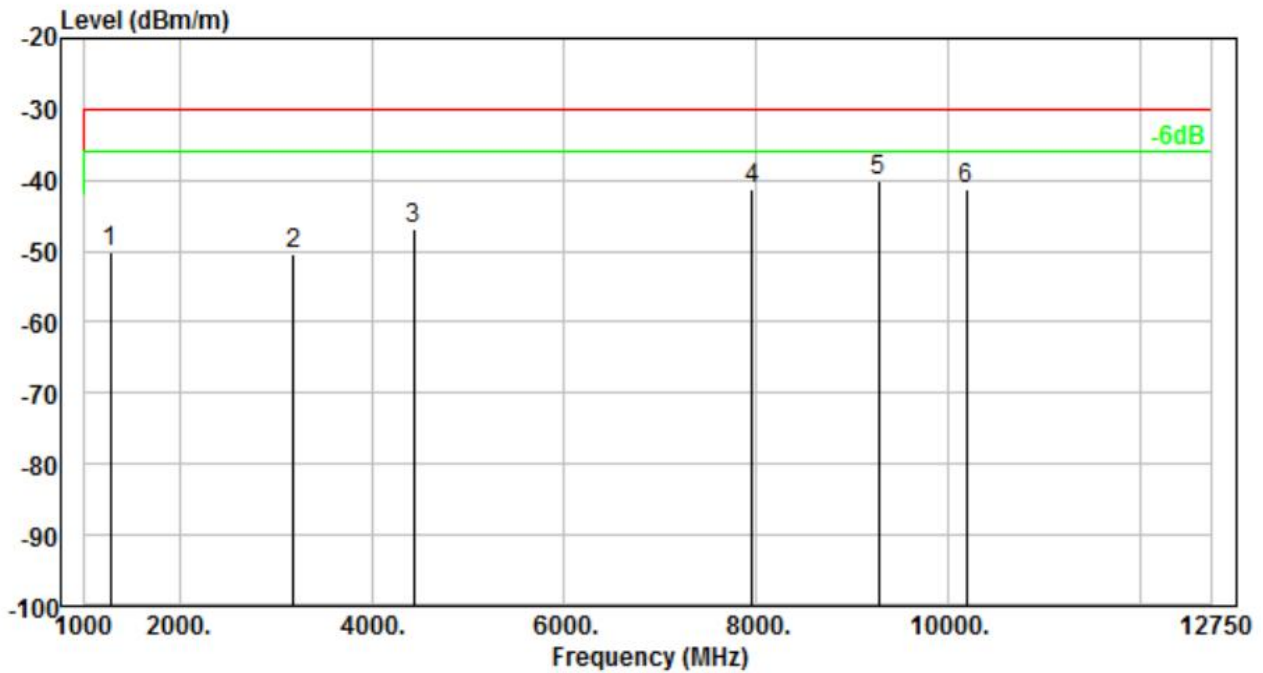
Radiated Spurious Emission (Above 1GHz)

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101 kPa	Polarization :	Horizontal
Test Voltage :	DC 3.7V		
Test Mode :	TX Mode		



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBμV	Preamp Gain dB	Emission Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
1	1996.000	2.43	26.09	-51.38	28.05	-50.91	-29.99	-20.92	Peak
2	3184.000	3.31	29.75	-56.37	28.85	-52.16	-29.99	-22.17	Peak
3	4468.000	3.96	31.86	-58.32	28.58	-51.08	-29.99	-21.09	Peak
4	7835.000	6.69	36.55	-61.68	27.29	-45.73	-29.99	-15.74	Peak
5	9285.000	7.64	37.78	-65.61	26.13	-46.32	-29.99	-16.33	Peak
6	10519.000	8.34	38.81	-66.85	23.90	-43.60	-29.99	-13.61	Peak

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101 kPa	Polarization :	Vertical
Test Voltage :	DC 3.7V		
Test Mode :	TX Mode		



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBμV	Preamp Gain dB	Emission Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
1	1286.000	1.60	25.10	-49.35	27.41	-50.06	-29.99	-20.07	Peak
2	3184.000	3.31	29.75	-54.50	28.85	-50.29	-29.99	-20.30	Peak
3	4439.000	3.94	31.83	-54.10	28.59	-46.92	-29.99	-16.93	Peak
4	7964.000	6.78	36.67	-57.39	27.18	-41.12	-29.99	-11.13	Peak
5	9275.000	7.63	37.78	-59.34	26.16	-40.09	-29.99	-10.10	Peak
6	10194.000	8.16	38.62	-64.24	23.87	-41.33	-29.99	-11.34	Peak

5. CONDUCTED OUTPUT POWER

5.1 APPLIED PROCEDURES / LIMIT

ACCORDING TO FCC 15.236(D)(2), In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP.

5.2 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.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



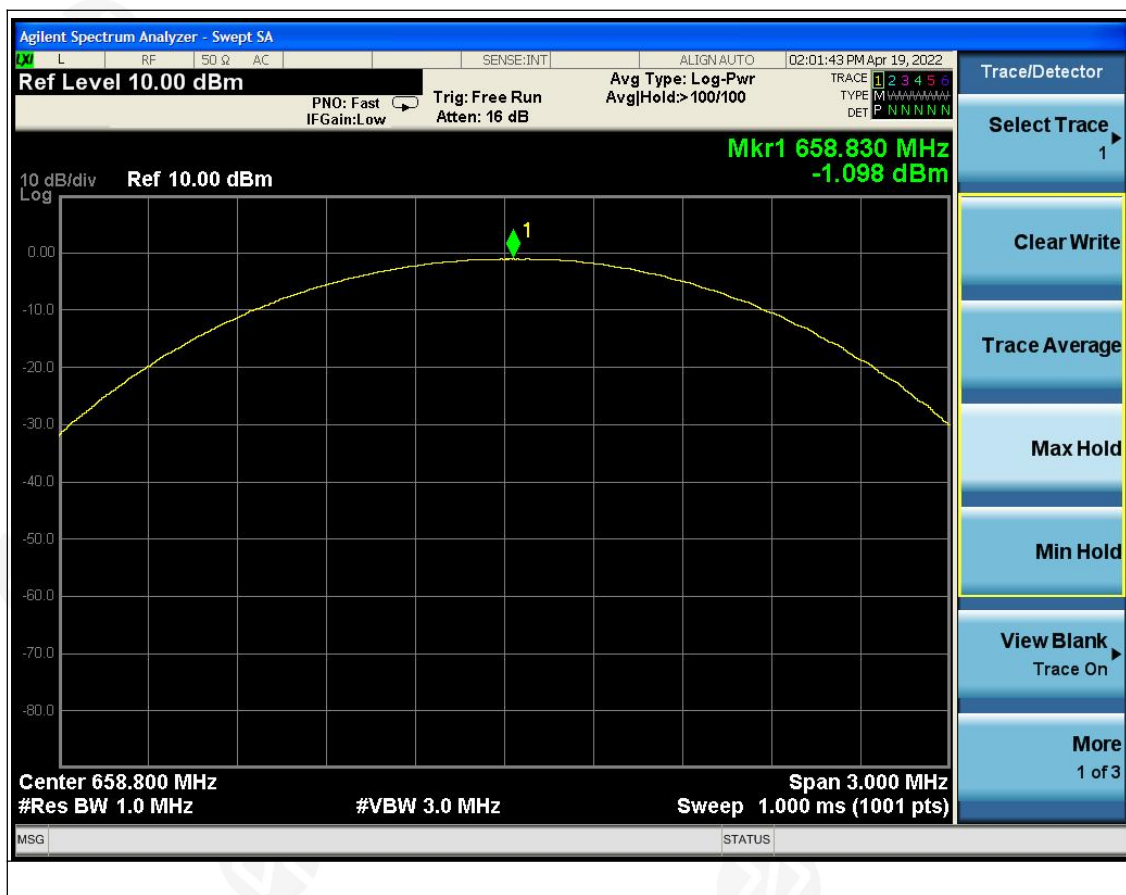
5.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 3.7V

Frequency	CONDUCTED OUTPUT POWER (dBm)	ANT GAIN (dBi)	EIRP (dBm)	EIRP Limit (mw)	EIRP Limit (dBm)	Result
658.8MHz	-1.098	0	-1.098	20	13	PASS



6. CHANNEL BANDWIDTH

6.1 APPLIED PROCEDURES / 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.
- (3) 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

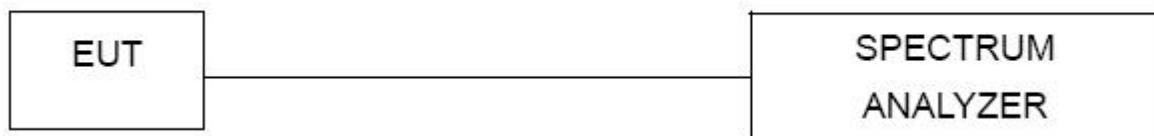
6.2 TEST PROCEDURE

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 -20dB Bandwidth and record it.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



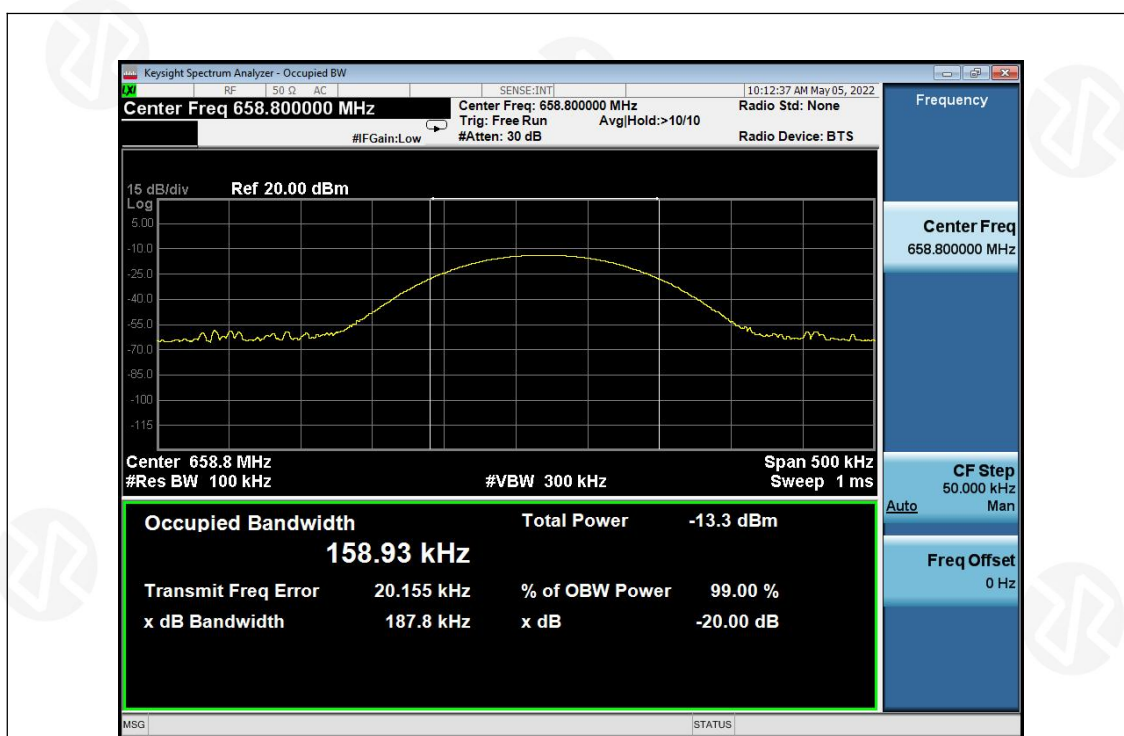
6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULTS

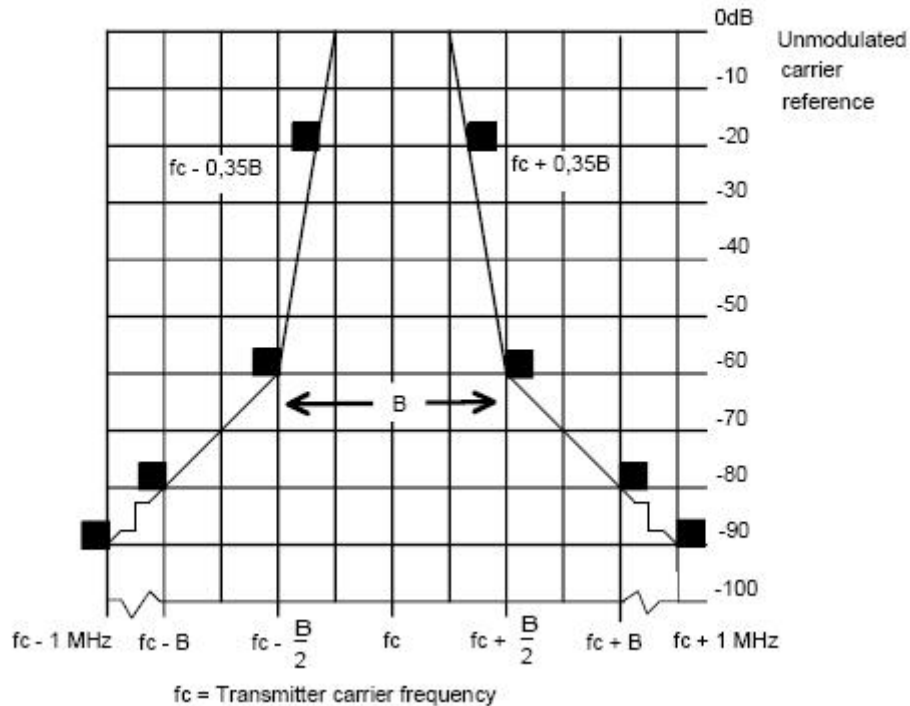
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 3.7V

Frequency (MHz)	20dB bandwidth (KHz)	99% bandwidth (KHz)	Limit (KHz)	Result
658.8	187.8	158.93	200	Pass



7. NECESSARY BANDWIDTH

7.1 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); Wireless 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.

7.2 TEST SETUP



7.3 TEST PROCEDURE

The arrangement of test equipment as shown in figure B.1 shall be used. Note that the noise meter conforms to (quasi-peak) 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).

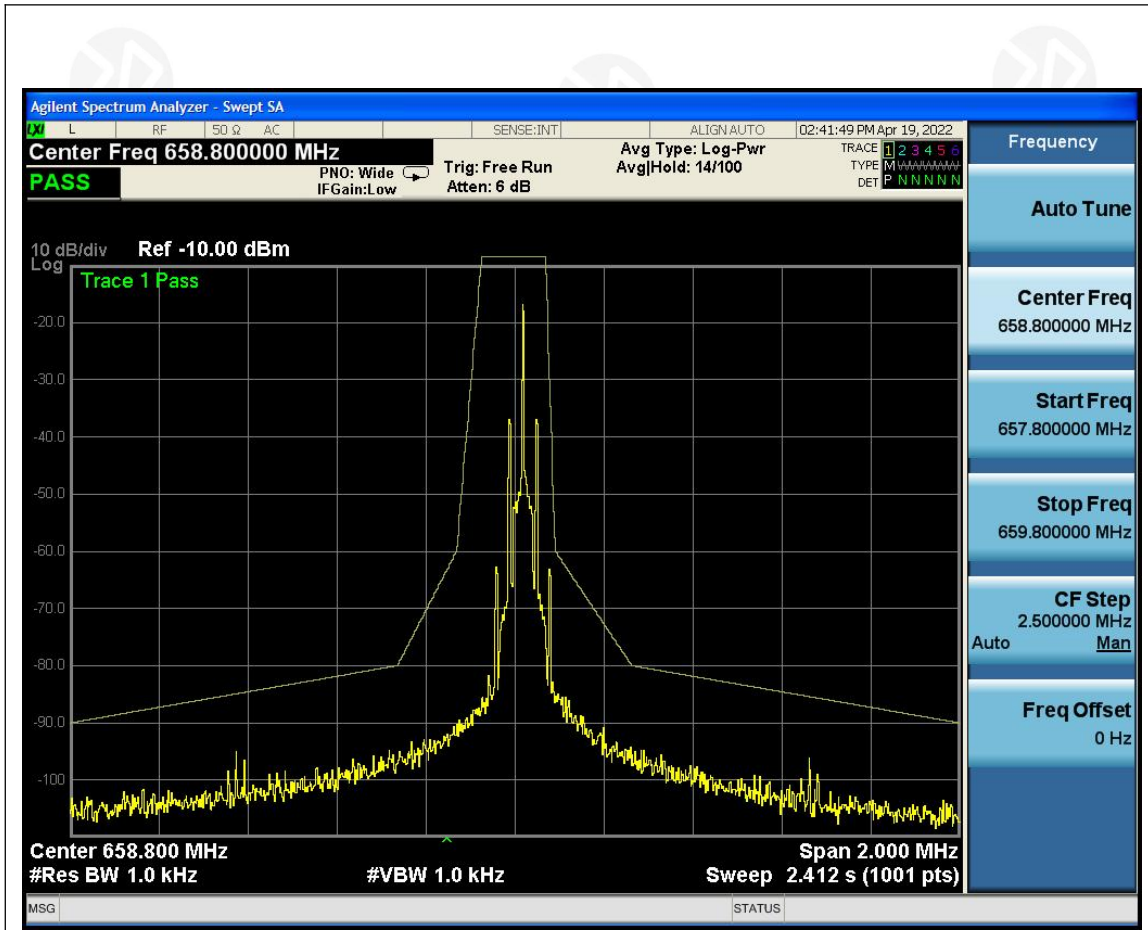
The LF generator shall be replaced with the weighted noise source to Recommendation ITU-R BS.559-2 [i.3], band-limited to 15 kHz as described in IEC 60244-13 [2], and the level shall be adjusted such that the measured input to the transmitter corresponds to +12 dB (lim).

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

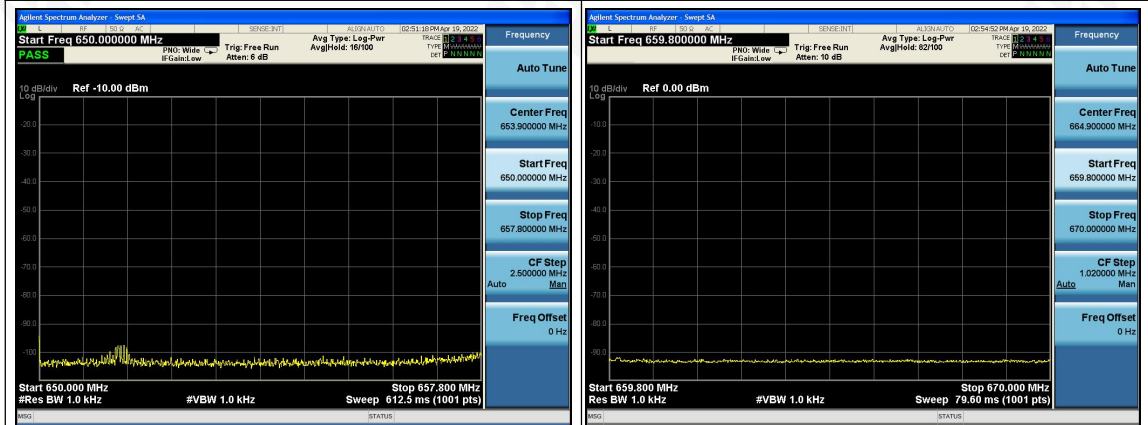
If the transmitter incorporates more than one audio input, e.g. stereo systems, the second and subsequent channels shall be simultaneously driven from the same noise source, attenuated to a level of -6 dB (lim).

- 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.

7.4 TEST RESULTS



-90 dBc point test result:



8. FREQUENCY STABILITY

8.1 Limit

$$\pm 0.005\% \times 658.8\text{MHz} = 32.94\text{KHz}$$

8.2 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

8.3 TEST SETUP



8.4 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.

8.5 Test Result

Test frequency (MHz)	Test Conditions		Measure Frequency (MHz)	Frequency Error (KHz)	Limit (KHz)	Result
	Voltage (V)	Temperature ($^{\circ}\text{C}$)				
658.8	N	N	658.8112	11.2	\pm 32.94KHz	Pass
		L	658.8134	13.4		Pass
		H	658.8141	14.1		Pass
	L	N	658.8167	16.7		Pass
		L	658.8145	14.5		Pass
		H	658.8132	13.2		Pass
	H	N	658.8111	11.1		Pass
		L	658.8119	11.9		Pass
		H	658.8121	12.1		Pass

9. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
EUT Antenna:	
The antennas are internal antenna, the best case gain of the antennas are 0dBi, reference to the appendix II for details	

9. TEST SETUP PHOTO

Reference to the appendix I for details.

10. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

***** END OF REPORT *****