FCC TEST REPORT
FCC ID: 2A5JB-HU10

Report Number	ZKT-22003041365
Date of Test	Feb. 24, 2022 -- Mar. 08, 2022
Date of issue	Mar. 08, 2022
Total number of pages	32
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	HIAUDIO ELECTRONICS CO.,LIMITED
Address	RM18,27/F,Ho King Comm CTR,2-16 FA YUEN ST,Mongkok Kowloon,HongKong
Manufacturer's name	HIAUDIO ELECTRONICS CO.,LIMITED
Address	RM18,27/F,Ho King Comm CTR,2-16 FA YUEN ST,Mongkok Kowloon,HongKong
Test specification:	
Standard	FCC Rules and Regulations 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-111_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	/
Model/Type reference	HU10, K2, K3, K5, K6WH, K6D, K8, K11, K201, K203, K205, K207, SWM15-PROS, SWM16-MAX, SWM16-PRO, SWM16-KM, RKI60, RKI65BT, SWM50-U2
Ratings	DC 3V

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-22003041365	Rev.01	Initial issue of report	Mar. 08, 2022

2.1SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.249) , Subpart C			
Standard Section	Test Item	Judgment	Rem rk
FCC part 15.203	Antenna requirement	PASS	
FCC part 15.207	AC Power Line Conducted Emision	N/A	
FCC part 15.236(d)(1)	Conducted Peak Output Power	PASS	
FCC part 15.236(d)(2)	Radiated Spurious Emission Measurement	PASS	
FCC part 15.236(d)(2)	Spurious Emission at Antenna Port	PASS	
FCC part 15.236(f)(2)	Occupied Bandwidth Emission	PASS	
FCC part 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 ± 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	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power conducted	±0.16dB
3	Spurious emissions conducted	±0.21dB
4	All emissions radiated(<1G)	±4.68dB
5	All emissions radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	Wireless Microphone
Model No.:	HU10
Model Different.:	There are many models of this product, only the model name, color and button are different, and other parts such as circuit principle, PCB, electrical structure, etc. are the same.
Serial No.:	K2, K3, K5, K6WH, K6D, K8, K11, K201, K203, K205, K207, SWM15-PROS, SWM16-MAX, SWM16-PRO, SWM16-KM, RKI60, RKI65BT, SWM50-U2
Hardware Version:	V1.3
Software Version:	V1.0
Channel numbers:	19
Channel separation:	540MHz~590MHz
Modulation technology:	FM
Antenna Type:	metal spring antenna
Antenna gain:	0 dBi
Power supply:	DC 3.0V from AA*2 Battery

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.
The product has 19 channels and the grayscale frequency is representative of the selected test.
Operation Frequency:

A mode-Channel	Frequency (MHz)	B mode-Channel(B)	Frequency (MHz)
1	540.0	11	574.1
2	556.1	12	576.4
3	558.4	13	578.7
4	560.7	14	580.2
5	562.2	15	582.5
6	564.5	16	584.8
7	565.0	17	586.3
8	566.8	18	588.6
9	568.3	19	590.0
10	570.6		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency
CH01	540MHz
CH07	565MHz
CH19	590MHz

3.2 DESCRIPTION OF TEST MODES

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Test method	Key combination
Power level setup	<17dBm

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission

N/A (not applicable to this device, which is powered by dry battery)

Radiated Emission

EUT PC

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

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.

3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY45109572	Sep. 21, 2021	Sep. 20, 2022
2	Spectrum Analyzer (1GHz-40GHz)	Agilent	E4446A	100363	Sep. 21, 2021	Sep. 20, 2022
3	Test Receiver (9kHz-7GHz)	R&S	ESCI7	101169	Sep. 21, 2021	Sep. 20, 2022
4	Bilog Antenna (30MHz-1400MHz)	Schwarzbeck	VULB9168	00877	Sep. 21, 2021	Sep. 20, 2022
5	Horn Antenna (1GHz-18GHz)	SCHWARZBECK	BBHA9120D	1541	Sep. 21, 2021	Sep. 20, 2022
6	Horn Antenna (18GHz-40GHz)	A.H. System	SAS-574	588	Sep. 21, 2021	Sep. 20, 2022
7	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	N/A	Sep. 21, 2021	Sep. 20, 2022
8	Amplifier (1GHz-40GHz)	QUANJUDA	DLE-161	097	Sep. 21, 2021	Sep. 20, 2022
9	Loop Antenna (9KHz-30MHz)	SCHWARZBECK	FMZB1519B	014	Sep. 21, 2021	Sep. 20, 2022
10	RF cables1 (9kHz-30MHz)	N/A	9kHz-30MHz	N/A	Sep. 21, 2021	Sep. 20, 2022
11	RF cables2 (30MHz-1GHz)	N/A	30MHz-1GHz	N/A	Sep. 21, 2021	Sep. 20, 2022
12	RF cables3 (1GHz-40GHz)	N/A	1GHz-40GHz	N/A	Sep. 21, 2021	Sep. 20, 2022
13	CMW500 Test	R&S	CMW500	106504	Sep. 21, 2021	Sep. 20, 2022
14	ESG Signal Generator	Agilent	E4421B	GB40051203	Sep. 21, 2021	Sep. 20, 2022
15	Signal Generator	Agilent	N5182A	MY47420215	Sep. 21, 2021	Sep. 20, 2022
16	D.C. Power Supply	LongWei	TPR-6405D	\	\	\
17	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. 21, 2021	Sep. 20, 2022
2	LISN	CYBERTEK	EM5040A	E1850400149	Sep. 21, 2021	Sep. 20, 2022
3	Test Cable	N/A	C01	N/A	Sep. 21, 2021	Sep. 20, 2022
4	Test Cable	N/A	C02	N/A	Sep. 21, 2021	Sep. 20, 2022
5	EMI Test Receiver	R&S	ESRP3	101946	Sep. 21, 2021	Sep. 20, 2022
6	Absorbing Clamp	DZ	ZN23201	N/A	Sep. 21, 2021	Sep. 20, 2022

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.4: 2014
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quas -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) *Decreases with the logarithm of the frequency.

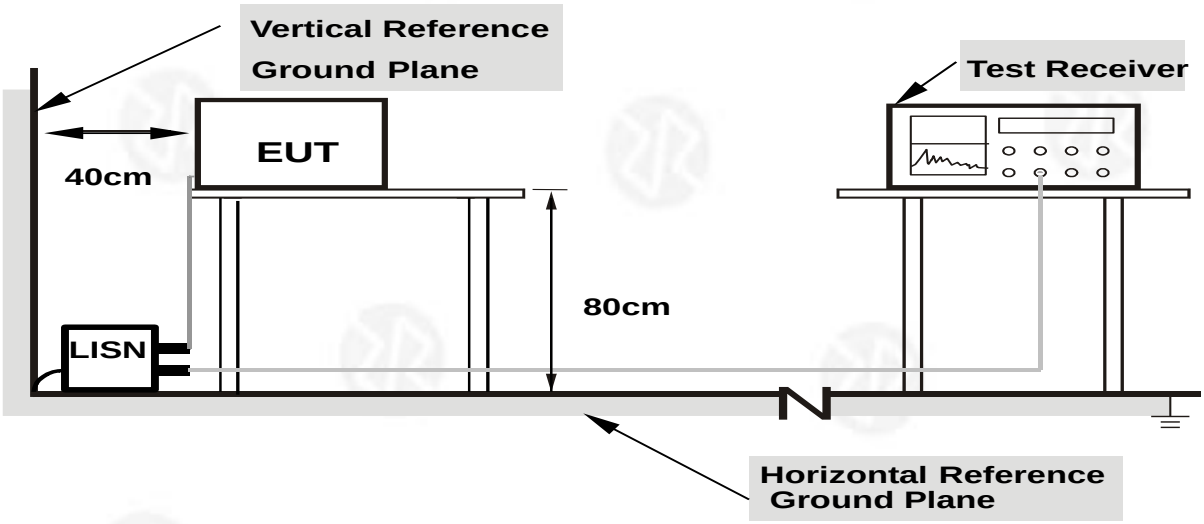
4.1.2 TEST PROCEDURE

a. 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.
b. 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.
c. 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.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. 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

N/A
（The product is powered by 2*AA batteries. This test item is not applicable）

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMIT

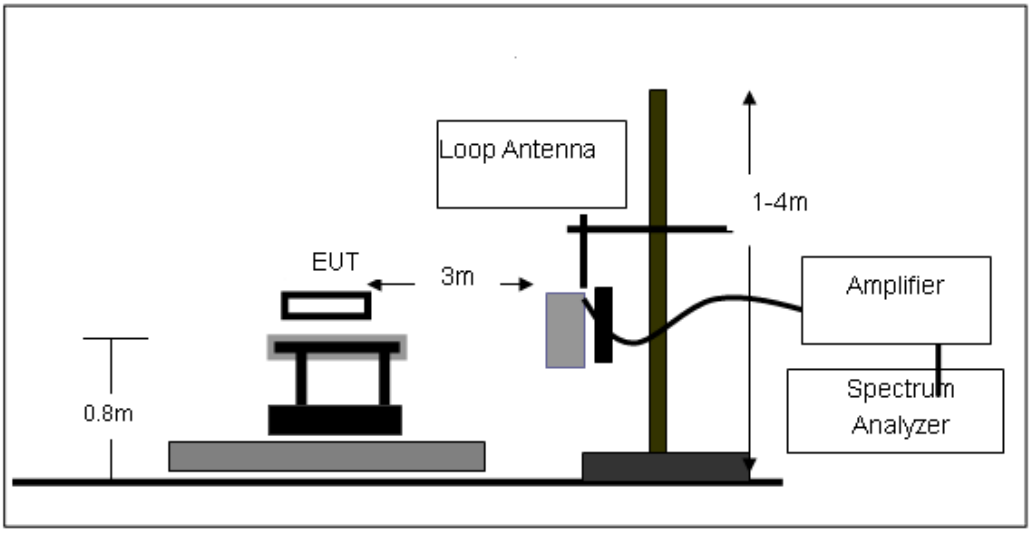
According to 15.236(d)(2), In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP

4.2.3 DEVIATION FROM TEST STANDARD

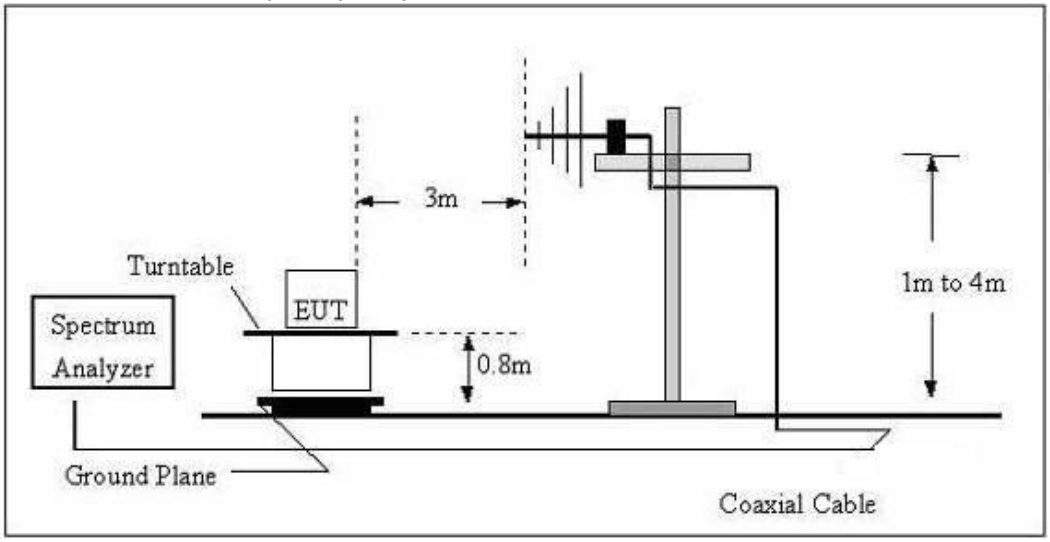
No deviation

4.2.4 TEST SETUP

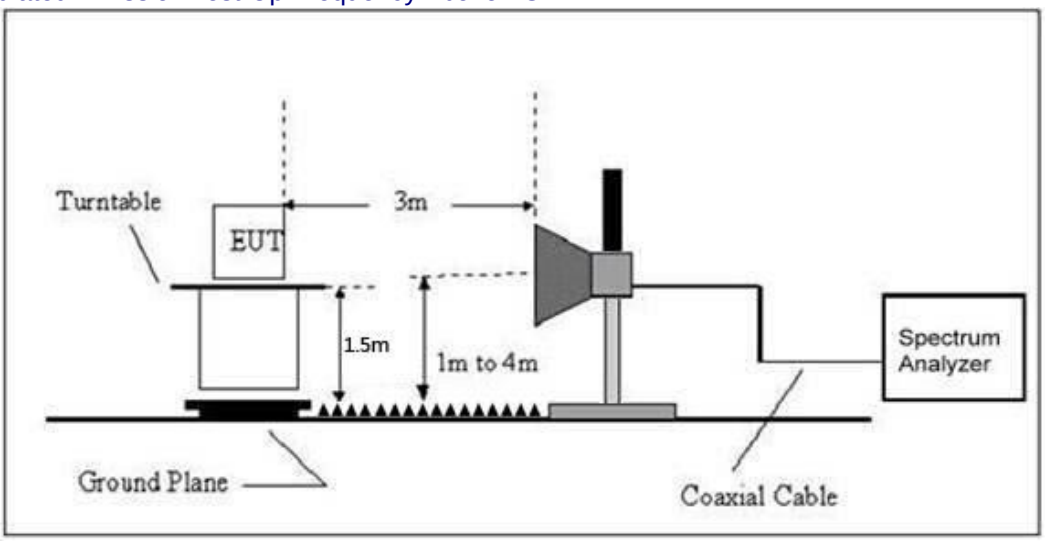
（A）Radiated Emission Test-Up Frequency Below 30MHz



（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

4.2.5 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 heightand polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from theEUT. 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.
Spurious attenuation limit in dB = 43 + 10 Log10 (power in Watts)

4.2.6 TEST RESULTS

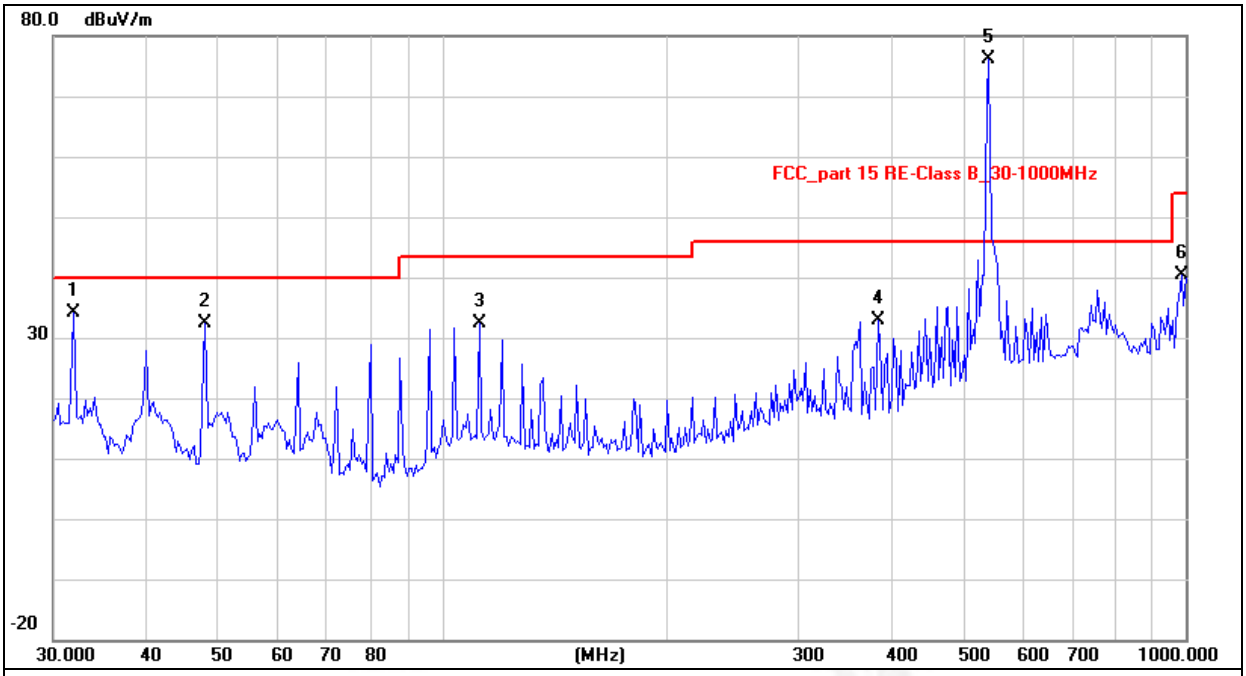
Below 30MHz Test Results:

FREQUENCY (MHZ)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Polarity
--	--	--	--	--	--	--
--	--	--	--	--	--	--

NOTE: Radiated emission test from 9KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor (more than 20dB below the limit) in 9KHz to 30MHz and not recorded in this report.

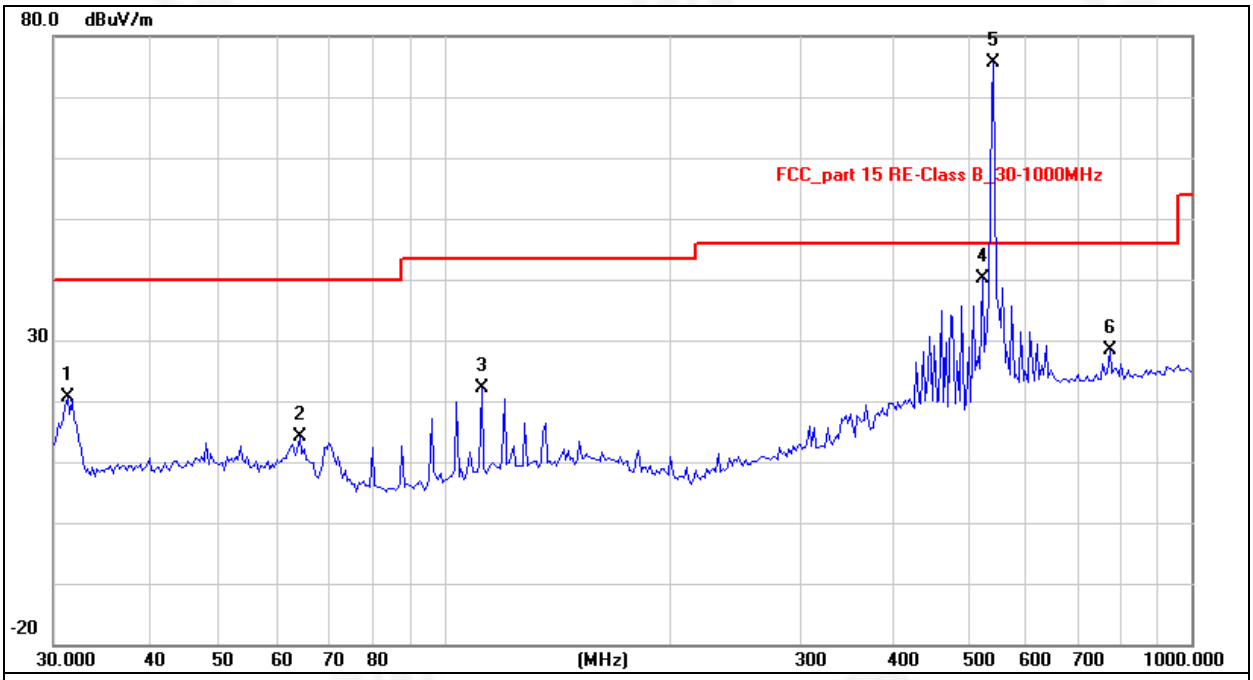
Between 30MHz – 1GHz

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.0V		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.9545	51.35	-17.11	34.24	40.00	-5.76	QP	100	360	
2		47.9940	48.89	-16.44	32.45	40.00	-7.55	QP	100	360	
3		112.1304	51.02	-18.73	32.29	43.50	-11.21	QP	100	360	
4		385.2804	46.42	-13.47	32.95	46.00	-13.05	QP	100	360	
5	*	543.2742	85.67	-9.48	76.19	46.00	30.19	QP	100	360	
6		986.0716	43.62	-3.19	40.43	54.00	-13.57	QP	100	360	

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 3.0V		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.2892	37.71	-17.11	20.60	40.00	-19.40	QP	100	360	
2		63.9827	31.90	-17.68	14.22	40.00	-25.78	QP	100	360	
3		112.1304	40.86	-18.73	22.13	43.50	-21.37	QP	100	360	
4		524.5541	50.08	-10.00	40.08	46.00	-5.92	QP	100	360	
5	*	543.2742	85.00	-9.48	75.52	46.00	29.52	QP	100	360	
6		776.8778	33.32	-4.93	28.39	46.00	-17.61	QP	100	360	

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.

Above 1GHz Test Results:

FREQUENCY (MHZ)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1086.2970	-45.76	7.78	-37.98	-30	7.98	H
1629.3506	-44.08	2.00	-42.08	-30	12.08	H
2172.9423	-43.42	-1.57	-44.99	-30	14.99	H
1086.2970	-43.89	6.08	-37.81	-30	7.81	V
1629.3506	-42.36	3.87	-38.49	-30	8.49	V
2172.9423	-40.00	-2.59	-42.59	-30	12.59	V

(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.

Standby mode:

FREQUENCY (MHZ)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Polarity
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

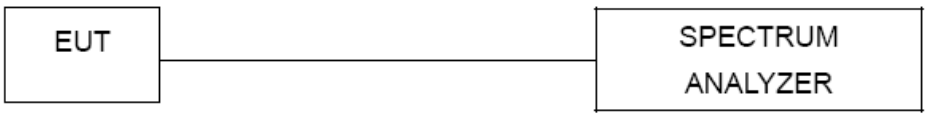
NOTE:
Radiated emission test from 30MHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor (more than 20dB below the limit) in 30MHz to 8GHz and not recorded in this report.

5.CONDUCTED OUTPUT POWER

5.1 LIMIT

ACCORDING TO FCC 15.236(D)(1), FOR LOW POWER AUXILIARY STATION OPERATING IN THE 470-608, AND 614-698 MHZBANDS, IN THE BANDS ALLOCATED AND ASSIGNED FOR BROADCAST TELEVISION AND IN THE 600 MHZ SERVICE BAND: 50 MW EIRP

5.2 TEST SETUP

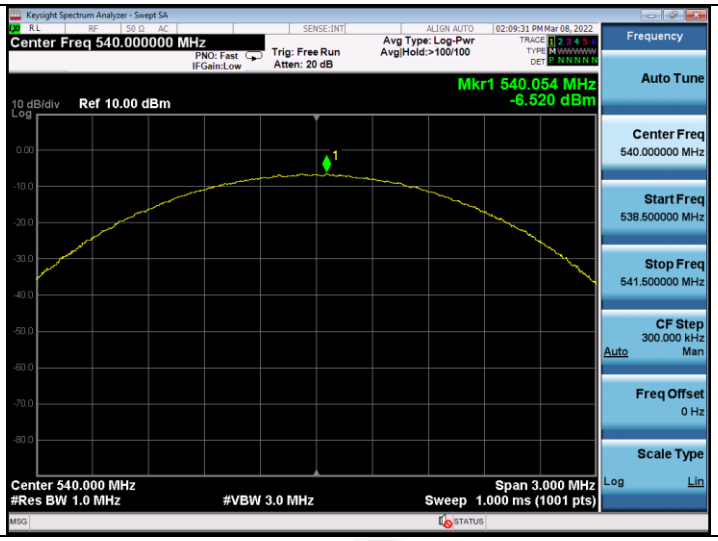
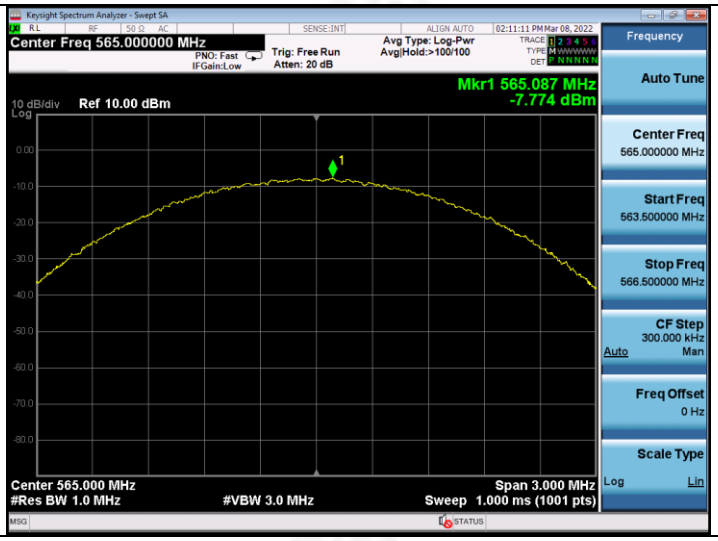
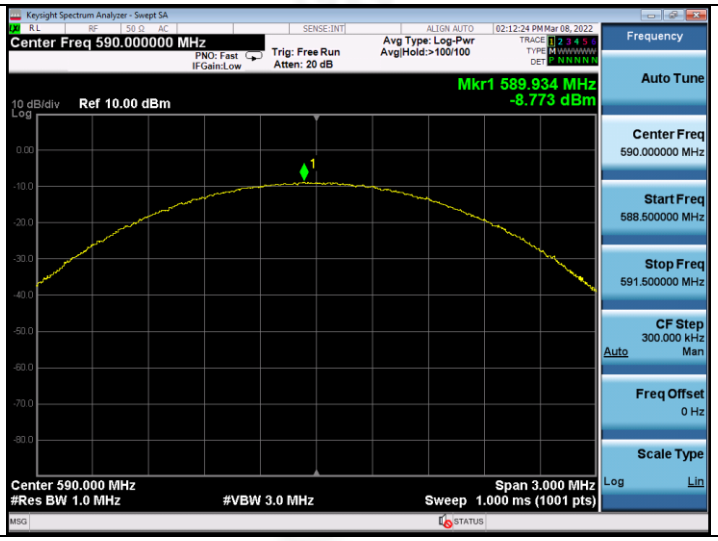


5.3 **TEST PROCEDURE:**

1. THE MAXIMUM PEAK OUTPUT POWER WAS MEASURED WITH A SPECTRUM ANALYZER CONNECTED TO THE ANTENNA TERMINALWHILE 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. THESPECTRUM 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 TOMEASURE FINAL RF STAGE SUPPLY VOLTAGE. THEN THE VOLTAGE V.S. CURRENT OF THE FINAL RF STAGE CAN BE SHOWED.

5.4 TEST RESULTS:

FREQUENCY (MHZ)	CONDUCTED OUTPUT POWER (DBM)	ANT GAIN (DBI)	EIRP (DBM)	LIMIT (DBM)	RESULT
540	-6.520	0	-6.520	17	PASS
565	-7.774	0	-7.774		PASS
590	-8.773	0	-8.773		PASS

540MHZ

565MHZ

590MHZ


6. CHANNEL BANDWIDTH

Test Requirement:	FCC Part15 C Section 15. 236(f)(2)
Test Method:	ANSI C63.4: 2014

6.1 APPLIED PROCEDURES / LIMIT

According to FCC 15.236(f)(2), The operating frequency within a permissible band of operation as defined inparagraph (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

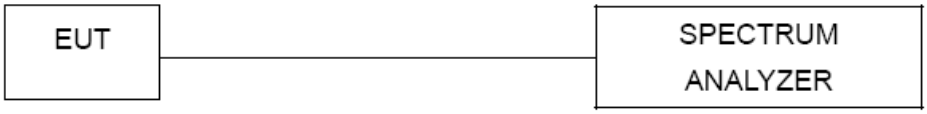
6.2 TEST PROCEDURE

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

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

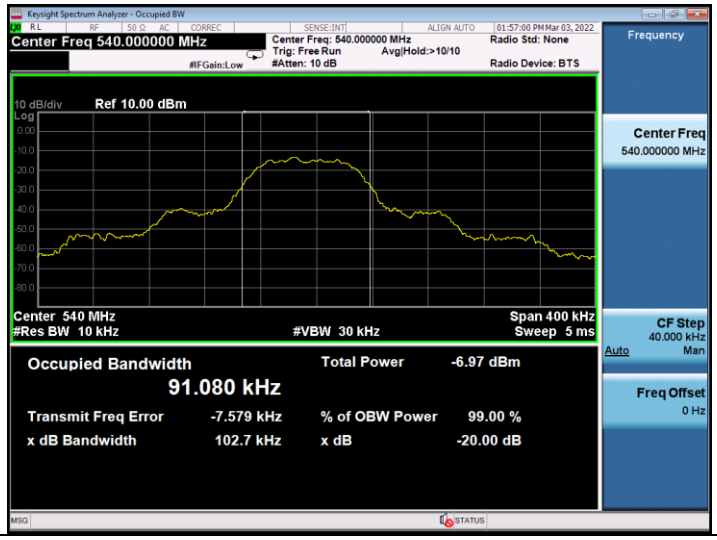
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULTS

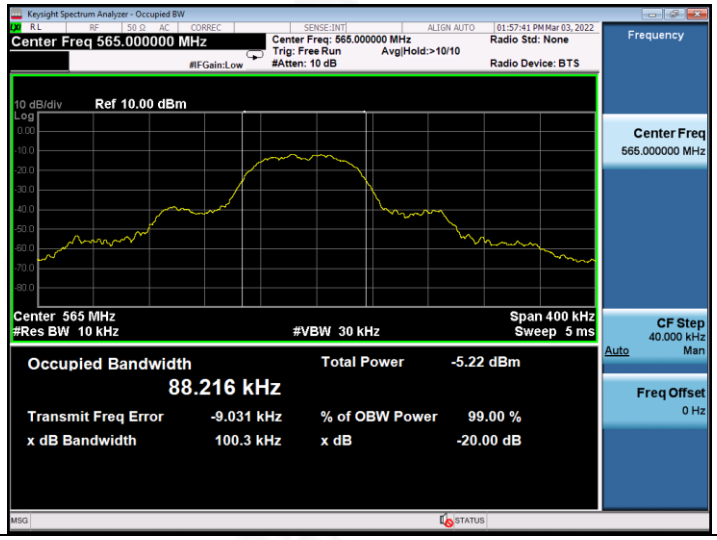
Temperature：	26℃	Relative Humidity：	54%
Test Mode ：	FM	Test Voltage ：	DC 3.0V

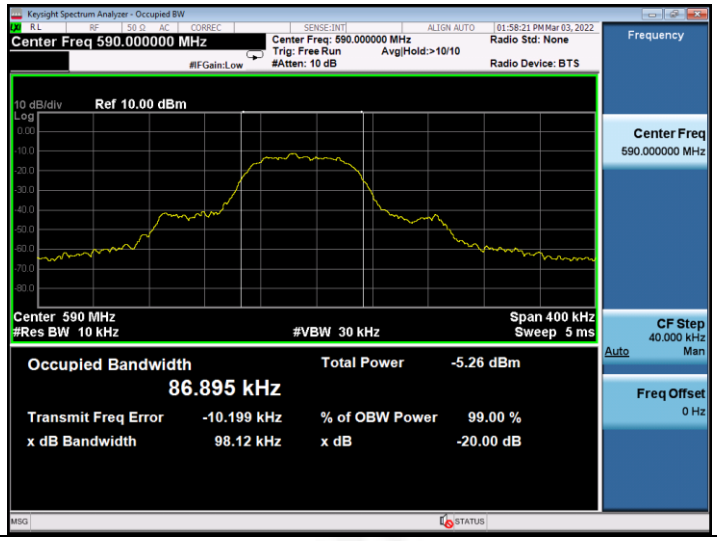
Test channel	20dB bandwidth (MHz)	99%Bandwidth (kHz)	Limit (kHz)	Result
Lowest	0.1027	91.080	200	Pass
Middle	0.1003	88.216		
Highest	0.0981	86.895		

540MHz



565MHz

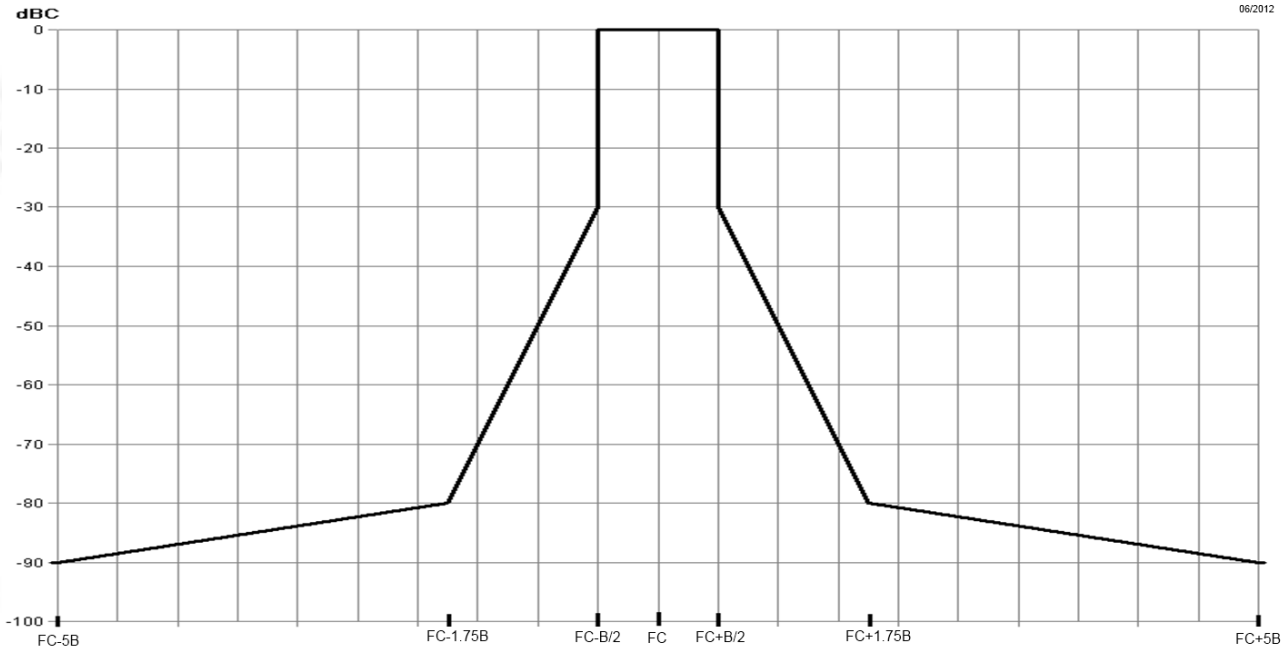


590MHz


Keysight Spectrum Analyzer - Occupied BW
Center Freq 590.000000 MHz
Center Freq: 590.000000 MHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
01:58:21 PM Mar 03, 2022
Frequency
10 dB/div
Ref 10.00 dBm
Log
Center Freq
590.000000 MHz
Center 590 MHz
#Res BW 10 kHz
#VBW 30 kHz
Span 400 kHz
Sweep 5 ms
CF Step
40.000 kHz
Auto
Man
Occupied Bandwidth
86.895 kHz
Total Power
-5.26 dBm
Transmit Freq Error
-10.199 kHz
% of OBW Power
99.00 %
x dB Bandwidth
98.12 kHz
x dB
-20.00 dB
Freq Offset
0 Hz
MSG
STATUS

7.Necessary bandwidth

7.1LIMIT

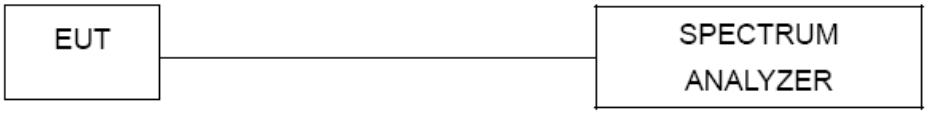


Standard Applicable

According to §15.236 (g) Emissions within the band from one megahertz below to one megahertz above thecarrier 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 thisband 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 maskdefined in the following figure.

7.2 TEST SETUP

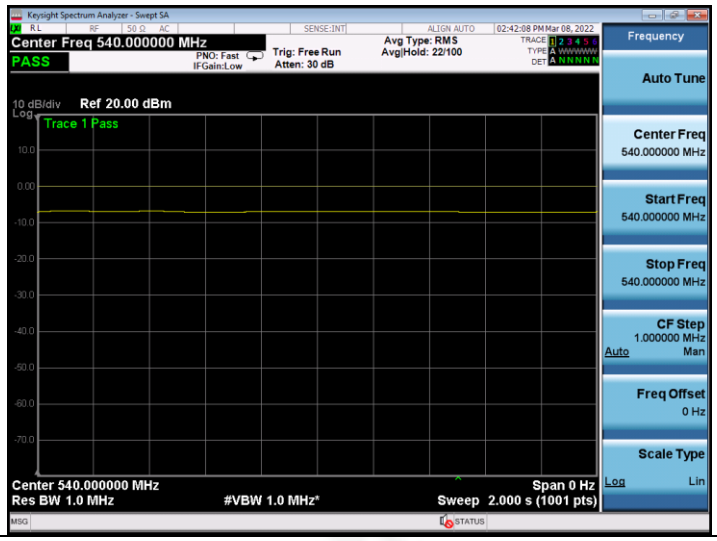
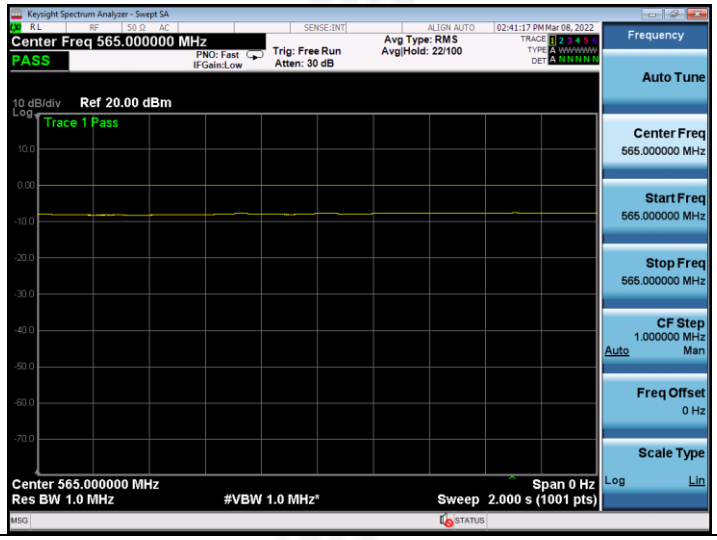
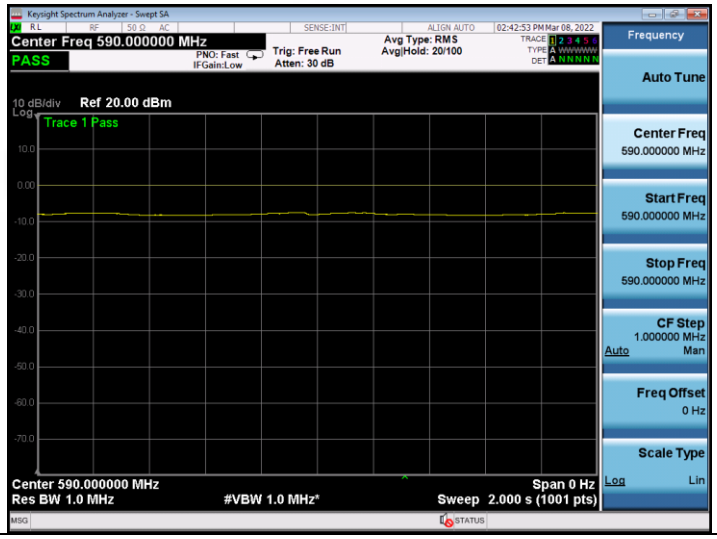


7.3 TEST PROCEDURE:

Principal Spectrum Mask measuring method for digital transmitters:
- Spectrum mask below 1 GHz, see figure 4; for the spectrum mask above 1 GHz, see figure 5.
NOTE: This parameter also includes the limits for spectral components within the out-of-band region.
The transmitter shall be modulated with the test signals defined in clause 7.1.2. In any case the mask shall not be
exceeded.
- Step 1: Measure the "Carrier Power" with the spectrum analyser setup:
• Centre Frequency = fc
• Span = Zero span
• Detector = RMS
• Trace Mode = Average
• RBW&VBW = 5 × B

• Sweep time ≥ 2 s
Step 2: Measure the "Maximum Relative Level (dBc) at Specified Carrier Offsets" with the following spectrum analyser setup:
• Centre Frequency = fc
• Span ≥ 5 × B
• Detector = RMS
• Trace Mode = Peak Hold
• RBW&VBW = 1 kHz
• Sweep time ≥ 2 s
Limits:
- Step 3: Measure the "transmitter wide band noise floor":
The measurement of transmitter broad band noise floor shall be carried out according to clause 8.3.2.1.
- Step 3a: Measure the "lower frequency transmitter wide band noise floor":
- Start Frequency = fc - 5 × B
Stop Frequency = fc - 1,75 × B
- Detector = RMS
- Trace Mode = Average
- RBW&VBW = 1 kHz
- Sweep time = 2 s per 200 kHz
- Step 3b: Measure the "upper frequency transmitter wide band noise floor":
- Start Frequency = fc + 1,75 × B
Stop Frequency = fc + 5 × B
- Detector = RMS
- Trace Mode = Average
- RBW&VBW = 1 kHz
- Sweep time = 2 s per 200 kHz
Both spectrum ranges shall be measured.
Limits: The spectrum mask for digital systems shall not be exceeded. See figure 4 for systems operating below
2 GHz and figure 5 for systems operating above 2 GHz.

7.4 TEST RESULT:

540MHz

565MHz

590MHz


540MHz

565MHz

590MHz

-90 dBc point test result:

540MHz

565MHz

590MHz

8.FREQUENCY STABILITY

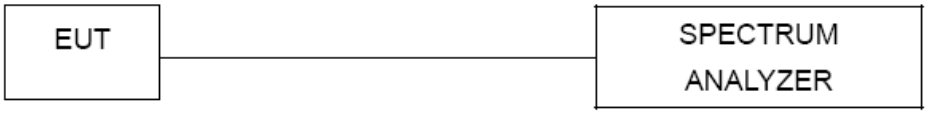
8.1 Limit

±50ppm

8.2 Standard Applicable

According to FCC 15.236(f)(3), The frequency tolerance of the carrier signal shall be maintained within ±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 temperatureof 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 form -20ºC to 50ºC with sufficient time. And measurethe 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 measuredband.

8.5 Test Result

Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (ºC)	(MHz)	(MHz)	ppm	ppm	
540MHz	N	N	539.9976	-0.0024	-4.36	±50ppm	PASS
		L	539.9803	-0.0197	-36.51		
		H	539.9890	-0.0110	-20.43		
	L	N	539.9883	-0.0117	-21.58		
		L	539.9874	-0.0126	-23.40		
		H	539.9788	-0.0212	-39.22		
	H	N	539.9885	-0.0115	-21.34		
		L	539.9913	-0.0087	-16.04		
		H	539.9920	-0.0080	-14.73		

Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (ºC)	(MHz)	(MHz)	ppm	ppm	
565MHz	N	N	564.9976	-0.0024	-4.24	±50ppm	PASS
		L	564.9801	-0.0199	-35.24		
		H	564.9892	-0.0108	-19.08		
	L	N	564.9885	-0.0115	-20.42		
		L	564.9872	-0.0128	-22.69		
		H	564.9788	-0.0212	-37.52		
	H	N	564.9884	-0.0116	-20.47		
		L	564.9911	-0.0089	-15.81		
		H	564.9921	-0.0079	-13.95		

Test frequency	Test Conditions		Measure Frequency	Frequency Error		Limit	Result
(MHz)	Voltage (V)	Temperature (ºC)	(MHz)	(MHz)	ppm	ppm	
590MHz	N	N	589.9982	-0.0018	-3.12	±50ppm	PASS
		L	589.9798	-0.0202	-34.22		
		H	589.9894	-0.0106	-18.02		
	L	N	589.9888	-0.0112	-18.92		
		L	589.9875	-0.0125	-21.23		
		H	589.9788	-0.0212	-35.99		
	H	N	589.9880	-0.0120	-20.37		
		L	589.9911	-0.0089	-15.04		
		H	589.9919	-0.0081	-13.65		

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 is metal spring antenna , the best case gain of the antennas are 0 dBi Max, reference to the internal photos 	

10. TEST SETUP PHOTO

11. EUT CONSTRUCTIONAL DETAILS

Please refer to the external photos file and internal photos file

※※※※※ END OF REPORT ※※※※※