TEST REPORT

Report No.:	BCTC2412280581E
Applicant:	SHENZHEN FENDA TECHNOLOGY CO., LTD.
Product Name:	Wireless Microphone
Test Model:	U1
Tested Date:	2025-05-26 to 2025-05-29
Issued Date:	2025-05-29

Shenzhen BCTC Testing Co., Ltd.

FCC ID:HBO-U1

Product Name:	Wireless Microphone
Trademark:	F&D
Model/Type Reference:	U1
Prepared For:	SHENZHEN FENDA TECHNOLOGY CO., LTD.
Address:	Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China
Manufacturer:	SHENZHEN FENDA TECHNOLOGY CO., LTD.
Address:	Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2025-05-26
Sample Tested Date:	2025-05-26 to 2025-05-29
Issue Date:	2025-05-29
Report No.:	BCTC2412280581E
Test Standards:	FCC Part15.236
Test Results:	PASS

Tested by:

Tang Changyu/ Project Handler

Approved by:

Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

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(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2412280581E	2025-05-29	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No.	Results
1	Conducted Emission	15.207	PASS
2	Radiated Spurious Emission	15.236(g)	PASS
3	RF Output Power (EIRP)	15.236(d)	PASS
4	99% Occupied Bandwidth	15.236(f)(2)	PASS
5	Emission Mask (Necessary Bandwidth)	15.236(g)	PASS
6	Frequency Tolerance	15.236(f)(3)	PASS

Note: “N/A” means not applicable.

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(9kHz-30MHz)	U=3.7dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
5	Conducted Emission(150kHz-30MHz)	U=3.20dB
6	Conducted output power uncertainty Above 1G	U=1.576dB
7	Conducted output power uncertainty below 1G	U=1.28dB
8	humidity uncertainty	U=5.3%
9	Temperature uncertainty	U=0.59℃

4. Product Information And Test Setup

4.1 Product Information

Model/Type Reference:	U1
Model Differences:	N/A
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	657.5MHz-659.5MHz
Type of Modulation:	FM
Number Of Channel	5CH
Antenna installation:	Internal Antenna
Antenna Gain:	3.02 dBi Remark: ☒ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. ☐ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.
Ratings:	DC 3.7V From Battery, DC 5V From USB

4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	Wireless Microphone	F&D	U1	N/A	EUT
E-2	Adapter	UGREEN	CD289	N/A	Auxiliary

Notes:
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.

4.4 Channel List

Channel No.	1	2	3	4	5
Frequency (MHz)	657.5	658	658.1	659	659.5

4.5 Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Mode	Description
Mode 1	Charging (Conducted emission)
Mode 2	Transmitting (CH01: 657.5 MHz)
Mode 3	Transmitting (CH03: 658.1 MHz)
Mode 4	Transmitting (CH05: 659.5 MHz)

Note:
(1) The measurements are performed at the highest, middle, lowest available channels.
(2) Fully-charged battery is used during the test

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.
FCC Test Firm Registration Number: 712850
A2LA certificate registration number is: CN1212
ISED Registered No.: 23583
ISED CAB identifier: CN0017

5.2 Test Instrument Used

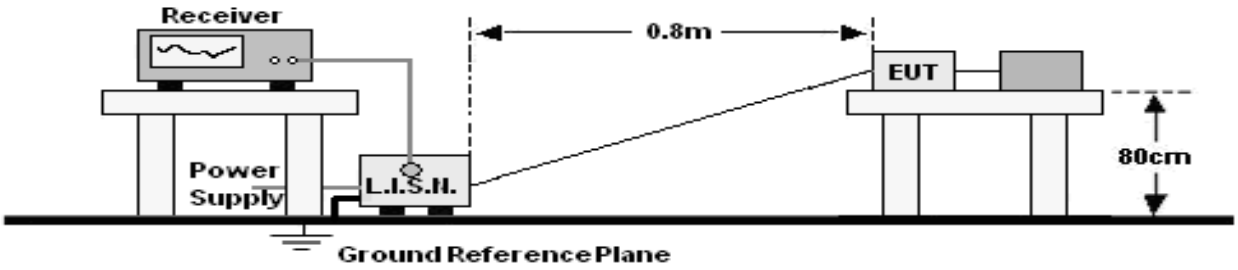
Conducted Emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR	102075	May 08, 2025	May 07, 2026
LISN	R&S	ENV216	101375	May 14, 2025	May 13, 2026
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Pulse limiter	Schwarzbeck	VTSD9561-F	01323	May 14, 2025	May 13, 2026

RF Conducted Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power metter	Keysight	E4419	\	May 14, 2025	May 13, 2026
Power Sensor (AV)	Keysight	E9300A	\	May 14, 2025	May 13, 2026
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 14, 2025	May 13, 2026
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 14, 2025	May 13, 2026

Radiated Emissions Test (966 Chamber01)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESR	102075	May 08, 2025	May 07, 2026
Receiver	R&S	ESRP	101154	May 14, 2025	May 13, 2026
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 14, 2025	May 13, 2026
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 24, 2025	May 23, 2026
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	May 24, 2025	May 23, 2026
Amplifier	SKET	LAPA_01G18G-45dB	SK2021040901	May 14, 2025	May 13, 2026
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 24, 2025	May 23, 2026
Amplifier(18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 24, 2025	May 23, 2026
Horn Antenn(18GHz-40GHz)	Schwarzbeck	BBHA9170	00822	May 24, 2025	May 23, 2026
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 14, 2025	May 13, 2026
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. Conducted Emissions

6.1 Block Diagram Of Test Setup



6.2 Limit

FREQUENCY (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00
Notes: 1. *Decreasing linearly with logarithm of frequency. 2. The lower limit shall apply at the transition frequencies.		

6.3 Test Procedure

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

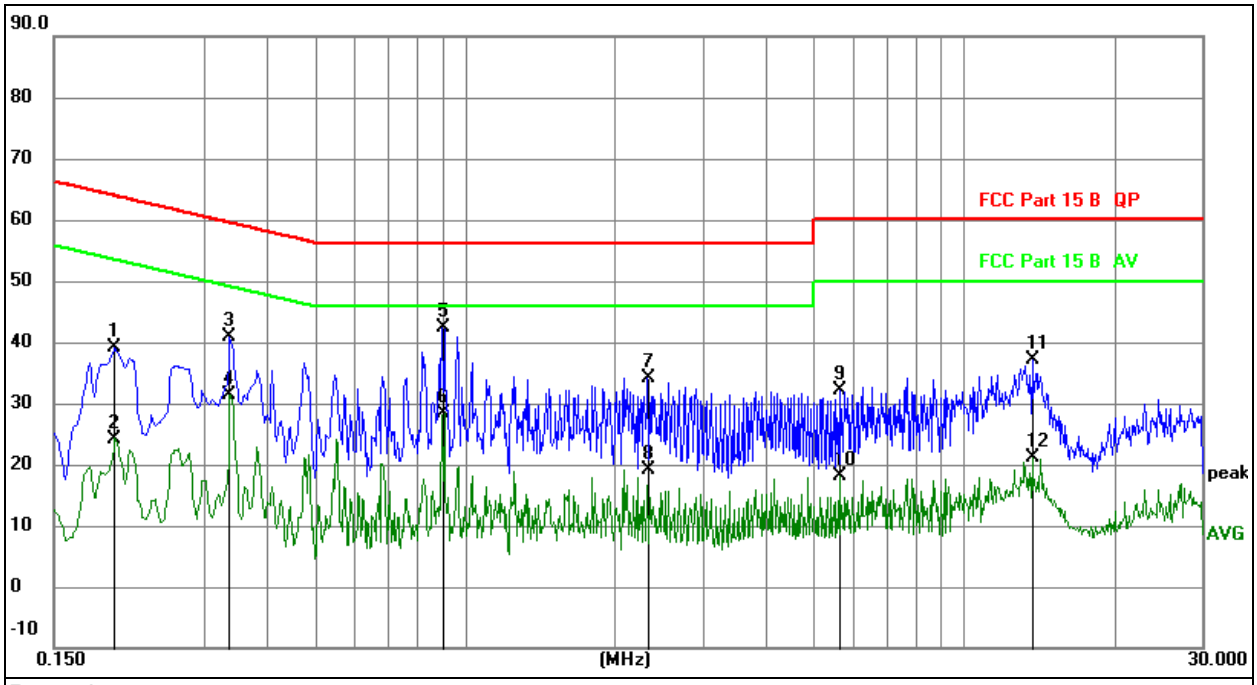
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 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.

6.5 Test Result

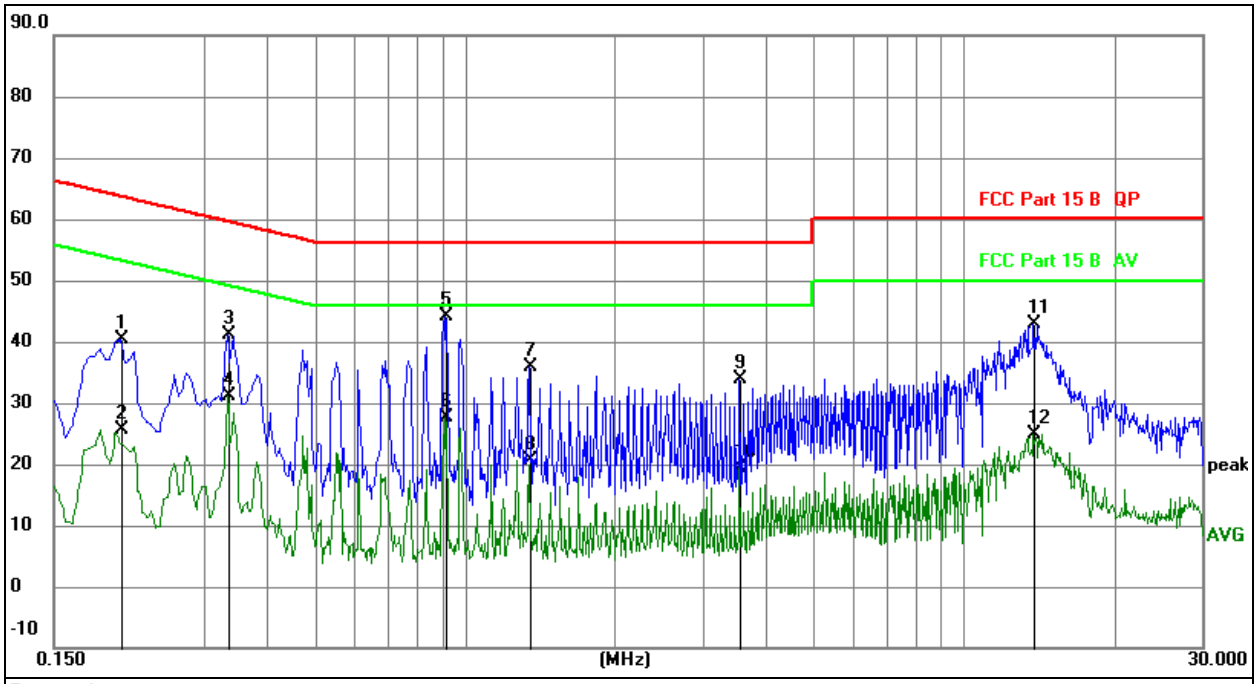
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	L
Test Mode:	Mode 1	Remark:	N/A



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over=Measurement-Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1986	18.99	20.07	39.06	63.67	-24.61	QP
2		0.1986	4.18	20.07	24.25	53.67	-29.42	AVG
3		0.3373	20.84	20.07	40.91	59.27	-18.36	QP
4		0.3373	11.36	20.07	31.43	49.27	-17.84	AVG
5	*	0.8992	22.40	20.09	42.49	56.00	-13.51	QP
6		0.8992	8.18	20.09	28.27	46.00	-17.73	AVG
7		2.3213	14.03	20.11	34.14	56.00	-21.86	QP
8		2.3213	-0.93	20.11	19.18	46.00	-26.82	AVG
9		5.6234	12.00	20.15	32.15	60.00	-27.85	QP
10		5.6234	-2.08	20.15	18.07	50.00	-31.93	AVG
11		13.6952	16.82	20.27	37.09	60.00	-22.91	QP
12		13.6952	0.83	20.27	21.10	50.00	-28.90	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	N
Test Mode:	Mode 1	Remark:	N/A



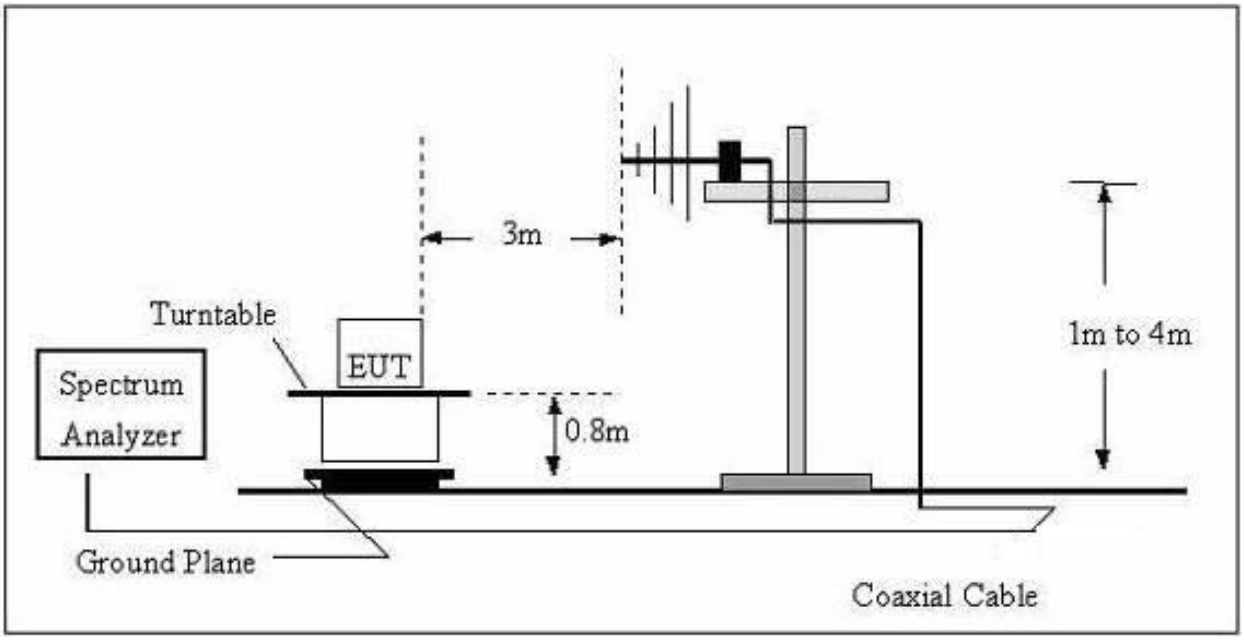
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over=Measurement-Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.2040	20.27	20.07	40.34	63.45	-23.11	QP
2		0.2040	5.54	20.07	25.61	53.45	-27.84	AVG
3		0.3345	21.18	20.07	41.25	59.34	-18.09	QP
4		0.3345	11.14	20.07	31.21	49.34	-18.13	AVG
5	*	0.9150	24.08	20.09	44.17	56.00	-11.83	QP
6		0.9150	7.61	20.09	27.70	46.00	-18.30	AVG
7		1.3470	15.86	20.09	35.95	56.00	-20.05	QP
8		1.3470	0.54	20.09	20.63	46.00	-25.37	AVG
9		3.5565	13.70	20.13	33.83	56.00	-22.17	QP
10		3.5565	-0.83	20.13	19.30	46.00	-26.70	AVG
11		13.7805	22.53	20.28	42.81	60.00	-17.19	QP
12		13.7805	4.61	20.28	24.89	50.00	-25.11	AVG

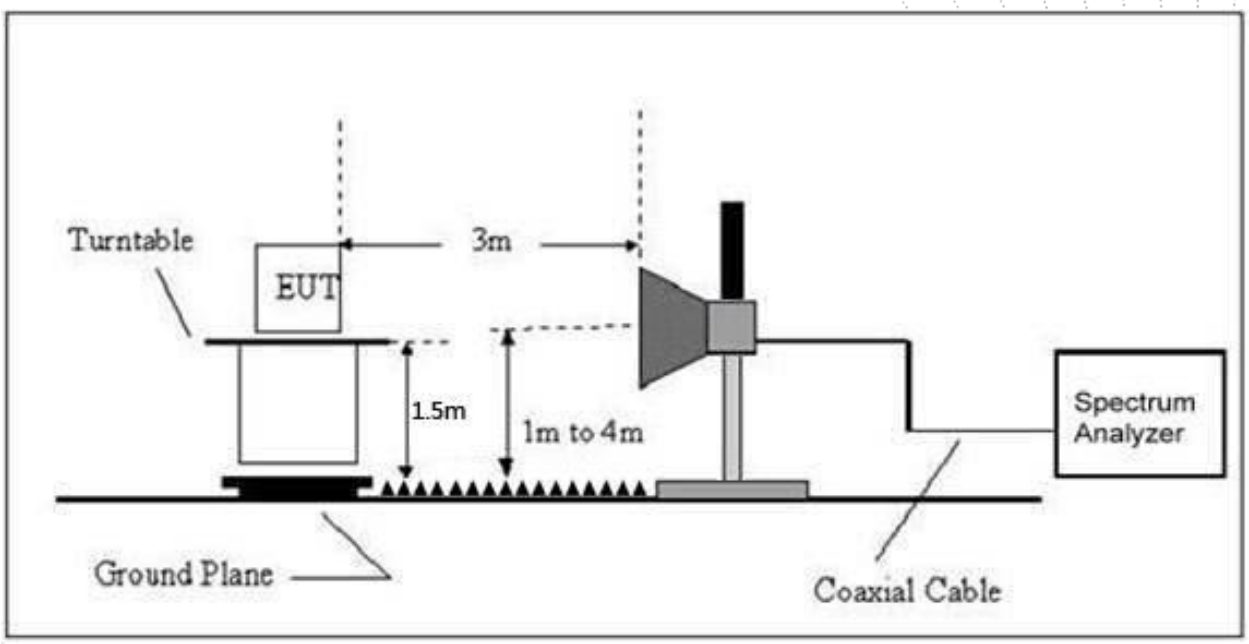
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

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



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



7.2 Limit

According to FCC 15.236(g)(4), Emissions outside of the emission masks listed in paragraphs (g)(1) through (g)(3) shall comply with the limits specified in section 4.2.4.1.2 of ETSI EN 300 422-1 V2.2.1 (2021-11), (incorporated by reference, see § 15.38).

Table 4: Transmitter unwanted emission limits (from ERC Recommendation 74-01 [2])

Frequency range	Maximum power	RBW
9 kHz - 150 kHz	-36 dBm	1 kHz
150 kHz - 30 MHz	-36 dBm	10 kHz
30 MHz - 1 GHz	-36 dBm	F_c + 2,5 B ≤ f ≤ f_c + 4 B: 1 kHz F_c + 4 B < f ≤ f_c + 10 B: 10 kHz f > f_c + 10 B: 100 kHz f < f_c - 10 B: 100 kHz f_c - 10 B ≤ f < f_c - 4 B: 10 kHz f_c - 4 B ≤ f ≤ f_c - 2,5 B: 1 kHz
except:		
47 MHz - 74 MHz 87,5 MHz - 118 MHz	-54 dBm	100 kHz
174 MHz - 230 MHz 470 MHz - 862 MHz	-54 dBm	F_c + 2,5 B ≤ f ≤ f_c + 4 B: 1 kHz F_c + 4 B < f ≤ f_c + 10 B: 10 kHz f > f_c + 10 B: 100 kHz f < f_c - 10 B: 100 kHz f_c - 10 B ≤ f < f_c - 4 B: 10 kHz f_c - 4 B ≤ f ≤ f_c - 2,5 B: 1 kHz
1 GHz < *f* ≤ F_{upper}	-30 dBm	F_c + 2,5 B ≤ f ≤ f_c + 10 B: 30 kHz F_c + 10 B < f ≤ f_c + 12 B: 300 kHz f > f_c + 12 B: 1 MHz f < f_c - 12 B: 1 MHz f_c - 12 B ≤ f < f_c - 10 B: 300 kHz f_c - 10 B ≤ f ≤ f_c - 2,5 B: 30 kHz

7.3 Test Procedure

Below 1GHz test procedure as below:
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:
a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
g. Test the EUT in the lowest channel, the Highest channel.
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

7.4 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.

7.5 Test Result

9KHz – 30MHz

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101 kPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 1(The Worst data)	Polarization :	--

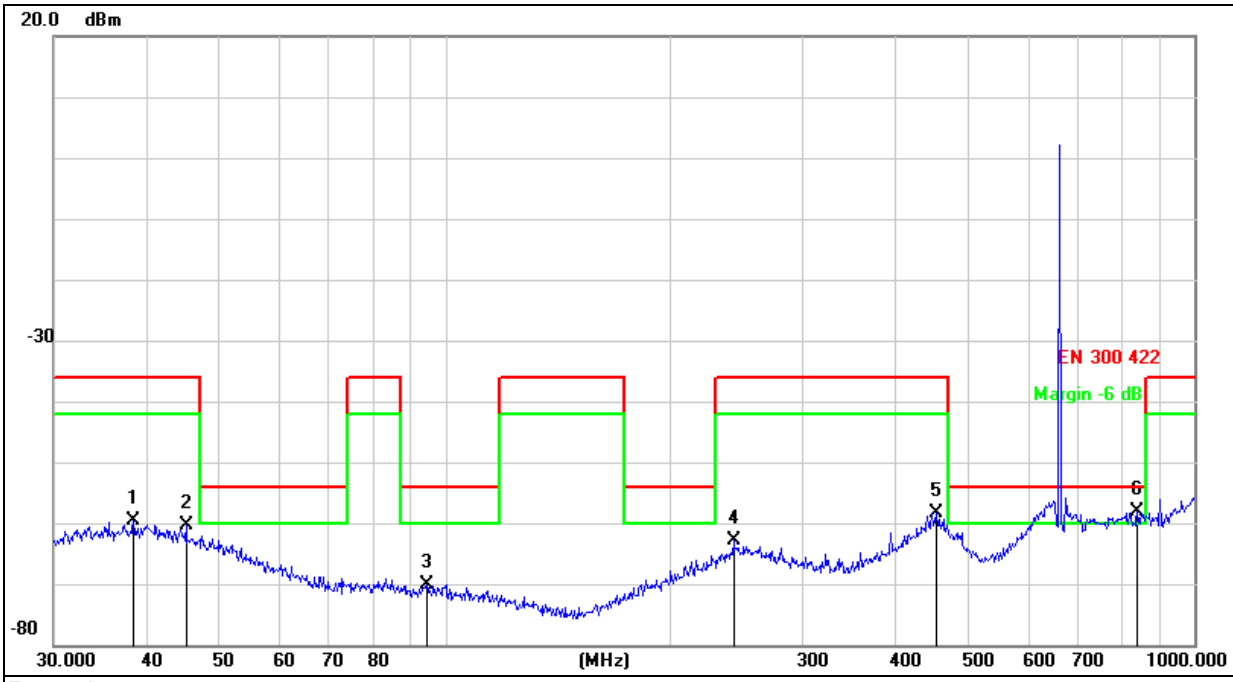
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

Between 30MHz – 1GHz

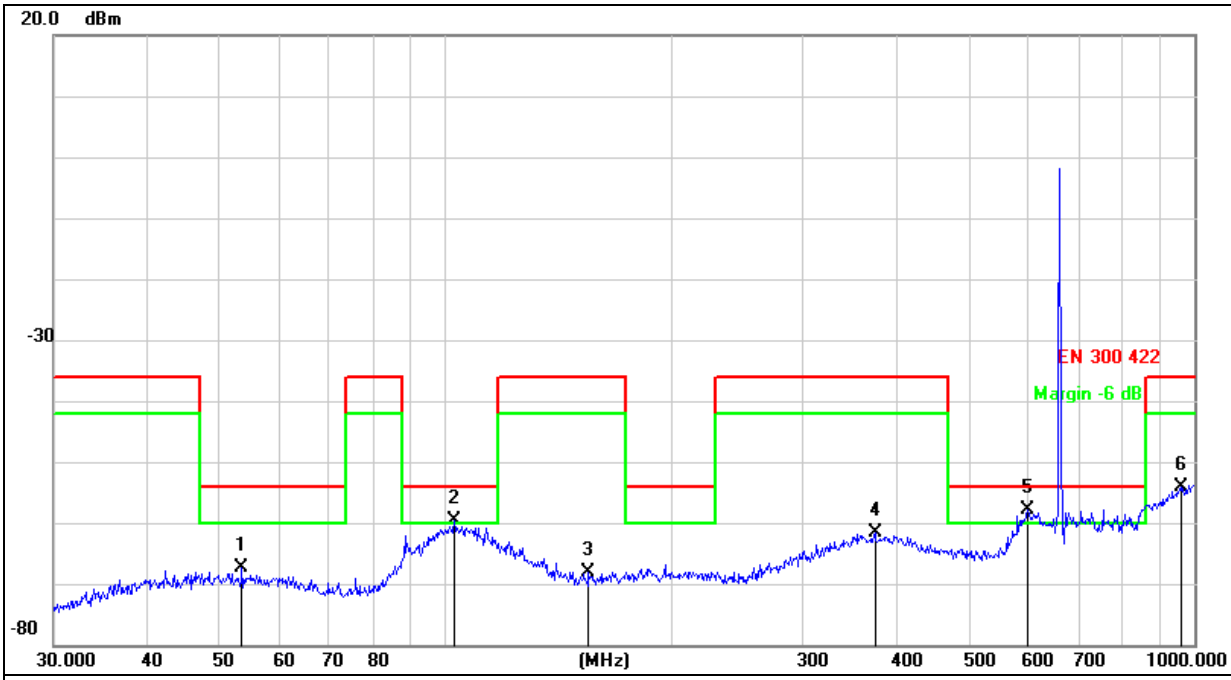
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Frequency	The worst data(Mode 3)	Remark:	N/A



Remark:
1.Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over=Measurement-Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBm	dB	dBm	dB	dB	Detector
1		38.3462	-62.22	2.50	-59.72	-36.00	-23.72	QP
2		45.0583	-61.67	1.31	-60.36	-36.00	-24.36	QP
3		94.4284	-62.90	-7.26	-70.16	-54.00	-16.16	QP
4		242.5253	-61.01	-1.81	-62.82	-36.00	-26.82	QP
5		452.7197	-61.97	3.49	-58.48	-36.00	-22.48	QP
6	*	839.1816	-66.18	8.01	-58.17	-54.00	-4.17	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Frequency	The worst data(Mode 3)	Remark:	N/A



Remark:
1.Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over=Measurement-Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBm	dB	dBm	dB	dB	Detector
1		53.5052	-61.81	-5.63	-67.44	-54.00	-13.44	QP
2	!	102.7192	-62.01	2.34	-59.67	-54.00	-5.67	QP
3		155.3643	-62.90	-5.18	-68.08	-36.00	-32.08	QP
4		374.6225	-62.12	0.51	-61.61	-36.00	-25.61	QP
5	*	599.3212	-62.27	4.34	-57.93	-54.00	-3.93	QP
6		962.1621	-61.61	7.42	-54.19	-36.00	-18.19	QP

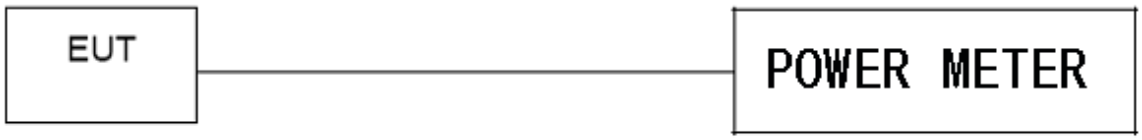
Above 1GHz

Frequency	Receiver Reading	Polar	Correct Factor	Absolute Level	Result	
					Limit	Margin
(MHz)	(dBm)	(H/V)	(dB)	(dBm)	(dBm)	(dB)
657.5 MHz						
1315.00	-11.04	V	-28.11	-39.15	-30	-9.15
1972.50	-24.66	H	-26.66	-51.32	-30	-21.32
1315.00	-20.59	H	-28.11	-48.70	-30	-18.70
1972.50	-26.84	V	-26.66	-53.50	-30	-23.50
658.1 MHz						
1316.20	-21.17	V	-28.10	-49.27	-30	-19.27
1974.30	-24.38	H	-26.66	-51.04	-30	-21.04
1316.20	-20.53	H	-28.1	-48.63	-30	-18.63
1974.30	-26.63	V	-26.66	-53.29	-30	-23.29
659.5 MHz						
1319.00	-21.05	V	-28.10	-49.15	-30	-19.15
1978.50	-24.40	H	-26.65	-51.05	-30	-21.05
1319.00	-20.71	H	-28.1	-48.81	-30	-18.81
1978.50	-26.91	V	-26.65	-53.56	-30	-23.56

Remark:
Absolute Level = Receiver Reading + Factor
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

8. RF Output Power (EIRP)

8.1 Block Diagram Of Test Setup



8.2 Limit

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

8.3 Test Procedure

The EUT was directly connected to the Power meter.

8.4 Test Result

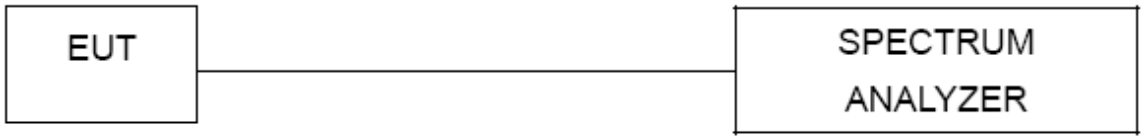
Temperature:	26℃	Relative Humidity:	54%
Test Mode:	FM	Test Voltage:	DC 3.7V

Frequency	Conducted Output Power	Antenna Gain	EIRP	EIRP	FCC Limit	Result
(MHz)	(dBm)	(dBi)	(dBm)	(mW)	(mW)	
657.5	5.315	3.02	8.325	7.000	20	PASS
658.1	5.170	3.02	8.190	6.592	20	PASS
659.5	4.915	3.02	7.935	6.216	20	PASS

Remark:
EIRP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi)

9. Occupied Bandwidth

9.1 Block Diagram Of Test Setup



9.2 Limit

According to FCC 15.236(f)(ii)
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 200 kHz.

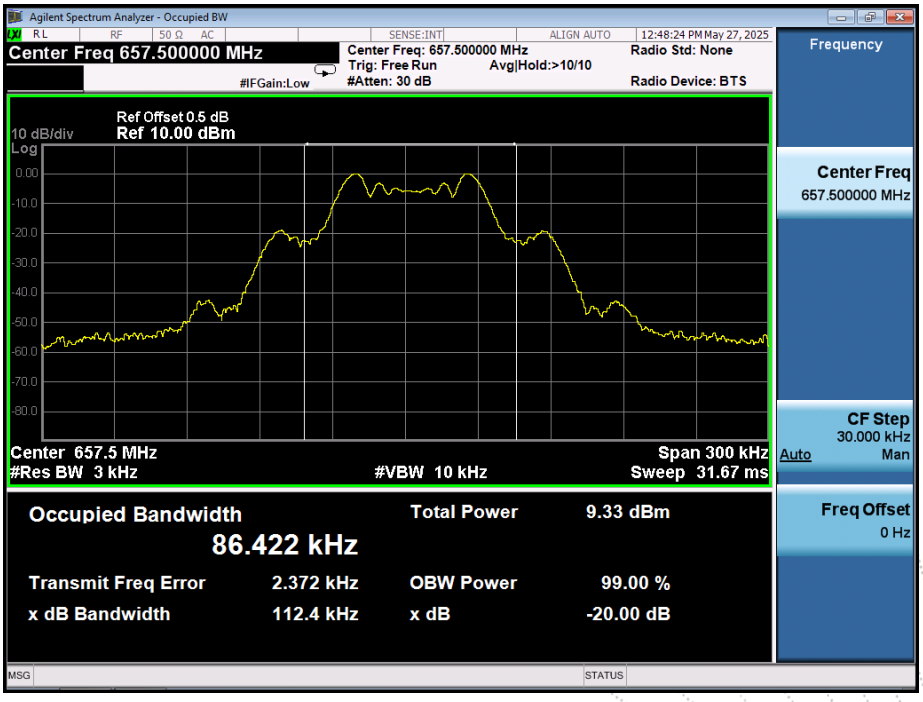
9.3 Test Procedure

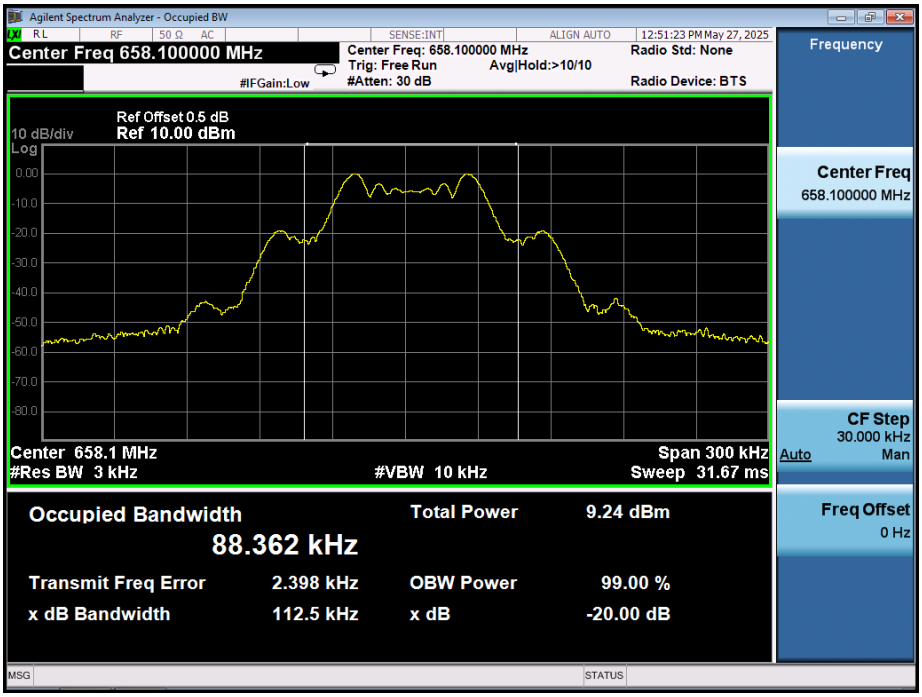
According to TIA-603 for additional Test Set-Up procedures, the occupied bandwidth of emission was measured with a Spectrum Analyzer connected to the antenna terminal while EUT was operating in 2.5kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation. Then mark the 99% Occupied Bandwidth and record it.

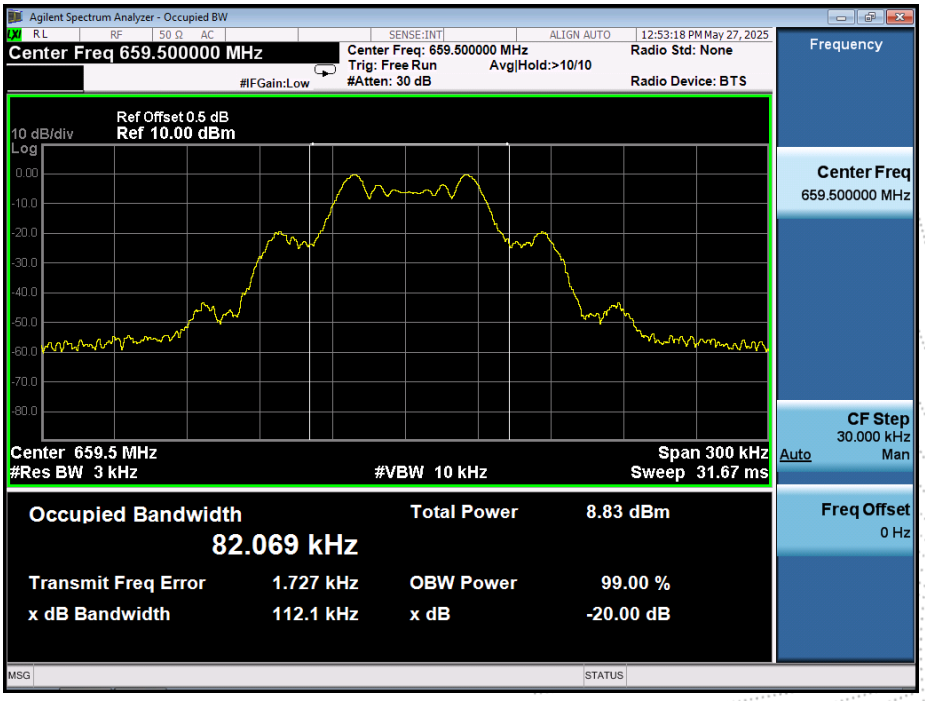
9.5 Test Result

Temperature:	26℃	Relative Humidity:	54%
Test Mode:	FM	Test Voltage:	DC 3.7V

Frequency(MHz)	99% Bandwidth(kHz)	Limit(kHz)	Result
657.5	86.422	200	PASS
658.1	88.362	200	PASS
659.5	82.069	200	PASS

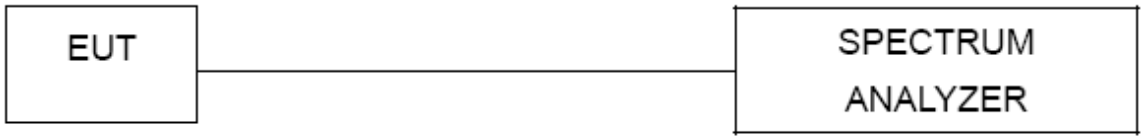



Agilent Spectrum Analyzer - Occupied BW
Center Freq 658.100000 MHz
Center Freq: 658.100000 MHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
12:51:23 PM May 27, 2025
Frequency
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Center Freq
658.100000 MHz
Center 658.1 MHz
#Res BW 3 kHz
#VBW 10 kHz
Span 300 kHz
Sweep 31.67 ms
CF Step
30.000 kHz
Auto
Man
Occupied Bandwidth
88.362 kHz
Total Power
9.24 dBm
Freq Offset
0 Hz
Transmit Freq Error
2.398 kHz
OBW Power
99.00 %
x dB Bandwidth
112.5 kHz
x dB
-20.00 dB
MSG
STATUS


Agilent Spectrum Analyzer - Occupied BW
Center Freq 659.500000 MHz
Center Freq: 659.500000 MHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
12:53:18 PM May 27, 2025
Frequency
Ref Offset 0.5 dB
10 dB/div
Ref 10.00 dBm
Log
Center Freq
659.500000 MHz
Center 659.5 MHz
#Res BW 3 kHz
#VBW 10 kHz
Span 300 kHz
Sweep 31.67 ms
CF Step
30.000 kHz
Auto
Man
Occupied Bandwidth
82.069 kHz
Total Power
8.83 dBm
Freq Offset
0 Hz
Transmit Freq Error
1.727 kHz
OBW Power
99.00 %
x dB Bandwidth
112.1 kHz
x dB
-20.00 dB
MSG
STATUS

10. Emission Mask (Necessary Bandwidth)

10.1 Block Diagram Of Test Setup



10.2 Limit

According to FCC 15.236(g)(1)
Emissions within the band from 2.5 × B below to 2.5 × B above the carrier frequency, where B is the channel bandwidth, shall comply with the emission mask in Figure 1 of section 4.2.4.2.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 15.38).

4.2.4.2.2 Limits

The following limits are applicable, where B is the *Declared Channel Bandwidth*.

The mean Power Density, measured with 1 kHz measurement bandwidth and RMS detector, of the transmitter unwanted emissions shall not exceed the limits of the masks provided in figure 1 for equipment employing analogue modulation and figure 2 for equipment employing digital modulation, but excluding WMAS.

The limits in figures 1 and 2 are relative to the transmitter RF output power according to clauses 4.2.1 and 5.4.1.

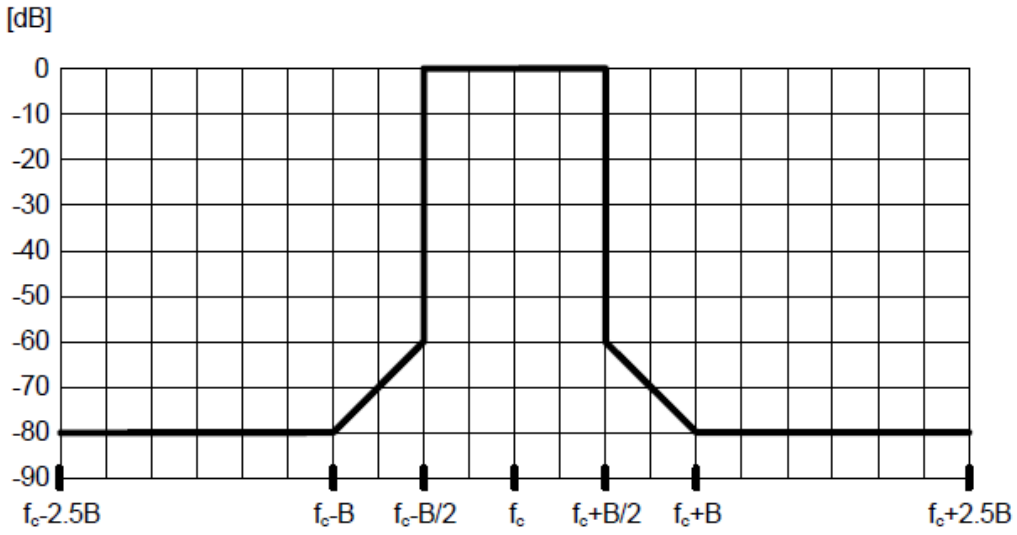


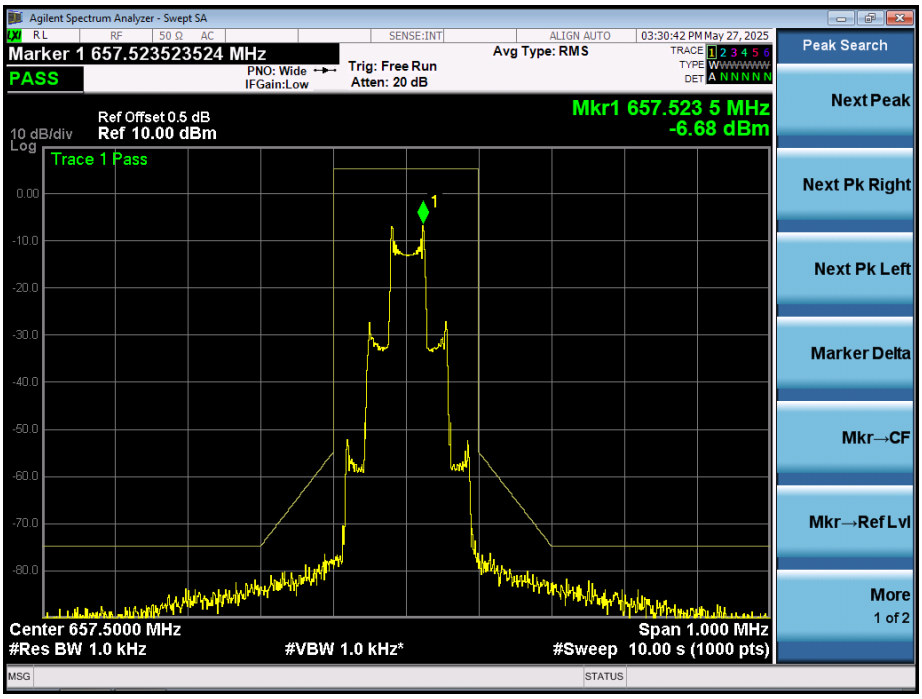
Figure 1: Transmit spectral power mask for equipment employing analogue modulation, RBW = 1 kHz

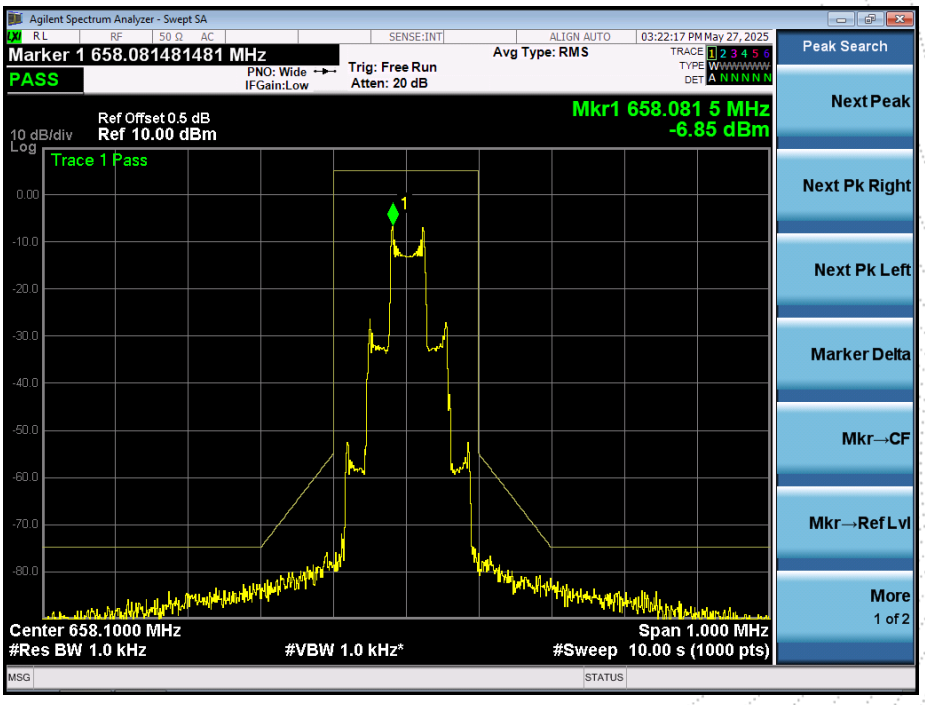
10.3 Test Procedure

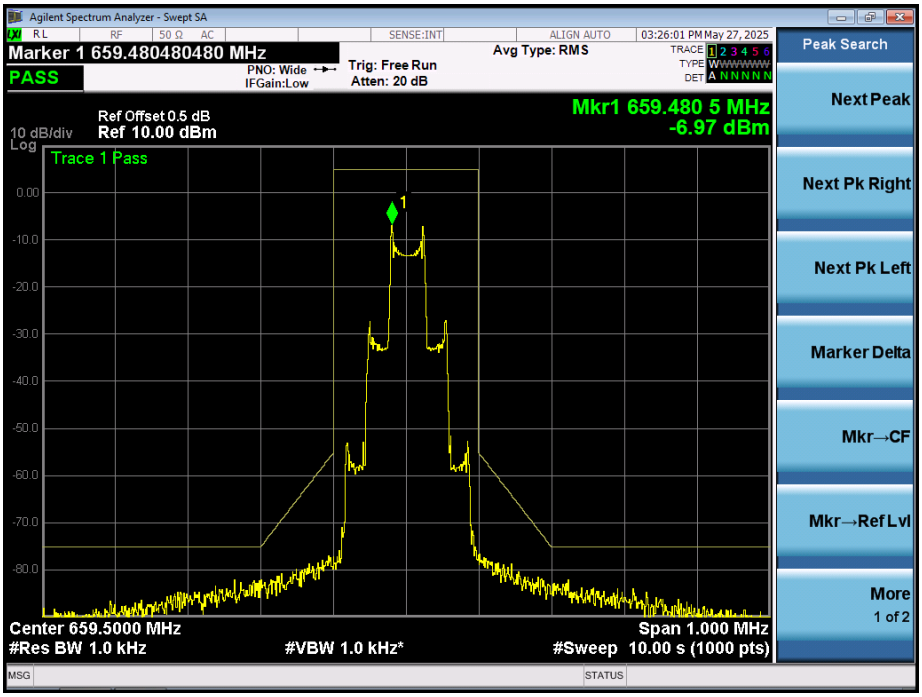
Method of Measurement for Analogue Systems in ETSI EN 300 422-1 V2.2.1 (2021-11) section 5.4.3.2

10.5 Test Result

Temperature:	26℃	Relative Humidity:	54%
Test Mode:	FM	Test Voltage:	DC 3.7V

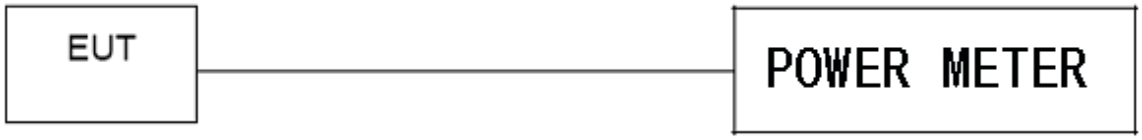





Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
03:26:01 PM May 27, 2025
Marker 1 659.480480480 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: RMS
TRACE 1 2 3 4 5 6
TYPE WWWWW
DET A N N N N
Ref Offset 0.5 dB
10 dB/div
Log
Ref 10.00 dBm
Mkr1 659.480 5 MHz
-6.97 dBm
Trace 1 Pass
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 659.5000 MHz
#Res BW 1.0 kHz
#VBW 1.0 kHz*
Span 1.000 MHz
#Sweep 10.00 s (1000 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

11. Frequency Tolerance

11.1 Block Diagram Of Test Setup



11.2 Limit

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 temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

11.3 Test Procedure

1, Setup the configuration of the ambient temperature form -20ºC to 50ºC 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.

11.5 Test Result

Temperature:	26℃	Relative Humidity:	54%
Test Mode:	Unmodulated	Test Voltage:	DC 3.7V

Test conditions		Frequency Error(MHz)
		657.5000
T_{min} (-20°C)	V_{min}(3.33V)	657.4984
	V_{max}(4.07V)	657.4949
T(-20°C)	V_{nom}(3.7V)	657.4926
T(-10°C)	V_{nom}(3.7V)	657.4892
T(0°C)	V_{nom}(3.7V)	657.4866
T(10°C)	V_{nom}(3.7V)	657.4857
T_{nom}(20°C)	V_{nom}(3.7V)	657.4845
T(30°C)	V_{nom}(3.7V)	657.4814
T(40°C)	V_{nom}(3.7V)	657.4807
T_{max}(50°C)	V_{min}(3.33V)	657.4777
	V_{max}(4.07V)	657.4771
Max. frequency error (ppm)		-35
Limit (ppm)		±50ppm

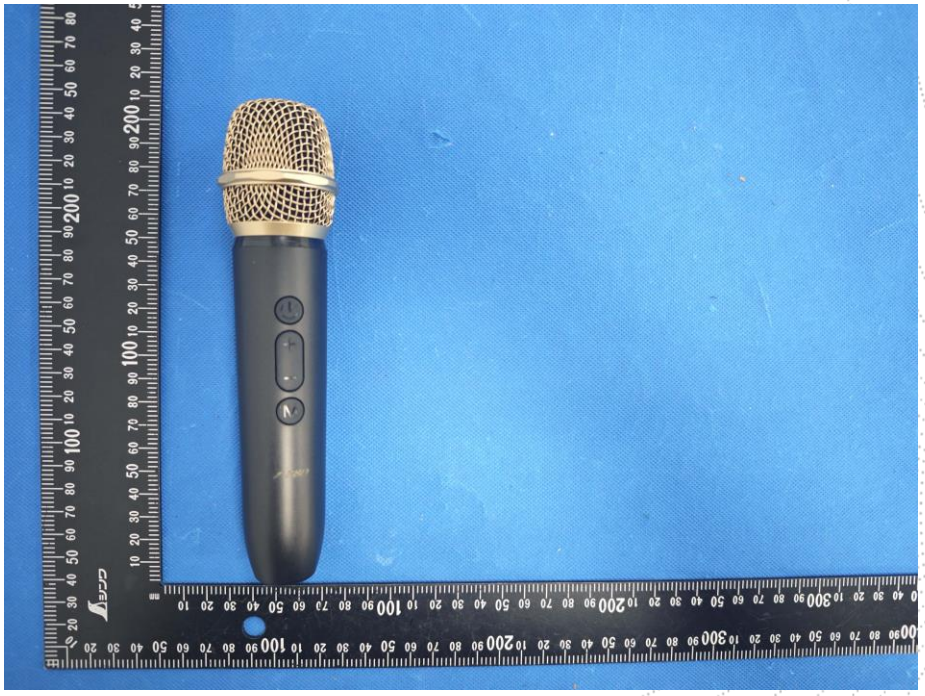
Test conditions		Frequency Error(MHz)
		658.1000
T_{min} (-20°C)	V_{min}(3.33V)	658.0965
	V_{max}(4.07V)	658.0962
T(-20°C)	V_{nom}(3.7V)	658.0961
T(-10°C)	V_{nom}(3.7V)	658.0957
T(0°C)	V_{nom}(3.7V)	658.0944
T(10°C)	V_{nom}(3.7V)	658.0906
T_{nom}(20°C)	V_{nom}(3.7V)	658.0905
T(30°C)	V_{nom}(3.7V)	658.0872
T(40°C)	V_{nom}(3.7V)	658.0858
T_{max}(50°C)	V_{min}(3.33V)	658.0847
	V_{max}(4.07V)	658.0828
Max. frequency error (ppm)		-26
Limit (ppm)		±50ppm

Test conditions		Frequency Error(MHz)
		659.5000
T_{min} (-20°C)	V_{min}(3.33V)	659.4966
	V_{max}(4.07V)	659.4933
T(-20°C)	V_{nom}(3.7V)	659.4928
T(-10°C)	V_{nom}(3.7V)	659.4912
T(0°C)	V_{nom}(3.7V)	659.4908
T(10°C)	V_{nom}(3.7V)	659.4902
T_{nom}(20°C)	V_{nom}(3.7V)	659.4898
T(30°C)	V_{nom}(3.7V)	659.4896
T(40°C)	V_{nom}(3.7V)	659.4883
T_{max}(50°C)	V_{min}(3.33V)	659.4861
	V_{max}(4.07V)	659.4835
Max. frequency error (ppm)		-25
Limit (ppm)		±50ppm

12. EUT Photographs

EUT Photo 1

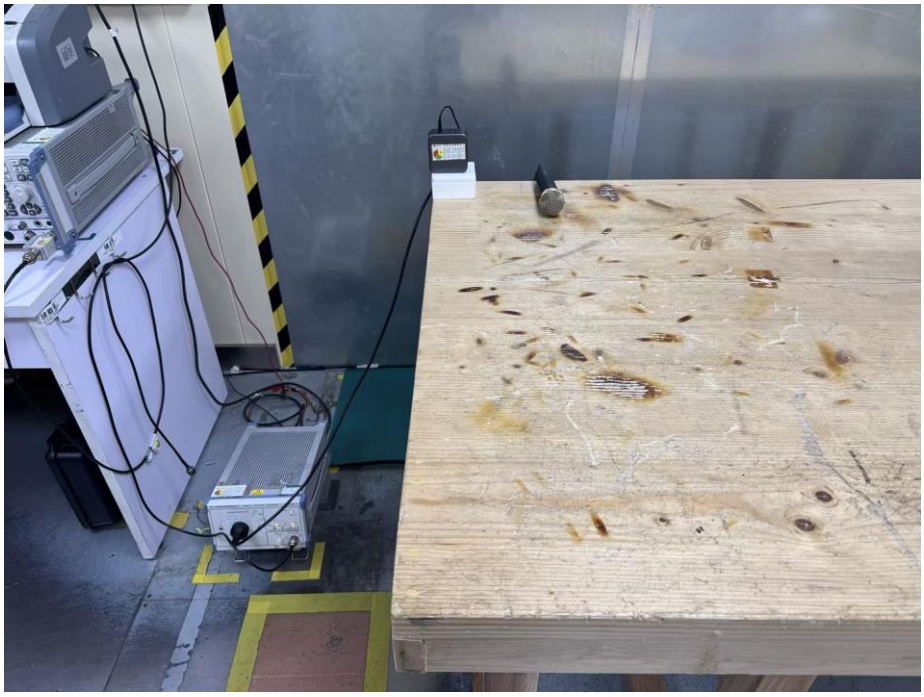
EUT Photo 2



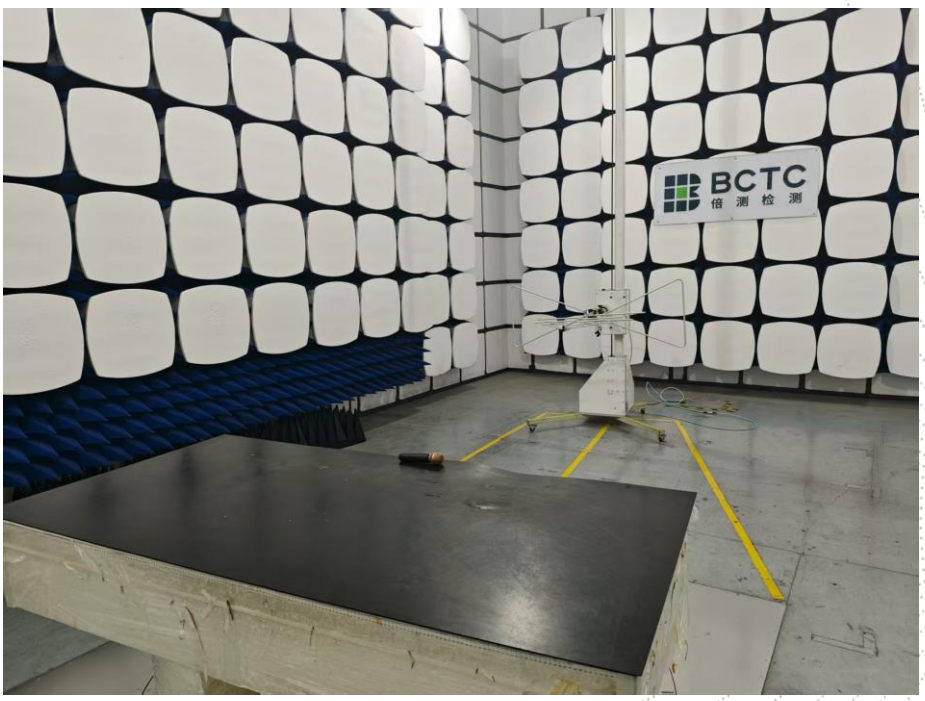
NOTE: Appendix-Photographs Of EUT Constructional Details.

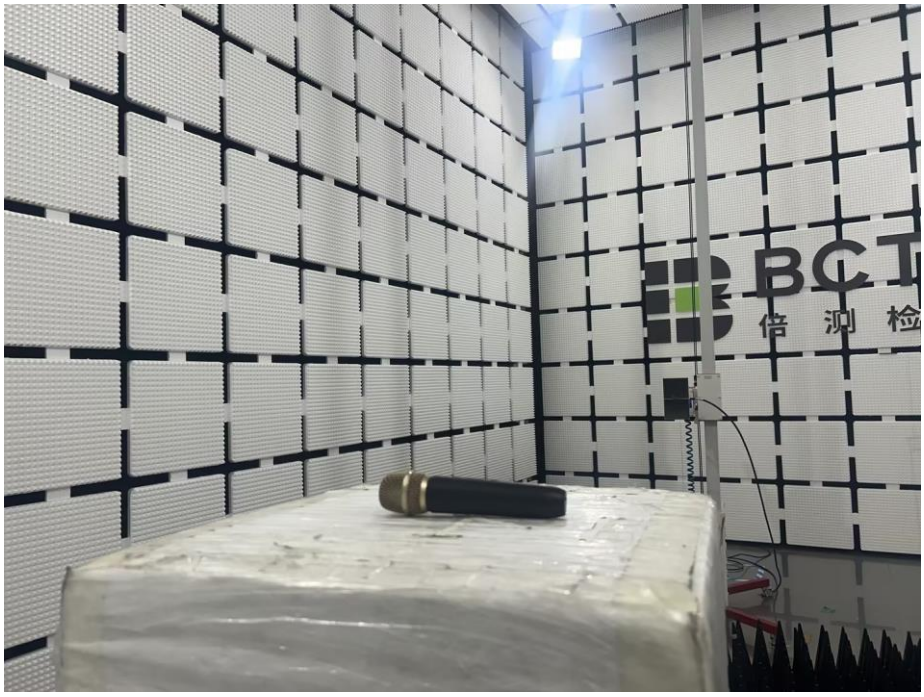
13. EUT Test Setup Photographs

Conducted Measurement Photo



Radiated Measurement Photos




BCT
倍 测 检

STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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P.C.: 518103

FAX: 0755-33229357

Website: http://www.chnbctc.com

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Complaint/Advice E-mail: advice@bctc-lab.com.cn

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