TEST REPORT

Applicant	:	SHENZHEN JIUHU TECHNOLOGY CO., LTD
Address	:	4F, HE Sheng Teng Tech Industrial Park, HuanGuan South Road.10 Guanlan, LongHua, ShenZhen, 518110 China
Manufacturer	:	SHENZHEN JIUHU TECHNOLOGY CO., LTD
Address	:	4F, HE Sheng Teng Tech Industrial Park, HuanGuan South Road.10 Guanlan, LongHua, ShenZhen, 518110 China
Product Name	:	AI Smart Translation Speaker
Model Number	:	future01, future02, future03, future05
Trademark	:	N/A
FCC ID	:	2APRE-FUTURE01
Test Date	:	Sept. 29, 2026 – Oct. 13, 2026
Date of Report	:	Oct. 16, 2026
Test Result	:	This device described above has been tested by NTT, and the test results show that the equipment under test (EUT) is in compliance with the Standard requirements. And it is applicable only to the tested sample identified in the report.

Test Procedure Used:

Standards	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 KDB 558074 D01 15.247 Meas Guidance v05r02

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Revision History of This Test Report		
Report Number	Description	Issued Date
SZNTT26040517E1-1	Initial Issue	2026-10-16

1. General Information

1.1.Description of Device (EUT)

EUT Name	:	AI Smart Translation Speaker
Model No.	:	future01
Seriol	:	future02, future03, future05
Model Difference	:	All the models are the same circuit and RF module, except the model name and appearance color.
Power supply	:	DC 3.7V from battery; Charging input: DC 5V
Operation frequency	:	2402-2480MHz
Modulation	:	GFSK
Antenna Type	:	Chip antenna, Maximum Gain is 1.24 dBi
Intend use environment	:	Residential, commercial and light industrial environment

1.2.Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	**2402**	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	**19**	**2440**	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	**2480**
12	2426	26	2454		
13	2428	27	2456		

1.3.Summary of test result

RF PART		
Test Items	**Test Requirement**	**Result**
Antenna requirement	FCC part 15.203/15.247 (b)(4)	PASS
AC Power Line Conducted Emission	FCC part 15.207	PASS
Conducted Peak Output Power	FCC part 15.247 (b)(3)	PASS
Channel Bandwidth& 99% OCB	FCC part 15.247 (a)(2)	PASS
Power Spectral Density	FCC part 15.247 (e)	PASS
Band Edge	FCC part 15.247(d)	PASS
Spurious Emission	FCC part 15.205/15.209	PASS
Remark: N/A is an abbreviation for Not Applicable. Measurement Uncertainty is not taken into account for conformity statement		

1.4.Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model No.	Hardware Version	Software Version
PC	Lenovo	M420-N000	/	/
USB serial port	/	/	/	/
Adapter	MI	MDY-14-ET	/	/

1.5.Test mode

The special RF test software was used to control EUT work in Continuous BLE TX mode, and select test channel, wireless mode.

Test mode	Low channel	Middle channel	High channel
GFSK 1M	2402MHz	2440MHz	2480MHz
GFSK 2M	2402MHz	2440MHz	2480MHz
Note：Only the worst Data Record in the report			

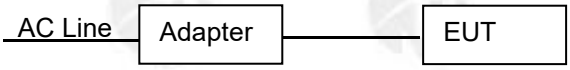
1.6. Test configuration

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 Software	BT_Tool V1.1.4
Power level setup	Default

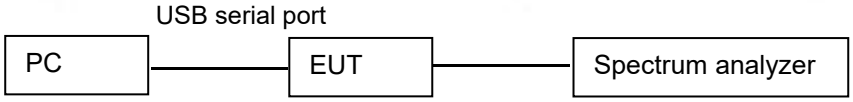
1.7.Block Diagram

Conducted Emission



Radiated Emission

RF Conducted Test



1.8.Test Conditions

Category	Normal Conditions	Extreme Conditions
Temperature range	15-35℃	N/A
Humidity range	20-75%	N/A
Pressure range	86-106kPa	N/A
Note: N/A is an abbreviation for Not Applicable.		

1.9.Measurement Uncertainty (95% confidence levels, k=2)

Parameter	**Uncertainty**
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10-6
Bandwidth	± 1.5 x 10-6
Time	±2%
Duty Cycle	±2%
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(9KHz~30MHz)	±4.51dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB
Remark:When making a conformity declaration based on test results for regulations/standards or specifications,the default is to use Clause 4.2.1of ILAC-G8:09/2019 and the guidelines on decision rules and conformity declaration in IEC Guide 115:2023.	

1.10.Test Facility

Site Description		
Name of Firm	:	Shenzhen NTT Testing Technology Co.,Ltd.
Site Location	:	1B, Building 2, Factory Building & 103, Building 3, Factory Building, Dayang Industrial Park, No.4, Industrial Avenue, Tangwei Community, Fuhai Sub-district, Bao 'an District, Shenzhen City, China
FCC Designation Number	:	CN3446
FCC Test Firm Registration Number	:	129414

1.11.Test Equipment

Conducted Test Site

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
944 Shielded Room	HSRCE944	/	HTEC	2025/4/30	2028/4/29
EMI Test Receiver	ESCI	100881/003	ROHDE&SCHWARZ	2026/09/04	2027/09/03
LISN	AMN6500	101185	ROHDE&SCHWARZ	2026/09/04	2027/09/03
LISN	NNLK 8129	00603	SCHWARZBECK	2026/09/04	2027/09/03
Pulse Limiters	VTSD 9561 F	00343	SCHWARZBECK	2026/09/04	2027/09/03
Cable	RG223-2M	/	RG	2026/09/04	2027/09/03

Radiated Test Site(Below 1G and Above 1G)&RF Test Site

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
966 Shielded Room	966 Room	/	EMToni	2025/07/24	2028/07/23
EMI Test Receiver	ESPI	101018	ROHDE&SCHWARZ	2026/09/04	2027/09/03
Amplifi（30MHz-1GHz）	BBV 9745	00431	SCHWARZBECK	2026/09/04	2027/09/03
Bilog Antenna（30MHz-1GHz）	VULB9168	1858	SCHWARZBECK	2026/09/05	2027/09/04
Horn antenna（1GHz-18GHz）	BBHA 9120 D	02622	SCHWARZBECK	2026/09/05	2027/09/04
Pream plifier（1GHz-18GHz）	BBV 9718D	0024	SCHWARZBECK	2026/09/04	2027/09/03
Spectrum Analyze（10Hz-40GHz）	FSV 40	100952	ROHDE&SCHWARZ	2026/09/04	2027/09/03
Pream plifier（18GHz-40GHz）	BBV 9721	0056	SCHWARZBECK	2026/09/04	2027/09/03
Double Ridge Guide Horn Antenna（18GHz-40GHz）	SAS-574	588	A.H.System	2026/09/05	2027/09/04
Loop Antenna (9KHz-30MHz)	FMZB 1513-60	00115	SCHWARZBECK	2026/09/04	2027/09/03
MXG Signal Analyzer	N9020A	MY49100730	Agilent	2026/09/04	2027/09/03
MXG Vector Signal Generator	N5182A	MY50144920	Agilent	2026/09/04	2027/09/03
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	/	ROHDE&SCHWARZ	2026/09/07	2027/09/06

Power Sensor	MW100-RFCB -2	MW260105 NTT-64	MWRFtest	2026/09/04	2027/09/03
RF Swith	MW100-RFCB -1	MW260105 NTT-64	MWRFtest	2026/09/04	2027/09/03
Cable	RG223-3M	/	DA	2026/09/04	2027/09/03
Cable	RG223-12M	/	DA	2026/09/04	2027/09/03
Cable	SFT205-NMN MSW-2.5M	/	DA	2026/09/04	2027/09/03
Cable	SFT205-NMN M-12M	/	DA	2026/09/04	2027/09/03
Cable	UCA500-NJW SM-1.5M	017	MWRFtest	2026/09/04	2027/09/03
High Pass Filter	HXHPF-3G-S	202507220 001	luanwei	2026/09/04	2027/09/03

Test software

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ-EMC	Ver.EMC-CON 3A1.1+
2	EMC radiation test system	FALA	EZ-EMC	Ver.FA-03A2 RE+
3	RF test system	TACHOY	RFTest	V1.0.0
4	RF communication test system	TACHOY	RFTest	V1.0.0

2. Conducted emission at the mains terminals test

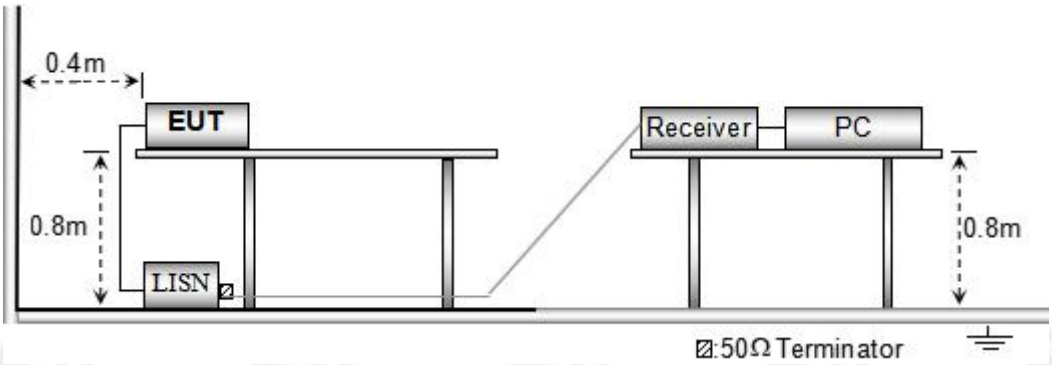
2.1.Limit

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

2.2.Test Setup

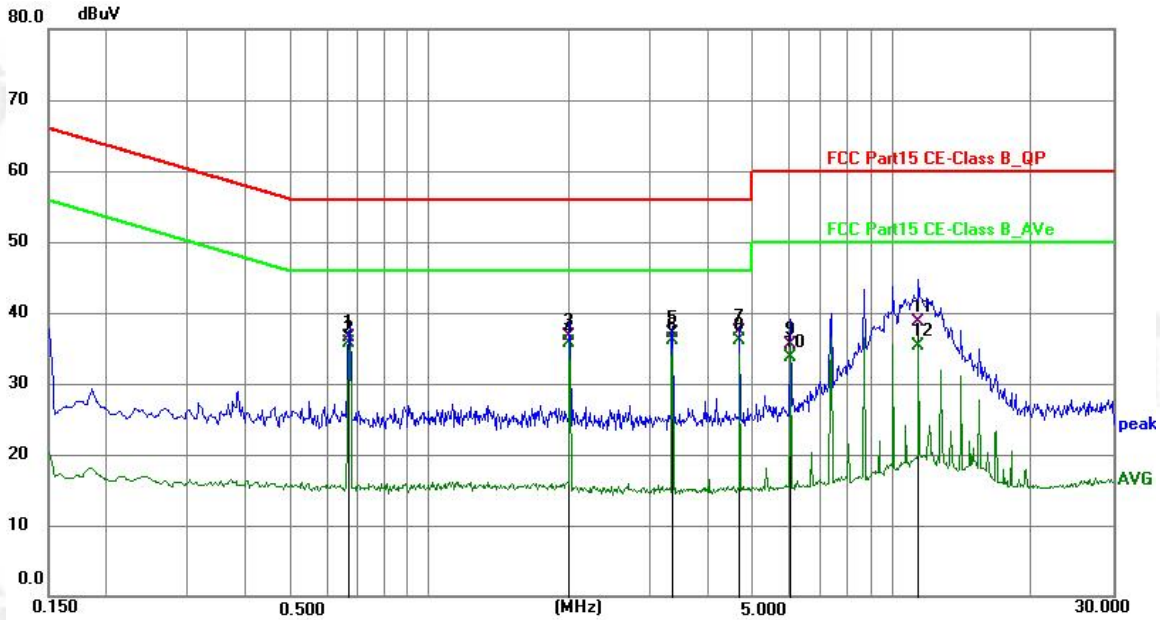


2.3.Test Procedure

1. 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.
2. 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.
3. 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.
4. LISN at least 80 cm from nearest part of EUT chassis.
5.For the actual test configuration, please refer to the related Item – EUT Test Photos.

2.4.Test Result

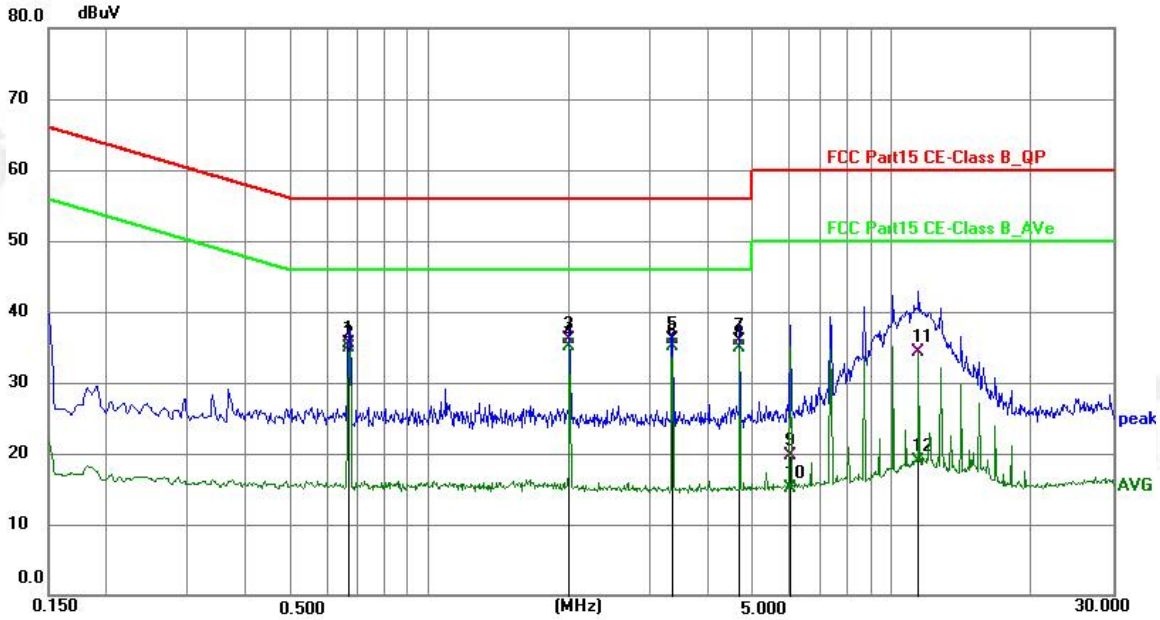
Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.8℃	Relative Humidity:	53%
Pressure:	1008hPa	Phase :	Line
Test Voltage :	DC 5V from adapter input AC 120V/60Hz	Test Mode:	GFSK 2M-2402MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.6701	16.87	19.63	36.50	56.00	-19.50	QP
2	0.6701	16.17	19.63	35.80	46.00	-10.20	AVG
3	2.0101	17.06	19.62	36.68	56.00	-19.32	QP
4	2.0101	16.13	19.62	35.75	46.00	-10.25	AVG
5	3.3531	17.48	19.60	37.08	56.00	-18.92	QP
6	3.3531	16.44	19.60	36.04	46.00	-9.96	AVG
7	4.6929	17.79	19.55	37.34	56.00	-18.66	QP
8 *	4.6929	16.60	19.55	36.15	46.00	-9.85	AVG
9	6.0380	16.02	19.56	35.58	60.00	-24.42	QP
10	6.0380	14.22	19.56	33.78	50.00	-16.22	AVG
11	11.3989	18.94	19.85	38.79	60.00	-21.21	QP
12	11.3989	15.48	19.85	35.33	50.00	-14.67	AVG

Note:
1. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
2. Margin = Reading level + Correct Factor - Limit
3. All the modes have tested and recorded the worst mode in the report

Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.8℃	Relative Humidity:	53%
Pressure:	1008hPa	Phase :	Neutral
Test Voltage :	DC 5V from adapter input AC 120V/60Hz	Test Mode:	GFSK 2M-2402MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.6706	15.85	19.67	35.52	56.00	-20.48	QP
2	0.6706	15.26	19.67	34.93	46.00	-11.07	AVG
3	2.0105	16.50	19.62	36.12	56.00	-19.88	QP
4 *	2.0105	15.58	19.62	35.20	46.00	-10.80	AVG
5	3.3508	16.51	19.58	36.09	56.00	-19.91	QP
6	3.3508	15.54	19.58	35.12	46.00	-10.88	AVG
7	4.6921	16.45	19.54	35.99	56.00	-20.01	QP
8	4.6921	15.37	19.54	34.91	46.00	-11.09	AVG
9	6.0302	0.10	19.57	19.67	60.00	-40.33	QP
10	6.0302	-4.46	19.57	15.11	50.00	-34.89	AVG
11	11.3833	14.39	19.88	34.27	60.00	-25.73	QP
12	11.3833	-1.06	19.88	18.82	50.00	-31.18	AVG

Note:
1. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
2. Margin = Reading level + Correct Factor - Limit
3. All the modes have tested and recorded the worst mode in the report.

3. Radiated Spurious Emissions

3.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019; ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

Test Result: PASS

Measurement Distance: 3m

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

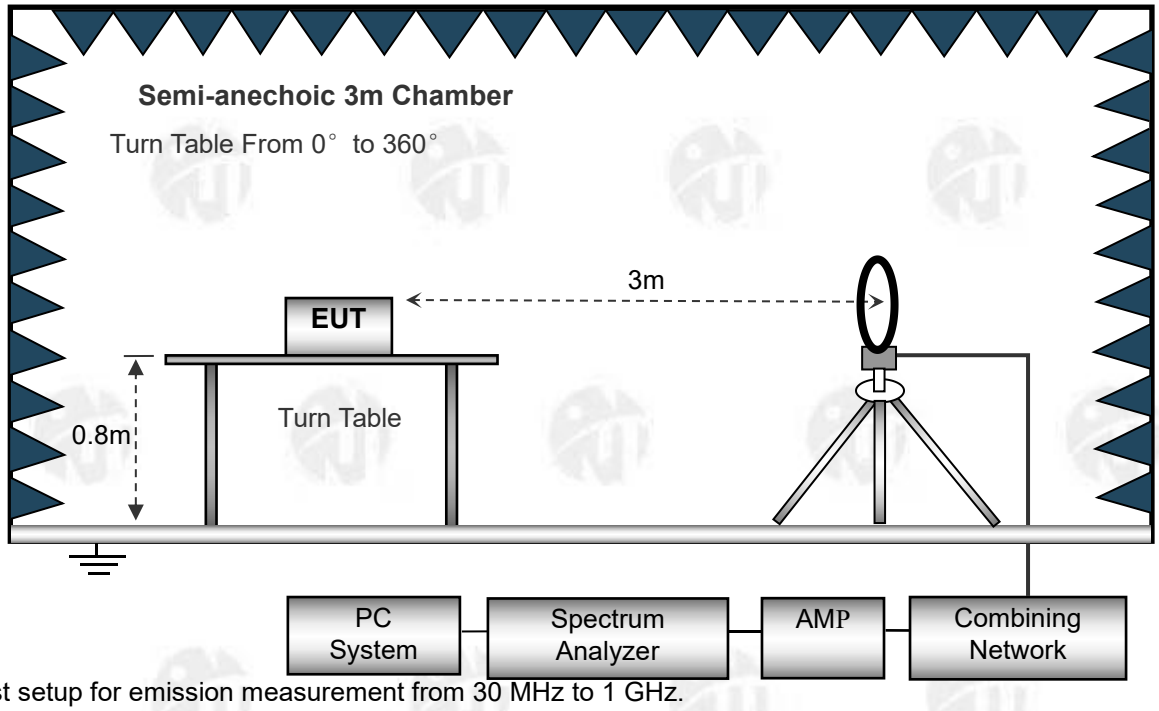
Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	20log(2400/F(kHz)) + 80
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	20log(24000/F(kHz)) + 40
1.705 ~ 30	30	30	100 * 30	20log(30) + 40
30 ~ 88	100	3	100	20log(100)
88 ~ 216	150	3	150	20log(150)
216 ~ 960	200	3	200	20log(200)
Above 960	500	3	500	20log(500)

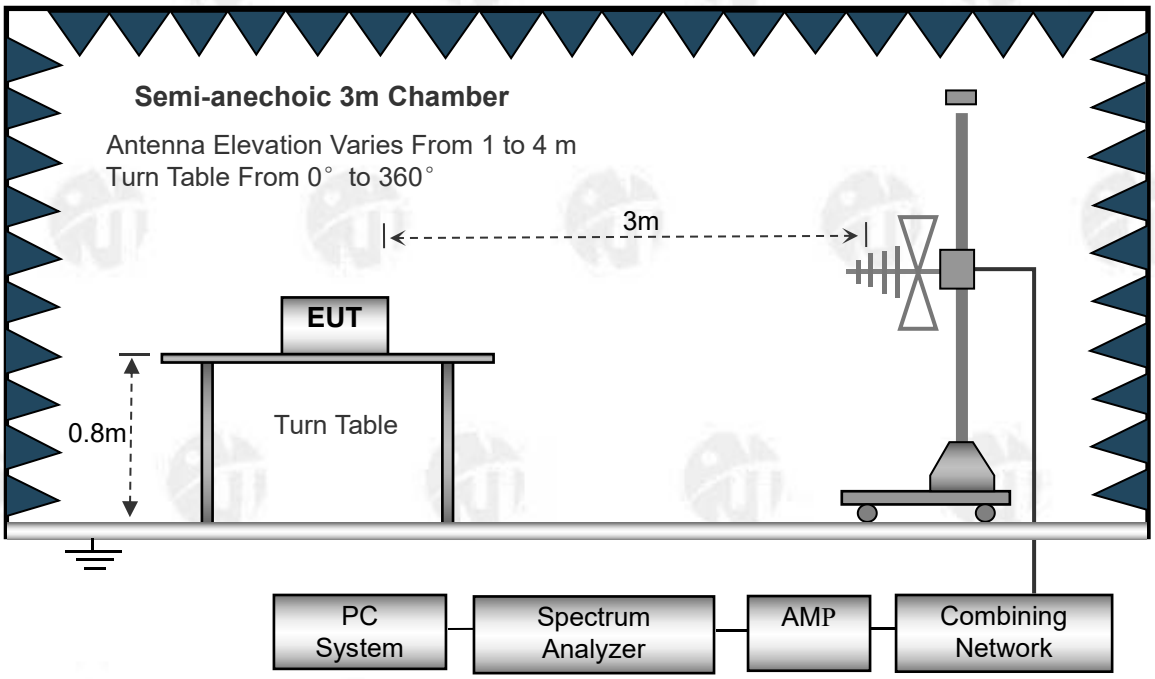
3.2.Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10.

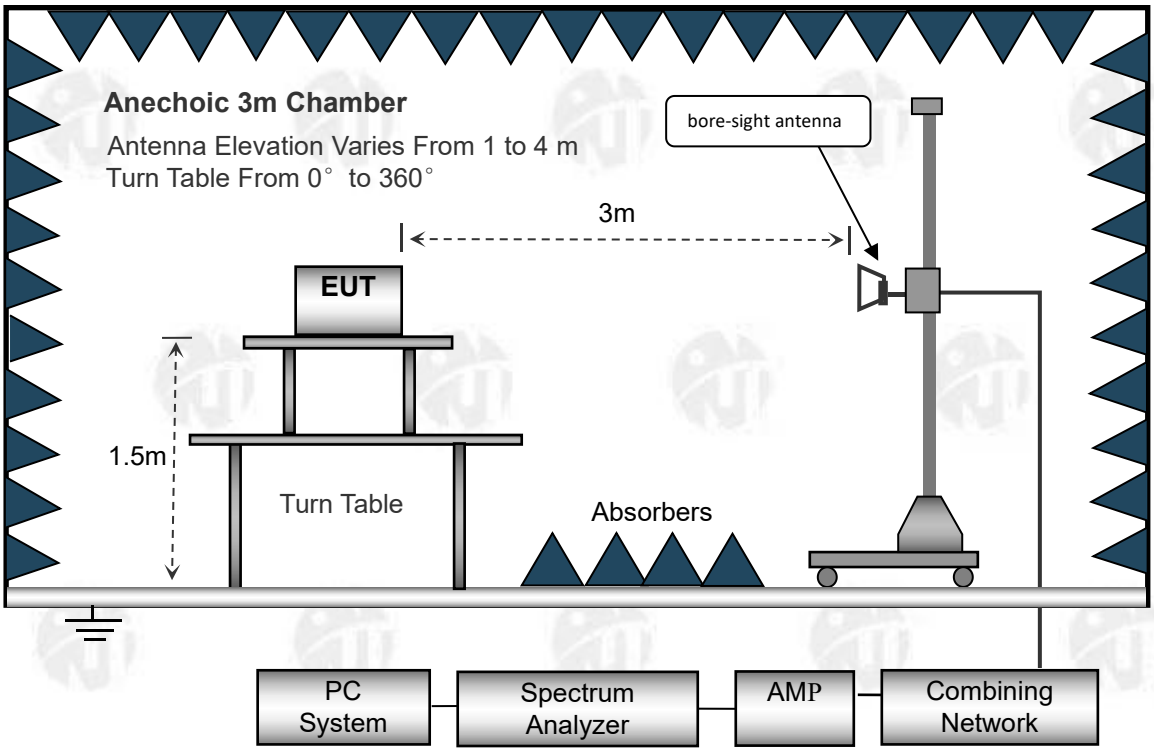
The test setup for emission measurement below 30MHz.

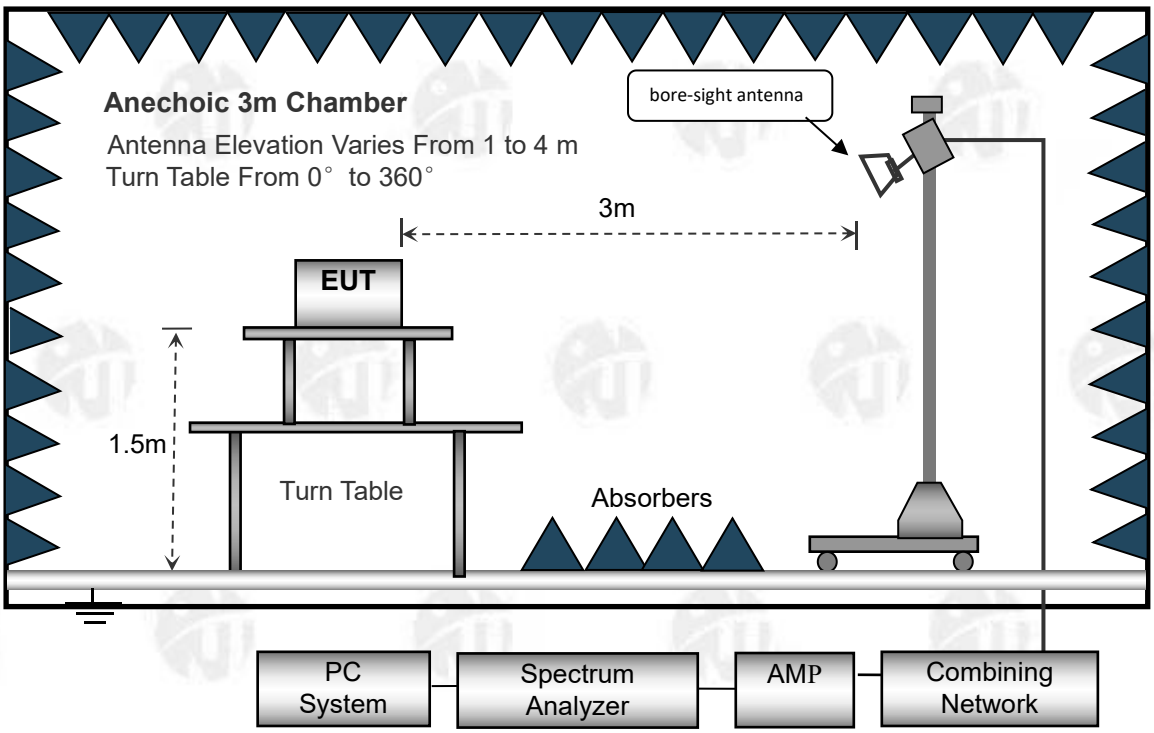


The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.


Anechoic 3m Chamber
Antenna Elevation Varies From 1 to 4 m
Turn Table From 0° to 360°
bore-sight antenna
3m
EUT
1.5m
Turn Table
Absorbers
PC System
Spectrum Analyzer
AMP
Combining Network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bore-sight antenna
3m
EUT
1.5m
Turn Table
Absorbers
PC System
Spectrum Analyzer
AMP
Combining Network

3.3.Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

6. Repeat above procedures until the measurements for all frequencies are complete.

7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in Z axis,so the worst data were shown as follow.

8. A 2.4GHz high –pass filter is used druing radiated emissions above 1GHz measurement.

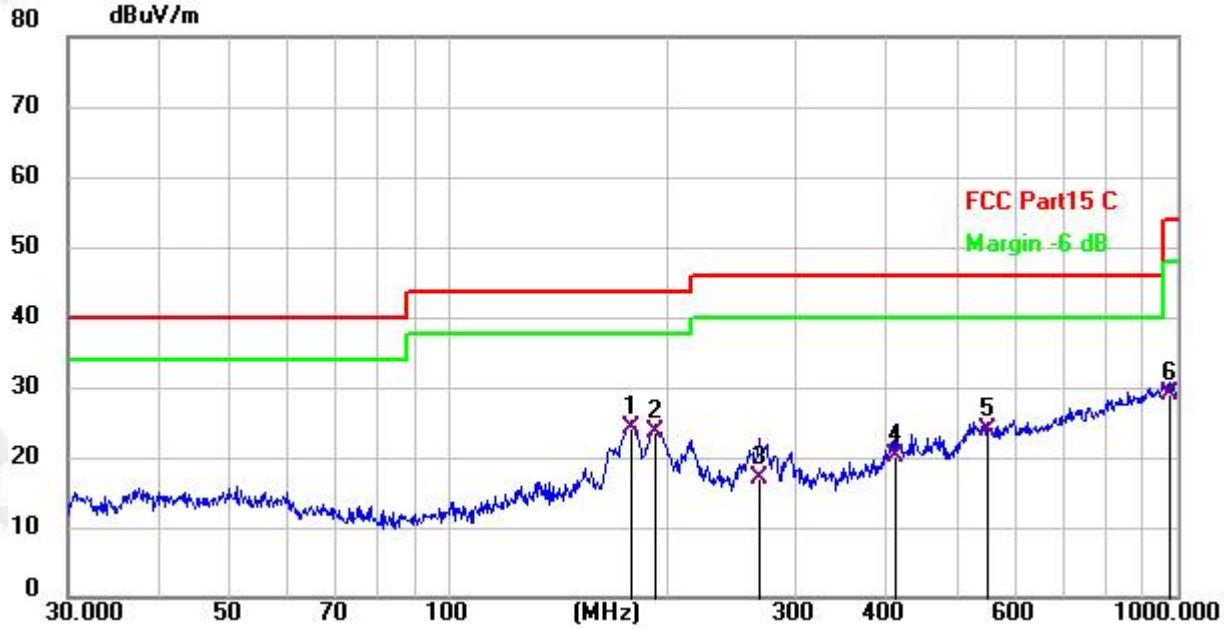
3.4.Test Result

Test Frequency: 9KHz~30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency : 30MHz ~ 1GHz

Radiation Emission Test Data			
Temperature:	25.8℃	Relative Humidity:	54%
Pressure:	1008hPa	Phase :	Horizontal
Test Voltage :	DC 5V from adapter input AC 120V/60Hz	Test Mode:	GFSK 2M-2402MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	178.1327	41.42	-17.33	24.09	43.50	-19.41	QP
2	191.7450	43.11	-19.48	23.63	43.50	-19.87	QP
3	267.5455	34.12	-17.09	17.03	46.00	-28.97	QP
4	410.3825	33.14	-12.94	20.20	46.00	-25.80	QP
5	550.9480	33.84	-10.04	23.80	46.00	-22.20	QP
6	979.1804	30.81	-1.91	28.90	54.00	-25.10	QP

Note:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit
2. All the modes have tested and recorded the worst mode in the report

Radiation Emission Test Data			
Temperature:	25.8℃	Relative Humidity:	54%
Pressure:	1008hPa	Phase :	Vertical
Test Voltage :	DC 5V from adapter input AC 120V/60Hz	Test Mode:	GFSK 2M-2402MHz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	80.9275	40.26	-20.71	19.55	40.00	-20.45	QP
2	110.5687	40.26	-18.71	21.55	43.50	-21.95	QP
3 *	163.1818	43.12	-15.46	27.66	43.50	-15.84	QP
4	215.2678	43.85	-18.56	25.29	43.50	-18.21	QP
5	530.1014	36.14	-10.84	25.30	46.00	-20.70	QP
6	878.3214	32.81	-4.13	28.68	46.00	-17.32	QP

Note:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit
2. All the modes have tested and recorded the worst mode in the report

1GHz~25GHz

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
GFSK 2M Low Channel:2402MHz									
V	4804	50.31	34.12	5.03	32.39	53.61	74.00	-20.39	Pk
V	4804	39.18	34.12	5.03	32.39	42.48	54.00	-11.52	AV
V	7206	48.72	32.54	6.29	35.86	58.33	74.00	-15.67	Pk
V	7206	33.11	32.54	6.29	35.86	42.72	54.00	-11.28	AV
V	9608	46.34	32.98	7.55	38.40	59.31	74.00	-14.69	Pk
V	9608	31.98	32.98	7.55	38.40	44.95	54.00	-9.05	AV
V	12010	43.95	32.09	8.93	39.00	59.79	74.00	-14.21	Pk
V	12010	25.91	32.09	8.93	39.00	41.75	54.00	-12.25	AV
H	4804	49.00	34.12	5.03	32.39	52.30	74.00	-21.70	Pk
H	4804	38.53	34.12	5.03	32.39	41.83	54.00	-12.17	AV
H	7206	45.35	32.54	6.29	35.86	54.96	74.00	-19.04	Pk
H	7206	29.87	32.54	6.29	35.86	39.48	54.00	-14.52	AV
H	9608	45.04	32.98	7.55	38.40	58.01	74.00	-15.99	Pk
H	9608	29.95	32.98	7.55	38.40	42.92	54.00	-11.08	AV
H	12010	40.07	32.09	8.93	39.00	55.91	74.00	-18.09	Pk
H	12010	25.36	32.09	8.93	39.00	41.20	54.00	-12.80	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
GFSK 2M Middle Channel:2440MHz									
V	4880	49.59	34.07	5.09	32.59	53.20	74.00	-20.80	Pk
V	4880	38.11	34.07	5.09	32.59	41.72	54.00	-12.28	AV
V	7320	45.21	32.63	6.34	35.96	54.88	74.00	-19.12	Pk
V	7320	34.64	32.63	6.34	35.96	44.31	54.00	-9.69	AV
V	9760	40.96	32.92	7.59	38.40	54.03	74.00	-19.97	Pk
V	9760	27.91	32.92	7.59	38.40	40.98	54.00	-13.02	AV
V	12200	40.71	31.96	8.88	39.04	56.67	74.00	-17.33	Pk
V	12200	28.15	31.96	8.88	39.04	44.11	54.00	-9.89	AV
H	4880	50.07	34.07	5.09	32.59	53.68	74.00	-20.32	Pk
H	4880	39.12	34.07	5.09	32.59	42.73	54.00	-11.27	AV
H	7320	45.85	32.63	6.34	35.96	55.52	74.00	-18.48	Pk
H	7320	32.20	32.63	6.34	35.96	41.87	54.00	-12.13	AV
H	9760	40.60	32.92	7.59	38.40	53.67	74.00	-20.33	Pk
H	9760	30.82	32.92	7.59	38.40	43.89	54.00	-10.11	AV
H	12200	38.25	31.96	8.88	39.04	54.21	74.00	-19.79	Pk
H	12200	27.45	31.96	8.88	39.04	43.41	54.00	-10.59	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
GFSK 2M High Channel:2480MHz									
V	4960	45.92	34.02	5.15	32.80	49.85	74.00	-24.15	Pk
V	4960	37.70	34.02	5.15	32.80	41.63	54.00	-12.37	AV
V	7440	44.49	32.71	6.40	36.05	54.23	74.00	-19.77	Pk
V	7440	34.90	32.71	6.40	36.05	44.64	54.00	-9.36	AV
V	9920	41.27	32.86	7.62	38.40	54.43	74.00	-19.57	Pk
V	9920	29.42	32.86	7.62	38.40	42.58	54.00	-11.42	AV
V	12400	37.86	31.82	8.84	39.08	53.96	74.00	-20.04	Pk
V	12400	27.56	31.82	8.84	39.08	43.66	54.00	-10.34	AV
H	4960	46.64	34.02	5.15	32.80	50.57	74.00	-23.43	Pk
H	4960	37.03	34.02	5.15	32.80	40.96	54.00	-13.04	AV
H	7440	45.36	32.71	6.40	36.05	55.10	74.00	-18.90	Pk
H	7440	31.49	32.71	6.40	36.05	41.23	54.00	-12.77	AV
H	9920	38.84	32.86	7.62	38.40	52.00	74.00	-22.00	Pk
H	9920	27.50	32.86	7.62	38.40	40.66	54.00	-13.34	AV
H	12400	38.77	31.82	8.84	39.08	54.87	74.00	-19.13	Pk
H	12400	26.25	31.82	8.84	39.08	42.35	54.00	-11.65	AV

Note: 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
All the modes have tested and recorded the worst mode in the report.
The 1-25GHz range has been tested, and the report only records the worst performance of the 1-18G range.

Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
GFSK 1M	Low Channel: 2402MHz									
	H	2390	57.72	35.17	3.48	27.49	53.52	74	-20.48	PK
	H	2390	49.59	35.17	3.48	27.49	45.39	54	-8.61	AV
	H	2400	58.46	35.16	3.49	27.52	54.31	74	-19.69	PK
	H	2400	49.55	35.16	3.49	27.52	45.40	54	-8.6	AV
	V	2390	56.75	35.17	3.48	27.49	52.55	74	-21.45	PK
	V	2390	48.82	35.17	3.48	27.49	44.62	54	-9.38	AV
	V	2400	58.38	35.16	3.49	27.52	54.23	74	-19.77	PK
	V	2400	49.09	35.16	3.49	27.52	44.94	54	-9.06	AV
	High Channel: 2480MHz									
	H	2483.5	57.18	35.11	3.56	27.75	53.38	74	-20.62	PK
	H	2485.5	48.58	35.11	3.56	27.75	44.78	54	-9.22	AV
	H	2483.5	58.82	35.10	3.57	27.80	55.09	74	-18.91	PK
	H	2485.5	49.03	35.10	3.57	27.80	45.30	54	-8.7	AV
	V	2483.5	57.23	35.11	3.56	27.75	53.43	74	-20.57	PK
	V	2485.5	50.10	35.11	3.56	27.75	46.30	54	-7.7	AV
	V	2483.5	57.98	35.10	3.57	27.80	54.25	74	-19.75	PK
	V	2485.5	48.98	35.10	3.57	27.80	45.25	54	-8.75	AV
GFSK 2M	Low Channel: 2402MHz									
	H	2390	57.88	35.17	3.48	27.49	53.68	74	-20.32	PK
	H	2390	49.82	35.17	3.48	27.49	45.62	54	-8.38	AV
	H	2400	58.56	35.16	3.49	27.52	54.41	74	-19.59	PK
	H	2400	49.78	35.16	3.49	27.52	45.63	54	-8.37	AV
	V	2390	57.14	35.17	3.48	27.49	52.94	74	-21.06	PK
	V	2390	48.80	35.17	3.48	27.49	44.60	54	-9.4	AV
	V	2400	58.56	35.16	3.49	27.52	54.41	74	-19.59	PK
	V	2400	49.13	35.16	3.49	27.52	44.98	54	-9.02	AV
	High Channel: 2480MHz									
	H	2483.5	56.98	35.11	3.56	27.75	53.18	74	-20.82	PK
	H	2485.5	48.72	35.11	3.56	27.75	44.92	54	-9.08	AV
	H	2483.5	58.83	35.10	3.57	27.80	55.10	74	-18.9	PK
	H	2485.5	49.15	35.10	3.57	27.80	45.42	54	-8.58	AV
	V	2483.5	57.46	35.11	3.56	27.75	53.66	74	-20.34	PK
	V	2485.5	49.94	35.11	3.56	27.75	46.14	54	-7.86	AV
	V	2483.5	58.41	35.10	3.57	27.80	54.68	74	-19.32	PK
	V	2485.5	49.19	35.10	3.57	27.80	45.46	54	-8.54	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss − Pre-amplifier, Margin= Emission Level - Limit

4. Conducted Spurious Emissions

4.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019; ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Result: PASS

Limit:
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

4.2.Test Setup

4.3.Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:
a) Set instrument center frequency to DTS channel center frequency.
b) Set the span to _ 1.5 times the DTS bandwidth.
c) Set the RBW = 100 kHz.
d) Set the VBW _ [3 × RBW].
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum PSD level.
Note that the channel found to contain the maximum PSD level can be used to establish the reference level.
Establish an emission level by using the following procedure:
a) Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.
NOTE—the number of points can also be increased for large spans to retain frequency resolution
b) Set the RBW = 100 kHz.
c) Set the VBW ≥ [3 × RBW].
d) Detector = peak.
e) Sweep time = No faster than coupled (auto) time.
f) Trace mode = max-hold.
g) Allow trace to fully stabilize.
h) Use the peak marker function to determine the maximum amplitude level.
Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in 11.1 a) or 11.1 b).
Report the three highest emissions relative to the limit.

4.4.Test Result

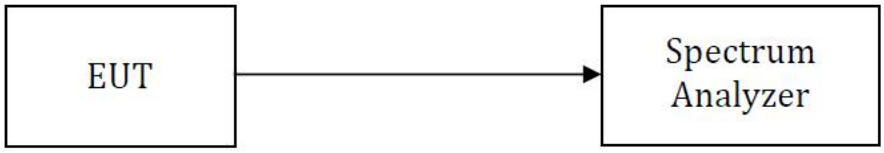
Please see the attachment for data.

5. Band Edge Measurement

5.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019;
ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Limit: Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
Test Mode: Transmitting

5.2.Test setup



5.3.Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

5.4.Test Result

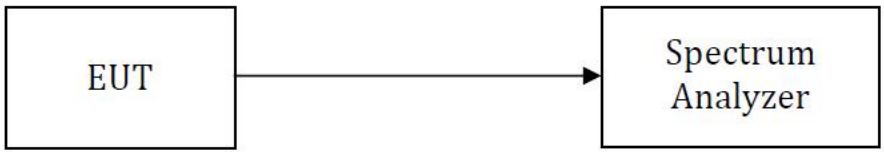
Please see the attachment for data.

6. -6 dB Bandwidth and 99% Bandwidth Measurement

6.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019;
ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

6.2.Test Setup



6.3.Test Procedure

For 6dB Bandwidth Measurement
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2.The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1(i.e, RBW= 100 kHz VBW>3 x RBW,and peak detector with maximum hold) is implemented by the instrumentation function.When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ⩾6 dB.
3. The steps for the first option are as follows:
a.Set RBW= shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
b.Set the VBW[3 x RBW].
c.Detector = peak
d.Trace mode = max-hold.
e.Sweep = No faster than coupled (auto) time.
f.Allow the trace to stabilize.
g.Measure the maximum width of the emission by placing two markers, one at the lowest frequencyand the other at the highest frequency of the envelope of the spectral display, such that each markeris at or slightly below the "-6 dB down amplitude". If a marker is below this "-6 dB down amplitude?' value, then it shalil be as close as possible to this value.
For 99% Bandwidth Measurement
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 1%-5% OBW, VBW ⩾ 3RBW

6.4.Test Result

Please see the attachment for data.

7. Maximum Peak Output Power

7.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019;
ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

7.2.Test Setup

7.3.Test Procedure

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.
a)Set the RBW ≥ DTS bandwidth.
b)Set VBW ≥ 3 x RBW.
c)Set span ≥ 3 x RBW
d)Sweep time = auto couple.
e)Detector = peak.
f)Trace mode = max hold.
g)Allow trace to fully stabilize.
h)Use peak marker function to determine the peak amplitude level.

7.4.Test Result

Please see the attachment for data.

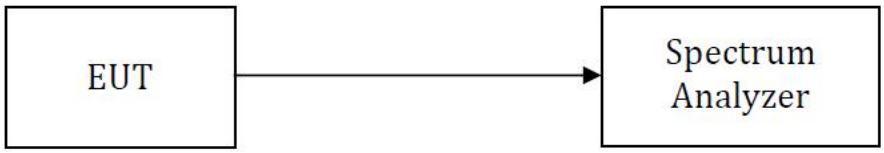
8. Power Spectral density

8.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019; ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8dBm/3kHz	2400-2483.5	PASS

8.2.Test Setup



8.3.Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

8.4.Test Result

Please see the attachment for data.

9. Antenna Requirement

According to the FCC Part 15 Paragraph 15.203, 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. This product has an integrated antenna fulfill the requirement of this section.

This product has an Chip antenna, and the maximum antenna gain is 1.24 dBi, fulfill the requirement of this section.

10. TEST SETUP & EUT PHOTOGRAPH

Please see the attachment for details.

---------- End of Report ----------