TEST REPORT

Applicant	:	Shenzhen Hua Kewei Technology Co., Ltd
Address	:	4/F, M Building, Guanlan Innovation Industrial Park, LonghuaGuanlan Street, Shenzhen City
Manufacturer	:	Shenzhen Hua Kewei Technology Co., Ltd
Address	:	4/F, M Building, Guanlan Innovation Industrial Park, LonghuaGuanlan Street, Shenzhen City
Product Name	:	TV BOX
Model Number	:	HK1 RBOX X50
Trademark	:	HK1 RBOX
FCC ID	:	2BHQC-HK1RBOXX50
Test Date	:	Spet. 21, 2026 – Oct. 10, 2026
Date of Report	:	Oct. 10, 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

Prepared by(Test Engineer):
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Reviewer(Supervisor):
Cindy Qin

Approved(Manager):
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Revision History of This Test Report		
Report Number	Description	Issued Date
SZNTT26039376E1-1	Initial Issue	2026-10-10

1. General Information

1.1. Description of Device (EUT)

EUT Name	:	TV BOX
Model No.	:	HK1 RBOX X50
Serial Model No.	:	HK1 RBOX S905X5M
Model Difference	:	Except for differences in model and exterior color, the circuitry and modules are identical across all models.
Power supply	:	Input: DC 5V/2A
Operation frequency	:	2402-2480MHz
Modulation	:	GFSK, Π/4-DQPSK, 8DPSK
Antenna Type	:	Built-in antenna, Maximum Gain is 2.78 dBi
Intend use environment	:	Residential, commercial and light industrial environment

1.2. Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	1	2403	2	2404	3	2405
4	2406	5	2407	6	2408	7	2409
8	2410	9	2411	10	2412	11	2413
12	2414	13	2415	14	2416	15	2417
16	2418	17	2419	18	2420	19	2421
20	2422	21	2423	22	2424	23	2425
24	2426	25	2427	26	2428	27	2429
28	2430	29	2431	30	2432	31	2433
32	2434	33	2435	34	2436	35	2437
36	2438	37	2439	38	2440	39	2441
40	2442	41	2443	42	2444	43	2445
44	2446	45	2447	46	2448	47	2449
48	2450	49	2451	50	2452	51	2453
52	2454	53	2455	54	2456	55	2457
56	2458	57	2459	58	2460	59	2461
60	2462	61	2463	62	2464	63	2465
64	2466	65	2467	66	2468	67	2469
68	2470	69	2471	70	2472	71	2473
72	2474	73	2475	74	2476	75	2477
76	2478	77	2479	78	2480	-	-

1.3. Summary of test result

RF PART		
Test Items	**Test Requirement**	**Result**
Radiated Spurious Emissions	15.205(a) 15.209 15.247(d)	PASS
Band edge	15.247(d) 15.205(a)	PASS
Conduct Emission	15.207	PASS
20dB Bandwidth 99% Occupied Bandwidth	15.247(a)(1)	PASS
Maximum Peak Output Power	15.247(b)(1)	PASS
Frequency Separation	15.247(a)(1)	PASS
Number of Hopping Frequency	15.247(a)(1)(iii)	PASS
Dwell time	15.247(a)(1)(iii)	PASS
Antenna Requirement	15.203	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
LAN cable	/	/	/	/
PC	Lenovo	M420-N000	/	/

1.5. Test mode

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

Test mode	Low channel	Middle channel	High channel
GFSK	2402MHz	2441MHz	2480MHz
Π/4-DQPSK	2402MHz	2441MHz	2480MHz
8DPSK	2402MHz	2441MHz	2480MHz
Note：Only the worst Data DH5/2DH5/3DH5 Record in the report			

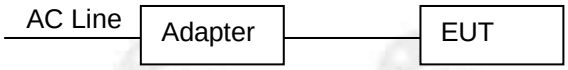
1.6. Test configuration

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.	

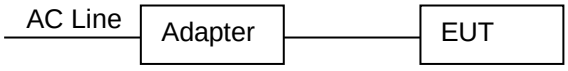
Test Software	ADB
Power level setup	Default

1.7. Block Diagram

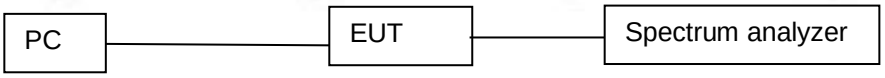
Conducted Emission



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	2025/04/30	2028/04/29
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	2026/09/09	2027/09/08
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	MW260105NTT-64	MWRFtest	2026/09/04	2027/09/03
RF Swith	MW100-RFCB-1	MW260105NTT-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-NMNMSW-2.5M	/	DA	2026/09/04	2027/09/03
Cable	SFT205-NMNM-12M	/	DA	2026/09/04	2027/09/03
Cable	UCA500-NJWSM-1.5M	017	MWRFtest	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

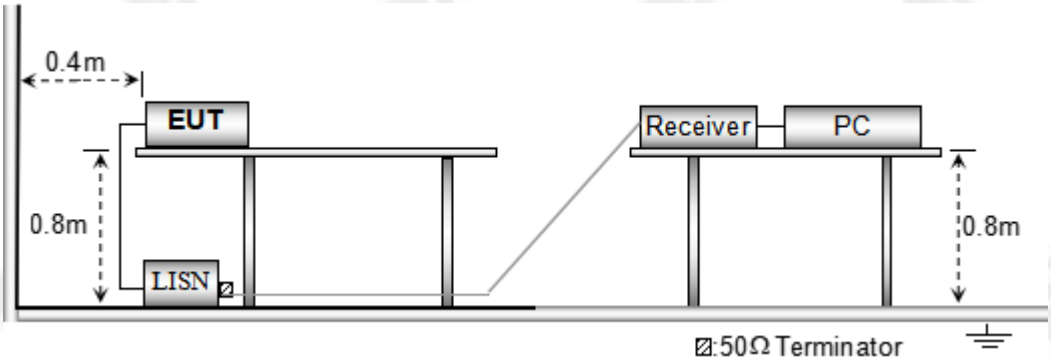
2.1. Limit

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

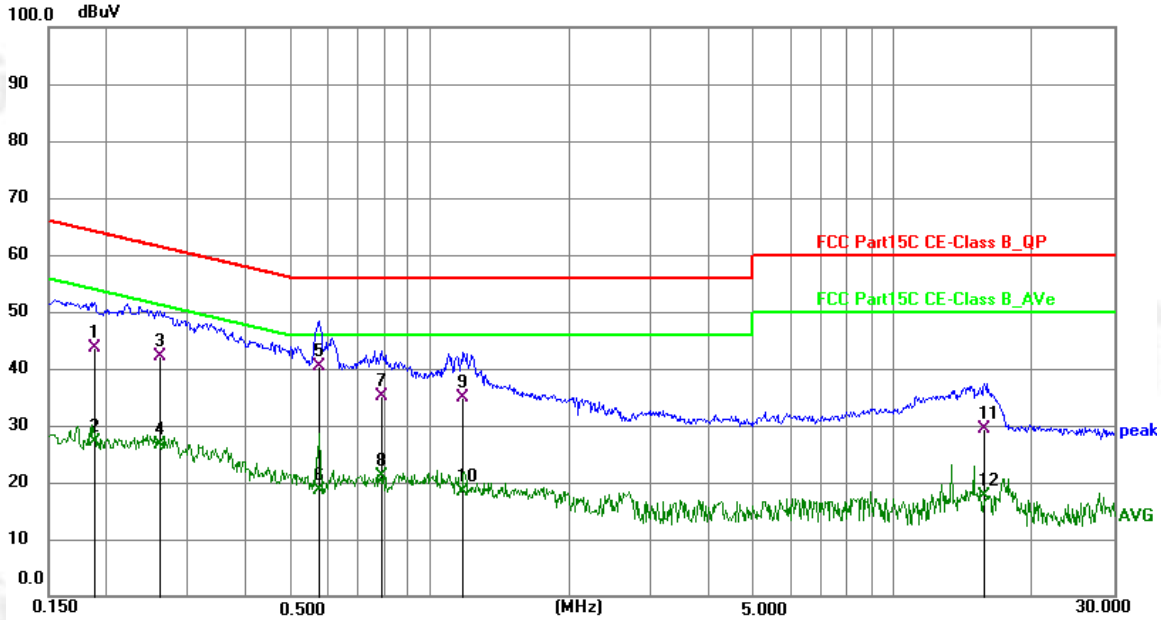


2.3. Test Procedure

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

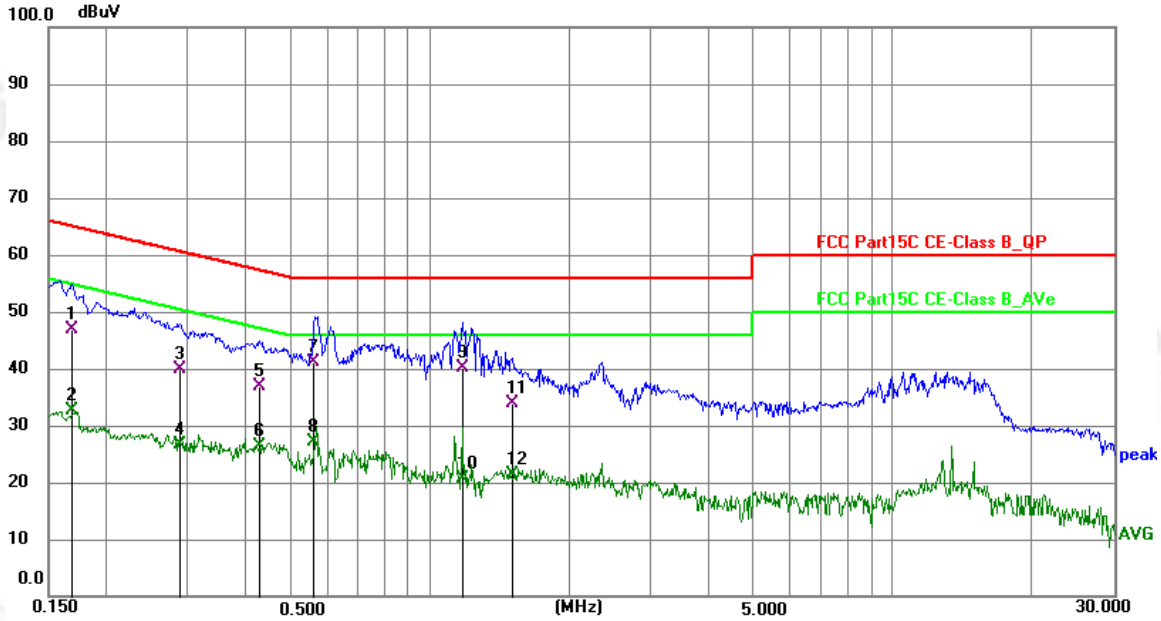
Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.3℃	Relative Humidity:	55%
Pressure:	1008hPa	Phase:	Line
Test Voltage:	DC 5V from adapter AC 120V/60Hz	Test Mode:	8DPSK(CH00)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1882	23.94	19.67	43.61	64.12	-20.51	QP
2	0.1882	7.53	19.67	27.20	54.12	-26.92	AVG
3	0.2615	22.49	19.67	42.16	61.38	-19.22	QP
4	0.2615	7.06	19.67	26.73	51.38	-24.65	AVG
5 *	0.5775	20.85	19.63	40.48	56.00	-15.52	QP
6	0.5775	-0.93	19.63	18.70	46.00	-27.30	AVG
7	0.7842	15.58	19.66	35.24	56.00	-20.76	QP
8	0.7842	1.58	19.66	21.24	46.00	-24.76	AVG
9	1.1805	15.29	19.69	34.98	56.00	-21.02	QP
10	1.1805	-1.26	19.69	18.43	46.00	-27.57	AVG
11	15.7964	9.07	20.26	29.33	60.00	-30.67	QP
12	15.7964	-2.67	20.26	17.59	50.00	-32.41	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(8DPSK) in the report

Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.3˚C	Relative Humidity:	55%
Pressure:	1008hPa	Phase :	Neutral
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode:	8DPSK(CH00)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1680	27.18	19.68	46.86	65.06	-18.20	QP
2	0.1680	12.93	19.68	32.61	55.06	-22.45	AVG
3	0.2878	20.15	19.66	39.81	60.59	-20.78	QP
4	0.2878	6.96	19.66	26.62	50.59	-23.97	AVG
5	0.4282	17.14	19.66	36.80	57.29	-20.49	QP
6	0.4282	6.64	19.66	26.30	47.29	-20.99	AVG
7 *	0.5639	21.39	19.66	41.05	56.00	-14.95	QP
8	0.5639	7.55	19.66	27.21	46.00	-18.79	AVG
9	1.1760	20.47	19.68	40.15	56.00	-15.85	QP
10	1.1760	0.96	19.68	20.64	46.00	-25.36	AVG
11	1.5090	14.21	19.65	33.86	56.00	-22.14	QP
12	1.5090	1.77	19.65	21.42	46.00	-24.58	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(8DPSK) 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

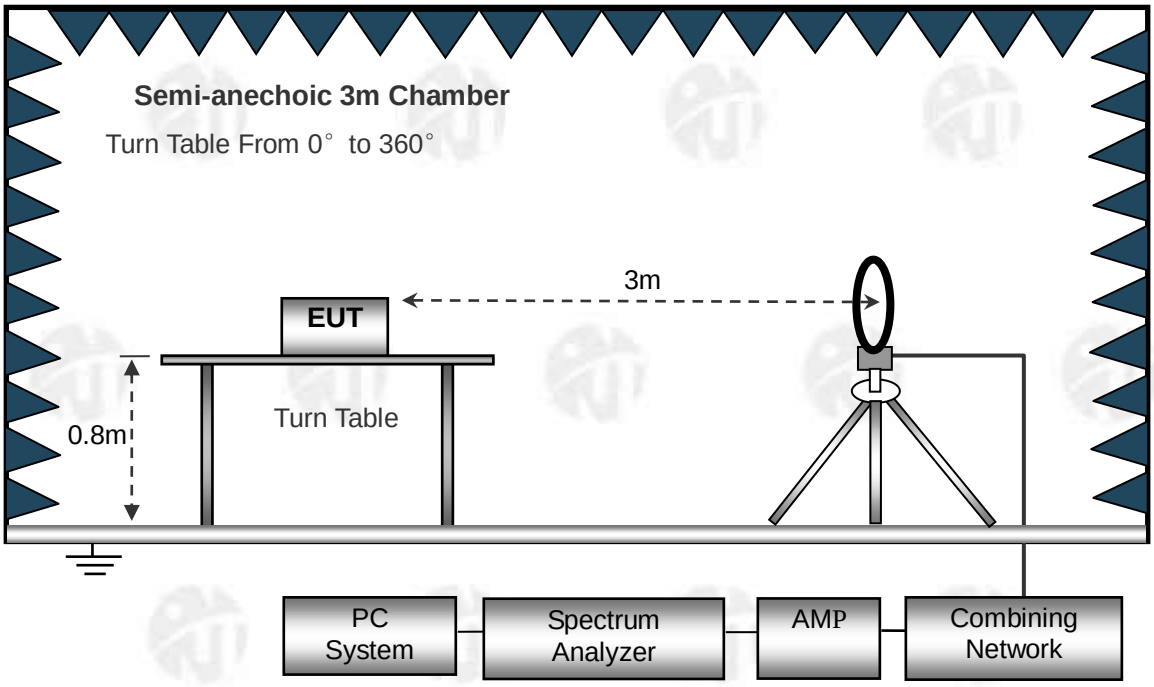
Limit:

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)

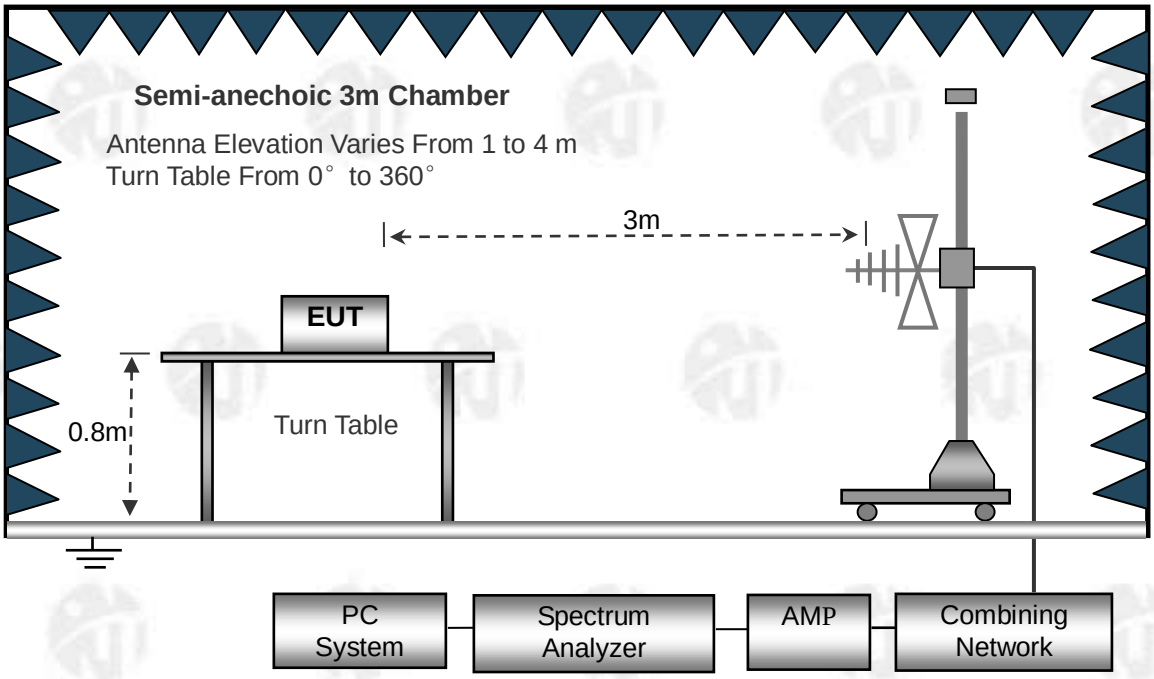
3.2. Test Setup

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

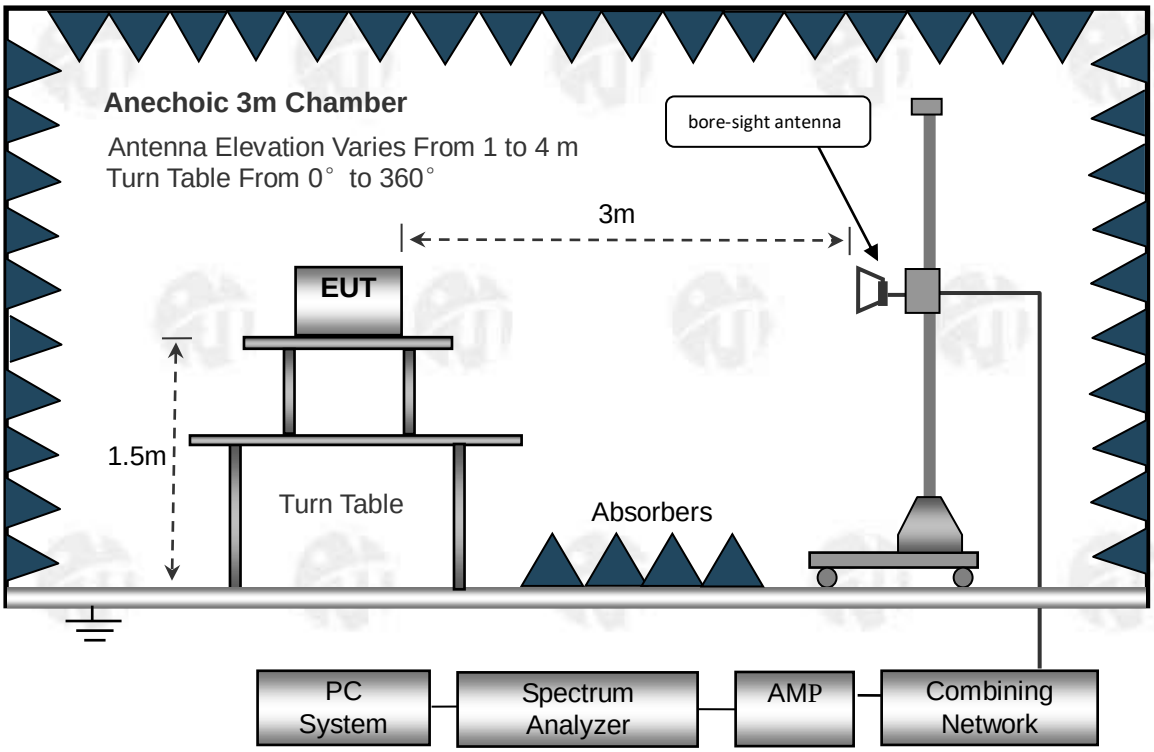
The test setup for emission measurement below 30MHz.

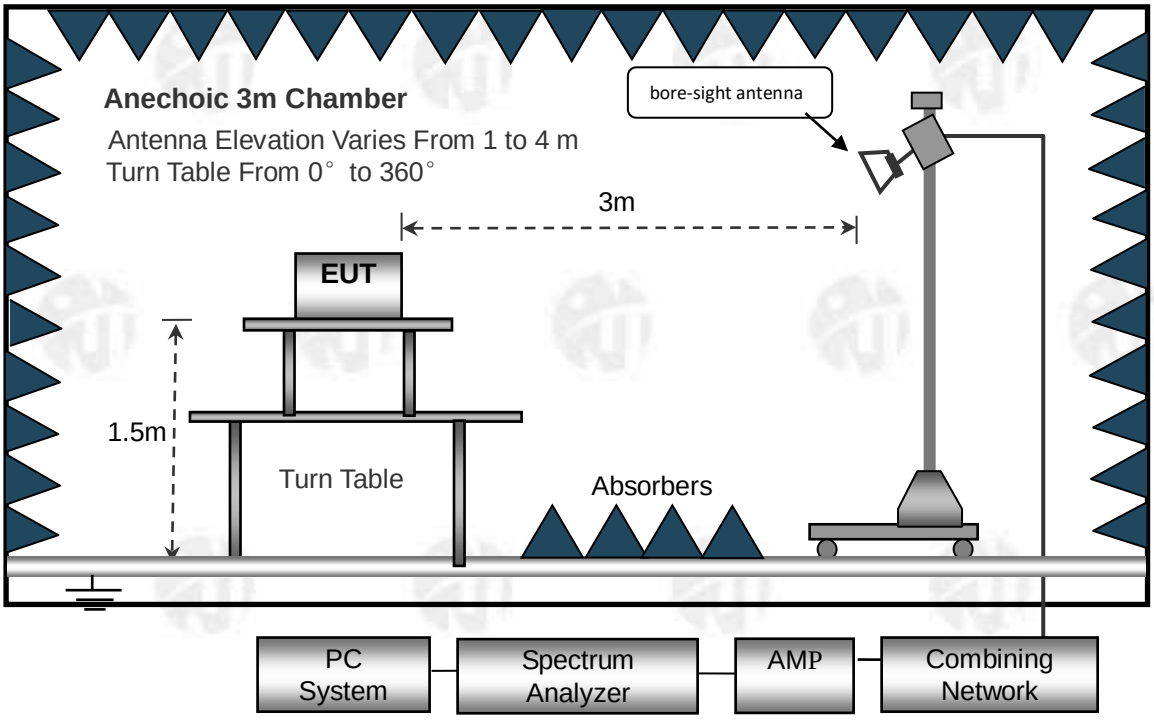


The test setup for emission measurement from 30 MHz to 1 GHz.



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


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

3.3. Test Procedure

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

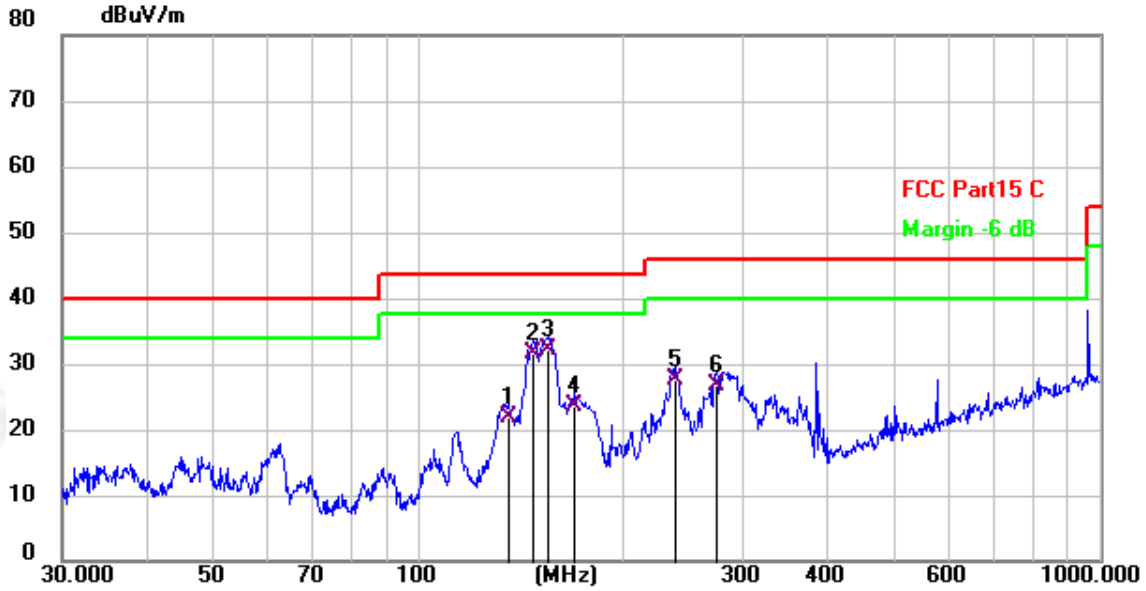
3.4. Test Result

Test Frequency: 9KHz~30MHz

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

Test Frequency : 30MHz ~ 1GHz

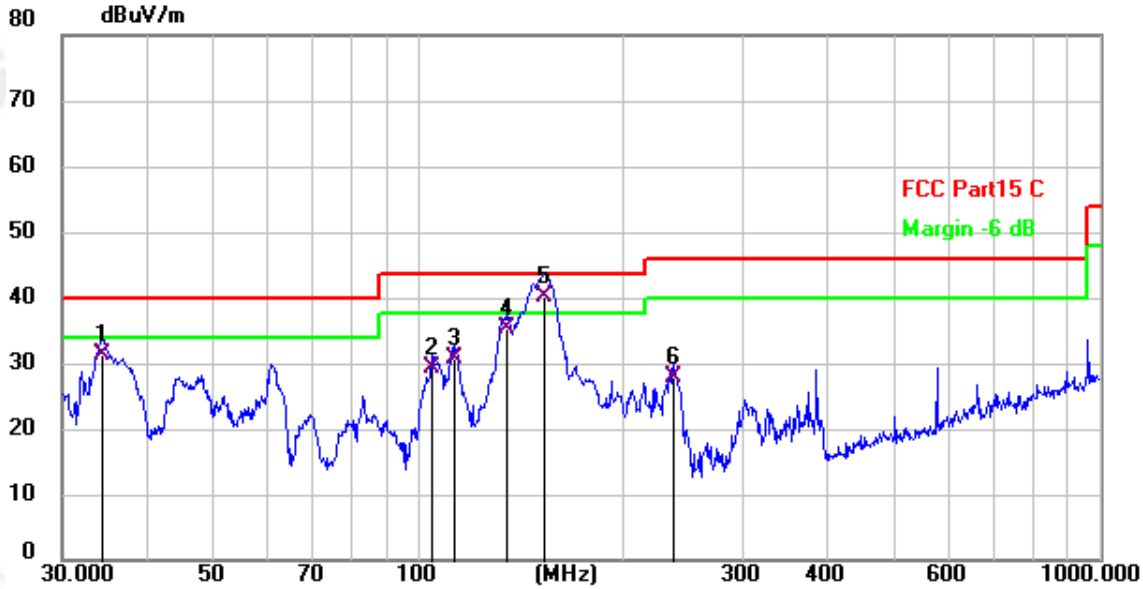
Radiation Emission Test Data			
Temperature:	25.4℃	Relative Humidity:	55%
Pressure:	1008hPa	Phase:	Horizontal
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode	8DPSK(CH00)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	135.5061	44.39	-22.49	21.90	43.50	-21.60	QP
2	147.4036	53.76	-22.06	31.70	43.50	-11.80	QP
3 *	155.3643	53.87	-21.67	32.20	43.50	-11.30	QP
4	169.0053	45.60	-21.90	23.70	43.50	-19.80	QP
5	238.3101	50.98	-23.38	27.60	46.00	-18.40	QP
6	274.1938	48.58	-21.78	26.80	46.00	-19.20	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(8DPSK) in the report

Radiation Emission Test Data			
Temperature:	25.4˚C	Relative Humidity:	55%
Pressure:	1008hPa	Phase :	Vertical
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode	8DPSK(CH00)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	34.2760	55.65	-24.45	31.20	40.00	-8.80	QP
2	104.9032	54.78	-25.58	29.20	43.50	-14.30	QP
3	112.9196	55.27	-24.47	30.80	43.50	-12.70	QP
4	134.5591	57.76	-22.56	35.20	43.50	-8.30	QP
5 *	152.6641	61.86	-21.66	40.20	43.50	-3.30	QP
6	236.6447	51.35	-23.55	27.80	46.00	-18.20	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(8DPSK) in the report

8DPSK

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
Low Channel:2402MHz									
V	4804	47.03	34.12	5.03	32.39	50.33	74.00	-23.67	Pk
V	4804	40.77	34.12	5.03	32.39	44.07	54.00	-9.93	AV
V	7206	47.44	32.54	6.29	35.86	57.05	74.00	-16.95	Pk
V	7206	36.28	32.54	6.29	35.86	45.89	54.00	-8.11	AV
V	9608	46.12	32.98	7.55	38.40	59.09	74.00	-14.91	Pk
V	9608	35.40	32.98	7.55	38.40	48.37	54.00	-5.63	AV
V	12010	41.86	32.09	8.93	39.00	57.70	74.00	-16.30	Pk
V	12010	31.87	32.09	8.93	39.00	47.71	54.00	-6.29	AV
H	4804	48.62	34.12	5.03	32.39	51.92	74.00	-22.08	Pk
H	4804	36.05	34.12	5.03	32.39	39.35	54.00	-14.65	AV
H	7206	47.05	32.54	6.29	35.86	56.66	74.00	-17.34	Pk
H	7206	35.32	32.54	6.29	35.86	44.93	54.00	-9.07	AV
H	9608	45.37	32.98	7.55	38.40	58.34	74.00	-15.66	Pk
H	9608	29.56	32.98	7.55	38.40	42.53	54.00	-11.47	AV
H	12010	39.18	32.09	8.93	39.00	55.02	74.00	-18.98	Pk
H	12010	28.20	32.09	8.93	39.00	44.04	54.00	-9.96	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
Middle Channel:2441MHz									
V	4882	50.11	34.07	5.09	32.59	53.72	74.00	-20.28	Pk
V	4882	35.82	34.07	5.09	32.59	39.43	54.00	-14.57	AV
V	7323	45.56	32.63	6.34	35.96	55.23	74.00	-18.77	Pk
V	7323	33.44	32.63	6.34	35.96	43.11	54.00	-10.89	AV
V	9764	40.74	32.92	7.59	38.40	53.81	74.00	-20.19	Pk
V	9764	26.33	32.92	7.59	38.40	39.40	54.00	-14.60	AV
V	12205	39.44	31.96	8.88	39.04	55.40	74.00	-18.60	Pk
V	12205	26.27	31.96	8.88	39.04	42.23	54.00	-11.77	AV
H	4882	48.29	34.07	5.09	32.59	51.90	74.00	-22.10	Pk
H	4882	37.08	34.07	5.09	32.59	40.69	54.00	-13.31	AV
H	7323	44.53	32.63	6.34	35.96	54.20	74.00	-19.80	Pk
H	7323	31.62	32.63	6.34	35.96	41.29	54.00	-12.71	AV
H	9764	38.93	32.92	7.59	38.40	52.00	74.00	-22.00	Pk
H	9764	28.75	32.92	7.59	38.40	41.82	54.00	-12.18	AV
H	12205	39.94	31.96	8.88	39.04	55.90	74.00	-18.10	Pk
H	12205	27.65	31.96	8.88	39.04	43.61	54.00	-10.39	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
High Channel:2480MHz									
V	4960	46.14	34.02	5.15	32.80	50.07	74.00	-23.93	Pk
V	4960	37.35	34.02	5.15	32.80	41.28	54.00	-12.72	AV
V	7440	44.13	32.71	6.40	36.05	53.87	74.00	-20.13	Pk
V	7440	32.39	32.71	6.40	36.05	42.13	54.00	-11.87	AV
V	9920	41.74	32.86	7.62	38.40	54.90	74.00	-19.10	Pk
V	9920	29.50	32.86	7.62	38.40	42.66	54.00	-11.34	AV
V	12400	40.12	31.82	8.84	39.08	56.22	74.00	-17.78	Pk
V	12400	27.78	31.82	8.84	39.08	43.88	54.00	-10.12	AV
H	4960	46.77	34.02	5.15	32.80	50.70	74.00	-23.30	Pk
H	4960	37.56	34.02	5.15	32.80	41.49	54.00	-12.51	AV
H	7440	46.47	32.71	6.40	36.05	56.21	74.00	-17.79	Pk
H	7440	32.73	32.71	6.40	36.05	42.47	54.00	-11.53	AV
H	9920	42.93	32.86	7.62	38.40	56.09	74.00	-17.91	Pk
H	9920	31.01	32.86	7.62	38.40	44.17	54.00	-9.83	AV
H	12400	37.08	31.82	8.84	39.08	53.18	74.00	-20.82	Pk
H	12400	28.56	31.82	8.84	39.08	44.66	54.00	-9.34	AV

Note: 1. The testing has been conformed to 10*2480MHz=24800MHz.
2. All other emissions more than 30dB below the limit.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit
4. All the modes have tested and recorded the worst mode(8DPSK) in the report
5. The 1-25GHz range has been tested, and the report only records the worst performance of the 1-18G range.

Radiated Band Emission Measurement:

	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	Low Channel: 2402MHz									
	H	2390	57.59	35.17	3.48	27.49	53.39	74	-20.61	PK
	H	2390	49.90	35.17	3.48	27.49	45.70	54	-8.3	AV
	H	2400	60.12	35.16	3.49	27.52	55.97	74	-18.03	PK
	H	2400	50.27	35.16	3.49	27.52	46.12	54	-7.88	AV
	V	2390	57.47	35.17	3.48	27.49	53.27	74	-20.73	PK
	V	2390	49.53	35.17	3.48	27.49	45.33	54	-8.67	AV
	V	2400	59.85	35.16	3.49	27.52	55.70	74	-18.3	PK
	V	2400	50.24	35.16	3.49	27.52	46.09	54	-7.91	AV
	High Channel: 2480MHz									
	H	2483.5	57.38	35.11	3.56	27.75	53.58	74	-20.42	PK
	H	2483.5	48.31	35.11	3.56	27.75	44.51	54	-9.49	AV
	H	2500	59.25	35.10	3.57	27.80	55.52	74	-18.48	PK
	H	2500	49.47	35.10	3.57	27.80	45.74	54	-8.26	AV
	V	2483.5	58.31	35.11	3.56	27.75	54.51	74	-19.49	PK
	V	2483.5	50.44	35.11	3.56	27.75	46.64	54	-7.36	AV
	V	2500	58.80	35.10	3.57	27.80	55.07	74	-18.93	PK

	V	2500	49.37	35.10	3.57	27.80	45.64	54	-8.36	AV
π/4-DQPSK	Low Channel: 2402MHz									
	H	2390	57.74	35.17	3.48	27.49	53.54	74	-20.46	PK
	H	2390	50.05	35.17	3.48	27.49	45.85	54	-8.15	AV
	H	2400	60.05	35.16	3.49	27.52	55.90	74	-18.1	PK
	H	2400	49.93	35.16	3.49	27.52	45.78	54	-8.22	AV
	V	2390	57.99	35.17	3.48	27.49	53.79	74	-20.21	PK
	V	2390	49.29	35.17	3.48	27.49	45.09	54	-8.91	AV
	V	2400	60.04	35.16	3.49	27.52	55.89	74	-18.11	PK
	V	2400	49.66	35.16	3.49	27.52	45.51	54	-8.49	AV
	High Channel: 2480MHz									
	H	2483.5	57.68	35.11	3.56	27.75	53.88	74	-20.12	PK
	H	2483.5	49.16	35.11	3.56	27.75	45.36	54	-8.64	AV
	H	2500	59.61	35.10	3.57	27.80	55.88	74	-18.12	PK
	H	2500	49.75	35.10	3.57	27.80	46.02	54	-7.98	AV
	V	2483.5	58.08	35.11	3.56	27.75	54.28	74	-19.72	PK
	V	2483.5	50.31	35.11	3.56	27.75	46.51	54	-7.49	AV
	V	2500	58.60	35.10	3.57	27.80	54.87	74	-19.13	PK
	V	2500	49.22	35.10	3.57	27.80	45.49	54	-8.51	AV
8DPSK	Low Channel: 2402MHz									
	H	2390	57.89	35.17	3.48	27.49	53.69	74	-20.31	PK
	H	2390	50.02	35.17	3.48	27.49	45.82	54	-8.18	AV
	H	2400	60.11	35.16	3.49	27.52	55.96	74	-18.04	PK
	H	2400	49.74	35.16	3.49	27.52	45.59	54	-8.41	AV
	V	2390	58.20	35.17	3.48	27.49	54.00	74	-20	PK
	V	2390	49.52	35.17	3.48	27.49	45.32	54	-8.68	AV
	V	2400	59.73	35.16	3.49	27.52	55.58	74	-18.42	PK
	V	2400	49.44	35.16	3.49	27.52	45.29	54	-8.71	AV
	High Channel: 2480MHz									
	H	2483.5	57.36	35.11	3.56	27.75	53.56	74	-20.44	PK
	H	2483.5	48.54	35.11	3.56	27.75	44.74	54	-9.26	AV
	H	2500	59.66	35.10	3.57	27.80	55.93	74	-18.07	PK
	H	2500	50.06	35.10	3.57	27.80	46.33	54	-7.67	AV
	V	2483.5	58.79	35.11	3.56	27.75	54.99	74	-19.01	PK
	V	2483.5	50.54	35.11	3.56	27.75	46.74	54	-7.26	AV
	V	2500	58.55	35.10	3.57	27.80	54.82	74	-19.18	PK
	V	2500	49.52	35.10	3.57	27.80	45.79	54	-8.21	AV

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

4. Maximum Peak Output Power

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

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1)	Peak Output Power	1 watt or 21dBm	2400-2483.5	PASS

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

RSS-247 § 5.4

For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W.

4.2. Test Setup

4.3. Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above,
2. Spectrum Setting:
   RBW > the 20 dB bandwidth of the emission being measured
   Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
   VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold

4.4. Test Result

Please see the attachment for data.

5. -20 dB Bandwidth 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

5.2. Test Setup

5.3. Test Procedure

For 20dB Bandwidth Measurement
Using the following spectrum analyzer settings:
1. Span= approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
2. Set the RBW = 30 kHz.
3. Set the VBW = 91 kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

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

5.4. Test Result

Please see the attachment for data.

6. Carrier Frequency Separation Test

6.1. Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)
Test Limit	>25KHz or >two-thirds of the 20 dB bandwidth

6.2. Test Setup

6.3. Test Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer settings:
1. Span= Wide enough to capture the peaks of two adjacent channels
2. Set the RBW = 300 kHz.
3. Set the VBW = 1 MHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

6.4. Test Result

Please see the attachment for data.

7. Number of Hopping Channel Test

7.1. Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Limit	>15 channels

7.2. Test Setup

7.3. Test Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer settings:
1. Span= Wide enough to capture the peaks of two adjacent channels
2. Set the RBW = 100 kHz.
3. Set the VBW = 300 kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

7.4. Test Result

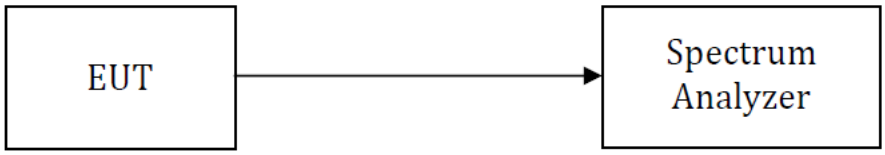
Please see the attachment for data.

8. Dwell Time Test

8.1. Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Limit	0.4 sec

8.2. Test setup



8.3. Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
1. Span= zero span, centered on a hopping channel
2. Set the RBW = 1 MHz.
3. Set the VBW = 3 MHz.
4. Sweep time = as necessary to capture the entire dwell time per hopping channel.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8.The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
The hops per second for all channels: The selected EUT Conf uses a slot type of 5-Tx&1-Rx and a Hopping rate of 1600 [ch*hop/s] for all channels. So the final hopping rate for all channels is 1600/6=266.67 [ch*hop/s]
The hops per second on one channel: 266.67 [ch*hops/s]/79 [ch]=3.38 [hop/s].
The total hops for all channels within the dwell time calculation
duration: 3.38 [hop/s]*31.6[s*ch]=106.67[hop*ch].
The dwell time for all channels hopping: 106.67 [hop*ch]*Burst Width [ms/hop/ch].
9.The duration for dwell time calculation: 0.4[s]*hopping number=0.4[s]*79[ch]=31.6[s*ch].
10.Pulse Time(ms)*Total Hops=Dwell Time

8.4. Test Result

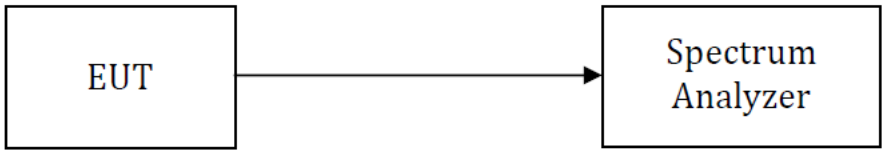
Please see the attachment for data.

9. Conducted Spurious Emissions and Band Edge Requirement

9.1. Limit

Test Standard	FCC Part15 C Section 15.247 (d)
Test Limit	in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, 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).

9.2. Test Setup



9.3. Test Procedure

The EUT must have its hopping/Non-hopping function enabled. Using the following spectrum analyzer setting:
1. Set the RBW = 100kHz.
2. Set the VBW = 300kHz.
3. Sweep time = auto couple.
4. Detector function = peak.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.

9.4. Test Result

Please see the attachment for data.

10. Antenna Requirement

10.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203 /247(b)(4)
Requirement	1) 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. 2) 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

10.2. Antenna Connected Construction

The antenna is Built-in antenna which permanently attached, and the best case gain of the antenna is 2.78 dBi. It complies with the standard requirement.

11. TEST SETUP & EUT PHOTOGRAPH

Please see the attachment for details.

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