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	:	Sept. 21, 2026 – Sept. 30, 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):
Gary Lu

Approved(Supervisor):
Cindy Qin

Approved(Manager):
Abel Yu

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Revision History of This Test Report		
Report Number	Description	Issued Date
SZNTT26039376E1-2	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	:	2412-2462MHz for 802.11b/g/n20; 2422-2452MHz for 802.11n40
Modulation	:	802.11b:(DQPSK, DBPSK, CCK) DSSS 802.11g/n:(64-QAM, 16-QAM, QPSK, BPSK) OFDM
Antenna Type	:	Built-in antenna, Maximum Gain is 2.81 dBi
Intend use environment	:	Residential, commercial and light industrial environment

1.2.Channel List

Frequency and Channel list for 802.11 b/g/n(HT20/HT40):

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	2	2417	3	2422	4	2427
5	2432	6	2437	7	2442	8	2447
9	2452	10	2457	11	2462		

Test Frequency and Channel for 802.11 b/g/n(HT20/HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	6	2437	11	2462
3	2422	6	2437	9	2452

1.3.Summary of test result

RF PART		
Test Items	**Test Requirement**	**Result**
Antenna requirement	FCC part 15.203/15.247 (b)(4)	PASS
Duty cycle	/	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
LAN cable	/	/	/	/
PC	Lenovo	M420-N000	/	/

1.5.Test mode

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

Test mode	Low channel	Middle channel	High channel
802.11b	2412MHz	2437MHz	2462MHz
802.11g	2412MHz	2437MHz	2462MHz
802.11n20	2412MHz	2437MHz	2462MHz
802.11n40	2422MHz	2437MHz	2452MHz
Note: All modes have been tested., Only the worst Data Record in the report			

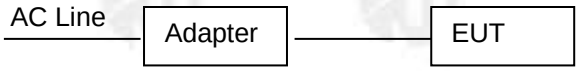
1.6. Test configuration

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.	

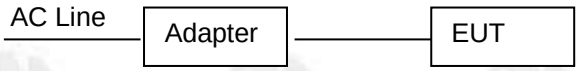
Test Software	ADB
Power level setup	Default

1.7.Block Diagram

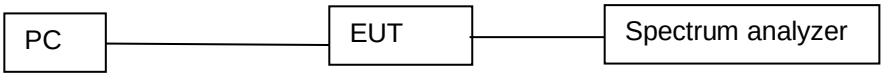
Conducted Emission



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

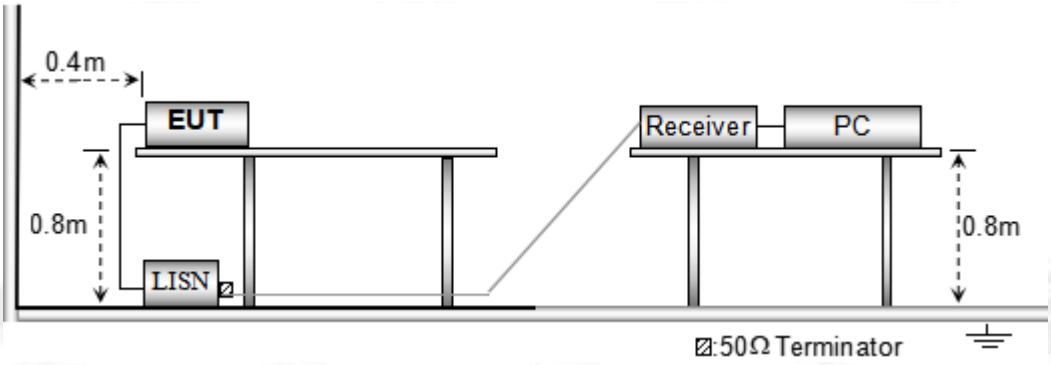
2.1.Limit

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

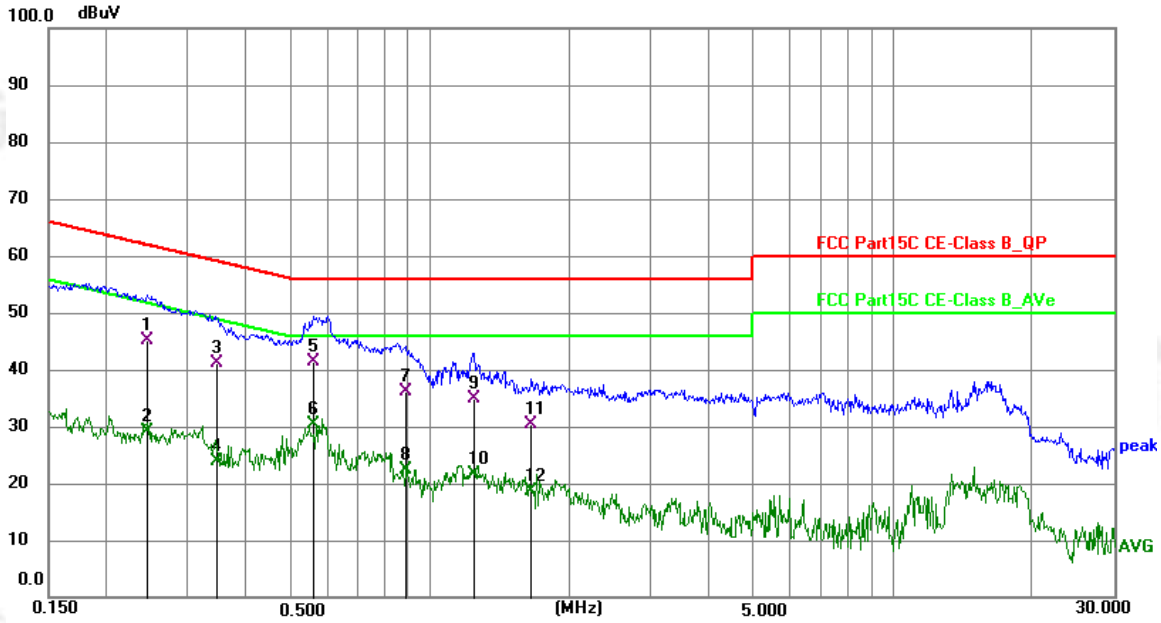


2.3.Test Procedure

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

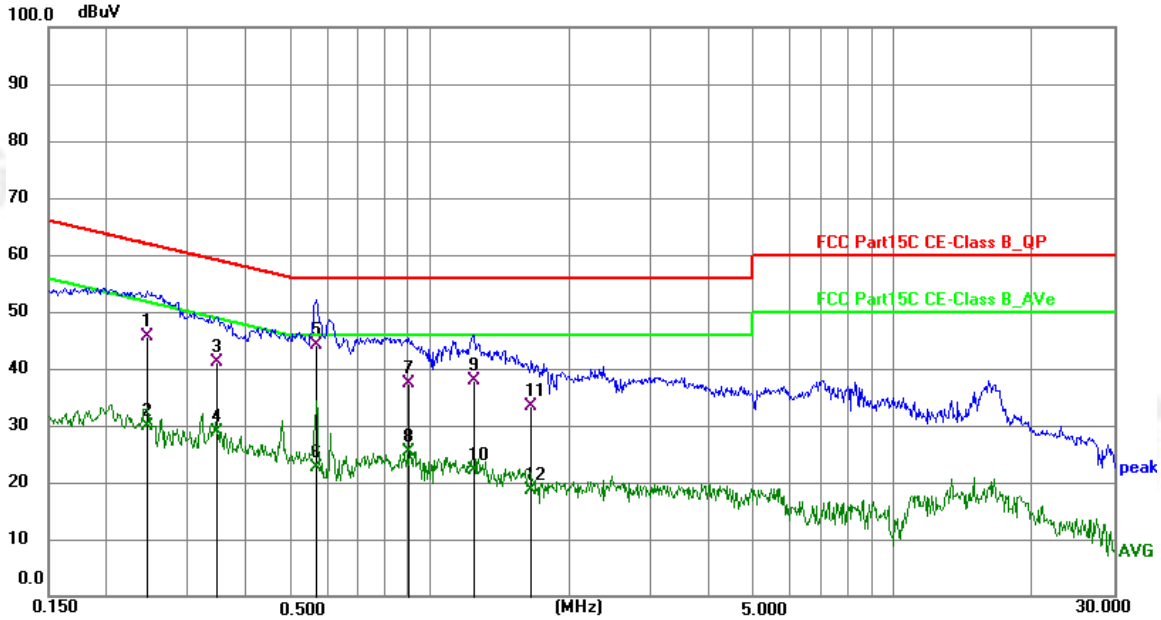
Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.5℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Line
Test Voltage :	DC 5V from adapter 120V/60Hz	Test Mode:	802.11b(CH01)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2442	25.34	19.68	45.02	61.95	-16.93	QP
2	0.2442	9.35	19.68	29.03	51.95	-22.92	AVG
3	0.3462	21.47	19.67	41.14	59.05	-17.91	QP
4	0.3462	4.12	19.67	23.79	49.05	-25.26	AVG
5 *	0.5611	21.74	19.63	41.37	56.00	-14.63	QP
6	0.5611	10.67	19.63	30.30	46.00	-15.70	AVG
7	0.8880	16.52	19.66	36.18	56.00	-19.82	QP
8	0.8880	2.68	19.66	22.34	46.00	-23.66	AVG
9	1.2435	15.21	19.69	34.90	56.00	-21.10	QP
10	1.2435	2.00	19.69	21.69	46.00	-24.31	AVG
11	1.6572	10.78	19.63	30.41	56.00	-25.59	QP
12	1.6572	-1.07	19.63	18.56	46.00	-27.44	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(802.11b) in the report

Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.5℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Neutral
Test Voltage :	DC 5V from adapter 120V/60Hz	Test Mode:	802.11b(CH01)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2442	25.84	19.68	45.52	61.95	-16.43	QP
2	0.2442	10.25	19.68	29.93	51.95	-22.02	AVG
3	0.3462	21.47	19.67	41.14	59.05	-17.91	QP
4	0.3462	9.12	19.67	28.79	49.05	-20.26	AVG
5 *	0.5685	24.44	19.63	44.07	56.00	-11.93	QP
6	0.5685	2.90	19.63	22.53	46.00	-23.47	AVG
7	0.9012	17.64	19.66	37.30	56.00	-18.70	QP
8	0.9012	5.68	19.66	25.34	46.00	-20.66	AVG
9	1.2435	18.21	19.69	37.90	56.00	-18.10	QP
10	1.2435	2.49	19.69	22.18	46.00	-23.82	AVG
11	1.6572	13.78	19.63	33.41	56.00	-22.59	QP
12	1.6572	-1.08	19.63	18.55	46.00	-27.45	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(802.11b) 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

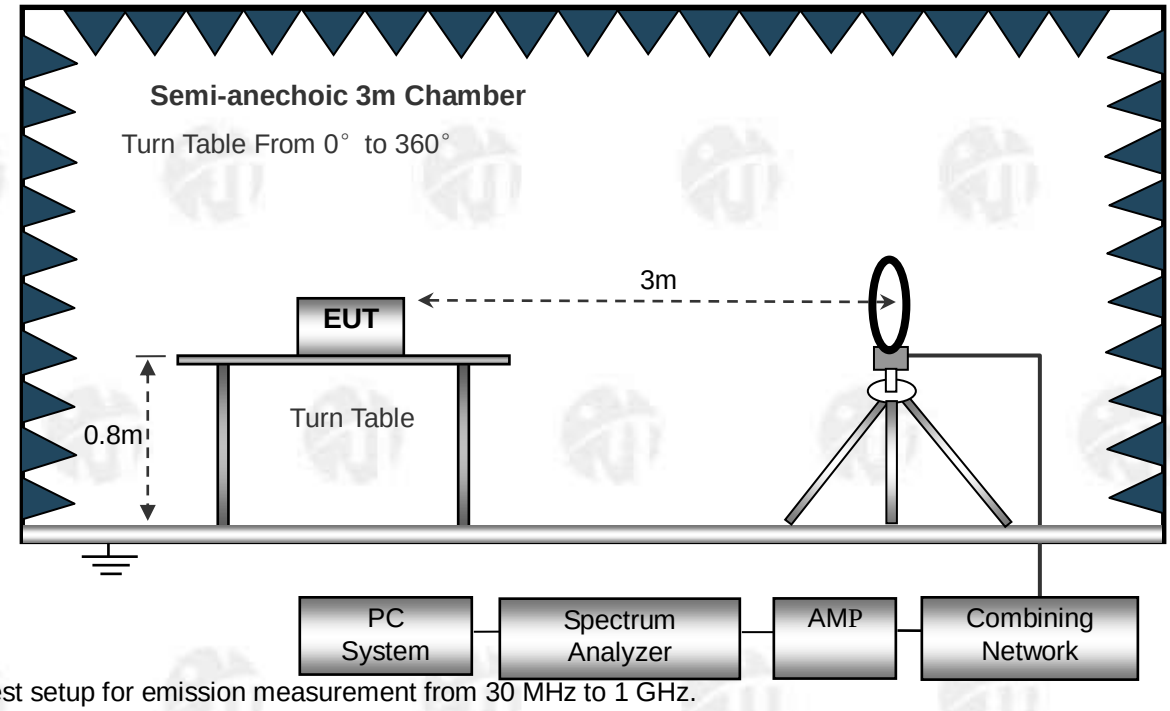
Limit:

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)

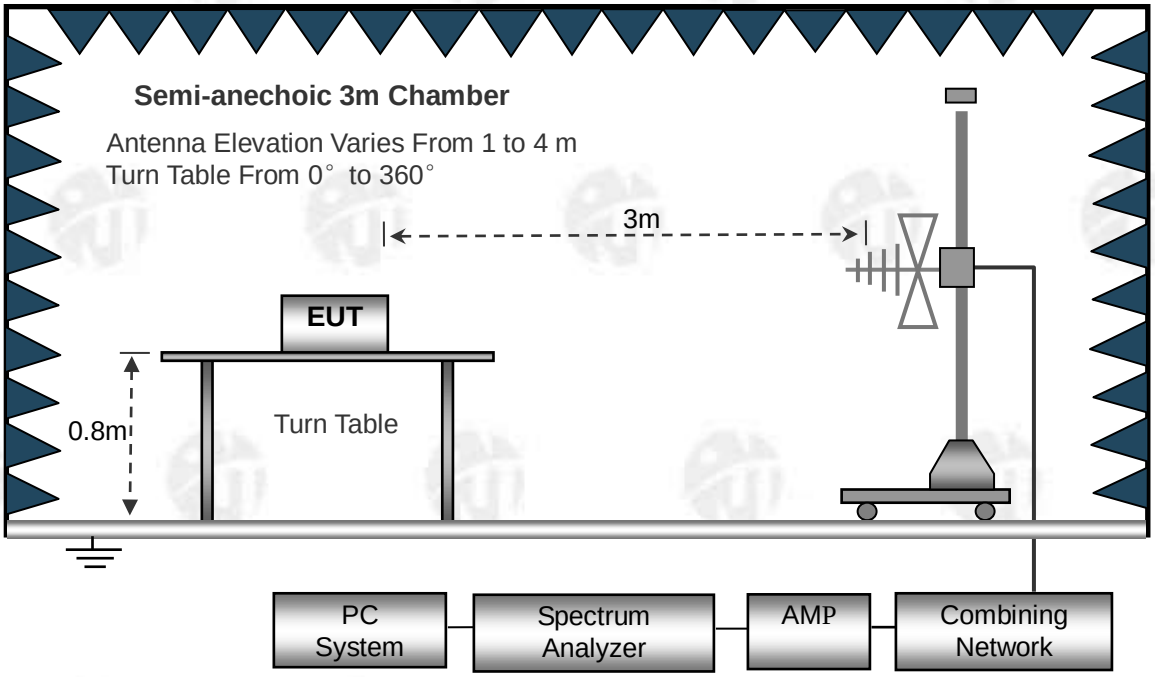
3.2.Test Setup

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

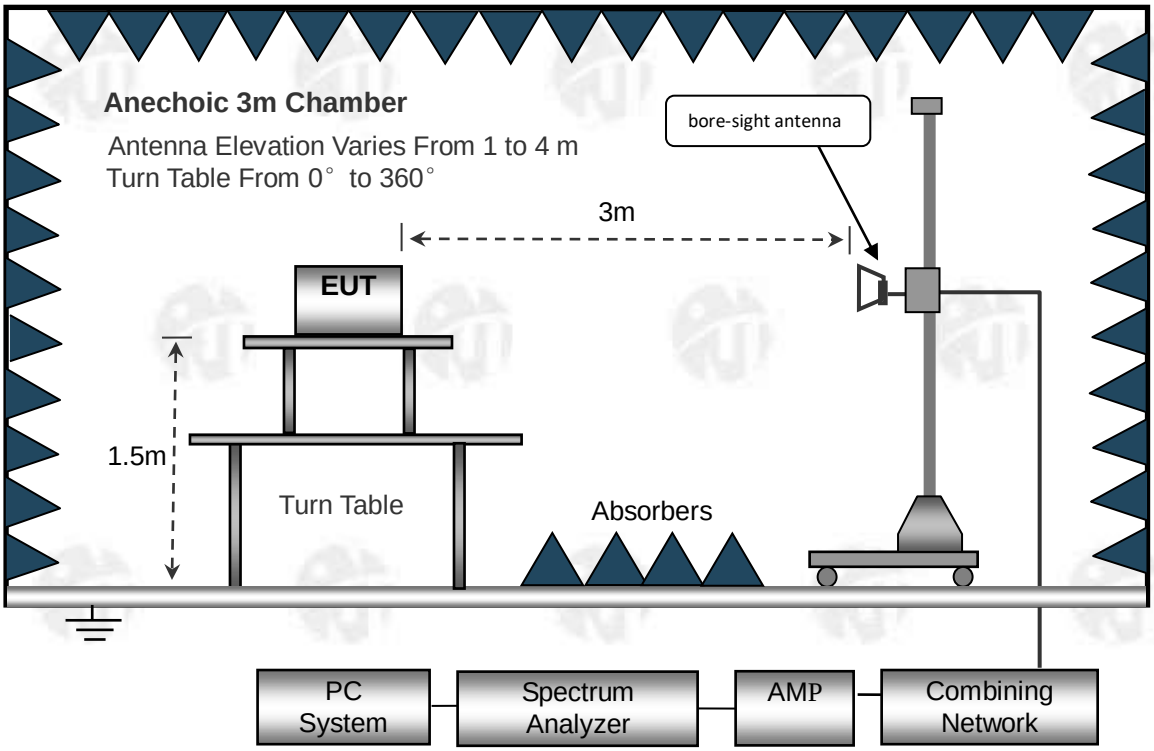
The test setup for emission measurement below 30MHz.

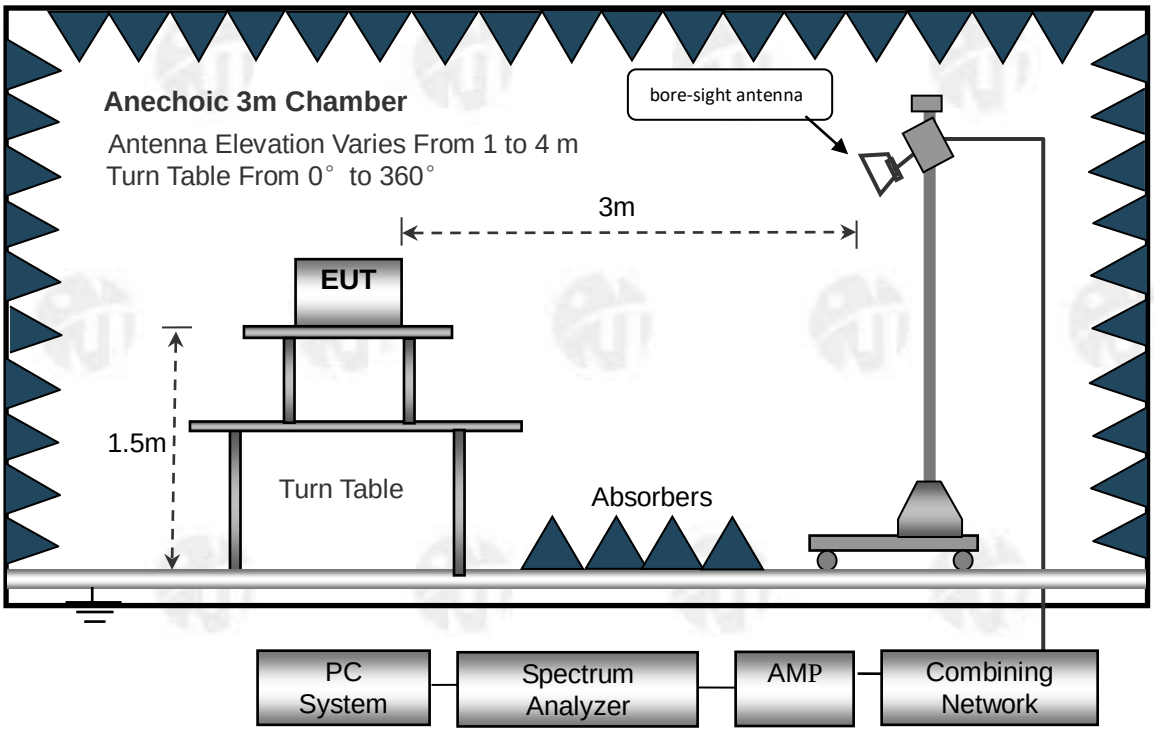


The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.





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.

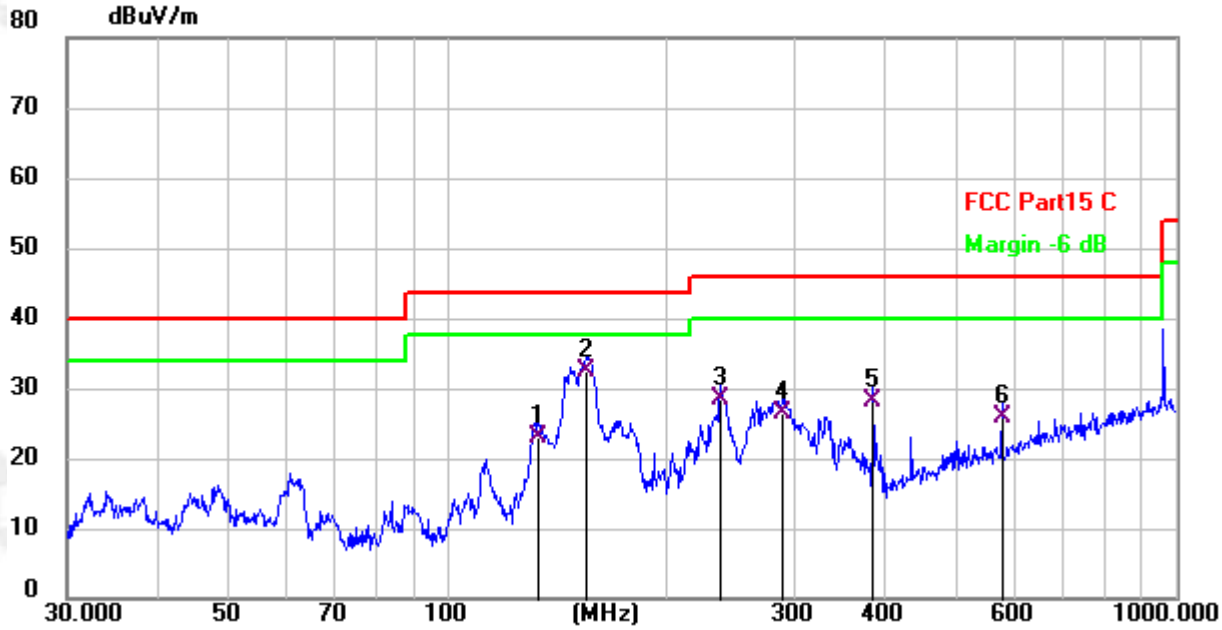
3.4.Test Result

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:	25.6℃	Relative Humidity:	53%
Pressure:	1008hPa	Phase :	Horizontal
Test Voltage :	DC 5V from adapter 120V/60Hz	Test Mode:	802.11b(CH01)

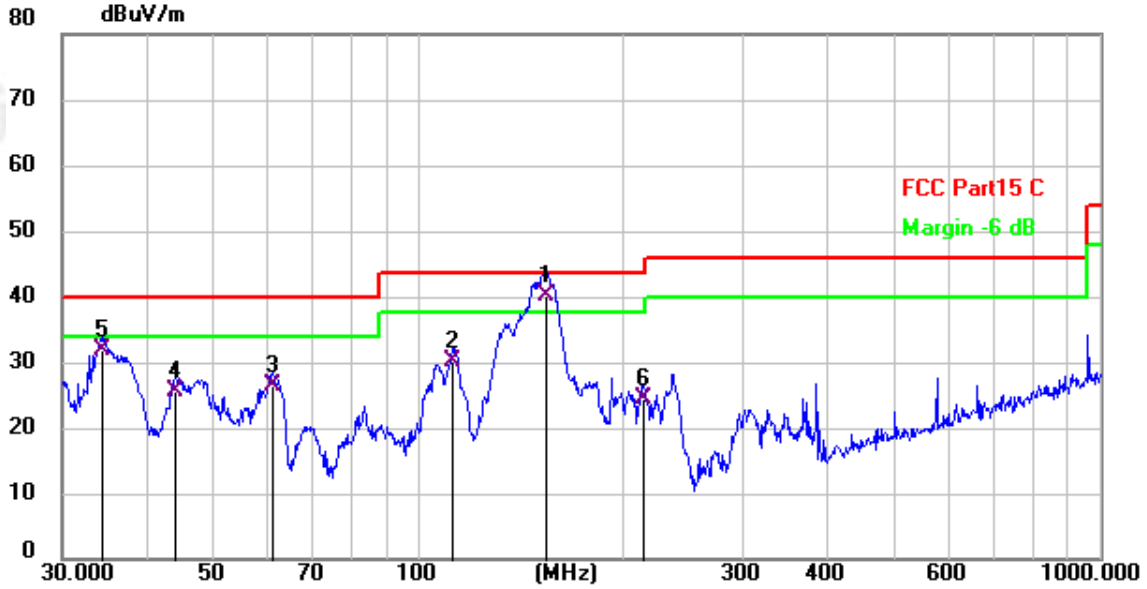


Note:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	133.1510	45.46	-22.36	23.10	43.50	-20.40	QP
2 *	155.3643	54.17	-21.67	32.50	43.50	-11.00	QP
3	237.4760	51.86	-23.46	28.40	46.00	-17.60	QP
4	289.0020	48.26	-21.76	26.50	46.00	-19.50	QP
5	383.9318	47.40	-19.30	28.10	46.00	-17.90	QP
6	576.6443	39.38	-13.58	25.80	46.00	-20.20	QP

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(802.11b) in the report

Radiation Emission Test Data			
Temperature:	25.6˚C	Relative Humidity:	53%
Pressure:	1008hPa	Phase :	Vertical
Test Voltage :	DC 5V from adapter 120V/60Hz	Test Mode:	802.11b(CH01)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	154.8204	61.84	-21.64	40.20	43.50	-3.30	QP
2	112.1304	54.67	-24.57	30.10	43.50	-13.40	QP
3	61.1315	51.22	-24.72	26.50	40.00	-13.50	QP
4	44.1202	49.56	-23.86	25.70	40.00	-14.30	QP
5	34.3964	56.29	-24.49	31.80	40.00	-8.20	QP
6	213.7634	48.55	-24.05	24.50	43.50	-19.00	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(802.11b) 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
Low Channel:2412MHz									
V	4824	44.19	34.11	5.04	32.44	47.56	74.00	-26.44	Pk
V	4824	35.16	34.11	5.04	32.44	38.53	54.00	-15.47	AV
V	7236	41.31	32.57	6.30	35.89	50.93	74.00	-23.07	Pk
V	7236	28.24	32.57	6.30	35.89	37.86	54.00	-16.14	AV
V	9648	37.02	32.96	7.56	38.40	50.02	74.00	-23.98	Pk
V	9648	22.42	32.96	7.56	38.40	35.42	54.00	-18.58	AV
V	12060	36.04	32.06	8.92	39.01	51.91	74.00	-22.09	Pk
V	12060	22.78	32.06	8.92	39.01	38.65	54.00	-15.35	AV
H	4824	48.27	34.11	5.04	32.44	51.64	74.00	-22.36	Pk
H	4824	36.75	34.11	5.04	32.44	40.12	54.00	-13.88	AV
H	7236	41.72	32.57	6.30	35.89	51.34	74.00	-22.66	Pk
H	7236	28.2	32.57	6.30	35.89	37.82	54.00	-16.18	AV
H	9648	38.64	32.96	7.56	38.40	51.64	74.00	-22.36	Pk
H	9648	24.89	32.96	7.56	38.40	37.89	54.00	-16.11	AV
H	12060	38.33	32.06	8.92	39.01	54.20	74.00	-19.80	Pk
H	12060	26.1	32.06	8.92	39.01	41.97	54.00	-12.03	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:2437MHz									
V	4874	50.85	34.08	5.08	32.57	54.42	74.00	-19.58	Pk
V	4874	39.00	34.08	5.08	32.57	42.57	54.00	-11.43	AV
V	7311	44.75	32.62	6.34	35.95	54.42	74.00	-19.58	Pk
V	7311	34.20	32.62	6.34	35.95	43.87	54.00	-10.13	AV
V	9748	40.80	32.93	7.58	38.40	53.85	74.00	-20.15	Pk
V	9748	34.97	32.93	7.58	38.40	48.02	54.00	-5.98	AV
V	12185	40.65	31.97	8.89	39.04	56.61	74.00	-17.39	Pk
V	12185	27.38	31.97	8.89	39.04	43.34	54.00	-10.66	AV
H	4874	43.96	34.08	5.08	32.57	47.53	74.00	-26.47	Pk
H	4874	32.05	34.08	5.08	32.57	35.62	54.00	-18.38	AV
H	7311	42.52	32.62	6.34	35.95	52.19	74.00	-21.81	Pk
H	7311	31.29	32.62	6.34	35.95	40.96	54.00	-13.04	AV
H	9748	44.83	32.93	7.58	38.40	57.88	74.00	-16.12	Pk
H	9748	30.36	32.93	7.58	38.40	43.41	54.00	-10.59	AV
H	12185	34.29	31.97	8.89	39.04	50.25	74.00	-23.75	Pk
H	12185	23.06	31.97	8.89	39.04	39.02	54.00	-14.98	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:2462MHz									
V	4924	45.57	34.05	5.14	32.79	49.45	74.00	-24.55	Pk
V	4924	34.20	34.05	5.14	32.79	38.08	54.00	-15.92	AV
V	7386	38.57	32.67	6.36	35.99	48.25	74.00	-25.75	Pk
V	7386	31.56	32.67	6.36	35.99	41.24	54.00	-12.76	AV
V	9848	40.95	32.89	7.59	38.37	54.02	74.00	-19.98	Pk
V	9848	25.88	32.89	7.59	38.37	38.95	54.00	-15.05	AV
V	12310	38.16	31.88	8.82	39.06	54.16	74.00	-19.84	Pk
V	12310	26.84	31.88	8.82	39.06	42.84	54.00	-11.16	AV
H	4924	45.68	34.05	5.14	32.79	49.56	74.00	-24.44	Pk
H	4924	37.40	34.05	5.14	32.79	41.28	54.00	-12.72	AV
H	7386	44.13	32.67	6.36	35.99	53.81	74.00	-20.19	Pk
H	7386	27.01	32.67	6.36	35.99	36.69	54.00	-17.31	AV
H	9848	39.38	32.89	7.59	38.37	52.45	74.00	-21.55	Pk
H	9848	26.68	32.89	7.59	38.37	39.75	54.00	-14.25	AV
H	12310	39.10	31.88	8.82	39.06	55.10	74.00	-18.90	Pk
H	12310	28.04	31.88	8.82	39.06	44.04	54.00	-9.96	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.
4.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
802.11b	Low Channel: 2412MHz									
	H	2390	57.82	35.17	3.48	27.49	53.62	74	-20.38	PK
	H	2390	50.05	35.17	3.48	27.49	45.85	54	-8.15	AV
	H	2400	60.13	35.16	3.49	27.52	55.98	74	-18.02	PK
	H	2400	49.30	35.16	3.49	27.52	45.15	54	-8.85	AV
	V	2390	57.63	35.17	3.48	27.49	53.43	74	-20.57	PK
	V	2390	50.30	35.17	3.48	27.49	46.10	54	-7.9	AV
	V	2400	59.38	35.16	3.49	27.52	55.23	74	-18.77	PK
	V	2400	49.60	35.16	3.49	27.52	45.45	54	-8.55	AV
	High Channel: 2462MHz									
	H	2483.5	57.79	35.11	3.56	27.75	53.99	74	-20.01	PK
	H	2483.5	48.64	35.11	3.56	27.75	44.84	54	-9.16	AV
	H	2500	59.23	35.10	3.57	27.80	55.50	74	-18.5	PK
	H	2500	50.10	35.10	3.57	27.80	46.37	54	-7.63	AV
	V	2483.5	58.13	35.11	3.56	27.75	54.33	74	-19.67	PK
	V	2483.5	49.81	35.11	3.56	27.75	46.01	54	-7.99	AV
	V	2500	58.77	35.10	3.57	27.80	55.04	74	-18.96	PK
	V	2500	49.92	35.10	3.57	27.80	46.19	54	-7.81	AV
802.11g	Low Channel: 2412MHz									
	H	2390	57.99	35.17	3.48	27.49	53.79	74	-20.21	PK
	H	2390	49.55	35.17	3.48	27.49	45.35	54	-8.65	AV
	H	2400	60.26	35.16	3.49	27.52	56.11	74	-17.89	PK
	H	2400	49.32	35.16	3.49	27.52	45.17	54	-8.83	AV
	V	2390	57.63	35.17	3.48	27.49	53.43	74	-20.57	PK
	V	2390	50.22	35.17	3.48	27.49	46.02	54	-7.98	AV
	V	2400	59.86	35.16	3.49	27.52	55.71	74	-18.29	PK
	V	2400	49.90	35.16	3.49	27.52	45.75	54	-8.25	AV
	High Channel: 2462MHz									
	H	2483.5	58.21	35.11	3.56	27.75	54.41	74	-19.59	PK
	H	2483.5	48.87	35.11	3.56	27.75	45.07	54	-8.93	AV
	H	2500	59.68	35.10	3.57	27.80	55.95	74	-18.05	PK
	H	2500	49.70	35.10	3.57	27.80	45.97	54	-8.03	AV
	V	2483.5	58.66	35.11	3.56	27.75	54.86	74	-19.14	PK
	V	2483.5	49.86	35.11	3.56	27.75	46.06	54	-7.94	AV
	V	2500	58.36	35.10	3.57	27.80	54.63	74	-19.37	PK
	V	2500	50.20	35.10	3.57	27.80	46.47	54	-7.53	AV
802.11 n20	Low Channel: 2412MHz									
	H	2390	57.65	35.17	3.48	27.49	53.45	74	-20.55	PK
	H	2390	50.00	35.17	3.48	27.49	45.80	54	-8.2	AV
	H	2400	60.60	35.16	3.49	27.52	56.45	74	-17.55	PK
	H	2400	49.71	35.16	3.49	27.52	45.56	54	-8.44	AV
	V	2390	57.53	35.17	3.48	27.49	53.33	74	-20.67	PK
	V	2390	50.41	35.17	3.48	27.49	46.21	54	-7.79	AV
	V	2400	59.80	35.16	3.49	27.52	55.65	74	-18.35	PK
	V	2400	49.65	35.16	3.49	27.52	45.50	54	-8.5	AV
	High Channel: 2462MHz									
	H	2483.5	57.84	35.11	3.56	27.75	54.04	74	-19.96	PK
	H	2483.5	48.56	35.11	3.56	27.75	44.76	54	-9.24	AV
	H	2500	59.28	35.10	3.57	27.80	55.55	74	-18.45	PK

	H	2500	49.69	35.10	3.57	27.80	45.96	54	-8.04	AV
	V	2483.5	58.16	35.11	3.56	27.75	54.36	74	-19.64	PK
	V	2483.5	49.67	35.11	3.56	27.75	45.87	54	-8.13	AV
	V	2500	58.79	35.10	3.57	27.80	55.06	74	-18.94	PK
	V	2500	50.01	35.10	3.57	27.80	46.28	54	-7.72	AV
802.11 n40	Low Channel 2422MHz									
	H	2390	57.59	35.17	3.48	27.49	53.39	74	-20.61	PK
	H	2390	49.57	35.17	3.48	27.49	45.37	54	-8.63	AV
	H	2400	60.26	35.16	3.49	27.52	56.11	74	-17.89	PK
	H	2400	49.73	35.16	3.49	27.52	45.58	54	-8.42	AV
	V	2390	57.26	35.17	3.48	27.49	53.06	74	-20.94	PK
	V	2390	50.41	35.17	3.48	27.49	46.21	54	-7.79	AV
	V	2400	59.32	35.16	3.49	27.52	55.17	74	-18.83	PK
	V	2400	49.77	35.16	3.49	27.52	45.62	54	-8.38	AV
	High Channel 2452MHz									
	H	2483.5	57.91	35.11	3.56	27.75	54.11	74	-19.89	PK
	H	2483.5	48.91	35.11	3.56	27.75	45.11	54	-8.89	AV
	H	2500	59.79	35.10	3.57	27.80	56.06	74	-17.94	PK
	H	2500	49.96	35.10	3.57	27.80	46.23	54	-7.77	AV
	V	2483.5	58.41	35.11	3.56	27.75	54.61	74	-19.39	PK
	V	2483.5	49.50	35.11	3.56	27.75	45.70	54	-8.3	AV
	V	2500	58.26	35.10	3.57	27.80	54.53	74	-19.47	PK
	V	2500	50.22	35.10	3.57	27.80	46.49	54	-7.51	AV

Remark:

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.

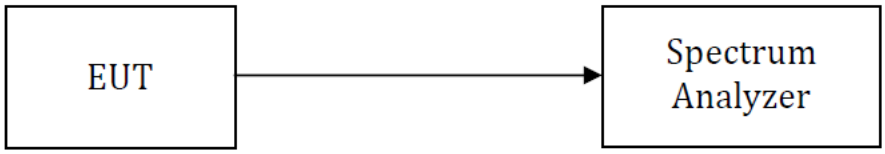
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

4. Duty cycle

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
Test Result:	PASS

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 the center frequency of the instrument to the center frequency of the transmission.
b) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.
c) Set VBW ≥ RBW. Detector = peak or average.
d) Sweep time = auto couple.
e) Trace mode = max hold.
f) Allow trace to fully stabilize.

4.4.Test Result

Please see the attachment for data.

5. Conducted Spurious Emissions

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 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)).

5.2.Test Setup

5.3.Test Procedure

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 = No faster than coupled (auto) time.
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.

5.4.Test Result

Please see the attachment for data.

6. Band Edge 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
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

6.2.Test setup

6.3.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:
3. Establish a reference level by using the following procedure
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 = No faster than coupled (auto) time.
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.
4. 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.

6.4.Test Result

Please see the attachment for data.

7. -6 dB Bandwidth and 99% Bandwidth Measurement

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

7.2.Test Setup

7.3.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

7.4.Test Result

Please see the attachment for data.

8. Maximum Peak Output Power

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(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

8.2.Test Setup

8.3.Test Procedure

Method AVGSA-2 uses trace averaging across ON and OFF times of the EUT transmissions, followed by duty cycle correction. The procedure for this method is as follows:
a) Measure the duty cycle D of the transmitter output signal as described in 11.6.
b) Set span to >1.5 times the OBW.
c) Set RBW = 1% to 5% of the OBW, but do not exceed 1 MHz.
d) Set VBW ≥ [3 × RBW].
e) Number of points in sweep ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
f) Sweep time = auto.
g) Detector = Power averaging (rms), if available. Otherwise, use the sample detector mode.
h) Do not use sweep triggering. Allow the sweep to “free run.”
i) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 until trace is stabilized so that the average accurately represents the true average over the ON and OFF periods of the transmitter.
j) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band-power measurement function with band limits set equal to the OBW band-edges. If the instrument does not have a band-power function, then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
k) Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is 25%.

8.4.Test Result

Please see the attachment for data.

9. Power Spectral density

9.1.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

9.2.Test Setup

9.3.Test Procedure

Method AVGPSD-2 uses trace averaging across ON and OFF times of the EUT transmissions, followed by duty cycle correction.
The following procedure is applicable when the EUT cannot be configured to transmit continuously (i.e., D < 98%), when sweep triggering/signal gating cannot be used to measure only when the EUT is transmitting at its maximum power control level, and when the transmission duty cycle is constant (i.e., duty cycle variations are less than ±2%):
a) Measure the duty cycle (D) of the transmitter output signal as described in 11.6.
b) Set instrument center frequency to DTS channel center frequency.
c) Set span to > 1.5 times the OBW.
d) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
e) Set VBW ≥ [3 × RBW].
f) Detector = power averaging (rms) or sample detector (when rms not available).
g) Ensure that the number of measurement points in the sweep ≥ [2 × span / RBW].
h) Sweep time = auto couple.
i) Do not use sweep triggering; allow sweep to “free run.”
j) Employ trace averaging (rms) mode over a minimum of 100 traces.
k) Use the peak marker function to determine the maximum amplitude level.
l) Add [10 log (1 / D)], where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time.
m) If measured value exceeds requirement specified by regulatory agency, then reduce RBW (but no less than 3 kHz) and repeat (note that this might require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

9.4.Test Result

Please see the attachment for data.

10. 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 Built-in antenna, and the maximum antenna gain is 2.81 dBi, fulfill the requirement of this section.

11. TEST SETUP & EUT PHOTOGRAPH

Please see the attachment for details.

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