TEST REPORT

Applicant	:	The Hyperspace Lighting Company Limited Liability Company
Address	:	302 Washington St #715 San Diego, CA 92103, USA
Manufacturer	:	Shenzhen Shihua Industry Co., Ltd
Address	:	No.204, second floor of building A , Guotai Industry park, No. 22, Xintang Village, Fucheng street, Shenzhen
Product Name	:	HyperCube15-SE
Model Number	:	HC15-SE, HyperCube-SE
Trademark	:	The Hyperspace Lighting Company
FCC ID	:	2BUDS-HC15-SE
Test Date	:	Dec. 22, 2025 - Jan. 08, 2026
Date of Report	:	Jan. 08, 2026
Test Result	:	This device described above has been tested by BKC, 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

Prepared by(Test Engineer):
Carey Zheng

Reviewer(Supervisor):
Casey Wang

Approved(Manager):
Jerry Liao

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Revision History of This Test Report		
Report Number	Description	Issued Date
BKC25125819ME-1	Initial Issue	2026-01-08

1. General Information

1.1.Description of Device (EUT)

EUT Name	:	HyperCube15-SE
Model No.	:	HC15-SE, HyperCube-SE
Model Difference	:	Only the model names are different. The mains test model is HC15-SE
Power Supply	:	DC 5V⎓3A power supply comes from the adapter.
Adapter	:	Input: 100-240V~, 50/60Hz, 0.5A Max Output: 5V⎓3A
Operation frequency	:	2.412-2.462GHz
Max. RF output power:	:	14.49dBm
Modulation	:	802.11b: Direct Sequence Spread Spectrum(DSSS) 802.11g/802.11n(H20)/802.11n(H40): Orthogonal Frequency Division Multiplexing(OFDM)
Antenna Type	:	PCB Antenna, Maximum Gain is 3.42dBi
Hardware Version	:	V1.0
Software Version	:	V2.8
Intend use environment	:	Residential, commercial and light industrial environment

1.2.Channel List

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	/	/
/	/						

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
Serial port board	/	/	/	/
/	/	/	/	/

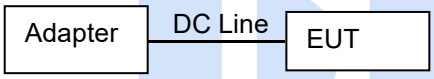
1.5.Test mode

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

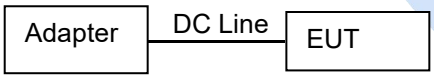
Test mode	Description	Low channel	Middle channel	High channel
TM1	802.11b	2412MHz	2437MHz	2462MHz
TM2	802.11g	2412MHz	2437MHz	2462MHz
TM3	802.11n20	2412MHz	2437MHz	2462MHz
TM4	802.11n40	2422MHz	2437MHz	2452MHz
Note：/				

1.6.Block Diagram

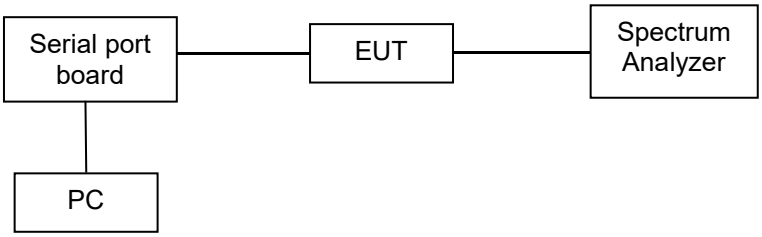
Conducted Emission



Radiated Emission



RF Conducted Test



1.7.Test configuration

Test Software	EspRFTestTool
Power level setup	Maximum

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
Power supply	DC 5V	N/A
Note: N/A is an abbreviation for Not Applicable.		

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

Item	MU	Remark
Uncertainty for radio frequency	±7×10-8	
Conducted Emissions (150kHz~30MHz)	±2.54dB	
Radiated Emission(9KHz~30MHz)	±1.6 dB	
Radiated Emission(30MHz~1GHz)	Vertical:±4.14dB Horizontal:±4.25dB	
Radiated Emission(1GHz~6GHz)	±3.9dB	
Radiated Emission(6GHz~18GHz)	±4.3dB	
Radiated Emission(18GHz~40GHz)	±3.38dB	
Uncertainty for conducted RF Power	±0.20dB	
Conducted spurious emissions	±0.24dB	
Uncertainty for temperature	0.6℃	
Uncertainty for humidity	1%	
Bandwidth	± 1.5 x 10-6	
Time	±2%	
Duty Cycle	±2%	
Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%		

1.10.Test Facility

Site Description		
Name of Firm	:	Shenzhen BKC Testing Co., Ltd.
Site Location	:	Room 103, 1/F, Huaya Building, Huaya Industrial Park, Longhua Community, Longhua District, Shenzhen, Guangdong, China.
ISED CAB identifier	:	CN0188
ISED Company Number	:	34333
FCC Designation Number	:	CN1416
FCC Test Firm Registration Number	:	701543

1.11.Test Equipment

Conducted Test Site

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	LISN	R&S	ENV216	102762	Mar. 10. 2025	Mar. 09. 2026
2	EMI Test Receiver	R&S	ESCI	101424	Mar. 10. 2025	Mar. 09. 2026
3	Rf cables	HTEC	HCE 2M-CE	N/A	Mar. 10. 2025	Mar. 09. 2026
4	Coupling/ Decoupling Network	Diamond	CX210	N/A	Mar. 10. 2025	Mar. 09. 2026
5	CE Testing software	EZ	EZ-EMC	/	/	/

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

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Antenna	Schwarzbeck	VULB 9168	01321	Mar. 20. 2025	Mar. 19. 2028
2	EMI Test Receiver	R&S	ESRP	101478	Mar. 10. 2025	Mar. 09. 2026
3	Preamplifier	HP	8447D	2727A05345	Mar. 10. 2025	Mar. 09. 2026
4	Double Ridged Broadband	SCHWARZBECK	BBHA 9120D	02621	Mar. 10. 2025	Mar. 19. 2028
5	Preamplifier	Schwarzbeck	BBV 9718D	00041	Mar. 10. 2025	Mar. 09. 2026
6	Rf cables	HUBER+SUHNER	8M-RE	N/A	Mar. 10. 2025	Mar. 09. 2026
7	Rf cables	HUBER+SUHNER	1.5M-RE	N/A	Mar. 10. 2025	Mar. 09. 2026
8	Rf cables	HUBER+SUHNER	1.5M-AP-RE	N/A	Mar. 10. 2025	Mar. 09. 2026
9	Loop antenna	TESEQ	HLA6121	58357	Mar. 09. 2025	Mar. 10. 2026
10	Spectrum analyzer	R&S	FSP40	200061	Feb. 13. 2025	Feb. 12. 2026
11	Double Ridged Broadband Horn Antenna	COM-POWER	AH-1840	10100009	Mar. 10. 2025	Mar. 09. 2026
12	Spectrum	Agilent	N9020A	MY50510311	Mar. 09. 2025	Mar. 10. 2026
13	RE Testing software	EZ	EZ-EMC	/	/	/

RF Test Site

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum	Agilent	N9020A	MY50510311	Mar. 09. 2025	Mar. 10. 2026
2	Vector source	Agilent	N5182A	MY47420223	Mar. 09. 2025	Mar. 10. 2026
3	All instrument	Rohde & Schwarz	CMW 500	101131	Mar. 09. 2025	Mar. 10. 2026
4	control unit	MW	MW100-RFCB	MW200411BK-34	Mar. 09. 2025	Mar. 10. 2026
5	RF Testing software	MW	MTS 8310	/	Mar. 09. 2025	/
6	Spectrum analyzer	R&S	FSP40	200061	Feb. 13. 2025	Feb. 12. 2026

Test software

Software name	RF Testing software
Software version	2.0.0.0
Software name	RE Testing software
Software version	EMEC-03A2 RE+
Software name	CE Testing software
Software version	EMEC-3A1+

2. Conducted emission at the mains terminals test

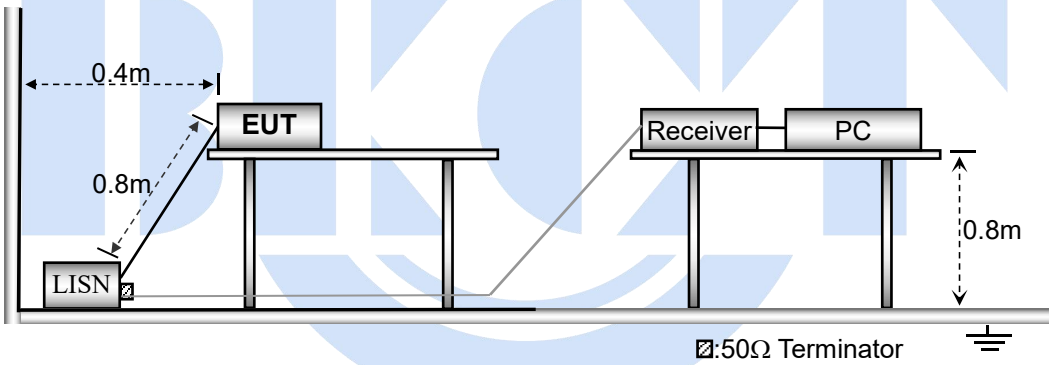
2.1.Limit

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2020
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

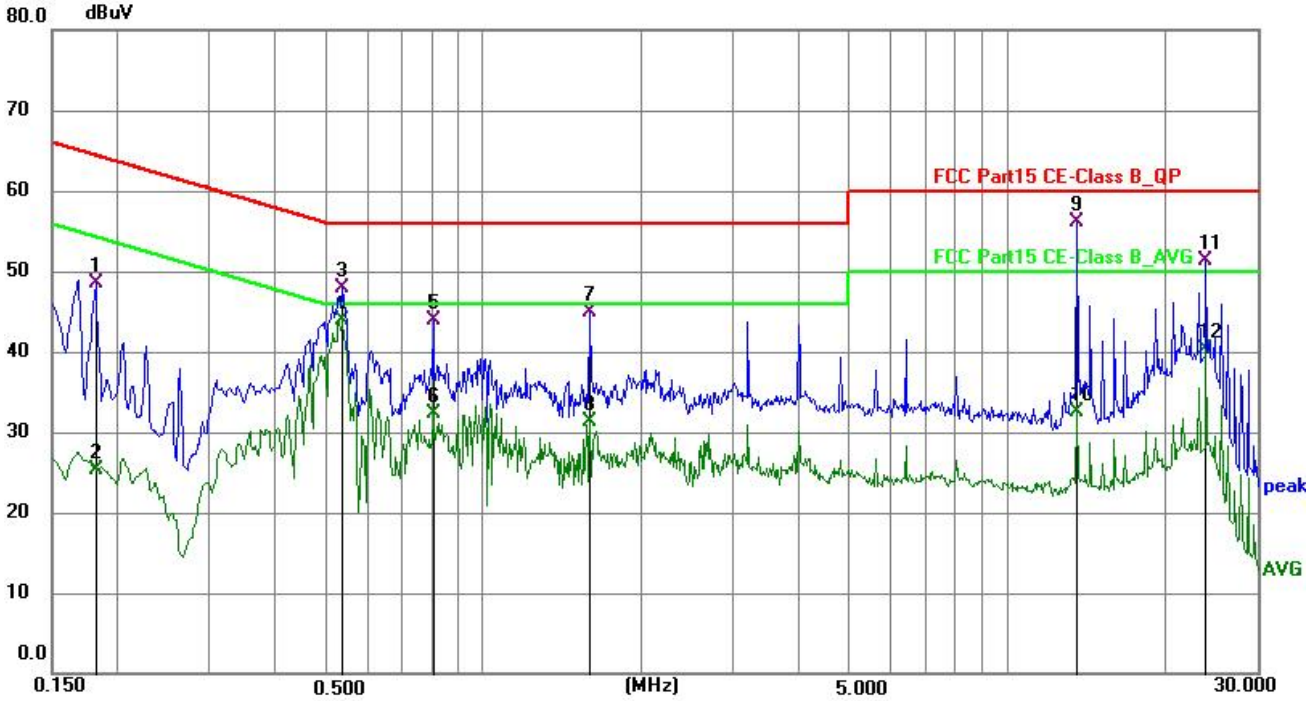


2.3.Test Procedure

1. The EUT was placed 0.1 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.

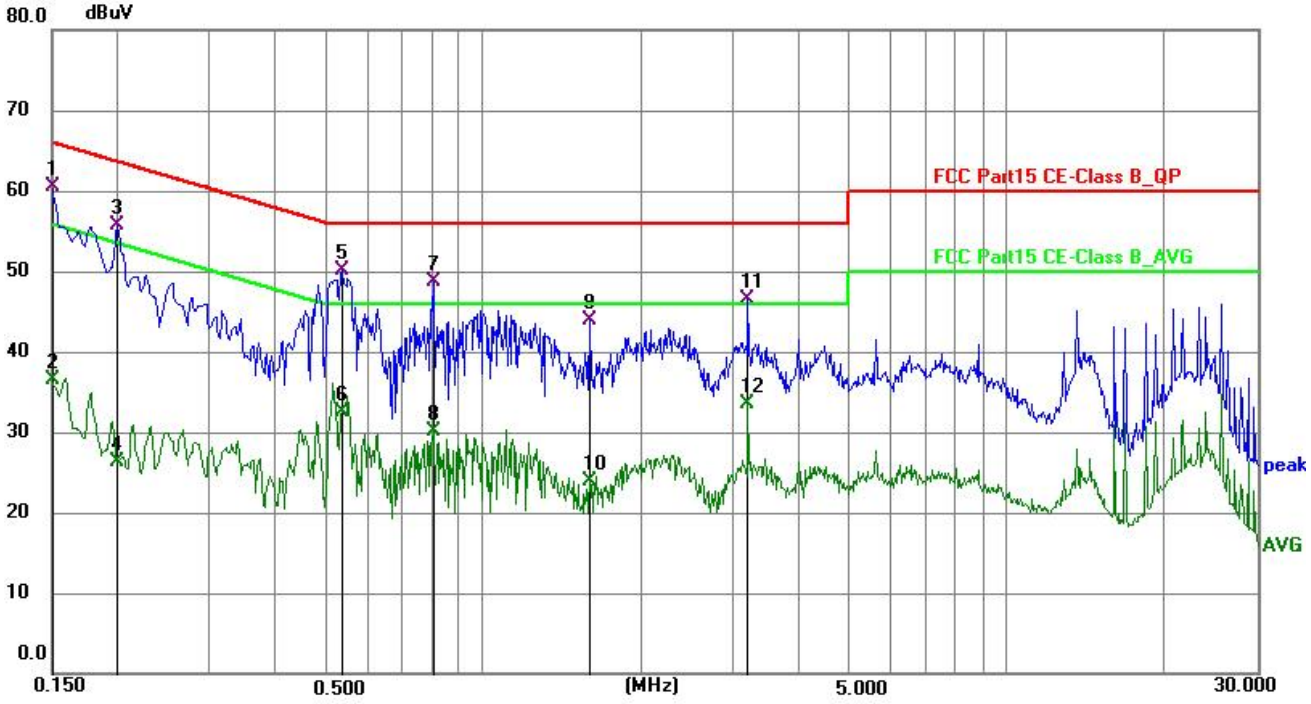
2.4.Test Result

Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Line
Test Voltage :	AC 120V/60Hz	Test Mode:	TM1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1815	38.80	9.79	48.59	64.42	-15.83	QP	P
2	0.1815	15.45	9.79	25.24	54.42	-29.18	AVG	P
3	0.5370	38.18	9.77	47.95	56.00	-8.05	QP	P
4 *	0.5370	34.07	9.77	43.84	46.00	-2.16	AVG	P
5	0.8025	34.09	9.76	43.85	56.00	-12.15	QP	P
6	0.8025	22.55	9.76	32.31	46.00	-13.69	AVG	P
7	1.5990	35.22	9.75	44.97	56.00	-11.03	QP	P
8	1.5990	21.51	9.75	31.26	46.00	-14.74	AVG	P
9	13.5960	46.38	9.74	56.12	60.00	-3.88	QP	P
10	13.5960	22.83	9.74	32.57	50.00	-17.43	AVG	P
11	24.0000	41.57	9.76	51.33	60.00	-8.67	QP	P
12	24.0000	30.52	9.76	40.28	50.00	-9.72	AVG	P

Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Neutral
Test Voltage :	AC 120V/60Hz	Test Mode:	TM1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1 *	0.1500	50.91	9.68	60.59	66.00	-5.41	QP	P
2	0.1500	26.83	9.68	36.51	56.00	-19.49	AVG	P
3	0.1995	45.98	9.71	55.69	63.63	-7.94	QP	P
4	0.1995	16.58	9.71	26.29	53.63	-27.34	AVG	P
5	0.5370	40.37	9.70	50.07	56.00	-5.93	QP	P
6	0.5370	22.90	9.70	32.60	46.00	-13.40	AVG	P
7	0.8024	39.04	9.69	48.73	56.00	-7.27	QP	P
8	0.8024	20.36	9.69	30.05	46.00	-15.95	AVG	P
9	1.5988	34.28	9.69	43.97	56.00	-12.03	QP	P
10	1.5988	14.29	9.69	23.98	46.00	-22.02	AVG	P
11	3.2010	36.71	9.71	46.42	56.00	-9.58	QP	P
12	3.2010	23.70	9.71	33.41	46.00	-12.59	AVG	P

Note:Only the worst Data 802.11b/2412MHz Record in the report.

3. Radiated Spurious Emissions

3.1.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.

9. Remark: Level = Reading + Factor, Margin = Level - Limit

3.2.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02;
ANSI C63.10:2020

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

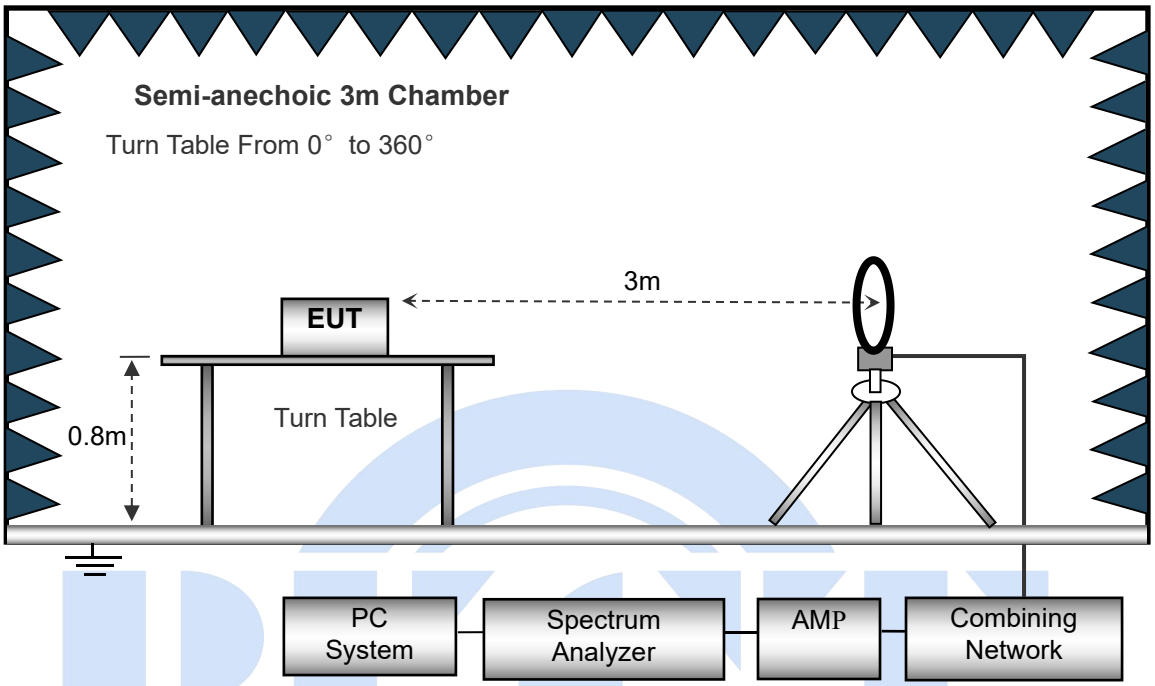
Limit:

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)

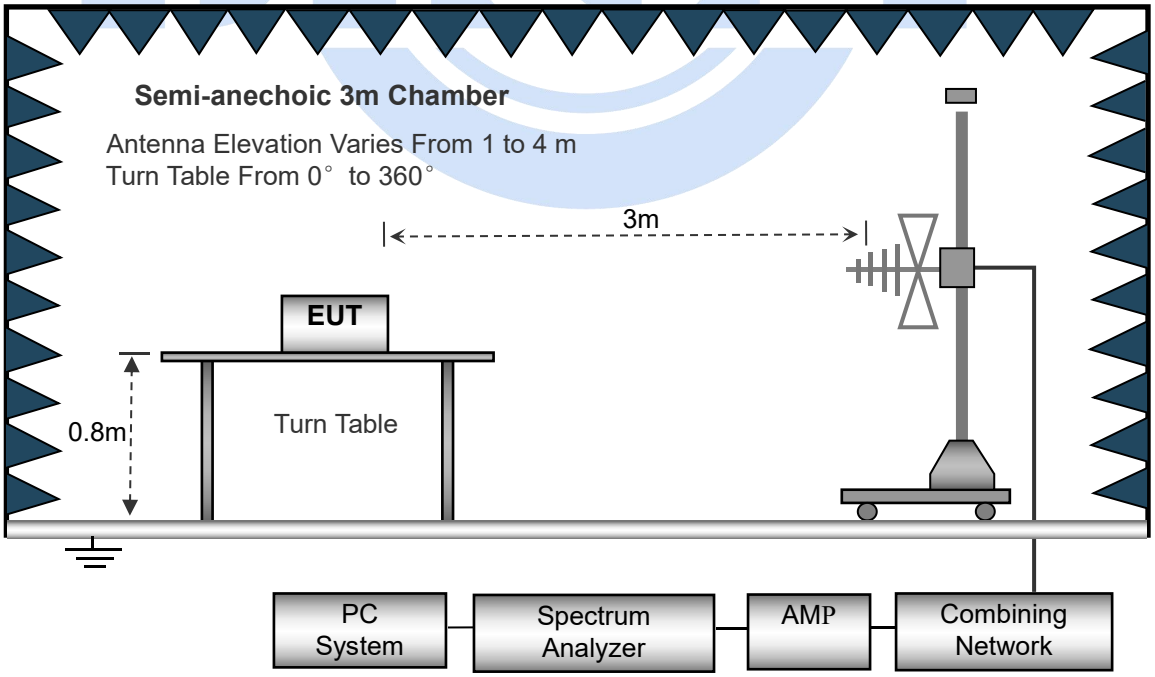
3.3.Test Setup

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

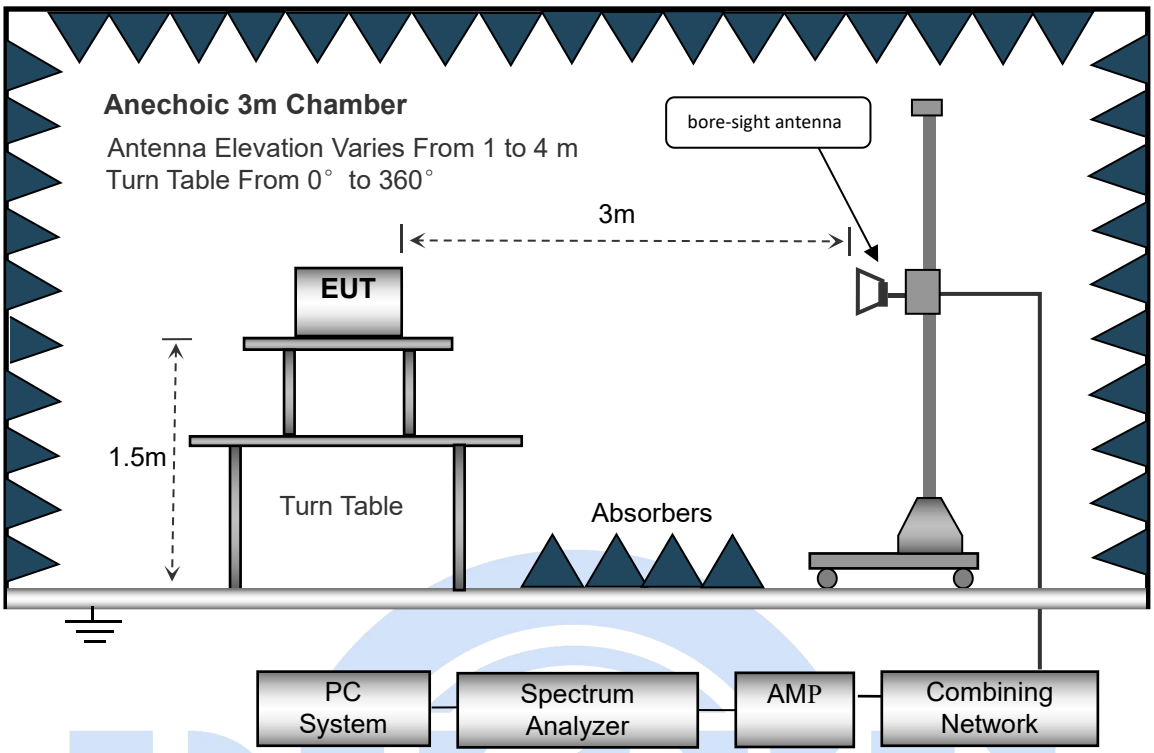
The test setup for emission measurement below 30MHz.

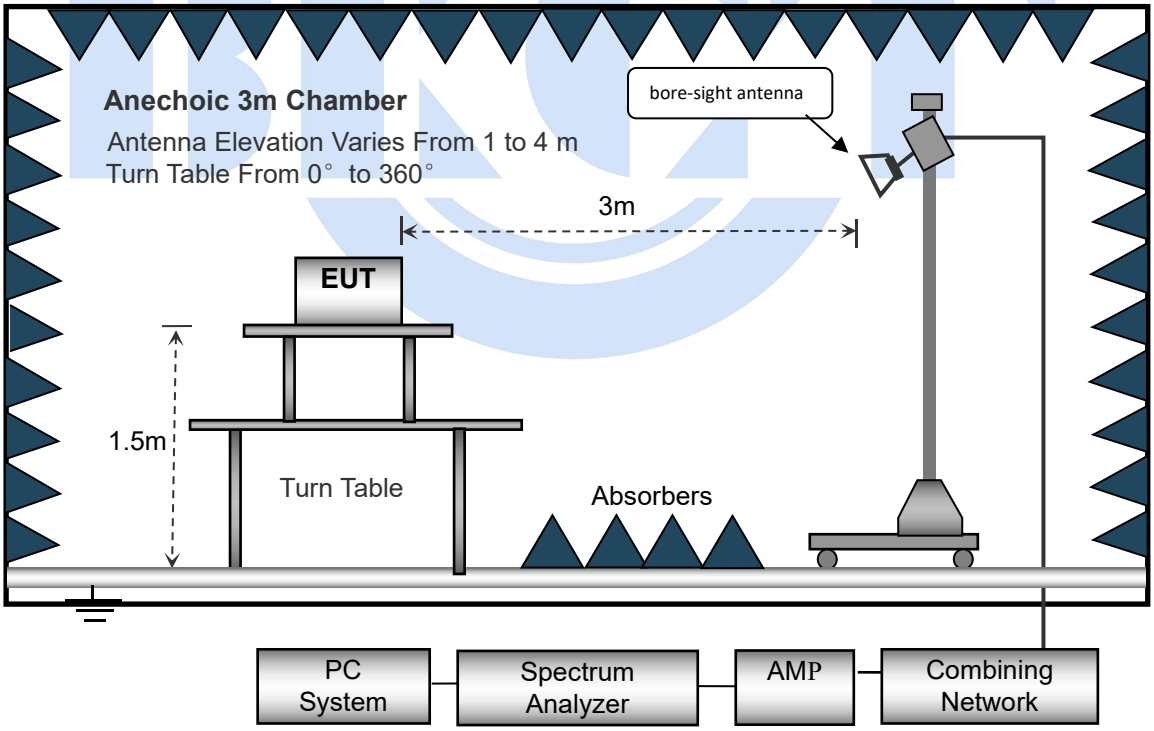


The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.





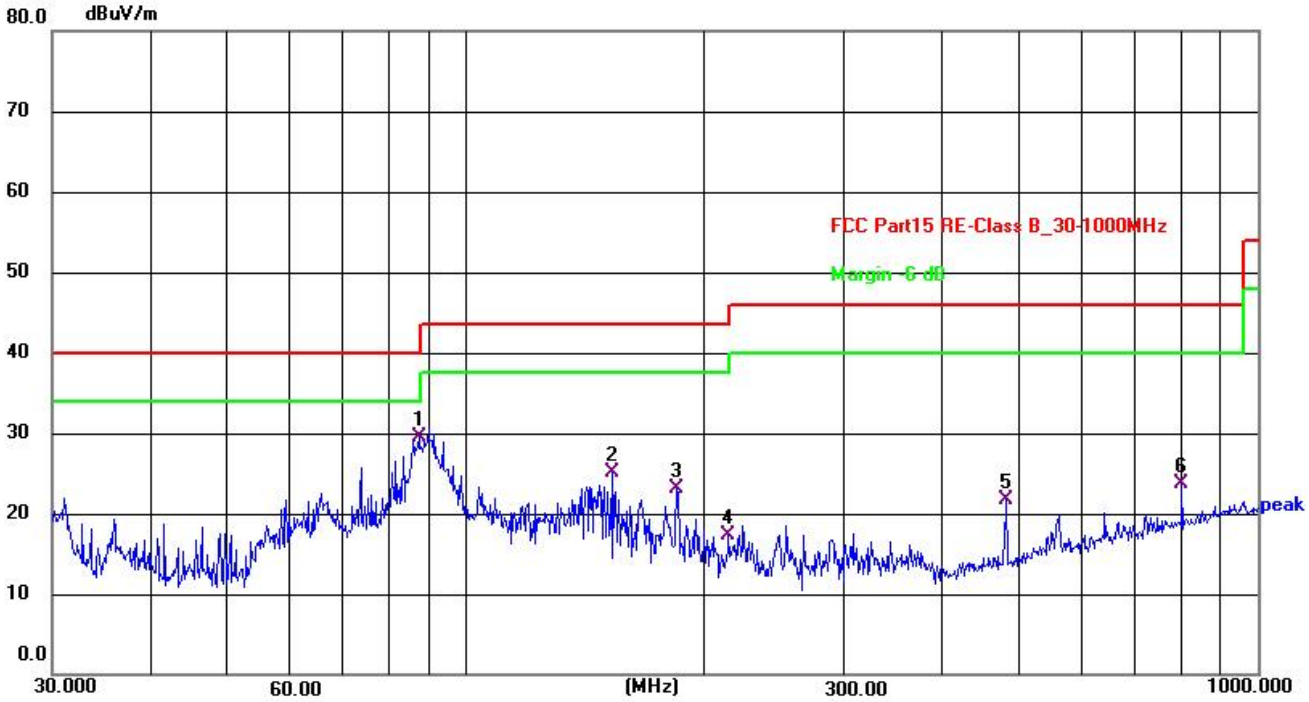
3.4.Test Result

Test Frequency: 9KHz~30MHz

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

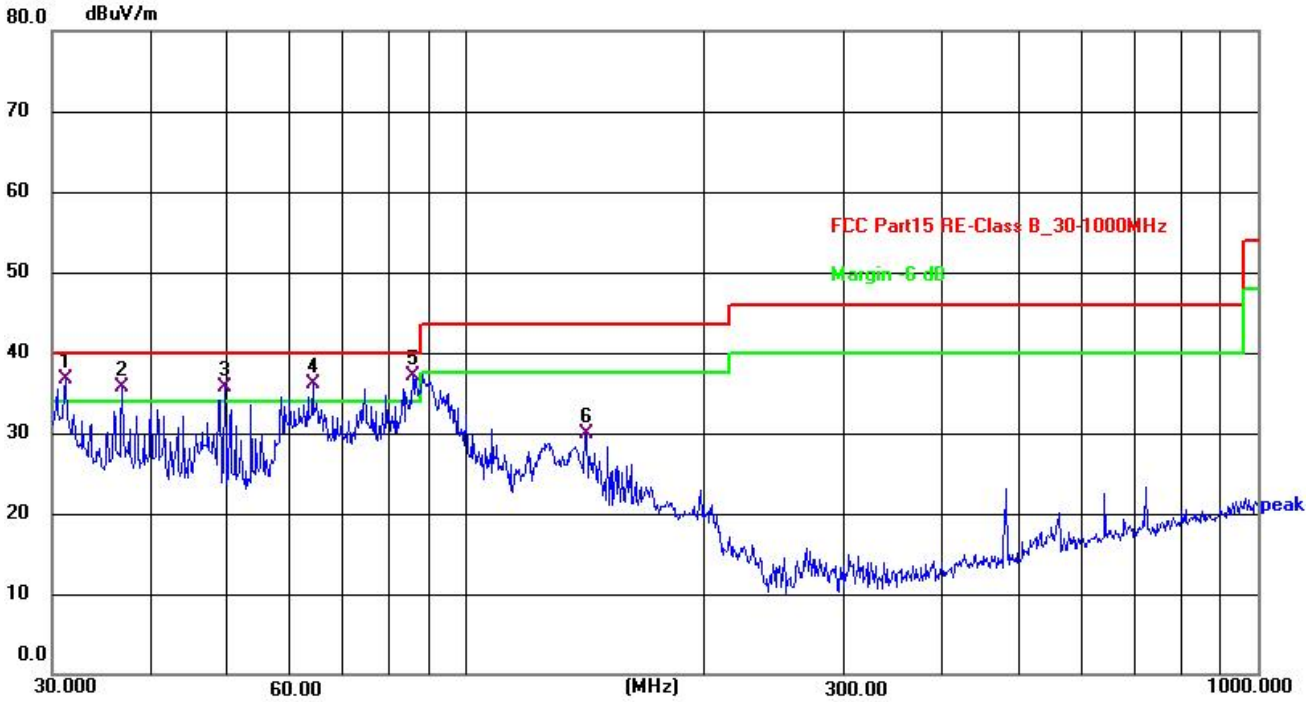
Test Frequency : 30MHz ~ 1GHz

Radiation Emission Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode	TM1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	87.1117	50.35	-20.87	29.48	40.00	-10.52	QP
2	152.6641	40.92	-15.85	25.07	43.50	-18.43	QP
3	184.4898	41.79	-18.72	23.07	43.50	-20.43	QP
4	214.5143	36.56	-19.30	17.26	43.50	-26.24	QP
5	480.5276	35.25	-13.47	21.78	46.00	-24.22	QP
6	801.7863	32.56	-8.80	23.76	46.00	-22.24	QP

Radiation Emission Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode	TM1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 !	31.1797	53.67	-16.98	36.69	40.00	-3.31	QP
2 !	36.7661	52.29	-16.62	35.67	40.00	-4.33	QP
3 !	49.5328	52.35	-16.63	35.72	40.00	-4.28	QP
4 !	63.9827	54.38	-18.19	36.19	40.00	-3.81	QP
5 *	85.5976	57.94	-20.93	37.01	40.00	-2.99	QP
6	141.8262	46.32	-16.47	29.85	43.50	-13.65	QP

Note:Only the worst Data 802.11b/2412MHz Record in the report.

Test Frequency 1GHz-25GHz:

802.11b

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: 802.11b_2412MHz									
V	4824.00	52.66	30.55	5.77	24.66	52.54	74.00	-21.46	Pk
V	4824.00	43.49	30.55	5.77	24.66	43.37	54.00	-10.63	AV
V	7236.00	53.92	30.33	6.32	24.55	54.46	74.00	-19.54	Pk
V	7236.00	43.59	30.33	6.32	24.55	44.13	54.00	-9.87	AV
V	9648.00	54.50	30.85	7.45	24.69	55.79	74.00	-18.21	Pk
V	9648.00	43.20	30.85	7.45	24.69	44.49	54.00	-9.51	AV
V	12060.00	52.04	31.02	8.99	25.57	55.58	74.00	-18.42	Pk
V	12060.00	43.39	31.02	8.99	25.57	46.93	54.00	-7.07	AV
H	4824.00	54.38	30.55	5.77	24.66	54.26	74.00	-19.74	Pk
H	4824.00	43.59	30.55	5.77	24.66	43.47	54.00	-10.53	AV
H	7236.00	52.23	30.33	6.32	24.55	52.77	74.00	-21.23	Pk
H	7236.00	43.96	30.33	6.32	24.55	44.50	54.00	-9.50	AV
H	9648.00	50.08	30.85	7.45	24.69	51.37	74.00	-22.63	Pk
H	9648.00	43.34	30.85	7.45	24.69	44.63	54.00	-9.37	AV
H	12060.00	54.66	31.02	8.99	25.57	58.20	74.00	-15.80	Pk
H	12060.00	43.95	31.02	8.99	25.57	47.49	54.00	-6.51	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: 802.11b_2437MHz									
V	4874.00	52.93	30.55	5.77	24.66	52.81	74.00	-21.19	Pk
V	4874.00	43.73	30.55	5.77	24.66	43.61	54.00	-10.39	AV
V	7311.00	54.72	30.33	6.32	24.55	55.26	74.00	-18.74	Pk
V	7311.00	43.87	30.33	6.32	24.55	44.41	54.00	-9.59	AV
V	9748.00	53.50	30.85	7.45	24.69	54.79	74.00	-19.21	Pk
V	9748.00	43.91	30.85	7.45	24.69	45.20	54.00	-8.80	AV
V	12185.00	52.26	31.02	8.99	25.57	55.80	74.00	-18.20	Pk
V	12185.00	43.26	31.02	8.99	25.57	46.80	54.00	-7.20	AV
H	4874.00	50.36	30.55	5.77	24.66	50.24	74.00	-23.76	Pk

H	4874.00	43.48	30.55	5.77	24.66	43.36	54.00	-10.64	AV
H	7311.00	51.91	30.33	6.32	24.55	52.45	74.00	-21.55	Pk
H	7311.00	43.22	30.33	6.32	24.55	43.76	54.00	-10.24	AV
H	9748.00	50.98	30.85	7.45	24.69	52.27	74.00	-21.73	Pk
H	9748.00	43.01	30.85	7.45	24.69	44.30	54.00	-9.70	AV
H	12185.00	53.98	31.02	8.99	25.57	57.52	74.00	-16.48	Pk
H	12185.00	43.73	31.02	8.99	25.57	47.27	54.00	-6.73	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: 802.11b_2462MHz									
V	4924.00	52.06	30.55	5.77	24.66	51.94	74.00	-22.06	Pk
V	4924.00	43.76	30.55	5.77	24.66	43.64	54.00	-10.36	AV
V	7386.00	51.14	30.33	6.32	24.55	51.68	74.00	-22.32	Pk
V	7386.00	43.11	30.33	6.32	24.55	43.65	54.00	-10.35	AV
V	9848.00	51.07	30.85	7.45	24.69	52.36	74.00	-21.64	Pk
V	9848.00	43.37	30.85	7.45	24.69	44.66	54.00	-9.34	AV
V	12310.00	53.91	31.02	8.99	25.57	57.45	74.00	-16.55	Pk
V	12310.00	43.69	31.02	8.99	25.57	47.23	54.00	-6.77	AV
H	4924.00	52.58	30.55	5.77	24.66	52.46	74.00	-21.54	Pk
H	4924.00	43.28	30.55	5.77	24.66	43.16	54.00	-10.84	AV
H	7386.00	51.60	30.33	6.32	24.55	52.14	74.00	-21.86	Pk
H	7386.00	43.72	30.33	6.32	24.55	44.26	54.00	-9.74	AV
H	9848.00	52.77	30.85	7.45	24.69	54.06	74.00	-19.94	Pk
H	9848.00	43.38	30.85	7.45	24.69	44.67	54.00	-9.33	AV
H	12310.00	51.59	31.02	8.99	25.57	55.13	74.00	-18.87	Pk
H	12310.00	43.69	31.02	8.99	25.57	47.23	54.00	-6.77	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. All of the 802.11b, 802.11g and 802.11n modes have been tested, the EUT complied with the FCC Part 15.247 standard limit for a wireless device. Only the worst Data 802.11b Record in the report.

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)	Detector Type	Result
802.11b	Low Channel 802.11b_2412MHz									
	H	2310.00	54.51	30.22	4.85	23.98	53.12	74.00	Pk	PASS
	H	2310.00	44.23	30.22	4.85	23.98	42.84	54.00	AV	PASS
	H	2390.00	53.98	30.22	4.85	23.98	52.59	74.00	Pk	PASS
	H	2390.00	44.25	30.22	4.85	23.98	42.86	54.00	AV	PASS
	V	2310.00	54.71	30.22	4.85	23.98	53.32	74.00	Pk	PASS
	V	2310.00	44.24	30.22	4.85	23.98	42.85	54.00	AV	PASS
	V	2390.00	53.82	30.22	4.85	23.98	52.43	74.00	Pk	PASS
	V	2390.00	44.19	30.22	4.85	23.98	42.80	54.00	AV	PASS
	High Channel 802.11b_2462MHz									
	H	2483.50	53.51	30.22	4.85	23.98	52.12	74.00	Pk	PASS
	H	2483.50	44.93	30.22	4.85	23.98	43.54	54.00	AV	PASS
	H	2500.00	54.22	30.22	4.85	23.98	52.83	74.00	Pk	PASS
	H	2500.00	44.34	30.22	4.85	23.98	42.95	54.00	AV	PASS
	V	2483.50	54.35	30.22	4.85	23.98	52.96	74.00	Pk	PASS
	V	2483.50	44.19	30.22	4.85	23.98	42.80	54.00	AV	PASS
	V	2500.00	54.19	30.22	4.85	23.98	52.80	74.00	Pk	PASS
	V	2500.00	44.84	30.22	4.85	23.98	43.45	54.00	AV	PASS

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. All of the 802.11b, 802.11g and 802.11n modes have been tested, the EUT complied with the FCC Part 15.247 standard limit for a wireless device. Only the worst Data 802.11b Record in the report.

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 v05r02; ANSI C63.10:2020
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 connect to the spectrum analyzer via a low loss RF cable.
2) Set instrument center frequency to DTS channel center frequency.
3) Set the span to 1.5 times the DTS bandwidth.
4) Set the RBW = 100 kHz.
5) Set the VBW [3 × RBW].
6) Detector = peak.
7) Sweep time = auto couple.
8) Trace mode = max hold.
9) Allow trace to fully stabilize.
10) Use the peak marker function to determine the maximum PSD level.

Emission level measurement:
1) Set the center frequency and span to encompass frequency range to be measured.
2) Set the RBW = 100 kHz.
3) Set the VBW [3 × RBW].
4) Detector = peak.
5) Sweep time = auto couple.
6) Trace mode = max hold.
7) Allow trace to fully stabilize.
8) Use the peak marker function to determine the maximum amplitude level.

4.4.Test Result

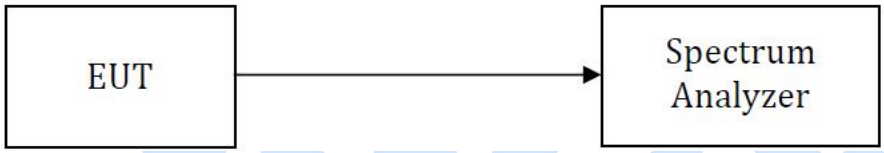
Please see the attachment for data.

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 v05r02;
ANSI C63.10:2020
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)).

5.2.Test setup



5.3.Test Procedure

1) Remove the antenna from the EUT and connect to the spectrum analyzer via a low loss RF cable.
2) Set instrument center frequency to DTS channel center frequency.
3) Set the span to 1.5 times the DTS bandwidth.
4) Set the RBW = 100 kHz.
5) Set the VBW [3 × RBW].
6) Detector = peak.
7) Sweep time = auto couple.
8) Trace mode = max hold.
9) Allow trace to fully stabilize.
10) Use the peak marker function to determine the maximum PSD level.

Emission level measurement:
1) Set the center frequency and span to encompass frequency range to be measured.
2) Set the RBW = 100 kHz.
3) Set the VBW [3 × RBW].
4) Detector = peak.
5) Sweep time = auto couple.
6) Trace mode = max hold.
7) Allow trace to fully stabilize.
8) Use the peak marker function to determine the maximum amplitude level.

5.4.Test Result

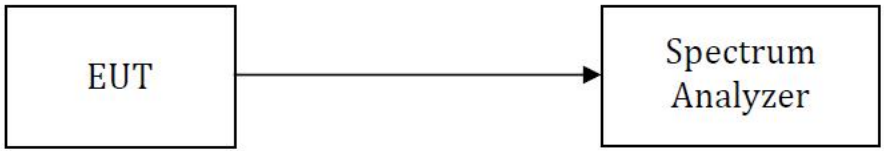
Please see the attachment for data.

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 v05r02; ANSI C63.10:2020

6.2.Test Setup



6.3.Test Procedure

DTS Bandwidth
a)Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
b) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
c) Set the VBW ≥ [3 × RBW].
d) Detector = peak.
e) Trace mode = max-hold.
f) Sweep = No faster than coupled (auto) time.
g) Allow the trace to stabilize.
Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "−6 dB down amplitude". If a marker is below this "−6 dB down amplitude" value, then it shall be as close as possible to this value.

99% Bandwidth
a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the RBW, unless otherwise specified by the applicable requirement
c) Detector = peak.
d) Trace mode = max-hold.
e) Sweep = No faster than coupled (auto) time.
f) Allow the trace to stabilize.
Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

6.4.Test Result

Please see the attachment for data.

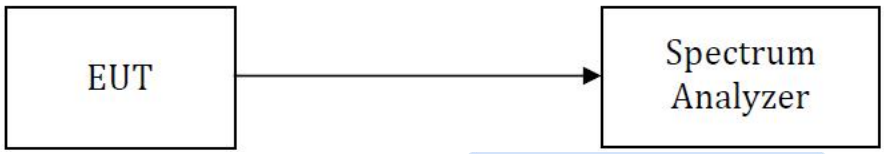
7. Maximum Output Power& E.I.R.P

7.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02;
ANSI C63.10:2020

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

7.2.Test Setup



7.3.Test Procedure

KDB 558074 D01 15.247 Meas Guidance v05r02;
section 8.3.1.1 (For BLE)
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 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.
section 8.3.1.2 (For WIFI)
This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.
a)Set the RBW = 1% to 5% of the OBW, not to exceed 1 MHz..
b)Set the VBW ≥ 3 x RBW
c)Set the span ≥ 1.5 x OBW.
d)Detector = RMS.
e)Sweep time = auto couple.
f) trigger = free run..
g) 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.)
h) Trace average at least 100 traces in power averaging (rms) mode.
i) 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, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

7.4.Test Result

Mode	Frequency (MHz)	Conducted Power (dBm)	Duty Cycle Factor (dB)	Total Power (dBm)	Limit (dBm)	E.I.R.P value	Test Result
b	2412	14.49	0	14.49	30	17.91	PASS
b	2437	13.96	0	13.96	30	17.38	PASS
b	2462	12.62	0	12.62	30	16.04	PASS
g	2412	12.31	0	12.31	30	15.73	PASS
g	2437	12.11	0	12.11	30	15.53	PASS
g	2462	10.93	0	10.93	30	14.35	PASS
n20	2412	12.28	0	12.28	30	15.70	PASS
n20	2437	11.97	0	11.97	30	15.39	PASS
n20	2462	10.80	0	10.80	30	14.22	PASS
n40	2422	11.43	0	11.43	30	14.85	PASS
n40	2437	11.51	0	11.51	30	14.93	PASS
n40	2452	10.81	0	10.81	30	14.23	PASS

Note: EIRP= Total Output Power+ ANT Gain, ANT Gain =3.42dBi.

Test plot Please see the attachment for data.

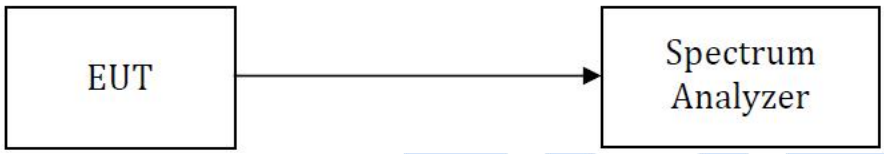
8. Power Spectral density

8.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02; ANSI C63.10:2020

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

8.2.Test Setup



8.3.Test Procedure

KDB 558074 D01 15.247 Meas Guidance v05r02;
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set instrument center frequency to DTS channel center frequency
3. Set span to > 1.5 times the OBW.
4. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz
5. Set VBW ≥ [3 x RBW]
6. Detector = power averaging (rms) or sample detector (when rms not available).
7. Ensure that the number of measurement points in the sweep ≥ [2 x span /RBW].
8. Sweep time = auto couple.
9. Employ trace averaging (rms) mode over a minimum of 100 traces.
10. Use the peak marker function to determine the maximum amplitude level.
11. If the measured value exceeds requirement, 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 meetthe minimum measurement point requirement as the RBW is reduced).
12. 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 PCB antenna fulfill the requirement of this section.

10. Test Photographs

Please see Attachment BKC25125819ME-3.

11. Appendix I: Photos of the EUT

Please see Attachment BKC25125819ME-4 and BKC25125819ME-5.