



TEST REPORT

Applicant : Shenzhen Haidege Technology Co., Ltd
Address : 13A13, No. 51, Pingxin North Rd., Shangmugu Comm., Pinghu St.,
Longgang Dist., Shenzhen, CHINA
Manufacturer : Shenzhen Haidege Technology Co., Ltd
Address : 13A13, No. 51, Pingxin North Rd., Shangmugu Comm., Pinghu St.,
Longgang Dist., Shenzhen, CHINA
Factory : Shenzhen Haidege Technology Co., Ltd
Address : 13A13, No. 51, Pingxin North Rd., Shangmugu Comm., Pinghu St.,
Longgang Dist., Shenzhen, CHINA
Product Name : Automatic Pet Feeder
Model Number : APF03, APF04, APF05
Trademark : /
FCC ID : 2BWGR-APF030405
Test Date : May. 08, 2026 – Aug. 18, 2026
Date of Report : Aug. 18, 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 + Cor. 1-2023+C63.10a-2024 + Errata to
C63.10a-2024

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Revision History of This Test Report

[illegible]

1. General Information

1.1. Description of Device (EUT)

EUT Name : Automatic Pet Feeder

Model No. : APF03, APF04, APF05

Model Difference : All the models are the same, except the model name, appearance and accessories. The main test model is APF04

Power supply : Input: 5.0V $\pm$ 1.0A

POWER ADAPTER Information : Model: M4-050100U
Input: 100-240V~ 50/60Hz 0.3A
Output 5.0V $\pm$ 1.0A
Manufacturer: Shenzhen Wanyou Electronic Co., Ltd.

Operation frequency : 2.412-2.462GHz

Max. RF output power: : 20.68 dBm

Modulation : 802.11b: Direct Sequence Spread Spectrum(DSSS)
802.11g/802.11n(H20)/802.11n(H40):
Orthogonal Frequency Division Multiplexing(OFDM)

Antenna Type : Internal antenna, Maximum Gain is 1.95dBi

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.	Serial Number
POWER ADAPTER	Wanyou	M4-050100U	/
/	/	/	/

1.5.Test mode

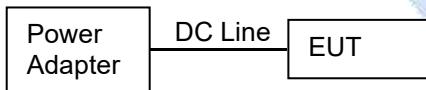
The special RF test software was used to control EUT work in Continuous WIFI TX mode, and select test channel, wireless mode.

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

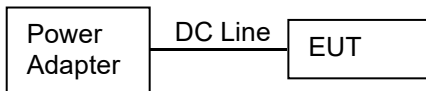
Note: /

1.6.Block Diagram

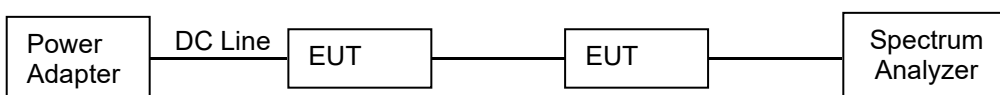
Conducted Emission



Radiated Emission



RF Conducted Test



1.7. Test Conditions

Category	Normal Conditions	Extreme Conditions
Temperature range	15-35°C	N/A
Humidity range	20-75%	N/A
Pressure range	86-106kPa	N/A
Power supply	120Vac for adapter	N/A
Note: N/A is an abbreviation for Not Applicable.		

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

Item	MU	Remark
Uncertainty for radio frequency	$\pm 7 \times 10^{-8}$	
Conducted Emissions (150kHz~30MHz)	$\pm 2.54\text{dB}$	
Radiated Emission(9KHz~30MHz)	$\pm 1.6\text{ dB}$	
Radiated Emission(30MHz~1GHz)	Vertical: $\pm 4.14\text{dB}$ Horizontal: $\pm 4.25\text{dB}$	
Radiated Emission(1GHz~6GHz)	$\pm 3.9\text{dB}$	
Radiated Emission(6GHz~18GHz)	$\pm 4.3\text{dB}$	
Radiated Emission(18GHz~40GHz)	$\pm 3.38\text{dB}$	
Uncertainty for conducted RF Power	$\pm 0.20\text{dB}$	
Conducted spurious emissions	$\pm 0.24\text{dB}$	
Uncertainty for temperature	0.6°C	
Uncertainty for humidity	1%	
Bandwidth	$\pm 1.5 \times 10^{-6}$	
Time	$\pm 2\%$	
Duty Cycle	$\pm 2\%$	

Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%

1.9. 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

1.10. 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. 11. 2026	Mar. 10. 2027
2	EMI Test Receiver	R&S	ESCI	101424	Mar. 11. 2026	Mar. 10. 2027
3	Rf cables	HTEC	HCE 2M-CE	N/A	Mar. 11. 2026	Mar. 10. 2027
4	Coupling/ Decoupling Network	Diamond	CX210	N/A	Mar. 11. 2026	Mar. 10. 2027
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. 11. 2026	Mar. 10. 2027
3	Preamplifier	HP	8447D	2727A05345	Mar. 11. 2026	Mar. 10. 2027
4	Double Ridged Broadband	SCHWARZBECK	BBHA 9120D	02621	Mar. 10. 2025	Mar. 19. 2028
5	Preamplifier	Schwarzbeck	BBV 9718D	00041	Mar. 11. 2026	Mar. 10. 2027
6	Rf cables	HUBER+SUHNER	8M-RE	N/A	Mar. 11. 2026	Mar. 10. 2027
7	Rf cables	HUBER+SUHNER	1.5M-RE	N/A	Mar. 11. 2026	Mar. 10. 2027
8	Rf cables	HUBER+SUHNER	1.5M-AP-RE	N/A	Mar. 09. 2026	Mar. 10. 2027
9	Spectrum	Agilent	N9020A	MY50510311	Mar. 11. 2026	Mar. 10. 2027
10	Spectrum analyzer	R&S	FSP40	200061	Mar. 11. 2026	Mar. 10. 2027
11	Double Ridged Broadband Horn Antenna	COM-POWER	AH-1840	10100009	Mar. 11. 2026	Mar. 10. 2027
12	RE Testing software	EZ	EZ-EMC	/	/	/

RF Test Site

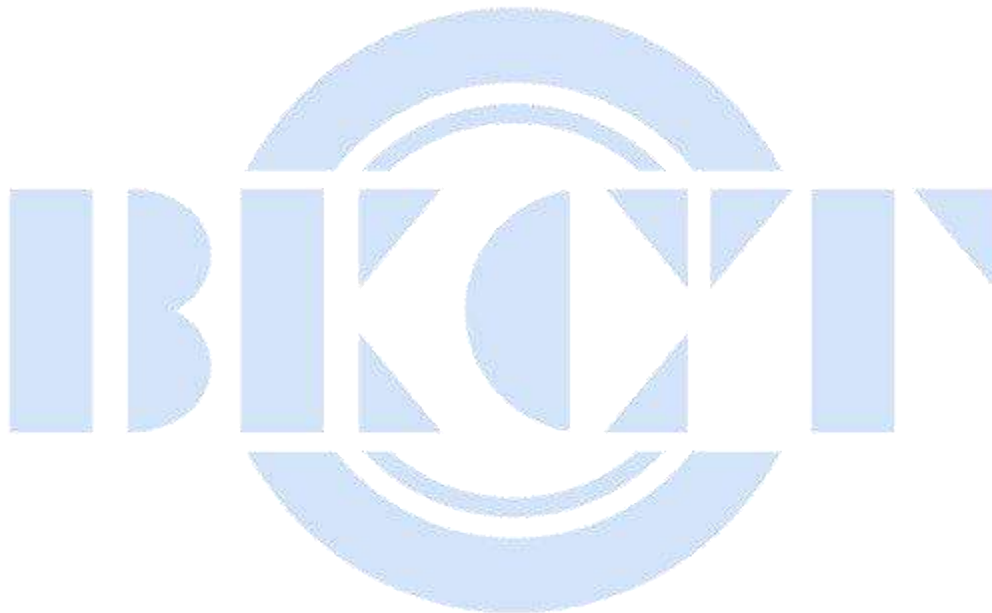
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum	Agilent	N9020A	MY50510311	Mar. 11. 2026	Mar. 10. 2027
2	Vector source	Agilent	N5182A	MY47420223	Mar. 11. 2026	Mar. 10. 2027
3	All instrument	Rohde & Schwarz	CMW 500	101131	Mar. 11. 2026	Mar. 10. 2027
4	control unit	MW	MW100-RFCB	MW200411BK-34	Mar. 11. 2026	Mar. 10. 2027
5	Spectrum analyzer	R&S	FSP40	200061	Mar. 11. 2026	Mar. 10. 2027
6	RF Testing software	MW	MTS 8310	/	/	/

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

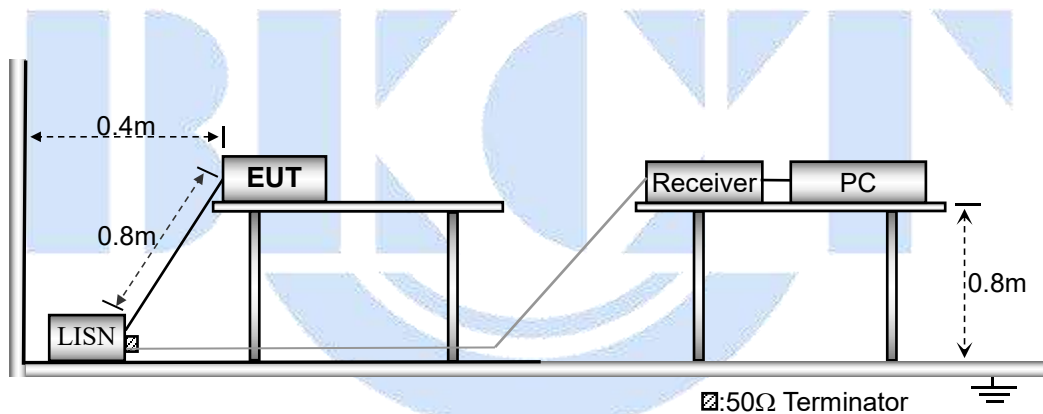
Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

Frequency MHz	Limits dB(μ V)	
	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



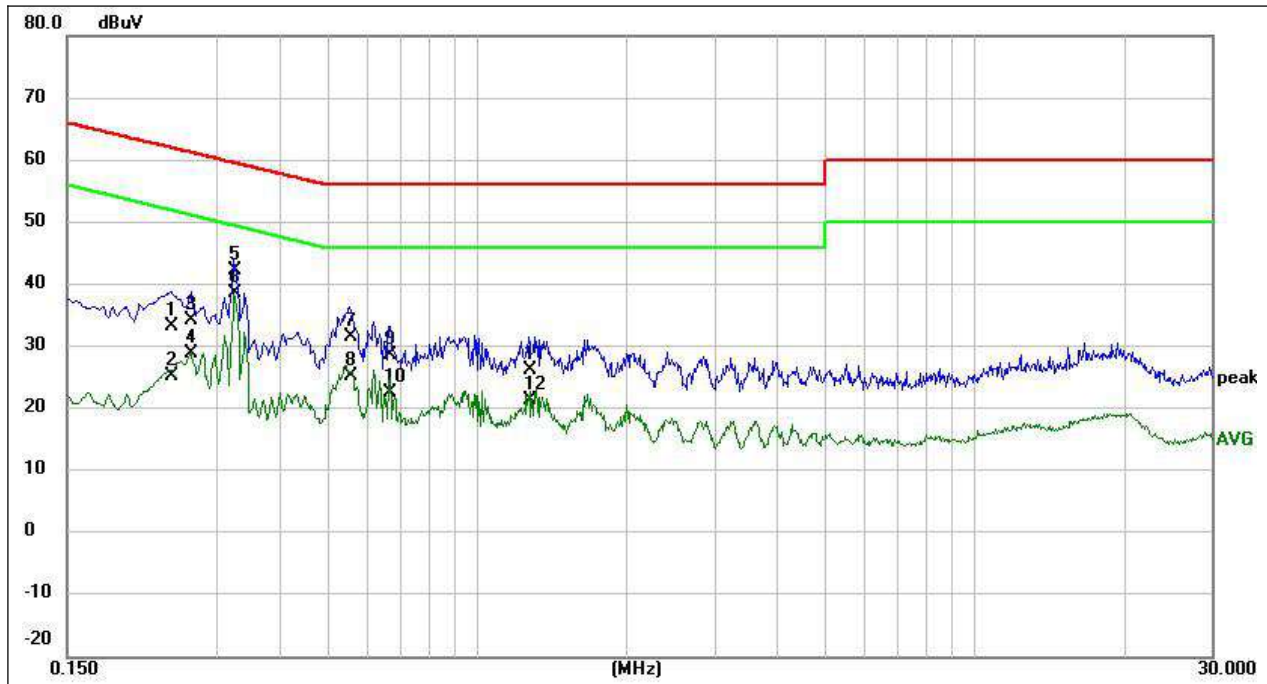
2.3.Test Procedure

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

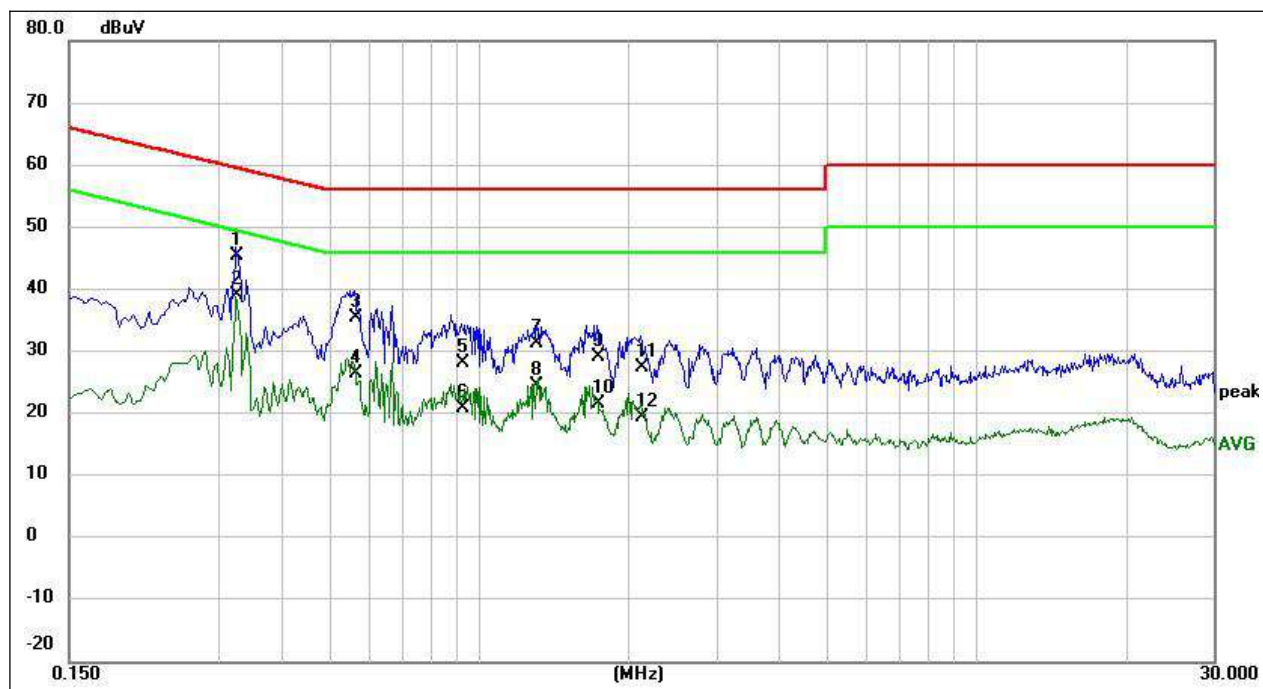
Note: Only the worst Data 802.11b/2412MHz Record in the report.

Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.1 °C	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Line
Test Voltage :	AC 120V/60Hz for adapter	Test Mode:	TM1-2412MHz
Model No. :	APF03		



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2420	11.33	21.84	33.17	62.03	-28.86	QP
2	0.2420	3.38	21.84	25.22	52.03	-26.81	AVG
3	0.2660	12.36	21.86	34.22	61.24	-27.02	QP
4	0.2660	6.99	21.86	28.85	51.24	-22.39	AVG
5	0.3260	20.46	21.88	42.34	59.55	-17.21	QP
6	0.3260	16.65	21.88	38.53	49.55	-11.02	AVG
7	0.5580	9.73	21.89	31.62	56.00	-24.38	QP
8	0.5580	3.44	21.89	25.33	46.00	-20.67	AVG
9	0.6660	6.82	21.89	28.71	56.00	-27.29	QP
10	0.6660	0.81	21.89	22.70	46.00	-23.30	AVG
11	1.2740	4.71	21.61	26.32	56.00	-29.68	QP
12	1.2740	-0.14	21.61	21.47	46.00	-24.53	AVG

Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Neutral
Test Voltage :	AC 120V/60Hz for adapter	Test Mode:	TM1-2412MHz
Model No. :	APF03		



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3260	23.64	21.88	45.52	59.55	-14.03	QP
2	0.3260	17.16	21.88	39.04	49.55	-10.51	AVG
3	0.5620	13.66	21.89	35.55	56.00	-20.45	QP
4	0.5620	4.50	21.89	26.39	46.00	-19.61	AVG
5	0.9260	6.36	21.88	28.24	56.00	-27.76	QP
6	0.9260	-0.91	21.88	20.97	46.00	-25.03	AVG
7	1.3060	9.78	21.57	31.35	56.00	-24.65	QP
8	1.3060	2.96	21.57	24.53	46.00	-21.47	AVG
9	1.7260	8.09	21.15	29.24	56.00	-26.76	QP
10	1.7260	0.54	21.15	21.69	46.00	-24.31	AVG
11	2.1180	6.76	20.76	27.52	56.00	-28.48	QP
12	2.1180	-1.24	20.76	19.52	46.00	-26.48	AVG

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 v05r02;
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

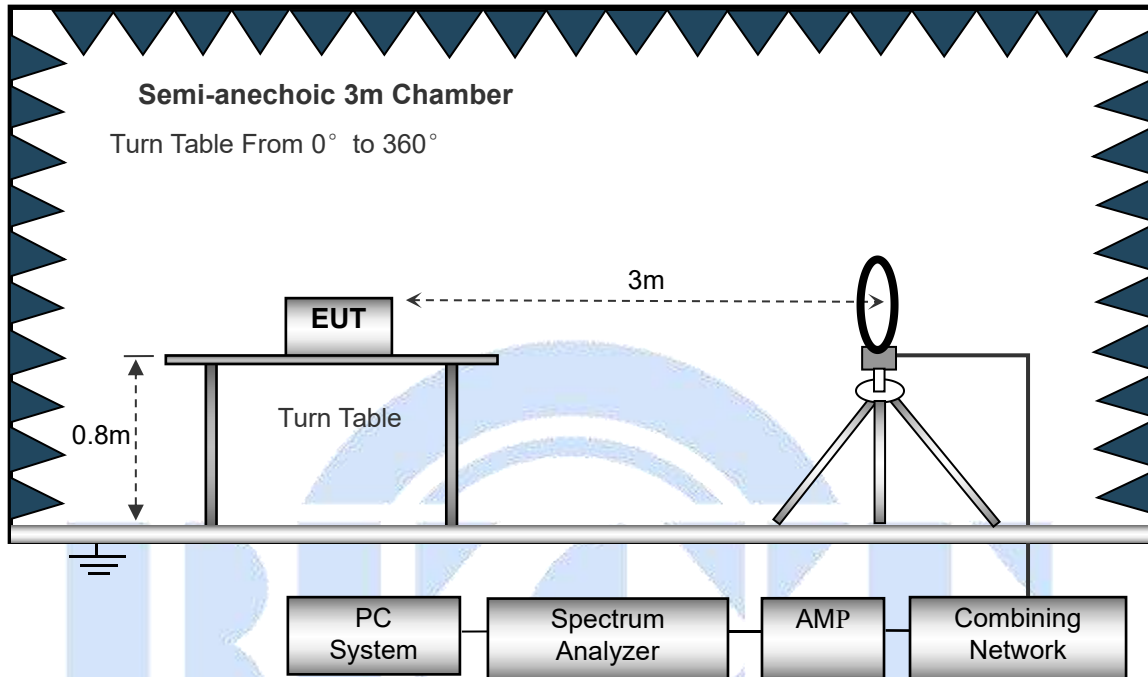
Limit:

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

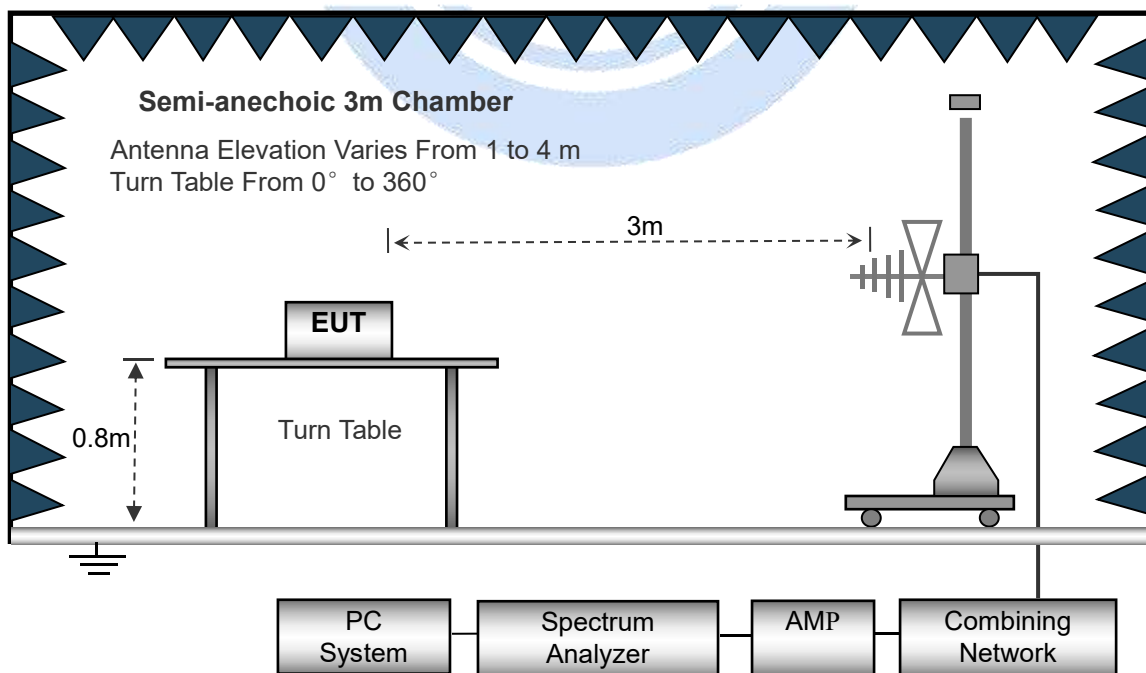
3.2. Test Setup

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

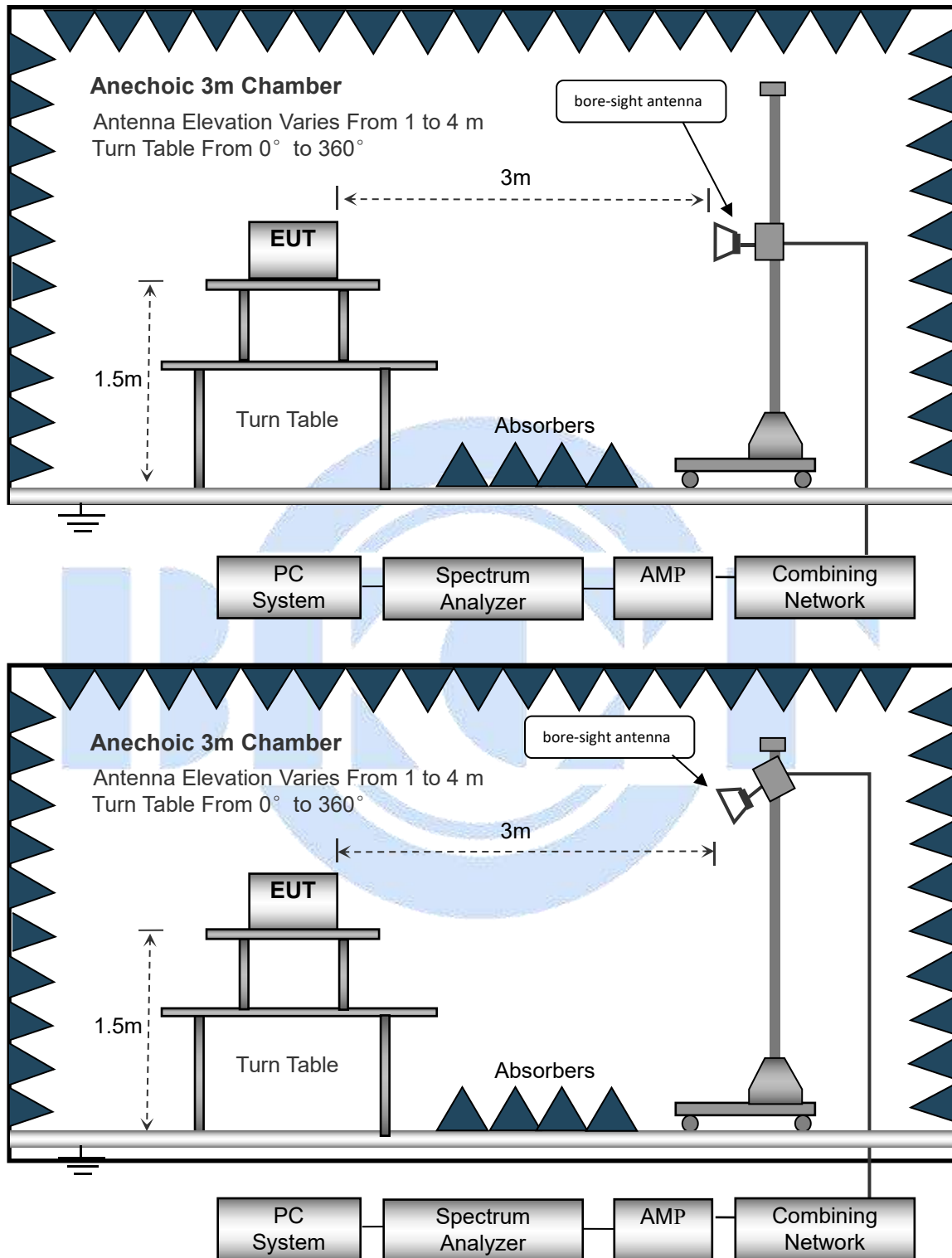
The test setup for emission measurement below 30MHz.



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 during radiated emissions above 1GHz measurement.
9. Remark: $\text{Level} = \text{Reading} + \text{Factor}$, $\text{Margin} = \text{Level} - \text{Limit}$



3.4. Test Result

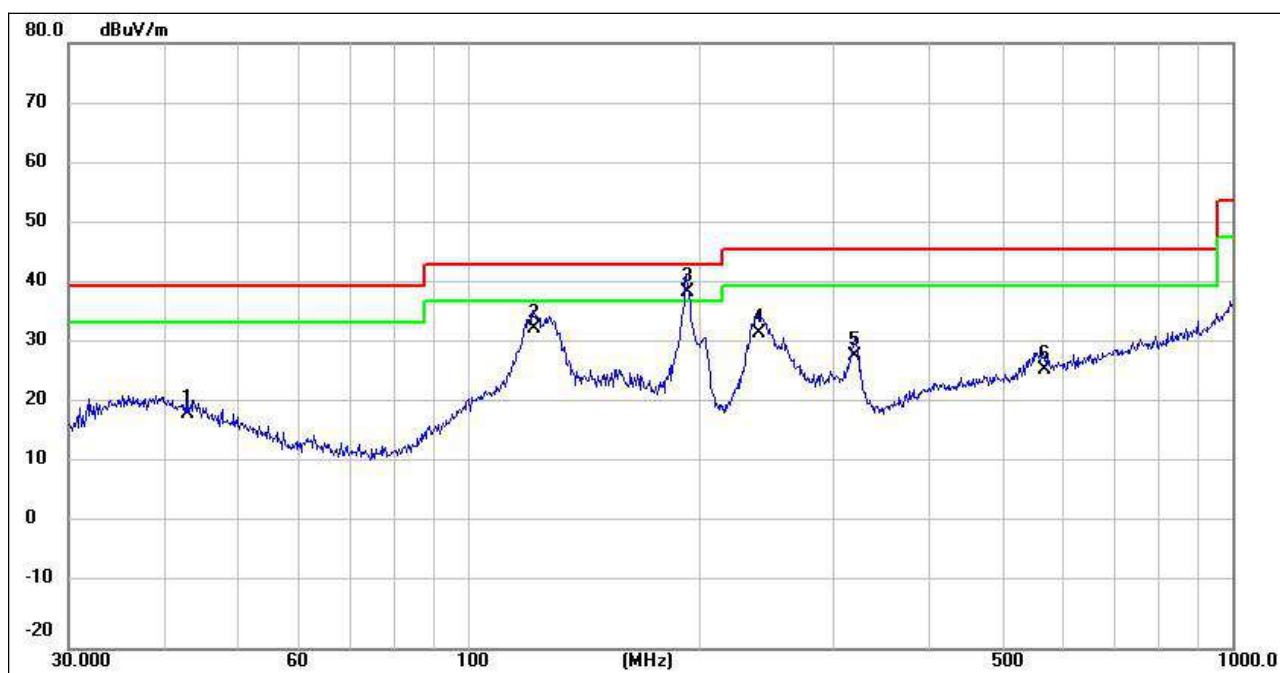
Test Frequency: 9KHz~30MHz

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

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

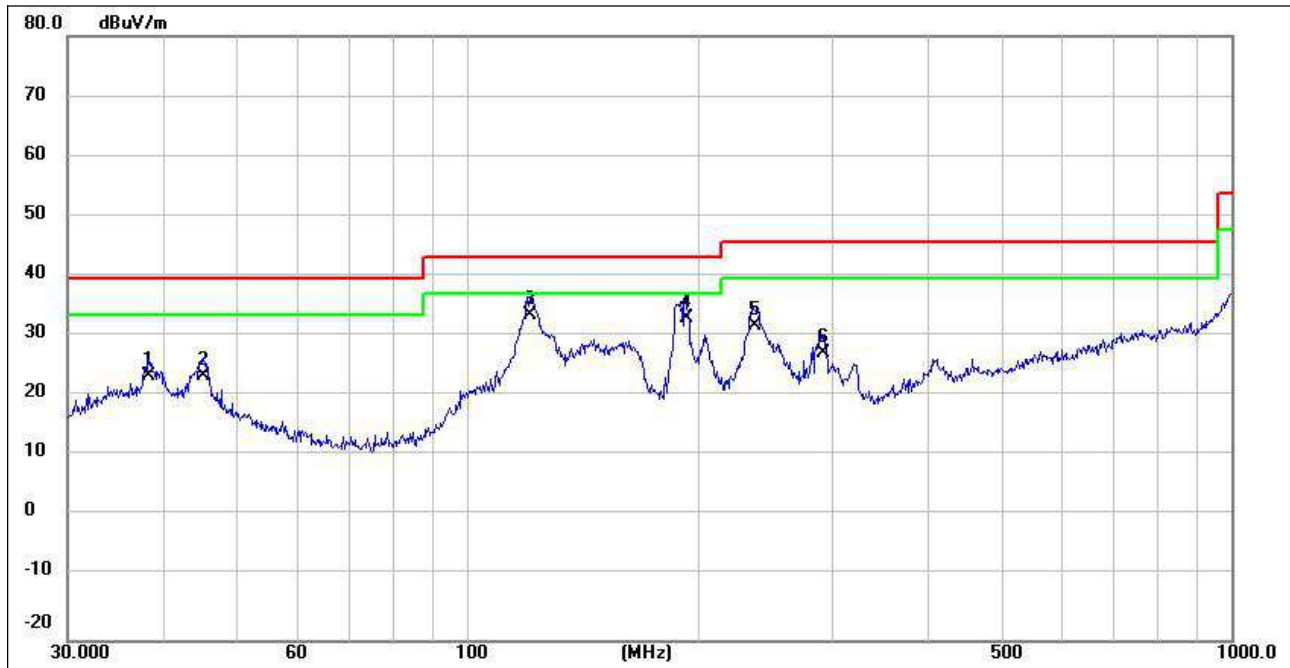
Test Frequency : 30MHz ~ 1GHz

Radiation Emission Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz for adapter	Test Mode	TM1-2412MHz
Model No. :	APF03		



No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark			
1	42.8998	22.08	-3.16	18.92	40.00	-21.08	QP			
2	121.5486	36.03	-3.19	32.84	43.50	-10.66	QP			
3	193.0945	45.92	-7.06	38.86	43.50	-4.64	QP			
4	239.1473	37.16	-4.98	32.18	46.00	-13.82	QP			
5	321.0608	30.47	-2.15	28.32	46.00	-17.68	QP			
6	566.6223	23.15	2.89	26.04	46.00	-19.96	QP			

Radiation Emission Test Data			
Temperature:	25.1°C	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Vertical
Test Voltage :	AC 120V/60Hz for adapter	Test Mode	TM1-2412MHz
Model No. :	APF03		



No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark			
1	38.3462	25.87	-2.05	23.82	40.00	-16.18	QP			
2	45.2166	28.00	-4.06	23.94	40.00	-16.06	QP			
3	120.6991	37.08	-3.18	33.90	43.50	-9.60	QP			
4	193.0945	40.54	-7.06	33.48	43.50	-10.02	QP			
5	237.4760	37.50	-5.46	32.04	46.00	-13.96	QP			
6	292.0583	28.75	-1.06	27.69	46.00	-18.31	QP			

Test Frequency 1GHz-25GHz:

All modes 2.4G 802.11b/g/n have been tested, and the worst result 802.11b recorded was report as below:

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-ampl ifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dBuV /m)	Detect or Type
Low Channel:2412MHz									
V	4824.00	54.63	33.53	5.83	25.60	52.53	74.00	-21.47	Pk
V	4824.00	43.71	33.53	5.83	25.60	41.61	54.00	-12.39	AV
V	7236.00	54.42	32.31	6.35	26.10	54.56	74.00	-19.44	Pk
V	7236.00	43.81	32.31	6.35	26.10	43.95	54.00	-10.05	AV
V	9648.00	54.89	31.84	7.48	27.90	58.43	74.00	-15.57	Pk
V	9648.00	43.06	31.84	7.48	27.90	46.60	54.00	-7.40	AV
V	12060.00	51.02	31.01	9.03	29.10	58.14	74.00	-15.86	Pk
V	12060.00	43.75	31.01	9.03	29.10	50.87	54.00	-3.13	AV
H	4824.00	53.11	33.53	5.83	25.60	51.01	74.00	-22.99	Pk
H	4824.00	43.09	33.53	5.83	25.60	40.99	54.00	-13.01	AV
H	7236.00	52.27	32.31	6.35	26.10	52.41	74.00	-21.59	Pk
H	7236.00	43.75	32.31	6.35	26.10	43.89	54.00	-10.11	AV
H	9648.00	53.46	31.84	7.48	27.90	57.00	74.00	-17.00	Pk
H	9648.00	43.94	31.84	7.48	27.90	47.48	54.00	-6.52	AV
H	12060.00	54.89	31.01	9.03	29.10	62.01	74.00	-11.99	Pk
H	12060.00	43.19	31.01	9.03	29.10	50.31	54.00	-3.69	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-ampl ifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dBuV /m)	Detect or Type
Middle Channel:2437MHz									
V	4874.00	52.83	33.51	5.85	25.64	50.81	74.00	-23.19	Pk
V	4874.00	43.07	33.51	5.85	25.64	41.05	54.00	-12.95	AV
V	7311.00	53.52	32.29	6.38	26.13	53.74	74.00	-20.26	Pk
V	7311.00	43.18	32.29	6.38	26.13	43.40	54.00	-10.60	AV
V	9748.00	52.95	31.81	7.51	27.92	56.57	74.00	-17.43	Pk
V	9748.00	43.37	31.81	7.51	27.92	46.99	54.00	-7.01	AV
V	12185.00	53.22	31.11	9.07	29.14	60.32	74.00	-13.68	Pk
V	12185.00	43.57	31.11	9.07	29.14	50.67	54.00	-3.33	AV
H	4874.00	50.63	33.51	5.85	25.64	48.61	74.00	-25.39	Pk
H	4874.00	43.20	33.51	5.85	25.64	41.18	54.00	-12.82	AV
H	7311.00	54.07	32.29	6.38	26.13	54.29	74.00	-19.71	Pk
H	7311.00	43.71	32.29	6.38	26.13	43.93	54.00	-10.07	AV
H	9748.00	53.14	31.81	7.51	27.92	56.76	74.00	-17.24	Pk
H	9748.00	43.28	31.81	7.51	27.92	46.90	54.00	-7.10	AV
H	12185.00	50.45	31.11	9.07	29.14	57.55	74.00	-16.45	Pk
H	12185.00	43.02	31.11	9.07	29.14	50.12	54.00	-3.88	AV

Polar (H/V)	Frequency	Meter Reading	Pre-amp lifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dBuV /m)	
High Channel:2462MHz									
V	4924.00	54.23	33.52	5.89	25.67	52.27	74.00	-21.73	Pk
V	4924.00	43.24	33.52	5.89	25.67	41.28	54.00	-12.72	AV
V	7386.00	51.64	32.28	6.39	26.17	51.92	74.00	-22.08	Pk
V	7386.00	43.62	32.28	6.39	26.17	43.90	54.00	-10.10	AV
V	9848.00	53.53	31.80	7.54	27.98	57.25	74.00	-16.75	Pk
V	9848.00	43.14	31.80	7.54	27.98	46.86	54.00	-7.14	AV
V	12310.00	51.56	31.09	9.11	29.19	58.77	74.00	-15.23	Pk
V	12310.00	43.60	31.09	9.11	29.19	50.81	54.00	-3.19	AV
H	4924.00	52.13	33.52	5.89	25.67	50.17	74.00	-23.83	Pk
H	4924.00	43.20	33.52	5.89	25.67	41.24	54.00	-12.76	AV
H	7386.00	52.04	32.28	6.39	26.17	52.32	74.00	-21.68	Pk
H	7386.00	43.14	32.28	6.39	26.17	43.42	54.00	-10.58	AV
H	9848.00	52.01	31.80	7.54	27.98	55.73	74.00	-18.27	Pk
H	9848.00	43.01	31.80	7.54	27.98	46.73	54.00	-7.27	AV
H	12310.00	53.20	31.09	9.11	29.19	60.41	74.00	-13.59	Pk
H	12310.00	43.09	31.09	9.11	29.19	50.30	54.00	-3.70	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.



Radiated Band Emission Measurement:

All modes 2.4G 802.11b/g/n have been tested, and the worst result 802.11n20 recorded was report as below:

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 (dBuV/m)	Detect or Type	Result
Low Channel 2412MHz										
H	2310.00	53.28	34.57	5.73	24.51	48.95	74.00	-25.05	Pk	PASS
H	2310.00	44.84	34.57	5.73	24.51	40.51	54.00	-13.49	AV	PASS
H	2390.00	53.05	34.52	7.74	24.58	50.85	74.00	-23.15	Pk	PASS
H	2390.00	44.87	34.52	7.74	24.58	42.67	54.00	-11.33	AV	PASS
V	2310.00	53.12	34.57	5.73	24.51	48.79	74.00	-25.21	Pk	PASS
V	2310.00	44.77	34.57	5.73	24.51	40.44	54.00	-13.56	AV	PASS
V	2390.00	54.16	34.52	7.74	24.58	51.96	74.00	-22.04	Pk	PASS
V	2390.00	44.23	34.52	7.74	24.58	42.03	54.00	-11.97	AV	PASS
High Channel 2462MHz										
H	2483.50	54.34	34.22	7.85	24.98	52.95	74.00	-21.05	Pk	PASS
H	2483.50	44.13	34.22	7.85	24.98	42.74	54.00	-11.26	AV	PASS
H	2500.00	53.01	34.19	7.86	25.03	51.71	74.00	-22.29	Pk	PASS
H	2500.00	44.16	34.19	7.86	25.03	42.86	54.00	-11.14	AV	PASS
V	2483.50	53.08	30.22	7.85	24.98	55.69	74.00	-18.31	Pk	PASS
V	2483.50	44.25	30.22	7.85	24.98	46.86	54.00	-7.14	AV	PASS
V	2500.00	54.38	30.22	7.86	25.03	57.05	74.00	-16.95	Pk	PASS
V	2500.00	44.99	30.22	7.86	25.03	47.66	54.00	-6.34	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. 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 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Result: PASS

Limit:

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

4.2.Test Setup



4.3.Test Procedure

- 1) Remove the antenna from the EUT and 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

Test Model

Maximum Conducted Level RBW=100kHz
Channel 1: 2412MHz 802.11b


Test Model

Conducted Spurious RF Conducted Emission
Channel 1: 2412MHz 802.11b


Test Model

Maximum Conducted Level RBW=100kHz
Channel 6: 2437MHz
802.11b


Test Model

Conducted Spurious RF Conducted Emission
Channel 6: 2437MHz
802.11b


Test Model

Maximum Conducted Level RBW=100kHz
Channel 11: 2462MHz
802.11b


Test Model

Conducted Spurious RF Conducted Emission
Channel 11: 2462MHz
802.11b

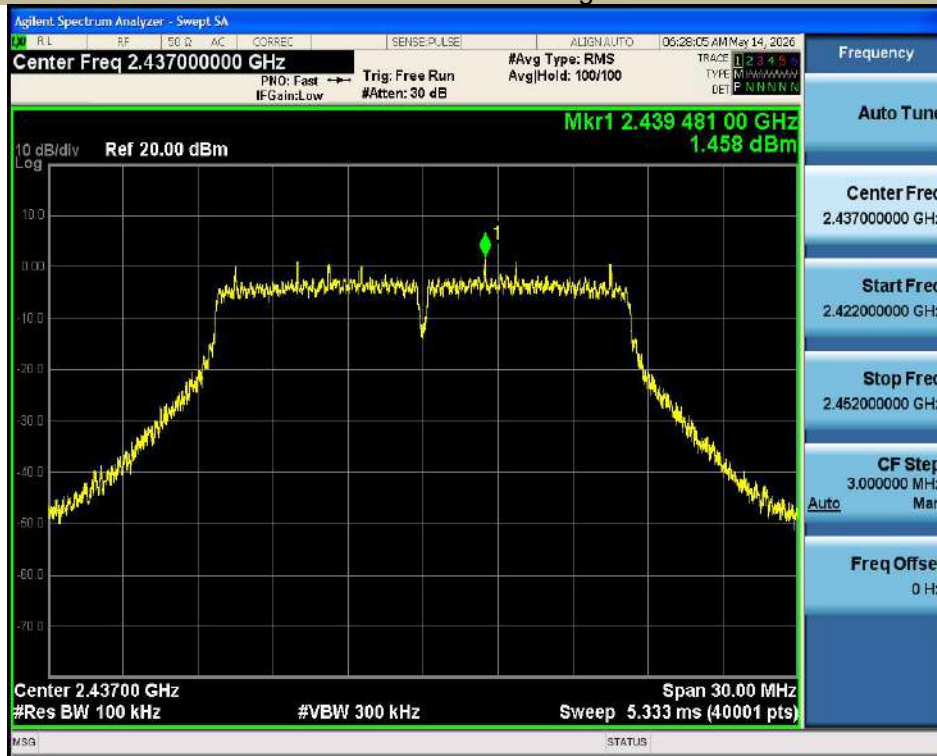

Test Model

Maximum Conducted Level RBW=100kHz
Channel 1: 2412MHz
802.11g


Test Model

Conducted Spurious RF Conducted Emission
Channel 1: 2412MHz
802.11g


Test Model

Maximum Conducted Level RBW=100kHz
Channel 6: 2437MHz
802.11g


Test Model

Conducted Spurious RF Conducted Emission
Channel 6: 2437MHz
802.11g


Test Model

Maximum Conducted Level RBW=100kHz
Channel 11: 2462MHz 802.11g


Test Model

Conducted Spurious RF Conducted Emission
Channel 11: 2462MHz 802.11g


Test Model

Maximum Conducted Level RBW=100kHz
Channel 1: 2412MHz 802.11n20


Test Model

Conducted Spurious RF Conducted Emission
Channel 1: 2412MHz 802.11n20

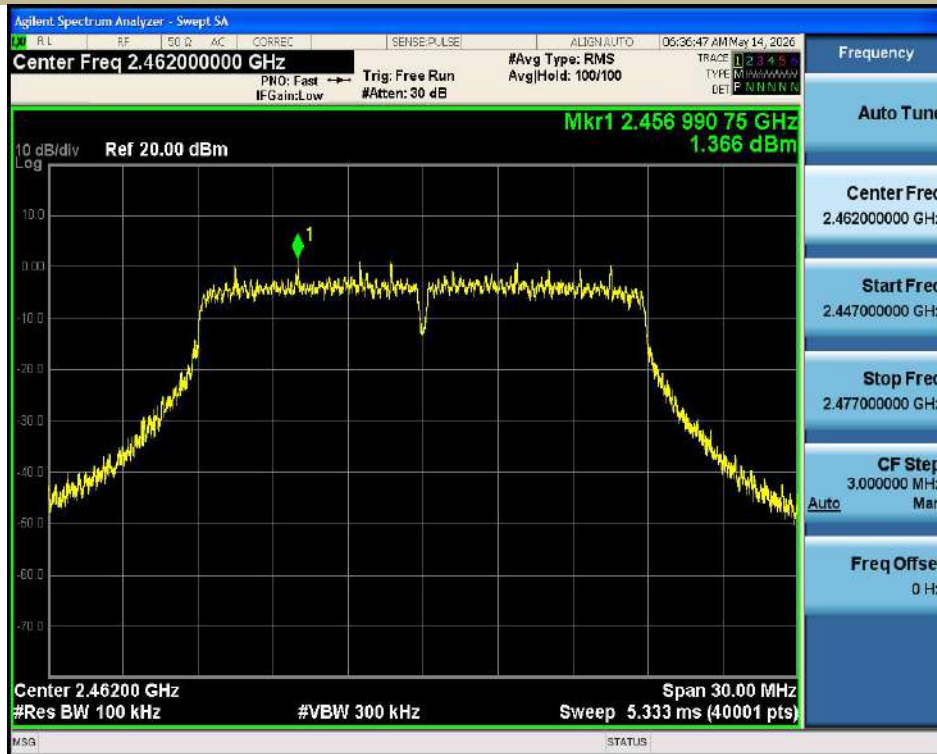

Test Model

Maximum Conducted Level RBW=100kHz
Channel 6: 2437MHz
802.11n20


Test Model

Conducted Spurious RF Conducted Emission
Channel 6: 2437MHz
802.11n20


Test Model

Maximum Conducted Level RBW=100kHz
Channel 11: 2462MHz 802.11n20


Test Model

Conducted Spurious RF Conducted Emission
Channel 11: 2462MHz 802.11n20


Test Model

Maximum Conducted Level RBW=100kHz
Channel 3: 2422MHz 802.11n40


Test Model

Conducted Spurious RF Conducted Emission
Channel 3: 2422MHz 802.11n40


Test Model

Maximum Conducted Level RBW=100kHz
Channel 6: 2437MHz
802.11n40


Test Model

Conducted Spurious RF Conducted Emission
Channel 6: 2437MHz
802.11n40


Test Model

Maximum Conducted Level RBW=100kHz
Channel 9: 2452MHz
802.11n40


Test Model

Conducted Spurious RF Conducted Emission
Channel 9: 2452MHz
802.11n40


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 + 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: TM1

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

Test Model

Band-edge Conducted Emissions
Channel 1: 2412MHz

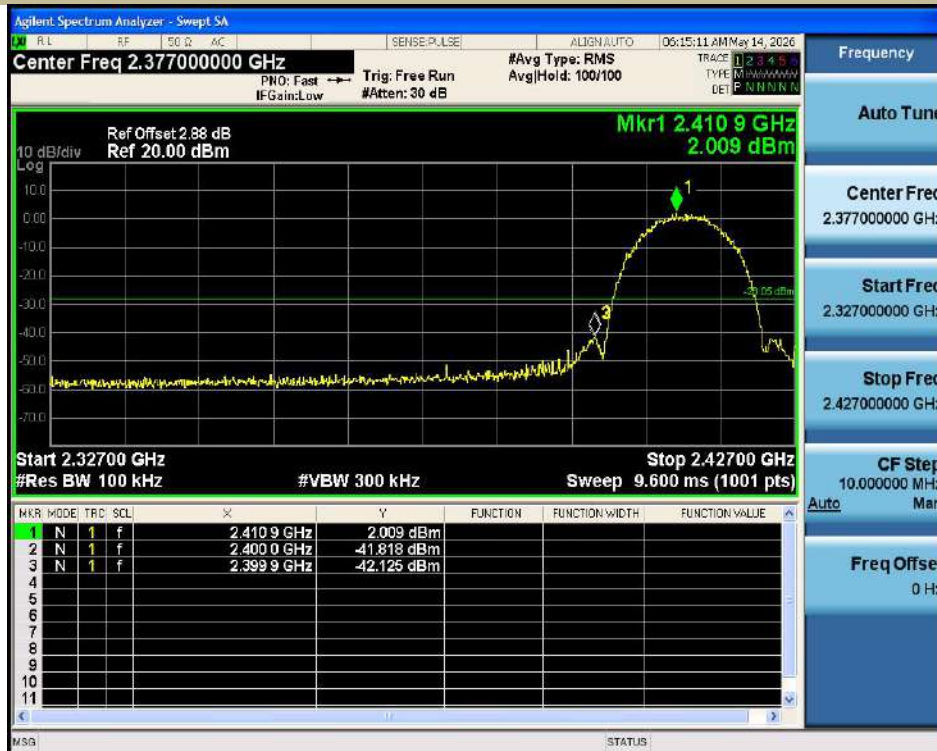
802.11b



Test Model

Band-edge Conducted Emissions
Channel 1: 2412MHz

802.11b



Test Model

Band-edge Conducted Emissions
Channel 11: 2462MHz

802.11b



Test Model

Band-edge Conducted Emissions
Channel 11: 2462MHz

802.11b



Test Model

Band-edge Conducted Emissions
Channel 1: 2412MHz

802.11g



Test Model

Band-edge Conducted Emissions
Channel 1: 2412MHz

802.11g



Test Model

Band-edge Conducted Emissions
Channel 11: 2462MHz

802.11g



Test Model

Band-edge Conducted Emissions
Channel 11: 2462MHz

802.11g



Test Model

Band-edge Conducted Emissions
Channel 1: 2412MHz

802.11n20



Test Model

Band-edge Conducted Emissions
Channel 1: 2412MHz

802.11n20



Test Model

Band-edge Conducted Emissions
Channel 11: 2462MHz

802.11n20



Test Model

Band-edge Conducted Emissions
Channel 11: 2462MHz

802.11n20



Test Model

Band-edge Conducted Emissions
Channel 3: 2422MHz

802.11n40



Test Model

Band-edge Conducted Emissions
Channel 3: 2422MHz

802.11n40



Test Model

Band-edge Conducted Emissions
Channel 6: 2452MHz

802.11n40



Test Model

Band-edge Conducted Emissions
Channel 9: 2452MHz

802.11n40



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 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

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. 6dB: Set RBW = shall be in the range of 1%% to 5% of the OBW but not less than 100 kHz.

Set the VBW $\geq [3 \times \text{RBW}]$.

Detector = peak.

Trace mode = max-hold.

Sweep = No faster than coupled (auto) time.

Allow the trace to stabilize.

99%: Set RBW = 1%~5% of 99% bandwidth, VBW $\geq [3 \times \text{RBW}]$, Sweep = Auto.

6.4.Test Result

Operation Mode	Channel Number	Channel Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit (kHz)	99% OBW (MHz)	Verdict
802.11b	1	2412	10.08	>500	14.591	PASS
	6	2437	10.07	>500	14.576	PASS
	11	2462	10.08	>500	14.58	PASS
802.11g	1	2412	16.36	>500	16.484	PASS
	6	2437	16.33	>500	16.515	PASS
	11	2462	16.35	>500	16.512	PASS
802.11n20	1	2412	17.49	>500	17.603	PASS
	6	2437	17.49	>500	17.597	PASS
	11	2462	17.50	>500	17.597	PASS
802.11n40	1	2422	35.54	>500	35.782	PASS
	6	2437	35.90	>500	35.786	PASS
	11	2452	35.52	>500	35.777	PASS



OBW b 2412MHz



OBW b 2437MHz



OBW b 2462MHz



OBW g 2412MHz



OBW g 2437MHz



OBW g 2462MHz



OBW n20 2412MHz



OBW n20 2437MHz



OBW n20 2462MHz



OBW n40 2422MHz



OBW n40 2437MHz



OBW n40 2452MHz

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

6.5.Limit

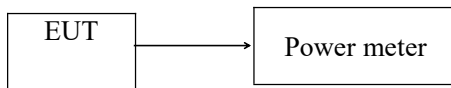
Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02;

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)	Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.6.Test Setup



6.7.Test Procedure

1. The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum output power setting and enable the EUT transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure and record the results in the report.

6.8.Test Result

Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	E.I.R.P value (dBm)	Test Result
b	2412	17.02	30	18.97	PASS
b	2437	17.99	30	19.94	PASS
b	2462	17.91	30	19.86	PASS
g	2412	20.68	30	22.63	PASS
g	2437	20.32	30	22.27	PASS
g	2462	20.5	30	22.45	PASS
n20	2412	20.54	30	22.49	PASS
n20	2437	20.33	30	22.28	PASS
n20	2462	20.32	30	22.27	PASS
n40	2422	20.5	30	22.45	PASS
n40	2437	20.45	30	22.4	PASS
n40	2452	20.54	30	22.49	PASS

Note: EIRP= Total Output Power+ ANT Gain, ANT Gain =1.95dBi.

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 v05r02; 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 (e)	Power Spectral Density	8dBm/3kHz	2400-2483.5	PASS

9.2.Test Setup



9.3.Test Procedure

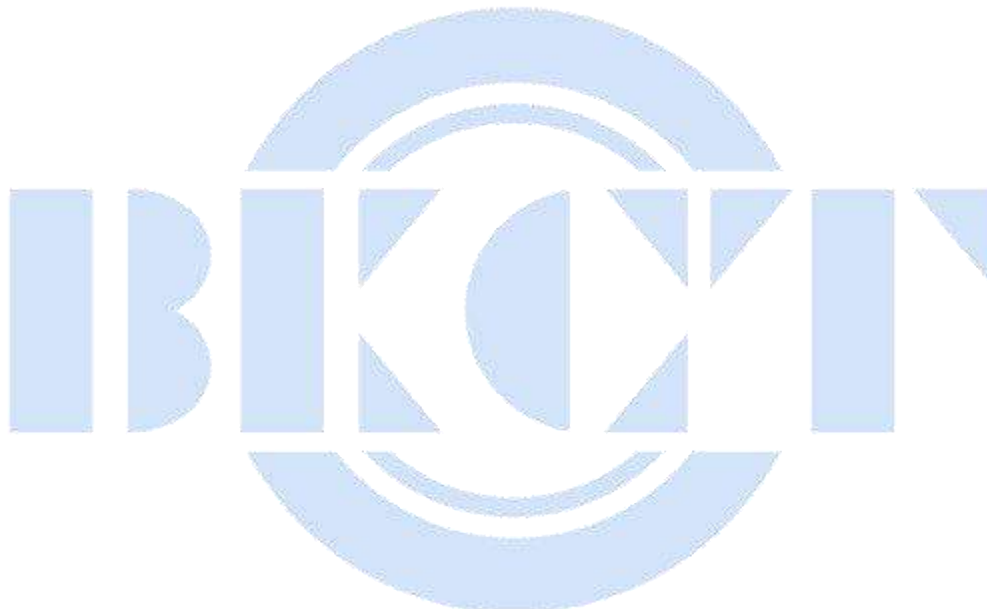
KDB 558074 D01 15.247 Meas Guidance v05r02;

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: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
5. Set VBW $\geq [3 \times \text{RBW}]$
6. Detector = power averaging (rms) or sample detector (when rms not available).
7. Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span} / \text{RBW}]$.
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 meet the 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.

9.4. Test Result

Mode	Frequency (MHz)	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
b	2412	-21.14	0.41	-20.73	8	Pass
b	2437	-20.15	0.41	-19.74	8	Pass
b	2462	-20.26	0.41	-19.85	8	Pass
g	2412	-21.64	0.27	-21.37	8	Pass
g	2437	-21.81	0.26	-21.55	8	Pass
g	2462	-21.96	0.26	-21.7	8	Pass
n20	2412	-21.71	0.28	-21.43	8	Pass
n20	2437	-22.24	0.28	-21.96	8	Pass
n20	2462	-21.69	0.28	-21.41	8	Pass
n40	2422	-25.32	0.55	-24.77	8	Pass
n40	2437	-25.38	0.55	-24.83	8	Pass
n40	2452	-25.36	0.55	-24.81	8	Pass

Note: Test level (dBm/3kHz)= measure level(dBm/30kHz)+10*log (3kHz/30kHz)





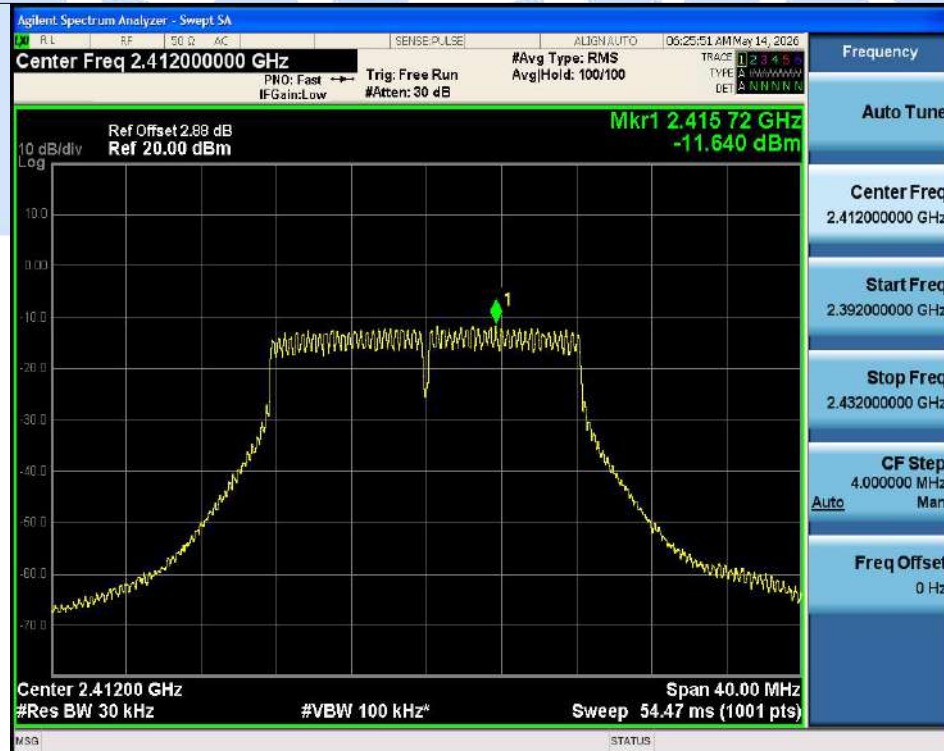
PSD b 2412MHz



PSD b 2437MHz



PSD b 2462MHz



PSD g 2412MHz



PSD g 2437MHz



PSD g 2462MHz



PSD n20 2412MHz



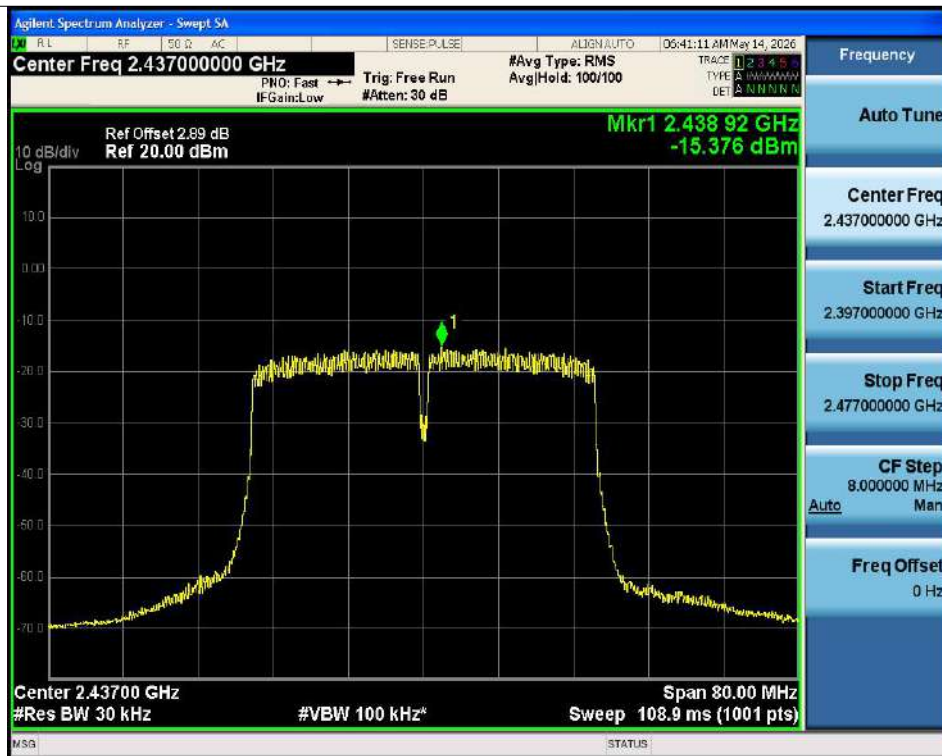
PSD n20 2437MHz



PSD n20 2462MHz



PSD n40 2422MHz



PSD n40 2437MHz



PSD n40 2452MHz

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 ceramic antenna fulfill the requirement of this section.

11. Test Photographs

Please see Attachment for test photographs.

12. Appendix I: Photos of the EUT

13. Please see Attachment for EUT photographs.

