



FCC Part 15C TEST REPORT

FCC ID: 2BSYP-S2

Prepared for : Shenzhen Jinjing Technology Co., Ltd
Address : Room 303, RongXinXing Creative Park, Xingdong Community,
XinAn Street, 71# Bao'an District, Shenzhen, China
Trade Name : Pernis
E.U.T : DASH CAM
Test Number : S2
Model(s) Number : S2, S1, S2L, S2P, S4, S5, S5P, S6, S6P, S8, S8P, M6, M7, M8,
M9, M10, M300, M800

Prepared by : Keyway Testing Technology(Guangdong) Co., Ltd.
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Report No. : 2025112686538037-00
Date of Test: : Nov. 11, 2025 ~ Dec. 06, 2025
Date of Report : Dec. 08, 2025

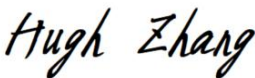
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Keyway Testing Technology (Guangdong) Co., Ltd.

Applicant:	Shenzhen Jinjing Technology Co., Ltd	
Address:	Room 303, RongXinXing Creative Park, Xingdong Community, XinAn Street, 71# Bao'an District, Shenzhen, China	
Manufacturer:	NetConn Electronics Co., Ltd	
Address:	3F-6, No.77, Sec.1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan	
E.U.T:	DASH CAM	
Test Number:	S2	
Model(s) Number:	S2, S1, S2L, S2P, S4, S5, S5P, S6, S6P, S8, S8P, M6, M7, M8, M9, M10, M300, M800	
Trade Name:	Pernis	
Date of Receipt:	Nov. 11, 2025	
Date of Test:	Nov. 11, 2025 ~ Dec. 06, 2025	
Test Specification :	FCC CFR Title 47 Part 15 Subpart C Section 15.407 ANSI C63.10-2020+Cor.1-2023 KDB 789033 D02 v02r01	
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied.	
		Issue Date: Dec. 06, 2025
Tested by:	Reviewed by:	Authorized by:
		
Hugh Zhang / Engineer	Billy Zeng / Supervisor	Cherry Chen / Manager
Abbreviations: OK/P=passed fail/F=failed N/A=not applicable E.U.T=equipment under tested		
This device described above has been tested by Keyway, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report. This report shall not be reproduced except in full, without the written approval of Keyway, this document may be altered or revised by Keyway, personal only, and shall be noted in the revision of the document.		

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Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2025.12.08		Original



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1 Test Summary

FCC Part15 (15.407), Subpart E			
Standard Section	Test Item	Judgment	Remark
15.407(b), 15.209	Radiated Spurious Emission	PASS	
15.207	Conducted Emission	PASS	
15.407 (a) 15.407 (e)	99% , 6dB and 26dB Bandwidth	PASS	
15.407 (a)	Maximum Conducted Output Power	PASS	
15.407(b)	Band Edge	PASS	
15.407 (a)	Power Spectral Density	PASS	
15.407(g)	Frequency Stability	PASS	
15.203	Antenna Requirement	PASS	
15.407 (c)	Automatically DiscontinueTransmission	PASS	

Remark:

1. "N/A" denotes test is not applicable in this Test Report.



2 TEST FACILITY

Lab Qualifications	: Certificated by CMA Registration No.: 202319016955 Date of registration: July 23, 2024 Certificated by CNAS Registration No.: CNAS L5783 Date of registration: March 07, 2025 Certificated by A2LA Certificate Number:7404.01 Valid To: March 31.2027 FCC Designation No.: CN1412 Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules. ISED (Company No.: 33959) The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0186 Certificated by VCCI Member No.3498 R-20091:G-20277:966 Chamber 2 Below 1 G G-20277:966 Chamber 2 above 1 G C-20064:Conducted Emissions at Mains ports T-20120:Conducted Emissions at Wired network port Date of Valid until: Step. 19, 2027 Certificated by Nemko Registration No.: ELA 814 Date of registration: September 25, 2024 Certificated by UL Registration No.: 100567237 Date of registration: September 25, 2024
Name of Firm	: Keyway Testing Technology(Guangdong) Co., Ltd.
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3 General Information

3.1 General Description of E.U.T.

Product Name:	DASH CAM
Test Number:	S2
Sample ID	33000256761
Sample(s) Status:	Engineer sample
series model.:	S2, S1, S2L, S2P, S4, S5, S5P, S6, S6P, S8, S8P, M6, M7, M8, M9, M10, M300, M800
Model Different.:	PCB board, structure and internal of these models (s) are the same, only the Model name is different for these models: does not affect the electrical structure.
Operation Frequency:	WIFI 5.2G: 5180MHz~5240MHz WIFI 5.8G: 5745MHz~5825MHz
Channel Number:	4 Channels for 20MHz bandwidth(5180MHz-5240MHz) 2 channels for 40MHz bandwidth(5190MHz~5230MHz) 1 channels for 80MHz bandwidth(5210MHz) 5 channels for 20MHz bandwidth(5745MHz-5825MHz) 2 channels for 40MHz bandwidth(5755MHz~5795MHz) 1 channels for 80MHz bandwidth(5775MHz)
Modulation type:	802.11a(OFDM): BPSK, QPSK, 16-QAM, 64-QAM 802.11n(OFDM): BPSK, QPSK, 16-QAM, 64-QAM 802.11ac(OFDM): BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM 802.11ax(OFDMA): BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
Antenna Type:	Internal Antenna
Antenna gain:	1.51dBi @ 2.4GHz; 1.65dBi @ 5.2GHz; 2.55dBi @ 5.8GHz
Power supply	DC5V, 1A From The Vehicle Charger By DC 12V Input
Remark:	Remark: 1. the Antenna gain is provided by customer from Antenna spec. and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant. 802.11ax support full RU tone and partial RU tone, both full RU and partial RU-left (for low CH) and partial RU-right (for high CH) are tested for conducted power in appendix, all the other test case were performed with full RU with its maximum power.

802.11a/n/ac/ax(20MHz) Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	44	5220	48	5240

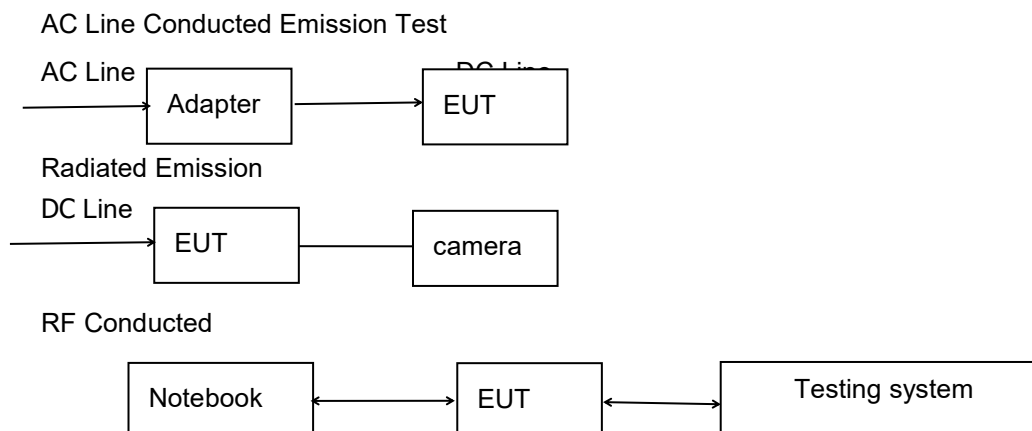
802.11n/ac/ax(40MHz) Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	-	-	-	-

802.11ac/ax(80MHz) Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	-	-	-	-

802.11a/n/ac/ax(20 MHz) Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

802.11n/ac/ax(40MHz) Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-
802.11ac/ax(80MHz) Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775	-	-	-	-

3.2 Test Setup Configuration



3.3 Test Mode

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	wifi_test
Version number	1.0

Small size RU 52+26 Tone:

Bandwidth	Tones		Index	
20MHz	26	52	1	38
20MHz	52	26	38	4
20MHz	52	26	39	7

Small size RU 106+26 Tone:

Bandwidth	Tones		Index	
20MHz	106	26	53	4
20MHz	26	106	4	54

Power setting in test

Mode	Channel/ Frequency (MHz)	Data rate	Power setting
802.11a	36 / 5180	6	12.0
	40 / 5200	6	12.0
	48 / 5240	6	12.0
	149 / 5745	6	12.0
	157 / 5785	6	12.0
	165 / 5825	6	12.0
802.11n(20MHz)	36 / 5180	MCS0	12.0
	40 / 5200	MCS0	12.0
	48 / 5240	MCS0	12.0
	149 / 5745	MCS0	12.0
	157 / 5785	MCS0	12.0
	165 / 5825	MCS0	12.0
802.11n(40MHz)	38 / 5190	MCS0	12.0
	46 / 5230	MCS0	12.0
	54 / 5270	MCS0	12.0
	151 / 5755	MCS0	12.0
	159 / 5795	MCS0	12.0
802.11ac(20MHz)	36 / 5180	MCS0	12.0
	40 / 5200	MCS0	12.0
	48 / 5240	MCS0	12.0
	149 / 5745	MCS0	12.0
	157 / 5785	MCS0	12.0
	165 / 5825	MCS0	12.0
802.11ac(40MHz)	38 / 5190	MCS0	12.0
	46 / 5230	MCS0	12.0
	54 / 5270	MCS0	12.0
	151 / 5755	MCS0	12.0
	159 / 5795	MCS0	12.0



802.11ac(80MHz)	42 / 5210	MCS0	12.0
	155 / 5775	MCS0	12.0
802.11ax(20MHz)	36 / 5180	MCS0	12.0
	40 / 5200	MCS0	12.0
	48 / 5240	MCS0	12.0
	149 / 5745	MCS0	12.0
	157 / 5785	MCS0	12.0
	165 / 5825	MCS0	12.0
802.11ax(40MHz)	38 / 5190	MCS0	12.0
	46 / 5230	MCS0	12.0
	54 / 5270	MCS0	12.0
	151 / 5755	MCS0	12.0
	159 / 5795	MCS0	12.0
802.11ax(80MHz)	42 / 5210	MCS0	12.0
	155 / 5775	MCS0	12.0

Channel/ Frequency (MHz)	RU configure	Data rate	Power setting
36 / 5180	26 / 0	MCS0	7.0
36 / 5180	52 / 37	MCS0	7.0
36 / 5180	106 / 53	MCS0	7.0
149 / 5745	26 / 8	MCS0	7.0
149 / 5745	52 / 40	MCS0	7.0
149 / 5745	106 / 54	MCS0	7.0

4 Equipment During Test

4.1 Equipments List

Equipment	Manufacturer	Model No.	Serial No.	Date of Cal.	Valid until
For conducted emission at the mains terminals and signal port test 944 Shielded Room					
Test Software	FARAD	EZ-EMC Ver.FARAD-3A1+	KWET-089	/	/
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr 14, 25	Apr 13, 26
ArtificialMains Network	Rohde&Schwarz	ENV216	101314	Mar 05, 25	Mar 04, 26
RF Cable	FUJIKURA	3D-2W	KWET-030	Apr 14, 25	Apr 13, 26
Socket	Gongniu	KWET-003A1	KWET-003A1	Feb 21, 25	Feb 20, 26
For radiated emission test (30MHz-1GHz)966 Chamber 2					
Test Software	FARAD	EZ-EMC Ver.FARAD-3A1+	KWET-087	/	/
EMI Test Receiver	Rohde&Schwarz	ESCI	101178	Apr 14, 25	Apr 13, 26
TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00829	May 10, 25	May 09, 26
3m Semi-anechoic Chamber	YIHENDIANZI	966	YH-KW-966-02	Mar 08, 24	Mar 07, 26
RF Cable	EMC Instruments	EMCCFD400-NM-NM-2000	240307	Apr 14, 25	Apr 13, 26
RF Cable	EMC Instruments	EMCCFD400-NM-NM-9000	240309	Apr 14, 25	Apr 13, 26
For radiated emission test (Above 1GHz)966 Chamber 2					
Test Software	FARAD	EZ-EMC Ver.FARAD-3A1+	KWET-087	/	/
EMI Test Receiver	Rohde&Schwarz	ESCI	101178	Apr 14, 25	Apr 13, 26
Spectrum Analyzer	Agilent	N9020A	MY56070279	Apr 14, 25	Apr 13, 26
Spectrum analyzer	R&S	FSV 40	101059	Nov 06, 24	Nov 05, 25



Horn Antenna	DAZE	ZN30701	11003	Jul 27, 25	Jul 26, 26
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1368	May 16, 25	May 15, 26
Signal Amplifier	WCS Technology	DLNA-18000-40000	KWET-138	Apr 19, 25	Apr 18, 26
3m anechoic Chamber	YIHENDIANZI	966	YH-KW-966-02	Mar 07, 25	Mar 06, 29
RF Cable(1G-18GHz)	EMC Instruments	EMC105-SM-SM-1000	240301	Apr 14, 25	Apr 13, 26
RF Cable(1G-18GHz)	EMC Instruments	EMC105-SM-SM-2000	240302	Apr 14, 25	Apr 13, 26
RF Cable(1G-18GHz)	EMC Instruments	EMC105-SM-SM-9000	240303	Apr 14, 25	Apr 13, 26
RF Cable(18G-40GHz)	WCS Technology	CA360P-29M29M-1M	W2415130001	Apr 14, 25	Apr 13, 26
RF Cable(18G-40GHz)	WCS Technology	CA360P-29M29M-9M	W2415110001	Apr 14, 25	Apr 13, 26
For conducted emission test (RF)					
MXG Signal Analyzer	Agilent	N9020A	MY56070279	Apr 14, 25	Apr 13, 26
RF SWITCH BOX	CSKJ	SMU-1003	KWET-047	Apr 14, 25	Apr 13, 26
Attenuator	R&S	ESH3-Z2	102696	Apr 14, 25	Apr 13, 26
Power meter	YOKOKAWA	WY210	27D528405	Apr 14, 25	Apr 13, 26
RF sma cable	Keysight	ULC-1m-SMSM+	1623	May 15, 25	May 14, 26
RF sma cable	Keysight	ULC-1m-SMSM+	1623	May 15, 25	May 14, 26
RF sma cable	Keysight	ULC-1.5FT-SMSM+	1623	May 15, 25	May 14, 26
RF sma cable	Keysight	ULC-1.5FT-SMSM+	1623	May 15, 25	May 14, 26
Coupler	Keysight	ZHDC-10-63-S+	SF331801603	May 15, 25	May 14, 26
Test Software	CSKJ	CS-305X	KWET-149	/	/

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4.2 Measurement Uncertainty

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
Duty Cycle	±2%
Spurious emissions,conducted	±0.21dB
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
Radiated Emission(25GHz~40GHz)	±3.38dB
Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%	

4.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	DASH CAM	Pernis	S2	N/A	EUT
E-2	Notebook	lenovo	B40-80	MP07F6JD	Auxiliary
E-3	Car charger	Pernis	S2	N/A	Auxiliary

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

5 Conducted Emission

Test Requirement: : FCC CFR 47 Part 15 Section 15.207

Test Method: : ANSI C63.10-2020+Cor.1-2023

Test Result: : PASS

Frequency Range: : 150kHz to 30MHz

Class/Severity: : Class B

Detector: : Peak for pre-scan (9kHz Resolution Bandwidth)

5.1 E.U.T. Operation

Operating Environment :

Temperature: : 24.5 °C

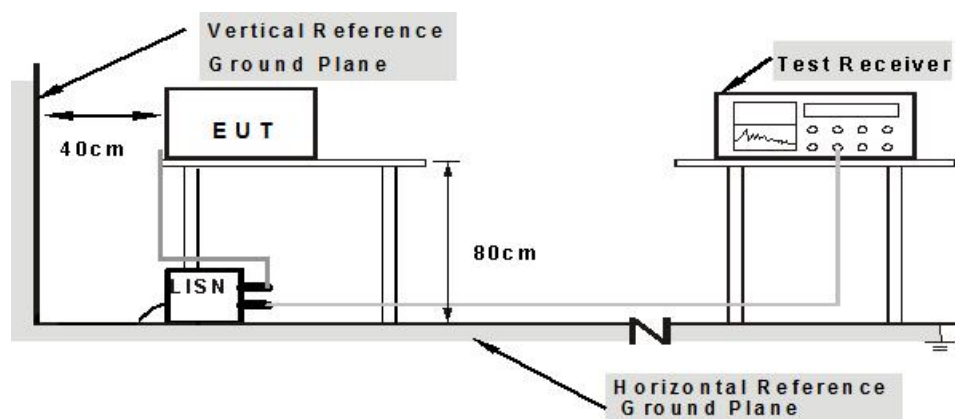
Humidity: : 51.3 % RH

Atmospheric Pressure: : 101.11kPa

Test Voltage : AC 120V/60Hz

5.2 EUT Setup

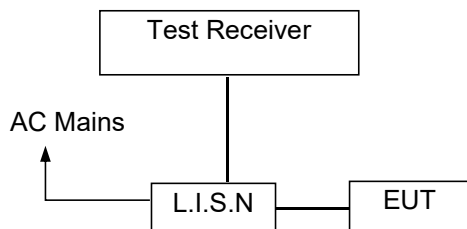
The conducted emission tests were performed using the setup accordance with the ANSI C63.10-2020+Cor.1-2023



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

5.3 Test SET-UP (Block Diagram of Configuration)



5.4 Measurement Procedure:

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

5.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.6 Measurement Description

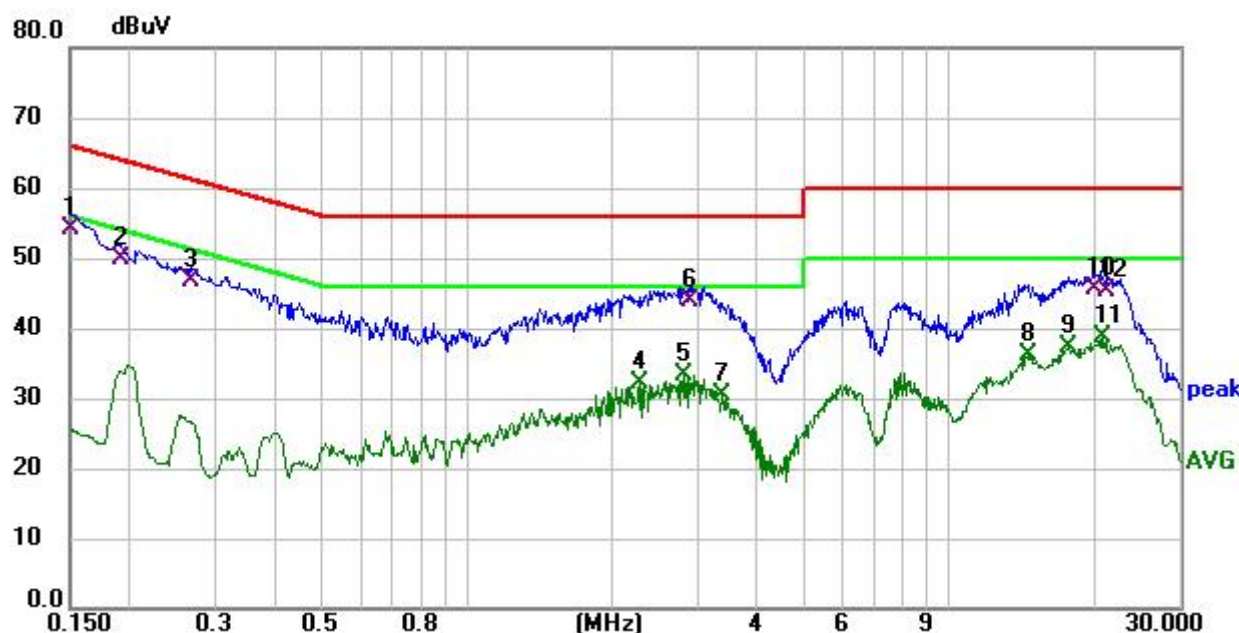
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.7 Conducted Emission Test Result

Pass

Conducted emission at both 120V & 240V is assessed, and emission at 120V represents the worst case. All the modulation modes were tested the data of the worst mode (802.11a, Lowest channel) are recorded in the following pages and the others modulation methods do not exceed the limits.

Channel:	Low	Phase :	L
Model:	S2	Mode:	5.2G WIFI



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.150	43.71	10.50	54.21	66.00	-11.79	QP	P	
2	0.191	39.25	10.70	49.95	63.99	-14.04	QP	P	
3	0.269	36.29	10.49	46.78	61.15	-14.37	QP	P	
4	2.287	21.72	10.55	32.27	46.00	-13.73	AVG	P	
5	2.827	22.72	10.59	33.31	46.00	-12.69	AVG	P	
6	2.908	33.29	10.59	43.88	56.00	-12.12	QP	P	
7	3.367	19.82	10.63	30.45	46.00	-15.55	AVG	P	
8	14.575	23.46	12.64	36.10	50.00	-13.90	AVG	P	
9	17.725	24.33	12.91	37.24	50.00	-12.76	AVG	P	
10	20.000	32.58	13.05	45.63	60.00	-14.37	QP	P	
11 *	20.825	25.56	13.20	38.76	50.00	-11.24	AVG	P	
12	21.150	31.96	13.27	45.23	60.00	-14.77	QP	P	

Notes: 1.An initial pre-scan was performed on the line and neutral lines with peak detector.

2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

3.Measurement Level = Reading level + Correct Factor

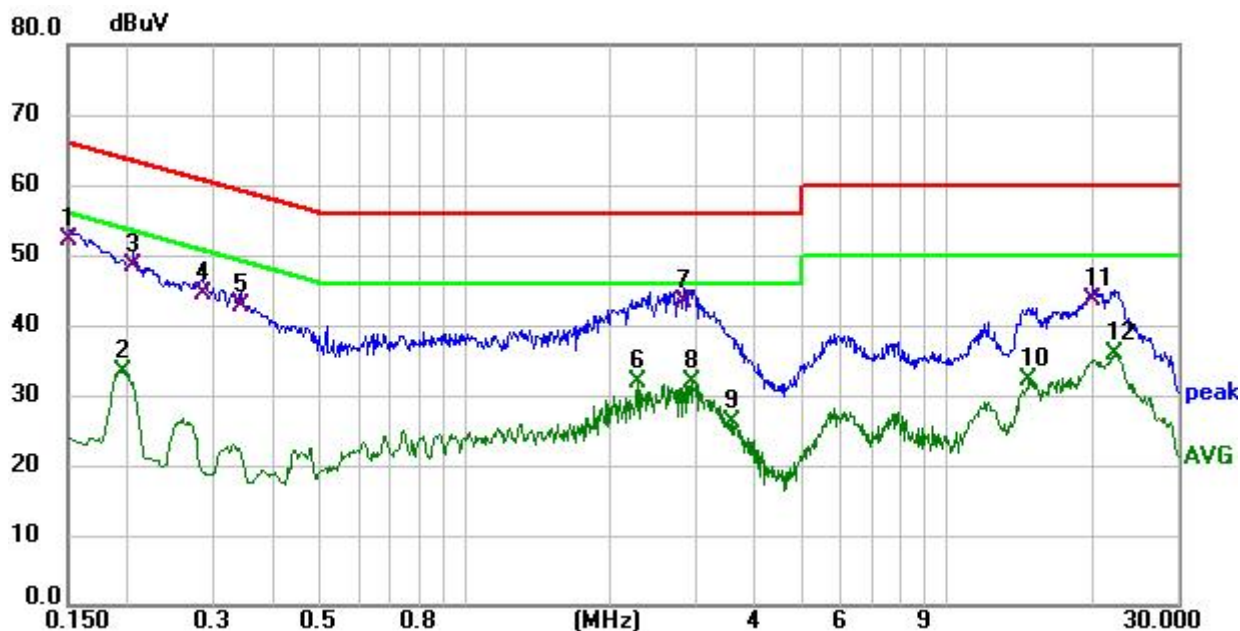
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Channel:	Low	Phase :	N
Model:	S2	Mode:	5.2G WIFI



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.150	41.91	10.31	52.22	66.00	-13.78	QP	P	
2	0.195	22.84	10.48	33.32	53.83	-20.51	AVG	P	
3	0.204	38.06	10.44	48.50	63.45	-14.95	QP	P	
4	0.285	34.14	10.27	44.41	60.67	-16.26	QP	P	
5	0.344	32.55	10.30	42.85	59.11	-16.26	QP	P	
6	2.287	21.36	10.38	31.74	46.00	-14.26	AVG	P	
7 *	2.845	32.90	10.43	43.33	56.00	-12.67	QP	P	
8	2.962	21.46	10.44	31.90	46.00	-14.10	AVG	P	
9	3.583	15.64	10.51	26.15	46.00	-19.85	AVG	P	
10	14.800	19.13	12.94	32.07	50.00	-17.93	AVG	P	
11	20.075	30.20	13.36	43.56	60.00	-16.44	QP	P	
12	22.200	22.22	13.66	35.88	50.00	-14.12	AVG	P	

Notes: 1.An initial pre-scan was performed on the line and neutral lines with peak detector.

2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

3.Measurement Level = Reading level + Correct Factor

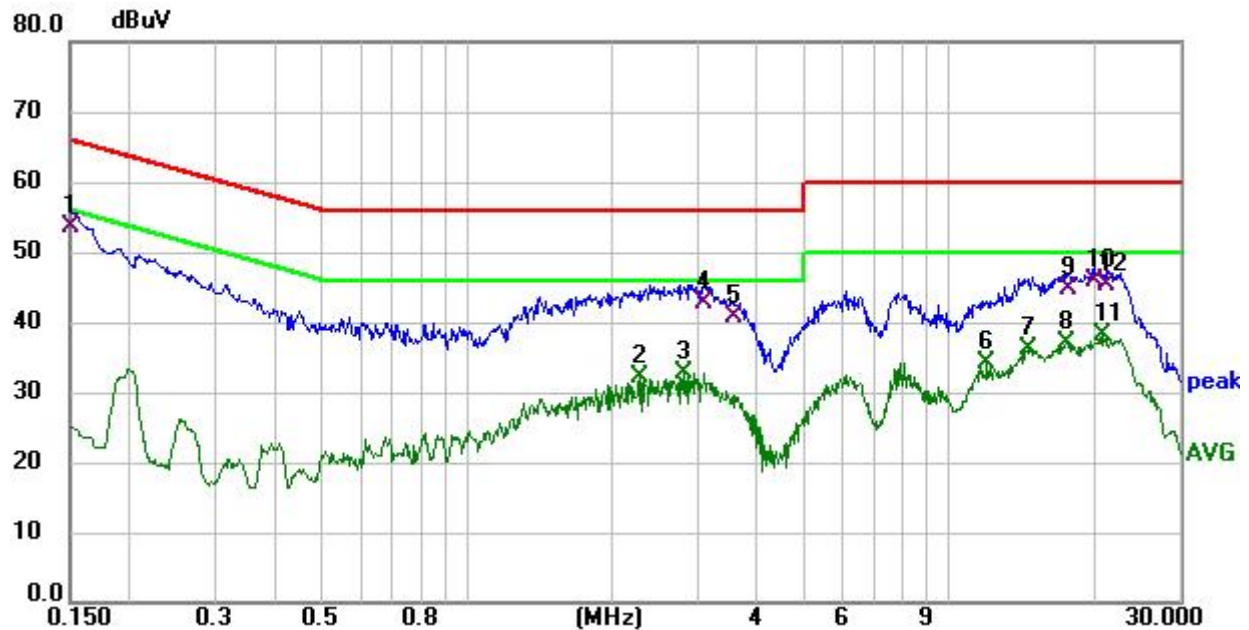
Laboratory Address: Room 2102, Building 6, Dongyi Intelligent Equipment New Energy Vehicle Park, No.30 of Tangxia District, Dongshen Road, Tangxia Town, Dongguan, 523710, People's Republic of China

Tel: 0769-87182258

E-mail: kwtest@keywaytest.com

https: www.keywaytest.com

Channel:	Low	Phase :	L
Model:	S2	Mode:	5.8G WIFI



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.150	43.21	10.50	53.71	66.00	-12.29	QP	P	
2	2.287	21.72	10.55	32.27	46.00	-13.73	AVG	P	
3	2.827	22.22	10.59	32.81	46.00	-13.19	AVG	P	
4	3.097	32.12	10.61	42.73	56.00	-13.27	QP	P	
5	3.601	30.11	10.65	40.76	56.00	-15.24	QP	P	
6	11.975	22.08	12.05	34.13	50.00	-15.87	AVG	P	
7	14.575	23.46	12.64	36.10	50.00	-13.90	AVG	P	
8	17.525	24.14	12.90	37.04	50.00	-12.96	AVG	P	
9	17.650	31.93	12.91	44.84	60.00	-15.16	QP	P	
10	20.000	32.88	13.05	45.93	60.00	-14.07	QP	P	
11 *	20.825	25.06	13.20	38.26	50.00	-11.74	AVG	P	
12	21.150	31.96	13.27	45.23	60.00	-14.77	QP	P	

Notes: 1.An initial pre-scan was performed on the line and neutral lines with peak detector.

2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

3.Measurement Level = Reading level + Correct Factor

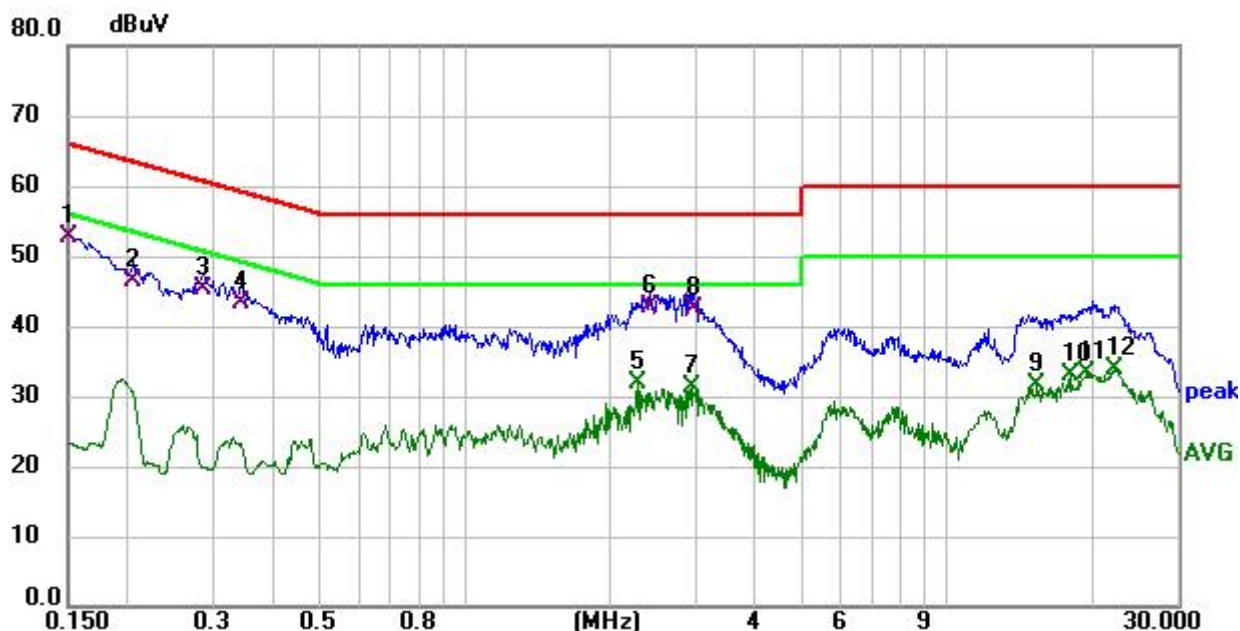
Laboratory Address: Room 2102, Building 6, Dongyi Intelligent Equipment New Energy Vehicle Park, No.30 of Tangxia District, Dongshen Road, Tangxia Town, Dongguan, 523710, People's Republic of China

Tel: 0769-87182258

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https: www.keywaytest.com

Channel:	Low	Phase :	N
Model:	S2	Mode:	5.8G WIFI



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.150	42.41	10.31	52.72	66.00	-13.28	QP	P	
2	0.204	36.06	10.44	46.50	63.45	-16.95	QP	P	
3	0.285	35.14	10.27	45.41	60.67	-15.26	QP	P	
4	0.344	33.05	10.30	43.35	59.11	-15.76	QP	P	
5	2.287	21.36	10.38	31.74	46.00	-14.26	AVG	P	
6	2.413	32.21	10.39	42.60	56.00	-13.40	QP	P	
7	2.962	20.96	10.44	31.40	46.00	-14.60	AVG	P	
8	2.980	32.12	10.44	42.56	56.00	-13.44	QP	P	
9	15.375	18.53	13.02	31.55	50.00	-18.45	AVG	P	
10	18.025	19.84	13.21	33.05	50.00	-16.95	AVG	P	
11	19.525	20.07	13.32	33.39	50.00	-16.61	AVG	P	
12	22.200	20.22	13.66	33.88	50.00	-16.12	AVG	P	

Notes: 1.An initial pre-scan was performed on the line and neutral lines with peak detector.

2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

3.Measurement Level = Reading level + Correct Factor

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6 Radiated Spurious Emissions

Test Requirement : FCC CFR47 Part 15 Section 15.209 & 15.407
Test Method : ANSI C63.10-2020+Cor.1-2023
Test Result : PASS
Measurement Distance : 3m
Limit : See the follow table

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	$20\log^{(500)}$

6.1 EUT Operation

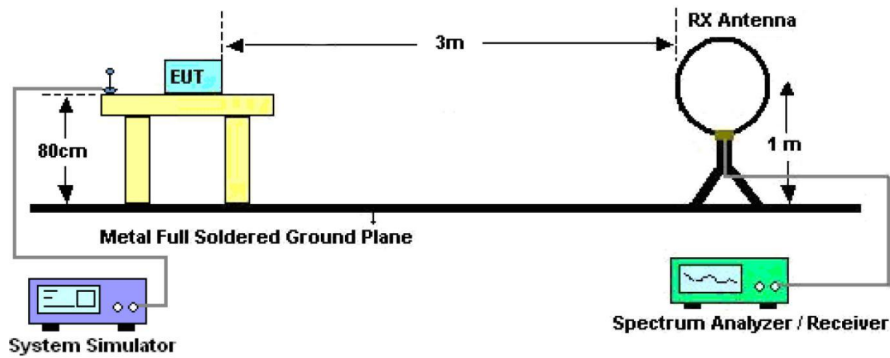
Operating Environment :

Temperature : 24.5°C
Humidity : 52 % RH
Atmospheric Pressure : 101.11kPa
Test Voltage : DC5V, 1A From The Vehicle Charger By DC 12V Input

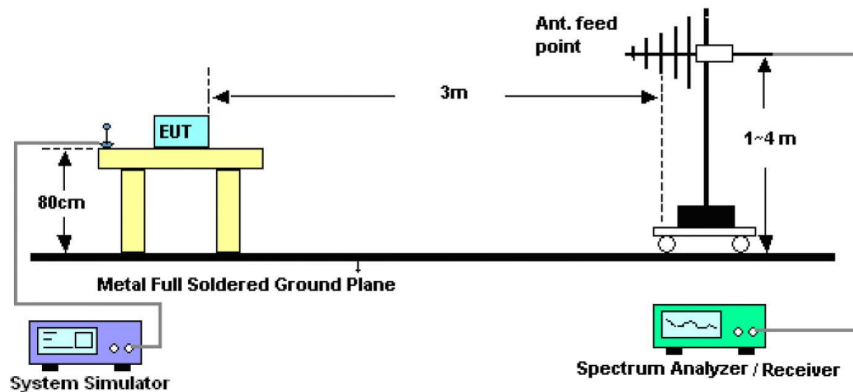
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

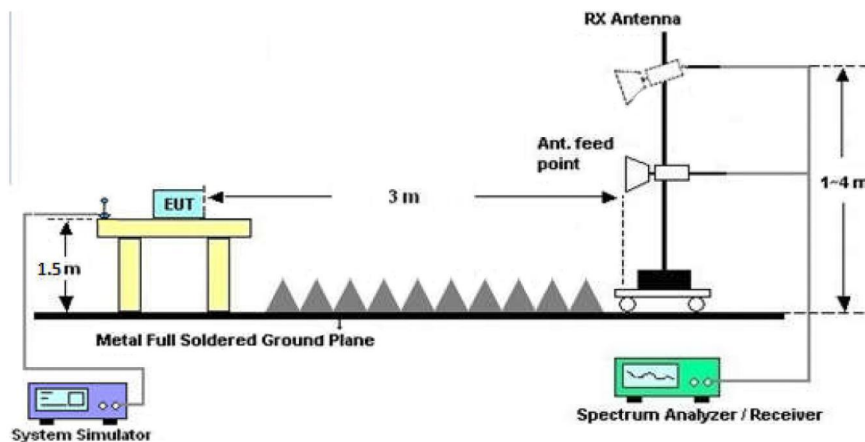
The test setup for emission measurement below 30MHz.



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



The test setup for emission measurement above 1 GHz.



6.3 Spectrum Analyzer Setup

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

6.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2013.
2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.
7. Test Procedure of measurement (For Above 1GHz):
 - 1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).
 - 2) Change the antenna polarization and repeat 1) with vertical polarization.

- 3) Make a hardcopy of the spectrum.
 - 4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
 - 5) Change the analyser mode to Clear/ Write and found the cone of emission.
 - 6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.
 - 7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.
 - 8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

6.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

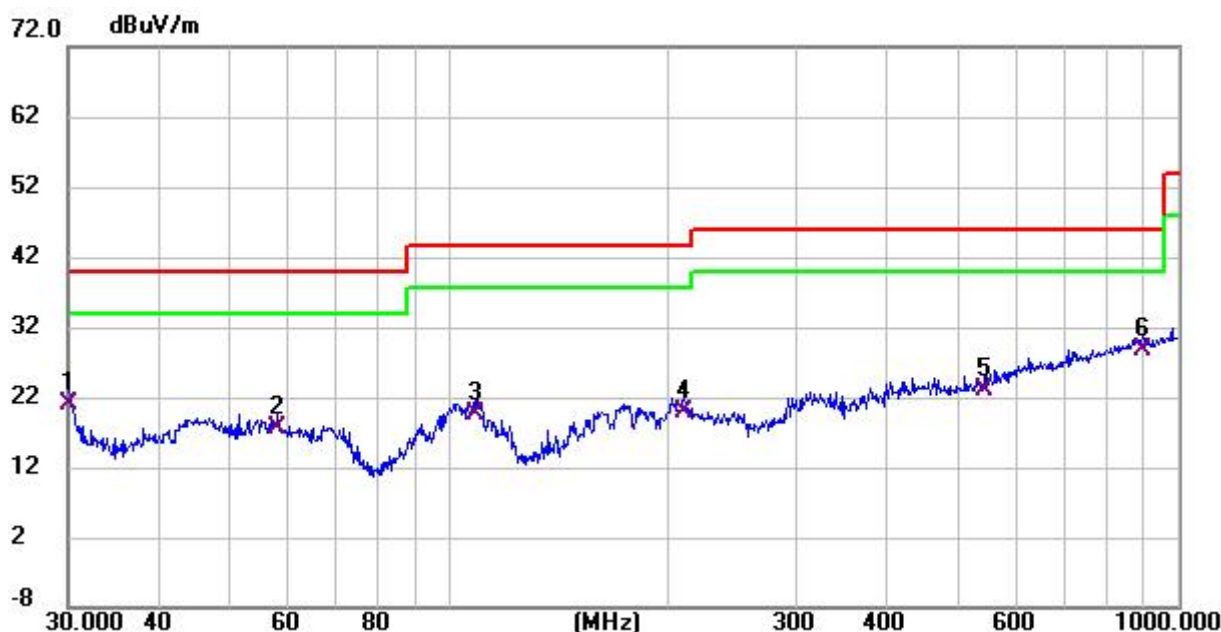
The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance}/\text{test distance})$ (dB);
Limit line = Specific limits(dBuV) + distance extrapolation factor.

Test Frequency: 30MHz ~ 1GHz

Please refer to the following test plots, Low Channel Worst case 802.11a for record:

Model:	S2	Polarization:	Horizontal
Channel:	Low	Mode:	5.2G WIFI



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Remark
1	30.105	10.23	10.91	21.14	40.00	-18.86	QP	PASS
2	58.203	5.02	12.43	17.45	40.00	-22.55	QP	PASS
3	108.647	8.03	11.60	19.63	43.50	-23.87	QP	PASS
4	210.048	7.72	12.17	19.89	43.50	-23.61	QP	PASS
5	543.274	2.98	20.10	23.08	46.00	-22.92	QP	PASS
6 *	896.996	3.45	25.22	28.67	46.00	-17.33	QP	PASS

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

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https: www.keywaytest.com

Model:	S2	Polarization:	Vertical
Channel:	Low	Mode:	5.2G WIFI



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Remark
1	30.105	16.27	7.62	23.89	40.00	-16.11	QP	PASS
2 *	57.594	13.61	14.12	27.73	40.00	-12.27	QP	PASS
3	142.324	18.28	8.08	26.36	43.50	-17.14	QP	PASS
4	207.850	13.78	12.10	25.88	43.50	-17.62	QP	PASS
5	437.120	7.35	17.86	25.21	46.00	-20.79	QP	PASS
6	958.794	4.48	25.73	30.21	46.00	-15.79	QP	PASS

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

Model:	S2	Polarization:	Horizontal
Channel:	Low	Mode:	5.8G WIFI



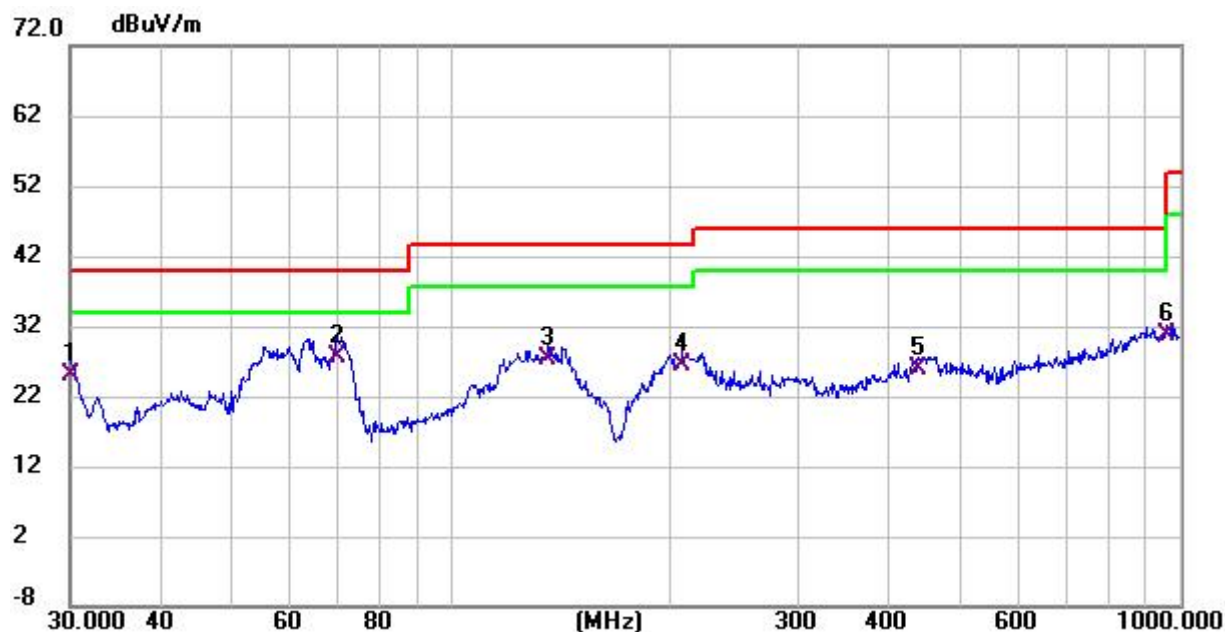
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Remark
1 *	30.105	14.23	10.91	25.14	40.00	-14.86	QP	PASS
2	57.392	10.33	12.56	22.89	40.00	-17.11	QP	PASS
3	101.644	9.93	11.65	21.58	43.50	-21.92	QP	PASS
4	173.205	11.94	9.52	21.46	43.50	-22.04	QP	PASS
5	543.274	4.98	20.10	25.08	46.00	-20.92	QP	PASS
6	896.996	3.45	25.22	28.67	46.00	-17.33	QP	PASS

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamplifier Factor

Model:	S2	Polarization:	Vertical
Channel:	Low	Mode:	5.8G WIFI



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Remark
1	30.105	17.27	7.62	24.89	40.00	-15.11	QP	PASS
2 *	69.845	16.89	10.64	27.53	40.00	-12.47	QP	PASS
3	135.982	19.20	8.18	27.38	43.50	-16.12	QP	PASS
4	207.850	14.28	12.10	26.38	43.50	-17.12	QP	PASS
5	437.120	7.99	17.86	25.85	46.00	-20.15	QP	PASS
6	958.794	4.89	25.73	30.62	46.00	-15.38	QP	PASS

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamp Factor

Test Frequency 1GHz-40GHz

802.11a

Polar	Frequency	Meter Reading	Pre-amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
(H/V)	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel:5745MHz									
V	11490	42.37	32.29	8.39	38.90	57.37	74	-16.63	PK
V	11490	19.93	32.29	8.39	38.90	34.93	54	-19.07	AV
V	17233.3	37.99	31.19	9.62	40.37	56.79	68.2	-11.41	PK
V	17233.3	20.29	31.19	9.62	40.37	39.09	54	-14.91	AV
V	22980	38.42	27.02	7.20	38.98	57.58	74	-16.42	PK
V	22980	19.10	27.02	7.20	38.98	38.26	54	-15.74	AV
V	28723.3	35.23	27.10	7.56	40.18	55.87	68.2	-12.33	PK
V	28723.3	16.41	27.10	7.56	40.18	37.05	54	-16.95	AV
H	11490	41.80	32.29	8.39	38.90	56.80	74	-17.20	PK
H	11490	20.81	32.29	8.39	38.90	35.81	54	-18.19	AV
H	17233.3	37.19	31.19	9.62	40.37	55.99	68.2	-12.21	PK
H	17233.3	17.97	31.19	9.62	40.37	36.77	54	-17.23	AV
H	22980	36.20	27.02	7.20	38.98	55.36	74	-18.64	PK
H	22980	19.12	27.02	7.20	38.98	38.28	54	-15.72	AV
H	28723.3	36.11	27.10	7.56	40.18	56.75	68.2	-11.45	PK
H	28723.3	14.56	27.10	7.56	40.18	35.20	54	-18.80	AV



Polar	Frequency	Meter Reading	Pre-amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
(H/V)	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel:5785MHz									
V	11570	41.19	32.26	8.48	38.90	56.31	74	-17.69	PK
V	11570	17.61	32.26	8.48	38.90	32.73	54	-21.27	AV
V	17353.3	36.85	31.08	9.67	40.61	56.05	68.2	-12.15	PK
V	17353.3	14.84	31.08	9.67	40.61	34.04	54	-19.96	AV
V	23140	35.33	27.03	7.24	39.03	54.57	68.2	-13.63	PK
V	23140	16.54	27.03	7.24	39.03	35.78	54	-18.22	AV
V	28923.3	35.61	27.10	7.58	40.34	56.43	68.2	-11.77	PK
V	28923.3	15.65	27.10	7.58	40.34	36.47	54	-17.53	AV
H	11570	37.93	32.26	8.48	38.90	53.05	74	-20.95	PK
H	11570	19.27	32.26	8.48	38.90	34.39	54	-19.61	AV
H	17353.3	34.70	31.08	9.67	40.61	53.90	68.2	-14.30	PK
H	17353.3	14.97	31.08	9.67	40.61	34.17	54	-19.83	AV
H	23140	34.09	27.03	7.24	39.03	53.33	68.2	-14.87	PK
H	23140	16.62	27.03	7.24	39.03	35.86	54	-18.14	AV
H	28923.3	35.12	27.10	7.58	40.34	55.94	68.2	-12.26	PK
H	28923.3	12.00	27.10	7.58	40.34	32.82	54	-21.18	AV



Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
High Channel:5825MHz									
V	11650	44.63	32.23	8.56	38.90	59.86	74	-14.14	PK
V	11650	31.10	32.23	8.56	38.90	46.33	54	-7.67	AV
V	17473.3	42.42	30.97	9.73	40.85	62.03	68.2	-6.17	PK
V	17473.3	27.93	30.97	9.73	40.85	47.54	54	-6.46	AV
V	23300	41.42	27.03	7.26	39.06	60.71	68.2	-7.49	PK
V	23300	23.17	27.03	7.26	39.06	42.46	54	-11.54	AV
V	29123.3	40.28	27.10	7.61	40.40	61.19	68.2	-7.01	PK
V	29123.3	22.70	27.10	7.61	40.40	43.61	54	-10.39	AV
H	11650	44.34	32.23	8.56	38.90	59.57	74	-14.43	PK
H	11650	30.00	32.23	8.56	38.90	45.23	54	-8.77	AV
H	17473.3	43.06	30.97	9.73	40.85	62.67	68.2	-5.53	PK
H	17473.3	27.16	30.97	9.73	40.85	46.77	54	-7.23	AV
H	23300	44.58	27.03	7.26	39.06	63.87	68.2	-4.33	PK
H	23300	22.86	27.03	7.26	39.06	42.15	54	-11.85	AV
H	29123.3	37.30	27.10	7.61	40.40	58.21	68.2	-9.99	PK
H	29123.3	23.76	27.10	7.61	40.40	44.67	54	-9.33	AV

802.11a

Polar	Frequency	Meter Reading	Pre-amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
(H/V)	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel:5180MHz									
V	10360	45.96	32.70	7.72	38.59	59.57	68.2	-8.63	PK
V	10360	24.04	32.70	7.72	38.59	37.65	54	-16.35	AV
V	15540	42.67	31.74	9.44	39.29	59.66	74	-14.34	PK
V	15540	17.66	31.74	9.44	39.29	34.65	54	-19.35	AV
V	20720	42.10	26.93	6.64	37.94	59.75	74	-14.25	PK
V	20720	18.43	26.93	6.64	37.94	36.08	54	-17.92	AV
V	25900	35.08	27.10	7.90	39.32	55.20	68.2	-13.00	PK
V	25900	21.33	27.10	7.90	39.32	41.45	54	-12.55	AV
H	10360	37.78	32.70	7.72	38.59	51.39	68.2	-16.81	PK
H	10360	22.62	32.70	7.72	38.59	36.23	54	-17.77	AV
H	15540	38.11	31.74	9.44	39.29	55.10	74	-18.90	PK
H	15540	23.57	31.74	9.44	39.29	40.56	54	-13.44	AV
H	20720	40.74	26.93	6.64	37.94	58.39	74	-15.61	PK
H	20720	17.94	26.93	6.64	37.94	35.59	54	-18.41	AV
H	25900	39.90	27.10	7.90	39.32	60.02	68.2	-8.18	PK
H	25900	19.86	27.10	7.90	39.32	39.98	54	-14.02	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)	Detect or Type
Middle Channel:5200MHz									
V	10400	44.97	32.69	7.73	38.62	58.63	68.2	-9.57	PK
V	10400	24.78	32.69	7.73	38.62	38.44	54	-15.56	AV
V	15600	39.54	31.72	9.45	39.28	56.55	74	-17.45	PK
V	15600	19.53	31.72	9.45	39.28	36.54	54	-17.46	AV
V	20800	36.66	26.93	6.73	37.96	54.42	74	-19.58	PK
V	20800	20.23	26.93	6.73	37.96	37.99	54	-16.01	AV
V	26000	37.25	27.10	7.94	39.30	57.39	68.2	-10.81	PK
V	26000	15.83	27.10	7.94	39.30	35.97	54	-18.03	AV
H	10400	42.83	32.69	7.73	38.62	56.49	68.2	-11.71	PK
H	10400	21.28	32.69	7.73	38.62	34.94	54	-19.06	AV
H	15600	38.51	31.72	9.45	39.28	55.52	74	-18.48	PK
H	15600	20.02	31.72	9.45	39.28	37.03	54	-16.97	AV
H	20800	38.82	26.93	6.73	37.96	56.58	74	-17.42	PK
H	20800	18.65	26.93	6.73	37.96	36.41	54	-17.59	AV
H	26000	37.15	27.10	7.94	39.30	57.29	68.2	-10.91	PK
H	26000	15.96	27.10	7.94	39.30	36.10	54	-17.90	AV

Polar	Frequency	Meter Reading	Pre-amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
(H/V)	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
High Channel:5240MHz									
V	10480	41.62	32.66	7.74	38.68	55.38	68.2	41.62	PK
V	10480	24.75	32.66	7.74	38.68	38.51	54	24.75	AV
V	15720	37.81	31.68	9.48	39.26	54.87	74	37.81	PK
V	15720	18.21	31.68	9.48	39.26	35.27	54	18.21	AV
V	20960	37.24	26.94	6.91	37.99	55.20	74	37.24	PK
V	20960	19.49	26.94	6.91	37.99	37.45	54	19.49	AV
V	26200	39.01	27.10	7.89	39.50	59.30	68.2	39.01	PK
V	26200	14.72	27.10	7.89	39.50	35.01	54	14.72	AV
H	10480	44.33	32.66	7.74	38.68	58.09	68.2	44.33	PK
H	10480	23.38	32.66	7.74	38.68	37.14	54	23.38	AV
H	15720	39.61	31.68	9.48	39.26	56.67	74	39.61	PK
H	15720	20.19	31.68	9.48	39.26	37.25	54	20.19	AV
H	20960	38.46	26.94	6.91	37.99	56.42	74	38.46	PK
H	20960	19.95	26.94	6.91	37.99	37.91	54	19.95	AV
H	26200	35.67	27.10	7.89	39.50	55.96	68.2	35.67	PK
H	26200	19.47	27.10	7.89	39.50	39.76	54	19.47	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. The worst mode is 802.11a, only the worst data is recorded.



Restrict Band EMISSION MEASUREMENT

Frequency	Meter Reading	antenna Factor	cable loss	preamp factor	Emission Level	Limit	Margin	Polar	Detector Type	Result
(MHz)	(dBuV/m)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(H/V)		
802.11a:5180MHz										
5150	52.49	33.14	5.29	33.88	57.04	74	-16.96	V	PK	Pass
5150	35.02	33.14	5.29	33.88	39.57	54	-14.43	V	AV	Pass
5145	54.36	33.14	5.29	33.88	58.91	74	-15.09	V	PK	Pass
5145	34.49	33.14	5.29	33.88	39.04	54	-14.96	V	AV	Pass
5150	53.12	33.14	5.29	33.88	57.67	74	-16.33	H	PK	Pass
5150	35.18	33.14	5.29	33.88	39.73	54	-14.27	H	AV	Pass
5145	52.87	33.14	5.29	33.88	57.42	74	-16.58	H	PK	Pass
5145	33.07	33.14	5.29	33.88	37.62	54	-16.38	H	AV	Pass
802.11a:5240MHz										
5350	56.48	33.06	5.44	33.72	61.26	74	-12.74	V	PK	Pass
5350	35.83	33.06	5.44	33.72	40.61	54	-13.39	V	AV	Pass
5370	51.03	33.05	5.45	33.70	55.83	74	-18.17	V	PK	Pass
5370	35.67	33.05	5.45	33.70	40.47	54	-13.53	V	AV	Pass
5350	56.33	33.06	5.44	33.72	61.11	74	-12.89	H	PK	Pass
5350	36.49	33.06	5.44	33.72	41.27	54	-12.73	H	AV	Pass
5370	53.04	33.05	5.45	33.70	57.84	74	-16.16	H	PK	Pass
5370	36.28	33.05	5.45	33.70	41.08	54	-12.92	H	AV	Pass
802.11n20:5180MHz										
5150	52.20	33.14	5.29	33.88	56.75	74	-17.25	V	PK	Pass
5150	35.96	33.14	5.29	33.88	40.51	54	-13.49	V	AV	Pass
5145	52.79	33.14	5.29	33.88	57.34	74	-16.66	V	PK	Pass

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5145	33.53	33.14	5.29	33.88	38.08	54	-15.92	V	AV	Pass
5150	52.40	33.14	5.29	33.88	56.95	74	-17.05	H	PK	Pass
5150	35.93	33.14	5.29	33.88	40.48	54	-13.52	H	AV	Pass
5145	50.57	33.14	5.29	33.88	55.12	74	-18.88	H	PK	Pass
5145	35.59	33.14	5.29	33.88	40.14	54	-13.86	H	AV	Pass
802.11n20:5240MHz										
5350	53.28	33.14	5.29	33.88	57.83	74	-16.17	V	PK	Pass
5350	33.41	33.14	5.29	33.88	37.96	54	-16.04	V	AV	Pass
5370	53.90	33.14	5.29	33.88	58.45	74	-15.55	V	PK	Pass
5370	34.86	33.14	5.29	33.88	39.41	54	-14.59	V	AV	Pass
5350	54.65	33.14	5.29	33.88	59.20	74	-14.80	H	PK	Pass
5350	35.09	33.14	5.29	33.88	39.64	54	-14.36	H	AV	Pass
5370	52.66	33.14	5.29	33.88	57.21	74	-16.79	H	PK	Pass
5370	34.07	33.14	5.29	33.88	38.62	54	-15.38	H	AV	Pass
802.11ac20:5180MHz										
5150	55.64	33.06	5.44	33.72	60.42	74	-13.58	V	PK	Pass
5150	36.92	33.06	5.44	33.72	41.70	54	-12.30	V	AV	Pass
5145	51.88	33.05	5.45	33.70	56.68	74	-17.32	V	PK	Pass
5145	36.47	33.05	5.45	33.70	41.27	54	-12.73	V	AV	Pass
5150	54.90	33.06	5.44	33.72	59.68	74	-14.32	H	PK	Pass
5150	37.61	33.06	5.44	33.72	42.39	54	-11.61	H	AV	Pass
5145	53.89	33.05	5.45	33.70	58.69	74	-15.31	H	PK	Pass
5145	35.41	33.05	5.45	33.70	40.21	54	-13.79	H	AV	Pass
802.11ac20:5240MHz										
5350	54.28	33.06	5.44	33.72	59.06	74	-14.94	V	PK	Pass
5350	39.17	33.06	5.44	33.72	43.95	54	-10.05	V	AV	Pass
5370	53.36	33.05	5.45	33.70	58.16	74	-15.84	V	PK	Pass

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5370	39.93	33.05	5.45	33.70	44.73	54	-9.27	V	AV	Pass
5350	55.60	33.06	5.44	33.72	60.38	74	-13.62	H	PK	Pass
5350	42.22	33.06	5.44	33.72	47.00	54	-7.00	H	AV	Pass
5370	54.39	33.05	5.45	33.70	59.19	74	-14.81	H	PK	Pass
5370	37.80	33.05	5.45	33.70	42.60	54	-11.40	H	AV	Pass
802.11ax20:5180MHz										
5150	55.60	33.06	5.44	33.72	60.38	74	-13.62	V	PK	Pass
5150	36.87	33.06	5.44	33.72	41.65	54	-12.35	V	AV	Pass
5145	51.79	33.05	5.45	33.70	56.59	74	-17.41	V	PK	Pass
5145	36.39	33.05	5.45	33.70	41.19	54	-12.81	V	AV	Pass
5150	54.84	33.06	5.44	33.72	59.62	74	-14.38	H	PK	Pass
5150	37.53	33.06	5.44	33.72	42.31	54	-11.69	H	AV	Pass
5145	53.86	33.05	5.45	33.70	58.66	74	-15.34	H	PK	Pass
5145	35.31	33.05	5.45	33.70	40.11	54	-13.89	H	AV	Pass
802.11ax20:5240MHz										
5350	54.20	33.06	5.44	33.72	58.98	74	-15.02	V	PK	Pass
5350	39.13	33.06	5.44	33.72	43.91	54	-10.09	V	AV	Pass
5370	53.33	33.05	5.45	33.70	58.13	74	-15.87	V	PK	Pass
5370	39.91	33.05	5.45	33.70	44.71	54	-9.29	V	AV	Pass
5350	55.51	33.06	5.44	33.72	60.29	74	-13.71	H	PK	Pass
5350	42.15	33.06	5.44	33.72	46.93	54	-7.07	H	AV	Pass
5370	54.36	33.05	5.45	33.70	59.16	74	-14.84	H	PK	Pass
5370	37.78	33.05	5.45	33.70	42.58	54	-11.42	H	AV	Pass
802.11n40:5190MHz										
5150	51.95	33.14	5.29	33.88	56.50	74	-17.50	V	PK	Pass
5150	36.91	33.14	5.29	33.88	41.46	54	-12.54	V	AV	Pass
5145	53.99	33.14	5.29	33.88	58.54	74	-15.46	V	PK	Pass



5145	36.14	33.14	5.29	33.88	40.69	54	-13.31	V	AV	Pass
5150	55.44	33.14	5.29	33.88	59.99	74	-14.01	H	PK	Pass
5150	38.31	33.14	5.29	33.88	42.86	54	-11.14	H	AV	Pass
5145	52.37	33.14	5.29	33.88	56.92	74	-17.08	H	PK	Pass
5145	38.10	33.14	5.29	33.88	42.65	54	-11.35	H	AV	Pass
802.11n40:5230MHz										
5350	56.04	33.06	5.44	33.72	60.82	74	-13.18	V	PK	Pass
5350	40.13	33.06	5.44	33.72	44.91	54	-9.09	V	AV	Pass
5370	54.24	33.05	5.45	33.70	59.04	74	-14.96	V	PK	Pass
5370	39.37	33.05	5.45	33.70	44.17	54	-9.83	V	AV	Pass
5350	56.61	33.06	5.44	33.72	61.39	74	-12.61	H	PK	Pass
5350	41.82	33.06	5.44	33.72	46.60	54	-7.40	H	AV	Pass
5370	54.32	33.05	5.45	33.70	59.12	74	-14.88	H	PK	Pass
5370	39.34	33.05	5.45	33.70	44.14	54	-9.86	H	AV	Pass
802.11ac40:5190MHz										
5150	52.30	33.14	5.29	33.88	56.85	74	-17.15	V	PK	Pass
5150	37.17	33.14	5.29	33.88	41.72	54	-12.28	V	AV	Pass
5145	53.24	33.14	5.29	33.88	57.79	74	-16.21	V	PK	Pass
5145	37.34	33.14	5.29	33.88	41.89	54	-12.11	V	AV	Pass
5150	54.21	33.14	5.29	33.88	58.76	74	-15.24	H	PK	Pass
5150	37.39	33.14	5.29	33.88	41.94	54	-12.06	H	AV	Pass
5145	51.80	33.14	5.29	33.88	56.35	74	-17.65	H	PK	Pass
5145	37.13	33.14	5.29	33.88	41.68	54	-12.32	H	AV	Pass
802.11ac40:5230MHz										
5350	55.22	33.06	5.44	33.72	60.00	74	-14.00	V	PK	Pass
5350	41.19	33.06	5.44	33.72	45.97	54	-8.03	V	AV	Pass



5370	54.51	33.05	5.45	33.70	59.31	74	-14.69	V	PK	Pass
5370	39.91	33.05	5.45	33.70	44.71	54	-9.29	V	AV	Pass
5350	55.97	33.06	5.44	33.72	60.75	74	-13.25	H	PK	Pass
5350	43.56	33.06	5.44	33.72	48.34	54	-5.66	H	AV	Pass
5370	55.15	33.05	5.45	33.70	59.95	74	-14.05	H	PK	Pass
5370	38.79	33.05	5.45	33.70	43.59	54	-10.41	H	AV	Pass
802.11ax40:5190MHz										
5150	52.28	33.14	5.29	33.88	56.83	74	-17.17	V	PK	Pass
5150	37.08	33.14	5.29	33.88	41.63	54	-12.37	V	AV	Pass
5145	53.22	33.14	5.29	33.88	57.77	74	-16.23	V	PK	Pass
5145	37.24	33.14	5.29	33.88	41.79	54	-12.21	V	AV	Pass
5150	54.14	33.14	5.29	33.88	58.69	74	-15.31	H	PK	Pass
5150	37.37	33.14	5.29	33.88	41.92	54	-12.08	H	AV	Pass
5145	51.74	33.14	5.29	33.88	56.29	74	-17.71	H	PK	Pass
5145	37.10	33.14	5.29	33.88	41.65	54	-12.35	H	AV	Pass
802.11ax40:5230MHz										
5350	55.18	33.06	5.44	33.72	59.96	74	-14.04	V	PK	Pass
5350	41.11	33.06	5.44	33.72	45.89	54	-8.11	V	AV	Pass
5370	54.41	33.05	5.45	33.70	59.21	74	-14.79	V	PK	Pass
5370	39.85	33.05	5.45	33.70	44.65	54	-9.35	V	AV	Pass
5350	55.91	33.06	5.44	33.72	60.69	74	-13.31	H	PK	Pass
5350	43.53	33.06	5.44	33.72	48.31	54	-5.69	H	AV	Pass
5370	55.08	33.05	5.45	33.70	59.88	74	-14.12	H	PK	Pass
5370	38.76	33.05	5.45	33.70	43.56	54	-10.44	H	AV	Pass
802.11ac80:5210MHz										
5150	54.63	33.06	5.44	33.72	59.41	74	-14.59	V	PK	Pass



5150	38.21	33.06	5.44	33.72	42.99	54	-11.01	V	AV	Pass
5145	50.37	33.05	5.45	33.70	55.17	74	-18.83	V	PK	Pass
5145	36.13	33.05	5.45	33.70	40.93	54	-13.07	V	AV	Pass
5150	54.97	33.06	5.44	33.72	59.75	74	-14.25	H	PK	Pass
5150	38.27	33.06	5.44	33.72	43.05	54	-10.95	H	AV	Pass
5145	53.84	33.05	5.45	33.70	58.64	74	-15.36	H	PK	Pass
5145	38.17	33.05	5.45	33.70	42.97	54	-11.03	H	AV	Pass
5350	54.70	33.06	5.44	33.72	59.48	74	-14.52	V	PK	Pass
5350	41.65	33.06	5.44	33.72	46.43	54	-7.57	V	AV	Pass
5370	53.85	33.05	5.45	33.70	58.65	74	-15.35	V	PK	Pass
5370	39.95	33.05	5.45	33.70	44.75	54	-9.25	V	AV	Pass
5350	55.94	33.06	5.44	33.72	60.72	74	-13.28	H	PK	Pass
5350	42.56	33.06	5.44	33.72	47.34	54	-6.66	H	AV	Pass
5370	55.66	33.05	5.45	33.70	60.46	74	-13.54	H	PK	Pass
5370	37.94	33.05	5.45	33.70	42.74	54	-11.26	H	AV	Pass
802.11ax80:5210MHz										
5150	54.55	33.06	5.44	33.72	59.33	74	-14.67	V	PK	Pass
5150	38.20	33.06	5.44	33.72	42.98	54	-11.02	V	AV	Pass
5145	50.27	33.05	5.45	33.70	55.07	74	-18.93	V	PK	Pass
5145	36.09	33.05	5.45	33.70	40.89	54	-13.11	V	AV	Pass
5150	54.94	33.06	5.44	33.72	59.72	74	-14.28	H	PK	Pass
5150	38.21	33.06	5.44	33.72	42.99	54	-11.01	H	AV	Pass
5145	53.78	33.05	5.45	33.70	58.58	74	-15.42	H	PK	Pass
5145	38.12	33.05	5.45	33.70	42.92	54	-11.08	H	AV	Pass
5350	54.67	33.06	5.44	33.72	59.45	74	-14.55	V	PK	Pass
5350	41.60	33.06	5.44	33.72	46.38	54	-7.62	V	AV	Pass
5370	53.78	33.05	5.45	33.70	58.58	74	-15.42	V	PK	Pass

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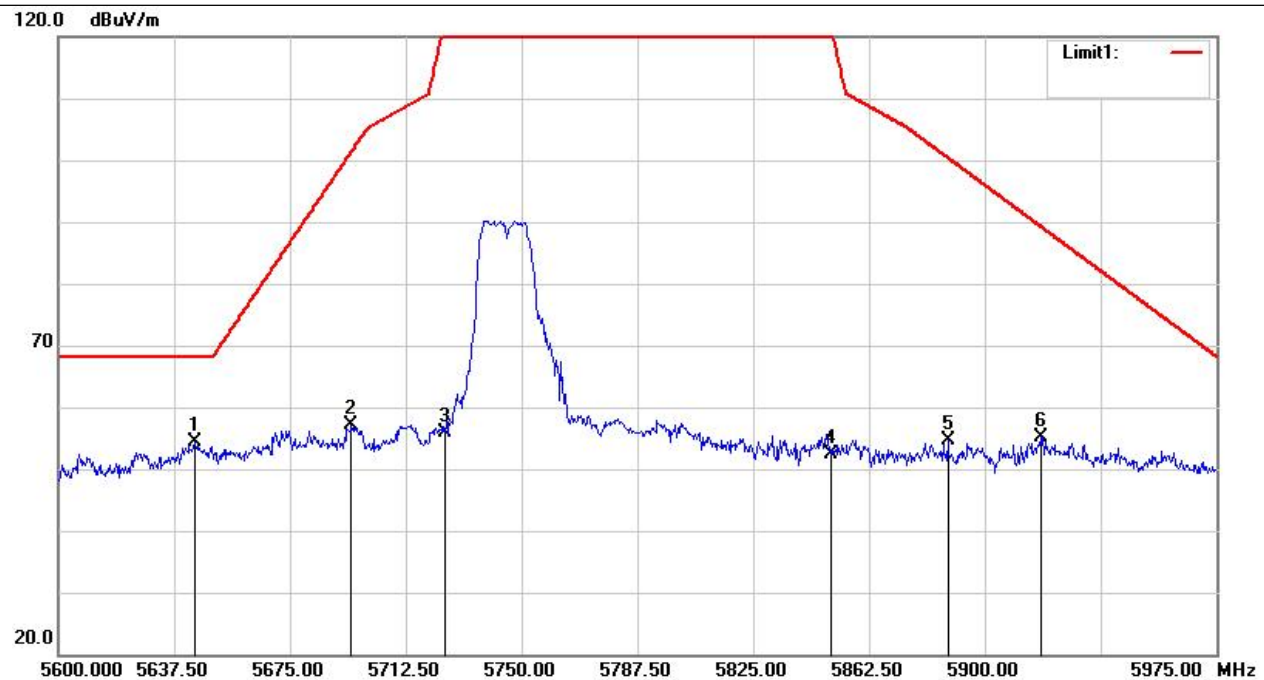


5370	39.90	33.05	5.45	33.70	44.70	54	-9.30	V	AV	Pass
5350	55.89	33.06	5.44	33.72	60.67	74	-13.33	H	PK	Pass
5350	42.54	33.06	5.44	33.72	47.32	54	-6.68	H	AV	Pass
5370	55.56	33.05	5.45	33.70	60.36	74	-13.64	H	PK	Pass
5370	37.88	33.05	5.45	33.70	42.68	54	-11.32	H	AV	Pass

5.8G WIFI (802.11a/n(20/40MHz)/ac(20/40/80MHz)/ax(20/40/80)MHz)mode have been tested, and the worst result(802.11n(20MHz)/ac(40MHz)/ax(80)MHz) was report as below

Operation Mode : TX 802.11n20 Low Channel

Test Specification : Horizontal



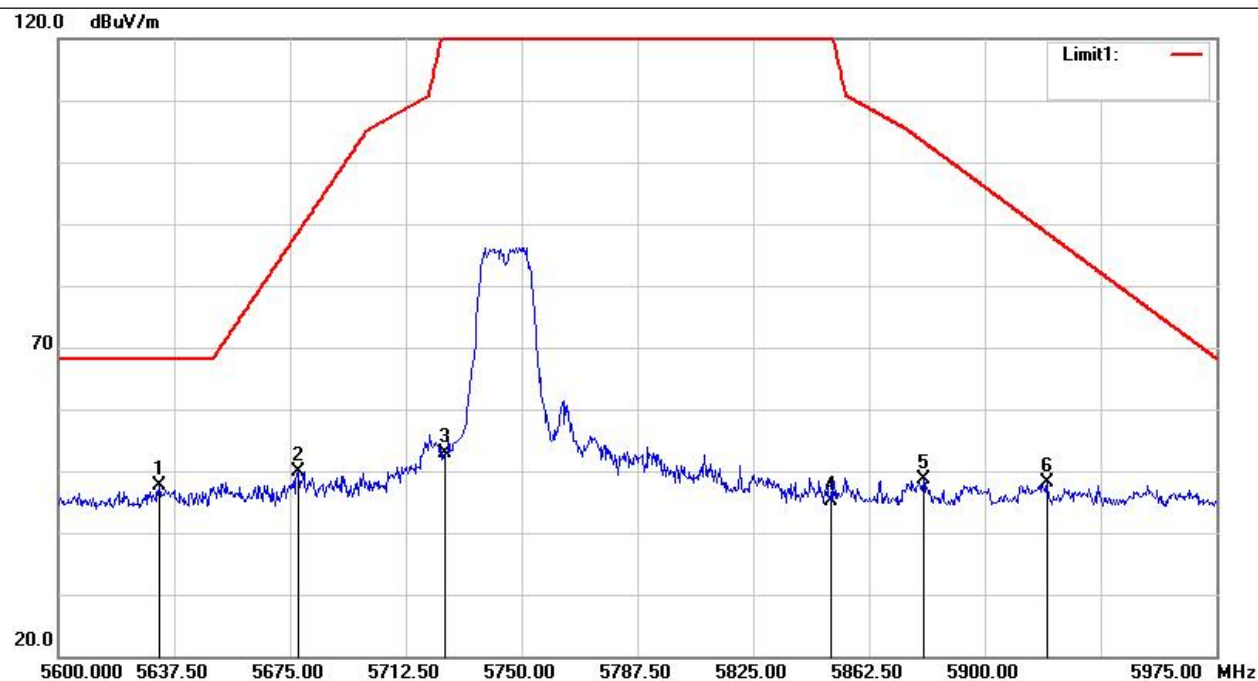
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5644.250	58.61	-4.68	53.93	68.2	-14.27	Peak
2	5694.875	61.6	-4.66	56.94	101.41	-44.47	Peak
3	5725.000	60.35	-4.57	55.78	122.2	-66.42	Peak
4	5850.000	56.12	-4.1	52.02	122.2	-70.18	Peak
5	5888.000	58.14	-3.93	54.21	100.39	-46.18	Peak
6	5918.000	58.96	-3.91	55.05	89.29	-34.24	Peak

Remark:

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

Operation Mode : TX 802.11n20 Low Channel

Test Specification : Vertical



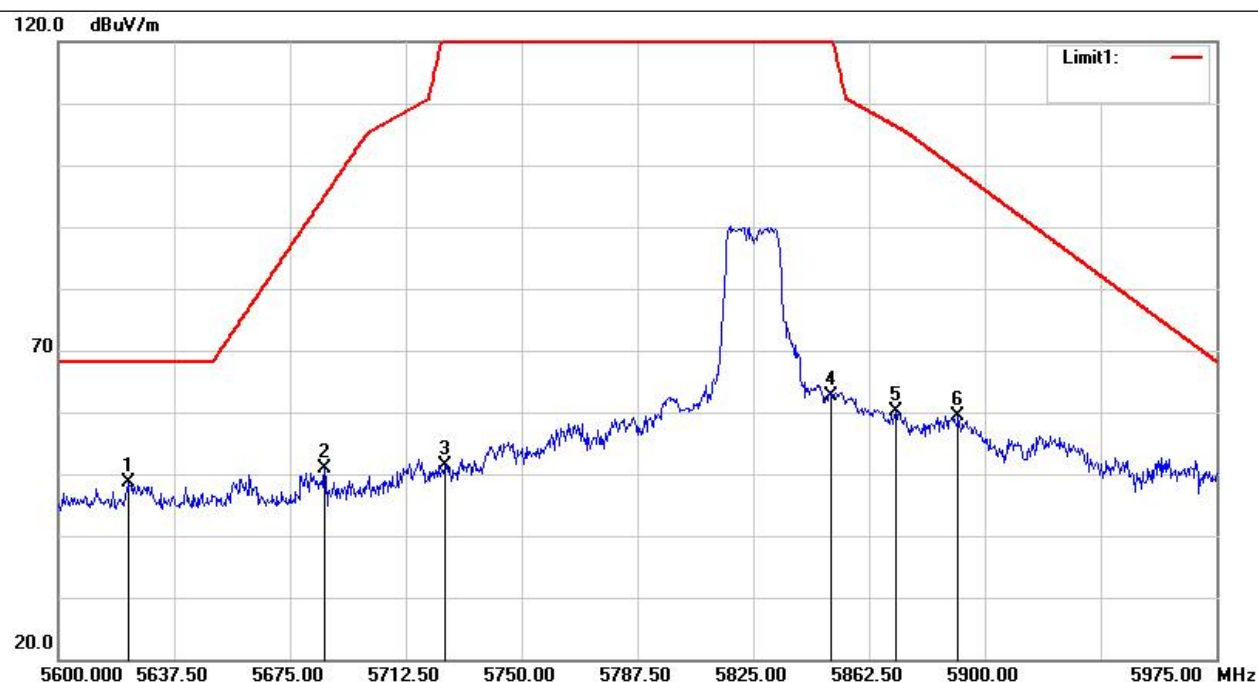
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5632.625	52.09	-4.69	47.40	68.2	-20.80	Peak
2	5677.625	54.53	-4.67	49.86	88.64	-38.78	Peak
3	5725.000	57.5	-4.57	52.93	122.2	-69.27	Peak
4	5850.000	48.86	-4.1	44.76	122.2	-77.44	Peak
5	5880.125	52.35	-3.97	48.38	103.3	-54.92	Peak
6	5920.250	51.67	-3.92	47.75	88.46	-40.71	Peak

Remark:

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

Operation Mode : TX 802.11n20 High Channel

Test Specification : Horizontal



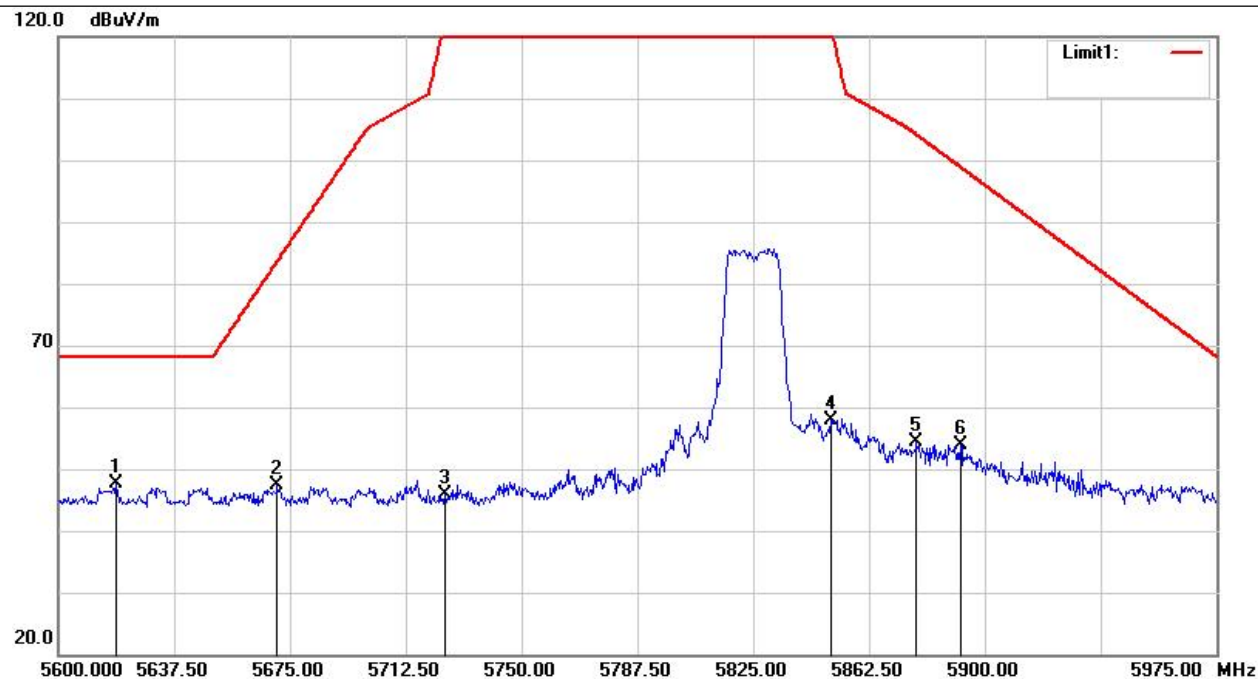
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5622.500	53.26	-4.69	48.57	68.2	-19.63	Peak
2	5686.250	55.49	-4.66	50.83	95.03	-44.20	Peak
3	5725.000	55.37	-4.57	50.80	122.2	-71.40	Peak
4	5850.000	66.73	-4.1	62.63	122.2	-59.57	Peak
5	5871.125	64.17	-4.01	60.16	106.28	-46.12	Peak
6	5891.375	62.96	-3.91	59.05	99.14	-40.09	Peak

Remark:

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

Operation Mode : TX 802.11n20 High Channel

Test Specification : Vertical



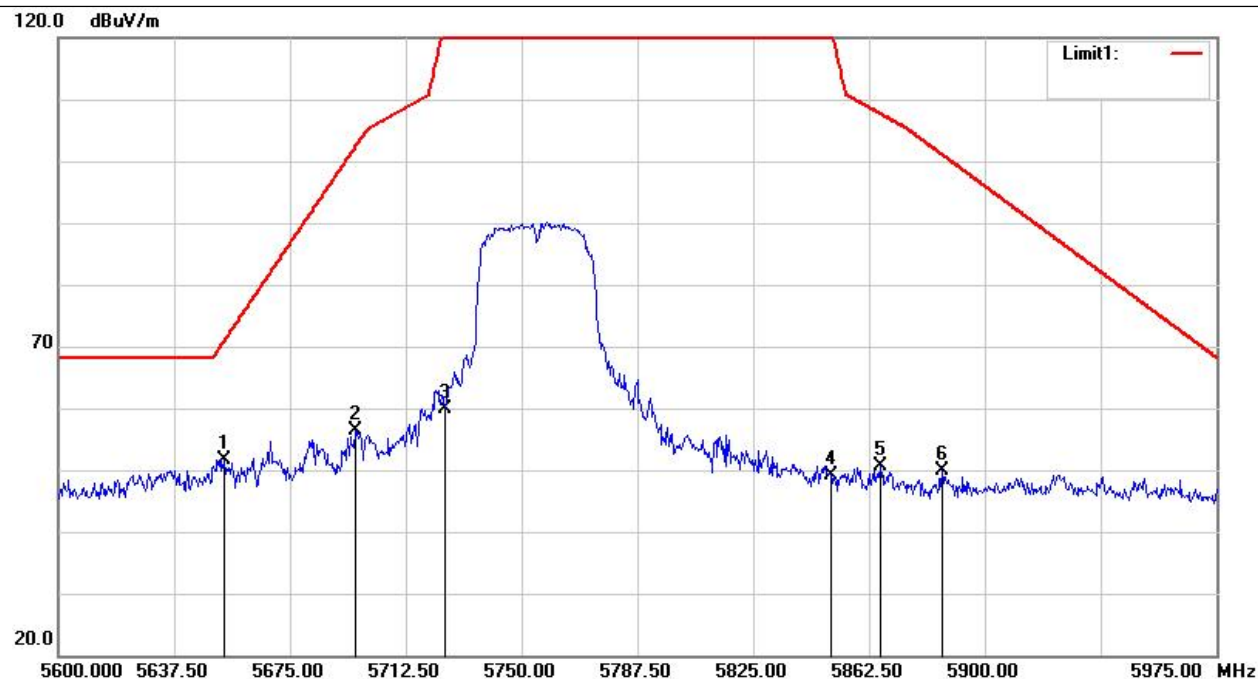
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5618.750	51.95	-4.69	47.26	68.2	-20.94	Peak
2	5670.875	51.63	-4.68	46.95	83.65	-36.70	Peak
3	5725.000	49.96	-4.57	45.39	122.2	-76.81	Peak
4	5850.000	61.88	-4.1	57.78	122.2	-64.42	Peak
5	5877.875	57.81	-3.98	53.83	104.14	-50.31	Peak
6	5892.125	57.61	-3.91	53.70	98.86	-45.16	Peak

Remark:

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

Operation Mode : TX 802.11ac40 Low Channel

Test Specification : Horizontal



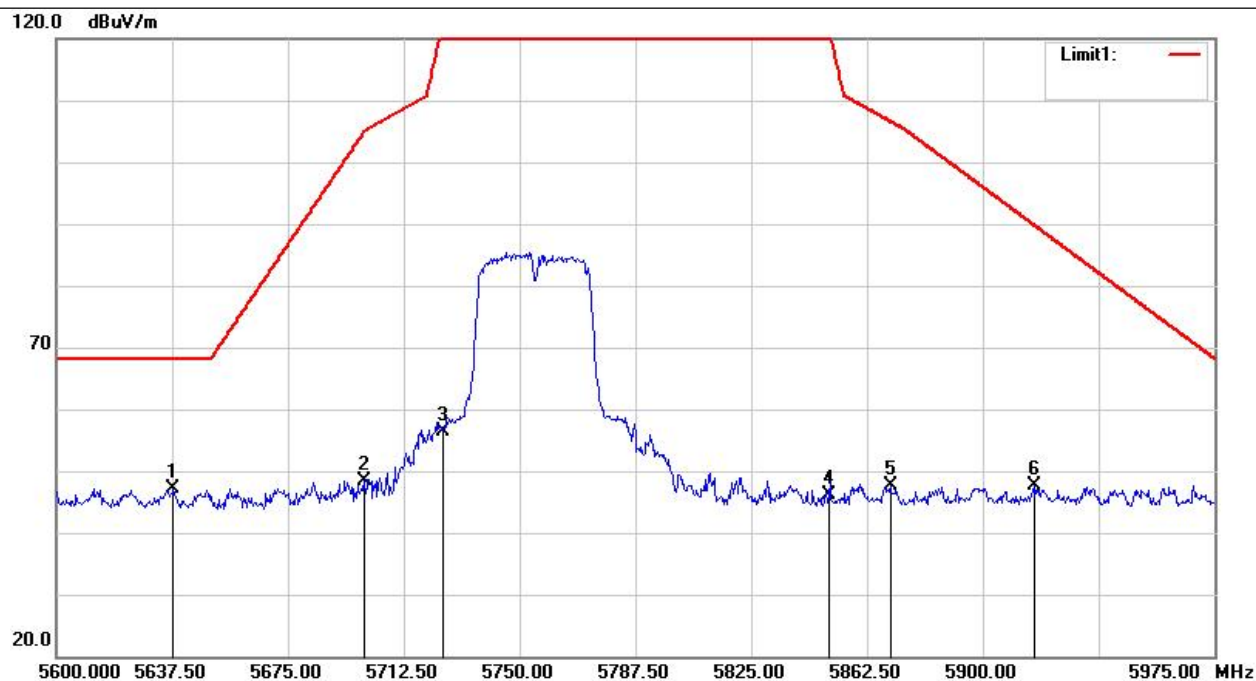
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5653.625	56.04	-4.67	51.37	70.88	-19.51	Peak
2	5696.000	60.62	-4.67	55.95	102.24	-46.29	Peak
3	5725.000	64.04	-4.57	59.47	122.2	-62.73	Peak
4	5850.000	52.87	-4.1	48.77	122.2	-73.43	Peak
5	5866.250	54.48	-4.02	50.46	107.65	-57.19	Peak
6	5886.125	53.72	-3.94	49.78	101.08	-51.30	Peak

Remark:

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

Operation Mode : TX 802.11ac40 Low Channel

Test Specification : Vertical



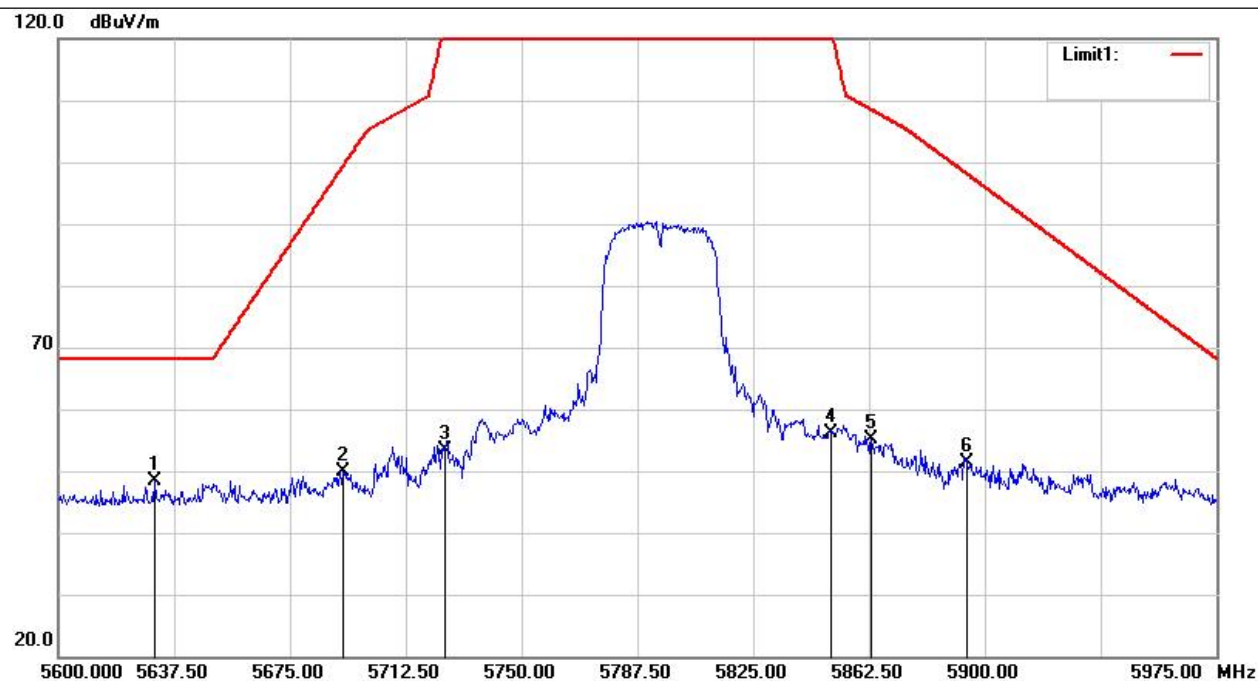
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5637.875	51.41	-4.69	46.72	68.2	-21.48	Peak
2	5699.750	52.76	-4.66	48.10	105.02	-56.92	Peak
3	5725.000	60.5	-4.57	55.93	122.2	-66.27	Peak
4	5850.000	50.12	-4.1	46.02	122.2	-76.18	Peak
5	5870.000	51.41	-4.01	47.40	106.6	-59.20	Peak
6	5916.875	51.3	-3.91	47.39	89.71	-42.32	Peak

Remark:

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

Operation Mode : TX 802.11ac40 High Channel

Test Specification : Horizontal



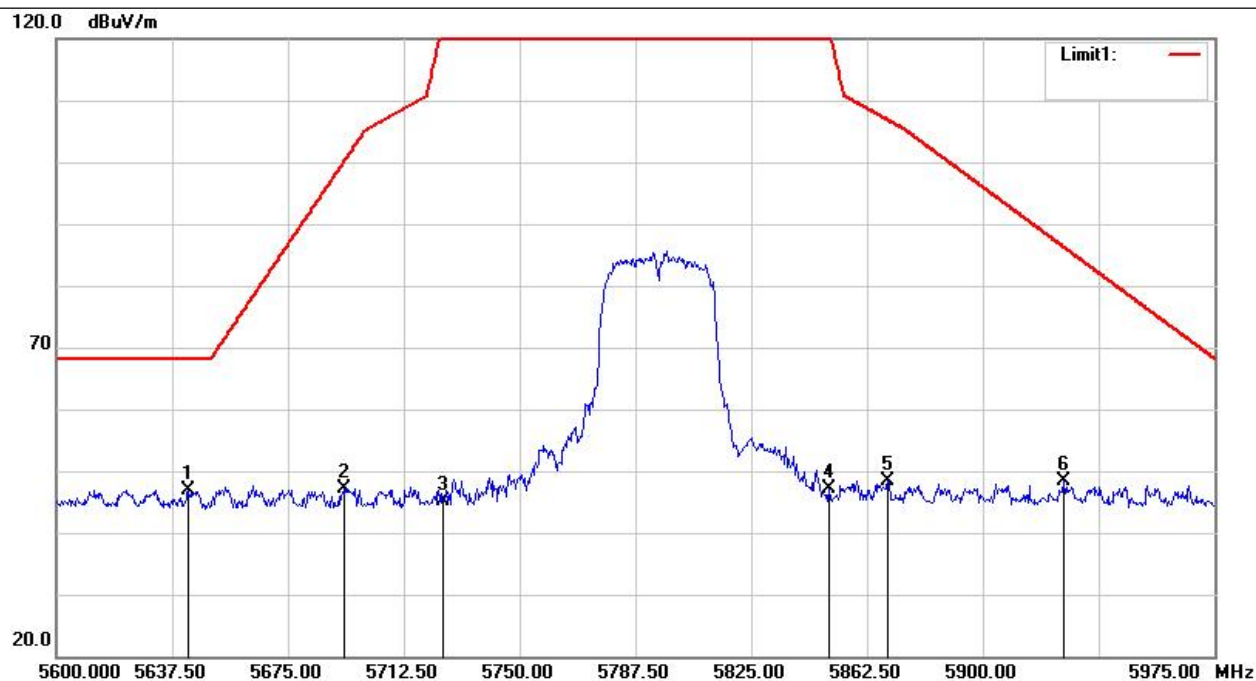
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5631.125	53.1	-4.69	48.41	68.2	-19.79	Peak
2	5692.250	54.25	-4.66	49.59	99.47	-49.88	Peak
3	5725.000	57.62	-4.57	53.05	122.2	-69.15	Peak
4	5850.000	59.82	-4.1	55.72	122.2	-66.48	Peak
5	5863.250	58.79	-4.04	54.75	108.49	-53.74	Peak
6	5894.375	55.18	-3.91	51.27	98.03	-46.76	Peak

Remark:

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

Operation Mode : TX 802.11ac40 High Channel

Test Specification : Vertical



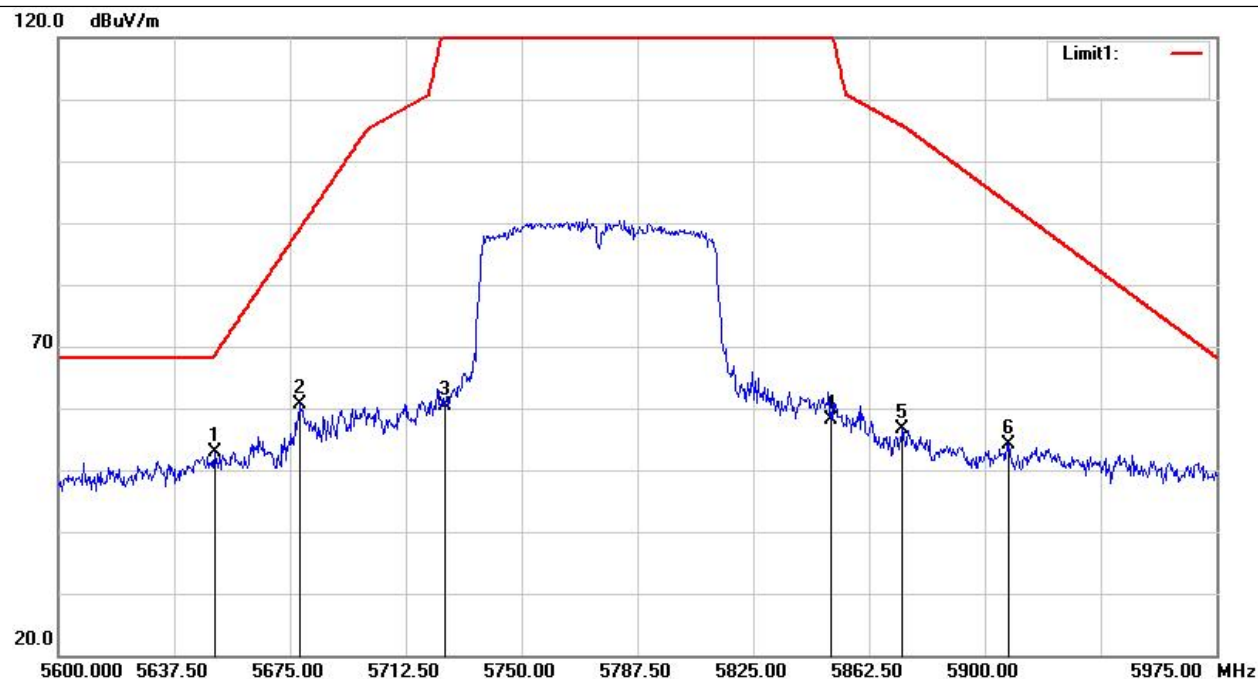
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5642.750	51.15	-4.68	46.47	68.2	-21.73	Peak
2	5693.000	51.71	-4.66	47.05	100.02	-52.97	Peak
3	5725.000	49.66	-4.57	45.09	122.2	-77.11	Peak
4	5850.000	50.73	-4.1	46.63	122.2	-75.57	Peak
5	5869.250	52.29	-4.02	48.27	106.81	-58.54	Peak
6	5926.250	51.75	-3.93	47.82	86.24	-38.42	Peak

Remark:

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

Operation Mode : TX 802.11ax80

Test Specification : Horizontal



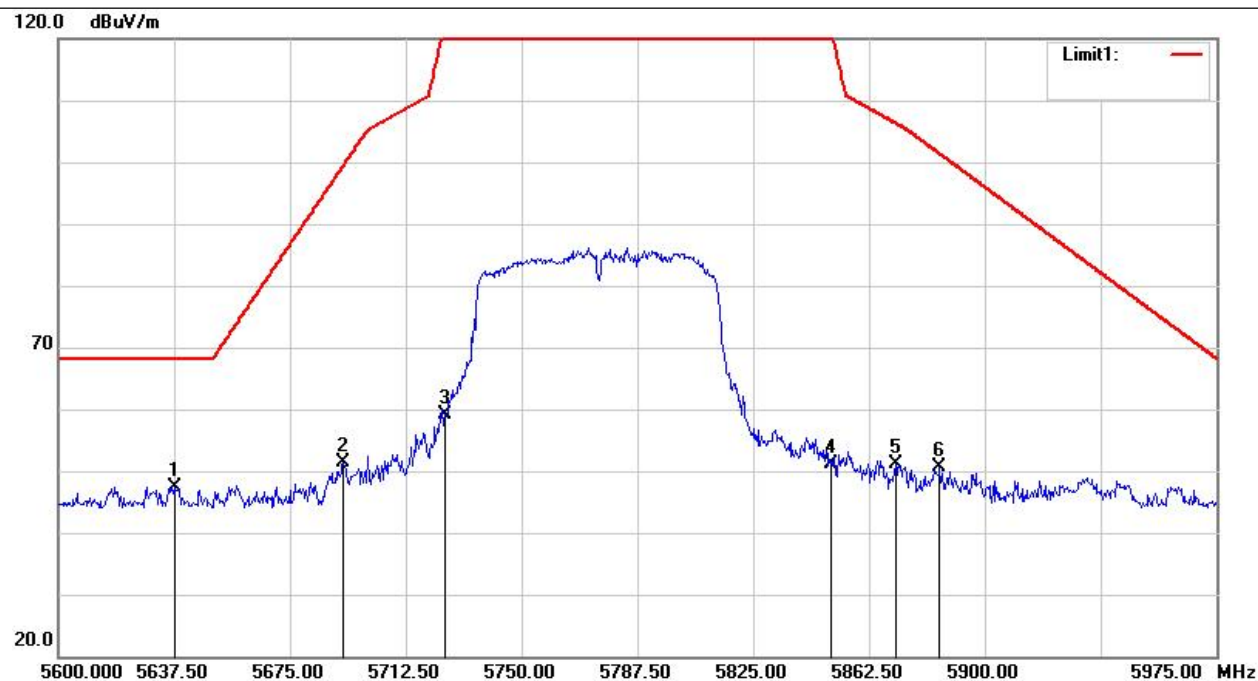
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5650.625	57.42	-4.68	52.74	68.66	-15.92	Peak
2	5678.375	64.82	-4.66	60.16	89.2	-29.04	Peak
3	5725.000	64.99	-4.57	60.42	122.2	-61.78	Peak
4	5850.000	61.83	-4.1	57.73	122.2	-64.47	Peak
5	5873.375	60.32	-3.99	56.33	105.66	-49.33	Peak
6	5907.875	57.71	-3.9	53.81	93.04	-39.23	Peak

Remark:

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

Operation Mode : TX 802.11ax80

Test Specification : Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5637.500	52.13	-4.69	47.44	68.2	-20.76	Peak
2	5692.250	55.68	-4.66	51.02	99.47	-48.45	Peak
3	5725.000	63.3	-4.57	58.73	122.2	-63.47	Peak
4	5850.000	55.1	-4.1	51.00	122.2	-71.20	Peak
5	5871.125	54.8	-4.01	50.79	106.28	-55.49	Peak
6	5885.375	54.17	-3.94	50.23	101.36	-51.13	Peak

Remark:

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

**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.

7 POWER SPECTRAL DENSITY TEST

7.1 Test Standard and Limit

According to FCC §15.407(3)

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum

power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

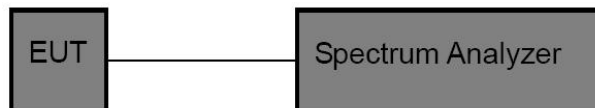
(iv) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations

exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

7.2 Test Setup



7.3 Test Procedure

1. The setting follows Method SA-1 of FCC KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.

For devices operating in the band, the rules specify a measurement bandwidth of 500 kHz.

Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used.

The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10 \log (500\text{kHz}/RBW)$ to the measured result, whereas $RBW (< 500 \text{ kHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10 \log (1\text{MHz}/RBW)$ to the measured result, whereas $RBW (< 1 \text{ MHz})$ is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.
- f) Please refer to ANSI C63.10-2020 Section 12.6 Method SA-2.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since $RBW=100 \text{ KHz}$ is available on nearly all spectrum analyzers.

7.4 Test Data

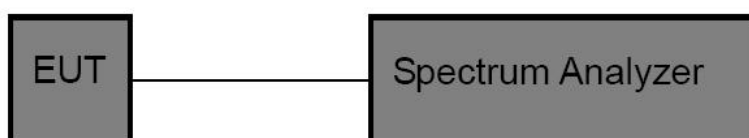
Please see the attachment for WIFI5.2G and WIFI5.8G data.

8 26DB & 6DB & 99% Emission Bandwidth Test

8.1 Test Standard

Test Standard	FCC Part15 C Section 15.407
	The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

8.2 Test Setup



8.3 Test Procedure

The testing follows ANSI C63.10 Section 6.9.3 (OBW), 12.5.1 (6dB BW) and 12.5.2 (26dB BW).

26dB Bandwidth:

- Set RBW = shall be in the range of 1% to 5% of the emission bandwidth.
 - Set the VBW > RBW.
 - Detector = peak.
 - Trace mode = max-hold.
 - Measure the maximum width of the emission that is 26 dB down from the peak of the emission.
- Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is in the range of 1% to 5%.

6dB Bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ 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 that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

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) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (\text{OBW}/\text{RBW})]$ below the reference level. Specific guidance is given in 4.1.6.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max-hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing spectral plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

8.4 Test Data

Please see the attachment for WIFI5.2G and WIFI5.8G data.

9 Maximum Conducted Output Power

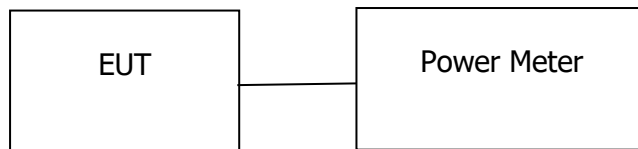
9.1 Test Standard and Limit

According to FCC §15.407

For an outdoor access point operating in the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

For the band 5.725–5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

9.2 Test Setup



9.3 Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance and C63.10 section 11.9.1 for Maximum peak conducted output power.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter or spectrum analyzer

Power Meter:

It is used as the auxiliary test equipment to conduct the output power measurement.

4. Record the max. Reading as observed from Spectrum or Power Meter.

9.4 Test Data

Please see the attachment for WIFI5.2G and WIFI5.8G data.

10 Out of Band Emissions and Spurious Emission

10.1 Test Standard and Limit

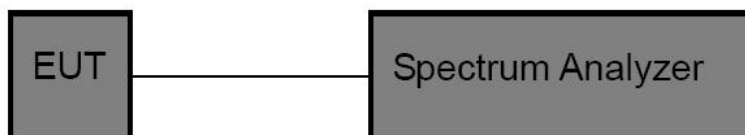
According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

10.2 Test Setup



10.3 Test Procedure

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

10.4 Test Data

Please see the attachment for WIFI5.2G and WIFI5.8G data.

11 Frequency Stability Measurement

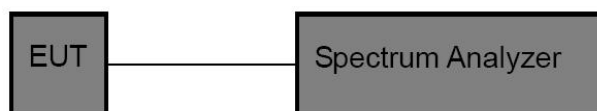
11.1 Test Standard and Limit

FCC

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

11.2 Test Setup



11.3 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6$ ppm and the limit is less than ± 20 ppm (IEEE 802.11n specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is $-20^{\circ}\text{C} \sim 50^{\circ}\text{C}$.

11.4 Test Data

Please see the attachment for WIFI5.2G and WIFI5.8G data.

12 Antenna Requirement

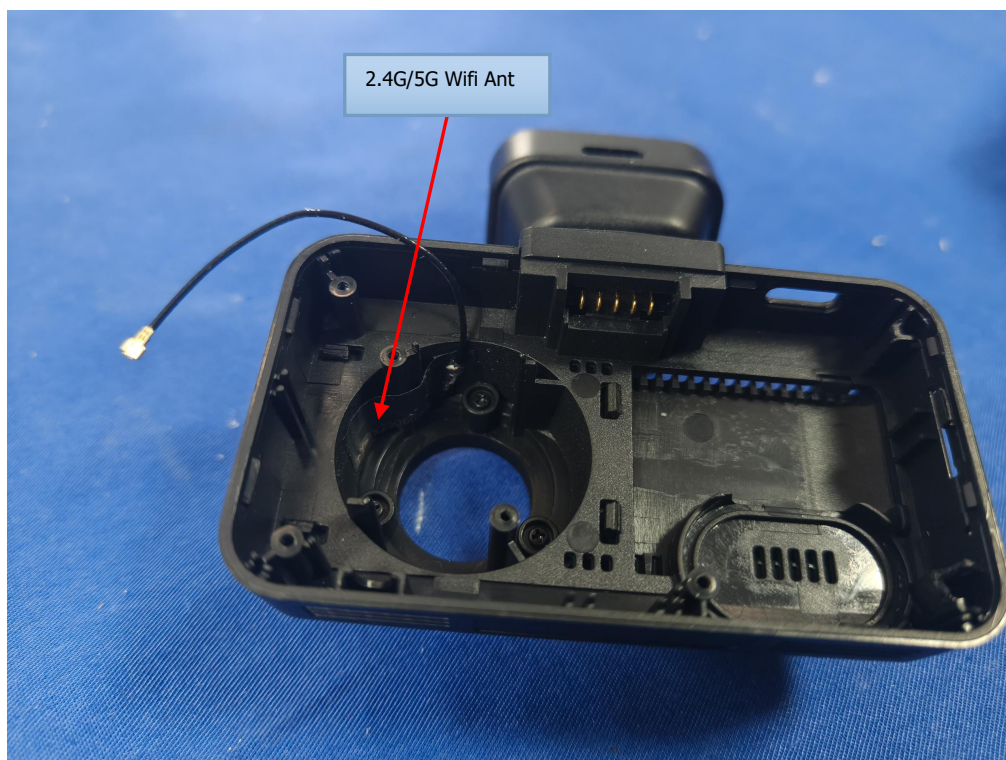
12.1 Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203
Requirement	15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

12.2 Antenna Connected Construction

The antenna is Internal Antenna which permanently attached, and the best case gain of the antenna is: Antenna: 1.51dBi @ 2.4GHz; 1.65dBi @ 5.2GHz; 2.55dBi @ 5.8GHz.

It complies with the standard requirement.



13 AUTOMATICALLY DISCONTINUE TRANSMISSION

13.1 Limit Of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

13.2 Test Result Of Automatically Discontinue Transmission

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



14. TEST SETUP & EUT PHOTOGRAPH

Please see the attachment for details.

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