



RADIO TEST REPORT

Report No.:STS2009231W03

Issued for

Nortek Security & Control LLC

5919 Sea Otter Place, STE 100, Carlsbad CA 92010, United States

Product Name:	Video Doorbell
Brand Name:	2GIG
Model Name:	2GIG-VBELL-1
Series Model:	N/A
FCC ID:	EF400191
IC:	1078A-00191
Test Standard:	FCC Part 15.407 RSS-247 Issue 2, February 2017 RSS-Gen Issue 5 ,March 2019

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TEST RESULT CERTIFICATION

Applicant's Name..... : Nortek Security & Control LLC
Address : 5919 Sea Otter Place, STE 100, Carlsbad CA 92010, United States
Manufacturer's Name : Shenzhen Aoni Electronic Co.,Ltd
Address : Building 5, Honghui Industrial Park, 2nd Road Liuxian, Baoan District, Shenzhen, P.R. China, 518101

Product Description

Product Name..... : Video Doorbell
Brand Name : 2GIG
Model Name : 2GIG-VBELL-1
Series Model..... : N/A

Test Standards : FCC Part15.407
RSS-247 Issue 2, February 2017
RSS-Gen Issue 5 ,March 2019

Test Procedure..... ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC/IC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test

Date of receipt of test item : 16 Sept. 2020
Date (s) of performance of tests : 16 Sept. 2020 ~ 22 Sept. 2020
Date of Issue..... : 22 Sept. 2020
Test Result..... : **Pass**

Testing Engineer :

(Chris Chen)

Technical Manager :

(Sean she)

Authorized Signatory :

(Vita Li)





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**Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	22 Sept. 2020	STS2009231W03	ALL	Initial Issue





1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

§ 15.407, KDB 789033 D02 General U-NII Test Procedures New Rules v02r01

FCC Part 15.407 RSS-247 Issue 2, February 2017		
FCC standard	Test Item	Results
15.207 RSS-Gen Issue 5	AC Conducted Emission	PASS
15.407 (a) /15.407 (e) RSS-Gen Issue 5	26dB/6dB &99% Bandwidth	PASS
15.407(a) RSS-247 Issue 2	Maximum Conducted Output Power	PASS
15.407(b)/15.205/15.209 RSS-247 Issue 2	Radiated Emission And (bandedge Emissions) Measurement	PASS
15.407(a) RSS-247 Issue 2	Power Spectral Density	PASS
15.407(c)	Automatically Discontinue Transmission	PASS
15.203/15.204 RSS-Gen Issue 5	Antenna Requirement	PASS
RSS-Gen Issue 5	Frequency Stability	PASS

NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report.
- (2) All tests are according to ANSI C63.10-2013.



1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.68\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.988\text{dB}$
3	All emissions, radiated 30-1GHz	$\pm 5.6\text{dB}$
4	All emissions, radiated 1G-6GHz	$\pm 5.5\text{dB}$
5	All emissions, radiated >6G	$\pm 5.8\text{dB}$
6	Conducted Emission (9KHz-150KHz)	$\pm 3.37\text{dB}$
7	Conducted Emission (150KHz-30MHz)	$\pm 3.83\text{dB}$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Video Doorbell	
Trade Name	2GIG	
Model Name	2GIG-VBELL-1	
Series Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a Video Doorbell	
	Operation Frequency:	IEEE 802.11a/ n(HT20)/ac(VHT20): 5.180GHz-5.240GHz
		IEEE 802.11n(HT40)/ac(VHT40): 5.190GHz-5.230GHz
		IEEE 802.11ac(VHT80): 5.210GHz
		IEEE 802.11a/ n(HT20)/ac(VHT20): 5.260GHz-5.320GHz
	Modulation Type:	IEEE 802.11 n(HT40)/ac(VHT40): 5.270GHz-5.310GHz
		IEEE 802.11ac(VHT80): 5.290GHz
		IEEE 802.11a/ n(HT20)/ac(VHT20): 5.500GHz-5.700GHz
		IEEE 802.11 n(HT40)/ac(VHT40): 5.510GHz-5.670GHz
	Antenna Designation:	IEEE 802.11ac(VHT80): 5.530GHz-5.610GHz
		IEEE 802.11a/ n(HT20)/ac(VHT20): 5.745GHz-5.825GHz
		IEEE 802.11a/ n(HT40)/ac(VHT40): 5.755GHz-5.795GHz
		IEEE 802.11ac(VHT80): 5.775GHz
	More details of EUT technical specification, please refer to the User Manual.	
Test Channel	Please refer to the Note 2.	
Power Rating	Input: AC 8-24V, 50/60Hz 1A	
Battery	Rated Voltage: DC 3.8V Charge Limit: DC 4.35V Capacity: 300mAh	
Hardware version number	V1.5	
Software version number	2020.08.14	
Connecting I/O Port(s)	Please refer to the Note 1.	

Note

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.



2. Operation Frequency of channel			
5.180GHz-5.240GHz		5.500GHz-5.720GHz	
Channel	Frequency	Channel	Frequency
36	5180	100	5500
38	5190	102	5510
40	5200	104	5520
42	5210	106	5530
44	5220	108	5540
46	5230	110	5550
48	5240	112	5560
		116	5580
		118	5590
5.260GHz-5.320GHz		120	5600
Channel	Frequency	122	5610
52	5260	124	5620
54	5270	126	5630
56	5280	128	5640
58	5290	132	5660
60	5300	134	5670
62	5310	136	5680
64	5320	140	5700
5.745GHz-5.825GHz			
Channel	Frequency		
149	5745		
151	5755		
153	5765		
157	5785		
159	5795		
161	5805		
165	5825		

Note:

1. IC not support Band 5600MHz-5650MHz.
2. In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below.

Carrier Frequency Channel

5GHz:

For 802.11a/n(HT20)/ac(VHT20)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
36	5180	52	5260
40	5200	60	5300
48	5240	64	5320

For 802.11a/n(HT20)/ac(VHT20)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
100	5500	149	5745
116	5580	157	5785
140	5700	165	5825



For 802.11 n(HT40)/ac(VHT40)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
38	5190	54	5270
46	5230	62	5310

For 802.11 n(HT40)/ac(VHT40)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
102	5510	151	5755
110	5550	159	5795
134	5670		

For 802.11ac (VHT80)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
42	5210	58	5290

For 802.11ac (VHT80)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
106	5530	155	5775
122	5610		

3. KDB 662911 D01 Multiple Transmitter Output v02r01

2) Directional Gain Calculations for In-Band Measurements

a) Basic methodology with NANT transmit antennas, each with the same directional gain G_{ANT} dBi, being driven by NANT transmitter outputs of equal power. Directional gain is to be computed as follows:

(i) If any transmit signals are correlated with each other,

$$\text{Directional gain} = G_{ANT} + 10 \log(NANT) \text{ dBi}$$

(ii) If all transmit signals are completely uncorrelated with each other,

$$\text{Directional gain} = G_{ANT}$$

Antenna number: 2

Antenna A gain : 3dBi

Antenna B gain : 3dBi

$$G_{ANT} + 10 \log(NANT) \text{ dBi}$$

$$\text{MIMO technology Directional gain} = 3 + 10 \log 2 = 6.01 \text{ dBi}$$

Ant	Brand	Model Name	Ant Type	Connector	Gain (dBi)	NOTE
A	2GIG	2GIG-VBELL-1	PIFA Antenna	N/A	Ant A: 3 Ant B: 3 MIMO: 6.01	WLAN Ant



2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Worst Mode	Description	Data Rate
Mode 1	TX IEEE 802.11a HT20 CH36&CH40&CH48	6 Mbps
Mode 2	TX IEEE 802.11a HT20 CH52&CH60&CH64	6 Mbps
Mode 3	TX IEEE 802.11a HT20 CH100&CH116&CH140	6 Mbps
Mode 4	TX IEEE 802.11a HT20 CH149&CH157&CH165	6 Mbps
Mode 5	TX IEEE 802.11n HT20 CH36&CH40&CH48	MCS 0
Mode 6	TX IEEE 802.11ac HT20 CH36&CH40&CH48	NSS1 MCS0
Mode 7	TX IEEE 802.11n HT20 CH52&CH60&CH64	MCS 0
Mode 8	TX IEEE 802.11ac HT20 CH52&CH60&CH64	NSS1 MCS0
Mode 9	TX IEEE 802.11n HT20 CH100&CH116&CH140	MCS 0
Mode 10	TX IEEE 802.11ac HT20 CH100&CH116&CH140	NSS1 MCS0
Mode 11	TX IEEE 802.11n HT20 CH149&CH157&CH165	MCS 0
Mode 12	TX IEEE 802.11ac HT20 CH149&CH157&CH165	NSS1 MCS0
Mode 13	TX IEEE 802.11n HT40 CH38&CH46	MCS 0
Mode 14	TX IEEE 802.11ac HT40 CH38&CH46	NSS1 MCS0
Mode 15	TX IEEE 802.11n HT40 CH54 &CH62	MCS 0
Mode 16	TX IEEE 802.11ac HT40 CH54 &CH62	NSS1 MCS0
Mode 17	TX IEEE 802.11n HT40 CH102&CH110&CH134	MCS 0
Mode 18	TX IEEE 802.11ac HT40 CH102&CH110&CH134	NSS1 MCS0
Mode 19	TX IEEE 802.11n HT40 CH151&CH159	MCS 0
Mode 20	TX IEEE 802.11ac HT40 CH151&CH159	NSS1 MCS0
Mode 21	TX IEEE 802.11ac HT80 CH42	NSS1 MCS0
Mode 22	TX IEEE 802.11ac HT80 CH58	NSS1 MCS0
Mode 23	TX IEEE 802.11ac HT80 CH106&122	NSS1 MCS0
Mode 24	TX IEEE 802.11ac HT80 CH155	NSS1 MCS0

- Note: (1) The measurements are performed at the highest, middle, lowest available channels.
(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.
(3) The battery is fully-charged during the radiated and RF conducted test.



AC Conducted Emission

Test Case	
AC Conducted Emission	Mode 25: Keeping TX + WLAN Link

2.3 TEST SOFTWARE AND POWER LEVEL

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

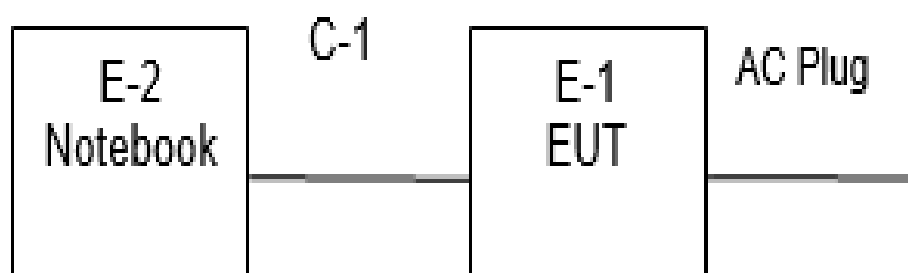
RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Ant_A Power Class	Ant_B Power Class	Software For Testing
WIFI(5G)	5G WIFI Band1 (5150MHz-5250MHz)	802.11a	Ant A:3 Ant B:3 MIMO:6.01	default	default	SecureCRT
		802.11n(HT20)		default	default	
		802.11n(HT40)		default	default	
		802.11ac(VHT20)		default	default	
		802.11ac(VHT40)		default	default	
		802.11ac(VHT80)		default	default	
RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Ant_A Power Class	Ant_B Power Class	Software For Testing
WIFI(5G)	5G WIFI Band2 (5250MHz-5350MHz)	802.11a	Ant A:3 Ant B:3 MIMO:6.01	default	default	SecureCRT
		802.11n(HT20)		default	default	
		802.11n(HT40)		default	default	
		802.11ac(VHT20)		default	default	
		802.11ac(VHT40)		default	default	
		802.11ac(VHT80)		default	default	
RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Ant_A Power Class	Ant_B Power Class	Software For Testing
WIFI(5G)	5G WIFI Band3 (5470MHz-5725MHz)	802.11a	Ant A:3 Ant B:3 MIMO:6.01	default	default	SecureCRT
		802.11n(HT20)		default	default	
		802.11n(HT40)		default	default	
		802.11ac(VHT20)		default	default	
		802.11ac(VHT40)		default	default	
		802.11ac(VHT80)		default	default	



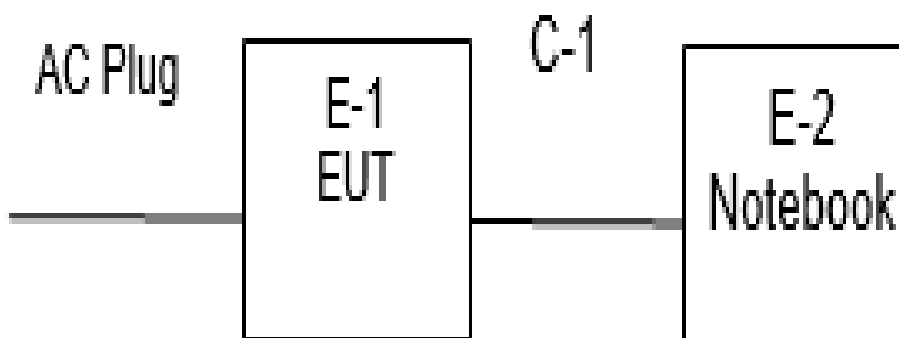
RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Ant_A Power Class	Ant_B Power Class	Software For Testing
WIFI(5G)	5G WIFI Band4 (5725MHz-5875MHz)	802.11a	Ant A:3 Ant B:3 MIMO:6.01	default	default	SecureCRT
		802.11n(HT20)		default	default	
		802.11n(HT40)		default	default	
		802.11ac(VHT20)		default	default	
		802.11ac(VHT40)		default	default	
		802.11ac(VHT80)		default	default	

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious EmissionTest



Conducted Emission Test





2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND 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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
E-2	Notebook	DELL	VOSTRO.3800	N/A	N/A
C-1	USB Cable	N/A	N/A	100cm	N/A

Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY51110105	2020.03.05	2021.03.04
Active loop Antenna	ZHINAN	ZN30900C	16035	2018.03.11	2021.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.01
Horn Antenna	SCHWARZBECK	BBHA 9120D(1201)	9120D-1343	2018.10.19	2021.10.18
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	J211020657	2018.03.11	2021.03.10
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2019.10.09	2020.10.08
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2019.10.12	2020.10.11
Pre-Amplifier (18G-40GHz)	SKET	LNPA-1840-50	SK2018101801	2019.10.12	2020.10.11
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
LISN	R&S	ENV216	101242	2019.10.09	2020.10.08
LISN	EMCO	3810/2NM	23625	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.12	2020.10.11
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 CE)			

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY49100060	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.12	2020.10.11
Test SW	FARAD	LZ-RF /LzRf-3A3			



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class B (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	56.00	46.00	CISPR
5.0 -30.0	60.00	50.00	CISPR

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of “ * ” marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

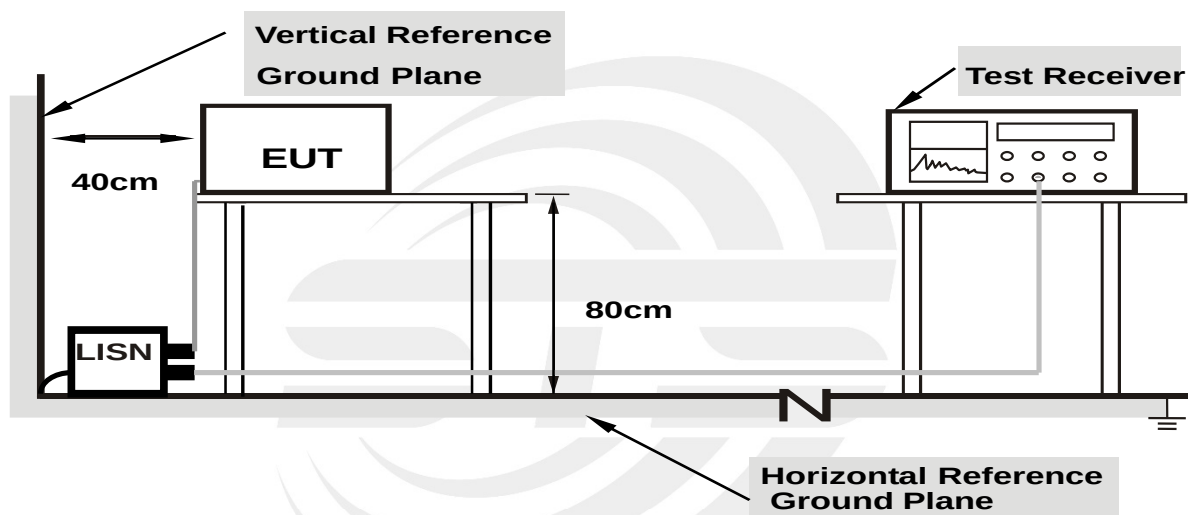
3.1.2 TEST PROCEDURE

- The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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.
- 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.
- LISN is at least 80 cm from the nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



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

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

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



3.1.6 TEST RESULTS

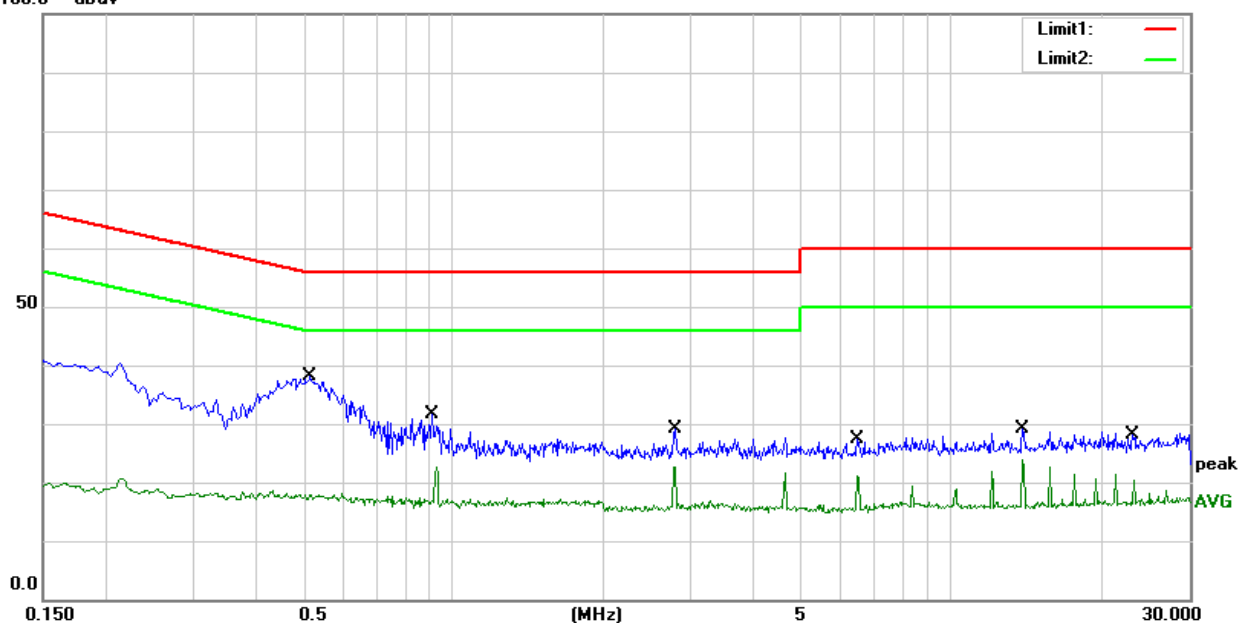
Temperature:	26.8(C)	Relative Humidity:	66%RH
Test Voltage:	AC 16V/60Hz	Phase:	L
Test Mode :	Mode 25		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.5180	17.81	20.42	38.23	56.00	-17.77	QP
2	0.5180	-2.47	20.42	17.95	46.00	-28.05	AVG
3	0.9060	11.47	20.19	31.66	56.00	-24.34	QP
4	0.9060	2.53	20.19	22.72	46.00	-23.28	AVG
5	2.7820	8.98	20.09	29.07	56.00	-26.93	QP
6	2.7820	2.57	20.09	22.66	46.00	-23.34	AVG
7	6.4780	7.41	19.91	27.32	60.00	-32.68	QP
8	6.4780	1.14	19.91	21.05	50.00	-28.95	AVG
9	13.8860	9.21	20.02	29.23	60.00	-30.77	QP
10	13.8860	3.81	20.02	23.83	50.00	-26.17	AVG
11	23.1140	7.46	20.66	28.12	60.00	-31.88	QP
12	23.1140	-0.25	20.66	20.41	50.00	-29.59	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) – Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)

100.0 dBuV



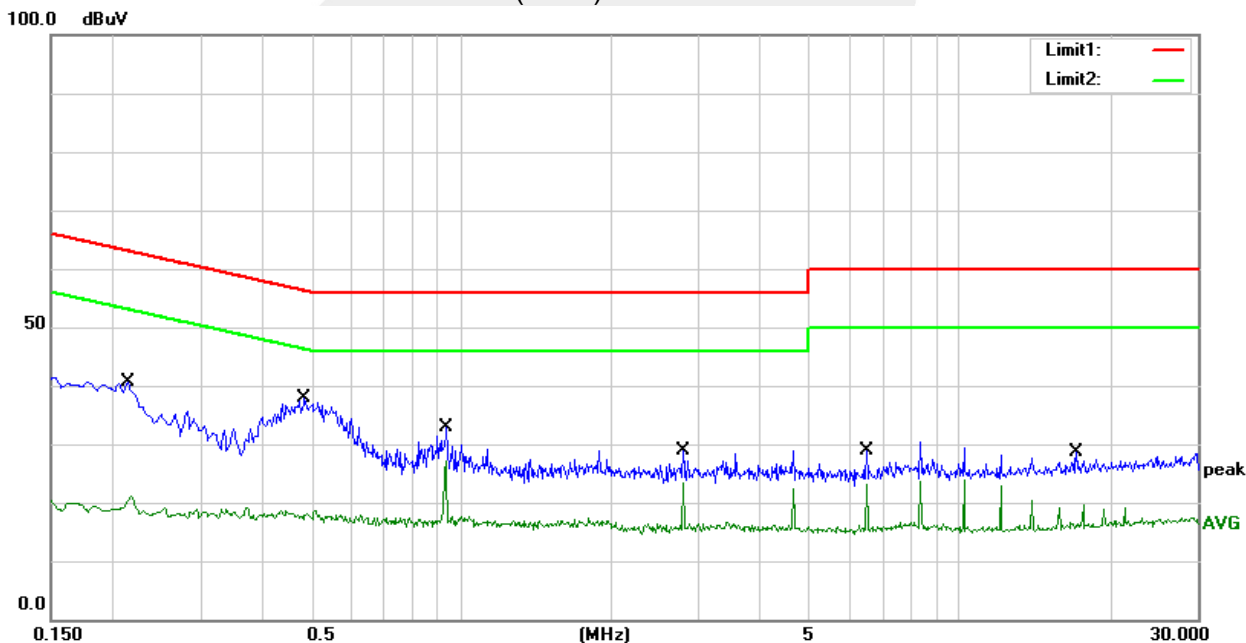


Temperature:	26.8(C)	Relative Humidity:	66%RH
Test Voltage:	AC 16V/60Hz	Phase:	N
Test Mode	Mode 25		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.2140	20.24	20.39	40.63	63.05	-22.42	QP
2	0.2140	0.80	20.39	21.19	53.05	-31.86	AVG
3	0.4860	17.35	20.44	37.79	56.24	-18.45	QP
4	0.4860	-2.36	20.44	18.08	46.24	-28.16	AVG
5	0.9340	12.72	20.19	32.91	56.00	-23.09	QP
6	0.9340	6.95	20.19	27.14	46.00	-18.86	AVG
7	2.7860	8.79	20.09	28.88	56.00	-27.12	QP
8	2.7860	3.16	20.09	23.25	46.00	-22.75	AVG
9	6.5020	8.87	19.92	28.79	60.00	-31.21	QP
10	6.5020	3.32	19.92	23.24	50.00	-26.76	AVG
11	17.1300	8.34	20.31	28.65	60.00	-31.35	QP
12	17.1300	-3.73	20.31	16.58	50.00	-33.42	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) - Limit
3. Factor = LISN factor + Cable loss + Limiter (10dB)





3.2 RADIATED EMISSION AND (BANDEDGE) MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

In case the emission fall within the restricted band specified on 15.407(b)7&15.205/209(a), then the limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	68.2	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15E.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RESTRICTED FREQUENCY BANDS

FCC:

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			



IC:

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138		

Note: In case the emission radiated emission above 1000MHz fall within the restricted band the restricted frequency bands, the peak limit is 74 dBuV/m.



LIMITS OF EMISSIONS OUTSIDE OF THE FREQUENCY BANDS

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 5.25-5.35 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.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note: dBuV/m(at 3M) = EIRP(dBm) + 95.3.

Peak Limit = -27dBm/MHz + 95.3 = 68.3 dBuV/m.

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier harmonic(Peak/AV)
RB / VB (emission in restricted band)	1 MHz / 1 MHz, AV=1 MHz /3 MHz

For Band edge

Spectrum Parameter	Setting
Detector	Peak
RB / VB (emission in restricted band)	1 MHz / 1 MHz, AV=1 MHz /3 MHz

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



3.2.2 TEST PROCEDURE

- a. The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
- c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and QuasiPeak detector mode will be re-measured.
- e. If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

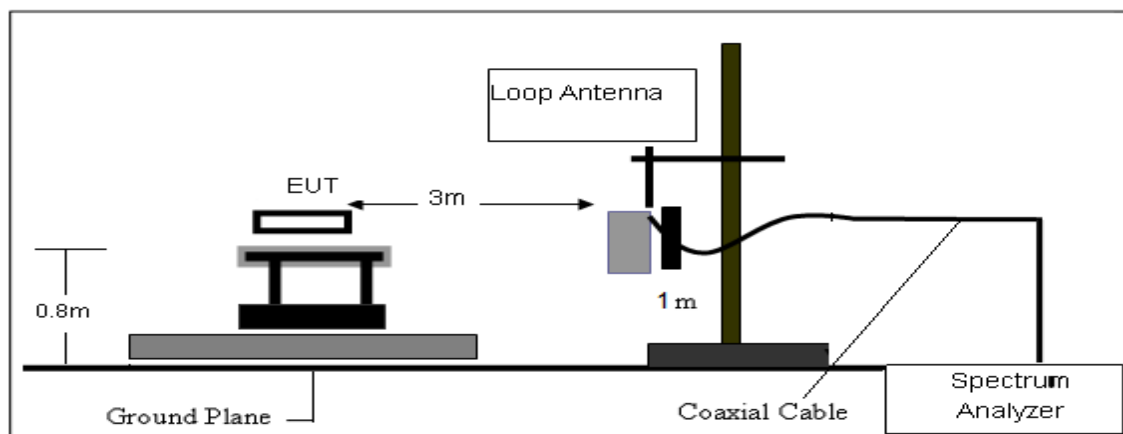
3.2.2 DEVIATION FROM TEST STANDARD

No deviation

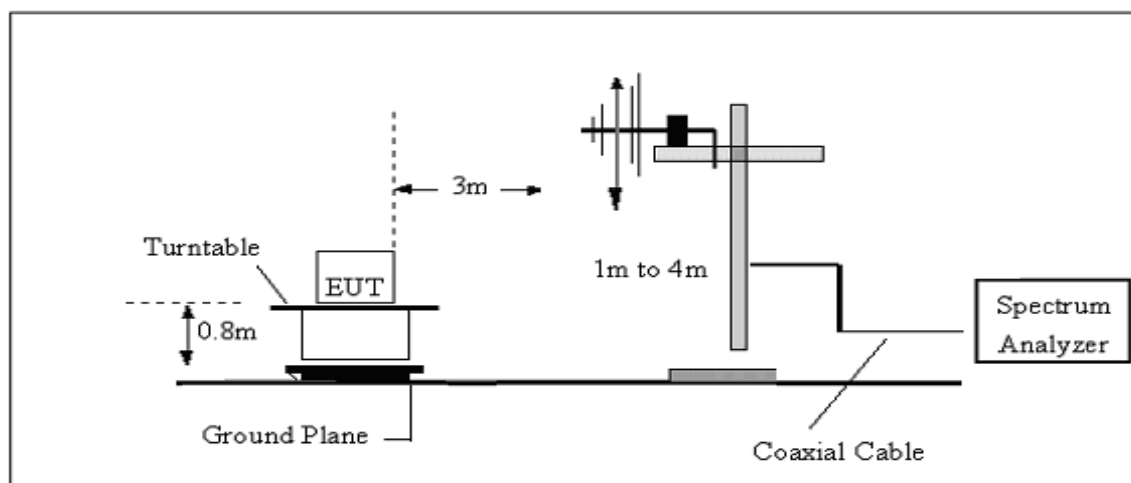


3.2.3 TEST SETUP

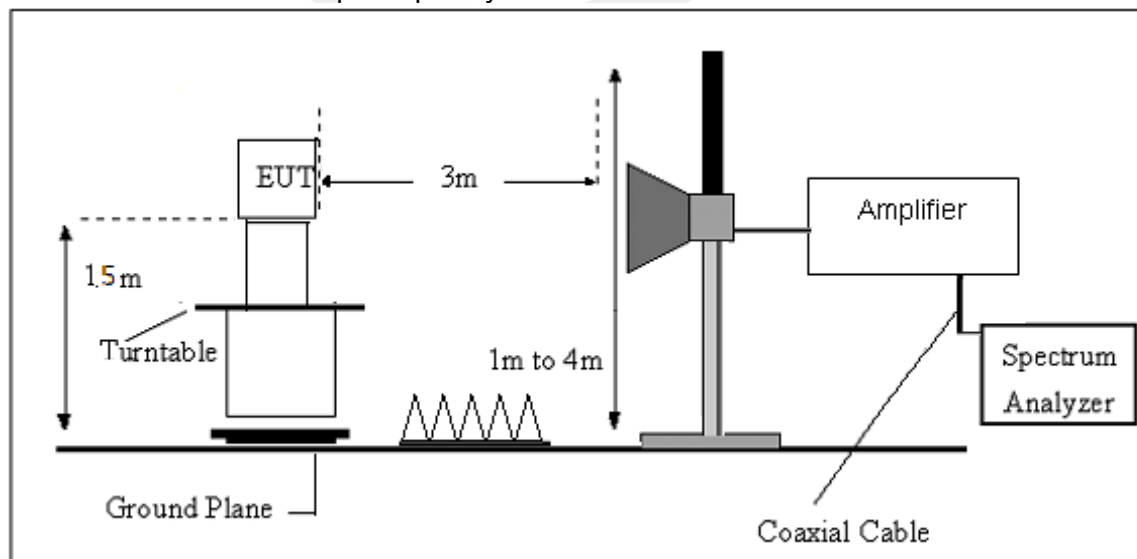
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz





3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

Frequency (MHz)	FS (dBμV/m)	RA (dBμV/m)	AF (dB)	CL (dB)	AG (dB)	Factor (dB)
300	40	58.1	12.2	1.6	31.9	-18.1

$$\text{Factor} = \text{AF} + \text{CL} - \text{AG}$$

**3.2.6 TEST RESULTS (Between 9KHz – 30 MHz)**

Temperature:	23.3(C)	Relative Humidity:	60%RH
Test Voltage:	DC 3.8V	Polarization :	--
Test Mode:	TX Mode		

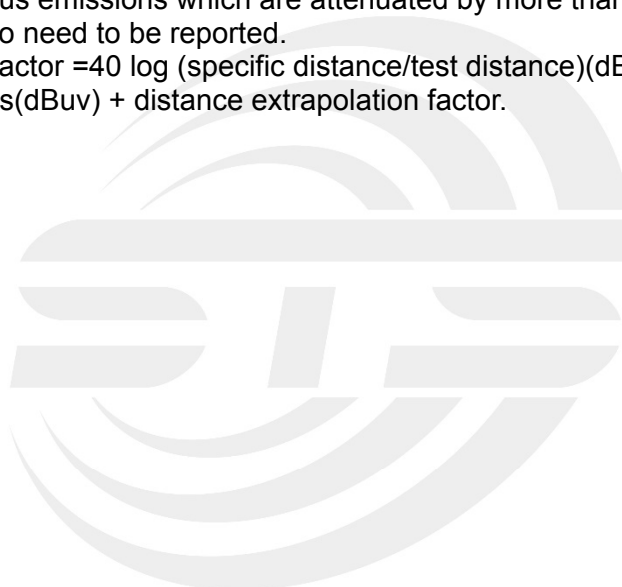
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

Note:

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

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})(\text{dB})$;

Limit line = specific limits(dBuV) + distance extrapolation factor.



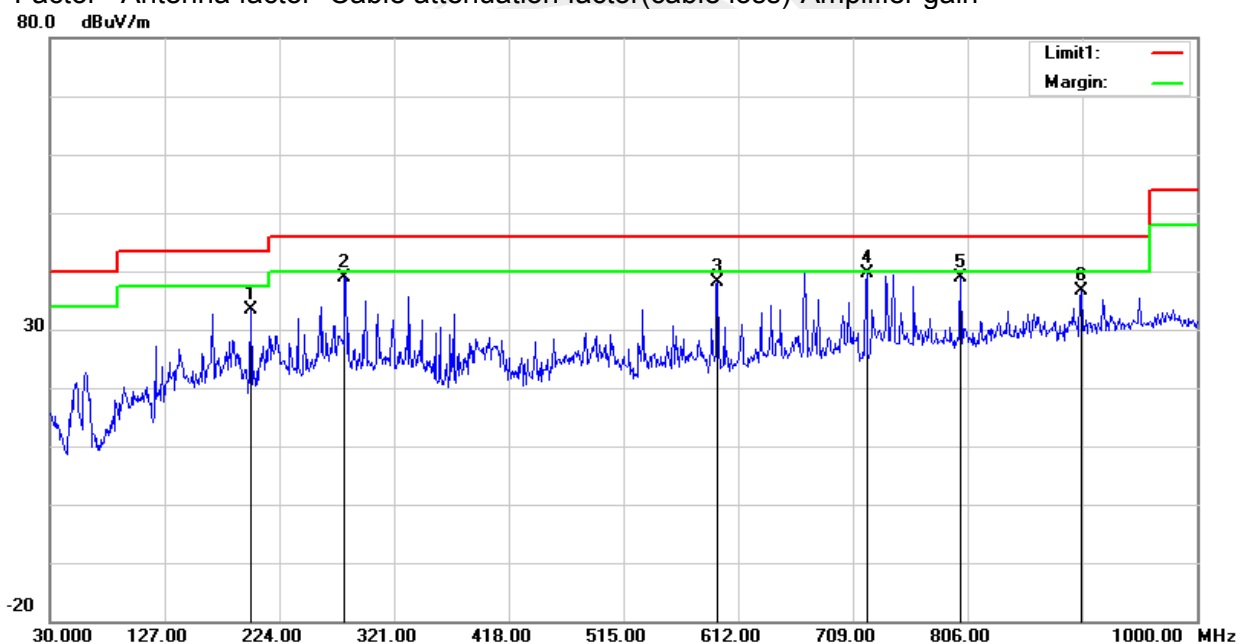
**3.2.7 TEST RESULTS (Between 30MHz – 1GHz)**

Temperature	23.3(C)	Relative Humidity:	60%RH
Test Voltage	DC 3.8V	Polarization:	Horizontal
Test Mode	Mode 1~24(Mode 2 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	199.7500	54.40	-21.11	33.29	43.50	-10.21	QP
2	279.2900	54.45	-15.58	38.87	46.00	-7.13	QP
3	594.5400	43.98	-5.84	38.14	46.00	-7.86	QP
4	720.6400	42.78	-3.20	39.58	46.00	-6.42	QP
5	800.1800	41.03	-2.05	38.98	46.00	-7.02	QP
6	902.0300	37.08	-0.40	36.68	46.00	-9.32	QP

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain





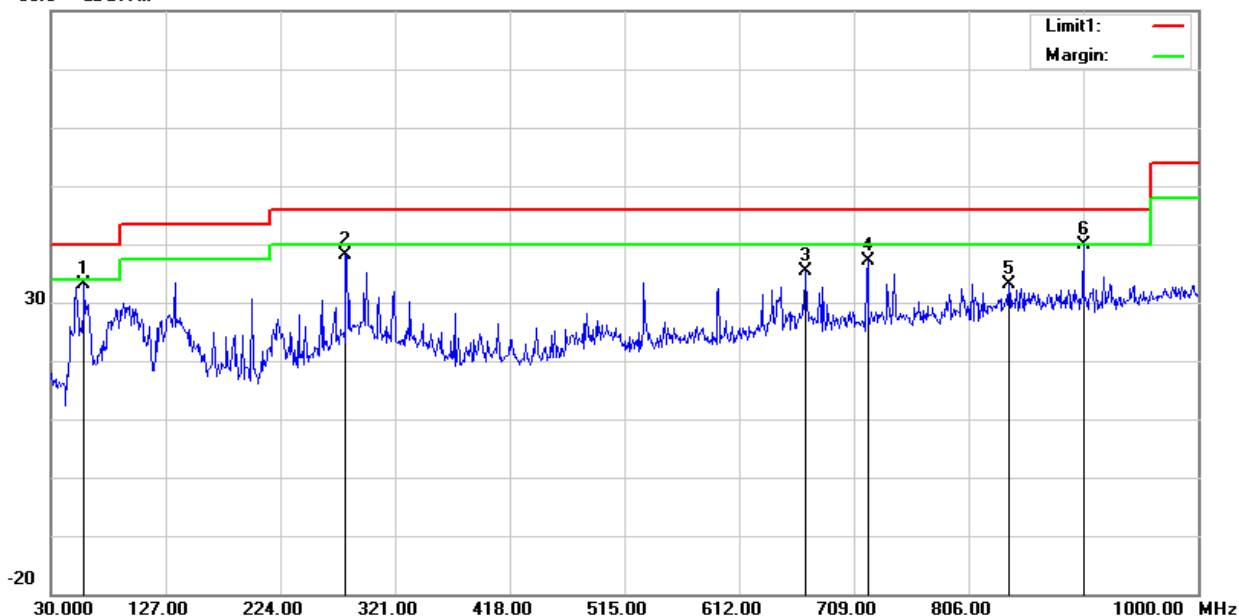
Temperature	23.3(C)	Relative Humidity:	60%RH
Test Voltage	DC 3.8V	Polarization:	Vertical
Test Mode	Mode 1~24(Mode 2 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	58.1300	58.78	-25.58	33.20	40.00	-6.80	QP
2	279.2900	53.65	-15.58	38.07	46.00	-7.93	QP
3	668.2600	39.97	-4.62	35.35	46.00	-10.65	QP
4	720.6400	40.40	-3.20	37.20	46.00	-8.80	QP
5	839.9500	33.42	-0.34	33.08	46.00	-12.92	QP
6	903.0000	40.24	-0.37	39.87	46.00	-6.13	QP

Remark:

1. Margin = Result (Result = Reading + Factor) - Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) - Amplifier gain

80.0 dBuV/m





3.2.8 TEST RESULTS (Above 1000 MHz)

Band I 5150-5250MHz

Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Orrected Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11n (HT-20)/ 5180 MHz)										
3260.08	44.60	44.70	6.70	28.20	-9.80	34.80	68.20	-33.40	Pk	Vertical
3260.08	41.04	44.70	6.70	28.20	-9.80	31.24	54.00	-22.76	AV	Vertical
3256.79	43.88	44.70	6.70	28.20	-9.80	34.08	68.20	-34.12	Pk	Horizontal
3256.79	41.70	44.70	6.70	28.20	-9.80	31.90	54.00	-22.10	AV	Horizontal
3997.24	40.04	44.20	7.90	29.70	-6.60	33.44	68.20	-34.76	Pk	Vertical
3997.24	36.70	44.20	7.90	29.70	-6.60	30.10	54.00	-23.90	AV	Vertical
3997.95	39.29	44.20	7.90	29.70	-6.60	32.69	68.20	-35.51	Pk	Horizontal
3997.95	36.13	44.20	7.90	29.70	-6.60	29.53	54.00	-24.47	AV	Horizontal
7223.22	36.97	43.50	11.40	35.50	3.40	40.37	68.20	-27.83	Pk	Vertical
7223.22	33.62	43.50	11.40	35.50	3.40	37.02	54.00	-16.98	AV	Vertical
7216.73	37.28	43.50	11.40	35.50	3.40	40.68	68.20	-27.52	Pk	Horizontal
7216.73	33.54	43.50	11.40	35.50	3.40	36.94	54.00	-17.06	AV	Horizontal
10360.03	40.08	44.50	13.80	38.80	8.10	48.18	68.20	-20.02	Pk	Vertical
10360.03	36.01	44.50	13.80	38.80	8.10	44.11	54.00	-9.89	AV	Vertical
10360.27	38.97	44.50	13.80	38.80	8.10	47.07	68.20	-21.13	Pk	Horizontal
10360.27	36.52	44.50	13.80	38.80	8.10	44.62	54.00	-9.38	AV	Horizontal
11020.98	34.02	43.60	14.30	39.50	10.20	44.22	68.20	-23.98	Pk	Vertical
11020.98	30.79	43.60	14.30	39.50	10.20	40.99	54.00	-13.01	AV	Vertical
11024.77	33.91	43.60	14.30	39.50	10.20	44.11	68.20	-24.09	Pk	Horizontal
11024.77	31.10	43.60	14.30	39.50	10.20	41.30	54.00	-12.70	AV	Horizontal
13295.47	32.13	42.60	15.90	38.90	12.20	44.33	68.20	-23.87	Pk	Vertical
13295.47	29.66	42.60	15.90	38.90	12.20	41.86	54.00	-12.14	AV	Vertical
13297.49	32.01	42.60	15.90	38.90	12.20	44.21	68.20	-23.99	Pk	Horizontal
13297.49	29.99	42.60	15.90	38.90	12.20	42.19	54.00	-11.81	AV	Horizontal
Mid Channel (802.11n (HT-20)/ 5200 MHz)										
3255.18	43.99	44.70	6.70	28.20	-9.80	34.19	68.20	-34.01	Pk	Vertical
3255.18	41.25	44.70	6.70	28.20	-9.80	31.45	54.00	-22.55	AV	Vertical
3261.02	43.82	44.70	6.70	28.20	-9.80	34.02	68.20	-34.18	Pk	Horizontal
3261.02	41.44	44.70	6.70	28.20	-9.80	31.64	54.00	-22.36	AV	Horizontal
3986.15	39.97	44.20	7.90	29.70	-6.60	33.37	68.20	-34.83	Pk	Vertical
3986.15	36.00	44.20	7.90	29.70	-6.60	29.40	54.00	-24.60	AV	Vertical
3983.47	39.93	44.20	7.90	29.70	-6.60	33.33	68.20	-34.87	Pk	Horizontal
3983.47	35.84	44.20	7.90	29.70	-6.60	29.24	54.00	-24.76	AV	Horizontal
7227.21	36.86	43.50	11.40	35.50	3.40	40.26	68.20	-27.94	Pk	Vertical
7227.21	34.08	43.50	11.40	35.50	3.40	37.48	54.00	-16.52	AV	Vertical
7221.26	36.60	43.50	11.40	35.50	3.40	40.00	68.20	-28.20	Pk	Horizontal
7221.26	34.03	43.50	11.40	35.50	3.40	37.43	54.00	-16.57	AV	Horizontal
10400.20	39.66	44.50	13.80	38.80	8.10	47.76	68.20	-20.44	Pk	Vertical
10400.20	36.97	44.50	13.80	38.80	8.10	45.07	54.00	-8.93	AV	Vertical
10399.99	40.11	44.50	13.80	38.80	8.10	48.21	68.20	-19.99	Pk	Horizontal
10399.99	37.13	44.50	13.80	38.80	8.10	45.23	54.00	-8.77	AV	Horizontal
11021.43	33.77	43.60	14.30	39.50	10.20	43.97	68.20	-24.23	Pk	Vertical
11021.43	30.85	43.60	14.30	39.50	10.20	41.05	54.00	-12.95	AV	Vertical
11033.53	33.96	43.60	14.30	39.50	10.20	44.16	68.20	-24.04	Pk	Horizontal
11033.53	30.24	43.60	14.30	39.50	10.20	40.44	54.00	-13.56	AV	Horizontal
13289.17	31.99	42.60	15.90	38.90	12.20	44.19	68.20	-24.01	Pk	Vertical
13289.17	28.69	42.60	15.90	38.90	12.20	40.89	54.00	-13.11	AV	Vertical
13299.71	32.84	42.60	15.90	38.90	12.20	45.04	68.20	-23.16	Pk	Horizontal
13299.71	29.84	42.60	15.90	38.90	12.20	42.04	54.00	-11.96	AV	Horizontal



High Channel (802.11n (HT-20)/ 5240 MHz)										
3246.52	44.99	44.70	6.70	28.20	-9.80	35.19	68.20	-33.01	Pk	Vertical
3246.52	41.90	44.70	6.70	28.20	-9.80	32.10	54.00	-21.90	AV	Vertical
3248.84	45.20	44.70	6.70	28.20	-9.80	35.40	68.20	-32.80	Pk	Horizontal
3248.84	41.56	44.70	6.70	28.20	-9.80	31.76	54.00	-22.24	AV	Horizontal
3987.97	39.87	44.20	7.90	29.70	-6.60	33.27	68.20	-34.93	Pk	Vertical
3987.97	36.14	44.20	7.90	29.70	-6.60	29.54	54.00	-24.46	AV	Vertical
3982.75	38.66	44.20	7.90	29.70	-6.60	32.06	68.20	-36.14	Pk	Horizontal
3982.75	36.39	44.20	7.90	29.70	-6.60	29.79	54.00	-24.21	AV	Horizontal
7222.39	36.54	43.50	11.40	35.50	3.40	39.94	68.20	-28.26	Pk	Vertical
7222.39	33.46	43.50	11.40	35.50	3.40	36.86	54.00	-17.14	AV	Vertical
7226.17	37.51	43.50	11.40	35.50	3.40	40.91	68.20	-27.29	Pk	Horizontal
7226.17	34.16	43.50	11.40	35.50	3.40	37.56	54.00	-16.44	AV	Horizontal
10480.38	39.32	44.50	13.80	38.80	8.10	47.42	68.20	-20.78	Pk	Vertical
10480.38	36.76	44.50	13.80	38.80	8.10	44.86	54.00	-9.14	AV	Vertical
10480.10	38.93	44.50	13.80	38.80	8.10	47.03	68.20	-21.17	Pk	Horizontal
10480.10	35.95	44.50	13.80	38.80	8.10	44.05	54.00	-9.95	AV	Horizontal
11029.16	32.91	43.60	14.30	39.50	10.20	43.11	68.20	-25.09	Pk	Vertical
11029.16	30.59	43.60	14.30	39.50	10.20	40.79	54.00	-13.21	AV	Vertical
11019.07	32.94	43.60	14.30	39.50	10.20	43.14	68.20	-25.06	Pk	Horizontal
11019.07	30.84	43.60	14.30	39.50	10.20	41.04	54.00	-12.96	AV	Horizontal
13290.03	31.77	42.60	15.90	38.90	12.20	43.97	68.20	-24.23	Pk	Vertical
13290.03	29.07	42.60	15.90	38.90	12.20	41.27	54.00	-12.73	AV	Vertical
13280.25	32.16	42.60	15.90	38.90	12.20	44.36	68.20	-23.84	Pk	Horizontal
13280.25	29.25	42.60	15.90	38.90	12.20	41.45	54.00	-12.55	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

2. Scan with 802.11a, 802.11n (HT-20), 802.11n (HT-40), 802.11ac (VHT-20), 802.11ac (VHT-40), 802.11ac (VHT-80) all have been tested the antenna A, antenna B and antenna A+B, the worst case is 802.11n (HT-20) of the antenna A+B.

3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



Band II 5250-5350MHz

Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Orrected Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11n (HT-20)/ 5260 MHz)										
3256.74	44.60	44.70	6.70	28.20	-9.80	34.80	68.20	-33.40	Pk	Vertical
3256.74	41.75	44.70	6.70	28.20	-9.80	31.95	54.00	-22.05	AV	Vertical
3255.82	45.17	44.70	6.70	28.20	-9.80	35.37	68.20	-32.83	Pk	Horizontal
3255.82	40.88	44.70	6.70	28.20	-9.80	31.08	54.00	-22.92	AV	Horizontal
3983.86	39.22	44.20	7.90	29.70	-6.60	32.62	68.20	-35.58	Pk	Vertical
3983.86	36.43	44.20	7.90	29.70	-6.60	29.83	54.00	-24.17	AV	Vertical
3982.64	39.83	44.20	7.90	29.70	-6.60	33.23	68.20	-34.97	Pk	Horizontal
3982.64	36.31	44.20	7.90	29.70	-6.60	29.71	54.00	-24.29	AV	Horizontal
7217.46	37.65	43.50	11.40	35.50	3.40	41.05	68.20	-27.15	Pk	Vertical
7217.46	34.78	43.50	11.40	35.50	3.40	38.18	54.00	-15.82	AV	Vertical
7235.02	37.48	43.50	11.40	35.50	3.40	40.88	68.20	-27.32	Pk	Horizontal
7235.02	33.69	43.50	11.40	35.50	3.40	37.09	54.00	-16.91	AV	Horizontal
10360.10	40.02	44.50	13.80	38.80	8.10	48.12	68.20	-20.08	Pk	Vertical
10360.10	36.51	44.50	13.80	38.80	8.10	44.61	54.00	-9.39	AV	Vertical
10360.06	39.23	44.50	13.80	38.80	8.10	47.33	68.20	-20.87	Pk	Horizontal
10360.06	36.08	44.50	13.80	38.80	8.10	44.18	54.00	-9.82	AV	Horizontal
11033.71	33.88	43.60	14.30	39.50	10.20	44.08	68.20	-24.12	Pk	Vertical
11033.71	30.57	43.60	14.30	39.50	10.20	40.77	54.00	-13.23	AV	Vertical
11031.27	33.53	43.60	14.30	39.50	10.20	43.73	68.20	-24.47	Pk	Horizontal
11031.27	29.89	43.60	14.30	39.50	10.20	40.09	54.00	-13.91	AV	Horizontal
13287.93	32.01	42.60	15.90	38.90	12.20	44.21	68.20	-23.99	Pk	Vertical
13287.93	29.69	42.60	15.90	38.90	12.20	41.89	54.00	-12.11	AV	Vertical
13292.48	32.76	42.60	15.90	38.90	12.20	44.96	68.20	-23.24	Pk	Horizontal
13292.48	29.72	42.60	15.90	38.90	12.20	41.92	54.00	-12.08	AV	Horizontal
Mid Channel (802.11n (HT-20)/ 5300 MHz)										
3255.25	45.14	44.70	6.70	28.20	-9.80	35.34	68.20	-32.86	Pk	Vertical
3255.25	41.79	44.70	6.70	28.20	-9.80	31.99	54.00	-22.01	AV	Vertical
3262.35	44.91	44.70	6.70	28.20	-9.80	35.11	68.20	-33.09	Pk	Horizontal
3262.35	40.84	44.70	6.70	28.20	-9.80	31.04	54.00	-22.96	AV	Horizontal
3999.32	38.80	44.20	7.90	29.70	-6.60	32.20	68.20	-36.00	Pk	Vertical
3999.32	36.62	44.20	7.90	29.70	-6.60	30.02	54.00	-23.98	AV	Vertical
3981.79	39.97	44.20	7.90	29.70	-6.60	33.37	68.20	-34.83	Pk	Horizontal
3981.79	36.21	44.20	7.90	29.70	-6.60	29.61	54.00	-24.39	AV	Horizontal
7235.89	36.46	43.50	11.40	35.50	3.40	39.86	68.20	-28.34	Pk	Vertical
7235.89	34.33	43.50	11.40	35.50	3.40	37.73	54.00	-16.27	AV	Vertical
7223.97	37.52	43.50	11.40	35.50	3.40	40.92	68.20	-27.28	Pk	Horizontal
7223.97	33.82	43.50	11.40	35.50	3.40	37.22	54.00	-16.78	AV	Horizontal
10400.11	39.43	44.50	13.80	38.80	8.10	47.53	68.20	-20.67	Pk	Vertical
10400.11	35.72	44.50	13.80	38.80	8.10	43.82	54.00	-10.18	AV	Vertical
10400.00	39.96	44.50	13.80	38.80	8.10	48.06	68.20	-20.14	Pk	Horizontal
10400.00	36.34	44.50	13.80	38.80	8.10	44.44	54.00	-9.56	AV	Horizontal
11034.92	33.57	43.60	14.30	39.50	10.20	43.77	68.20	-24.43	Pk	Vertical
11034.92	30.46	43.60	14.30	39.50	10.20	40.66	54.00	-13.34	AV	Vertical
11020.67	32.88	43.60	14.30	39.50	10.20	43.08	68.20	-25.12	Pk	Horizontal
11020.67	29.81	43.60	14.30	39.50	10.20	40.01	54.00	-13.99	AV	Horizontal
13280.70	32.61	42.60	15.90	38.90	12.20	44.81	68.20	-23.39	Pk	Vertical
13280.70	29.18	42.60	15.90	38.90	12.20	41.38	54.00	-12.62	AV	Vertical
13287.22	31.86	42.60	15.90	38.90	12.20	44.06	68.20	-24.14	Pk	Horizontal
13287.22	28.89	42.60	15.90	38.90	12.20	41.09	54.00	-12.91	AV	Horizontal



High Channel (802.11n (HT-20)/ 5320 MHz)										
3248.34	45.05	44.70	6.70	28.20	-9.80	35.25	68.20	-32.95	Pk	Vertical
3248.34	40.92	44.70	6.70	28.20	-9.80	31.12	54.00	-22.88	AV	Vertical
3248.92	44.53	44.70	6.70	28.20	-9.80	34.73	68.20	-33.47	Pk	Horizontal
3248.92	40.92	44.70	6.70	28.20	-9.80	31.12	54.00	-22.88	AV	Horizontal
3991.14	40.04	44.20	7.90	29.70	-6.60	33.44	68.20	-34.76	Pk	Vertical
3991.14	36.37	44.20	7.90	29.70	-6.60	29.77	54.00	-24.23	AV	Vertical
3980.34	39.93	44.20	7.90	29.70	-6.60	33.33	68.20	-34.87	Pk	Horizontal
3980.34	35.66	44.20	7.90	29.70	-6.60	29.06	54.00	-24.94	AV	Horizontal
7222.01	37.77	43.50	11.40	35.50	3.40	41.17	68.20	-27.03	Pk	Vertical
7222.01	33.61	43.50	11.40	35.50	3.40	37.01	54.00	-16.99	AV	Vertical
7219.28	36.68	43.50	11.40	35.50	3.40	40.08	68.20	-28.12	Pk	Horizontal
7219.28	34.21	43.50	11.40	35.50	3.40	37.61	54.00	-16.39	AV	Horizontal
10480.35	39.65	44.50	13.80	38.80	8.10	47.75	68.20	-20.45	Pk	Vertical
10480.35	36.45	44.50	13.80	38.80	8.10	44.55	54.00	-9.45	AV	Vertical
10480.17	38.80	44.50	13.80	38.80	8.10	46.90	68.20	-21.30	Pk	Horizontal
10480.17	36.13	44.50	13.80	38.80	8.10	44.23	54.00	-9.77	AV	Horizontal
11025.63	33.25	43.60	14.30	39.50	10.20	43.45	68.20	-24.75	Pk	Vertical
11025.63	30.97	43.60	14.30	39.50	10.20	41.17	54.00	-12.83	AV	Vertical
11019.04	33.62	43.60	14.30	39.50	10.20	43.82	68.20	-24.38	Pk	Horizontal
11019.04	30.70	43.60	14.30	39.50	10.20	40.90	54.00	-13.10	AV	Horizontal
13288.62	32.10	42.60	15.90	38.90	12.20	44.30	68.20	-23.90	Pk	Vertical
13288.62	28.86	42.60	15.90	38.90	12.20	41.06	54.00	-12.94	AV	Vertical
13288.66	32.17	42.60	15.90	38.90	12.20	44.37	68.20	-23.83	Pk	Horizontal
13288.66	28.97	42.60	15.90	38.90	12.20	41.17	54.00	-12.83	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a, 802.11n (HT-20), 802.11n (HT-40), 802.11ac (VHT-20), 802.11ac (VHT-40), 802.11ac (VHT-80) all have been tested the antenna A, antenna B and antenna A+B, the worst case is 802.11n (HT-20) of the antenna A+B.
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



Band III 5470-5725MHz

Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Orrected Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11ac (VHT-20)/ 5500 MHz)										
3260.13	44.03	44.70	6.70	28.20	-9.80	34.23	68.20	-33.97	Pk	Vertical
3260.13	42.09	44.70	6.70	28.20	-9.80	32.29	54.00	-21.71	AV	Vertical
3265.23	44.63	44.70	6.70	28.20	-9.80	34.83	68.20	-33.37	Pk	Horizontal
3265.23	42.21	44.70	6.70	28.20	-9.80	32.41	54.00	-21.59	AV	Horizontal
4000.20	39.79	44.20	7.90	29.70	-6.60	33.19	68.20	-35.01	Pk	Vertical
4000.20	36.94	44.20	7.90	29.70	-6.60	30.34	54.00	-23.66	AV	Vertical
3988.22	39.06	44.20	7.90	29.70	-6.60	32.46	68.20	-35.74	Pk	Horizontal
3988.22	36.91	44.20	7.90	29.70	-6.60	30.31	54.00	-23.69	AV	Horizontal
7217.19	36.61	43.50	11.40	35.50	3.40	40.01	68.20	-28.19	Pk	Vertical
7217.19	34.46	43.50	11.40	35.50	3.40	37.86	54.00	-16.14	AV	Vertical
7231.18	36.63	43.50	11.40	35.50	3.40	40.03	68.20	-28.17	Pk	Horizontal
7231.18	34.32	43.50	11.40	35.50	3.40	37.72	54.00	-16.28	AV	Horizontal
10360.39	39.44	44.50	13.80	38.80	8.10	47.54	68.20	-20.66	Pk	Vertical
10360.39	36.77	44.50	13.80	38.80	8.10	44.87	54.00	-9.13	AV	Vertical
10360.31	39.66	44.50	13.80	38.80	8.10	47.76	68.20	-20.44	Pk	Horizontal
10360.31	36.97	44.50	13.80	38.80	8.10	45.07	54.00	-8.93	AV	Horizontal
11030.76	34.12	43.60	14.30	39.50	10.20	44.32	68.20	-23.88	Pk	Vertical
11030.76	31.16	43.60	14.30	39.50	10.20	41.36	54.00	-12.64	AV	Vertical
11020.88	34.09	43.60	14.30	39.50	10.20	44.29	68.20	-23.91	Pk	Horizontal
11020.88	30.75	43.60	14.30	39.50	10.20	40.95	54.00	-13.05	AV	Horizontal
13290.96	32.45	42.60	15.90	38.90	12.20	44.65	68.20	-23.55	Pk	Vertical
13290.96	29.97	42.60	15.90	38.90	12.20	42.17	54.00	-11.83	AV	Vertical
13290.63	32.72	42.60	15.90	38.90	12.20	44.92	68.20	-23.28	Pk	Horizontal
13290.63	30.02	42.60	15.90	38.90	12.20	42.22	54.00	-11.78	AV	Horizontal
Mid Channel (802.11ac (VHT-20)/ 5580 MHz)										
3252.85	45.13	44.70	6.70	28.20	-9.80	35.33	68.20	-32.87	Pk	Vertical
3252.85	41.48	44.70	6.70	28.20	-9.80	31.68	54.00	-22.32	AV	Vertical
3252.94	43.78	44.70	6.70	28.20	-9.80	33.98	68.20	-34.22	Pk	Horizontal
3252.94	41.54	44.70	6.70	28.20	-9.80	31.74	54.00	-22.26	AV	Horizontal
3989.14	39.66	44.20	7.90	29.70	-6.60	33.06	68.20	-35.14	Pk	Vertical
3989.14	36.30	44.20	7.90	29.70	-6.60	29.70	54.00	-24.30	AV	Vertical
3981.65	39.19	44.20	7.90	29.70	-6.60	32.59	68.20	-35.61	Pk	Horizontal
3981.65	36.40	44.20	7.90	29.70	-6.60	29.80	54.00	-24.20	AV	Horizontal
7231.63	36.42	43.50	11.40	35.50	3.40	39.82	68.20	-28.38	Pk	Vertical
7231.63	33.52	43.50	11.40	35.50	3.40	36.92	54.00	-17.08	AV	Vertical
7227.58	37.67	43.50	11.40	35.50	3.40	41.07	68.20	-27.13	Pk	Horizontal
7227.58	33.82	43.50	11.40	35.50	3.40	37.22	54.00	-16.78	AV	Horizontal
10399.97	39.95	44.50	13.80	38.80	8.10	48.05	68.20	-20.15	Pk	Vertical
10399.97	36.39	44.50	13.80	38.80	8.10	44.49	54.00	-9.51	AV	Vertical
10400.26	39.84	44.50	13.80	38.80	8.10	47.94	68.20	-20.26	Pk	Horizontal
10400.26	35.90	44.50	13.80	38.80	8.10	44.00	54.00	-10.00	AV	Horizontal
11032.87	32.90	43.60	14.30	39.50	10.20	43.10	68.20	-25.10	Pk	Vertical
11032.87	30.00	43.60	14.30	39.50	10.20	40.20	54.00	-13.80	AV	Vertical
11028.10	32.78	43.60	14.30	39.50	10.20	42.98	68.20	-25.22	Pk	Horizontal
11028.10	29.96	43.60	14.30	39.50	10.20	40.16	54.00	-13.84	AV	Horizontal
13296.89	31.83	42.60	15.90	38.90	12.20	44.03	68.20	-24.17	Pk	Vertical
13296.89	29.48	42.60	15.90	38.90	12.20	41.68	54.00	-12.32	AV	Vertical
13294.11	32.33	42.60	15.90	38.90	12.20	44.53	68.20	-23.67	Pk	Horizontal
13294.11	29.53	42.60	15.90	38.90	12.20	41.73	54.00	-12.27	AV	Horizontal



High Channel (802.11ac (VHT-20) 5700 MHz)										
3264.73	43.91	44.70	6.70	28.20	-9.80	34.11	68.20	-34.09	Pk	Vertical
3264.73	41.92	44.70	6.70	28.20	-9.80	32.12	54.00	-21.88	AV	Vertical
3250.75	44.70	44.70	6.70	28.20	-9.80	34.90	68.20	-33.30	Pk	Horizontal
3250.75	41.45	44.70	6.70	28.20	-9.80	31.65	54.00	-22.35	AV	Horizontal
3998.64	40.09	44.20	7.90	29.70	-6.60	33.49	68.20	-34.71	Pk	Vertical
3998.64	36.22	44.20	7.90	29.70	-6.60	29.62	54.00	-24.38	AV	Vertical
3990.44	38.97	44.20	7.90	29.70	-6.60	32.37	68.20	-35.83	Pk	Horizontal
3990.44	36.52	44.20	7.90	29.70	-6.60	29.92	54.00	-24.08	AV	Horizontal
7236.26	37.58	43.50	11.40	35.50	3.40	40.98	68.20	-27.22	Pk	Vertical
7236.26	33.78	43.50	11.40	35.50	3.40	37.18	54.00	-16.82	AV	Vertical
7235.80	37.08	43.50	11.40	35.50	3.40	40.48	68.20	-27.72	Pk	Horizontal
7235.80	34.38	43.50	11.40	35.50	3.40	37.78	54.00	-16.22	AV	Horizontal
10480.39	38.94	44.50	13.80	38.80	8.10	47.04	68.20	-21.16	Pk	Vertical
10480.39	36.78	44.50	13.80	38.80	8.10	44.88	54.00	-9.12	AV	Vertical
10480.01	38.91	44.50	13.80	38.80	8.10	47.01	68.20	-21.19	Pk	Horizontal
10480.01	36.83	44.50	13.80	38.80	8.10	44.93	54.00	-9.07	AV	Horizontal
11019.25	33.70	43.60	14.30	39.50	10.20	43.90	68.20	-24.30	Pk	Vertical
11019.25	30.20	43.60	14.30	39.50	10.20	40.40	54.00	-13.60	AV	Vertical
11027.41	33.22	43.60	14.30	39.50	10.20	43.42	68.20	-24.78	Pk	Horizontal
11027.41	30.61	43.60	14.30	39.50	10.20	40.81	54.00	-13.19	AV	Horizontal
13284.16	32.69	42.60	15.90	38.90	12.20	44.89	68.20	-23.31	Pk	Vertical
13284.16	29.56	42.60	15.90	38.90	12.20	41.76	54.00	-12.24	AV	Vertical
13281.89	32.15	42.60	15.90	38.90	12.20	44.35	68.20	-23.85	Pk	Horizontal
13281.89	28.87	42.60	15.90	38.90	12.20	41.07	54.00	-12.93	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a, 802.11n (HT-20), 802.11n (HT-40), 802.11ac (VHT-20), 802.11ac (VHT-40), 802.11ac (VHT-80) all have been tested the antenna A, antenna B and antenna A+B, the worst case is 802.11ac (VHT-20) of the antenna A+B.
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



Band IV(5.725-5.850) GHz

Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Orrected Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11n (HT-20)/ 5745 MHz)										
3256.75	44.11	44.70	6.70	28.20	-9.80	34.31	68.20	-33.89	Pk	Vertical
3256.75	41.31	44.70	6.70	28.20	-9.80	31.51	54.00	-22.49	AV	Vertical
3249.55	43.79	44.70	6.70	28.20	-9.80	33.99	68.20	-34.21	Pk	Horizontal
3249.55	41.56	44.70	6.70	28.20	-9.80	31.76	54.00	-22.24	AV	Horizontal
3981.99	40.03	44.20	7.90	29.70	-6.60	33.43	68.20	-34.77	Pk	Vertical
3981.99	36.18	44.20	7.90	29.70	-6.60	29.58	54.00	-24.42	AV	Vertical
3994.31	40.06	44.20	7.90	29.70	-6.60	33.46	68.20	-34.74	Pk	Horizontal
3994.31	36.21	44.20	7.90	29.70	-6.60	29.61	54.00	-24.39	AV	Horizontal
7232.90	37.50	43.50	11.40	35.50	3.40	40.90	68.20	-27.30	Pk	Vertical
7232.90	34.32	43.50	11.40	35.50	3.40	37.72	54.00	-16.28	AV	Vertical
7229.98	37.00	43.50	11.40	35.50	3.40	40.40	68.20	-27.80	Pk	Horizontal
7229.98	34.66	43.50	11.40	35.50	3.40	38.06	54.00	-15.94	AV	Horizontal
10360.12	39.09	44.50	13.80	38.80	8.10	47.19	68.20	-21.01	Pk	Vertical
10360.12	35.73	44.50	13.80	38.80	8.10	43.83	54.00	-10.17	AV	Vertical
10360.05	39.02	44.50	13.80	38.80	8.10	47.12	68.20	-21.08	Pk	Horizontal
10360.05	36.17	44.50	13.80	38.80	8.10	44.27	54.00	-9.73	AV	Horizontal
11030.61	33.96	43.60	14.30	39.50	10.20	44.16	68.20	-24.04	Pk	Vertical
11030.61	30.29	43.60	14.30	39.50	10.20	40.49	54.00	-13.51	AV	Vertical
11026.15	33.43	43.60	14.30	39.50	10.20	43.63	68.20	-24.57	Pk	Horizontal
11026.15	30.97	43.60	14.30	39.50	10.20	41.17	54.00	-12.83	AV	Horizontal
13293.27	32.59	42.60	15.90	38.90	12.20	44.79	68.20	-23.41	Pk	Vertical
13293.27	28.75	42.60	15.90	38.90	12.20	40.95	54.00	-13.05	AV	Vertical
13283.74	32.38	42.60	15.90	38.90	12.20	44.58	68.20	-23.62	Pk	Horizontal
13283.74	29.45	42.60	15.90	38.90	12.20	41.65	54.00	-12.35	AV	Horizontal
Mid Channel (802.11n (HT-20)/ 5785MHz)										
3252.51	44.86	44.70	6.70	28.20	-9.80	35.06	68.20	-33.14	Pk	Vertical
3252.51	41.54	44.70	6.70	28.20	-9.80	31.74	54.00	-22.26	AV	Vertical
3256.25	44.19	44.70	6.70	28.20	-9.80	34.39	68.20	-33.81	Pk	Horizontal
3256.25	41.23	44.70	6.70	28.20	-9.80	31.43	54.00	-22.57	AV	Horizontal
3981.68	39.08	44.20	7.90	29.70	-6.60	32.48	68.20	-35.72	Pk	Vertical
3981.68	36.83	44.20	7.90	29.70	-6.60	30.23	54.00	-23.77	AV	Vertical
3990.09	39.16	44.20	7.90	29.70	-6.60	32.56	68.20	-35.64	Pk	Horizontal
3990.09	36.28	44.20	7.90	29.70	-6.60	29.68	54.00	-24.32	AV	Horizontal
7218.90	37.12	43.50	11.40	35.50	3.40	40.52	68.20	-27.68	Pk	Vertical
7218.90	33.76	43.50	11.40	35.50	3.40	37.16	54.00	-16.84	AV	Vertical
7218.29	37.15	43.50	11.40	35.50	3.40	40.55	68.20	-27.65	Pk	Horizontal
7218.29	34.04	43.50	11.40	35.50	3.40	37.44	54.00	-16.56	AV	Horizontal
10400.39	40.19	44.50	13.80	38.80	8.10	48.29	68.20	-19.91	Pk	Vertical
10400.39	36.77	44.50	13.80	38.80	8.10	44.87	54.00	-9.13	AV	Vertical
10400.01	39.78	44.50	13.80	38.80	8.10	47.88	68.20	-20.32	Pk	Horizontal
10400.01	35.83	44.50	13.80	38.80	8.10	43.93	54.00	-10.07	AV	Horizontal
11034.21	34.04	43.60	14.30	39.50	10.20	44.24	68.20	-23.96	Pk	Vertical
11034.21	30.63	43.60	14.30	39.50	10.20	40.83	54.00	-13.17	AV	Vertical
11035.27	33.23	43.60	14.30	39.50	10.20	43.43	68.20	-24.77	Pk	Horizontal
11035.27	30.89	43.60	14.30	39.50	10.20	41.09	54.00	-12.91	AV	Horizontal
13280.62	31.76	42.60	15.90	38.90	12.20	43.96	68.20	-24.24	Pk	Vertical
13280.62	29.50	42.60	15.90	38.90	12.20	41.70	54.00	-12.30	AV	Vertical
13283.50	32.06	42.60	15.90	38.90	12.20	44.26	68.20	-23.94	Pk	Horizontal
13283.50	29.62	42.60	15.90	38.90	12.20	41.82	54.00	-12.18	AV	Horizontal



High Channel (802.11n (HT-20)/ 5825 MHz)										
3262.18	45.05	44.70	6.70	28.20	-9.80	35.25	68.20	-32.95	Pk	Vertical
3262.18	41.21	44.70	6.70	28.20	-9.80	31.41	54.00	-22.59	AV	Vertical
3262.65	44.51	44.70	6.70	28.20	-9.80	34.71	68.20	-33.49	Pk	Horizontal
3262.65	42.22	44.70	6.70	28.20	-9.80	32.42	54.00	-21.58	AV	Horizontal
3989.37	39.04	44.20	7.90	29.70	-6.60	32.44	68.20	-35.76	Pk	Vertical
3989.37	36.58	44.20	7.90	29.70	-6.60	29.98	54.00	-24.02	AV	Vertical
3985.70	38.88	44.20	7.90	29.70	-6.60	32.28	68.20	-35.92	Pk	Horizontal
3985.70	36.38	44.20	7.90	29.70	-6.60	29.78	54.00	-24.22	AV	Horizontal
7220.79	36.55	43.50	11.40	35.50	3.40	39.95	68.20	-28.25	Pk	Vertical
7220.79	33.75	43.50	11.40	35.50	3.40	37.15	54.00	-16.85	AV	Vertical
7236.28	37.49	43.50	11.40	35.50	3.40	40.89	68.20	-27.31	Pk	Horizontal
7236.28	33.85	43.50	11.40	35.50	3.40	37.25	54.00	-16.75	AV	Horizontal
10480.43	39.16	44.50	13.80	38.80	8.10	47.26	68.20	-20.94	Pk	Vertical
10480.43	35.90	44.50	13.80	38.80	8.10	44.00	54.00	-10.00	AV	Vertical
10480.20	38.80	44.50	13.80	38.80	8.10	46.90	68.20	-21.30	Pk	Horizontal
10480.20	36.65	44.50	13.80	38.80	8.10	44.75	54.00	-9.25	AV	Horizontal
11021.89	33.55	43.60	14.30	39.50	10.20	43.75	68.20	-24.45	Pk	Vertical
11021.89	31.06	43.60	14.30	39.50	10.20	41.26	54.00	-12.74	AV	Vertical
11035.40	33.83	43.60	14.30	39.50	10.20	44.03	68.20	-24.17	Pk	Horizontal
11035.40	30.46	43.60	14.30	39.50	10.20	40.66	54.00	-13.34	AV	Horizontal
13296.28	32.10	42.60	15.90	38.90	12.20	44.30	68.20	-23.90	Pk	Vertical
13296.28	29.35	42.60	15.90	38.90	12.20	41.55	54.00	-12.45	AV	Vertical
13284.66	32.87	42.60	15.90	38.90	12.20	45.07	68.20	-23.13	Pk	Horizontal
13284.66	29.28	42.60	15.90	38.90	12.20	41.48	54.00	-12.52	AV	Horizontal

Remark:

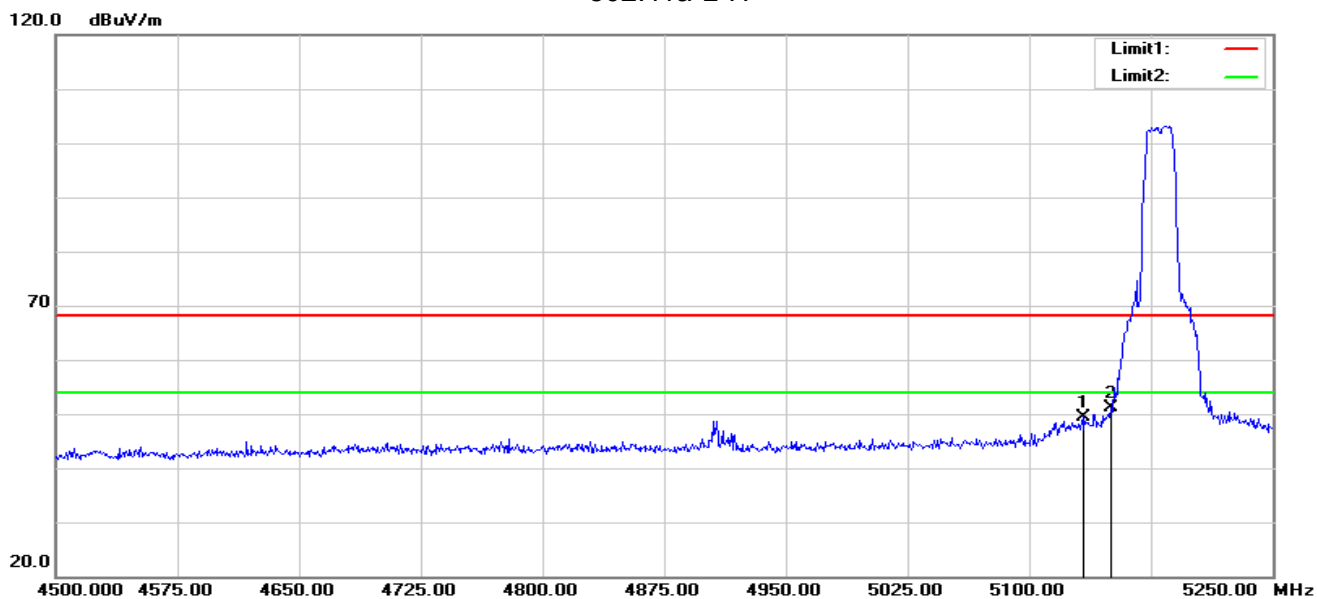
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a, 802.11n (HT-20), 802.11n (HT-40), 802.11ac (VHT-20), 802.11ac (VHT-40), 802.11ac (VHT-80) all have been tested the antenna A, antenna B and antenna A+B, the worst case is 802.11n (HT-20) of the antenna A+B.
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



3.2.9 RESTRICTED FREQUENCY BANDS AND BAND EDGE

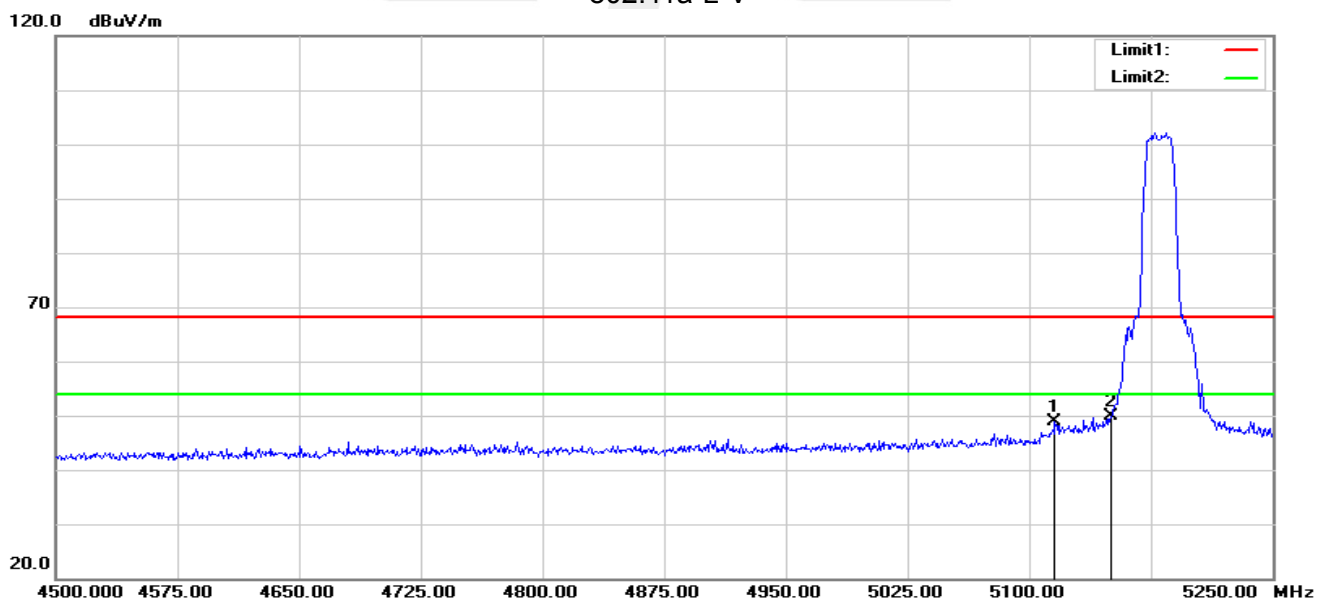
Band I 5150-5250MHz

802.11a-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5133.750	55.23	-5.73	49.50	68.20	-18.70	peak
2	5150.000	56.77	-5.73	51.04	68.20	-17.16	peak

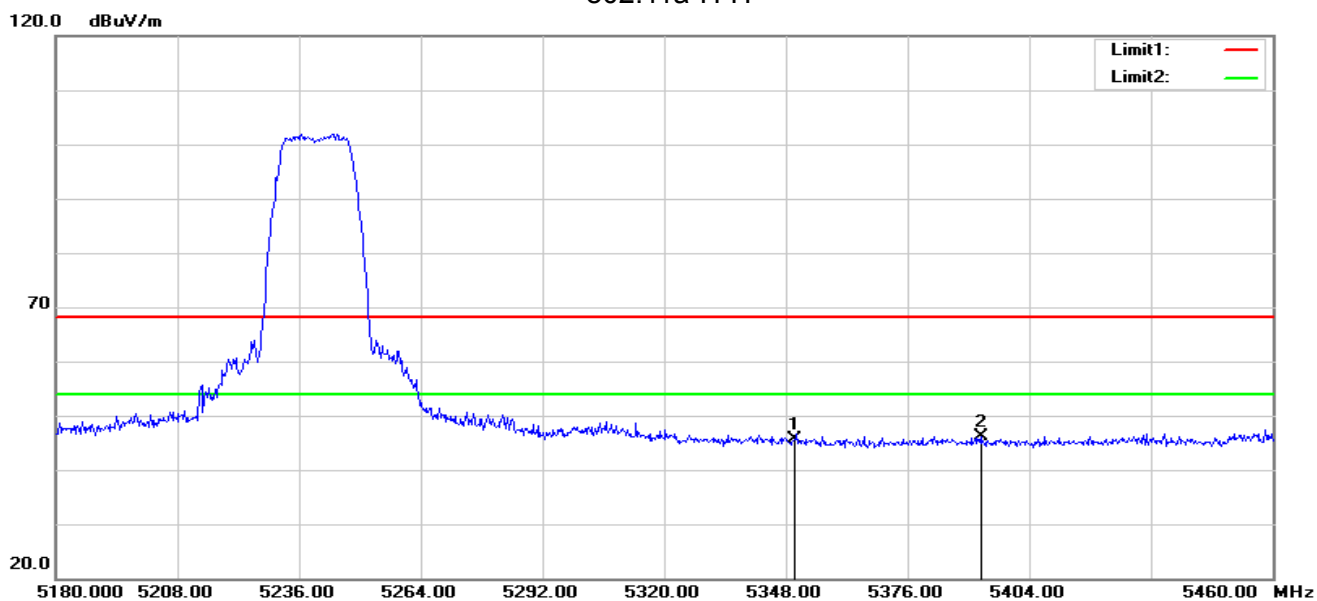
802.11a-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5115.750	54.70	-5.74	48.96	68.20	-19.24	peak
2	5150.000	55.52	-5.73	49.79	68.20	-18.41	peak

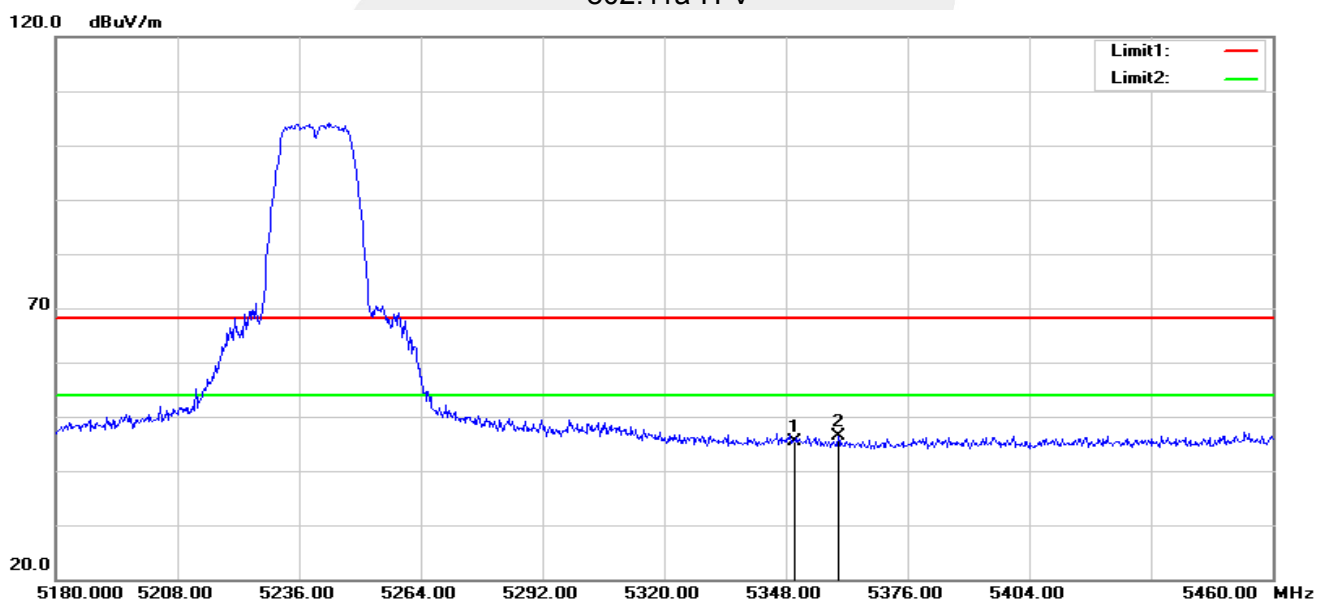


802.11a-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	50.83	-5.23	45.60	68.20	-22.60	peak
2	5392.800	51.44	-5.25	46.19	68.20	-22.01	peak

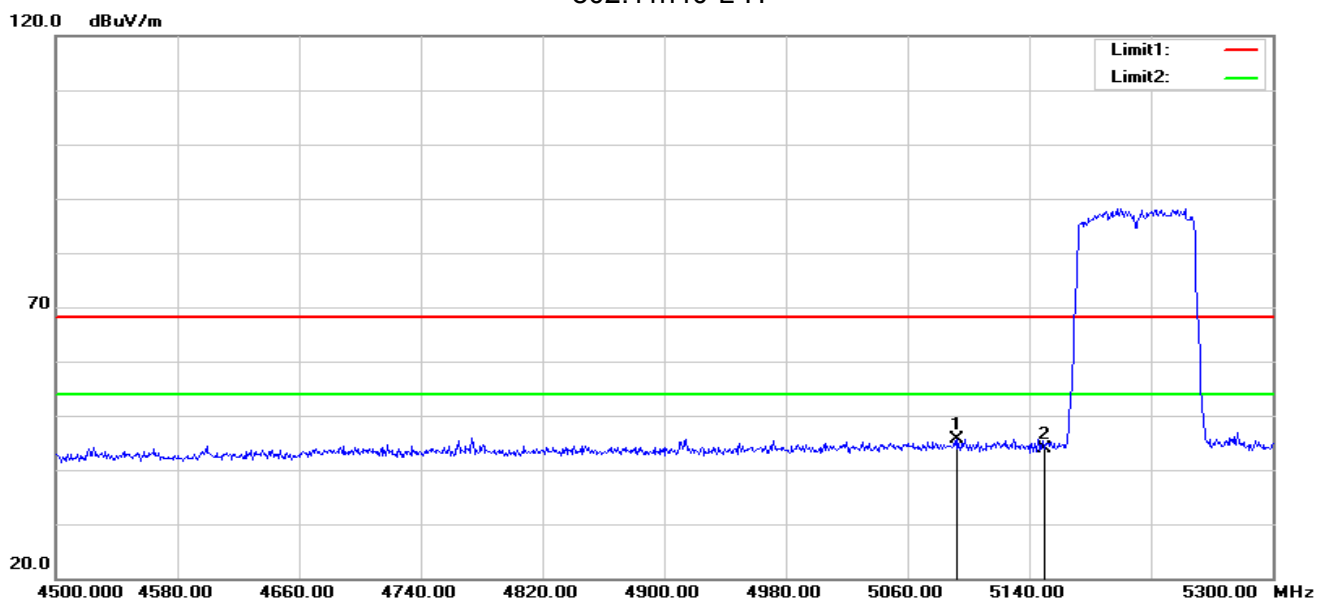
802.11a-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	50.59	-5.23	45.36	68.20	-22.84	peak
2	5360.040	51.52	-5.23	46.29	68.20	-21.91	peak

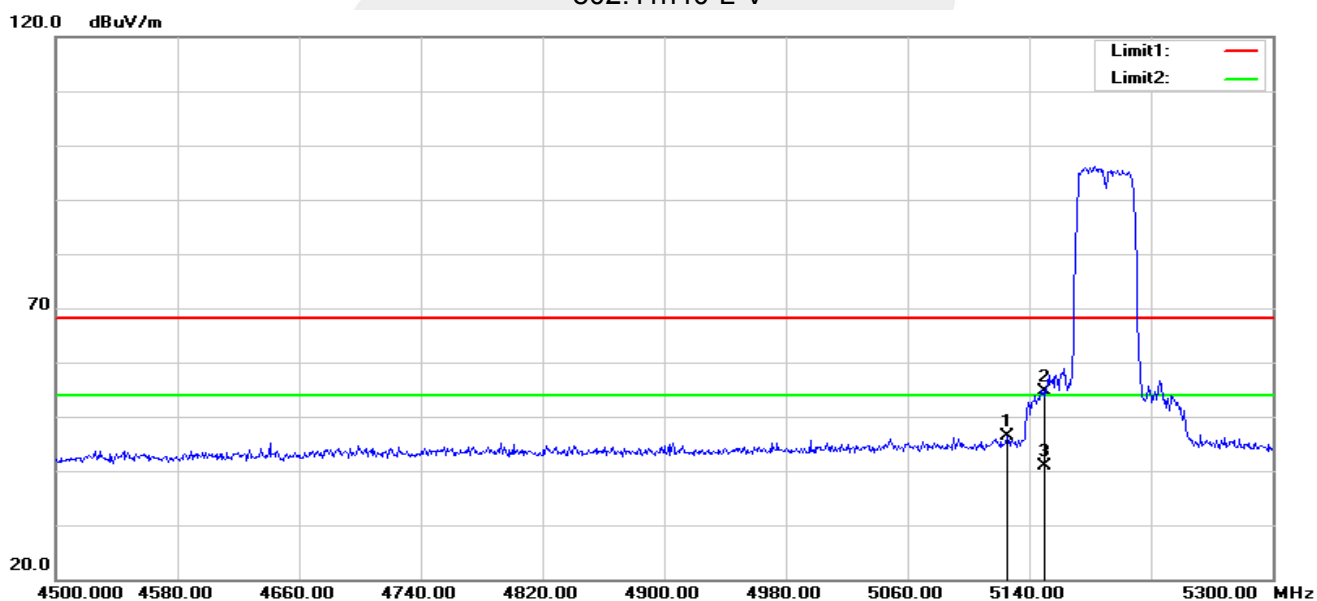


802.11n40-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5092.800	51.37	-5.78	45.59	68.20	-22.61	peak
2	5150.000	49.52	-5.73	43.79	68.20	-24.41	peak

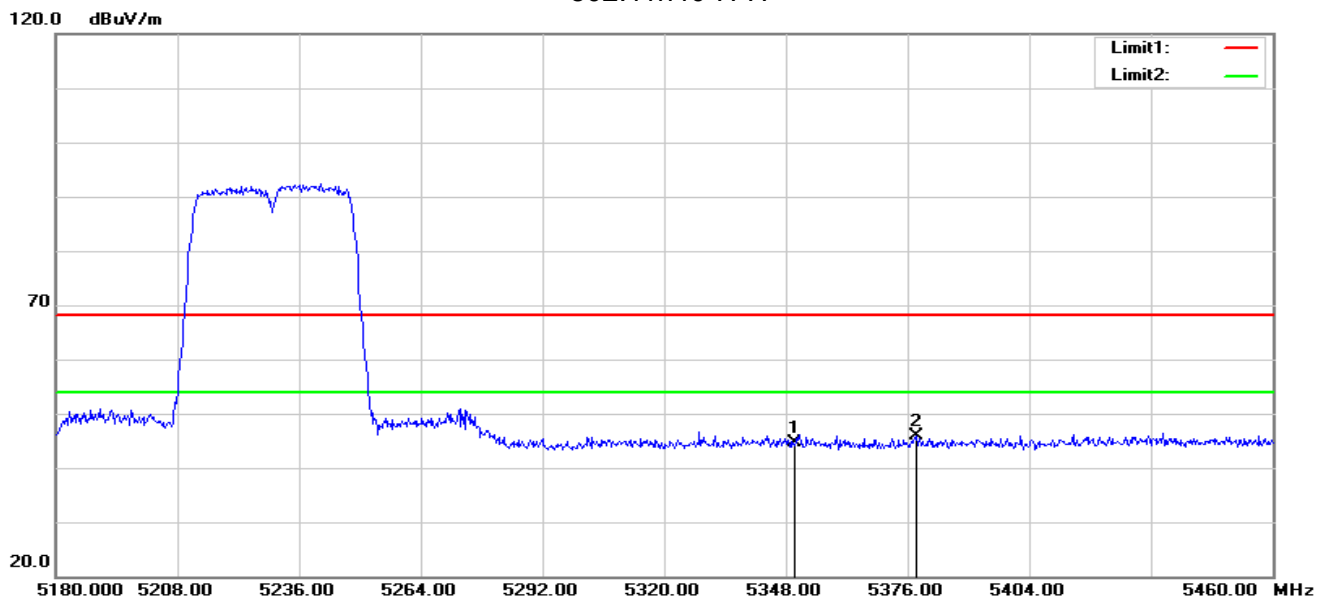
802.11n40-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5125.600	52.16	-5.74	46.42	68.20	-21.78	peak
2	5150.000	60.45	-5.73	54.72	68.20	-13.48	peak
3	5150.000	46.64	-5.73	40.91	54.00	-13.09	AVG

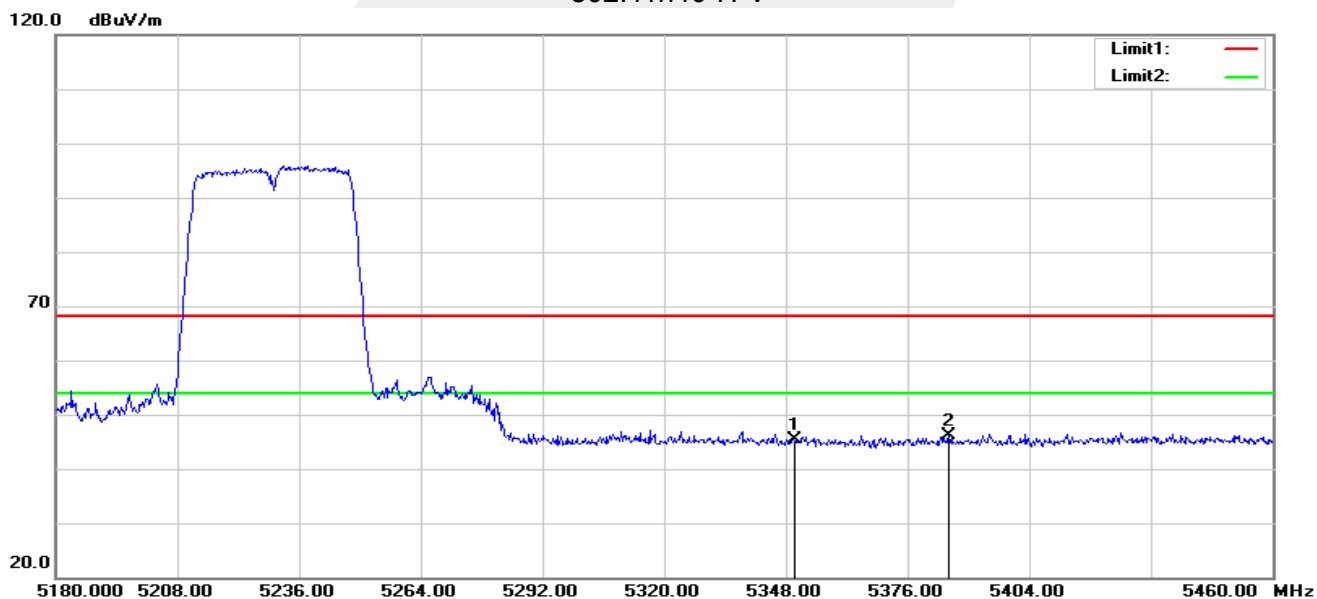


802.11n40-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	49.78	-5.23	44.55	68.20	-23.65	peak
2	5377.960	51.08	-5.24	45.84	68.20	-22.36	peak

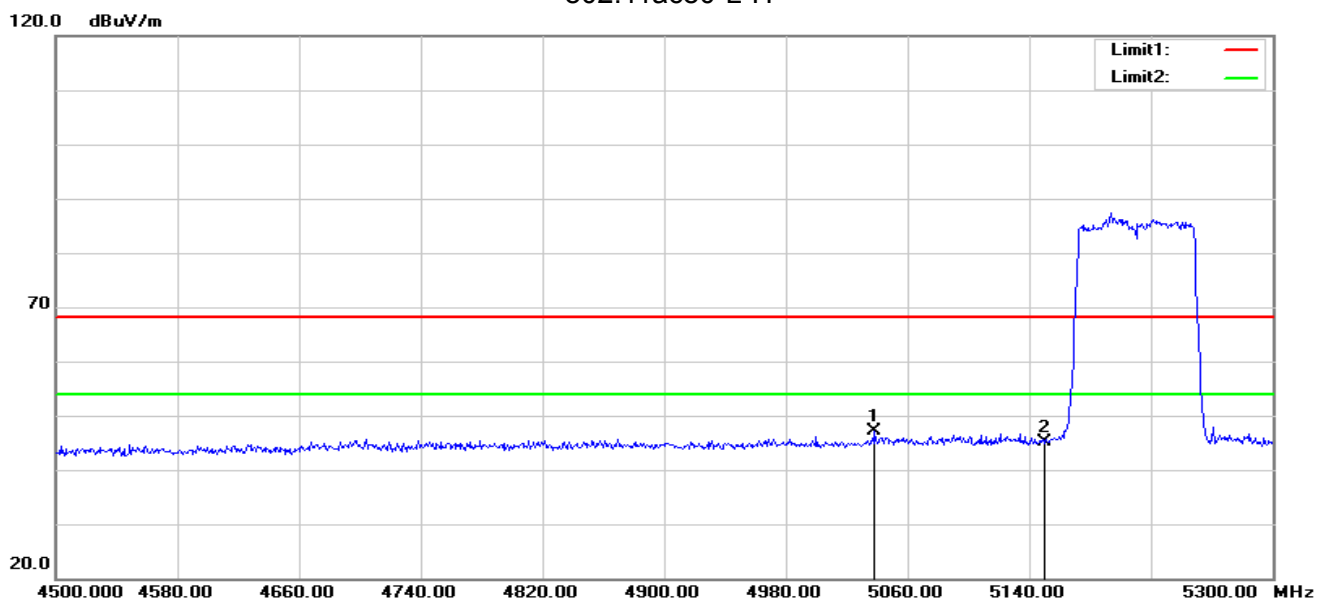
802.11n40-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	50.69	-5.23	45.46	68.20	-22.74	peak
2	5385.520	51.44	-5.24	46.20	68.20	-22.00	peak

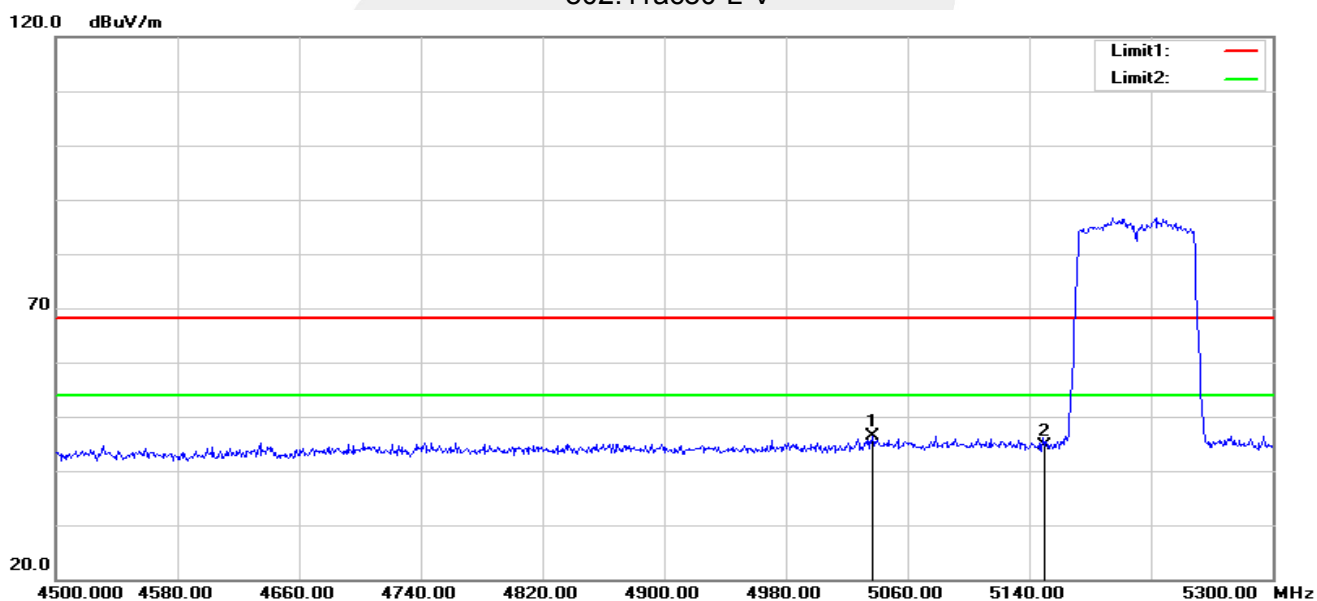


802.11ac80-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5038.400	53.03	-6.02	47.01	68.20	-21.19	peak
2	5150.000	50.87	-5.73	45.14	68.20	-23.06	peak

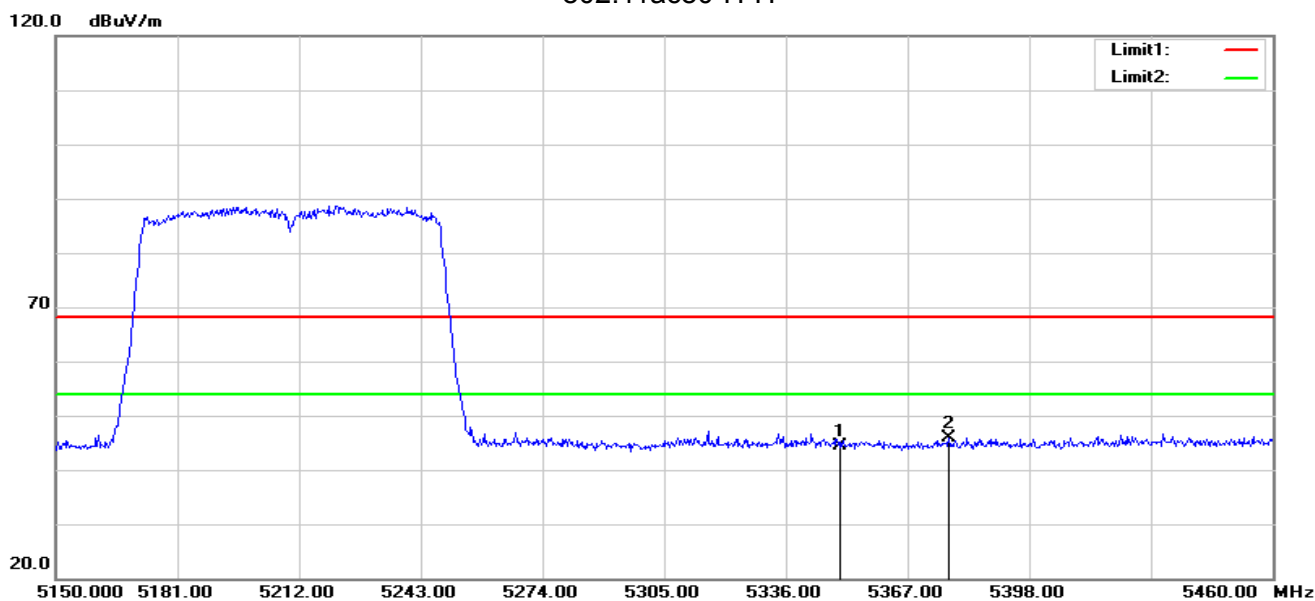
802.11ac80-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5036.800	52.41	-6.02	46.39	68.20	-21.81	peak
2	5150.000	50.40	-5.73	44.67	68.20	-23.53	peak

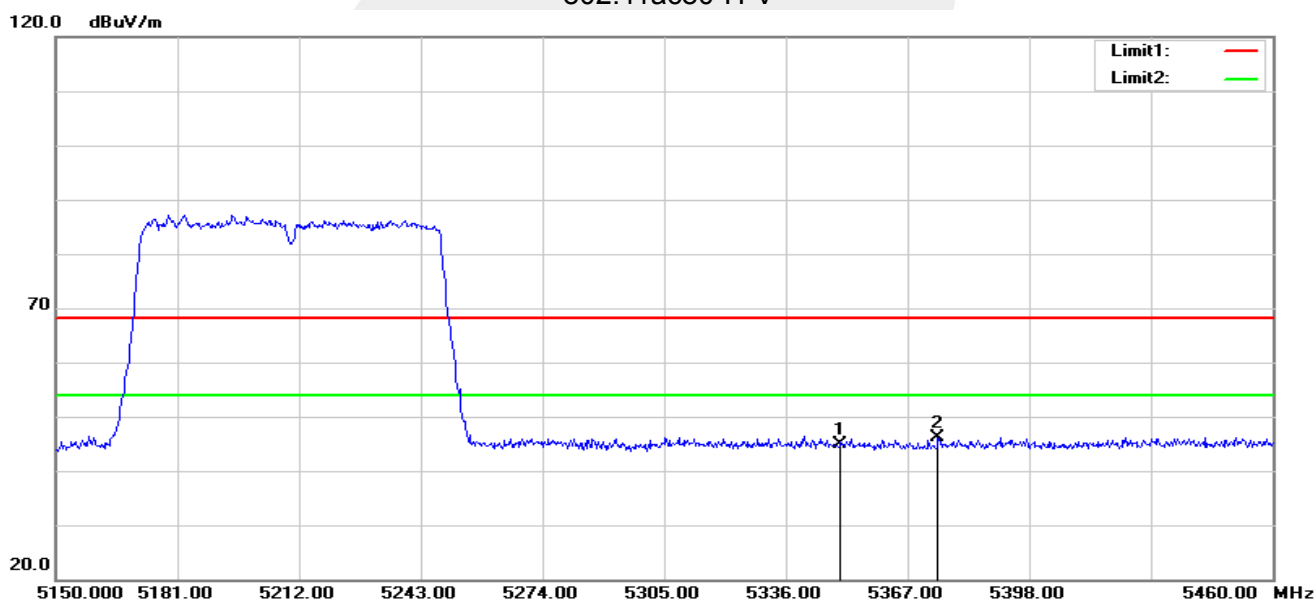


802.11ac80-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	49.67	-5.23	44.44	68.20	-23.76	peak
2	5377.540	51.17	-5.24	45.93	68.20	-22.27	peak

802.11ac80-H-V



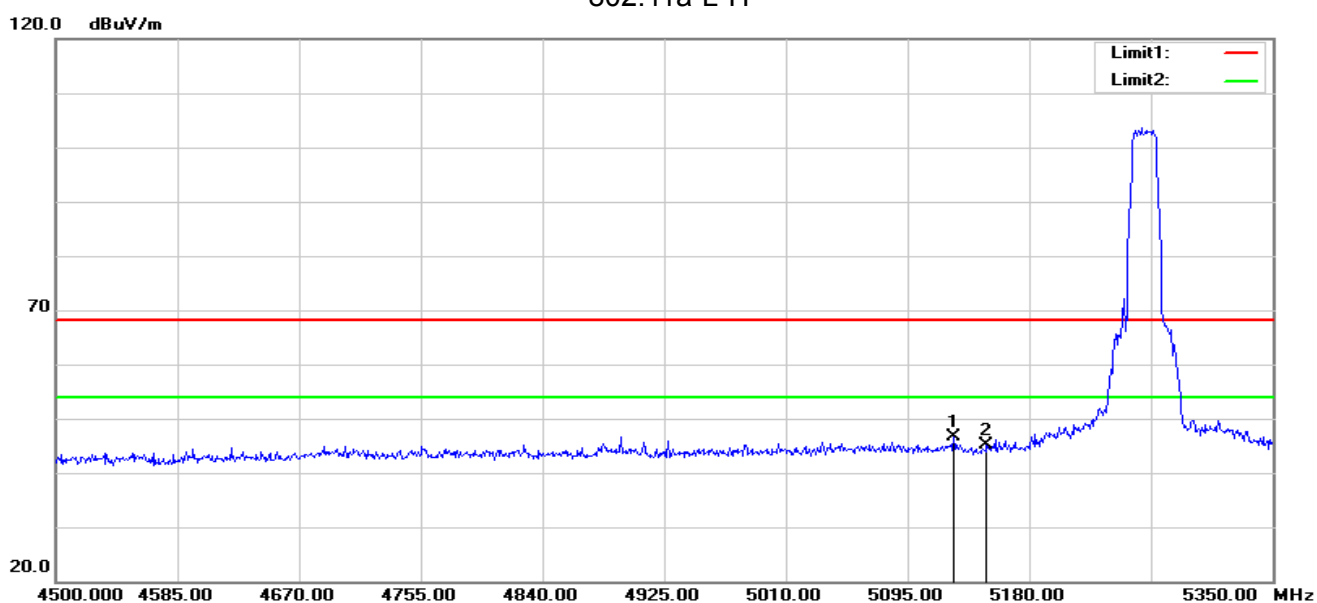
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	50.15	-5.23	44.92	68.20	-23.28	peak
2	5374.750	51.44	-5.24	46.20	68.20	-22.00	peak

Note: Scan with 802.11a,802.11n (HT-20),802.11n (HT-40), 802.11ac (VHT-20),802.11ac (VHT-40), 802.11ac (VHT-80) all have been tested the antenna A, antenna B and antenna A+B, the worst case is 802.11a mode of antenna A, 802.11n(HT 40) and 802.11ac(VHT80) of antenna A+B.



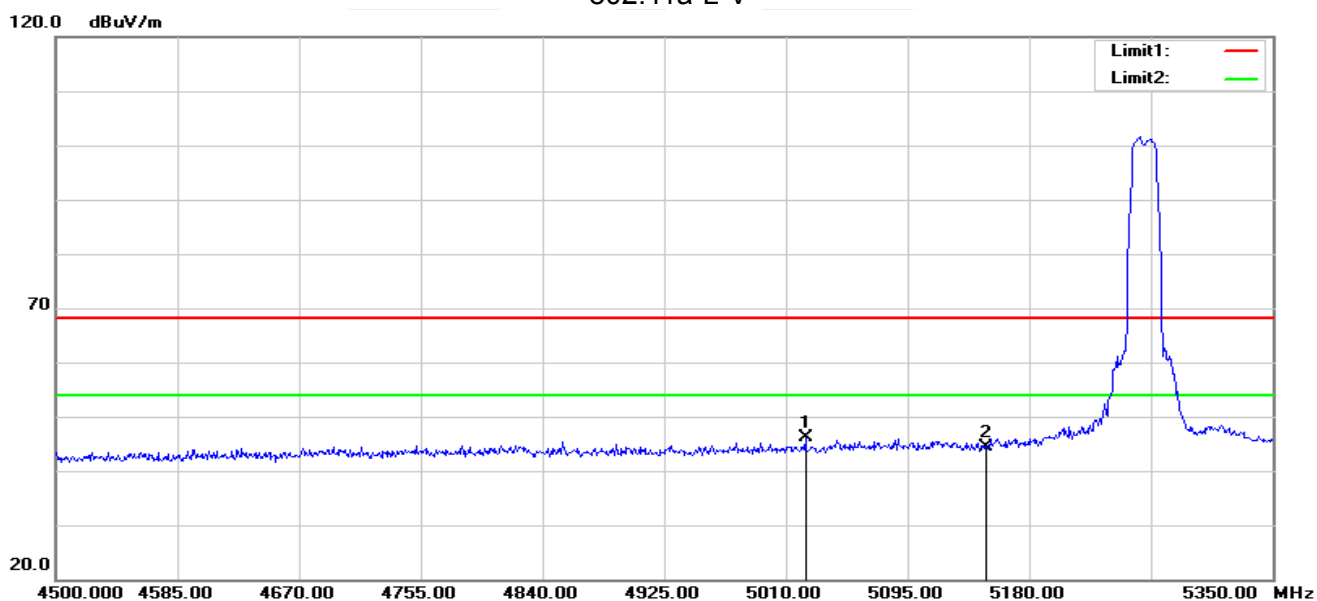
Band II 5250-5350MHz

802.11a-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5127.300	52.32	-5.74	46.58	68.20	-21.62	peak
2	5150.000	50.84	-5.73	45.11	68.20	-23.09	peak

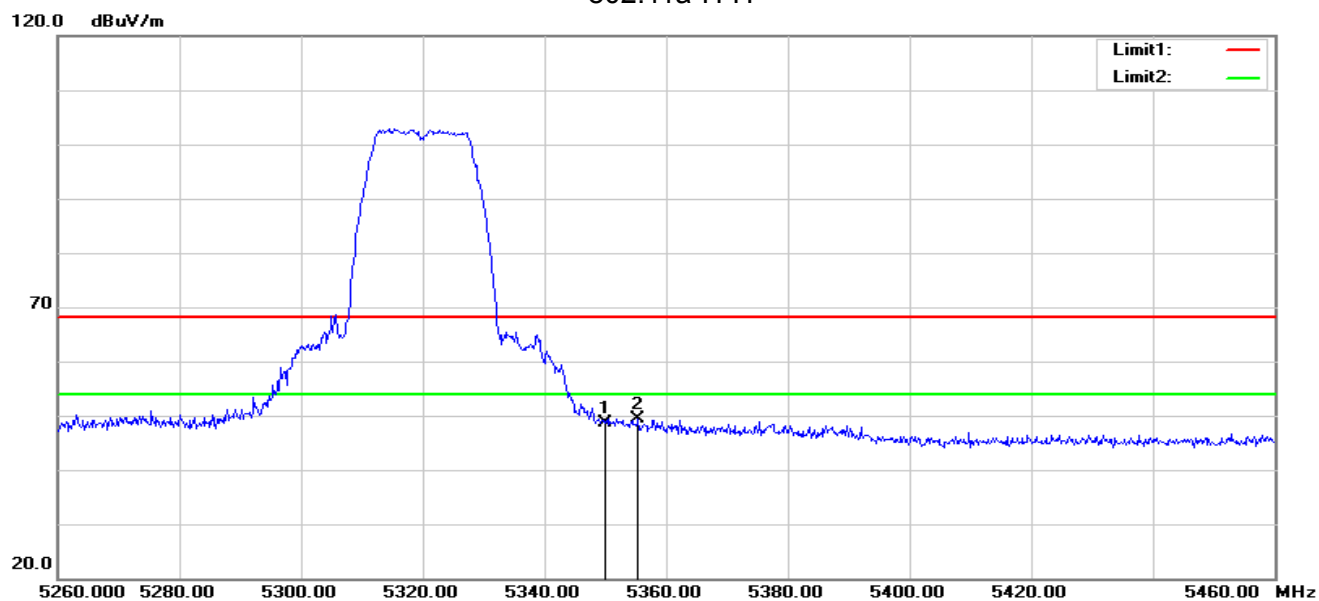
802.11a-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5023.600	52.14	-6.08	46.06	68.20	-22.14	peak
2	5150.000	50.18	-5.73	44.45	68.20	-23.75	peak

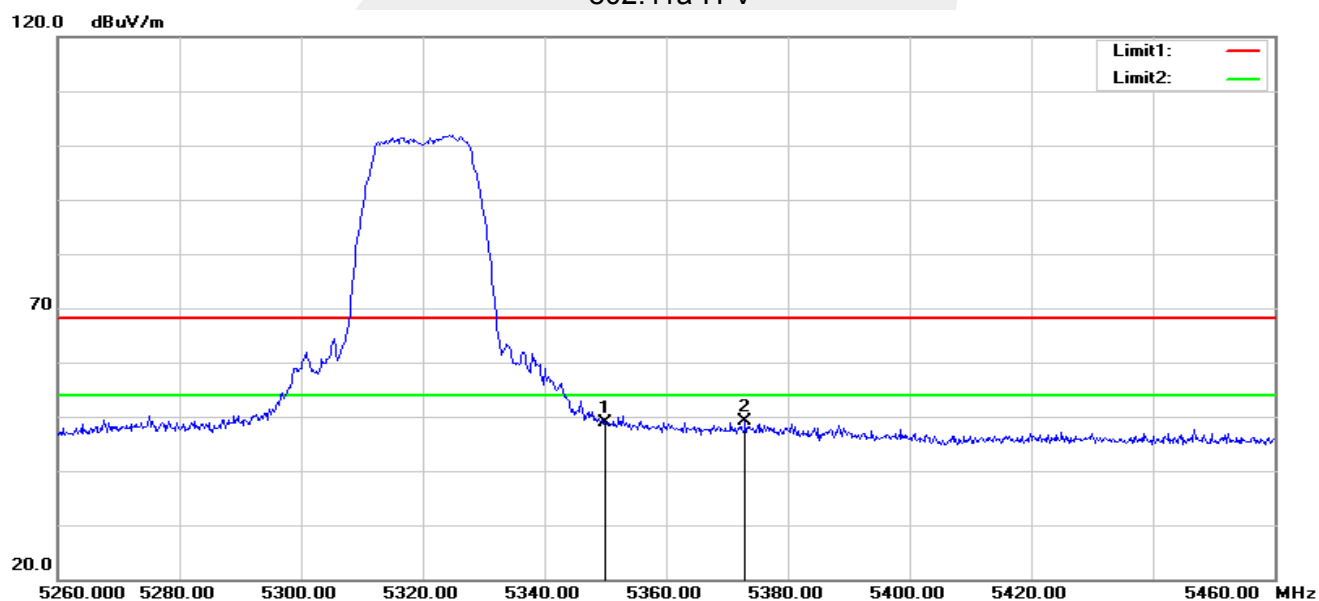


802.11a-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	53.75	-5.23	48.52	68.20	-19.68	peak
2	5355.400	54.54	-5.24	49.30	68.20	-18.90	peak

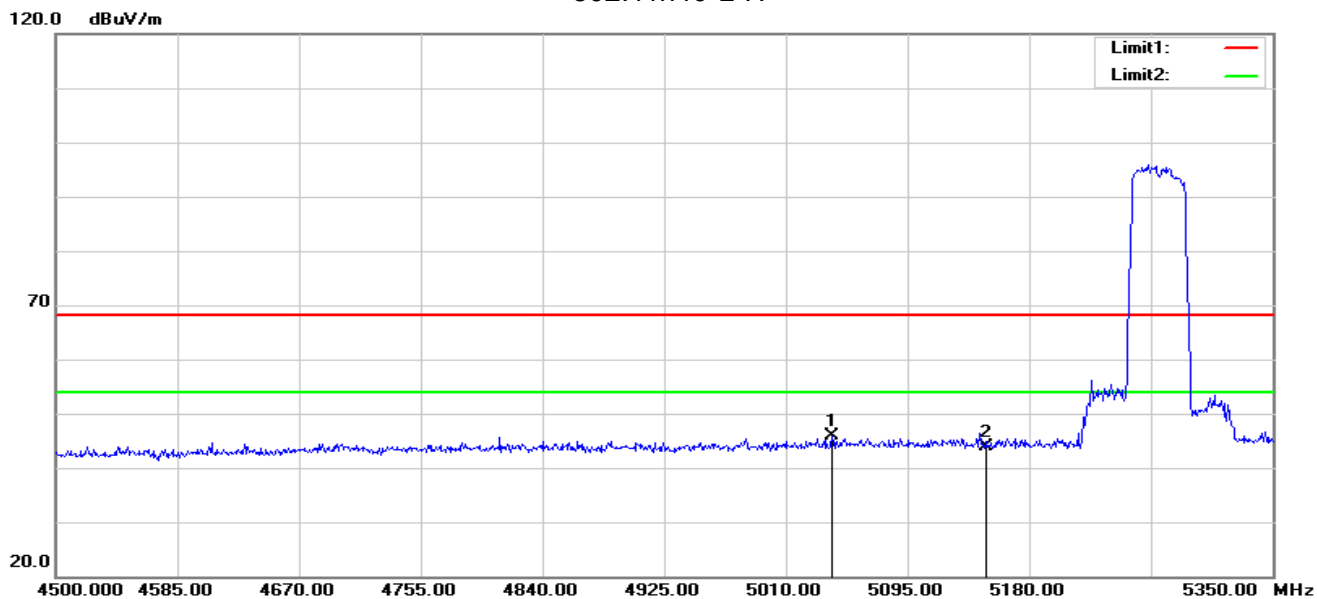
802.11a-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	54.08	-5.23	48.85	68.20	-19.35	peak
2	5373.000	54.29	-5.24	49.05	68.20	-19.15	peak

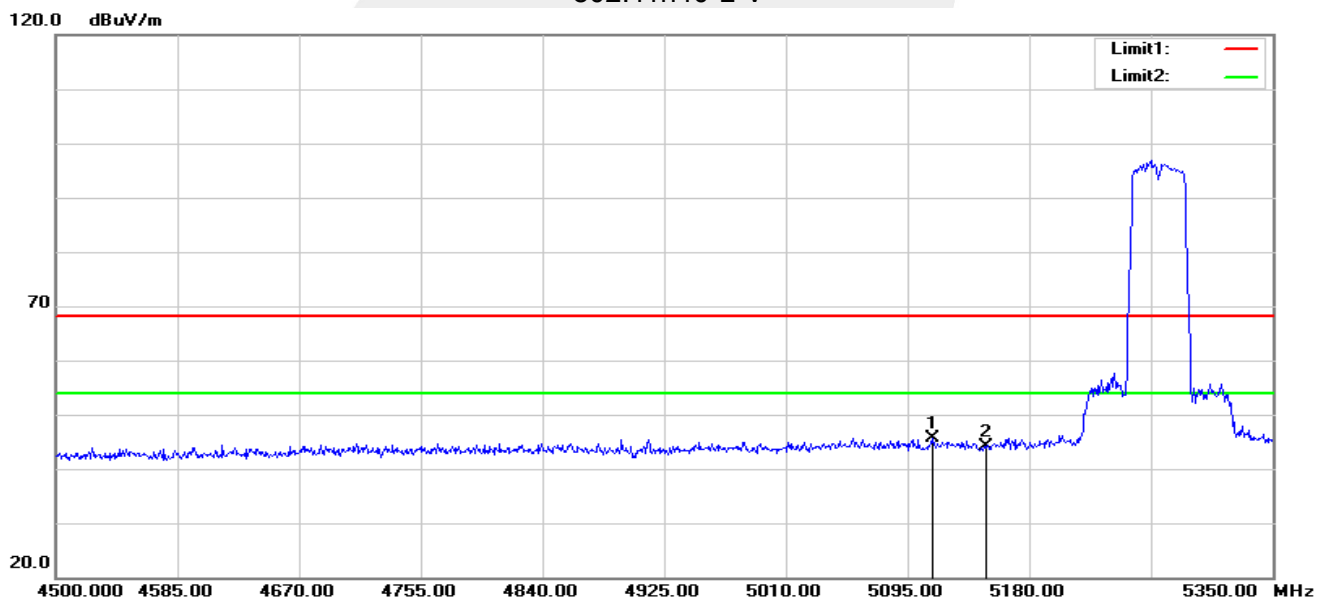


802.11n40-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5042.300	51.81	-6.00	45.81	68.20	-22.39	peak
2	5150.000	49.58	-5.73	43.85	68.20	-24.35	peak

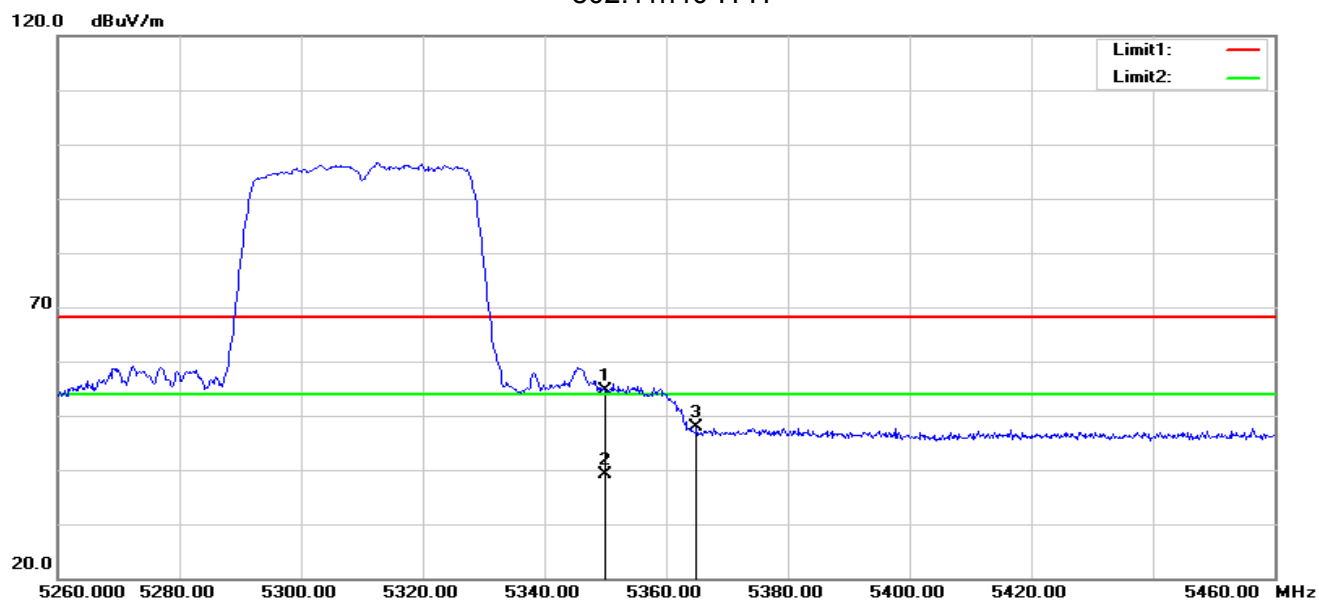
802.11n40-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5112.000	51.27	-5.74	45.53	68.20	-22.67	peak
2	5150.000	49.93	-5.73	44.20	68.20	-24.00	peak

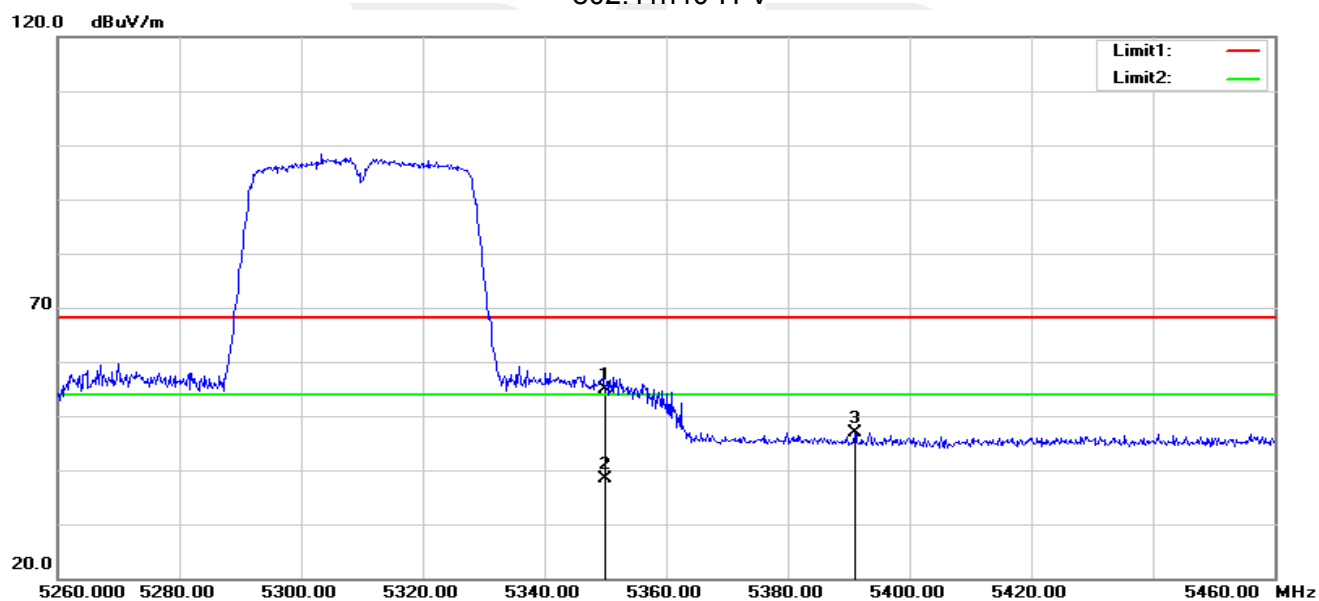


802.11n40-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	59.97	-5.23	54.74	68.20	-13.46	peak
2	5350.000	44.35	-5.23	39.12	54.00	-14.88	AVG
3	5365.000	53.18	-5.24	47.94	68.20	-20.26	peak

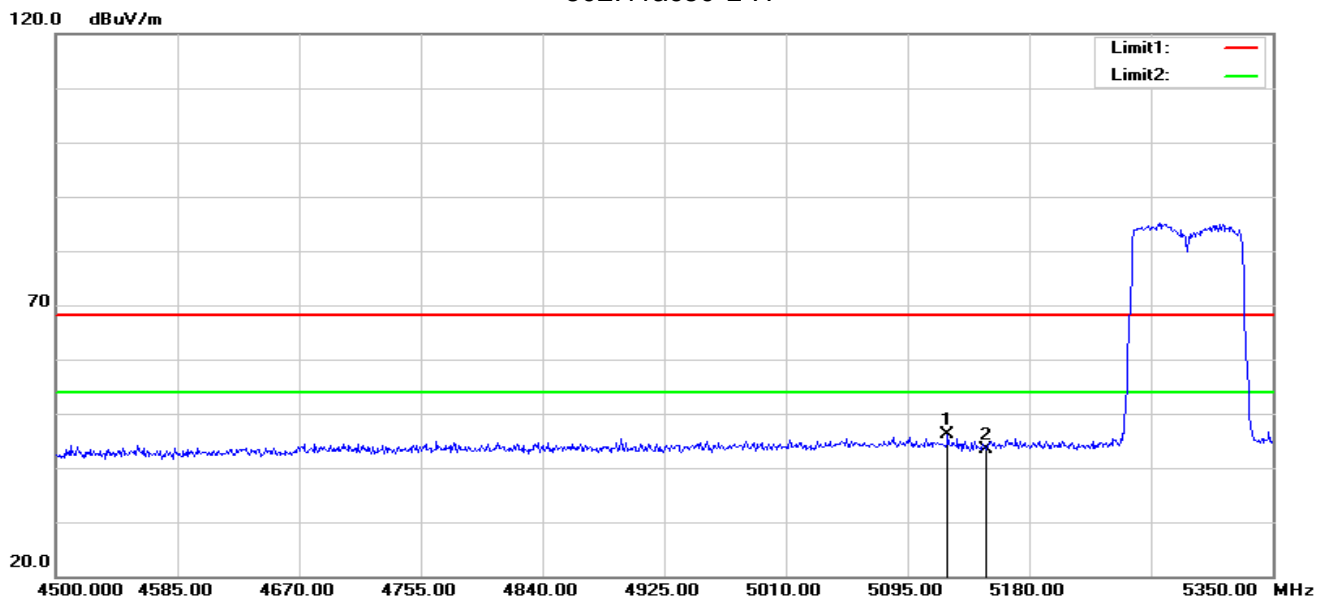
802.11n40-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	60.12	-5.23	54.89	68.20	-13.31	peak
2	5350.000	43.68	-5.23	38.45	54.00	-15.55	AVG
3	5391.000	52.16	-5.25	46.91	68.20	-21.29	peak

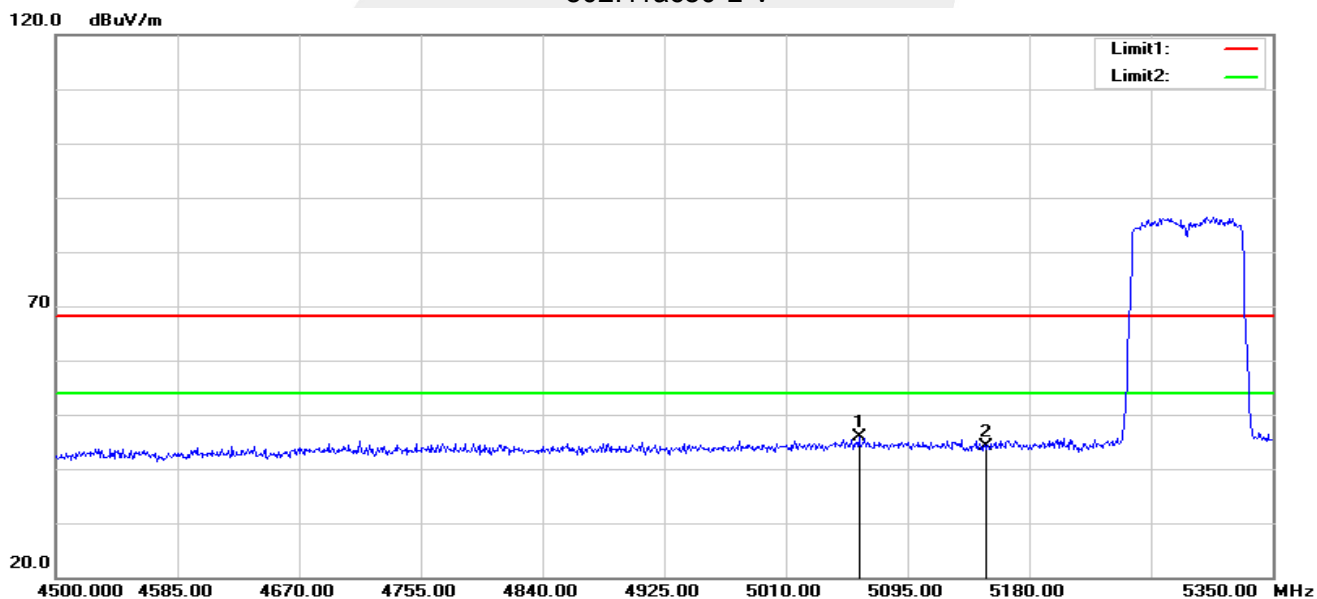


802.11ac80-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5123.050	51.77	-5.74	46.03	68.20	-22.17	peak
2	5150.000	49.17	-5.73	43.44	68.20	-24.76	peak

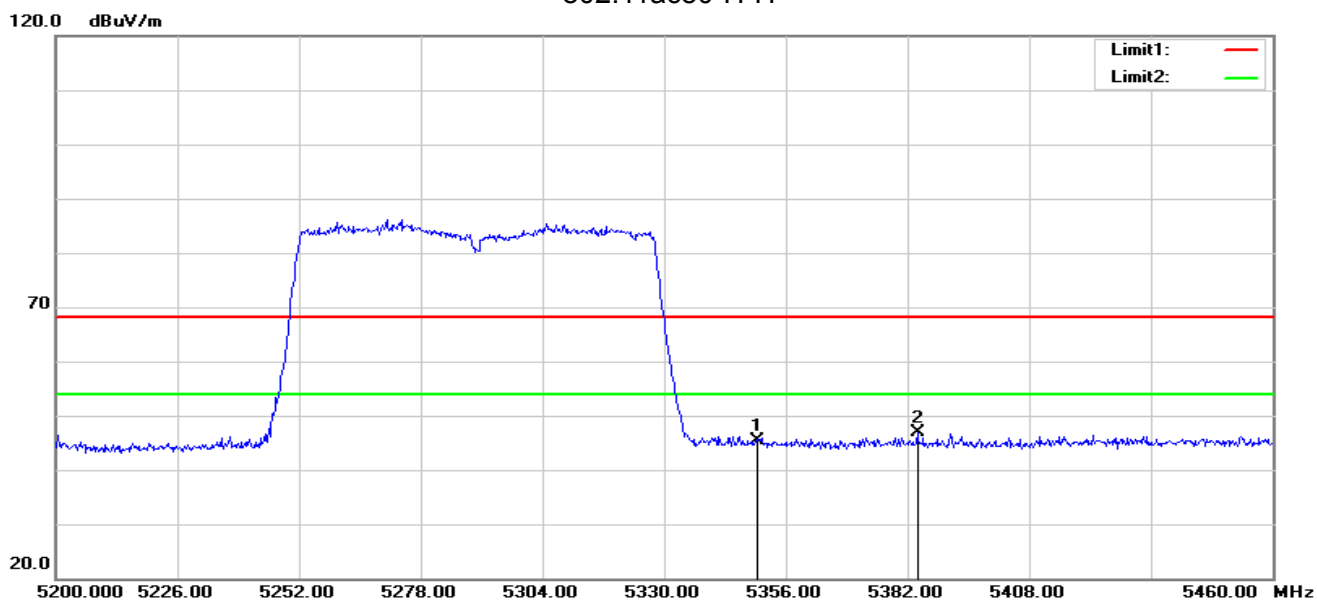
802.11ac80-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5061.000	51.70	-5.91	45.79	68.20	-22.41	peak
2	5150.000	49.90	-5.73	44.17	68.20	-24.03	peak

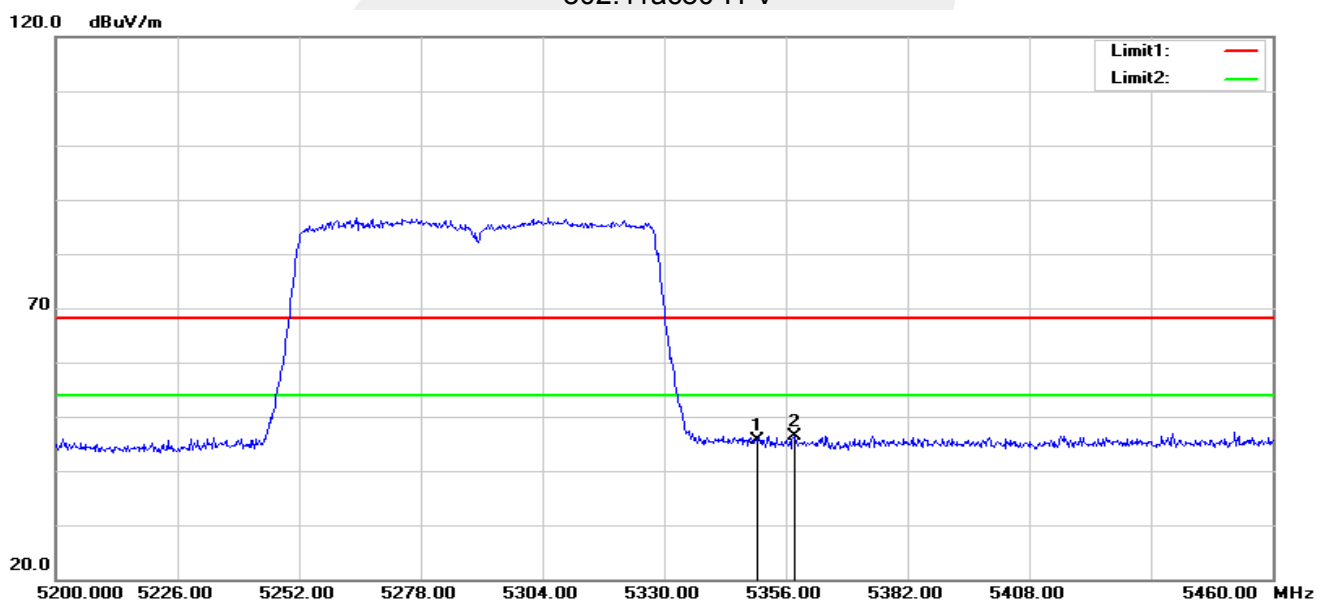


802.11ac80-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	50.52	-5.23	45.29	68.20	-22.91	peak
2	5384.080	52.21	-5.24	46.97	68.20	-21.23	peak

802.11ac80-H-V



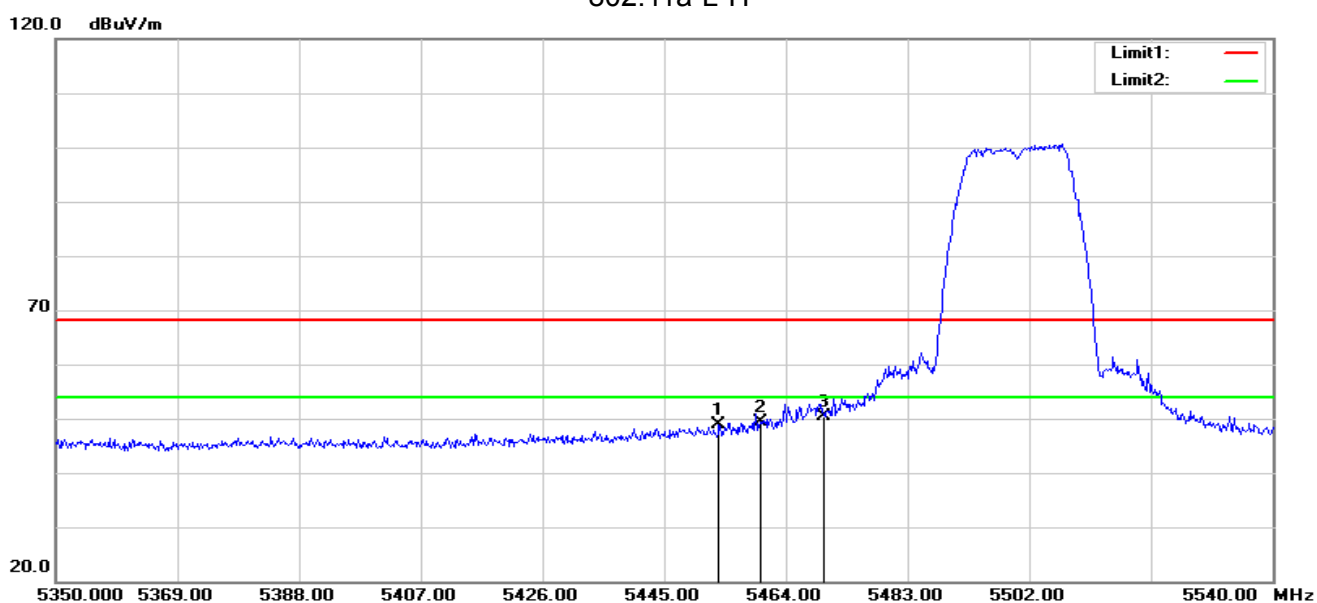
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	50.81	-5.23	45.58	68.20	-22.62	peak
2	5357.820	51.64	-5.23	46.41	68.20	-21.79	peak

Note: Scan with 802.11a,802.11n (HT-20),802.11n (HT-40), 802.11ac (VHT-20),802.11ac (VHT-40), 802.11ac (VHT-80) all have been tested the antenna A, antenna B and antenna A+B, the worst case is 802.11a mode of antenna A, 802.11n(HT 40) and 802.11ac(VHT80) of antenna A+B.



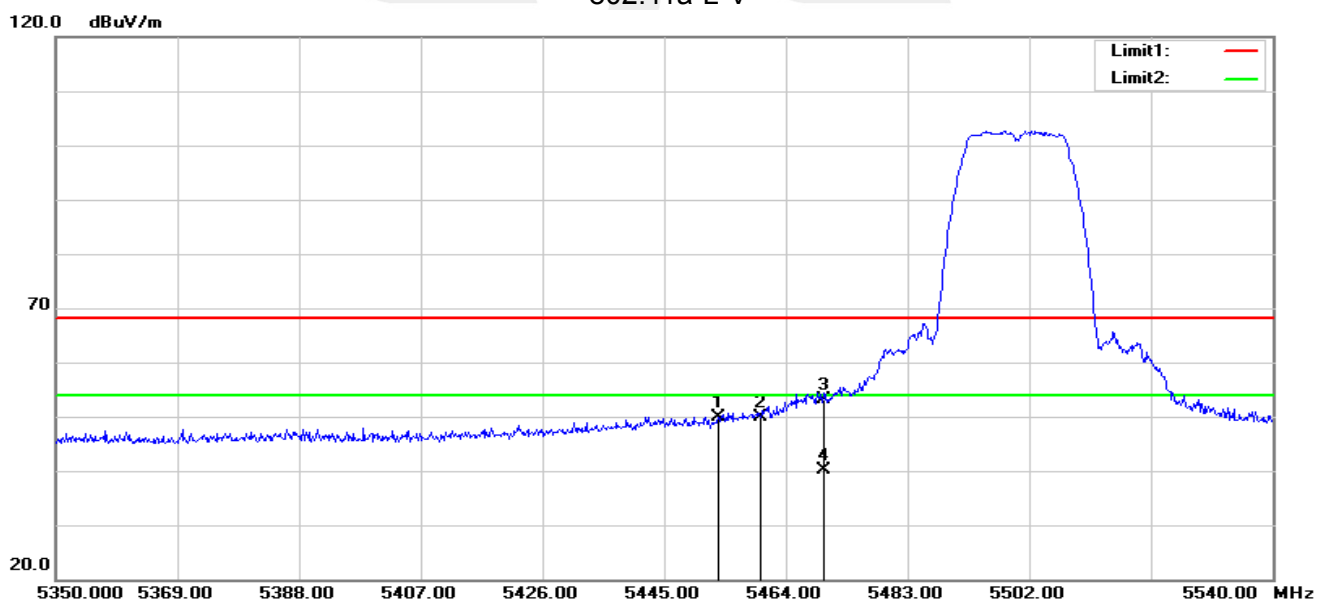
Band III 5470-5725MHz

802.11a-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5453.550	53.94	-5.13	48.81	68.20	-19.39	peak
2	5460.000	54.53	-5.11	49.42	68.20	-18.78	peak
3	5470.000	55.48	-5.09	50.39	68.20	-17.81	peak

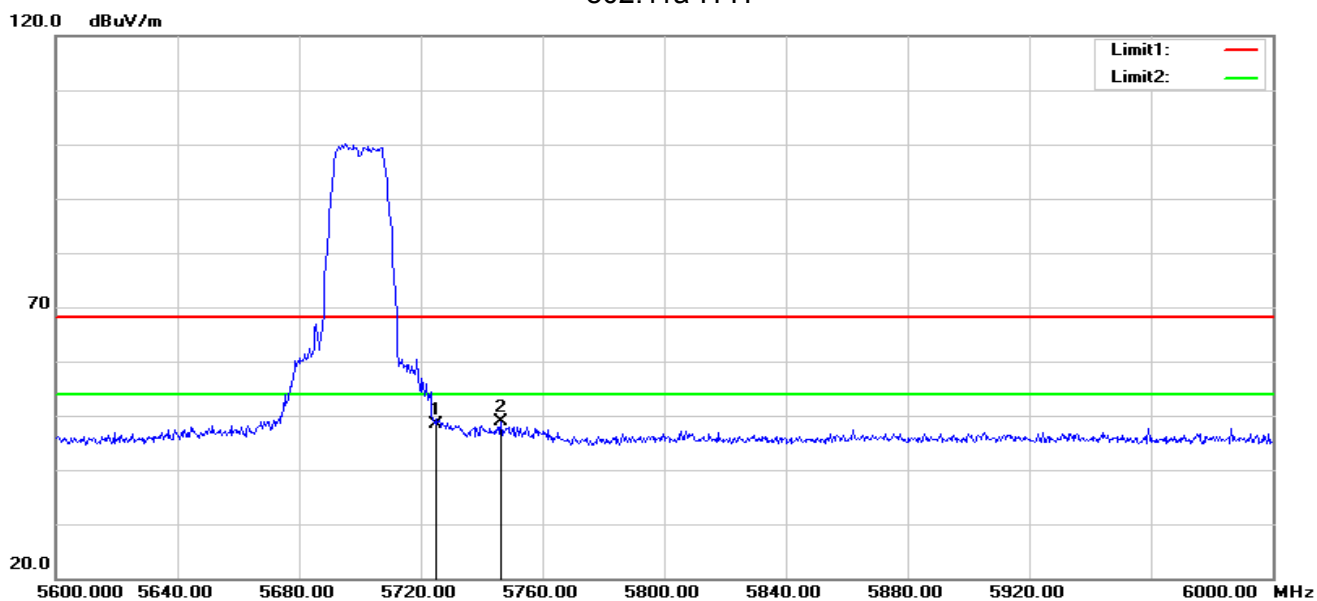
802.11a-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5453.360	55.12	-5.13	49.99	68.20	-18.21	peak
2	5460.000	55.05	-5.11	49.94	68.20	-18.26	peak
3	5470.000	58.24	-5.09	53.15	68.20	-15.05	peak
4	5470.000	45.20	-5.09	40.11	54.00	-13.89	AVG

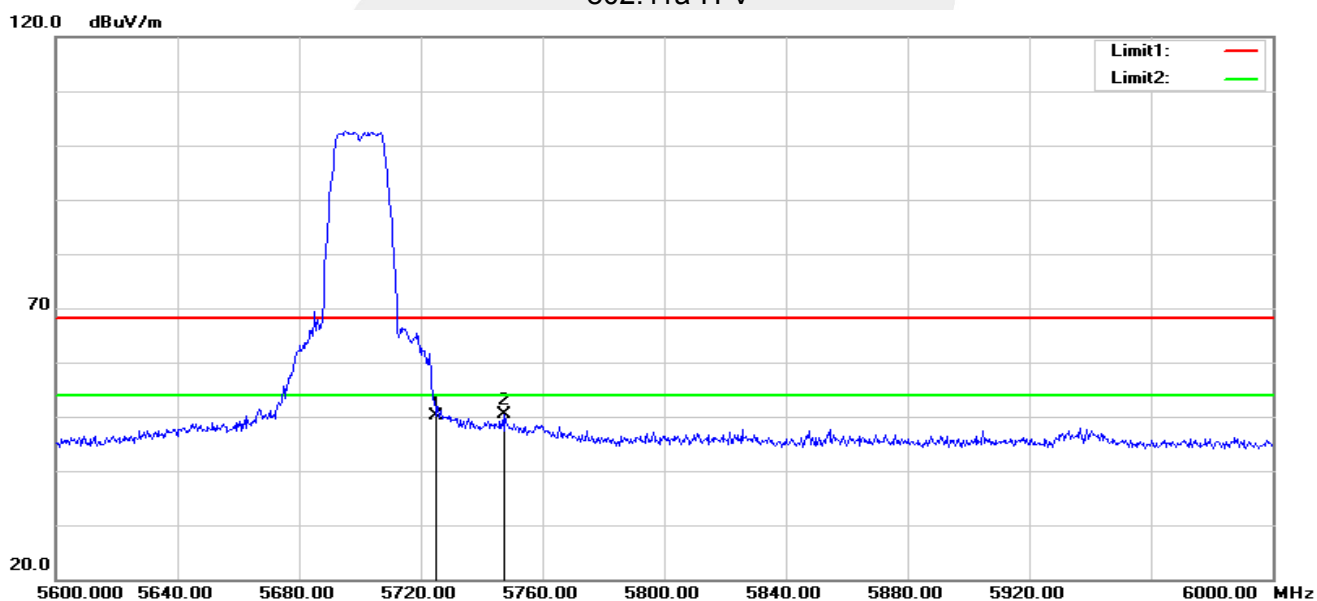


802.11a-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	53.03	-4.57	48.46	68.20	-19.74	peak
2	5746.400	53.29	-4.51	48.78	68.20	-19.42	peak

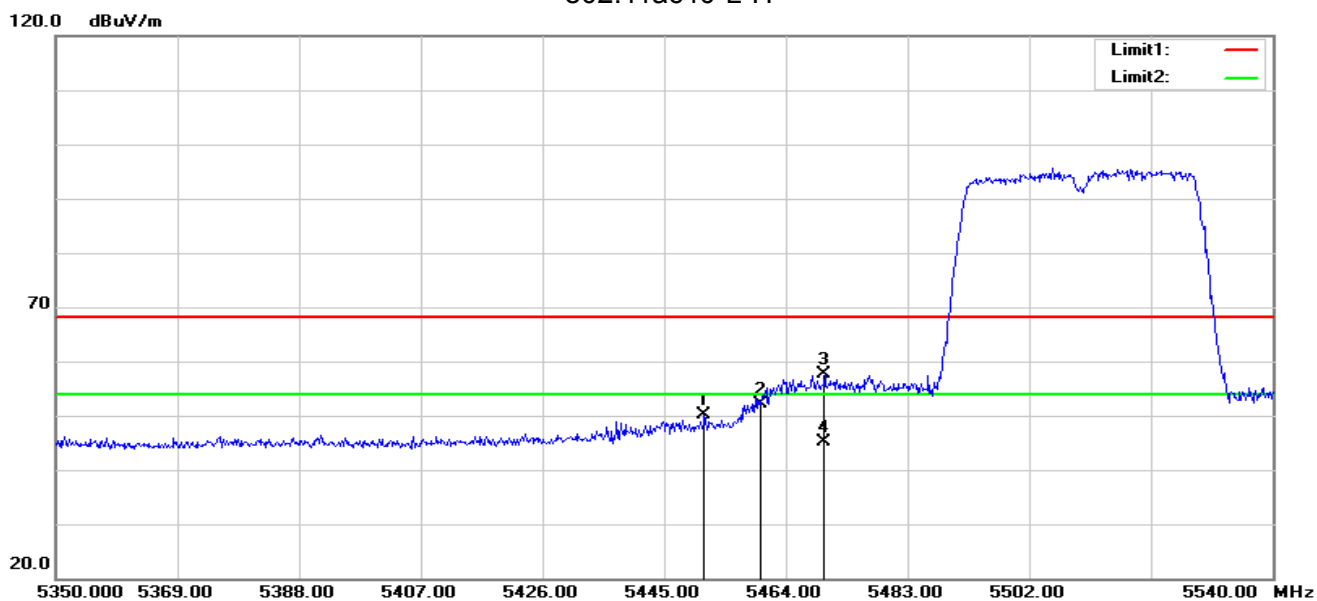
802.11a-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	54.69	-4.57	50.12	68.20	-18.08	peak
2	5747.600	54.96	-4.49	50.47	68.20	-17.73	peak

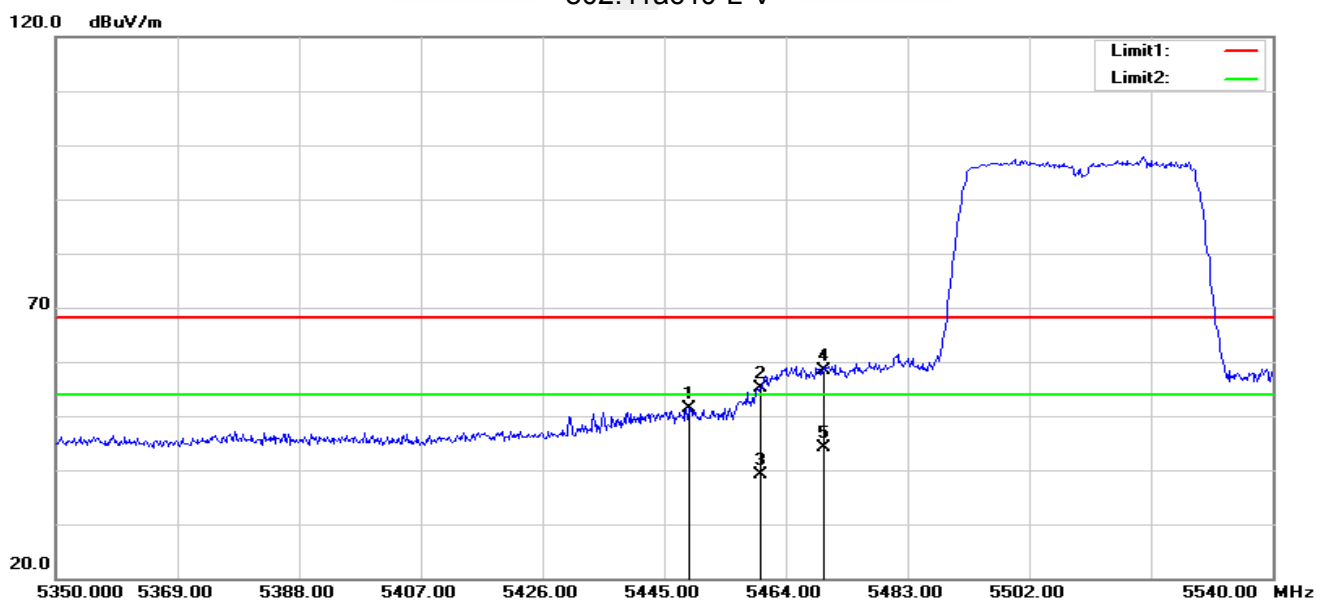


802.11ac40-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5451.270	55.32	-5.13	50.19	68.20	-18.01	peak
2	5460.000	57.17	-5.11	52.06	68.20	-16.14	peak
3	5470.000	62.81	-5.09	57.72	68.20	-10.48	peak
4	5470.000	50.21	-5.09	45.12	54.00	-8.88	AVG

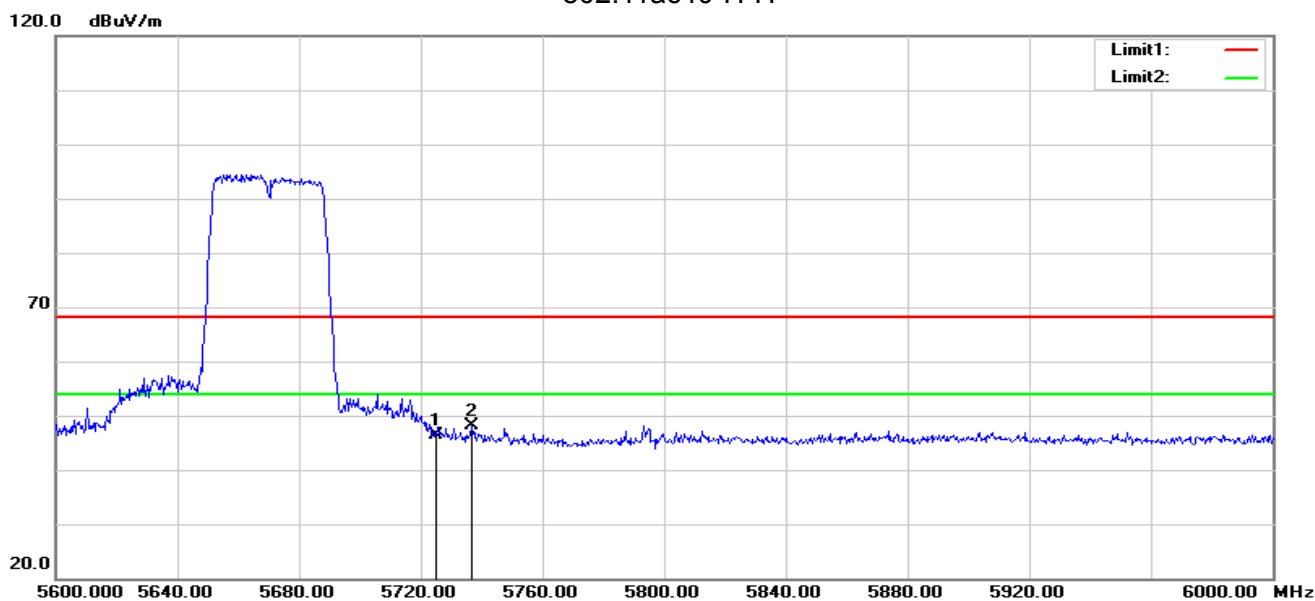
802.11ac40-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5448.800	56.61	-5.14	51.47	68.20	-16.73	peak
2	5460.000	60.25	-5.11	55.14	68.20	-13.06	peak
3	5460.000	44.20	-5.11	39.09	54.00	-14.91	AVG
4	5470.000	63.53	-5.09	58.44	68.20	-9.76	peak
5	5470.000	49.13	-5.09	44.04	54.00	-9.96	AVG

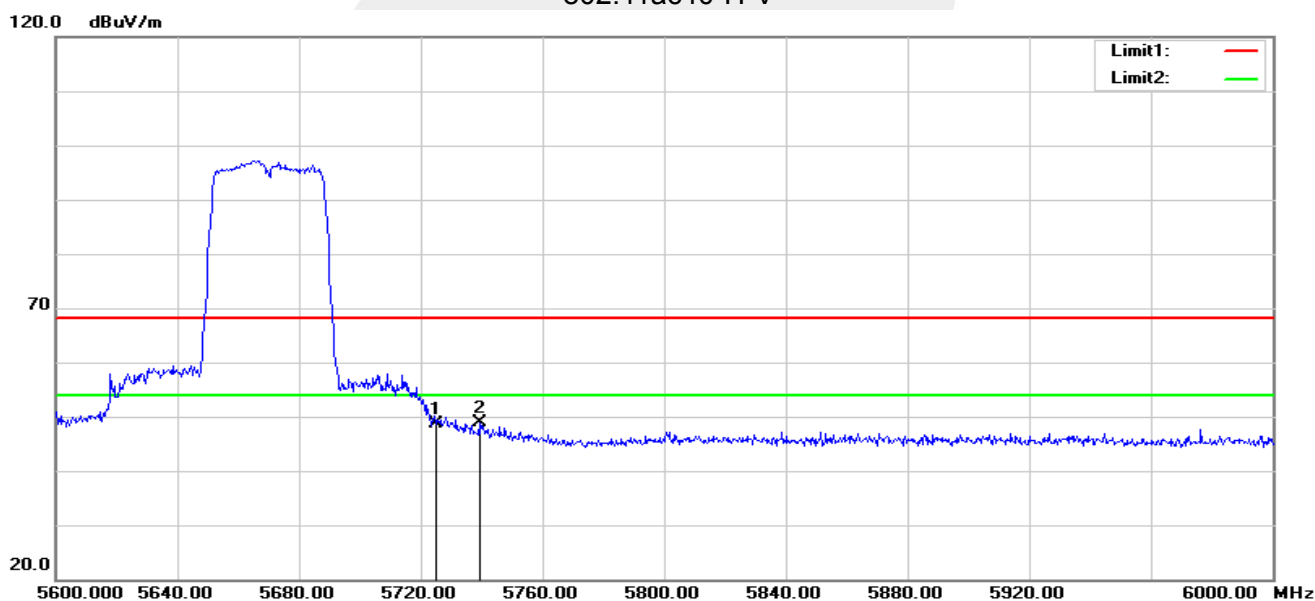


802.11ac40-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	50.88	-4.57	46.31	68.20	-21.89	peak
2	5736.800	52.72	-4.53	48.19	68.20	-20.01	peak

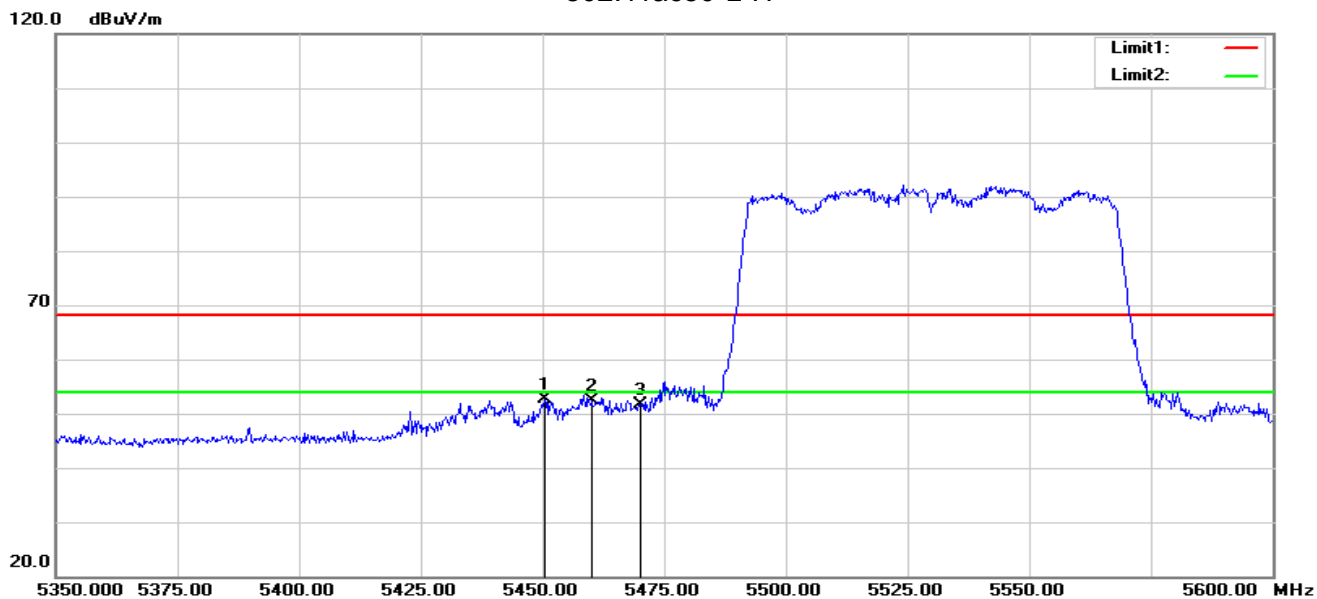
802.11ac40-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	53.28	-4.57	48.71	68.20	-19.49	peak
2	5739.200	53.52	-4.53	48.99	68.20	-19.21	peak

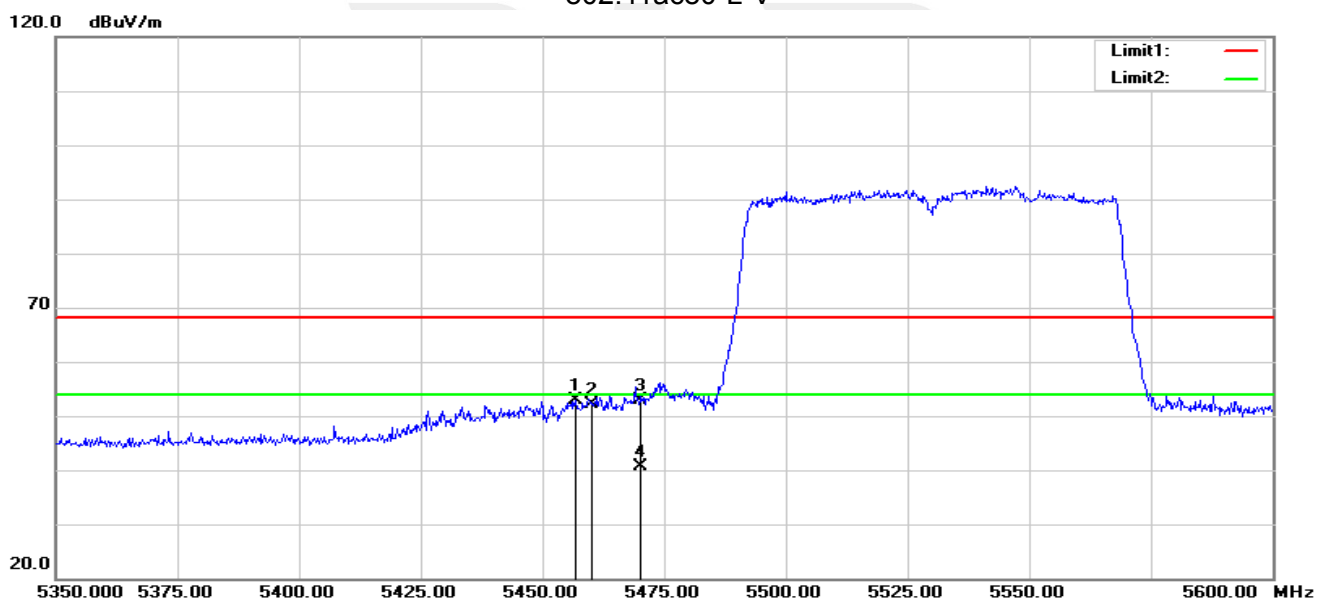


802.11ac80-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5450.500	57.67	-5.13	52.54	68.20	-15.66	peak
2	5460.000	57.56	-5.11	52.45	68.20	-15.75	peak
3	5470.000	56.80	-5.09	51.71	68.20	-16.49	peak

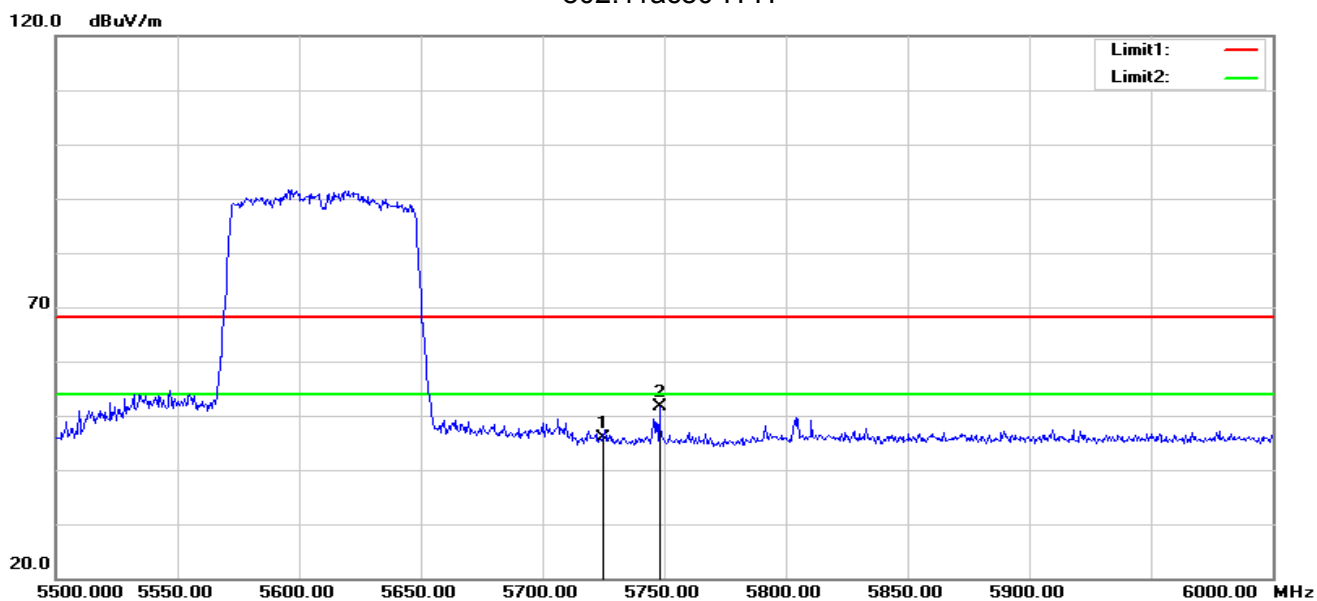
802.11ac80-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5456.750	57.89	-5.11	52.78	68.20	-15.42	peak
2	5460.000	57.24	-5.11	52.13	68.20	-16.07	peak
3	5470.000	57.98	-5.09	52.89	68.20	-15.31	peak
4	5470.000	45.63	-5.09	40.54	54.00	-13.46	AVG

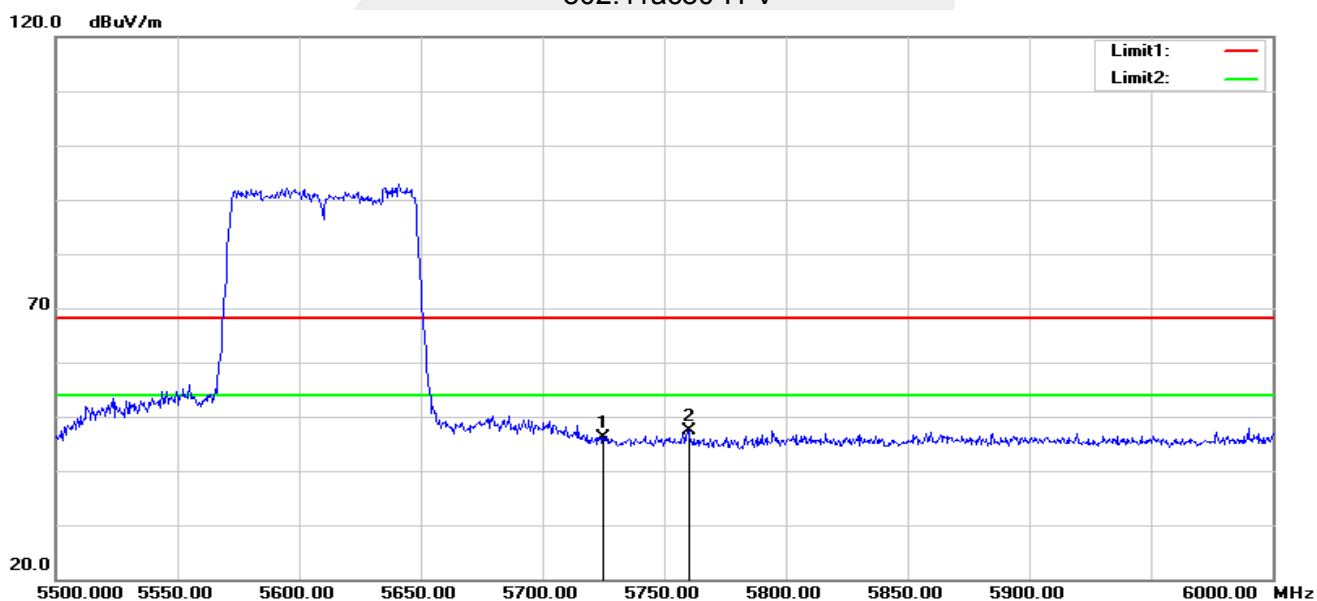


802.11ac80-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	50.48	-4.57	45.91	68.20	-22.29	peak
2	5748.000	56.11	-4.49	51.62	68.20	-16.58	peak

802.11ac80-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	50.66	-4.57	46.09	68.20	-22.11	peak
2	5760.000	51.89	-4.45	47.44	68.20	-20.76	peak

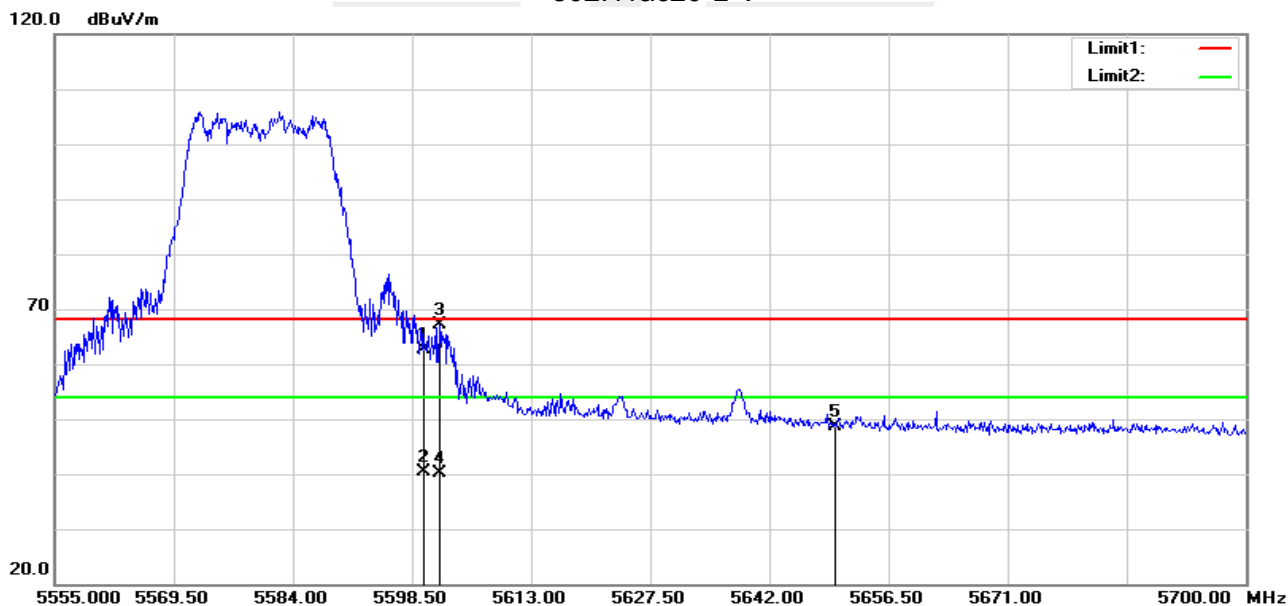


IC:
802.11ac20-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5600.000	58.80	-4.70	54.10	68.20	-14.10	peak
2	5600.000	43.68	-4.70	38.98	54.00	-15.02	AVG
3	5601.400	63.67	-4.70	58.97	68.20	-9.23	peak
4	5601.400	43.47	-4.70	38.77	54.00	-15.23	AVG
5	5650.000	51.50	-4.68	46.82	68.20	-21.38	peak

802.11ac20-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5600.000	67.24	-4.70	62.54	68.20	-5.66	peak
2	5600.000	44.96	-4.70	40.26	54.00	-13.74	AVG
3	5601.835	71.72	-4.70	67.02	68.20	-1.18	peak
4	5601.835	44.83	-4.70	40.13	54.00	-13.87	AVG
5	5650.000	53.31	-4.68	48.63	68.20	-19.57	peak



802.11ac20-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5600.000	58.80	-4.70	54.10	68.20	-14.10	peak
2	5600.000	43.68	-4.70	38.98	54.00	-15.02	AVG
3	5601.400	63.67	-4.70	58.97	68.20	-9.23	peak
4	5601.400	43.47	-4.70	38.77	54.00	-15.23	AVG
5	5650.000	51.50	-4.68	46.82	68.20	-21.38	peak

802.11ac20-H-V



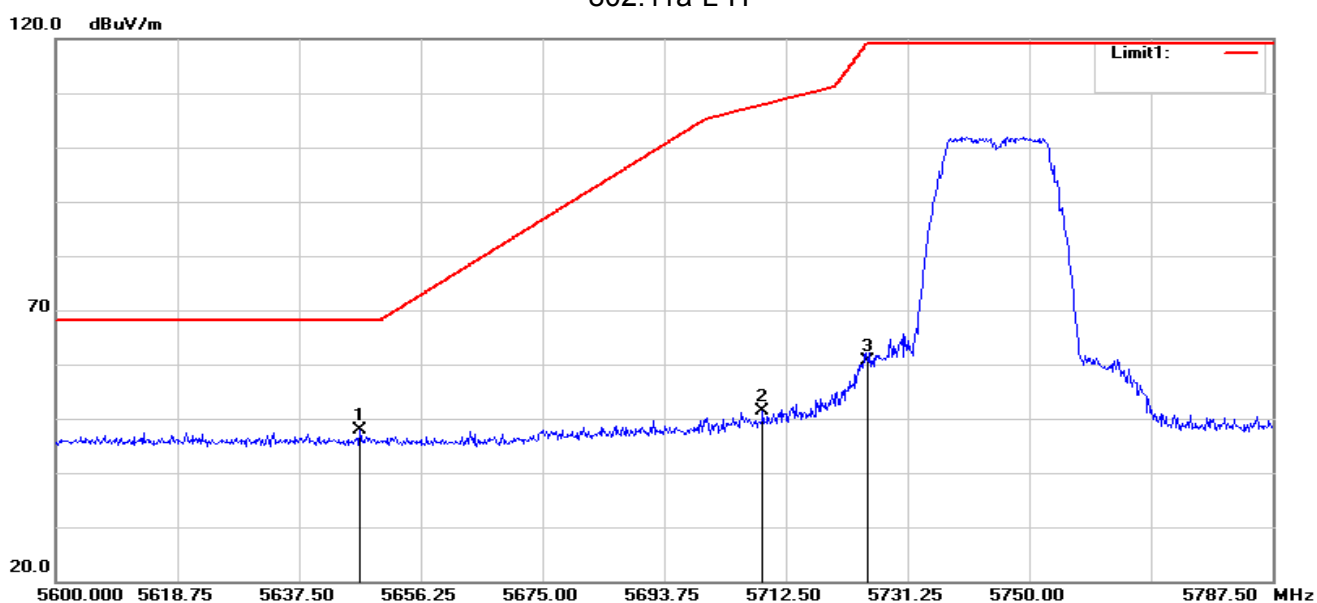
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5600.000	67.24	-4.70	62.54	68.20	-5.66	peak
2	5600.000	44.96	-4.70	40.26	54.00	-13.74	AVG
3	5601.835	71.72	-4.70	67.02	68.20	-1.18	peak
4	5601.835	44.83	-4.70	40.13	54.00	-13.87	AVG
5	5650.000	53.31	-4.68	48.63	68.20	-19.57	peak

Note: Scan with 802.11a,802.11n (HT-20),802.11n (HT-40), 802.11ac (VHT-20),802.11ac (VHT-40), 802.11ac (VHT-80) all have been tested the antenna A, antenna B and antenna A+B, the worst case is 802.11a mode of antenna A, 802.11ac(VHT 40) and 802.11ac(VHT80) of antenna A+B.



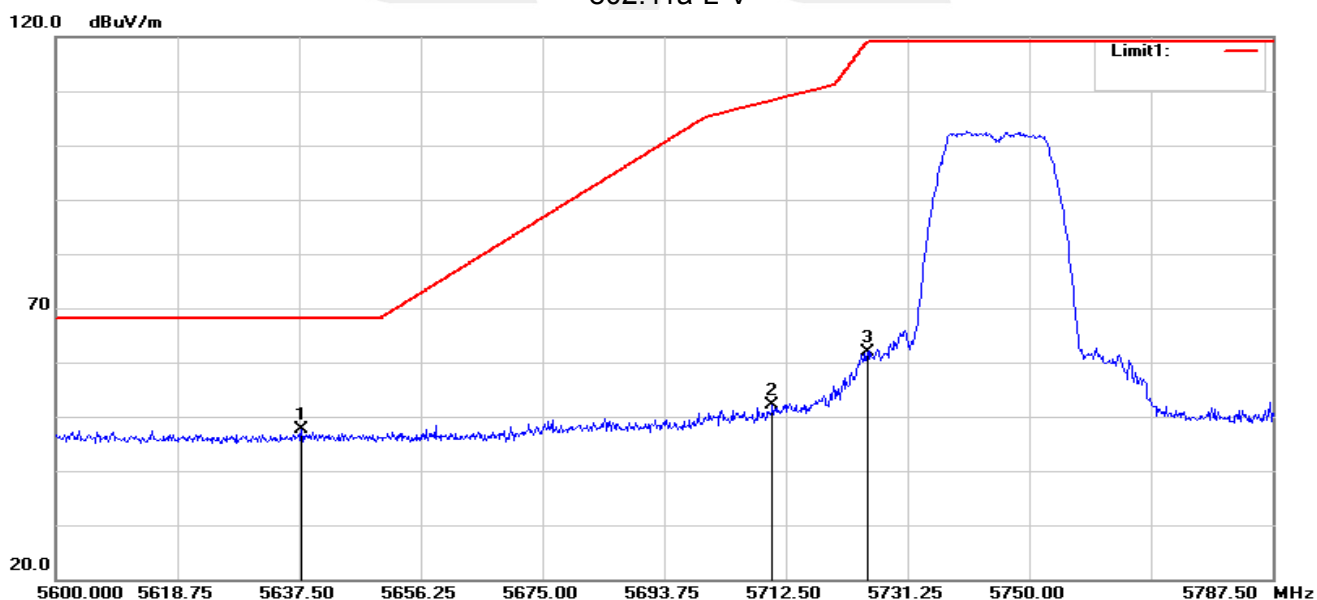
Band IV(5.725-5.85 GHz)

802.11a-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5646.875	52.50	-4.69	47.81	68.20	-20.39	peak
2	5708.938	56.11	-4.63	51.48	107.88	-56.40	peak
3	5725.000	65.11	-4.57	60.54	119.20	-58.66	peak

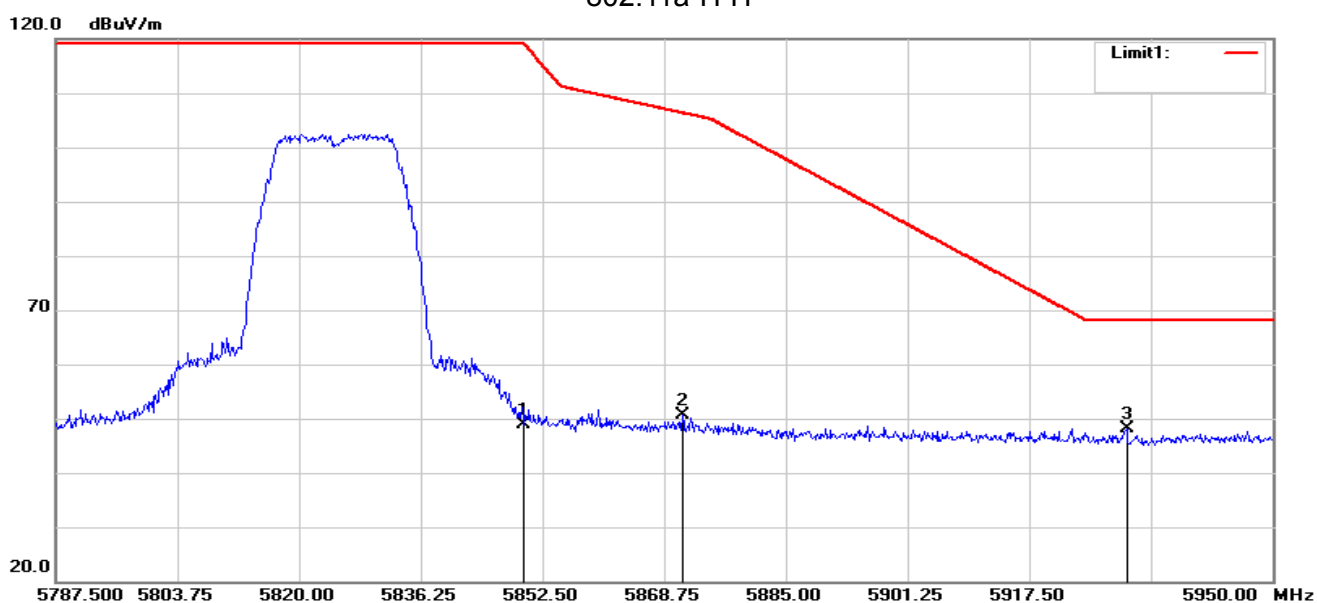
802.11a-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5637.875	52.25	-4.69	47.56	68.20	-20.64	peak
2	5710.438	56.85	-4.62	52.23	108.33	-56.10	peak
3	5725.000	66.45	-4.57	61.88	119.20	-57.32	peak

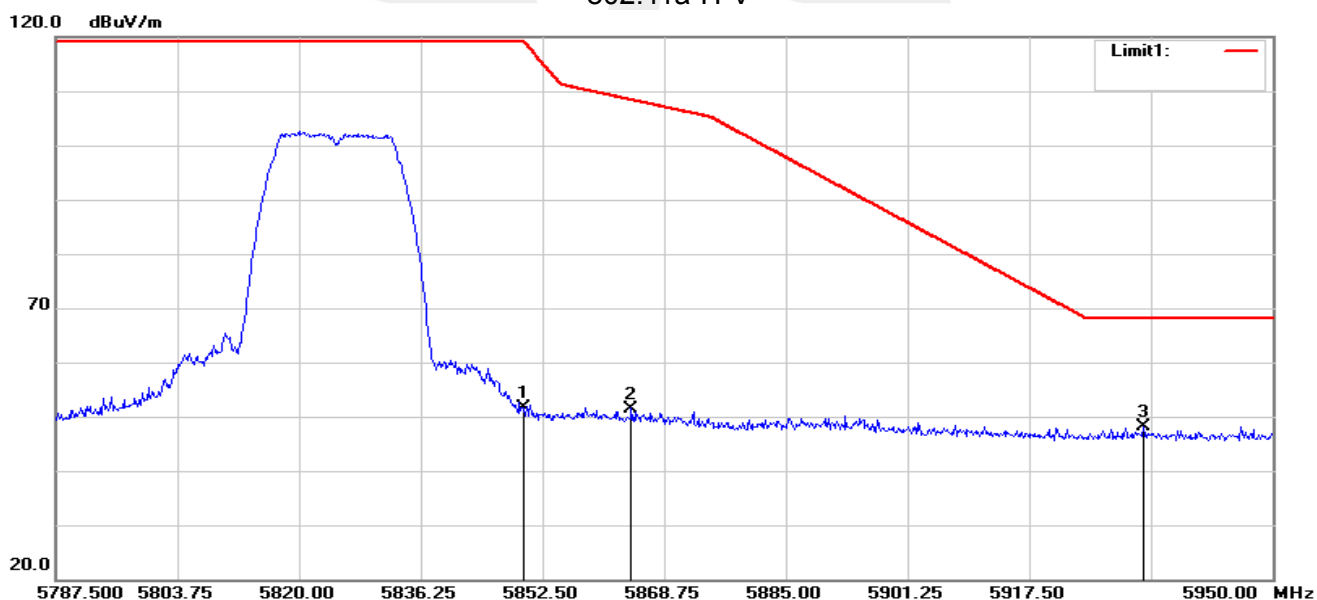


802.11a-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	53.07	-4.10	48.97	119.20	-70.23	peak
2	5871.188	54.57	-4.01	50.56	106.34	-55.78	peak
3	5930.500	52.13	-3.93	48.20	68.20	-20.00	peak

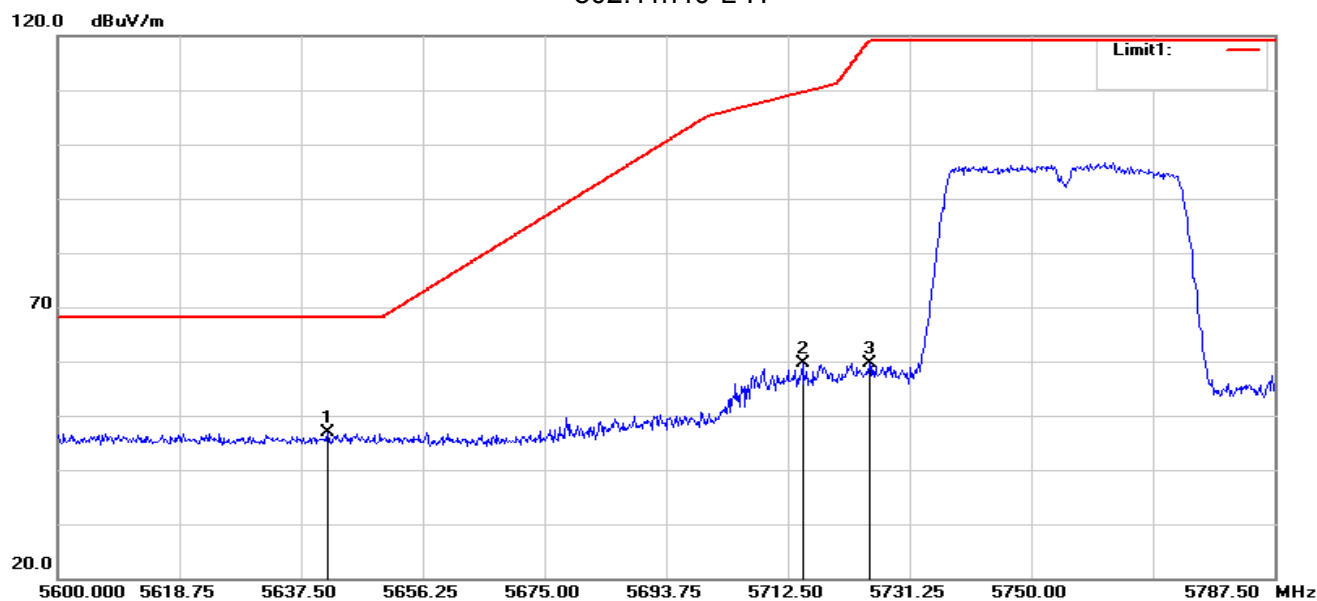
802.11a-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	55.62	-4.10	51.52	119.20	-67.68	peak
2	5864.363	55.54	-4.04	51.50	108.39	-56.89	peak
3	5932.775	52.03	-3.94	48.09	68.20	-20.11	peak

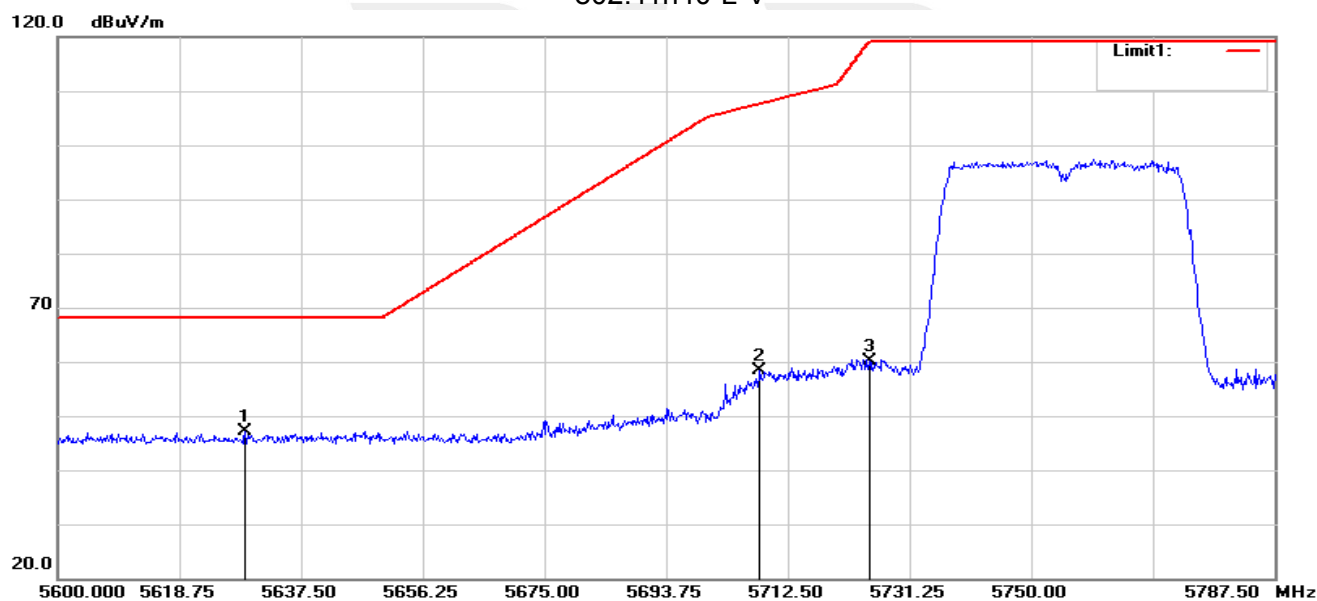


802.11n40-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5641.625	51.53	-4.68	46.85	68.20	-21.35	peak
2	5714.750	64.28	-4.61	59.67	109.63	-49.96	peak
3	5725.000	64.24	-4.57	59.67	119.20	-59.53	peak

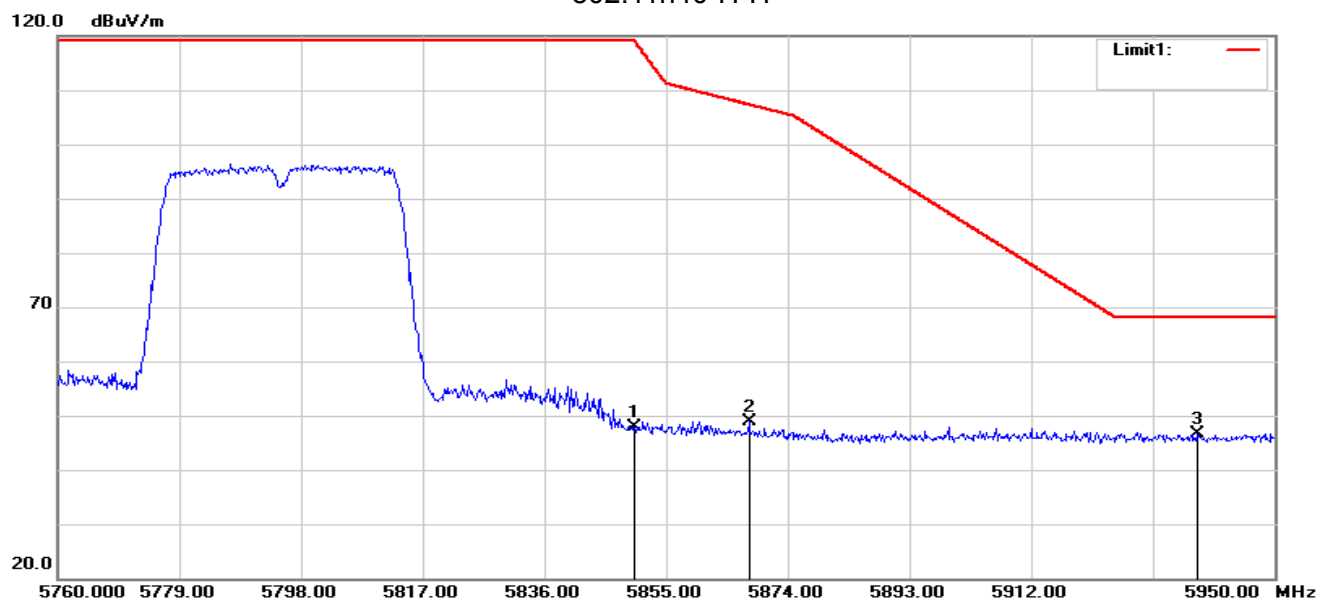
802.11n40-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5628.875	51.80	-4.68	47.12	68.20	-21.08	peak
2	5708.188	63.01	-4.64	58.37	107.66	-49.29	peak
3	5725.000	64.70	-4.57	60.13	119.20	-59.07	peak

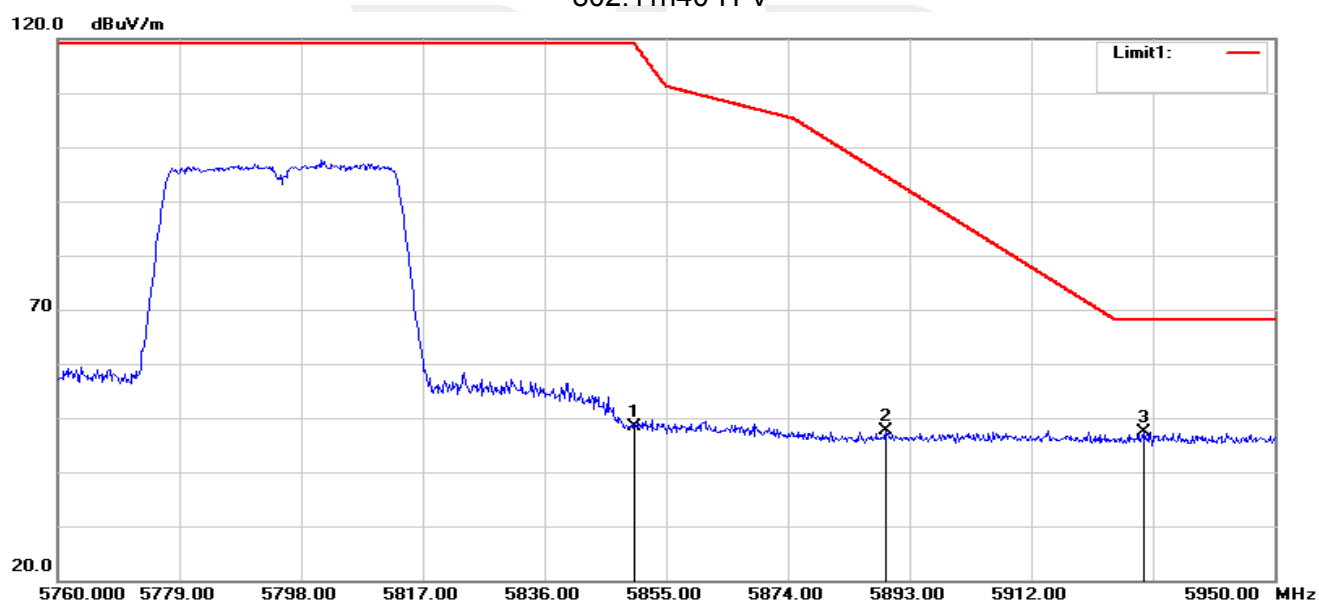


802.11n40-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	52.08	-4.10	47.98	119.20	-71.22	peak
2	5867.920	52.91	-4.02	48.89	107.32	-58.43	peak
3	5937.840	50.48	-3.94	46.54	68.20	-21.66	peak

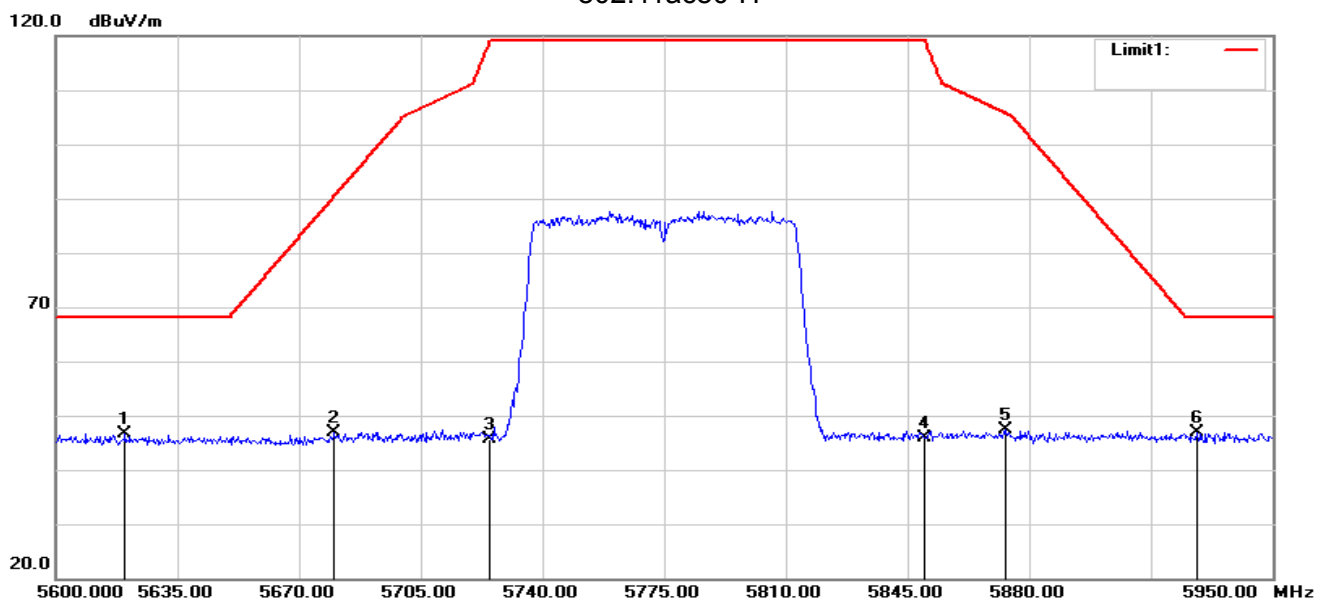
802.11n40-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	52.57	-4.10	48.47	119.20	-70.73	peak
2	5889.200	51.44	-3.93	47.51	94.69	-47.18	peak
3	5929.670	51.26	-3.93	47.33	68.20	-20.87	peak



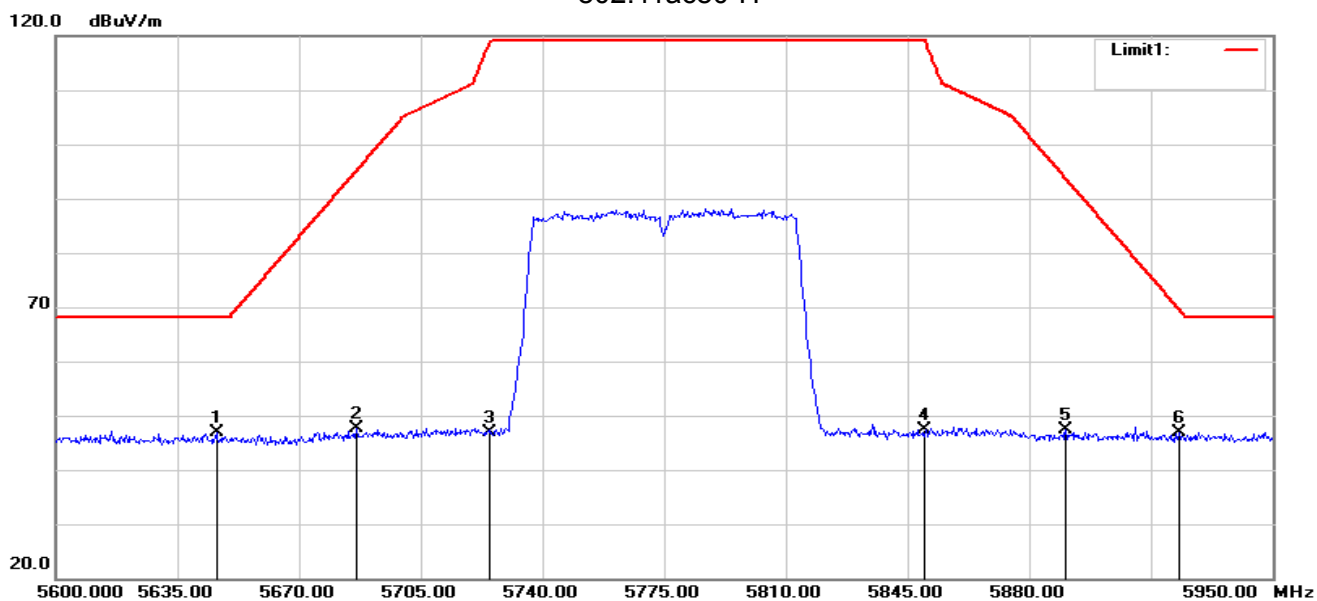
802.11ac80-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5619.950	51.37	-4.69	46.68	68.20	-21.52	peak
2	5680.150	51.54	-4.67	46.87	90.51	-43.64	peak
3	5725.000	50.19	-4.57	45.62	119.20	-73.58	peak
4	5850.000	50.06	-4.10	45.96	119.20	-73.24	peak
5	5873.000	51.40	-4.00	47.40	105.80	-58.40	peak
6	5928.300	50.86	-3.92	46.94	68.20	-21.26	peak



802.11ac80-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5646.200	51.64	-4.69	46.95	68.20	-21.25	peak
2	5686.450	52.21	-4.66	47.55	95.17	-47.62	peak
3	5725.000	51.57	-4.57	47.00	119.20	-72.20	peak
4	5850.000	51.51	-4.10	47.41	119.20	-71.79	peak
5	5890.500	51.42	-3.93	47.49	93.73	-46.24	peak
6	5923.050	50.83	-3.92	46.91	69.64	-22.73	peak

Note: Scan with 802.11a,802.11n (HT-20),802.11n (HT-40), 802.11ac (VHT-20),802.11ac (VHT-40), 802.11ac (VHT-80) all have been tested the antenna A, antenna B and antenna A+B, the worst case is 802.11a mode of antenna A, 802.11n(HT 40) and 802.11ac(VHT80) of antenna A+B.



4. POWER SPECTRAL DENSITY TEST

4.1 LIMIT

FCC:

1. For mobile and portable 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 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 5.725-5.850 GHz, the peak power spectral density shall not exceed 30 dBm in any 500KHz band. If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC:

1. For the 5.15-5.25 GHz, The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
3. The output 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 output 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 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.

4.2 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 $10 \log(1\text{MHz}/\text{RBW})$ 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.

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 KHZ is available on nearly all spectrum analyzers.

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.6 TEST RESULTS

5150-5250MHz									
Frequency	Direct measurement Ant_A Power Density (dBm)	Direct measurement Ant_B Power Density (dBm)	Ant_A Duty cycle factor	Ant_B Duty cycle factor	Final Ant_A Power Density (dBm)	Final Ant_B Power Density (dBm)	Power Density Total (dBm)	Limit (dBm)	Result
802.11a									
5180	2.374	-0.607	0.258	0.258	2.632	-0.349	--	11.00	PASS
5200	2.188	-0.694	0.258	0.258	2.446	-0.436	--	11.00	PASS
5240	1.442	0.100	0.258	0.258	1.700	0.358	--	11.00	PASS
802.11n20									
5180	2.161	-0.955	0.275	0.275	2.436	-0.680	4.162	10.99	PASS
5200	1.855	-1.257	0.275	0.275	2.130	-0.982	3.857	10.99	PASS
5240	1.221	-0.838	0.275	0.275	1.496	-0.563	3.597	10.99	PASS
802.11n40									
5190	-5.167	-6.713	0.570	0.570	-4.597	-6.143	-2.291	10.99	PASS
5230	-5.216	-7.047	0.570	0.570	-4.646	-6.477	-2.455	10.99	PASS
802.11ac20									
5180	1.731	-1.121	0.273	0.273	2.004	-0.848	3.818	10.99	PASS
5200	1.501	-1.047	0.273	0.273	1.774	-0.774	3.695	10.99	PASS
5240	0.838	-0.734	0.273	0.273	1.111	-0.461	3.406	10.99	PASS
802.11ac40									
5190	-5.293	-6.644	0.554	0.554	-4.739	-6.090	-2.352	10.99	PASS
5230	-5.386	-6.993	0.554	0.554	-4.832	-6.439	-2.551	10.99	PASS
802.11ac80									
5210	-14.481	-17.476	1.056	1.056	-13.425	-16.420	-11.659	10.99	PASS



5250-5350MHz									
Frequency	Direct measurement Ant_A Power Density (dBm)	Direct measurement Ant_B Power Density (dBm)	Ant_A Duty cycle factor	Ant_B Duty cycle factor	Final Ant_A Power Density (dBm)	Final Ant_B Power Density (dBm)	Power Density Total (dBm)	Limit (dBm)	Result
802.11a									
5260	0.700	-0.492	0.258	0.258	0.958	-0.234	--	11.00	PASS
5300	0.279	-0.092	0.258	0.258	0.537	0.166	--	11.00	PASS
5320	0.462	0.474	0.258	0.258	0.720	0.732	--	11.00	PASS
802.11n20									
5260	0.245	-0.968	0.275	0.275	0.520	-0.693	2.966	10.99	PASS
5300	-0.078	-0.331	0.275	0.275	0.197	-0.056	3.082	10.99	PASS
5320	0.030	-0.203	0.275	0.275	0.305	0.072	3.200	10.99	PASS
802.11n40									
5270	-5.091	-6.457	0.557	0.557	-4.534	-5.900	-2.153	10.99	PASS
5310	-5.438	-5.734	0.557	0.557	-4.881	-5.177	-2.016	10.99	PASS
802.11ac20									
5260	0.147	-1.097	0.273	0.273	0.420	-0.824	2.853	10.99	PASS
5300	-0.047	-0.411	0.273	0.273	0.226	-0.138	3.058	10.99	PASS
5320	0.231	-0.461	0.273	0.273	0.504	-0.188	3.182	10.99	PASS
802.11ac40									
5270	-5.260	-6.396	0.554	0.554	-4.706	-5.842	-2.227	10.99	PASS
5310	-4.992	-5.672	0.554	0.554	-4.438	-5.118	-1.754	10.99	PASS
802.11ac80									
5290	-16.774	-19.808	1.043	1.043	-15.731	-18.765	-13.978	10.99	PASS



5470-5725MHz									
Frequency	Direct measurement Ant_A Power Density (dBm)	Direct measurement Ant_B Power Density (dBm)	Ant_A Duty cycle factor	Ant_B Duty cycle factor	Final Ant_A Power Density (dBm)	Final Ant_B Power Density (dBm)	Power Density Total (dBm)	Limit (dBm)	Result
802.11a									
5500	0.400	0.798	0.252	0.252	0.652	1.050	--	11.00	PASS
5580	0.359	0.431	0.252	0.252	0.611	0.683	--	11.00	PASS
5700	0.843	0.177	0.252	0.252	1.095	0.429	--	11.00	PASS
802.11n20									
5500	0.094	0.323	0.268	0.268	0.362	0.591	3.489	10.99	PASS
5580	-0.080	0.163	0.268	0.268	0.188	0.431	3.322	10.99	PASS
5700	-0.025	0.067	0.268	0.268	0.243	0.335	3.300	10.99	PASS
802.11n40									
5510	-5.645	-5.342	0.557	0.557	-5.088	-4.785	-1.923	10.99	PASS
5550	-5.653	-5.568	0.557	0.557	-5.096	-5.011	-2.043	10.99	PASS
5670	-5.806	-5.895	0.557	0.557	-5.249	-5.338	-2.283	10.99	PASS
802.11ac20									
5500	0.178	0.532	0.283	0.283	0.461	0.815	3.652	10.99	PASS
5580	0.035	0.215	0.283	0.283	0.318	0.498	3.419	10.99	PASS
5700	0.046	-0.104	0.283	0.283	0.329	0.179	3.265	10.99	PASS
802.11ac40									
5510	-5.605	-5.240	0.538	0.538	-5.067	-4.702	-1.870	10.99	PASS
5550	-5.611	-5.545	0.538	0.538	-5.073	-5.007	-2.029	10.99	PASS
5670	-5.675	-5.930	0.538	0.538	-5.137	-5.392	-2.252	10.99	PASS
802.11ac80									
5530	-13.022	-17.969	1.064	1.064	-11.958	-16.905	-10.752	10.99	PASS
5610	-13.347	-18.278	1.064	1.064	-12.283	-17.214	-11.073	10.99	PASS



5725-5850MHz											
Frequency	Use RBW 510KHz direct measurement Ant_A Power Density (dBm)	Use RBW 510KHz direct measurement Ant_B Power Density (dBm)	Convert to RBW 500KHz direct measurement Ant_A Power Density (dBm)	Convert to RBW 500KHz direct measurement Ant_B Power Density (dBm)	Ant_A Duty cycle factor (dB)	Ant_B Duty cycle factor (dB)	Final Ant_A Power Density (dBm)	Final Ant_B Power Density (dBm)	Power Density Total (dBm)	Limit (dBm)	Result
802.11a											
5745	-1.796	-2.069	-1.882	-2.155	0.267	0.267	-1.615	-1.888	--	30.00	PASS
5785	-2.201	-1.990	-2.287	-2.076	0.267	0.267	-2.020	-1.809	--	30.00	PASS
5825	-2.118	-2.325	-2.204	-2.411	0.267	0.267	-1.937	-2.144	--	30.00	PASS
802.11n20											
5745	-2.288	-2.584	-2.374	-2.670	0.275	0.275	-2.099	-2.395	0.765	29.99	PASS
5785	-2.416	-2.568	-2.502	-2.654	0.275	0.275	-2.227	-2.379	0.708	29.99	PASS
5825	-2.725	-2.945	-2.811	-3.031	0.275	0.275	-2.536	-2.756	0.365	29.99	PASS
802.11n40											
5755	-8.418	-8.113	-8.504	-8.199	0.557	0.557	-7.947	-7.642	-4.781	29.99	PASS
5795	-7.986	-8.156	-8.072	-8.242	0.557	0.557	-7.515	-7.685	-4.589	29.99	PASS
802.11ac20											
5745	-2.076	-2.742	-2.162	-2.828	0.273	0.273	-1.889	-2.555	0.801	29.99	PASS
5785	-2.475	-2.716	-2.561	-2.802	0.273	0.273	-2.288	-2.529	0.604	29.99	PASS
5825	-2.311	-2.588	-2.397	-2.674	0.273	0.273	-2.124	-2.401	0.750	29.99	PASS
802.11ac40											
5755	-7.875	-7.894	-7.961	-7.980	0.554	0.554	-7.407	-7.426	-4.406	29.99	PASS
5795	-8.006	-8.180	-8.092	-8.266	0.554	0.554	-7.538	-7.712	-4.614	29.99	PASS
802.11ac80											
5775	-17.016	-22.729	-17.102	-22.815	1.066	1.066	-16.036	-21.749	-15.004	29.99	PASS



EIRP PSD

Band I (5.15-5.25GHz)								
Test Channel	Frequency (MHz)	Ant_A Power Density (dBm)	Ant_B Power Density (dBm)	Ant Gain (dBi)	Ant_A EIRP Power Density (dBm)	Ant_B EIRP Power Density (dBm)	EIRP Power Density Total (dBm)	LIMIT (dBm)
802.11a								
36	5180	2.37	-0.61	3.00	5.37	2.39	--	10
40	5200	2.19	-0.69	3.00	5.19	2.31	--	10
48	5240	1.44	0.10	3.00	4.44	3.10	--	10
802.11n(HT20)								
36	5180	2.16	-0.96	3.00	5.16	2.05	6.89	10
40	5200	1.86	-1.26	3.00	4.86	1.74	6.58	10
48	5240	1.22	-0.84	3.00	4.22	2.16	6.32	10
802.11n(HT40)								
38	5190	-5.17	-6.71	3.00	-2.17	-3.71	0.14	10
46	5230	-5.22	-7.05	3.00	-2.22	-4.05	-0.03	10
802.11ac(VHT20)								
36	5180	1.73	-1.12	3.00	4.73	1.88	6.55	10
40	5200	1.50	-1.05	3.00	4.50	1.95	6.42	10
48	5240	0.84	-0.73	3.00	3.84	2.27	6.13	10
802.11ac(VHT40)								
38	5190	-5.29	-6.64	3.00	-2.29	-3.64	0.09	10
46	5230	-5.39	-6.99	3.00	-2.39	-3.99	-0.11	10
802.11ac(VHT80)								
42	5210	-14.48	-17.48	3.00	-11.48	-14.48	-9.71	10

Note: 1. RB conversion formula: $10 \cdot \log(500\text{KHz}/\text{RBW})$

2. The MIMO antenna gain is 6.01dBi, which is greater than 6dBi, so the MIMO mode maximum power spectral density limit will be reduced by 0.01dBi.

3. Test plots see Attachment A.



5. BANDWIDTH MEASUREMENT

5.1 EMISSION BANDWIDTH (EBW) 26 BANDWID PROCEDURES / LIMIT

The following procedure shall be used for measuring 26 bandwidth.

5.1.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW $\geq$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. 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 analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

**5.1.5 TEST RESULTS**

Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5180	21.45	Pass
5200	21.42	Pass
5240	21.39	Pass
802.11n(HT20)		
5180	21.60	Pass
5200	21.70	Pass
5240	21.69	Pass
802.11n(HT40)		
5190	39.94	Pass
5230	39.90	Pass
802.11ac(VHT20)		
5180	21.62	Pass
5200	21.54	Pass
5240	21.75	Pass
802.11ac(VHT40)		
5190	39.97	Pass
5230	40.02	Pass
802.11ac(VHT80)		
5210	81.70	Pass

Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5260	21.41	Pass
5300	21.38	Pass
5320	21.40	Pass
802.11n(HT20)		
5260	21.71	Pass
5300	21.49	Pass
5320	21.58	Pass
802.11n(HT40)		
5270	40.44	Pass
5310	40.46	Pass
802.11ac(VHT20)		
5260	21.73	Pass
5300	21.67	Pass
5320	21.83	Pass
802.11ac(VHT40)		
5270	41.89	Pass
5310	40.49	Pass
802.11ac(VHT80)		
5290	114.90	Pass



Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5500	21.49	Pass
5580	21.60	Pass
5700	21.61	Pass
802.11n(HT20)		
5500	21.70	Pass
5580	21.99	Pass
5700	21.52	Pass
802.11n(HT40)		
5510	40.56	Pass
5550	40.27	Pass
5670	40.36	Pass
802.11ac(VHT20)		
5500	21.68	Pass
5580	21.87	Pass
5700	21.59	Pass
802.11ac(VHT40)		
5510	40.17	Pass
5550	40.79	Pass
5670	40.38	Pass
802.11ac(VHT80)		
5530	115.00	Pass
5610	115.00	Pass

Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5745	21.56	Pass
5785	21.44	Pass
5825	21.49	Pass
802.11n(HT20)		
5745	21.60	Pass
5785	21.93	Pass
5825	21.71	Pass
802.11n(HT40)		
5755	40.24	Pass
5795	47.55	Pass
802.11ac(VHT20)		
5745	21.56	Pass
5785	21.81	Pass
5825	21.74	Pass
802.11ac(VHT40)		
5755	40.33	Pass
5795	45.63	Pass
802.11ac(VHT80)		
5775	114.60	Pass

Note:

1. Antenna A Power > Antenna B Power, Both antenna A and B have been test, Only show the worst data of Antenna A.
2. Test plot see Attachment B.



5.2 OCCUPIED BANDWIDTH (99%) TEST APPLIED PROCEDURES / LIMIT

The following procedure shall be used for measuring (99 %) power bandwidth.

5.2.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v02r01.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot$ RBW
5. 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.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. 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% occupied bandwidth is the difference between these two frequencies.

5.2.2 DEVIATION FROM STANDARD

No deviation.

5.2.3 TEST SETUP



5.2.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

**5.2.5 TEST RESULTS**

Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5180	16.77	Pass
5200	16.77	Pass
5240	16.76	Pass
802.11n(HT20)		
5180	17.87	Pass
5200	17.86	Pass
5240	17.85	Pass
802.11n(HT40)		
5190	36.30	Pass
5230	36.30	Pass
802.11ac(VHT20)		
5180	17.85	Pass
5200	17.86	Pass
5240	17.87	Pass
802.11ac(VHT40)		
5190	36.29	Pass
5230	36.33	Pass
802.11ac(VHT80)		
5210	75.89	Pass

Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5260	16.74	Pass
5300	16.78	Pass
5320	16.76	Pass
802.11n(HT20)		
5260	17.86	Pass
5300	17.87	Pass
5320	17.86	Pass
802.11n(HT40)		
5270	36.37	Pass
5310	36.32	Pass
802.11ac(VHT20)		
5260	17.88	Pass
5300	17.86	Pass
5320	17.86	Pass
802.11ac(VHT40)		
5270	36.36	Pass
5310	36.37	Pass
802.11ac(VHT80)		
5290	76.15	Pass



Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5500	16.77	Pass
5580	16.76	Pass
5700	16.77	Pass
802.11n(HT20)		
5500	17.87	Pass
5580	17.93	Pass
5700	17.88	Pass
802.11n(HT40)		
5510	36.36	Pass
5550	36.33	Pass
5670	36.33	Pass
802.11ac(VHT20)		
5500	17.88	Pass
5580	17.90	Pass
5700	17.88	Pass
802.11ac(VHT40)		
5510	36.34	Pass
5550	36.35	Pass
5670	36.39	Pass
802.11ac(VHT80)		
5530	76.10	Pass
5610	76.23	Pass

Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5745	16.75	Pass
5785	16.80	Pass
5825	16.76	Pass
802.11n(HT20)		
5745	17.88	Pass
5785	17.90	Pass
5825	17.88	Pass
802.11n(HT40)		
5755	36.35	Pass
5795	36.39	Pass
802.11ac(VHT20)		
5745	17.87	Pass
5785	17.91	Pass
5825	17.87	Pass
802.11ac(VHT40)		
5755	36.35	Pass
5795	36.36	Pass
802.11ac(VHT80)		
5775	76.15	Pass

Note:

1. Antenna A Power > Antenna B Power, Both antenna A and B have been test, Only show the worst data of Antenna A.
2. Test plot see Attachment B.

5.3 MINIMUM EMISSION BANDWIDTH(6 DB) PROCEDURES / LIMIT

The minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth.

5.3.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v02r01.
 - 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 = auto couple.
 - 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.

5.3.2 DEVIATION FROM STANDARD

No deviation.

5.3.3 TEST SETUP



5.3.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

**5.3.5 TEST RESULTS**

Frequency (MHz)	6dB Bandwidth (MHz)	Pass/Fail
802.11a		
5745	16.35	Pass
5785	16.36	Pass
5825	16.36	Pass
802.11n(HT20)		
5745	17.60	Pass
5785	17.59	Pass
5825	17.60	Pass
802.11n(HT40)		
5755	36.33	Pass
5795	36.37	Pass
802.11ac(VHT20)		
5745	17.60	Pass
5785	17.57	Pass
5825	17.60	Pass
802.11ac(VHT40)		
5755	36.36	Pass
5795	36.40	Pass
802.11ac(VHT80)		
5775	76.32	Pass

Note:

1. Antenna A Power > Antenna B Power, Both antenna A and B have been test, Only show the worst data of Antenna A.
2. Test plot see Attachment C.



6. MAXIMUM CONDUCTED OUTPUT POWER

6.1 LIMIT

FCC:

For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. 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.

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 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz, If transmitting antennas of directional gain greater than 6 dBi are used.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used.

FCC Part15 (15.407) , Subpart E				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.407(a) (1) (iv)	Peak Output Power	0.25 watt	5150-5250	PASS
		The lesser of 250 mW or 11 dBm + 10 log (26 dB emission bandwidth)	5250-5350 5470-5725	
15.407(a) (3)		1 watt	5725-5825	



IC:

1. The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;
2. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.
3. The maximum conducted output power shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output 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 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.

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Section	Test Item	Limit	Frequency Range (MHz)	Result
6.2.1.1	Average Output Power	200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz	5150-5250	PASS
6.2.2.1 6.2.3.1		The lesser of 250 mW or $11 \text{ dBm} + 10 \log (26 \text{ dB emission bandwidth})$	5250-5350 5470-5725	
6.2.4.1		1 watt	5725-5825	

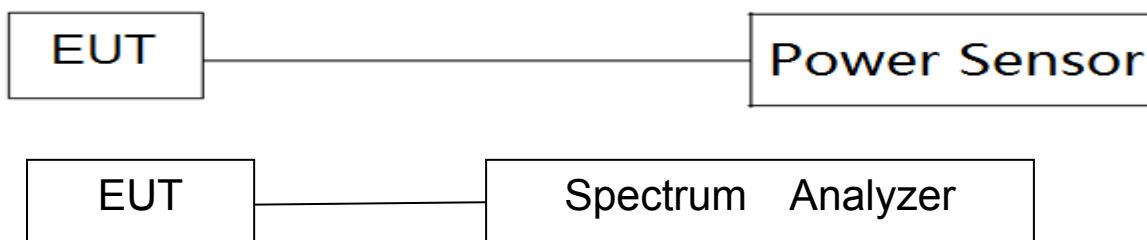
6.2 TEST PROCEDURE

The EUT was directly connected to the Power Sensor&PC

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 5 Unless otherwise a special operating condition is specified in the follows during the testing.



6.6 TEST RESULTS

Band I (5.15-5.25GHz)									
Test Channel	Frequency (MHz)	Direct measurement Ant_A AV Power (dBm)	Direct measurement Ant B_AV Power (dBm)	Ant_A Duty cycle factor (dB)	Ant_B Duty cycle factor (dB)	Final Ant_A AV Power (dBm)	Final Ant_B AV Power (dBm)	AV Power Total (dBm)	LIMIT (dBm)
802.11a									
36	5180	11.80	11.00	0.258	0.258	12.06	11.26	--	23.98
40	5200	11.83	11.08	0.258	0.258	12.09	11.34	--	23.98
48	5240	11.66	11.06	0.258	0.258	11.92	11.32	--	23.98
802.11n(HT20)									
36	5180	11.77	10.91	0.275	0.275	12.04	11.18	14.65	23.97
40	5200	11.78	10.81	0.275	0.275	12.05	11.08	14.61	23.97
48	5240	11.70	10.96	0.275	0.275	11.97	11.23	14.63	23.97
802.11n(HT40)									
38	5190	8.63	7.87	0.570	0.570	9.20	8.44	11.85	23.97
46	5230	8.46	7.82	0.570	0.570	9.03	8.39	11.73	23.97
802.11ac(VHT20)									
36	5180	11.59	11.01	0.273	0.273	11.86	11.28	14.59	23.97
40	5200	11.61	11.10	0.273	0.273	11.88	11.37	14.65	23.97
48	5240	11.68	10.95	0.273	0.273	11.95	11.22	14.61	23.97
802.11ac(VHT40)									
38	5190	8.52	7.76	0.554	0.554	9.07	8.31	11.72	23.97
46	5230	8.28	7.82	0.554	0.554	8.83	8.37	11.62	23.97
802.11ac(VHT80)									
42	5210	10.82	8.59	1.056	1.056	11.88	9.65	13.91	23.97

Note: The MIMO antenna gain is 6.01dBi, which is greater than 6dBi, so the MIMO mode limit will be reduced by 0.01dBi.



Band II(5.25-5.35GHz)									
Test Channel	Frequency (MHz)	Direct measurement Ant_A AV Power (dBm)	Direct measurement Ant B_AV Power (dBm)	Ant_A Duty cycle factor (dB)	Ant_B Duty cycle factor (dB)	Final Ant_A AV Power (dBm)	Final Ant_B AV Power (dBm)	AV Power Total (dBm)	LIMIT (dBm)
802.11a									
52	5260	11.75	10.94	0.258	0.258	12.01	11.20	--	23.98
60	5300	11.76	11.07	0.258	0.258	12.02	11.33	--	23.98
64	5320	11.74	11.19	0.258	0.258	12.00	11.45	--	23.98
802.11n(HT20)									
52	5260	11.36	10.83	0.275	0.275	11.63	11.10	14.39	23.97
60	5300	11.70	10.99	0.275	0.275	11.97	11.26	14.64	23.97
64	5320	11.71	11.15	0.275	0.275	11.98	11.42	14.72	23.97
802.11n(HT40)									
54	5270	8.68	8.32	0.557	0.557	9.24	8.88	12.07	23.97
62	5310	8.61	8.49	0.557	0.557	9.17	9.05	12.12	23.97
802.11ac(VHT20)									
52	5260	11.48	10.79	0.273	0.273	11.75	11.06	14.43	23.97
60	5300	11.47	11.03	0.273	0.273	11.74	11.30	14.54	23.97
64	5320	11.50	11.09	0.273	0.273	11.77	11.36	14.58	23.97
802.11ac(VHT40)									
54	5270	8.49	8.27	0.554	0.554	9.04	8.82	11.95	23.97
62	5310	8.62	8.53	0.554	0.554	9.17	9.08	12.14	23.97
802.11ac(VHT80)									
58	5290	9.49	6.40	1.043	1.043	10.53	7.44	12.27	23.97

Note: The MIMO antenna gain is 6.01dBi, which is greater than 6dBi, so the MIMO mode limit will be reduced by 0.01dBi.



Band III(5.47-5.725GHz)									
Test Channel	Frequency (MHz)	Direct measurement Ant_A AV Power (dBm)	Direct measurement Ant B_AV Power (dBm)	Ant_A Duty cycle factor (dB)	Ant_B Duty cycle factor (dB)	Final Ant_A AV Power (dBm)	Final Ant_B AV Power (dBm)	AV Power Total (dBm)	LIMIT (dBm)
802.11a									
100	5500	12.06	11.87	0.252	0.252	12.31	12.12	--	23.98
116	5580	11.95	11.55	0.252	0.252	12.20	11.80	--	23.98
140	5700	11.85	11.41	0.252	0.252	12.10	11.66	--	23.98
802.11n(HT20)									
100	5500	11.77	11.54	0.268	0.268	12.04	11.81	14.94	23.97
116	5580	11.67	11.49	0.268	0.268	11.94	11.76	14.86	23.97
140	5700	11.59	11.35	0.268	0.268	11.86	11.62	14.75	23.97
802.11n(HT40)									
102	5510	8.92	8.82	0.557	0.557	9.48	9.38	12.44	23.97
110	5550	8.66	8.93	0.557	0.557	9.22	9.49	12.36	23.97
134	5670	8.53	8.37	0.557	0.557	9.09	8.93	12.02	23.97
802.11ac(VHT20)									
100	5500	11.85	11.72	0.283	0.283	12.13	12.00	15.08	23.97
116	5580	11.63	11.48	0.283	0.283	11.91	11.76	14.85	23.97
140	5700	11.66	11.22	0.283	0.283	11.94	11.50	14.74	23.97
802.11ac(VHT40)									
102	5510	8.89	8.80	0.538	0.538	9.43	9.34	12.39	23.97
110	5550	8.80	8.74	0.538	0.538	9.34	9.28	12.32	23.97
134	5670	8.71	8.39	0.538	0.538	9.25	8.93	12.10	23.97
802.11ac(VHT80)									
106	5530	11.27	3.70	1.064	1.064	12.33	4.76	13.03	23.97
122	5610	11.38	3.77	1.064	1.064	12.44	4.83	13.14	23.97

Note: The MIMO antenna gain is 6.01dBi, which is greater than 6dBi, so the MIMO mode limit will be reduced by 0.01dBi.



Band IV (5.725-5.85GHz)									
Test Channel	Frequency (MHz)	Direct measurement Ant_A AV Power (dBm)	Direct measurement Ant B_AV Power (dBm)	Ant_A Duty cycle factor (dB)	Ant_B Duty cycle factor (dB)	Final Ant_A AV Power (dBm)	Final Ant_B AV Power (dBm)	AV Power Total (dBm)	LIMIT (dBm)
802.11a									
149	5745	12.32	11.65	0.267	0.267	12.59	11.92	--	30.00
157	5785	12.11	11.79	0.267	0.267	12.38	12.06	--	30.00
165	5825	11.96	11.85	0.267	0.267	12.23	12.12	--	30.00
802.11n(HT20)									
149	5745	12.27	11.44	0.275	0.275	12.54	11.71	15.160	29.99
157	5785	12.06	11.57	0.275	0.275	12.33	11.84	15.107	29.99
165	5825	11.97	11.68	0.275	0.275	12.24	11.95	15.112	29.99
802.11n(HT40)									
151	5755	8.77	8.76	0.557	0.557	9.33	9.32	12.333	29.99
159	5795	8.76	8.67	0.557	0.557	9.32	9.23	12.283	29.99
802.11ac(VHT20)									
149	5745	12.10	11.56	0.273	0.273	12.37	11.83	15.122	29.99
157	5785	12.05	11.54	0.273	0.273	12.32	11.81	15.086	29.99
165	5825	11.85	11.72	0.273	0.273	12.12	11.99	15.069	29.99
802.11ac(VHT40)									
151	5755	8.88	8.56	0.554	0.554	9.43	9.11	12.287	29.99
159	5795	8.69	8.63	0.554	0.554	9.24	9.18	12.225	29.99
802.11ac(VHT80)									
155	5775	9.89	5.17	1.066	1.066	10.96	6.24	12.218	29.99

Note: The MIMO antenna gain is 6.01dBi, which is greater than 6dBi, so the MIMO mode limit will be reduced by 0.01dBi.



EIRP

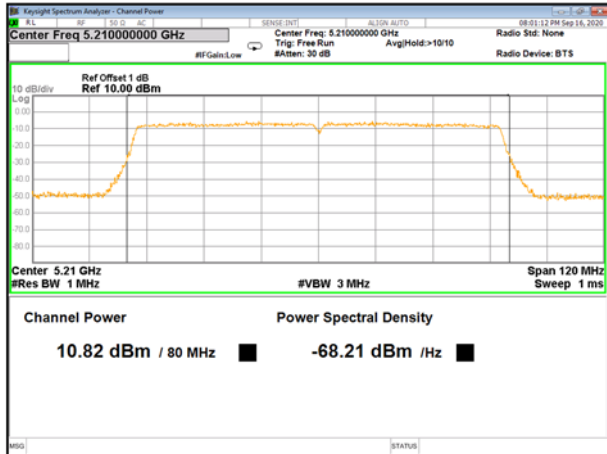
Band I (5.15-5.25GHz)-EIRP								
Test Channel	Frequency (MHz)	Ant_A AV Power (dBm)	Ant_B AV Power (dBm)	Ant Gain (dBi)	Ant_A E.I.R.P Power (dBm)	Ant_B E.I.R.P Power (dBm)	E.I.R.P Power Total (dBm)	E.I.R.P LIMIT (dBm)
802.11a								
36	5180	11.80	11.00	3.00	14.80	14.00	--	23.01
40	5200	11.83	11.08	3.00	14.83	14.08	--	23.01
48	5240	11.66	11.06	3.00	14.66	14.06	--	23.01
802.11n(HT20)								
36	5180	11.77	10.91	3.00	14.77	13.91	17.37	23.01
40	5200	11.78	10.81	3.00	14.78	13.81	17.33	23.01
48	5240	11.70	10.96	3.00	14.70	13.96	17.36	23.01
802.11n(HT40)								
38	5190	8.63	7.87	3.00	11.63	10.87	14.28	23.01
46	5230	8.46	7.82	3.00	11.46	10.82	14.16	23.01
802.11ac(VHT20)								
36	5180	11.59	11.01	3.00	14.59	14.01	17.32	23.01
40	5200	11.61	11.10	3.00	14.61	14.10	17.37	23.01
48	5240	11.68	10.95	3.00	14.68	13.95	17.34	23.01
802.11ac(VHT40)								
38	5190	8.52	7.76	3.00	11.52	10.76	14.17	23.01
46	5230	8.28	7.82	3.00	11.28	10.82	14.07	23.01
802.11ac(VHT80)								
42	5210	10.82	8.59	3.00	13.82	11.59	15.86	23.01



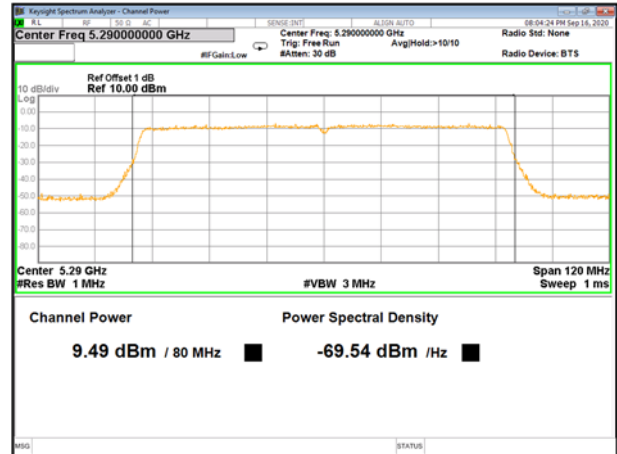
Band II(5.25-5.35GHz)-EIRP										
Test Channel	Frequency (MHz)	Ant_A AV Power (dBm)	Ant_B AV Power (dBm)	Conducted Power Total (dBm)	Conducted Output Power LIMIT (dBm)	Ant Gain (dBi)	Ant_A E.I.R.P Power (dBm)	Ant_B E.I.R.P Power (dBm)	E.I.R.P Power Total (dBm)	E.I.R.P LIMIT (dBm)
802.11a										
52	5260	11.75	10.94	--	23.98	3.00	14.75	13.94	--	30
60	5300	11.76	11.07	--	23.98	3.00	14.76	14.07	--	30
64	5320	11.74	11.19	--	23.98	3.00	14.74	14.19	--	30
802.11n(HT20)										
52	5260	11.36	10.83	14.11	23.98	3.00	14.36	13.83	17.11	30
60	5300	11.76	10.99	14.40	23.98	3.00	14.76	13.99	17.40	30
64	5320	11.74	11.15	14.47	23.98	3.00	14.74	14.15	17.47	30
802.11n(HT40)										
54	5270	8.68	8.32	11.51	23.98	3.00	11.68	11.32	14.51	30
62	5310	8.61	8.49	11.56	23.98	3.00	11.61	11.49	14.56	30
802.11ac(VHT20)										
52	5260	11.48	10.79	14.16	23.98	3.00	14.48	13.79	17.16	30
60	5300	11.47	11.03	14.27	23.98	3.00	14.47	14.03	17.27	30
64	5320	11.50	11.09	14.31	23.98	3.00	14.50	14.09	17.31	30
802.11ac(VHT40)										
54	5270	8.49	8.27	11.39	23.98	3.00	11.49	11.27	14.39	30
62	5310	8.62	8.53	11.59	23.98	3.00	11.62	11.53	14.59	30
802.11ac(VHT80)										
58	5290	9.49	6.40	11.22	23.98	3.00	12.49	9.40	14.22	30



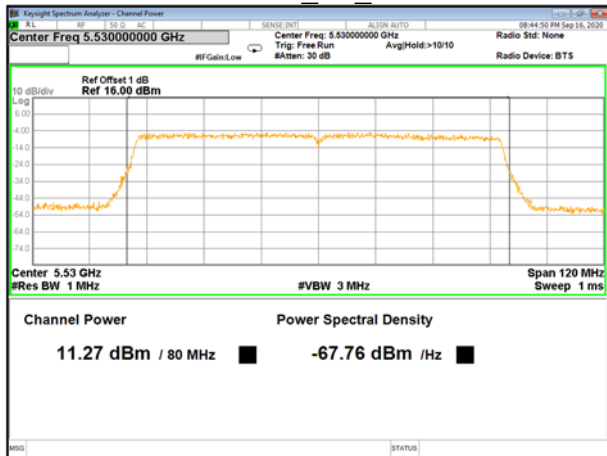
Band III (5.47-5.725GHz)-EIRP										
Test Channel	Frequency (MHz)	Ant_A AV Power (dBm)	Ant_B AV Power (dBm)	Conducted Power Total (dBm)	Conducted Output Power LIMIT (dBm)	Ant Gain (dBi)	Ant_A E.I.R.P Power (dBm)	Ant_B E.I.R.P Power (dBm)	E.I.R.P Power Total (dBm)	E.I.R.P LIMIT (dBm)
802.11a										
100	5500	12.06	11.87	--	23.98	3.00	15.06	14.87	--	30
116	5580	11.95	11.55	--	23.98	3.00	14.95	14.55	--	30
140	5700	11.85	11.41	--	23.98	3.00	14.85	14.41	--	30
802.11n(HT20)										
100	5500	11.77	11.54	14.67	23.98	3.00	14.77	14.54	17.67	30
116	5580	11.67	11.49	14.59	23.98	3.00	14.67	14.49	17.59	30
140	5700	11.59	11.35	14.48	23.98	3.00	14.59	14.35	17.48	30
802.11n(HT40)										
102	5510	8.92	8.82	11.88	23.98	3.00	11.92	11.82	14.88	30
110	5550	8.66	8.93	11.81	23.98	3.00	11.66	11.93	14.81	30
134	5670	8.53	8.37	11.46	23.98	3.00	11.53	11.37	14.46	30
802.11ac(VHT20)										
100	5500	11.85	11.72	14.80	23.98	3.00	14.85	14.72	17.80	30
116	5580	11.63	11.48	14.57	23.98	3.00	14.63	14.48	17.57	30
140	5700	11.66	11.22	14.46	23.98	3.00	14.66	14.22	17.46	30
802.11ac(VHT40)										
102	5510	8.89	8.80	11.86	23.98	3.00	11.89	11.80	14.86	30
110	5550	8.80	8.74	11.78	23.98	3.00	11.80	11.74	14.78	30
134	5670	8.71	8.39	11.56	23.98	3.00	11.71	11.39	14.56	30
802.11ac(VHT80)										
106	5530	11.27	3.70	11.97	23.98	3.00	14.27	6.70	14.97	30
122	5610	11.38	3.77	12.07	23.98	3.00	14.38	6.77	15.07	30



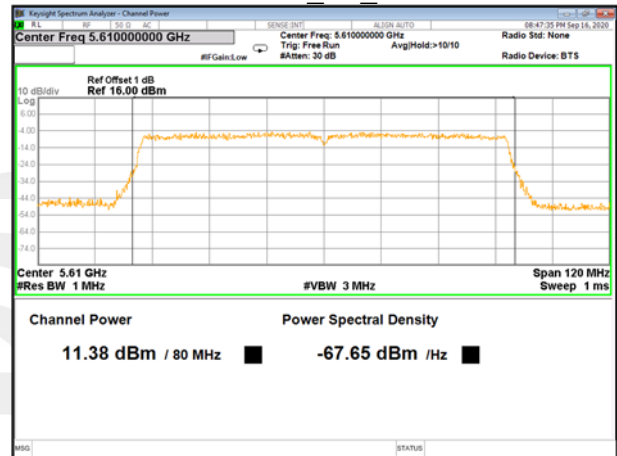
5210MHz_AV_Ant A



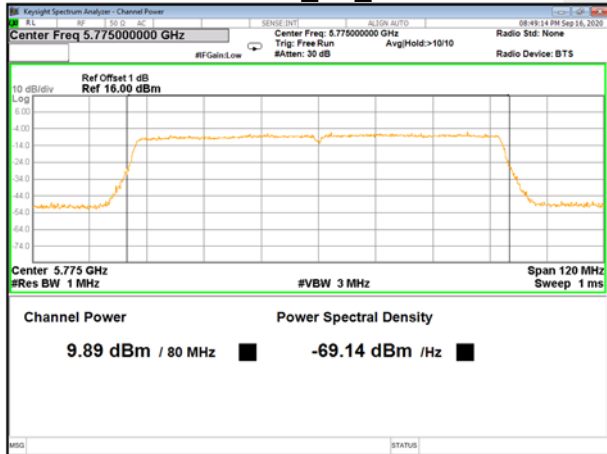
5290MHz_AV_Ant A



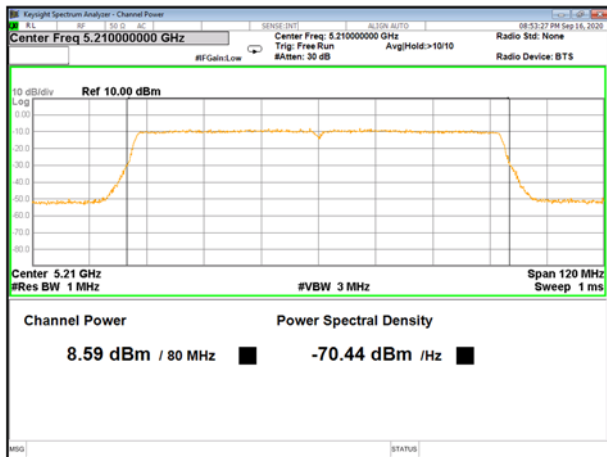
5530MHz_AV_Ant A



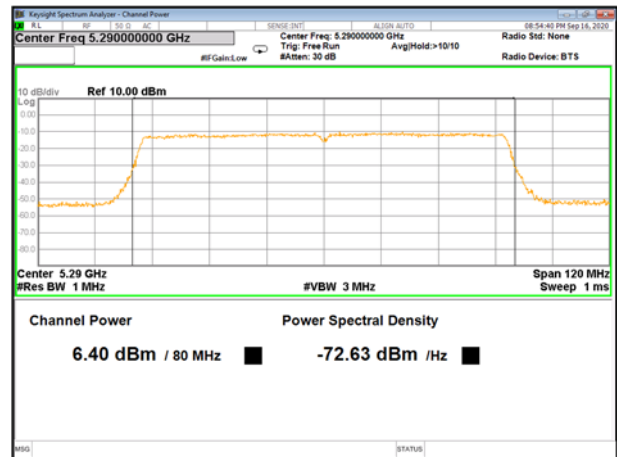
5610MHz_AV_Ant A



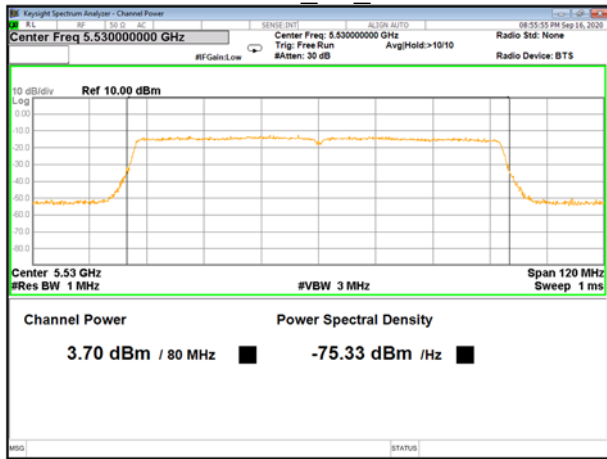
5775MHz_AV_Ant A



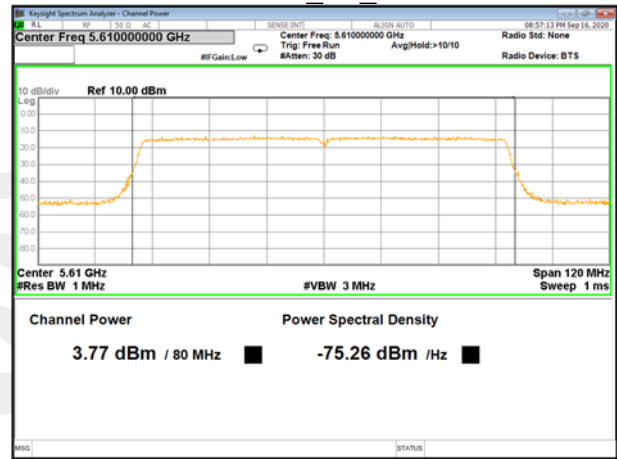
5210MHz_AV_Ant B



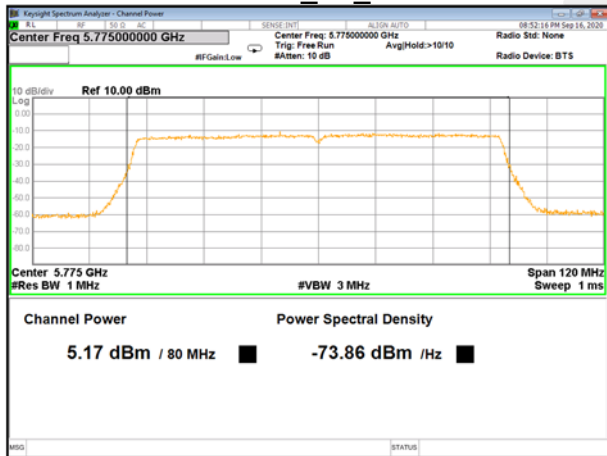
5290MHz_AV_Ant B



5530MHz_AV_Ant B



5610MHz_AV_Ant B



5775MHz_AV_Ant B



Duty cycle

Band1				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.440	1.528	94.24%	0.258
n20	1.348	1.436	93.87%	0.275
n40	0.670	0.764	87.70%	0.570
ac20	1.356	1.444	93.91%	0.273
ac40	0.676	0.768	88.02%	0.554
ac80	0.338	0.431	78.42%	1.056
Band2				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.440	1.528	94.24%	0.258
n20	1.348	1.436	93.87%	0.275
n40	0.672	0.764	87.96%	0.557
ac20	1.356	1.444	93.91%	0.273
ac40	0.676	0.768	88.02%	0.554
ac80	0.339	0.431	78.65%	1.043
Band3				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.440	1.526	94.36%	0.252
n20	1.349	1.435	94.01%	0.268
n40	0.672	0.764	87.96%	0.557
ac20	1.353	1.444	93.70%	0.283
ac40	0.682	0.772	88.34%	0.538
ac80	0.337	0.431	78.27%	1.064
Band4				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.437	1.528	94.04%	0.267
n20	1.348	1.436	93.87%	0.275
n40	0.672	0.764	87.96%	0.557
ac20	1.356	1.444	93.91%	0.273
ac40	0.676	0.768	88.02%	0.554
ac80	0.338	0.432	78.24%	1.066



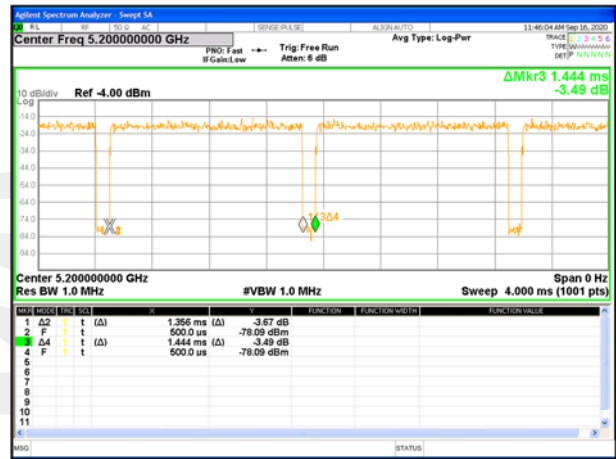
Band 1-a20



Band 1-n20



Band 1-n40



Band 1-ac20



Band 1-ac40



Band 1-ac80



Band 2-a20



Band 2-n20



Band 2-n40



Band 2-ac20



Band 2-ac40



Band 2-ac80



Band 3-a20



Band 3-n20



Band 3-n40



Band 3-ac20



Band 3-ac40



Band 3-ac80



Band 4-a20



Band 4-n20



Band 4-n40



Band 4-ac20



Band 4-ac40



Band 4-ac80



7. AUTOMATICALLY DISCONTINUE TRANSMISSION

7.1 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.

7.2 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





8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

15.203&RSS Gen requirement: For intentional device, according to 15.203&RSS Gen: 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.

8.2 EUT ANTENNA

The EUT antenna is PIFA Antenna. It comply with the standard requirement.





9. FREQUENCY STABILITY

9.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.02\%$ of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees.

9.2 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at $+20$ degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

9.3 TEST RESULT

Channel 40 (5200MHz)

Voltage vs. Frequency Stability

Voltage(V)	Measurement Frequency(MHz)
4.37	5200.0029
3.8	5200.0025
3.23	5200.0019
Max.Deviation(MHz)	0.0029
Max.Deviation(ppm)	0.56

Rated working voltage: DC 3.8V

Temperature vs. Frequency Stability

Temperature($^{\circ}$ C)	Measurement Frequency(MHz)
-30	5200.0046
-20	5200.0040
-10	5200.0040
0	5200.0043
10	5200.0038
20	5200.0038
30	5200.0038
40	5200.0044
50	5200.0045
Max.Deviation(MHz)	0.0046
Max.Deviation(ppm)	0.88



Channel 60 (5300MHz)

Voltage vs. Frequency Stability

Voltage(V)	Measurement Frequency(MHz)
4.37	5300.0035
3.8	5300.0032
3.23	5300.0026
Max.Deviation(MHz)	0.0035
Max.Deviation(ppm)	0.66

Rated working voltage: DC 3.8V

Temperature vs. Frequency Stability

Temperature(°C)	Measurement Frequency(MHz)
-30	5300.0041
-20	5300.0037
-10	5300.0034
0	5300.0037
10	5300.0031
20	5300.0032
30	5300.0036
40	5300.0038
50	5300.0038
Max.Deviation(MHz)	0.0041
Max.Deviation(ppm)	0.77



Channel 116 (5580MHz)

Voltage vs. Frequency Stability

Voltage(V)	Measurement Frequency(MHz)
4.37	5580.0042
3.8	5580.0032
3.23	5580.0036
Max.Deviation(MHz)	0.0042
Max.Deviation(ppm)	0.75

Rated working voltage: DC 3.8V

Temperature vs. Frequency Stability

Temperature(°C)	Measurement Frequency(MHz)
-30	5580.0036
-20	5580.0030
-10	5580.0034
0	5580.0030
10	5580.0027
20	5580.0032
30	5580.0034
40	5580.0031
50	5580.0028
Max.Deviation(MHz)	0.0036
Max.Deviation(ppm)	0.65



Channel 157 (5785MHz)

Voltage vs. Frequency Stability

Voltage(V)	Measurement Frequency(MHz)
4.37	5785.0031
3.8	5785.0024
3.23	5785.0026
Max.Deviation(MHz)	0.0031
Max.Deviation(ppm)	0.54

Rated working voltage: DC 3.8V

Temperature vs. Frequency Stability

Temperature(°C)	Measurement Frequency(MHz)
-30	5785.0030
-20	5785.0027
-10	5785.0029
0	5785.0024
10	5785.0026
20	5785.0023
30	5785.0022
40	5785.0023
50	5785.0022
Max.Deviation(MHz)	0.0030
Max.Deviation(ppm)	0.52



APPENDIX - PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※

