



RADIO TEST REPORT

Report No.:STS2107141W06

Issued for

Telit Communications S.p.A.

Viale Stazione di Prosecco 5/b Trieste 34010 Italy

Product Name:	SE150A4-NA
Brand Name:	Telit
Model Name:	SE150A4-NA
Series Model:	N/A
FCC ID:	RI7SE150A4NA
Test Standard:	FCC Part 15.407

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TEST RESULT CERTIFICATION

Applicant's Name..... : Telit Communications S.p.A.
Address : Viale Stazione di Prosecco 5/b Trieste 34010 Italy
Manufacturer's Name : Telit Communications S.p.A.
Address : Viale Stazione di Prosecco 5/b Trieste 34010 Italy

Product Description

Product Name..... : SE150A4-NA
Brand Name : Telit
Model Name : SE150A4-NA
Series Model..... : N/A

Test Standards : FCC Part15.407

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 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 : 20 July 2021

Date (s) of performance of tests : 20 July 2021 ~ 09 Aug. 2021

Date of Issue..... : 09 Aug. 2021

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	09 Aug. 2021	STS2107141W06	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		
FCC standard	Test Item	Results
15.207	AC Conducted Emission	PASS
15.407 (a) /15.407 (e)	26dB/6dB &99% Bandwidth	PASS
15.407(a)	Maximum Conducted Output Power	PASS
15.407(b)/15.205/15.209	Radiated Emission And (bandedge Emissions) Measurement	PASS
15.407(a)	Power Spectral Density	PASS
15.407(c)	Automatically Discontinue Transmission	PASS
15.203	Antenna Requirement	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 expended 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 9K-30MHz	$\pm 2.68\text{dB}$
4	All emissions, radiated 30M-1GHz	$\pm 4.39\text{dB}$
5	All emissions, radiated 1G-6GHz	$\pm 5.10\text{dB}$
6	All emissions, radiated >6G	$\pm 5.48\text{dB}$
7	Conducted Emission (9KHz-150KHz)	$\pm 2.79\text{dB}$
8	Conducted Emission (150KHz-30MHz)	$\pm 2.80\text{dB}$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	SE150A4-NA	
Trade Name	Telit	
Model Name	SE150A4-NA	
Series Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a SE150A4-NA	
	Operation Frequency:	IEEE 802.11a/ n(HT20): 5.180GHz-5.240GHz IEEE 802.11n(HT40): 5.190GHz-5.310GHz
		IEEE 802.11a/ n(HT20): 5.260GHz-5.320GHz IEEE 802.11n(HT40): 5.270GHz-5.310GHz
		IEEE 802.11a/ n(HT20): 5.500GHz-5.700GHz IEEE 802.11n(HT40): 5.510GHz-5.670GHz
		IEEE 802.11a/ n(HT20): 5.745GHz-5.825GHz IEEE 802.11n(HT40): 5.755GHz-5.795GHz
		802.11a(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM): BPSK,QPSK,16-QAM,64-QAM
	Antenna Designation:	Please refer to the Note 3.
	Max.Output Power(Conducted):	10.72 dBm
	More details of EUT technical specification, please refer to the User Manual.	
Test Channel	Please refer to the Note 2.	
Rating	Input: 3.8V	
Hardware version number	V1.01	
Software version number	M0M.100001	
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.

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		
155	5775		
157	5785		
159	5795		
161	5805		
165	5825		

Note:

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)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
36	5180	52	5260
40	5200	60	5300
48	5240	64	5320



For 802.11a/n(HT20)

Channel	Freq.(MHz)	Channel	Freq.(MHz)
100	5500	149	5745
116	5580	157	5785
140	5700	165	5825

For 802.11n(HT40)

Channel	Freq.(MHz)	Channel	Freq.(MHz)
38	5190	54	5270
46	5230	62	5310

For 802.11n(HT40)

Channel	Freq.(MHz)	Channel	Freq.(MHz)
102	5510	151	5755
110	5550	159	5795
134	5670		

3.	Ant	Brand	Model Name	Ant Type	Connector	Gain (dBi)	NOTE
	A	Telit	SE150A4-NA	External	N/A	2.1 dBi	WLAN Ant

Note: The antenna information refer the manufacturer provide report, applicable only to the tested sample identified in the report.



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 802.11n HT20 CH52&CH60&CH64	MCS 0
Mode 7	TX IEEE 802.11n HT20 CH100&CH116&CH140	MCS 0
Mode 8	TX IEEE 802.11n HT20 CH149&CH157&CH165	MCS 0
Mode 9	TX IEEE 802.11n HT40 CH38&CH46	MCS 0
Mode 10	TX IEEE 802.11n HT40 CH54 &CH62	MCS 0
Mode 11	TX IEEE 802.11n HT40 CH102&CH110&CH134	MCS 0
Mode 12	TX IEEE 802.11n HT40 CH151&CH159	MCS 0

- 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) We have been tested for all available U.S. voltage and frequencies (For 120V, 50/60Hz and 240V, 50/60Hz) for which the device is capable of operation.
(4) The battery is fully-charged during the radiated and RF conducted test.

AC Conducted Emission

Test Case	
AC Conducted Emission	Mode 13: Keeping TX + WLAN Link



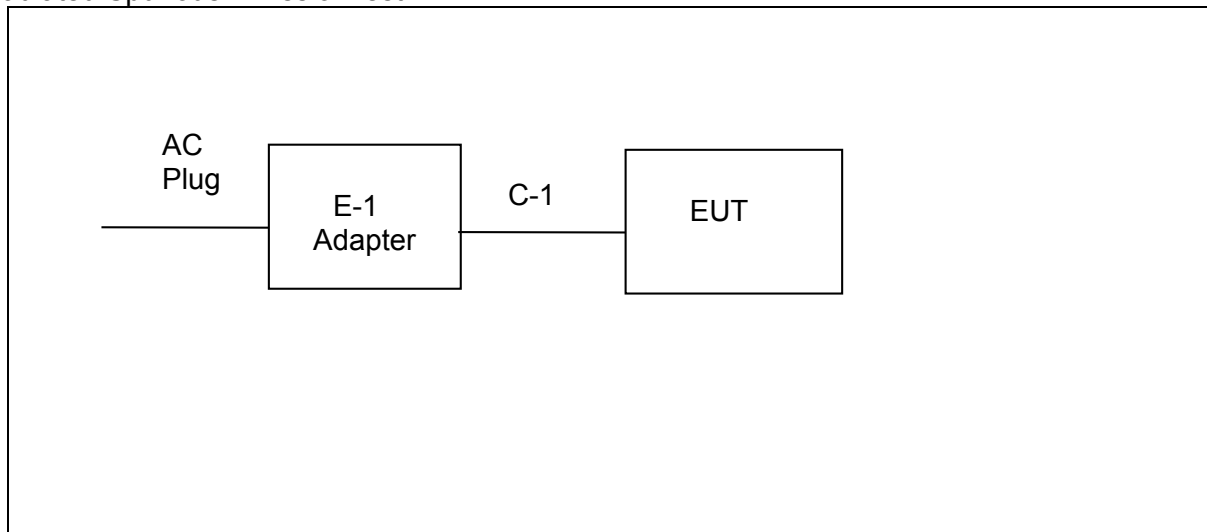
2.3 TEST SOFTWARE AND POWER LEVEL

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

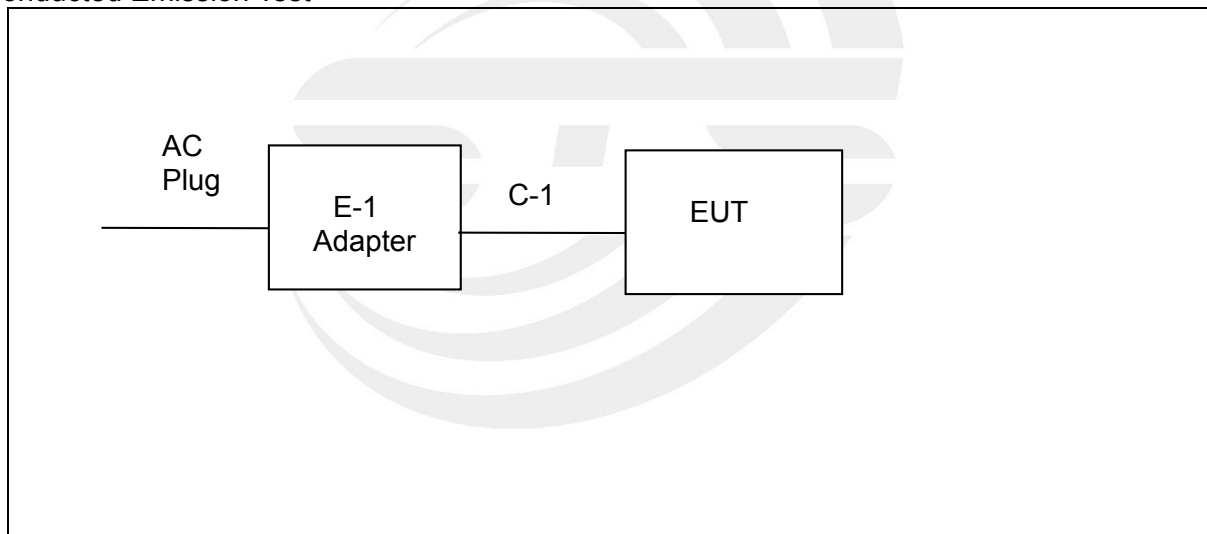
RF Function	Type	Mode Or Modulation type	ANT Gain(dBi)	Power Class	Software For Testing
WIFI(5G)	5G WIFI Band1 (5150MHz-5250MHz)	802.11a	2.1	14	QRCT
		802.11n(HT20)		14	
		802.11n(HT40)		14	
RF Function	Type	Mode Or Modulation type	ANT Gain(dBi)	Power Class	Software For Testing
WIFI(5G)	5G WIFI Band2 (5250MHz-5350MHz)	802.11a	2.1	14	QRCT
		802.11n(HT20)		14	
		802.11n(HT40)		14	
RF Function	Type	Mode Or Modulation type	ANT Gain(dBi)	Power Class	Software For Testing
WIFI(5G)	5G WIFI Band3 (5470MHz-5725MHz)	802.11a	2.1	14	QRCT
		802.11n(HT20)		14	
		802.11n(HT40)		14	
RF Function	Type	Mode Or Modulation type	ANT Gain(dBi)	Power Class	Software For Testing
WIFI(5G)	5G WIFI Band4 (5725MHz-5850MHz)	802.11a	2.1	14	QRCT
		802.11n(HT20)		14	
		802.11n(HT40)		14	

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



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-1	Adapter	HUAWEI	HW-050450C00	N/A	N/A
C-1	DC Cable	N/A	N/A	30cm	NO

Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (2) “YES” is means “with core”; “NO” is means “without core”.



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	2020.10.12	2021.10.11
Signal Analyzer	R&S	FSV 40-N	101823	2020.10.10	2021.10.09
Active loop Antenna	ZHINAN	ZN30900C	16035	2021.04.11	2022.04.10
Bilog Antenna	TESEQ	CBL6111D	34678	2020.10.12	2022.10.11
Horn Antenna	SCHWARZBECK	BBHA 9120D	02014	2019.10.15	2021.10.14
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	J211020657	2020.10.12	2022.10.11
Pre-Amplifier(0.1M-3G Hz)	EM	EM330	060665	2020.10.12	2021.10.11
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2020.10.12	2021.10.11
Pre-Amplifier (18G-40GHz)	SKET	LNPA-1840-50	SK2018101801	2020.10.10	2021.10.09
Temperature & Humidity	HH660	Mieo	N/A	2020.10.13	2021.10.12
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	2020.10.12	2021.10.11
LISN	R&S	ENV216	101242	2020.10.12	2021.10.11
LISN	EMCO	3810/2NM	23625	2020.10.12	2021.10.11
Temperature & Humidity	HH660	Mieo	N/A	2020.10.13	2021.10.12
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 CE)			

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Power Sensor	Keysight	U2021XA	MY55520005	2020.10.10	2021.10.09
			MY55520006	2020.10.10	2021.10.09
			MY56120038	2020.10.10	2021.10.09
			MY56280002	2020.10.10	2021.10.09
Signal Analyzer	Agilent	N9020A	MY51110105	2021.03.04	2022.03.03
Temperature & Humidity	HH660	Mieo	N/A	2020.10.13	2021.10.12



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

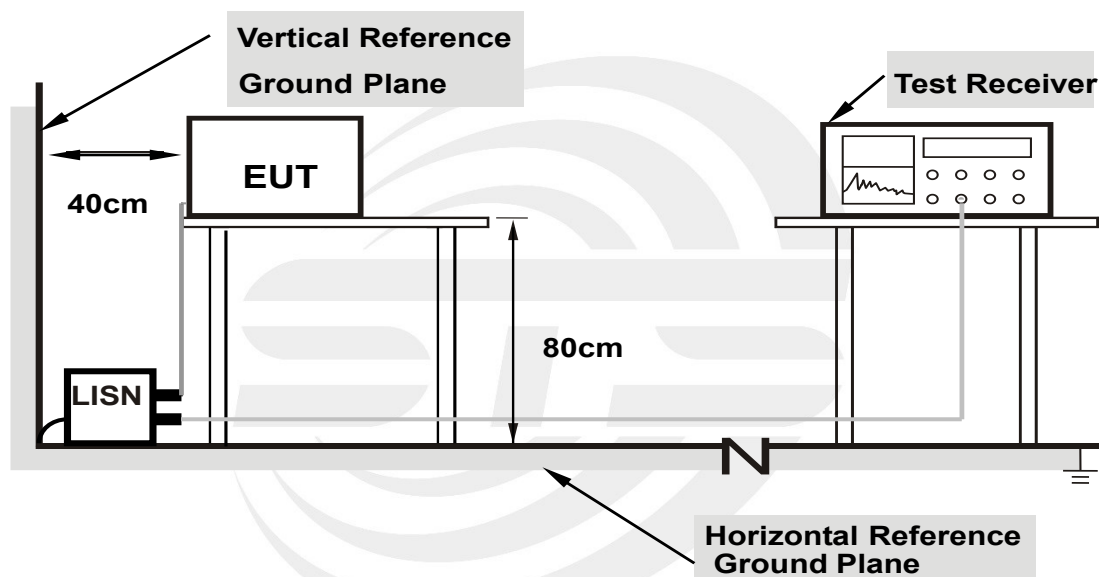
3.1.2 TEST PROCEDURE

- 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 support units.

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

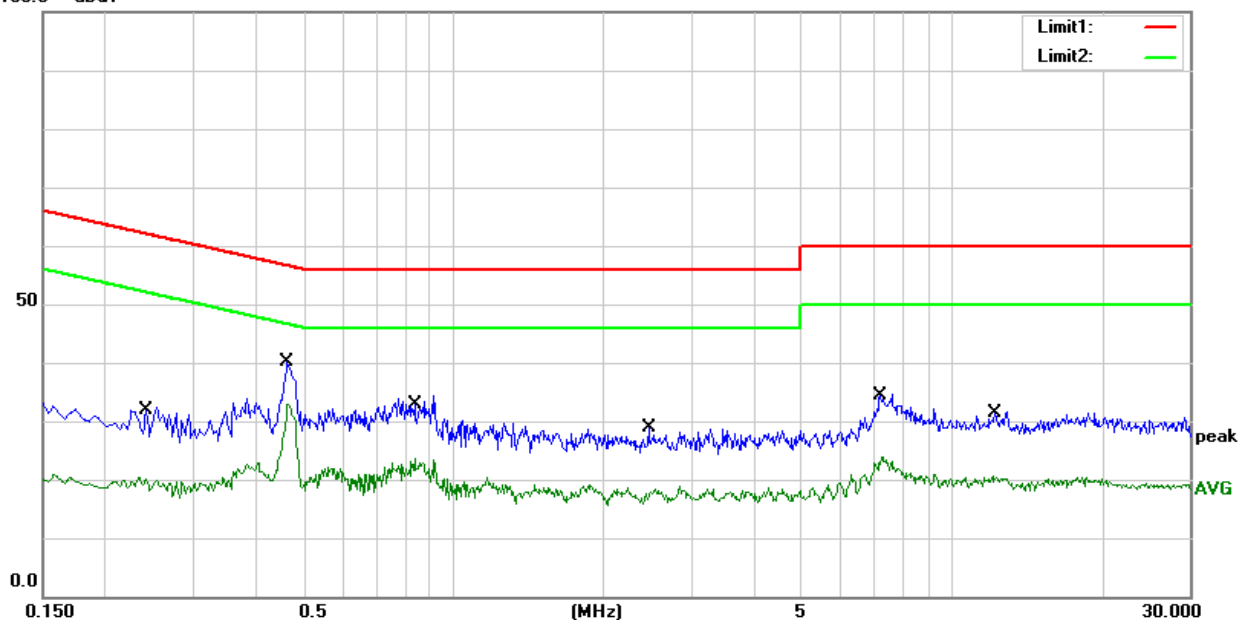
Temperature:	26.5(C)	Relative Humidity:	54%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode :	Mode 13		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.2420	11.85	20.50	32.35	62.03	-29.68	QP
2	0.2420	-0.41	20.50	20.09	52.03	-31.94	AVG
3	0.4660	19.57	20.54	40.11	56.58	-16.47	QP
4	0.4660	12.46	20.54	33.00	46.58	-13.58	AVG
5	0.8380	13.93	20.33	34.26	56.00	-21.74	QP
6	0.8380	3.42	20.33	23.75	46.00	-22.25	AVG
7	2.4620	8.45	20.32	28.77	56.00	-27.23	QP
8	2.4620	-1.49	20.32	18.83	46.00	-27.17	AVG
9	7.2740	13.90	20.64	34.54	60.00	-25.46	QP
10	7.2740	3.29	20.64	23.93	50.00	-26.07	AVG
11	12.0660	10.24	21.42	31.66	60.00	-28.34	QP
12	12.0660	-0.80	21.42	20.62	50.00	-29.38	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



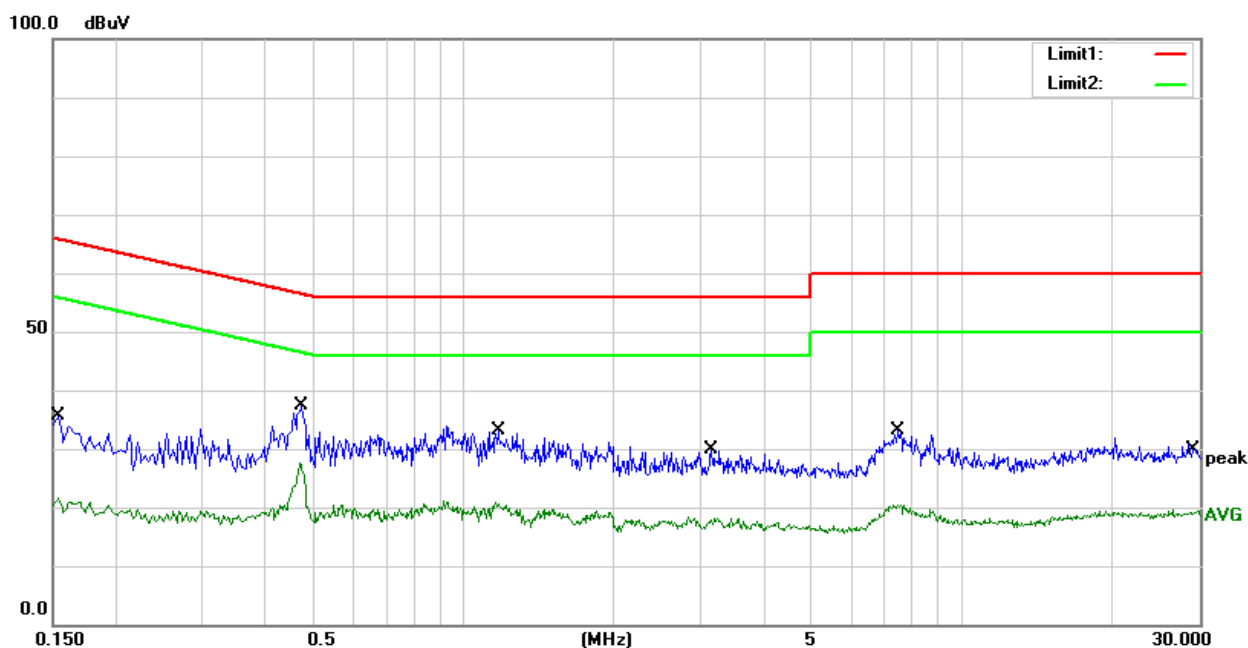


Temperature:	26.5(C)	Relative Humidity:	54%RH
Test Voltage	AC 120V/60Hz	Phase:	N
Test Mode	Mode 13		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1540	15.40	20.33	35.73	65.78	-30.05	QP
2	0.1540	1.21	20.33	21.54	55.78	-34.24	AVG
3	0.4700	16.83	20.54	37.37	56.51	-19.14	QP
4	0.4700	7.01	20.54	27.55	46.51	-18.96	AVG
5	1.1620	12.79	20.30	33.09	56.00	-22.91	QP
6	1.1620	0.68	20.30	20.98	46.00	-25.02	AVG
7	3.1420	9.60	20.35	29.95	56.00	-26.05	QP
8	3.1420	-2.18	20.35	18.17	46.00	-27.83	AVG
9	7.4820	12.54	20.68	33.22	60.00	-26.78	QP
10	7.4820	-0.25	20.68	20.43	50.00	-29.57	AVG
11	29.6500	6.54	22.91	29.45	60.00	-30.55	QP
12	29.6500	-3.45	22.91	19.46	50.00	-30.54	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 (micorvolts/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

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			

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) + 95.2.

Peak Limit = -27dBm/MHz + 95.2 = 68.2 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:

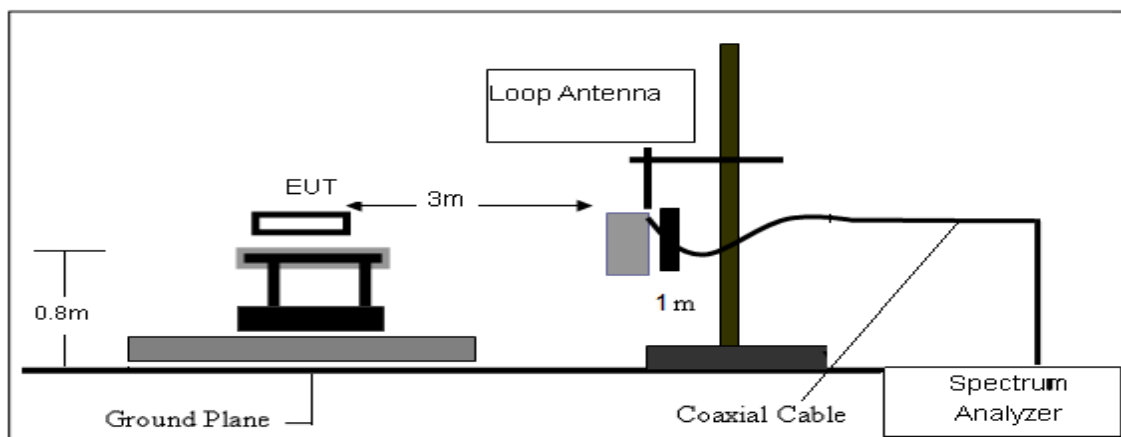
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.2 DEVIATION FROM TEST STANDARD

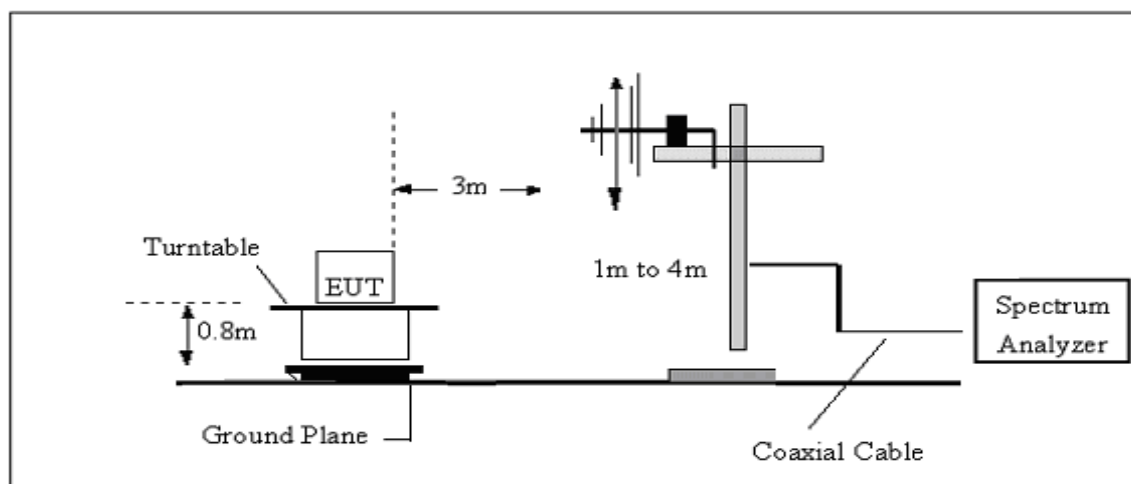
No deviation

3.2.3 TEST SETUP

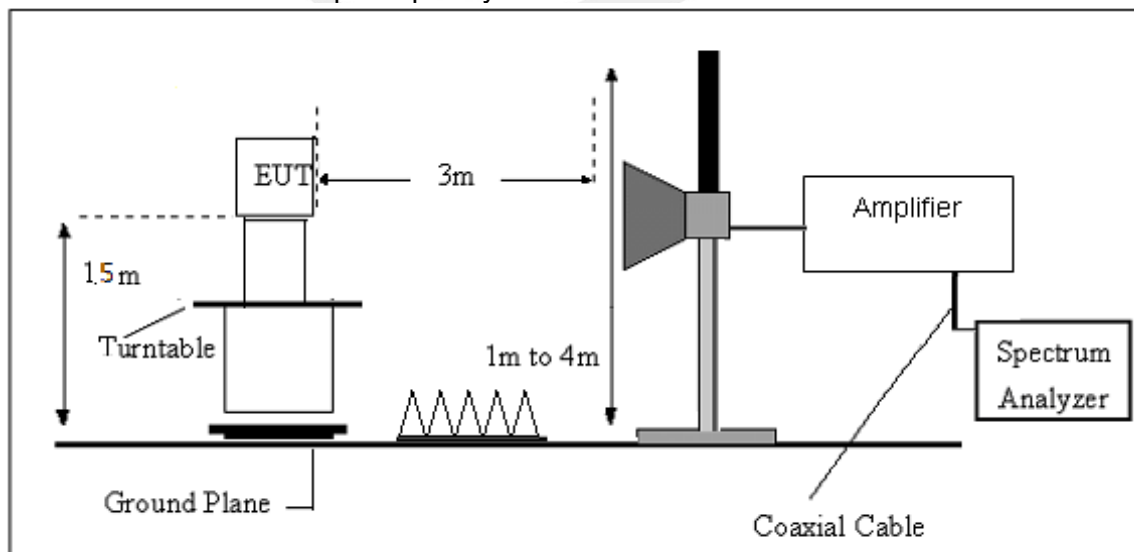
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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	FS	RA	AF	CL	AG	Factor
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dB)	(dB)	(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:	23.1(C)	Relative Humidity:	60%RH
Test Voltage :	DC 3.8V	Polarization :	--
Test Mode :	TX Mode		

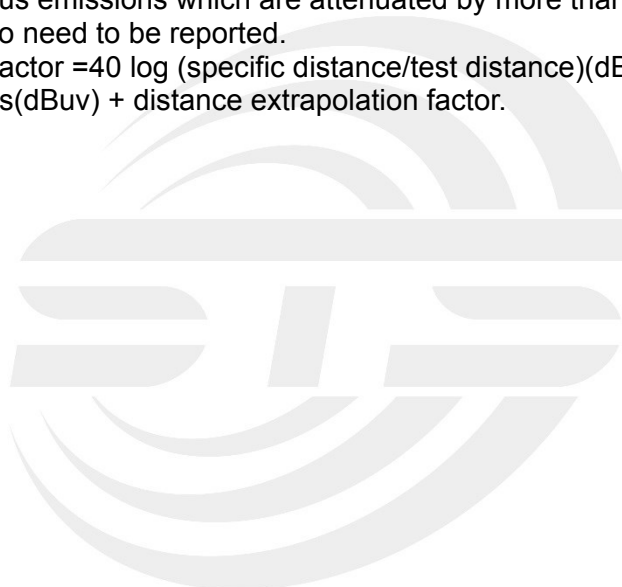
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

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	23.1(C)	Relative Humidity:	60%RH
Test Voltage	DC 3.8V	Polarization:	Horizontal
Test Mode	Mode 1~12(Mode 11 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	197.8100	61.47	-21.12	40.35	43.50	-3.15	QP
2	244.3700	56.21	-17.12	39.09	46.00	-6.91	QP
3	390.8400	45.32	-11.54	33.78	46.00	-12.22	QP
4	720.6400	32.16	-3.20	28.96	46.00	-17.04	QP
5	799.2100	37.76	-2.04	35.72	46.00	-10.28	QP
6	931.1300	32.91	0.64	33.55	46.00	-12.45	QP

Remark:

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





Temperature	23.1(C)	Relative Humidity:	60%RH
Test Voltage	DC 3.8V	Polarization:	Vertical
Test Mode	Mode 1~12(Mode 11 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	54.2500	59.88	-24.75	35.13	40.00	-4.87	QP
2	199.7500	59.25	-21.11	38.14	43.50	-5.36	QP
3	390.8400	43.71	-11.54	32.17	46.00	-13.83	QP
4	531.4900	40.97	-7.37	33.60	46.00	-12.40	QP
5	882.6300	31.63	-0.67	30.96	46.00	-15.04	QP
6	932.1000	33.17	0.72	33.89	46.00	-12.11	QP

Remark:

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





3.2.8 TEST RESULTS (Above 1000 MHz)

Band I 5150-5250MHz

Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11n40/ 5190 MHz)										
3268.18	44.96	44.70	6.70	28.20	-9.80	35.16	68.20	-33.04	Pk	Vertical
3268.18	41.06	44.70	6.70	28.20	-9.80	31.26	54.00	-22.74	AV	Vertical
3261.80	44.90	44.70	6.70	28.20	-9.80	35.10	74.00	-38.90	Pk	Horizontal
3261.80	41.32	44.70	6.70	28.20	-9.80	31.52	54.00	-22.48	AV	Horizontal
4001.88	39.58	44.20	7.90	29.70	-6.60	32.98	74.00	-41.02	Pk	Vertical
4001.88	35.86	44.20	7.90	29.70	-6.60	29.26	54.00	-24.74	AV	Vertical
3994.24	38.69	44.20	7.90	29.70	-6.60	32.09	74.00	-41.91	Pk	Horizontal
3994.24	37.01	44.20	7.90	29.70	-6.60	30.41	54.00	-23.59	AV	Horizontal
7242.62	36.97	43.50	11.40	35.50	3.40	40.37	68.20	-27.83	Pk	Vertical
7242.62	34.30	43.50	11.40	35.50	3.40	37.70	54.00	-16.30	AV	Vertical
7239.76	37.24	43.50	11.40	35.50	3.40	40.64	68.20	-27.56	Pk	Horizontal
7239.76	34.72	43.50	11.40	35.50	3.40	38.12	54.00	-15.88	AV	Horizontal
10380.12	39.32	44.50	13.80	38.80	8.10	47.42	68.20	-20.78	Pk	Vertical
10380.12	35.70	44.50	13.80	38.80	8.10	43.80	54.00	-10.20	AV	Vertical
10380.18	40.15	44.50	13.80	38.80	8.10	48.25	68.20	-19.95	Pk	Horizontal
10380.18	36.82	44.50	13.80	38.80	8.10	44.92	54.00	-9.08	AV	Horizontal
11042.02	33.68	43.60	14.30	39.50	10.20	43.88	74.00	-30.12	Pk	Vertical
11042.02	30.37	43.60	14.30	39.50	10.20	40.57	54.00	-13.43	AV	Vertical
11055.69	33.74	43.60	14.30	39.50	10.20	43.94	74.00	-30.06	Pk	Horizontal
11055.69	30.58	43.60	14.30	39.50	10.20	40.78	54.00	-13.22	AV	Horizontal
13313.34	31.81	42.60	15.90	38.90	12.20	44.01	74.00	-29.99	Pk	Vertical
13313.34	28.72	42.60	15.90	38.90	12.20	40.92	54.00	-13.08	AV	Vertical
13318.95	33.01	42.60	15.90	38.90	12.20	45.21	74.00	-28.79	Pk	Horizontal
13318.95	28.66	42.60	15.90	38.90	12.20	40.86	54.00	-13.14	AV	Horizontal
Mid Channel (802.11n40/ 5230 MHz)										
3276.44	44.03	44.70	6.70	28.20	-9.80	34.23	68.20	-33.97	Pk	Vertical
3276.44	41.70	44.70	6.70	28.20	-9.80	31.90	54.00	-22.10	AV	Vertical
3265.04	44.83	44.70	6.70	28.20	-9.80	35.03	74.00	-38.97	Pk	Horizontal
3265.04	41.65	44.70	6.70	28.20	-9.80	31.85	54.00	-22.15	AV	Horizontal
4011.23	39.02	44.20	7.90	29.70	-6.60	32.42	74.00	-41.58	Pk	Vertical
4011.23	36.44	44.20	7.90	29.70	-6.60	29.84	54.00	-24.16	AV	Vertical
4003.56	39.77	44.20	7.90	29.70	-6.60	33.17	74.00	-40.83	Pk	Horizontal
4003.56	35.66	44.20	7.90	29.70	-6.60	29.06	54.00	-24.94	AV	Horizontal
7260.25	37.14	43.50	11.40	35.50	3.40	40.54	74.00	-33.46	Pk	Vertical
7260.25	34.68	43.50	11.40	35.50	3.40	38.08	54.00	-15.92	AV	Vertical
7259.43	37.64	43.50	11.40	35.50	3.40	41.04	74.00	-32.96	Pk	Horizontal
7259.43	34.28	43.50	11.40	35.50	3.40	37.68	54.00	-16.32	AV	Horizontal
10460.13	39.80	44.50	13.80	38.80	8.10	47.90	68.20	-20.30	Pk	Vertical
10460.13	35.86	44.50	13.80	38.80	8.10	43.96	54.00	-10.04	AV	Vertical
10460.44	39.14	44.50	13.80	38.80	8.10	47.24	68.20	-20.96	Pk	Horizontal
10460.44	36.81	44.50	13.80	38.80	8.10	44.91	54.00	-9.09	AV	Horizontal
11083.21	33.75	43.60	14.30	39.50	10.20	43.95	74.00	-30.05	Pk	Vertical
11083.21	31.04	43.60	14.30	39.50	10.20	41.24	54.00	-12.76	AV	Vertical
11094.53	33.96	43.60	14.30	39.50	10.20	44.16	74.00	-29.84	Pk	Horizontal
11094.53	29.89	43.60	14.30	39.50	10.20	40.09	54.00	-13.91	AV	Horizontal
13372.66	32.20	42.60	15.90	38.90	12.20	44.40	74.00	-29.60	Pk	Vertical
13372.66	28.82	42.60	15.90	38.90	12.20	41.02	54.00	-12.98	AV	Vertical
13375.76	32.76	42.60	15.90	38.90	12.20	44.96	74.00	-29.04	Pk	Horizontal
13375.76	29.57	42.60	15.90	38.90	12.20	41.77	54.00	-12.23	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a,802.11n (HT-20),802.11n (HT-40) the worst case is 802.11n (HT-40).
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 (802.11n20/ 5260 MHz)										
3256.65	43.89	44.70	6.70	28.20	-9.80	34.09	68.20	-34.11	Pk	Vertical
3256.65	41.35	44.70	6.70	28.20	-9.80	31.55	54.00	-22.45	AV	Vertical
3261.89	44.49	44.70	6.70	28.20	-9.80	34.69	74.00	-39.31	Pk	Horizontal
3261.89	40.89	44.70	6.70	28.20	-9.80	31.09	54.00	-22.91	AV	Horizontal
3998.87	40.00	44.20	7.90	29.70	-6.60	33.40	74.00	-40.60	Pk	Vertical
3998.87	35.68	44.20	7.90	29.70	-6.60	29.08	54.00	-24.92	AV	Vertical
3988.17	39.37	44.20	7.90	29.70	-6.60	32.77	74.00	-41.23	Pk	Horizontal
3988.17	36.04	44.20	7.90	29.70	-6.60	29.44	54.00	-24.56	AV	Horizontal
7225.07	37.58	43.50	11.40	35.50	3.40	40.98	68.20	-27.22	Pk	Vertical
7225.07	34.66	43.50	11.40	35.50	3.40	38.06	54.00	-15.94	AV	Vertical
7226.63	37.35	43.50	11.40	35.50	3.40	40.75	68.20	-27.45	Pk	Horizontal
7226.63	33.51	43.50	11.40	35.50	3.40	36.91	54.00	-17.09	AV	Horizontal
10520.17	38.80	44.50	13.90	38.80	8.20	47.00	68.20	-21.20	Pk	Vertical
10520.17	35.95	44.50	13.90	38.80	8.20	44.15	54.00	-9.85	AV	Vertical
10520.00	39.99	44.50	13.90	38.80	8.20	48.19	68.20	-20.01	Pk	Horizontal
10520.00	36.37	44.50	13.90	38.80	8.20	44.57	54.00	-9.43	AV	Horizontal
11020.62	33.79	43.60	14.30	39.50	10.20	43.99	74.00	-30.01	Pk	Vertical
11020.62	30.45	43.60	14.30	39.50	10.20	40.65	54.00	-13.35	AV	Vertical
11021.95	32.96	43.60	14.30	39.50	10.20	43.16	74.00	-30.84	Pk	Horizontal
11021.95	30.45	43.60	14.30	39.50	10.20	40.65	54.00	-13.35	AV	Horizontal
13285.12	31.92	42.60	15.90	38.90	12.20	44.12	74.00	-29.88	Pk	Vertical
13285.12	29.20	42.60	15.90	38.90	12.20	41.40	54.00	-12.60	AV	Vertical
13284.38	31.81	42.60	15.90	38.90	12.20	44.01	74.00	-29.99	Pk	Horizontal
13284.38	29.58	42.60	15.90	38.90	12.20	41.78	54.00	-12.22	AV	Horizontal
Mid Channel (802.11n20/ 5300 MHz)										
3248.75	44.74	44.70	6.70	28.20	-9.80	34.94	68.20	-33.26	Pk	Vertical
3248.75	41.57	44.70	6.70	28.20	-9.80	31.77	54.00	-22.23	AV	Vertical
3256.19	44.81	44.70	6.70	28.20	-9.80	35.01	68.20	-33.19	Pk	Horizontal
3256.19	40.85	44.70	6.70	28.20	-9.80	31.05	54.00	-22.95	AV	Horizontal
3993.89	38.77	44.20	7.90	29.70	-6.60	32.17	74.00	-41.83	Pk	Vertical
3993.89	36.42	44.20	7.90	29.70	-6.60	29.82	54.00	-24.18	AV	Vertical
3983.55	39.42	44.20	7.90	29.70	-6.60	32.82	74.00	-41.18	Pk	Horizontal
3983.55	36.27	44.20	7.90	29.70	-6.60	29.67	54.00	-24.33	AV	Horizontal
7221.05	36.69	43.50	11.40	35.50	3.40	40.09	68.20	-28.11	Pk	Vertical
7221.05	33.72	43.50	11.40	35.50	3.40	37.12	54.00	-16.88	AV	Vertical
7216.66	36.51	43.50	11.40	35.50	3.40	39.91	68.20	-28.29	Pk	Horizontal
7216.66	33.76	43.50	11.40	35.50	3.40	37.16	54.00	-16.84	AV	Horizontal
10600.03	39.32	44.50	13.80	38.80	8.10	47.42	74.00	-26.58	Pk	Vertical
10600.03	35.69	44.50	13.80	38.80	8.10	43.79	54.00	-10.21	AV	Vertical
10600.38	39.66	44.50	13.80	38.80	8.10	47.76	74.00	-26.24	Pk	Horizontal
10600.38	36.70	44.50	13.80	38.80	8.10	44.80	54.00	-9.20	AV	Horizontal
11029.43	33.52	43.60	14.30	39.50	10.20	43.72	74.00	-30.28	Pk	Vertical
11029.43	31.10	43.60	14.30	39.50	10.20	41.30	54.00	-12.70	AV	Vertical
11027.28	33.79	43.60	14.30	39.50	10.20	43.99	74.00	-30.01	Pk	Horizontal
11027.28	30.42	43.60	14.30	39.50	10.20	40.62	54.00	-13.38	AV	Horizontal
13287.64	32.16	42.60	15.90	38.90	12.20	44.36	74.00	-29.64	Pk	Vertical
13287.64	29.28	42.60	15.90	38.90	12.20	41.48	54.00	-12.52	AV	Vertical
13289.41	32.88	42.60	15.90	38.90	12.20	45.08	74.00	-28.92	Pk	Horizontal
13289.41	29.37	42.60	15.90	38.90	12.20	41.57	54.00	-12.43	AV	Horizontal



High Channel (802.11n20/ 5320 MHz)										
3255.52	44.38	44.70	6.70	28.20	-9.80	34.58	68.20	-33.62	Pk	Vertical
3255.52	40.79	44.70	6.70	28.20	-9.80	30.99	54.00	-23.01	AV	Vertical
3263.82	45.08	44.70	6.70	28.20	-9.80	35.28	74.00	-38.72	Pk	Horizontal
3263.82	41.49	44.70	6.70	28.20	-9.80	31.69	54.00	-22.31	AV	Horizontal
3988.18	39.83	44.20	7.90	29.70	-6.60	33.23	74.00	-40.77	Pk	Vertical
3988.18	35.72	44.20	7.90	29.70	-6.60	29.12	54.00	-24.88	AV	Vertical
3997.01	39.43	44.20	7.90	29.70	-6.60	32.83	74.00	-41.17	Pk	Horizontal
3997.01	35.70	44.20	7.90	29.70	-6.60	29.10	54.00	-24.90	AV	Horizontal
7230.49	37.62	43.50	11.40	35.50	3.40	41.02	68.20	-27.18	Pk	Vertical
7230.49	34.44	43.50	11.40	35.50	3.40	37.84	54.00	-16.16	AV	Vertical
7225.27	37.32	43.50	11.40	35.50	3.40	40.72	68.20	-27.48	Pk	Horizontal
7225.27	33.66	43.50	11.40	35.50	3.40	37.06	54.00	-16.94	AV	Horizontal
10640.34	39.57	44.50	13.80	38.80	8.10	47.67	74.00	-26.33	Pk	Vertical
10640.34	35.85	44.50	13.80	38.80	8.10	43.95	54.00	-10.05	AV	Vertical
10639.99	40.18	44.50	13.80	38.80	8.10	48.28	74.00	-25.72	Pk	Horizontal
10639.99	36.77	44.50	13.80	38.80	8.10	44.87	54.00	-9.13	AV	Horizontal
11035.25	33.25	43.60	14.30	39.50	10.20	43.45	74.00	-30.55	Pk	Vertical
11035.25	31.16	43.60	14.30	39.50	10.20	41.36	54.00	-12.64	AV	Vertical
11029.69	33.25	43.60	14.30	39.50	10.20	43.45	74.00	-30.55	Pk	Horizontal
11029.69	30.46	43.60	14.30	39.50	10.20	40.66	54.00	-13.34	AV	Horizontal
13297.45	31.60	42.70	18.00	37.10	12.40	44.00	74.00	-30.00	Pk	Vertical
13297.45	28.96	42.70	18.00	37.10	12.40	41.36	54.00	-12.64	AV	Vertical
13293.84	32.94	42.70	18.00	37.10	12.40	45.34	74.00	-28.66	Pk	Horizontal
13293.84	29.40	42.70	18.00	37.10	12.40	41.80	54.00	-12.20	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a,802.11n (HT-20),802.11n (HT-40) the worst case is 802.11n (HT-20).
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)	Corrected Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11n40/ 5510 MHz)										
3260.46	44.66	44.70	6.70	28.20	-9.80	34.86	74.00	-39.14	Pk	Vertical
3260.46	41.29	44.70	6.70	28.20	-9.80	31.49	54.00	-22.51	AV	Vertical
3257.87	44.26	44.70	6.70	28.20	-9.80	34.46	68.20	-33.74	Pk	Horizontal
3257.87	42.10	44.70	6.70	28.20	-9.80	32.30	54.00	-21.70	AV	Horizontal
3989.99	39.86	44.20	7.90	29.70	-6.60	33.26	74.00	-40.74	Pk	Vertical
3989.99	37.10	44.20	7.90	29.70	-6.60	30.50	54.00	-23.50	AV	Vertical
4003.91	39.33	44.20	7.90	29.70	-6.60	32.73	74.00	-41.27	Pk	Horizontal
4003.91	36.26	44.20	7.90	29.70	-6.60	29.66	54.00	-24.34	AV	Horizontal
7231.62	37.36	43.50	11.40	35.50	3.40	40.76	68.20	-27.44	Pk	Vertical
7231.62	34.73	43.50	11.40	35.50	3.40	38.13	54.00	-15.87	AV	Vertical
7236.09	37.83	43.50	11.40	35.50	3.40	41.23	68.20	-26.97	Pk	Horizontal
7236.09	34.31	43.50	11.40	35.50	3.40	37.71	54.00	-16.29	AV	Horizontal
10369.41	39.58	44.50	13.80	38.80	8.10	47.68	68.20	-20.52	Pk	Vertical
10369.41	36.40	44.50	13.80	38.80	8.10	44.50	54.00	-9.50	AV	Vertical
10364.19	39.91	44.50	13.80	38.80	8.10	48.01	68.20	-20.19	Pk	Horizontal
10364.19	36.09	44.50	13.80	38.80	8.10	44.19	54.00	-9.81	AV	Horizontal
11020.40	33.55	43.60	14.30	39.50	10.20	43.75	74.00	-30.25	Pk	Vertical
11020.40	30.17	43.60	14.30	39.50	10.20	40.37	54.00	-13.63	AV	Vertical
11020.29	33.57	43.60	14.30	39.50	10.20	43.77	74.00	-30.23	Pk	Horizontal
11020.29	30.38	43.60	14.30	39.50	10.20	40.58	54.00	-13.42	AV	Horizontal
13307.04	32.77	42.60	15.90	38.90	12.20	44.97	74.00	-29.03	Pk	Vertical
13307.04	29.40	42.60	15.90	38.90	12.20	41.60	54.00	-12.40	AV	Vertical
13307.19	31.69	42.60	15.90	38.90	12.20	43.89	74.00	-30.11	Pk	Horizontal
13307.19	29.99	42.60	15.90	38.90	12.20	42.19	54.00	-11.81	AV	Horizontal
Mid Channel (802.11n40/ 5550 MHz)										
3229.87	44.52	44.70	6.70	28.20	-9.80	34.72	68.20	-33.48	Pk	Vertical
3229.87	42.16	44.70	6.70	28.20	-9.80	32.36	54.00	-21.64	AV	Vertical
3247.50	44.54	44.70	6.70	28.20	-9.80	34.74	68.20	-33.46	Pk	Horizontal
3247.50	41.78	44.70	6.70	28.20	-9.80	31.98	54.00	-22.02	AV	Horizontal
3977.57	39.49	44.20	7.90	29.70	-6.60	32.89	74.00	-41.11	Pk	Vertical
3977.57	36.61	44.20	7.90	29.70	-6.60	30.01	54.00	-23.99	AV	Vertical
3964.91	39.15	44.20	7.90	29.70	-6.60	32.55	74.00	-41.45	Pk	Horizontal
3964.91	35.74	44.20	7.90	29.70	-6.60	29.14	54.00	-24.86	AV	Horizontal
7183.89	37.08	43.50	11.40	35.50	3.40	40.48	68.20	-27.72	Pk	Vertical
7183.89	33.95	43.50	11.40	35.50	3.40	37.35	54.00	-16.65	AV	Vertical
7182.74	36.71	43.50	11.40	35.50	3.40	40.11	68.20	-28.09	Pk	Horizontal
7182.74	34.07	43.50	11.40	35.50	3.40	37.47	54.00	-16.53	AV	Horizontal
10339.51	38.76	44.50	13.80	38.80	8.10	46.86	68.20	-21.34	Pk	Vertical
10339.51	36.85	44.50	13.80	38.80	8.10	44.95	54.00	-9.05	AV	Vertical
10343.60	38.92	44.50	13.80	38.80	8.10	47.02	68.20	-21.18	Pk	Horizontal
10343.60	36.69	44.50	13.80	38.80	8.10	44.79	54.00	-9.21	AV	Horizontal
11100.06	32.78	43.60	14.30	39.50	10.20	42.98	74.00	-31.02	Pk	Vertical
11100.06	30.38	43.60	14.30	39.50	10.20	40.58	54.00	-13.42	AV	Vertical
11099.99	33.28	43.60	14.30	39.50	10.20	43.48	74.00	-30.52	Pk	Horizontal
11099.99	30.20	43.60	14.30	39.50	10.20	40.40	54.00	-13.60	AV	Horizontal
13223.11	31.65	42.60	15.90	38.90	12.20	43.85	68.20	-24.35	Pk	Vertical
13223.11	28.77	42.60	15.90	38.90	12.20	40.97	54.00	-13.03	AV	Vertical
13210.72	32.53	42.60	15.90	38.90	12.20	44.73	68.20	-23.47	Pk	Horizontal
13210.72	29.02	42.60	15.90	38.90	12.20	41.22	54.00	-12.78	AV	Horizontal



High Channel (802.11n40/ 5670 MHz)										
3238.13	45.06	44.70	6.70	28.20	-9.80	35.26	68.20	-32.94	Pk	Vertical
3238.13	41.10	44.70	6.70	28.20	-9.80	31.30	54.00	-22.70	AV	Vertical
3236.64	44.87	44.70	6.70	28.20	-9.80	35.07	68.20	-33.13	Pk	Horizontal
3236.64	41.09	44.70	6.70	28.20	-9.80	31.29	54.00	-22.71	AV	Horizontal
3976.72	39.32	44.20	7.90	29.70	-6.60	32.72	74.00	-41.28	Pk	Vertical
3976.72	35.89	44.20	7.90	29.70	-6.60	29.29	54.00	-24.71	AV	Vertical
3971.66	40.04	44.20	7.90	29.70	-6.60	33.44	74.00	-40.56	Pk	Horizontal
3971.66	36.65	44.20	7.90	29.70	-6.60	30.05	54.00	-23.95	AV	Horizontal
7184.46	37.35	43.50	11.40	35.50	3.40	40.75	68.20	-27.45	Pk	Vertical
7184.46	33.46	43.50	11.40	35.50	3.40	36.86	54.00	-17.14	AV	Vertical
7187.76	37.94	43.50	11.40	35.50	3.40	41.34	68.20	-26.86	Pk	Horizontal
7187.76	34.83	43.50	11.40	35.50	3.40	38.23	54.00	-15.77	AV	Horizontal
10418.21	38.85	44.50	13.80	38.80	8.10	46.95	68.20	-21.25	Pk	Vertical
10418.21	36.27	44.50	13.80	38.80	8.10	44.37	54.00	-9.63	AV	Vertical
10422.18	40.06	44.50	13.80	38.80	8.10	48.16	68.20	-20.04	Pk	Horizontal
10422.18	36.61	44.50	13.80	38.80	8.10	44.71	54.00	-9.29	AV	Horizontal
11340.31	33.40	43.60	14.30	39.50	10.20	43.60	74.00	-30.40	Pk	Vertical
11340.31	29.73	43.60	14.30	39.50	10.20	39.93	54.00	-14.07	AV	Vertical
11340.04	32.79	43.60	14.30	39.50	10.20	42.99	74.00	-31.01	Pk	Horizontal
11340.04	30.97	43.60	14.30	39.50	10.20	41.17	54.00	-12.83	AV	Horizontal
13221.25	32.29	42.60	15.90	38.90	12.20	44.49	68.20	-23.71	Pk	Vertical
13221.25	29.24	42.60	15.90	38.90	12.20	41.44	54.00	-12.56	AV	Vertical
13220.83	31.84	42.60	15.90	38.90	12.20	44.04	68.20	-24.16	Pk	Horizontal
13220.83	28.80	42.60	15.90	38.90	12.20	41.00	54.00	-13.00	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a,802.11n (HT-20),802.11n (HT-40) the worst case is 802.11n (HT-40).
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 (802.11n40/ 5755 MHz)										
3258.27	44.12	44.70	6.70	28.20	-9.80	34.32	68.20	-33.88	Pk	Vertical
3258.27	41.62	44.70	6.70	28.20	-9.80	31.82	54.00	-22.18	AV	Vertical
3269.20	44.48	44.70	6.70	28.20	-9.80	34.68	68.20	-33.52	Pk	Horizontal
3269.20	41.63	44.70	6.70	28.20	-9.80	31.83	54.00	-22.17	AV	Horizontal
4003.57	40.07	44.20	7.90	29.70	-6.60	33.47	74.00	-40.53	Pk	Vertical
4003.57	36.83	44.20	7.90	29.70	-6.60	30.23	54.00	-23.77	AV	Vertical
4001.38	39.71	44.20	7.90	29.70	-6.60	33.11	74.00	-40.89	Pk	Horizontal
4001.38	36.81	44.20	7.90	29.70	-6.60	30.21	54.00	-23.79	AV	Horizontal
7244.23	37.36	43.50	11.40	35.50	3.40	40.76	68.20	-27.44	Pk	Vertical
7244.23	34.60	43.50	11.40	35.50	3.40	38.00	54.00	-16.00	AV	Vertical
7235.96	36.84	43.50	11.40	35.50	3.40	40.24	68.20	-27.96	Pk	Horizontal
7235.96	34.17	43.50	11.40	35.50	3.40	37.57	54.00	-16.43	AV	Horizontal
10518.84	39.17	44.50	13.90	38.80	8.20	47.37	68.20	-20.83	Pk	Vertical
10518.84	37.16	44.50	13.90	38.80	8.20	45.36	54.00	-8.64	AV	Vertical
10524.13	39.93	44.50	13.90	38.80	8.20	48.13	68.20	-20.07	Pk	Horizontal
10524.13	36.79	44.50	13.90	38.80	8.20	44.99	54.00	-9.01	AV	Horizontal
11510.03	32.76	43.60	14.30	39.50	10.20	42.96	74.00	-31.04	Pk	Vertical
11510.03	30.94	43.60	14.30	39.50	10.20	41.14	54.00	-12.86	AV	Vertical
11510.38	33.88	43.60	14.30	39.50	10.20	44.08	74.00	-29.92	Pk	Horizontal
11510.38	30.76	43.60	14.30	39.50	10.20	40.96	54.00	-13.04	AV	Horizontal
13308.42	31.68	42.60	15.90	38.90	12.20	43.88	74.00	-30.12	Pk	Vertical
13308.42	30.00	42.60	15.90	38.90	12.20	42.20	54.00	-11.80	AV	Vertical
13315.89	31.55	42.60	15.90	38.90	12.20	43.75	74.00	-30.25	Pk	Horizontal
13315.89	29.18	42.60	15.90	38.90	12.20	41.38	54.00	-12.62	AV	Horizontal
High Channel (802.11n40/ 5795 MHz)										
3248.03	44.79	44.70	6.70	28.20	-9.80	34.99	68.20	-33.21	Pk	Vertical
3248.03	41.12	44.70	6.70	28.20	-9.80	31.32	54.00	-22.68	AV	Vertical
3241.64	43.85	44.70	6.70	28.20	-9.80	34.05	68.20	-34.15	Pk	Horizontal
3241.64	41.43	44.70	6.70	28.20	-9.80	31.63	54.00	-22.37	AV	Horizontal
3971.24	38.93	44.20	7.90	29.70	-6.60	32.33	74.00	-41.67	Pk	Vertical
3971.24	36.55	44.20	7.90	29.70	-6.60	29.95	54.00	-24.05	AV	Vertical
3970.39	39.42	44.20	7.90	29.70	-6.60	32.82	74.00	-41.18	Pk	Horizontal
3970.39	36.06	44.20	7.90	29.70	-6.60	29.46	54.00	-24.54	AV	Horizontal
7179.21	36.67	43.50	11.40	35.50	3.40	40.07	68.20	-28.13	Pk	Vertical
7179.21	33.59	43.50	11.40	35.50	3.40	36.99	54.00	-17.01	AV	Vertical
7184.71	37.61	43.50	11.40	35.50	3.40	41.01	68.20	-27.19	Pk	Horizontal
7184.71	34.85	43.50	11.40	35.50	3.40	38.25	54.00	-15.75	AV	Horizontal
10579.51	39.11	44.50	13.80	38.80	8.10	47.21	68.20	-20.99	Pk	Vertical
10579.51	35.88	44.50	13.80	38.80	8.10	43.98	54.00	-10.02	AV	Vertical
10585.30	39.71	44.50	13.80	38.80	8.10	47.81	68.20	-20.39	Pk	Horizontal
10585.30	36.02	44.50	13.80	38.80	8.10	44.12	54.00	-9.88	AV	Horizontal
11590.28	33.42	43.60	14.30	39.50	10.20	43.62	74.00	-30.38	Pk	Vertical
11590.28	31.11	43.60	14.30	39.50	10.20	41.31	54.00	-12.69	AV	Vertical
11590.38	33.73	43.60	14.30	39.50	10.20	43.93	74.00	-30.07	Pk	Horizontal
11590.38	31.06	43.60	14.30	39.50	10.20	41.26	54.00	-12.74	AV	Horizontal
13220.57	31.69	42.70	18.00	37.10	12.40	44.09	68.20	-24.11	Pk	Vertical
13220.57	29.74	42.70	18.00	37.10	12.40	42.14	54.00	-11.86	AV	Vertical
13212.34	33.00	42.70	18.00	37.10	12.40	45.40	68.20	-22.80	Pk	Horizontal
13212.34	29.67	42.70	18.00	37.10	12.40	42.07	54.00	-11.93	AV	Horizontal

Remark:

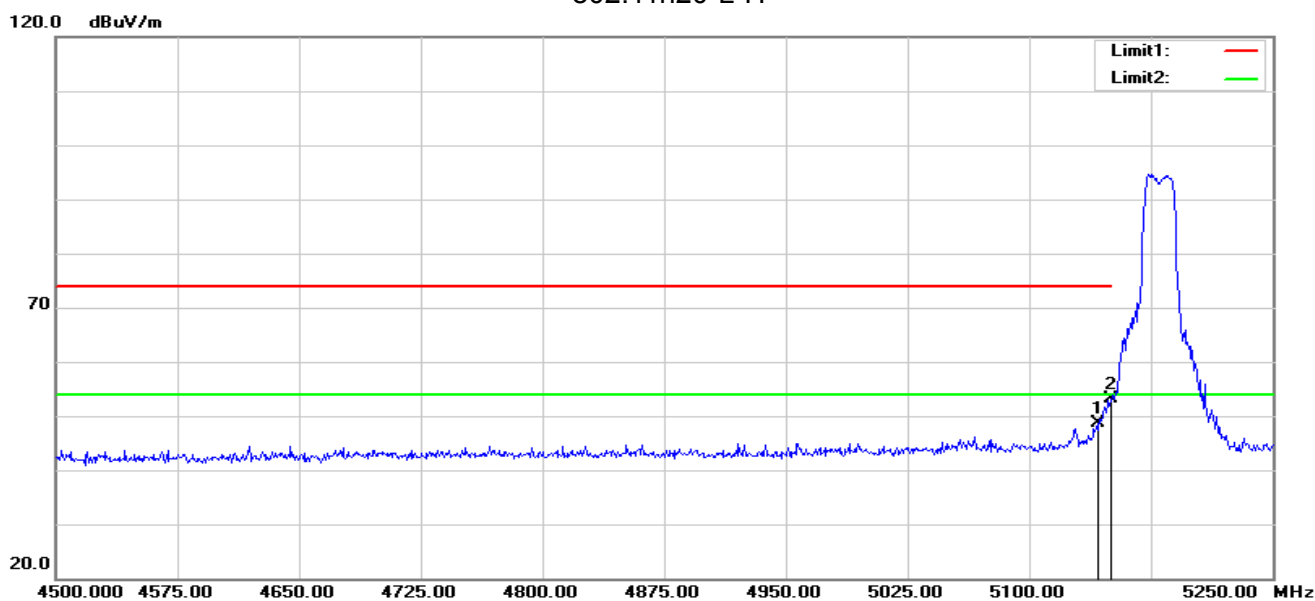
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a,802.11n (HT-20),802.11n (HT-40) the worst case is 802.11n (HT-20).
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment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



3.2.9 RESTRICTED FREQUENCY BANDS AND BAND EDGE

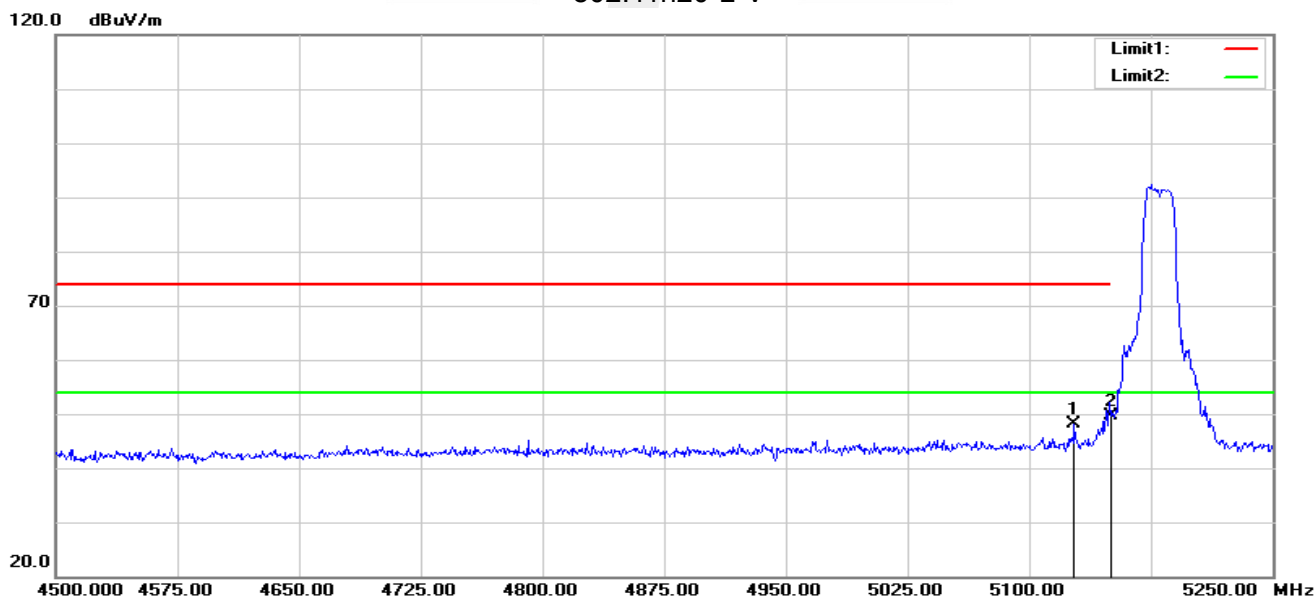
Band I 5150-5250MHz

802.11n20-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5142.000	54.46	-5.74	48.72	74.00	-25.28	peak
2	5150.000	58.81	-5.73	53.08	74.00	-20.92	peak

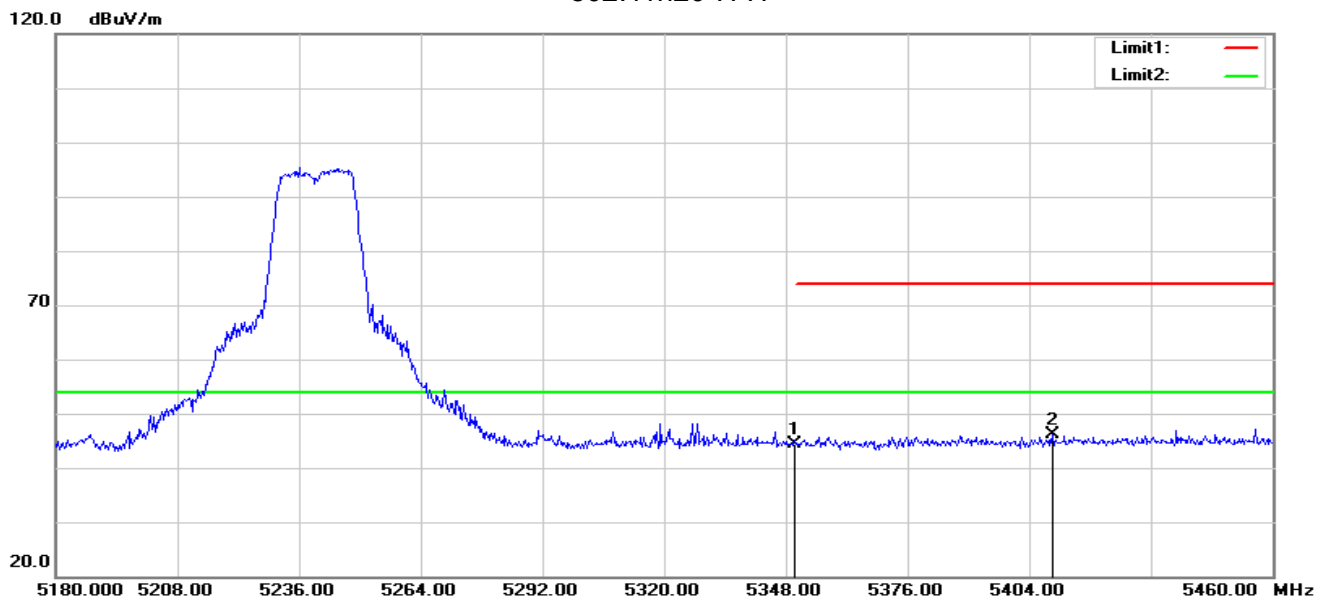
802.11n20-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5127.750	53.77	-5.74	48.03	74.00	-25.97	peak
2	5150.000	55.38	-5.73	49.65	74.00	-24.35	peak

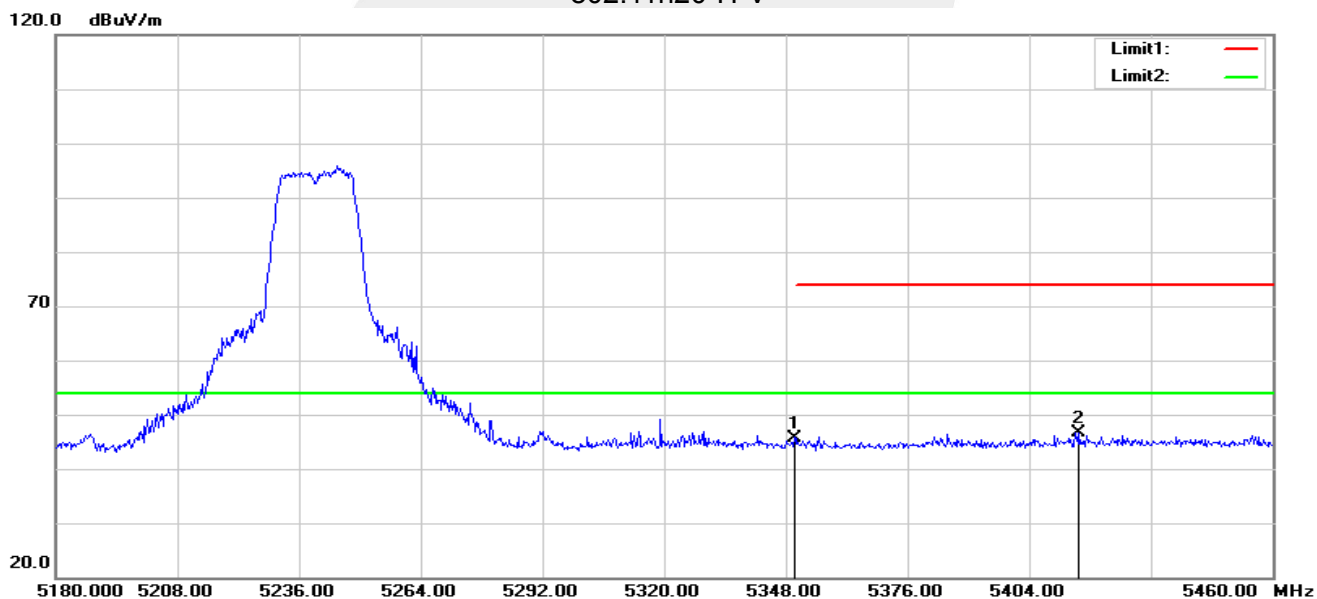


802.11n20-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	49.58	-5.23	44.35	74.00	-29.65	peak
2	5409.320	51.29	-5.23	46.06	74.00	-27.94	peak

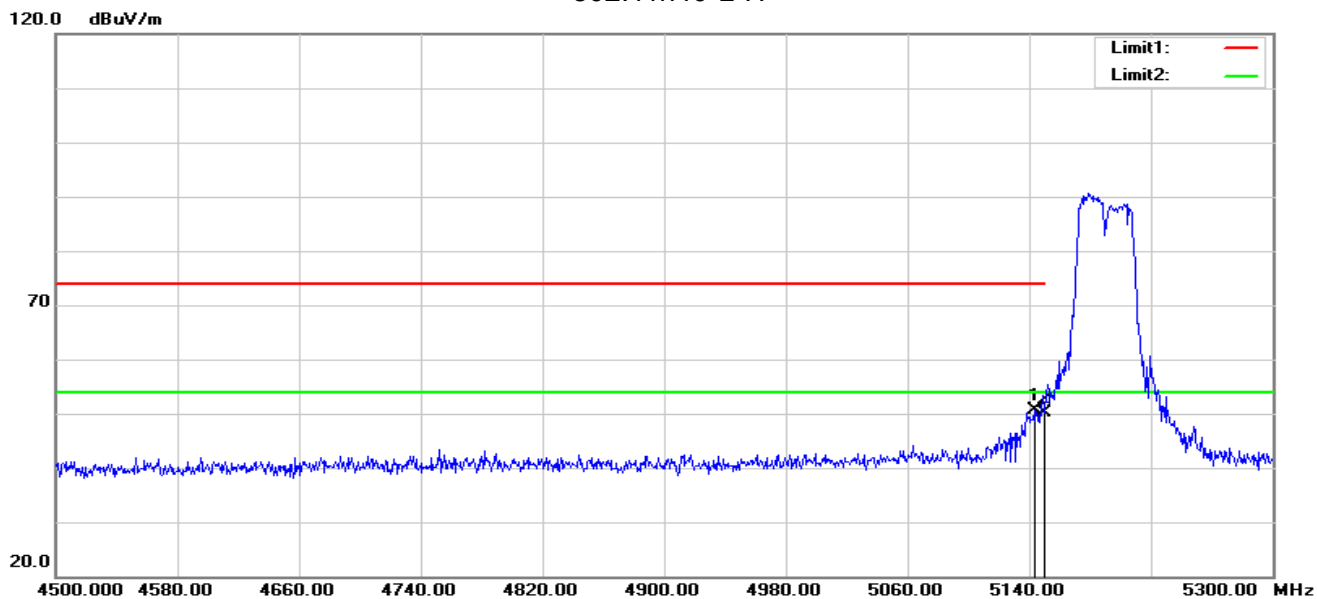
802.11n20-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	50.79	-5.23	45.56	74.00	-28.44	peak
2	5415.480	51.85	-5.22	46.63	74.00	-27.37	peak

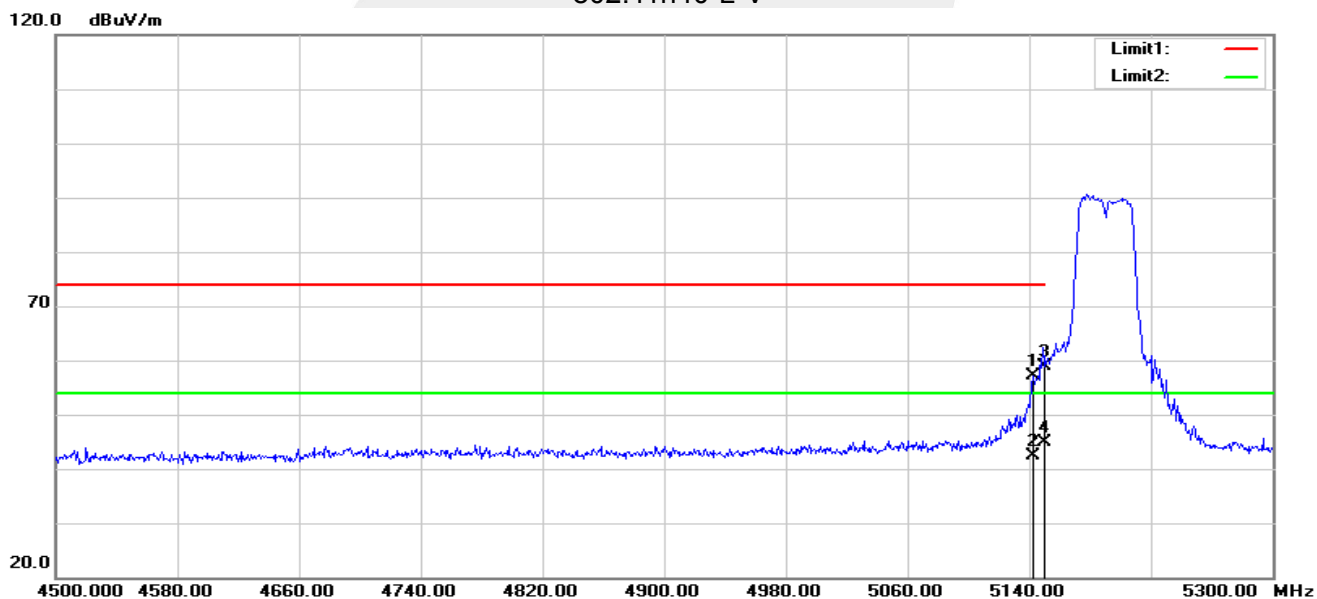


802.11n40-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5143.200	56.25	-5.74	50.51	74.00	-23.49	peak
2	5150.000	55.86	-5.73	50.13	74.00	-23.87	peak

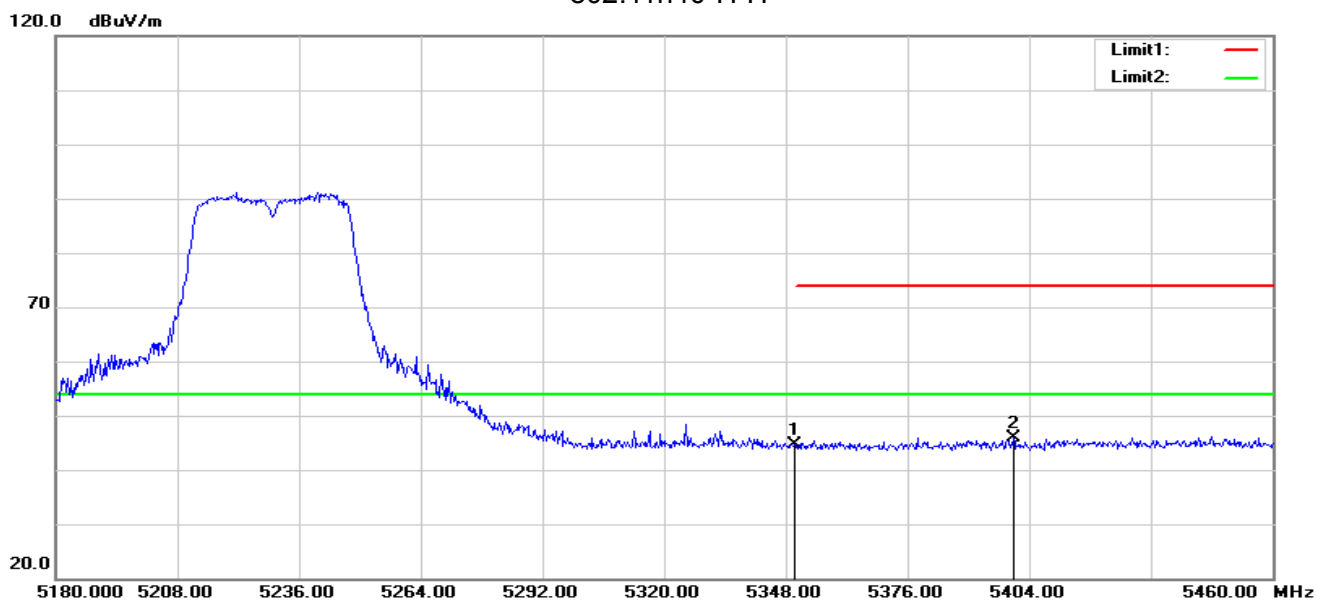
802.11n40-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5142.400	62.81	-5.74	57.07	74.00	-16.93	peak
2	5142.400	48.10	-5.74	42.36	54.00	-11.64	AVG
3	5150.000	64.69	-5.73	58.96	74.00	-15.04	peak
4	5150.000	50.67	-5.73	44.94	54.00	-9.06	AVG

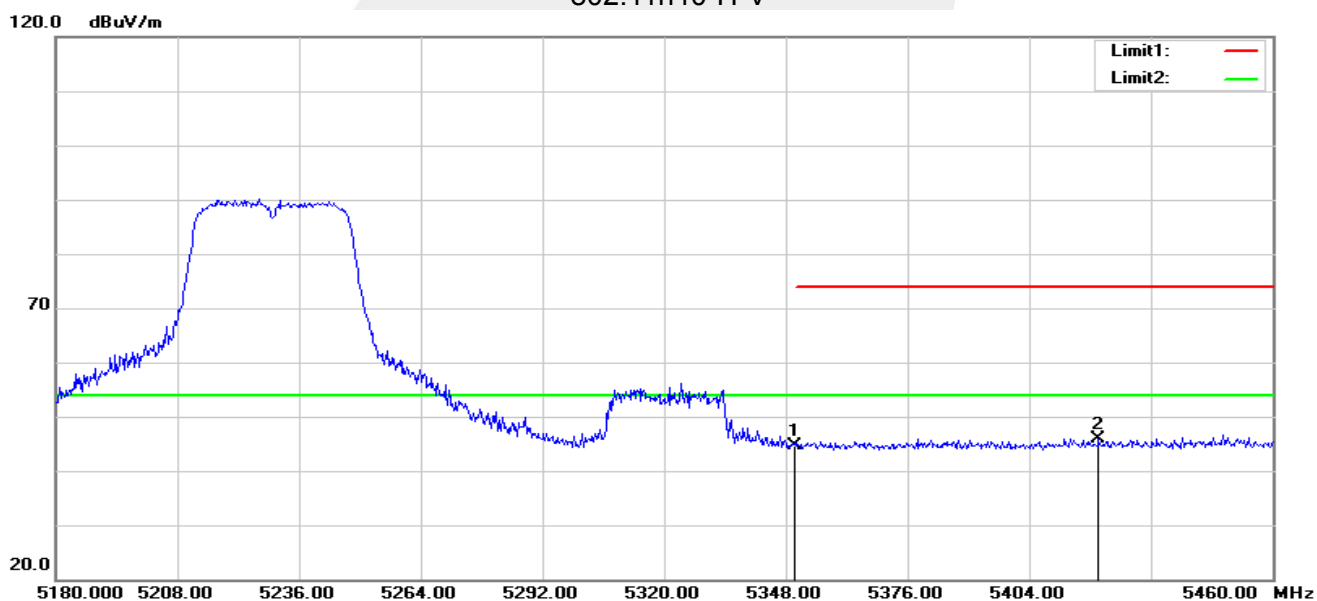


802.11n40-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	49.79	-5.23	44.56	74.00	-29.44	peak
2	5400.360	51.13	-5.25	45.88	74.00	-28.12	peak

802.11n40-H-V



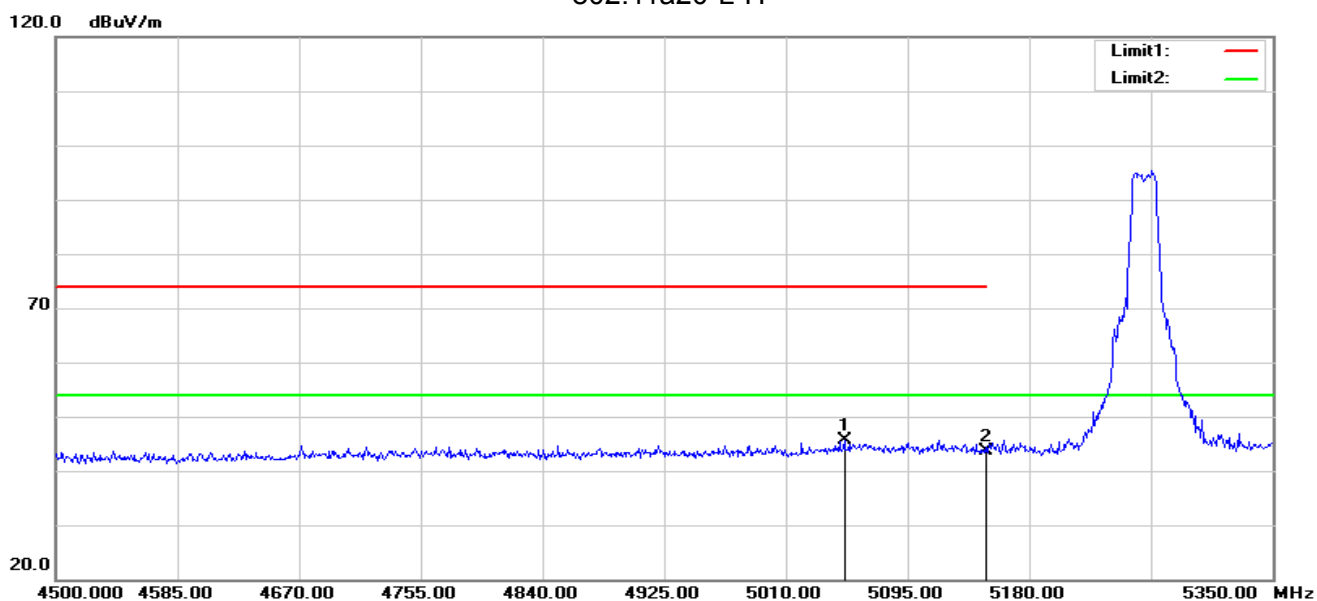
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	49.77	-5.23	44.54	74.00	-29.46	peak
2	5419.960	51.09	-5.20	45.89	74.00	-28.11	peak

Note: All modes have been tested. Only the worst mode shown in the report.



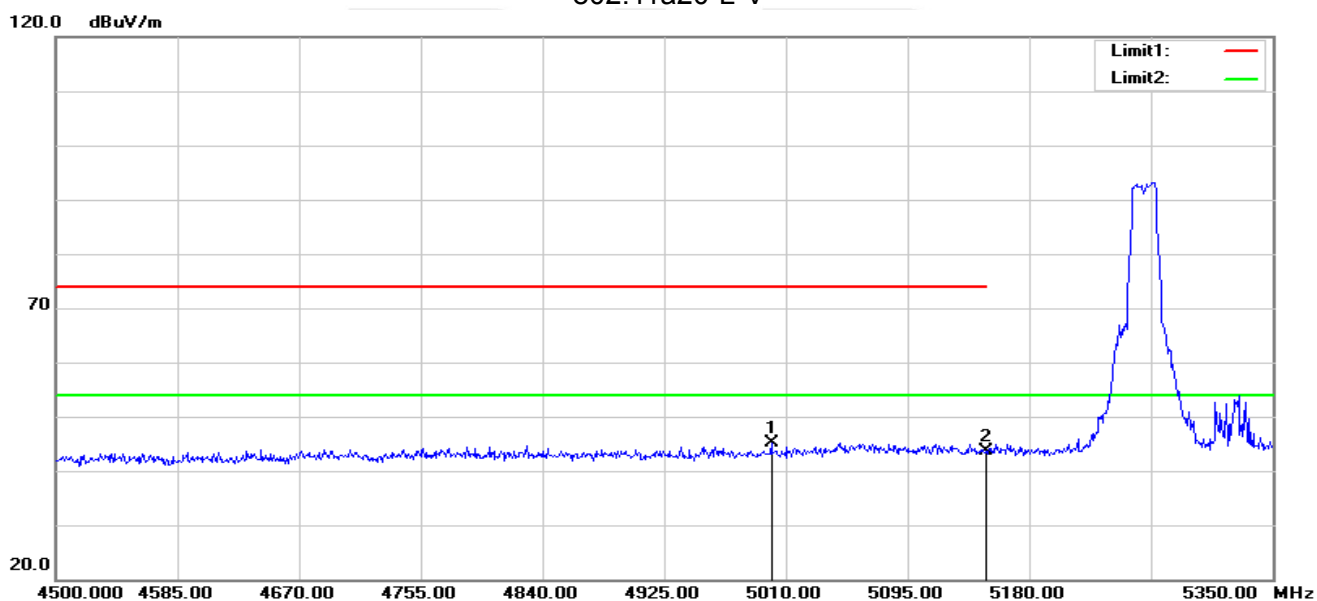
Band II 5250-5350MHz

802.11a20-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5050.800	51.58	-5.96	45.62	74.00	-28.38	peak
2	5150.000	49.32	-5.73	43.59	74.00	-30.41	peak

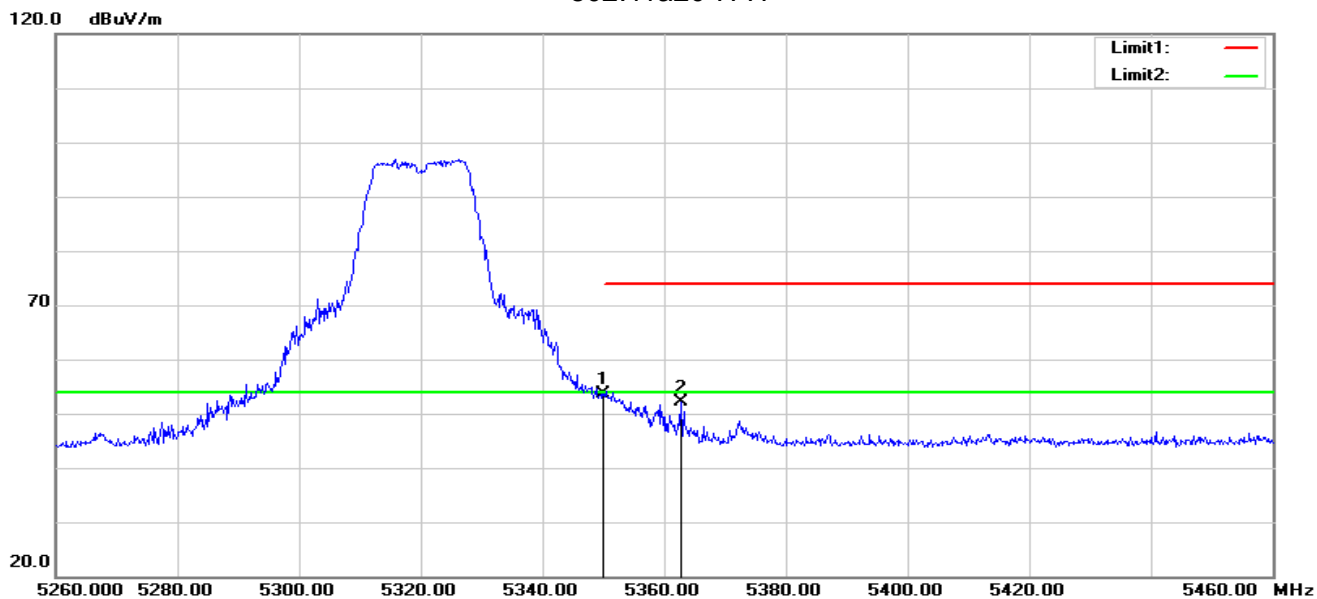
802.11a20-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4999.800	51.39	-6.19	45.20	74.00	-28.80	peak
2	5150.000	49.37	-5.73	43.64	74.00	-30.36	peak

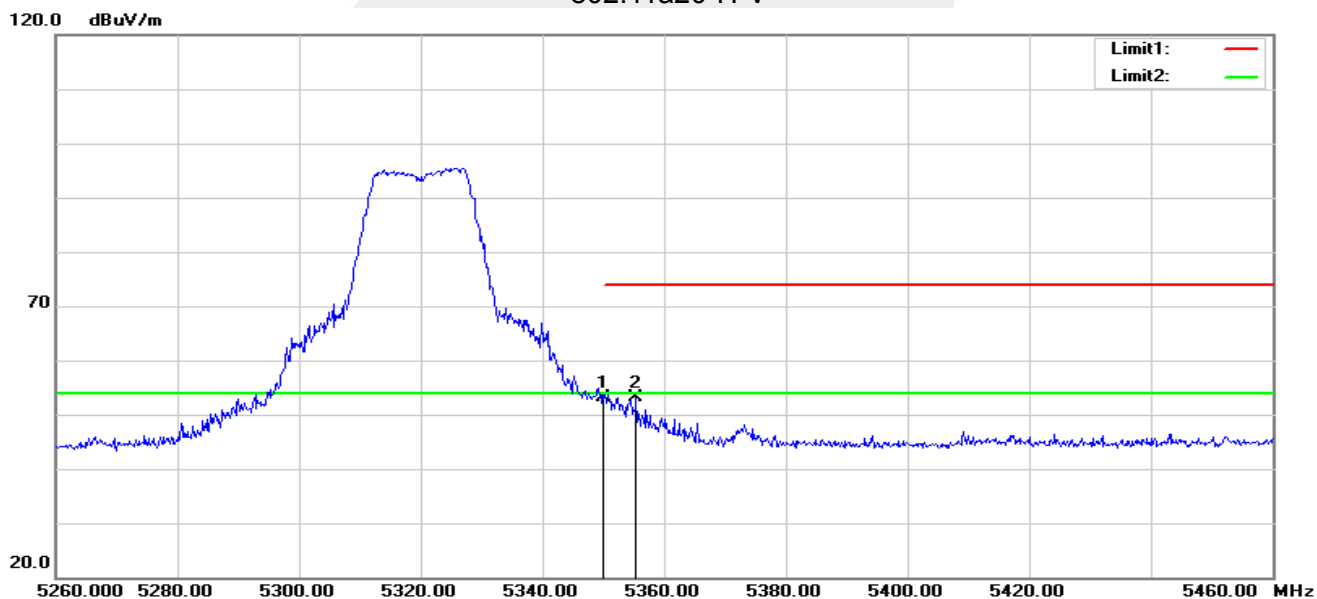


802.11a20-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	58.87	-5.23	53.64	74.00	-20.36	peak
2	5362.800	57.43	-5.24	52.19	74.00	-21.81	peak

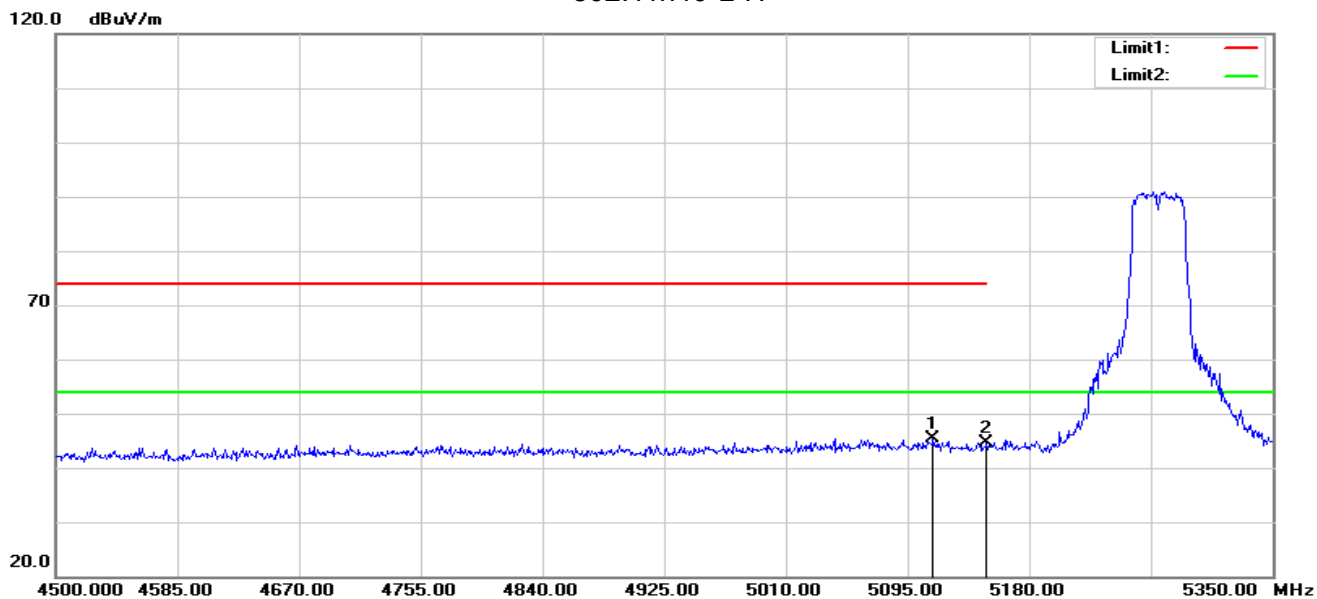
802.11a20-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	58.33	-5.23	53.10	74.00	-20.90	peak
2	5355.400	58.25	-5.24	53.01	74.00	-20.99	peak

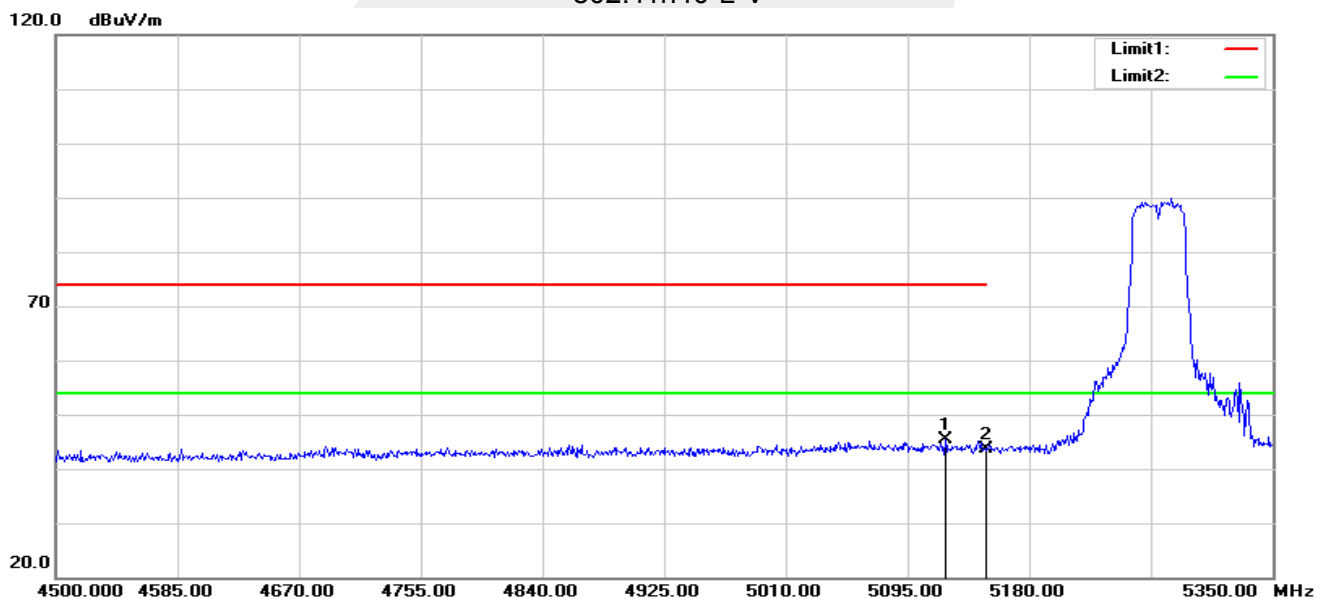


802.11n40-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5112.850	51.09	-5.74	45.35	74.00	-28.65	peak
2	5150.000	50.40	-5.73	44.67	74.00	-29.33	peak

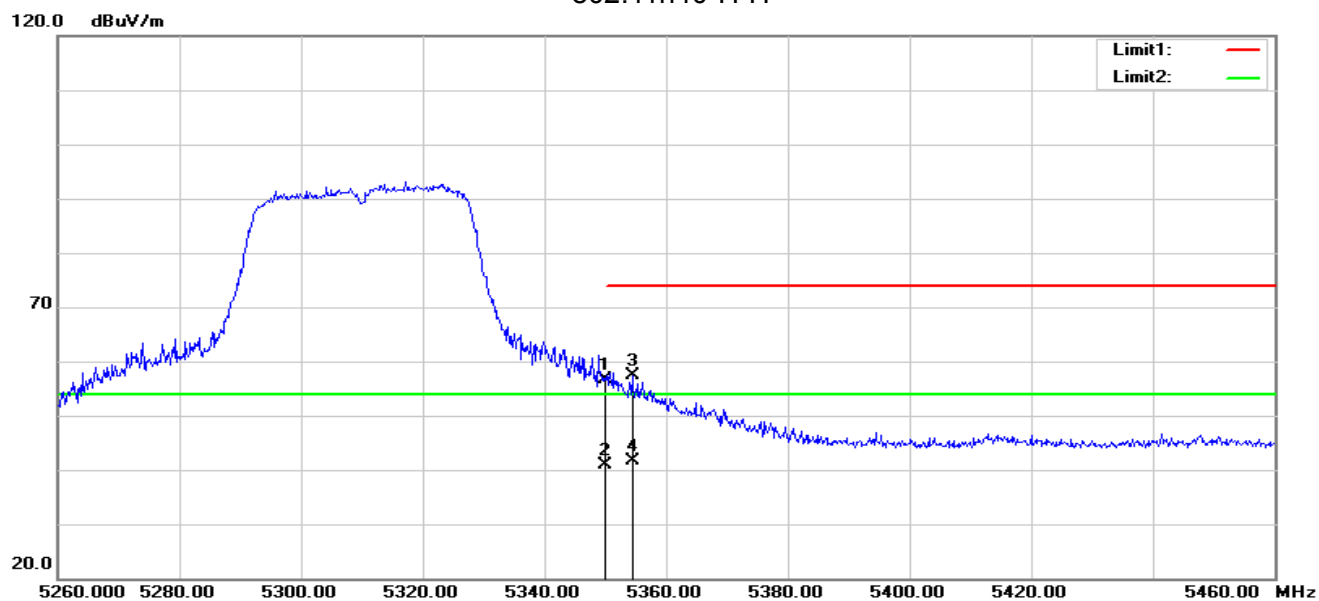
802.11n40-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5121.350	51.07	-5.73	45.34	74.00	-28.66	peak
2	5150.000	49.31	-5.73	43.58	74.00	-30.42	peak

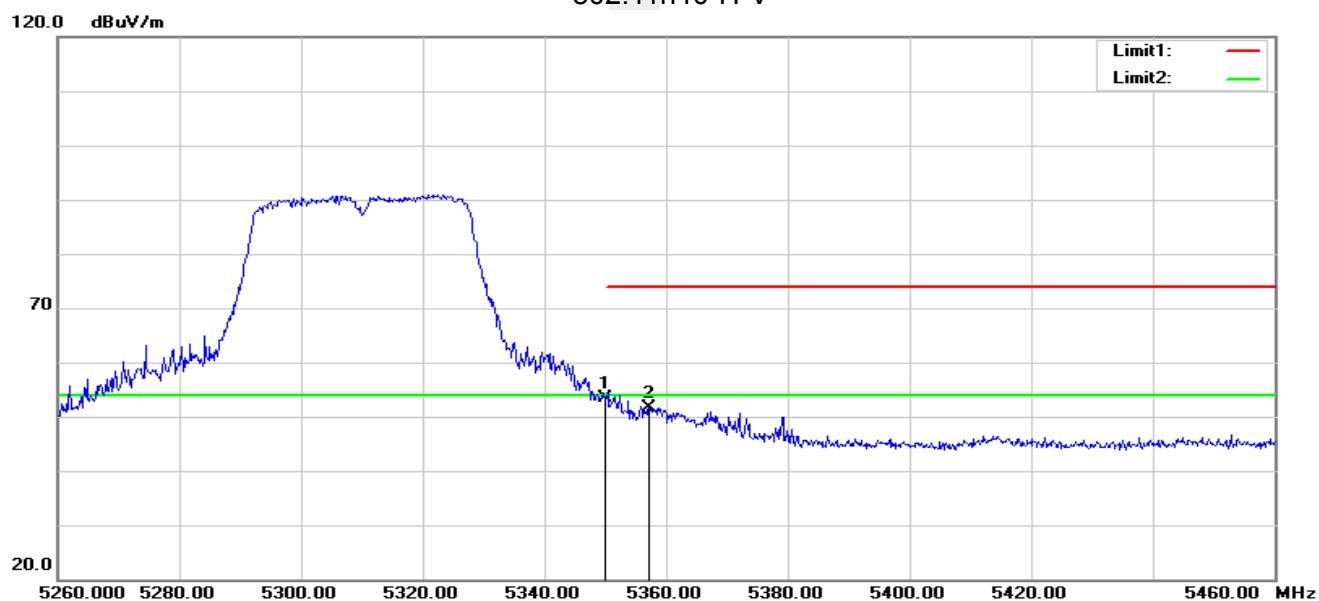


802.11n40-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	61.97	-5.23	56.74	74.00	-17.26	peak
2	5350.000	46.20	-5.23	40.97	54.00	-13.03	AVG
3	5354.400	62.65	-5.24	57.41	74.00	-16.59	peak
4	5354.400	46.93	-5.24	41.69	54.00	-12.31	AVG

802.11n40-H-V



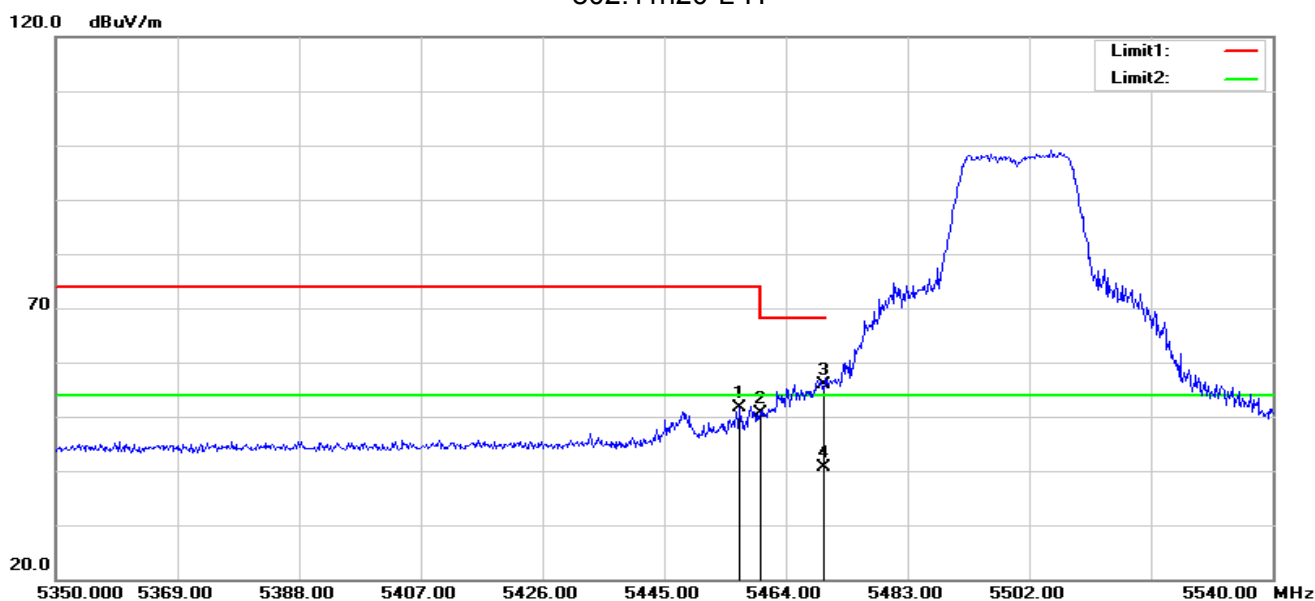
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	58.65	-5.23	53.42	74.00	-20.58	peak
2	5357.200	56.98	-5.23	51.75	74.00	-22.25	peak

Note: All modes have been tested. Only the worst mode shown in the report.



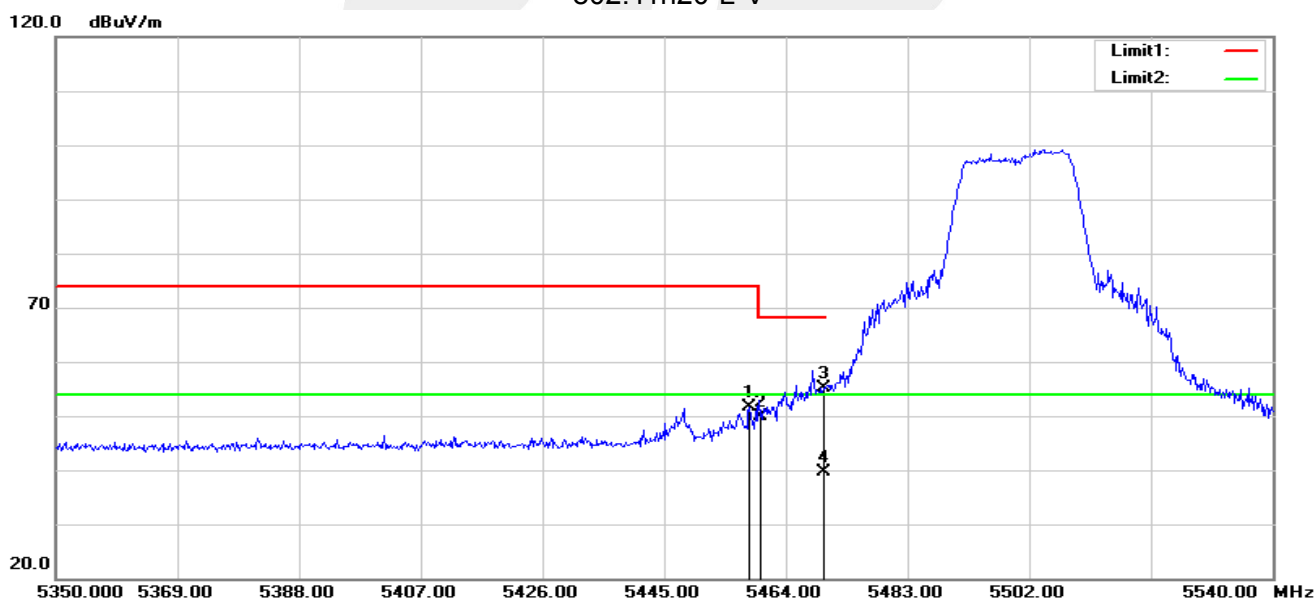
Band III 5470-5725MHz

802.11n20-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5456.780	56.67	-5.11	51.56	74.00	-22.44	peak
2	5460.000	55.85	-5.11	50.74	68.20	-17.46	peak
3	5470.000	60.94	-5.09	55.85	68.20	-12.35	peak
4	5470.000	45.74	-5.09	40.65	54.00	-13.35	AVG

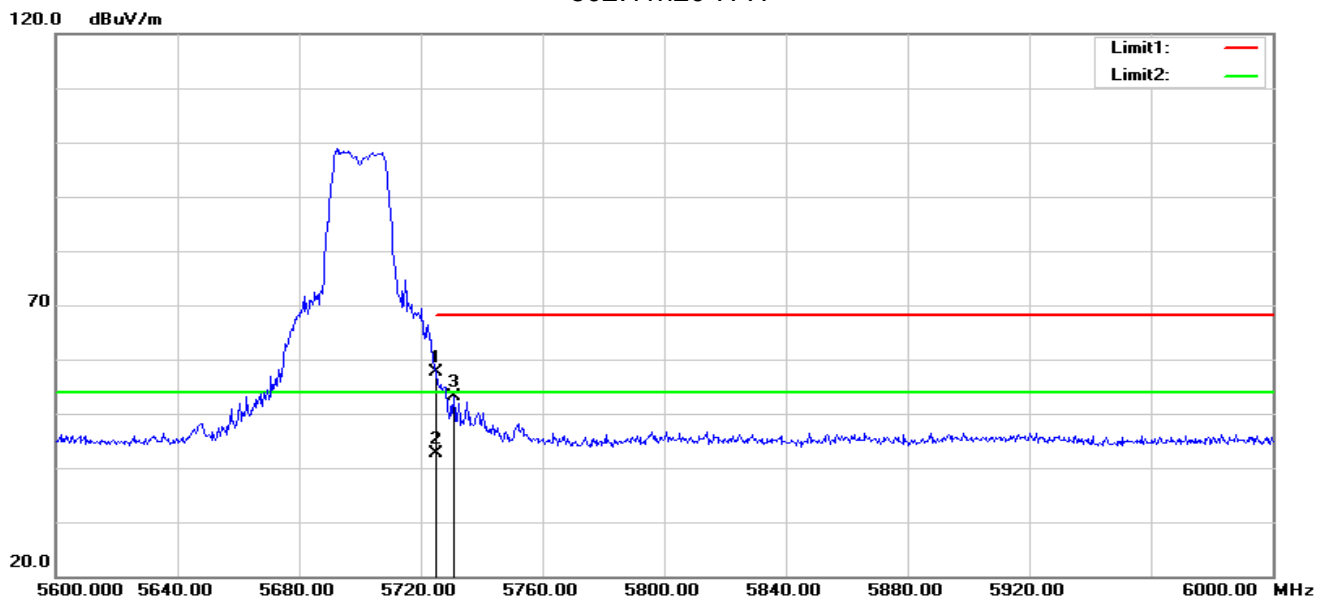
802.11n20-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5458.300	56.75	-5.11	51.64	74.00	-22.36	peak
2	5460.000	55.04	-5.11	49.93	68.20	-18.27	peak
3	5470.000	60.13	-5.09	55.04	68.20	-13.16	peak
4	5470.000	44.72	-5.09	39.63	54.00	-14.37	AVG

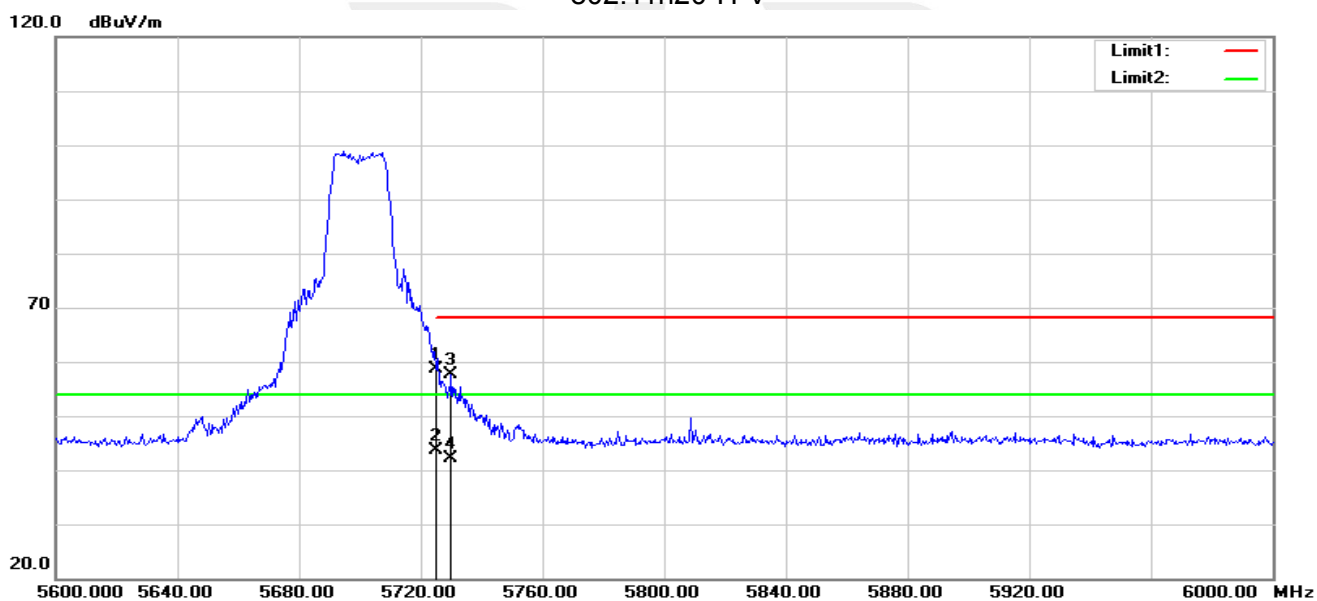


802.11n20-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	62.29	-4.57	57.72	68.20	-10.48	peak
2	5725.000	47.20	-4.57	42.63	54.00	-11.37	AVG
3	5730.800	57.58	-4.55	53.03	68.20	-15.17	peak

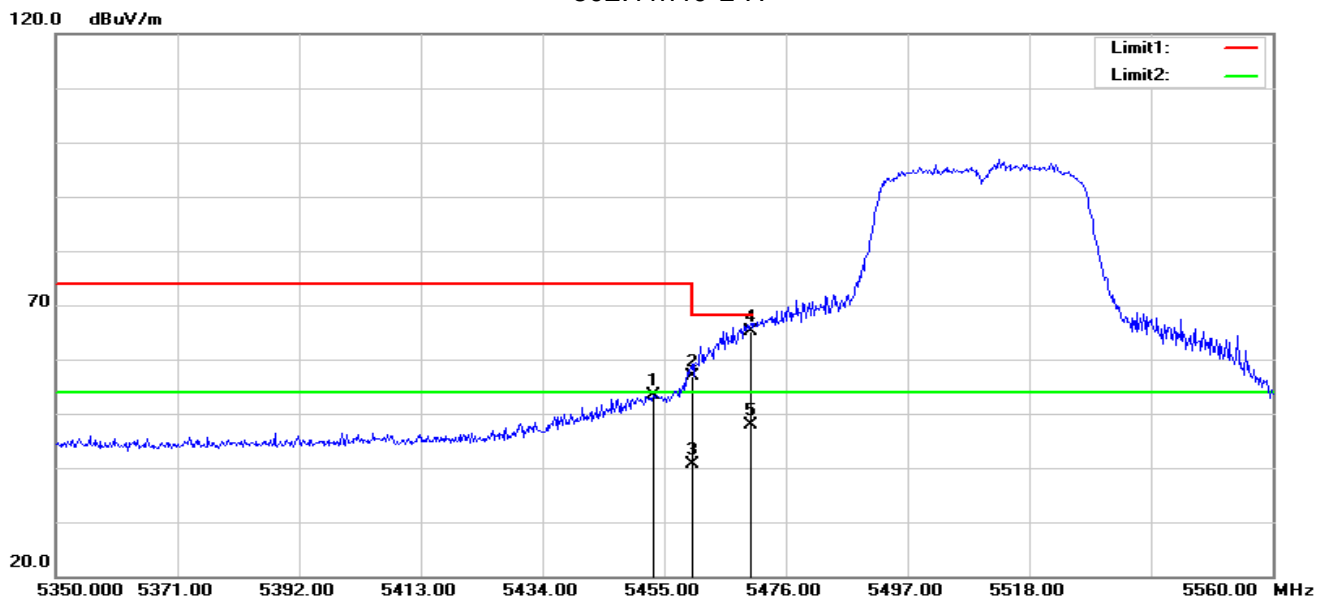
802.11n20-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	63.32	-4.57	58.75	68.20	-9.45	peak
2	5725.000	48.19	-4.57	43.62	54.00	-10.38	AVG
3	5730.000	62.16	-4.56	57.60	68.20	-10.60	peak
4	5730.000	46.59	-4.56	42.03	54.00	-11.97	AVG

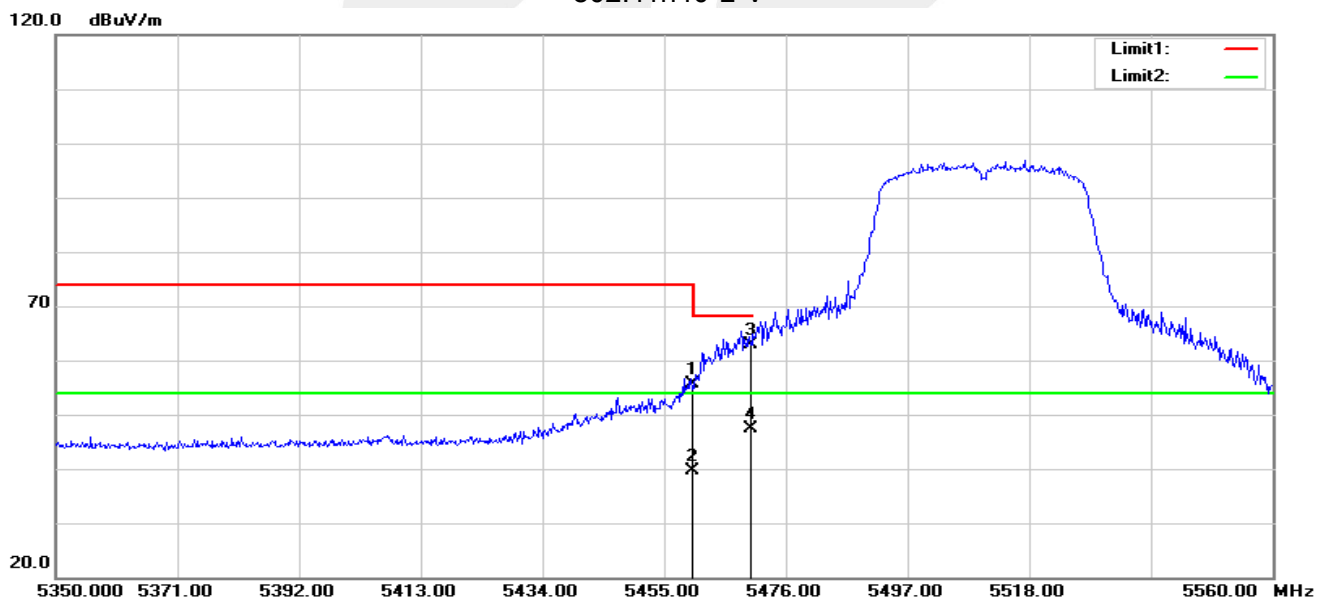


802.11n40-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5453.110	58.62	-5.13	53.49	74.00	-20.51	peak
2	5460.000	61.95	-5.11	56.84	68.20	-11.36	peak
3	5460.000	45.80	-5.11	40.69	68.20	-27.51	QP
4	5470.000	70.23	-5.09	65.14	68.20	-3.06	peak
5	5470.000	52.85	-5.09	47.76	54.00	-6.24	AVG

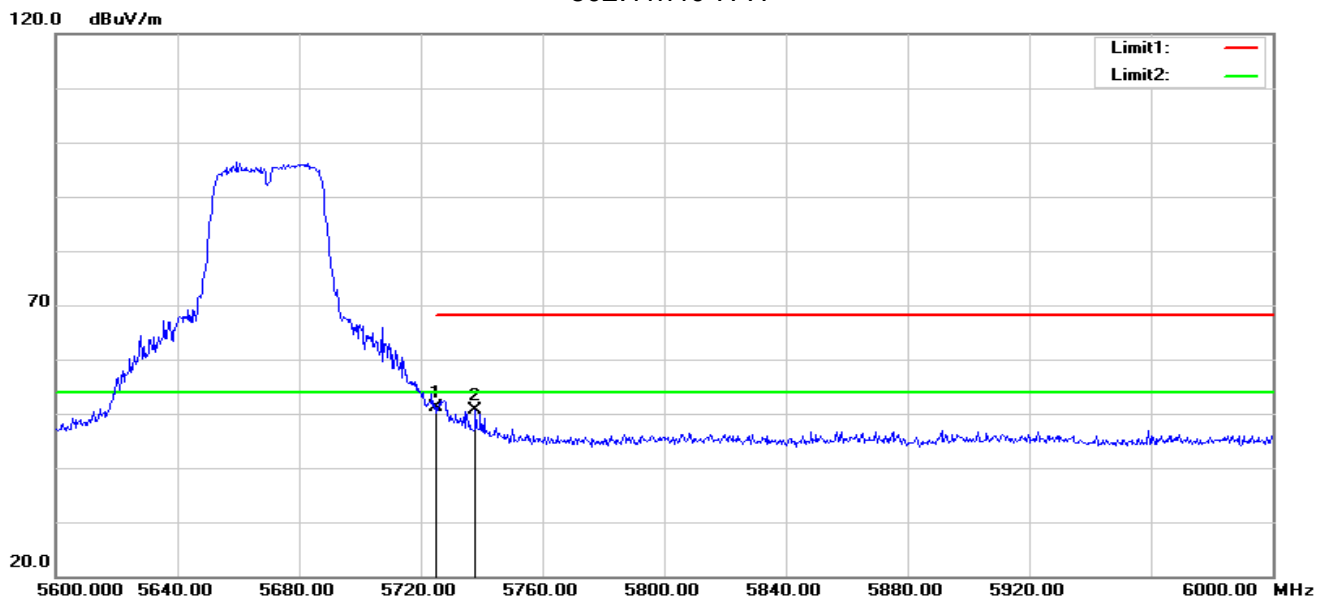
802.11n40-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5460.000	60.76	-5.11	55.65	68.20	-12.55	peak
2	5460.000	44.73	-5.11	39.62	54.00	-14.38	AVG
3	5470.000	68.08	-5.09	62.99	68.20	-5.21	peak
4	5470.000	52.41	-5.09	47.32	54.00	-6.68	AVG

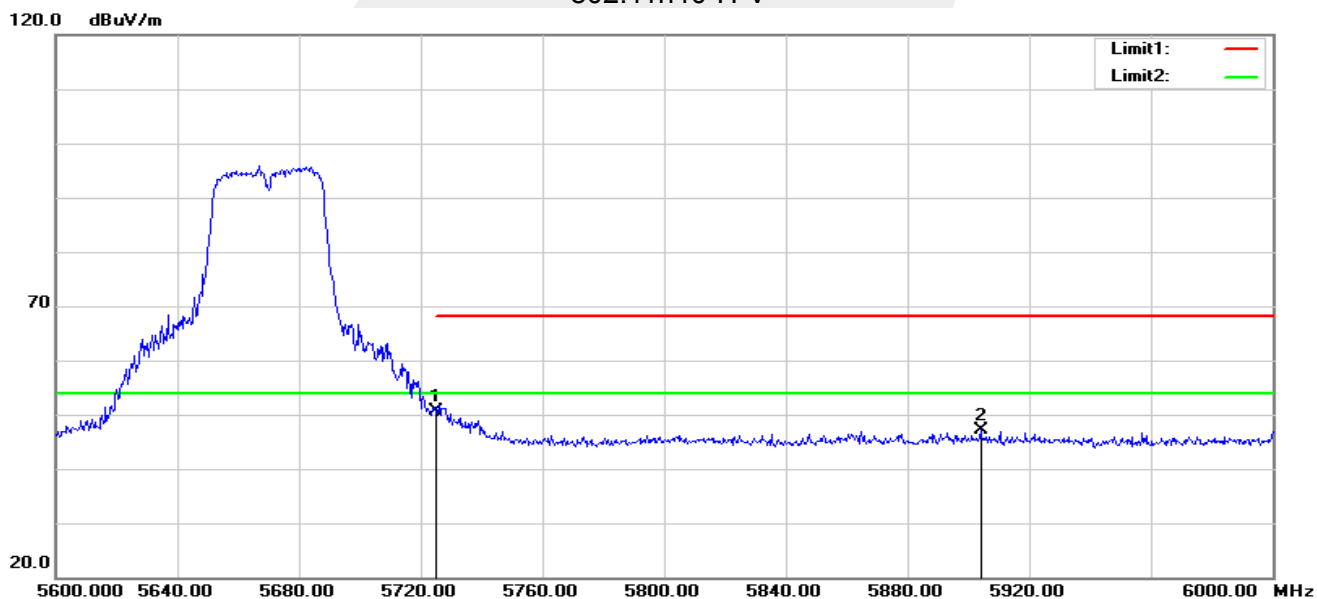


802.11n40-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	55.76	-4.57	51.19	68.20	-17.01	peak
2	5738.000	55.23	-4.53	50.70	68.20	-17.50	peak

802.11n40-H-V



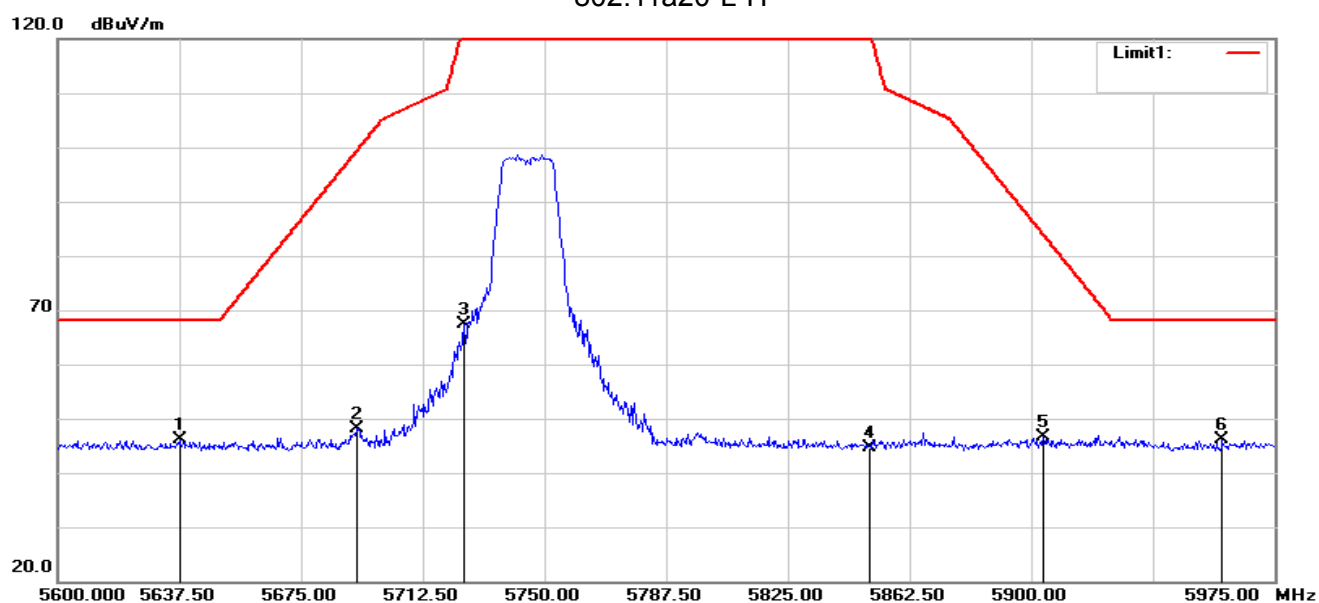
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5725.000	55.31	-4.57	50.74	68.20	-17.46	peak
2	5904.000	51.05	-3.88	47.17	68.20	-21.03	peak

Note: All modes have been tested. Only the worst mode shown in the report.



Band IV(5.725-5.85 GHz)

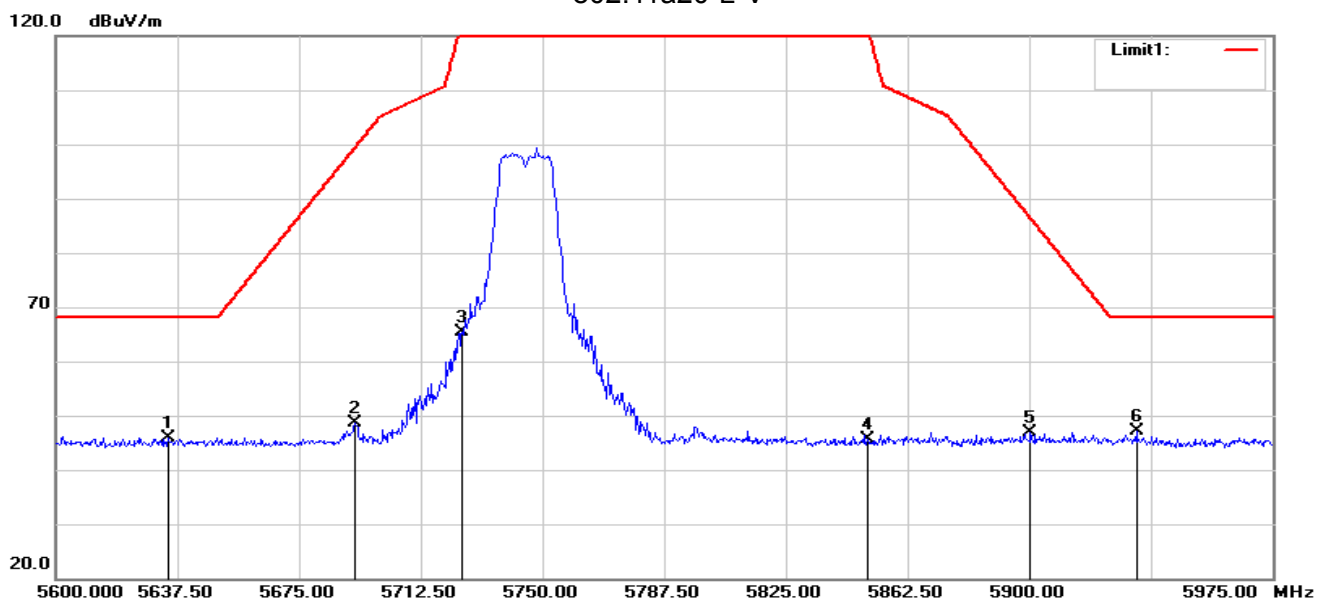
802.11a20-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5637.500	50.76	-4.69	46.07	68.20	-22.13	peak
2	5692.250	52.70	-4.66	48.04	99.47	-51.43	peak
3	5725.000	71.97	-4.57	67.40	122.20	-54.80	peak
4	5850.000	48.85	-4.10	44.75	122.20	-77.45	peak
5	5903.750	50.50	-3.88	46.62	83.92	-37.30	peak
6	5958.875	50.16	-3.98	46.18	68.20	-22.02	peak



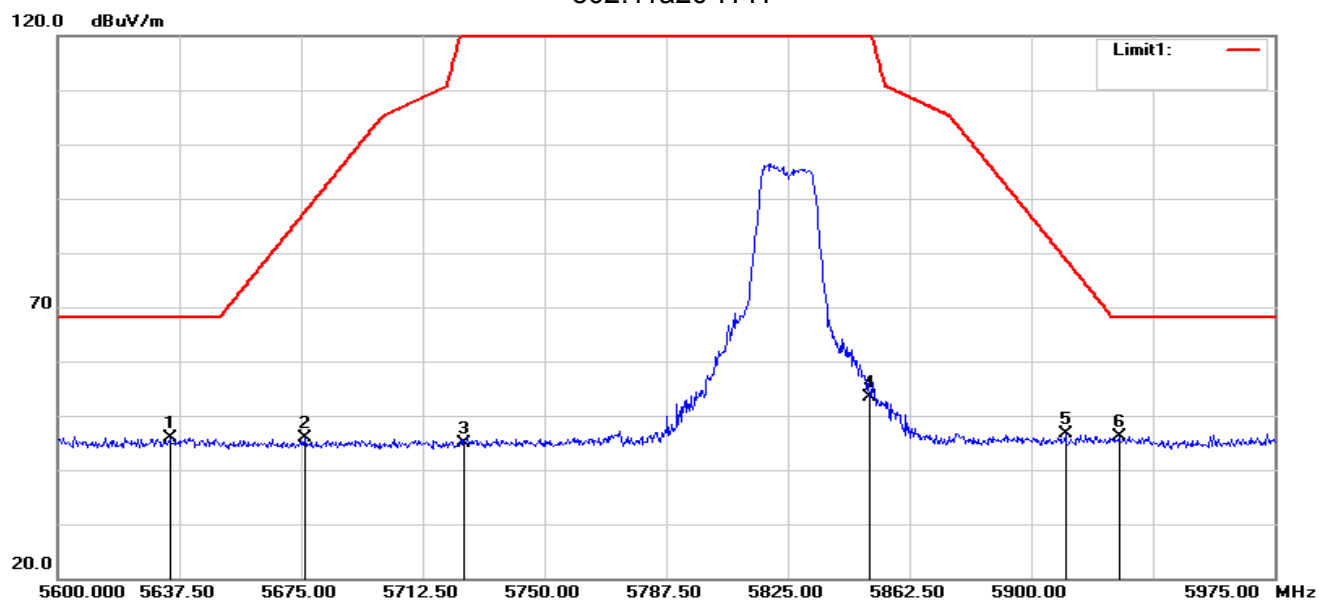
802.11a20-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5634.500	50.58	-4.68	45.90	68.20	-22.30	peak
2	5692.250	53.28	-4.66	48.62	99.47	-50.85	peak
3	5725.000	70.04	-4.57	65.47	122.20	-56.73	peak
4	5850.000	49.75	-4.10	45.65	122.20	-76.55	peak
5	5900.375	50.79	-3.88	46.91	86.42	-39.51	peak
6	5933.000	51.09	-3.94	47.15	68.20	-21.05	peak



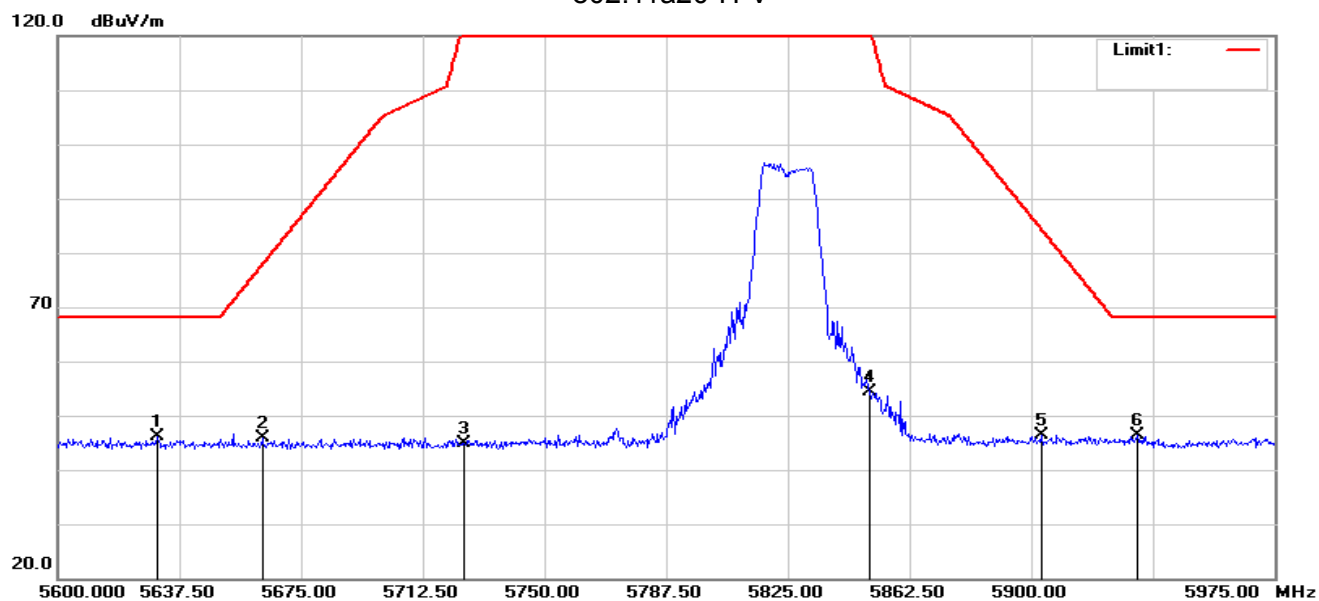
802.11a20-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5634.500	50.54	-4.68	45.86	68.20	-22.34	peak
2	5676.125	50.43	-4.67	45.76	87.53	-41.77	peak
3	5725.000	49.50	-4.57	44.93	122.20	-77.27	peak
4	5850.000	57.40	-4.10	53.30	122.20	-68.90	peak
5	5910.500	50.45	-3.89	46.56	78.93	-32.37	peak
6	5927.000	50.13	-3.93	46.20	68.20	-22.00	peak



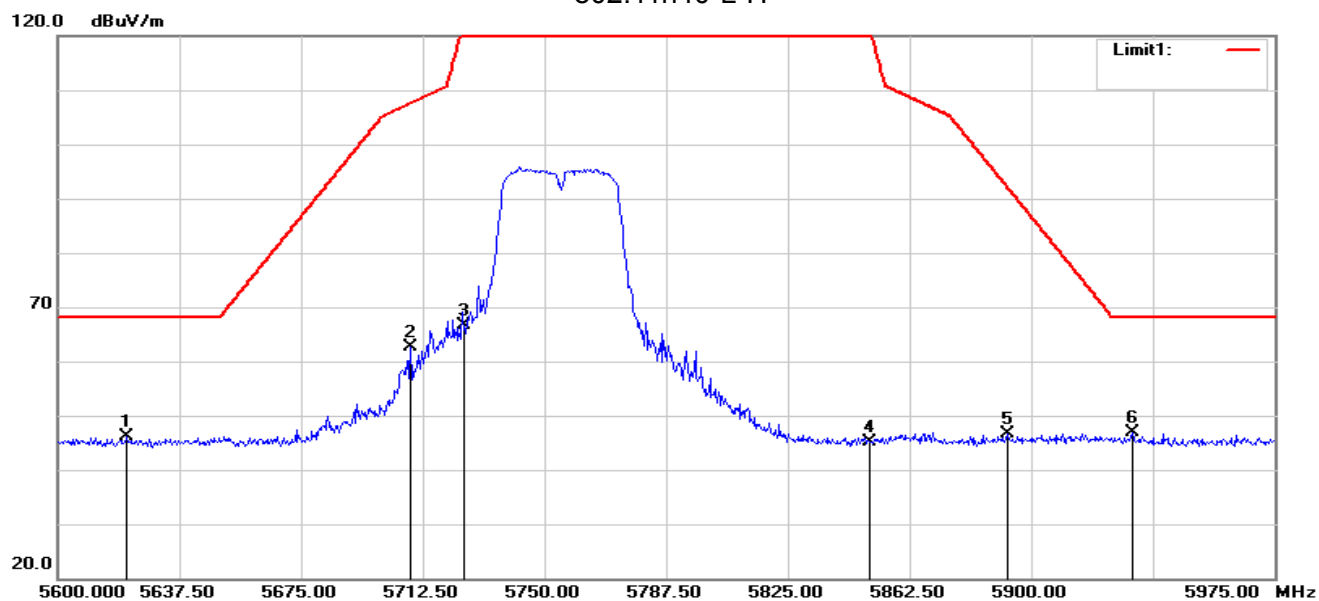
802.11a20-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5630.750	50.88	-4.69	46.19	68.20	-22.01	peak
2	5663.000	50.54	-4.68	45.86	77.82	-31.96	peak
3	5725.000	49.38	-4.57	44.81	122.20	-77.39	peak
4	5850.000	58.36	-4.10	54.26	122.20	-67.94	peak
5	5903.000	50.30	-3.89	46.41	84.48	-38.07	peak
6	5932.625	50.28	-3.94	46.34	68.20	-21.86	peak



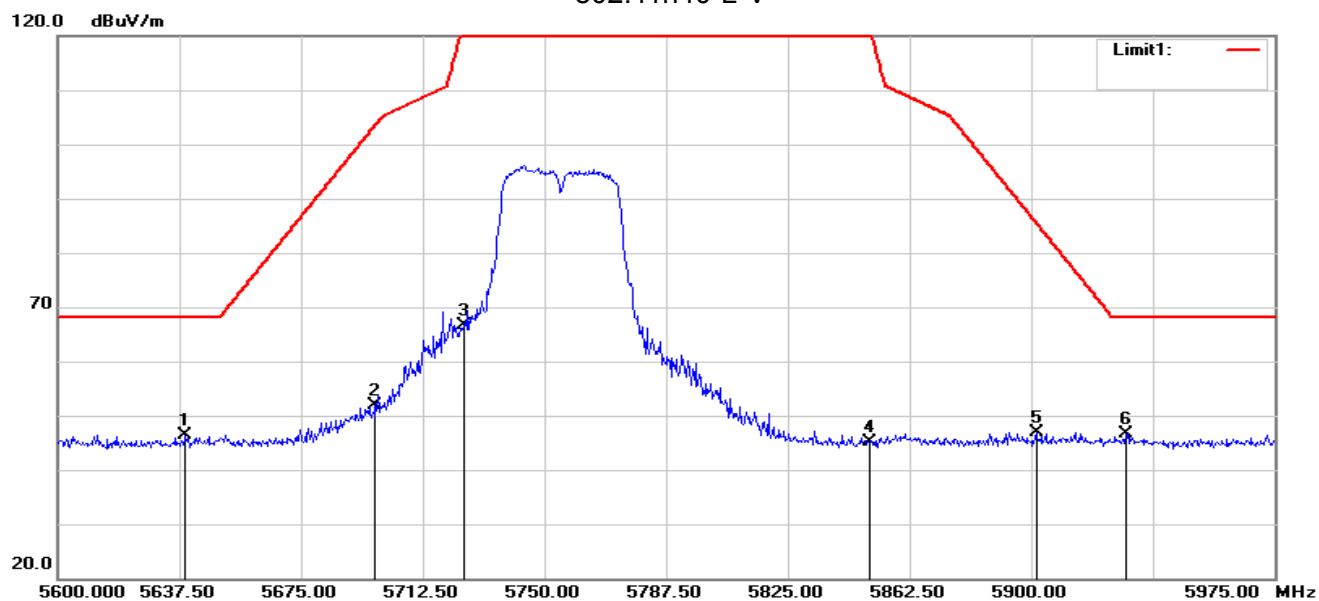
802.11n40-L-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5621.375	50.74	-4.70	46.04	68.20	-22.16	peak
2	5708.750	67.33	-4.63	62.70	107.65	-44.95	peak
3	5725.000	71.21	-4.57	66.64	122.20	-55.56	peak
4	5850.000	49.20	-4.10	45.10	122.20	-77.10	peak
5	5892.500	50.62	-3.91	46.71	92.25	-45.54	peak
6	5931.125	50.76	-3.93	46.83	68.20	-21.37	peak



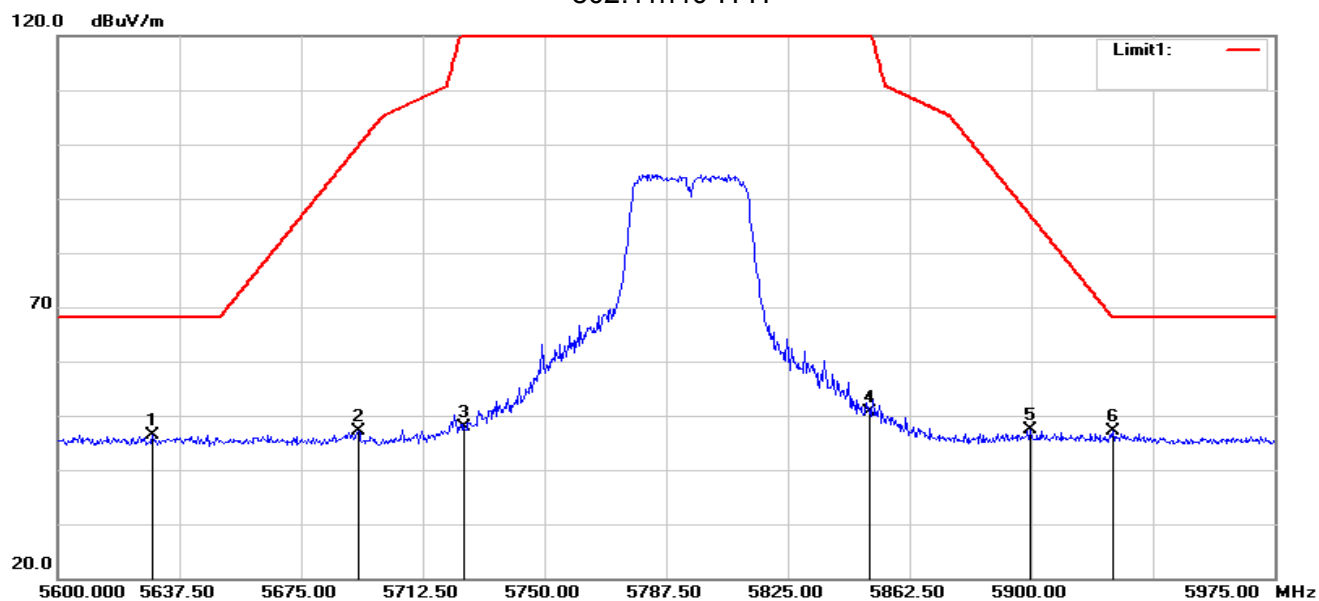
802.11n40-L-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5639.375	51.13	-4.69	46.44	68.20	-21.76	peak
2	5697.875	56.59	-4.66	51.93	103.63	-51.70	peak
3	5725.000	71.32	-4.57	66.75	122.20	-55.45	peak
4	5850.000	49.13	-4.10	45.03	122.20	-77.17	peak
5	5901.500	50.72	-3.88	46.84	85.59	-38.75	peak
6	5929.250	50.64	-3.93	46.71	68.20	-21.49	peak



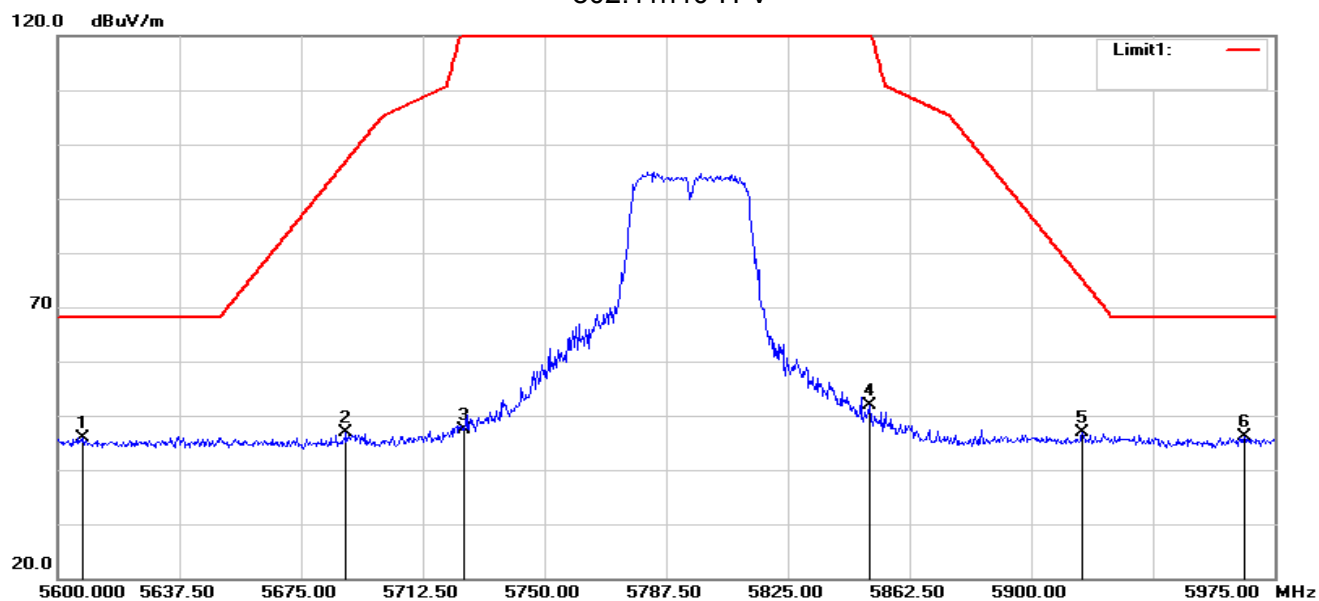
802.11n40-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5629.250	51.12	-4.69	46.43	68.20	-21.77	peak
2	5692.625	51.67	-4.66	47.01	99.74	-52.73	peak
3	5725.000	52.33	-4.57	47.76	122.20	-74.44	peak
4	5850.000	54.83	-4.10	50.73	122.20	-71.47	peak
5	5899.625	51.19	-3.88	47.31	86.98	-39.67	peak
6	5925.125	50.93	-3.92	47.01	68.20	-21.19	peak



802.11n40-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5607.875	50.62	-4.70	45.92	68.20	-22.28	peak
2	5688.875	51.64	-4.67	46.97	96.97	-50.00	peak
3	5725.000	51.88	-4.57	47.31	122.20	-74.89	peak
4	5850.000	55.91	-4.10	51.81	122.20	-70.39	peak
5	5915.750	50.70	-3.90	46.80	75.05	-28.25	peak
6	5965.625	50.18	-4.00	46.18	68.20	-22.02	peak

Note: All modes have been tested. Only the worst mode shown in the report.



4. POWER SPECTRAL DENSITY TEST

4.1 LIMIT

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.

4.2 TEST PROCEDURE

1. The setting follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set span to encompass the EBW
3. Set RBW = 1MHz.
4. Set the VBW $\geq$ 3MHz.
5. Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW}/2$, so that narrowband signals are not lost between frequency bins.)
6. Sweep time = auto.
7. Detector = power averaging (rms), if available. Otherwise, use sample detector mode
8. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.

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 Power Density (dBm)	Duty cycle factor (dB)	Final Power Density (dBm)	Limit (dBm)	Result
802.11a					
5180	-4.770	0.544	-4.226	11	PASS
5200	-3.577	0.544	-3.033	11	PASS
5240	-3.223	0.544	-2.679	11	PASS
802.11n20					
5180	-4.970	0.544	-4.426	11	PASS
5200	-4.055	0.544	-3.511	11	PASS
5240	-3.768	0.544	-3.224	11	PASS
802.11n40					
5190	-8.742	1.109	-7.633	11	PASS
5230	-8.412	1.109	-7.303	11	PASS

5250-5350MHz					
Frequency	Direct measurement Power Density (dBm)	Duty cycle factor (dB)	Final Power Density (dBm)	Limit (dBm)	Result
802.11a					
5260	-2.219	0.504	-1.715	11	PASS
5300	-2.228	0.504	-1.724	11	PASS
5320	-2.118	0.504	-1.614	11	PASS
802.11n20					
5260	-2.942	0.546	-2.396	11	PASS
5300	-2.916	0.546	-2.370	11	PASS
5320	-2.316	0.546	-1.770	11	PASS
802.11n40					
5270	-7.540	1.105	-6.435	11	PASS
5310	-6.714	1.105	-5.609	11	PASS



5470-5725MHz					
Frequency	Direct measurement Power Density (dBm)	Duty cycle factor (dB)	Final Power Density (dBm)	Limit (dBm)	Result
802.11a					
5500	-0.675	0.544	-0.131	11	PASS
5580	-2.545	0.544	-2.001	11	PASS
5700	-3.906	0.544	-3.362	11	PASS
802.11n20					
5500	-0.867	0.566	-0.301	11	PASS
5580	-2.988	0.566	-2.422	11	PASS
5700	-3.961	0.566	-3.395	11	PASS
802.11n40					
5510	-4.588	1.083	-3.505	11	PASS
5550	-5.721	1.083	-4.638	11	PASS
5670	-7.984	1.083	-6.901	11	PASS

5725-5850MHz						
Frequency	Use RBW 510KHz direct measurement Direct measurement Power Density (dBm)	Convert to RBW 500KHz direct measurement Power Density (dBm)	Duty cycle factor (dB)	Final Power Density (dBm)	Limit (dBm/500KHz)	Result
802.11a						
5745	-6.652	-6.738	0.520	-6.218	30	PASS
5785	-6.414	-6.500	0.520	-5.980	30	PASS
5825	-6.472	-6.558	0.520	-6.038	30	PASS
802.11n20						
5745	-7.194	-7.280	0.524	-6.756	30	PASS
5785	-6.798	-6.884	0.524	-6.360	30	PASS
5825	-6.496	-6.582	0.524	-6.058	30	PASS
802.11n40						
5755	-9.510	-9.596	1.094	-8.502	30	PASS
5795	-9.579	-9.665	1.094	-8.571	30	PASS

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

2. 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	21.97	Pass
5200	21.78	Pass
5240	22.11	Pass
802.11n(HT20)		
5180	21.94	Pass
5200	21.70	Pass
5240	22.32	Pass
802.11n(HT40)		
5190	43.69	Pass
5230	43.13	Pass

Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5260	22.01	Pass
5300	22.04	Pass
5320	22.30	Pass
802.11n(HT20)		
5260	22.43	Pass
5300	22.46	Pass
5320	22.24	Pass
802.11n(HT40)		
5270	42.77	Pass
5310	43.31	Pass

Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5500	21.75	Pass
5580	21.79	Pass
5700	21.73	Pass
802.11n(HT20)		
5500	22.17	Pass
5580	22.01	Pass
5700	23.17	Pass
802.11n(HT40)		
5510	42.94	Pass
5550	42.93	Pass
5670	43.56	Pass



Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5745	21.67	Pass
5785	21.59	Pass
5825	21.79	Pass
802.11n(HT20)		
5745	22.22	Pass
5785	21.88	Pass
5825	21.97	Pass
802.11n(HT40)		
5755	44.09	Pass
5795	42.40	Pass

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	17.81	Pass
5200	16.70	Pass
5240	16.72	Pass
802.11n(HT20)		
5180	17.81	Pass
5200	16.73	Pass
5240	17.81	Pass
802.11n(HT40)		
5190	36.15	Pass
5230	36.17	Pass

Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5260	16.73	Pass
5300	16.72	Pass
5320	16.71	Pass
802.11n(HT20)		
5260	17.79	Pass
5300	17.85	Pass
5320	17.82	Pass
802.11n(HT40)		
5270	36.11	Pass
5310	36.13	Pass

Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5500	16.74	Pass
5580	16.71	Pass
5700	16.71	Pass
802.11n(HT20)		
5500	17.80	Pass
5580	17.80	Pass
5700	17.81	Pass
802.11n(HT40)		
5510	36.14	Pass
5550	36.14	Pass
5670	36.11	Pass



Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5745	16.71	Pass
5785	16.70	Pass
5825	16.71	Pass
802.11n(HT20)		
5745	17.82	Pass
5785	17.81	Pass
5825	17.81	Pass
802.11n(HT40)		
5755	36.18	Pass
5795	36.13	Pass

Test plot See Attachment B.



5.3 MINIMUM EMISSION BANDWIDTH(6 DB) PROCEDURES / LIMIT

Section 15.407(e) specifies 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	16.38	Pass
5785	16.41	Pass
5825	16.39	Pass
802.11n(HT20)		
5745	17.61	Pass
5785	17.62	Pass
5825	17.60	Pass
802.11n(HT40)		
5755	35.19	Pass
5795	35.17	Pass

Test plots see Attachment C.





6. MAXIMUM CONDUCTED OUTPUT POWER

6.1 LIMIT

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	

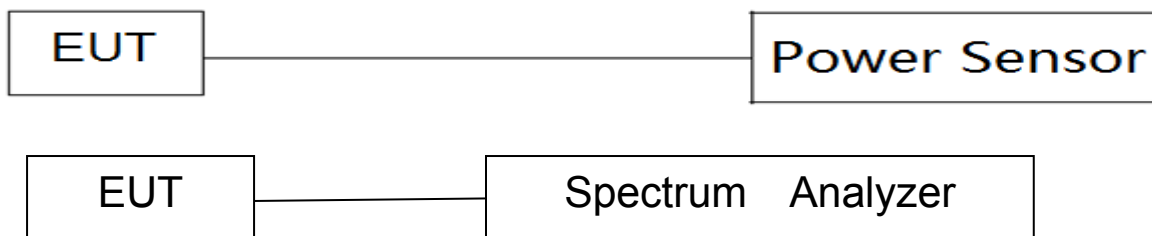
6.2 TEST PROCEDURE

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 AV Power (dBm)	Duty cycle factor (dB)	Final AV Power (dBm)	LIMIT (dBm)
802.11a					
36	5180	7.97	0.544	8.51	23.98
40	5200	7.86	0.544	8.40	23.98
48	5240	7.92	0.544	8.46	23.98
802.11n(HT20)					
36	5180	7.98	0.544	8.52	23.98
40	5200	7.88	0.544	8.42	23.98
48	5240	7.94	0.544	8.48	23.98
802.11n(HT40)					
38	5190	8.01	1.109	9.12	23.98
46	5230	7.58	1.109	8.69	23.98

Band II(5.25-5.35GHz)					
Test Channel	Frequency (MHz)	Direct measurement AV Power (dBm)	Duty cycle factor (dB)	Final AV Power (dBm)	LIMIT (dBm)
802.11a					
52	5260	8.44	0.504	8.94	23.98
60	5300	8.66	0.504	9.16	23.98
64	5320	8.79	0.504	9.29	23.98
802.11n(HT20)					
52	5260	8.43	0.546	8.98	23.98
60	5300	8.68	0.546	9.23	23.98
64	5320	8.75	0.546	9.30	23.98
802.11n(HT40)					
54	5270	7.14	1.105	8.24	23.98
62	5310	7.73	1.105	8.83	23.98



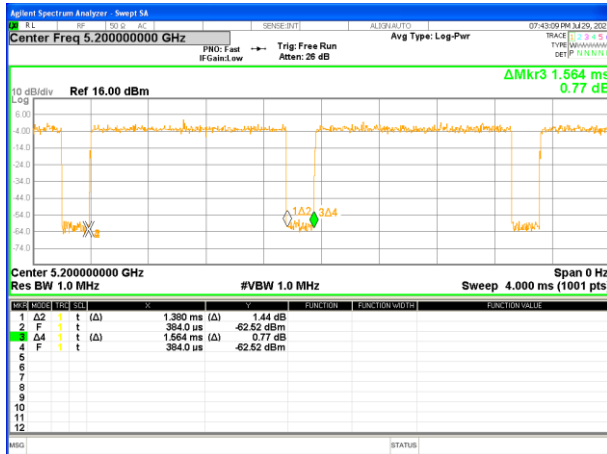
Band III(5.47-5.725GHz)					
Test Channel	Frequency (MHz)	Direct measurement AV Power (dBm)	Duty cycle factor (dB)	Final AV Power (dBm)	LIMIT (dBm)
802.11a					
100	5500	9.61	0.544	10.15	23.98
116	5580	9.12	0.544	9.66	23.98
140	5700	8.53	0.544	9.07	23.98
802.11n(HT20)					
100	5500	9.65	0.566	10.22	23.98
116	5580	9.06	0.566	9.63	23.98
140	5700	8.54	0.566	9.11	23.98
802.11n(HT40)					
102	5510	9.64	1.083	10.72	23.98
110	5550	8.83	1.083	9.91	23.98
134	5670	8.02	1.083	9.10	23.98

Band IV (5.725-5.85GHz)					
Test Channel	Frequency (MHz)	Direct measurement AV Power (dBm)	Duty cycle factor (dB)	Final AV Power (dBm)	LIMIT (dBm)
802.11a					
149	5745	8.96	0.520	9.48	30.00
157	5785	8.98	0.520	9.50	30.00
165	5825	9.16	0.520	9.68	30.00
802.11n(HT20)					
149	5745	8.95	0.524	9.47	30.00
157	5785	9.00	0.524	9.52	30.00
165	5825	9.15	0.524	9.67	30.00
802.11n(HT40)					
151	5755	8.96	1.094	10.05	30.00
159	5795	9.11	1.094	10.20	30.00



Duty Cycle

Band1				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.380	1.564	88.24%	0.544
n20	1.288	1.460	88.22%	0.544
n40	0.646	0.834	77.46%	1.109
Band2				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.300	1.460	89.04%	0.504
n20	1.284	1.456	88.19%	0.546
n40	0.642	0.828	77.54%	1.105
Band3				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.380	1.564	88.24%	0.544
n20	1.292	1.472	87.77%	0.566
n40	0.650	0.834	77.94%	1.083
Band4				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.384	1.560	88.72%	0.520
n20	1.372	1.548	88.63%	0.524
n40	0.642	0.826	77.72%	1.094



Band 1-a20



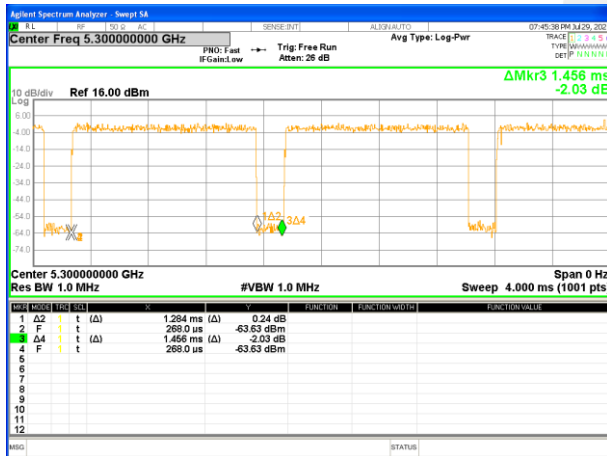
Band 1-n20



Band 1-n40



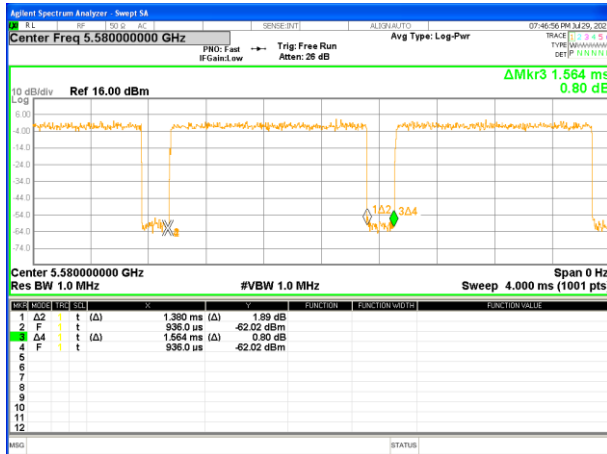
Band 2-a20



Band 2-n20



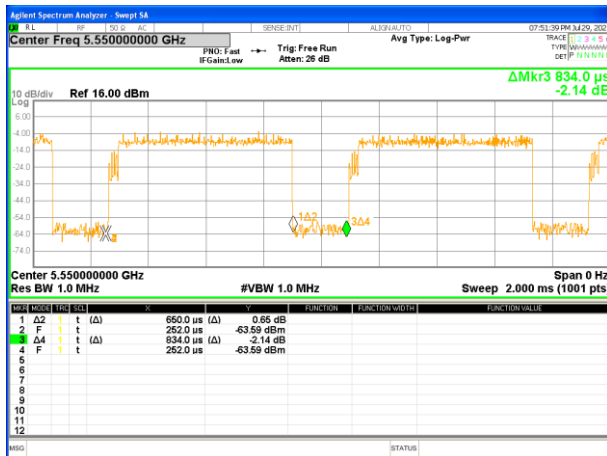
Band 2-n40



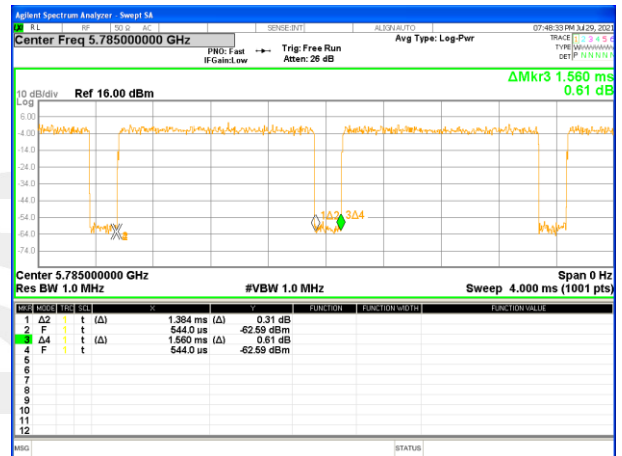
Band 3-a20



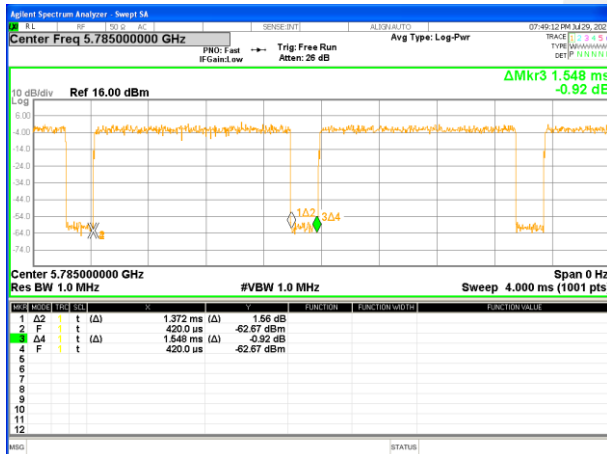
Band 3-n20



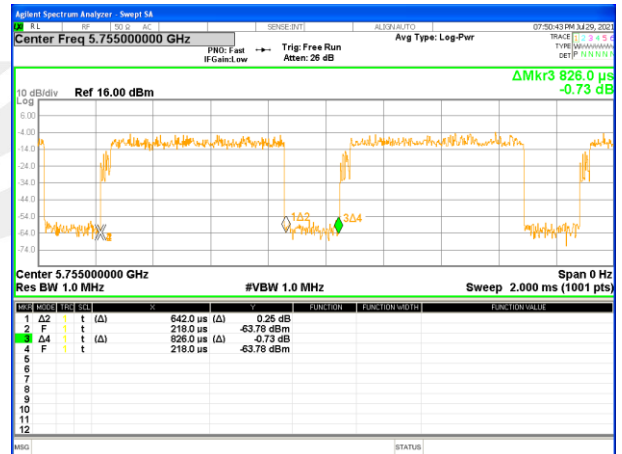
Band 3-n20



Band 4-a20



Band 4-n20



Band 4-n40



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 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2 EUT ANTENNA

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





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※※※※※

