

# TEST REPORT

<b>Application No.:</b>	KSCR2409001776AT
<b>FCC ID:</b>	2AQQMLBAIRBOX
<b>IC:</b>	27586-LBAIRBOX
<b>Applicant:</b>	Zhejiang Libiao Robotics Co., Ltd.
<b>Address of Applicant:</b>	No.96,Changda Road,Linping Street,Linping District,Hangzhou City,Zhejiang Province,China
<b>Manufacturer:</b>	Zhejiang Libiao Robotics Co., Ltd.
<b>Address of Manufacturer:</b>	No.96,Changda Road,Linping Street,Linping District,Hangzhou City,Zhejiang Province,China
<b>Factory:</b>	Zhejiang Libiao Robotics Co., Ltd.
<b>Address of Factory:</b>	No.96,Changda Road,Linping Street,Linping District,Hangzhou City,Zhejiang Province,China
<b>Equipment Under Test (EUT):</b>	
<b>EUT Name:</b>	AirBox
<b>Model No.:</b>	LBAirBox
<b>Trade Mark:</b>	LiBiao
<b>Standard(s) :</b>	47 CFR Part 15, Subpart E 15.407 RSS-247 Issue 3, August 2023 RSS-Gen Issue 5 Amendment 2 (February 2021)
<b>Date of Receipt:</b>	2024-09-09
<b>Date of Test:</b>	2025-04-10 to 2025-04-24
<b>Date of Issue:</b>	2025-04-24
<b>Test Result:</b>	<b>Pass*</b>

\* In the configuration tested, the EUT complied with the standards specified above.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

<b>Revision Record</b>			
<b>Version</b>	<b>Description</b>	<b>Date</b>	<b>Remark</b>
00	Original	2025-04-24	/

Authorized for issue by:			
Tested By		Damon zhou	
		Damon_Zhou/Project Engineer	
Approved By		Terry Hou	
		Terry Hou /Reviewer	

## 2 Test Summary

<b>Radio Spectrum Technical Requirement</b>				
<b>Item</b>	<b>FCC Requirement</b>	<b>IC Requirement</b>	<b>Method</b>	<b>Result</b>
Antenna Requirement	47 CFR Part 15, Subpart C 15.203	RSS-Gen Clause 6.8	N/A	Pass
Transmission in the Absence of Data	47 CFR Part 15, Subpart E 15.407 (c)	RSS-247 Section 6.4(a)	N/A	Pass

N/A: Not applicable

### Radio Spectrum Matter Part

<b>Item</b>	<b>FCC Requirement</b>	<b>IC Requirement</b>	<b>Method</b>	<b>Result</b>
99% Bandwidth	N/A	RSS-Gen Section 6.7	KDB 789033 II D	Pass
26dB Emission bandwidth	47 CFR Part 15, Subpart E 15.407 (a)	RSS-247 Section 6.2.1(1)	KDB 789033 D02 II C 1	Pass
Minimum 6 dB bandwidth (5.725-5.85 GHz band)	47 CFR Part 15, Subpart E 15.407 (e)	RSS-247 Section 6.2.4	KDB 789033 D02 II C 2	Pass
Maximum Conducted output power	47 CFR Part 15, Subpart E 15.407 (a)	RSS-247 Section 6.2.1&6.2.2&6.2.3&6.2.4	KDB 789033 D02 II E	Pass
Peak Power spectrum density	47 CFR Part 15, Subpart E 15.407 (a)	RSS-247 Section 6.2.1&6.2.2&6.2.3&6.2.4	KDB 789033 D02 II F	Pass
Radiated Emissions	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	RSS-247 Section 3.3 & RSS-Gen Section 8.9	KDB 789033 D02 II G	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	RSS-247 Section 3.3 & RSS-Gen Section 8.9	KDB 789033 D02 II G	Pass
Frequency Stability	47 CFR Part 15, Subpart E15.407 (g)	RSS-Gen Section 8.11	ANSI C63.10 (2013) Section 6.8& RSS-Gen Section 6.11	Pass

### 3 Contents

	Page
<b>1 COVER PAGE</b>	<b>1</b>
<b>2 Test Summary</b>	<b>3</b>
<b>3 Contents</b>	<b>4</b>
<b>4 General Information</b>	<b>5</b>
4.1 Details of E.U.T.	5
4.2 Power level setting using in test:	5
4.3 Description of Support Units	5
4.4 Measurement Uncertainty	6
4.5 Test Location	7
4.6 Test Facility	7
4.7 Deviation from Standards	7
4.8 Abnormalities from Standard Conditions	7
<b>5 Equipment List</b>	<b>8</b>
<b>6 Radio Spectrum Technical Requirement</b>	<b>9</b>
6.1 Antenna Requirement	9
6.2 Transmission in the Absence of Data	10
<b>7 Radio Spectrum Matter Test Results</b>	<b>11</b>
7.1 Maximum Conducted output power	11
7.2 Radiated Emissions (Below 1GHz)	12
7.3 Radiated Emissions (Above 1GHz)	16
7.4 Radiated Emissions which fall in the restricted bands	31
7.5 Duty Cycle	48
7.6 99% Bandwidth	49
7.7 26dB Emission bandwidth	50
7.8 Minimum 6 dB bandwidth (5.725-5.85 GHz band )	51
7.9 Peak Power spectrum density	52
7.10 Frequency Stability	53
<b>8 Test Setup Photo</b>	<b>54</b>
<b>9 EUT Constructional Details (EUT Photos)</b>	<b>54</b>
<b>10 Appendix</b>	<b>55</b>

## 4 General Information

### 4.1 Details of E.U.T.

Power supply:	DC 25-29V
Test Voltage:	DC 27V
Operation Frequency/Number of channels (20MHz):	U-NII-1:5180-5240MHz (4 Channels); U-NII-3: 5745-5825MHz (5 Channels)
Modulation Type:	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing:	802.11a/n 20: 20MHz
Antenna Type:	Dipole Antenna
Antenna Gain:	1.11dBi (Provided by the manufacturer)
SN:	18-06-1B-30-C7-70-00
Firmware Version:	F002

### 4.2 Power level setting using in test:

Channel	802.11a	802.11n(HT20)
	Ant 1	Ant 1
36	0	0
40	0	0
48	0	0
149	0	0
157	0	0
165	0	0

### 4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	Lenovo	/	/
DC power supply	/	/	/

#### 4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$8.4 \times 10^{-8}$
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz) 5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz) 4.5dB (30MHz-1GHz) 5.1dB (1GHz-18GHz) 5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

#### 4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
3. Sample source: sent by customer.

#### 4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **A2LA**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC**

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

- **ISED**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

- **VCCI**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

#### 4.7 Deviation from Standards

None

#### 4.8 Abnormalities from Standard Conditions

None

## 5 Equipment List

RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/01/2024	07/31/2025
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/01/2024	07/31/2025
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/15/2025	01/14/2026
4	Signal Generator	R&S	SMBV100B	KSEM032	02/19/2025	02/18/2026
5	Signal Generator	R&S	SMW200A	KSEM020-1	08/02/2024	08/01/2025
6	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/01/2024	07/31/2025
7	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/01/2024	07/31/2025
8	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	02/19/2025	02/18/2026
9	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/13/2024	08/12/2025
10	Switcher	TST	FY562	KUS2001M001-4	01/15/2025	01/14/2026
11	AC Power Source	EXTECH	6605	KS301178	N.C.R	N.C.R
12	DC Power Supply	Agilent	E3632A	KS301180	N.C.R	N.C.R
13	Conducted Test Cable	Thermax	RF01-RF04	CZ301111-CZ301120	01/14/2025	01/13/2026
14	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KSES104904	09/02/2024	09/01/2025
15	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	02/26/2025	02/25/2026
16	Software	BST	TST-PASS	/	NCR	NCR
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	08/06/2024	08/05/2025
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	02/18/2025	02/17/2026
3	Signal Generator	Agilent	E8257C	KS301066	08/06/2024	08/05/2025
4	Loop Antenna	COM-POWER	AL-130R	KUS1806E001	03/01/2025	02/28/2027
5	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E005	06/29/2023	06/28/2025
6	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	03/23/2024	03/22/2026
8	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	01/07/2024	01/06/2026
9	Amplifier(30MHz~18GHz)	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-1	01/15/2025	01/14/2026
10	Amplifier(18~40GHz)	PANSHAN TECHNOLOGY	LNA180400G40	KSEM038	08/12/2024	08/11/2025
11	RE Test Cable	REBES MICROWAVE	/	CZ301097	08/23/2024	08/22/2025
12	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	02/26/2025	02/25/2026
13	Software	Faratronic	EZ_EMCA-3A1	/	NCR	NCR
14	Software	ESE	E3_V 6.111221a	/	NCR	NCR

## 6 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

#### 6.1.2 Conclusion

Standard Requirement:

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

EUT Antenna:

The antenna is dipole antenna and no consideration of replacement. The best case gain of the Antenna is 1.11dBi

Antenna location: Refer to internal photo.

## 6.2 Transmission in the Absence of Data

### 6.2.1 Test Requirement:

47 CFR Part 15, Subpart E 15.407 (c)

### 6.2.2 Conclusion

Conclusion

Standard Requirement:

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 signalling 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 a description of how this requirement is met.

EUT Details:

WIFI chip support automatically discontinue transmission in case of either absence of information to transmit or operational failure, if the chip detect absence of information to transmit or operational failure, it will be automatically shut off.

## 7 Radio Spectrum Matter Test Results

### 7.1 Maximum Conducted output power

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)  
Test Method: KDB 789033 D02 II E

Limit:

Frequency band(MHz)	Limit
5150-5250	≤1W(30dBm) for master device
	≤250mW(24dBm) for client device
5250-5350	≤250mW(24dBm) or 11dBm+10logB*
5470-5725	≤250mW(24dBm) or 11dBm+10logB*
5725-5850	≤1W(30dBm)
Remark:	* Where B is the 26dB emission bandwidth in MHz. The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

#### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 20.6 °C      Humidity: 28.0 % RH      Atmospheric Pressure: 1010 mbar

#### 7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

#### 7.1.3 Measurement Procedure and Data

Note: Since the verify power the same operating range bandwidth and smaller power can be covered by the higher power.

Please Refer to Appendix for Details

## 7.2 Radiated Emissions (Below 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)  
 Test Method: KDB 789033 D02 II G  
 Measurement Distance: 3M

Limit:

Frequency(MHz)	Field strength(microvolts/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
960-1000	500	3

### 7.2.1 E.U.T. Operation

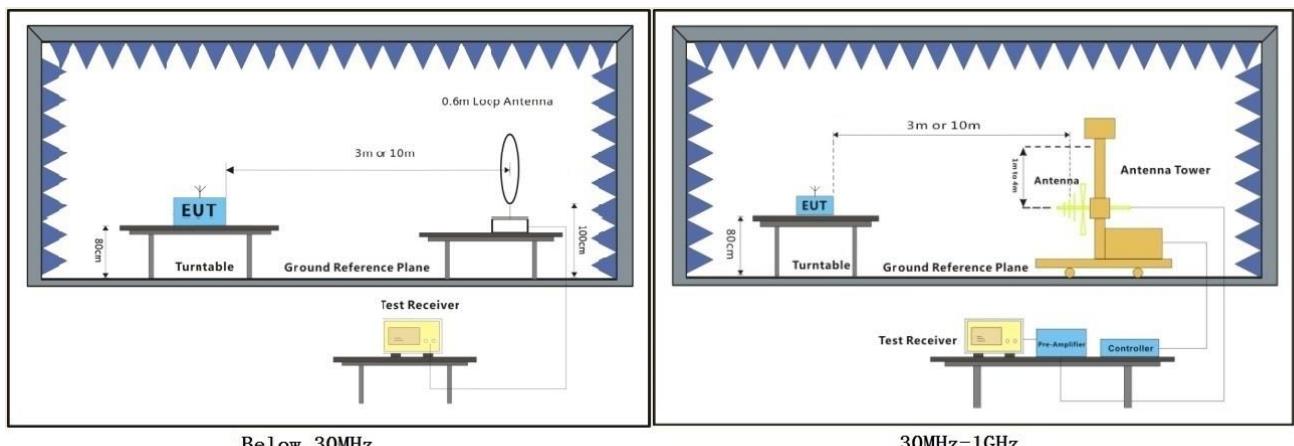
Operating Environment:

Temperature: 23.3 °C      Humidity: 45.6 % RH      Atmospheric Pressure: 1010 mbar

### 7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

### 7.2.3 Test Setup Diagram



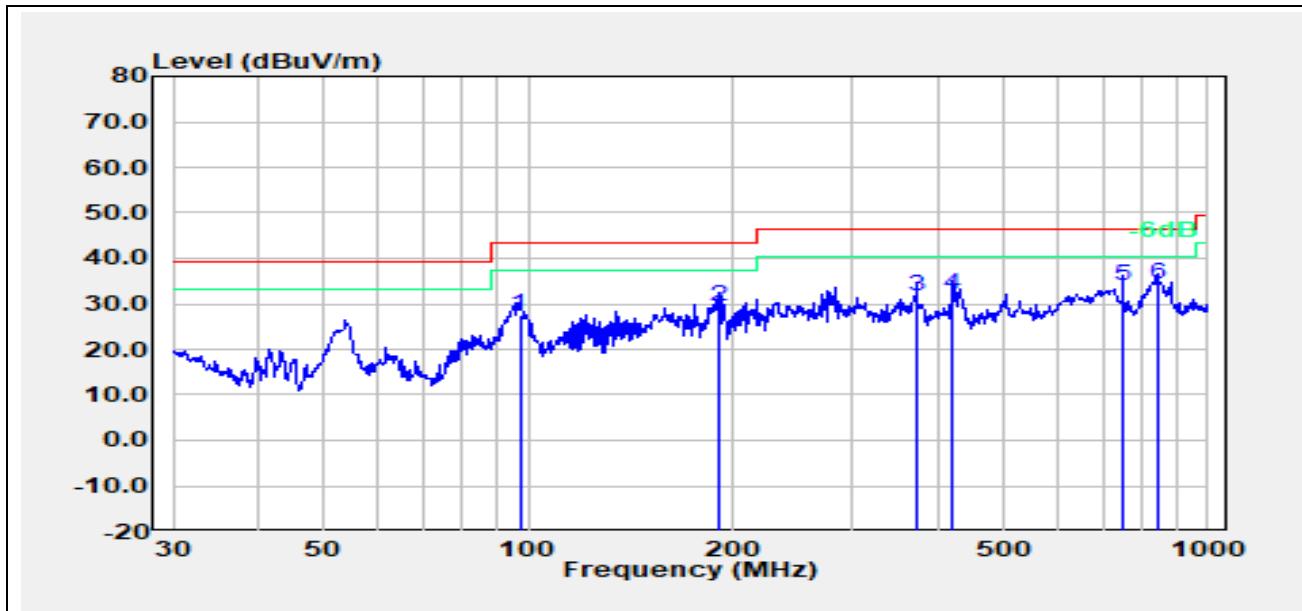
#### 7.2.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

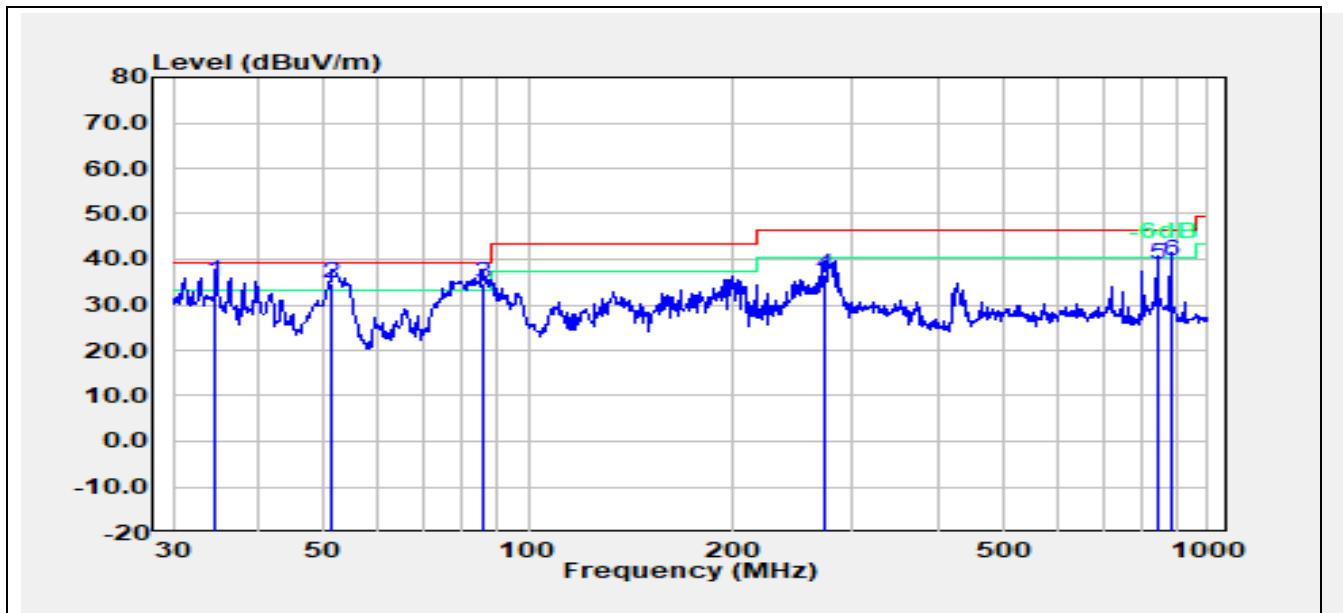
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. For emission below 1GHz, through the pre-scan found the worst case is the lowest channel of 802.11a. Only the worst case is recorded in the report.
3. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
4. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Test Mode: 01; Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	97.12	45.09	-17.58	27.51	43.50	-15.99	100	161	QP
2	190.41	44.26	-14.98	29.28	43.50	-14.22	400	195	QP
3	373.31	42.45	-10.61	31.84	46.40	-14.56	300	226	QP
4	422.06	41.73	-9.49	32.24	46.40	-14.16	100	183	QP
5	750.11	37.94	-3.80	34.14	46.40	-12.26	400	74	QP
6	842.13	36.50	-2.00	34.50	46.40	-11.90	100	201	QP

Test Mode: 01; Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	34.64	47.70	-12.78	34.92	39.10	-4.18	100	209	QP
2	51.48	56.91	-22.16	34.75	39.10	-4.35	300	280	QP
3	85.90	56.13	-21.51	34.62	39.10	-4.48	400	235	QP
4	272.28	52.19	-15.45	36.74	46.40	-9.66	100	66	QP
5	842.13	43.10	-4.24	38.86	46.40	-7.54	200	0	QP
6	881.41	43.22	-3.53	39.69	46.40	-6.71	200	0	QP

### 7.3 Radiated Emissions (Above 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)

Test Method: KDB 789033 D02 II G

Measurement Distance: 3M

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1GHz	500	3

\*(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.

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

#### 7.3.1 E.U.T. Operation

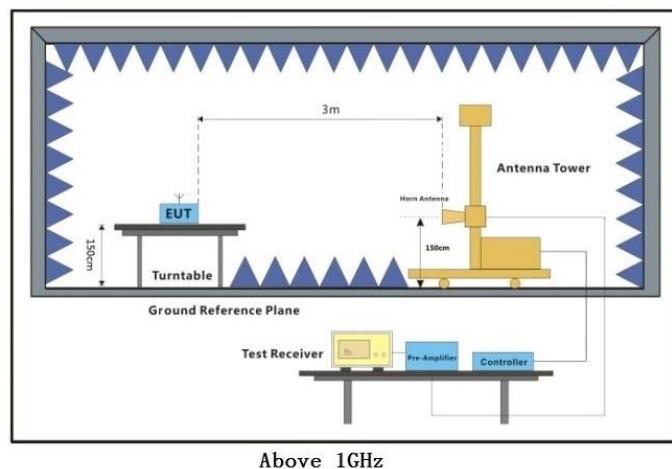
Operating Environment:

Temperature: 23.3 °C      Humidity: 45.6 % RH      Atmospheric Pressure: 1010 mbar

#### 7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

### 7.3.3 Test Setup Diagram



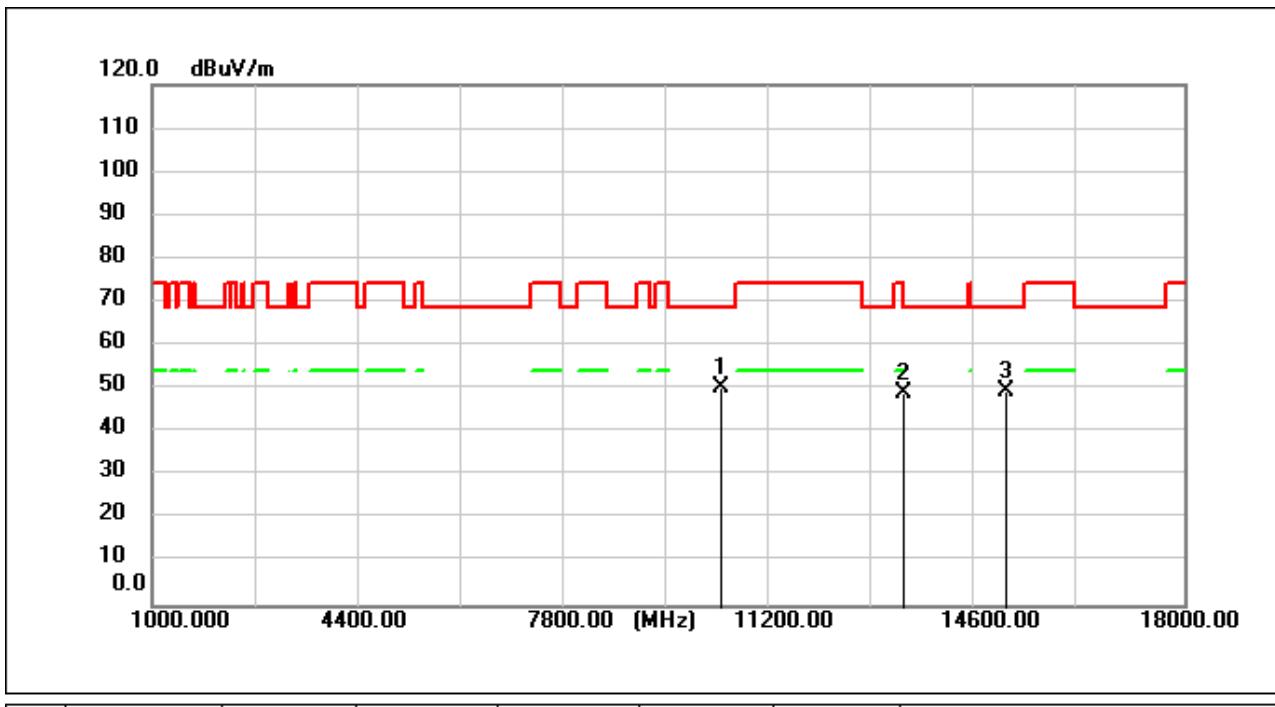
### 7.3.4 Measurement Procedure and Data

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

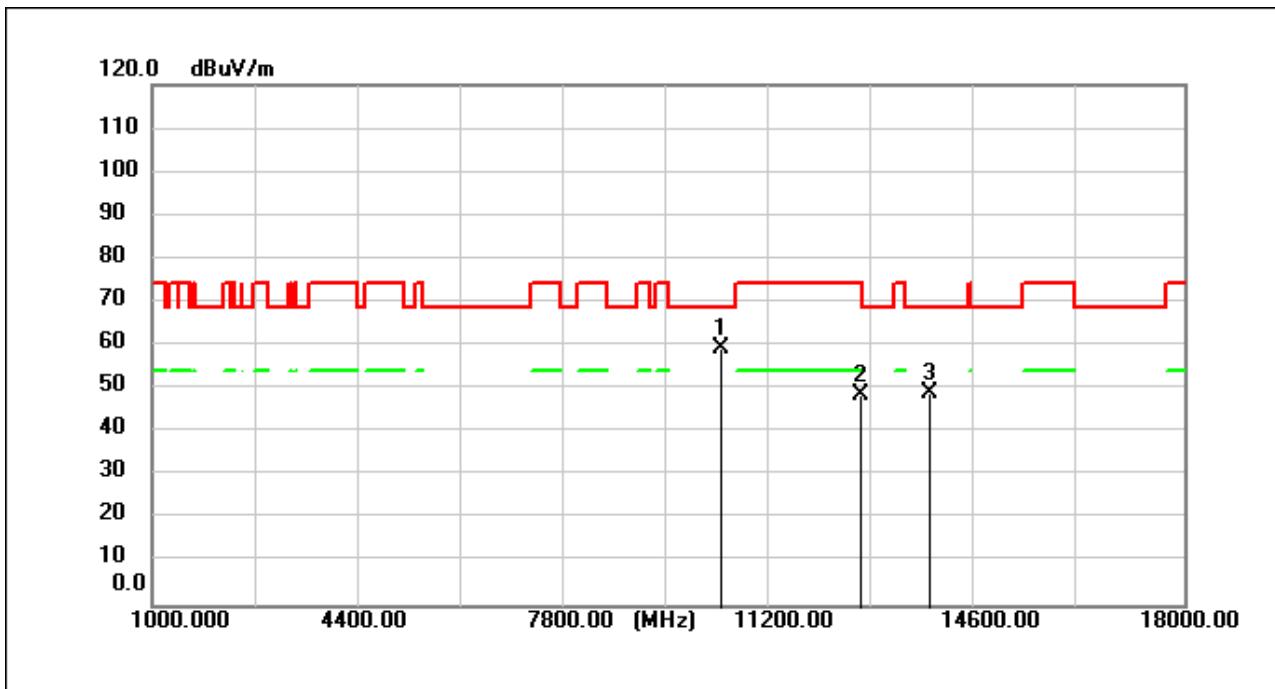
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
5. For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.
6. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
7. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.

Test Mode: 01; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



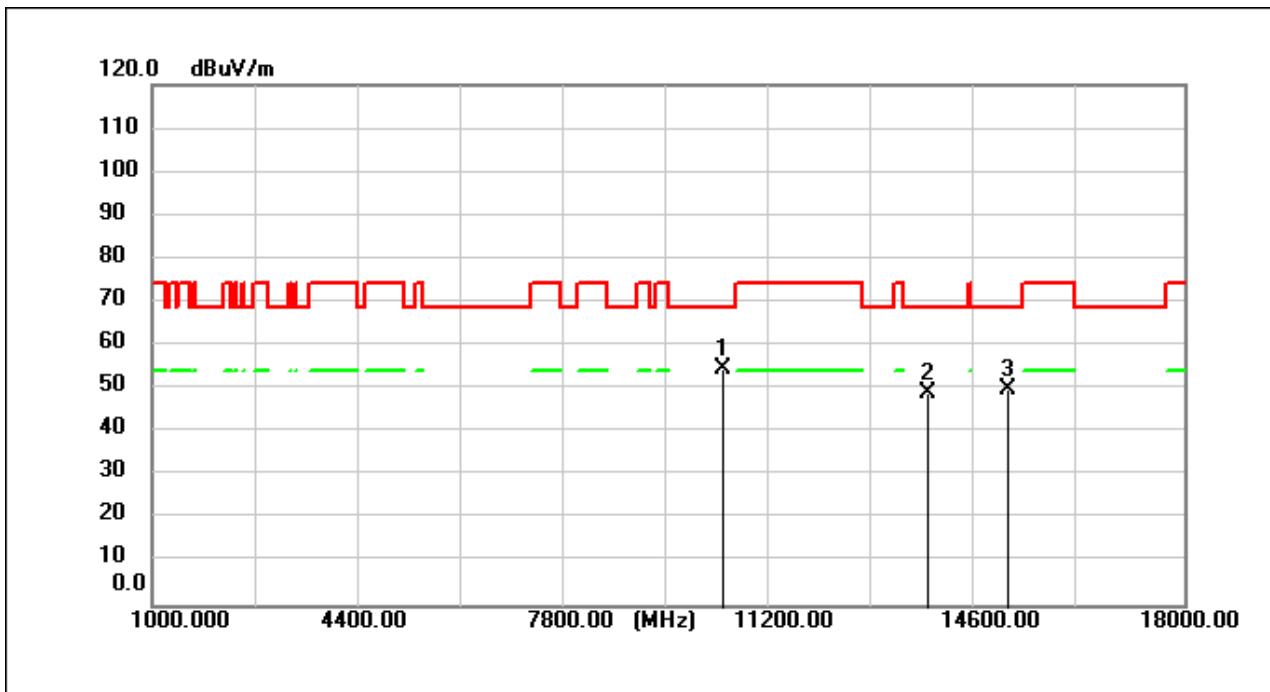
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10361.900	56.07	-5.88	50.19	68.30	-18.11	peak
2	13374.300	54.56	-5.61	48.95	74.00	-25.05	peak
3	15074.300	54.32	-4.64	49.68	68.30	-18.62	peak

Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



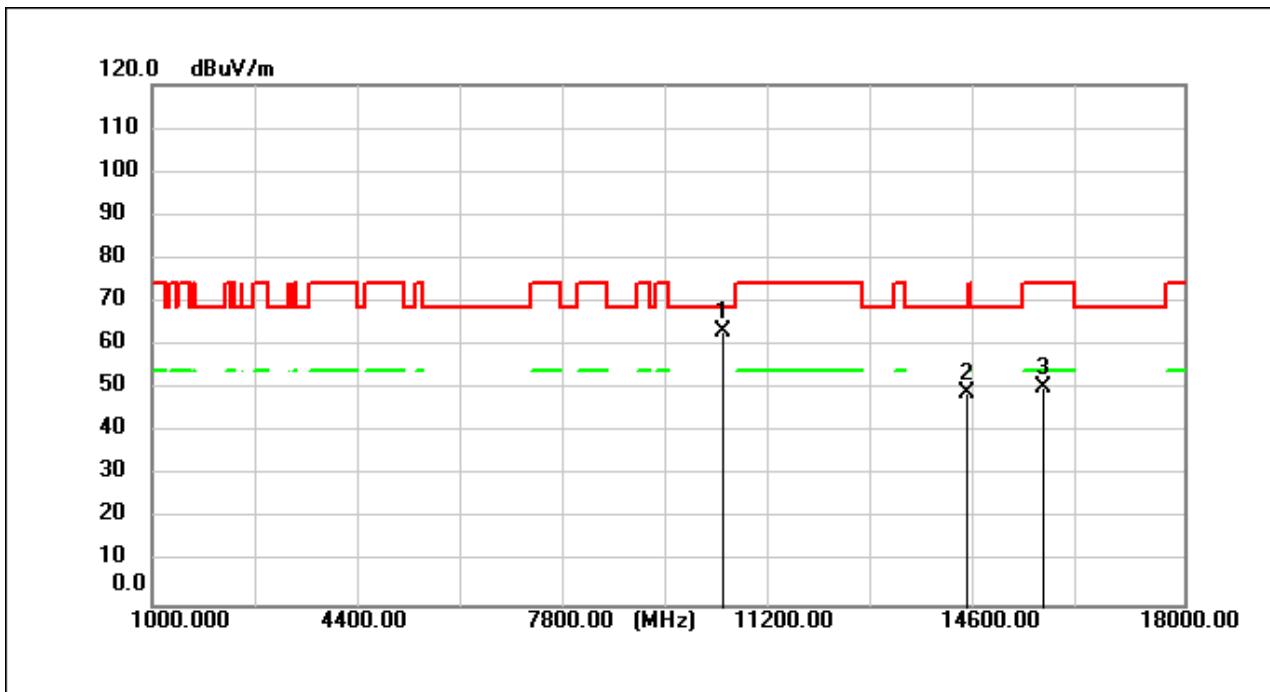
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10355.950	65.08	-5.87	59.21	68.30	-9.09	peak
2	12646.700	54.88	-6.08	48.80	74.00	-25.20	peak
3	13797.600	54.44	-5.39	49.05	68.30	-19.25	peak

Test Mode: 01; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



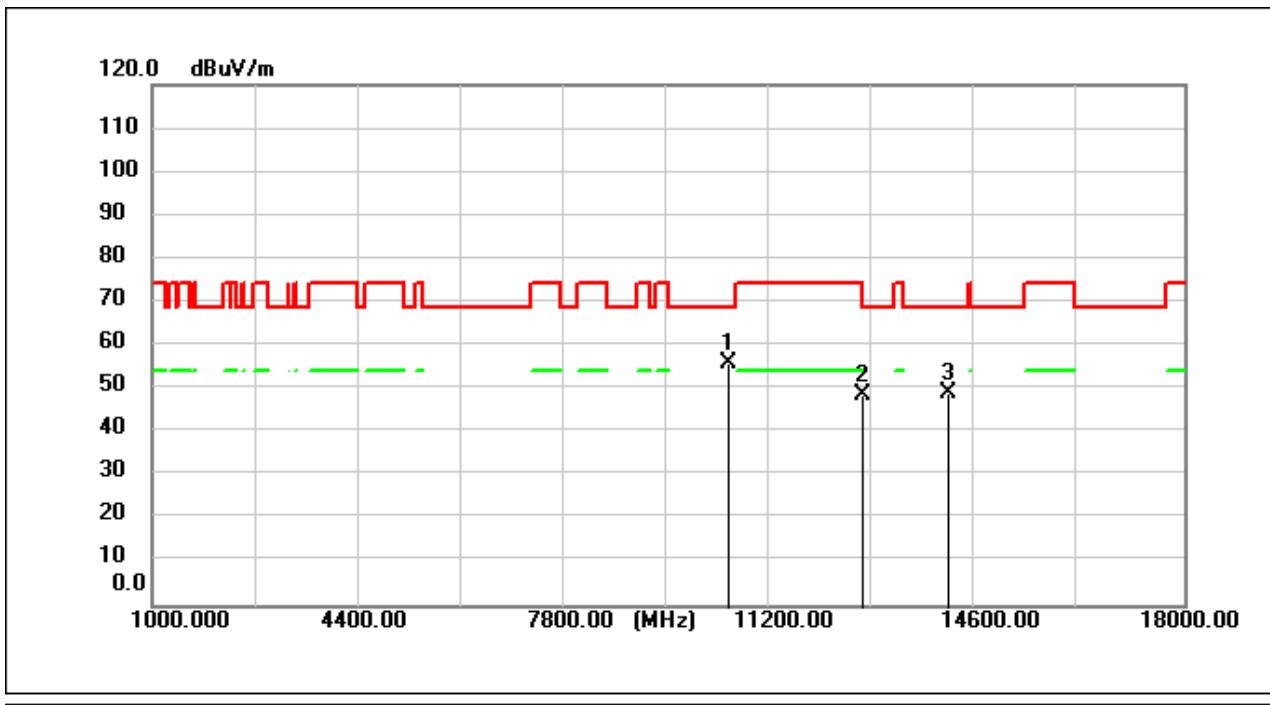
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10397.600	60.68	-5.91	54.77	68.30	-13.53	peak
2	13781.450	54.46	-5.40	49.06	68.30	-19.24	peak
3	15107.450	54.60	-4.58	50.02	68.30	-18.28	peak

Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



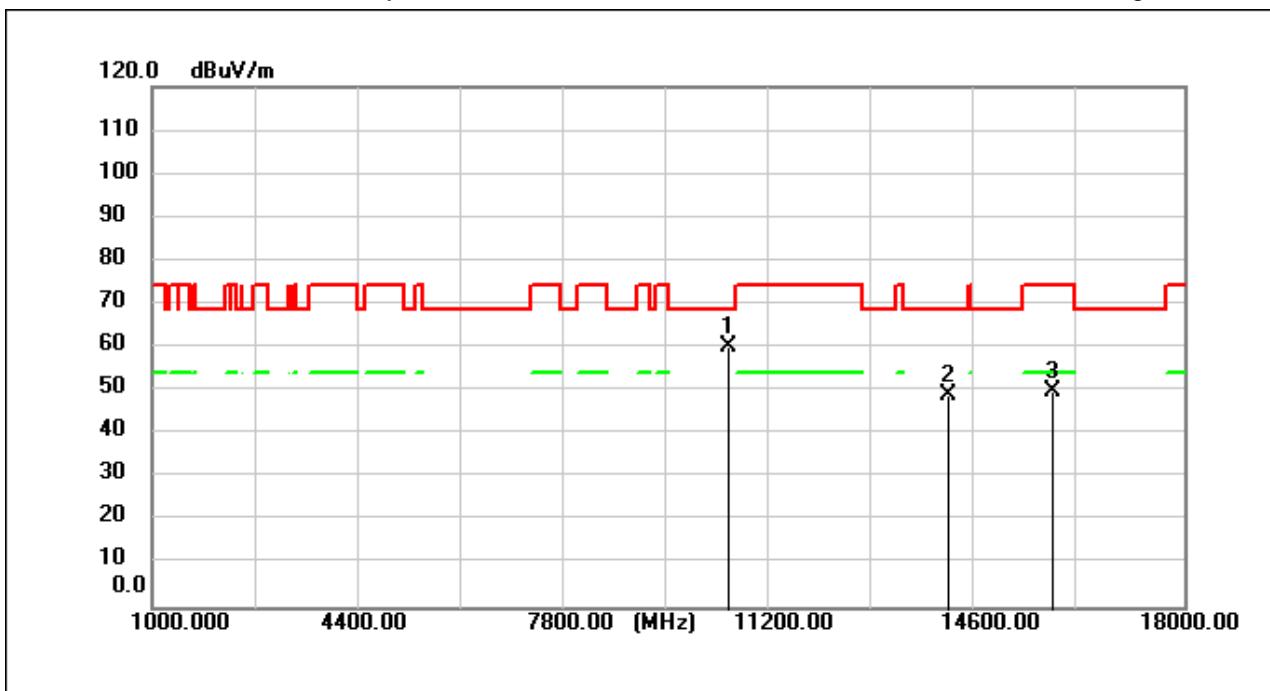
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10400.150	68.93	-5.91	63.02	68.30	-5.28	peak
2	14401.100	54.44	-5.28	49.16	68.30	-19.14	peak
3	15673.550	54.05	-3.64	50.41	74.00	-23.59	peak

Test Mode: 01; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



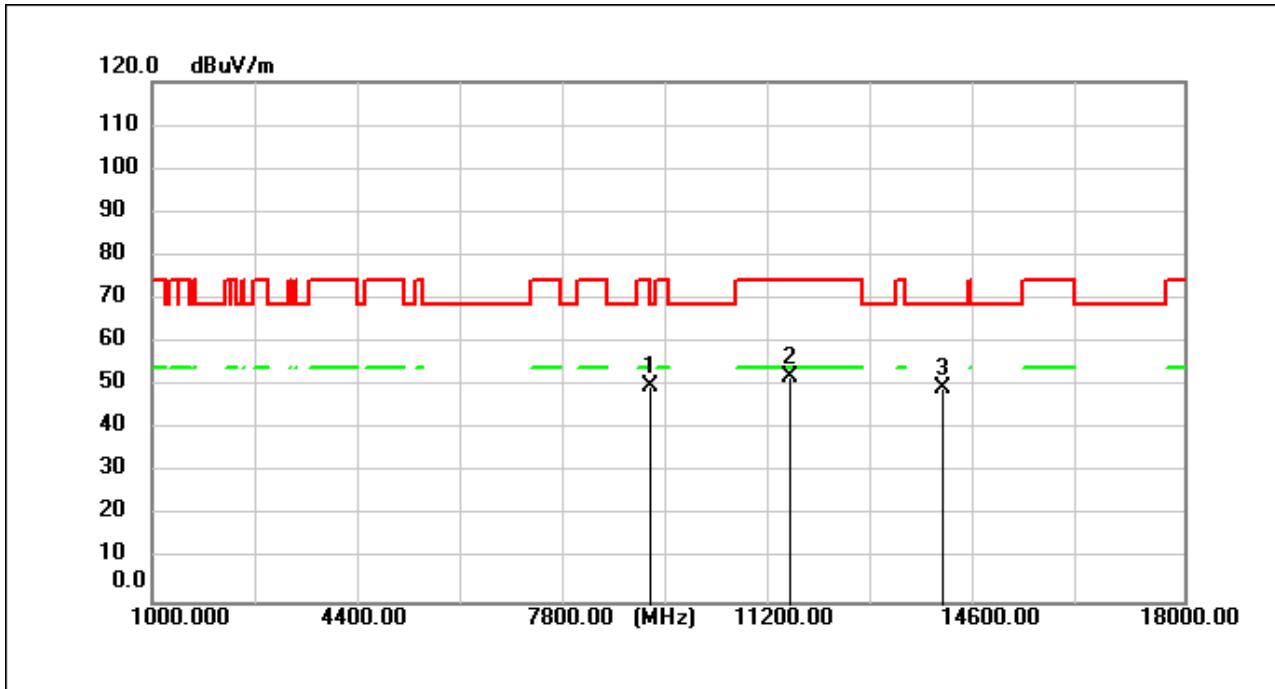
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10480.050	62.11	-5.98	56.13	68.30	-12.17	peak
2	12697.700	54.84	-6.05	48.79	74.00	-25.21	peak
3	14113.800	54.31	-5.29	49.02	68.30	-19.28	peak

Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



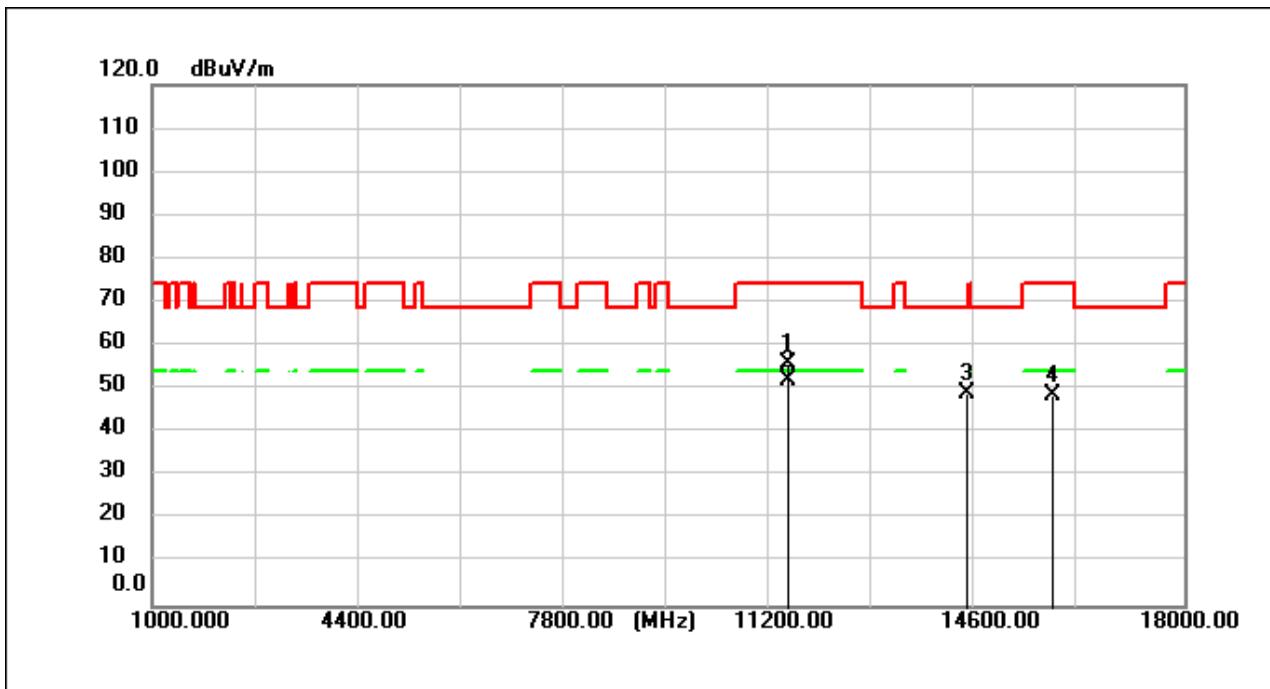
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	10480.050	66.31	-5.98	60.33	68.30	-7.97	peak
2	14101.050	54.39	-5.28	49.11	68.30	-19.19	peak
3	15824.850	53.45	-3.39	50.06	74.00	-23.94	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



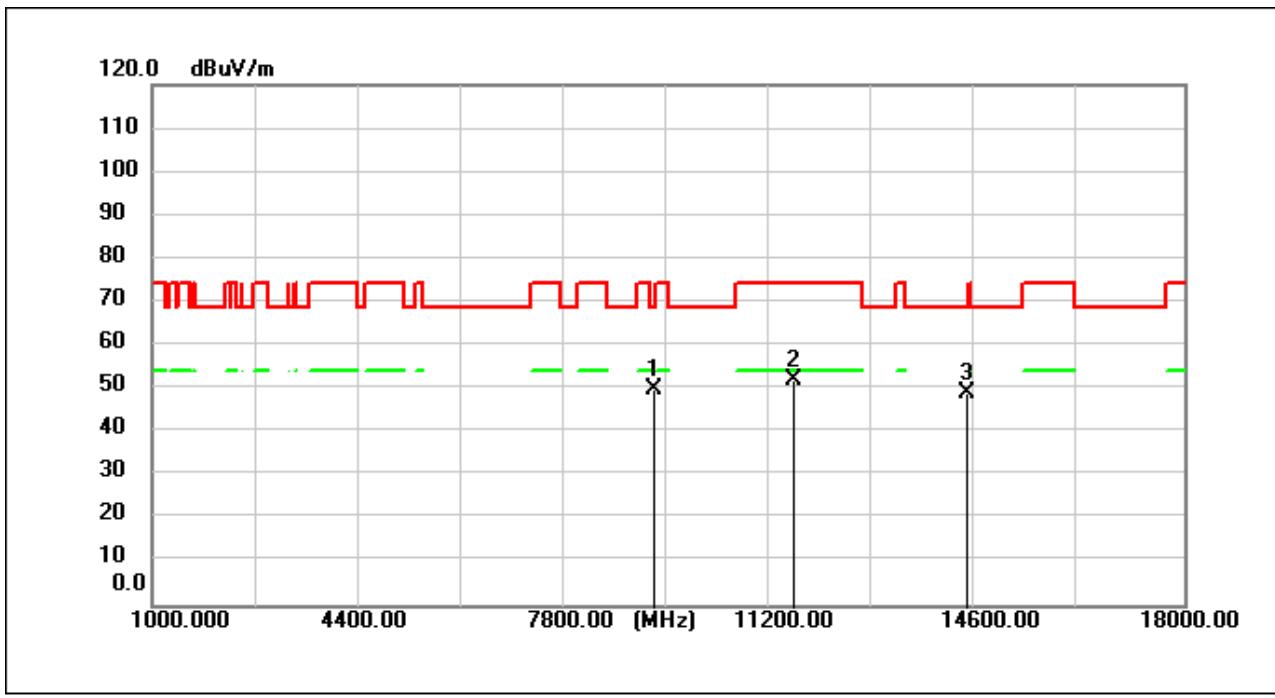
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9191.450	57.19	-7.31	49.88	74.00	-24.12	peak
2	11490.700	58.32	-6.46	51.86	74.00	-22.14	peak
3	14022.850	54.81	-5.29	49.52	68.30	-18.78	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



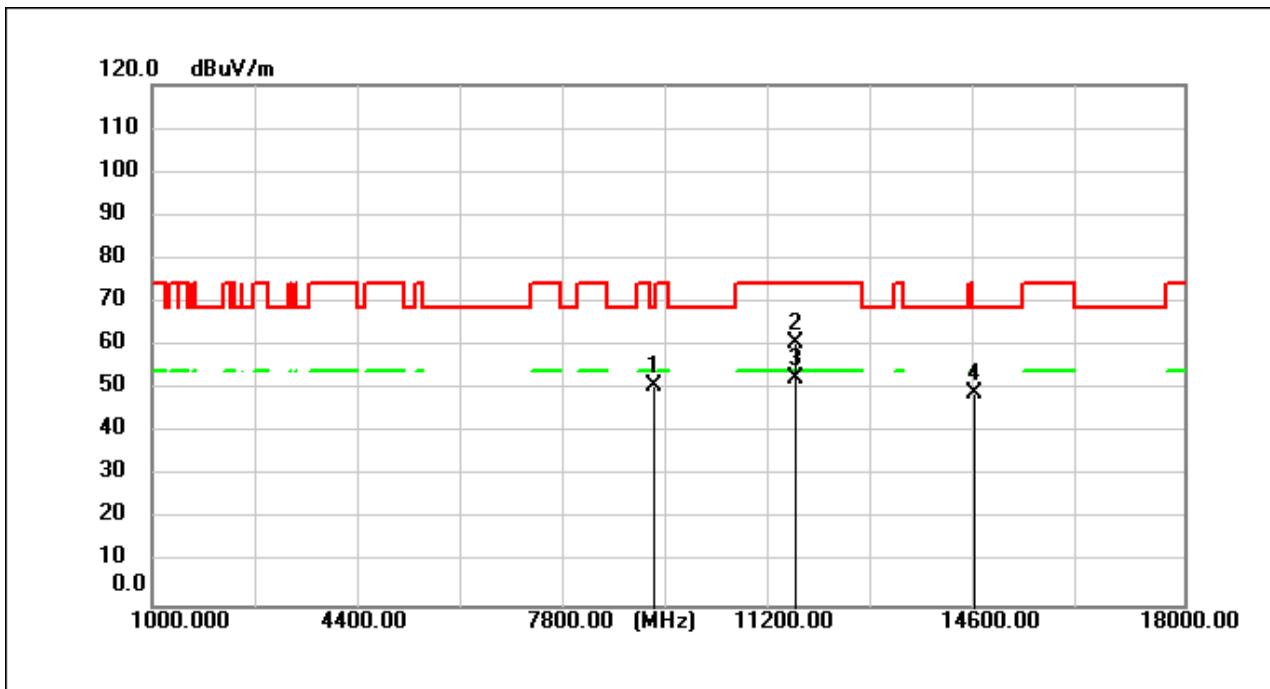
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	11487.300	62.57	-6.46	56.11	74.00	-17.89	peak
2	11487.300	58.39	-6.46	51.93	54.00	-2.07	AVG
3	14397.700	54.29	-5.28	49.01	68.30	-19.29	peak
4	15825.700	52.14	-3.39	48.75	74.00	-25.25	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



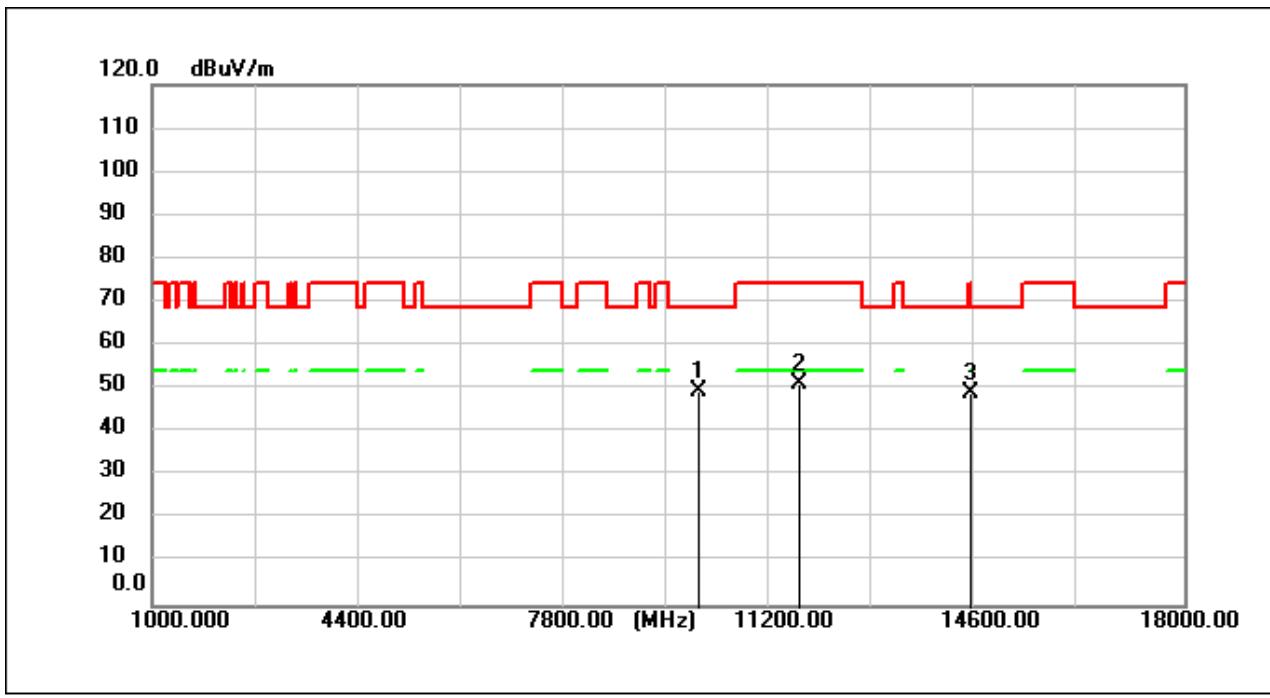
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9256.050	57.13	-7.14	49.99	68.30	-18.31	peak
2	11568.900	58.53	-6.46	52.07	74.00	-21.93	peak
3	14398.550	54.43	-5.28	49.15	68.30	-19.15	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



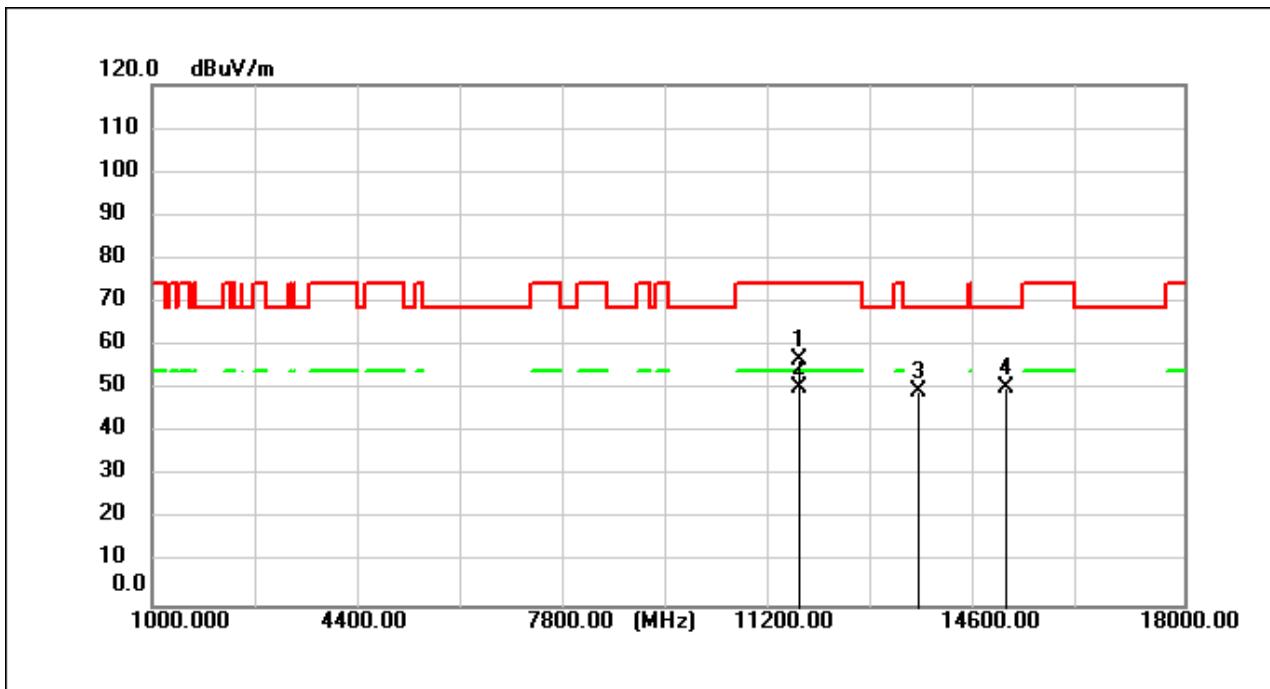
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9256.050	58.12	-7.14	50.98	68.30	-17.32	peak
2	11576.550	67.12	-6.46	60.66	74.00	-13.34	peak
3	11576.550	59.00	-6.46	52.54	54.00	-1.46	AVG
4	14539.650	54.15	-5.17	48.98	68.30	-19.32	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9997.250	55.27	-5.58	49.69	68.30	-18.61	peak
2	11645.400	57.77	-6.47	51.30	74.00	-22.70	peak
3	14475.900	54.34	-5.22	49.12	74.00	-24.88	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	11648.800	63.08	-6.47	56.61	74.00	-17.39	peak
2	11648.800	56.81	-6.47	50.34	54.00	-3.66	AVG
3	13604.650	54.89	-5.49	49.40	68.30	-18.90	peak
4	15074.300	54.87	-4.64	50.23	68.30	-18.07	peak

## 7.4 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)

Test Method: KDB 789033 D02 II G

Measurement Distance: 3M

Limit:

Frequency(MHz)	Field strength(microvolts/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

\*(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.

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

### 7.4.1 E.U.T. Operation

Operating Environment:

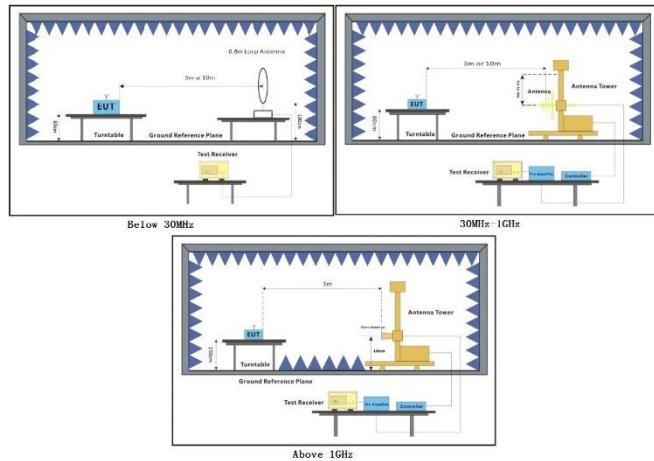
Temperature: 23.3 °C      Humidity: 45.6 % RH      Atmospheric Pressure: 1010 mbar

### 7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only

		the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

#### 7.4.3 Test Setup Diagram



#### 7.4.4 Measurement Procedure and Data

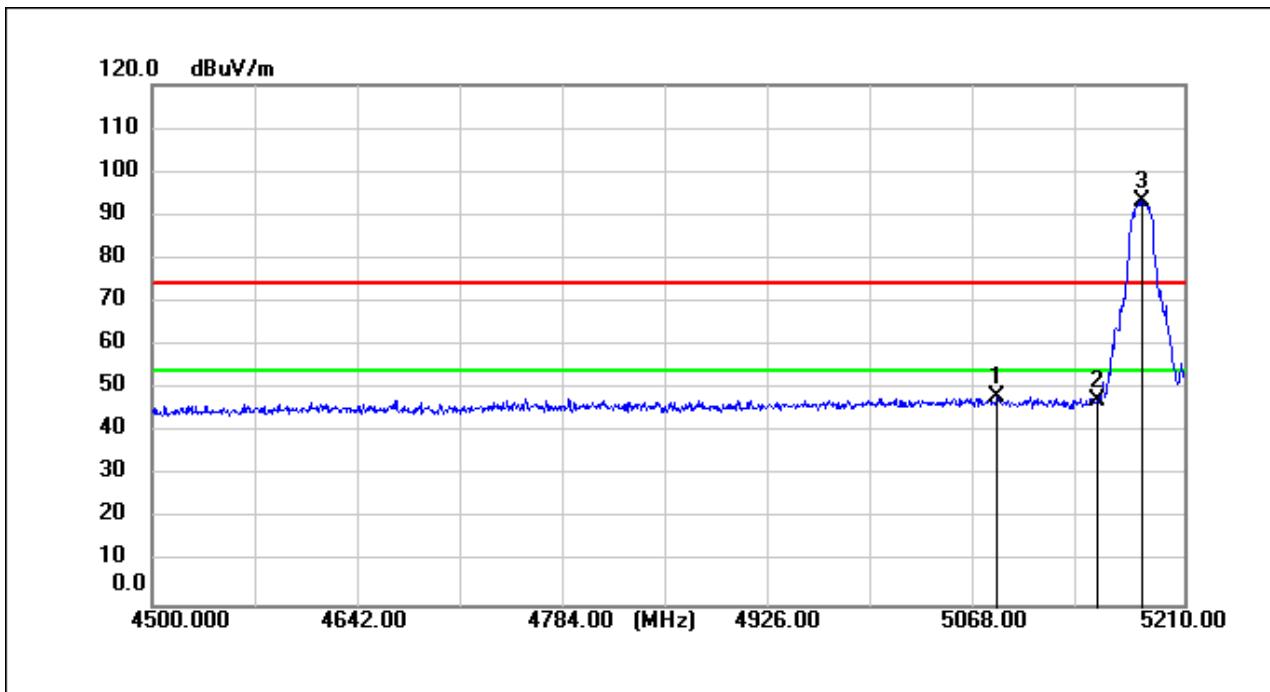
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.

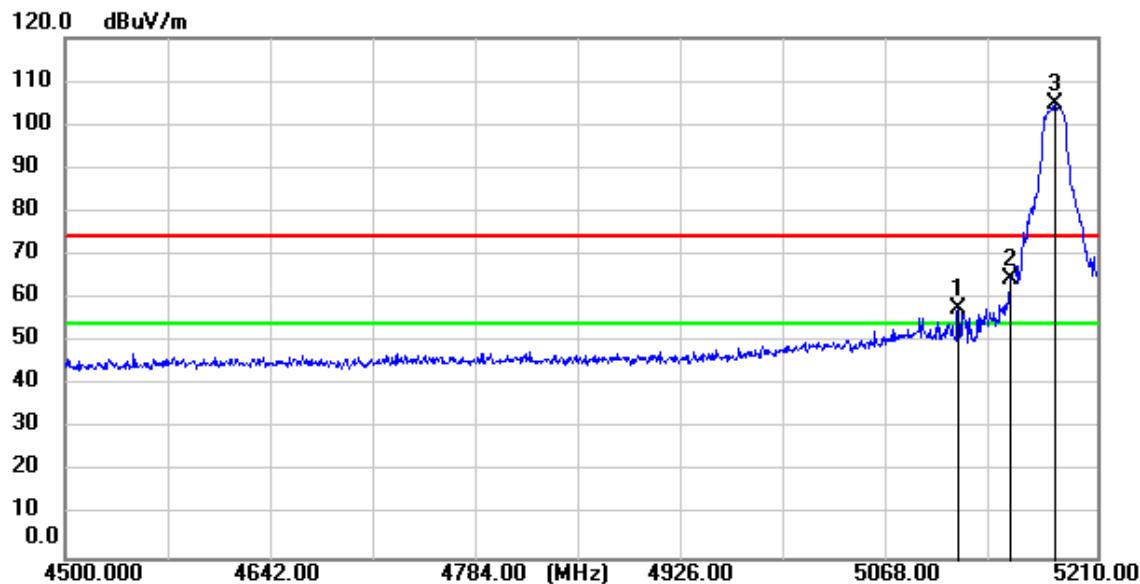
Remark 3. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.

Test Mode: 01; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



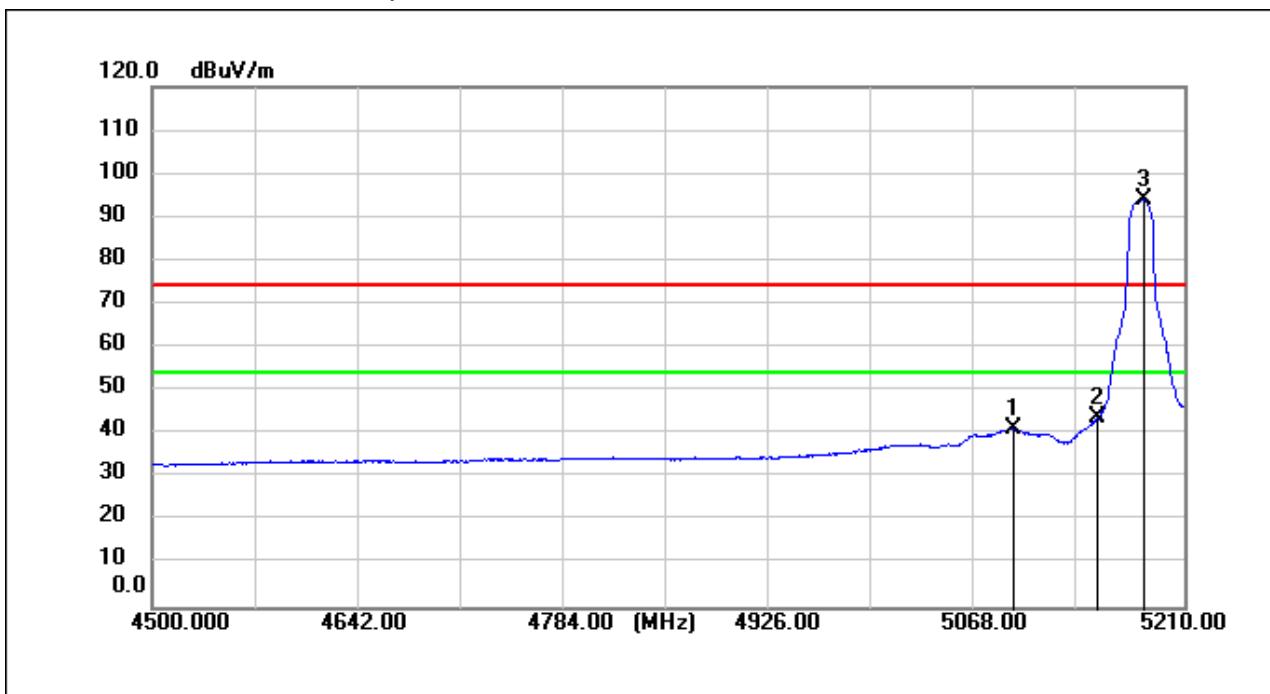
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5081.490	41.15	7.14	48.29	74.00	-25.71	peak
2	5150.000	40.45	7.12	47.57	74.00	-26.43	peak
3	5181.600	86.31	7.10	93.41	74.00	19.41	peak

Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



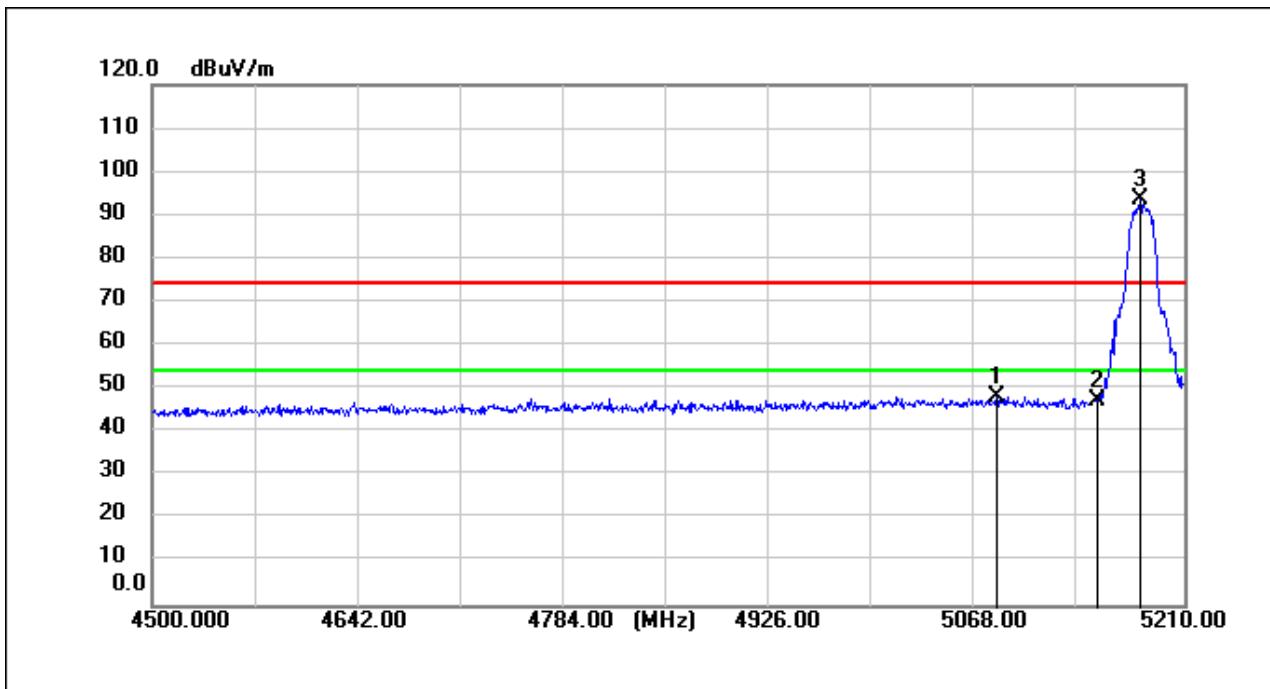
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5114.150	50.53	7.13	57.66	74.00	-16.34	peak
2	5150.000	57.31	7.12	64.43	74.00	-9.57	peak
3	5181.600	97.64	7.10	104.74	74.00	30.74	peak

Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



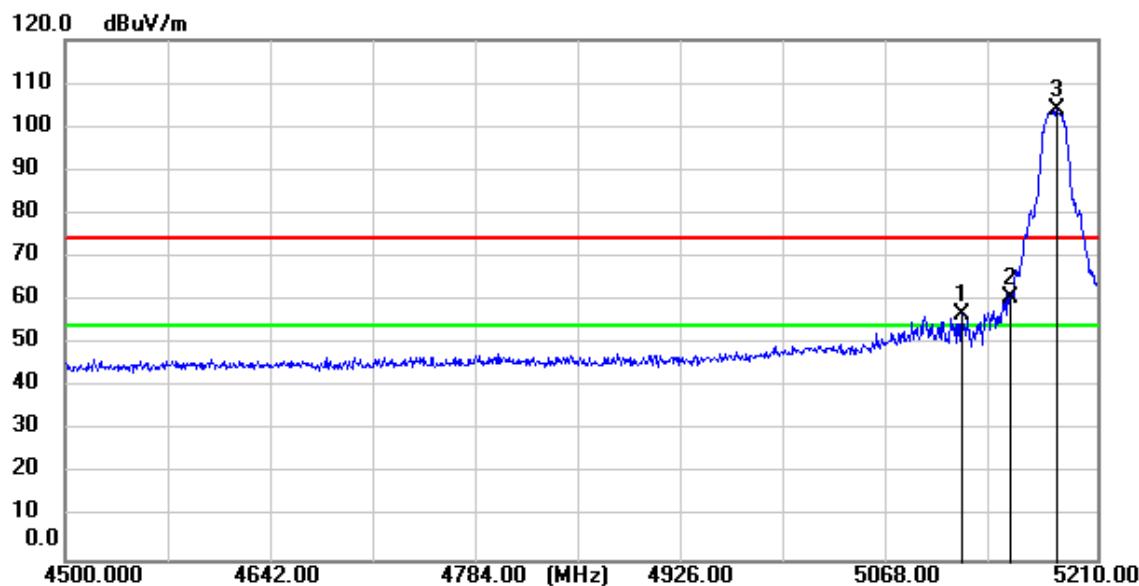
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5092.850	34.17	7.14	41.31	54.00	-12.69	AVG
2	5150.000	36.70	7.12	43.82	54.00	-10.18	AVG
3	5183.020	87.17	7.11	94.28	54.00	40.28	AVG

Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



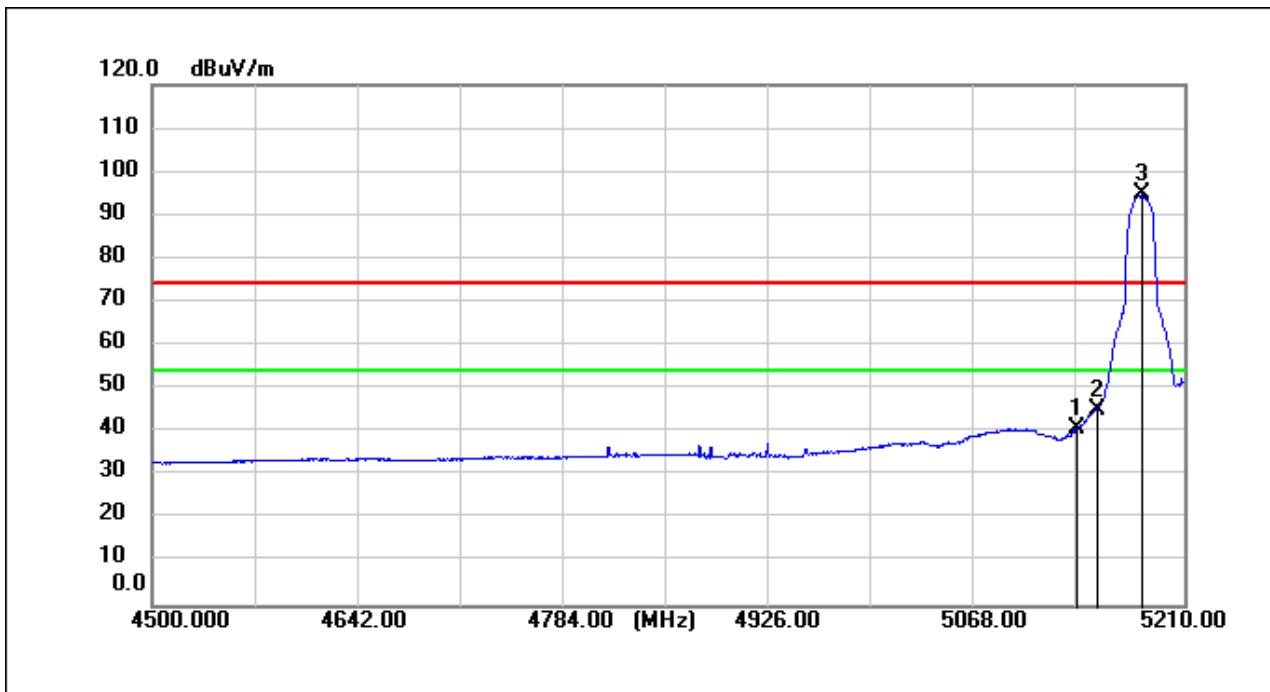
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5080.780	40.98	7.14	48.12	74.00	-25.88	peak
2	5150.000	40.09	7.12	47.21	74.00	-26.79	peak
3	5179.470	86.38	7.11	93.49	74.00	19.49	peak

Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



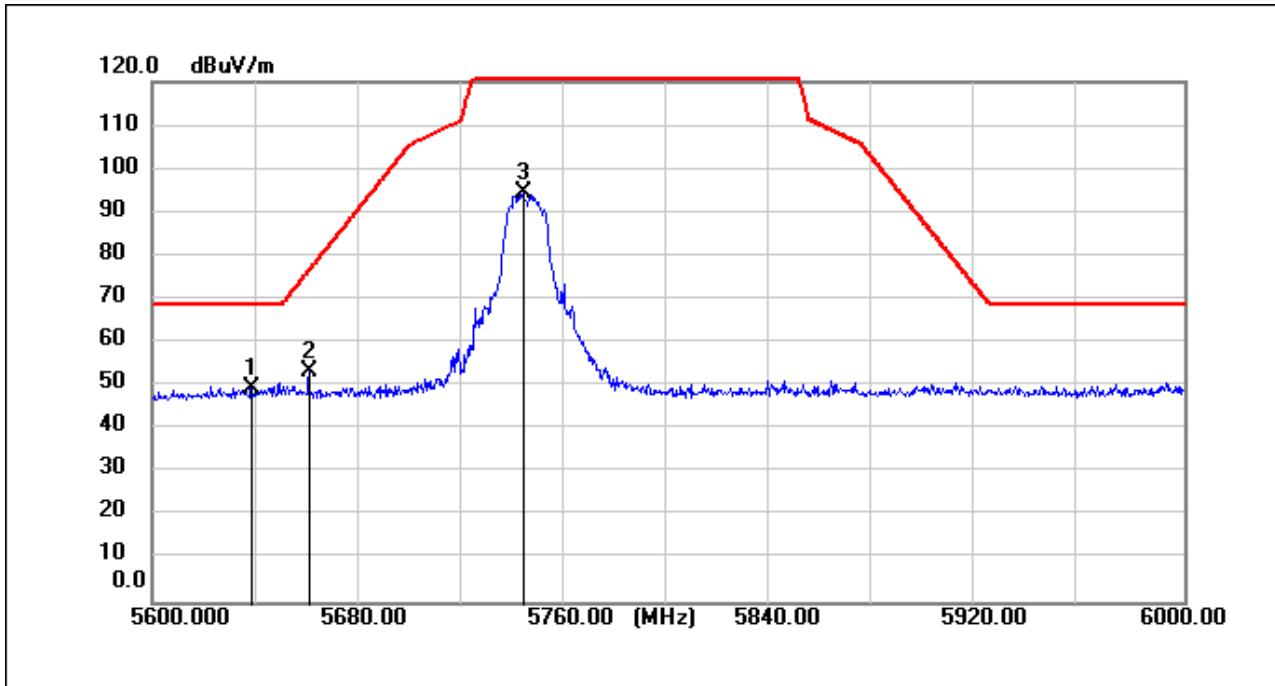
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5117.700	49.86	7.13	56.99	74.00	-17.01	peak
2	5150.000	53.45	7.12	60.57	74.00	-13.43	peak
3	5183.020	96.97	7.11	104.08	74.00	30.08	peak

Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



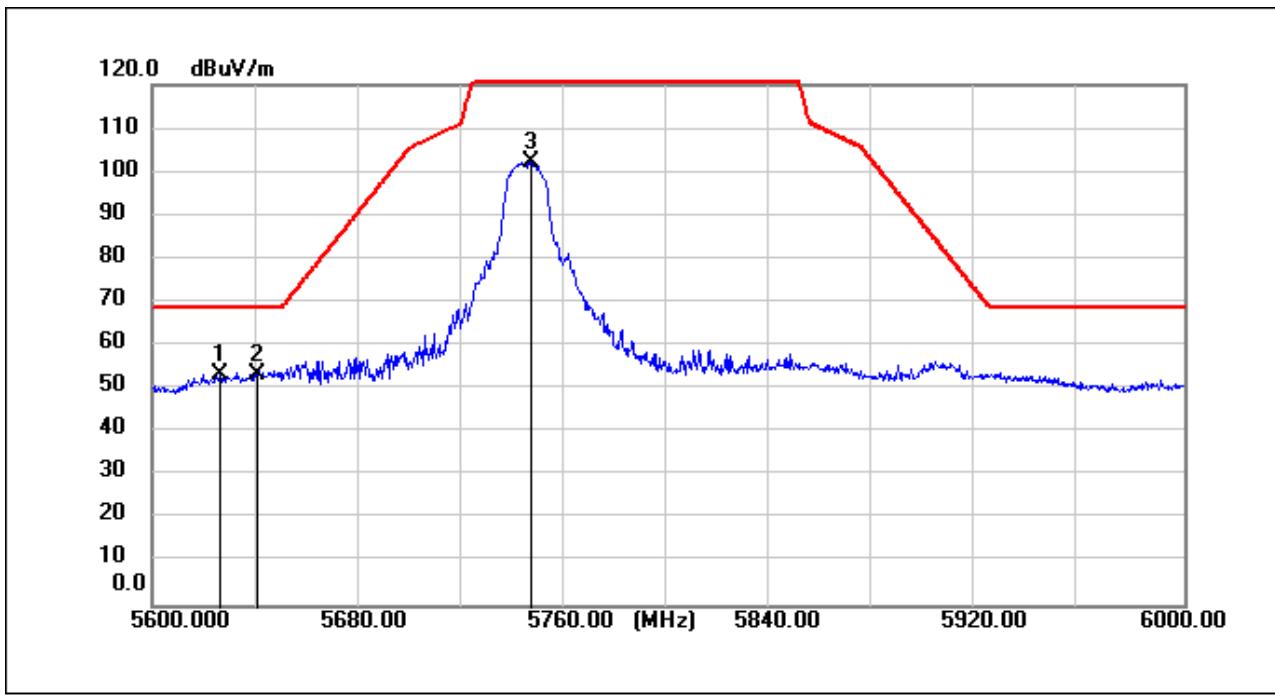
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5136.160	33.97	7.12	41.09	54.00	-12.91	AVG
2	5150.000	38.17	7.12	45.29	54.00	-8.71	AVG
3	5181.600	87.70	7.10	94.80	54.00	40.80	AVG

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



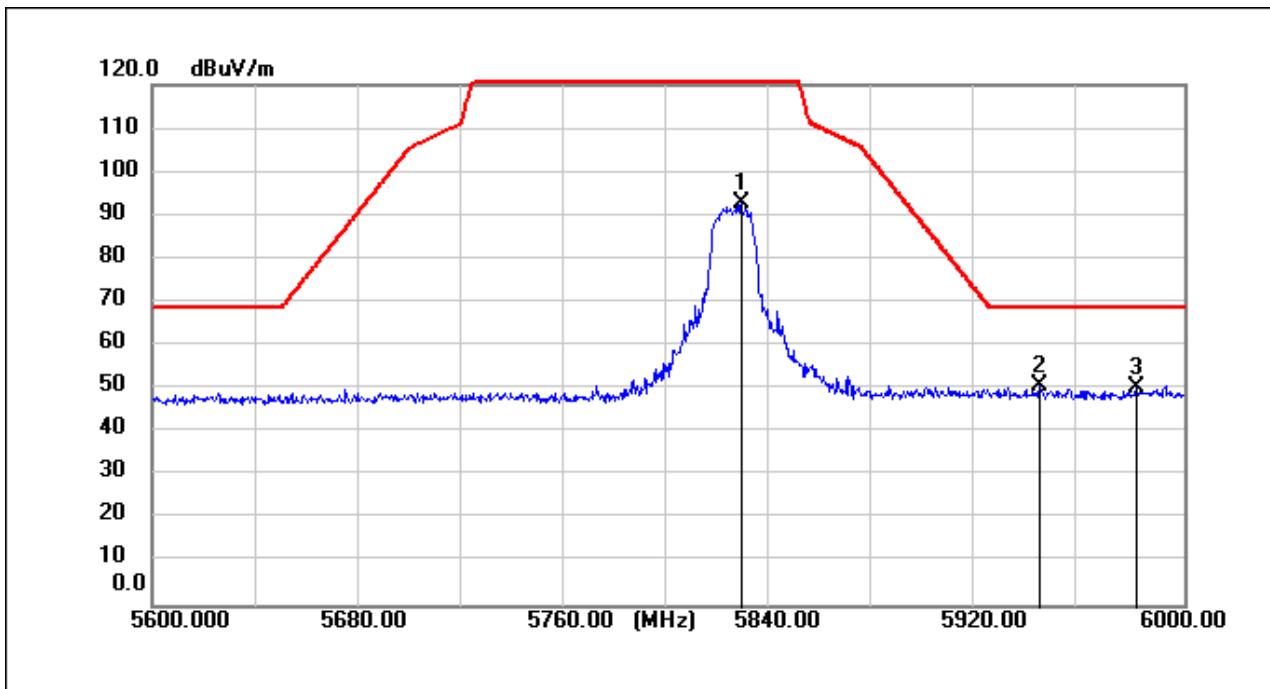
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5638.400	42.37	7.17	49.54	68.20	-18.66	peak
2	5660.800	46.08	7.22	53.30	76.19	-22.89	peak
3	5744.000	86.97	7.42	94.39	135.00	-40.61	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



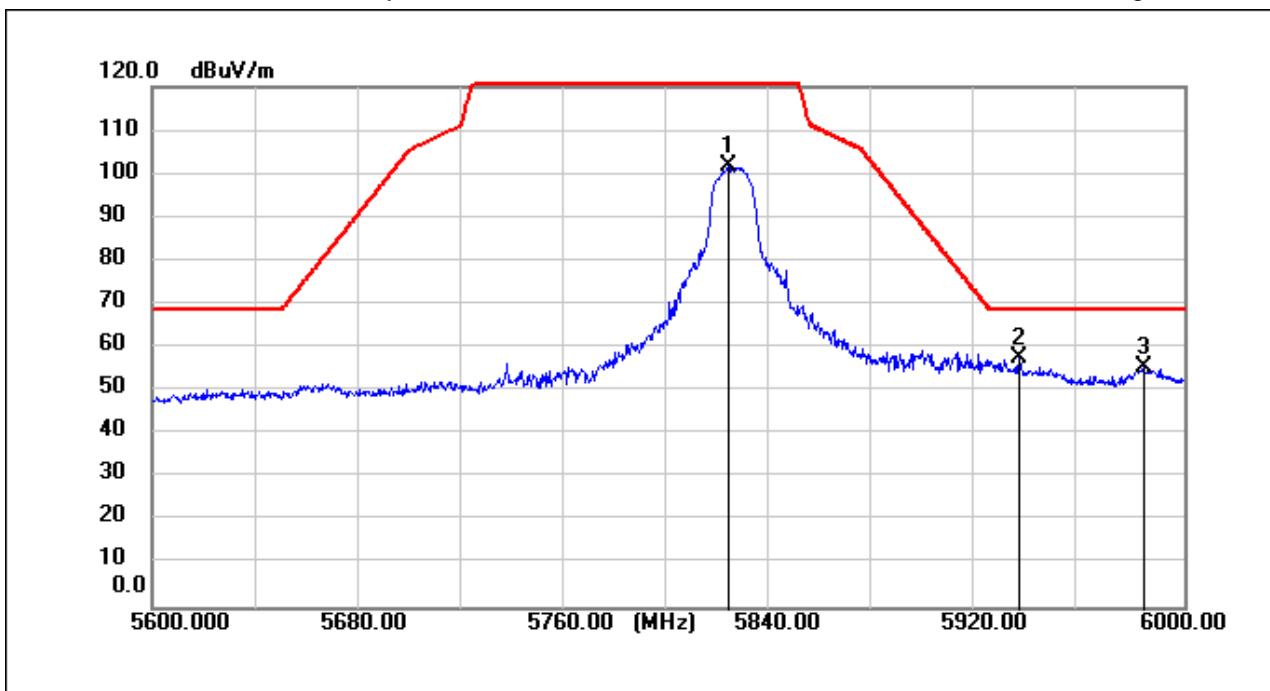
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5626.000	46.37	7.14	53.51	68.20	-14.69	peak
2	5640.800	46.35	7.18	53.53	68.20	-14.67	peak
3	5746.800	94.97	7.43	102.40	135.00	-32.60	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



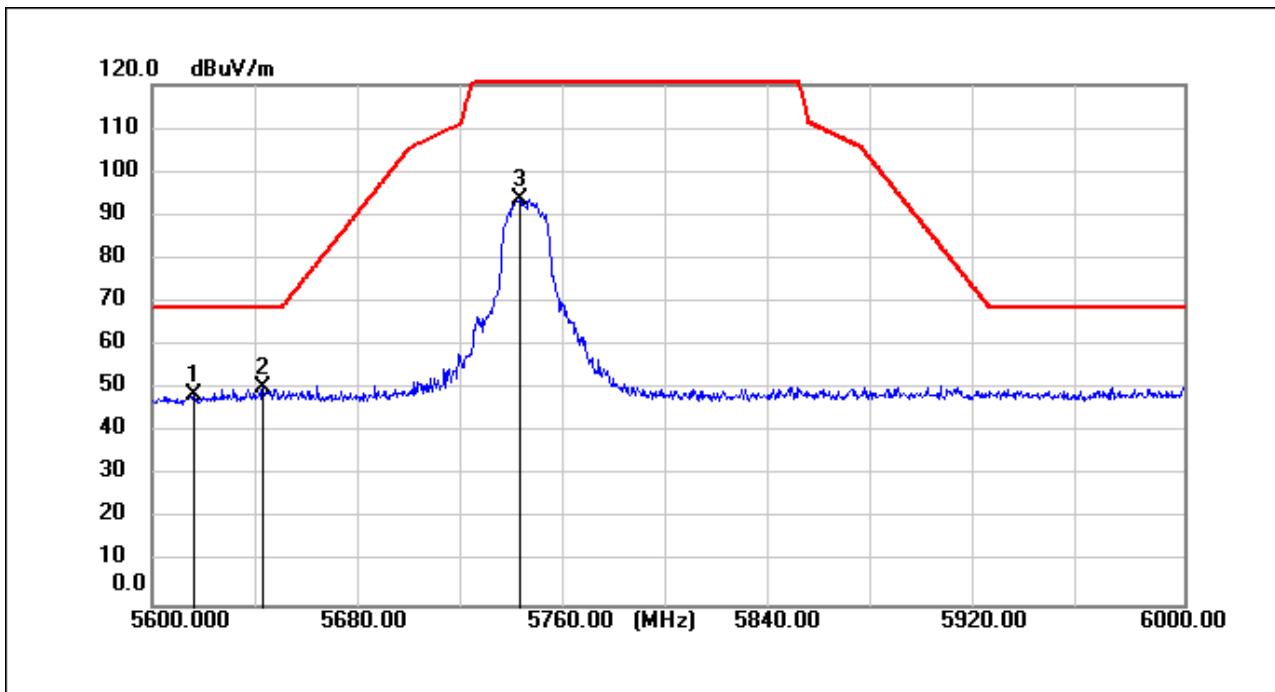
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5828.400	84.98	7.61	92.59	135.00	-42.41	peak
2	5944.400	42.80	7.89	50.69	68.20	-17.51	peak
3	5981.600	42.29	7.97	50.26	68.20	-17.94	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



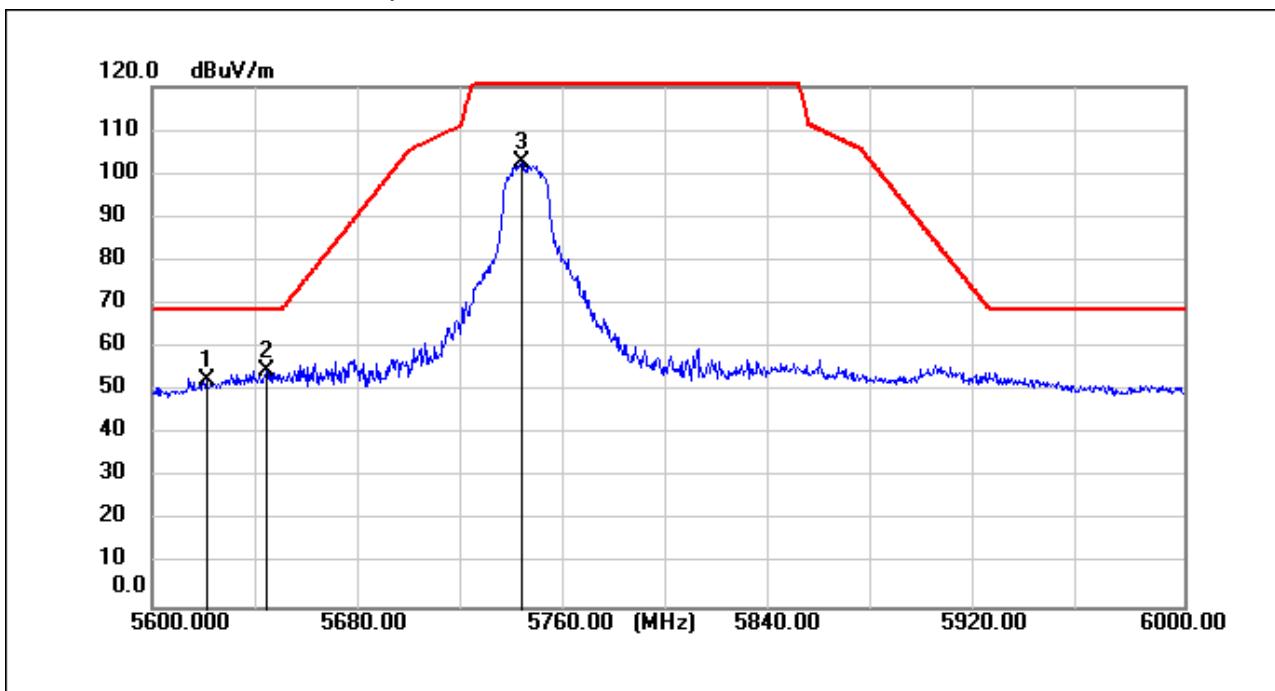
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5823.200	94.27	7.60	101.87	135.00	-33.13	peak
2	5936.400	49.69	7.87	57.56	68.20	-10.64	peak
3	5984.400	47.67	7.98	55.65	68.20	-12.55	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



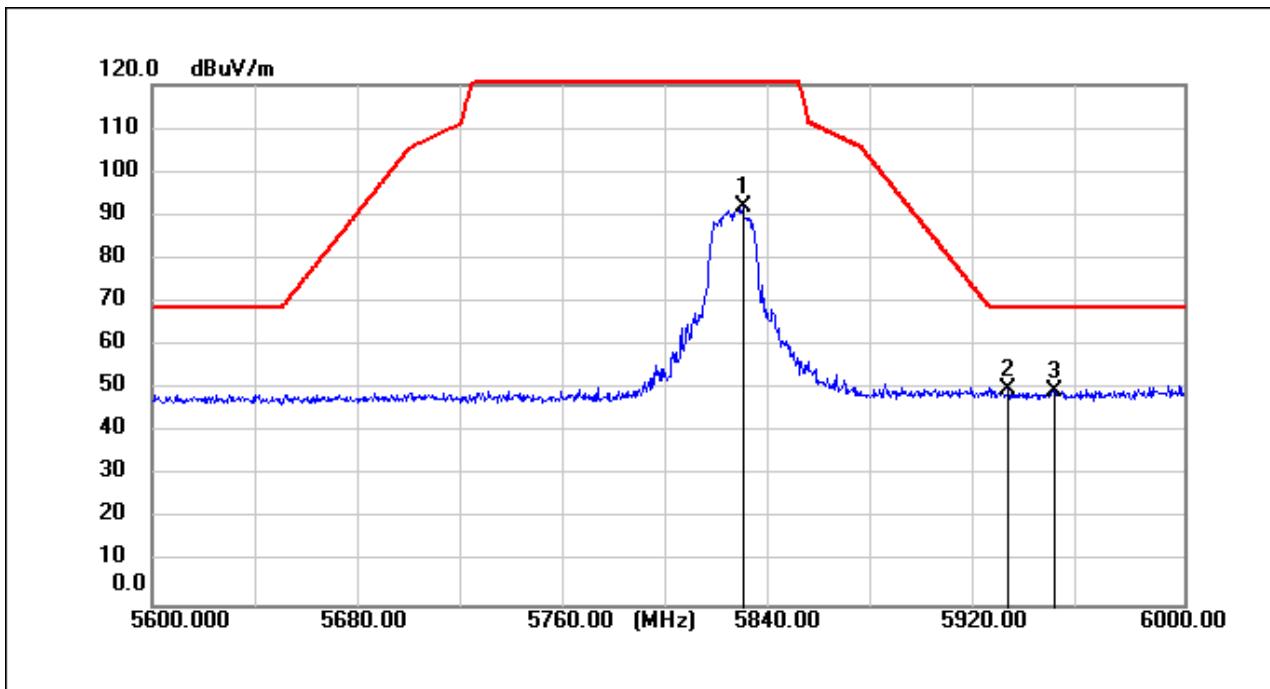
No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5616.400	41.43	7.12	48.55	68.20	-19.65	peak
2	5642.800	43.07	7.18	50.25	68.20	-17.95	peak
3	5742.400	86.26	7.41	93.67	135.00	-41.33	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



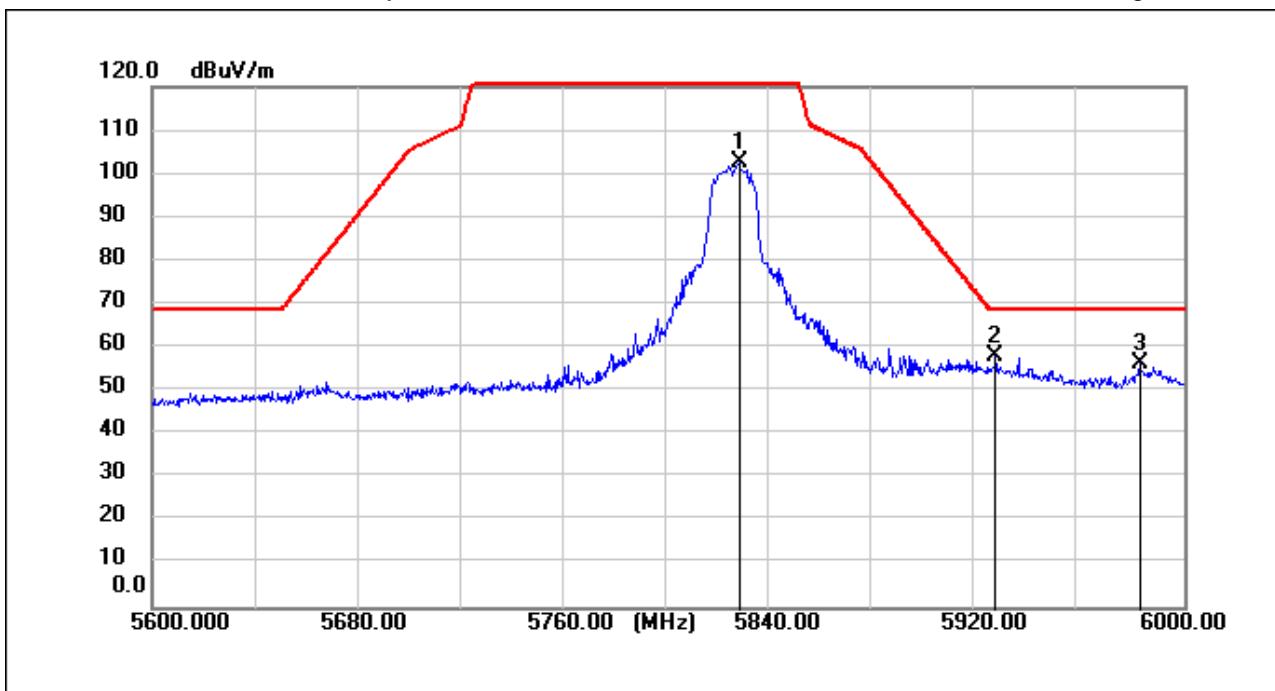
No.	Frequency (MHz)	Reading (dB <sub>u</sub> V)	Correction factor(dB/m)	Result (dB <sub>u</sub> V/m)	Limit (dB <sub>u</sub> V/m)	Margin (dB)	Remark
1	5621.200	45.27	7.13	52.40	68.20	-15.80	peak
2	5644.400	47.41	7.18	54.59	68.20	-13.61	peak
3	5743.200	95.39	7.41	102.80	135.00	-32.20	peak

Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5829.200	84.50	7.62	92.12	135.00	-42.88	peak
2	5932.000	41.98	7.86	49.84	68.20	-18.36	peak
3	5949.600	41.78	7.91	49.69	68.20	-18.51	peak

Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5827.600	94.87	7.61	102.48	135.00	-32.52	peak
2	5926.800	50.28	7.85	58.13	68.20	-10.07	peak
3	5982.800	48.40	7.98	56.38	68.20	-11.82	peak

## 7.5 Duty Cycle

Test Requirement KDB 789033 D02 II B 1  
Test Method: KDB 789033 II B 1

### 7.5.1 E.U.T. Operation

Operating Environment:  
Temperature: 20.6 °C      Humidity: 28.0 % RH      Atmospheric Pressure: 1010 mbar

### 7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

### 7.5.3 Measurement Procedure and Data

Please Refer to Appendix for Details

## 7.6 99% Bandwidth

Test Requirement N/A  
Test Method: KDB 789033 II D

### 7.6.1 E.U.T. Operation

Operating Environment:  
Temperature: 20.6 °C      Humidity: 28.0 % RH      Atmospheric Pressure: 1010 mbar

### 7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

### 7.6.3 Measurement Procedure and Data

Please Refer to Appendix for Details

## 7.7 26dB Emission bandwidth

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)  
Test Method: KDB 789033 D02 II C 1

### 7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 20.6 °C      Humidity: 28.0 % RH      Atmospheric Pressure: 1010 mbar

### 7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

### 7.7.3 Measurement Procedure and Data

Please Refer to Appendix for Details

## 7.8 Minimum 6 dB bandwidth (5.725-5.85 GHz band )

Test Requirement 47 CFR Part 15, Subpart E 15.407 (e)  
Test Method: KDB 789033 D02 II C 2

Limit:

Frequency band(MHz)	Limit
5725-5850	≥500 kHz

### 7.8.1 E.U.T. Operation

Operating Environment:  
Temperature: 20.6 °C      Humidity: 28.0 % RH      Atmospheric Pressure: 1010 mbar

### 7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

### 7.8.3 Measurement Procedure and Data

Please Refer to Appendix for Details

## 7.9 Peak Power spectrum density

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)  
Test Method: KDB 789033 D02 II F

Limit:

Frequency band(MHz)	Limit
5150-5250	≤17dBm in 1MHz for master device
	≤11dBm in 1MHz for client device
5250-5350	≤11dBm in 1MHz for client device
5470-5725	≤11dBm in 1MHz for client device
5725-5850	≤30dBm in 500 kHz
Remark:	The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.

### 7.9.1 E.U.T. Operation

Operating Environment:  
Temperature: 20.6 °C      Humidity: 28.0 % RH      Atmospheric Pressure: 1010 mbar

### 7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

### 7.9.3 Measurement Procedure and Data

Please Refer to Appendix for Details

## 7.10 Frequency Stability

Test Requirement 47 CFR Part 15, Subpart E 15.407 (g)  
Test Method: ANSI C63.10 (2013) Section 6.8

### 7.10.1 E.U.T. Operation

Operating Environment:

Temperature: 20.6 °C      Humidity: 28.0 % RH      Atmospheric Pressure: 1010 mbar

### 7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and only the data of worst case is recorded in the report.

### 7.10.3 Measurement Procedure and Data

Please Refer to Appendix for Details

## 8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2409001776AT

## 9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for KSCR2409001776AT

## 10 Appendix

### 1. Duty Cycle

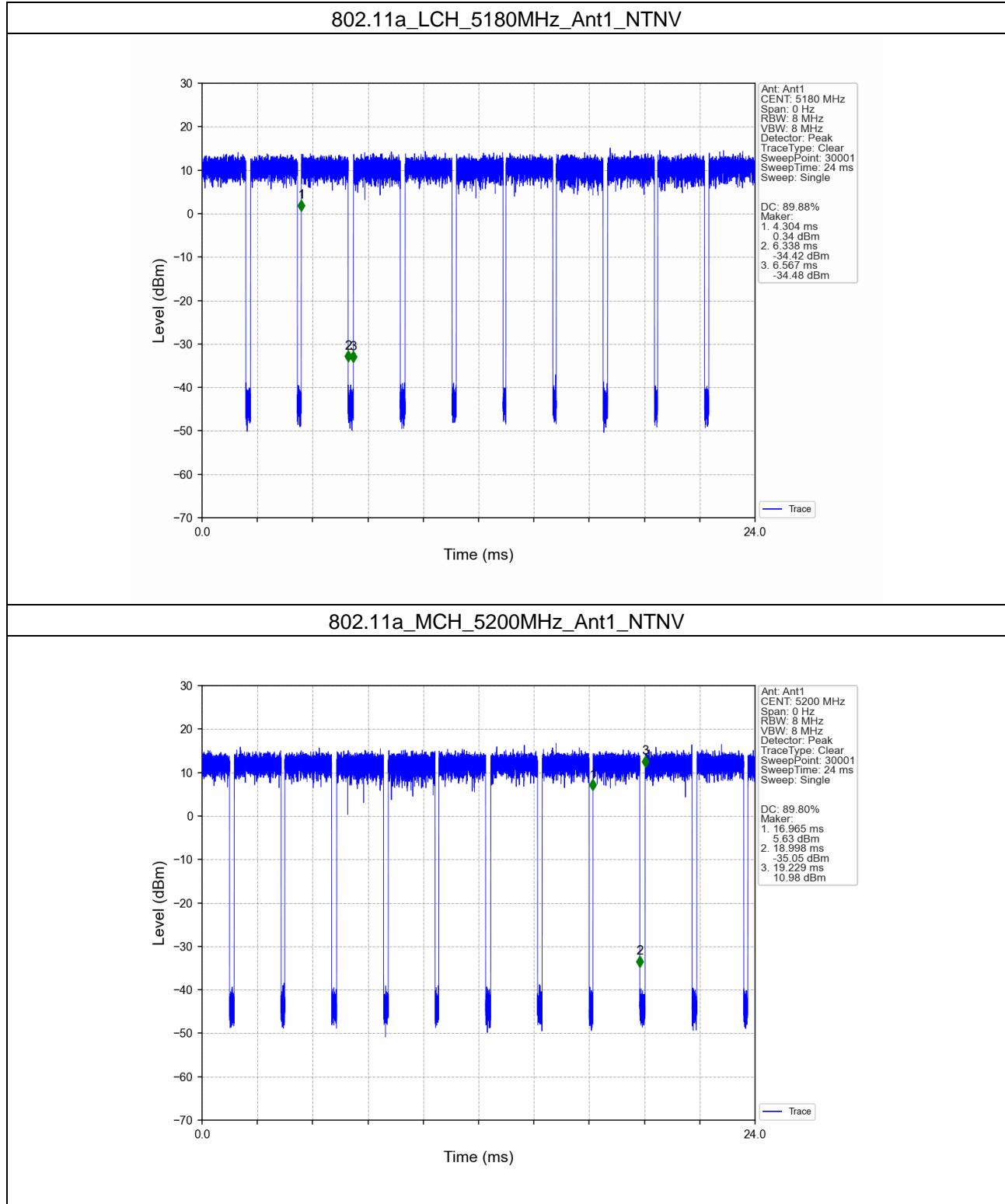
#### 1.1 Test Result

##### 1.1.1 Ant1

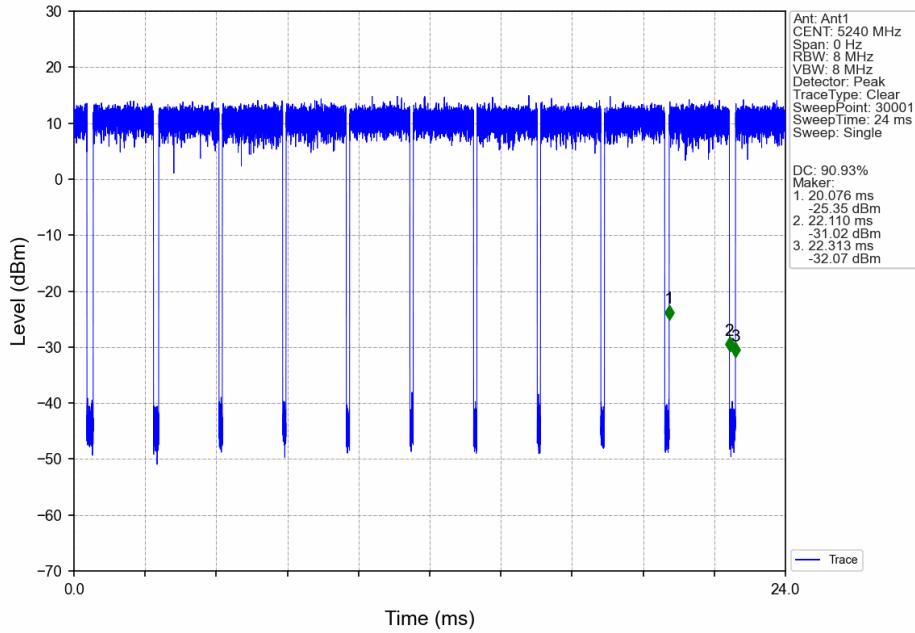
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5180	2.034	2.263	89.88	0.46	4.51
		5200	2.033	2.264	89.80	0.47	2.99
		5240	2.034	2.237	90.93	0.41	3.83
		5745	2.034	2.255	90.20	0.45	4.56
		5785	2.034	2.255	90.20	0.45	4.54
		5825	2.034	2.272	89.52	0.48	5.27
802.11n (HT20)	SISO	5180	1.893	2.124	89.12	0.50	4.40
		5200	1.893	2.133	88.75	0.52	5.65
		5240	1.894	2.088	90.71	0.42	3.65
		5745	1.892	2.124	89.08	0.50	4.80
		5785	1.894	2.133	88.80	0.52	5.62
		5825	1.894	2.106	89.93	0.46	4.47

## 1.2 Test Graph

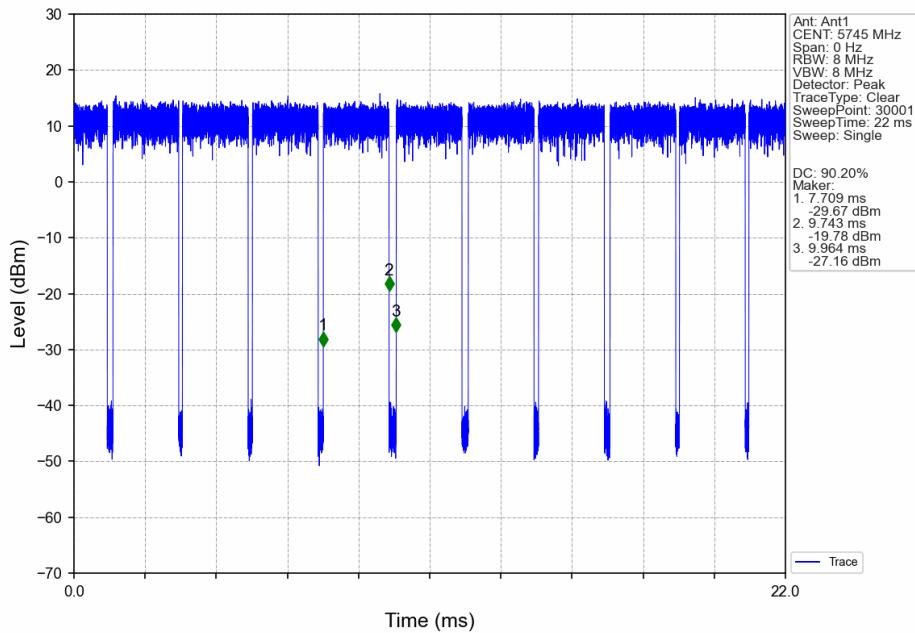
### 1.2.1 Ant1



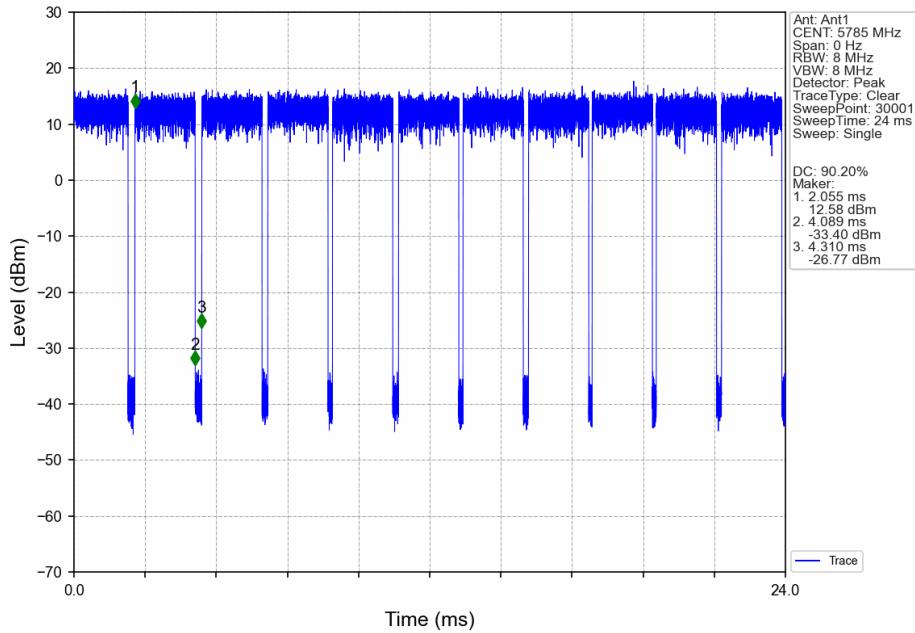
## 802.11a\_HCH\_5240MHz\_Ant1\_NTNV



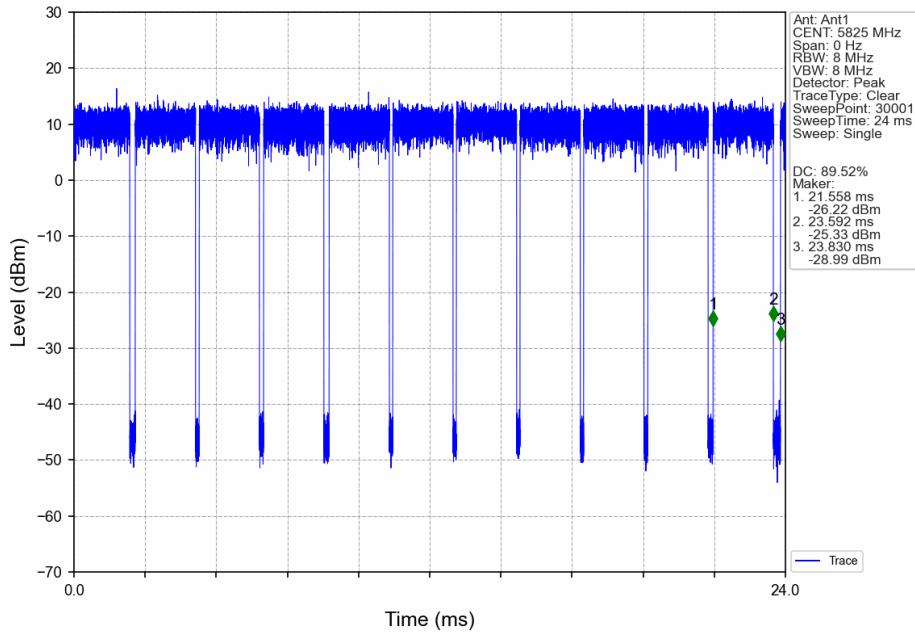
## 802.11a\_LCH\_5745MHz\_Ant1\_NTNV



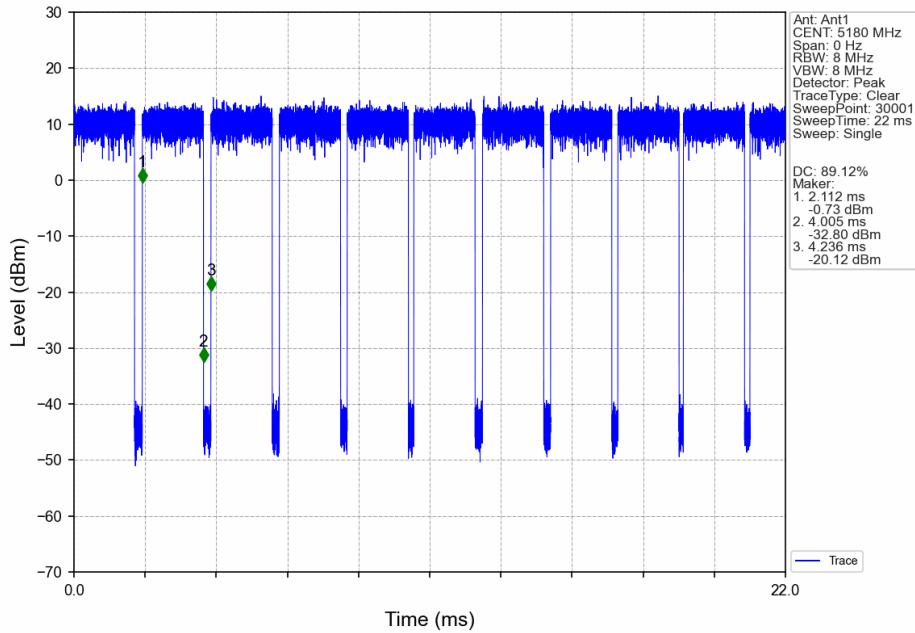
## 802.11a\_MCH\_5785MHz\_Ant1\_NTNV



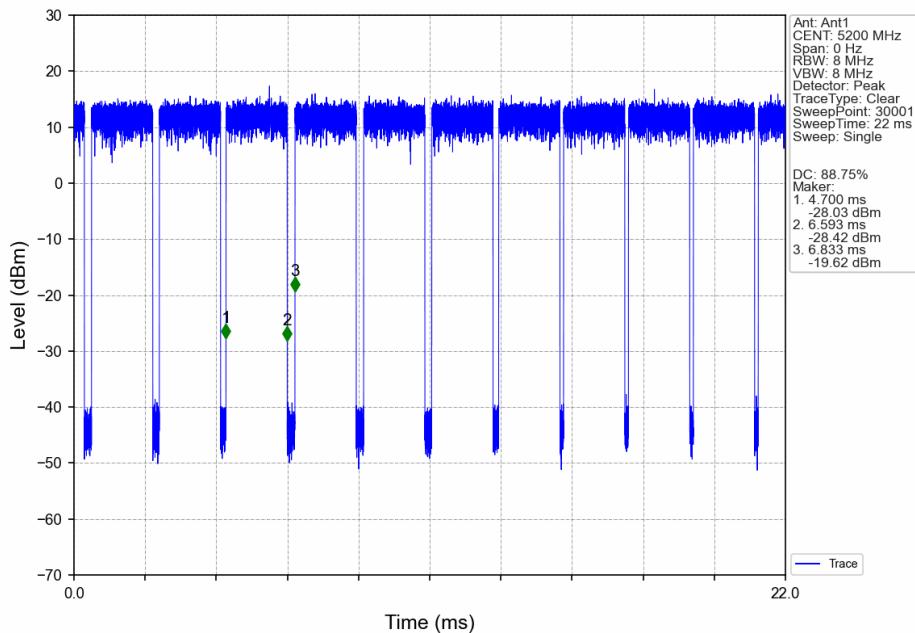
## 802.11a\_HCH\_5825MHz\_Ant1\_NTNV



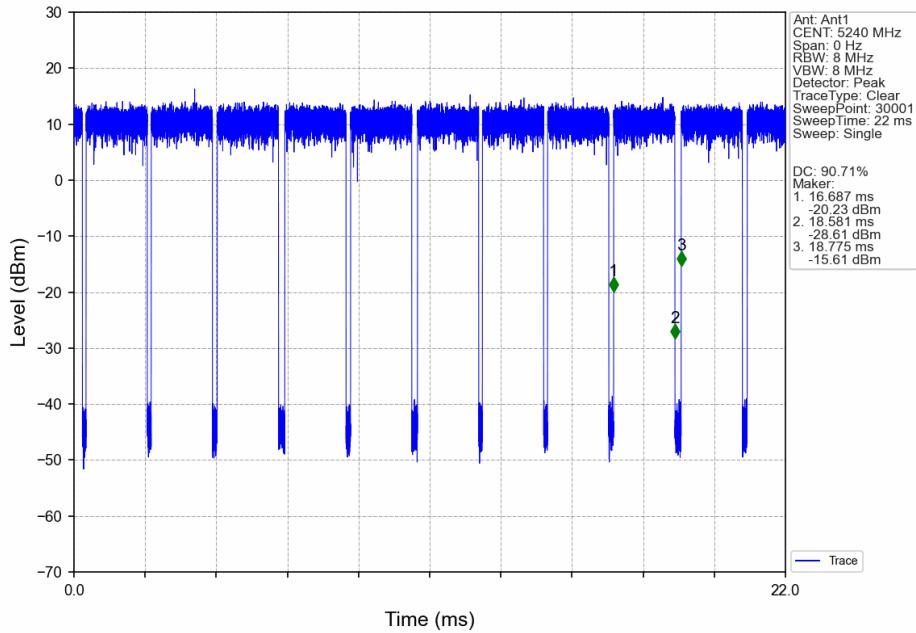
## 802.11n(HT20)\_LCH\_5180MHz\_Ant1\_NTNV



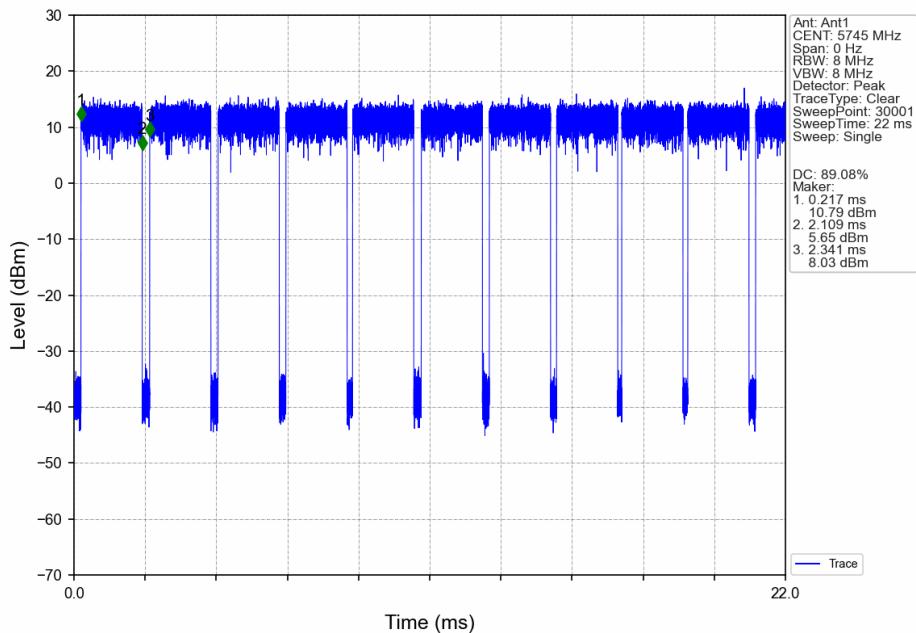
## 802.11n(HT20)\_MCH\_5200MHz\_Ant1\_NTNV



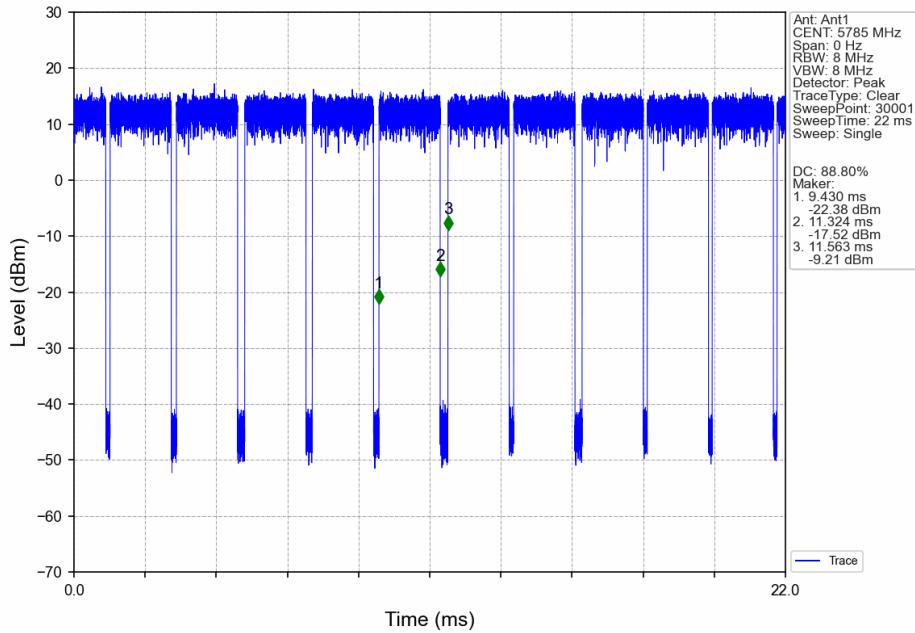
802.11n(HT20)\_HCH\_5240MHz\_Ant1\_NTNV



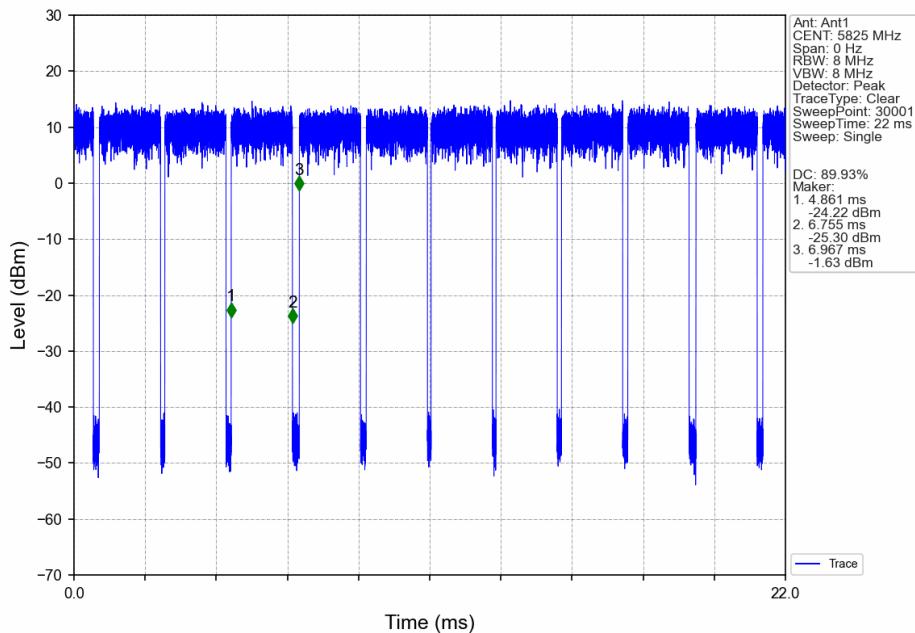
802.11n(HT20)\_LCH\_5745MHz\_Ant1\_NTNV



## 802.11n(HT20)\_MCH\_5785MHz\_Ant1\_NTNV



## 802.11n(HT20)\_HCH\_5825MHz\_Ant1\_NTNV



## 2. Bandwidth

### 2.1 Test Result

#### 2.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	18.919	/	Pass
		5200	1	19.686	/	Pass
		5240	1	19.452	/	Pass
		5745	1	18.449	/	Pass
		5785	1	18.857	/	Pass
		5825	1	18.127	/	Pass
802.11n (HT20)	SISO	5180	1	19.568	/	Pass
		5200	1	19.475	/	Pass
		5240	1	20.098	/	Pass
		5745	1	19.402	/	Pass
		5785	1	19.249	/	Pass
		5825	1	18.933	/	Pass

#### 2.1.2 6dB BW

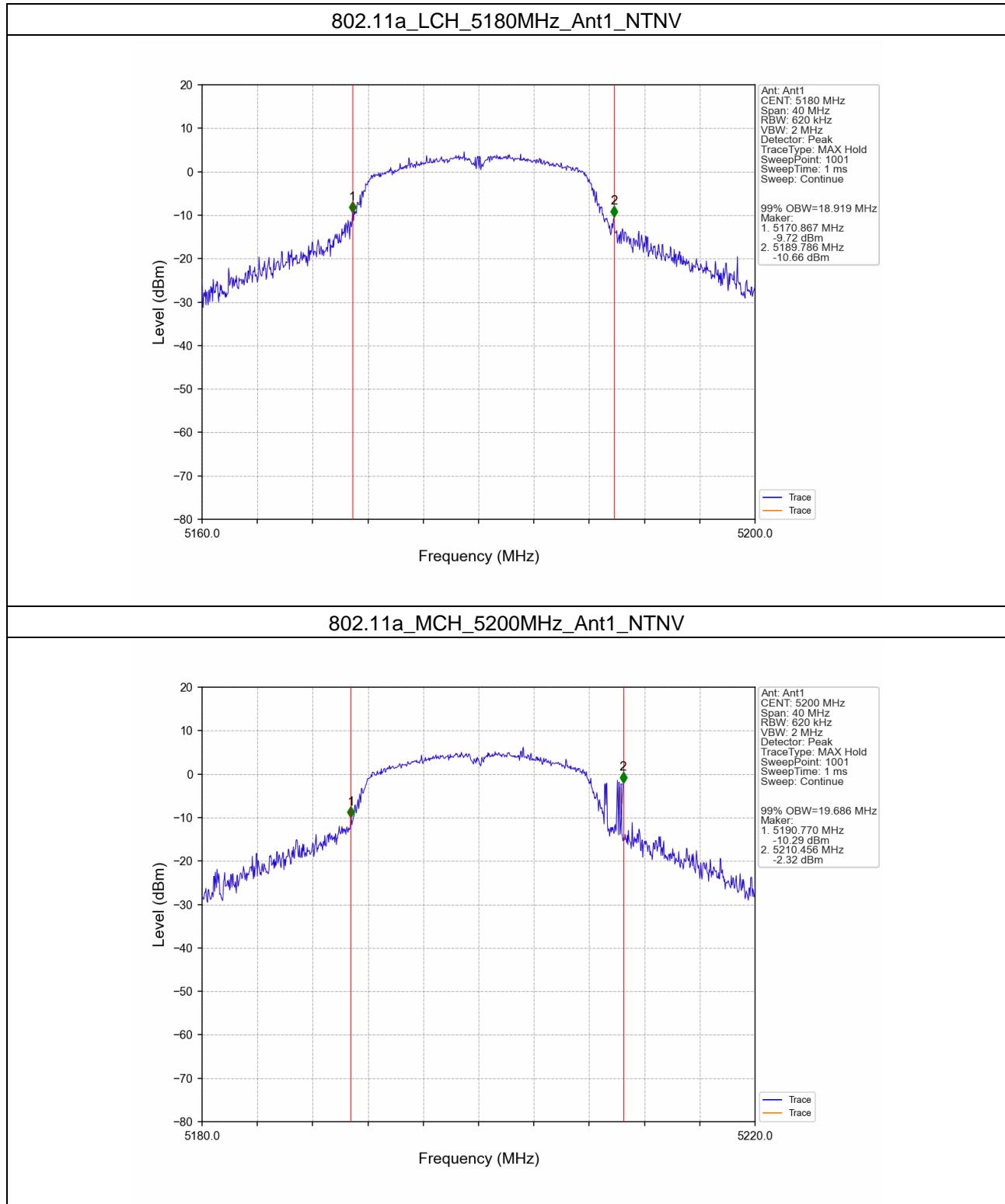
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5745	1	14.210	>=0.5	Pass
		5785	1	12.349	>=0.5	Pass
		5825	1	14.402	>=0.5	Pass
802.11n (HT20)	SISO	5745	1	13.930	>=0.5	Pass
		5785	1	15.990	>=0.5	Pass
		5825	1	14.198	>=0.5	Pass

#### 2.1.3 26dB BW

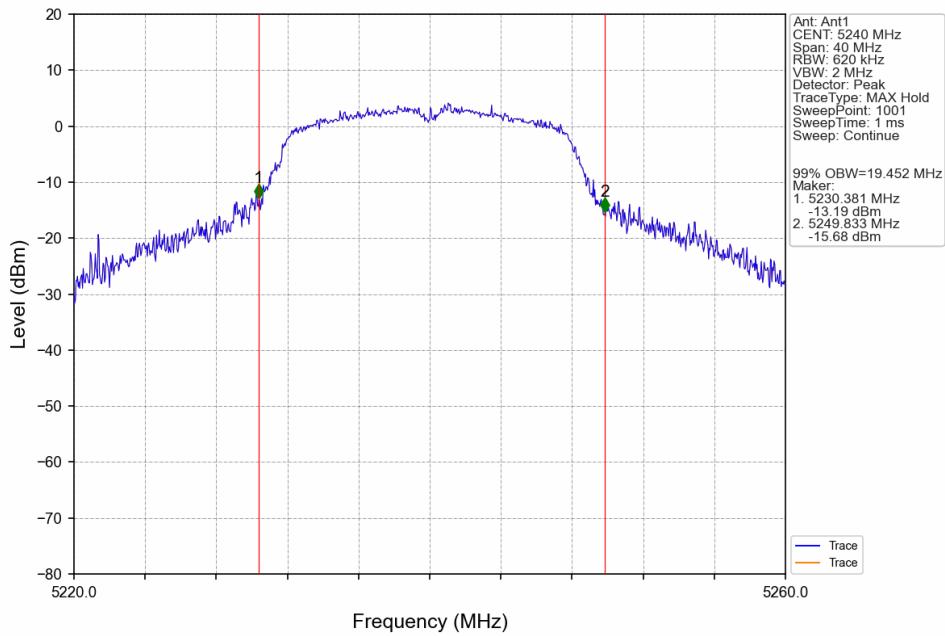
Mode	TX Type	Frequency (MHz)	ANT	26dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	29.371	/	Pass
		5200	1	28.096	/	Pass
		5240	1	29.198	/	Pass
802.11n (HT20)	SISO	5180	1	28.330	/	Pass
		5200	1	30.737	/	Pass
		5240	1	31.709	/	Pass

## 2.2 Test Graph

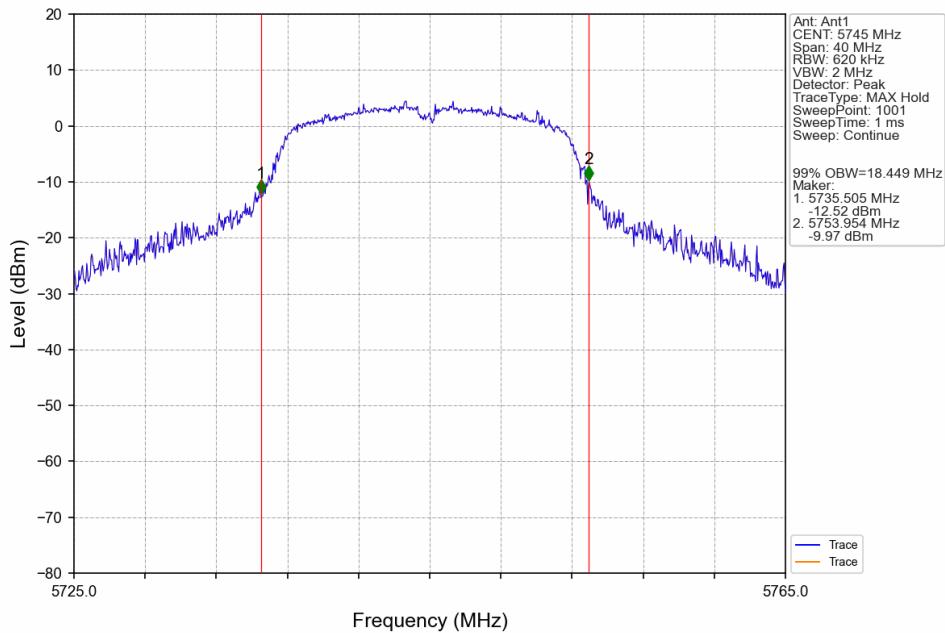
### 2.2.1 OBW

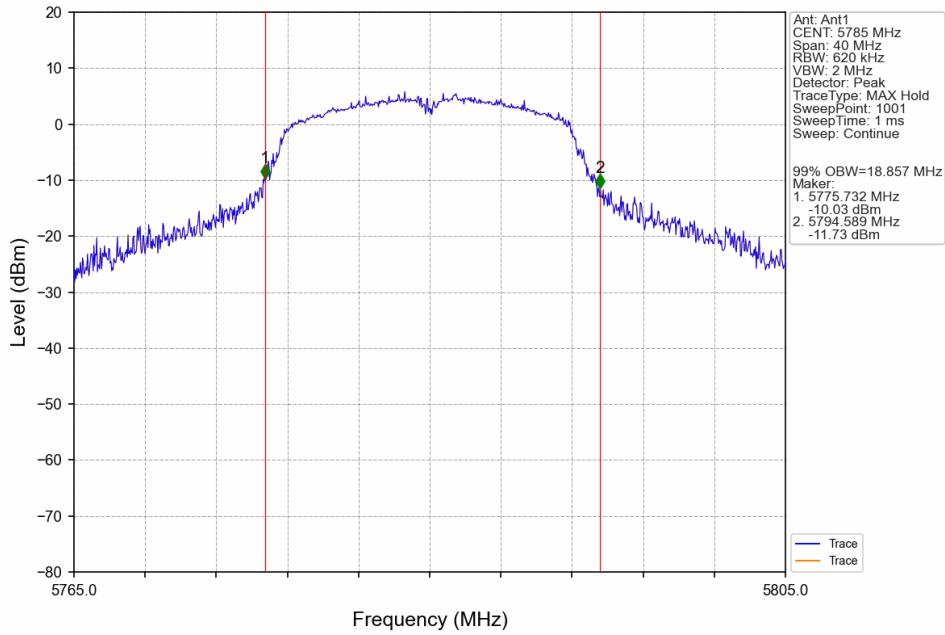
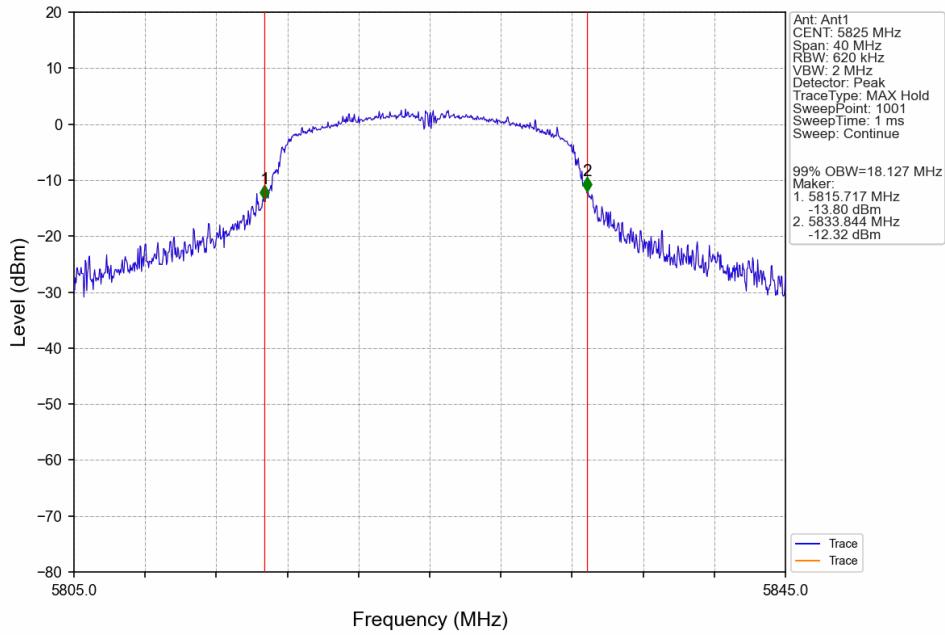


## 802.11a\_HCH\_5240MHz\_Ant1\_NTNV

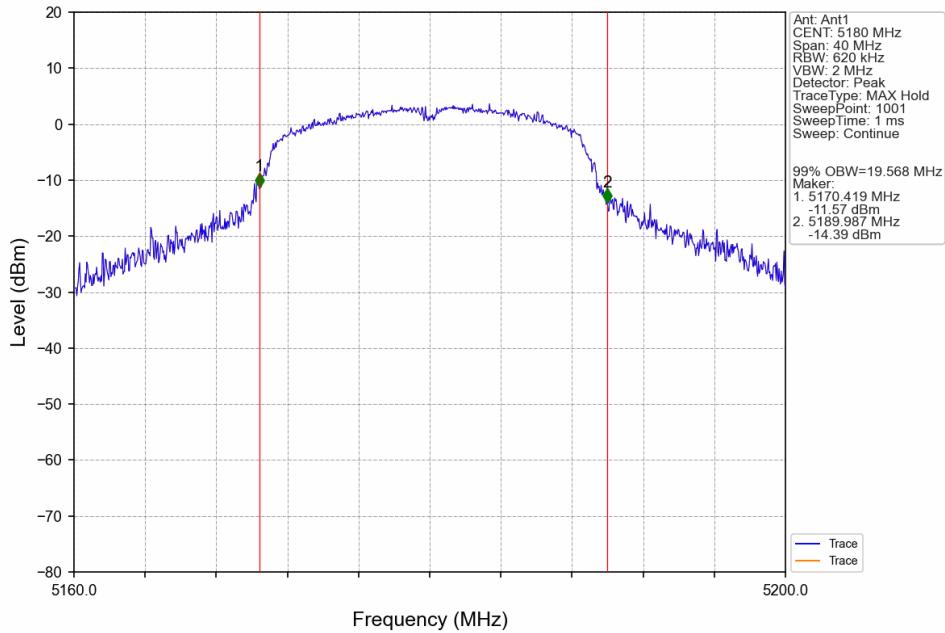


## 802.11a\_LCH\_5745MHz\_Ant1\_NTNV

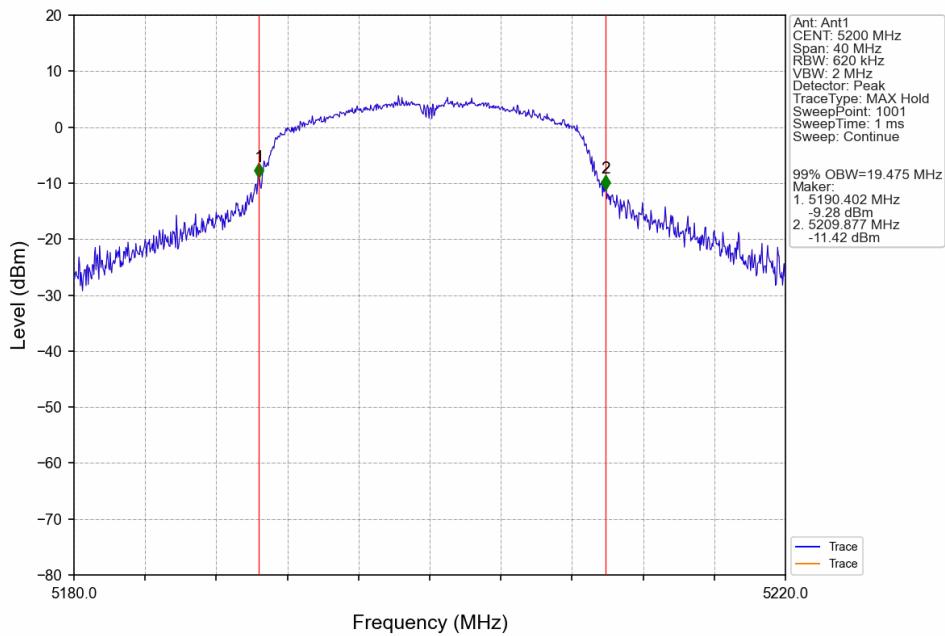


**802.11a\_MCH\_5785MHz\_Ant1\_NTNV****802.11a\_HCH\_5825MHz\_Ant1\_NTNV**

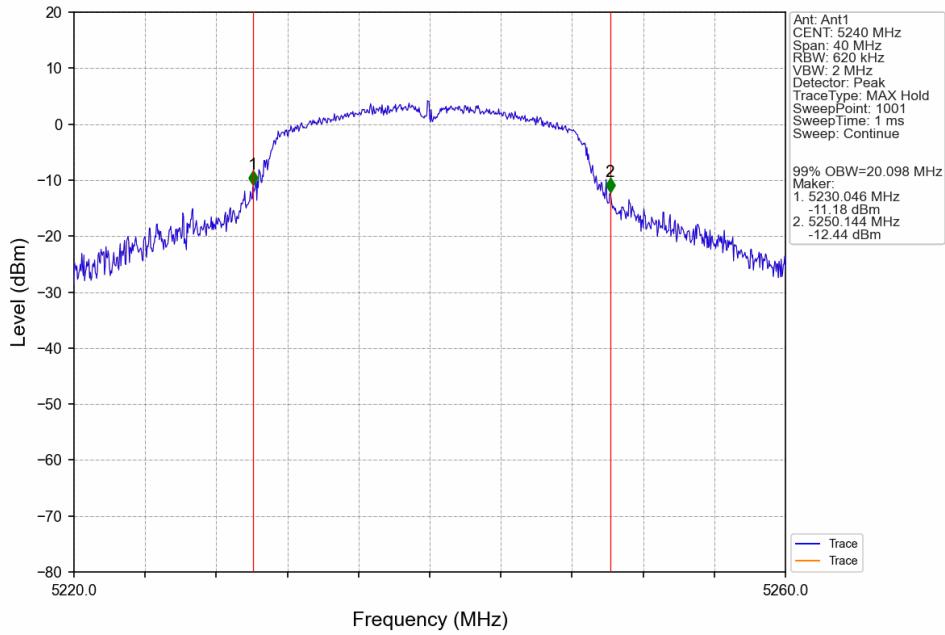
## 802.11n(HT20)\_LCH\_5180MHz\_Ant1\_NTNV



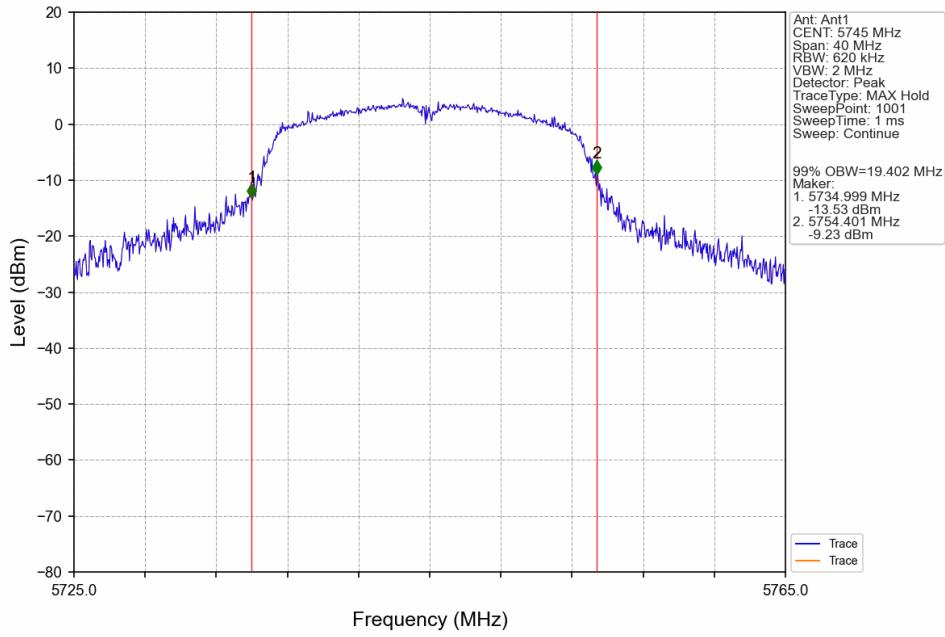
## 802.11n(HT20)\_MCH\_5200MHz\_Ant1\_NTNV

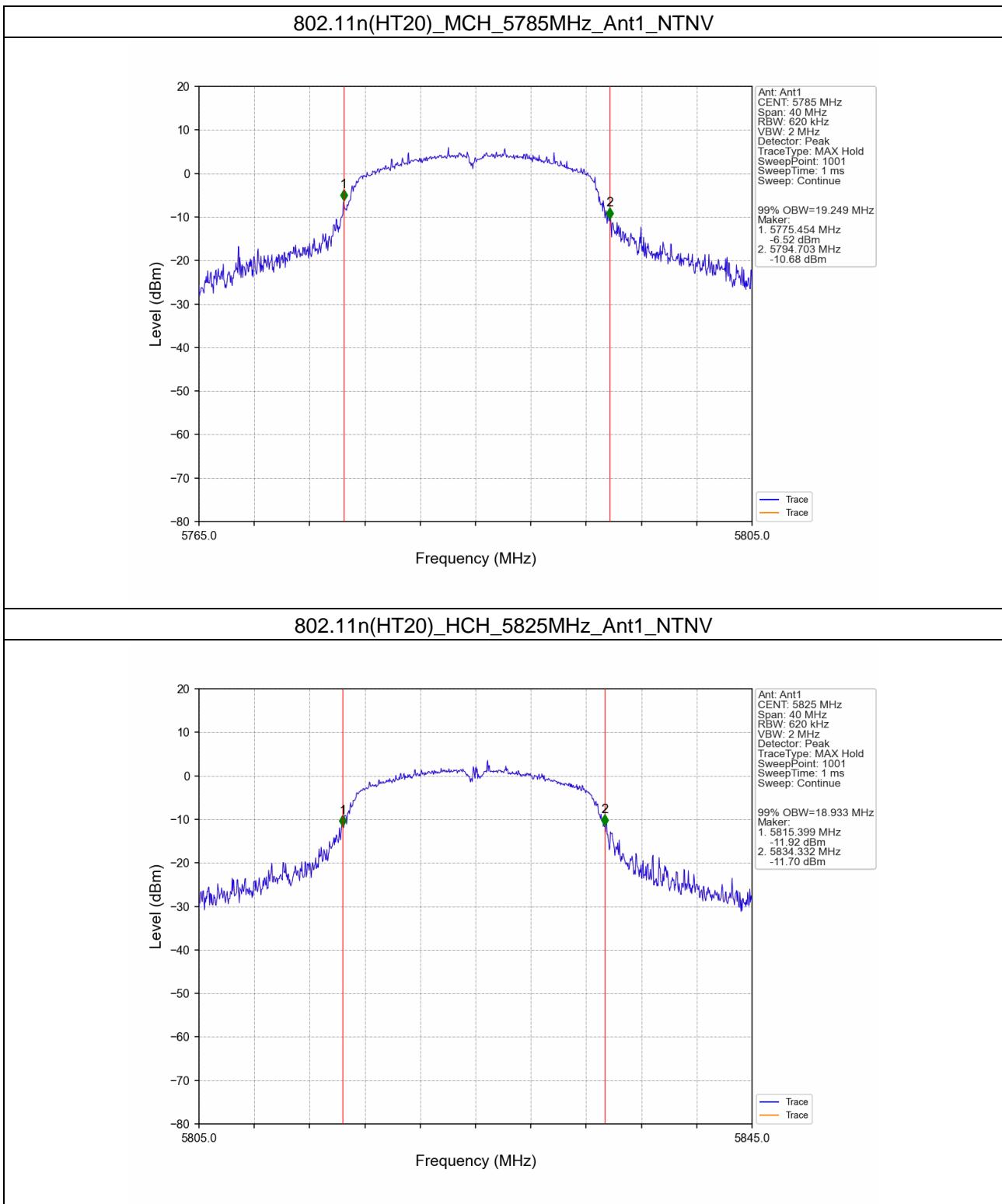


## 802.11n(HT20)\_HCH\_5240MHz\_Ant1\_NTNV

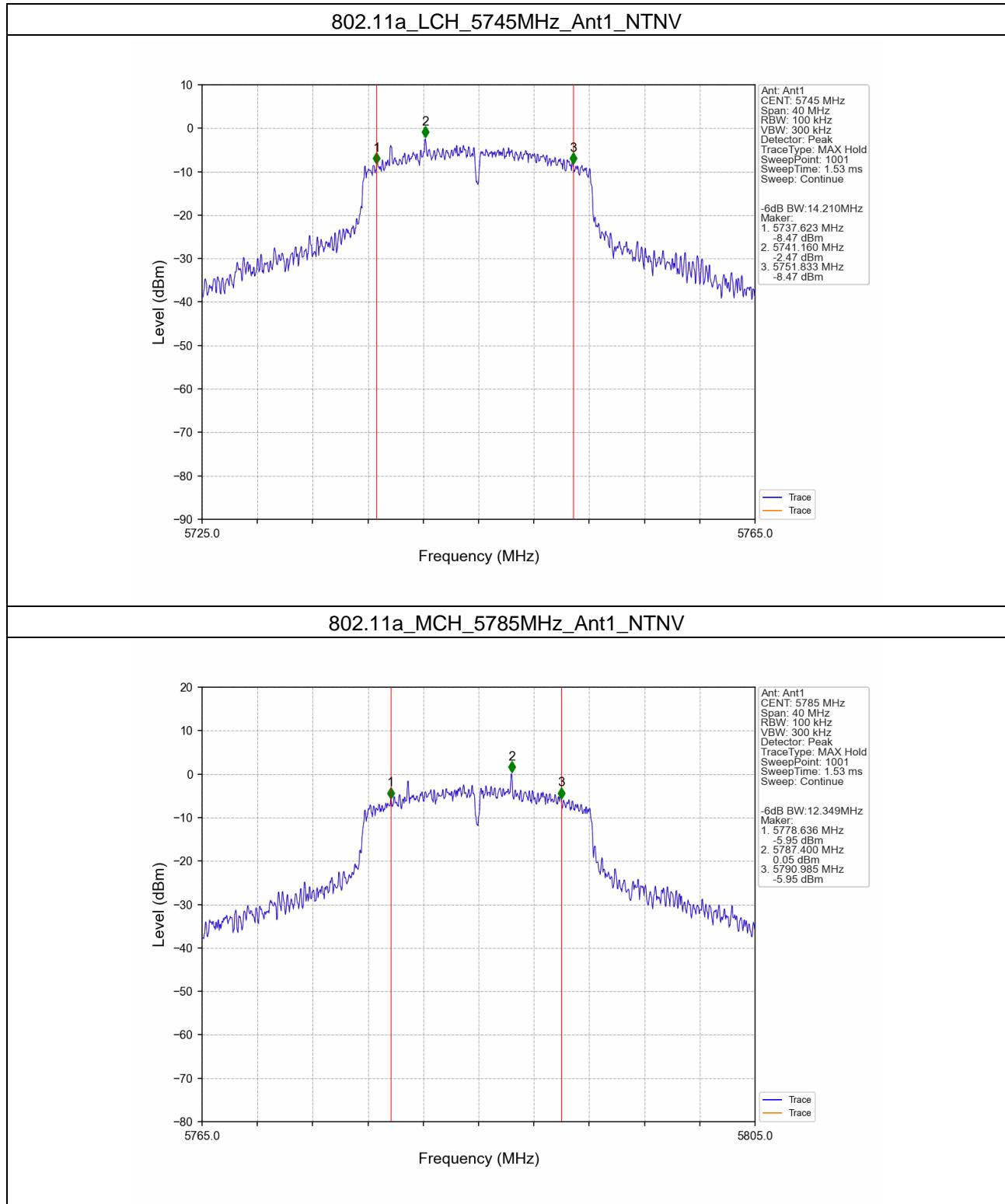


## 802.11n(HT20)\_LCH\_5745MHz\_Ant1\_NTNV

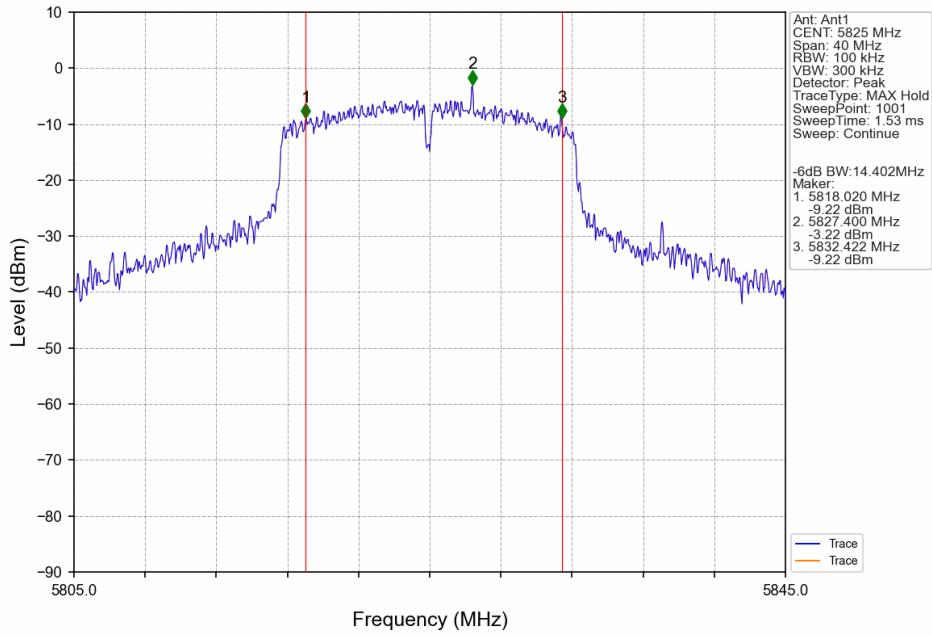




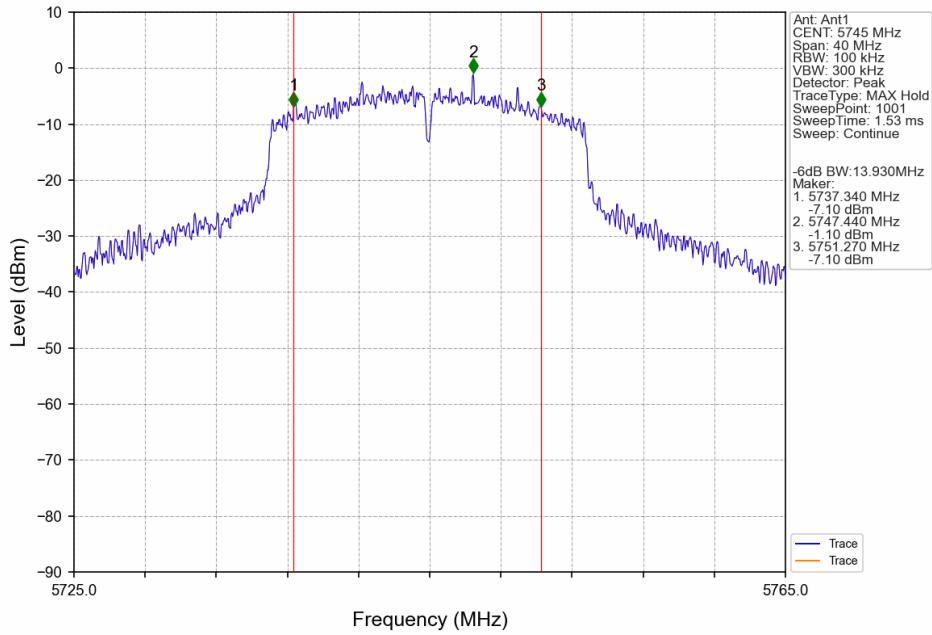
## 2.2.2 6dB BW

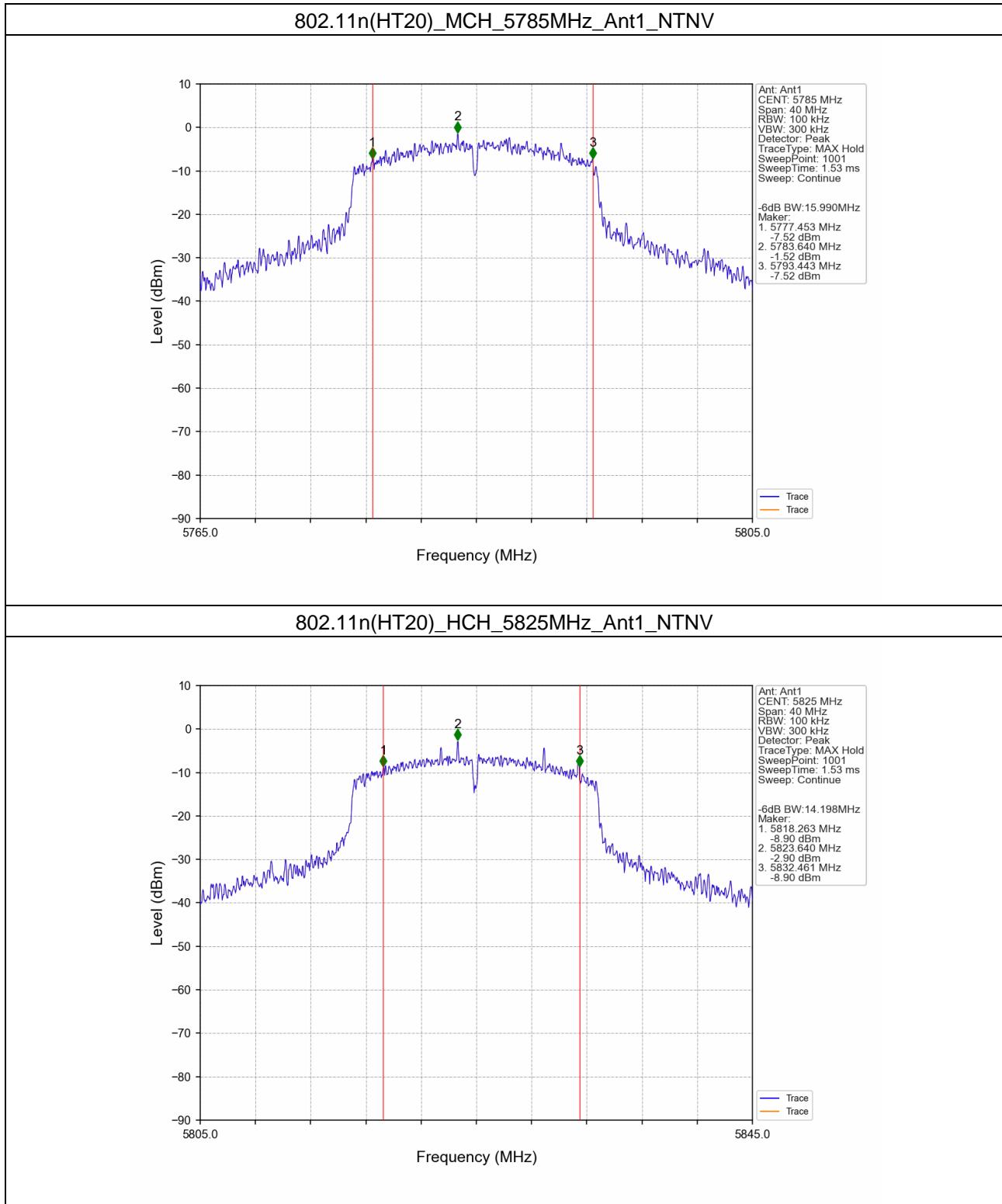


## 802.11a\_HCH\_5825MHz\_Ant1\_NTNV

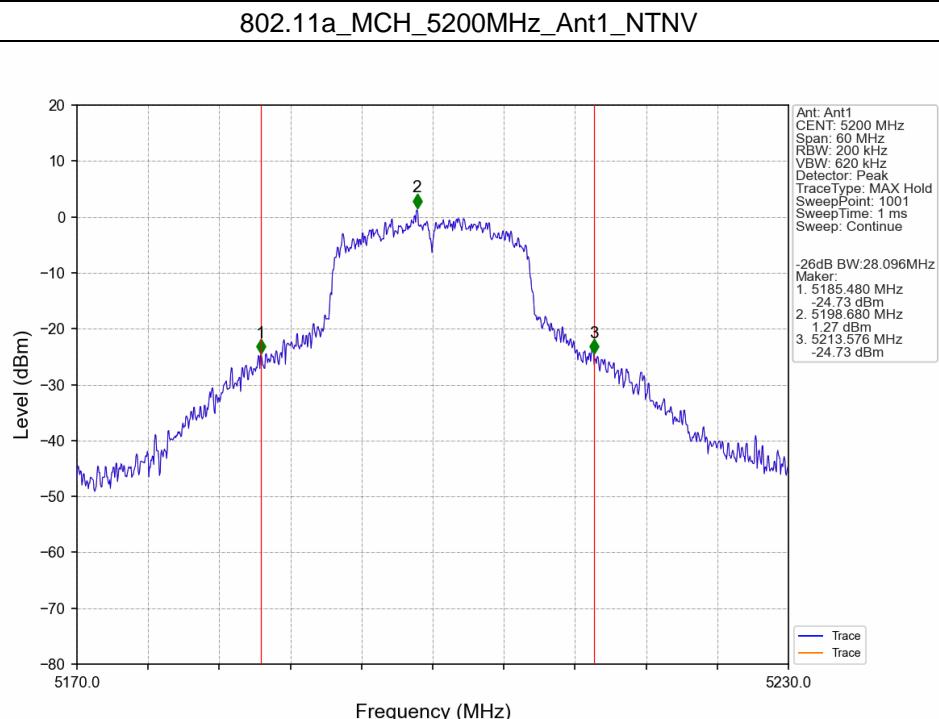
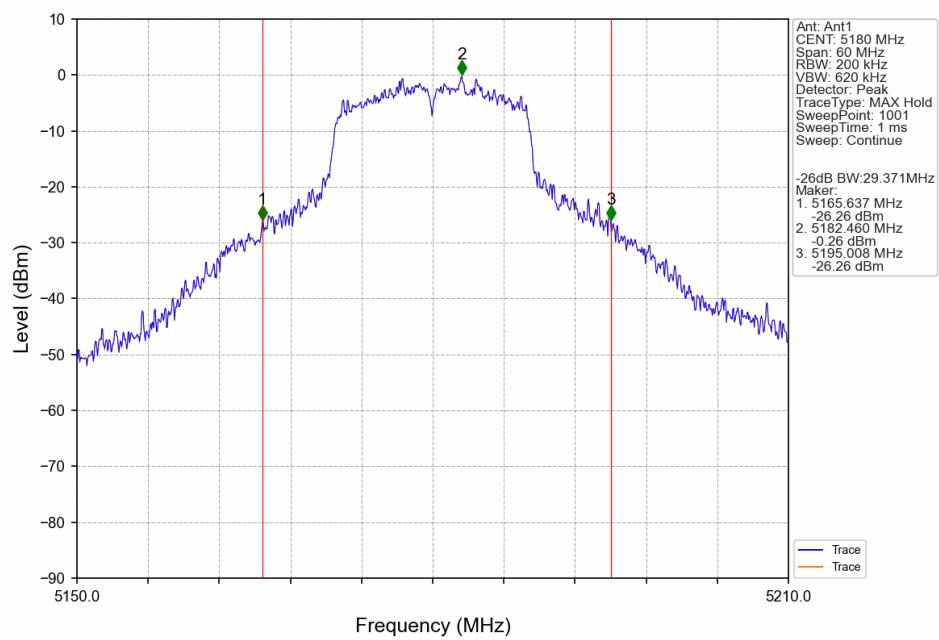


## 802.11n(HT20)\_LCH\_5745MHz\_Ant1\_NTNV

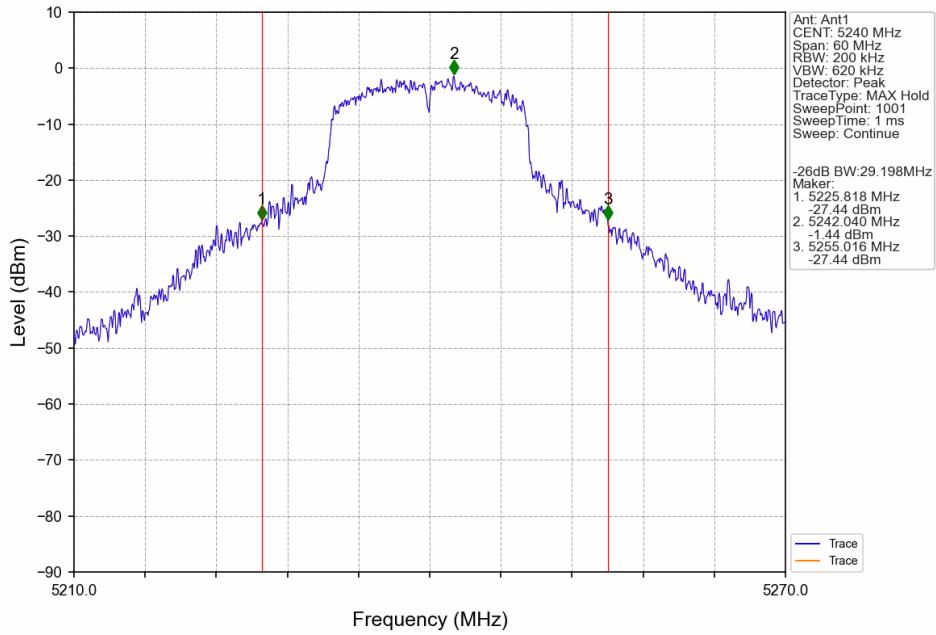




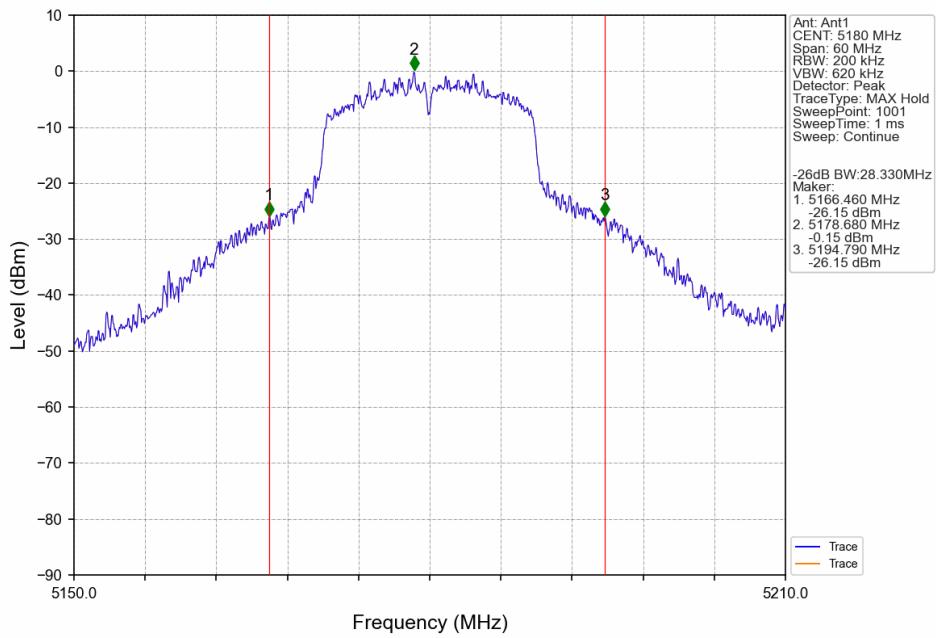
## 2.2.3 26dB BW

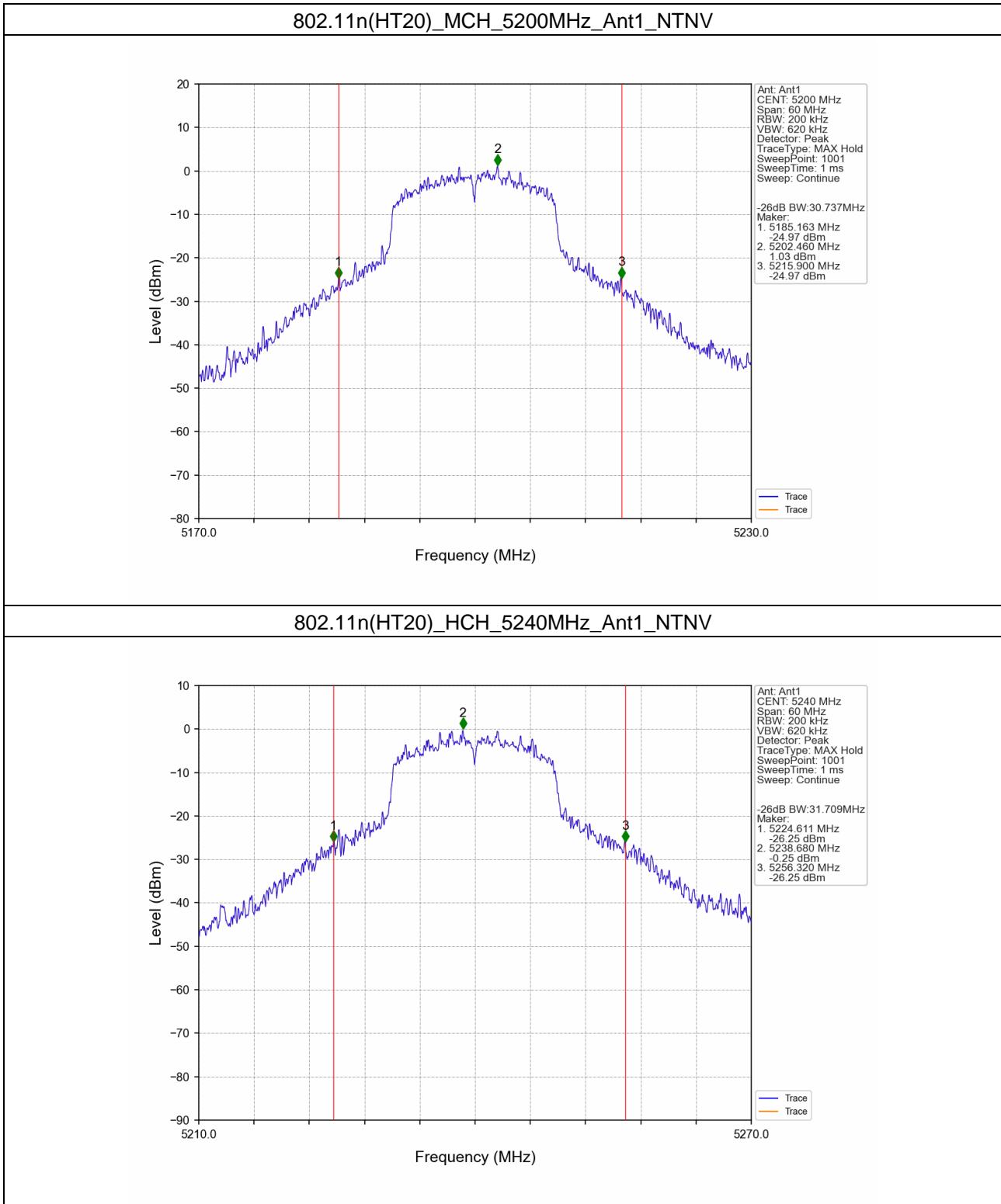


## 802.11a\_HCH\_5240MHz\_Ant1\_NTNV



## 802.11n(HT20)\_LCH\_5180MHz\_Ant1\_NTNV





### 3. Maximum Conducted Output Power

#### 3.1 Test Result

##### 3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11a	SISO	5180	8.44	/	Pass
		5200	8.20	/	Pass
		5240	8.38	/	Pass
		5745	8.79	<=30	Pass
		5785	9.06	<=30	Pass
		5825	7.58	<=30	Pass
802.11n (HT20)	SISO	5180	8.49	/	Pass
		5200	8.32	/	Pass
		5240	8.69	/	Pass
		5745	9.08	<=30	Pass
		5785	8.92	<=30	Pass
		5825	7.43	<=30	Pass

Note1: Antenna Gain: Ant1: 1.11dBi;

##### 3.1.2 EIRP

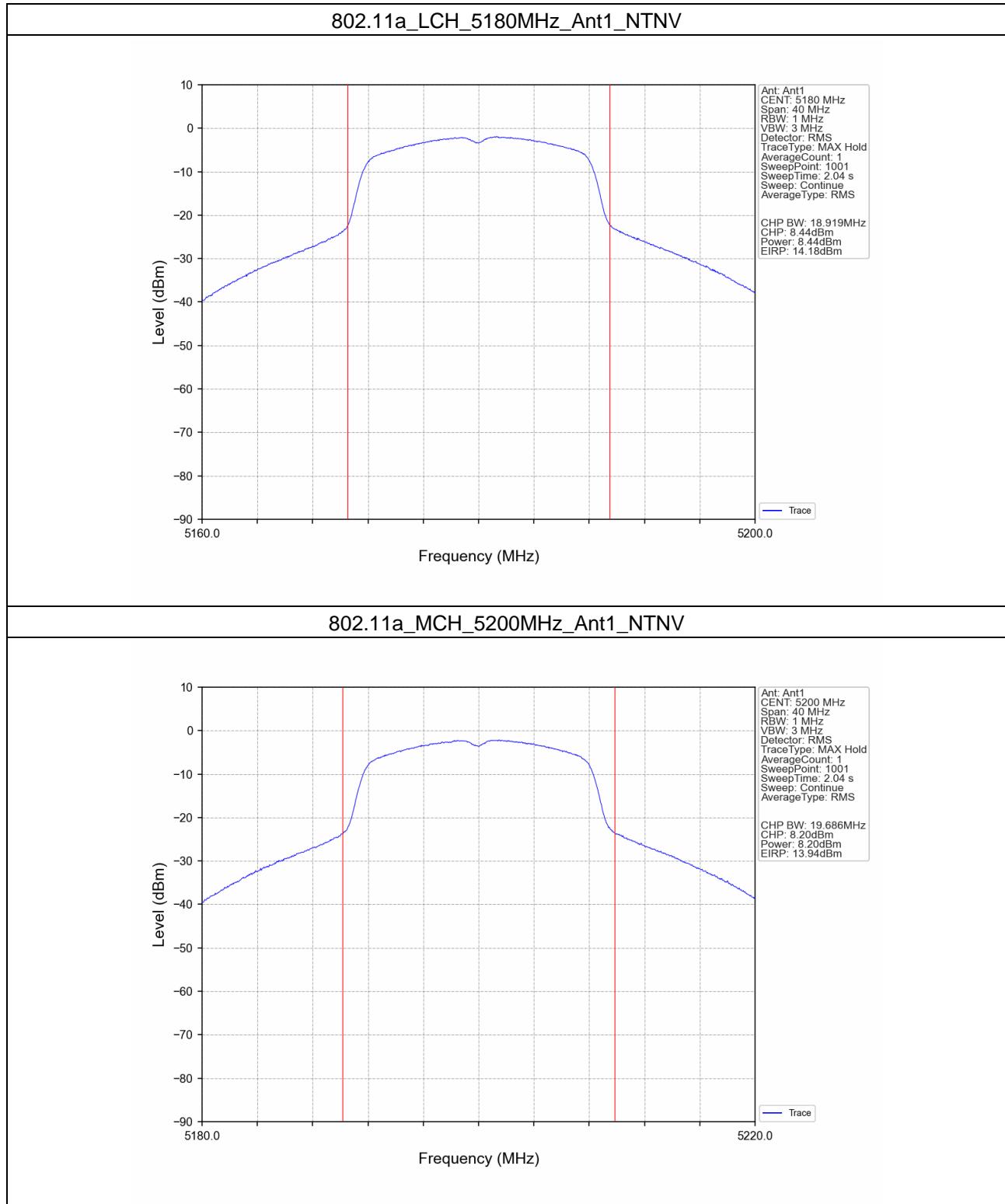
Mode	TX Type	Frequency (MHz)	E.I.R.P (dBm)		Verdict
			ANT1	Limit	
802.11a	SISO	5180	9.55	<=22.77	Pass
		5200	9.31	<=22.94	Pass
		5240	9.49	<=22.89	Pass
		5745	9.90	/	Pass
		5785	10.17	/	Pass
		5825	8.69	/	Pass
802.11n (HT20)	SISO	5180	9.60	<=22.92	Pass
		5200	9.43	<=22.89	Pass
		5240	9.80	<=23.01	Pass
		5745	10.19	/	Pass
		5785	10.03	/	Pass
		5825	8.54	/	Pass

Note1: Antenna Gain: Ant1: 1.11dBi;

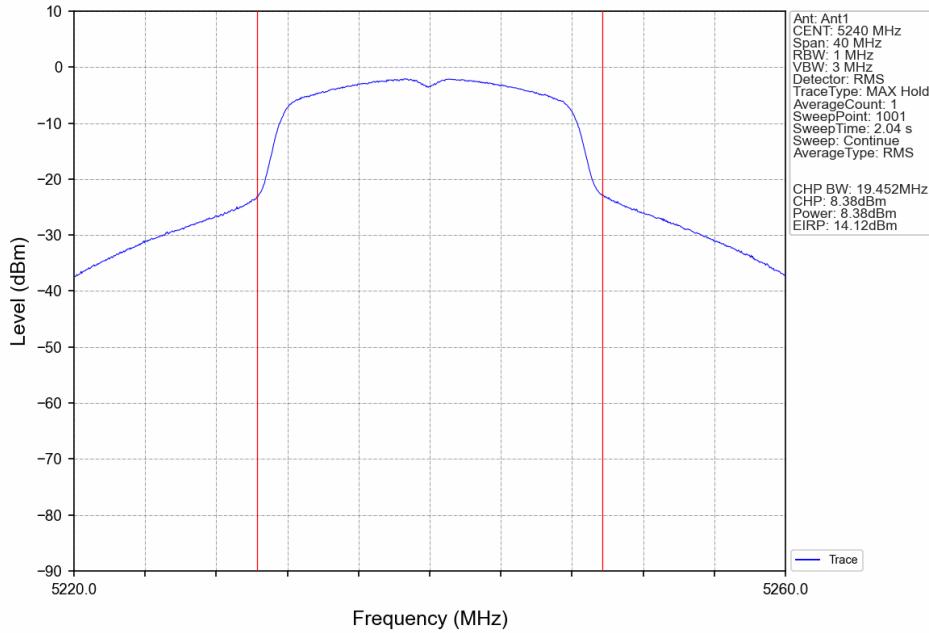
Note2: E.I.R.P = Measured Power + Antenna Gain

## 3.2 Test Graph

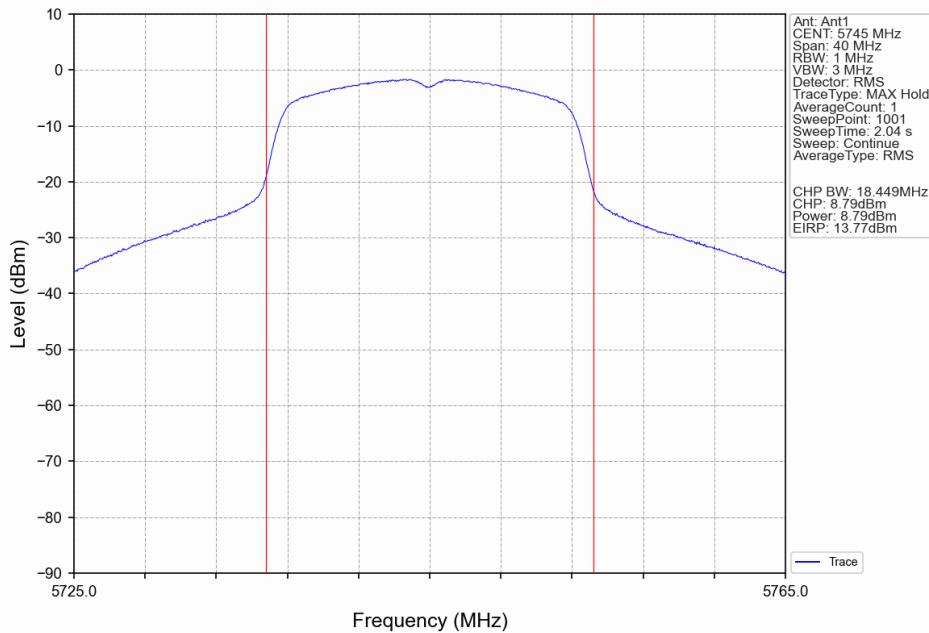
### 3.2.1 EIRP



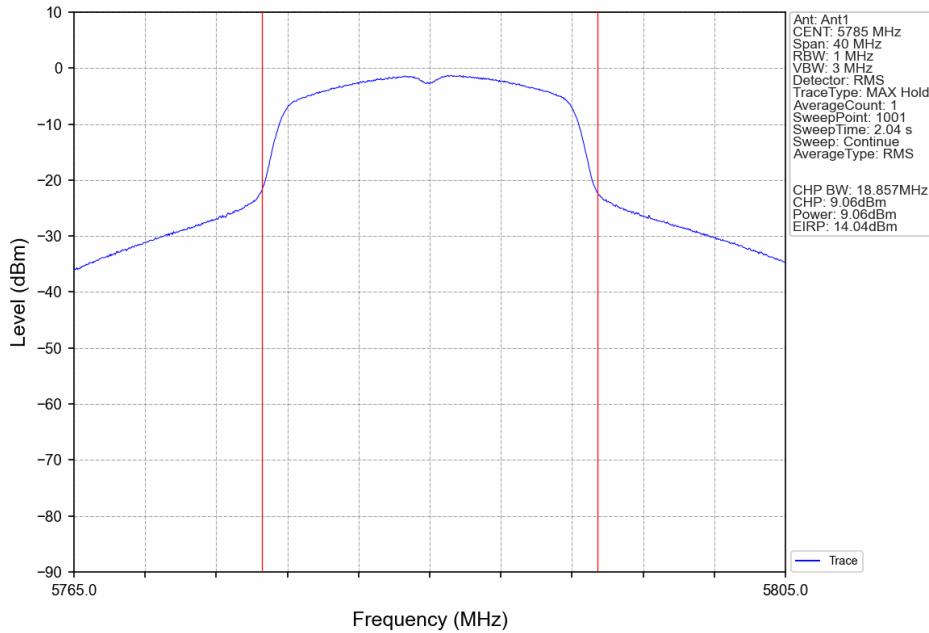
## 802.11a\_HCH\_5240MHz\_Ant1\_NTNV



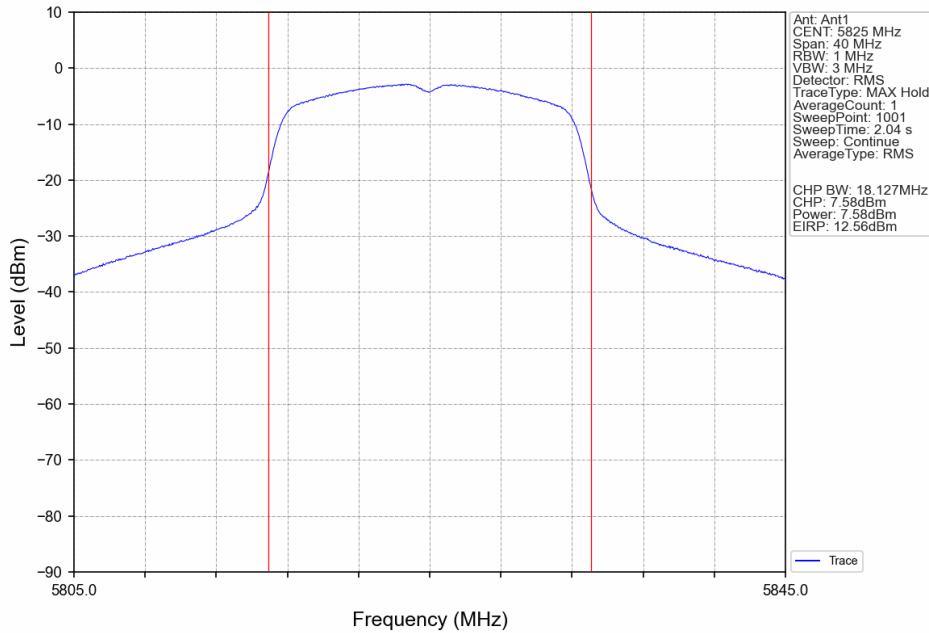
## 802.11a\_LCH\_5745MHz\_Ant1\_NTNV



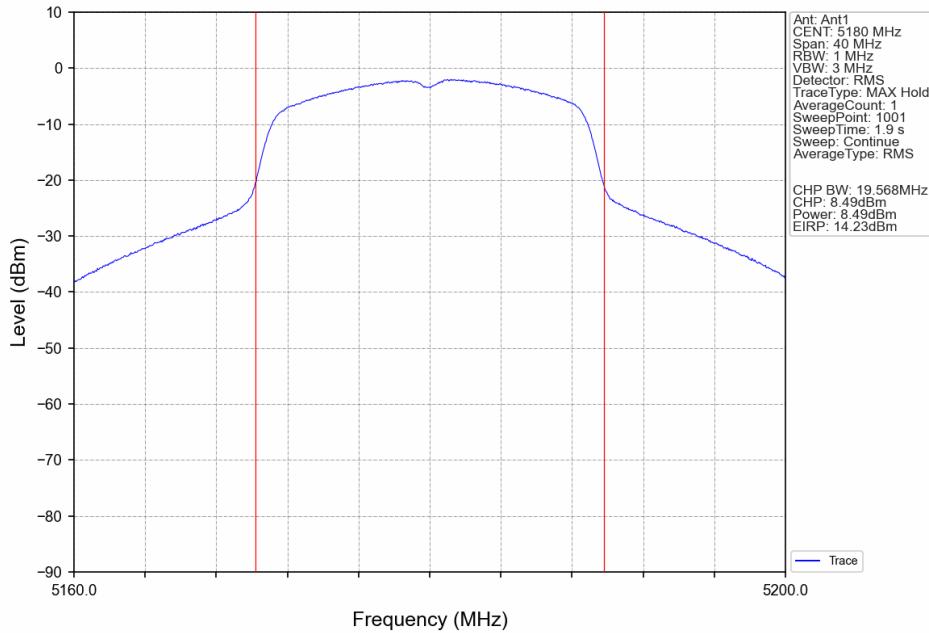
### 802.11a\_MCH\_5785MHz\_Ant1\_NTNV



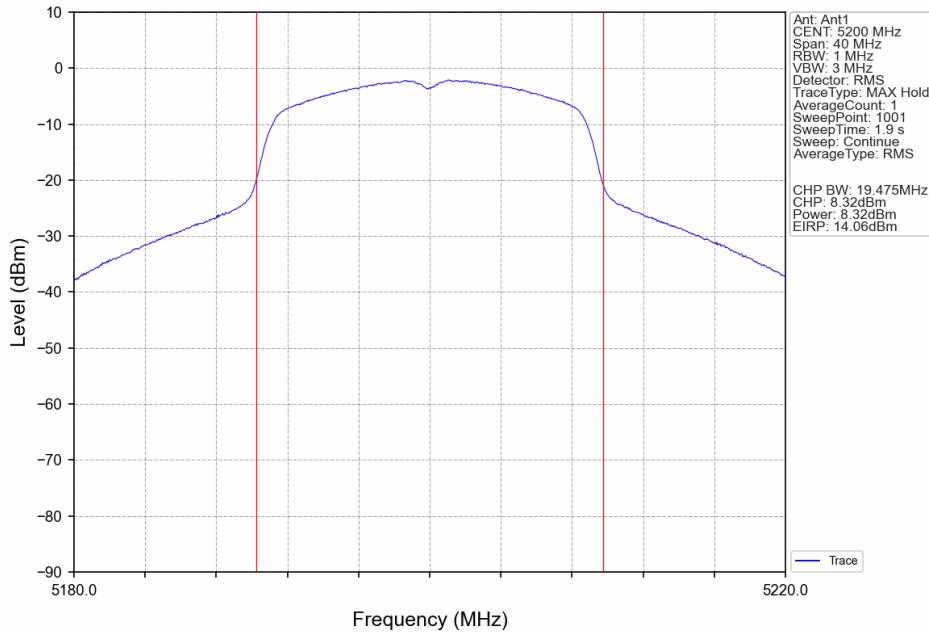
### 802.11a\_HCH\_5825MHz\_Ant1\_NTNV



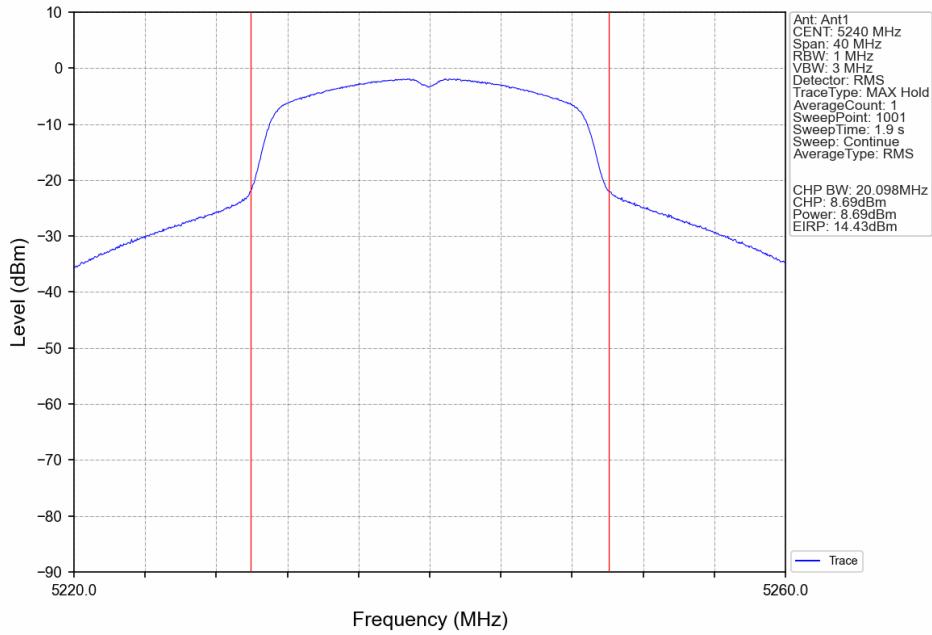
### 802.11n(HT20)\_LCH\_5180MHz\_Ant1\_NTNV



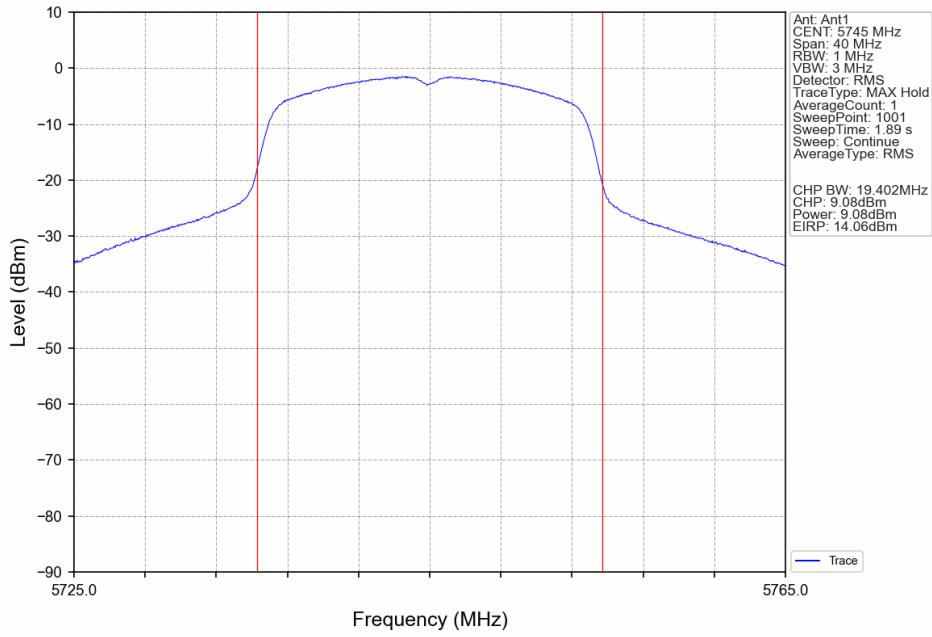
### 802.11n(HT20)\_MCH\_5200MHz\_Ant1\_NTNV



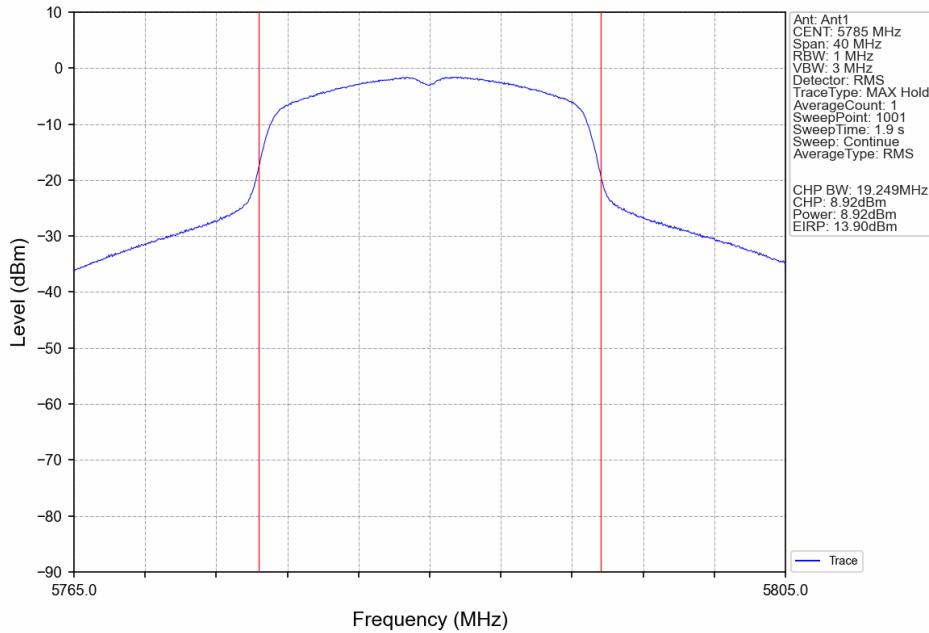
## 802.11n(HT20)\_HCH\_5240MHz\_Ant1\_NTNV



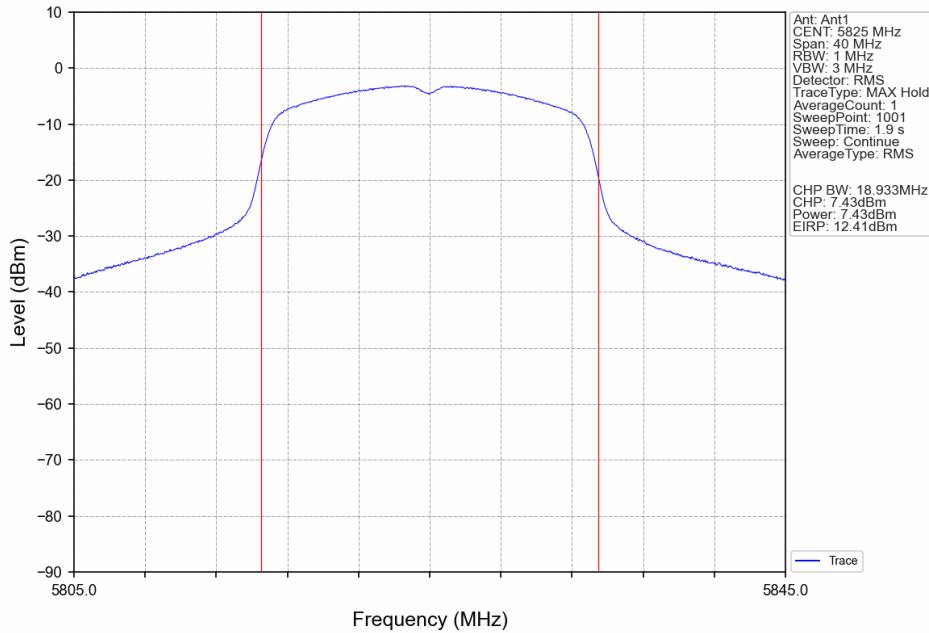
## 802.11n(HT20)\_LCH\_5745MHz\_Ant1\_NTNV



### 802.11n(HT20)\_MCH\_5785MHz\_Ant1\_NTNV



### 802.11n(HT20)\_HCH\_5825MHz\_Ant1\_NTNV



## 4. Maximum Power Spectral Density

### 4.1 Test Result

#### 4.1.1 PSD-Band3

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/500kHz)		Verdict
			ANT1	Limit	
802.11a	SISO	5745	-4.53	<=30	Pass
		5785	-4.16	<=30	Pass
		5825	-5.71	<=30	Pass
802.11n (HT20)	SISO	5745	-4.39	<=30	Pass
		5785	-4.31	<=30	Pass
		5825	-5.89	<=30	Pass

Note1: Antenna Gain: Ant1: 1.11dBi;

#### 4.1.2 E.I.R.PSD

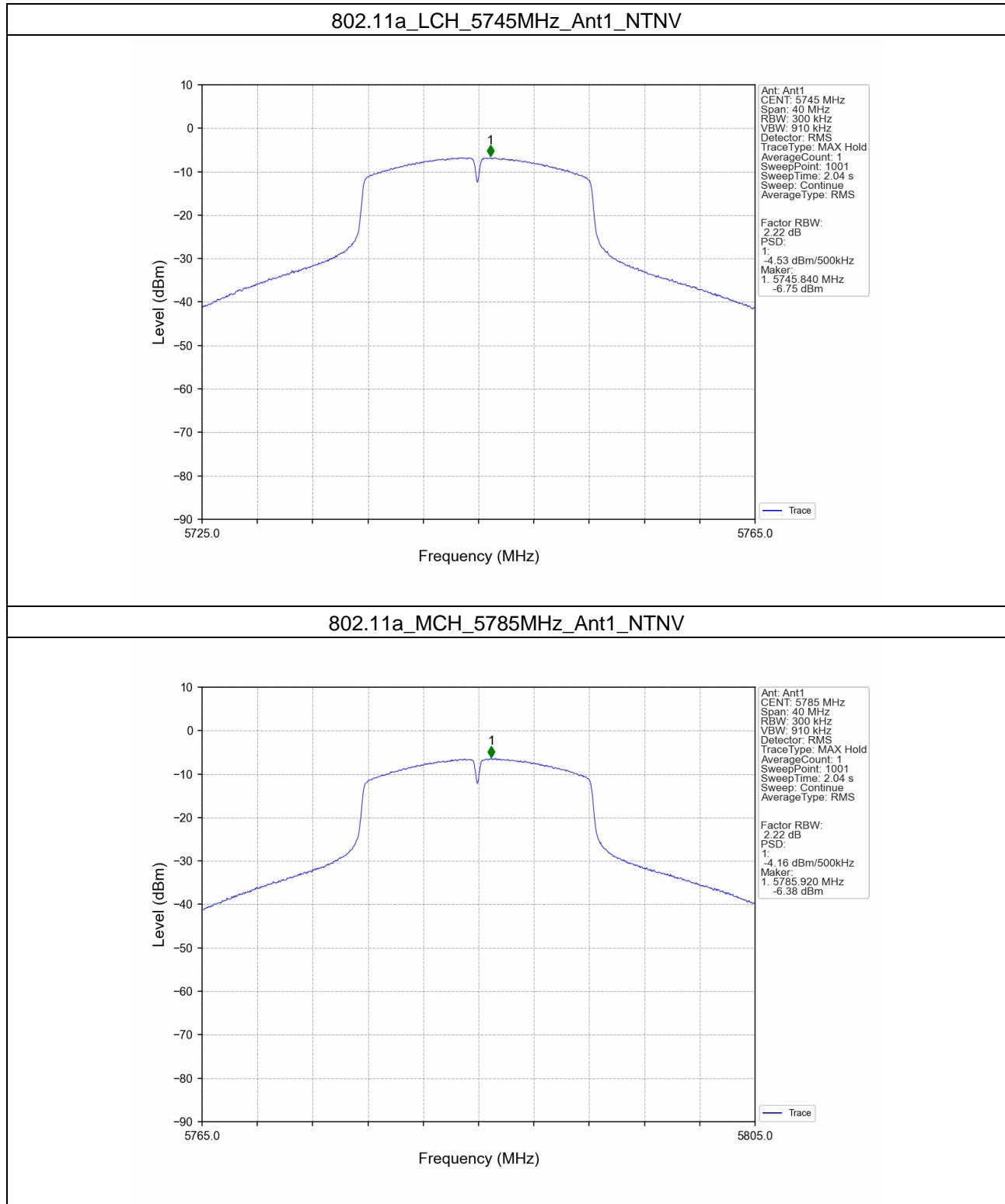
Mode	TX Type	Frequency (MHz)	Maximum E.I.R.PSD (dBm/MHz)		Verdict
			ANT1	Limit	
802.11a	SISO	5180	-3.42	<=10	Pass
		5200	-3.05	<=10	Pass
		5240	-4.60	<=10	Pass
802.11n (HT20)	SISO	5180	-3.28	<=10	Pass
		5200	-3.20	<=10	Pass
		5240	-4.78	<=10	Pass

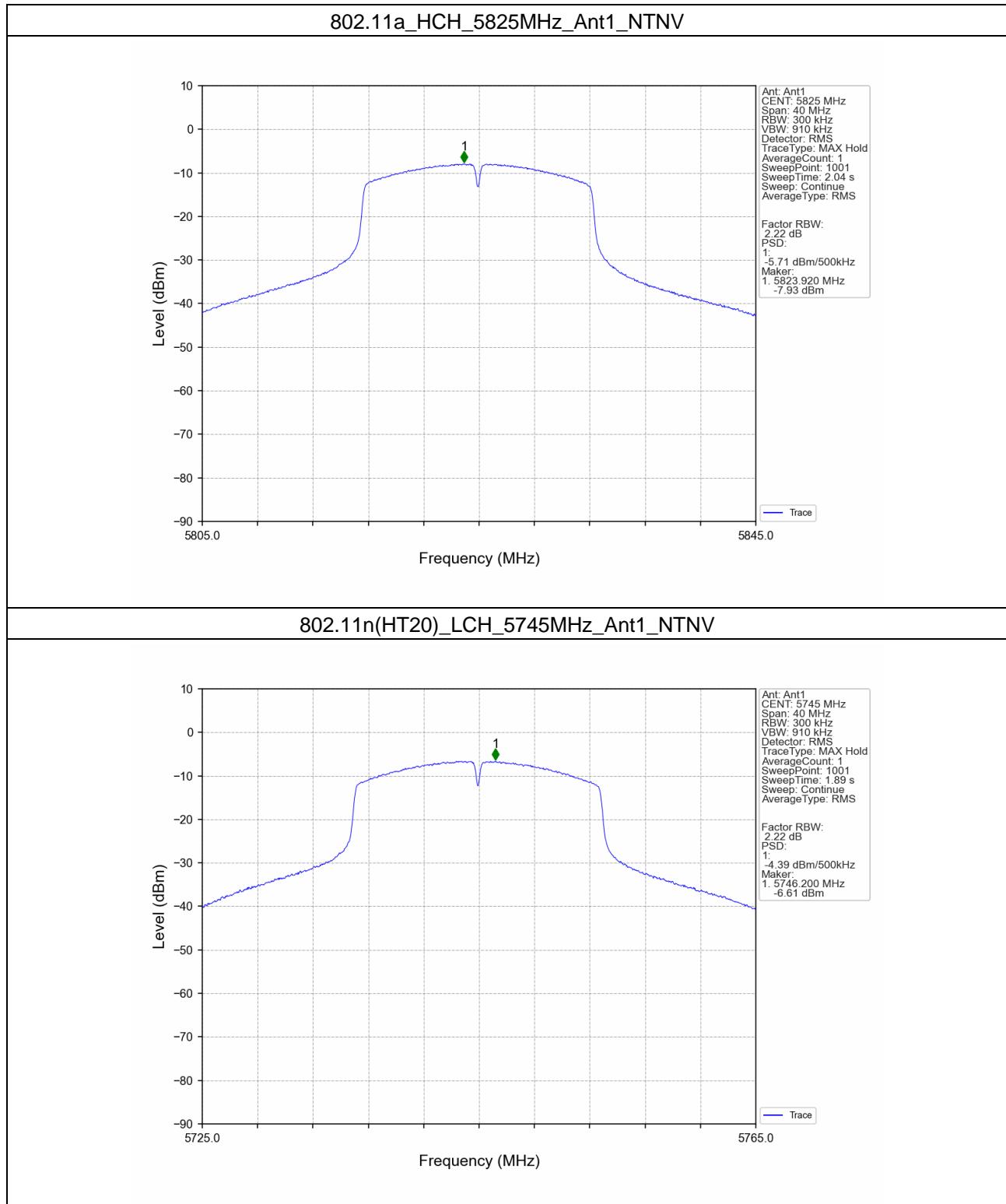
Note1: Antenna Gain: Ant1: 1.11dBi;

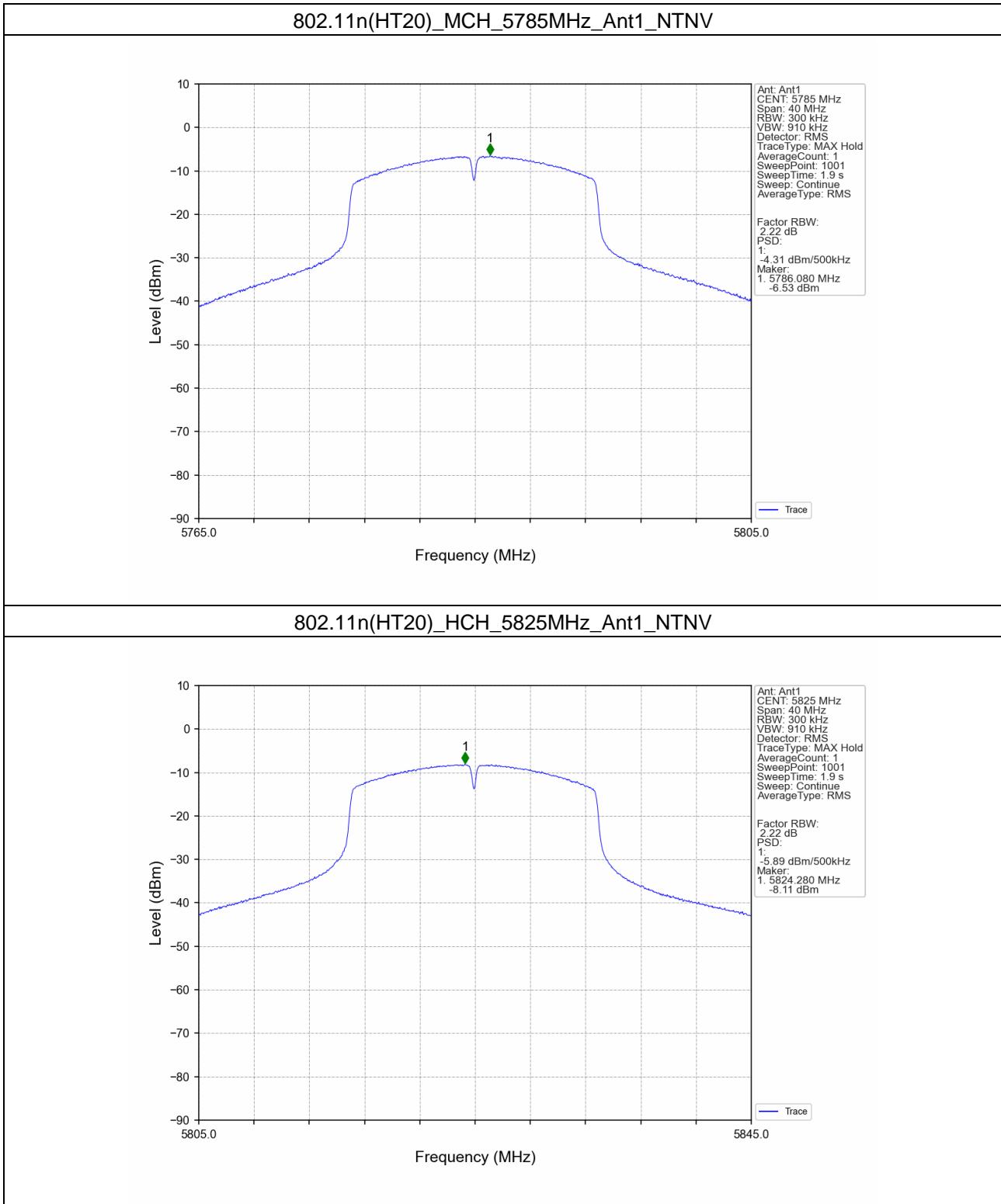
Note2: E.I.R.PSD = Measured PSD + Antenna Gain

## 4.2 Test Graph

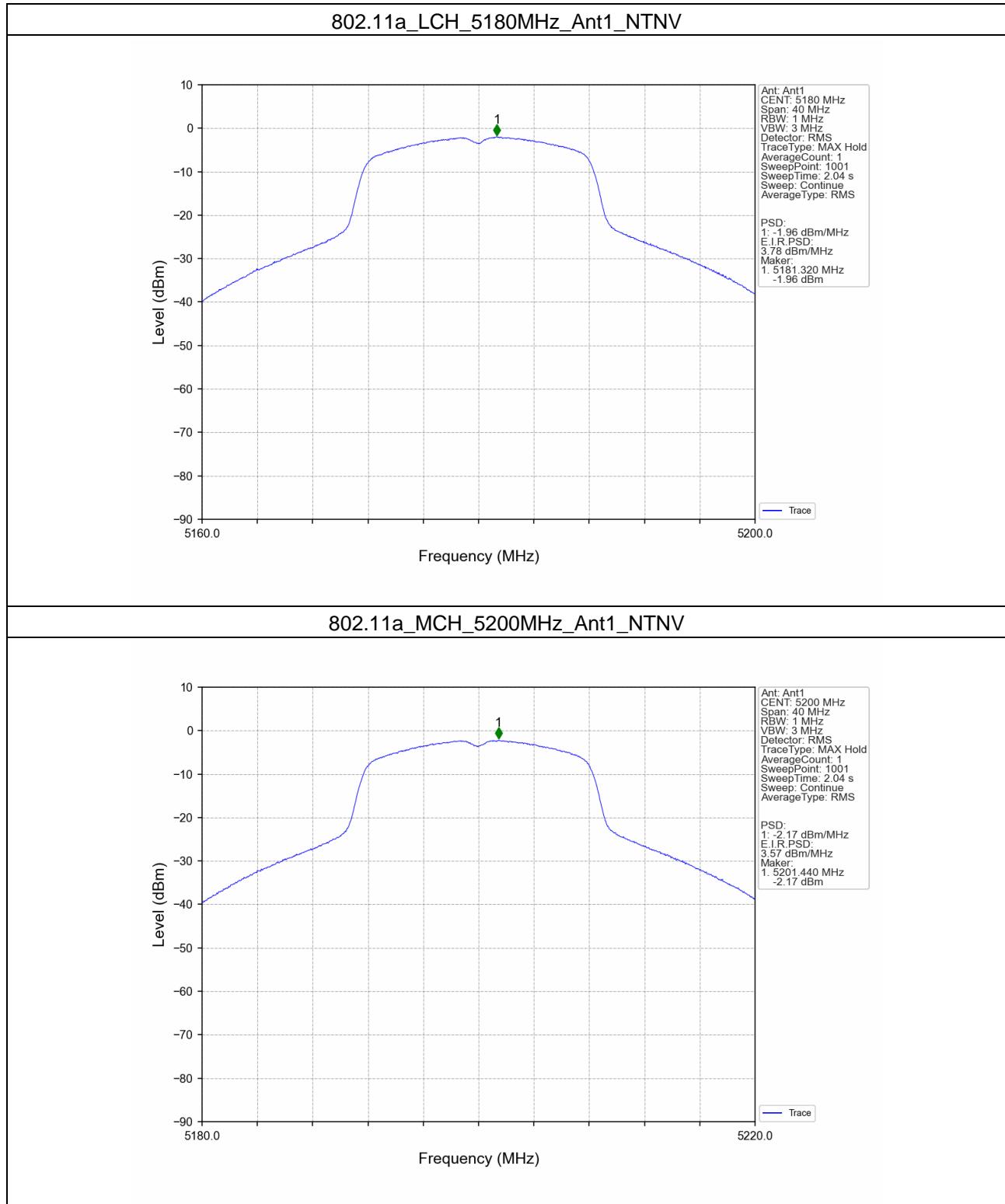
### 4.2.1 PSD-Band3

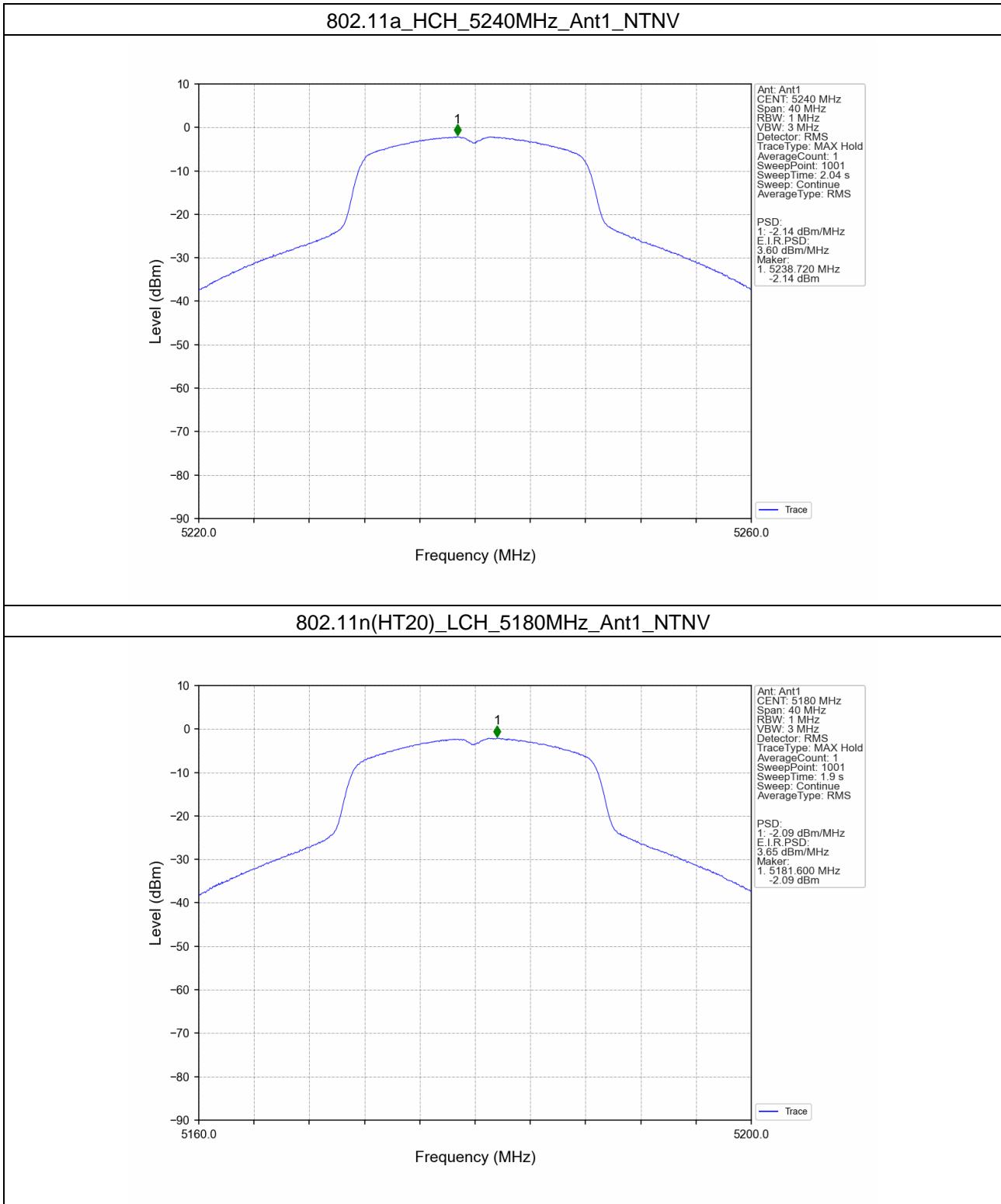




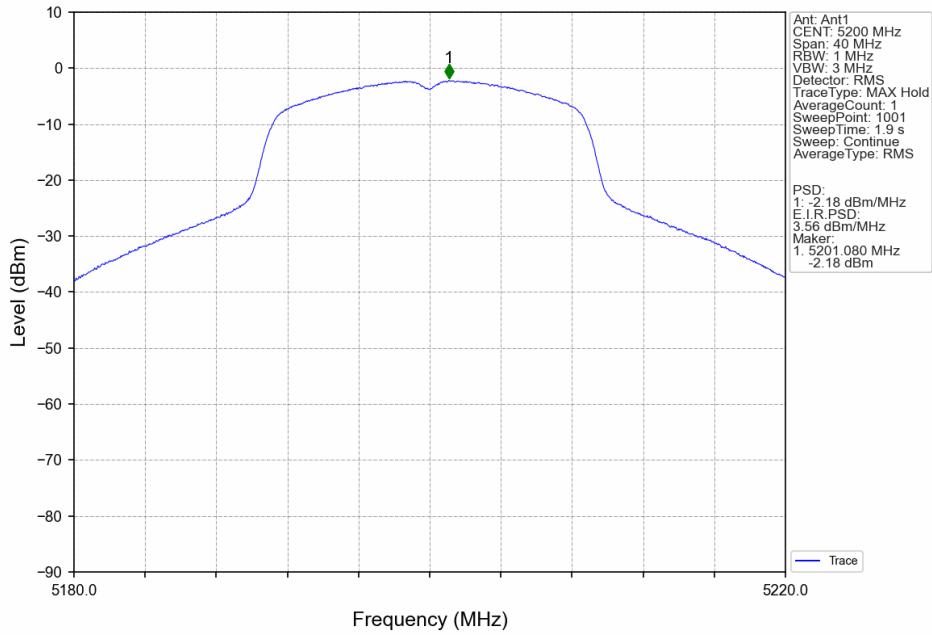


## 4.2.2 E.I.R.PSD

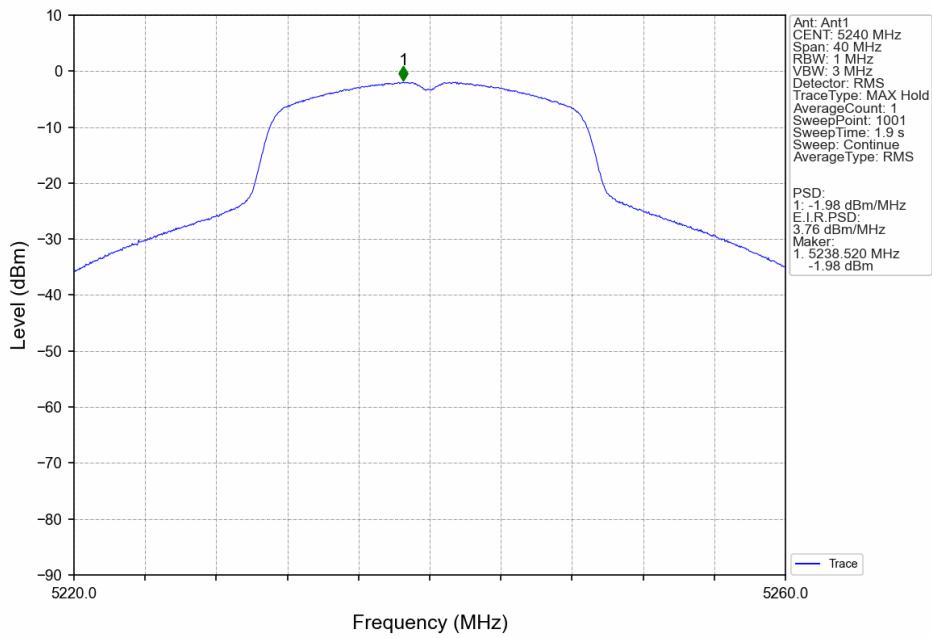




## 802.11n(HT20)\_MCH\_5200MHz\_Ant1\_NTNV



## 802.11n(HT20)\_HCH\_5240MHz\_Ant1\_NTNV



## 5. Frequency Stability

### 5.1 Test Result

#### 5.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit (MHz)	Verdict
802.11a	SISO	5180	20	25	5179.980	5172.432 to 5187.568	Pass
				27	5179.960	5172.432 to 5187.568	Pass
				29	5179.960	5172.432 to 5187.568	Pass
			-30	27	5179.960	5172.432 to 5187.568	Pass
			50	27	5179.960	5172.432 to 5187.568	Pass
		5200	20	25	5199.960	5192.126 to 5207.874	Pass
				27	5199.940	5192.126 to 5207.874	Pass
				29	5199.980	5192.126 to 5207.874	Pass
			-30	27	5199.920	5192.126 to 5207.874	Pass
			50	27	5199.960	5192.126 to 5207.874	Pass
		5240	20	25	5239.940	5232.219 to 5247.781	Pass
				27	5239.900	5232.219 to 5247.781	Pass
				29	5239.960	5232.219 to 5247.781	Pass
			-30	27	5239.920	5232.219 to 5247.781	Pass
			50	27	5239.920	5232.219 to 5247.781	Pass
		5745	20	25	5744.900	5737.62 to 5752.38	Pass
				27	5744.880	5737.62 to 5752.38	Pass
				29	5744.880	5737.62 to 5752.38	Pass
			-30	27	5744.880	5737.62 to 5752.38	Pass
			50	27	5744.920	5737.62 to 5752.38	Pass
		5785	20	25	5784.940	5777.457 to 5792.543	Pass
				27	5784.920	5777.457 to 5792.543	Pass
				29	5784.940	5777.457 to 5792.543	Pass
			-30	27	5784.960	5777.457 to 5792.543	Pass
			50	27	5784.920	5777.457 to 5792.543	Pass
		5825	20	25	5824.920	5817.749 to 5832.251	Pass
				27	5824.900	5817.749 to 5832.251	Pass
				29	5824.880	5817.749 to 5832.251	Pass
			-30	27	5825.000	5817.749 to 5832.251	Pass
			50	27	5824.880	5817.749 to 5832.251	Pass
802.11n (HT20)	SISO	5180	20	25	5179.980	5172.173 to 5187.827	Pass
				27	5179.940	5172.173 to 5187.827	Pass

			29	5179.920	5172.173 to 5187.827	Pass
		-30	27	5180.000	5172.173 to 5187.827	Pass
		50	27	5179.920	5172.173 to 5187.827	Pass
5200	20	25	5199.960	5192.21 to 5207.79	Pass	
		27	5199.980	5192.21 to 5207.79	Pass	
		29	5199.960	5192.21 to 5207.79	Pass	
		-30	27	5199.900	5192.21 to 5207.79	Pass
		50	27	5199.960	5192.21 to 5207.79	Pass
5240	20	25	5239.880	5231.961 to 5248.039	Pass	
		27	5239.920	5231.961 to 5248.039	Pass	
		29	5239.920	5231.961 to 5248.039	Pass	
		-30	27	5239.920	5231.961 to 5248.039	Pass
		50	27	5239.940	5231.961 to 5248.039	Pass
5745	20	25	5744.920	5737.239 to 5752.761	Pass	
		27	5744.880	5737.239 to 5752.761	Pass	
		29	5744.960	5737.239 to 5752.761	Pass	
		-30	27	5744.920	5737.239 to 5752.761	Pass
		50	27	5744.940	5737.239 to 5752.761	Pass
5785	20	25	5784.920	5777.3 to 5792.7	Pass	
		27	5784.920	5777.3 to 5792.7	Pass	
		29	5784.900	5777.3 to 5792.7	Pass	
		-30	27	5784.920	5777.3 to 5792.7	Pass
		50	27	5784.940	5777.3 to 5792.7	Pass
5825	20	25	5824.920	5817.427 to 5832.573	Pass	
		27	5824.840	5817.427 to 5832.573	Pass	
		29	5824.920	5817.427 to 5832.573	Pass	
		-30	27	5824.900	5817.427 to 5832.573	Pass
		50	27	5824.920	5817.427 to 5832.573	Pass

- End of the Report -