

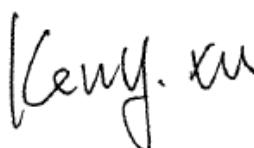
Report No.: SZCR210402058704  
Page: 1 of 125

# TEST REPORT

<b>Application No.:</b>	SZCR2104020587AT
<b>Applicant:</b>	GUANGDONG GENIUS TECHNOLOGY CO., LTD.
<b>Address of Applicant:</b>	No.168, Middle Road Of East Gate, Xiaobian Community, Chang'an Town, Dongguan City, Guangdong, China
<b>Manufacturer:</b>	GUANGDONG GENIUS TECHNOLOGY CO., LTD.
<b>Address of Manufacturer:</b>	No.168, Middle Road Of East Gate, Xiaobian Community, Chang'an Town, Dongguan City, Guangdong, China
<b>Factory:</b>	GUANGDONG GENIUS TECHNOLOGY CO., LTD.
<b>Address of Factory:</b>	No.168, Middle Road Of East Gate, Xiaobian Community, Chang'an Town, Dongguan City, Guangdong, China
<b>Equipment Under Test (EUT):</b>	
<b>EUT Name:</b>	Watch Phone
<b>Model No.:</b>	W1818AO
<b>Trade Mark:</b>	imoo
<b>FCC ID:</b>	2AYJFI18
<b>Standard(s) :</b>	47 CFR Part 15, Subpart C 15.247
<b>Date of Receipt:</b>	2021-04-16
<b>Date of Test:</b>	2021-04-19 to 2021-05-17
<b>Date of Issue:</b>	2021-06-17

<b>Test Result:</b>	<b>Pass*</b>
---------------------	--------------

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



Keny Xu  
EMC Laboratory Manager



SGS-CSTC Standards Technical Services Co., Ltd.  
Shenzhen Branch Inspection & Testing Services Laboratory

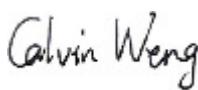
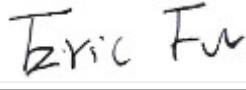
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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-06-17		Original

Authorized for issue by:			
		Calvin Weng	
		Calvin Weng/Project Engineer	
		Eric Fu	
		Eric Fu/Reviewer	



## 2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Duty Cycle	47 CFR Part 15, Subpart C 15.247	KDB 558074 D01 v05r02 section 6	KDB 558074 D01 v05r02 section 6	Pass
Conducted Peak Output Power		ANSI C63.10 (2013) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth		ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectrum Density		ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2013) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2013) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass

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## 4 General Information

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

Power supply:	DC3.85V by li-ion battery(680mAh) Recharge input: DC5V/1200mA from power adapter
Cable(s):	USB charge cable: 1m unshielded cable without ferrite core
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz; 802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK); 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	802.11b/g/n(HT20):11 802.11n(HT40):7
Channel Spacing:	5MHz
Antenna Type:	PIFA Antenna
Antenna Gain:	0.5dBi
Remark:	WIFI can't work while charging

### 4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
--	--	--	--

The EUT has been tested as an independent unit.

### 4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Peak Output Power	± 0.75dB
Minimum 6dB Bandwidth	± 3%
Power Spectrum Density	± 2.84dB
Conducted Band Edges Measurement	± 0.75dB
Conducted Spurious Emissions	± 0.75dB
Radiated Emissions which fall in the restricted bands	± 4.5dB (Below 1GHz);± 4.8dB (Above 1GHz)
Radiated Spurious Emissions Below 1GHz	± 4.5dB
Radiated Spurious Emissions Above 1GHz	± 4.8dB

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### 4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.  
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

### 4.5 Test Facility

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

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

### 4.6 Deviation from Standards

None

### 4.7 Abnormalities from Standard Conditions

None

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## 5 Equipment List

Duty cycle					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021-04-08	2022-04-07

Conducted Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021-04-08	2022-04-07

Minimum 6dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021-04-08	2022-04-07

Power Spectrum Density					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021-04-08	2022-04-07



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## Conducted Band Edges Measurement

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021-04-08	2022-04-07

## Conducted Spurious Emissions

Conducted Spurious Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021-04-08	2022-04-07

## Radiated Emissions which fall in the restricted bands

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2021-03-26	2024-03-25
EXA Signal Analyzer	Agilent Technologies Inc	N9010A	SEM004-12	2021-02-01	2022-01-31
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2021-04-14	2024-04-13
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2020-09-23	2021-09-22
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2020-07-10	2021-07-09
Horn Antenna	Schwarzbeck	BBHA 9170	SEM003-15	2020-11-14	2023-11-13
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2021-03-24	2022-03-23

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Shenzhen Branch, Shenzhen SGS Laboratory

**Radiated Spurious Emissions Below 1GHz**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2020-11-02	2021-11-01
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2020-08-14	2023-08-13
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-02	2019-05-24	2022-05-23
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2021-03-24	2022-03-23
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2020-07-10	2021-07-09

**Radiated Spurious Emissions Above 1GHz**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2021-03-26	2024-03-25
EXA Signal Analyzer	Agilent Technologies Inc	N9010A	SEM004-12	2021-02-01	2022-01-31
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2021-04-14	2024-04-13
Horn Antenna	Schwarzbeck	BBHA 9170	SEM003-15	2020-11-14	2023-11-13
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2020-09-23	2021-09-22
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2020-07-10	2021-07-09

**General used equipment**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2020-09-15	2021-09-14
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2020-09-15	2021-09-14
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2021-03-30	2022-03-29

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## 6 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

#### 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 permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0.5 dBi.

Antenna location: Refer to internal photo.

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## 7 Radio Spectrum Matter Test Results

### 7.1 Duty Cycle

Test Requirement: KDB 558074 D01 v05r02 section 6  
Test Method: KDB 558074 D01 v05r02 section 6

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

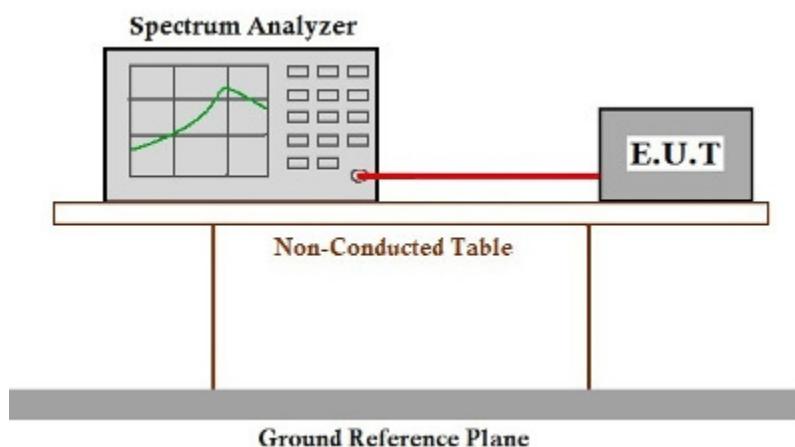
Operating Environment:

Temperature: 25.5 °C      Humidity: 40.0 % RH      Atmospheric Pressure: 1010 mbar

#### 7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

#### 7.1.3 Test Setup Diagram



#### 7.1.4 Measurement Procedure and Data

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## 7.2 Conducted Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)

Test Method: ANSI C63.10 (2013) Section 11.9.1

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for $\geq 50$ hopping channels
	0.25 for $25 \leq$ hopping channels $< 50$
	1 for digital modulation
2400-2483.5	1 for $\geq 75$ non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.9 °C

Humidity: 34.4 % RH

Atmospheric Pressure: 1010 mbar

### 7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

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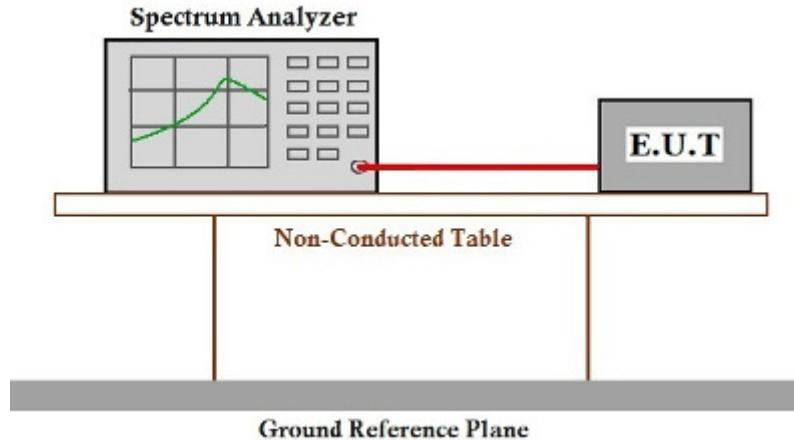
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### 7.2.3 Test Setup Diagram



### 7.2.4 Measurement Procedure and Data

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### 7.3 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)

Test Method: ANSI C63.10 (2013) Section 11.8.1

Limit:

≥500 kHz

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

Operating Environment:

Temperature: 25.9 °C

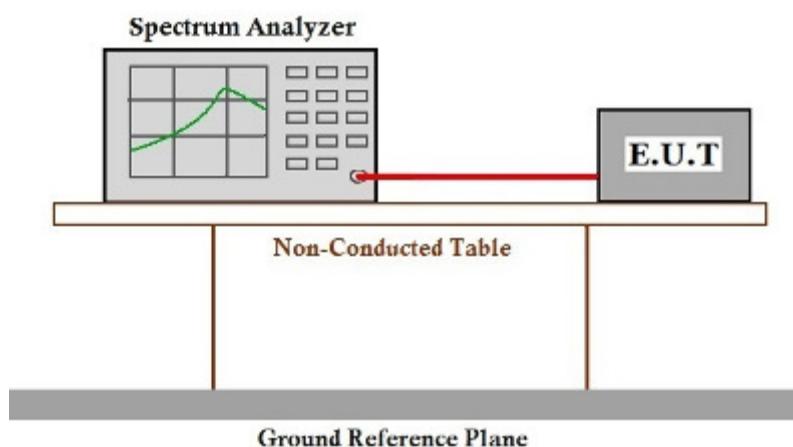
Humidity: 34.4 % RH

Atmospheric Pressure: 1010 mbar

#### 7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

#### 7.3.3 Test Setup Diagram



#### 7.3.4 Measurement Procedure and Data

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## 7.4 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)

Test Method: ANSI C63.10 (2013) Section 11.10.2

Limit:

≤8dBm in any 3 kHz band during any time interval of continuous transmission

### 7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25.9 °C

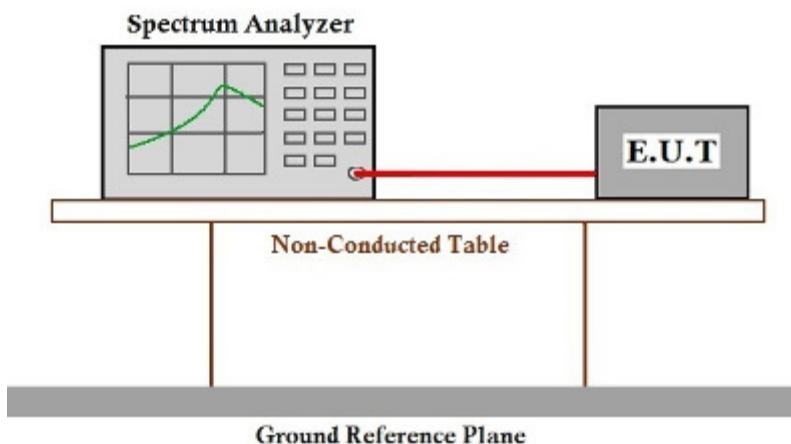
Humidity: 34.4 % RH

Atmospheric Pressure: 1010 mbar

### 7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 7.4.3 Test Setup Diagram



### 7.4.4 Measurement Procedure and Data

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## 7.5 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)  
Test Method: ANSI C63.10 (2013) Section 11.13.3.2

Limit:

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

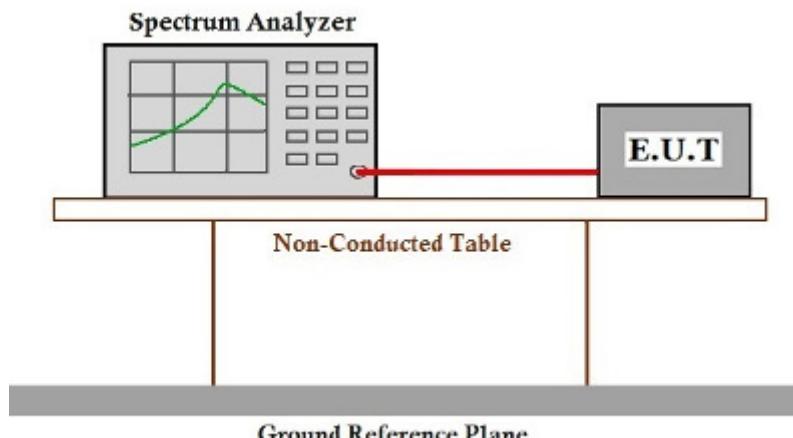
### 7.5.1 E.U.T. Operation

Operating Environment:  
Temperature: 25.9 °C      Humidity: 34.4 % RH      Atmospheric Pressure: 1010 mbar

### 7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 7.5.3 Test Setup Diagram



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### 7.5.4 Measurement Procedure and Data

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## 7.6 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)

Test Method: ANSI C63.10 (2013) Section 11.11

Limit:

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

### 7.6.1 E.U.T. Operation

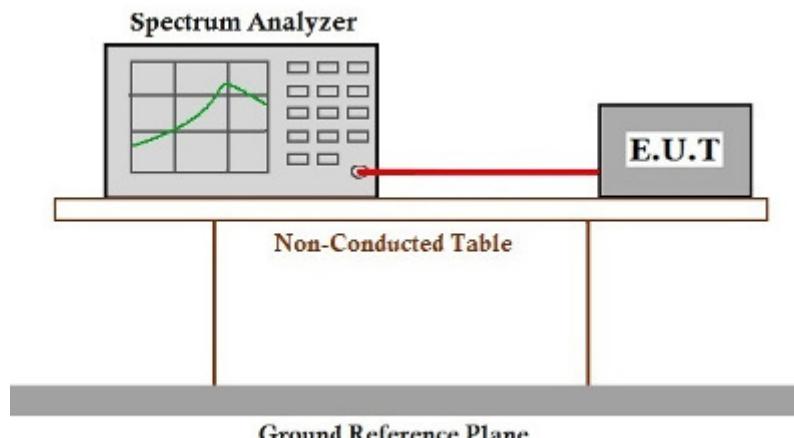
Operating Environment:

Temperature: 25.9 °C      Humidity: 34.4 % RH      Atmospheric Pressure: 1010 mbar

### 7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 7.6.3 Test Setup Diagram



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## 7.6.4 Measurement Procedure and Data

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**7.7 Radiated Emissions which fall in the restricted bands**

Test Requirement 47 CFR Part 15, Subpart C 15.205 &amp; 15.209

Test Method: ANSI C63.10 (2013) Section 6.10.5

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

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.

**7.7.1 E.U.T. Operation**

Operating Environment:

Temperature: 23.5 °C

Humidity: 56.3 % RH

Atmospheric Pressure: 1010 mbar

**7.7.2 Test Mode Description**

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

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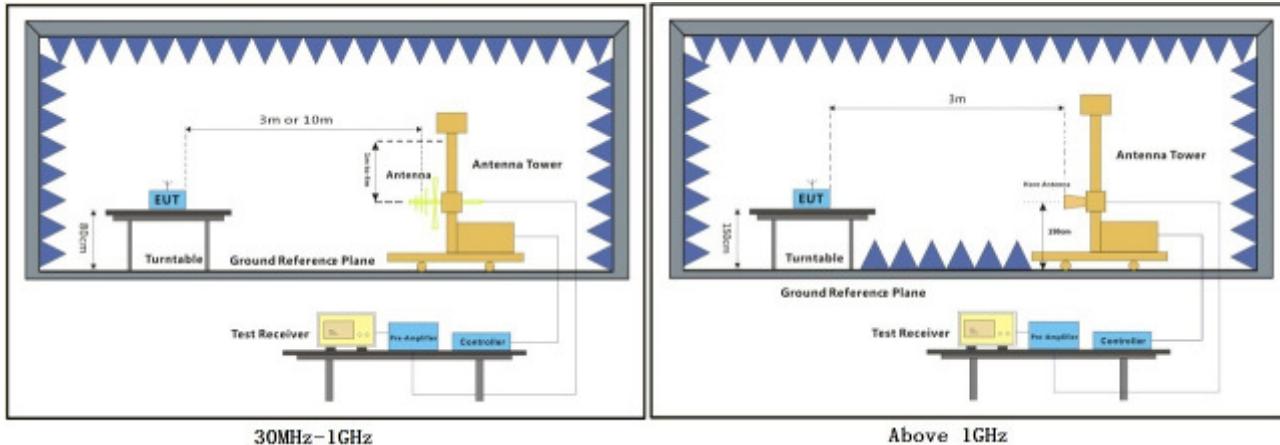


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## 7.7.3 Test Setup Diagram



## 7.7.4 Measurement Procedure and Data

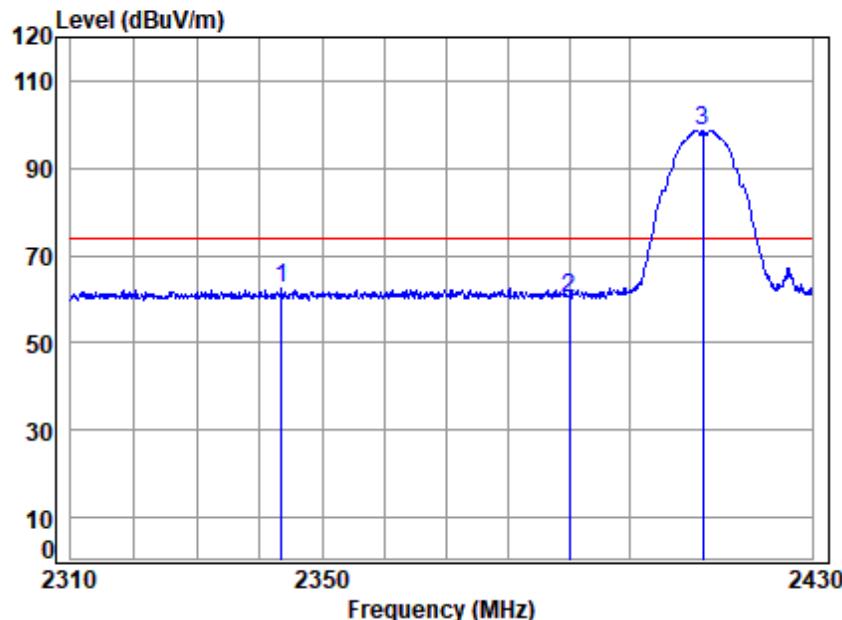
- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 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.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- 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.
- Repeat above procedures until all frequencies measured was complete.

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

Remark 2: 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.



Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



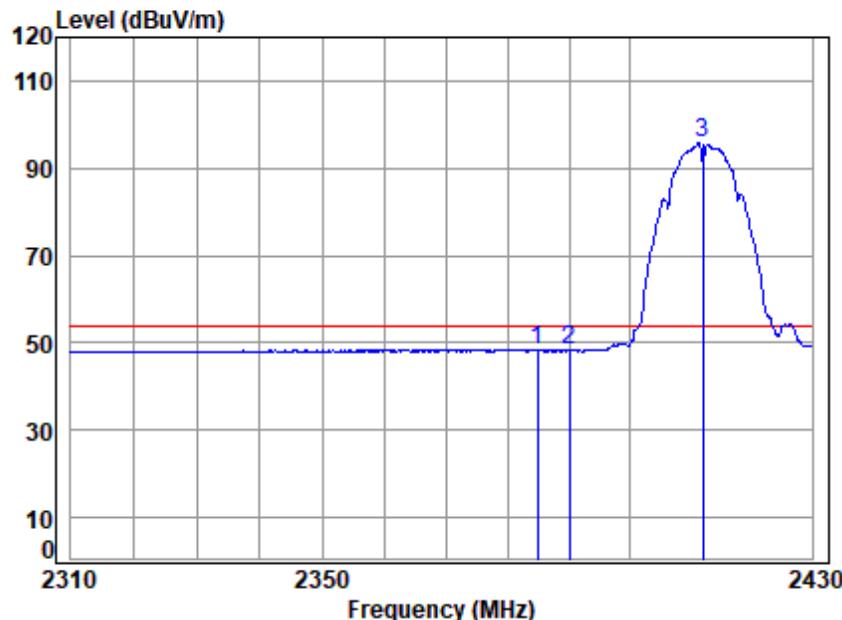
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				dB	dB/m			
MHz								
1	2343.464	4.27	28.78	40.40	69.80	62.45	74.00	-11.55 peak
2	2390.000	4.34	28.88	40.42	67.51	60.31	74.00	-13.69 peak
3 *	2412.000	4.38	28.92	40.43	105.68	98.55	74.00	24.55 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



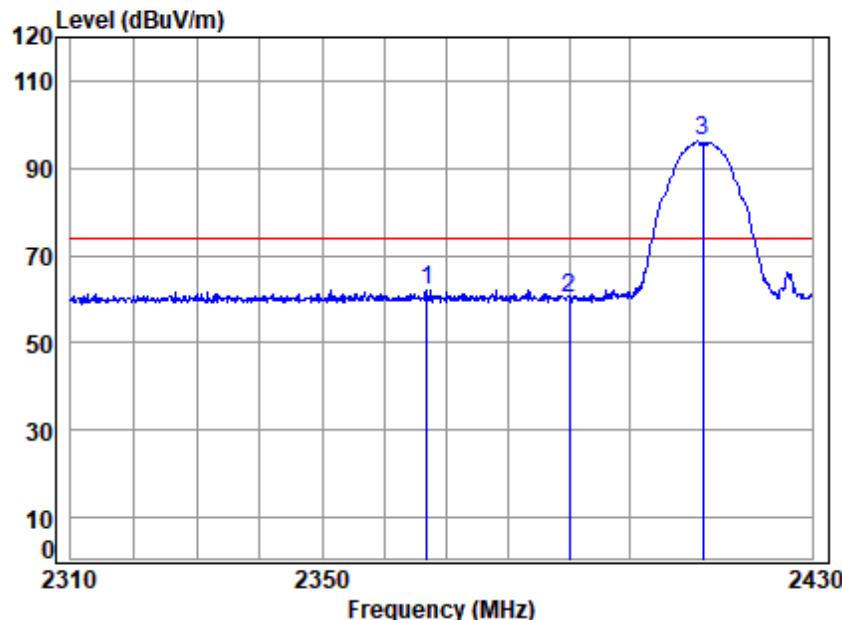
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11B

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark		
	MHz	Loss	Factor	Factor	Level	Level	Line	Limit	
1	2384.890	4.34	28.87	40.42	55.57	48.36	54.00	-5.64	Average
2	2390.000	4.34	28.88	40.42	55.53	48.33	54.00	-5.67	Average
3 *	2412.000	4.38	28.92	40.43	102.84	95.71	54.00	41.71	Average

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Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



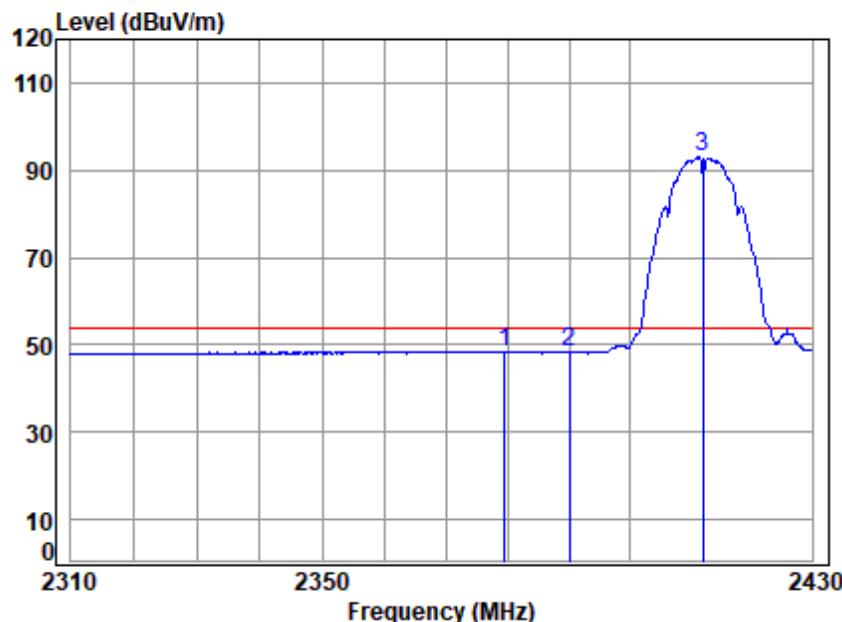
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11B

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2366.962	4.31	28.83	40.41	69.32	62.05	74.00 -11.95 Peak
2	2390.000	4.34	28.88	40.42	67.24	60.04	74.00 -13.96 Peak
3 *	2412.000	4.38	28.92	40.43	103.25	96.12	74.00 22.12 Peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



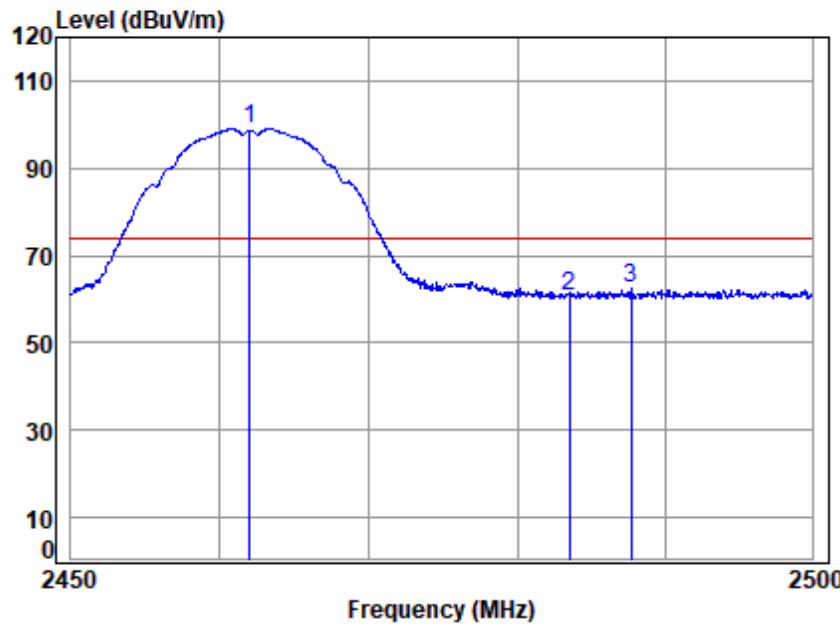
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				Level	dBuV			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 2379.461	4.33	28.86	40.41	55.73	48.51	54.00	-5.49	Average
2 2390.000	4.34	28.88	40.42	55.41	48.21	54.00	-5.79	Average
3 * 2412.000	4.38	28.92	40.43	100.38	93.25	54.00	39.25	Average

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



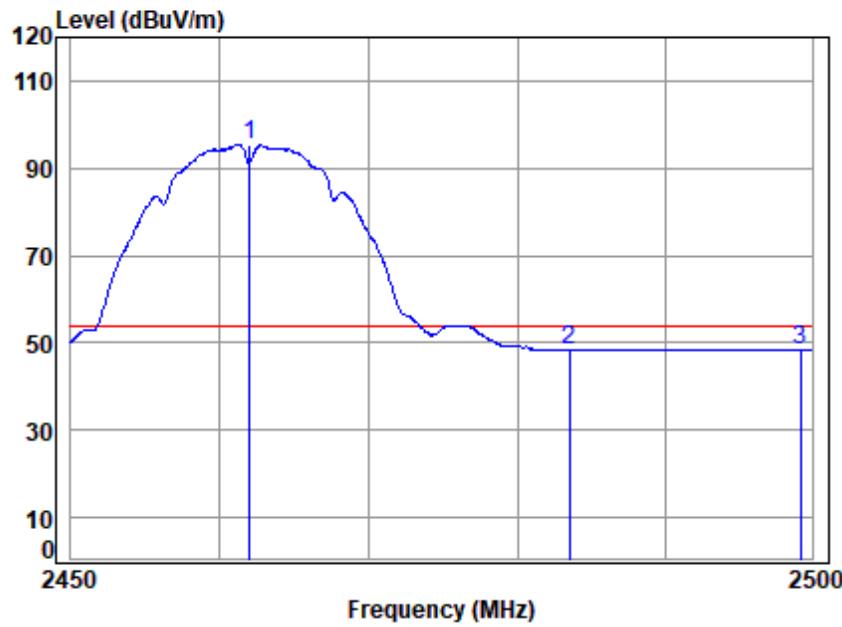
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11B

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Factor	Level	Level	Line	Limit
1 * 2462.000	4.46	29.02	40.46	105.94	98.96	74.00	24.96	peak
2 2483.500	4.49	29.07	40.47	67.74	60.83	74.00	-13.17	peak
3 2487.707	4.50	29.08	40.47	69.18	62.29	74.00	-11.71	peak

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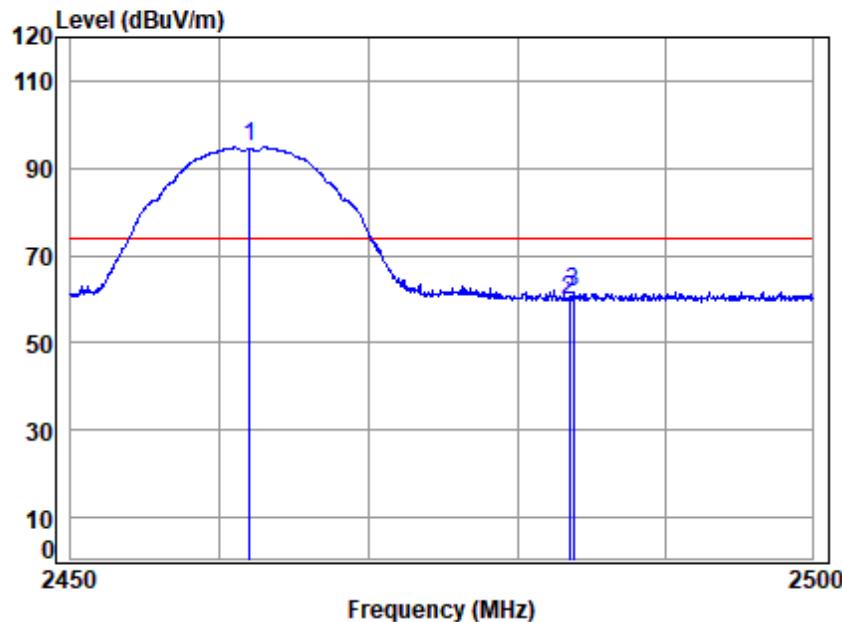
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				dB	dB/m			
1 * 2462.000	4.46	29.02	40.46	102.45	95.47	54.00	41.47	Average
2 2483.500	4.49	29.07	40.47	55.32	48.41	54.00	-5.59	Average
3 2499.192	4.52	29.10	40.47	55.41	48.56	54.00	-5.44	Average

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Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



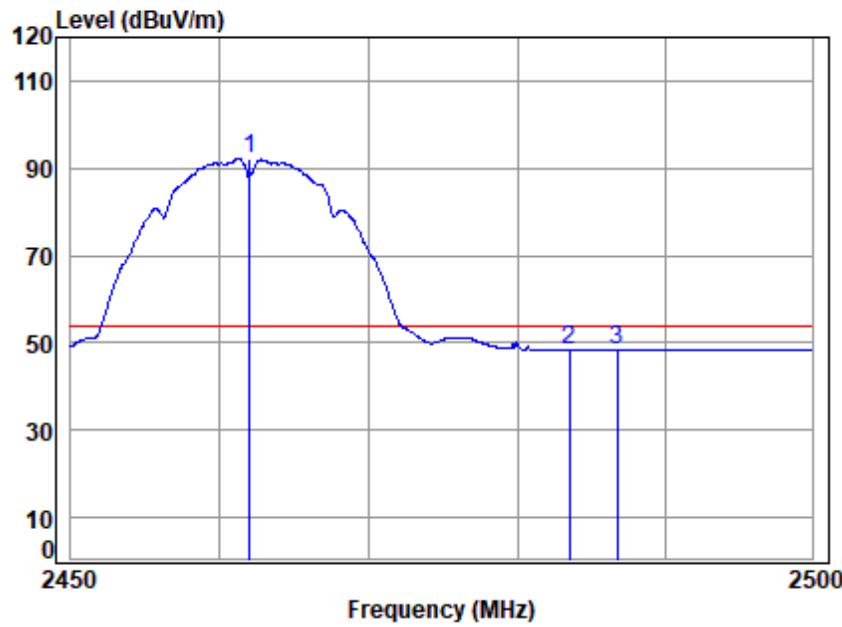
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11B

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1 * 2462.000	4.46	29.02	40.46	101.80	94.82	74.00	20.82 Peak
2 2483.500	4.49	29.07	40.47	66.86	59.95	74.00	-14.05 Peak
3 2483.790	4.49	29.07	40.47	68.59	61.68	74.00	-12.32 Peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Line Limit	Over Limit	Remark	
								dB	
MHz									
1 * 2462.000	4.46	29.02	40.46	99.25	92.27	54.00	38.27	Average	
2 2483.500	4.49	29.07	40.47	55.23	48.32	54.00	-5.68	Average	
3 2486.752	4.50	29.07	40.47	55.45	48.55	54.00	-5.45	Average	

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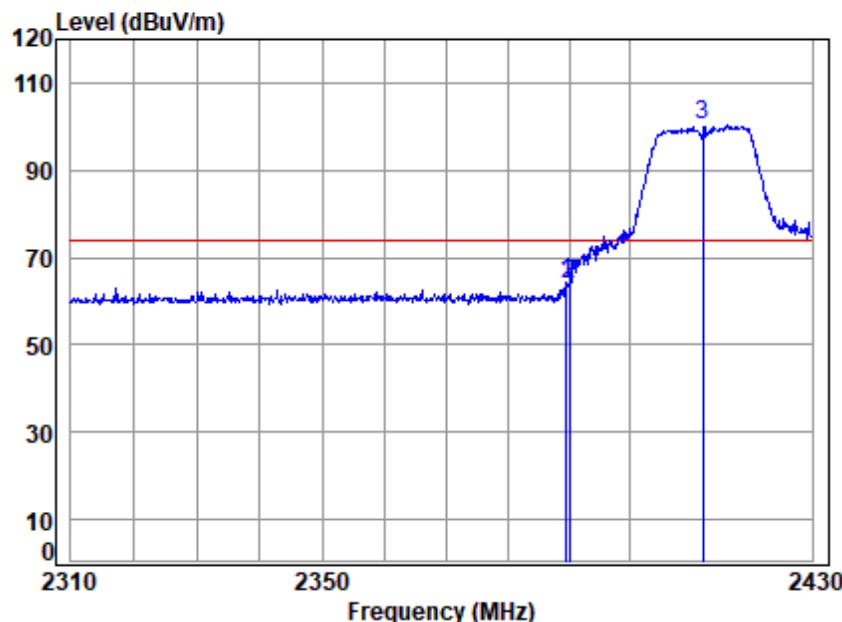
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Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



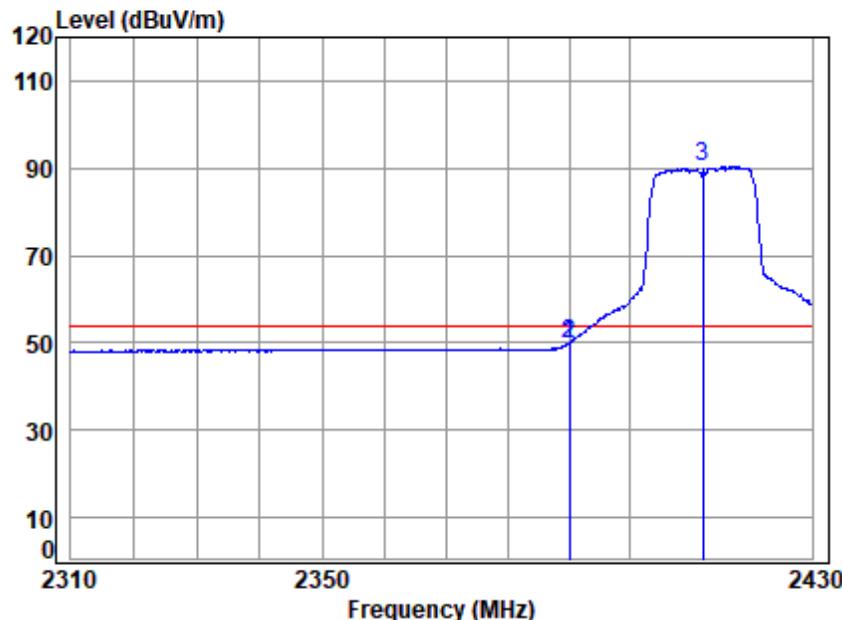
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11G

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1	2389.605	4.34	28.88	40.42	71.73	64.53	74.00	-9.47 peak
2	2390.000	4.34	28.88	40.42	71.22	64.02	74.00	-9.98 peak
3 *	2412.000	4.38	28.92	40.43	107.32	100.19	74.00	26.19 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



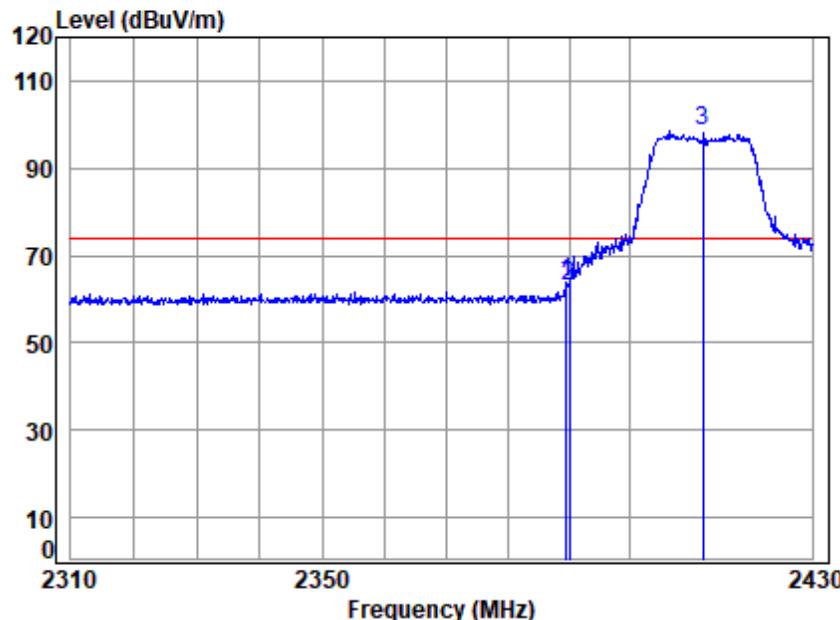
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m		dBuV	dBuV/m	dBuV/m	dB	
1	2389.968	4.34	28.88	40.42	57.08	49.88	54.00	-4.12	Average
2	2390.000	4.34	28.88	40.42	57.08	49.88	54.00	-4.12	Average
3 *	2412.000	4.38	28.92	40.43	97.55	90.42	54.00	36.42	Average

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Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



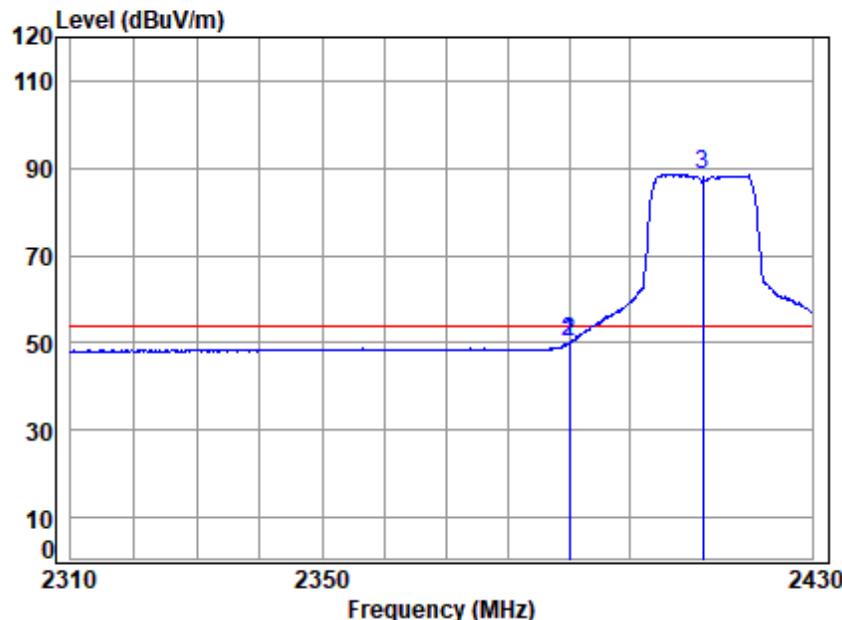
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11G

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Factor	Level	Level	
1	2389.605	4.34	28.88	40.42	71.03	63.83	74.00 -10.17 Peak
2	2390.000	4.34	28.88	40.42	70.39	63.19	74.00 -10.81 Peak
3 *	2412.000	4.38	28.92	40.43	105.84	98.71	74.00 24.71 Peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



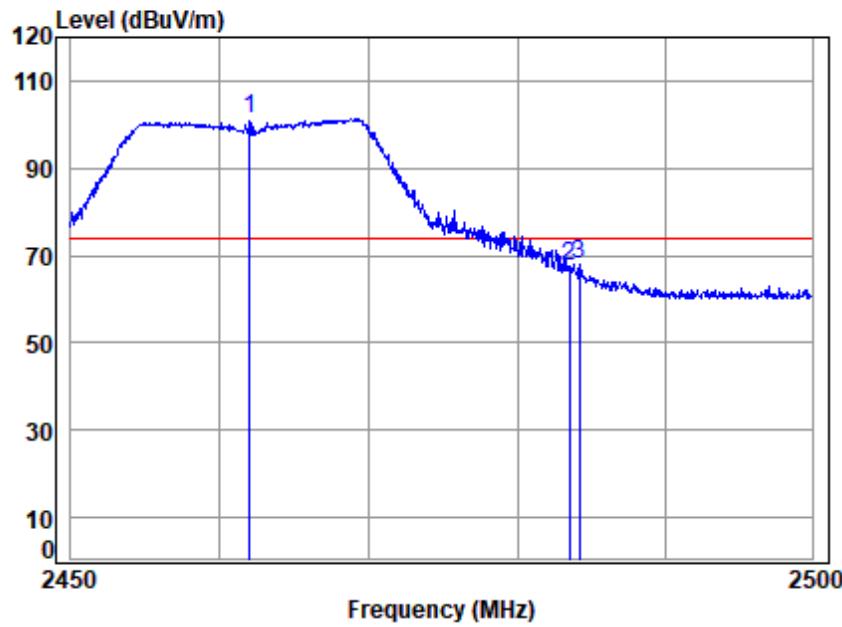
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11G

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				dB	dB/m			
MHz								
1	2389.968	4.34	28.88	40.42	57.23	50.03	54.00	-3.97 Average
2	2390.000	4.34	28.88	40.42	57.23	50.03	54.00	-3.97 Average
3 *	2412.000	4.38	28.92	40.43	95.74	88.61	54.00	34.61 Average

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



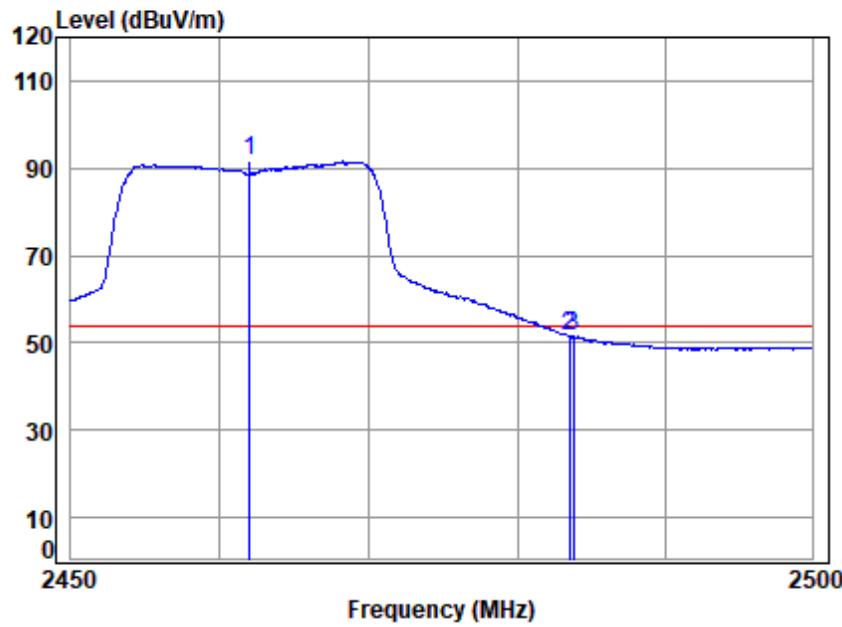
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11G

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				dB	dB/m			
MHz								
1 * 2462.000	4.46	29.02	40.46	108.23	101.25	74.00	27.25	peak
2 2483.500	4.49	29.07	40.47	74.59	67.68	74.00	-6.32	peak
3 2484.191	4.50	29.07	40.47	75.03	68.13	74.00	-5.87	peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



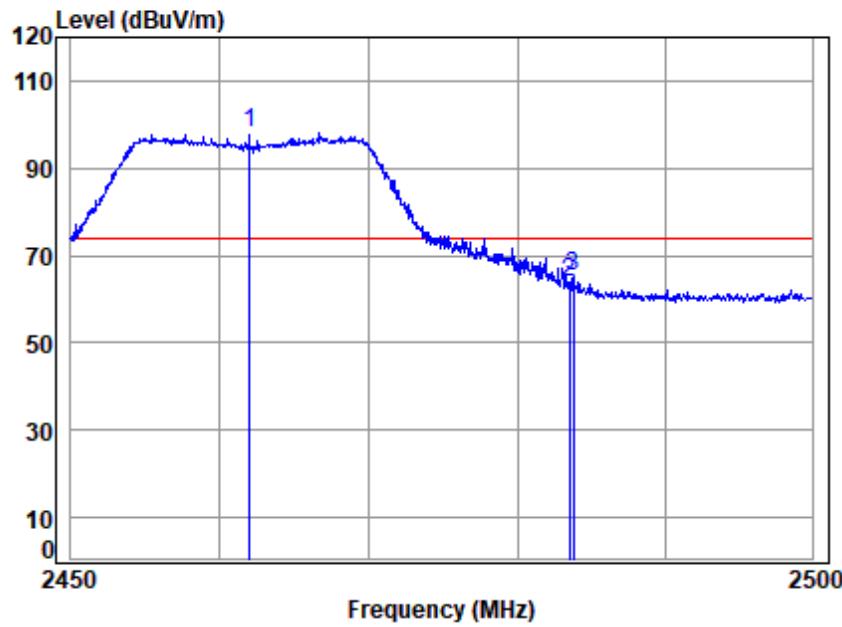
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11G

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1 *	2462.000	4.46	29.02	40.46	98.48	91.50	54.00	37.50 Average
2	2483.500	4.49	29.07	40.47	58.51	51.60	54.00	-2.40 Average
3	2483.790	4.49	29.07	40.47	58.26	51.35	54.00	-2.65 Average

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Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



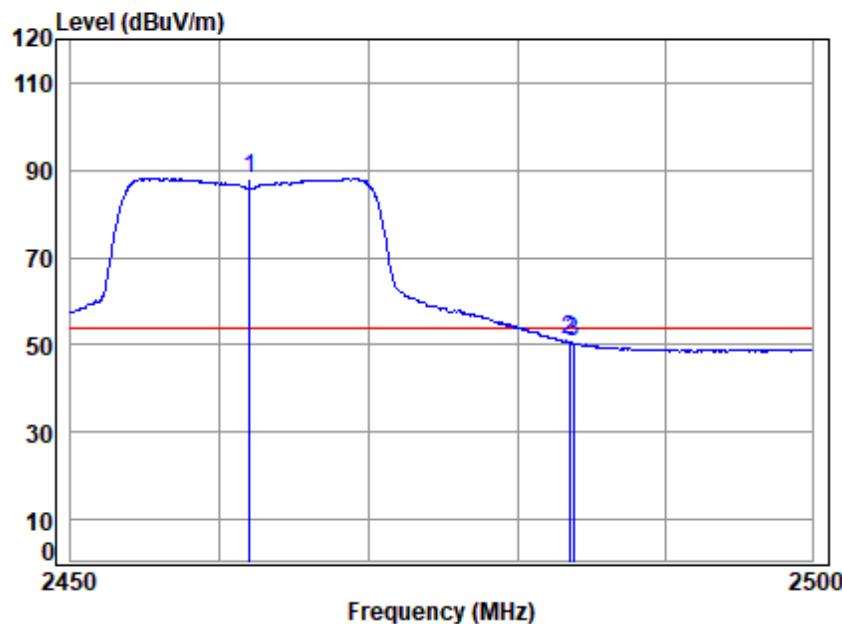
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11G

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 *	2462.000	4.46	29.02	40.46	104.96	97.98	74.00 23.98 Peak
2	2483.500	4.49	29.07	40.47	70.74	63.83	74.00 -10.17 Peak
3	2483.790	4.49	29.07	40.47	72.15	65.24	74.00 -8.76 Peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11G

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				dB	dB/m			
MHz								
1 * 2462.000	4.46	29.02	40.46	94.95	87.97	54.00	33.97	Average
2 2483.500	4.49	29.07	40.47	58.07	51.16	54.00	-2.84	Average
3 2483.790	4.49	29.07	40.47	57.34	50.43	54.00	-3.57	Average

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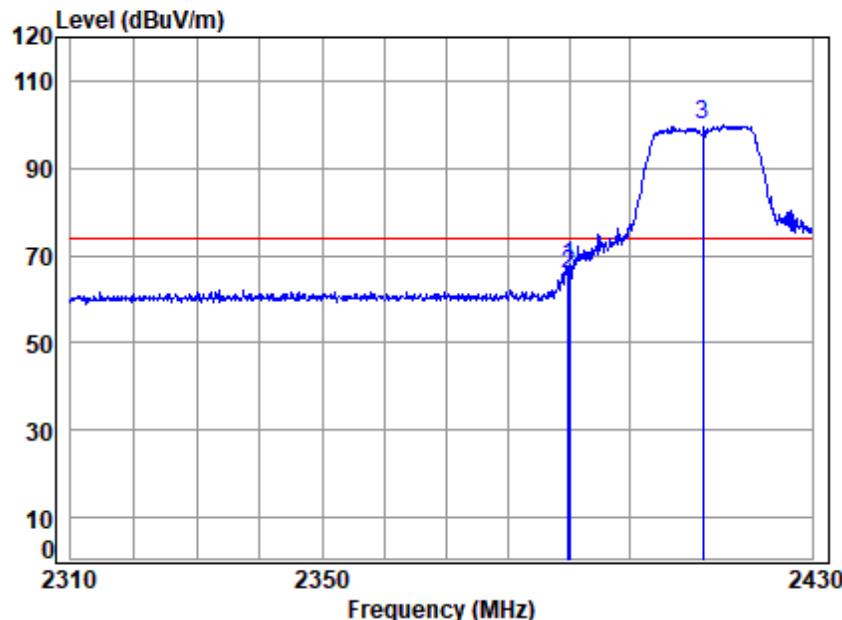
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Shenzhen Branch Inspection & Testing Services Laboratory

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中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 1 (86-755) 26012053 f (86-755) 26710594 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



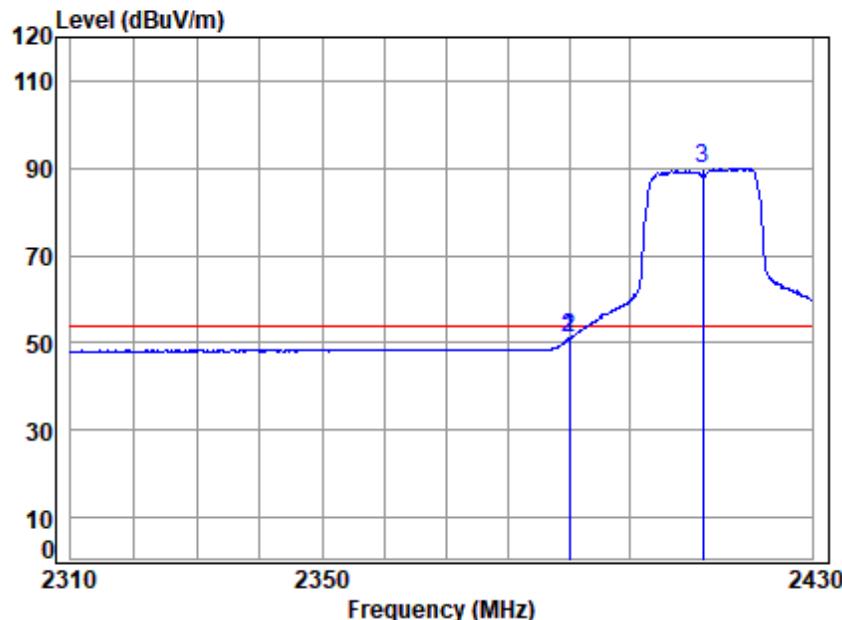
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11N20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2389.847	4.34	28.88	40.42	74.85	67.65	74.00 -6.35 peak
2	2390.000	4.34	28.88	40.42	72.91	65.71	74.00 -8.29 peak
3 *	2412.000	4.38	28.92	40.43	106.84	99.71	74.00 25.71 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



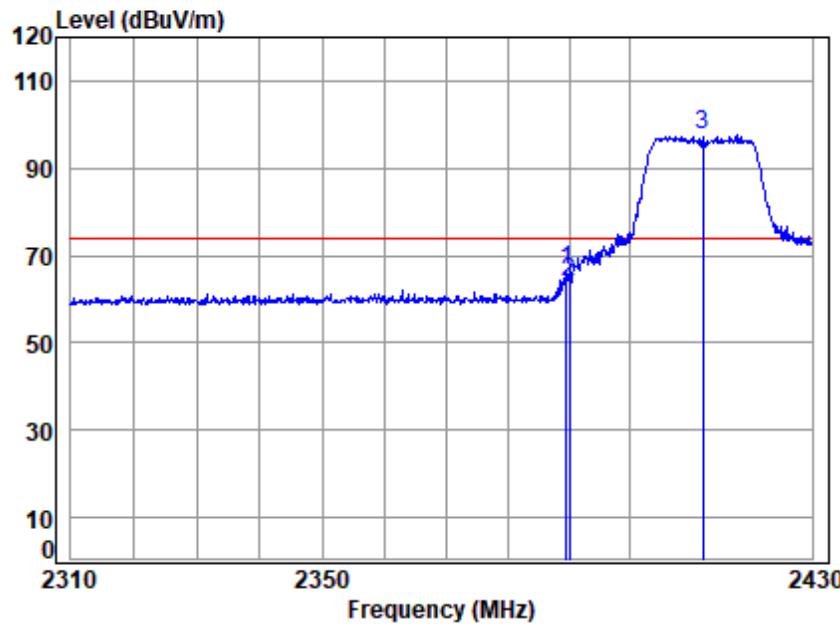
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11N20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level	Level	Line		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2389.968	4.34	28.88	40.42	58.20	51.00	54.00	-3.00 Average
2	2390.000	4.34	28.88	40.42	58.20	51.00	54.00	-3.00 Average
3 *	2412.000	4.38	28.92	40.43	97.03	89.90	54.00	35.90 Average

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



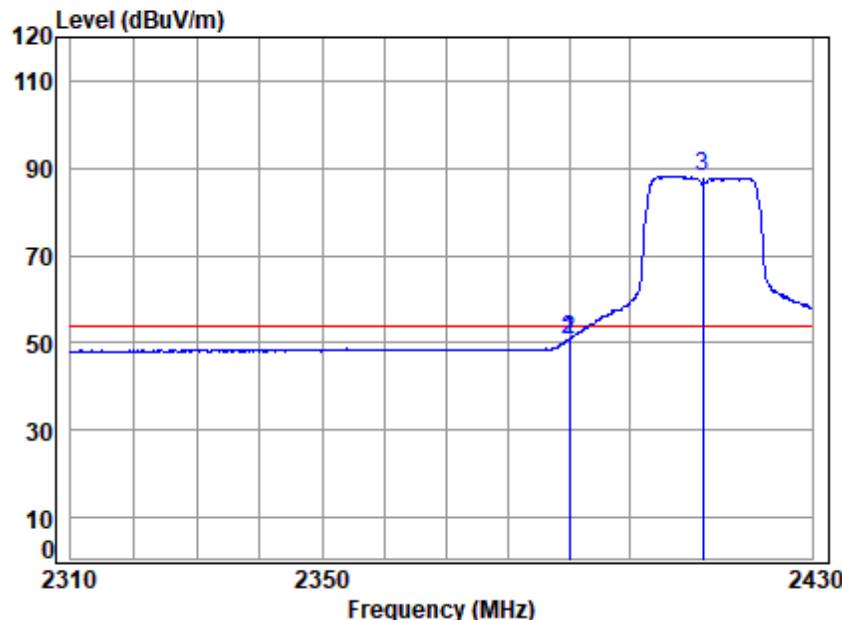
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11N20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	Loss	Factor	Factor	Level	Level	Line	
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 2389.605	4.34	28.88	40.42	73.99	66.79	74.00	-7.21 Peak
2 2390.000	4.34	28.88	40.42	71.08	63.88	74.00	-10.12 Peak
3 * 2412.000	4.38	28.92	40.43	104.68	97.55	74.00	23.55 Peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

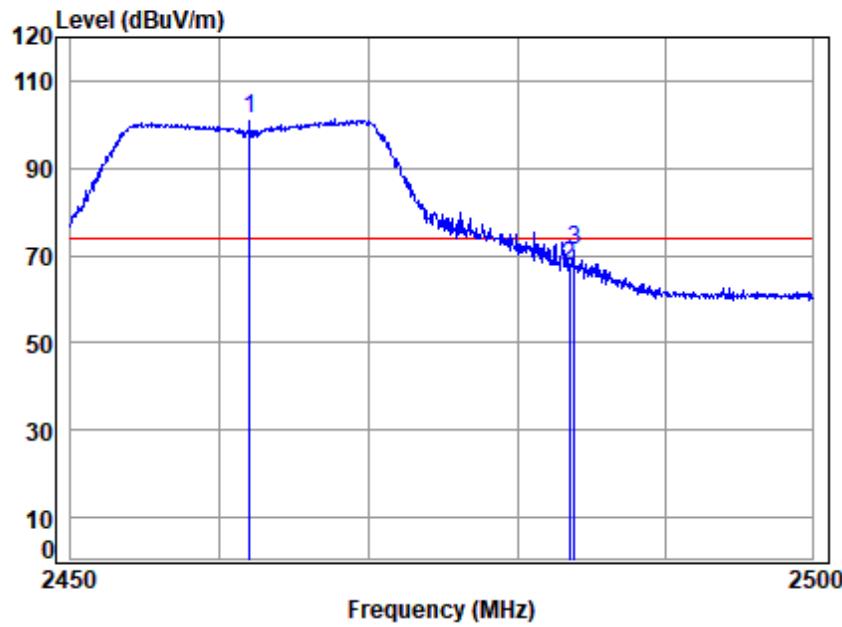


Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2412 Band edge  
Note : 2.4G WIFI 11N20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level	Level	Line		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2389.968	4.34	28.88	40.42	57.97	50.77	54.00	-3.23 Average
2	2390.000	4.34	28.88	40.42	57.97	50.77	54.00	-3.23 Average
3 *	2412.000	4.38	28.92	40.43	95.28	88.15	54.00	34.15 Average



Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



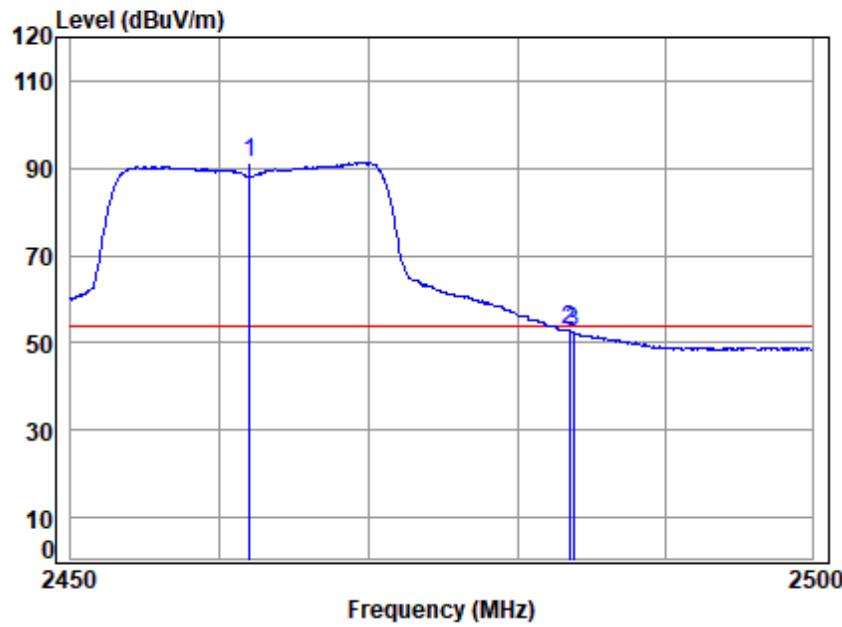
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11N20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	Loss	Factor	Factor	Level	Level	Line	
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 * 2462.000	4.46	29.02	40.46	108.20	101.22	74.00	27.22 peak
2 2483.500	4.49	29.07	40.47	74.39	67.48	74.00	-6.52 peak
3 2483.840	4.49	29.07	40.47	78.17	71.26	74.00	-2.74 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



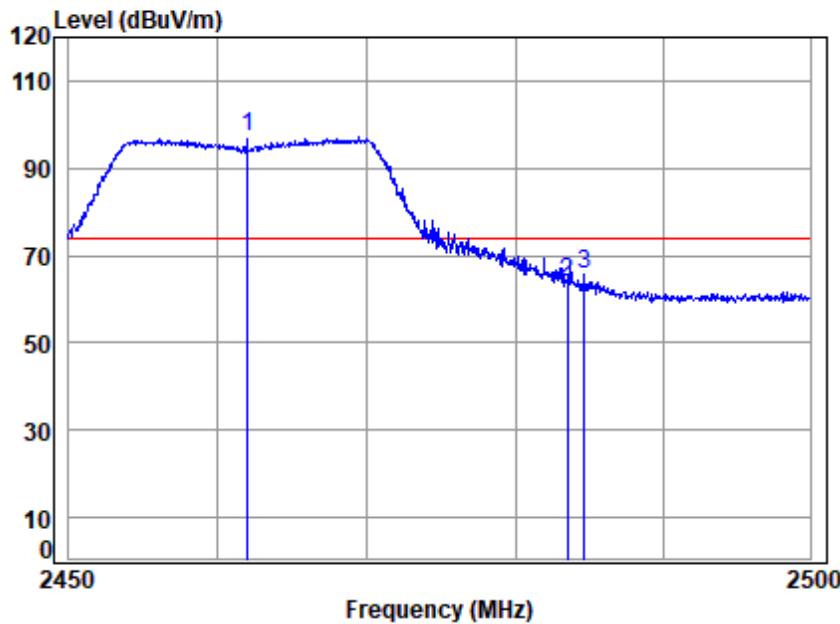
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11N20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				dB	dB/m			
MHz								
1 * 2462.000	4.46	29.02	40.46	98.27	91.29	54.00	37.29	Average
2 2483.500	4.49	29.07	40.47	59.64	52.73	54.00	-1.27	Average
3 2483.790	4.49	29.07	40.47	59.18	52.27	54.00	-1.73	Average

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High

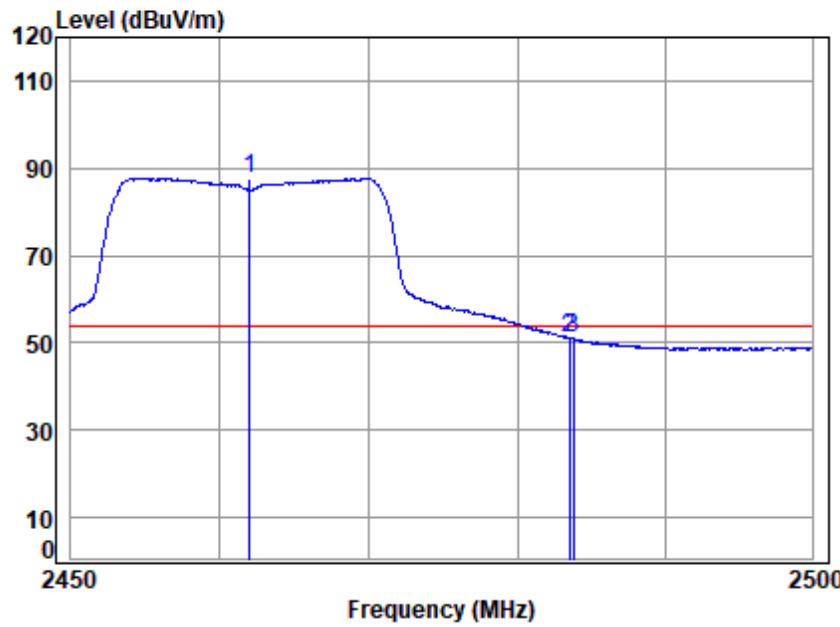


Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11N20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				dB	dB/m			
MHz	dB	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1 * 2462.000	4.46	29.02	40.46	104.03	97.05	74.00	23.05	Peak
2 2483.500	4.49	29.07	40.47	70.76	63.85	74.00	-10.15	Peak
3 2484.693	4.50	29.07	40.47	72.70	65.80	74.00	-8.20	Peak



Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



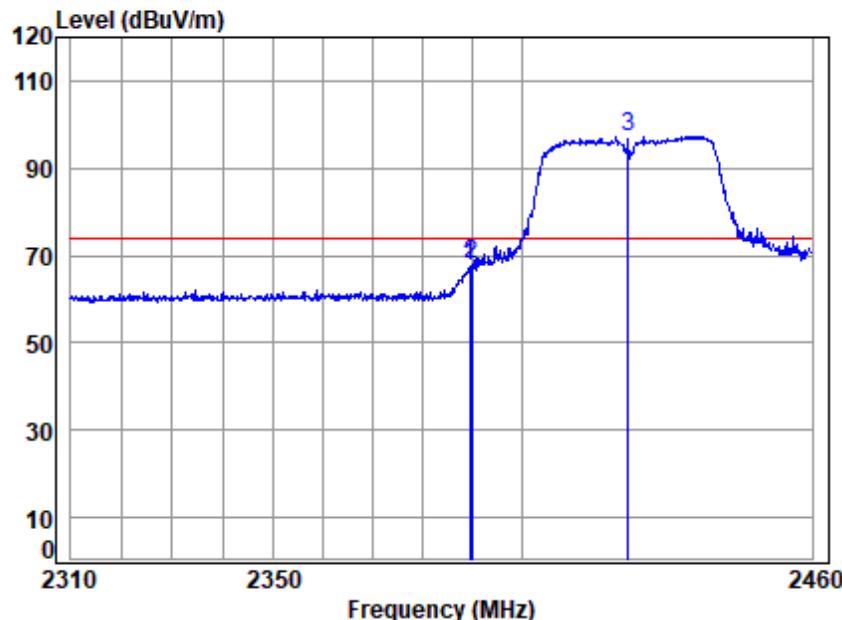
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2462 Band edge  
Note : 2.4G WIFI 11N20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				dB	dB/m			
MHz								
1 * 2462.000	4.46	29.02	40.46	94.78	87.80	54.00	33.80	Average
2 2483.500	4.49	29.07	40.47	58.04	51.13	54.00	-2.87	Average
3 2483.790	4.49	29.07	40.47	58.01	51.10	54.00	-2.90	Average

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2422 Band edge  
Note : 2.4G WIFI 11N40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1	2389.526	4.34	28.88	40.42	74.81	67.61	74.00	-6.39 peak
2	2390.000	4.34	28.88	40.42	75.12	67.92	74.00	-6.08 peak
3 *	2422.000	4.40	28.94	40.44	104.50	97.40	74.00	23.40 peak

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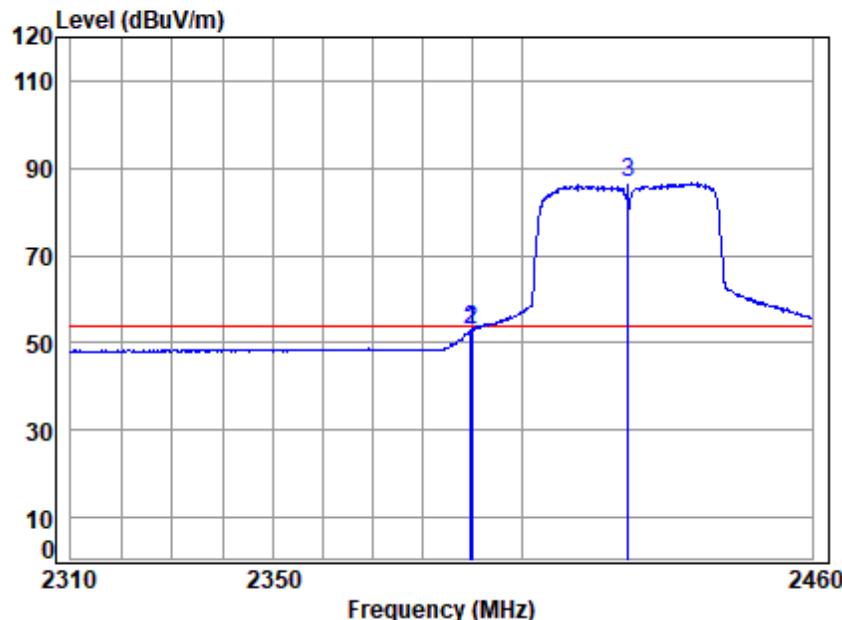
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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



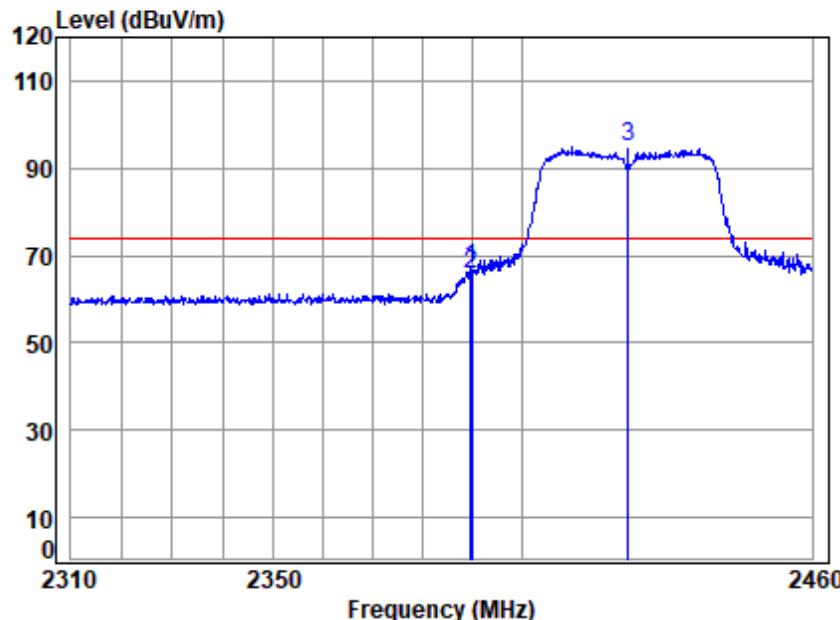
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2422 Band edge  
Note : 2.4G WIFI 11N40

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark
				Level			
MHz	dB	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1 2389.827	4.34	28.88	40.42	59.95	52.75	54.00	-1.25 Average
2 2390.000	4.34	28.88	40.42	60.30	53.10	54.00	-0.90 Average
3 * 2422.000	4.40	28.94	40.44	93.65	86.55	54.00	32.55 Average

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



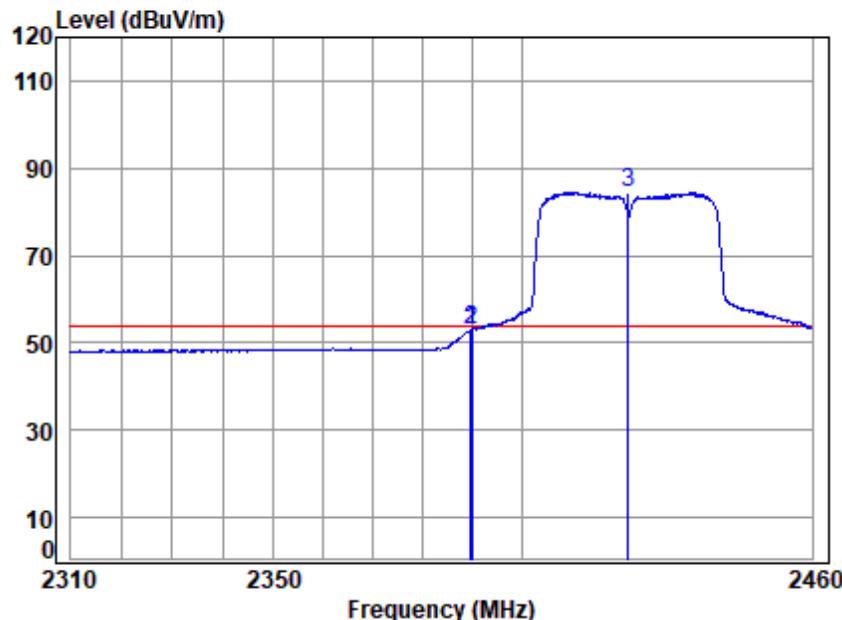
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2422 Band edge  
Note : 2.4G WIFI 11N40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	2389.677	4.34	28.88	40.42	74.27	67.07	74.00 -6.93 Peak
2	2390.000	4.34	28.88	40.42	73.06	65.86	74.00 -8.14 Peak
3 *	2422.000	4.40	28.94	40.44	102.10	95.00	74.00 21.00 Peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



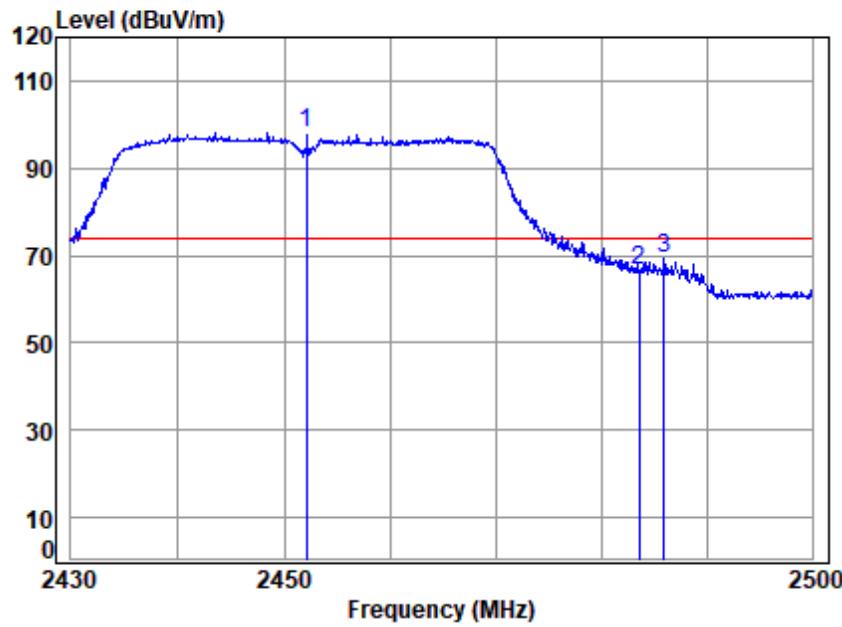
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2422 Band edge  
Note : 2.4G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Line Limit	Over Limit	Remark
	MHz	dB	dB/m		dB	dBuV	dBuV/m	dBuV/m	
1	2389.827	4.34	28.88	40.42	60.20	53.00	54.00	-1.00	Average
2	2390.000	4.34	28.88	40.42	60.18	52.98	54.00	-1.02	Average
3 *	2422.000	4.40	28.94	40.44	91.70	84.60	54.00	30.60	Average

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



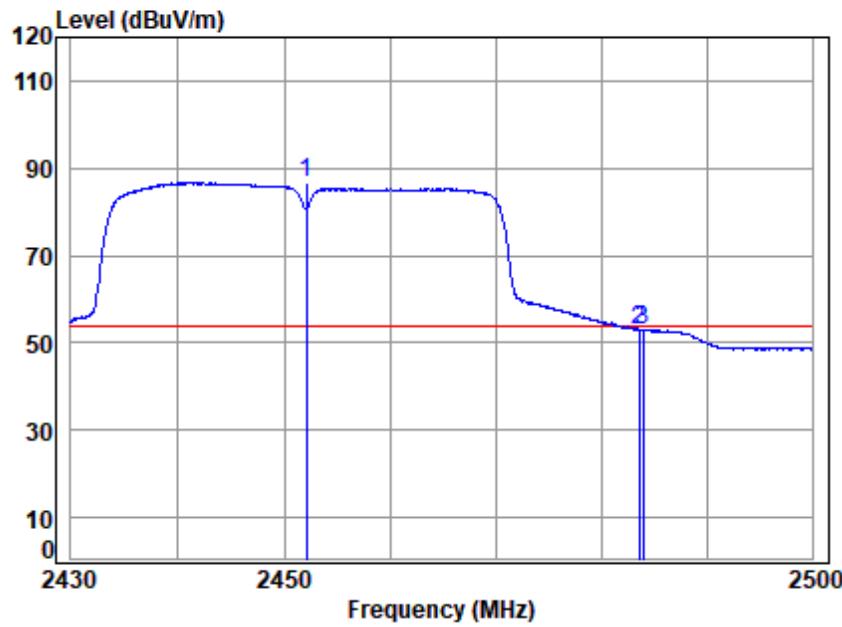
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2452 Band edge  
Note : 2.4G WIFI 11N40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	Loss	Factor	Factor	Level	Level	Line	
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 * 2452.000	4.44	29.00	40.45	105.16	98.15	74.00	24.15 peak
2 2483.500	4.49	29.07	40.47	73.41	66.50	74.00	-7.50 peak
3 2485.841	4.50	29.07	40.47	76.17	69.27	74.00	-4.73 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



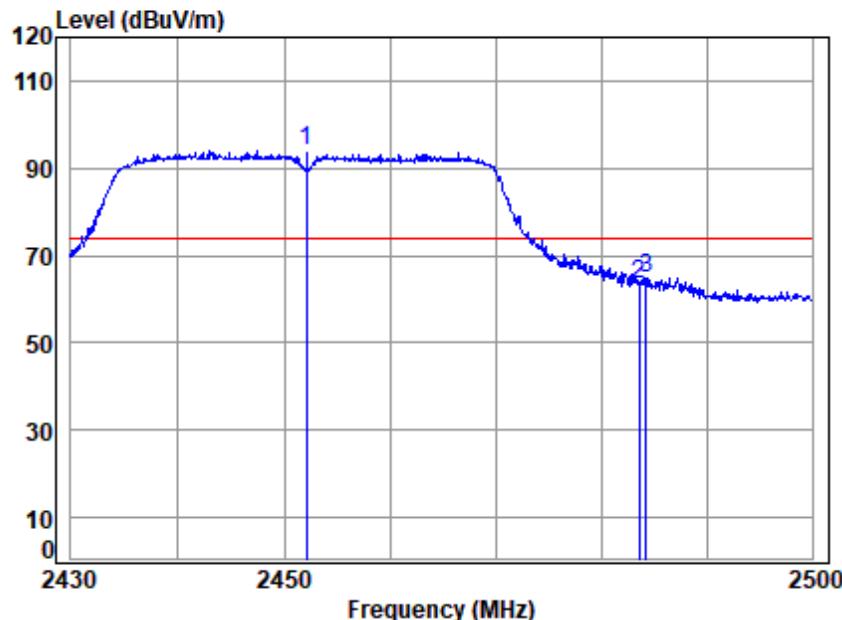
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2452 Band edge  
Note : 2.4G WIFI 11N40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	Loss	Factor	Factor	Level	Level	Line	
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 * 2452.000	4.44	29.00	40.45	93.78	86.77	54.00	32.77 Average
2 2483.500	4.49	29.07	40.47	60.01	53.10	54.00	-0.90 Average
3 2483.865	4.49	29.07	40.47	59.86	52.95	54.00	-1.05 Average

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



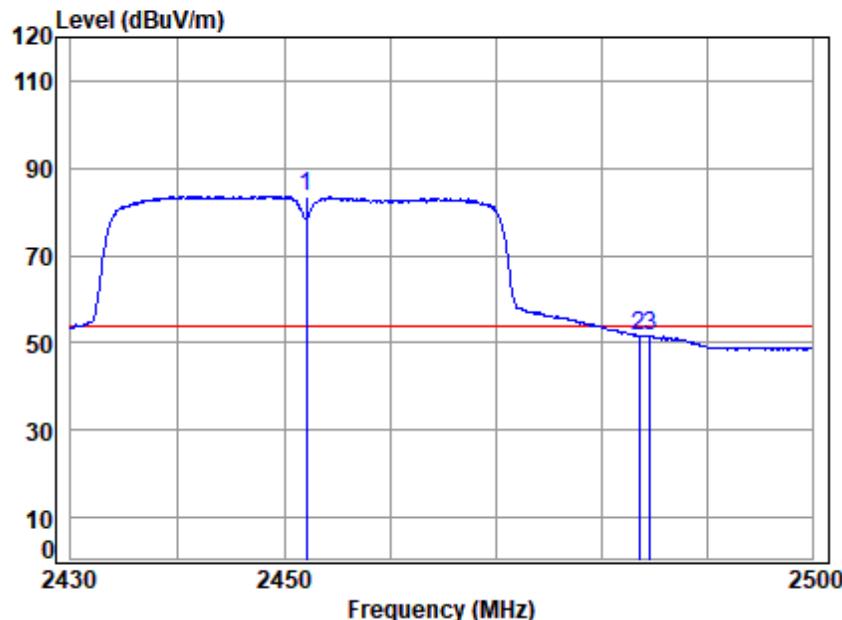
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2452 Band edge  
Note : 2.4G WIFI 11N40

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				dB	dB/m			
MHz								
1 * 2452.000	4.44	29.00	40.45	100.99	93.98	74.00	19.98	Peak
2 2483.500	4.49	29.07	40.47	70.37	63.46	74.00	-10.54	Peak
3 2484.147	4.50	29.07	40.47	71.88	64.98	74.00	-9.02	Peak

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Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2452 Band edge  
Note : 2.4G WIFI 11N40

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				Level	dBuV			
MHz	dB	dB/m		dB	dBuV/m	dBuV/m	dB	
1 * 2452.000	4.44	29.00	40.45	90.61	83.60	54.00	29.60	Average
2 2483.500	4.49	29.07	40.47	58.34	51.43	54.00	-2.57	Average
3 2484.570	4.50	29.07	40.47	58.48	51.58	54.00	-2.42	Average

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## 7.8 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 &amp; 15.209

Test Method: ANSI C63.10 (2013) Section 6.4,6.5

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

### 7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 1010 mbar

### 7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

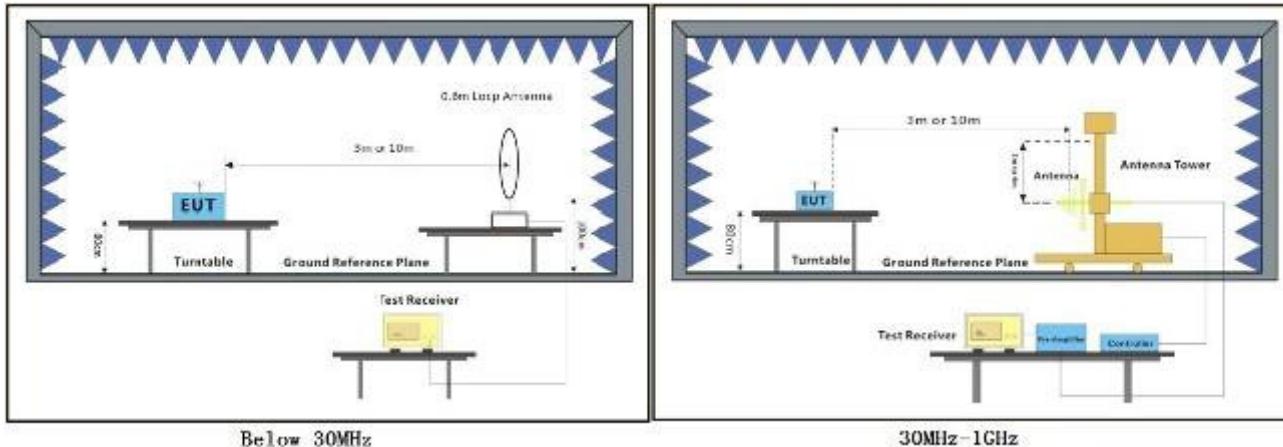
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**7.8.3 Test Setup Diagram****7.8.4 Measurement Procedure and Data**

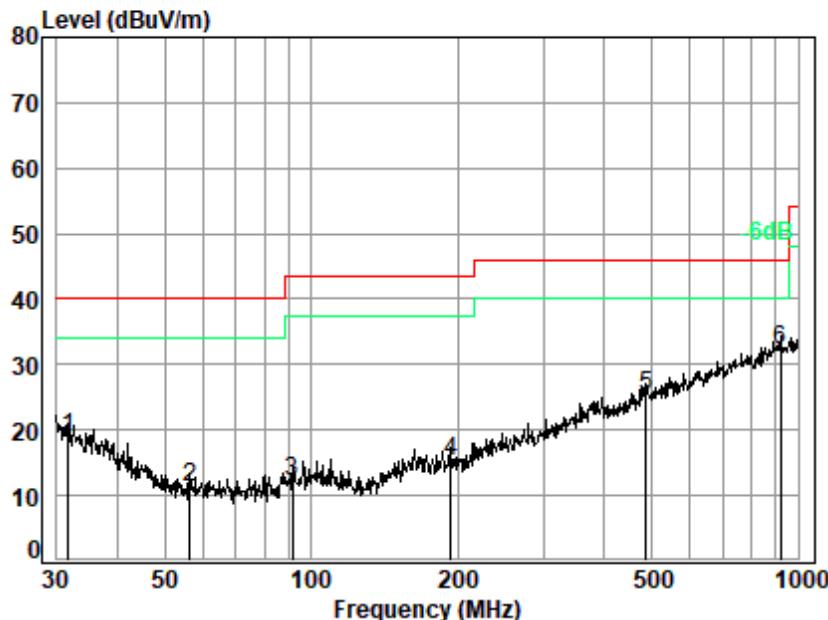
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, 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. 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.
3. 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: 03; Polarity: Horizontal



Condition: 3m HORIZONTAL

Job No. : 20587AT

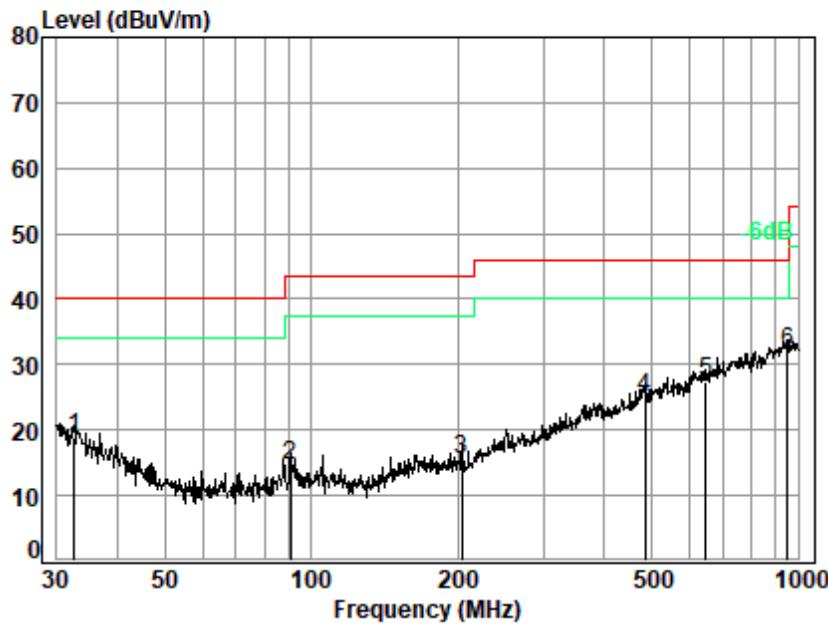
Test Mode: 03

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level				
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	31.62	0.62	21.78	27.73	24.28	18.95	40.00	-21.05 QP
2	56.39	0.77	12.96	27.67	25.31	11.37	40.00	-28.63 QP
3	91.49	1.27	13.40	27.62	25.18	12.23	43.50	-31.27 QP
4	193.09	1.19	15.59	27.17	25.59	15.20	43.50	-28.30 QP
5	487.32	2.48	24.30	27.75	26.09	25.12	46.00	-20.88 QP
6 pp	919.29	3.52	29.19	27.06	26.59	32.24	46.00	-13.76 QP

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Test Mode: 03; Polarity: Vertical



Condition: 3m VERTICAL

Job No. : 20587AT

Test Mode: 03

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level				
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	32.63	0.63	21.31	27.73	24.62	18.83	40.00	-21.17 QP
2	90.54	1.29	13.21	27.62	27.63	14.51	43.50	-28.99 QP
3	203.52	1.23	15.62	27.13	25.86	15.58	43.50	-27.92 QP
4	483.91	2.47	24.30	27.74	26.04	25.07	46.00	-20.93 QP
5	645.12	2.79	26.25	28.03	26.32	27.33	46.00	-18.67 QP
6 pp	952.09	3.55	29.38	26.90	25.80	31.83	46.00	-14.17 QP

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## 7.9 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 &amp; 15.209

Test Method: ANSI C63.10 (2013) Section 6.6

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1000	500	3

### 7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

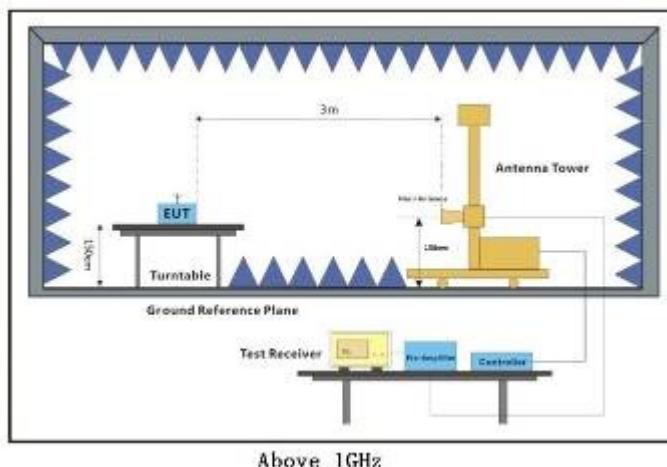
Humidity: 56.3 % RH

Atmospheric Pressure: 1010 mbar

### 7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 7.9.3 Test Setup Diagram



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**7.9.4 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 1GHz to 25GHz, 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.

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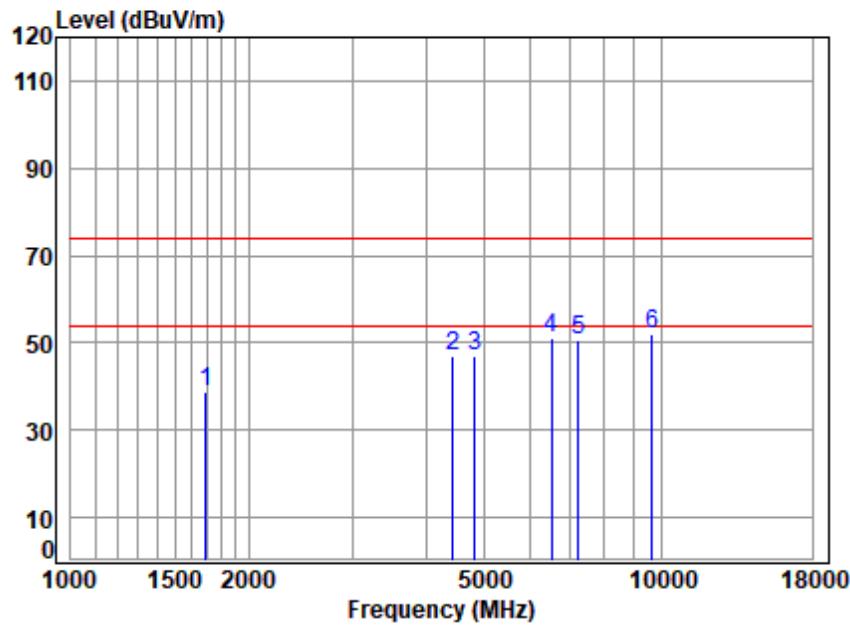


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中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 1 (86-755) 26012053 f (86-755) 26710594 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



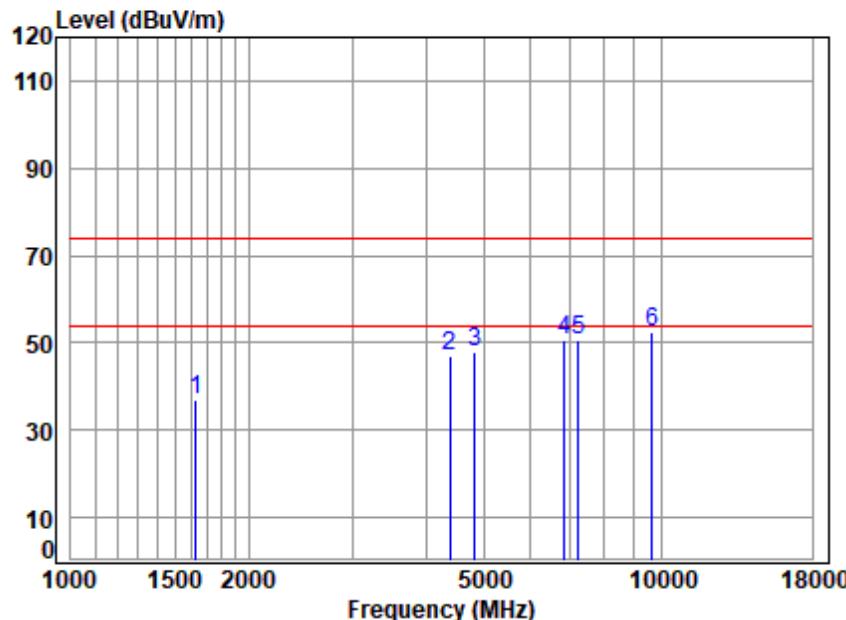
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2412 TX RSE  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1	1692.231	3.42	26.66	40.06	48.70	38.72	74.00	-35.28	peak
2	4430.628	6.70	32.95	41.81	49.06	46.90	74.00	-27.10	peak
3	4824.000	7.12	33.66	42.16	48.29	46.91	74.00	-27.09	peak
4	6507.536	8.28	34.61	42.03	50.15	51.01	74.00	-22.99	peak
5	7236.000	8.77	35.69	41.48	47.86	50.84	74.00	-23.16	peak
6	9648.000	10.79	37.36	37.69	41.77	52.23	74.00	-21.77	peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



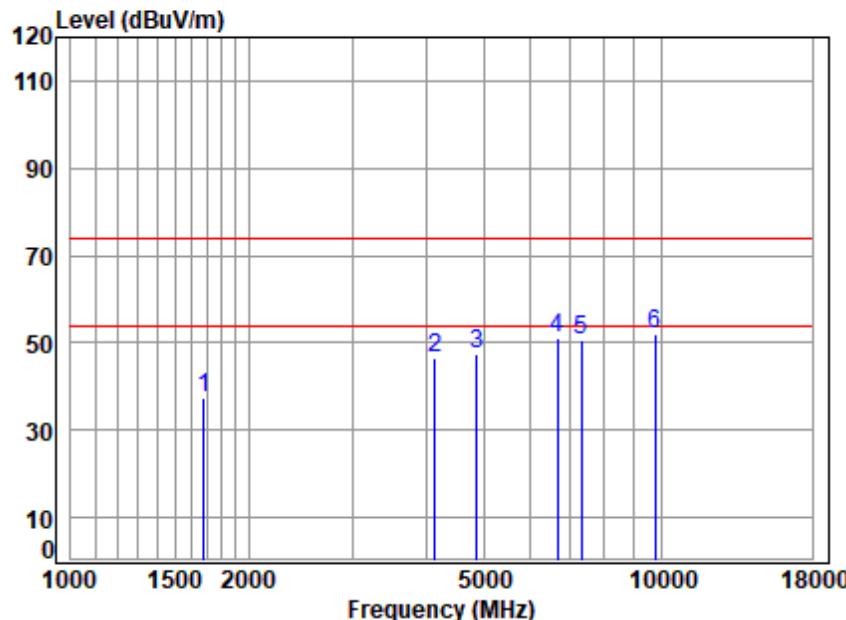
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2412 TX RSE  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1	1629.825	3.37	26.36	40.02	47.25	36.96	74.00	-37.04	peak
2	4392.376	6.66	32.92	41.78	49.32	47.12	74.00	-26.88	peak
3	4824.000	7.12	33.66	42.16	49.46	48.08	74.00	-25.92	peak
4	6855.063	8.47	35.25	41.80	48.69	50.61	74.00	-23.39	peak
5	7236.000	8.77	35.69	41.48	47.89	50.87	74.00	-23.13	peak
6	9648.000	10.79	37.36	37.69	41.84	52.30	74.00	-21.70	peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



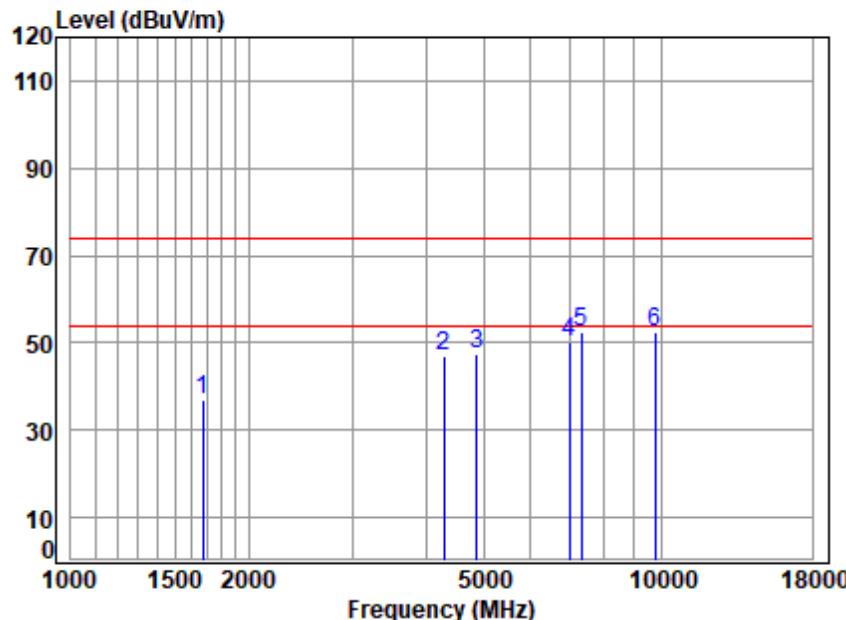
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2437 TX RSE  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1	1677.621	3.41	26.59	40.05	47.32	37.27	74.00	-36.73	peak
2	4133.699	6.41	32.71	41.53	48.97	46.56	74.00	-27.44	peak
3	4874.000	7.17	33.76	42.20	48.94	47.67	74.00	-26.33	peak
4	6679.040	8.38	34.93	41.91	49.90	51.30	74.00	-22.70	peak
5	7311.000	8.84	35.75	41.41	47.65	50.83	74.00	-23.17	peak
6	9748.000	10.76	37.40	37.52	41.52	52.16	74.00	-21.84	peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



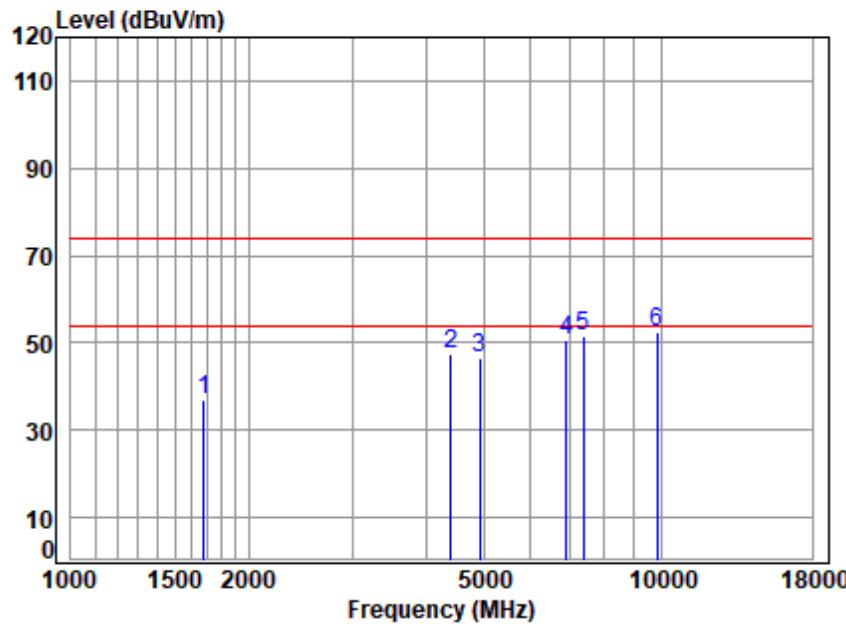
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2437 TX RSE  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1	1672.779	3.41	26.57	40.05	46.86	36.79	74.00	-37.21	peak
2	4279.589	6.56	32.83	41.67	49.32	47.04	74.00	-26.96	peak
3	4874.000	7.17	33.76	42.20	48.57	47.30	74.00	-26.70	peak
4	6995.172	8.54	35.49	41.70	48.07	50.40	74.00	-23.60	peak
5	7311.000	8.84	35.75	41.41	49.12	52.30	74.00	-21.70	peak
6	9748.000	10.76	37.40	37.52	41.83	52.47	74.00	-21.53	peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



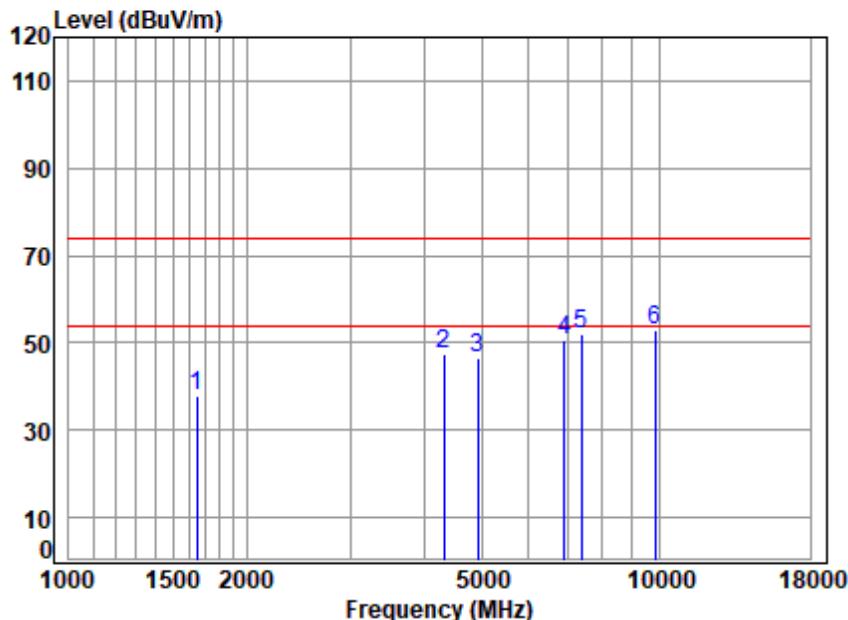
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2462 TX RSE  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Line Limit	Over Limit	Remark	
								MHz	dB
1	1677.621	3.41	26.59	40.05	47.04	36.99	74.00	-37.01	peak
2	4405.090	6.67	32.93	41.79	49.81	47.62	74.00	-26.38	peak
3	4924.000	7.22	33.85	42.24	47.84	46.67	74.00	-27.33	peak
4	6914.763	8.50	35.35	41.76	48.59	50.68	74.00	-23.32	peak
5	7386.000	8.91	35.81	41.34	48.08	51.46	74.00	-22.54	peak
6	9848.000	10.73	37.44	37.35	41.74	52.56	74.00	-21.44	peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



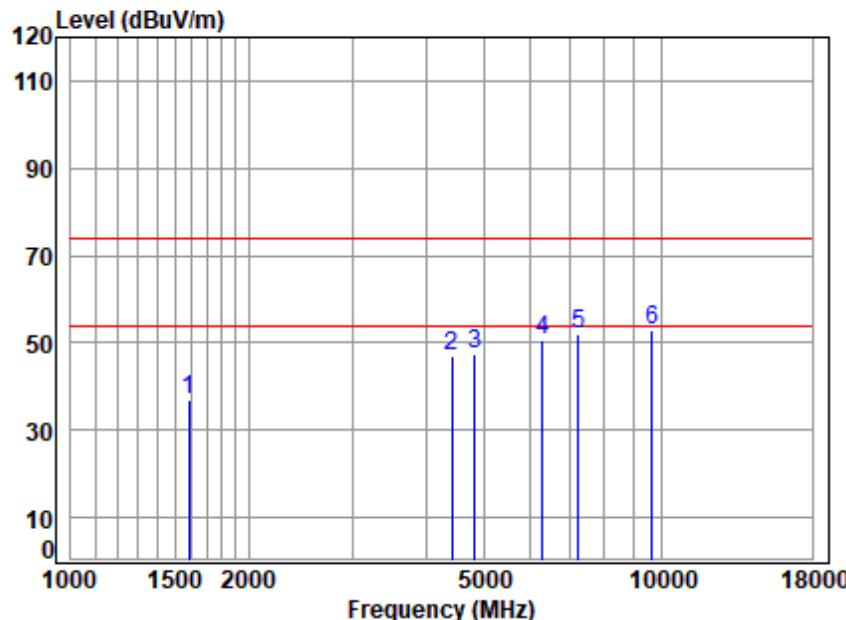
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2462 TX RSE  
Note : 2.4G WIFI 11B

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1 1648.778	3.39	26.46	40.03	47.84	37.66	74.00	-36.34	peak	
2 4316.859	6.59	32.86	41.71	49.63	47.37	74.00	-26.63	peak	
3 4924.000	7.22	33.85	42.24	47.93	46.76	74.00	-27.24	peak	
4 6894.806	8.49	35.32	41.77	48.60	50.64	74.00	-23.36	peak	
5 7386.000	8.91	35.81	41.34	48.44	51.82	74.00	-22.18	peak	
6 9848.000	10.73	37.44	37.35	42.16	52.98	74.00	-21.02	peak	

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



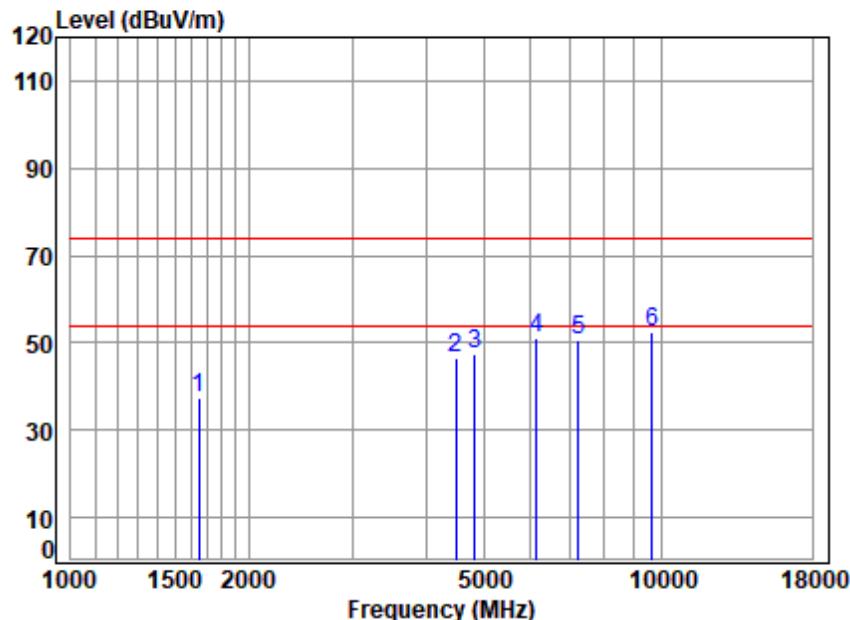
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2412 TX RSE  
Note : 2.4G WIFI 11G

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1	1583.392	3.33	26.13	40.00	47.61	37.07	74.00	-36.93	peak
2	4417.841	6.68	32.94	41.80	49.33	47.15	74.00	-26.85	peak
3	4824.000	7.12	33.66	42.16	48.84	47.46	74.00	-26.54	peak
4	6303.890	8.27	34.60	42.18	50.05	50.74	74.00	-23.26	peak
5	7236.000	8.77	35.69	41.48	49.26	52.24	74.00	-21.76	peak
6	9648.000	10.79	37.36	37.69	42.31	52.77	74.00	-21.23	peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



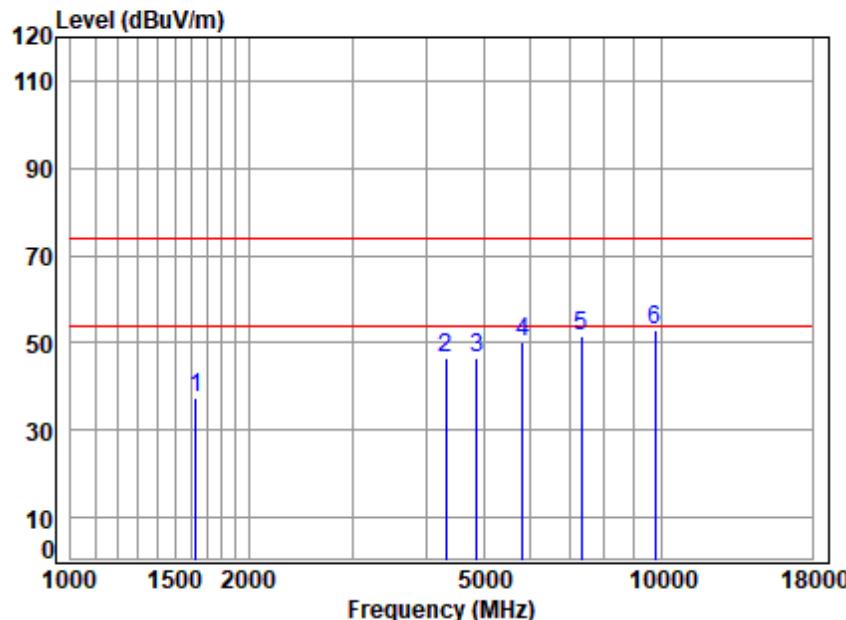
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2412 TX RSE  
Note : 2.4G WIFI 11G

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Line Limit	Over Limit	Remark	
								MHz	dB
1	1648.778	3.39	26.46	40.03	47.60	37.42	74.00	-36.58	peak
2	4495.125	6.76	33.00	41.87	48.74	46.63	74.00	-27.37	peak
3	4824.000	7.12	33.66	42.16	48.75	47.37	74.00	-26.63	peak
4	6142.019	8.27	34.60	42.29	50.60	51.18	74.00	-22.82	peak
5	7236.000	8.77	35.69	41.48	47.74	50.72	74.00	-23.28	peak
6	9648.000	10.79	37.36	37.69	42.00	52.46	74.00	-21.54	peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



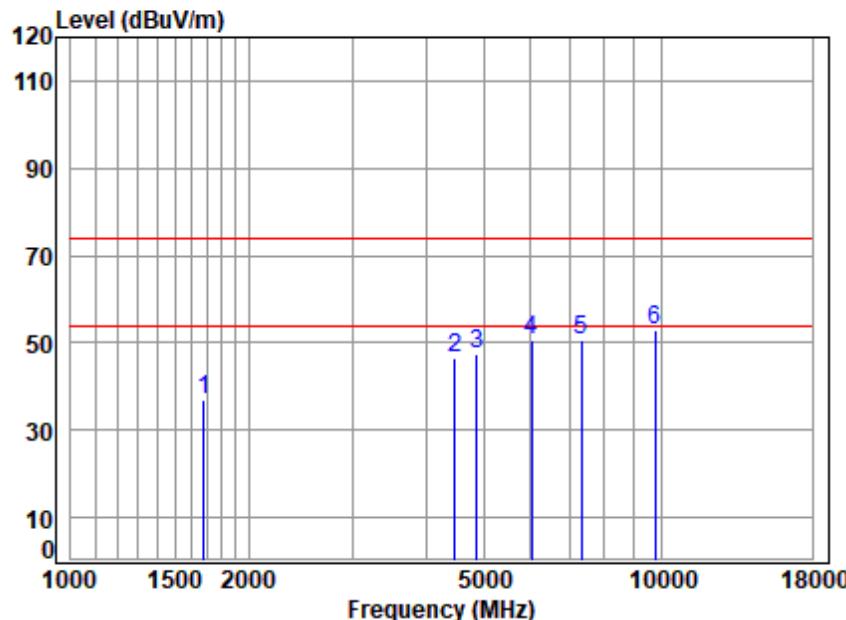
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2437 TX RSE  
Note : 2.4G WIFI 11G

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1	1629.825	3.37	26.36	40.02	47.62	37.33	74.00	-36.67	peak
2	4316.859	6.59	32.86	41.71	48.74	46.48	74.00	-27.52	peak
3	4874.000	7.17	33.76	42.20	48.00	46.73	74.00	-27.27	peak
4	5830.640	8.23	34.47	42.38	50.06	50.38	74.00	-23.62	peak
5	7311.000	8.84	35.75	41.41	48.41	51.59	74.00	-22.41	peak
6	9748.000	10.76	37.40	37.52	42.23	52.87	74.00	-21.13	peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



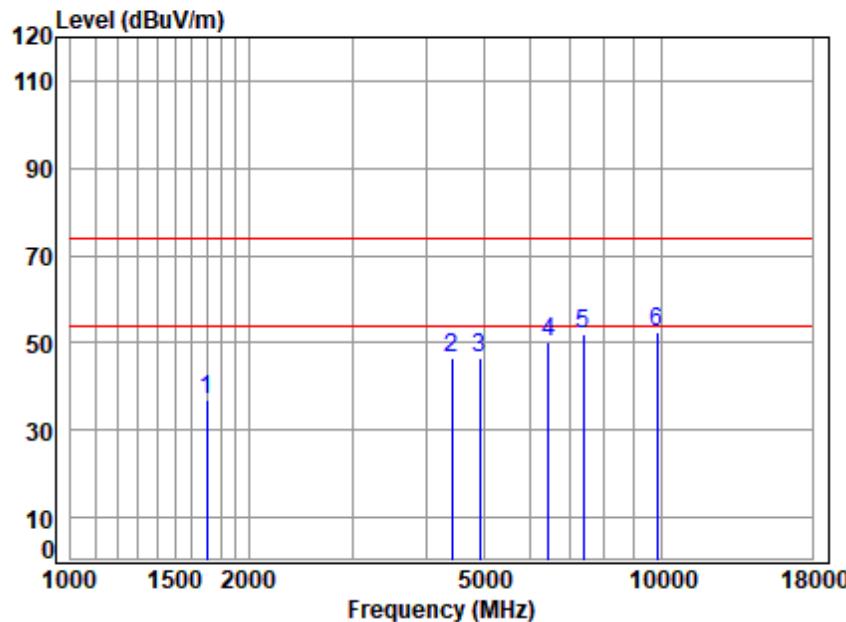
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2437 TX RSE  
Note : 2.4G WIFI 11G

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1	1677.621	3.41	26.59	40.05	47.06	37.01	74.00	-36.99	peak
2	4469.214	6.73	32.98	41.85	48.68	46.54	74.00	-27.46	peak
3	4874.000	7.17	33.76	42.20	48.56	47.29	74.00	-26.71	peak
4	6036.421	8.26	34.60	42.37	50.31	50.80	74.00	-23.20	peak
5	7311.000	8.84	35.75	41.41	47.34	50.52	74.00	-23.48	peak
6	9748.000	10.76	37.40	37.52	42.14	52.78	74.00	-21.22	peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



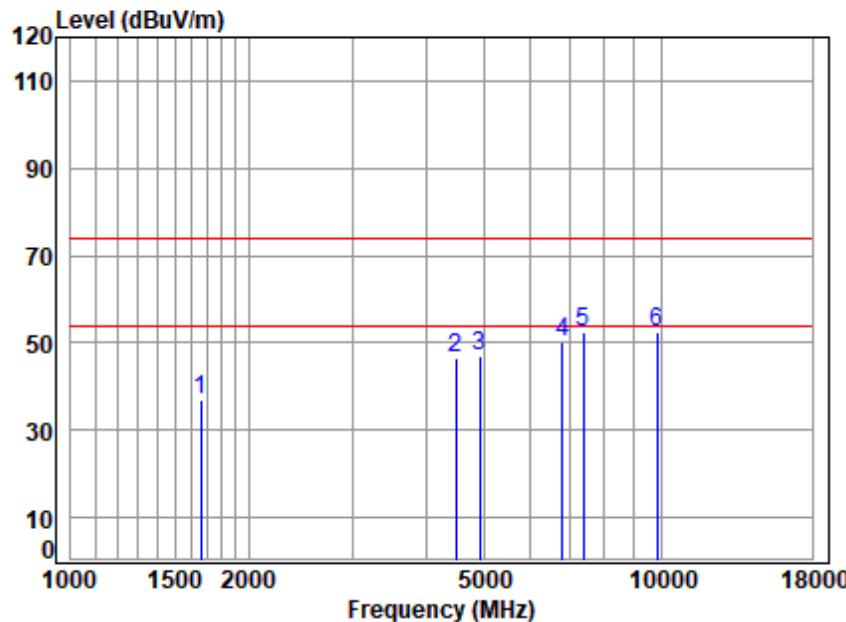
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2462 TX RSE  
Note : 2.4G WIFI 11G

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1	1697.129	3.43	26.69	40.06	46.86	36.92	74.00	-37.08	peak
2	4417.841	6.68	32.94	41.80	48.69	46.51	74.00	-27.49	peak
3	4924.000	7.22	33.85	42.24	47.87	46.70	74.00	-27.30	peak
4	6432.732	8.28	34.60	42.08	49.22	50.02	74.00	-23.98	peak
5	7386.000	8.91	35.81	41.34	48.55	51.93	74.00	-22.07	peak
6	9848.000	10.73	37.44	37.35	41.78	52.60	74.00	-21.40	peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



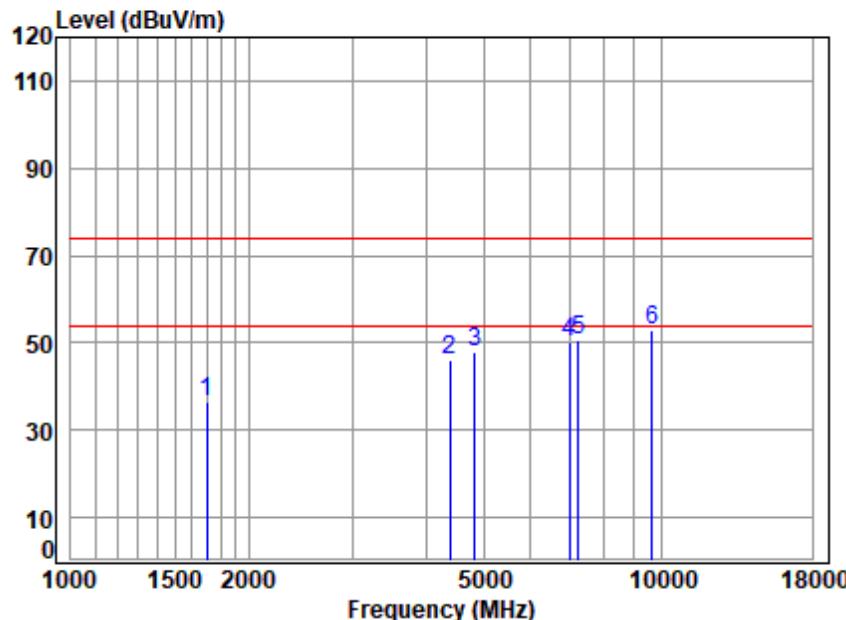
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2462 TX RSE  
Note : 2.4G WIFI 11G

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark	
								MHz	dB
1	1663.137	3.40	26.53	40.04	47.17	37.06	74.00	-36.94	peak
2	4482.150	6.74	32.99	41.86	48.83	46.70	74.00	-27.30	peak
3	4924.000	7.22	33.85	42.24	48.18	47.01	74.00	-26.99	peak
4	6795.879	8.44	35.14	41.83	48.39	50.14	74.00	-23.86	peak
5	7386.000	8.91	35.81	41.34	48.95	52.33	74.00	-21.67	peak
6	9848.000	10.73	37.44	37.35	41.49	52.31	74.00	-21.69	peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



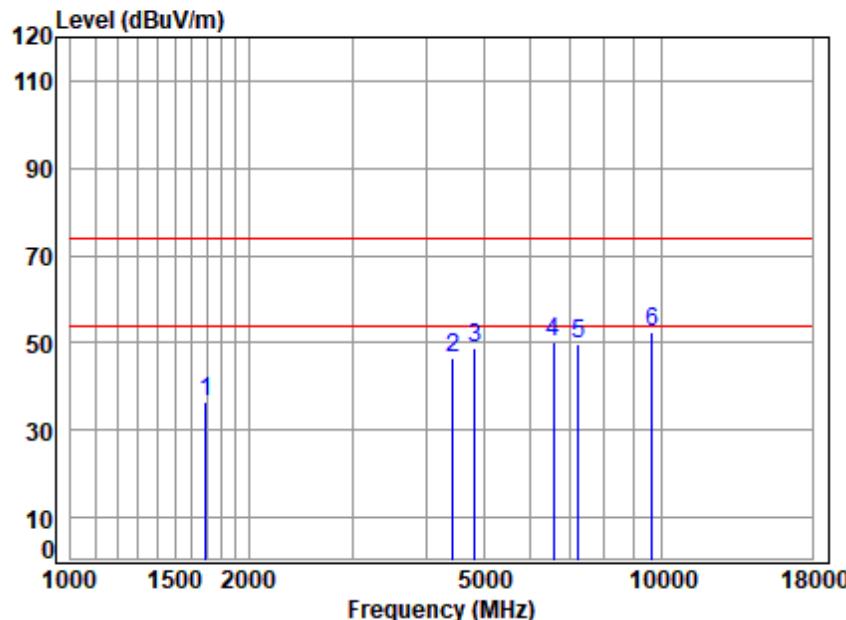
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2412 TX RSE  
Note : 2.4G WIFI 11N20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark	
				Level				
MHz	dB	dB/m		dB	dBuV	dBuV/m	dBuV/m	dB
1 1697.129	3.43	26.69	40.06	46.62	36.68	74.00	-37.32	peak
2 4392.376	6.66	32.92	41.78	48.26	46.06	74.00	-27.94	peak
3 4824.000	7.12	33.66	42.16	49.18	47.80	74.00	-26.20	peak
4 6974.982	8.53	35.46	41.72	48.03	50.30	74.00	-23.70	peak
5 7236.000	8.77	35.69	41.48	47.68	50.66	74.00	-23.34	peak
6 9648.000	10.79	37.36	37.69	42.33	52.79	74.00	-21.21	peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



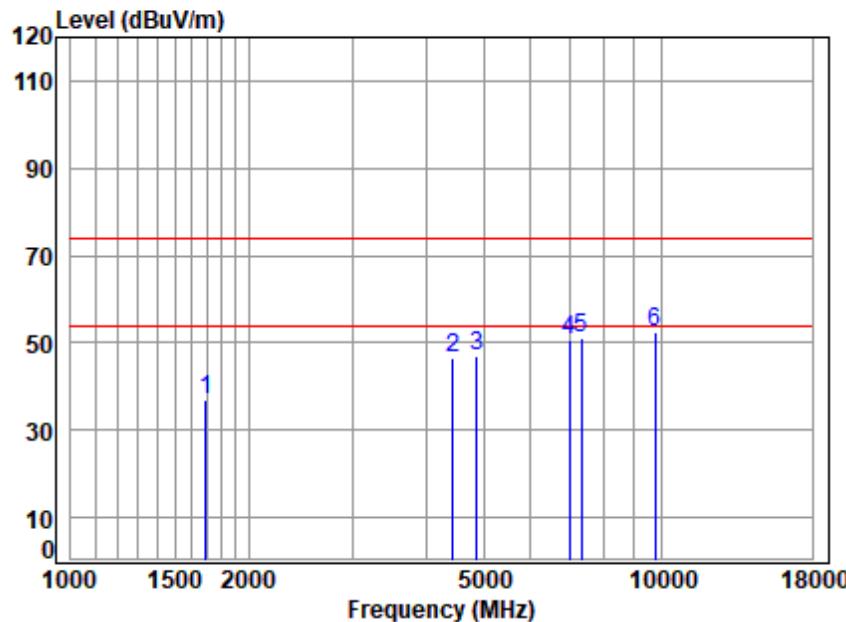
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2412 TX RSE  
Note : 2.4G WIFI 11N20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark
				Level			
MHz	dB	dB/m		dBuV	dBuV/m	dBuV/m	dB
1 1692.231	3.42	26.66	40.06	46.69	36.71	74.00	-37.29 peak
2 4443.453	6.71	32.96	41.82	48.75	46.60	74.00	-27.40 peak
3 4824.000	7.12	33.66	42.16	50.17	48.79	74.00	-25.21 peak
4 6564.209	8.31	34.72	41.99	49.20	50.24	74.00	-23.76 peak
5 7236.000	8.77	35.69	41.48	46.76	49.74	74.00	-24.26 peak
6 9648.000	10.79	37.36	37.69	42.15	52.61	74.00	-21.39 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



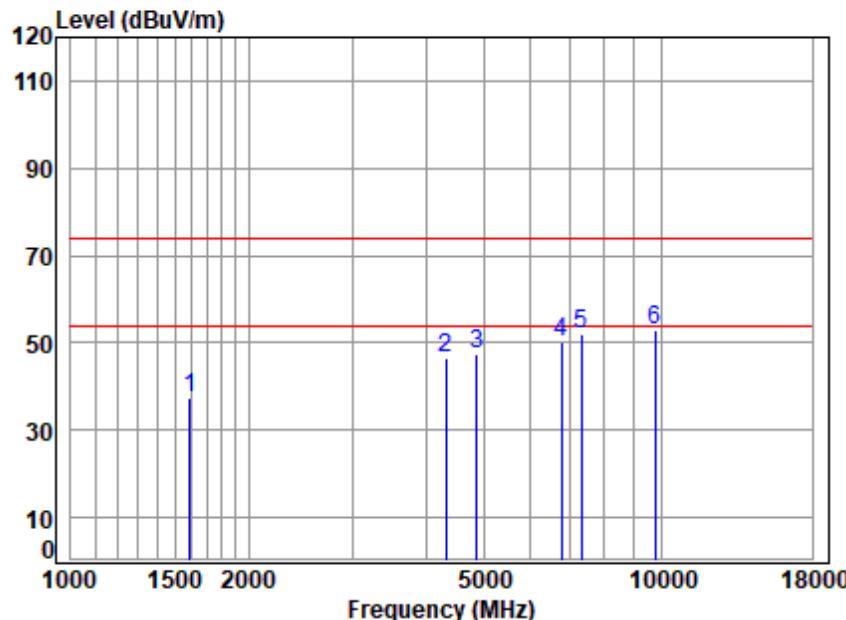
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2437 TX RSE  
Note : 2.4G WIFI 11N20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark
				Level			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	
1 1692.231	3.42	26.66	40.06	46.79	36.81	74.00	-37.19 peak
2 4430.628	6.70	32.95	41.81	48.80	46.64	74.00	-27.36 peak
3 4874.000	7.17	33.76	42.20	48.19	46.92	74.00	-27.08 peak
4 6995.172	8.54	35.49	41.70	48.17	50.50	74.00	-23.50 peak
5 7311.000	8.84	35.75	41.41	47.94	51.12	74.00	-22.88 peak
6 9748.000	10.76	37.40	37.52	41.93	52.57	74.00	-21.43 peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



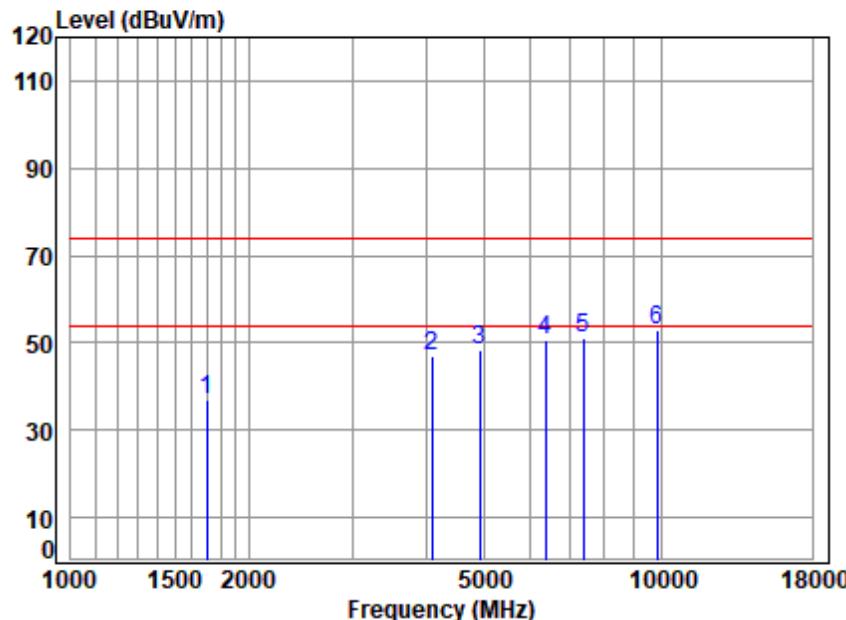
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2437 TX RSE  
Note : 2.4G WIFI 11N20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit	Over	Remark
				Level	Level	Line	
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 1592.571	3.34	26.18	40.00	47.89	37.41	74.00	-36.59 peak
2 4316.859	6.59	32.86	41.71	49.01	46.75	74.00	-27.25 peak
3 4874.000	7.17	33.76	42.20	48.90	47.63	74.00	-26.37 peak
4 6776.265	8.43	35.11	41.85	48.60	50.29	74.00	-23.71 peak
5 7311.000	8.84	35.75	41.41	48.97	52.15	74.00	-21.85 peak
6 9748.000	10.76	37.40	37.52	42.34	52.98	74.00	-21.02 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



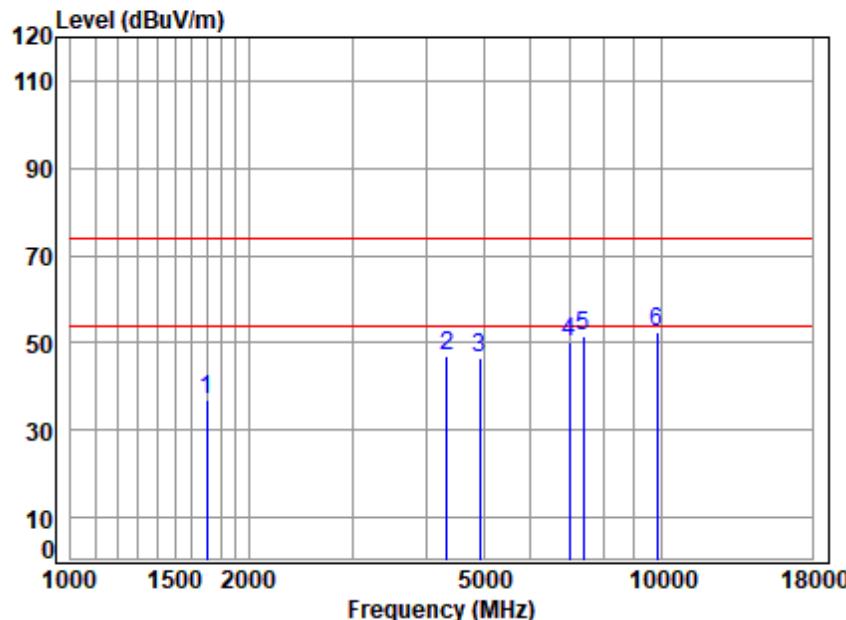
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2462 TX RSE  
Note : 2.4G WIFI 11N20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark
				Level			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 1697.129	3.43	26.69	40.06	46.70	36.76	74.00	-37.24 peak
2 4086.182	6.37	32.67	41.49	49.53	47.08	74.00	-26.92 peak
3 4924.000	7.22	33.85	42.24	49.42	48.25	74.00	-25.75 peak
4 6358.789	8.27	34.60	42.14	50.05	50.78	74.00	-23.22 peak
5 7386.000	8.91	35.81	41.34	47.74	51.12	74.00	-22.88 peak
6 9848.000	10.73	37.44	37.35	41.93	52.75	74.00	-21.25 peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



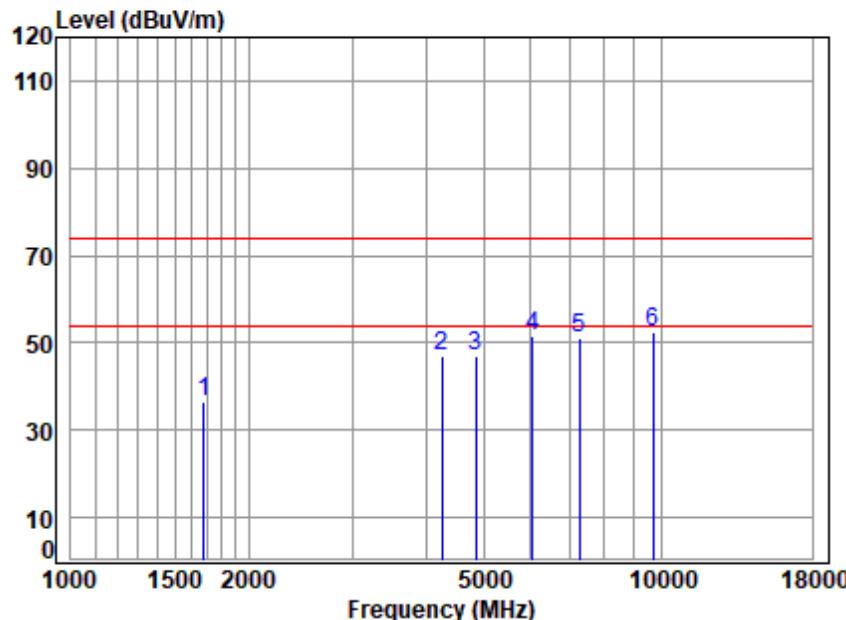
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2462 TX RSE  
Note : 2.4G WIFI 11N20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark
				Level			
MHz	dB	dB/m	dB	dB	dB	dB	
1 1702.042	3.43	26.71	40.06	47.03	37.11	74.00	-36.89 peak
2 4341.886	6.61	32.88	41.73	49.14	46.90	74.00	-27.10 peak
3 4924.000	7.22	33.85	42.24	47.91	46.74	74.00	-27.26 peak
4 6974.982	8.53	35.46	41.72	48.11	50.38	74.00	-23.62 peak
5 7386.000	8.91	35.81	41.34	48.35	51.73	74.00	-22.27 peak
6 9848.000	10.73	37.44	37.35	41.48	52.30	74.00	-21.70 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



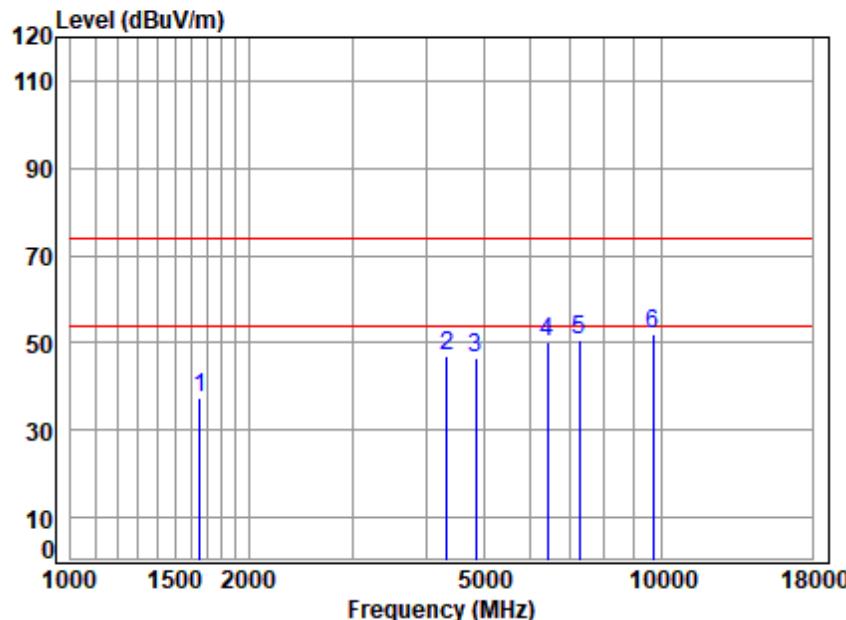
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2422 TX RSE  
Note : 2.4G WIFI 11N40

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark
				Level			
MHz	dB	dB/m		dB	dBuV/m	dBuV/m	dB
1 1682.477	3.42	26.62	40.05	46.72	36.71	74.00	-37.29 peak
2 4254.921	6.53	32.81	41.65	49.17	46.86	74.00	-27.14 peak
3 4844.000	7.14	33.70	42.17	48.40	47.07	74.00	-26.93 peak
4 6053.894	8.26	34.60	42.36	51.02	51.52	74.00	-22.48 peak
5 7266.000	8.79	35.72	41.45	47.88	50.94	74.00	-23.06 peak
6 9688.000	10.78	37.38	37.63	41.84	52.37	74.00	-21.63 peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



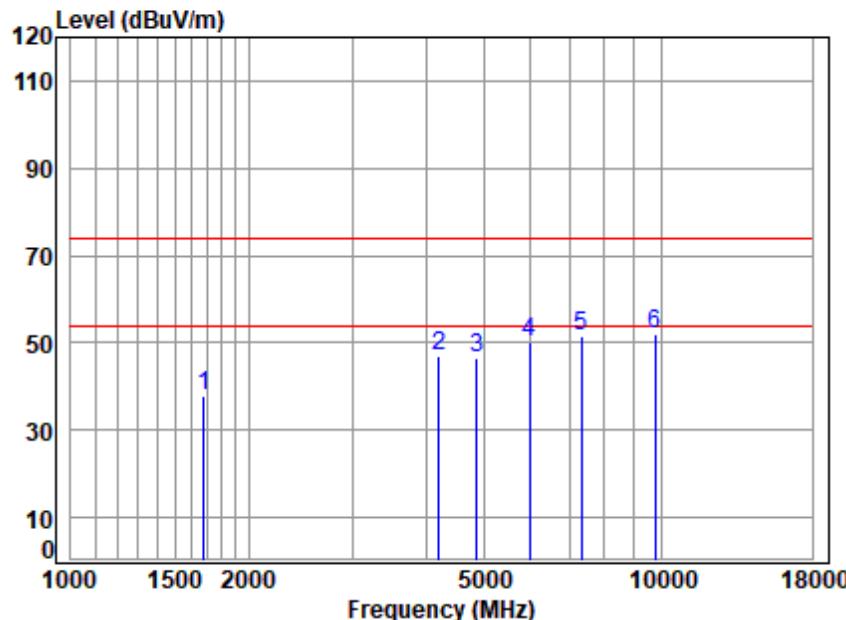
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2422 TX RSE  
Note : 2.4G WIFI 11N40

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark
				Level			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 1653.550	3.39	26.48	40.04	47.61	37.44	74.00	-36.56 peak
2 4329.354	6.60	32.87	41.72	49.33	47.08	74.00	-26.92 peak
3 4844.000	7.14	33.70	42.17	47.86	46.53	74.00	-27.47 peak
4 6414.167	8.28	34.60	42.10	49.53	50.31	74.00	-23.69 peak
5 7266.000	8.79	35.72	41.45	47.56	50.62	74.00	-23.38 peak
6 9688.000	10.78	37.38	37.63	41.49	52.02	74.00	-21.98 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



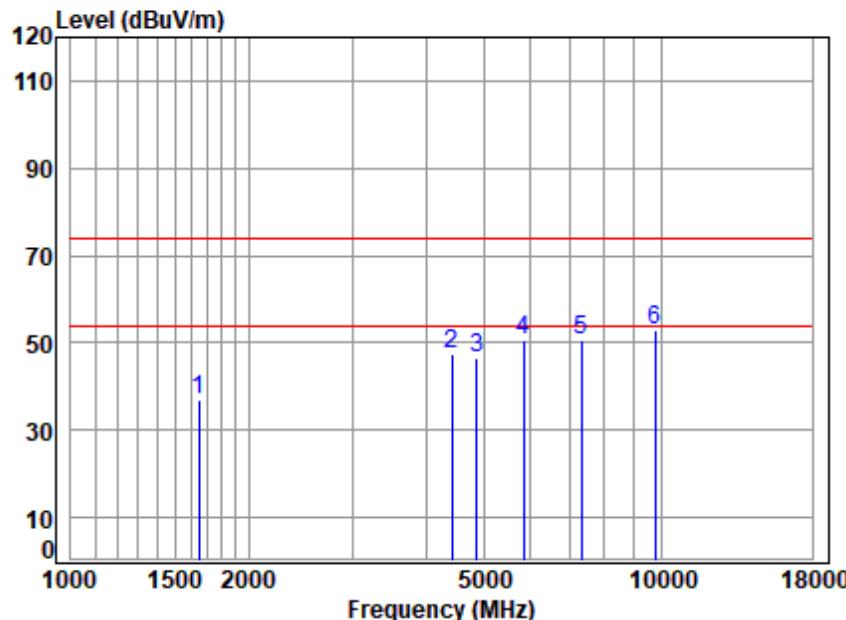
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2437 TX RSE  
Note : 2.4G WIFI 11N40

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit	Over	Remark
				Level	Level	Line	
MHz	dB	dB/m		dBuV	dBuV/m	dBuV/m	dB
1 1677.621	3.41	26.59	40.05	47.87	37.82	74.00	-36.18 peak
2 4206.011	6.48	32.77	41.60	49.14	46.79	74.00	-27.21 peak
3 4874.000	7.17	33.76	42.20	47.58	46.31	74.00	-27.69 peak
4 5984.305	8.26	34.59	42.40	49.71	50.16	74.00	-23.84 peak
5 7311.000	8.84	35.75	41.41	48.40	51.58	74.00	-22.42 peak
6 9748.000	10.76	37.40	37.52	41.44	52.08	74.00	-21.92 peak

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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



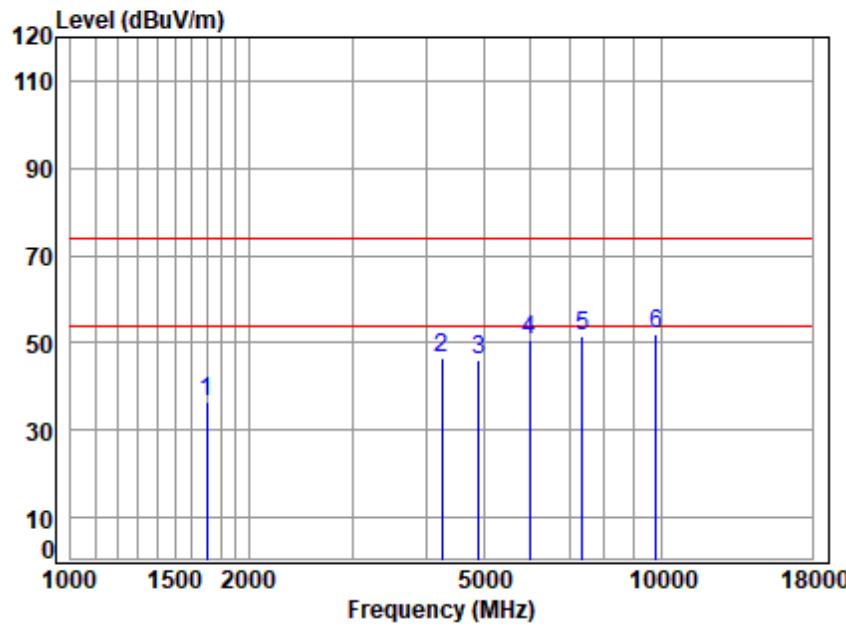
Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2437 TX RSE  
Note : 2.4G WIFI 11N40

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit	Over	Remark
				Level	Level	Line	
1648.778	3.39	26.46	40.03	46.99	36.81	74.00	-37.19 peak
4417.841	6.68	32.94	41.80	49.47	47.29	74.00	-26.71 peak
4874.000	7.17	33.76	42.20	48.00	46.73	74.00	-27.27 peak
5847.517	8.24	34.48	42.39	50.21	50.54	74.00	-23.46 peak
7311.000	8.84	35.75	41.41	47.30	50.48	74.00	-23.52 peak
9748.000	10.76	37.40	37.52	42.19	52.83	74.00	-21.17 peak

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Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



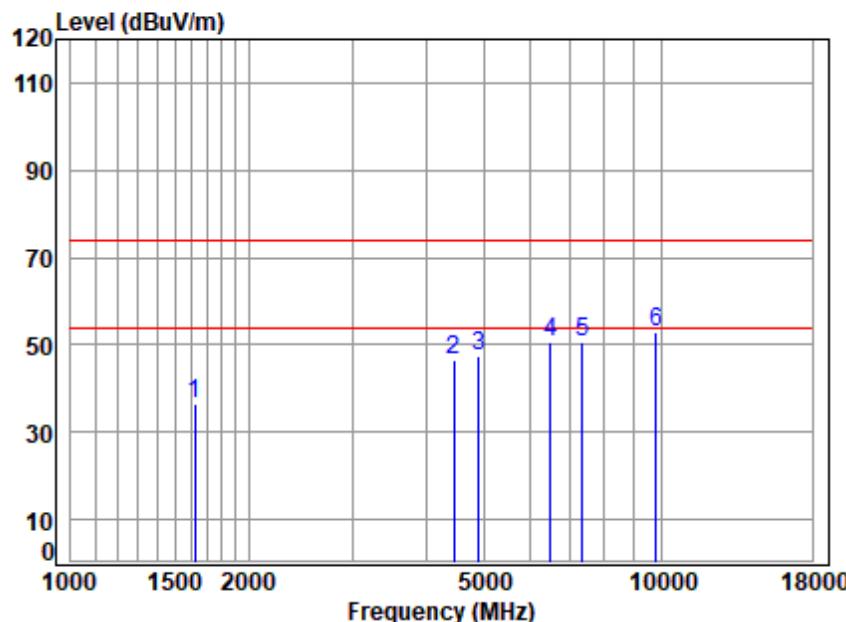
Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 20587AT  
Mode : 2452 TX RSE  
Note : 2.4G WIFI 11N40

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark
				Level			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	
1 1702.042	3.43	26.71	40.06	46.56	36.64	74.00	-37.36 peak
2 4254.921	6.53	32.81	41.65	49.03	46.72	74.00	-27.28 peak
3 4904.000	7.20	33.82	42.22	47.24	46.04	74.00	-27.96 peak
4 5984.305	8.26	34.59	42.40	50.01	50.46	74.00	-23.54 peak
5 7356.000	8.88	35.79	41.37	48.17	51.47	74.00	-22.53 peak
6 9808.000	10.75	37.42	37.42	41.38	52.13	74.00	-21.87 peak

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Site : chamber  
Condition: 3m VERTICAL  
Job No : 20587AT  
Mode : 2452 TX RSE  
Note : 2.4G WIFI 11N40

Freq	Cable Loss	Ant Factor	Preamp Factor	Read	Limit Line	Over Limit	Remark
				Level			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 1620.431	3.36	26.32	40.02	46.82	36.48	74.00	-37.52 peak
2 4456.315	6.72	32.97	41.84	48.57	46.42	74.00	-27.58 peak
3 4904.000	7.20	33.82	42.22	48.53	47.33	74.00	-26.67 peak
4 6488.754	8.28	34.60	42.04	49.90	50.74	74.00	-23.26 peak
5 7356.000	8.88	35.79	41.37	47.53	50.83	74.00	-23.17 peak
6 9808.000	10.75	37.42	37.42	42.10	52.85	74.00	-21.15 peak

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## 8 Test Setup Photo

Please refer to Test Setup Photographs.



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## 9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for SZCR2104020587AT



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## 10 Appendix

### Appendix for 15.247

#### 1. Duty Cycle

##### 1.1 Test Result

Test Mode	Channel Frequency(MHz)	TX Type	ANT No.	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
802.11b	2412	SISO	1	8.220	8.420	97.62	0.10
	2437	SISO	1	8.220	8.420	97.62	0.10
	2462	SISO	1	8.220	8.420	97.62	0.10
802.11g	2412	SISO	1	1.363	1.561	87.32	0.59
	2437	SISO	1	1.363	1.561	87.32	0.59
	2462	SISO	1	1.363	1.561	87.32	0.59
802.11n(HT20)	2412	SISO	1	1.248	1.444	86.43	0.63
	2437	SISO	1	1.248	1.442	86.55	0.63
	2462	SISO	1	1.249	1.444	86.50	0.63
802.11n(HT40)	2422	SISO	1	0.636	0.836	76.08	1.19
	2437	SISO	1	0.635	0.835	76.05	1.19
	2452	SISO	1	0.635	0.835	76.05	1.19

##### 1.2 Test Graph



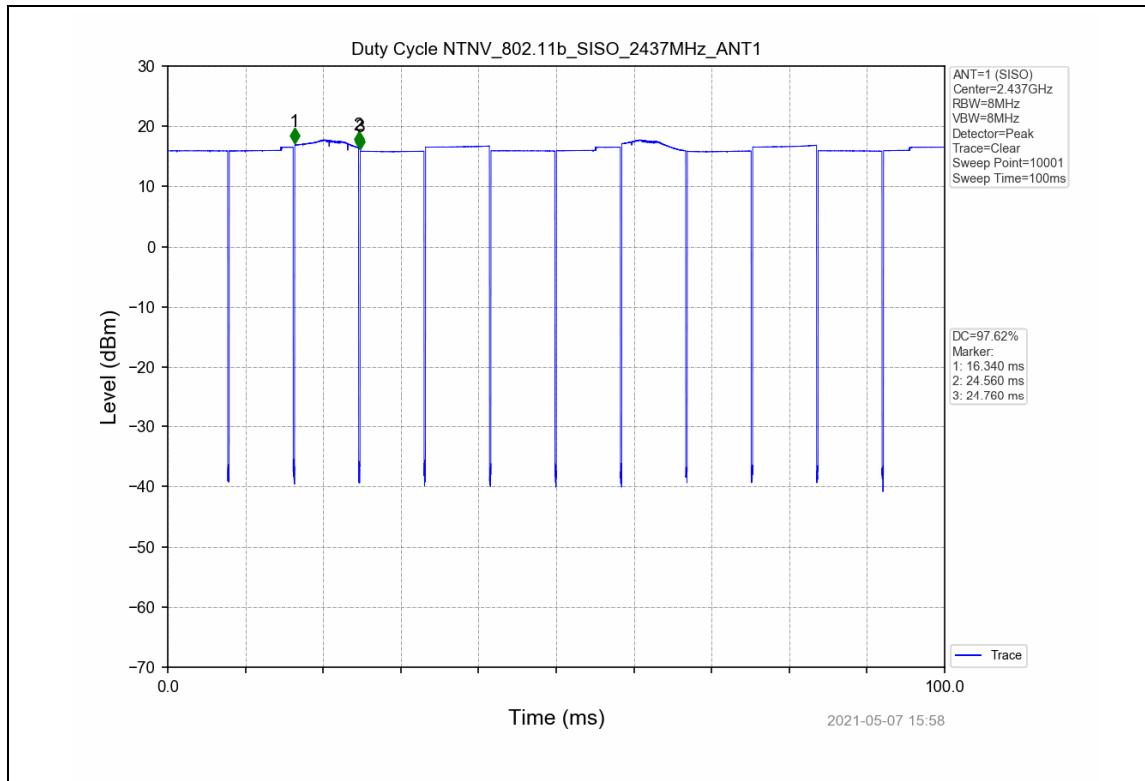
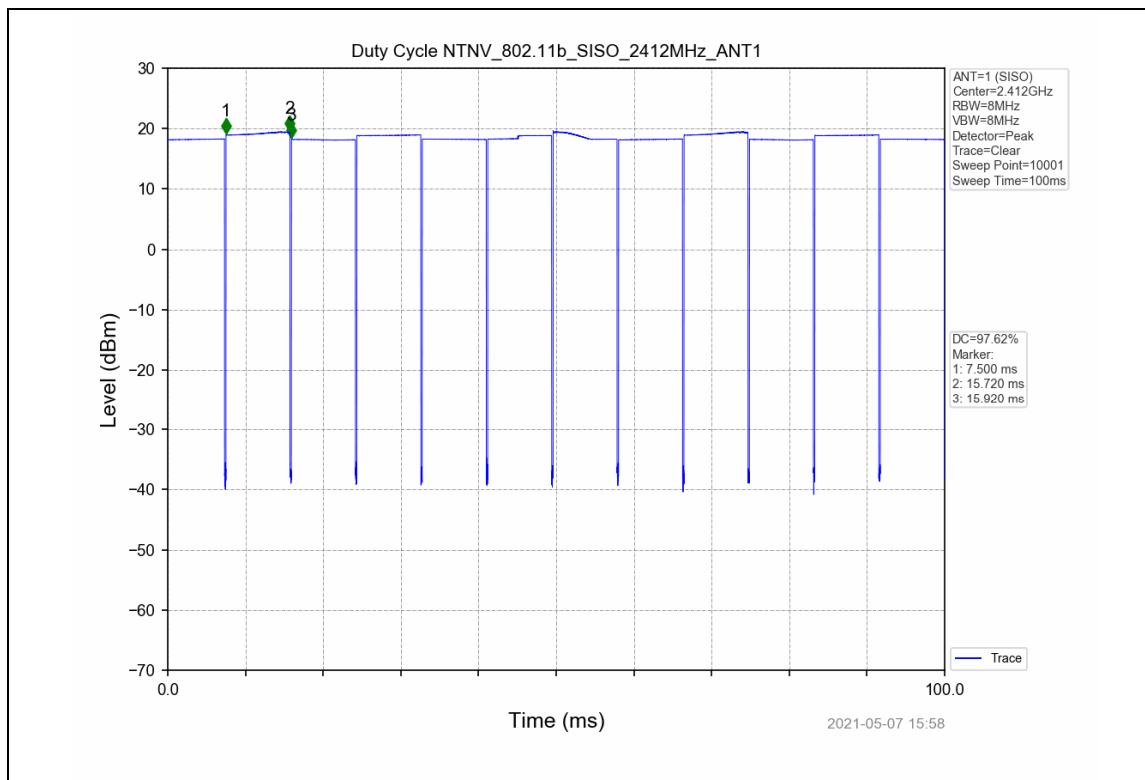
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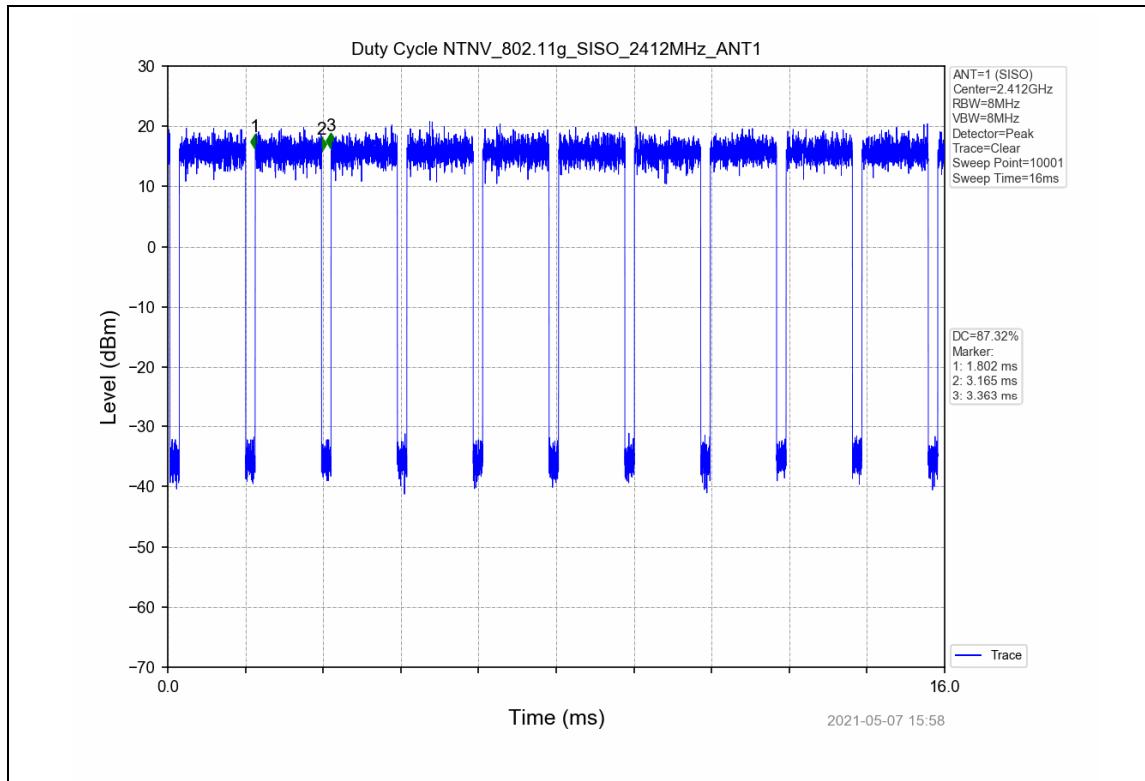
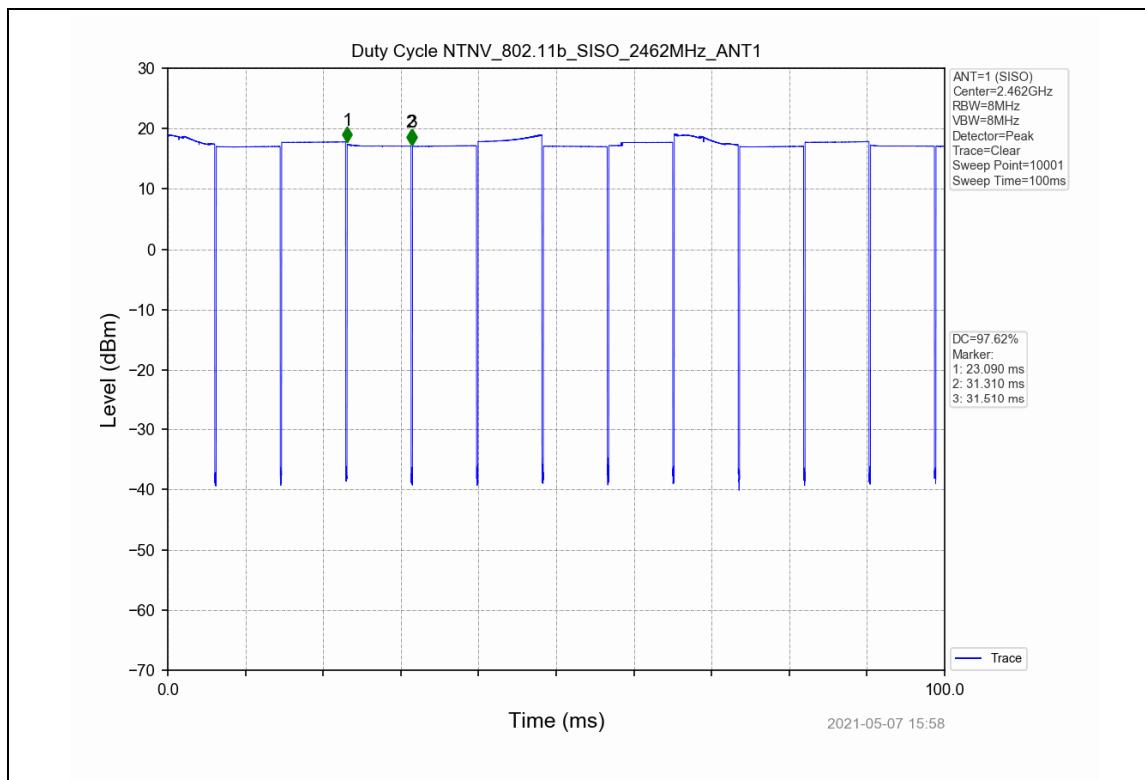
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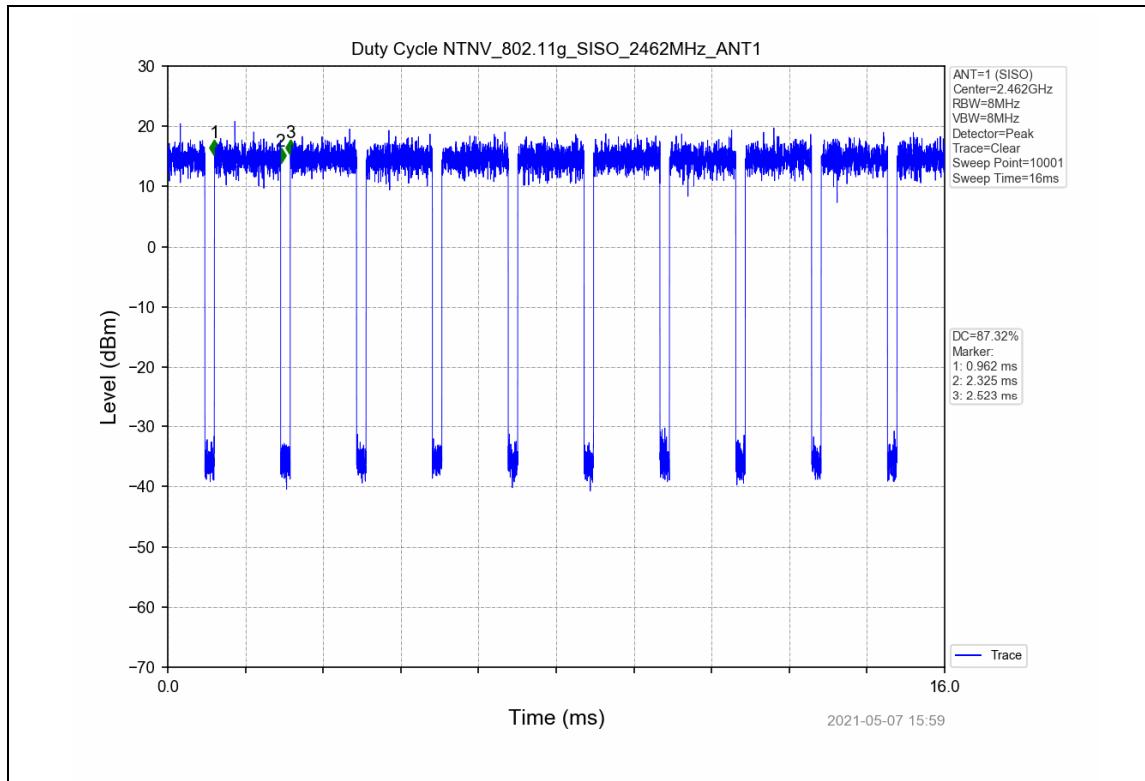
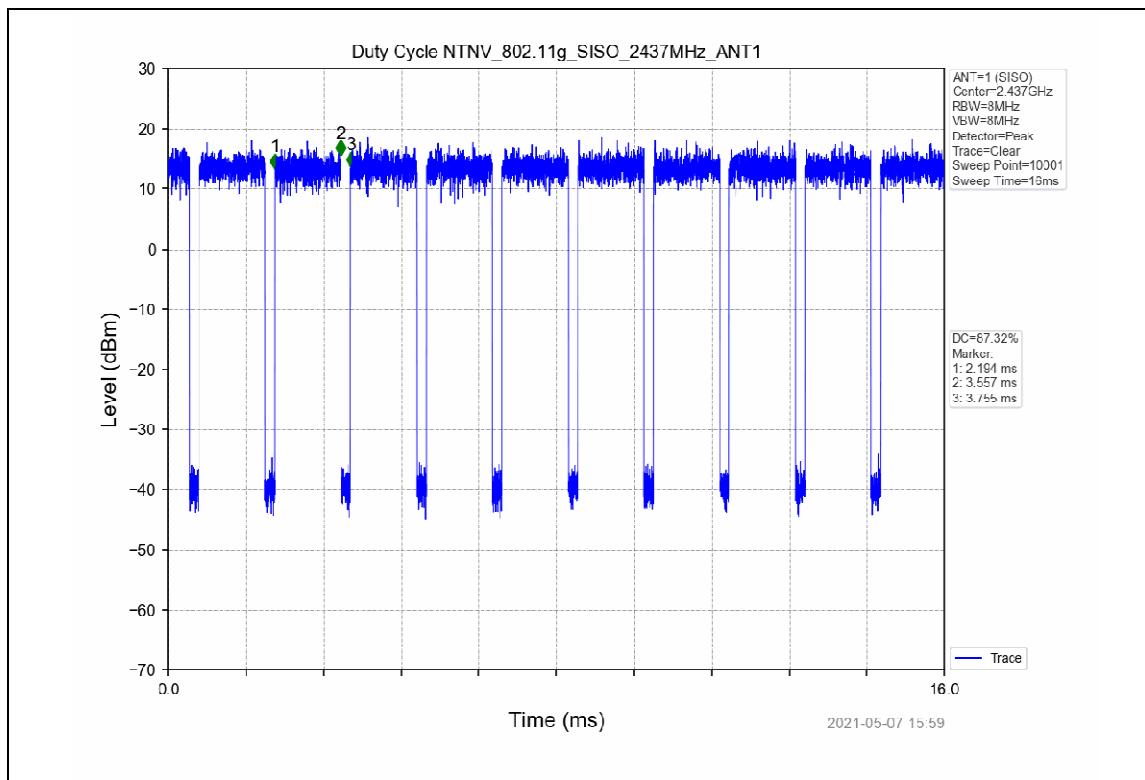
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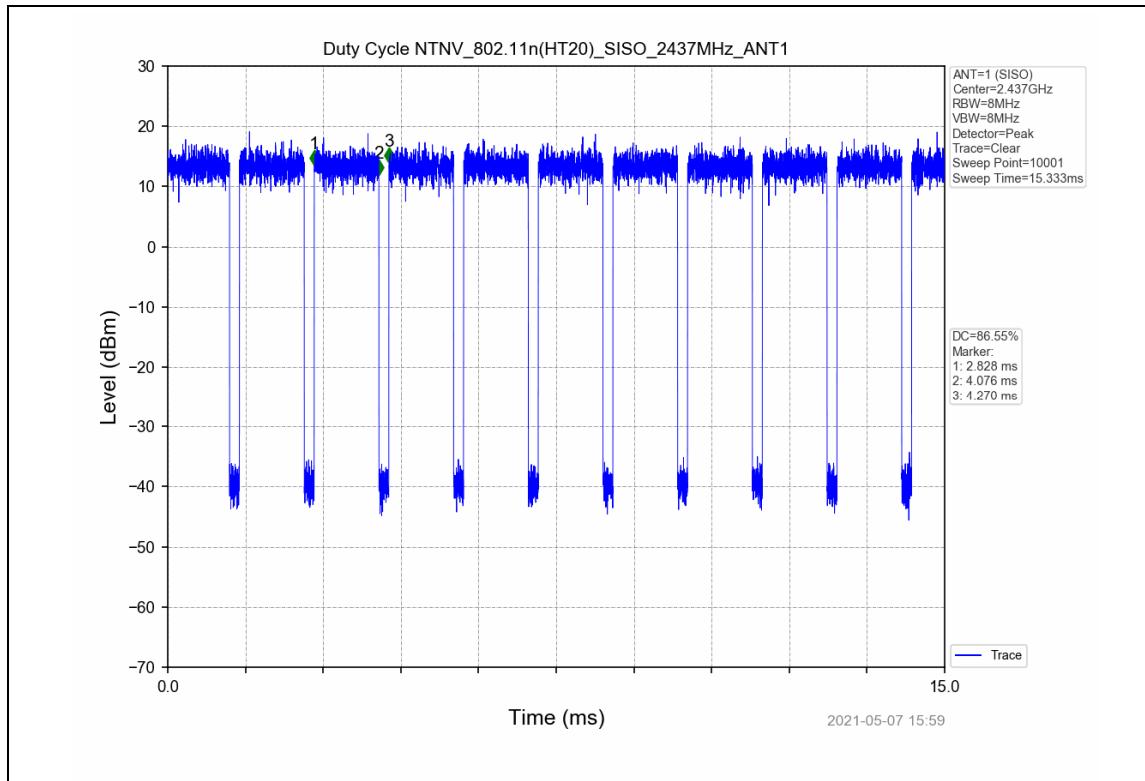
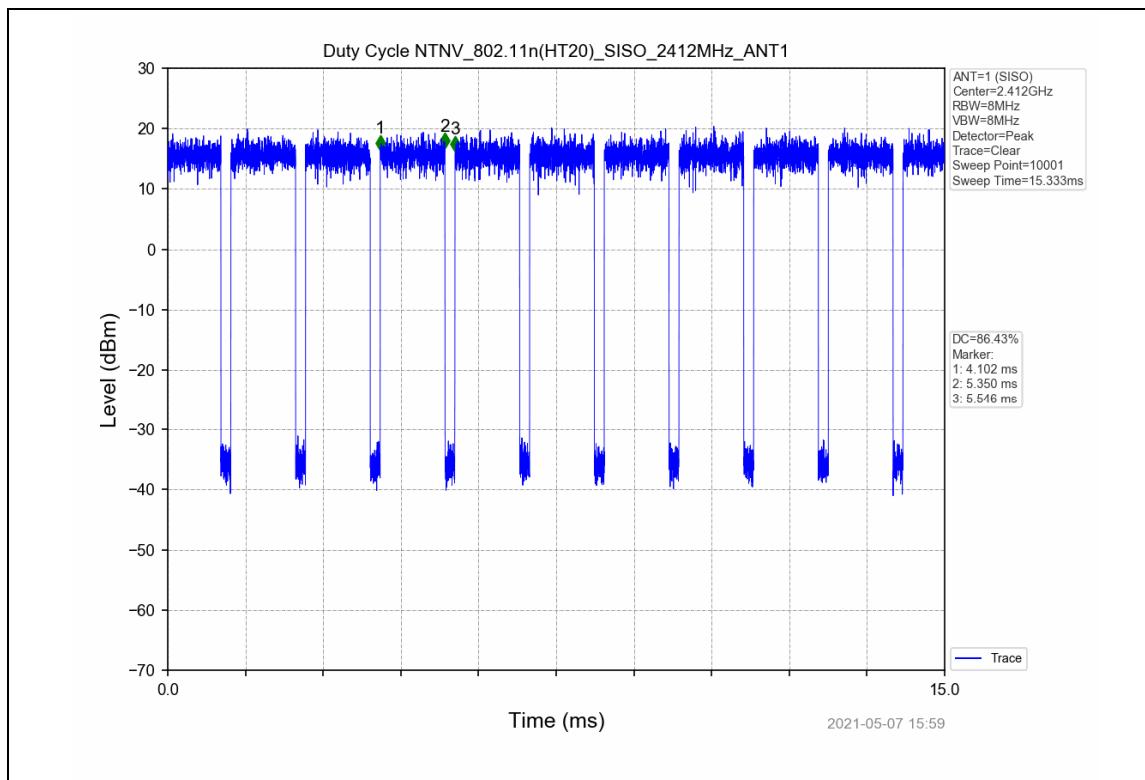
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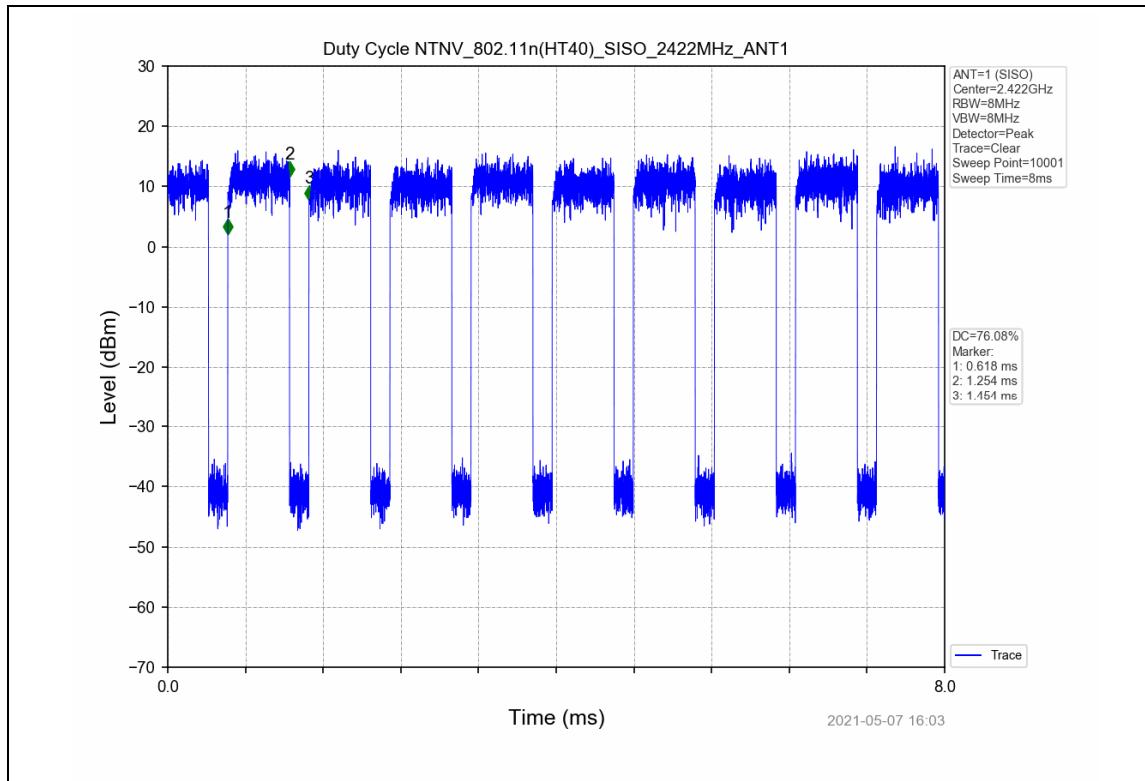
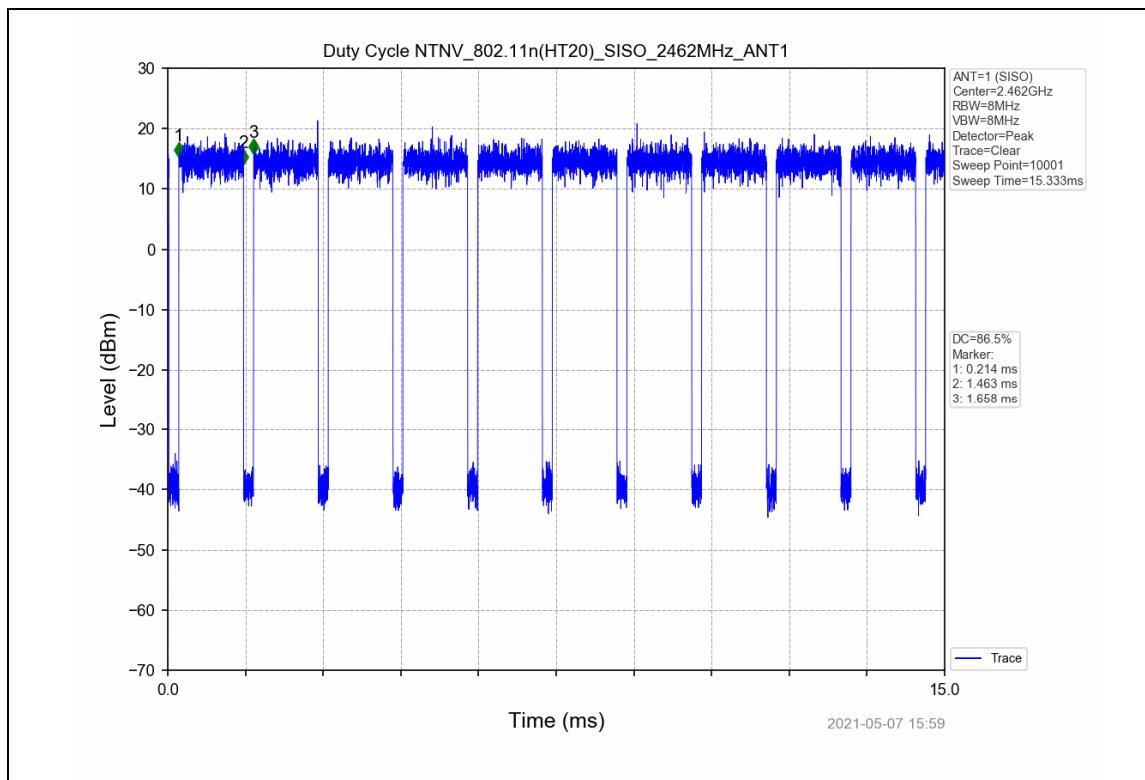


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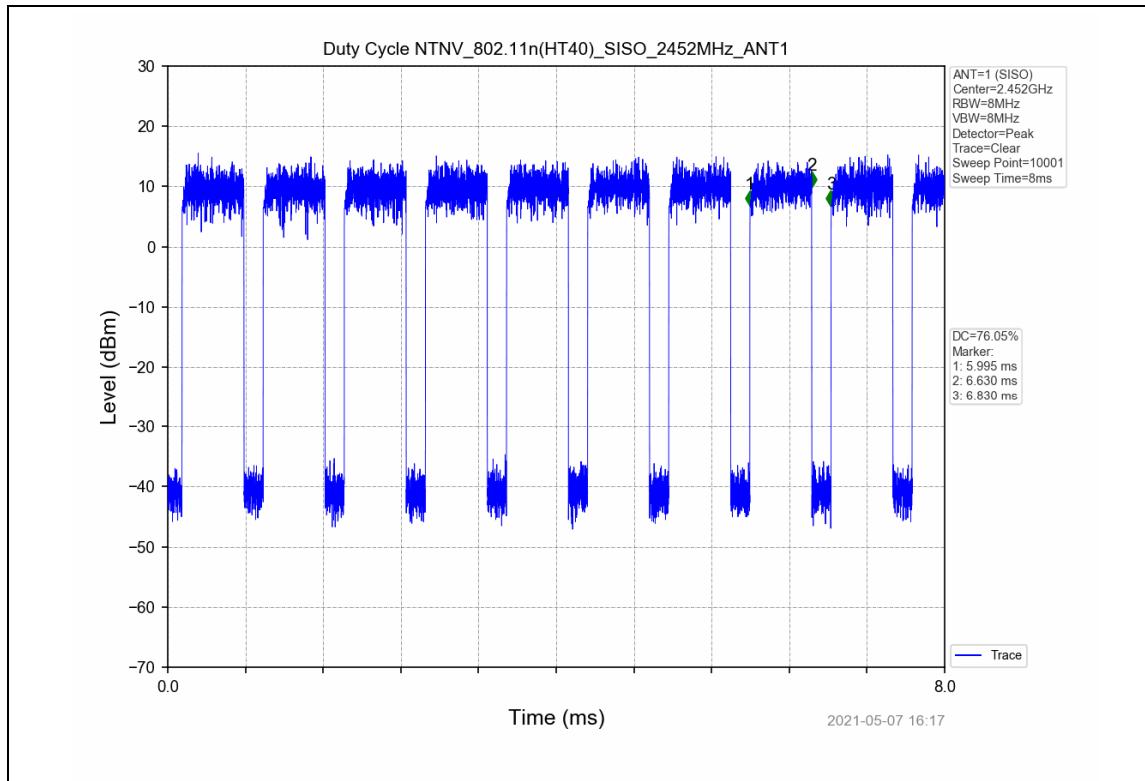
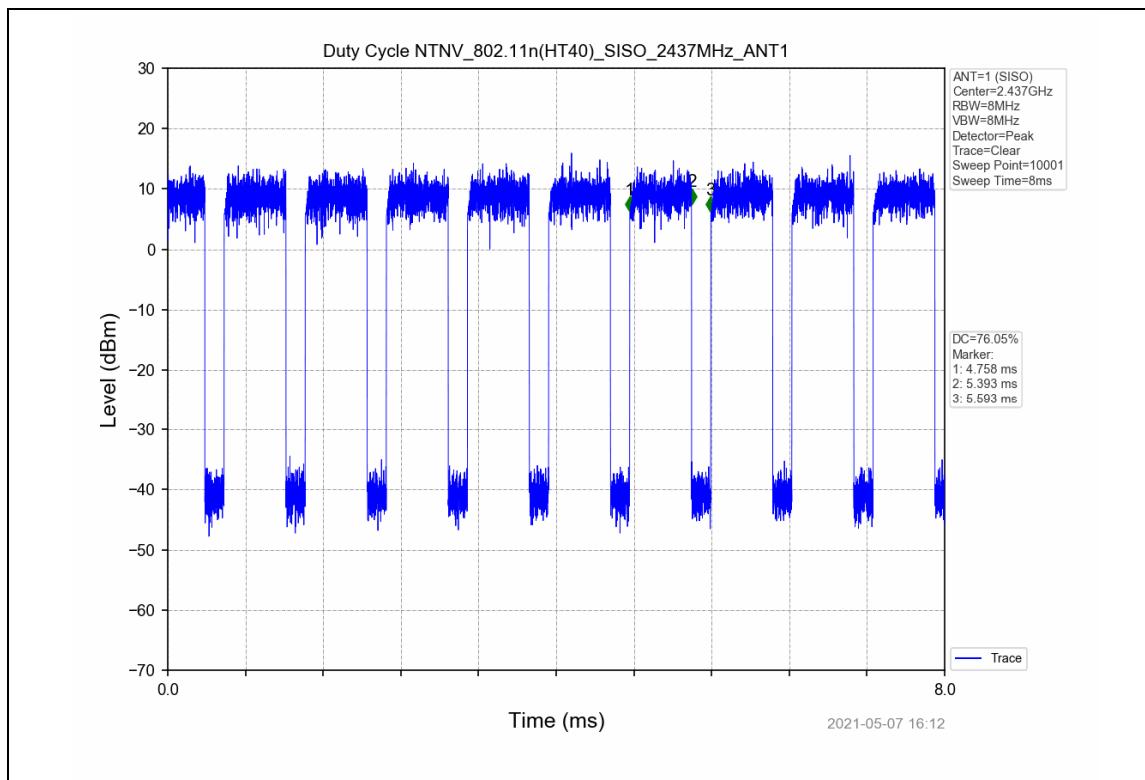






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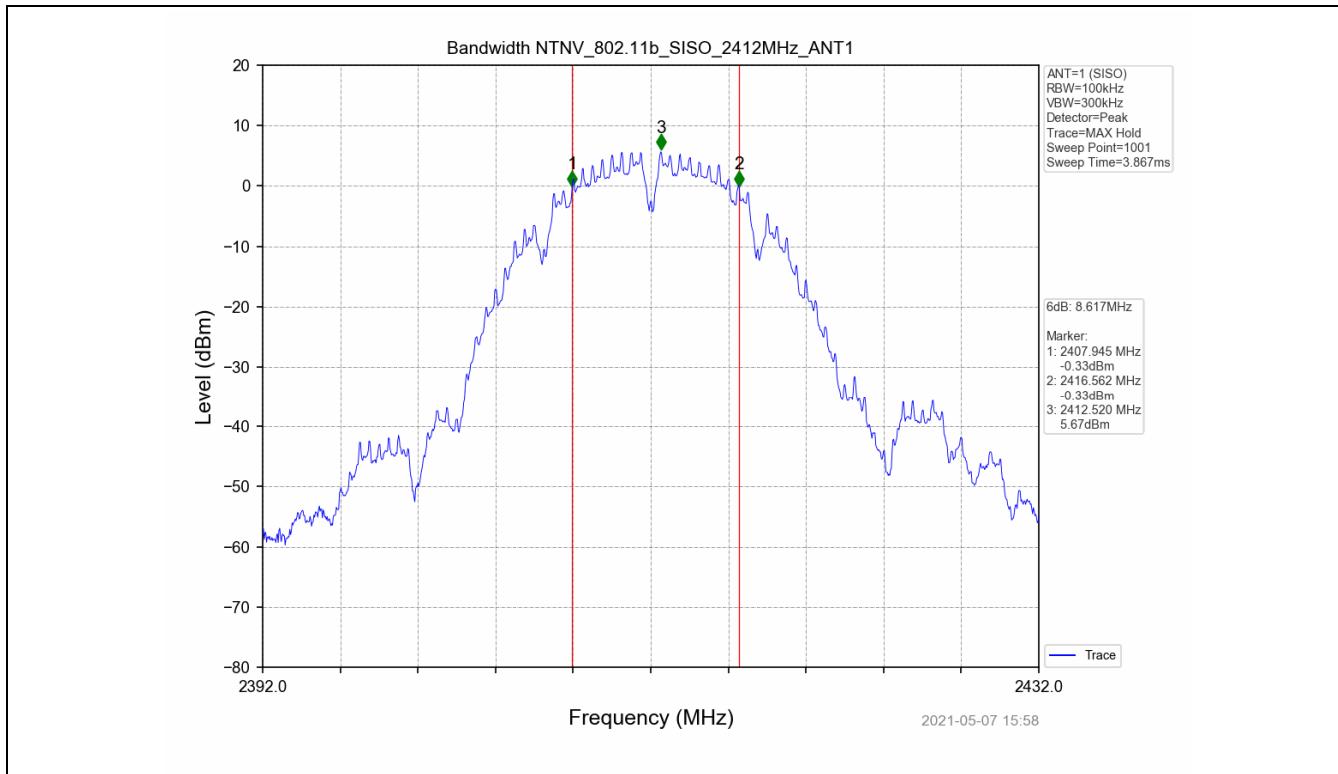
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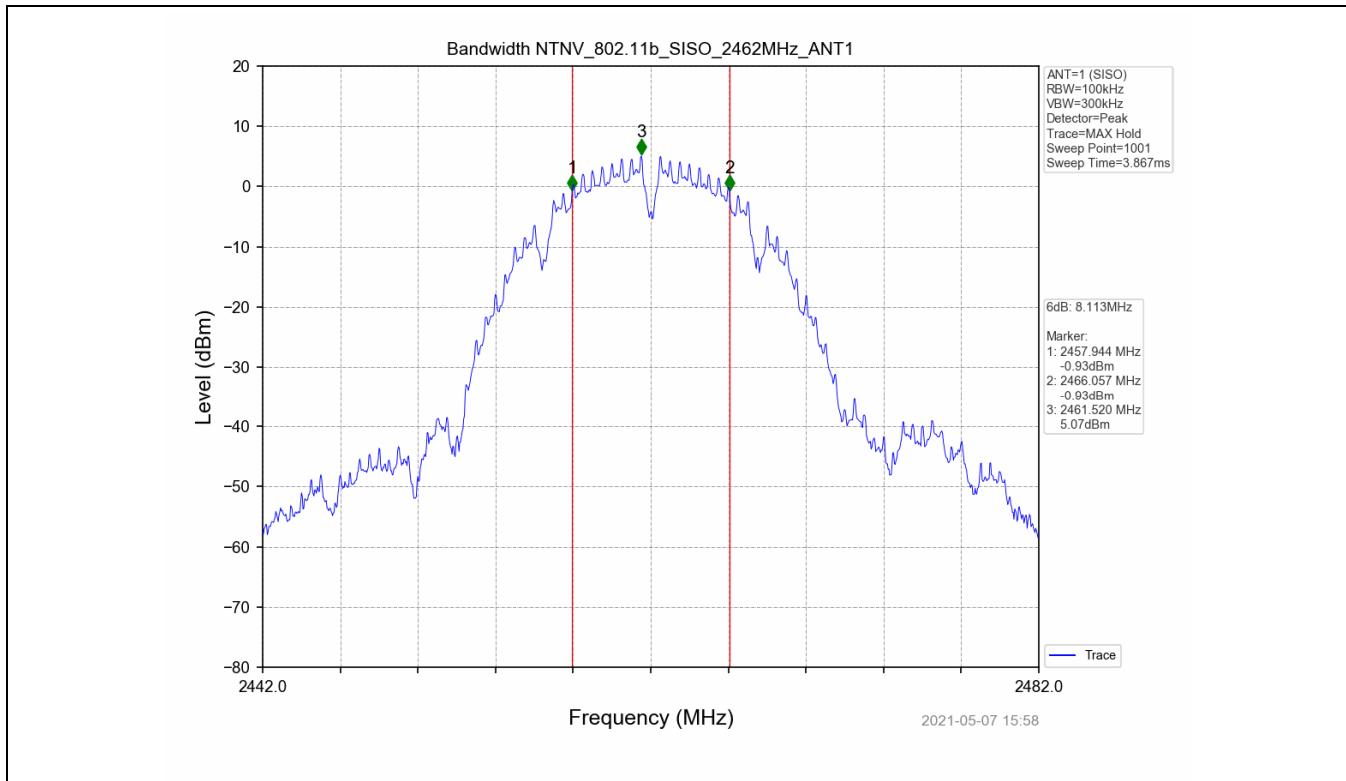
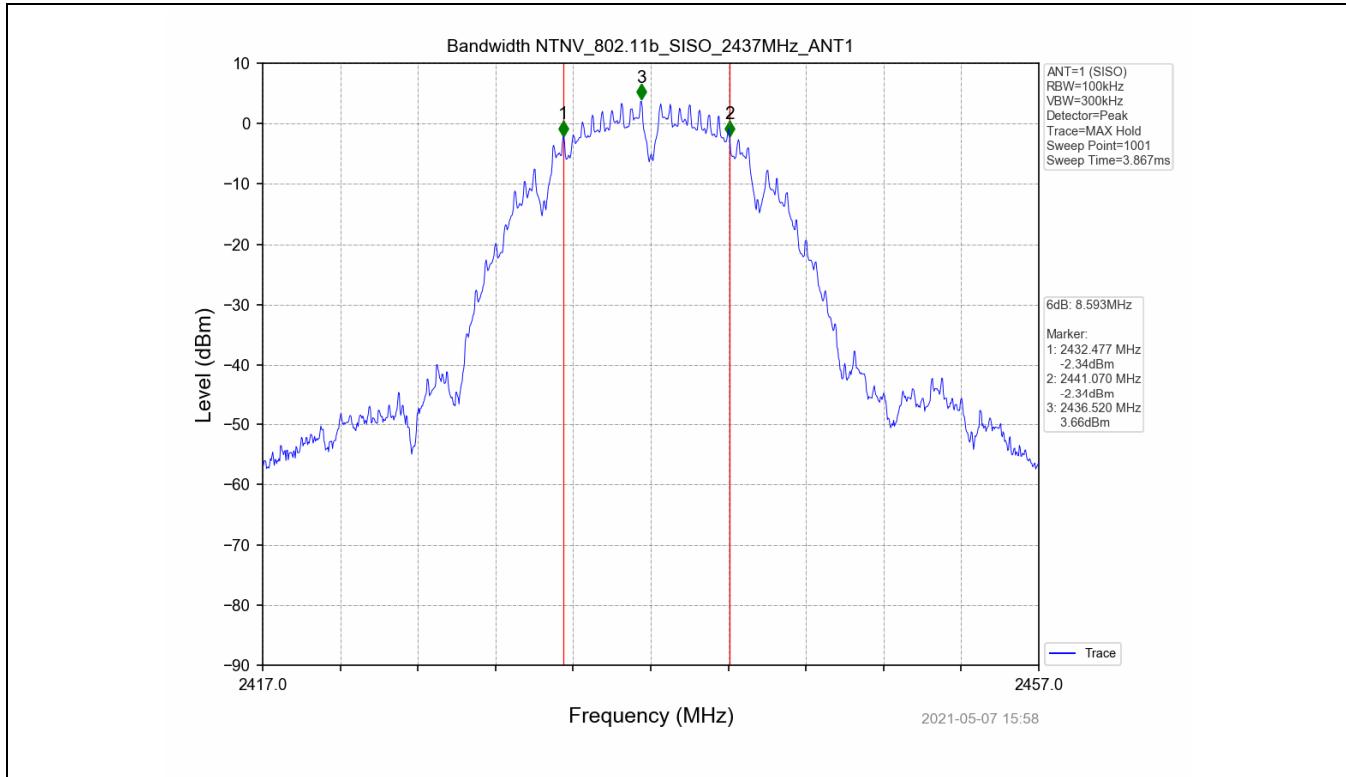
## 2. 6dB Bandwidth

### 2.1 Test Result

Test Mode	Frequency (MHz)	TX Type	ANT No.	6dB Bandwidth	Verdict
				Test Result (MHz)	
802.11b	2412	SISO	1	8.617	PASS
	2437	SISO	1	8.593	PASS
	2462	SISO	1	8.113	PASS
802.11g	2412	SISO	1	16.401	PASS
	2437	SISO	1	16.437	PASS
	2462	SISO	1	16.415	PASS
802.11n(HT20)	2412	SISO	1	17.593	PASS
	2437	SISO	1	17.672	PASS
	2462	SISO	1	17.608	PASS
802.11n(HT40)	2422	SISO	1	35.212	PASS
	2437	SISO	1	35.411	PASS
	2452	SISO	1	35.228	PASS

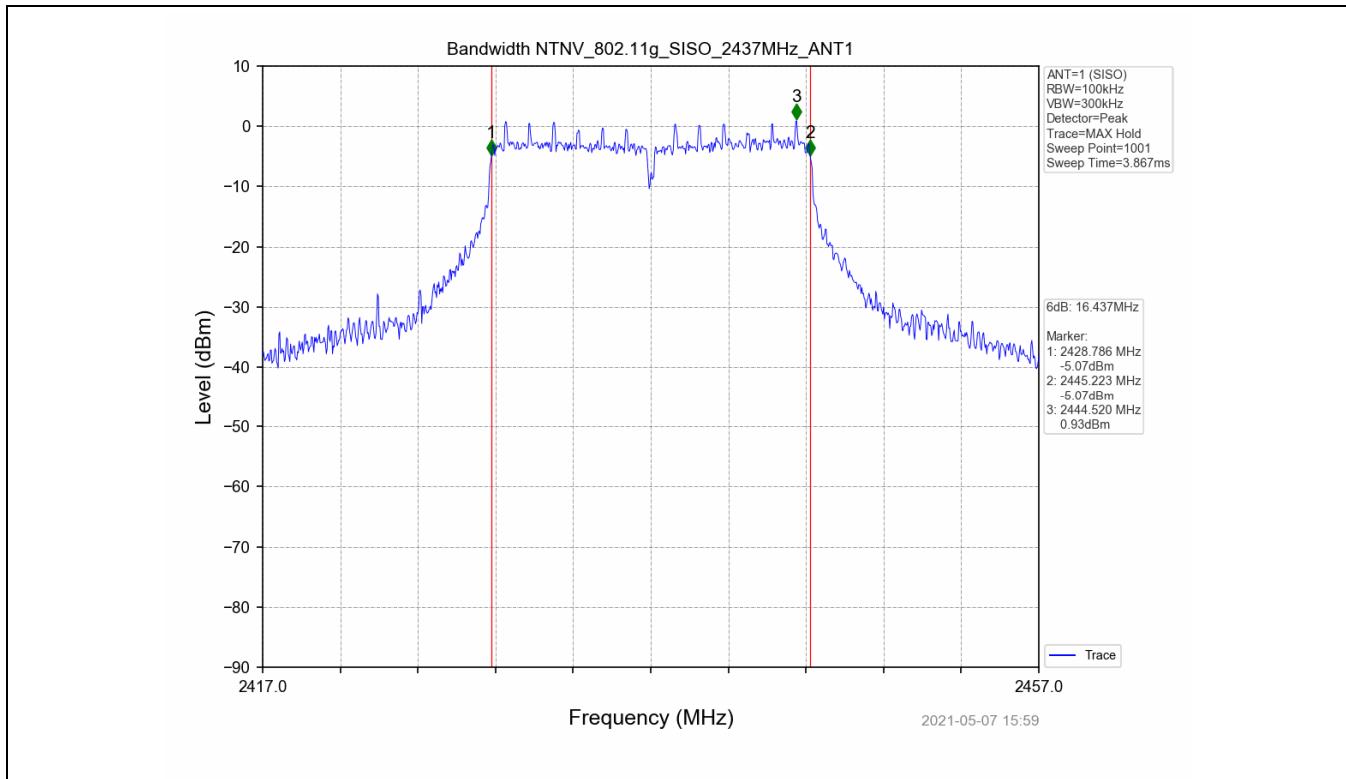
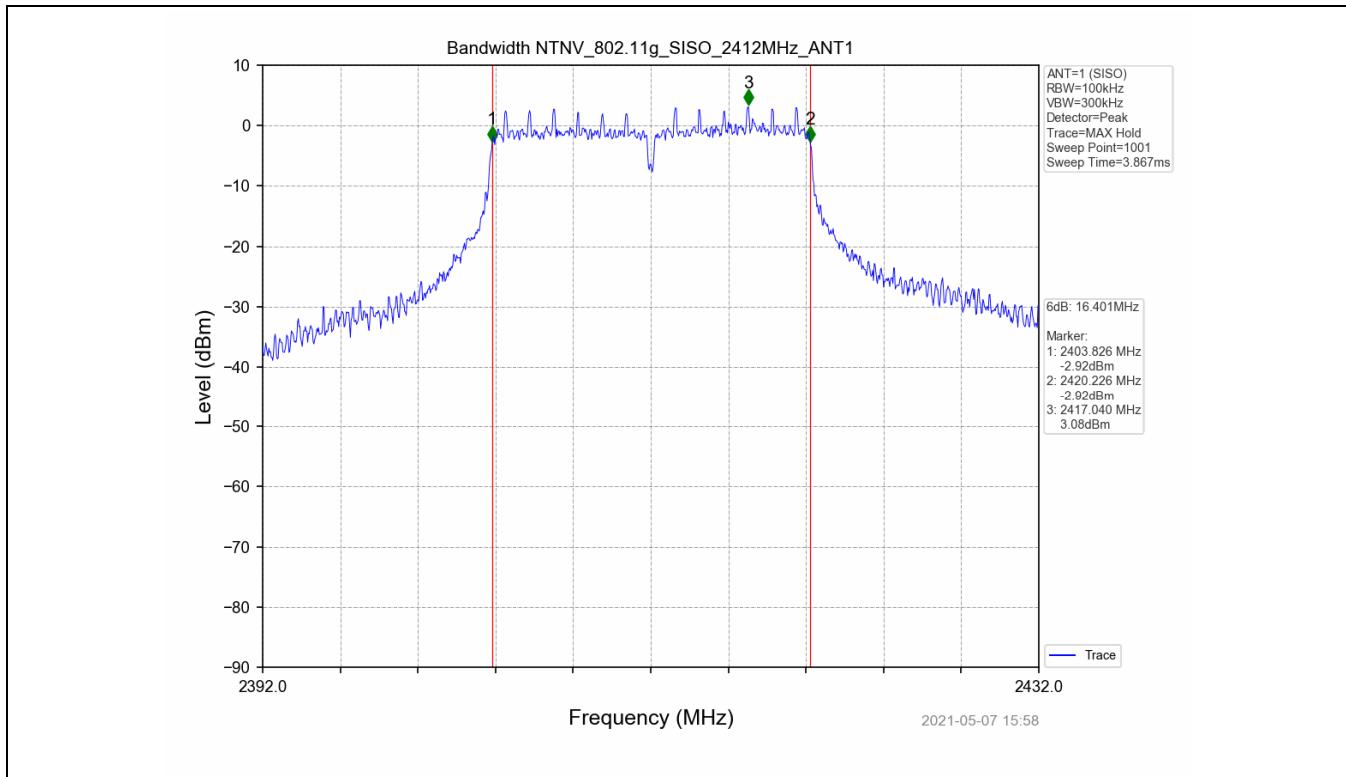
### 2.2 Test Graph - 6dB Bandwidth





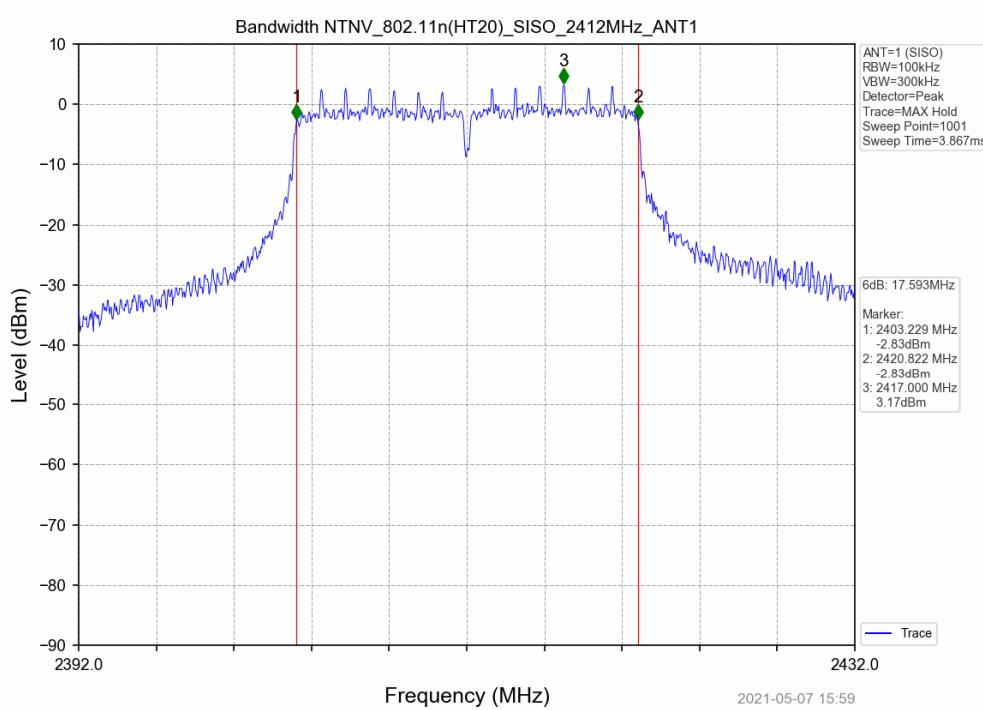
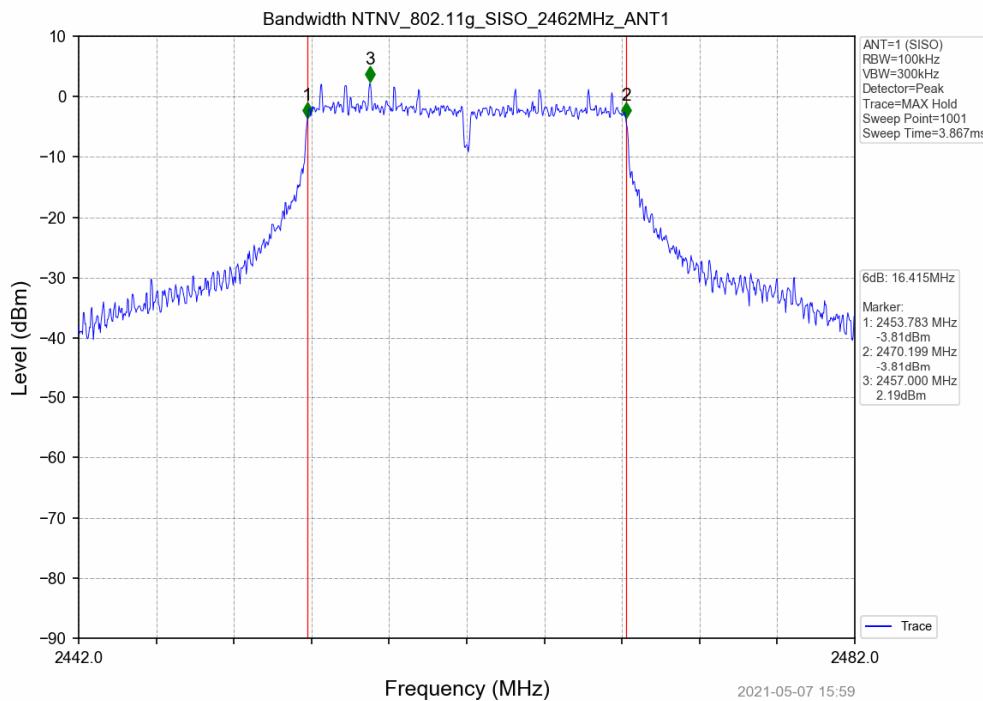
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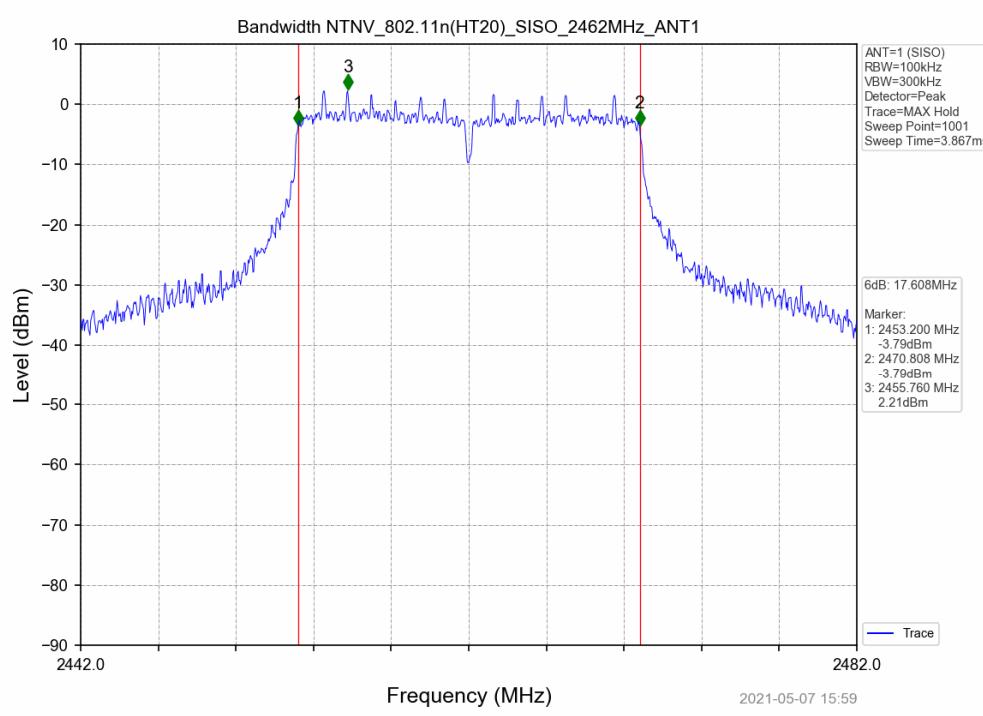
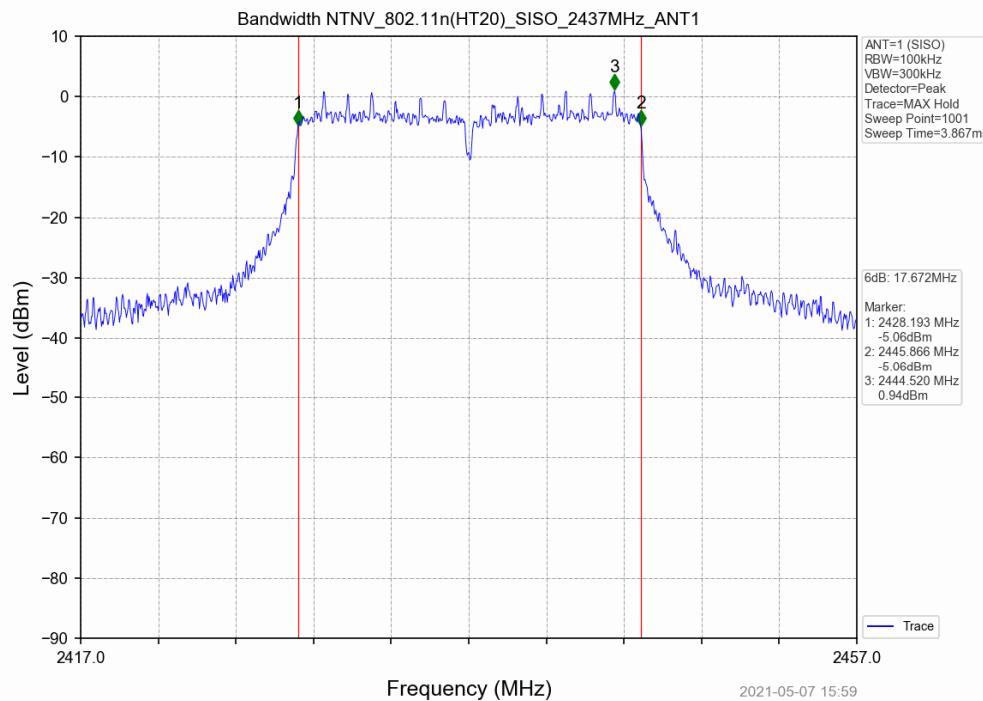
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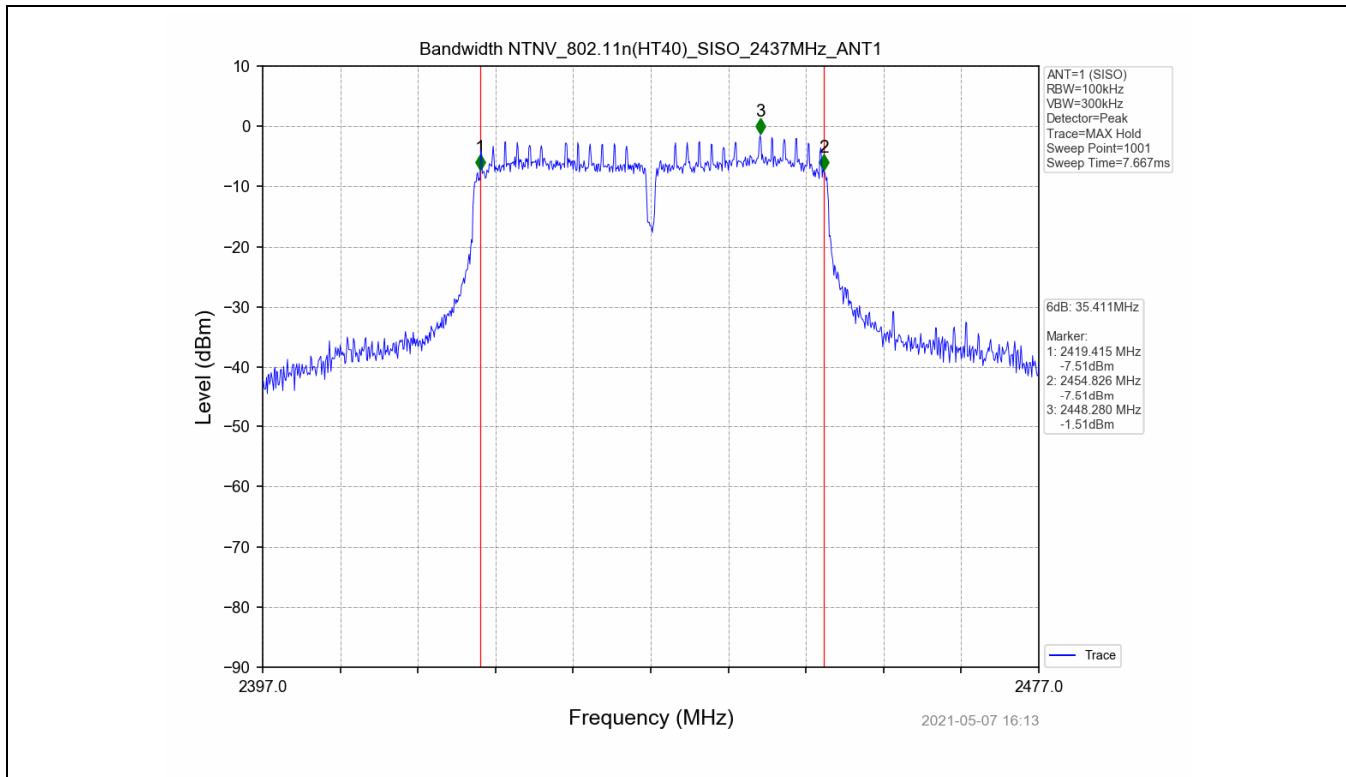
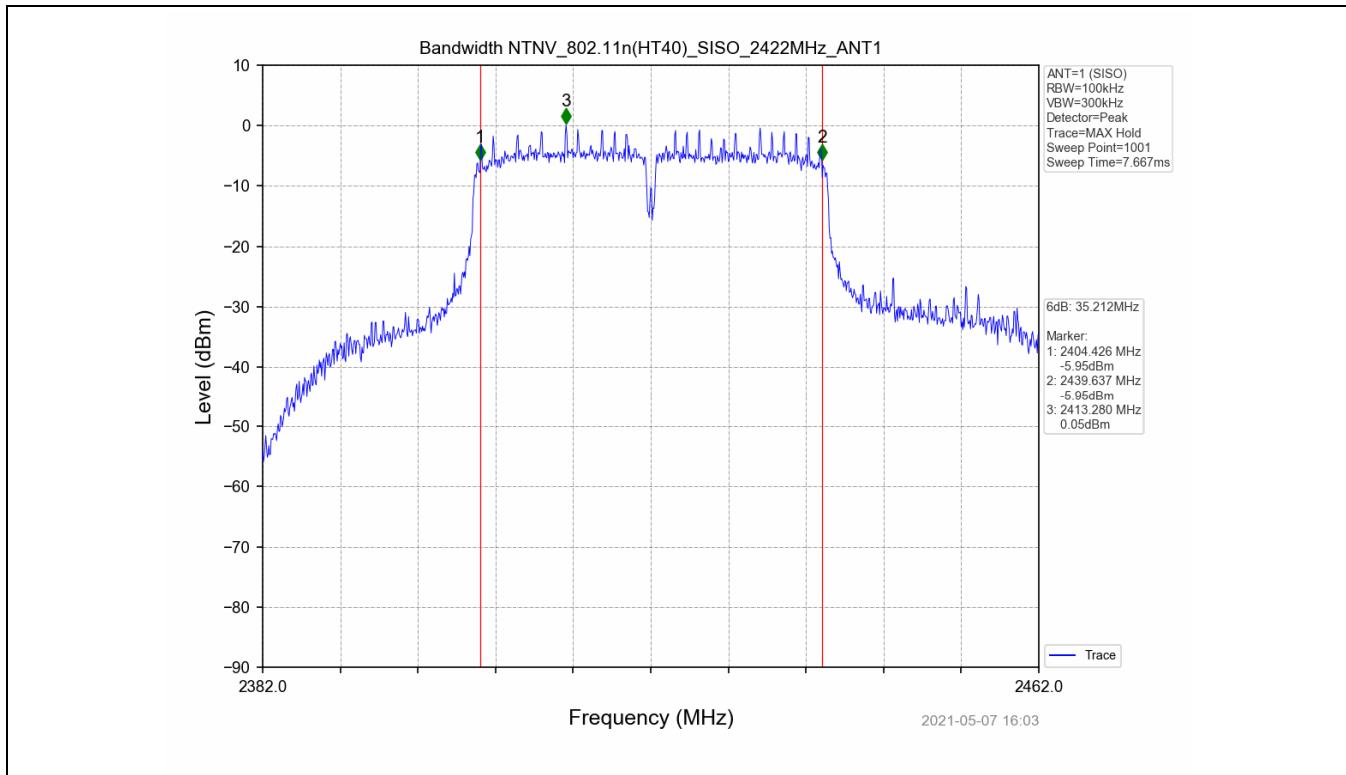
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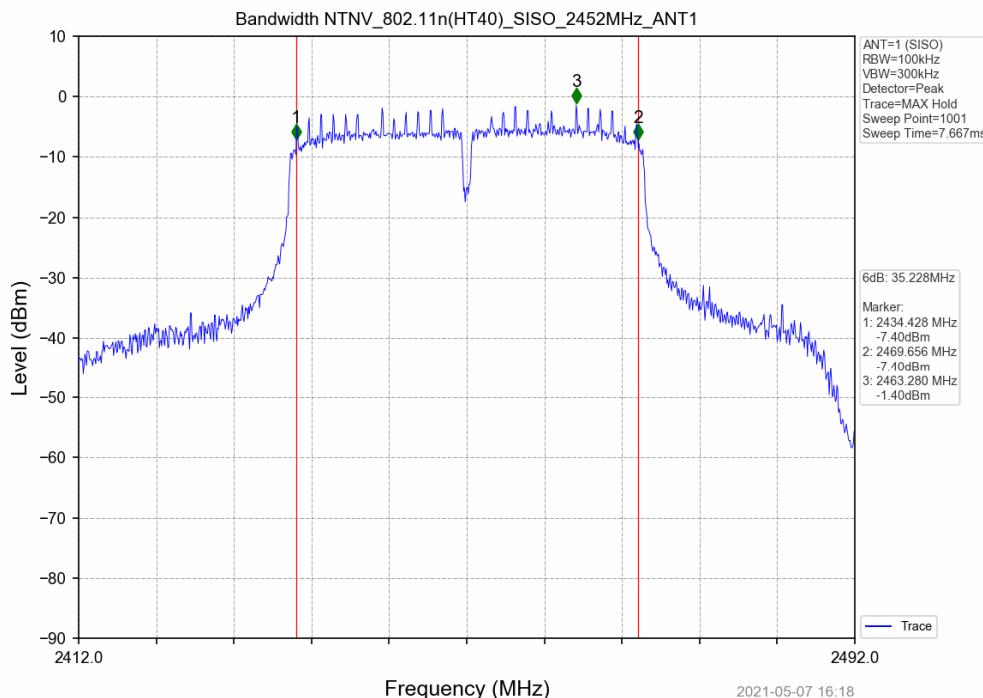
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### 3. Maximum Conducted Output Power

#### 3.1 Test Result

Test Mode	Frequency (MHz)	Tx Type	Measured Average Output Power (dBm)	Limits (dBm)	Verdict
			Ant 1		
802.11b	2412	SISO	13.98	30	PASS
	2437	SISO	11.54	30	PASS
	2462	SISO	12.68	30	PASS
802.11g	2412	SISO	13.99	30	PASS
	2437	SISO	12.08	30	PASS
	2462	SISO	13.16	30	PASS
802.11n(HT20)	2412	SISO	14.04	30	PASS
	2437	SISO	11.77	30	PASS
	2462	SISO	13.22	30	PASS
802.11n(HT40)	2422	SISO	12.89	30	PASS
	2437	SISO	12.07	30	PASS
	2452	SISO	12.34	30	PASS

#### 3.2 Test Graph

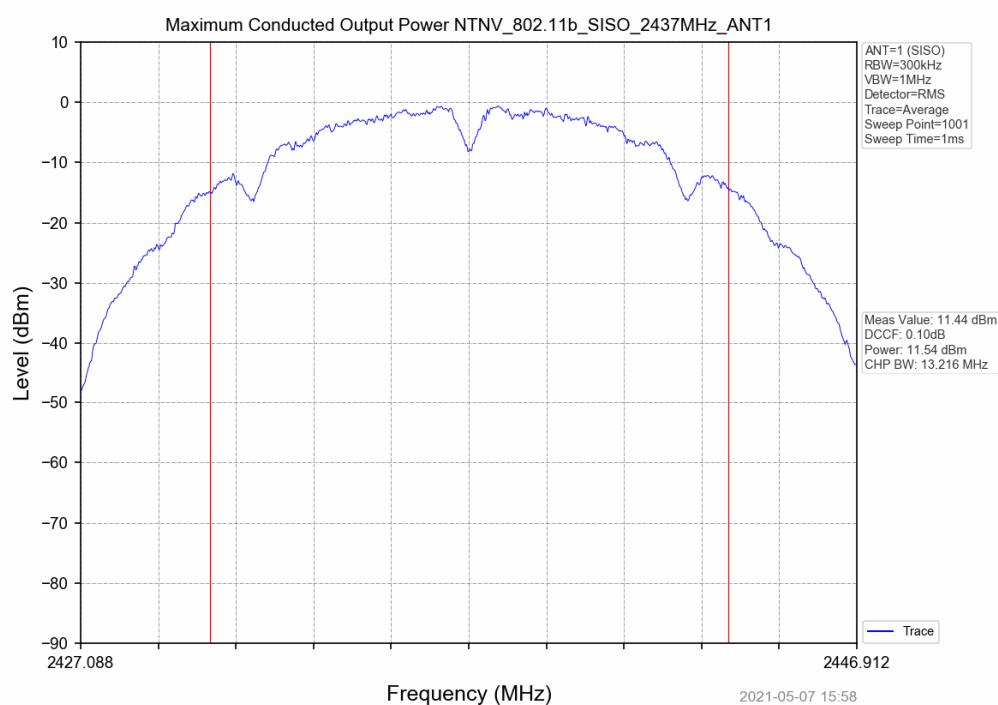
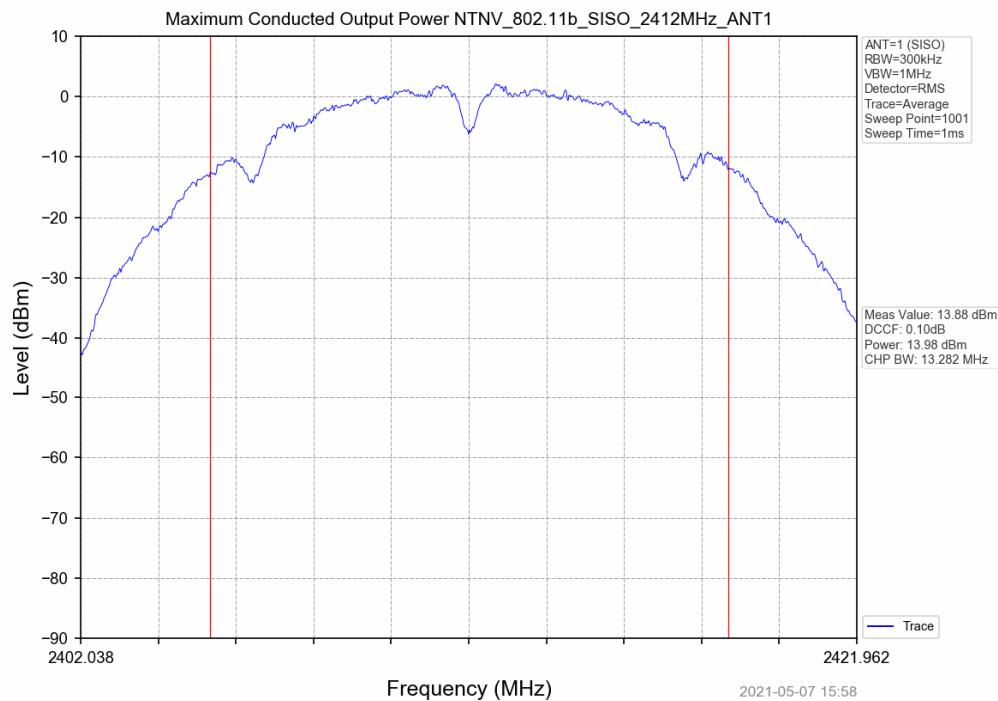


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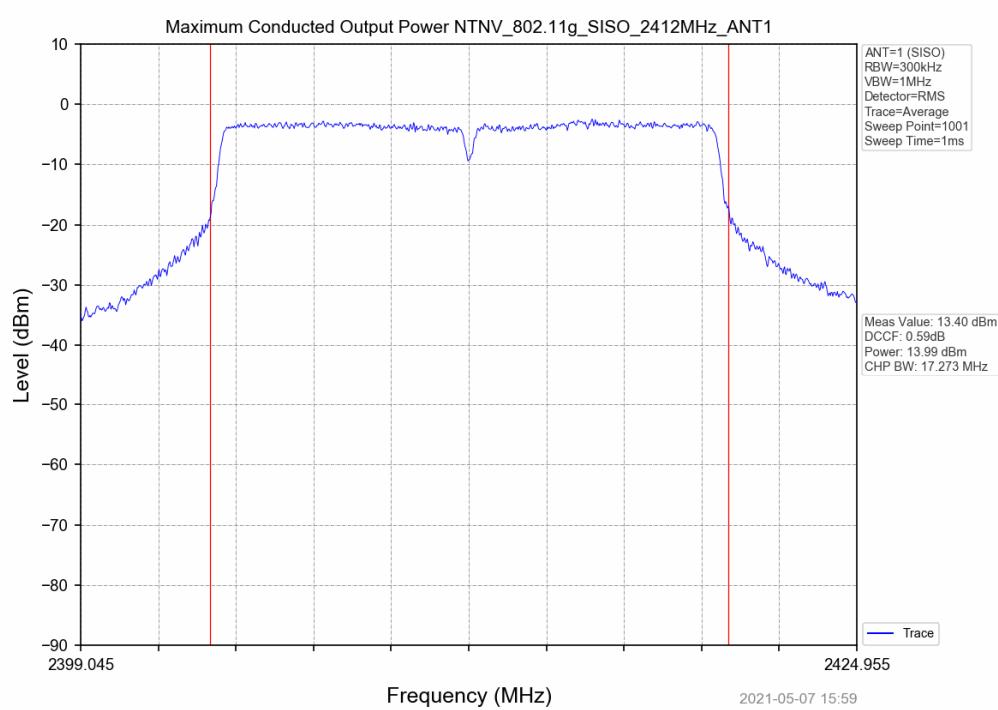
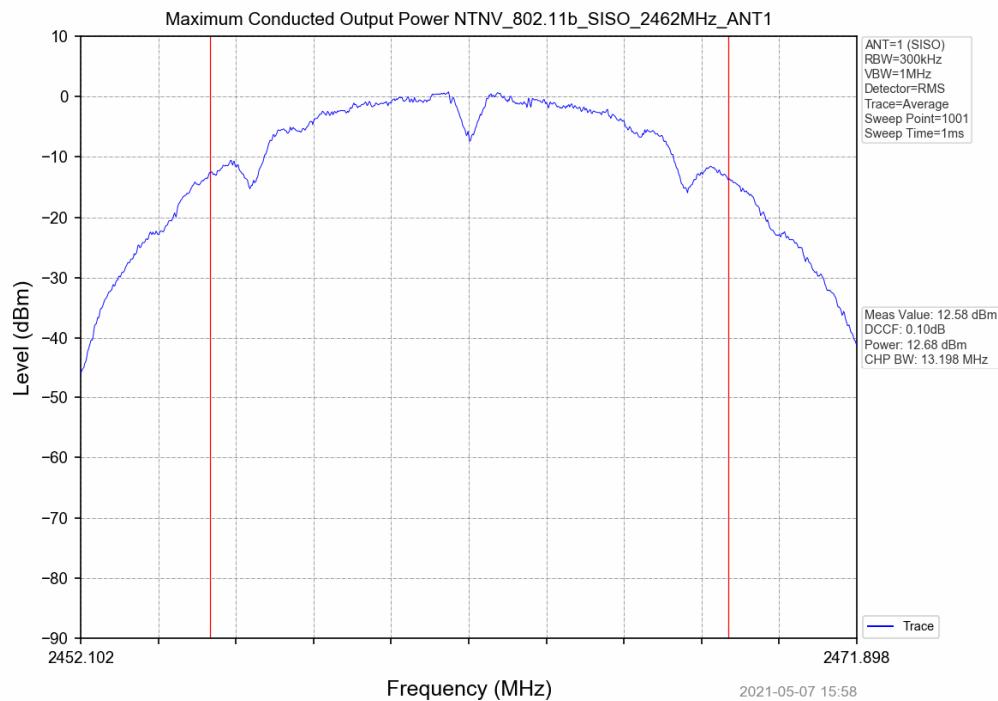
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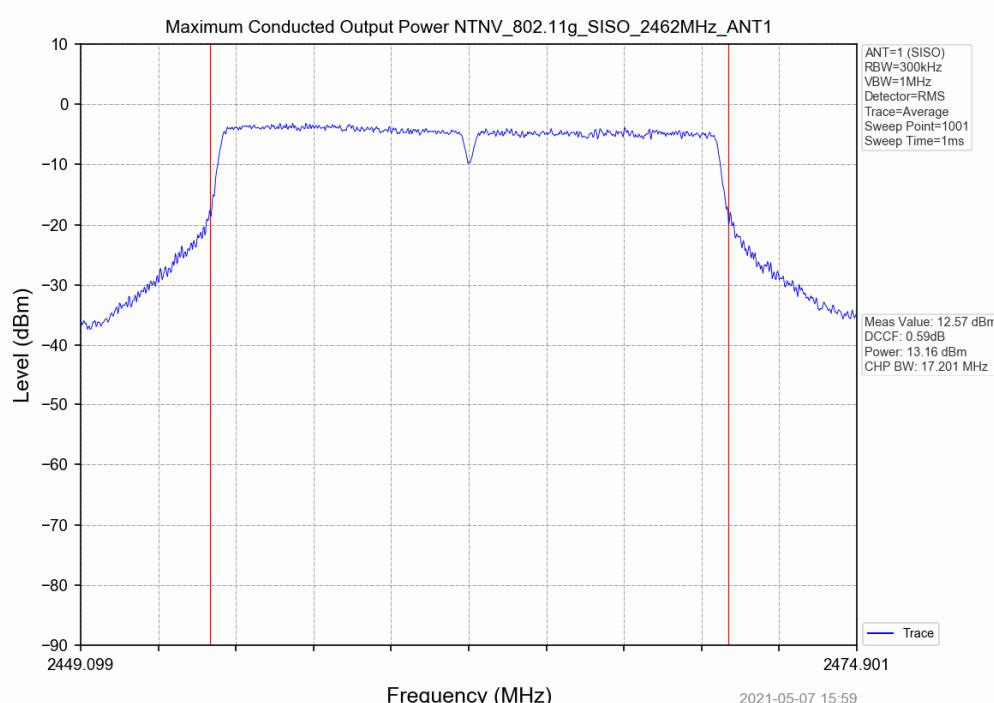
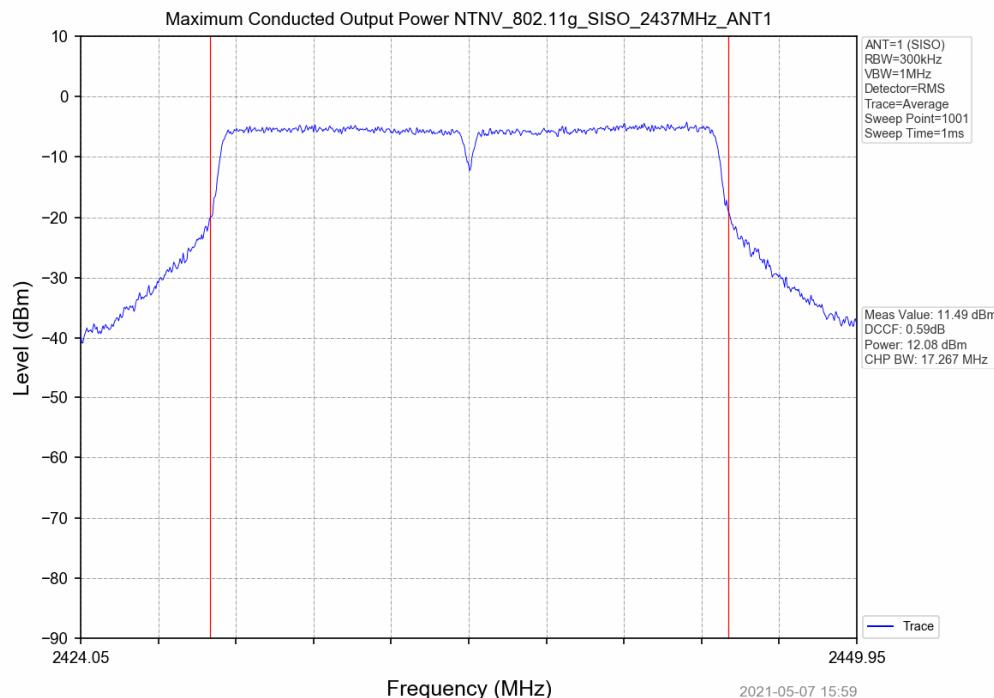
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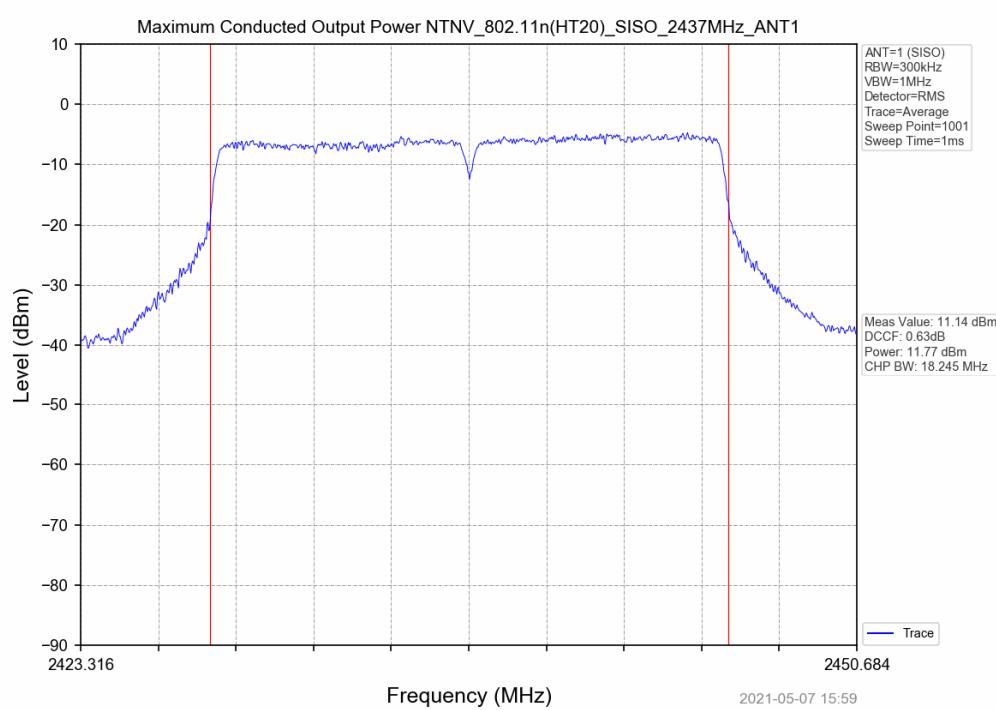
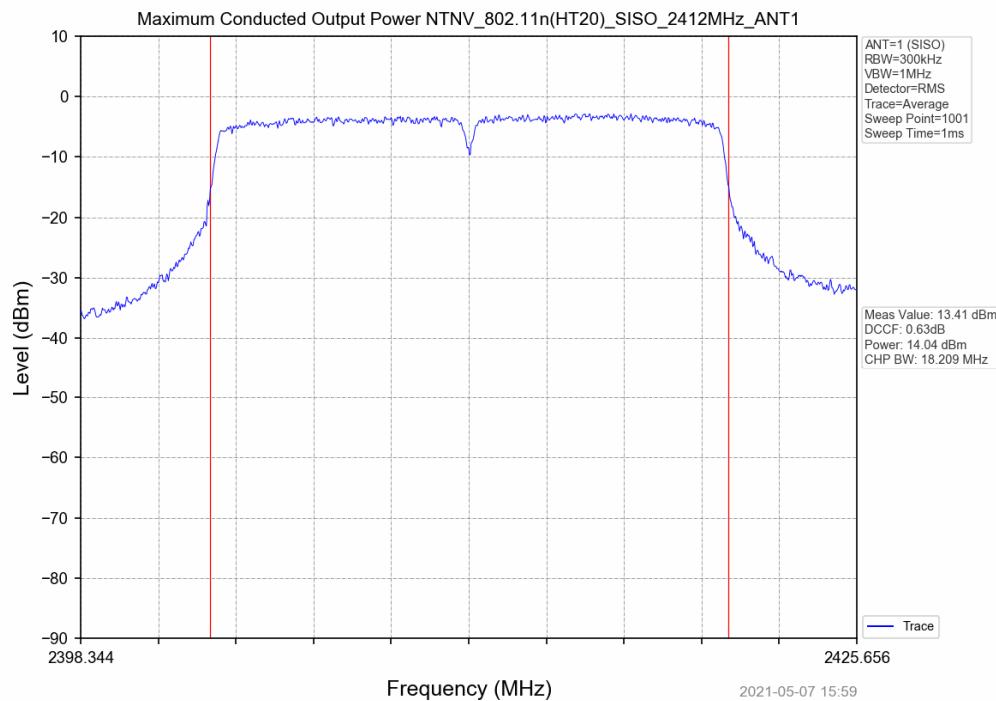
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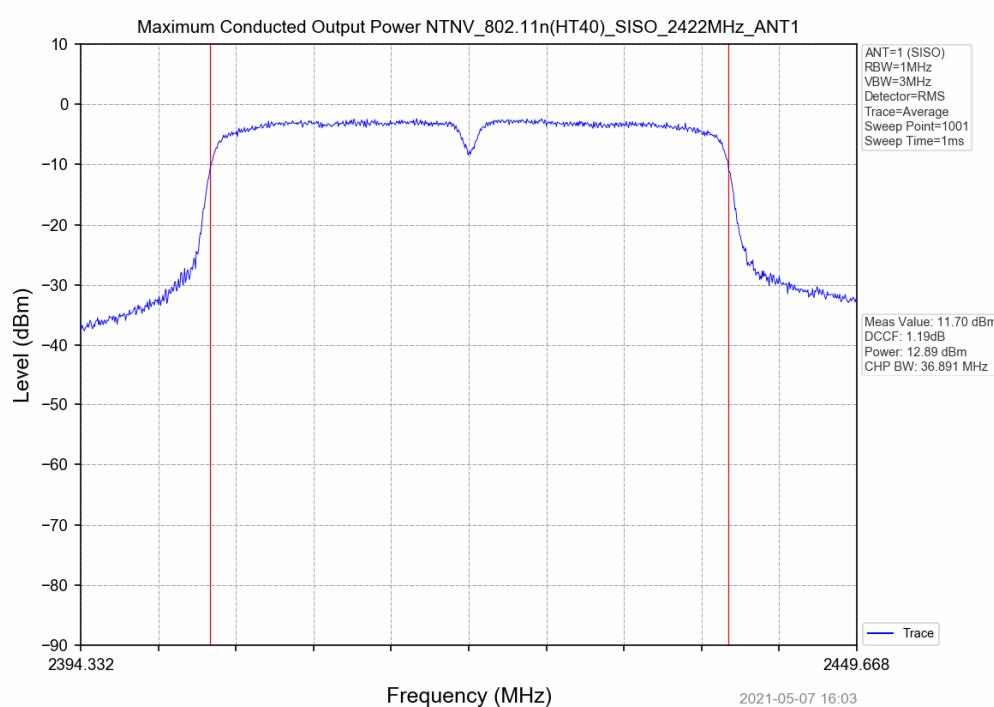
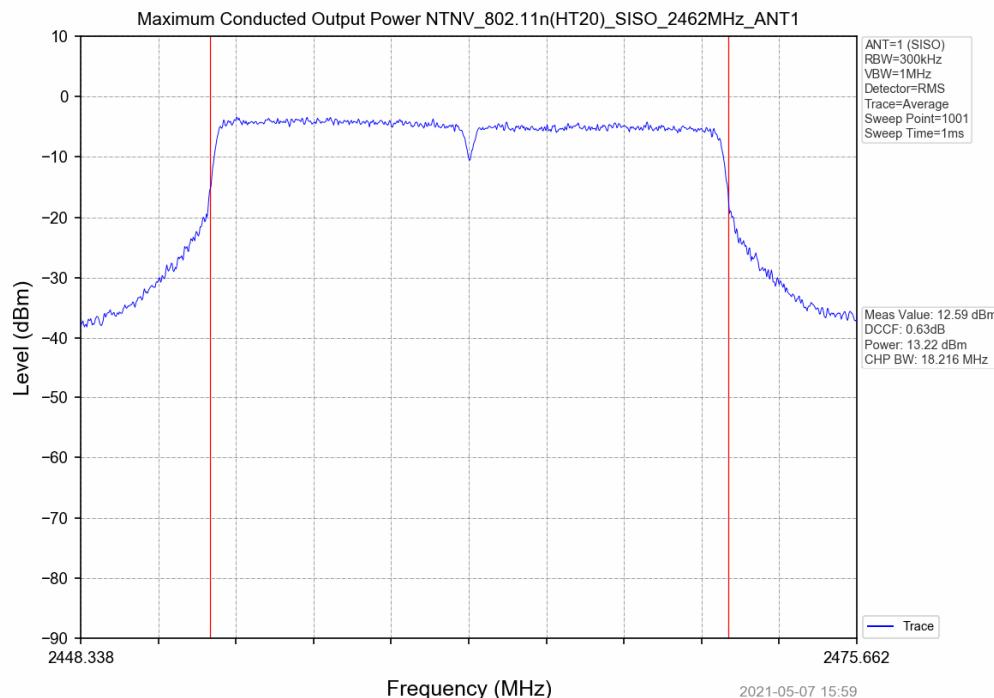
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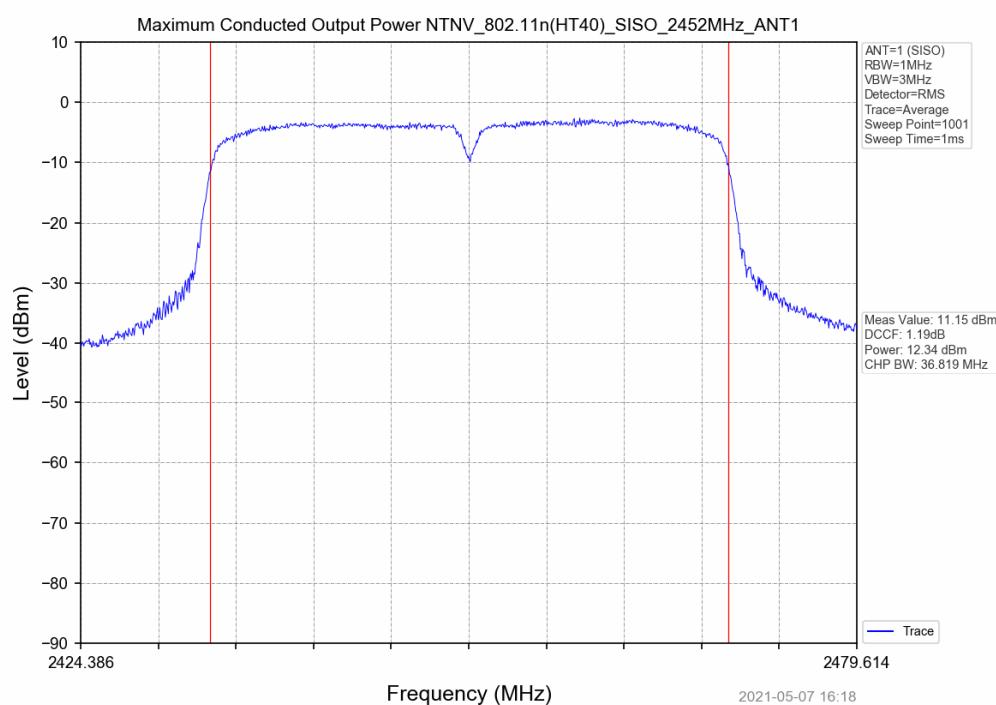
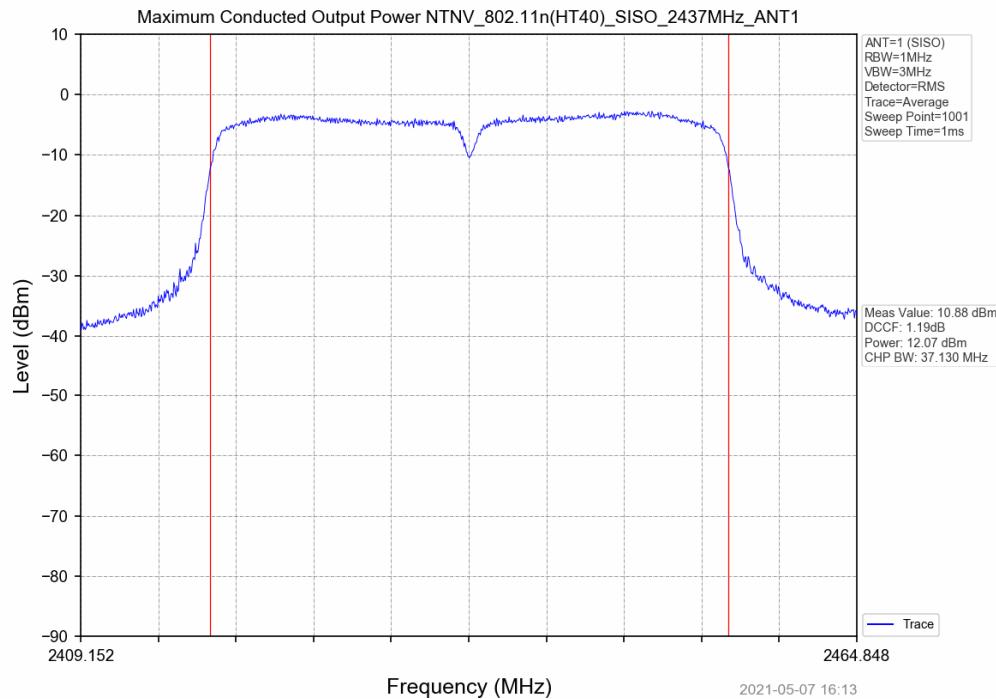
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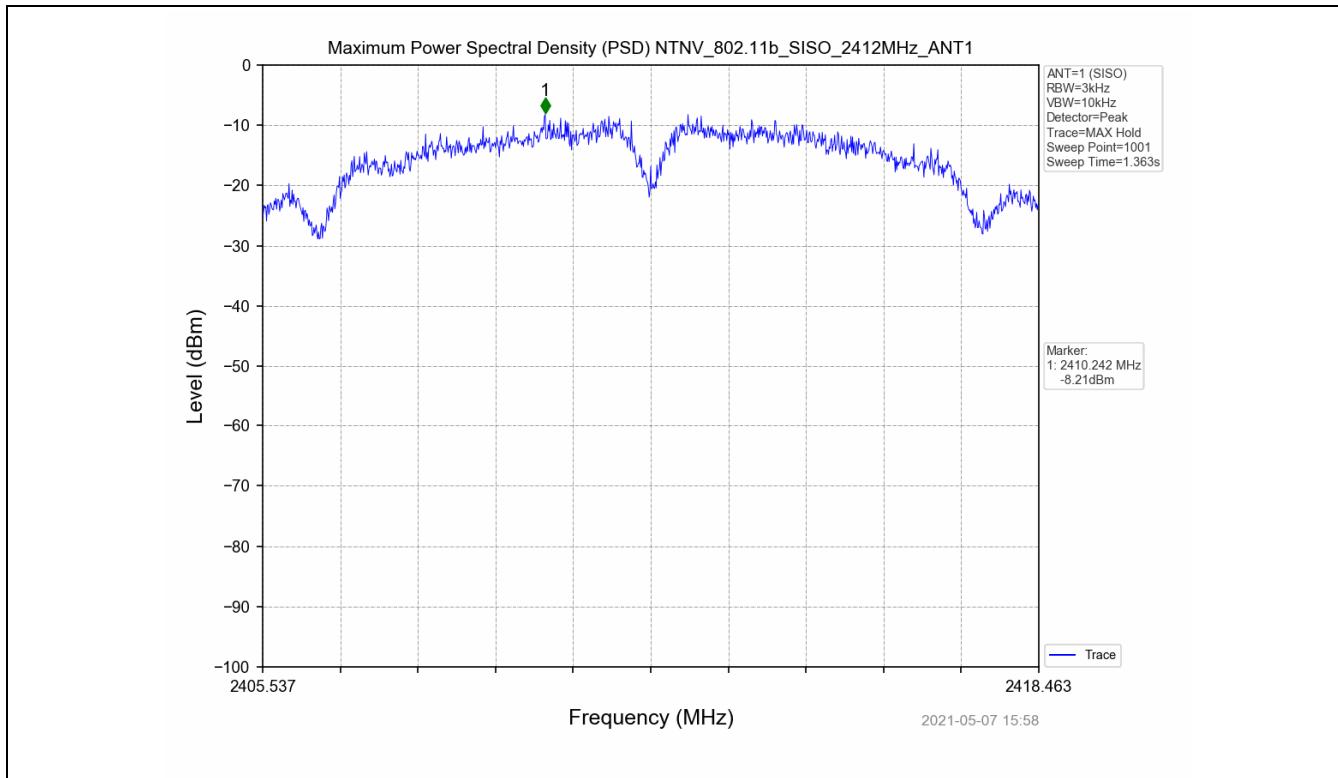
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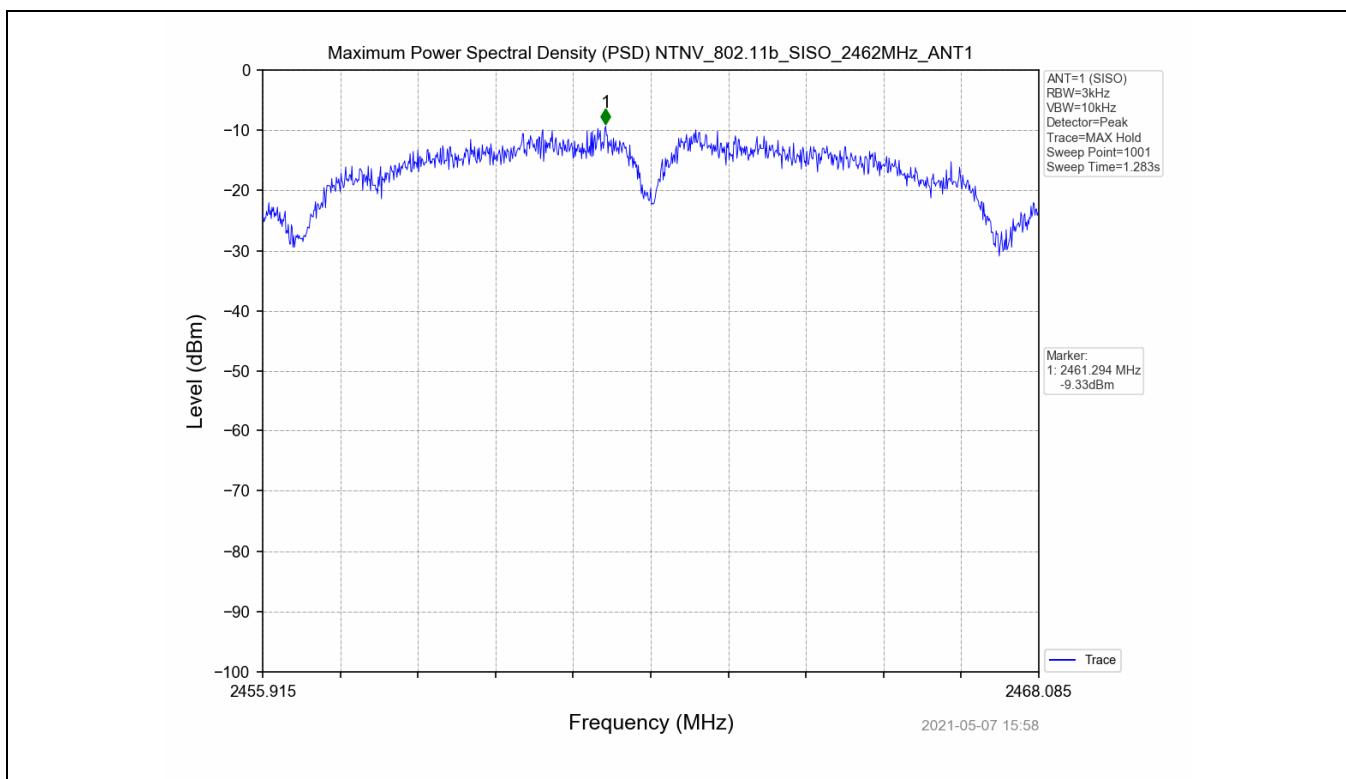
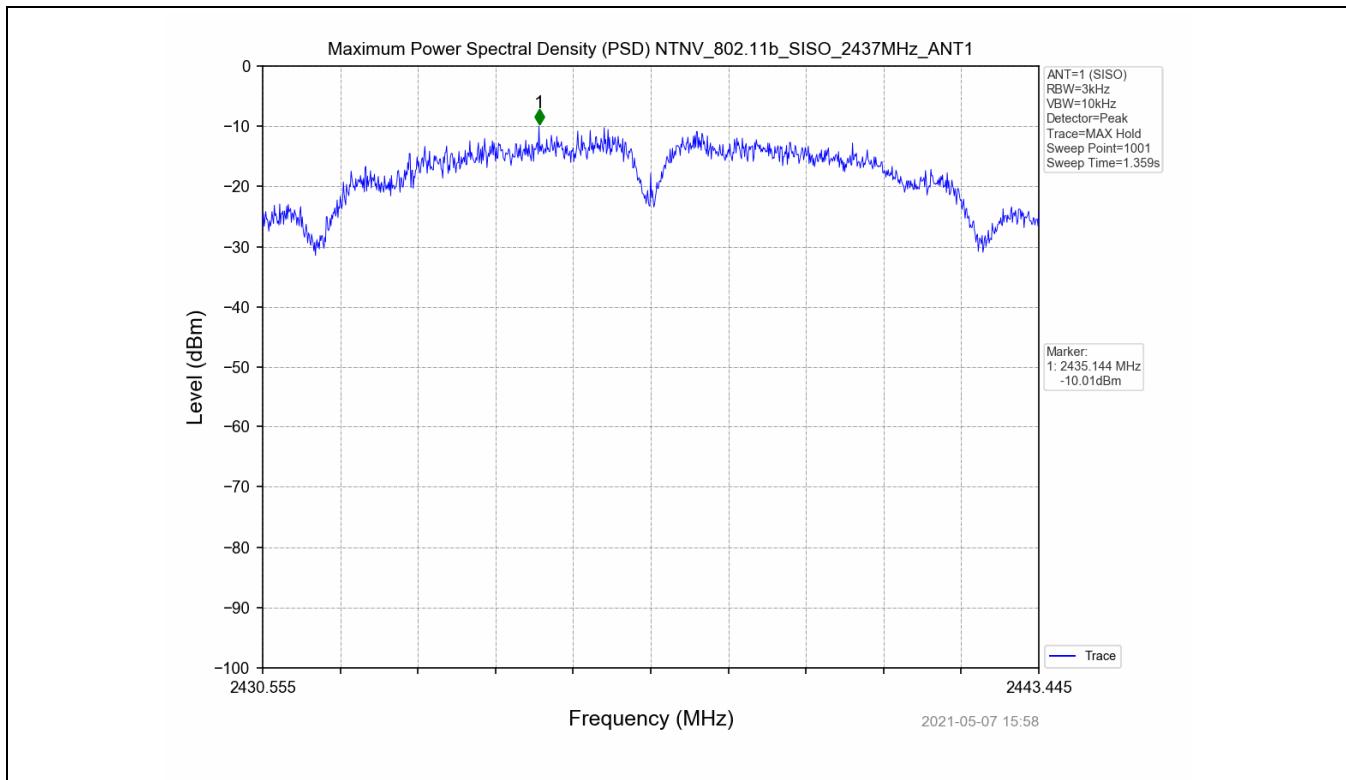
## 4. Maximum Power Spectral Density (PSD)

### 4.1 Test Result

Test Mode	Frequency (MHz)	Tx Type	Maximum Power Spectral Density (dBm/3KHz)	Limits (dBm/3kHz)	Verdict
			Ant 1		
802.11b	2412	SISO	-8.21	≤8	PASS
	2437	SISO	-10.01	≤8	PASS
	2462	SISO	-9.33	≤8	PASS
802.11g	2412	SISO	-11.35	≤8	PASS
	2437	SISO	-12.39	≤8	PASS
	2462	SISO	-12.19	≤8	PASS
802.11n(HT20)	2412	SISO	-10.37	≤8	PASS
	2437	SISO	-12.57	≤8	PASS
	2462	SISO	-11.72	≤8	PASS
802.11n(HT40)	2422	SISO	-14.56	≤8	PASS
	2437	SISO	-15.68	≤8	PASS
	2452	SISO	-15.35	≤8	PASS

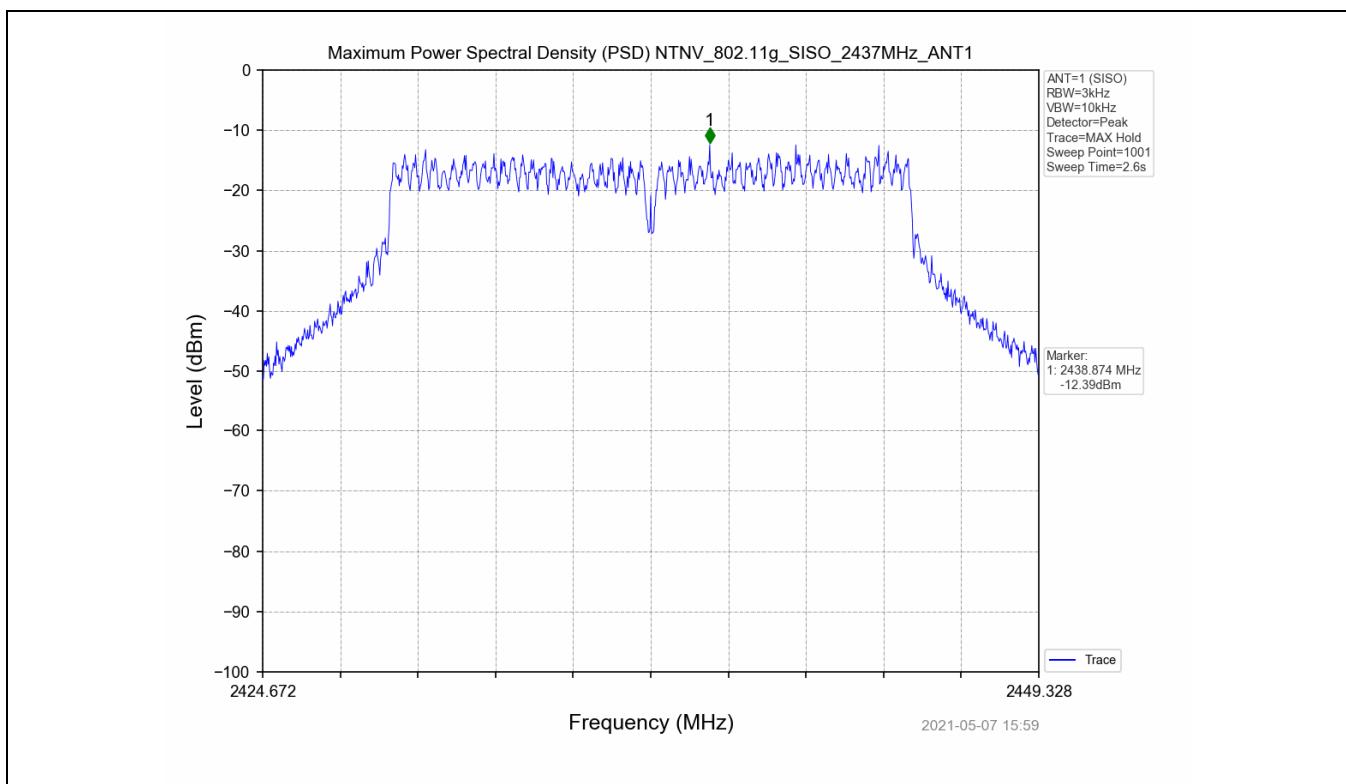
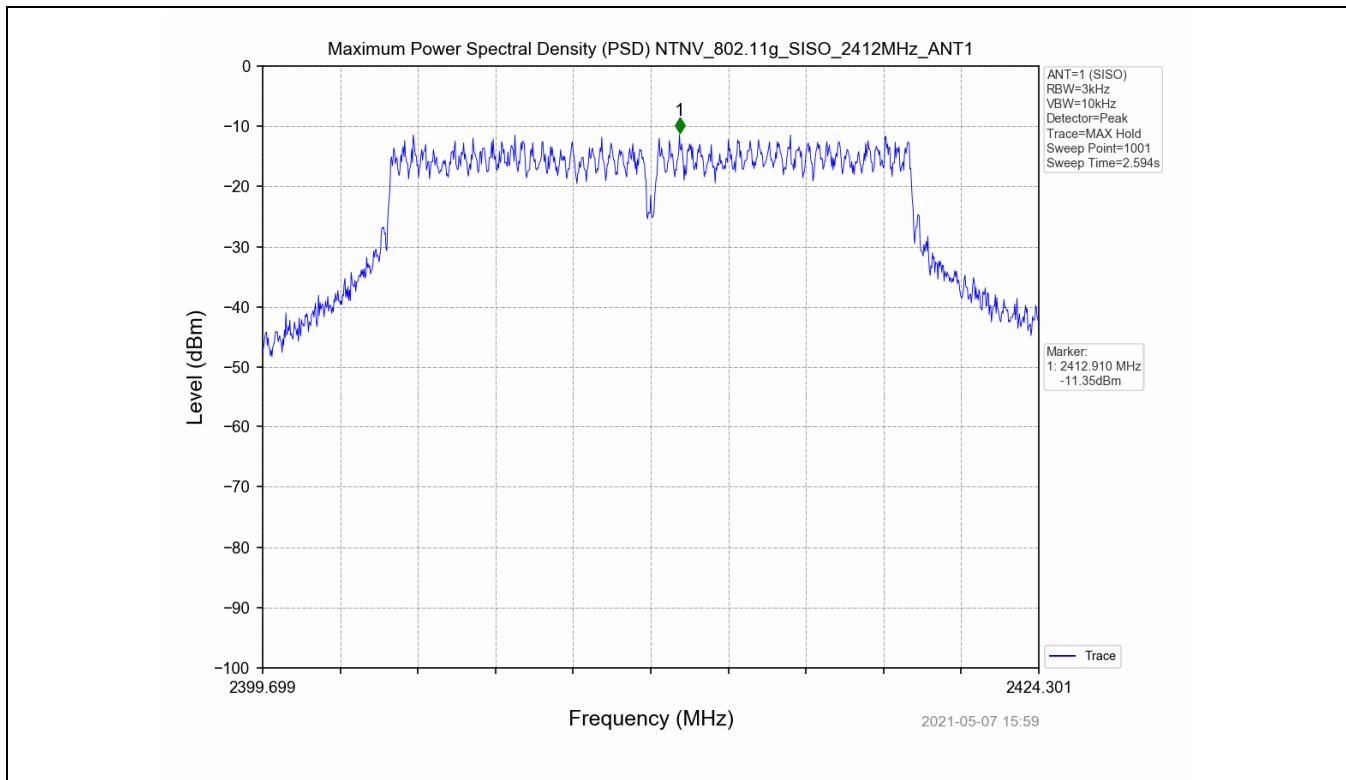
### 4.2 Test Graph

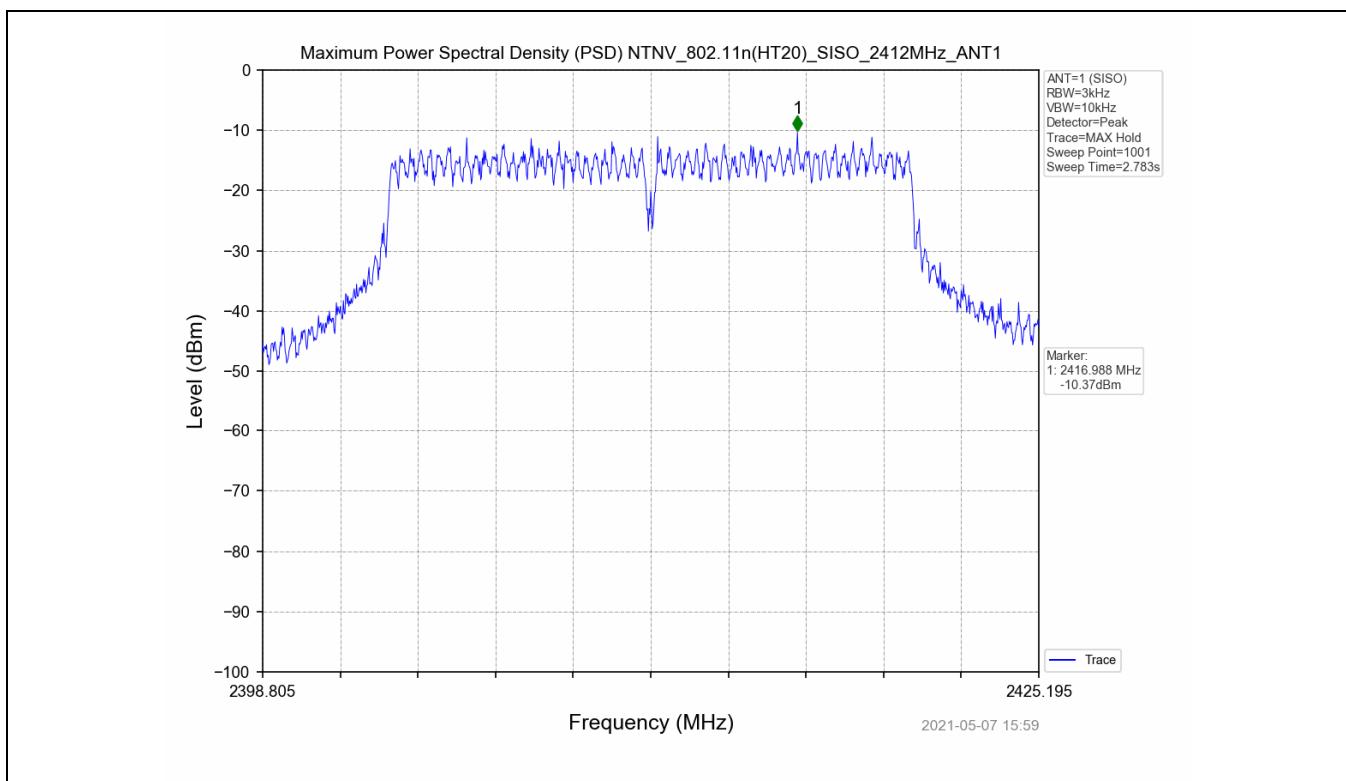
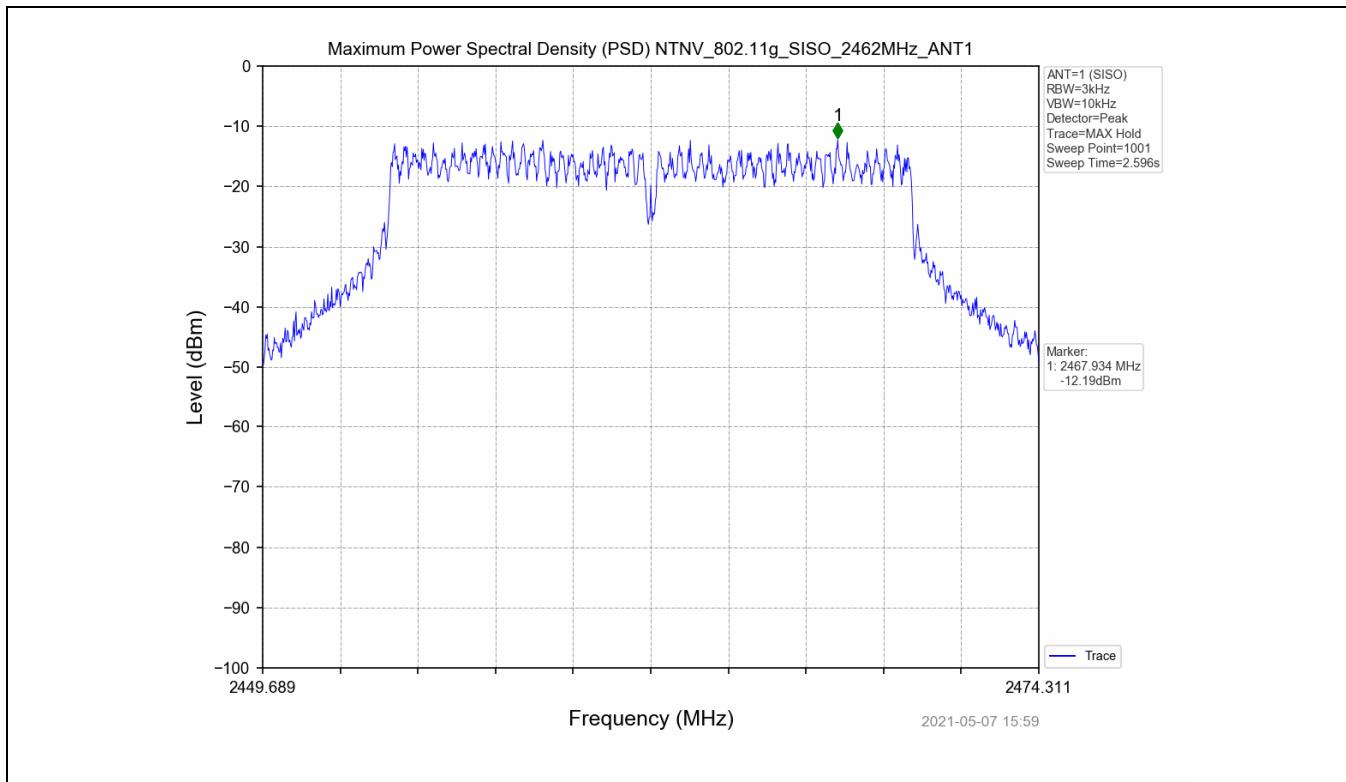


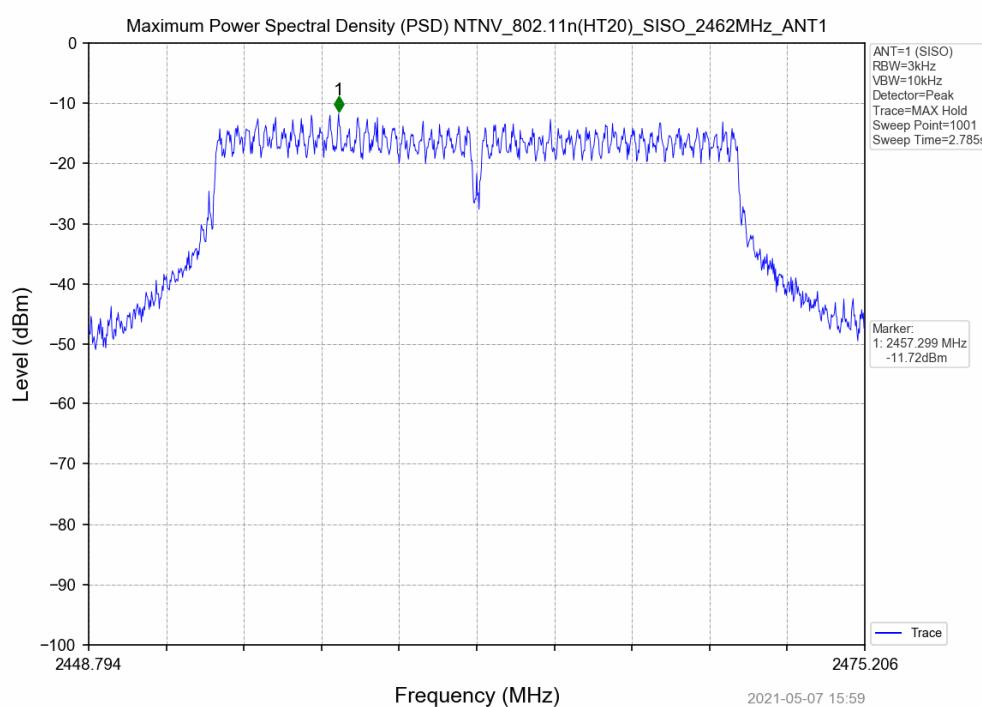
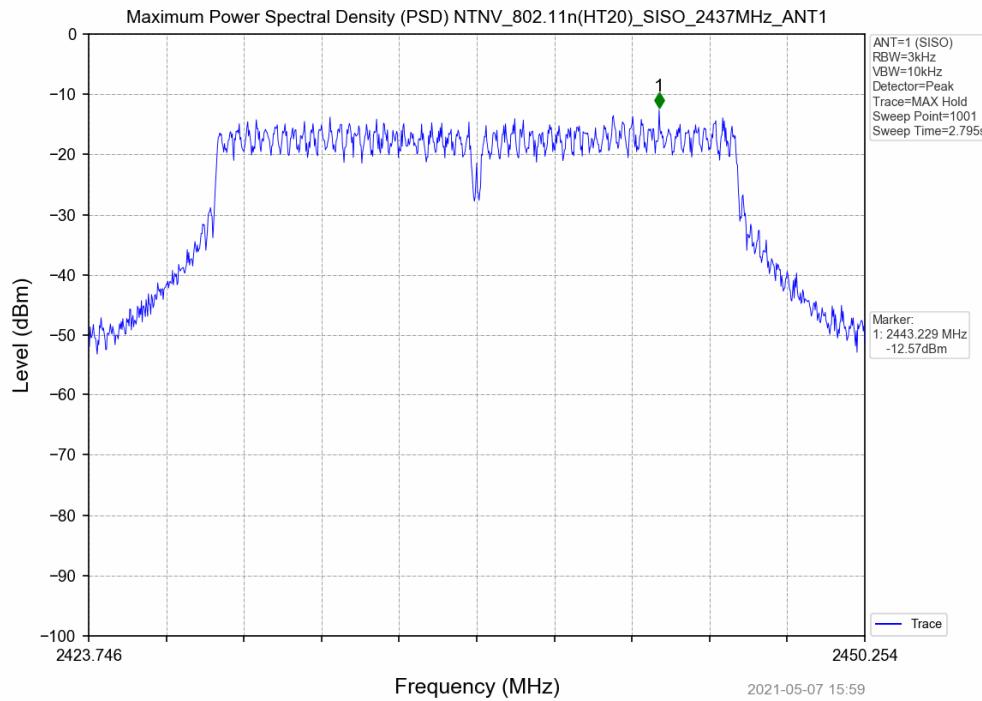


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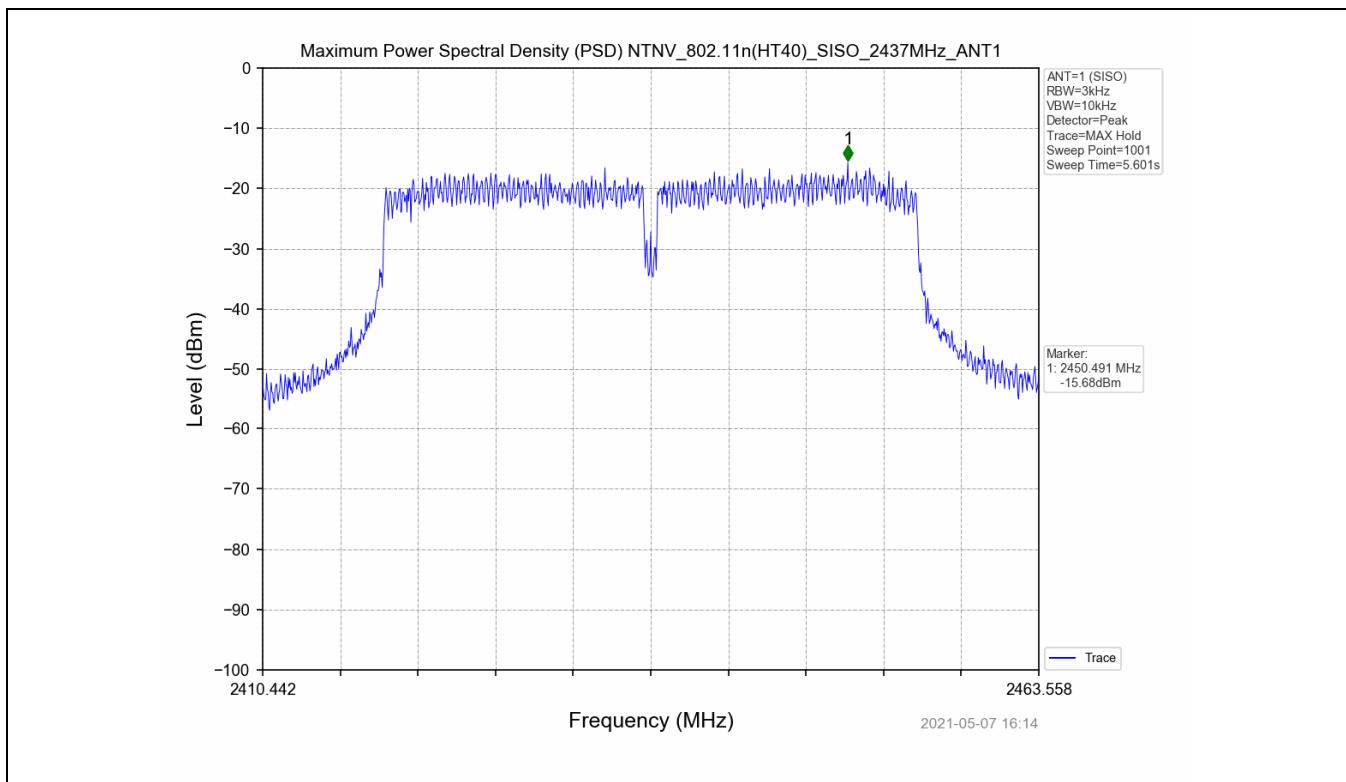
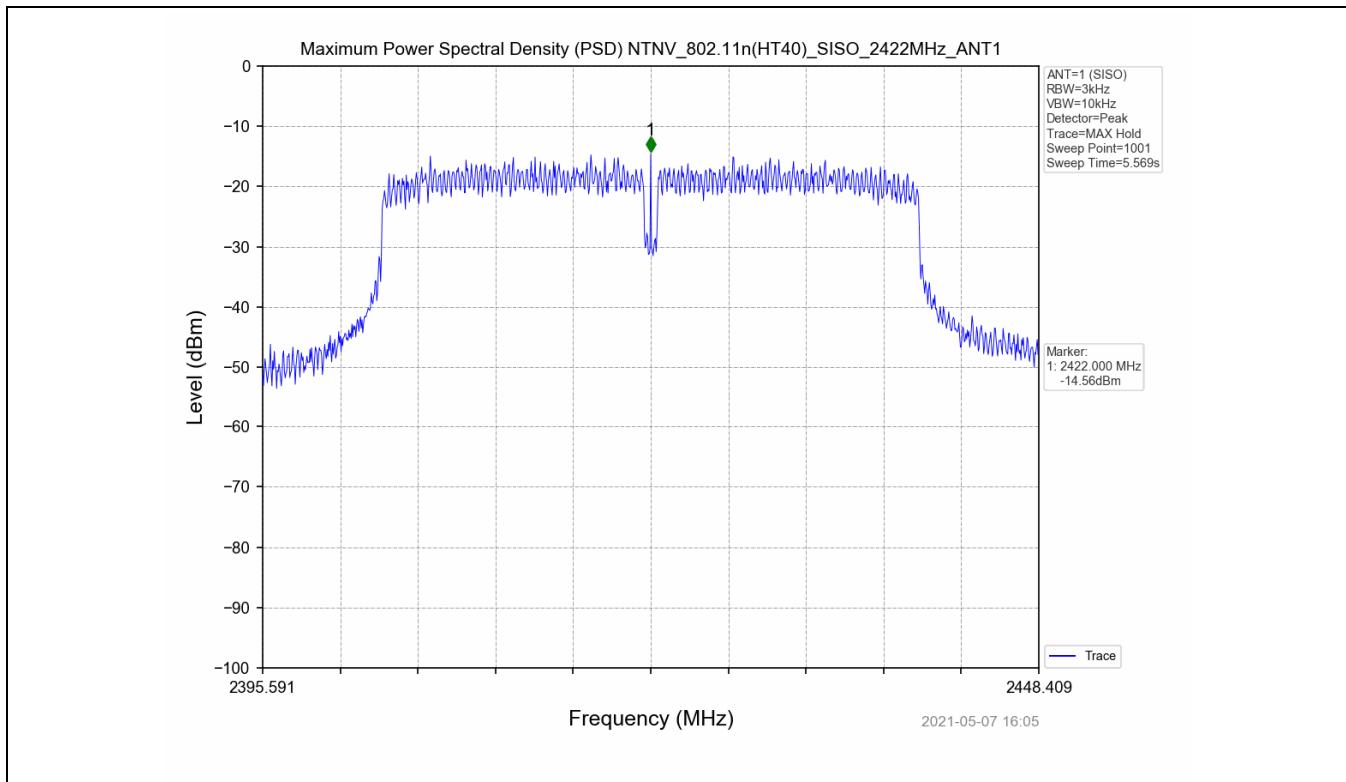
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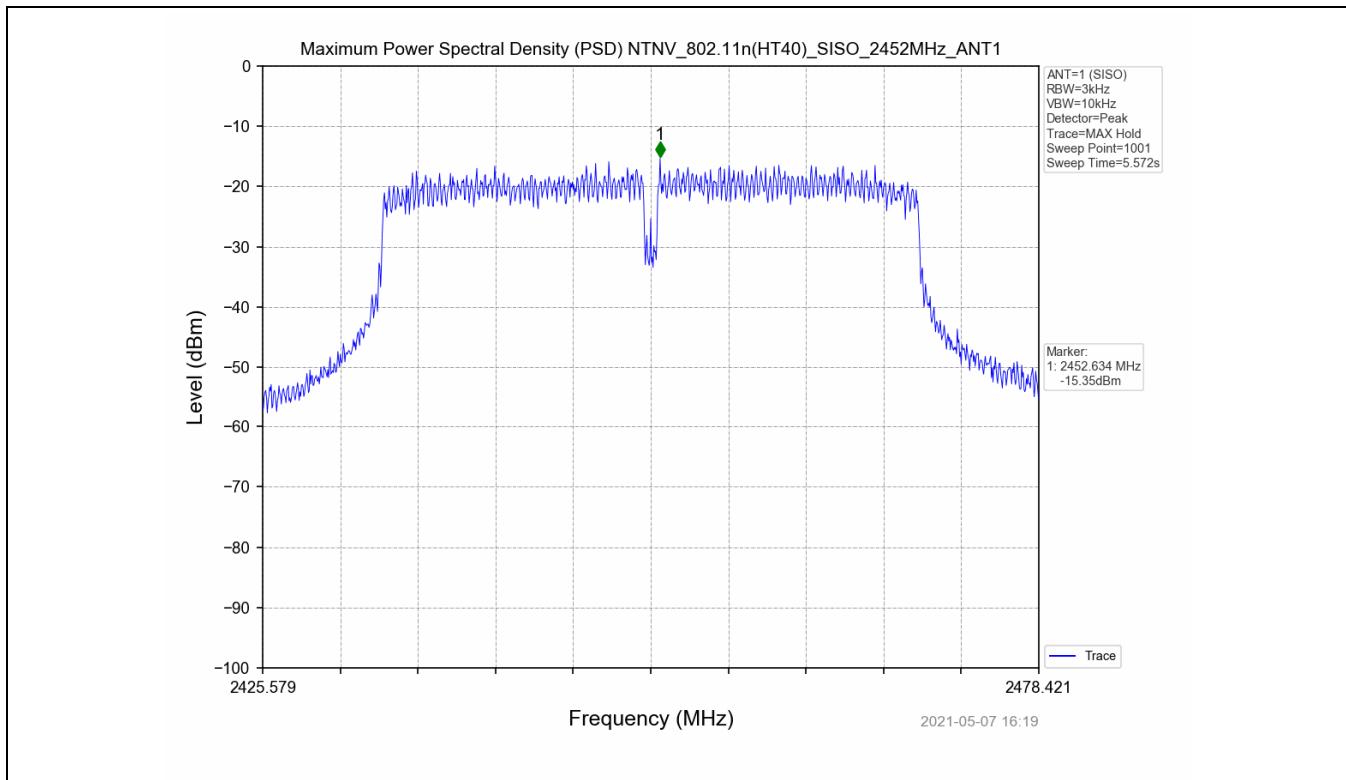






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## 5. Unwanted Emissions in Non-restricted Frequency Bands

### 5.1 Test Result

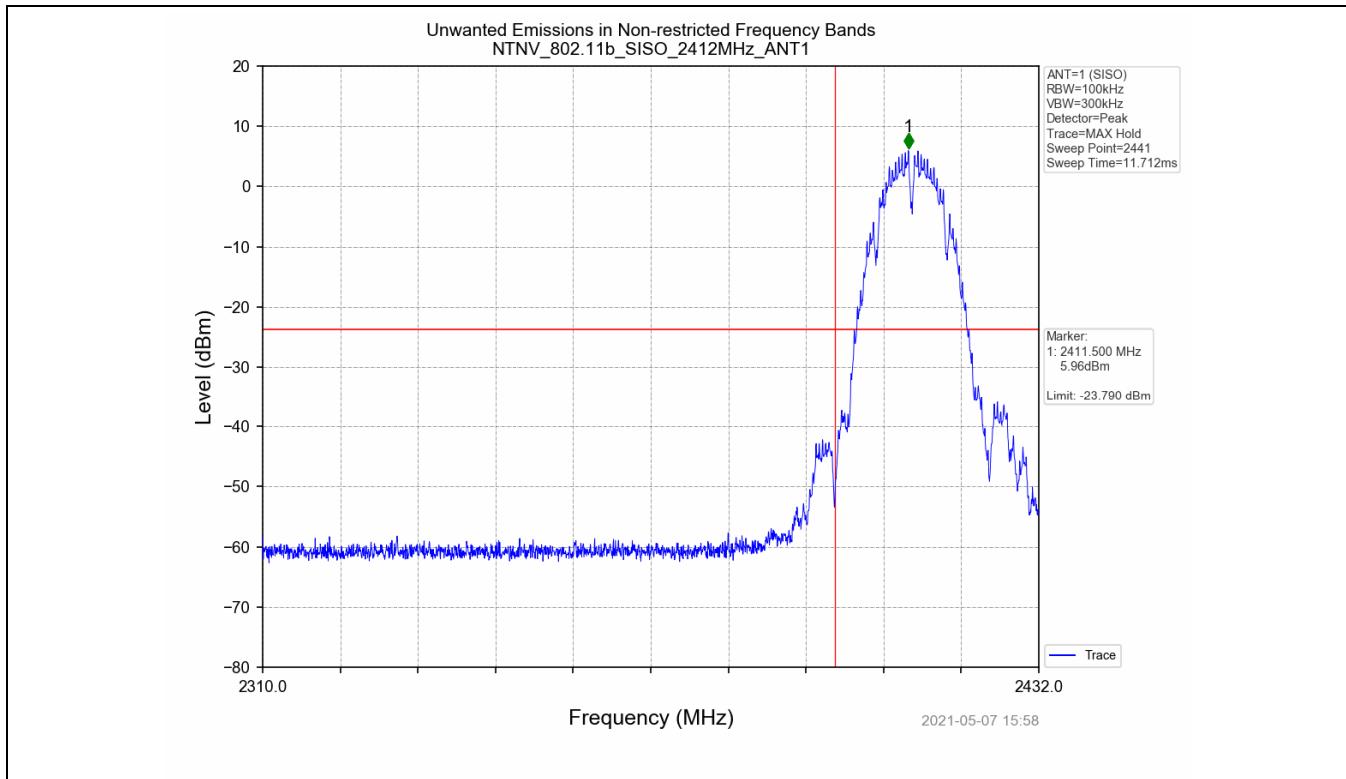
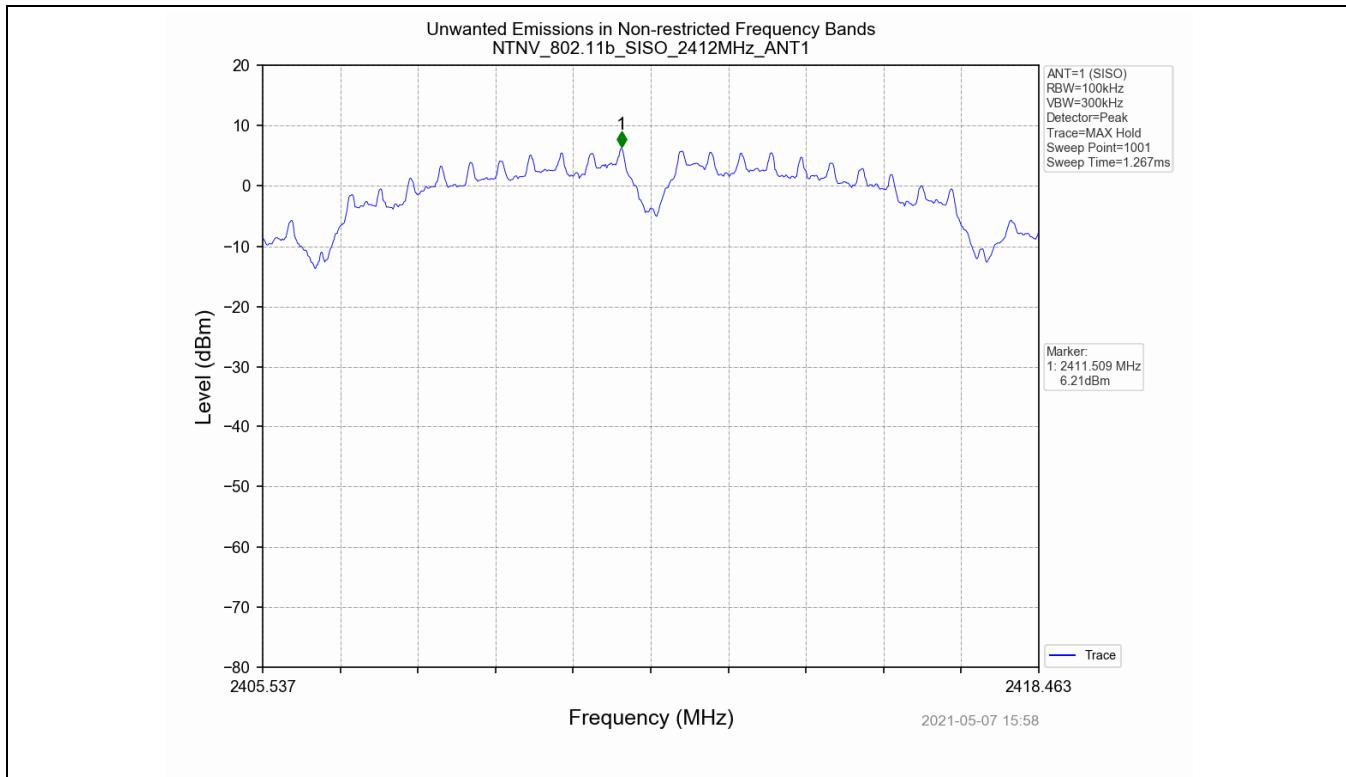
Test Mode	Frequency (MHz)	TX Type	ANT No.	Spurious Conducted Emission (dBm)	Limits (dBm)	Verdict
802.11b	2412	SISO	1	Refer to test graph	-23.79	PASS
	2437	SISO	1	Refer to test graph	-23.79	PASS
	2462	SISO	1	Refer to test graph	-23.79	PASS
802.11g	2412	SISO	1	Refer to test graph	-26.59	PASS
	2437	SISO	1	Refer to test graph	-26.59	PASS
	2462	SISO	1	Refer to test graph	-26.59	PASS
802.11n(HT20)	2412	SISO	1	Refer to test graph	-26.72	PASS
	2437	SISO	1	Refer to test graph	-26.72	PASS
	2462	SISO	1	Refer to test graph	-26.72	PASS
802.11n(HT40)	2422	SISO	1	Refer to test graph	-30.19	PASS
	2437	SISO	1	Refer to test graph	-30.19	PASS
	2452	SISO	1	Refer to test graph	-30.19	PASS

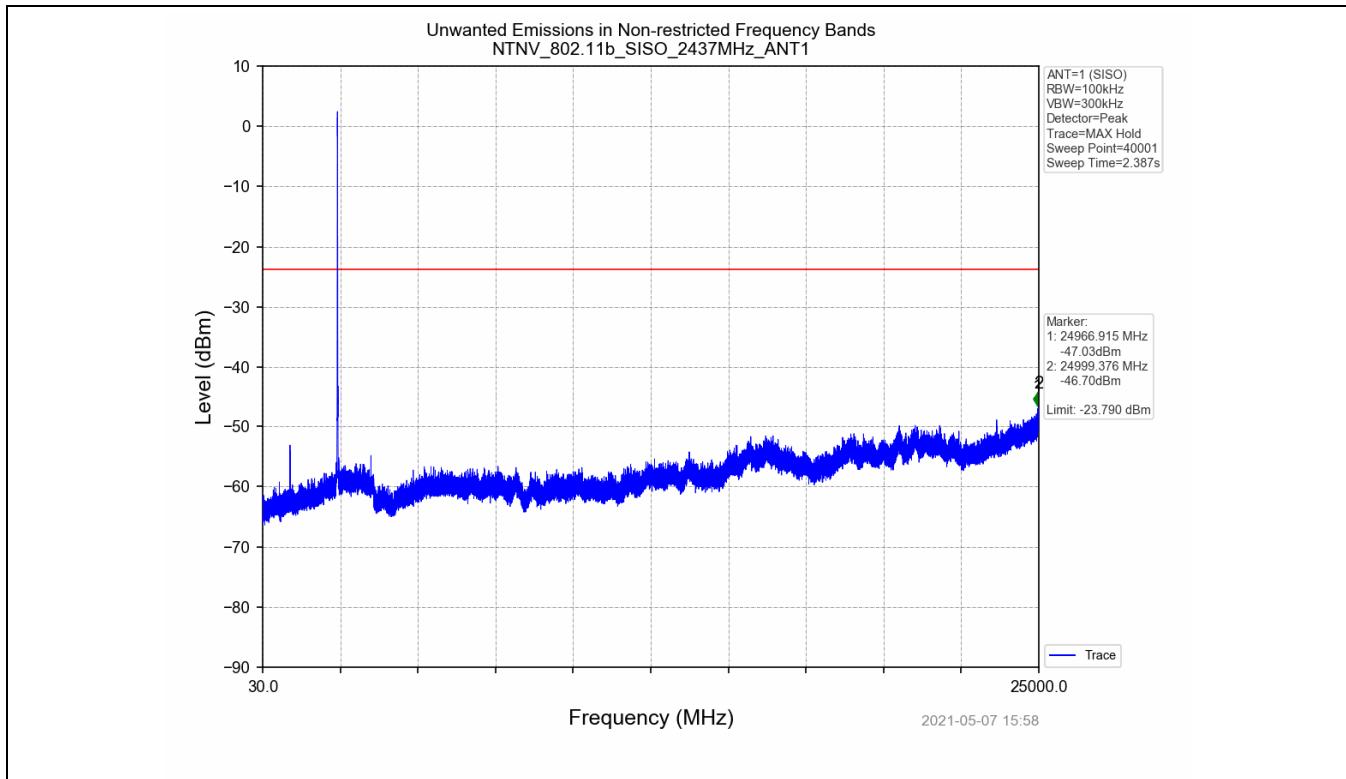
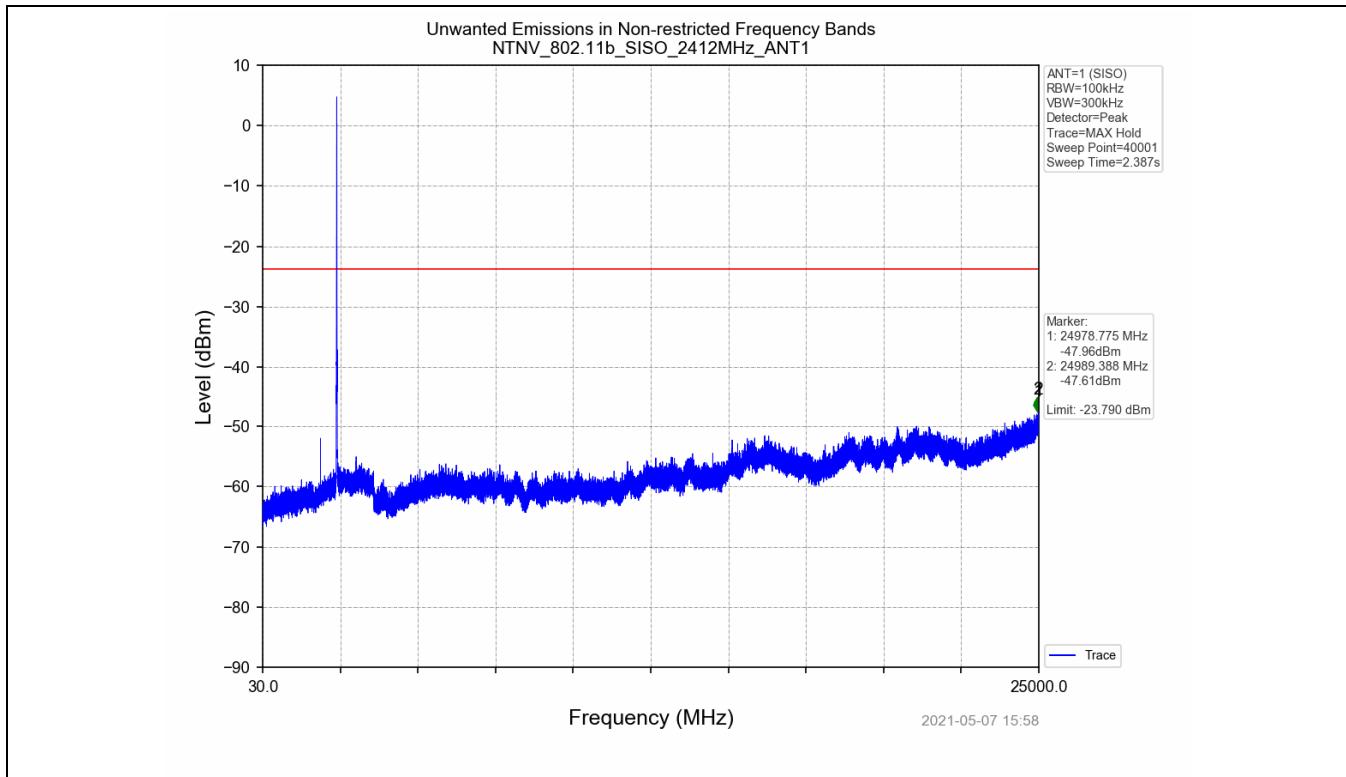
### 5.2 Test Graph



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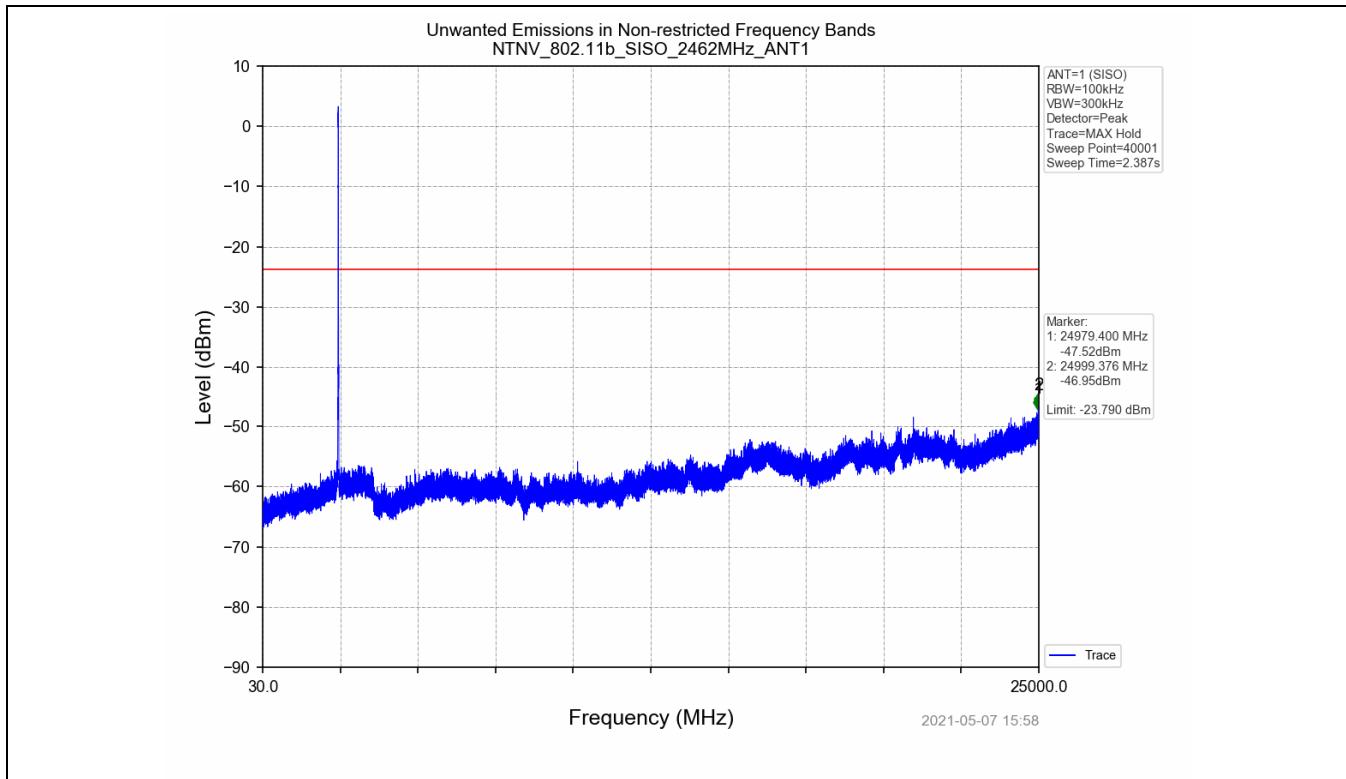
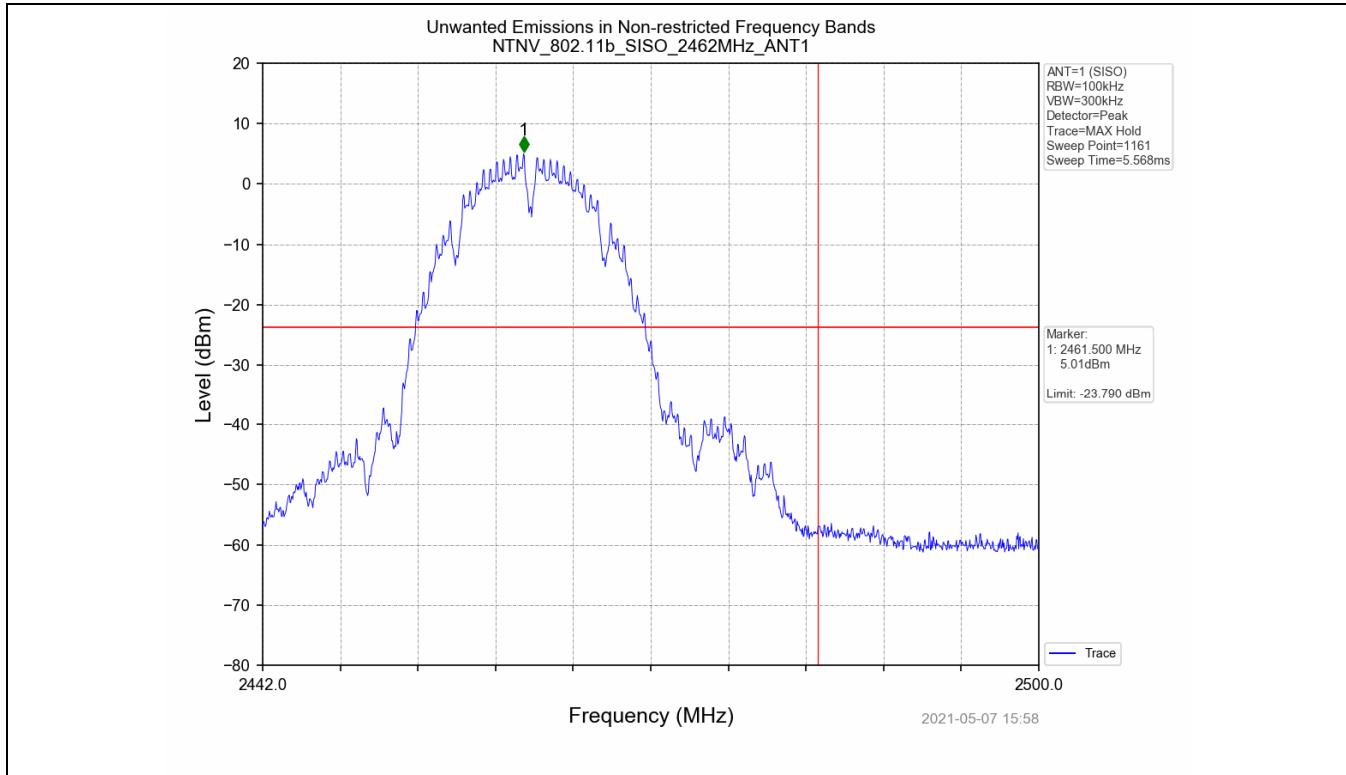
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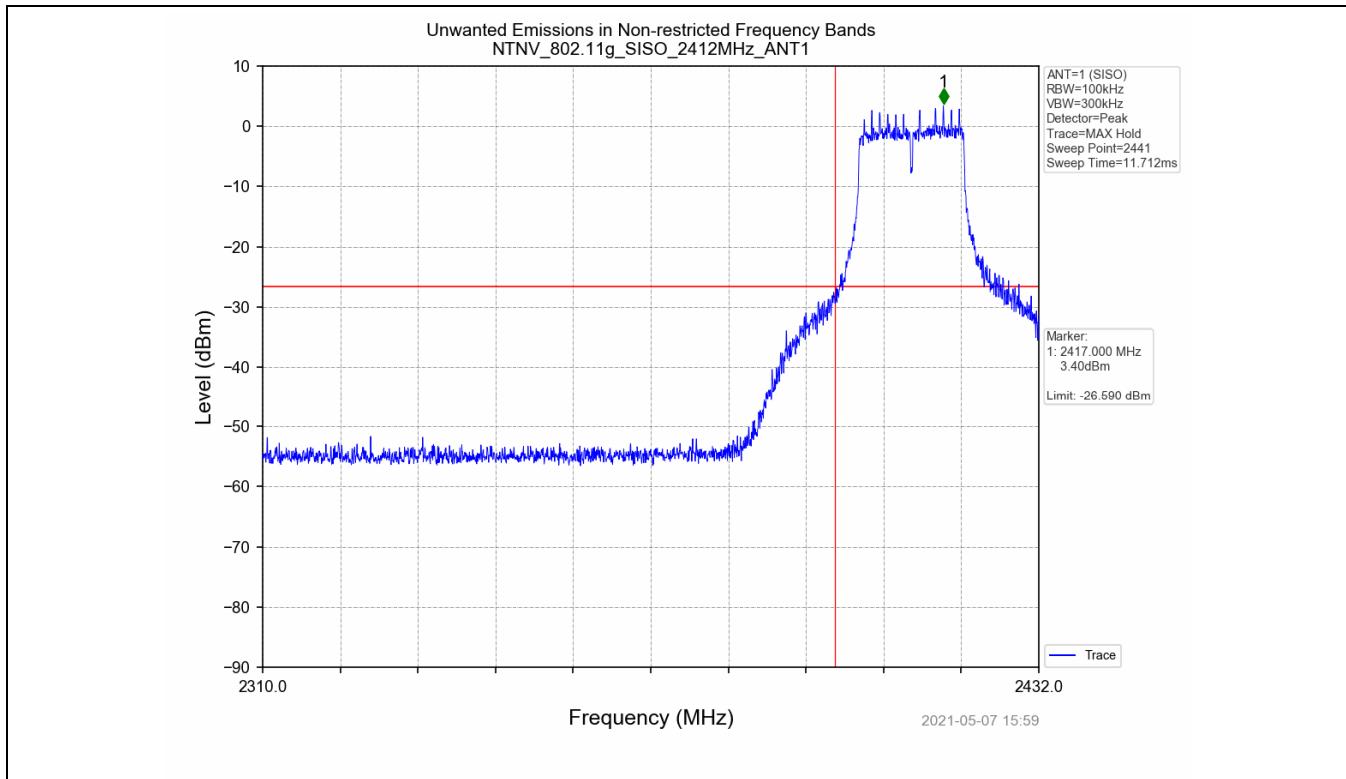
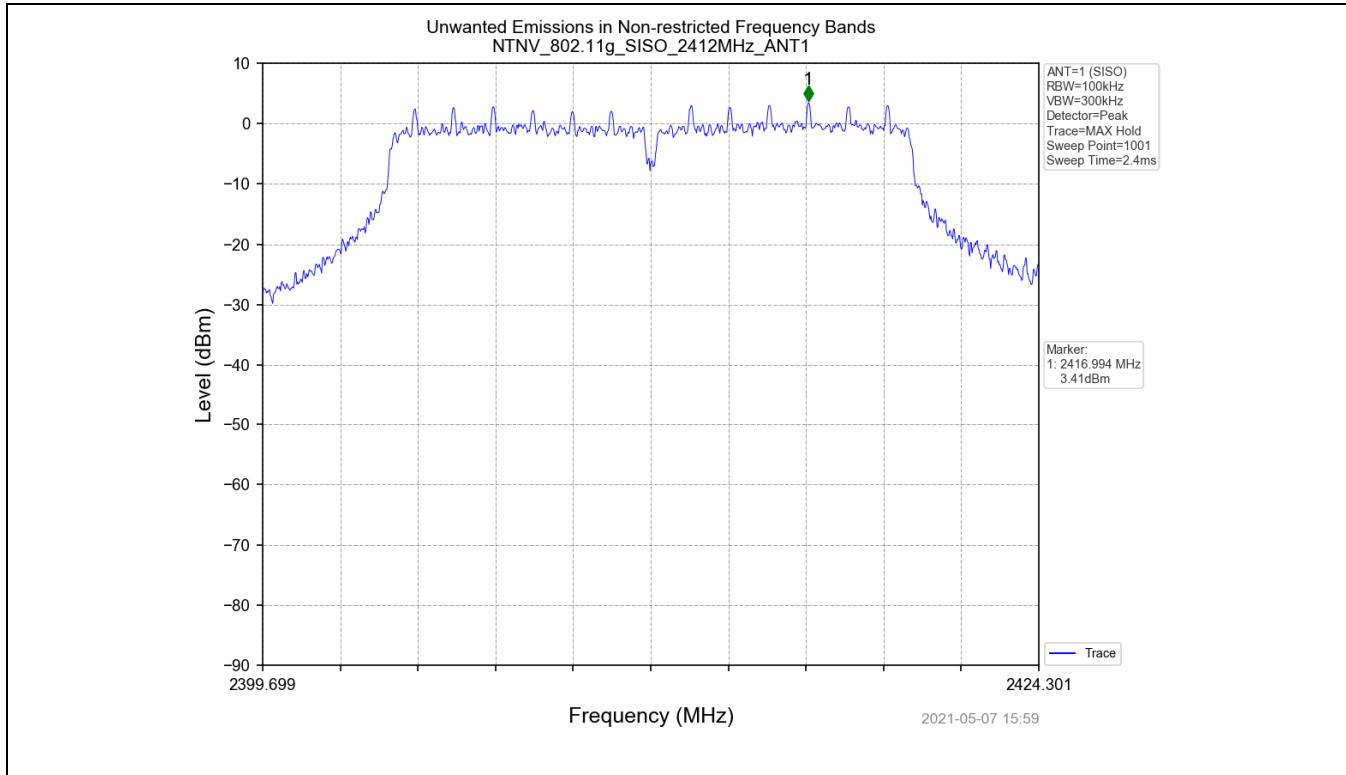
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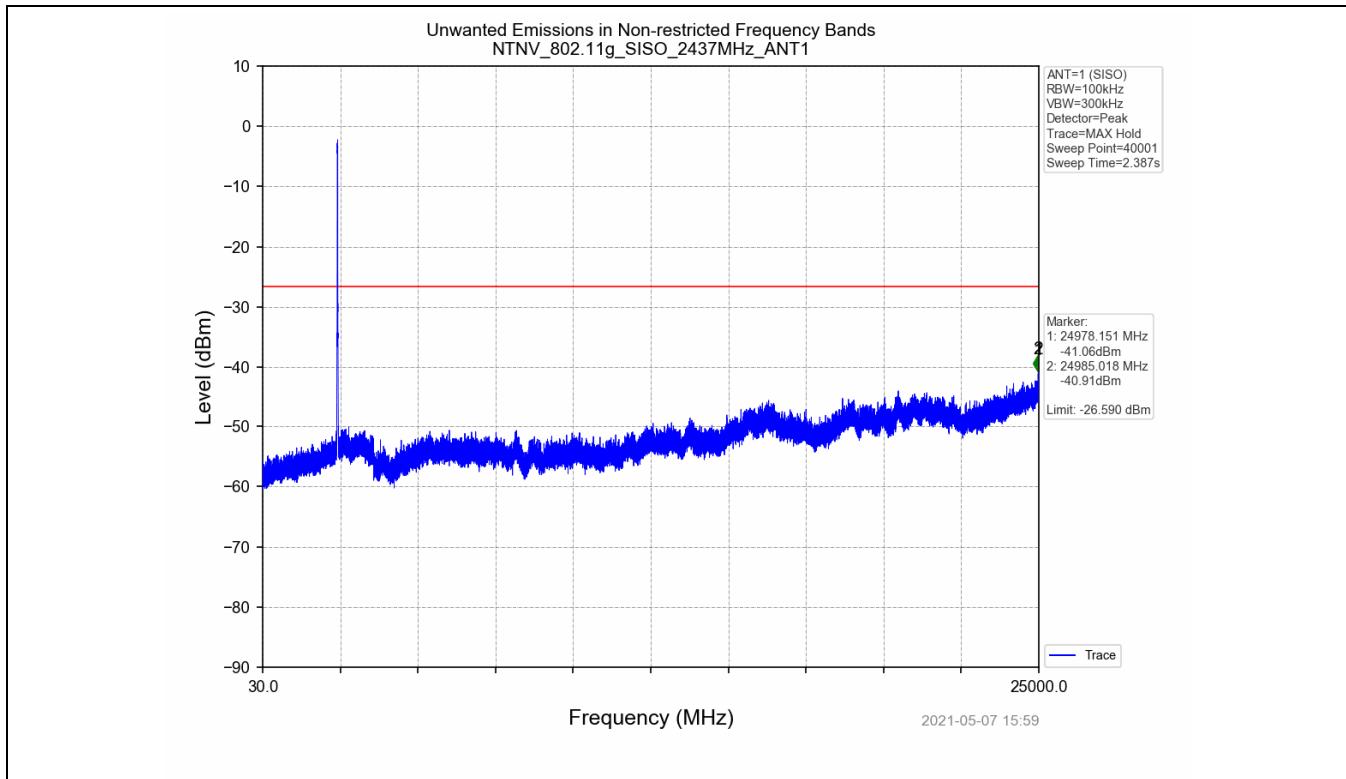
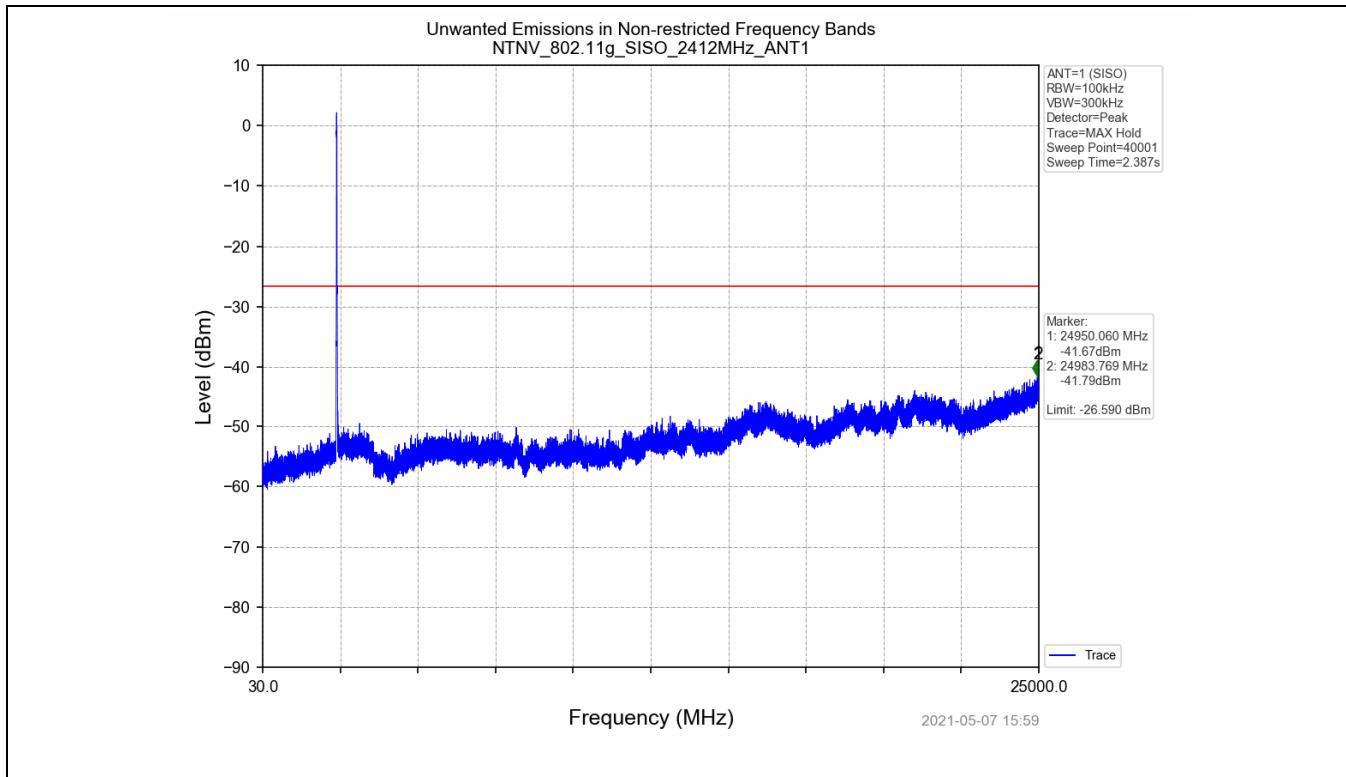
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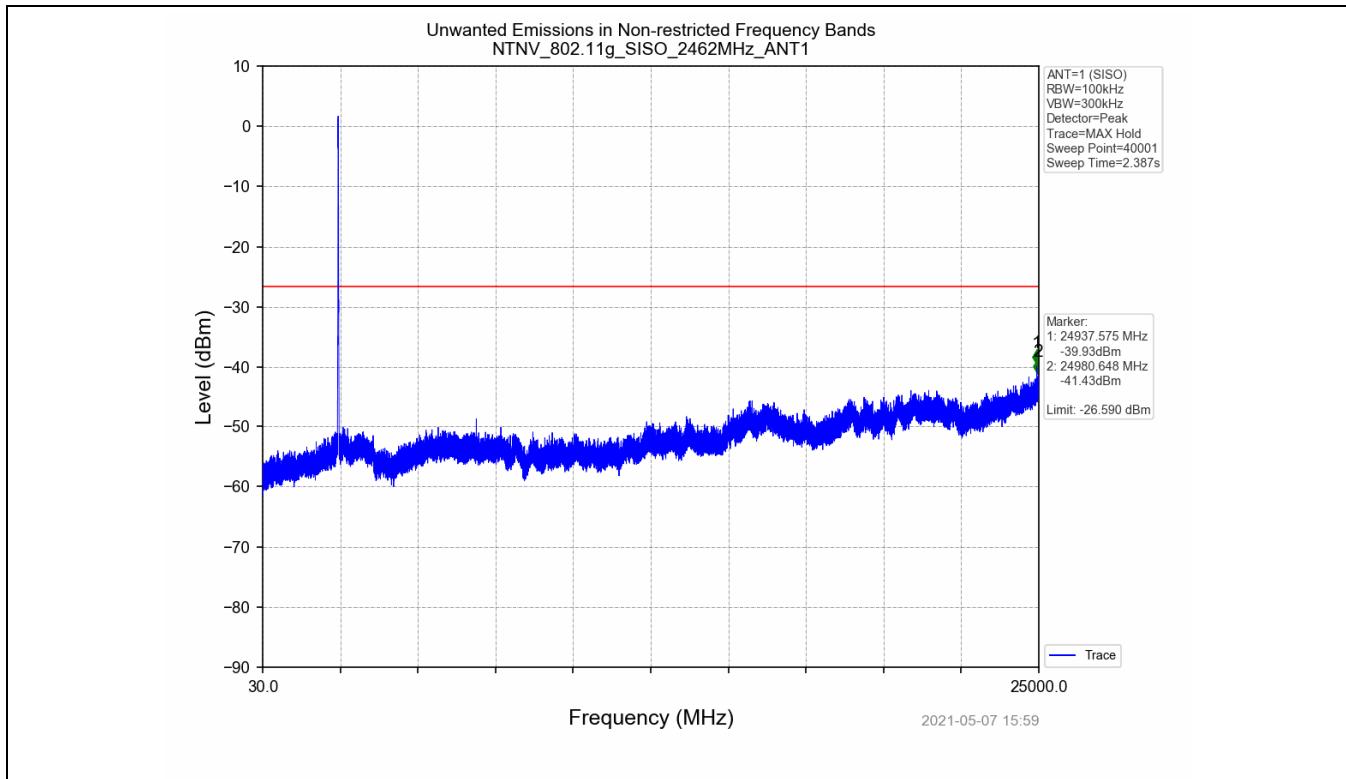
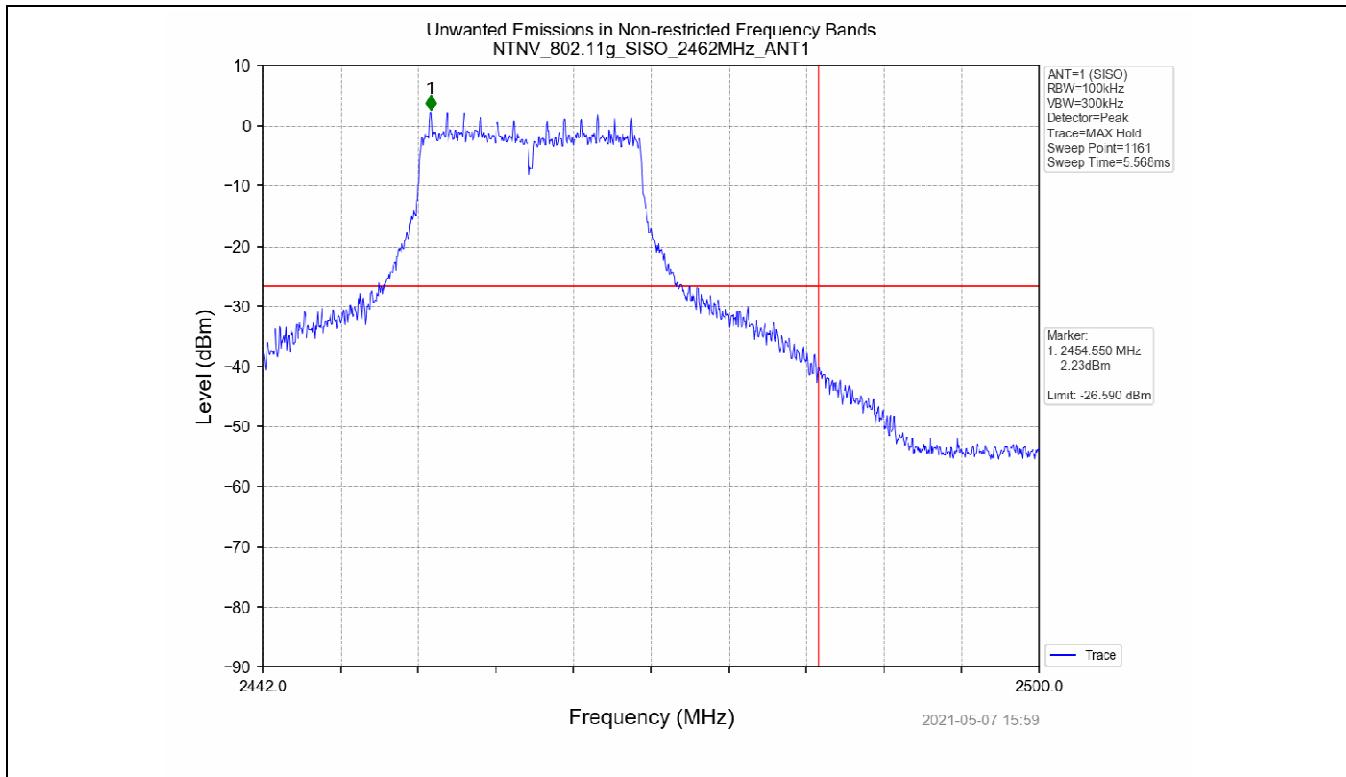
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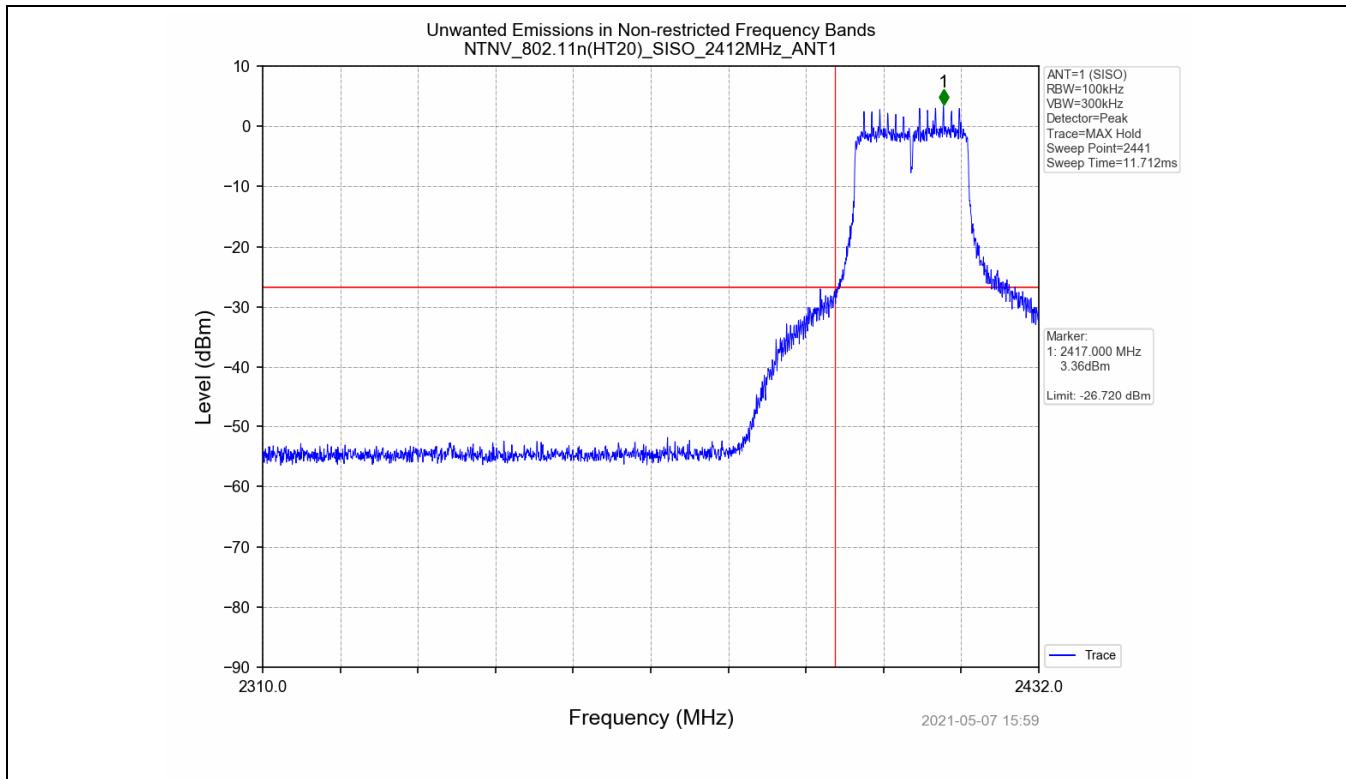
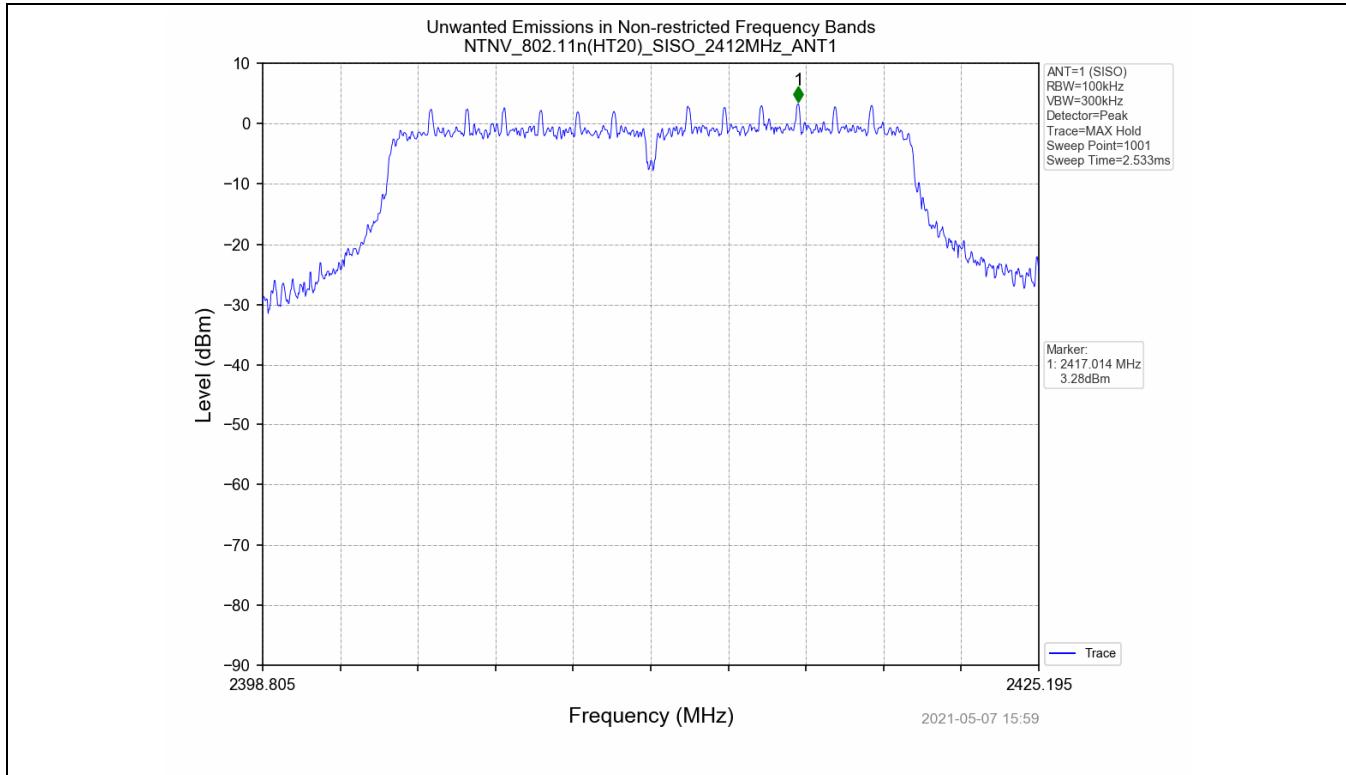
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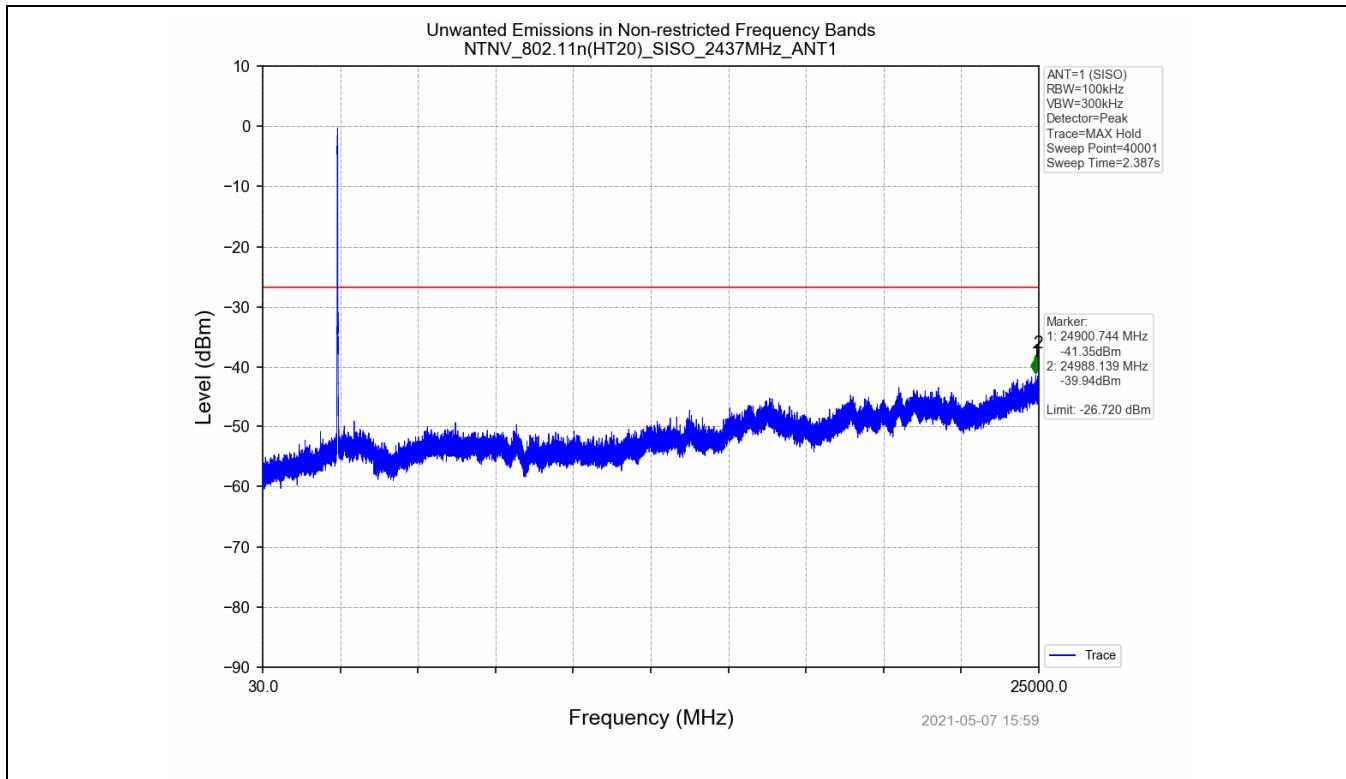
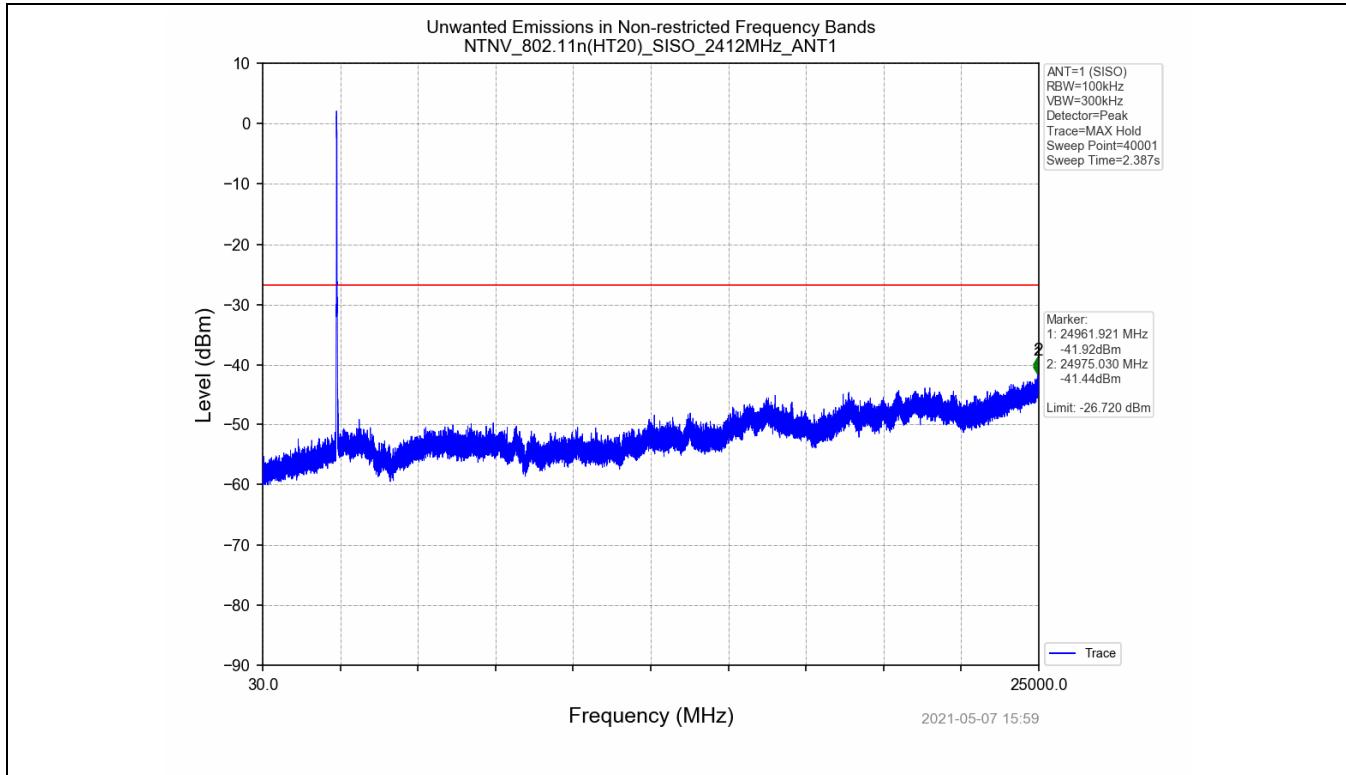
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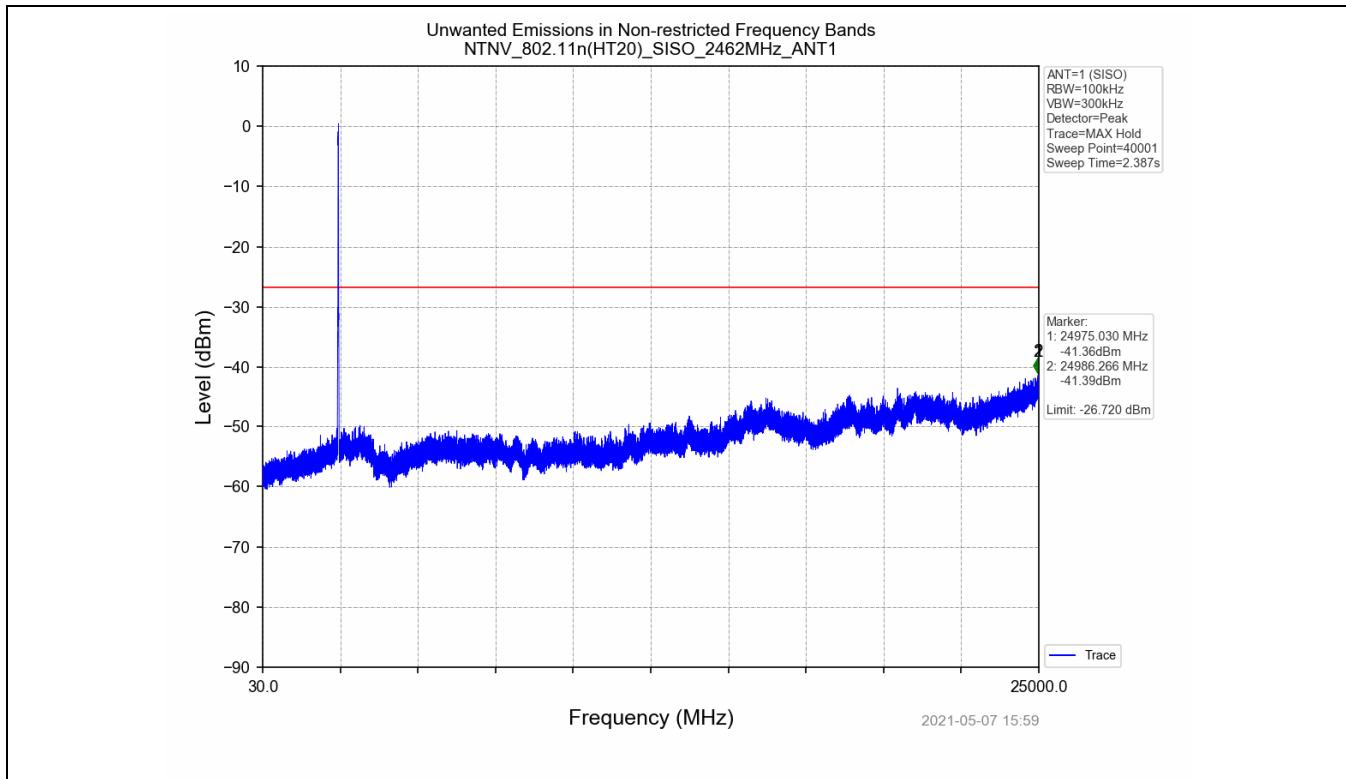
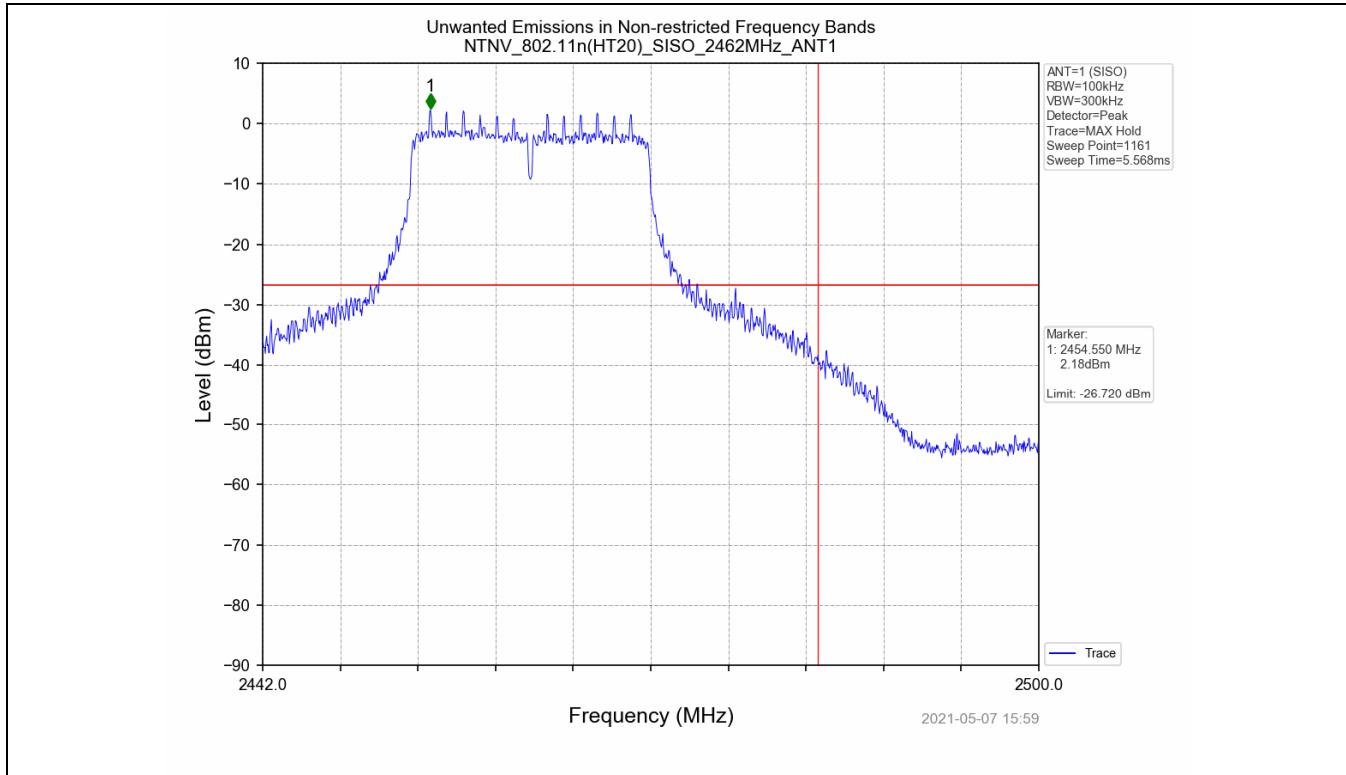
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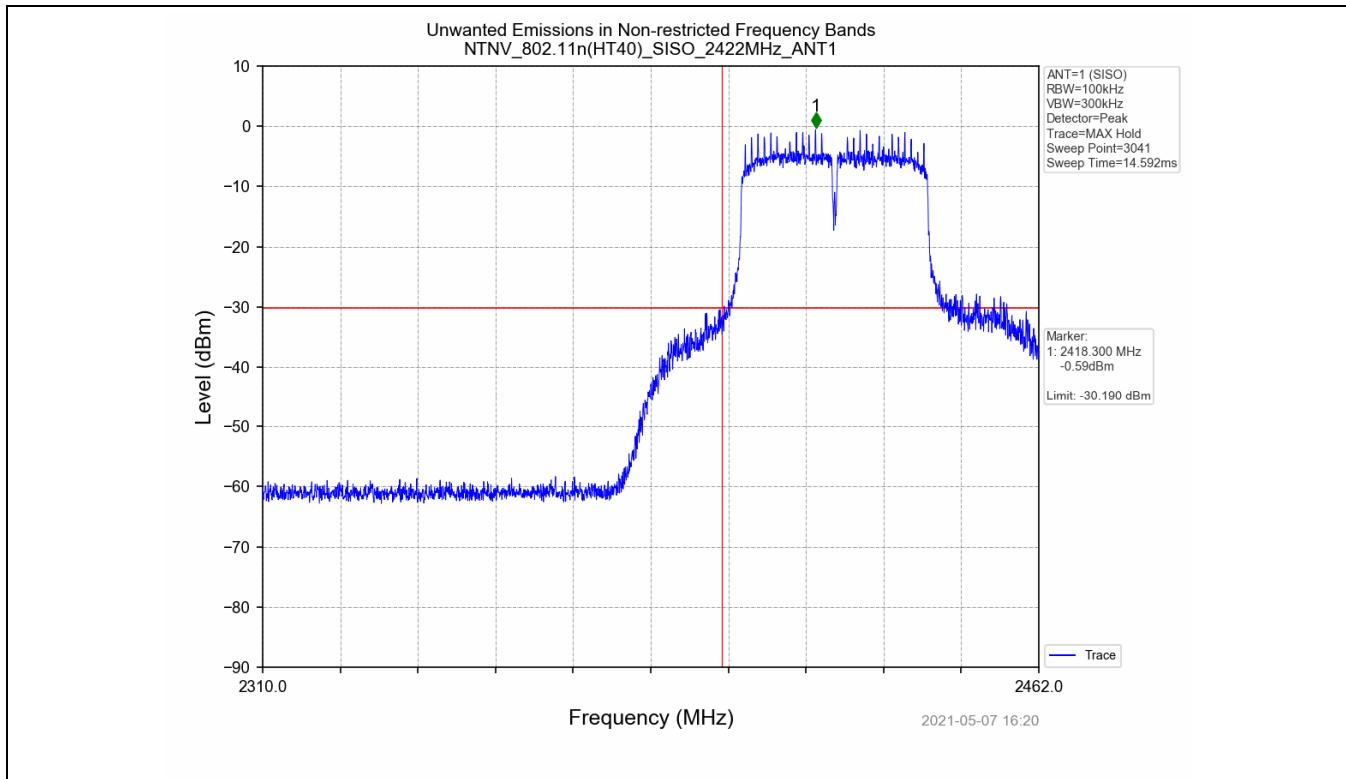
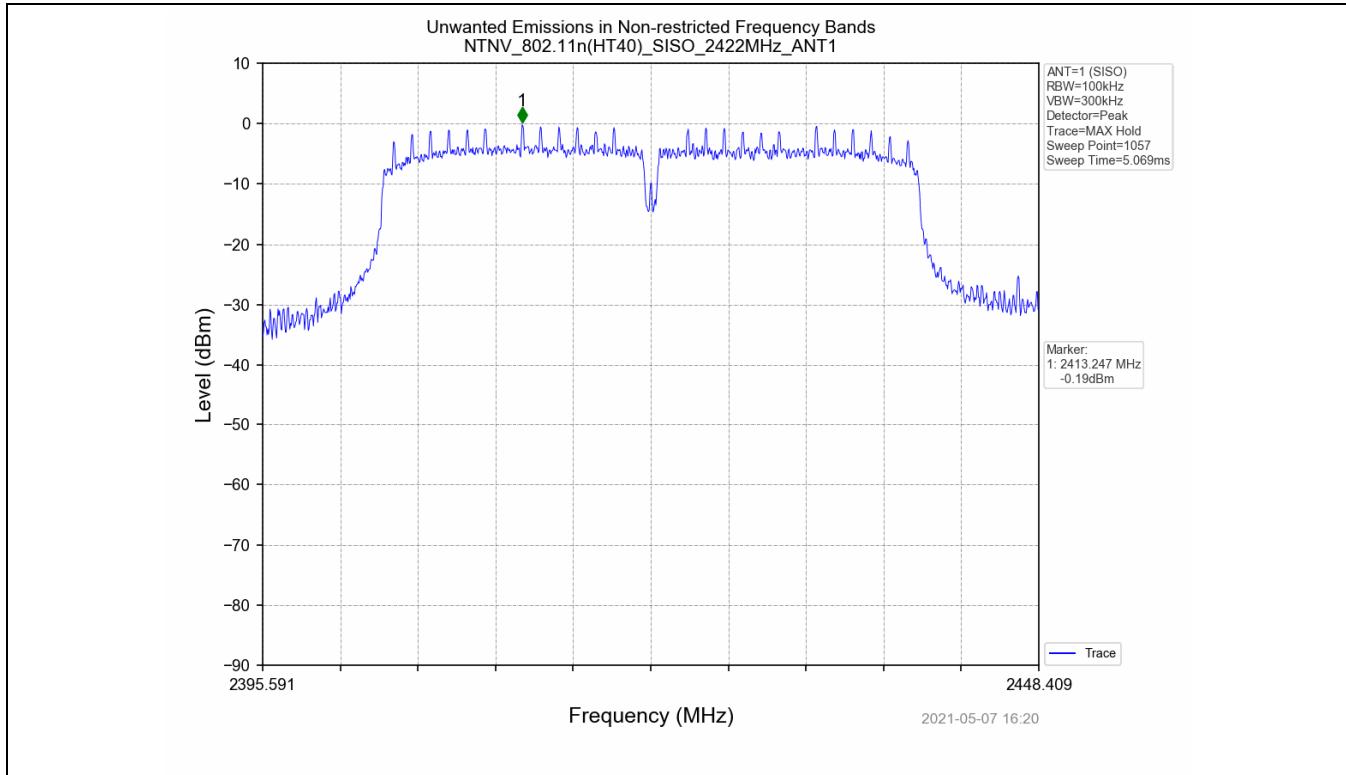
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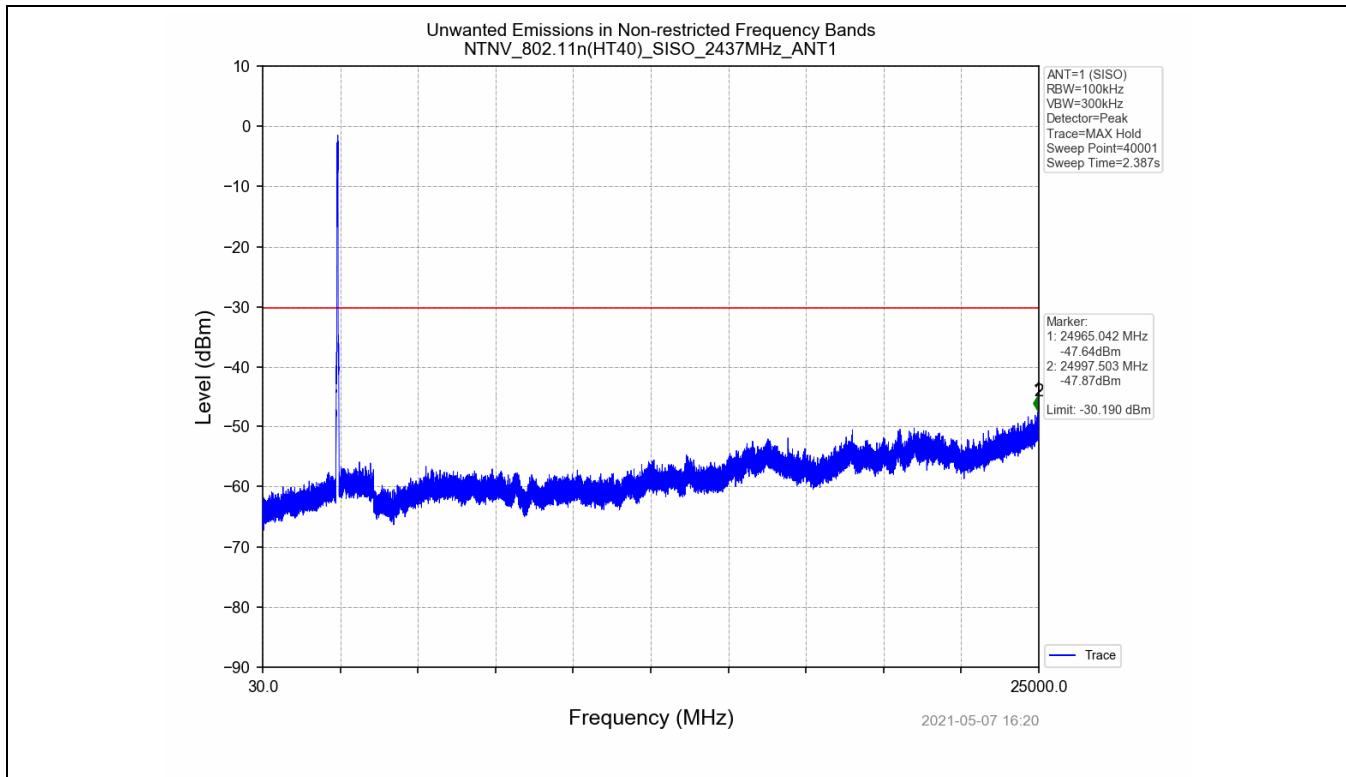
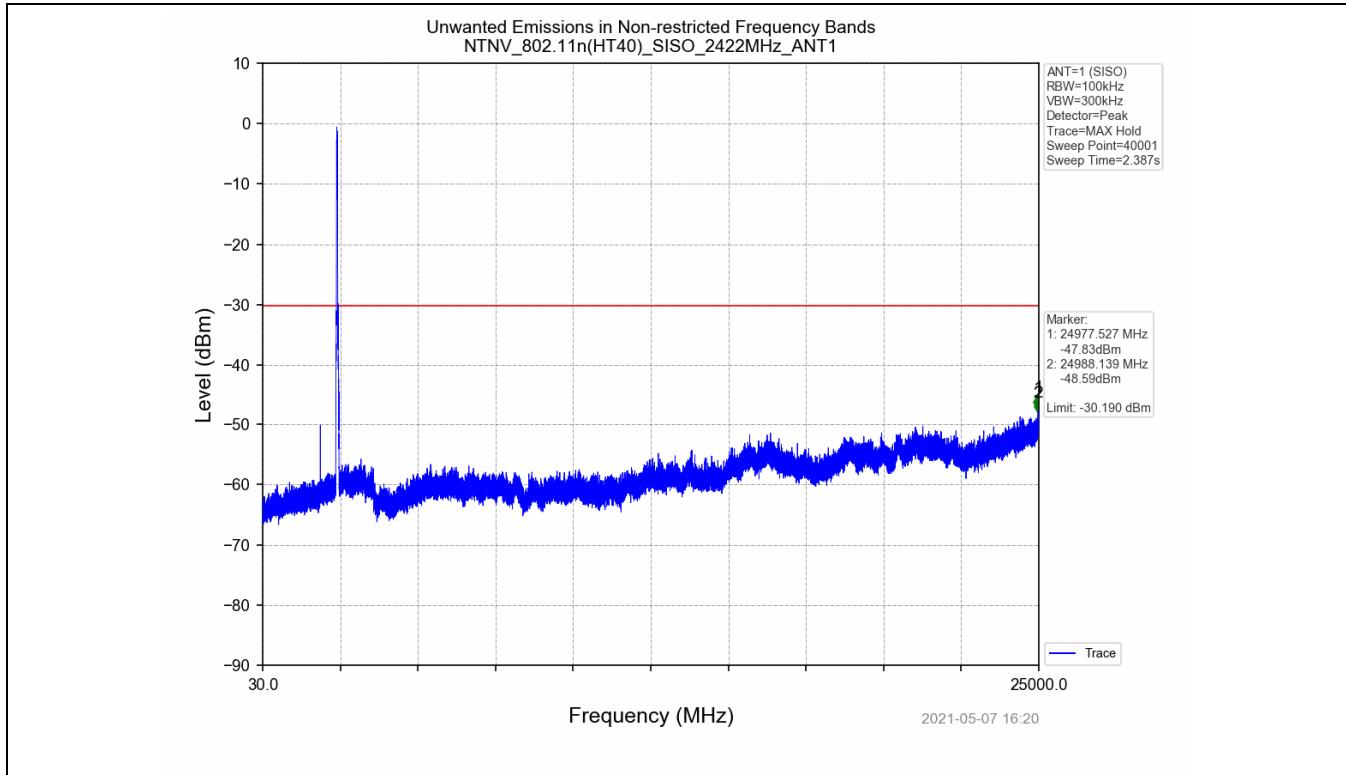
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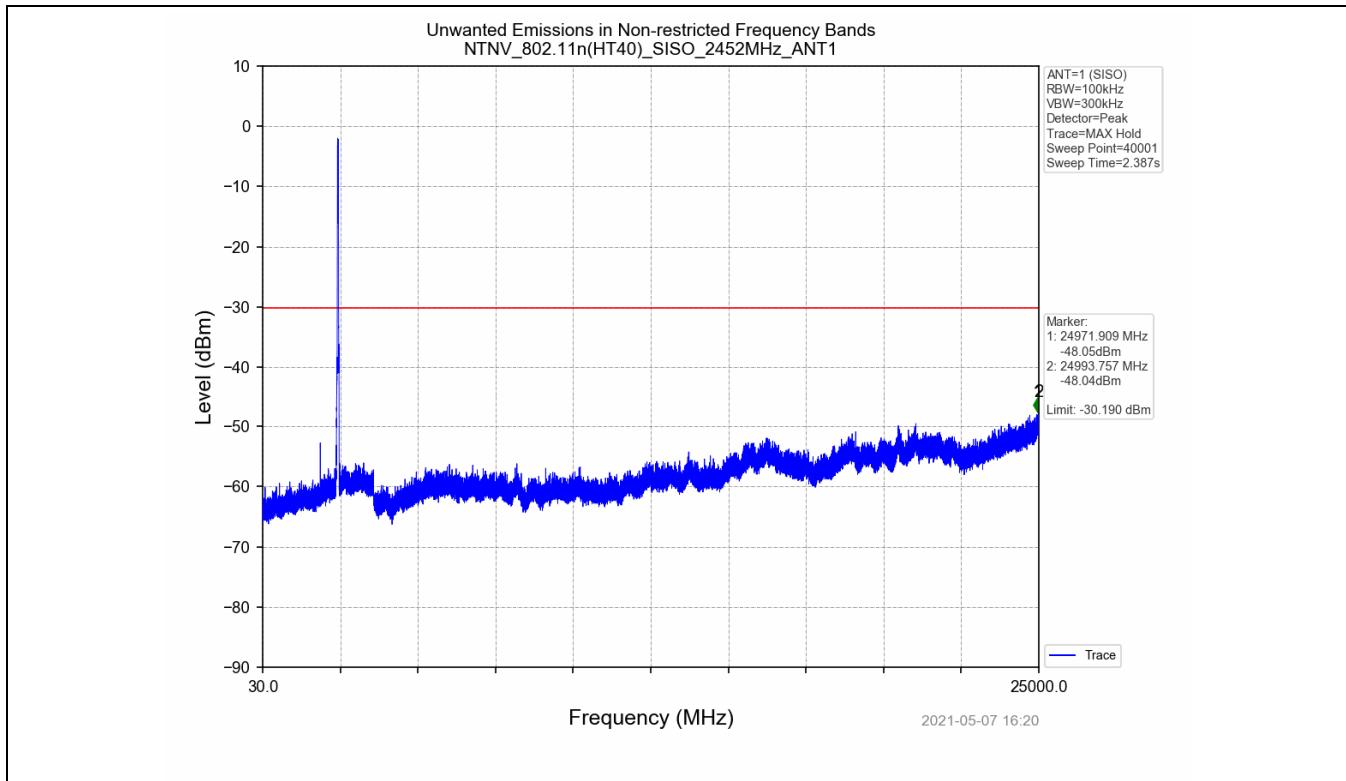
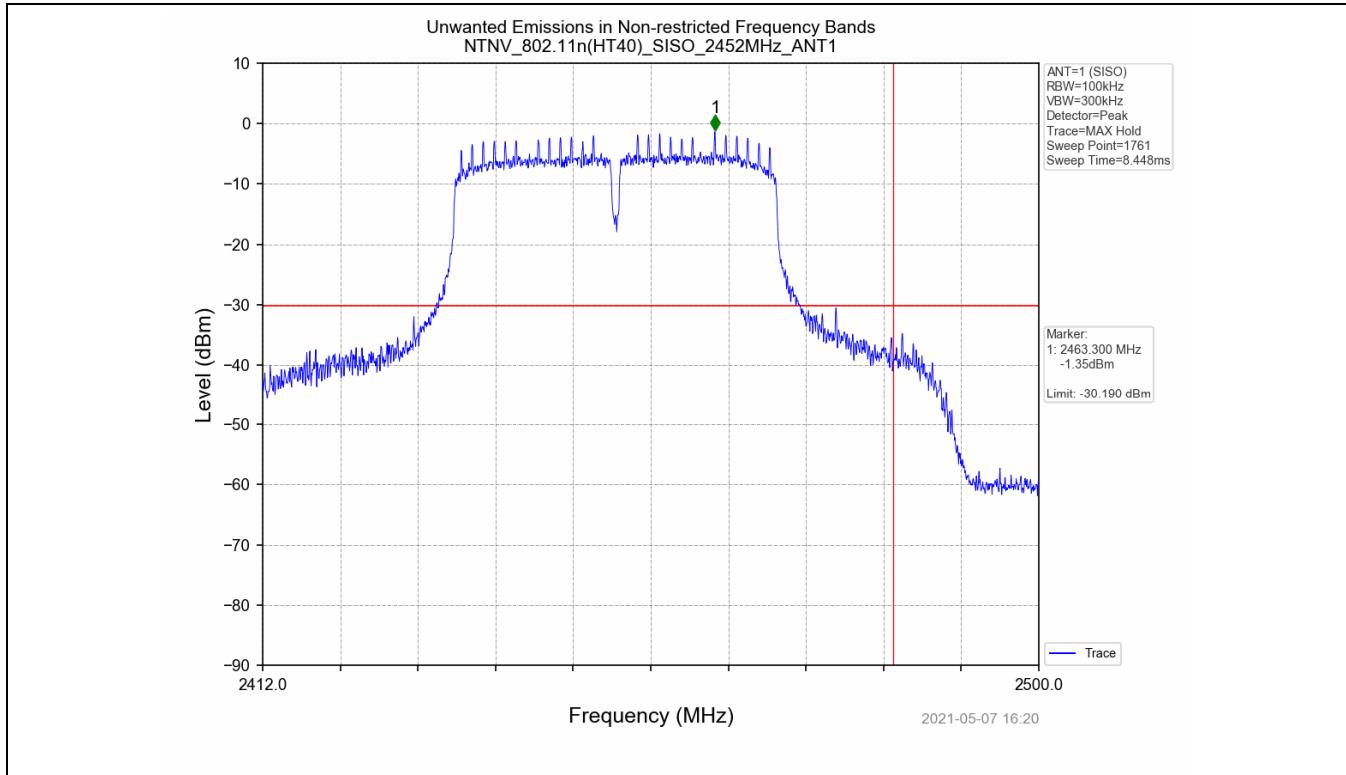
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