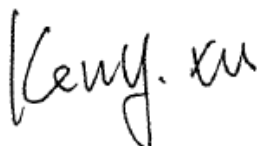


TEST REPORT

Application No.: SZCR2105021258AT
Applicant: Guangdong WiiRobot Co., Ltd
Address of Applicant: Room 401, Building 1, No.11 Yinghe 1st Street, Yaoshan, Xiegang Town, Dongguan City, Guangdong Province, China
Manufacturer: Guangdong WiiRobot Co., Ltd.
Address of Manufacturer: Room 401, Building 1, No. 11, Yaoshan Yinghe Street, Xiegang Town, Dongguan City, Guangdong Province
Equipment Under Test (EUT):
EUT Name: Speedbird
Model No.: I63E, I63E Bundle A, I63E Bundle B, I63EA ♣
 ♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark: ING
FCC ID: 2AZ7PI63E
Standard(s) : 47 CFR Part 15, Subpart E 15.407
Date of Receipt: 2021-05-28
Date of Test: 2021-06-09 to 2021-06-17
Date of Issue: 2021-06-22

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-06-22		Original

Authorized for issue by:				
		Benson Wang		
		Benson Wang/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 E 15.407	N/A	47 CFR Part 15, Subpart C 15.203	Pass
Transmission in the Absence of Data		N/A	47 CFR Part 15, Subpart C 15.407 (c)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Duty Cycle	47 CFR Part 15, Subpart E 15.407	KDB 789033 II B 1	KDB 789033 D02 II B 1	Pass
99% Bandwidth		KDB 789033 II D	N/A	Pass
26dB Emission bandwidth		KDB 789033 D02 II C 1	47 CFR Part 15, Subpart C 15.407 (a)	Pass
Minimum 6 dB bandwidth (5.725-5.85 GHz band)		KDB 789033 D02 II C 2	47 CFR Part 15, Subpart C 15.407 (e)	Pass
Maximum Conducted output power		KDB 789033 D02 II E	47 CFR Part 15, Subpart C 15.407 (a)	Pass
Peak Power spectrum density		KDB 789033 D02 II F	47 CFR Part 15, Subpart C 15.407 (a)	Pass
Radiated Emissions (Below 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & 15.407(b)	Pass
Radiated Emissions (Above 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & 15.407(b)	Pass
Radiated Emissions which fall in the restricted bands		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & 15.407(b)	Pass
Frequency Stability		ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart C 15.407 (g)	Pass

Declaration of EUT Family Grouping:

Model No.: I63E, I63E Bundle A, I63E Bundle B, I63EA

Only the model I63E was tested. According to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on models, appearance and package method.



3 Contents

	Page
1 COVER PAGE	1
2 TEST SUMMARY	3
3 CONTENTS	4
4 GENERAL INFORMATION	6
4.1 DETAILS OF E.U.T.	6
4.2 DESCRIPTION OF SUPPORT UNITS	6
4.3 MEASUREMENT UNCERTAINTY	6
4.4 TEST LOCATION	7
4.5 TEST FACILITY	7
4.6 DEVIATION FROM STANDARDS	7
4.7 ABNORMALITIES FROM STANDARD CONDITIONS	7
5 EQUIPMENT LIST	8
6 RADIO SPECTRUM TECHNICAL REQUIREMENT	12
6.1 ANTENNA REQUIREMENT	12
6.1.1 <i>Test Requirement:</i>	12
6.1.2 <i>Conclusion</i>	12
6.2 TRANSMISSION IN THE ABSENCE OF DATA	13
6.2.1 <i>Test Requirement:</i>	13
6.2.2 <i>Conclusion</i>	13
7 RADIO SPECTRUM MATTER TEST RESULTS	14
7.1 DUTY CYCLE	14
7.1.1 <i>E.U.T. Operation</i>	14
7.1.2 <i>Test Mode Description</i>	14
7.1.3 <i>Test Setup Diagram</i>	14
7.1.4 <i>Measurement Procedure and Data</i>	14
7.2 99% BANDWIDTH	15
7.2.1 <i>E.U.T. Operation</i>	15
7.2.2 <i>Test Mode Description</i>	15
7.2.3 <i>Test Setup Diagram</i>	15
7.2.4 <i>Measurement Procedure and Data</i>	15
7.3 26dB EMISSION BANDWIDTH	16
7.3.1 <i>E.U.T. Operation</i>	16
7.3.2 <i>Test Mode Description</i>	16
7.3.3 <i>Test Setup Diagram</i>	16
7.3.4 <i>Measurement Procedure and Data</i>	16
7.4 MINIMUM 6 dB BANDWIDTH (5.725-5.85 GHz BAND)	17
7.4.1 <i>E.U.T. Operation</i>	17
7.4.2 <i>Test Mode Description</i>	17
7.4.3 <i>Test Setup Diagram</i>	17
7.4.4 <i>Measurement Procedure and Data</i>	17
7.5 MAXIMUM CONDUCTED OUTPUT POWER	18



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7.5.1	E.U.T. Operation	18
7.5.2	Test Mode Description	18
7.5.3	Test Setup Diagram	19
7.5.4	Measurement Procedure and Data	19
7.6	PEAK POWER SPECTRUM DENSITY	20
7.6.1	E.U.T. Operation	20
7.6.2	Test Mode Description	20
7.6.3	Test Setup Diagram	21
7.6.4	Measurement Procedure and Data	21
7.7	RADIATED EMISSIONS (BELOW 1GHz)	22
7.7.1	E.U.T. Operation	22
7.7.2	Test Mode Description	22
7.7.3	Test Setup Diagram	23
7.7.4	Measurement Procedure and Data	24
7.8	RADIATED EMISSIONS (ABOVE 1GHz)	29
7.8.1	E.U.T. Operation	30
7.8.2	Test Mode Description	30
7.8.3	Test Setup Diagram	30
7.8.4	Measurement Procedure and Data	31
7.9	RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS	56
7.9.1	E.U.T. Operation	56
7.9.2	Test Mode Description	57
7.9.3	Test Setup Diagram	57
7.9.4	Measurement Procedure and Data	58
7.10	FREQUENCY STABILITY	83
7.10.1	E.U.T. Operation	83
7.10.2	Test Mode Description	83
7.10.3	Test Setup Diagram	83
7.10.4	Measurement Procedure and Data	84
8	TEST SETUP PHOTO	85
9	EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)	85
10	APPENDIX	86



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4 General Information

4.1 Details of E.U.T.

Power supply:	Lithium Ion Battery: DC11.4V 3200mAh (Charged by adapter)
Cable(s):	Type-C to Type-C cable: 43cm unshielded support 5V/2A USB-A to Type-C cable: 43cm unshielded support 45W.
Operation Frequency (20MHz):	U-NII-1: 5180-5240MHz; U-NII-3: 5745-5825MHz
Moudulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing:	802.11a/n(HT20): 20MHz
Antenna Type:	Integral Antenna
Antenna Gain:	Antenna 1/ Antenna 2: 2dBi Two antennas can simultaneous transmission.

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
Duty Cycle	$\pm 0.37\%$
99% Bandwidth	$\pm 3\%$
26dB Emission bandwidth	$\pm 3\%$
Minimum 6 dB bandwidth (5.725-5.85 GHz band)	$\pm 3\%$
Maximum Conducted output power	$\pm 0.75\text{dB}$
Peak Power spectrum density	$\pm 2.84\text{dB}$
Radiated Emissions (Above 1GHz)	$\pm 4.8\text{dB}$
Radiated Emissions which fall in the restricted bands	$\pm 4.5\text{dB}$ (below 1GHz); $\pm 4.8\text{dB}$ (above 1GHz);
Frequency Stability	$\pm 7.25 \times 10^{-8}$
Radiated Emissions (Below 1GHz)	$\pm 4.5\text{dB}$

Remark:

The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

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 (Member No. 1937)**

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. Shenzhen EMC laboratory 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
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2021-03-23	2022-03-22
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
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
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021-03-23	2022-03-22

99% Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2021-03-23	2022-03-22
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
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
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021-03-23	2022-03-22

26dB Emission bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2021-03-23	2022-03-22
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
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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Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021-03-23	2022-03-22
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Minimum 6 dB bandwidth (5.725-5.85 GHz band)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2021-03-23	2022-03-22
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
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
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021-03-23	2022-03-22

Maximum 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
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2021-03-23	2022-03-22
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
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
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021-03-23	2022-03-22

Peak 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
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2021-03-23	2022-03-22
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
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



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Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021-04-08	2022-04-07
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021-03-23	2022-03-22

Radiated 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 (10Hz-44GHz)	Agilent Technologies Inc	N9010A	SEM004-12	2021-02-01	2022-01-31
Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2021-04-14	2024-04-13
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2020-11-14	2023-11-13
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2020-09-23	2021-09-22
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	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	SEM026-01	2020-07-10	2021-07-09

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 (10Hz-44GHz)	Agilent Technologies Inc	N9010A	SEM004-12	2021-02-01	2022-01-31
Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2021-04-14	2024-04-13
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2020-11-14	2023-11-13
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2020-09-23	2021-09-22
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	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	SEM026-01	2020-07-10	2021-07-09



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Frequency Stability					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2021-03-23	2022-03-22
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-17	2021-04-08	2022-04-07
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
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
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021-03-23	2022-03-22

Radiated 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
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

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

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

Standard Requirement:

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

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the Antenna1 / Antenna 2: 2dBi.

Antenna location: Refer to Internal photos



6.2 Transmission in the Absence of Data

6.2.1 Test Requirement:

47 CFR Part 15, Subpart C 15.407 (c)

6.2.2 Conclusion

6.2.2 Conclusion

Standard Requirement:

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Applicants shall include in their application for equipment authorization a description of how this requirement is met.

EUT Details:

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



7 Radio Spectrum Matter Test Results

7.1 Duty Cycle

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

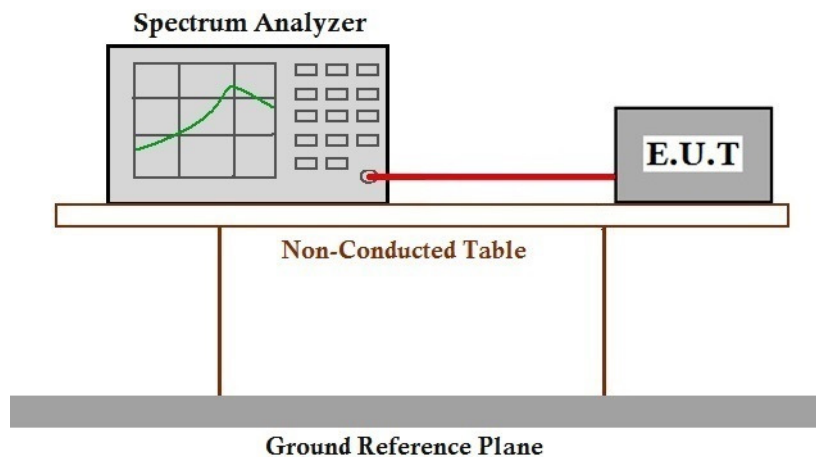
7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 25.4 °C Humidity: 48.8 % RH Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20);. Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.

7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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7.2 99% Bandwidth

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

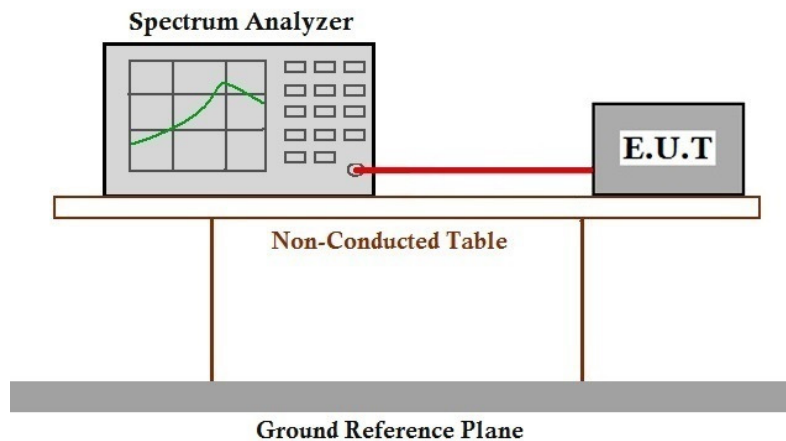
7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 25.4 °C Humidity: 48.8 % RH Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.3 26dB Emission bandwidth

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

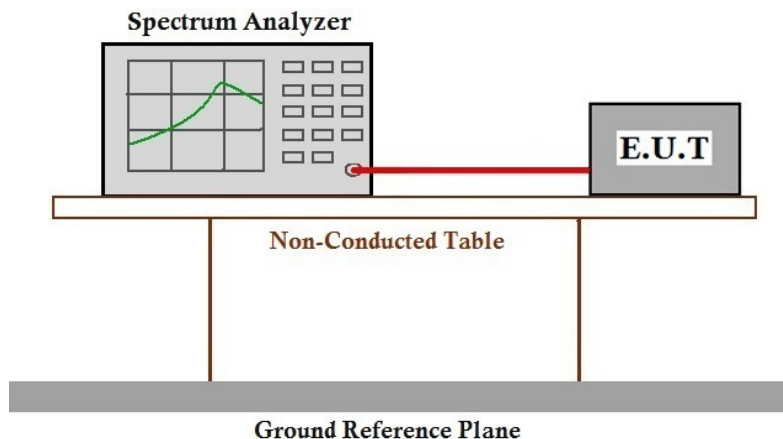
7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 25.4 °C Humidity: 48.8 % RH Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20);. Only the data of worst case is recorded in the report.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.4 Minimum 6 dB bandwidth (5.725-5.85 GHz band)

Test Requirement 47 CFR Part 15, Subpart C 15.407 (e)

Test Method: KDB 789033 D02 II C 2

Limit:

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

7.4.1 E.U.T. Operation

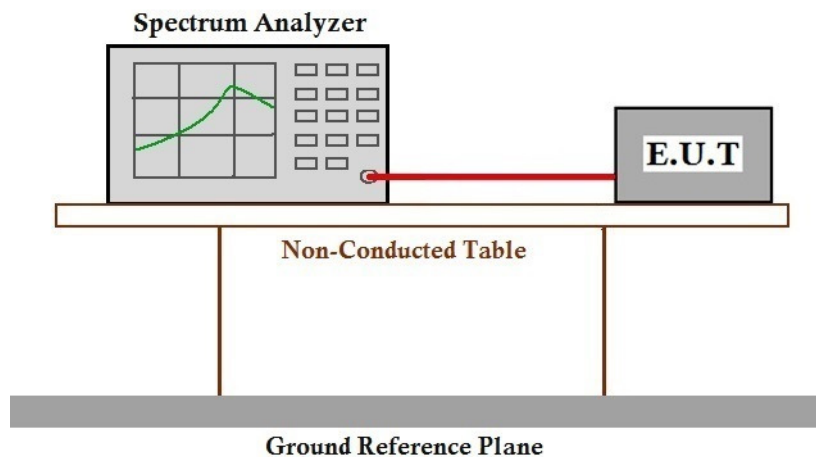
Operating Environment:

Temperature: 25.4 °C Humidity: 48.8 % RH Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.5 Maximum Conducted output power

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)

Test Method: KDB 789033 D02 II E

Limit:

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

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 25.4 °C

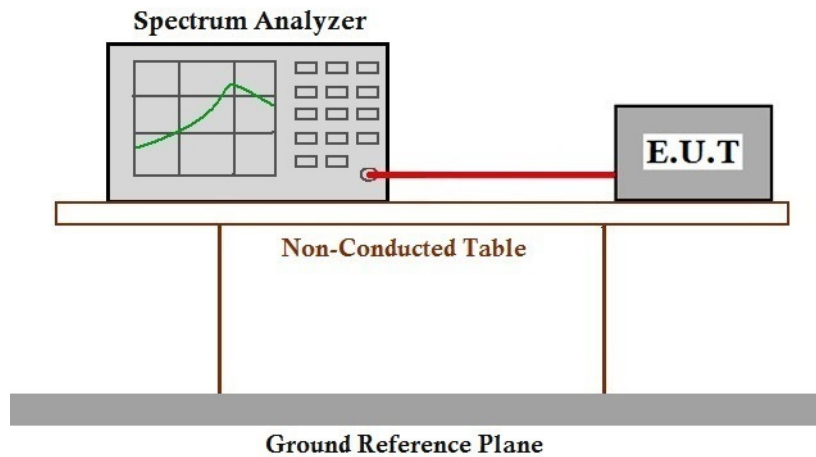
Humidity: 48.8 % RH

Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20);. Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.6 Peak Power spectrum density

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)

Test Method: KDB 789033 D02 II F

Limit:

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

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 25.4 °C

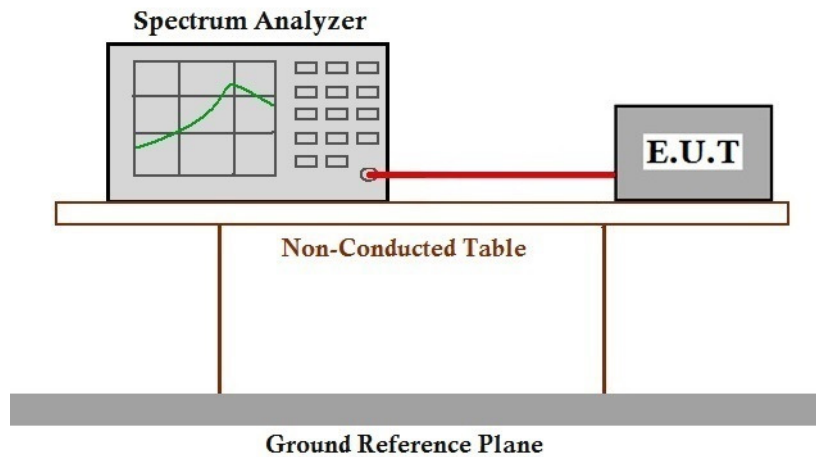
Humidity: 48.8 % RH

Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20);. Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.7 Radiated Emissions (Below 1GHz)

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

Test Method: KDB 789033 D02 II G

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
960-1000	500	3

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 26.2 °C

Humidity: 61.8 % RH

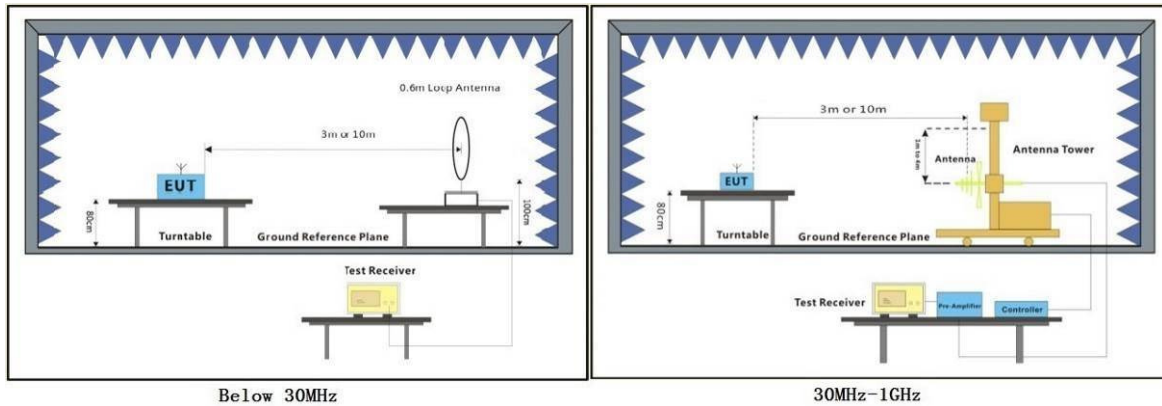
Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20);. Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.



7.7.3 Test Setup Diagram



Below 30MHz

30MHz-1GHz

7.7.4 Measurement Procedure and Data

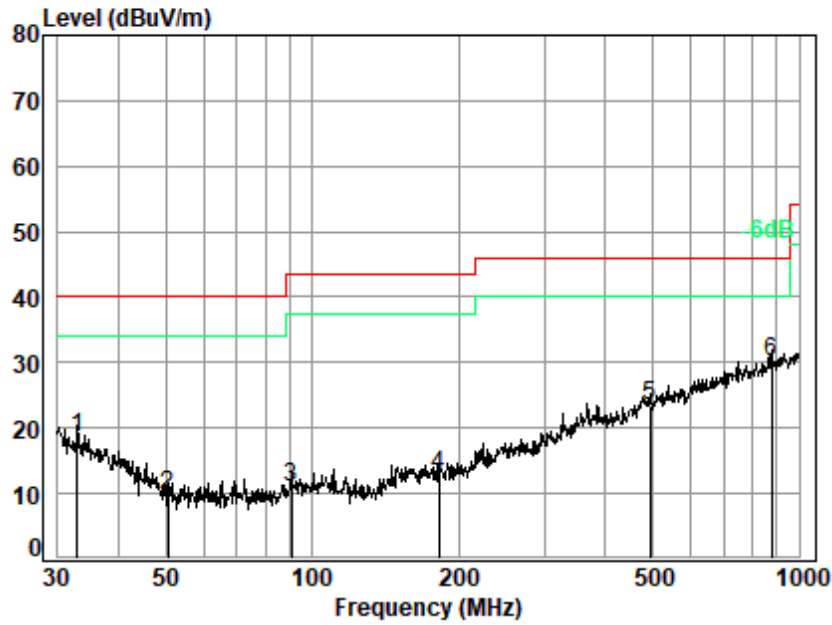
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna,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

Remark:

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



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

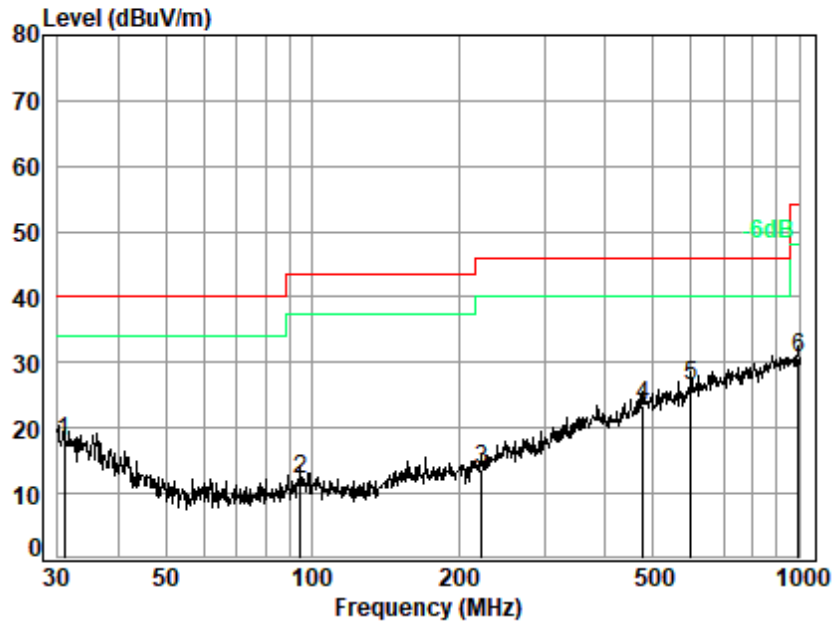


Site : chamber
Condition: 3m HORIZONTAL
Job No. : 21258AT
Test Mode: 03

	Ant Freq	Cable Factor	Preamp Loss	Read Level	Limit Level	Over Line	Over Limit	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	32.98	21.20	0.63	27.73	24.34	18.44	40.00	-21.56 QP
2	50.41	13.98	0.70	27.68	22.70	9.70	40.00	-30.30 QP
3	90.54	13.21	1.29	27.62	24.13	11.01	43.50	-32.49 QP
4	181.92	15.42	1.19	27.21	23.30	12.70	43.50	-30.80 QP
5	494.20	24.22	2.49	27.78	24.36	23.29	46.00	-22.71 QP
6 q	878.32	29.04	3.46	27.28	24.80	30.02	46.00	-15.98 QP



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

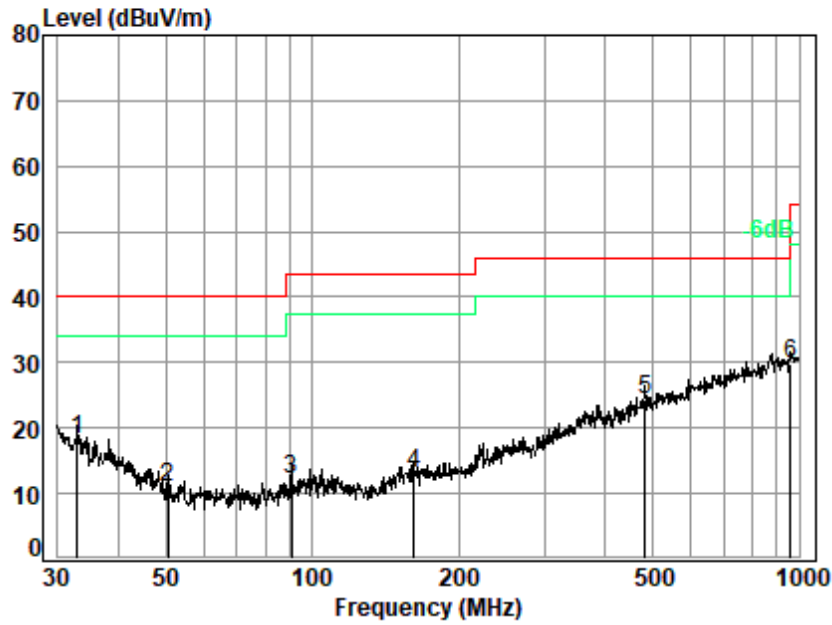


Site : chamber
Condition: 3m VERTICAL
Job No. : 21258AT
Test Mode: 03

		Ant	Cable	Preamp	Read	Limit	Over	
	Freq	Factor	Loss	Factor	Level	Level	Line	Limit Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.96	22.27	0.61	27.73	22.87	18.02	40.00	-21.98 QP
2	94.76	13.61	1.20	27.62	24.83	12.02	43.50	-31.48 QP
3	222.95	16.95	1.41	27.07	22.42	13.71	46.00	-32.29 QP
4	478.85	24.22	2.46	27.72	24.48	23.44	46.00	-22.56 QP
5 q	599.32	25.79	2.70	28.13	26.12	26.48	46.00	-19.52 QP
6	996.50	29.75	3.60	26.68	23.90	30.57	54.00	-23.43 QP



Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

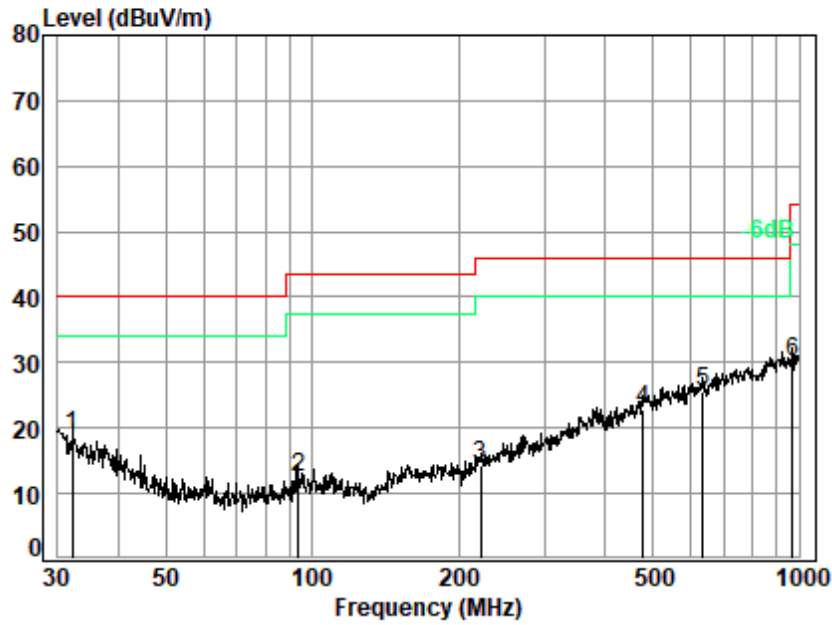


Site : chamber
Condition: 3m HORIZONTAL
Job No. : 21258AT
Test Mode: 04

	Ant	Cable	Preamp	Read	Limit	Over	
Freq	Factor	Loss	Factor	Level	Level	Line	Limit Remark
MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	32.98	21.20	0.63	27.73	24.15	18.25	40.00 -21.75 QP
2	50.41	13.98	0.70	27.68	23.86	10.86	40.00 -29.14 QP
3	90.54	13.21	1.29	27.62	25.29	12.17	43.50 -31.33 QP
4	161.47	15.43	1.17	27.29	23.73	13.04	43.50 -30.46 QP
5 q	482.22	24.30	2.47	27.73	25.40	24.44	46.00 -21.56 QP
6	962.16	29.50	3.56	26.84	23.45	29.67	54.00 -24.33 QP



Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No. : 21258AT
Test Mode: 04

		Ant	Cable	Preamp	Read	Limit	Over	
	Freq	Factor	Loss	Factor	Level	Level	Line	Limit Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	32.18	21.44	0.62	27.73	24.49	18.82	40.00	-21.18 QP
2	93.44	13.50	1.23	27.62	25.24	12.35	43.50	-31.15 QP
3	221.39	16.87	1.40	27.07	23.04	14.24	46.00	-31.76 QP
4	478.85	24.22	2.46	27.72	23.95	22.91	46.00	-23.09 QP
5 q	633.91	26.38	2.77	28.05	24.47	25.57	46.00	-20.43 QP
6	968.93	29.50	3.57	26.81	23.84	30.10	54.00	-23.90 QP



7.8 Radiated Emissions (Above 1GHz)

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

Test Method: KDB 789033 D02 II G

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1GHz	500	3
*(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (4) For transmitters operating in the 5.725-5.85 GHz band: (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.		



7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C

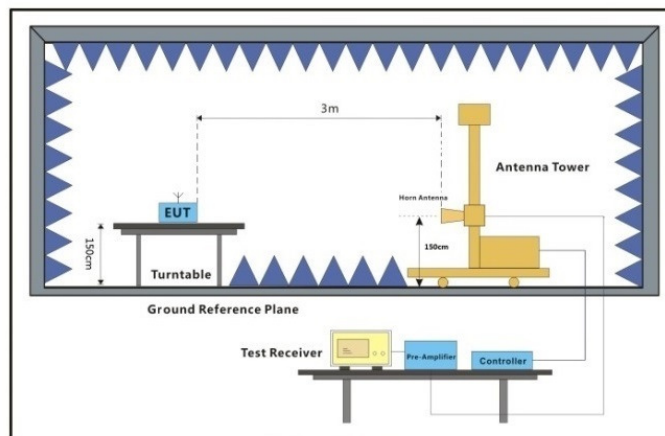
Humidity: 50.1 % RH

Atmospheric Pressure: 1010 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20);. Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.

7.8.3 Test Setup Diagram



Above 1GHz



7.8.4 Measurement Procedure and Data

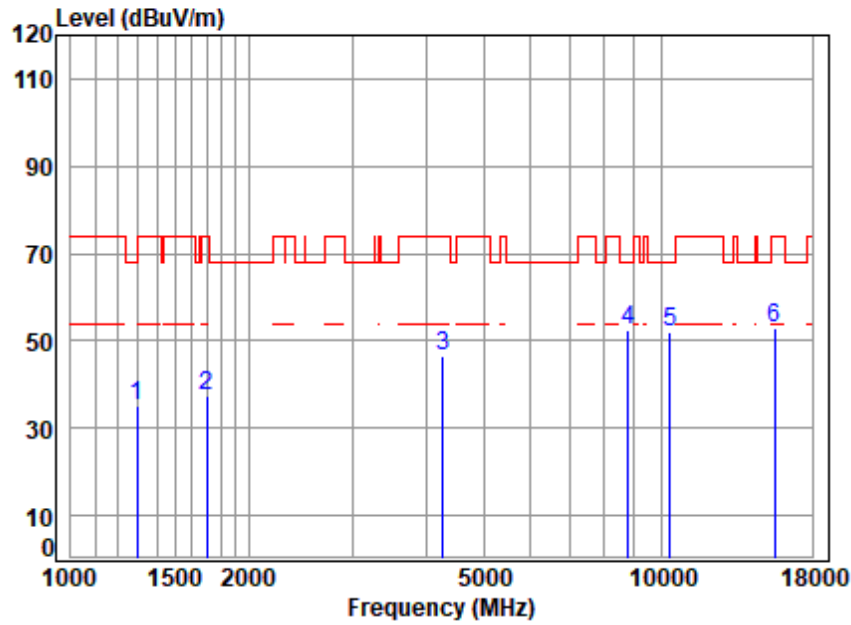
- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which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

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
5. Pretest the EUT at antenna 1, antenna 2 and MIMO mode and found the MIMO mode which is worst case for 802.11a/n mode; So, Only the worst test data is recorded in the report.



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

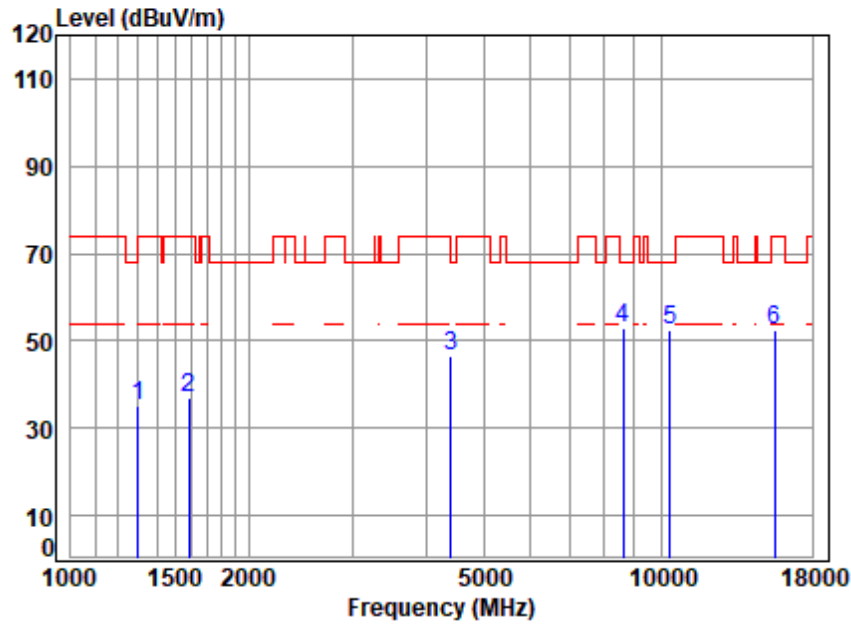


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5180 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1297.103	2.94	25.31	39.83	46.84	35.26	68.20	-32.94	peak
2	1702.042	3.43	26.71	40.06	47.14	37.22	74.00	-36.78	peak
3	4267.237	6.54	32.82	41.66	48.90	46.60	74.00	-27.40	peak
4	8789.516	10.22	36.75	39.24	44.93	52.66	68.20	-15.54	peak
5	10360.000	10.57	37.43	37.29	41.41	52.12	68.20	-16.08	peak
6	15540.000	13.97	40.73	40.38	38.62	52.94	74.00	-21.06	peak



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

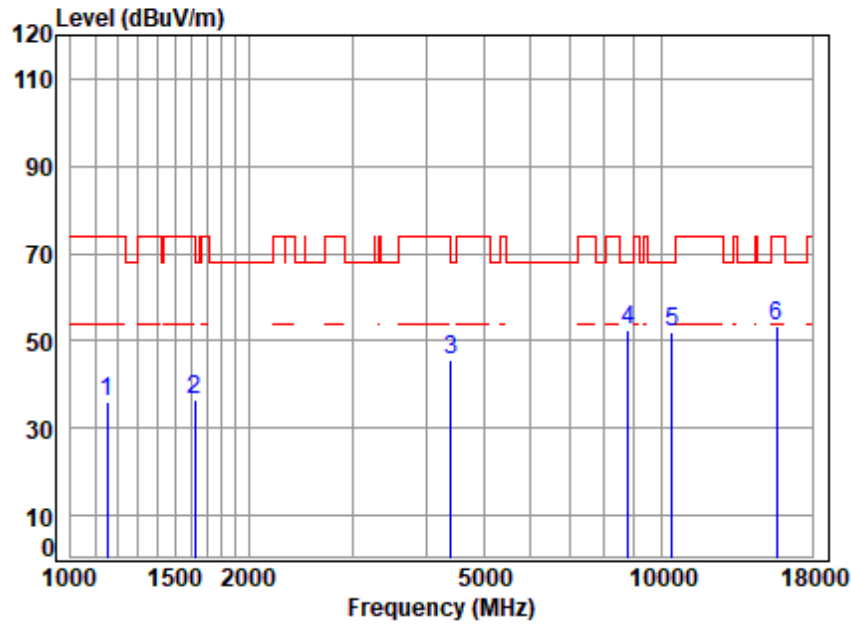


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5180 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1300.858	2.94	25.31	39.83	46.73	35.15	74.00	-38.85	peak
2	1587.975	3.34	26.16	40.00	47.53	37.03	74.00	-36.97	peak
3	4405.090	6.67	32.93	41.79	48.72	46.53	68.20	-21.67	peak
4	8613.468	10.15	36.54	39.57	45.64	52.76	68.20	-15.44	peak
5	10360.000	10.57	37.43	37.29	41.58	52.29	68.20	-15.91	peak
6	15540.000	13.97	40.73	40.38	38.36	52.68	74.00	-21.32	peak



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

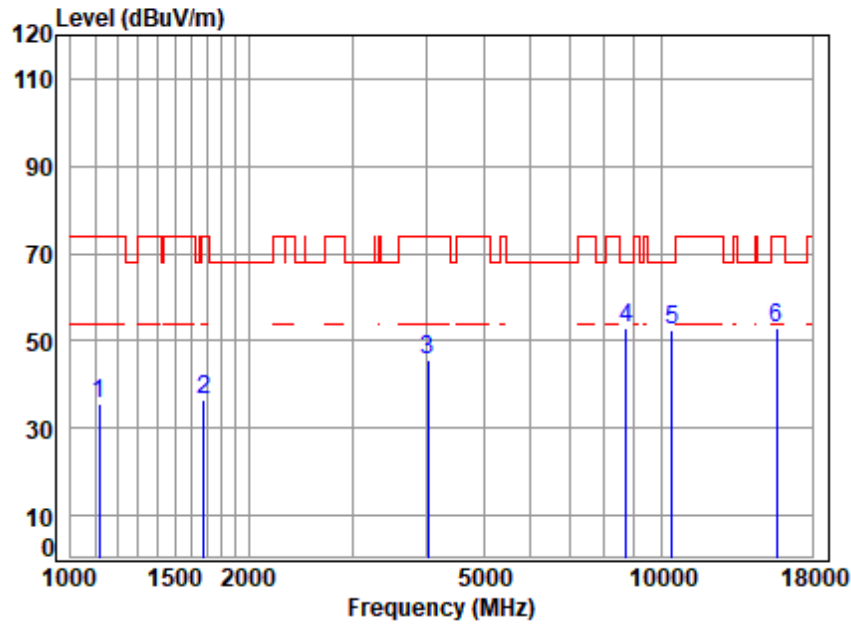


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5220 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1152.148	2.67	24.98	39.72	48.22	36.15	74.00	-37.85	peak
2	1620.431	3.36	26.32	40.02	47.00	36.66	74.00	-37.34	peak
3	4405.090	6.67	32.93	41.79	47.63	45.44	68.20	-22.76	peak
4	8789.516	10.22	36.75	39.24	44.92	52.65	68.20	-15.55	peak
5	10440.000	10.55	37.41	37.34	41.59	52.21	68.20	-15.99	peak
6	15660.000	14.02	40.83	40.44	38.76	53.17	74.00	-20.83	peak



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

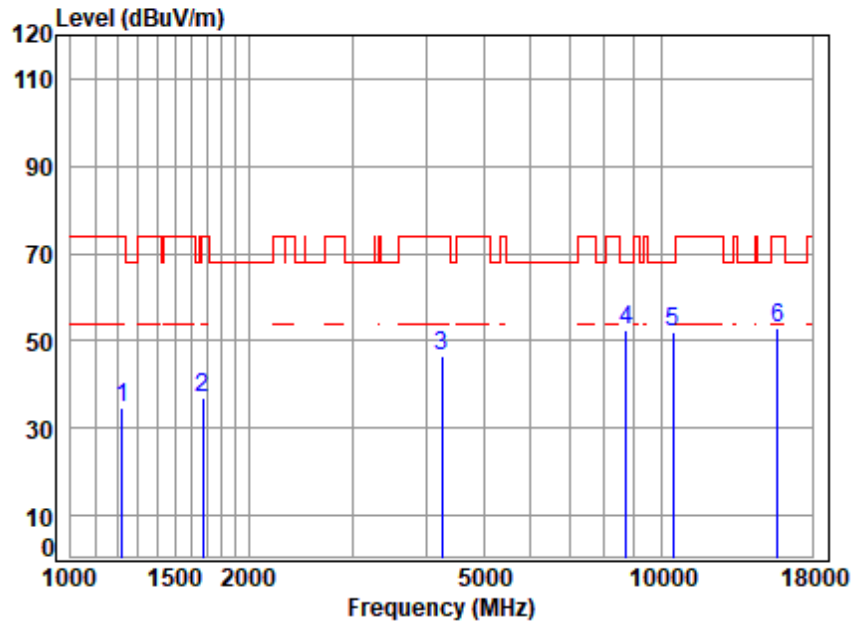


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5220 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1119.323	2.61	24.91	39.70	47.60	35.42	74.00	-38.58	peak
2	1677.621	3.41	26.59	40.05	46.44	36.39	74.00	-37.61	peak
3	4027.554	6.31	32.62	41.43	48.32	45.82	74.00	-28.18	peak
4	8713.630	10.19	36.66	39.38	45.50	52.97	68.20	-15.23	peak
5	10440.000	10.55	37.41	37.34	41.80	52.42	68.20	-15.78	peak
6	15660.000	14.02	40.83	40.44	38.42	52.83	74.00	-21.17	peak



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

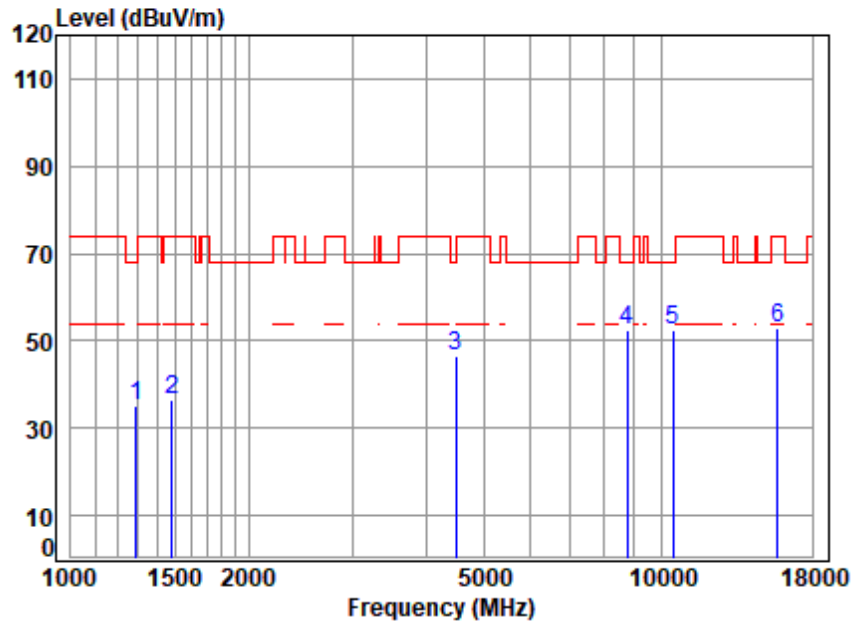


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5240 Band edge
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1220.714	2.80	25.14	39.77	46.38	34.55	74.00	-39.45	peak
2	1672.779	3.41	26.57	40.05	47.16	37.09	74.00	-36.91	peak
3	4254.921	6.53	32.81	41.65	49.02	46.71	74.00	-27.29	peak
4	8713.630	10.19	36.66	39.38	44.97	52.44	68.20	-15.76	peak
5	10480.000	10.54	37.40	37.36	41.40	51.98	68.20	-16.22	peak
6	15720.000	14.04	40.88	40.47	38.42	52.87	74.00	-21.13	peak



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

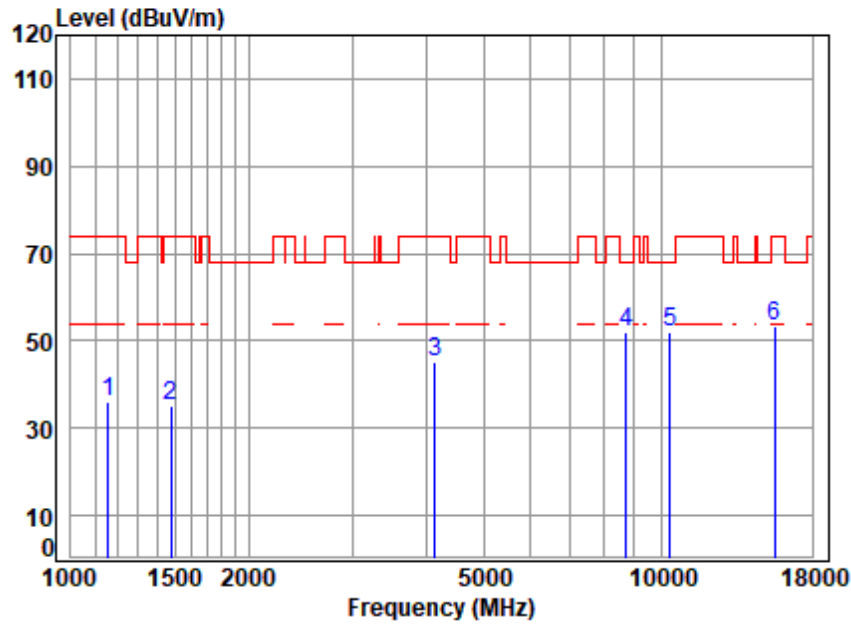


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5240 Band edge
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1289.627	2.92	25.29	39.82	46.63	35.02	68.20	-33.18	peak
2	1481.553	3.23	25.67	39.94	47.40	36.36	74.00	-37.64	peak
3	4482.150	6.74	32.99	41.86	48.71	46.58	68.20	-21.62	peak
4	8738.852	10.20	36.69	39.34	44.95	52.50	68.20	-15.70	peak
5	10480.000	10.54	37.40	37.36	41.93	52.51	68.20	-15.69	peak
6	15720.000	14.04	40.88	40.47	38.30	52.75	74.00	-21.25	peak



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

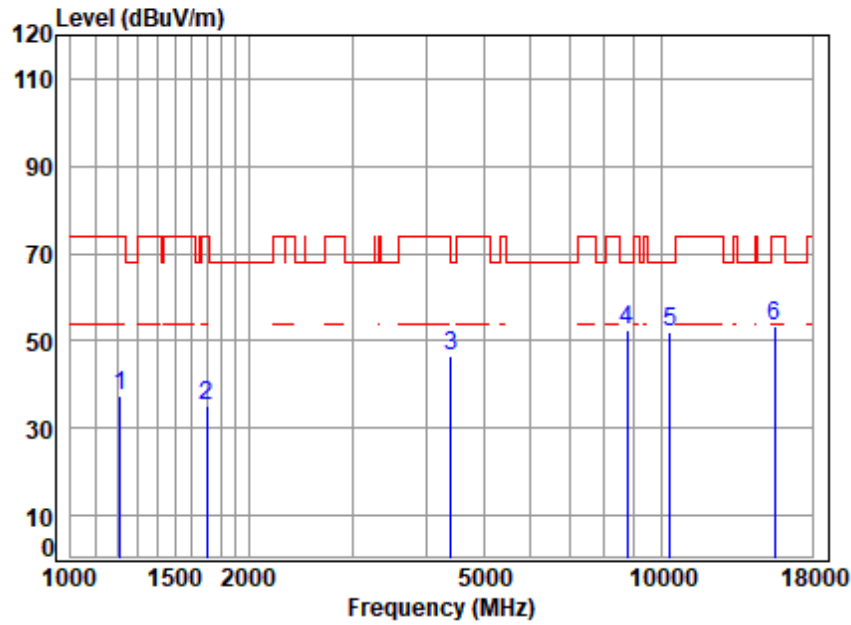


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5180 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1158.828	2.69	25.00	39.73	47.90	35.86	74.00	-38.14	peak
2	1477.276	3.23	25.66	39.94	46.32	35.27	74.00	-38.73	peak
3	4133.699	6.41	32.71	41.53	47.55	45.14	74.00	-28.86	peak
4	8713.630	10.19	36.66	39.38	44.69	52.16	68.20	-16.04	peak
5	10360.000	10.57	37.43	37.29	41.37	52.08	68.20	-16.12	peak
6	15540.000	13.97	40.73	40.38	39.14	53.46	74.00	-20.54	peak



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

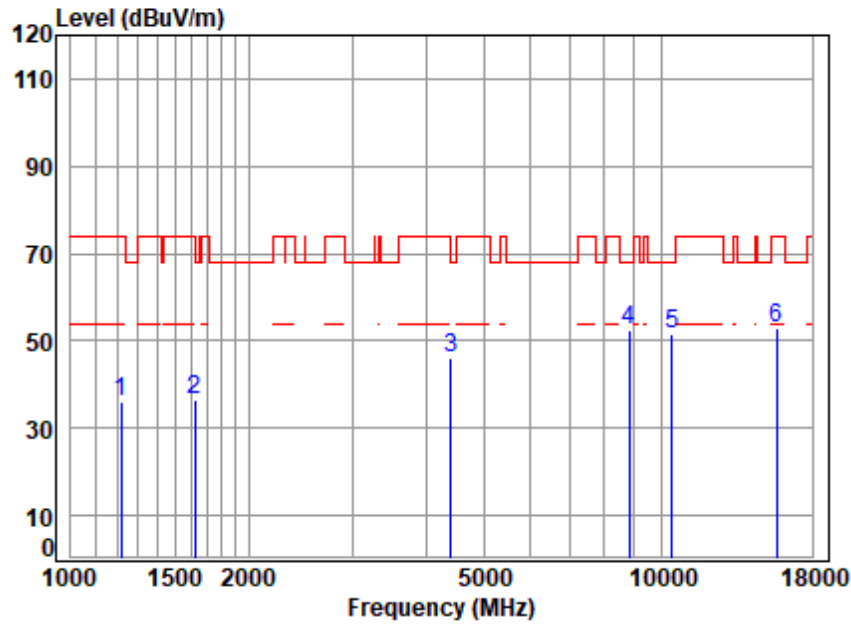


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5180 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1210.174	2.78	25.12	39.77	49.19	37.32	74.00	-36.68	peak
2	1697.129	3.43	26.69	40.06	45.22	35.28	74.00	-38.72	peak
3	4405.090	6.67	32.93	41.79	48.86	46.67	68.20	-21.53	peak
4	8764.146	10.21	36.72	39.29	44.71	52.35	68.20	-15.85	peak
5	10360.000	10.57	37.43	37.29	41.26	51.97	68.20	-16.23	peak
6	15540.000	13.97	40.73	40.38	38.88	53.20	74.00	-20.80	peak



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

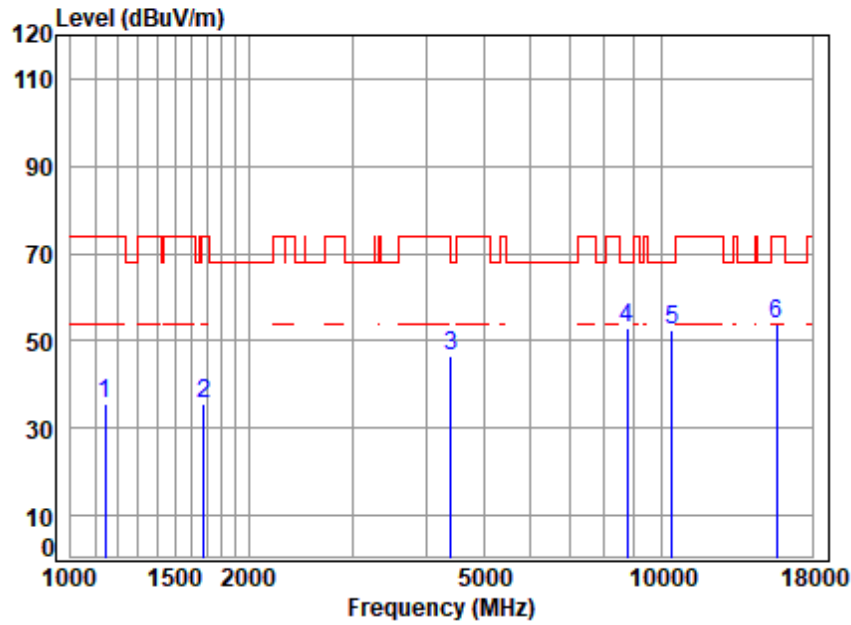


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5220 TX SE
Note : 5G WIFI 11N20

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 1217.190	2.80	25.13	39.77	47.79	35.95	74.00	-38.05 peak
2 1620.431	3.36	26.32	40.02	46.65	36.31	74.00	-37.69 peak
3 4405.090	6.67	32.93	41.79	48.25	46.06	68.20	-22.14 peak
4 8814.957	10.23	36.78	39.19	44.80	52.62	68.20	-15.58 peak
5 10440.000	10.55	37.41	37.34	40.79	51.41	68.20	-16.79 peak
6 15660.000	14.02	40.83	40.44	38.30	52.71	74.00	-21.29 peak



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

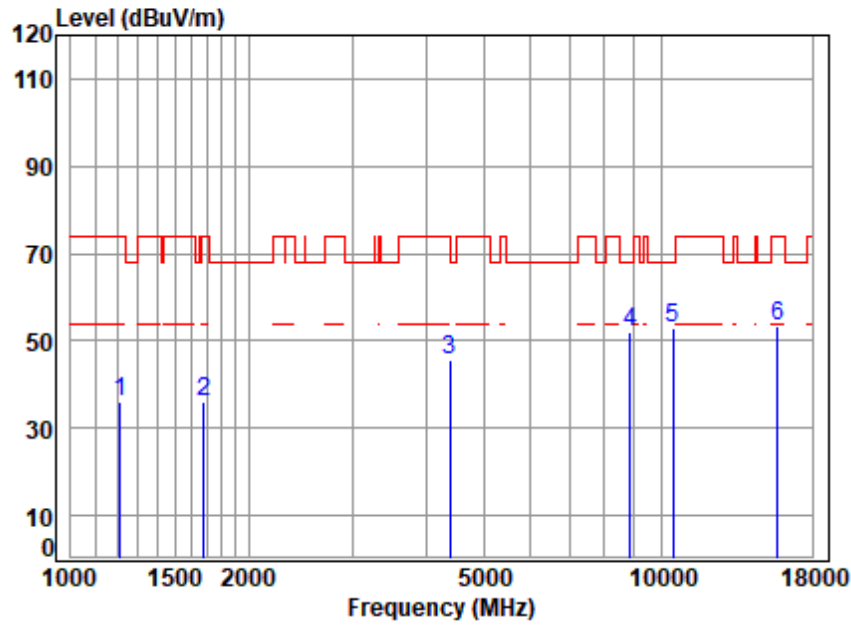


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5220 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1145.507	2.66	24.97	39.72	47.46	35.37	74.00	-38.63	peak
2	1682.477	3.42	26.62	40.05	45.73	35.72	74.00	-38.28	peak
3	4405.090	6.67	32.93	41.79	48.73	46.54	68.20	-21.66	peak
4	8764.146	10.21	36.72	39.29	45.33	52.97	68.20	-15.23	peak
5	10440.000	10.55	37.41	37.34	42.06	52.68	68.20	-15.52	peak
6	15660.000	14.02	40.83	40.44	39.33	53.74	74.00	-20.26	peak



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

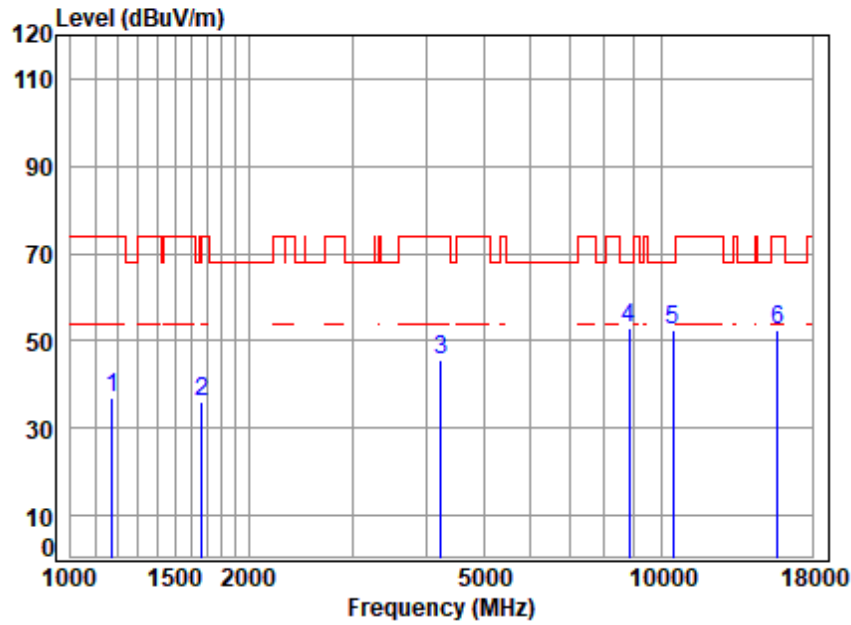


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5240 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1210.174	2.78	25.12	39.77	47.88	36.01	74.00	-37.99	peak
2	1682.477	3.42	26.62	40.05	46.26	36.25	74.00	-37.75	peak
3	4392.376	6.66	32.92	41.78	47.63	45.43	74.00	-28.57	peak
4	8840.473	10.24	36.81	39.14	44.26	52.17	68.20	-16.03	peak
5	10480.000	10.54	37.40	37.36	42.31	52.89	68.20	-15.31	peak
6	15720.000	14.04	40.88	40.47	38.71	53.16	74.00	-20.84	peak



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

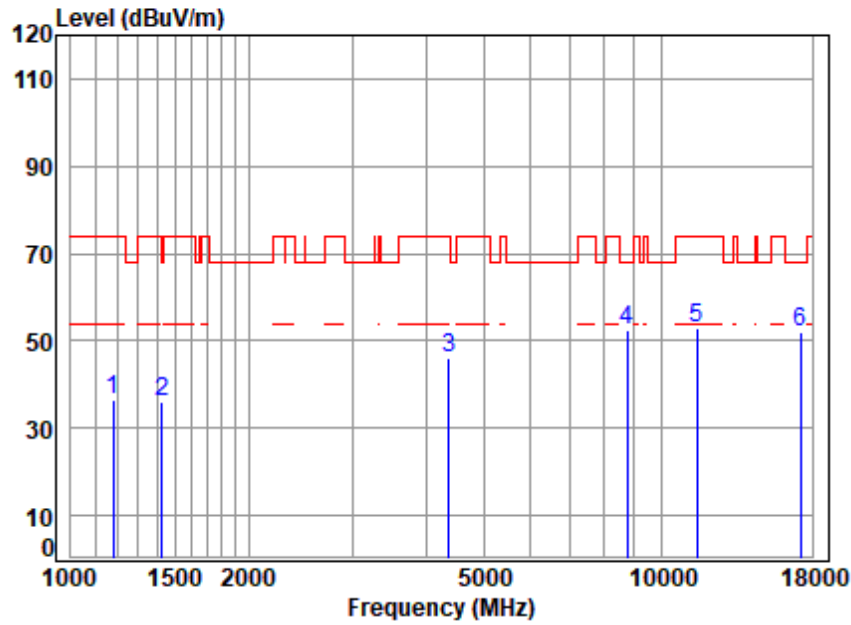


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5240 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1175.697	2.72	25.04	39.74	49.17	37.19	74.00	-36.81	peak
2	1667.951	3.40	26.55	40.04	46.00	35.91	74.00	-38.09	peak
3	4230.396	6.51	32.79	41.63	47.87	45.54	74.00	-28.46	peak
4	8814.957	10.23	36.78	39.19	45.20	53.02	68.20	-15.18	peak
5	10480.000	10.54	37.40	37.36	41.74	52.32	68.20	-15.88	peak
6	15720.000	14.04	40.88	40.47	38.04	52.49	74.00	-21.51	peak



Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

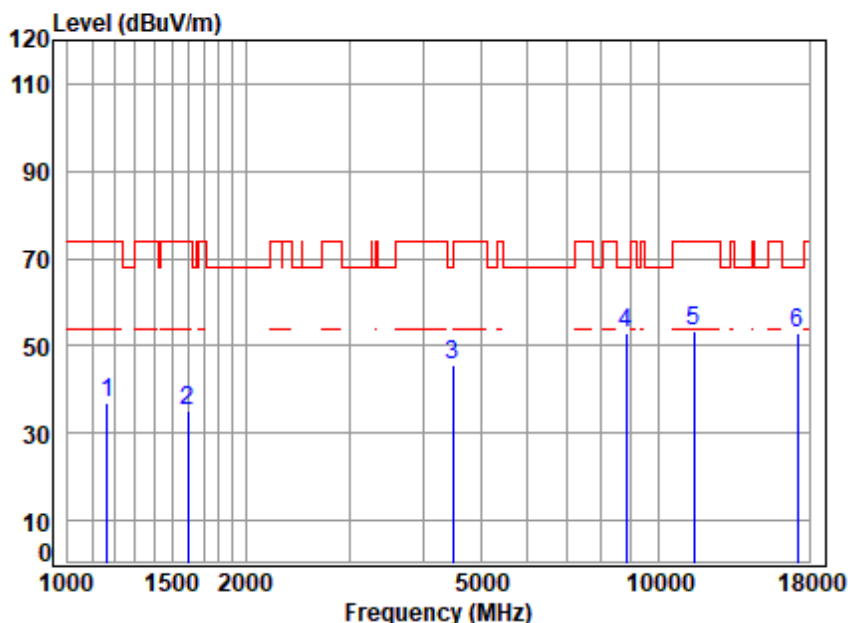


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5745 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1179.100	2.73	25.05	39.74	48.56	36.60	74.00	-37.40	peak
2	1426.916	3.15	25.56	39.91	47.20	36.00	74.00	-38.00	peak
3	4367.058	6.64	32.90	41.75	48.07	45.86	74.00	-28.14	peak
4	8764.146	10.21	36.72	39.29	44.97	52.61	68.20	-15.59	peak
5	11490.000	11.62	38.10	37.86	40.87	52.73	74.00	-21.27	peak
6	17235.000	14.09	42.64	40.28	35.77	52.22	68.20	-15.98	peak



Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5745 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1165.546	2.70	25.02	39.73	49.03	37.02	74.00	-36.98	peak
2	1597.181	3.35	26.20	40.01	45.64	35.18	74.00	-38.82	peak
3	4482.150	6.74	32.99	41.86	47.75	45.62	68.20	-22.58	peak
4	8814.957	10.23	36.78	39.19	44.99	52.81	68.20	-15.39	peak
5	11490.000	11.62	38.10	37.86	41.50	53.36	74.00	-20.64	peak
6	17235.000	14.09	42.64	40.28	36.41	52.86	68.20	-15.34	peak



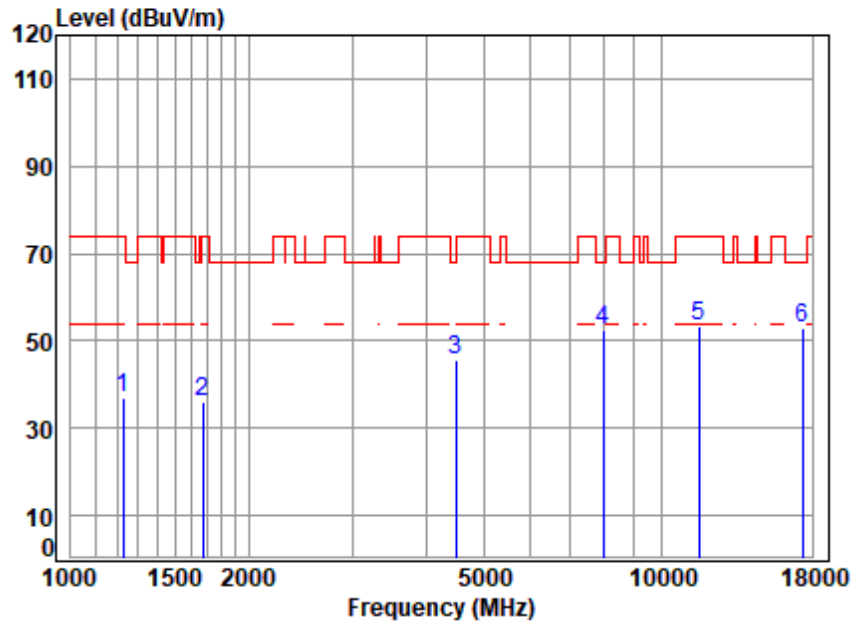
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle

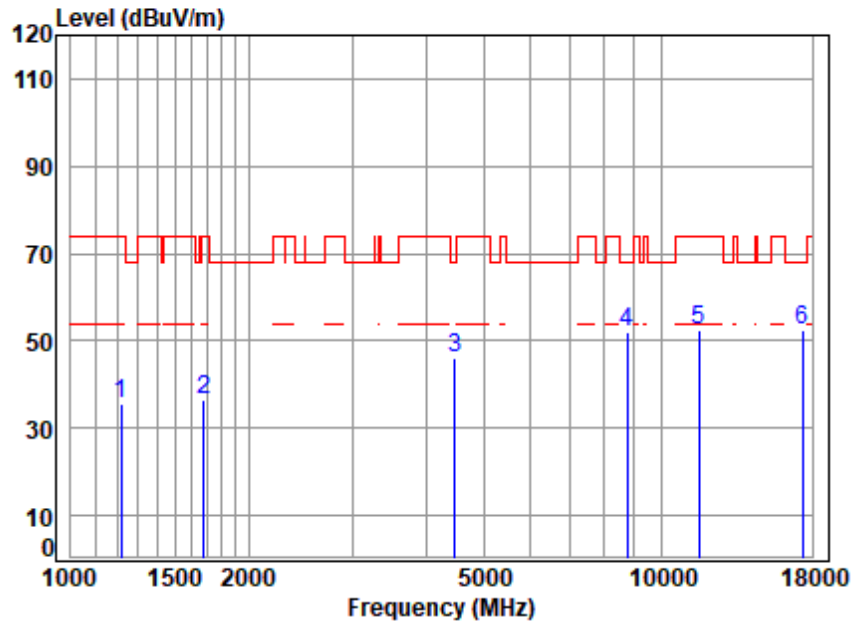


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5785 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1227.791	2.82	25.16	39.78	48.75	36.95	74.00	-37.05	peak
2	1672.779	3.41	26.57	40.05	46.09	36.02	74.00	-37.98	peak
3	4482.150	6.74	32.99	41.86	47.80	45.67	68.20	-22.53	peak
4	7989.893	9.41	36.10	40.81	47.60	52.30	68.20	-15.90	peak
5	11570.000	11.72	38.09	37.90	41.29	53.20	74.00	-20.80	peak
6	17355.000	14.06	42.76	40.25	36.44	53.01	68.20	-15.19	peak



Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle

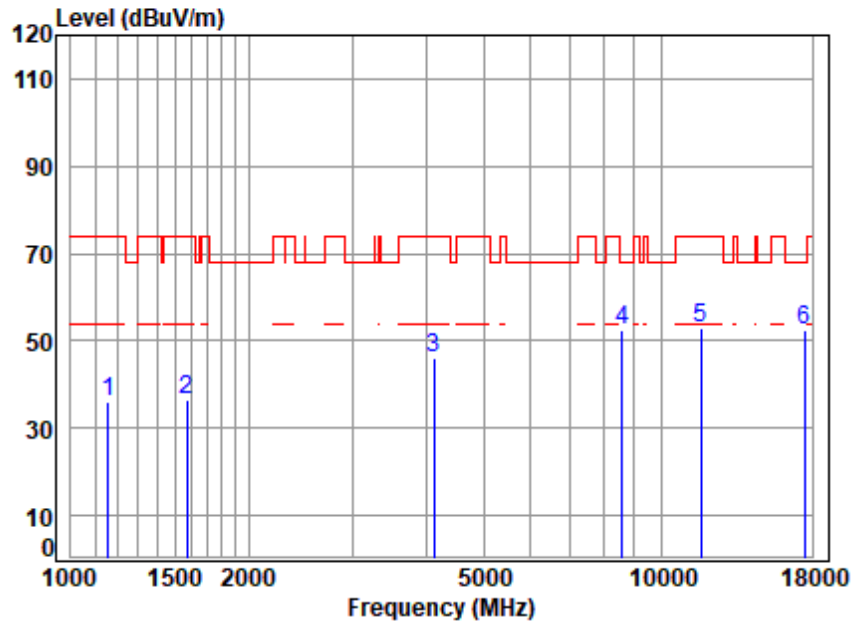


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5785 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1217.190	2.80	25.13	39.77	47.47	35.63	74.00	-38.37	peak
2	1677.621	3.41	26.59	40.05	46.44	36.39	74.00	-37.61	peak
3	4469.214	6.73	32.98	41.85	48.44	46.30	68.20	-21.90	peak
4	8738.852	10.20	36.69	39.34	44.37	51.92	68.20	-16.28	peak
5	11570.000	11.72	38.09	37.90	40.46	52.37	74.00	-21.63	peak
6	17355.000	14.06	42.76	40.25	36.11	52.68	68.20	-15.52	peak



Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High

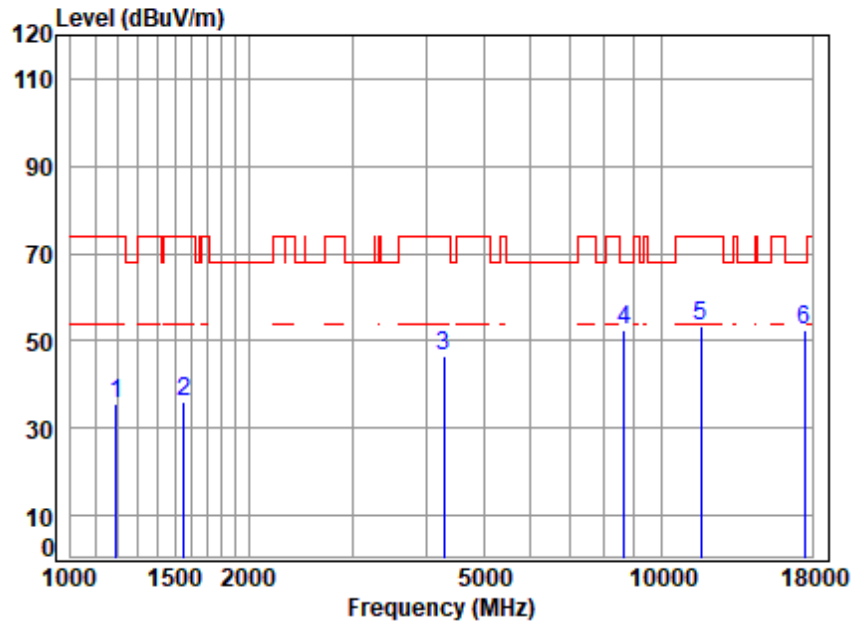


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5825 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1158.828	2.69	25.00	39.73	47.98	35.94	74.00	-38.06	peak
2	1574.265	3.33	26.09	39.99	46.98	36.41	74.00	-37.59	peak
3	4121.768	6.40	32.70	41.52	48.33	45.91	74.00	-28.09	peak
4	8588.607	10.14	36.51	39.62	45.60	52.63	68.20	-15.57	peak
5	11650.000	11.82	38.07	37.94	41.09	53.04	74.00	-20.96	peak
6	17475.000	14.02	42.88	40.23	35.72	52.39	68.20	-15.81	peak



Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High

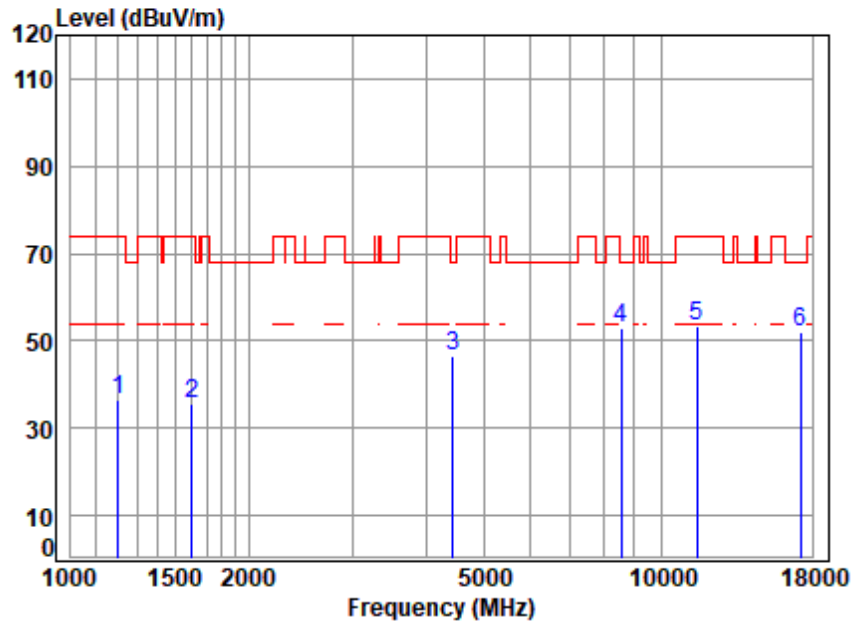


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5825 TX SE
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1192.811	2.75	25.08	39.75	47.42	35.50	74.00	-38.50	peak
2	1556.169	3.31	25.99	39.98	46.80	36.12	74.00	-37.88	peak
3	4279.589	6.56	32.83	41.67	48.66	46.38	74.00	-27.62	peak
4	8663.404	10.17	36.60	39.48	45.38	52.67	68.20	-15.53	peak
5	11650.000	11.82	38.07	37.94	41.52	53.47	74.00	-20.53	peak
6	17475.000	14.02	42.88	40.23	35.86	52.53	68.20	-15.67	peak



Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

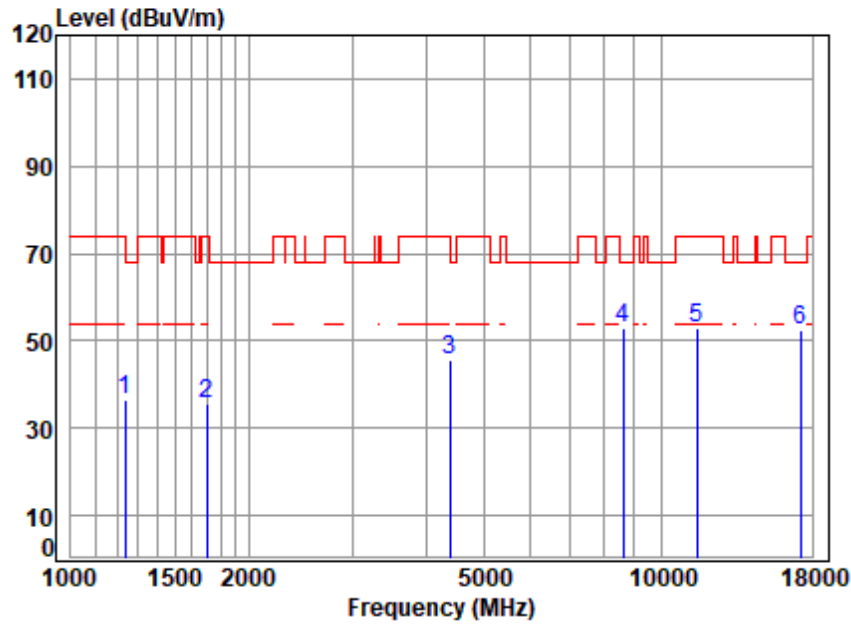


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5745 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1203.199	2.77	25.10	39.76	48.58	36.69	74.00	-37.31	peak
2	1606.441	3.35	26.25	40.01	45.89	35.48	74.00	-38.52	peak
3	4430.628	6.70	32.95	41.81	48.74	46.58	68.20	-21.62	peak
4	8563.818	10.13	36.48	39.67	46.05	52.99	68.20	-15.21	peak
5	11490.000	11.62	38.10	37.86	41.52	53.38	74.00	-20.62	peak
6	17235.000	14.09	42.64	40.28	35.68	52.13	68.20	-16.07	peak



Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

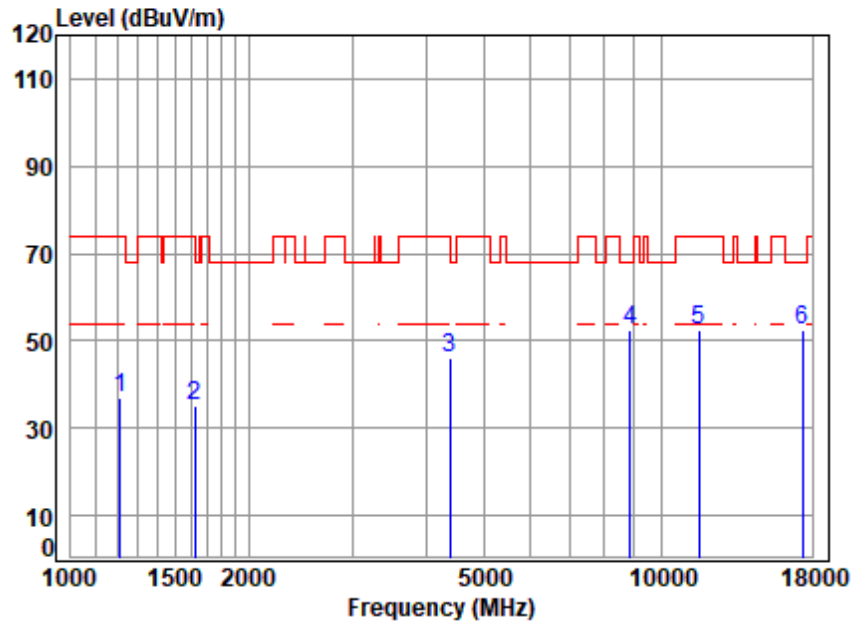


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5745 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1234.909	2.83	25.17	39.78	48.21	36.43	74.00	-37.57	peak
2	1697.129	3.43	26.69	40.06	45.36	35.42	74.00	-38.58	peak
3	4392.376	6.66	32.92	41.78	47.66	45.46	74.00	-28.54	peak
4	8613.468	10.15	36.54	39.57	45.76	52.88	68.20	-15.32	peak
5	11490.000	11.62	38.10	37.86	41.15	53.01	74.00	-20.99	peak
6	17235.000	14.09	42.64	40.28	36.08	52.53	68.20	-15.67	peak



Test Mode: 04; Polarity: Horizontal; Modulation: 802.11n; Bandwidth: 20MHz; Channel: middle

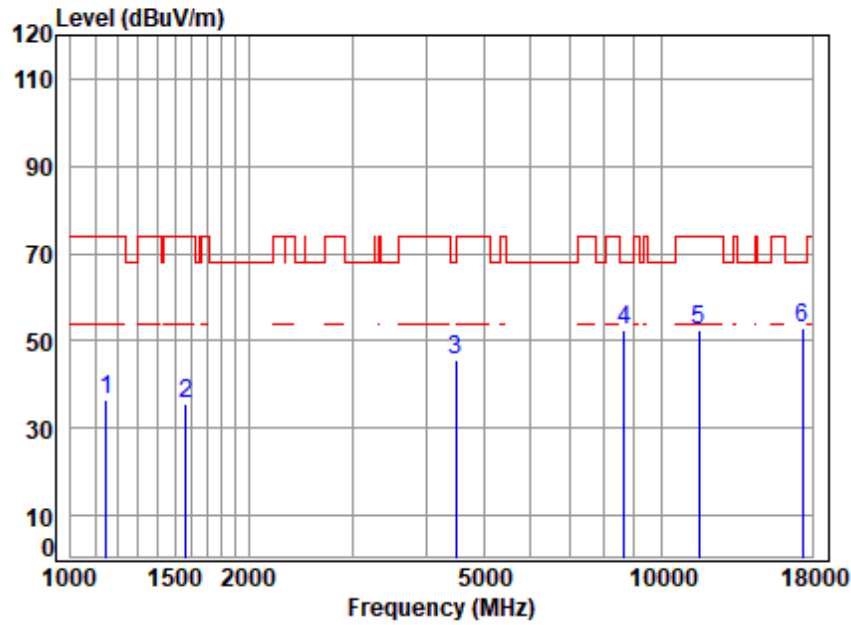


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5785 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1210.174	2.78	25.12	39.77	48.83	36.96	74.00	-37.04	peak
2	1620.431	3.36	26.32	40.02	45.59	35.25	74.00	-38.75	peak
3	4392.376	6.66	32.92	41.78	48.18	45.98	74.00	-28.02	peak
4	8840.473	10.24	36.81	39.14	44.58	52.49	68.20	-15.71	peak
5	11570.000	11.72	38.09	37.90	40.62	52.53	74.00	-21.47	peak
6	17355.000	14.06	42.76	40.25	35.99	52.56	68.20	-15.64	peak



Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle

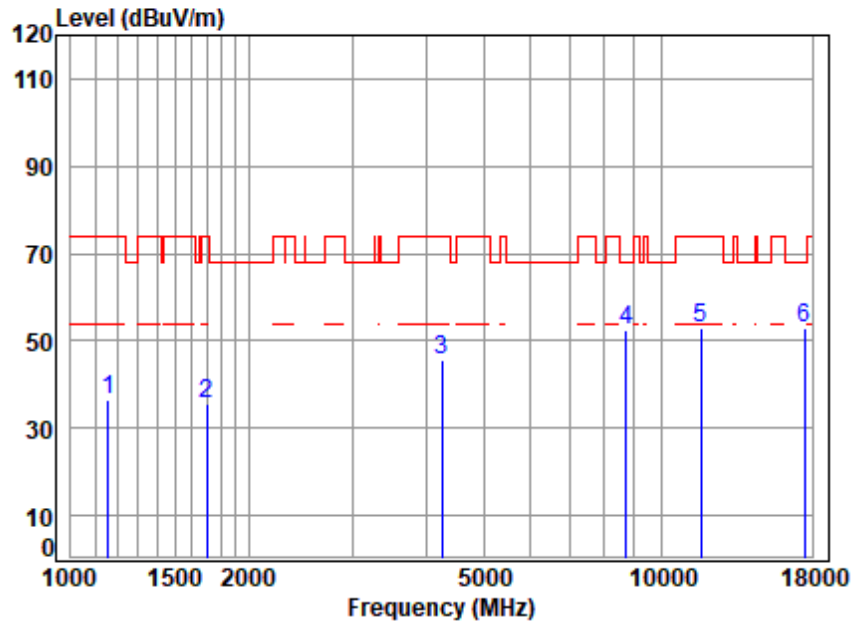


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5785 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1148.823	2.67	24.98	39.72	48.44	36.37	74.00	-37.63	peak
2	1569.721	3.32	26.06	39.99	46.02	35.41	74.00	-38.59	peak
3	4482.150	6.74	32.99	41.86	47.93	45.80	68.20	-22.40	peak
4	8663.404	10.17	36.60	39.48	45.27	52.56	68.20	-15.64	peak
5	11570.000	11.72	38.09	37.90	40.35	52.26	74.00	-21.74	peak
6	17355.000	14.06	42.76	40.25	36.30	52.87	68.20	-15.33	peak



Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

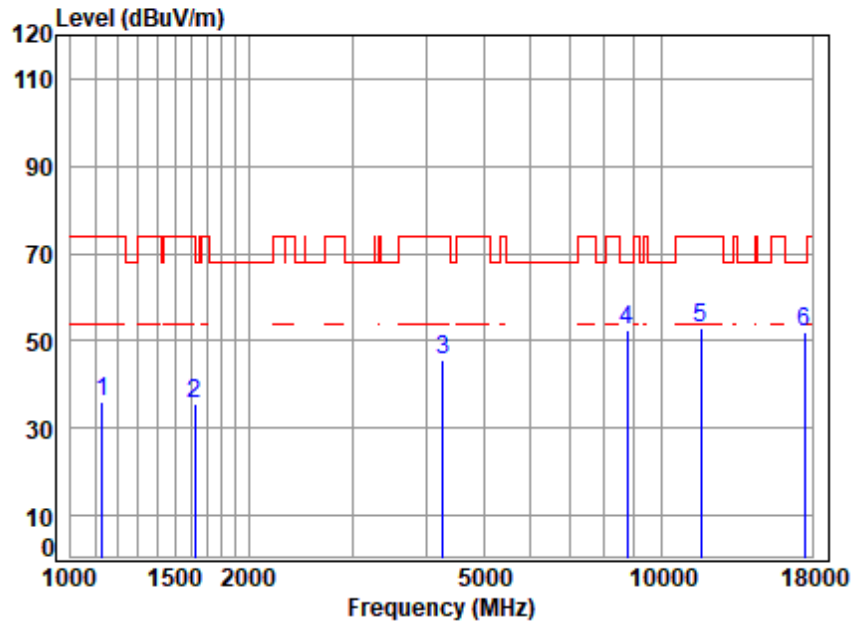


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5825 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1158.828	2.69	25.00	39.73	48.34	36.30	74.00	-37.70	peak
2	1697.129	3.43	26.69	40.06	45.46	35.52	74.00	-38.48	peak
3	4242.641	6.52	32.80	41.64	47.94	45.62	74.00	-28.38	peak
4	8713.630	10.19	36.66	39.38	44.95	52.42	68.20	-15.78	peak
5	11650.000	11.82	38.07	37.94	41.03	52.98	74.00	-21.02	peak
6	17475.000	14.02	42.88	40.23	36.09	52.76	68.20	-15.44	peak



Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5825 TX SE
Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1129.072	2.63	24.93	39.71	48.14	35.99	74.00	-38.01	peak
2	1625.121	3.37	26.34	40.02	46.11	35.80	74.00	-38.20	peak
3	4267.237	6.54	32.82	41.66	48.07	45.77	74.00	-28.23	peak
4	8764.146	10.21	36.72	39.29	44.99	52.63	68.20	-15.57	peak
5	11650.000	11.82	38.07	37.94	41.06	53.01	74.00	-20.99	peak
6	17475.000	14.02	42.88	40.23	35.33	52.00	68.20	-16.20	peak



7.9 Radiated Emissions which fall in the restricted bands

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

Test Method: KDB 789033 D02 II G

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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

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

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C

Humidity: 50.1 % RH

Atmospheric Pressure: 1010 mbar



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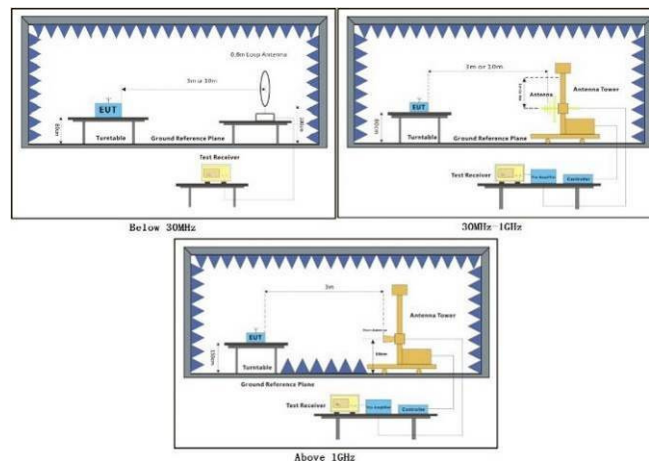
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7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20);. Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types.All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.

7.9.3 Test Setup Diagram

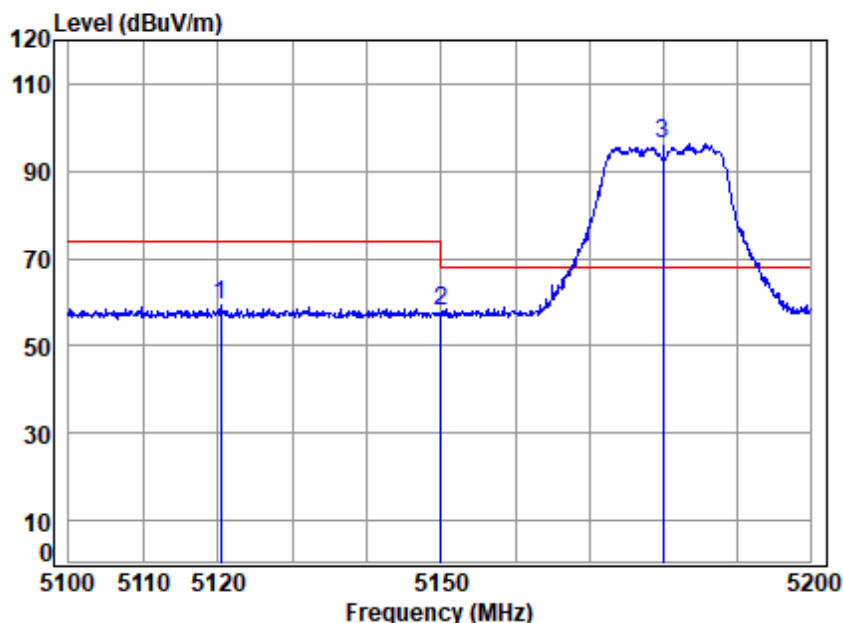


7.9.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
 - b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
 - c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
 - e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
 - f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
 - g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
 - h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
 - i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
 - j. Repeat above procedures until all frequencies measured was complete.
- Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- k. Pretest the EUT at antenna 1, antenna 2 and MIMO mode and found the MIMO mode which is worst case for 802.11a/n mode; So, Only the worst test data is recorded in the report.



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

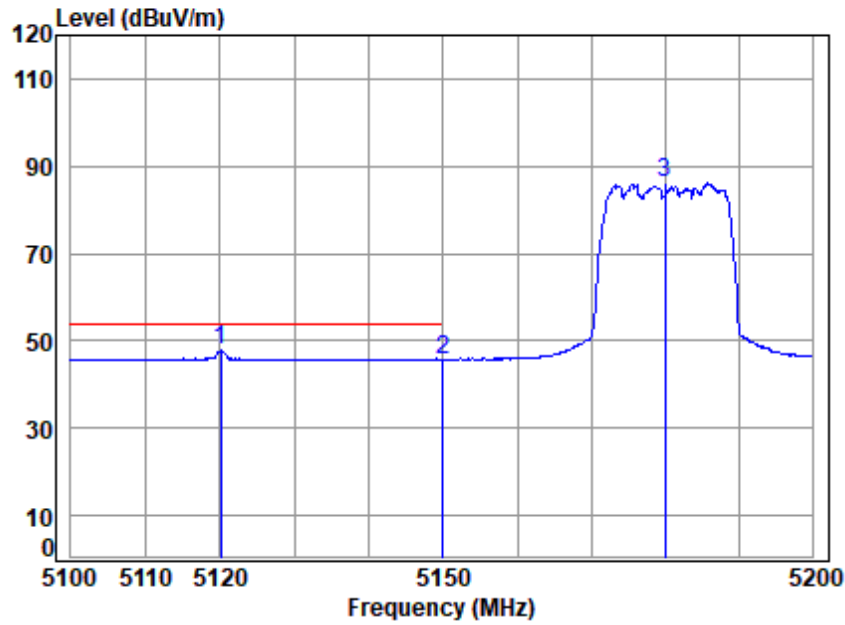


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5180 Band edge
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dB	
1	5120.342	7.52	34.05	42.31	59.84	59.10	74.00	-14.90 peak
2	5149.980	7.57	34.06	42.32	58.42	57.73	74.00	-16.27 peak
3	5180.000	7.63	34.07	42.32	96.80	96.18	68.20	27.98 peak



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

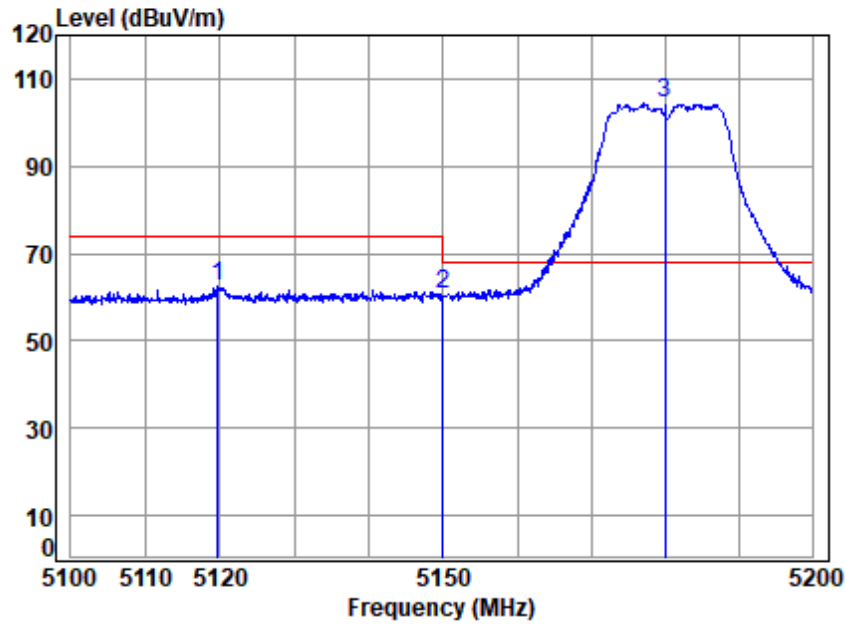


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5180 Band edge
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5120.143	7.52	34.05	42.31	48.44	47.70	54.00	-6.30 Average
2	5149.980	7.57	34.06	42.32	46.41	45.72	54.00	-8.28 Average
3	5180.000	7.63	34.07	42.32	86.76	86.14	-----	----- Average



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

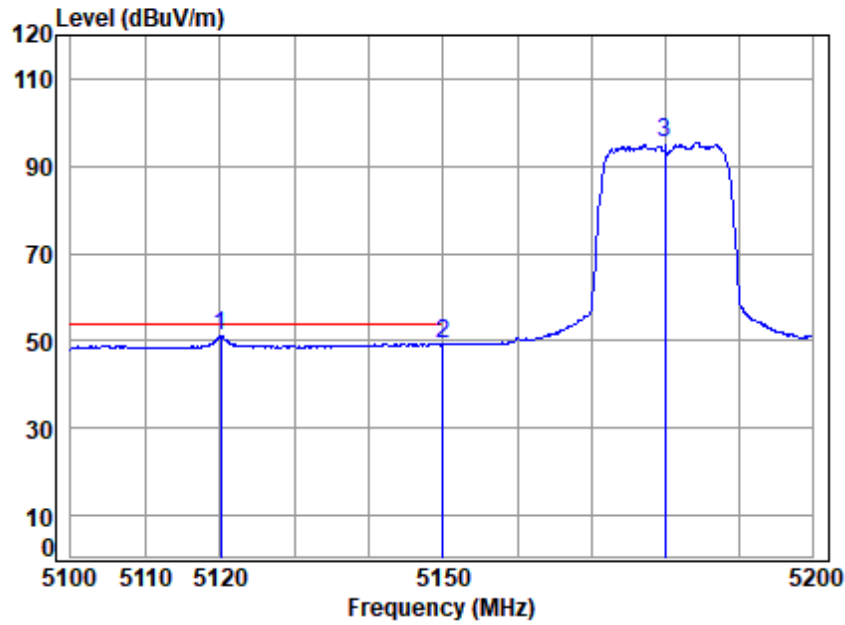


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5180 Band edge
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5119.746	7.52	34.05	42.31	63.25	62.51	74.00	-11.49 Peak
2	5149.980	7.57	34.06	42.32	61.30	60.61	74.00	-13.39 Peak
3	5180.000	7.63	34.07	42.32	105.09	104.47	68.20	36.27 Peak



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

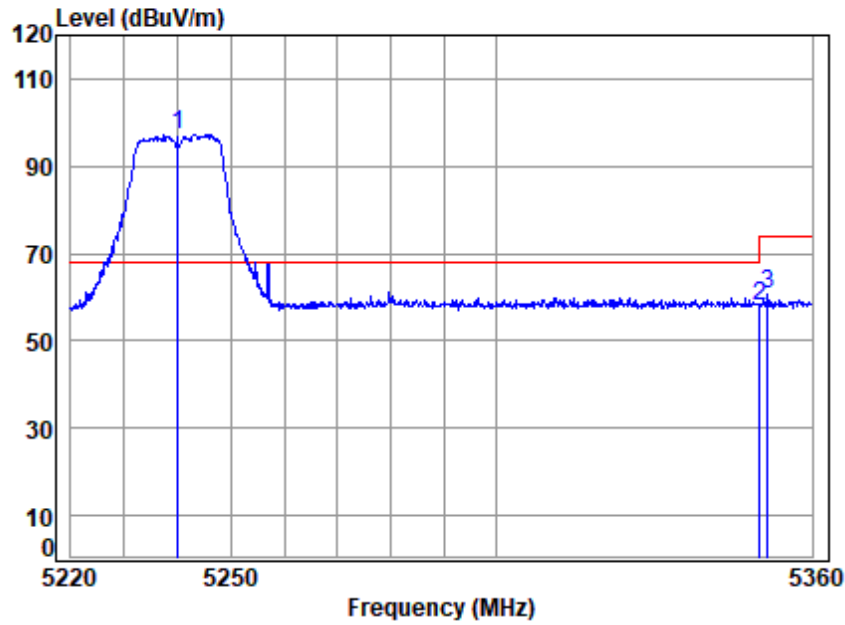


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5180 Band edge
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5120.143	7.52	34.05	42.31	52.06	51.32	54.00	-2.68 Average
2	5149.980	7.57	34.06	42.32	50.00	49.31	54.00	-4.69 Average
3	5180.000	7.63	34.07	42.32	95.96	95.34	-----	----- Average



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



Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5240 Band edge
Note : 5G WIFI 11A

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 . 5240.000	7.73	34.10	42.33	97.85	97.35	68.20	29.15	peak
2 5350.020	7.92	34.14	42.34	58.39	58.11	74.00	-15.89	peak
3 5351.495	7.93	34.14	42.34	60.79	60.52	74.00	-13.48	peak

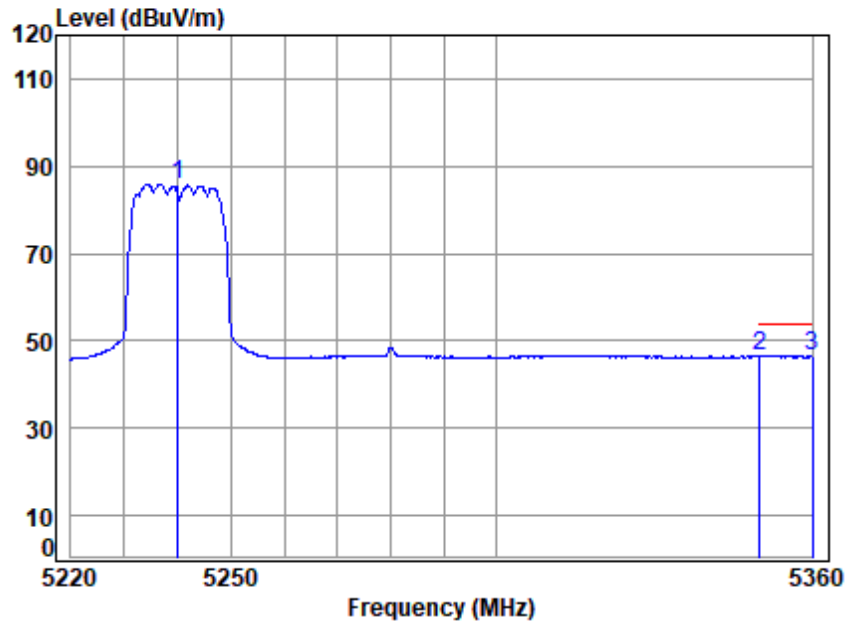


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Test Mode: 03; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High

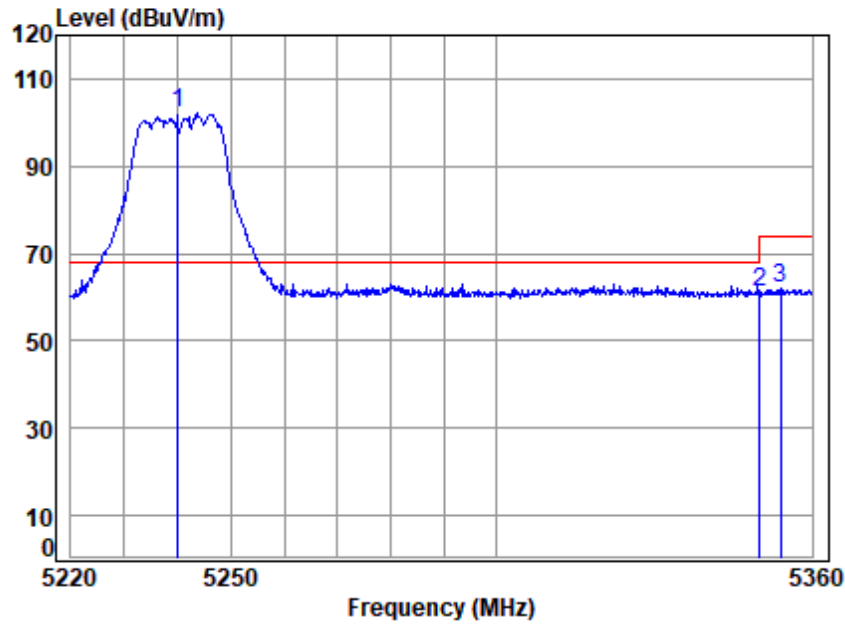


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5240 Band edge
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5240.000	7.73	34.10	42.33	86.47	85.97	-----	Average
2	5350.020	7.92	34.14	42.34	46.70	46.42	54.00	-7.58 Average
3	5360.000	7.94	34.15	42.34	46.75	46.50	54.00	-7.50 Average



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



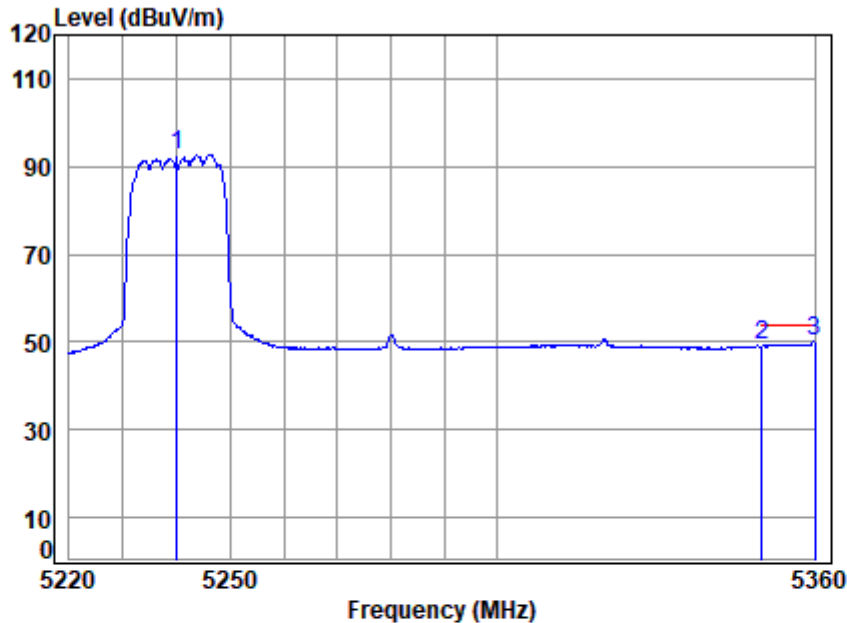
Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5240 Band edge
Note : 5G WIFI 11A

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 . 5240.000	7.73	34.10	42.33	102.71	102.21	68.20	34.01	Peak
2 5350.020	7.92	34.14	42.34	61.24	60.96	74.00	-13.04	Peak
3 5354.045	7.93	34.14	42.34	62.33	62.06	74.00	-11.94	Peak



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

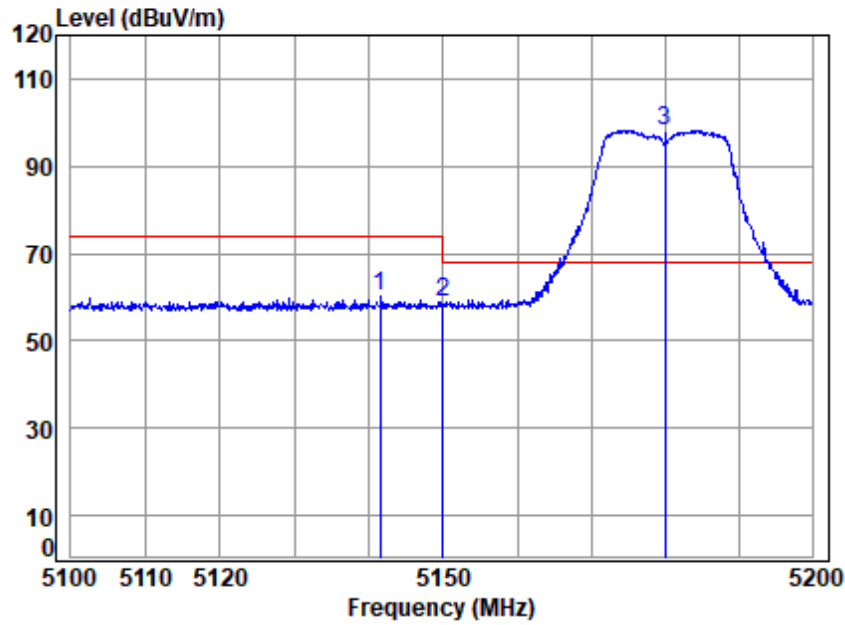


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5240 Band edge
Note : 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5240.000	7.73	34.10	42.33	93.20	92.70	-----	-----	Average
2	5350.020	7.92	34.14	42.34	49.66	49.38	54.00	-4.62	Average
3	5360.000	7.94	34.15	42.34	50.45	50.20	54.00	-3.80	Average



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

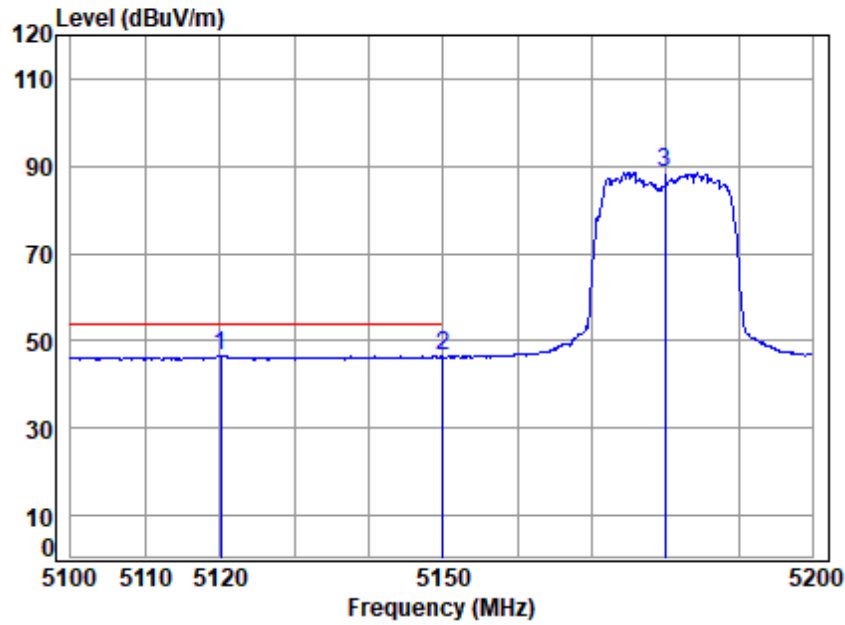


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5180 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5141.564	7.56	34.06	42.32	61.09	60.39	74.00	-13.61	peak
2	5149.980	7.57	34.06	42.32	59.74	59.05	74.00	-14.95	peak
3	5180.000	7.63	34.07	42.32	98.94	98.32	68.20	30.12	peak



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

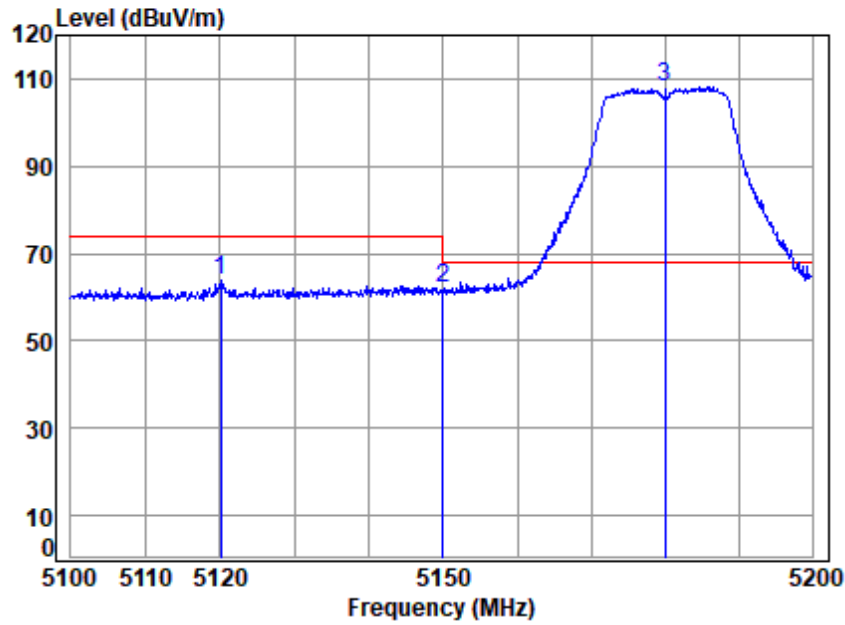


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5180 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5120.143	7.52	34.05	42.31	47.45	46.71	54.00	-7.29	Average
2	5149.980	7.57	34.06	42.32	47.03	46.34	54.00	-7.66	Average
3	5180.000	7.63	34.07	42.32	89.24	88.62	-----	-----	Average



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

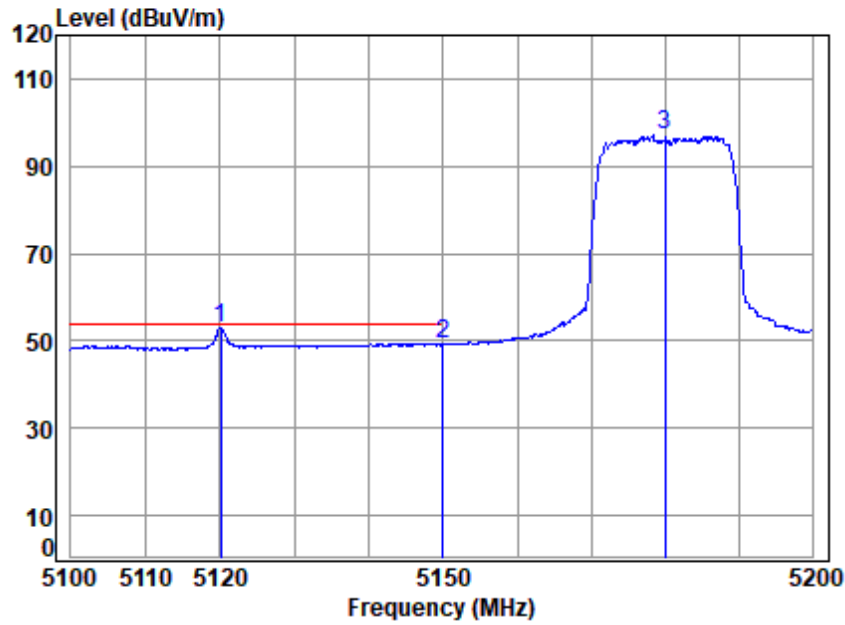


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5180 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5120.044	7.52	34.05	42.31	64.40	63.66	74.00	-10.34	Peak
2	5149.980	7.57	34.06	42.32	62.65	61.96	74.00	-12.04	Peak
3	5180.000	7.63	34.07	42.32	108.92	108.30	68.20	40.10	Peak



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

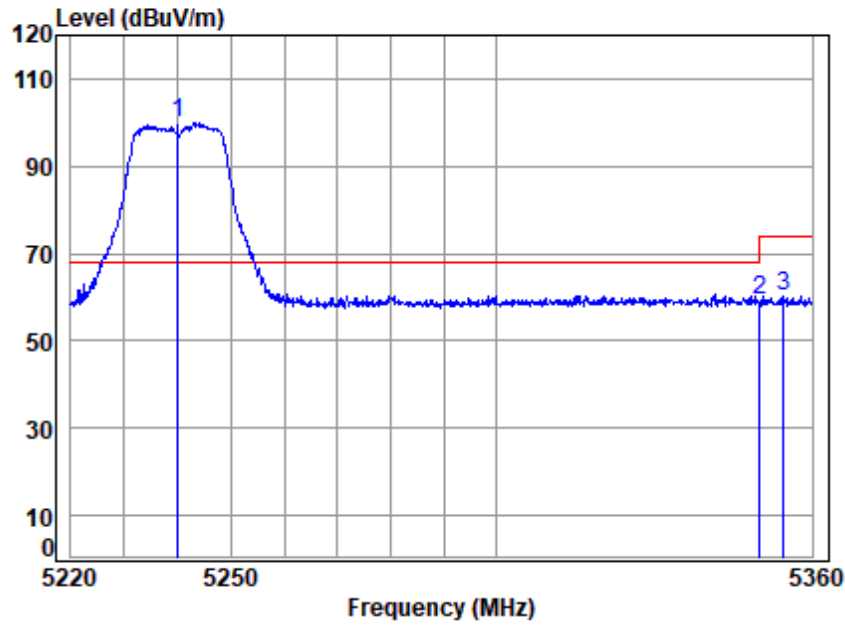


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5180 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5120.044	7.52	34.05	42.31	53.74	53.00	54.00	-1.00 Average
2	5149.980	7.57	34.06	42.32	50.01	49.32	54.00	-4.68 Average
3	5180.000	7.63	34.07	42.32	97.64	97.02	-----	----- Average



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

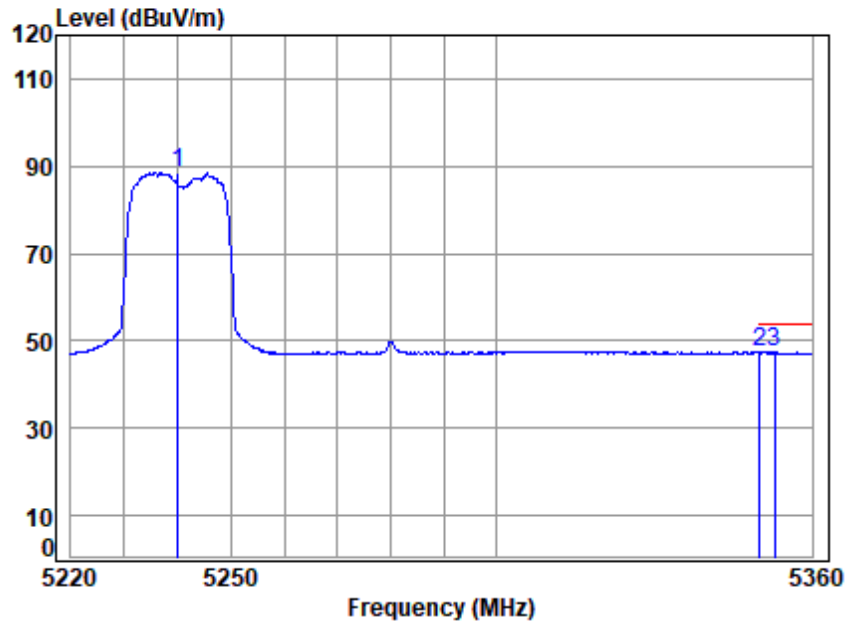


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5240 Band edge
: 5G WIFI 11N20

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 . 5240.000	7.73	34.10	42.33	100.50	100.00	68.20	31.80	peak
2 5350.020	7.92	34.14	42.34	59.58	59.30	74.00	-14.70	peak
3 5354.470	7.93	34.14	42.34	60.68	60.41	74.00	-13.59	peak



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



Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5240 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5240.000	7.73	34.10	42.33	88.94	88.44	-----	Average
2	5350.020	7.92	34.14	42.34	47.57	47.29	54.00	-6.71 Average
3	5352.912	7.93	34.14	42.34	47.73	47.46	54.00	-6.54 Average

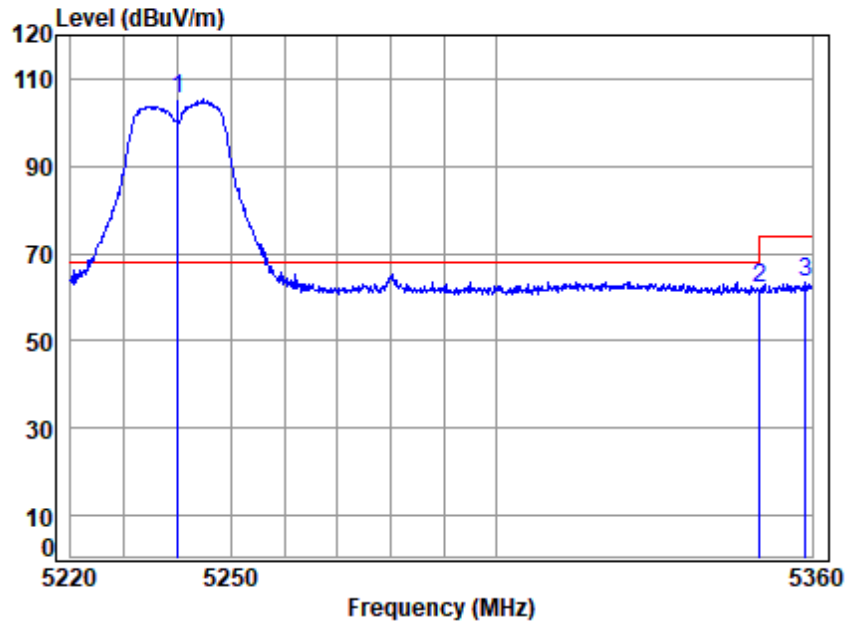


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Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5240 Band edge
: 5G WIFI 11N20

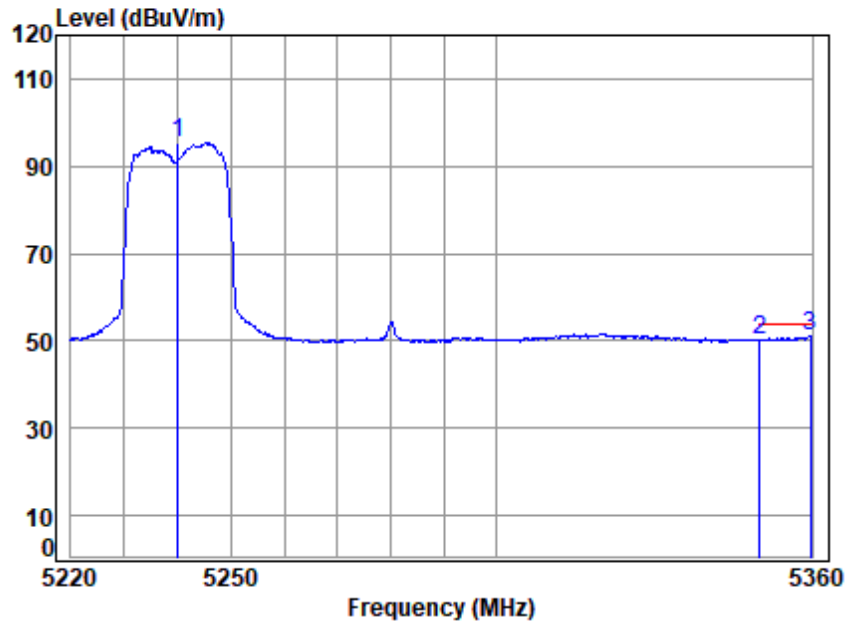
	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 . 5240.000	7.73	34.10	42.33	105.72	105.22	68.20	37.02	Peak
2 5350.020	7.92	34.14	42.34	62.55	62.27	74.00	-11.73	Peak
3 5358.724	7.94	34.15	42.34	63.45	63.20	74.00	-10.80	Peak



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

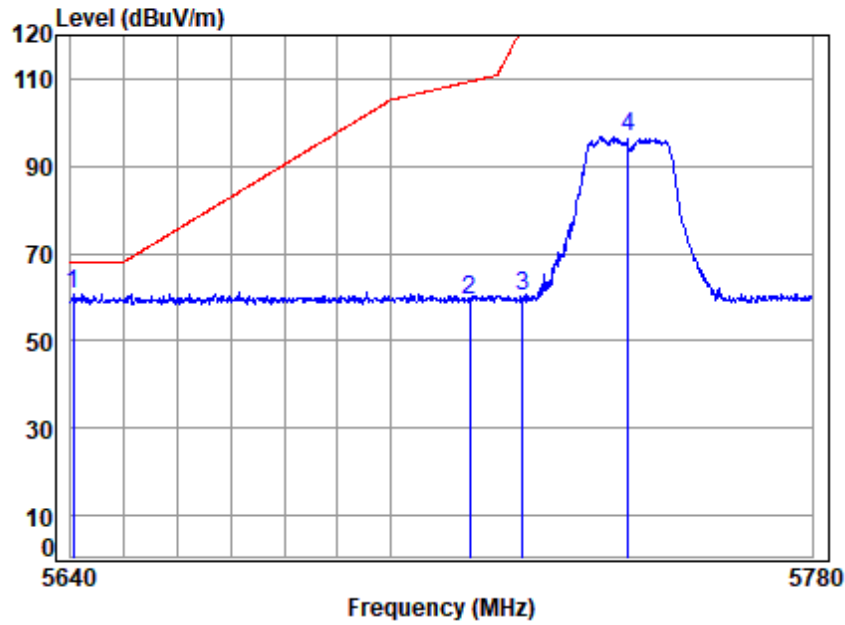


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5240 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5240.000	7.73	34.10	42.33	96.04	95.54	-----	----- Average
2	5350.020	7.92	34.14	42.34	50.40	50.12	54.00	-3.88 Average
3	5359.716	7.94	34.15	42.34	51.38	51.13	54.00	-2.87 Average



Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

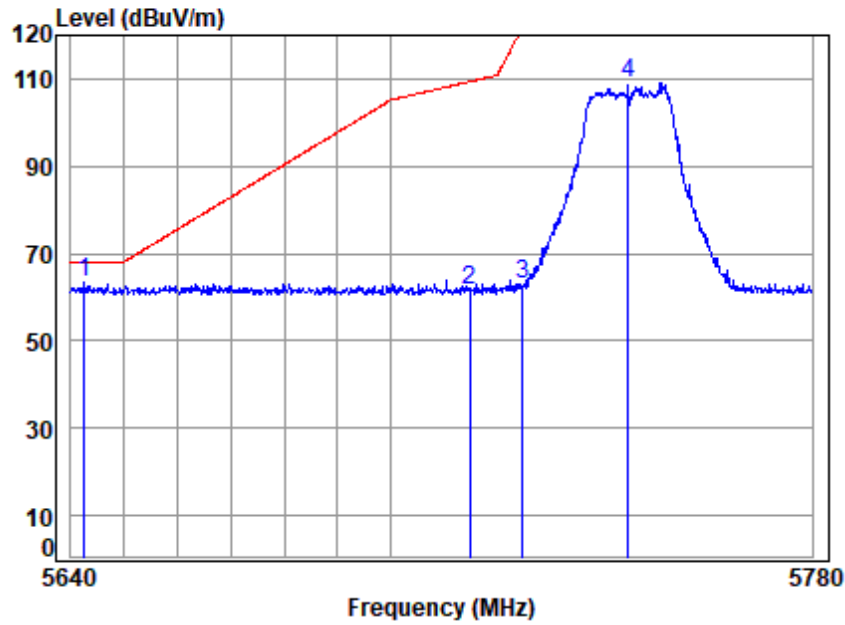


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5745 Band edge
: 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5640.553	8.20	34.32	42.37	60.58	60.73	68.20	-7.47 peak
2	5715.000	8.22	34.38	42.37	59.24	59.47	109.40	-49.93 peak
3	5725.000	8.22	34.38	42.37	60.04	60.27	122.20	-61.93 peak
4	5745.000	8.22	34.40	42.38	96.35	96.59	-----	----- peak



Test Mode: 04; Polarity: Vertical; Modulation: 802.11a; Bandwidth: 20MHz; Channel: Low

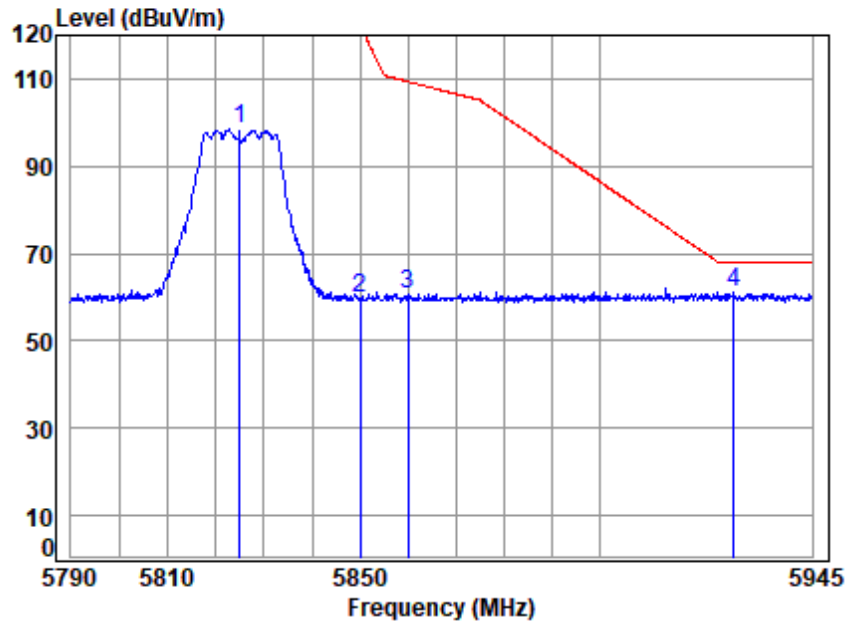


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5745 Band edge
: 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5642.490	8.20	34.32	42.37	63.22	63.37	68.20	-4.83 peak
2	5715.000	8.22	34.38	42.37	61.24	61.47	109.40	-47.93 peak
3	5725.000	8.22	34.38	42.37	62.91	63.14	122.20	-59.06 peak
4	5745.000	8.22	34.40	42.38	108.67	108.91	-----	----- peak



Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High

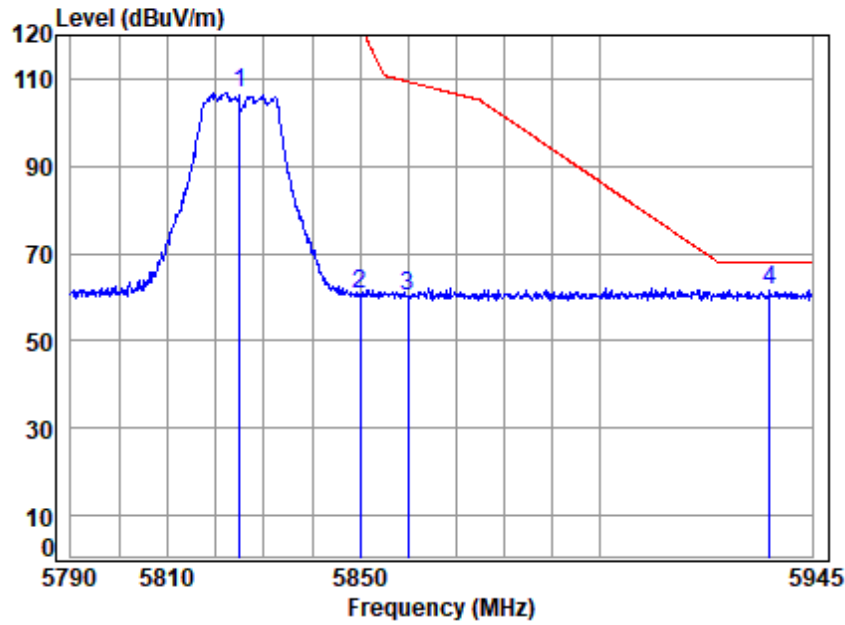


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5825 Band edge
: 5G WIFI 11A

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5825.000	8.23	34.46	42.38	98.39	98.70	-----	-----	peak
2	5850.000	8.24	34.48	42.39	59.42	59.75	122.20	-62.45	peak
3	5860.000	8.24	34.49	42.39	60.20	60.54	109.40	-48.86	peak
4	5928.532	8.25	34.54	42.39	60.56	60.96	68.20	-7.24	peak



Test Mode: 04; Polarity: Vertical; Modulation: 802.11a; Bandwidth: 20MHz; Channel: High

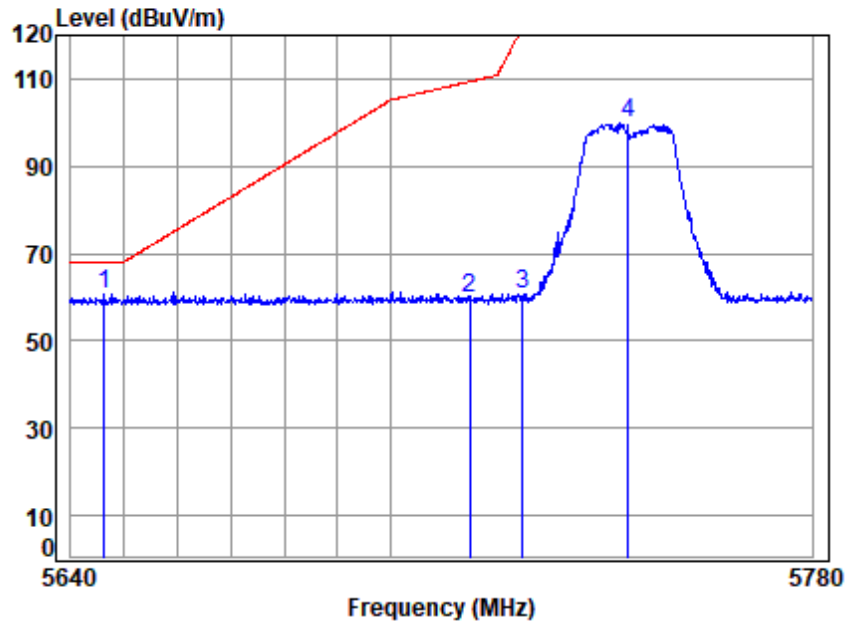


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5825 Band edge
: 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5825.000	8.23	34.46	42.38	106.52	106.83	-----	----- peak
2	5850.000	8.24	34.48	42.39	60.35	60.68	122.20	-61.52 peak
3	5860.000	8.24	34.49	42.39	60.08	60.42	109.40	-48.98 peak
4	5936.055	8.25	34.55	42.39	61.18	61.59	68.20	-6.61 peak



Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

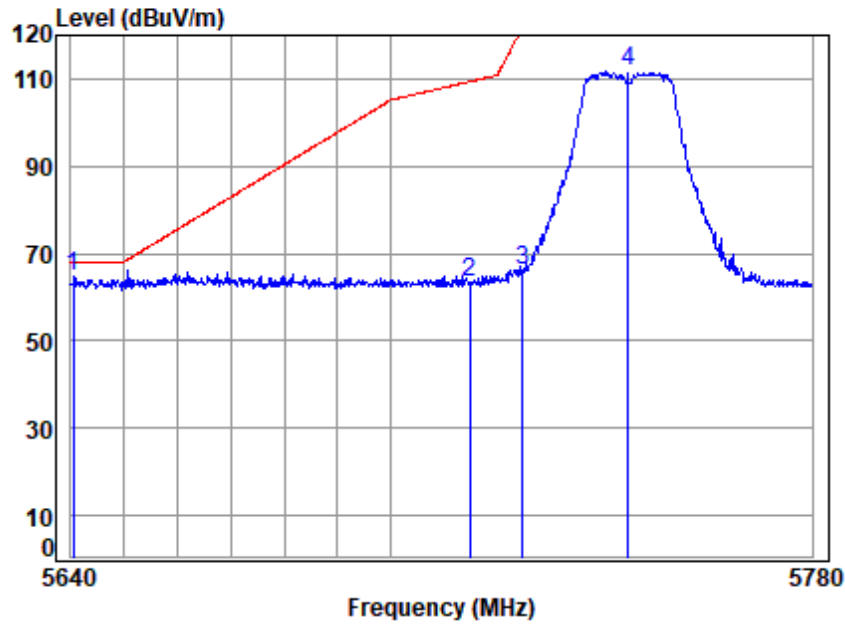


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5745 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5646.227	8.20	34.32	42.37	60.52	60.67	68.20	-7.53 peak
2	5715.000	8.22	34.38	42.37	59.74	59.97	109.40	-49.43 peak
3	5725.000	8.22	34.38	42.37	60.36	60.59	122.20	-61.61 peak
4	5745.000	8.22	34.40	42.38	99.46	99.70	-----	----- peak



Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

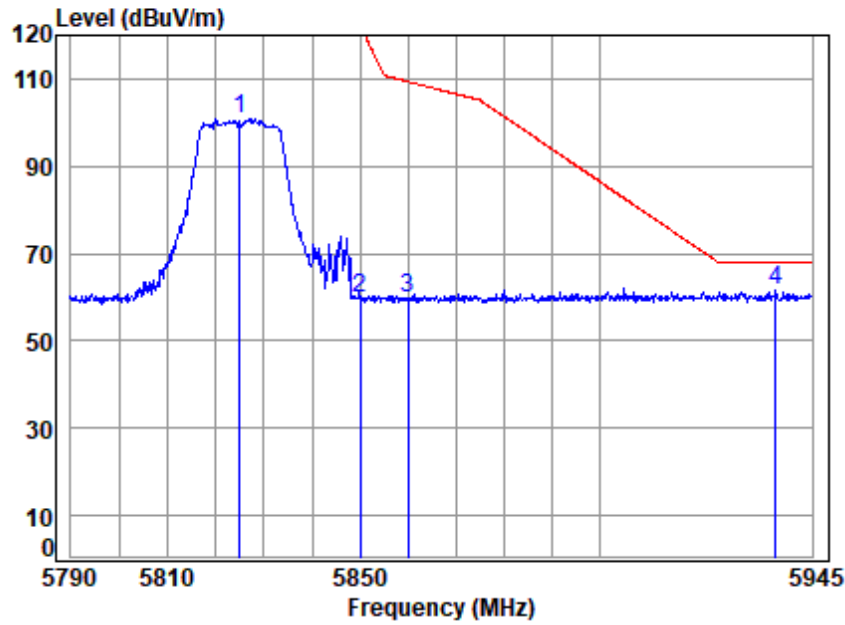


Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5745 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5640.553	8.20	34.32	42.37	64.47	64.62	68.20	-3.58 peak
2	5715.000	8.22	34.38	42.37	63.28	63.51	109.40	-45.89 peak
3	5725.000	8.22	34.38	42.37	65.98	66.21	122.20	-55.99 peak
4	5745.000	8.22	34.40	42.38	111.33	111.57	-----	----- peak



Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

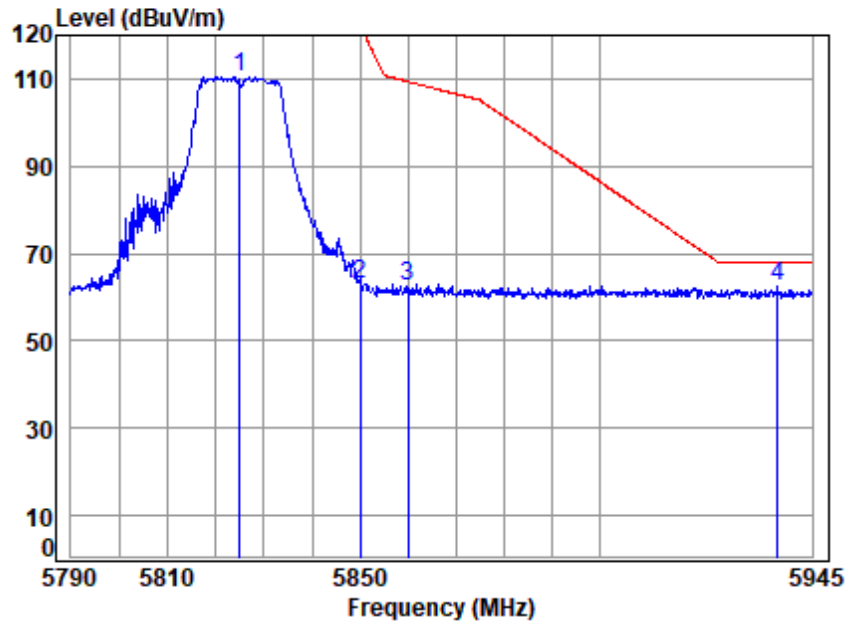


Site : chamber
Condition: 3m HORIZONTAL
Job No : 21258AT
Mode : 5825 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5825.000	8.23	34.46	42.38	100.47	100.78	-----	-----	peak
2	5850.000	8.24	34.48	42.39	59.25	59.58	122.20	-62.62	peak
3	5860.000	8.24	34.49	42.39	59.63	59.97	109.40	-49.43	peak
4	5937.309	8.25	34.55	42.39	60.98	61.39	68.20	-6.81	peak



Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 21258AT
Mode : 5825 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5825.000	8.23	34.46	42.38	110.06	110.37	-----	----- peak
2	5850.000	8.24	34.48	42.39	62.74	63.07	122.20	-59.13 peak
3	5860.000	8.24	34.49	42.39	61.95	62.29	109.40	-47.11 peak
4	5937.623	8.25	34.55	42.39	62.02	62.43	68.20	-5.77 peak



7.10 Frequency Stability

Test Requirement 47 CFR Part 15, Subpart C 15.407 (g)

Test Method: ANSI C63.10 (2013) Section 6.8

7.10.1 E.U.T. Operation

Operating Environment:

Temperature: 25.4 °C

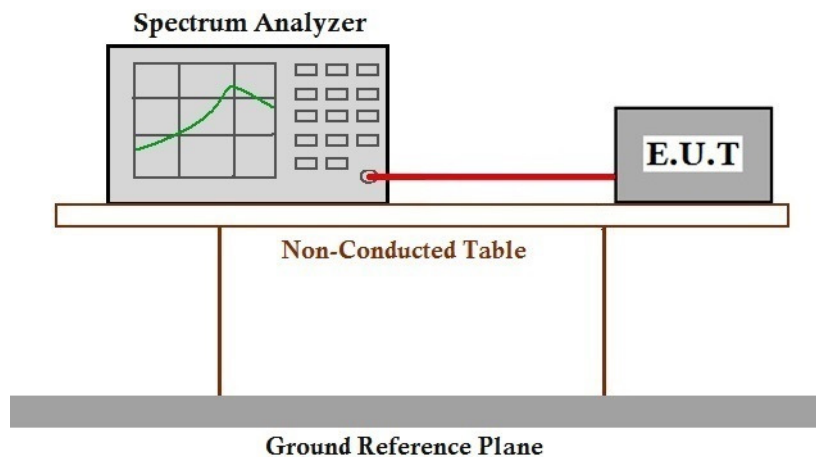
Humidity: 48.8 % RH

Atmospheric Pressure: 1010 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20);. Only the data of worst case is recorded in the report.
Final test	04	TX mode (U-NII-3)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); Only the data of worst case is recorded in the report.

7.10.3 Test Setup Diagram



7.10.4 Measurement Procedure and Data

Please Refer to Appendix for Details



8 Test Setup Photo

Refer to Setup Photos

9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for SZCR2105021258AT



10 Appendix

1. Duty Cycle

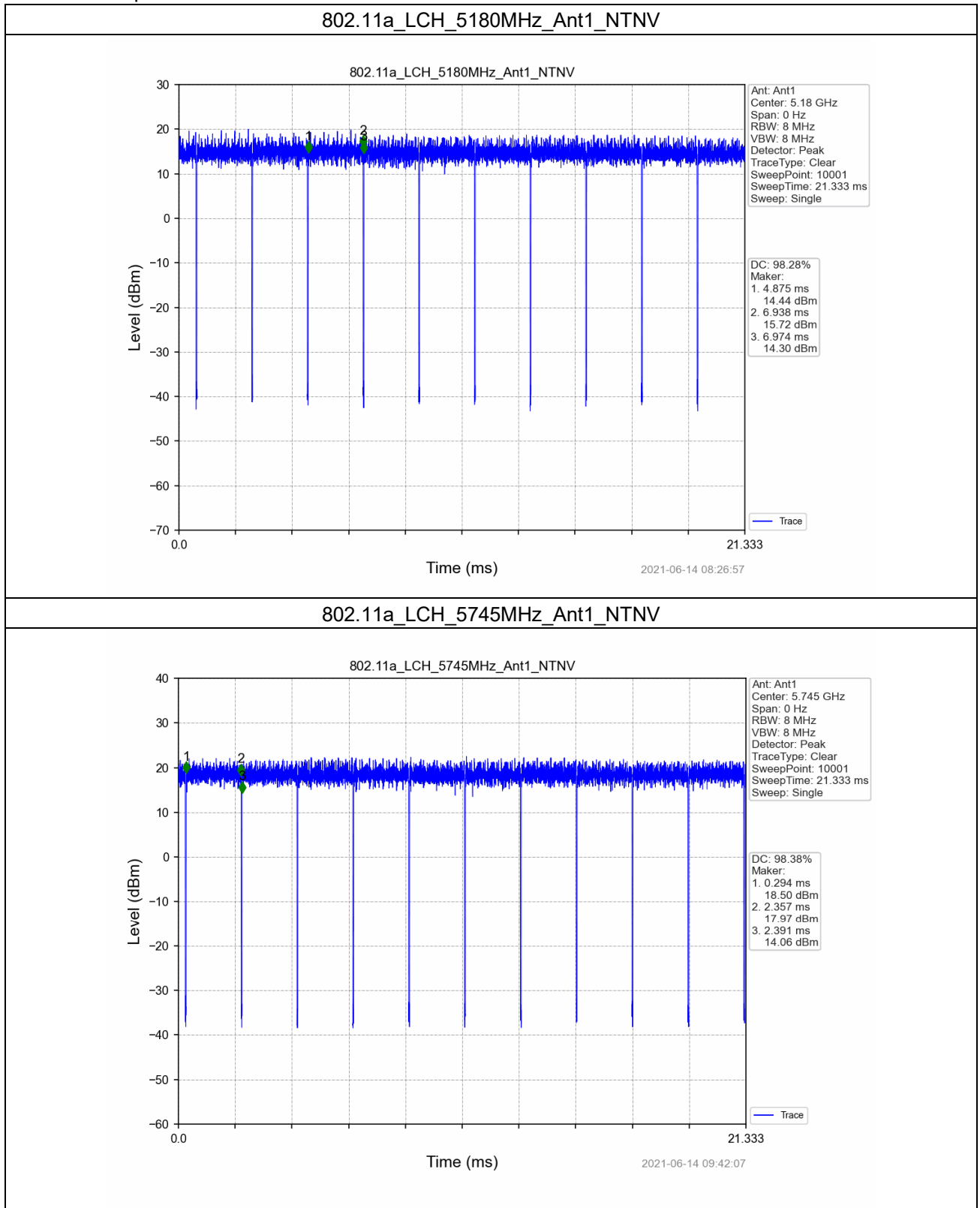
1.1.1 Test Result

Pretest the EUT at antenna 1, antenna 2 and MIMO mode and found the antenna 1 of MIMO mode which is worst case for 802.11a/n mode; So, Only the worst test data is recorded in the report.

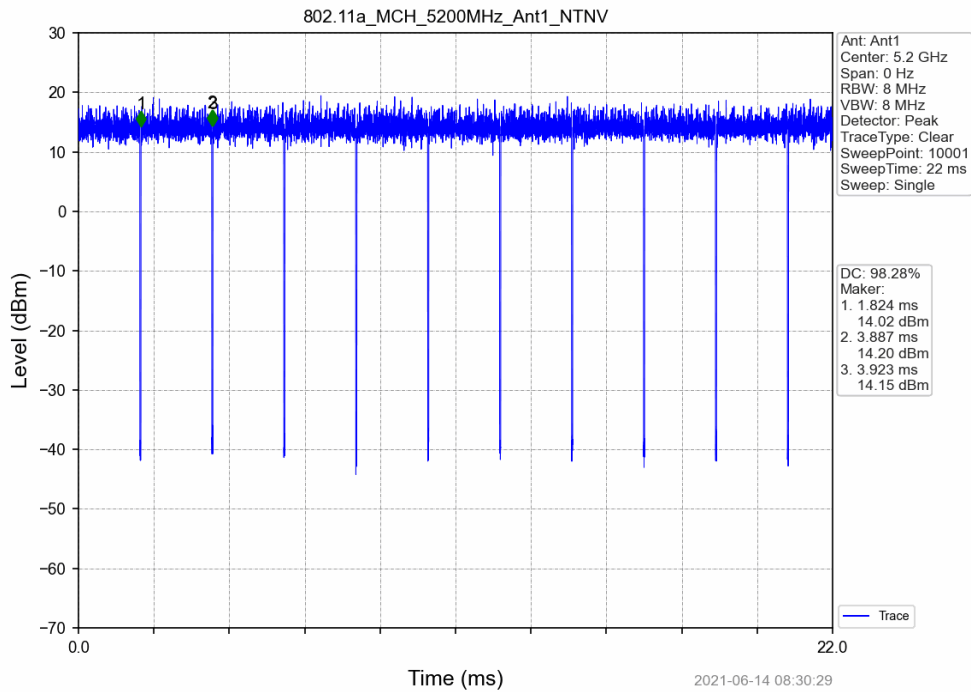
Mode	TX Type	Frequency (MHz)	RU	RU Pos	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	MIMO	5180	/	/	2.06	2.10	98.28	0.08	0.10
		5745	/	/	2.06	2.10	98.38	0.07	0.00
		5200	/	/	2.06	2.10	98.28	0.08	0.00
		5785	/	/	2.06	2.10	98.24	0.08	0.10
		5240	/	/	2.06	2.10	98.28	0.08	0.10
		5825	/	/	2.06	2.10	98.28	0.08	0.10
802.11n (HT20)	MIMO	5180	/	/	0.51	0.54	93.37	0.30	0.09
		5745	/	/	0.27	0.31	88.27	0.54	0.10
		5200	/	/	0.51	0.54	93.54	0.29	0.09
		5785	/	/	0.27	0.31	88.60	0.53	0.09
		5240	/	/	0.51	0.54	93.54	0.29	0.09
		5825	/	/	0.27	0.31	88.60	0.53	0.10

Note1: Only for Report Use

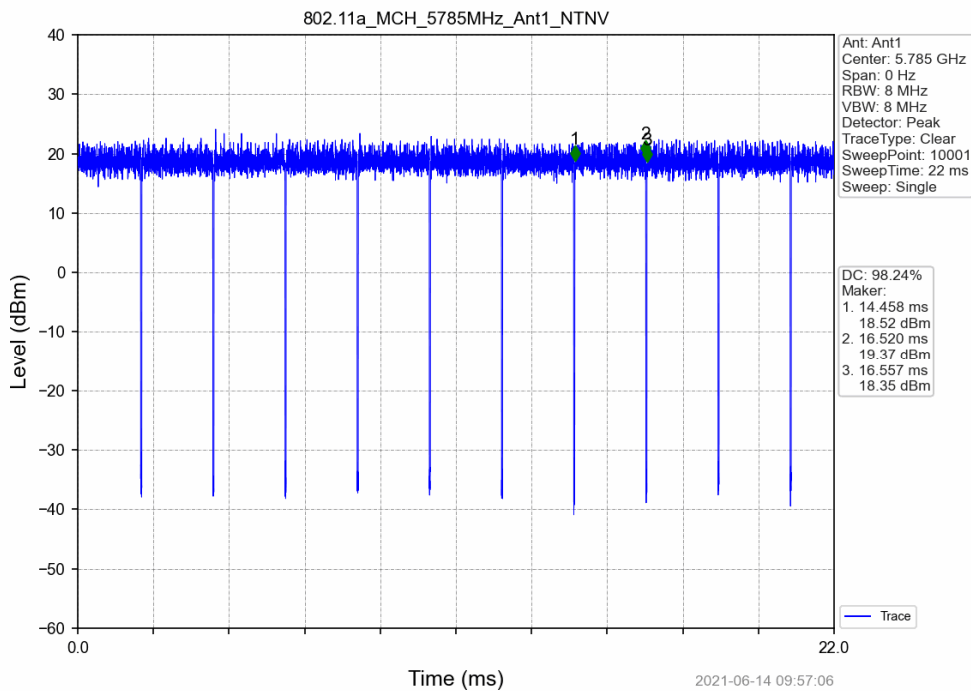
1.1.2 Test Graph



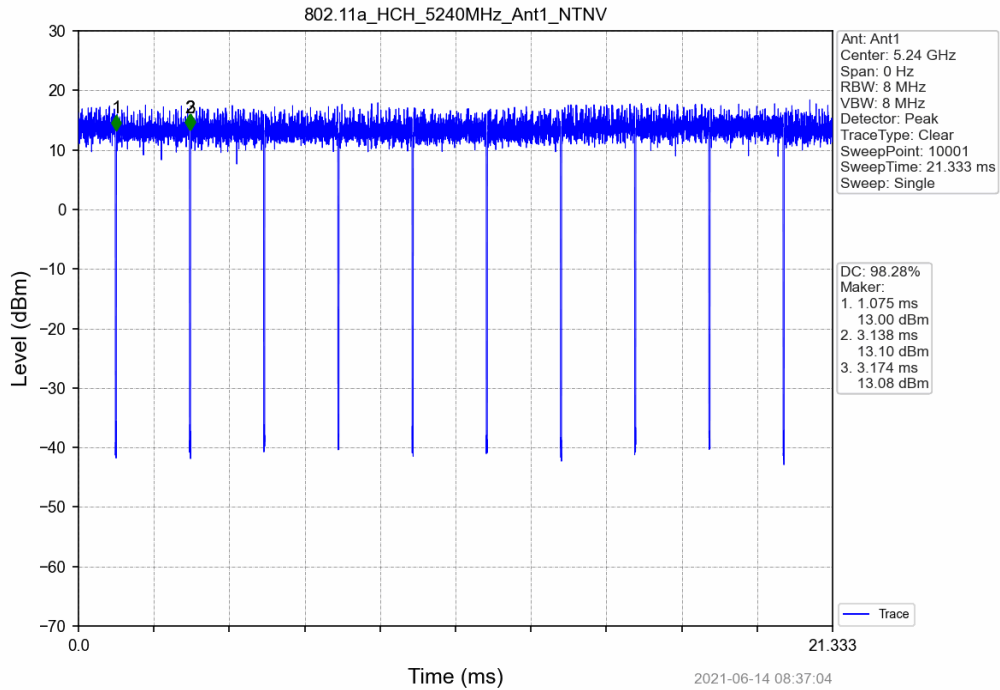
802.11a_MCH_5200MHz_Ant1_NTNV



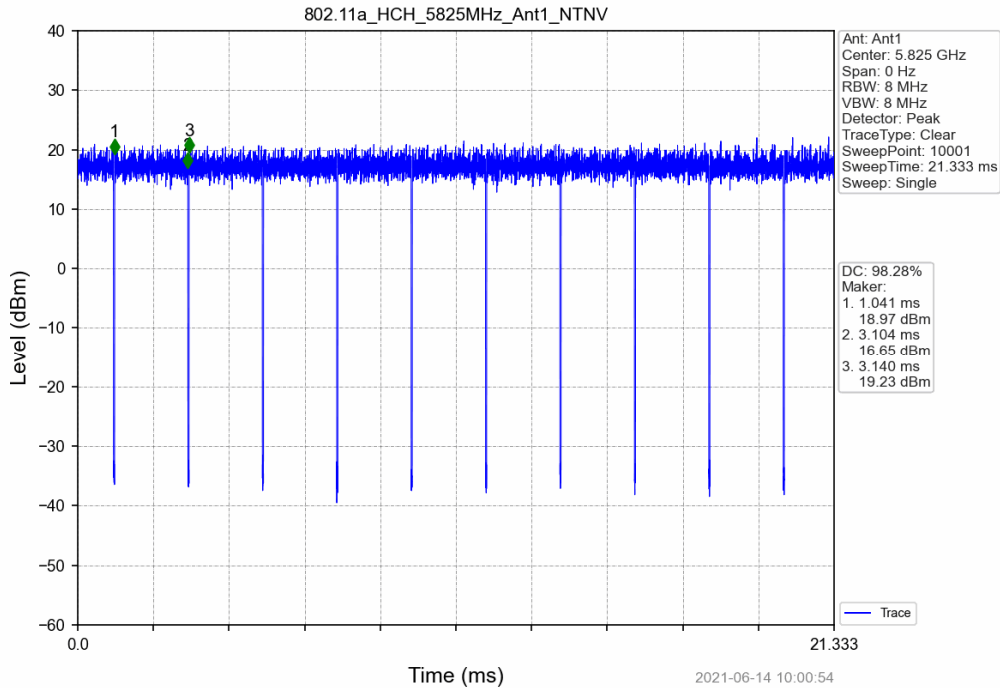
802.11a_MCH_5785MHz_Ant1_NTNV



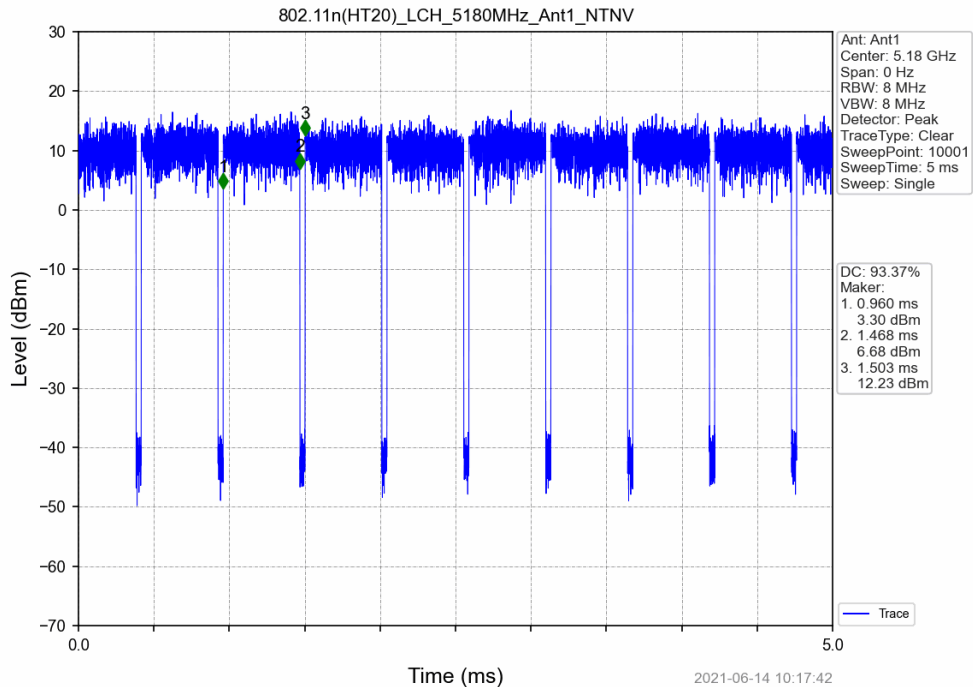
802.11a_HCH_5240MHz_Ant1_NTNV



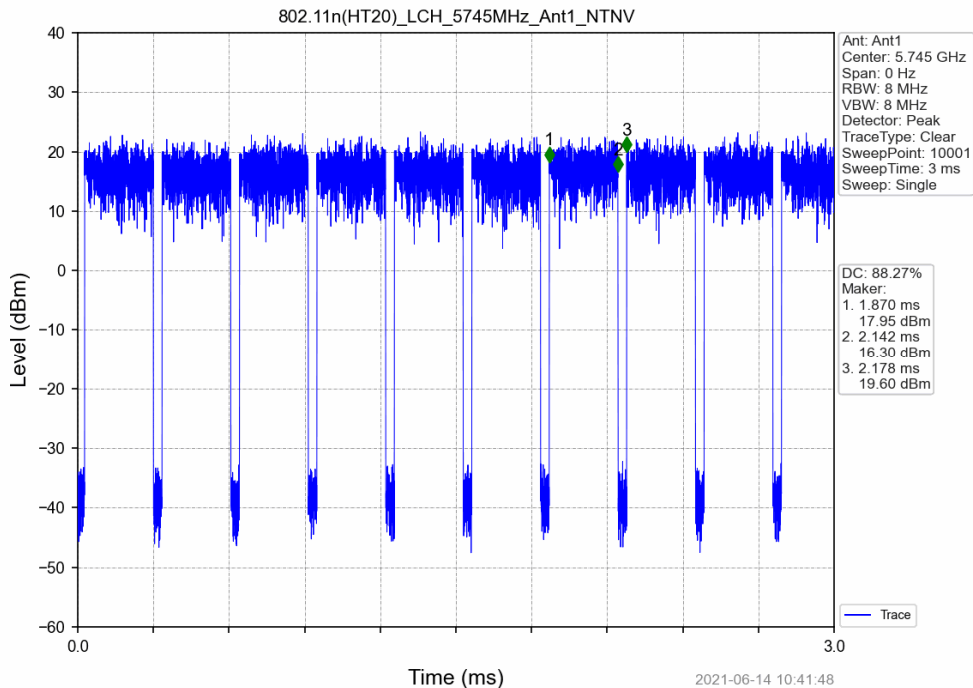
802.11a_HCH_5825MHz_Ant1_NTNV



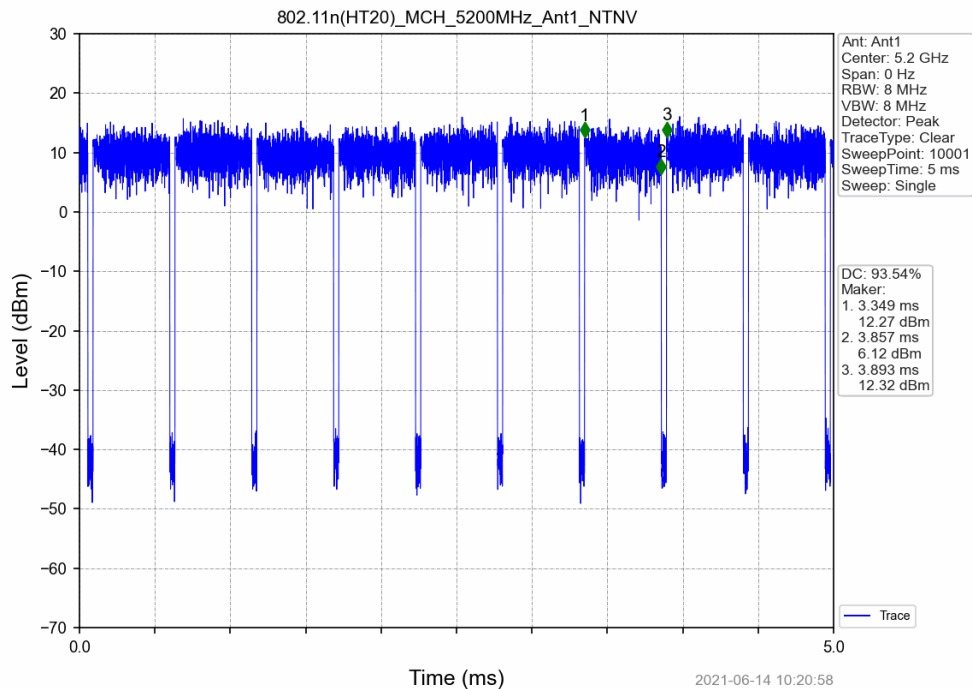
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



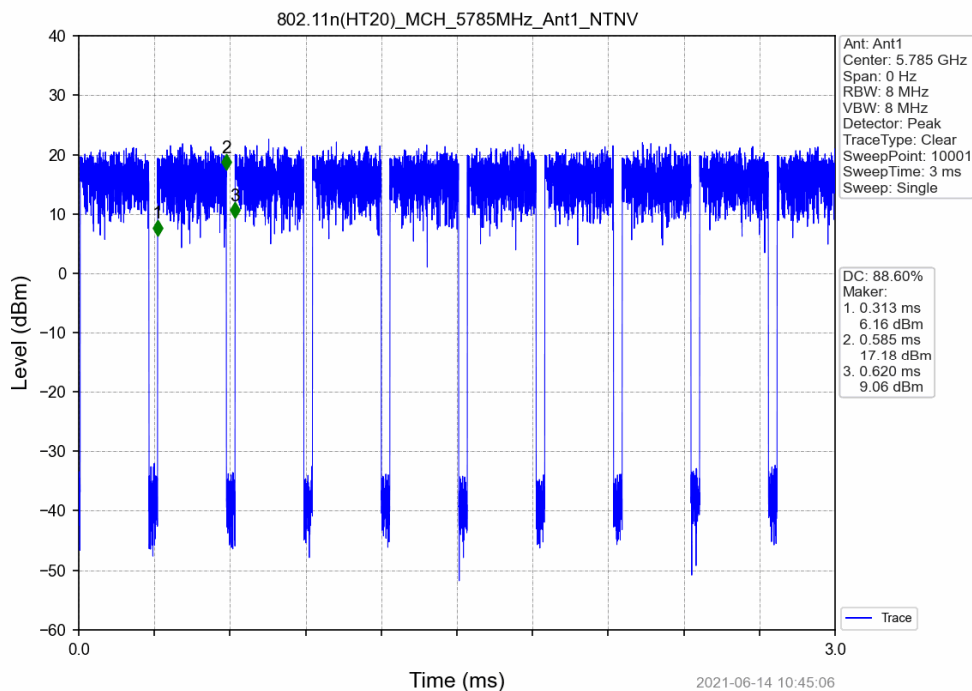
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



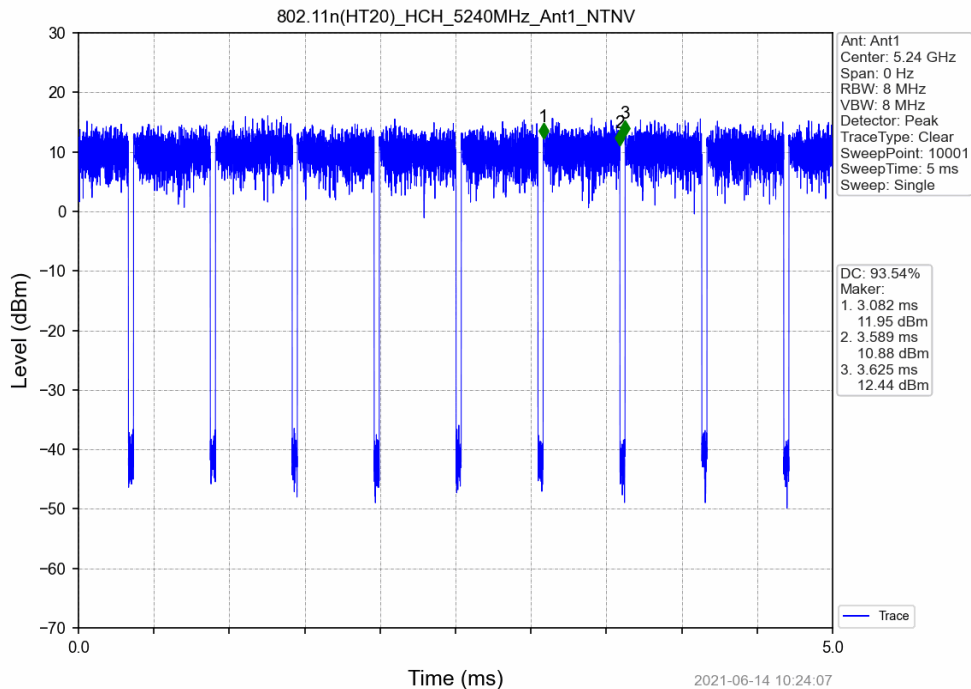
802.11n(HT20)_MCH_5200MHz_Ant1_NTNV



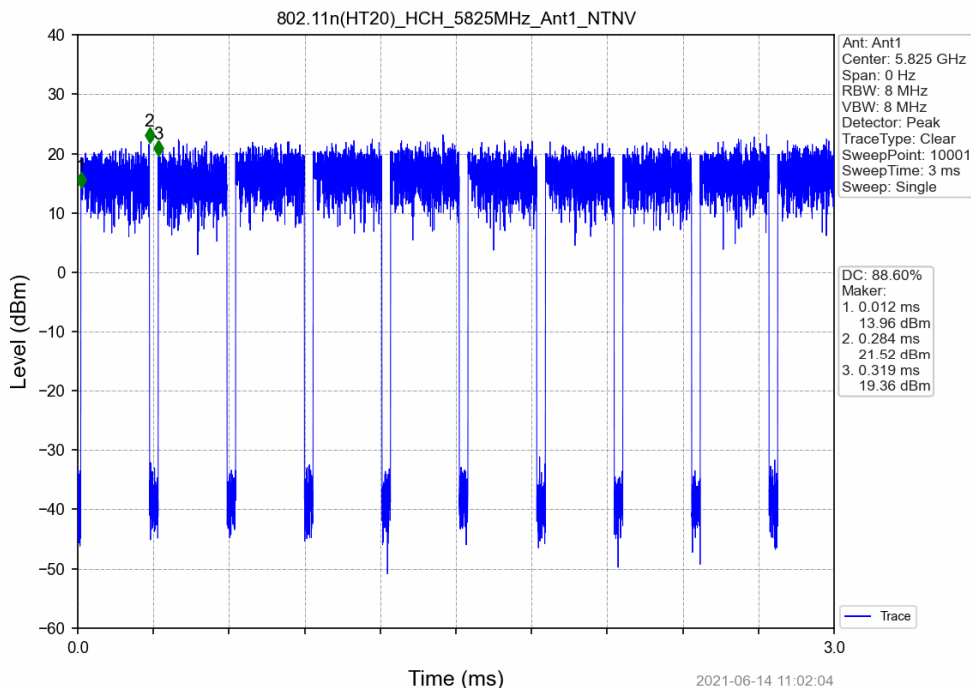
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



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2. Bandwidth

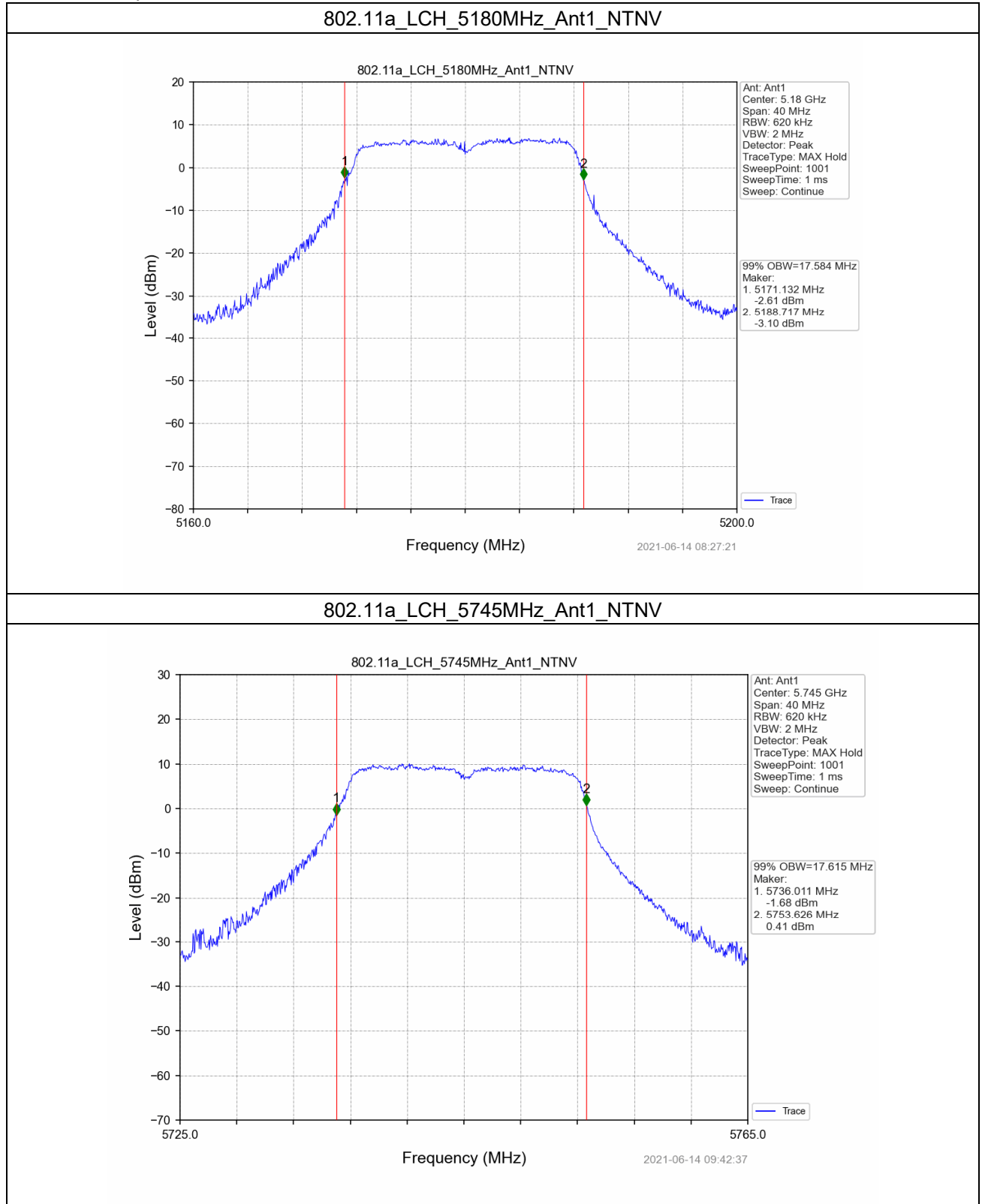
2.1 OBW

2.1.1 Test Result

Pretest the EUT at antenna 1, antenna 2 and MIMO mode and found the antenna 1 of MIMO mode which is worst case for 802.11a/n mode; So, Only the worst test data is recorded in the report.

Mode	TX Type	Frequency (MHz)	RU	RU Pos	99% Occupied Bandwidth (MHz)		Limit (MHz)	Verdict
					Ant1	Ant2		
802.11a	MIMO	5180	/	/	17.584	/	/	Note1
		5745	/	/	17.615	/	/	Note1
		5200	/	/	17.552	/	/	Note1
		5785	/	/	17.602	/	/	Note1
		5240	/	/	17.517	/	/	Note1
		5825	/	/	17.627	/	/	Note1
802.11n (HT20)	MIMO	5180	/	/	18.306	/	/	Note1
		5745	/	/	18.329	/	/	Note1
		5200	/	/	18.329	/	/	Note1
		5785	/	/	18.338	/	/	Note1
		5240	/	/	18.284	/	/	Note1
		5825	/	/	18.322	/	/	Note1
Note1: Only for Report Use								

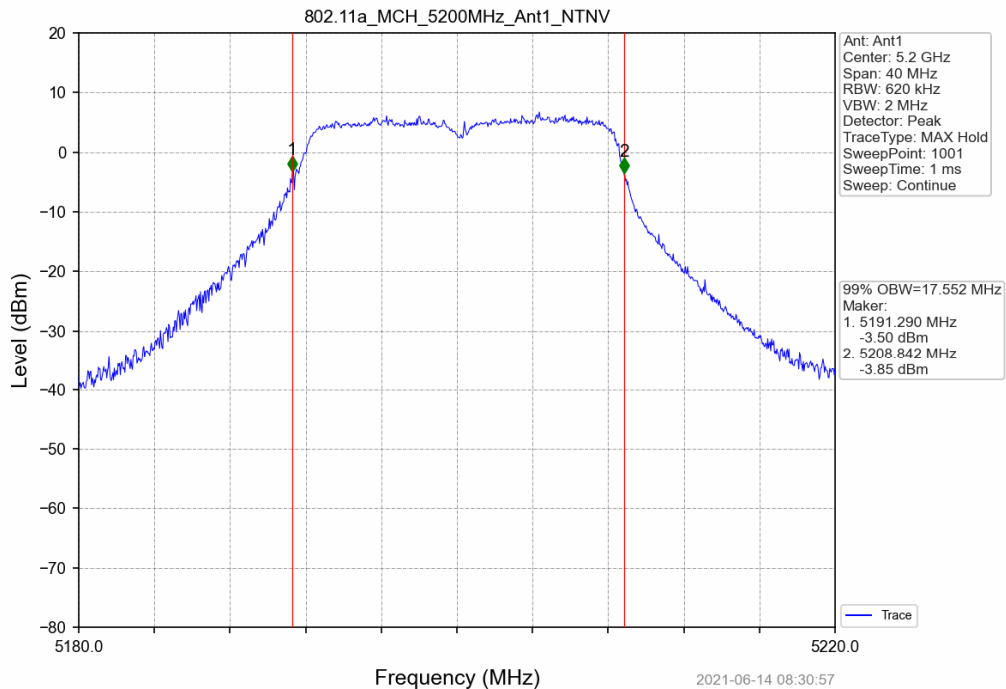
2.1.2 Test Graph



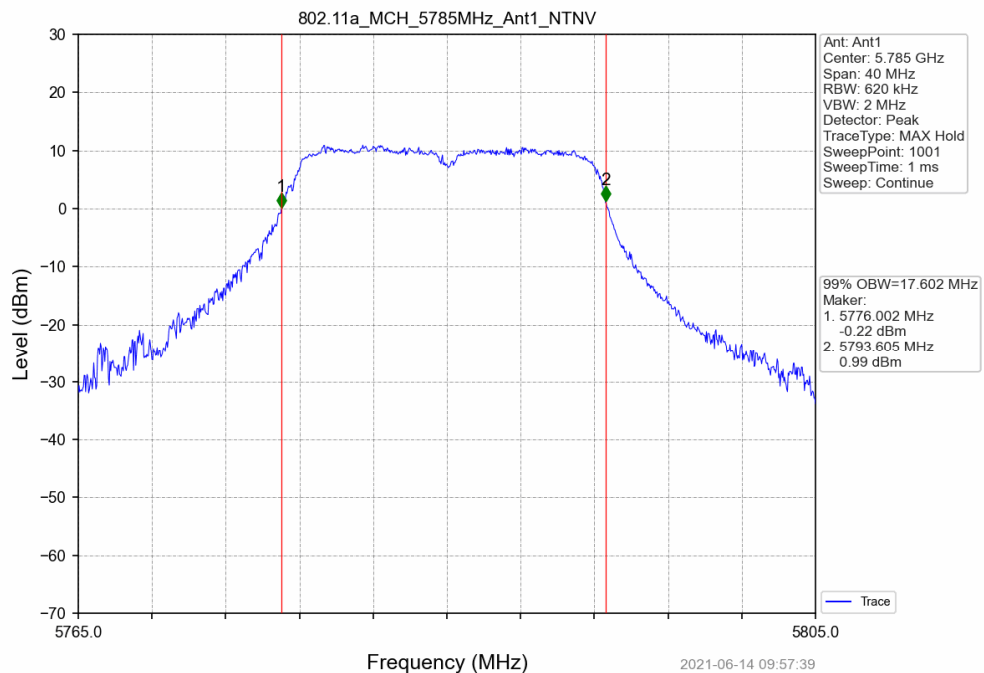
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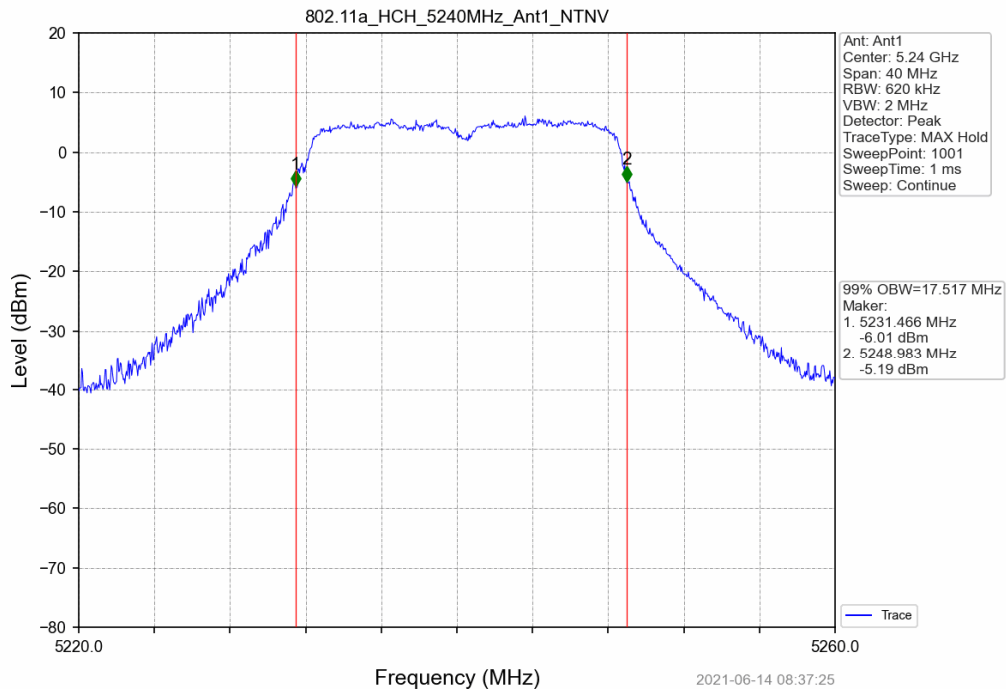
802.11a_MCH_5200MHz_Ant1_NTNV



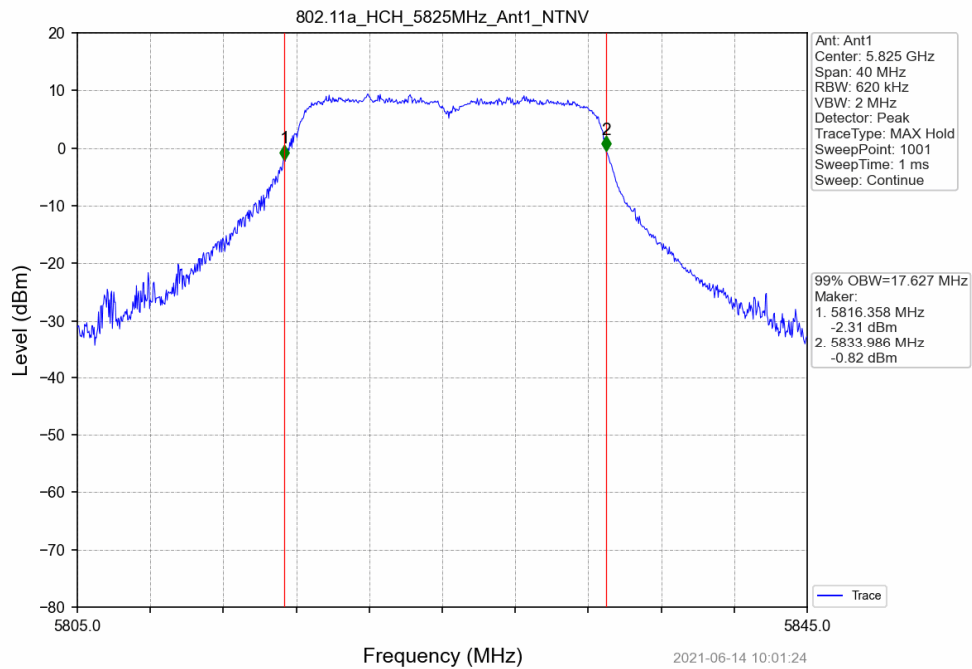
802.11a_MCH_5785MHz_Ant1_NTNV



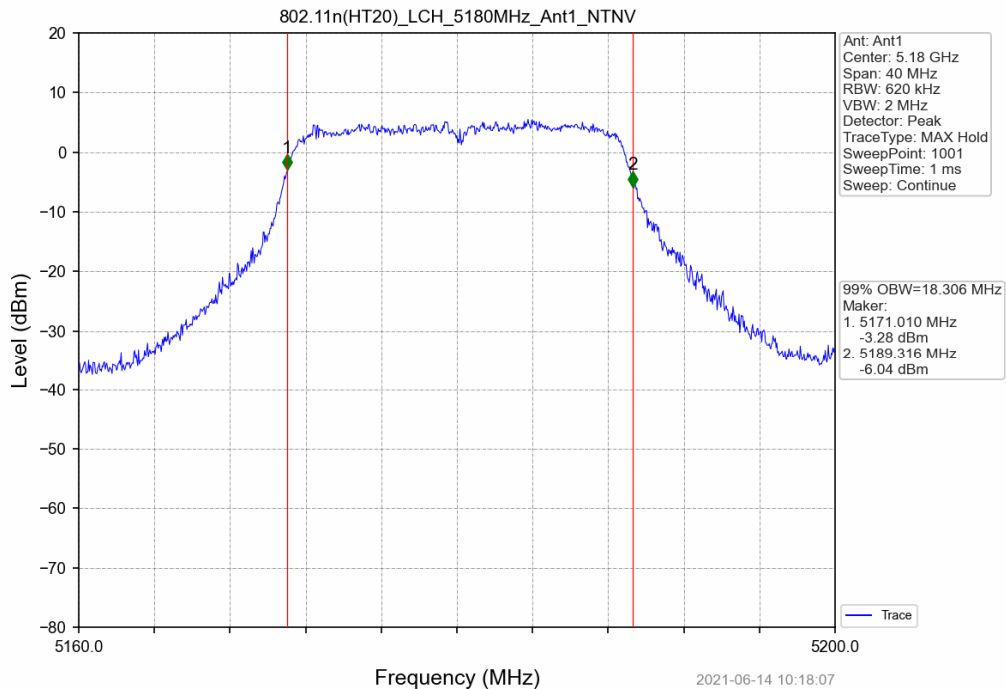
802.11a_HCH_5240MHz_Ant1_NTNV



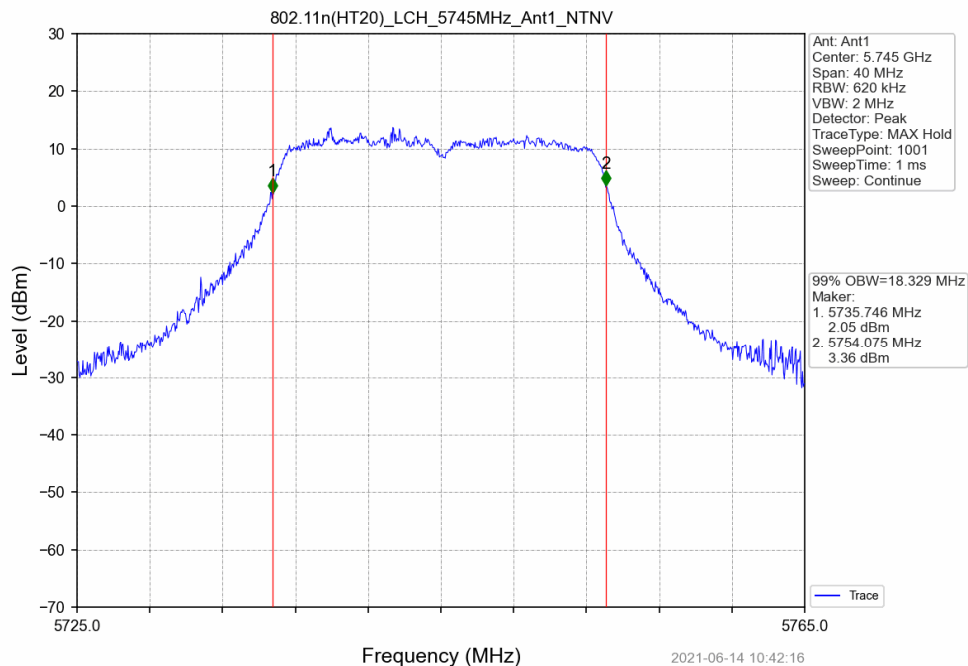
802.11a_HCH_5825MHz_Ant1_NTNV



802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



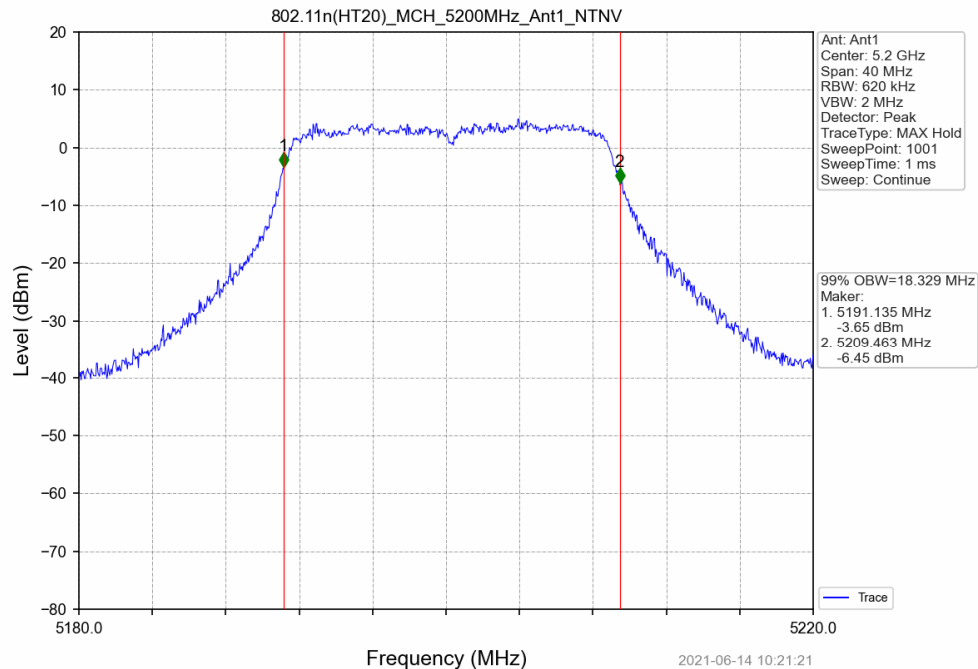
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



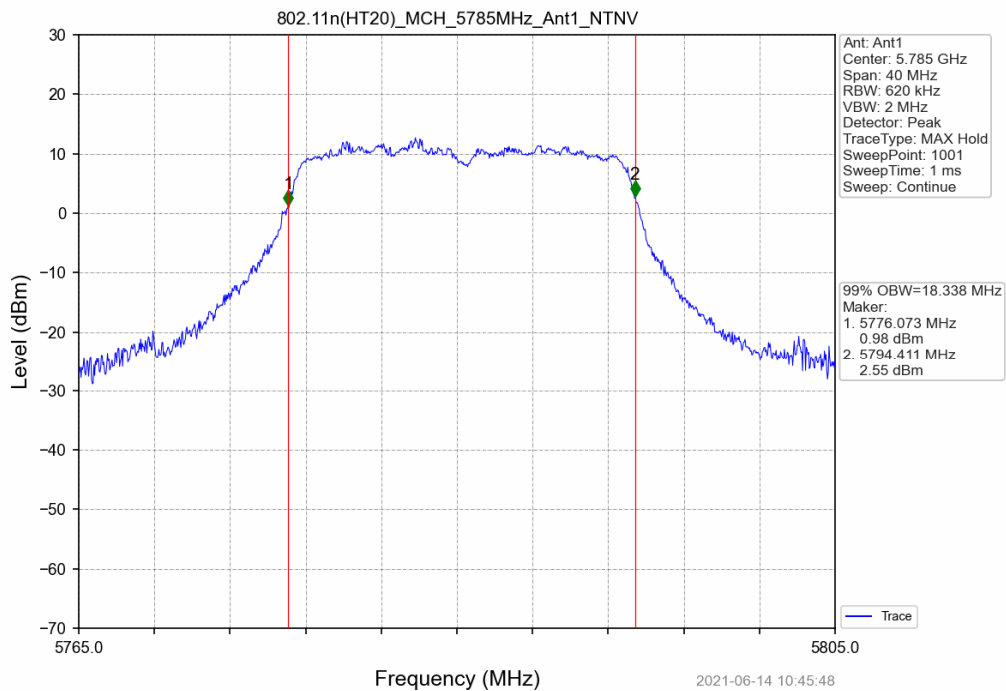
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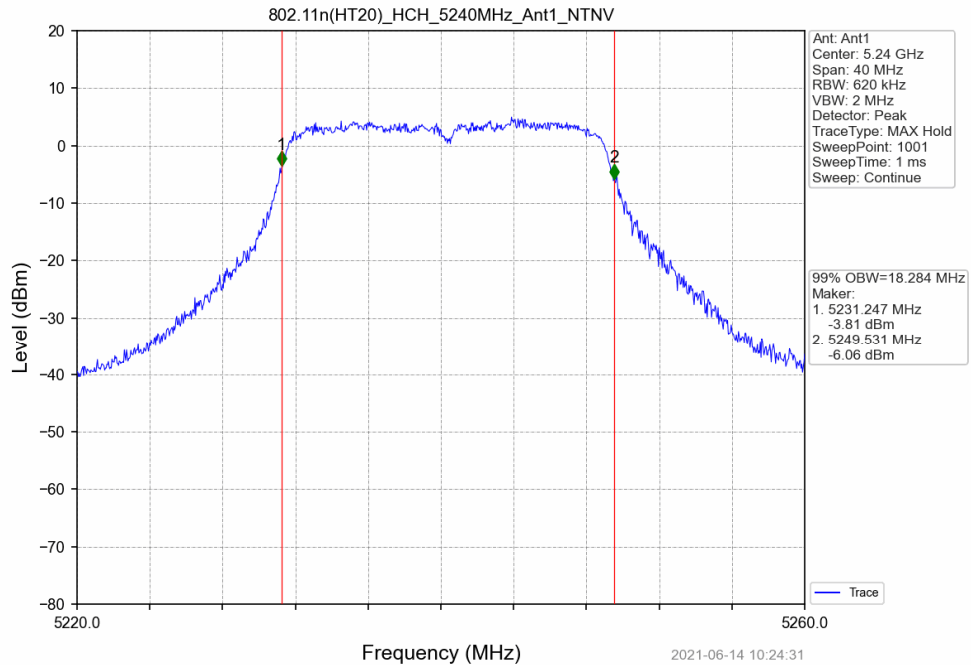
802.11n(HT20)_MCH_5200MHz_Ant1_NTNV



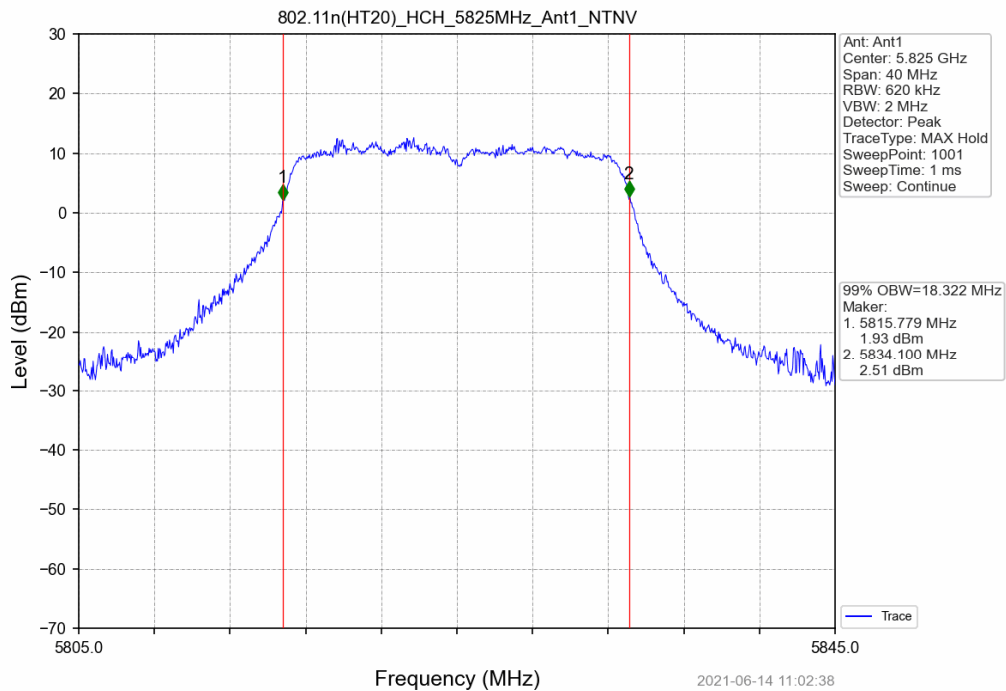
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



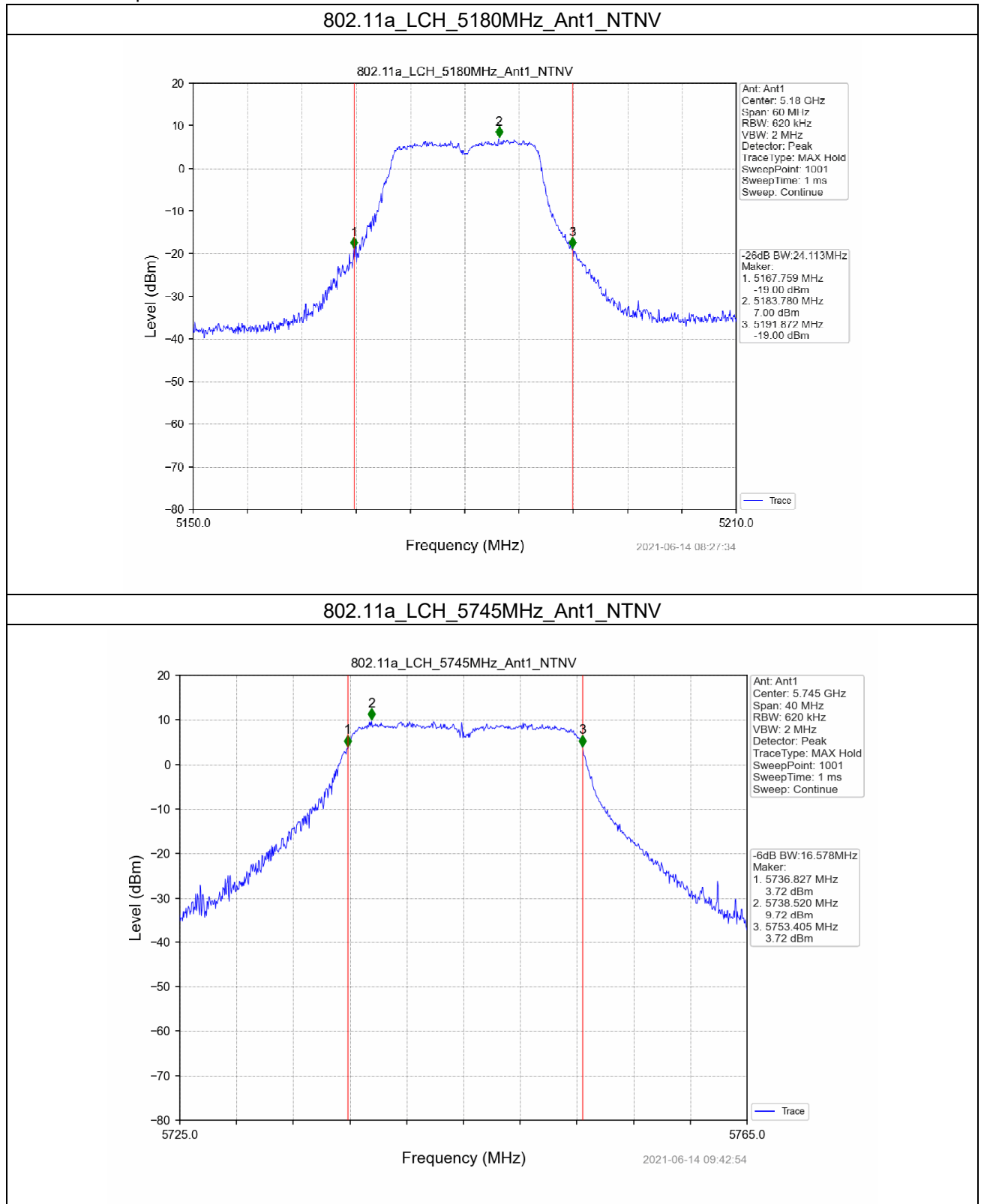
2.2 -6dB and 26dB bandwidth

2.2.1 Test Result

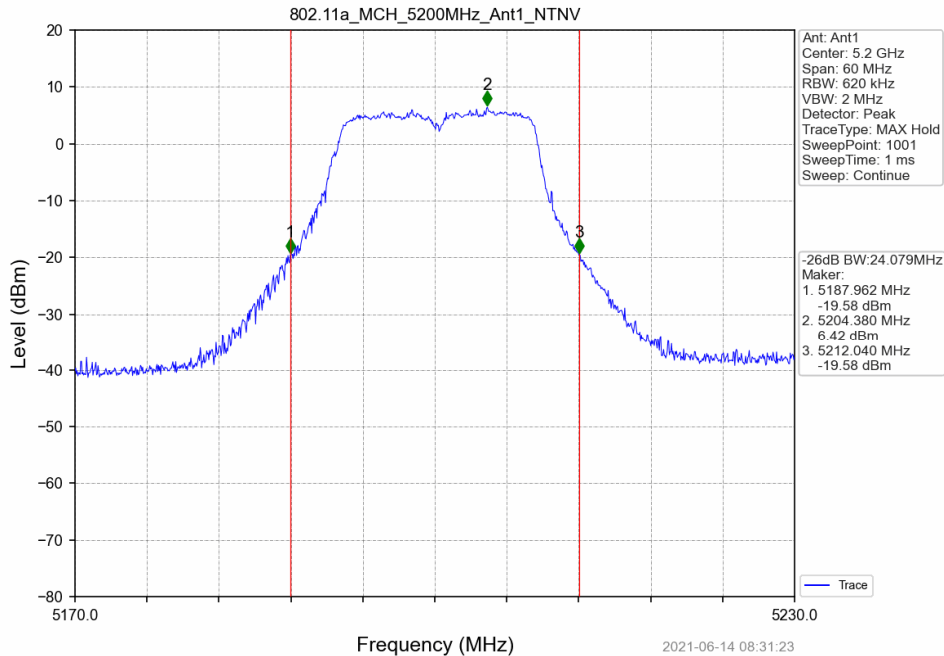
Pretest the EUT at antenna 1, antenna 2 and MIMO mode and found the antenna 1 of MIMO mode which is worst case for 802.11a/n mode; So, Only the worst test data is recorded in the report.

Mode	TX Type	Frequency (MHz)	RU	RU Pos	-6dB and 26dB Bandwidth (MHz)		Limit (MHz)	Verdict
					Ant1	Ant2		
802.11a	MIMO	5180	/	/	24.113	/	/	Note1
		5745	/	/	16.578	/	>=0.5	Pass
		5200	/	/	24.079	/	/	Note1
		5785	/	/	16.643	/	>=0.5	Pass
		5240	/	/	24.163	/	/	Note1
		5825	/	/	16.582	/	>=0.5	Pass
802.11n (HT20)	MIMO	5180	/	/	23.799	/	/	Note1
		5745	/	/	17.405	/	>=0.5	Pass
		5200	/	/	24.038	/	/	Note1
		5785	/	/	17.362	/	>=0.5	Pass
		5240	/	/	24.297	/	/	Note1
		5825	/	/	17.372	/	>=0.5	Pass
Note1: Only for Report Use								

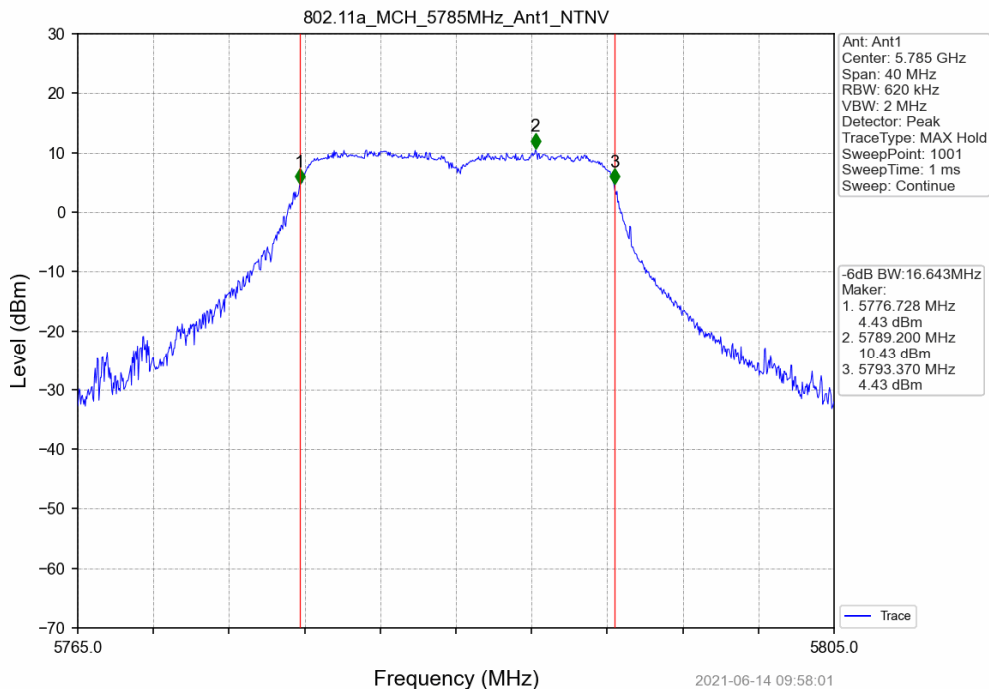
2.2.2 Test Graph



802.11a_MCH_5200MHz_Ant1_NTNV



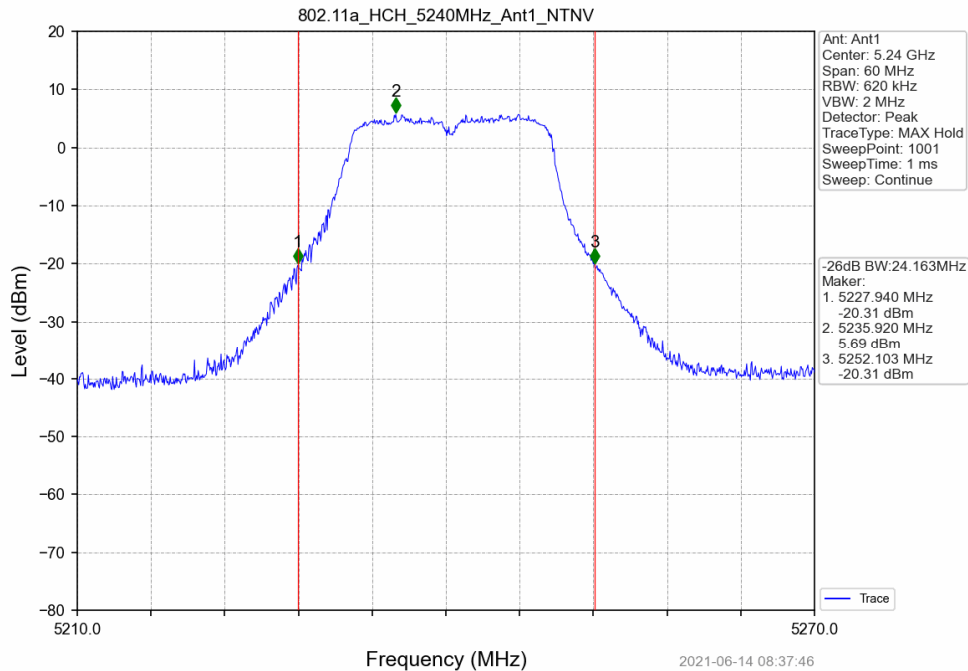
802.11a_MCH_5785MHz_Ant1_NTNV



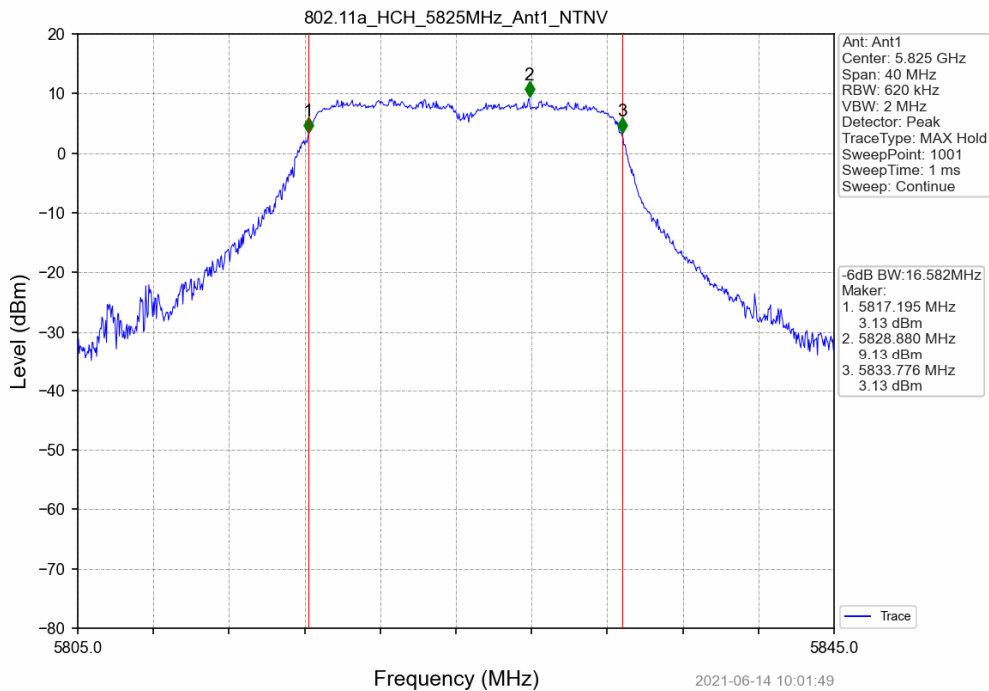
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802.11a_HCH_5240MHz_Ant1_NTNV



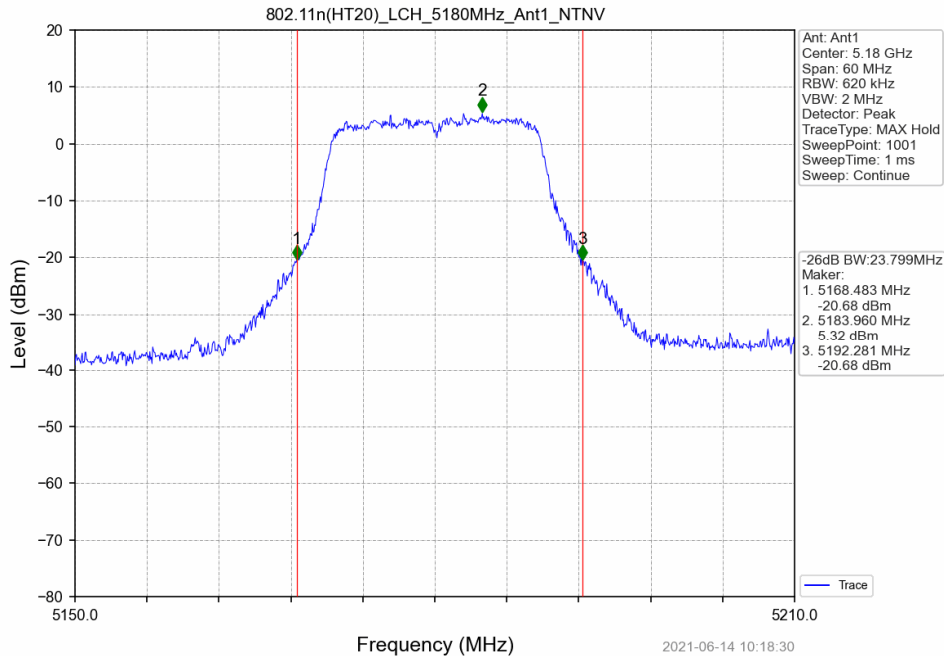
802.11a_HCH_5825MHz_Ant1_NTNV



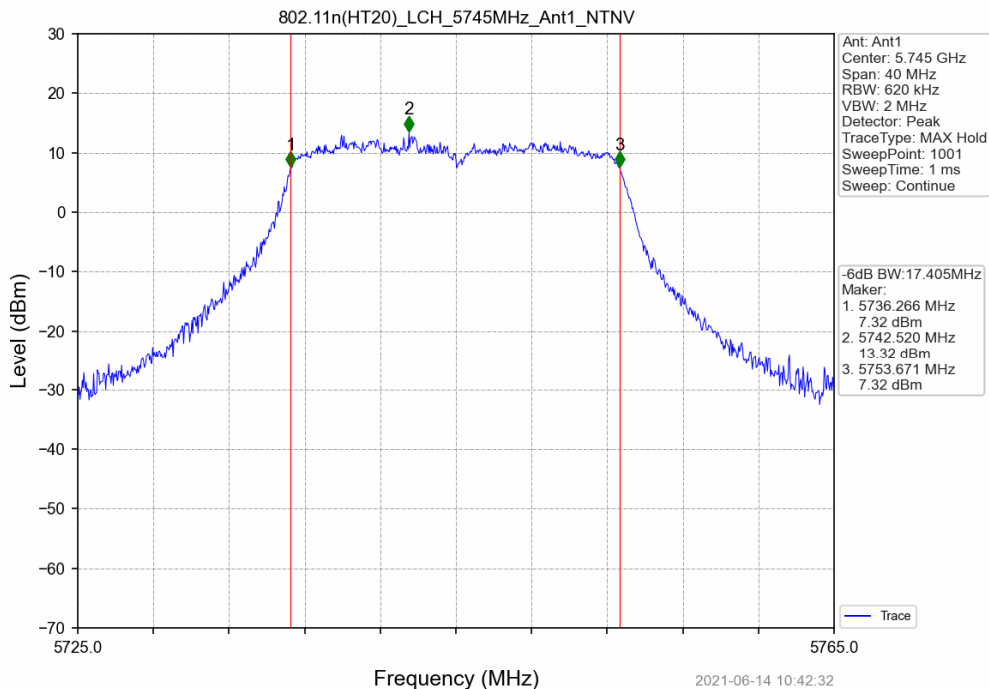
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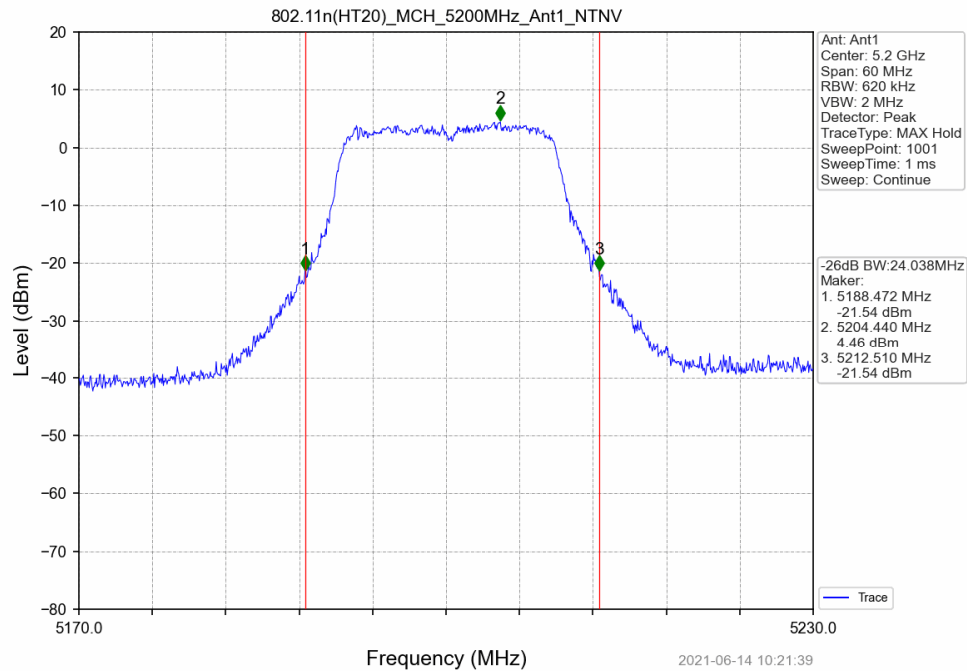
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



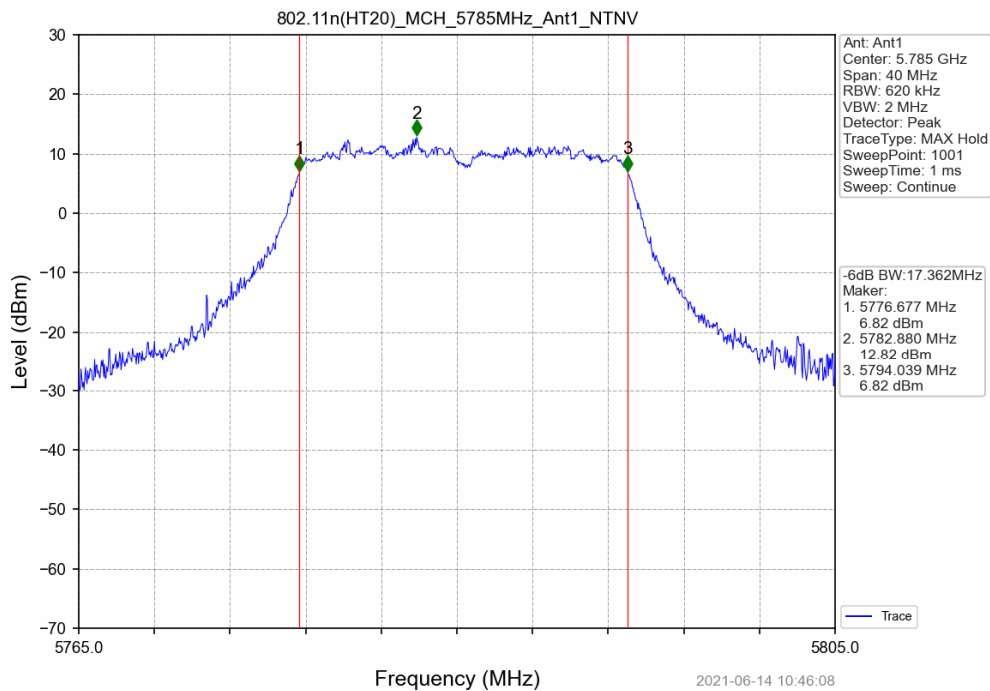
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



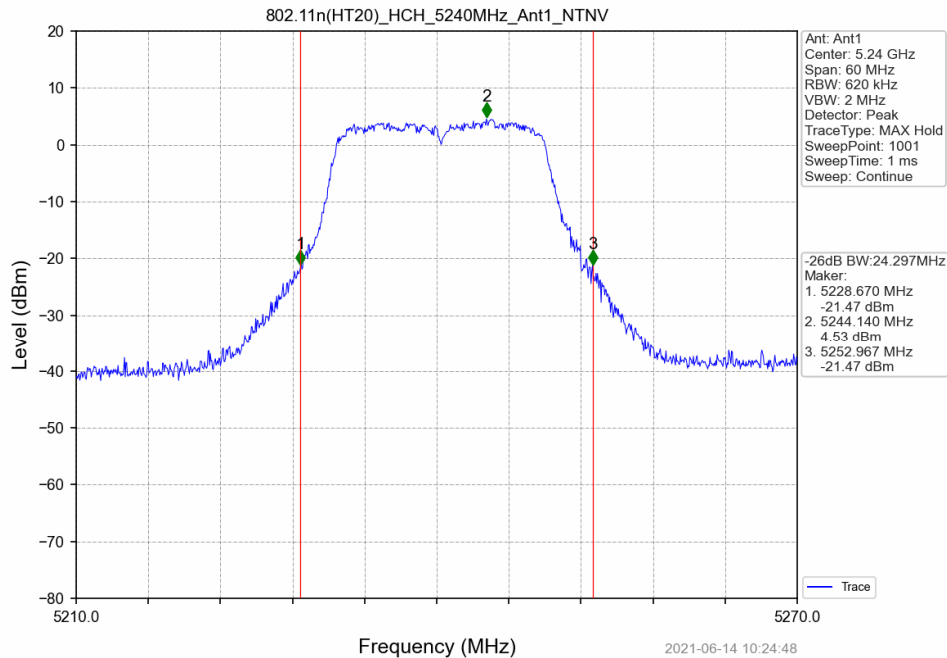
802.11n(HT20)_MCH_5200MHz_Ant1_NTNV



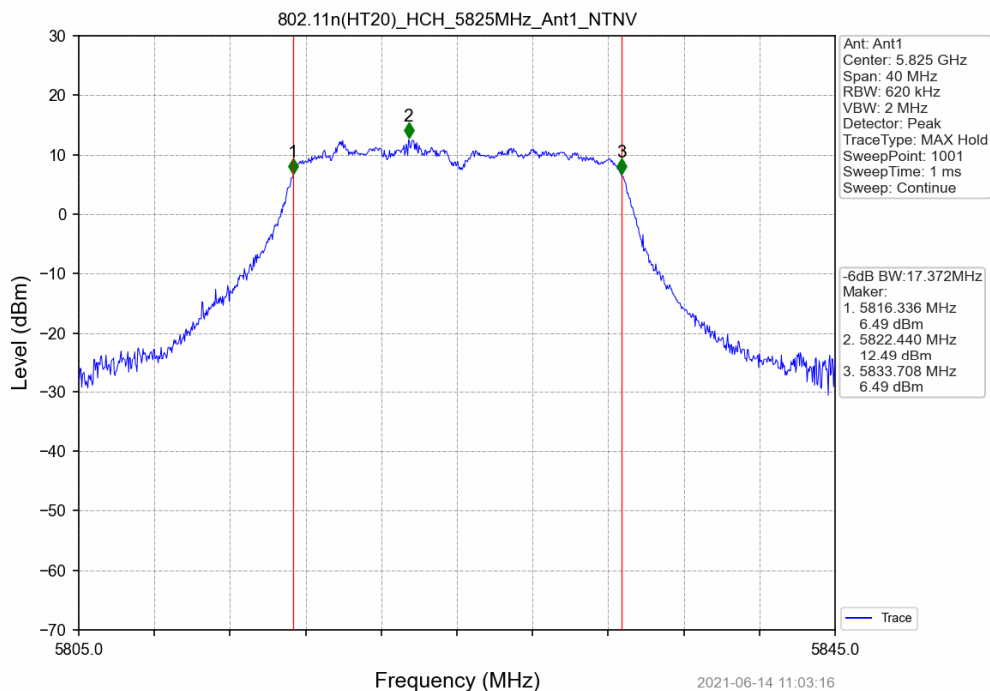
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



3. Maximum Conducted Output Power

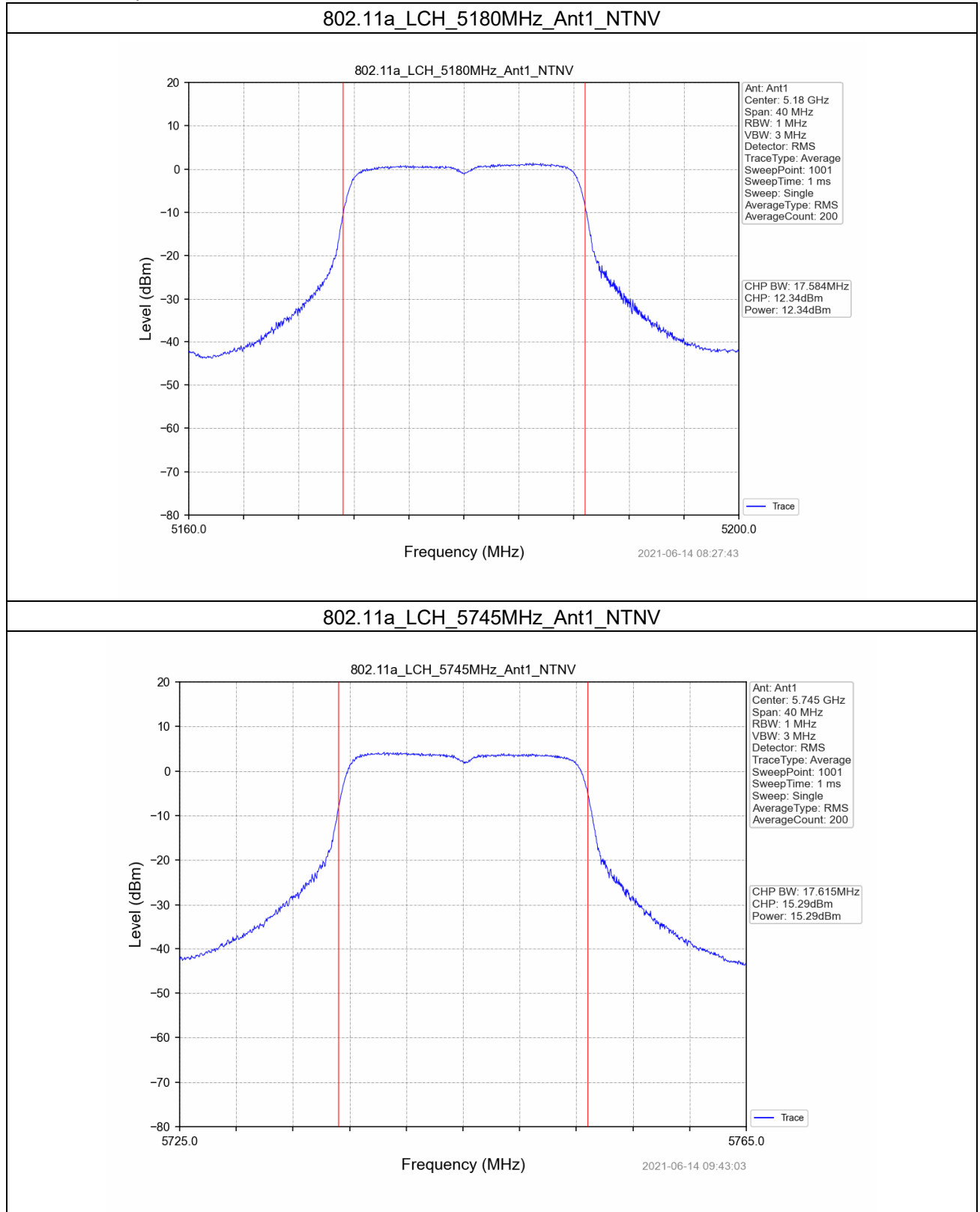
3.1 Power

3.1.1 Test Result

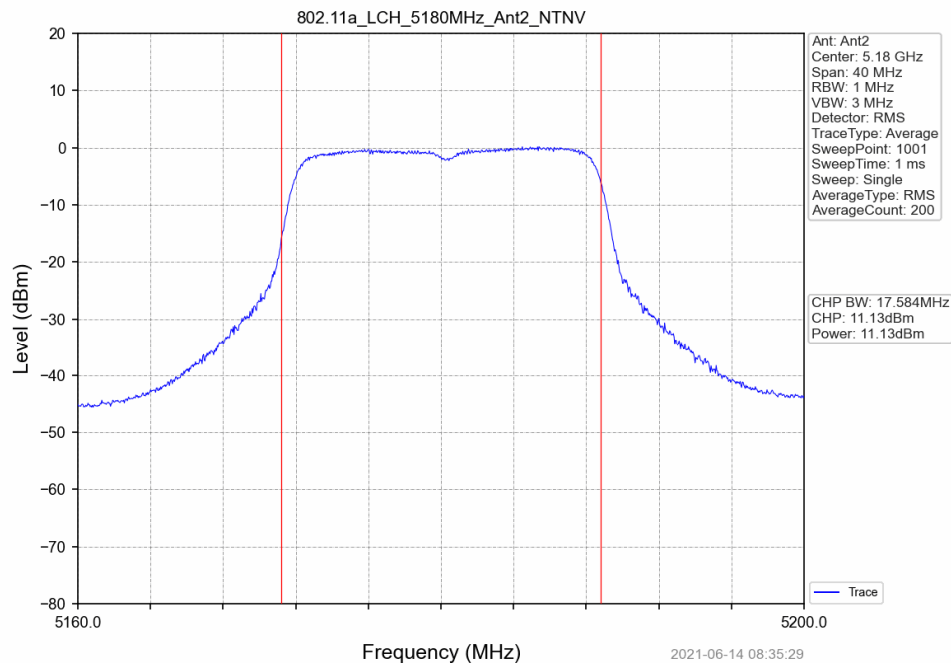
Mode	TX Type	Frequency (MHz)	RU	RU Pos	Measured Peak Output Power (dBm)			Limit (dBm)	Verdict
					Ant1	Ant2	Sum		
802.11a	MIMO	5180	/	/	12.34	11.13	14.79	<=23.98	Pass
		5745	/	/	15.29	17.03	19.26	<=30	Pass
		5200	/	/	11.76	11.79	14.79	<=23.98	Pass
		5785	/	/	16.01	17.82	20.02	<=30	Pass
		5240	/	/	11.44	12.52	15.02	<=23.98	Pass
		5825	/	/	14.44	16.85	18.82	<=30	Pass
802.11n (HT20)	MIMO	5180	/	/	9.94	10.32	13.14	<=23.98	Pass
		5745	/	/	16.90	18.71	20.91	<=30	Pass
		5200	/	/	9.57	9.65	12.62	<=23.98	Pass
		5785	/	/	16.41	16.01	19.23	<=30	Pass
		5240	/	/	9.66	10.03	12.86	<=23.98	Pass
		5825	/	/	16.23	17.75	20.07	<=30	Pass

Note1: Antenna Gain: 1: 2.00dBi; 2: 2.00dBi; Directional gain= 5.01dBi

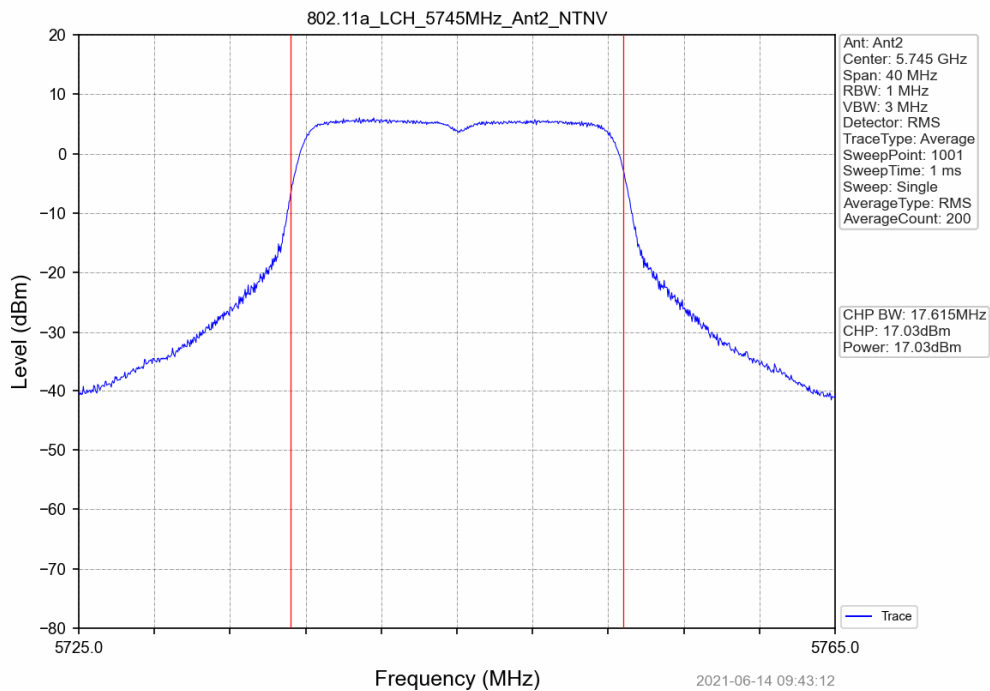
3.1.2 Test Graph



802.11a_LCH_5180MHz_Ant2_NTNV



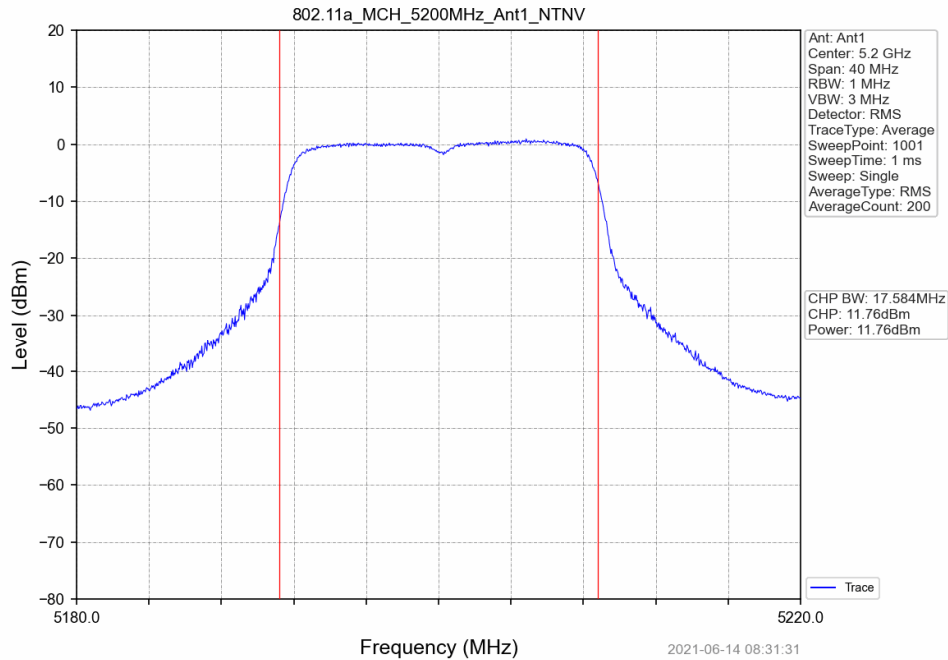
802.11a_LCH_5745MHz_Ant2_NTNV



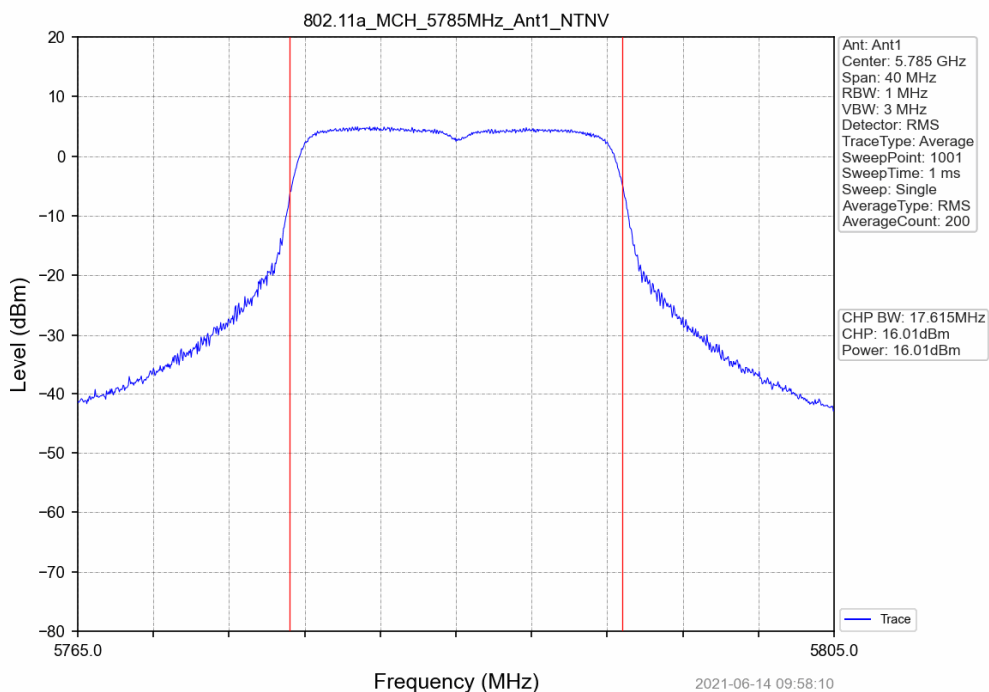
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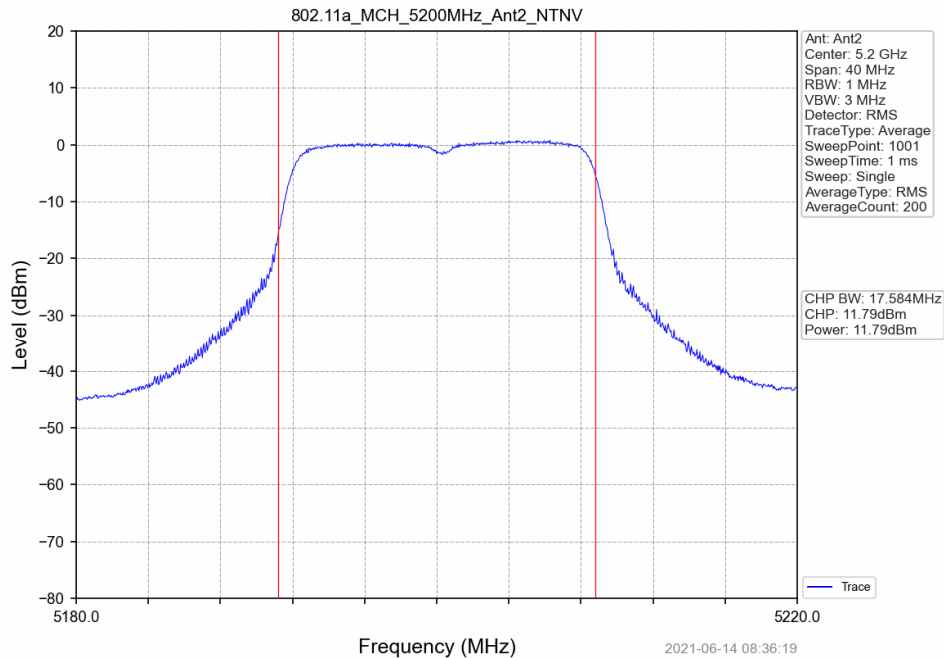
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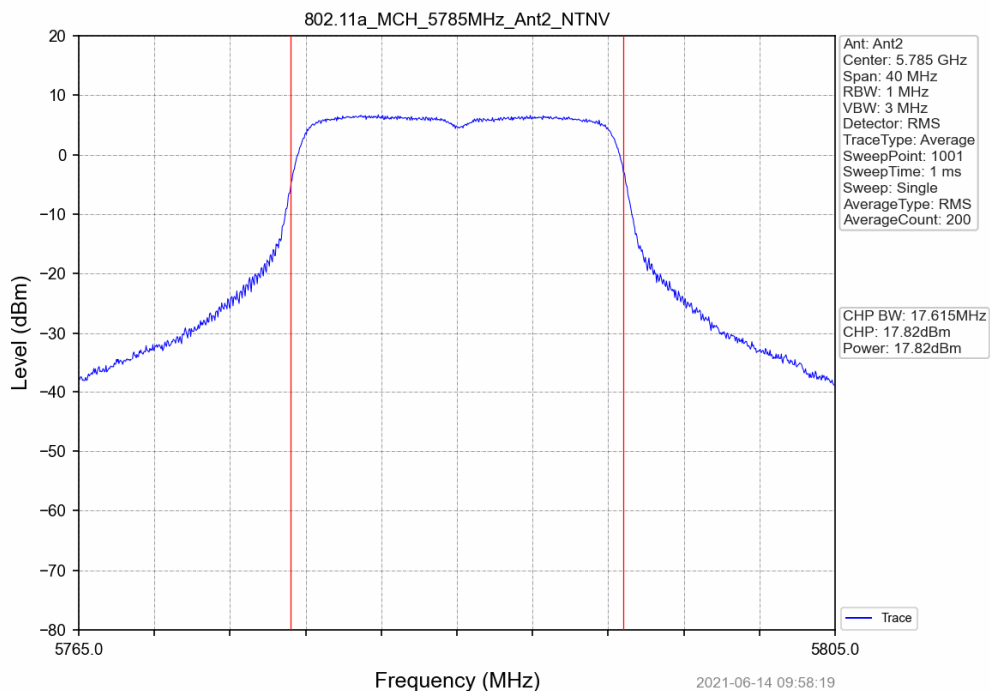
802.11a_MCH_5785MHz_Ant1_NTNV



802.11a_MCH_5200MHz_Ant2_NTNV



802.11a_MCH_5785MHz_Ant2_NTNV



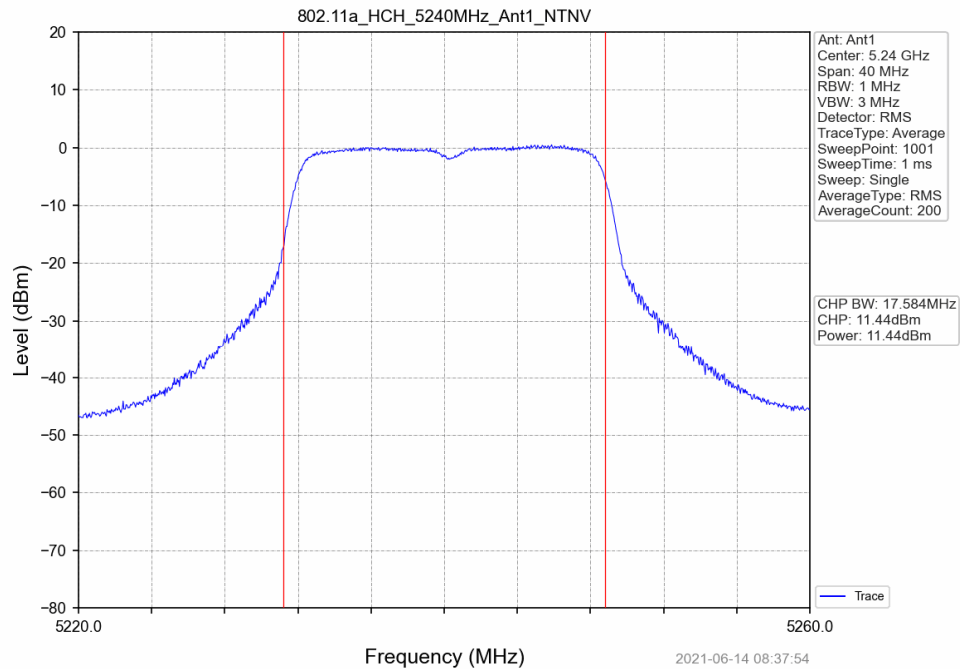
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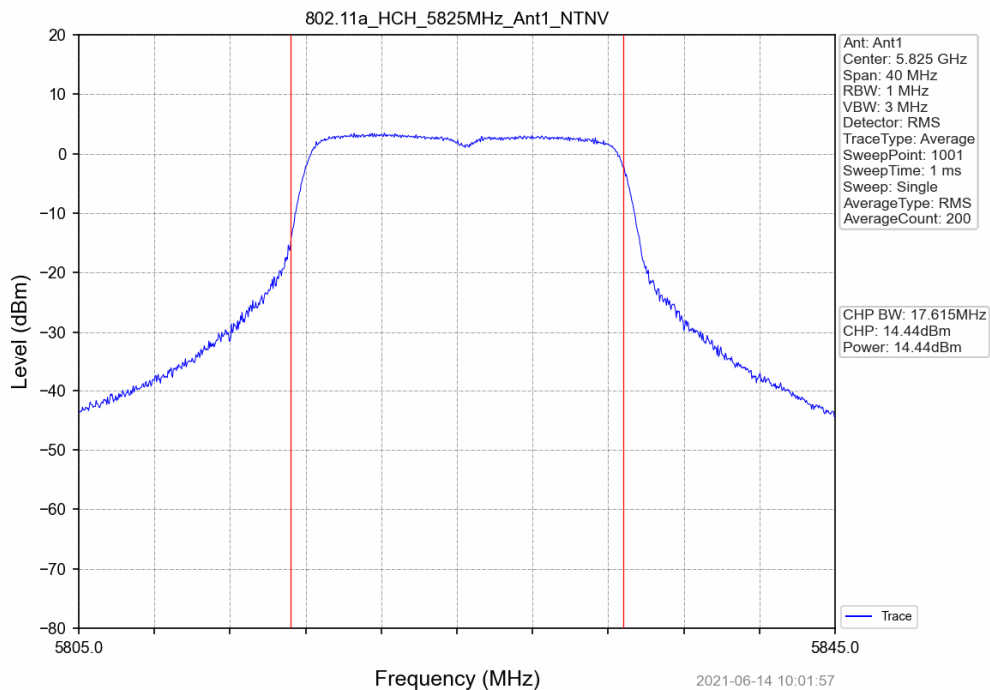
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Shenzhen Branch (China) EMC Laboratory

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

802.11a_HCH_5240MHz_Ant1_NTNV



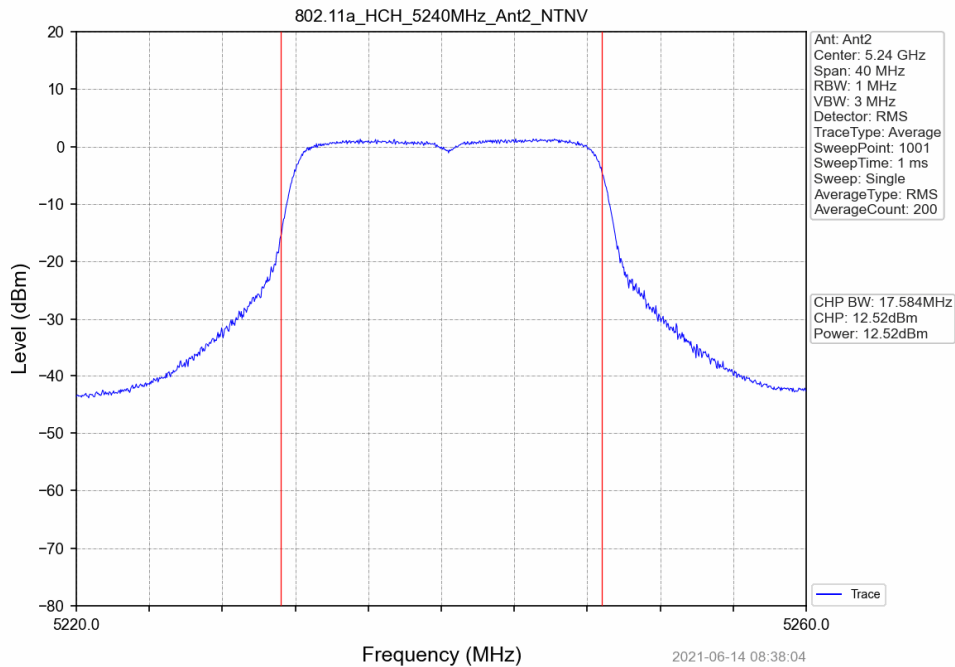
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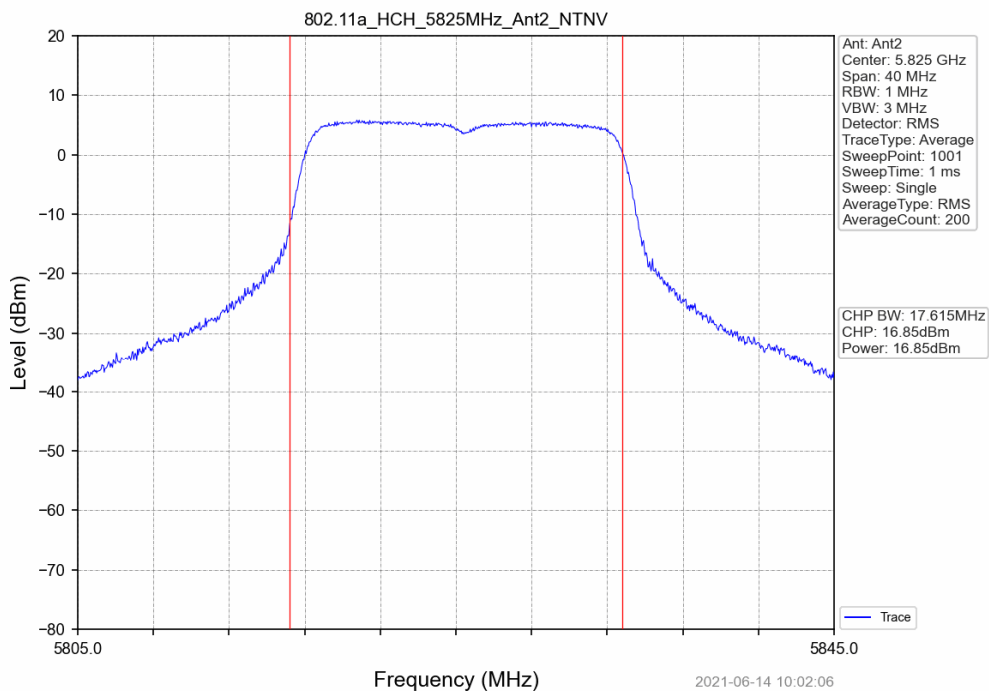
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802.11a_HCH_5240MHz_Ant2_NTNV



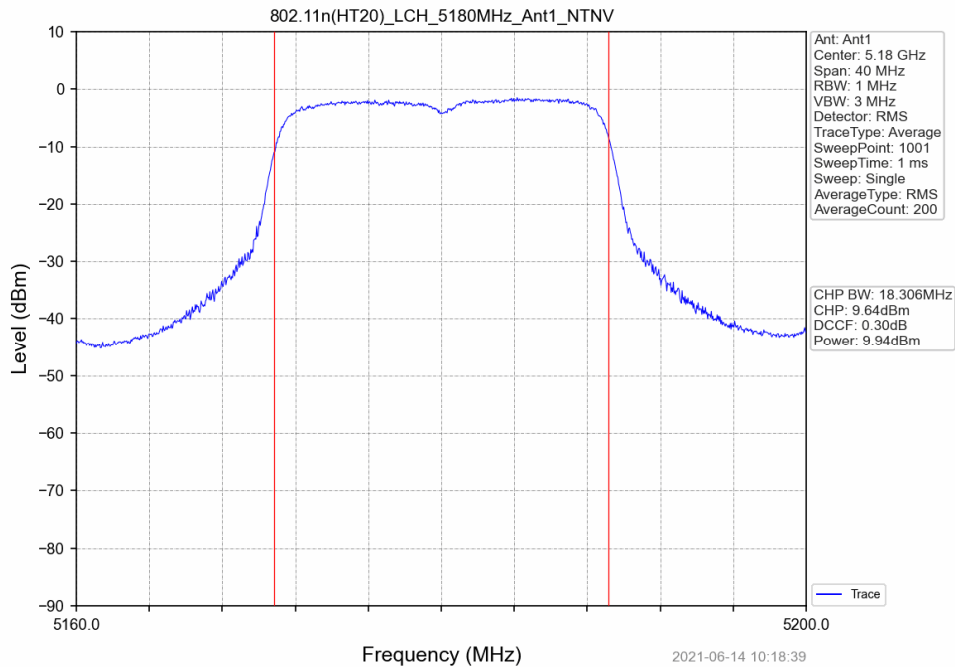
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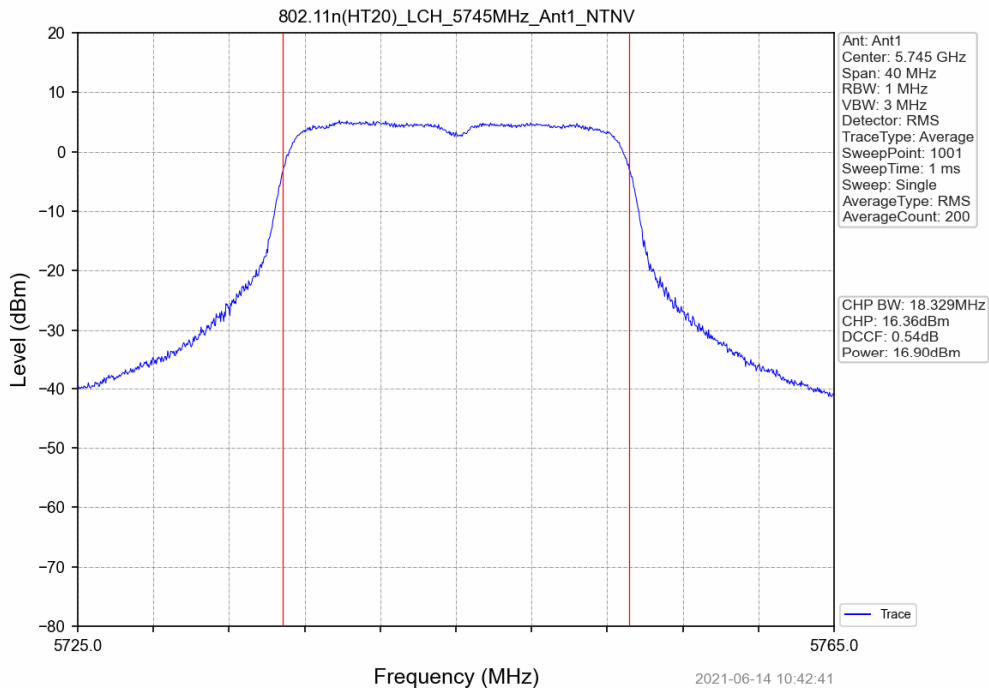
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802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



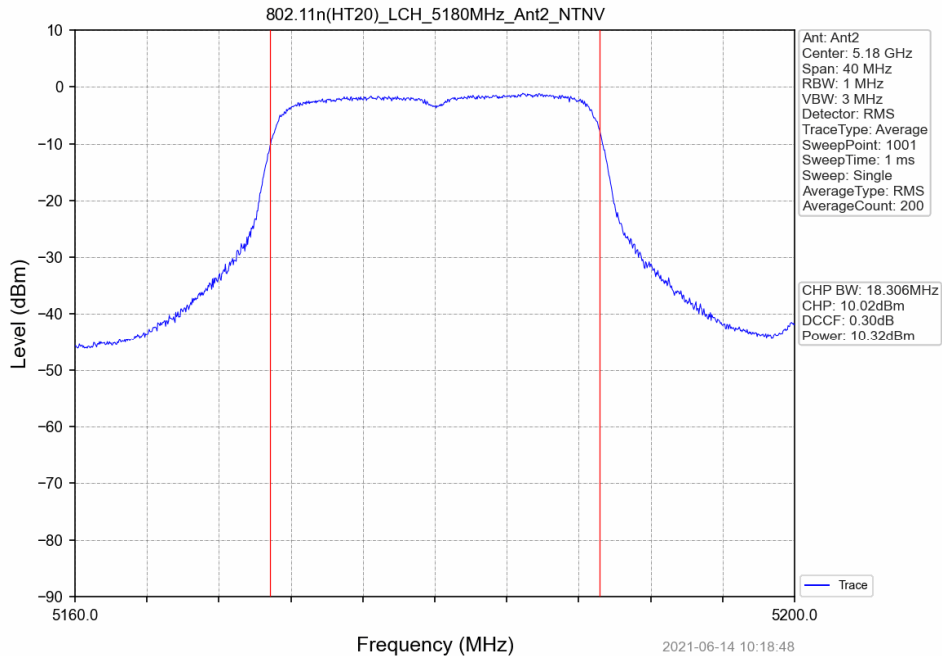
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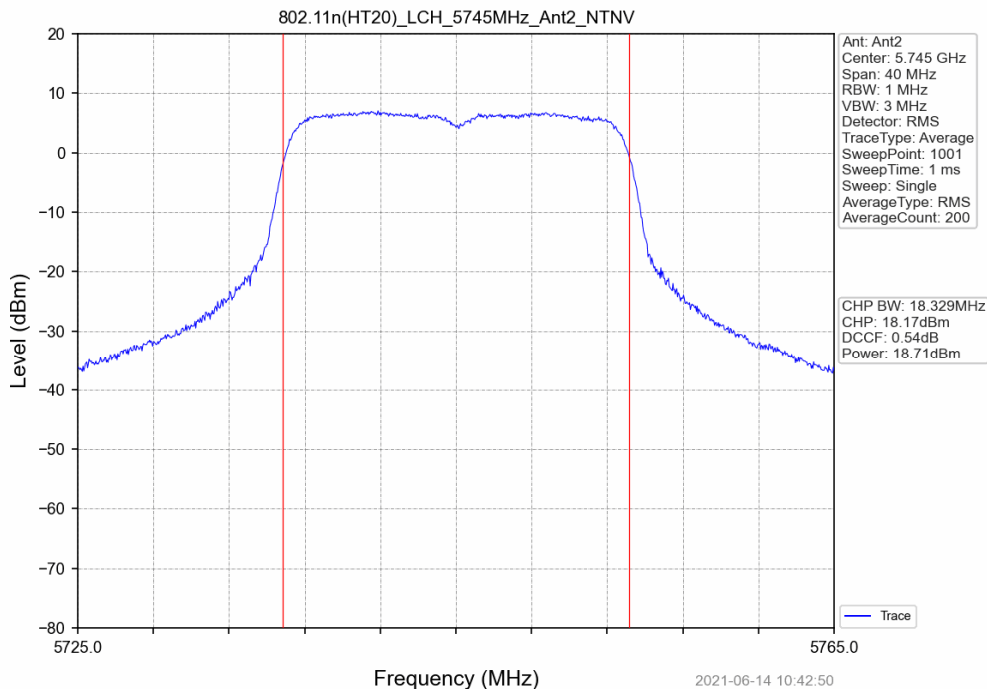
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802.11n(HT20)_LCH_5180MHz_Ant2_NTNV



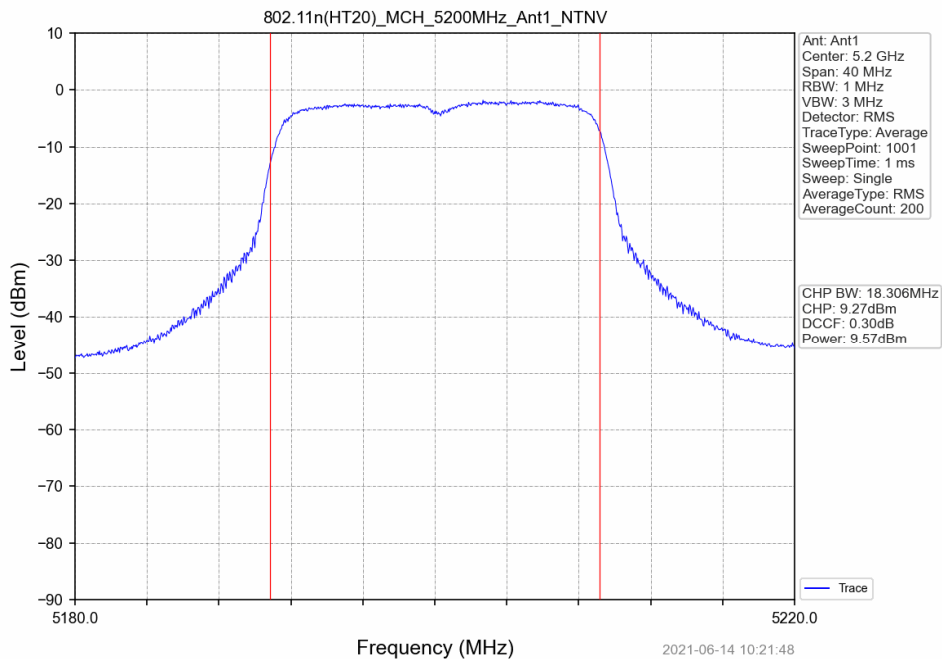
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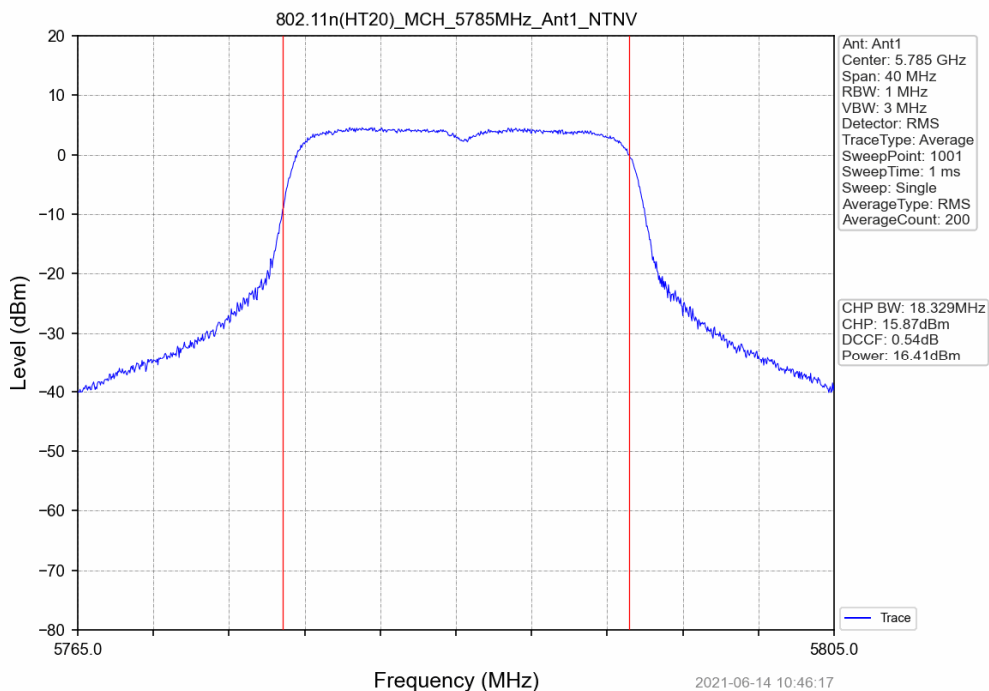
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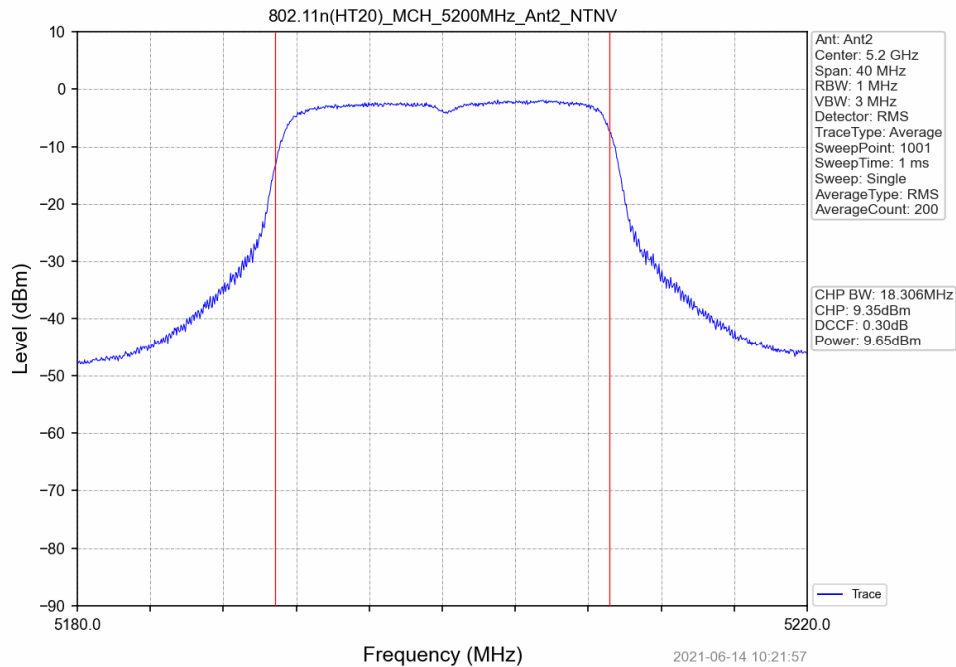
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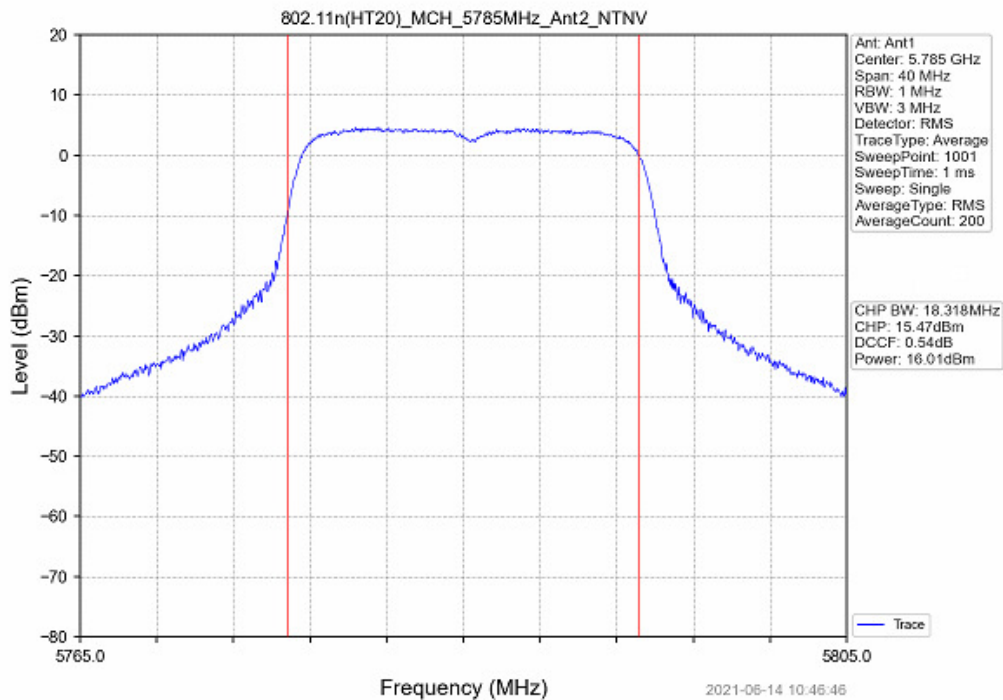
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802.11n(HT20)_MCH_5200MHz_Ant2_NTNV



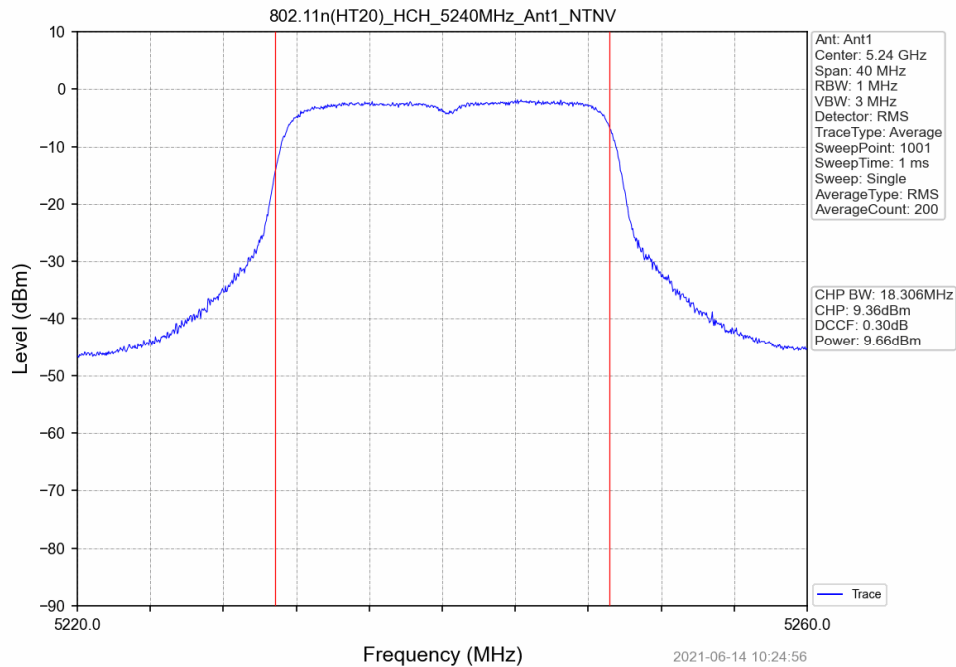
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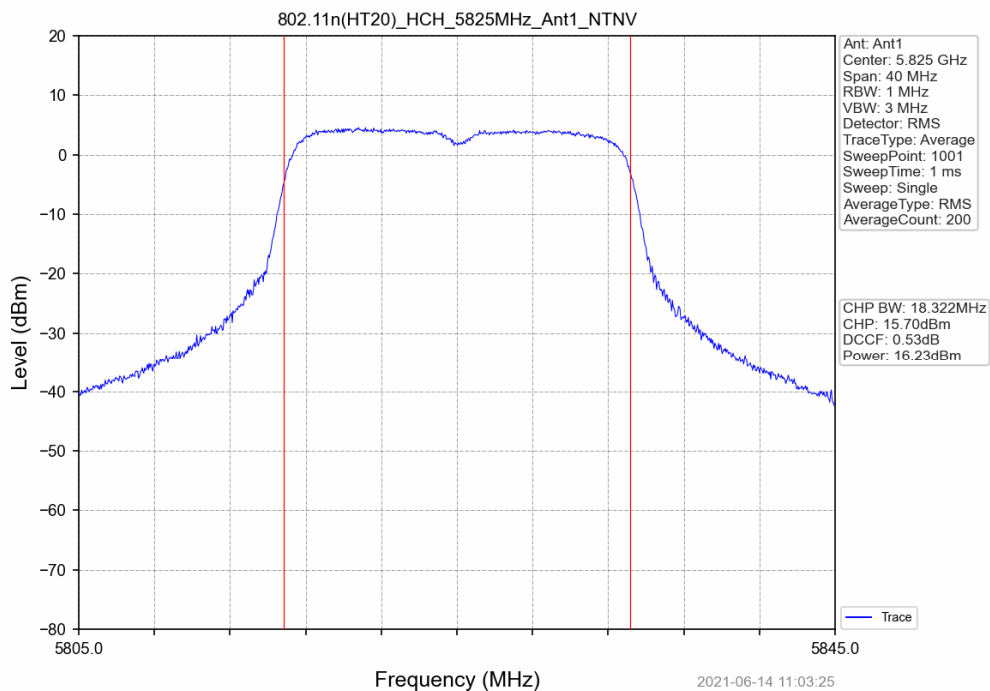
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802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



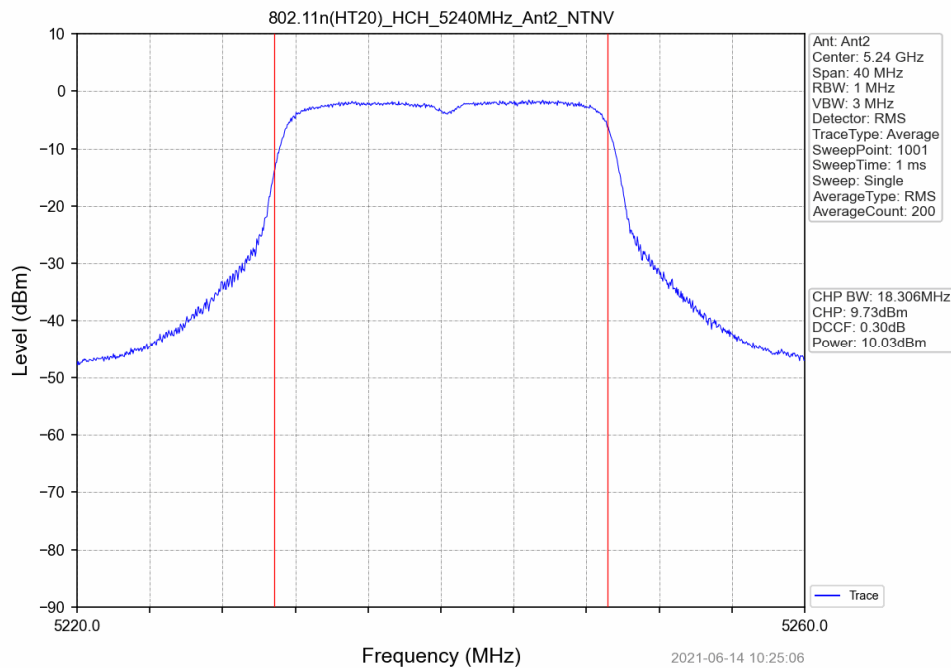
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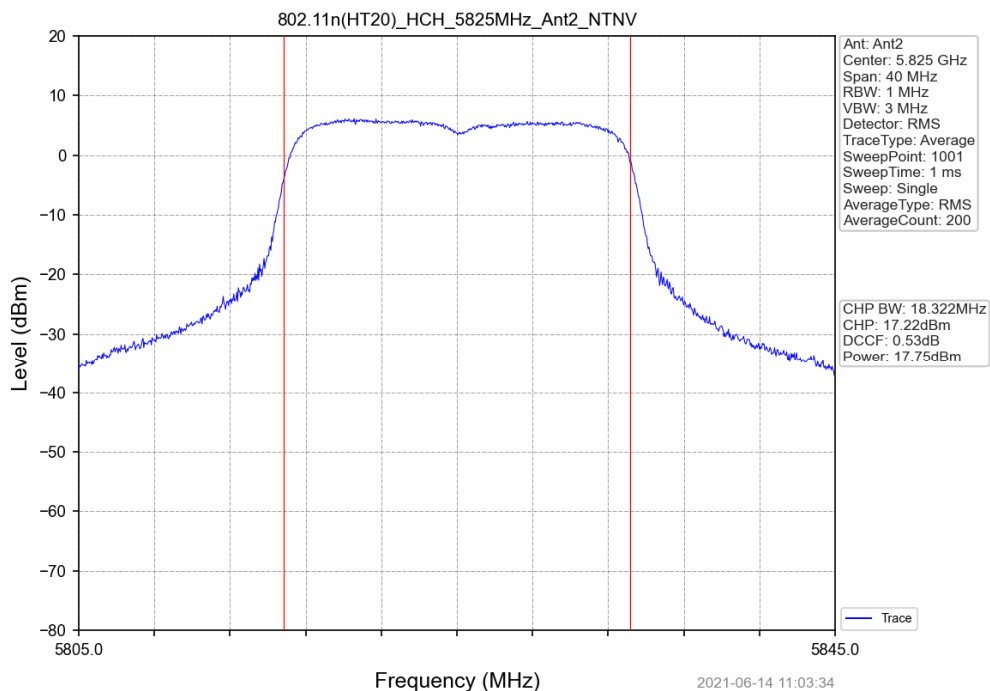
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802.11n(HT20)_HCH_5240MHz_Ant2_NTNV



802.11n(HT20)_HCH_5825MHz_Ant2_NTNV



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4. Maximum Power Spectral Density

4.1 PSD

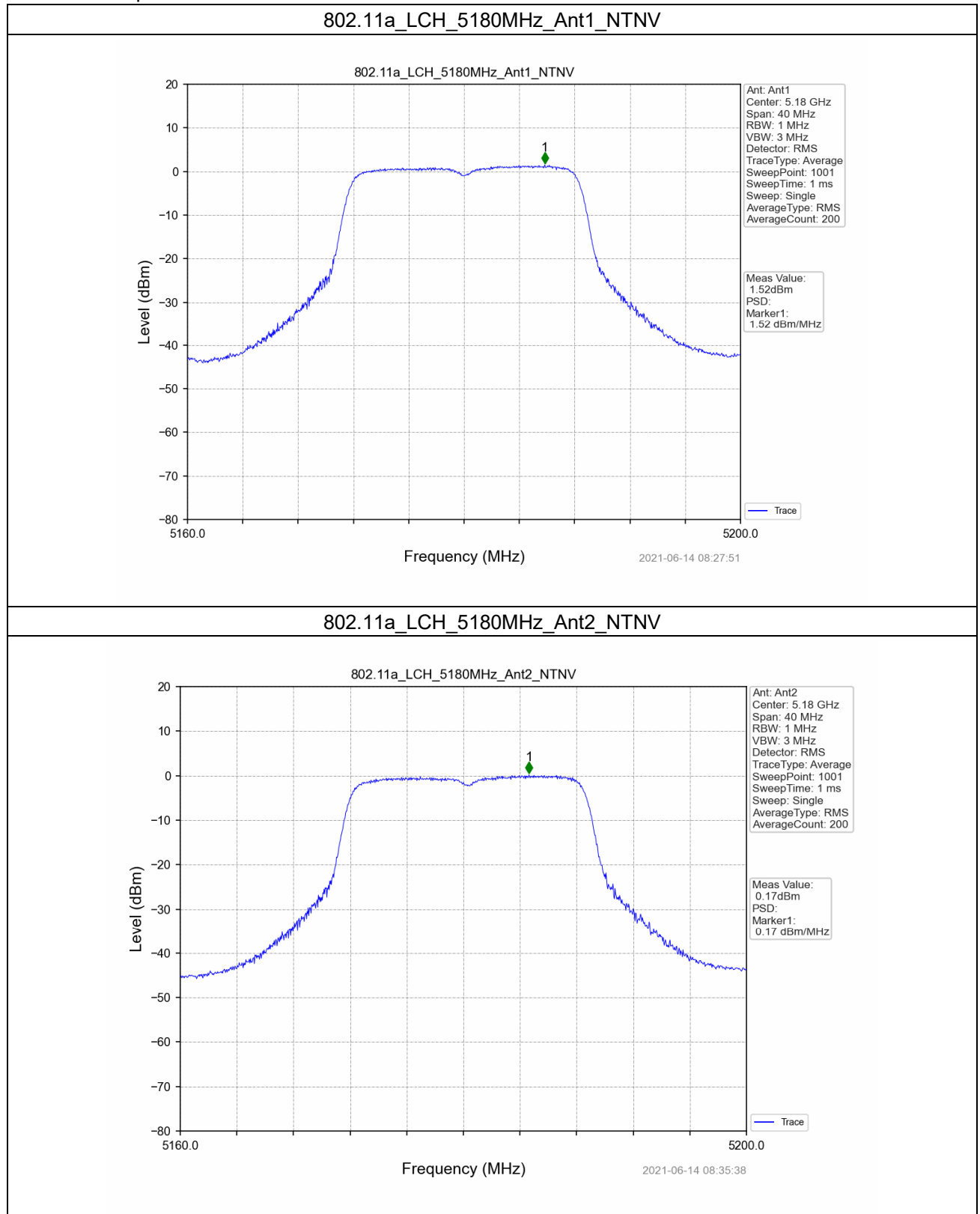
4.1.1 Test Result

Mode	TX Type	Frequency (MHz)	RU	RU Pos	Maximum PSD (dBm/MHz)			Limit (dBm/MHz)	Verdict
					Ant1	Ant2	Sum		
802.11a	MIMO	5180	/	/	1.52	0.17	3.77	<=11	Pass
		5200	/	/	0.72	0.78	3.67	<=11	Pass
		5240	/	/	0.41	1.48	3.90	<=11	Pass
802.11n (HT20)	MIMO	5180	/	/	-1.62	-0.95	1.63	<=11	Pass
		5200	/	/	-1.60	-1.35	1.42	<=11	Pass
		5240	/	/	-1.61	-1.36	1.32	<=11	Pass

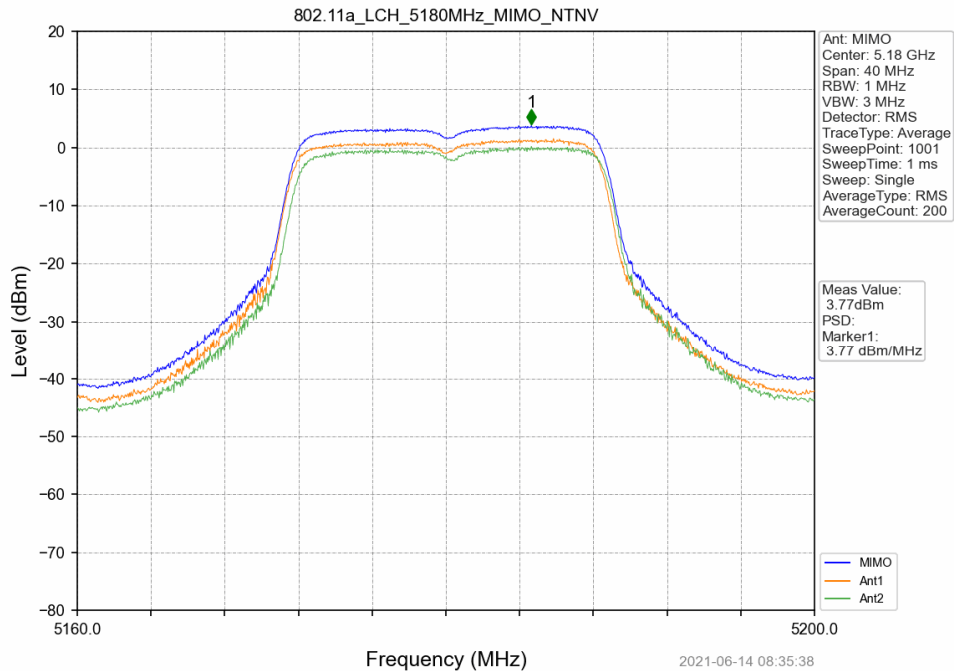
Note1: Antenna Gain: 1: 2.00dBi; 2: 2.00dBi; Directional gain= 5.01dBi



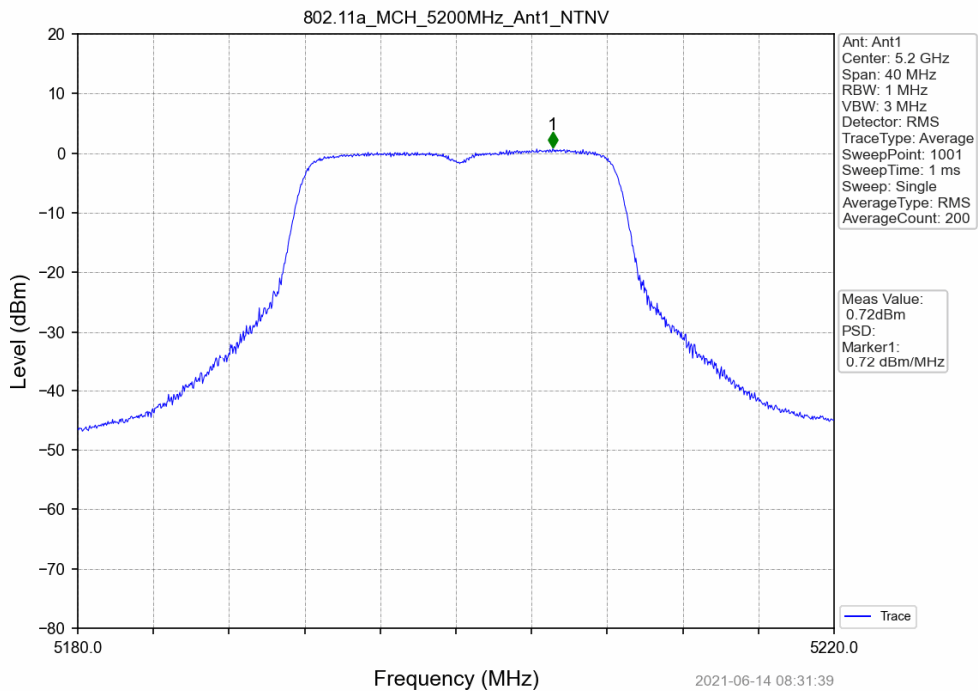
4.1.2 Test Graph



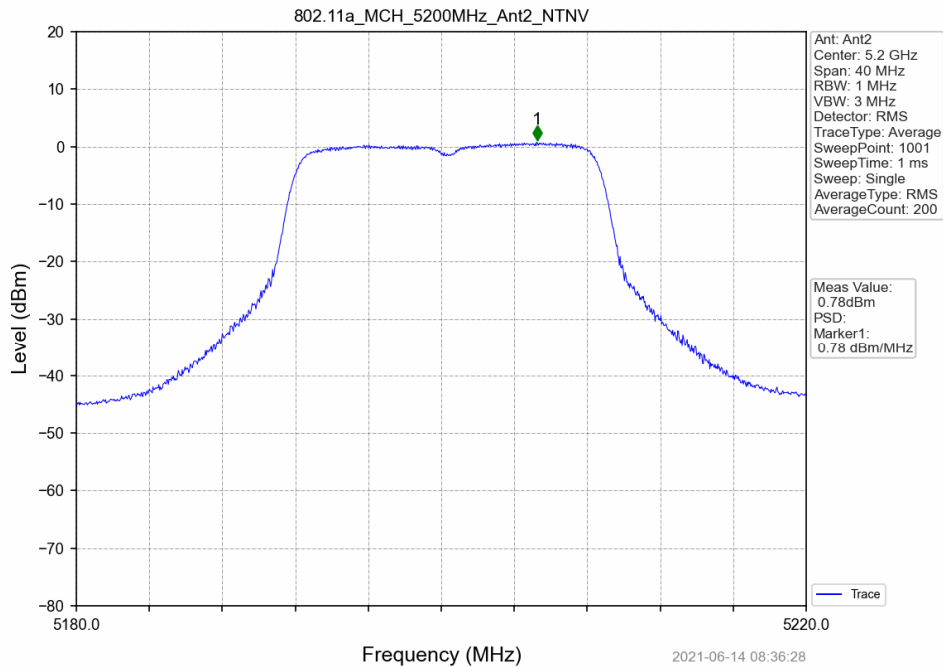
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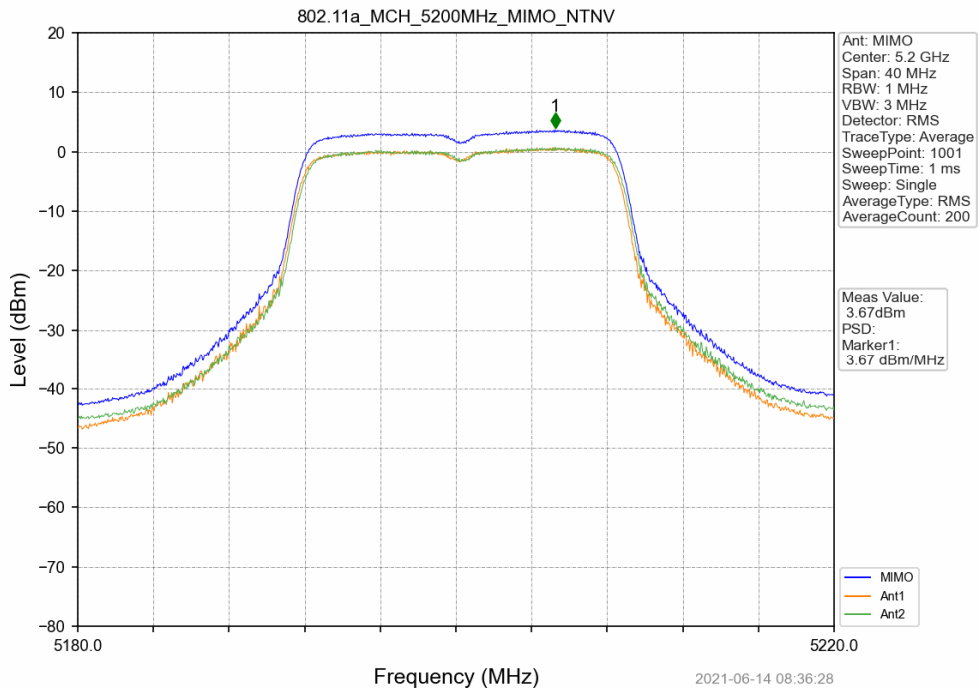
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802.11a_MCH_5200MHz_Ant2_NTNV



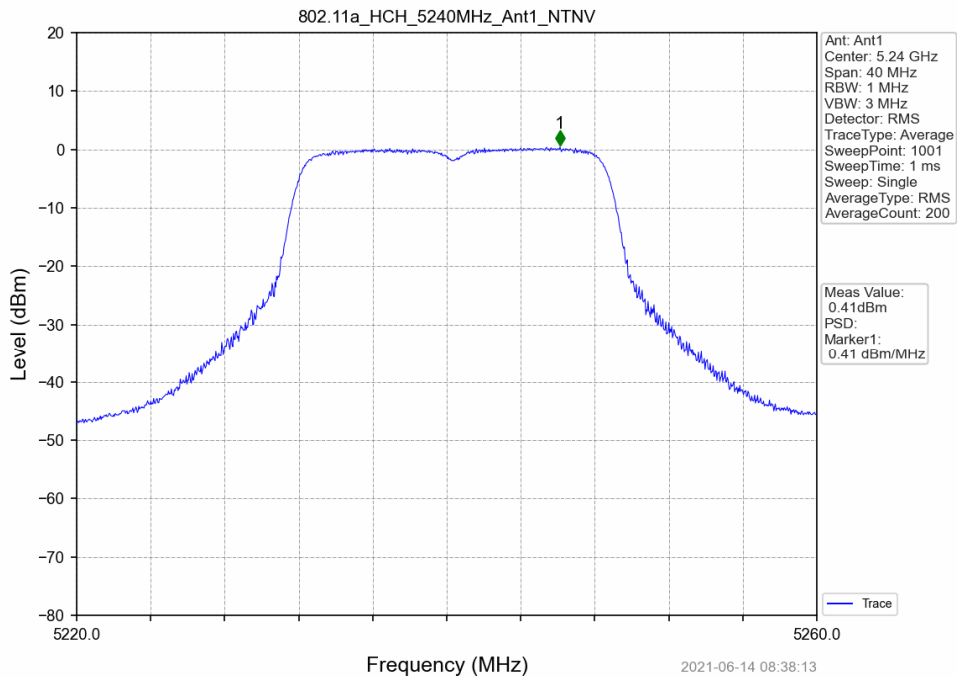
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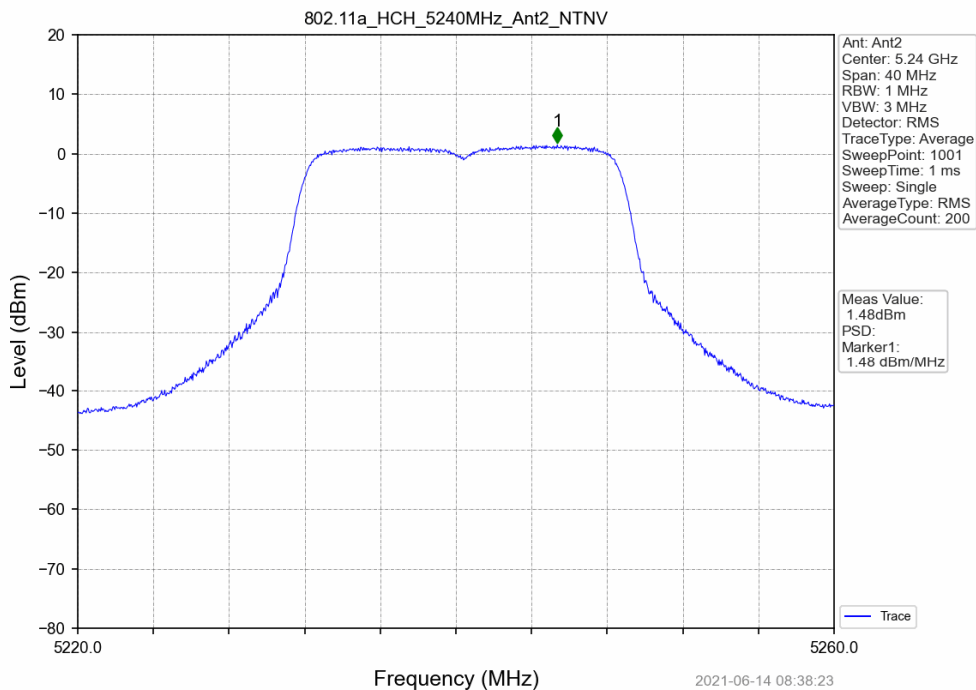
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802.11a_HCH_5240MHz_Ant1_NTNV



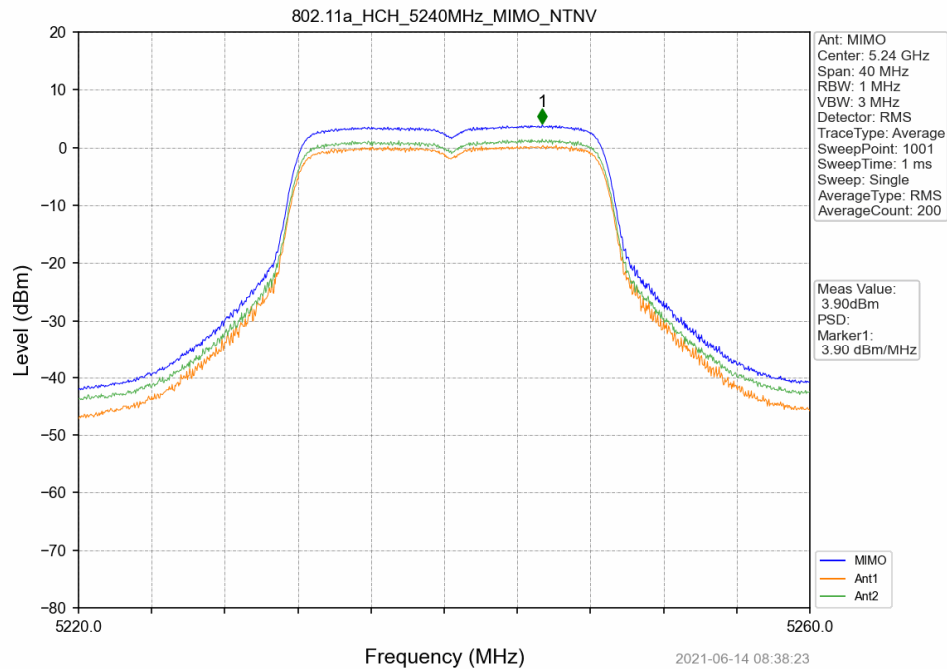
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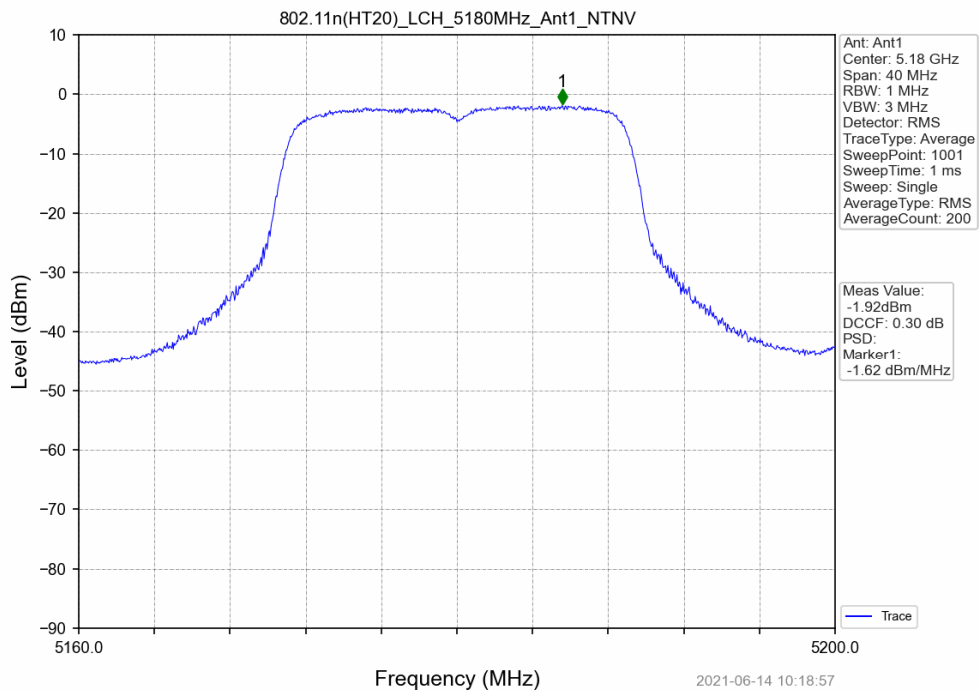
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802.11a_HCH_5240MHz_MIMO_NTNV



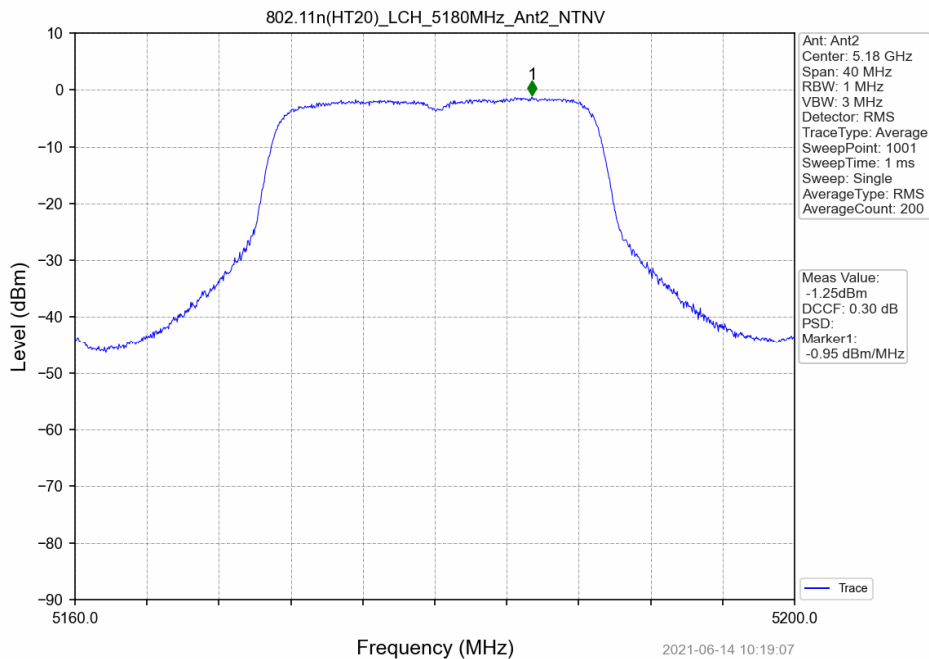
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



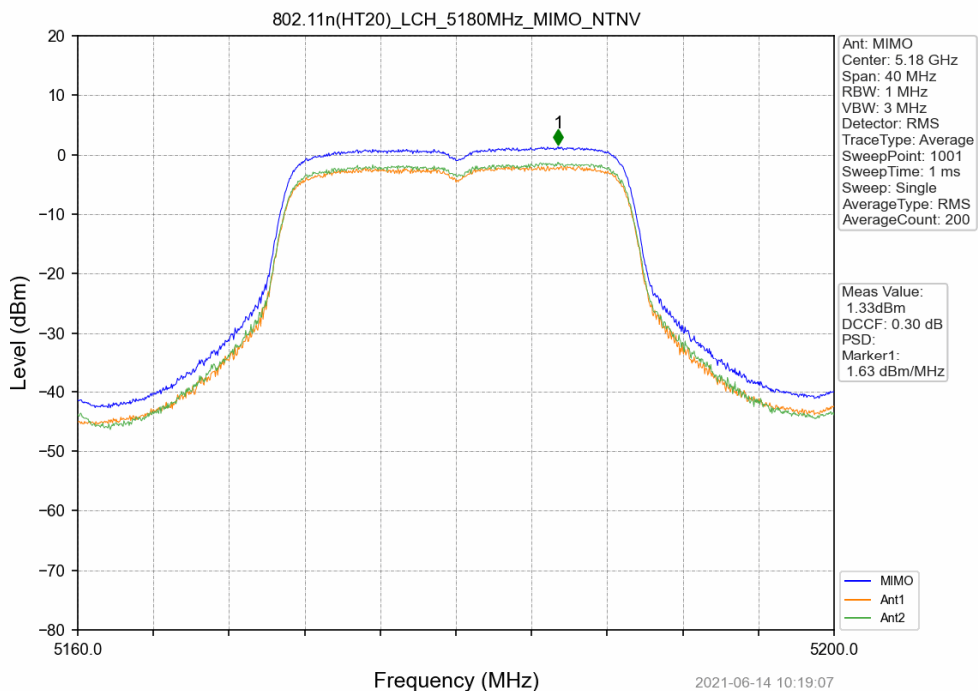
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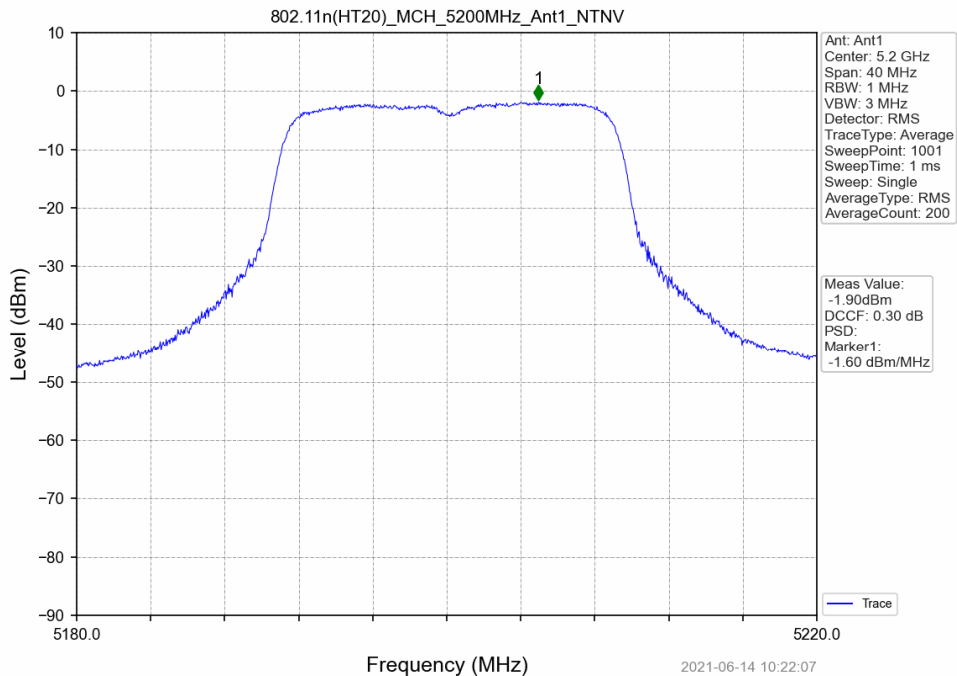
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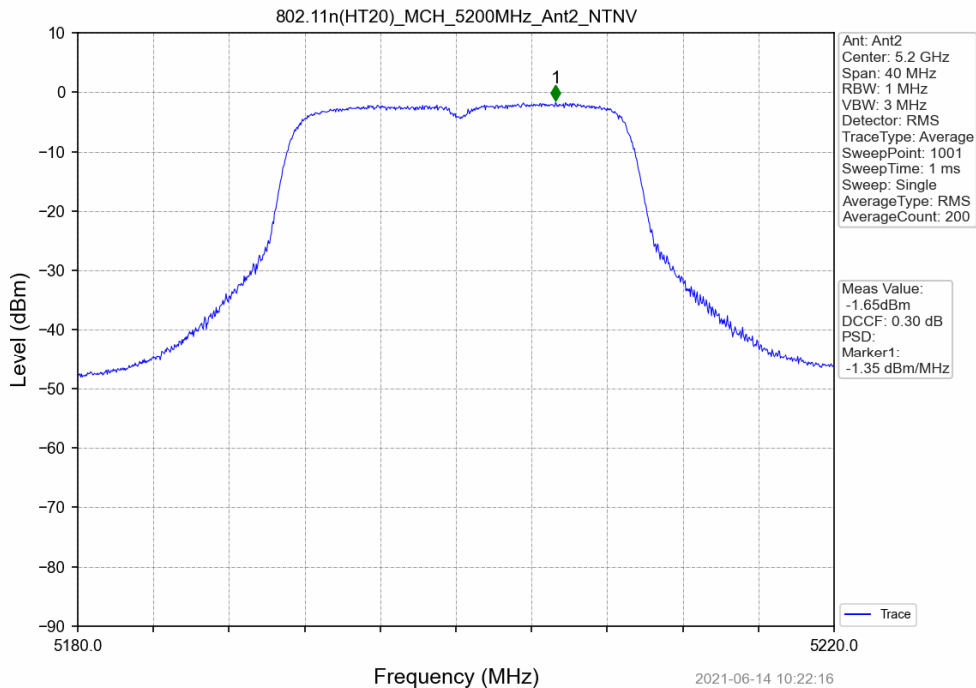
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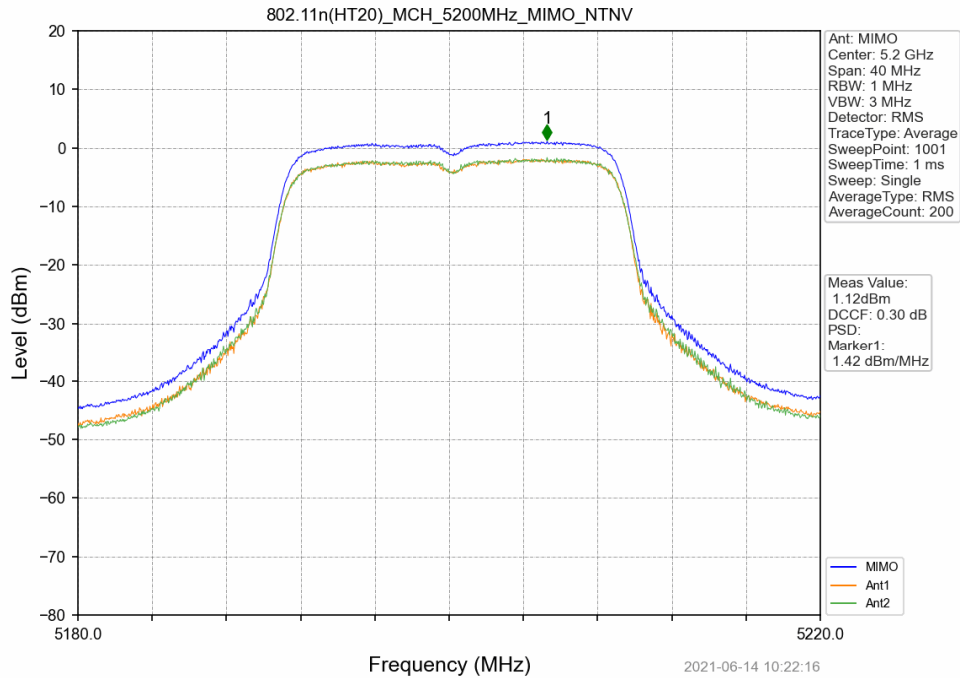
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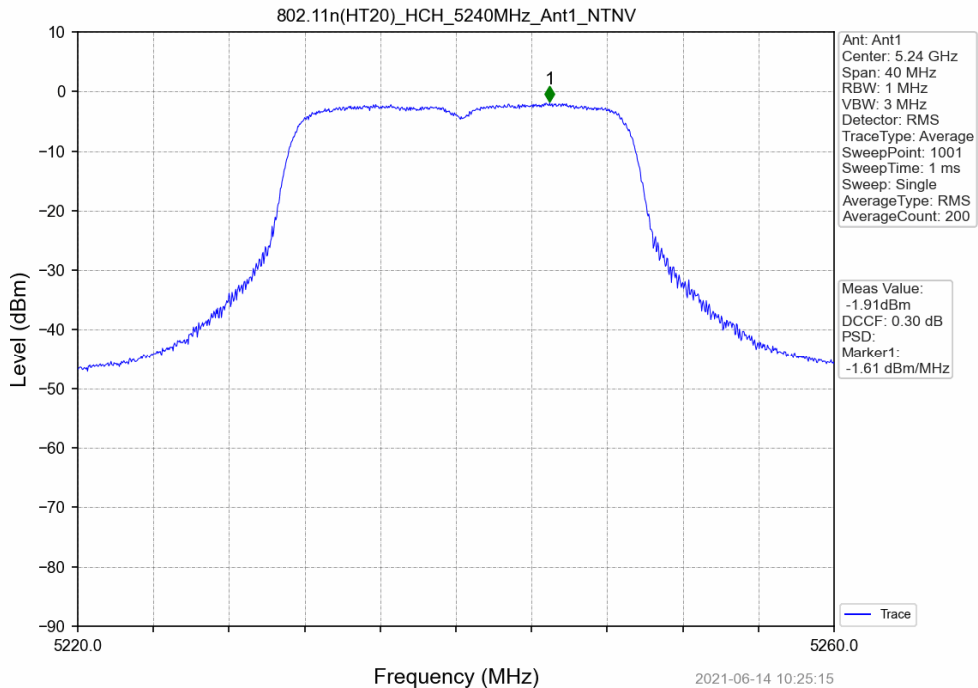
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802.11n(HT20)_MCH_5200MHz_MIMO_NTNV



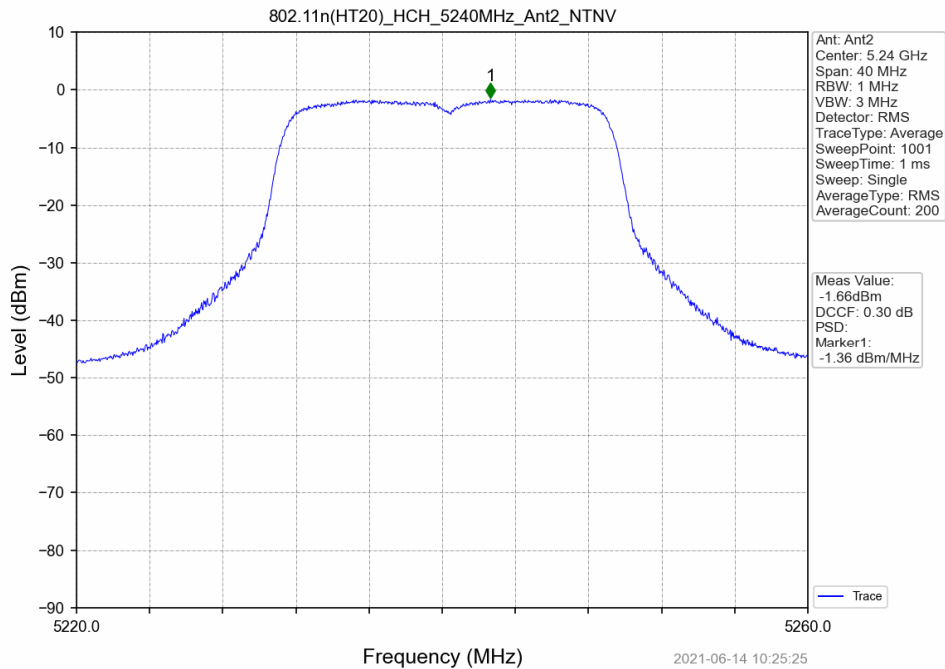
802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



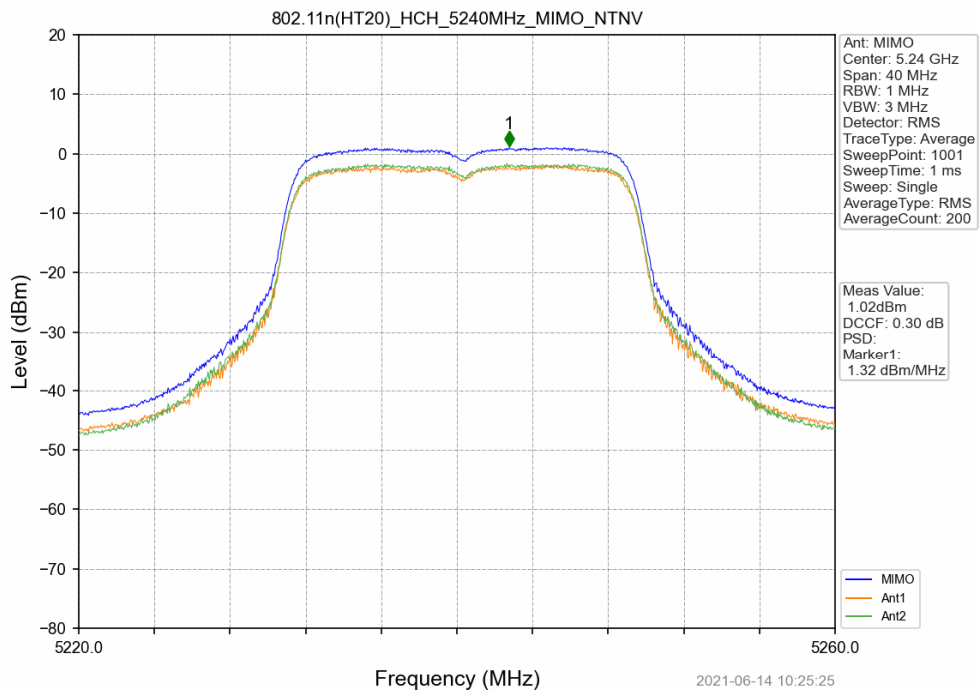
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802.11n(HT20)_HCH_5240MHz_Ant2_NTNV



802.11n(HT20)_HCH_5240MHz_MIMO_NTNV



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4.2 PSD-Band3

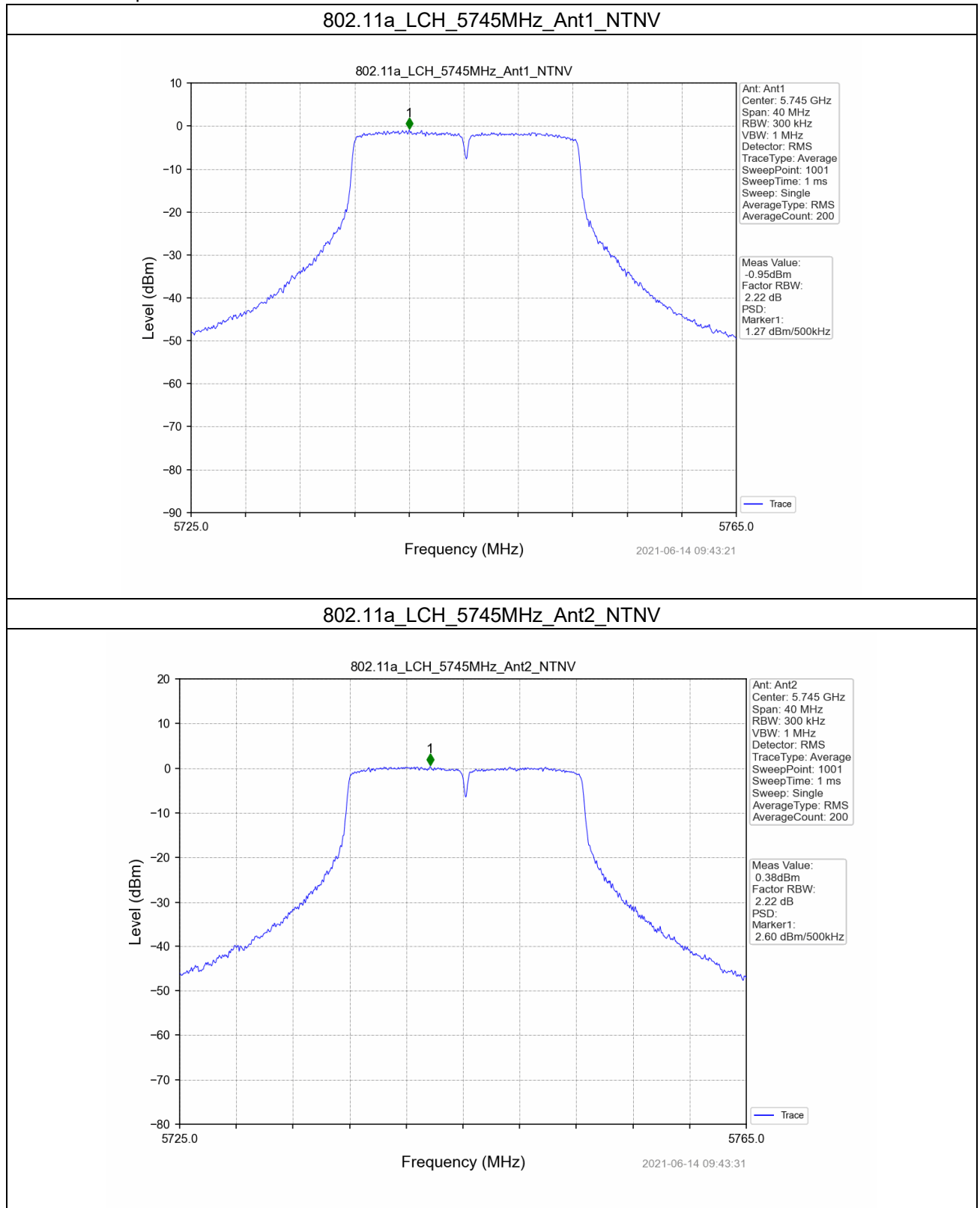
4.2.1 Test Result

Mode	TX Type	Frequency (MHz)	RU	RU Pos	Maximum PSD (dBm/500kHz)			Limit (dBm/500kHz)	Verdict
					Ant1	Ant2	Sum		
802.11a	MIMO	5745	/	/	1.27	2.60	4.87	<=30	Pass
		5785	/	/	1.51	3.32	5.40	<=30	Pass
		5825	/	/	-3.12	2.88	3.71	<=30	Pass
802.11n (HT20)	MIMO	5745	/	/	2.81	4.45	6.64	<=30	Pass
		5785	/	/	2.91	4.86	7.00	<=30	Pass
		5825	/	/	2.30	4.01	6.25	<=30	Pass

Note1: Antenna Gain: 1: 2.00dBi; 2: 2.00dBi;



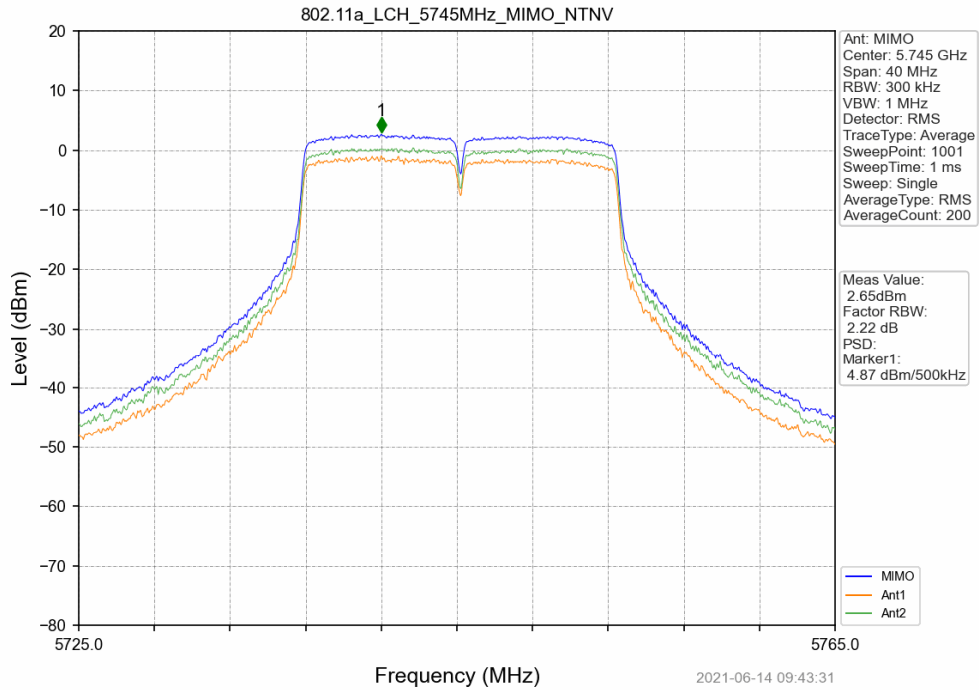
4.2.2 Test Graph



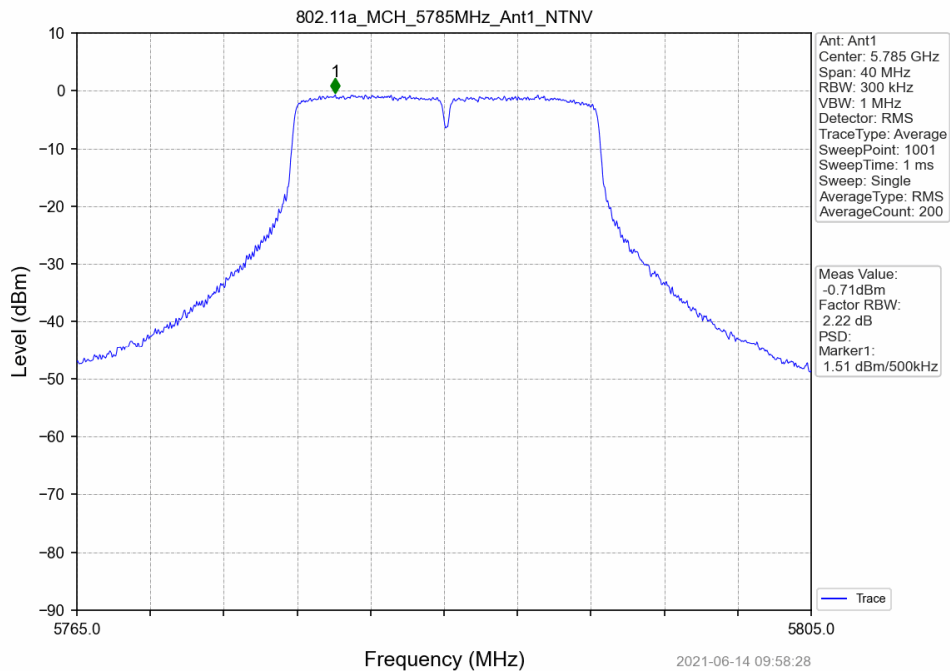
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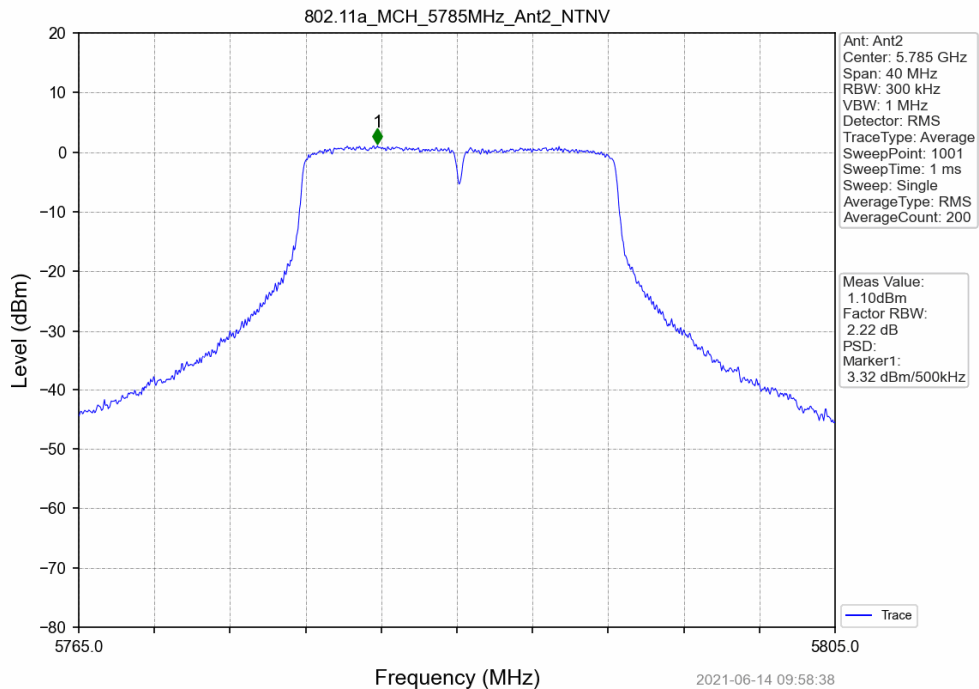
802.11a_LCH_5745MHz_MIMO_NTNV



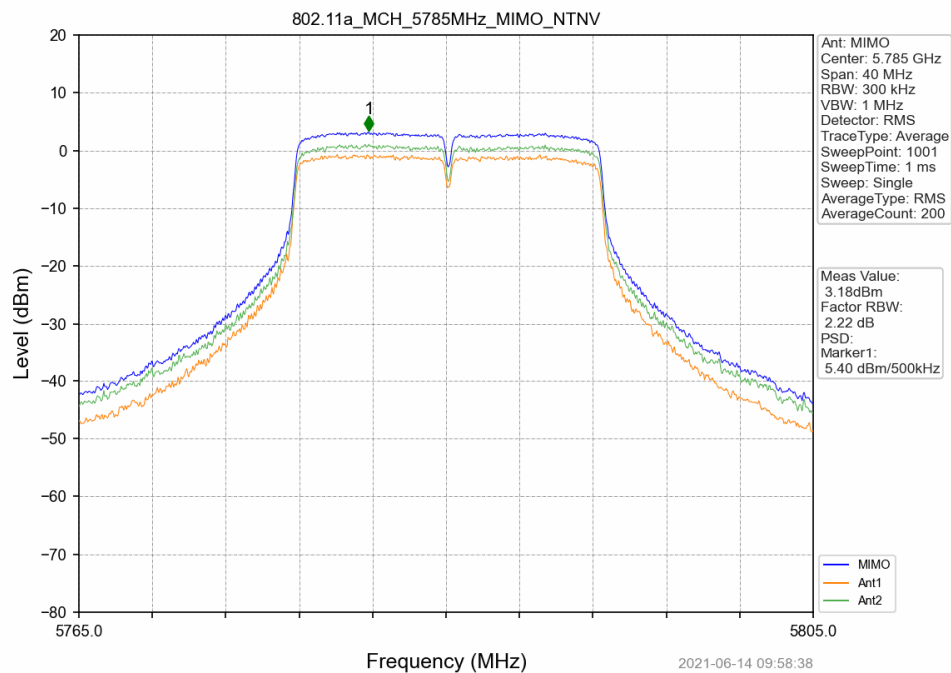
802.11a_MCH_5785MHz_Ant1_NTNV



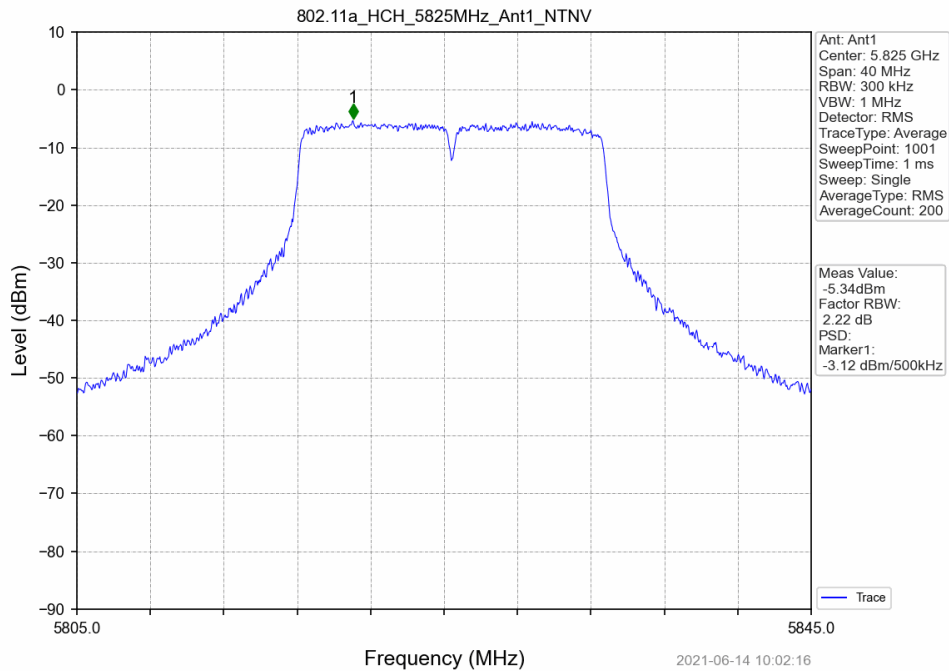
802.11a_MCH_5785MHz_Ant2_NTNV



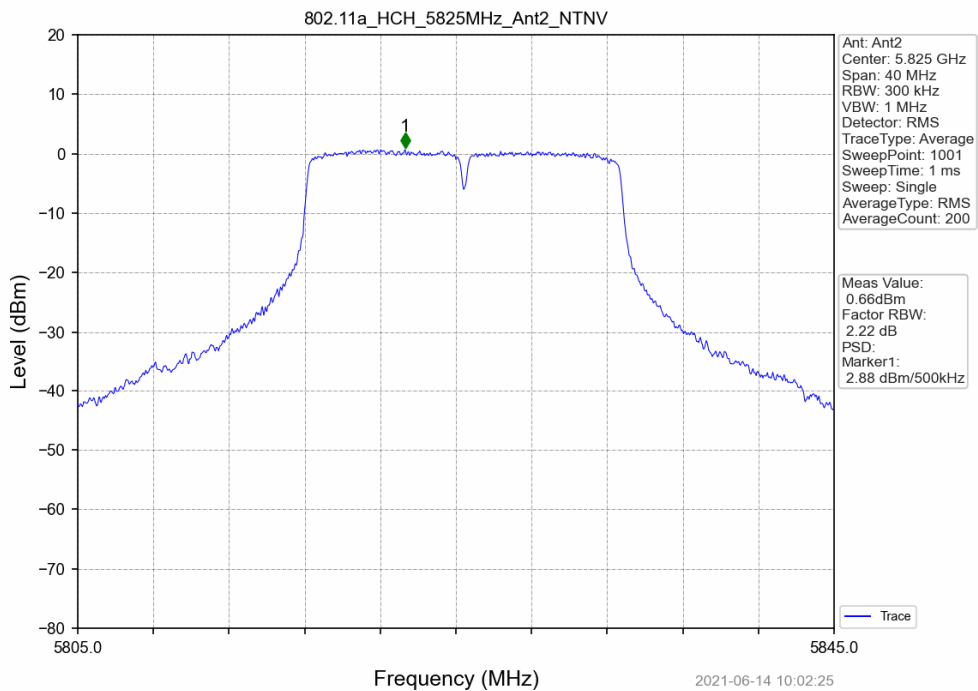
802.11a_MCH_5785MHz_MIMO_NTNV



802.11a_HCH_5825MHz_Ant1_NTNV



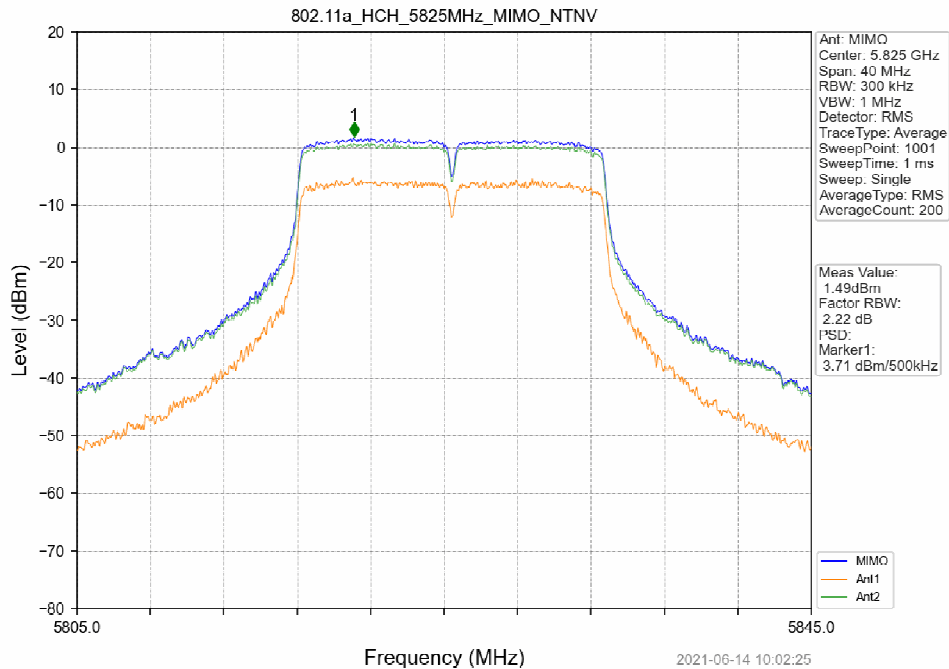
802.11a_HCH_5825MHz_Ant2_NTNV



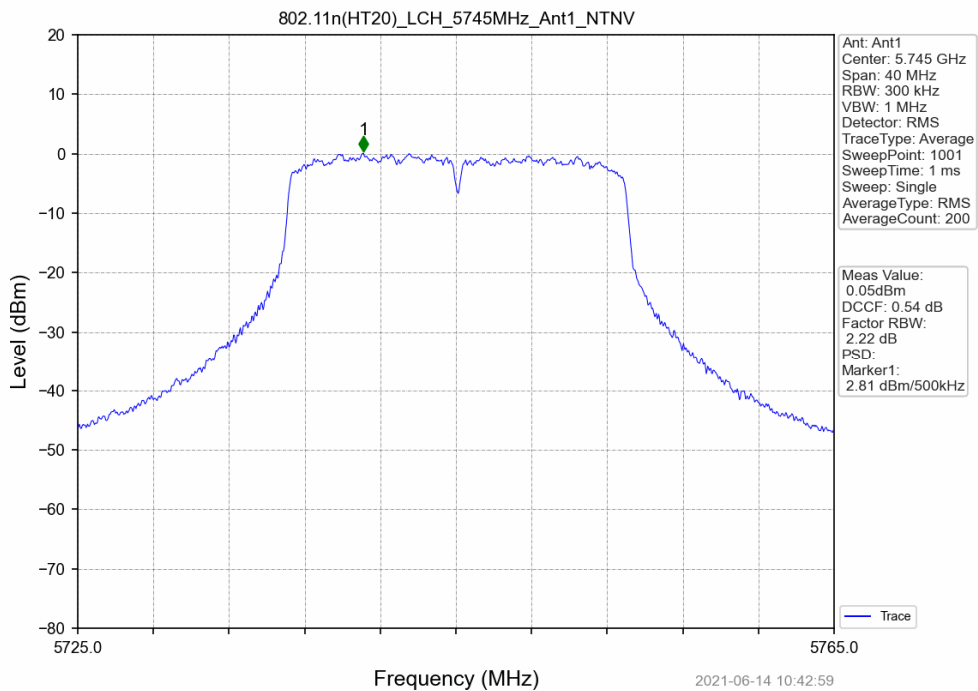
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802.11a_HCH_5825MHz_MIMO_NTNV



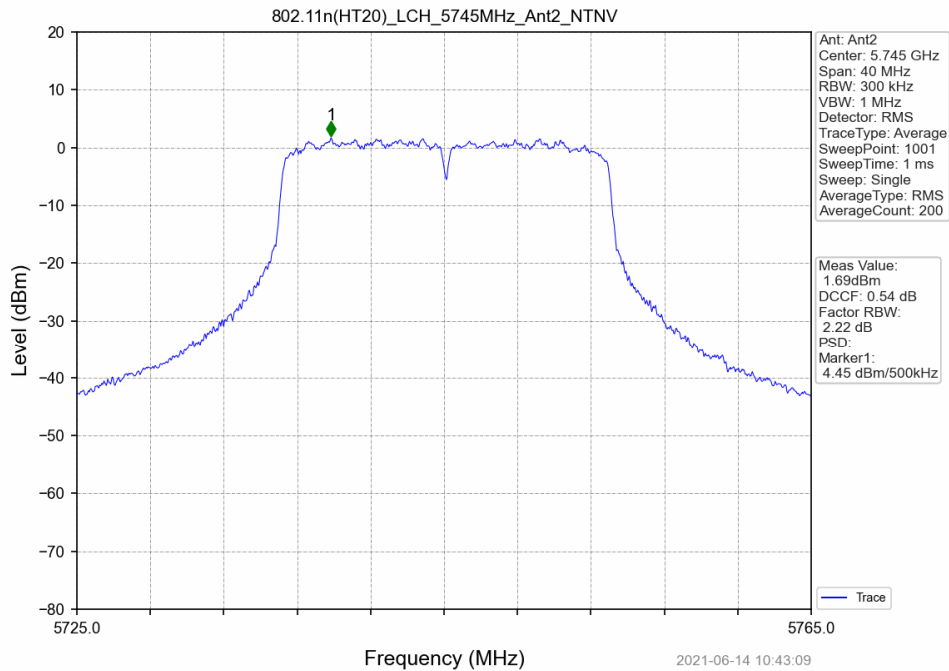
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



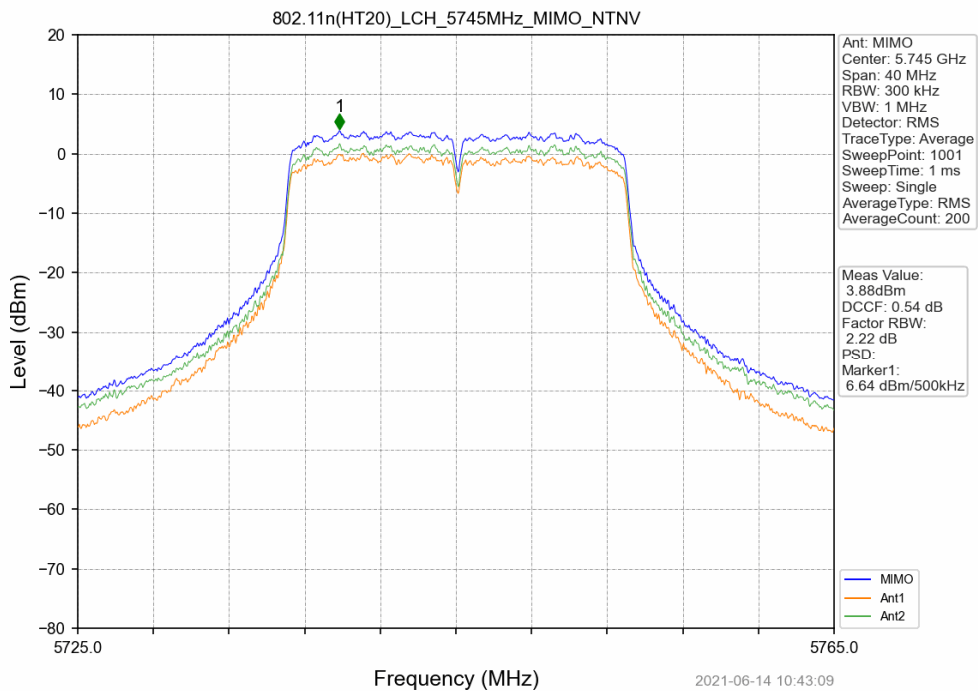
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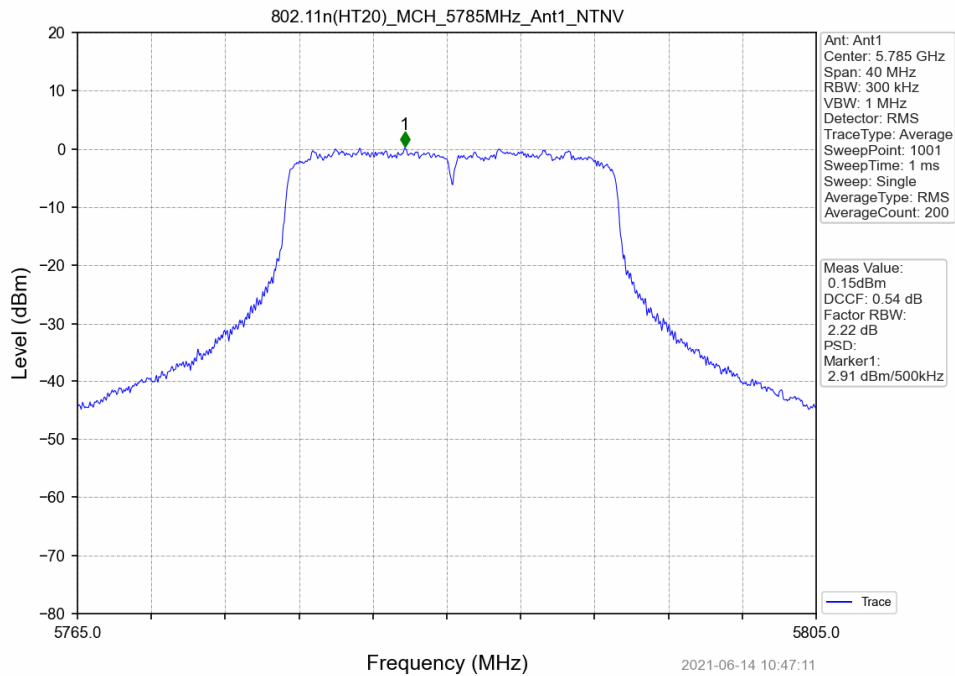
802.11n(HT20)_LCH_5745MHz_Ant2_NTNV



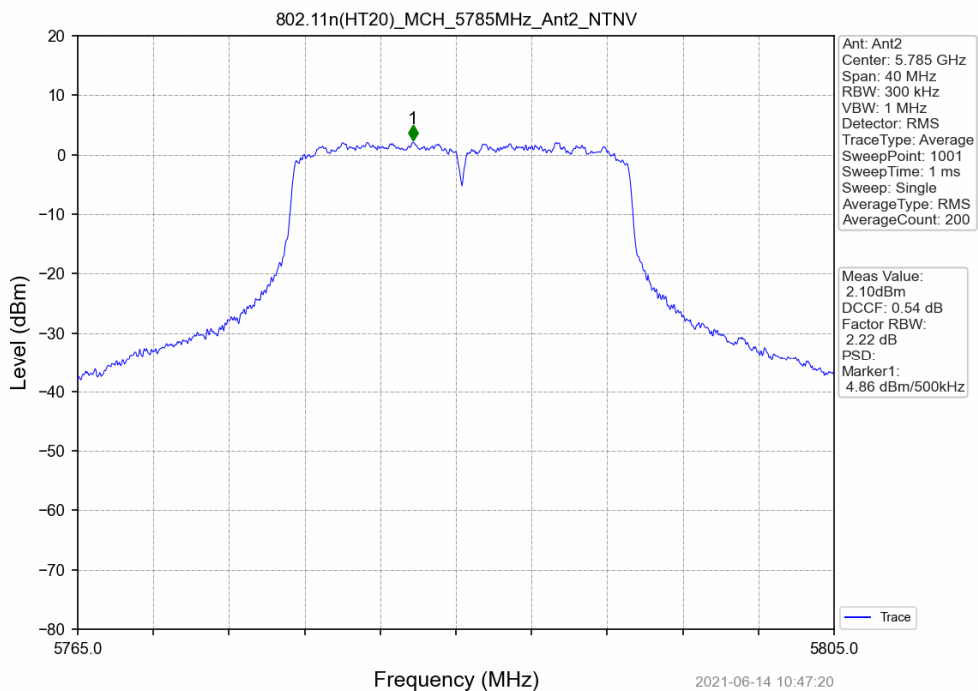
802.11n(HT20)_LCH_5745MHz_MIMO_NTNV



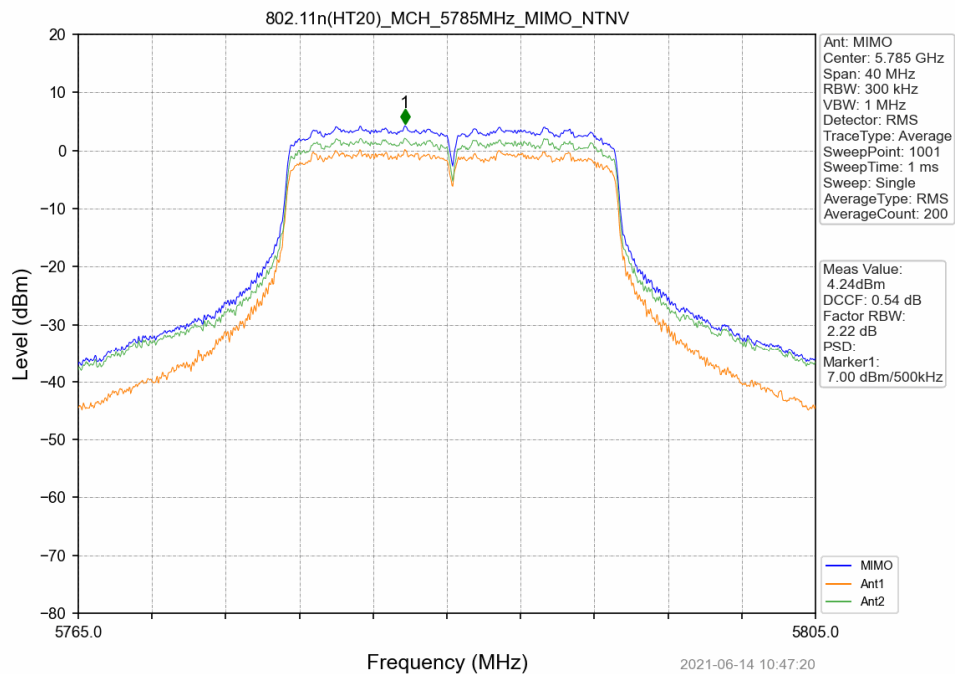
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



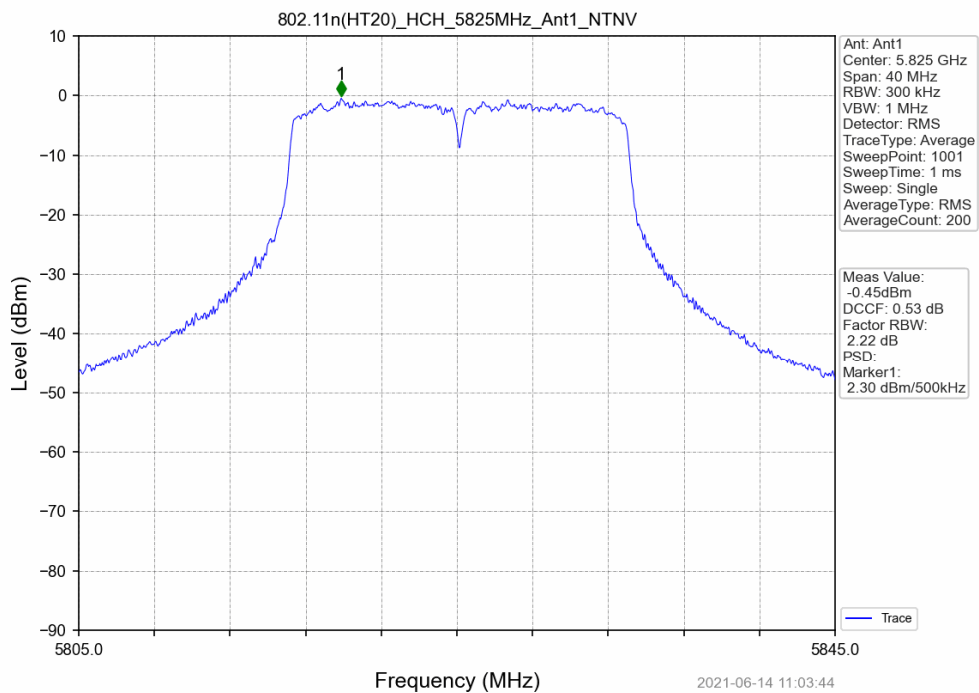
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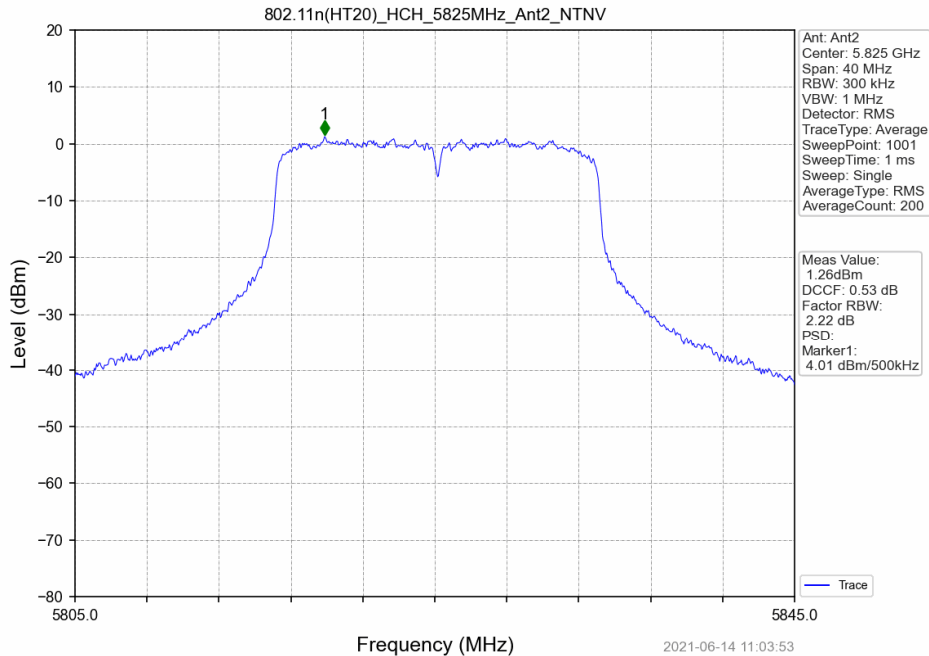
802.11n(HT20)_MCH_5785MHz_MIMO_NTNV



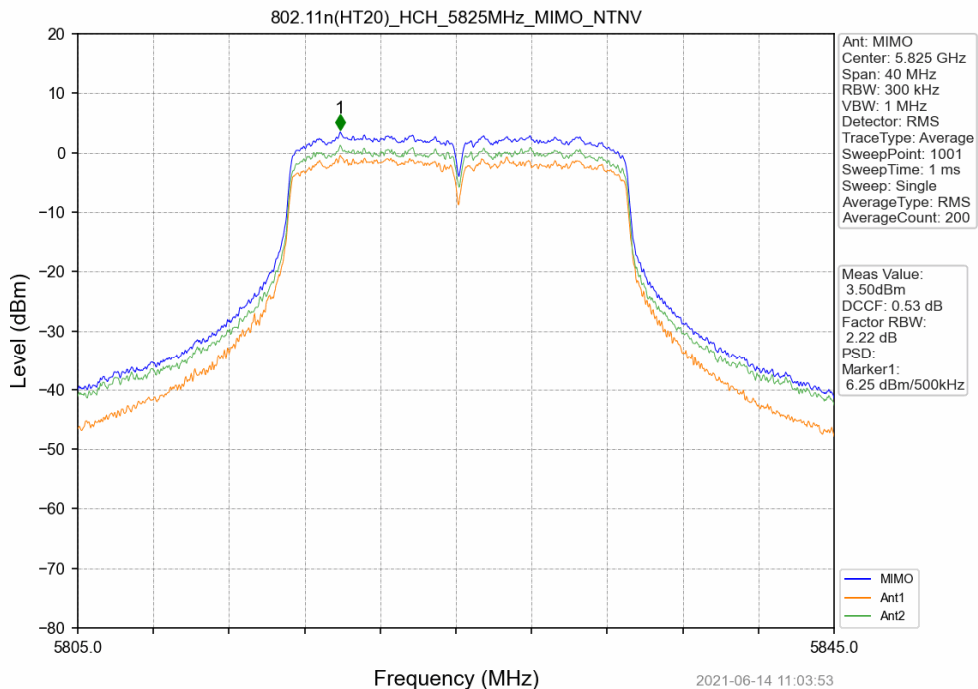
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



802.11n(HT20)_HCH_5825MHz_Ant2_NTNV



802.11n(HT20)_HCH_5825MHz_MIMO_NTNV



5. Frequency Stability

5.1 Ant1

5.1.1 Test Result

Pretest the EUT at antenna 1, antenna 2 and MIMO mode and found the antenna 1 of MIMO mode which is worst case for 802.11a/n mode; So, Only the worst test data is recorded in the report.

Ant1									
Mode	TX Type	Frequency (MHz)	RU	RU Pos	Temperature (°C)	Voltage (VAC)	Measured Frequency (MHz)	Limit	Verdict
802.11a	MIMO	5180	/	/	20	102	5180.040	5150 to 5250	Pass
						120	5180.060	5150 to 5250	Pass
						138	5180.040	5150 to 5250	Pass
					-30	120	5180.040	5150 to 5250	Pass
					-20	120	5180.060	5150 to 5250	Pass
					-10	120	5180.040	5150 to 5250	Pass
					0	120	5180.080	5150 to 5250	Pass
					10	120	5180.080	5150 to 5250	Pass
					30	120	5180.080	5150 to 5250	Pass
					40	120	5180.100	5150 to 5250	Pass
					50	120	5180.060	5150 to 5250	Pass
		5745	/	/	20	102	5745.140	5725 to 5850	Pass
						120	5745.160	5725 to 5850	Pass
						138	5745.140	5725 to 5850	Pass
					-30	120	5745.120	5725 to 5850	Pass
					-20	120	5745.160	5725 to 5850	Pass
					-10	120	5745.200	5725 to 5850	Pass
					0	120	5745.200	5725 to 5850	Pass
					10	120	5745.180	5725 to 5850	Pass
					30	120	5745.220	5725 to 5850	Pass
					40	120	5745.240	5725 to 5850	Pass
					50	120	5745.240	5725 to 5850	Pass
		5200	/	/	20	102	5200.280	5150 to 5250	Pass
						120	5200.200	5150 to 5250	Pass
						138	5200.160	5150 to 5250	Pass
					-30	120	5200.180	5150 to 5250	Pass
					-20	120	5200.220	5150 to 5250	Pass



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					-10	120	5200.240	5150 to 5250	Pass
					0	120	5200.240	5150 to 5250	Pass
					10	120	5200.240	5150 to 5250	Pass
					30	120	5200.260	5150 to 5250	Pass
					40	120	5200.220	5150 to 5250	Pass
					50	120	5200.200	5150 to 5250	Pass
		5785	/	/	20	102	5785.080	5725 to 5850	Pass
						120	5785.120	5725 to 5850	Pass
						138	5785.100	5725 to 5850	Pass
					-30	120	5785.180	5725 to 5850	Pass
					-20	120	5785.140	5725 to 5850	Pass
					-10	120	5785.140	5725 to 5850	Pass
					0	120	5785.160	5725 to 5850	Pass
					10	120	5785.180	5725 to 5850	Pass
					30	120	5785.180	5725 to 5850	Pass
					40	120	5785.260	5725 to 5850	Pass
					50	120	5785.240	5725 to 5850	Pass
		5240	/	/	20	102	5240.340	5150 to 5250	Pass
						120	5240.380	5150 to 5250	Pass
						138	5240.360	5150 to 5250	Pass
					-30	120	5240.300	5150 to 5250	Pass
					-20	120	5240.360	5150 to 5250	Pass
					-10	120	5240.360	5150 to 5250	Pass
					0	120	5240.360	5150 to 5250	Pass
					10	120	5240.320	5150 to 5250	Pass
					30	120	5240.340	5150 to 5250	Pass
					40	120	5240.400	5150 to 5250	Pass
					50	120	5240.380	5150 to 5250	Pass
		5825	/	/	20	102	5825.340	5725 to 5850	Pass
						120	5825.380	5725 to 5850	Pass
						138	5825.380	5725 to 5850	Pass
					-30	120	5825.320	5725 to 5850	Pass
					-20	120	5825.260	5725 to 5850	Pass
					-10	120	5825.300	5725 to 5850	Pass
					0	120	5825.320	5725 to 5850	Pass
					10	120	5825.300	5725 to 5850	Pass
					30	120	5825.340	5725 to 5850	Pass
					40	120	5825.260	5725 to 5850	Pass
					50	120	5825.260	5725 to 5850	Pass
802.11n (HT20)	MIMO	5180	/	/	20	102	5180.100	5150 to 5250	Pass
						120	5180.100	5150 to 5250	Pass



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						138	5180.080	5150 to 5250	Pass
					-30	120	5180.120	5150 to 5250	Pass
					-20	120	5180.160	5150 to 5250	Pass
					-10	120	5180.120	5150 to 5250	Pass
					0	120	5180.120	5150 to 5250	Pass
					10	120	5180.180	5150 to 5250	Pass
					30	120	5180.120	5150 to 5250	Pass
					40	120	5180.160	5150 to 5250	Pass
					50	120	5180.160	5150 to 5250	Pass
		5745	/	/	20	102	5745.120	5725 to 5850	Pass
						120	5745.120	5725 to 5850	Pass
						138	5745.160	5725 to 5850	Pass
					-30	120	5745.120	5725 to 5850	Pass
					-20	120	5745.160	5725 to 5850	Pass
					-10	120	5745.160	5725 to 5850	Pass
					0	120	5745.200	5725 to 5850	Pass
					10	120	5745.200	5725 to 5850	Pass
					30	120	5745.200	5725 to 5850	Pass
					40	120	5745.220	5725 to 5850	Pass
					50	120	5745.240	5725 to 5850	Pass
		5200	/	/	20	102	5200.240	5150 to 5250	Pass
						120	5200.280	5150 to 5250	Pass
						138	5200.260	5150 to 5250	Pass
					-30	120	5200.260	5150 to 5250	Pass
					-20	120	5200.280	5150 to 5250	Pass
					-10	120	5200.280	5150 to 5250	Pass
					0	120	5200.280	5150 to 5250	Pass
					10	120	5200.240	5150 to 5250	Pass
					30	120	5200.300	5150 to 5250	Pass
					40	120	5200.300	5150 to 5250	Pass
					50	120	5200.300	5150 to 5250	Pass
		5785	/	/	20	102	5785.320	5725 to 5850	Pass
						120	5785.220	5725 to 5850	Pass
						138	5785.280	5725 to 5850	Pass
					-30	120	5785.260	5725 to 5850	Pass
					-20	120	5785.300	5725 to 5850	Pass
					-10	120	5785.260	5725 to 5850	Pass
					0	120	5785.260	5725 to 5850	Pass
					10	120	5785.260	5725 to 5850	Pass
					30	120	5785.300	5725 to 5850	Pass
					40	120	5785.300	5725 to 5850	Pass



		5240	/	/	50	120	5785.280	5725 to 5850	Pass
					20	102	5240.320	5150 to 5250	Pass
						120	5240.300	5150 to 5250	Pass
						138	5240.340	5150 to 5250	Pass
						-30	5240.380	5150 to 5250	Pass
						-20	5240.320	5150 to 5250	Pass
						-10	5240.340	5150 to 5250	Pass
						0	5240.360	5150 to 5250	Pass
						10	5240.380	5150 to 5250	Pass
						30	5240.360	5150 to 5250	Pass
						40	5240.340	5150 to 5250	Pass
						50	5240.360	5150 to 5250	Pass
		5825	/	/	20	102	5825.180	5725 to 5850	Pass
						120	5825.160	5725 to 5850	Pass
						138	5825.220	5725 to 5850	Pass
						-30	5825.140	5725 to 5850	Pass
						-20	5825.220	5725 to 5850	Pass
						-10	5825.220	5725 to 5850	Pass
						0	5825.260	5725 to 5850	Pass
						10	5825.180	5725 to 5850	Pass
						30	5825.300	5725 to 5850	Pass
						40	5825.280	5725 to 5850	Pass
						50	5825.300	5725 to 5850	Pass

- End of the Report -



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