TEST REPORT

Application No.:	SZCR2310003474AT
Applicant:	Mammotion Technology Co., Limited
Address of Applicant:	UNIT 89 3/F YAU LEE CENTRE NO.45 HOI YUEN ROAD, KWUN TONG KL HONG KONG China
Manufacturer:	Mammotion Technology Co., Limited
Address of Manufacturer:	UNIT 89 3/F YAU LEE CENTRE NO.45 HOI YUEN ROAD, KWUN TONG KL HONG KONG China
Factory:	Huizhou BYD Electronic Co., Ltd.
Address of Factory:	Daya Bay Economic and Technological Development Zone, Huizhou City
Equipment Under Test (EUT):	
EUT Name:	Luba 2 AWD
Model No.:	1000, 3000, 5000, 10000, 1000H, 3000H, 5000H, 10000H ♣
♣	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark:	Mammotion
FCC ID:	2A8QJ-LUBA2AWD
Standard(s) :	47 CFR Part 15, Subpart E 15.407
Date of Receipt:	2023-10-31
Date of Test:	2023-11-09 to 2024-01-05
Date of Issue:	2024-01-09
Test Result:	**Pass***

* 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		2024-01-09		Original

Authorized for issue by:				
		Darren Yuan		
		Darren Yuan/Project Engineer		
		Eric Fu		
		Eric Fu/Reviewer		

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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 E 15.407 (c)	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart E 15.407	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207 & Subpart E 15.407 b(9)	Pass
Duty Cycle		KDB 789033 II B 1	KDB 789033 D02 II B 1	Pass
99% Bandwidth		KDB 789033 II D	N/A	Pass
Minimum 6 dB bandwidth (5.725-5.85 GHz band)		KDB 789033 D02 II C 2	47 CFR Part 15, Subpart E 15.407 (e)	Pass
Maximum Conducted output power		KDB 789033 D02 II E	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Peak Power spectrum density		KDB 789033 D02 II F	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Radiated Emissions (Below 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Radiated Emissions (Above 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & Subpart E 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 & Subpart E 15.407(b)	Pass
Frequency Stability		ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart E 15.407 (g)	Pass
Non-occupancy period		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass
Channel Move Time		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass
Channel Closing Transmission Time		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass

Declaration of EUT Family Grouping:

Model No.: 1000, 3000, 5000, 10000, 1000H, 3000H, 5000H, 10000H

Only the model 5000 was tested, since according to the declaration from the applicant, the electrical circuit design, PCB layout, components used and internal wiring and functions were identical for the above models, with only difference on model No. and battery capacity.

Model	Battery Capacity
1000	21.6Vdc, 4.5Ah, 97.2Wh
3000	21.6Vdc, 9.6Ah, 207.36Wh
5000	21.6Vdc, 9.6Ah, 207.36Wh
10000	21.6Vdc, 9.6Ah, 207.36Wh
1000H	21.6Vdc, 4.5Ah, 97.2Wh
3000H	21.6Vdc, 9.6Ah, 207.36Wh
5000H	21.6Vdc, 9.6Ah, 207.36Wh
10000H	21.6Vdc, 9.6Ah, 207.36Wh

Considering to the difference, both batteries are pre-tested, Higher capacity battery is the worst-case,

Only the worst-case test data were recorded in this report.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	Powered by Rechargeable Li-ion Battery. Battery information 1# Rated Voltage: 21.6VDC Rated Capacity: 9.6Ah/207.36Wh Battery information 2# Rated Voltage: 21.6VDC Rated Capacity: 4.5Ah/97.2Wh Charging station information Model: CHG0002, CHG0003 Input: 25.2VDC, 176.4W Output: 22.6VDC, 7.0A Charging station adapter information Model: GQ180-2520700-E4 Input: 100-240VAC, 50/60Hz 2.5A Max Output: 25.2VDC, 7.0A, 176.4W
Operation Frequency (20MHz):	U-NII-2C: 5500MHz-5700MHz U-NII-3: 5745MHz -5825MHz
Operation Frequency (40MHz):	U-NII-2C: 5510MHz-5670MHz U-NII-3: 5755MHz -5795MHz
Channel number (20MHz):	U-NII-2C: 11, U-NII-3: 5
Channel number (40MHz):	U-NII-2C: 5, U-NII-3: 2
Modulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing:	802.11a/n(HT20): 20MHz 802.11n(HT40): 40MHz
DFS Function:	Slave without Radar detection
TPC Function:	Without TPC function
Antenna Type:	PIFA Antenna
Antenna Gain:	U-NII-2C: 3.8dBi, U-NII-3: 3.1dBi

Cable Loss (for RF conducted test):	U-NII-2C: 1.6dB, U-NII-3: 1.9dB

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
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The EUT has been tested as an independent unit.			

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	± 3.1dB
Duty Cycle	± 0.37%
99% Bandwidth	± 3%
Minimum 6 dB bandwidth (5.725-5.85 GHz band)	± 3%
Maximum Conducted output power	± 0.75dB
Peak Power spectrum density	± 2.84dB
Radiated Emissions (Below 1GHz)	± 6.0dB for 3m; ± 5.0dB for 10m
Radiated Emissions (Above 1GHz)	± 4.6dB (1-18GHz);± 4.8dB (18-40GHz)
Radiated Emissions which fall in the restricted bands	± 6.0dB (below 1GHz); ± 4.6dB (above 1GHz);
Frequency Stability	± 7.25 x 10-8
Remark: The U_{lab} (lab Uncertainty) is less than $U_{cispr/ETSI}$ (CISPR/ETSI 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, Nanshan District, 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: CN1336

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

Designation Number: CN1336. Test Firm Registration Number: 787754.

• 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

5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2022-05-14	2025-05-13
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2023-03-20	2024-03-19
Matching Pad	N/A	N/A	SEM021-23	2023-03-22	2024-03-21
Matching Pad	N/A	N/A	SEM021-24	2023-03-22	2024-03-21
Measurement Software	AUDIX	e3 V8.2014-6-27a	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2023-07-07	2024-07-06
LISN	Rohde&Schwarz	ENV216	SEM007-01	2023-09-19	2024-09-18
LISN	ETS-LINDGREN	3816/2	SEM007-02	2023-03-20	2024-03-19

Duty Cycle					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2023-09-19	2024-09-18
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2023-03-21	2024-03-20

99% Bandwidth					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2023-09-19	2024-09-18
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2023-03-21	2024-03-20

Minimum 6 dB bandwidth (5.725-5.85 GHz band)					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2023-09-19	2024-09-18
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2023-03-21	2024-03-20

Maximum Conducted output power					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Power Sensor	TST PASS	TSPS2023R	SEM009-26	2023-04-01	2024-03-31
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2023-03-21	2024-03-20
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2023-09-19	2024-09-18
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2023-03-21	2024-03-20

Peak Power spectrum density					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2023-09-19	2024-09-18
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2023-03-21	2024-03-20

Radiated Emissions (Below 1GHz)					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2021-11-21	2023-11-20
				2023-11-20	2025-11-19
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2023-06-19	2026-06-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2023-10-19	2024-10-18
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2023-09-16	2025-09-15
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2023-03-20	2024-03-19
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2023-07-07	2024-07-06

Radiated Emissions (Above 1GHz)					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
3m Fully-Anechoic Chamber	AUDIX	N/A	SEM001-02	2023-04-01	2026-03-31
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2023-03-20	2024-03-19
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2023-07-23	2025-07-22
Microwave system amplifier	Agilent	83017A	SEM005-25	2023-09-19	2024-09-18
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2023-07-07	2024-07-06
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	SEM003-15	2022-08-10	2024-08-09
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2023-03-20	2024-03-19

Radiated Emissions which fall in the restricted bands					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
3m Fully-Anechoic Chamber	AUDIX	N/A	SEM001-02	2023-04-01	2026-03-31
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2023-03-20	2024-03-19
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2023-07-23	2025-07-22
Microwave system amplifier	Agilent	83017A	SEM005-25	2023-09-19	2024-09-18
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2023-07-07	2024-07-06

Frequency Stability					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2023-09-19	2024-09-18
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2023-03-21	2024-03-20

Non-occupancy period					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2023-03-31	2024-03-30
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2023-03-31	2024-03-30
Measurement Software	KEYSIGHT	Signal Studio for DFS Radar Profiles V2.2.0.0	N/A	N/A	N/A
Measurement Software	Agilent	ISMonitor10	N/A	N/A	N/A
MXG Vector Signal Generator	Agilent	N5182A	SEM006-21	2023-03-31	2024-03-30
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-22	2023-03-21	2024-03-20

Channel Move Time					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2023-03-31	2024-03-30
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2023-03-31	2024-03-30
Measurement Software	KEYSIGHT	Signal Studio for DFS Radar Profiles V2.2.0.0	N/A	N/A	N/A
Measurement Software	Agilent	ISMonitor10	N/A	N/A	N/A
MXG Vector Signal Generator	Agilent	N5182A	SEM006-21	2023-03-31	2024-03-30
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-22	2023-03-21	2024-03-20

Channel Closing Transmission Time					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2023-03-31	2024-03-30
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2023-03-31	2024-03-30
Measurement Software	KEYSIGHT	Signal Studio for DFS Radar Profiles V2.2.0.0	N/A	N/A	N/A
Measurement Software	Agilent	ISMonitor10	N/A	N/A	N/A
MXG Vector Signal Generator	Agilent	N5182A	SEM006-21	2023-03-31	2024-03-30
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-22	2023-03-21	2024-03-20

General used equipment					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	deli	8838	SEM002-32	2023-07-28	2024-07-27
Humidity/ Temperature Indicator	deli	8838	SEM002-33	2023-07-28	2024-07-27
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2023-03-23	2024-03-22

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 permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
15.247(b) (4) requirement:
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
EUT Antenna:
The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is U-NII-2C: 3.8dBi, U-NII-3: 3.1dBi.
Antenna location: Refer to internal photo.

6.2 Transmission in the Absence of Data

6.2.1 Test Requirement:

47 CFR Part 15, Subpart E 15.407 (c)

6.2.2 Conclusion

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 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207 & Subpart E 15.407 b(9)
Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		

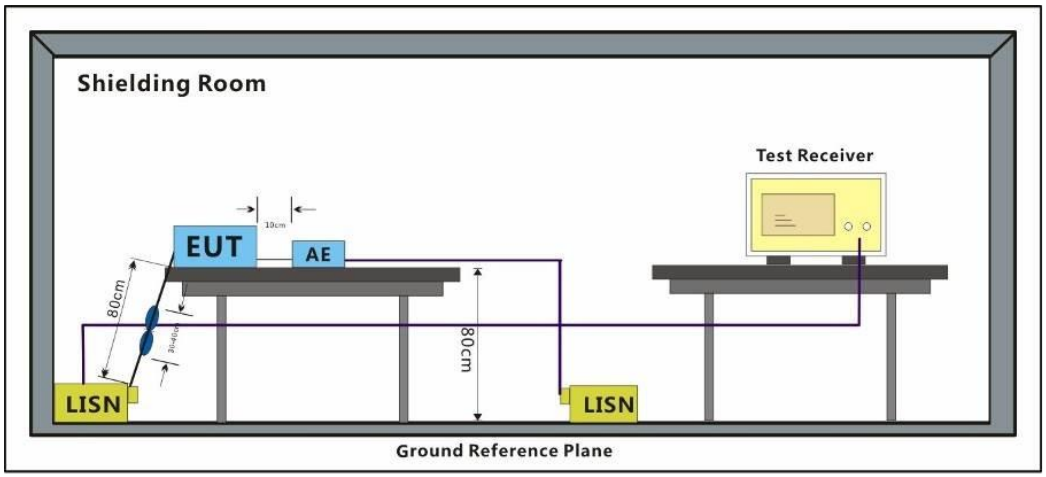
7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 23.4 °C Humidity: 47.3 % RH Atmospheric Pressure: 1000 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	12	Charge + TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. 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 20/40, Only the data of worst case is recorded in the report.
Pre-scan	13	Charge + TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. 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 20/40, Only the data of worst case is recorded in the report.

7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

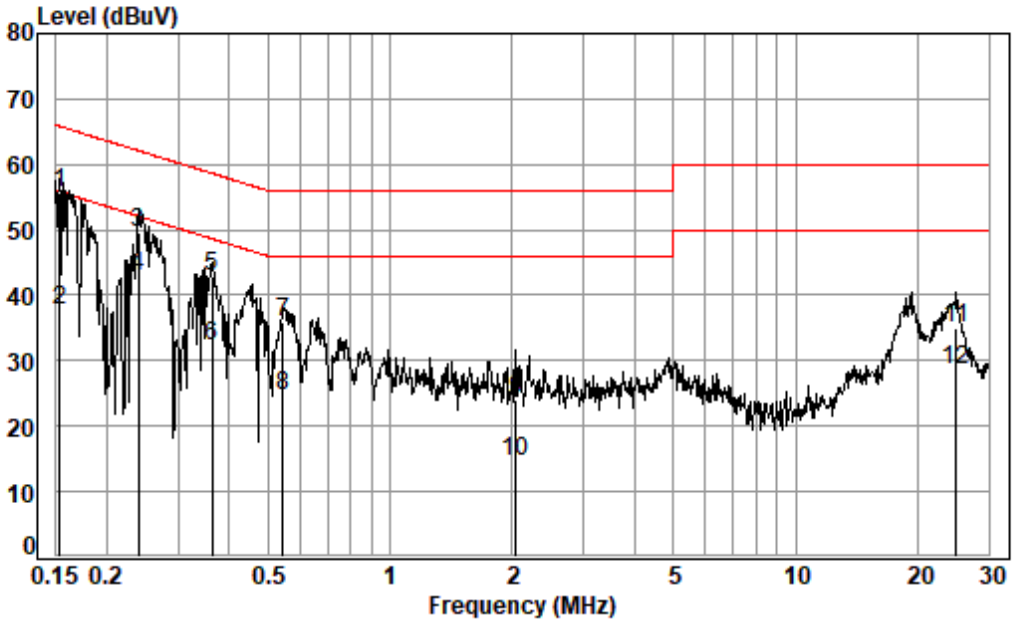
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: Level=Read Level+ Cable Loss+ LISN Factor

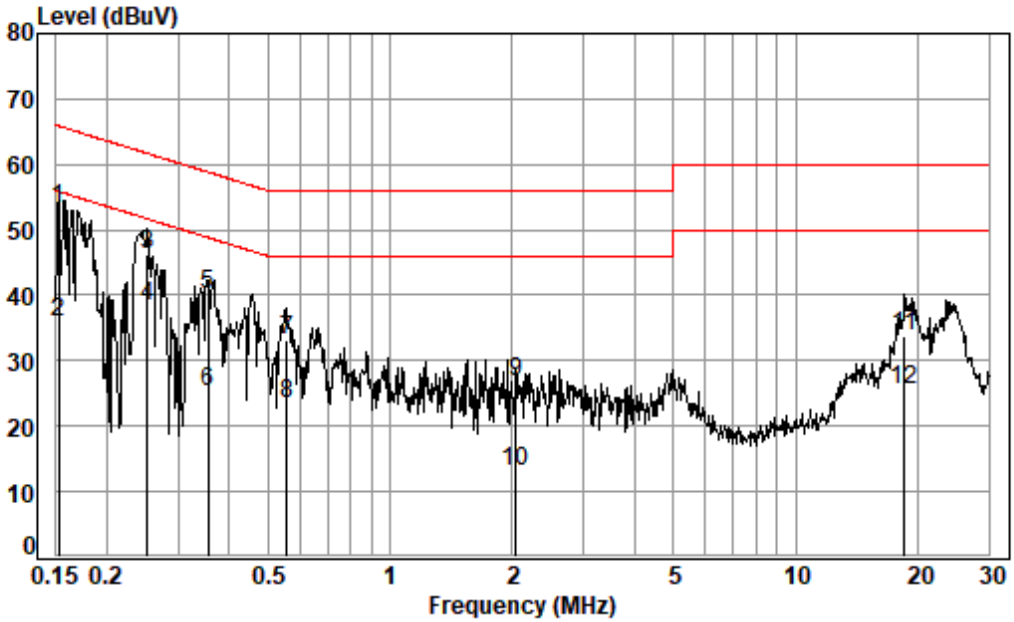
Test Mode: 12; Line: Live line



Site : Shielding Room
Condition: Line
Job No. : 03474AT
Test mode: 12

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1 *	0.153	0.02	10.26	45.50	55.78	65.82	-10.04	QP
2	0.153	0.02	10.26	27.35	37.63	55.82	-18.19	Average
3	0.239	0.03	10.29	39.12	49.44	62.13	-12.69	QP
4 *	0.239	0.03	10.29	32.46	42.78	52.13	-9.35	Average
5	0.363	0.03	10.33	32.61	42.97	58.65	-15.68	QP
6	0.363	0.03	10.33	21.99	32.35	48.65	-16.30	Average
7	0.544	0.04	10.35	25.54	35.93	56.00	-20.07	QP
8	0.544	0.04	10.35	14.30	24.69	46.00	-21.31	Average
9	2.044	0.07	10.39	13.71	24.17	56.00	-31.83	QP
10	2.044	0.07	10.39	4.14	14.60	46.00	-31.40	Average
11	24.922	0.31	10.78	23.94	35.03	60.00	-24.97	QP
12	24.922	0.31	10.78	17.57	28.66	50.00	-21.34	Average

Test Mode: 12; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 03474AT
Test mode: 12

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1 *	0.152	0.02	10.24	42.85	53.11	65.87	-12.76	QP
2	0.152	0.02	10.24	25.55	35.81	55.87	-20.06	Average
3	0.252	0.03	10.26	35.91	46.20	61.69	-15.49	QP
4 *	0.252	0.03	10.26	28.16	38.45	51.69	-13.24	Average
5	0.356	0.03	10.28	29.85	40.16	58.83	-18.67	QP
6	0.356	0.03	10.28	14.93	25.24	48.83	-23.59	Average
7	0.555	0.04	10.31	22.94	33.29	56.00	-22.71	QP
8	0.555	0.04	10.31	12.99	23.34	46.00	-22.66	Average
9	2.044	0.07	10.35	16.25	26.67	56.00	-29.33	QP
10	2.044	0.07	10.35	2.77	13.19	46.00	-32.81	Average
11	18.622	0.26	10.76	22.76	33.78	60.00	-26.22	QP
12	18.622	0.26	10.76	14.58	25.60	50.00	-24.40	Average

7.2 Duty Cycle

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

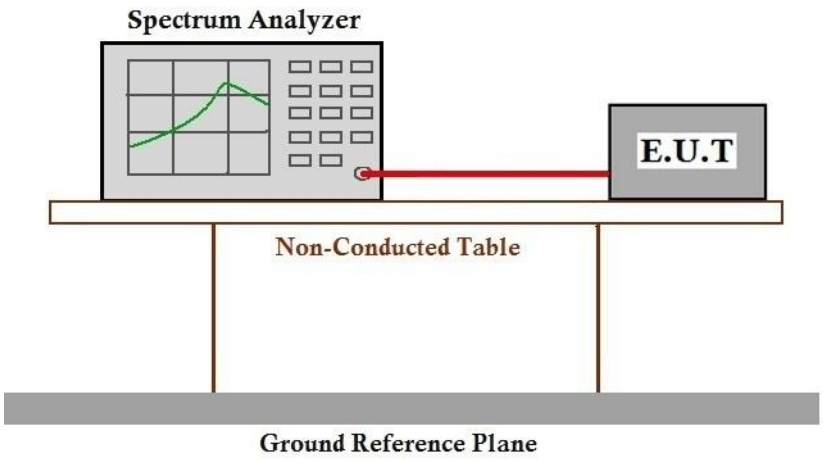
7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 22.7 °C Humidity: 44.7 % RH Atmospheric Pressure: 1000 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-2C) _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 20/40, Only the data of worst case is recorded in the report.
Final test	10	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 20/40, 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 99% Bandwidth

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

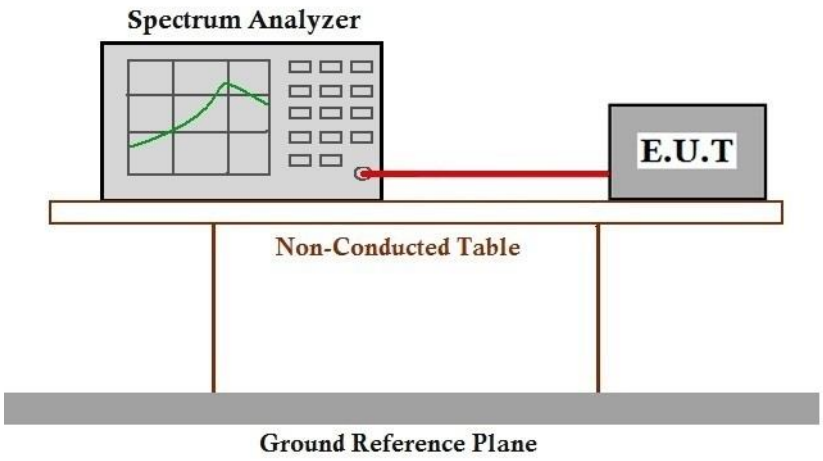
7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 22.7 °C Humidity: 44.7 % RH Atmospheric Pressure: 1000 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-2C) _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 20/40, Only the data of worst case is recorded in the report.
Final test	10	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 20/40, 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 E 15.407 (e)
Test Method: KDB 789033 D02 II C 2

Limit:

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

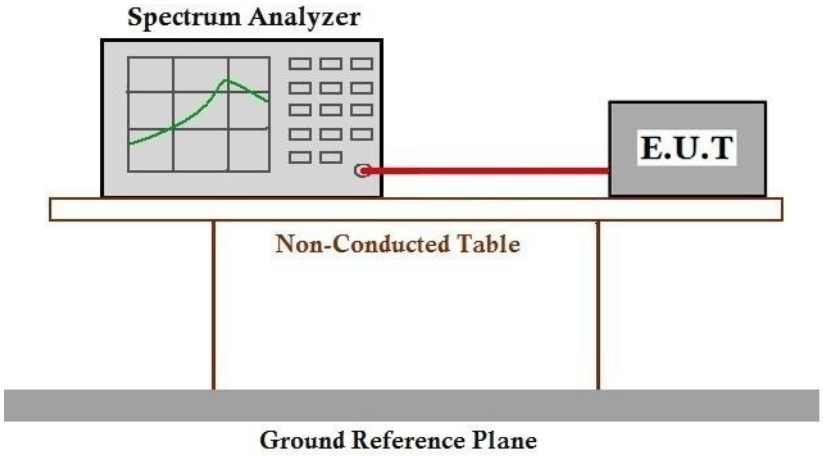
7.4.1 E.U.T. Operation

Operating Environment:
Temperature: 22.7 °C Humidity: 44.7 % RH Atmospheric Pressure: 1000 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	10	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 20/40, 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 E 15.407 (a)

Test Method: KDB 789033 D02 II E

Limit:

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

7.5.1 E.U.T. Operation

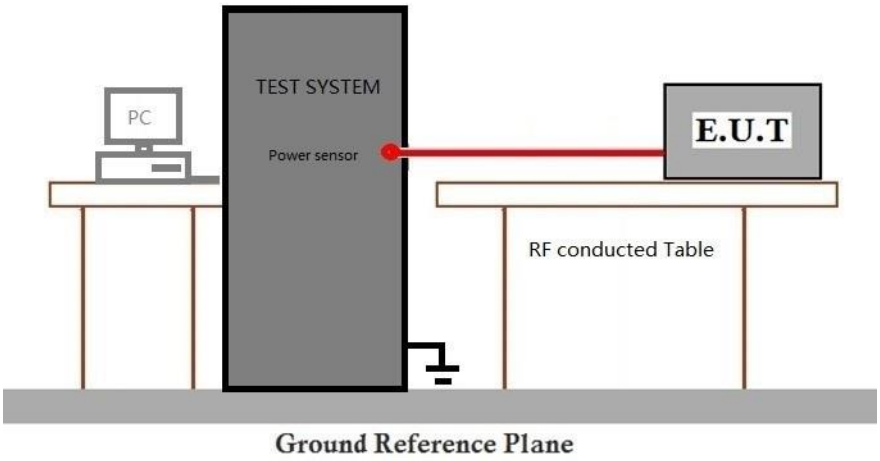
Operating Environment:

Temperature: 22.7 °C Humidity: 44.7 % RH Atmospheric Pressure: 1000 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-2C) _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 20/40, Only the data of worst case is recorded in the report.
Final test	10	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 20/40, Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

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

Please Refer to Appendix for Details

7.6 Peak Power spectrum density

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

Limit:

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

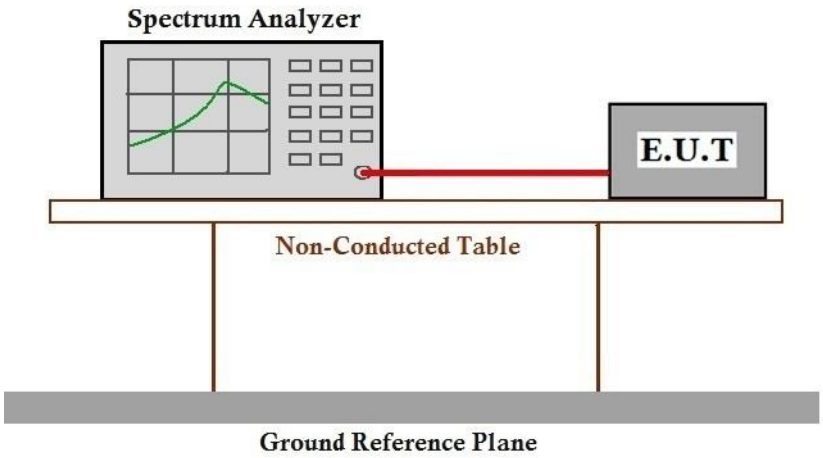
7.6.1 E.U.T. Operation

Operating Environment:
Temperature: 22.7 °C Humidity: 44.7 % RH Atmospheric Pressure: 1000 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-2C) _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 20/40, Only the data of worst case is recorded in the report.
Final test	10	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 20/40, 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 & Subpart E 15.407(b)
Test Method: KDB 789033 D02 II G
Measurement Distance: 3m

Limit:

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

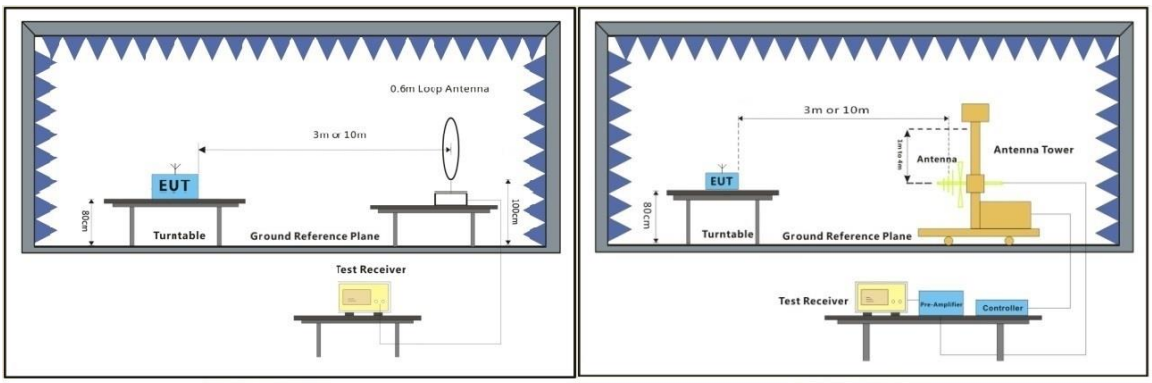
7.7.1 E.U.T. Operation

Operating Environment:
Temperature: 23.2 °C Humidity: 45.8 % RH Atmospheric Pressure: 1000 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	09	TX mode (U-NII-2C) _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 20/40, Only the data of worst case is recorded in the report.
Pre-scan	10	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 20/40, Only the data of worst case is recorded in the report.
Final test	12	Charge + TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. 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 20/40, Only the data of worst case is recorded in the report.
Pre-scan	13	Charge + TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. 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 20/40, 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:

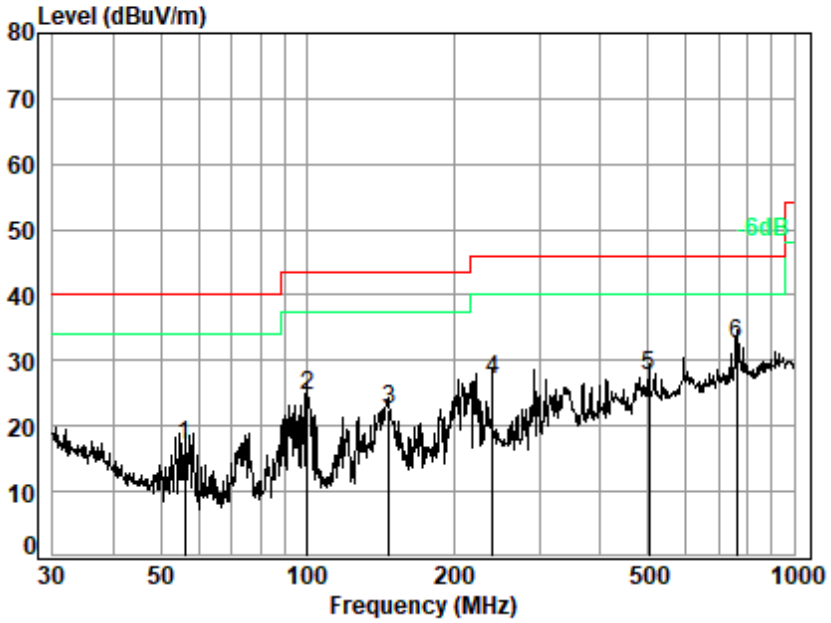
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

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.

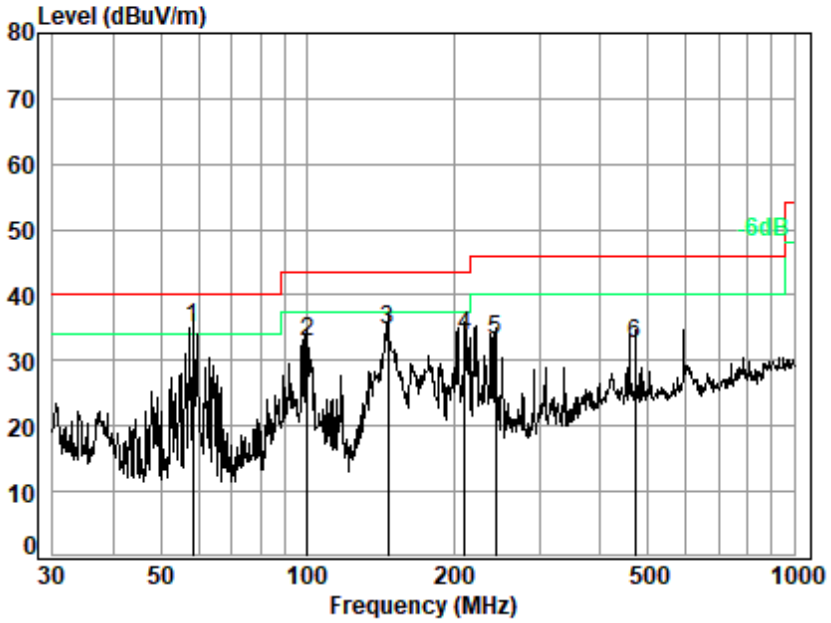
Test Mode: 12; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No. : 03474AT/03475AT
Test Mode: 12

	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	56.001	11.85	0.88	27.73	31.97	16.97	40.00	-23.03	QP
2	99.878	12.29	1.19	27.61	38.67	24.54	43.50	-18.96	QP
3	146.888	12.66	1.44	27.44	35.80	22.46	43.50	-21.04	QP
4	239.987	17.07	1.91	27.11	35.09	26.96	46.00	-19.04	QP
5	502.940	23.02	2.90	27.80	29.52	27.64	46.00	-18.36	QP
6 q	763.376	26.50	3.71	27.72	30.20	32.69	46.00	-13.31	QP

Test Mode: 12; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No. : 03474AT/03475AT
Test Mode: 12

	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	58.203	11.67	0.90	27.73	50.27	35.11	40.00	-4.89	QP
2	99.878	12.29	1.19	27.61	46.83	32.70	43.50	-10.80	QP
3	146.374	12.60	1.44	27.44	48.11	34.71	43.50	-8.79	QP
4	210.786	14.76	1.78	27.21	44.56	33.89	43.50	-9.61	QP
5	243.377	17.06	1.92	27.09	41.13	33.02	46.00	-12.98	QP
6	472.176	22.37	2.80	27.66	35.08	32.59	46.00	-13.41	QP

7.8 Radiated Emissions (Above 1GHz)

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

Limit:

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

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

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

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

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

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

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

7.8.1 E.U.T. Operation

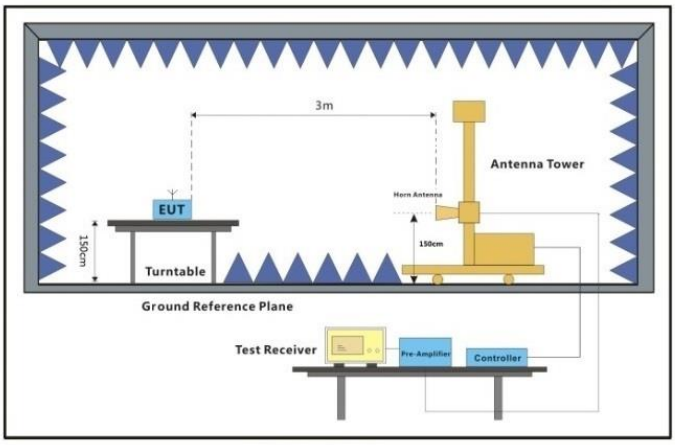
Operating Environment:

Temperature: 21.9 °C Humidity: 60.1 % RH Atmospheric Pressure: 1000 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	09	TX mode (U-NII-2C) _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 20/40, Only the data of worst case is recorded in the report.
Pre-scan	10	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 20/40, Only the data of worst case is recorded in the report.
Final test	12	Charge + TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. 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 20/40, Only the data of worst case is recorded in the report.
Final test	13	Charge + TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. 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 20/40, 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

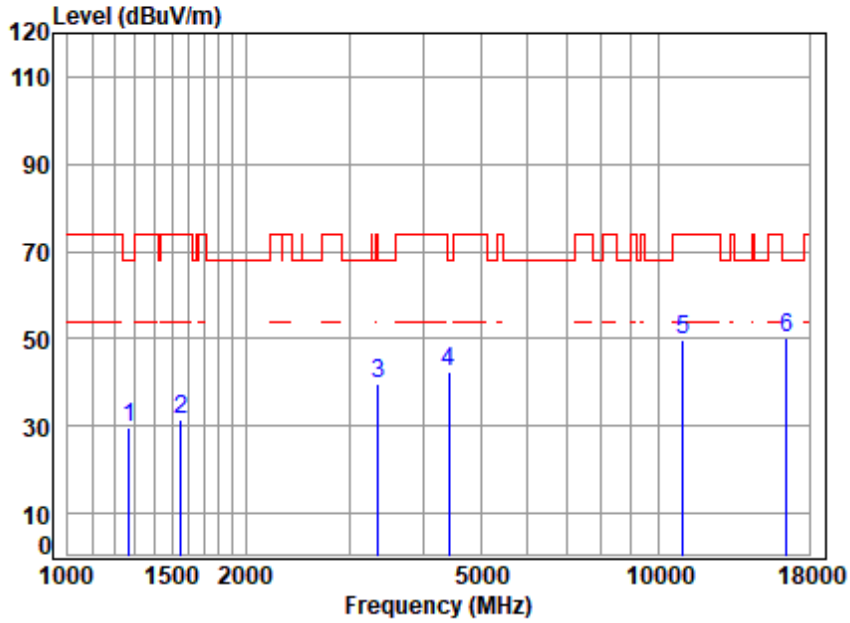
2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit 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. For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.

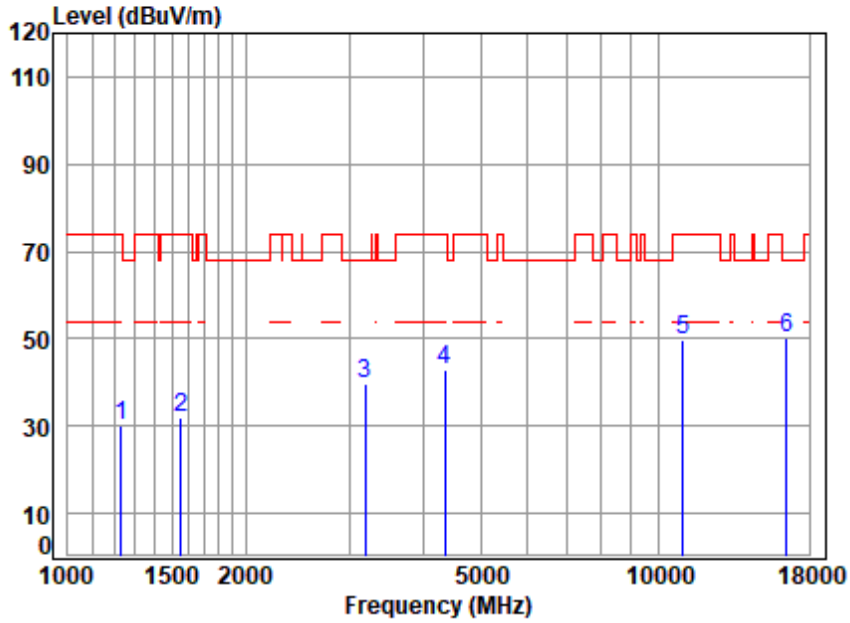
Test Mode: 12; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5500 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1271.123	3.71	24.97	38.35	39.48	29.81	68.20	-38.39	peak
2	1551.677	4.13	26.99	38.40	38.86	31.58	74.00	-42.42	peak
3	3357.061	6.05	32.14	36.12	37.53	39.60	74.00	-34.40	peak
4	4417.841	7.07	34.59	35.78	36.39	42.27	68.20	-25.93	peak
5	11000.000	12.90	37.50	37.84	37.28	49.84	74.00	-24.16	peak
6	q16500.000	14.47	42.10	37.47	31.07	50.17	68.20	-18.03	peak

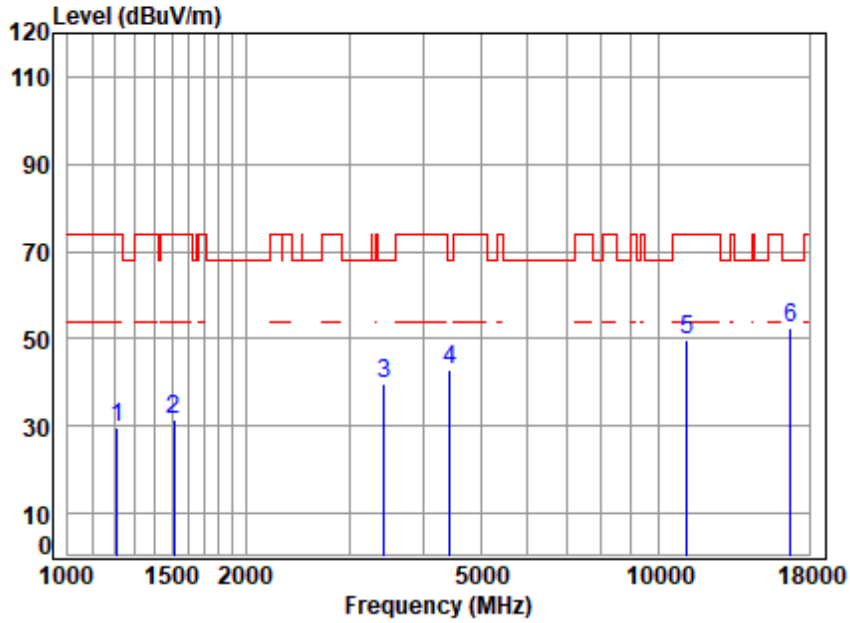
Test Mode: 12; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5500 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1231.345	3.64	24.84	38.35	40.08	30.21	74.00	-43.79	peak
2	1551.677	4.13	26.99	38.40	39.42	32.14	74.00	-41.86	peak
3	3186.869	5.83	32.79	36.13	37.22	39.71	68.20	-28.49	peak
4	4354.454	7.03	34.44	35.83	37.14	42.78	74.00	-31.22	peak
5	11000.000	12.90	37.50	37.84	37.05	49.61	74.00	-24.39	peak
6	q16500.000	14.47	42.10	37.47	31.04	50.14	68.20	-18.06	peak

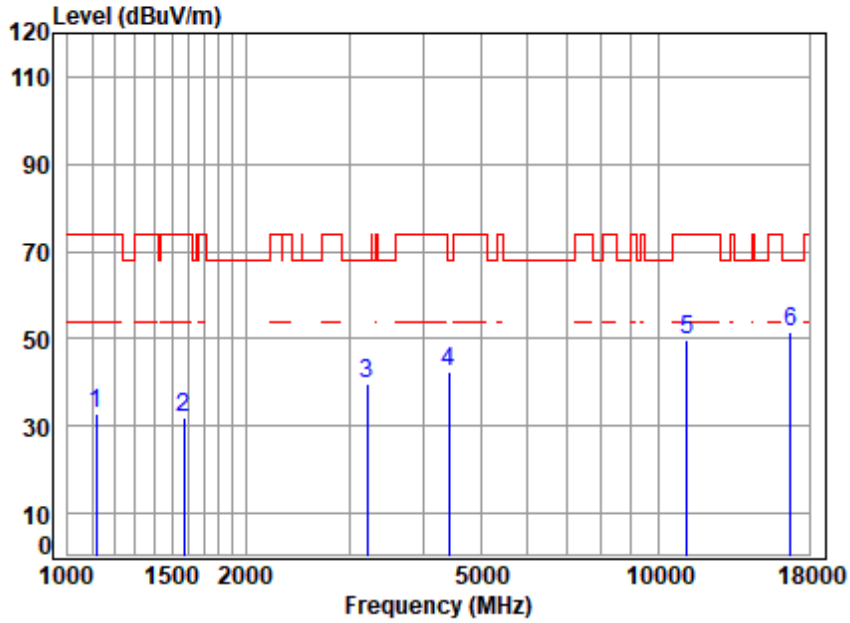
Test Mode: 12; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5580 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1210.174	3.60	24.54	38.34	39.70	29.50	74.00	-44.50	peak
2	1511.833	4.08	26.85	38.39	39.05	31.59	74.00	-42.41	peak
3	3435.590	6.15	31.97	36.12	37.56	39.56	68.20	-28.64	peak
4	4443.453	7.09	34.28	35.77	37.10	42.70	68.20	-25.50	peak
5	11160.000	12.93	37.62	37.79	37.06	49.82	74.00	-24.18	peak
6	q16740.000	14.51	42.78	37.49	32.70	52.50	68.20	-15.70	peak

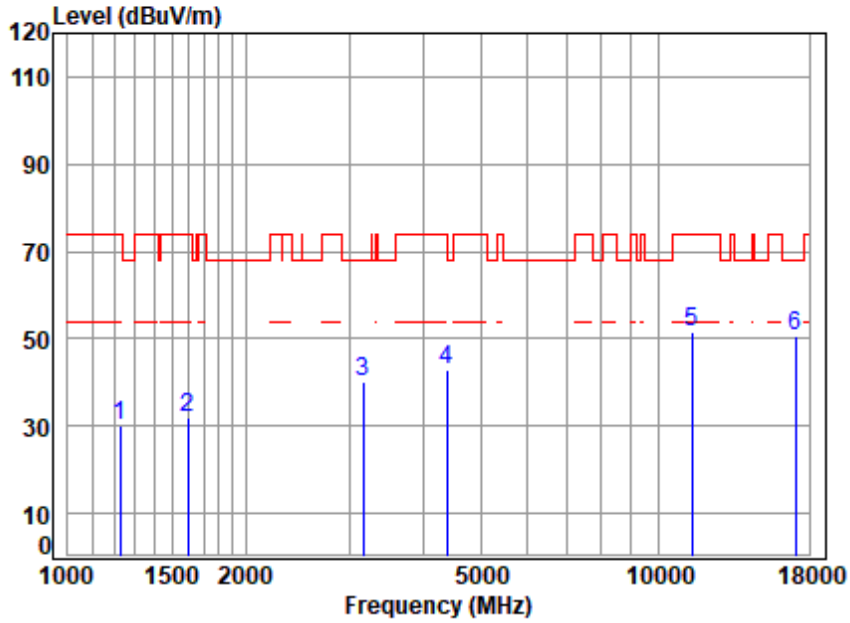
Test Mode: 12; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5580 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1119.323	3.43	23.78	38.32	44.10	32.99	74.00	-41.01	peak
2	1574.265	4.17	26.90	38.40	39.25	31.92	74.00	-42.08	peak
3	3214.623	5.87	32.67	36.13	37.20	39.61	68.20	-28.59	peak
4	4417.841	7.07	34.59	35.78	36.77	42.65	68.20	-25.55	peak
5	11160.000	12.93	37.62	37.79	36.86	49.62	74.00	-24.38	peak
6	q16740.000	14.51	42.78	37.49	31.73	51.53	68.20	-16.67	peak

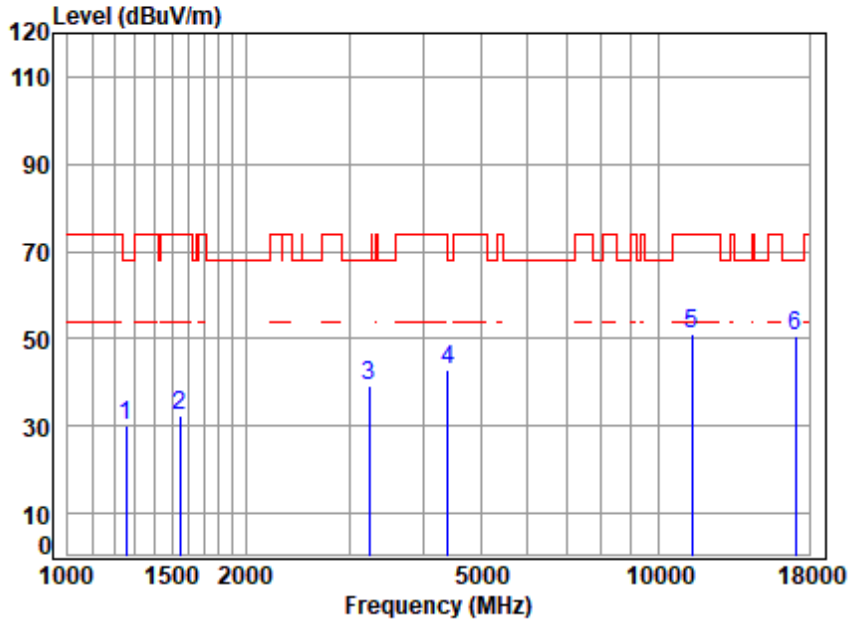
Test Mode: 12; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5700 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1227.791	3.63	24.79	38.34	39.86	29.94	74.00	-44.06	peak
2	1597.181	4.20	26.81	38.40	39.11	31.72	74.00	-42.28	peak
3	3159.355	5.80	32.57	36.13	37.77	40.01	68.20	-28.19	peak
4	4392.376	7.05	34.74	35.80	36.68	42.67	74.00	-31.33	peak
5	11400.000	12.98	37.70	37.72	38.81	51.77	74.00	-22.23	peak
6	q17100.000	14.62	43.10	37.53	30.47	50.66	68.20	-17.54	peak

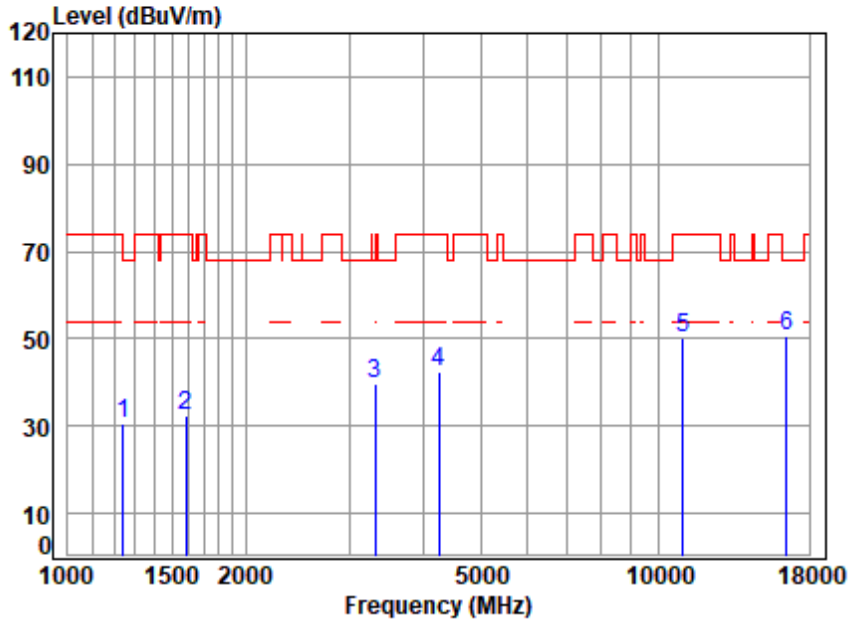
Test Mode: 12; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5700 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1256.512	3.68	25.06	38.35	39.70	30.09	68.20	-38.11	peak
2	1547.199	4.13	26.99	38.39	39.64	32.37	74.00	-41.63	peak
3	3233.260	5.89	32.37	36.13	37.32	39.45	68.20	-28.75	peak
4	4405.090	7.06	34.74	35.79	36.79	42.80	68.20	-25.40	peak
5	11400.000	12.98	37.70	37.72	38.02	50.98	74.00	-23.02	peak
6	q17100.000	14.62	43.10	37.53	30.64	50.83	68.20	-17.37	peak

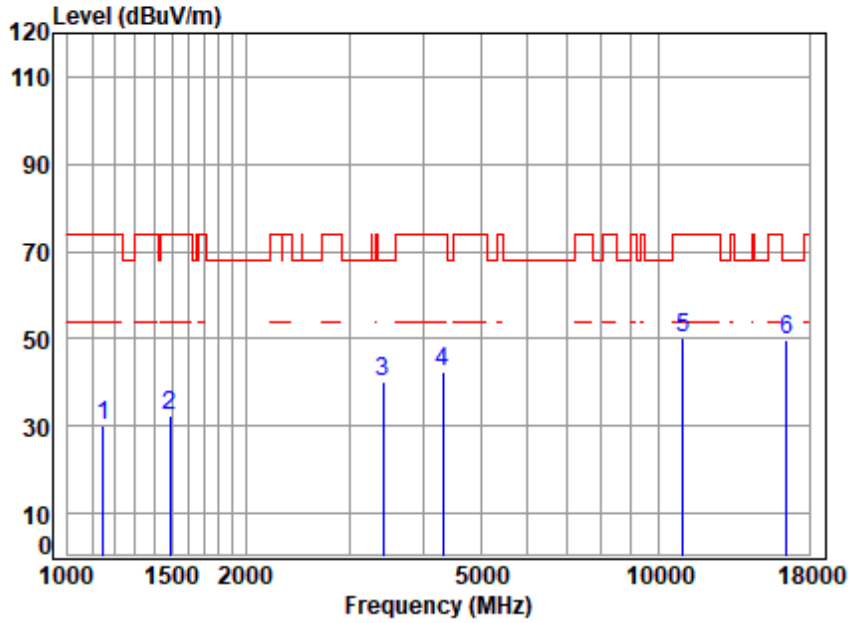
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5500 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1242.068	3.66	24.99	38.35	40.16	30.46	68.20	-37.74	peak
2	1583.392	4.18	26.87	38.40	39.83	32.48	74.00	-41.52	peak
3	3318.471	6.00	31.53	36.13	38.10	39.50	68.20	-28.70	peak
4	4242.641	6.95	33.80	35.91	37.46	42.30	74.00	-31.70	peak
5	11000.000	12.90	37.50	37.84	37.77	50.33	74.00	-23.67	peak
6	q16500.000	14.47	42.10	37.47	31.68	50.78	68.20	-17.42	peak

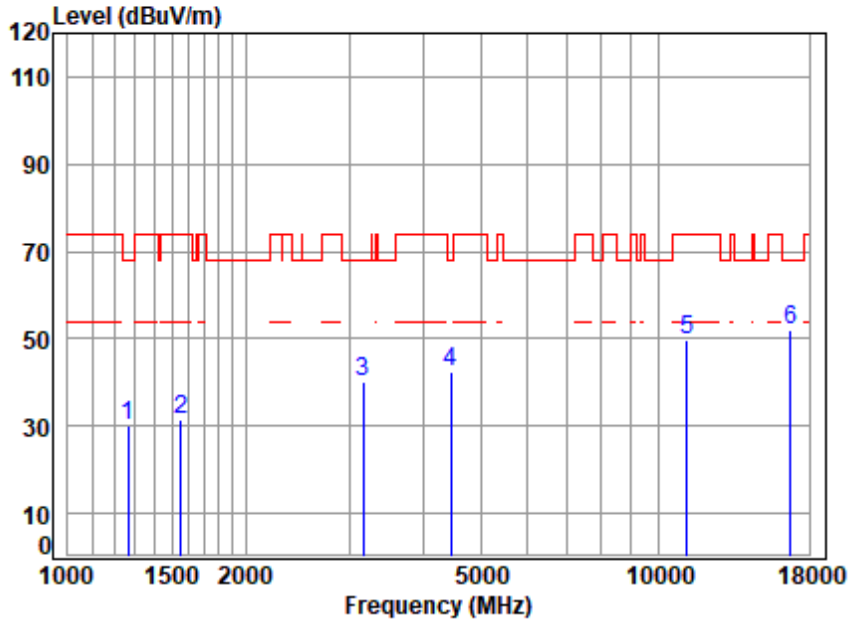
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5500 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1148.823	3.49	23.90	38.33	41.09	30.15	74.00	-43.85	peak
2	1490.142	4.05	26.52	38.39	40.09	32.27	74.00	-41.73	peak
3	3425.675	6.13	32.09	36.12	37.88	39.98	68.20	-28.22	peak
4	4316.859	7.00	34.13	35.86	37.25	42.52	74.00	-31.48	peak
5	11000.000	12.90	37.50	37.84	37.69	50.25	74.00	-23.75	peak
6	q16500.000	14.47	42.10	37.47	30.46	49.56	68.20	-18.64	peak

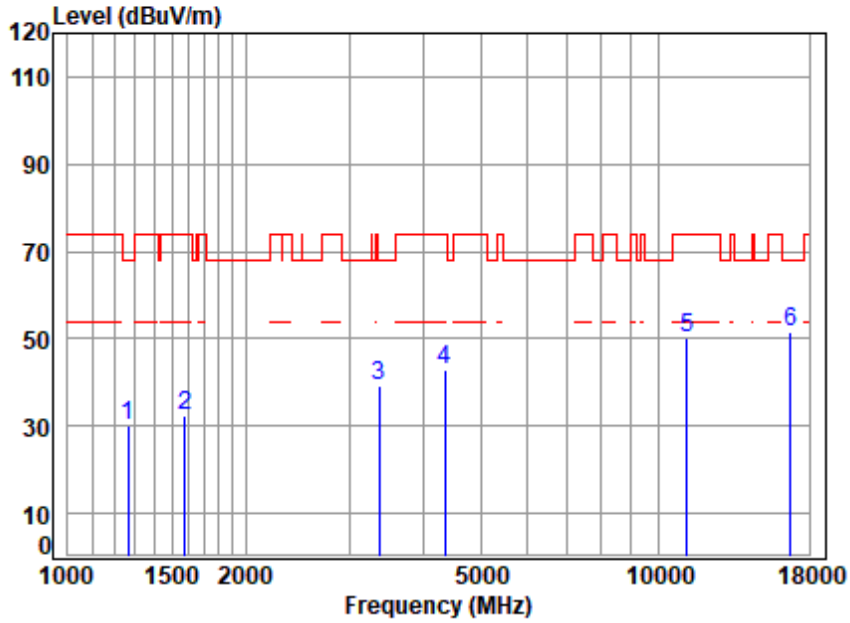
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5580 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1267.454	3.70	25.00	38.35	39.75	30.10	68.20	-38.10	peak
2	1551.677	4.13	26.99	38.40	38.73	31.45	74.00	-42.55	peak
3	3168.500	5.81	32.65	36.13	37.62	39.95	68.20	-28.25	peak
4	4456.315	7.09	34.12	35.76	37.18	42.63	68.20	-25.57	peak
5	11160.000	12.93	37.62	37.79	36.86	49.62	74.00	-24.38	peak
6	q16740.000	14.51	42.78	37.49	32.35	52.15	68.20	-16.05	peak

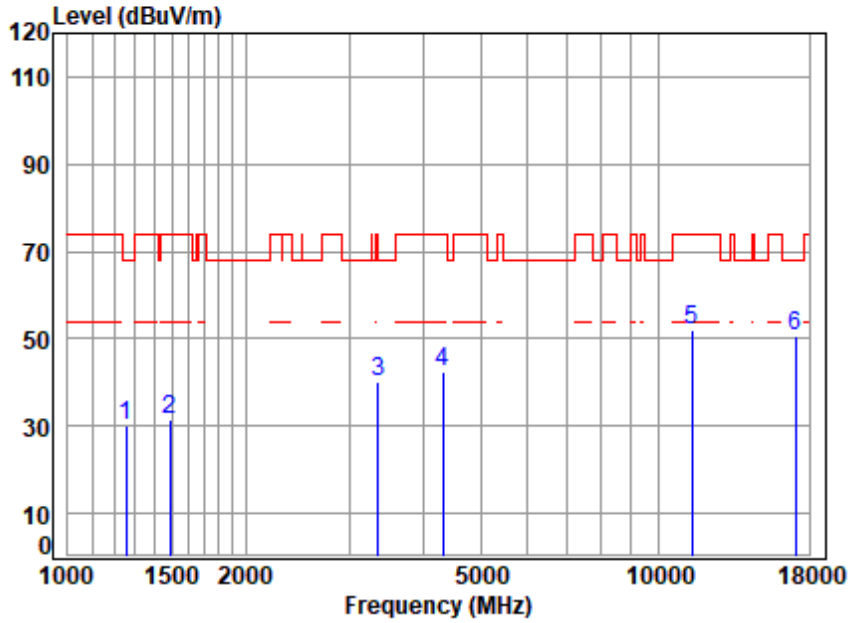
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5580 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1263.796	3.69	25.02	38.35	39.74	30.10	68.20	-38.10	peak
2	1578.822	4.17	26.88	38.40	39.62	32.27	74.00	-41.73	peak
3	3366.778	6.06	32.20	36.12	37.19	39.33	68.20	-28.87	peak
4	4354.454	7.03	34.44	35.83	37.25	42.89	74.00	-31.11	peak
5	11160.000	12.93	37.62	37.79	37.41	50.17	74.00	-23.83	peak
6	q16740.000	14.51	42.78	37.49	31.81	51.61	68.20	-16.59	peak

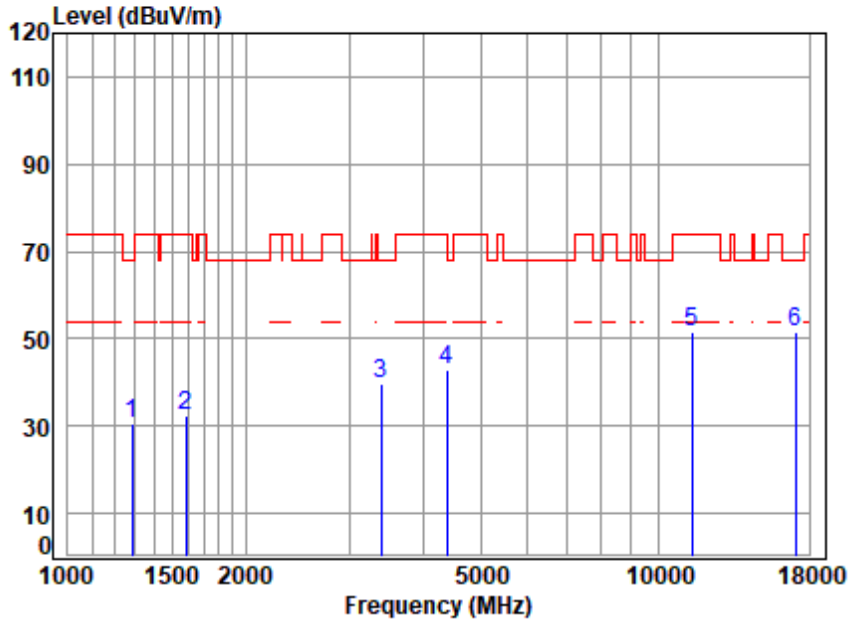
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5700 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1256.512	3.68	25.06	38.35	39.58	29.97	68.20	-38.23	peak
2	1490.142	4.05	26.52	38.39	39.34	31.52	74.00	-42.48	peak
3	3357.061	6.05	32.14	36.12	37.98	40.05	74.00	-33.95	peak
4	4316.859	7.00	34.13	35.86	37.08	42.35	74.00	-31.65	peak
5	11400.000	12.98	37.70	37.72	39.03	51.99	74.00	-22.01	peak
6	q17100.000	14.62	43.10	37.53	30.65	50.84	68.20	-17.36	peak

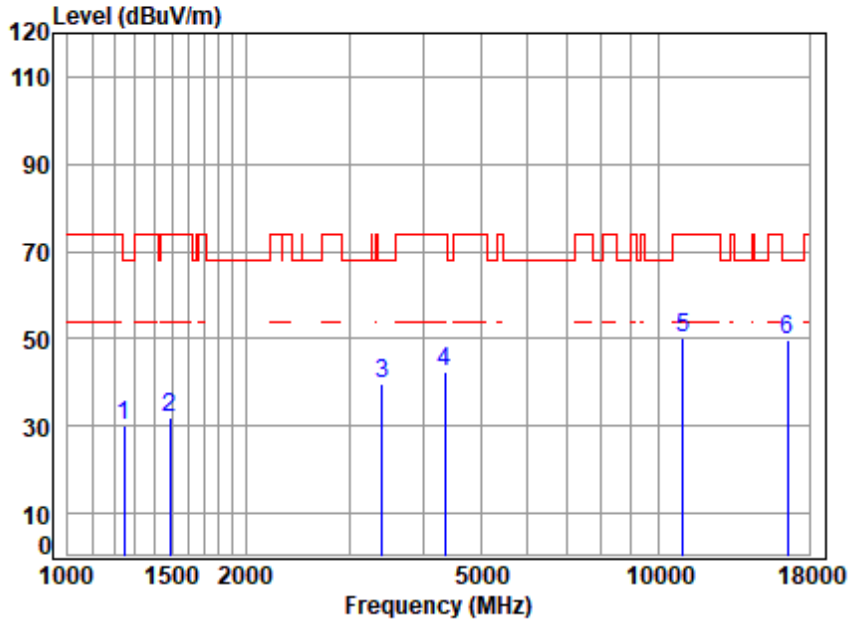
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5700 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1285.904	3.73	24.88	38.35	40.28	30.54	68.20	-37.66	peak
2	1583.392	4.18	26.87	38.40	39.64	32.29	74.00	-41.71	peak
3	3396.098	6.10	32.38	36.12	37.29	39.65	68.20	-28.55	peak
4	4392.376	7.05	34.74	35.80	37.01	43.00	74.00	-31.00	peak
5	11400.000	12.98	37.70	37.72	38.53	51.49	74.00	-22.51	peak
6	q17100.000	14.62	43.10	37.53	31.29	51.48	68.20	-16.72	peak

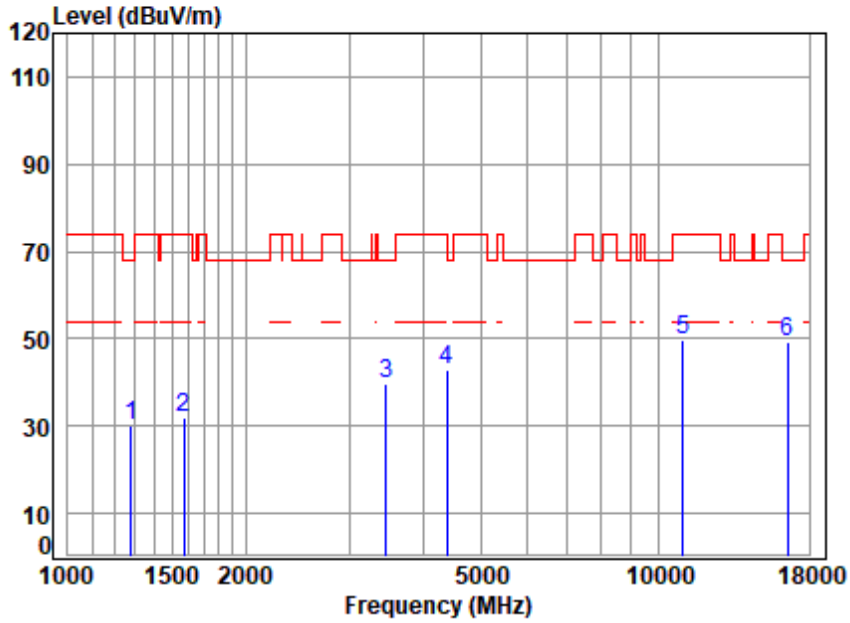
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5510 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1245.663	3.66	25.04	38.35	39.82	30.17	68.20	-38.03	peak
2	1490.142	4.05	26.52	38.39	39.66	31.84	74.00	-42.16	peak
3	3405.929	6.11	32.33	36.12	37.27	39.59	68.20	-28.61	peak
4	4354.454	7.03	34.44	35.83	36.96	42.60	74.00	-31.40	peak
5	11020.000	12.90	37.50	37.83	37.69	50.26	74.00	-23.74	peak
6	q16530.000	14.48	42.16	37.47	30.39	49.56	68.20	-18.64	peak

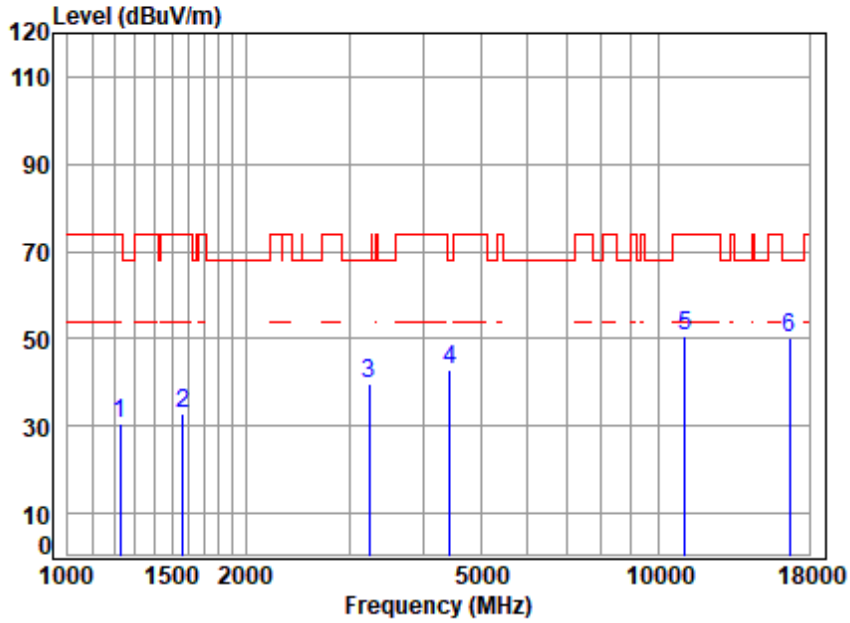
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5510 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1282.193	3.72	24.91	38.35	39.90	30.18	68.20	-38.02	peak
2	1574.265	4.17	26.90	38.40	39.43	32.10	74.00	-41.90	peak
3	3455.508	6.17	31.78	36.12	38.04	39.87	68.20	-28.33	peak
4	4379.699	7.04	34.64	35.81	36.94	42.81	74.00	-31.19	peak
5	11020.000	12.90	37.50	37.83	36.97	49.54	74.00	-24.46	peak
6	q16530.000	14.48	42.16	37.47	30.29	49.46	68.20	-18.74	peak

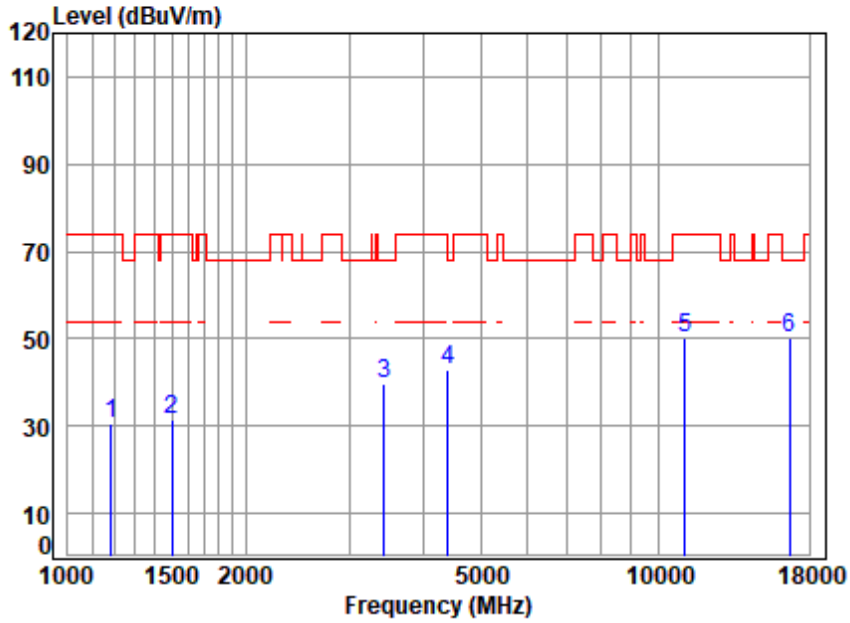
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5550 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1227.791	3.63	24.79	38.34	40.70	30.78	74.00	-43.22	peak
2	1569.721	4.16	26.92	38.40	40.14	32.82	74.00	-41.18	peak
3	3242.619	5.90	32.22	36.13	37.80	39.79	68.20	-28.41	peak
4	4430.628	7.08	34.43	35.77	37.00	42.74	68.20	-25.46	peak
5	11100.000	12.92	37.50	37.81	38.08	50.69	74.00	-23.31	peak
6	q16650.000	14.50	42.50	37.48	30.71	50.23	68.20	-17.97	peak

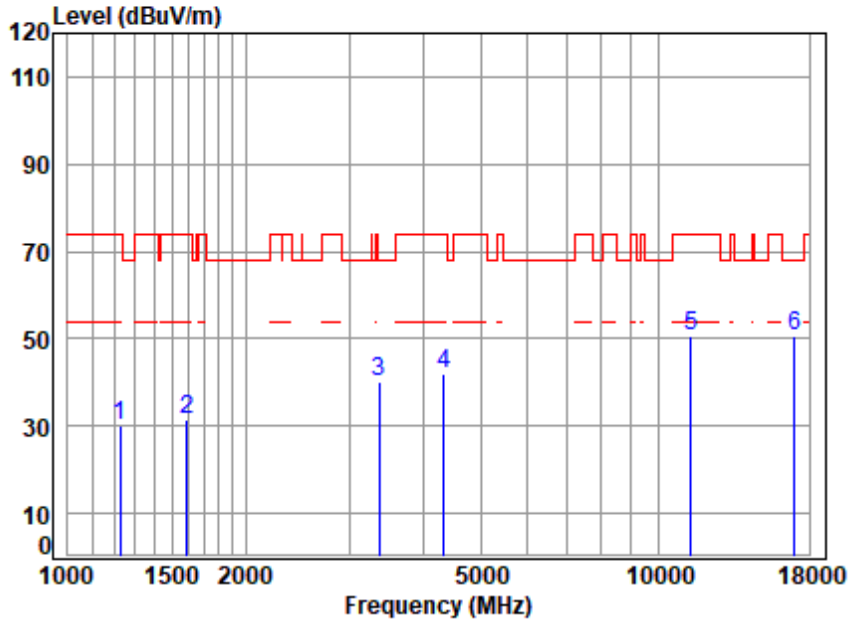
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5550 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1182.513	3.55	24.23	38.34	41.16	30.60	74.00	-43.40	peak
2	1498.781	4.06	26.77	38.39	39.10	31.54	74.00	-42.46	peak
3	3435.590	6.15	31.97	36.12	37.58	39.58	68.20	-28.62	peak
4	4405.090	7.06	34.74	35.79	36.89	42.90	68.20	-25.30	peak
5	11100.000	12.92	37.50	37.81	37.58	50.19	74.00	-23.81	peak
6	q16650.000	14.50	42.50	37.48	30.62	50.14	68.20	-18.06	peak

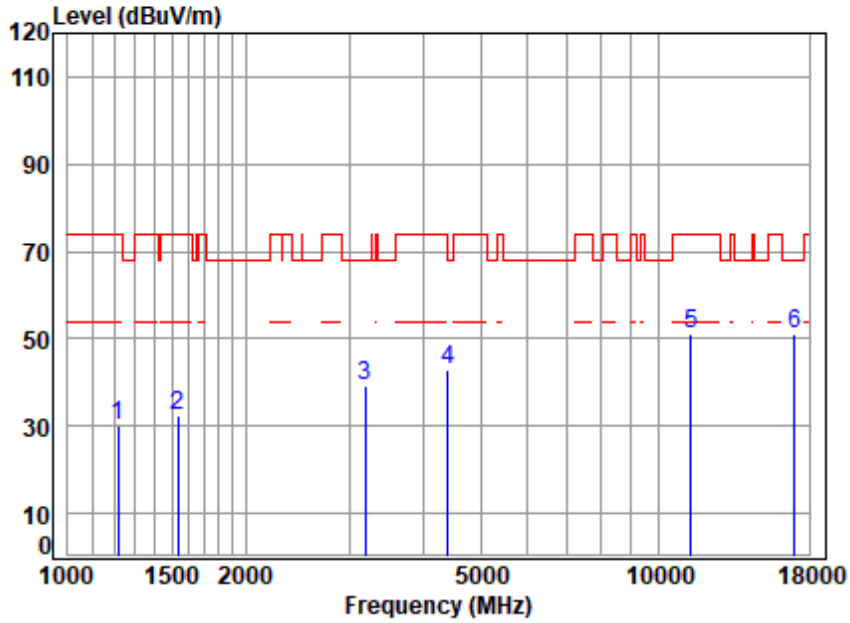
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5670 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1227.791	3.63	24.79	38.34	40.12	30.20	74.00	-43.80	peak
2	1592.571	4.19	26.83	38.40	38.87	31.49	74.00	-42.51	peak
3	3366.778	6.06	32.20	36.12	38.06	40.20	68.20	-28.00	peak
4	4341.886	7.02	34.34	35.84	36.65	42.17	74.00	-31.83	peak
5	11340.000	12.97	37.76	37.74	37.83	50.82	74.00	-23.18	peak
6	q17010.000	14.57	43.10	37.51	30.55	50.71	68.20	-17.49	peak

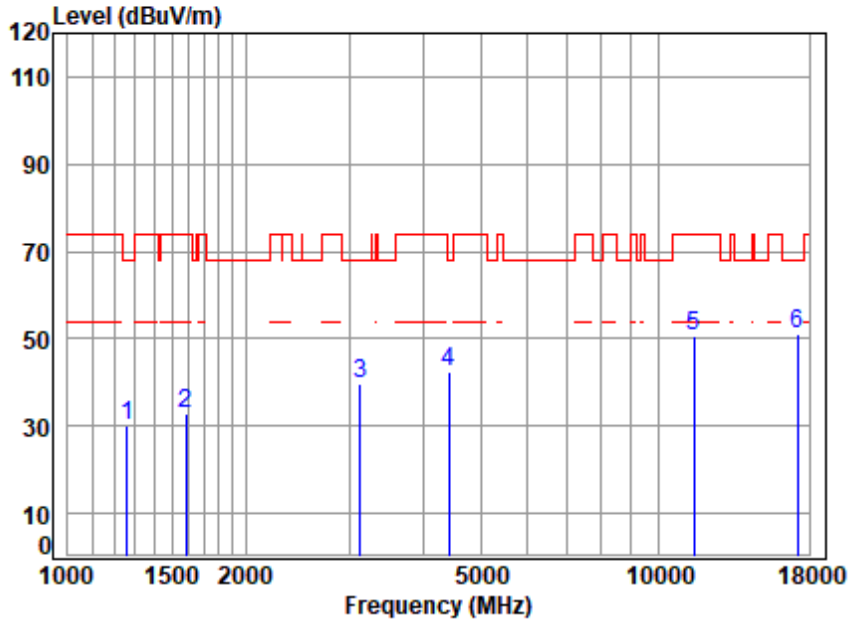
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5670 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1217.190	3.61	24.64	38.34	40.43	30.34	74.00	-43.66	peak
2	1538.281	4.12	26.95	38.39	39.56	32.24	74.00	-41.76	peak
3	3186.869	5.83	32.79	36.13	36.96	39.45	68.20	-28.75	peak
4	4405.090	7.06	34.74	35.79	37.06	43.07	68.20	-25.13	peak
5	11340.000	12.97	37.76	37.74	38.24	51.23	74.00	-22.77	peak
6	q17010.000	14.57	43.10	37.51	30.73	50.89	68.20	-17.31	peak

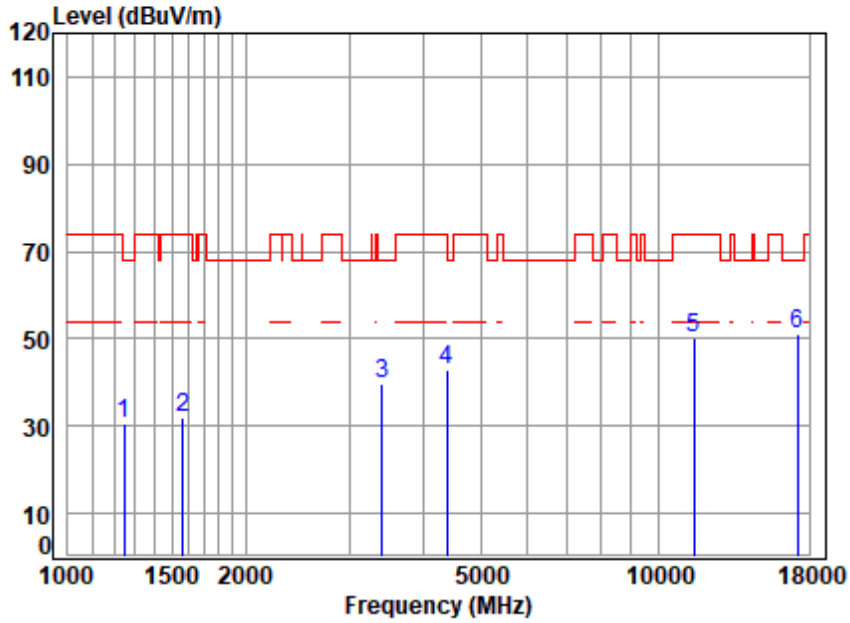
Test Mode: 13; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5745 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1260.149	3.69	25.04	38.35	39.67	30.05	68.20	-38.15	peak
2	1583.392	4.18	26.87	38.40	40.23	32.88	74.00	-41.12	peak
3	3123.039	5.75	32.01	36.13	38.28	39.91	68.20	-28.29	peak
4	4417.841	7.07	34.59	35.78	36.38	42.26	68.20	-25.94	peak
5	11490.000	13.00	37.79	37.69	37.58	50.68	74.00	-23.32	peak
6	q17235.000	14.70	43.03	37.55	30.79	50.97	68.20	-17.23	peak

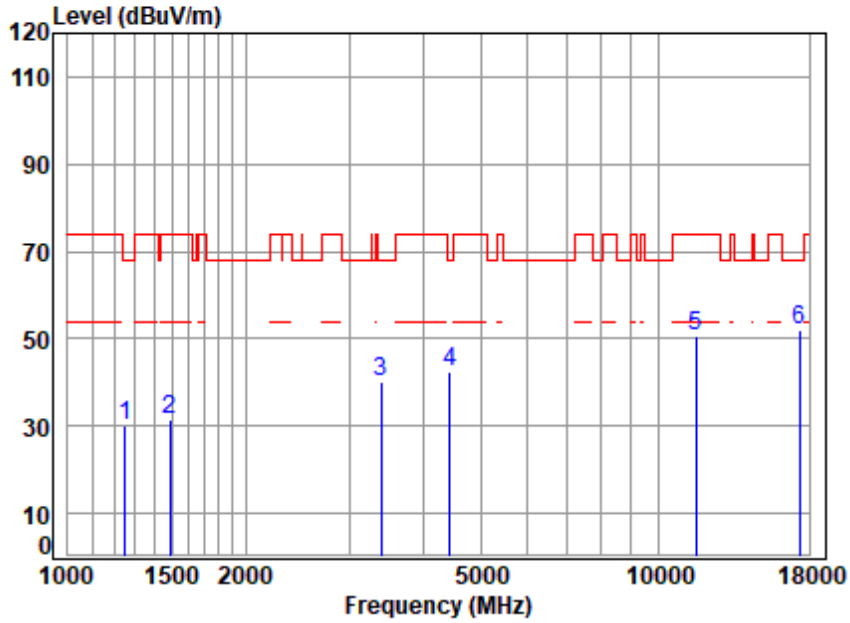
Test Mode: 13; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5745 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1245.663	3.66	25.04	38.35	40.03	30.38	68.20	-37.82	peak
2	1569.721	4.16	26.92	38.40	39.13	31.81	74.00	-42.19	peak
3	3405.929	6.11	32.33	36.12	37.26	39.58	68.20	-28.62	peak
4	4392.376	7.05	34.74	35.80	36.82	42.81	74.00	-31.19	peak
5	11490.000	13.00	37.79	37.69	37.12	50.22	74.00	-23.78	peak
6	q17235.000	14.70	43.03	37.55	31.05	51.23	68.20	-16.97	peak

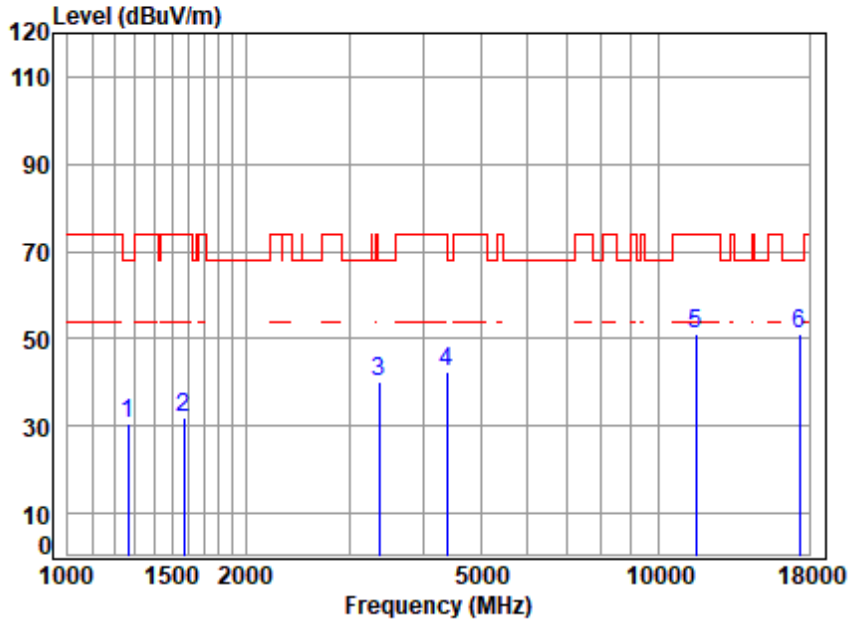
Test Mode: 13; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5785 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1252.885	3.67	25.08	38.35	39.62	30.02	68.20	-38.18	peak
2	1490.142	4.05	26.52	38.39	39.32	31.50	74.00	-42.50	peak
3	3396.098	6.10	32.38	36.12	37.65	40.01	68.20	-28.19	peak
4	4430.628	7.08	34.43	35.77	36.78	42.52	68.20	-25.68	peak
5	11570.000	13.01	37.73	37.67	37.61	50.68	74.00	-23.32	peak
6	q17355.000	14.77	43.26	37.56	31.43	51.90	68.20	-16.30	peak

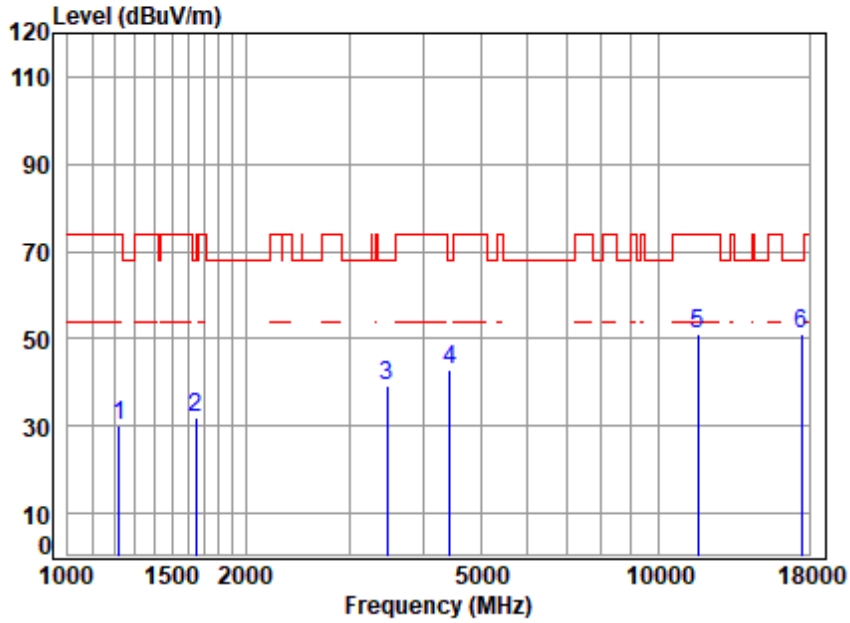
Test Mode: 13; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5785 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1267.454	3.70	25.00	38.35	40.23	30.58	68.20	-37.62	peak
2	1574.265	4.17	26.90	38.40	39.39	32.06	74.00	-41.94	peak
3	3366.778	6.06	32.20	36.12	38.05	40.19	68.20	-28.01	peak
4	4392.376	7.05	34.74	35.80	36.61	42.60	74.00	-31.40	peak
5	11570.000	13.01	37.73	37.67	38.01	51.08	74.00	-22.92	peak
6	q17355.000	14.77	43.26	37.56	30.41	50.88	68.20	-17.32	peak

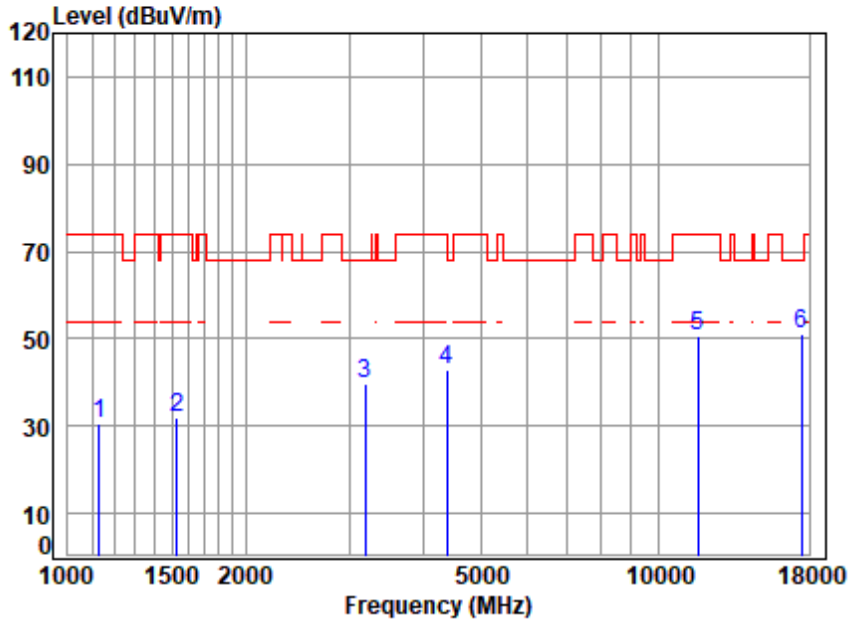
Test Mode: 13; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5825 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1224.247	3.62	24.74	38.34	40.00	30.02	74.00	-43.98	peak
2	1648.778	4.26	26.31	38.41	39.57	31.73	68.20	-36.47	peak
3	3475.541	6.19	31.70	36.12	37.68	39.45	68.20	-28.75	peak
4	4430.628	7.08	34.43	35.77	37.11	42.85	68.20	-25.35	peak
5	11650.000	13.03	37.80	37.65	37.72	50.90	74.00	-23.10	peak
6	q17475.000	14.84	43.40	37.58	30.56	51.22	68.20	-16.98	peak

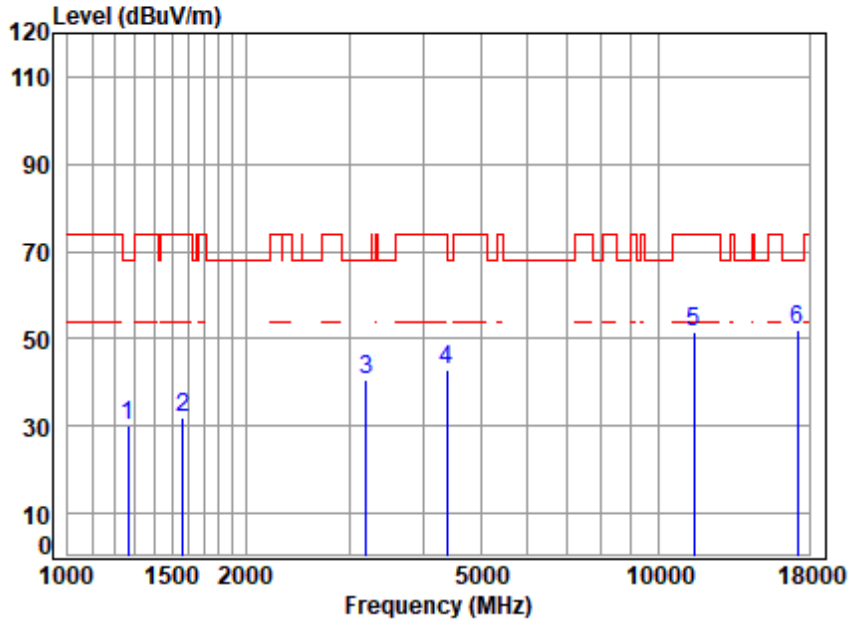
Test Mode: 13; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5825 TX RSE
Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1129.072	3.45	23.82	38.33	41.46	30.40	74.00	-43.60	peak
2	1529.414	4.10	26.92	38.39	39.18	31.81	74.00	-42.19	peak
3	3186.869	5.83	32.79	36.13	37.21	39.70	68.20	-28.50	peak
4	4379.699	7.04	34.64	35.81	36.94	42.81	74.00	-31.19	peak
5	11650.000	13.03	37.80	37.65	37.43	50.61	74.00	-23.39	peak
6	q17475.000	14.84	43.40	37.58	30.60	51.26	68.20	-16.94	peak

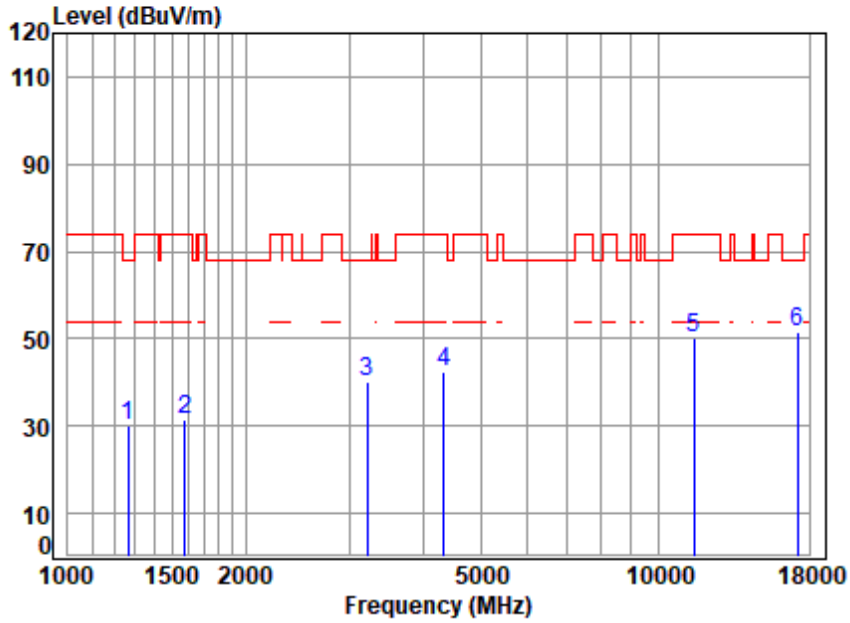
Test Mode: 13; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5745 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1263.796	3.69	25.02	38.35	39.53	29.89	68.20	-38.31	peak
2	1569.721	4.16	26.92	38.40	39.36	32.04	74.00	-41.96	peak
3	3196.094	5.84	32.87	36.13	38.02	40.60	68.20	-27.60	peak
4	4392.376	7.05	34.74	35.80	36.72	42.71	74.00	-31.29	peak
5	11490.000	13.00	37.79	37.69	38.33	51.43	74.00	-22.57	peak
6	q17235.000	14.70	43.03	37.55	31.67	51.85	68.20	-16.35	peak

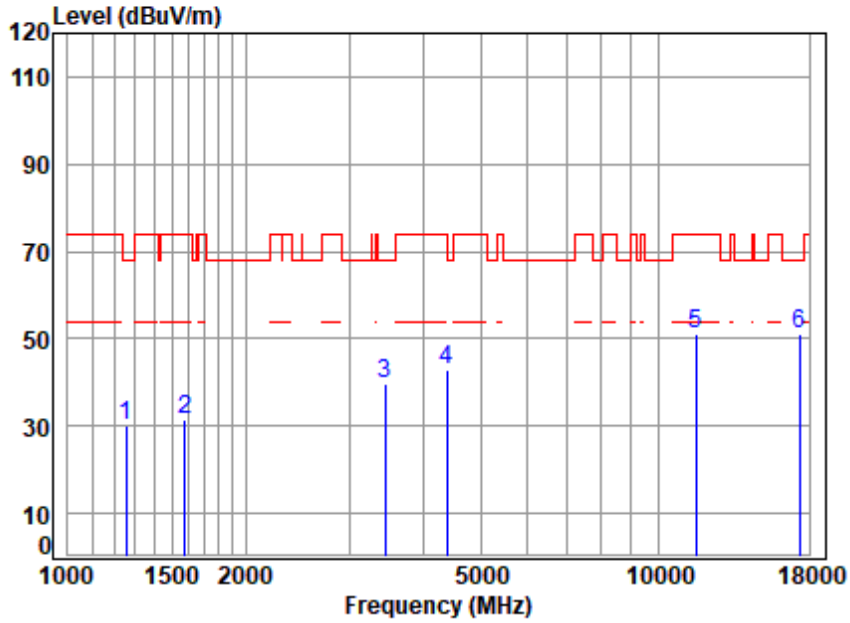
Test Mode: 13; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5745 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1263.796	3.69	25.02	38.35	39.58	29.94	68.20	-38.26	peak
2	1578.822	4.17	26.88	38.40	38.92	31.57	74.00	-42.43	peak
3	3214.623	5.87	32.67	36.13	37.67	40.08	68.20	-28.12	peak
4	4329.354	7.01	34.23	35.85	36.82	42.21	74.00	-31.79	peak
5	11490.000	13.00	37.79	37.69	37.17	50.27	74.00	-23.73	peak
6	q17235.000	14.70	43.03	37.55	31.40	51.58	68.20	-16.62	peak

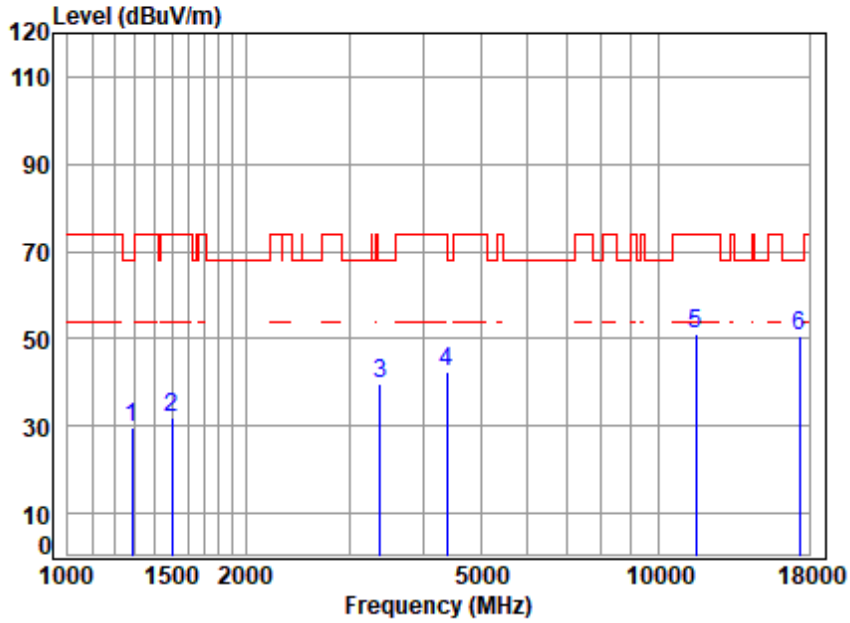
Test Mode: 13; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5785 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1256.512	3.68	25.06	38.35	39.77	30.16	68.20	-38.04	peak
2	1578.822	4.17	26.88	38.40	39.03	31.68	74.00	-42.32	peak
3	3445.535	6.16	31.85	36.12	37.74	39.63	68.20	-28.57	peak
4	4379.699	7.04	34.64	35.81	36.84	42.71	74.00	-31.29	peak
5	11570.000	13.01	37.73	37.67	37.81	50.88	74.00	-23.12	peak
6	q17355.000	14.77	43.26	37.56	30.52	50.99	68.20	-17.21	peak

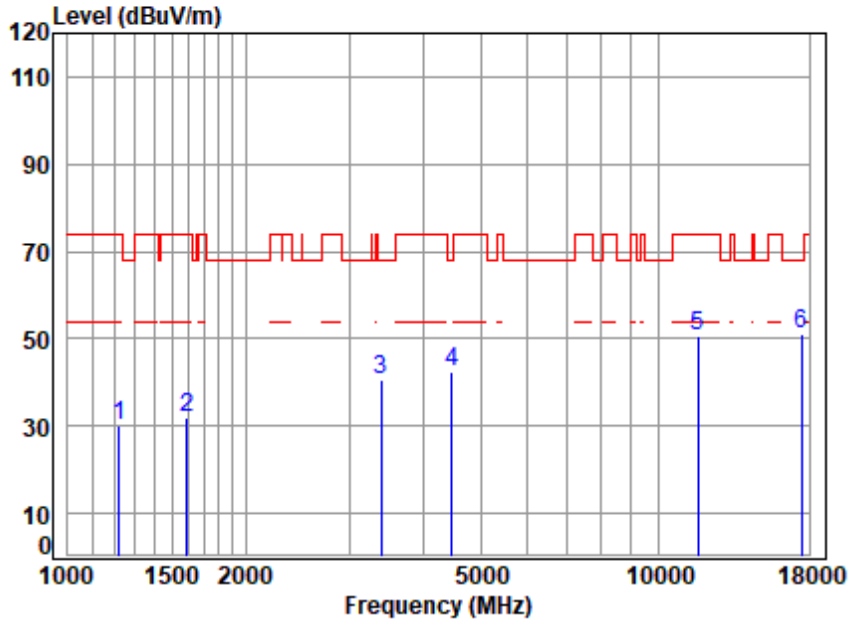
Test Mode: 13; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5785 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1285.904	3.73	24.88	38.35	39.45	29.71	68.20	-38.49	peak
2	1503.119	4.07	26.81	38.39	39.63	32.12	74.00	-41.88	peak
3	3376.523	6.07	32.26	36.12	37.58	39.79	68.20	-28.41	peak
4	4379.699	7.04	34.64	35.81	36.43	42.30	74.00	-31.70	peak
5	11570.000	13.01	37.73	37.67	37.84	50.91	74.00	-23.09	peak
6	q17355.000	14.77	43.26	37.56	30.16	50.63	68.20	-17.57	peak

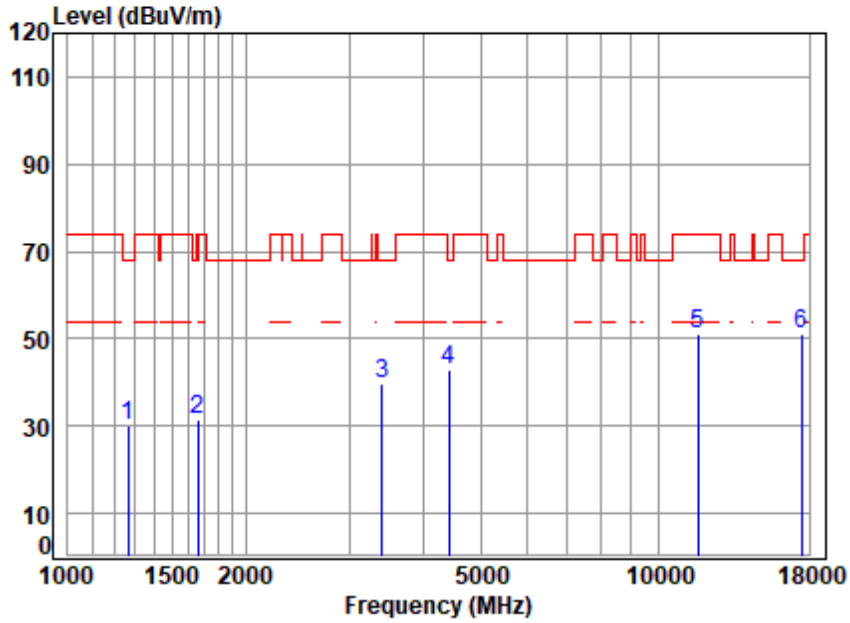
Test Mode: 13; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5825 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1220.714	3.62	24.69	38.34	39.98	29.95	74.00	-44.05	peak
2	1592.571	4.19	26.83	38.40	39.25	31.87	74.00	-42.13	peak
3	3396.098	6.10	32.38	36.12	38.21	40.57	68.20	-27.63	peak
4	4469.214	7.10	33.97	35.75	37.26	42.58	68.20	-25.62	peak
5	11650.000	13.03	37.80	37.65	37.46	50.64	74.00	-23.36	peak
6	q17475.000	14.84	43.40	37.58	30.23	50.89	68.20	-17.31	peak

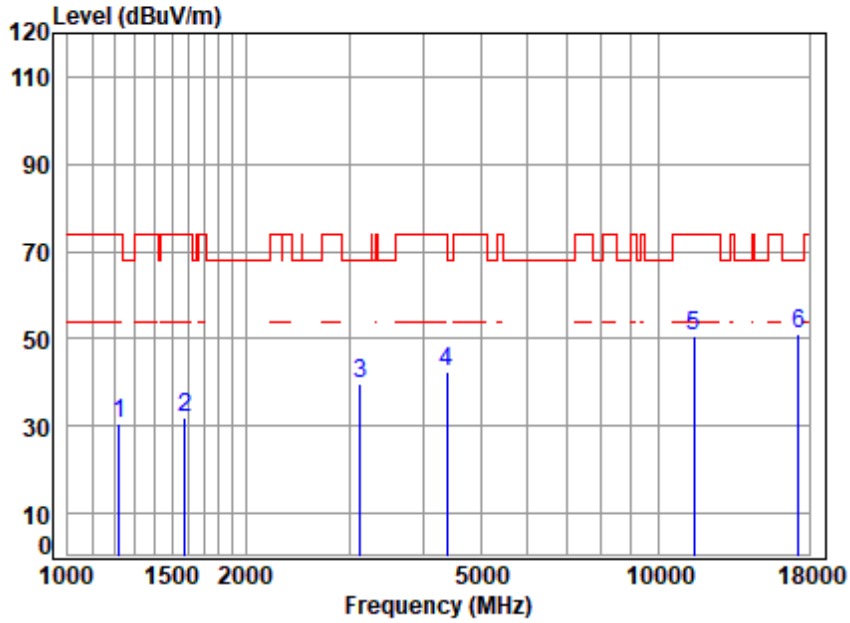
Test Mode: 13; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5825 TX RSE
Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1263.796	3.69	25.02	38.35	39.69	30.05	68.20	-38.15	peak
2	1663.137	4.28	26.27	38.41	39.16	31.30	74.00	-42.70	peak
3	3405.929	6.11	32.33	36.12	37.35	39.67	68.20	-28.53	peak
4	4417.841	7.07	34.59	35.78	36.88	42.76	68.20	-25.44	peak
5	11650.000	13.03	37.80	37.65	37.82	51.00	74.00	-23.00	peak
6	q17475.000	14.84	43.40	37.58	30.47	51.13	68.20	-17.07	peak

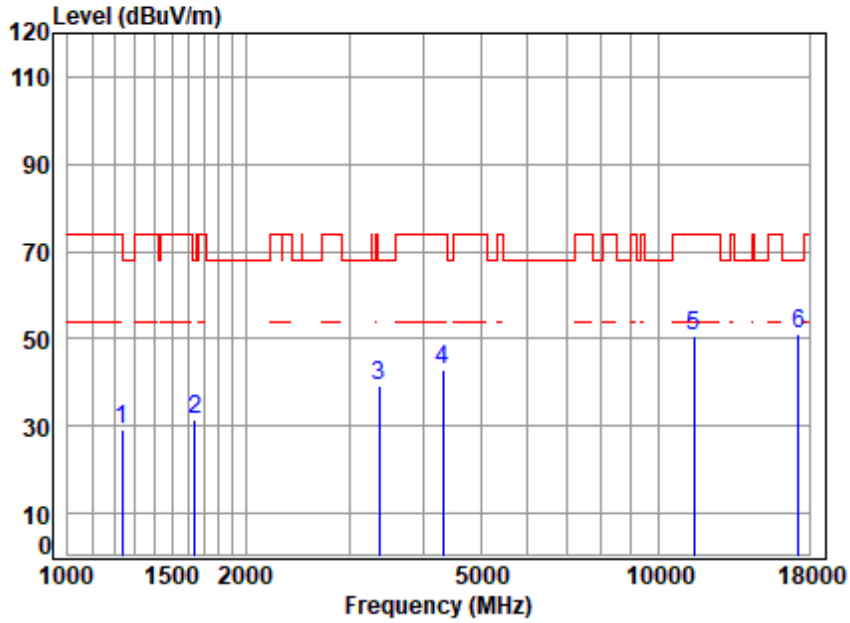
Test Mode: 13; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5755 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1220.714	3.62	24.69	38.34	40.40	30.37	74.00	-43.63	peak
2	1578.822	4.17	26.88	38.40	39.23	31.88	74.00	-42.12	peak
3	3132.079	5.76	32.18	36.13	37.75	39.56	68.20	-28.64	peak
4	4392.376	7.05	34.74	35.80	36.64	42.63	74.00	-31.37	peak
5	11510.000	13.00	37.79	37.69	37.34	50.44	74.00	-23.56	peak
6	q17265.000	14.72	43.06	37.55	30.70	50.93	68.20	-17.27	peak

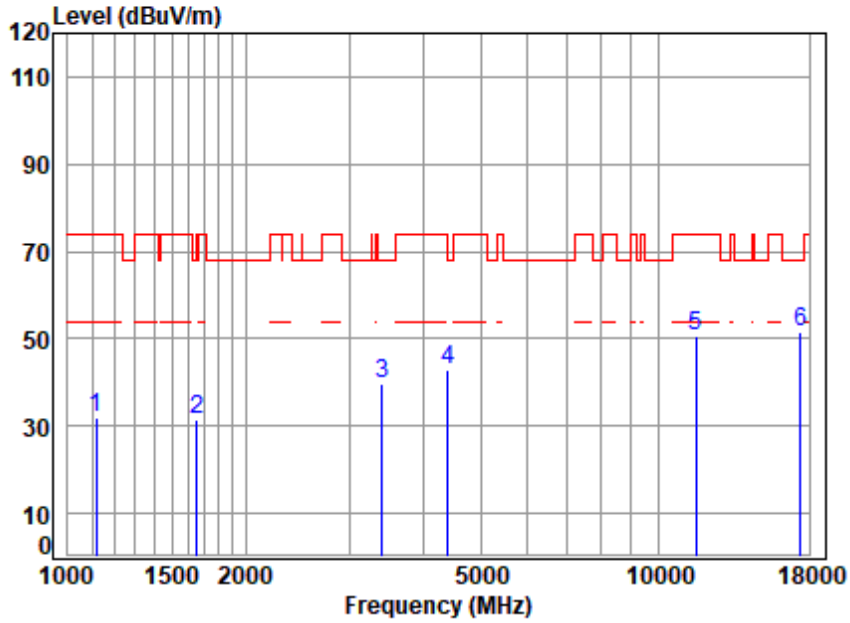
Test Mode: 13; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5755 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1234.909	3.64	24.89	38.35	39.18	29.36	74.00	-44.64	peak
2	1644.019	4.26	26.36	38.41	39.25	31.46	68.20	-36.74	peak
3	3366.778	6.06	32.20	36.12	37.29	39.43	68.20	-28.77	peak
4	4316.859	7.00	34.13	35.86	37.44	42.71	74.00	-31.29	peak
5	11510.000	13.00	37.79	37.69	37.55	50.65	74.00	-23.35	peak
6	q17265.000	14.72	43.06	37.55	30.77	51.00	68.20	-17.20	peak

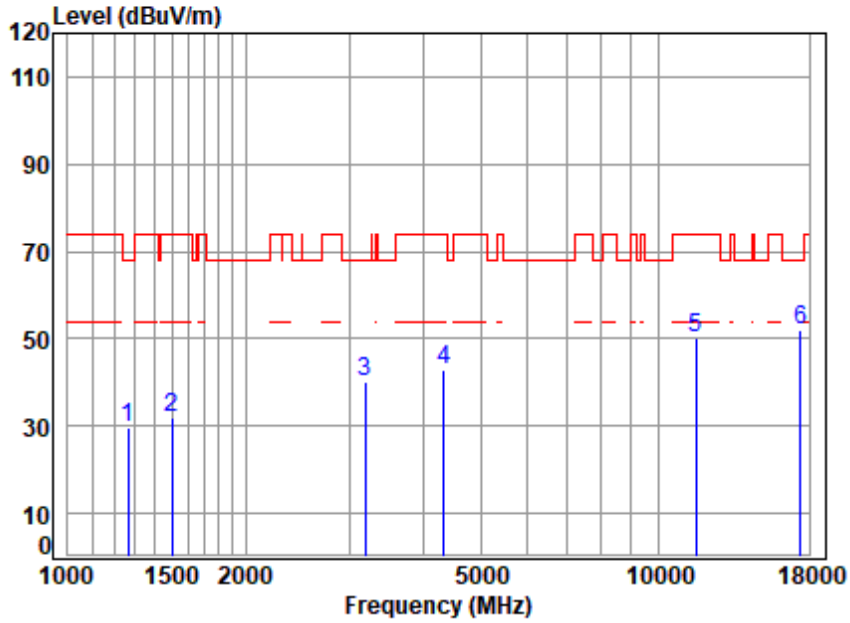
Test Mode: 13; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5795 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1119.323	3.43	23.78	38.32	42.98	31.87	74.00	-42.13	peak
2	1653.550	4.27	26.29	38.41	39.31	31.46	68.20	-36.74	peak
3	3405.929	6.11	32.33	36.12	37.40	39.72	68.20	-28.48	peak
4	4405.090	7.06	34.74	35.79	36.98	42.99	68.20	-25.21	peak
5	11590.000	13.01	37.71	37.67	37.45	50.50	74.00	-23.50	peak
6	q17385.000	14.79	43.35	37.57	30.86	51.43	68.20	-16.77	peak

Test Mode: 13; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5795 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1267.454	3.70	25.00	38.35	39.44	29.79	68.20	-38.41	peak
2	1503.119	4.07	26.81	38.39	39.32	31.81	74.00	-42.19	peak
3	3186.869	5.83	32.79	36.13	37.79	40.28	68.20	-27.92	peak
4	4329.354	7.01	34.23	35.85	37.38	42.77	74.00	-31.23	peak
5	11590.000	13.01	37.71	37.67	36.95	50.00	74.00	-24.00	peak
6	q17385.000	14.79	43.35	37.57	31.29	51.86	68.20	-16.34	peak

7.9 Radiated Emissions which fall in the restricted bands

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

Limit:

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

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

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

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

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

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

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

7.9.1 E.U.T. Operation

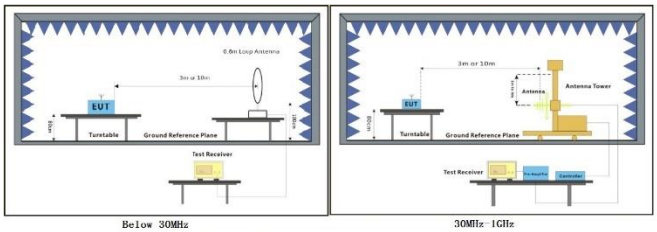
Operating Environment:

Temperature: 21.9 °C Humidity: 60.1 % RH Atmospheric Pressure: 1000 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	09	TX mode (U-NII-2C) _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 20/40, Only the data of worst case is recorded in the report.
Pre-scan	10	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 20/40, Only the data of worst case is recorded in the report.
Final test	12	Charge + TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. 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 20/40, Only the data of worst case is recorded in the report.
Final test	13	Charge + TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. 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 20/40, 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.

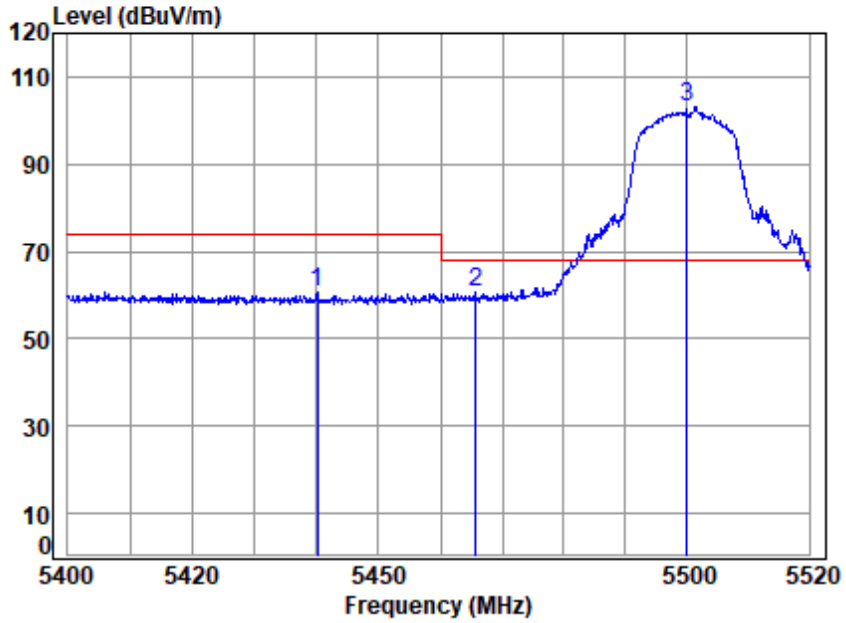
h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

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

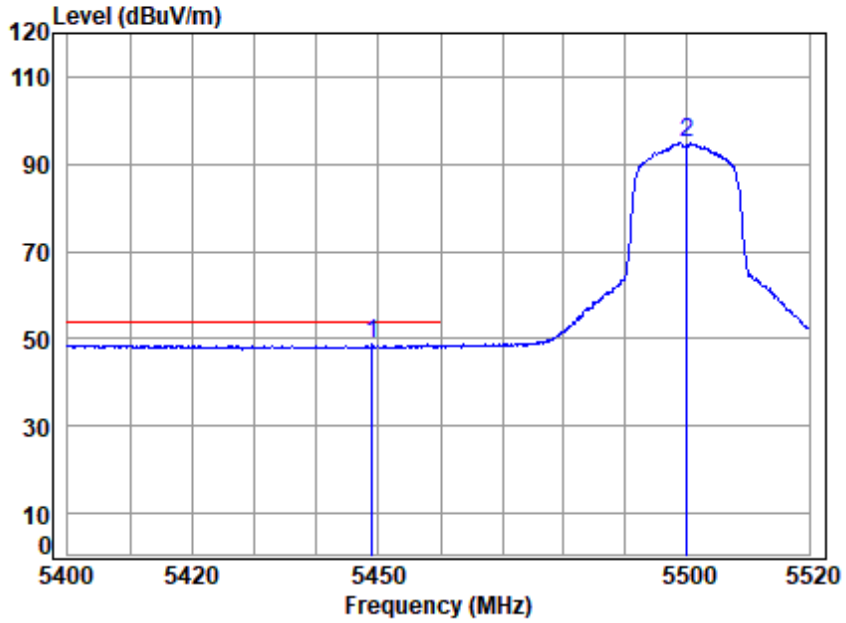
Test Mode: 12; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5500 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5440.146	7.77	34.68	35.16	53.35	60.64	74.00	-13.36	peak
2	5465.673	7.79	34.64	35.15	53.24	60.52	68.20	-7.68	peak
3 q	5500.000	7.82	34.50	35.13	95.79	102.98	68.20	34.78	peak

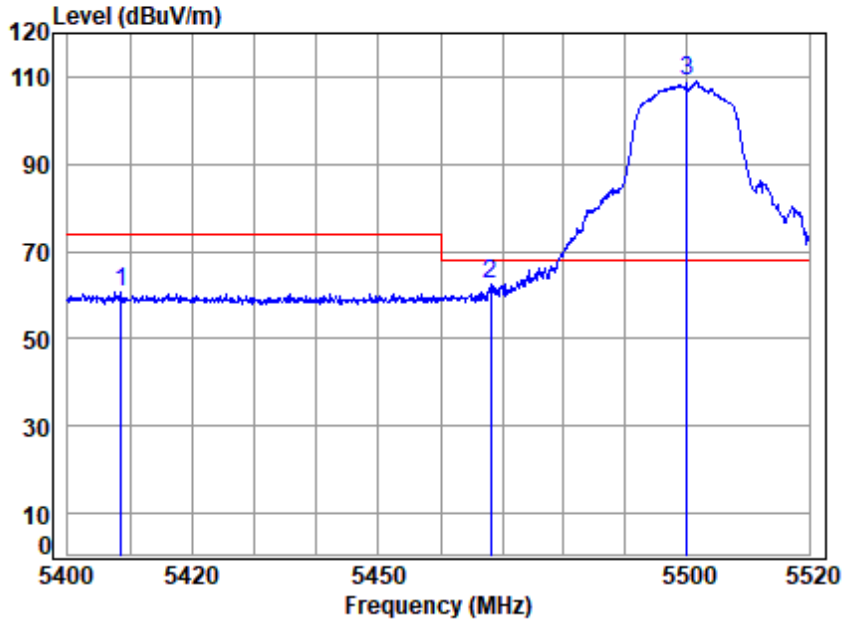
Test Mode: 12; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5500 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5448.881	7.78	34.70	35.16	41.38	48.70	54.00	-5.30	Average
2	5500.000	7.82	34.50	35.13	87.53	94.72	------	------	Average

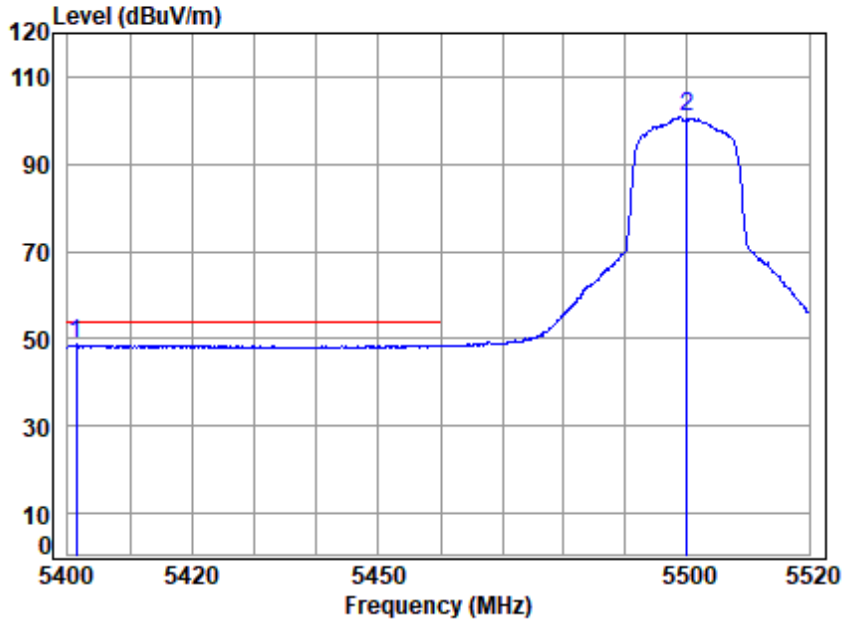
Test Mode: 12; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5500 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5408.552	7.75	34.62	35.18	53.55	60.74	74.00	-13.26	Peak
2	5468.077	7.79	34.63	35.15	55.03	62.30	68.20	-5.90	peak
3 q	5500.000	7.82	34.50	35.13	102.02	109.21	68.20	41.01	Peak

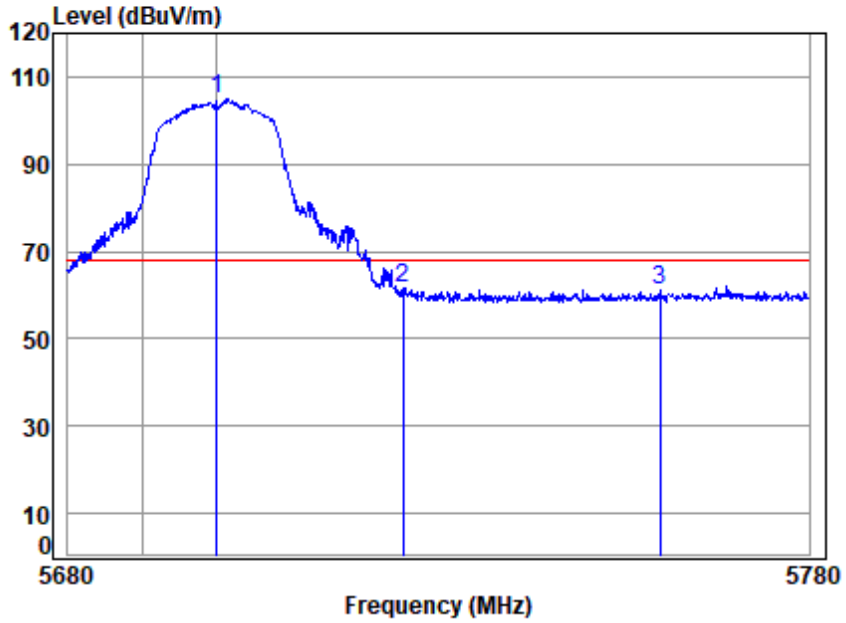
Test Mode: 12; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5500 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5401.424	7.74	34.60	35.18	41.45	48.61	54.00	-5.39	Average
2	5500.000	7.82	34.50	35.13	93.58	100.77	------	------	Average

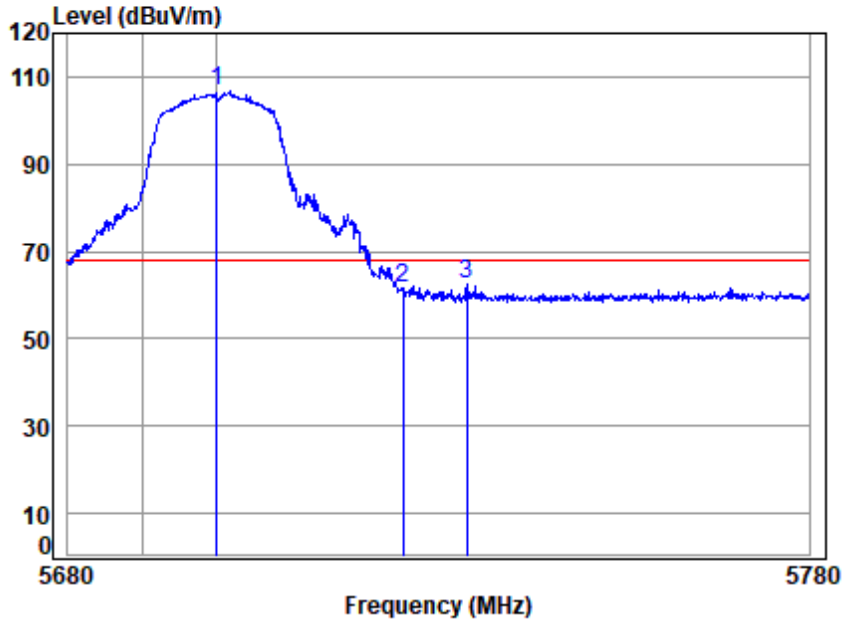
Test Mode: 12; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5700 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5700.000	7.96	34.30	35.04	97.84	105.06	68.20	36.86	peak
2	5725.000	7.98	34.25	35.03	54.37	61.57	68.20	-6.63	peak
3	5759.760	8.00	34.22	35.01	53.98	61.19	68.20	-7.01	peak

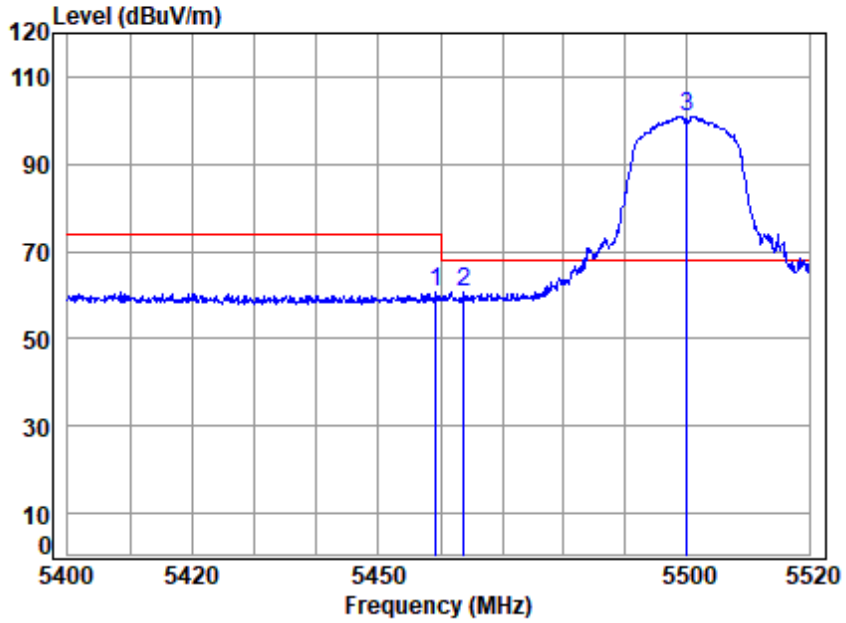
Test Mode: 12; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5700 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5700.000	7.96	34.30	35.04	99.46	106.68	68.20	38.48	Peak
2	5725.000	7.98	34.25	35.03	54.43	61.63	68.20	-6.57	Peak
3	5733.583	7.99	34.23	35.02	55.10	62.30	68.20	-5.90	Peak

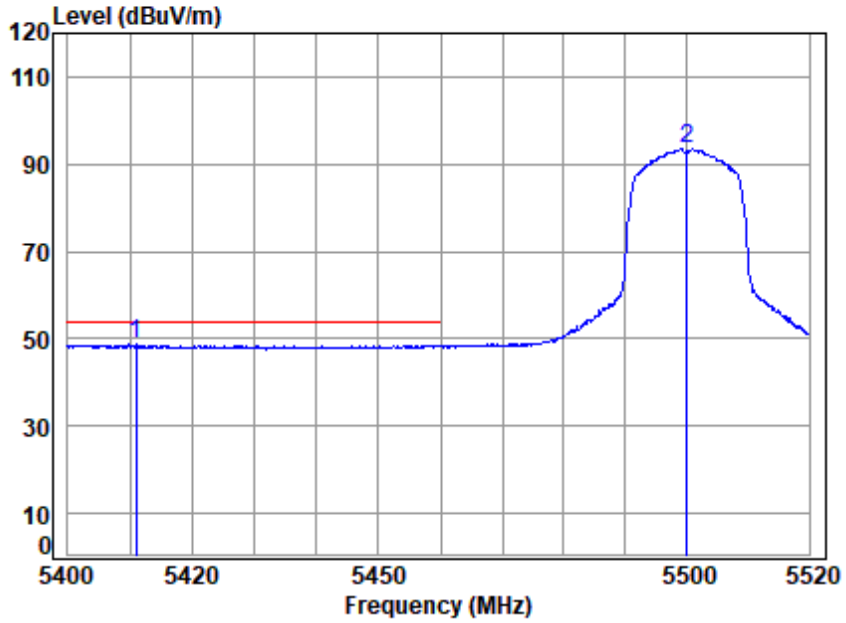
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5500 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5459.311	7.79	34.66	35.15	53.29	60.59	74.00	-13.41	peak
2	5463.752	7.79	34.64	35.15	53.38	60.66	68.20	-7.54	peak
3 q	5500.000	7.82	34.50	35.13	93.75	100.94	68.20	32.74	peak

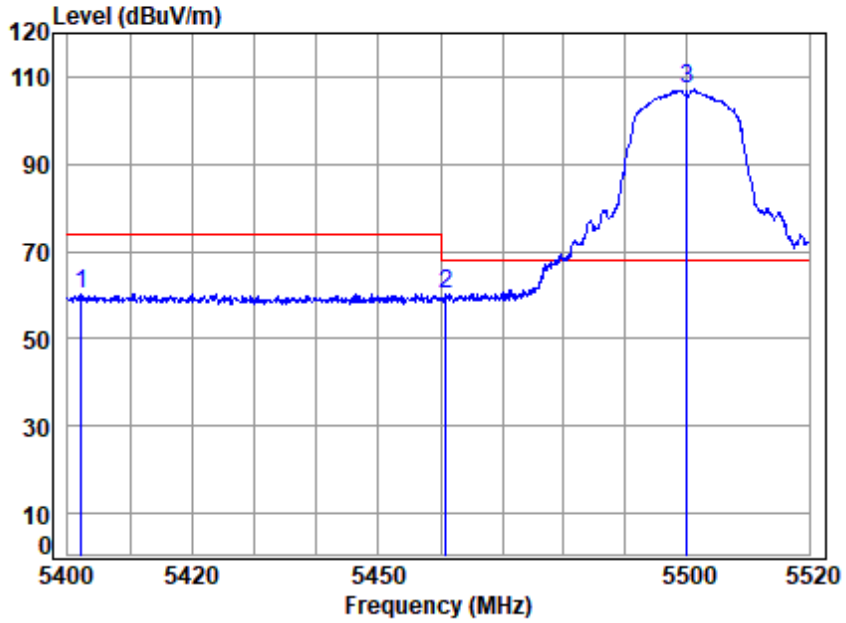
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5500 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5410.930	7.75	34.62	35.18	41.46	48.65	54.00	-5.35	Average
2	5500.000	7.82	34.50	35.13	86.30	93.49	------	------	Average

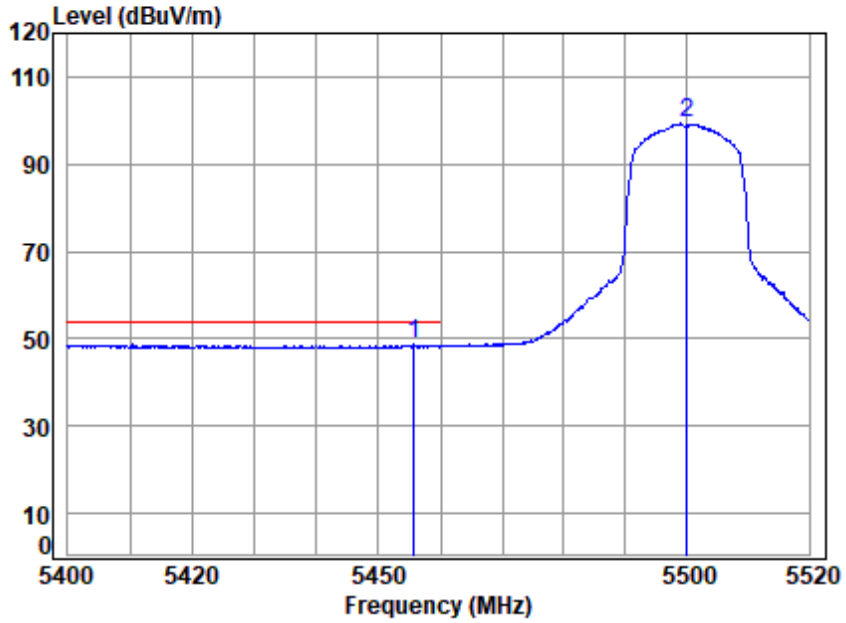
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5500 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5402.137	7.74	34.60	35.18	53.19	60.35	74.00	-13.65	Peak
2	5460.871	7.79	34.66	35.15	53.11	60.41	68.20	-7.79	peak
3 q	5500.000	7.82	34.50	35.13	99.86	107.05	68.20	38.85	Peak

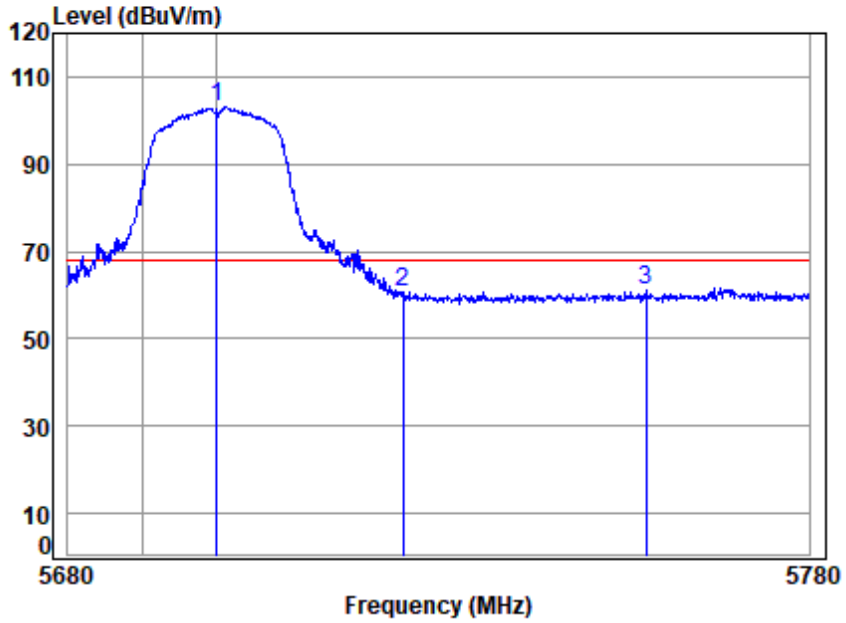
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5500 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5455.712	7.78	34.68	35.16	41.47	48.77	54.00	-5.23	Average
2	5500.000	7.82	34.50	35.13	92.06	99.25	------	------	Average

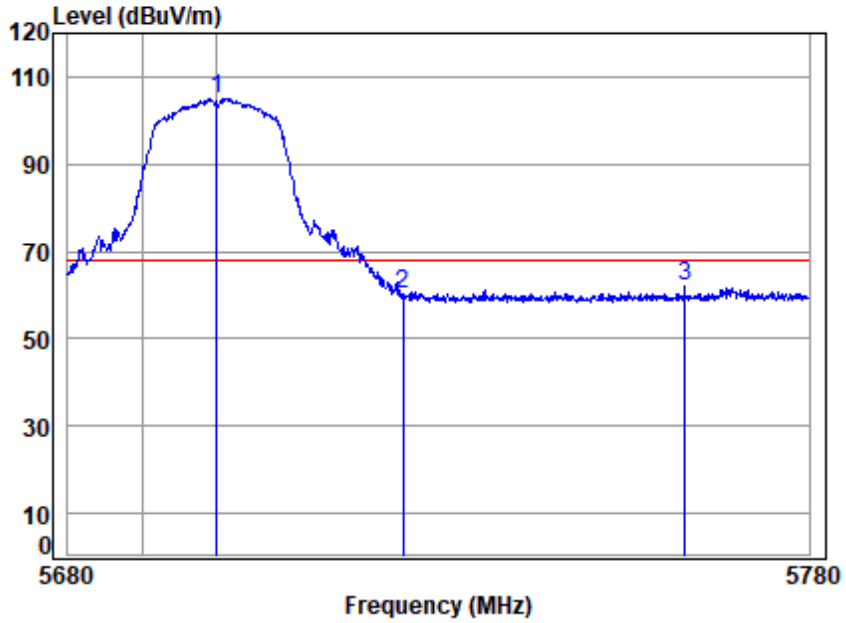
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5700 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5700.000	7.96	34.30	35.04	95.93	103.15	68.20	34.95	peak
2	5725.000	7.98	34.25	35.03	53.57	60.77	68.20	-7.43	peak
3	5757.850	8.00	34.22	35.01	53.80	61.01	68.20	-7.19	peak

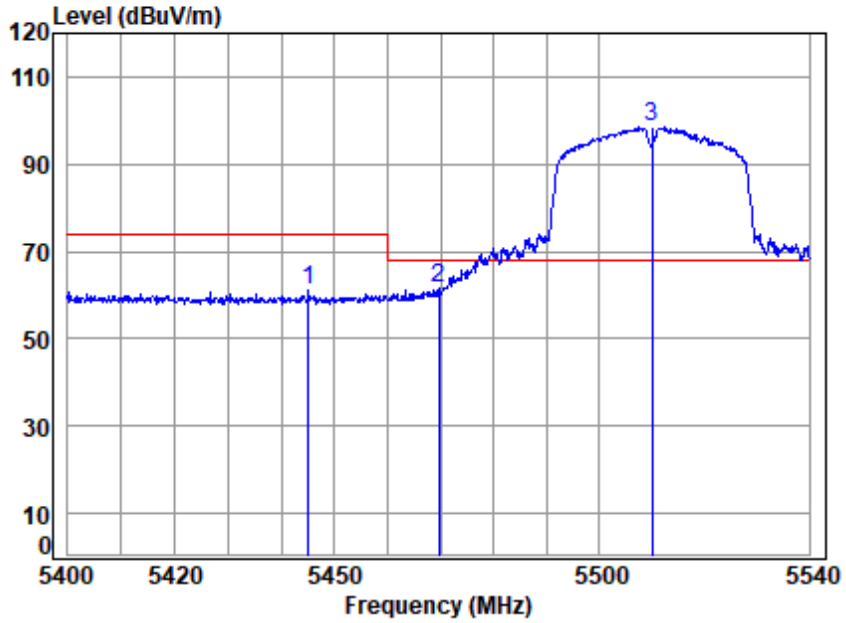
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5700 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5700.000	7.96	34.30	35.04	97.68	104.90	68.20	36.70	Peak
2	5725.000	7.98	34.25	35.03	53.22	60.42	68.20	-7.78	Peak
3	5763.078	8.01	34.23	35.01	54.87	62.10	68.20	-6.10	Peak

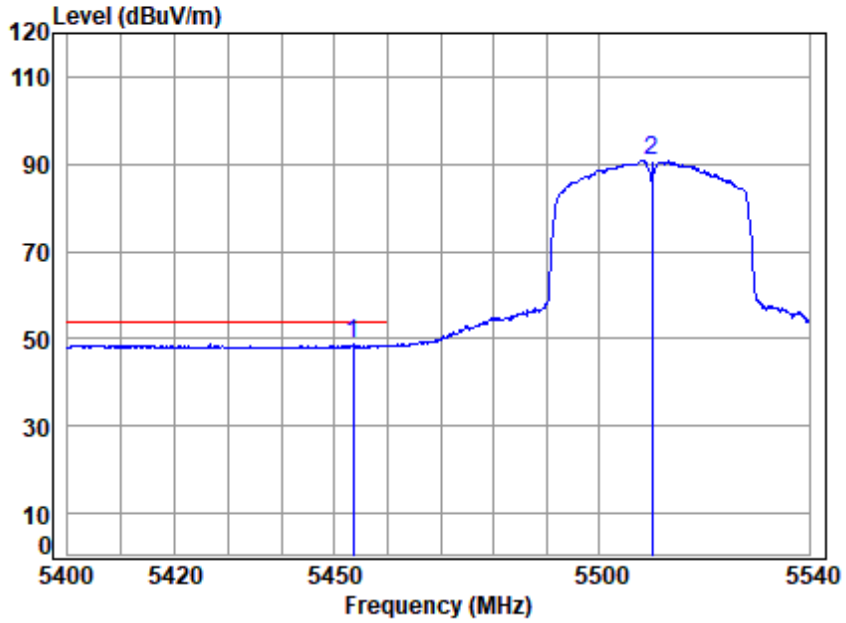
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5510 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5445.107	7.78	34.69	35.16	53.77	61.08	74.00	-12.92	peak
2	5469.692	7.79	34.62	35.15	54.34	61.60	68.20	-6.60	peak
3 q	5510.000	7.82	34.54	35.13	91.42	98.65	68.20	30.45	peak

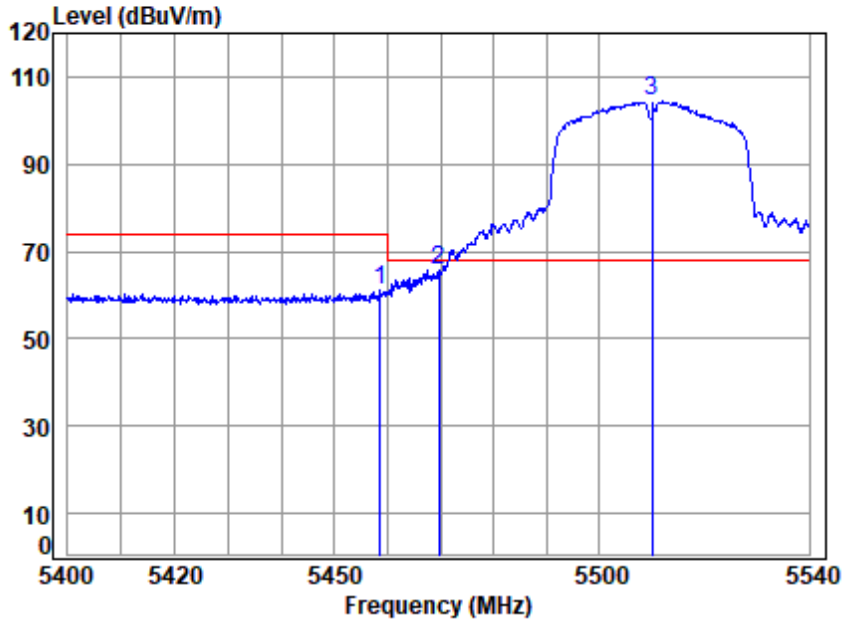
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5510 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5453.476	7.78	34.69	35.16	41.35	48.66	54.00	-5.34	Average
2	5510.000	7.82	34.54	35.13	83.62	90.85	------	------	Average

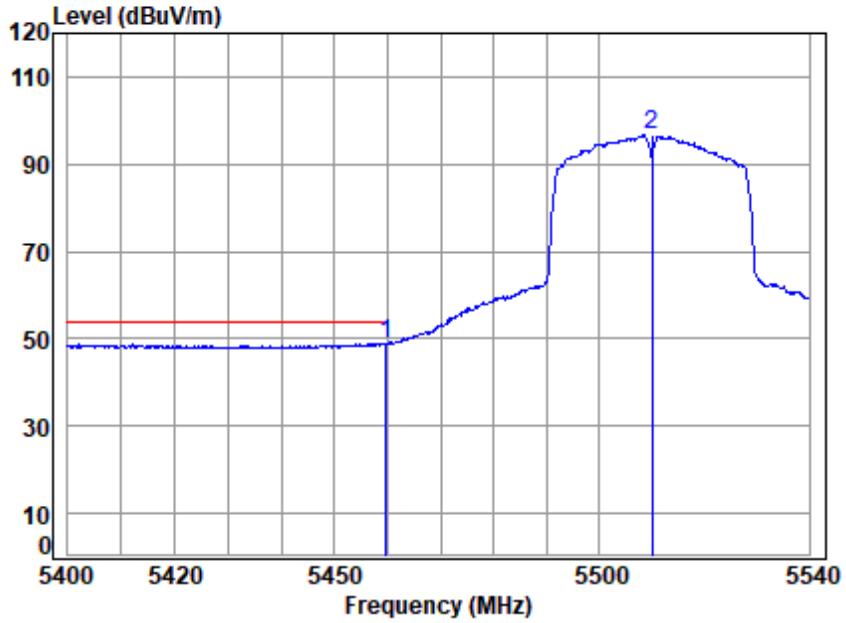
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5510 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5458.503	7.79	34.67	35.15	53.76	61.07	74.00	-12.93	Peak
2	5469.692	7.79	34.62	35.15	58.41	65.67	68.20	-2.53	peak
3 q	5510.000	7.82	34.54	35.13	97.11	104.34	68.20	36.14	Peak

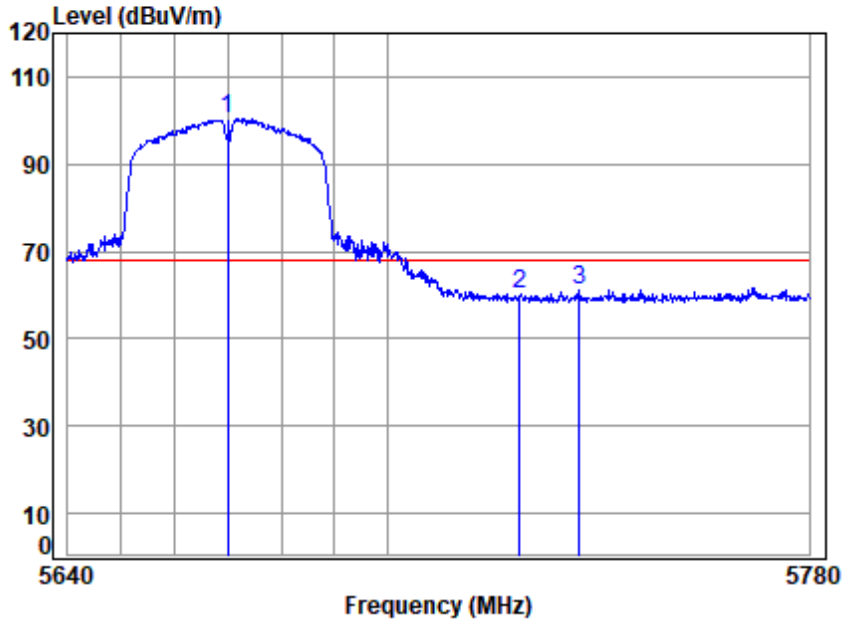
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5510 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5459.622	7.79	34.66	35.15	41.72	49.02	54.00	-4.98	Average
2	5510.000	7.82	34.54	35.13	89.44	96.67	------	------	Average

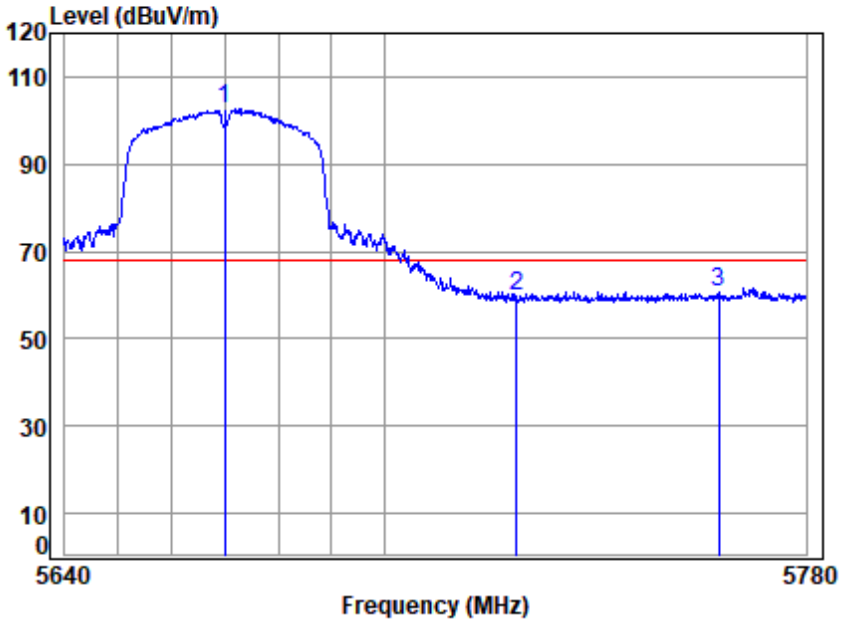
Test Mode: 12; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5670 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5670.000	7.94	34.36	35.05	93.20	100.45	68.20	32.25	peak
2	5725.000	7.98	34.25	35.03	53.17	60.37	68.20	-7.83	peak
3	5736.232	7.99	34.23	35.02	53.94	61.14	68.20	-7.06	peak

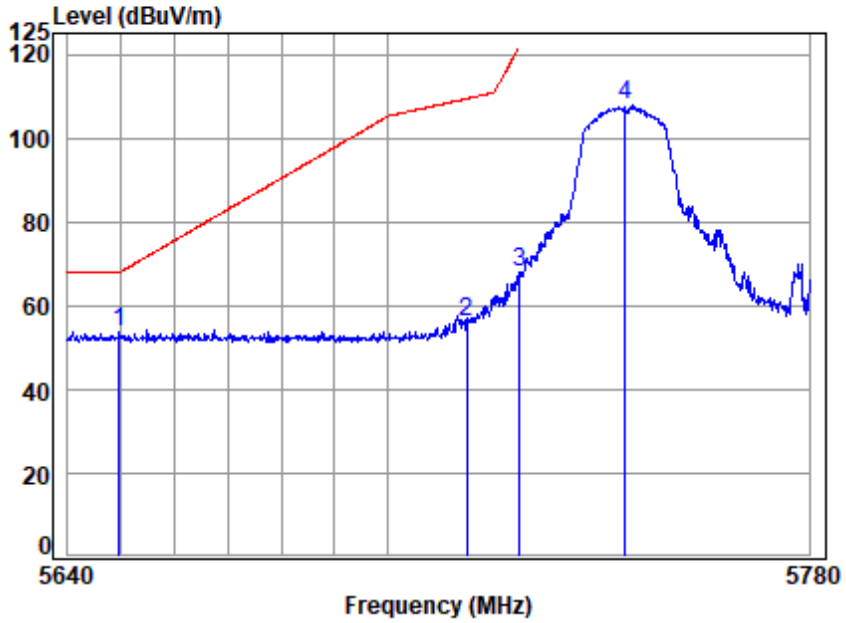
Test Mode: 12; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5670 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5670.000	7.94	34.36	35.05	95.36	102.61	68.20	34.41	Peak
2	5725.000	7.98	34.25	35.03	52.53	59.73	68.20	-8.47	Peak
3	5763.301	8.01	34.23	35.01	53.43	60.66	68.20	-7.54	Peak

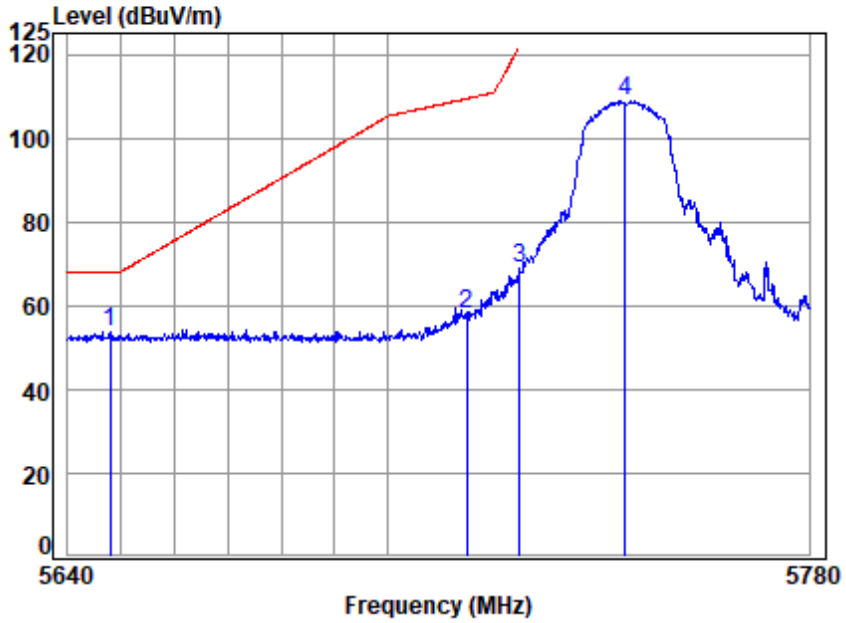
Test Mode: 13; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5745 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5649.550	7.93	34.40	35.06	46.41	53.68	68.20	-14.52	peak
2	5715.000	7.97	34.27	35.03	49.04	56.25	109.40	-53.15	peak
3	5725.000	7.98	34.25	35.03	60.89	68.09	122.20	-54.11	peak
4	5745.000	7.99	34.21	35.02	100.84	108.02	------	------	peak

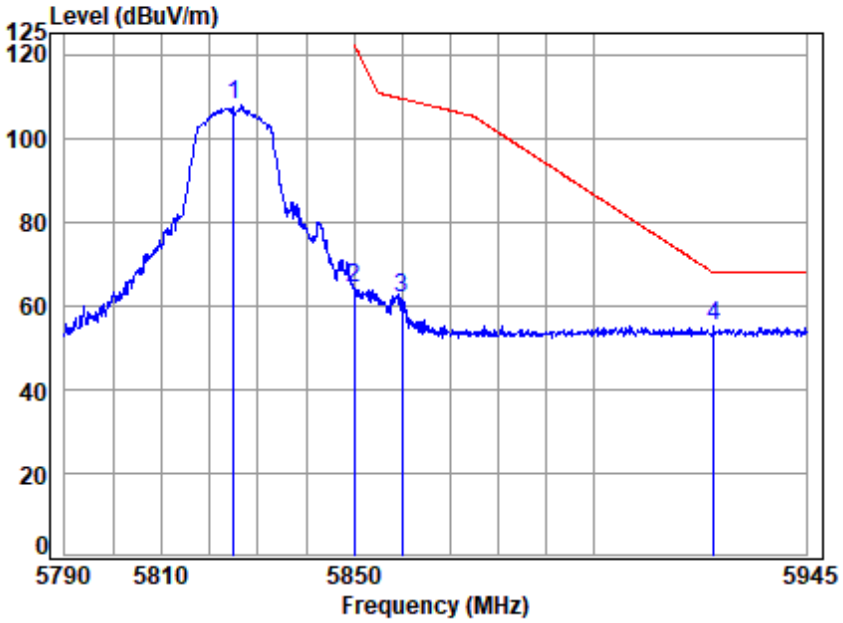
Test Mode: 13; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5745 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5647.888	7.92	34.41	35.06	46.50	53.77	68.20	-14.43	peak
2	5715.000	7.97	34.27	35.03	50.70	57.91	109.40	-51.49	peak
3	5725.000	7.98	34.25	35.03	61.51	68.71	122.20	-53.49	peak
4	5745.000	7.99	34.21	35.02	101.72	108.90	------	------	peak

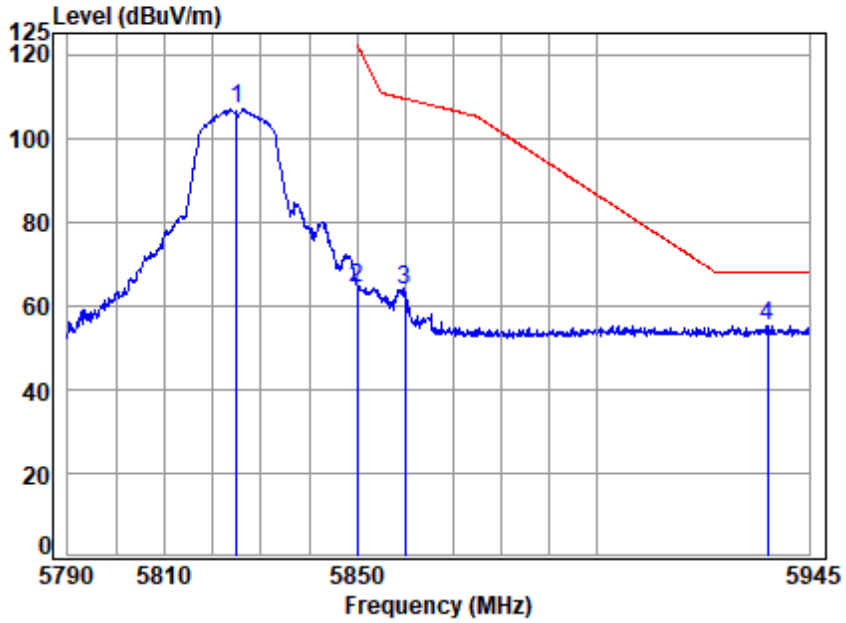
Test Mode: 13; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5825 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5825.000	8.05	34.35	34.98	100.31	107.73	------	------	peak
2	5850.000	8.07	34.40	34.97	56.78	64.28	122.20	-57.92	peak
3	5860.000	8.07	34.44	34.96	54.03	61.58	109.40	-47.82	peak
4 q	5925.400	8.12	34.65	34.93	47.22	55.06	68.20	-13.14	peak

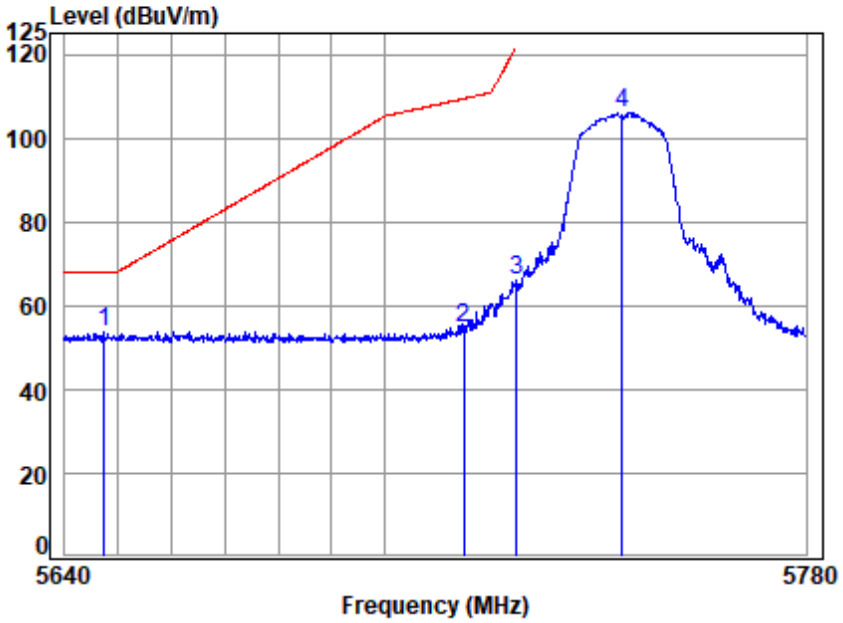
Test Mode: 13; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5825 Band edge
: 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5825.000	8.05	34.35	34.98	99.43	106.85	------	------	peak
2	5850.000	8.07	34.40	34.97	56.87	64.37	122.20	-57.83	peak
3	5860.000	8.07	34.44	34.96	56.07	63.62	109.40	-45.78	peak
4 q	5936.211	8.13	34.67	34.93	47.38	55.25	68.20	-12.95	peak

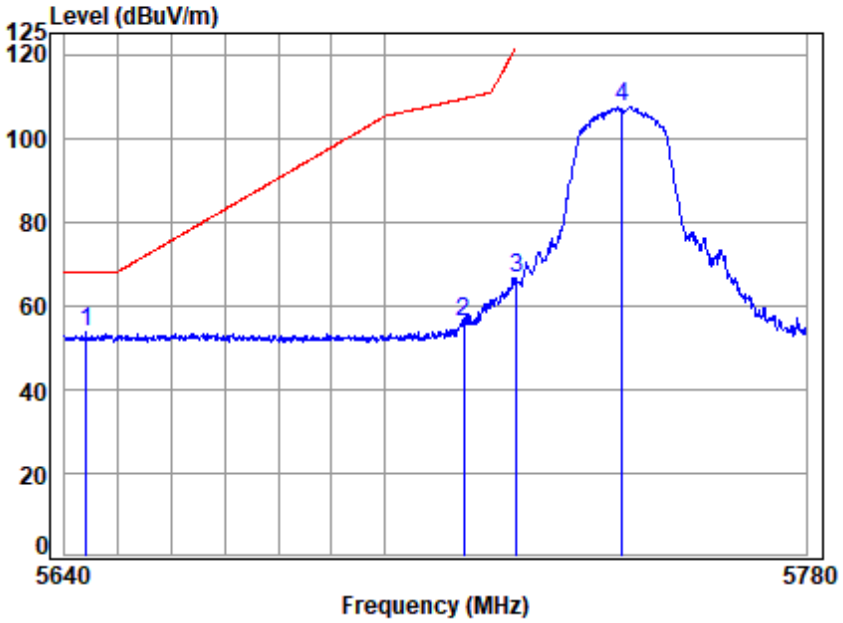
Test Mode: 13; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5745 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5647.334	7.92	34.42	35.06	46.20	53.48	68.20	-14.72	peak
2	5715.000	7.97	34.27	35.03	47.64	54.85	109.40	-54.55	peak
3	5725.000	7.98	34.25	35.03	58.91	66.11	122.20	-56.09	peak
4	5745.000	7.99	34.21	35.02	98.86	106.04	------	------	peak

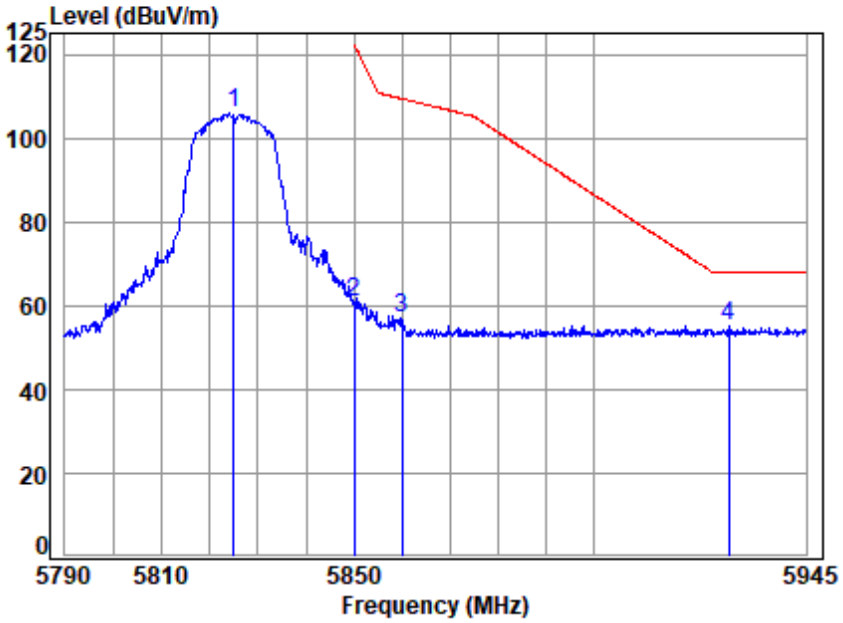
Test Mode: 13; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5745 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5644.012	7.92	34.44	35.06	46.30	53.60	68.20	-14.60	peak
2	5715.000	7.97	34.27	35.03	49.07	56.28	109.40	-53.12	peak
3	5725.000	7.98	34.25	35.03	59.16	66.36	122.20	-55.84	peak
4	5745.000	7.99	34.21	35.02	100.41	107.59	------	------	peak

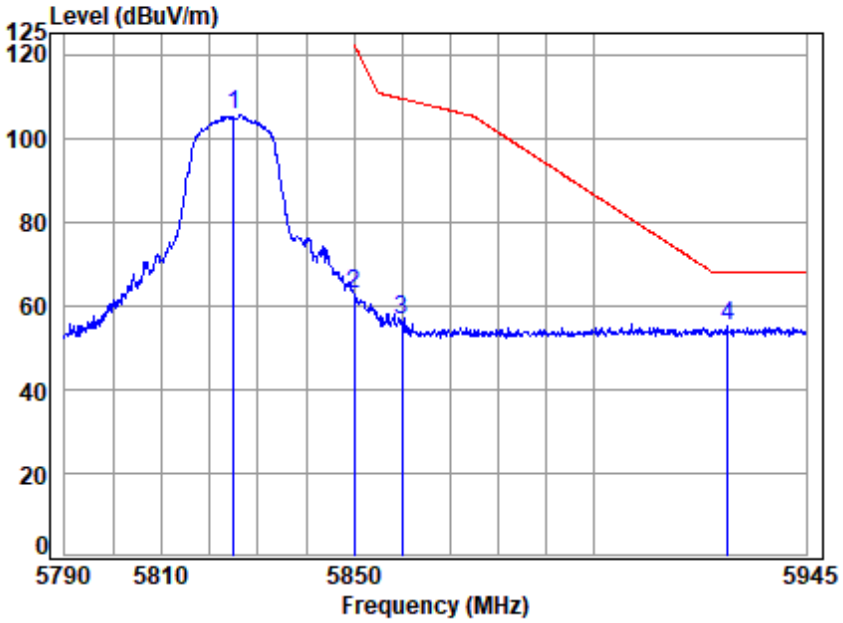
Test Mode: 13; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5825 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5825.000	8.05	34.35	34.98	98.34	105.76	------	------	peak
2	5850.000	8.07	34.40	34.97	53.14	60.64	122.20	-61.56	peak
3	5860.000	8.07	34.44	34.96	49.33	56.88	109.40	-52.52	peak
4 q	5928.688	8.12	34.66	34.93	47.41	55.26	68.20	-12.94	peak

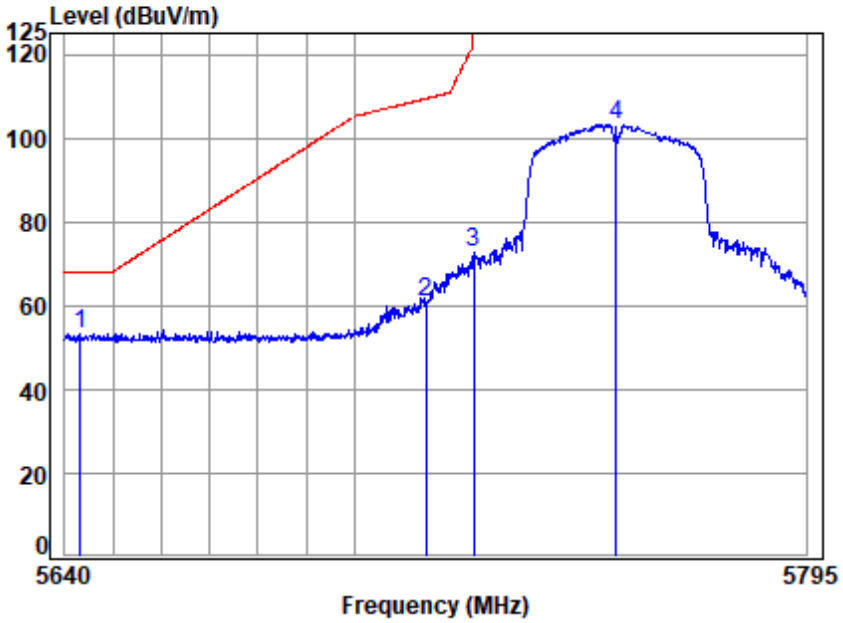
Test Mode: 13; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5825 Band edge
: 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5825.000	8.05	34.35	34.98	98.22	105.64	------	------	peak
2	5850.000	8.07	34.40	34.97	55.32	62.82	122.20	-59.38	peak
3	5860.000	8.07	34.44	34.96	49.23	56.78	109.40	-52.62	peak
4 q	5928.375	8.12	34.66	34.93	47.07	54.92	68.20	-13.28	peak

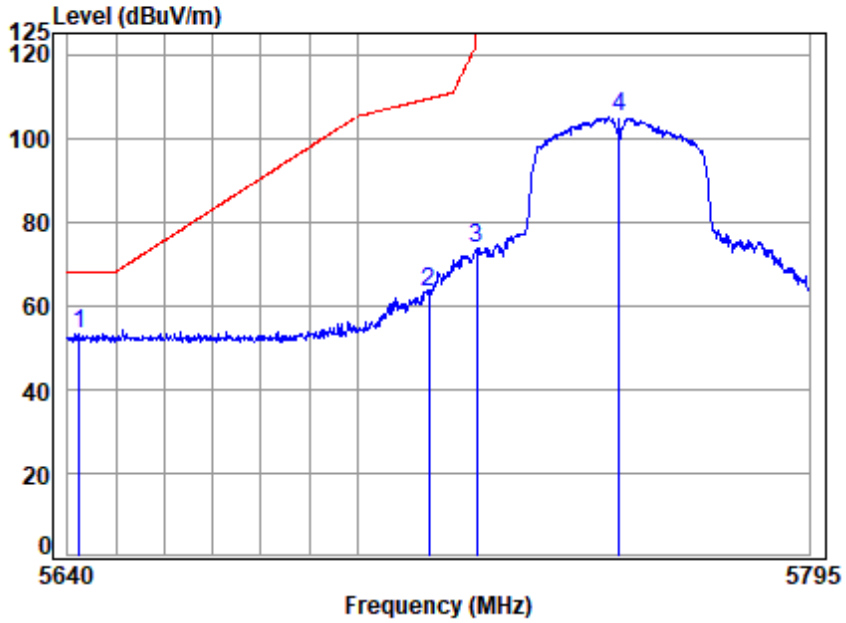
Test Mode: 13; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5755 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5643.212	7.92	34.44	35.06	45.92	53.22	68.20	-14.98	peak
2	5715.000	7.97	34.27	35.03	53.40	60.61	109.40	-48.79	peak
3	5725.000	7.98	34.25	35.03	65.53	72.73	122.20	-49.47	peak
4	5755.000	8.00	34.21	35.01	96.14	103.34	------	------	peak

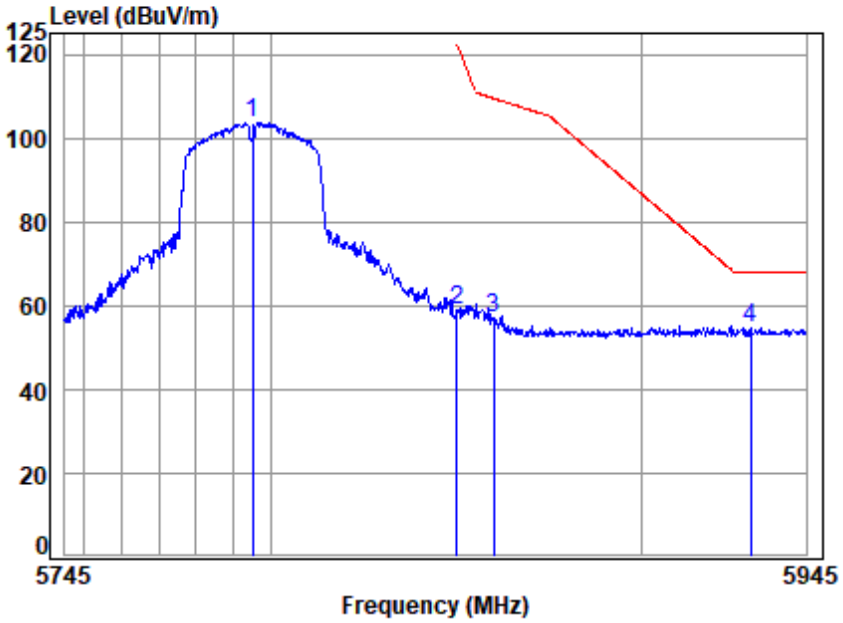
Test Mode: 13; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5755 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 q	5642.447	7.92	34.45	35.07	45.90	53.20	68.20	-15.00	peak
2	5715.000	7.97	34.27	35.03	56.05	63.26	109.40	-46.14	peak
3	5725.000	7.98	34.25	35.03	66.36	73.56	122.20	-48.64	peak
4	5755.000	8.00	34.21	35.01	97.67	104.87	------	------	peak

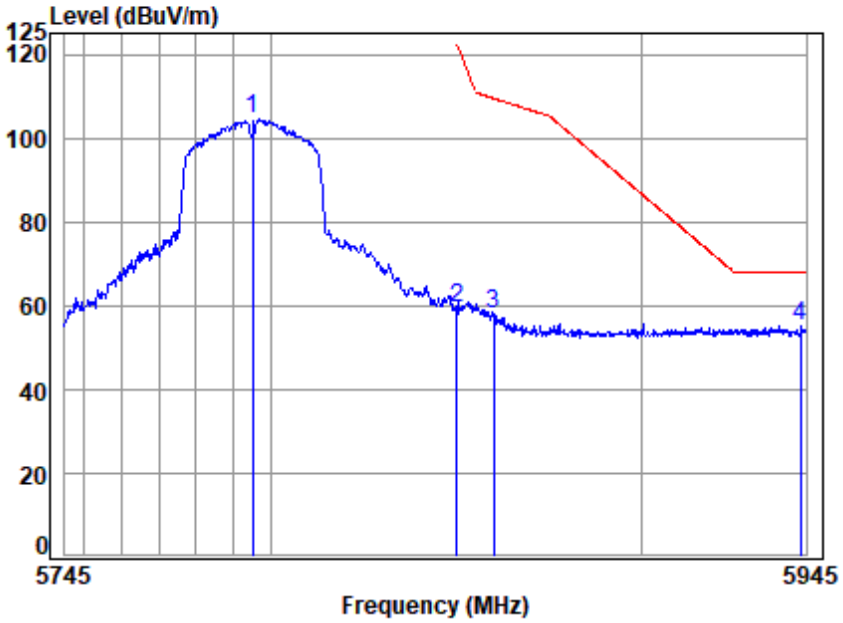
Test Mode: 13; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03474AT\03475AT
Mode : 5795 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5795.000	8.03	34.29	34.99	96.45	103.78	------	------	peak
2	5850.000	8.07	34.40	34.97	51.28	58.78	122.20	-63.42	peak
3	5860.000	8.07	34.44	34.96	49.51	57.06	109.40	-52.34	peak
4 q	5929.761	8.12	34.66	34.93	47.01	54.86	68.20	-13.34	peak

Test Mode: 13; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: High



Site : chamber
Condition: 3m VERTICAL
Job No : 03474AT\03475AT
Mode : 5795 Band edge
: 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5795.000	8.03	34.29	34.99	97.05	104.38	------	------	peak
2	5850.000	8.07	34.40	34.97	51.95	59.45	122.20	-62.75	peak
3	5860.000	8.07	34.44	34.96	50.51	58.06	109.40	-51.34	peak
4 q	5943.576	8.13	34.69	34.93	47.19	55.08	68.20	-13.12	peak

7.10 Frequency Stability

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

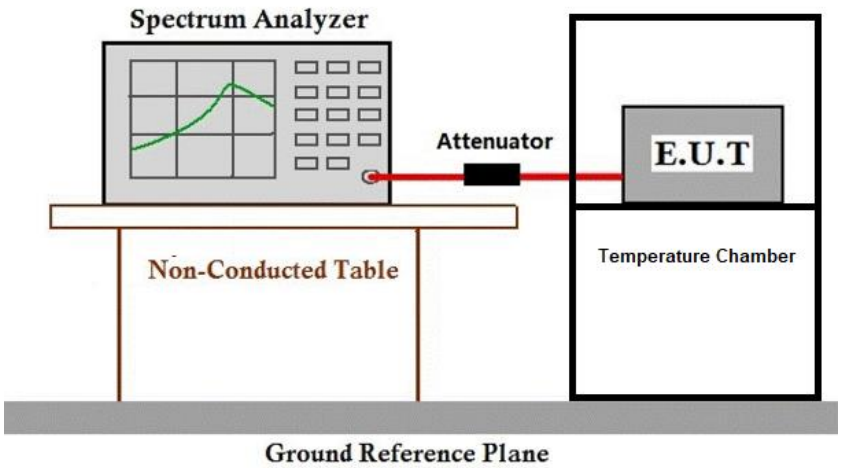
7.10.1 E.U.T. Operation

Operating Environment:
Temperature: 22.7 °C Humidity: 44.7 % RH Atmospheric Pressure: 1000 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-2C) _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 20/40, Only the data of worst case is recorded in the report.
Final test	10	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 20/40, 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

7.11 Non-occupancy period

Test Requirement KDB 905462 D02 Section 5.1
Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

7.11.1 E.U.T. Operation

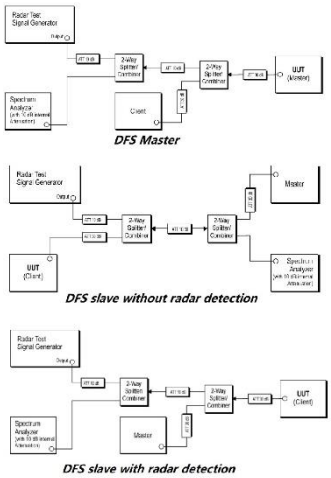
Operating Environment:

Temperature: 22.6 °C Humidity: 50.5 % RH Atmospheric Pressure: 1000 mbar

7.11.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	11	Normal operating_Keep the EUT communication with the companion device.

7.11.3 Test Setup Diagram



7.11.4 Measurement Procedure and Data

1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

4) EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details

7.12 Channel Move Time

Test Requirement KDB 905462 D02 Section 5.1
Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

7.12.1 E.U.T. Operation

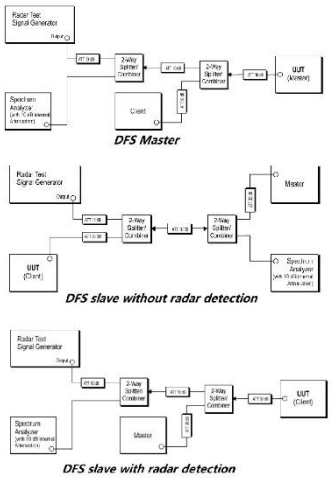
Operating Environment:

Temperature: 22.6 °C Humidity: 50.5 % RH Atmospheric Pressure: 1000 mbar

7.12.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	11	Normal operating_Keep the EUT communication with the companion device.

7.12.3 Test Setup Diagram



7.12.4 Measurement Procedure and Data

1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

4) EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details

7.13 Channel Closing Transmission Time

Test Requirement KDB 905462 D02 Section 5.1
Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

7.13.1 E.U.T. Operation

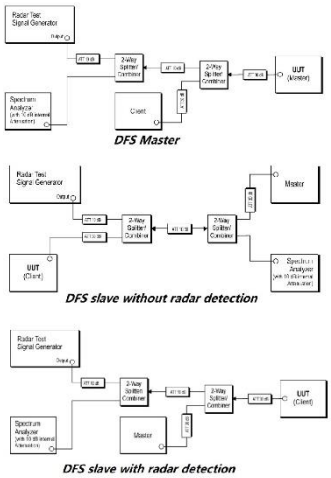
Operating Environment:

Temperature: 22.6 °C Humidity: 50.5 % RH Atmospheric Pressure: 1000 mbar

7.13.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	11	Normal operating_Keep the EUT communication with the companion device.

7.13.3 Test Setup Diagram



7.13.4 Measurement Procedure and Data

1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

4) EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details

8 Test Setup Photo

Refer to Setup Photo for SZCR2310003474AT

9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for SZCR2310003474AT

10 Appendix

1. Duty Cycle

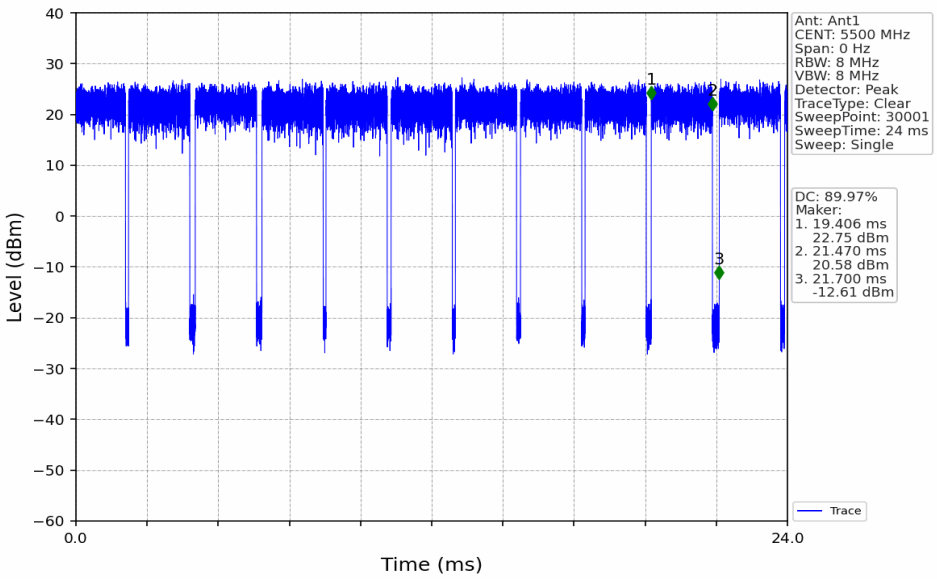
1.1 Ant1

1.1.1 Test Result

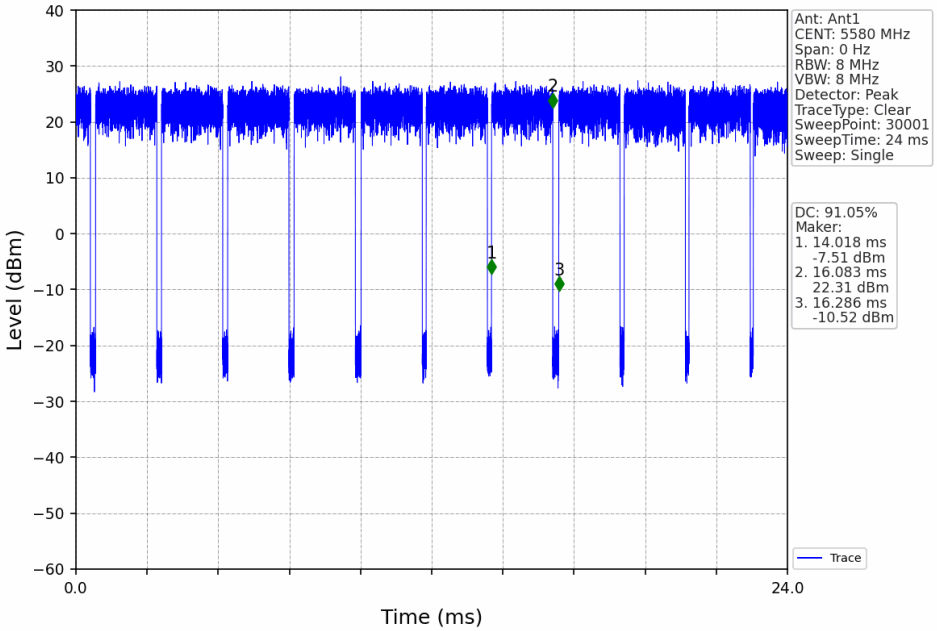
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5500	2.064	2.294	89.97	0.46	5.60
		5580	2.065	2.268	91.05	0.41	4.13
		5700	2.065	2.294	90.02	0.46	4.45
		5745	2.064	2.449	84.28	0.74	11.27
		5785	2.064	2.295	89.93	0.46	4.10
		5825	2.064	2.295	89.93	0.46	5.28
802.11n (HT20)	SISO	5500	1.920	2.124	90.40	0.44	4.01
		5580	1.920	2.142	89.64	0.48	5.58
		5700	1.921	2.132	90.10	0.45	4.80
		5745	1.921	2.133	90.06	0.45	4.79
		5785	1.921	2.411	79.68	0.99	15.59
		5825	1.921	2.106	91.22	0.40	4.08
802.11n (HT40)	SISO	5510	0.945	1.156	81.75	0.88	8.40
		5550	0.945	1.148	82.32	0.85	7.77
		5670	0.945	1.139	82.97	0.81	7.11
		5755	0.945	1.157	81.68	0.88	9.22
		5795	0.946	1.176	80.44	0.95	8.89

1.1.2 Test Graph

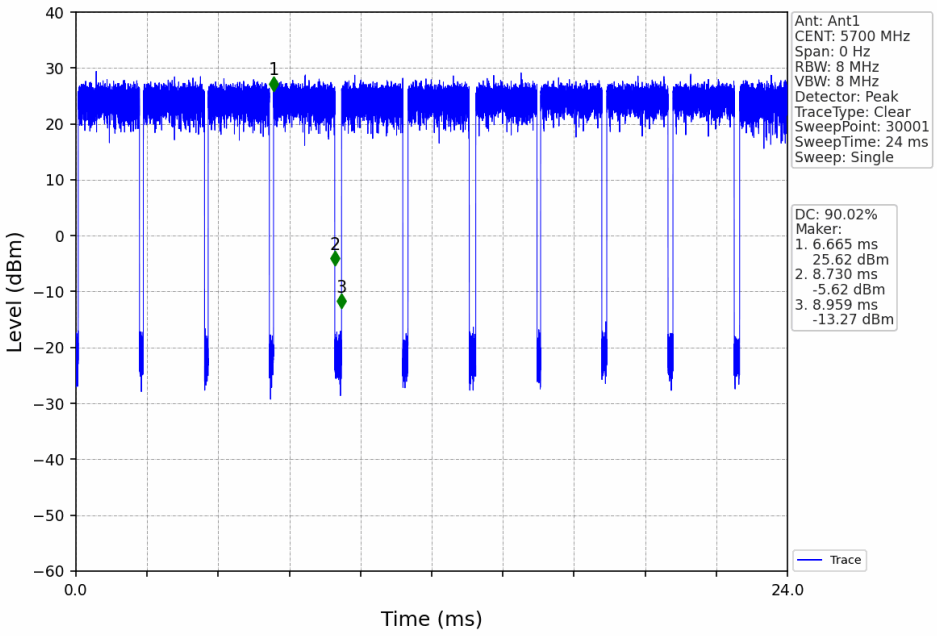
802.11a_LCH_5500MHz_Ant1_NTNV



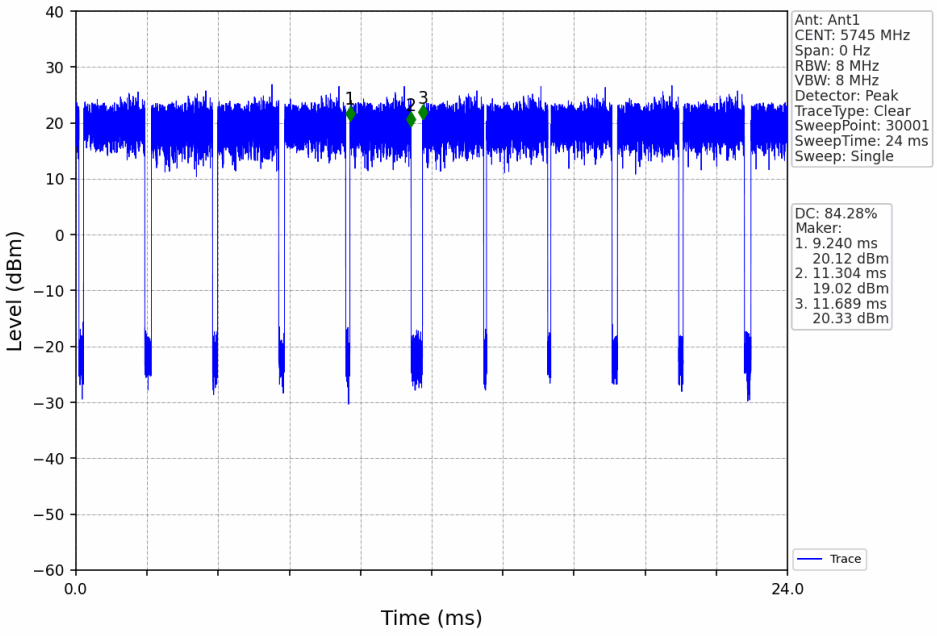
802.11a_MCH_5580MHz_Ant1_NTNV



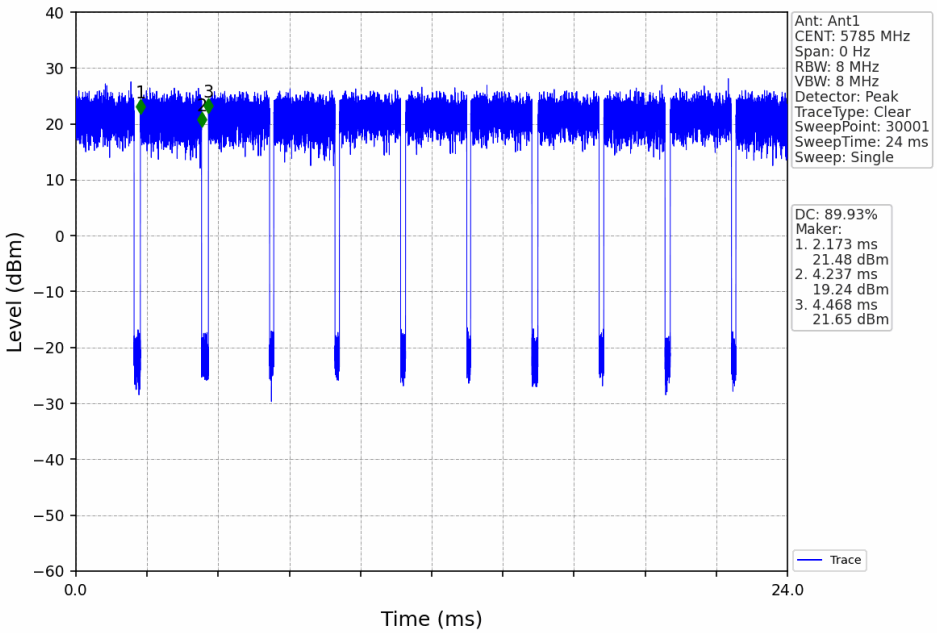
802.11a_HCH_5700MHz_Ant1_NTNV



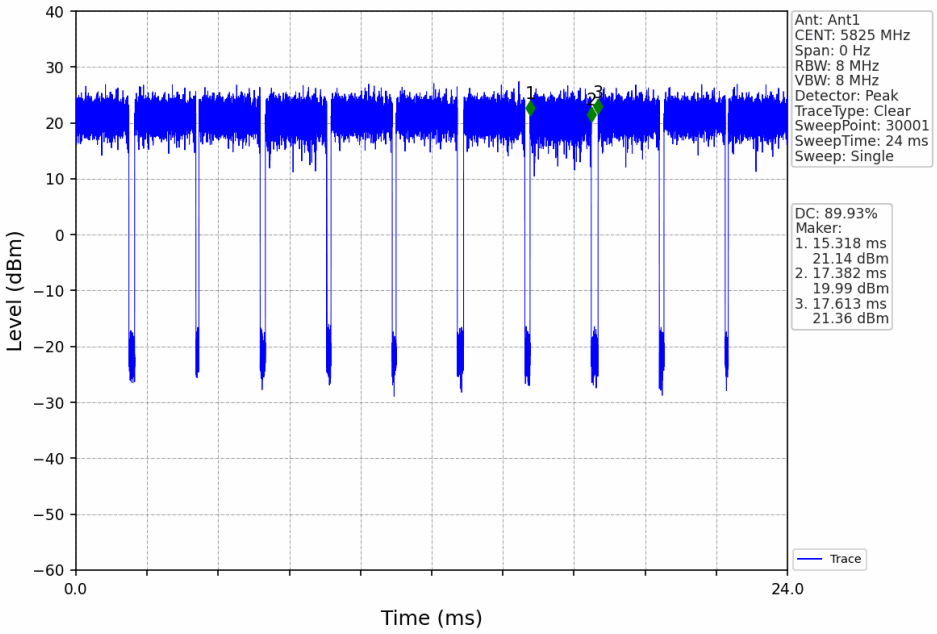
802.11a_LCH_5745MHz_Ant1_NTNV



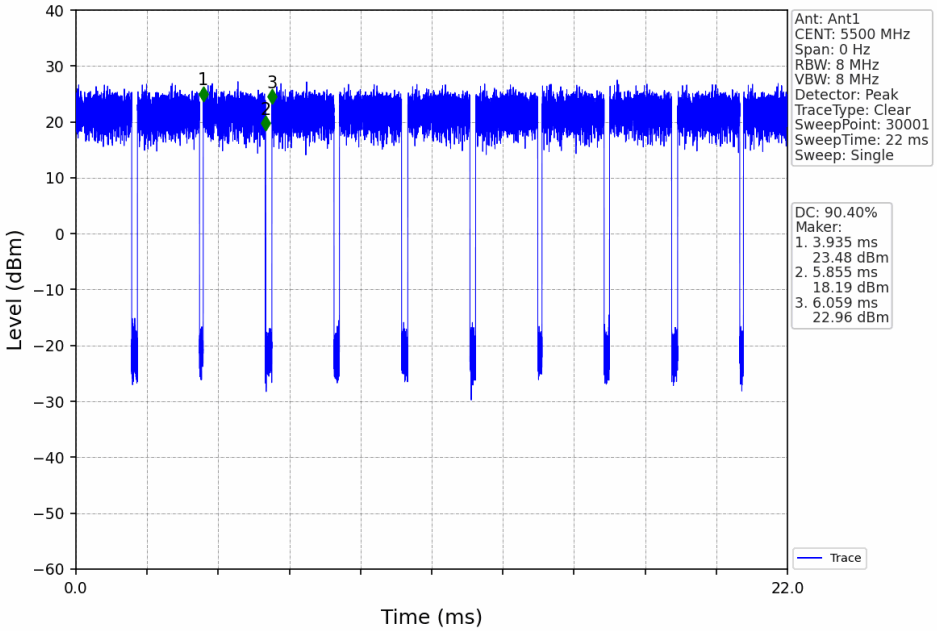
802.11a_MCH_5785MHz_Ant1_NTNV



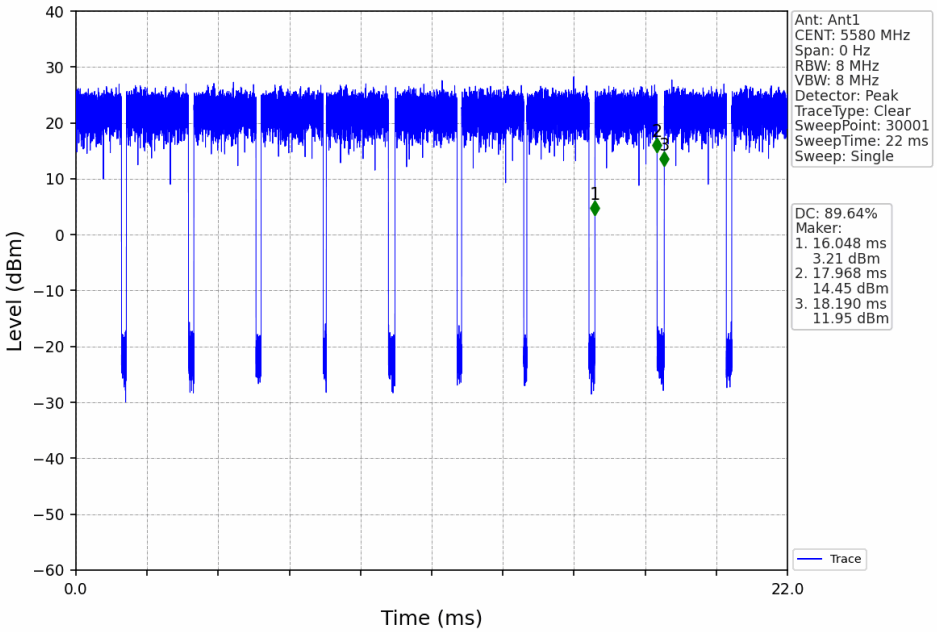
802.11a_HCH_5825MHz_Ant1_NTNV



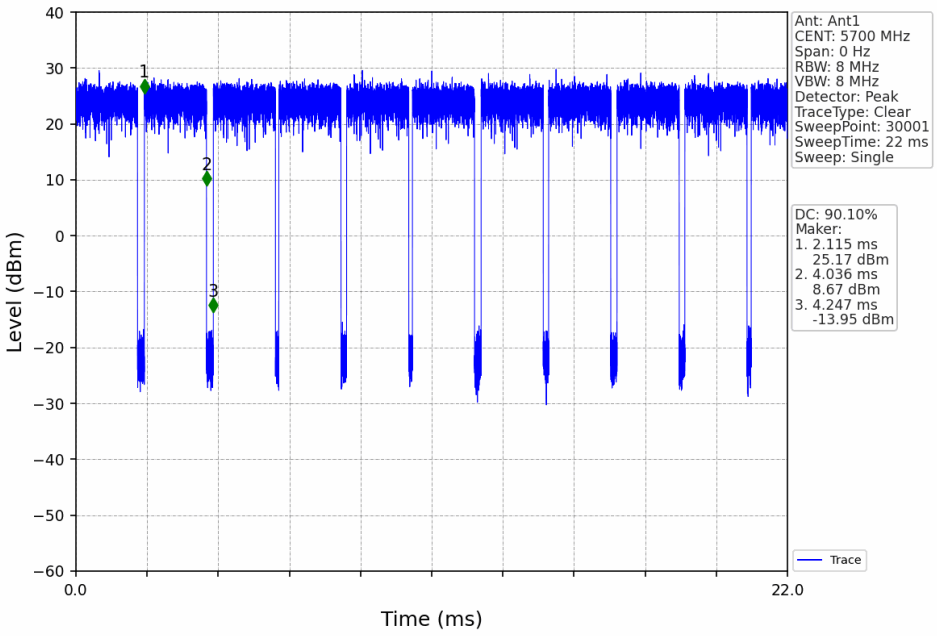
802.11n(HT20)_LCH_5500MHz_Ant1_NTNV



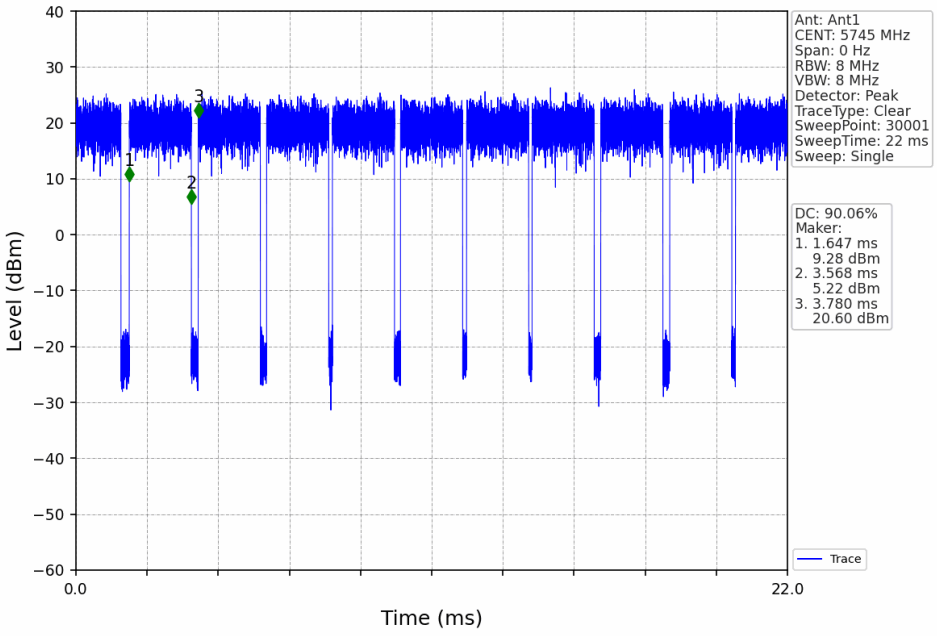
802.11n(HT20)_MCH_5580MHz_Ant1_NTNV



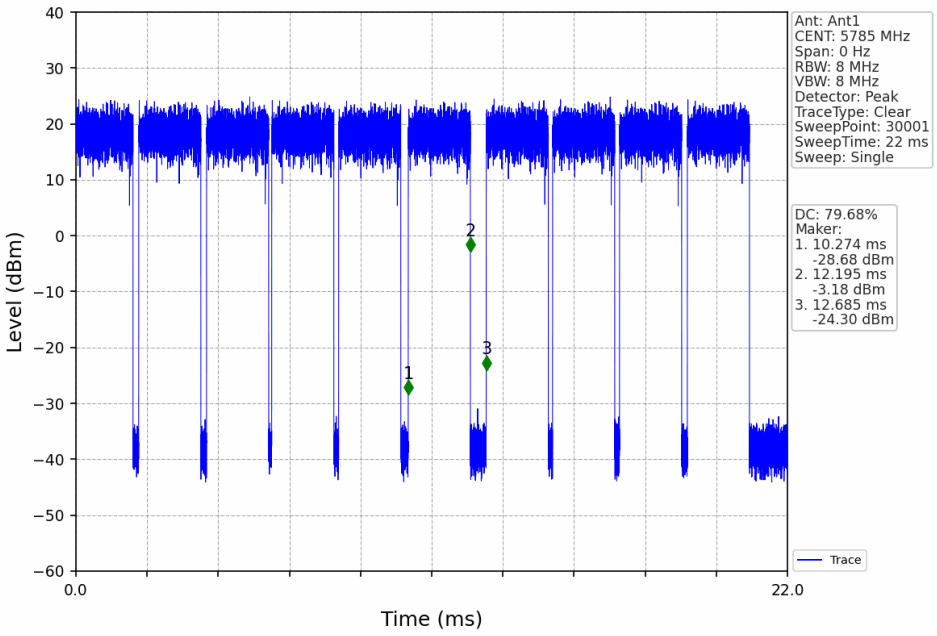
802.11n(HT20)_HCH_5700MHz_Ant1_NTNV



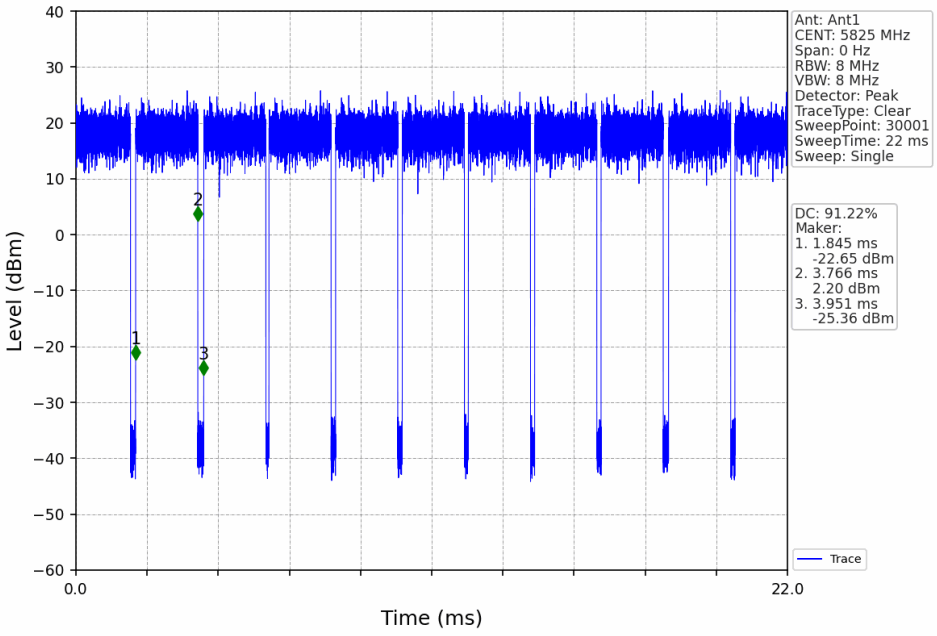
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



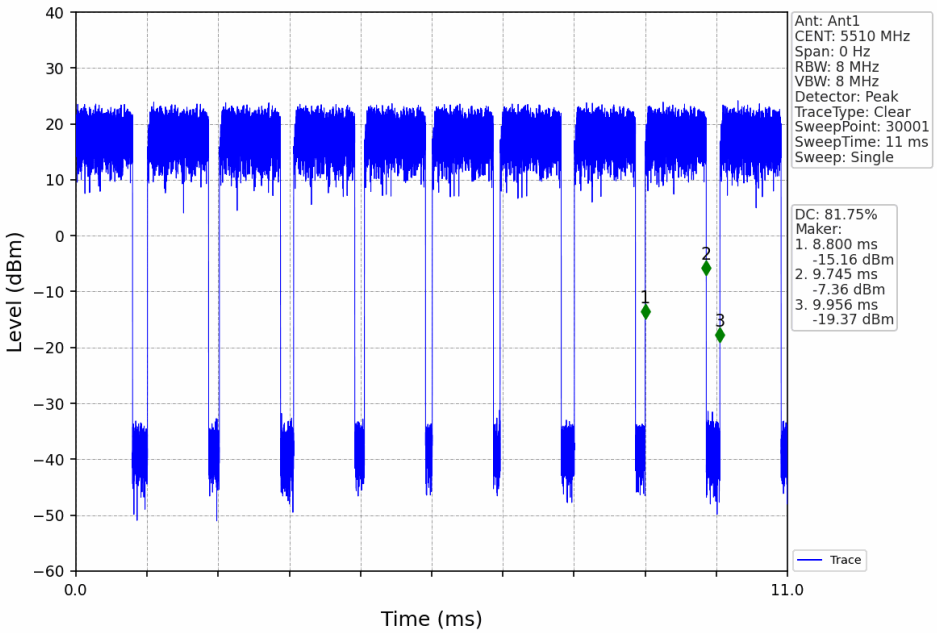
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



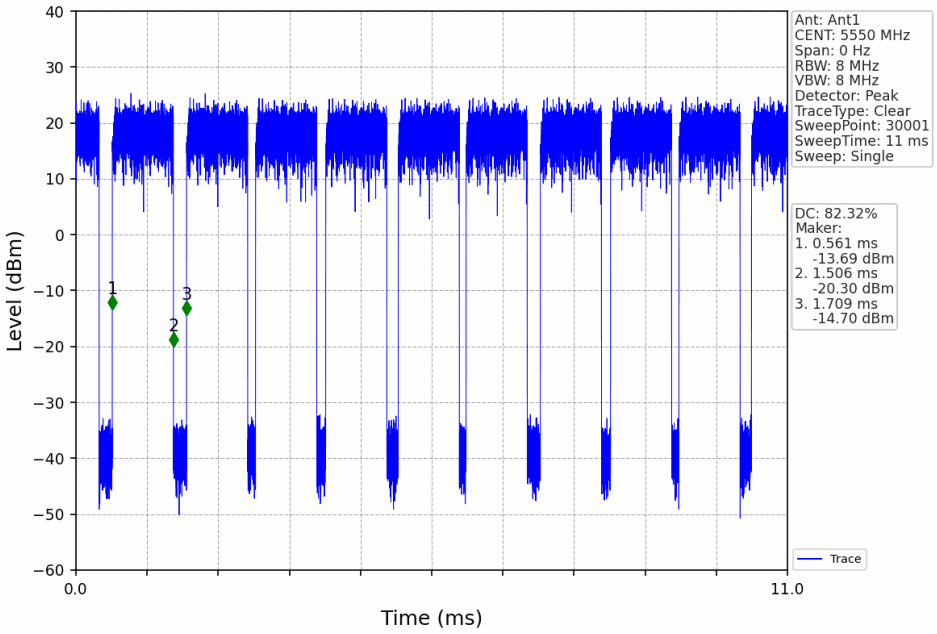
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



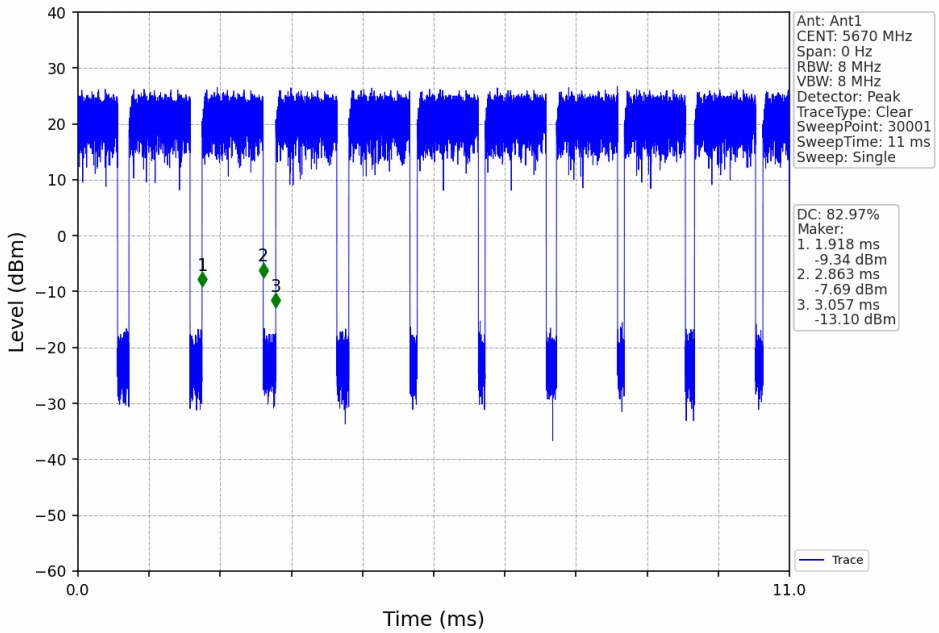
802.11n(HT40)_LCH_5510MHz_Ant1_NTNV



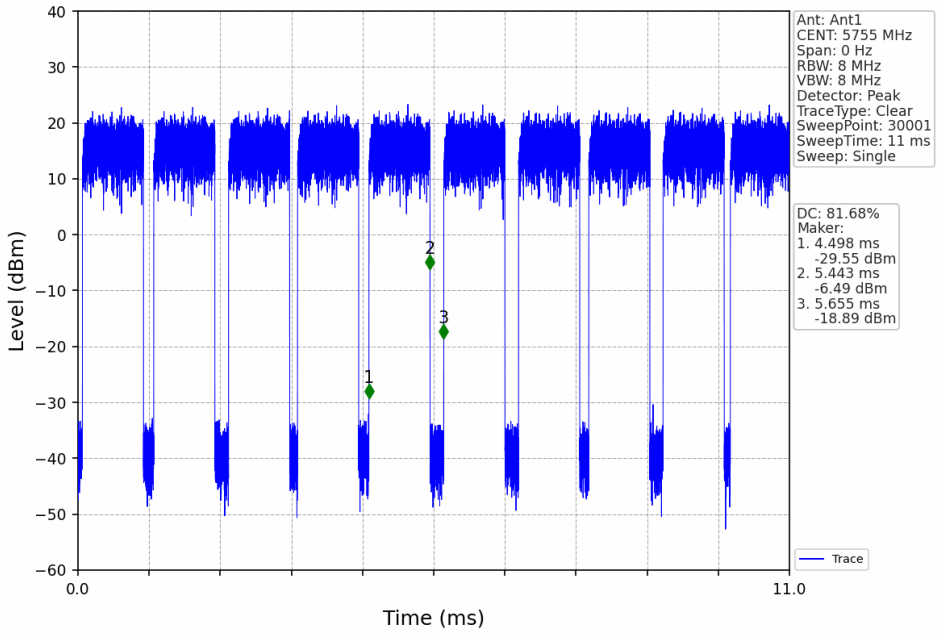
802.11n(HT40)_MCH_5550MHz_Ant1_NTNV



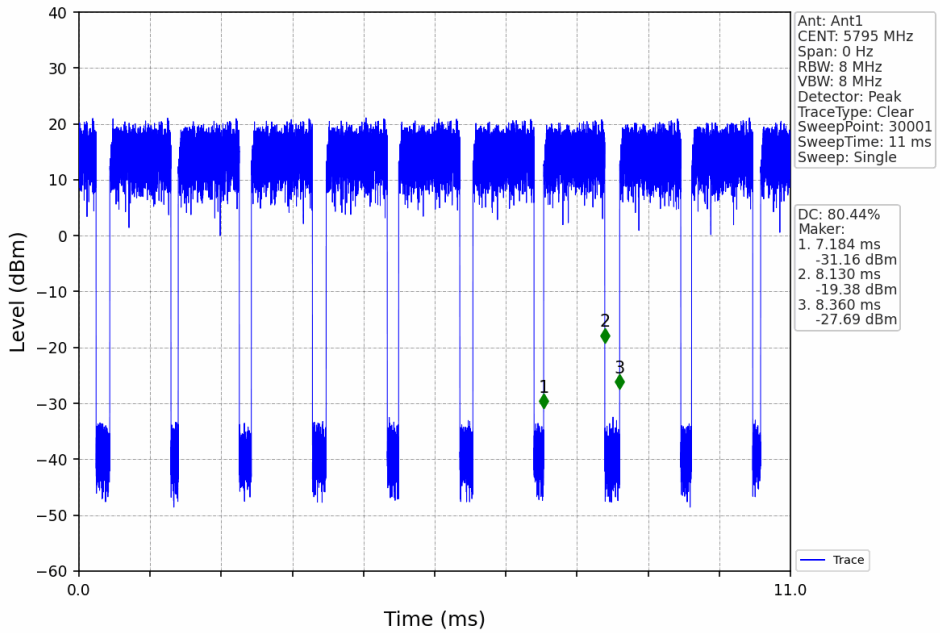
802.11n(HT40)_HCH_5670MHz_Ant1_NTNV



802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



2. Bandwidth

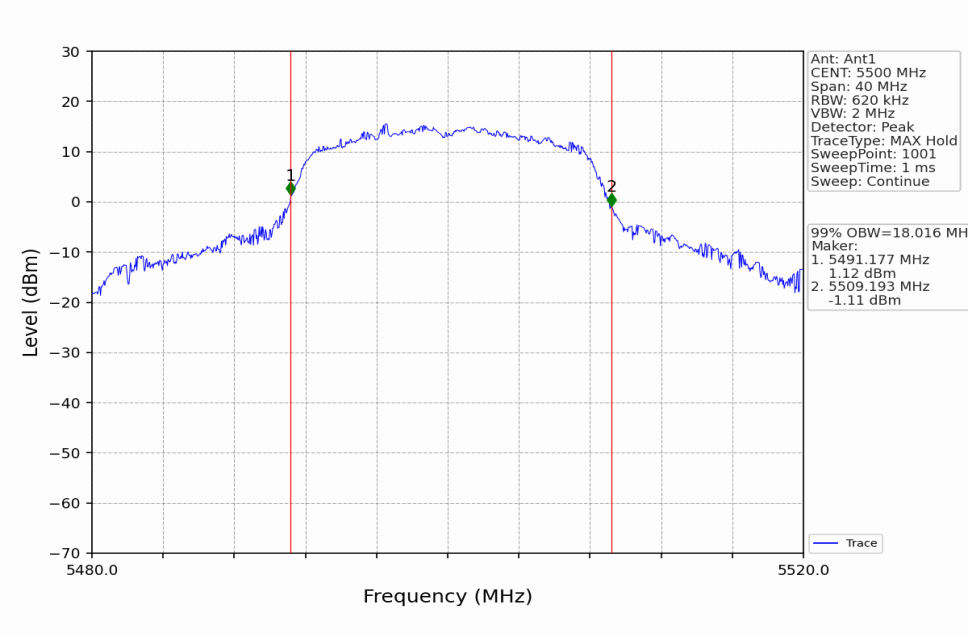
2.1 OBW

2.1.1 Test Result

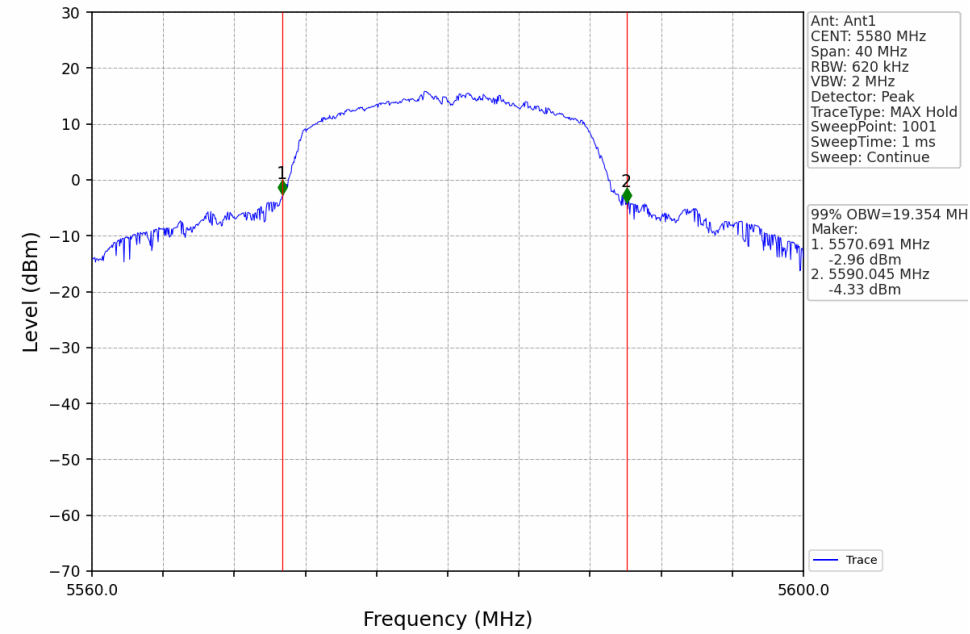
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5500	1	18.016	/	Pass
		5580	1	19.354	/	Pass
		5700	1	17.655	/	Pass
		5745	1	17.224	/	Pass
		5785	1	17.641	/	Pass
		5825	1	17.216	/	Pass
802.11n (HT20)	SISO	5500	1	18.669	/	Pass
		5580	1	18.094	/	Pass
		5700	1	19.344	/	Pass
		5745	1	18.169	/	Pass
		5785	1	17.880	/	Pass
		5825	1	17.881	/	Pass
802.11n (HT40)	SISO	5510	1	36.734	/	Pass
		5550	1	36.108	/	Pass
		5670	1	38.940	/	Pass
		5755	1	35.616	/	Pass
		5795	1	35.345	/	Pass

2.1.2 Test Graph

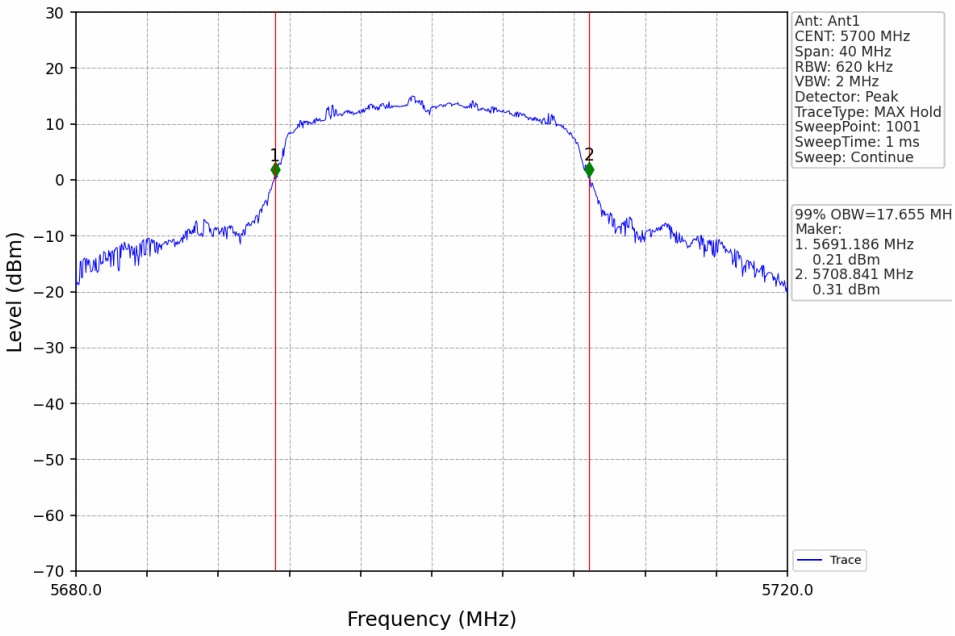
802.11a_LCH_5500MHz_Ant1_NTNV



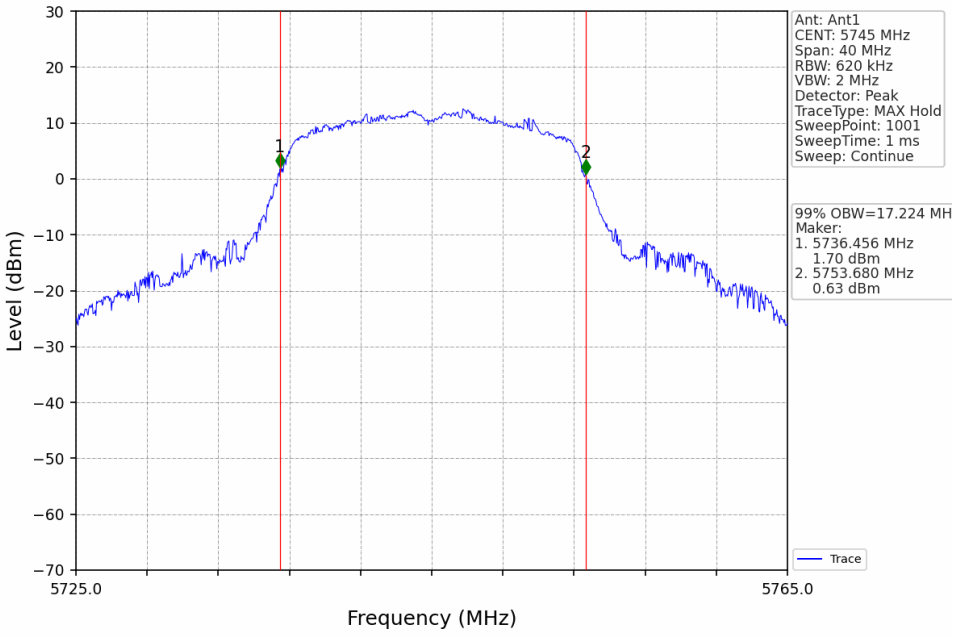
802.11a_MCH_5580MHz_Ant1_NTNV



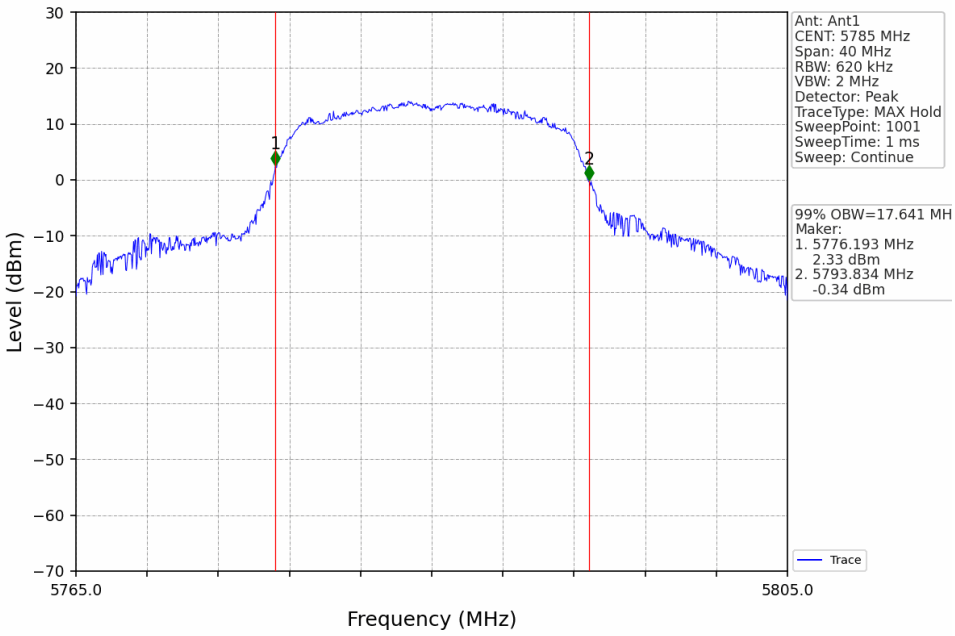
802.11a_HCH_5700MHz_Ant1_NTNV



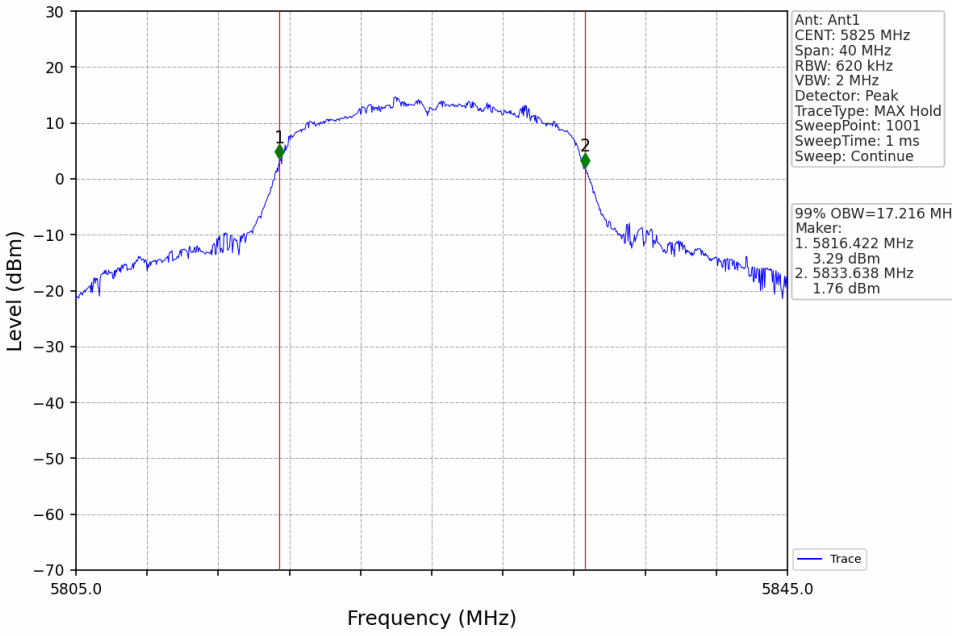
802.11a_LCH_5745MHz_Ant1_NTNV



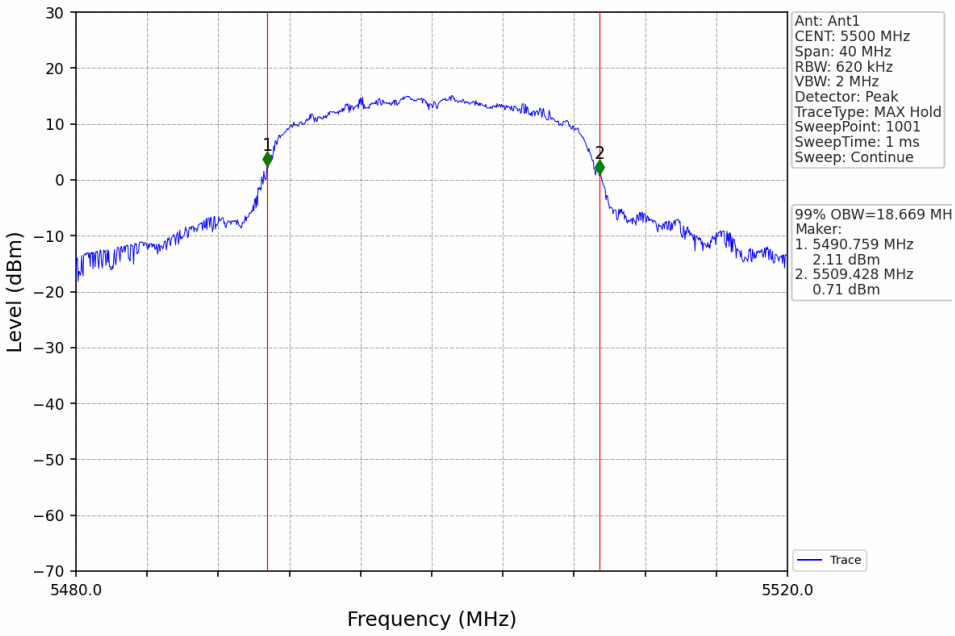
802.11a_MCH_5785MHz_Ant1_NTNV



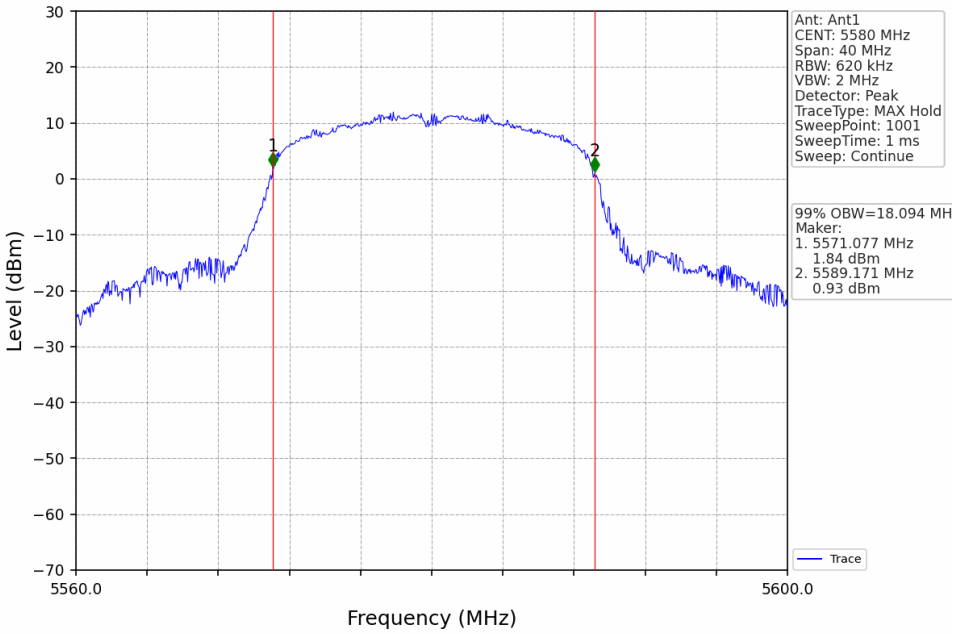
802.11a_HCH_5825MHz_Ant1_NTNV



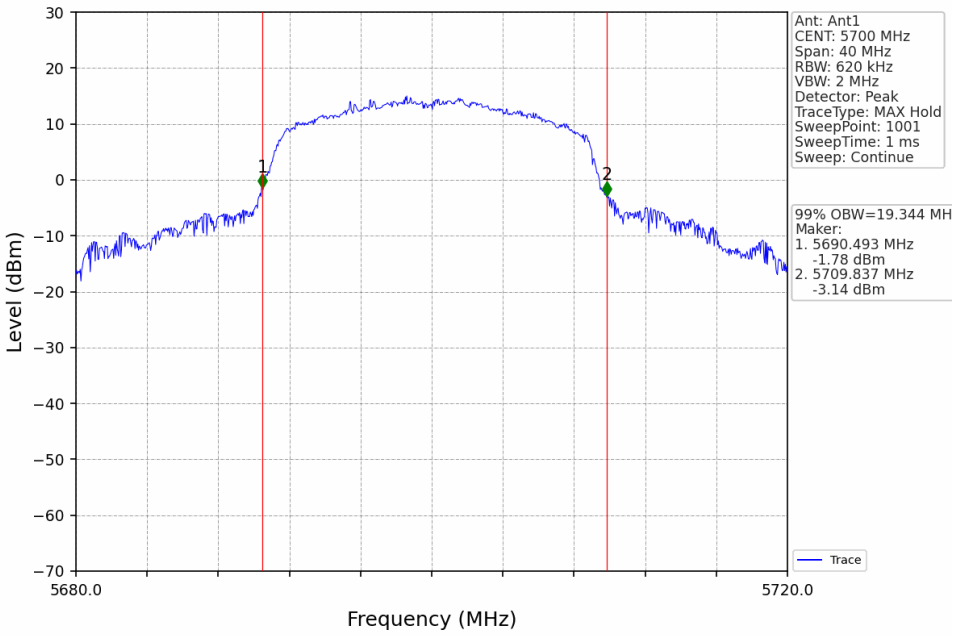
802.11n(HT20)_LCH_5500MHz_Ant1_NTNV



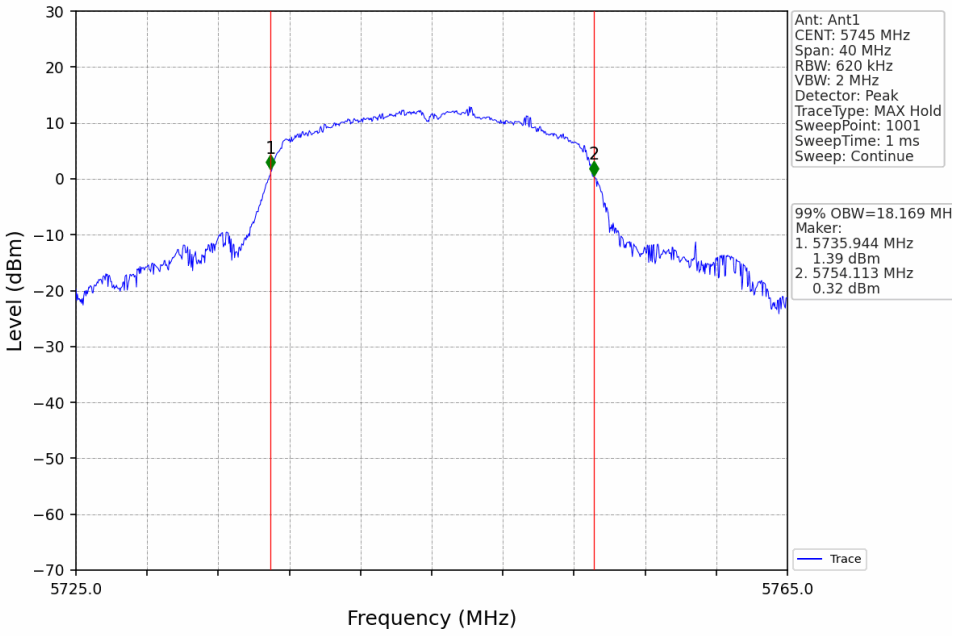
802.11n(HT20)_MCH_5580MHz_Ant1_NTNV



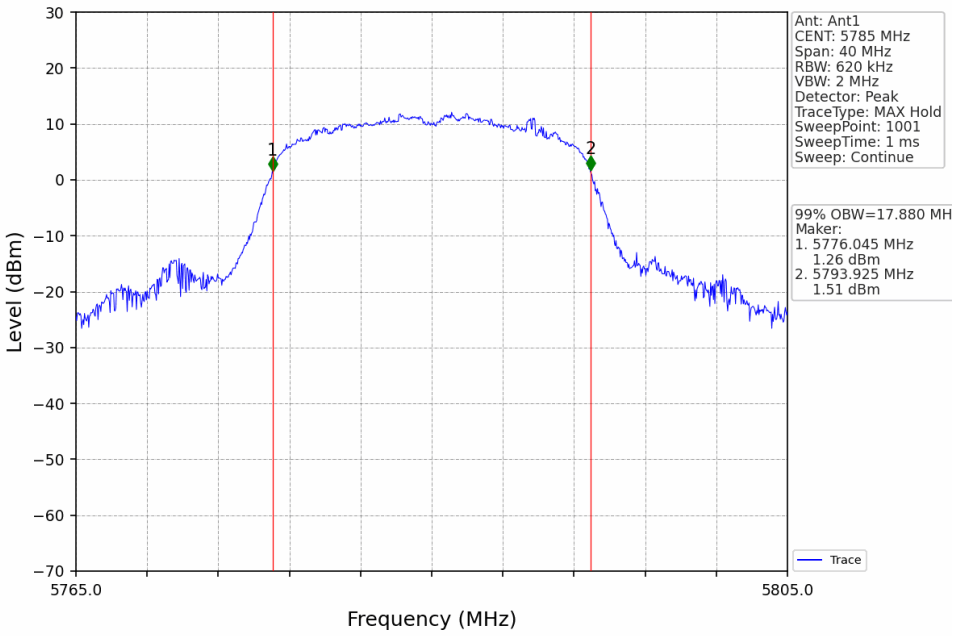
802.11n(HT20)_HCH_5700MHz_Ant1_NTNV



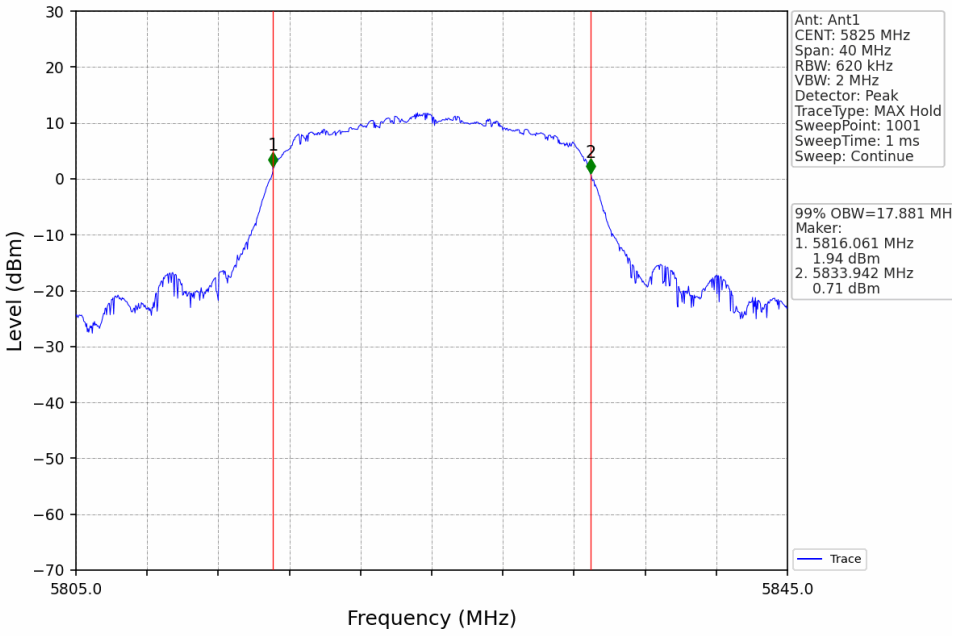
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



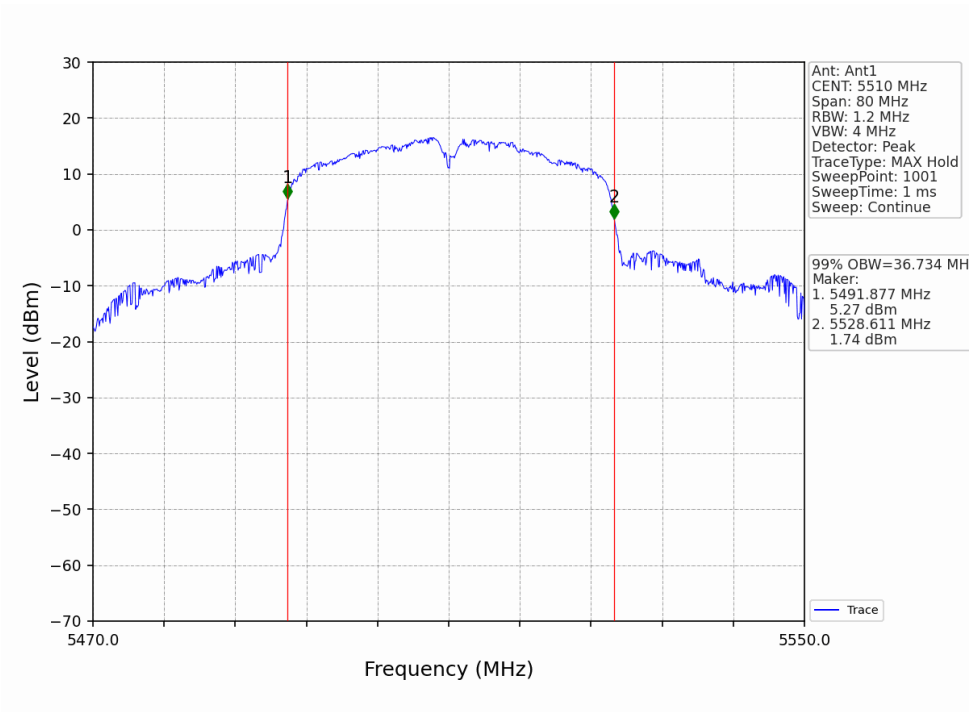
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



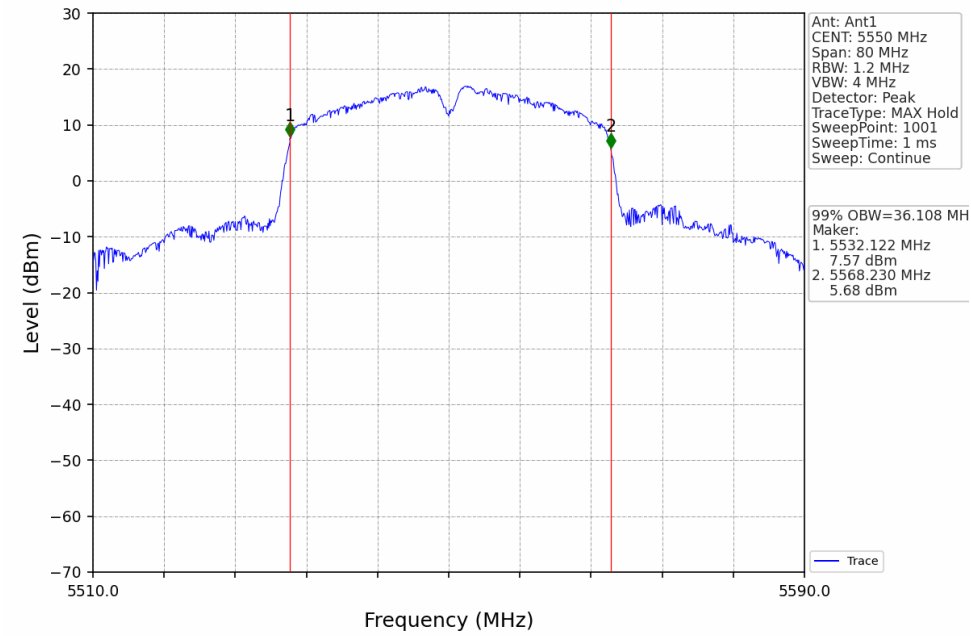
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



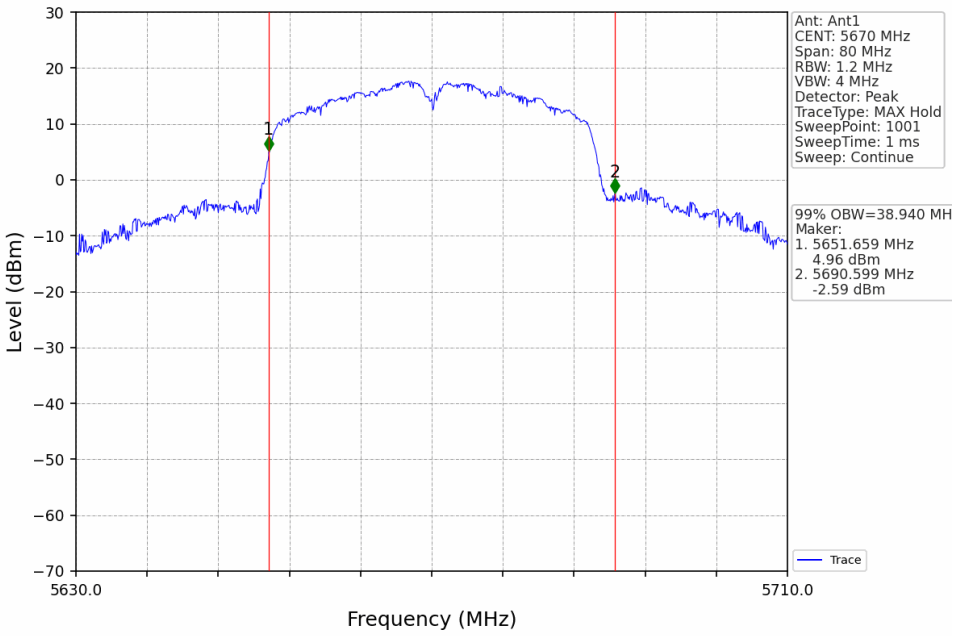
802.11n(HT40)_LCH_5510MHz_Ant1_NTNV



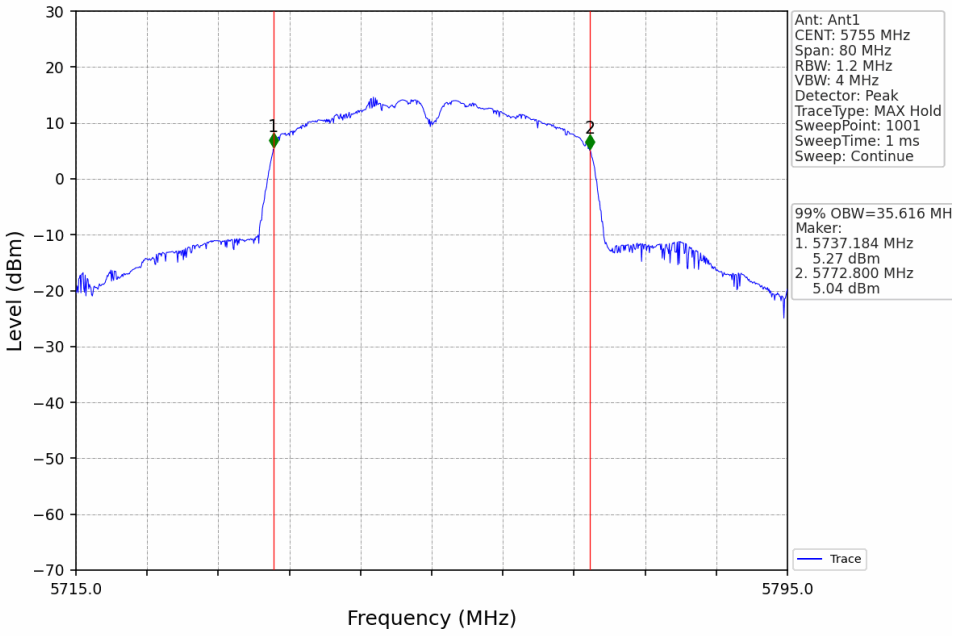
802.11n(HT40)_MCH_5550MHz_Ant1_NTNV



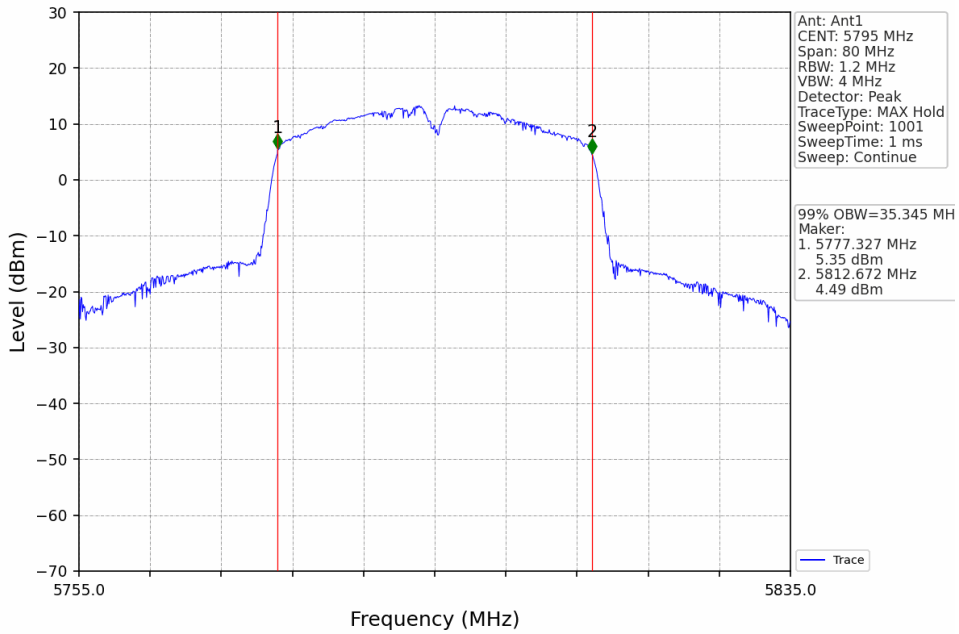
802.11n(HT40)_HCH_5670MHz_Ant1_NTNV



802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



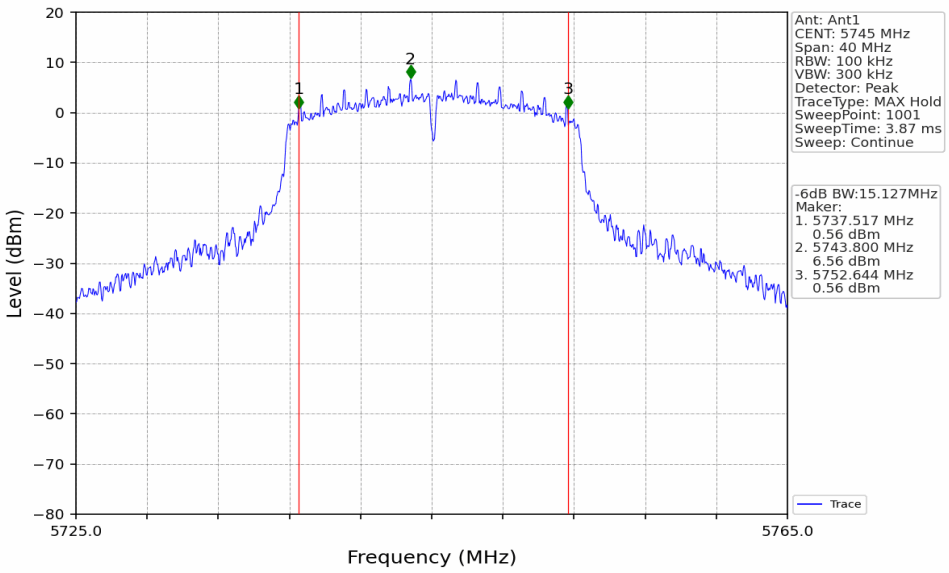
2.2 6dB BW

2.2.1 Test Result

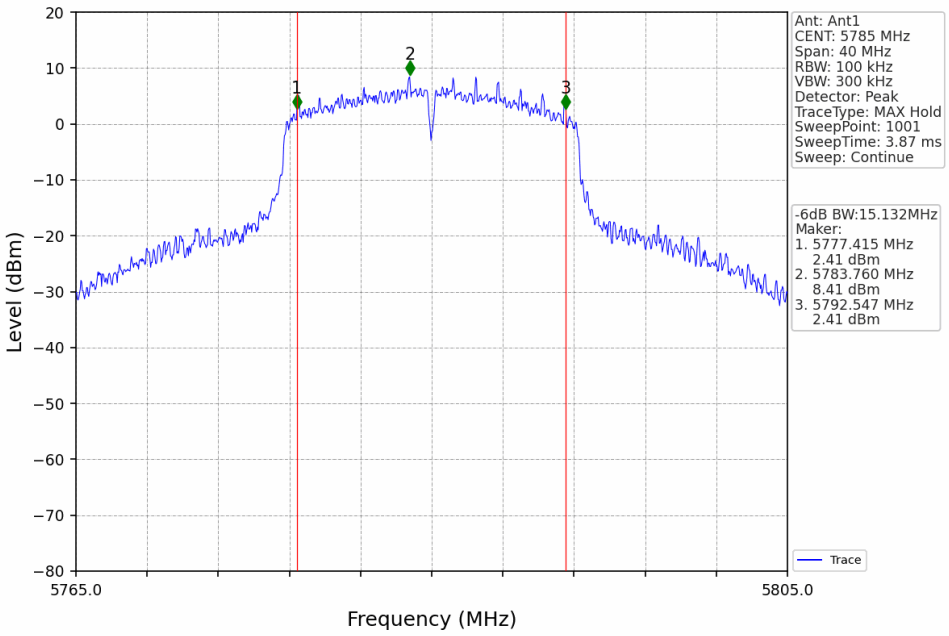
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5745	1	15.127	>=0.5	Pass
		5785	1	15.132	>=0.5	Pass
		5825	1	15.114	>=0.5	Pass
802.11n (HT20)	SISO	5745	1	13.880	>=0.5	Pass
		5785	1	15.107	>=0.5	Pass
		5825	1	15.094	>=0.5	Pass
802.11n (HT40)	SISO	5755	1	31.354	>=0.5	Pass
		5795	1	31.360	>=0.5	Pass

2.2.2 Test Graph

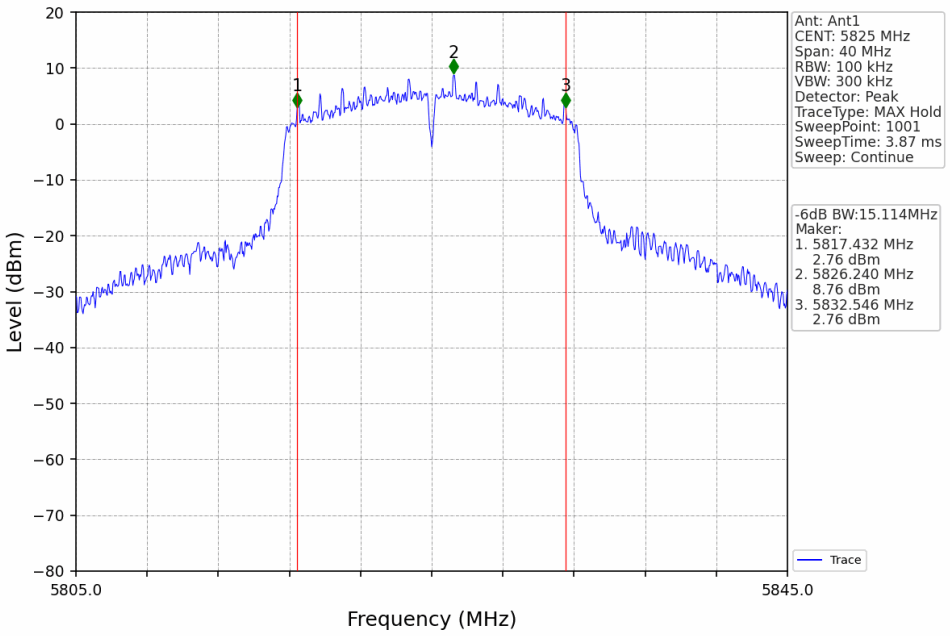
802.11a_LCH_5745MHz_Ant1_NTNV



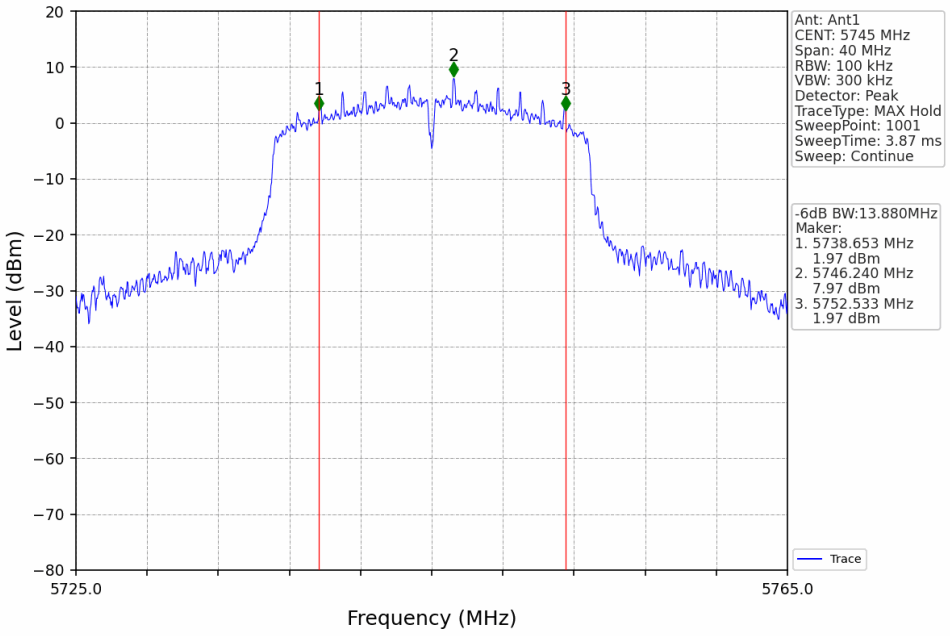
802.11a_MCH_5785MHz_Ant1_NTNV



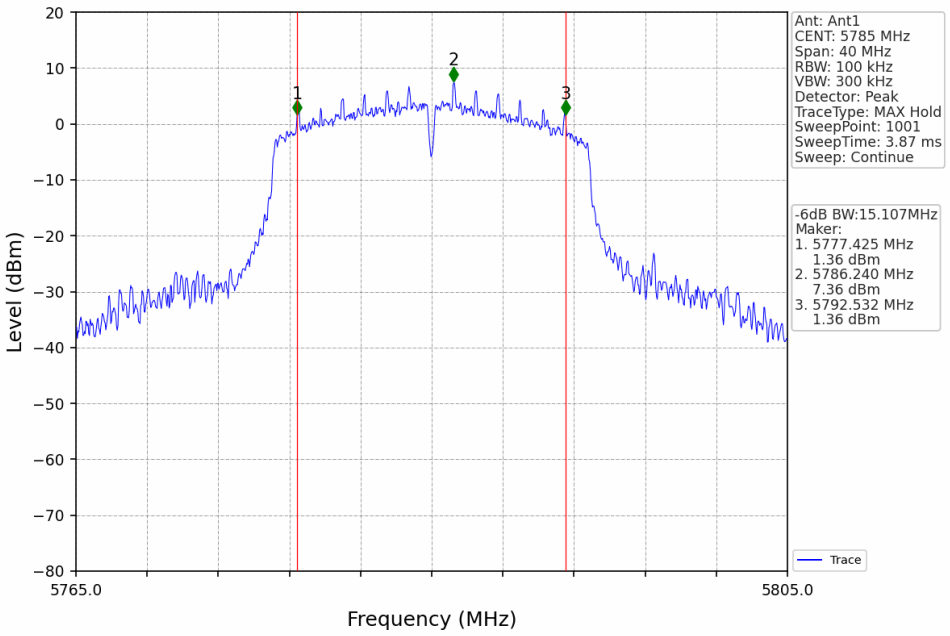
802.11a_HCH_5825MHz_Ant1_NTNV



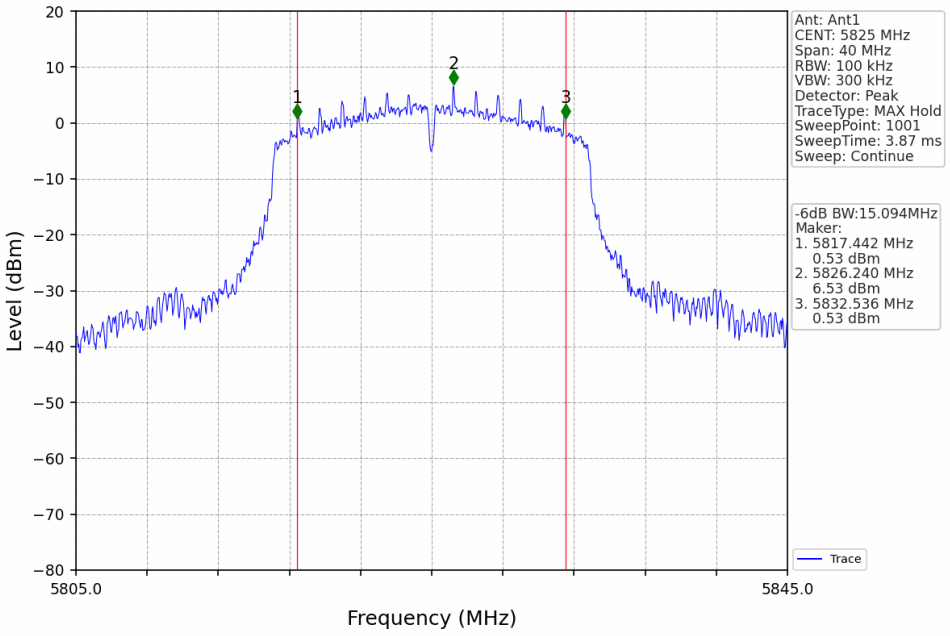
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



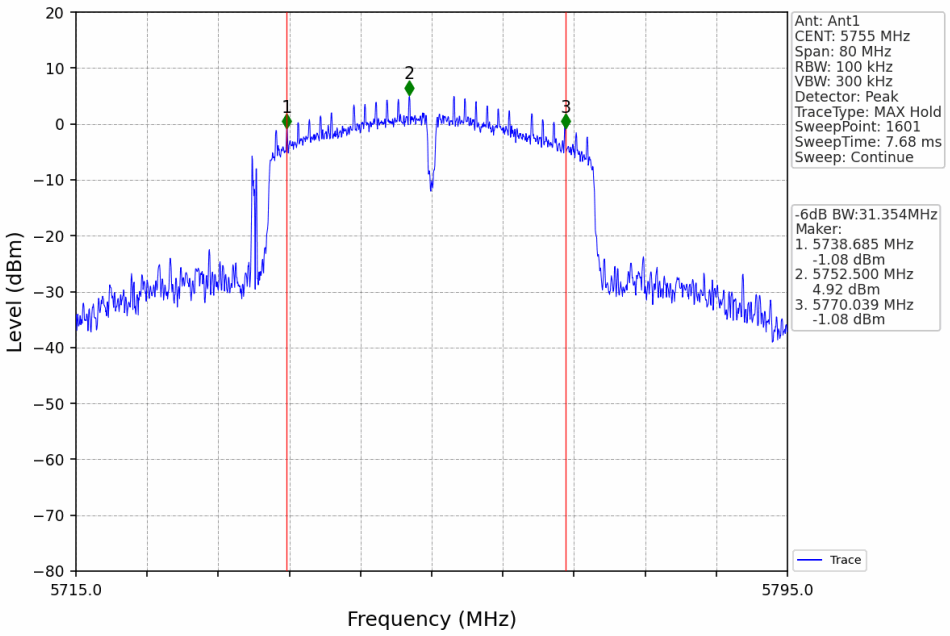
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



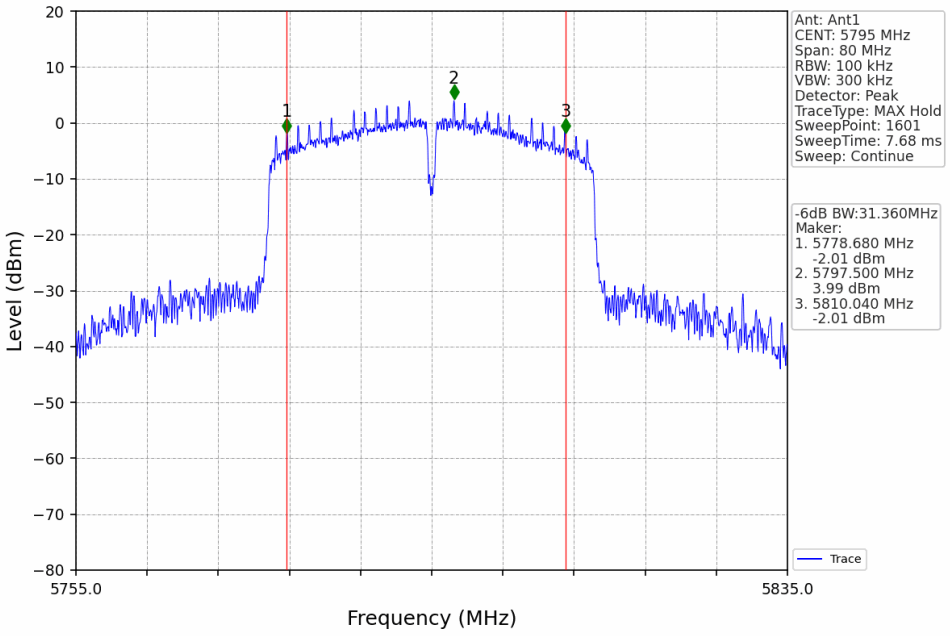
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



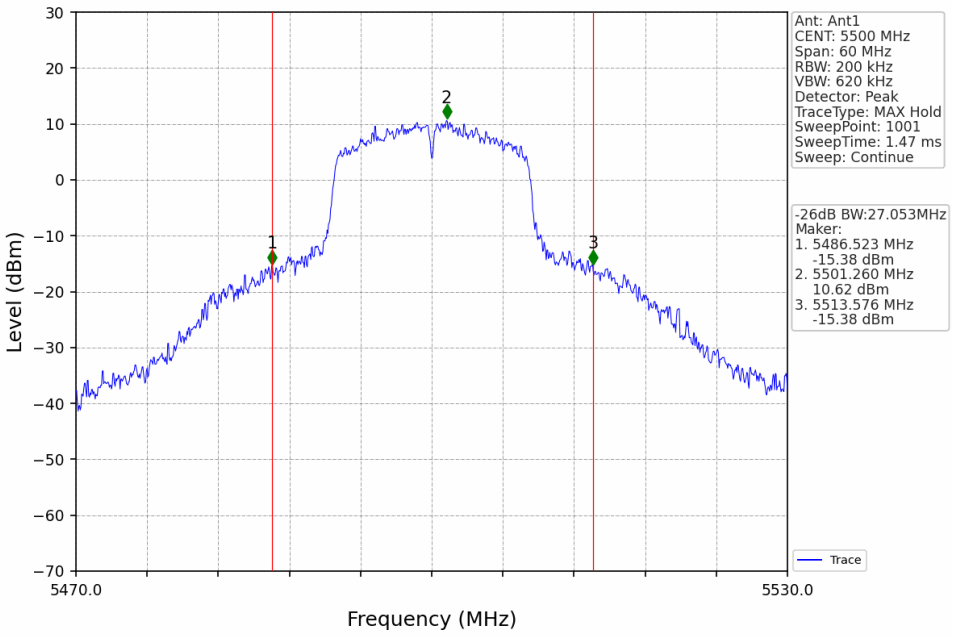
2.3 26dB BW

2.3.1 Test Result

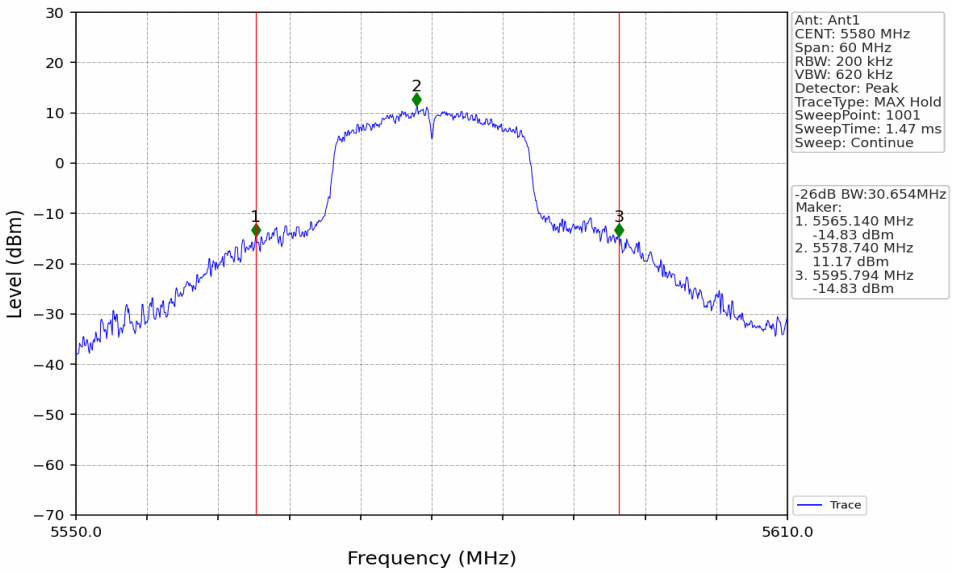
Mode	TX Type	Frequency (MHz)	ANT	26dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5500	1	27.053	/	Pass
		5580	1	30.654	/	Pass
		5700	1	27.705	/	Pass
802.11n (HT20)	SISO	5500	1	26.075	/	Pass
		5580	1	20.339	/	Pass
		5700	1	30.820	/	Pass
802.11n (HT40)	SISO	5510	1	67.219	/	Pass
		5550	1	61.391	/	Pass
		5670	1	71.935	/	Pass

2.3.2 Test Graph

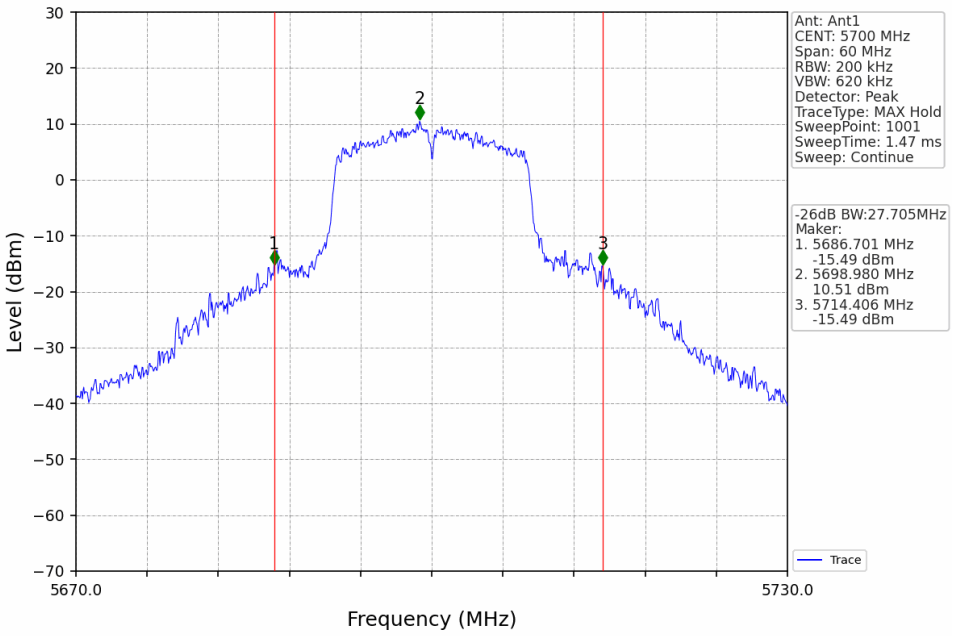
802.11a_LCH_5500MHz_Ant1_NTNV



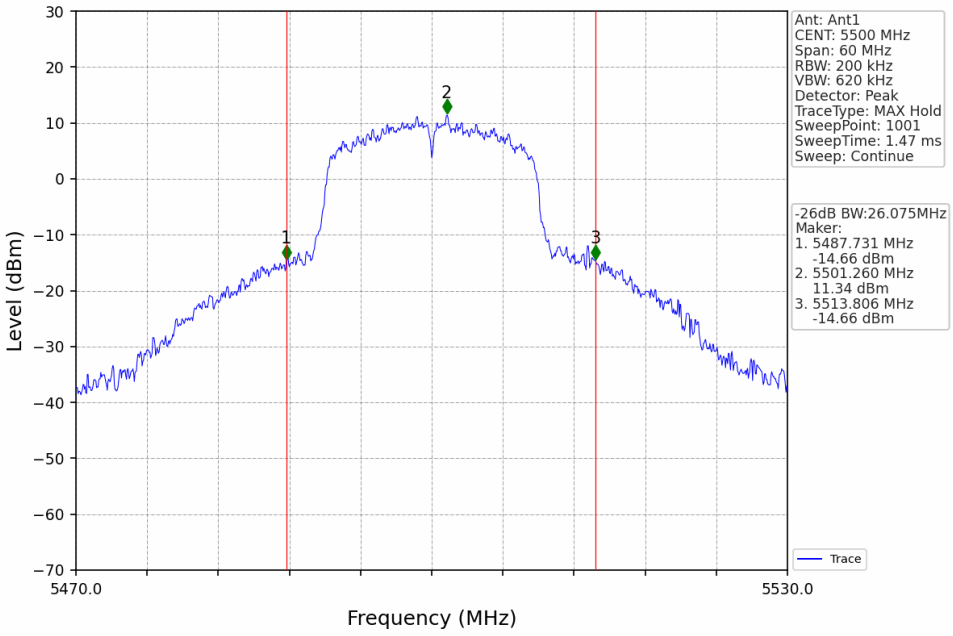
802.11a_MCH_5580MHz_Ant1_NTNV



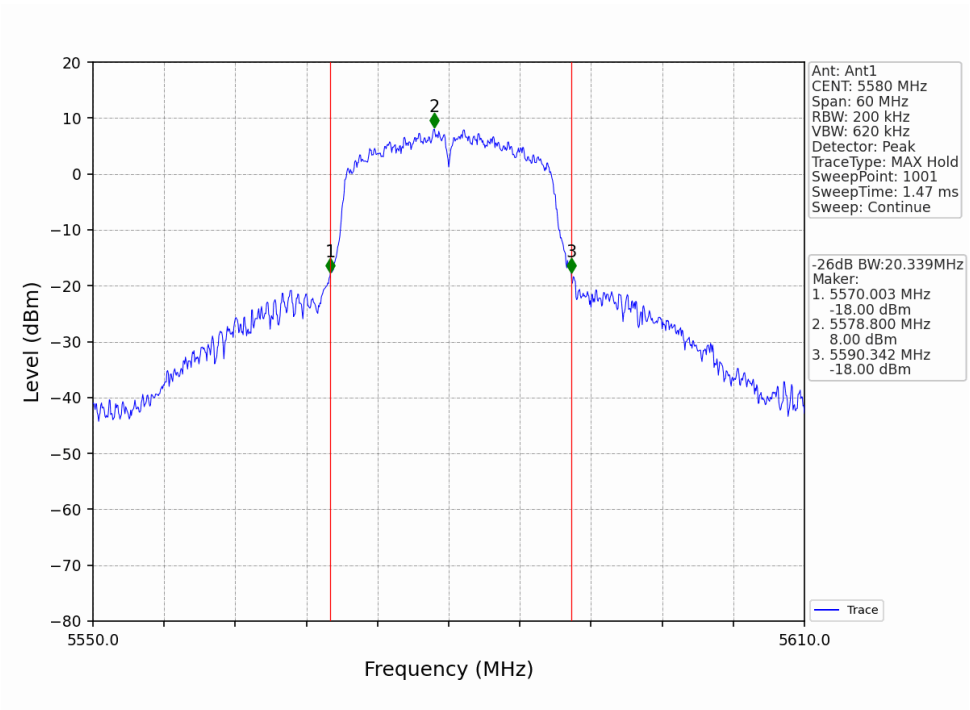
802.11a_HCH_5700MHz_Ant1_NTNV



802.11n(HT20)_LCH_5500MHz_Ant1_NTNV



802.11n(HT20)_MCH_5580MHz_Ant1_NTNV



802.11n(HT20)_HCH_5700MHz_Ant1_NTNV