TEST REPORT

Application No.:	SZCR2410003887AT
Applicant:	Rewind AI, Inc. DBA Limitless AI
Address of Applicant:	2000 South Colorado Blvd Tower 1 Suite 222, Denver, Colorado, 80222, United States
Manufacturer:	Cosonic Intelligent Technologies Co.，Ltd.
Address of Manufacturer:	NO.3 Keyuan Road,Songshan Lake District, Dongguan City, Guangdong Province 523808
Factory:	Cosonic Electroacoustic Technology Co., LTD
Address of Factory:	No. 151, Shipai Section, Dongyuan Avenue, Shipai Town, Dongguan City, Guangdong Province, China
Equipment Under Test (EUT):	
EUT Name:	Limitless Pendant
Model No.:	LS-PT-01
Trade Mark:	Limitless
FCC ID:	2BL99-LSPT01
Standard(s) :	47 CFR Part 15, Subpart E 15.407
Date of Receipt:	2024-10-21
Date of Test:	2024-10-23 to 2024-11-27
Date of Issue:	2024-11-27
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		2024-11-27		Original

Authorized for issue by:				
		Edison Li Edison Li/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
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
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
Duty Cycle		KDB 789033 D02 II B 1	KDB 789033 D02 II B 1	Pass
99% Bandwidth		KDB 789033 D02 II D	N/A	Pass
26dB Emission bandwidth		KDB 789033 D02 II C 1	47 CFR Part 15, Subpart E 15.407 (a)	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
Frequency Stability		ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart E 15.407 (g)	Pass
Channel Move Time		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass
Non-occupancy period		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

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Declaration of EUT Family Grouping:

Model No.: LS-PT-01

Only the model LS-PT-01 was tested, since according to the declaration from the applicant, the electrical circuit design, PCB layout, components used and internal wiring were identical for the above models, with only difference being appearance color.

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.8V, 245mAh rechargeable battery which charged by USB Type-C			
Cable(s):	Type-C cable:120cm unshielded			
Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
	UNII Band I	802.11a/n/ac/ax(HT20)	5180-5240	4
	UNII Band II-A	802.11a/n/ac/ax(HT20)	5260-5320	4
Modulation Type:	802.11a: OFDM(QPSK, BPSK, 16QAM, 64QAM) 802.11n: OFDM(QPSK, BPSK, 16QAM, 64QAM) 802.11ax: OFDMA(QPSK, BPSK, 16QAM, 64QAM, 256QAM, 1024QAM)			
DFS Function:	Slave without radar detection			
TPC Function:	Not support			
Antenna Type:	PCB Antenna			
Antenna Gain:	-3.6dBi			

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.
Adapter	Xiaomi	MDY-12-EF	/
RF Cable	SGS	N/A(Cable loss:1.5dB)	N/A

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4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	± 3.1dB
Radiated Emissions which fall in the restricted bands	± 6.0dB (below 1GHz); ± 4.6dB (above 1GHz);
Radiated Emissions (Below 1GHz)	± 6.0dB for 3m; ± 5.0dB for 10m
Radiated Emissions (Above 1GHz)	± 4.6dB (1-18GHz);± 4.8dB (18-40GHz)
Maximum Conducted output power	± 0.75dB
Duty Cycle	± 0.37%
99% Bandwidth	± 3%
26dB Emission bandwidth	± 3%
Peak Power spectrum density	± 2.84dB
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.

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4.4 Test Location

All tests were performed at:

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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

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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	ESR	SZ-WRG-M-047	2024-01-30	2025-01-29
Matching Pad	N/A	N/A	SEM021-23	2024-03-20	2025-03-19
Matching Pad	N/A	N/A	SEM021-24	2024-03-20	2025-03-19
Measurement Software	AUDIX	e3 V8.2014-6-27a	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2024-07-06	2025-07-05
LISN	Rohde&Schwarz	ENV216	SEM007-01	2024-08-15	2025-08-14
LISN	ETS-LINDGREN	3816/2	SEM007-02	2024-03-14	2025-03-13

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	2024-05-11	2027-05-10
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2024-03-15	2025-03-14
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2023-07-23	2025-07-22
Microwave system amplifier	Agilent	83017A	SEM005-25	2024-09-14	2025-09-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2024-07-06	2025-07-05

Radiated Emissions (Below 1GHz)					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Loop Antenna	ETS-Lindgren	6502	SEM003-08	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	2024-08-14	2025-08-13
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2023-09-16	2025-09-15
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2024-03-14	2025-03-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2024-07-06	2025-07-05

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Radiated Emissions (Above 1GHz)					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
3m Fully-Anechoic Chamber	AUDIX	N/A	SEM001-02	2024-05-11	2027-05-10
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2024-03-15	2025-03-14
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2023-07-23	2025-07-22
Microwave system amplifier	Agilent	83017A	SEM005-25	2024-09-14	2025-09-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2024-07-06	2025-07-05
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	SEM003-15	2024-08-10	2025-08-09
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2024-03-15	2025-03-14

RF Conducted Test					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2024-08-14	2025-08-13
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2024-03-14	2025-03-13
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2024-09-14	2025-09-13
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2024-07-06	2025-07-05
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2024-03-27	2025-03-26
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024-03-19	2025-03-18
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2024-03-27	2025-03-26
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2024-03-27	2025-03-26
MXG Vector Signal Generator	Agilent	N5182A	SEM006-21	2024-03-27	2025-03-26
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-22	2024-03-14	2025-03-13

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DFS					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2024-03-27	2025-03-26
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2024-03-27	2025-03-26
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	2024-03-27	2025-03-26
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-22	2024-03-14	2025-03-13

General used equipment					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	deli	8838	SEM002-32	2024-07-24	2025-07-23
Humidity/ Temperature Indicator	deli	8838	SEM002-33	2024-07-24	2025-07-23
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2024-03-18	2025-03-17

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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

Standard Requirement:

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

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the Antenna 1: -3.6dBi.

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

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.

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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: 21.5 °C Humidity: 44.5 % RH Atmospheric Pressure: 1020 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

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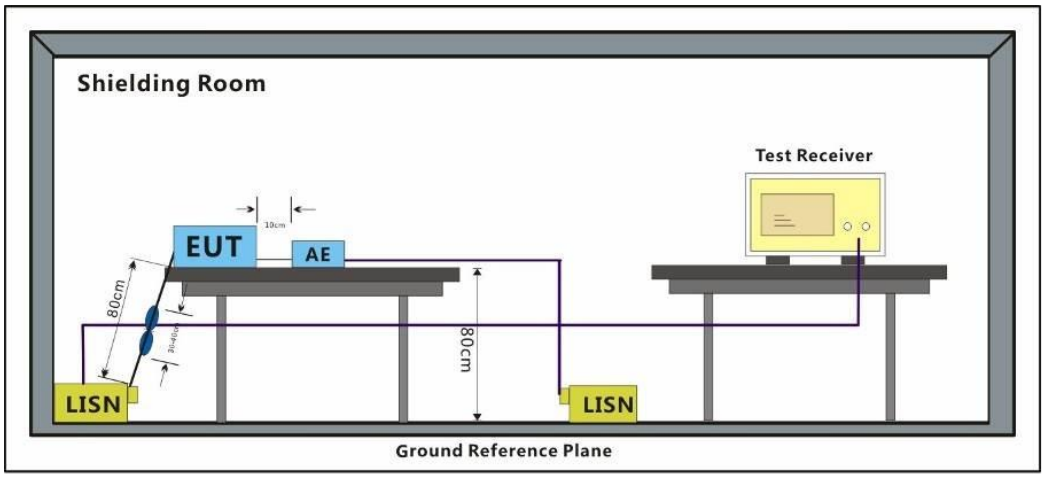
7.1.3 Test Setup Diagram



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

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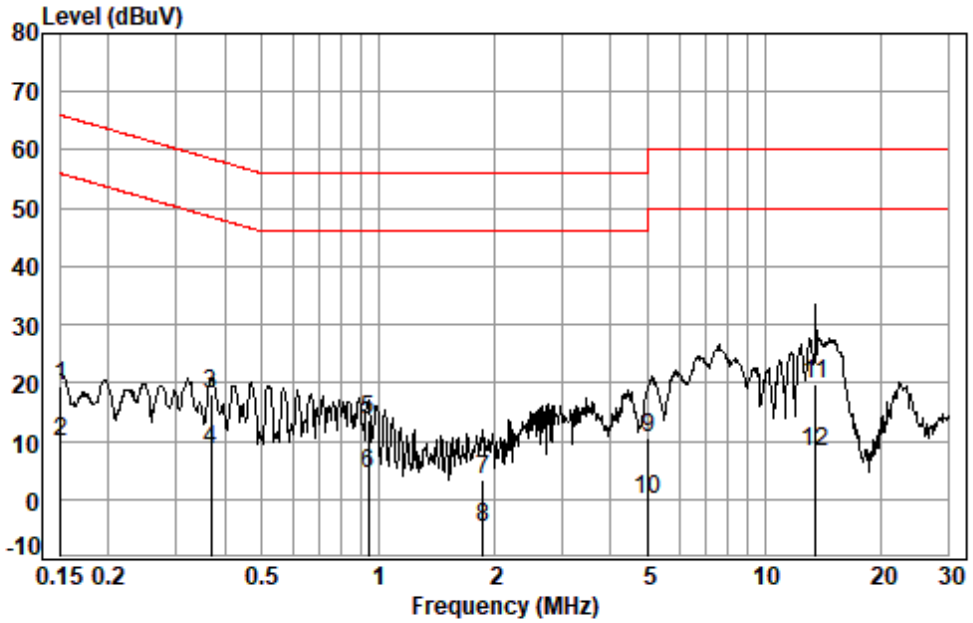
Test Mode: 16; Line: Live line



Site : Shielding Room
Condition: Line
Job No. : 03887AT
Test mode: 16

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1508	0.06	9.81	9.56	19.43	65.96	-46.53	QP
2	0.1508	0.06	9.81	0.13	10.00	55.96	-45.96	Average
3	0.3692	0.07	9.73	8.21	18.01	58.52	-40.51	QP
4 *	0.3692	0.07	9.73	-1.38	8.42	48.52	-40.10	Average
5	0.9431	0.09	9.71	3.73	13.53	56.00	-42.47	QP
6	0.9431	0.09	9.71	-5.47	4.33	46.00	-41.67	Average
7	1.8680	0.10	9.66	-6.40	3.36	56.00	-52.64	QP
8	1.8680	0.10	9.66	-14.47	-4.71	46.00	-50.71	Average
9	5.0046	0.12	9.64	0.91	10.67	60.00	-49.33	QP
10	5.0046	0.12	9.64	-9.80	-0.04	50.00	-50.04	Average
11 *	13.5509	0.24	10.07	9.44	19.75	60.00	-40.25	QP
12	13.5509	0.24	10.07	-2.07	8.24	50.00	-41.76	Average

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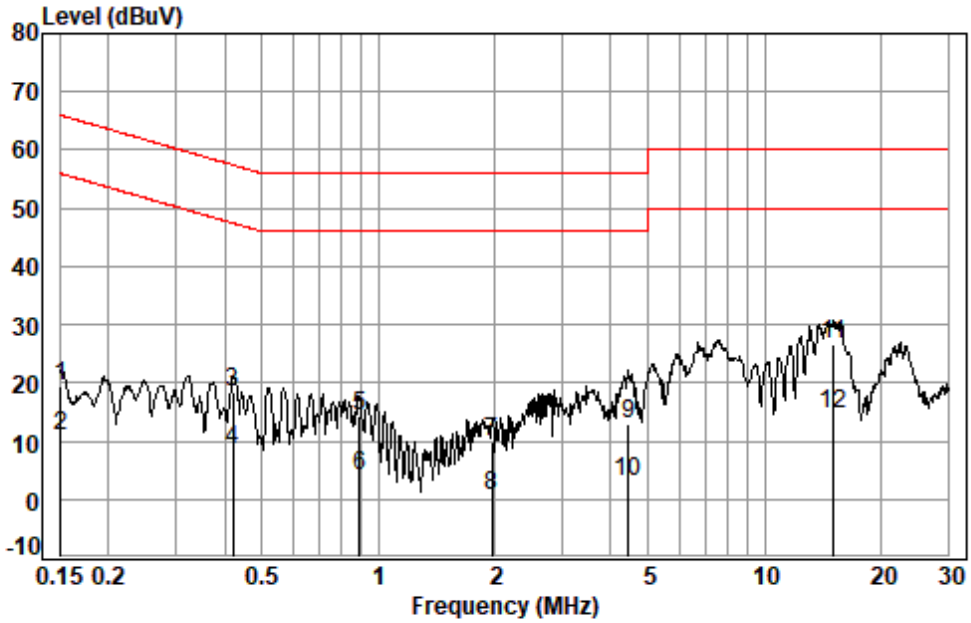
Test Mode: 16; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 03887AT
Test mode: 16

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1508	0.06	9.82	9.69	19.57	65.96	-46.39	QP
2	0.1508	0.06	9.82	0.91	10.79	55.96	-45.17	Average
3	0.4215	0.07	9.74	8.59	18.40	57.42	-39.02	QP
4	0.4215	0.07	9.74	-1.18	8.63	47.42	-38.79	Average
5	0.8944	0.09	9.73	4.47	14.29	56.00	-41.71	QP
6	0.8944	0.09	9.73	-5.79	4.03	46.00	-41.97	Average
7	1.9697	0.10	9.69	-0.04	9.75	56.00	-46.25	QP
8	1.9697	0.10	9.69	-9.12	0.67	46.00	-45.33	Average
9	4.4305	0.12	9.66	3.18	12.96	56.00	-43.04	QP
10	4.4305	0.12	9.66	-6.71	3.07	46.00	-42.93	Average
11 *	15.0656	0.26	10.18	16.14	26.58	60.00	-33.42	QP
12 *	15.0656	0.26	10.18	4.15	14.59	50.00	-35.41	Average

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7.2 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.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.4 °C Humidity: 68.7 % RH Atmospheric Pressure: 1020 mbar

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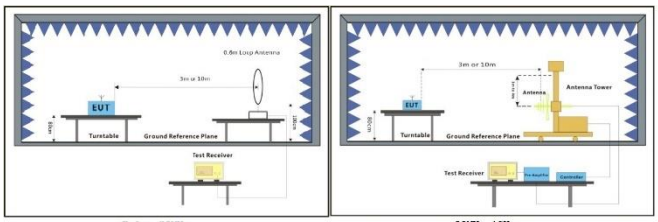
7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	15	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	17	TX mode (U-NII-2A) _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/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

7.2.3 Test Setup Diagram



Below 30MHz

30MHz~1GHz

Above 1GHz

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7.2.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

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

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

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

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

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

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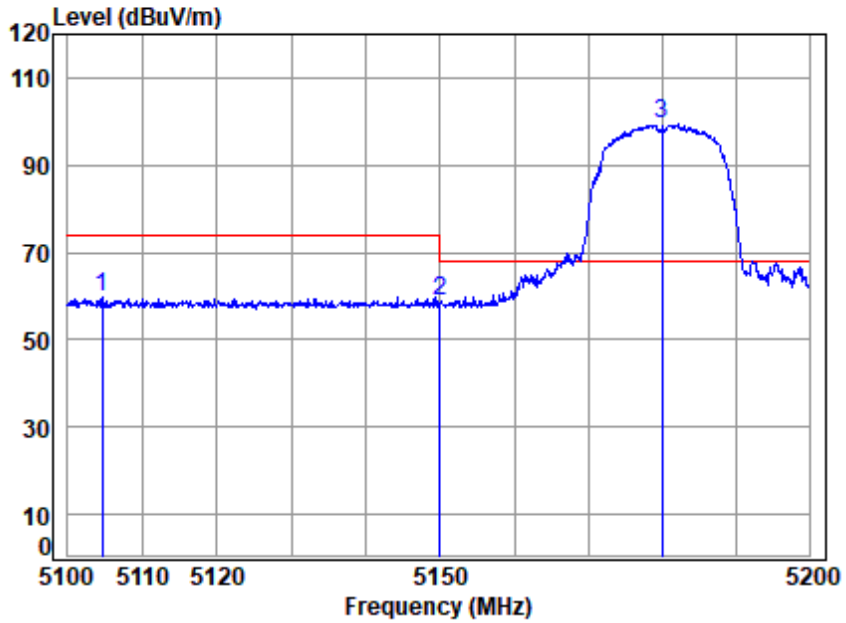
Test Mode: 16; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5180 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	5104.558	18.77	33.99	31.26	38.36	59.86	74.00	-14.14	peak
2	5149.980	18.83	33.90	31.28	37.37	58.82	74.00	-15.18	peak
3 p	5180.000	18.88	33.96	31.30	77.72	99.26	68.20	31.06	peak

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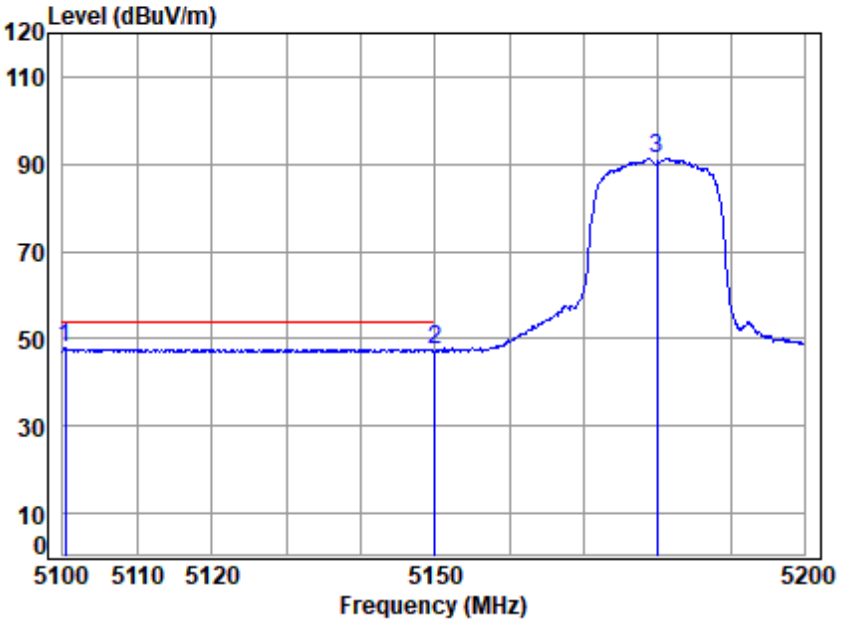
Test Mode: 16; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5180 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	5100.297	18.76	34.00	31.25	26.24	47.75	54.00	-6.25	Average
2	5149.980	18.83	33.90	31.28	25.97	47.42	54.00	-6.58	Average
3	5180.000	18.88	33.96	31.30	69.74	91.28	------	------	Average

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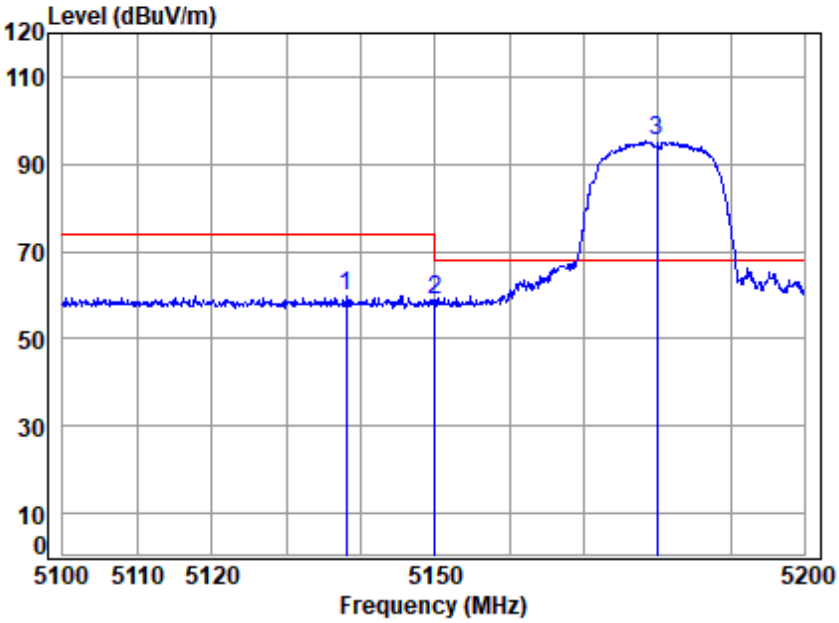
Test Mode: 16; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT\03888AT
Mode : 5180 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	5137.971	18.82	33.92	31.27	38.44	59.91	74.00	-14.09	Peak
2	5149.980	18.83	33.90	31.28	37.52	58.97	74.00	-15.03	Peak
3 p	5180.000	18.88	33.96	31.30	73.63	95.17	68.20	26.97	Peak

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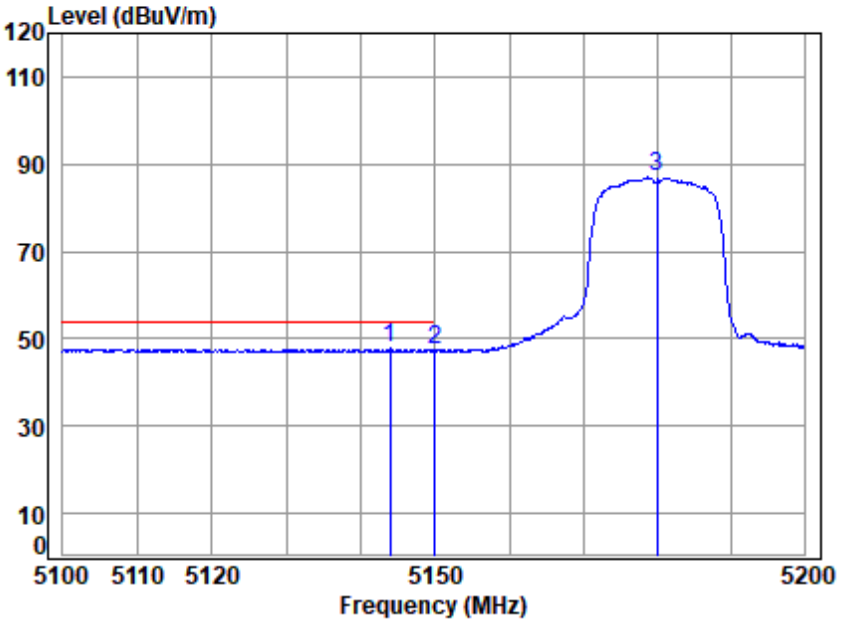

Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT\03888AT
Mode : 5180 Band edge
: 5G WIFI 11A

	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	5143.960	18.83	33.91	31.28	26.39	47.85	54.00	-6.15	Average
2	5149.980	18.83	33.90	31.28	25.98	47.43	54.00	-6.57	Average
3	5180.000	18.88	33.96	31.30	65.46	87.00	------	------	Average

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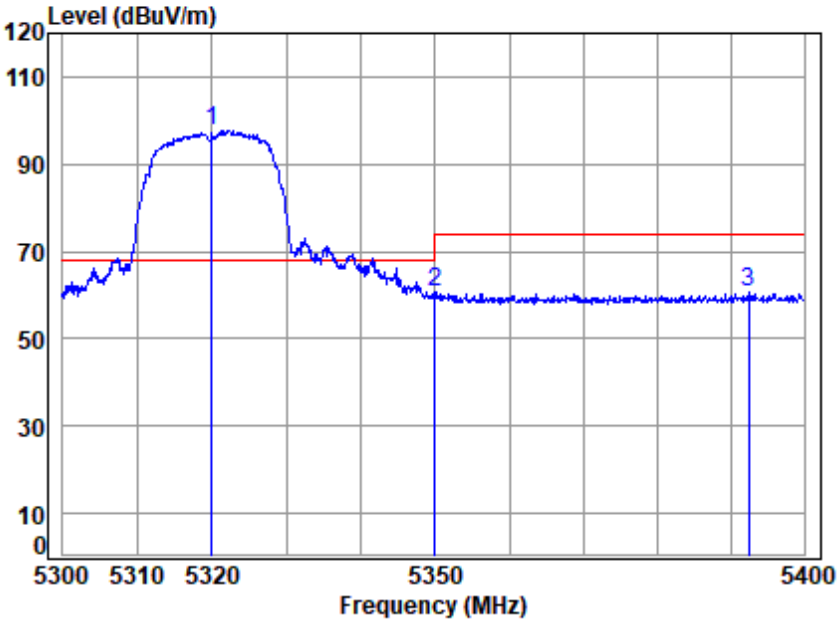
Test Mode: 18; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5320 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 p	5320.000	19.07	34.28	31.37	75.60	97.58	68.20	29.38	peak
2	5350.020	19.11	34.40	31.39	38.74	60.86	74.00	-13.14	peak
3	5392.435	19.17	34.57	31.41	38.14	60.47	74.00	-13.53	peak

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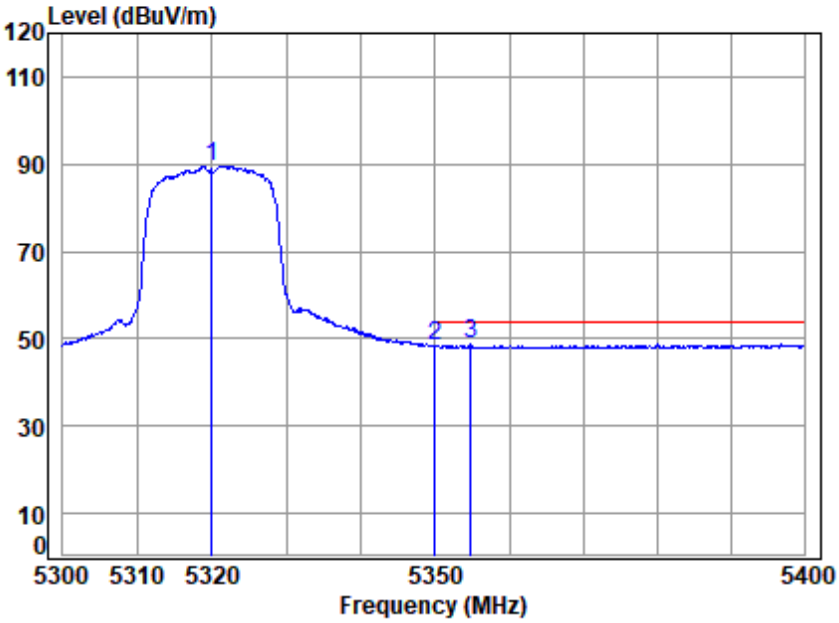
Test Mode: 18; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5320 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	5320.000	19.07	34.28	31.37	67.55	89.53	------	------	Average
2	5350.020	19.11	34.40	31.39	26.31	48.43	54.00	-5.57	Average
3 q	5354.869	19.12	34.42	31.39	26.64	48.79	54.00	-5.21	Average

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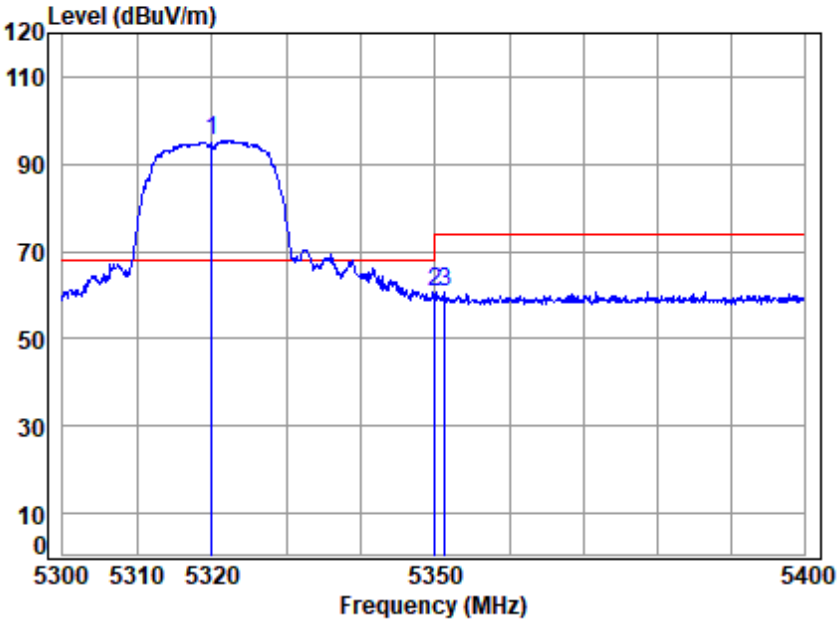
Test Mode: 18; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT\03888AT
Mode : 5320 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 p	5320.000	19.07	34.28	31.37	73.45	95.43	68.20	27.23	Peak
2	5350.020	19.11	34.40	31.39	38.67	60.79	74.00	-13.21	Peak
3	5351.367	19.11	34.41	31.39	38.60	60.73	74.00	-13.27	Peak

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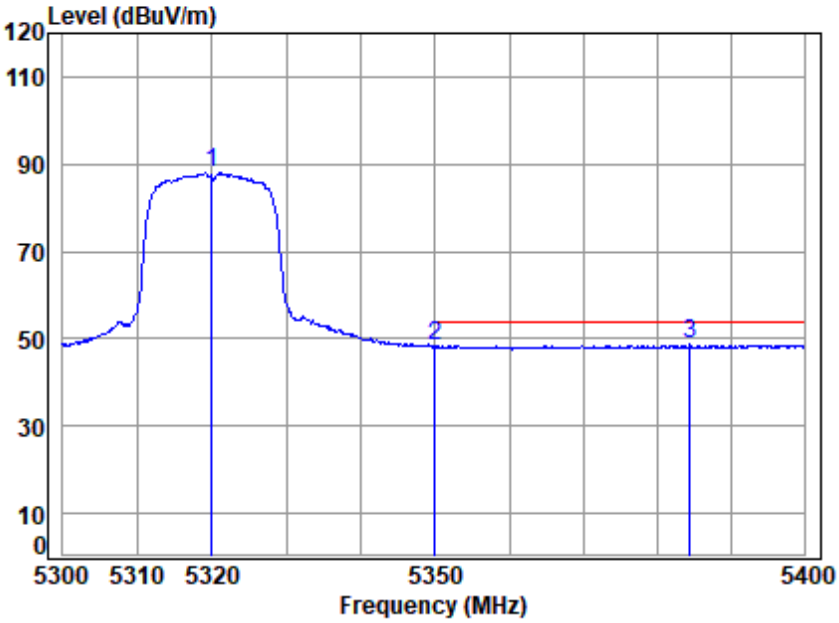
Test Mode: 18; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT\03888AT
Mode : 5320 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	5320.000	19.07	34.28	31.37	66.12	88.10	------	------	Average
2	5350.020	19.11	34.40	31.39	26.23	48.35	54.00	-5.65	Average
3 q	5384.478	19.16	34.54	31.40	26.34	48.64	54.00	-5.36	Average

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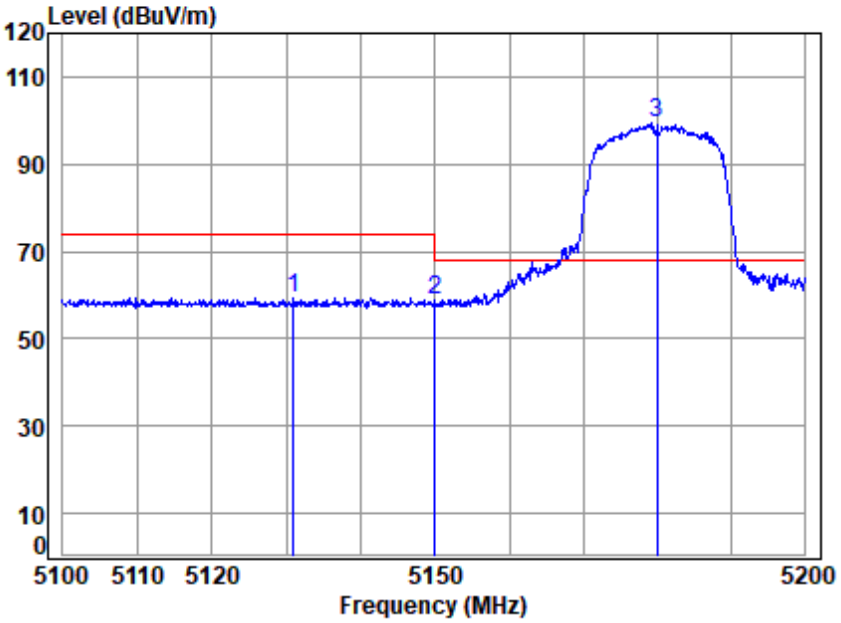
Test Mode: 16; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5180 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	5130.892	18.81	33.94	31.27	37.99	59.47	74.00	-14.53	peak
2	5149.980	18.83	33.90	31.28	37.62	59.07	74.00	-14.93	peak
3 p	5180.000	18.88	33.96	31.30	77.88	99.42	68.20	31.22	peak

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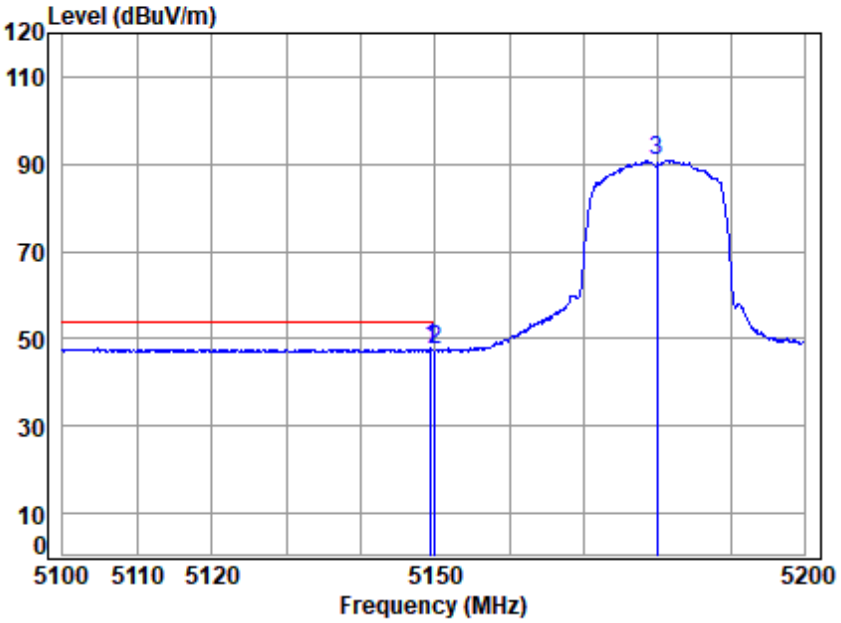
Test Mode: 16; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5180 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	5149.357	18.83	33.90	31.28	26.40	47.85	54.00	-6.15	Average
2	5149.980	18.83	33.90	31.28	25.99	47.44	54.00	-6.56	Average
3	5180.000	18.88	33.96	31.30	69.36	90.90	------	------	Average

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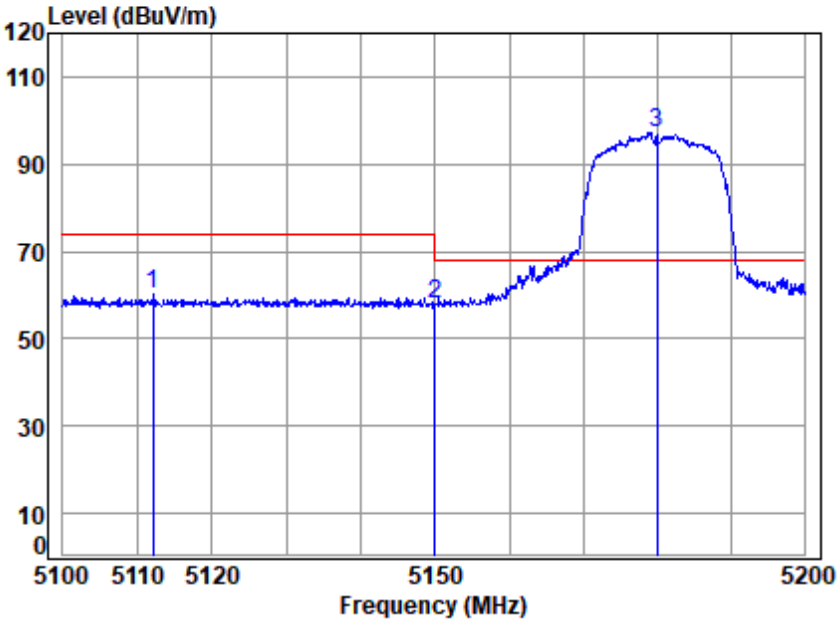
Test Mode: 16; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT\03888AT
Mode : 5180 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	5112.096	18.78	33.98	31.26	38.66	60.16	74.00	-13.84	Peak
2	5149.980	18.83	33.90	31.28	36.67	58.12	74.00	-15.88	Peak
3 p	5180.000	18.88	33.96	31.30	75.50	97.04	68.20	28.84	Peak

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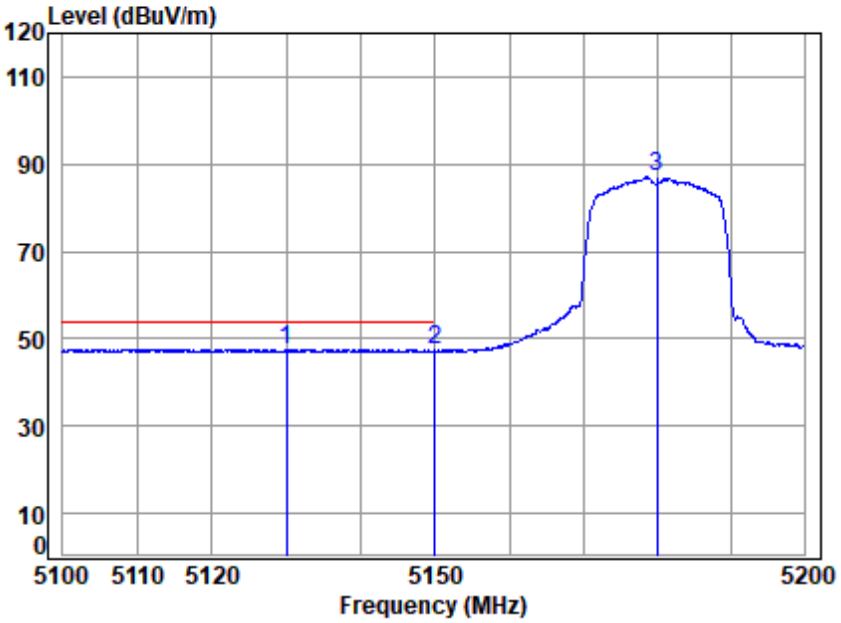
Test Mode: 16; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT\03888AT
Mode : 5180 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	5129.996	18.81	33.94	31.27	26.11	47.59	54.00	-6.41	Average
2	5149.980	18.83	33.90	31.28	25.92	47.37	54.00	-6.63	Average
3	5180.000	18.88	33.96	31.30	65.49	87.03	------	------	Average

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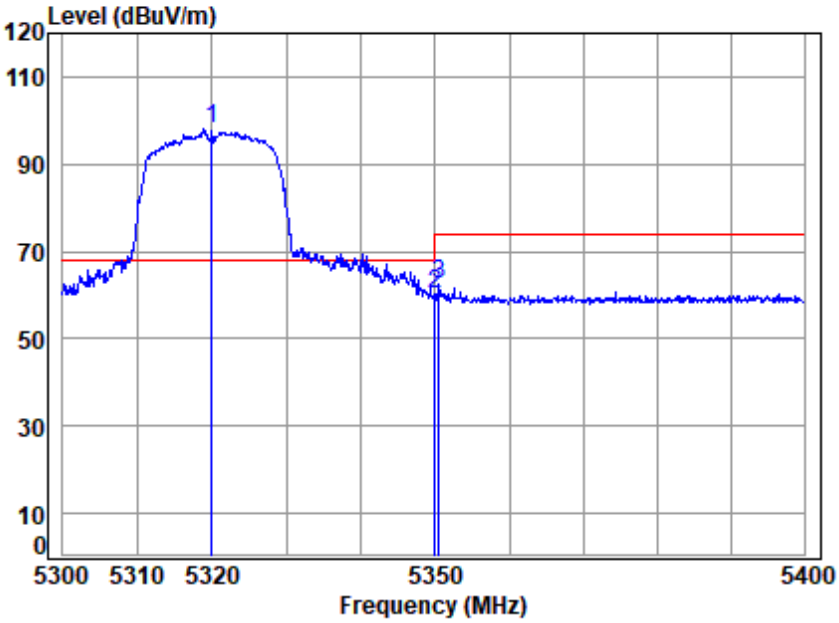
Test Mode: 18; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5320 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 p	5320.000	19.07	34.28	31.37	75.96	97.94	68.20	29.74	peak
2	5350.020	19.11	34.40	31.39	38.00	60.12	74.00	-13.88	peak
3	5350.566	19.11	34.40	31.39	40.26	62.38	74.00	-11.62	peak

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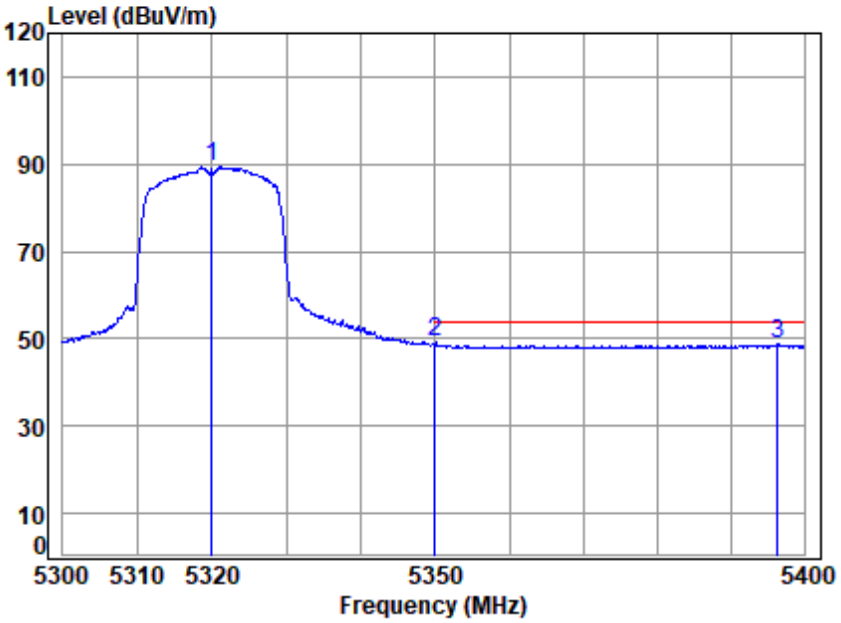
Test Mode: 18; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5320 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	5320.000	19.07	34.28	31.37	67.31	89.29	------	------	Average
2 q	5350.020	19.11	34.40	31.39	27.04	49.16	54.00	-4.84	Average
3	5396.368	19.17	34.59	31.41	26.41	48.76	54.00	-5.24	Average

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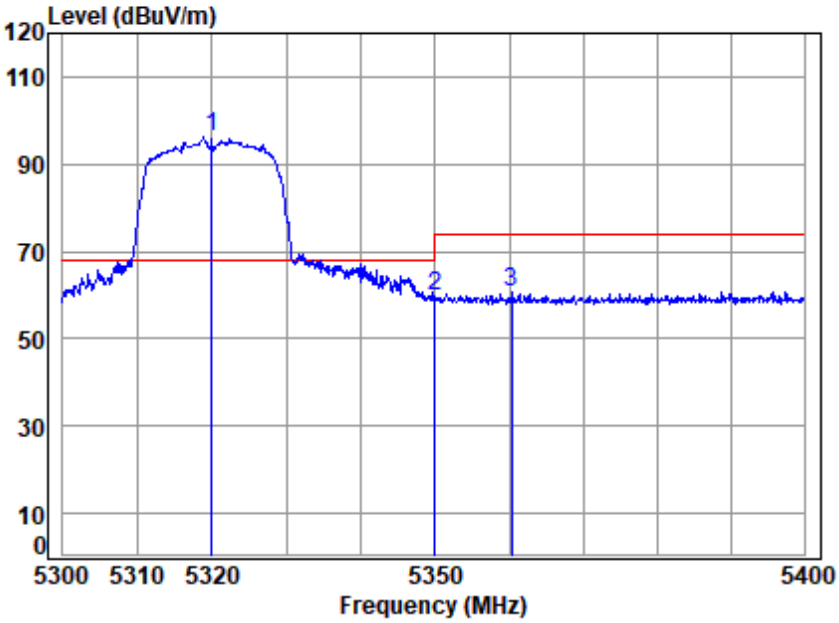
Test Mode: 18; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT\03888AT
Mode : 5320 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 p	5320.000	19.07	34.28	31.37	74.09	96.07	68.20	27.87	Peak
2	5350.020	19.11	34.40	31.39	37.79	59.91	74.00	-14.09	Peak
3	5360.276	19.12	34.44	31.39	38.56	60.73	74.00	-13.27	Peak

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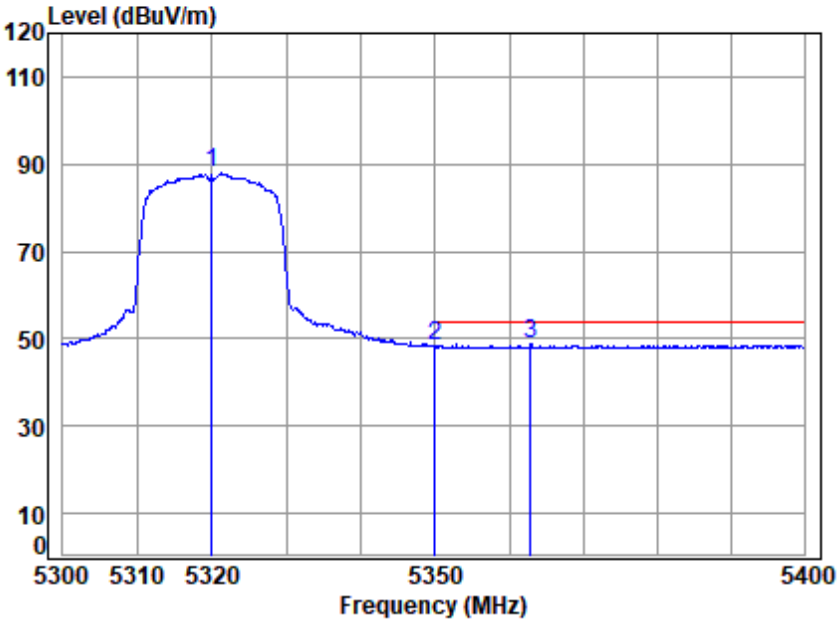
Test Mode: 18; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High




```
Site      : chamber
Condition: 3m VERTICAL
Job No    : 03887AT\03888AT
Mode      : 5320 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	5320.000	19.07	34.28	31.37	65.92	87.90	------	------	Average
2	5350.020	19.11	34.40	31.39	26.32	48.44	54.00	-5.56	Average
3 q	5362.882	19.13	34.45	31.39	26.64	48.83	54.00	-5.17	Average

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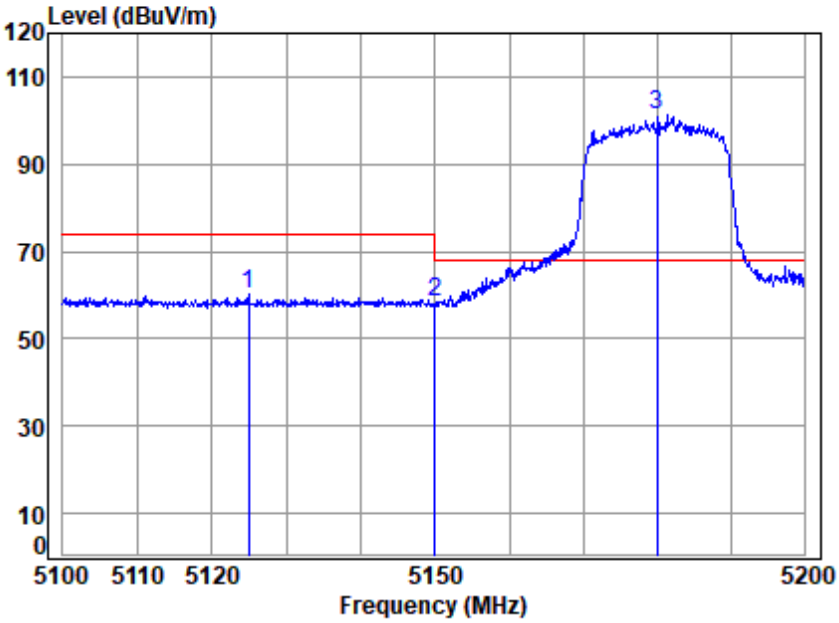
Test Mode: 16; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5180 Band edge
: 5G WIFI 11AX20

	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	5124.918	18.80	33.95	31.27	38.55	60.03	74.00	-13.97	peak
2	5149.980	18.83	33.90	31.28	37.12	58.57	74.00	-15.43	peak
3 p	5180.000	18.88	33.96	31.30	79.63	101.17	68.20	32.97	peak

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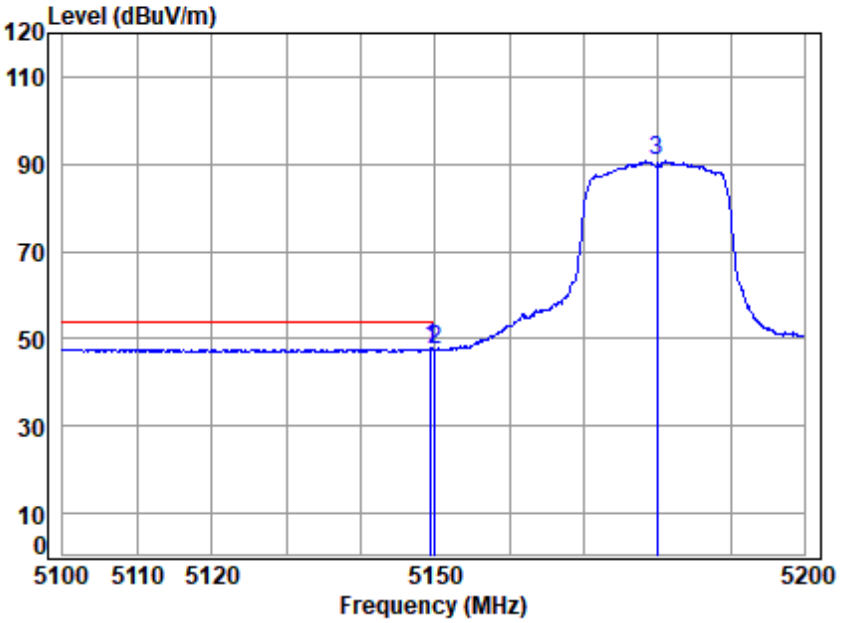
Test Mode: 16; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5180 Band edge
: 5G WIFI 11AX20

	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	5149.458	18.83	33.90	31.28	26.43	47.88	54.00	-6.12	Average
2	5149.980	18.83	33.90	31.28	26.10	47.55	54.00	-6.45	Average
3	5180.000	18.88	33.96	31.30	69.26	90.80	------	------	Average

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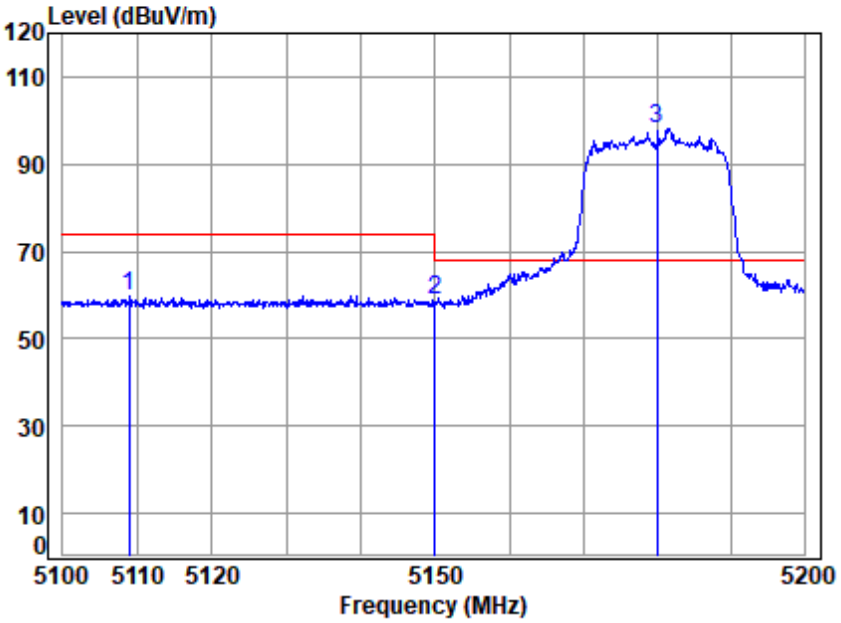
Test Mode: 16; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT\03888AT
Mode : 5180 Band edge
: 5G WIFI 11AX20

	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	5108.921	18.78	33.98	31.26	38.42	59.92	74.00	-14.08	Peak
2	5149.980	18.83	33.90	31.28	37.23	58.68	74.00	-15.32	Peak
3 p	5180.000	18.88	33.96	31.30	76.42	97.96	68.20	29.76	Peak

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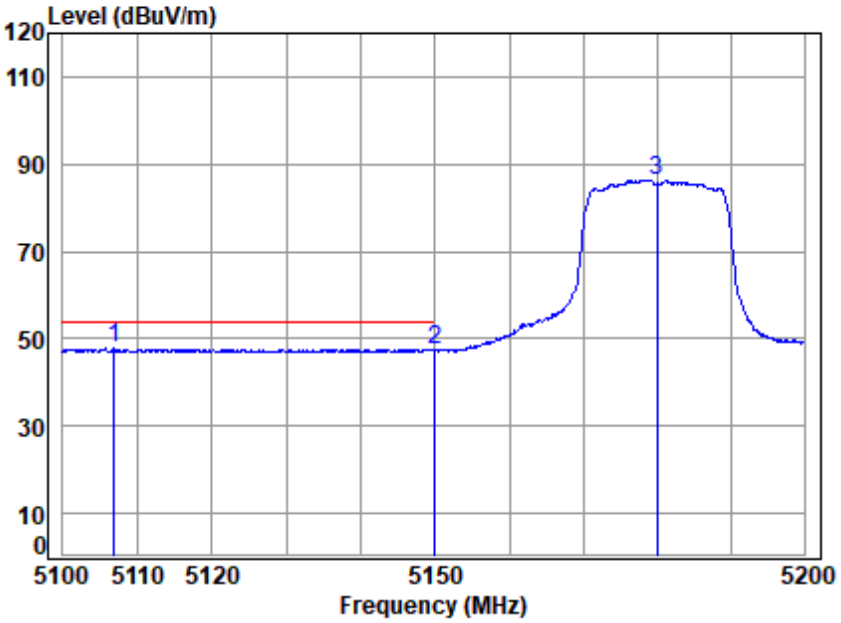
Test Mode: 16; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low




```
Site      : chamber
Condition: 3m VERTICAL
Job No    : 03887AT\03888AT
Mode      : 5180 Band edge
          : 5G WIFI 11AX20
```

	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	5106.838	18.77	33.99	31.26	26.26	47.76	54.00	-6.24	Average
2	5149.980	18.83	33.90	31.28	25.96	47.41	54.00	-6.59	Average
3	5180.000	18.88	33.96	31.30	64.91	86.45	------	------	Average

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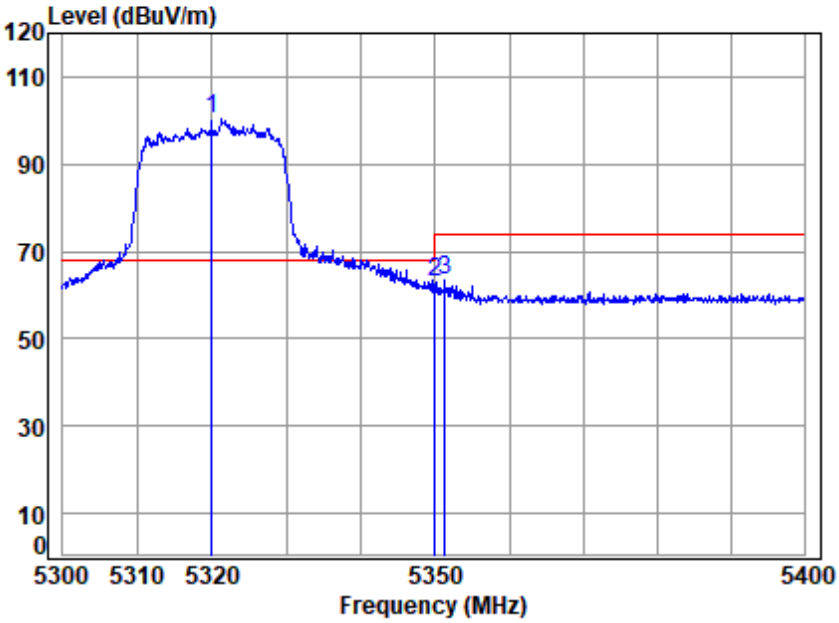
Test Mode: 18; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5320 Band edge
: 5G WIFI 11AX20

	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 p	5320.000	19.07	34.28	31.37	78.21	100.19	68.20	31.99	peak
2	5350.020	19.11	34.40	31.39	41.05	63.17	74.00	-10.83	peak
3	5351.367	19.11	34.41	31.39	41.14	63.27	74.00	-10.73	peak

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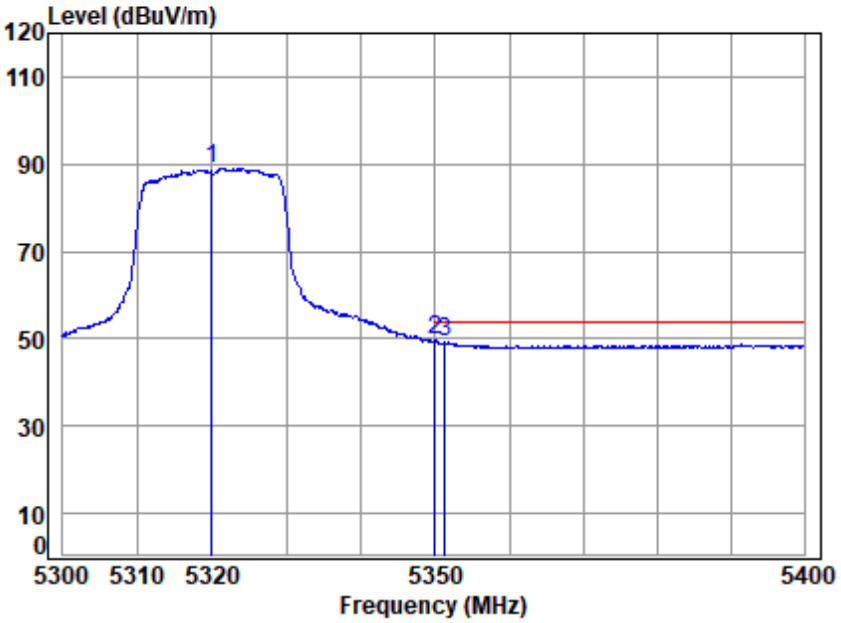
Test Mode: 18; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT\03888AT
Mode : 5320 Band edge
: 5G WIFI 11AX20

	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	5320.000	19.07	34.28	31.37	66.94	88.92	------	------	Average
2 q	5350.020	19.11	34.40	31.39	27.47	49.59	54.00	-4.41	Average
3	5351.267	19.11	34.41	31.39	26.96	49.09	54.00	-4.91	Average

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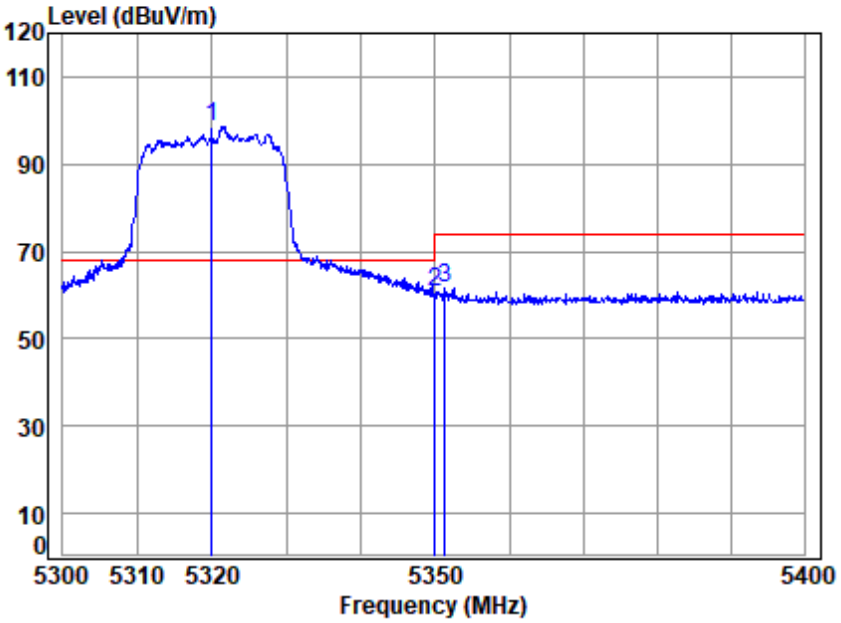
Test Mode: 18; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT\03888AT
Mode : 5320 Band edge
: 5G WIFI 11AX20

	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 p	5320.000	19.07	34.28	31.37	76.53	98.51	68.20	30.31	Peak
2	5350.020	19.11	34.40	31.39	38.59	60.71	74.00	-13.29	Peak
3	5351.367	19.11	34.41	31.39	39.67	61.80	74.00	-12.20	Peak

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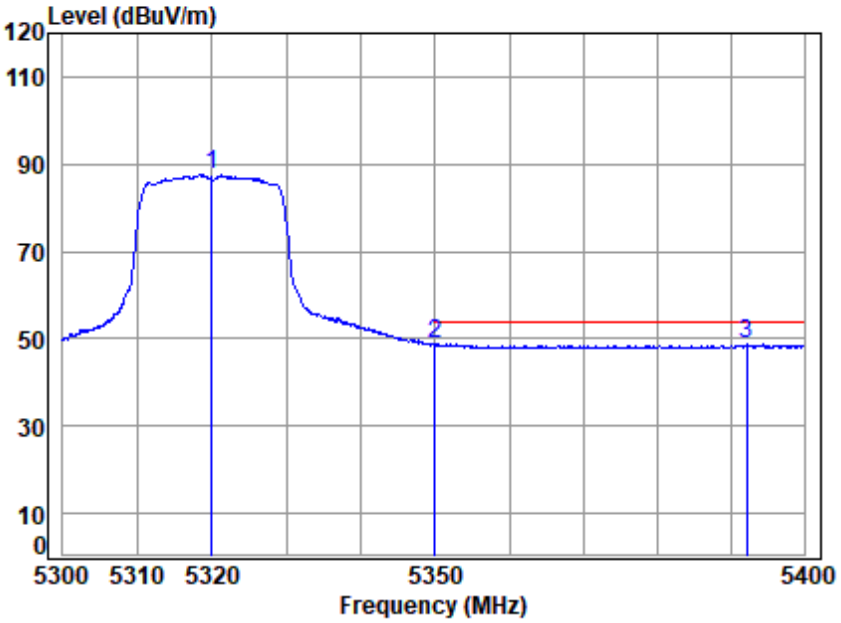
Test Mode: 18; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High




```
Site      : chamber
Condition: 3m VERTICAL
Job No    : 03887AT\03888AT
Mode      : 5320 Band edge
          : 5G WIFI 11AX20
```

	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	5320.000	19.07	34.28	31.37	65.50	87.48	------	------	Average
2	5350.020	19.11	34.40	31.39	26.53	48.65	54.00	-5.35	Average
3 q	5392.133	19.17	34.57	31.41	26.37	48.70	54.00	-5.30	Average

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7.3 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

7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 23.5 °C Humidity: 47.5 % RH Atmospheric Pressure: 1020 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	15	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	17	TX mode (U-NII-2A) _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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

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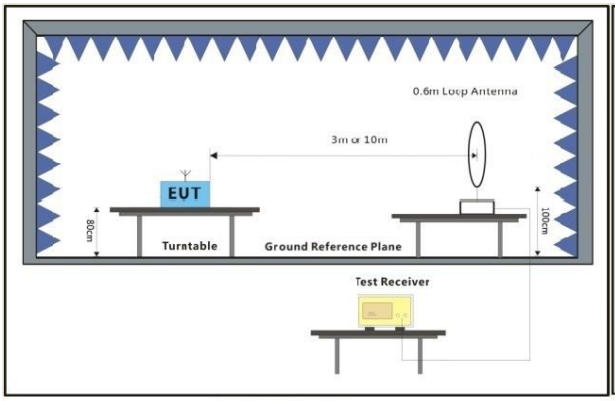
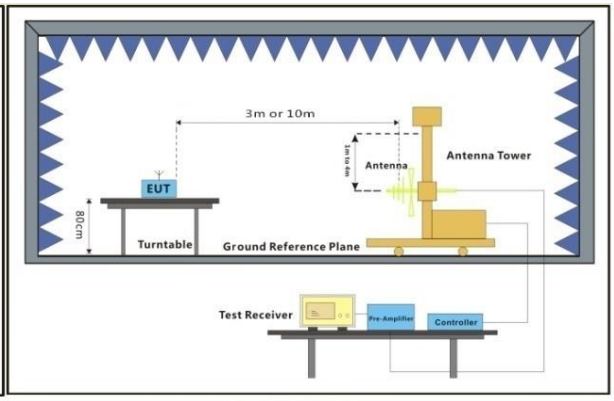
7.3.3 Test Setup Diagram



Below 30MHz



30MHz-1GHz

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7.3.4 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.

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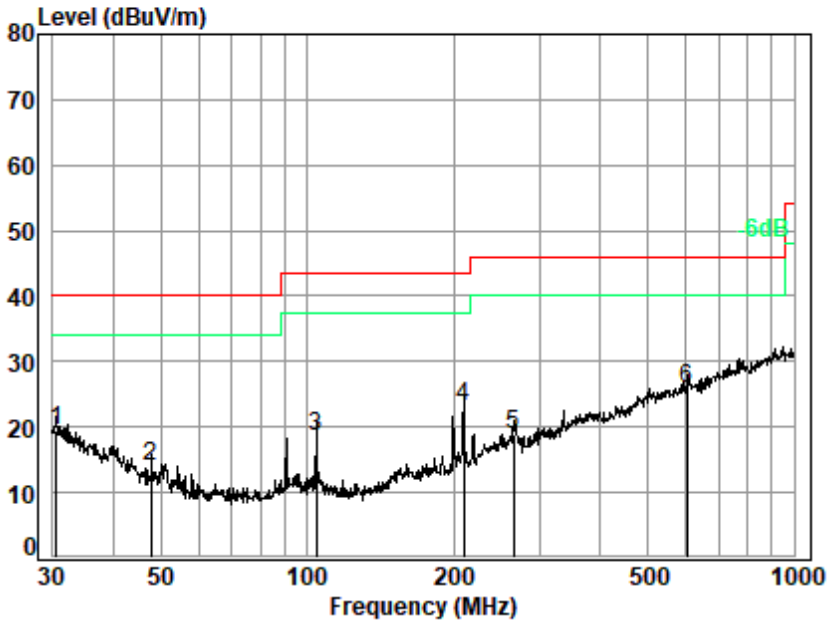
Test Mode: 16; Polarity: Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : 03887AT/03888AT
Test Mode: 16

	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	30.531	20.95	0.68	27.79	25.64	19.48	40.00	-20.52	QP
2	47.826	13.36	0.84	27.74	27.42	13.88	40.00	-26.12	QP
3	104.170	12.22	1.25	27.57	32.68	18.58	43.50	-24.92	QP
4	209.313	14.75	1.81	27.13	33.54	22.97	43.50	-20.53	QP
5	264.746	17.08	2.06	26.90	26.74	18.98	46.00	-27.02	QP
6 q	603.539	24.47	3.25	27.96	26.11	25.87	46.00	-20.13	QP

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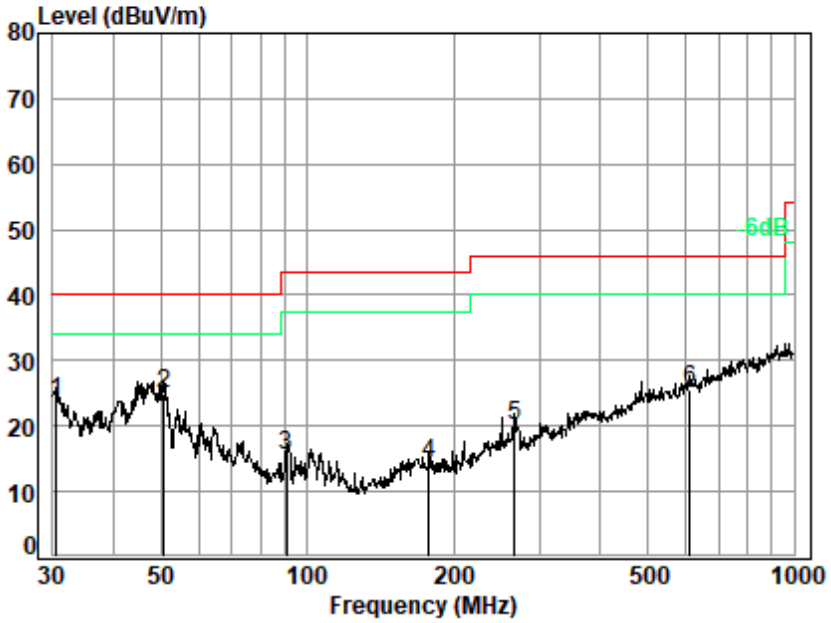
Test Mode: 16; Polarity: Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : 03887AT/03888AT
Test Mode: 16

	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	30.531	20.95	0.68	27.79	29.98	23.82	40.00	-16.18	QP
2 q	50.764	12.64	0.87	27.73	39.11	24.89	40.00	-15.11	QP
3	90.537	11.77	1.16	27.62	30.15	15.46	43.50	-28.04	QP
4	177.509	13.96	1.67	27.26	25.84	14.21	43.50	-29.29	QP
5	266.609	17.08	2.07	26.89	27.78	20.04	46.00	-25.96	QP
6	612.064	24.81	3.28	27.94	25.44	25.59	46.00	-20.41	QP

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7.4 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.

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.4 °C Humidity: 69.3 % RH Atmospheric Pressure: 1020 mbar

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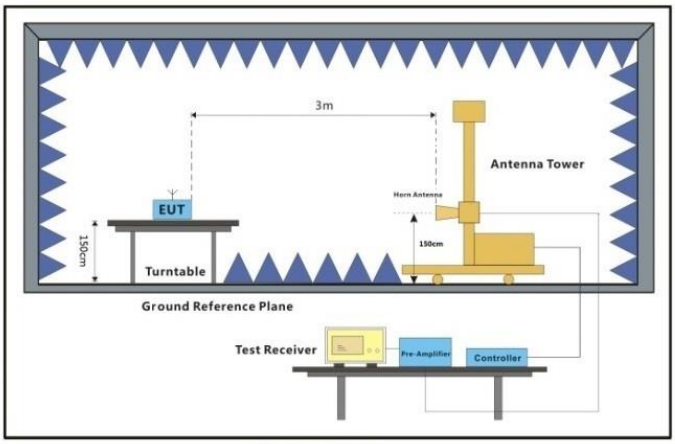
7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	15	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	17	TX mode (U-NII-2A) _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/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



Above 1GHz

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7.4.4 Measurement Procedure and Data

a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.

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

h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

i. Repeat above procedures until all frequencies measured was complete.

Remark:

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

2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

5. For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.

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

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

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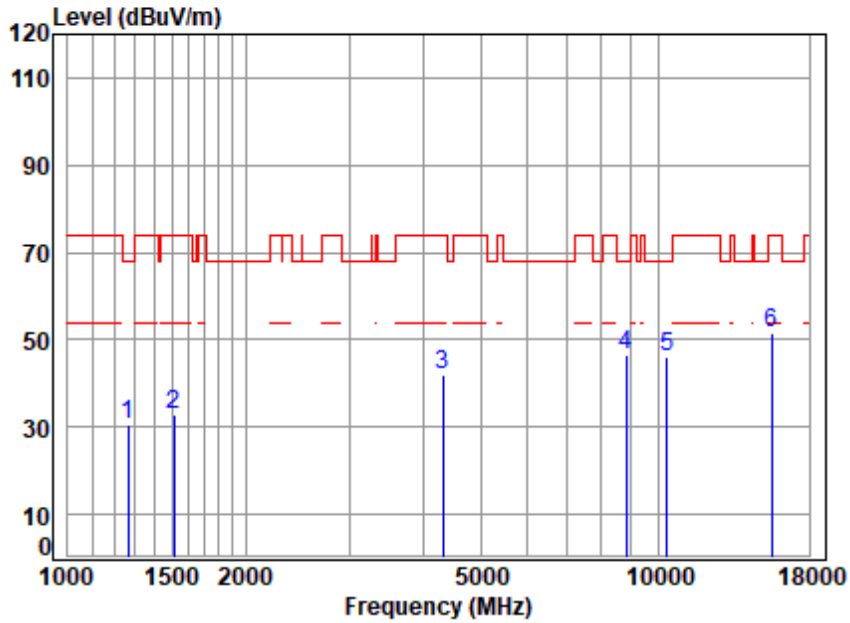
Test Mode: 16; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5180 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	1263.796	3.77	25.02	54.70	56.50	30.59	68.20	-37.61	peak
2	1511.833	4.06	26.85	54.78	56.70	32.83	74.00	-41.17	peak
3	4316.859	7.04	34.13	54.27	55.08	41.98	74.00	-32.02	peak
4	p 8814.957	9.78	37.13	53.51	53.20	46.60	68.20	-21.60	peak
5	10360.000	11.14	37.10	53.13	50.89	46.00	68.20	-22.20	peak
6	15540.000	13.79	41.10	52.16	48.96	51.69	74.00	-22.31	peak

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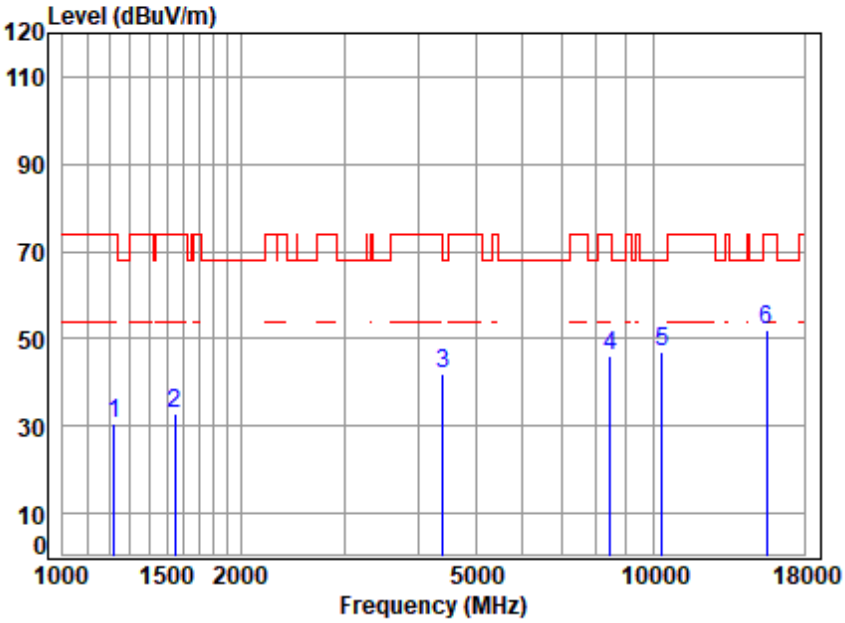
Test Mode: 16; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5180 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	3.71	24.74	54.69	56.75	30.51	74.00	-43.49	peak
2	1547.199	4.11	26.99	54.79	56.66	32.97	74.00	-41.03	peak
3	4405.090	7.14	34.74	54.26	54.51	42.13	68.20	-26.07	peak
4	8465.379	9.50	36.63	53.34	53.49	46.28	74.00	-27.72	peak
5	p10360.000	11.14	37.10	53.13	51.83	46.94	68.20	-21.26	peak
6	15540.000	13.79	41.10	52.16	49.07	51.80	74.00	-22.20	peak

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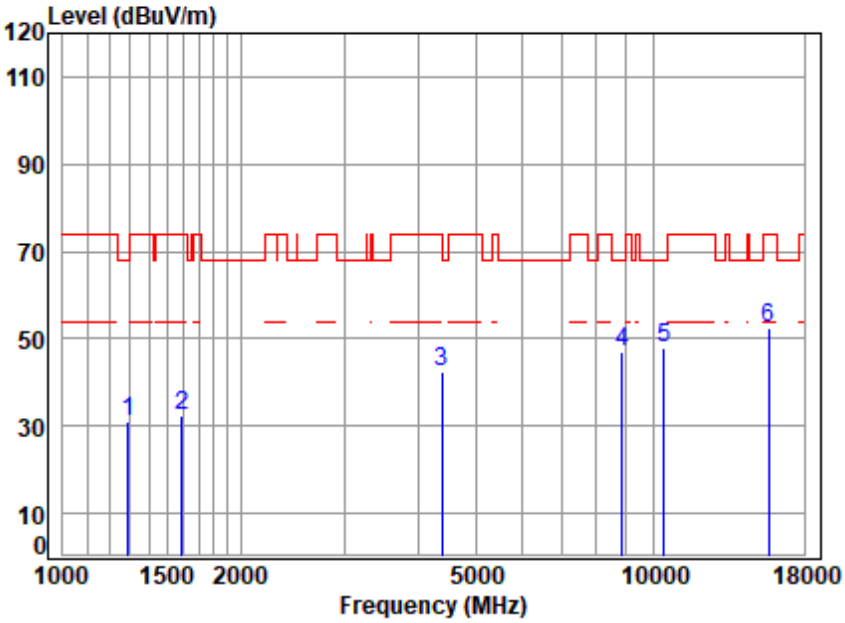
Test Mode: 16; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5220 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	1289.627	3.80	24.86	54.71	56.93	30.88	68.20	-37.32	peak
2	1592.571	4.18	26.83	54.80	56.30	32.51	74.00	-41.49	peak
3	4379.699	7.11	34.64	54.26	54.73	42.22	74.00	-31.78	peak
4	8840.473	9.80	37.18	53.52	53.40	46.86	68.20	-21.34	peak
5	p10440.000	11.26	37.18	53.11	52.69	48.02	68.20	-20.18	peak
6	15660.000	13.94	41.16	52.07	49.27	52.30	74.00	-21.70	peak

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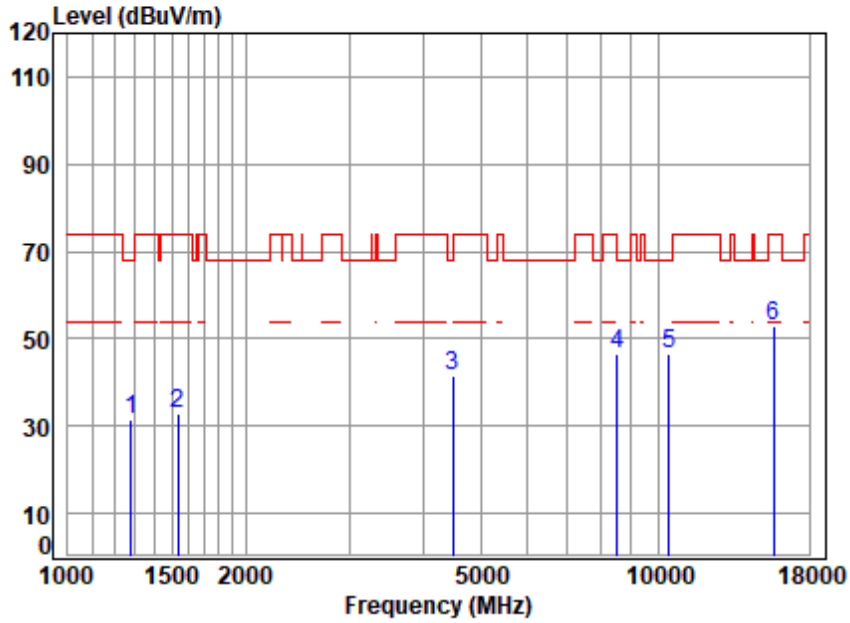
Test Mode: 16; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5220 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	1282.193	3.79	24.91	54.71	57.62	31.61	68.20	-36.59	peak
2	1533.841	4.09	26.94	54.79	56.66	32.90	74.00	-41.10	peak
3	4482.150	7.23	33.81	54.25	54.66	41.45	68.20	-26.75	peak
4	8514.456	9.54	36.73	53.36	53.75	46.66	68.20	-21.54	peak
5	10440.000	11.26	37.18	53.11	51.06	46.39	68.20	-21.81	peak
6	p15660.000	13.94	41.16	52.07	49.81	52.84	74.00	-21.16	peak

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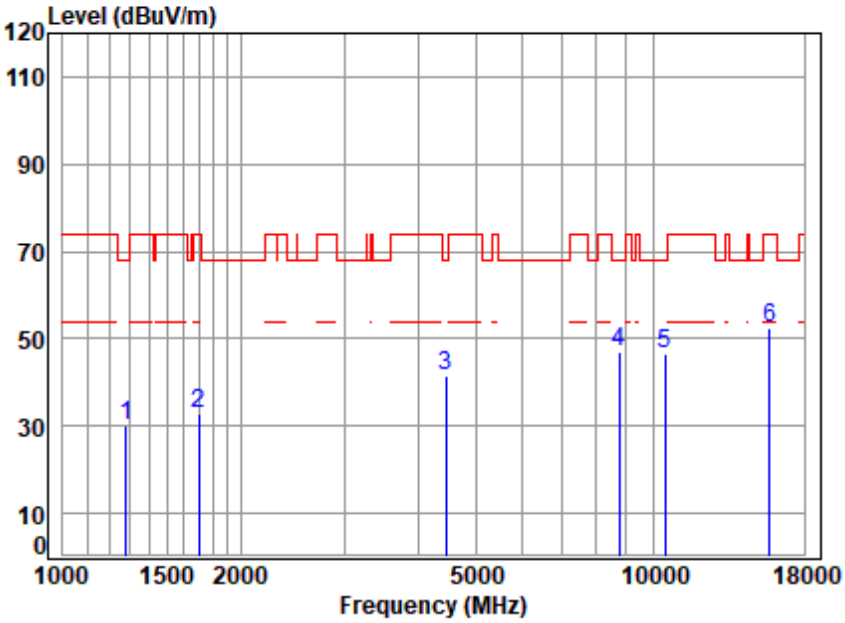
Test Mode: 16; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5240 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	1278.492	3.78	24.93	54.71	56.08	30.08	68.20	-38.12	peak
2	1702.042	4.33	26.22	54.83	57.04	32.76	74.00	-41.24	peak
3	4456.315	7.20	34.12	54.25	54.66	41.73	68.20	-26.47	peak
4	p 8738.852	9.72	36.90	53.47	53.88	47.03	68.20	-21.17	peak
5	10480.000	11.33	37.26	53.10	50.92	46.41	68.20	-21.79	peak
6	15720.000	14.01	41.22	52.02	49.34	52.55	74.00	-21.45	peak

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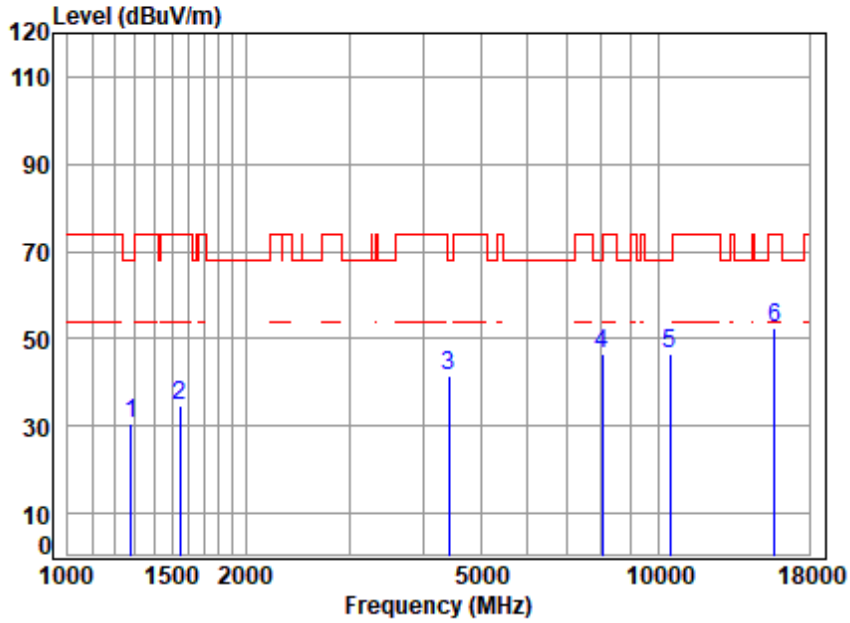
Test Mode: 16; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5240 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	1278.492	3.78	24.93	54.71	56.49	30.49	68.20	-37.71	peak
2	1547.199	4.11	26.99	54.79	58.23	34.54	74.00	-39.46	peak
3	4417.841	7.16	34.59	54.26	54.18	41.67	68.20	-26.53	peak
4	8036.214	9.07	36.40	53.12	54.10	46.45	74.00	-27.55	peak
5	10480.000	11.33	37.26	53.10	51.05	46.54	68.20	-21.66	peak
6	p15720.000	14.01	41.22	52.02	49.19	52.40	74.00	-21.60	peak

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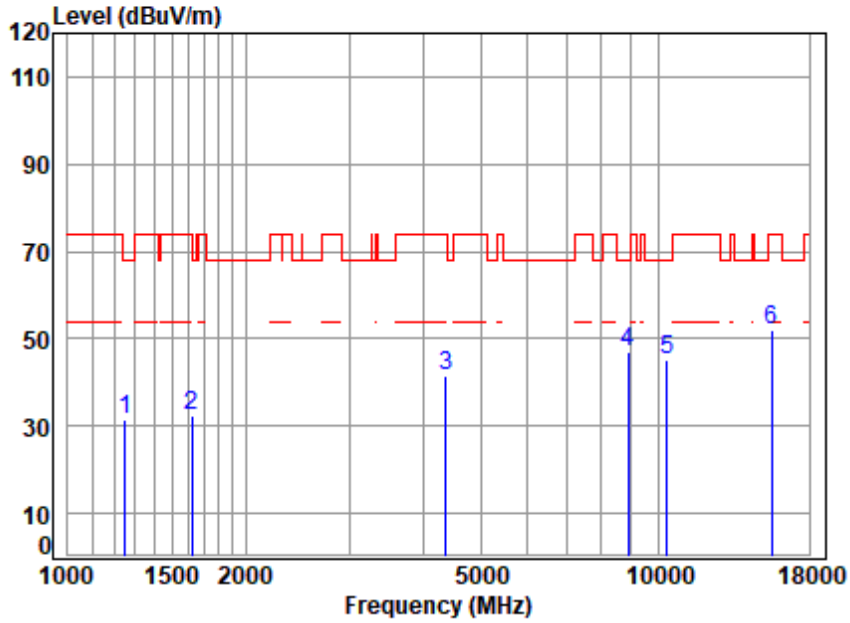
Test Mode: 16; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5180 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	1249.269	3.75	25.09	54.70	57.16	31.30	68.20	-36.90	peak
2	1625.121	4.22	26.55	54.81	56.45	32.41	74.00	-41.59	peak
3	4367.058	7.10	34.54	54.26	54.35	41.73	74.00	-32.27	peak
4	p 8891.725	9.84	37.20	53.55	53.44	46.93	68.20	-21.27	peak
5	10360.000	11.14	37.10	53.13	50.06	45.17	68.20	-23.03	peak
6	15540.000	13.79	41.10	52.16	49.22	51.95	74.00	-22.05	peak

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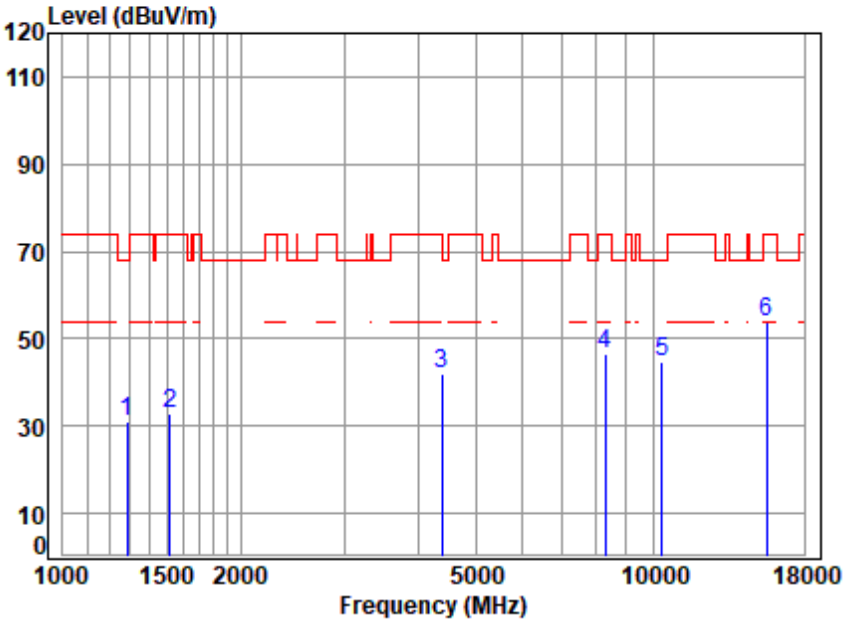
Test Mode: 16; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5180 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	3.79	24.88	54.71	56.93	30.89	68.20	-37.31	peak
2	1520.598	4.07	26.88	54.78	56.66	32.83	74.00	-41.17	peak
3	4392.376	7.13	34.74	54.26	54.55	42.16	74.00	-31.84	peak
4	8295.823	9.33	36.70	53.25	53.64	46.42	74.00	-27.58	peak
5	10360.000	11.14	37.10	53.13	49.82	44.93	68.20	-23.27	peak
6	p15540.000	13.79	41.10	52.16	50.88	53.61	74.00	-20.39	peak

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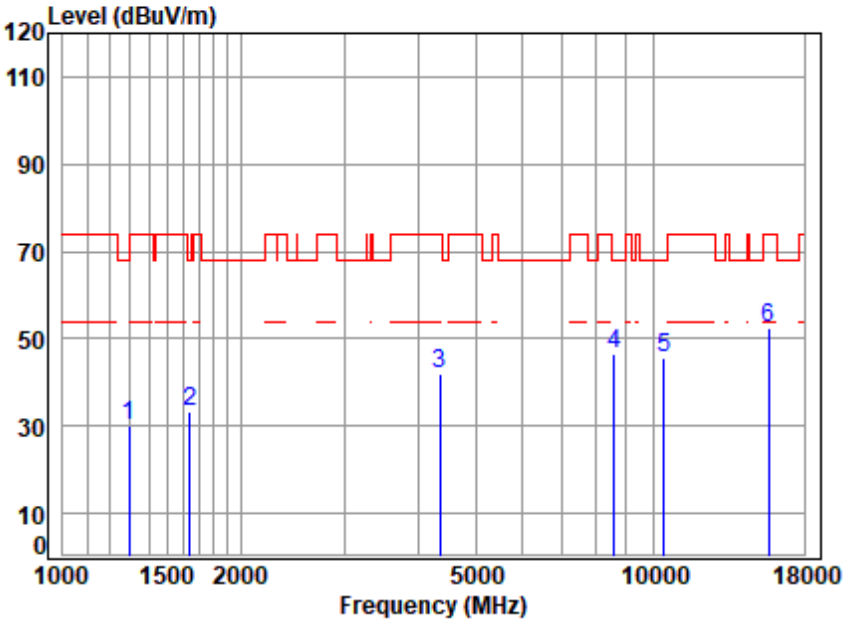
Test Mode: 16; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5220 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	1293.359	3.80	24.84	54.71	56.24	30.17	68.20	-38.03	peak
2	1639.274	4.24	26.41	54.81	57.26	33.10	68.20	-35.10	peak
3	4354.454	7.08	34.44	54.26	54.51	41.77	74.00	-32.23	peak
4	8588.607	9.60	36.88	53.40	53.37	46.45	68.20	-21.75	peak
5	10440.000	11.26	37.18	53.11	50.44	45.77	68.20	-22.43	peak
6	p15660.000	13.94	41.16	52.07	49.39	52.42	74.00	-21.58	peak

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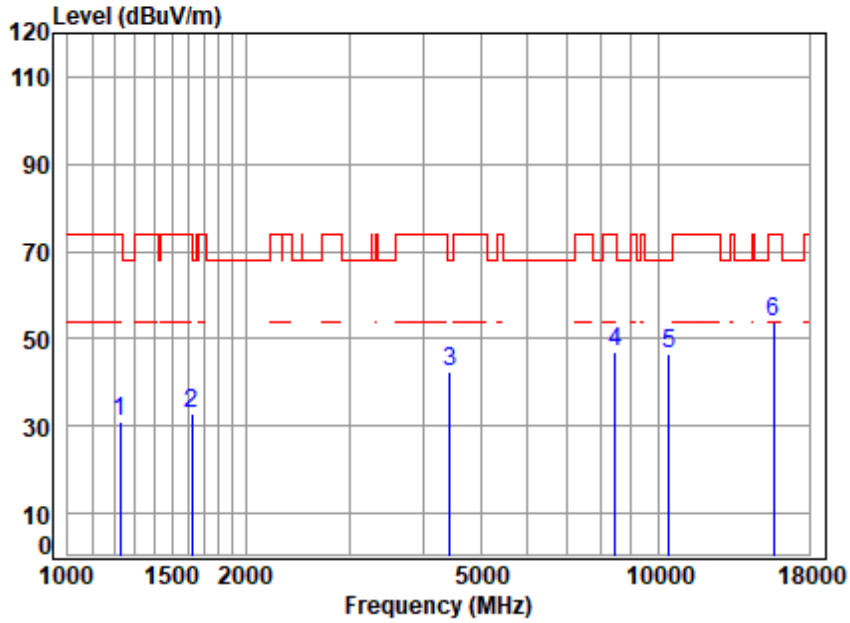
Test Mode: 16; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5220 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	1227.791	3.72	24.79	54.69	57.25	31.07	74.00	-42.93	peak
2	1620.431	4.21	26.60	54.81	56.95	32.95	74.00	-41.05	peak
3	4443.453	7.19	34.28	54.25	55.32	42.54	68.20	-25.66	peak
4	8440.945	9.47	36.62	53.33	54.18	46.94	74.00	-27.06	peak
5	10440.000	11.26	37.18	53.11	51.21	46.54	68.20	-21.66	peak
6	p15660.000	13.94	41.16	52.07	50.92	53.95	74.00	-20.05	peak

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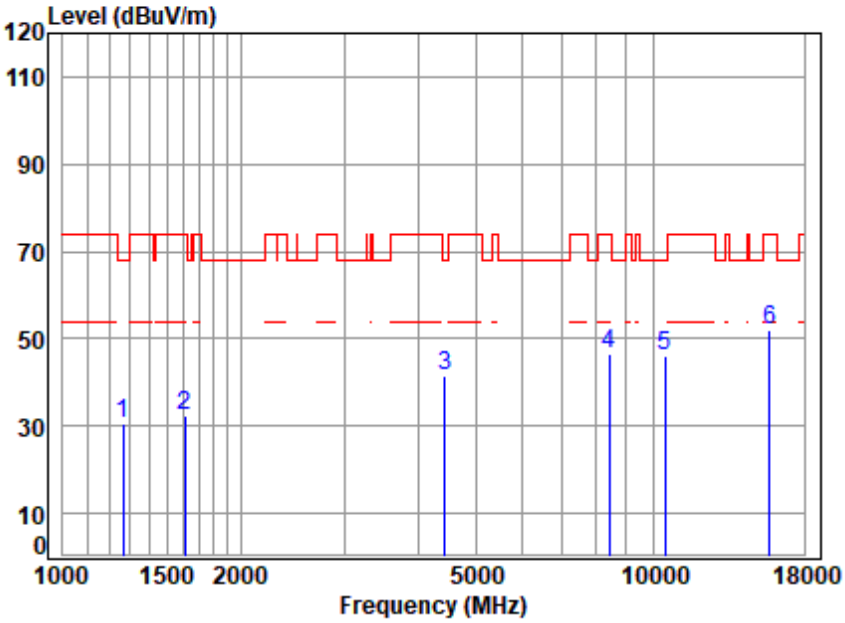
Test Mode: 16; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5240 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	3.77	25.00	54.70	56.59	30.66	68.20	-37.54	peak
2	1611.091	4.20	26.69	54.81	56.52	32.60	74.00	-41.40	peak
3	4443.453	7.19	34.28	54.25	54.19	41.41	68.20	-26.79	peak
4	8416.584	9.45	36.67	53.32	53.77	46.57	74.00	-27.43	peak
5	10480.000	11.33	37.26	53.10	50.77	46.26	68.20	-21.94	peak
6	p15720.000	14.01	41.22	52.02	49.01	52.22	74.00	-21.78	peak

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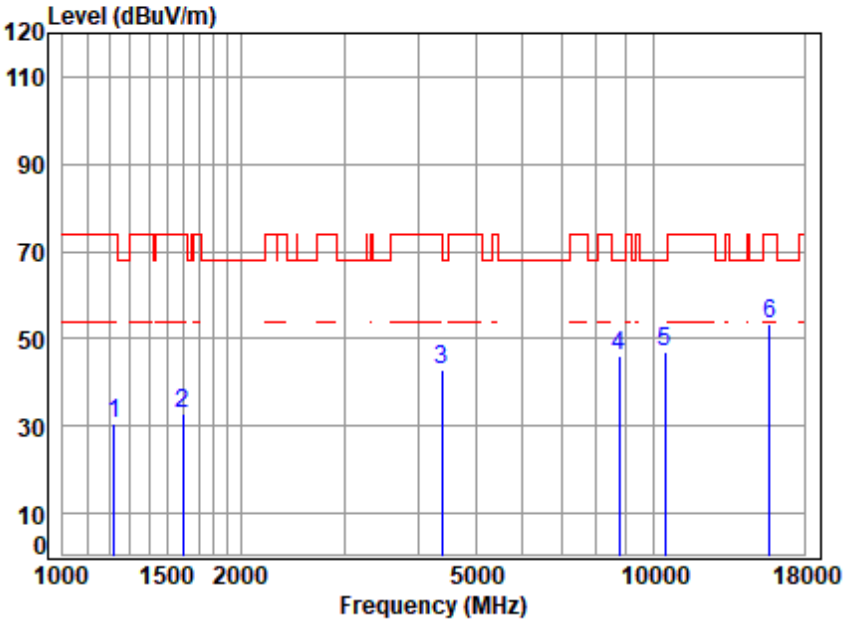
Test Mode: 16; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5240 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	1224.247	3.71	24.74	54.69	56.64	30.40	74.00	-43.60	peak
2	1597.181	4.18	26.81	54.80	56.57	32.76	74.00	-41.24	peak
3	4392.376	7.13	34.74	54.26	55.43	43.04	74.00	-30.96	peak
4	8738.852	9.72	36.90	53.47	53.09	46.24	68.20	-21.96	peak
5	10480.000	11.33	37.26	53.10	51.52	47.01	68.20	-21.19	peak
6	p15720.000	14.01	41.22	52.02	50.08	53.29	74.00	-20.71	peak

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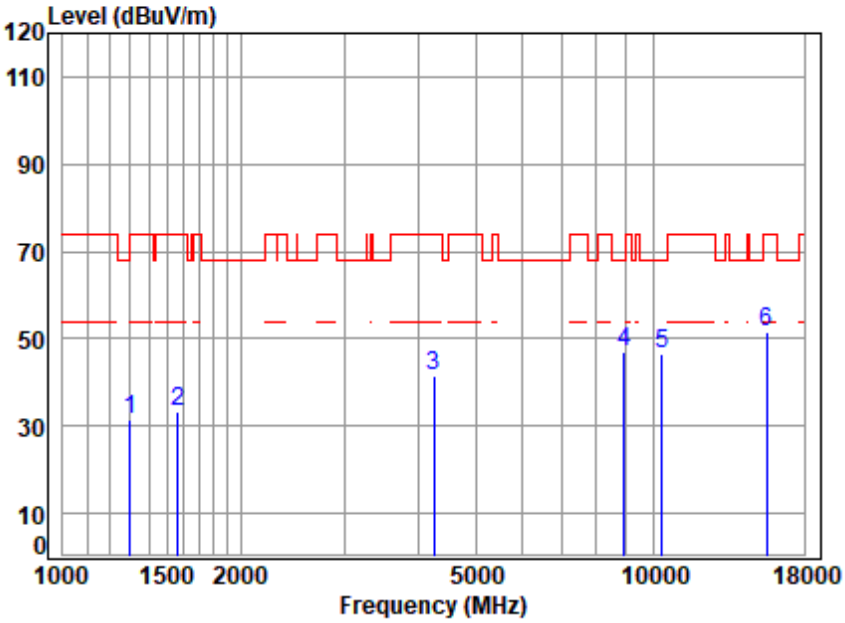
Test Mode: 16; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5180 TX RSE
Note : 5G WIFI 11AC20

	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	1300.858	3.81	24.79	54.71	57.62	31.51	74.00	-42.49	peak
2	1569.721	4.14	26.92	54.80	56.94	33.20	74.00	-40.80	peak
3	4254.921	6.96	33.82	54.27	54.97	41.48	74.00	-32.52	peak
4	p 8917.462	9.86	37.13	53.56	53.45	46.88	68.20	-21.32	peak
5	10360.000	11.14	37.10	53.13	51.29	46.40	68.20	-21.80	peak
6	15540.000	13.79	41.10	52.16	49.04	51.77	74.00	-22.23	peak

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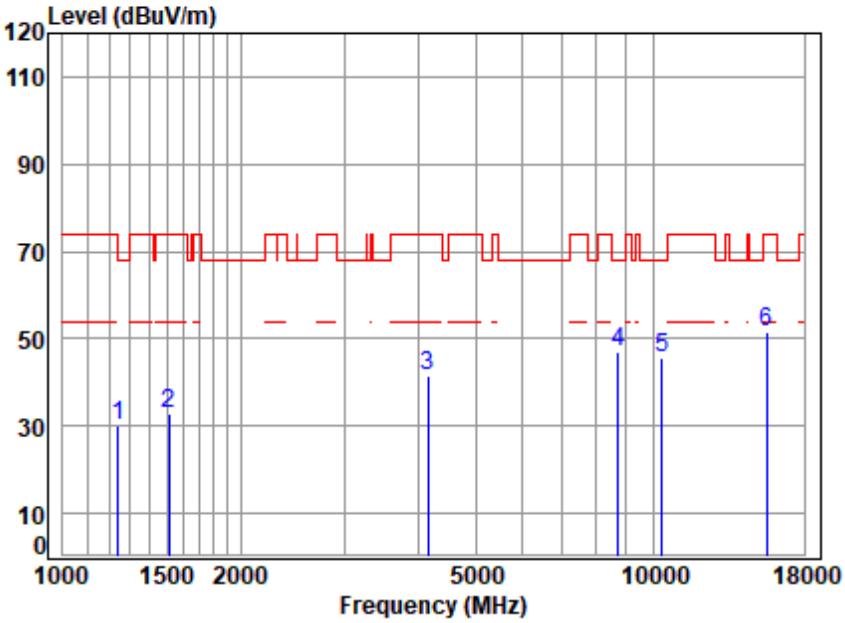
Test Mode: 16; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5180 TX RSE
Note : 5G WIFI 11AC20

	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	3.74	24.99	54.69	56.24	30.28	68.20	-37.92	peak
2	1511.833	4.06	26.85	54.78	56.92	33.05	74.00	-40.95	peak
3	4145.664	6.83	33.73	54.28	55.24	41.52	74.00	-32.48	peak
4 p	8713.630	9.70	36.90	53.46	53.97	47.11	68.20	-21.09	peak
5	10360.000	11.14	37.10	53.13	50.44	45.55	68.20	-22.65	peak
6	15540.000	13.79	41.10	52.16	48.64	51.37	74.00	-22.63	peak

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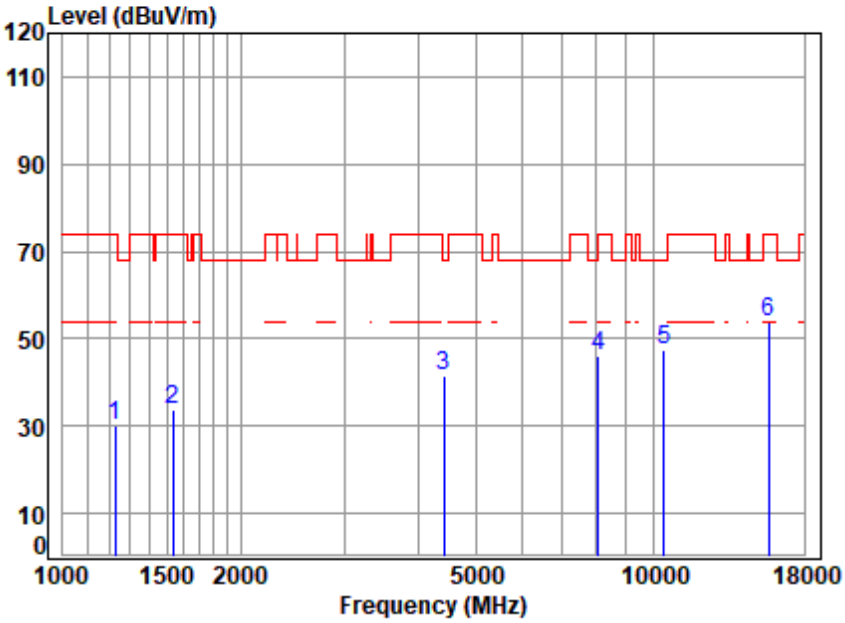
Test Mode: 16; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5220 TX RSE
Note : 5G WIFI 11AC20

	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	3.72	24.79	54.69	56.25	30.07	74.00	-43.93	peak
2	1538.281	4.10	26.95	54.79	57.47	33.73	74.00	-40.27	peak
3	4417.841	7.16	34.59	54.26	54.16	41.65	68.20	-26.55	peak
4	8082.804	9.11	36.47	53.14	53.68	46.12	74.00	-27.88	peak
5	10440.000	11.26	37.18	53.11	51.96	47.29	68.20	-20.91	peak
6	p15660.000	13.94	41.16	52.07	50.64	53.67	74.00	-20.33	peak

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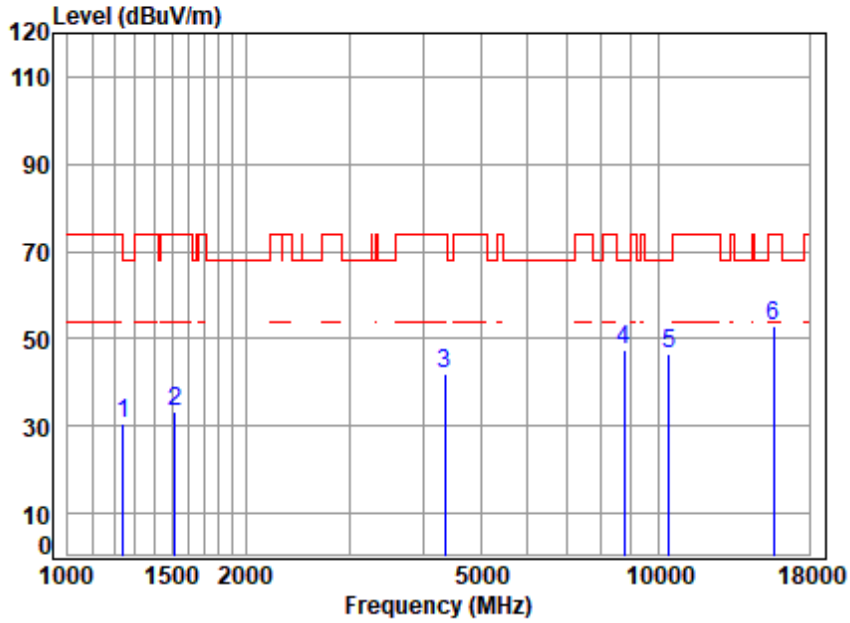
Test Mode: 16; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5220 TX RSE
Note : 5G WIFI 11AC20

	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	3.74	24.99	54.69	56.55	30.59	68.20	-37.61	peak
2	1520.598	4.07	26.88	54.78	57.04	33.21	74.00	-40.79	peak
3	4354.454	7.08	34.44	54.26	54.50	41.76	74.00	-32.24	peak
4	p 8738.852	9.72	36.90	53.47	54.14	47.29	68.20	-20.91	peak
5	10440.000	11.26	37.18	53.11	51.30	46.63	68.20	-21.57	peak
6	15660.000	13.94	41.16	52.07	49.97	53.00	74.00	-21.00	peak

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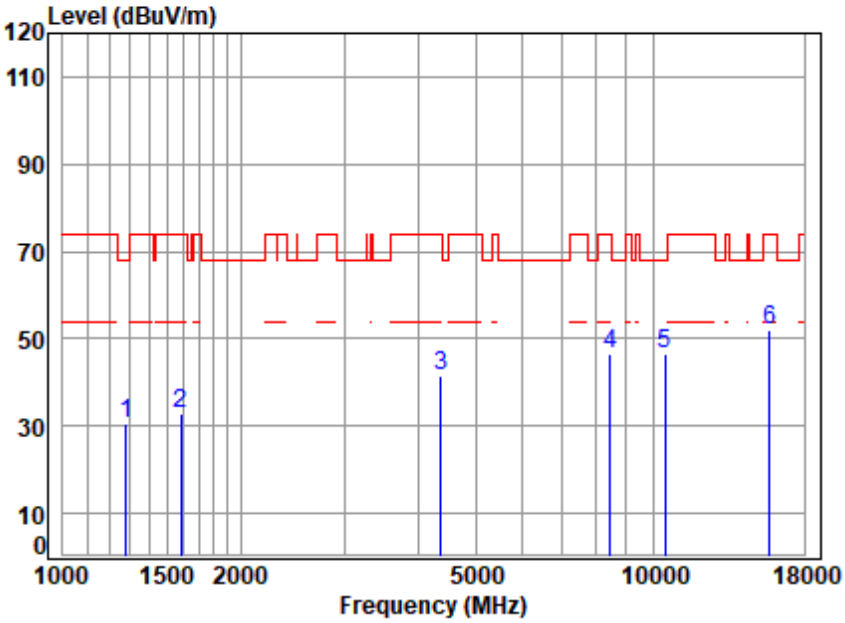
Test Mode: 16; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5240 TX RSE
Note : 5G WIFI 11AC20

	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	1278.492	3.78	24.93	54.71	56.50	30.50	68.20	-37.70	peak
2	1587.975	4.17	26.85	54.80	56.76	32.98	74.00	-41.02	peak
3	4367.058	7.10	34.54	54.26	54.33	41.71	74.00	-32.29	peak
4	8440.945	9.47	36.62	53.33	53.56	46.32	74.00	-27.68	peak
5	p10480.000	11.33	37.26	53.10	50.93	46.42	68.20	-21.78	peak
6	15720.000	14.01	41.22	52.02	48.72	51.93	74.00	-22.07	peak

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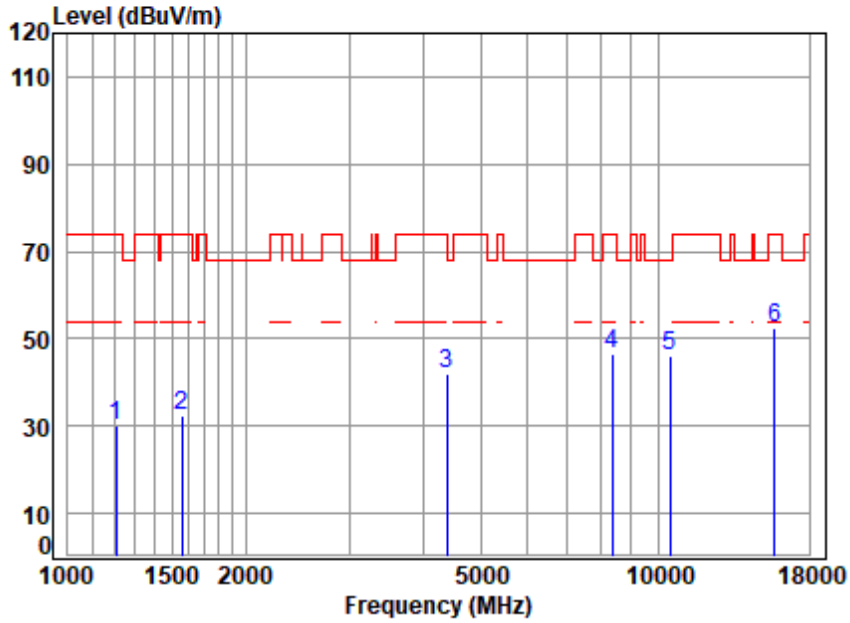
Test Mode: 16; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5240 TX RSE
Note : 5G WIFI 11AC20

	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	1206.682	3.69	24.49	54.68	56.49	29.99	74.00	-44.01	peak
2	1560.673	4.13	26.96	54.79	56.28	32.58	74.00	-41.42	peak
3	4392.376	7.13	34.74	54.26	54.42	42.03	74.00	-31.97	peak
4	8368.069	9.40	36.70	53.29	53.61	46.42	74.00	-27.58	peak
5	10480.000	11.33	37.26	53.10	50.73	46.22	68.20	-21.98	peak
6	p15720.000	14.01	41.22	52.02	49.08	52.29	74.00	-21.71	peak

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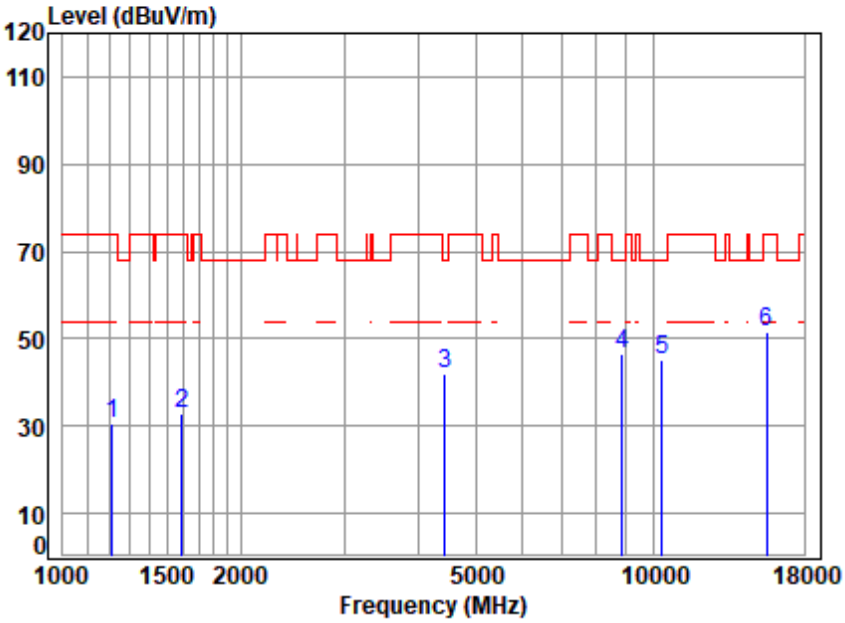
Test Mode: 16; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5180 TX RSE
Note : 5G WIFI 11AX 20

	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	1213.677	3.70	24.59	54.68	57.09	30.70	74.00	-43.30	peak
2	1592.571	4.18	26.83	54.80	56.61	32.82	74.00	-41.18	peak
3	4443.453	7.19	34.28	54.25	54.80	42.02	68.20	-26.18	peak
4 p	8866.062	9.82	37.20	53.54	53.10	46.58	68.20	-21.62	peak
5	10360.000	11.14	37.10	53.13	50.19	45.30	68.20	-22.90	peak
6	15540.000	13.79	41.10	52.16	48.69	51.42	74.00	-22.58	peak

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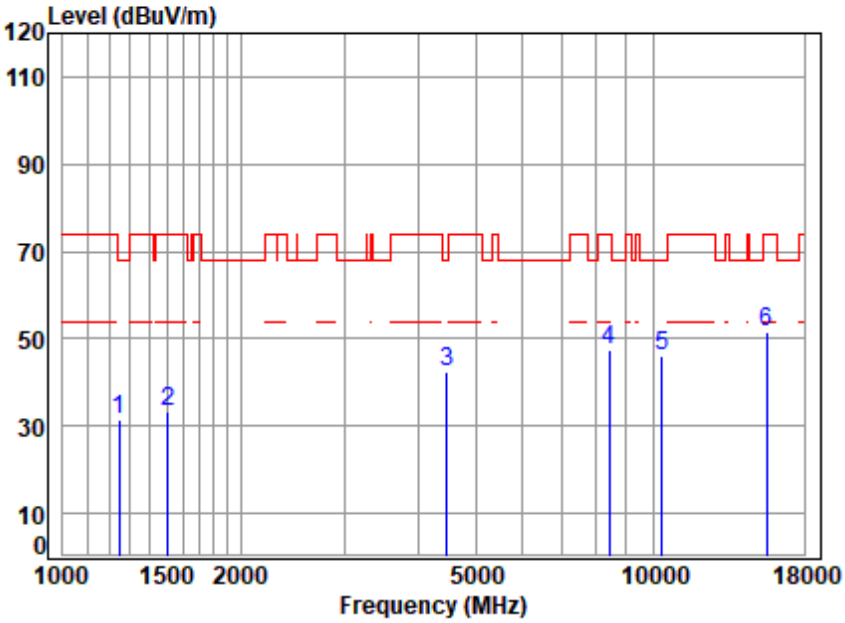
Member of the SGS Group (SGS SA)

Test Mode: 16; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5180 TX RSE
Note : 5G WIFI 11AX 20

	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	3.74	25.04	54.70	57.23	31.31	68.20	-36.89	peak
2	1507.470	4.05	26.83	54.78	57.08	33.18	74.00	-40.82	peak
3	4469.214	7.22	33.97	54.25	55.67	42.61	68.20	-25.59	peak
4	8416.584	9.45	36.67	53.32	54.73	47.53	74.00	-26.47	peak
5	p10360.000	11.14	37.10	53.13	51.15	46.26	68.20	-21.94	peak
6	15540.000	13.79	41.10	52.16	48.93	51.66	74.00	-22.34	peak

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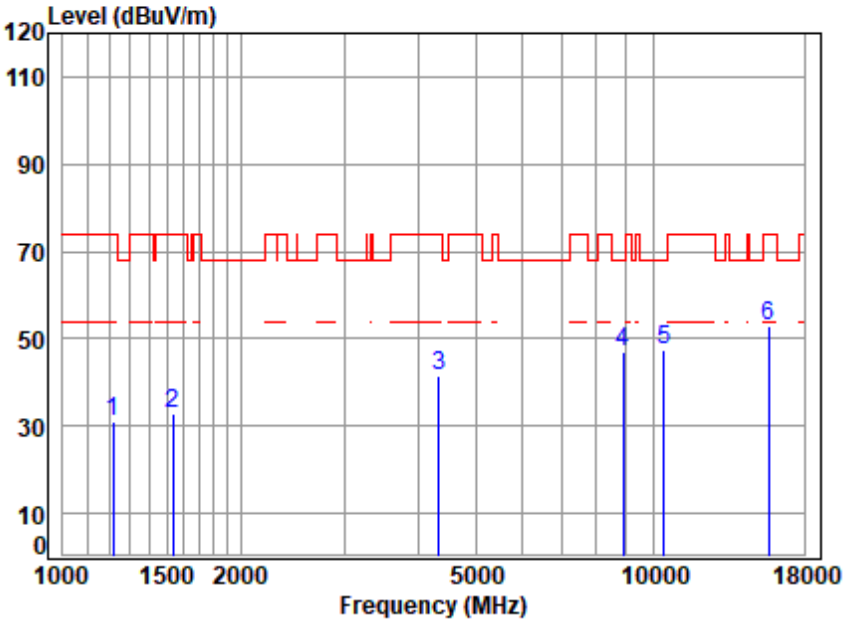
Test Mode: 16; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5220 TX RSE
Note : 5G WIFI 11AX 20

	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	3.71	24.64	54.69	57.18	30.84	74.00	-43.16	peak
2	1533.841	4.09	26.94	54.79	56.54	32.78	74.00	-41.22	peak
3	4341.886	7.07	34.34	54.26	54.26	41.41	74.00	-32.59	peak
4	8891.725	9.84	37.20	53.55	53.41	46.90	68.20	-21.30	peak
5	p10440.000	11.26	37.18	53.11	51.98	47.31	68.20	-20.89	peak
6	15660.000	13.94	41.16	52.07	50.04	53.07	74.00	-20.93	peak

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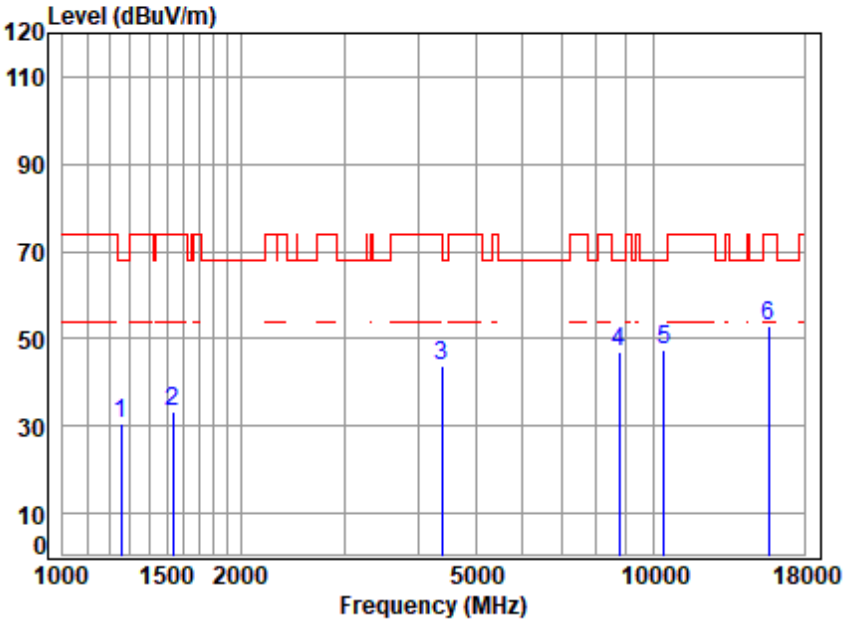
Test Mode: 16; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5220 TX RSE
Note : 5G WIFI 11AX 20

	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	3.76	25.06	54.70	56.28	30.40	68.20	-37.80	peak
2	1533.841	4.09	26.94	54.79	57.00	33.24	74.00	-40.76	peak
3	4379.699	7.11	34.64	54.26	56.13	43.62	74.00	-30.38	peak
4	8738.852	9.72	36.90	53.47	53.95	47.10	68.20	-21.10	peak
5	p10440.000	11.26	37.18	53.11	52.25	47.58	68.20	-20.62	peak
6	15660.000	13.94	41.16	52.07	49.71	52.74	74.00	-21.26	peak

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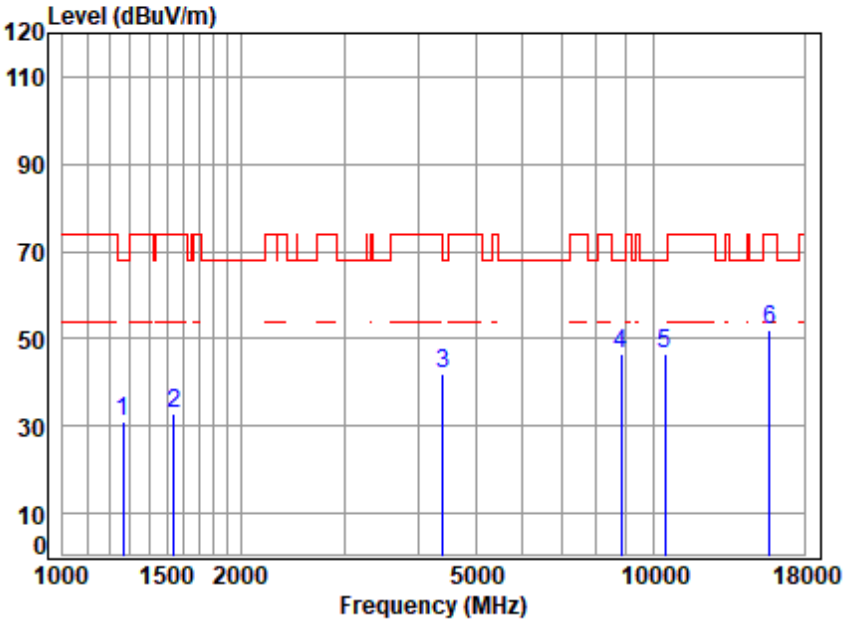
Test Mode: 16; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5240 TX RSE
Note : 5G WIFI 11AX 20

	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	3.77	25.02	54.70	56.80	30.89	68.20	-37.31	peak
2	1542.733	4.10	26.97	54.79	56.70	32.98	74.00	-41.02	peak
3	4405.090	7.14	34.74	54.26	54.25	41.87	68.20	-26.33	peak
4 p	8814.957	9.78	37.13	53.51	53.32	46.72	68.20	-21.48	peak
5	10480.000	11.33	37.26	53.10	51.03	46.52	68.20	-21.68	peak
6	15720.000	14.01	41.22	52.02	48.59	51.80	74.00	-22.20	peak

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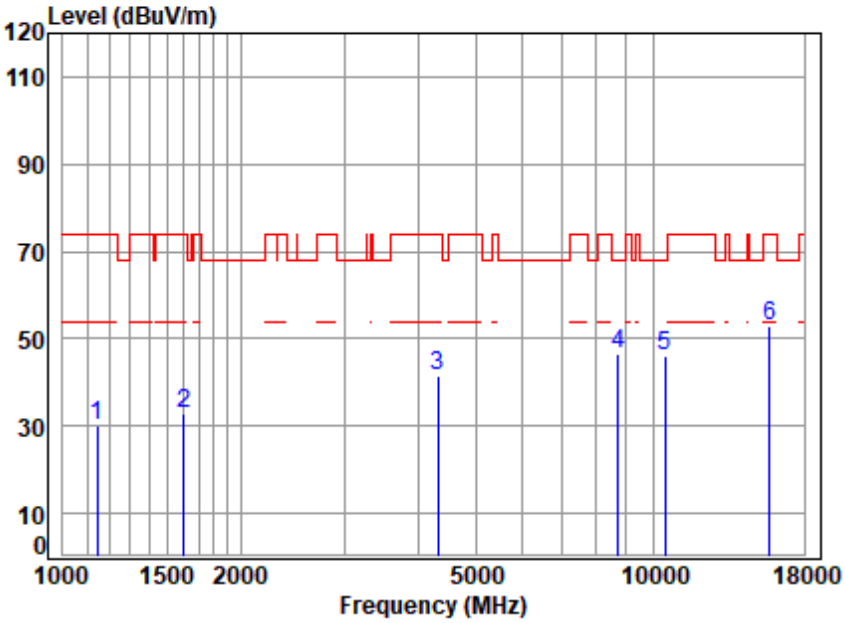
Test Mode: 16; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5240 TX RSE
Note : 5G WIFI 11AX 20

	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	1145.507	3.61	23.88	54.66	57.29	30.12	74.00	-43.88	peak
2	1606.441	4.19	26.74	54.81	56.68	32.80	74.00	-41.20	peak
3	4316.859	7.04	34.13	54.27	54.73	41.63	74.00	-32.37	peak
4	8713.630	9.70	36.90	53.46	53.49	46.63	68.20	-21.57	peak
5	10480.000	11.33	37.26	53.10	50.79	46.28	68.20	-21.92	peak
6	p15720.000	14.01	41.22	52.02	49.68	52.89	74.00	-21.11	peak

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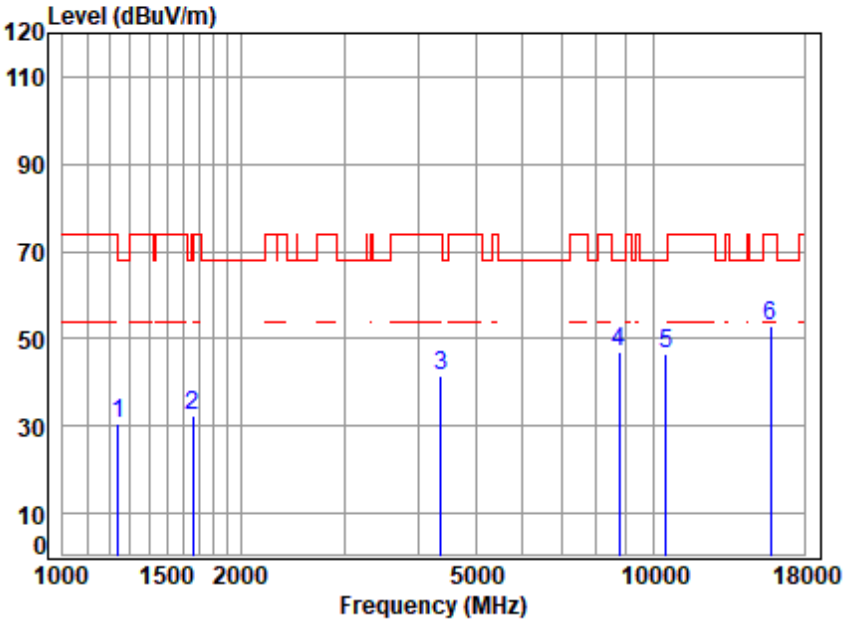
Test Mode: 18; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5260 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	1242.068	3.74	24.99	54.69	56.62	30.66	68.20	-37.54	peak
2	1658.337	4.27	26.28	54.82	56.81	32.54	68.20	-35.66	peak
3	4367.058	7.10	34.54	54.26	54.03	41.41	74.00	-32.59	peak
4	8738.852	9.72	36.90	53.47	53.70	46.85	68.20	-21.35	peak
5	10520.000	11.37	37.30	53.09	50.87	46.45	68.20	-21.75	peak
6	p15780.000	14.08	41.28	51.97	49.64	53.03	74.00	-20.97	peak

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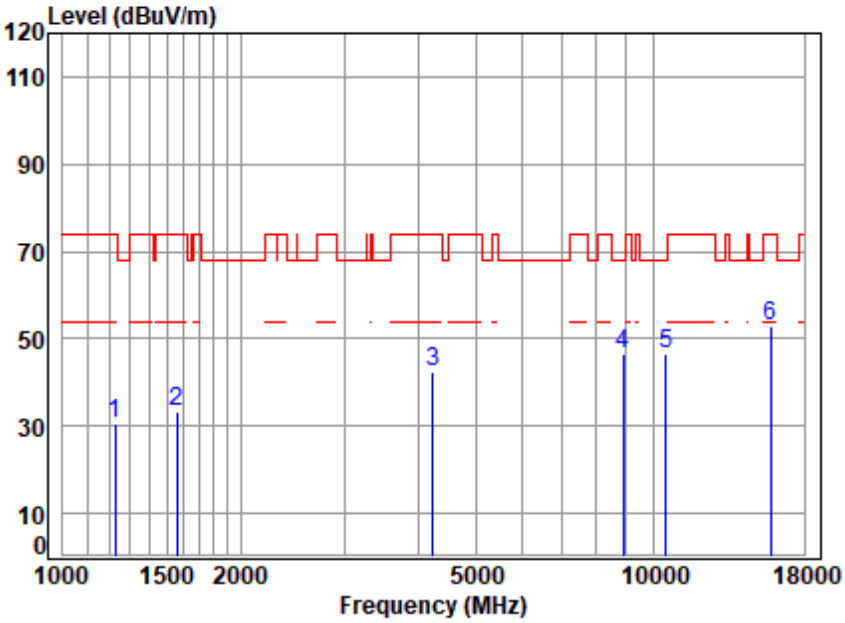
Test Mode: 18; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5260 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	3.72	24.79	54.69	56.56	30.38	74.00	-43.62	peak
2	1560.673	4.13	26.96	54.79	56.87	33.17	74.00	-40.83	peak
3	4230.396	6.94	33.80	54.27	56.08	42.55	74.00	-31.45	peak
4	8891.725	9.84	37.20	53.55	52.93	46.42	68.20	-21.78	peak
5	10520.000	11.37	37.30	53.09	50.97	46.55	68.20	-21.65	peak
6	p15780.000	14.08	41.28	51.97	49.62	53.01	74.00	-20.99	peak

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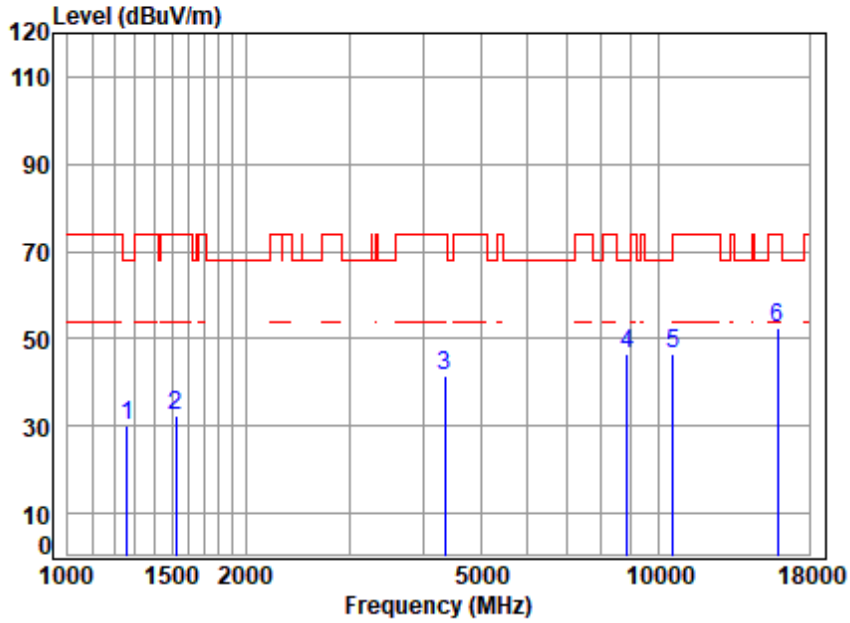
Test Mode: 18; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5300 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	3.76	25.04	54.70	55.94	30.04	68.20	-38.16	peak
2	1525.000	4.08	26.90	54.78	56.29	32.49	74.00	-41.51	peak
3	4354.454	7.08	34.44	54.26	54.45	41.71	74.00	-32.29	peak
4	8866.062	9.82	37.20	53.54	52.86	46.34	68.20	-21.86	peak
5	p10600.000	11.43	37.30	53.08	50.80	46.45	68.20	-21.75	peak
6	15900.000	14.23	41.40	51.88	48.50	52.25	74.00	-21.75	peak

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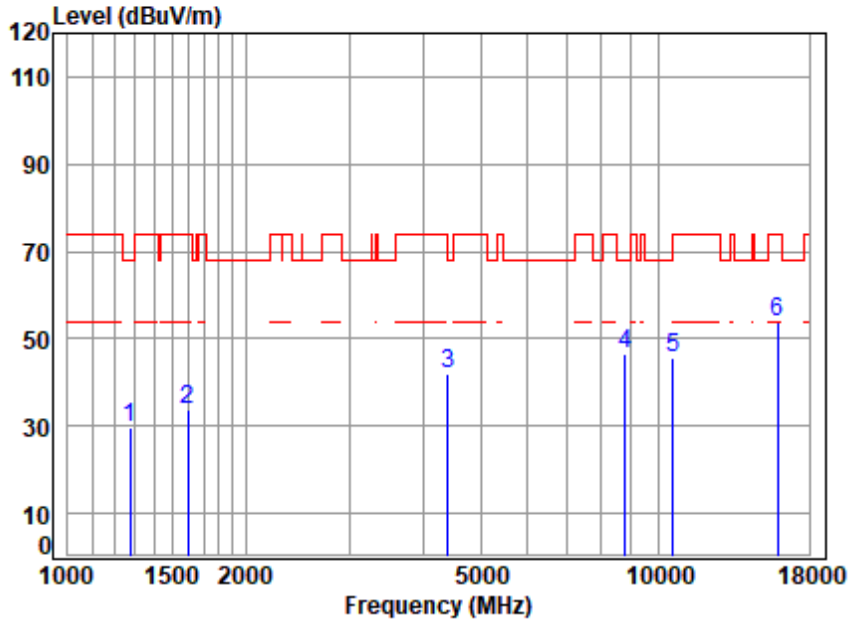
Test Mode: 18; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5300 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	1274.802	3.78	24.95	54.71	55.70	29.72	68.20	-38.48	peak
2	1597.181	4.18	26.81	54.80	57.62	33.81	74.00	-40.19	peak
3	4405.090	7.14	34.74	54.26	54.41	42.03	68.20	-26.17	peak
4	8789.516	9.76	37.06	53.50	53.13	46.45	68.20	-21.75	peak
5	10600.000	11.43	37.30	53.08	50.09	45.74	68.20	-22.46	peak
6	p15900.000	14.23	41.40	51.88	50.22	53.97	74.00	-20.03	peak

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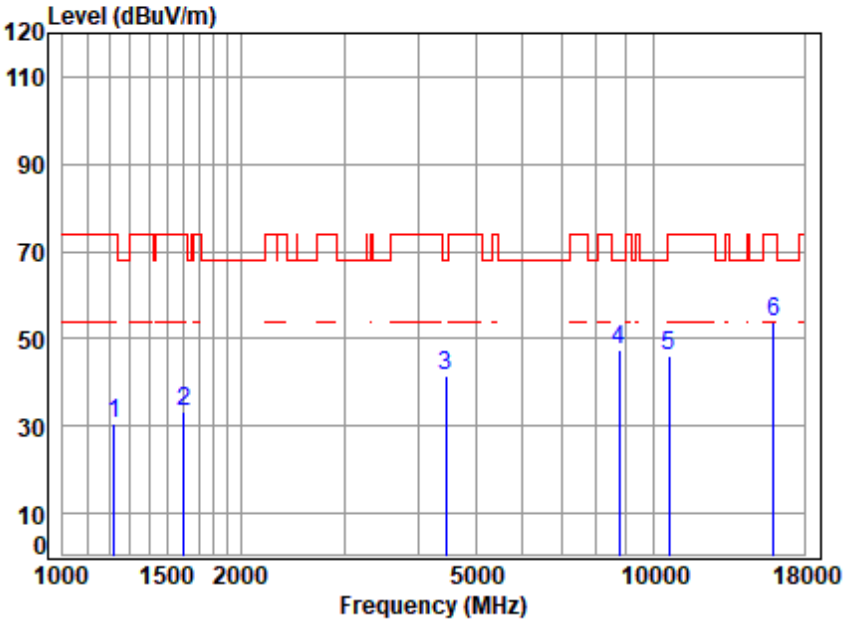
Test Mode: 18; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5320 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	3.71	24.74	54.69	57.00	30.76	74.00	-43.24	peak
2	1601.804	4.19	26.78	54.80	57.14	33.31	74.00	-40.69	peak
3	4456.315	7.20	34.12	54.25	54.60	41.67	68.20	-26.53	peak
4	8738.852	9.72	36.90	53.47	54.12	47.27	68.20	-20.93	peak
5	10640.000	11.45	37.22	53.07	50.28	45.88	74.00	-28.12	peak
6	p15960.000	14.30	41.52	51.83	49.66	53.65	74.00	-20.35	peak

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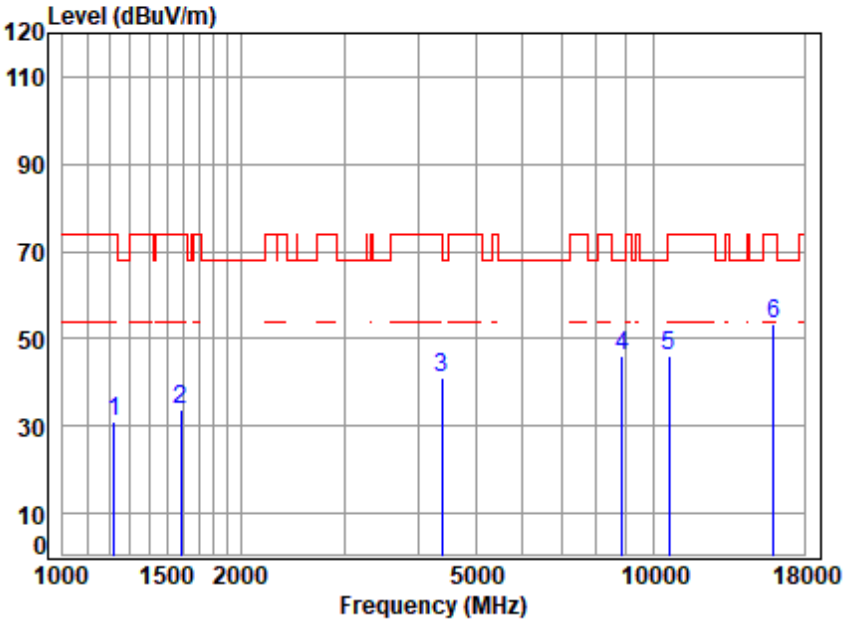
Test Mode: 18; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5320 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	3.71	24.74	54.69	57.08	30.84	74.00	-43.16	peak
2	1583.392	4.16	26.87	54.80	57.67	33.90	74.00	-40.10	peak
3	4379.699	7.11	34.64	54.26	53.71	41.20	74.00	-32.80	peak
4	8840.473	9.80	37.18	53.52	52.43	45.89	68.20	-22.31	peak
5	10640.000	11.45	37.22	53.07	50.60	46.20	74.00	-27.80	peak
6	p15960.000	14.30	41.52	51.83	49.53	53.52	74.00	-20.48	peak

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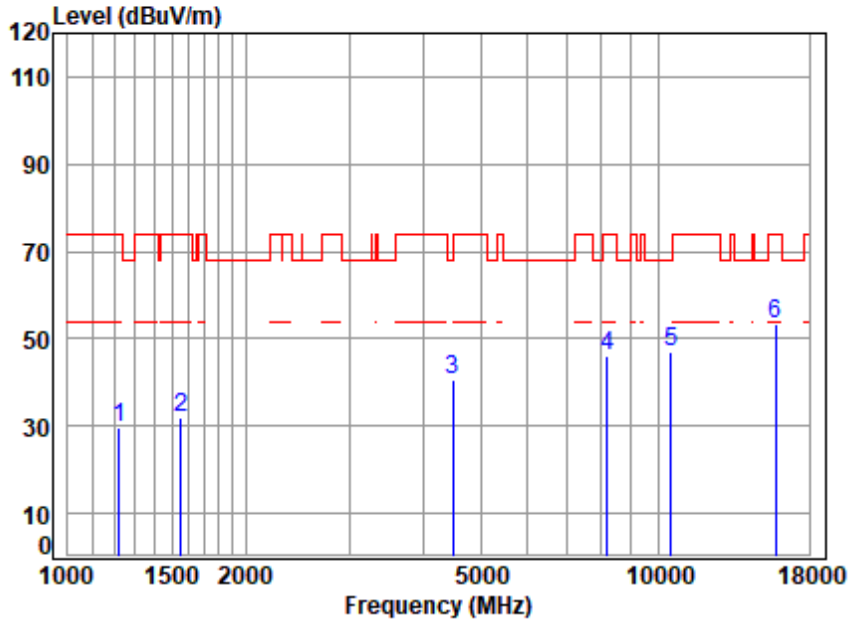
Test Mode: 18; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5260 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	3.71	24.69	54.69	55.96	29.67	74.00	-44.33	peak
2	1551.677	4.12	26.99	54.79	55.77	32.09	74.00	-41.91	peak
3	4482.150	7.23	33.81	54.25	53.93	40.72	68.20	-27.48	peak
4	8200.463	9.23	36.60	53.21	53.58	46.20	74.00	-27.80	peak
5	10520.000	11.37	37.30	53.09	51.46	47.04	68.20	-21.16	peak
6	p15780.000	14.08	41.28	51.97	49.77	53.16	74.00	-20.84	peak

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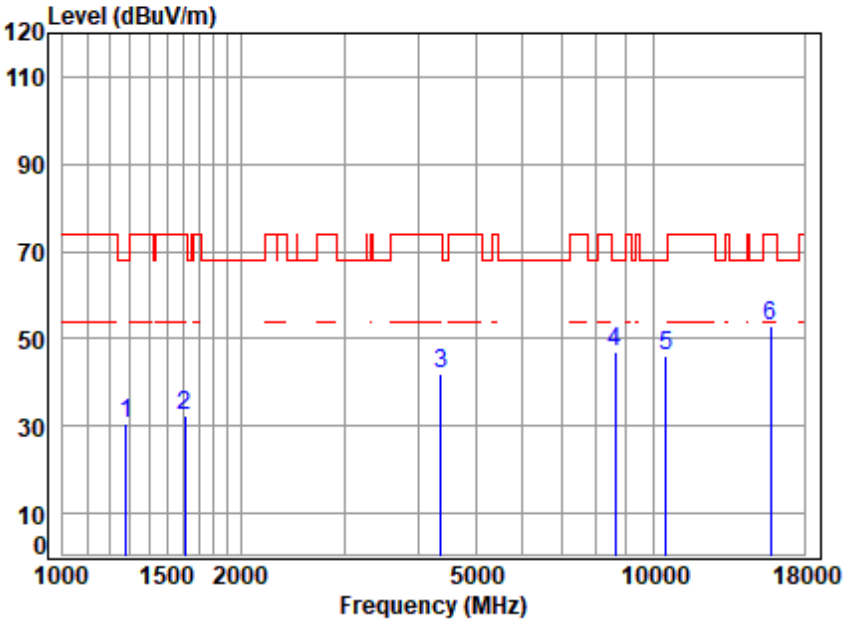
Test Mode: 18; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5260 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	1282.193	3.79	24.91	54.71	56.74	30.73	68.20	-37.47	peak
2	1611.091	4.20	26.69	54.81	56.10	32.18	74.00	-41.82	peak
3	4367.058	7.10	34.54	54.26	54.63	42.01	74.00	-31.99	peak
4	8613.468	9.62	36.90	53.41	53.92	47.03	68.20	-21.17	peak
5	10520.000	11.37	37.30	53.09	50.53	46.11	68.20	-22.09	peak
6	p15780.000	14.08	41.28	51.97	49.54	52.93	74.00	-21.07	peak

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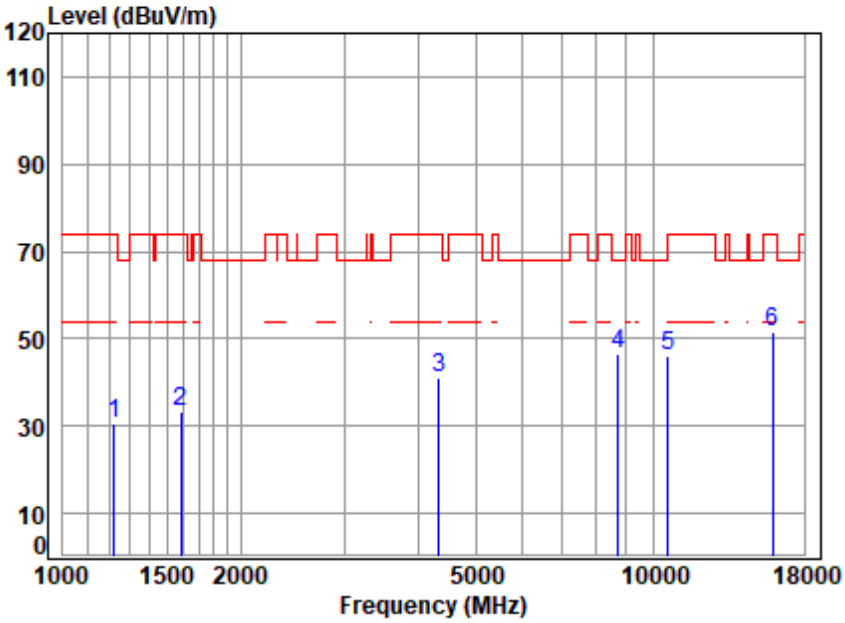
Test Mode: 18; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5300 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	3.71	24.69	54.69	56.82	30.53	74.00	-43.47	peak
2	1587.975	4.17	26.85	54.80	57.13	33.35	74.00	-40.65	peak
3	4329.354	7.05	34.23	54.26	53.90	40.92	74.00	-33.08	peak
4 p	8713.630	9.70	36.90	53.46	53.38	46.52	68.20	-21.68	peak
5	10600.000	11.43	37.30	53.08	50.28	45.93	68.20	-22.27	peak
6	15900.000	14.23	41.40	51.88	47.61	51.36	74.00	-22.64	peak

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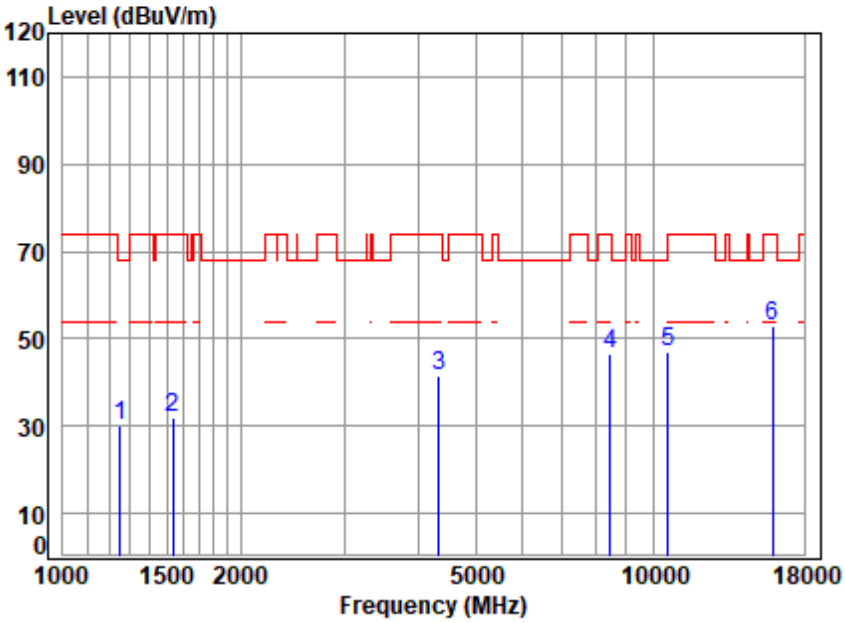
Test Mode: 18; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5300 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	1249.269	3.75	25.09	54.70	56.19	30.33	68.20	-37.87	peak
2	1538.281	4.10	26.95	54.79	55.90	32.16	74.00	-41.84	peak
3	4329.354	7.05	34.23	54.26	54.63	41.65	74.00	-32.35	peak
4	8440.945	9.47	36.62	53.33	53.76	46.52	74.00	-27.48	peak
5	10600.000	11.43	37.30	53.08	51.22	46.87	68.20	-21.33	peak
6	p15900.000	14.23	41.40	51.88	49.32	53.07	74.00	-20.93	peak

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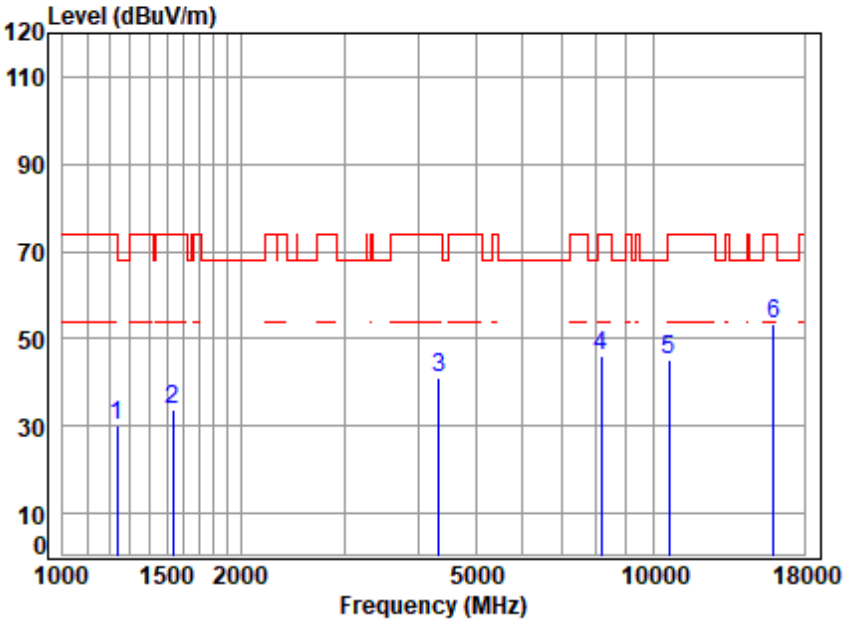
Test Mode: 18; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5320 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	1234.909	3.73	24.89	54.69	56.02	29.95	74.00	-44.05	peak
2	1533.841	4.09	26.94	54.79	57.34	33.58	74.00	-40.42	peak
3	4341.886	7.07	34.34	54.26	53.95	41.10	74.00	-32.90	peak
4	8153.195	9.19	36.51	53.18	53.45	45.97	74.00	-28.03	peak
5	10640.000	11.45	37.22	53.07	49.75	45.35	74.00	-28.65	peak
6	p15960.000	14.30	41.52	51.83	49.32	53.31	74.00	-20.69	peak

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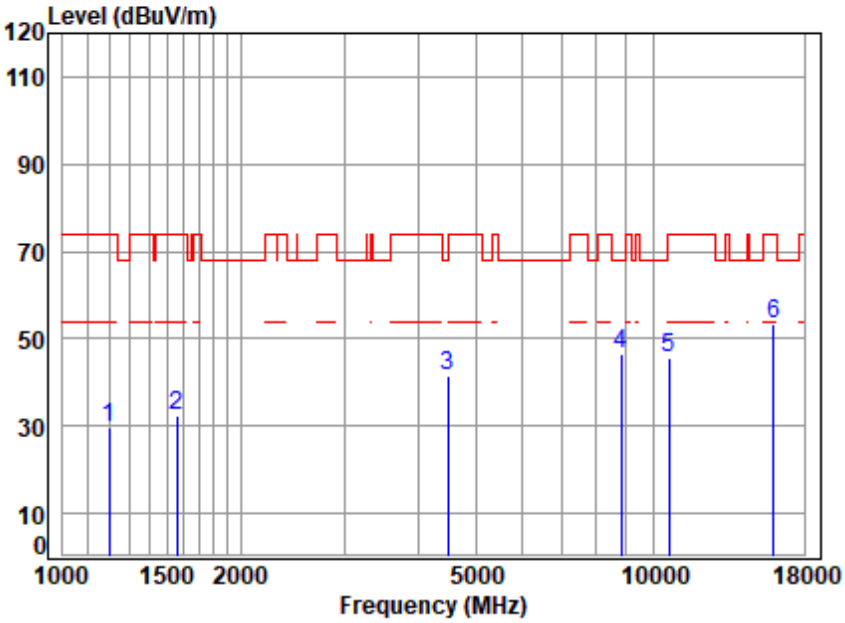
Test Mode: 18; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5320 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	1196.264	3.68	24.36	54.68	56.26	29.62	74.00	-44.38	peak
2	1560.673	4.13	26.96	54.79	56.12	32.42	74.00	-41.58	peak
3	4482.150	7.23	33.81	54.25	54.53	41.32	68.20	-26.88	peak
4	8814.957	9.78	37.13	53.51	53.14	46.54	68.20	-21.66	peak
5	10640.000	11.45	37.22	53.07	50.08	45.68	74.00	-28.32	peak
6	p15960.000	14.30	41.52	51.83	49.23	53.22	74.00	-20.78	peak

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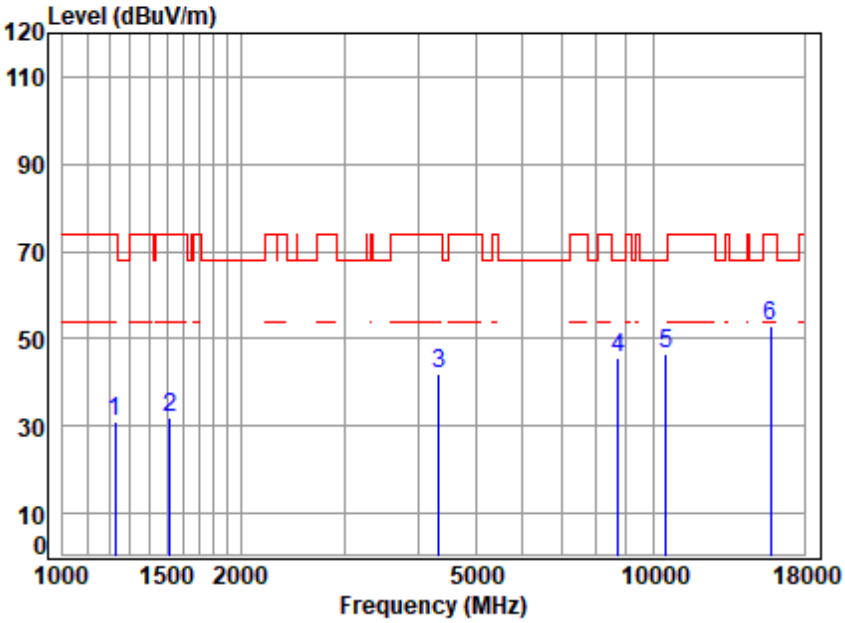
Test Mode: 18; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5260 TX RSE
Note : 5G WIFI 11AC20

	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	3.72	24.79	54.69	57.05	30.87	74.00	-43.13	peak
2	1516.210	4.06	26.86	54.78	55.88	32.02	74.00	-41.98	peak
3	4341.886	7.07	34.34	54.26	54.78	41.93	74.00	-32.07	peak
4	8713.630	9.70	36.90	53.46	52.50	45.64	68.20	-22.56	peak
5	10520.000	11.37	37.30	53.09	51.11	46.69	68.20	-21.51	peak
6	p15780.000	14.08	41.28	51.97	49.53	52.92	74.00	-21.08	peak

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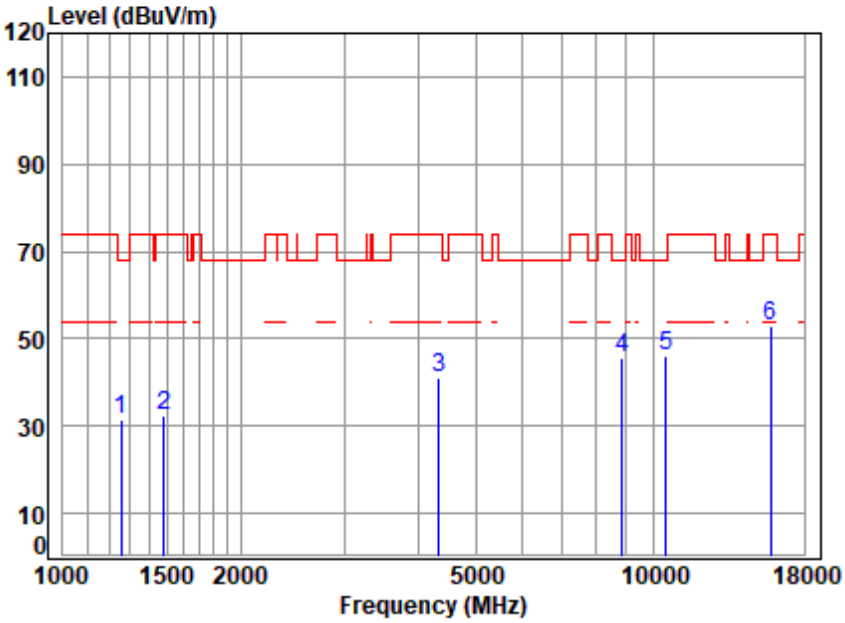
Test Mode: 18; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5260 TX RSE
Note : 5G WIFI 11AC20

	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	3.76	25.06	54.70	57.24	31.36	68.20	-36.84	peak
2	1485.841	4.02	26.40	54.77	56.81	32.46	74.00	-41.54	peak
3	4329.354	7.05	34.23	54.26	54.19	41.21	74.00	-32.79	peak
4	8866.062	9.82	37.20	53.54	52.23	45.71	68.20	-22.49	peak
5	10520.000	11.37	37.30	53.09	50.66	46.24	68.20	-21.96	peak
6	p15780.000	14.08	41.28	51.97	49.46	52.85	74.00	-21.15	peak

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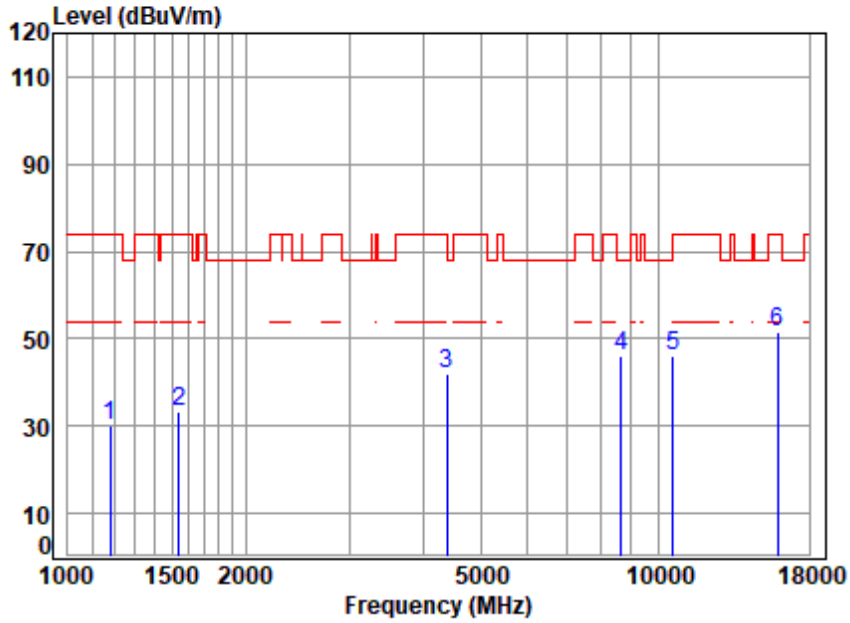
Test Mode: 18; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5300 TX RSE
Note : 5G WIFI 11AC20

	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	1179.100	3.65	24.19	54.67	56.75	29.92	74.00	-44.08	peak
2	1542.733	4.10	26.97	54.79	56.93	33.21	74.00	-40.79	peak
3	4392.376	7.13	34.74	54.26	54.52	42.13	74.00	-31.87	peak
4	p 8638.399	9.64	36.90	53.43	52.92	46.03	68.20	-22.17	peak
5	10600.000	11.43	37.30	53.08	50.26	45.91	68.20	-22.29	peak
6	15900.000	14.23	41.40	51.88	47.91	51.66	74.00	-22.34	peak

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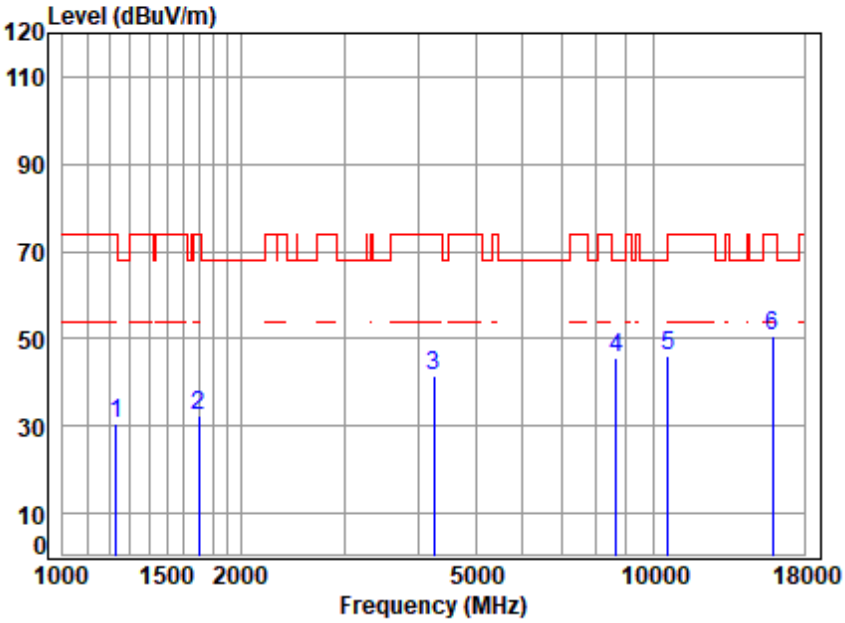
Test Mode: 18; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5300 TX RSE
Note : 5G WIFI 11AC20

	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	3.72	24.84	54.69	56.48	30.35	74.00	-43.65	peak
2	1697.129	4.32	26.21	54.83	56.84	32.54	74.00	-41.46	peak
3	4254.921	6.96	33.82	54.27	54.89	41.40	74.00	-32.60	peak
4	8663.404	9.66	36.90	53.44	52.48	45.60	68.20	-22.60	peak
5	p10600.000	11.43	37.30	53.08	50.43	46.08	68.20	-22.12	peak
6	15900.000	14.23	41.40	51.88	46.93	50.68	74.00	-23.32	peak

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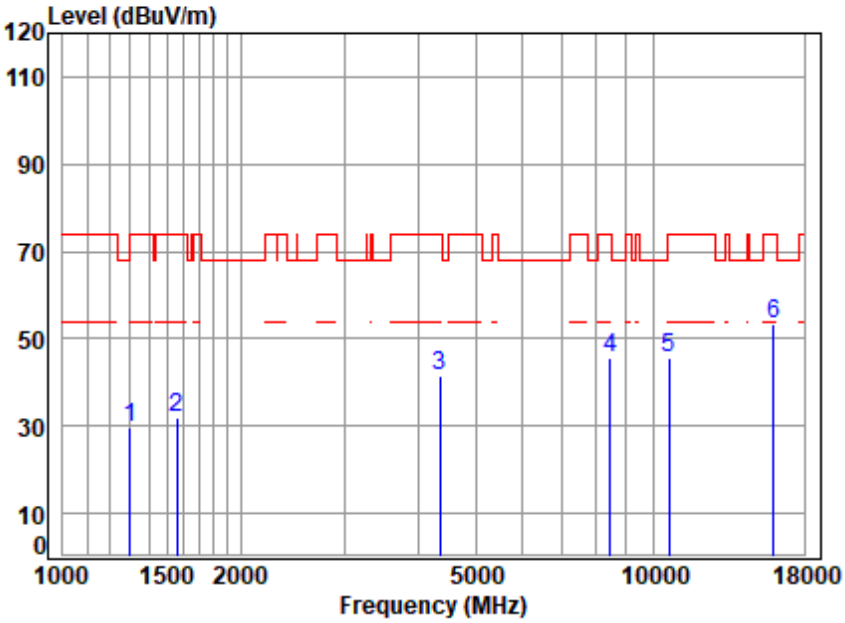
Test Mode: 18; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5320 TX RSE
Note : 5G WIFI 11AC20

	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	1300.858	3.81	24.79	54.71	55.76	29.65	74.00	-44.35	peak
2	1560.673	4.13	26.96	54.79	55.86	32.16	74.00	-41.84	peak
3	4354.454	7.08	34.44	54.26	54.48	41.74	74.00	-32.26	peak
4	8440.945	9.47	36.62	53.33	52.95	45.71	74.00	-28.29	peak
5	10640.000	11.45	37.22	53.07	50.24	45.84	74.00	-28.16	peak
6	p15960.000	14.30	41.52	51.83	49.22	53.21	74.00	-20.79	peak

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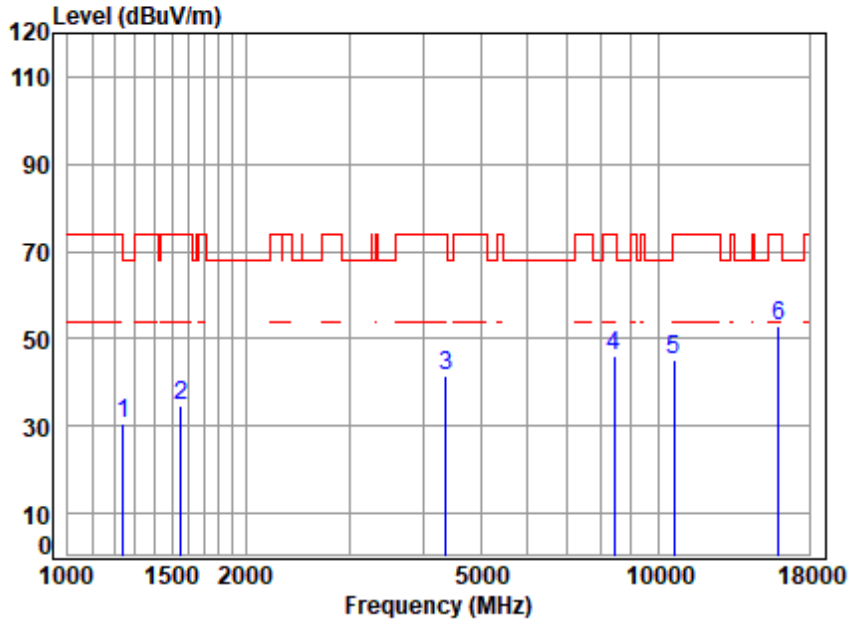
Test Mode: 18; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5320 TX RSE
Note : 5G WIFI 11AC20

	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	3.74	24.99	54.69	56.41	30.45	68.20	-37.75	peak
2	1556.169	4.12	26.98	54.79	58.20	34.51	74.00	-39.49	peak
3	4367.058	7.10	34.54	54.26	54.05	41.43	74.00	-32.57	peak
4	8416.584	9.45	36.67	53.32	53.16	45.96	74.00	-28.04	peak
5	10640.000	11.45	37.22	53.07	49.73	45.33	74.00	-28.67	peak
6	p15960.000	14.30	41.52	51.83	49.16	53.15	74.00	-20.85	peak

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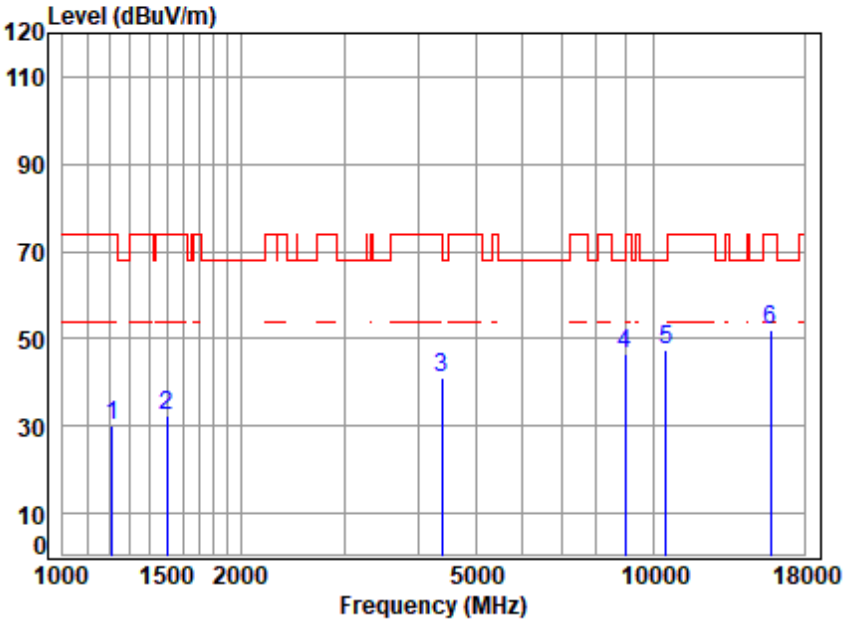
Test Mode: 18; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5260 TX RSE
Note : 5G WIFI 11AX20

	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	3.70	24.54	54.68	56.34	29.90	74.00	-44.10	peak
2	1503.119	4.04	26.81	54.78	56.55	32.62	74.00	-41.38	peak
3	4379.699	7.11	34.64	54.26	53.52	41.01	74.00	-32.99	peak
4	8943.274	9.88	37.03	53.57	53.03	46.37	68.20	-21.83	peak
5	p10520.000	11.37	37.30	53.09	51.87	47.45	68.20	-20.75	peak
6	15780.000	14.08	41.28	51.97	48.68	52.07	74.00	-21.93	peak

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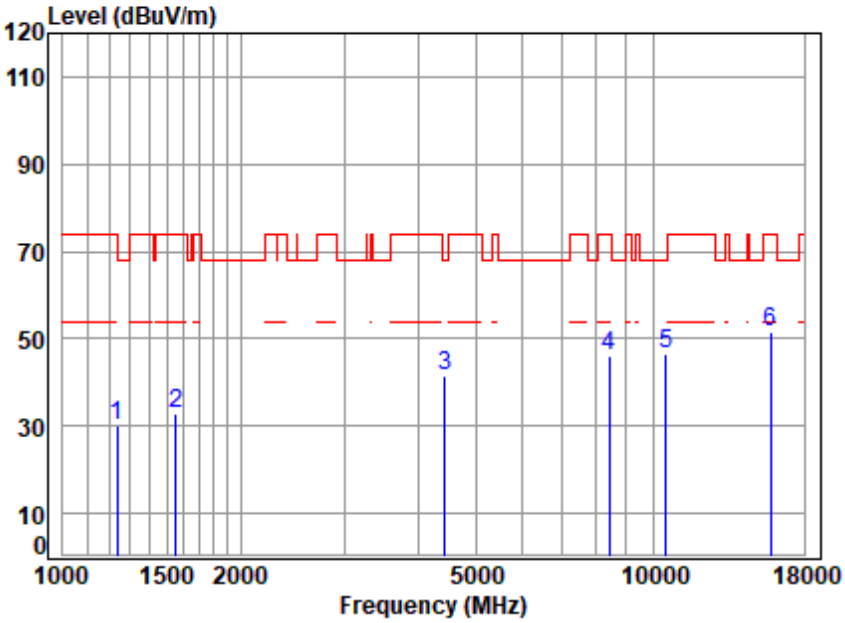
Test Mode: 18; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5260 TX RSE
Note : 5G WIFI 11AX20

	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	1238.483	3.73	24.94	54.69	56.00	29.98	74.00	-44.02	peak
2	1556.169	4.12	26.98	54.79	56.36	32.67	74.00	-41.33	peak
3	4430.628	7.17	34.43	54.25	54.16	41.51	68.20	-26.69	peak
4	8416.584	9.45	36.67	53.32	53.06	45.86	74.00	-28.14	peak
5	p10520.000	11.37	37.30	53.09	50.87	46.45	68.20	-21.75	peak
6	15780.000	14.08	41.28	51.97	48.08	51.47	74.00	-22.53	peak

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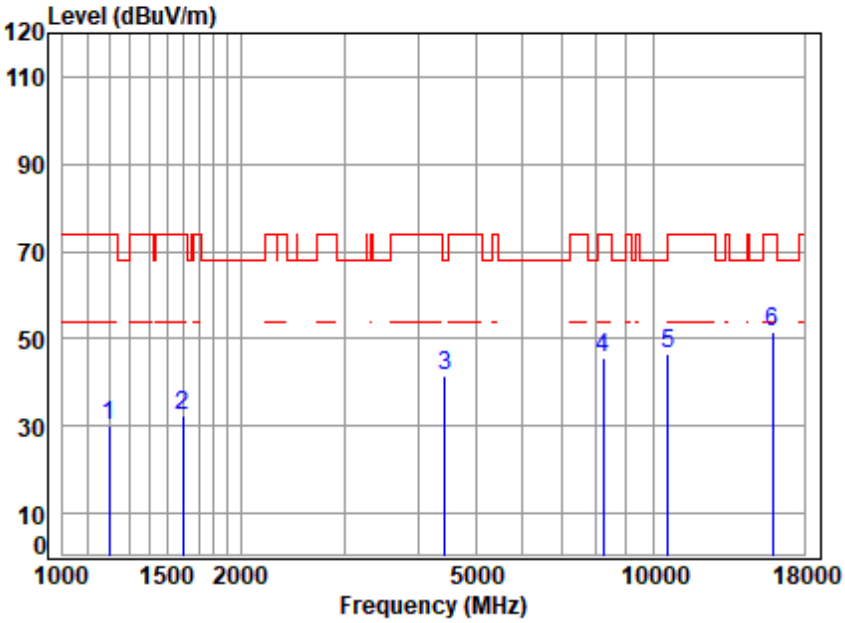
Test Mode: 18; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5300 TX RSE
Note : 5G WIFI 11AX20

	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	1199.726	3.68	24.40	54.68	56.81	30.21	74.00	-43.79	peak
2	1597.181	4.18	26.81	54.80	56.03	32.22	74.00	-41.78	peak
3	4430.628	7.17	34.43	54.25	54.02	41.37	68.20	-26.83	peak
4	8224.200	9.26	36.65	53.22	52.77	45.46	74.00	-28.54	peak
5	p10600.000	11.43	37.30	53.08	51.03	46.68	68.20	-21.52	peak
6	15900.000	14.23	41.40	51.88	47.70	51.45	74.00	-22.55	peak

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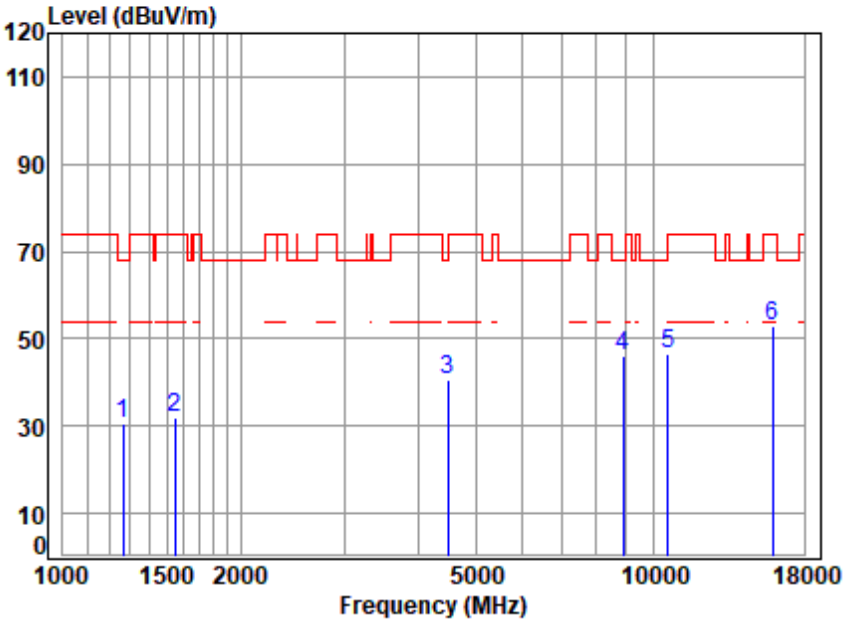
Test Mode: 18; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5300 TX RSE
Note : 5G WIFI 11AX20

	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	3.77	25.02	54.70	56.49	30.58	68.20	-37.62	peak
2	1547.199	4.11	26.99	54.79	55.64	31.95	74.00	-42.05	peak
3	4482.150	7.23	33.81	54.25	53.94	40.73	68.20	-27.47	peak
4	8891.725	9.84	37.20	53.55	52.61	46.10	68.20	-22.10	peak
5	10600.000	11.43	37.30	53.08	50.67	46.32	68.20	-21.88	peak
6	p15900.000	14.23	41.40	51.88	49.06	52.81	74.00	-21.19	peak

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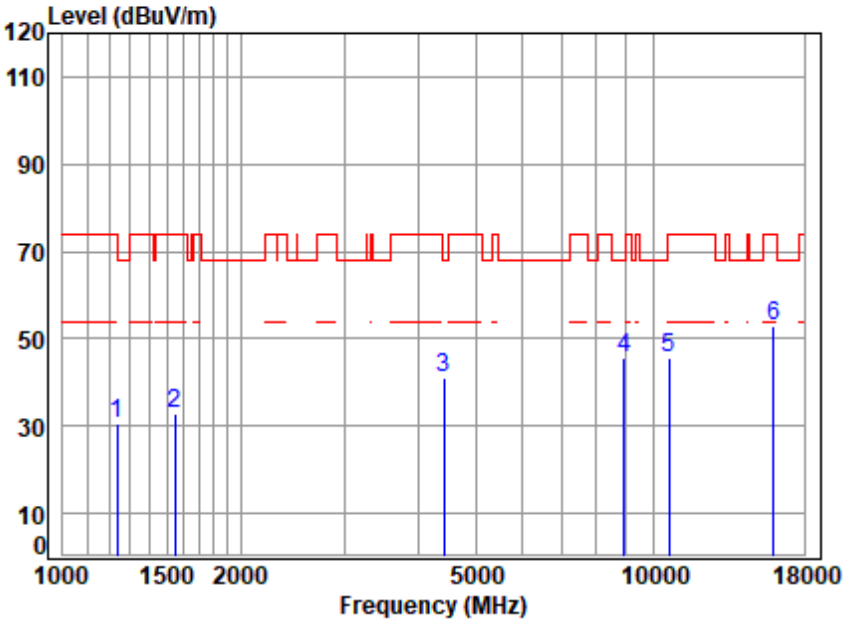
Test Mode: 18; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 03887AT/03888AT
Mode : 5320 TX RSE
Note : 5G WIFI 11AX20

	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	1238.483	3.73	24.94	54.69	56.51	30.49	74.00	-43.51	peak
2	1547.199	4.11	26.99	54.79	56.52	32.83	74.00	-41.17	peak
3	4417.841	7.16	34.59	54.26	53.77	41.26	68.20	-26.94	peak
4	8917.462	9.86	37.13	53.56	51.99	45.42	68.20	-22.78	peak
5	10640.000	11.45	37.22	53.07	49.81	45.41	74.00	-28.59	peak
6	p15960.000	14.30	41.52	51.83	48.81	52.80	74.00	-21.20	peak

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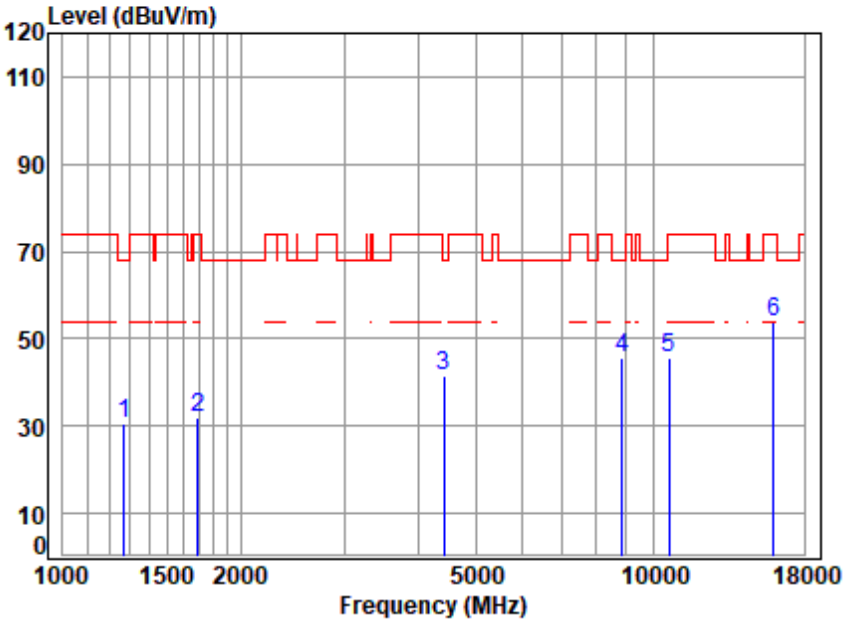
Test Mode: 18; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 03887AT/03888AT
Mode : 5320 TX RSE
Note : 5G WIFI 11AX20

	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	3.77	24.97	54.70	56.50	30.54	68.20	-37.66	peak
2	1692.231	4.31	26.22	54.83	56.29	31.99	74.00	-42.01	peak
3	4417.841	7.16	34.59	54.26	53.89	41.38	68.20	-26.82	peak
4	8866.062	9.82	37.20	53.54	52.14	45.62	68.20	-22.58	peak
5	10640.000	11.45	37.22	53.07	49.85	45.45	74.00	-28.55	peak
6	p15960.000	14.30	41.52	51.83	49.98	53.97	74.00	-20.03	peak

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7.5 Duty Cycle

Test Requirement KDB 789033 D02 II B 1

Test Method: KDB 789033 D02 II B 1

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 36.7 % RH Atmospheric Pressure: 1020 mbar

7.5.1 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	15	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	17	TX mode (U-NII-2A) _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/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

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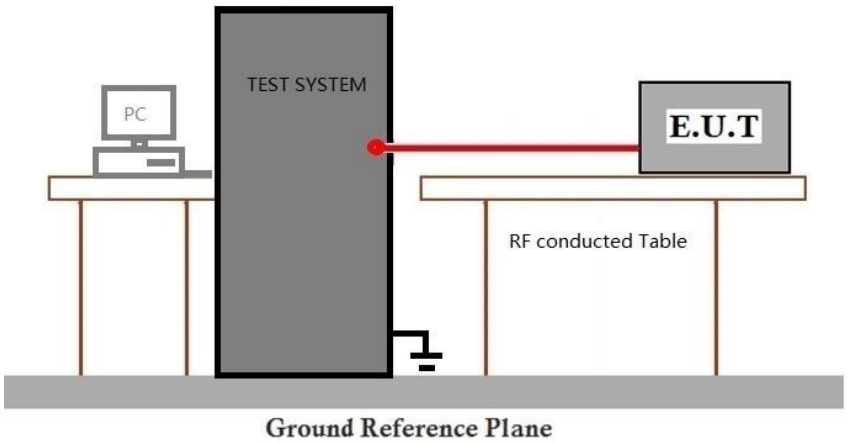
7.5.2 Test Setup Diagram



7.5.3 Measurement Procedure and Data

Please Refer to Appendix for Details

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7.6 99% Bandwidth

Test Requirement N/A

Test Method: KDB 789033 D02 II D

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 36.7 % RH Atmospheric Pressure: 1020 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	15	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	17	TX mode (U-NII-2A) _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/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

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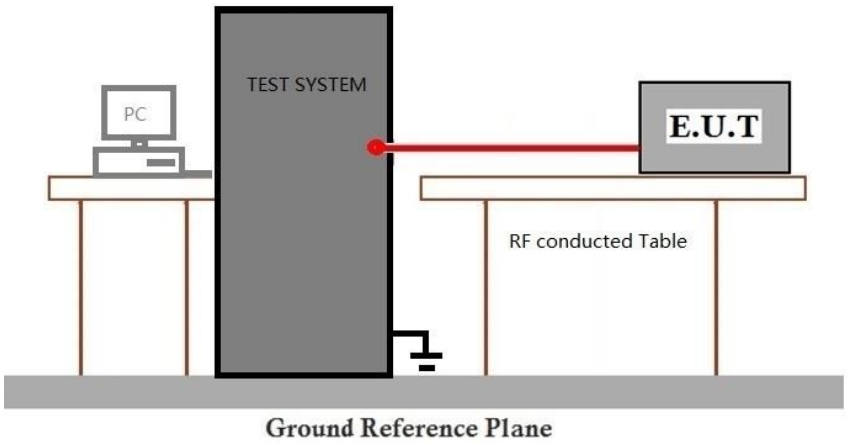
7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

Please Refer to Appendix for Details

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7.7 26dB Emission bandwidth

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

Test Method: KDB 789033 D02 II C 1

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 36.7 % RH Atmospheric Pressure: 1020 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	15	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	17	TX mode (U-NII-2A) _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/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

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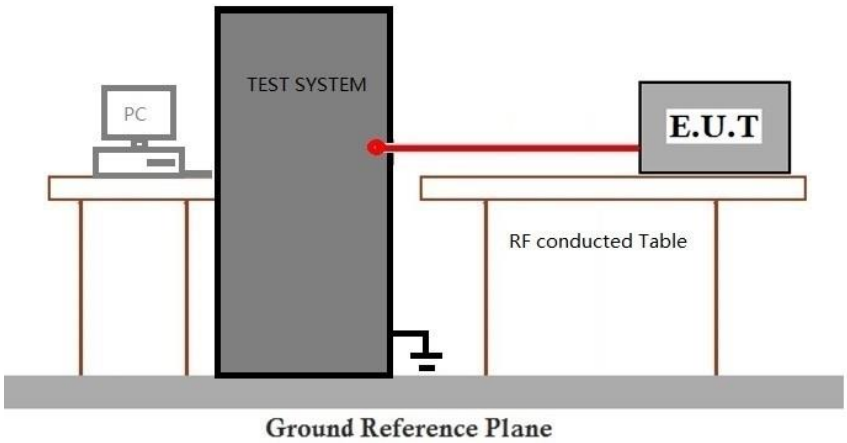
7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

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7.8 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.	

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 36.7 % RH Atmospheric Pressure: 1020 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	15	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	17	TX mode (U-NII-2A) _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/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

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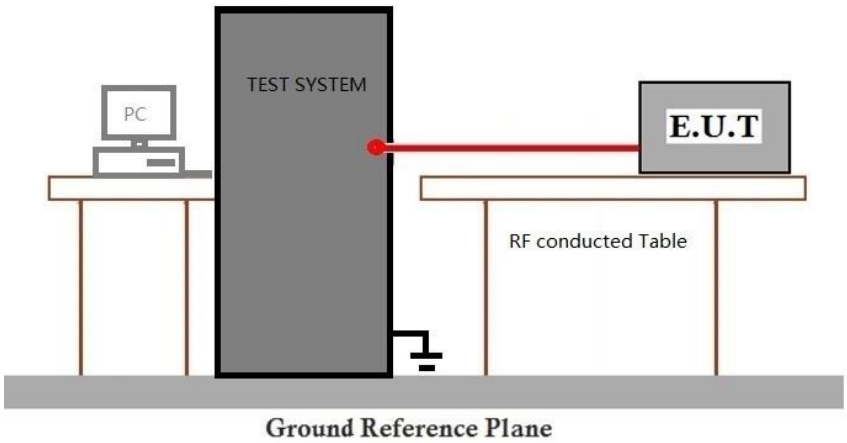
7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

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7.9 Peak Power spectrum density

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

Test Method: KDB 789033 D02 II F

Limit:

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

7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 36.7 % RH Atmospheric Pressure: 1020 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	15	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	17	TX mode (U-NII-2A) _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/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

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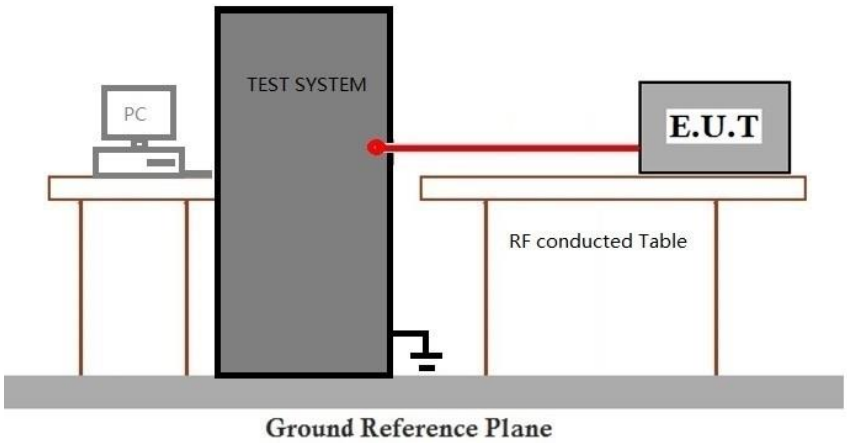
7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

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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: 24.0 °C Humidity: 36.7 % RH Atmospheric Pressure: 1020 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	15	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	16	Charge + TX mode (U-NII-1) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.
Pre-scan	17	TX mode (U-NII-2A) _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/ac/ax 20, Only the data of worst case is recorded in the report.
Final test	18	Charge + TX mode (U-NII-2A) _Keep the EUT in charging and 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/ac/ax 20, Only the data of worst case is recorded in the report.

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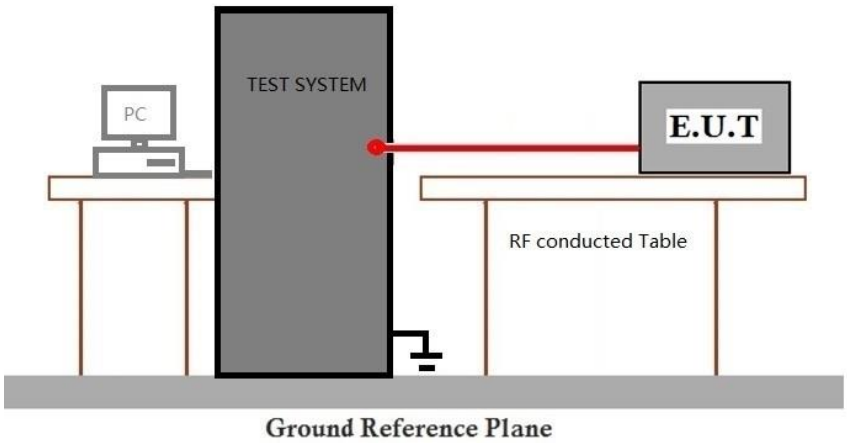
7.10.3 Test Setup Diagram



7.10.4 Measurement Procedure and Data

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7.11 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.

7.11.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 53.7 % RH Atmospheric Pressure: 1020 mbar

7.11.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	23	Normal operating_Keep the EUT communication with the companion device.

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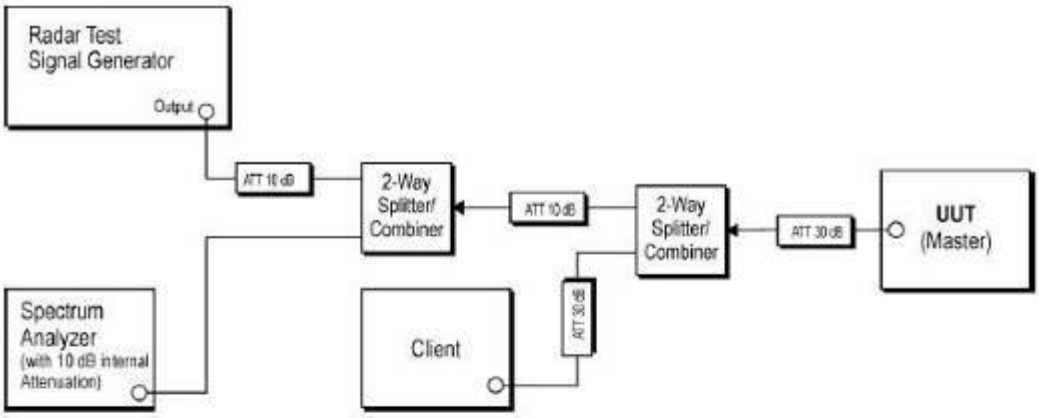
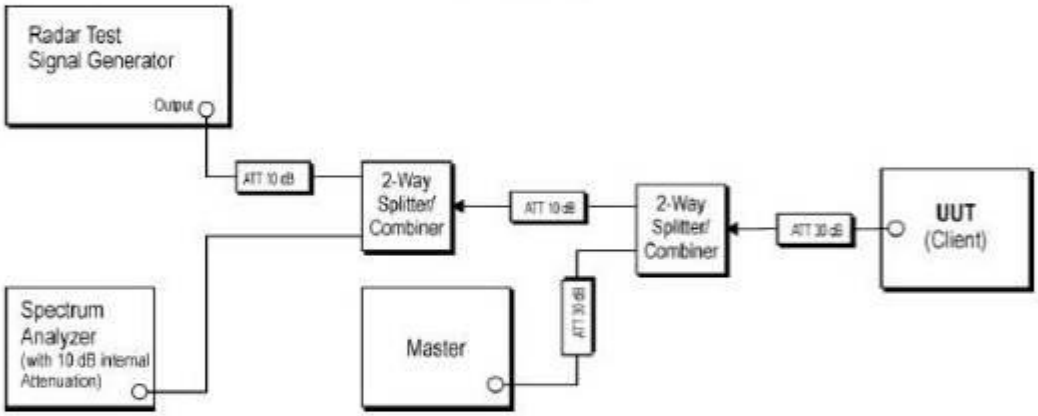
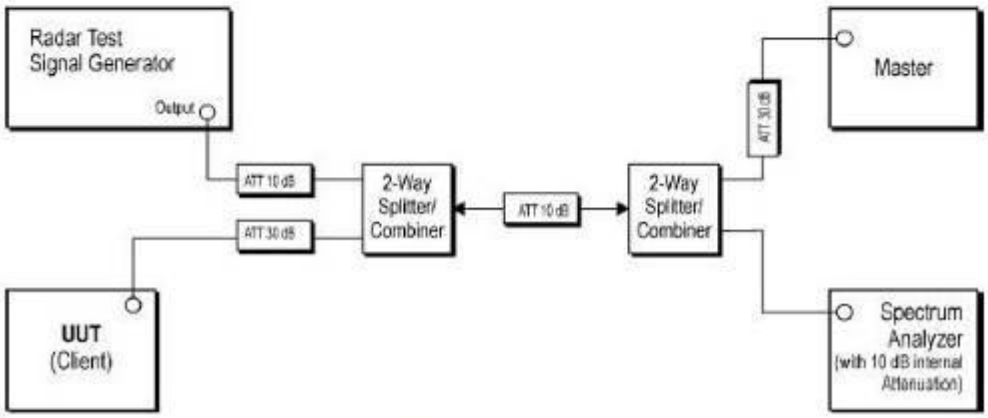
7.11.3 Test Setup Diagram



DFS master



DFS slave with radar detection



DFS slave without radar detection

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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

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7.12 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.

7.12.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 53.7 % RH Atmospheric Pressure: 1020 mbar

7.12.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	23	Normal operating_Keep the EUT communication with the companion device.

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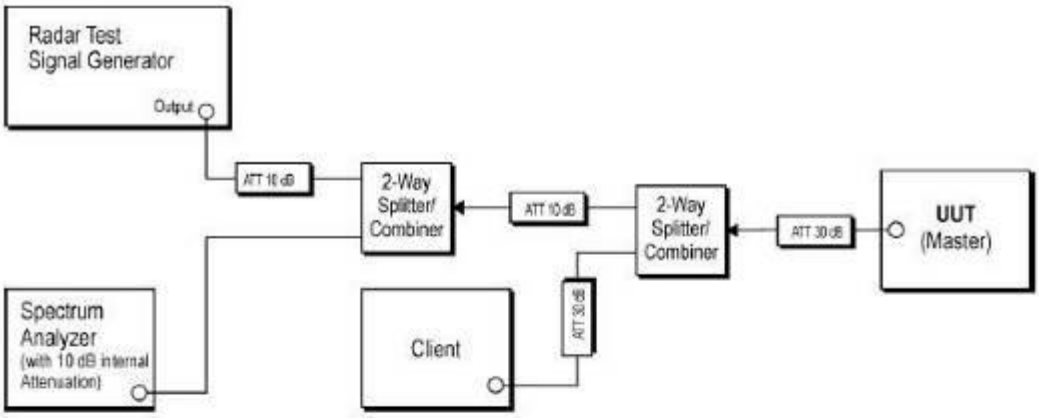
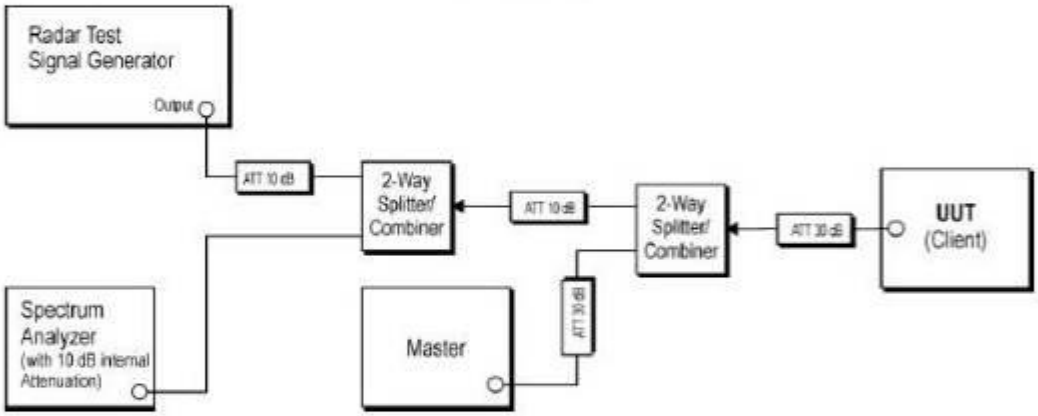
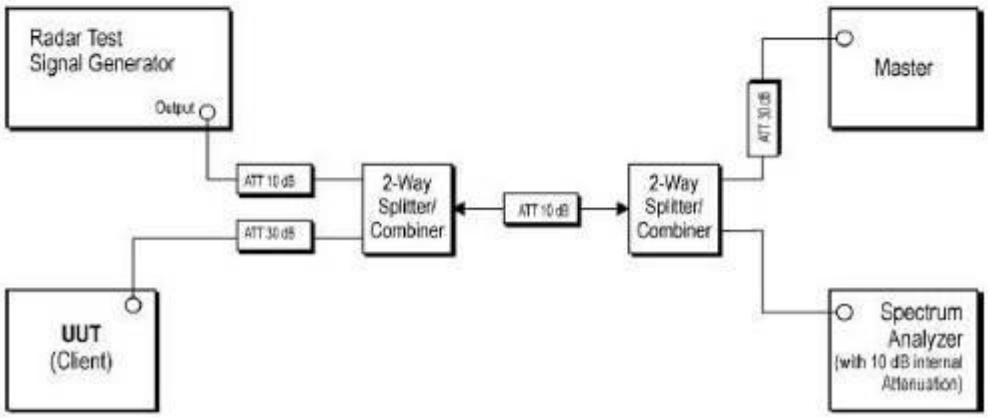
7.12.3 Test Setup Diagram



DFS master



DFS slave with radar detection



DFS slave without radar detection

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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.

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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: 53.7 % RH Atmospheric Pressure: 1020 mbar

7.13.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	23	Normal operating_Keep the EUT communication with the companion device.

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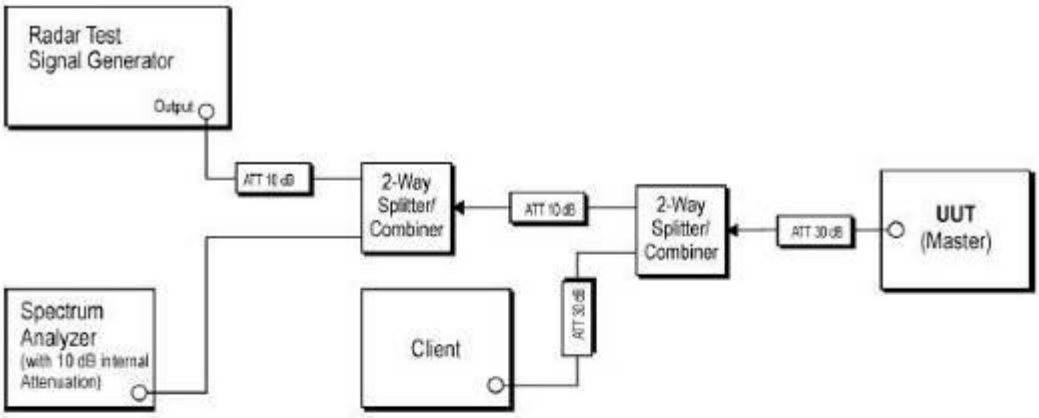
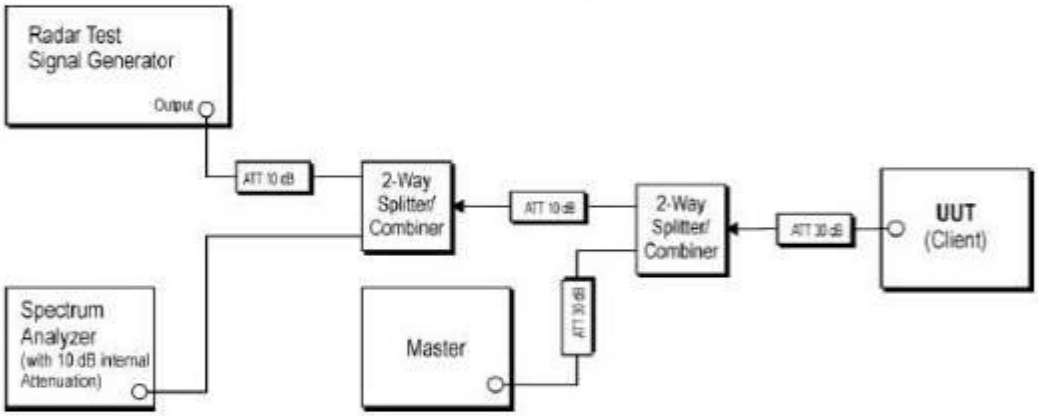
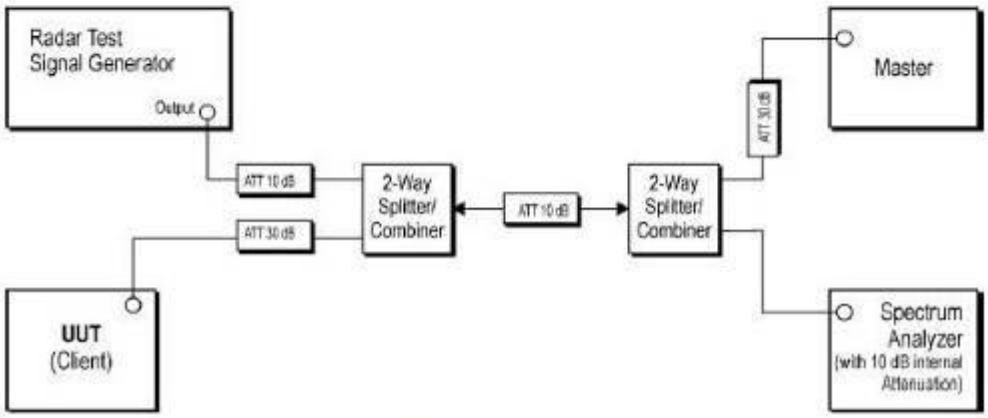
7.13.3 Test Setup Diagram



DFS master



DFS slave with radar detection



DFS slave without radar detection

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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.

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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.

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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for SZCR2410003887AT

9 EUT Constructional Details (EUT Photos)

Refer to Appendix_Photographs of EUT Constructional Details for SZCR2410003887AT

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10 Appendix

1. Duty Cycle

1.1 Test Result

1.1.1 Ant1

Ant1								
Mode	TX Type	Frequency (MHz)	RU	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5180	/	1.937	2.261	85.67	0.67	4.30
		5200	/	1.938	2.262	85.68	0.67	5.09
		5240	/	1.937	2.260	85.71	0.67	3.90
		5260	/	1.938	2.261	85.71	0.67	4.67
		5300	/	1.938	2.261	85.71	0.67	5.04
		5320	/	1.938	2.271	85.34	0.69	5.02
802.11n (HT20)	SISO	5180	/	1.805	2.144	84.19	0.75	5.66
		5200	/	1.805	2.144	84.19	0.75	5.26
		5240	/	1.804	2.126	84.85	0.71	4.96
		5260	/	1.806	2.126	84.95	0.71	4.93
		5300	/	1.805	2.135	84.54	0.73	4.53
		5320	/	1.805	2.144	84.19	0.75	5.26
802.11ac (VHT20)	SISO	5180	/	1.817	2.153	84.39	0.74	5.65
		5200	/	1.817	2.153	84.39	0.74	5.68
		5240	/	1.818	2.144	84.79	0.72	5.31
		5260	/	1.817	2.153	84.39	0.74	5.65
		5300	/	1.817	2.153	84.39	0.74	5.65
		5320	/	1.817	2.153	84.39	0.74	4.48
802.11ax (HEW20)	SISO	5180	SU	1.637	1.974	82.93	0.81	4.37
		5200	SU	1.637	1.982	82.59	0.83	6.05
		5240	SU	1.637	1.937	84.51	0.73	3.74
		5260	SU	1.637	1.974	82.93	0.81	5.25
		5300	SU	1.637	1.982	82.59	0.83	4.37
		5320	SU	1.637	1.982	82.59	0.83	5.61

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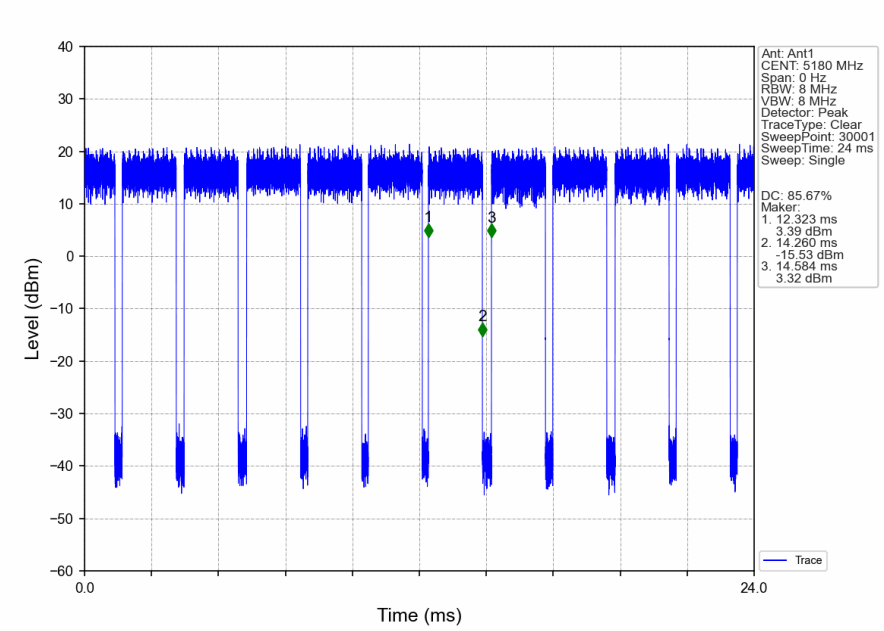
1.2 Test Graph

1.2.1 Ant1

802.11a_LCH_5180MHz_Ant1_NTNV



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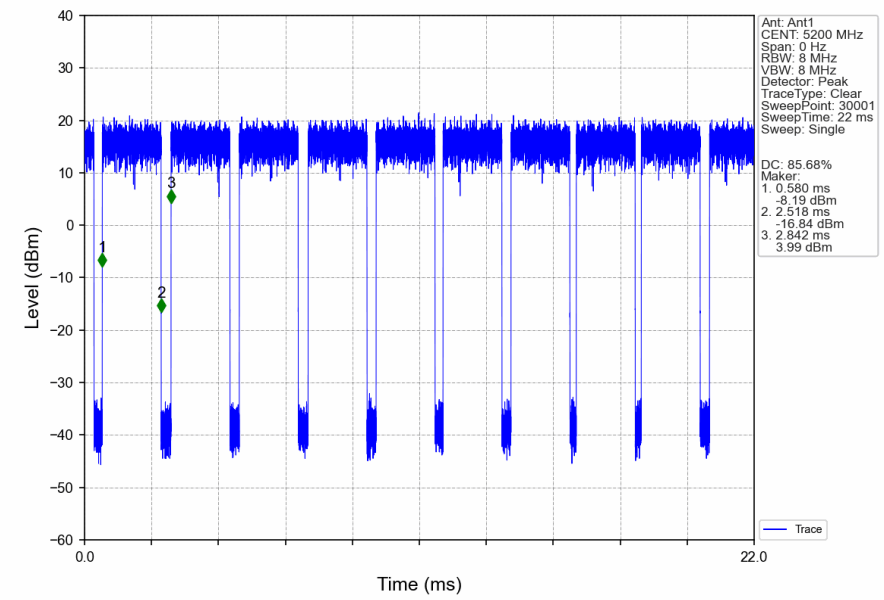

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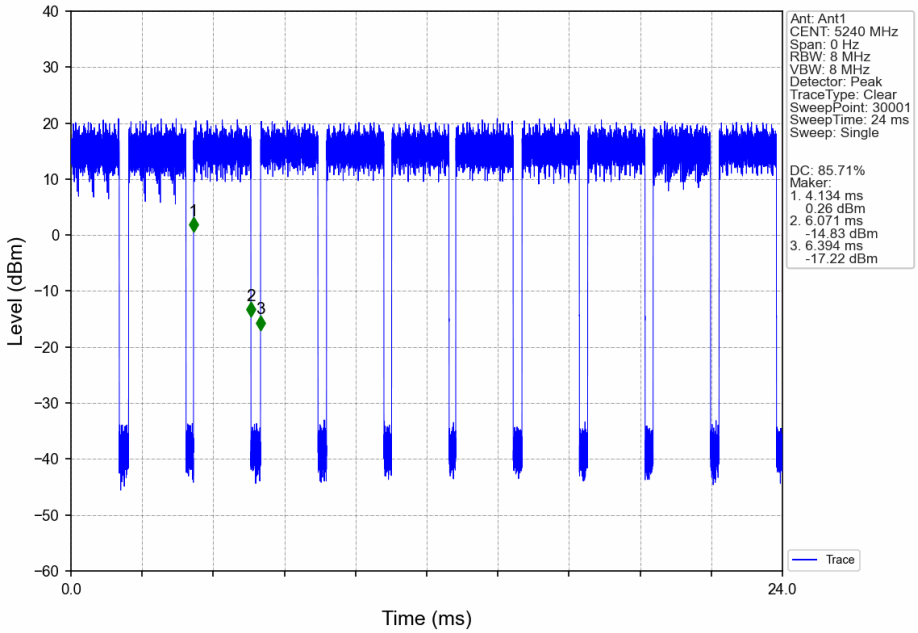
802.11a_HCH_5240MHz_Ant1_NTNV



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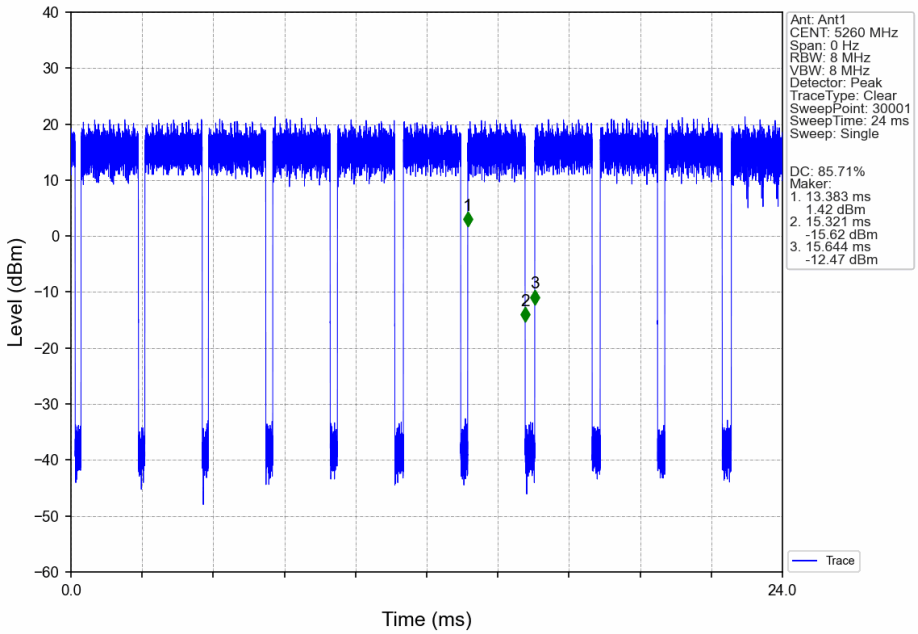

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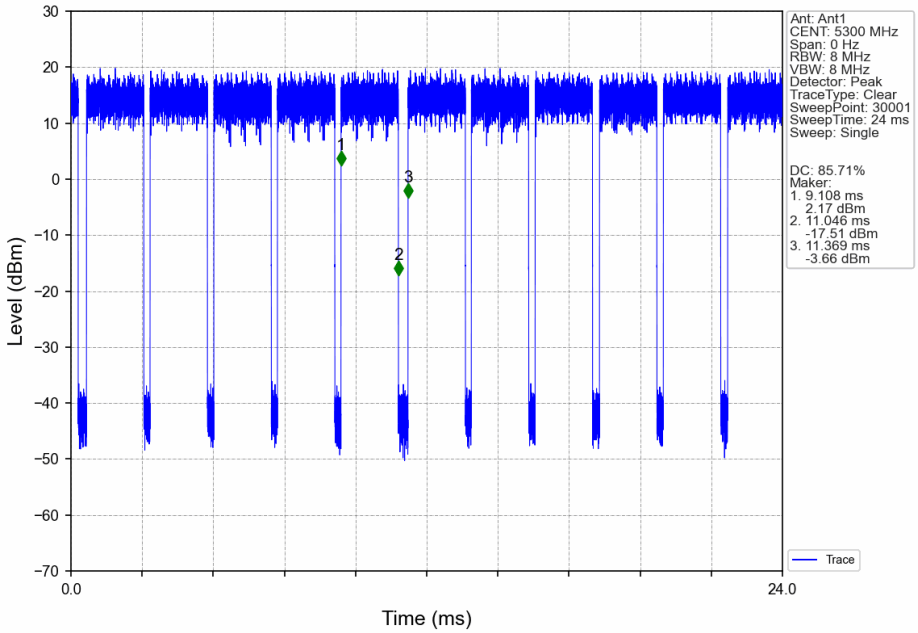
802.11a_MCH_5300MHz_Ant1_NTNV



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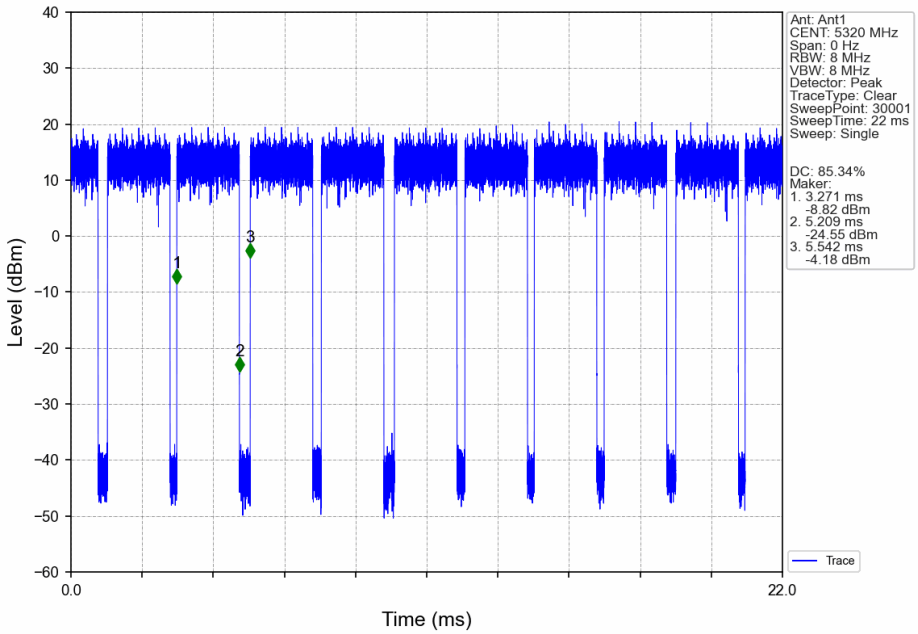

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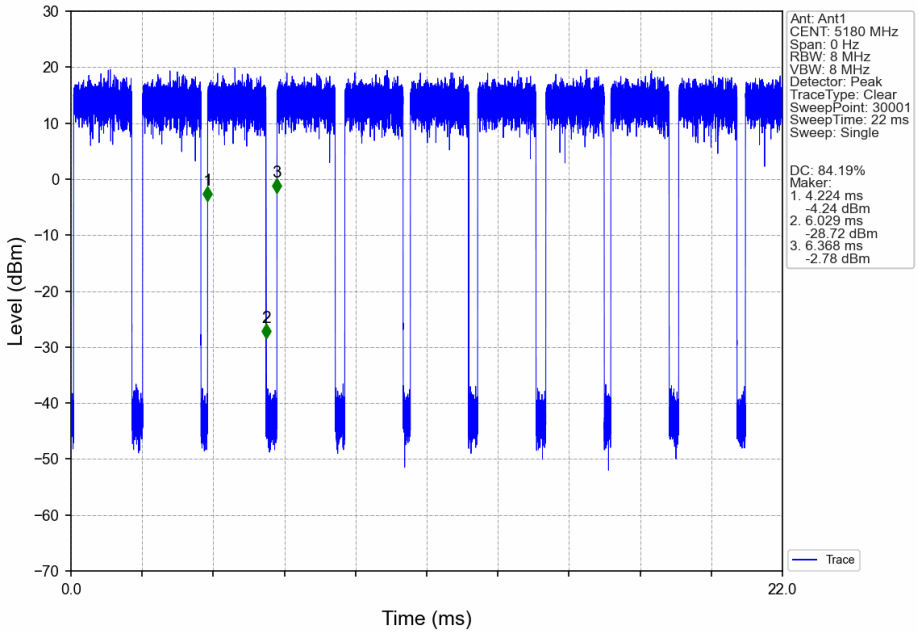
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



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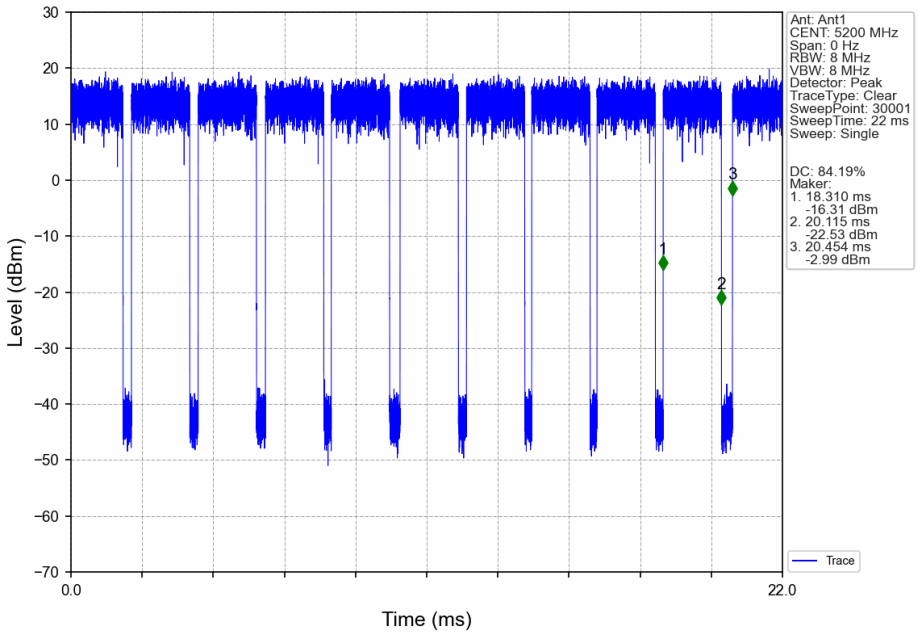

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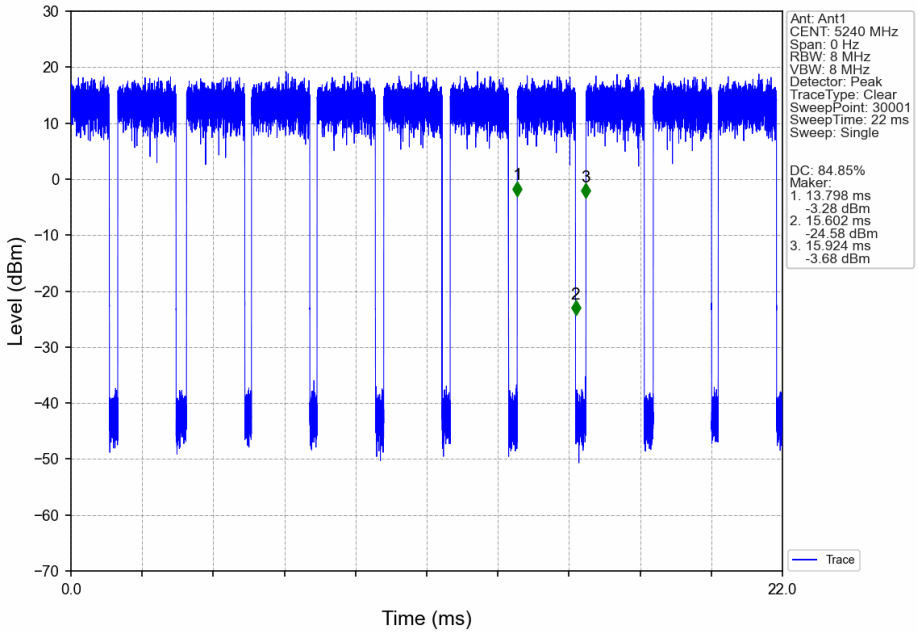
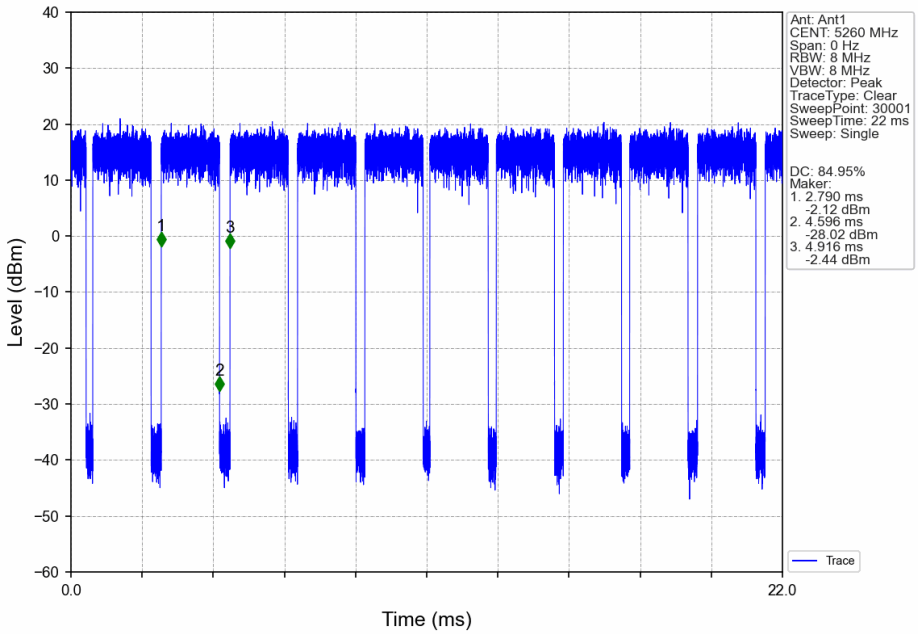
802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



802.11n(HT20)_LCH_5260MHz_Ant1_NTNV



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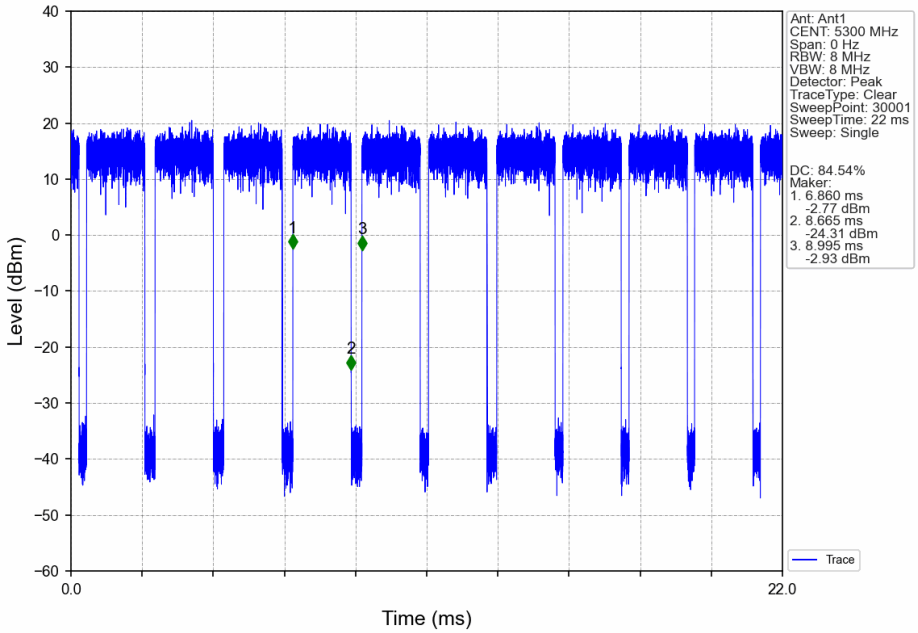
802.11n(HT20)_MCH_5300MHz_Ant1_NTNV



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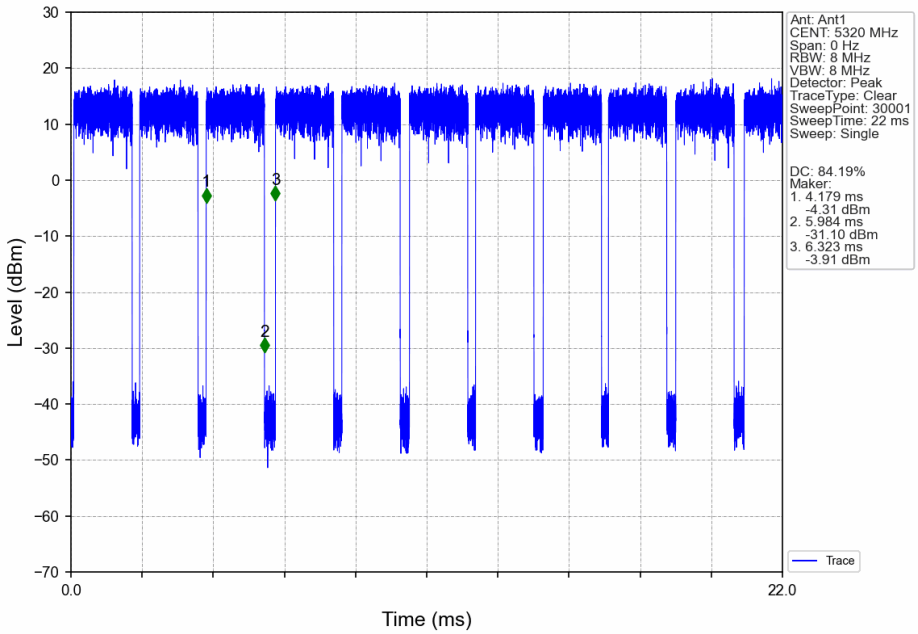

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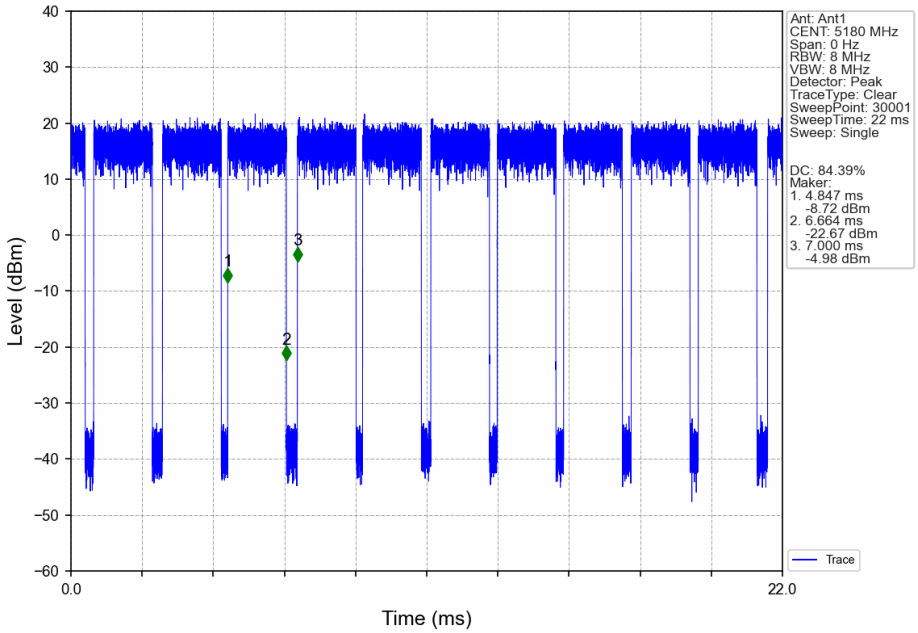
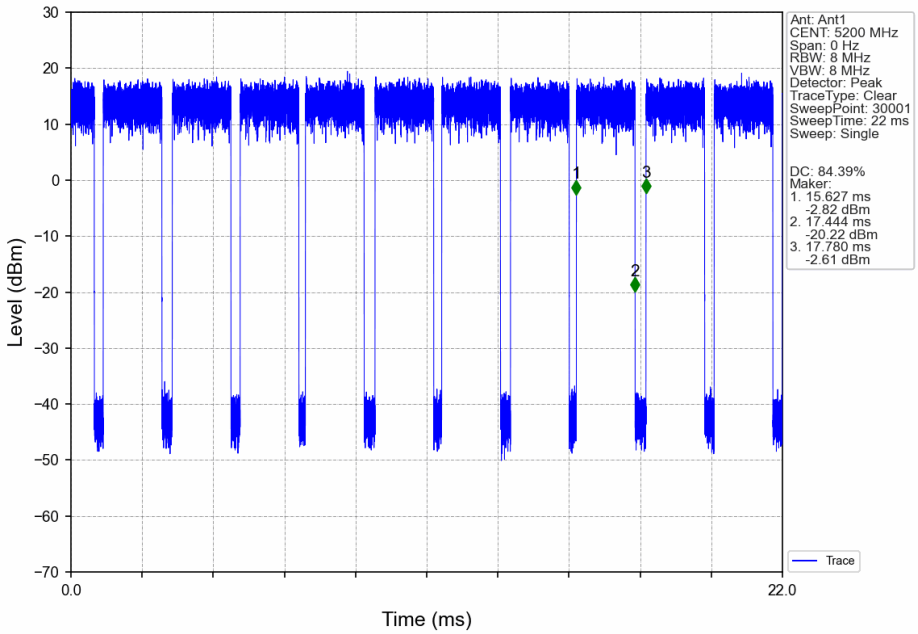
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



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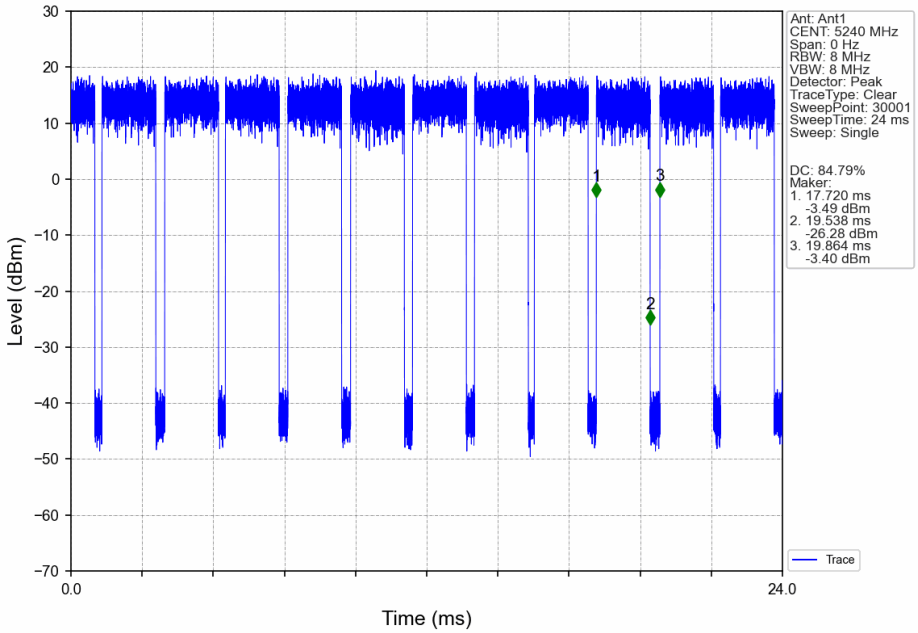
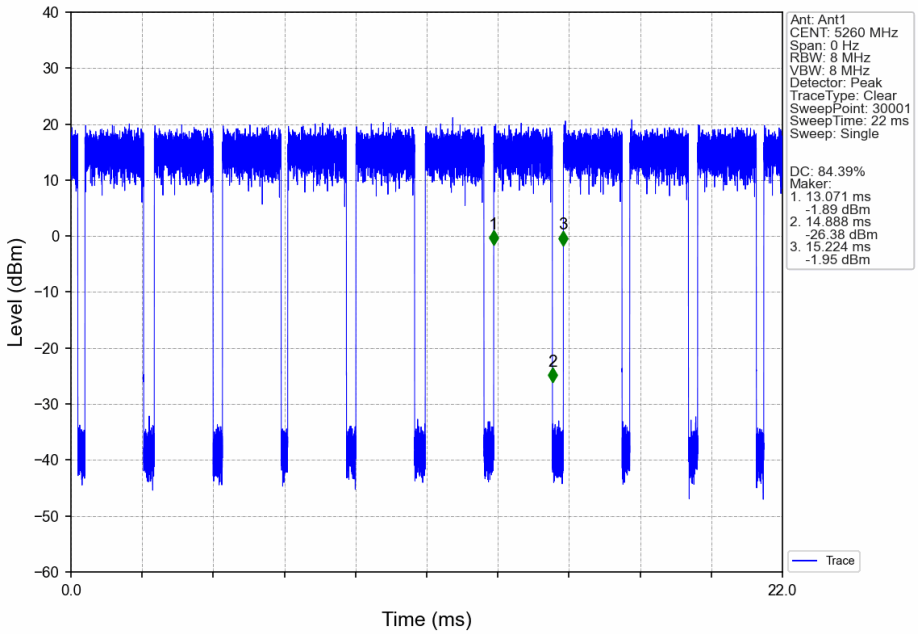
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



802.11ac(VHT20)_LCH_5260MHz_Ant1_NTNV



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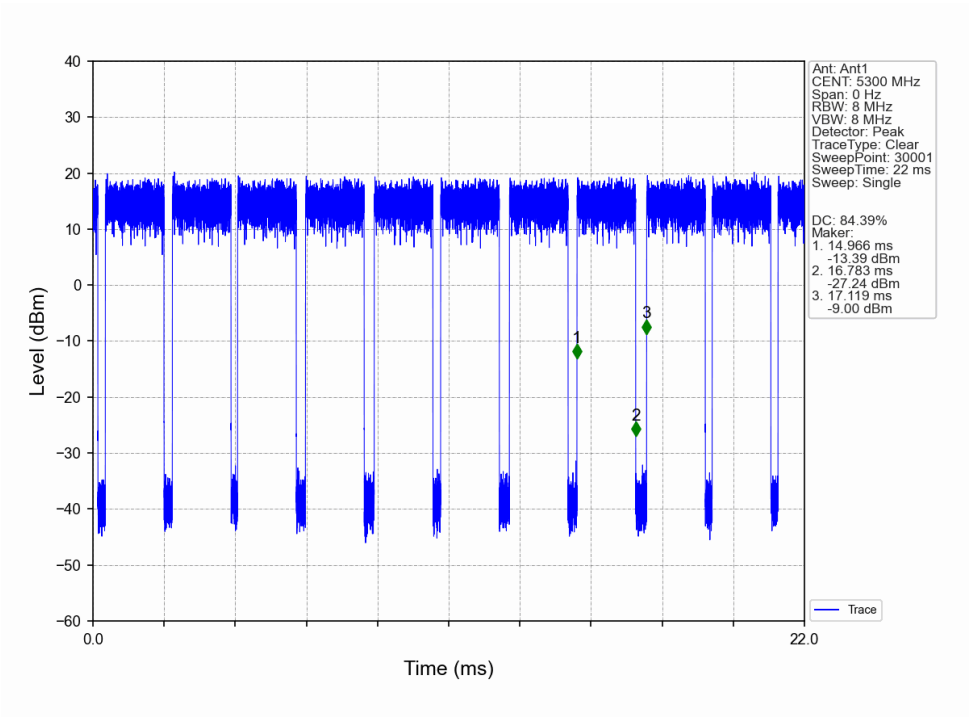
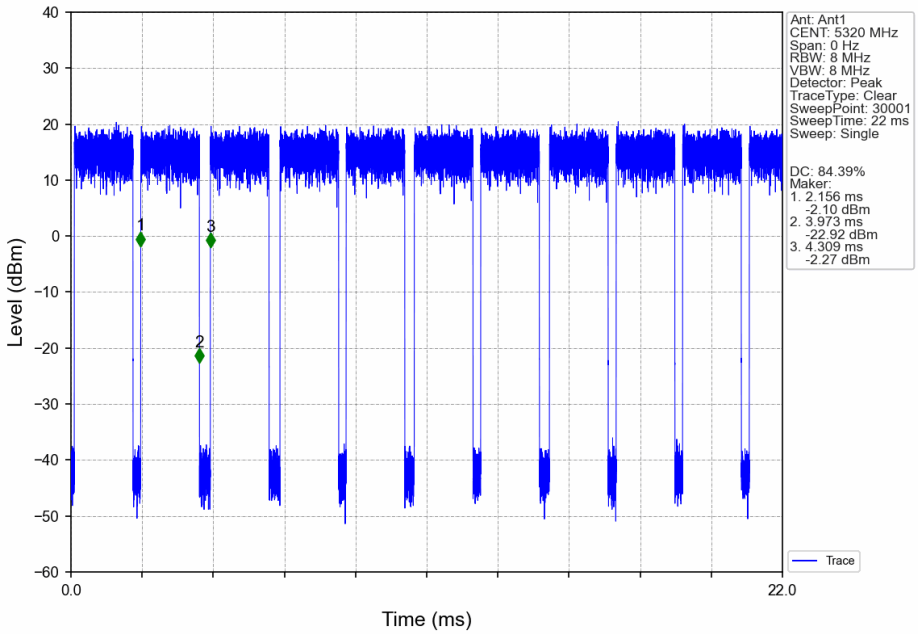
802.11ac(VHT20)_MCH_5300MHz_Ant1_NTNV



802.11ac(VHT20)_HCH_5320MHz_Ant1_NTNV



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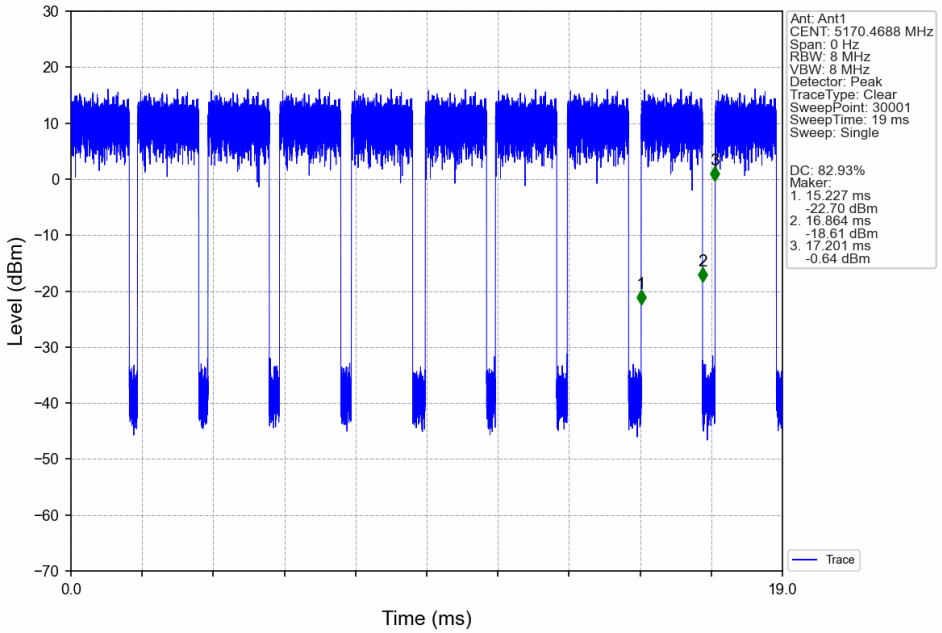
802.11ax(HEW20)_LCH_5180MHz_SU_Ant1_NTNV



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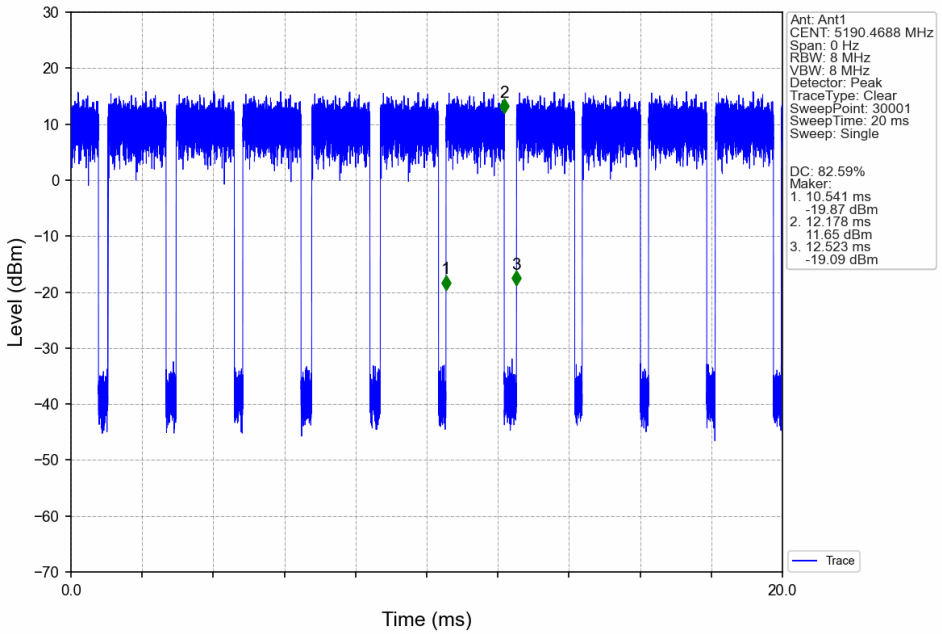

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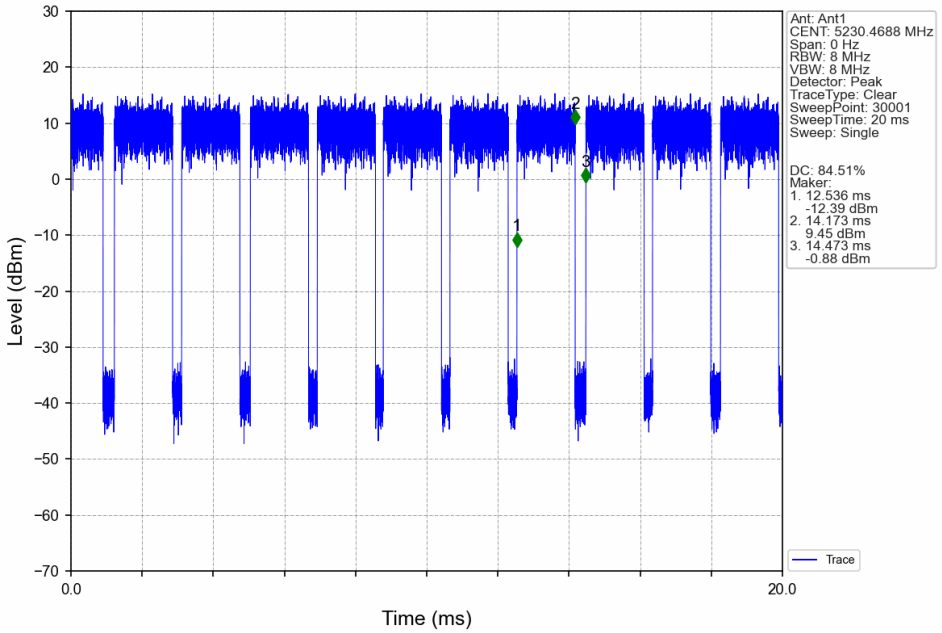
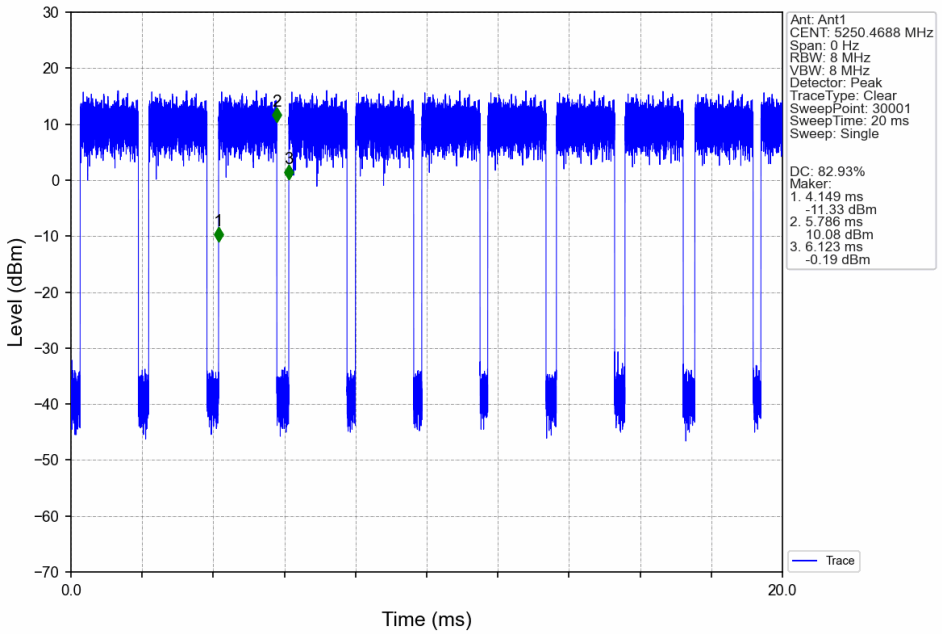
802.11ax(HEW20)_HCH_5240MHz_SU_Ant1_NTNV



802.11ax(HEW20)_LCH_5260MHz_SU_Ant1_NTNV



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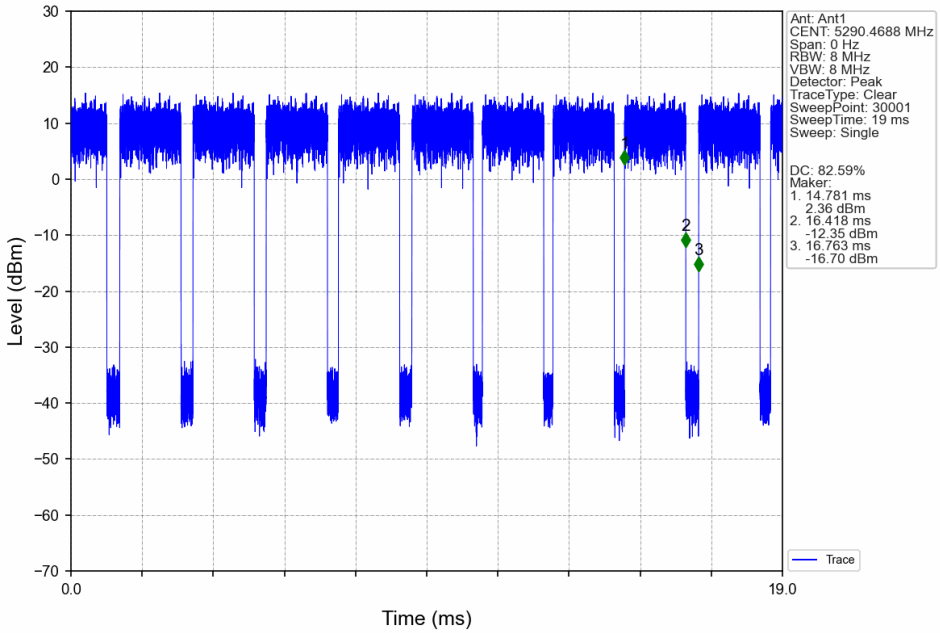
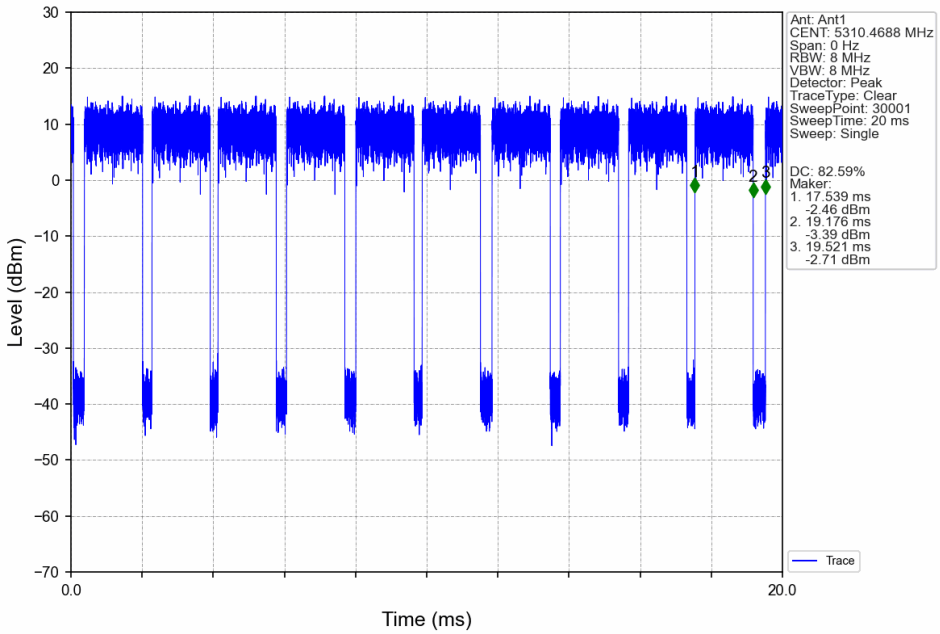
802.11ax(HEW20)_MCH_5300MHz_SU_Ant1_NTNV



802.11ax(HEW20)_HCH_5320MHz_SU_Ant1_NTNV



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2. Bandwidth

2.1 Test Result

2.1.1 OBW

Mode	TX Type	Frequency (MHz)	RU	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
802.11a	SISO	5180	/	1	17.640	/	Pass
		5200	/	1	17.805	/	Pass
		5240	/	1	17.505	/	Pass
		5260	/	1	17.534	/	Pass
		5300	/	1	17.493	/	Pass
		5320	/	1	17.414	/	Pass
802.11n (HT20)	SISO	5180	/	1	17.958	/	Pass
		5200	/	1	17.966	/	Pass
		5240	/	1	17.951	/	Pass
		5260	/	1	18.028	/	Pass
		5300	/	1	18.012	/	Pass
		5320	/	1	17.897	/	Pass
802.11ac (VHT20)	SISO	5180	/	1	18.125	/	Pass
		5200	/	1	18.199	/	Pass
		5240	/	1	17.926	/	Pass
		5260	/	1	17.969	/	Pass
		5300	/	1	17.976	/	Pass
		5320	/	1	17.992	/	Pass
802.11ax (HEW20)	SISO	5180	SU	1	19.059	/	Pass
		5200	SU	1	19.055	/	Pass
		5240	SU	1	18.972	/	Pass
		5260	SU	1	19.035	/	Pass
		5300	SU	1	19.037	/	Pass
		5320	SU	1	19.066	/	Pass

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2.1.2 26dB BW

Mode	TX Type	Frequency (MHz)	RU	ANT	26dB Bandwidth (MHz)		Verdict
					Result	Limit	
802.11a	SISO	5180	/	1	20.345	/	Pass
		5200	/	1	20.511	/	Pass
		5240	/	1	19.748	/	Pass
		5260	/	1	20.086	/	Pass
		5300	/	1	19.780	/	Pass
		5320	/	1	19.675	/	Pass
802.11n (HT20)	SISO	5180	/	1	19.744	/	Pass
		5200	/	1	19.754	/	Pass
		5240	/	1	19.867	/	Pass
		5260	/	1	19.883	/	Pass
		5300	/	1	19.891	/	Pass
		5320	/	1	19.948	/	Pass
802.11ac (VHT20)	SISO	5180	/	1	21.424	/	Pass
		5200	/	1	19.828	/	Pass
		5240	/	1	19.806	/	Pass
		5260	/	1	19.909	/	Pass
		5300	/	1	19.893	/	Pass
		5320	/	1	19.736	/	Pass
802.11ax (HEW20)	SISO	5180	SU	1	23.006	/	Pass
		5200	SU	1	22.935	/	Pass
		5240	SU	1	22.033	/	Pass
		5260	SU	1	23.057	/	Pass
		5300	SU	1	22.082	/	Pass
		5320	SU	1	23.049	/	Pass

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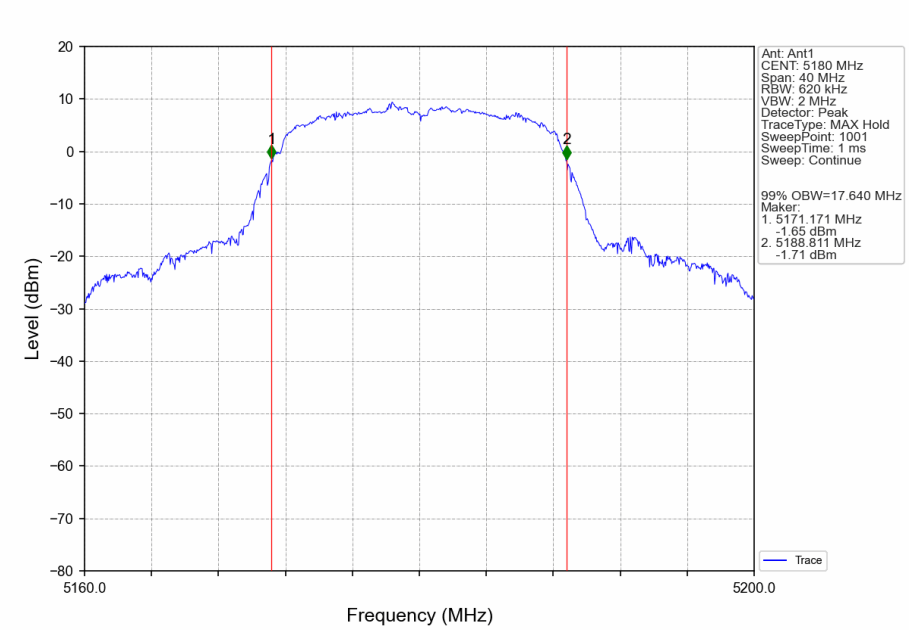
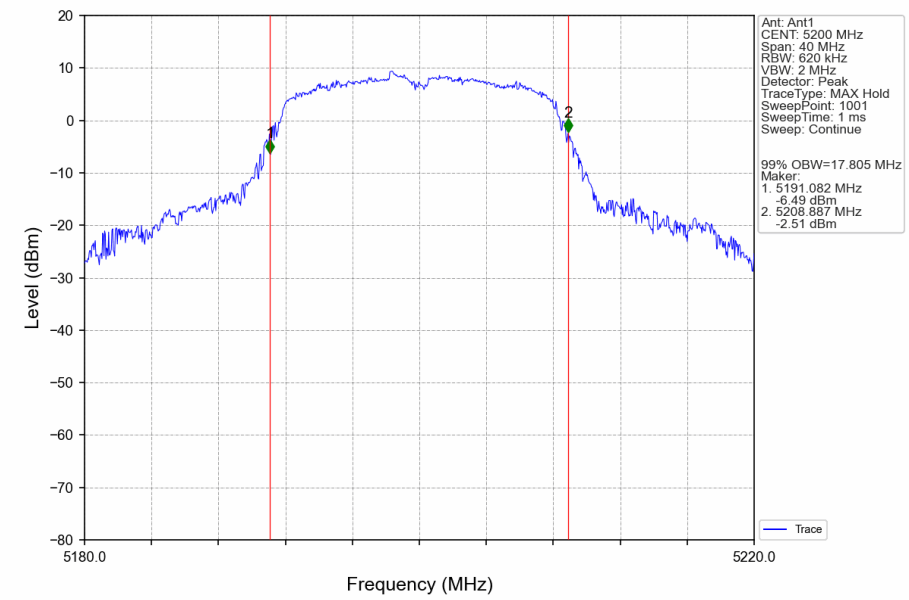
2.2 Test Graph

2.2.1 OBW

802.11a_LCH_5180MHz_Ant1_NTNV



802.11a_MCH_5200MHz_Ant1_NTNV



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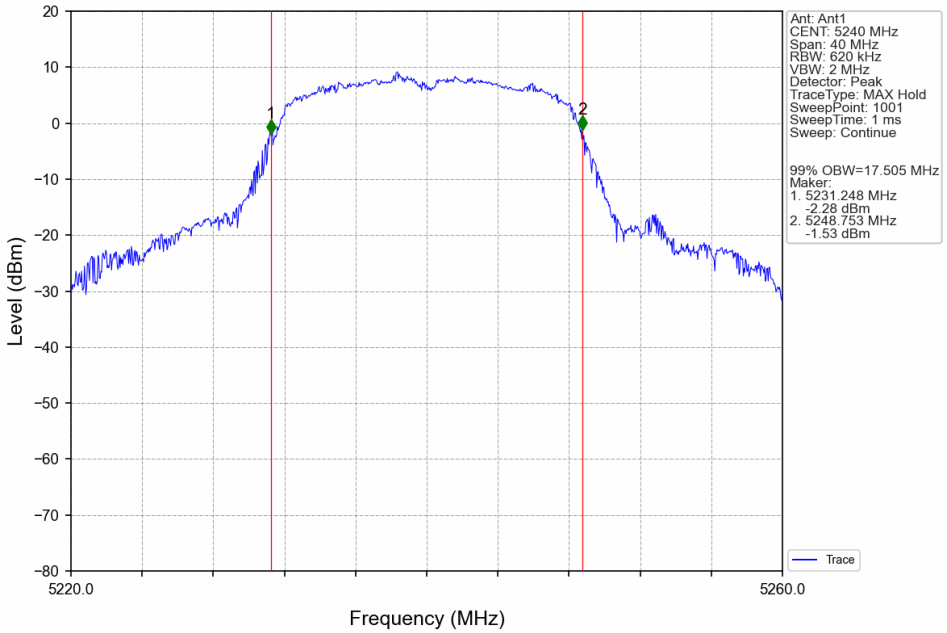
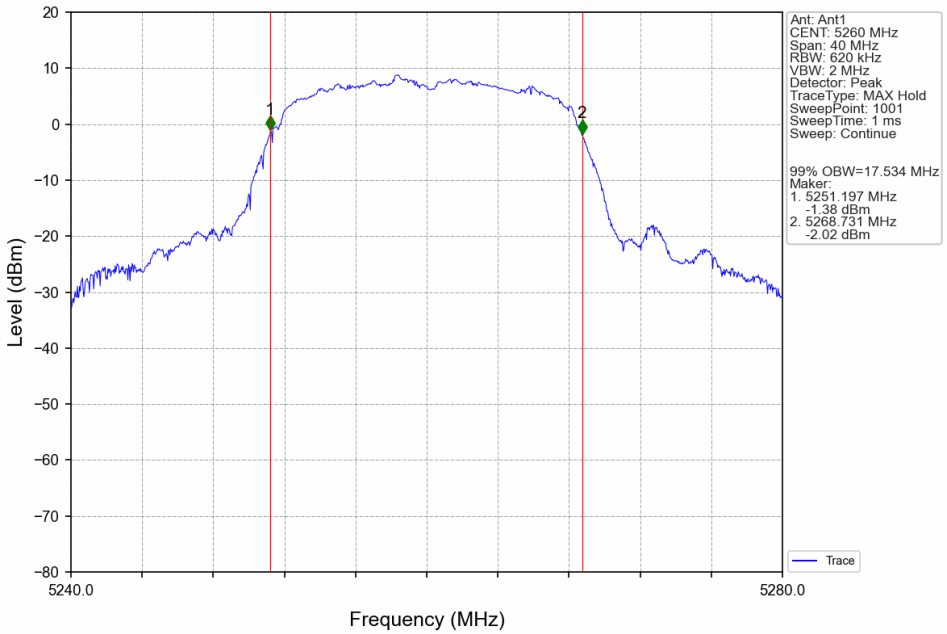
802.11a_HCH_5240MHz_Ant1_NTNV



802.11a_LCH_5260MHz_Ant1_NTNV



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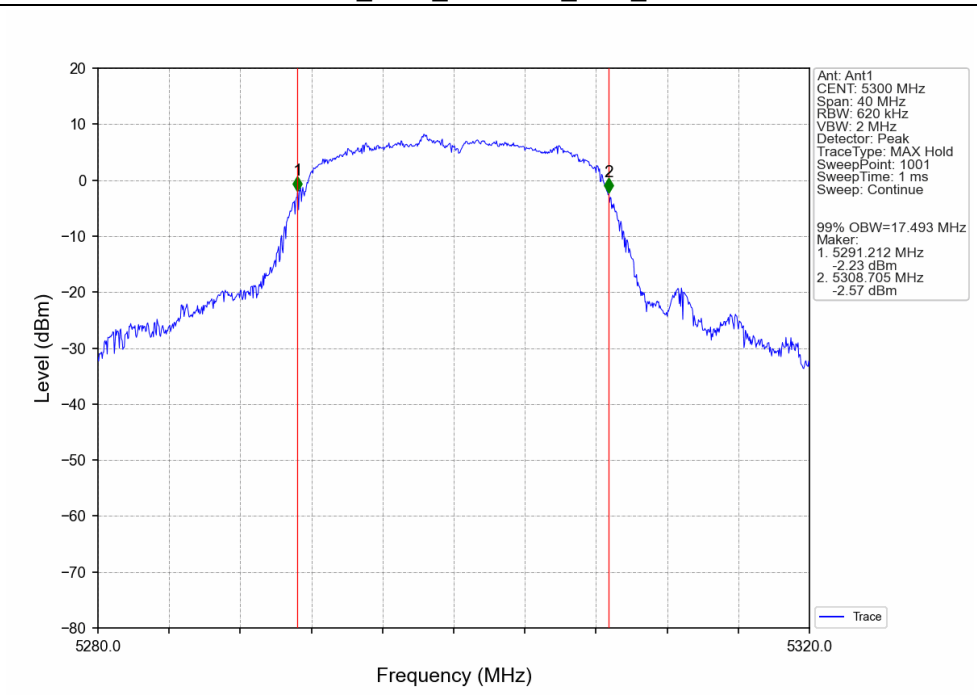
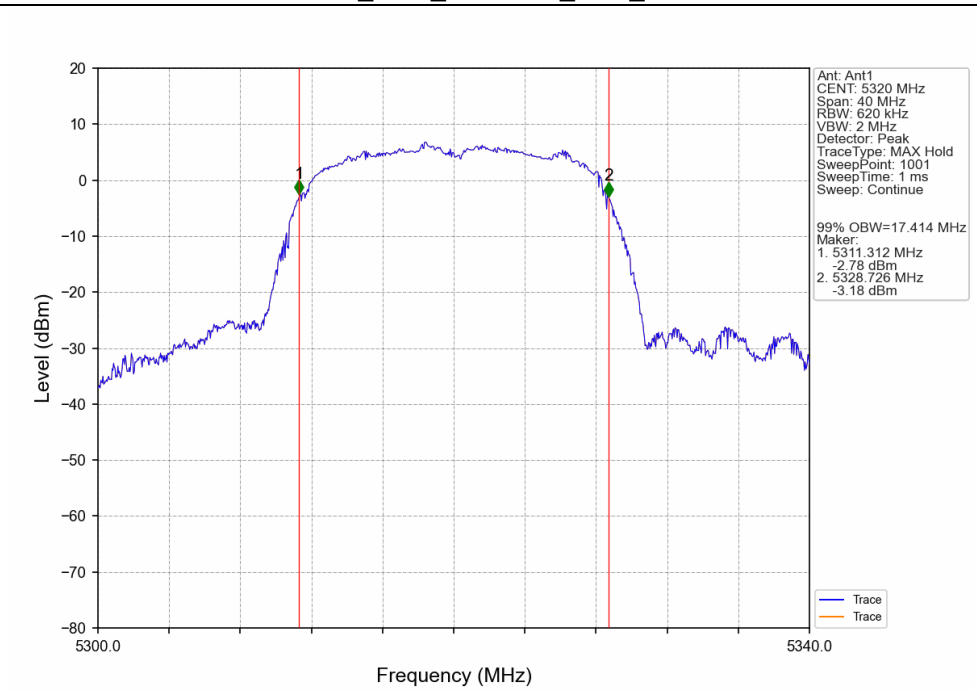
802.11a_MCH_5300MHz_Ant1_NTNV



802.11a_HCH_5320MHz_Ant1_NTNV



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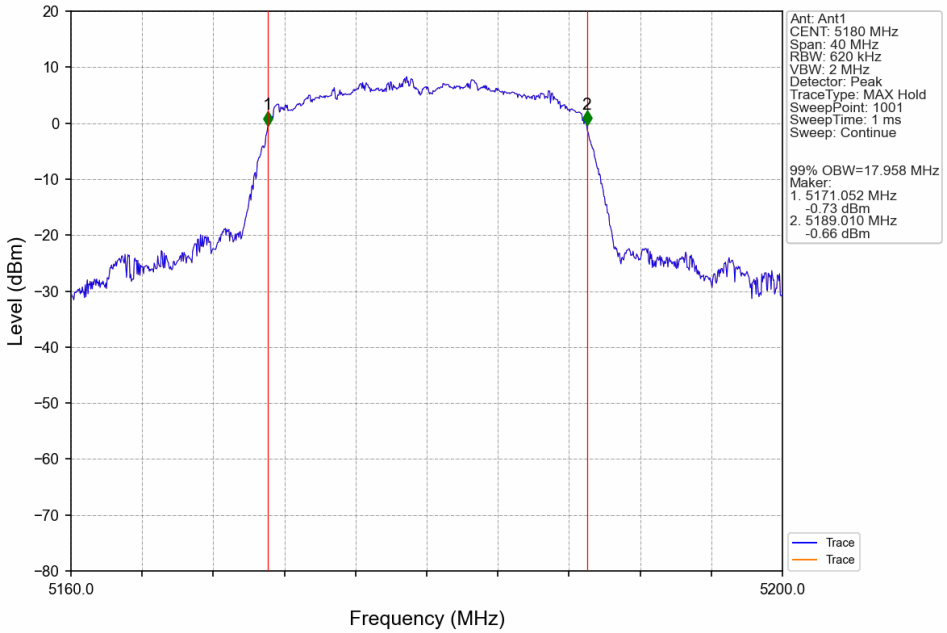
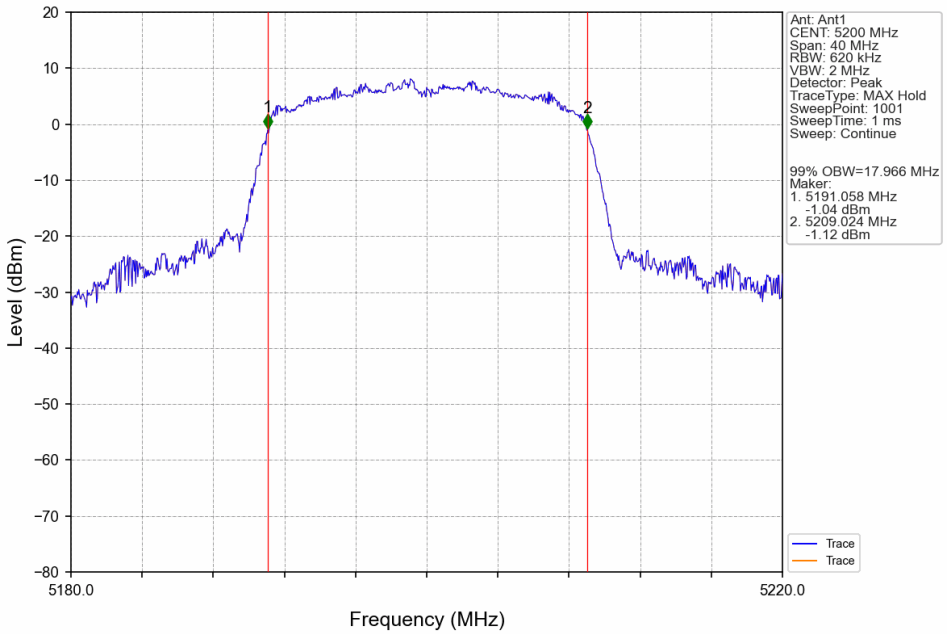
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



802.11n(HT20)_MCH_5200MHz_Ant1_NTNV



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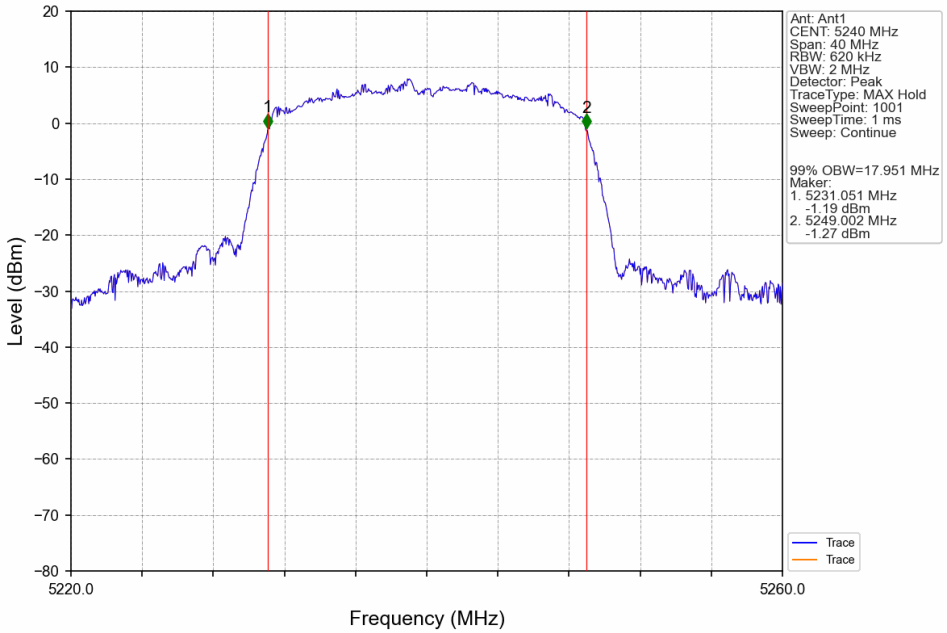
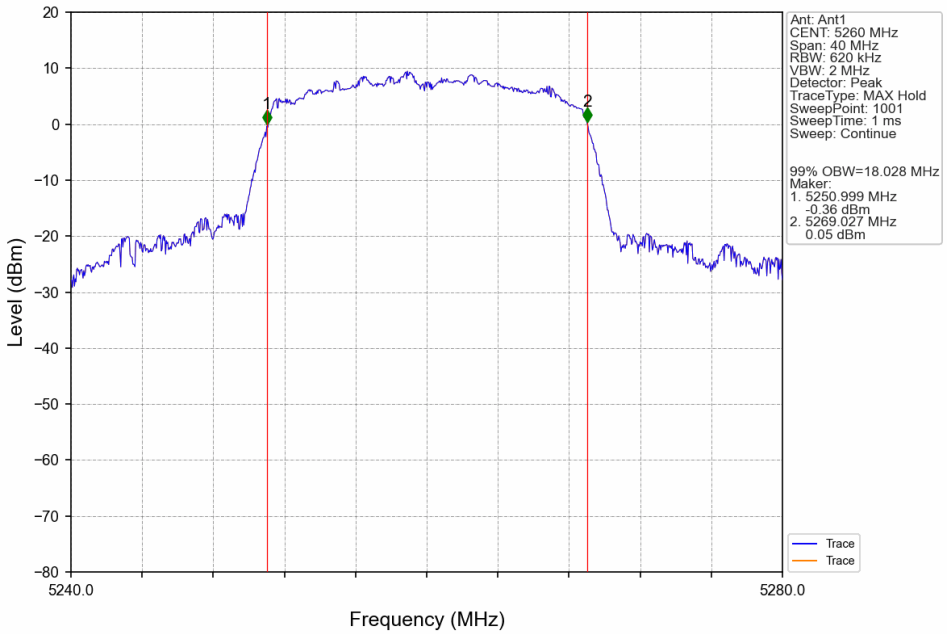
802.11n(HT20)_HCH_5240MHz_Ant1_NTNV



802.11n(HT20)_LCH_5260MHz_Ant1_NTNV



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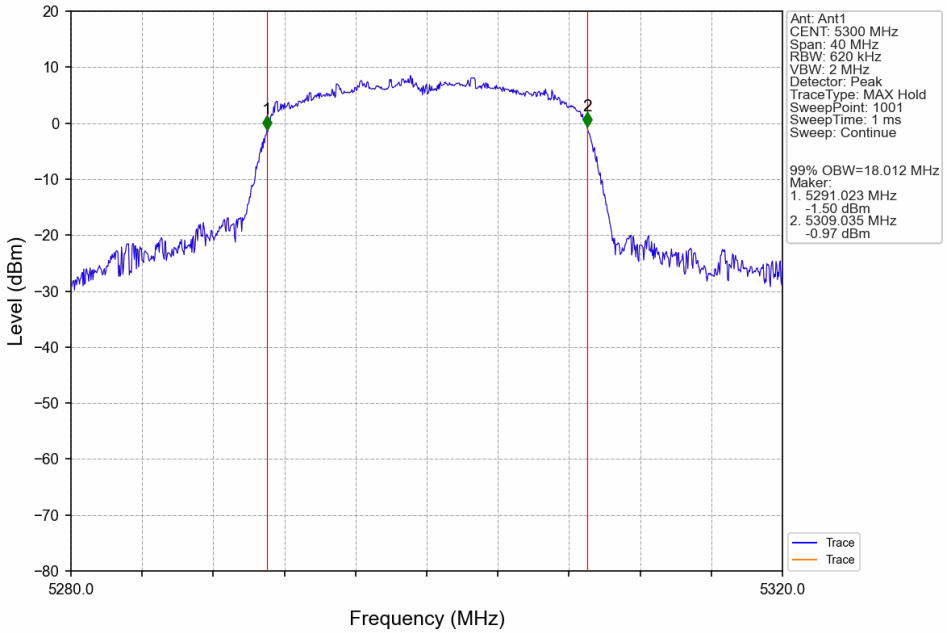
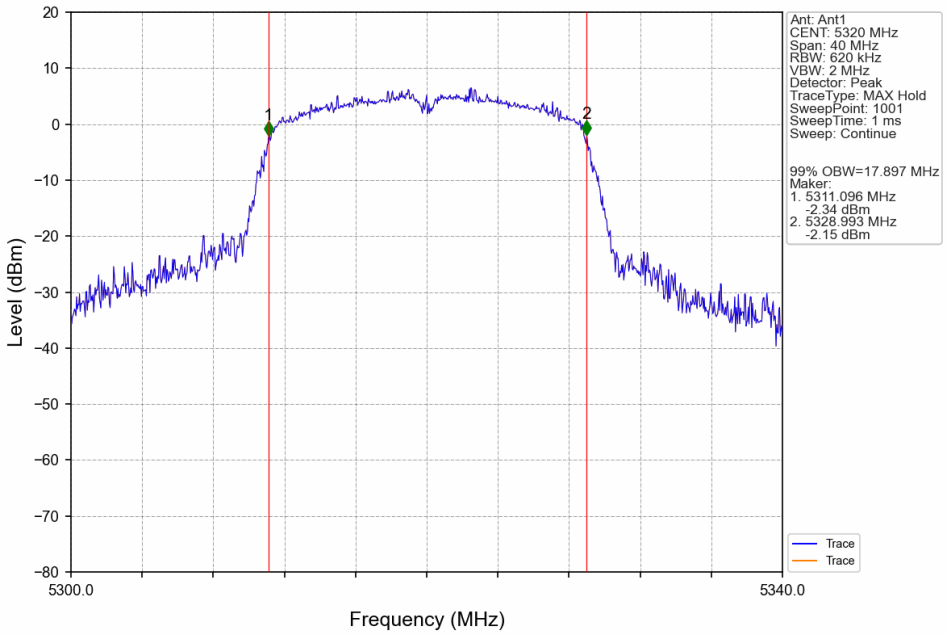
802.11n(HT20)_MCH_5300MHz_Ant1_NTNV



802.11n(HT20)_HCH_5320MHz_Ant1_NTNV



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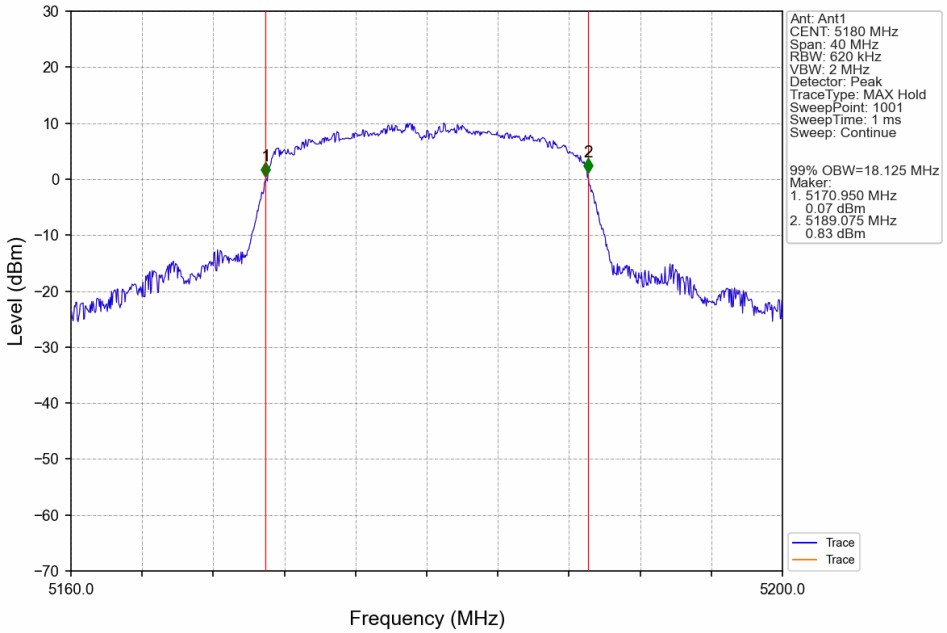
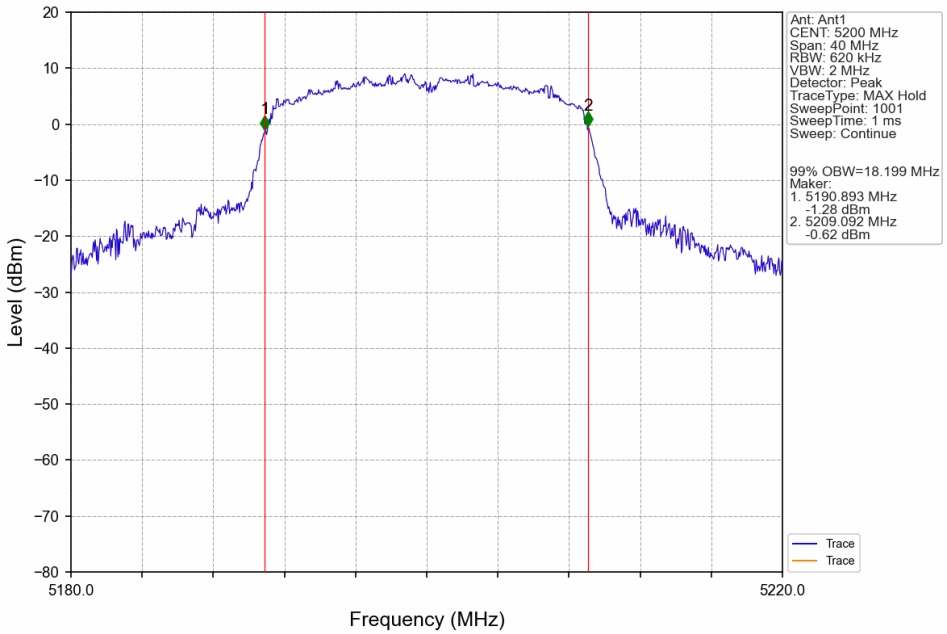
802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV



802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV



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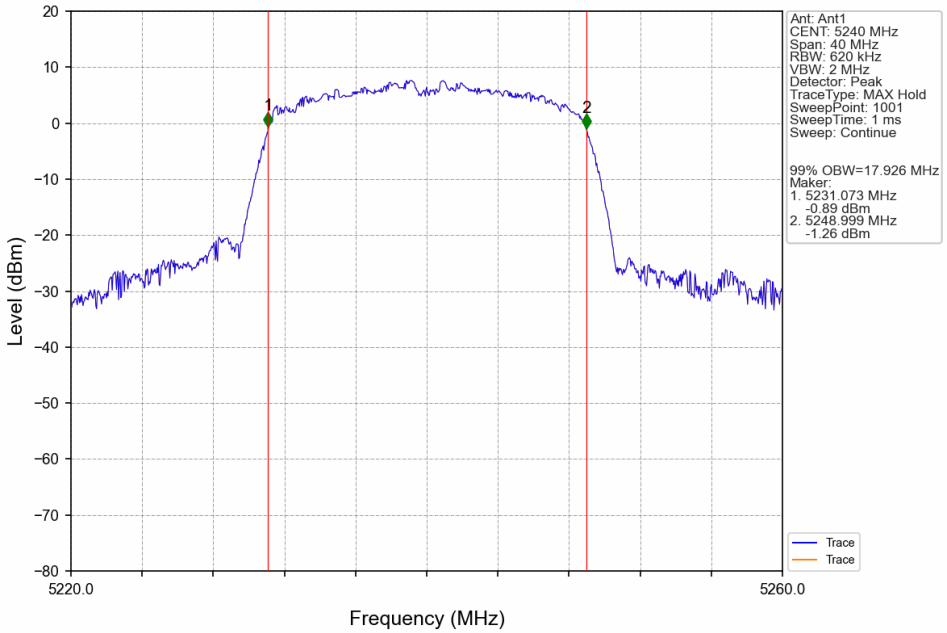
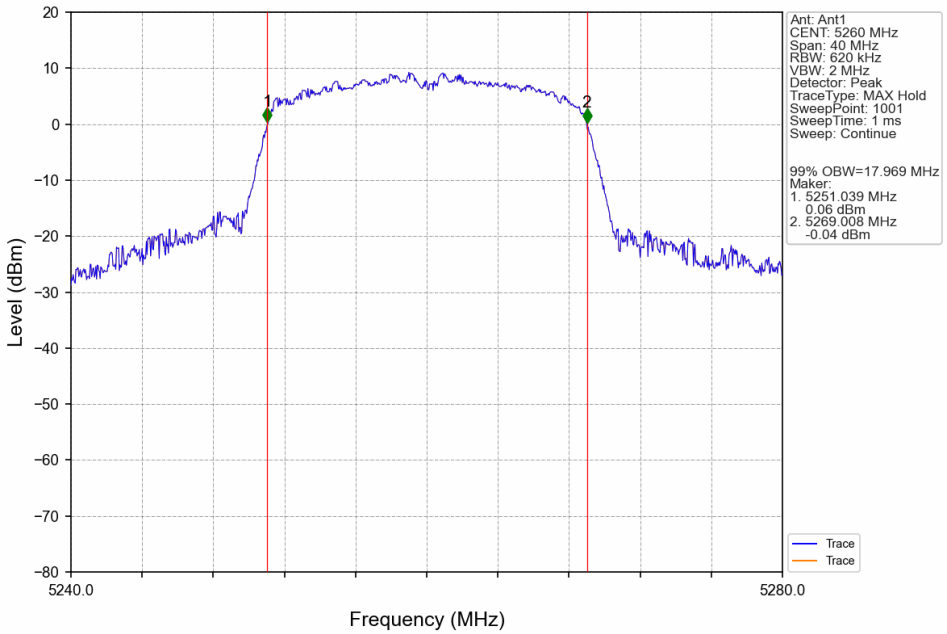
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



802.11ac(VHT20)_LCH_5260MHz_Ant1_NTNV



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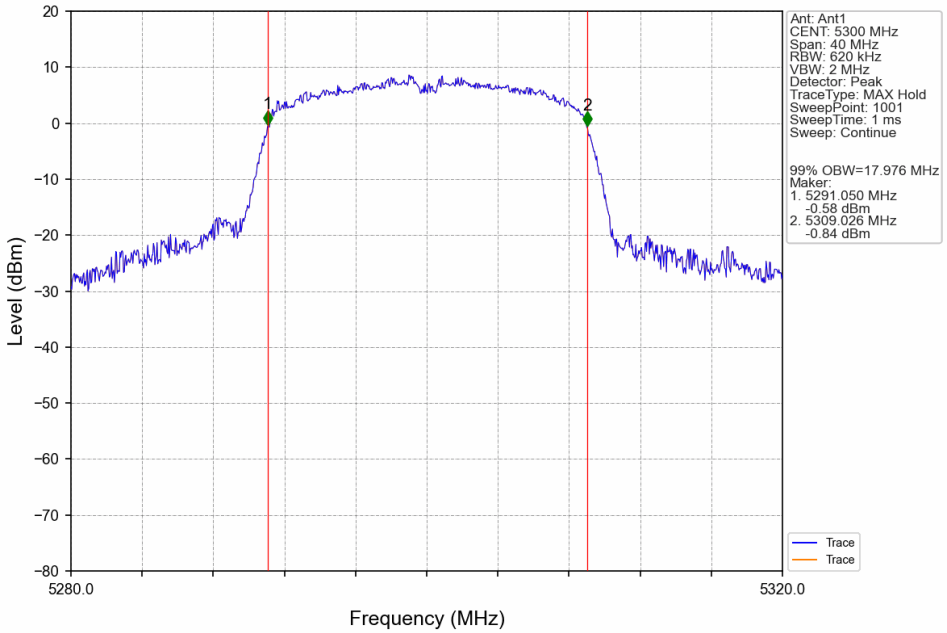
802.11ac(VHT20)_MCH_5300MHz_Ant1_NTNV



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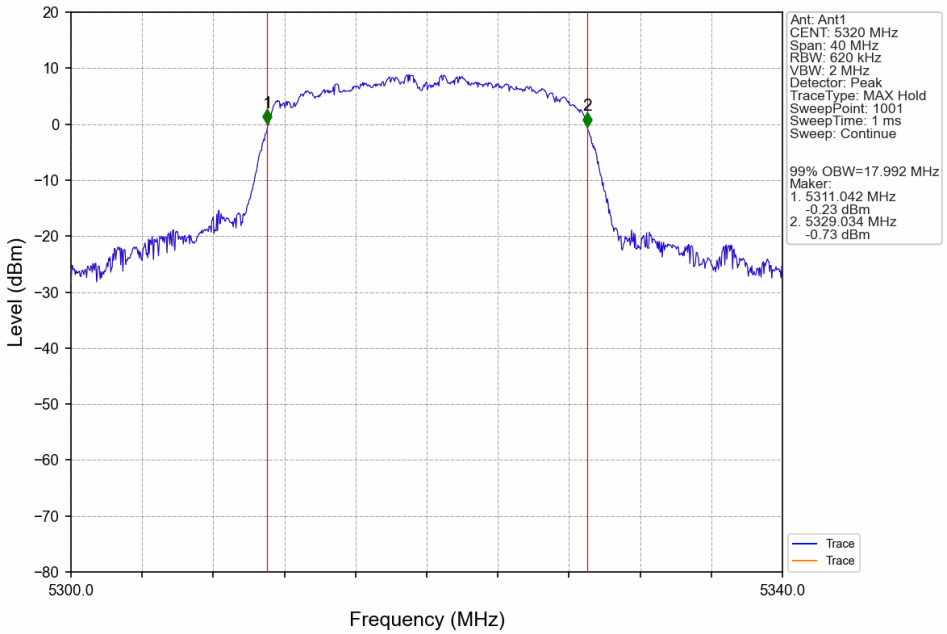

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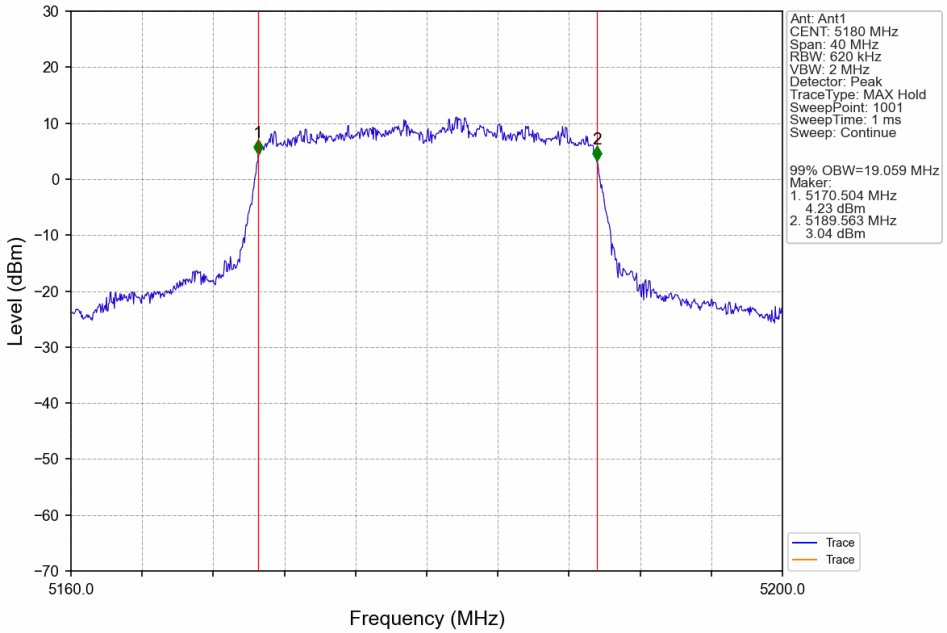
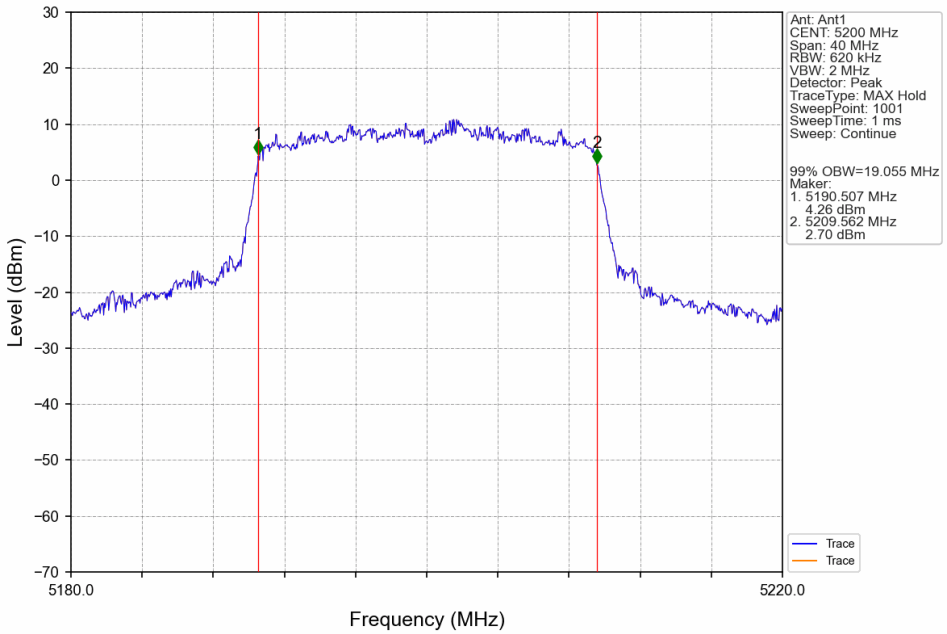
802.11ax(HEW20)_LCH_5180MHz_SU_Ant1_NTNV



802.11ax(HEW20)_MCH_5200MHz_SU_Ant1_NTNV



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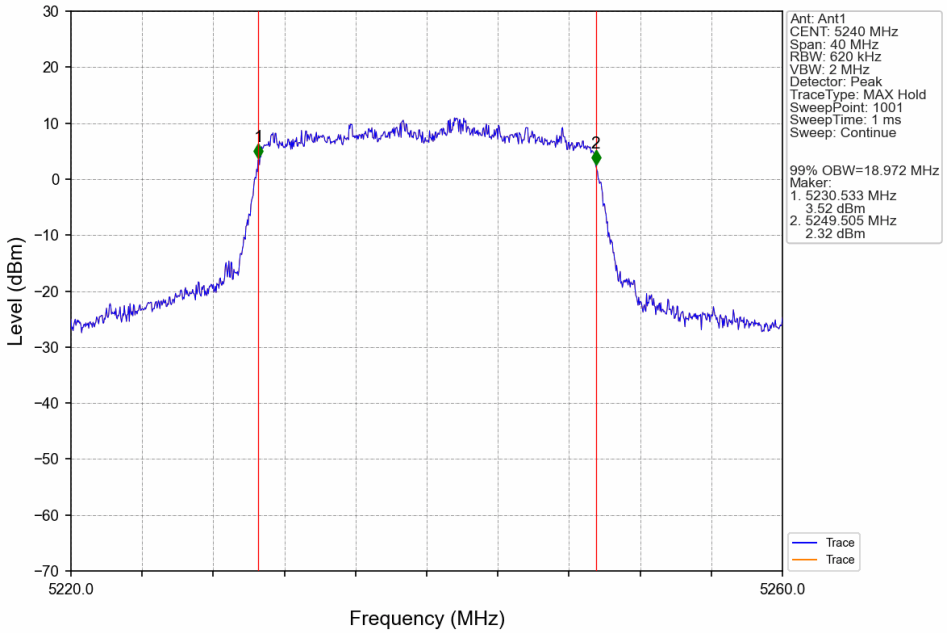
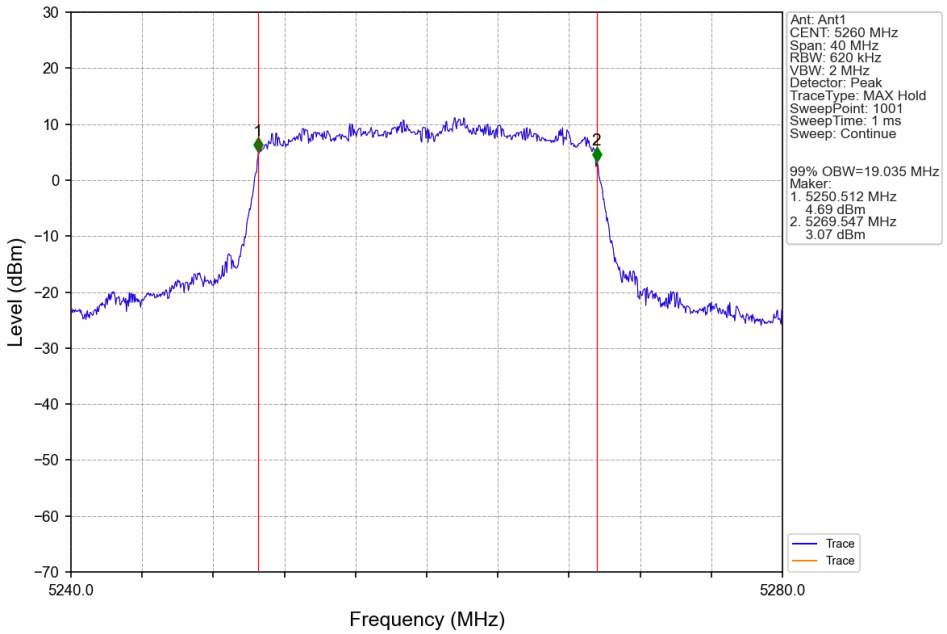
802.11ax(HEW20)_HCH_5240MHz_SU_Ant1_NTNV



802.11ax(HEW20)_LCH_5260MHz_SU_Ant1_NTNV



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