

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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250200049104

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TEST REPORT

Application No.: SZCR2502000491AT
Applicant: SZ Knowact Robot Technology Co., Ltd
Address of Applicant: Room C3-A081, Building C, Kexing Science Park, No. 15, Keyuan Road, Science Park Community, Yuehai Street, Nanshan District, Shenzhen, China
Manufacturer: SZ Knowact Robot Technology Co., Ltd
Address of Manufacturer: Room C3-A081, Building C, Kexing Science Park, No. 15, Keyuan Road, Science Park Community, Yuehai Street, Nanshan District, Shenzhen, China
Factory: SZ Knowact Robot Technology Co., Ltd
Address of Factory: Room C3-A081, Building C, Kexing Science Park, No. 15, Keyuan Road, Science Park Community, Yuehai Street, Nanshan District, Shenzhen, China

Equipment Under Test (EUT):

EUT Name: Caelone 01
Model No.: AUDAFV
FCC ID: 2BMUV-AUDAFV25
Standard(s) : 47 CFR Part 15, Subpart E 15.407
Date of Receipt: 2025-02-13
Date of Test: 2025-02-21 to 2025-03-20
Date of Issue: 2025-04-01

Test Result:**Pass***

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

Kenx. Xu

Keny Xu
EMC Laboratory Manager



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

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2025-04-01		Original

Authorized for issue by:				
		<div>Donjon . Huang</div>		
		Donjon Huang/Project Engineer		
		<div>Eric Fu</div>		
		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
Maximum Conducted output power		ANSI C63.10 (2013) Section 12.3	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Radiated Emissions (Below 1GHz)		ANSI C63.10 (2013) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Radiated Emissions (Above 1GHz)		ANSI C63.10 (2013) Section 6.6	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Duty Cycle		ANSI C63.10 (2013) Section 12.2	ANSI C63.10 (2013) Section 12.2	Pass
99% Bandwidth		ANSI C63.10 (2013) Section 12.4.2	ANSI C63.10 (2013) Section 12.4.2	Pass
Minimum 6 dB bandwidth (5.725-5.85 GHz band)		ANSI C63.10 (2013) Section 6.9.2	47 CFR Part 15, Subpart E 15.407 (e)	Pass
Peak Power spectrum density		ANSI C63.10 (2013) Section 12.5	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

Remark: KDB 789033 D02 is not accredited by A2LA



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4 General Information

4.1 Details of E.U.T.

Power supply:	Powered by Lithium-Ion Rechargeable Battery. Battery information Model: WAADFBS Nominal voltage: 7.3V
Operation Frequency/Number of channels (20MHz):	U-NII-3: 5745-5825MHz (5 Channels)
Operation Frequency/Number of channels/(40MHz):	U-NII-3: 5755-5795MHz (2 Channels)
Operation Frequency/Number of channels (80MHz):	U-NII-3: 5775MHz (1 Channel)
Modulation Type:	802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing:	802.11a/n/ac 20: 20MHz 802.11n/ac 40: 40MHz 802.11ac 80: 80MHz
DFS Function:	Without DFS function
TPC Function:	Without TPC function
Antenna Type:	Integral Antenna
Antenna Gain:	1.5dBi
Antenna Number:	1
RF Cable:	5725MHz ~ 5850MHz (1.9dB)

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

4.2 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	$\pm 3.1\text{dB}$
Conducted Emissions at AC Power Line (150kHz-30MHz)	$\pm 3.1\text{dB}$
Maximum Conducted output power	$\pm 0.75\text{dB}$
Maximum Conducted output power	$\pm 0.75\text{dB}$
Radiated Emissions (Below 1GHz)	$\pm 6.0\text{dB}$ for 3m; $\pm 5.0\text{dB}$ for 10m
Radiated Emissions (Below 1GHz)	$\pm 6.0\text{dB}$ for 3m; $\pm 5.0\text{dB}$ for 10m
Radiated Emissions (Above 1GHz)	$\pm 4.6\text{dB}$ (1-18GHz); $\pm 4.8\text{dB}$ (18-40GHz)



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Radiated Emissions (Above 1GHz)	$\pm 4.6\text{dB}$ (1-18GHz); $\pm 4.8\text{dB}$ (18-40GHz)
Radiated Emissions which fall in the restricted bands	$\pm 6.0\text{dB}$ (below 1GHz); $\pm 4.6\text{dB}$ (above 1GHz);
Radiated Emissions which fall in the restricted bands	$\pm 6.0\text{dB}$ (below 1GHz); $\pm 4.6\text{dB}$ (above 1GHz);
Duty Cycle	$\pm 0.37\%$
Duty Cycle	$\pm 0.37\%$
99% Bandwidth	$\pm 3\%$
99% Bandwidth	$\pm 3\%$
26dB Emission bandwidth	$\pm 3\%$
26dB Emission bandwidth	$\pm 3\%$
Minimum 6 dB bandwidth (5.725-5.85 GHz band)	$\pm 3\%$
Minimum 6 dB bandwidth (5.725-5.85 GHz band)	$\pm 3\%$
Peak Power spectrum density	$\pm 2.84\text{dB}$
Peak Power spectrum density	$\pm 2.84\text{dB}$
Frequency Stability	$\pm 7.25 \times 10^{-8}$
Frequency Stability	$\pm 7.25 \times 10^{-8}$
<p>Remark:</p> <p>The U_{lab} (lab Uncertainty) is less than $U_{\text{CISPR/ETSI}}$ (CISPR/ETSI Uncertainty), so the test results</p> <ul style="list-style-type: none"> – 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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4.3 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.

4.4 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.

4.5 Deviation from Standards

None

4.6 Abnormalities from Standard Conditions

None



5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2022-05-14	2025-05-13
EMI Test Receiver	Rohde&Schwarz	ESR	SZ-WRG-M-047	2025-01-8	2026-01-7
Matching Pad	N/A	N/A	SEM021-23	2025-03-19	2026-03-18
Matching Pad	N/A	N/A	SEM021-24	2025-03-19	2026-03-18
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 2025-03-03	2025-03-13 2026-03-02

Maximum Conducted output power					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Power Sensor	TST PASS	TSPS2023R	SEM009-26	2024-03-14 2025-03-04	2025-03-13 2026-03-03
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2024-03-14 2025-03-04	2025-03-13 2026-03-03
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 2025-03-04	2025-03-13 2026-03-03
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 2025-03-03	2025-03-26 2026-03-02
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024-03-19 2025-02-26	2024-03-18 2026-02-25

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



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BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2023-09-16	2025-09-15
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2024-03-14 2025-03-04	2025-03-13 2026-03-03
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

Radiated Emissions (Above 1GHz)

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Signal & Spectrum Analyzer	Rohde & Schwarz	FSV	SZ-WRG-M-048	2025-01-7	2026-01-6
Low Noise Amplifier 1G-18GHz	Tonscend	TAP01018050	SZ-WRG-M-051	2025-01-7	2026-01-6
Low Noise Amplifier 18G-40GHz	Tonscend	TAP18040048	SZ-WRG-M-052	2025-01-8	2026-01-7
Double Ridge Horn Antenna 1GHz-18GHz	SCHWARZBECK	BBHA 9120 D	SZ-WRG-M-055	2023-12-21	2025-12-20
SHF-EHF Horn 15GHz-40GHz	SCHWARZBECK	BBHA 9170	SZ-WRG-M-056	2023-12-25	2025-12-24
RSE Test Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Chamber	CRTSGSSAC966	N/A	SZ-WRG-C-063	2025-01-06	2028-01-05
Humidity and Temperature Indicator	deli	8838	SEM002-46	2024-07-24	2025-07-23

Radiated Emissions which fall in the restricted bands

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Signal & Spectrum Analyzer	Rohde & Schwarz	FSV	SZ-WRG-M-048	2025-01-7	2026-01-6
Low Noise Amplifier 30M-8GHz	Tonscend	TAP30M8G30	SZ-WRG-M-050	2025-01-7	2026-01-6
Double Ridge Horn Antenna 1GHz-18GHz	SCHWARZBECK	BBHA 9120 D	SZ-WRG-M-055	2023-12-21	2025-12-20
SHF-EHF Horn 15GHz-40GHz	SCHWARZBECK	BBHA 9170	SZ-WRG-M-056	2023-12-25	2025-12-24
RSE Test Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Chamber	CRTSGSSAC966	N/A	SZ-WRG-C-063	2025-01-06	2028-01-05
Humidity and Temperature Indicator	deli	8838	SEM002-46	2024-07-24	2025-07-23

RF Conducted Test



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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 2025-03-04	2025-03-13 2026-03-03
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 2025-03-03	2025-03-26 2026-03-02
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2025-02-26	2026-02-25

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 2025-03-03	2025-03-17 2026-03-02



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

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1.5dBi

Antenna location: Refer to internal photo.



6.2 Transmission in the Absence of Data

6.2.1 Test Requirement:

47 CFR Part 15, Subpart E 15.407 (c)

6.2.2 Conclusion

Standard Requirement:

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

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

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



7 Radio Spectrum Matter Test Results

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

Test Requirement 47 CFR Part 15, Subpart C 15.207 & Subpart E 15.407 b(9)

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dB μ V)	
	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:

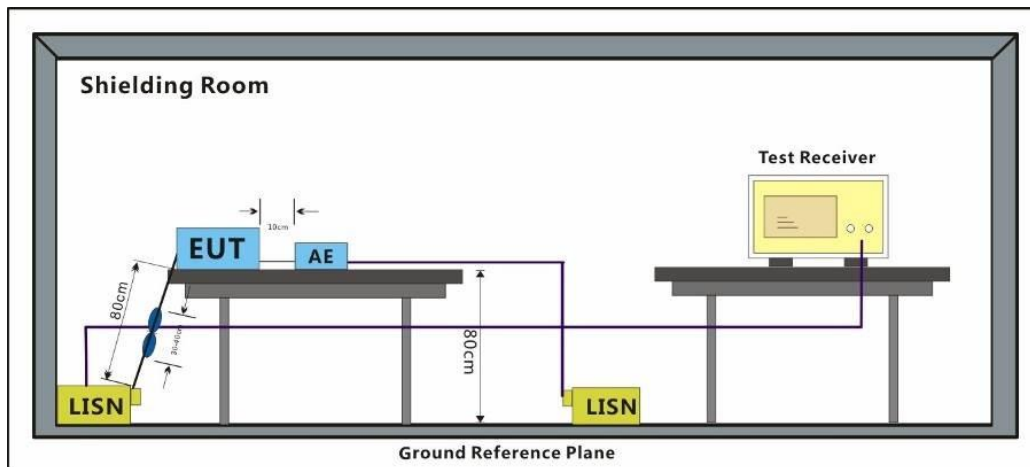
Temperature: 22.5 °C Humidity: 44.5 % RH Atmospheric Pressure: 1020 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	10	Charge + TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.



7.1.3 Test Setup Diagram



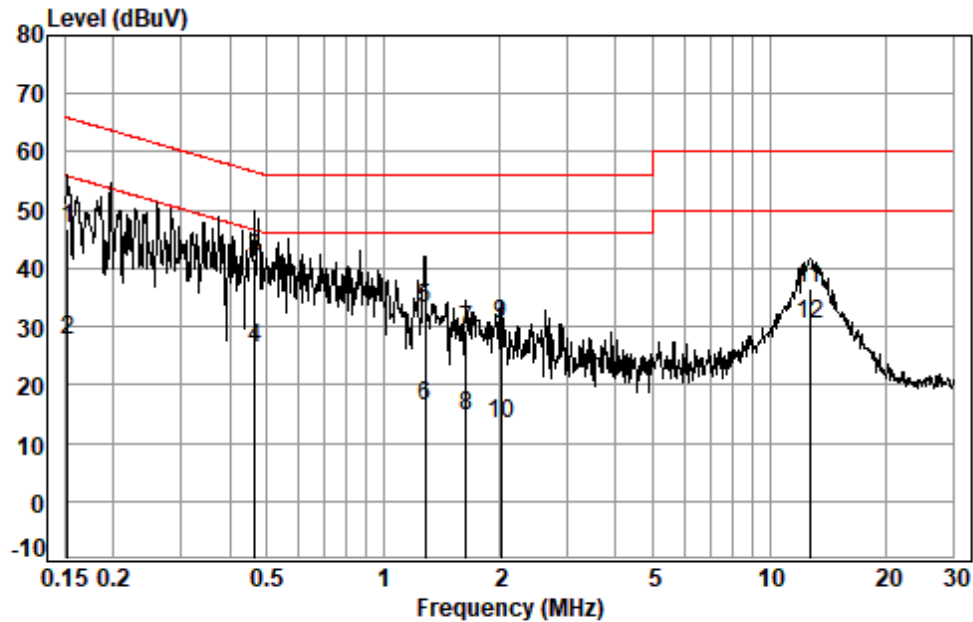
7.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

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



Test Mode: 10; Line: Live line

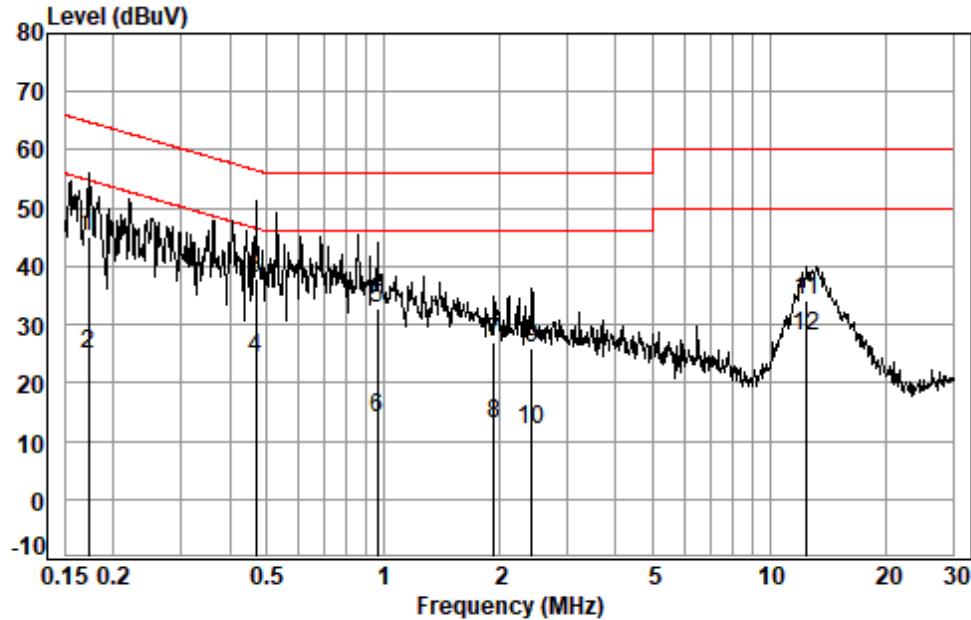


Site : Shielding Room
Condition: Line
Job No. : 00491AT
Test mode: 10

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1524	0.06	10.19	36.55	46.80	65.87	-19.07	QP
2	0.1524	0.06	10.19	17.33	27.58	55.87	-28.29	Average
3 *	0.4661	0.08	9.58	31.99	41.65	56.58	-14.93	QP
4	0.4661	0.08	9.58	16.48	26.14	46.58	-20.44	Average
5	1.2824	0.09	9.58	23.32	32.99	56.00	-23.01	QP
6	1.2824	0.09	9.58	6.52	16.19	46.00	-29.81	Average
7	1.6363	0.10	9.58	19.62	29.30	56.00	-26.70	QP
8	1.6363	0.10	9.58	4.86	14.54	46.00	-31.46	Average
9	2.0119	0.10	9.58	20.53	30.21	56.00	-25.79	QP
10	2.0119	0.10	9.58	3.43	13.11	46.00	-32.89	Average
11	12.7161	0.24	9.83	26.51	36.58	60.00	-23.42	QP
12 *	12.7161	0.24	9.83	20.16	30.23	50.00	-19.77	Average



Test Mode: 10; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 00491AT
Test mode: 10

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1731	0.06	10.12	35.01	45.19	64.81	-19.62	QP
2	0.1731	0.06	10.12	14.89	25.07	54.81	-29.74	Average
3 *	0.4686	0.08	9.72	28.00	37.80	56.54	-18.74	QP
4	0.4686	0.08	9.72	14.32	24.12	46.54	-22.42	Average
5	0.9684	0.09	9.55	23.10	32.74	56.00	-23.26	QP
6	0.9684	0.09	9.55	4.21	13.85	46.00	-32.15	Average
7	1.9386	0.10	9.55	17.32	26.97	56.00	-29.03	QP
8	1.9386	0.10	9.55	3.13	12.78	46.00	-33.22	Average
9	2.4218	0.11	9.55	16.14	25.80	56.00	-30.20	QP
10	2.4218	0.11	9.55	2.26	11.92	46.00	-34.08	Average
11	12.4495	0.23	9.73	24.19	34.15	60.00	-25.85	QP
12 *	12.4495	0.23	9.73	18.18	28.14	50.00	-21.86	Average



7.2 Maximum Conducted output power

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

Test Method: ANSI C63.10 (2013) Section 12.3

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:	<p>* Where B is the 26dB emission bandwidth in MHz.</p> <p>The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.</p>

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.2 °C

Humidity: 40.4 % RH

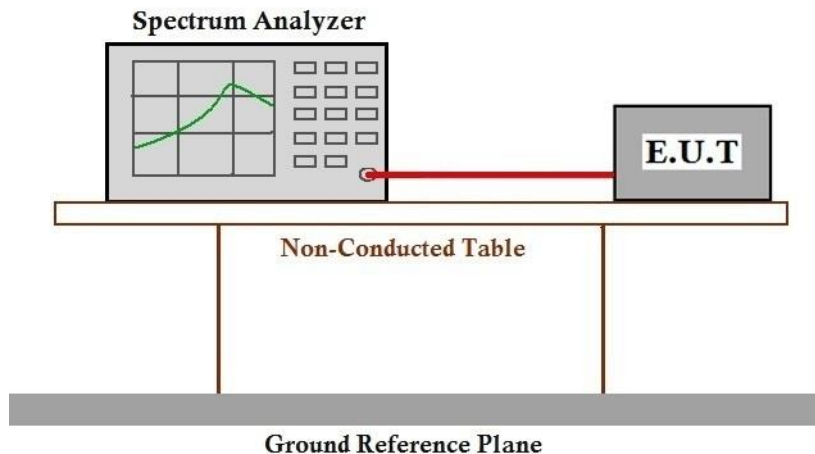
Atmospheric Pressure: 1020 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.



7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

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

Please Refer to Appendix for Details



7.3 Radiated Emissions (Below 1GHz)

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

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

Measurement Distance: 3m

Limit:

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

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.2 °C

Humidity: 45.3 % RH

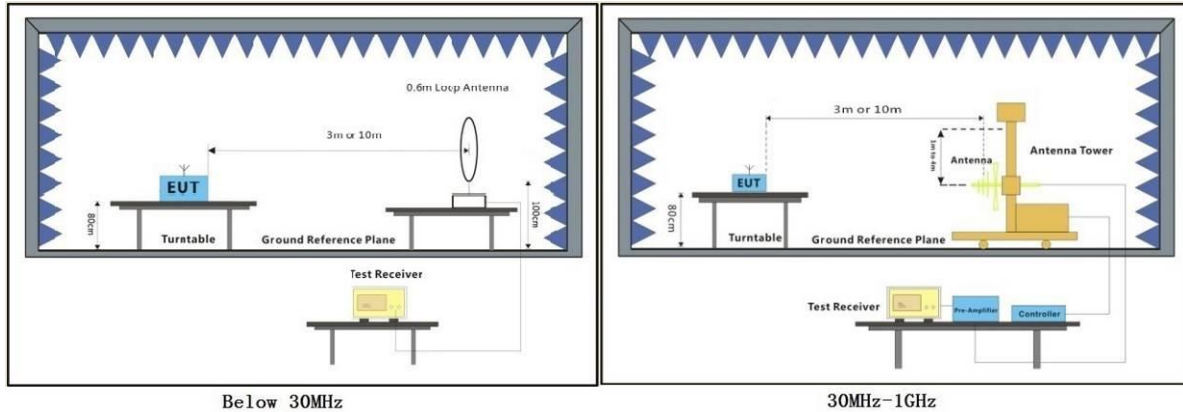
Atmospheric Pressure: 1020 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	09	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	10	Charge + TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.



7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

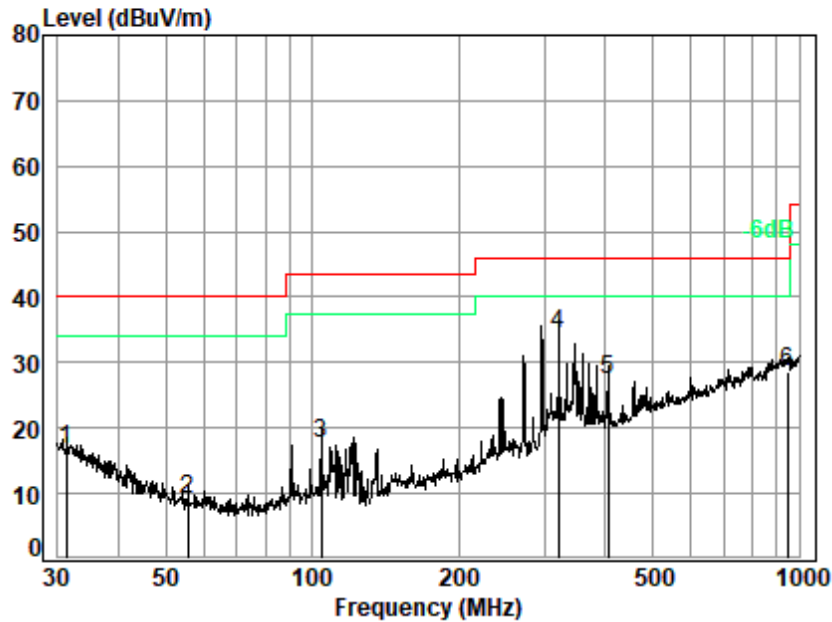
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna,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

Remark:

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



Test Mode: 10; Polarity: Horizontal

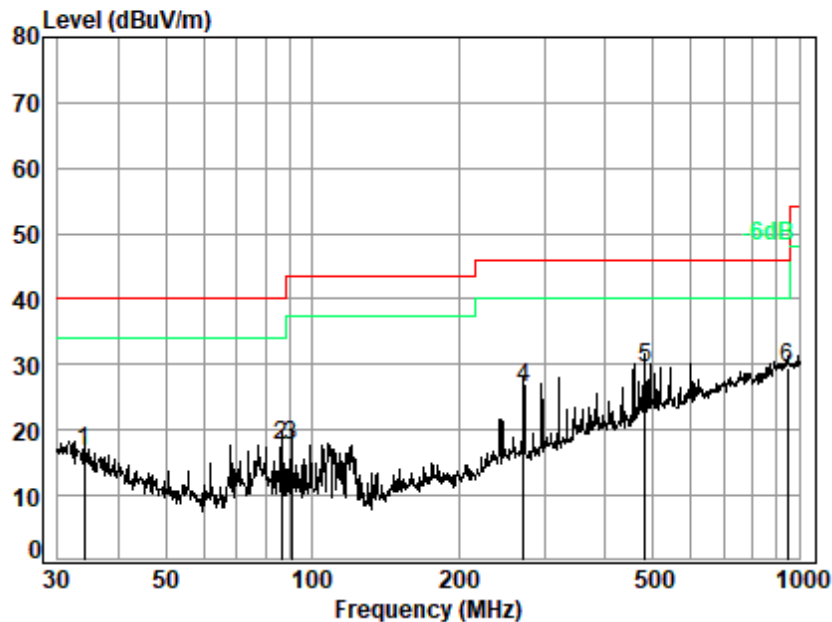


Site : chamber
Condition: 3m HORIZONTAL
Job No. : 00491AT
Test Mode: 10

	Ant Freq	Cable Factor	Preamp Loss	Read Factor	Level dBuV	Level dBuV/m	Limit Line	Over Limit	Remark
	MHz	dB/m	dB	dB					
1	31.289	20.60	0.69	27.79	23.18	16.68	40.00	-23.32	QP
2	55.609	11.89	0.91	27.72	24.08	9.16	40.00	-30.84	QP
3	104.170	12.22	1.25	27.57	31.88	17.78	43.50	-25.72	QP
4 q	321.061	18.53	2.29	26.84	40.49	34.47	46.00	-11.53	QP
5	404.667	20.54	2.60	27.18	31.51	27.47	46.00	-18.53	QP
6	945.440	28.26	4.24	26.44	22.65	28.71	46.00	-17.29	QP



Test Mode: 10; Polarity: Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : 00491AT
Test Mode: 10

	Ant Freq	Cable Factor	Preamp Loss	Read Factor	Level	Limit	Over	
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	34.037	19.41	0.72	27.78	24.43	16.78	40.00	-23.22 QP
2	86.503	11.24	1.14	27.63	32.95	17.70	40.00	-22.30 QP
3	90.537	11.77	1.16	27.62	32.41	17.72	43.50	-25.78 QP
4	271.325	17.09	2.09	26.87	34.08	26.39	46.00	-19.61 QP
5 q	482.216	22.80	2.86	27.49	31.42	29.59	46.00	-16.41 QP
6	945.440	28.26	4.24	26.44	23.37	29.43	46.00	-16.57 QP



7.4 Radiated Emissions (Above 1GHz)

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

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

Measurement Distance: 3m

Limit:

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

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

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

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

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

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

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

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

Humidity: 58.9 % RH

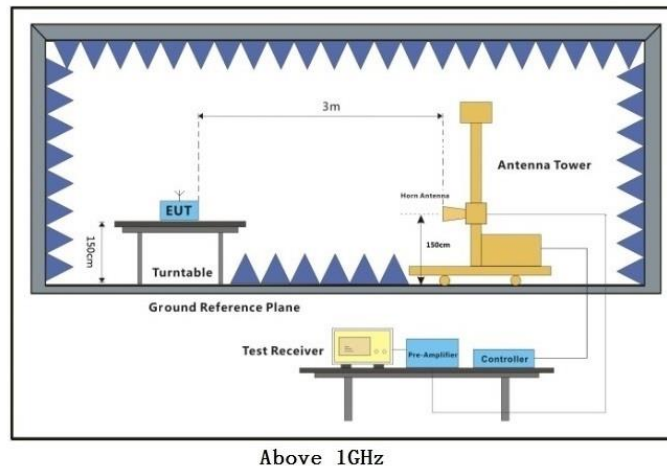
Atmospheric Pressure: 1020 mbar



7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	10	Charge + TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

- a. For 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.



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4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
5. For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.
6. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
7. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



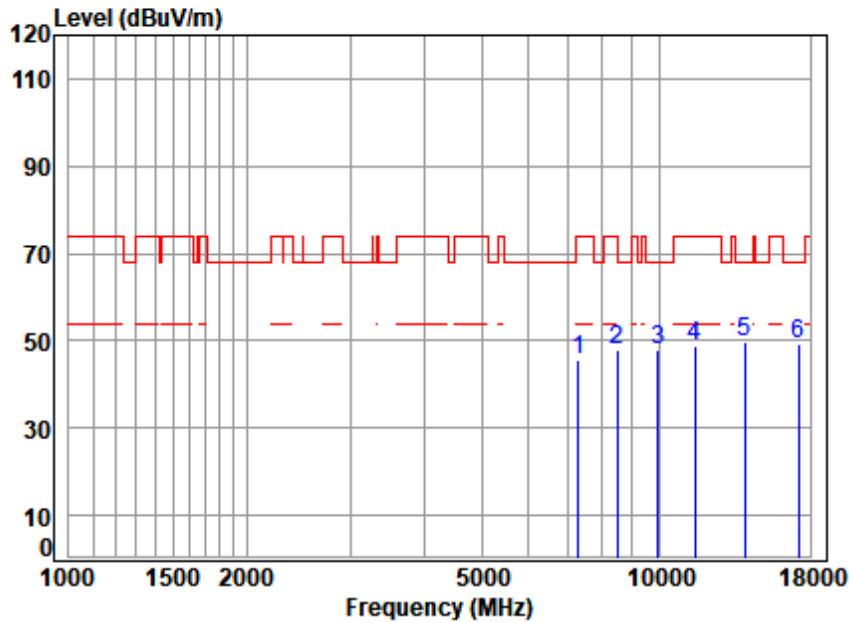
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Shenzhen Branch Testing and Calibration Laboratory

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Test Mode: 09; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00491AT

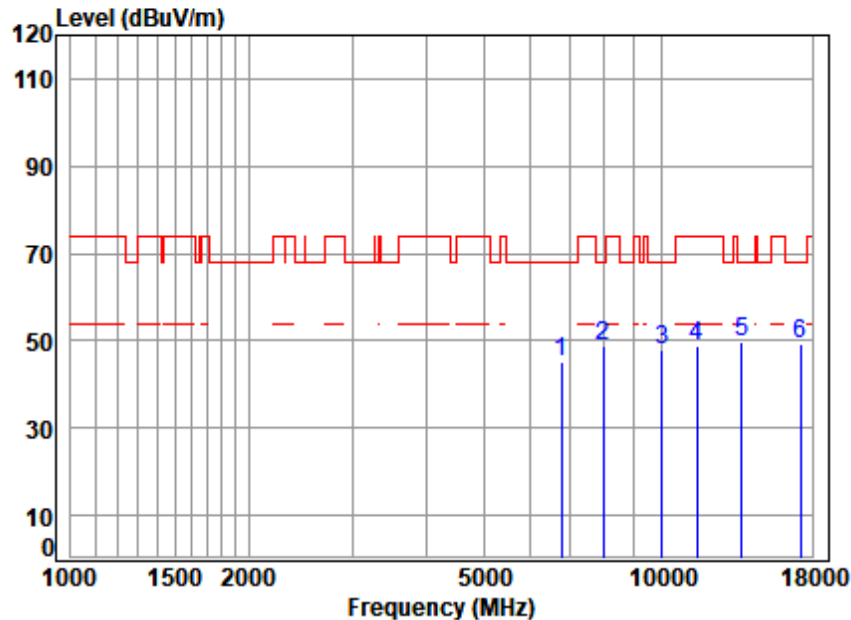
Mode : 5745 TX RSE

: 5.8G Wi-Fi 11a

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	7284.038	11.51	36.67	56.47	54.04	45.75	74.00	-28.25 peak
2	8489.882	12.24	38.32	55.46	52.72	47.82	74.00	-26.18 peak
3	9952.717	12.91	38.90	54.14	50.32	47.99	68.20	-20.21 peak
4	11490.000	14.97	39.61	53.65	47.93	48.86	74.00	-25.14 peak
5	pp13957.530	16.24	39.90	54.40	48.20	49.94	68.20	-18.26 Peak
6	17235.000	17.83	40.01	54.35	45.75	49.24	68.20	-18.96 peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00491AT

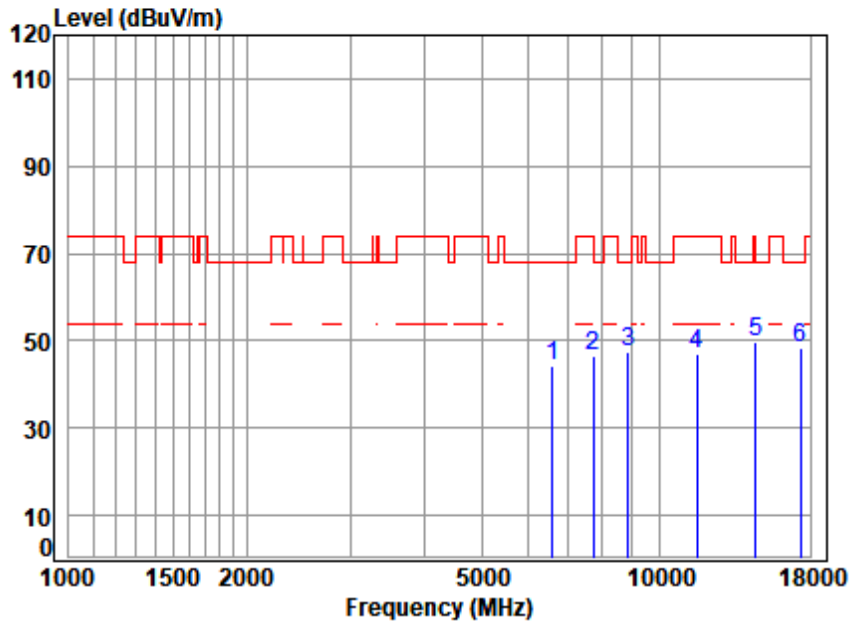
Mode : 5745 TX RSE

: 5.8G Wi-Fi 11a

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	6776.265	11.38	35.81	56.74	54.68	45.13	68.20	-23.07 Peak
2	7966.832	11.55	37.73	55.93	55.34	48.69	68.20	-19.51 peak
3	10010.420	13.04	38.92	54.09	50.19	48.06	68.20	-20.14 peak
4	11490.000	14.97	39.61	53.65	47.75	48.68	74.00	-25.32 peak
5	pp13677.970	16.27	40.00	54.43	47.85	49.69	68.20	-18.51 Peak
6	17235.000	17.83	40.01	54.35	45.92	49.41	68.20	-18.79 peak



Test Mode: 09; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Condition: 3m HORIZONTAL

Job No : 00491AT

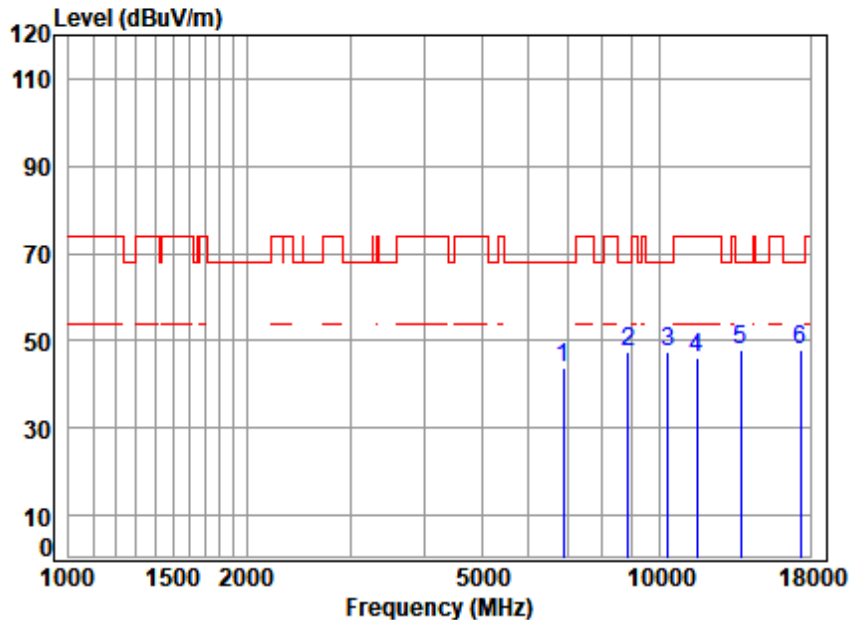
Mode : 5785 TX RSE

: 5.8G Wi-Fi 11a

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	6583.209	11.61	35.13	56.78	54.28	44.24	68.20	-23.96 Peak
2	7739.857	11.39	36.98	56.11	54.10	46.36	74.00	-27.64 Peak
3	8840.473	12.24	38.50	55.14	52.02	47.62	68.20	-20.58 peak
4	11570.000	14.78	39.60	53.67	46.09	46.80	74.00	-27.20 peak
5	pp14533.910	16.79	39.43	54.35	47.74	49.61	68.20	-18.59 Peak
6	17355.000	18.00	40.31	54.37	44.28	48.22	68.20	-19.98 peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Condition: 3m VERTICAL

Job No : 00491AT

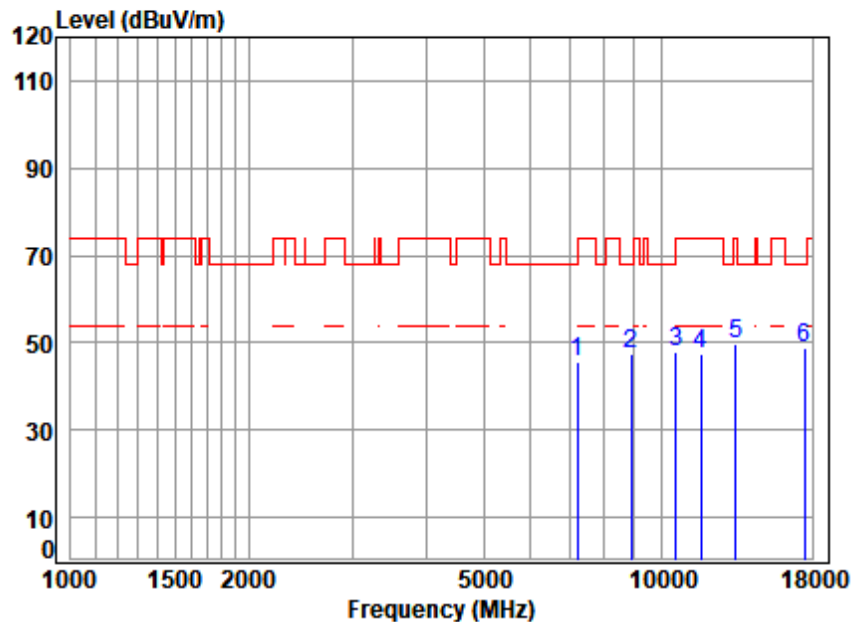
Mode : 5785 TX RSE

: 5.8G Wi-Fi 11a

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	6874.906	11.37	36.10	56.73	53.17	43.91	68.20	-24.29 Peak
2	8866.062	12.23	38.53	55.12	51.59	47.23	68.20	-20.97 peak
3	10333.800	13.59	39.00	53.90	48.56	47.25	68.20	-20.95 Peak
4	11570.000	14.78	39.60	53.67	45.24	45.95	74.00	-28.05 peak
5	pp13717.560	16.33	39.98	54.43	46.05	47.93	68.20	-20.27 Peak
6	17355.000	18.00	40.31	54.37	43.84	47.78	68.20	-20.42 peak



Test Mode: 09; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00491AT

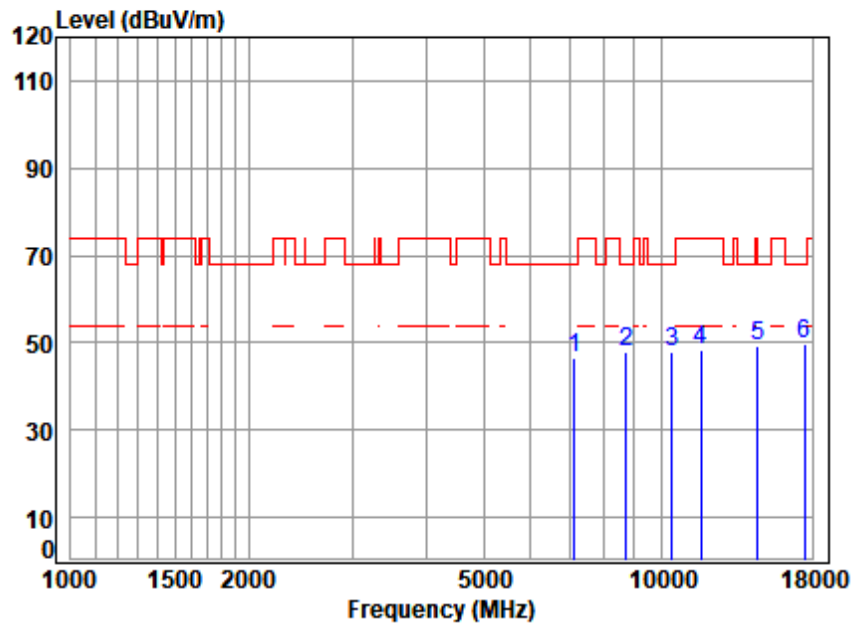
Mode : 5825 TX RSE

: 5.8G Wi-Fi 11a

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	7200.309	11.52	36.60	56.54	54.05	45.63	68.20	-22.57 Peak
2	8891.725	12.22	38.58	55.10	51.57	47.27	68.20	-20.93 peak
3	10606.150	13.62	39.31	53.74	48.68	47.87	74.00	-26.13 Peak
4	11650.000	14.69	39.55	53.69	46.90	47.45	74.00	-26.55 peak
5	13365.320	16.13	40.30	54.46	47.68	49.65	74.00	-24.35 Peak
6	pp17475.000	18.35	40.78	54.40	43.98	48.71	68.20	-19.49 peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL

Job No : 00491AT

Mode : 5825 TX RSE

: 5.8G Wi-Fi 11a

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	7117.542	11.91	36.44	56.61	54.79	46.53	68.20	-21.67 Peak
2	8713.630	12.11	38.57	55.26	52.33	47.75	68.20	-20.45 peak
3	10423.800	13.62	39.02	53.85	49.23	48.02	68.20	-20.18 Peak
4	11650.000	14.69	39.55	53.69	47.64	48.19	74.00	-25.81 peak
5	14533.910	16.79	39.43	54.35	47.63	49.50	68.20	-18.70 Peak
6	pp17475.000	18.35	40.78	54.40	44.89	49.62	68.20	-18.58 peak



7.5 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: ANSI C63.10 (2013) Section 6.10.5

Measurement Distance: 3m

Limit:

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

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C

Humidity: 59.8 % RH

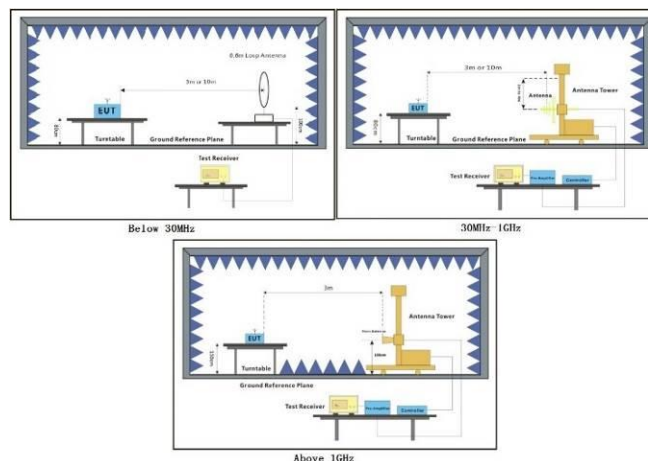
Atmospheric Pressure: 1020 mbar



7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	10	Charge + TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types and being charged. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

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

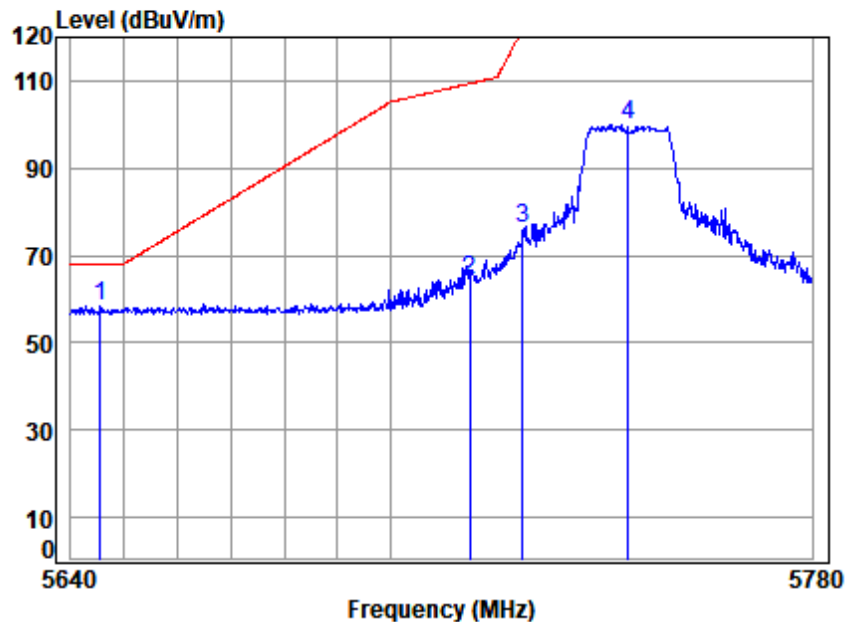
Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

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

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



Test Mode: 09; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

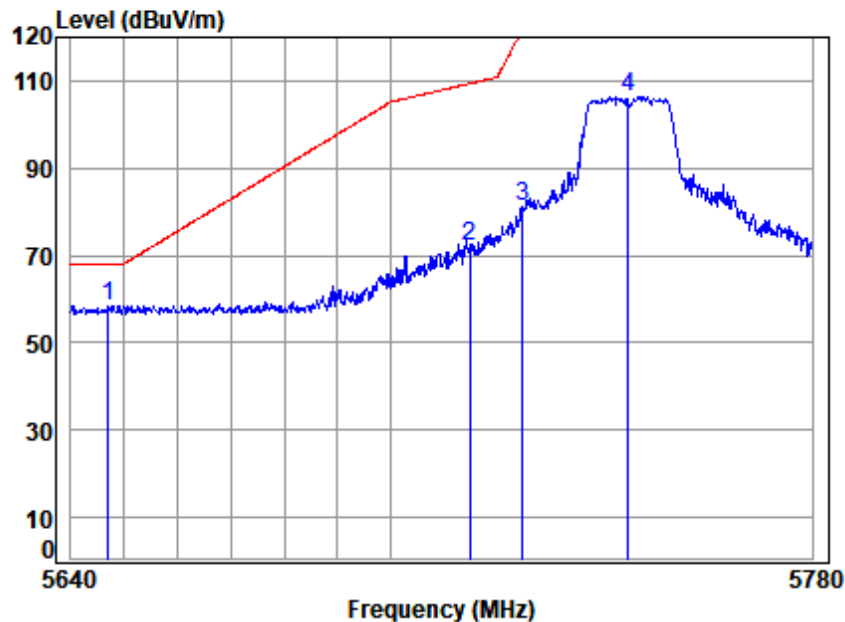
Job No : 00491AT

Mode : 5745 Band edge
: 5.8G Wi-Fi 11a

		Cable	Ant	Preamp	Read	Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	5645.534	10.48	33.09	30.64	45.57	58.50	68.20	-9.70 peak
2	5715.000	10.63	33.23	30.61	50.96	64.21	109.40	-45.19 peak
3	5725.000	10.68	33.25	30.61	62.82	76.14	122.20	-46.06 peak
4	5745.000	10.77	33.29	30.60	86.67	100.13	-----	----- peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

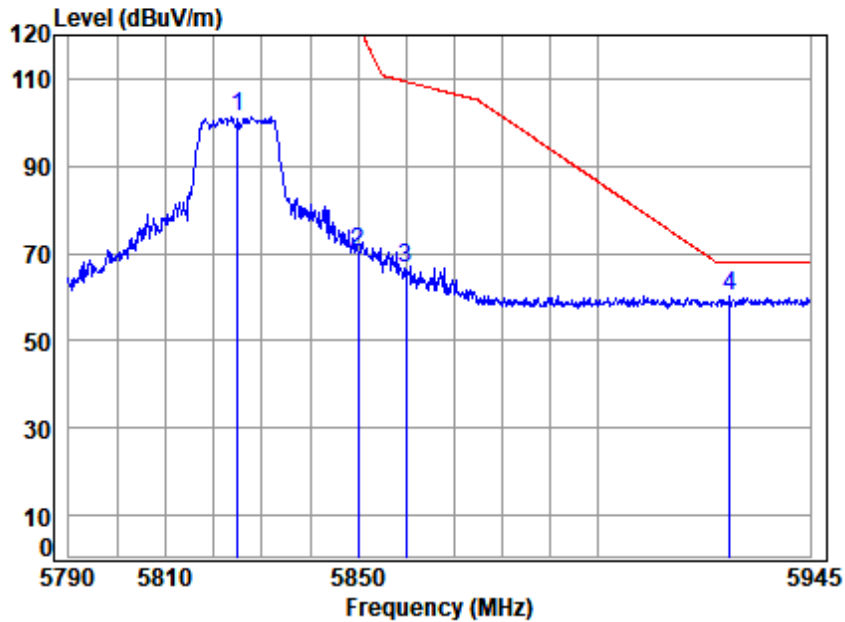
Job No : 00491AT

Mode : 5745 Band edge
: 5.8G Wi-Fi 11a

		Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 5646.919	10.48	33.09	30.64	45.65	58.58	68.20	-9.62	peak
2 5715.000	10.63	33.23	30.61	58.95	72.20	109.40	-37.20	peak
3 5725.000	10.68	33.25	30.61	67.85	81.17	122.20	-41.03	peak
4 5745.000	10.77	33.29	30.60	93.01	106.47	-----	-----	peak



Test Mode: 09; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

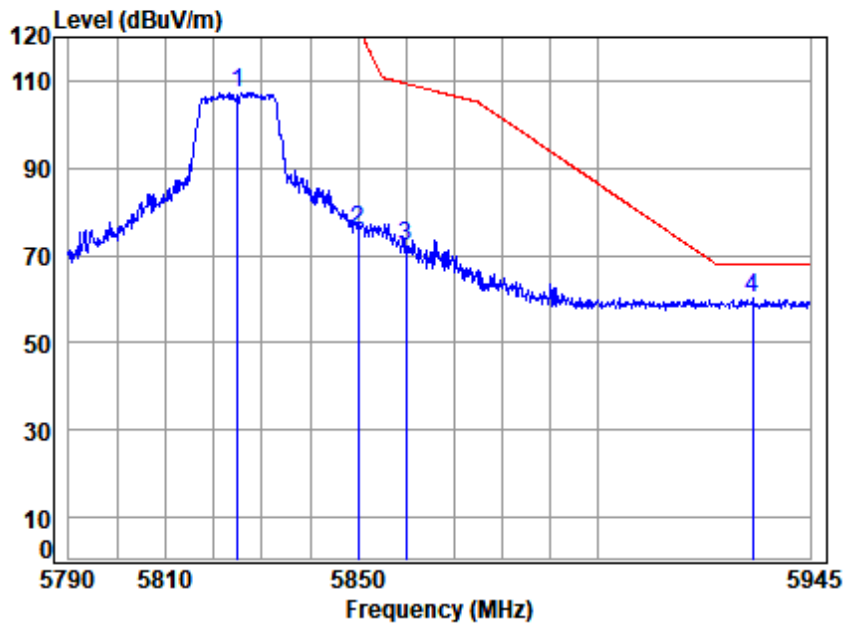
Job No : 00491AT

Mode : 5825 Band edge
: 5.8G Wi-Fi 11a

		Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5825.000	10.99	33.50	30.57	87.31	101.23	-----	-----	peak
2	5850.000	10.95	33.60	30.56	56.31	70.30	122.20	-51.90	peak
3	5860.000	10.94	33.58	30.56	52.57	66.53	109.40	-42.87	peak
4 pp	5928.062	10.87	33.56	30.53	46.18	60.08	68.20	-8.12	peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL

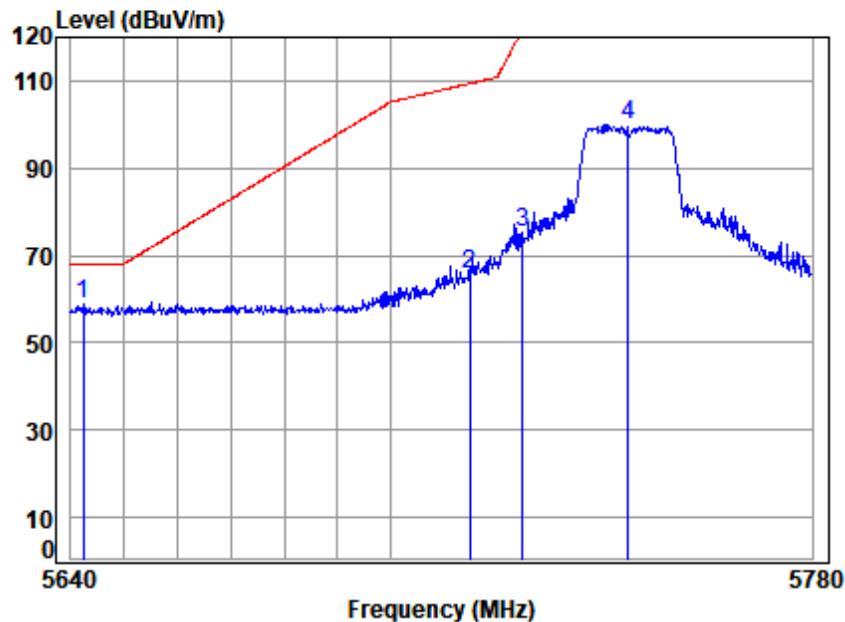
Job No : 00491AT

Mode : 5825 Band edge
: 5.8G Wi-Fi 11a

		Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5825.000	10.99	33.50	30.57	93.50	107.42	-----	-----	peak
2	5850.000	10.95	33.60	30.56	61.83	75.82	122.20	-46.38	peak
3	5860.000	10.94	33.58	30.56	58.30	72.26	109.40	-37.14	peak
4 pp	5932.919	10.86	33.57	30.53	46.28	60.18	68.20	-8.02	peak



Test Mode: 09; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00491AT

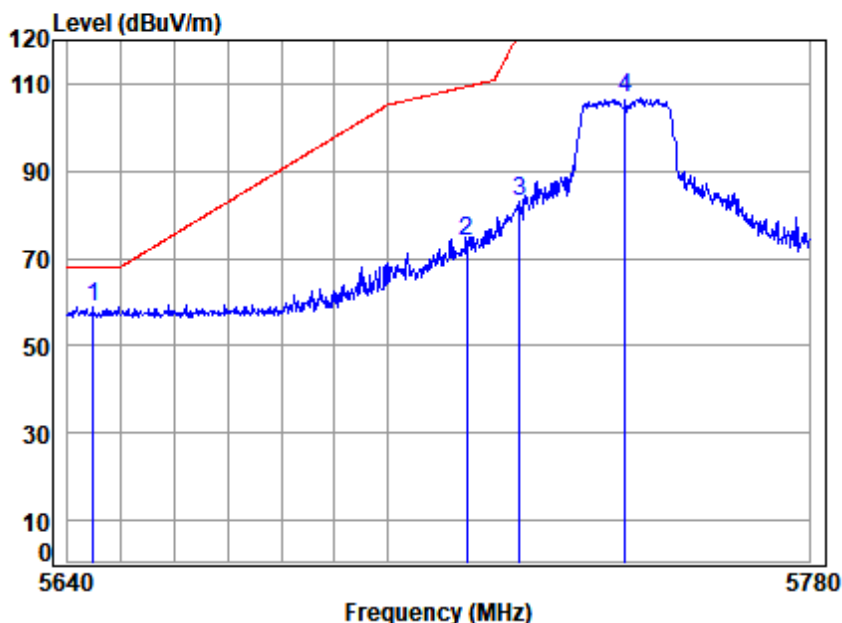
Mode : 5745 Band edge

: 5.8G Wi-Fi 11n20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 5642.352	10.47	33.08	30.64	46.06	58.97	68.20	-9.23	peak
2 5715.000	10.63	33.23	30.61	52.36	65.61	109.40	-43.79	peak
3 5725.000	10.68	33.25	30.61	61.75	75.07	122.20	-47.13	peak
4 5745.000	10.77	33.29	30.60	86.69	100.15	-----	-----	peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00491AT

Mode : 5745 Band edge

: 5.8G Wi-Fi 11n20

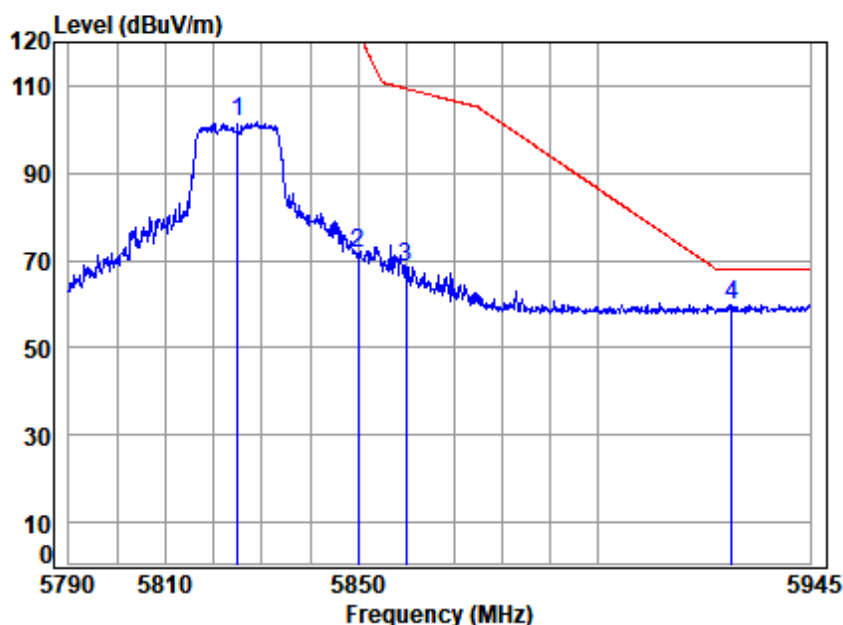
		Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 5644.704	10.48	33.09	30.64	45.82	58.75	68.20	-9.45	peak
2 5715.000	10.63	33.23	30.61	60.66	73.91	109.40	-35.49	peak
3 5725.000	10.68	33.25	30.61	69.83	83.15	122.20	-39.05	peak
4 5745.000	10.77	33.29	30.60	93.16	106.62	-----	-----	peak



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Test Mode: 09; Polarity: Horizontal; Modulation: 802.11n; Bandwidth: 20MHz; Channel: High



Condition: 3m HORIZONTAL

Job No : 00491AT

Mode : 5825 Band edge

: 5.8G Wi-Fi 11n20

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5825.000	10.99	33.50	30.57	87.76	101.68	-----	-----	peak
2	5850.000	10.95	33.60	30.56	57.57	71.56	122.20	-50.64	peak
3	5860.000	10.94	33.58	30.56	54.50	68.46	109.40	-40.94	peak
4 pp	5928.532	10.87	33.56	30.53	46.02	59.92	68.20	-8.28	peak



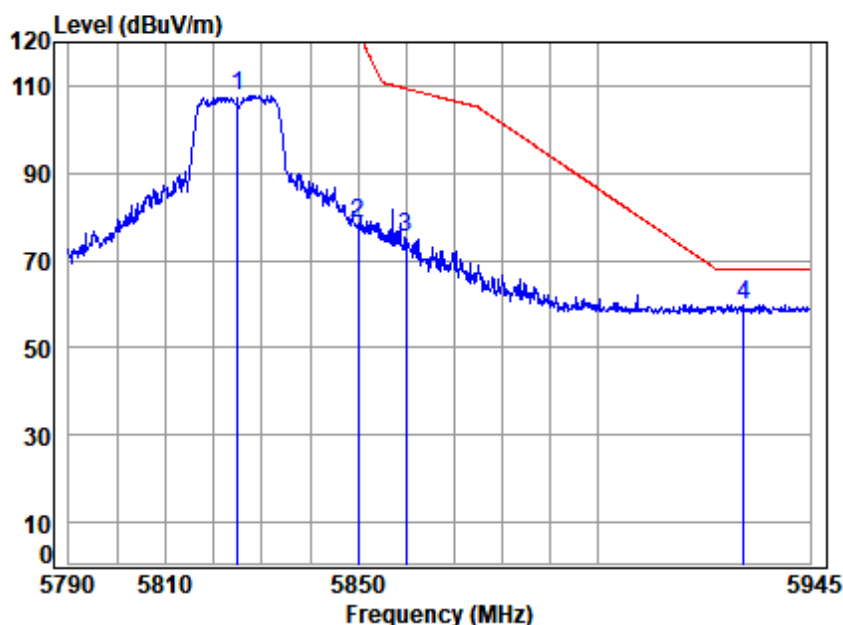
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Test Mode: 09; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL

Job No : 00491AT

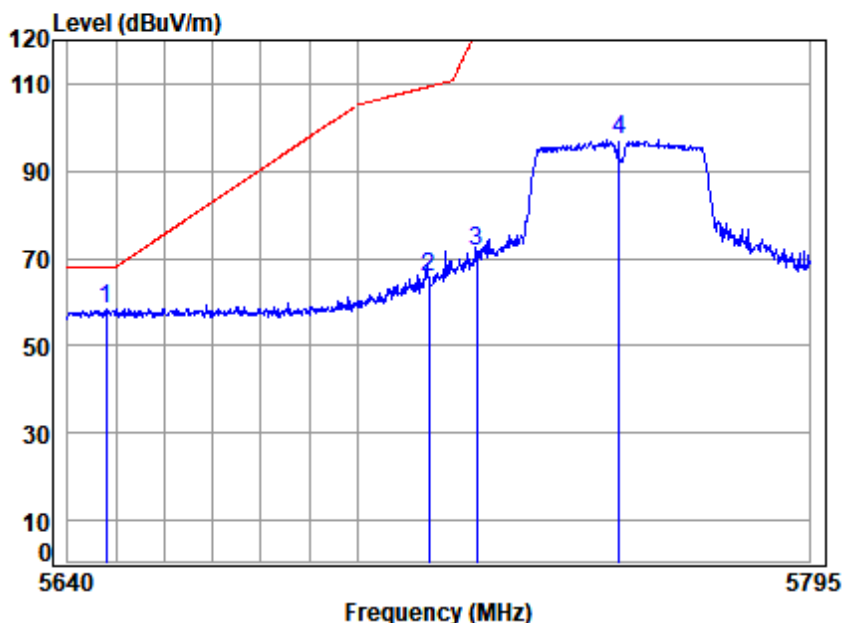
Mode : 5825 Band edge

: 5.8G Wi-Fi 11n20

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
5825.000	10.99	33.50	30.57	93.79	107.71	-----	-----	peak
5850.000	10.95	33.60	30.56	64.42	78.41	122.20	-43.79	peak
5860.000	10.94	33.58	30.56	61.42	75.38	109.40	-34.02	peak
5930.882	10.87	33.56	30.53	46.01	59.91	68.20	-8.29	peak



Test Mode: 09; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00491AT

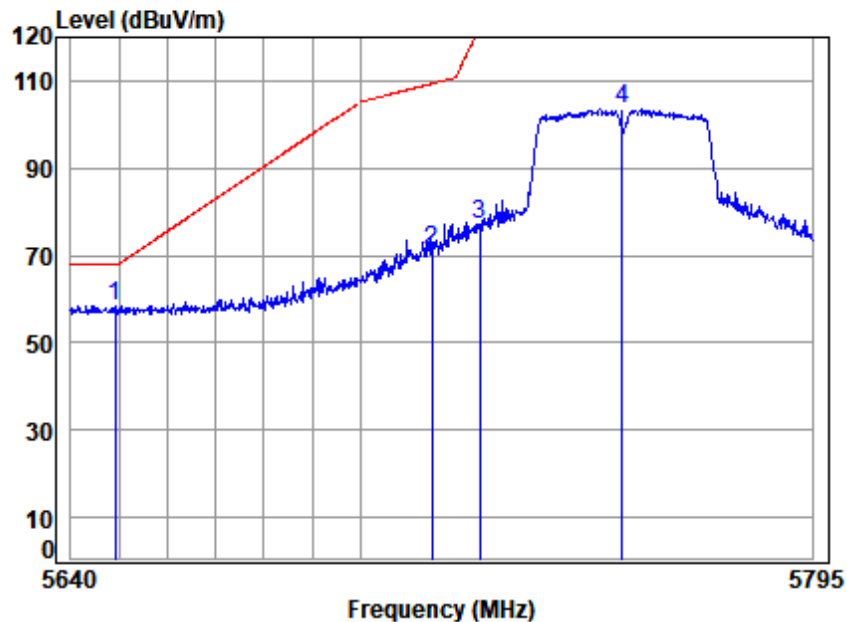
Mode : 5755 Band edge

: 5.8G Wi-Fi 11n40

		Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 5647.957	10.48	33.10	30.64	45.33	58.27	68.20	-9.93	peak
2 5715.000	10.63	33.23	30.61	52.35	65.60	109.40	-43.80	peak
3 5725.000	10.68	33.25	30.61	58.41	71.73	122.20	-50.47	peak
4 5755.000	10.81	33.31	30.60	83.66	97.18	-----	-----	peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00491AT

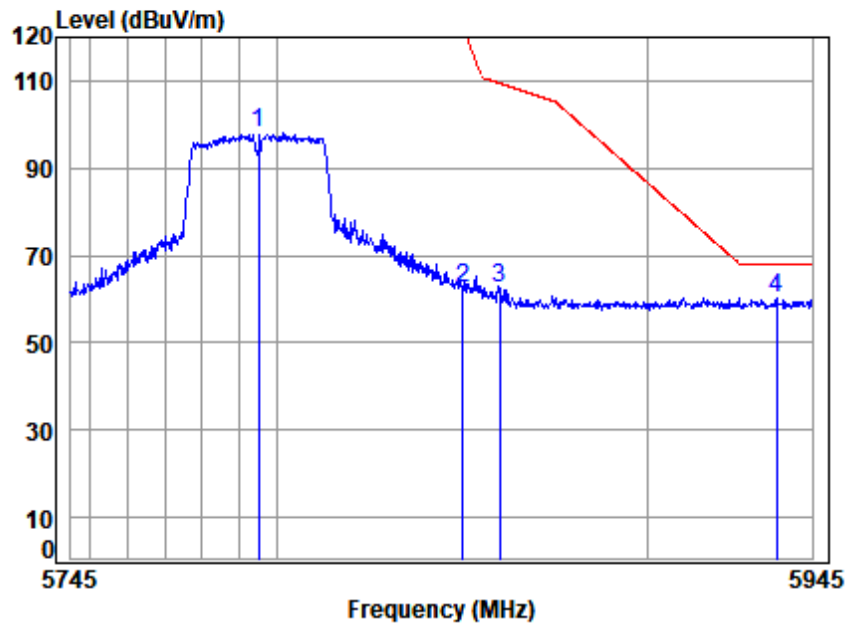
Mode : 5755 Band edge

: 5.8G Wi-Fi 11n40

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	5649.182	10.48	33.10	30.64	45.59	58.53	68.20	-9.67	peak
2	5715.000	10.63	33.23	30.61	57.76	71.01	109.40	-38.39	peak
3	5725.000	10.68	33.25	30.61	63.94	77.26	122.20	-44.94	peak
4	5755.000	10.81	33.31	30.60	90.05	103.57	-----	-----	peak



Test Mode: 09; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00491AT

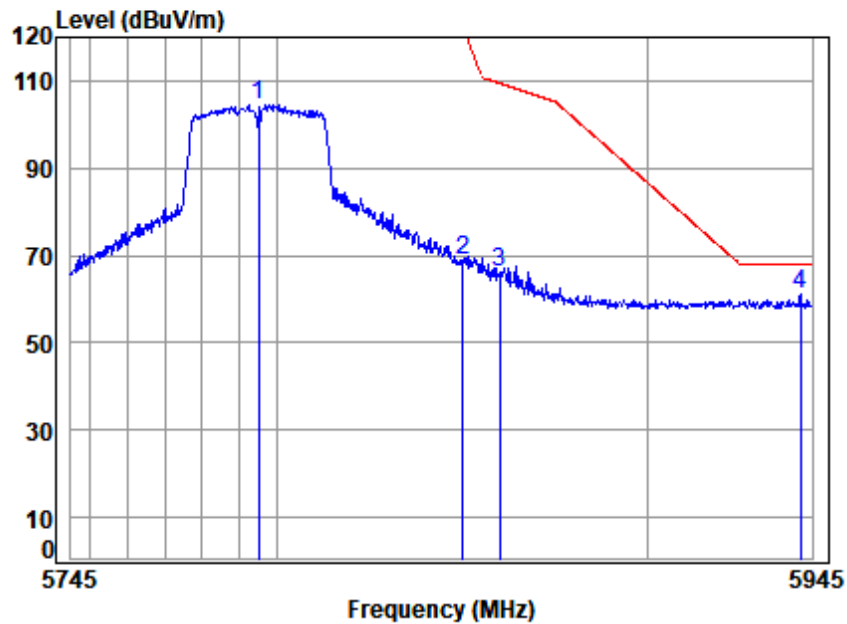
Mode : 5795 Band edge

: 5.8G Wi-Fi 11n40

		Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5795.000	11.00	33.39	30.58	84.47	98.28	-----	-----	peak
2	5850.000	10.95	33.60	30.56	48.61	62.60	122.20	-59.60	peak
3	5860.000	10.94	33.58	30.56	48.40	62.36	109.40	-47.04	peak
4 pp	5935.243	10.86	33.57	30.53	46.24	60.14	68.20	-8.06	peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m VERTICAL

Job No : 00491AT

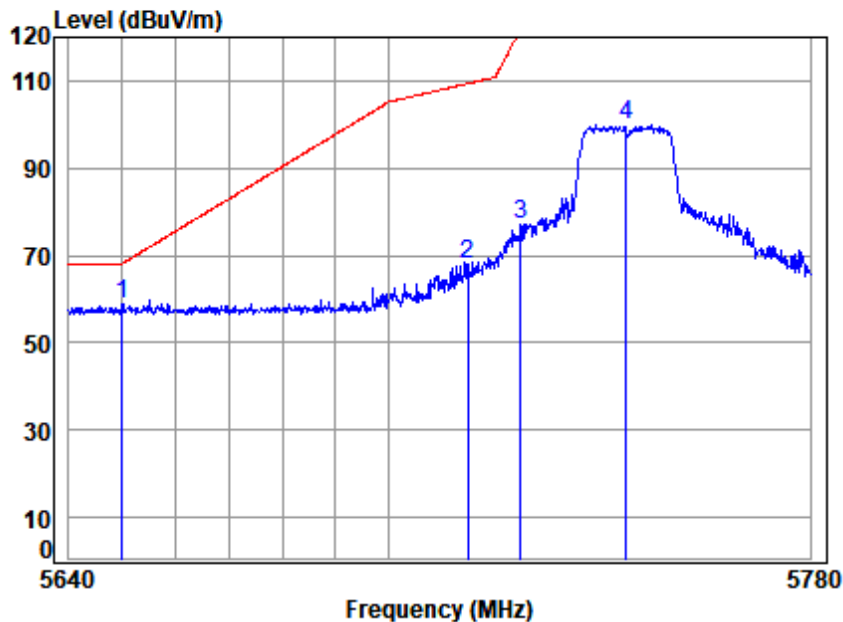
Mode : 5795 Band edge

: 5.8G Wi-Fi 11n40

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 5795.000	11.00	33.39	30.58	90.81	104.62	-----	----- peak
2 5850.000	10.95	33.60	30.56	54.68	68.67	122.20	-53.53 peak
3 5860.000	10.94	33.58	30.56	52.22	66.18	109.40	-43.22 peak
4 pp 5941.746	10.86	33.58	30.52	47.38	61.30	68.20	-6.90 peak



Test Mode: 09; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00491AT

Mode : 5745 Band edge

: 5.8G Wi-Fi 11ac20

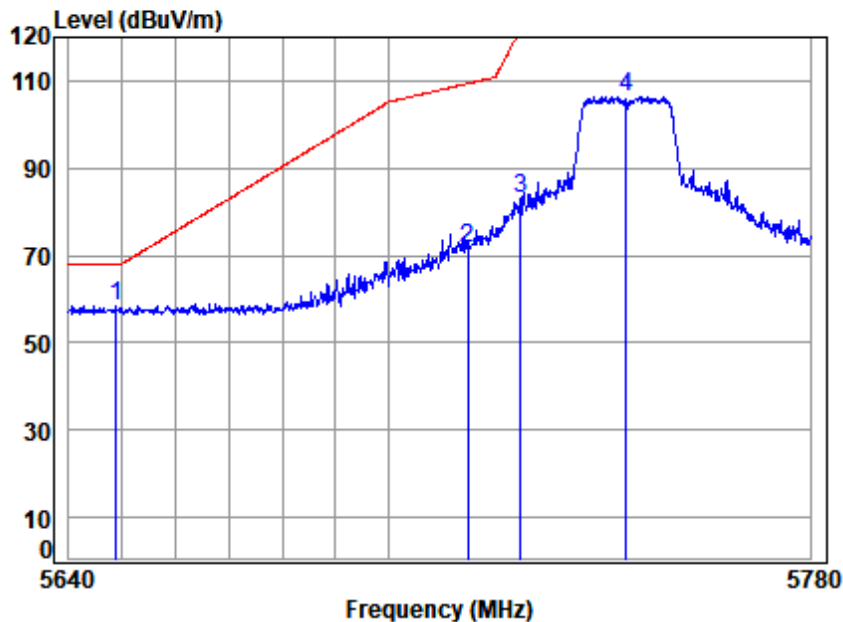
		Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 5649.966	10.48	33.10	30.64	45.74	58.68	68.20	-9.52	peak
2 5715.000	10.63	33.23	30.61	54.90	68.15	109.40	-41.25	peak
3 5725.000	10.68	33.25	30.61	64.02	77.34	122.20	-44.86	peak
4 5745.000	10.77	33.29	30.60	86.34	99.80	-----	-----	peak



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Test Mode: 09; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00491AT

Mode : 5745 Band edge

: 5.8G Wi-Fi 11ac20

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	5648.857	10.48	33.10	30.64	45.61	58.55	68.20	-9.65	peak
2	5715.000	10.63	33.23	30.61	58.35	71.60	109.40	-37.80	peak
3	5725.000	10.68	33.25	30.61	69.60	82.92	122.20	-39.28	peak
4	5745.000	10.77	33.29	30.60	93.01	106.47	-----	-----	peak



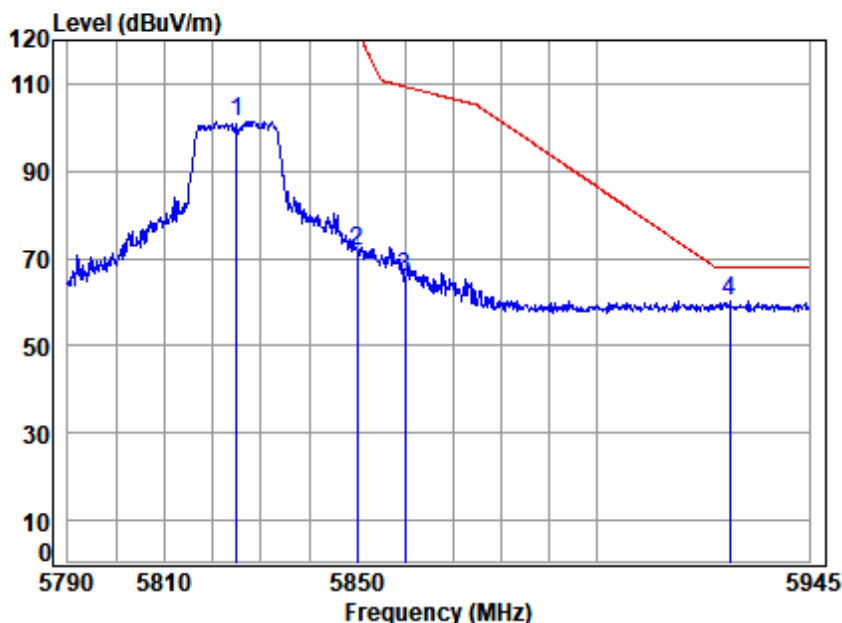
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Test Mode: 09; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00491AT

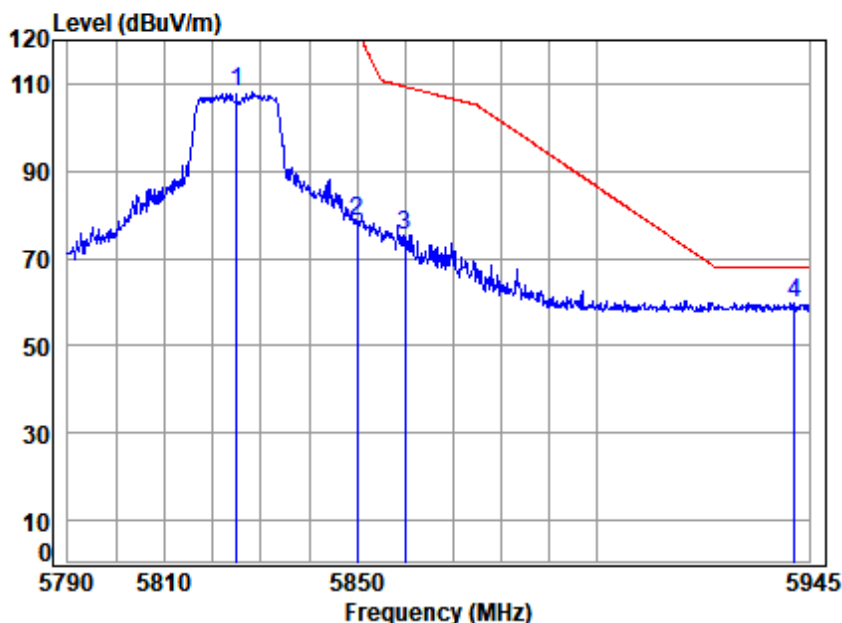
Mode : 5825 Band edge

: 5.8G Wi-Fi 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	5825.000	10.99	33.50	30.57	87.60	101.52	-----	-----	peak
2	5850.000	10.95	33.60	30.56	57.55	71.54	122.20	-50.66	peak
3	5860.000	10.94	33.58	30.56	51.93	65.89	109.40	-43.51	peak
4 pp	5928.219	10.87	33.56	30.53	46.31	60.21	68.20	-7.99	peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL

Job No : 00491AT

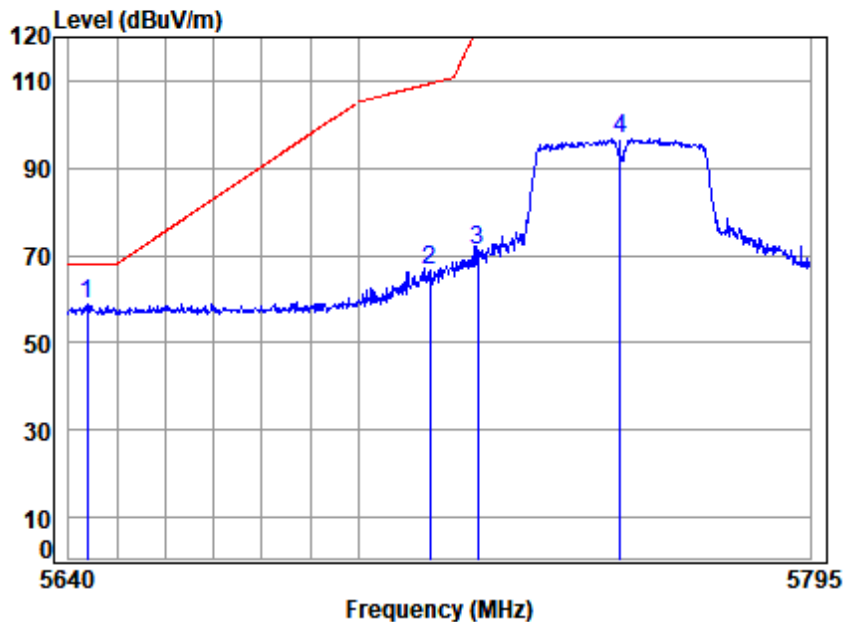
Mode : 5825 Band edge

: 5.8G Wi-Fi 11ac20

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 5825.000	10.99	33.50	30.57	94.02	107.94	-----	-----	peak
2 5850.000	10.95	33.60	30.56	64.69	78.68	122.20	-43.52	peak
3 5860.000	10.94	33.58	30.56	61.27	75.23	109.40	-34.17	peak
4 pp 5941.860	10.86	33.58	30.52	45.97	59.89	68.20	-8.31	peak



Test Mode: 09; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00491AT

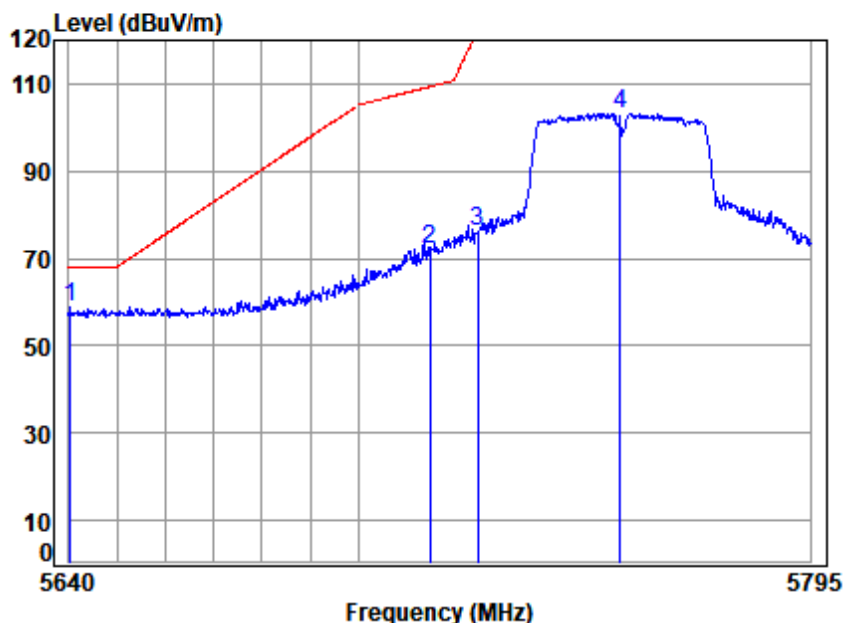
Mode : 5755 Band edge

: 5.8G Wi-Fi 11ac40

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	5643.824	10.48	33.09	30.64	45.76	58.69	68.20	-9.51	peak
2	5715.000	10.63	33.23	30.61	53.41	66.66	109.40	-42.74	peak
3	5725.000	10.68	33.25	30.61	58.07	71.39	122.20	-50.81	peak
4	5755.000	10.81	33.31	30.60	83.25	96.77	-----	-----	peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00491AT

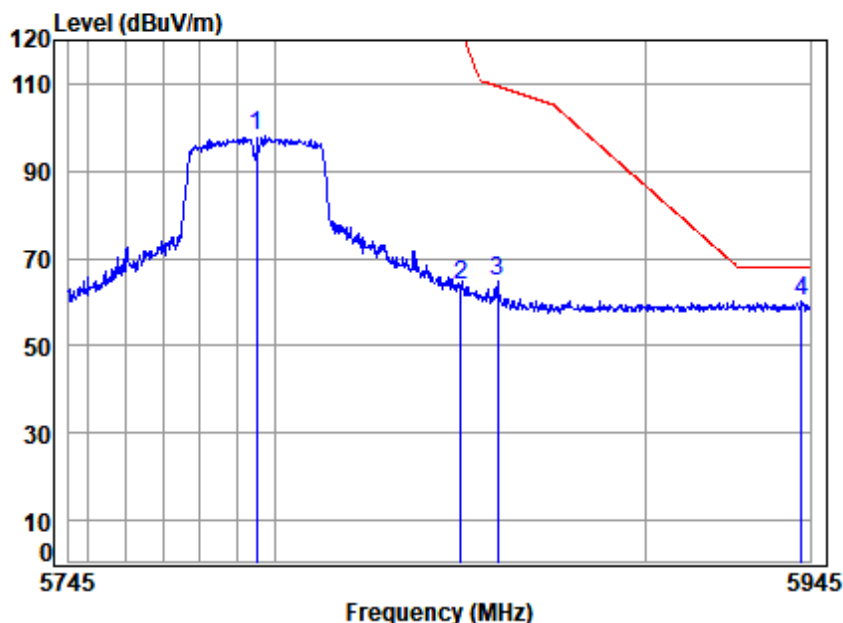
Mode : 5755 Band edge

: 5.8G Wi-Fi 11ac40

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	5640.306	10.47	33.08	30.64	45.89	58.80	68.20	-9.40	peak
2	5715.000	10.63	33.23	30.61	58.66	71.91	109.40	-37.49	peak
3	5725.000	10.68	33.25	30.61	62.75	76.07	122.20	-46.13	peak
4	5755.000	10.81	33.31	30.60	89.73	103.25	-----	-----	peak



Test Mode: 09; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00491AT

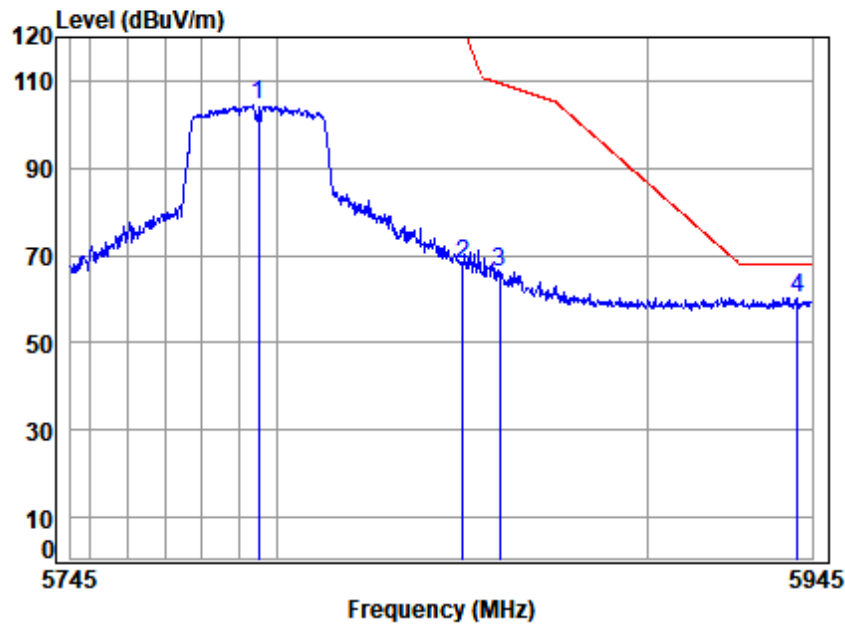
Mode : 5795 Band edge

: 5.8G Wi-Fi 11ac40

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
5795.000	11.00	33.39	30.58	84.08	97.89	-----	-----	peak
5850.000	10.95	33.60	30.56	49.68	63.67	122.20	-58.53	peak
5860.000	10.94	33.58	30.56	50.73	64.69	109.40	-44.71	peak
5942.763	10.86	33.59	30.52	46.21	60.14	68.20	-8.06	peak



Test Mode: 09; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



Condition: 3m VERTICAL

Job No : 00491AT

Mode : 5795 Band edge

: 5.8G Wi-Fi 11ac40

		Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5795.000	11.00	33.39	30.58	90.51	104.32	-----	-----	peak
2	5850.000	10.95	33.60	30.56	53.90	67.89	122.20	-54.31	peak
3	5860.000	10.94	33.58	30.56	52.10	66.06	109.40	-43.34	peak
4 pp	5940.933	10.86	33.58	30.52	46.24	60.16	68.20	-8.04	peak



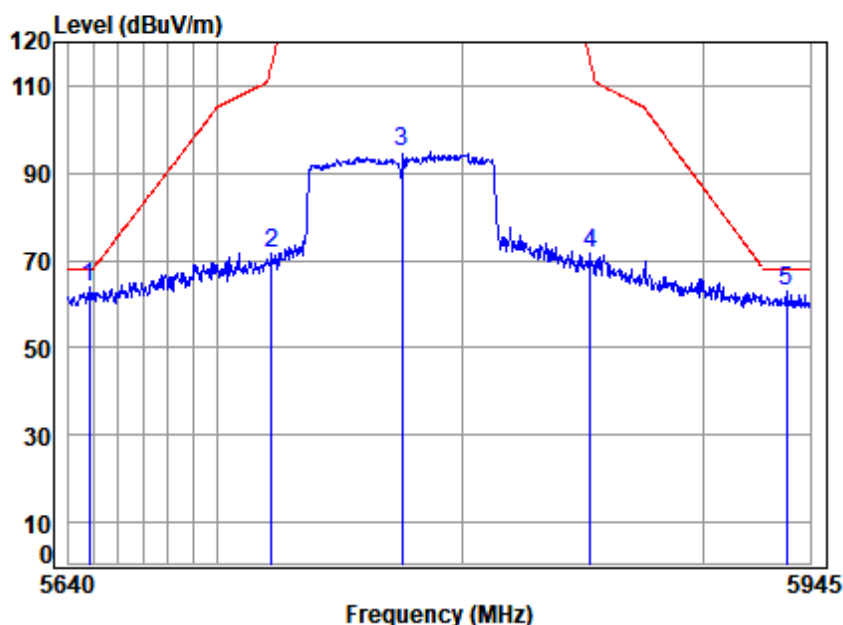
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Test Mode: 09; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



Condition: 3m HORIZONTAL

Job No : 00491AT

Mode : 5775 Band edge

: 5.8G Wi-Fi 11ac80

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	5648.323	10.48	33.10	30.64	50.72	63.66	68.20	-4.54	Peak
2	5721.979	10.66	33.24	30.61	58.25	71.54	115.31	-43.77	peak
3	5775.000	10.91	33.35	30.59	81.12	94.79	-----	-----	peak
4	5852.732	10.95	33.59	30.56	57.47	71.45	115.97	-44.52	peak
5	5934.989	10.86	33.57	30.53	48.88	62.78	68.20	-5.42	peak



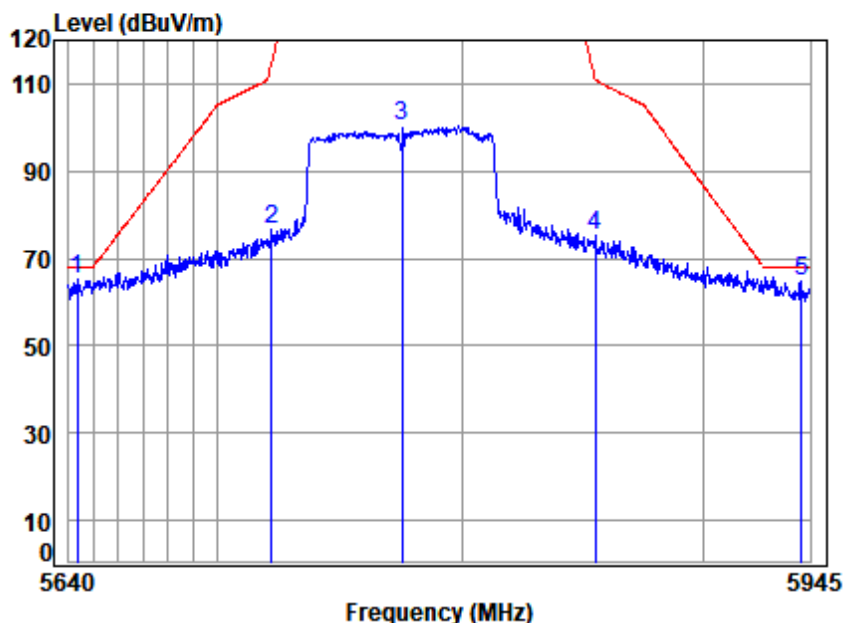
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Test Mode: 09; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



Condition: 3m VERTICAL

Job No : 00491AT

Mode : 5775 Band edge

: 5.8G Wi-Fi 11ac80

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	5643.269	10.47	33.09	30.64	52.34	65.26	68.20	-2.94	Peak
2	5721.979	10.66	33.24	30.61	63.34	76.63	115.31	-38.68	peak
3	5775.000	10.91	33.35	30.59	86.57	100.24	-----	-----	peak
4	5854.890	10.95	33.59	30.56	61.37	75.35	111.05	-35.70	peak
5	5941.244	10.86	33.58	30.52	50.83	64.75	68.20	-3.45	peak



7.6 Duty Cycle

Test Requirement ANSI C63.10 (2013) Section 12.2

Test Method: ANSI C63.10 (2013) Section 12.2

7.6.1 E.U.T. Operation

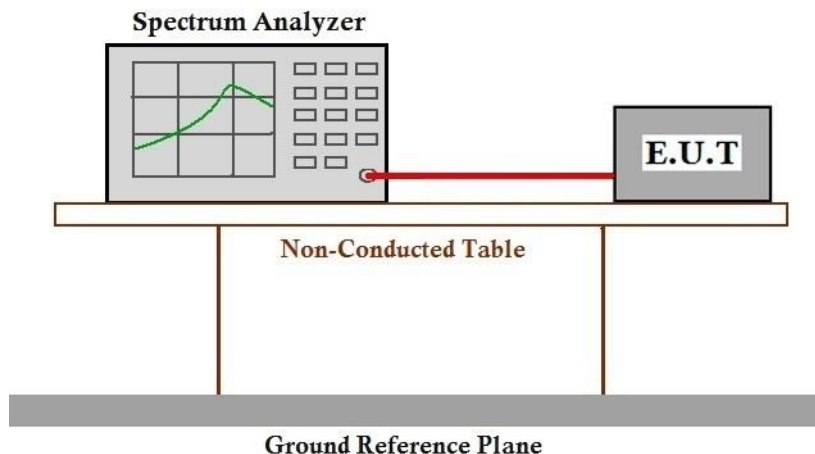
Operating Environment:

Temperature: 22.2 °C Humidity: 40.4 % RH Atmospheric Pressure: 1020 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.7 99% Bandwidth

Test Requirement ANSI C63.10 (2013) Section 12.4.2

Test Method: ANSI C63.10 (2013) Section 12.4.2

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.2 °C

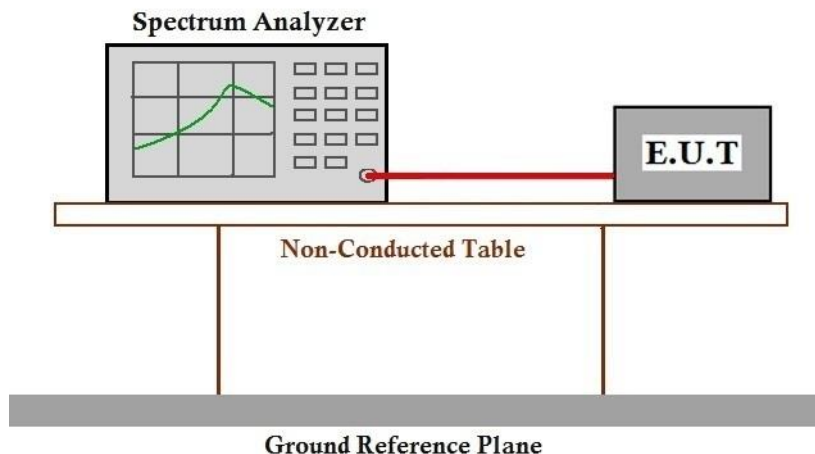
Humidity: 40.4 % RH

Atmospheric Pressure: 1020 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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

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

Test Method: ANSI C63.10 (2013) Section 6.9.2

Limit:

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

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.2 °C

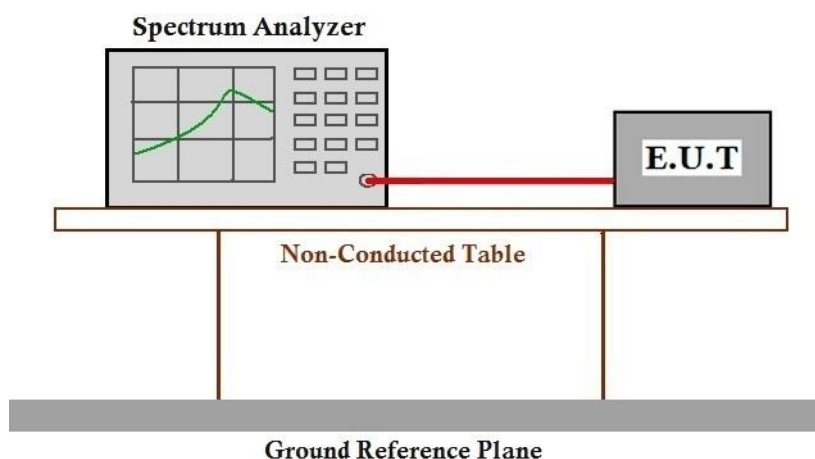
Humidity: 40.4 % RH

Atmospheric Pressure: 1020 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.9 Peak Power spectrum density

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

Test Method: ANSI C63.10 (2013) Section 12.5

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: 22.2 °C

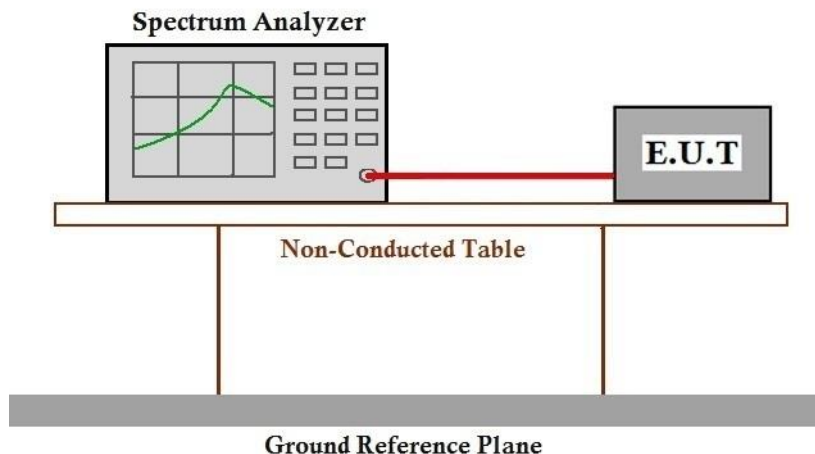
Humidity: 40.4 % RH

Atmospheric Pressure: 1020 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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Shenzhen Branch Testing & Analysis Laboratory

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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: 22.2 °C

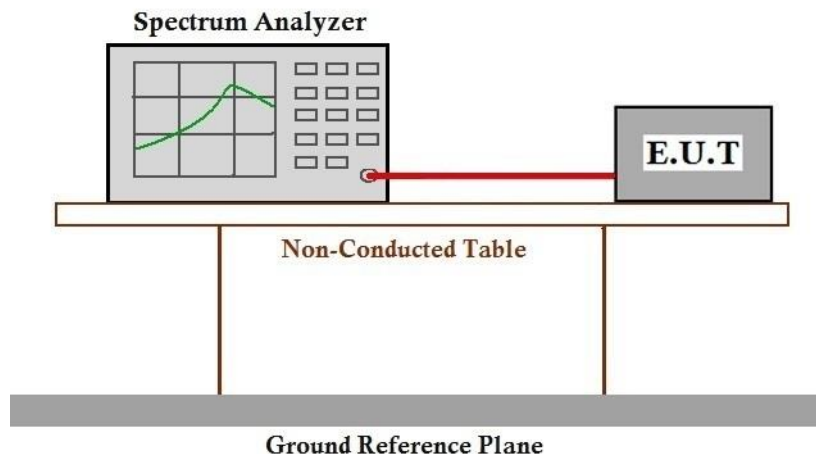
Humidity: 40.4 % RH

Atmospheric Pressure: 1020 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	09	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.10.3 Test Setup Diagram



7.10.4 Measurement Procedure and Data

Please Refer to Appendix for Details



8 Test Setup Photo

Refer to Appendix – Test Setup Photos for SZCR2502000491AT

9 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal photos for SZCR2502000491AT

10 Appendix

1. Duty Cycle

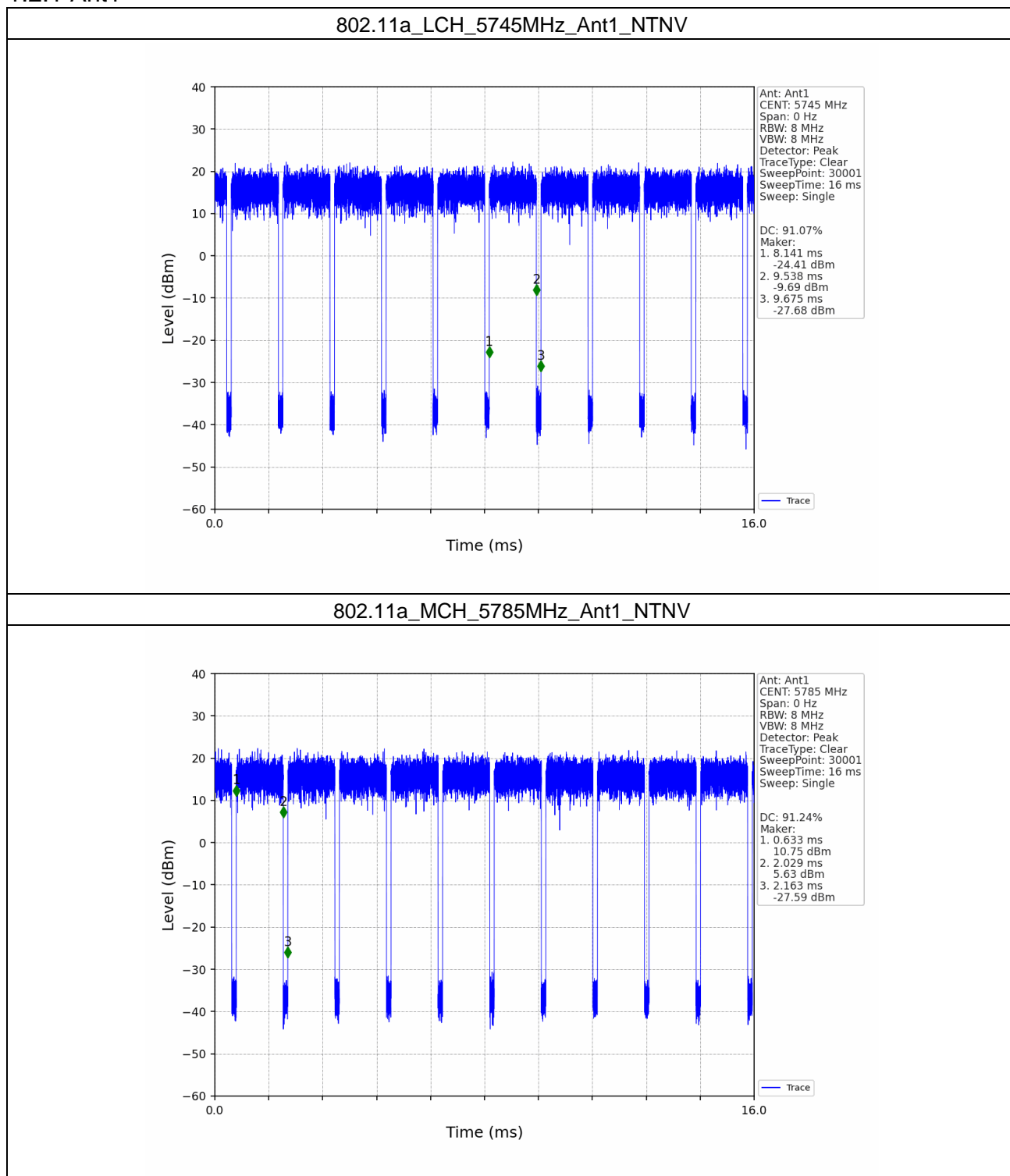
1.1 Test Result

1.1.1 Ant1

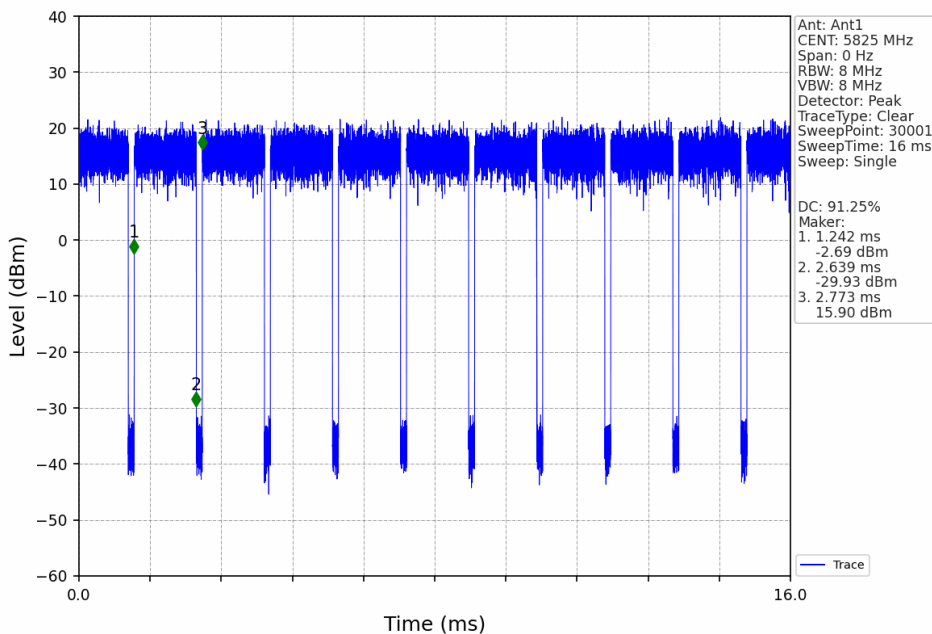
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5745	1.397	1.534	91.07	0.41	0.19
		5785	1.396	1.530	91.24	0.40	0.00
		5825	1.397	1.531	91.25	0.40	0.03
802.11n (HT20)	SISO	5745	1.309	1.443	90.71	0.42	0.03
		5785	1.309	1.443	90.71	0.42	0.03
		5825	1.308	1.443	90.64	0.43	0.03
802.11n (HT40)	SISO	5755	0.649	0.783	82.89	0.82	0.03
		5795	0.649	0.784	82.78	0.82	0.06
802.11ac (VHT20)	SISO	5745	1.317	1.453	90.64	0.43	0.16
		5785	1.317	1.451	90.76	0.42	0.03
		5825	1.317	1.451	90.76	0.42	0.03
802.11ac (VHT40)	SISO	5755	0.656	0.791	82.93	0.81	0.04
		5795	100.000	100.000	100.00	0.00	0.00
802.11ac (VHT80)	SISO	5775	100.000	100.000	100.00	0.00	0.00

1.2 Test Graph

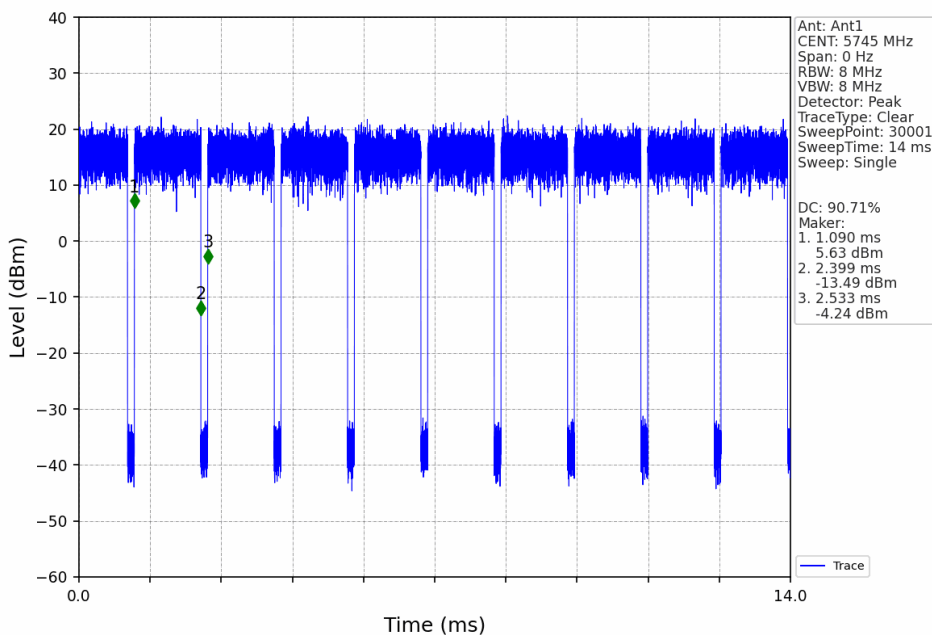
1.2.1 Ant1



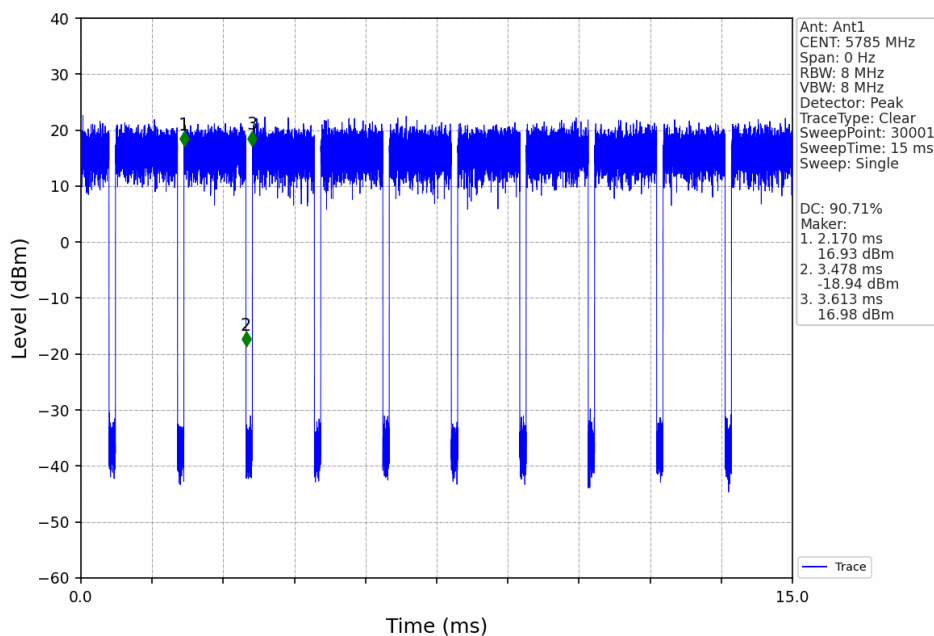
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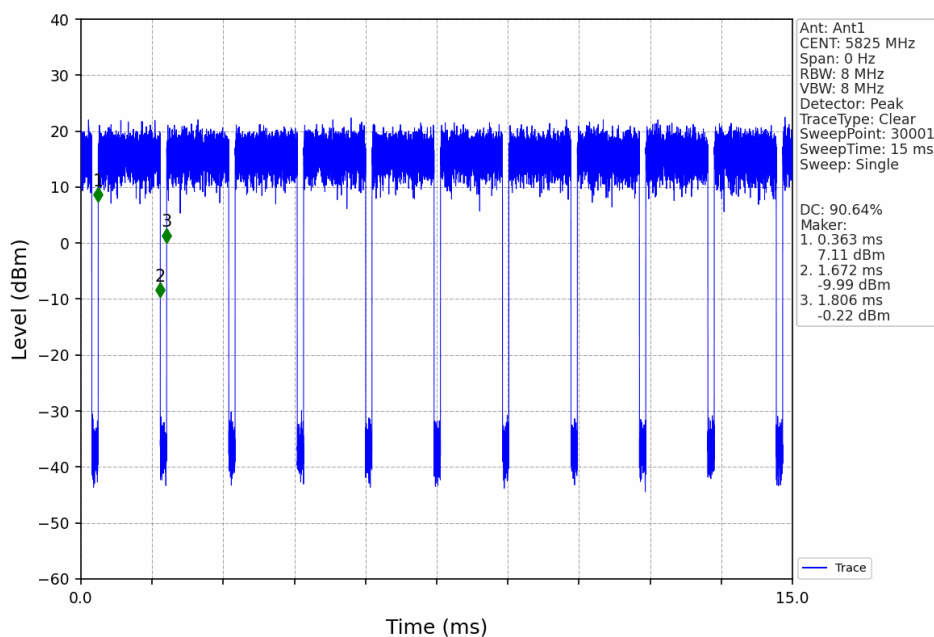
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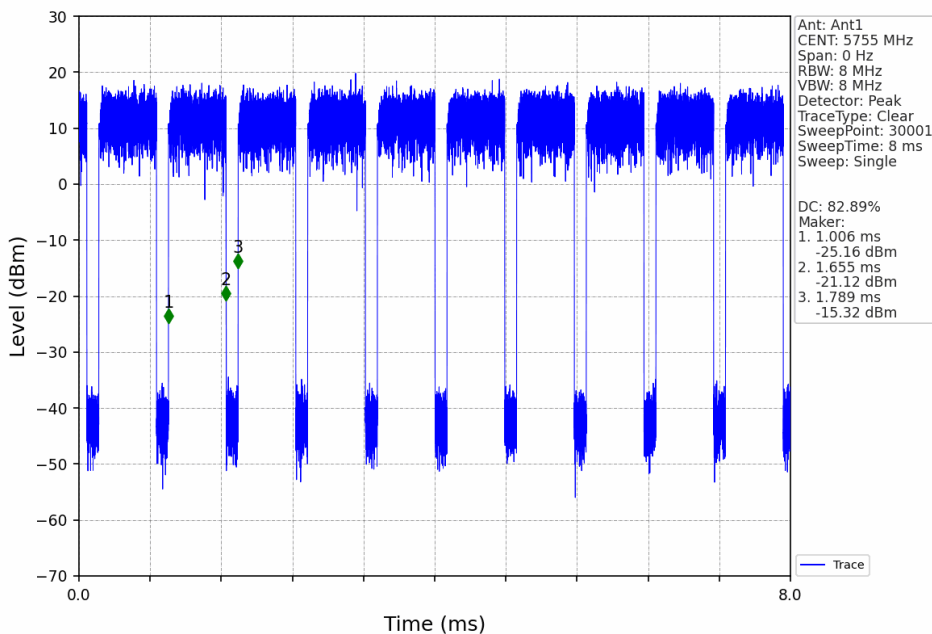
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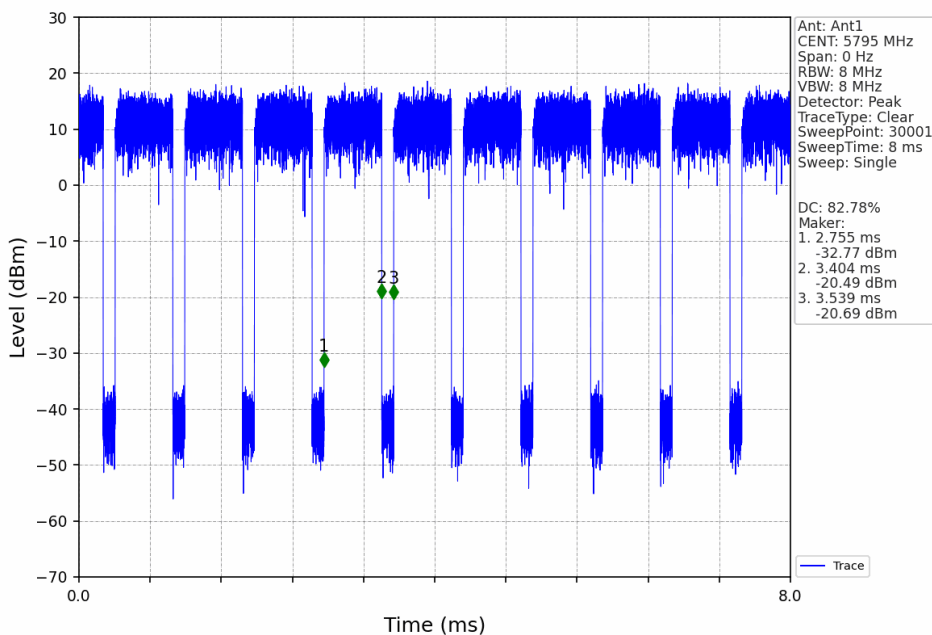
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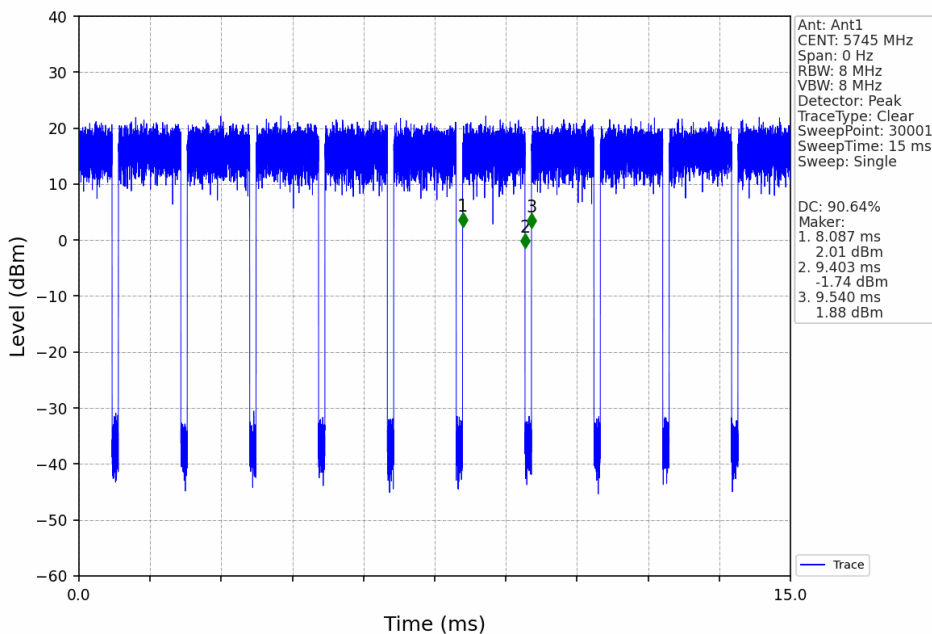
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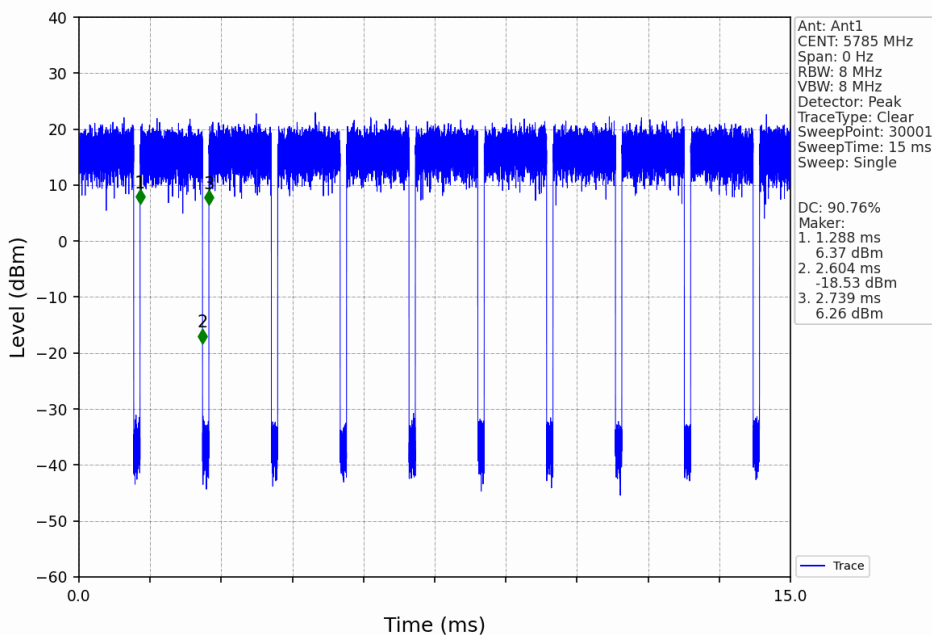
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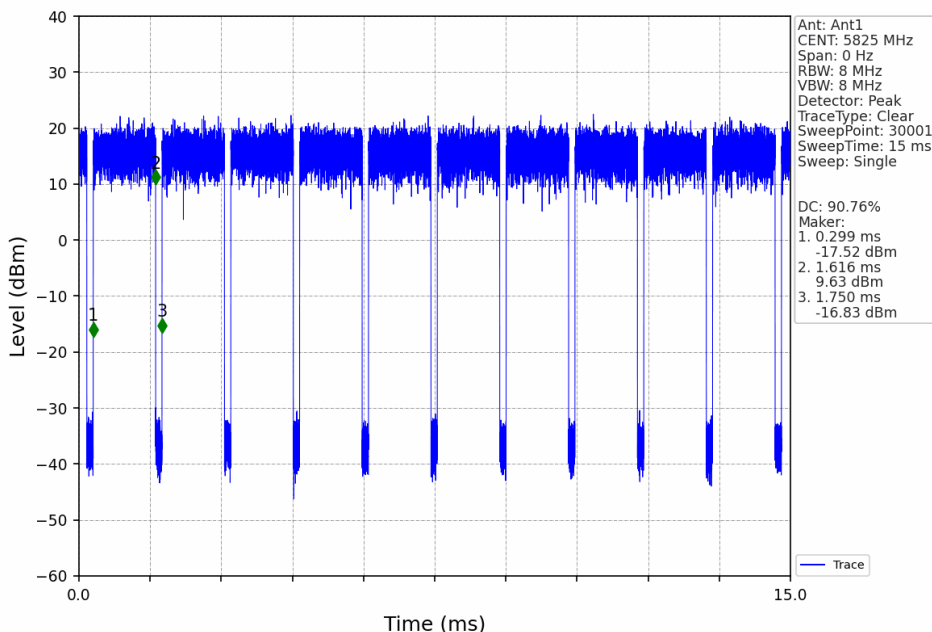
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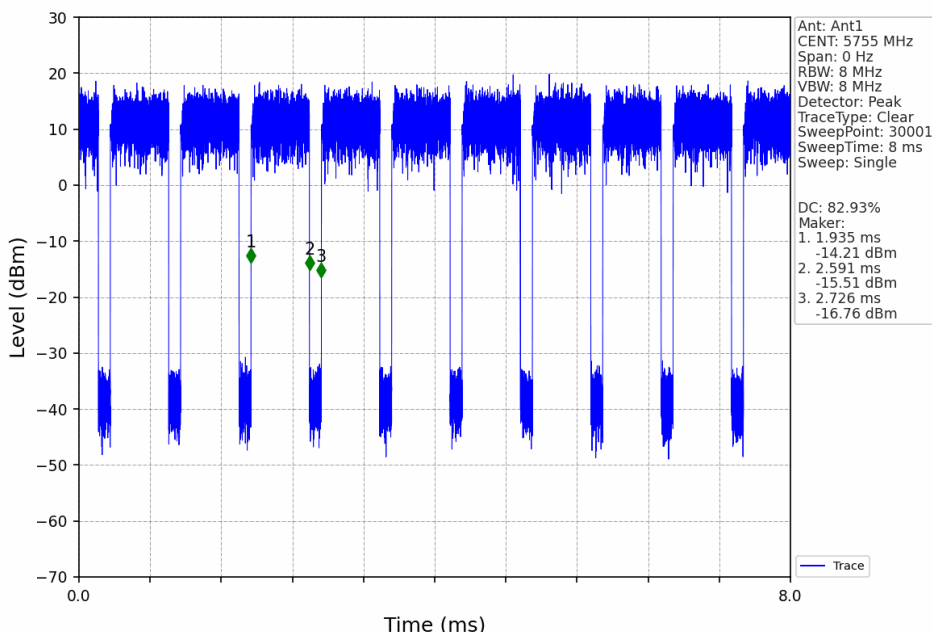
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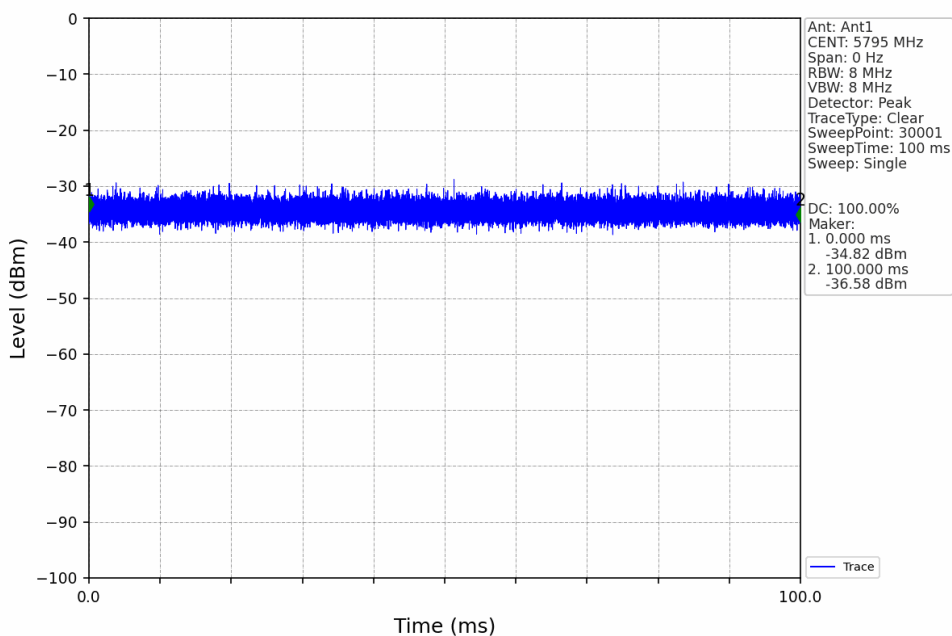
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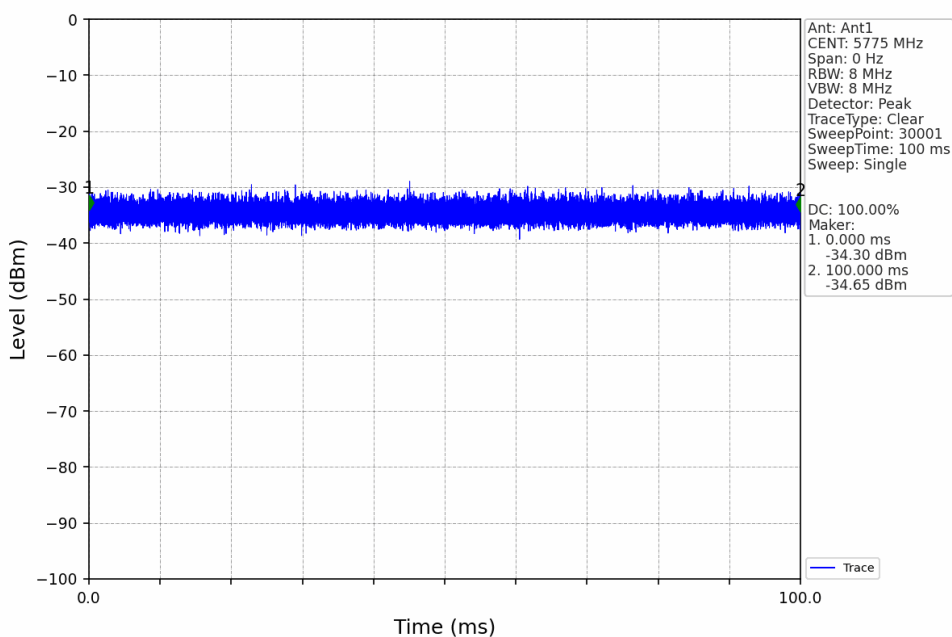
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5745	1	18.032	/	Pass
		5785	1	17.893	/	Pass
		5825	1	18.047	/	Pass
802.11n (HT20)	SISO	5745	1	19.076	/	Pass
		5785	1	18.979	/	Pass
		5825	1	19.176	/	Pass
802.11n (HT40)	SISO	5755	1	36.603	/	Pass
		5795	1	36.634	/	Pass
802.11ac (VHT20)	SISO	5745	1	19.058	/	Pass
		5785	1	18.802	/	Pass
		5825	1	19.057	/	Pass
802.11ac (VHT40)	SISO	5755	1	36.661	/	Pass
		5795	1	36.651	/	Pass
802.11ac (VHT80)	SISO	5775	1	76.408	/	Pass



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2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5745	1	16.372	≥ 0.5	Pass
		5785	1	16.380	≥ 0.5	Pass
		5825	1	16.373	≥ 0.5	Pass
802.11n (HT20)	SISO	5745	1	17.549	≥ 0.5	Pass
		5785	1	17.543	≥ 0.5	Pass
		5825	1	17.586	≥ 0.5	Pass
802.11n (HT40)	SISO	5755	1	35.739	≥ 0.5	Pass
		5795	1	35.521	≥ 0.5	Pass
802.11ac (VHT20)	SISO	5745	1	17.540	≥ 0.5	Pass
		5785	1	17.551	≥ 0.5	Pass
		5825	1	17.573	≥ 0.5	Pass
802.11ac (VHT40)	SISO	5755	1	35.827	≥ 0.5	Pass
		5795	1	35.836	≥ 0.5	Pass
802.11ac (VHT80)	SISO	5775	1	75.587	≥ 0.5	Pass



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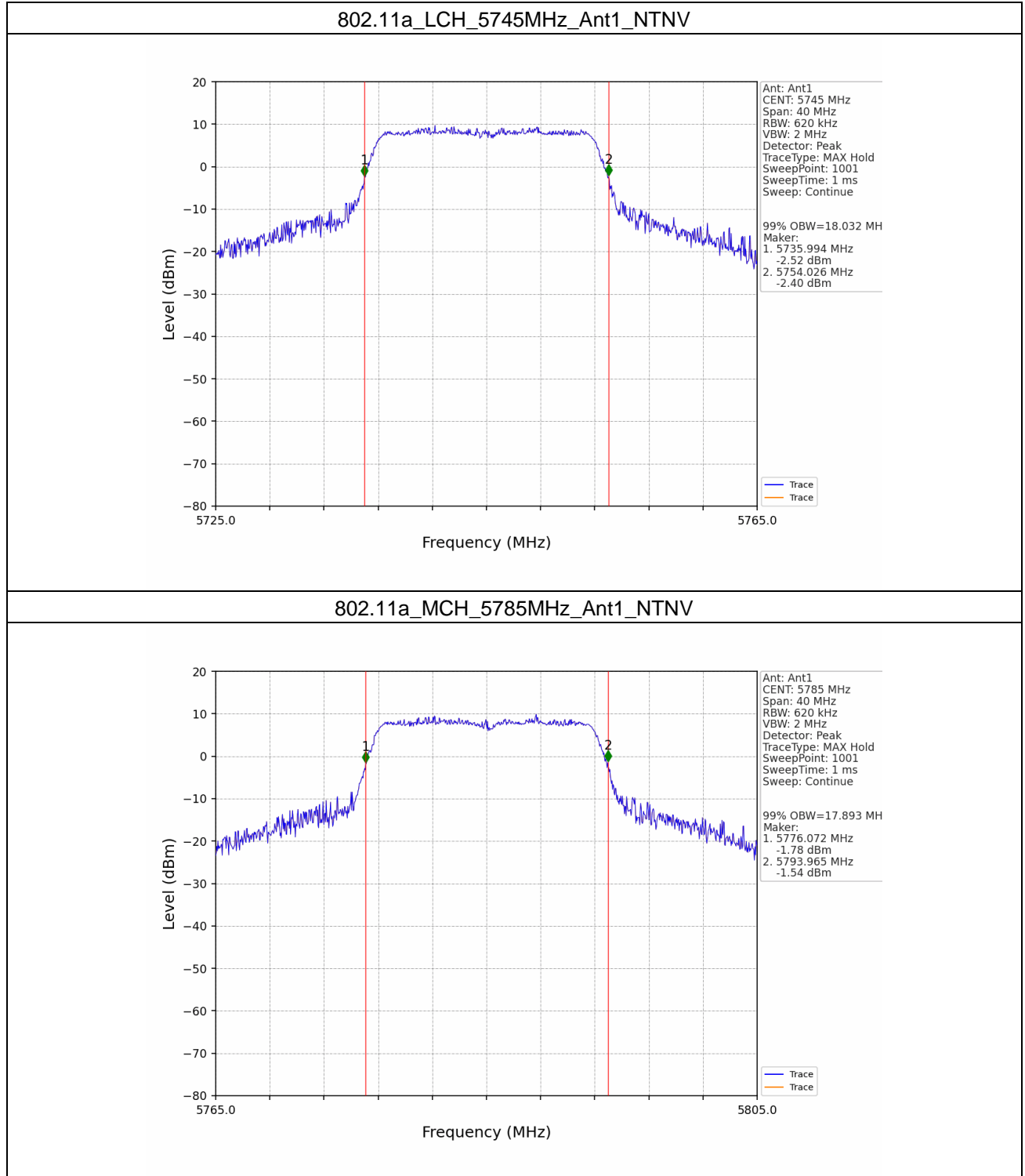
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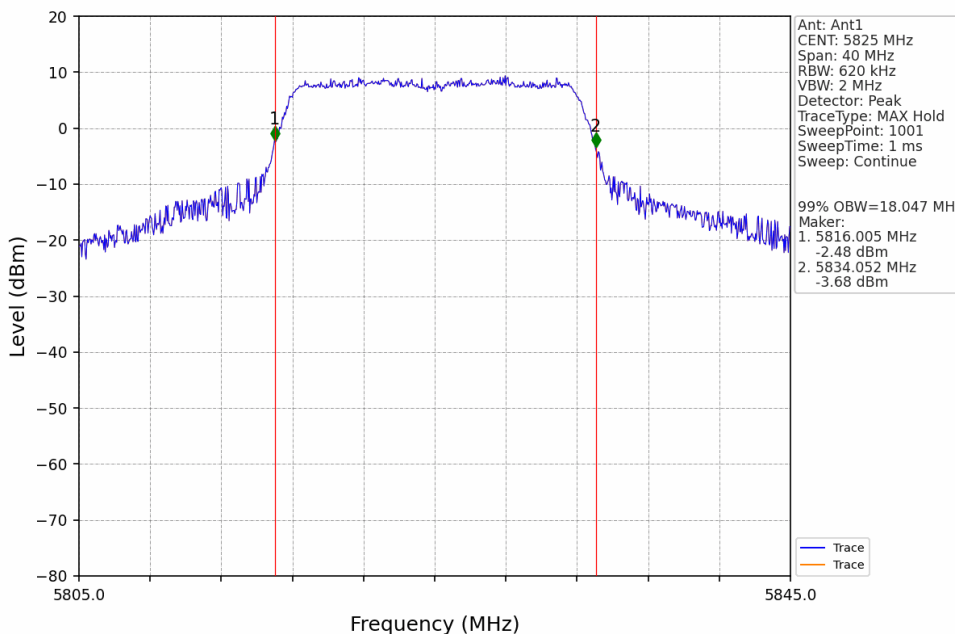
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2.2 Test Graph

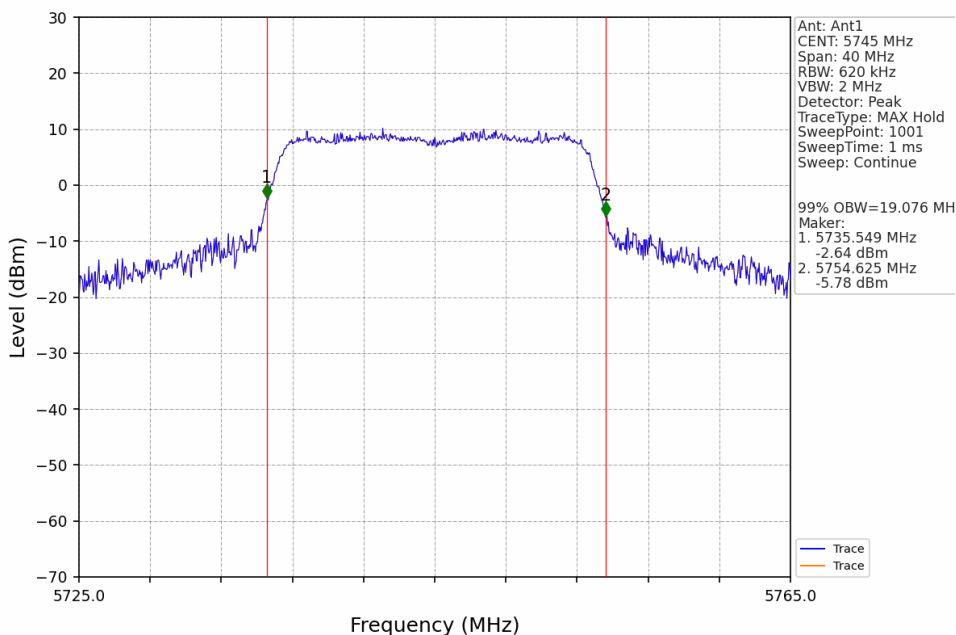
2.2.1 OBW



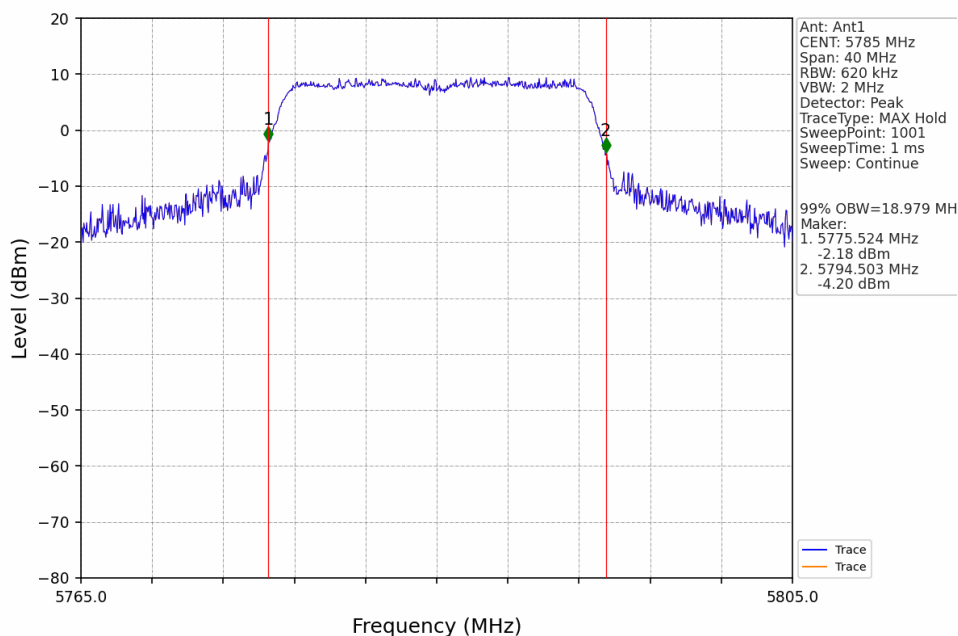
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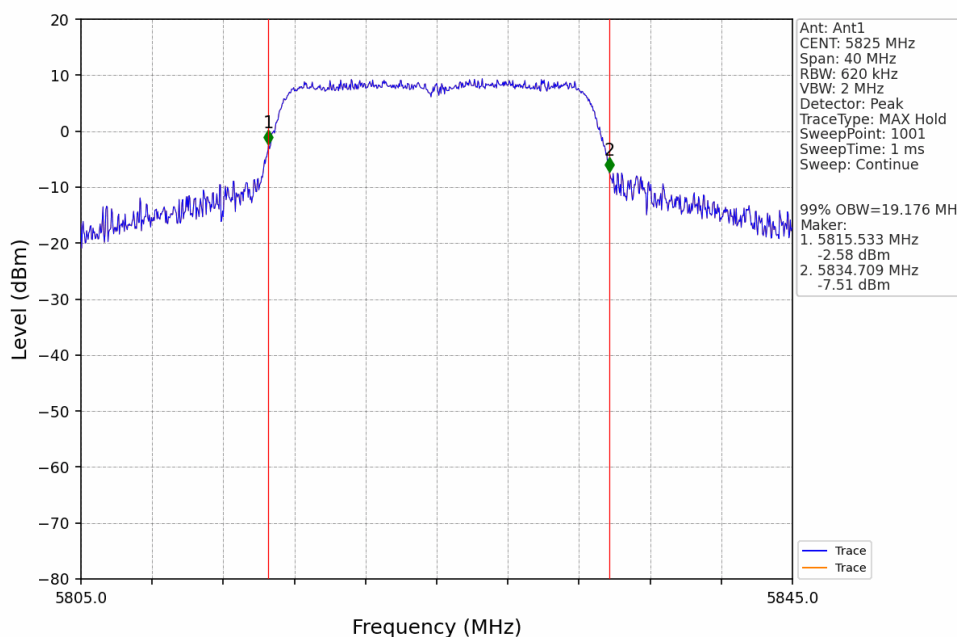
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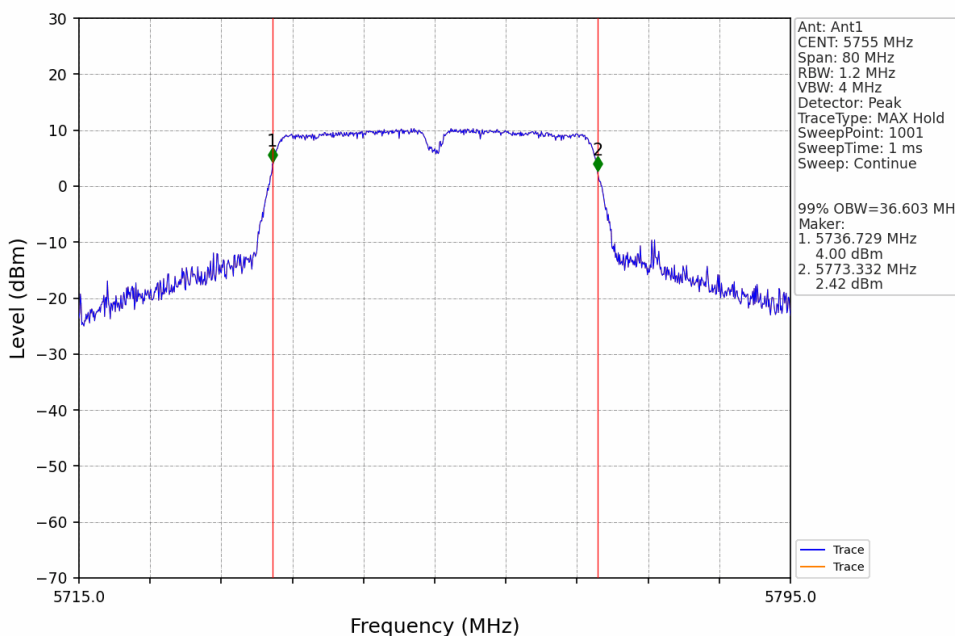
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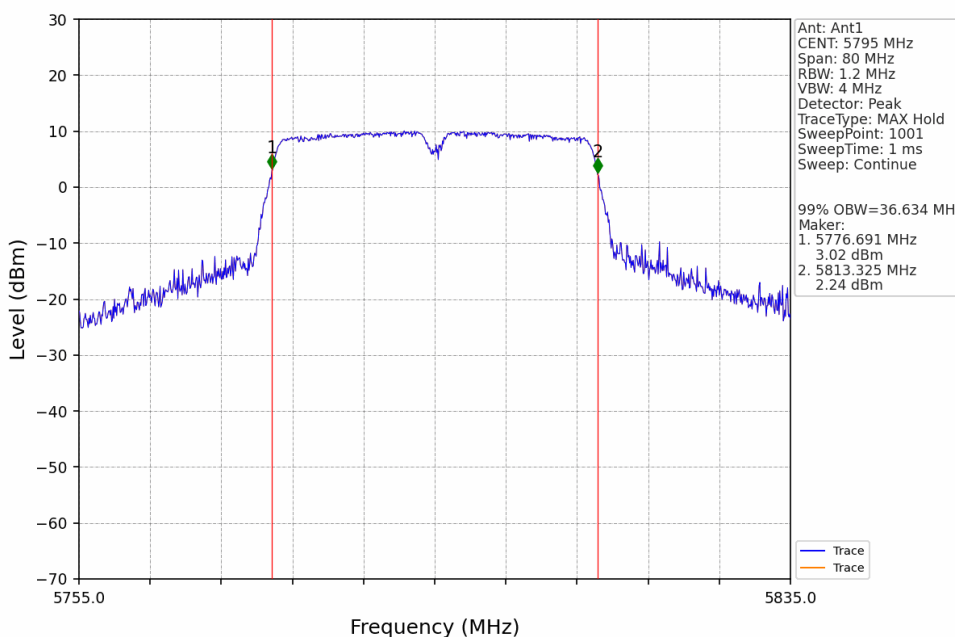
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802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



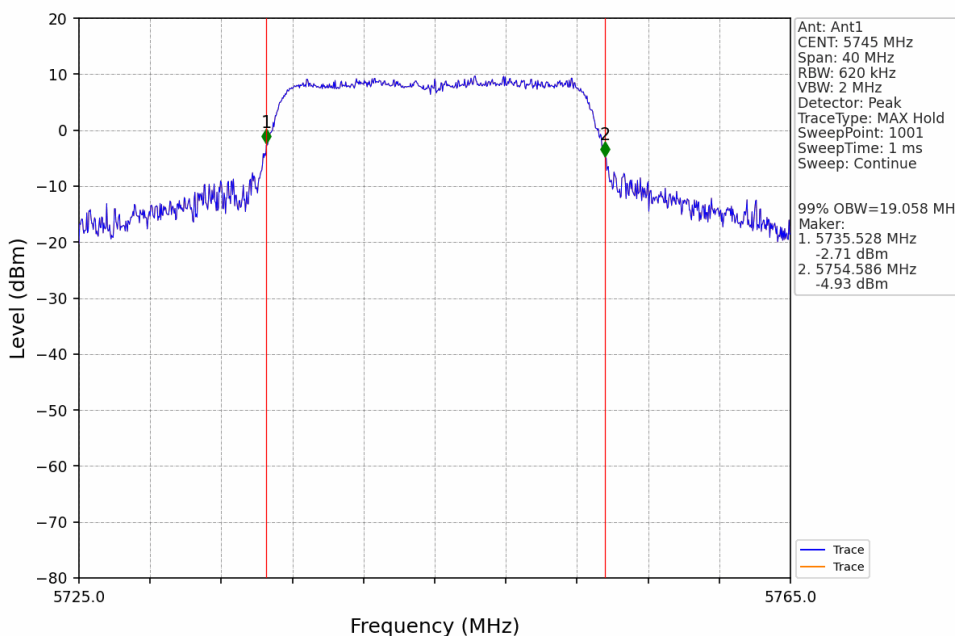
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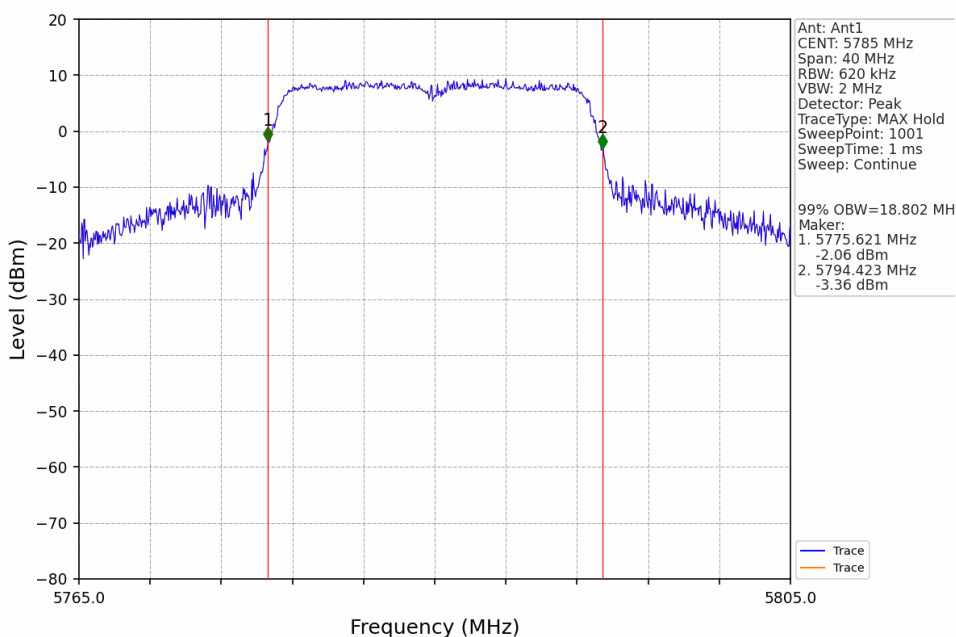
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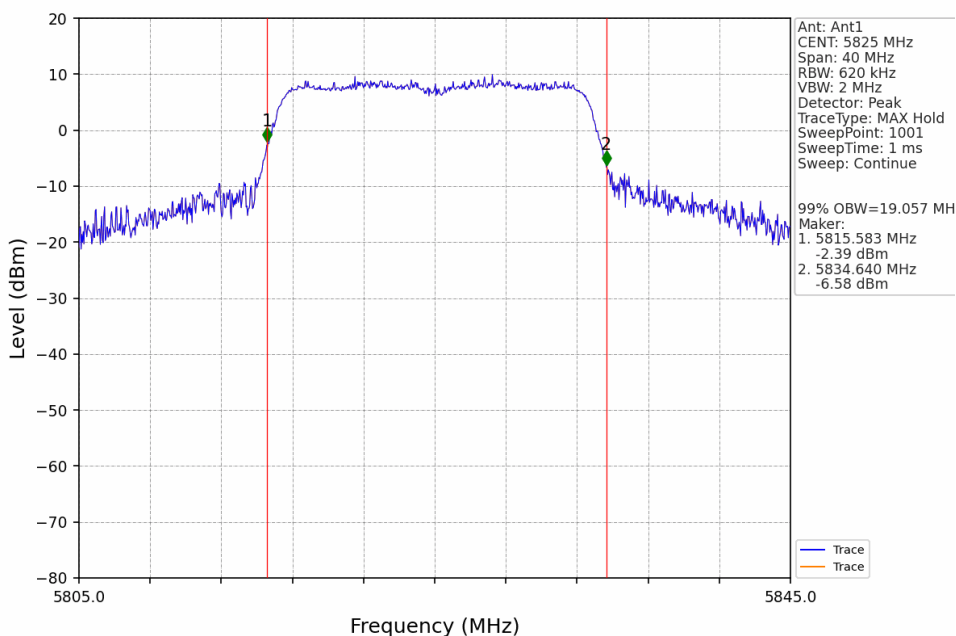
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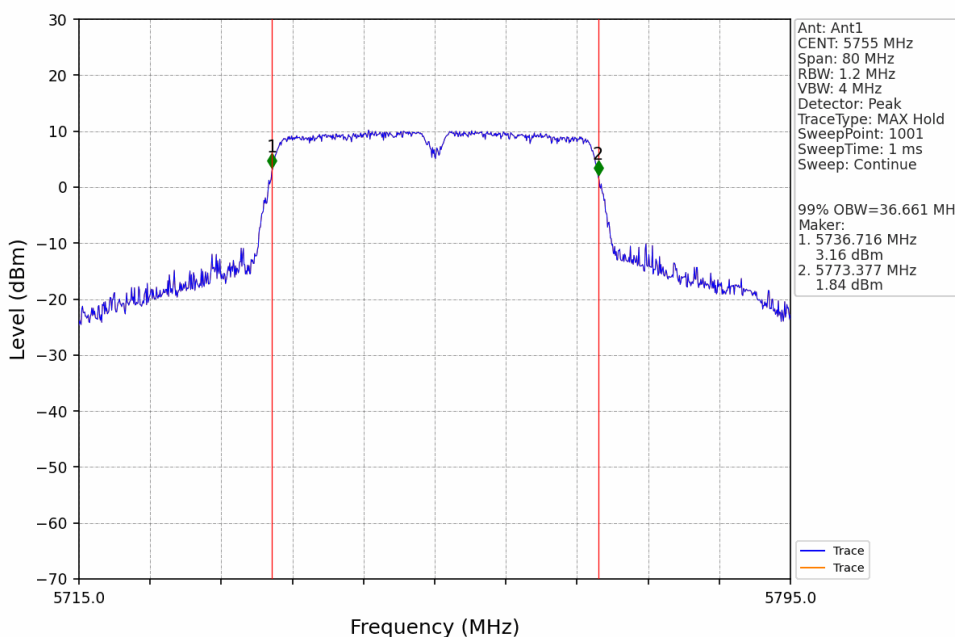
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802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



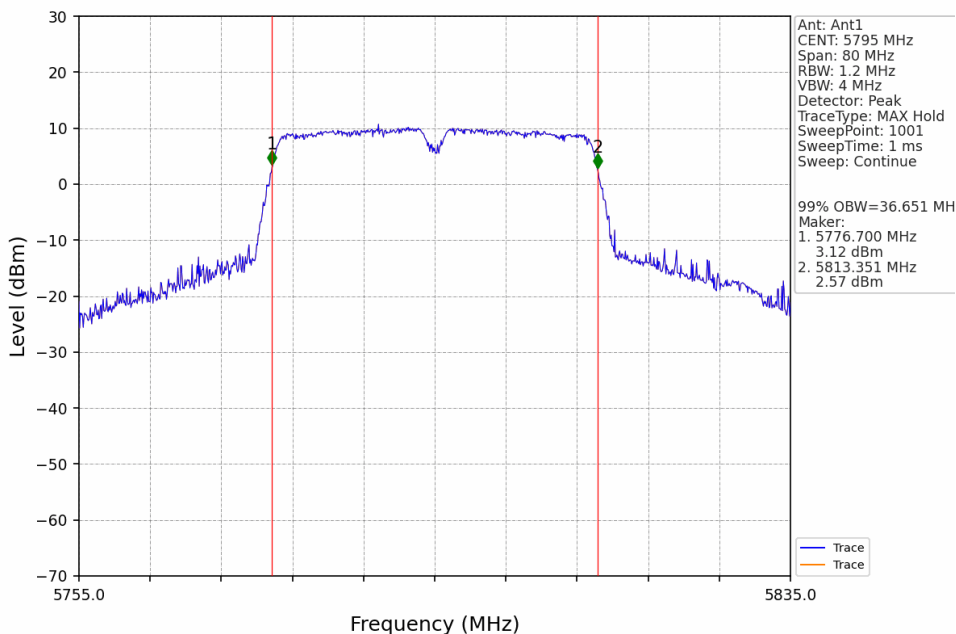
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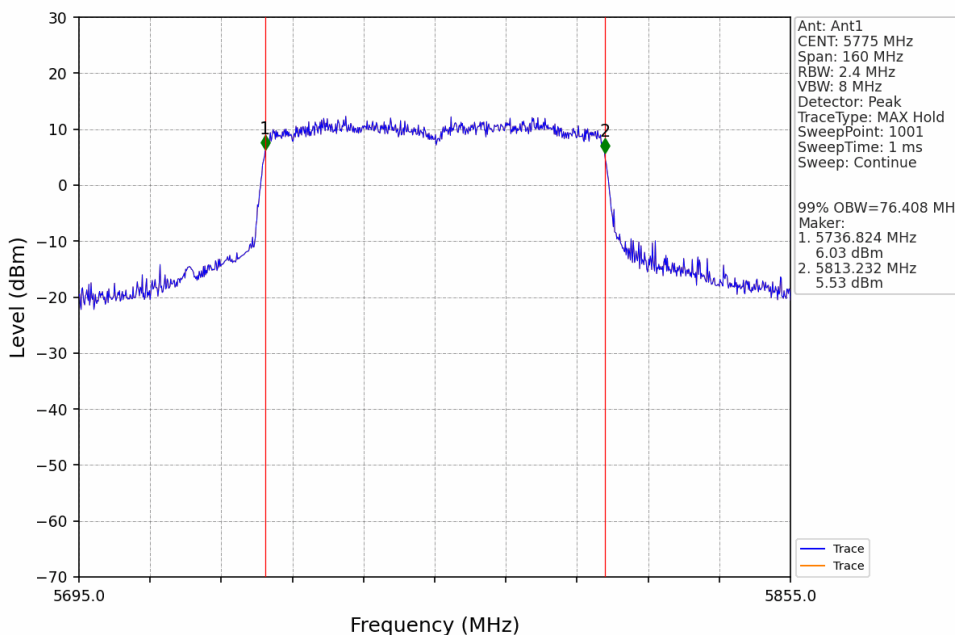
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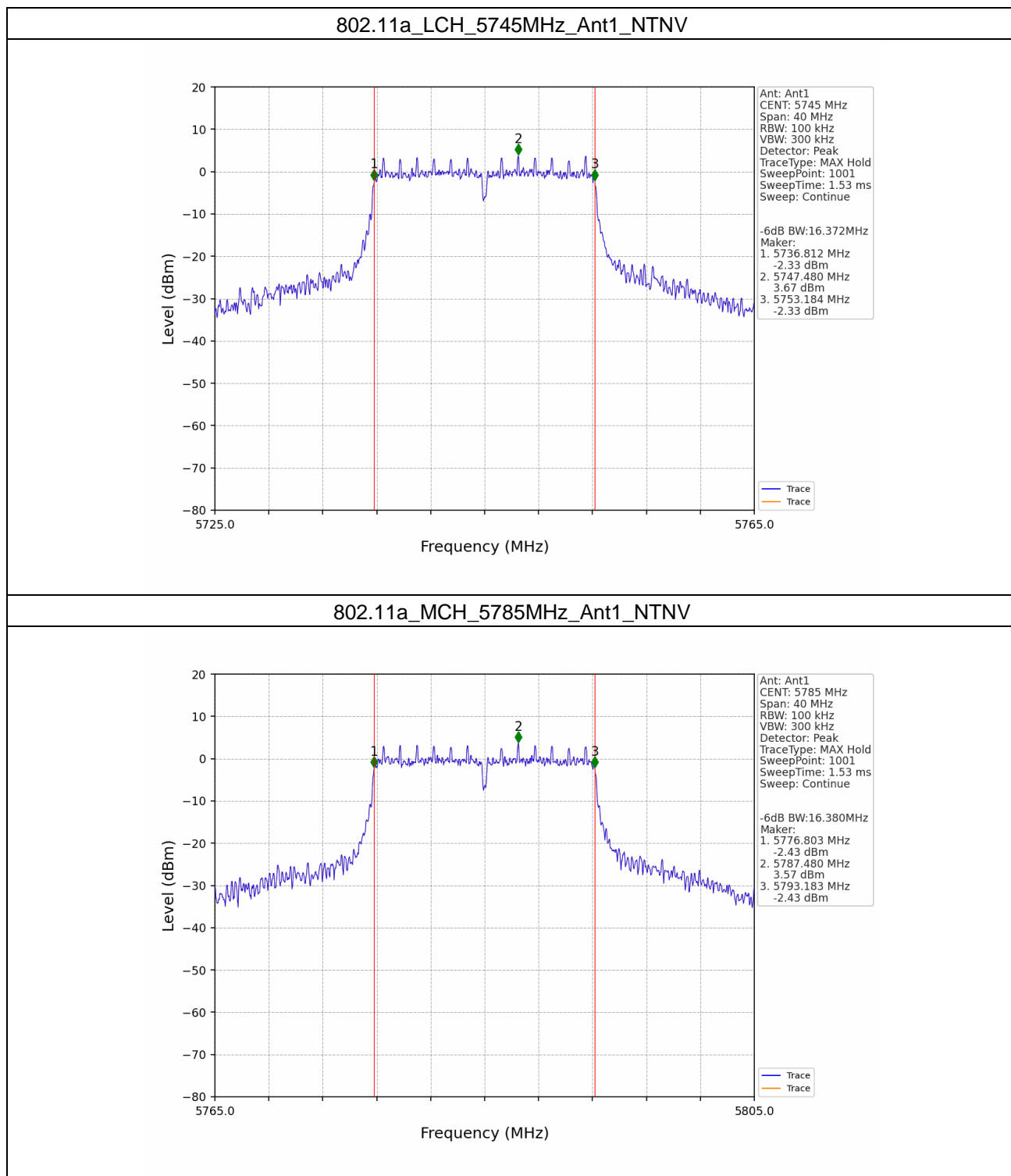
802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



2.2.2 6dB BW



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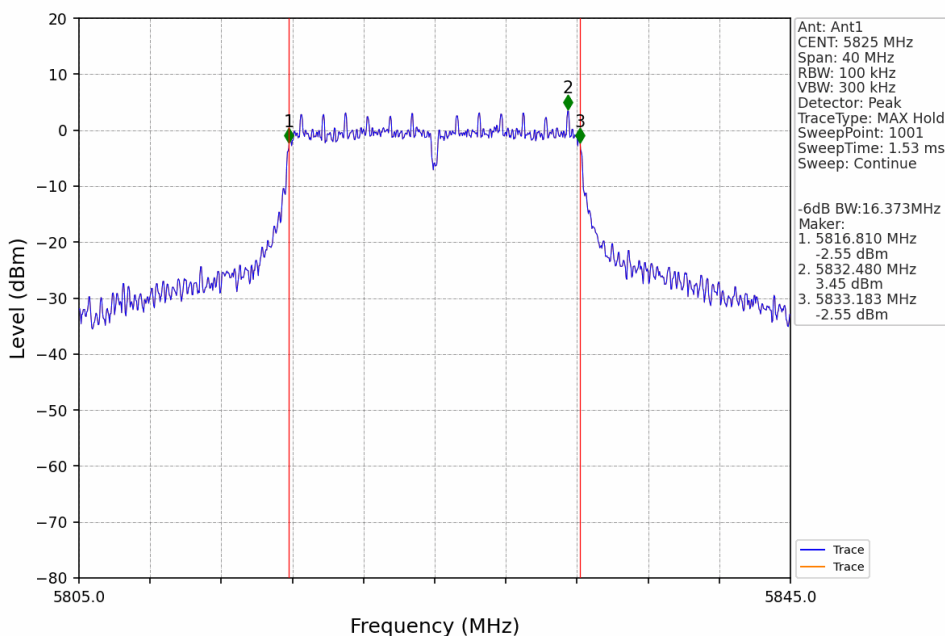
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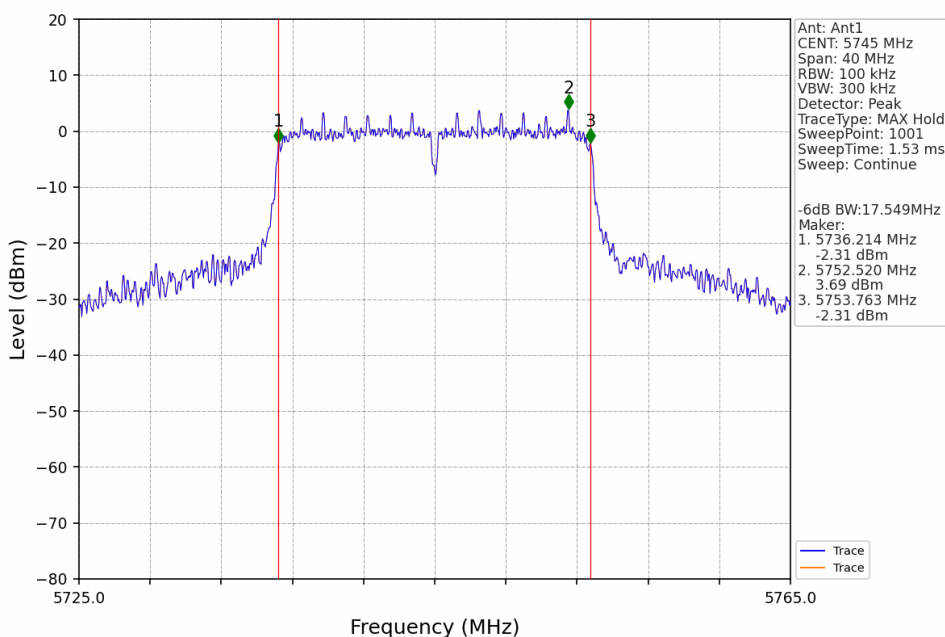
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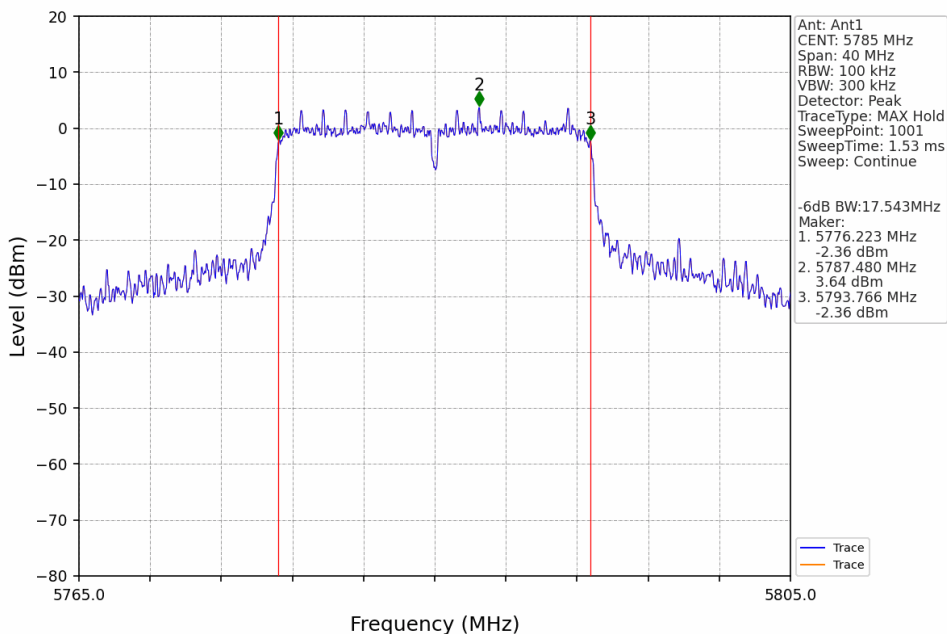
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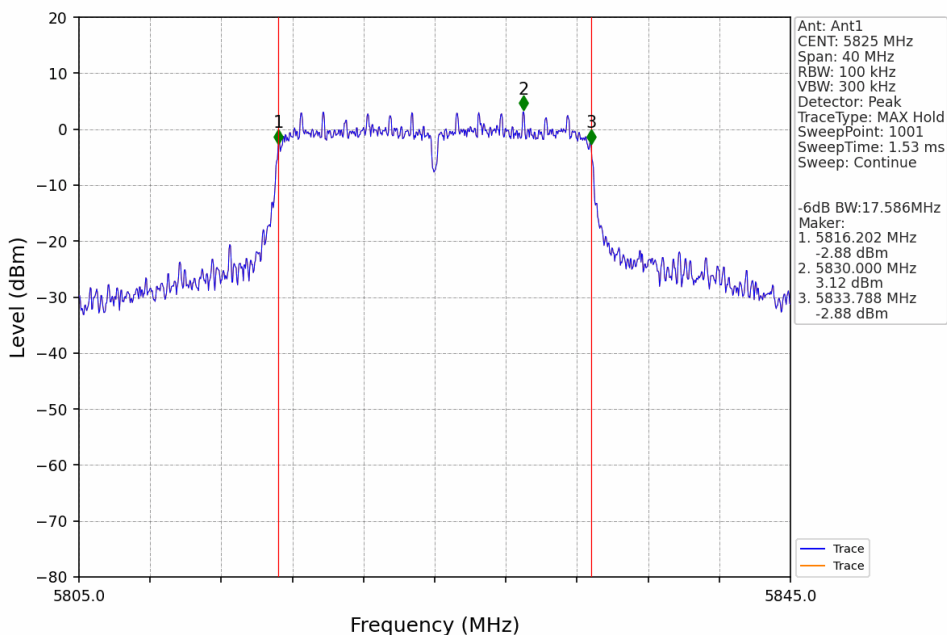
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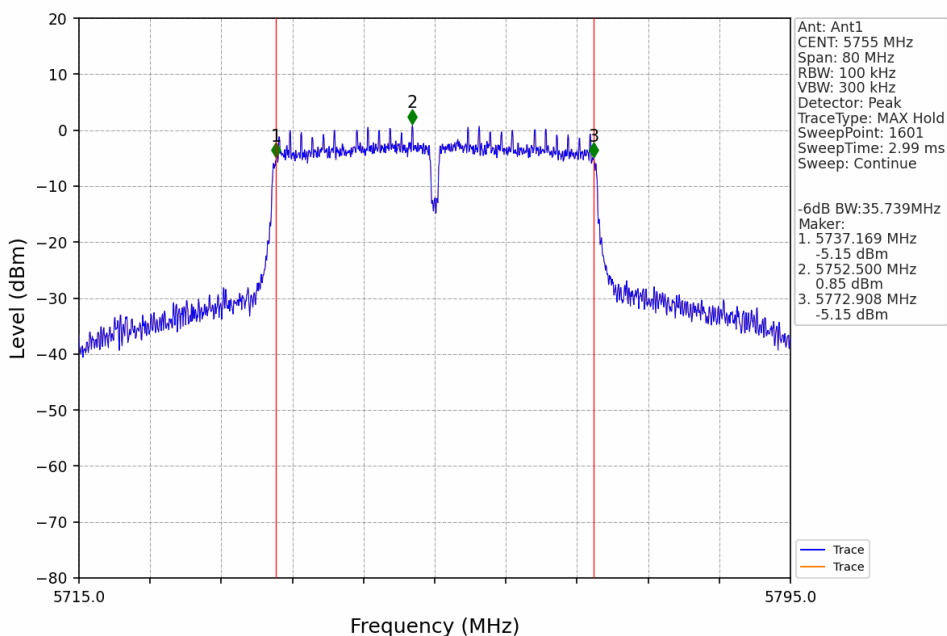
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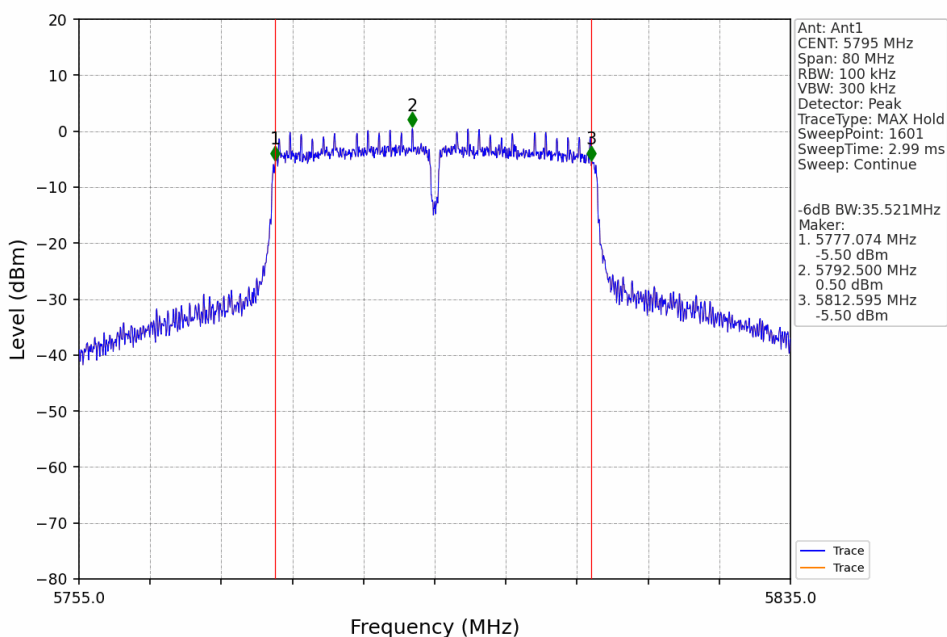
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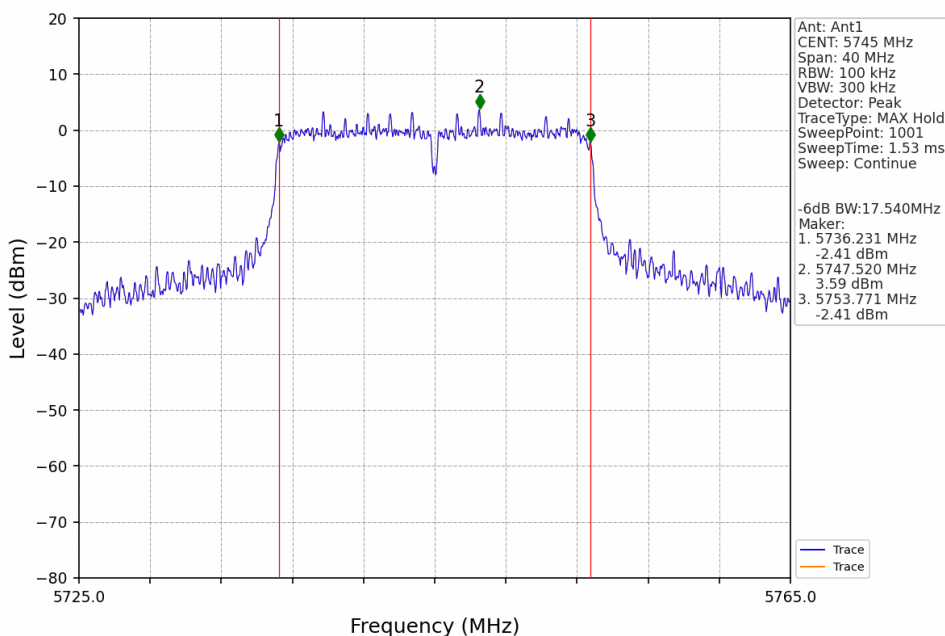
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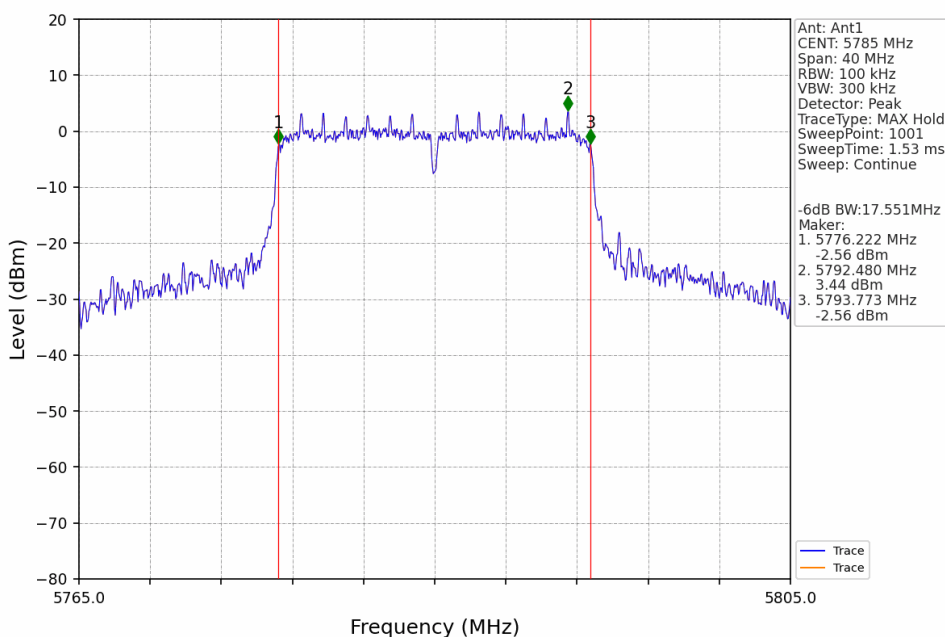
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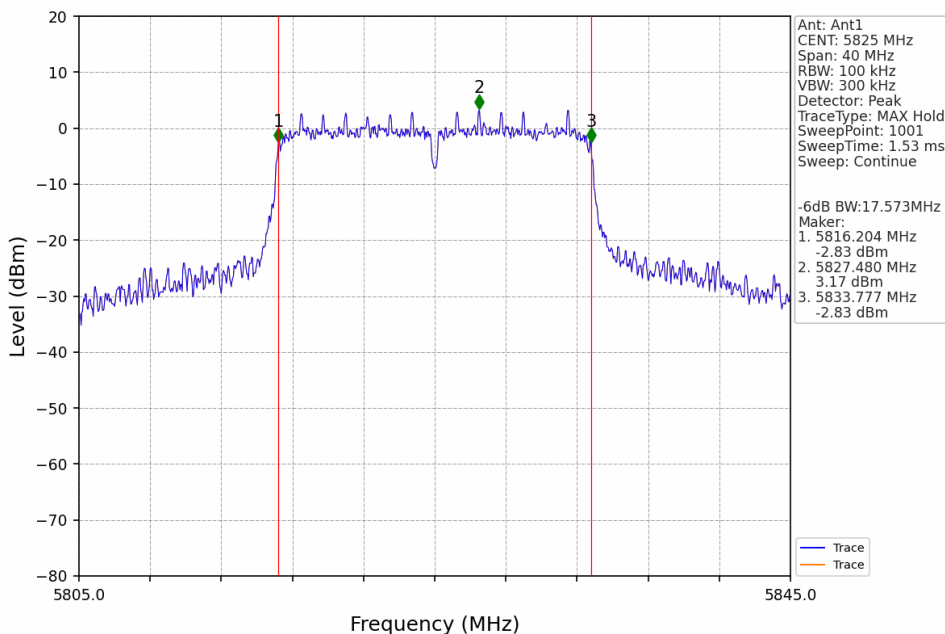
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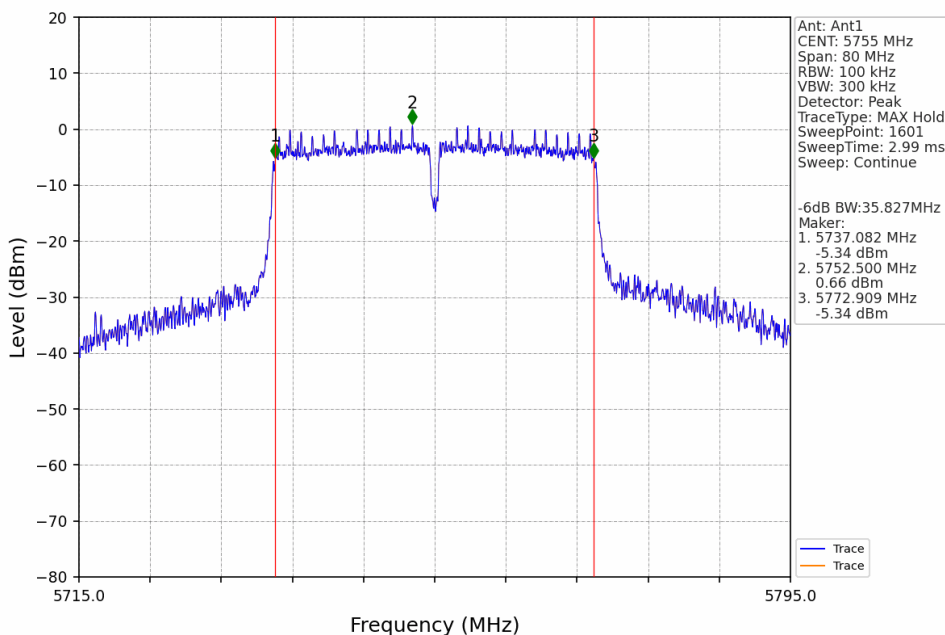
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



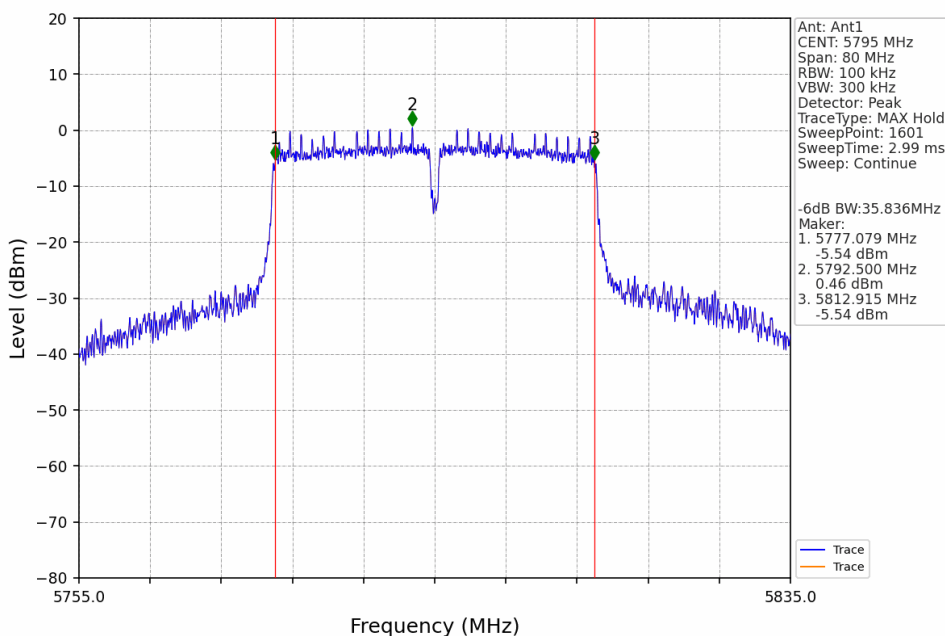
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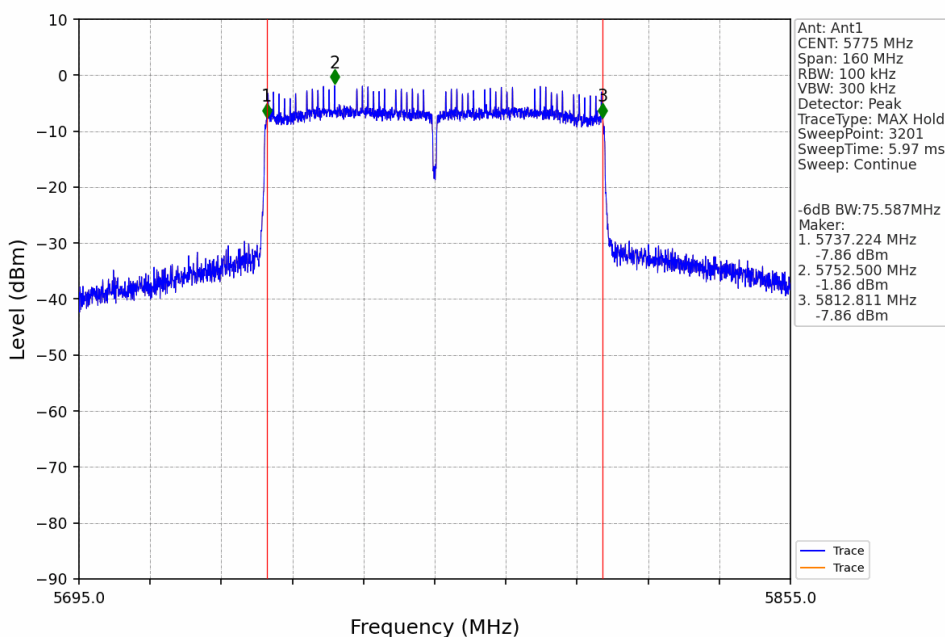
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802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11a	SISO	5745	14.95	<=30	Pass
		5785	14.72	<=30	Pass
		5825	14.56	<=30	Pass
802.11n (HT20)	SISO	5745	15.35	<=30	Pass
		5785	15.28	<=30	Pass
		5825	15.04	<=30	Pass
802.11n (HT40)	SISO	5755	15.09	<=30	Pass
		5795	14.81	<=30	Pass
802.11ac (VHT20)	SISO	5745	15.20	<=30	Pass
		5785	15.07	<=30	Pass
		5825	14.92	<=30	Pass
802.11ac (VHT40)	SISO	5755	14.97	<=30	Pass
		5795	14.07	<=30	Pass
802.11ac (VHT80)	SISO	5775	13.61	<=30	Pass



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4. Maximum Power Spectral Density

4.1 Test Result

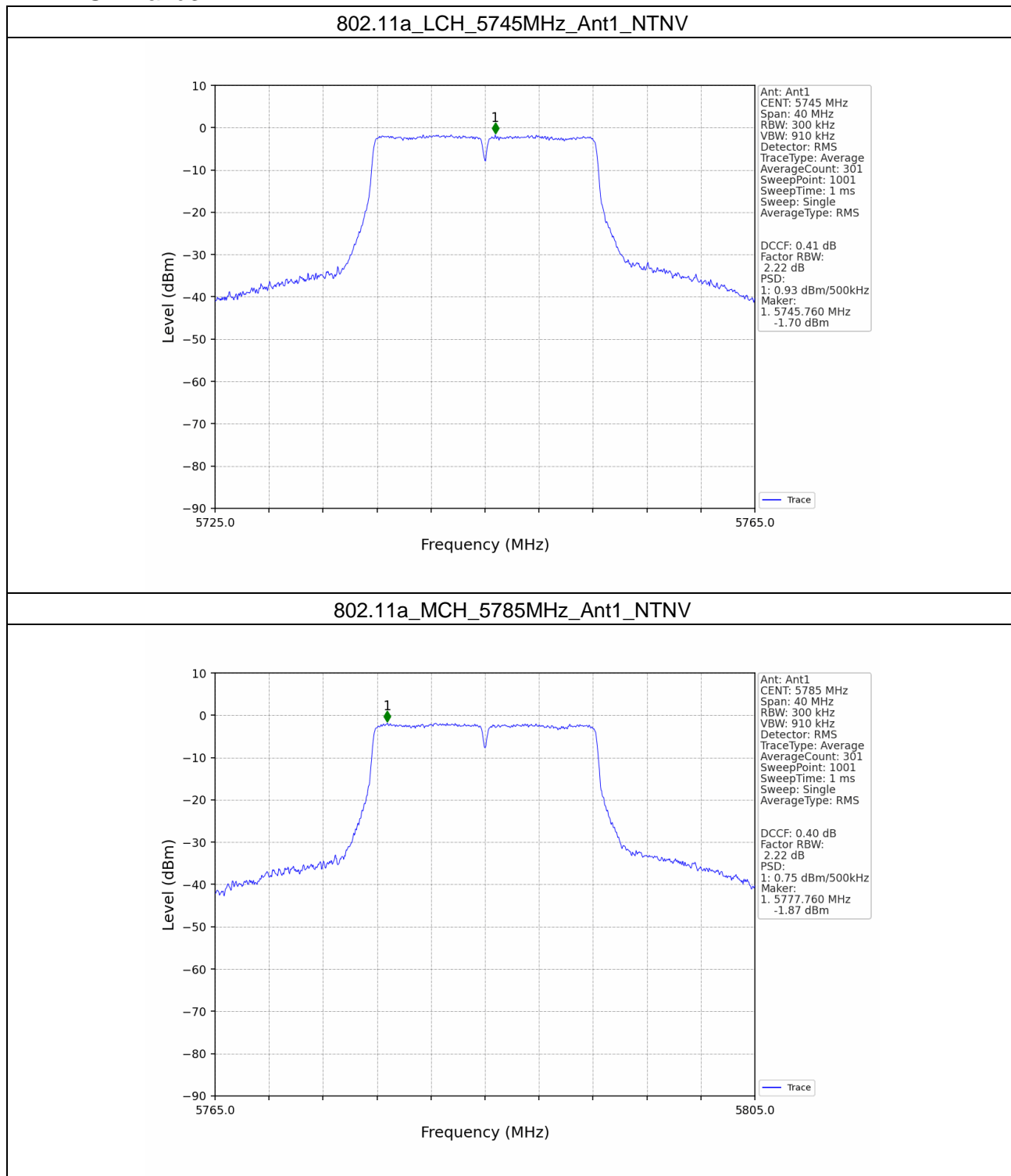
4.1.1 PSD-Band3

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/500kHz)		Verdict
			ANT1	Limit	
802.11a	SISO	5745	0.93	<=30	Pass
		5785	0.75	<=30	Pass
		5825	0.66	<=30	Pass
802.11n (HT20)	SISO	5745	1.08	<=30	Pass
		5785	0.73	<=30	Pass
		5825	0.71	<=30	Pass
802.11n (HT40)	SISO	5755	-2.10	<=30	Pass
		5795	-2.18	<=30	Pass
802.11ac (VHT20)	SISO	5745	0.95	<=30	Pass
		5785	0.64	<=30	Pass
		5825	0.63	<=30	Pass
802.11ac (VHT40)	SISO	5755	-2.21	<=30	Pass
		5795	-3.06	<=30	Pass
802.11ac (VHT80)	SISO	5775	-6.17	<=30	Pass



4.2 Test Graph

4.2.1 PSD-Band3



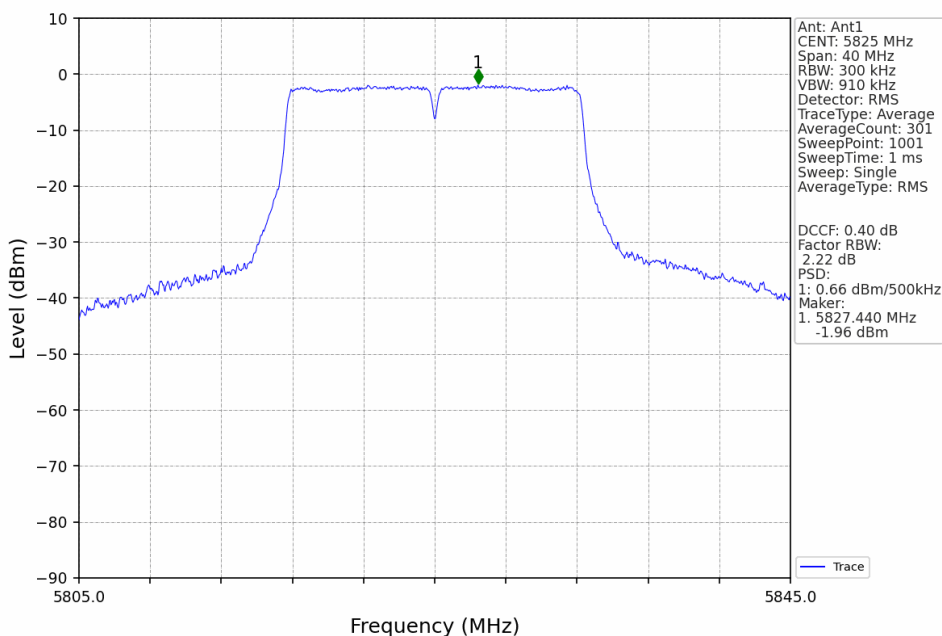
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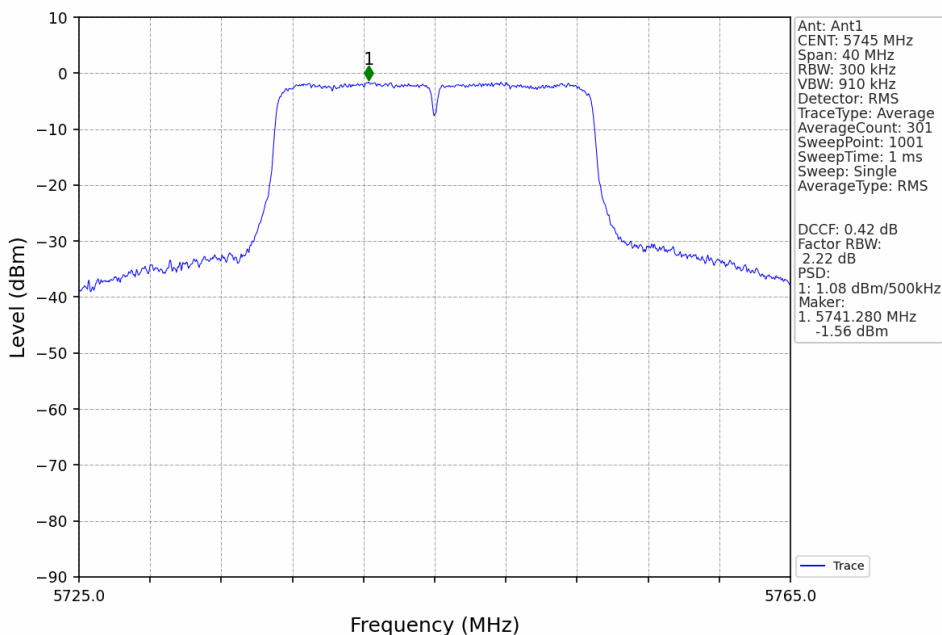
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802.11a_HCH_5825MHz_Ant1_NTNV



802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



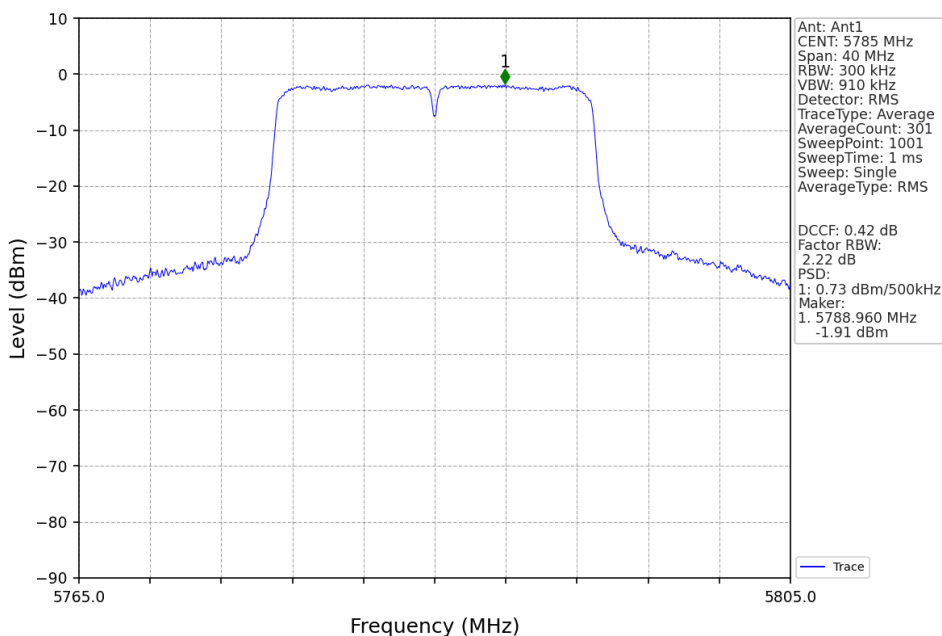
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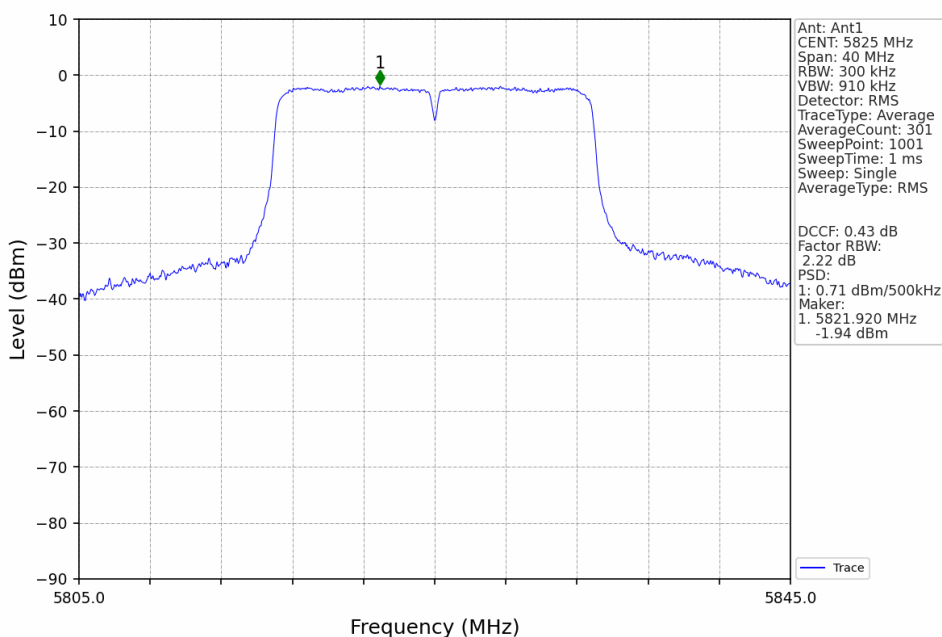
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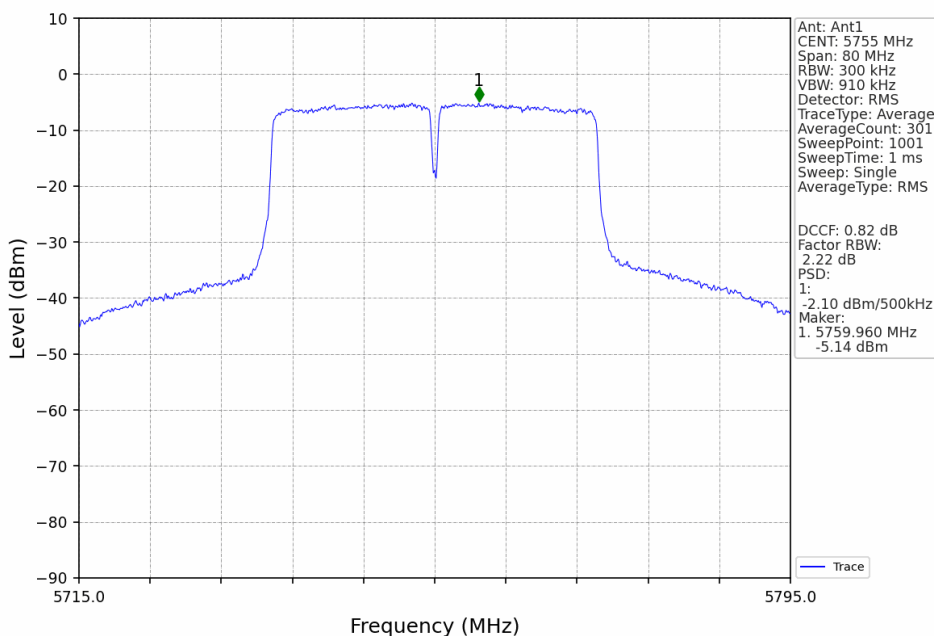
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



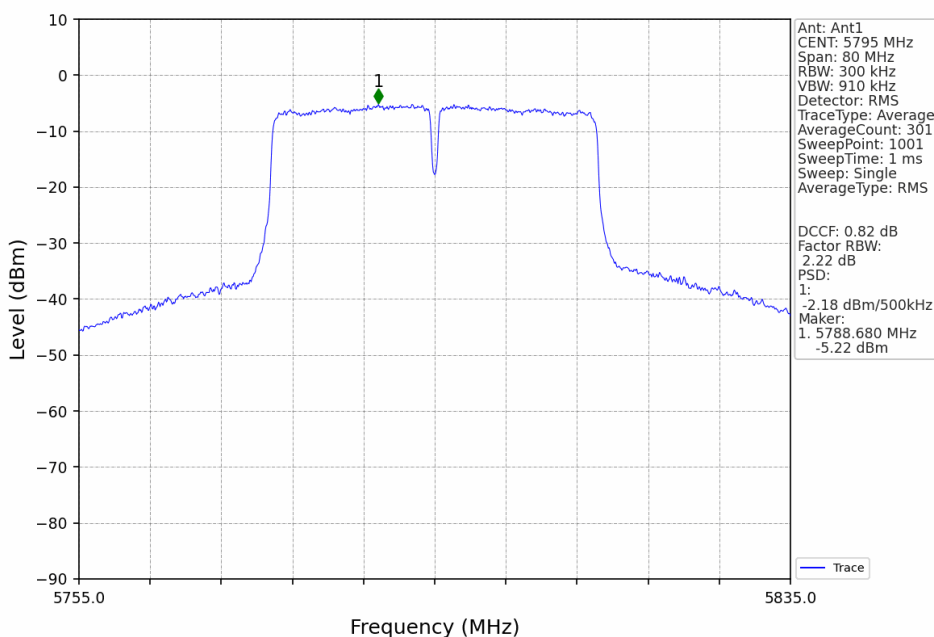
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



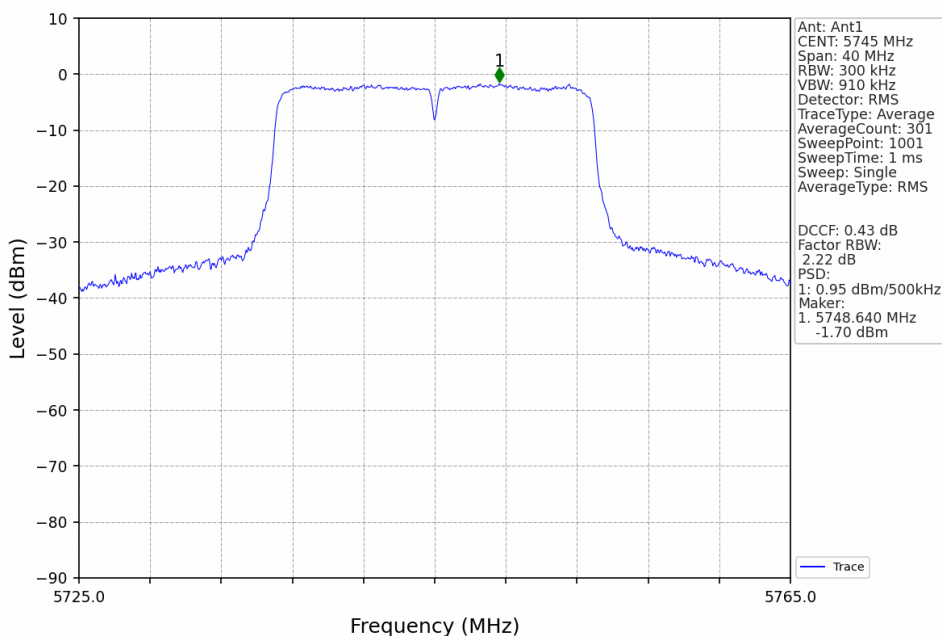
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



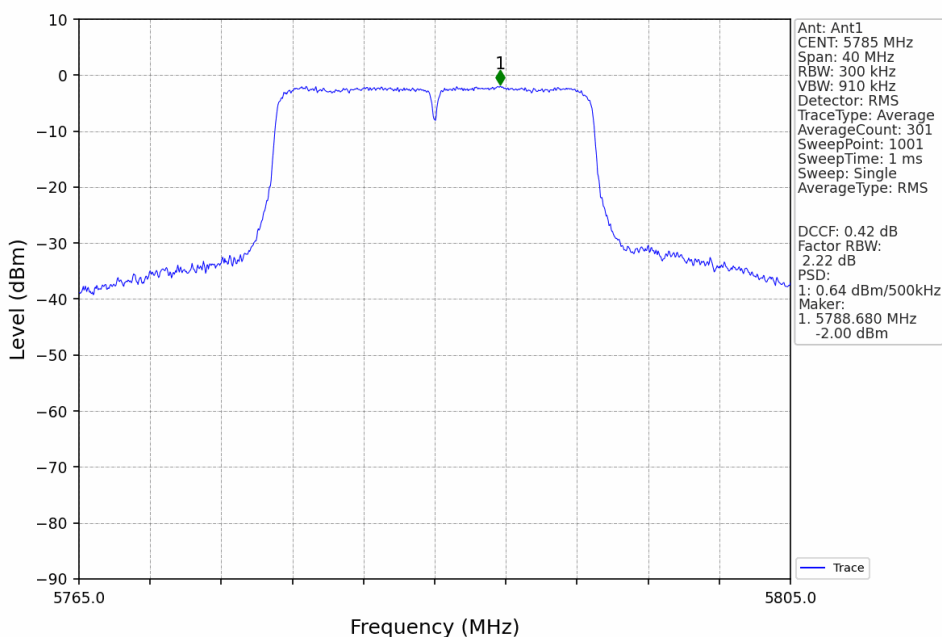
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



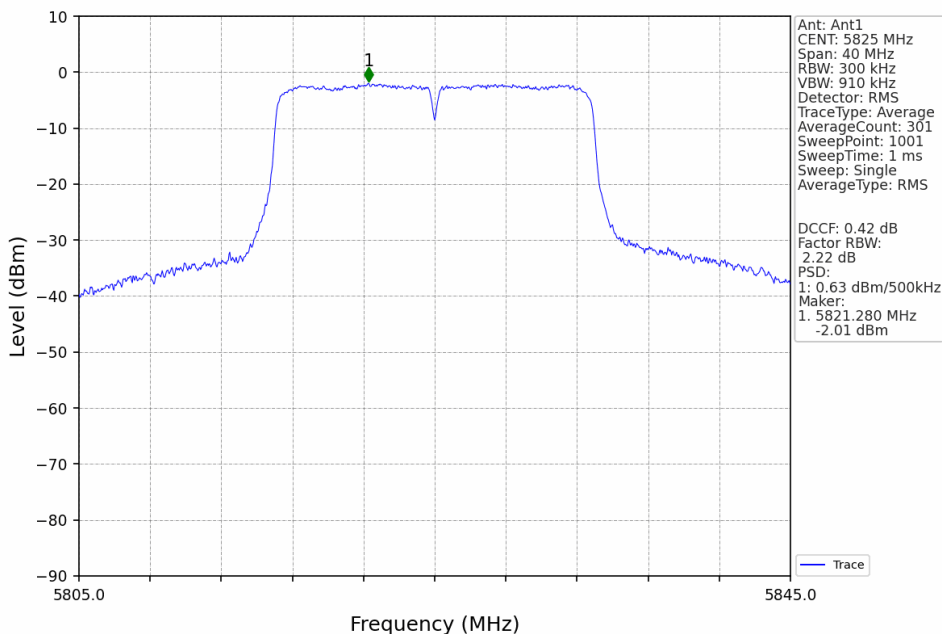
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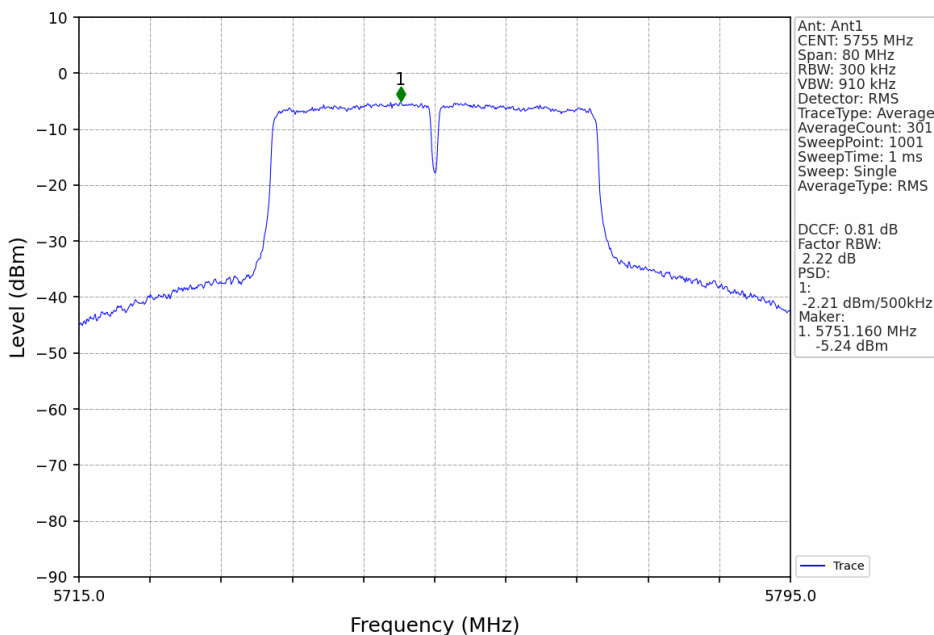
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802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



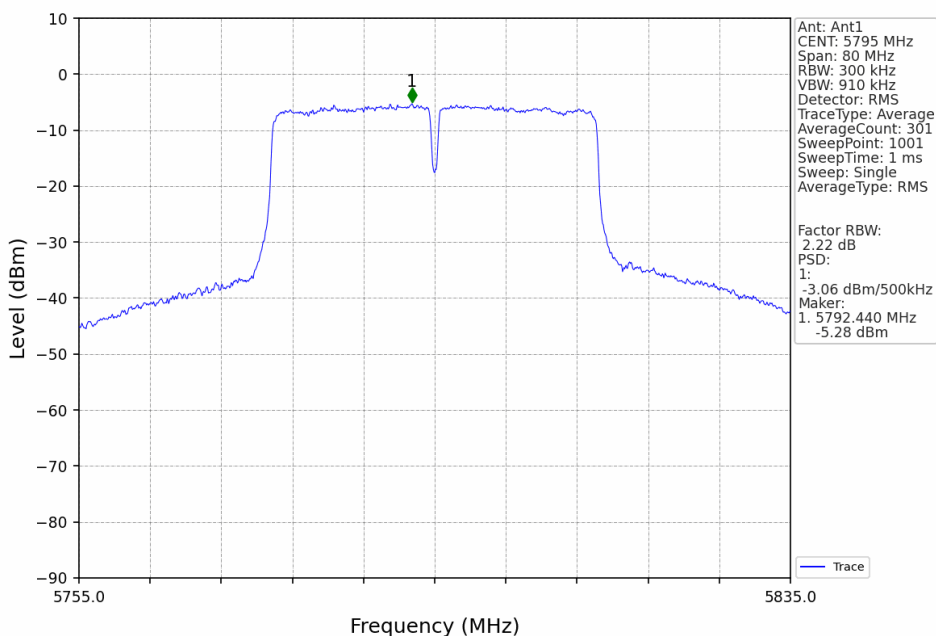
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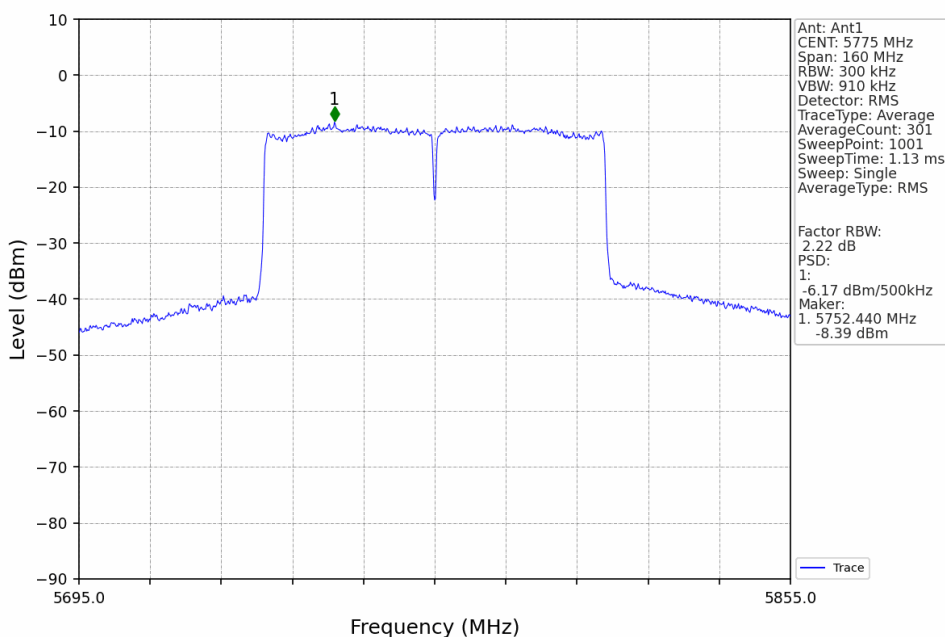
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802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



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5. Frequency Stability

5.1 Test Result

5.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VAC)	Measured Frequency (MHz)	Limit (MHz)	Verdict
802.11a	SISO	5745	20	102	5745.040	5725 to 5850	Pass
				120	5745.000	5725 to 5850	Pass
				138	5744.960	5725 to 5850	Pass
			-30	120	5745.020	5725 to 5850	Pass
			-20	120	5744.980	5725 to 5850	Pass
			-10	120	5745.020	5725 to 5850	Pass
			0	120	5744.940	5725 to 5850	Pass
			10	120	5744.980	5725 to 5850	Pass
			30	120	5744.960	5725 to 5850	Pass
			40	120	5744.960	5725 to 5850	Pass
			50	120	5745.000	5725 to 5850	Pass
		5785	20	102	5784.980	5725 to 5850	Pass
				120	5784.960	5725 to 5850	Pass
				138	5785.000	5725 to 5850	Pass
			-30	120	5785.000	5725 to 5850	Pass
			-20	120	5785.020	5725 to 5850	Pass
			-10	120	5785.000	5725 to 5850	Pass
			0	120	5785.060	5725 to 5850	Pass
			10	120	5785.000	5725 to 5850	Pass
			30	120	5784.980	5725 to 5850	Pass
			40	120	5784.960	5725 to 5850	Pass
			50	120	5784.940	5725 to 5850	Pass
		5825	20	102	5825.020	5725 to 5850	Pass
				120	5825.000	5725 to 5850	Pass
				138	5825.000	5725 to 5850	Pass
			-30	120	5824.980	5725 to 5850	Pass
			-20	120	5824.980	5725 to 5850	Pass
			-10	120	5825.000	5725 to 5850	Pass
			0	120	5825.040	5725 to 5850	Pass
			10	120	5824.960	5725 to 5850	Pass
			30	120	5824.940	5725 to 5850	Pass



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250200049104

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802.11n (HT20)	SISO		40	120	5825.000	5725 to 5850	Pass
			50	120	5825.020	5725 to 5850	Pass
		5745	20	102	5744.960	5725 to 5850	Pass
				120	5745.040	5725 to 5850	Pass
				138	5745.040	5725 to 5850	Pass
			-30	120	5744.980	5725 to 5850	Pass
			-20	120	5745.000	5725 to 5850	Pass
			-10	120	5745.000	5725 to 5850	Pass
			0	120	5745.040	5725 to 5850	Pass
			10	120	5745.000	5725 to 5850	Pass
			30	120	5744.940	5725 to 5850	Pass
			40	120	5745.000	5725 to 5850	Pass
			50	120	5744.980	5725 to 5850	Pass
		5785	20	102	5785.000	5725 to 5850	Pass
				120	5785.000	5725 to 5850	Pass
				138	5784.960	5725 to 5850	Pass
			-30	120	5784.940	5725 to 5850	Pass
			-20	120	5785.020	5725 to 5850	Pass
			-10	120	5784.940	5725 to 5850	Pass
			0	120	5785.040	5725 to 5850	Pass
			10	120	5784.960	5725 to 5850	Pass
			30	120	5785.000	5725 to 5850	Pass
			40	120	5784.940	5725 to 5850	Pass
			50	120	5785.000	5725 to 5850	Pass
		5825	20	102	5825.000	5725 to 5850	Pass
				120	5825.000	5725 to 5850	Pass
				138	5825.000	5725 to 5850	Pass
			-30	120	5825.020	5725 to 5850	Pass
			-20	120	5825.020	5725 to 5850	Pass
			-10	120	5825.000	5725 to 5850	Pass
			0	120	5825.020	5725 to 5850	Pass
			10	120	5824.960	5725 to 5850	Pass
			30	120	5825.040	5725 to 5850	Pass
			40	120	5824.940	5725 to 5850	Pass
			50	120	5825.000	5725 to 5850	Pass
802.11n (HT40)	SISO	5755	20	102	5754.920	5725 to 5850	Pass
				120	5755.000	5725 to 5850	Pass
				138	5755.040	5725 to 5850	Pass
			-30	120	5754.920	5725 to 5850	Pass
			-20	120	5755.000	5725 to 5850	Pass



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			-10	120	5755.040	5725 to 5850	Pass
			0	120	5755.000	5725 to 5850	Pass
			10	120	5755.000	5725 to 5850	Pass
			30	120	5754.960	5725 to 5850	Pass
			40	120	5755.040	5725 to 5850	Pass
			50	120	5754.960	5725 to 5850	Pass
		5795	20	102	5795.040	5725 to 5850	Pass
				120	5794.960	5725 to 5850	Pass
				138	5795.000	5725 to 5850	Pass
			-30	120	5795.040	5725 to 5850	Pass
			-20	120	5794.960	5725 to 5850	Pass
			-10	120	5795.040	5725 to 5850	Pass
			0	120	5795.000	5725 to 5850	Pass
			10	120	5795.000	5725 to 5850	Pass
			30	120	5795.040	5725 to 5850	Pass
			40	120	5795.000	5725 to 5850	Pass
			50	120	5795.000	5725 to 5850	Pass
802.11ac (VHT20)	SISO	5745	20	102	5744.980	5725 to 5850	Pass
				120	5744.980	5725 to 5850	Pass
				138	5745.000	5725 to 5850	Pass
			-30	120	5744.960	5725 to 5850	Pass
			-20	120	5744.980	5725 to 5850	Pass
			-10	120	5744.960	5725 to 5850	Pass
			0	120	5745.000	5725 to 5850	Pass
			10	120	5744.960	5725 to 5850	Pass
			30	120	5745.020	5725 to 5850	Pass
			40	120	5744.940	5725 to 5850	Pass
			50	120	5745.000	5725 to 5850	Pass
		5785	20	102	5785.000	5725 to 5850	Pass
				120	5785.000	5725 to 5850	Pass
				138	5785.000	5725 to 5850	Pass
			-30	120	5784.960	5725 to 5850	Pass
			-20	120	5785.020	5725 to 5850	Pass
			-10	120	5785.000	5725 to 5850	Pass
			0	120	5785.020	5725 to 5850	Pass
			10	120	5785.060	5725 to 5850	Pass
			30	120	5784.980	5725 to 5850	Pass
			40	120	5784.940	5725 to 5850	Pass
			50	120	5785.020	5725 to 5850	Pass
		5825	20	102	5824.960	5725 to 5850	Pass



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				120	5825.020	5725 to 5850	Pass
				138	5825.000	5725 to 5850	Pass
			-30	120	5825.000	5725 to 5850	Pass
			-20	120	5824.980	5725 to 5850	Pass
			-10	120	5825.000	5725 to 5850	Pass
			0	120	5824.980	5725 to 5850	Pass
			10	120	5824.960	5725 to 5850	Pass
			30	120	5825.000	5725 to 5850	Pass
			40	120	5825.000	5725 to 5850	Pass
			50	120	5824.960	5725 to 5850	Pass
802.11ac (VHT40)	SISO	5755	20	102	5754.960	5725 to 5850	Pass
				120	5755.040	5725 to 5850	Pass
				138	5754.960	5725 to 5850	Pass
			-30	120	5755.000	5725 to 5850	Pass
			-20	120	5755.040	5725 to 5850	Pass
			-10	120	5755.000	5725 to 5850	Pass
			0	120	5755.000	5725 to 5850	Pass
			10	120	5754.920	5725 to 5850	Pass
			30	120	5755.000	5725 to 5850	Pass
			40	120	5755.040	5725 to 5850	Pass
			50	120	5754.960	5725 to 5850	Pass
		5795	20	102	5795.000	5725 to 5850	Pass
				120	5794.960	5725 to 5850	Pass
				138	5795.000	5725 to 5850	Pass
			-30	120	5795.040	5725 to 5850	Pass
			-20	120	5795.000	5725 to 5850	Pass
			-10	120	5795.000	5725 to 5850	Pass
			0	120	5794.960	5725 to 5850	Pass
			10	120	5795.040	5725 to 5850	Pass
			30	120	5794.960	5725 to 5850	Pass
			40	120	5795.000	5725 to 5850	Pass
			50	120	5795.000	5725 to 5850	Pass
802.11ac (VHT80)	SISO	5775	20	102	5775.000	5725 to 5850	Pass
				120	5774.925	5725 to 5850	Pass
				138	5775.000	5725 to 5850	Pass
			-30	120	5775.000	5725 to 5850	Pass
			-20	120	5775.000	5725 to 5850	Pass
			-10	120	5775.000	5725 to 5850	Pass
			0	120	5775.000	5725 to 5850	Pass
			10	120	5775.000	5725 to 5850	Pass



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			30	120	5775.000	5725 to 5850	Pass
			40	120	5775.000	5725 to 5850	Pass
			50	120	5775.000	5725 to 5850	Pass

- End of the Report -



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