

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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 1 of 199

TEST REPORT

Application No.: SZCR2412004576AT
Applicant: Grandstream Networks, Inc.
Address of Applicant: 126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
Manufacturer: Grandstream Networks, Inc.
Address of Manufacturer: 126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
Equipment Under Test (EUT):
EUT Name: In-Wall Wi-Fi 7 Access Point
Model No.: GWN7670WM
Trade Mark: GRANDSTREAM
FCC ID: YZZGWN7670WM
Standard(s) : 47 CFR Part 15, Subpart E 15.407
Date of Receipt: 2024-12-05
Date of Test: 2024-12-09 to 2025-01-24
Date of Issue: 2025-02-17

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

Kenx Xu

Kenx Xu
EMC Laboratory Manager



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

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Report No.: SZCR241200457605

Page: 2 of 199

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2025-02-17		Original

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



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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart E 15.407	N/A	47 CFR Part 15, Subpart C 15.203	Pass
Transmission in the Absence of Data		N/A	47 CFR Part 15, Subpart E 15.407 (c)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart E 15.407	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207 & Subpart E 15.407 b(9)	Pass
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



3 Contents

	Page
1 Cover Page	1
2 Test Summary	3
3 Contents	4
4 General Information	6
4.1 Details of E.U.T.	6
4.2 Description of Support Units	6
4.3 Measurement Uncertainty	7
4.4 Test Location	8
4.5 Test Facility	8
4.6 Deviation from Standards	8
4.7 Abnormalities from Standard Conditions	8
5 Equipment List	9
6 Radio Spectrum Technical Requirement	12
6.1 Antenna Requirement	12
6.1.1 Test Requirement:	12
6.1.2 Conclusion	12
6.2 Transmission in the Absence of Data	13
6.2.1 Test Requirement:	13
6.2.2 Conclusion	13
7 Radio Spectrum Matter Test Results	14
7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)	14
7.1.1 E.U.T. Operation	14
7.1.2 Test Mode Description	14
7.1.3 Test Setup Diagram	15
7.1.4 Measurement Procedure and Data	15
7.2 Maximum Conducted output power	18
7.2.1 E.U.T. Operation	18
7.2.2 Test Mode Description	18
7.2.3 Test Setup Diagram	19
7.2.4 Measurement Procedure and Data	19
7.3 Radiated Emissions (Below 1GHz)	20
7.3.1 E.U.T. Operation	20
7.3.2 Test Mode Description	20
7.3.3 Test Setup Diagram	20
7.3.4 Measurement Procedure and Data	21
7.4 Radiated Emissions (Above 1GHz)	24
7.4.1 E.U.T. Operation	24
7.4.2 Test Mode Description	24
7.4.3 Test Setup Diagram	25



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 5 of 199

7.4.4	Measurement Procedure and Data.....	26
7.5	Radiated Emissions which fall in the restricted bands	55
7.5.1	E.U.T. Operation	55
7.5.2	Test Mode Description	55
7.5.3	Test Setup Diagram	55
7.5.4	Measurement Procedure and Data.....	56
7.6	Duty Cycle	79
7.6.1	E.U.T. Operation	79
7.6.2	Test Mode Description	79
7.6.3	Test Setup Diagram	79
7.6.4	Measurement Procedure and Data.....	79
7.7	99% Bandwidth	80
7.7.1	E.U.T. Operation	80
7.7.2	Test Mode Description	80
7.7.3	Test Setup Diagram	80
7.7.4	Measurement Procedure and Data.....	80
7.8	Minimum 6 dB bandwidth.....	81
7.8.1	E.U.T. Operation	81
7.8.2	Test Mode Description	81
7.8.3	Test Setup Diagram	81
7.8.4	Measurement Procedure and Data.....	81
7.9	Peak Power spectrum density.....	82
7.9.1	E.U.T. Operation	82
7.9.2	Test Mode Description	82
7.9.3	Test Setup Diagram	83
7.9.4	Measurement Procedure and Data.....	83
7.10	Frequency Stability	84
7.10.1	E.U.T. Operation.....	84
7.10.2	Test Mode Description.....	84
7.10.3	Test Setup Diagram.....	84
7.10.4	Measurement Procedure and Data	84
8	Test Setup Photo	85
9	EUT Constructional Details (EUT Photos)	85
10	Appendix.....	86



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4 General Information

4.1 Details of E.U.T.

Power supply:	Powered by POE DC48V
Cable Loss (for RF conducted test):	1.5dB
Operation Frequency / Number of channels (20MHz):	U-NII-3/4: 5845-5885MHz (3 Channels)
Operation Frequency / Number of channels(40MHz):	U-NII-3/4: 5835-5875MHz (2 Channels)
Operation Frequency / Number of channels (80MHz):	U-NII-3/4: 5855MHz (1 Channel)
Operation Frequency / Number of channels (160MHz):	U-NII-3/4: 5815MHz (1 Channel)
Modulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM); 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024-QAM); 802.11be: OFDMA with enhancements (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024-QAM, 4096-QAM)
Channel Spacing:	802.11a/n/ac/ax/be 20: 20MHz; 802.11n/ac/ax/be 40: 40MHz;
Antenna Type:	PIFA Antenna
Antenna Gain:	Ant1: 4.16dBi, Ant2: 4.3dBi

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

4.2 Description of Support Units

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

The EUT has been tested as an independent unit.



4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	$\pm 3.1\text{dB}$
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 (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);
Duty Cycle	$\pm 0.37\%$
99% Bandwidth	$\pm 3\%$
26dB Emission bandwidth	$\pm 3\%$
Minimum 6 dB bandwidth (5.725-5.85 GHz band)	$\pm 3\%$
Peak Power spectrum density	$\pm 2.84\text{dB}$
Frequency Stability	$\pm 7.25 \times 10^{-8}$



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 8 of 199

4.4 Test Location

All tests were performed at:

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

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

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

No tests were sub-contracted.

4.5 Test Facility

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

• A2LA (Certificate No. 3816.01)

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

• VCCI (Member No. 1937)

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

• FCC –Designation Number: CN1336

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

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

• Innovation, Science and Economic Development Canada

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

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2022-05-14	2025-05-13
EMI Test Receiver	Rohde&Schwarz	ESR	SZ-WRG-M-047	2024-01-30	2025-01-29
Matching Pad	N/A	N/A	SEM021-23	2024-03-20	2025-03-19
Matching Pad	N/A	N/A	SEM021-24	2024-03-20	2025-03-19
Measurement Software	AUDIX	e3 V8.2014-6-27a	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2024-07-06	2025-07-05
LISN	Rohde&Schwarz	ENV216	SEM007-01	2024-08-15	2025-08-14
LISN	ETS-LINDGREN	3816/2	SEM007-02	2024-03-14	2025-03-13

Maximum Conducted output power					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Power Sensor	TST PASS	TSPS2023R	SEM009-26	2024-03-27	2025-03-26
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2024-03-14	2025-03-13
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2024-08-14	2025-08-13
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2024-03-14	2025-03-13
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2024-09-14	2025-09-13
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2024-07-06	2025-07-05
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2024-03-27	2025-03-26
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024-03-19	2025-03-18

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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 10 of 199

Radiated Emissions (Below 1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2023-11-20	2025-11-19
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2023-06-19	2026-06-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2024-08-14	2025-08-13
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2023-09-16	2025-09-15
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2024-03-14	2025-03-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2024-07-06	2025-07-05

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

Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
3m Fully-Anechoic Chamber	AUDIX	N/A	SEM001-02	2024-05-11	2027-05-10
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2024-03-15	2025-03-14
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2023-07-23	2025-07-22
Microwave system amplifier	Agilent	83017A	SEM005-25	2024-09-14	2025-09-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2024-07-06	2025-07-05



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605
Page: 11 of 199

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

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

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

15.203 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.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is Ant1: 4.16dBi, Ant2: 4.3dBi, directional gain: $(4.3+3.01)$ dBi=7.31dBi

Antenna location: Refer to internal photos



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 detects 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:

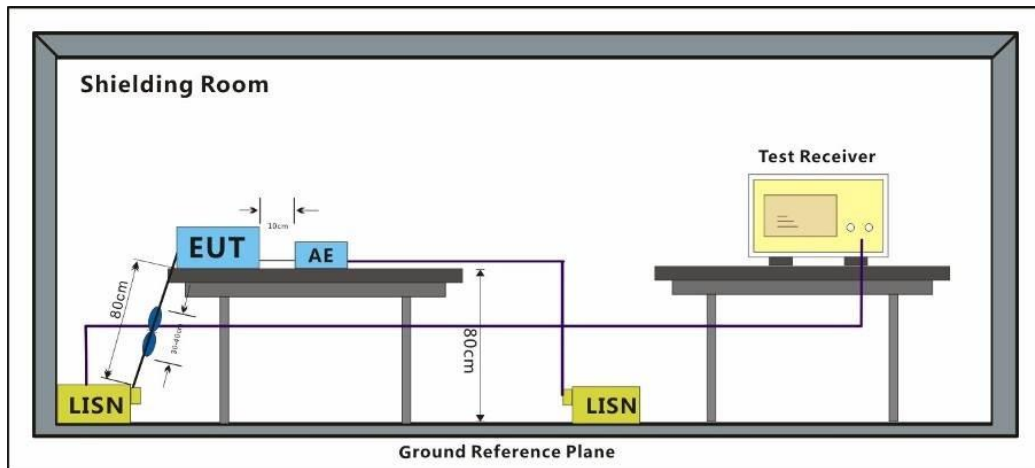
Temperature: 22.5 °C Humidity: 44.5 % RH Atmospheric Pressure: 1020 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. Only the data of worst case is recorded in the report.



7.1.3 Test Setup Diagram



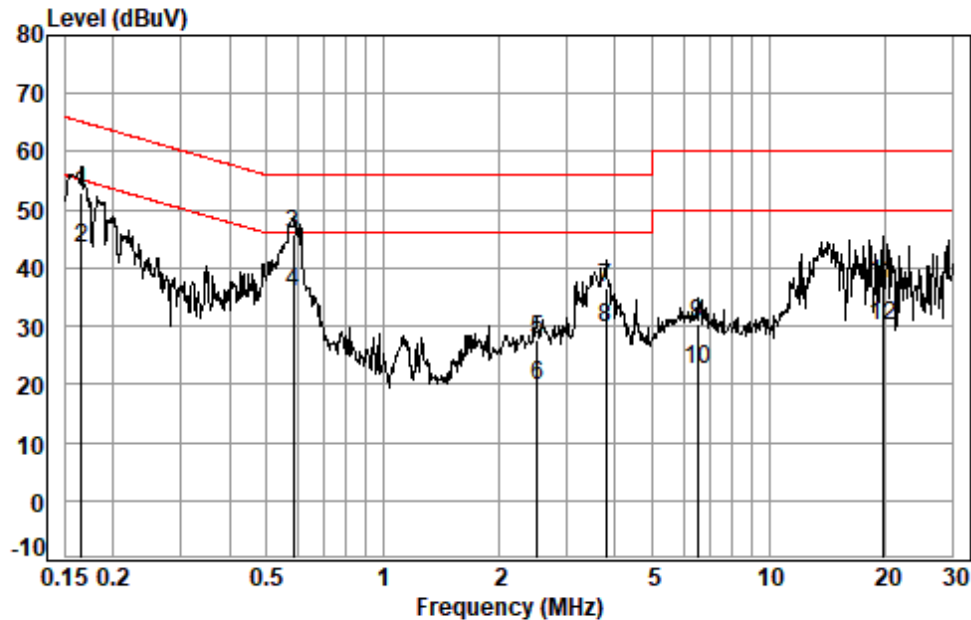
7.1.4 Measurement Procedure and Data

- 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: 08; Line: Live line

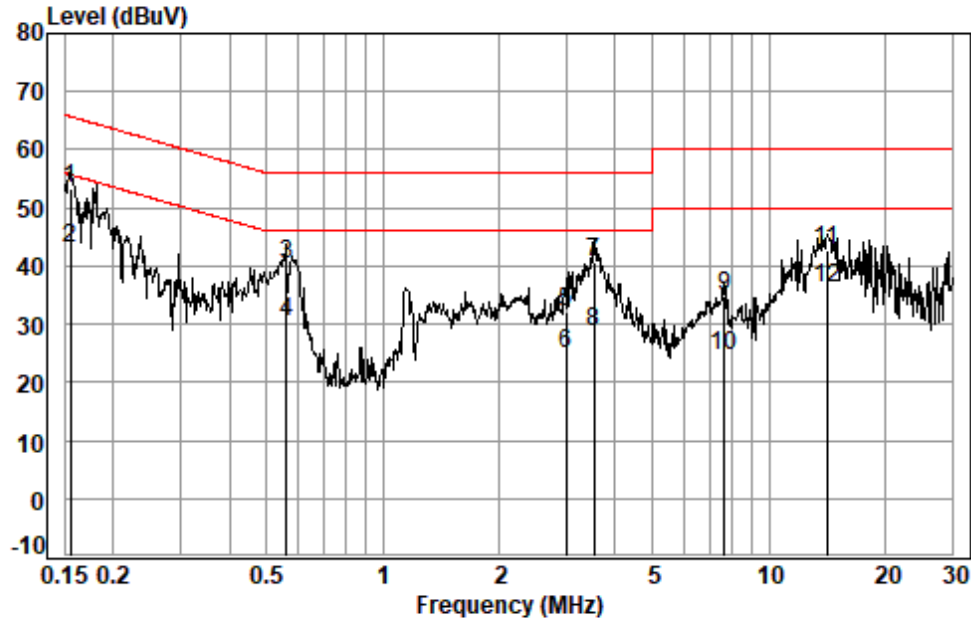


Site : Shielding Room
Condition: Line
Job No. : 04576AT
Test mode: 08

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1659	0.06	9.81	43.01	52.88	65.16	-12.28	QP
2	0.1659	0.06	9.81	33.65	43.52	55.16	-11.64	Average
3 *	0.5854	0.08	9.71	35.99	45.78	56.00	-10.22	QP
4 *	0.5854	0.08	9.71	26.07	35.86	46.00	-10.14	Average
5	2.5133	0.11	9.65	17.78	27.54	56.00	-28.46	QP
6	2.5133	0.11	9.65	10.07	19.83	46.00	-26.17	Average
7	3.7794	0.11	9.65	26.90	36.66	56.00	-19.34	QP
8	3.7794	0.11	9.65	19.77	29.53	46.00	-16.47	Average
9	6.5227	0.15	9.80	20.45	30.40	60.00	-29.60	QP
10	6.5227	0.15	9.80	12.45	22.40	50.00	-27.60	Average
11	19.7397	0.30	10.17	26.89	37.36	60.00	-22.64	QP
12	19.7397	0.30	10.17	19.67	30.14	50.00	-19.86	Average



Test Mode: 08; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 04576AT
Test mode: 08

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1 *	0.1548	0.06	9.82	43.50	53.38	65.74	-12.36	QP
2 *	0.1548	0.06	9.82	33.23	43.11	55.74	-12.63	Average
3	0.5611	0.08	9.72	30.40	40.20	56.00	-15.80	QP
4	0.5611	0.08	9.72	20.74	30.54	46.00	-15.46	Average
5	2.9776	0.11	9.67	22.41	32.19	56.00	-23.81	QP
6	2.9776	0.11	9.67	15.29	25.07	46.00	-20.93	Average
7	3.5278	0.11	9.67	30.77	40.55	56.00	-15.45	QP
8	3.5278	0.11	9.67	18.77	28.55	46.00	-17.45	Average
9	7.6870	0.17	9.86	24.72	34.75	60.00	-25.25	QP
10	7.6870	0.17	9.86	14.51	24.54	50.00	-25.46	Average
11	14.1376	0.25	10.15	32.27	42.67	60.00	-17.33	QP
12	14.1376	0.25	10.15	25.67	36.07	50.00	-13.93	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)
5850-5895	≤36dBm EIRP
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: 23.3 °C

Humidity: 34.1 % RH

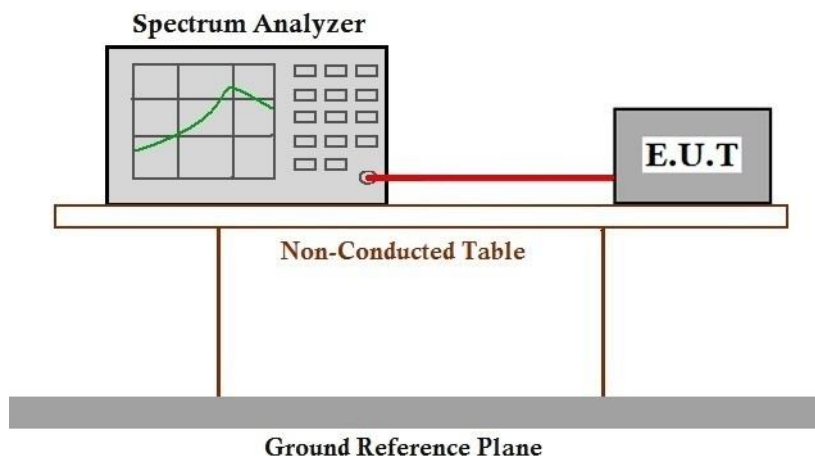
Atmospheric Pressure: 1020 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. Only the data of worst case is recorded in the report.



7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.3 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

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: 21.2 °C

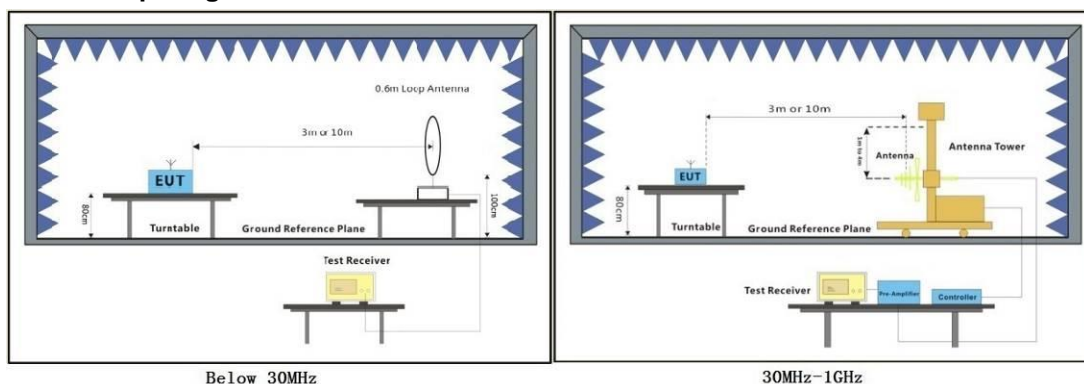
Humidity: 46.2 % RH

Atmospheric Pressure: 1020 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. 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.



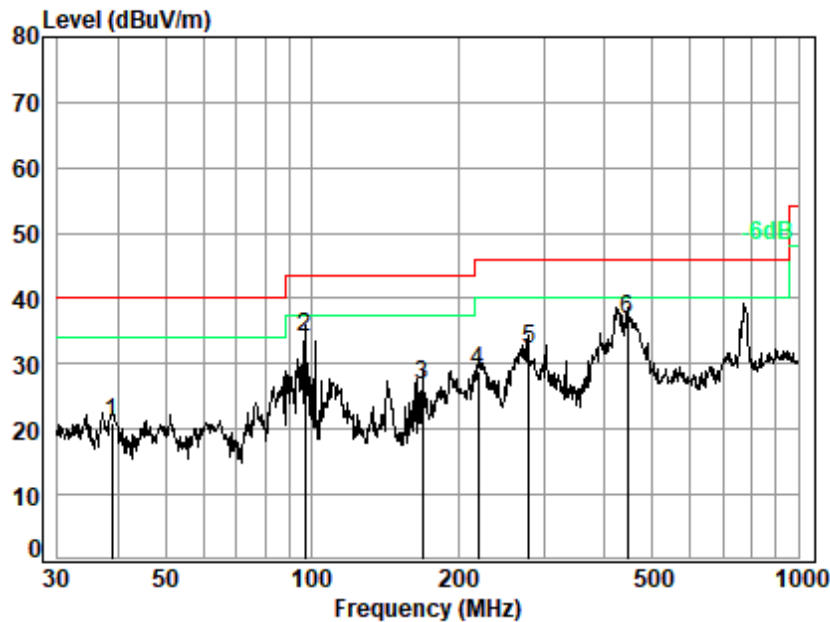
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 22 of 199

Test Mode: 08; Polarity: Horizontal



Site : chamber

Condition: 3m HORIZONTAL

Job No. : 04576AT/04577AT

Test Mode: 08

	Ant	Cable	Preamp	Read		Limit	Over	
Freq	Factor	Loss	Factor	Level	Level	Line	Limit	Remark
MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	38.752	16.95	0.77	27.77	30.89	20.84	40.00	-19.16 QP
2	96.775	12.19	1.20	27.60	48.21	34.00	43.50	-9.50 QP
3	168.414	13.19	1.63	27.30	39.23	26.75	43.50	-16.75 QP
4	219.845	15.14	1.86	27.09	39.11	29.02	46.00	-16.98 QP
5	279.044	16.94	2.12	26.84	40.16	32.38	46.00	-13.62 QP
6 q	446.414	21.14	2.75	27.35	40.16	36.70	46.00	-9.30 QP



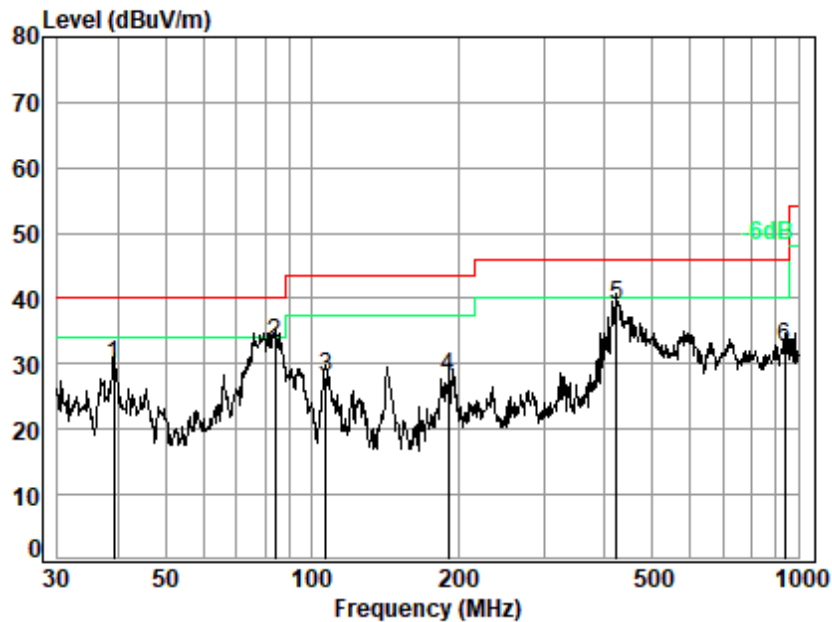
SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 23 of 199

Test Mode: 08; Polarity: Vertical



Site : chamber

Condition: 3m VERTICAL

Job No. : 04576AT/04577AT

Test Mode: 08

		Ant	Cable	Preamp	Read	Limit	Over	
	Freq	Factor	Loss	Factor	Level	Level	Line	Limit Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	39.162	16.77	0.77	27.77	39.92	29.69	40.00	-10.31 QP
2 q	84.110	10.89	1.12	27.64	48.89	33.26	40.00	-6.74 QP
3	106.759	12.15	1.27	27.56	42.05	27.91	43.50	-15.59 QP
4	191.074	14.28	1.72	27.21	39.27	28.06	43.50	-15.44 QP
5	422.058	20.67	2.66	27.25	42.80	38.88	46.00	-7.12 QP
6	938.833	28.15	4.22	26.49	26.69	32.57	46.00	-13.43 QP



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7.4 Radiated Emissions (Above 1GHz)

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

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

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1GHz	500	3
<p>*(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.</p> <p>(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.</p> <p>(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.</p> <p>(4) For transmitters operating in the 5.725-5.85 GHz band:</p> <p>(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.</p> <p>For transmitters operating solely in the 5.850-5.895 GHz band or operating on a channel that spans across 5.725-5.895 GHz:</p> <p>For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of -7 dBm/MHz at or above 5.925 GHz.</p> <p>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.</p>		

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

Humidity: 56.3 % RH

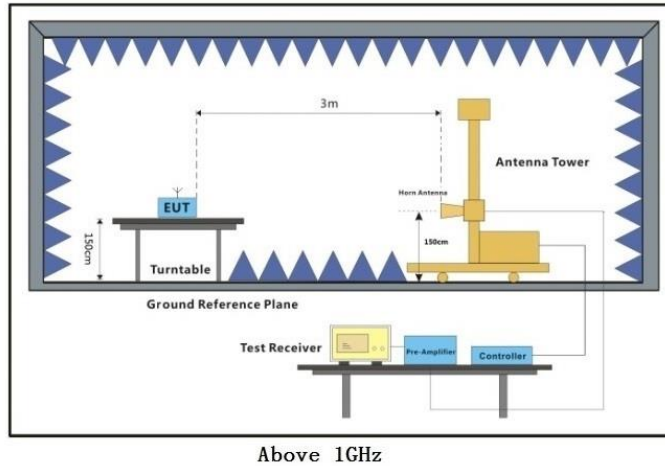
Atmospheric Pressure: 1020 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. Only the data of worst case is recorded in the report.



7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

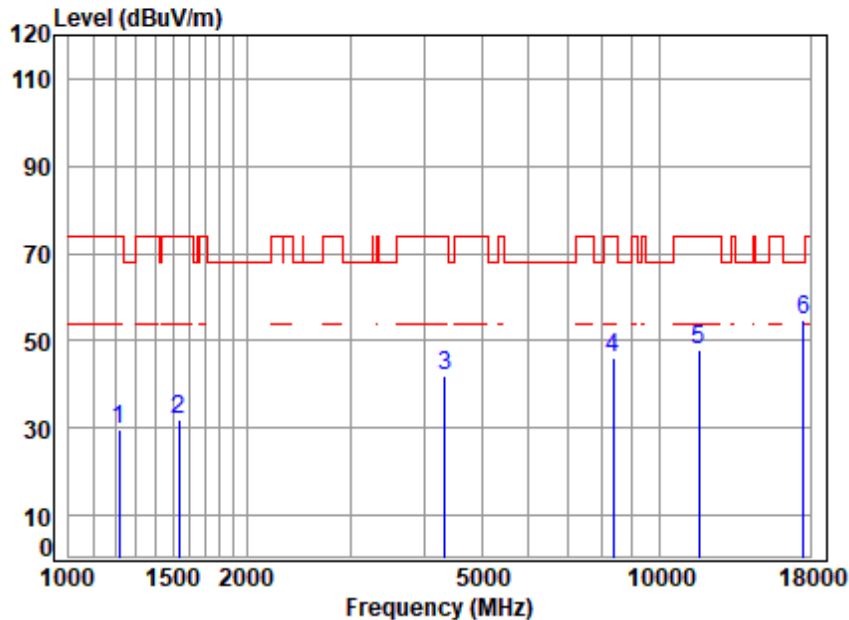
- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which 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.
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 $\leq 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



Test Mode: 08; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

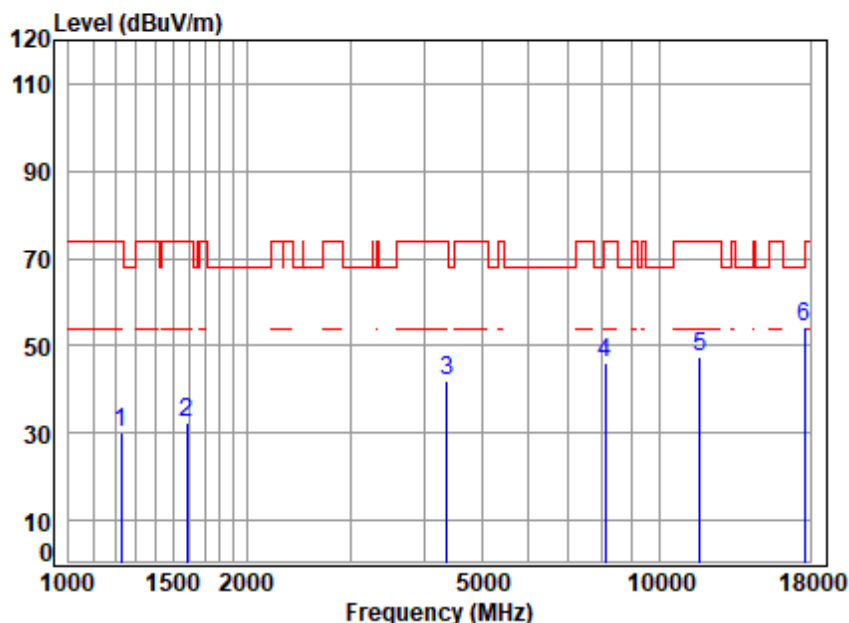


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5845 TX RSE
Note : 5G WIFI 11A

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 1217.190	3.71	24.64	54.69	56.11	29.77	74.00	-44.23 peak
2 1538.281	4.10	26.95	54.79	55.89	32.15	74.00	-41.85 peak
3 4341.886	7.07	34.34	54.26	54.82	41.97	74.00	-32.03 peak
4 8343.918	9.38	36.70	53.28	53.44	46.24	74.00	-27.76 peak
5 11690.000	11.95	37.88	53.14	51.03	47.72	74.00	-26.28 peak
6 p17535.000	14.93	43.47	52.63	48.80	54.57	68.20	-13.63 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Site : chamber

Condition: 3m HORIZONTAL

Job No : 04576AT/04577AT

Mode : 5865 TX RSE

Note : 5G WIFI 11A

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1227.791	3.72	24.79	54.69	56.46	30.28	74.00	-43.72	peak
2	1587.975	4.17	26.85	54.80	56.36	32.58	74.00	-41.42	peak
3	4367.058	7.10	34.54	54.26	54.60	41.98	74.00	-32.02	peak
4	8106.200	9.14	36.50	53.16	53.70	46.18	74.00	-27.82	peak
5	11730.000	11.95	37.90	53.15	50.78	47.48	74.00	-26.52	peak
6	17595.000	15.00	43.59	52.60	48.13	54.12	68.20	-14.08	peak



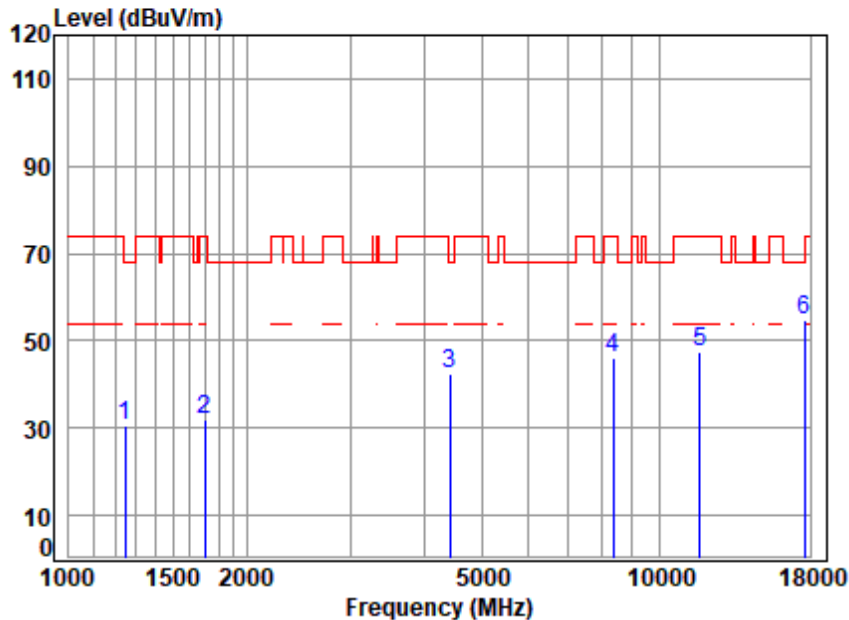
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Test Mode: 08; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

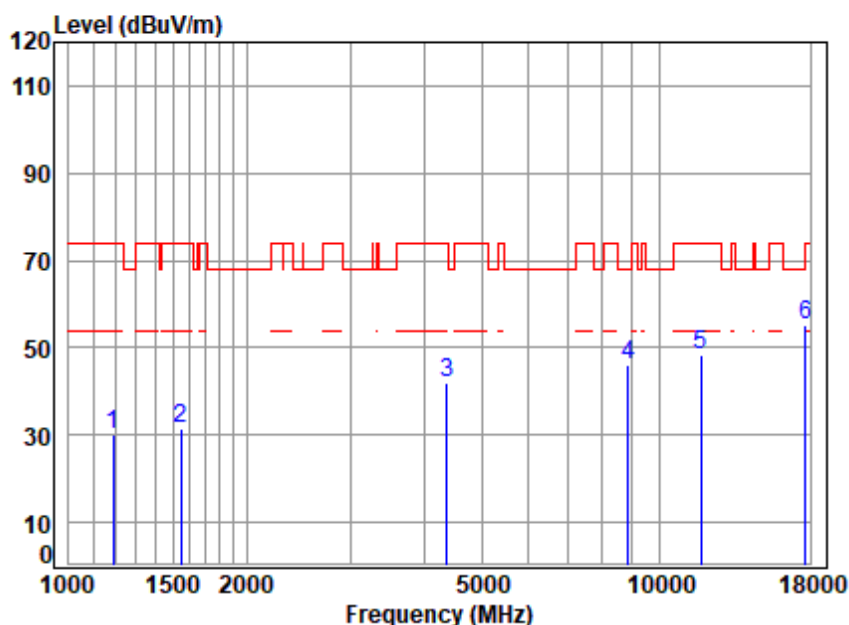
Mode : 5865 TX RSE

Note : 5G WIFI 11A

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1245.663	3.74	25.04	54.70	56.30	30.38	68.20 -37.82 peak
2	1697.129	4.32	26.21	54.83	56.20	31.90	74.00 -42.10 peak
3	4417.841	7.16	34.59	54.26	54.94	42.43	68.20 -25.77 peak
4	8343.918	9.38	36.70	53.28	53.30	46.10	74.00 -27.90 peak
5	11730.000	11.95	37.90	53.15	50.68	47.38	74.00 -26.62 peak
6	p17595.000	15.00	43.59	52.60	48.66	54.65	68.20 -13.55 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



```
Site      : chamber
Condition: 3m HORIZONTAL
Job No    : 04576AT/04577AT
Mode      : 5885 TX RSE
Note      : 5G WIFI 11A
```

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1189.368	3.67	24.29	54.68	56.65	29.93	74.00	-44.07	peak
2	1547.199	4.11	26.99	54.79	55.22	31.53	74.00	-42.47	peak
3	4367.058	7.10	34.54	54.26	54.78	42.16	74.00	-31.84	peak
4	8866.062	9.82	37.20	53.54	52.59	46.07	68.20	-22.13	peak
5	11770.000	11.96	37.90	53.16	51.44	48.14	74.00	-25.86	peak
6	17655.000	15.07	43.71	52.57	48.87	55.08	68.20	-13.12	peak

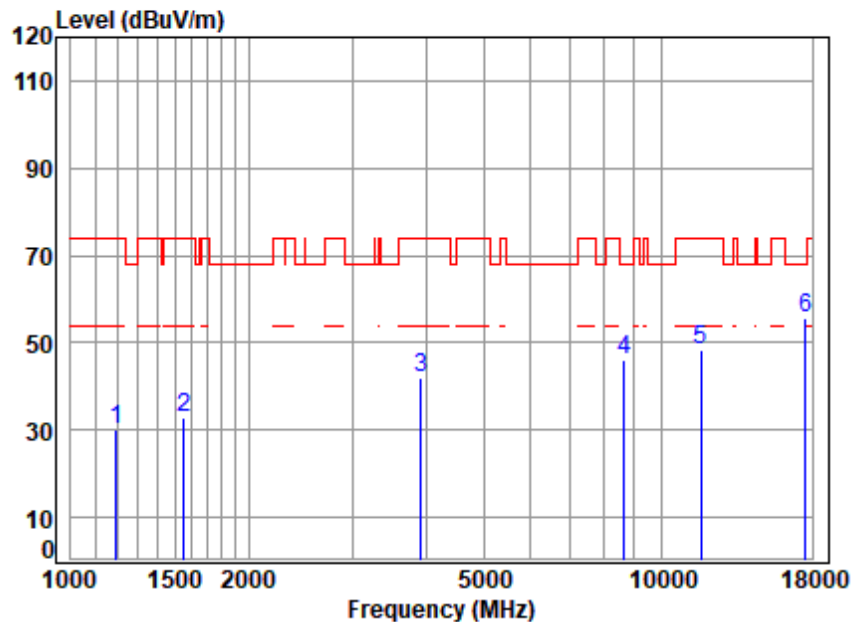


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Test Mode: 08; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL

Job No : 04576AT/04577AT

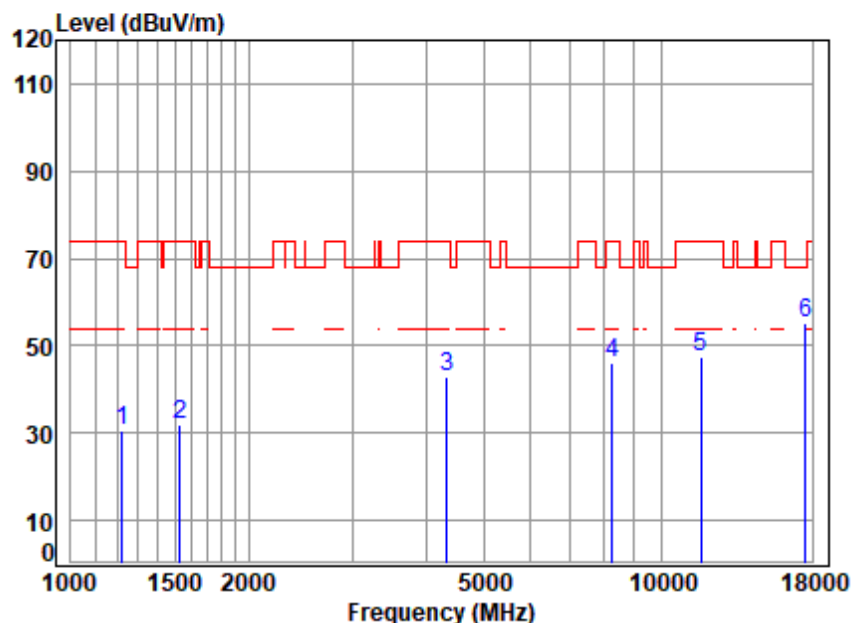
Mode : 5845 TX RSE

Note : 5G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1192.811	3.67	24.33	54.68	56.74	30.06	74.00	-43.94	peak
2	1551.677	4.12	26.99	54.79	56.55	32.87	74.00	-41.13	peak
3	3912.809	6.63	33.72	54.35	55.99	41.99	74.00	-32.01	peak
4	8663.404	9.66	36.90	53.44	53.07	46.19	68.20	-22.01	peak
5	11690.000	11.95	37.88	53.14	51.69	48.38	74.00	-25.62	peak
6	p17535.000	14.93	43.47	52.63	49.87	55.64	68.20	-12.56	peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



```
Site      : chamber
Condition: 3m VERTICAL
Job No    : 04576AT/04577AT
Mode      : 5845 TX RSE
Note      : 5G WIFI 11N20
```

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1224.247	3.71	24.74	54.69	56.84	30.60	74.00	-43.40	peak
2	1529.414	4.08	26.92	54.78	55.71	31.93	74.00	-42.07	peak
3	4341.886	7.07	34.34	54.26	55.81	42.96	74.00	-31.04	peak
4	8248.005	9.28	36.70	53.23	53.43	46.18	74.00	-27.82	peak
5	11690.000	11.95	37.88	53.14	50.88	47.57	74.00	-26.43	peak
6	17535.000	14.93	43.47	52.63	49.45	55.22	68.20	-12.98	peak

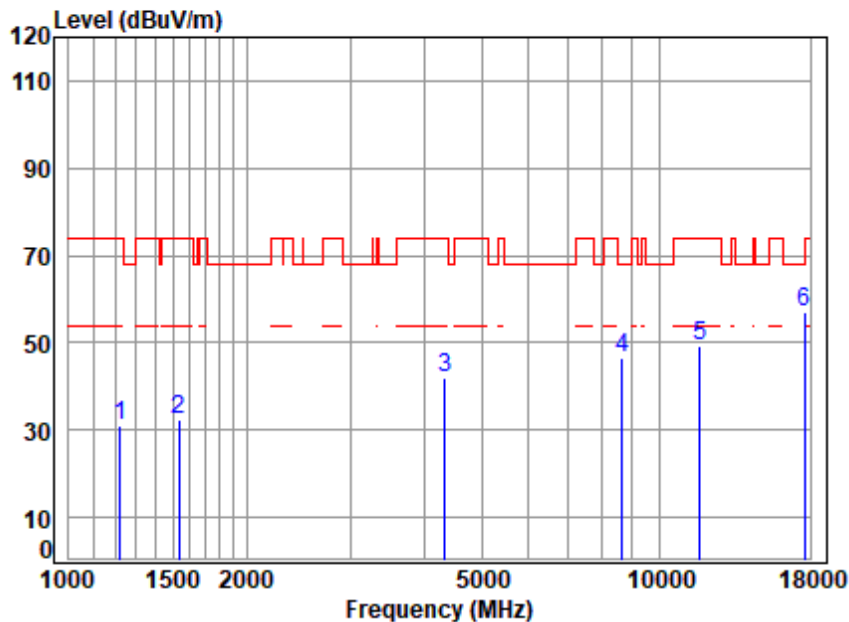


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Test Mode: 08; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle

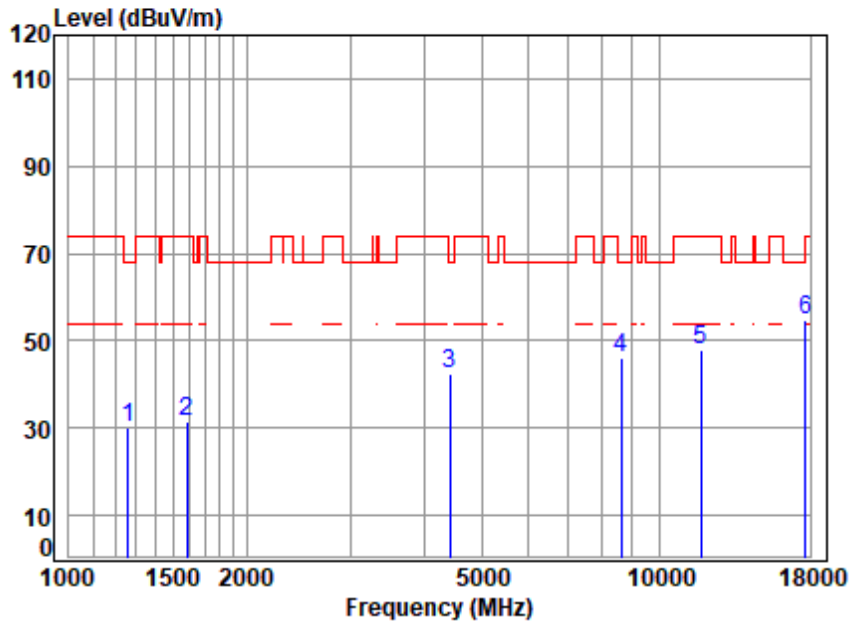


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5865 TX RSE
Note : 5G WIFI 11N20

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1224.247	3.71	24.74	54.69	57.10	30.86	74.00 -43.14 peak
2	1538.281	4.10	26.95	54.79	56.08	32.34	74.00 -41.66 peak
3	4341.886	7.07	34.34	54.26	54.93	42.08	74.00 -31.92 peak
4	8663.404	9.66	36.90	53.44	53.20	46.32	68.20 -21.88 peak
5	11730.000	11.95	37.90	53.15	52.42	49.12	74.00 -24.88 peak
6	p17595.000	15.00	43.59	52.60	50.87	56.86	68.20 -11.34 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL

Job No : 04576AT/04577AT

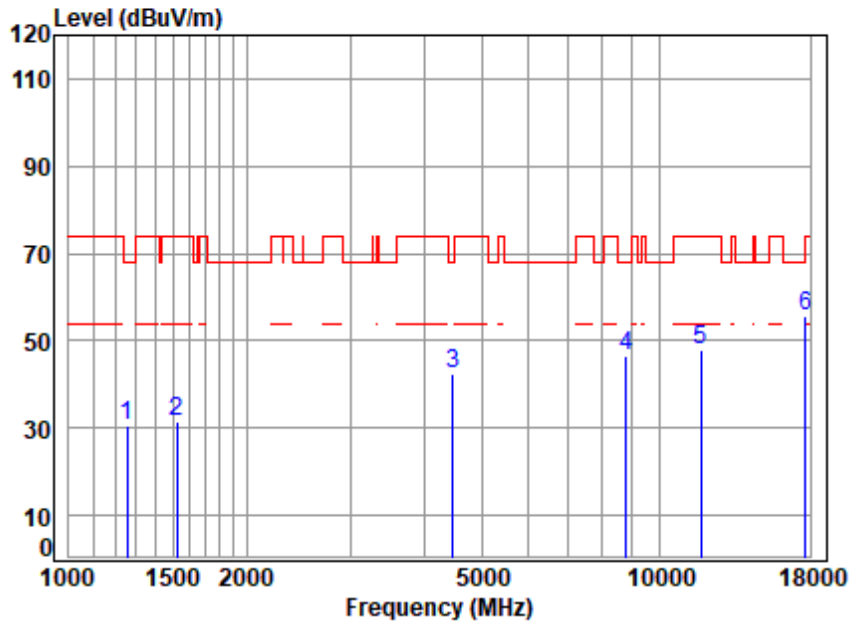
Mode : 5885 TX RSE

Note : 5G WIFI 11N20

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1260.149	3.76	25.04	54.70	55.91	30.01	68.20 -38.19 peak
2	1587.975	4.17	26.85	54.80	55.26	31.48	74.00 -42.52 peak
3	4417.841	7.16	34.59	54.26	55.07	42.56	68.20 -25.64 peak
4	8613.468	9.62	36.90	53.41	53.19	46.30	68.20 -21.90 peak
5	11770.000	11.96	37.90	53.16	51.03	47.73	74.00 -26.27 peak
6	p17655.000	15.07	43.71	52.57	48.53	54.74	68.20 -13.46 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

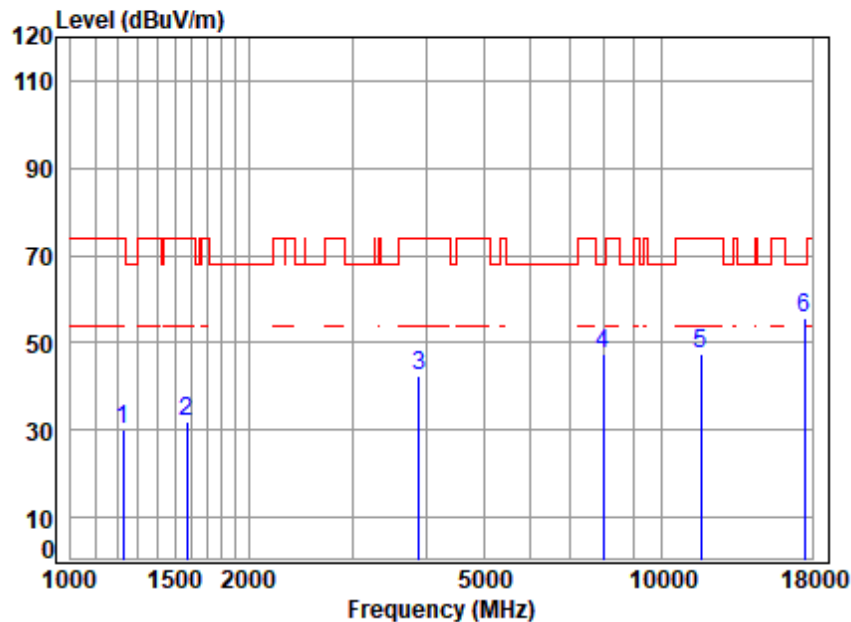
Mode : 5885 TX RSE

Note : 5G WIFI 11N20

		Cable	Ant	Preamp	Read	Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1256.512	3.76	25.06	54.70	56.64	30.76	68.20	-37.44 peak
2	1525.000	4.08	26.90	54.78	55.06	31.26	74.00	-42.74 peak
3	4469.214	7.22	33.97	54.25	55.51	42.45	68.20	-25.75 peak
4	8789.516	9.76	37.06	53.50	53.18	46.50	68.20	-21.70 peak
5	11770.000	11.96	37.90	53.16	51.18	47.88	74.00	-26.12 peak
6	p17655.000	15.07	43.71	52.57	49.59	55.80	68.20	-12.40 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

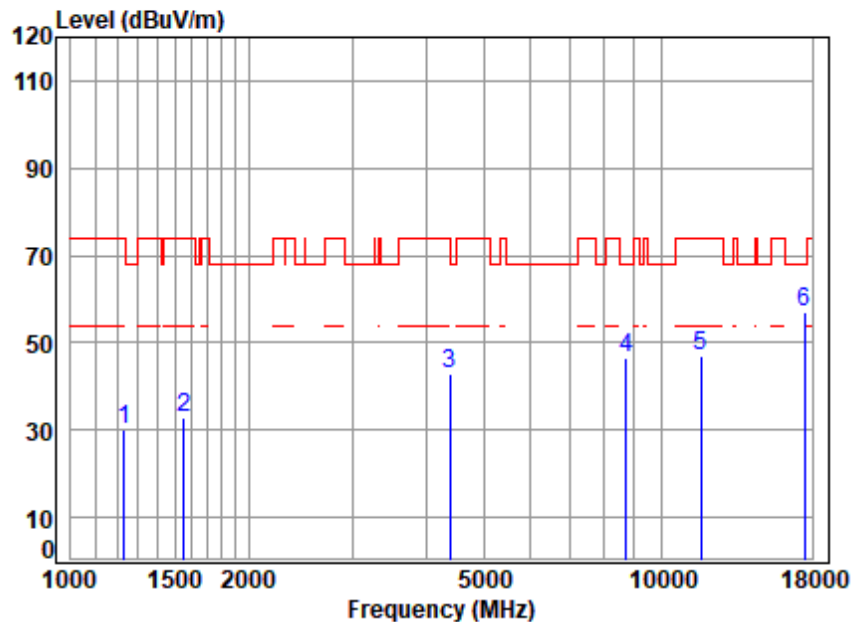


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5835 TX RSE
Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1227.791	3.72	24.79	54.69	56.41	30.23	74.00	-43.77	peak
2	1574.265	4.15	26.90	54.80	55.57	31.82	74.00	-42.18	peak
3	3890.255	6.62	33.66	54.37	56.72	42.63	74.00	-31.37	peak
4	7989.893	9.02	36.40	53.10	54.95	47.27	68.20	-20.93	peak
5	11670.000	11.95	37.84	53.14	50.87	47.52	74.00	-26.48	peak
6	p17505.000	14.90	43.41	52.64	50.07	55.74	68.20	-12.46	peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

Mode : 5835 TX RSE

Note : 5G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1231.345	3.72	24.84	54.69	56.35	30.22	74.00	-43.78	peak
2	1556.169	4.12	26.98	54.79	56.58	32.89	74.00	-41.11	peak
3	4392.376	7.13	34.74	54.26	55.15	42.76	74.00	-31.24	peak
4	8713.630	9.70	36.90	53.46	53.23	46.37	68.20	-21.83	peak
5	11670.000	11.95	37.84	53.14	50.40	47.05	74.00	-26.95	peak
6	17505.000	14.90	43.41	52.64	51.50	57.17	68.20	-11.03	peak

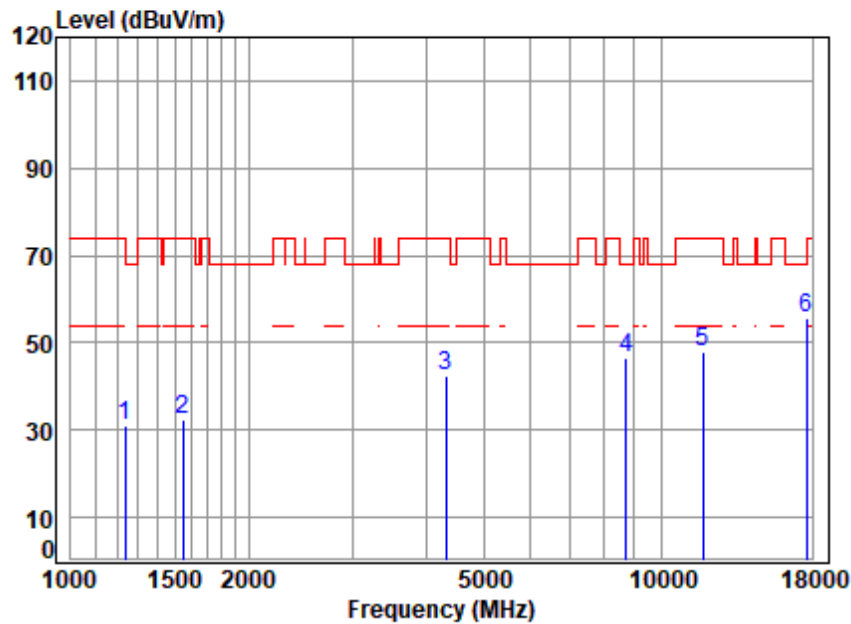


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Test Mode: 08; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High

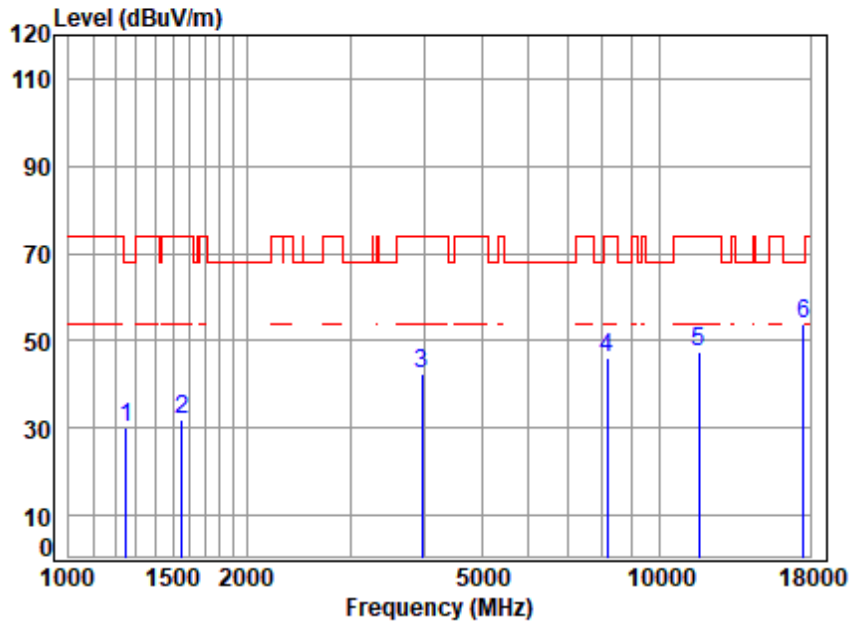


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5875 TX RSE
Note : 5G WIFI 11N40

	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 1238.483	3.73	24.94	54.69	56.94	30.92	74.00	-43.08 peak
2 1547.199	4.11	26.99	54.79	56.13	32.44	74.00	-41.56 peak
3 4316.859	7.04	34.13	54.27	55.42	42.32	74.00	-31.68 peak
4 8713.630	9.70	36.90	53.46	53.35	46.49	68.20	-21.71 peak
5 11750.000	11.96	37.90	53.15	50.98	47.69	74.00	-26.31 peak
6 p17625.000	15.04	43.65	52.58	49.77	55.88	68.20	-12.32 peak



Test Mode: 08; Polarity: Horizontal; Modulation: 802.11ax(Full RU0); Bandwidth: 20MHz; Channel: Low



Site : chamber

Condition: 3m HORIZONTAL

Job No : 04576AT/04577AT

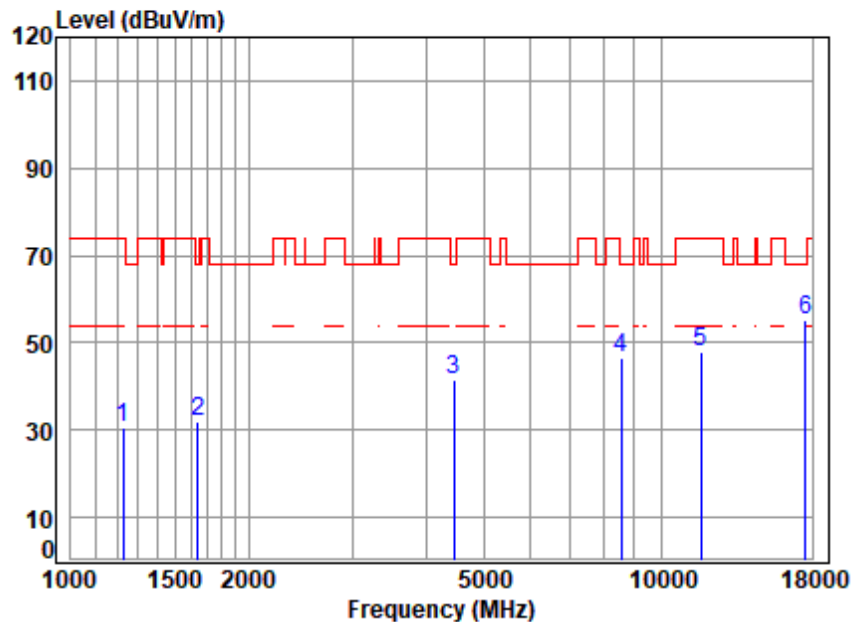
Mode : 5845 TX RSE

Note : 5G WIFI 11AX20

		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	1249.269	3.75	25.09	54.70	56.04	30.18	68.20	-38.02 peak
2	1551.677	4.12	26.99	54.79	55.56	31.88	74.00	-42.12 peak
3	3969.767	6.64	33.30	54.32	56.68	42.30	74.00	-31.70 peak
4	8153.195	9.19	36.51	53.18	53.65	46.17	74.00	-27.83 peak
5	11690.000	11.95	37.88	53.14	50.66	47.35	74.00	-26.65 peak
6	17535.000	14.93	43.47	52.63	48.27	54.04	68.20	-14.16 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



```
Site      : chamber
Condition: 3m VERTICAL
Job No    : 04576AT/04577AT
Mode      : 5845 TX RSE
Note      : 5G WIFI 11AX20
```

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1227.791	3.72	24.79	54.69	56.55	30.37	74.00	-43.63	peak
2	1639.274	4.24	26.41	54.81	56.00	31.84	68.20	-36.36	peak
3	4456.315	7.20	34.12	54.25	54.41	41.48	68.20	-26.72	peak
4	8539.102	9.56	36.78	53.38	53.45	46.41	68.20	-21.79	peak
5	11690.000	11.95	37.88	53.14	51.44	48.13	74.00	-25.87	peak
6	17535.000	14.93	43.47	52.63	49.58	55.35	68.20	-12.85	peak



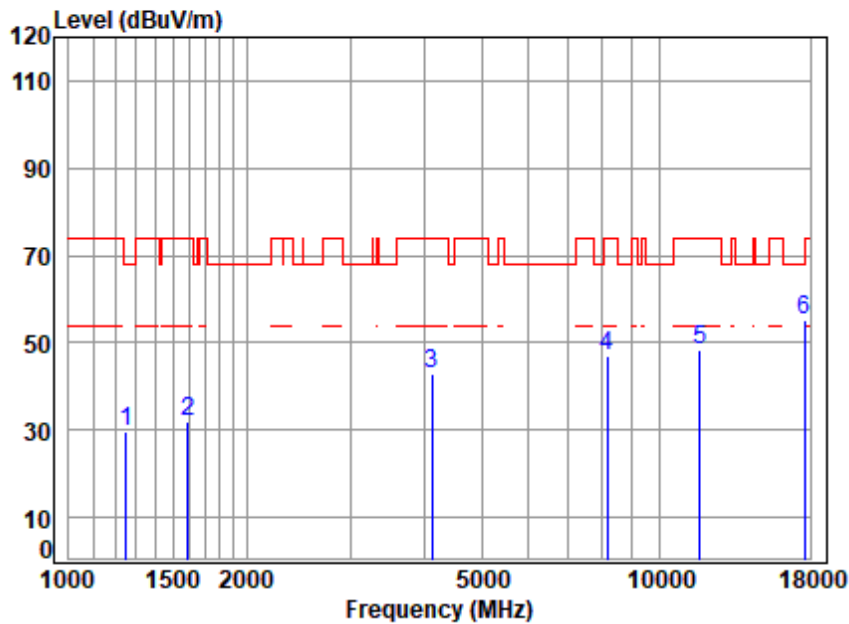
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Test Mode: 08; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5865 TX RSE
Note : 5G WIFI 11AX20

		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	1252.885	3.75	25.08	54.70	55.73	29.86	68.20	-38.34 peak
2	1592.571	4.18	26.83	54.80	55.59	31.80	74.00	-42.20 peak
3	4121.768	6.80	33.35	54.29	57.25	43.11	74.00	-30.89 peak
4	8153.195	9.19	36.51	53.18	54.62	47.14	74.00	-26.86 peak
5	11730.000	11.95	37.90	53.15	51.47	48.17	74.00	-25.83 peak
6	p17595.000	15.00	43.59	52.60	49.38	55.37	68.20	-12.83 peak



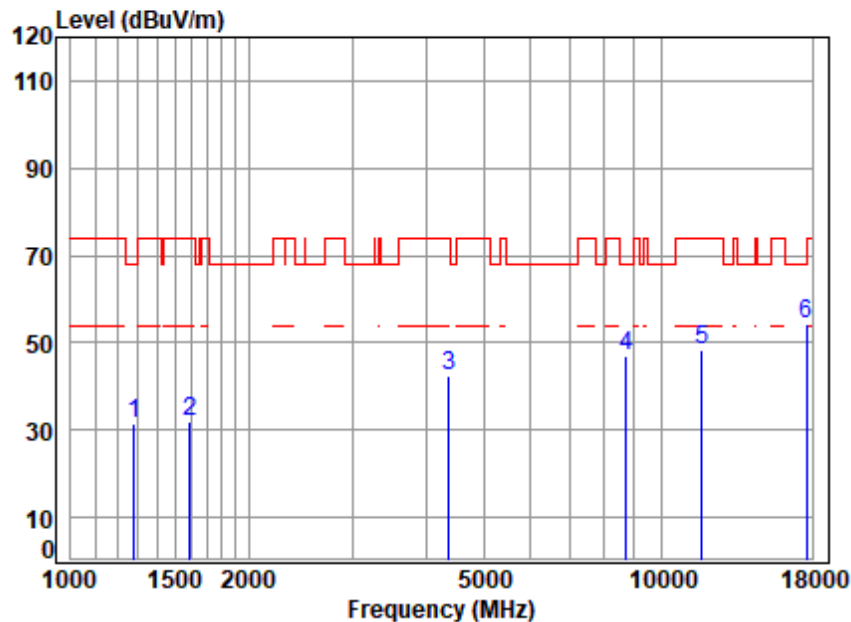
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 46 of 199

Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:middle



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

Mode : 5865 TX RSE

Note : 5G WIFI 11AX20

		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	1282.193	3.79	24.91	54.71	57.46	31.45	68.20	-36.75 peak
2	1592.571	4.18	26.83	54.80	55.71	31.92	74.00	-42.08 peak
3	4367.058	7.10	34.54	54.26	54.99	42.37	74.00	-31.63 peak
4	8713.630	9.70	36.90	53.46	53.97	47.11	68.20	-21.09 peak
5	11730.000	11.95	37.90	53.15	51.61	48.31	74.00	-25.69 peak
6	p17595.000	15.00	43.59	52.60	48.26	54.25	68.20	-13.95 peak



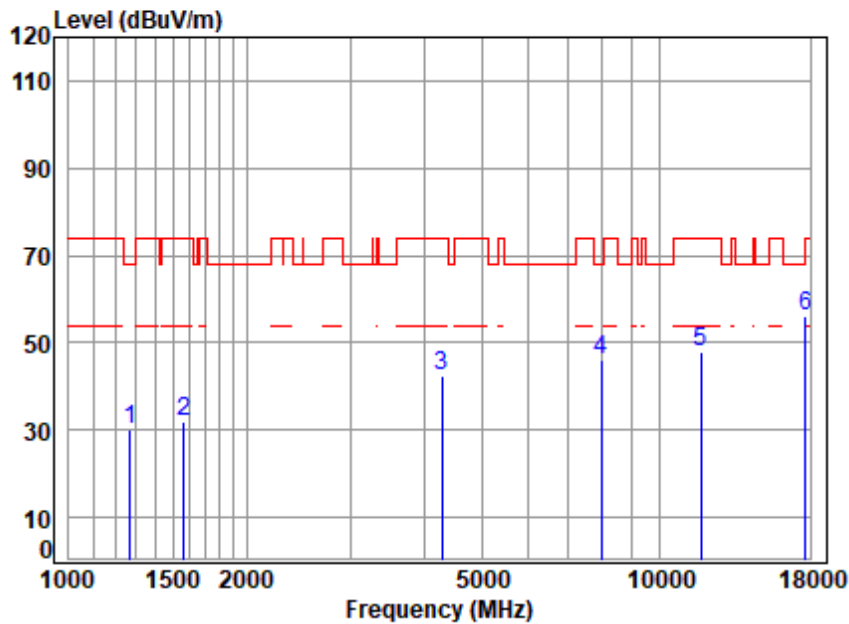
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Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 04576AT/04577AT
Mode : 5885 TX RSE
Note : 5G WIFI 11AX20

		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	1271.123	3.77	24.97	54.70	56.21	30.25	68.20	-37.95 peak
2	1565.191	4.14	26.94	54.79	55.79	32.08	74.00	-41.92 peak
3	4291.977	7.01	33.97	54.27	55.60	42.31	74.00	-31.69 peak
4	7989.893	9.02	36.40	53.10	53.84	46.16	68.20	-22.04 peak
5	11770.000	11.96	37.90	53.16	51.29	47.99	74.00	-26.01 peak
6	p17655.000	15.07	43.71	52.57	49.84	56.05	68.20	-12.15 peak



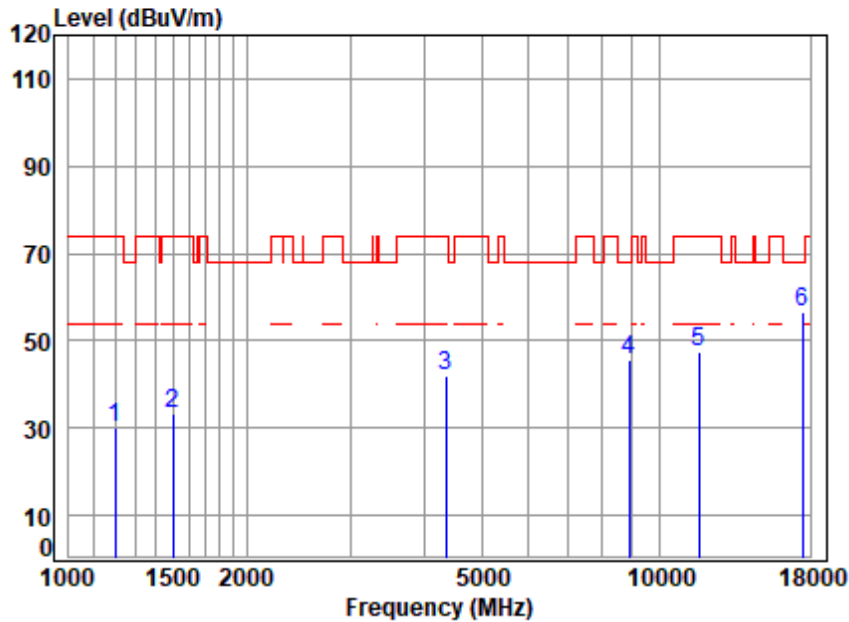
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 49 of 199

Test Mode: 08; Polarity: Horizontal; Modulation: 802.11ax(Full RU0); Bandwidth: 40MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5835 TX RSE
Note : 5G WIFI 11AX40

	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	1196.264	3.68	24.36	54.68	56.90	30.26	74.00 -43.74 peak
2	1503.119	4.04	26.81	54.78	57.14	33.21	74.00 -40.79 peak
3	4354.454	7.08	34.44	54.26	54.83	42.09	74.00 -31.91 peak
4	8891.725	9.84	37.20	53.55	52.34	45.83	68.20 -22.37 peak
5	11670.000	11.95	37.84	53.14	50.68	47.33	74.00 -26.67 peak
6	p17505.000	14.90	43.41	52.64	50.81	56.48	68.20 -11.72 peak



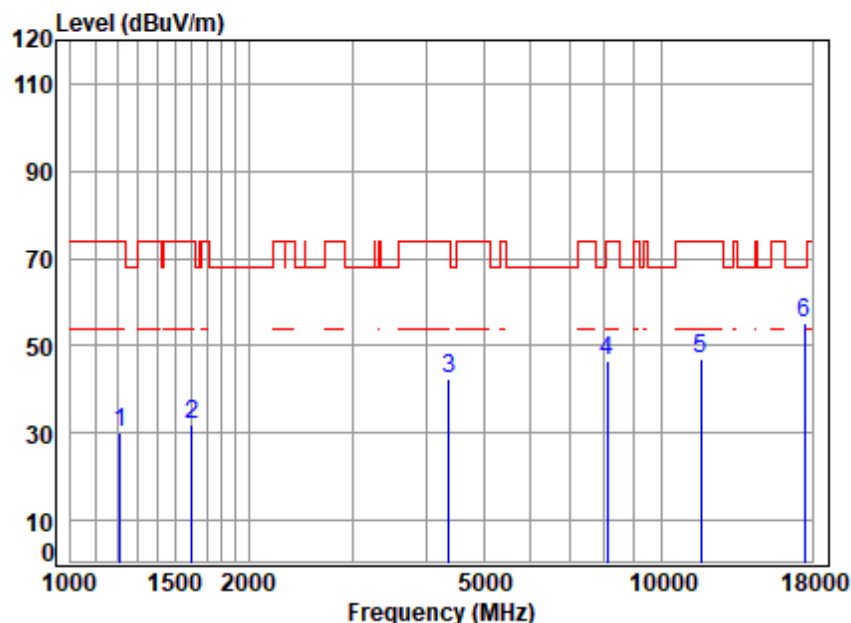
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Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:Low



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

Mode : 5835 TX RSE

Note : 5G WIFI 11AX40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1213.677	3.70	24.59	54.68	56.50	30.11	74.00	-43.89	peak
2	1601.804	4.19	26.78	54.80	55.99	32.16	74.00	-41.84	peak
3	4367.058	7.10	34.54	54.26	55.23	42.61	74.00	-31.39	peak
4	8106.200	9.14	36.50	53.16	54.27	46.75	74.00	-27.25	peak
5	11670.000	11.95	37.84	53.14	50.34	46.99	74.00	-27.01	peak
6	17505.000	14.90	43.41	52.64	49.41	55.08	68.20	-13.12	peak



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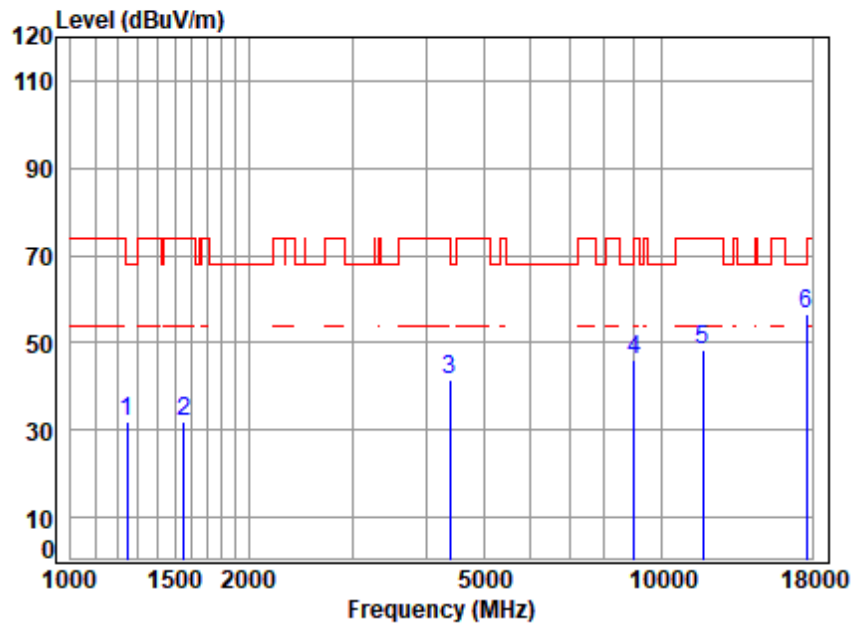
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 51 of 199

Test Mode: 08; Polarity: Horizontal; Modulation: 802.11ax(Full RU0); Bandwidth: 40MHz; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5875 TX RSE
Note : 5G WIFI 11AX40

		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	1245.663	3.74	25.04	54.70	57.85	31.93	68.20	-36.27 peak
2	1556.169	4.12	26.98	54.79	55.54	31.85	74.00	-42.15 peak
3	4379.699	7.11	34.64	54.26	53.85	41.34	74.00	-32.66 peak
4	8995.123	9.92	36.91	53.60	52.70	45.93	68.20	-22.27 peak
5	11750.000	11.96	37.90	53.15	51.53	48.24	74.00	-25.76 peak
6	p17625.000	15.04	43.65	52.58	50.35	56.46	68.20	-11.74 peak



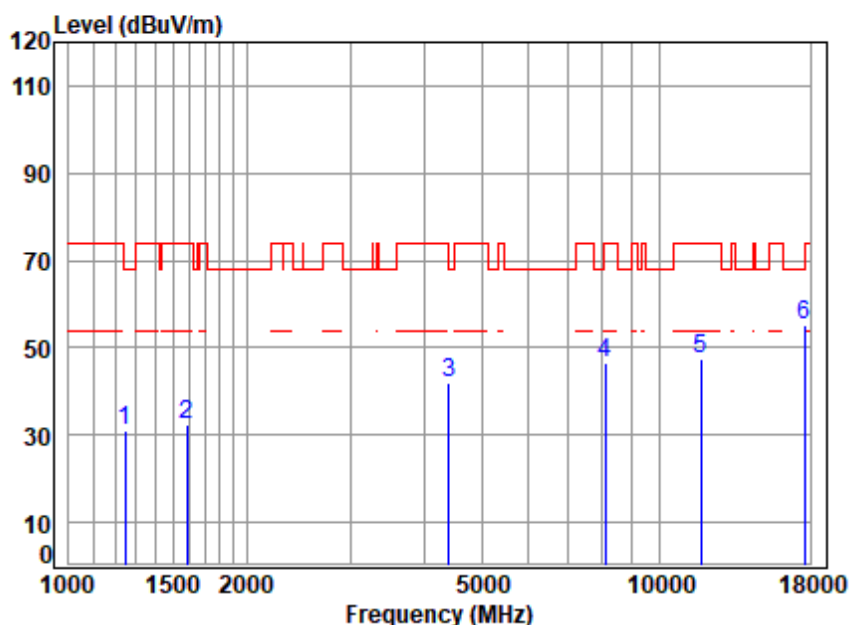
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Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:High



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

Mode : 5875 TX RSE

Note : 5G WIFI 11AX40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1245.663	3.74	25.04	54.70	56.72	30.80	68.20	-37.40	peak
2	1587.975	4.17	26.85	54.80	56.19	32.41	74.00	-41.59	peak
3	4405.090	7.14	34.74	54.26	54.35	41.97	68.20	-26.23	peak
4	8106.200	9.14	36.50	53.16	54.10	46.58	74.00	-27.42	peak
5	11750.000	11.96	37.90	53.15	50.72	47.43	74.00	-26.57	peak
6	17625.000	15.04	43.65	52.58	49.01	55.12	68.20	-13.08	peak



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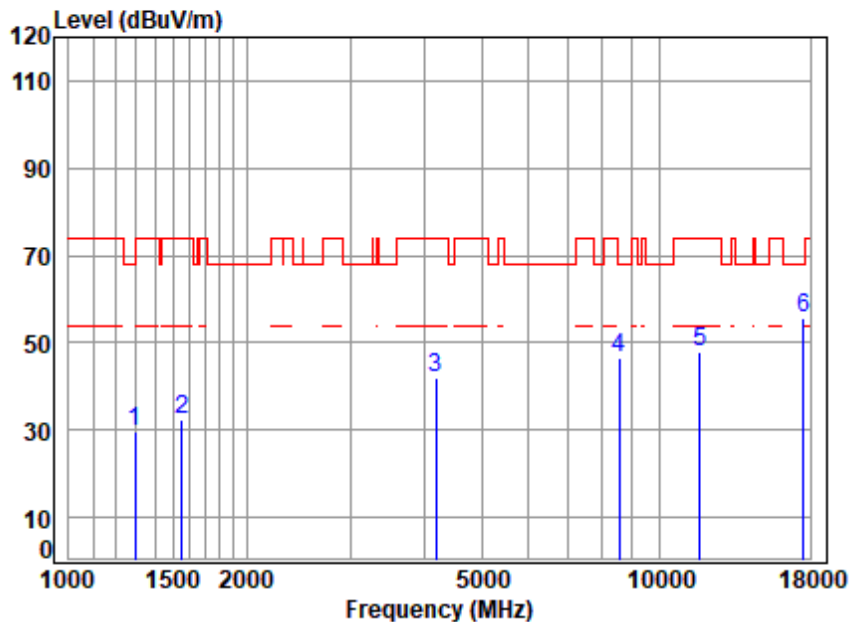
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 53 of 199

Test Mode: 08; Polarity: Horizontal; Modulation: 802.11ax(Full RU0); Bandwidth: 80MHz; Channel: middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5855 TX RSE
Note : 5G WIFI 11AX80

		Cable	Ant	Preamp	Read	Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1297.103	3.81	24.82	54.71	55.86	29.78	68.20	-38.42 peak
2	1556.169	4.12	26.98	54.79	56.00	32.31	74.00	-41.69 peak
3	4181.768	6.88	33.80	54.28	55.39	41.79	74.00	-32.21 peak
4	8539.102	9.56	36.78	53.38	53.36	46.32	68.20	-21.88 peak
5	11710.000	11.95	37.90	53.14	51.17	47.88	74.00	-26.12 peak
6	17565.000	14.97	43.53	52.61	49.58	55.47	68.20	-12.73 peak



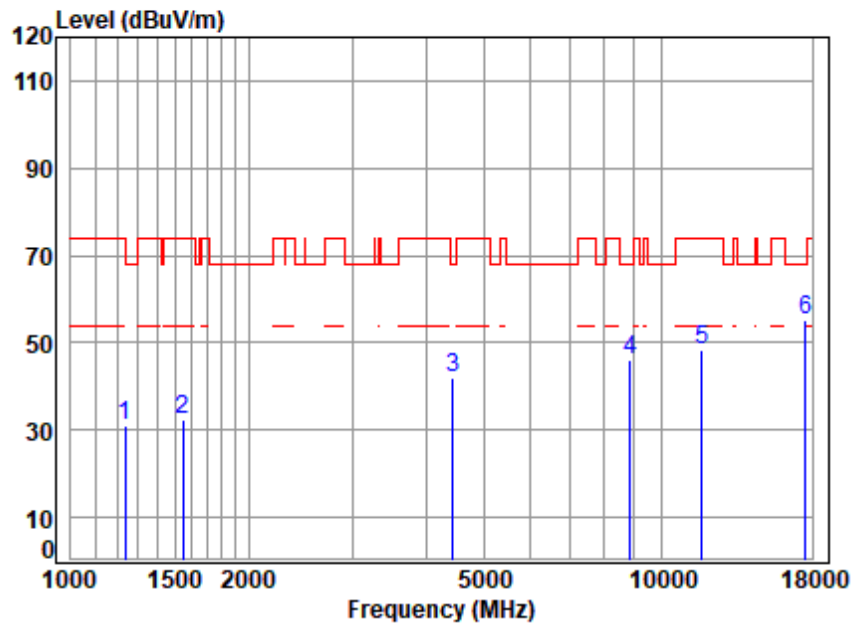
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Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:80MHz; Channel:middle



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

Mode : 5855 TX RSE

Note : 5G WIFI 11AX80

		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	1238.483	3.73	24.94	54.69	57.17	31.15	74.00	-42.85 peak
2	1547.199	4.11	26.99	54.79	55.98	32.29	74.00	-41.71 peak
3	4430.628	7.17	34.43	54.25	54.54	41.89	68.20	-26.31 peak
4	8866.062	9.82	37.20	53.54	52.49	45.97	68.20	-22.23 peak
5	11710.000	11.95	37.90	53.14	51.46	48.17	74.00	-25.83 peak
6	p17565.000	14.97	43.53	52.61	49.32	55.21	68.20	-12.99 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:

- (i) For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of -7 dBm/ MHz at or above 5.925 GHz.
- (ii) For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

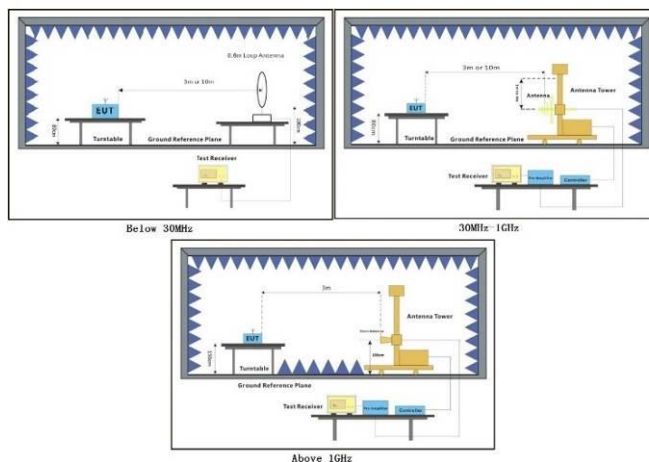
Humidity: 56.3 % RH

Atmospheric Pressure: 1020 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. 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.

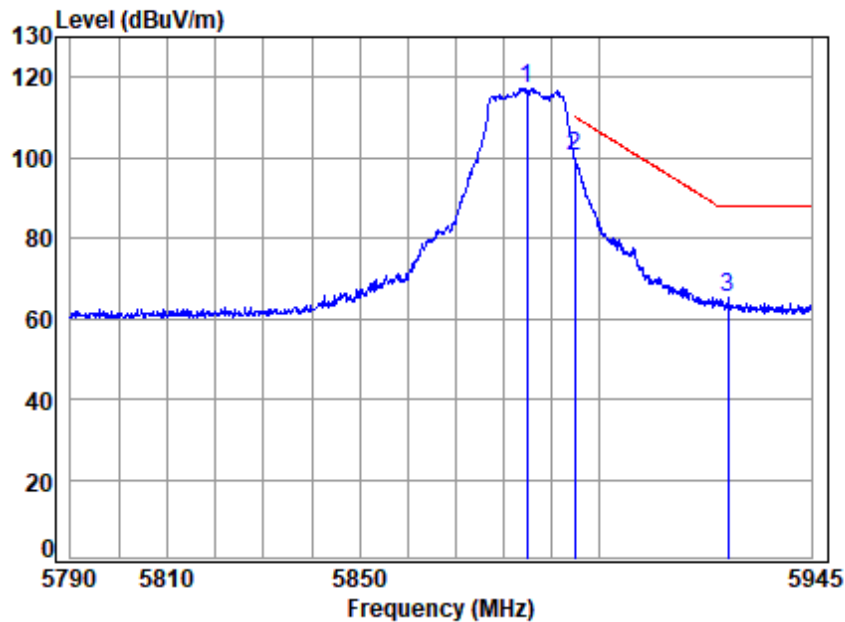
Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

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: 08; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5885 Band edge
: 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5885.000	19.56	34.54	31.65	94.68	117.13	-----	----- peak
2 p	5895.000	19.57	34.58	31.65	77.88	100.38	110.20	-9.82 peak
3	5927.436	19.59	34.65	31.67	42.52	65.09	88.20	-23.11 peak



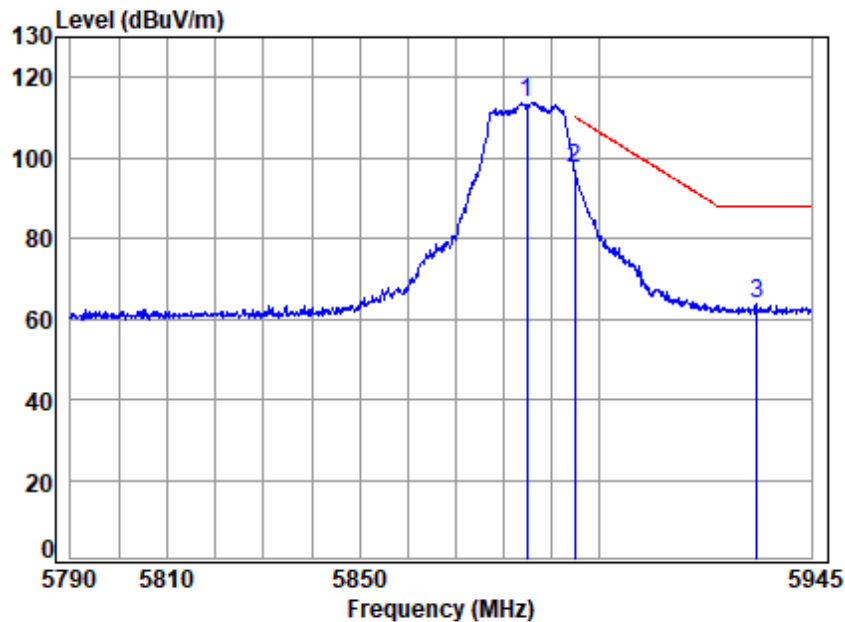
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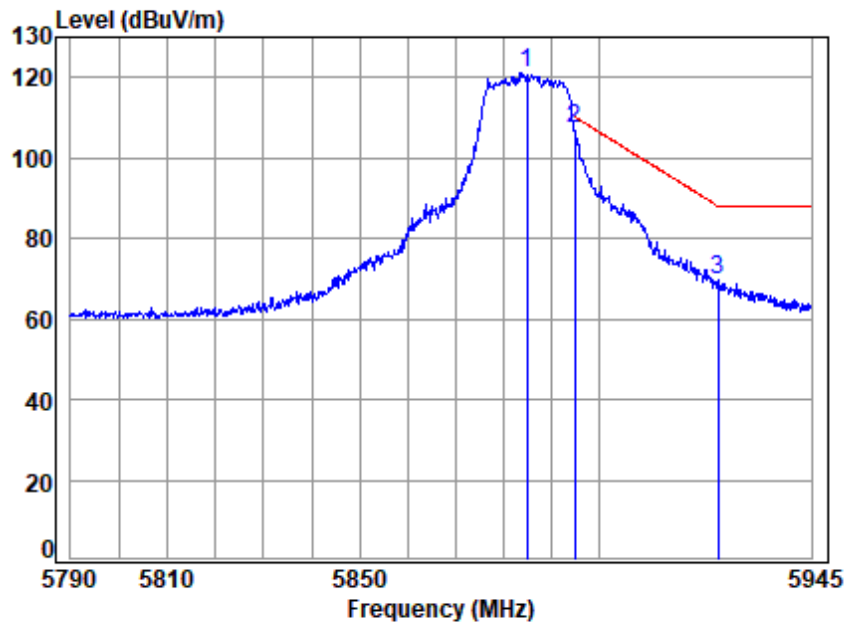


Site : chamber
Condition: 3m VERTICAL
Job No : 04576AT/04577AT
Mode : 5885 Band edge
: 5G WIFI 11A

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5885.000	19.56	34.54	31.65	91.25	113.70	-----	peak
2 p	5895.000	19.57	34.58	31.65	74.85	97.35	110.20	-12.85 peak
3	5933.389	19.59	34.67	31.67	40.95	63.54	88.20	-24.66 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

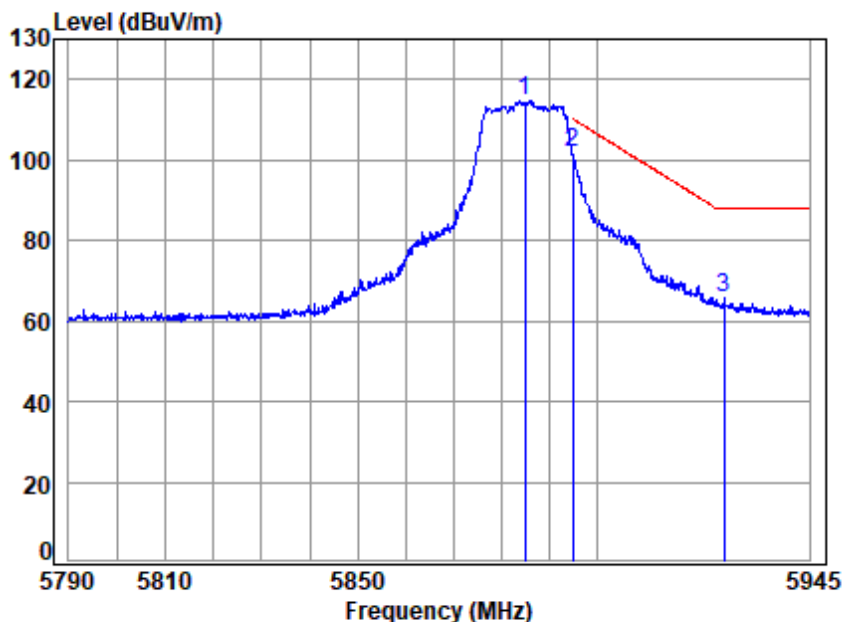


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5885 Band edge
: 5G WIFI 11N20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5885.000	19.56	34.54	31.65	98.55	121.00	-----	peak
2 p	5895.000	19.57	34.58	31.65	84.88	107.38	110.20	-2.82 peak
3	5925.244	19.58	34.65	31.67	46.89	69.45	88.20	-18.75 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

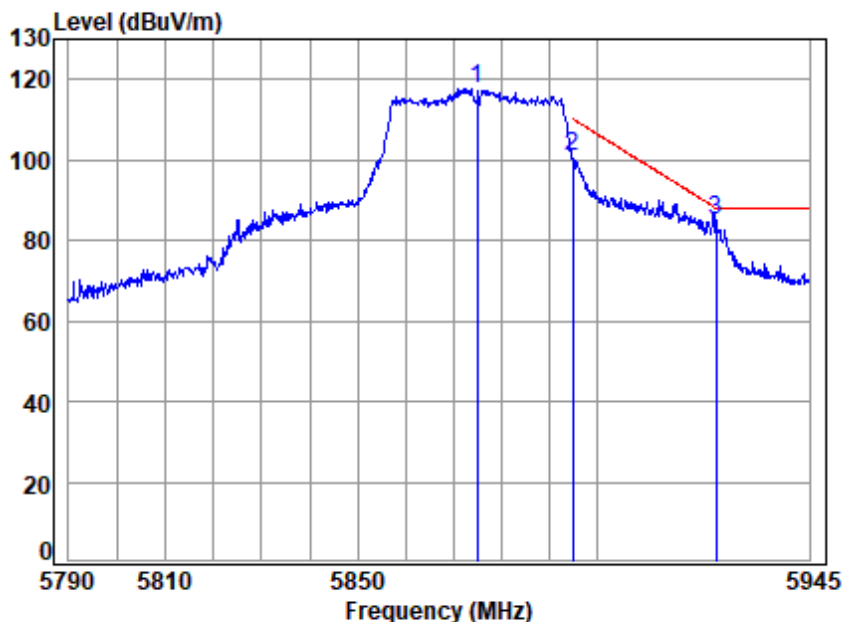
Mode : 5885 Band edge

: 5G WIFI 11N20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5885.000	19.56	34.54	31.65	92.31	114.76	-----	peak
2 p	5895.000	19.57	34.58	31.65	79.09	101.59	110.20	-8.61 peak
3	5926.966	19.58	34.65	31.67	43.05	65.61	88.20	-22.59 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL

Job No : 04576AT/04577AT

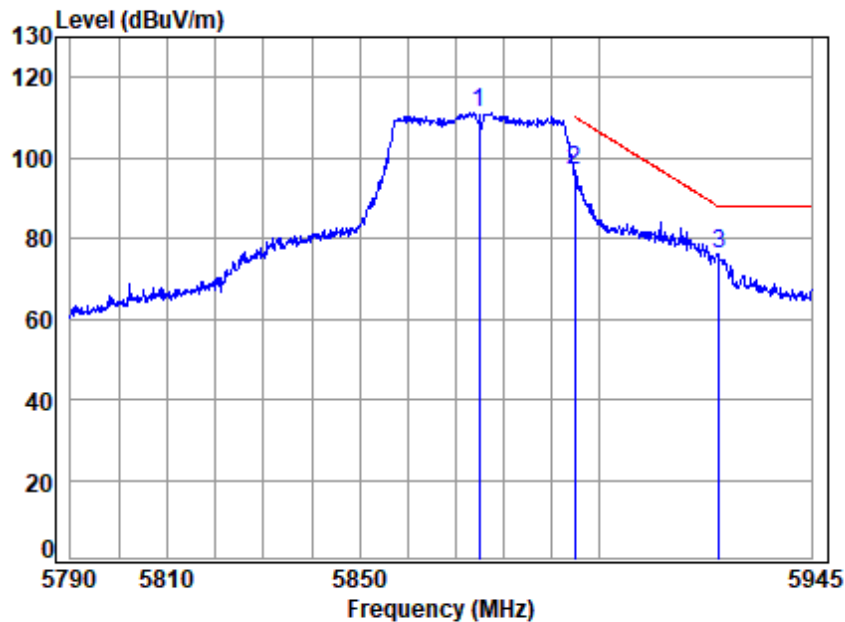
Mode : 5875 Band edge

: 5G WIFI 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	5875.000	19.55	34.50	31.64	95.32	117.73	-----	peak
2	5895.000	19.57	34.58	31.65	78.41	100.91	110.20	-9.29 peak
3	5925.244	19.58	34.65	31.67	62.52	85.08	88.20	-3.12 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High

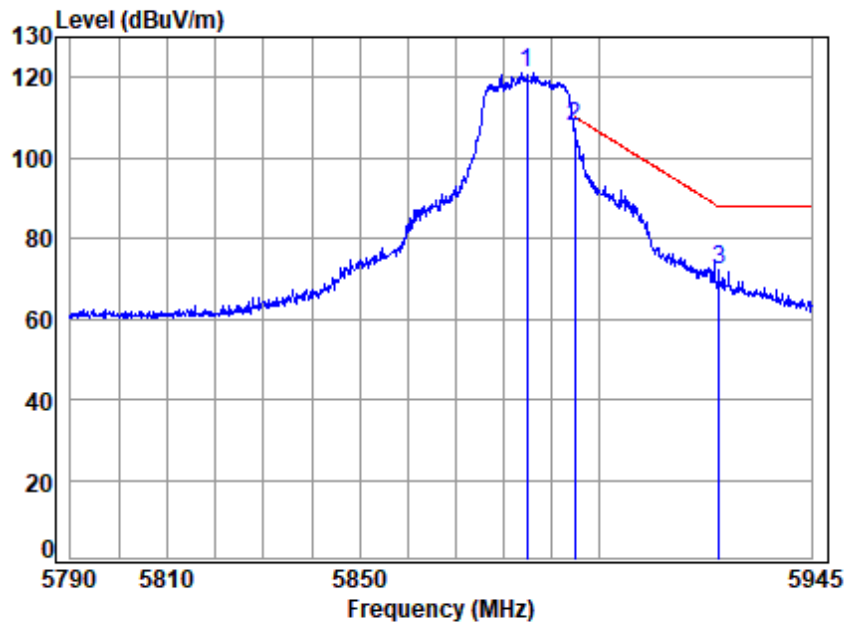


Site : chamber
Condition: 3m VERTICAL
Job No : 04576AT/04577AT
Mode : 5875 Band edge
: 5G WIFI 11N40

		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 5875.000	19.55	34.50	31.64	88.82	111.23	-----	-----	peak
2 5895.000	19.57	34.58	31.65	74.27	96.77	110.20	-13.43	peak
3 p 5925.400	19.58	34.65	31.67	53.61	76.17	88.20	-12.03	peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High

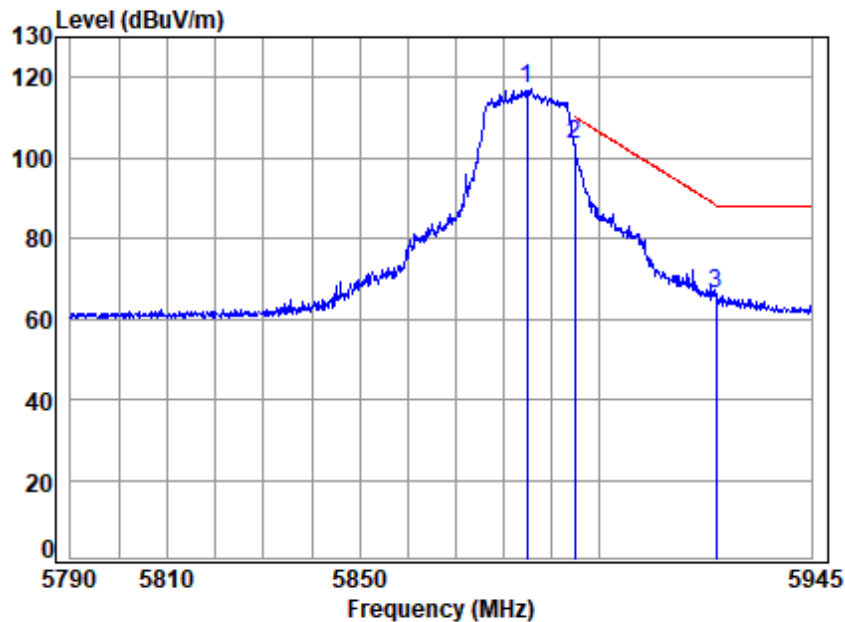


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5885 Band edge
: 5G WIFI 11AC20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5885.000	19.56	34.54	31.65	98.76	121.21	-----	peak
2 p	5895.000	19.57	34.58	31.65	85.42	107.92	110.20	-2.28 peak
3	5925.400	19.58	34.65	31.67	49.44	72.00	88.20	-16.20 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High

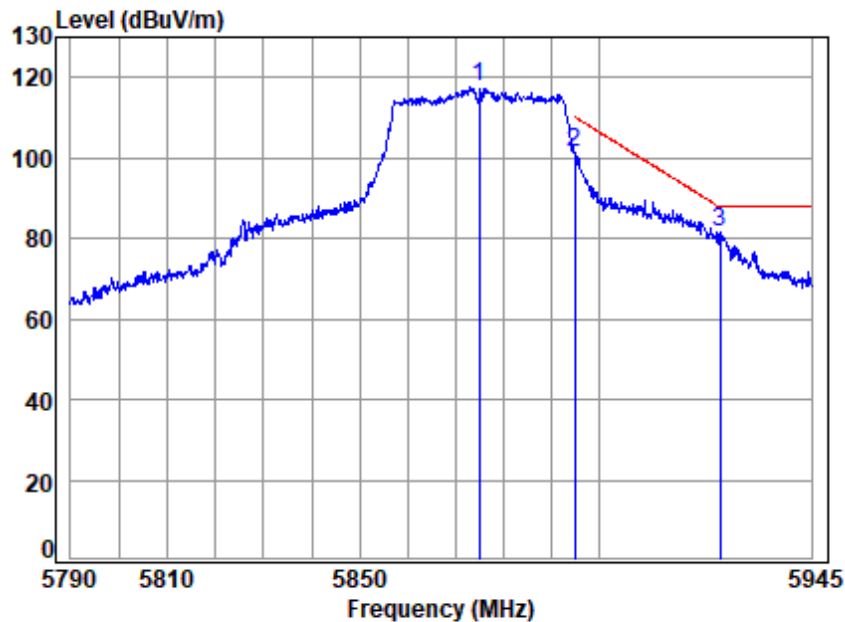


Site : chamber
Condition: 3m VERTICAL
Job No : 04576AT/04577AT
Mode : 5885 Band edge
: 5G WIFI 11AC20

		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	5885.000	19.56	34.54	31.65	94.55	117.00	-----	----- peak
2 p	5895.000	19.57	34.58	31.65	80.71	103.21	110.20	-6.99 peak
3	5924.931	19.58	34.65	31.67	43.60	66.16	88.25	-22.09 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High

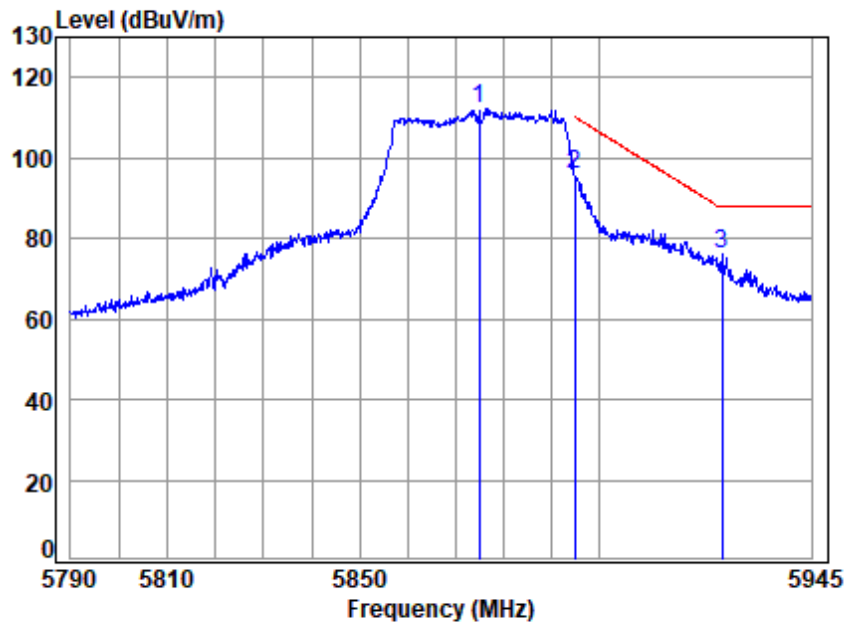


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5875 Band edge
: 5G WIFI 11AC40

		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	5875.000	19.55	34.50	31.64	95.19	117.60	-----	----- peak
2	5895.000	19.57	34.58	31.65	78.92	101.42	110.20	-8.78 peak
3 p	5925.713	19.58	34.65	31.67	59.11	81.67	88.20	-6.53 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High

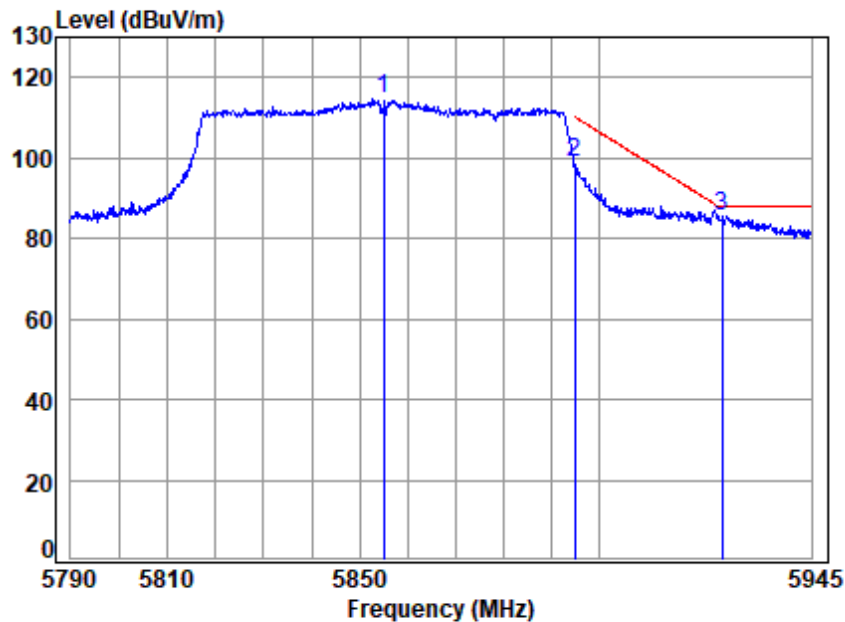


Site : chamber
Condition: 3m VERTICAL
Job No : 04576AT/04577AT
Mode : 5875 Band edge
: 5G WIFI 11AC40

		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	5875.000	19.55	34.50	31.64	89.81	112.22	-----	peak
2	5895.000	19.57	34.58	31.65	73.36	95.86	110.20	-14.34 peak
3 p	5926.026	19.58	34.65	31.67	53.44	76.00	88.20	-12.20 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:High

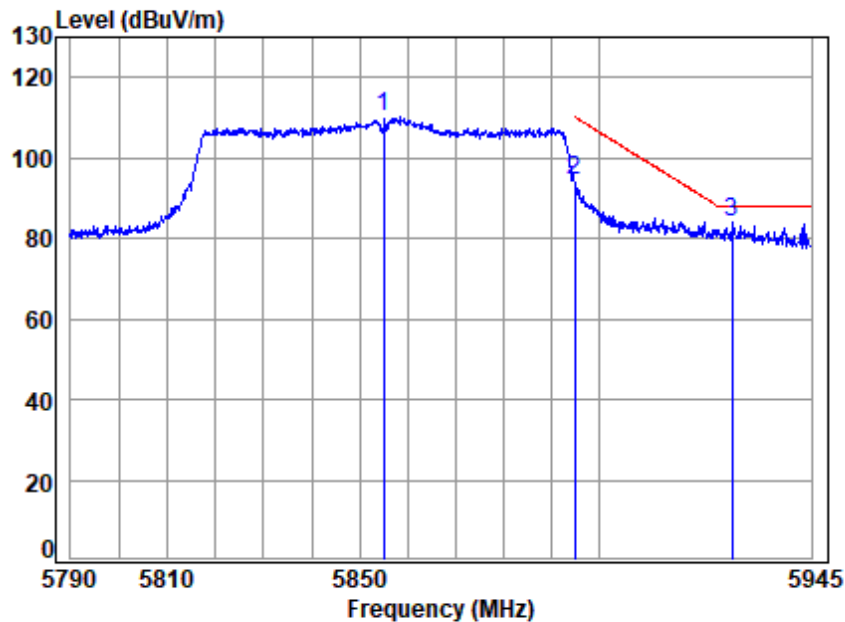


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5855 Band edge
: 5G WIFI 11AC80

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5855.000	19.54	34.42	31.63	92.32	114.65	-----	peak
2	5895.000	19.57	34.58	31.65	76.33	98.83	110.20	-11.37 peak
3 p	5926.183	19.58	34.65	31.67	63.19	85.75	88.20	-2.45 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:High

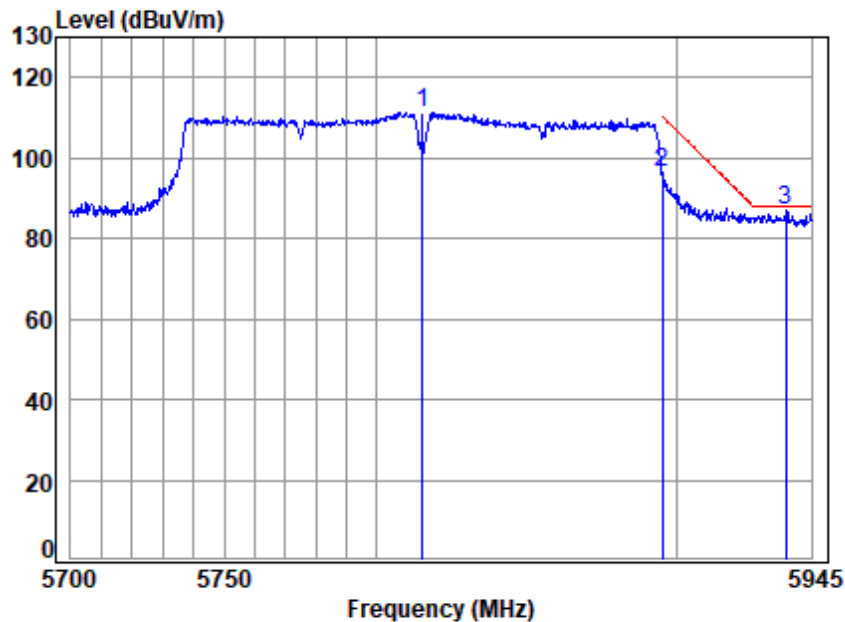


Site : chamber
Condition: 3m VERTICAL
Job No : 04576AT/04577AT
Mode : 5855 Band edge
: 5G WIFI 11AC80

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5855.000	19.54	34.42	31.63	87.74	110.07	-----	peak
2	5895.000	19.57	34.58	31.65	71.76	94.26	110.20	-15.94 peak
3 p	5928.219	19.59	34.66	31.67	61.48	84.06	88.20	-4.14 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:160MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL

Job No : 04576AT/04577AT

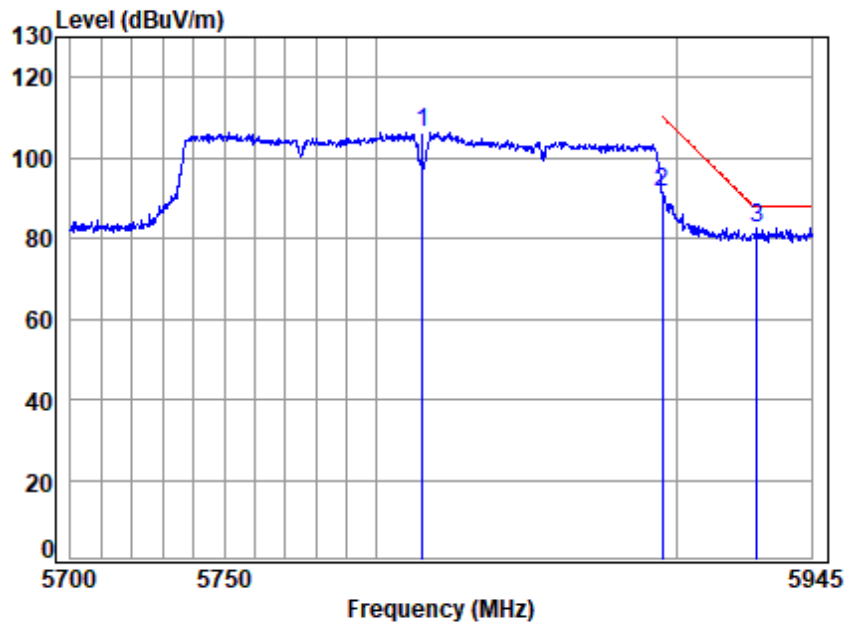
Mode : 5815 Band edge

: 5G WIFI 11AC160

		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	5815.000	19.51	34.33	31.61	89.13	111.36	-----	----- peak
2	5895.000	19.57	34.58	31.65	73.99	96.49	110.20	-13.71 peak
3 p	5936.250	19.59	34.67	31.67	64.23	86.82	88.20	-1.38 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11ac; Bandwidth:160MHz; Channel:High



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

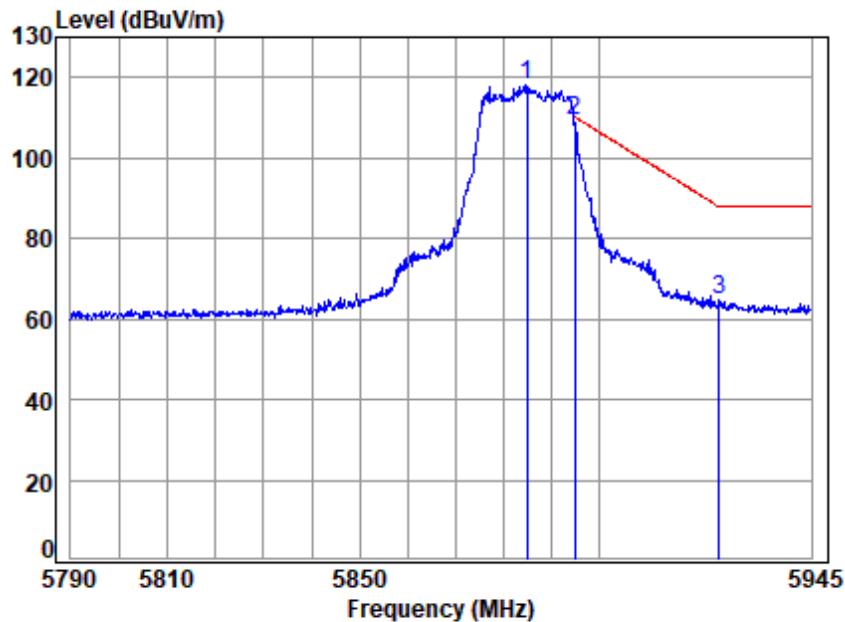
Mode : 5815 Band edge

: 5G WIFI 11AC160

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5815.000	19.51	34.33	31.61	84.21	106.44	-----	peak
2	5895.000	19.57	34.58	31.65	68.70	91.20	110.20	-19.00 peak
3 p	5926.764	19.58	34.65	31.67	60.00	82.56	88.20	-5.64 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High

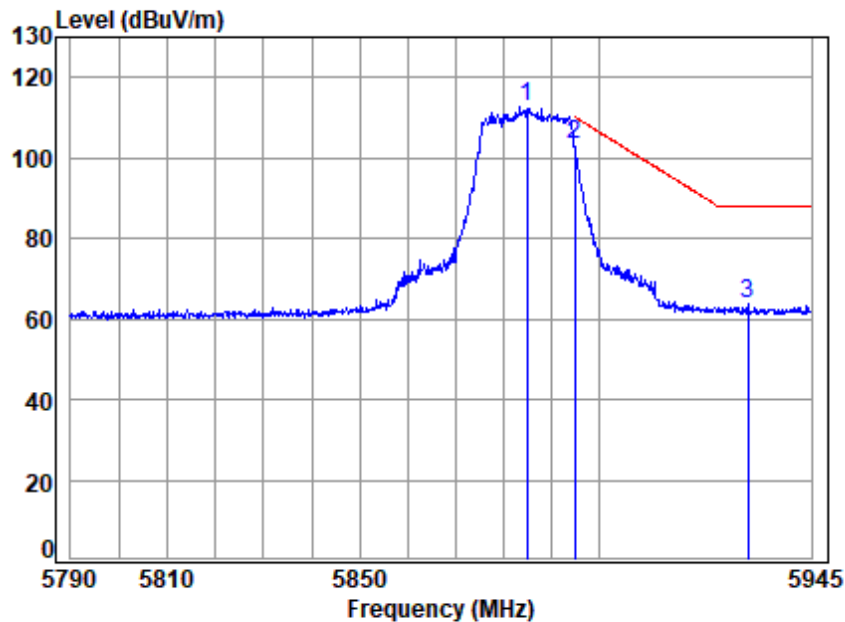


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5885 Band edge
: 5G WIFI 11AX20

		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	5885.000	19.56	34.54	31.65	95.69	118.14	-----	----- peak
2 p	5895.000	19.57	34.58	31.65	86.65	109.15	110.20	-1.05 peak
3	5925.557	19.58	34.65	31.67	41.99	64.55	88.20	-23.65 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 04576AT/04577AT
Mode : 5885 Band edge
: 5G WIFI 11AX20

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5885.000	19.56	34.54	31.65	90.34	112.79	-----	peak
2 p	5895.000	19.57	34.58	31.65	80.60	103.10	110.20	-7.10 peak
3	5931.508	19.59	34.66	31.67	41.39	63.97	88.20	-24.23 peak



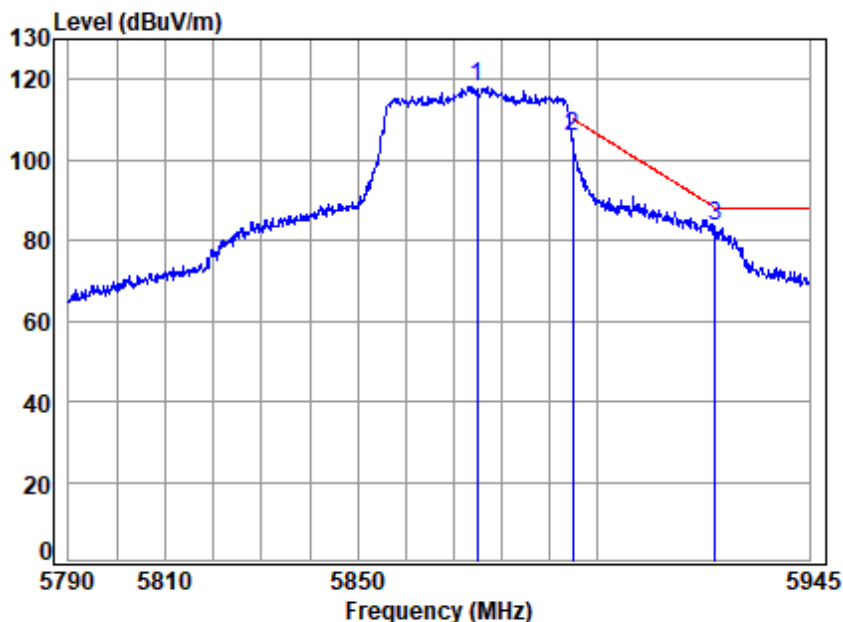
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No.1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Test Mode: 08; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:High

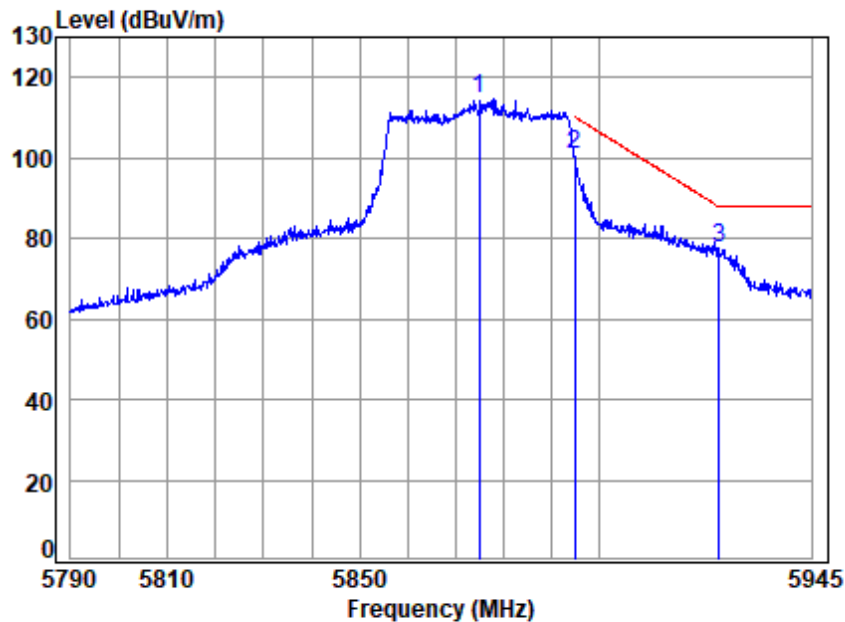


Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5875 Band edge
: 5G WIFI 11AX40

		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	5875.000	19.55	34.50	31.64	95.86	118.27	-----	----- peak
2 p	5895.000	19.57	34.58	31.65	83.07	105.57	110.20	-4.63 peak
3	5925.087	19.58	34.65	31.67	61.01	83.57	88.20	-4.63 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:High

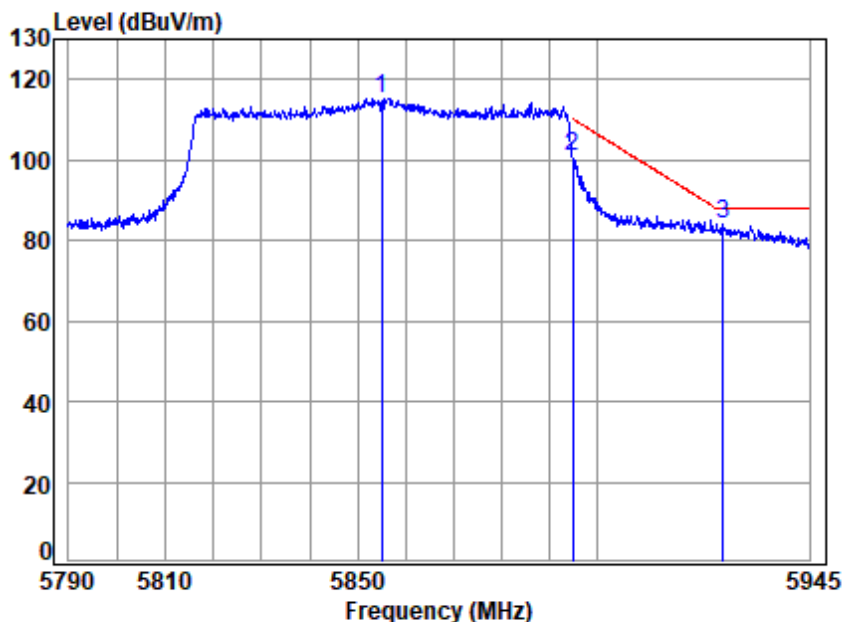


Site : chamber
Condition: 3m VERTICAL
Job No : 04576AT/04577AT
Mode : 5875 Band edge
: 5G WIFI 11AX40

		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	5875.000	19.55	34.50	31.64	92.25	114.66	-----	----- peak
2 p	5895.000	19.57	34.58	31.65	78.48	100.98	110.20	-9.22 peak
3	5925.557	19.58	34.65	31.67	55.21	77.77	88.20	-10.43 peak



Test Mode: 08; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:80MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 04576AT/04577AT
Mode : 5855 Band edge
: 5G WIFI 11AX80

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5855.000	19.54	34.42	31.63	92.99	115.32	-----	peak
2	5895.000	19.57	34.58	31.65	78.43	100.93	110.20	-9.27 peak
3 p	5926.810	19.58	34.65	31.67	61.48	84.04	88.20	-4.16 peak



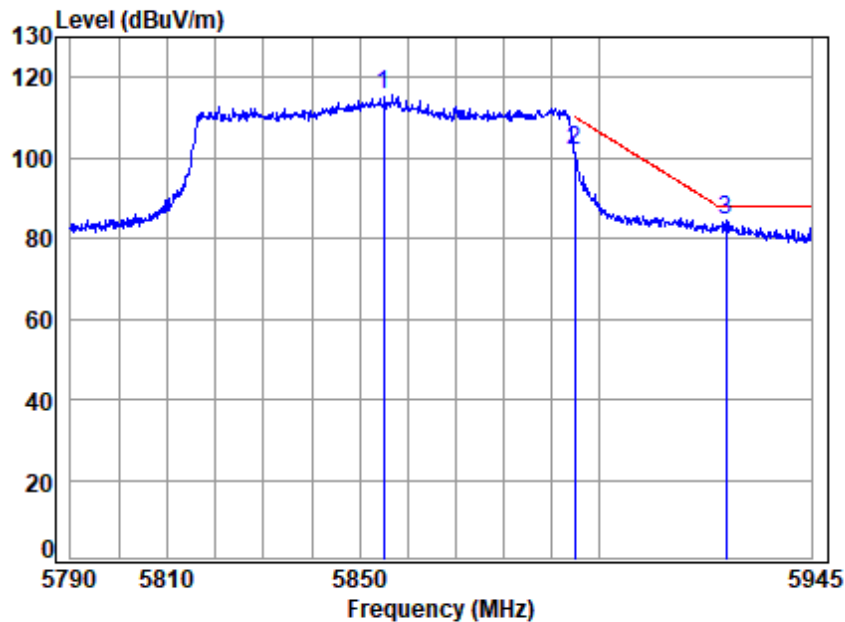
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 76 of 199

Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:80MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 04576AT/04577AT
Mode : 5855 Band edge
: 5G WIFI 11AX80

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5855.000	19.54	34.42	31.63	93.39	115.72	-----	peak
2	5895.000	19.57	34.58	31.65	79.57	102.07	110.20	-8.13 peak
3 p	5926.966	19.58	34.65	31.67	61.79	84.35	88.20	-3.85 peak



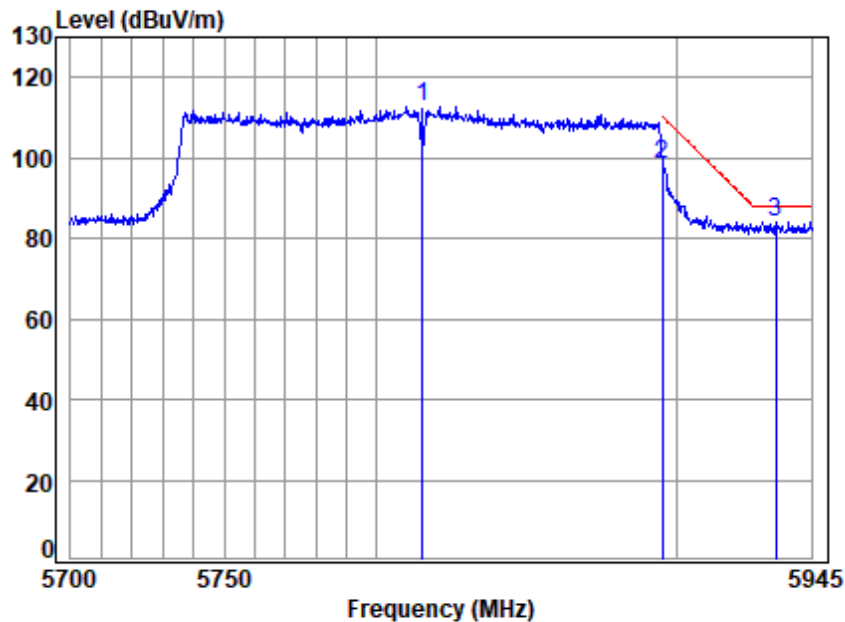
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Shenzhen Branch Inspection & Testing Laboratory

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中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Test Mode: 08; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:160MHz; Channel:High



Site : chamber

Condition: 3m HORIZONTAL

Job No : 04576AT/04577AT

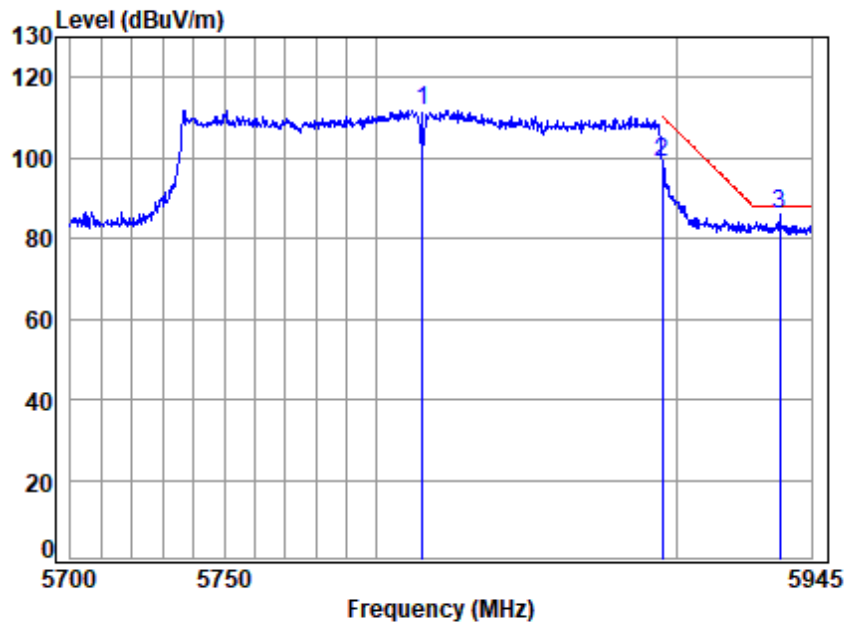
Mode : 5815 Band edge

: 5G WIFI 11AX160

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5815.000	19.51	34.33	31.61	90.53	112.76	-----	peak
2	5895.000	19.57	34.58	31.65	76.01	98.51	110.20	-11.69 peak
3 p	5933.003	19.59	34.67	31.67	61.65	84.24	88.20	-3.96 peak



Test Mode: 08; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:160MHz; Channel:High



Site : chamber

Condition: 3m VERTICAL

Job No : 04576AT/04577AT

Mode : 5815 Band edge

: 5G WIFI 11AX160

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5815.000	19.51	34.33	31.61	89.72	111.95	-----	peak
2	5895.000	19.57	34.58	31.65	76.33	98.83	110.20	-11.37 peak
3 p	5934.501	19.59	34.67	31.67	63.21	85.80	88.20	-2.40 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

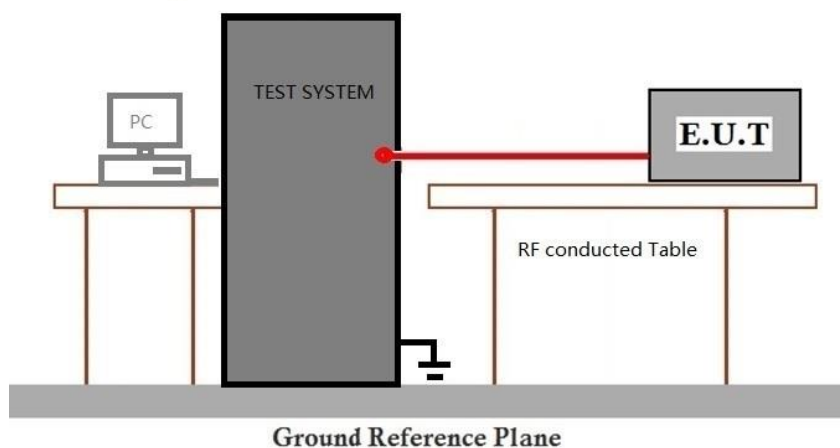
Operating Environment:

Temperature: 23.3 °C Humidity: 34.1 % RH Atmospheric Pressure: 1020 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. 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: 23.3 °C

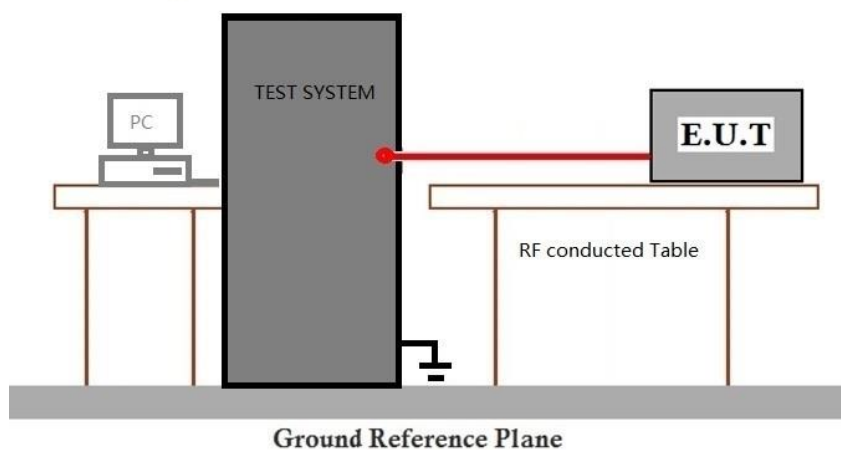
Humidity: 34.1 % RH

Atmospheric Pressure: 1020 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. 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

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
5725-5895	≥500 kHz

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23.3 °C

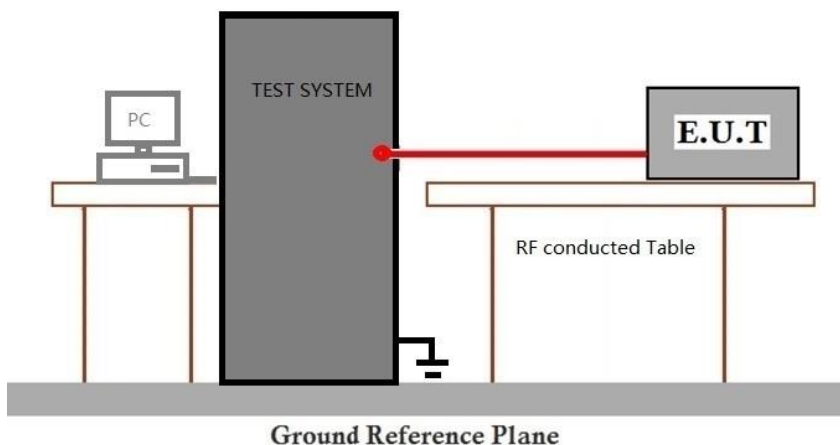
Humidity: 34.1 % RH

Atmospheric Pressure: 1020 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. 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
5850-5895	≤20dBm EIRP PSD
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: 23.3 °C

Humidity: 34.1 % RH

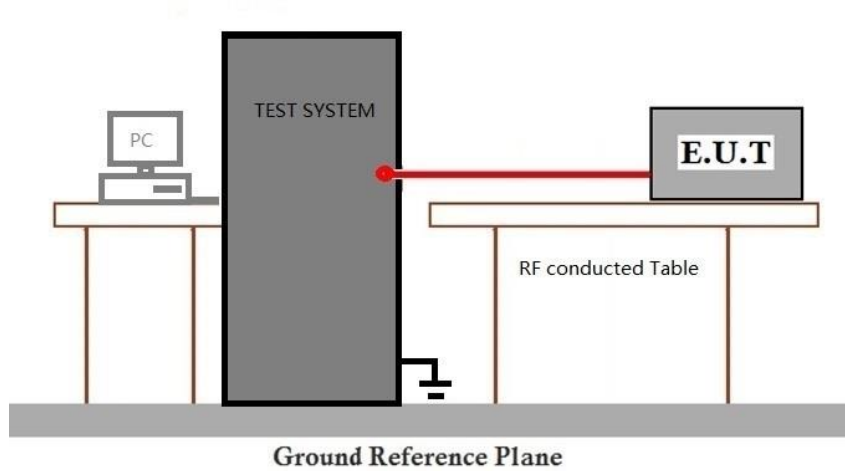
Atmospheric Pressure: 1020 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. 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



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

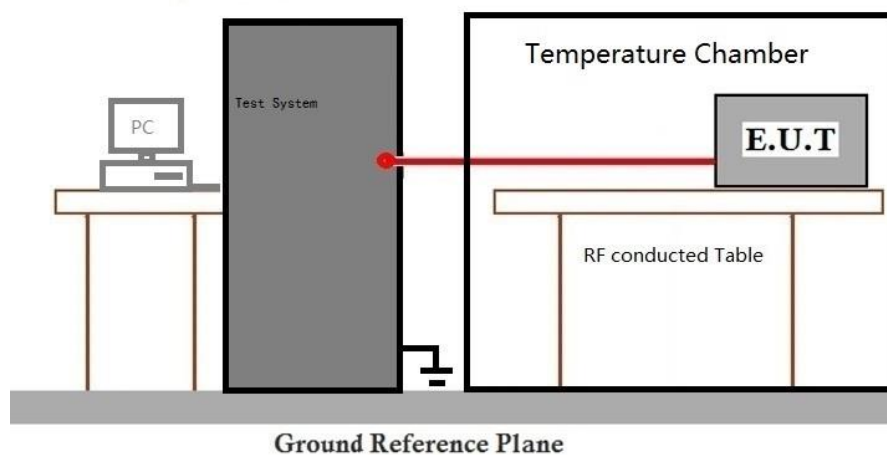
Operating Environment:

Temperature: 23.3 °C Humidity: 34.1 % RH Atmospheric Pressure: 1020 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode (U-NII-4) _Keep the EUT in continuously transmitting mode with all modulation types. 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 Photo for SZCR2412004576AT

9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for SZCR2412004576AT



10 Appendix

1. Duty Cycle

1.1 Test Result

1.1.1 Ant1

Ant1									
Mode	TX Type	Frequency (MHz)	RU	RU Pos	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5865	/	/	1.976	1.993	99.15	0.04	0.00
		5885	/	/	1.976	1.994	99.10	0.04	0.03
		5845	/	/	1.976	1.993	99.15	0.04	0.03
802.11n (HT20)	MIMO	5865	/	/	5.428	5.608	96.79	0.14	2.26
		5885	/	/	5.428	5.616	96.65	0.15	1.61
		5845	/	/	5.428	5.606	96.82	0.14	2.23
802.11n (HT40)	MIMO	5875	/	/	5.428	5.616	96.65	0.15	2.26
		5835	/	/	5.428	5.606	96.82	0.14	1.90
802.11ac (VHT20)	MIMO	5865	/	/	5.428	5.570	97.45	0.11	1.42
		5885	/	/	5.428	5.616	96.65	0.15	2.40
		5845	/	/	5.428	5.608	96.79	0.14	1.94
802.11ac (VHT40)	MIMO	5875	/	/	5.428	5.596	97.00	0.13	2.05
		5835	/	/	5.430	5.588	97.17	0.12	1.88
802.11ac (VHT80)	MIMO	5855	/	/	5.428	5.588	97.14	0.13	1.95
802.11ac (VHT160)	MIMO	5815	/	/	5.430	5.588	97.17	0.12	1.92
802.11ax (HEW20)	MIMO	5865	SU	/	5.454	5.640	96.70	0.15	2.17
		5885	SU	/	5.452	5.630	96.84	0.14	2.18
		5845	SU	/	5.454	5.640	96.70	0.15	2.17
802.11ax (HEW40)	MIMO	5875	SU	/	5.452	5.470	99.67	0.01	0.04
		5835	SU	/	5.452	5.630	96.84	0.14	2.22
802.11ax (HEW80)	MIMO	5855	SU	/	5.452	5.640	96.67	0.15	2.25
802.11ax (HEW160)	MIMO	5815	SU	/	5.452	5.640	96.67	0.15	2.39
802.11be (EHT20)	MIMO	5865	SU	/	5.462	5.634	96.95	0.13	1.57
		5885	SU	/	5.447	5.626	96.82	0.14	2.06



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR241200457605

Page: 87 of 199

		5845	SU	/	5.446	5.616	96.97	0.13	2.08
802.11be (EHT40)	MIMO	5875	SU	/	5.446	5.596	97.32	0.12	1.74
		5835	SU	/	5.446	5.632	96.70	0.15	2.36
802.11be (EHT80)	MIMO	5855	SU	/	5.446	5.634	96.66	0.15	1.89
802.11be (EHT160)	MIMO	5815	SU	/	5.448	5.634	96.70	0.15	1.89



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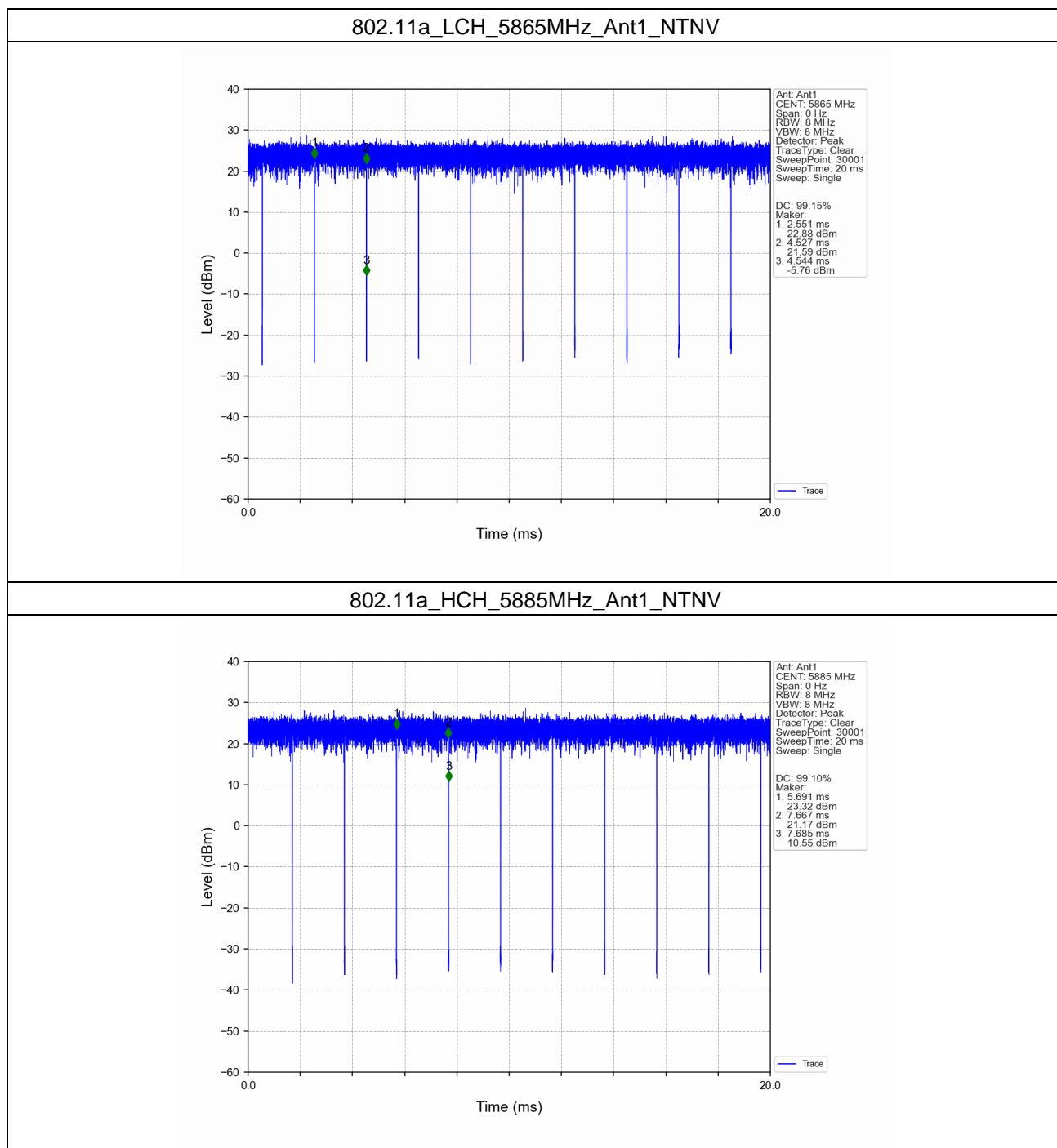
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1.2 Test Graph

1.2.1 Ant1



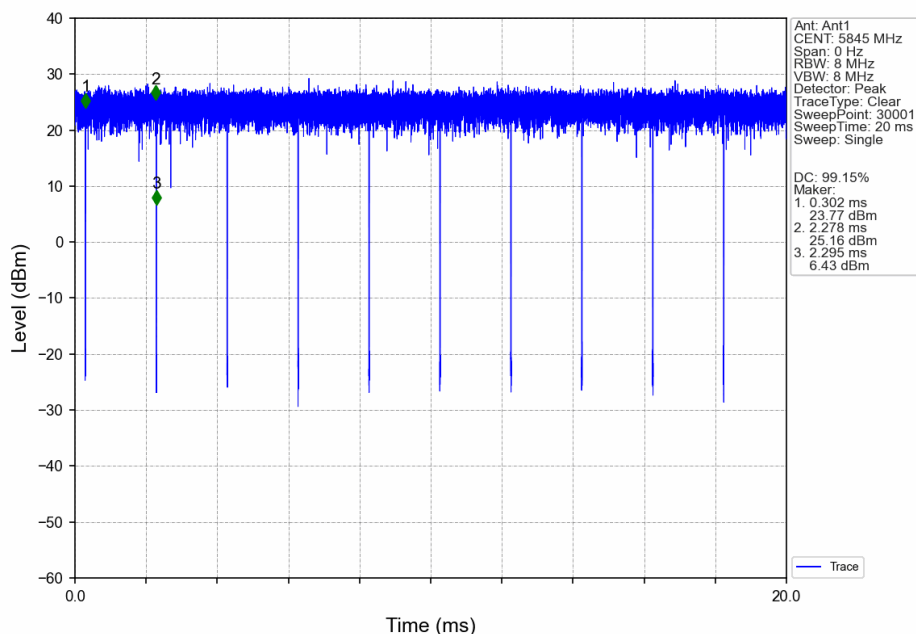
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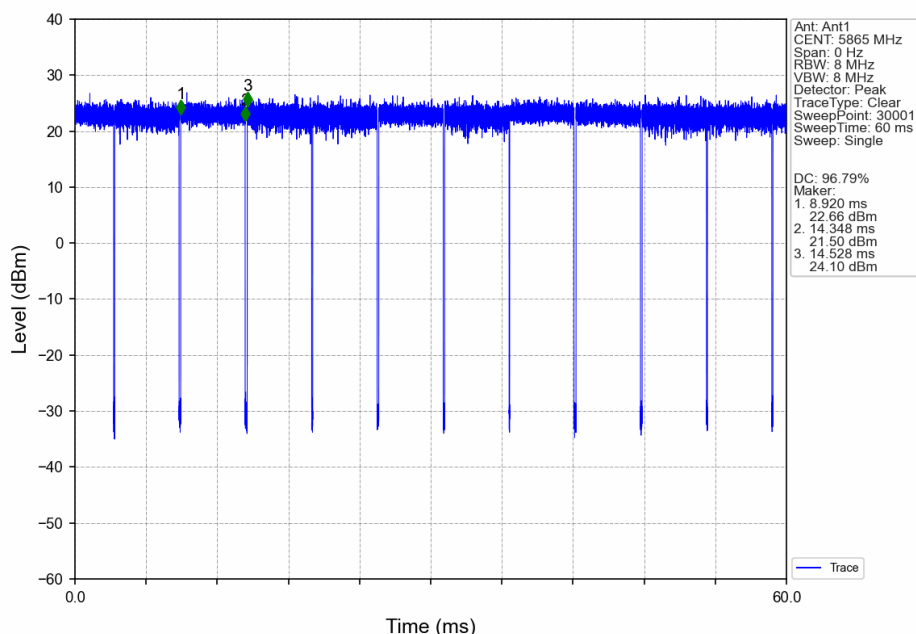
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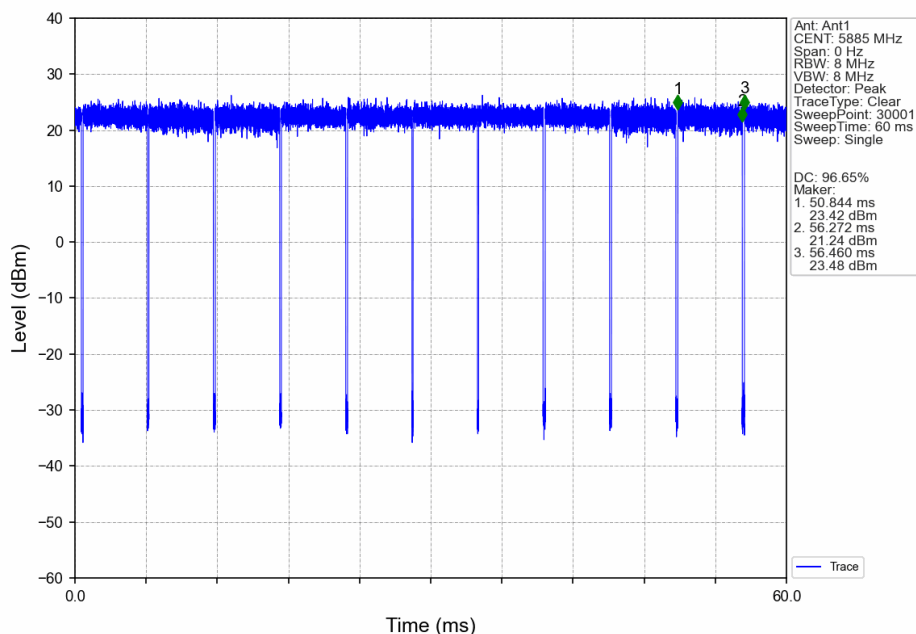
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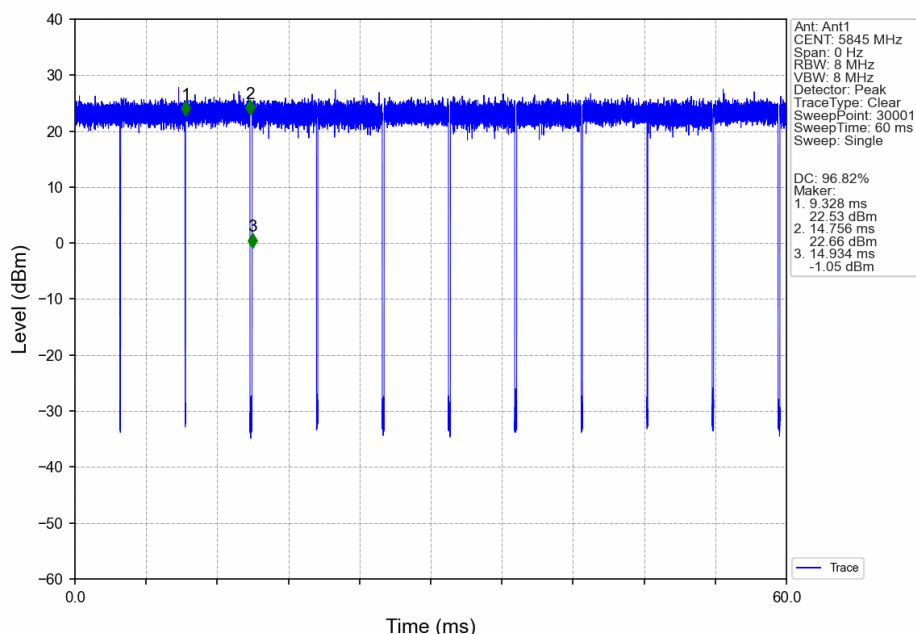
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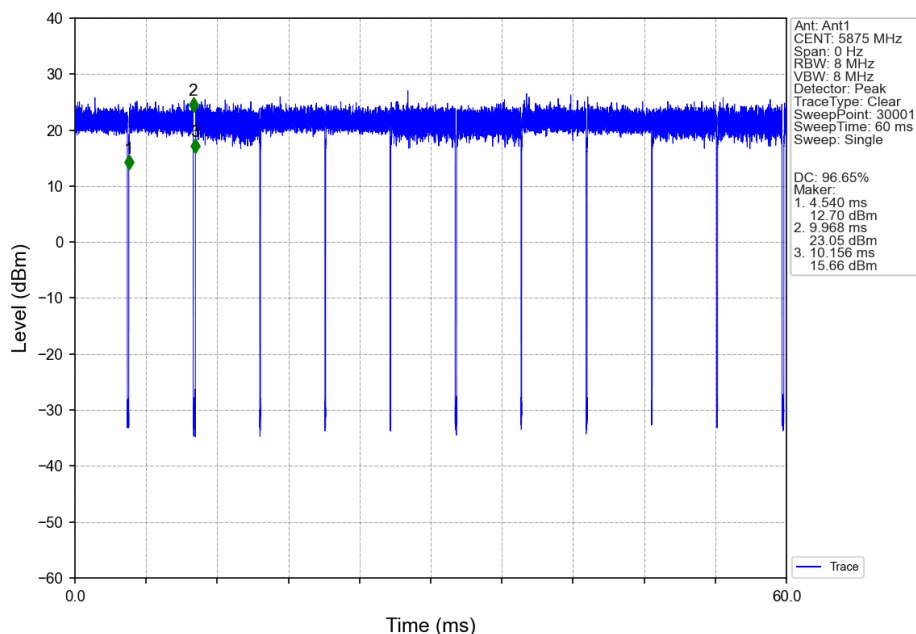
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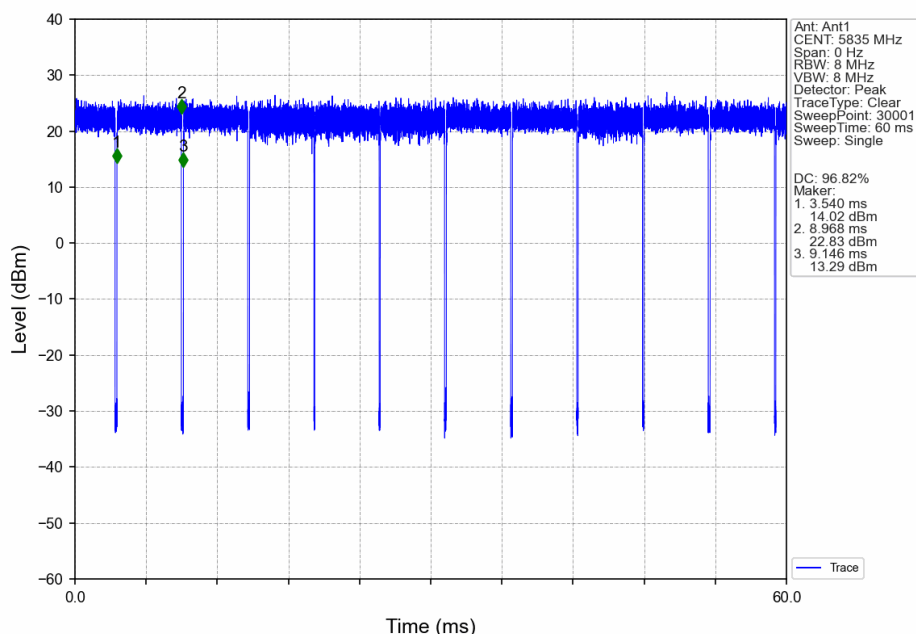
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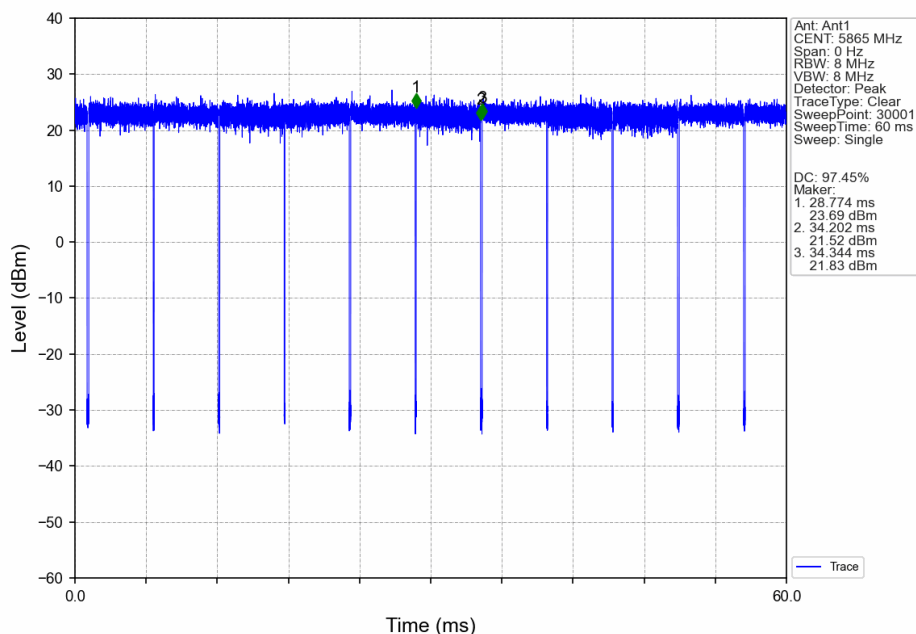
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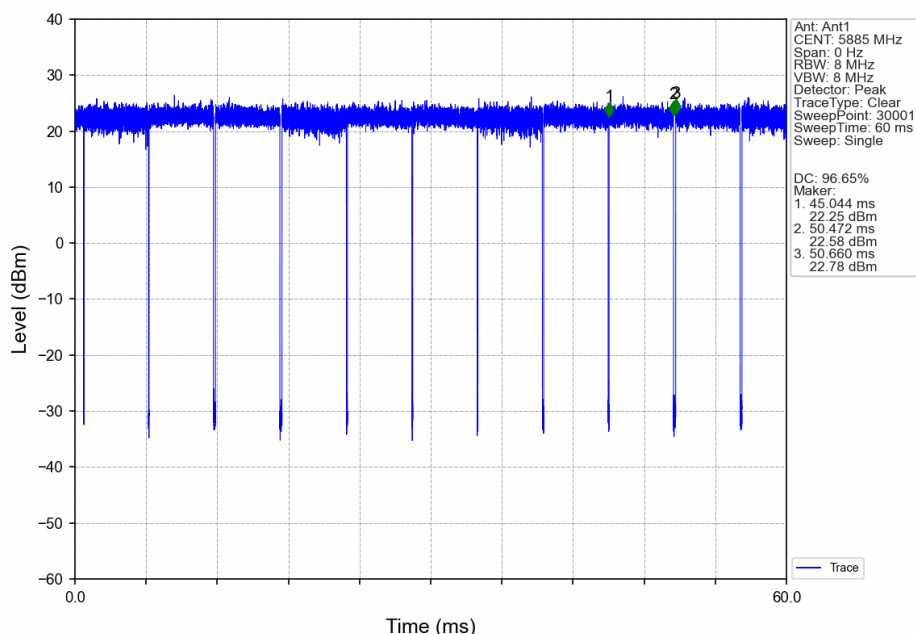
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802.11ac(VHT20)_HCH_5885MHz_Ant1_NTNV



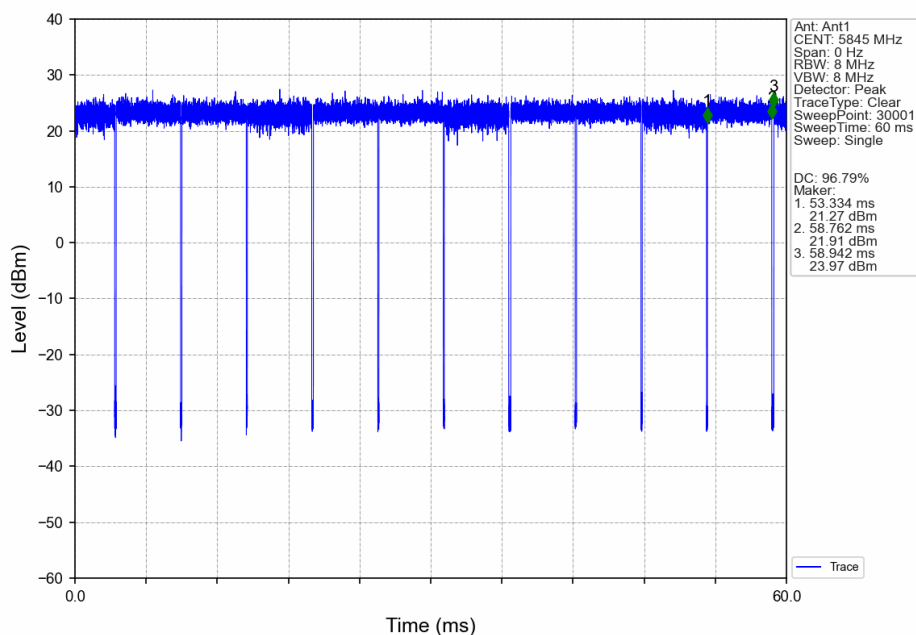
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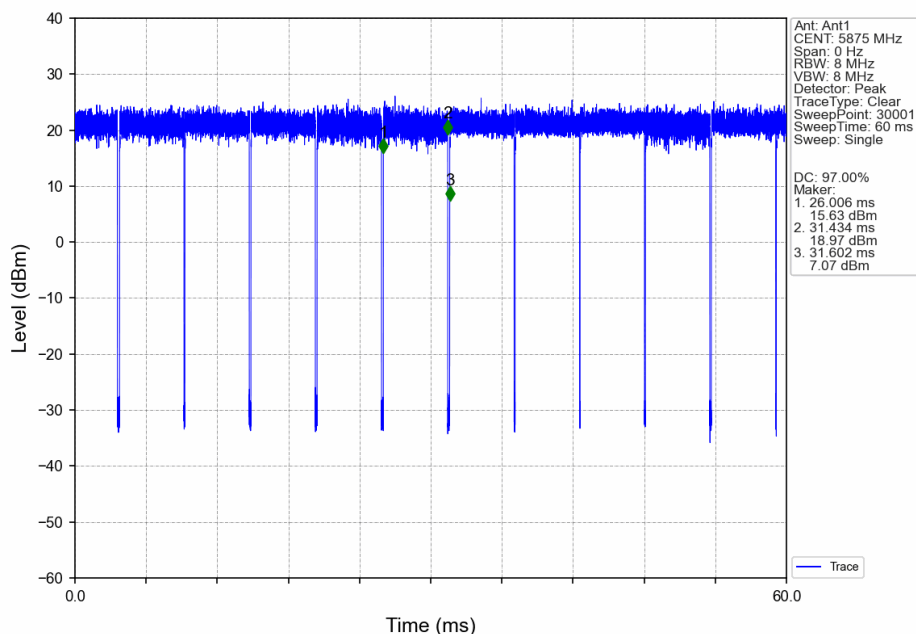
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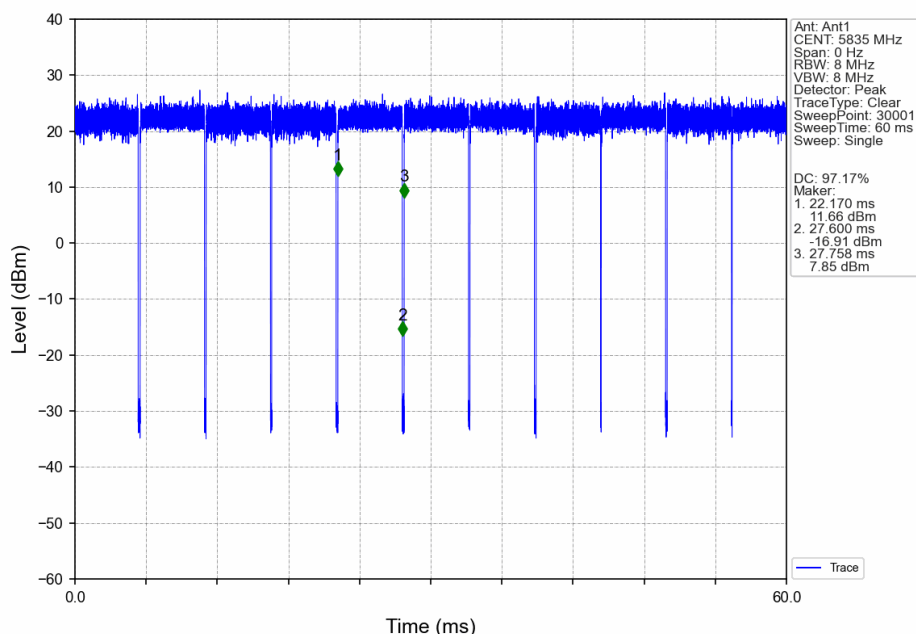
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802.11ac(VHT40)_MCH_5875MHz_Ant1_NTNV



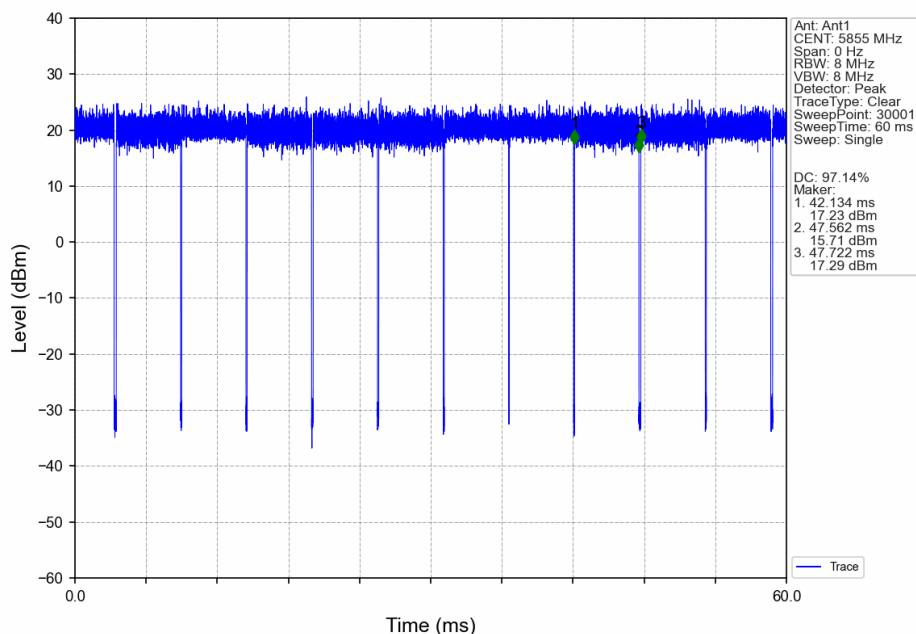
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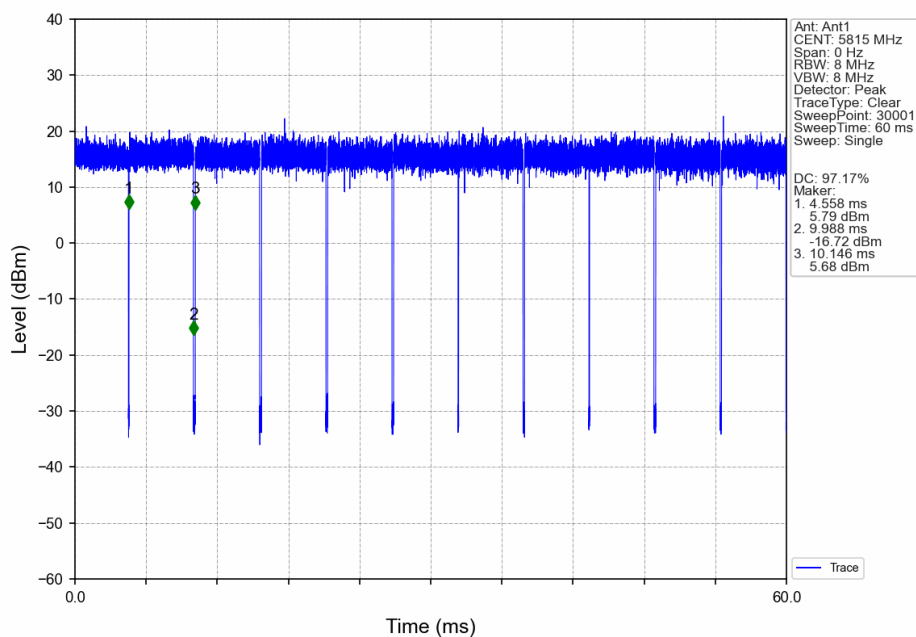
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802.11ac(VHT160)_HCH_5815MHz_Ant1_NTNV



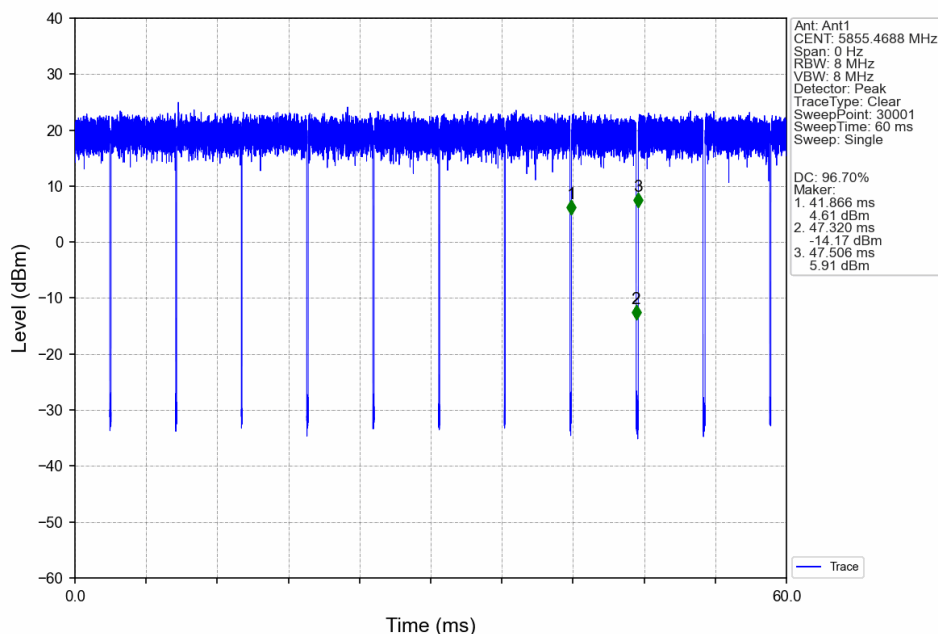
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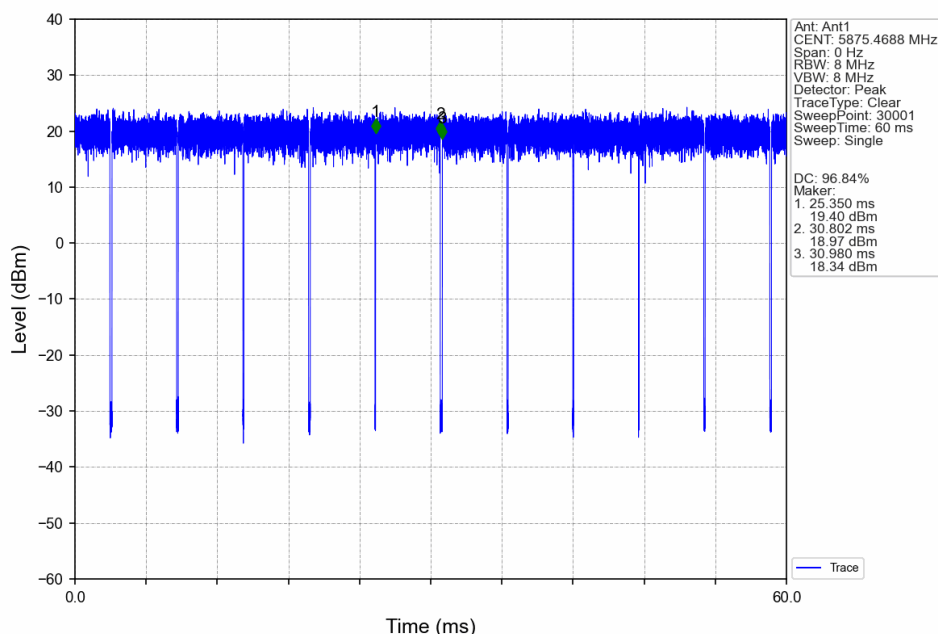
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802.11ax(HEW20)_LCH_5865MHz_SU_ / _Ant1_NTNV



802.11ax(HEW20)_HCH_5885MHz_SU_ / _Ant1_NTNV



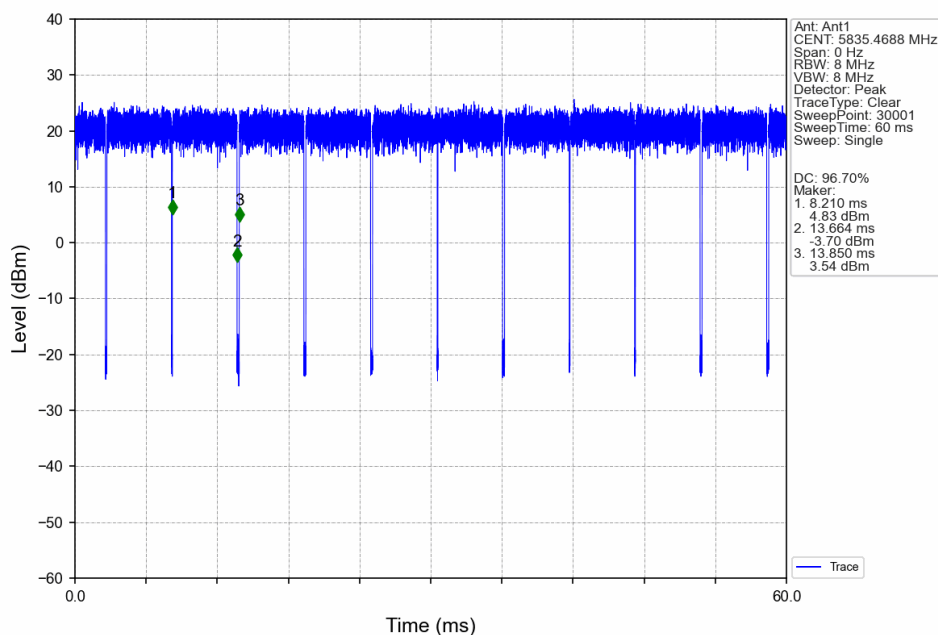
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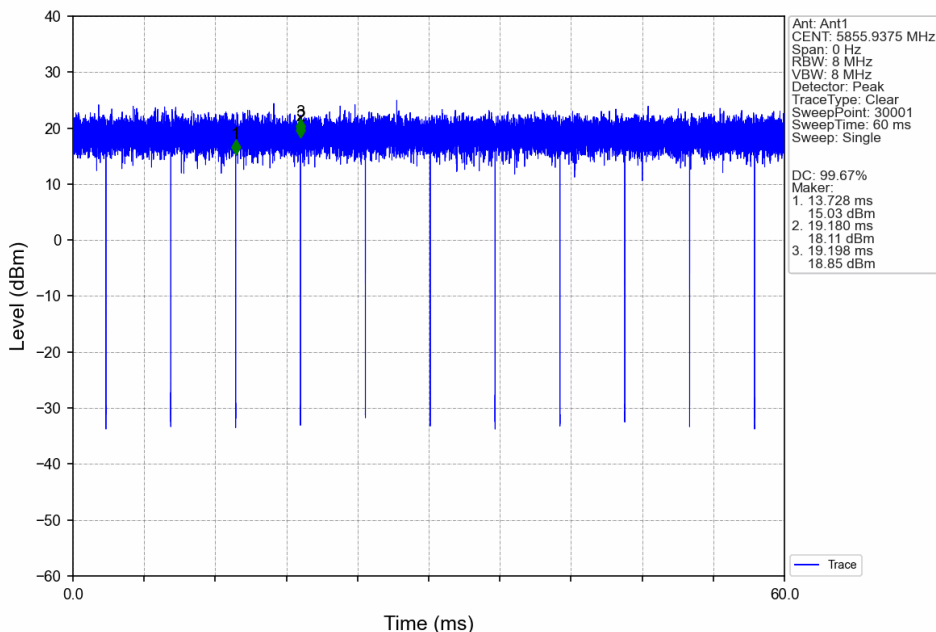
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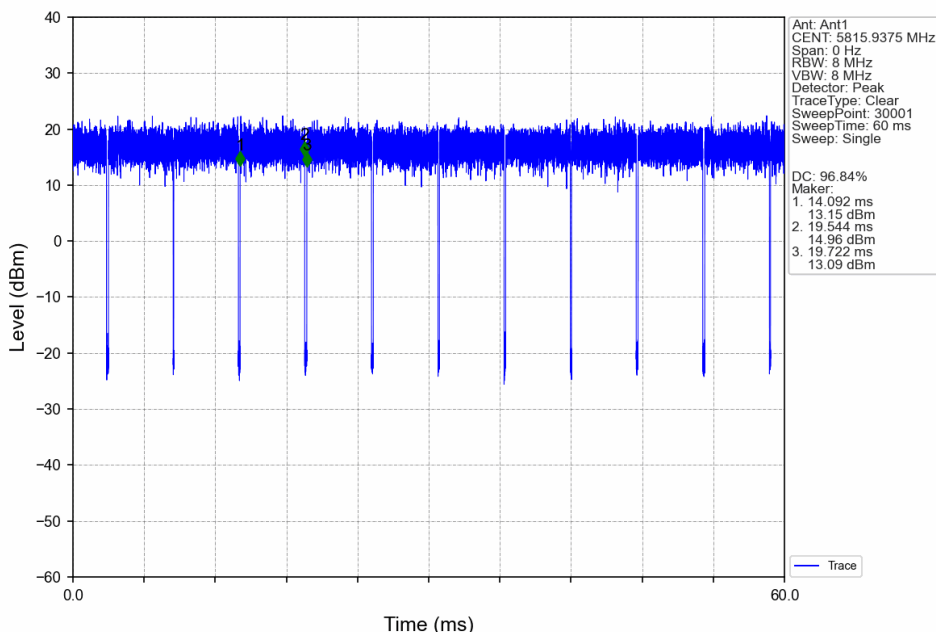
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802.11ax(HEW40)_MCH_5875MHz_SU_ / _Ant1_NTNV



802.11ax(HEW40)_HCH_5835MHz_SU_ / _Ant1_NTNV



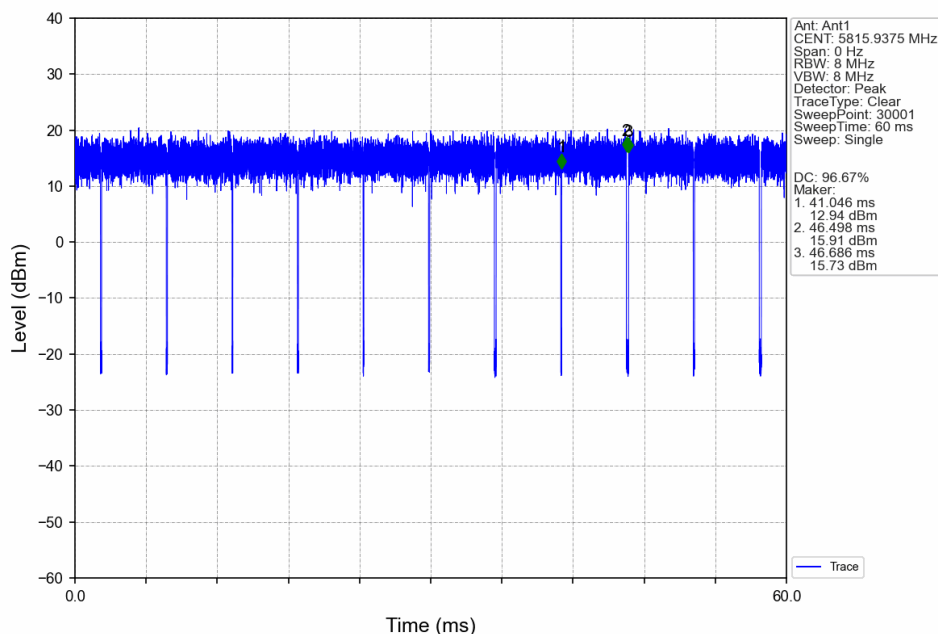
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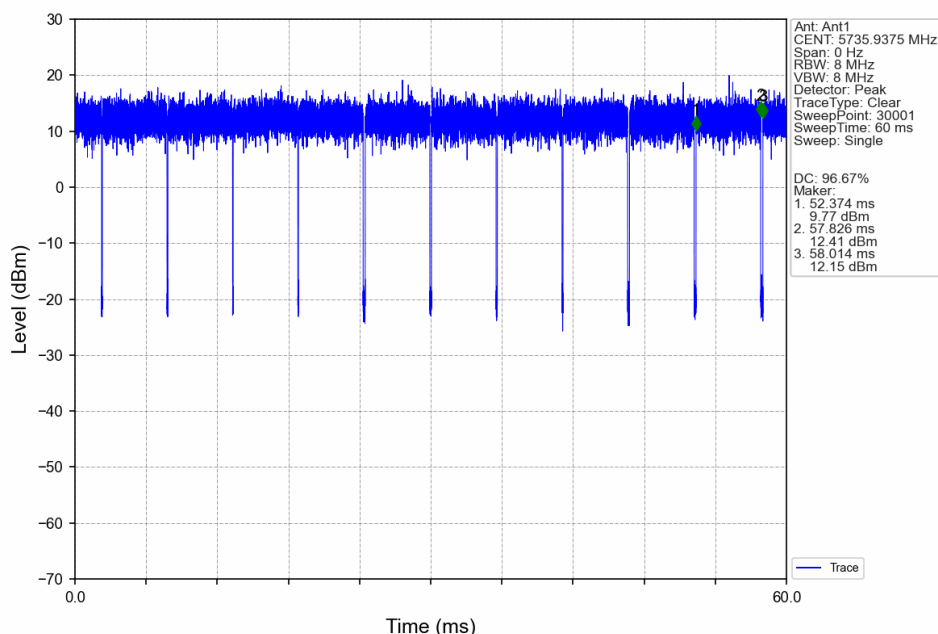
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802.11ax(HEW160)_HCH_5815MHz_SU_/_Ant1_NTNV



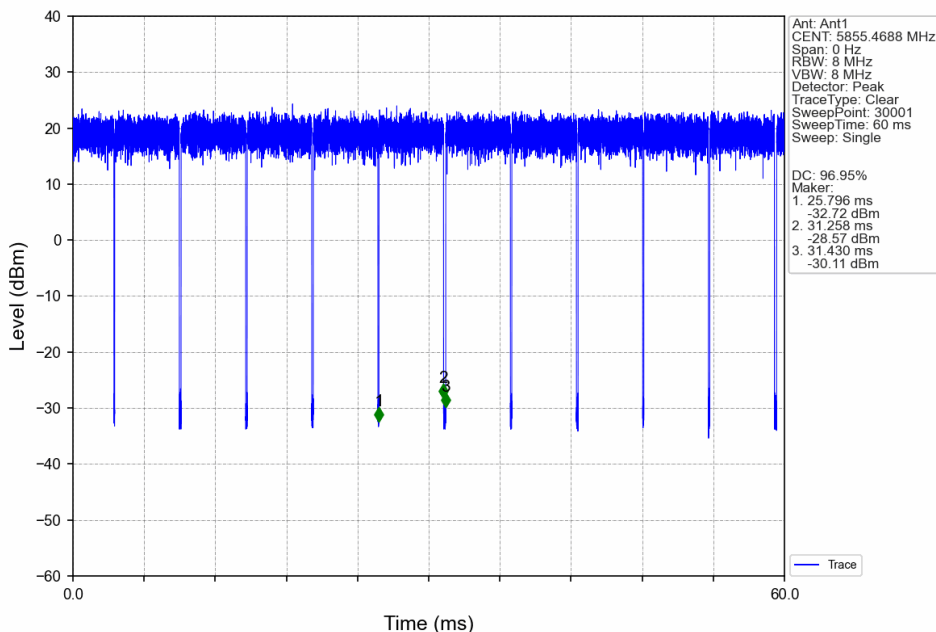
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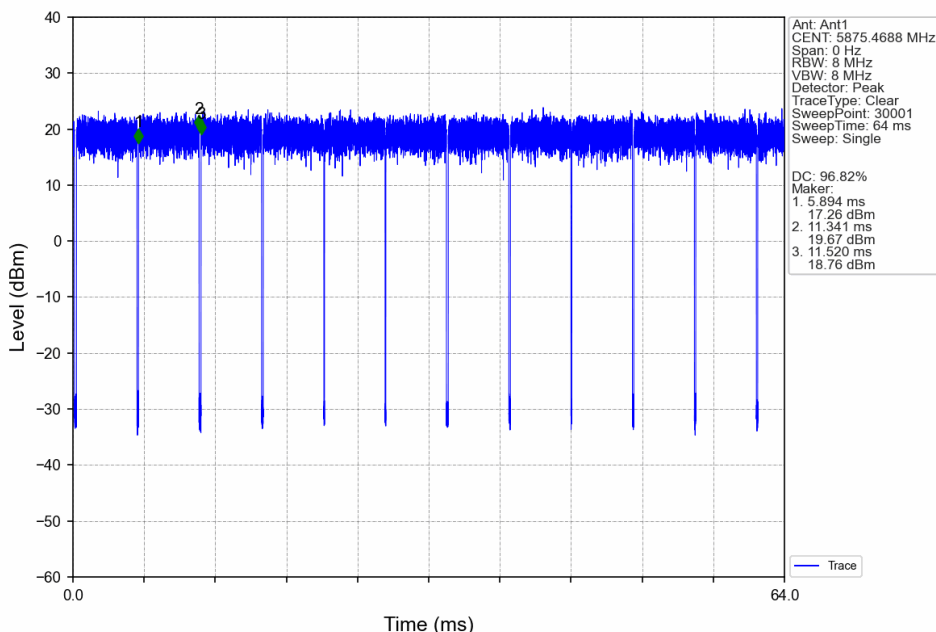
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802.11be(EHT20)_HCH_5885MHz_SU_ / _Ant1_NTNV



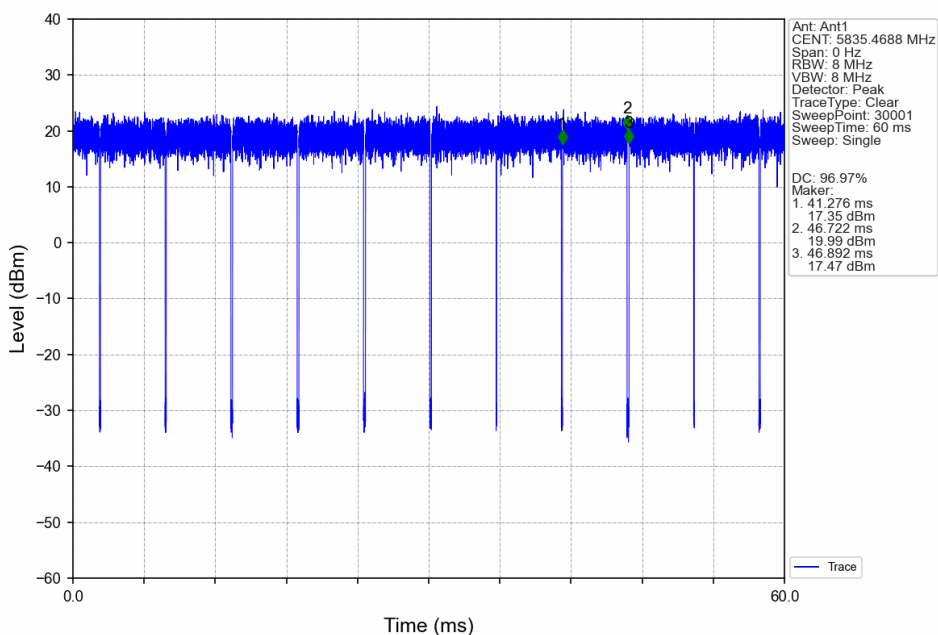
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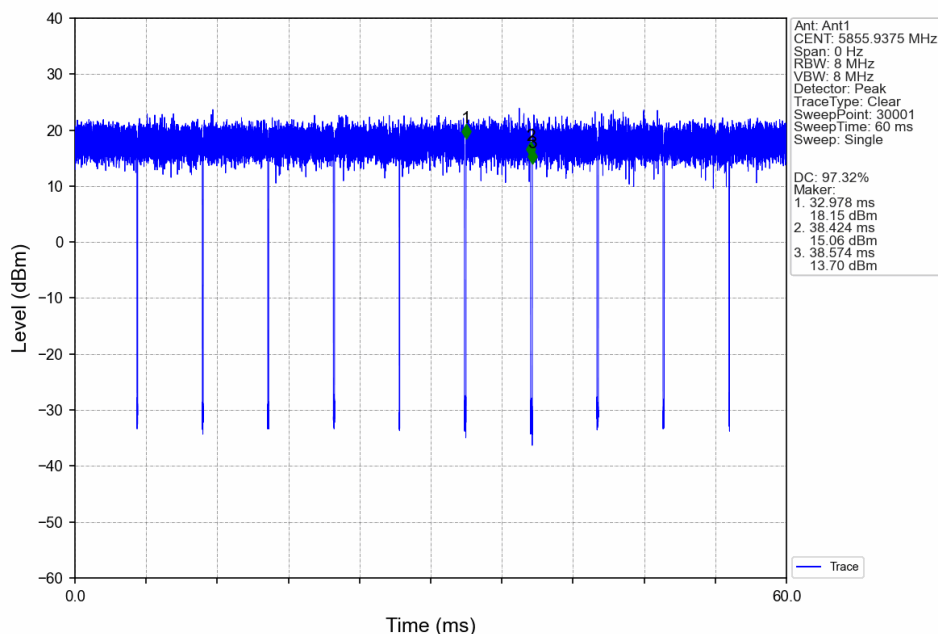
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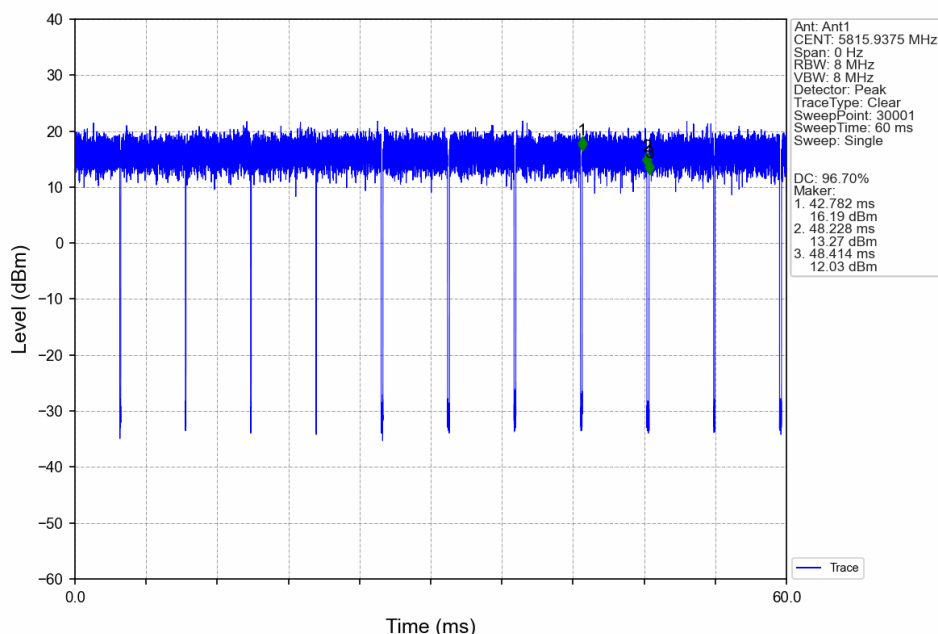
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802.11be(EHT40)_MCH_5875MHz_SU_ / _Ant1_NTNV



802.11be(EHT40)_HCH_5835MHz_SU_ / _Ant1_NTNV



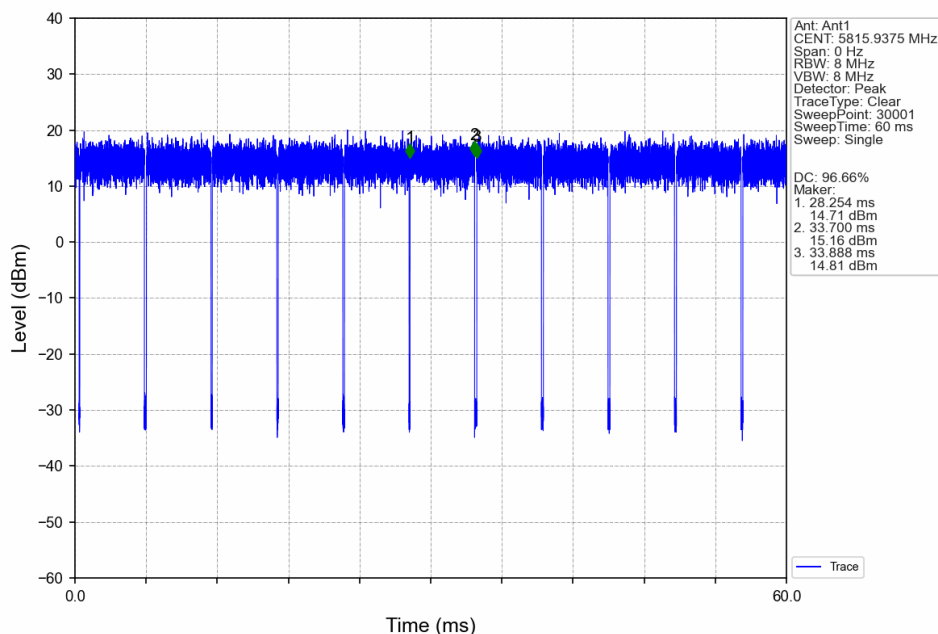
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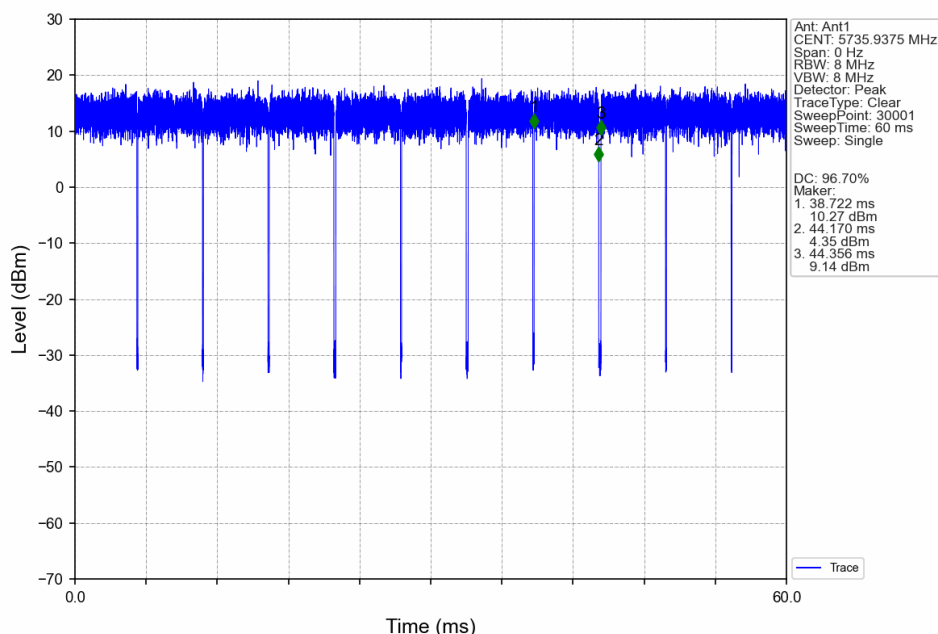
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802.11be(EHT80)_HCH_5855MHz_SU_ / _Ant1_NTNV



802.11be(EHT160)_HCH_5815MHz_SU_ / _Ant1_NTNV



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2. Bandwidth

2.1 Test Result

2.1.1 OBW

Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	99% Occupied Bandwidth (MHz)		Verdict
						Result	Limit	
802.11a	SISO	5865	/	/	1	18.071	/	Pass
		5885	/	/	1	18.225	/	Pass
		5845	/	/	1	18.031	/	Pass
802.11n (HT20)	MIMO	5865	/	/	1	18.805	/	Pass
		5885	/	/	1	18.880	/	Pass
		5845	/	/	1	18.898	/	Pass
802.11n (HT40)	MIMO	5875	/	/	1	38.078	/	Pass
		5835	/	/	1	37.421	/	Pass
802.11ac (VHT20)	MIMO	5865	/	/	1	18.815	/	Pass
		5885	/	/	1	18.906	/	Pass
		5845	/	/	1	18.897	/	Pass
802.11ac (VHT40)	MIMO	5875	/	/	1	38.083	/	Pass
		5835	/	/	1	37.588	/	Pass
802.11ac (VHT80)	MIMO	5855	/	/	1	77.278	/	Pass
802.11ac (VHT160)	MIMO	5815	/	/	1	156.336	/	Pass
802.11ax (HEW20)	MIMO	5865	SU	/	1	19.670	/	Pass
		5885	SU	/	1	19.611	/	Pass
		5845	SU	/	1	19.555	/	Pass
802.11ax (HEW40)	MIMO	5875	SU	/	1	39.016	/	Pass
		5835	SU	/	1	38.517	/	Pass
802.11ax (HEW80)	MIMO	5855	SU	/	1	78.373	/	Pass
802.11ax (HEW160)	MIMO	5815	SU	/	1	157.183	/	Pass
802.11be (EHT20)	MIMO	5865	SU	/	1	19.554	/	Pass
		5885	SU	/	1	19.587	/	Pass
		5845	SU	/	1	19.563	/	Pass
802.11be (EHT40)	MIMO	5875	SU	/	1	38.723	/	Pass
		5835	SU	/	1	38.647	/	Pass
802.11be	MIMO	5855	SU	/	1	78.421	/	Pass



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Report No.: SZCR241200457605

Page: 105 of 199

(EHT80)								
802.11be (EHT160)	MIMO	5815	SU	/	1	157.867	/	Pass

2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	6dB Bandwidth (MHz)		Verdict
						Result	Limit	
802.11a	SISO	5865	/	/	1	15.763	≥ 0.5	Pass
		5885	/	/	1	15.765	≥ 0.5	Pass
		5845	/	/	1	15.710	≥ 0.5	Pass
802.11n (HT20)	MIMO	5865	/	/	1	16.584	≥ 0.5	Pass
		5885	/	/	1	15.074	≥ 0.5	Pass
		5845	/	/	1	17.164	≥ 0.5	Pass
802.11n (HT40)	MIMO	5875	/	/	1	35.721	≥ 0.5	Pass
		5835	/	/	1	36.305	≥ 0.5	Pass
802.11ac (VHT20)	MIMO	5865	/	/	1	16.339	≥ 0.5	Pass
		5885	/	/	1	15.725	≥ 0.5	Pass
		5845	/	/	1	16.430	≥ 0.5	Pass
802.11ac (VHT40)	MIMO	5875	/	/	1	35.977	≥ 0.5	Pass
		5835	/	/	1	36.123	≥ 0.5	Pass
802.11ac (VHT80)	MIMO	5855	/	/	1	72.565	≥ 0.5	Pass
802.11ac (VHT160)	MIMO	5815	/	/	1	142.813	≥ 0.5	Pass
802.11ax (HEW20)	MIMO	5865	SU	/	1	16.494	≥ 0.5	Pass
		5885	SU	/	1	18.628	≥ 0.5	Pass
		5845	SU	/	1	18.459	≥ 0.5	Pass
802.11ax (HEW40)	MIMO	5875	SU	/	1	36.954	≥ 0.5	Pass
		5835	SU	/	1	37.741	≥ 0.5	Pass
802.11ax (HEW80)	MIMO	5855	SU	/	1	76.288	≥ 0.5	Pass
802.11ax (HEW160)	MIMO	5815	SU	/	1	143.978	≥ 0.5	Pass
802.11be (EHT20)	MIMO	5865	SU	/	1	18.209	≥ 0.5	Pass
		5885	SU	/	1	18.035	≥ 0.5	Pass
		5845	SU	/	1	17.989	≥ 0.5	Pass
802.11be (EHT40)	MIMO	5875	SU	/	1	36.621	≥ 0.5	Pass
		5835	SU	/	1	37.642	≥ 0.5	Pass
802.11be (EHT80)	MIMO	5855	SU	/	1	72.716	≥ 0.5	Pass
802.11be	MIMO	5815	SU	/	1	143.820	≥ 0.5	Pass



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Report No.: SZCR241200457605

Page: 106 of 199

(EHT160)								
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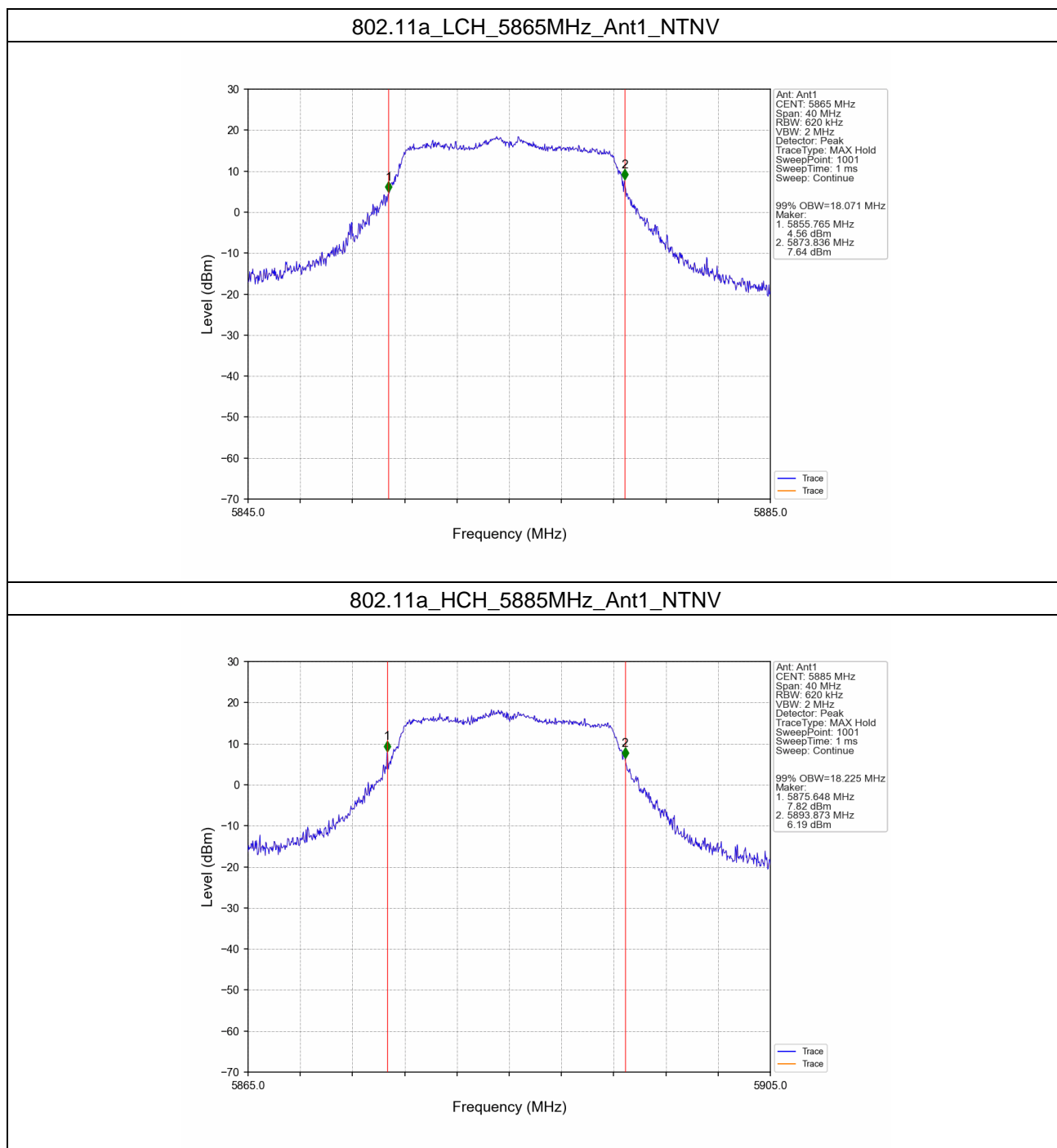


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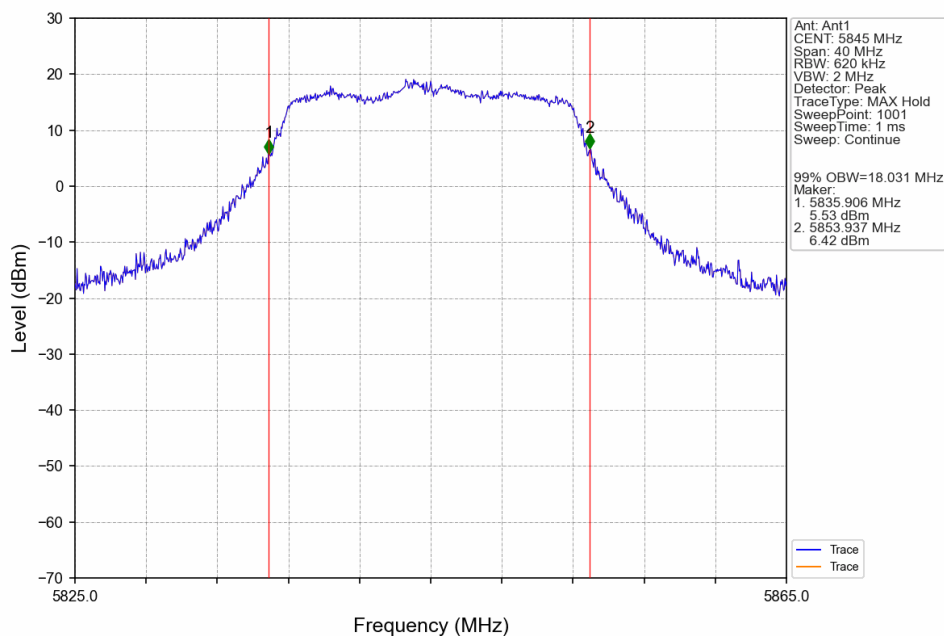
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2.2 Test Graph

2.2.1 OBW



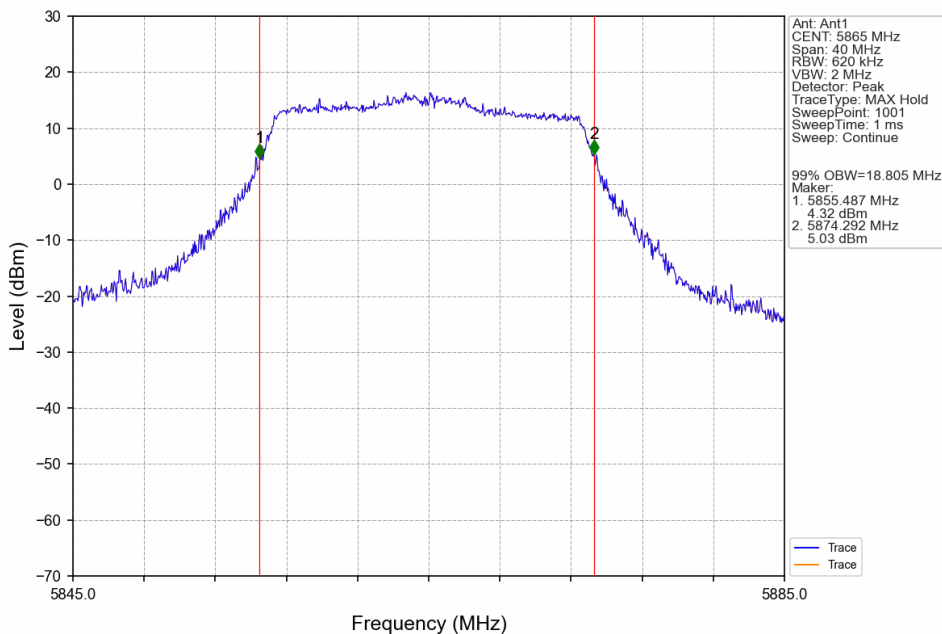
802.11a_HCH_5845MHz_Ant1_NTNV



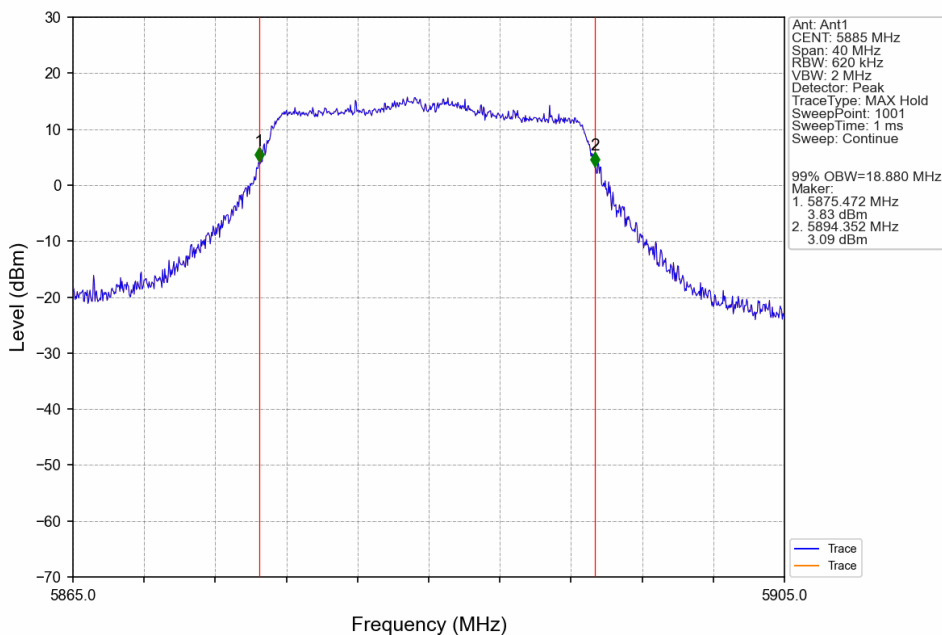
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802.11n(HT20)_LCH_5865MHz_Ant1_NTNV



802.11n(HT20)_HCH_5885MHz_Ant1_NTNV



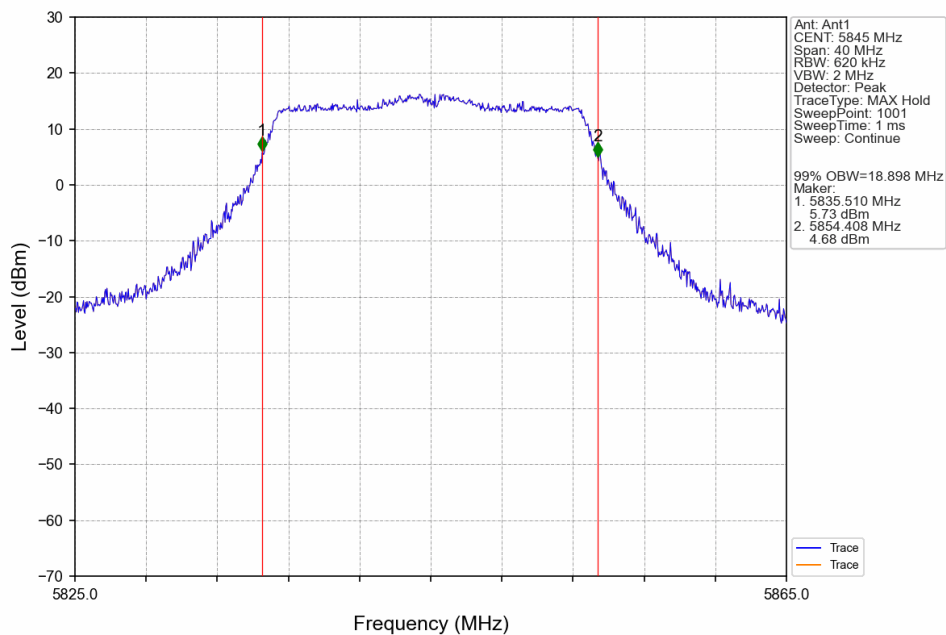
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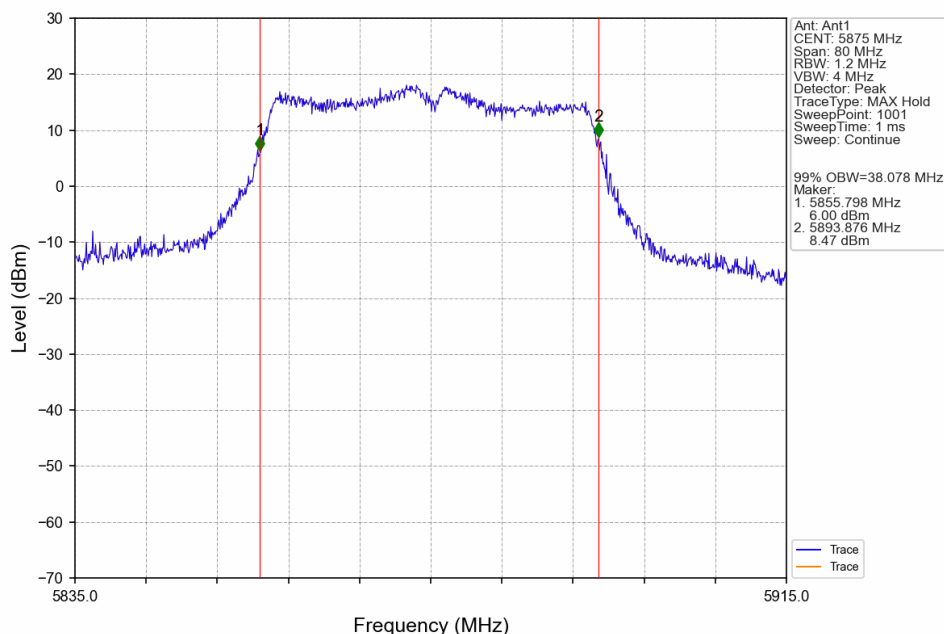
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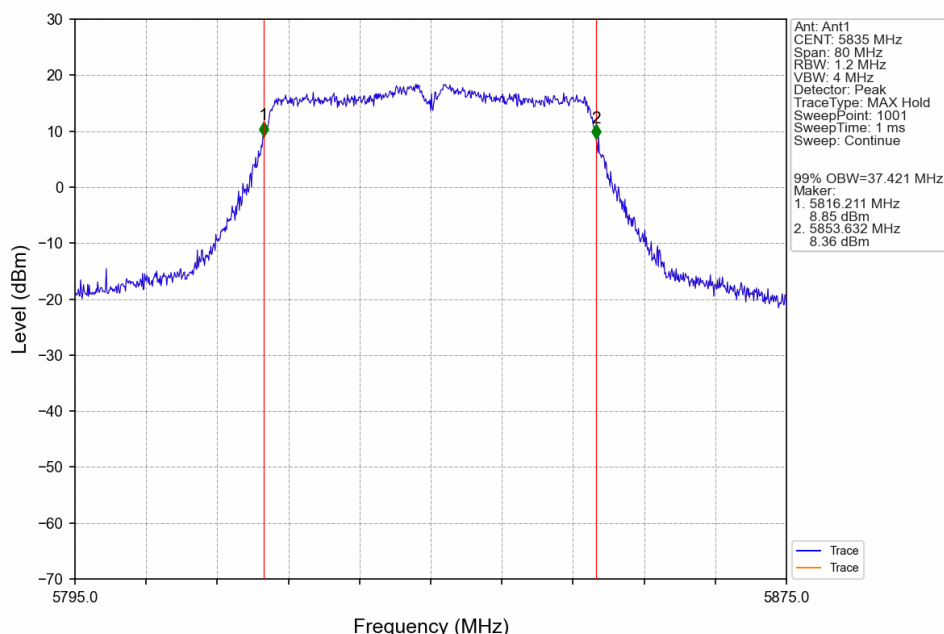
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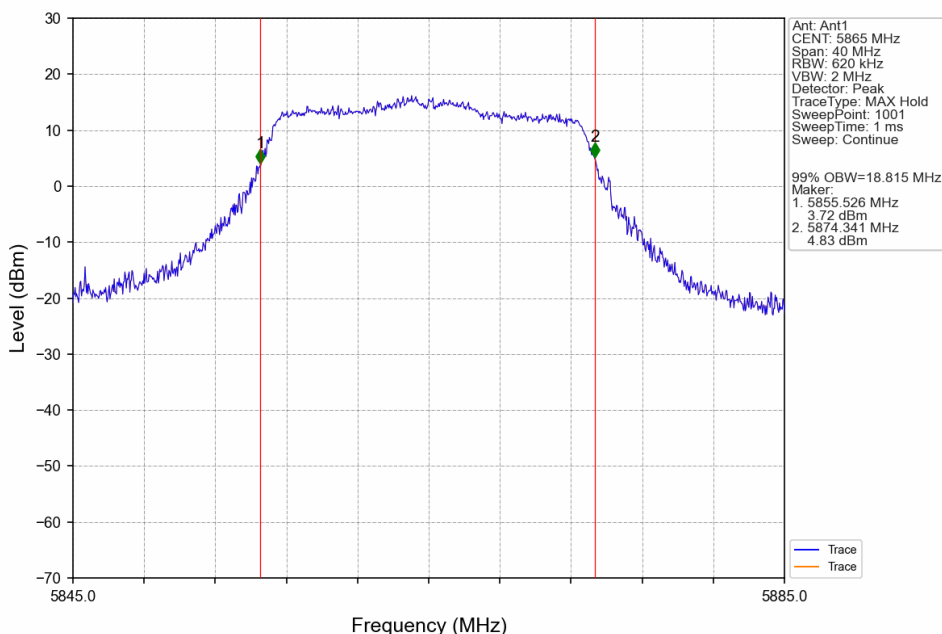
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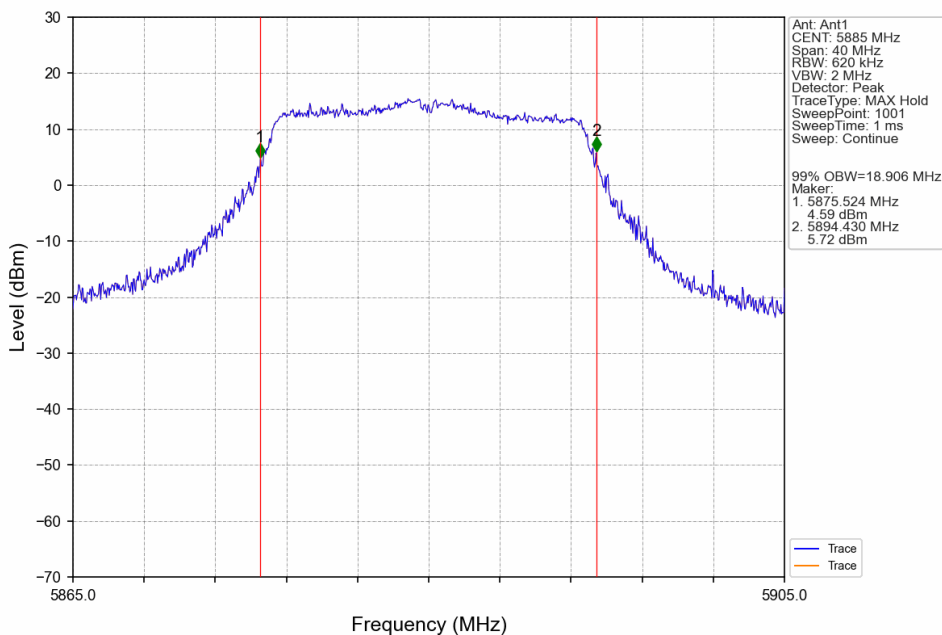
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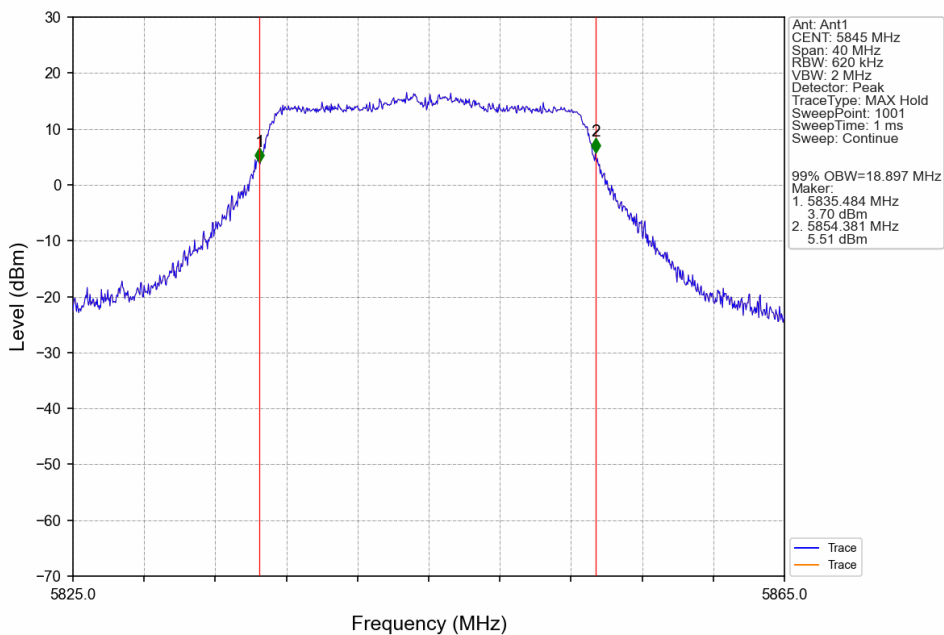
802.11ac(VHT20)_LCH_5865MHz_Ant1_NTNV



802.11ac(VHT20)_HCH_5885MHz_Ant1_NTNV



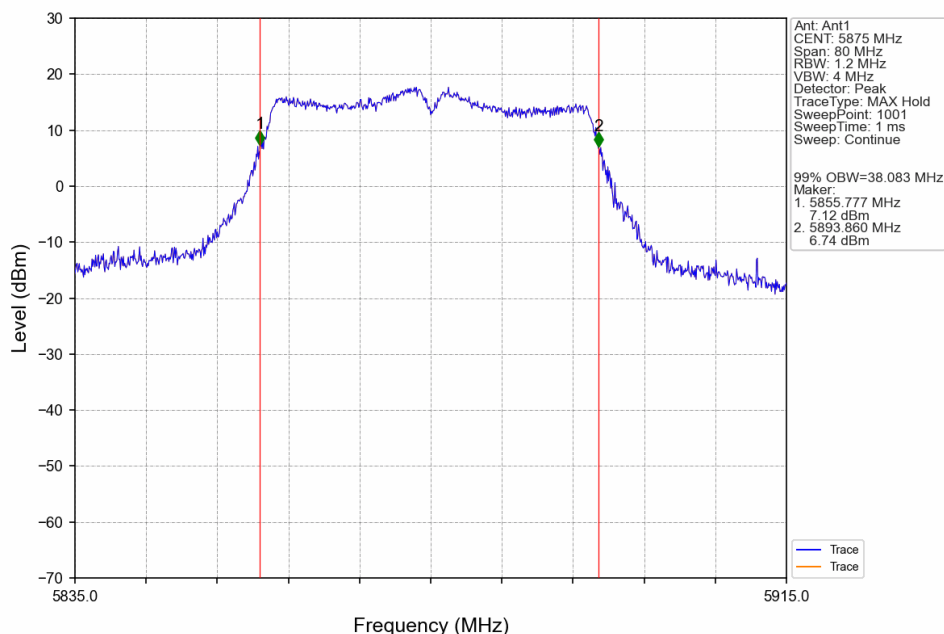
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