

TEST REPORT

Application No.: SZCR2401000384AT
Applicant: Quectel Wireless Solutions Co., Ltd.
Address of Applicant: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Manufacturer: Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Equipment Under Test (EUT):
EUT Name: 5G Sub-6 GHz Smart Module with Wi-Fi 6E & Bluetooth
Model No.: SG560D-NA
Trade Mark: QUECTEL
FCC ID: XMR2024SG560DNA
Standard(s) : 47 CFR Part 15, Subpart C 15.247
47 CFR Part 15, Subpart C 15.209
Date of Receipt: 2024-01-29
Date of Test: 2024-02-27 to 2024-03-15
Date of Issue: 2024-03-21

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



Keny Xu
EMC Laboratory Manager





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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 2 of 195

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024-03-21		Original

Authorized for issue by:				
		Donjon . Huang		
		Donjon Huang/Project Engineer		
		Eric Fu		
		Eric Fu/Reviewer		



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2 Test Summary

Test Item	FCC Rule No.	Test Method	Result
Antenna Requirement	15.203/15.247(b)	--	PASS
AC Power Line Conducted Emission	15.207	ANSI C63.10-2020 Section 6.2	PASS
Duty Cycle	--	--	For Report Purpose
Conducted Output Power	15.247 (b)(3)	ANSI C63.10-2020 Section 11.9.1.2	PASS
DTS (6 dB) Bandwidth & 99% Occupied Bandwidth	15.247 (a)(2)	ANSI C63.10-2020 Section 11.8 Option 2 / 6.9.3	PASS
Power Spectral Density	15.247 (e)	ANSI C63.10-2020 Section 11.10.2	PASS
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10-2020 Section 11.11	PASS
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10-2020 Section 11.11	PASS
Radiated Spurious Emissions	15.247(d);15.205/15.209	ANSI C63.10-2020 Section 11.12	PASS
Restricted bands around fundamental frequency (Radiated Emission)	15.247(d);15.205/15.209	ANSI C63.10-2020 Section 11.12	PASS



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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	7
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
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 Conducted Peak 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 Minimum 6dB Bandwidth & 99% Occupied Bandwidth	20
7.3.1 E.U.T. Operation	20
7.3.2 Test Mode Description	20
7.3.3 Test Setup Diagram	21
7.3.4 Measurement Procedure and Data	21
7.4 Power Spectrum Density	22
7.4.1 E.U.T. Operation	22
7.4.2 Test Mode Description	22
7.4.3 Test Setup Diagram	23
7.4.4 Measurement Procedure and Data	23
7.5 Conducted Band Edges Measurement	24



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 5 of 195

7.5.1	E.U.T. Operation	24
7.5.2	Test Mode Description	24
7.5.3	Test Setup Diagram	25
7.5.4	Measurement Procedure and Data	25
7.6	Conducted Spurious Emissions	26
7.6.1	E.U.T. Operation	26
7.6.2	Test Mode Description	26
7.6.3	Test Setup Diagram	27
7.6.4	Measurement Procedure and Data	27
7.7	Radiated Emissions which fall in the restricted bands	28
7.7.1	E.U.T. Operation	28
7.7.2	Test Mode Description	28
7.7.3	Test Setup Diagram	29
7.7.4	Measurement Procedure and Data	29
7.8	Radiated Spurious Emissions Below 1GHz	54
7.8.1	E.U.T. Operation	54
7.8.2	Test Mode Description	54
7.8.3	Test Setup Diagram	55
7.8.4	Measurement Procedure and Data	55
7.9	Radiated Spurious Emissions Above 1GHz	58
7.9.1	E.U.T. Operation	58
7.9.2	Test Mode Description	58
7.9.3	Test Setup Diagram	59
7.9.4	Measurement Procedure and Data	60
8	Test Setup Photo	79
9	Appendix	80



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4 General Information

4.1 Details of E.U.T.

EUT Description:	5G Sub-6 GHz Smart Module with Wi-Fi 6E & Bluetooth	
Model No.:	SG560D-NA	
Trade Mark:	QUECTEL	
Hardware Version:	R1.0	
Software Version:	SG560DNAPAR03A05	
Power Supply:	Power form the mainboard which with AC/DC adapter Model No: GQ36-120300-AX Input: AC100-240V~50/60Hz 1.0A MAX Output: DC12.0V 0.3A 36.0W	
Operation Frequency:	802.11b/g/n(HT20)/ax(HE20):	2412MHz to 2462MHz
	802.11n(HT40)/ax(HE40):	2422MHz to 2452MHz
Modulation Type:	802.11b:	DSSS (DBPSK, DQPSK, CCK)
	802.11g/n:	OFDM (BPSK, QPSK, 16QAM, 64QAM)
	802.11ax:	OFDM/OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Number of Channels:	802.11b/g/n(HT20)/ax(HE20): 11 802.11n(HT40)/ax(HE40): 7	
Channel Spacing:	5MHz	
Smart System:	☐ SISO	802.11b/g/n/ax
	☒ MIMO	802.11n/ax: 2Tx & 2Rx
	☒ Diversity	802.11b/g: 2Tx & 2Rx
Antenna Type:	Integrated antenna	
Antenna Gain:	0.2dBi(Ant5); 0.2dBi(Ant6)	
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.	
RF Cable:	1.2dB	
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4.2 Description of Support Units

Description	Manufacturer	Model No.
Mother board	QUECTEL	SMART-5G-EVB_V1.3
Adapter	Dong Guan City GangQi Electronic Co.,Ltd	GQ36-120300-AX
Remark: all above the information of table are provided by client.		

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	$\pm 3.1\text{dB}$
Conducted Peak Output Power	$\pm 0.75\text{dB}$
Minimum 6dB Bandwidth	$\pm 3\%$
Power Spectrum Density	$\pm 2.84\text{dB}$
Conducted Band Edges Measurement	$\pm 0.75\text{dB}$
Conducted Spurious Emissions	$\pm 0.75\text{dB}$
Radiated Emissions which fall in the restricted bands	$\pm 6.0\text{dB}$ (Below 1GHz); $\pm 4.6\text{dB}$ (Above 1GHz)
Radiated Spurious Emissions Below 1GHz	$\pm 6.0\text{dB}$ for 3m; $\pm 5.0\text{dB}$ for 10m
Radiated Spurious Emissions Above 1GHz	$\pm 4.6\text{dB}$ (1-18GHz); $\pm 4.8\text{dB}$ (18-40GHz)

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{\text{CISPR/ETSI}}$ (CISPR/ETSI Uncertainty), so the test results

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

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Report No.: SZCR240100038404

Page: 8 of 195

4.4 Test Location

All tests were performed at:

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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	ESCI	SEM004-02	2023-03-20	2024-03-19
Measurement Software	AUDIX	e3 V8.2014-6-27a	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2023-07-07	2024-07-06
LISN	Rohde&Schwarz	ENV216	SEM007-01	2023-09-19	2024-09-18
LISN	ETS-LINDGREN	3816/2	SEM007-02	2023-03-20	2024-03-19

Conducted Peak Output Power					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Power Sensor	TST PASS	TSPS2023R	SEM009-26	2023-04-01	2024-03-31
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2023-03-21	2024-03-20
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30

Minimum 6dB Bandwidth					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30

Power Spectrum Density					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 10 of 195

Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30

Conducted Band Edges Measurement

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30

Conducted Spurious Emissions

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2023-10-19	2024-10-18
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2023-03-21	2024-03-20
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023-03-31	2024-03-30

Radiated Emissions which fall in the restricted bands

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



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 11 of 195

Radiated Spurious 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	2023-10-19	2024-10-18
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2023-09-16	2025-09-15
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2023-03-20	2024-03-19
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2023-07-07	2024-07-06

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

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



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

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 an integrated antenna, and the connection port is fixed with glue, and the antenna cannot be replaced.

The best case gain of the antenna is 0.2dBi(Ant5); 0.2dBi(Ant6).

**Note:*

The antenna gain are derived from the gain information report provided by the manufacturer.

Remark:

As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 13 of 195

Cyclic Delay Diversity (CDD) System:

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,

$Array\ Gain = 10 \log(N_{ANT}/N_{SS}=1) \text{ dB}$.

- For power measurements on IEEE 802.11 devices:

$Array\ Gain = 0 \text{ dB}$ (i.e., no array gain) for $N_{ANT} \leq 4$;

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

The Power and PSD limit should be modified if the directional gain of eut is over 6dbi.

The EUT supports CDD System.

All antennas have the same gain:

ANT Gain5 (dBi)	ANT Gain6 (dBi)	Power DG (dBi)	PSD DG (dBi)	Power Limit Reduction(dB)	PSD Limit Reduction(dB)
0.2	0.2	0.2	3.21	0	0

Power Limit Reduction = Directional gain – 6dBi, (Directional gain < 6dBi) =0

PSD Limit Reduction = Directional gain – 6dBi, (Directional gain < 6dBi) =0



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7 Radio Spectrum Matter Test Results

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

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2020) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz		

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.3 °C

Humidity: 43.4 % RH

Atmospheric Pressure: 1020 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	07	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
Final test	08	Charge + TX mode_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.



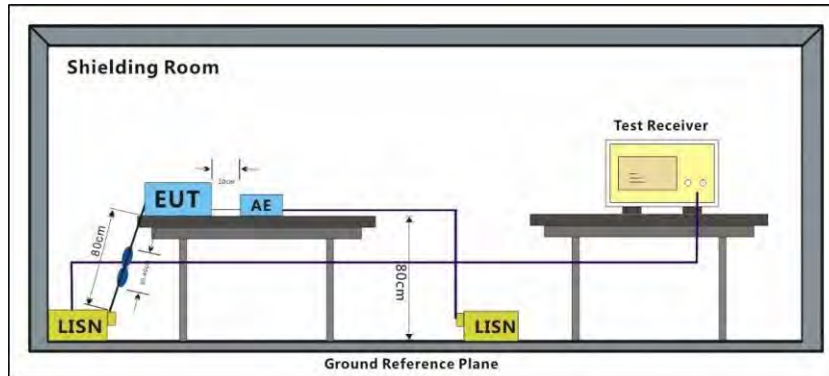
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7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

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

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

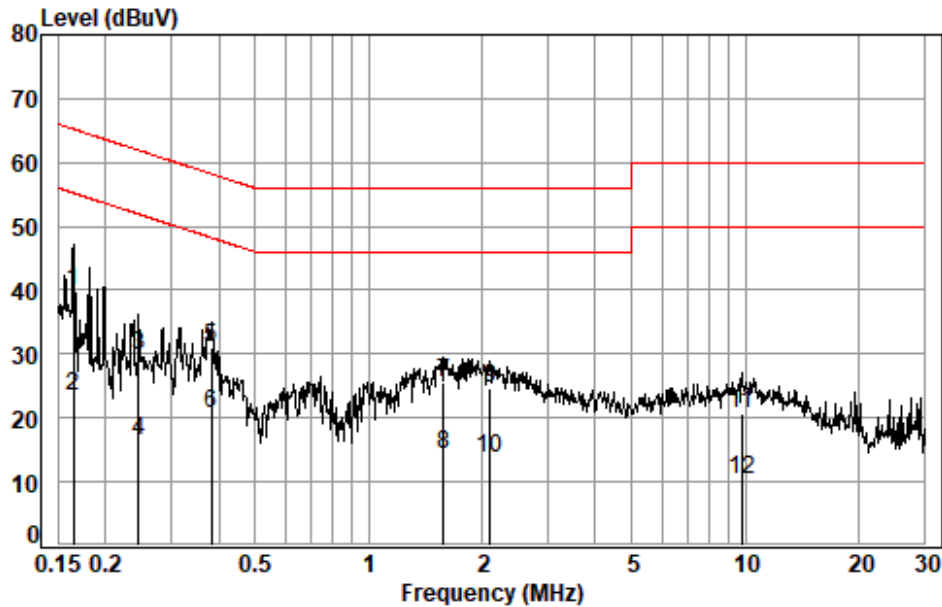
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 16 of 195

Test Mode: 08; Line: Live line



Site : Shielding Room
Condition: Line
Job No. : 00384AT
Test mode: 08

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1 *	0.1641	0.02	9.50	30.32	39.84	65.25	-25.41	QP
2	0.1641	0.02	9.50	13.87	23.39	55.25	-31.86	Average
3	0.2455	0.03	9.50	20.33	29.86	61.91	-32.05	QP
4	0.2455	0.03	9.50	6.79	16.32	51.91	-35.59	Average
5	0.3832	0.03	9.57	21.51	31.11	58.21	-27.10	QP
6 *	0.3832	0.03	9.57	11.15	20.75	48.21	-27.46	Average
7	1.5851	0.06	9.46	15.96	25.48	56.00	-30.52	QP
8	1.5851	0.06	9.46	4.92	14.44	46.00	-31.56	Average
9	2.0990	0.07	9.46	15.26	24.79	56.00	-31.21	QP
10	2.0990	0.07	9.46	4.17	13.70	46.00	-32.30	Average
11	9.8085	0.17	9.98	10.50	20.65	60.00	-39.35	QP
12	9.8085	0.17	9.98	0.17	10.32	50.00	-39.68	Average



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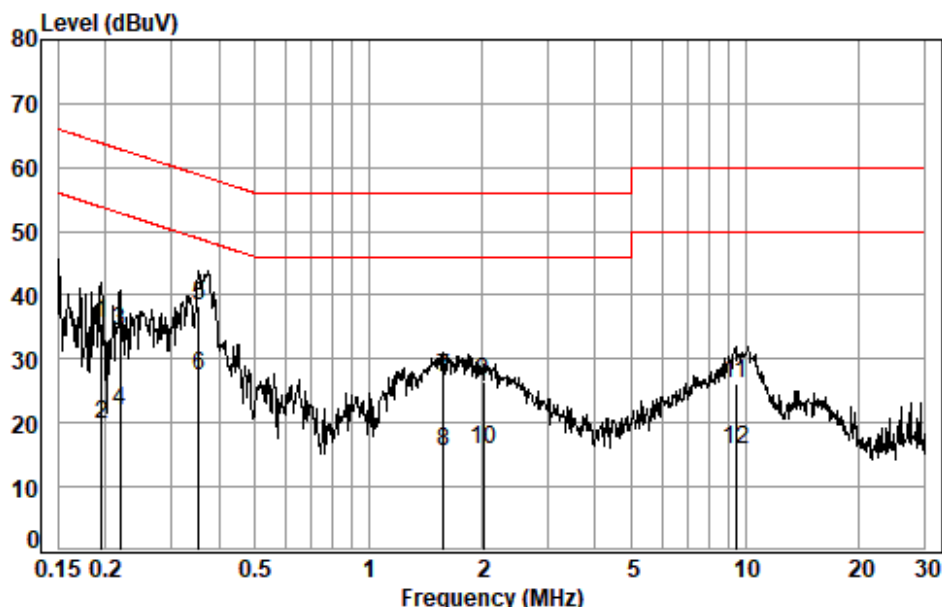
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 17 of 195

Test Mode: 08; Line: Neutral Line



Site : Shielding Room

Condition: Neutral

Job No. : 00384AT

Test mode: 08

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1955	0.02	9.66	25.80	35.48	63.80	-28.32	QP
2	0.1955	0.02	9.66	10.02	19.70	53.80	-34.10	Average
3	0.2185	0.03	9.66	24.54	34.23	62.88	-28.65	QP
4	0.2185	0.03	9.66	12.34	22.03	52.88	-30.85	Average
5 *	0.3539	0.03	9.71	28.67	38.41	58.87	-20.46	QP
6 *	0.3539	0.03	9.71	17.54	27.28	48.87	-21.59	Average
7	1.5767	0.06	9.73	17.20	26.99	56.00	-29.01	QP
8	1.5767	0.06	9.73	5.60	15.39	46.00	-30.61	Average
9	2.0225	0.07	9.79	16.72	26.58	56.00	-29.42	QP
10	2.0225	0.07	9.79	5.86	15.72	46.00	-30.28	Average
11	9.4514	0.16	10.10	15.85	26.11	60.00	-33.89	QP
12	9.4514	0.16	10.10	5.56	15.82	50.00	-34.18	Average



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 18 of 195

7.2 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)
Test Method: ANSI C63.10 (2013) Section 11.9.2

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
2400-2483.5	30dBm

7.2.1 E.U.T. Operation

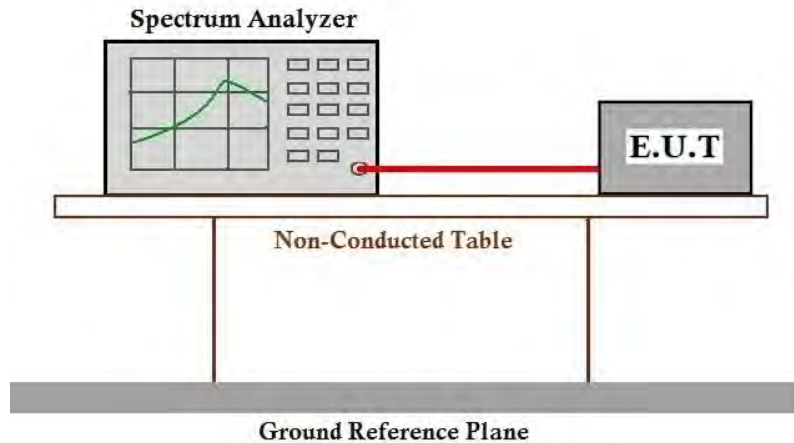
Operating Environment:

Temperature: 23.8 °C Humidity: 37.9 % RH Atmospheric Pressure: 1020 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
Final test	08	Charge + TX mode_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

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

Please Refer to Appendix for Details

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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 20 of 195

7.3 Minimum 6dB Bandwidth & 99% Occupied Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)

Test Method: ANSI C63.10-2020 Section 11.8 Option 2 / 6.9.3

Limit:

≥500 kHz

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.8 °C

Humidity: 37.9 % RH

Atmospheric Pressure: 1020 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
Final test	08	Charge + TX mode_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.



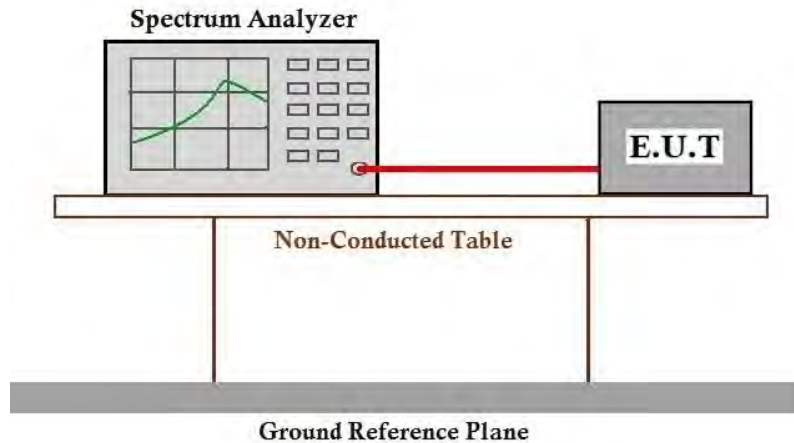
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7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.4 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)
Test Method: ANSI C63.10 (2020) Section 11.10.2

Limit:

≤8dBm in any 3 kHz band during any time interval of continuous transmission

7.4.1 E.U.T. Operation

Operating Environment:

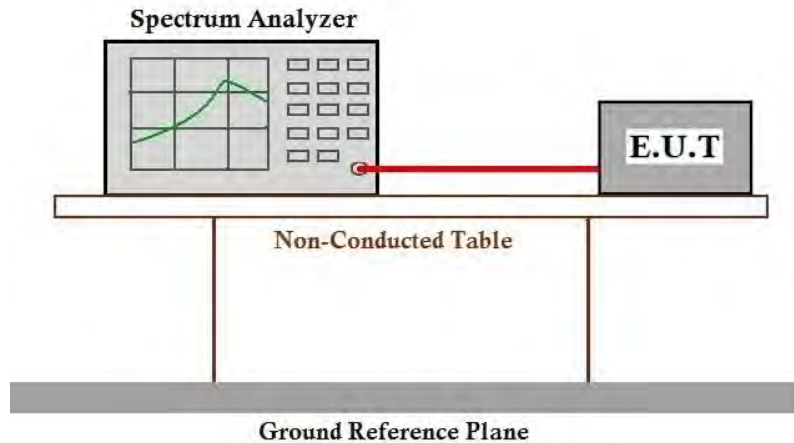
Temperature: 23.8 °C Humidity: 37.9 % RH Atmospheric Pressure: 1020 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
Final test	08	Charge + TX mode_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.



7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.5 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)

Test Method: ANSI C63.10 (2020) Section 11.11

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.8 °C

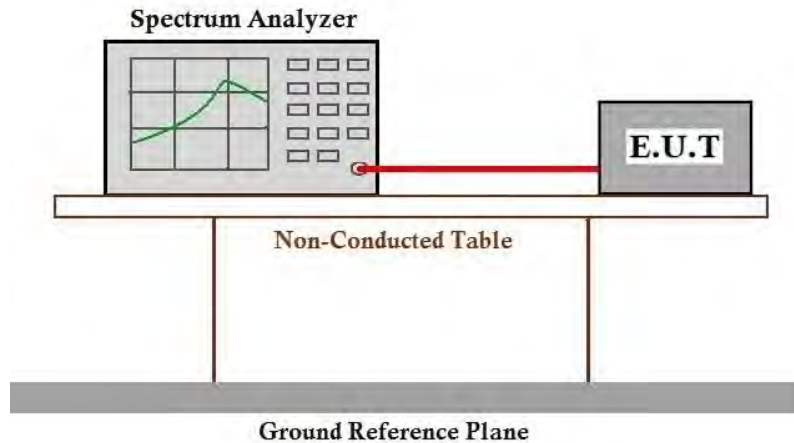
Humidity: 37.9 % RH

Atmospheric Pressure: 1020 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
Final test	08	Charge + TX mode_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.6 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
Test Method: ANSI C63.10 (2020) Section 11.11

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

7.6.1 E.U.T. Operation

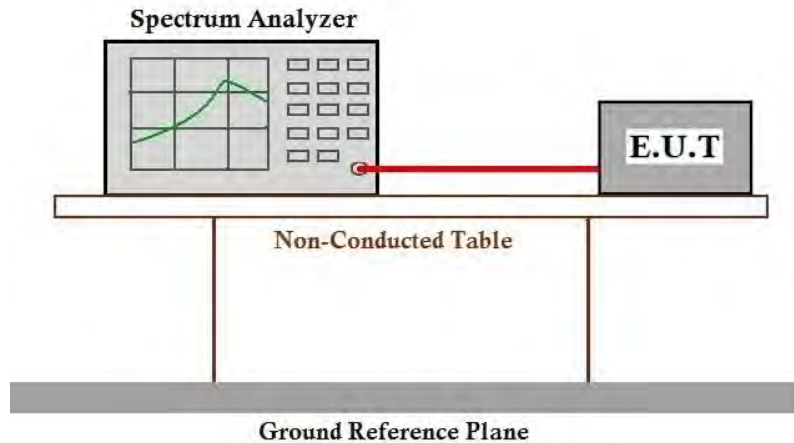
Operating Environment:

Temperature: 23.8 °C Humidity: 37.9 % RH Atmospheric Pressure: 1020 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
Final test	08	Charge + TX mode_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. 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

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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 28 of 195

7.7 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
Test Method: ANSI C63.10-2020 Section 11.12
Measurement Distance: 3m

Limit:	Frequency	Limit (dBuV/m)	Remark
	30MHz-88MHz	40.0	Quasi-peak
	88MHz-216MHz	43.5	Quasi-peak
	216MHz-960MHz	46.0	Quasi-peak
	960MHz-1GHz	54.0	Quasi-peak
	Above 1GHz	54.0	Average Value
		74.0	Peak Value

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 19.0 °C Humidity: 52.7 % RH Atmospheric Pressure: 1020 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
Pre-scan	08	Charge + TX mode_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.



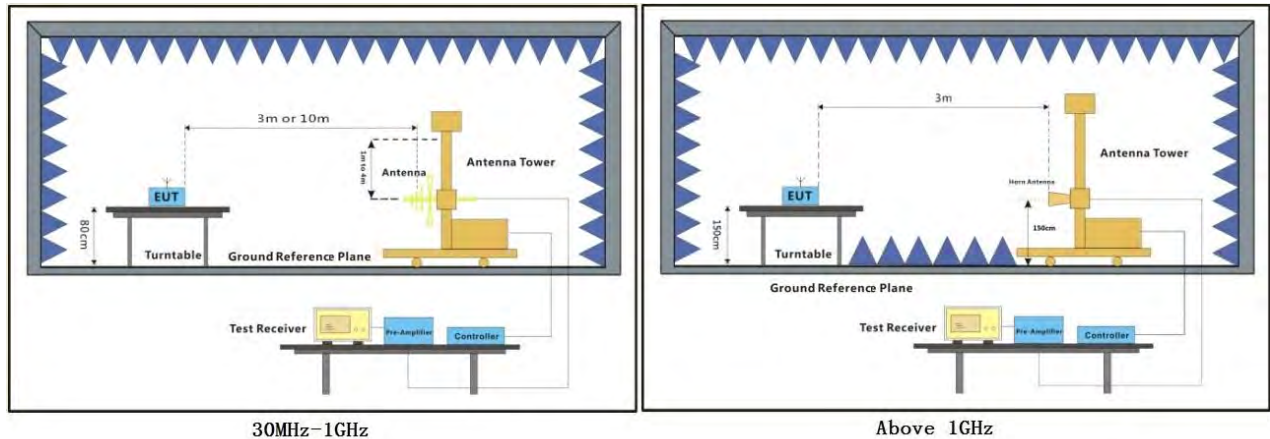
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7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

- 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.
- 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.
- 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.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- 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.
- Repeat above procedures until all frequencies measured was complete.

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

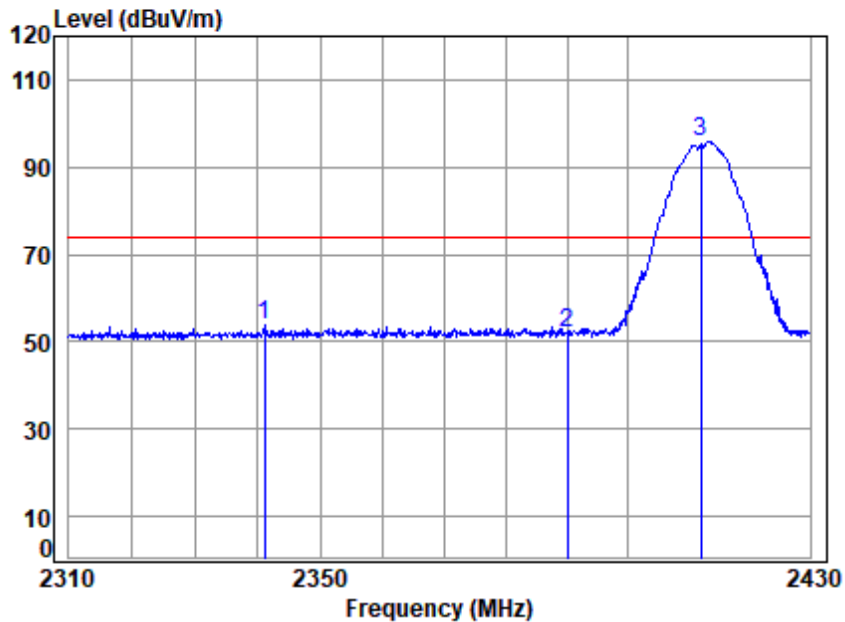
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



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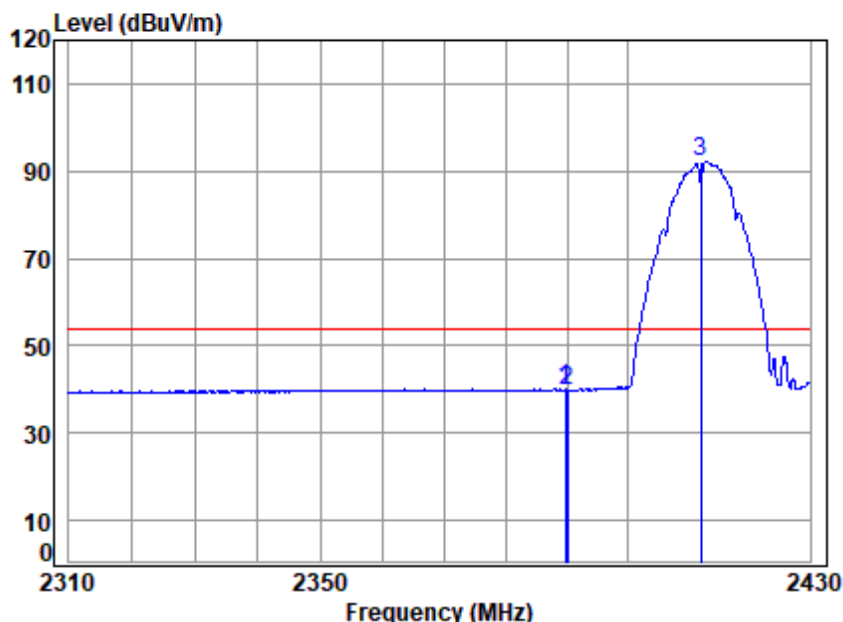
Test Mode: 07; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2412 Band edge
Note : 2.4G WIFI 11B

		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	2341.092	5.03	28.98	37.55	57.26	53.72	74.00	-20.28	peak
2	2390.000	5.08	29.10	37.44	55.32	52.06	74.00	-21.94	peak
3 p	2412.000	5.10	29.05	37.38	99.10	95.87	74.00	21.87	peak

Test Mode: 07; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low

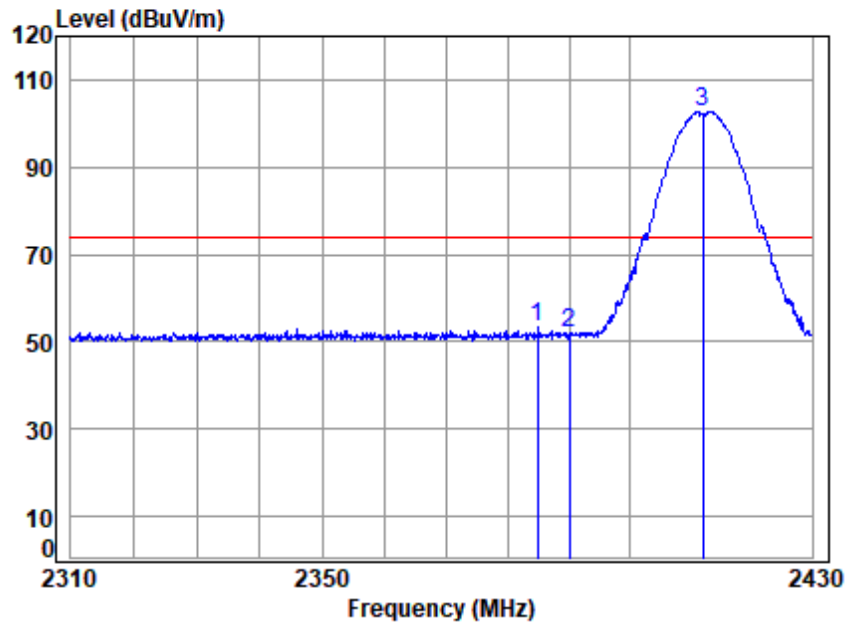


Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2412 Band edge
Note : 2.4G WIFI 11B

		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	2389.726	5.08	29.10	37.44	43.37	40.11	54.00	-13.89 Average
2	2390.000	5.08	29.10	37.44	43.11	39.85	54.00	-14.15 Average
3 q	2412.000	5.10	29.05	37.38	95.34	92.11	54.00	38.11 Average



Test Mode: 07; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Site : chamber
 Condition: 3m VERTICAL
 Job No : 00384AT/00385AT
 Mode : 2412 Band edge
 Note : 2.4G WIFI 11B

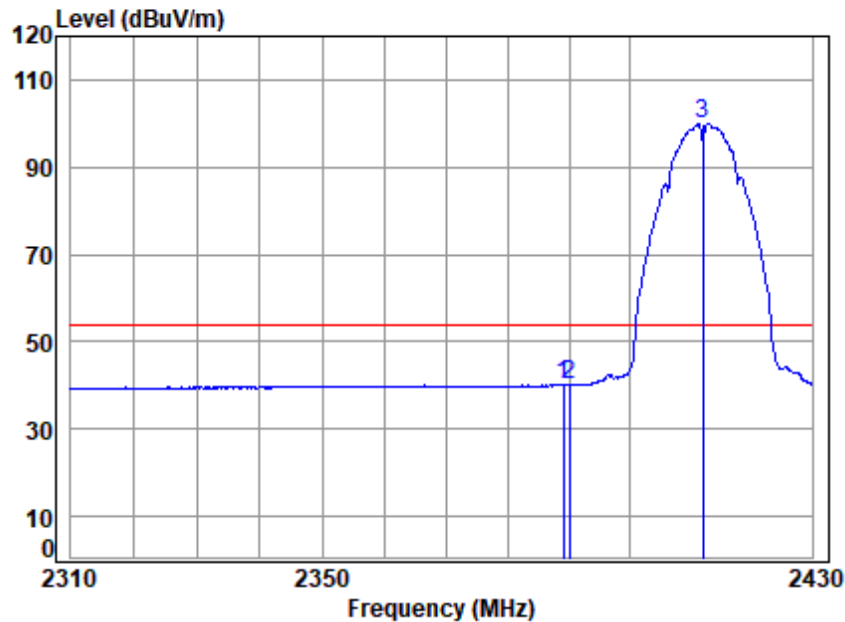
		Cable	Ant	Preamp	Read	Limit	Over	
	Freq	Loss	Factor	Factor	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2384.890	5.07	29.10	37.45	56.60	53.32	74.00	-20.68 Peak
2	2390.000	5.08	29.10	37.44	55.10	51.84	74.00	-22.16 Peak
3 p	2412.000	5.10	29.05	37.38	106.11	102.88	74.00	28.88 Peak



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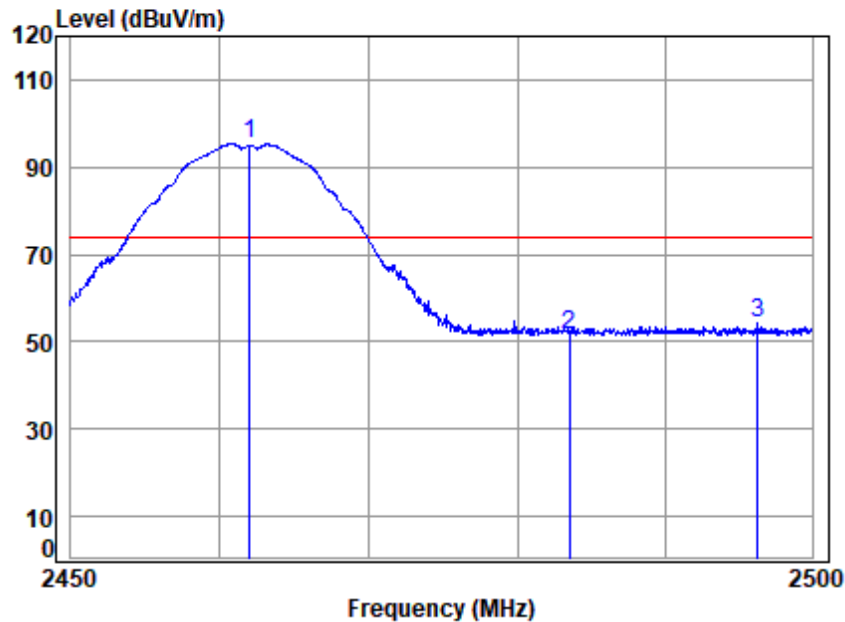
Test Mode: 07; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2412 Band edge
Note : 2.4G WIFI 11B

		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	2389.121	5.07	29.10	37.44	43.49	40.22	54.00	-13.78	Average
2	2390.000	5.08	29.10	37.44	43.32	40.06	54.00	-13.94	Average
3 q	2412.000	5.10	29.05	37.38	103.30	100.07	54.00	46.07	Average

Test Mode: 07; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2462 Band edge
Note : 2.4G WIFI 11B

		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 p	2462.000	5.14	28.90	37.27	98.55	95.32	74.00	21.32	peak
2	2483.500	5.16	28.90	37.22	54.84	51.68	74.00	-22.32	peak
3	2496.316	5.17	28.90	37.19	57.23	54.11	74.00	-19.89	peak



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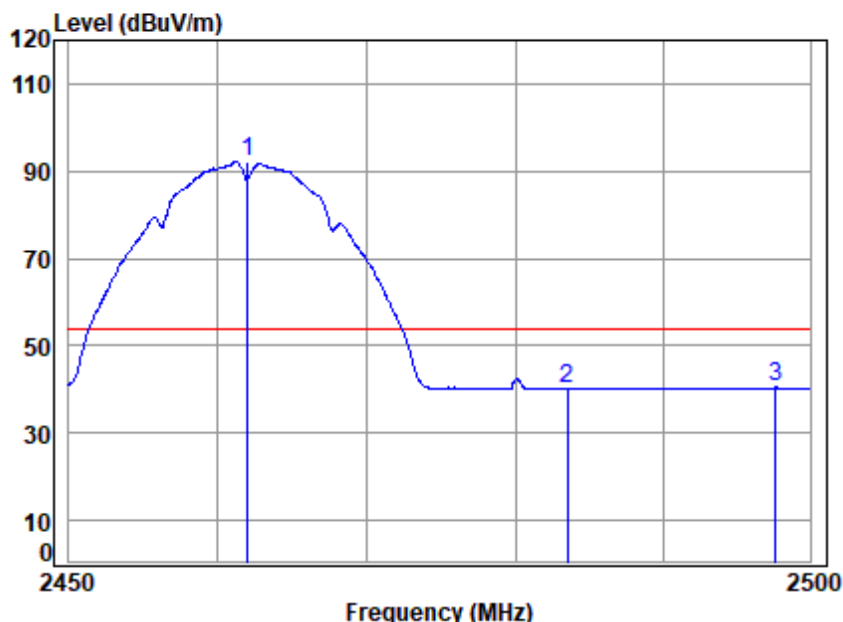
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 35 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2462 Band edge
Note : 2.4G WIFI 11B

		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 q	2462.000	5.14	28.90	37.27	95.30	92.07	54.00	38.07 Average
2	2483.500	5.16	28.90	37.22	43.23	40.07	54.00	-13.93 Average
3	2497.678	5.17	28.90	37.18	43.59	40.48	54.00	-13.52 Average



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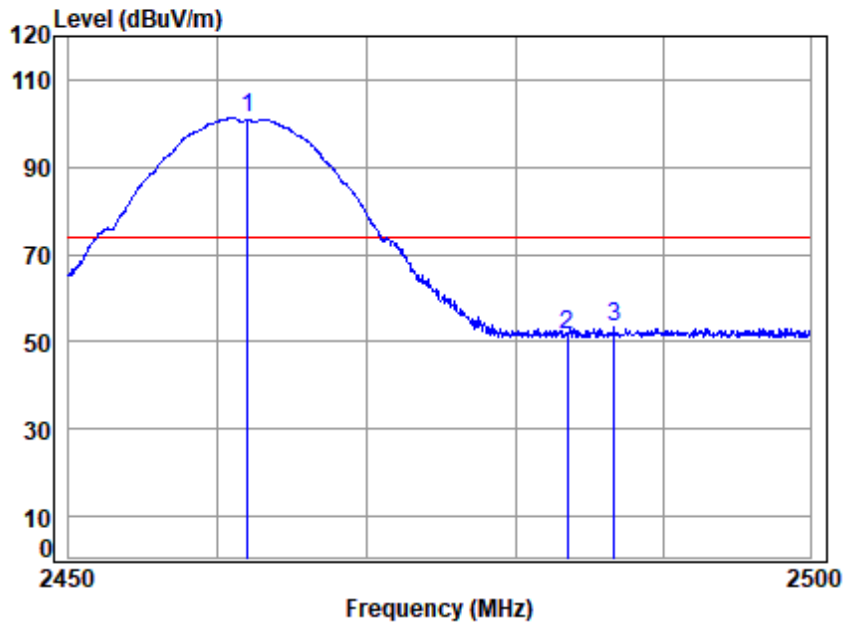
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Report No.: SZCR240100038404

Page: 36 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2462 Band edge
Note : 2.4G WIFI 11B

		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 p	2462.000	5.14	28.90	37.27	104.57	101.34	74.00	27.34	Peak
2	2483.500	5.16	28.90	37.22	54.82	51.66	74.00	-22.34	Peak
3	2486.702	5.16	28.90	37.21	56.45	53.30	74.00	-20.70	Peak



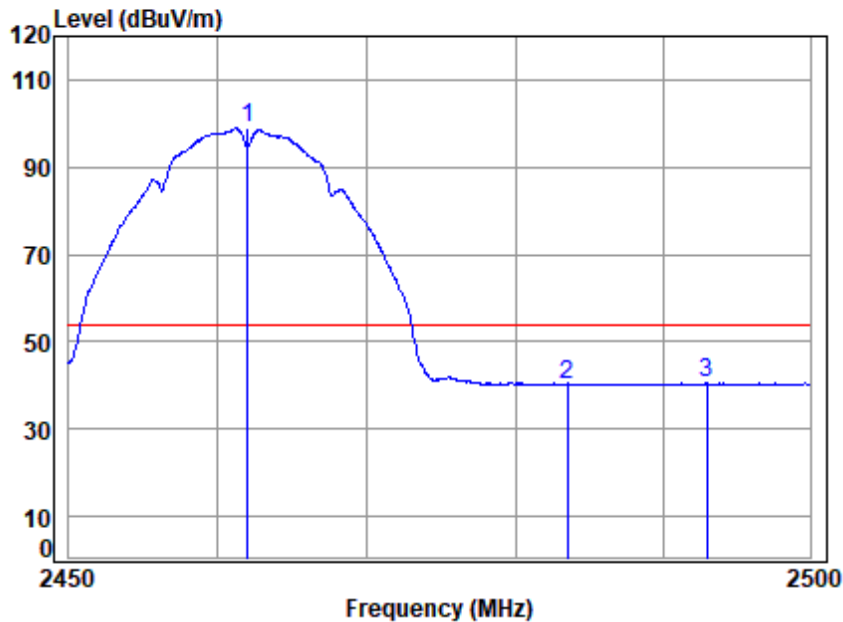
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Test Mode: 07; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2462 Band edge
Note : 2.4G WIFI 11B

		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 q	2462.000	5.14	28.90	37.27	102.11	98.88	54.00	44.88 Average
2	2483.500	5.16	28.90	37.22	43.38	40.22	54.00	-13.78 Average
3	2492.990	5.17	28.90	37.19	43.56	40.44	54.00	-13.56 Average

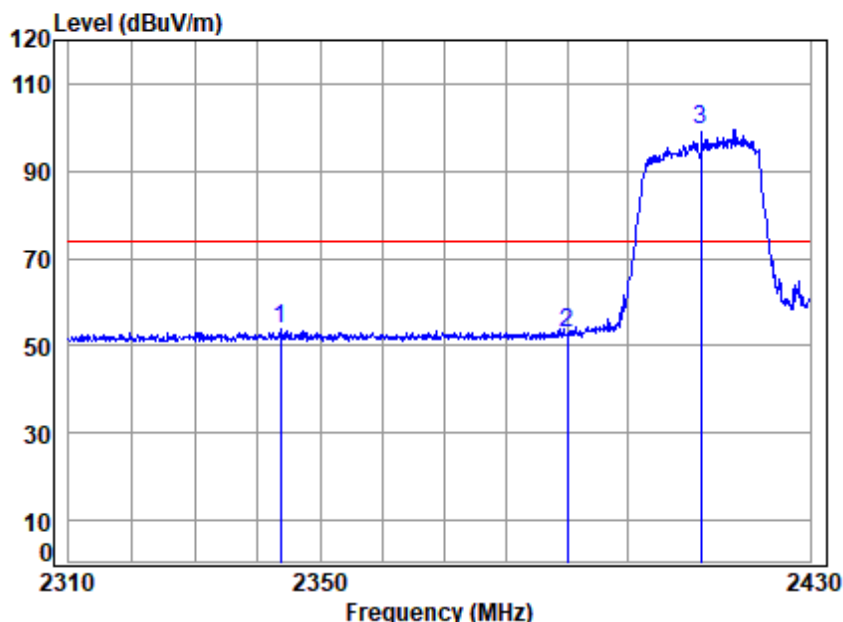
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 38 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2412 Band edge
Note : 2.4G 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	2343.702	5.03	29.01	37.55	57.27	53.76	74.00	-20.24 peak
2	2390.000	5.08	29.10	37.44	56.07	52.81	74.00	-21.19 peak
3 p	2412.000	5.10	29.05	37.38	102.91	99.68	74.00	25.68 peak



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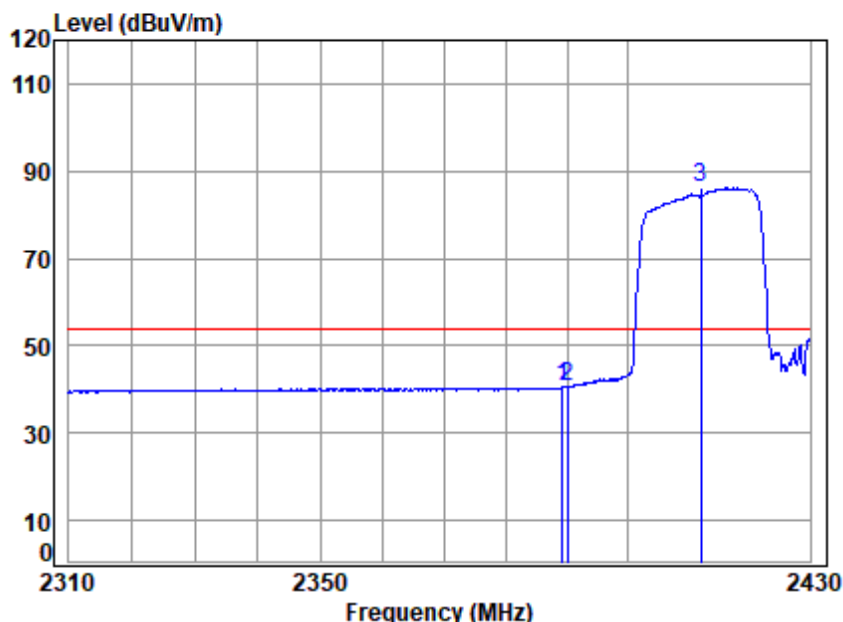
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 39 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2412 Band edge
Note : 2.4G 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	2389.242	5.07	29.10	37.44	43.84	40.57	54.00	-13.43	Average
2	2390.000	5.08	29.10	37.44	43.76	40.50	54.00	-13.50	Average
3 q	2412.000	5.10	29.05	37.38	89.34	86.11	54.00	32.11	Average



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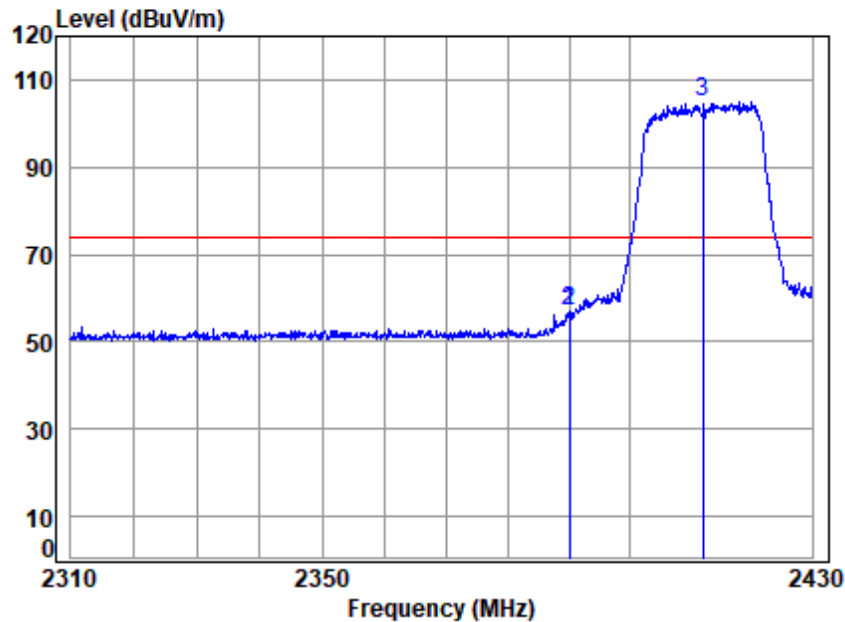
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 40 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2412 Band edge
Note : 2.4G 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	2389.968	5.08	29.10	37.44	60.07	56.81	74.00	-17.19	Peak
2	2390.000	5.08	29.10	37.44	60.07	56.81	74.00	-17.19	Peak
3 p	2412.000	5.10	29.05	37.38	108.28	105.05	74.00	31.05	Peak



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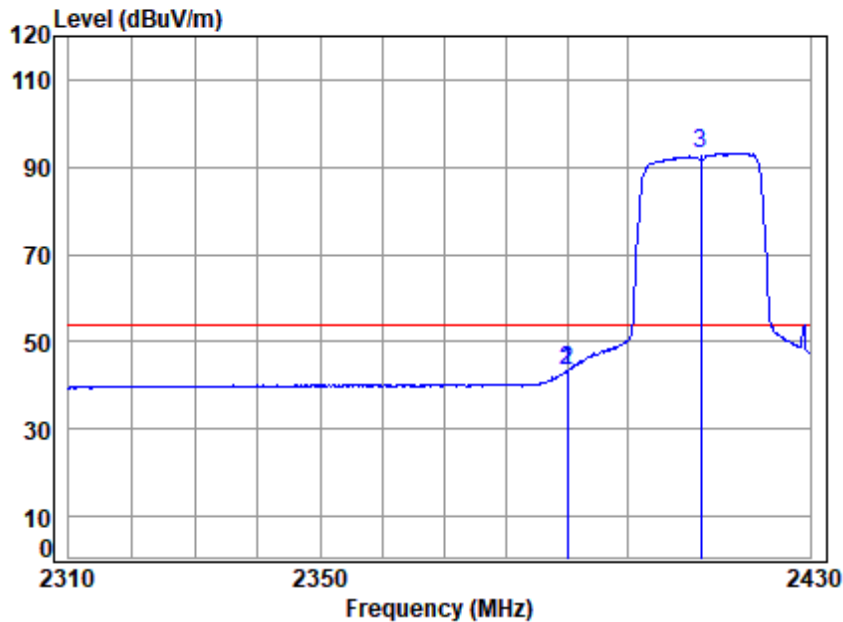
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 41 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2412 Band edge
Note : 2.4G 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	2389.968	5.08	29.10	37.44	46.40	43.14	54.00	-10.86	Average
2	2390.000	5.08	29.10	37.44	46.40	43.14	54.00	-10.86	Average
3 q	2412.000	5.10	29.05	37.38	96.53	93.30	54.00	39.30	Average



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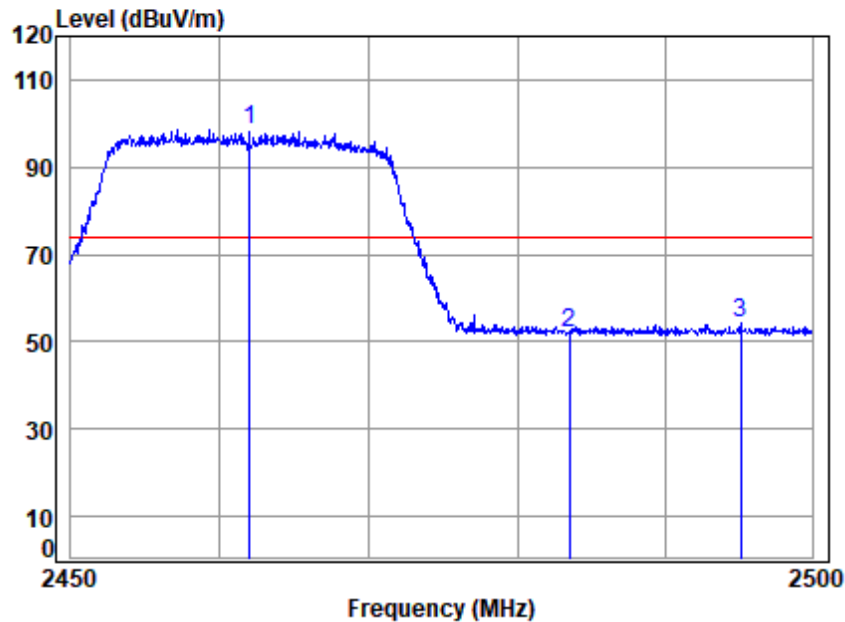
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 42 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2462 Band edge
Note : 2.4G 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 p	2462.000	5.14	28.90	37.27	101.65	98.42	74.00	24.42	peak
2	2483.500	5.16	28.90	37.22	55.33	52.17	74.00	-21.83	peak
3	2495.156	5.17	28.90	37.19	57.22	54.10	74.00	-19.90	peak



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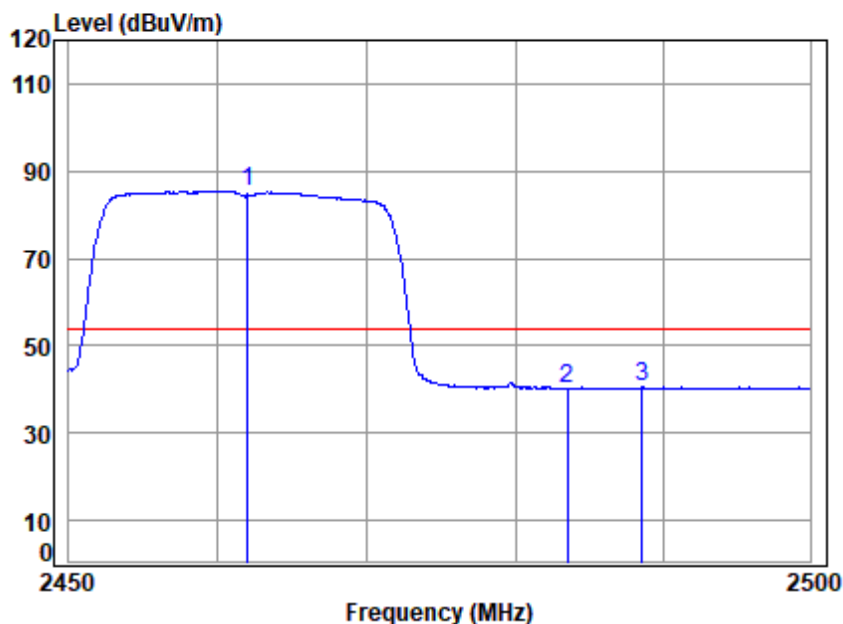
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 43 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2462 Band edge
Note : 2.4G 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 q	2462.000	5.14	28.90	37.27	88.63	85.40	54.00	31.40 Average
2	2483.500	5.16	28.90	37.22	43.36	40.20	54.00	-13.80 Average
3	2488.612	5.17	28.90	37.20	43.60	40.47	54.00	-13.53 Average



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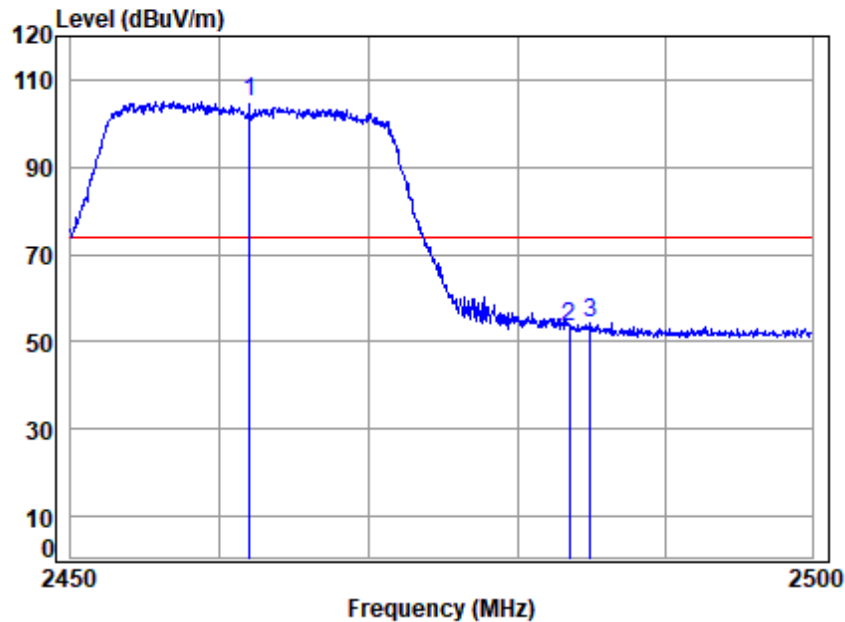
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 44 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2462 Band edge
Note : 2.4G 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 p	2462.000	5.14	28.90	37.27	108.21	104.98	74.00	30.98	Peak
2	2483.500	5.16	28.90	37.22	56.64	53.48	74.00	-20.52	Peak
3	2484.944	5.16	28.90	37.21	57.29	54.14	74.00	-19.86	Peak



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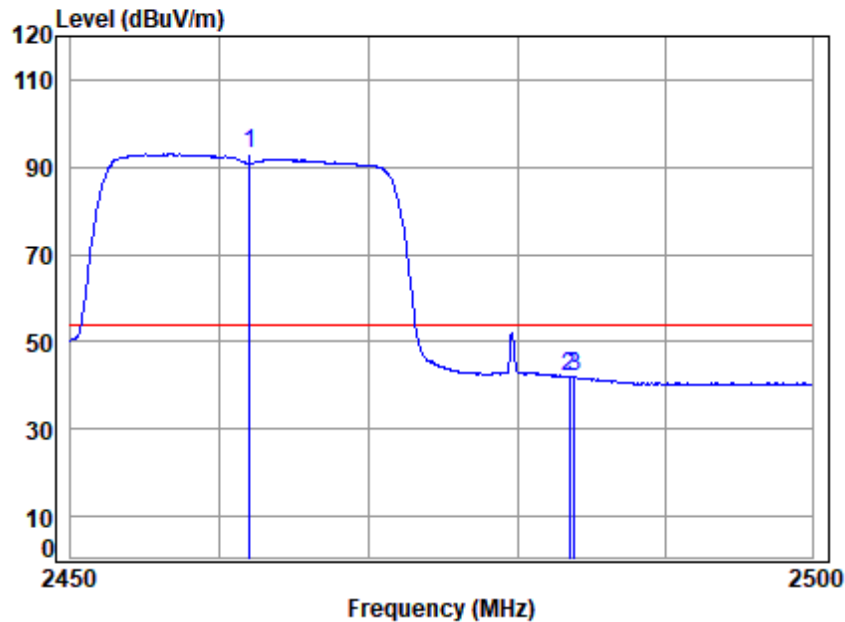
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 45 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2462 Band edge
Note : 2.4G 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 q	2462.000	5.14	28.90	37.27	96.15	92.92	54.00	38.92 Average
2	2483.500	5.16	28.90	37.22	45.22	42.06	54.00	-11.94 Average
3	2483.840	5.16	28.90	37.22	45.03	41.87	54.00	-12.13 Average



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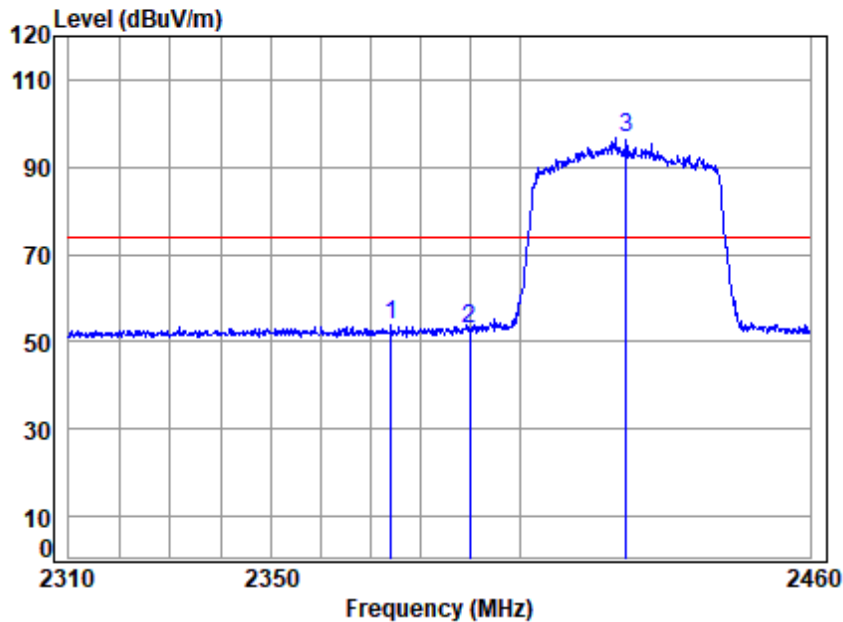
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 46 of 195

Test Mode: 07; Polarity: Horizontal; Modulation: 802.11ax(Full RU0); Bandwidth: 40MHz; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2422 Band edge
Note : 2.4G 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	2374.092	5.06	29.10	37.47	57.04	53.73	74.00	-20.27 peak
2	2390.000	5.08	29.10	37.44	56.11	52.85	74.00	-21.15 peak
3 p	2422.000	5.10	29.01	37.36	100.04	96.79	74.00	22.79 peak



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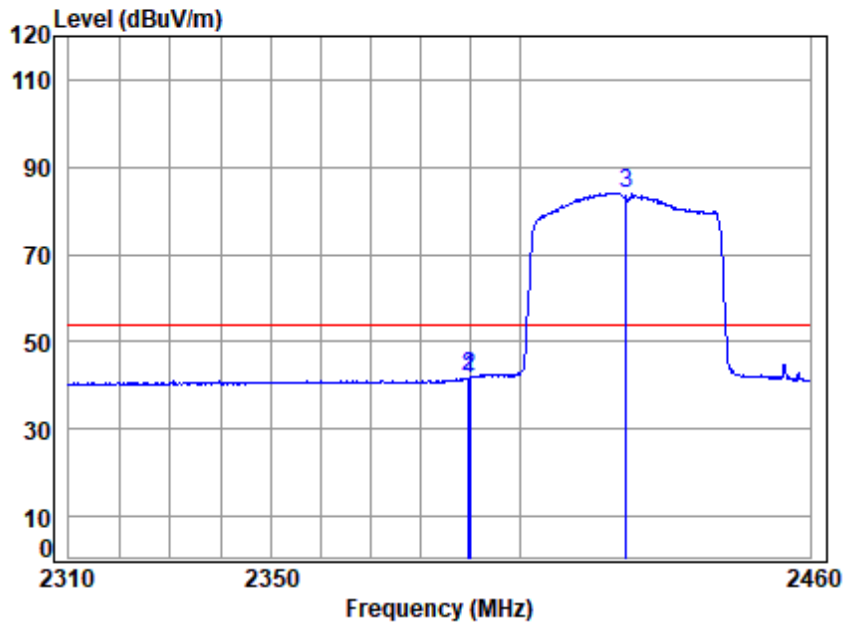
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 47 of 195

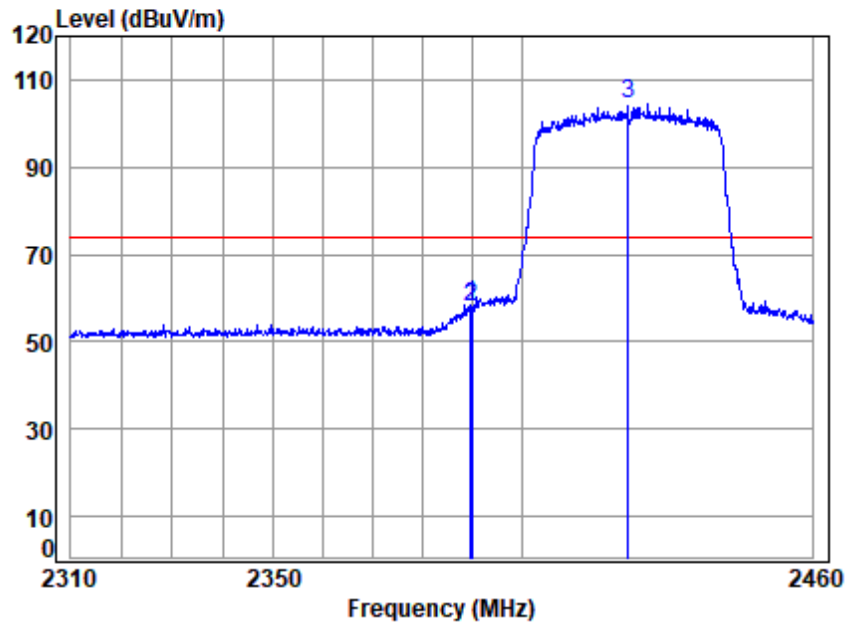
Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2422 Band edge
Note : 2.4G 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	2389.827	5.08	29.10	37.44	44.83	41.57	54.00	-12.43 Average
2	2390.000	5.08	29.10	37.44	45.17	41.91	54.00	-12.09 Average
3 q	2422.000	5.10	29.01	37.36	87.41	84.16	54.00	30.16 Average

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2422 Band edge
Note : 2.4G WIFI 11AX40

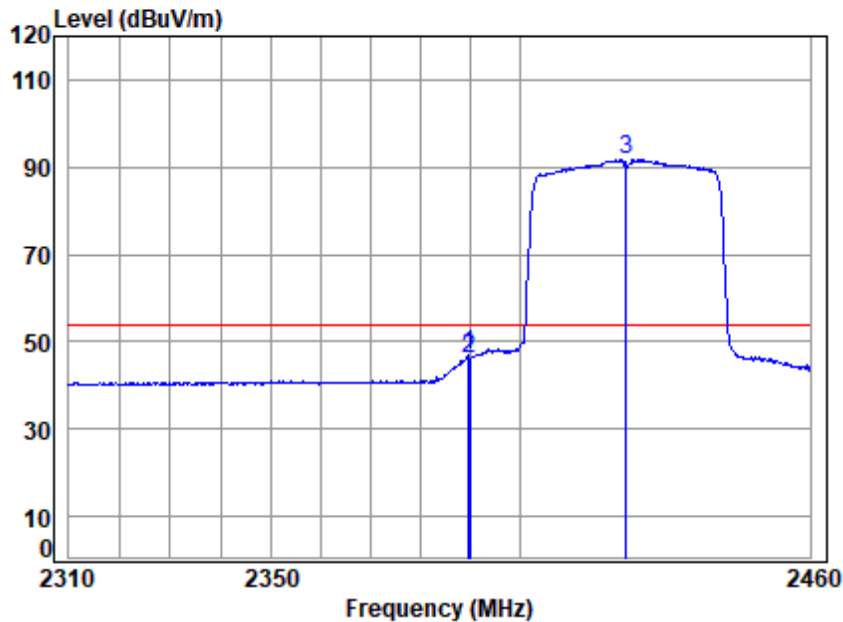
		Cable	Ant	Preamp	Read	Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2389.677	5.08	29.10	37.44	61.54	58.28	74.00	-15.72 Peak
2	2390.000	5.08	29.10	37.44	61.22	57.96	74.00	-16.04 Peak
3 p	2422.000	5.10	29.01	37.36	107.53	104.28	74.00	30.28 Peak



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Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2422 Band edge
Note : 2.4G WIFI 11AX40

		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	2389.677	5.08	29.10	37.44	50.29	47.03	54.00	-6.97 Average
2	2390.000	5.08	29.10	37.44	49.42	46.16	54.00	-7.84 Average
3 q	2422.000	5.10	29.01	37.36	94.87	91.62	54.00	37.62 Average

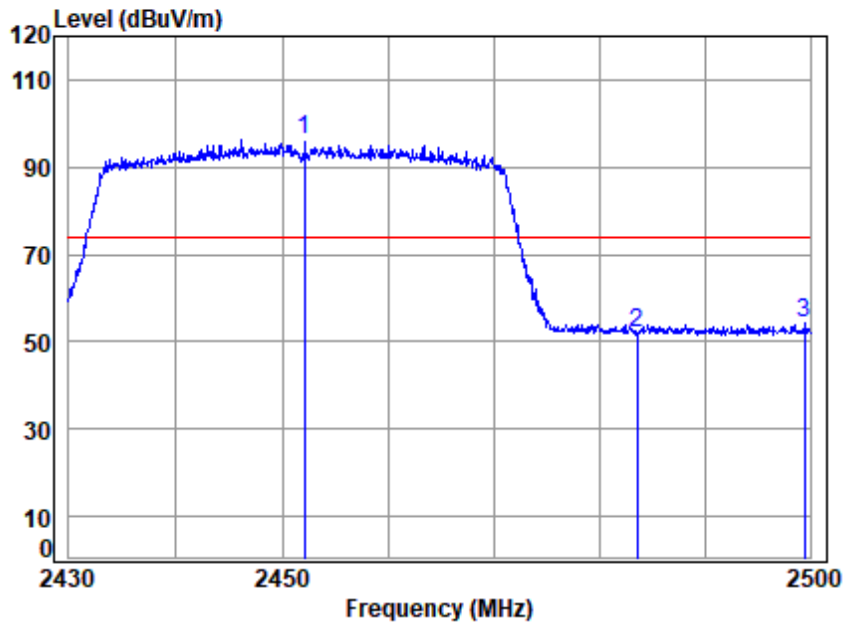
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 50 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2452 Band edge
Note : 2.4G 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 p	2452.000	5.13	28.90	37.29	99.36	96.10	74.00	22.10 peak
2	2483.500	5.16	28.90	37.22	55.06	51.90	74.00	-22.10 peak
3	2499.432	5.17	28.90	37.18	57.28	54.17	74.00	-19.83 peak

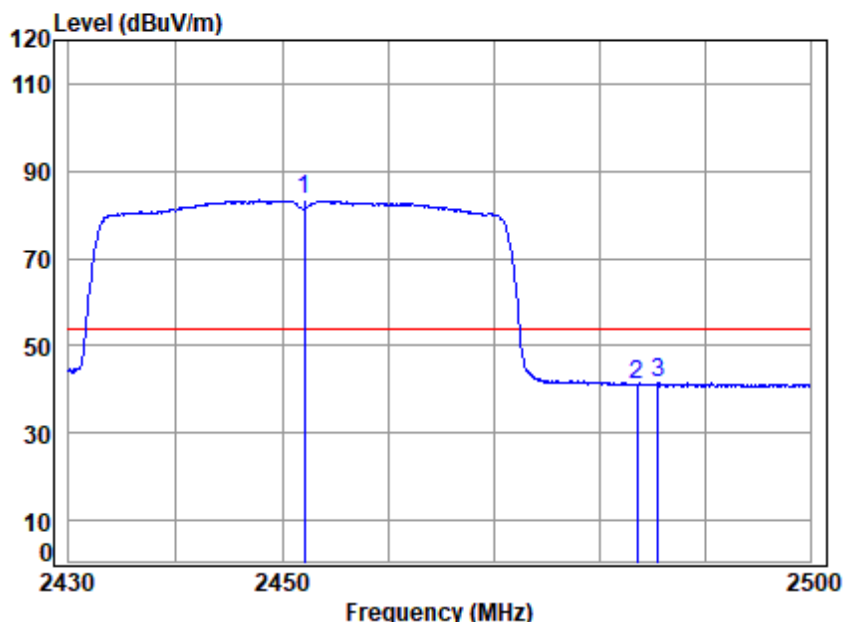
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 51 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2452 Band edge
Note : 2.4G 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 q	2452.000	5.13	28.90	37.29	86.59	83.33	54.00	29.33 Average
2	2483.500	5.16	28.90	37.22	44.22	41.06	54.00	-12.94 Average
3	2485.488	5.16	28.90	37.21	44.67	41.52	54.00	-12.48 Average



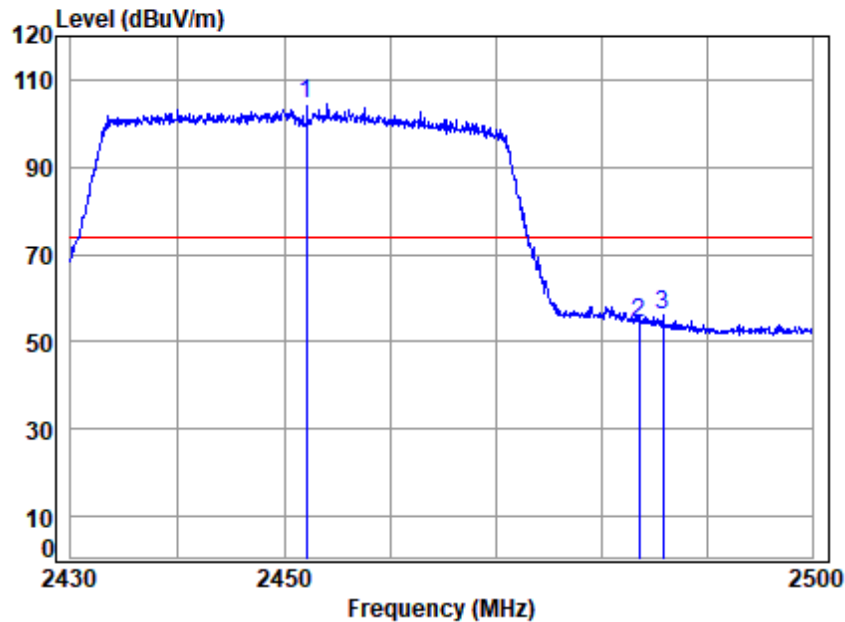
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Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:High

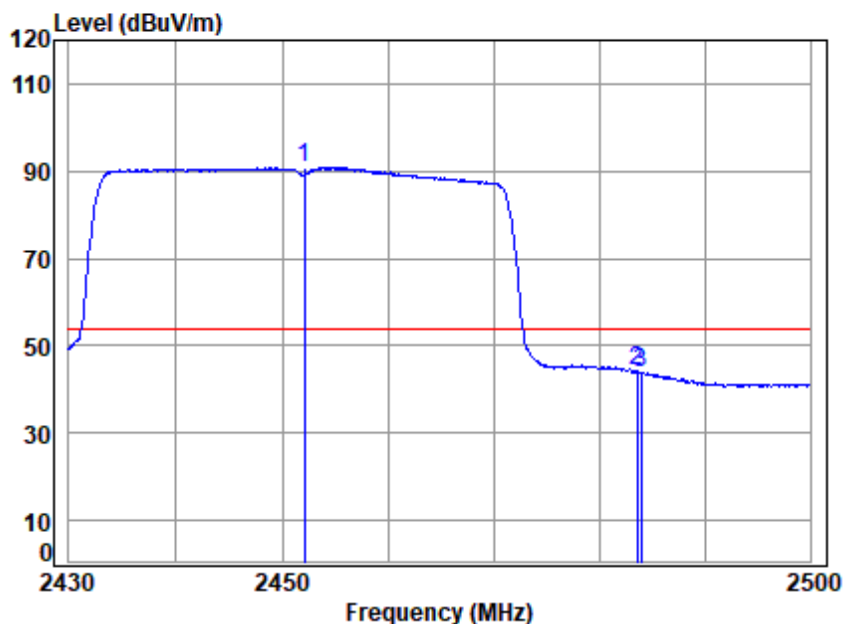


Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2452 Band edge
Note : 2.4G WIFI 11AX40

		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 p	2452.000	5.13	28.90	37.29	107.61	104.35	74.00	30.35 Peak
2	2483.500	5.16	28.90	37.22	57.63	54.47	74.00	-19.53 Peak
3	2485.770	5.16	28.90	37.21	59.17	56.02	74.00	-17.98 Peak



Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2452 Band edge
Note : 2.4G 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 q	2452.000	5.13	28.90	37.29	93.97	90.71	54.00	36.71 Average
2	2483.500	5.16	28.90	37.22	47.20	44.04	54.00	-9.96 Average
3	2483.865	5.16	28.90	37.22	47.03	43.87	54.00	-10.13 Average



7.8 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
 Test Method: ANSI C63.10-2020 Section 11.12
 Measurement Distance: 3m

Limit:

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

7.8.1 E.U.T. Operation

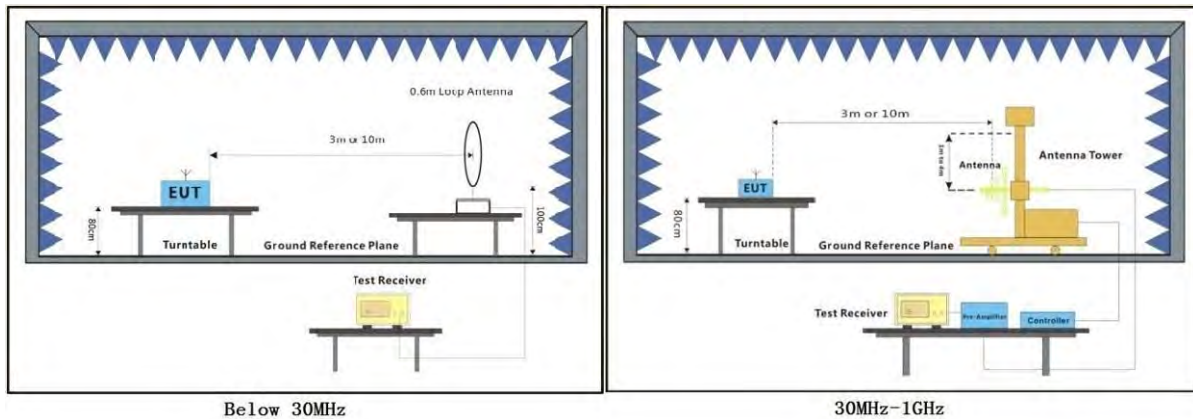
Operating Environment:

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

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	07	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
Final test	08	Charge + TX mode_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

- 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.
- 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.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- 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.
- Repeat above procedures until all frequencies measured was complete.

Remark:

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

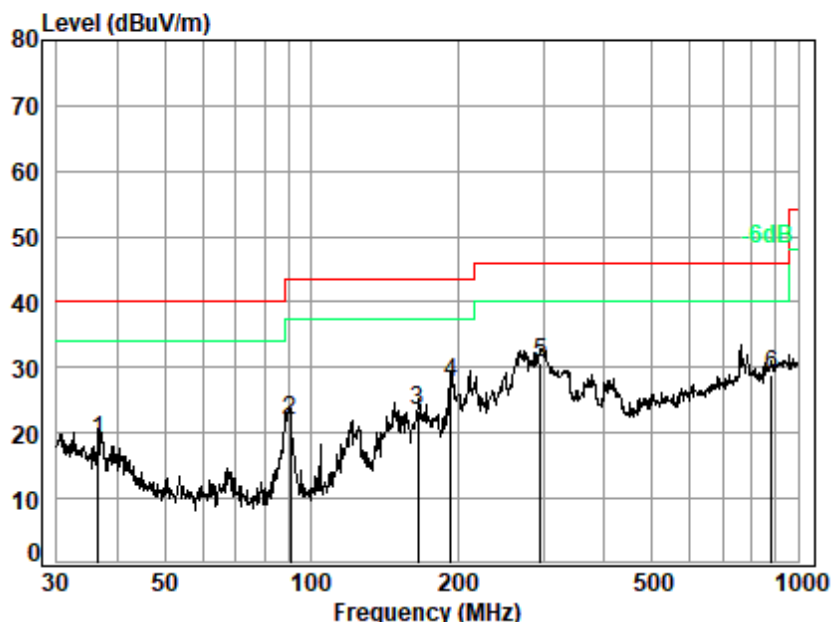
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 56 of 195

Test Mode: 08; Polarity: Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : 00384AT
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	36.51	18.02	0.71	27.79	27.83	18.77	40.00	-21.23 QP
2	90.54	11.77	1.13	27.64	36.56	21.82	43.50	-21.68 QP
3	165.49	13.18	1.54	27.37	35.96	23.31	43.50	-20.19 QP
4	193.09	14.21	1.69	27.27	38.98	27.61	43.50	-15.89 QP
5 q	296.18	17.57	2.15	26.90	38.04	30.86	46.00	-15.14 QP
6	881.41	27.76	4.04	27.22	24.32	28.90	46.00	-17.10 QP



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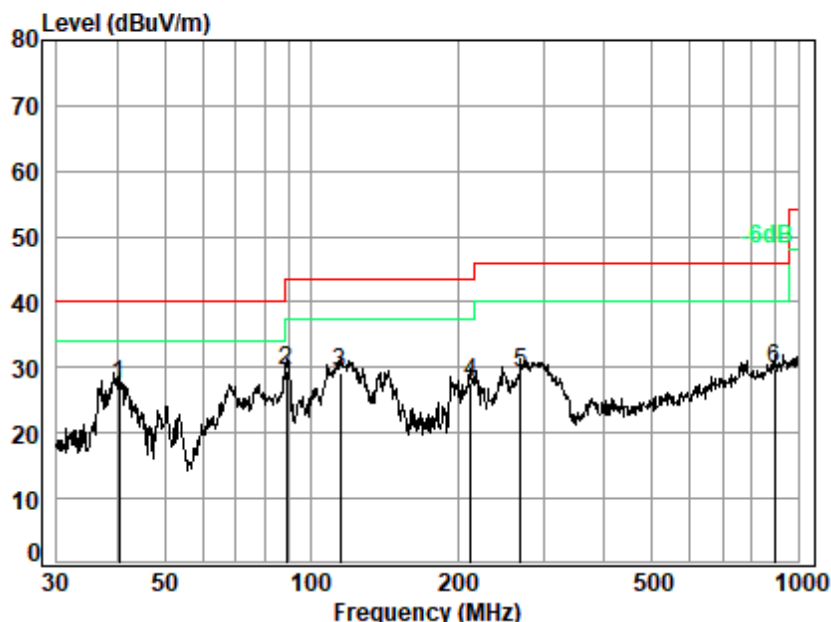
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 57 of 195

Test Mode: 08; Polarity: Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : 00384AT
Test Mode: 08

		Ant	Cable	Preamp	Read	Limit	Over	
	Freq	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	q	40.28	16.28	0.75	27.78	38.08	27.33	40.00 -12.67 QP
2		88.96	11.61	1.12	27.64	44.31	29.40	43.50 -14.10 QP
3		114.92	11.43	1.27	27.56	44.09	29.23	43.50 -14.27 QP
4		212.27	14.79	1.78	27.21	38.47	27.83	43.50 -15.67 QP
5		268.49	17.09	2.03	27.00	37.07	29.19	46.00 -16.81 QP
6		893.86	28.02	4.07	27.16	24.87	29.80	46.00 -16.20 QP



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 58 of 195

7.9 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
 Test Method: ANSI C63.10-2020 Section 11.12
 Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1000	500	3

7.9.1 E.U.T. Operation

Operating Environment:
 Temperature: 19.0 °C Humidity: 52.7 % RH Atmospheric Pressure: 1020 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
Pre-scan	08	Charge + TX mode_Keep the EUT in charging and continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), data rate @ MCS0 is the worst case of IEEE 802.11ax 20/40, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.



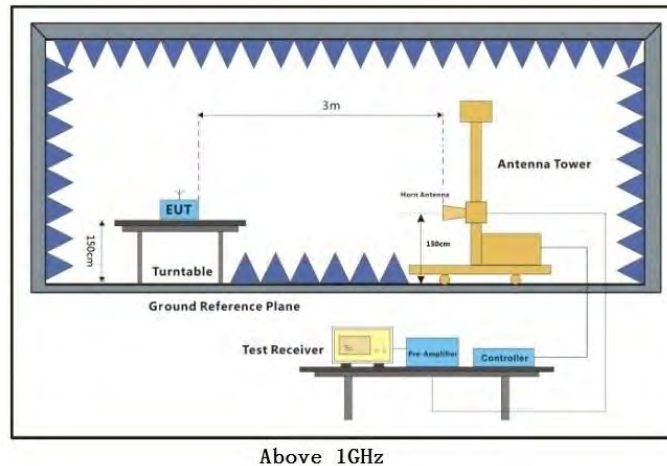
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7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

- 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 1GHz to 25GHz, 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.

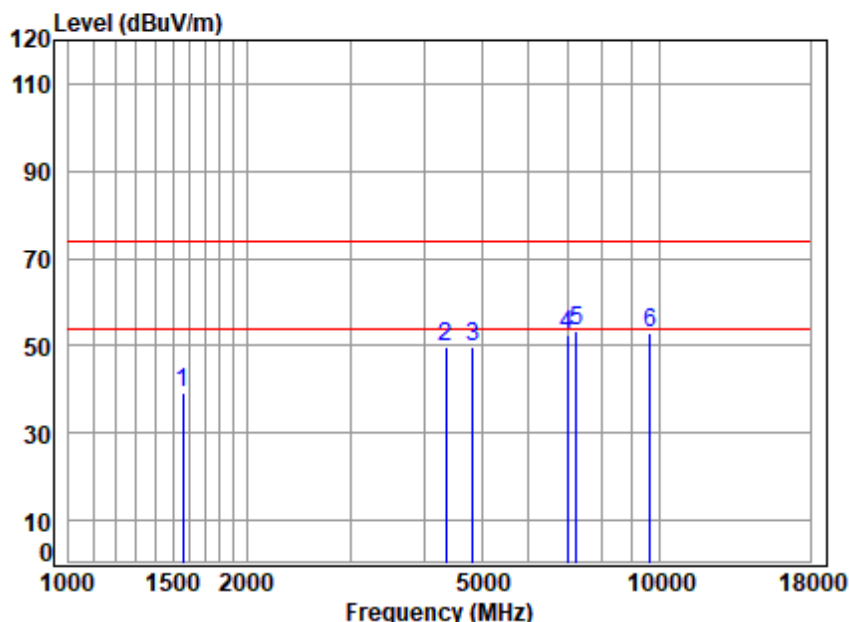
SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 61 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2412 TX RSE
: 2.4G WIFI 11B

		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	1560.673	4.15	26.96	38.40	46.75	39.46	74.00	-34.54	peak
2	4354.454	7.03	34.44	35.83	44.31	49.95	74.00	-24.05	peak
3	4824.000	7.33	34.40	35.50	43.47	49.70	74.00	-24.30	peak
4	6995.172	8.92	35.71	35.57	43.28	52.34	74.00	-21.66	peak
5 p	7236.000	9.21	35.70	35.82	44.13	53.22	74.00	-20.78	peak
6	9648.000	12.39	37.50	37.45	40.29	52.73	74.00	-21.27	peak



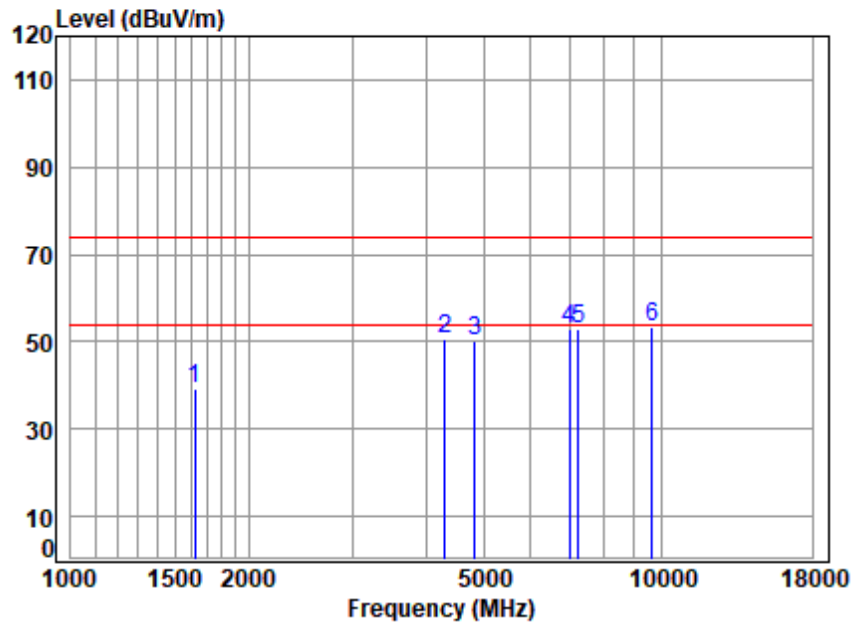
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Test Mode: 07; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Site : chamber
 Condition: 3m VERTICAL
 Job No : 00384AT/00385AT
 Mode : 2412 TX RSE
 : 2.4G WIFI 11B

	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	1625.121	4.23	26.55	38.41	46.93	39.30	74.00	-34.70	peak
2	4304.400	6.99	34.04	35.87	45.59	50.75	74.00	-23.25	peak
3	4824.000	7.33	34.40	35.50	44.09	50.32	74.00	-23.68	peak
4	6974.982	8.90	35.75	35.55	43.71	52.81	74.00	-21.19	peak
5	7236.000	9.21	35.70	35.82	43.91	53.00	74.00	-21.00	peak
6 p	9648.000	12.39	37.50	37.45	40.90	53.34	74.00	-20.66	peak

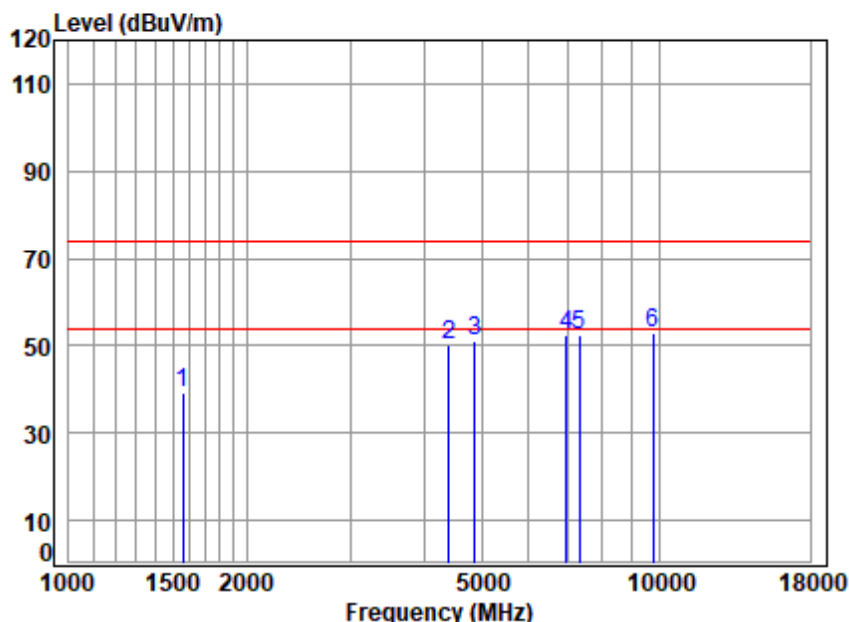
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 63 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2437 TX RSE
: 2.4G WIFI 11B

		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	1560.673	4.15	26.96	38.40	46.31	39.02	74.00	-34.98	peak
2	4405.090	7.06	34.74	35.79	43.97	49.98	74.00	-24.02	peak
3	4874.000	7.36	34.60	35.47	44.41	50.90	74.00	-23.10	peak
4	6954.852	8.89	35.79	35.54	43.39	52.53	74.00	-21.47	peak
5	7311.000	9.30	35.70	35.89	43.54	52.65	74.00	-21.35	peak
6 p	9748.000	12.46	37.40	37.43	40.33	52.76	74.00	-21.24	peak



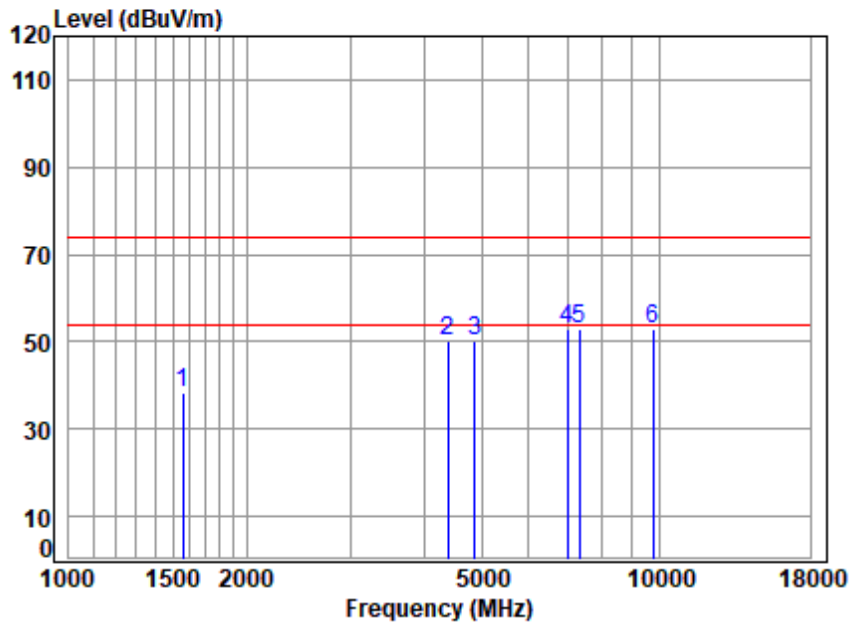
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Test Mode: 07; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2437 TX RSE
: 2.4G WIFI 11B

		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	1560.673	4.15	26.96	38.40	45.73	38.44	74.00	-35.56	peak
2	4379.699	7.04	34.64	35.81	44.50	50.37	74.00	-23.63	peak
3	4874.000	7.36	34.60	35.47	43.81	50.30	74.00	-23.70	peak
4	6995.172	8.92	35.71	35.57	43.69	52.75	74.00	-21.25	peak
5	7311.000	9.30	35.70	35.89	43.71	52.82	74.00	-21.18	peak
6 p	9748.000	12.46	37.40	37.43	40.70	53.13	74.00	-20.87	peak

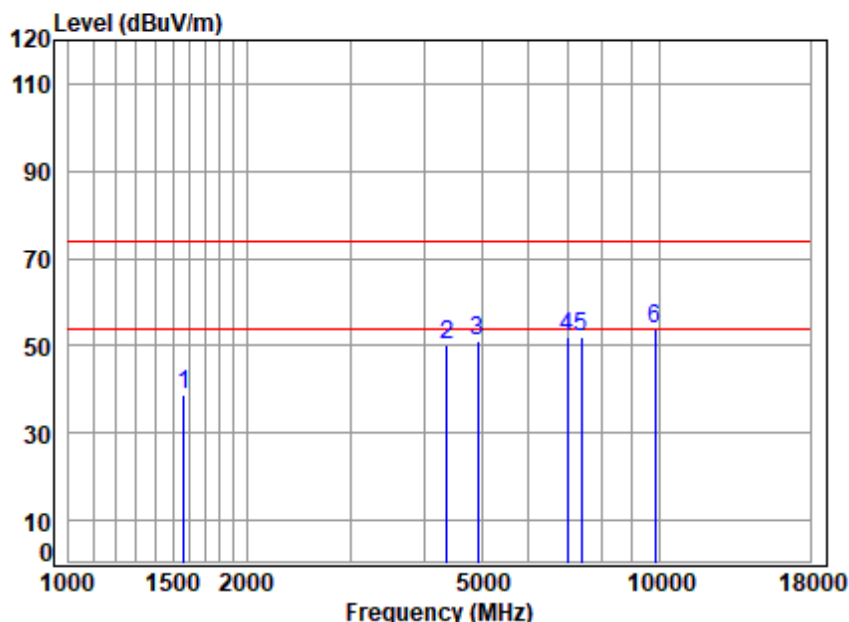
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 65 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2462 TX RSE
: 2.4G WIFI 11B

		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	1569.721	4.16	26.92	38.40	45.90	38.58	74.00	-35.42	peak
2	4367.058	7.04	34.54	35.82	44.44	50.20	74.00	-23.80	peak
3	4924.000	7.39	34.65	35.44	44.33	50.93	74.00	-23.07	peak
4	6995.172	8.92	35.71	35.57	43.13	52.19	74.00	-21.81	peak
5	7386.000	9.39	35.77	35.97	43.03	52.22	74.00	-21.78	peak
6 p	9848.000	12.53	37.20	37.40	41.37	53.70	74.00	-20.30	peak

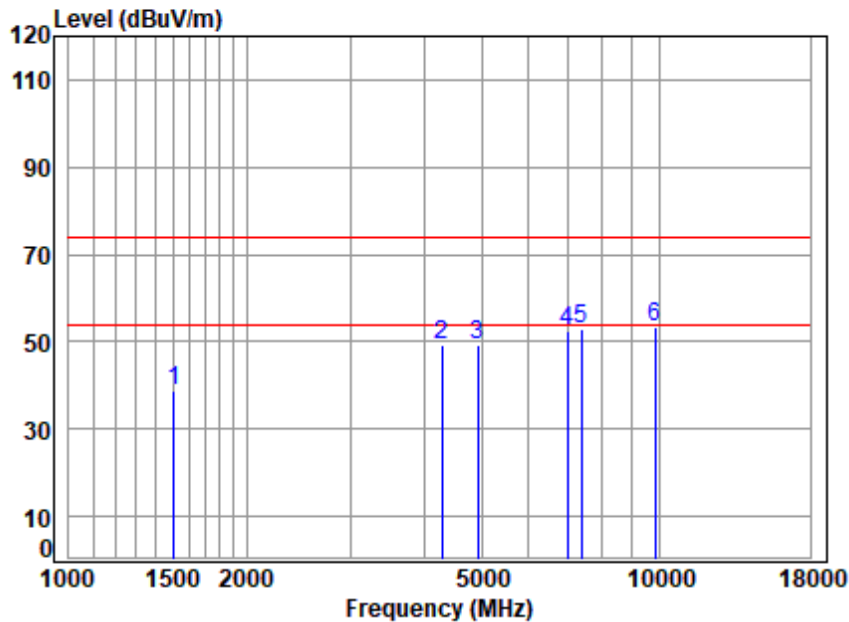
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 66 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2462 TX RSE
: 2.4G WIFI 11B

	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	1507.470	4.07	26.83	38.39	46.39	38.90	74.00	-35.10	peak
2	4279.589	6.98	33.92	35.89	44.45	49.46	74.00	-24.54	peak
3	4924.000	7.39	34.65	35.44	42.81	49.41	74.00	-24.59	peak
4	6974.982	8.90	35.75	35.55	43.26	52.36	74.00	-21.64	peak
5	7386.000	9.39	35.77	35.97	43.86	53.05	74.00	-20.95	peak
6 p	9848.000	12.53	37.20	37.40	40.91	53.24	74.00	-20.76	peak

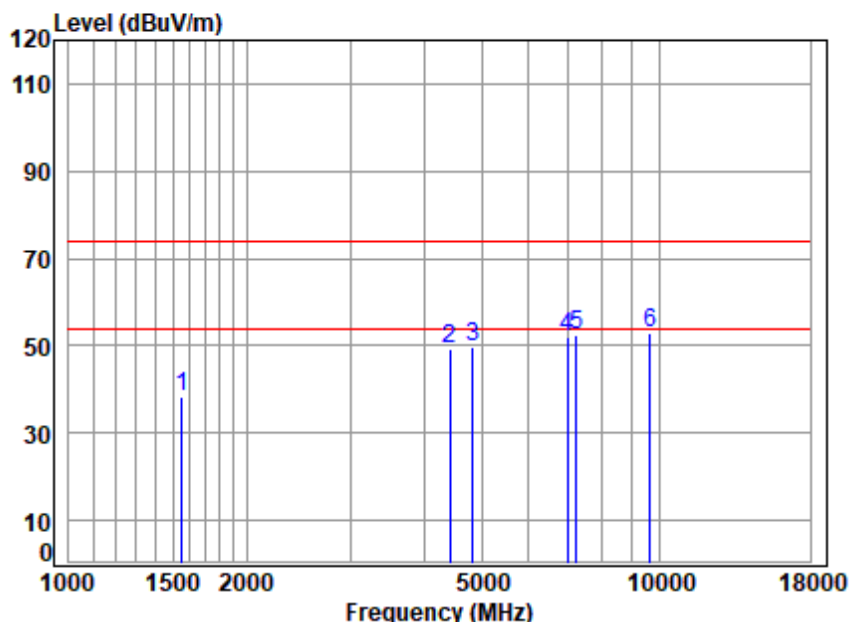
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 67 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2412 TX RSE
: 2.4G 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	4.13	26.99	38.40	45.40	38.12	74.00	-35.88 peak
2	7.07	34.59	35.78	43.48	49.36	74.00	-24.64 peak
3	7.33	34.40	35.50	43.50	49.73	74.00	-24.27 peak
4	8.92	35.71	35.57	43.04	52.10	74.00	-21.90 peak
5	9.21	35.70	35.82	43.54	52.63	74.00	-21.37 peak
6 p	12.39	37.50	37.45	40.60	53.04	74.00	-20.96 peak



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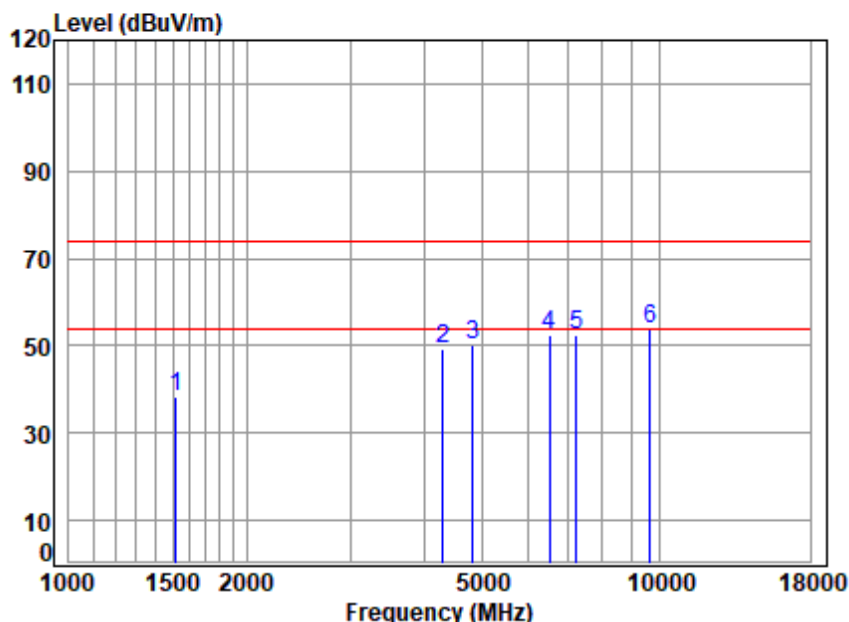
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 68 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2412 TX RSE
: 2.4G WIFI 11AX20

	Freq	Cable Loss	Ant Factor	Preamplifier Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1520.598	4.09	26.88	38.39	45.62	38.20	74.00	-35.80	peak
2	4304.400	6.99	34.04	35.87	44.23	49.39	74.00	-24.61	peak
3	4824.000	7.33	34.40	35.50	44.10	50.33	74.00	-23.67	peak
4	6526.373	8.58	35.55	35.27	43.55	52.41	74.00	-21.59	peak
5	7236.000	9.21	35.70	35.82	43.37	52.46	74.00	-21.54	peak
6 p	9648.000	12.39	37.50	37.45	41.26	53.70	74.00	-20.30	peak



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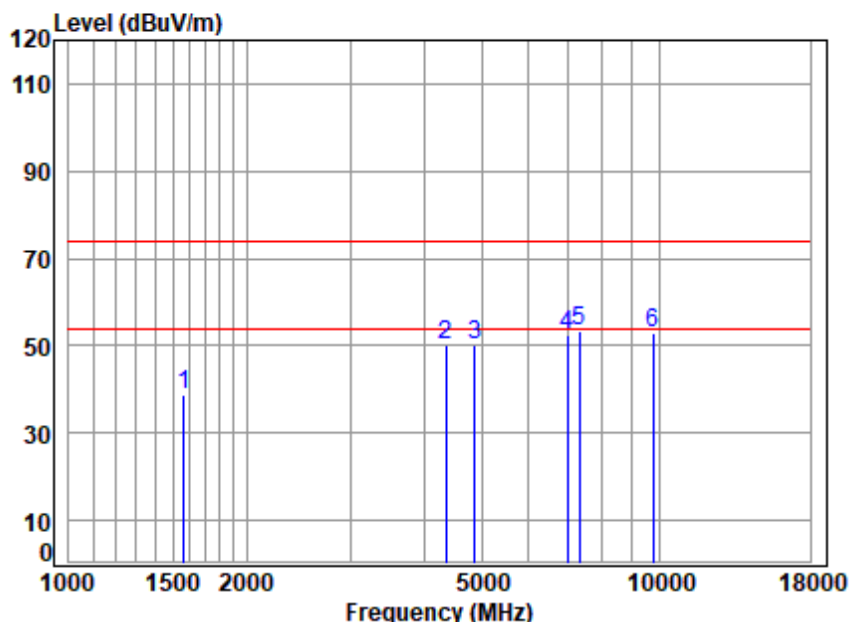
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 69 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2437 TX RSE
: 2.4G 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	1565.191	4.15	26.94	38.40	45.99	38.68	74.00	-35.32	peak
2	4354.454	7.03	34.44	35.83	44.54	50.18	74.00	-23.82	peak
3	4874.000	7.36	34.60	35.47	43.53	50.02	74.00	-23.98	peak
4	6995.172	8.92	35.71	35.57	43.59	52.65	74.00	-21.35	peak
5 p	7311.000	9.30	35.70	35.89	44.05	53.16	74.00	-20.84	peak
6	9748.000	12.46	37.40	37.43	40.46	52.89	74.00	-21.11	peak



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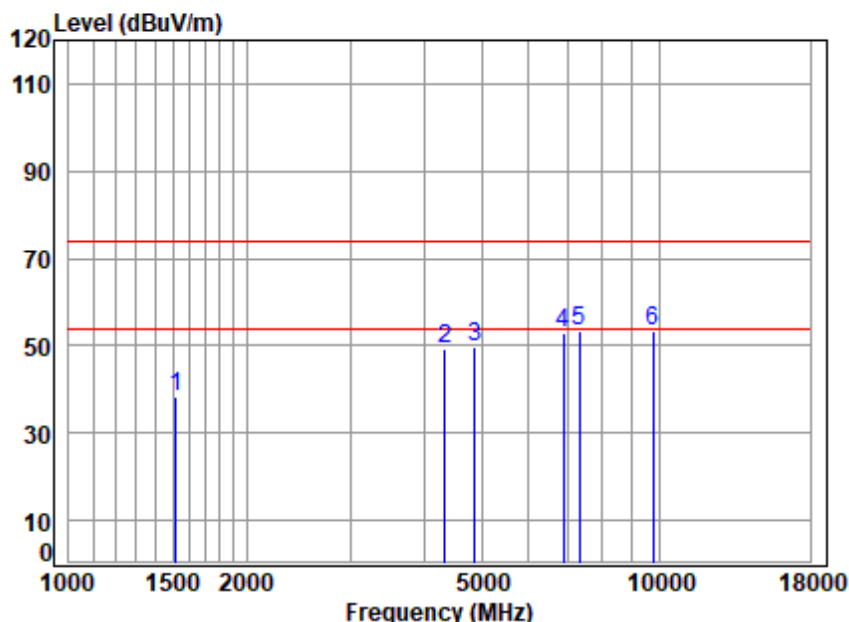
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 70 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2437 TX RSE
: 2.4G 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	1520.598	4.09	26.88	38.39	45.55	38.13	74.00	-35.87	peak
2	4329.354	7.01	34.23	35.85	44.03	49.42	74.00	-24.58	peak
3	4874.000	7.36	34.60	35.47	43.39	49.88	74.00	-24.12	peak
4	6874.906	8.83	35.55	35.49	44.02	52.91	74.00	-21.09	peak
5	7311.000	9.30	35.70	35.89	44.15	53.26	74.00	-20.74	peak
6 p	9748.000	12.46	37.40	37.43	40.95	53.38	74.00	-20.62	peak



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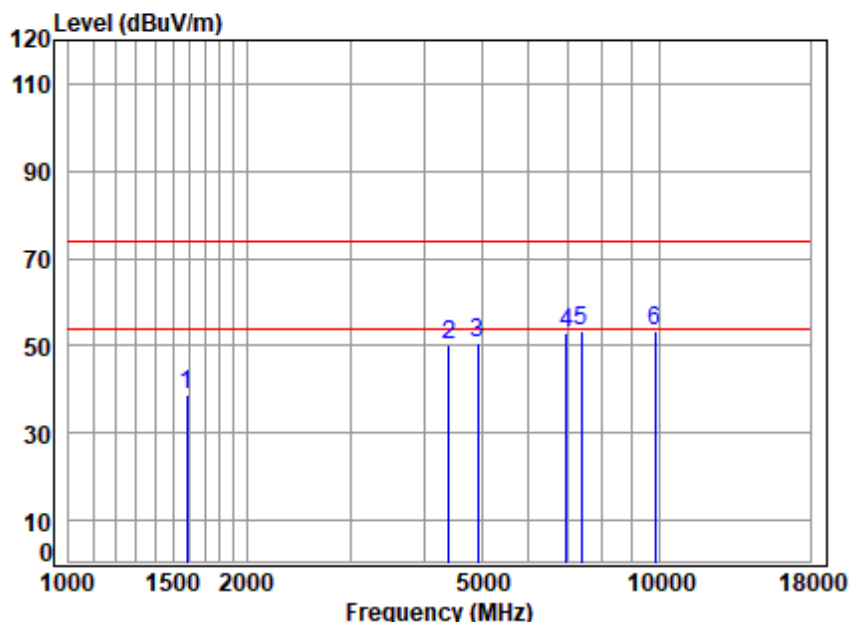
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 71 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
 Condition: 3m HORIZONTAL
 Job No : 00384AT/00385AT
 Mode : 2462 TX RSE
 : 2.4G WIFI 11AX20

	Freq	Cable Loss	Ant Factor	Preamplifier Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1587.975	4.18	26.85	38.40	46.37	39.00	74.00	-35.00	peak
2	4405.090	7.06	34.74	35.79	44.08	50.09	74.00	-23.91	peak
3	4924.000	7.39	34.65	35.44	43.93	50.53	74.00	-23.47	peak
4	6954.852	8.89	35.79	35.54	43.69	52.83	74.00	-21.17	peak
5 p	7386.000	9.39	35.77	35.97	43.99	53.18	74.00	-20.82	peak
6	9848.000	12.53	37.20	37.40	40.85	53.18	74.00	-20.82	peak



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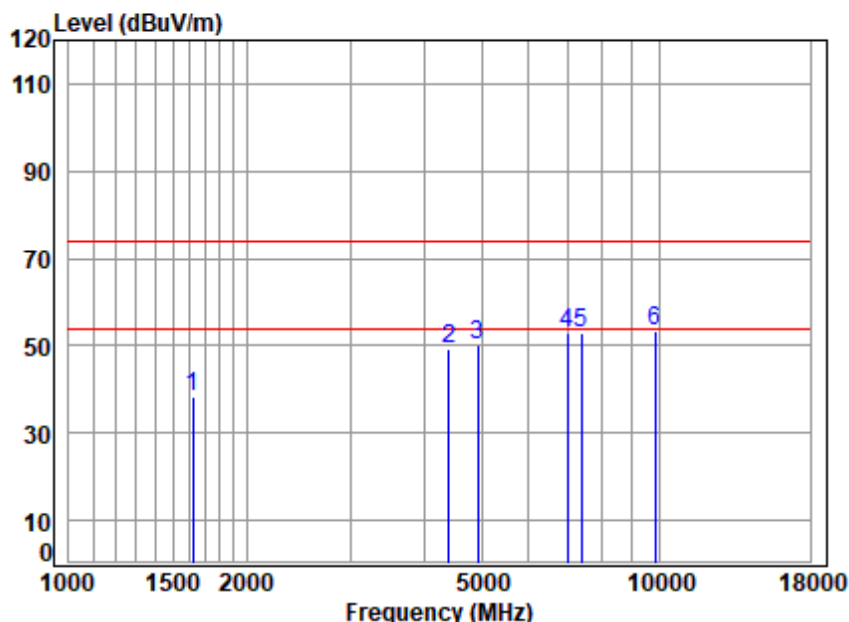
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 72 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:20MHz; Channel:High



Site : chamber
 Condition: 3m VERTICAL
 Job No : 00384AT/00385AT
 Mode : 2462 TX RSE
 : 2.4G 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	1620.431	4.23	26.60	38.40	46.02	38.45	74.00 -35.55 peak
2	4405.090	7.06	34.74	35.79	43.49	49.50	74.00 -24.50 peak
3	4924.000	7.39	34.65	35.44	43.58	50.18	74.00 -23.82 peak
4	6974.982	8.90	35.75	35.55	43.70	52.80	74.00 -21.20 peak
5	7386.000	9.39	35.77	35.97	43.72	52.91	74.00 -21.09 peak
6 p	9848.000	12.53	37.20	37.40	41.24	53.57	74.00 -20.43 peak



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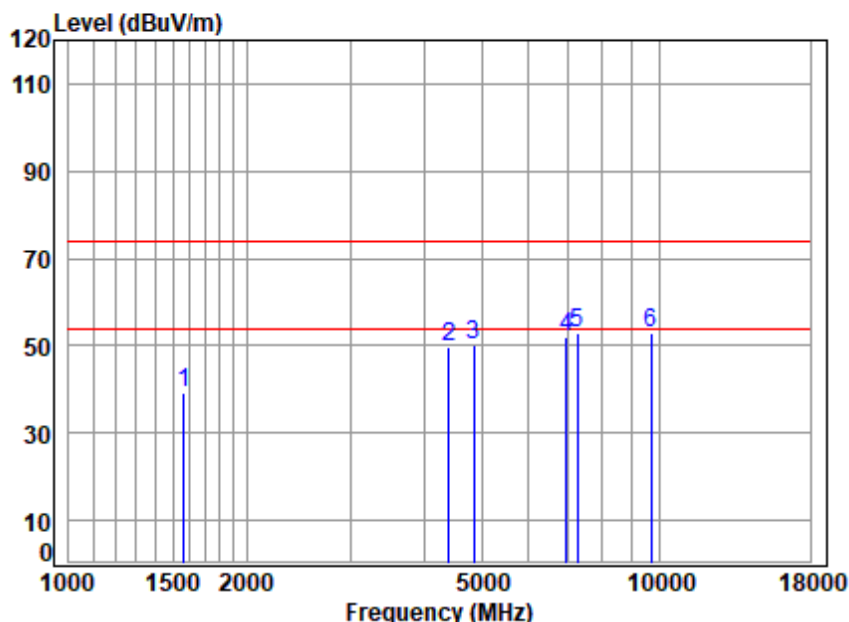
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 73 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:Low



Site : chamber
 Condition: 3m HORIZONTAL
 Job No : 00384AT/00385AT
 Mode : 2422 TX RSE
 : 2.4G 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	1569.721	4.16	26.92	38.40	46.50	39.18	74.00	-34.82	peak
2	4405.090	7.06	34.74	35.79	43.65	49.66	74.00	-24.34	peak
3	4844.000	7.34	34.48	35.49	43.89	50.22	74.00	-23.78	peak
4	6954.852	8.89	35.79	35.54	42.71	51.85	74.00	-22.15	peak
5 p	7266.000	9.25	35.70	35.85	43.88	52.98	74.00	-21.02	peak
6	9688.000	12.42	37.50	37.44	40.31	52.79	74.00	-21.21	peak



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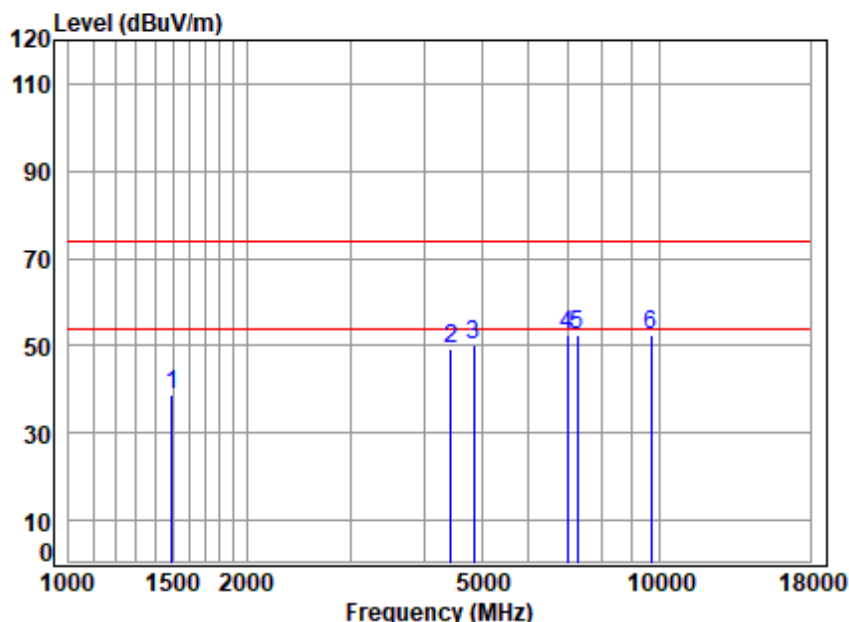
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 74 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2422 TX RSE
: 2.4G 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	1494.455	4.05	26.64	38.39	46.33	38.63	74.00	-35.37	peak
2	4443.453	7.09	34.28	35.77	43.76	49.36	74.00	-24.64	peak
3	4844.000	7.34	34.48	35.49	43.76	50.09	74.00	-23.91	peak
4	6995.172	8.92	35.71	35.57	43.62	52.68	74.00	-21.32	peak
5	7266.000	9.25	35.70	35.85	43.36	52.46	74.00	-21.54	peak
6 p	9688.000	12.42	37.50	37.44	40.22	52.70	74.00	-21.30	peak



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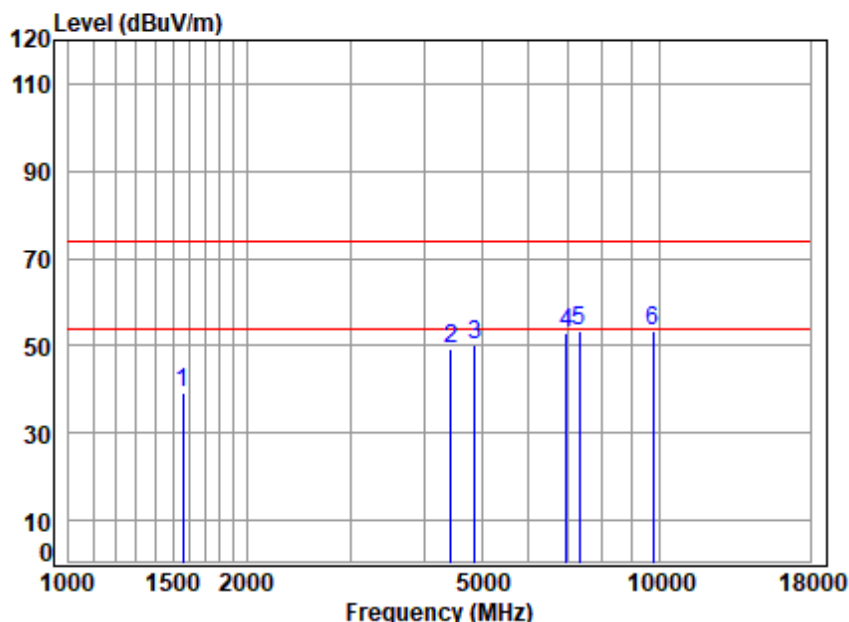
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 75 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2437 TX RSE
: 2.4G 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	1560.673	4.15	26.96	38.40	46.57	39.28	74.00	-34.72	peak
2	4430.628	7.08	34.43	35.77	43.65	49.39	74.00	-24.61	peak
3	4874.000	7.36	34.60	35.47	43.73	50.22	74.00	-23.78	peak
4	6954.852	8.89	35.79	35.54	43.70	52.84	74.00	-21.16	peak
5	7311.000	9.30	35.70	35.89	44.29	53.40	74.00	-20.60	peak
6 p	9748.000	12.46	37.40	37.43	41.17	53.60	74.00	-20.40	peak



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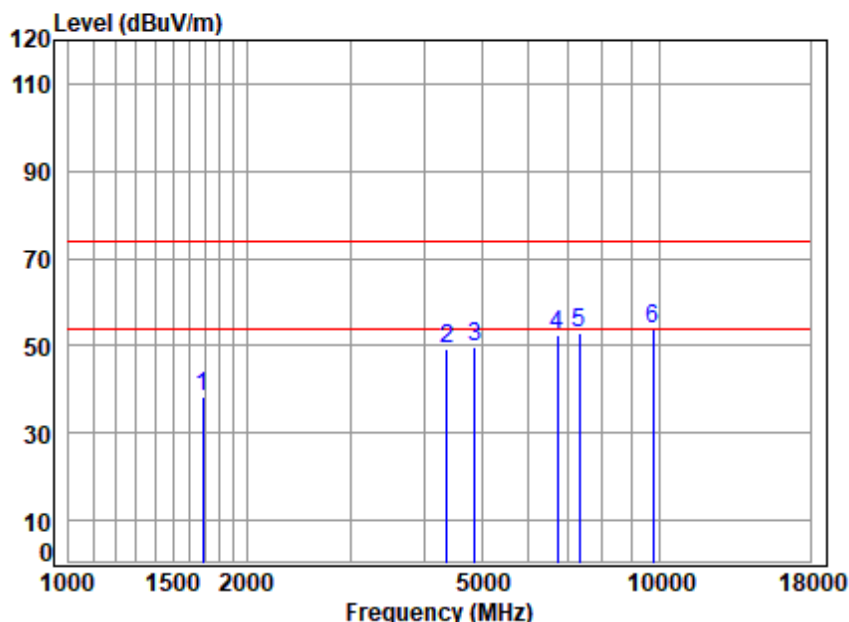
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 76 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2437 TX RSE
: 2.4G WIFI 11AX40

	Freq	Cable Loss	Ant Factor	Preamplifier Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1687.347	4.31	26.23	38.41	46.04	38.17	74.00	-35.83	peak
2	4367.058	7.04	34.54	35.82	43.67	49.43	74.00	-24.57	peak
3	4874.000	7.36	34.60	35.47	43.21	49.70	74.00	-24.30	peak
4	6717.762	8.72	35.20	35.39	43.87	52.40	74.00	-21.60	peak
5	7311.000	9.30	35.70	35.89	43.68	52.79	74.00	-21.21	peak
6 p	9748.000	12.46	37.40	37.43	41.19	53.62	74.00	-20.38	peak



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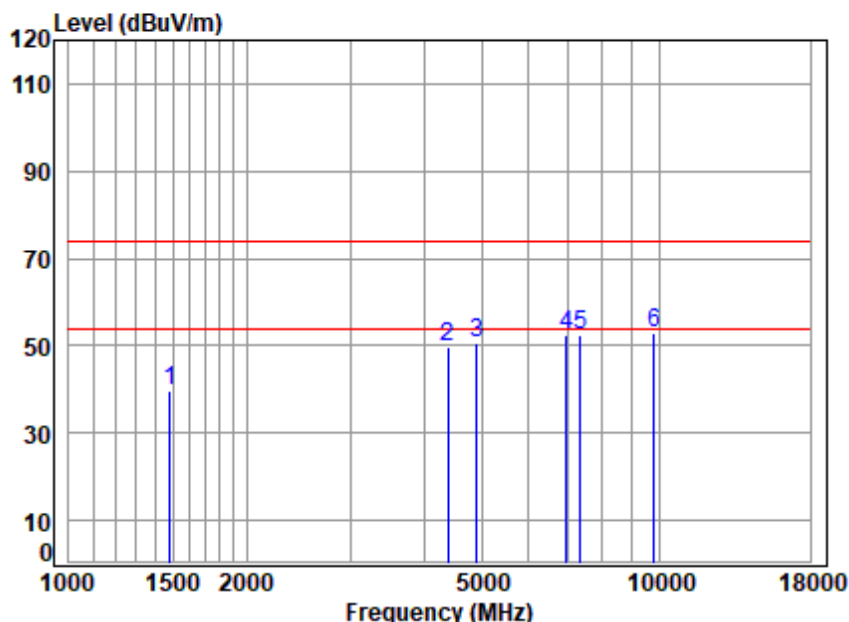
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Report No.: SZCR240100038404

Page: 77 of 195

Test Mode: 07; Polarity: Horizontal; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 00384AT/00385AT
Mode : 2452 TX RSE
: 2.4G 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	1481.553	4.03	26.28	38.39	47.77	39.69	74.00	-34.31	peak
2	4392.376	7.05	34.74	35.80	43.52	49.51	74.00	-24.49	peak
3	4904.000	7.37	34.69	35.45	44.10	50.71	74.00	-23.29	peak
4	6954.852	8.89	35.79	35.54	43.54	52.68	74.00	-21.32	peak
5	7356.000	9.36	35.71	35.94	43.26	52.39	74.00	-21.61	peak
6 p	9808.000	12.50	37.28	37.41	40.60	52.97	74.00	-21.03	peak



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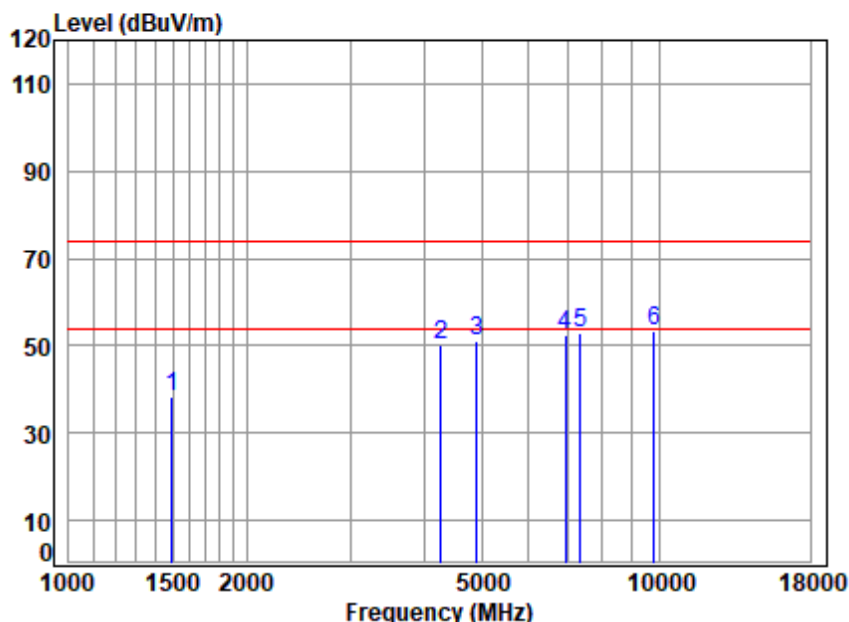
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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 78 of 195

Test Mode: 07; Polarity: Vertical; Modulation:802.11ax(Full RU0); Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 00384AT/00385AT
Mode : 2452 TX RSE
: 2.4G 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	1494.455	4.05	26.64	38.39	45.93	38.23	74.00	-35.77	peak
2	4267.237	6.97	33.87	35.89	45.16	50.11	74.00	-23.89	peak
3	4904.000	7.37	34.69	35.45	44.39	51.00	74.00	-23.00	peak
4	6934.778	8.87	35.74	35.53	43.34	52.42	74.00	-21.58	peak
5	7356.000	9.36	35.71	35.94	43.87	53.00	74.00	-21.00	peak
6 p	9808.000	12.50	37.28	37.41	40.86	53.23	74.00	-20.77	peak



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8 Test Setup Photo

Refer to Appendix A.2 WLAN Setup Photos.

9 Appendix

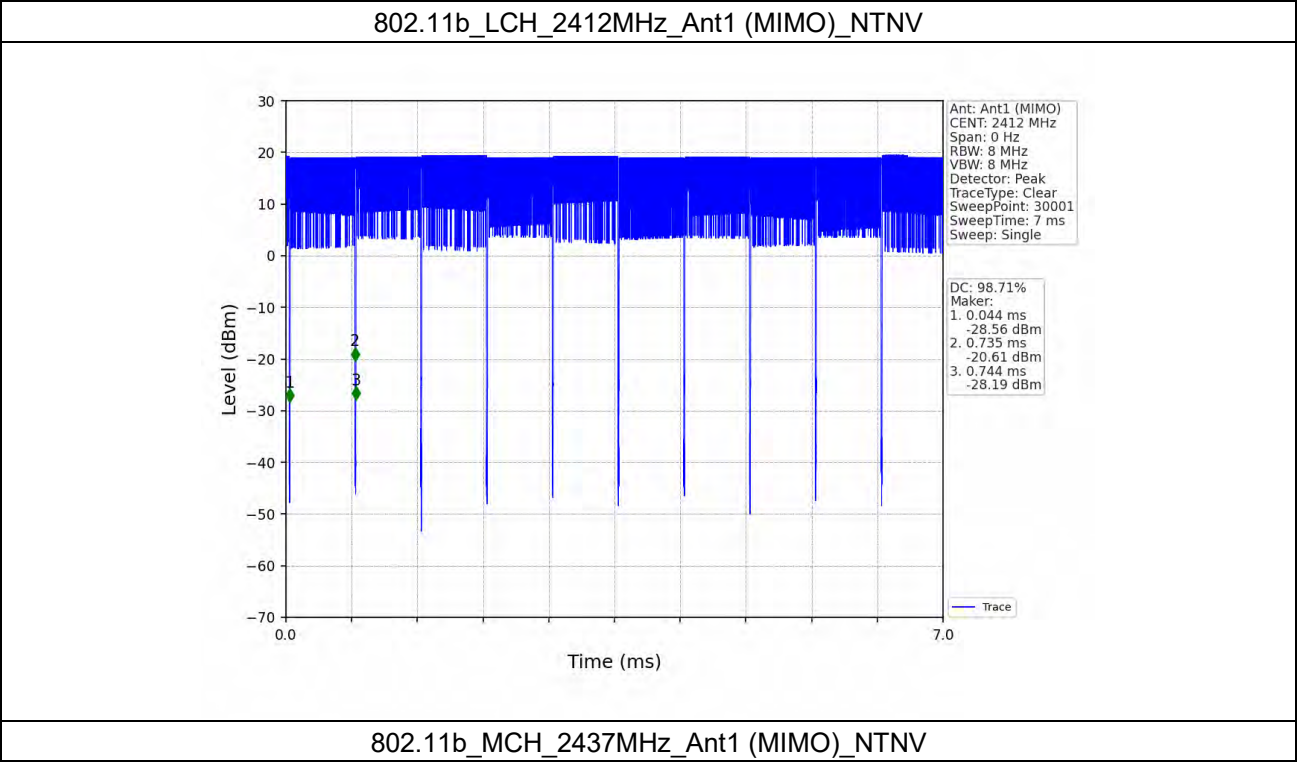
1. Duty Cycle

1.1 Ant1

1.1.1 Test Result

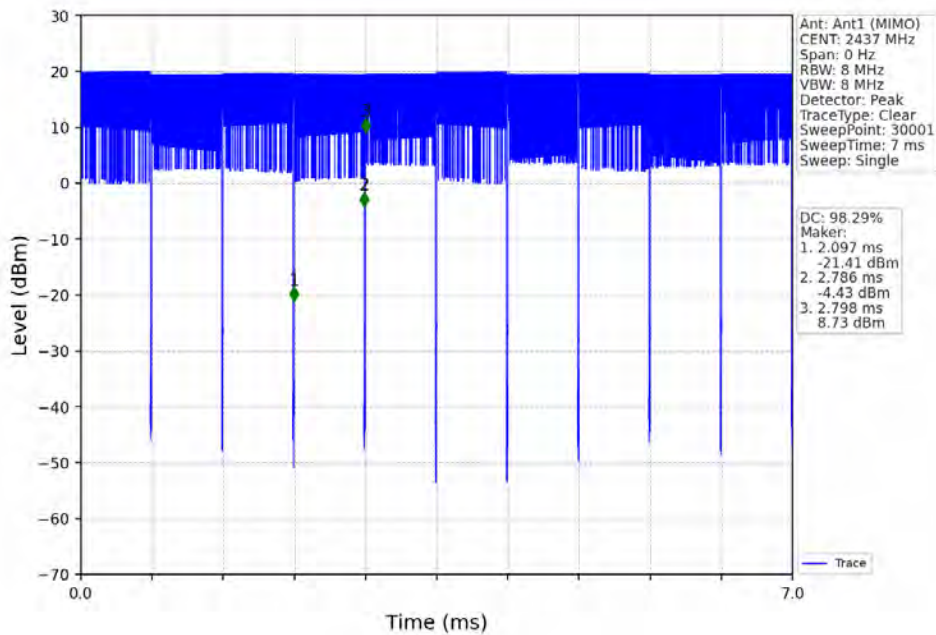
Ant1									
Mode	Tx Type	Frequency (MHz)	RU	RU Pos	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	MIMO	2412	/	/	0.691	0.700	98.71	0.06	0.07
		2437	/	/	0.689	0.701	98.29	0.07	0.07
		2462	/	/	0.691	0.700	98.71	0.06	0.03
802.11g	MIMO	2412	/	/	2.096	2.112	99.24	0.03	0.03
		2437	/	/	2.096	2.112	99.24	0.03	0.03
		2462	/	/	2.097	2.112	99.29	0.03	0.00
802.11n (HT20)	MIMO	2412	/	/	5.428	5.444	99.71	0.01	0.00
		2437	/	/	5.428	5.444	99.71	0.01	0.00
		2462	/	/	5.428	5.444	99.71	0.01	0.04
802.11n (HT40)	MIMO	2422	/	/	5.428	5.444	99.71	0.01	0.04
		2437	/	/	5.428	5.444	99.71	0.01	0.04
		2452	/	/	5.428	5.444	99.71	0.01	0.04
802.11ax (HE20)	MIMO	2412	RU242	Left	5.454	5.470	99.71	0.01	0.04
		2437	RU242	Left	5.454	5.470	99.71	0.01	0.04
		2462	RU242	Left	5.456	5.472	99.71	0.01	0.04
802.11ax (HE40)	MIMO	2422	RU484	Left	5.456	5.472	99.71	0.01	0.04
		2437	RU484	Left	5.454	5.470	99.71	0.01	0.04
		2452	RU484	Left	5.455	5.470	99.73	0.01	0.00

1.1.2 Test Graph

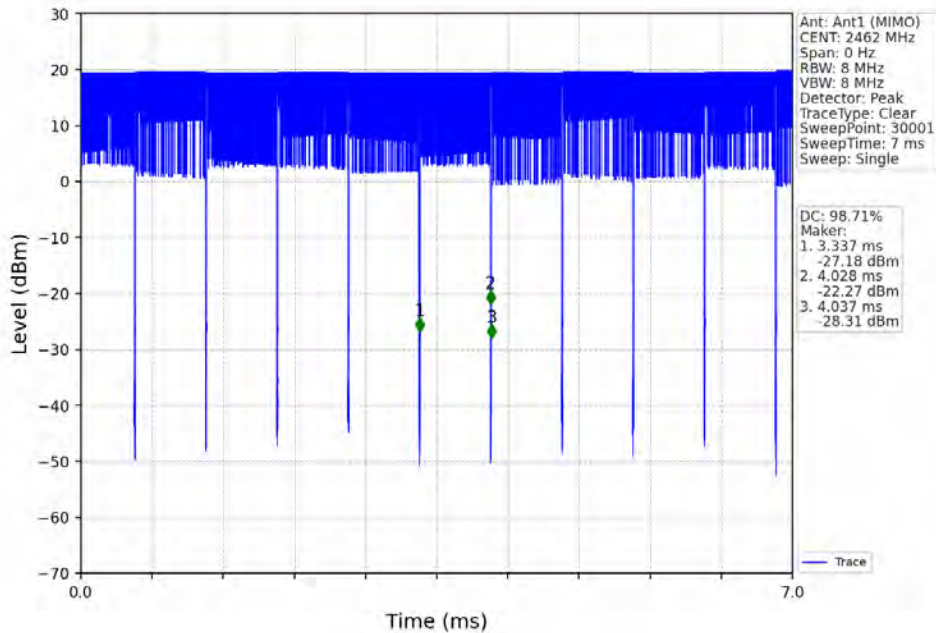


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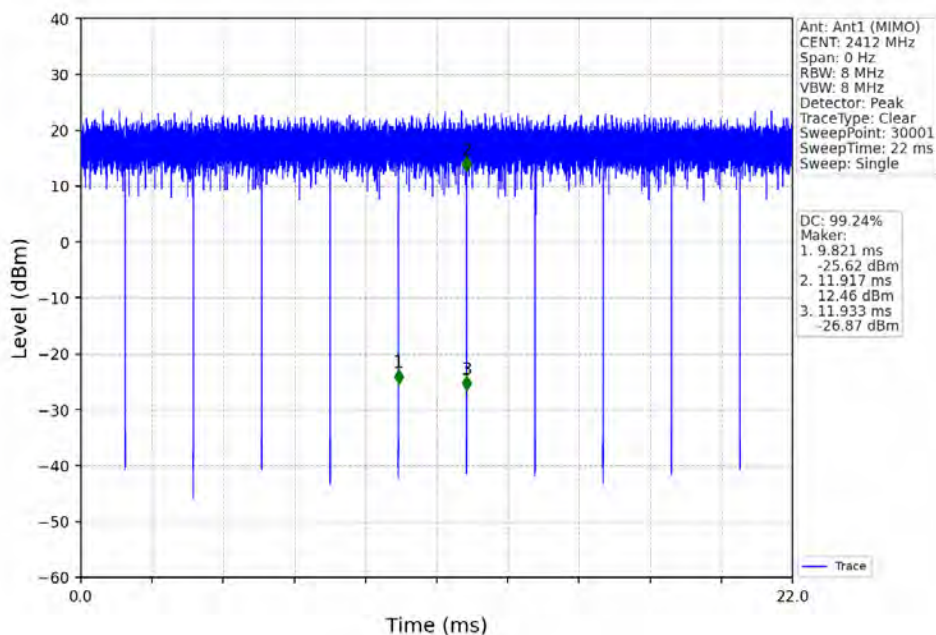
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802.11b_HCH_2462MHz_Ant1 (MIMO)_NTNV



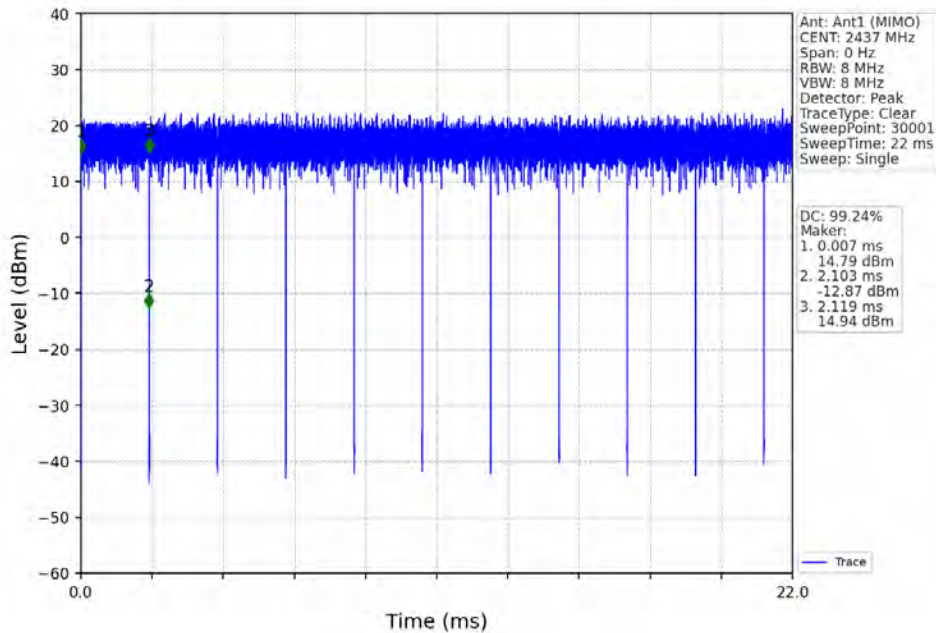
802.11g_LCH_2412MHz_Ant1 (MIMO)_NTNV



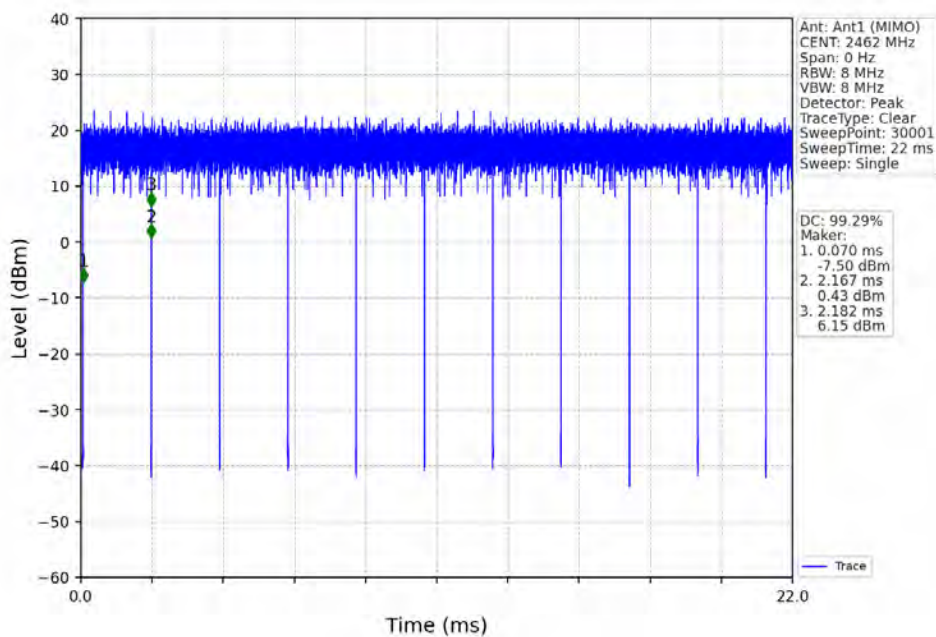
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802.11g_MCH_2437MHz_Ant1 (MIMO)_NTNV



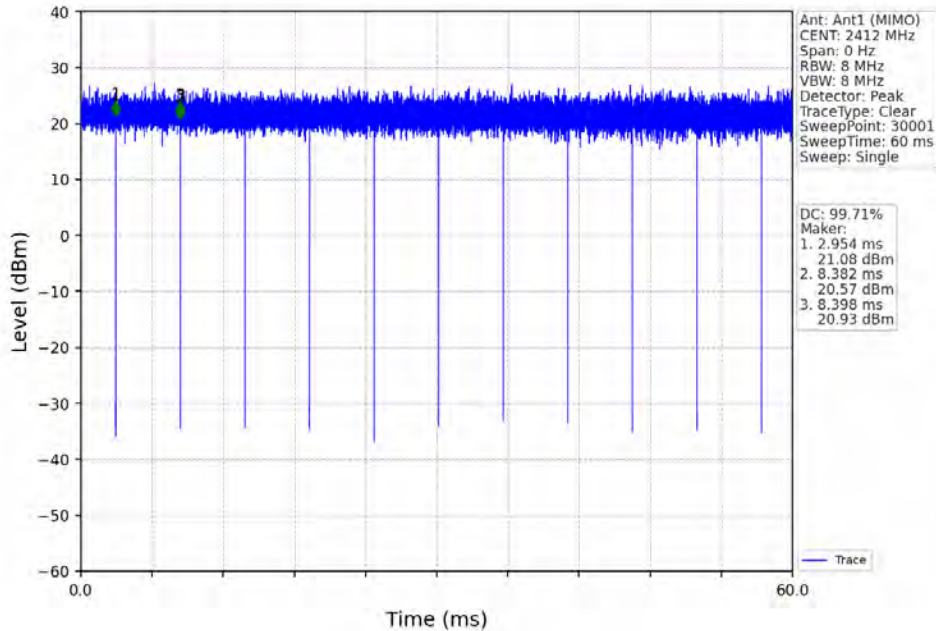
802.11g_HCH_2462MHz_Ant1 (MIMO)_NTNV



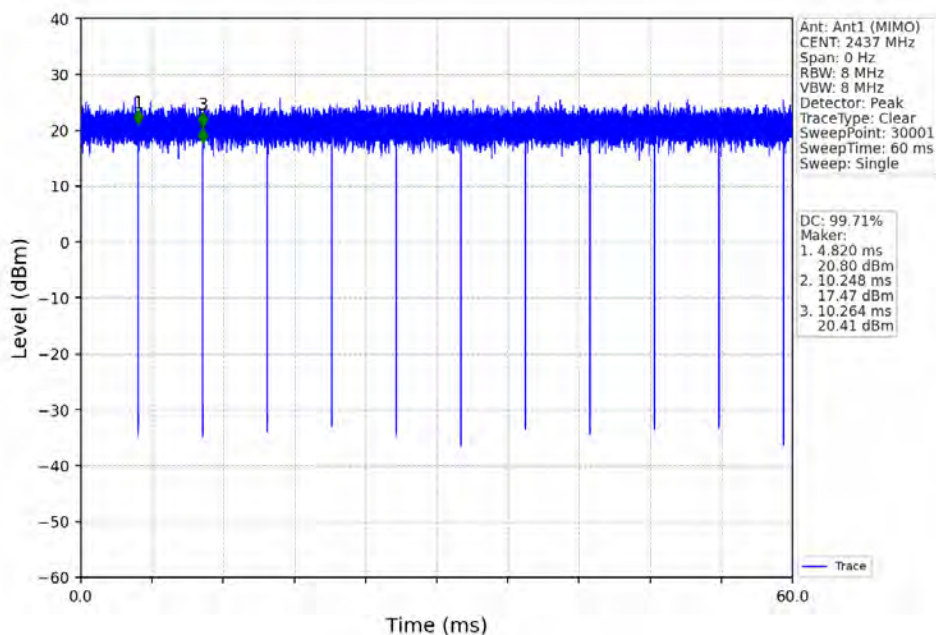
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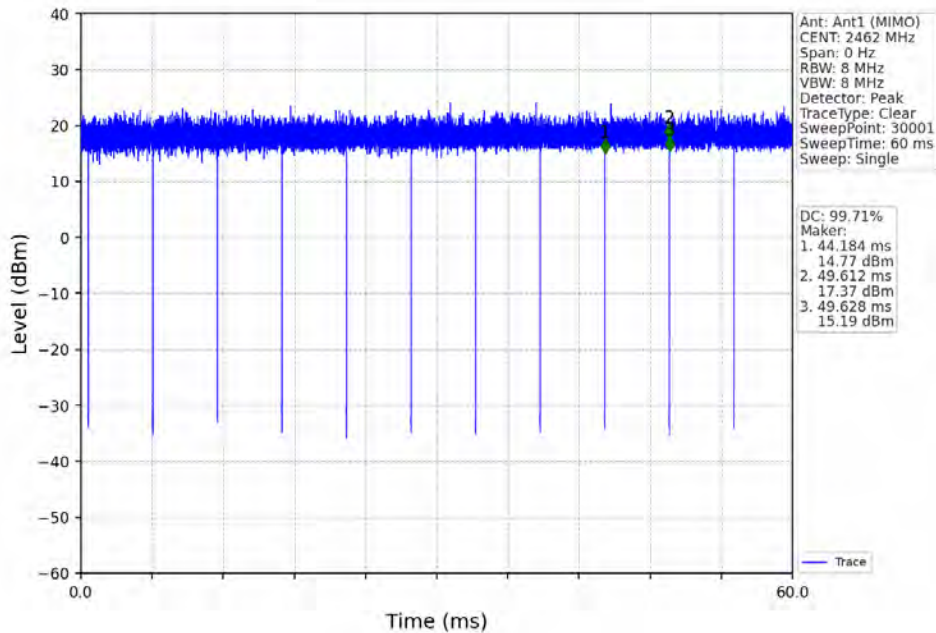
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



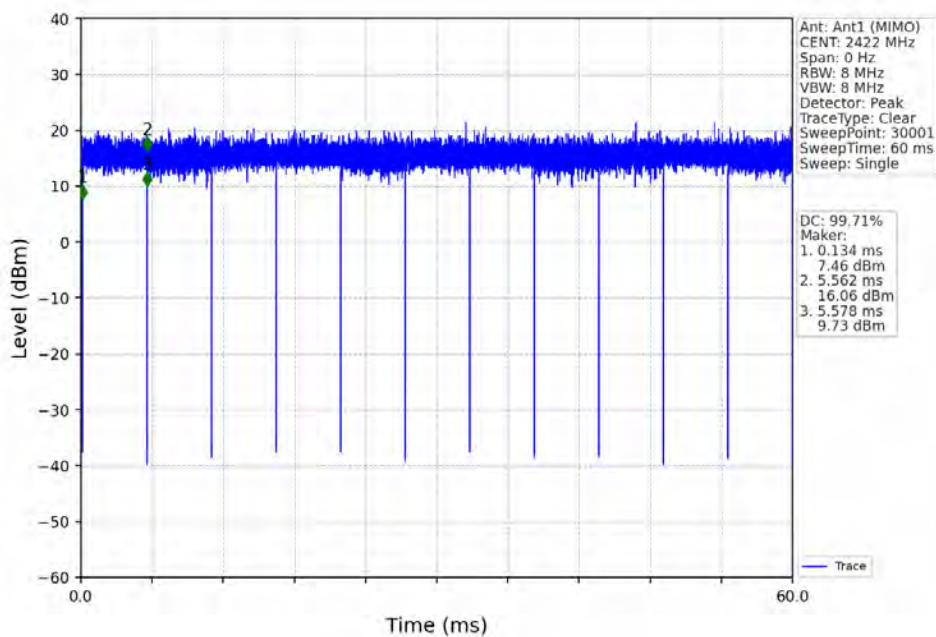
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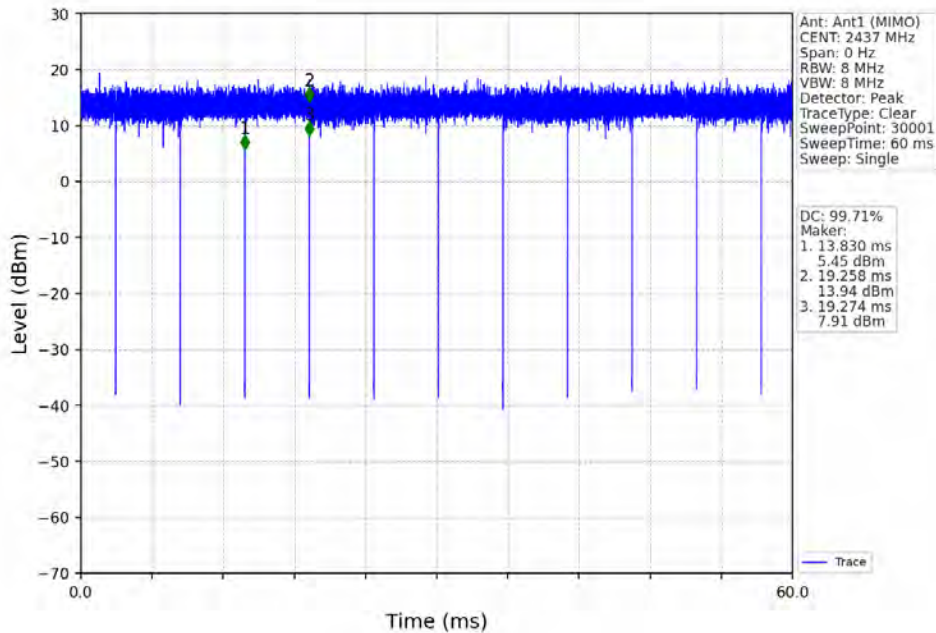
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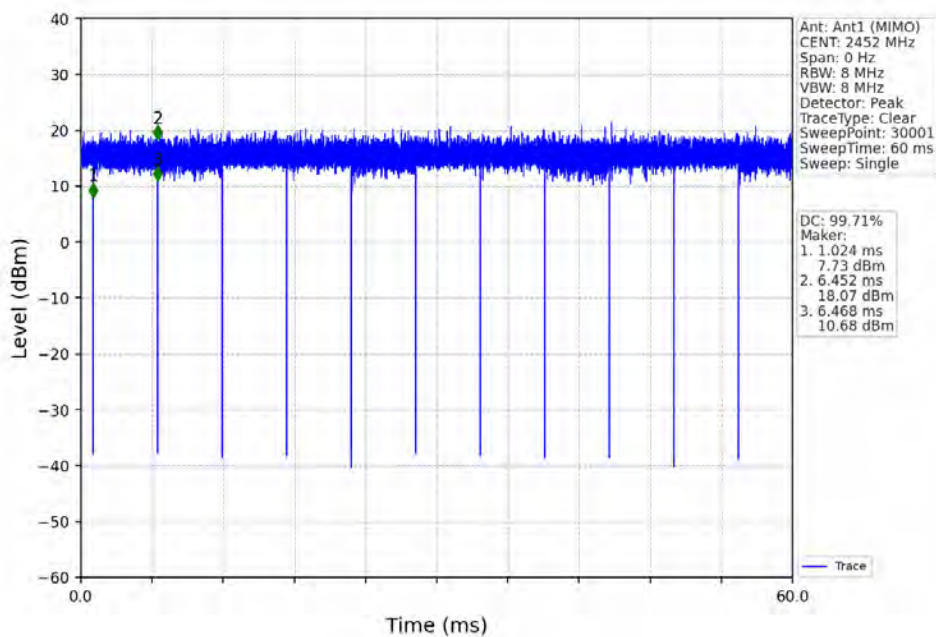
802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



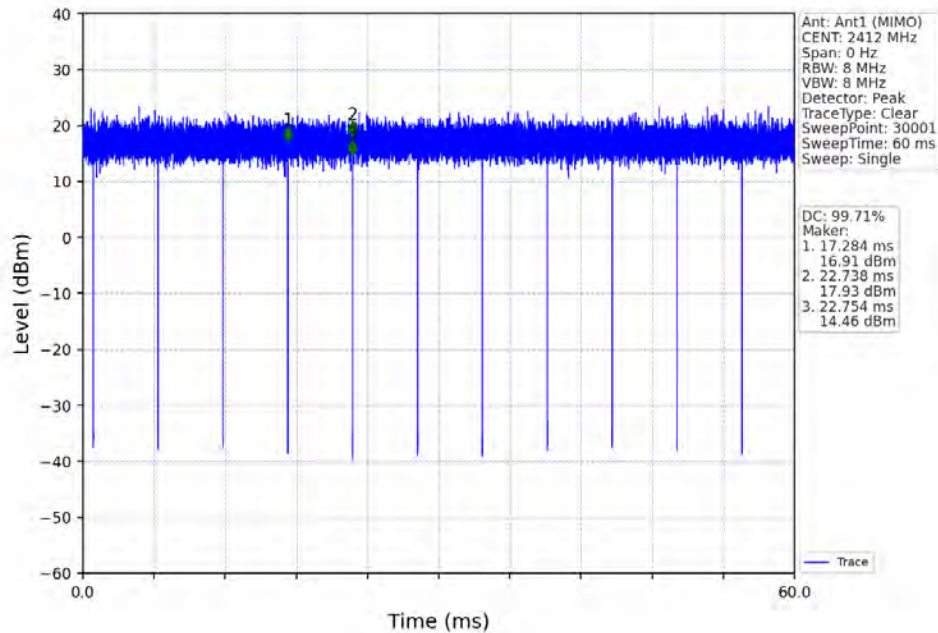
802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



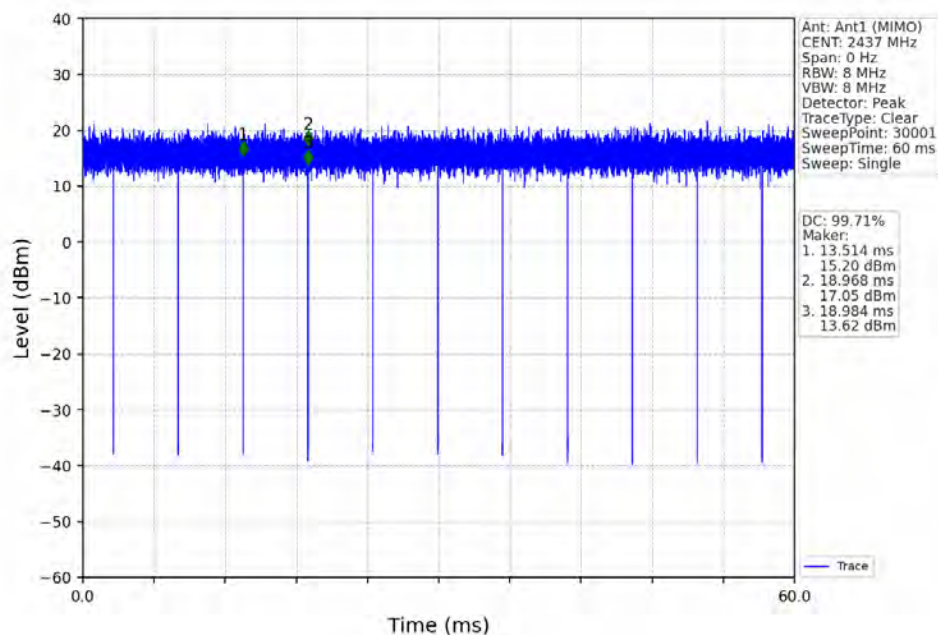
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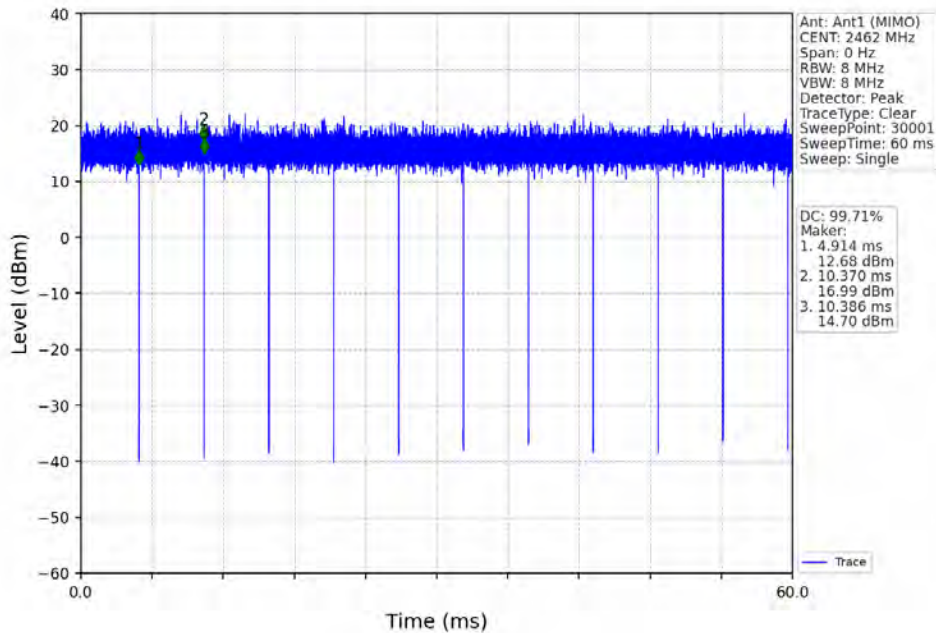
802.11ax(HE20)_LCH_2412MHz_RU242_Left_Ant1 (MIMO)_NTNV



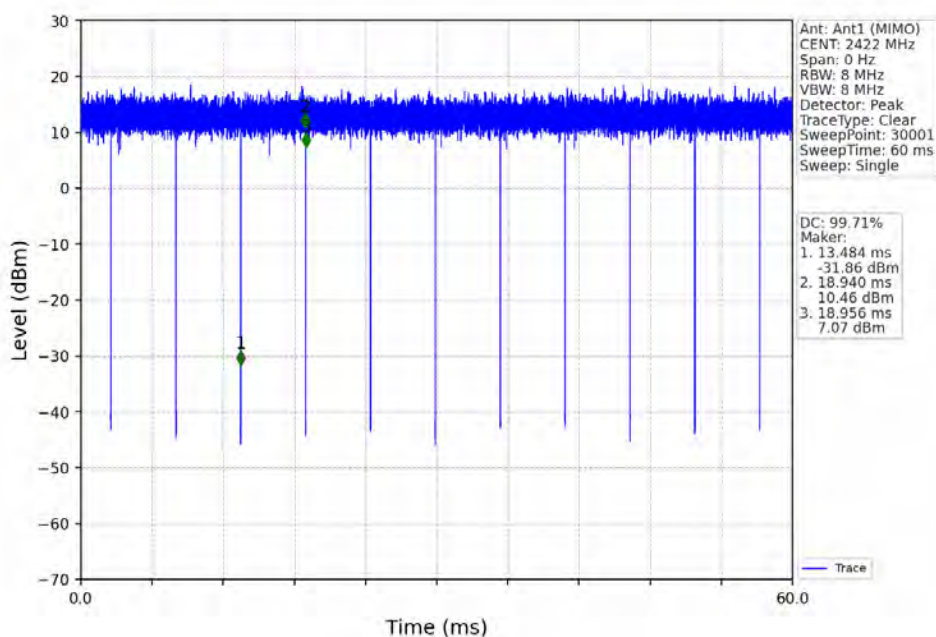
802.11ax(HE20)_MCH_2437MHz_RU242_Left_Ant1 (MIMO)_NTNV



802.11ax(HE20)_HCH_2462MHz_RU242_Left_Ant1 (MIMO)_NTNV



802.11ax(HE40)_LCH_2422MHz_RU484_Left_Ant1 (MIMO)_NTNV



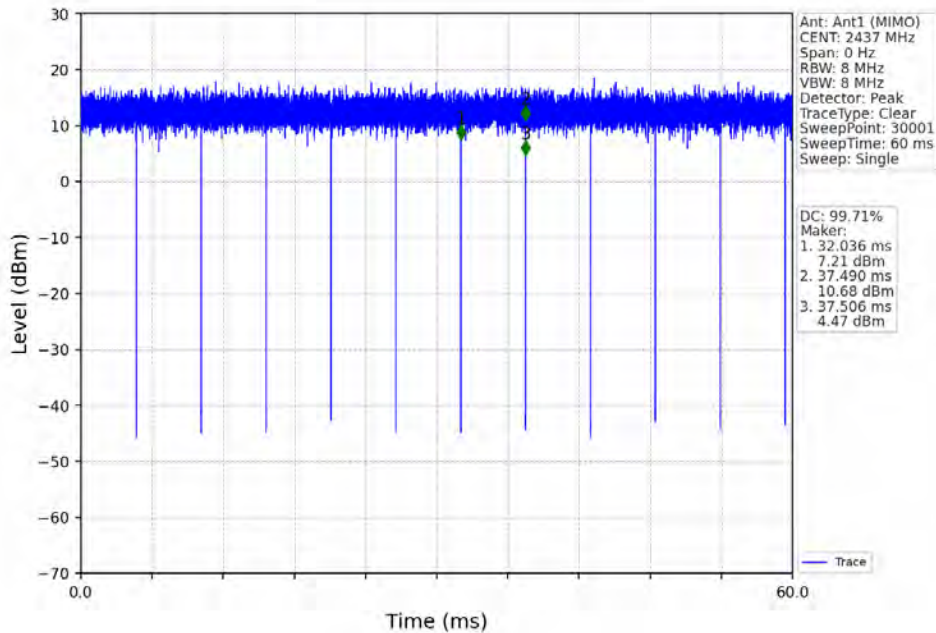
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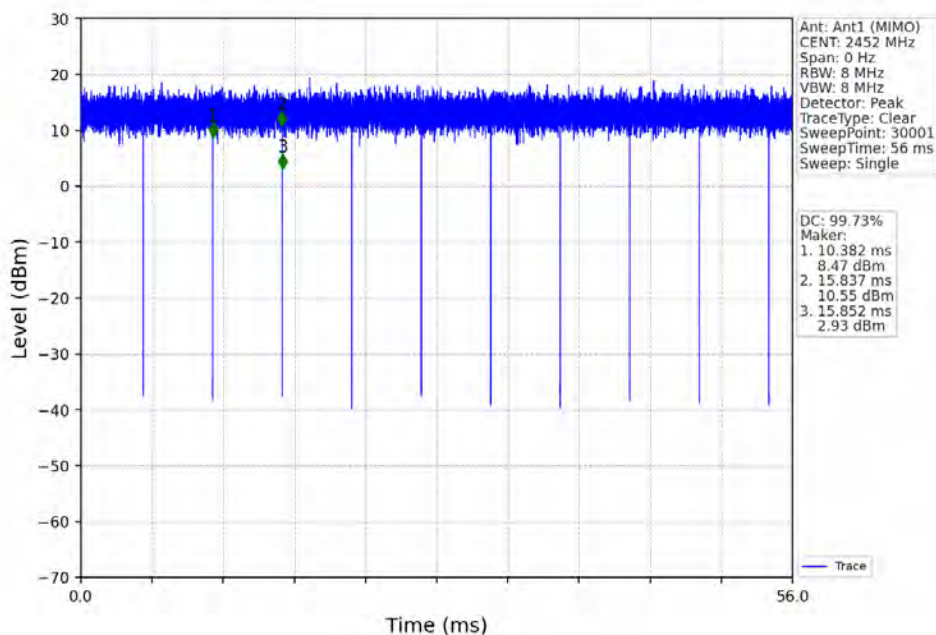
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802.11ax(HE40)_MCH_2437MHz_RU484_Left_Ant1 (MIMO)_NTNV



802.11ax(HE40)_HCH_2452MHz_RU484_Left_Ant1 (MIMO)_NTNV



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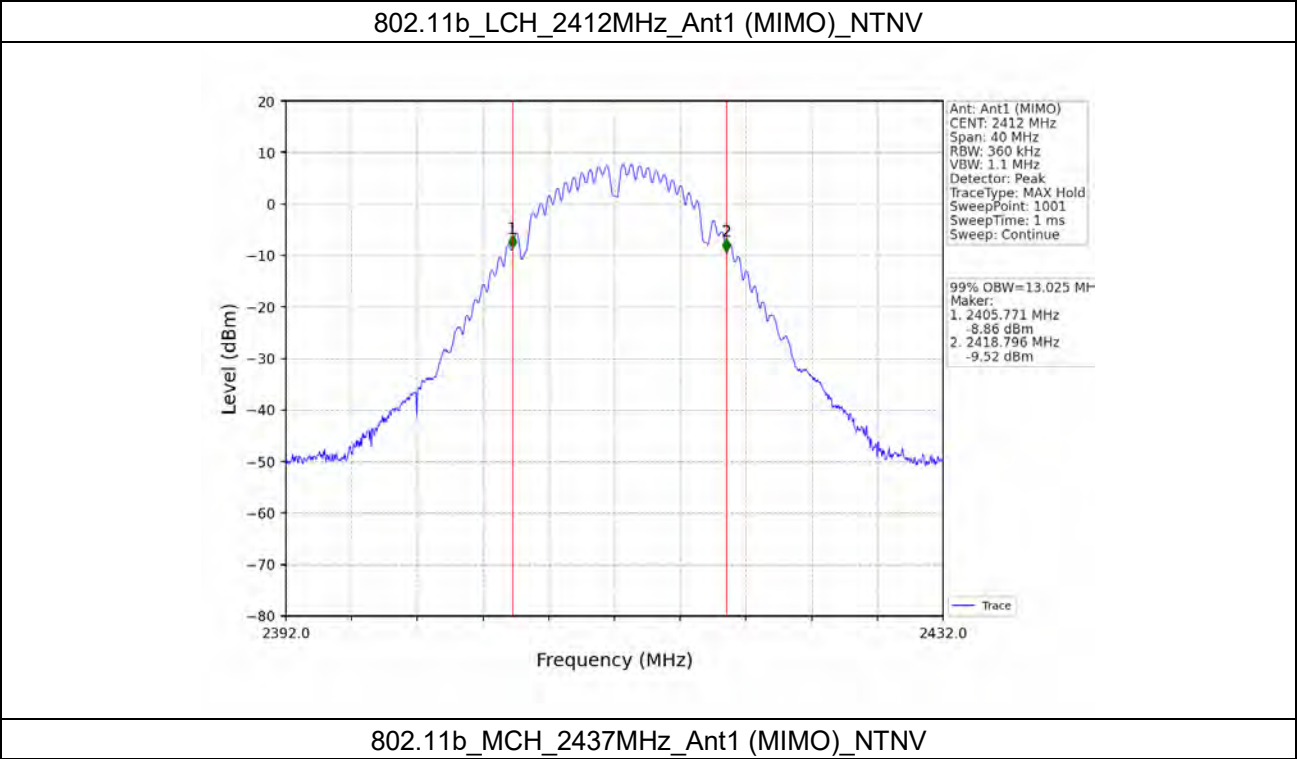
2. Bandwidth

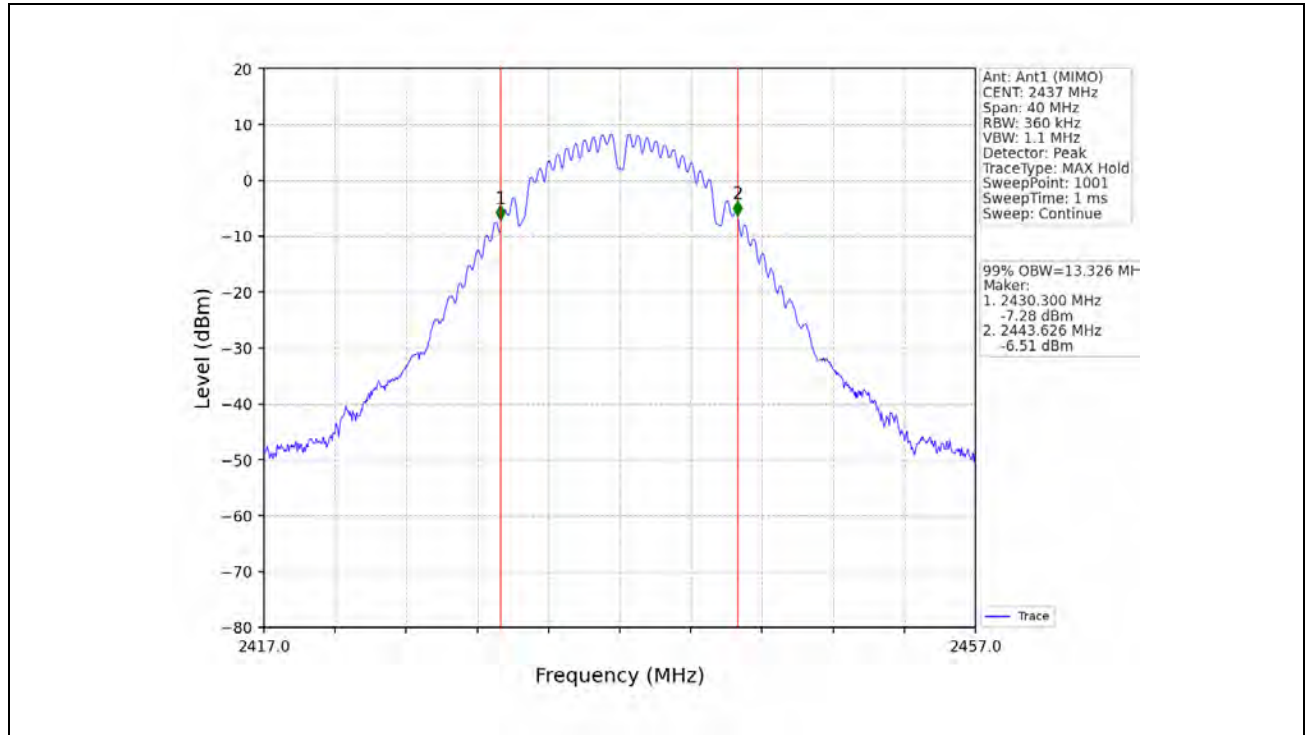
2.1 OBW

2.1.1 Test Result

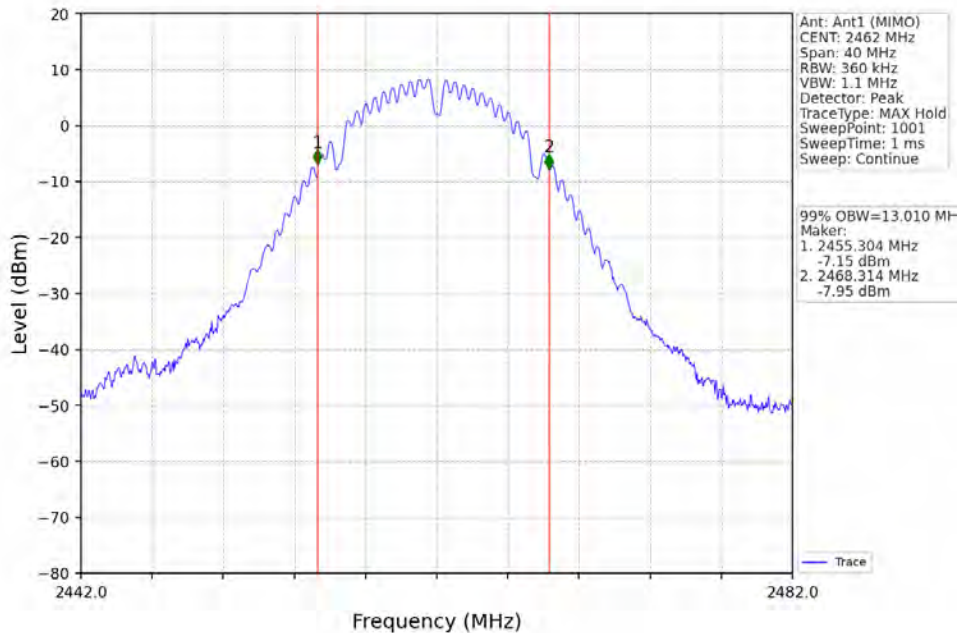
Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	99% Occupied Bandwidth (MHz)		Verdict
						Result	Limit	
802.11b	MIMO	2412	/	/	1	13.025	/	Pass
		2437	/	/	1	13.326	/	Pass
		2462	/	/	1	13.010	/	Pass
802.11g	MIMO	2412	/	/	1	16.812	/	Pass
		2437	/	/	1	16.985	/	Pass
		2462	/	/	1	16.848	/	Pass
802.11n (HT20)	MIMO	2412	/	/	1	17.953	/	Pass
		2437	/	/	1	18.061	/	Pass
		2462	/	/	1	17.856	/	Pass
802.11n (HT40)	MIMO	2422	/	/	1	35.930	/	Pass
		2437	/	/	1	36.473	/	Pass
		2452	/	/	1	36.047	/	Pass
802.11ax (HE20)	MIMO	2412	RU242	Left	1	19.068	/	Pass
		2437	RU242	Left	1	19.170	/	Pass
		2462	RU242	Left	1	19.027	/	Pass
802.11ax (HE40)	MIMO	2422	RU484	Left	1	37.792	/	Pass
		2437	RU484	Left	1	38.187	/	Pass
		2452	RU484	Left	1	37.781	/	Pass

2.1.2 Test Graph

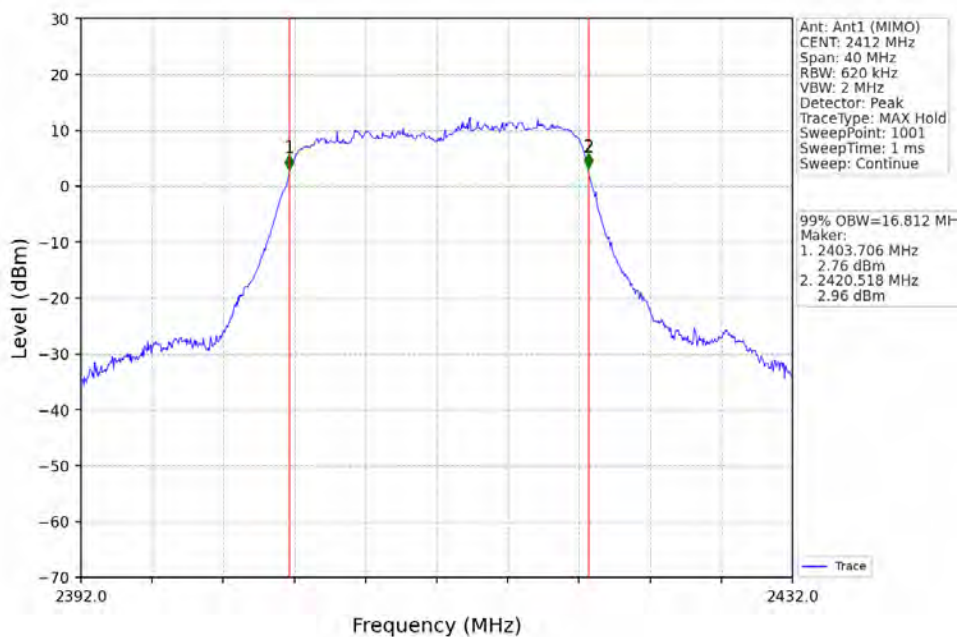




802.11b_HCH_2462MHz_Ant1 (MIMO)_NTNV



802.11g_LCH_2412MHz_Ant1 (MIMO)_NTNV



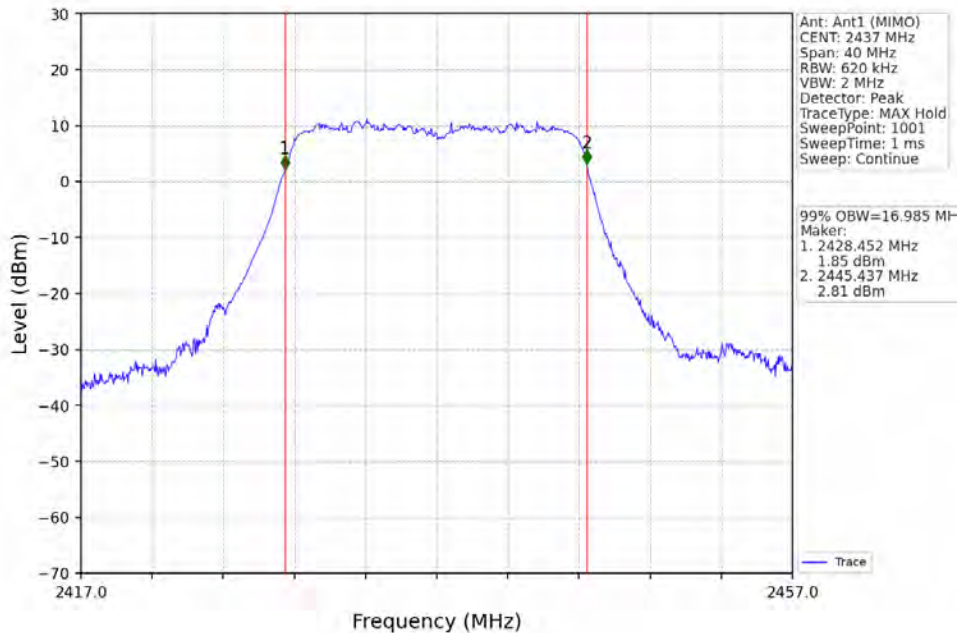
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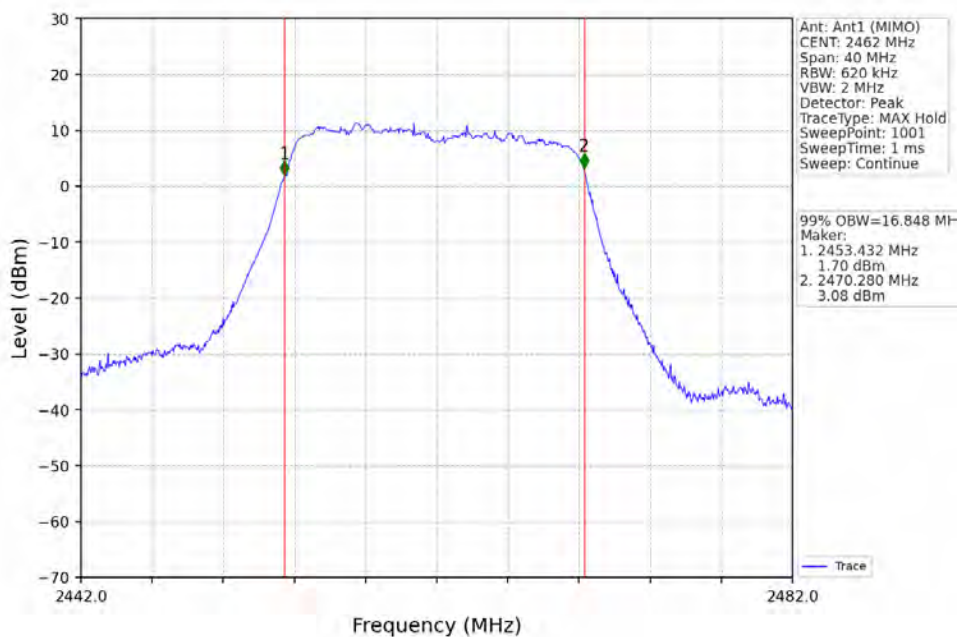
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802.11g_MCH_2437MHz_Ant1 (MIMO)_NTNV



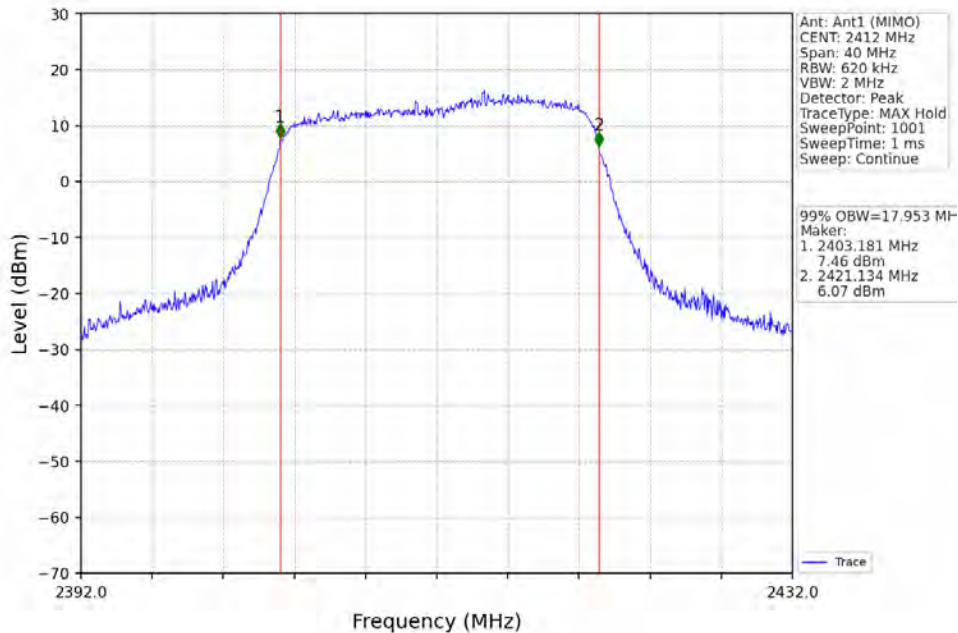
802.11g_HCH_2462MHz_Ant1 (MIMO)_NTNV



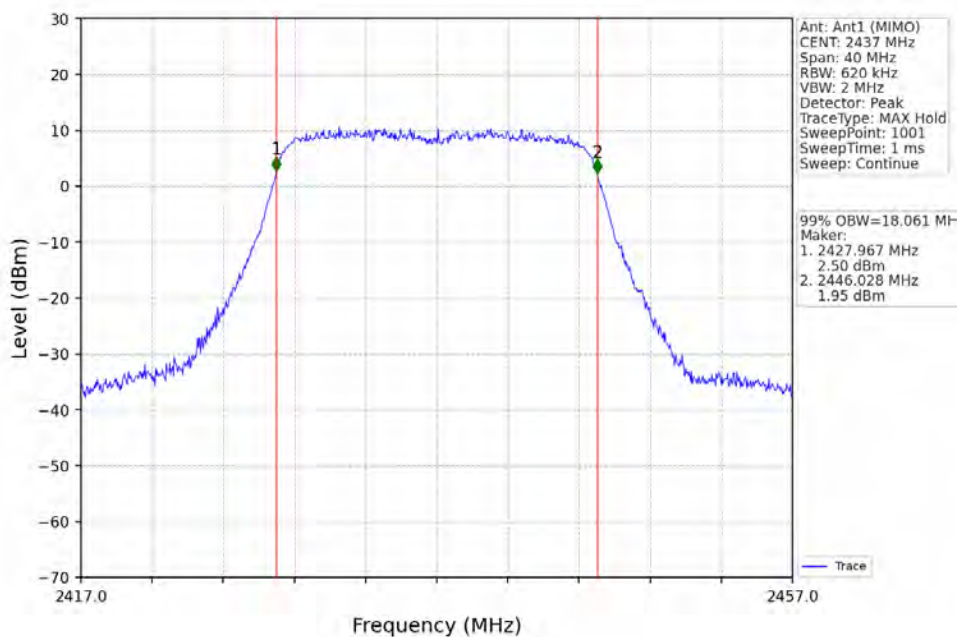
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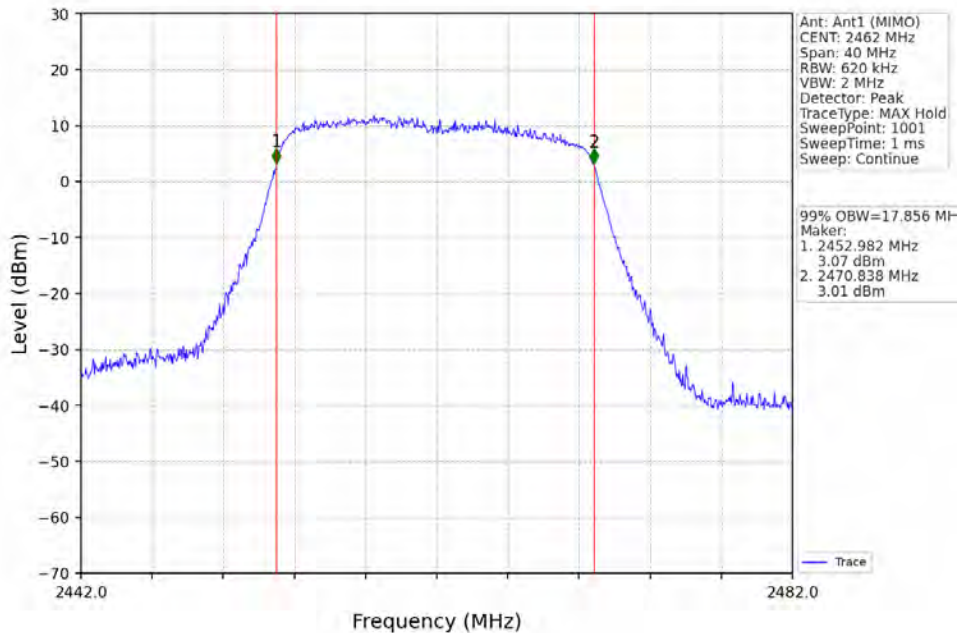
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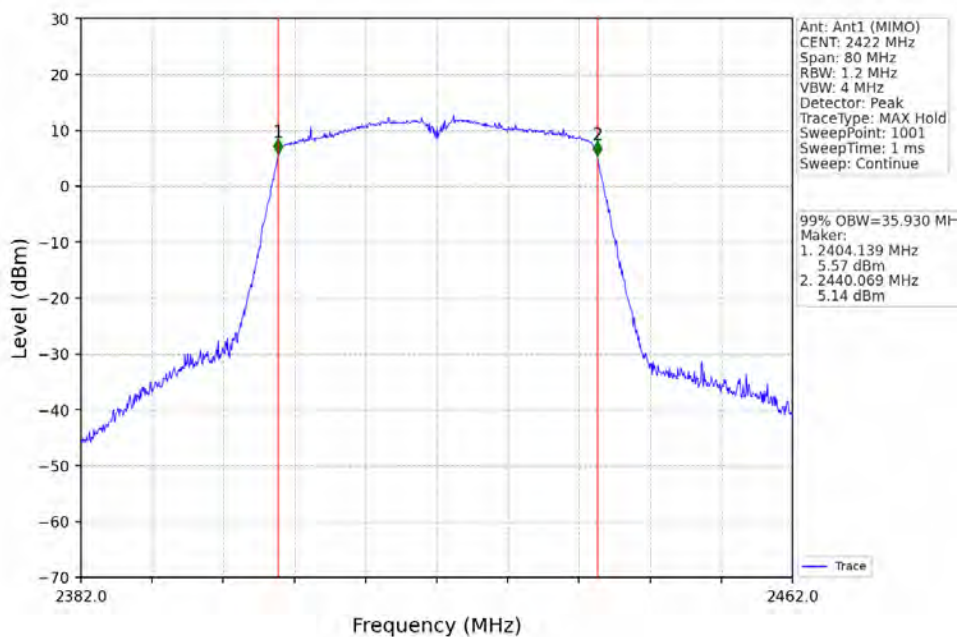
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802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



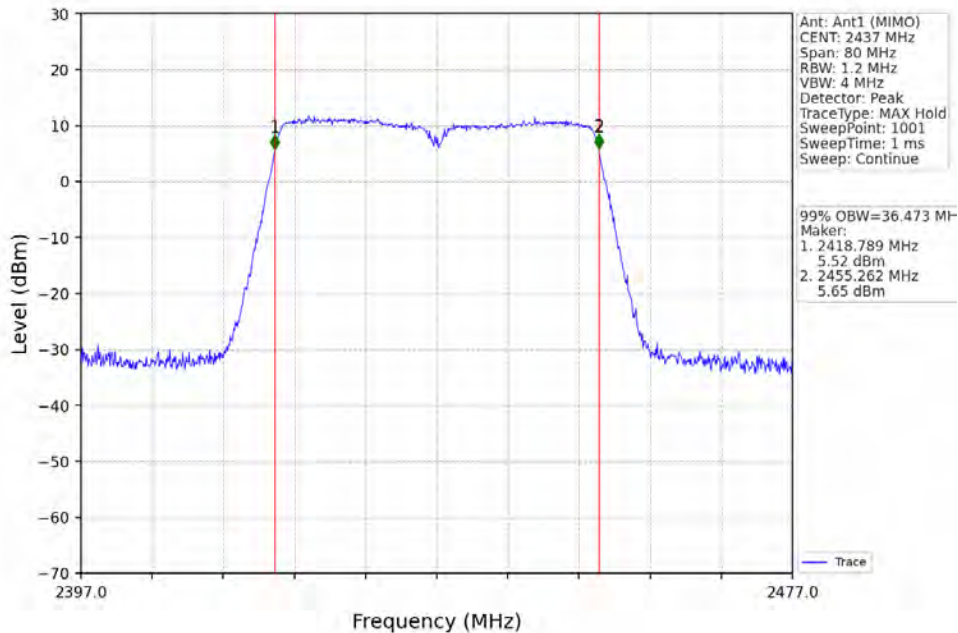
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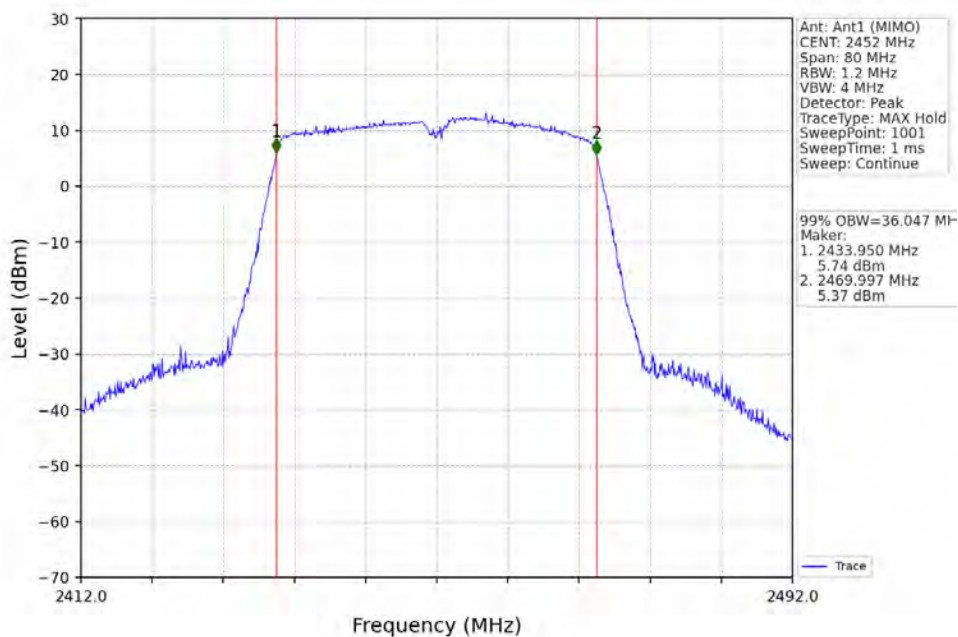
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802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



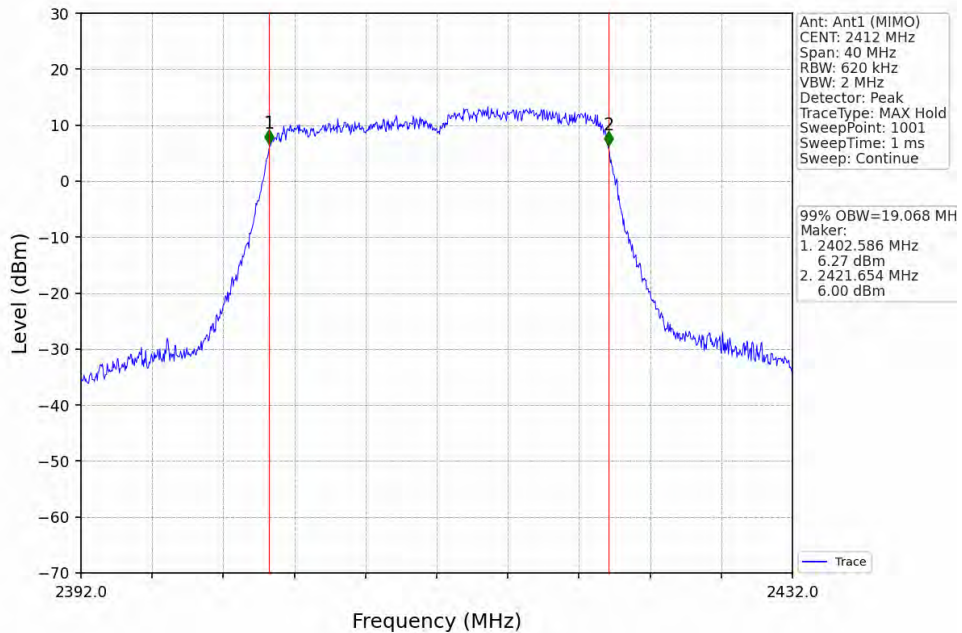
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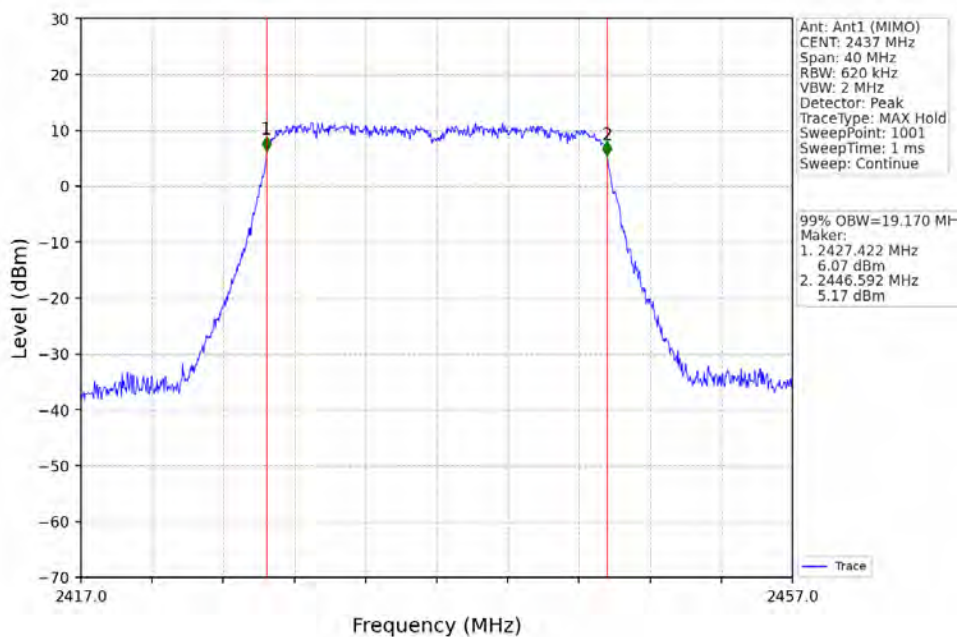
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802.11ax(HE20)_LCH_2412MHz_RU242_Left_Ant1 (MIMO)_NTNV



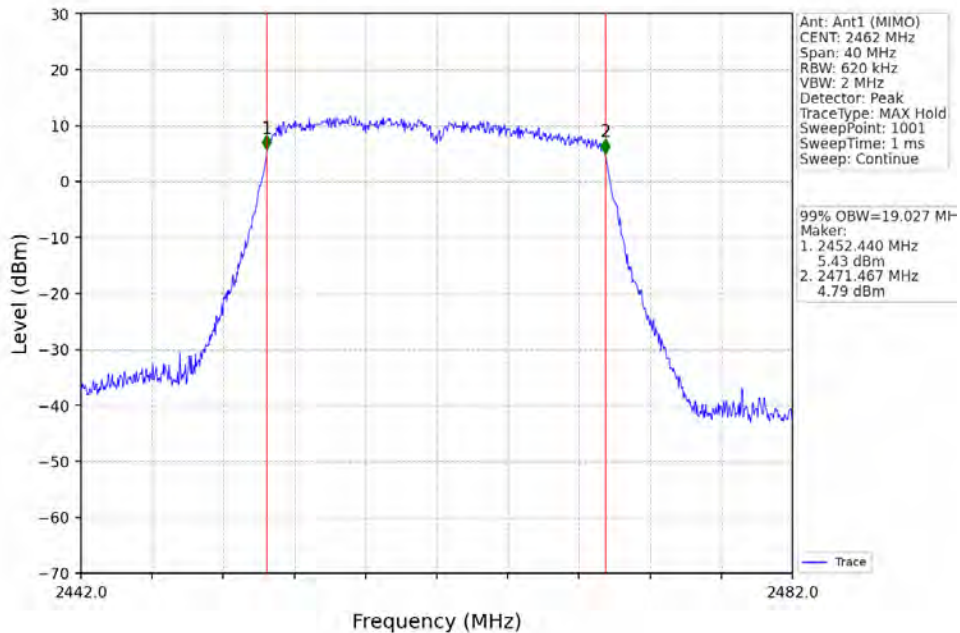
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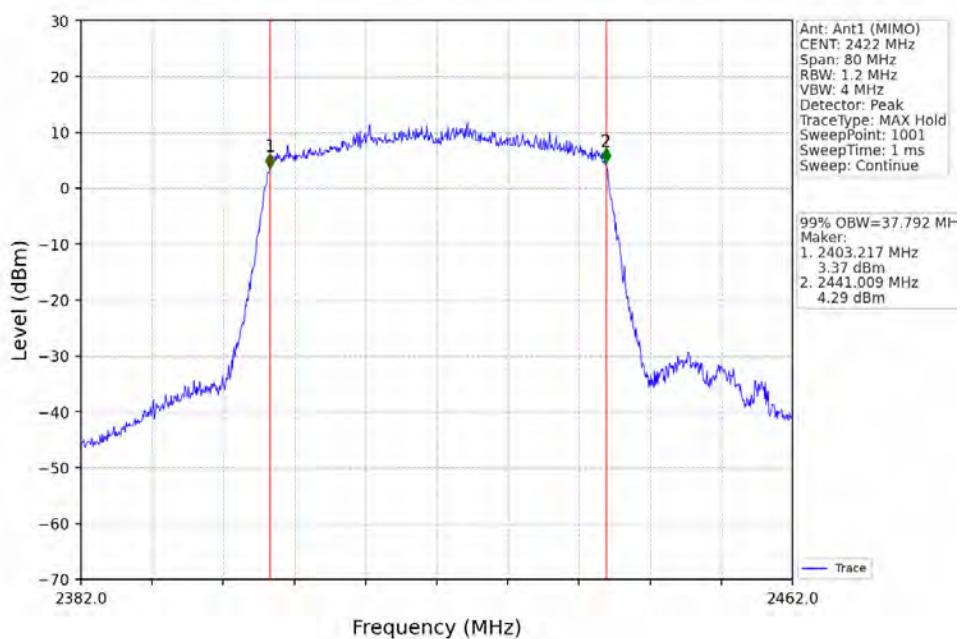
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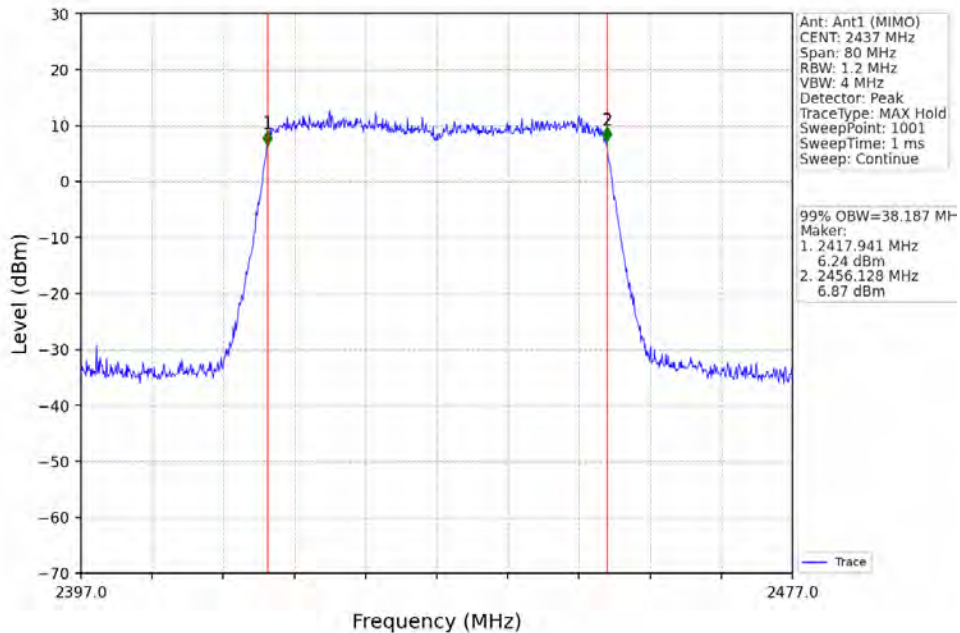
802.11ax(HE40)_LCH_2422MHz_RU484_Left_Ant1 (MIMO)_NTNV



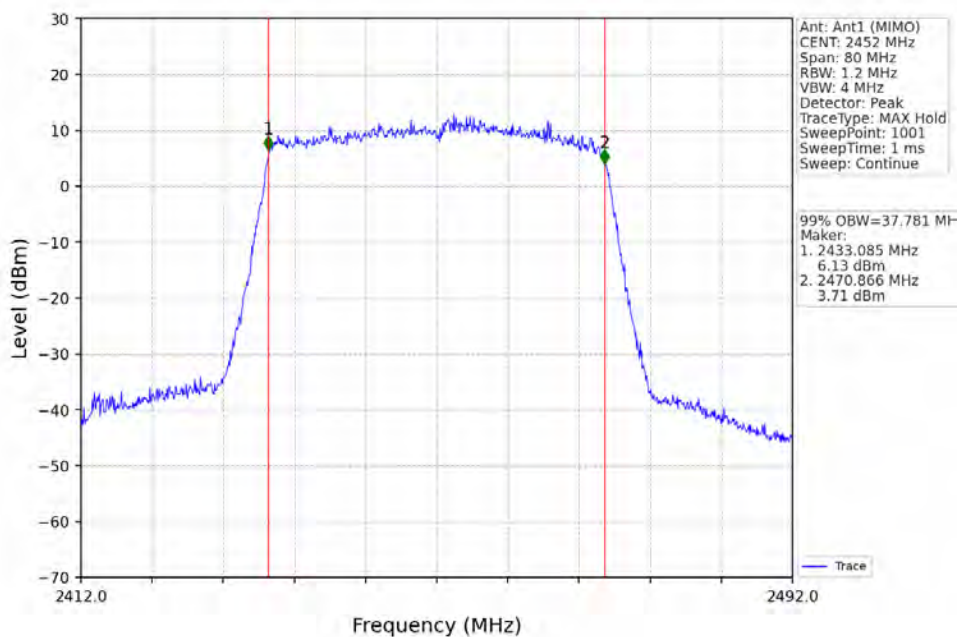
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802.11ax(HE40)_MCH_2437MHz_RU484_Left_Ant1 (MIMO)_NTNV



802.11ax(HE40)_HCH_2452MHz_RU484_Left_Ant1 (MIMO)_NTNV



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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

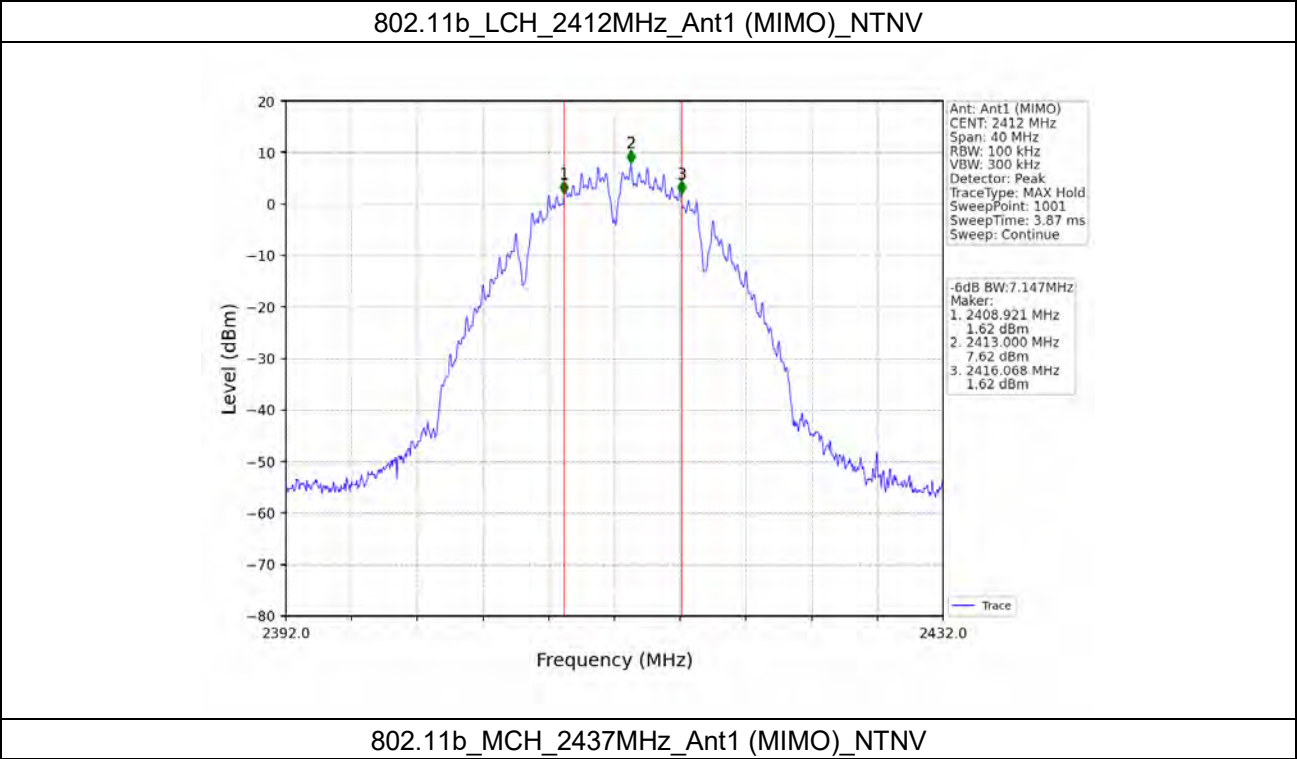
Page: 102 of 195

2.2 6dB BW

2.2.1 Test Result

Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	6dB Bandwidth (MHz)		Verdict
						Result	Limit	
802.11b	MIMO	2412	/	/	1	7.147	>=0.5	Pass
		2437	/	/	1	8.092	>=0.5	Pass
		2462	/	/	1	8.551	>=0.5	Pass
802.11g	MIMO	2412	/	/	1	15.966	>=0.5	Pass
		2437	/	/	1	16.377	>=0.5	Pass
		2462	/	/	1	15.777	>=0.5	Pass
802.11n (HT20)	MIMO	2412	/	/	1	16.368	>=0.5	Pass
		2437	/	/	1	17.615	>=0.5	Pass
		2462	/	/	1	16.351	>=0.5	Pass
802.11n (HT40)	MIMO	2422	/	/	1	35.100	>=0.5	Pass
		2437	/	/	1	36.353	>=0.5	Pass
		2452	/	/	1	35.140	>=0.5	Pass
802.11ax (HE20)	MIMO	2412	RU242	Left	1	18.744	>=0.5	Pass
		2437	RU242	Left	1	19.040	>=0.5	Pass
		2462	RU242	Left	1	18.029	>=0.5	Pass
802.11ax (HE40)	MIMO	2422	RU484	Left	1	37.011	>=0.5	Pass
		2437	RU484	Left	1	38.074	>=0.5	Pass
		2452	RU484	Left	1	37.272	>=0.5	Pass

2.2.2 Test Graph

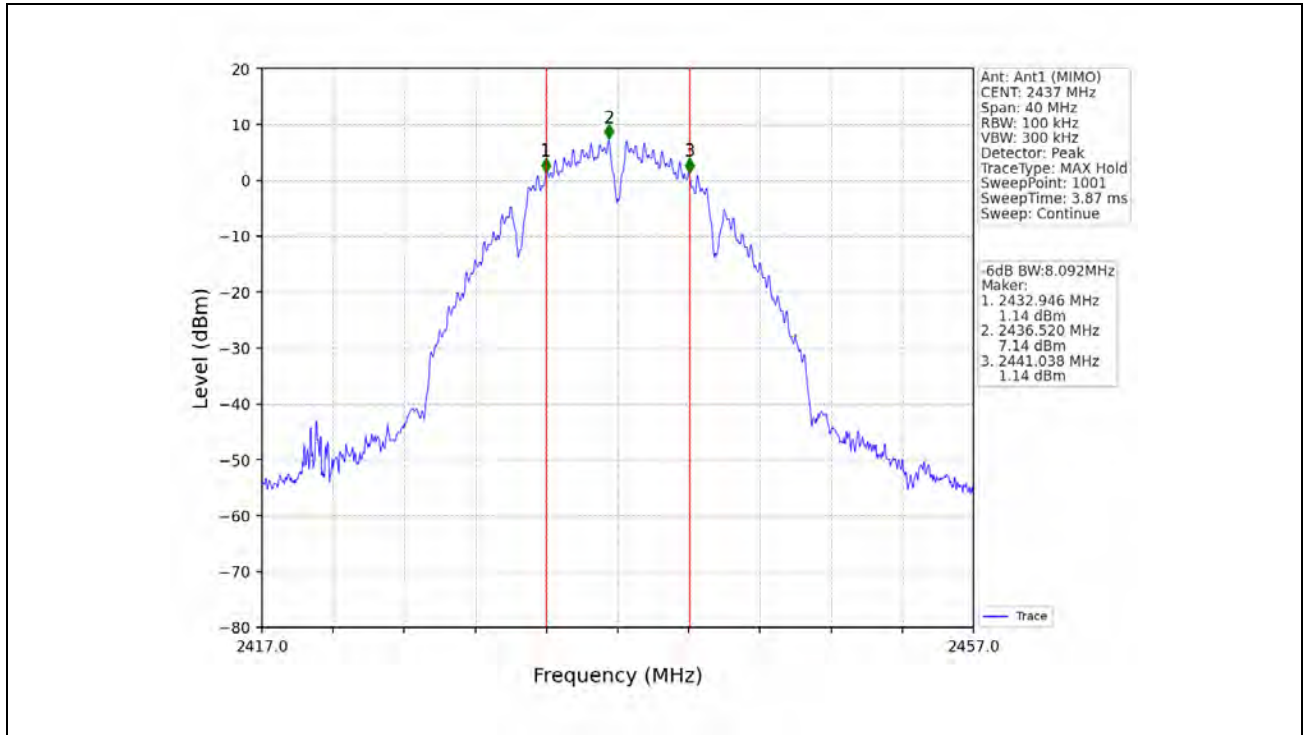


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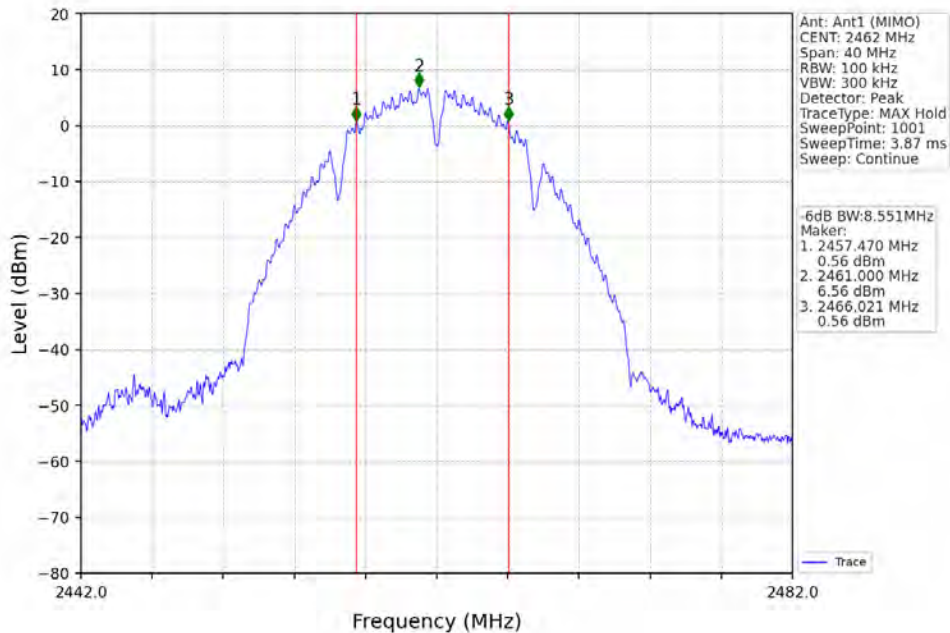
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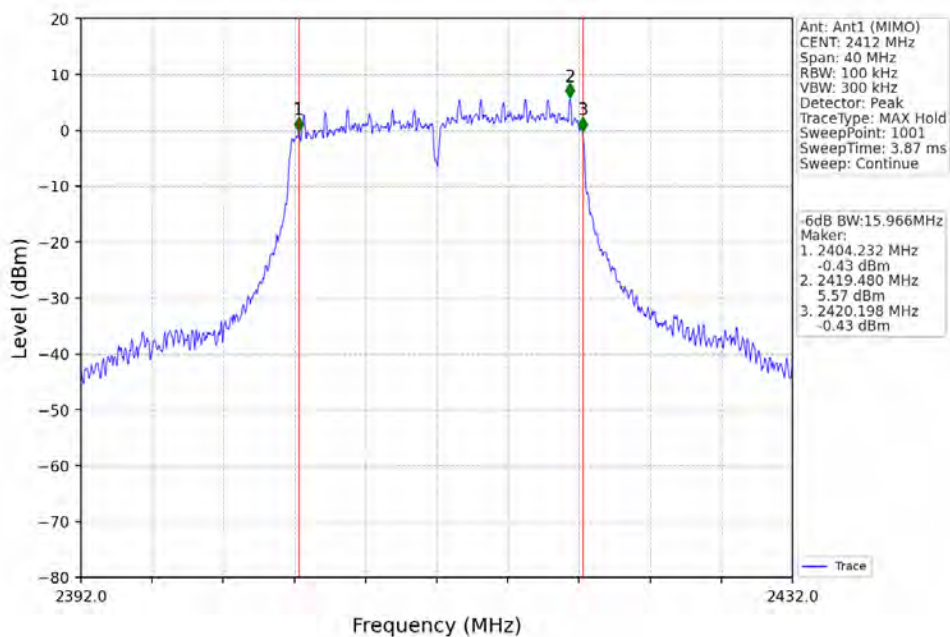
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中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



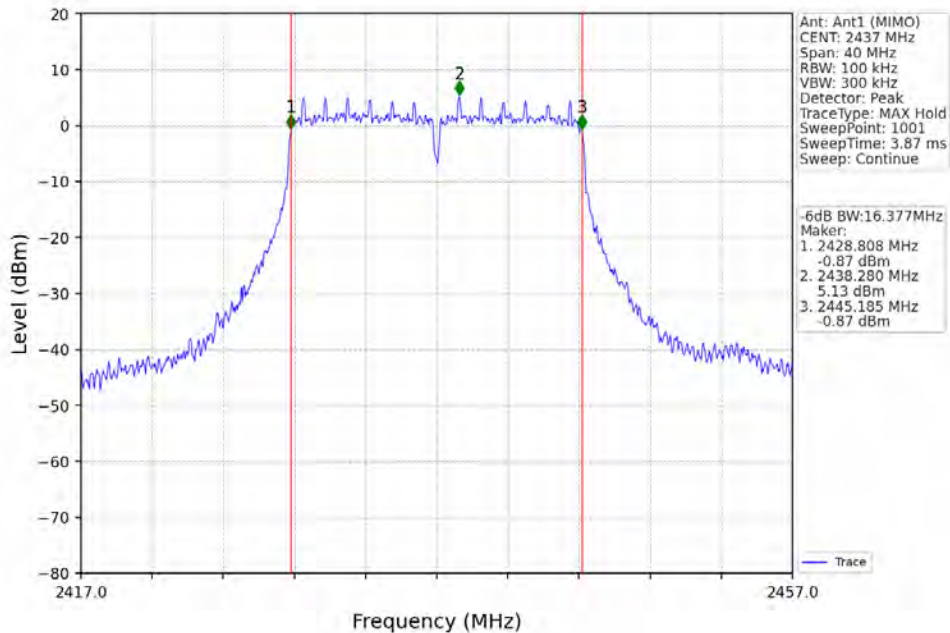
802.11b_HCH_2462MHz_Ant1 (MIMO)_NTNV



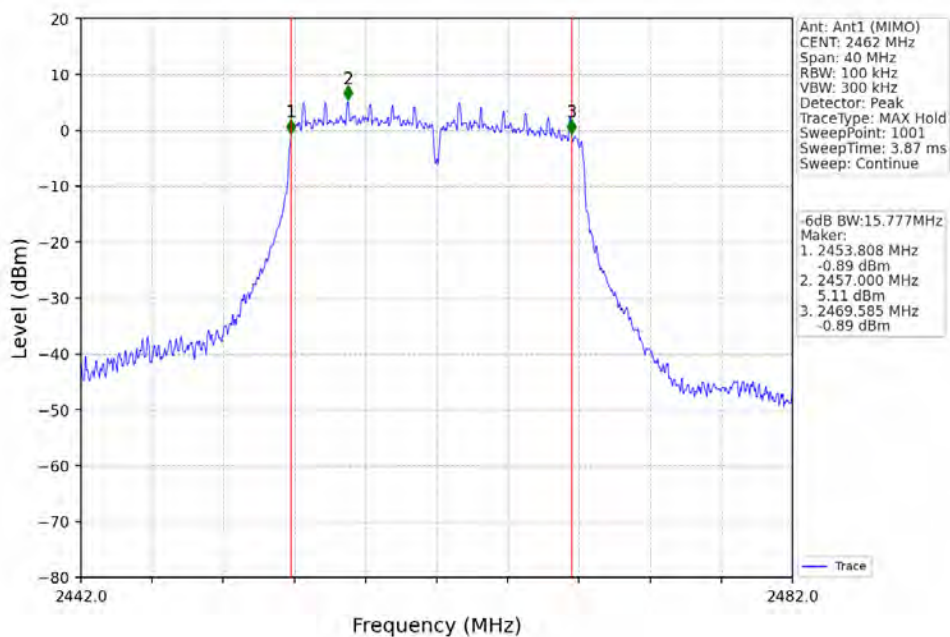
802.11g_LCH_2412MHz_Ant1 (MIMO)_NTNV



802.11g_MCH_2437MHz_Ant1 (MIMO)_NTNV



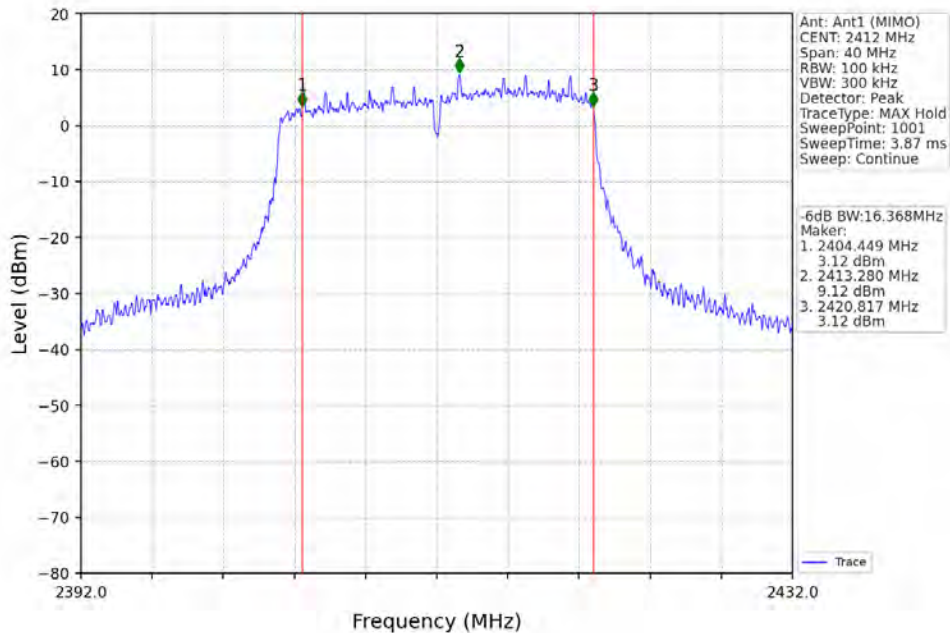
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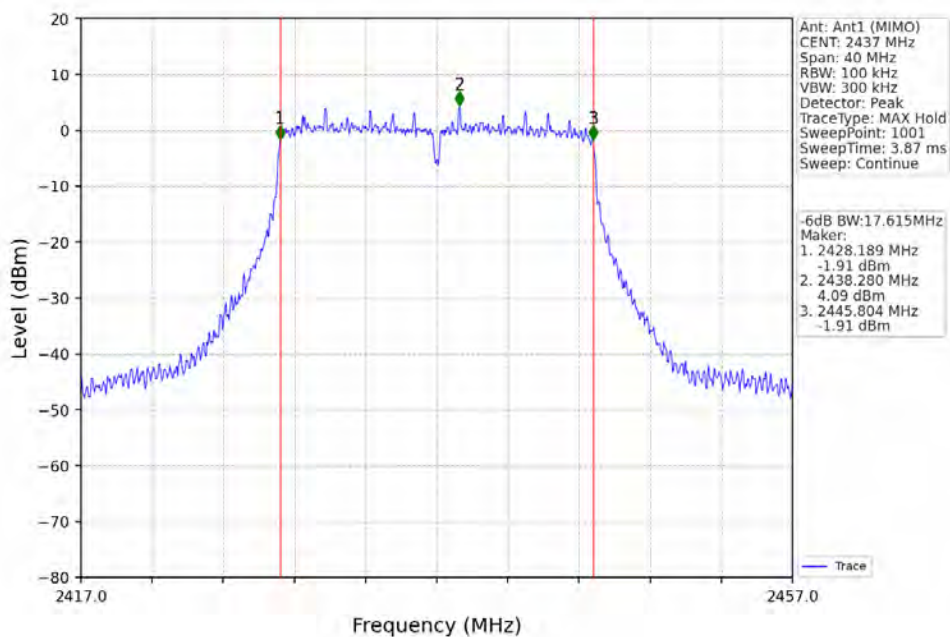
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802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



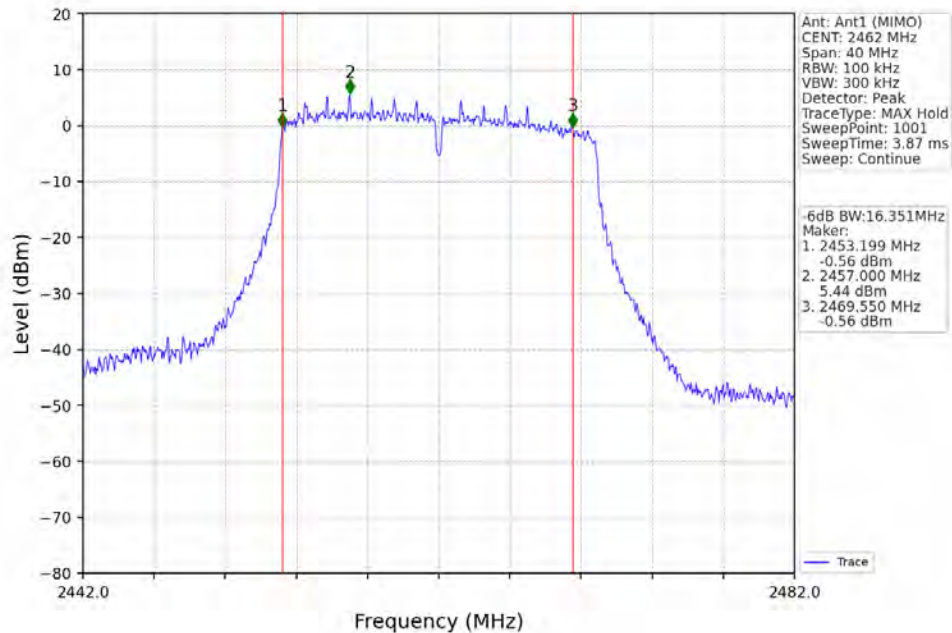
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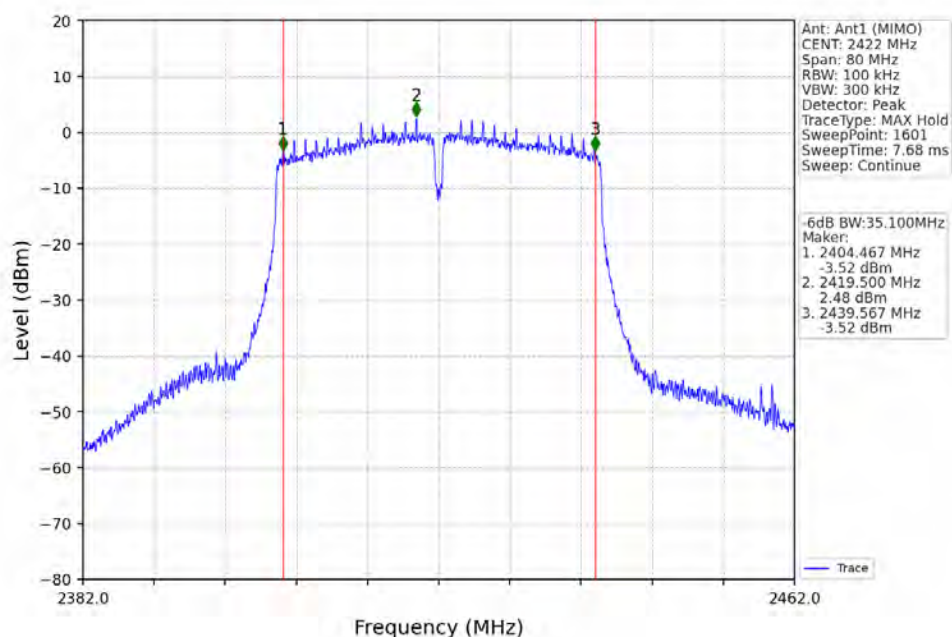
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802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



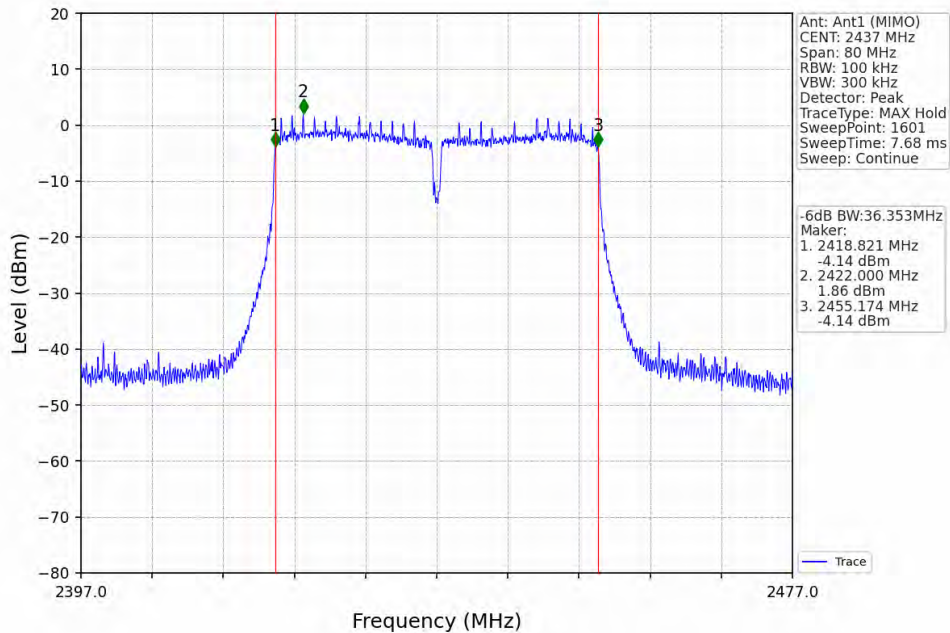
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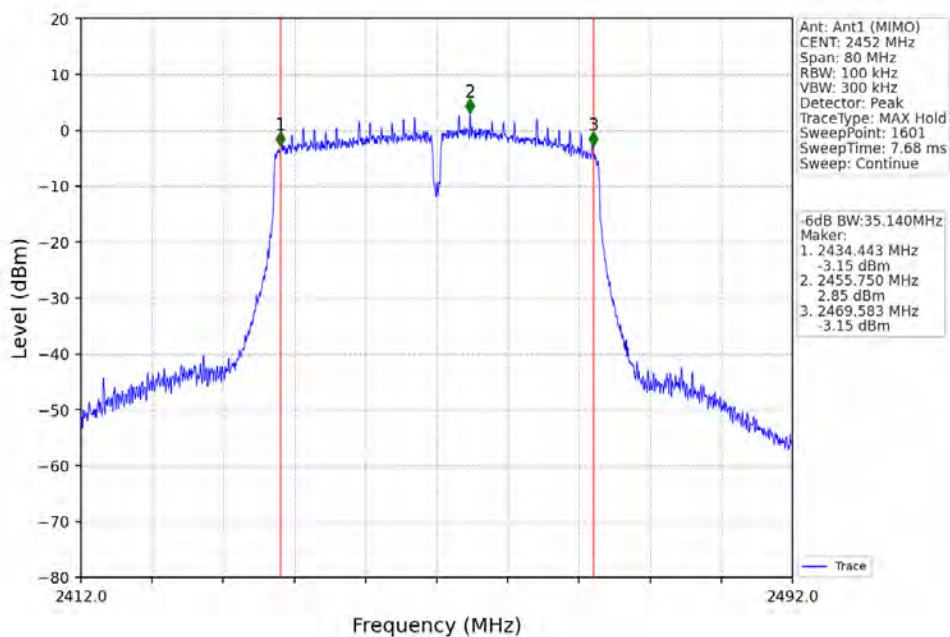
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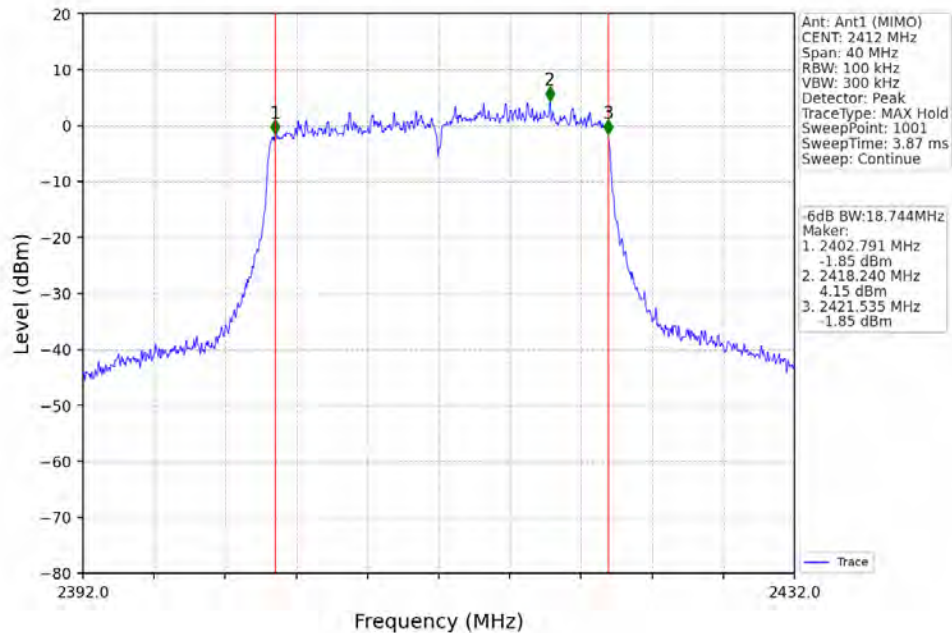
802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



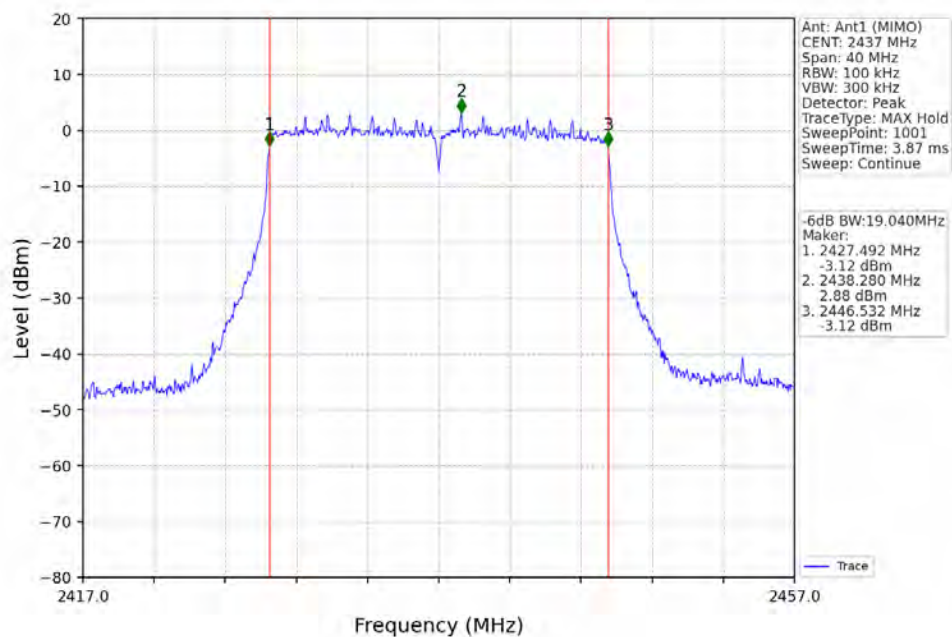
802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



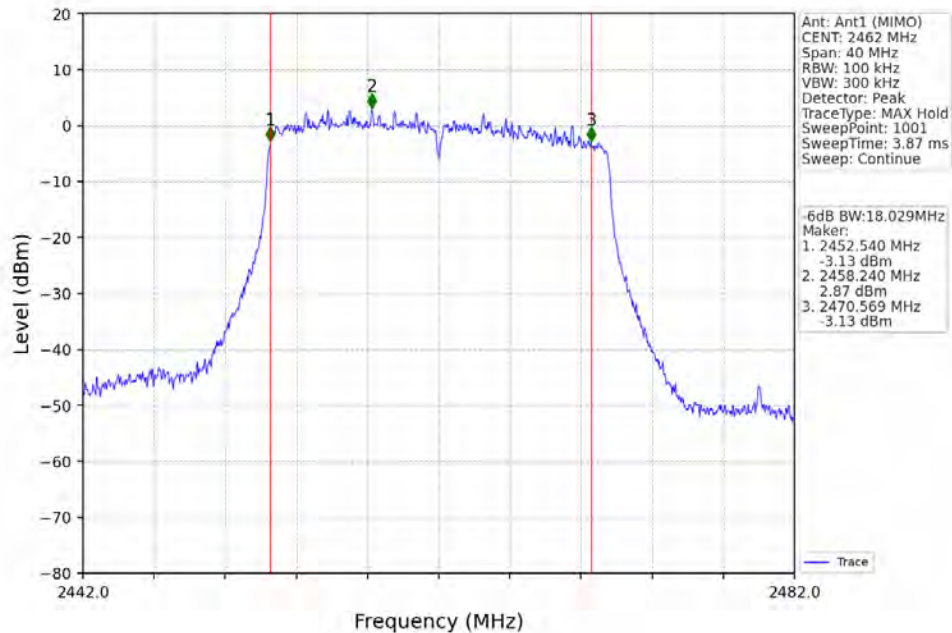
802.11ax(HE20)_LCH_2412MHz_RU242_Left_Ant1 (MIMO)_NTNV



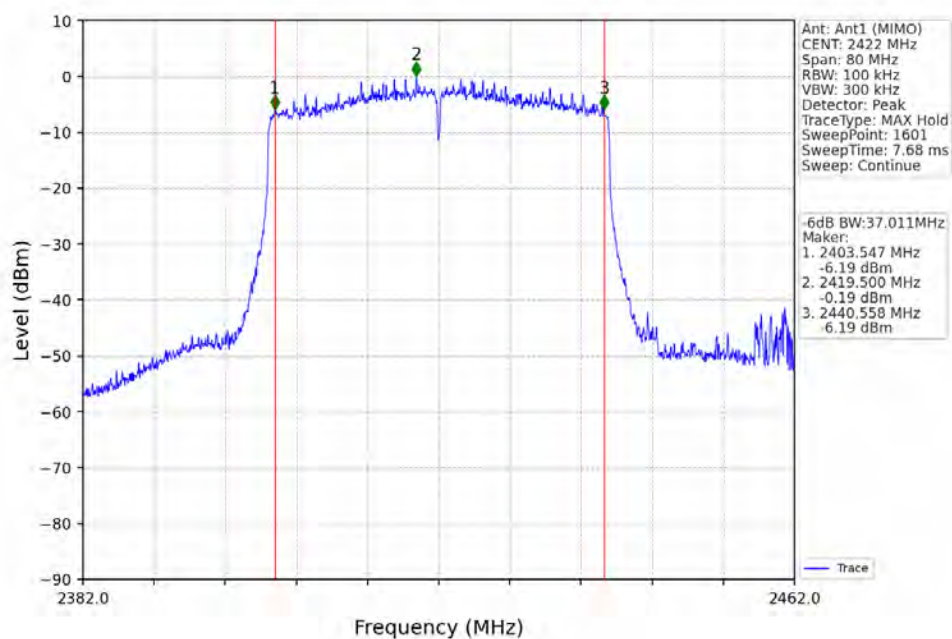
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802.11ax(HE20)_HCH_2462MHz_RU242_Left_Ant1 (MIMO)_NTNV



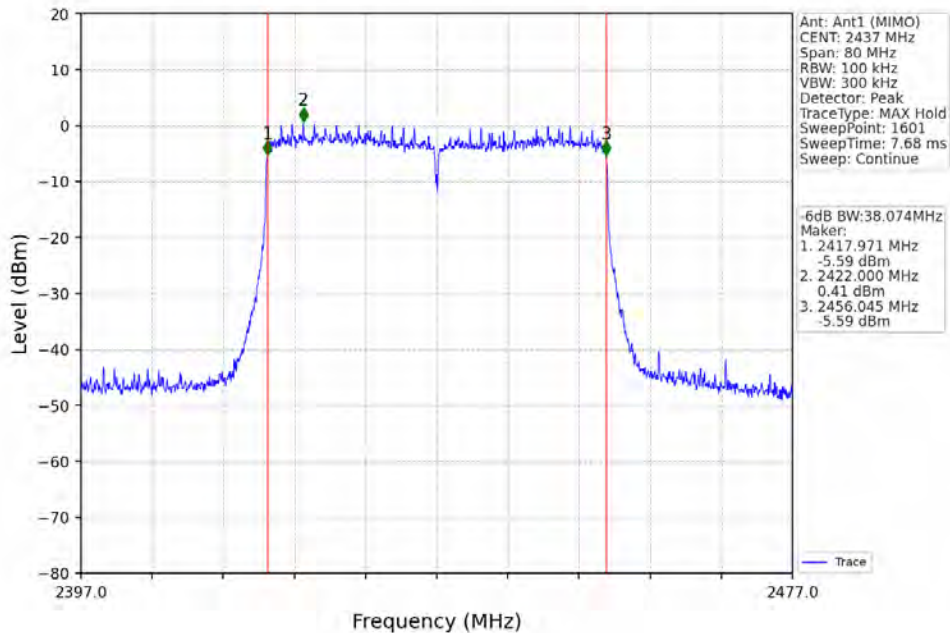
802.11ax(HE40)_LCH_2422MHz_RU484_Left_Ant1 (MIMO)_NTNV



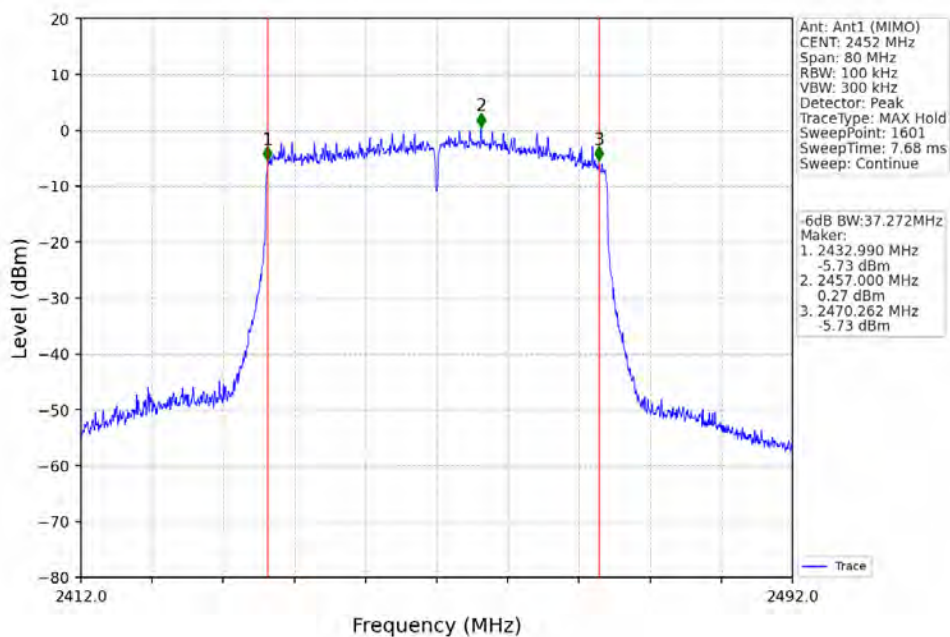
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802.11ax(HE40)_HCH_2452MHz_RU484_Left_Ant1 (MIMO)_NTNV



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3. Maximum Conducted Output Power

3.1 Power

3.1.1 Test Result

Mode	TX Type	Frequency (MHz)	RU	RU Pos	Maximum Average Conducted Output Power (dBm)				Verdict
					ANT1	ANT2	MIMO	Limit	
802.11b	MIMO	2412	/	/	15.94	16.06	19.01	<=30	Pass
		2437	/	/	15.84	16.13	19.00	<=30	Pass
		2462	/	/	15.75	15.82	18.80	<=30	Pass
802.11g	MIMO	2412	/	/	16.41	16.43	19.43	<=30	Pass
		2437	/	/	16.22	16.76	19.51	<=30	Pass
		2462	/	/	15.95	16.57	19.28	<=30	Pass
802.11n (HT20)	MIMO	2412	/	/	15.33	15.71	18.53	<=30	Pass
		2437	/	/	15.16	15.90	18.56	<=30	Pass
		2462	/	/	14.86	15.34	18.12	<=30	Pass
802.11n (HT40)	MIMO	2422	/	/	14.51	14.76	17.65	<=30	Pass
		2437	/	/	14.70	15.01	17.87	<=30	Pass
		2452	/	/	13.83	14.00	16.93	<=30	Pass
802.11ax (HE20)	MIMO	2412	RU242	Left	14.01	14.36	17.20	<=30	Pass
		2437	RU242	Left	14.10	14.73	17.44	<=30	Pass
		2462	RU242	Left	13.81	14.29	17.07	<=30	Pass
802.11ax (HE40)	MIMO	2422	RU484	Left	14.18	14.37	17.29	<=30	Pass
		2437	RU484	Left	14.56	14.72	17.65	<=30	Pass
		2452	RU484	Left	13.70	13.88	16.80	<=30	Pass

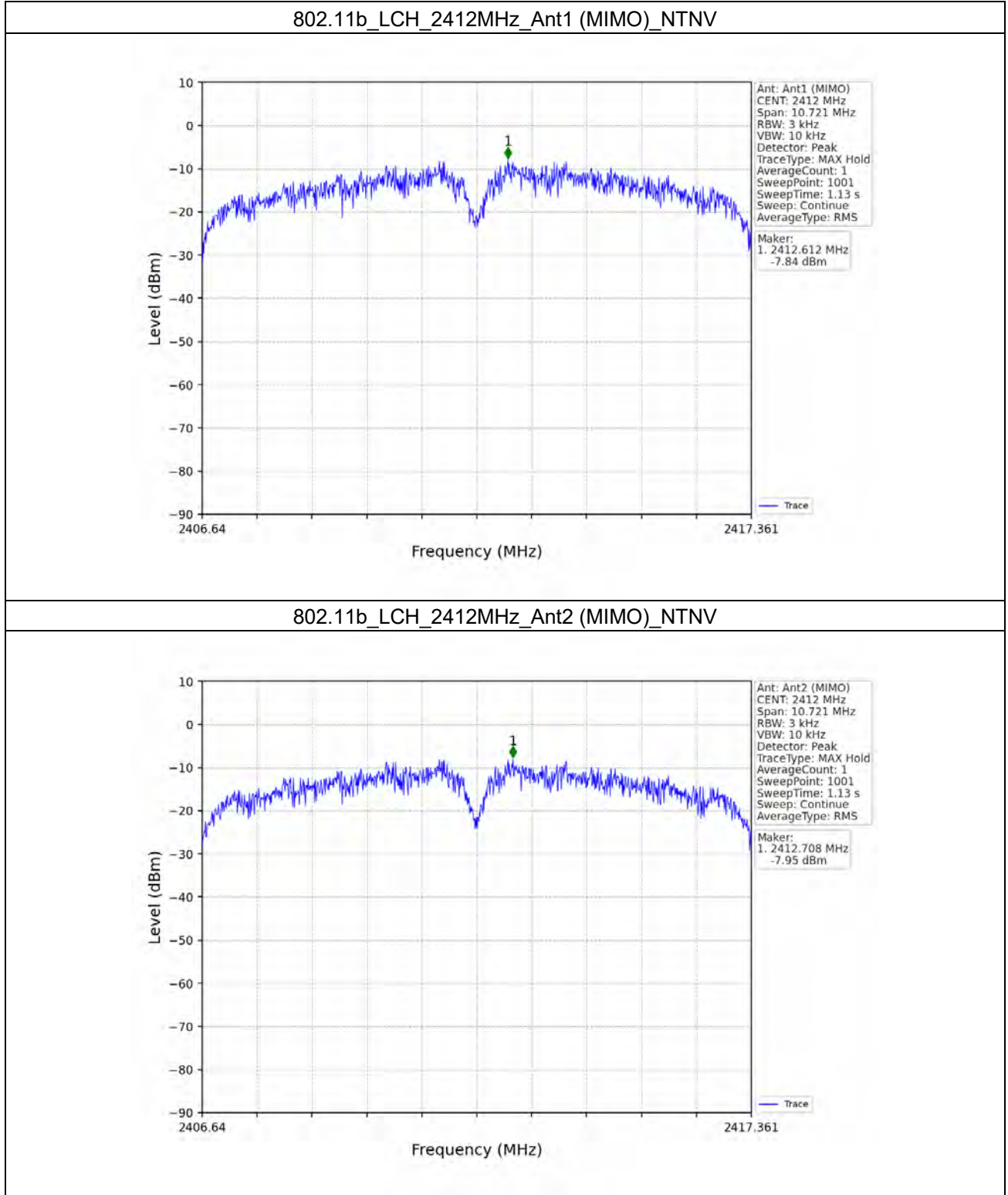
4. Maximum Power Spectral Density

4.1 PSD

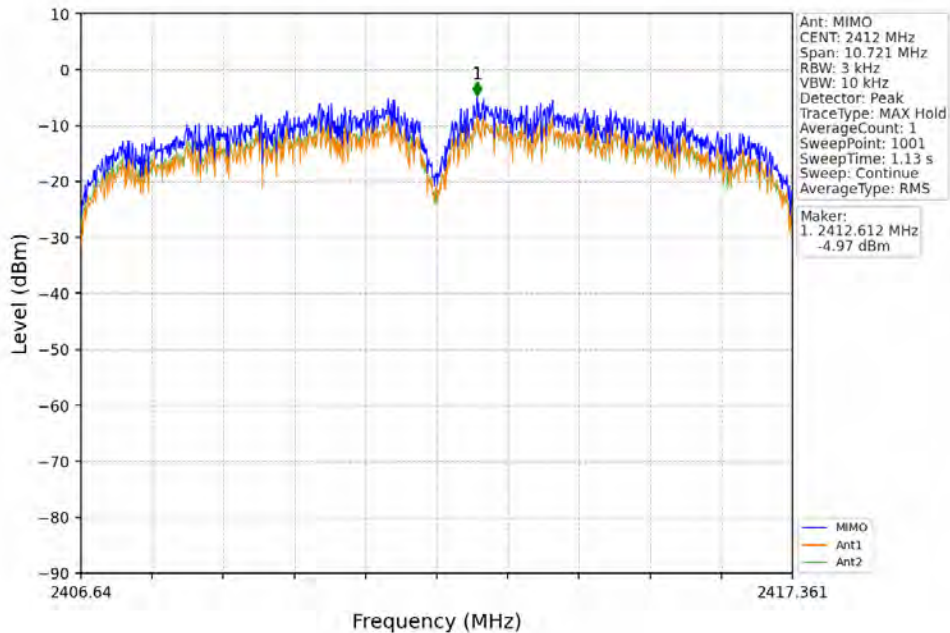
4.1.1 Test Result

Mode	TX Type	Frequency (MHz)	RU	RU Pos	Maximum PSD (dBm/3kHz)				Verdict
					ANT1	ANT2	MIMO	Limit	
802.11b	MIMO	2412	/	/	-7.84	-7.95	-4.97	<=8	Pass
		2437	/	/	-7.10	-6.73	-3.90	<=8	Pass
		2462	/	/	-7.10	-6.79	-3.95	<=8	Pass
802.11g	MIMO	2412	/	/	-10.18	-9.47	-7.45	<=8	Pass
		2437	/	/	-9.78	-9.30	-8.00	<=8	Pass
		2462	/	/	-9.36	-9.34	-7.81	<=8	Pass
802.11n (HT20)	MIMO	2412	/	/	-9.19	-9.43	-7.40	<=8	Pass
		2437	/	/	-11.54	-9.71	-7.62	<=8	Pass
		2462	/	/	-10.04	-9.67	-6.84	<=8	Pass
802.11n (HT40)	MIMO	2422	/	/	-12.44	-13.32	-10.75	<=8	Pass
		2437	/	/	-13.27	-12.68	-10.58	<=8	Pass
		2452	/	/	-14.37	-14.42	-11.44	<=8	Pass
802.11ax (HE20)	MIMO	2412	RU242	Left	-12.12	-12.44	-10.17	<=8	Pass
		2437	RU242	Left	-12.23	-11.46	-8.82	<=8	Pass
		2462	RU242	Left	-12.27	-12.28	-10.38	<=8	Pass
802.11ax (HE40)	MIMO	2422	RU484	Left	-14.37	-14.55	-12.22	<=8	Pass
		2437	RU484	Left	-15.13	-14.26	-12.72	<=8	Pass
		2452	RU484	Left	-15.12	-14.38	-12.66	<=8	Pass

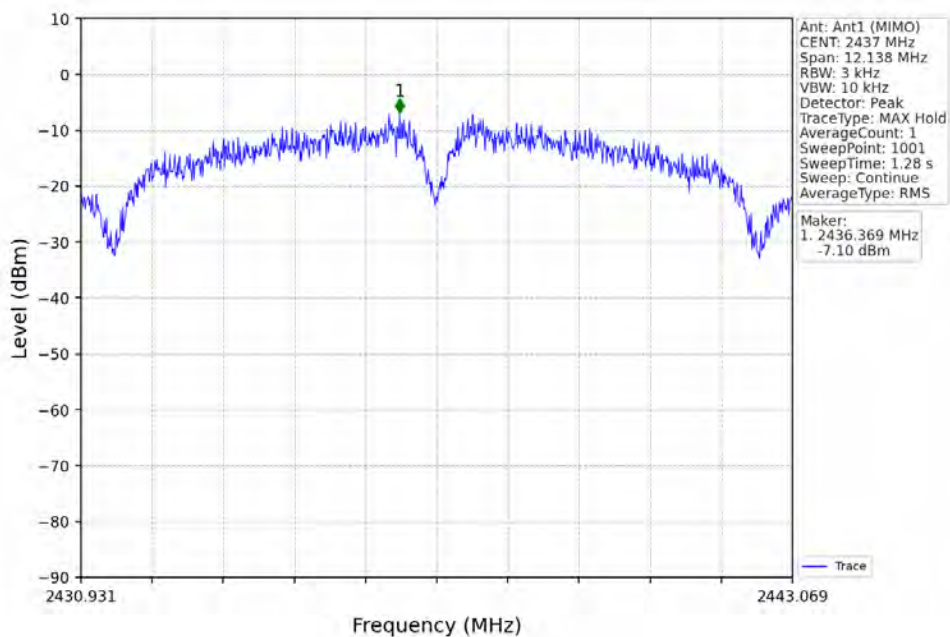
4.1.2 Test Graph



802.11b_LCH_2412MHz_MIMO_NTNV



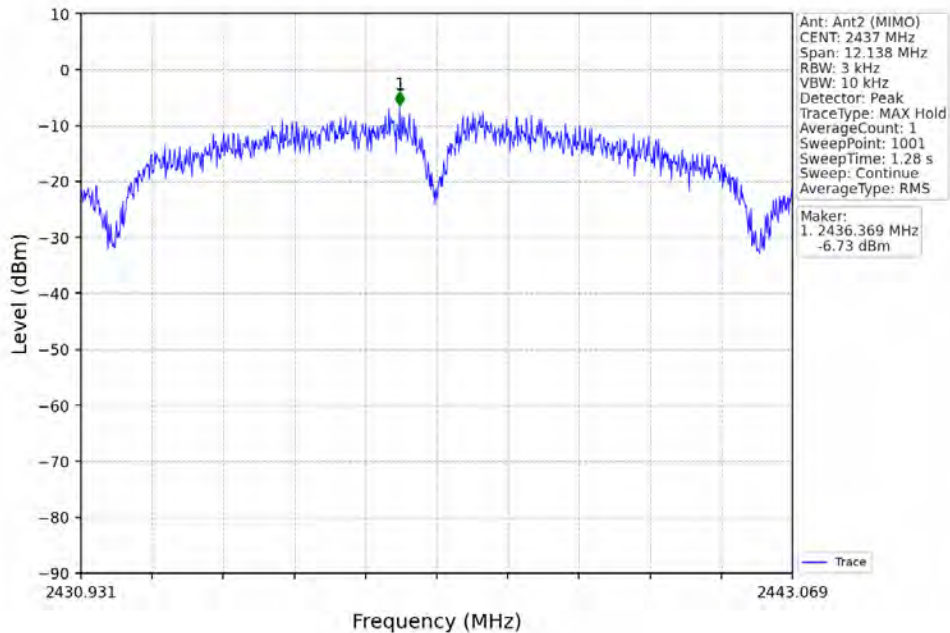
802.11b_MCH_2437MHz_Ant1 (MIMO)_NTNV



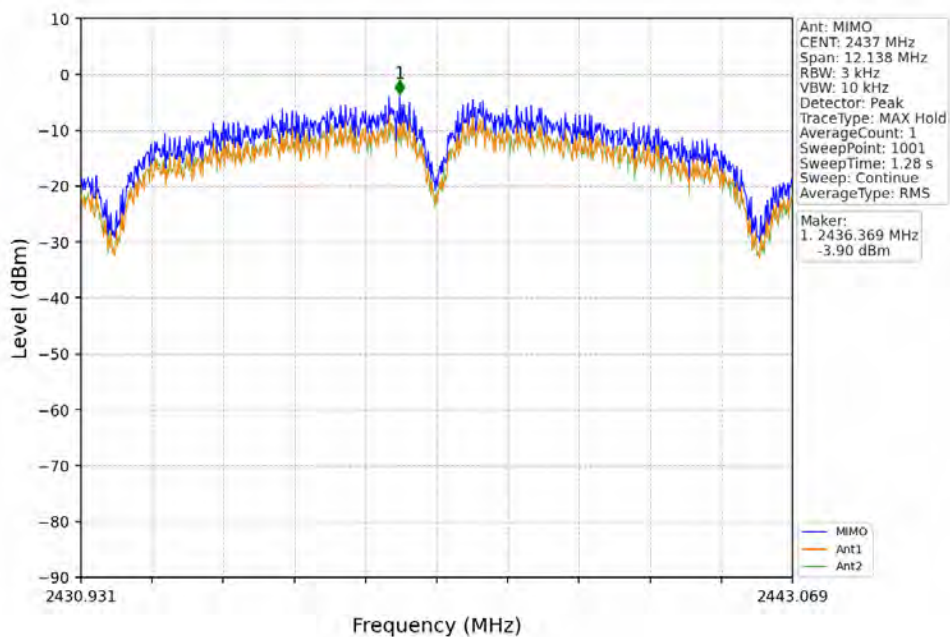
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802.11b_MCH_2437MHz_Ant2 (MIMO)_NTNV



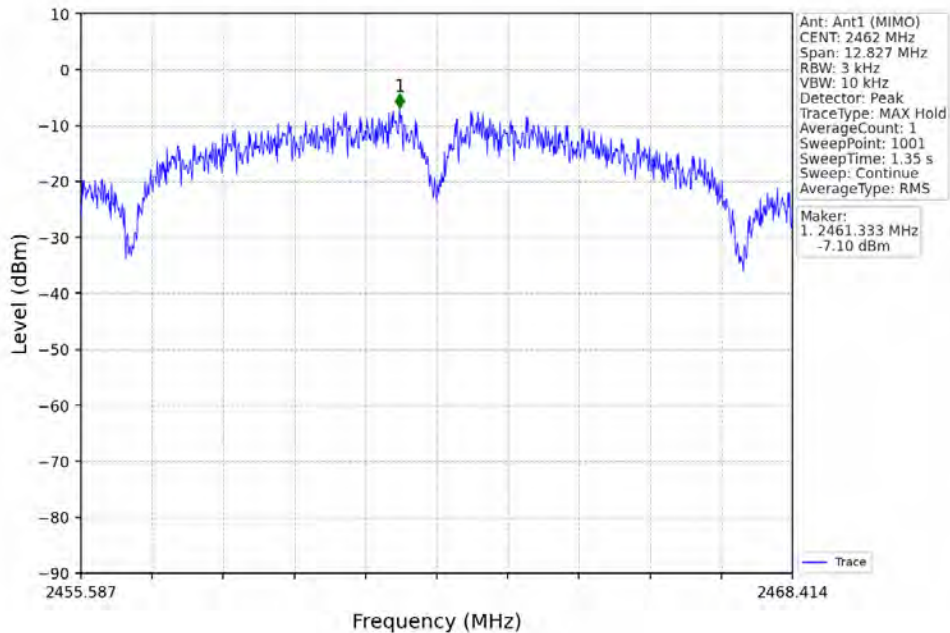
802.11b_MCH_2437MHz_MIMO_NTNV



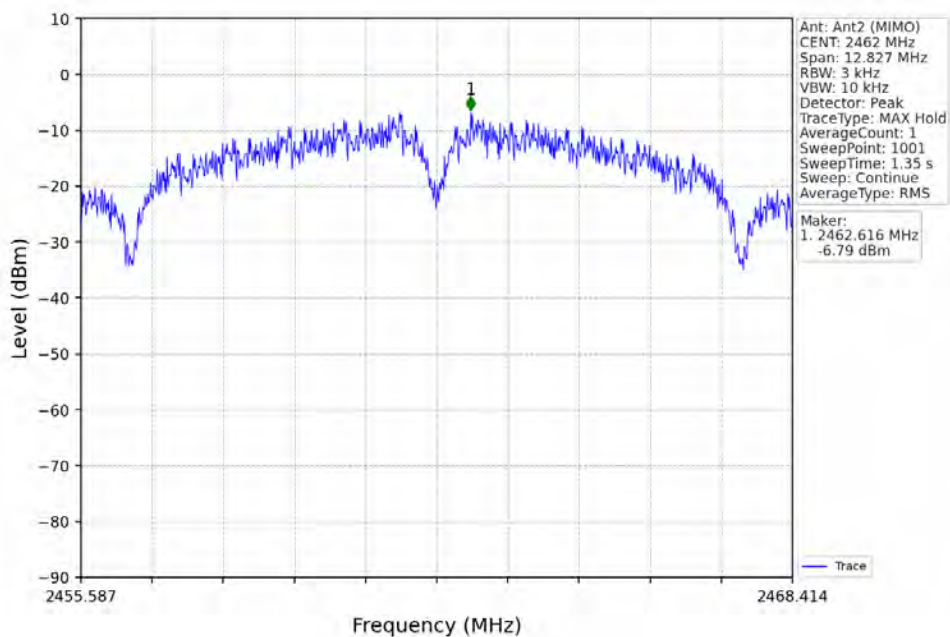
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802.11b_HCH_2462MHz_Ant1 (MIMO)_NTNV



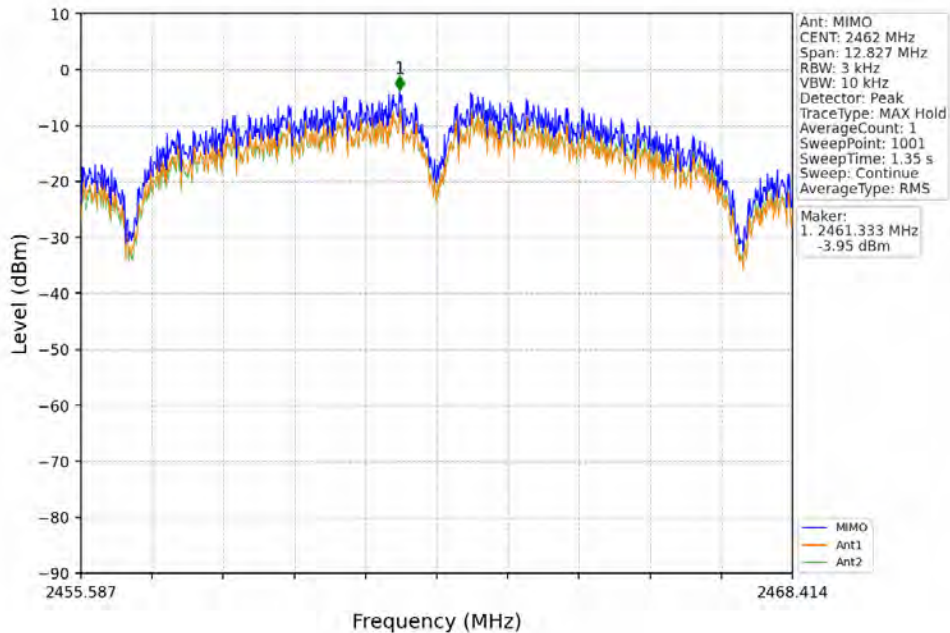
802.11b_HCH_2462MHz_Ant2 (MIMO)_NTNV



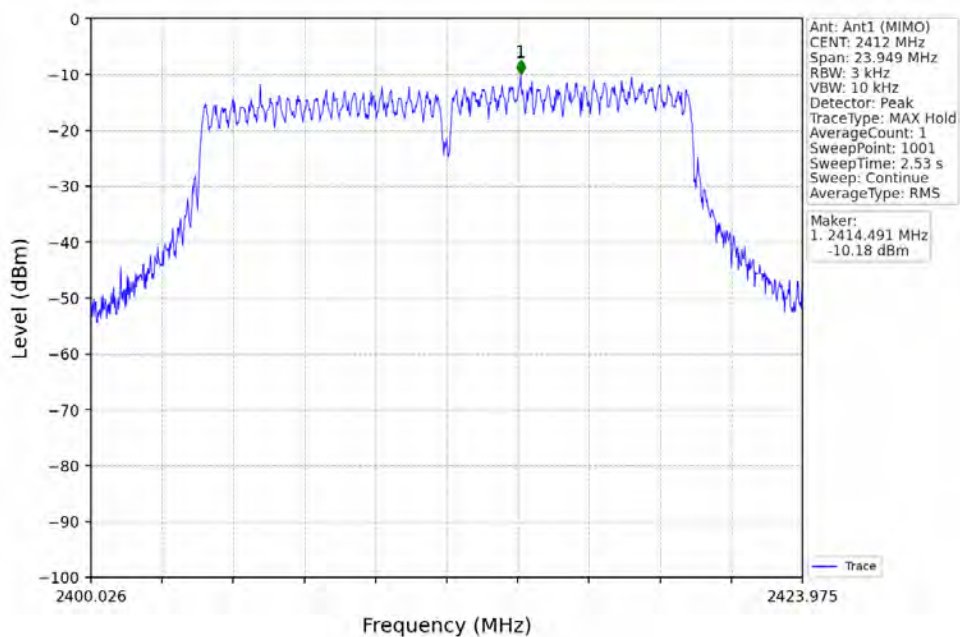
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802.11b_HCH_2462MHz_MIMO_NTNV



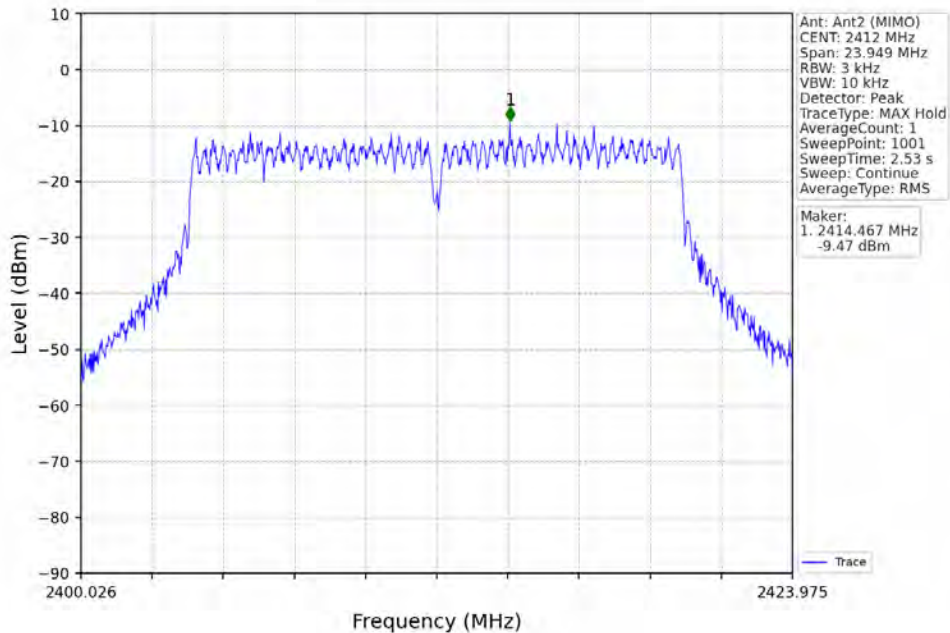
802.11g_LCH_2412MHz_Ant1 (MIMO)_NTNV



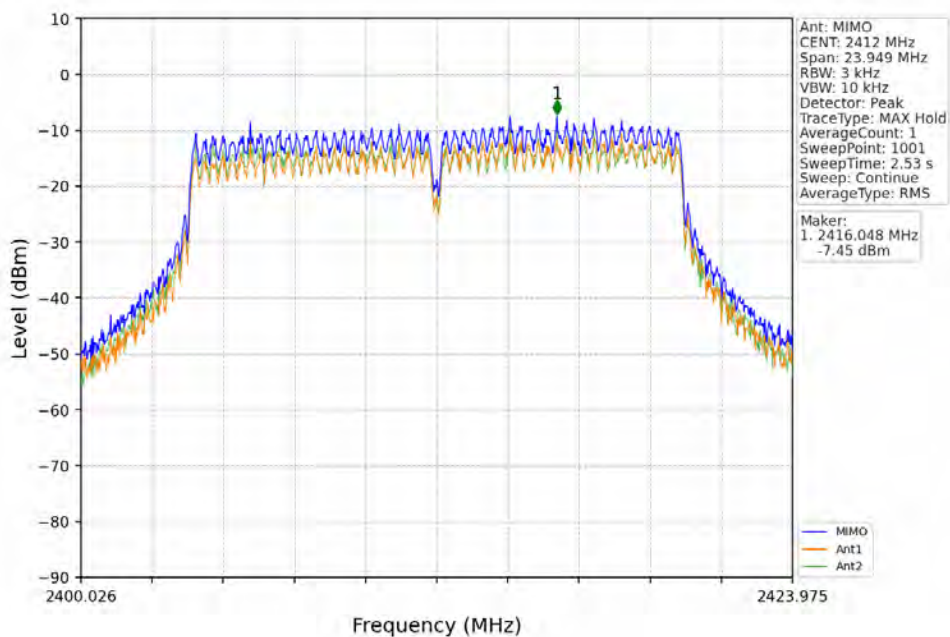
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802.11g_LCH_2412MHz_Ant2 (MIMO)_NTNV



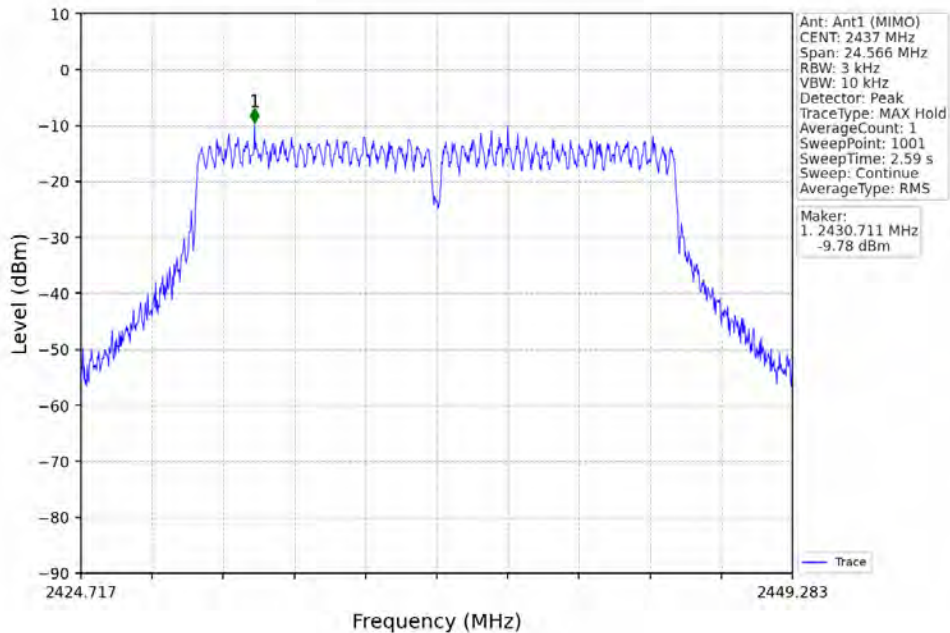
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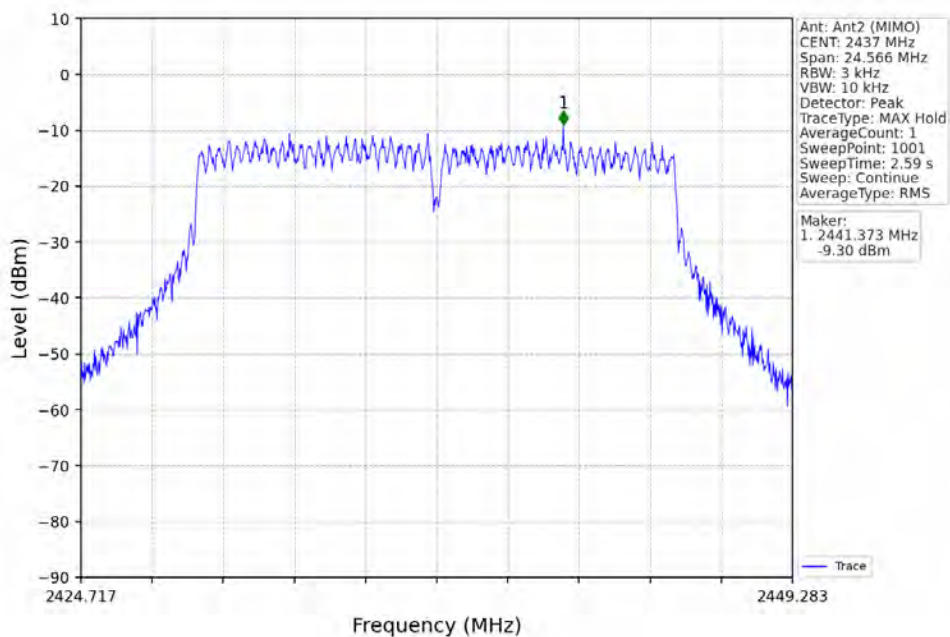
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802.11g_MCH_2437MHz_Ant1 (MIMO)_NTNV



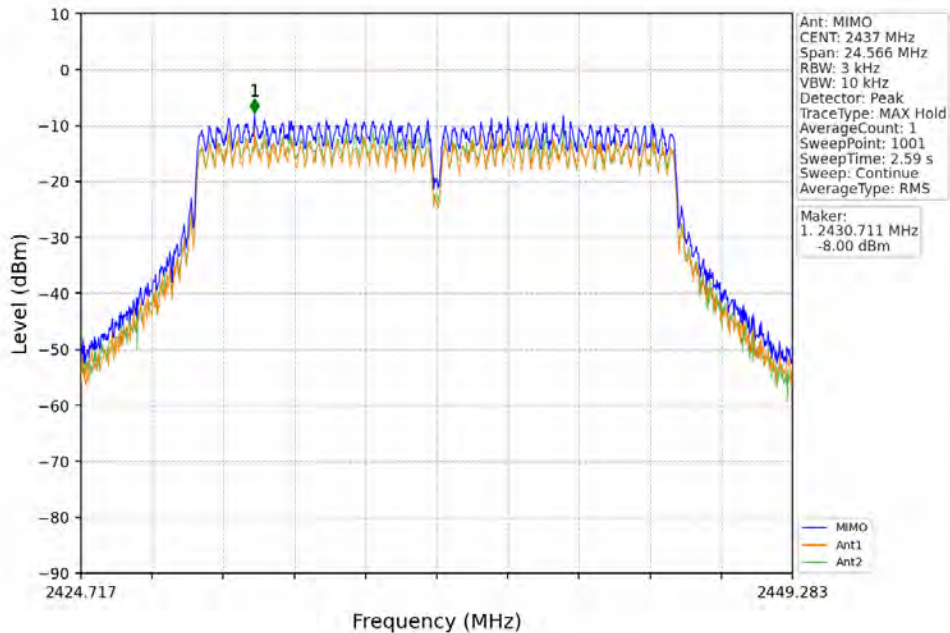
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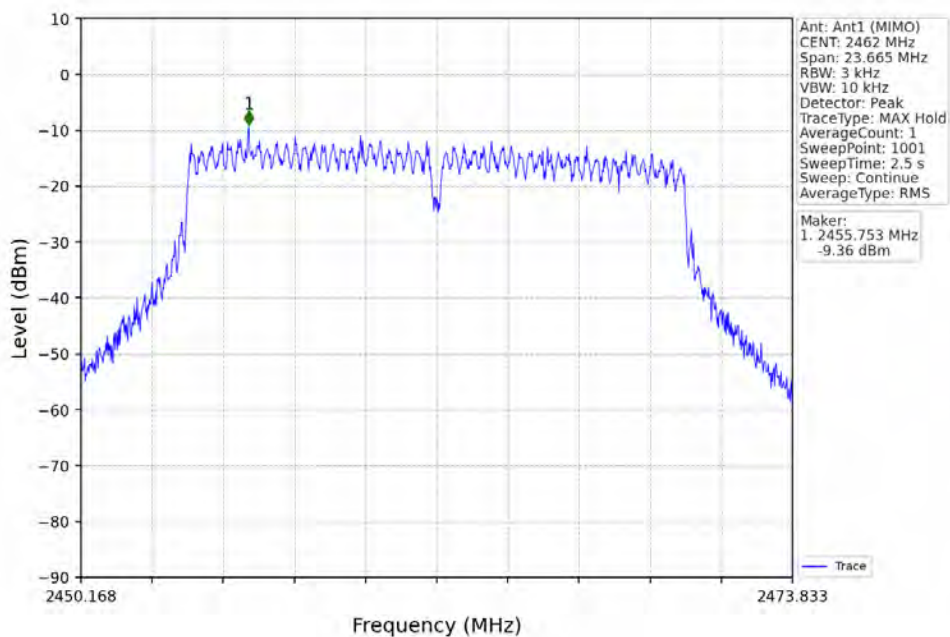
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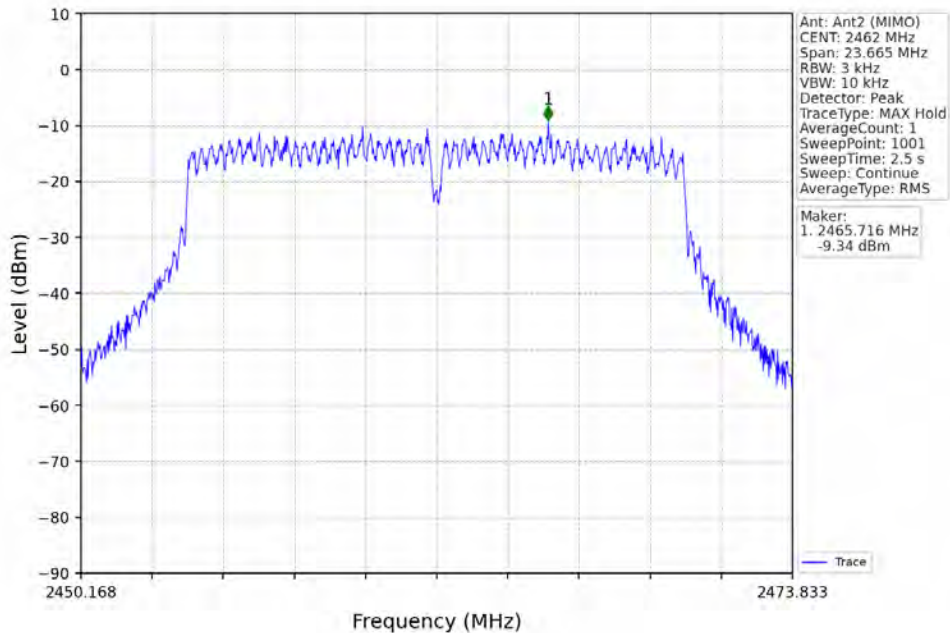
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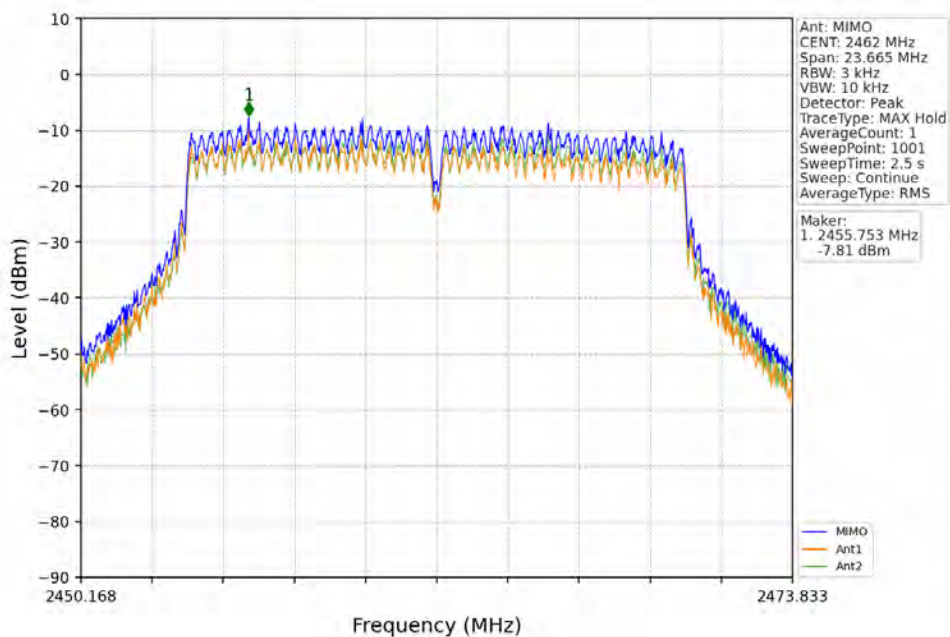
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802.11g_HCH_2462MHz_Ant2 (MIMO)_NTNV



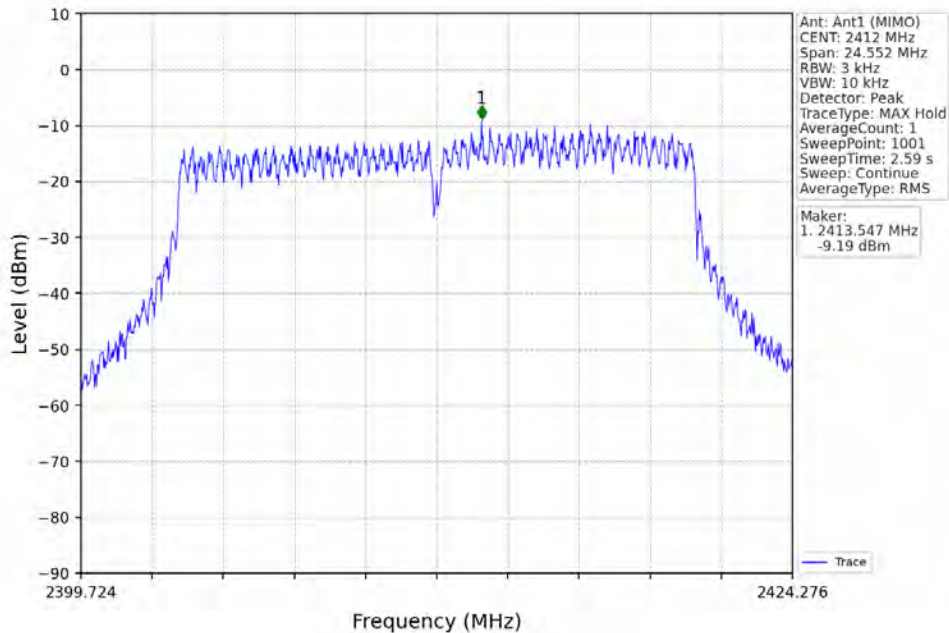
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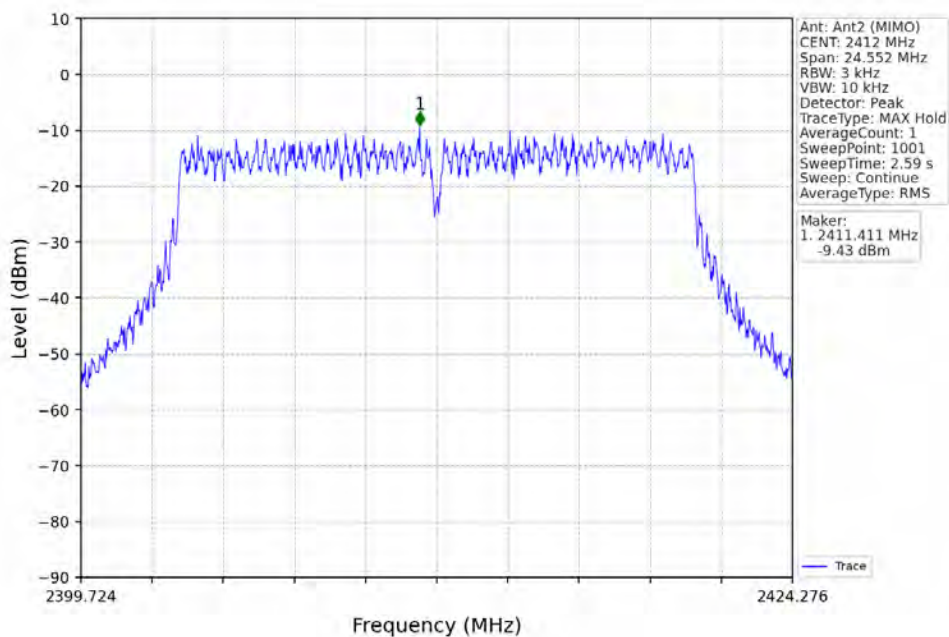
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802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



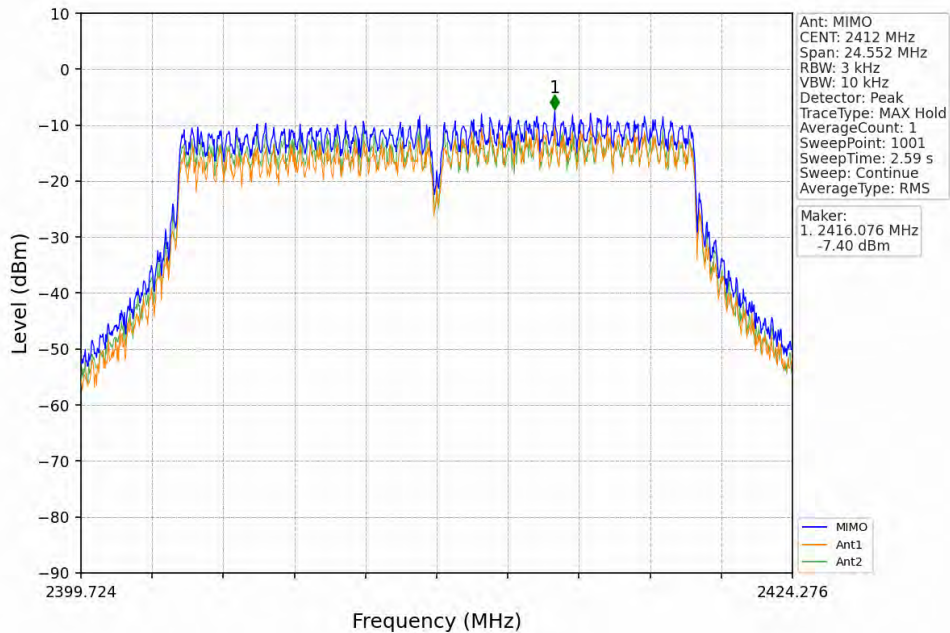
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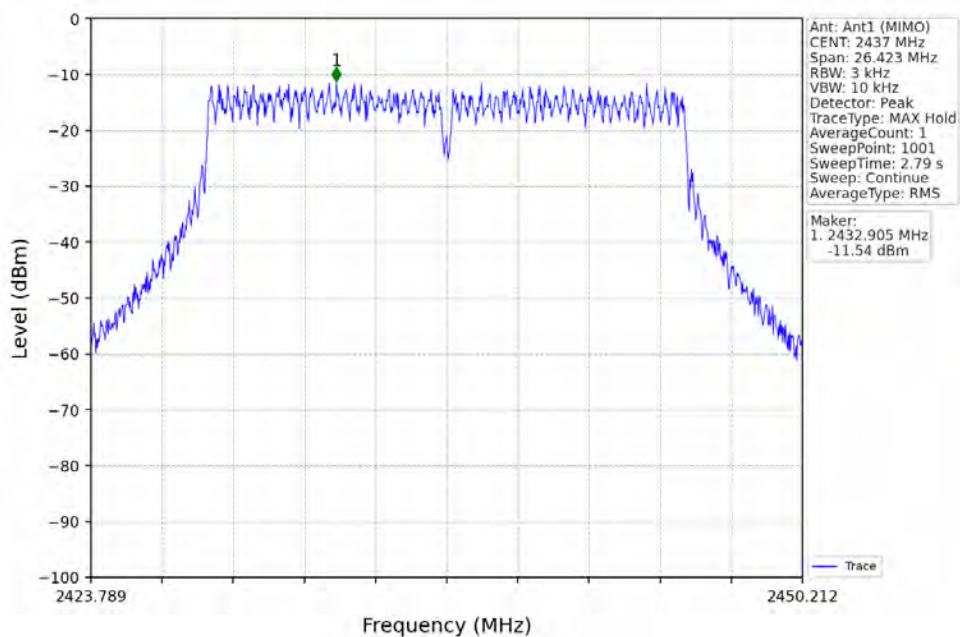
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802.11n(HT20)_LCH_2412MHz_MIMO_NTNV



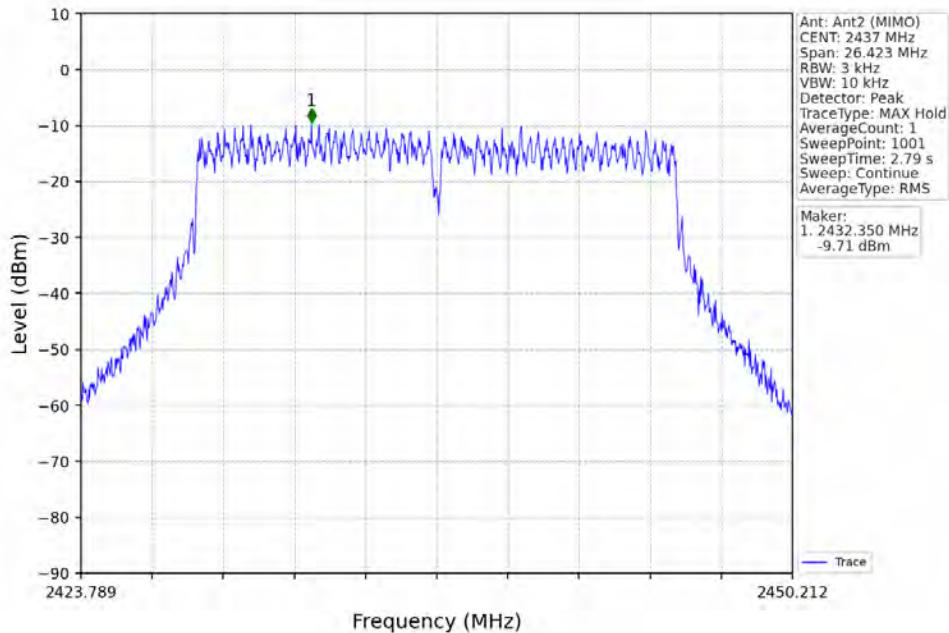
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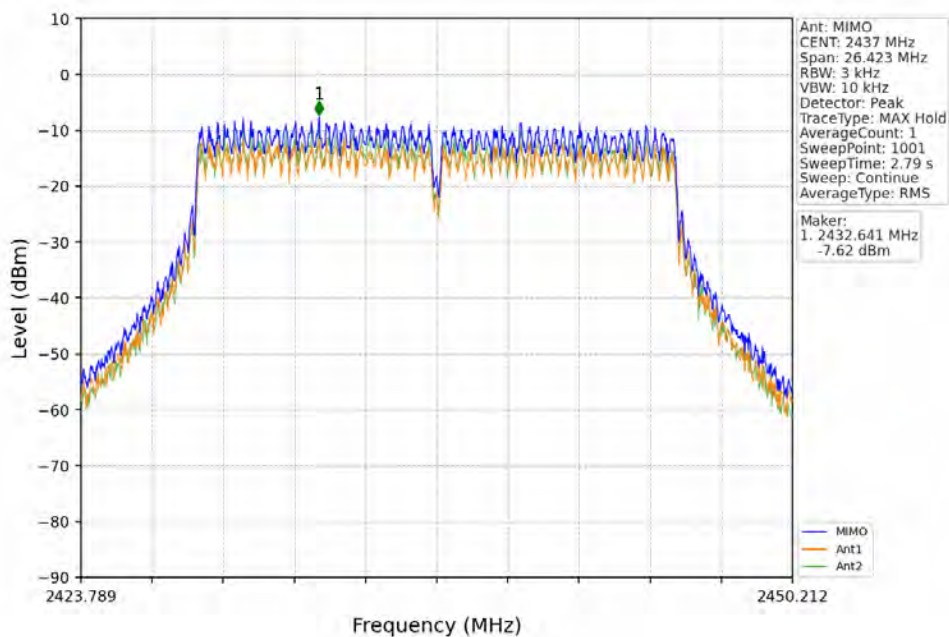
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802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



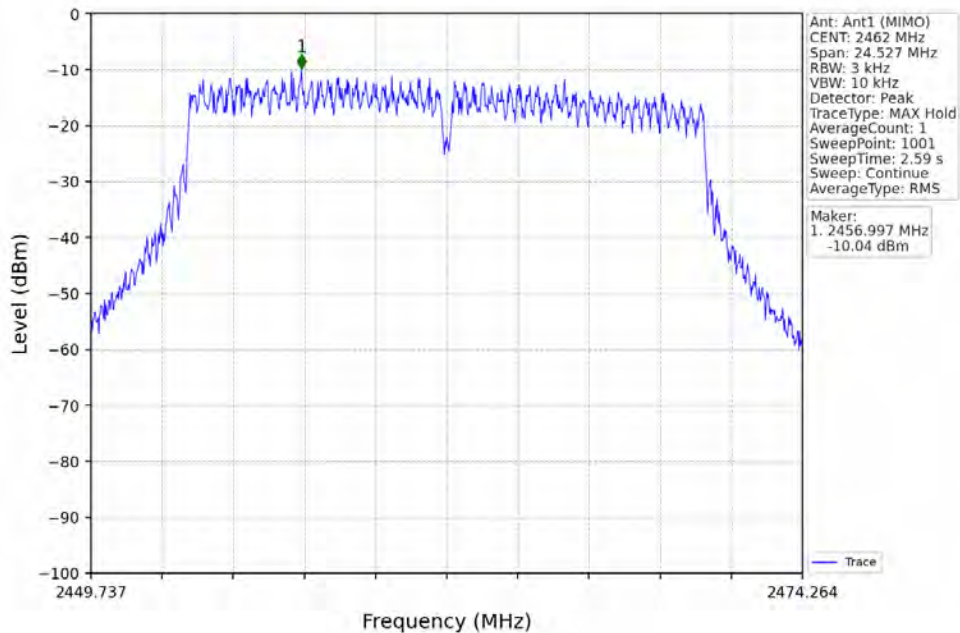
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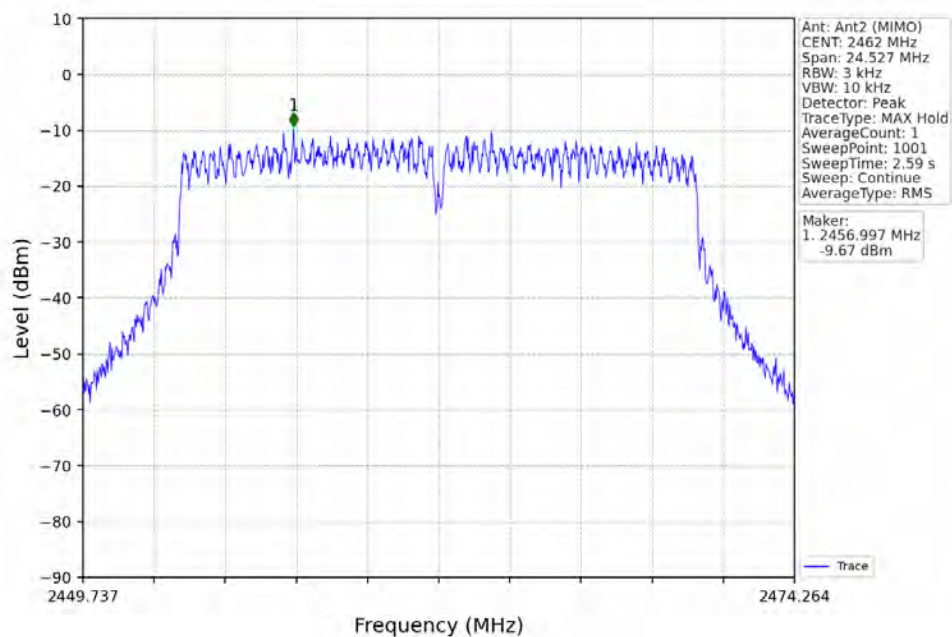
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802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



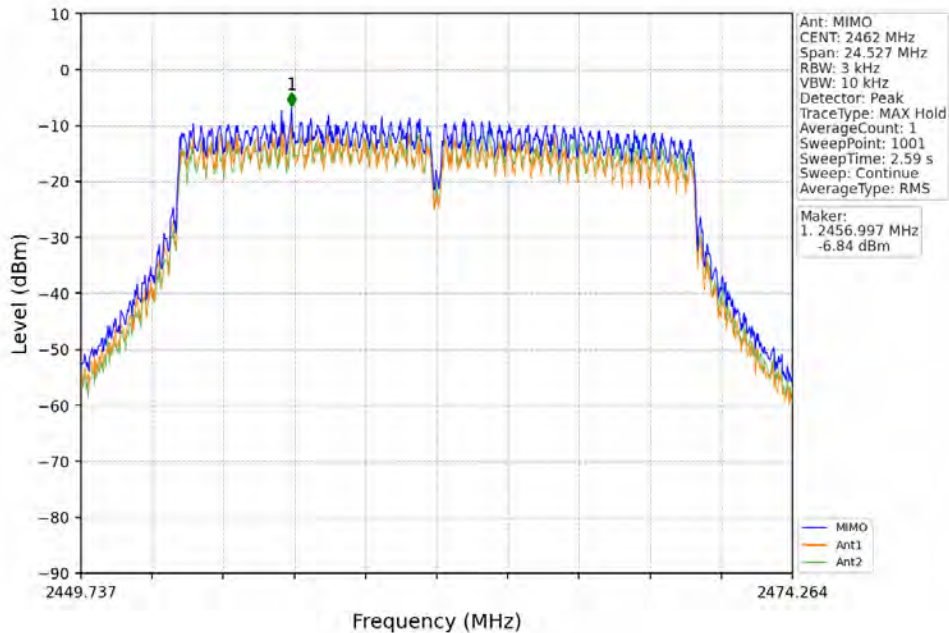
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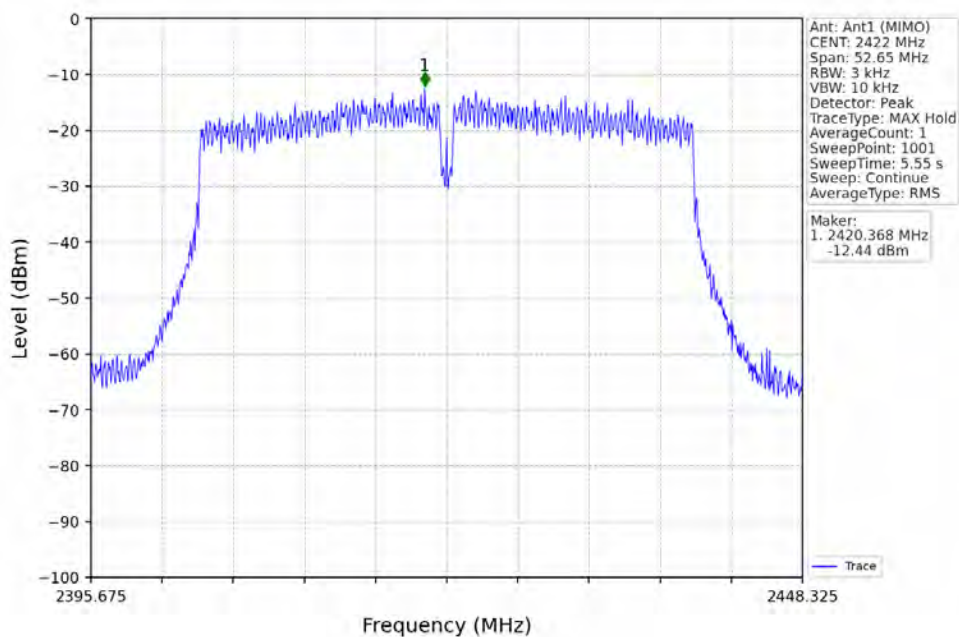
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802.11n(HT20)_HCH_2462MHz_MIMO_NTNV



802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



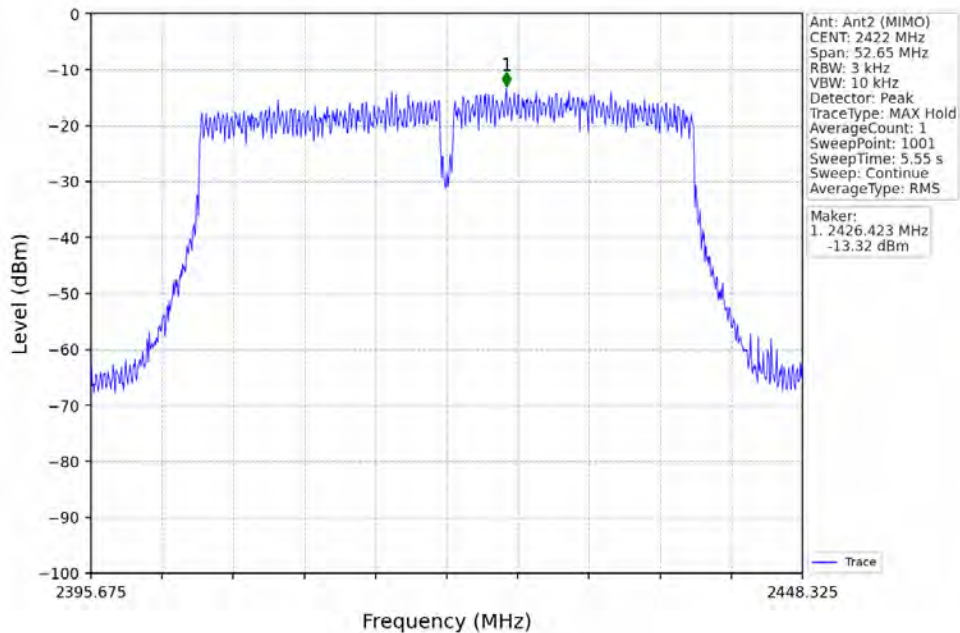
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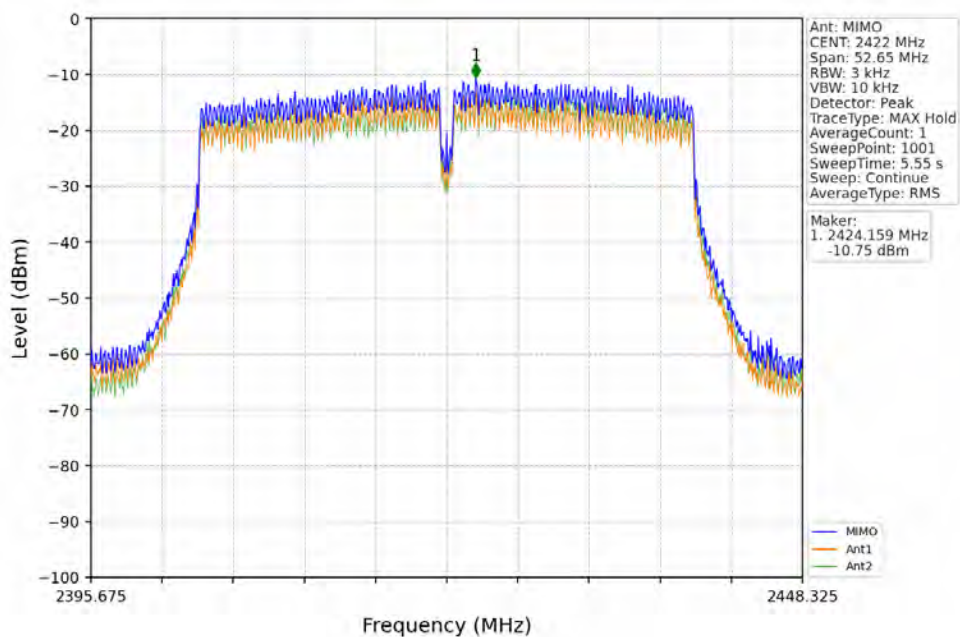
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中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

802.11n(HT40)_LCH_2422MHz_Ant2 (MIMO)_NTNV



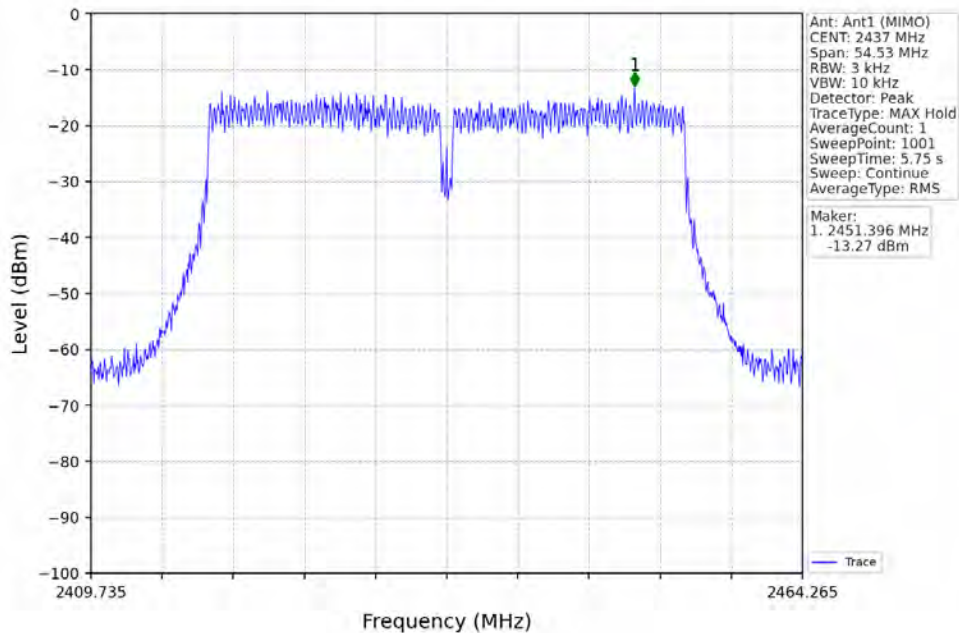
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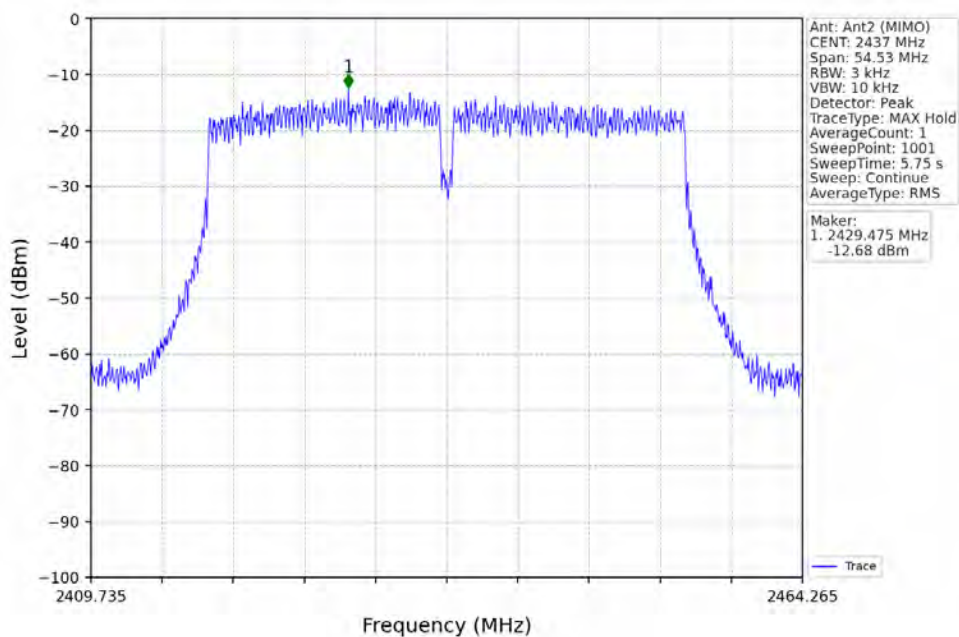
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802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



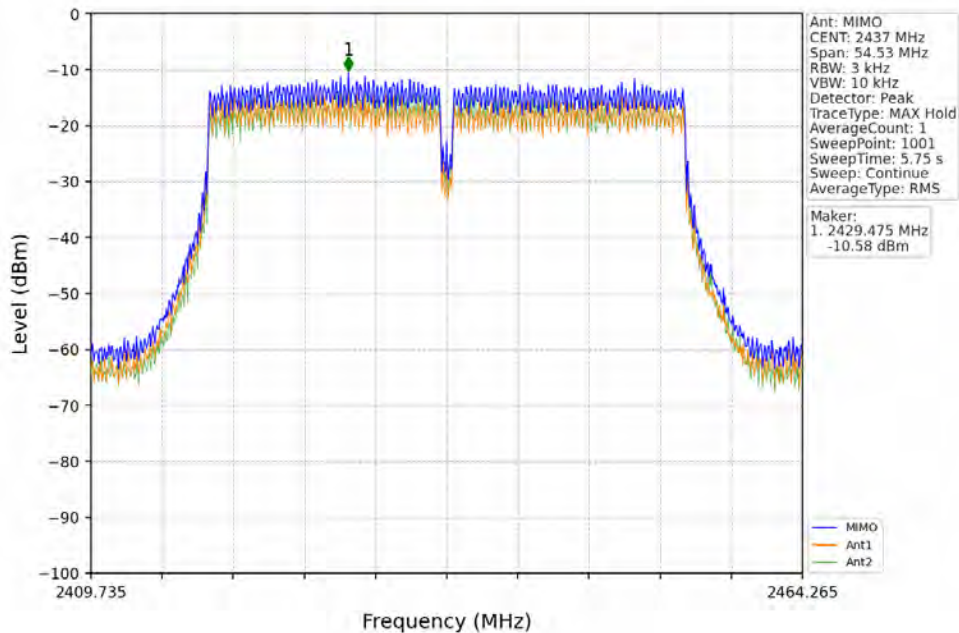
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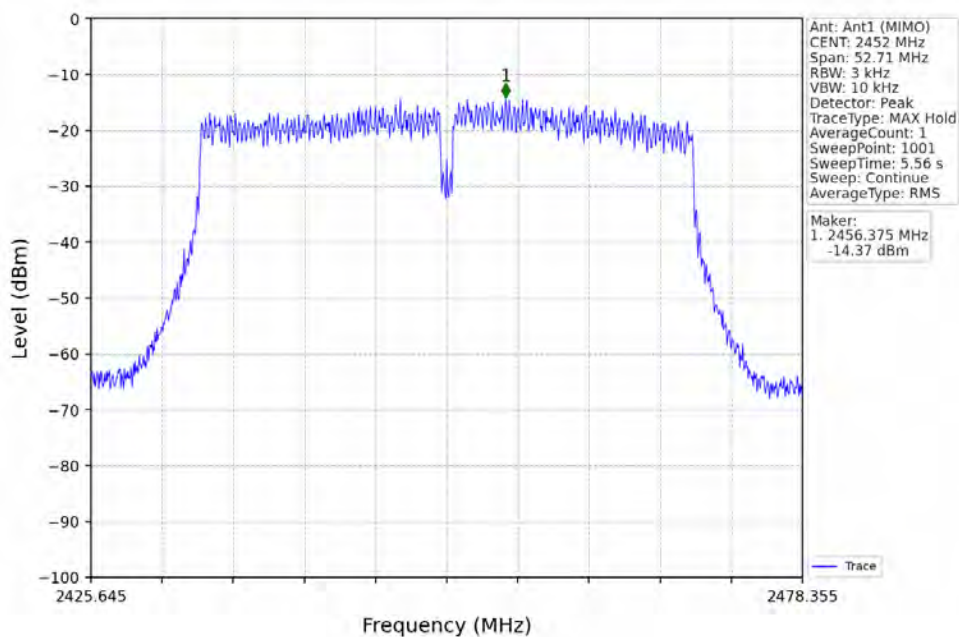
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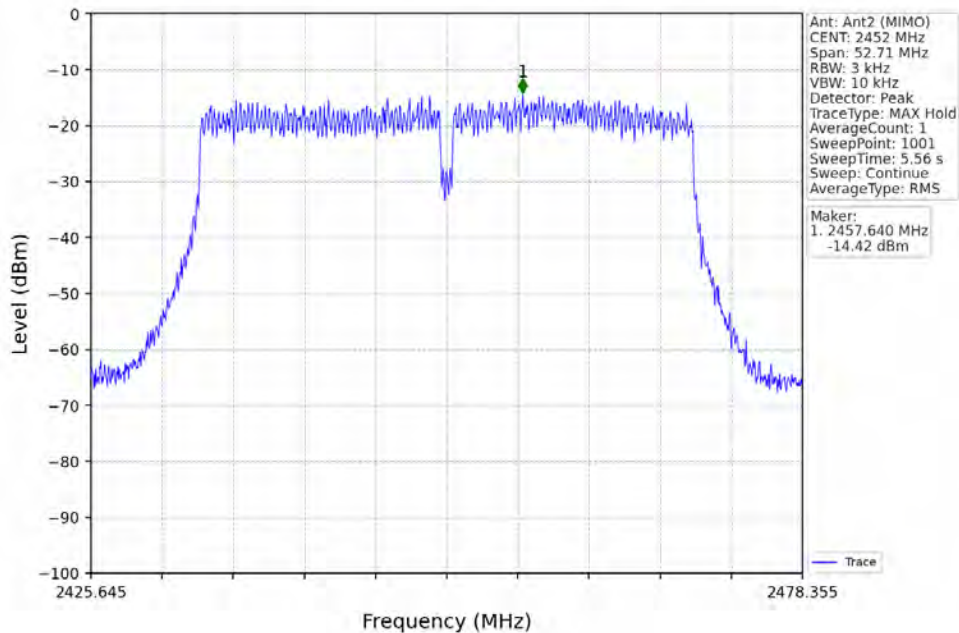
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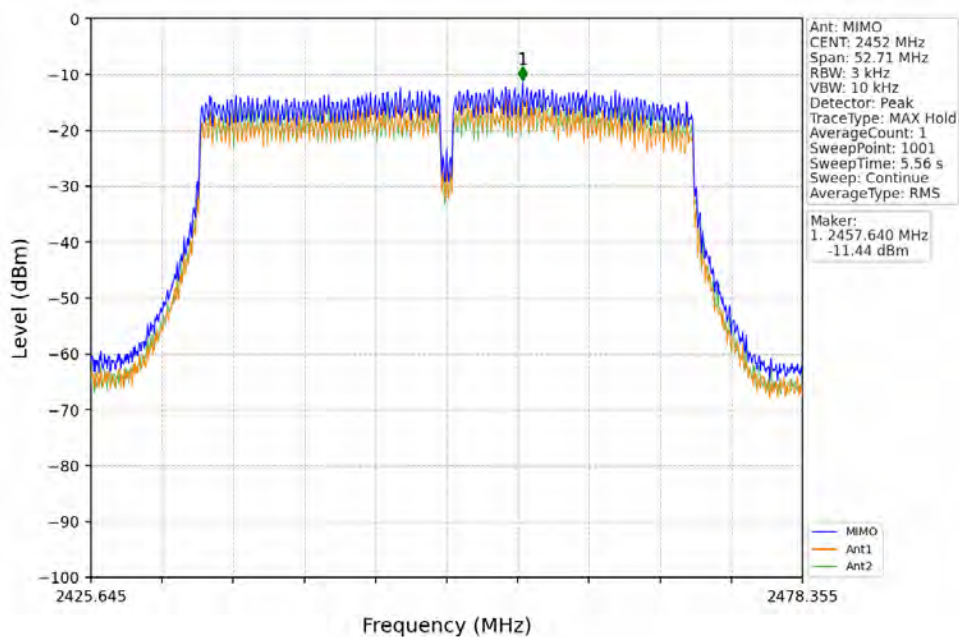
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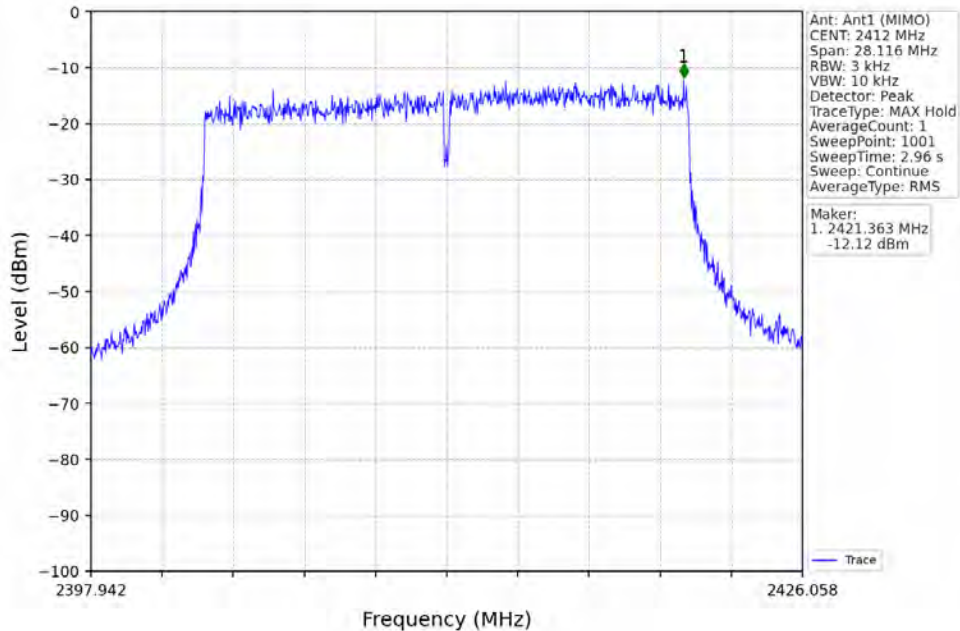
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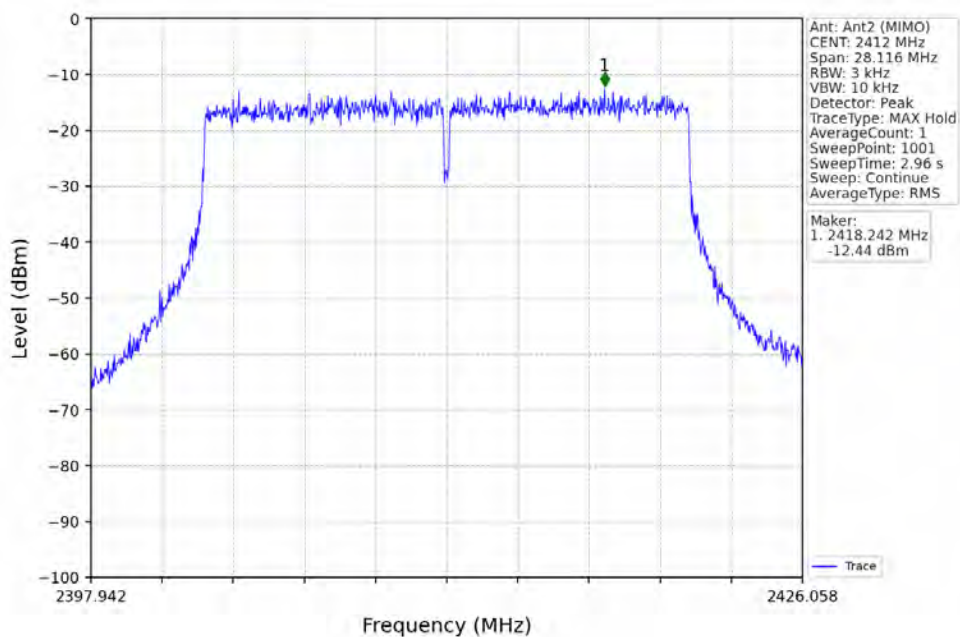
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802.11ax(HE20)_LCH_2412MHz_RU242_Left_Ant1 (MIMO)_NTNV



802.11ax(HE20)_LCH_2412MHz_RU242_Left_Ant2 (MIMO)_NTNV



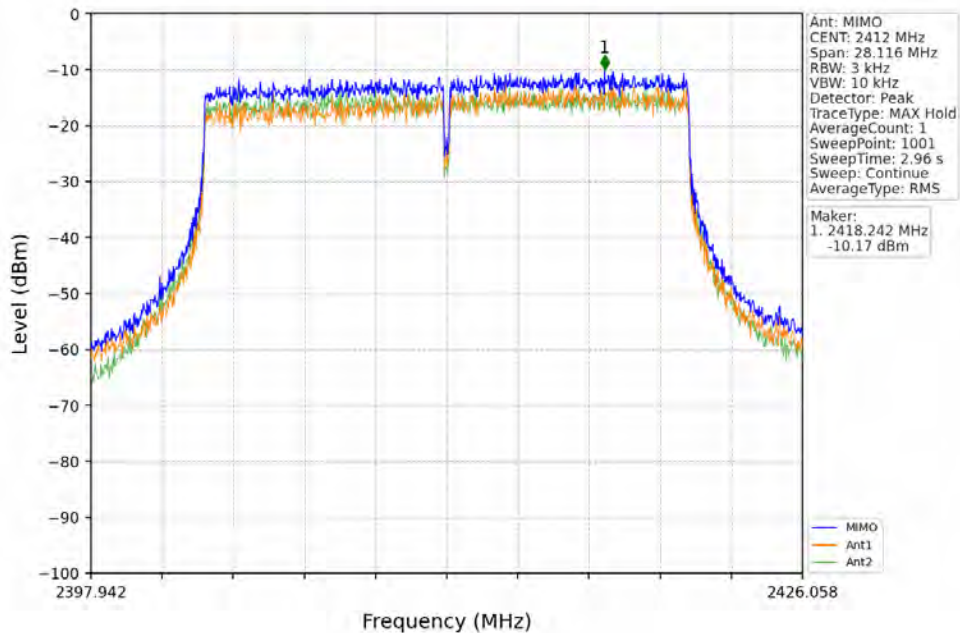
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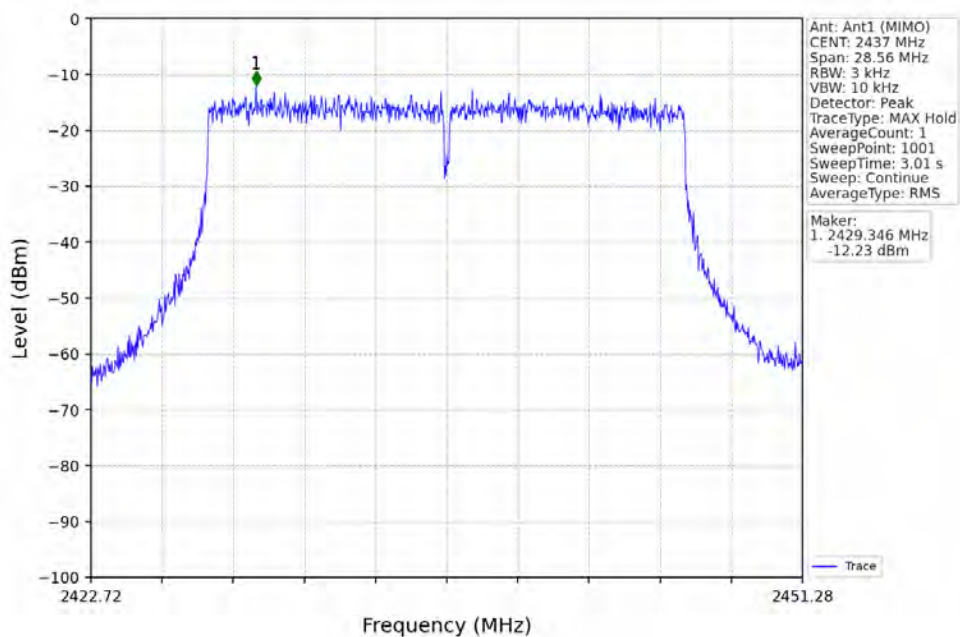
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802.11ax(HE20)_LCH_2412MHz_RU242_Left_MIMO_NTNV



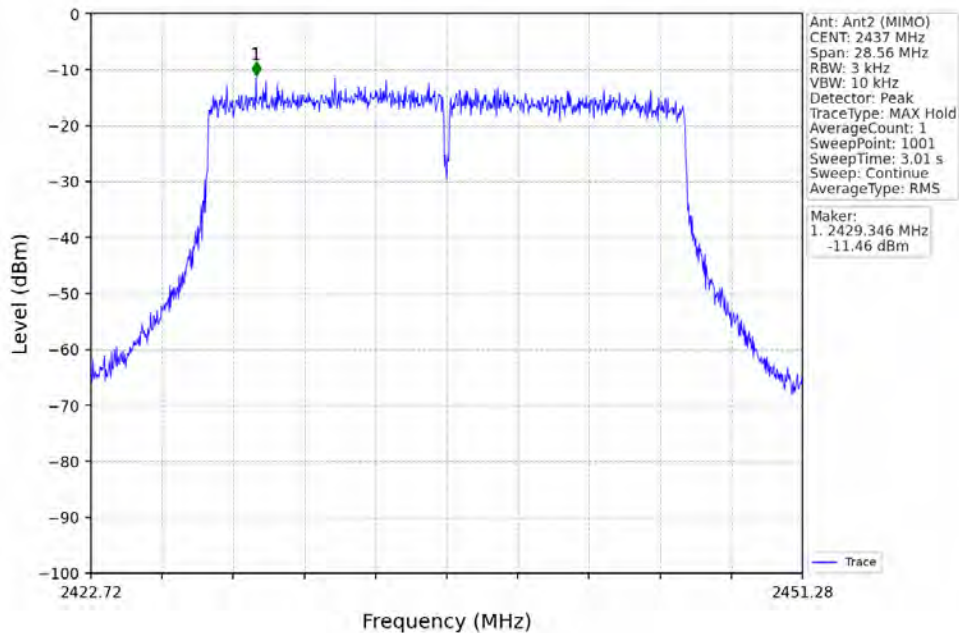
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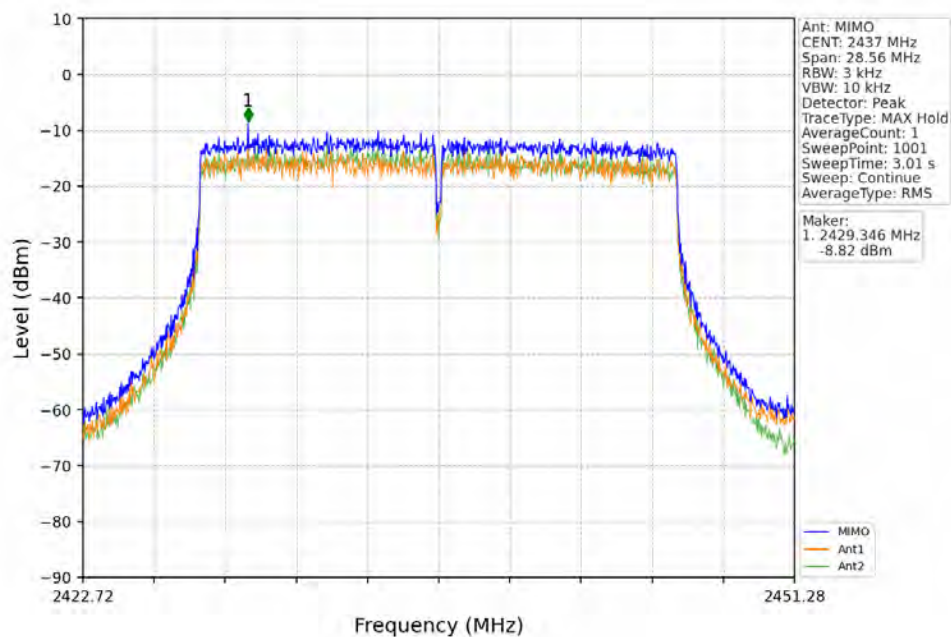
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802.11ax(HE20)_MCH_2437MHz_RU242_Left_Ant2 (MIMO)_NTNV



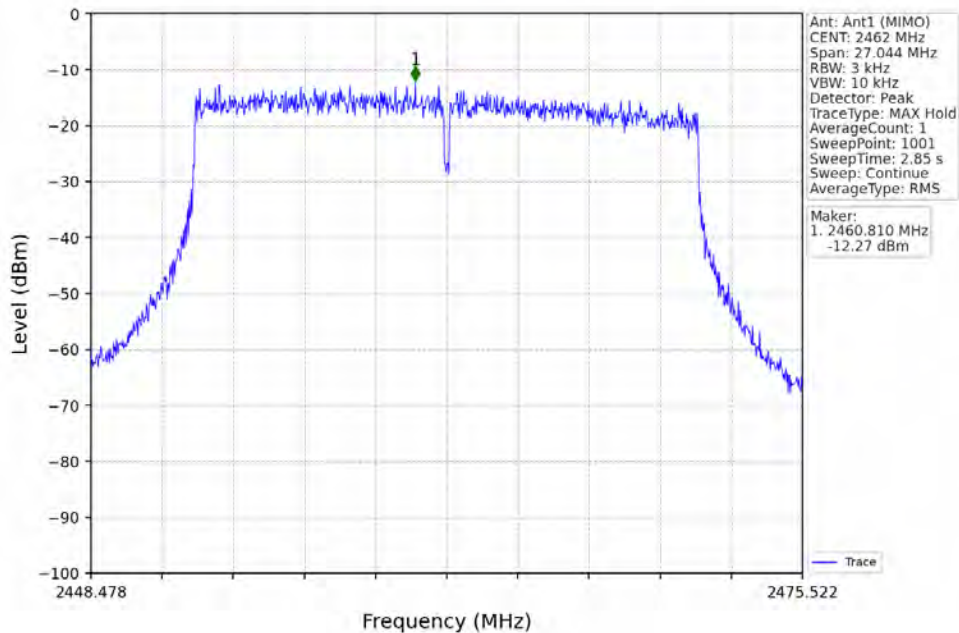
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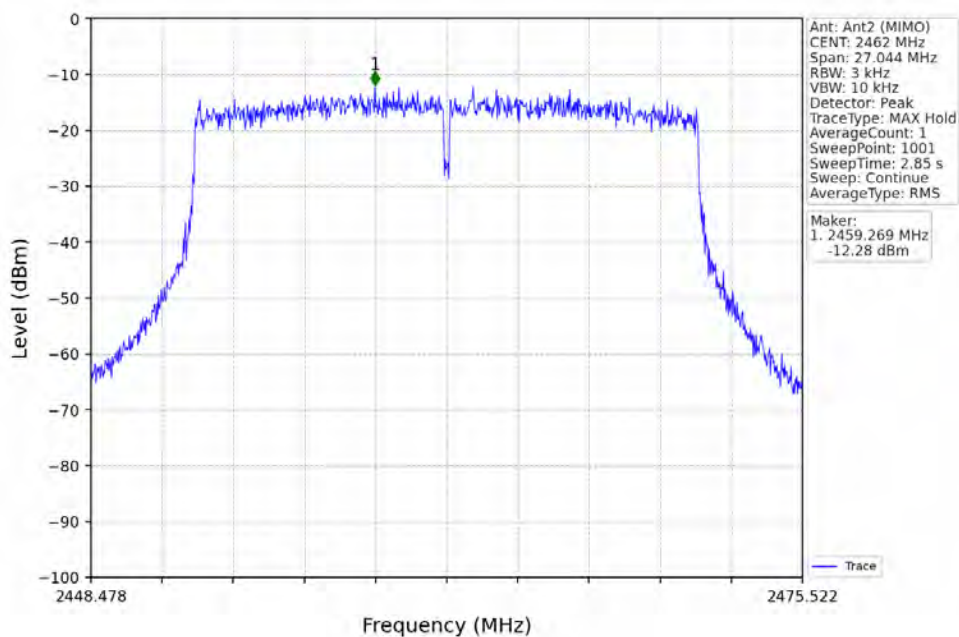
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802.11ax(HE20)_HCH_2462MHz_RU242_Left_Ant1 (MIMO)_NTNV



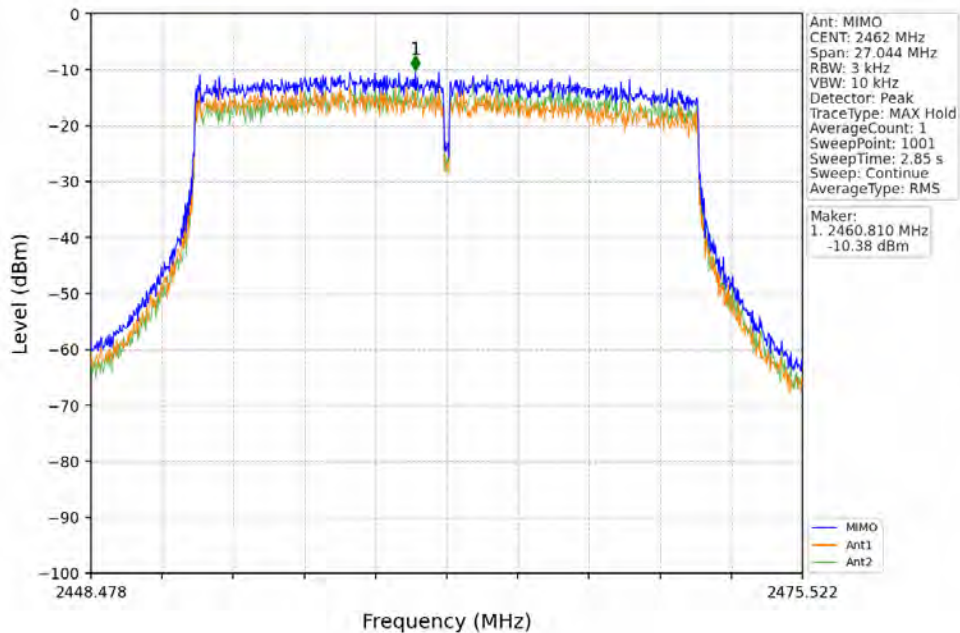
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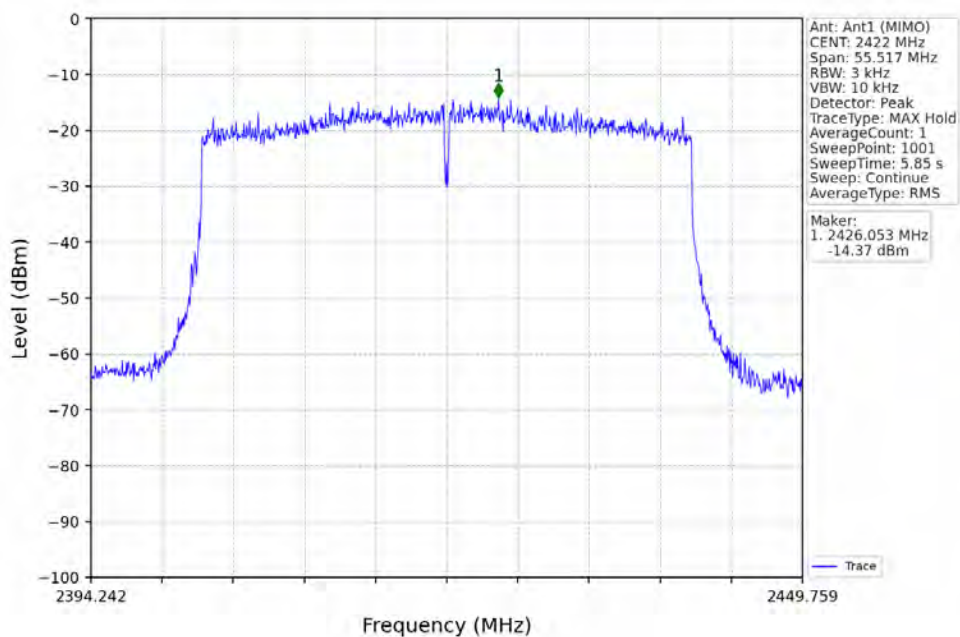
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802.11ax(HE20)_HCH_2462MHz_RU242_Left_MIMO_NTNV



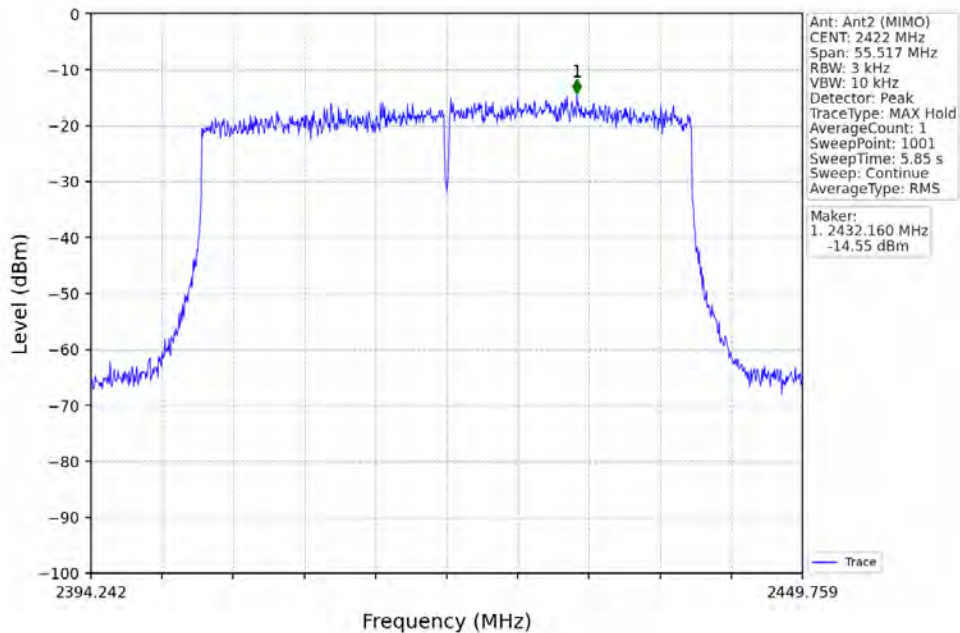
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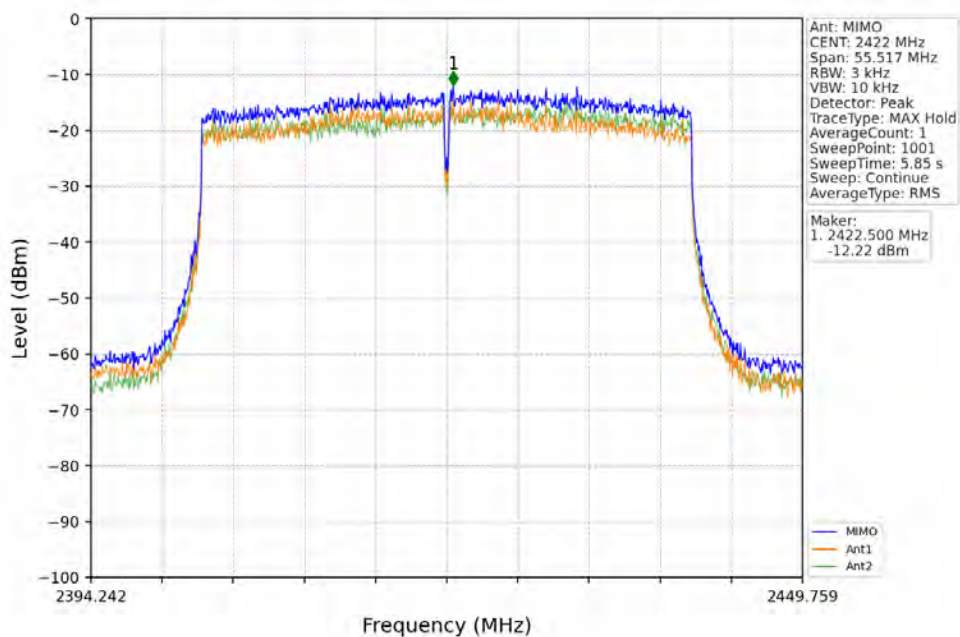
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802.11ax(HE40)_LCH_2422MHz_RU484_Left_Ant2 (MIMO)_NTNV



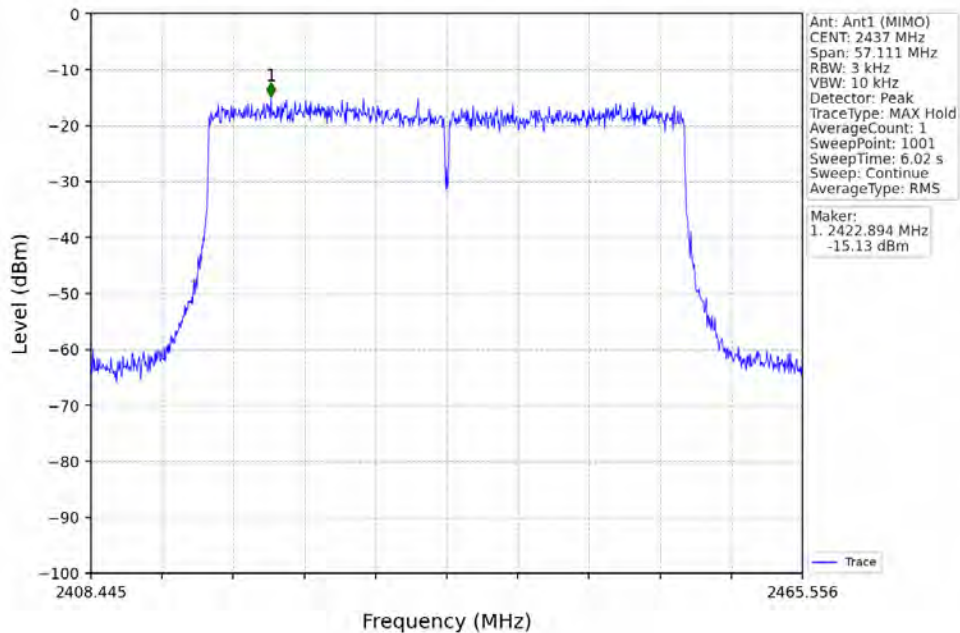
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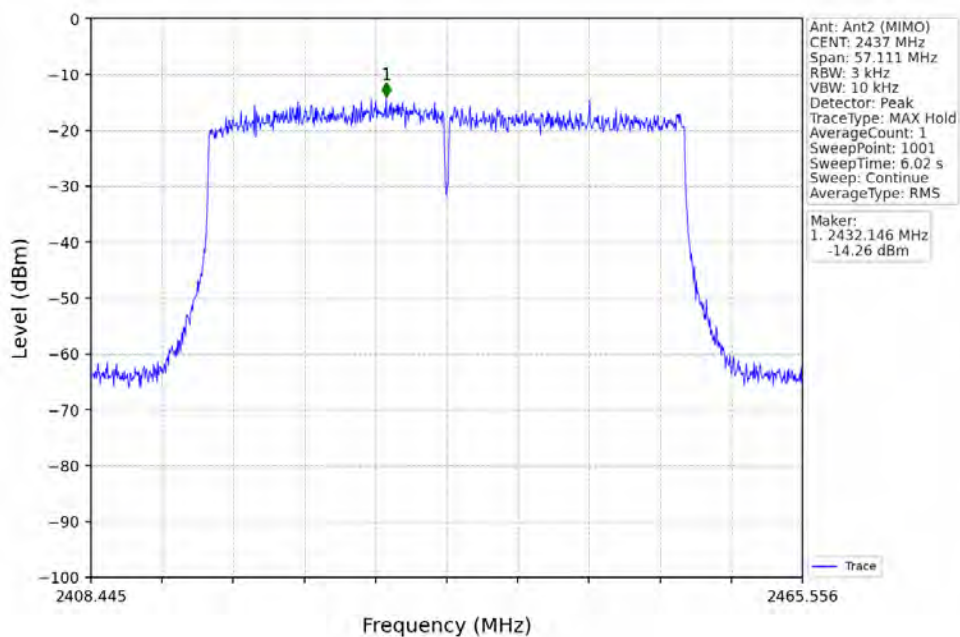
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802.11ax(HE40)_MCH_2437MHz_RU484_Left_Ant1 (MIMO)_NTNV



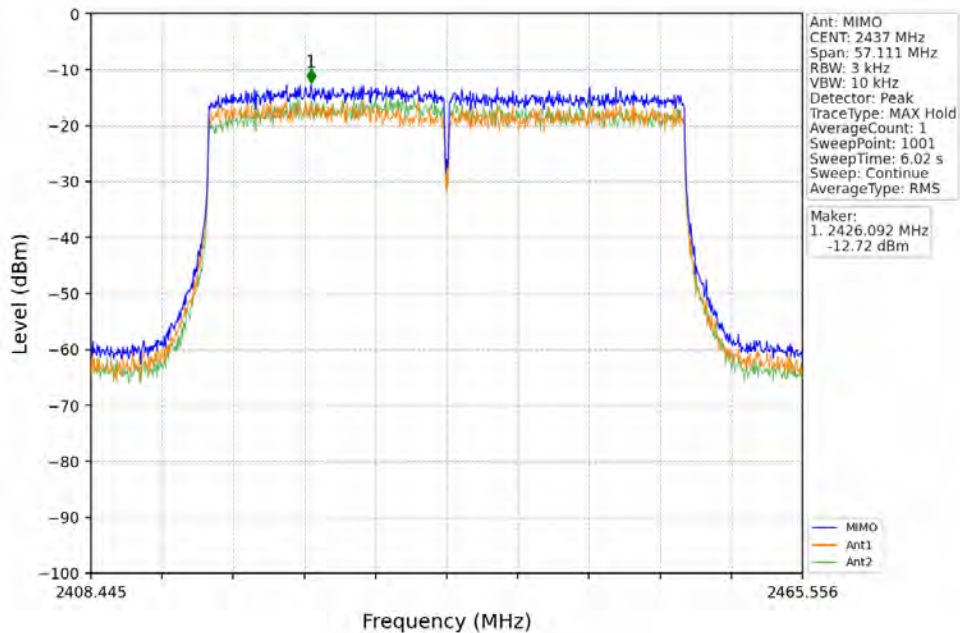
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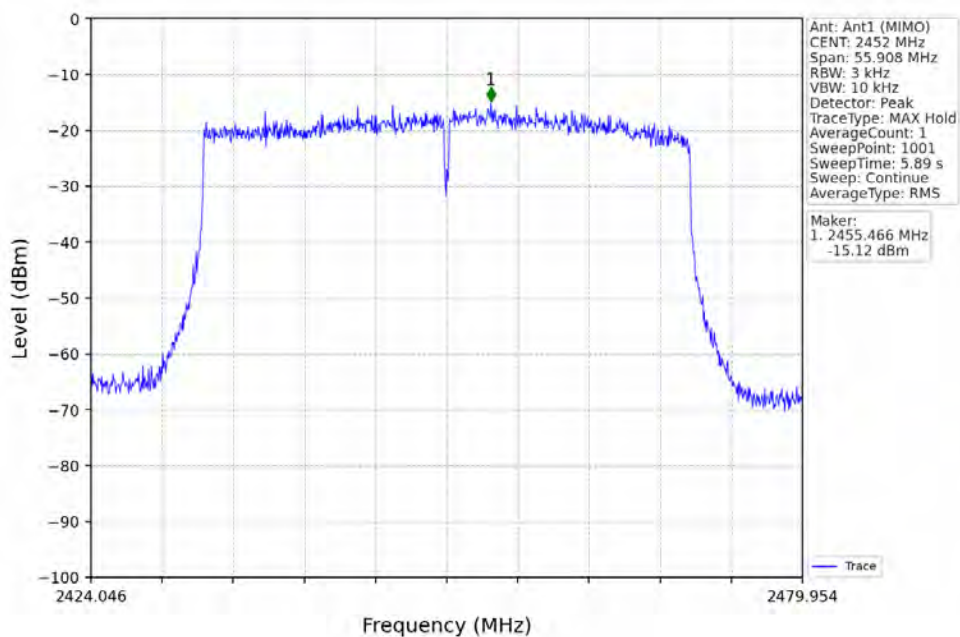
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802.11ax(HE40)_MCH_2437MHz_RU484_Left_MIMO_NTNV



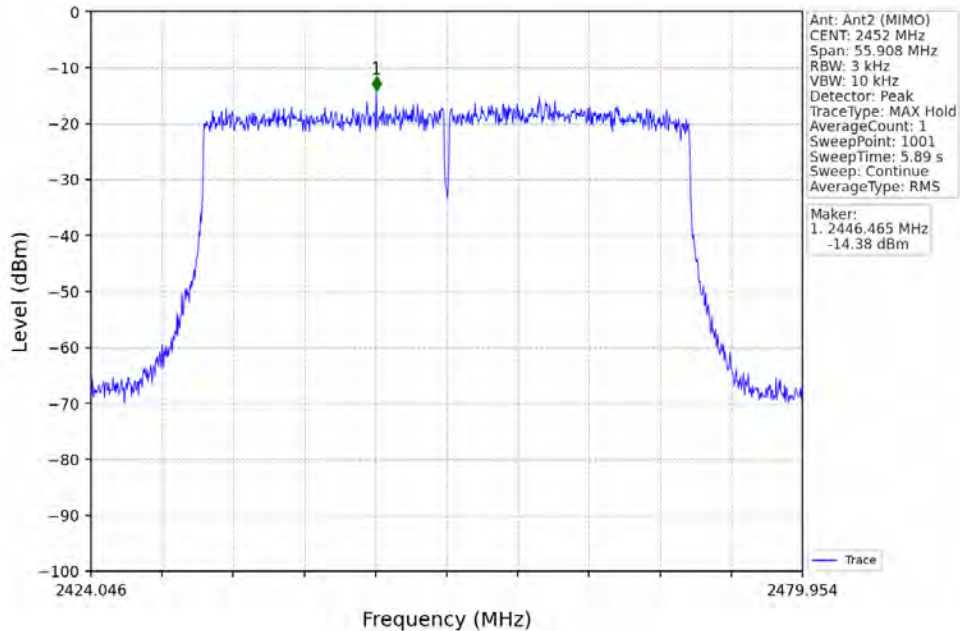
802.11ax(HE40)_HCH_2452MHz_RU484_Left_Ant1 (MIMO)_NTNV



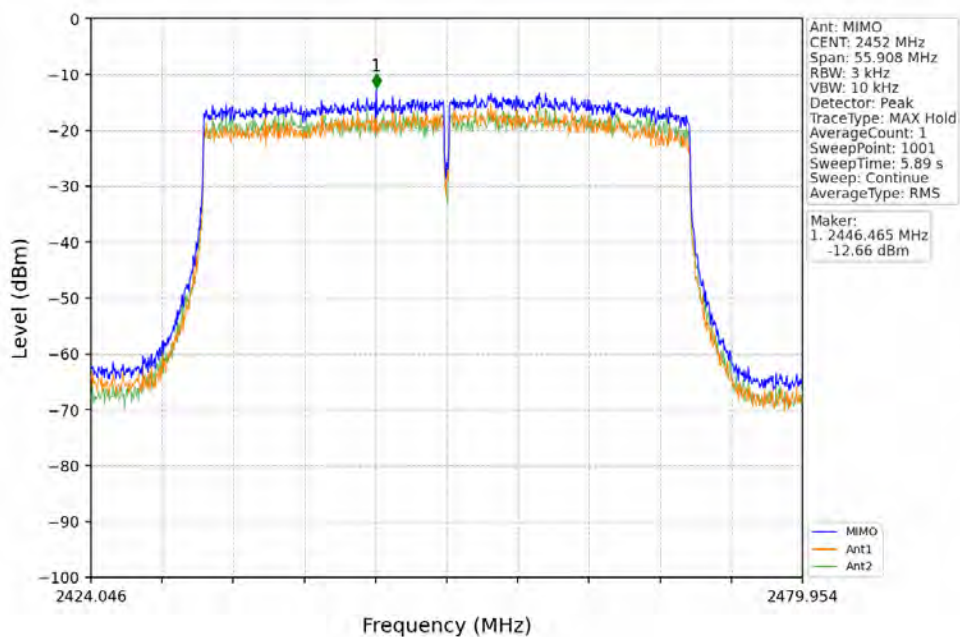
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802.11ax(HE40)_HCH_2452MHz_RU484_Left_MIMO_NTNV



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5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Ref

5.1.1 Test Result

Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	Level of Reference (dBm)
802.11b	MIMO	2412	/	/	1	7.62
					2	6.81
		2437	/	/	1	7.11
					2	7.52
		2462	/	/	1	6.45
					2	6.55
802.11g	MIMO	2412	/	/	1	5.68
					2	5.70
		2437	/	/	1	5.13
					2	5.54
		2462	/	/	1	4.90
					2	5.39
802.11n (HT20)	MIMO	2412	/	/	1	9.15
					2	8.57
		2437	/	/	1	3.76
					2	4.89
		2462	/	/	1	5.47
					2	5.58
802.11n (HT40)	MIMO	2422	/	/	1	2.16
					2	2.21
		2437	/	/	1	1.90
					2	2.55
		2452	/	/	1	2.75
					2	2.00

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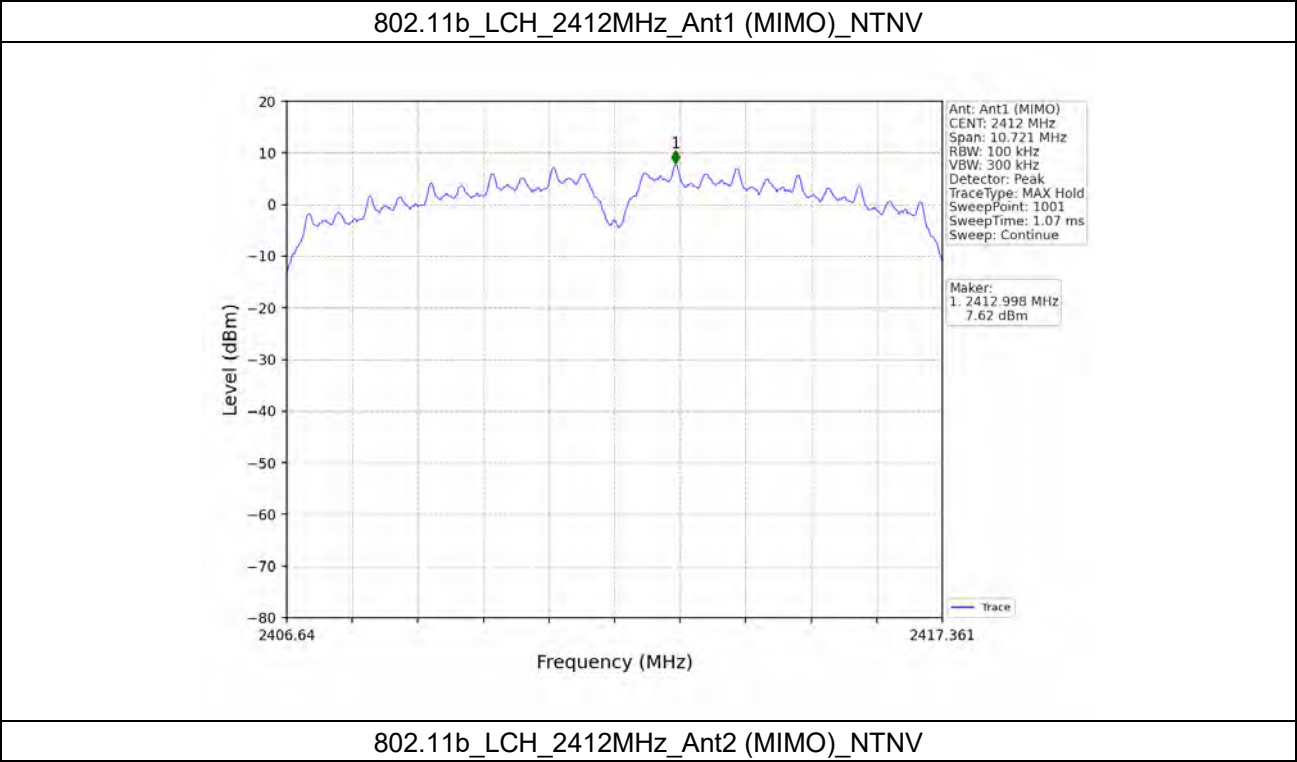
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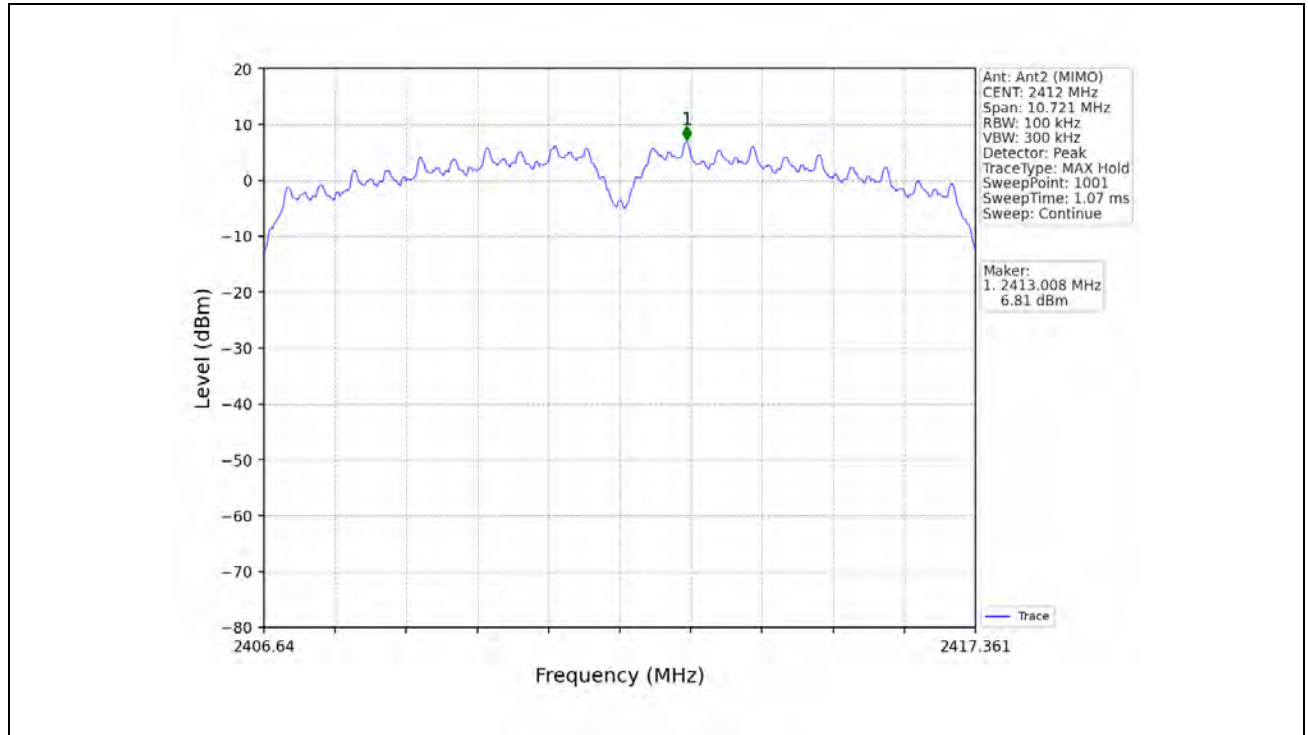
Report No.: SZCR240100038404

Page: 143 of 195

802.11ax (HE20)	MIMO	2412	RU242	Left	1	4.27
					2	3.83
		2437	RU242	Left	1	2.97
					2	3.35
		2462	RU242	Left	1	2.41
					2	3.23
802.11ax (HE40)	MIMO	2422	RU484	Left	1	-0.31
					2	-0.12
		2437	RU484	Left	1	0.58
					2	0.92
		2452	RU484	Left	1	0.07
					2	-0.20

5.1.2 Test Graph

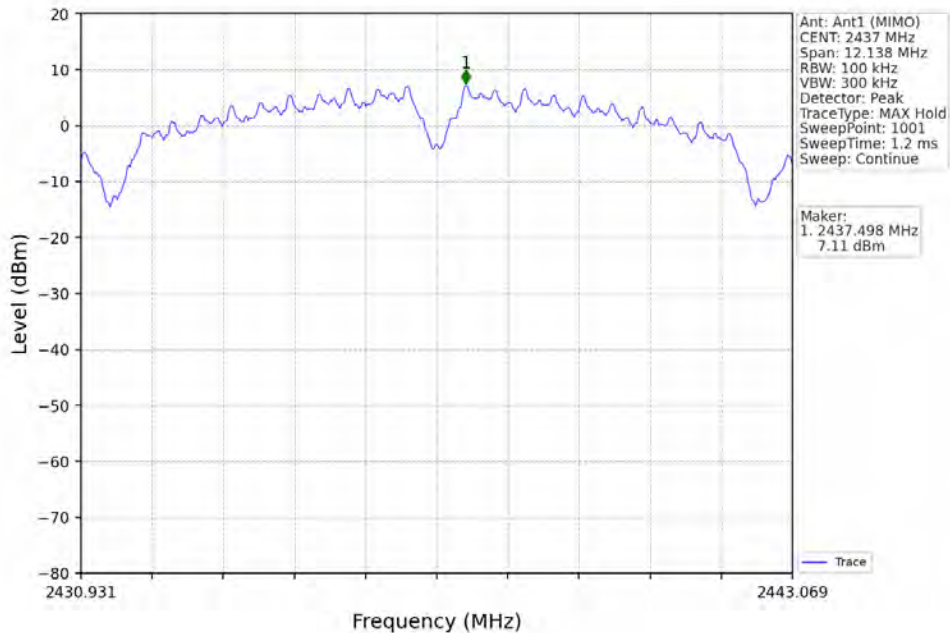




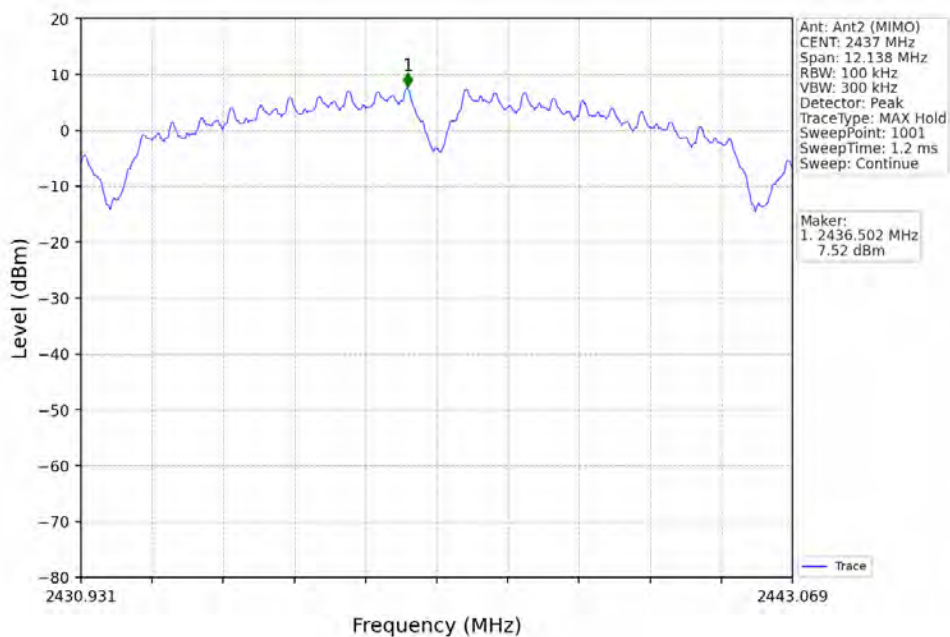
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802.11b_MCH_2437MHz_Ant1 (MIMO)_NTNV



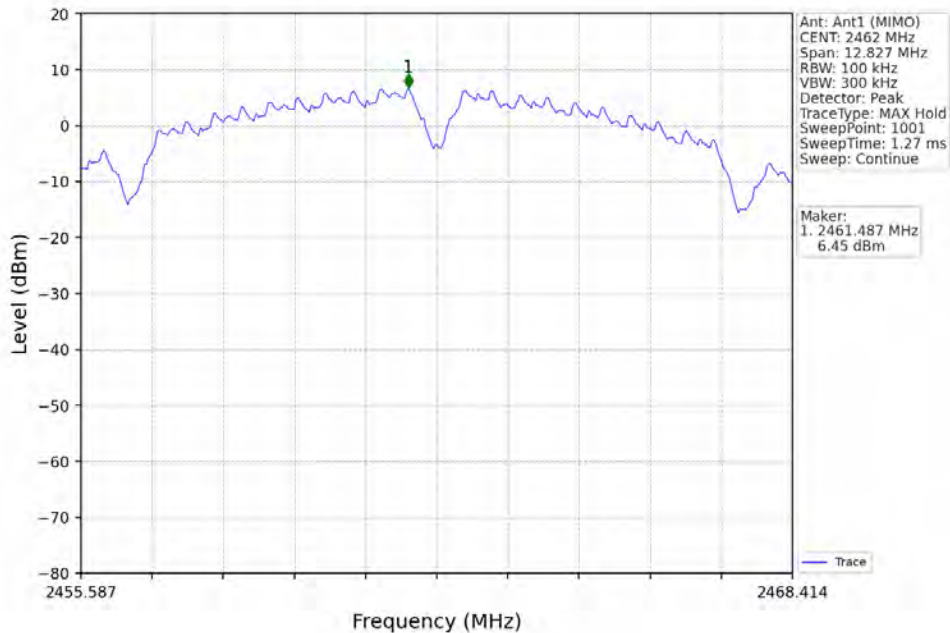
802.11b_MCH_2437MHz_Ant2 (MIMO)_NTNV



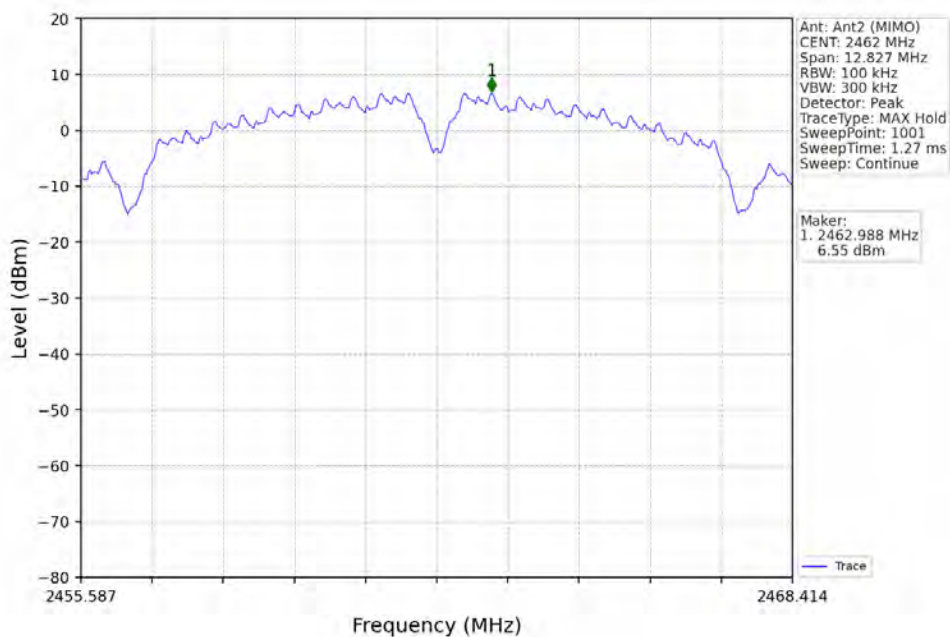
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802.11b_HCH_2462MHz_Ant1 (MIMO)_NTNV



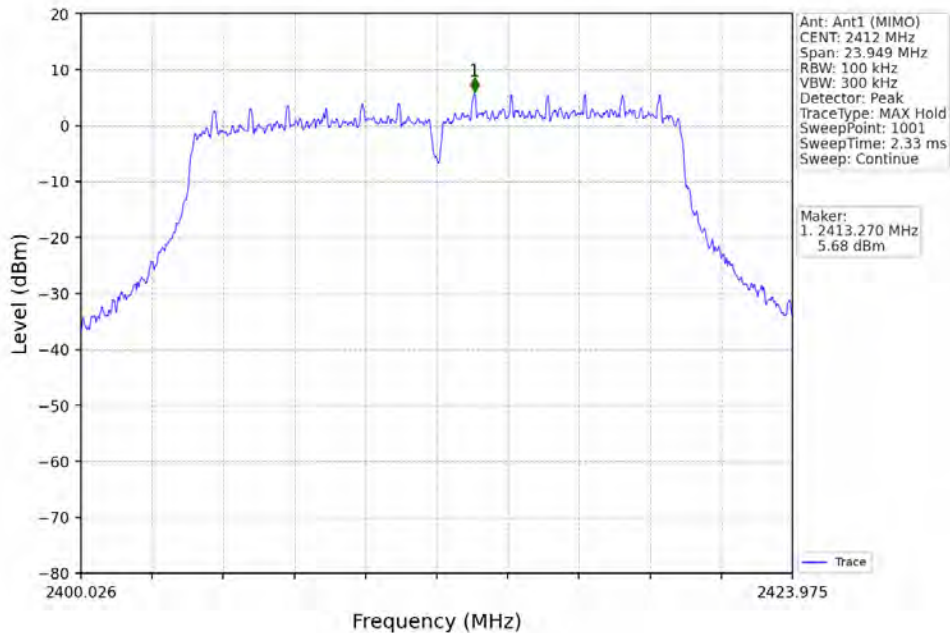
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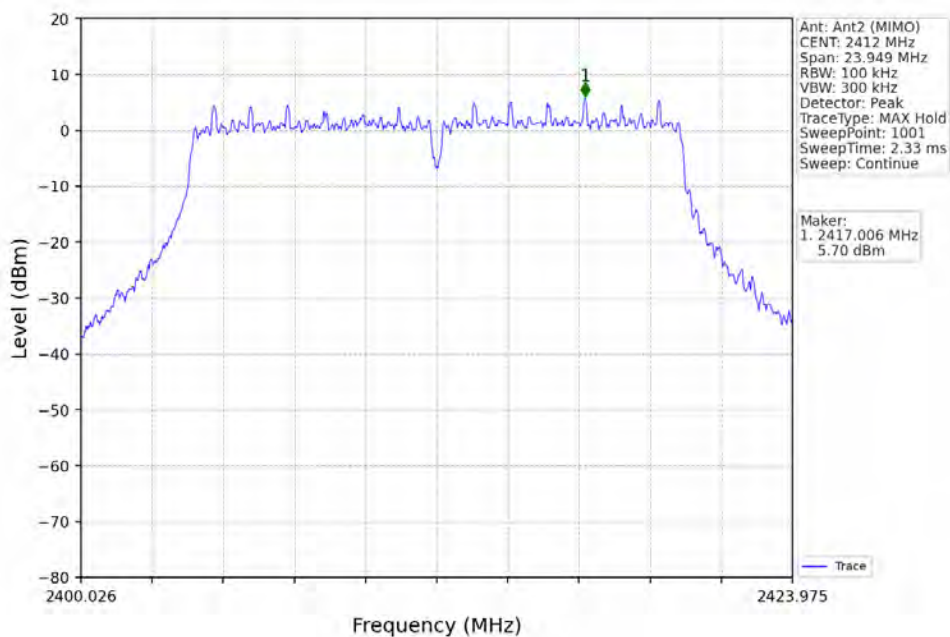
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802.11g_LCH_2412MHz_Ant1 (MIMO)_NTNV



802.11g_LCH_2412MHz_Ant2 (MIMO)_NTNV



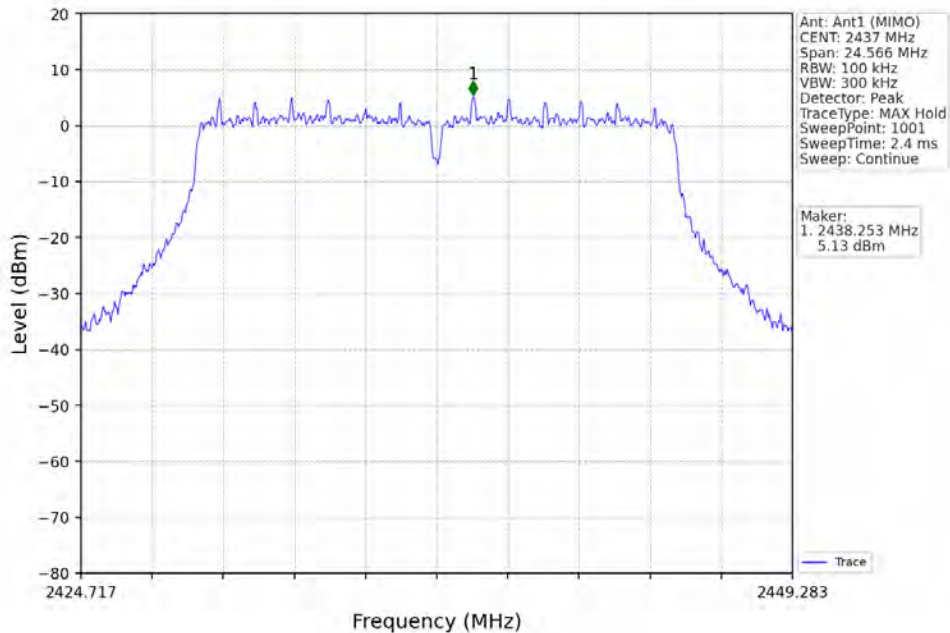
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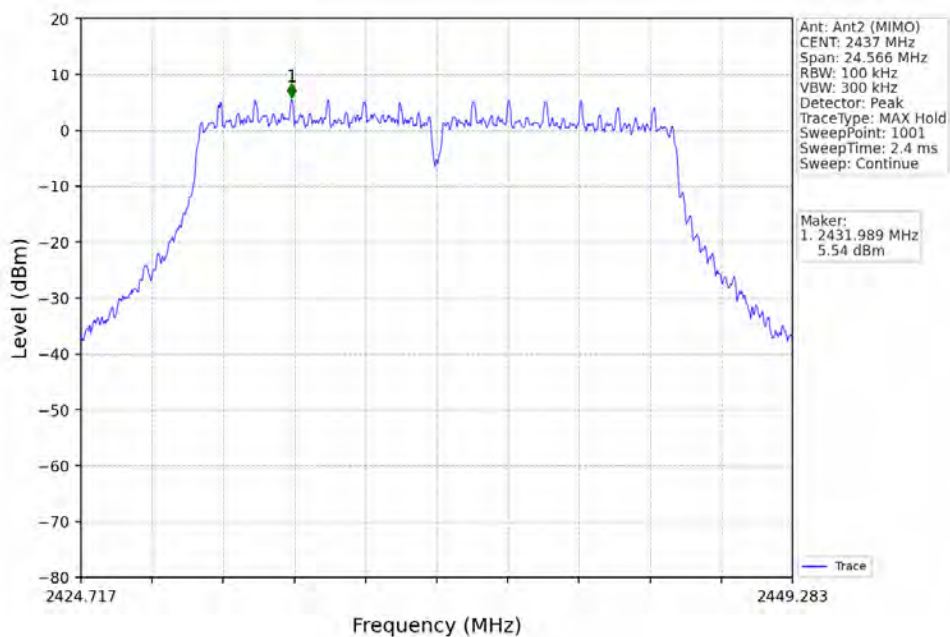
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802.11g_MCH_2437MHz_Ant1 (MIMO)_NTNV



802.11g_MCH_2437MHz_Ant2 (MIMO)_NTNV



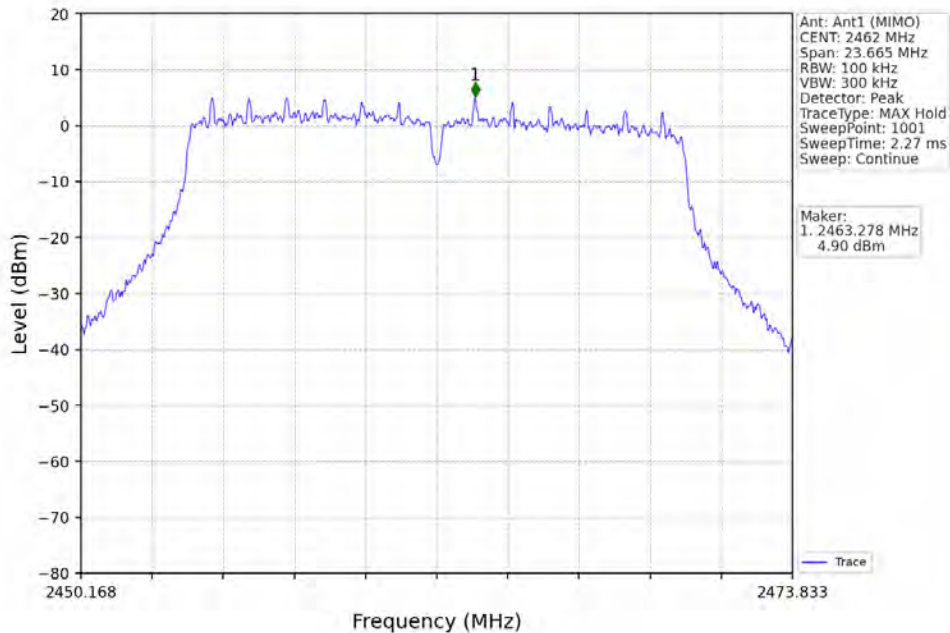
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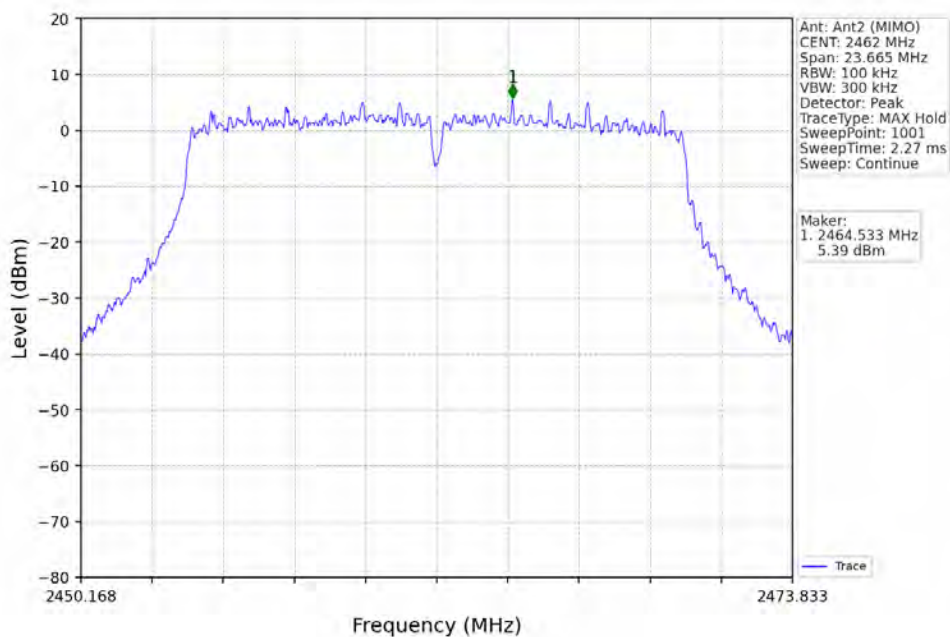
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802.11g_HCH_2462MHz_Ant1 (MIMO)_NTNV



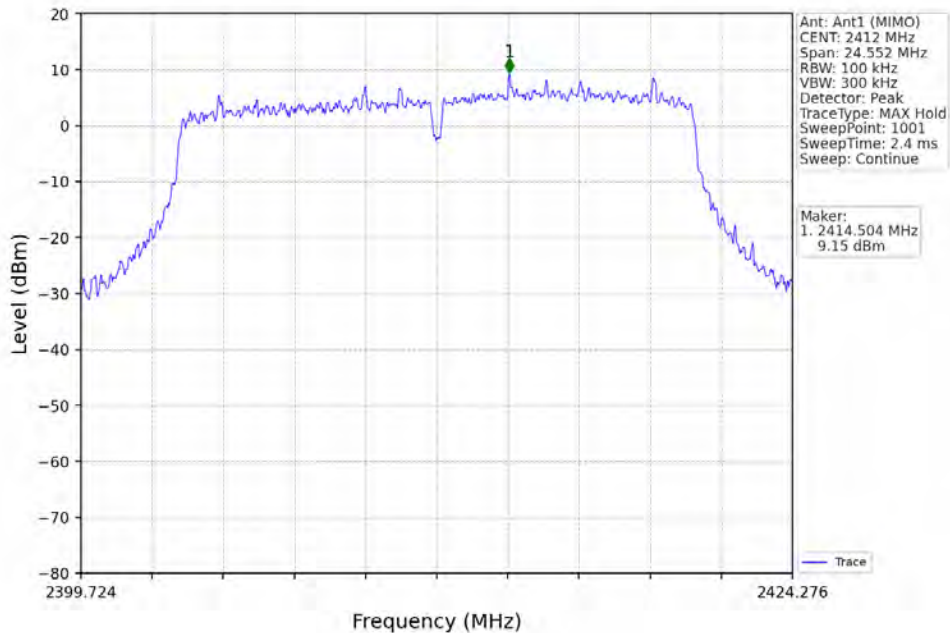
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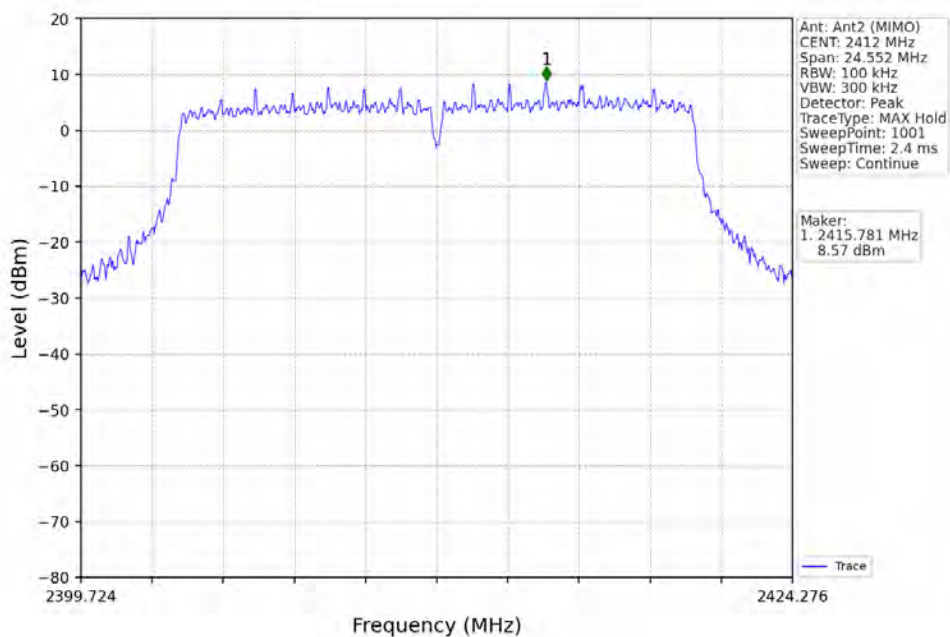
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802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



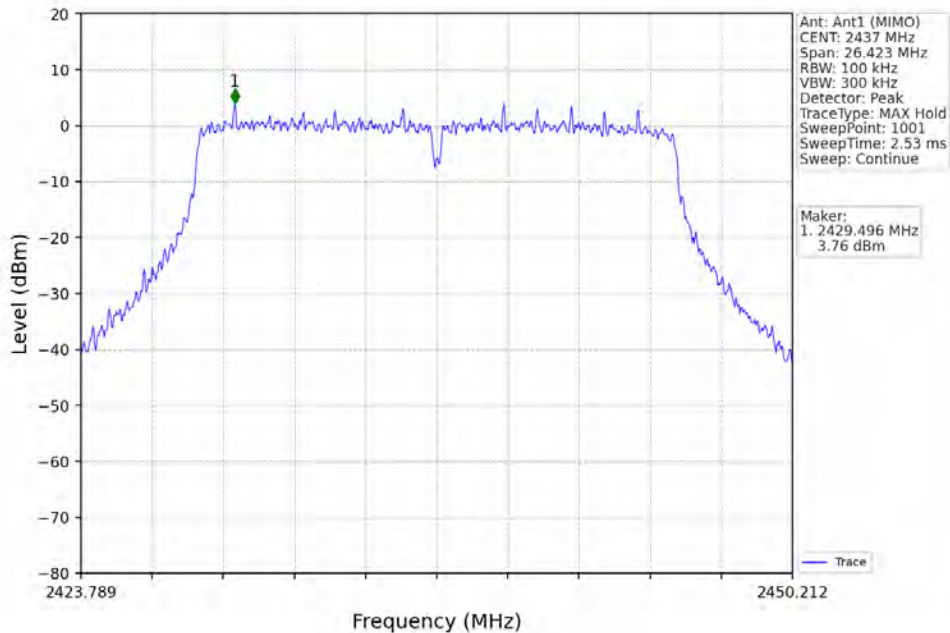
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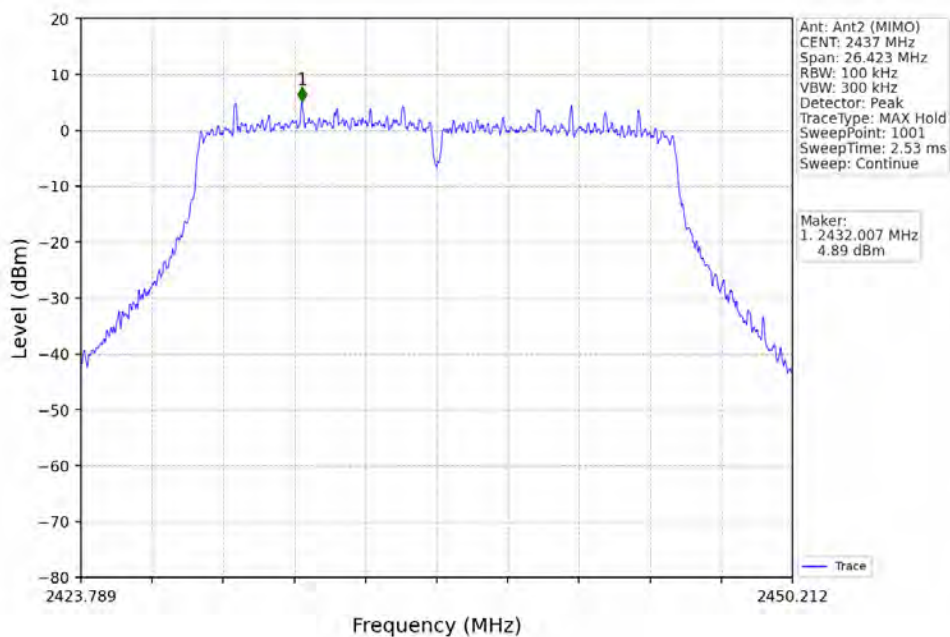
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802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



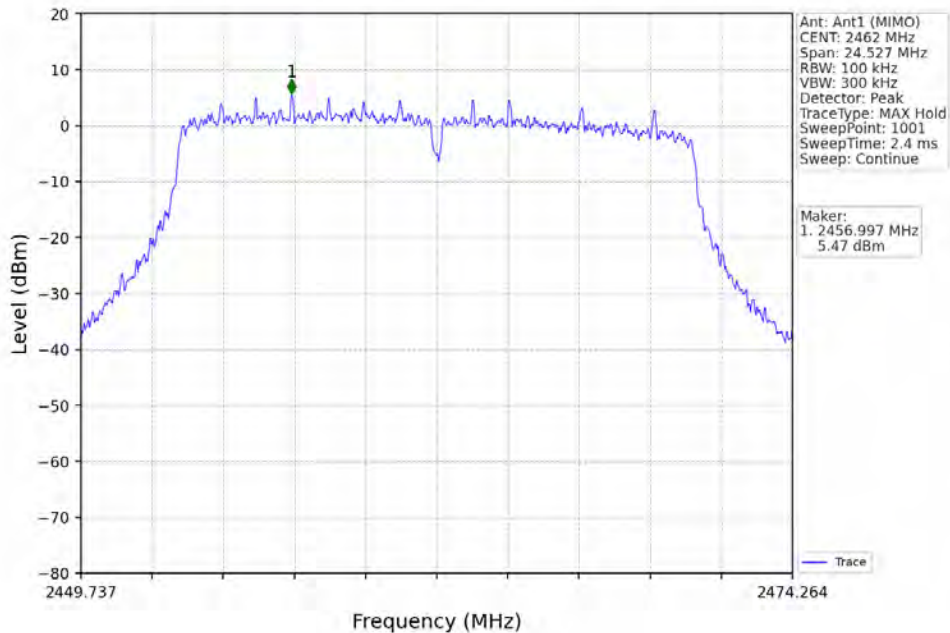
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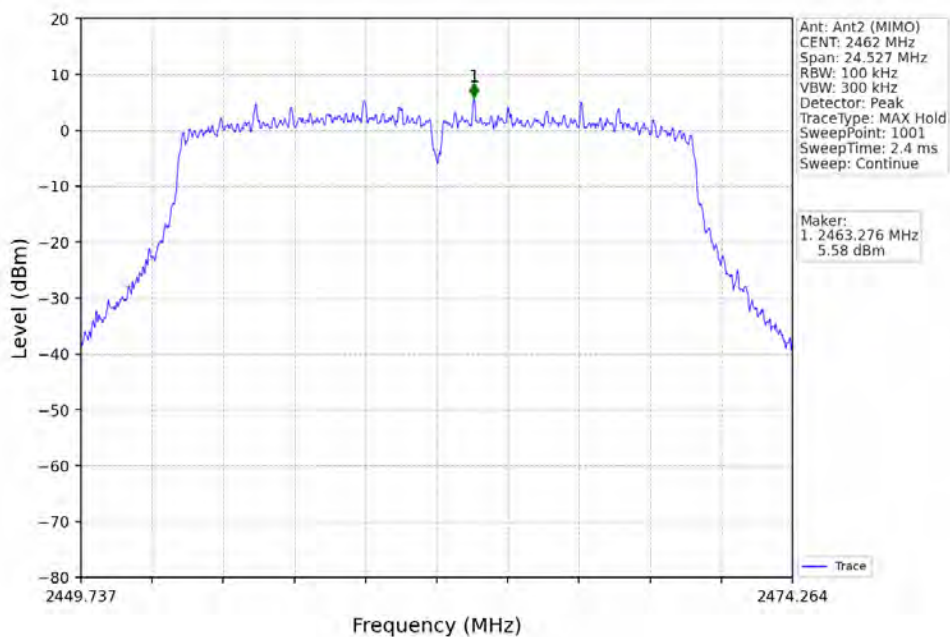
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802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



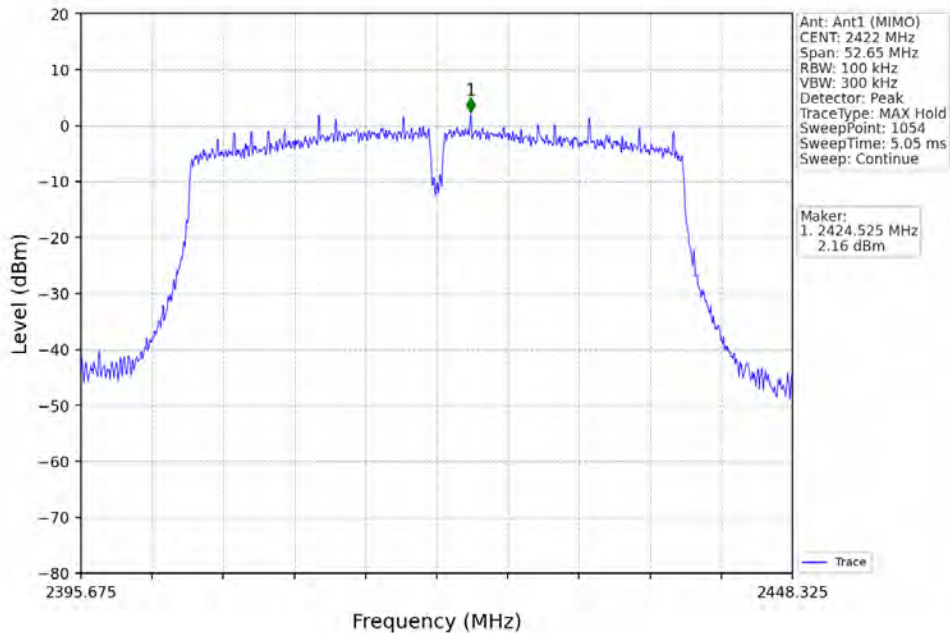
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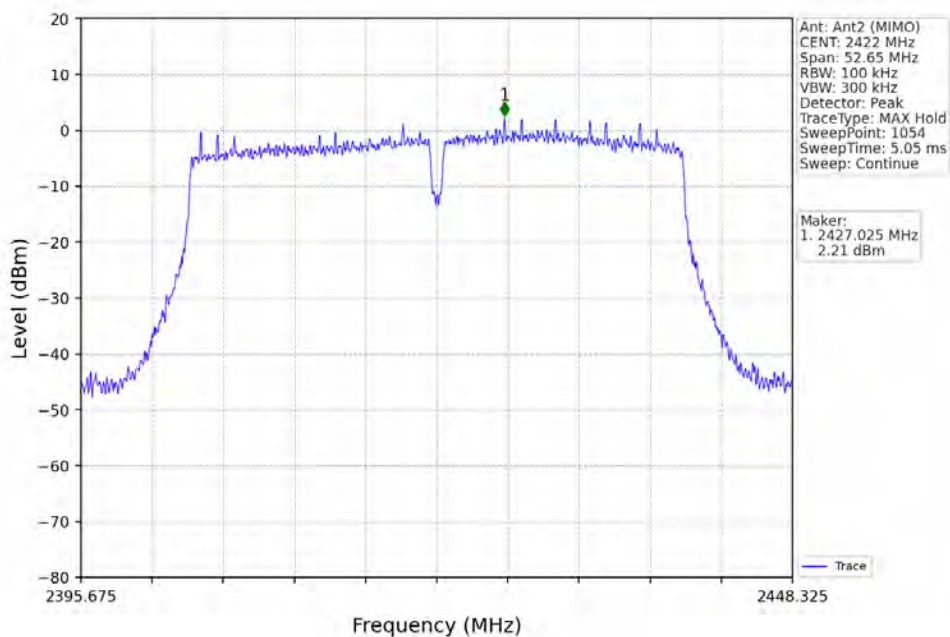
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802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



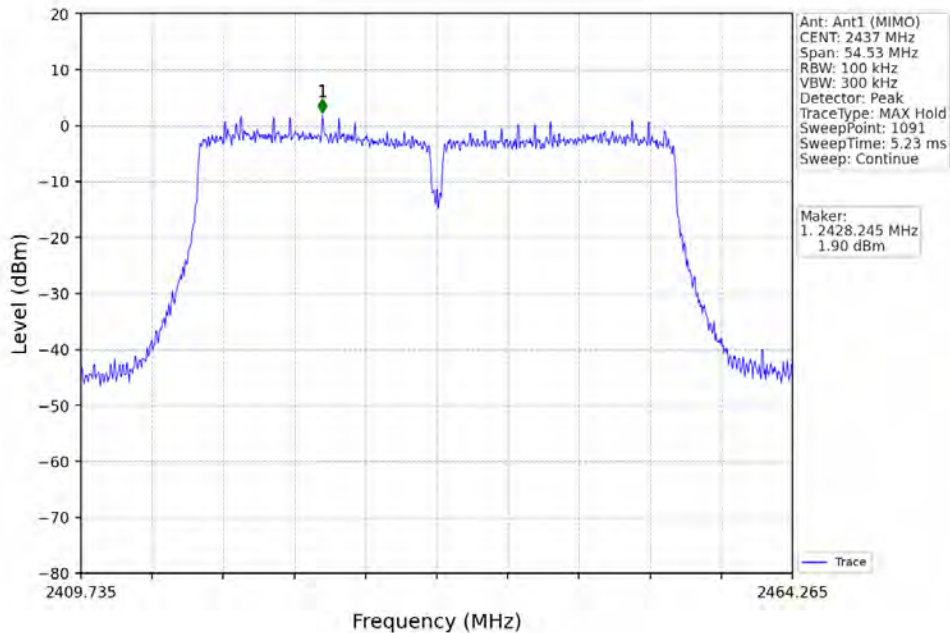
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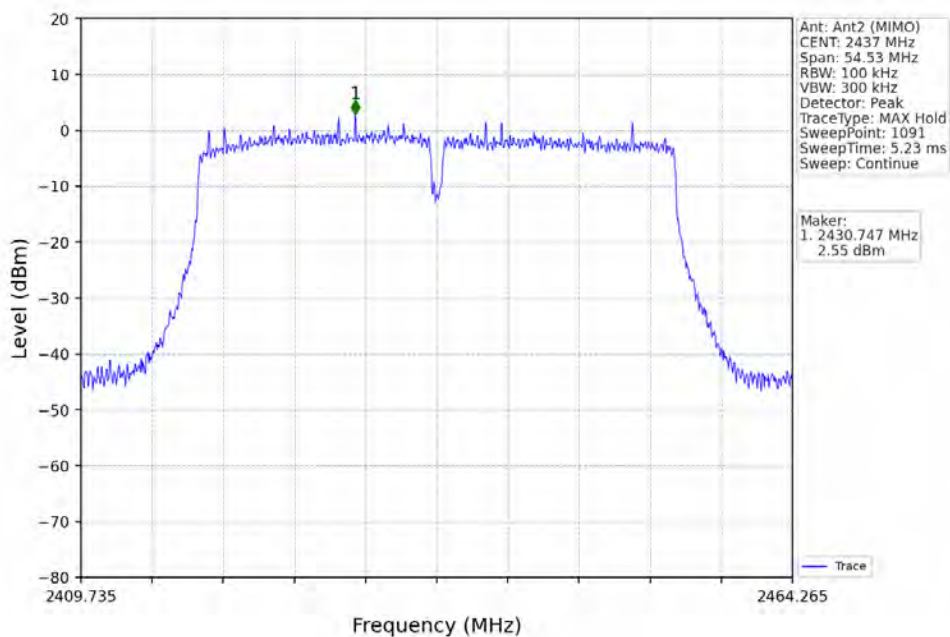
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802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant2 (MIMO)_NTNV



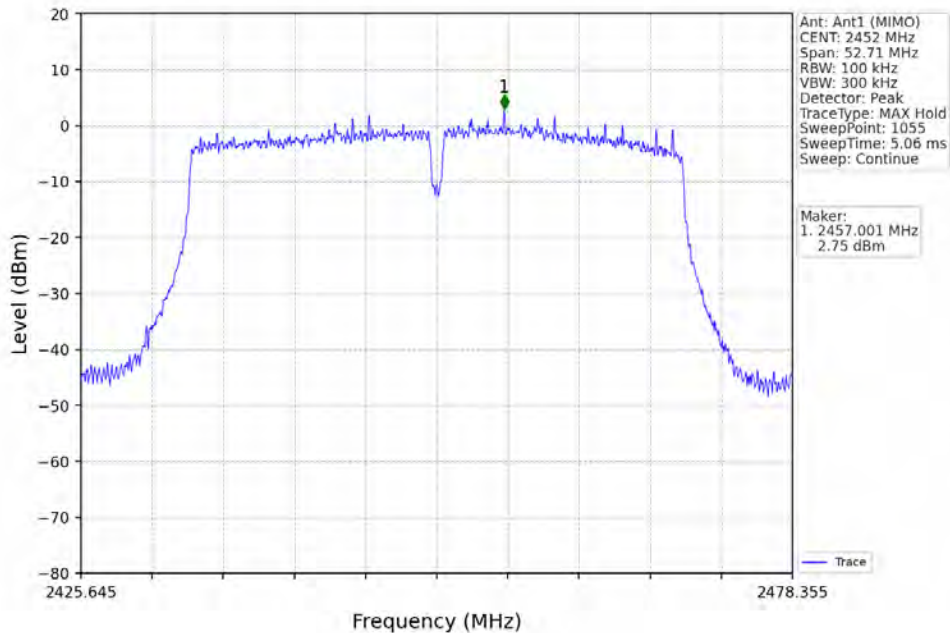
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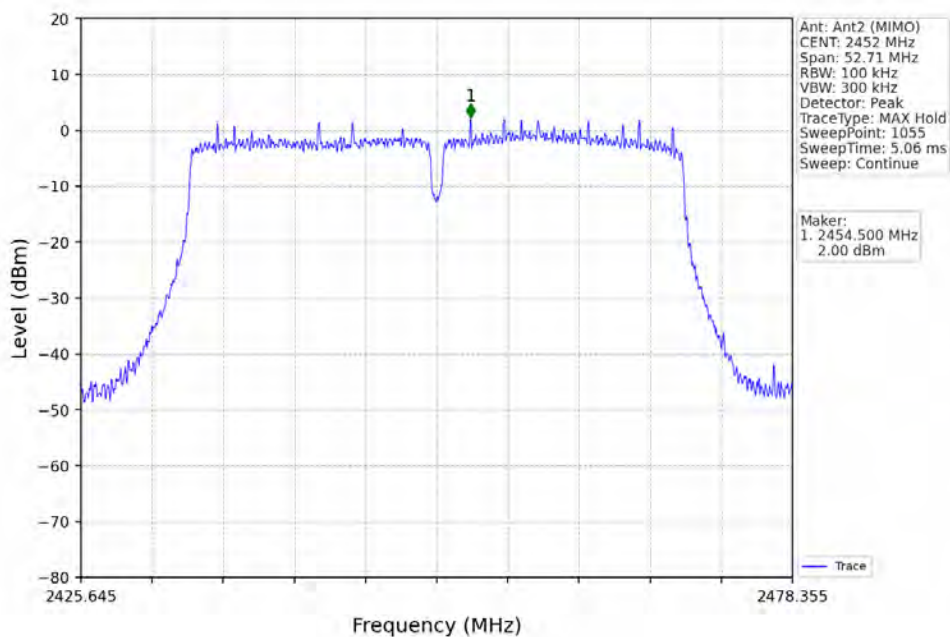
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Shenzhen Branch

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802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



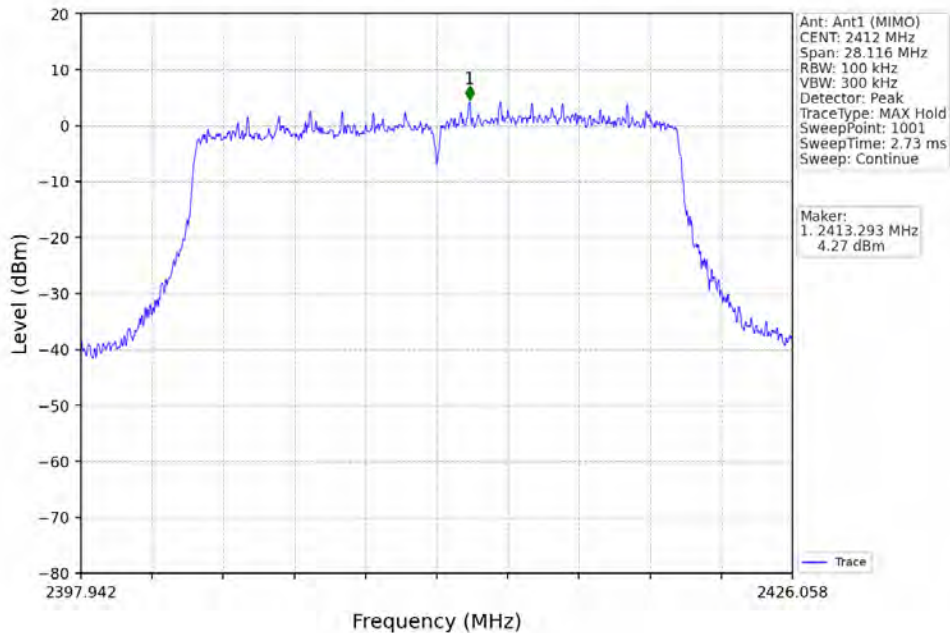
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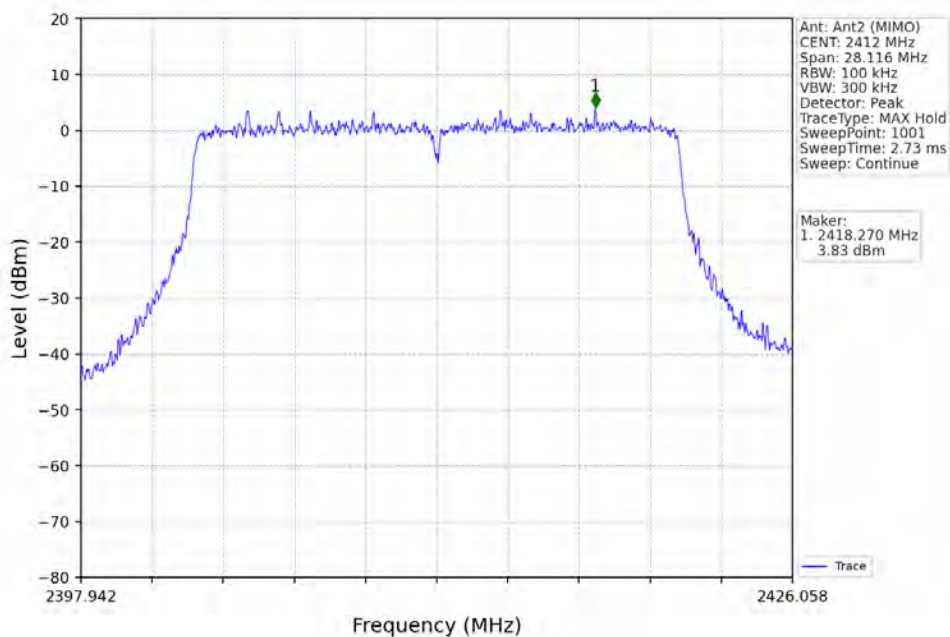
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802.11ax(HE20)_LCH_2412MHz_RU242_Left_Ant1 (MIMO)_NTNV



802.11ax(HE20)_LCH_2412MHz_RU242_Left_Ant2 (MIMO)_NTNV



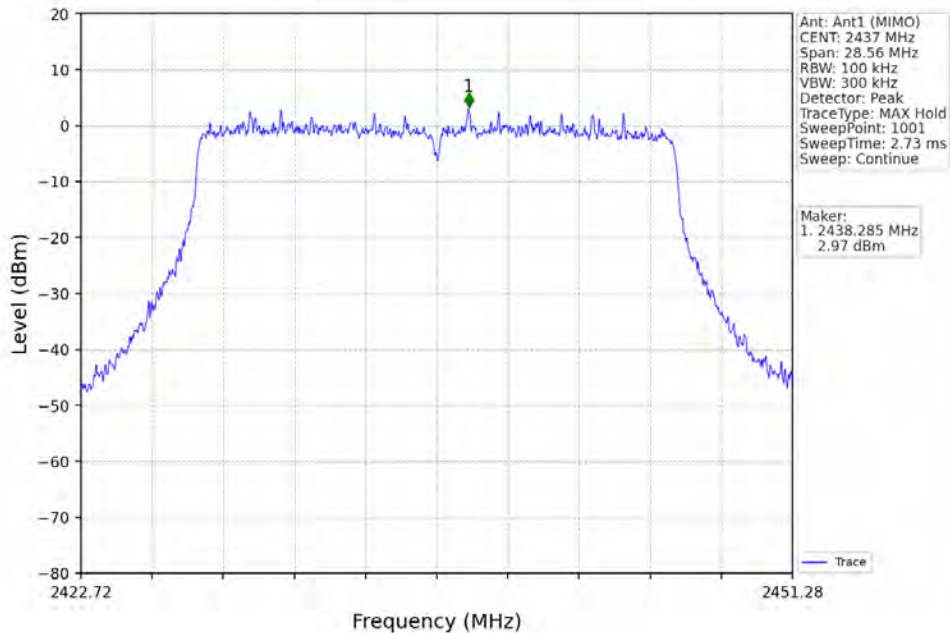
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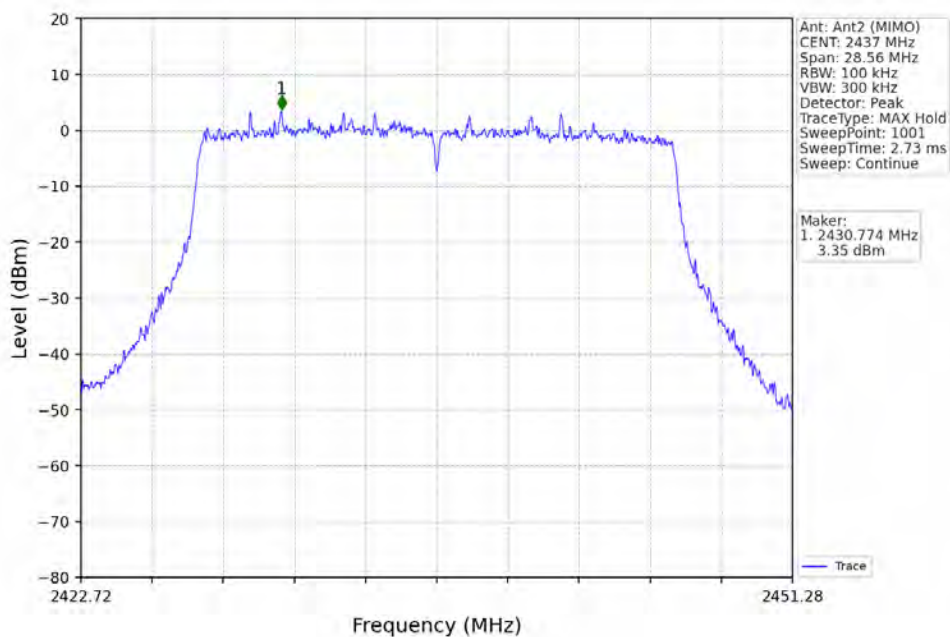
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802.11ax(HE20)_MCH_2437MHz_RU242_Left_Ant1 (MIMO)_NTNV



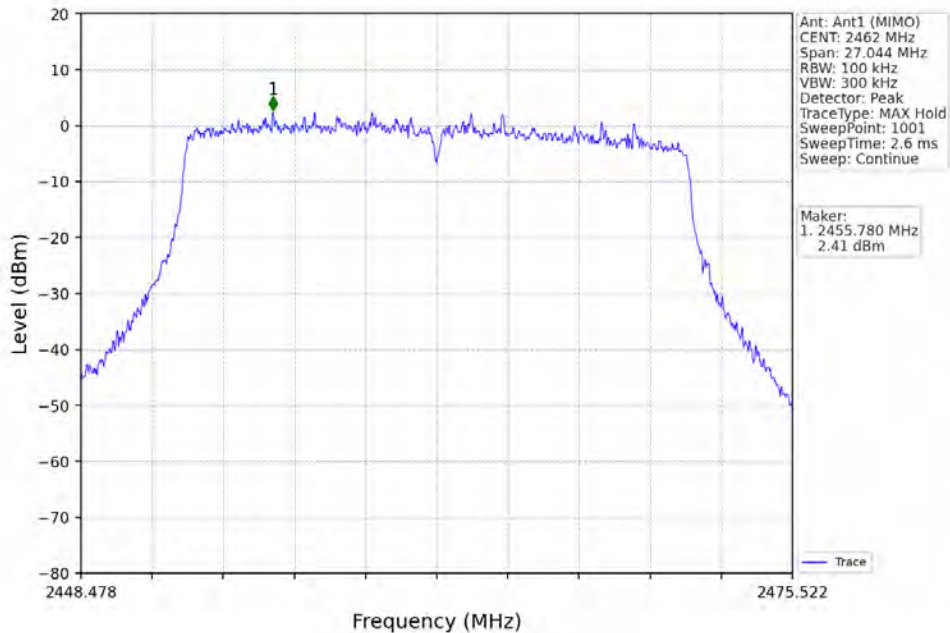
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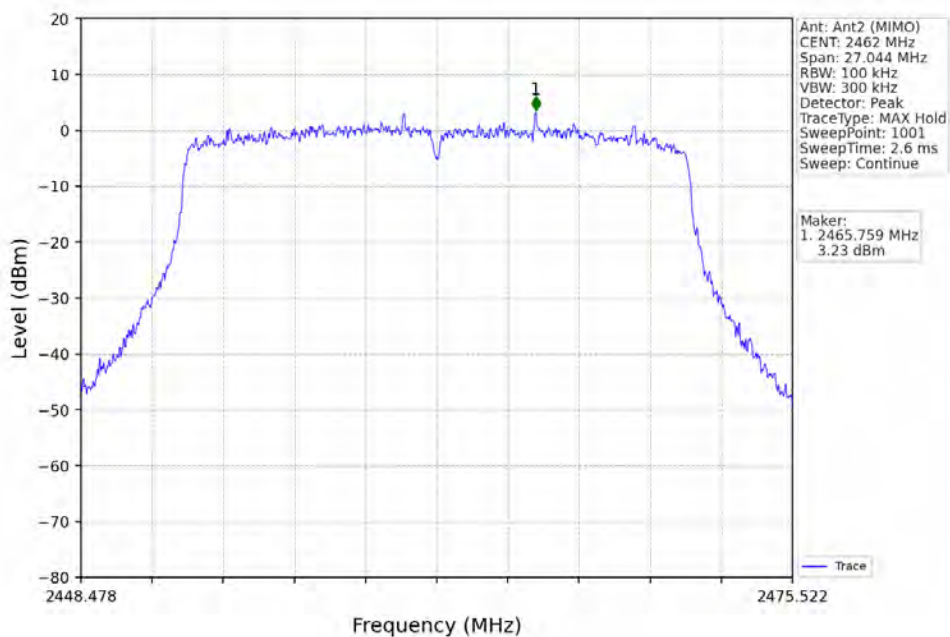
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802.11ax(HE20)_HCH_2462MHz_RU242_Left_Ant1 (MIMO)_NTNV



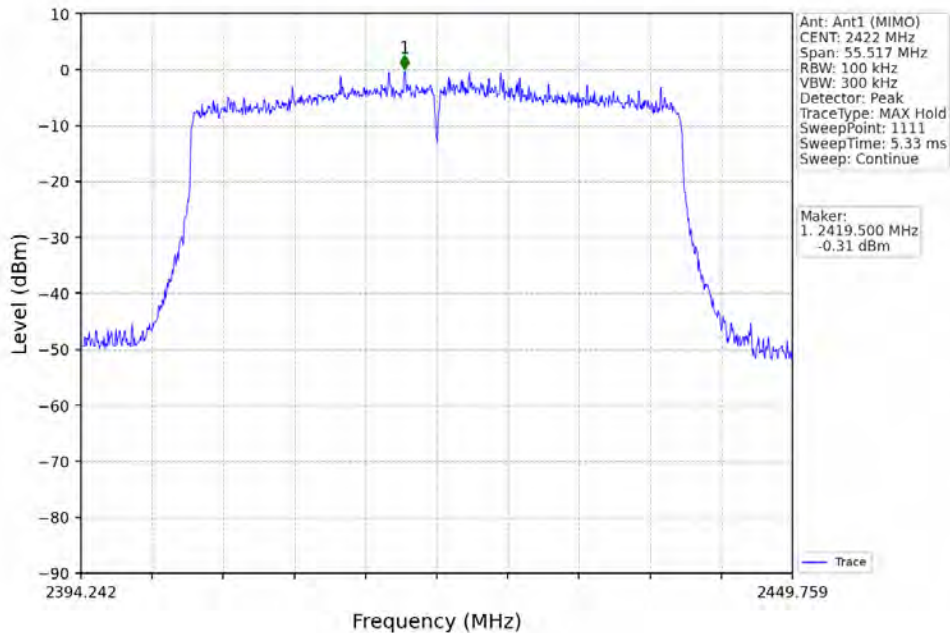
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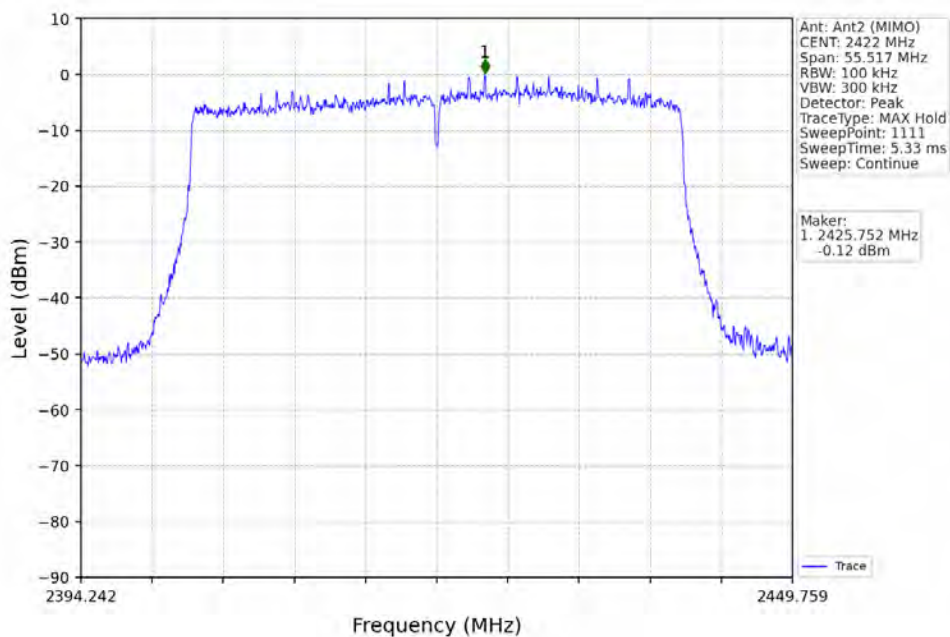
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802.11ax(HE40)_LCH_2422MHz_RU484_Left_Ant1 (MIMO)_NTNV



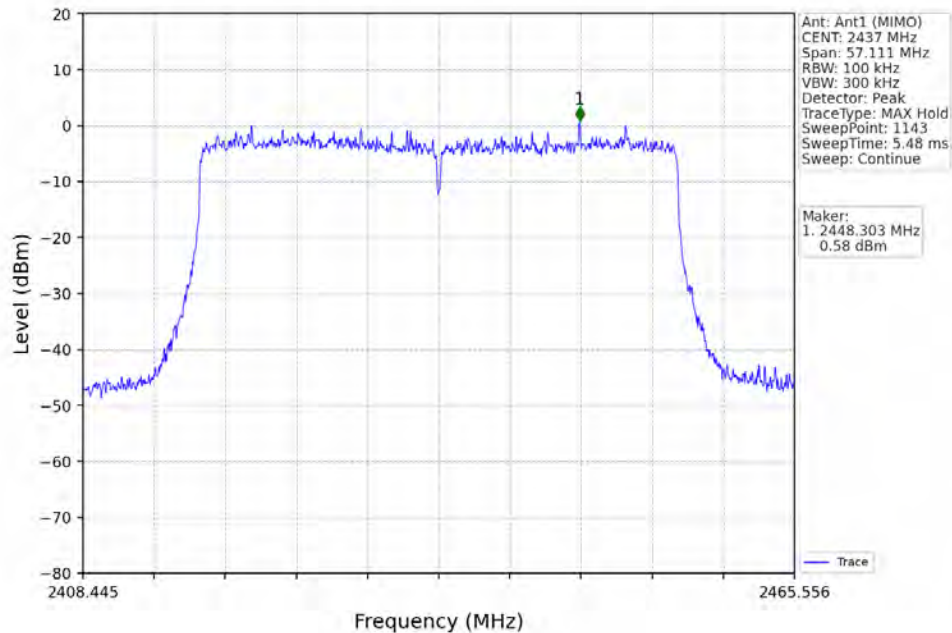
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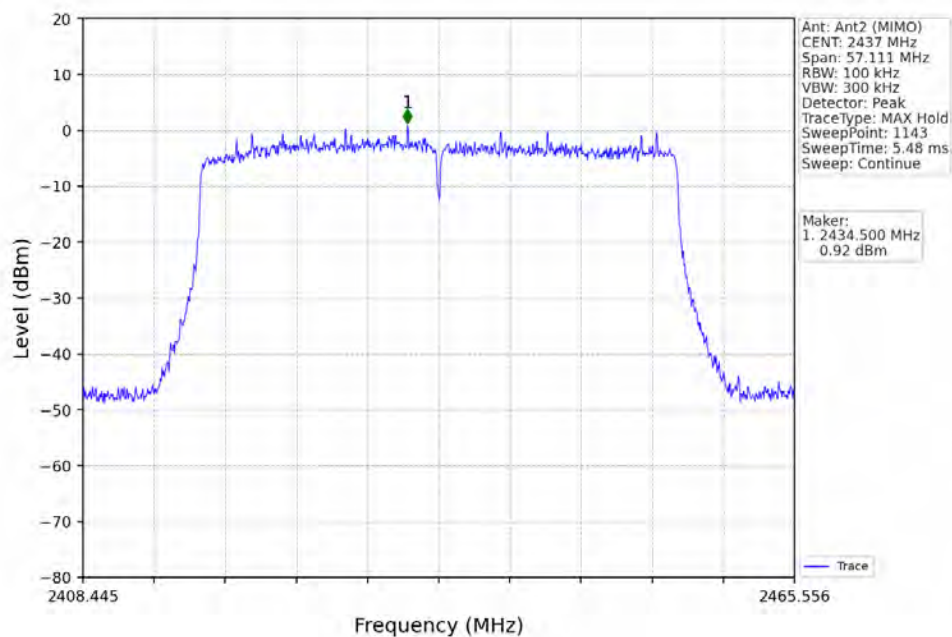
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802.11ax(HE40)_MCH_2437MHz_RU484_Left_Ant1 (MIMO)_NTNV



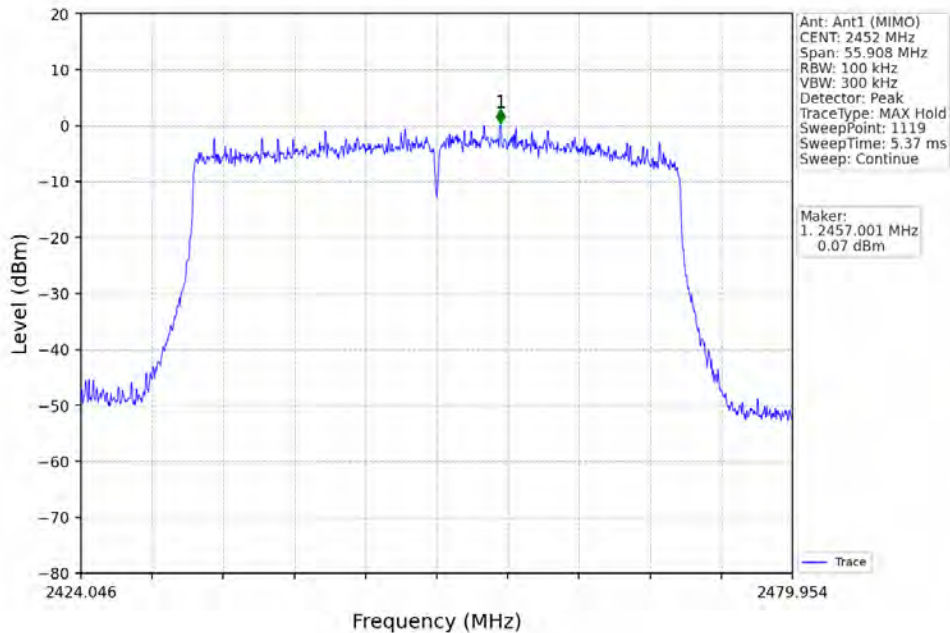
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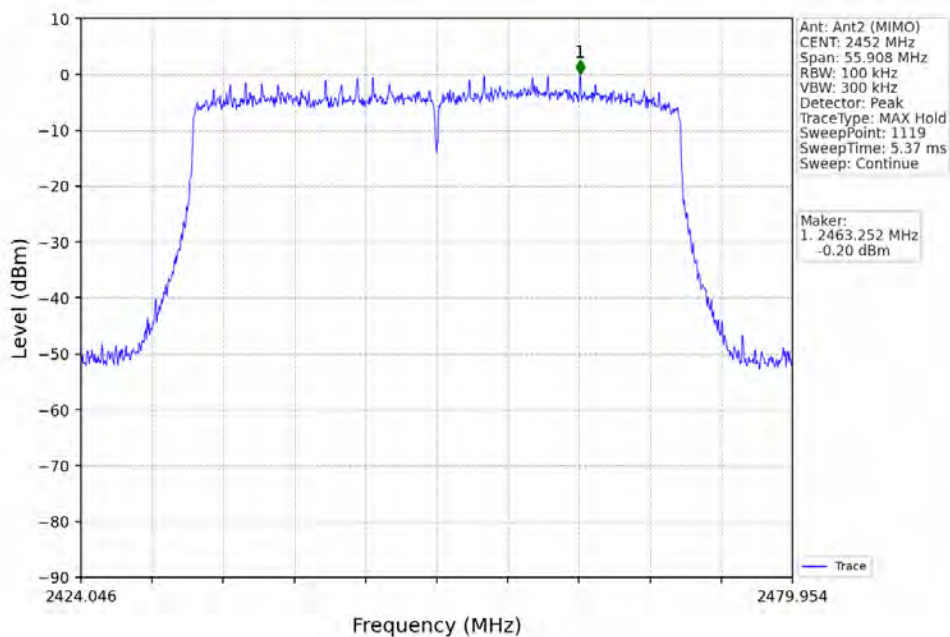
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802.11ax(HE40)_HCH_2452MHz_RU484_Left_Ant1 (MIMO)_NTNV



802.11ax(HE40)_HCH_2452MHz_RU484_Left_Ant2 (MIMO)_NTNV



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 163 of 195

5.2 CSE

5.2.1 Test Result

Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	MIMO	2412	/	/	1	7.62	-22.38	Pass
					2	7.52	-22.48	Pass
		2437	/	/	1	7.62	-22.38	Pass
					2	7.52	-22.48	Pass
		2462	/	/	1	7.62	-22.38	Pass
					2	7.52	-22.48	Pass
802.11g	MIMO	2412	/	/	1	5.68	-24.32	Pass
					2	5.70	-24.30	Pass
		2437	/	/	1	5.68	-24.32	Pass
					2	5.70	-24.30	Pass
		2462	/	/	1	5.68	-24.32	Pass
					2	5.70	-24.30	Pass
802.11n (HT20)	MIMO	2412	/	/	1	9.15	-20.85	Pass
					2	8.57	-21.43	Pass
		2437	/	/	1	9.15	-20.85	Pass
					2	8.57	-21.43	Pass
		2462	/	/	1	9.15	-20.85	Pass
					2	8.57	-21.43	Pass
802.11n (HT40)	MIMO	2422	/	/	1	2.75	-27.25	Pass
					2	2.55	-27.45	Pass
		2437	/	/	1	2.75	-27.25	Pass
					2	2.55	-27.45	Pass
		2452	/	/	1	2.75	-27.25	Pass
					2	2.55	-27.45	Pass
802.11ax (HE20)	MIMO	2412	RU242	Left	1	4.27	-25.73	Pass
					2	3.83	-26.17	Pass
		2437	RU242	Left	1	4.27	-25.73	Pass
					2	3.83	-26.17	Pass
		2462	RU242	Left	1	4.27	-25.73	Pass
					2	3.83	-26.17	Pass
802.11ax (HE40)	MIMO	2422	RU484	Left	1	0.58	-29.42	Pass
					2	0.92	-29.08	Pass



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100038404

Page: 164 of 195

		2437	RU484	Left	1	0.58	-29.42	Pass
					2	0.92	-29.08	Pass
		2452	RU484	Left	1	0.58	-29.42	Pass
					2	0.92	-29.08	Pass

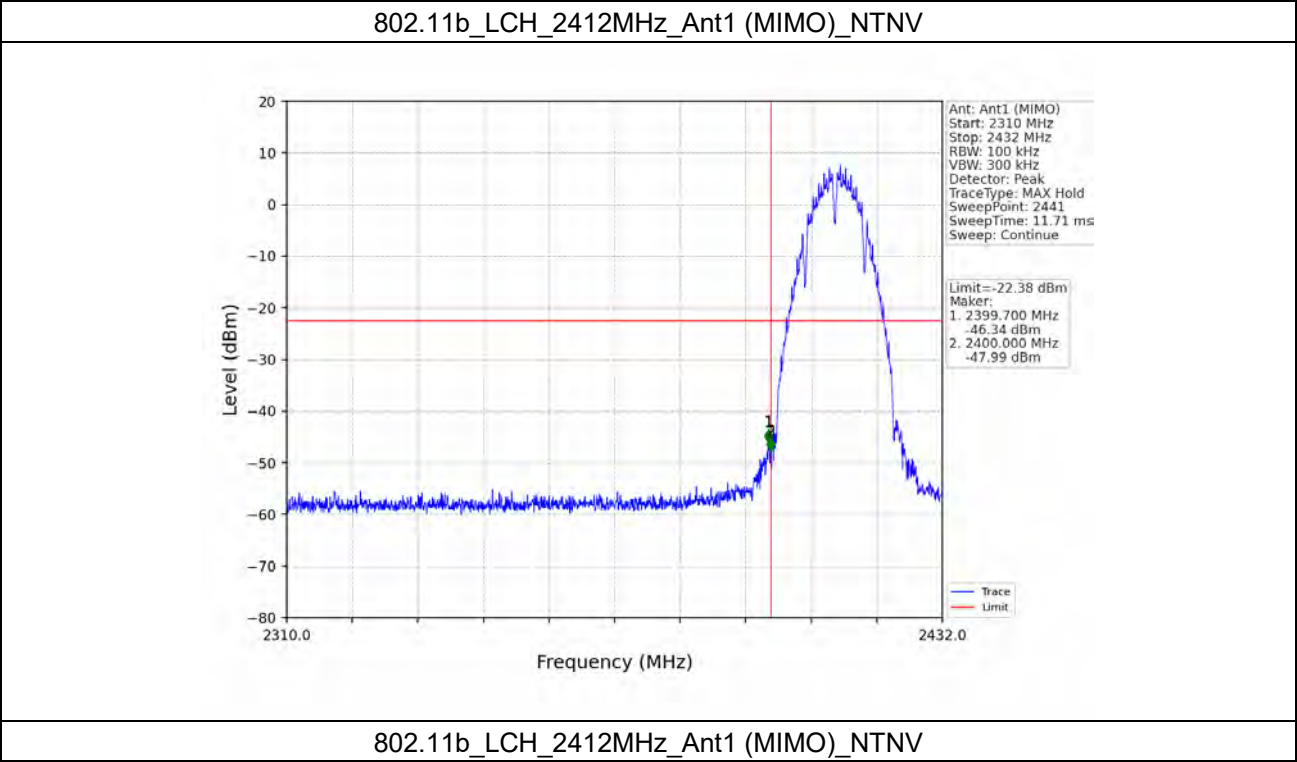


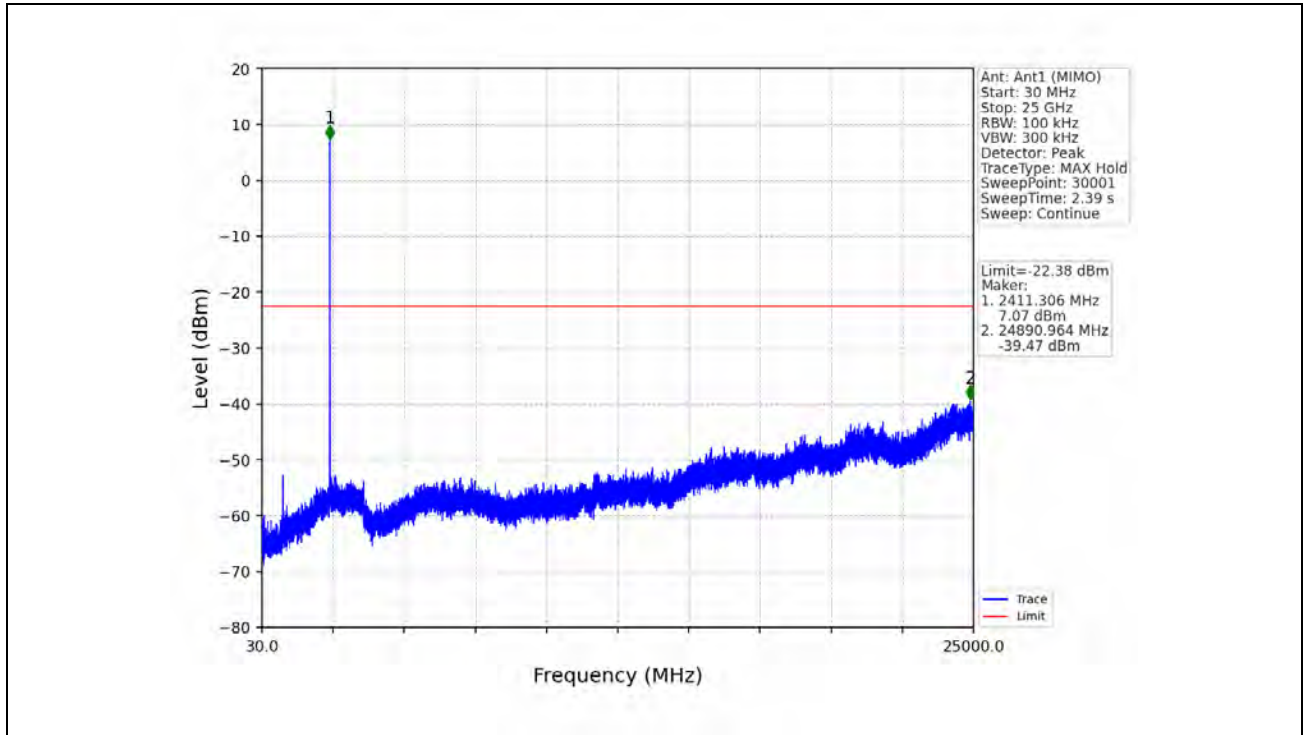
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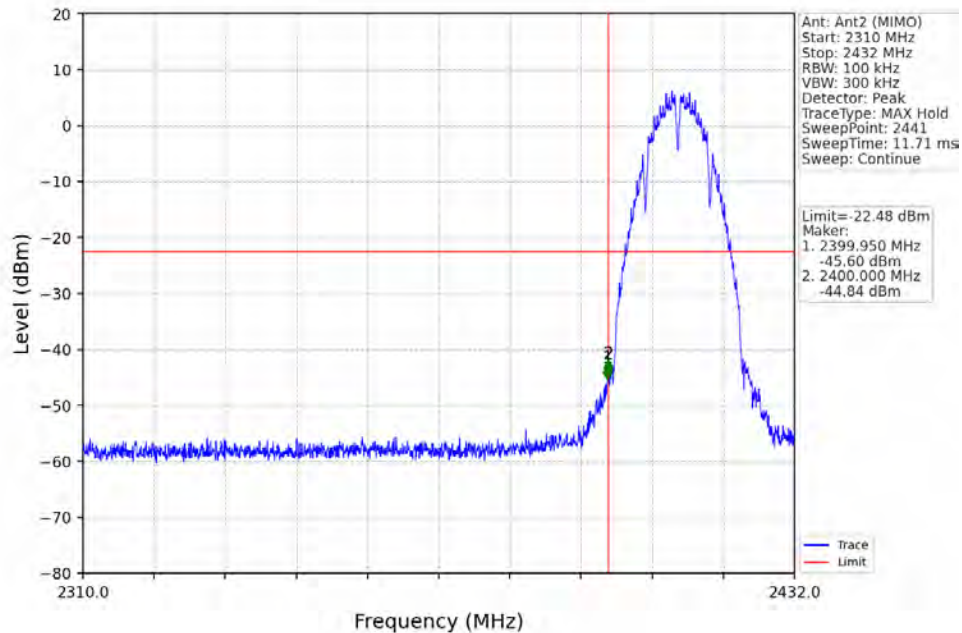
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5.2.2 Test Graph





802.11b_LCH_2412MHz_Ant2 (MIMO)_NTNV



802.11b_LCH_2412MHz_Ant2 (MIMO)_NTNV

