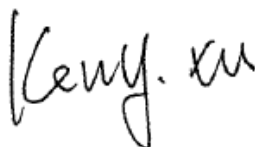


TEST REPORT

Application No.: SZCR2204001050AT
Applicant: Shenzhen Heiman Technology Co., Ltd.
Address of Applicant: 101, No.4 Dafu Industrial Park, Kukeng Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China
Manufacturer: Shenzhen Heiman Technology Co., Ltd.
Address of Manufacturer: 101, No.4 Dafu Industrial Park, Kukeng Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China
Factory: Shenzhen Heiman Technology Co., Ltd.
Address of Factory: 101, No.4 Dafu Industrial Park, Kukeng Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China
Equipment Under Test (EUT):
EUT Name: Photoelectric Smoke Alarm
Model No.: WS2SA-1, WS2SA-5 ♣
 ♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) : EN 300 328 V2.2.2
Date of Receipt: 2022-04-07
Date of Test: 2022-04-08 to 2022-04-21
Date of Issue: 2022-04-24

Test Result:	Pass*
---------------------	--------------

* 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, EMC Laboratory

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022-04-24		Original

Authorized for issue by:				
		Leo Li		
		Leo Li/Project Engineer		
		Eric Fu		
		Eric Fu/Reviewer		



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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Geo-location capability	EN 300 328 V2.2.2	N/A	EN 300 328 Clause 4.3.2.12.3	Customer Declaration

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
RF Output Power	EN 300 328 V2.2.2	EN 300 328 Clause 5.4.2.2.1.2	EN 300 328 Clause 4.3.2.2.3	Pass
Power Spectral Density		EN 300 328 Clause 5.4.3.2.1	EN 300 328 Clause 4.3.2.3.3	Pass
Adaptivity		EN 300 328 Clause 5.4.6.2.1.4	EN 300 328 Clause 4.3.2.6	Pass
Occupied Channel Bandwidth		EN 300 328 Clause 5.4.7.2.1	EN 300 328 Clause 4.3.2.7.3	Pass
Transmitter unwanted emissions in the OOB domain		EN 300 328 Clause 5.4.8.2.1	EN 300 328 Clause 4.3.2.8.3	Pass
Transmitter unwanted emissions in the spurious domain		EN 300 328 Clause 5.4.9.2	EN 300 328 Clause 4.3.2.9.3	Pass
Receiver spurious emissions		EN 300 328 Clause 5.4.10.2	EN 300 328 Clause 4.3.2.10.3	Pass
Receiver Blocking		EN 300 328 Clause 5.4.11.2.1	EN 300 328 Clause 4.3.2.11.4	Pass

Declaration of EUT Family Grouping:

Model No.: WS2SA-1, WS2SA-5

Only the model WS2SA-1 was tested, since according to the declaration from the applicant, the electrical circuit design, PCB layout, components used and internal wiring and functions were identical for the above models, with only difference on external cover design.



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 ENVIRONMENT PARAMETER.....	6
4.3 DESCRIPTION OF SUPPORT UNITS	7
4.4 MEASUREMENT UNCERTAINTY	7
4.5 TEST LOCATION	8
4.6 TEST FACILITY	8
4.7 DEVIATION FROM STANDARDS	8
4.8 ABNORMALITIES FROM STANDARD CONDITIONS	8
5 EQUIPMENT LIST	9
6 RADIO SPECTRUM TECHNICAL REQUIREMENT	12
6.1 GEO-LOCATION CAPABILITY	12
6.1.1 <i>Test Requirement:</i>	12
6.1.2 <i>Conclusion</i>	12
7 RADIO SPECTRUM MATTER TEST RESULTS	13
7.1 RF OUTPUT POWER	13
7.1.1 <i>E.U.T. Operation</i>	13
7.1.2 <i>Test Mode Description</i>	13
7.1.3 <i>Test Setup Diagram</i>	14
7.1.4 <i>Measurement Procedure and Data</i>	14
7.2 POWER SPECTRAL DENSITY	15
7.2.1 <i>E.U.T. Operation</i>	15
7.2.2 <i>Test Mode Description</i>	15
7.2.3 <i>Test Setup Diagram</i>	15
7.2.4 <i>Measurement Procedure and Data</i>	15
7.3 ADAPTIVITY	16
7.3.1 <i>E.U.T. Operation</i>	17
7.3.2 <i>Test Mode Description</i>	17
7.3.3 <i>Test Setup Diagram</i>	17
7.3.4 <i>Measurement Procedure and Data</i>	17
7.4 OCCUPIED CHANNEL BANDWIDTH	18
7.4.1 <i>E.U.T. Operation</i>	18
7.4.2 <i>Test Mode Description</i>	18
7.4.3 <i>Test Setup Diagram</i>	18
7.4.4 <i>Measurement Procedure and Data</i>	18
7.5 TRANSMITTER UNWANTED EMISSIONS IN THE OOB DOMAIN	19
7.5.1 <i>E.U.T. Operation</i>	19
7.5.2 <i>Test Mode Description</i>	19



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7.5.3	Test Setup Diagram	20
7.5.4	Measurement Procedure and Data	20
7.6	TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN	21
7.6.1	E.U.T. Operation	21
7.6.2	Test Mode Description	21
7.6.3	Test Setup Diagram	22
7.6.4	Measurement Procedure and Data	22
7.7	RECEIVER SPURIOUS EMISSIONS	39
7.7.1	E.U.T. Operation	39
7.7.2	Test Mode Description	39
7.7.3	Test Setup Diagram	39
7.7.4	Measurement Procedure and Data	40
7.8	RECEIVER BLOCKING	57
7.8.1	E.U.T. Operation	59
7.8.2	Test Mode Description	59
7.8.3	Test Setup Diagram	59
7.8.4	Measurement Procedure and Data	59
8	TEST SETUP PHOTO	60
9	EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)	61
10	APPENDIX	62



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4 General Information

4.1 Details of E.U.T.

Power supply:	3V DC (3.0Vx1"CR123A" Size Battery)
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2472MHz, 802.11n(HT40): 2422MHz to 2462MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK), 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Channel Spacing:	5MHz
Number of Channels:	802.11b/g/n(HT20): 13, 802.11n(HT40):9
Antenna Type:	PCB Antenna
Antenna Gain:	2.2dBi

4.2 Environment Parameter

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Value	Temperature(°C)	Voltage(V)
NTNV	23	3
LTNV	-10	3
HTNV	105	3

Note:

NV:Normal Voltage HT:High Extreme Test Temperature
NT:Normal Temperature LT:Low Extreme Test Temperature

4.3 Description of Support Units

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

4.4 Measurement Uncertainty

Test Item	Measurement Uncertainty
RF Output Power	$\pm 0.75\text{dB}$
Power Spectral Density	$\pm 2.84\text{dB}$
Adaptivity	$\pm 3\%$
Occupied Channel Bandwidth	$\pm 3\%$
Transmitter unwanted emissions in the OOB domain	$\pm 0.75\text{dB}$
Transmitter unwanted emissions in the spurious domain	$\pm 4.5\text{dB}$ (Below 1GHz), $\pm 4.8\text{dB}$ (Above 1GHz)
Receiver spurious emissions	$\pm 4.5\text{dB}$ (Below 1GHz), $\pm 4.8\text{dB}$ (Above 1GHz)
Receiver Blocking	$\pm 3\%$

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.

4.5 Test Location

All tests were performed at:

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

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

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

No tests were sub-contracted.

4.6 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.

- **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.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None



5 Equipment List

RF Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	AUDIX	N/A	SEM001-08	2019-06-13	2022-06-12
EXA Signal Analyzer	KEYSIGHT	N9010A	SEM004-09	2022-04-07	2023-04-06
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2022-03-22	2023-03-21
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2022-04-07	2023-04-06
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2022-04-07	2023-04-06
Power Sensor	TST PASS	TSPS2023R	SEM009-22	2021-09-23	2022-09-22
Power Sensor	TST PASS	TSPS2023R	SEM009-23	2021-09-23	2022-09-22
Power Sensor	TST PASS	TSPS2023R	SEM009-24	2021-09-23	2022-09-22
Power Sensor	TST PASS	TSPS2023R	SEM009-25	2021-09-23	2022-09-22
Programmable Temperature&Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2022-03-22	2023-03-21
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2021-07-09	2022-07-08

Power Spectral Density					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	AUDIX	N/A	SEM001-08	2019-06-13	2022-06-12
EXA Signal Analyzer	KEYSIGHT	N9010A	SEM004-09	2022-04-07	2023-04-06
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2022-03-22	2023-03-21
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2021-07-09	2022-07-08

Adaptivity					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	AUDIX	N/A	SEM001-08	2019-06-13	2022-06-12
EXA Signal Analyzer	KEYSIGHT	N9010A	SEM004-09	2022-04-07	2023-04-06
Signal Generator	KEYSIGHT	N5171B	SEM006-13	2022-03-22	2023-03-21
MXG Vector Signal Generator	KEYSIGHT	N5182A	SEM006-14	2022-03-22	2023-03-21
ESG Vector Signal Generator	KEYSIGHT	E4438C	SEM006-15	2021-09-23	2022-09-22
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2022-03-22	2023-03-21
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2022-04-07	2023-04-06
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2022-04-07	2023-04-06
Power Sensor	TST PASS	TSPS2023R	SEM009-22	2021-09-23	2022-09-22



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Power Sensor	TST PASS	TSPS2023R	SEM009-23	2021-09-23	2022-09-22
Power Sensor	TST PASS	TSPS2023R	SEM009-24	2021-09-23	2022-09-22
Power Sensor	TST PASS	TSPS2023R	SEM009-25	2021-09-23	2022-09-22
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2021-07-09	2022-07-08

Occupied Channel Bandwidth

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	AUDIX	N/A	SEM001-08	2019-06-13	2022-06-12
EXA Signal Analyzer	KEYSIGHT	N9010A	SEM004-09	2022-04-07	2023-04-06
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2022-03-22	2023-03-21
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2021-07-09	2022-07-08

Transmitter unwanted emissions in the OOB domain

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	AUDIX	N/A	SEM001-08	2019-06-13	2022-06-12
EXA Signal Analyzer	KEYSIGHT	N9010A	SEM004-09	2022-04-07	2023-04-06
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2022-03-22	2023-03-21
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2021-07-09	2022-07-08

Transmitter unwanted emissions in the spurious domain

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2021-03-26	2024-03-25
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2022-03-23	2023-03-22
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2021-04-14	2023-04-13
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2021-09-23	2022-09-22
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2021-07-09	2022-07-08

Receiver spurious emissions

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2021-03-26	2024-03-25
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2022-03-23	2023-03-22



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Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2021-04-14	2023-04-13
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2021-09-23	2022-09-22
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2021-07-09	2022-07-08

Receiver Blocking					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	AUDIX	N/A	SEM001-08	2019-06-13	2022-06-12
EXA Signal Analyzer	KEYSIGHT	N9010A	SEM004-09	2022-04-07	2023-04-06
Signal Generator	KEYSIGHT	N5171B	SEM006-13	2022-03-22	2023-03-21
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2022-03-22	2023-03-21
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2022-04-07	2023-04-06
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2022-04-07	2023-04-06
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2021-07-09	2022-07-08

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2021-09-14	2022-09-13
Humidity/ Temperature Indicator	Anymetre	TH101B	SEM002-09	2021-09-14	2022-09-13
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2022-03-28	2023-03-27



6 Radio Spectrum Technical Requirement

6.1 Geo-location capability

6.1.1 Test Requirement:

EN 300 328 Clause 4.3.2.12.3

Limit:

The geographical location determined by the non-FHSS equipment as defined in clause 4.3.2.12.2 shall not be accessible to the user in a way that would allow the user to alter it.

Definition:

Geo-location capability is a feature of the equipment to determine its geographical location with the purpose to configure itself according to the regulatory requirements applicable at the geographical location where it operates.

The geo-location capability may be present in the equipment or in an external device (temporary) associated with the equipment operating at the same geographical location during the initial power up of the equipment. The geographical location may also be available in equipment already installed and operating at the same geographical location.

6.1.2 Conclusion

The applicant declares: The product does not have the geo-location function.



7 Radio Spectrum Matter Test Results

7.1 RF Output Power

Test Requirement EN 300 328 Clause 4.3.2.2.3
Test Method: EN 300 328 Clause 5.4.2.2.1.2

Limit:

Frequency band(MHz)	Limit
2400-2483.5	20dBm/(100mw) (e.i.r.p)

7.1.1 E.U.T. Operation

Operating Environment:

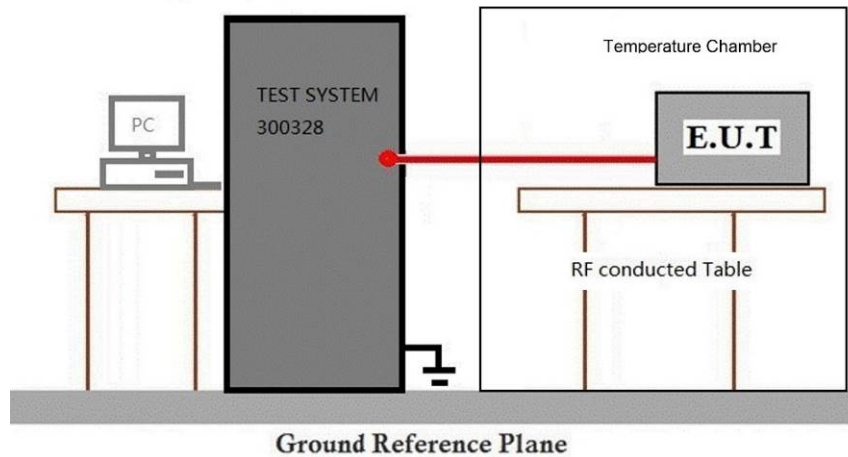
Temperature: 22.7 °C Humidity: 44.4 % RH Atmospheric Pressure: 1015 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	06	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). Only the data of worst case is recorded in the report.



7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.2 Power Spectral Density

Test Requirement EN 300 328 Clause 4.3.2.3.3

Test Method: EN 300 328 Clause 5.4.3.2.1

Limit:

Frequency band(MHz)	Limit
2400-2483.5	≤10dBm per MHz

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C

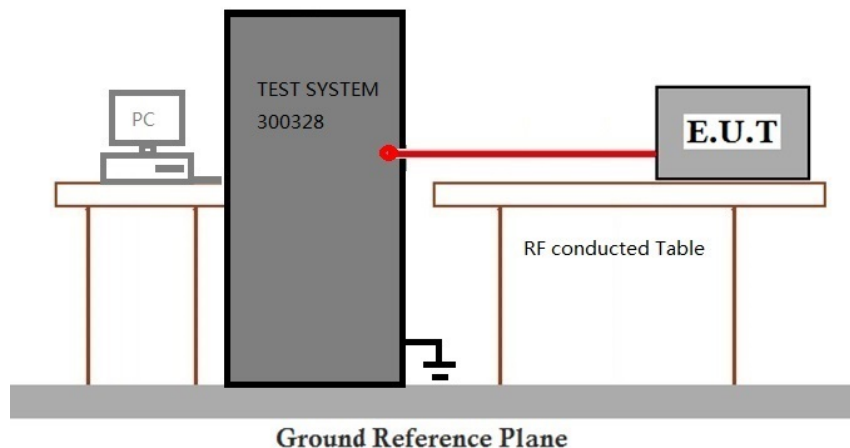
Humidity: 44.4 % RH

Atmospheric Pressure: 1015 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	06	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). Only the data of worst case is recorded in the report.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.3 Adaptivity

Test Requirement EN 300 328 Clause 4.3.2.6
Test Method: EN 300 328 Clause 5.4.6.2.1.4

Limit:

Adaptive Type	Limit
Adaptive Frequency Hopping using LBT based DAA	The CCA observation time shall be not less than 0,2 % of the Channel Occupancy Time with a minimum of 18 μ s.
	The Channel Occupancy Time for a given hopping frequency, which starts immediately after a successful CCA, shall be less than 60 ms followed by an Idle Period of minimum 5 % of the Channel Occupancy Time with a minimum of 100 μ s.
	For LBT based adaptive frequency hopping equipment with a dwell time < 60 ms, the maximum Channel Occupancy Time is limited by the dwell time.
Adaptive Frequency Hopping using other forms of DAA (non-LBT based)	The hopping frequency shall remain unavailable for a minimum time equal to 1 second or 5 times the actual number of hopping frequencies in the current (adapted) channel map used by the equipment, multiplied with the Channel Occupancy Time whichever is greater.
	The Channel Occupancy Time for a given hopping frequency shall be less than 40 ms. For equipment using a dwell time > 40 ms that wants to have other transmissions during the same hop (dwell time) an Idle Period (no transmissions) of minimum 5 % of the Channel Occupancy Period with a minimum of 100 μ s shall be implemented.
	For non-LBT based frequency hopping equipment with a dwell time < 40 ms, the maximum Channel Occupancy Time may be non-contiguous, i.e. spread over a number of hopping sequences (equal to 40 ms divided by the dwell time [ms]).
Short Control Signalling Transmissions	If implemented, Short Control Signalling Transmissions shall have a maximum TxOn / (TxOn + TxOff) ratio of 10 % within any observation period of 50 ms or within an observation period equal to the dwell time, whichever is less.
Non-LBT based Detect and Avoid	The Channel Occupancy Time shall be less than 40 ms. Each such transmission sequence shall be followed by an Idle Period (no transmissions) of minimum 5 % of the Channel Occupancy Time with a minimum of 100 μ s.
LBT based Detect and Avoid (FBE)	The equipment shall observe the operating channel for the duration of the CCA observation time which shall be not less than 18 μ s.
	The Channel Occupancy Time shall be in the range 1 ms to 10 ms followed by an Idle Period of at least 5 % of the Channel Occupancy Time used in the equipment for the current Fixed Frame Period.
	The threshold level (TL) may be corrected for the (receive) antenna assembly gain (G); however, beamforming gain (Y) shall not be taken into account. For power levels less than 20 dBm e.i.r.p. the CCA threshold level may be relaxed to: $TL = -70 \text{ dBm/MHz} + 10 \times \log_{10} (100 \text{ mW} / P_{out})$ (P_{out} in mW e.i.r.p.)
LBT based Detect and Avoid (LBE)	The equipment shall observe the operating channel for the duration of the CCA observation time which shall be not less than 18 μ s.
	This Channel Occupancy Time shall be less than 13 ms
	The threshold level (TL) may be corrected for the (receive) antenna assembly gain (G); however, beamforming gain (Y) shall not be taken into account. For power levels less than 20 dBm e.i.r.p. the CCA threshold level may be relaxed to:



TL = -70 dBm/MHz + 10 × log10 (100 mW / Pout) (Pout in mW e.i.r.p.)

7.3.1 E.U.T. Operation

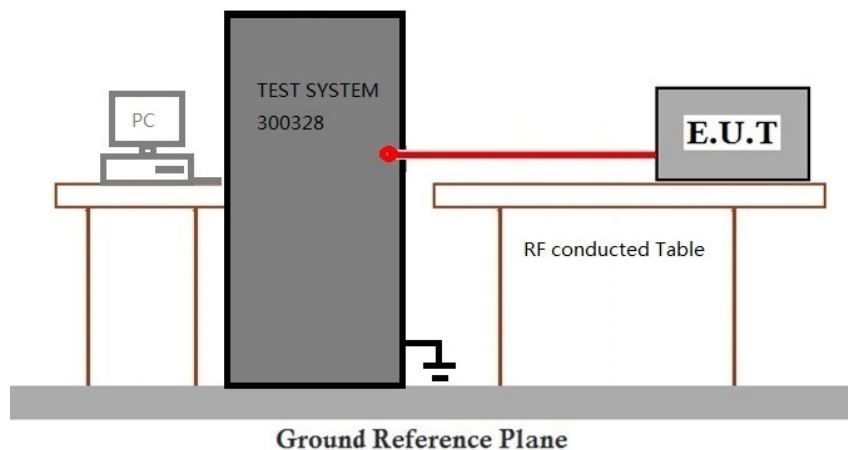
Operating Environment:

Temperature: 22.7 °C Humidity: 44.4 % RH Atmospheric Pressure: 1015 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	Normal operating_Keep the EUT communication with the companion device.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.4 Occupied Channel Bandwidth

Test Requirement EN 300 328 Clause 4.3.2.7.3

Test Method: EN 300 328 Clause 5.4.7.2.1

Limit:

The Occupied Channel Bandwidth shall be within the band given in table 1.

In addition, for non-adaptive non-FHSS equipment with e.i.r.p. greater than 10 dBm, the Occupied Channel Bandwidth shall be equal to or less than 20 MHz.

7.4.1 E.U.T. Operation

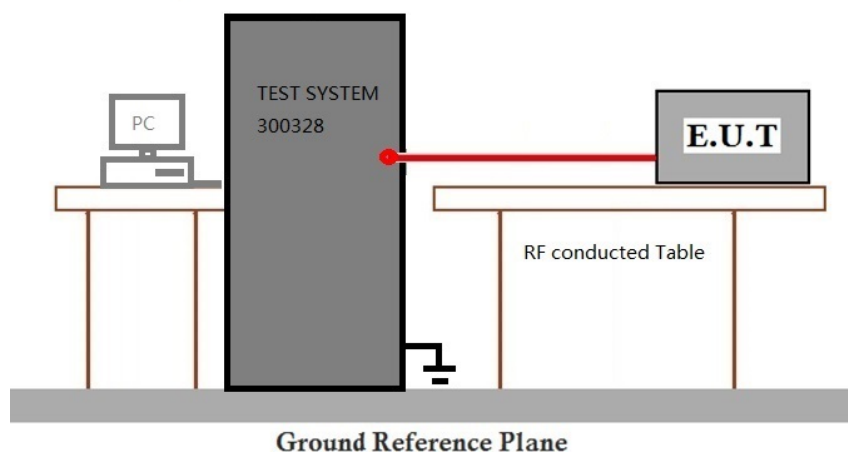
Operating Environment:

Temperature: 22.7 °C Humidity: 44.4 % RH Atmospheric Pressure: 1015 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	06	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). 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

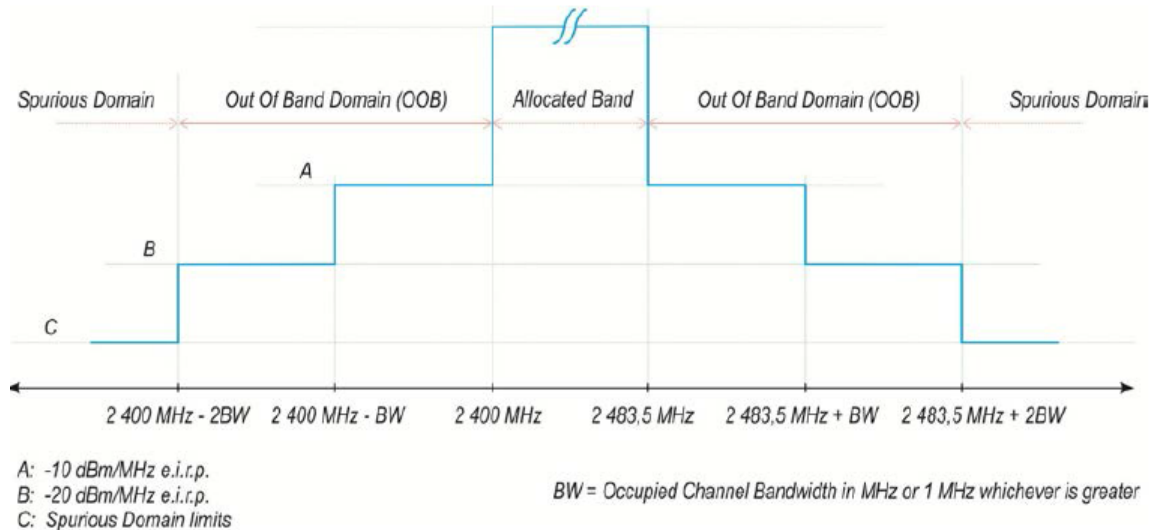


7.5 Transmitter unwanted emissions in the OOB domain

Test Requirement EN 300 328 Clause 4.3.2.8.3

Test Method: EN 300 328 Clause 5.4.8.2.1

Limit:



7.5.1 E.U.T. Operation

Operating Environment:

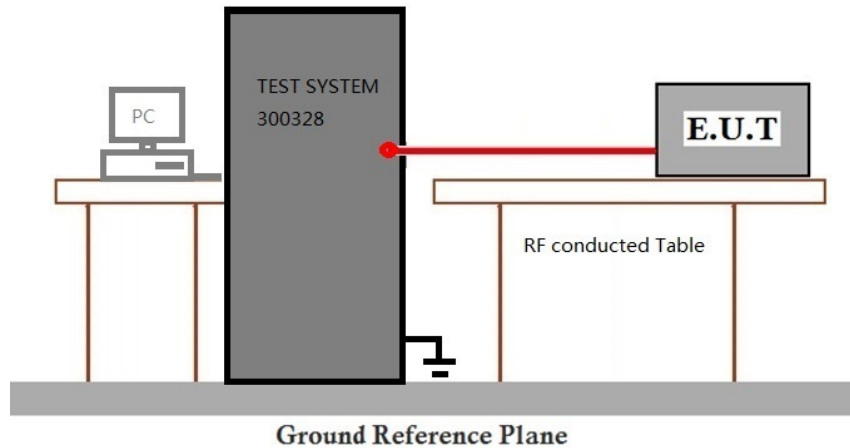
Temperature: 22.7 °C Humidity: 44.4 % RH Atmospheric Pressure: 1015 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	06	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). 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 Transmitter unwanted emissions in the spurious domain

Test Requirement EN 300 328 Clause 4.3.2.9.3

Test Method: EN 300 328 Clause 5.4.9.2

Limit:

Table 1: Transmitter limits for spurious emissions

Frequency range	Maximum power, e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Bandwidth
30 MHz to 47 MHz	-36dBm	100 kHz
47 MHz to 74 MHz	-54dBm	100 kHz
74 MHz to 87,5 MHz	-36dBm	100 kHz
87,5 MHz to 118 MHz	-54dBm	100 kHz
118 MHz to 174 MHz	-36dBm	100 kHz
174 MHz to 230 MHz	-54dBm	100 kHz
230 MHz to 470 MHz	-36dBm	100 kHz
470 MHz to 694 MHz	-54dBm	100 kHz
694 MHz to 1 GHz	-36dBm	100 kHz
1 GHz to 12,75 GHz	-30dBm	1MHz

7.6.1 E.U.T. Operation

Operating Environment:

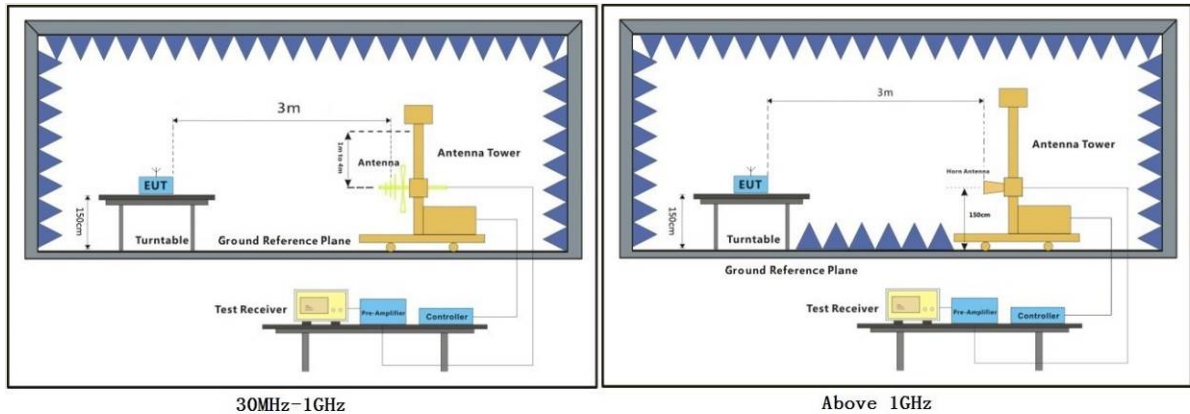
Temperature: 20.9 °C Humidity: 56.3 % RH Atmospheric Pressure: 1015 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	06	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). Only the data of worst case is recorded in the report.



7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

1. Using test software to set up the lowest channel, the middle channel and the highest channel.
2. Scan from 30MHz to 12.75GHz, find the maximum radiation frequency to measure. No Standby Mode apply for the EUT.
3. The technique used to find the Spurious Emissions of the transmitter was a pre-calibration method which is measure the path loss from the measurement antenna to the substitution antenna and subtract this from the signal generator level to reach the measurement result. The method was performed to determine the actual ERP/EIRP emission levels of the EUT.

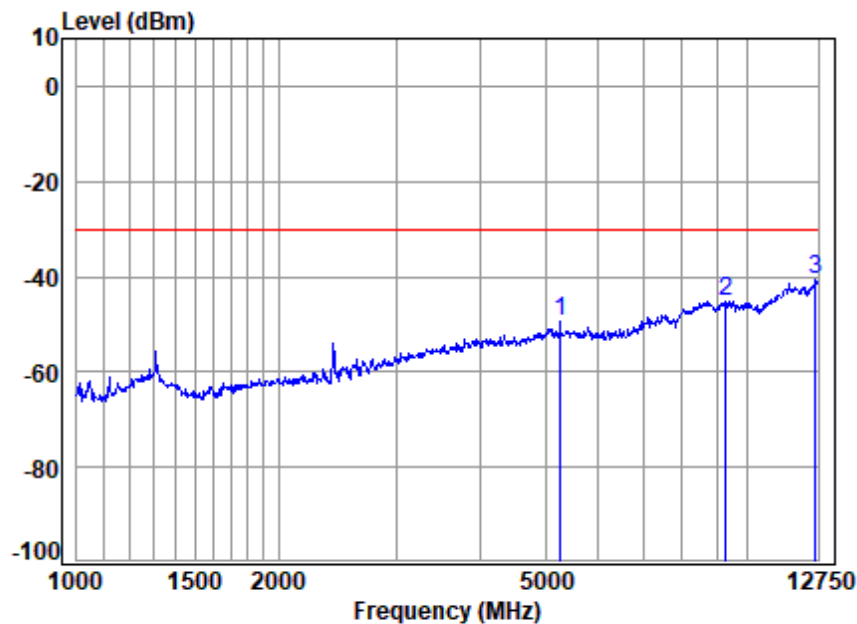
Test procedure as below:

- 1) The EUT was powered ON and placed on a table in the chamber. The antenna of the transmitter was extended to its maximum length. Receiver mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- 2) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 3) The test antenna shall be raised or lowered again, if necessary, through the specified height range until a maximum is obtained. This level shall be recorded.
- 4) This measurement shall be repeated for horizontal and vertical polarization.

Remark:

The disturbance below 1GHz was very low and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Test Mode: 06; Polarity: Horizontal; Modulation: 802.11b; Bandwidth: 20MHz; Channel: Low



Condition: 3m HORIZONTAL

Job No: 01050AT

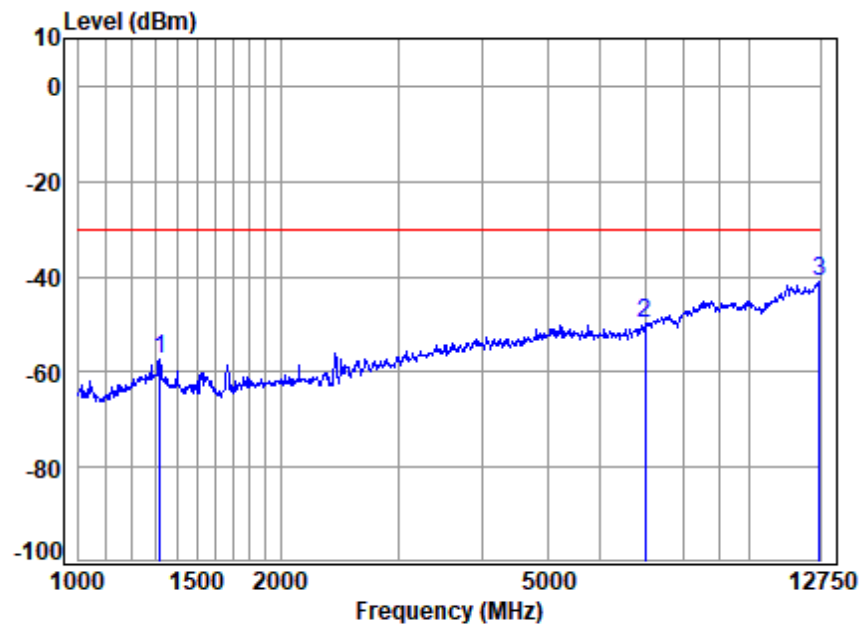
Test mode: 2412 TX RSE

Note: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5257.66	-49.43	-30.00	-19.43
2	9275.16	-45.12	-30.00	-15.12
3	12653.00	-40.52	-30.00	-10.52



Test Mode: 06; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No: 01050AT

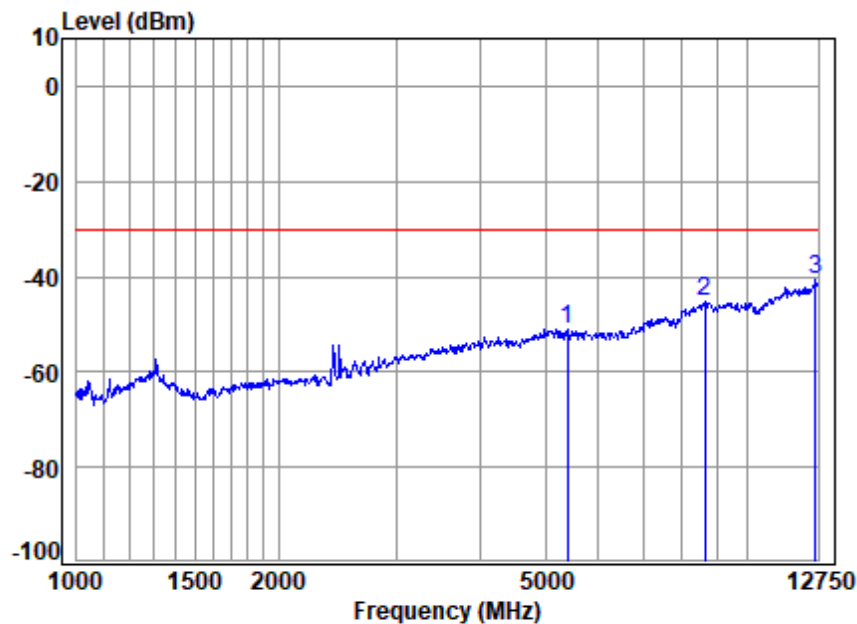
Test mode: 2412 TX RSE

Note: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1319.78	-57.19	-30.00	-27.19
2	6992.14	-49.99	-30.00	-19.99
3	12717.59	-40.82	-30.00	-10.82



Test Mode: 06; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

Job No: 01050AT

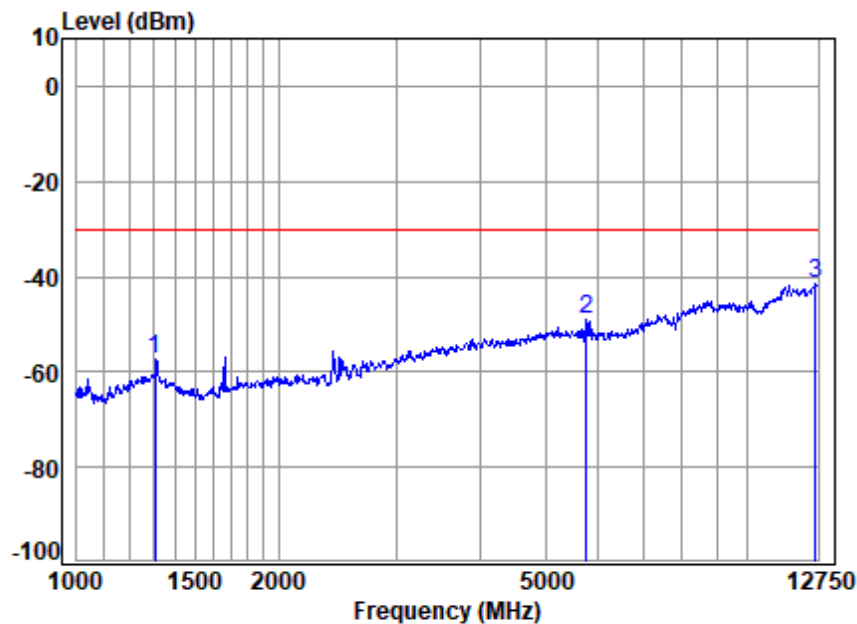
Test mode: 2472 TX RSE

Note: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5393.22	-51.02	-30.00	-21.02
2	8637.08	-45.06	-30.00	-15.06
3	12620.84	-40.81	-30.00	-10.81



Test Mode: 06; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL

Job No: 01050AT

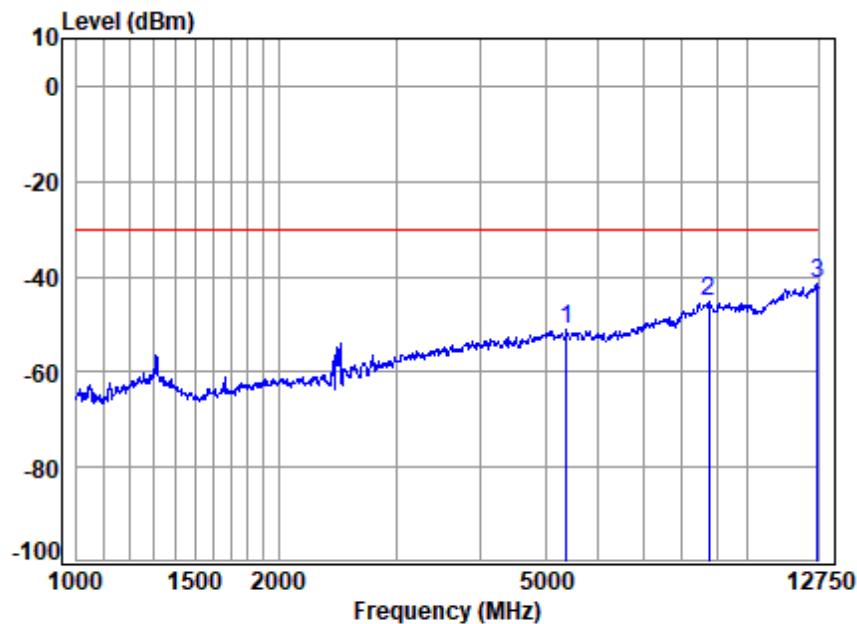
Test mode: 2472 TX RSE

Note: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1309.74	-57.55	-30.00	-27.55
2	5762.24	-49.02	-30.00	-19.02
3	12620.84	-41.53	-30.00	-11.53



Test Mode: 06; Polarity: Horizontal; Modulation: 802.11g; Bandwidth: 20MHz; Channel: Low



Condition: 3m HORIZONTAL

Job No: 01050AT

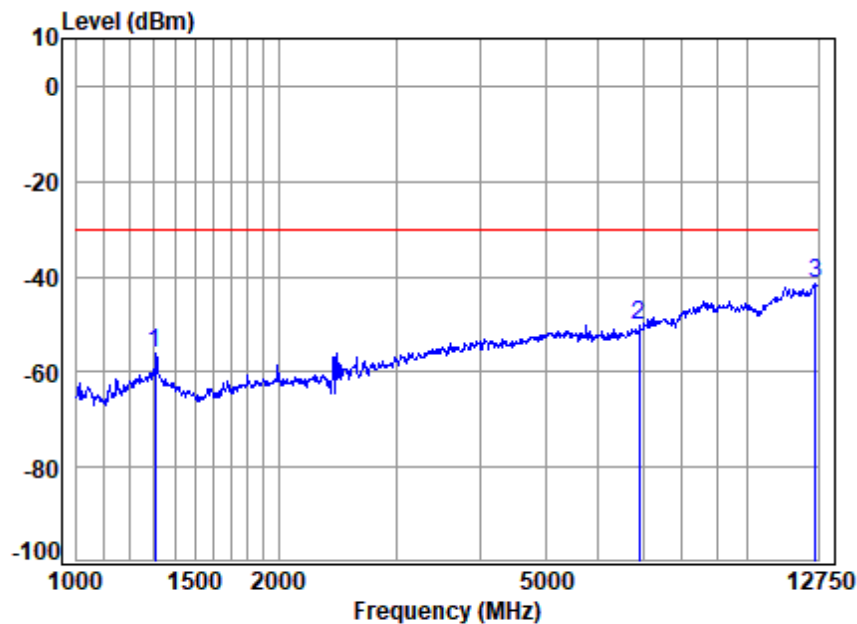
Test mode: 2412 TX RSE

Note: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5379.50	-50.87	-30.00	-20.87
2	8770.01	-45.20	-30.00	-15.20
3	12717.59	-41.56	-30.00	-11.56



Test Mode: 06; Polarity: Vertical; Modulation: 802.11g; Bandwidth: 20MHz; Channel: Low



Condition: 3m VERTICAL

Job No: 01050AT

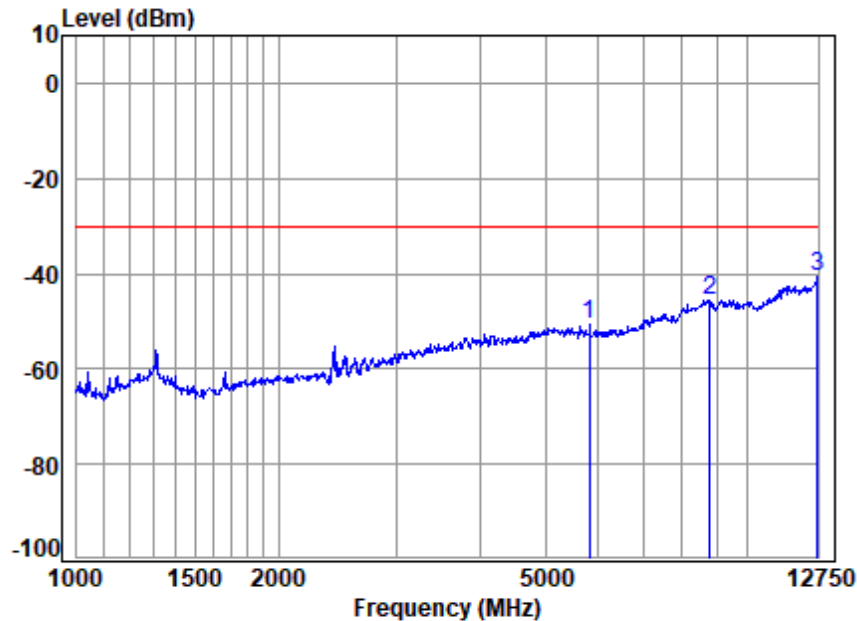
Test mode: 2412 TX RSE

Note: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1309.74	-55.90	-30.00	-25.90
2	6903.71	-50.42	-30.00	-20.42
3	12653.00	-41.64	-30.00	-11.64



Test Mode: 06; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

Job No: 01050AT

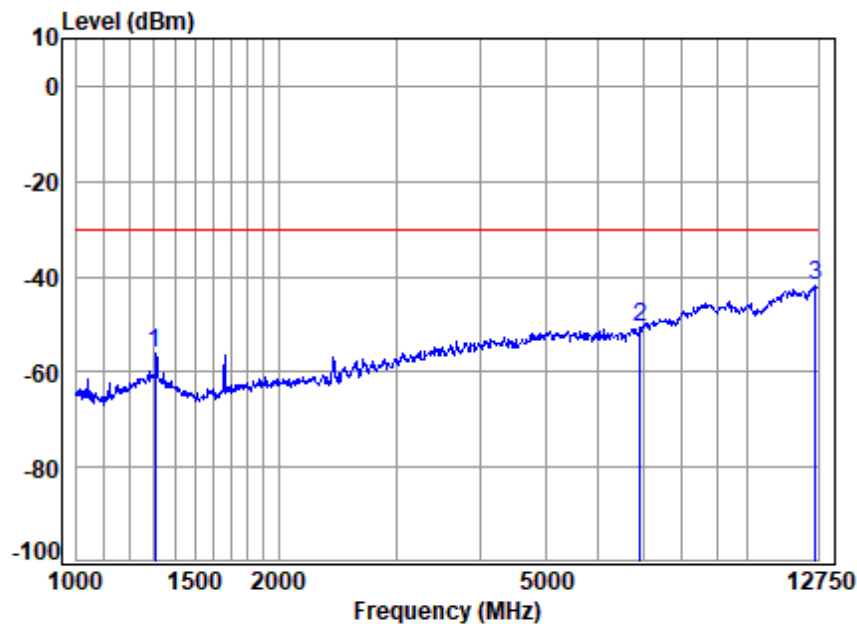
Test mode: 2472 TX RSE

Note: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5821.21	-50.47	-30.00	-20.47
2	8792.37	-45.49	-30.00	-15.49
3	12717.59	-40.54	-30.00	-10.54



Test Mode: 06; Polarity: Vertical; Modulation: 802.11g; Bandwidth: 20MHz; Channel: High



Condition: 3m VERTICAL

Job No: 01050AT

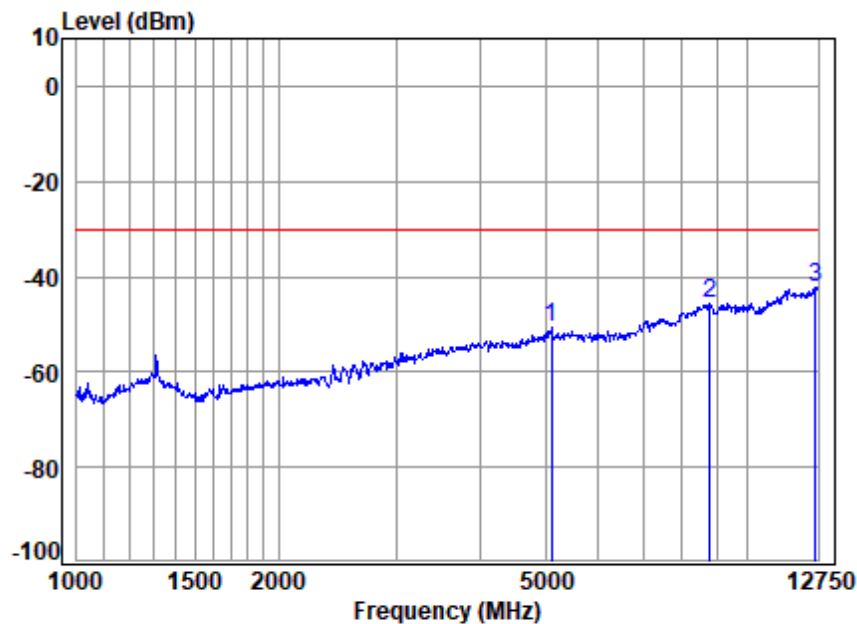
Test mode: 2472 TX RSE

Note: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1309.74	-56.00	-30.00	-26.00
2	6921.30	-50.46	-30.00	-20.46
3	12620.84	-41.98	-30.00	-11.98



Test Mode: 06; Polarity: Horizontal; Modulation: 802.11n; Bandwidth: 20MHz; Channel: Low



Condition: 3m HORIZONTAL

Job No: 01050AT

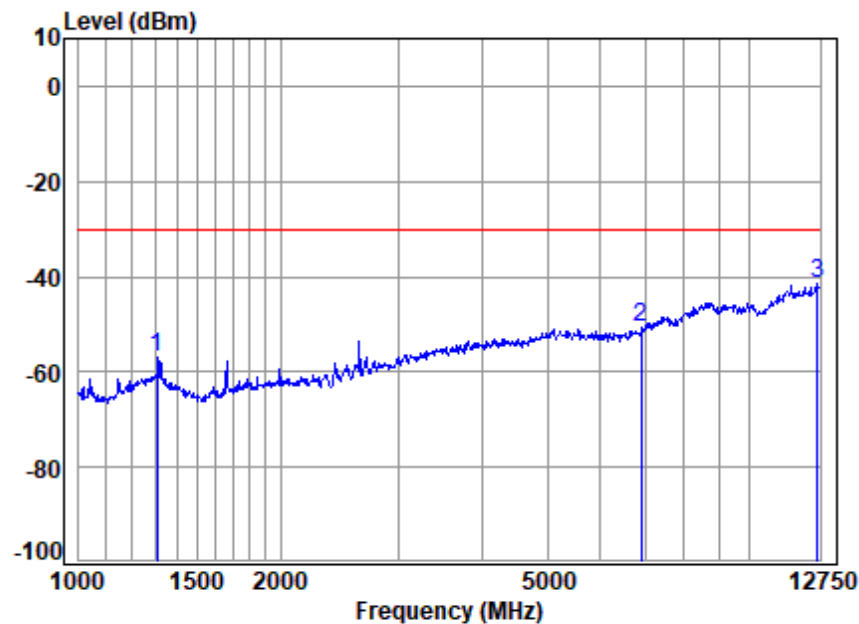
Test mode: 2412 TX RSE

Note: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5099.49	-50.73	-30.00	-20.73
2	8792.37	-45.75	-30.00	-15.75
3	12620.84	-42.08	-30.00	-12.08



Test Mode: 06; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No: 01050AT

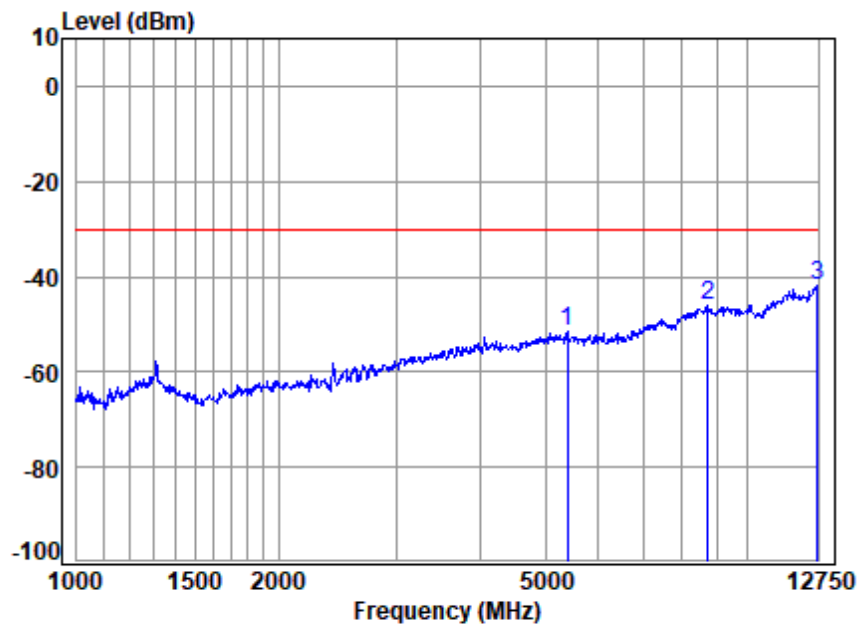
Test mode: 2412 TX RSE

Note: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1309.74	-57.07	-30.00	-27.07
2	6903.71	-50.59	-30.00	-20.59
3	12620.84	-41.57	-30.00	-11.57



Test Mode: 06; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

Job No: 01050AT

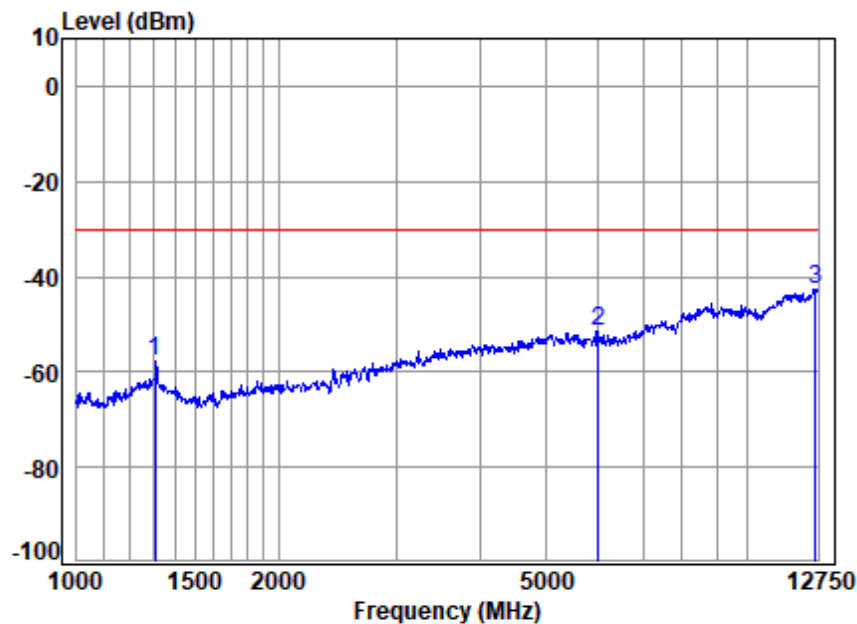
Test mode: 2472 TX RSE

Note: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5393.22	-51.30	-30.00	-21.30
2	8725.48	-46.19	-30.00	-16.19
3	12717.59	-42.05	-30.00	-12.05



Test Mode: 06; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL

Job No: 01050AT

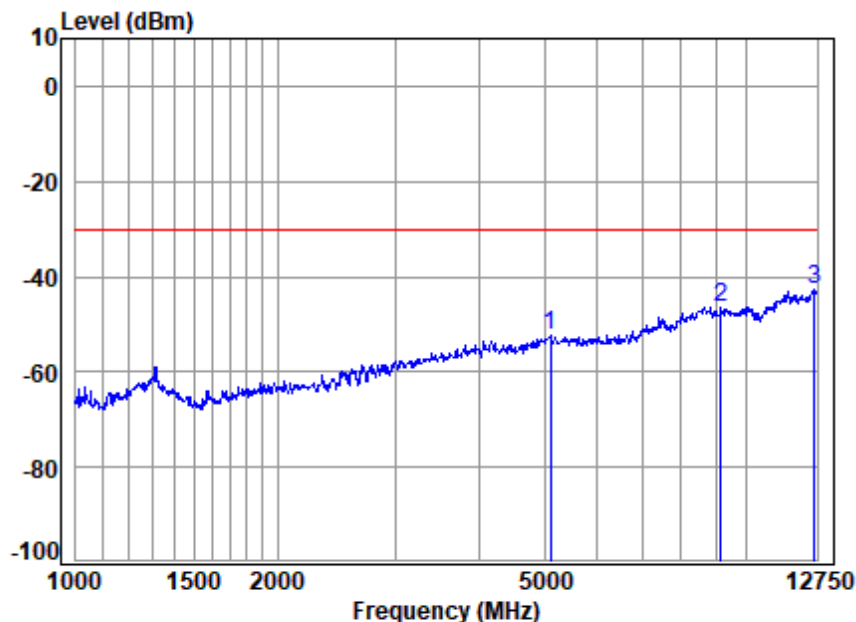
Test mode: 2472 TX RSE

Note: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1309.74	-57.95	-30.00	-27.95
2	6001.77	-51.35	-30.00	-21.35
3	12620.84	-42.64	-30.00	-12.64



Test Mode: 06; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No: 01050AT

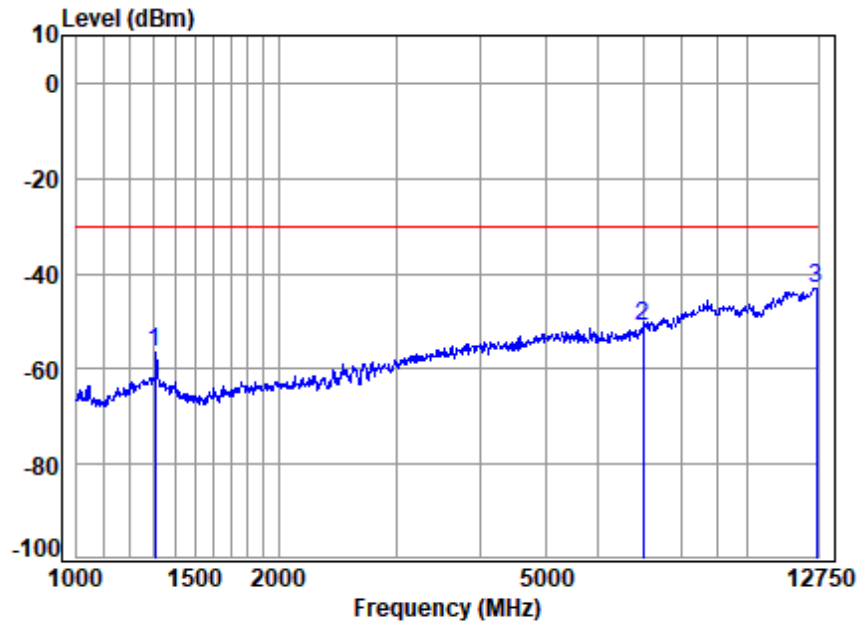
Test mode: 2422 TX RSE

Note: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5099.49	-52.22	-30.00	-22.22
2	9157.86	-46.30	-30.00	-16.30
3	12620.84	-42.75	-30.00	-12.75



Test Mode: 06; Polarity: Vertical; Modulation: 802.11n; Bandwidth: 40MHz; Channel: Low

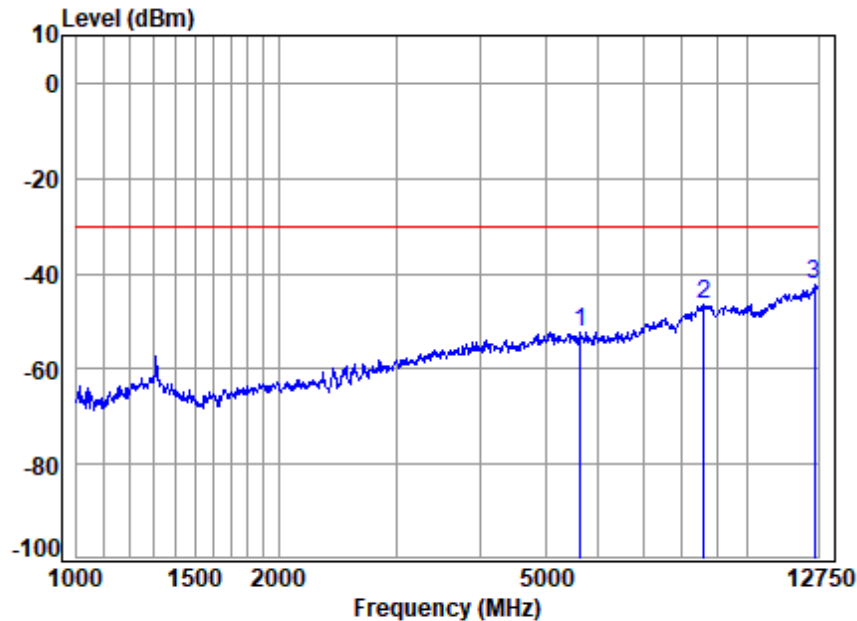


Condition: 3m VERTICAL
Job No: 01050AT
Test mode: 2422 TX RSE
Note: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1309.74	-56.33	-30.00	-26.33
2	6992.14	-51.09	-30.00	-21.09
3	12685.25	-42.92	-30.00	-12.92



Test Mode: 06; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL

Job No: 01050AT

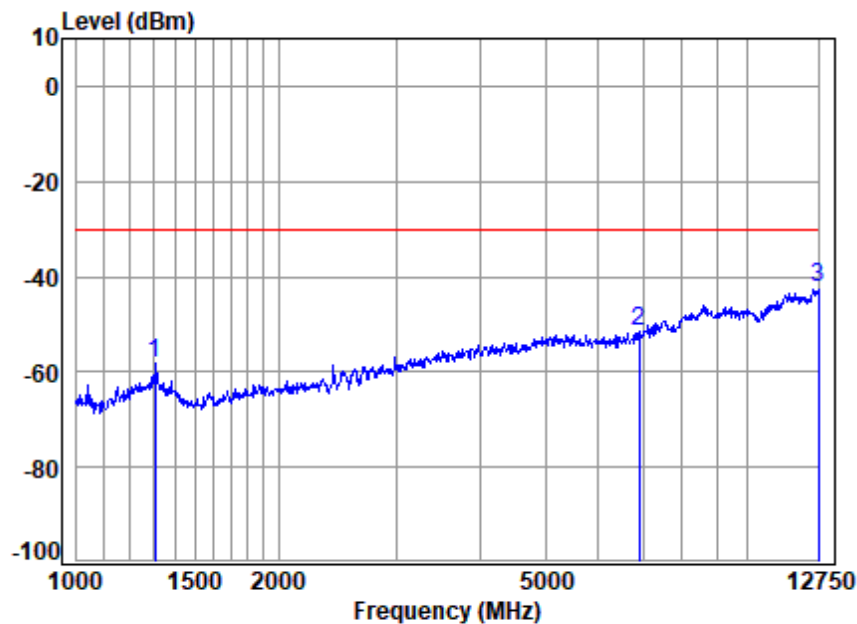
Test mode: 2462 TX RSE

Note: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5646.08	-52.12	-30.00	-22.12
2	8615.13	-46.50	-30.00	-16.50
3	12588.75	-42.42	-30.00	-12.42



Test Mode: 06; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m VERTICAL

Job No: 01050AT

Test mode: 2462 TX RSE

Note: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1309.74	-58.37	-30.00	-28.37
2	6886.15	-51.67	-30.00	-21.67
3	12750.00	-42.24	-30.00	-12.24



7.7 Receiver spurious emissions

Test Requirement EN 300 328 Clause 4.3.2.10.3

Test Method: EN 300 328 Clause 5.4.10.2

Limit:

The spurious emissions of the receiver shall not exceed the values in tables in the indicated bands:

Frequency Range	Limit
30 MHz to 1 GHz	2nW(-57dBm)
Above 1GHz	20nW(-47dBm)

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 20.9 °C

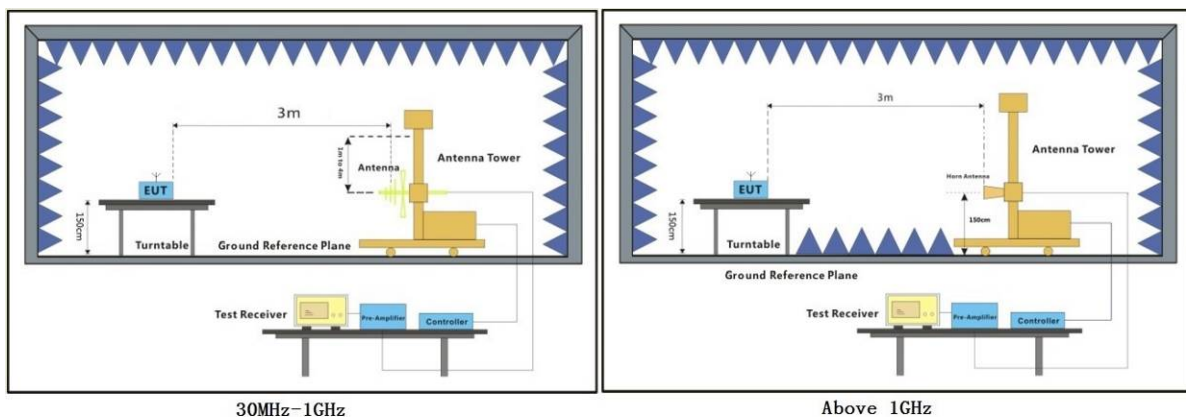
Humidity: 56.2 % RH

Atmospheric Pressure: 1015 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	RX_Keep the EUT in receiving mode with all modulation types. Only the data of worst case for 20MHz bandwidth and 40MHz bandwidth is recorded in the report.

7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

1. Using test software to set up the lowest channel, the middle channel and the highest channel.
2. Scan from 30MHz to 12.75GHz, find the maximum radiation frequency to measure. No Standby Mode apply for the EUT.
3. The technique used to find the Spurious Emissions of the transmitter was a pre-calibration method which is measure the path loss from the measurement antenna to the substitution antenna and subtract this from the signal generator level to reach the measurement result. The method was performed to determine the actual ERP/EIRP emission levels of the EUT.

Test procedure as below:

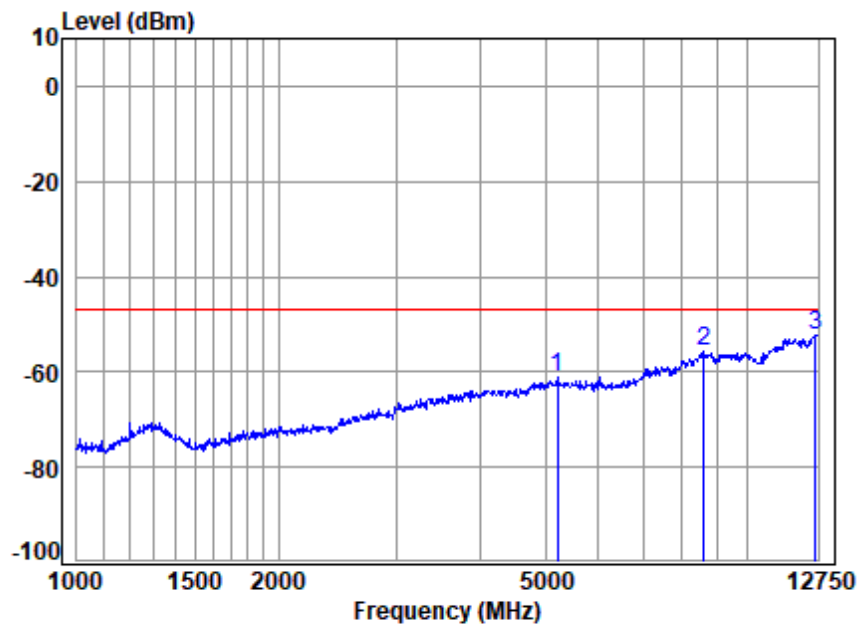
- 1) The EUT was powered ON and placed on a table in the chamber. The antenna of the transmitter was extended to its maximum length. Receiver mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- 2) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 3) The test antenna shall be raised or lowered again, if necessary, through the specified height range until a maximum is obtained. This level shall be recorded.
- 4) This measurement shall be repeated for horizontal and vertical polarization.

Remark:

The disturbance below 1GHz was very low and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.



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



Condition: 3m HORIZONTAL

Job No: 01050AT

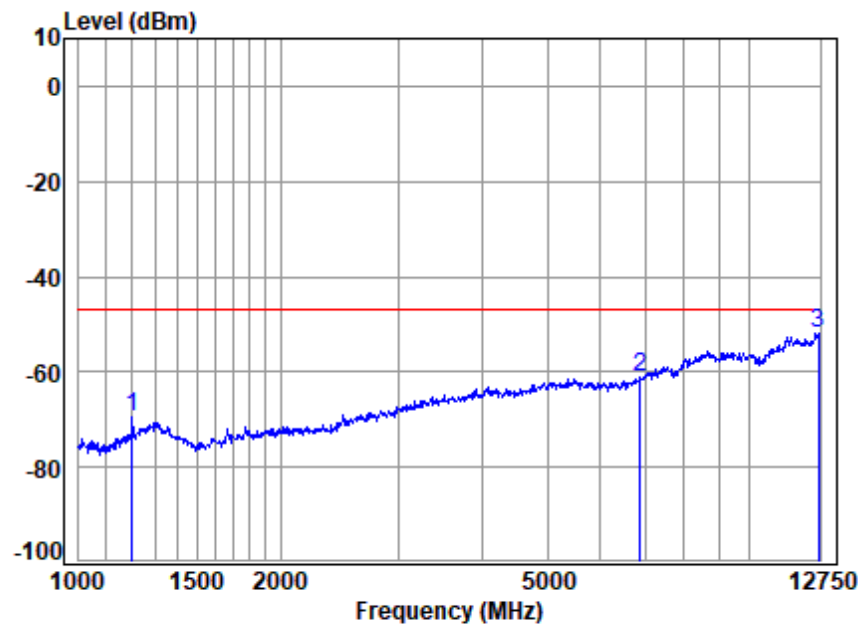
Test mode: 2412 RX RSE

Note: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5217.66	-61.05	-47.00	-14.05
2	8615.13	-55.87	-47.00	-8.87
3	12653.00	-52.15	-47.00	-5.15



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



Condition: 3m VERTICAL

Job No: 01050AT

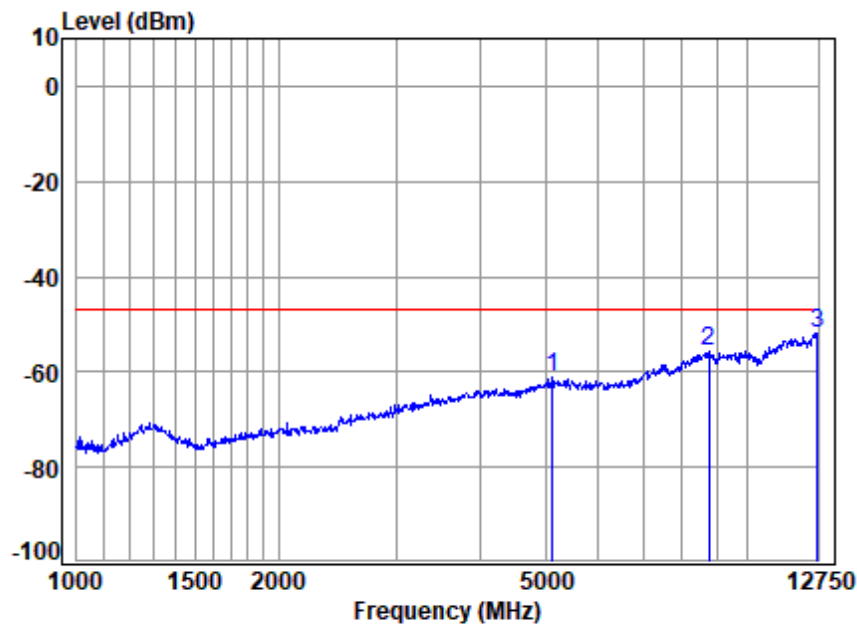
Test mode: 2412 RX RSE

Note: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1201.15	-69.52	-47.00	-22.52
2	6868.65	-60.95	-47.00	-13.95
3	12685.25	-51.80	-47.00	-4.80



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



Condition: 3m HORIZONTAL

Job No: 01050AT

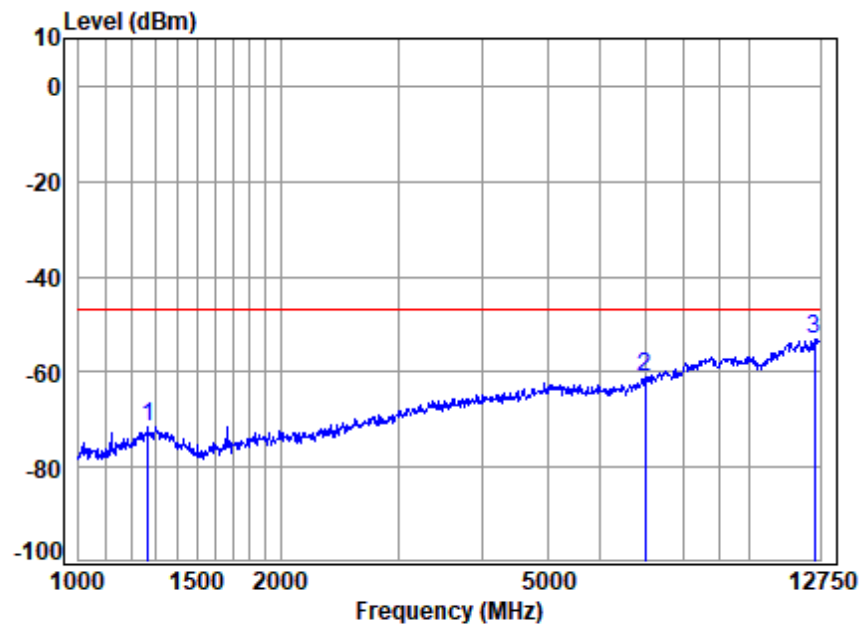
Test mode: 2472 RX RSE

Note: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5125.52	-61.23	-47.00	-14.23
2	8770.01	-55.81	-47.00	-8.81
3	12717.59	-51.78	-47.00	-4.78



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



Condition: 3m VERTICAL

Job No: 01050AT

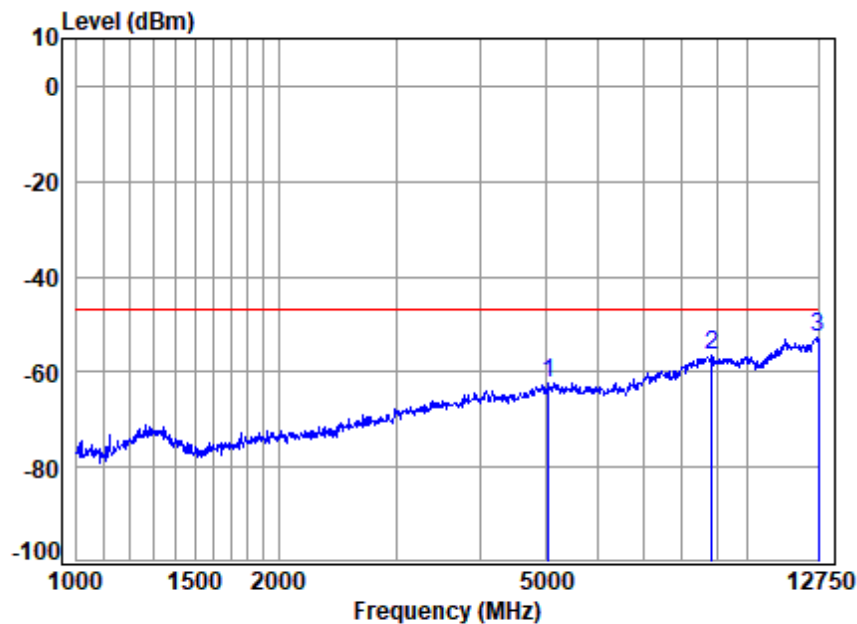
Test mode: 2472 RX RSE

Note: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1267.10	-71.68	-47.00	-24.68
2	6992.14	-61.26	-47.00	-14.26
3	12492.98	-53.12	-47.00	-6.12



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



Condition: 3m HORIZONTAL

Job No: 01050AT

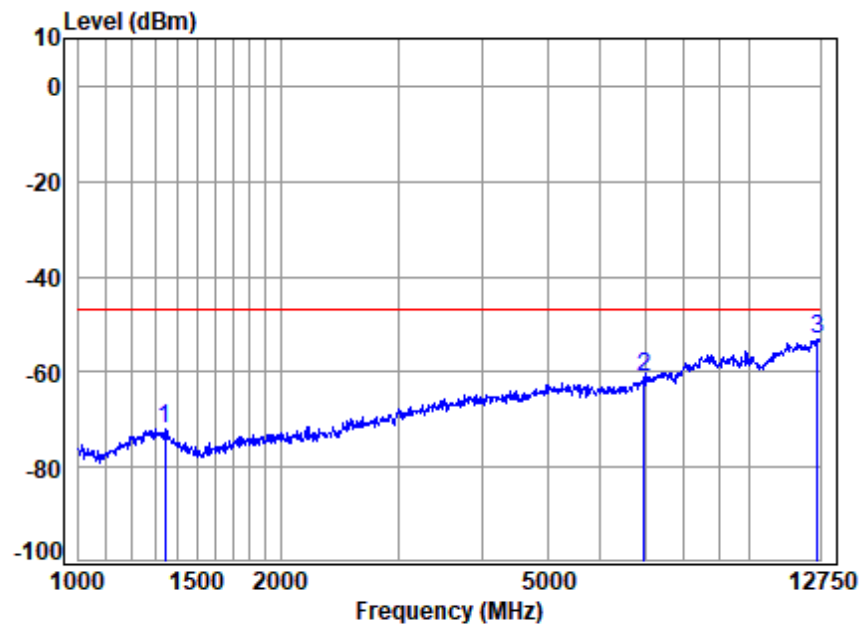
Test mode: 2412 RX RSE

Note: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5047.83	-62.45	-47.00	-15.45
2	8859.77	-56.60	-47.00	-9.60
3	12750.00	-52.74	-47.00	-5.74



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



Condition: 3m VERTICAL

Job No: 01050AT

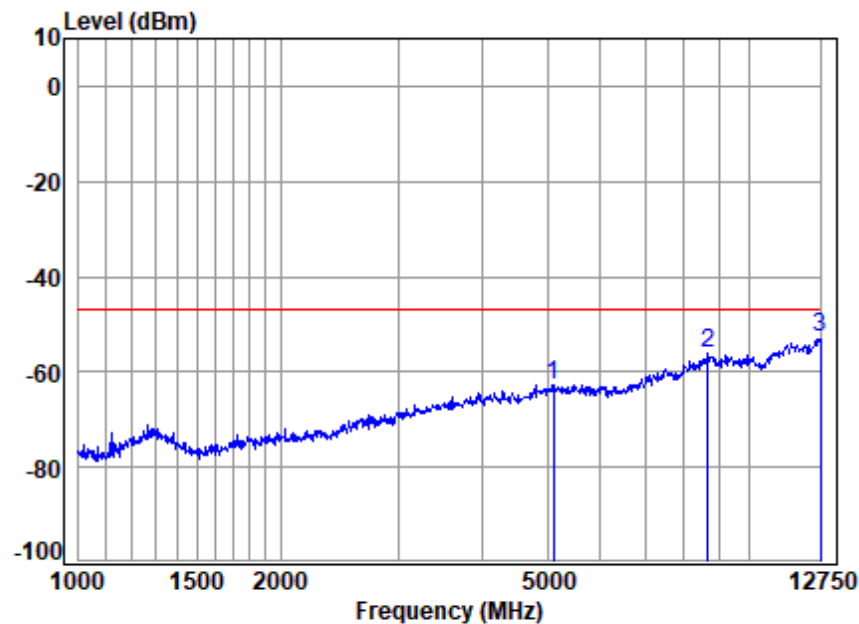
Test mode: 2412 RX RSE

Note: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1343.51	-71.91	-47.00	-24.91
2	6974.36	-61.24	-47.00	-14.24
3	12620.84	-53.01	-47.00	-6.01



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



Condition: 3m HORIZONTAL

Job No: 01050AT

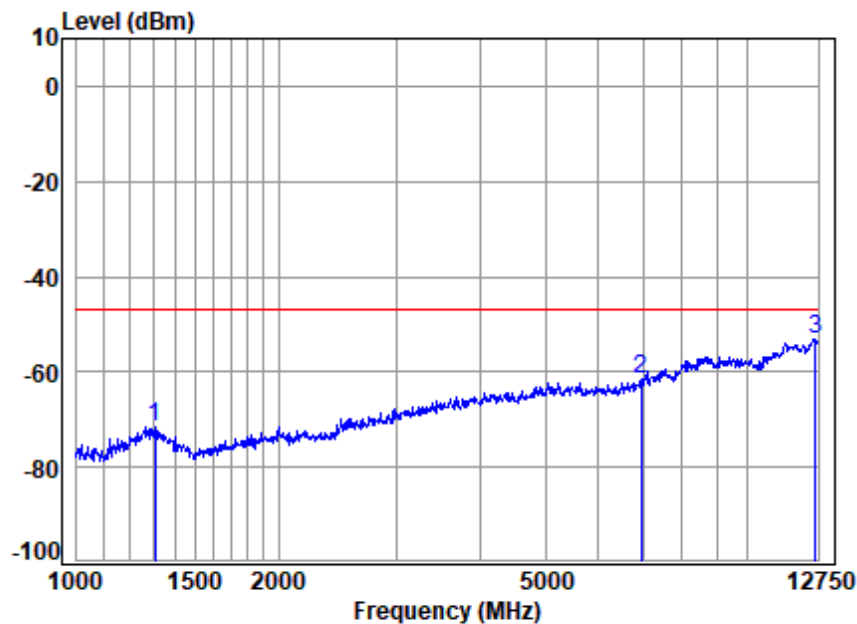
Test mode: 2472 RX RSE

Note: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5112.49	-62.57	-47.00	-15.57
2	8681.17	-56.12	-47.00	-9.12
3	12750.00	-52.94	-47.00	-5.94



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



Condition: 3m VERTICAL

Job No: 01050AT

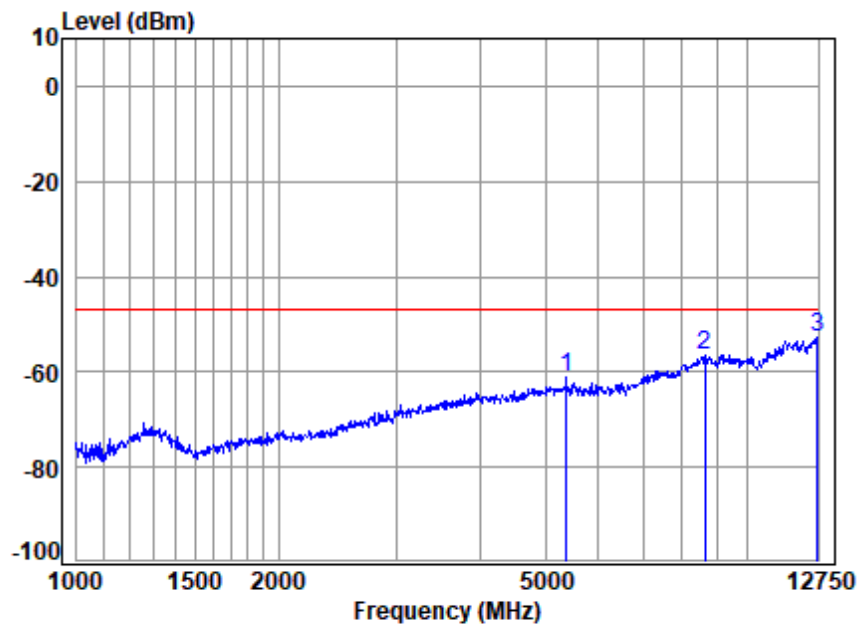
Test mode: 2472 RX RSE

Note: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1306.41	-71.46	-47.00	-24.46
2	6938.94	-61.69	-47.00	-14.69
3	12653.00	-53.05	-47.00	-6.05



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



Condition: 3m HORIZONTAL

Job No: 01050AT

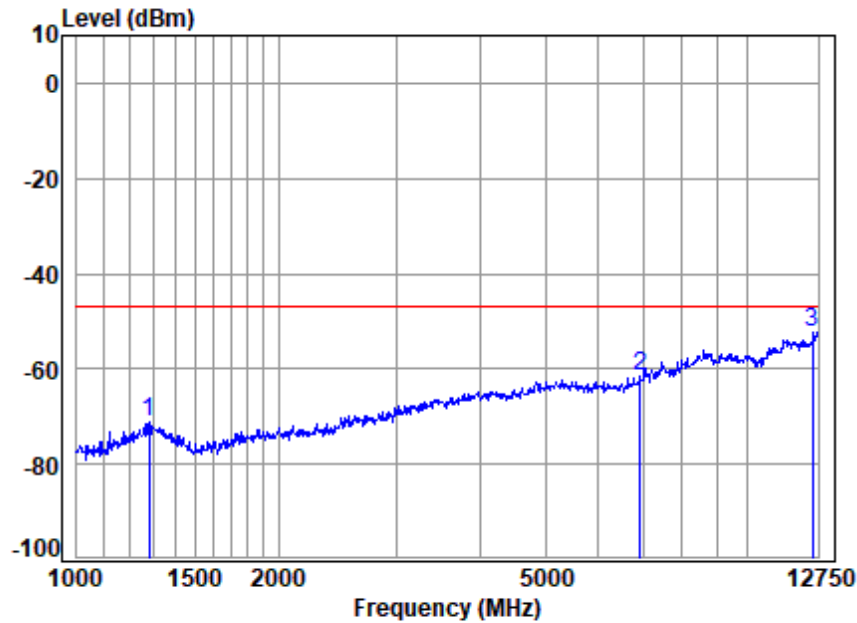
Test mode: 2412 RX RSE

Note: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5365.83	-61.20	-47.00	-14.20
2	8637.08	-56.30	-47.00	-9.30
3	12717.59	-52.78	-47.00	-5.78



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



Condition: 3m VERTICAL

Job No: 01050AT

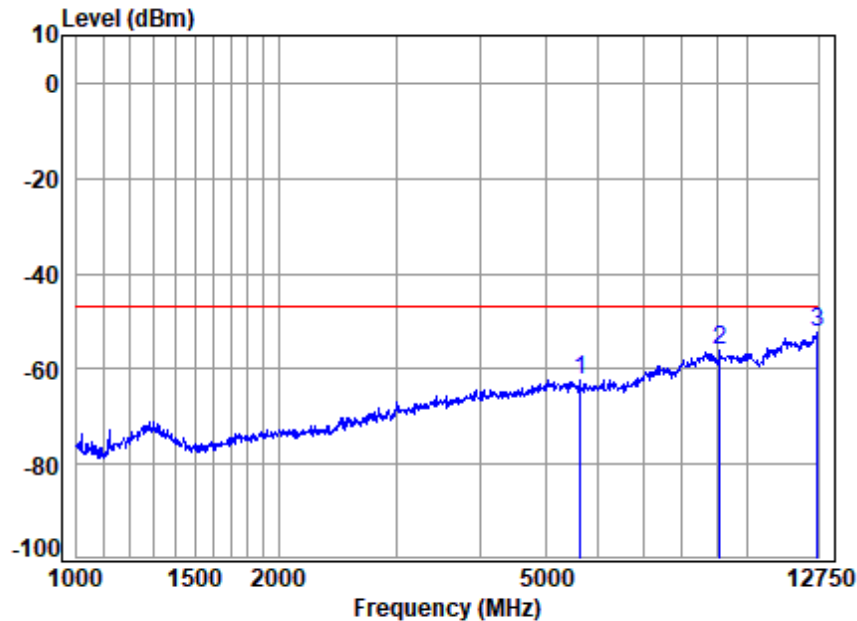
Test mode: 2412 RX RSE

Note: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1283.34	-71.20	-47.00	-24.20
2	6921.30	-61.64	-47.00	-14.64
3	12524.82	-52.26	-47.00	-5.26



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



Condition: 3m HORIZONTAL

Job No: 01050AT

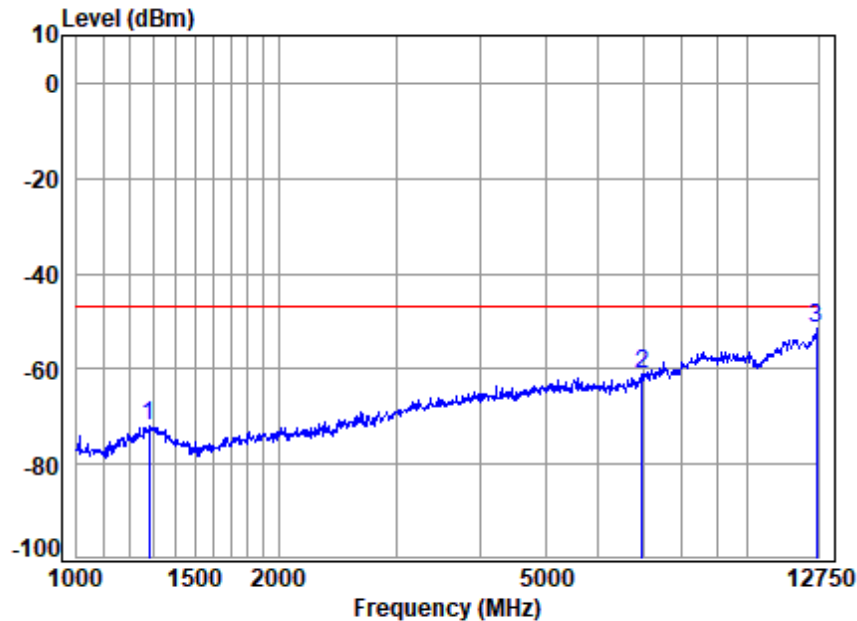
Test mode: 2472 RX RSE

Note: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5631.73	-62.35	-47.00	-15.35
2	9088.19	-56.24	-47.00	-9.24
3	12717.59	-52.12	-47.00	-5.12



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



Condition: 3m VERTICAL

Job No: 01050AT

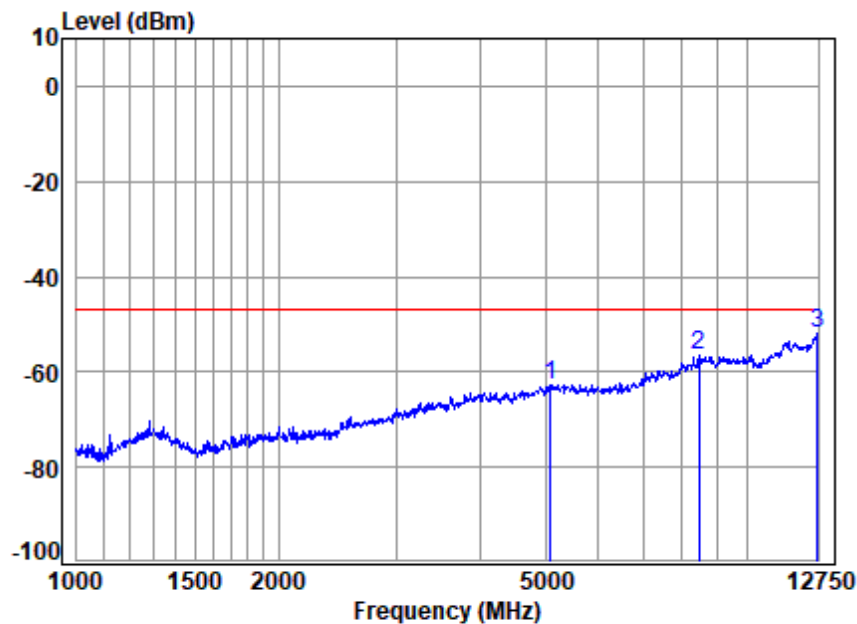
Test mode: 2472 RX RSE

Note: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1280.07	-71.97	-47.00	-24.97
2	6974.36	-61.26	-47.00	-14.26
3	12685.25	-51.60	-47.00	-4.60



Test Mode: 07; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No: 01050AT

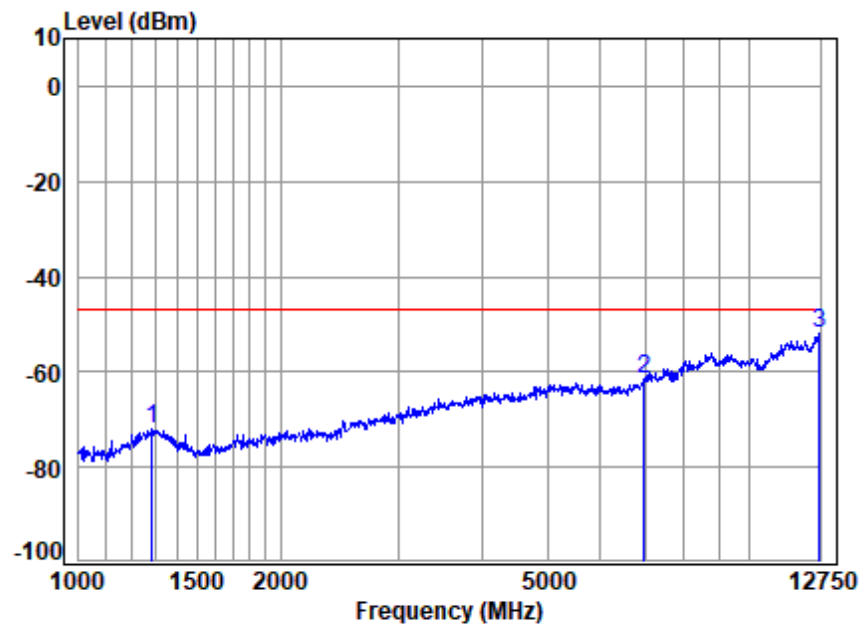
Test mode: 2422 RX RSE

Note: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5086.52	-62.59	-47.00	-15.59
2	8462.98	-56.56	-47.00	-9.56
3	12717.59	-52.06	-47.00	-5.06



Test Mode: 07; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m VERTICAL

Job No: 01050AT

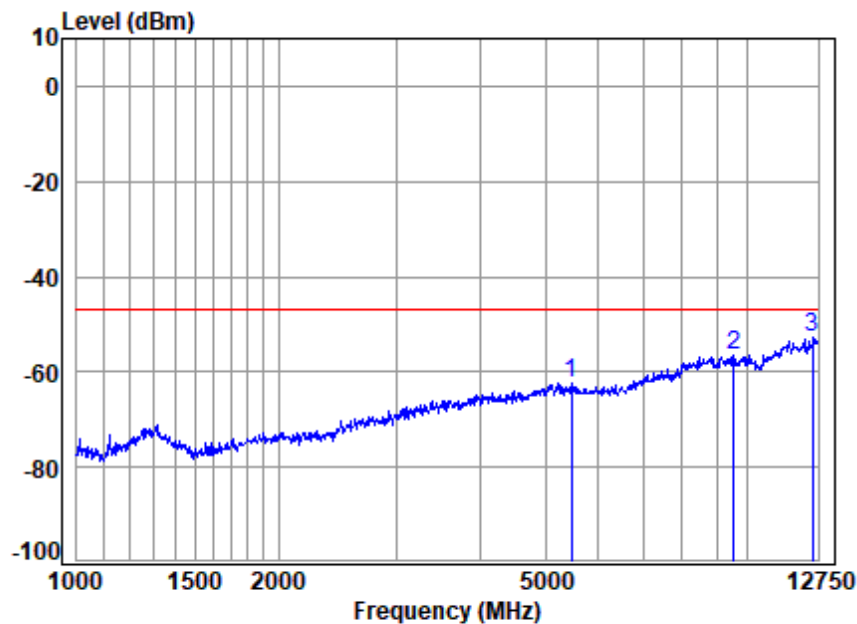
Test mode: 2422 RX RSE

Note: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1286.61	-71.81	-47.00	-24.81
2	6974.36	-61.71	-47.00	-14.71
3	12717.59	-52.03	-47.00	-5.03



Test Mode: 07; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL

Job No: 01050AT

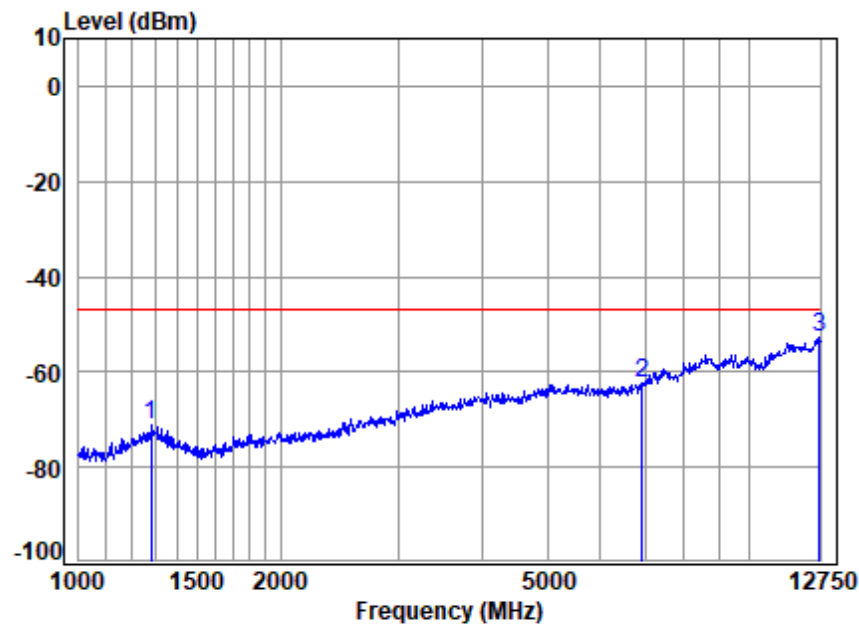
Test mode: 2462 RX RSE

Note: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5462.30	-62.42	-47.00	-15.42
2	9538.54	-56.70	-47.00	-9.70
3	12524.82	-52.94	-47.00	-5.94



Test Mode: 07; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m VERTICAL

Job No: 01050AT

Test mode: 2462 RX RSE

Note: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1280.07	-71.35	-47.00	-24.35
2	6921.30	-62.25	-47.00	-15.25
3	12717.59	-52.79	-47.00	-5.79



7.8 Receiver Blocking

Test Requirement EN 300 328 Clause 4.3.2.11.4

Test Method: EN 300 328 Clause 5.4.11.2.1

Limit:

For equipment that supports a PER or FER test to be performed, the minimum performance criterion shall be a PER or FER less than or equal to 10 %.

For equipment that does not support a PER or a FER test to be performed, the minimum performance criterion shall be no loss of the wireless transmission function needed for the intended use of the equipment.

The blocking levels at specified frequency offsets shall be equal to or greater than the limits defined for the applicable receiver category provided below table.

Receiver Blocking parameters for Receiver Category 1 equipment			
Wanted signal mean power from companion device (dBm) (see notes 1 and 4)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 4)	Type of blocking signal
(-133 dBm + 10 × log10(OCBW)) or -68 dBm whichever is less (see note 2)	2380 2504	-34	CW
(-139 dBm + 10 × log10(OCBW)) or -74 dBm whichever is less (see note 3)	2 300 2 330 2 360 2 524 2 584 2 674		

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 26 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 20 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.



Receiver Blocking parameters for Receiver Category 2 equipment			
Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × log ₁₀ (OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

Receiver Blocking parameters for Receiver Category 3 equipment			
Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × log ₁₀ (OCBW) + 20 dB) or (-74 dBm + 20 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 30 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C

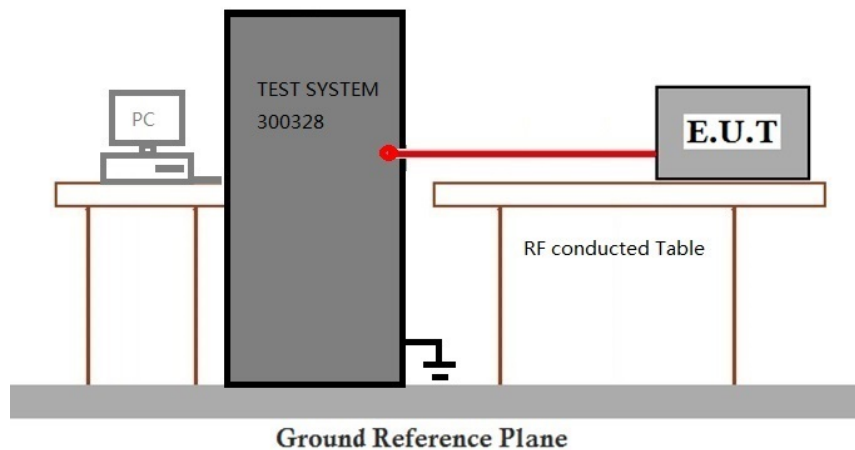
Humidity: 44.4 % RH

Atmospheric Pressure: 1015 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	Normal operating_Keep the EUT communication with the companion device.

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details



8 Test Setup Photo

Transmitter unwanted emissions in the spurious domain



Receiver spurious emissions



9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for SZCR2204001050AT



10 Appendix

1. RF Output Power

1.1 Power

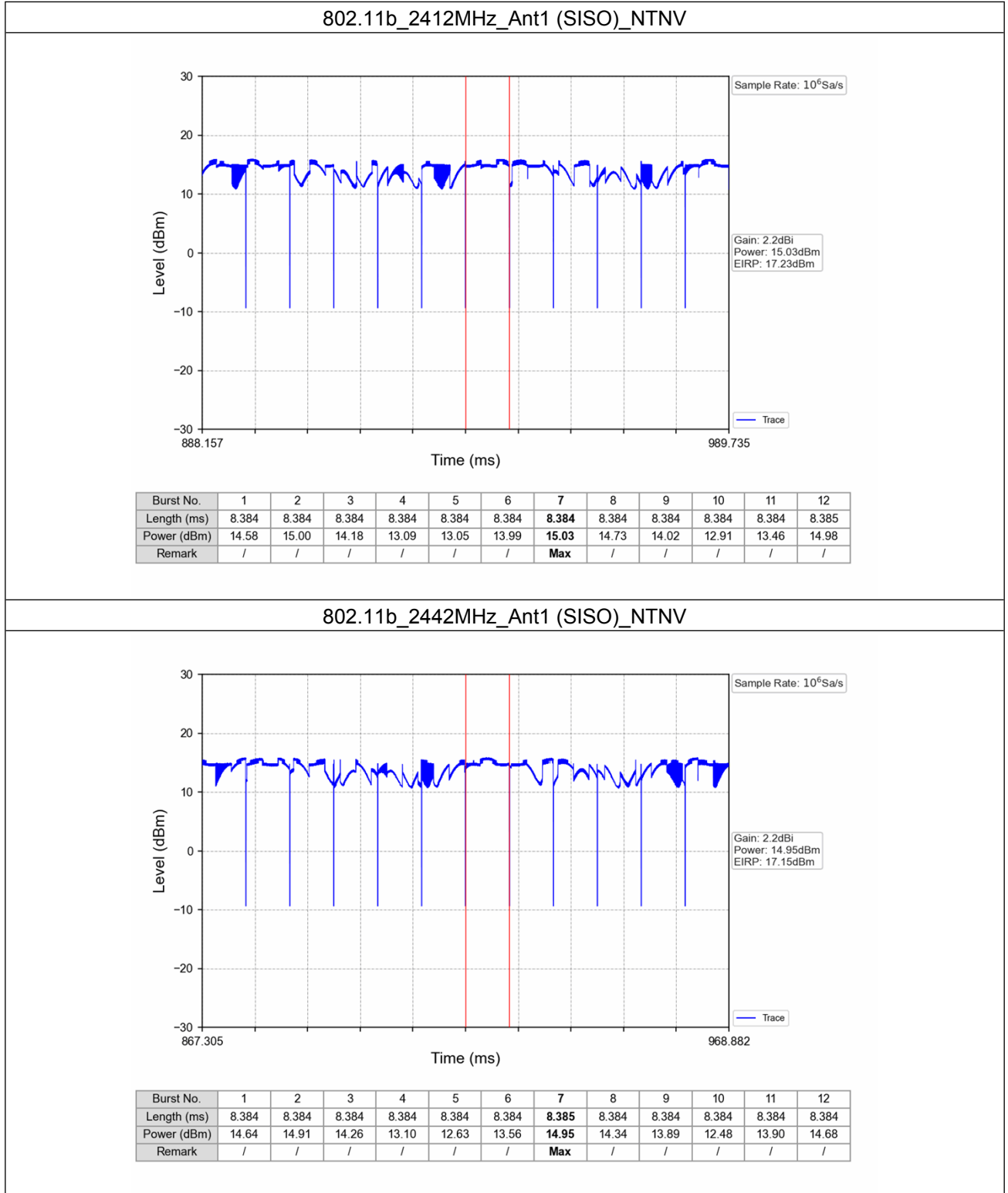
1.1.1 Test Result

ENV	Mode	TX Type	Frequency (MHz)	ANT	Gain (dBi)	Power (dBm)	EIRP (dBm)	Limit (dBm)	Verdict
NTNV	802.11b	SISO	2412	1	2.20	15.03	17.23	<=20	Pass
			2442	1	2.20	14.95	17.15	<=20	Pass
			2472	1	2.20	14.40	16.60	<=20	Pass
	802.11g	SISO	2412	1	2.20	12.81	15.01	<=20	Pass
			2442	1	2.20	12.60	14.80	<=20	Pass
			2472	1	2.20	12.22	14.42	<=20	Pass
	802.11n (HT20)	SISO	2412	1	2.20	11.64	13.84	<=20	Pass
			2442	1	2.20	11.37	13.57	<=20	Pass
			2472	1	2.20	11.01	13.21	<=20	Pass
	802.11n (HT40)	SISO	2422	1	2.20	10.34	12.54	<=20	Pass
			2442	1	2.20	10.09	12.29	<=20	Pass
			2462	1	2.20	10.21	12.41	<=20	Pass
HTNV	802.11b	SISO	2412	1	2.20	15.02	17.22	<=20	Pass
			2442	1	2.20	14.98	17.18	<=20	Pass
			2472	1	2.20	14.38	16.58	<=20	Pass
	802.11g	SISO	2412	1	2.20	12.81	15.01	<=20	Pass
			2442	1	2.20	12.57	14.77	<=20	Pass
			2472	1	2.20	12.19	14.39	<=20	Pass
	802.11n (HT20)	SISO	2412	1	2.20	11.64	13.84	<=20	Pass
			2442	1	2.20	11.39	13.59	<=20	Pass
			2472	1	2.20	11.02	13.22	<=20	Pass
	802.11n (HT40)	SISO	2422	1	2.20	10.34	12.54	<=20	Pass
			2442	1	2.20	10.06	12.26	<=20	Pass
			2462	1	2.20	10.19	12.39	<=20	Pass
LTNV	802.11b	SISO	2412	1	2.20	15.00	17.20	<=20	Pass
			2442	1	2.20	14.96	17.16	<=20	Pass
			2472	1	2.20	14.39	16.59	<=20	Pass
	802.11g	SISO	2412	1	2.20	12.79	14.99	<=20	Pass
			2442	1	2.20	12.59	14.79	<=20	Pass
			2472	1	2.20	12.21	14.41	<=20	Pass

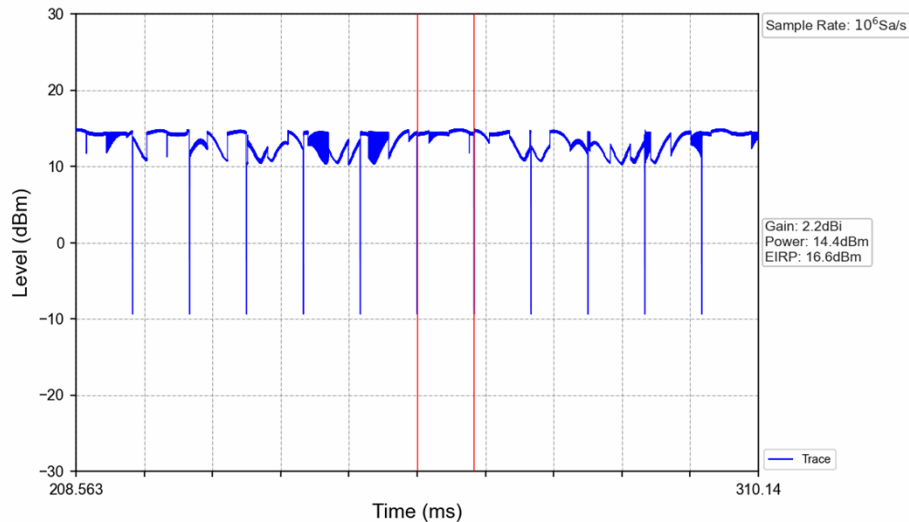
	802.11n (HT20)	SISO	2412	1	2.20	11.57	13.77	<=20	Pass
			2442	1	2.20	11.40	13.60	<=20	Pass
			2472	1	2.20	11.00	13.20	<=20	Pass
	802.11n (HT40)	SISO	2422	1	2.20	10.33	12.53	<=20	Pass
			2442	1	2.20	10.03	12.23	<=20	Pass
			2462	1	2.20	10.17	12.37	<=20	Pass
Note1: E.I.R.P = Measured Power + Antenna Gain									



1.1.2 Test Graph

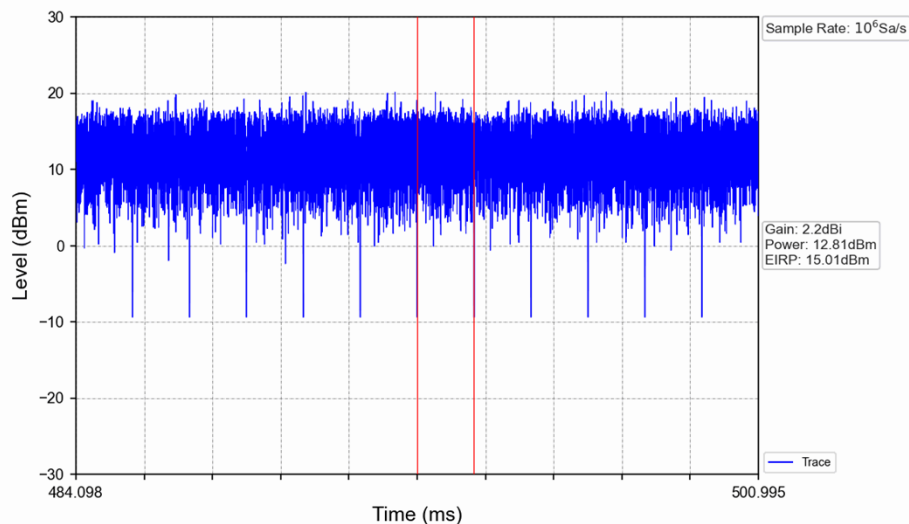


802.11b_2472MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384
Power (dBm)	14.26	13.96	13.45	12.49	12.56	13.65	14.40	13.62	13.05	11.88	13.15	14.36
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

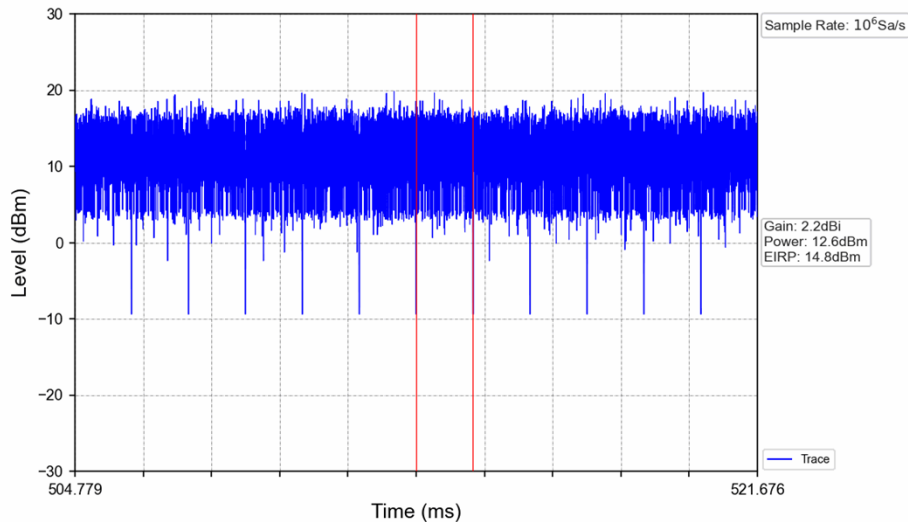
802.11g_2412MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.392	1.393	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392
Power (dBm)	12.69	12.59	12.73	12.64	12.68	12.76	12.81	12.73	12.61	12.72	12.53	12.66
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

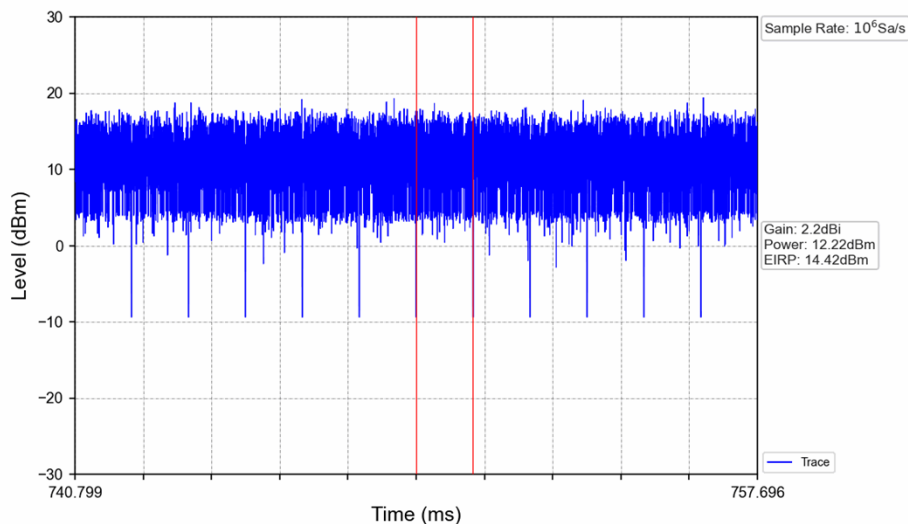


802.11g_2442MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.393	1.392
Power (dBm)	12.52	12.41	12.51	12.45	12.51	12.55	12.60	12.54	12.36	12.50	12.36	12.48
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

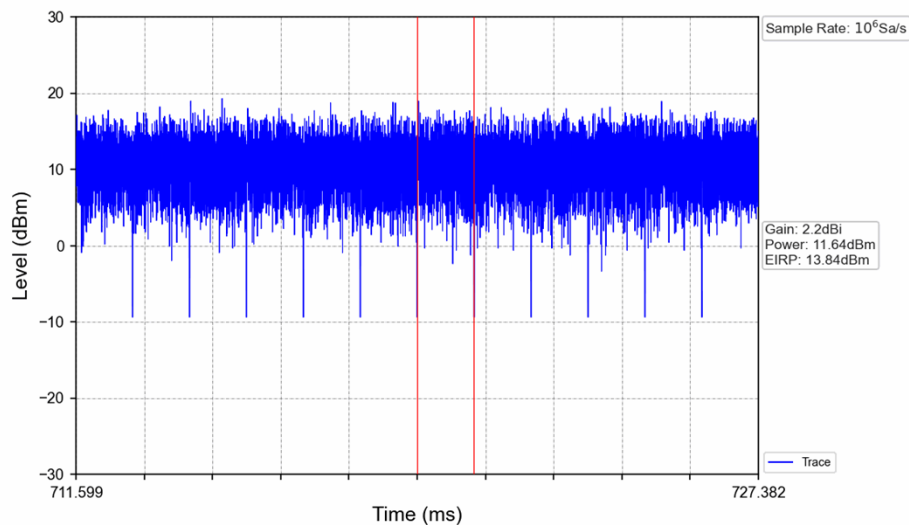
802.11g_2472MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.393	1.392
Power (dBm)	12.08	12.01	12.09	12.07	12.12	12.12	12.22	12.16	11.93	12.11	11.96	12.08
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

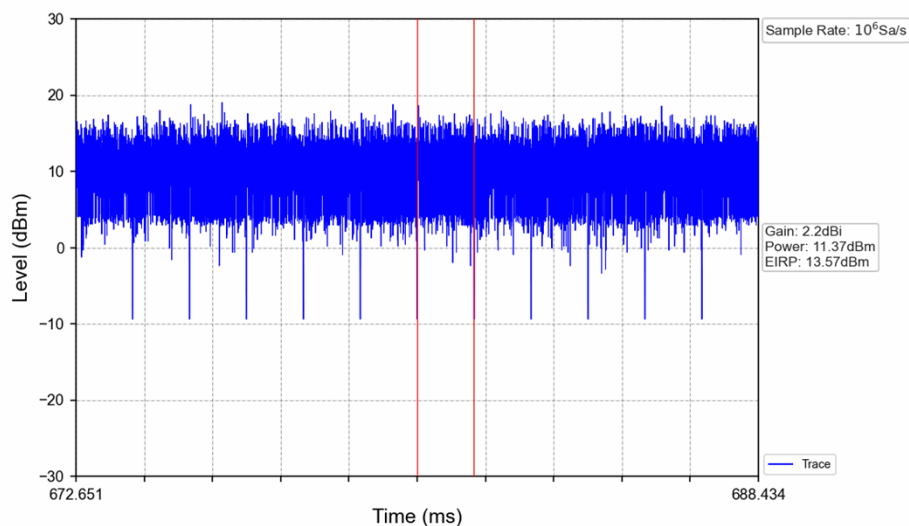


802.11n(HT20)_2412MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.301	1.300	1.300	1.301	1.300	1.300	1.300	1.300	1.299	1.300	1.300	1.300
Power (dBm)	11.46	11.45	11.54	11.46	11.38	11.55	11.64	11.41	11.53	11.56	11.42	11.50
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

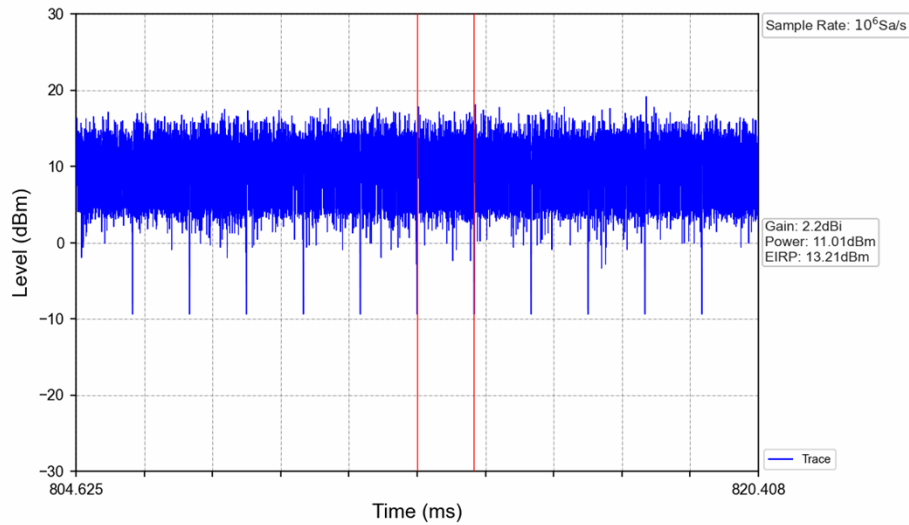
802.11n(HT20)_2442MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.301	1.300	1.300	1.301	1.300	1.300	1.300	1.300	1.299	1.300	1.300	1.300
Power (dBm)	11.17	11.18	11.26	11.17	11.12	11.27	11.37	11.12	11.22	11.28	11.11	11.22
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

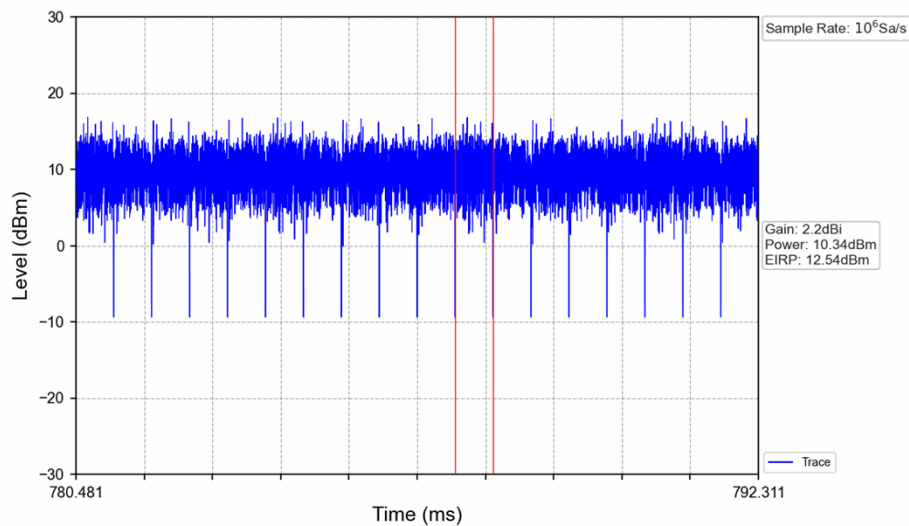


802.11n(HT20)_2472MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.301	1.300	1.300	1.301	1.300	1.300	1.300	1.300	1.299	1.300	1.300	1.300
Power (dBm)	10.82	10.83	10.91	10.82	10.79	10.89	11.01	10.84	10.89	10.93	10.81	10.86
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

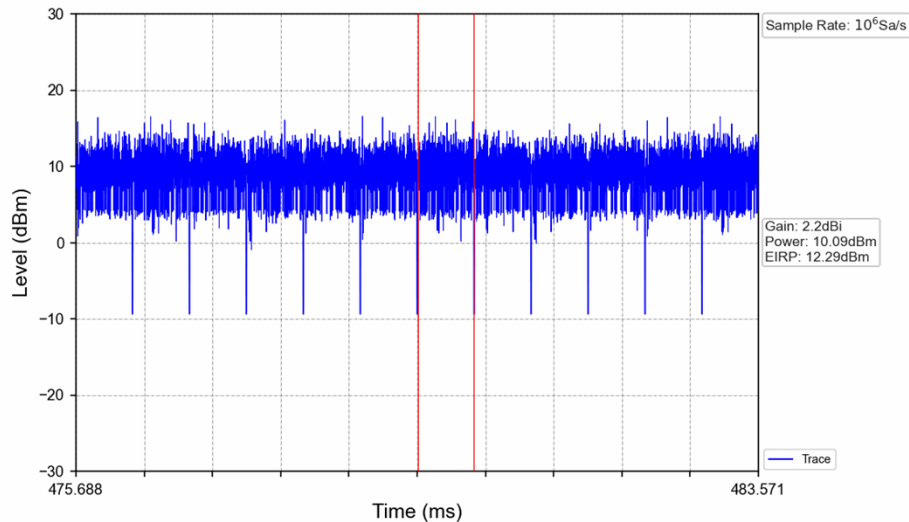
802.11n(HT40)_2422MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	0.648	1.963	0.648	0.648	1.963	0.648	0.648	1.305	0.648	0.648	0.648	1.305
Power (dBm)	10.33	10.11	10.15	10.33	10.11	10.13	10.34	10.13	10.18	10.11	10.33	10.10
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

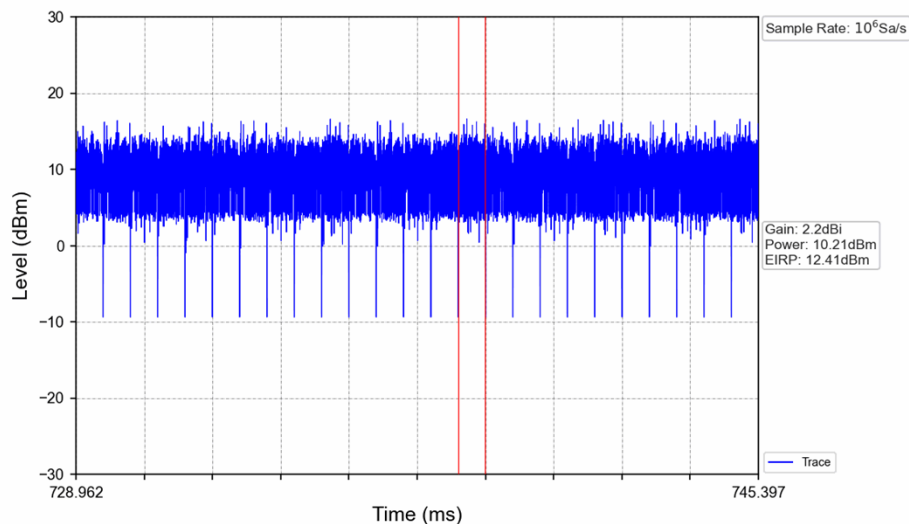


802.11n(HT40)_2442MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	0.648	0.648	0.647	0.648	0.648	0.648	0.647	0.648	0.648	0.648	0.648	0.647
Power (dBm)	9.86	10.07	9.96	9.84	9.91	9.91	10.09	9.95	9.86	9.93	9.87	9.92
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

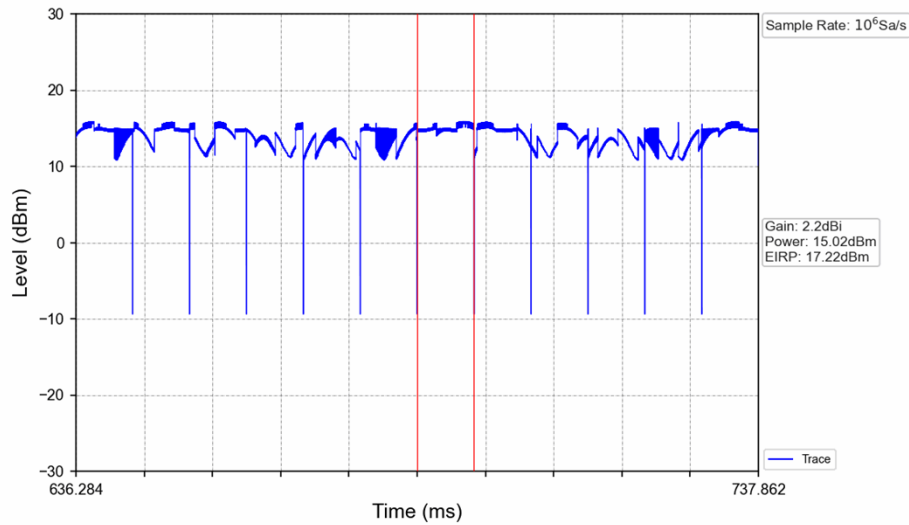
802.11n(HT40)_2462MHz_Ant1 (SISO)_NTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	2.621	0.648	2.621	0.648	1.963	0.648	0.648	2.621	0.648	1.963	0.648	0.648
Power (dBm)	10.00	10.08	10.01	10.19	9.99	10.01	10.21	9.98	10.21	9.99	9.99	10.21
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

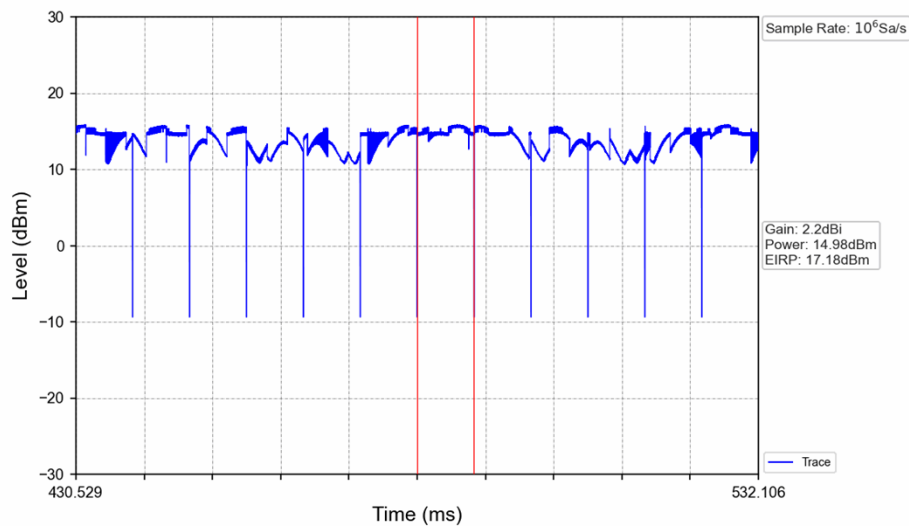


802.11b_2412MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.385
Power (dBm)	14.68	14.69	14.23	13.53	12.98	14.10	15.02	14.68	13.56	13.00	12.84	14.87
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

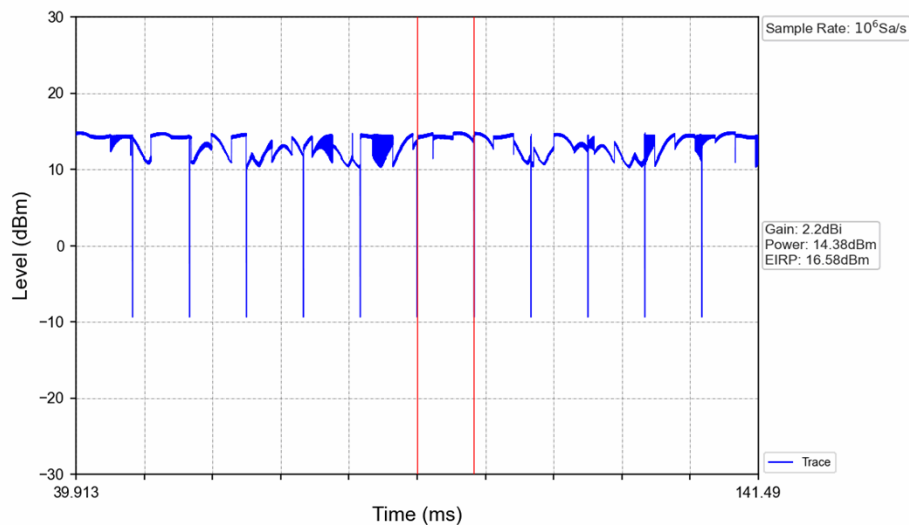
802.11b_2442MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384
Power (dBm)	14.56	14.62	14.10	12.96	12.77	14.53	14.98	14.54	13.67	12.45	13.70	14.82
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

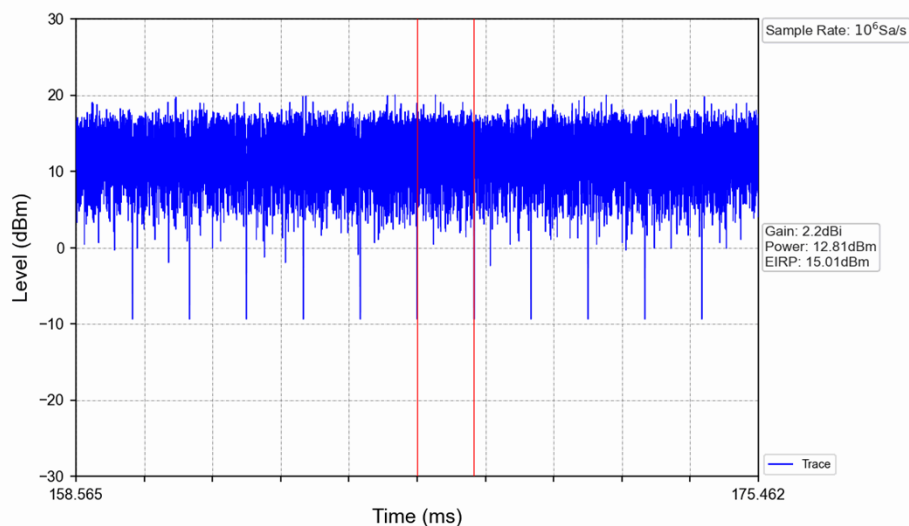


802.11b_2472MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384
Power (dBm)	14.30	13.82	13.35	12.31	12.47	13.44	14.38	13.69	12.97	12.09	13.58	14.27
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

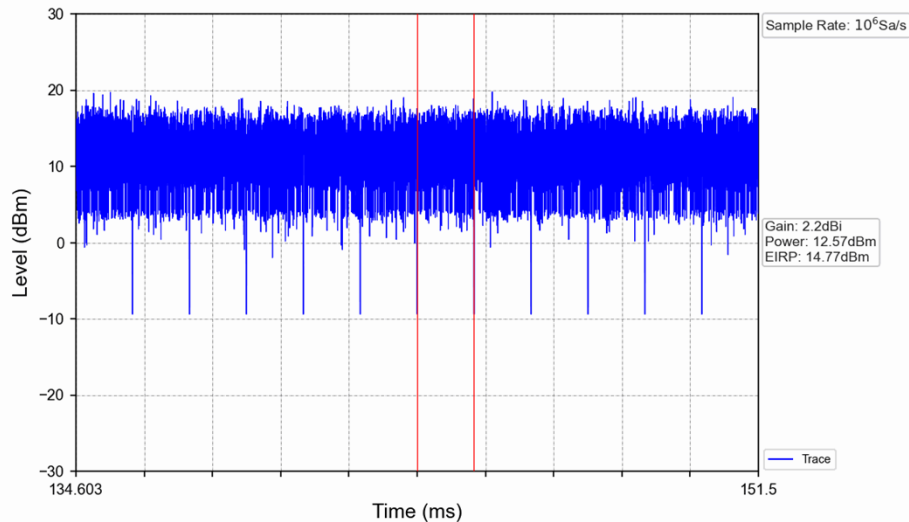
802.11g_2412MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392
Power (dBm)	12.68	12.60	12.72	12.63	12.66	12.74	12.81	12.73	12.60	12.70	12.53	12.65
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

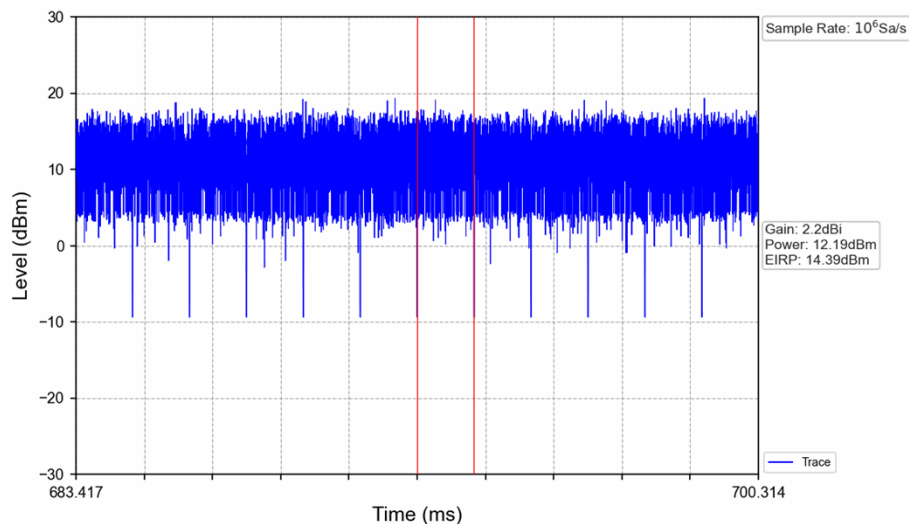


802.11g_2442MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.392	1.393	1.392	1.393	1.392	1.393	1.392	1.393	1.392	1.393	1.392	1.393
Power (dBm)	12.44	12.49	12.52	12.29	12.50	12.32	12.57	12.48	12.54	12.37	12.40	12.30
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

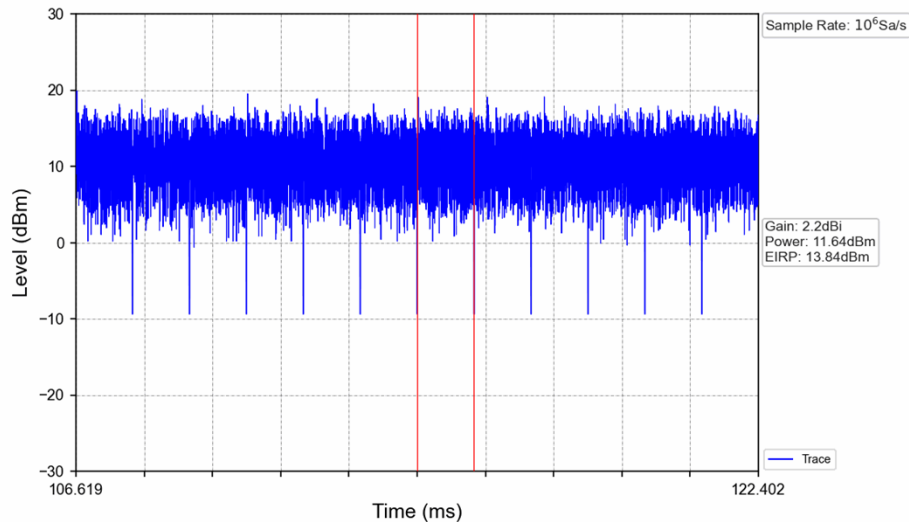
802.11g_2472MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.393	1.392
Power (dBm)	12.10	12.00	12.10	12.06	12.10	12.13	12.19	12.14	11.94	12.09	11.95	12.05
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

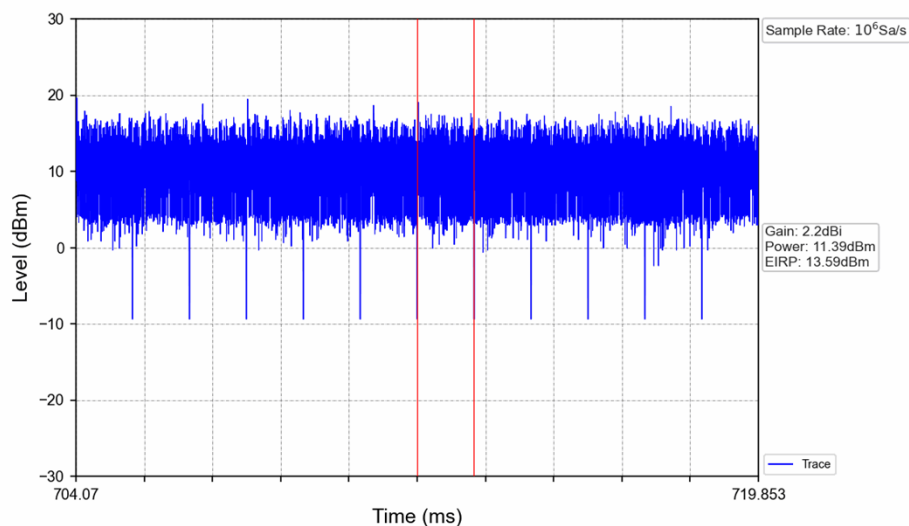


802.11n(HT20)_2412MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.300	1.299	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.301	1.300	1.301
Power (dBm)	11.48	11.49	11.46	11.49	11.52	11.41	11.64	11.51	11.32	11.45	11.45	11.37
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

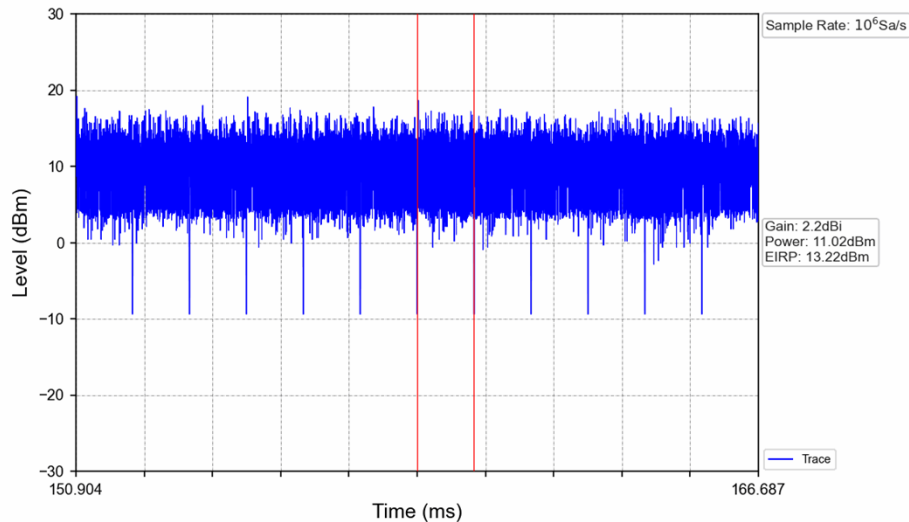
802.11n(HT20)_2442MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.301	1.300	1.301
Power (dBm)	11.23	11.26	11.15	11.24	11.22	11.11	11.39	11.18	11.07	11.24	11.18	11.16
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

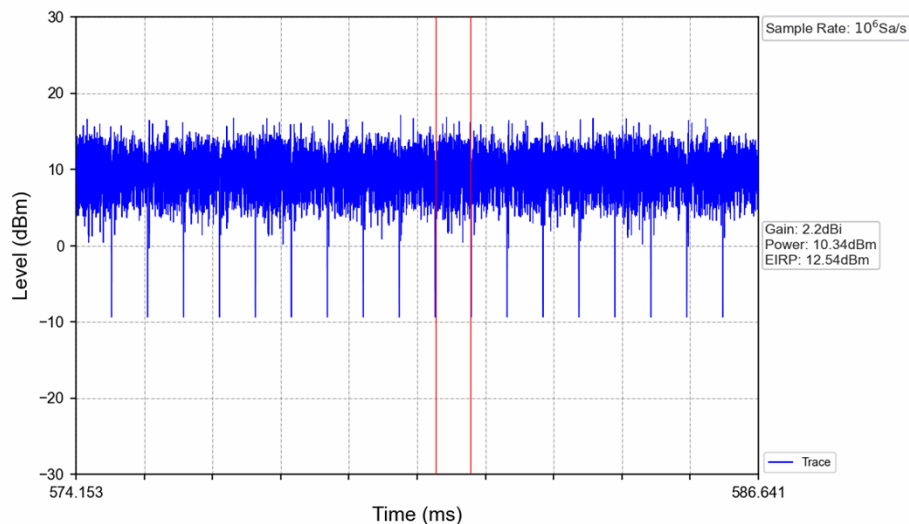


802.11n(HT20)_2472MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.301	1.300	1.301
Power (dBm)	10.86	10.92	10.79	10.91	10.87	10.75	11.02	10.83	10.72	10.88	10.78	10.80
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

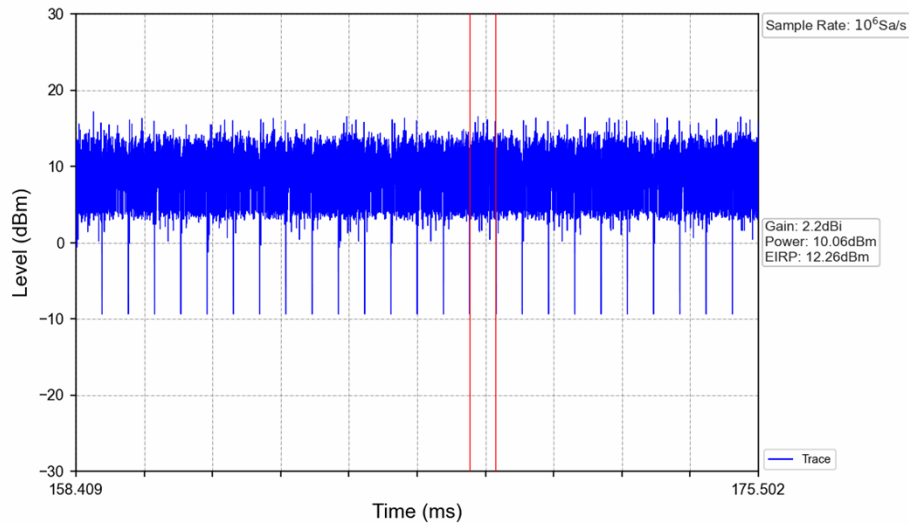
802.11n(HT40)_2422MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	0.648	1.963	0.648	0.648	1.963	0.648	0.648	1.963	0.648	0.648	1.305	0.648
Power (dBm)	10.31	10.10	10.17	10.32	10.09	10.19	10.34	10.14	10.15	10.33	10.15	10.17
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

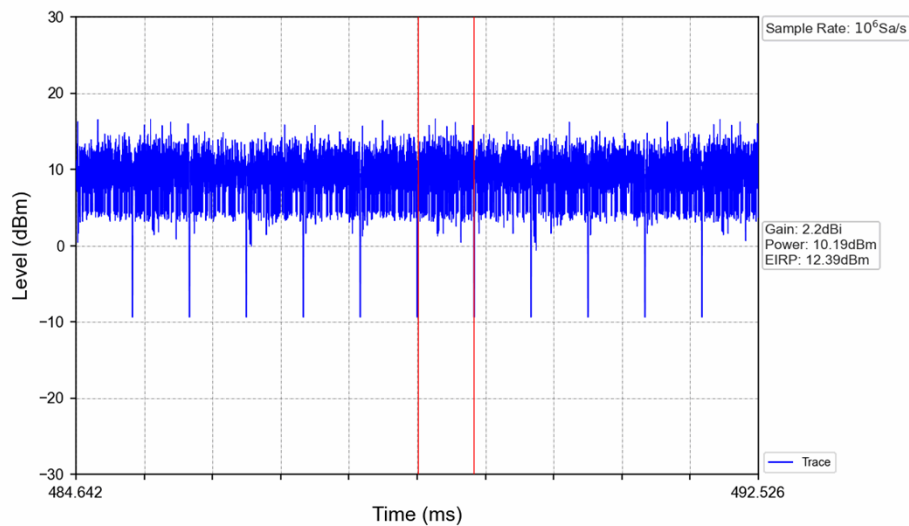


802.11n(HT40)_2442MHz_Ant1 (SISO)_HTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	0.648	2.621	0.648	2.621	0.648	2.621	0.648	2.621	0.648	1.963	0.648	0.648
Power (dBm)	9.80	9.83	9.96	9.84	9.99	9.81	10.06	9.82	10.03	9.84	9.82	10.05
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

802.11n(HT40)_2462MHz_Ant1 (SISO)_HTNV



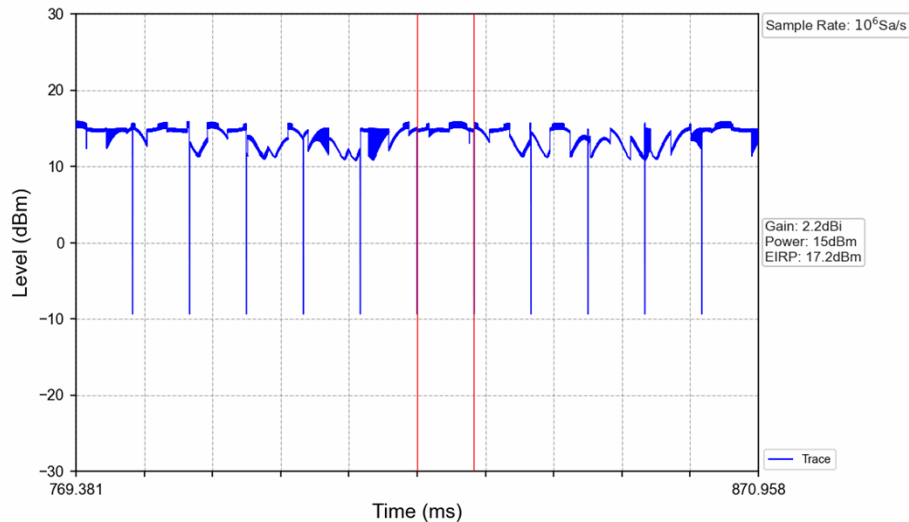
Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	0.648	0.648	0.647	0.648	0.648	0.648	0.648	0.647	0.648	0.648	0.648	0.648
Power (dBm)	9.98	10.18	9.98	9.96	10.04	9.97	10.19	10.11	9.95	10.03	9.95	10.18
Remark	/	/	/	/	/	/	Max	/	/	/	/	/



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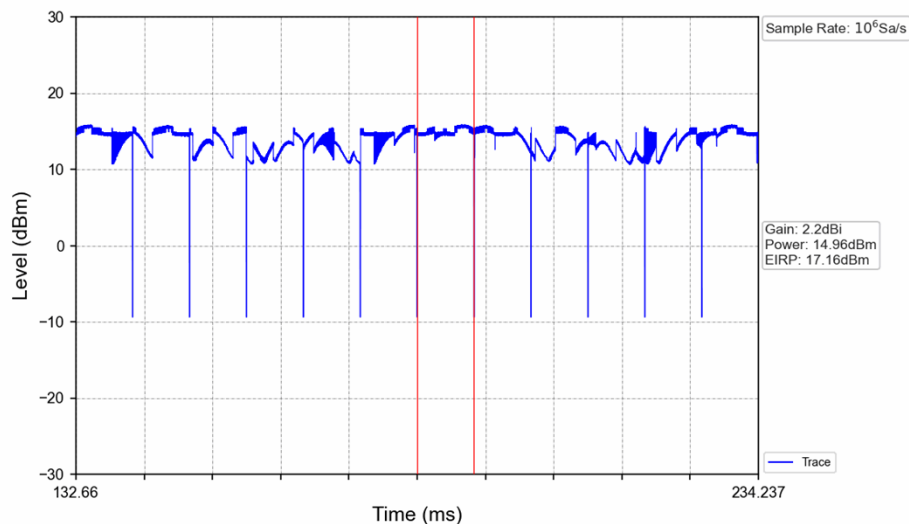
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802.11b_2412MHz_Ant1 (SISO)_LTV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384
Power (dBm)	14.83	14.77	14.24	13.19	12.86	14.30	15.00	14.08	13.79	12.97	13.51	14.88
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

802.11b_2442MHz_Ant1 (SISO)_LTV

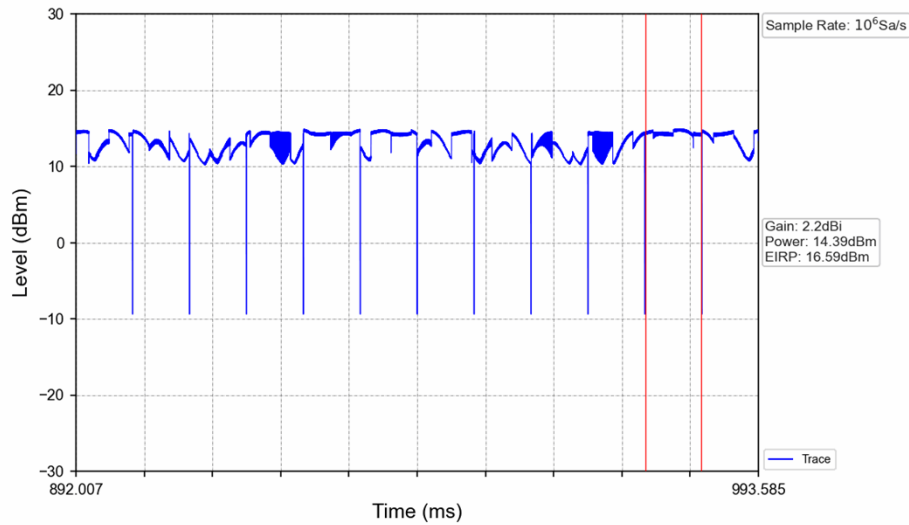


Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384	8.384
Power (dBm)	14.73	14.56	13.85	12.74	12.99	14.56	14.96	14.68	13.57	12.59	13.73	14.88
Remark	/	/	/	/	/	/	Max	/	/	/	/	/



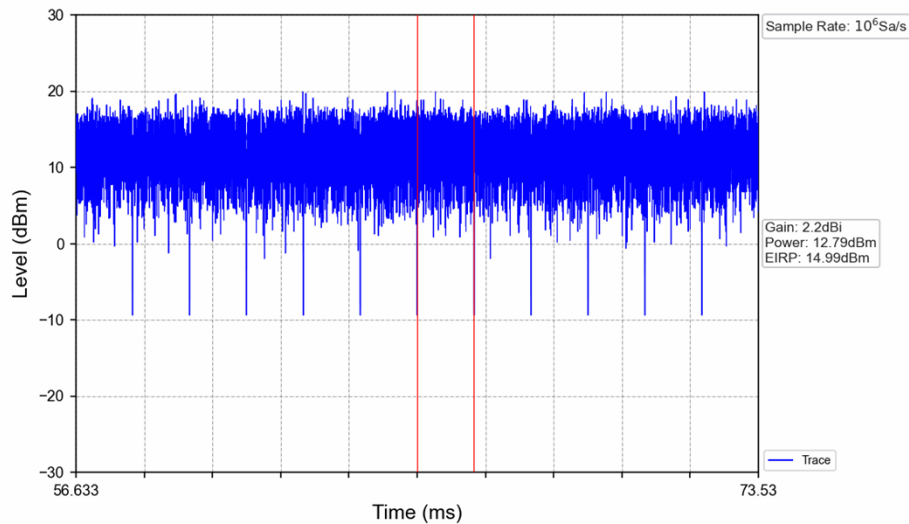
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802.11b_2472MHz_Ant1 (SISO)_LTV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	8.384	8.385	8.384	8.384	8.384	8.384	8.384	8.385	8.384	8.384	8.384	8.384
Power (dBm)	13.50	12.88	11.98	13.27	14.27	13.97	13.61	12.31	12.17	13.27	14.39	13.63
Remark	/	/	/	/	/	/	/	/	/	/	Max	/

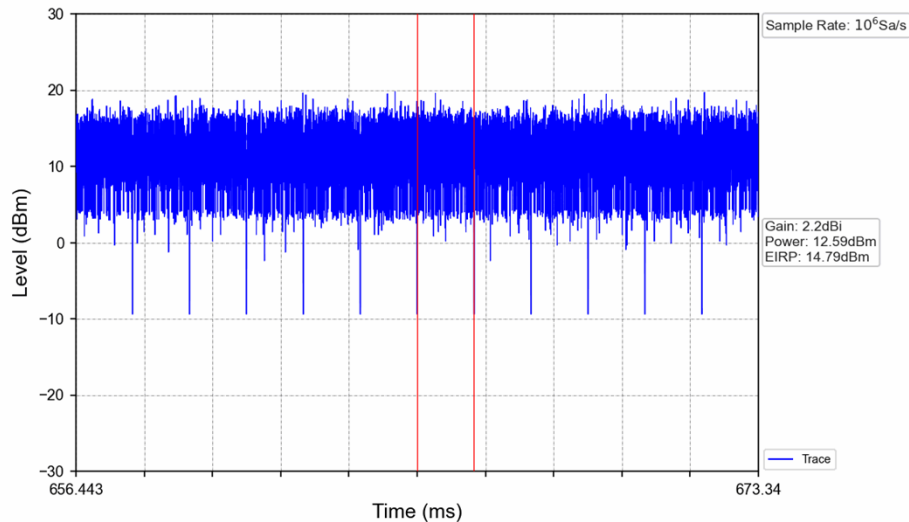
802.11g_2412MHz_Ant1 (SISO)_LTV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392
Power (dBm)	12.66	12.58	12.70	12.62	12.65	12.72	12.79	12.72	12.54	12.69	12.49	12.64
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

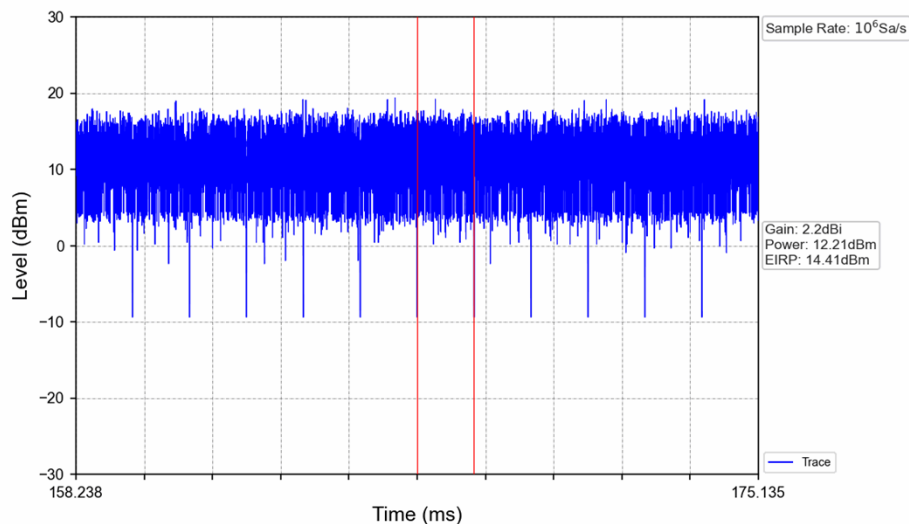


802.11g_2442MHz_Ant1 (SISO)_LTV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.393	1.392
Power (dBm)	12.47	12.38	12.47	12.42	12.47	12.50	12.59	12.52	12.33	12.48	12.33	12.43
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

802.11g_2472MHz_Ant1 (SISO)_LTV



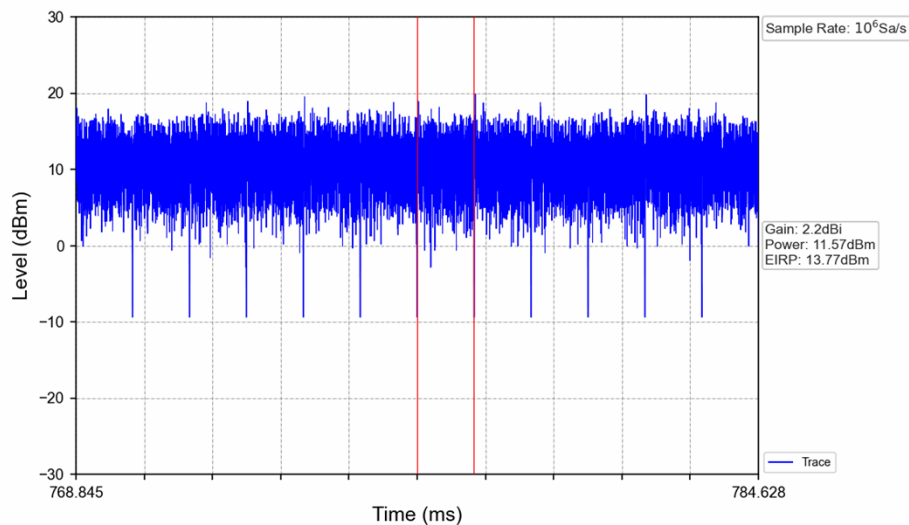
Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.392	1.393	1.392
Power (dBm)	12.07	11.99	12.10	12.03	12.07	12.12	12.21	12.12	11.95	12.10	11.95	12.04
Remark	/	/	/	/	/	/	Max	/	/	/	/	/



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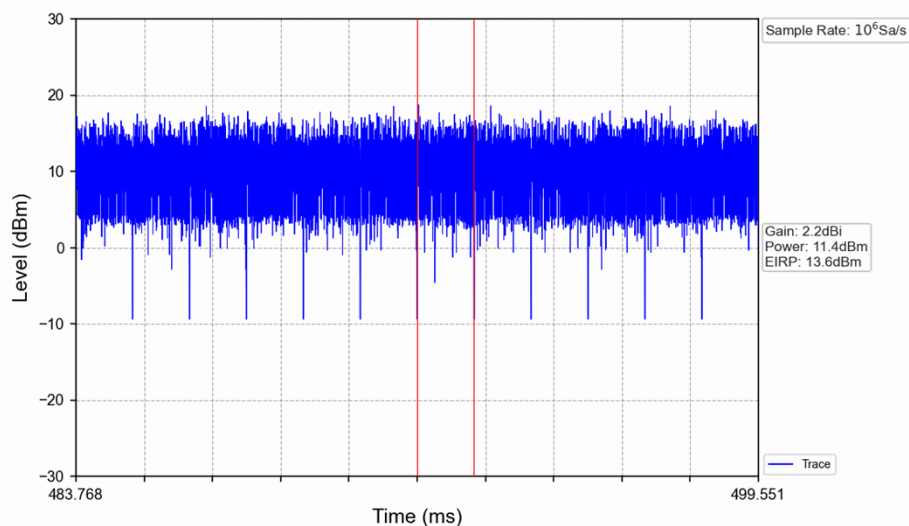
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802.11n(HT20)_2412MHz_Ant1 (SISO)_LTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.301	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.299	1.300	1.300	1.300
Power (dBm)	11.40	11.38	11.46	11.46	11.41	11.42	11.57	11.43	11.45	11.48	11.46	11.45
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

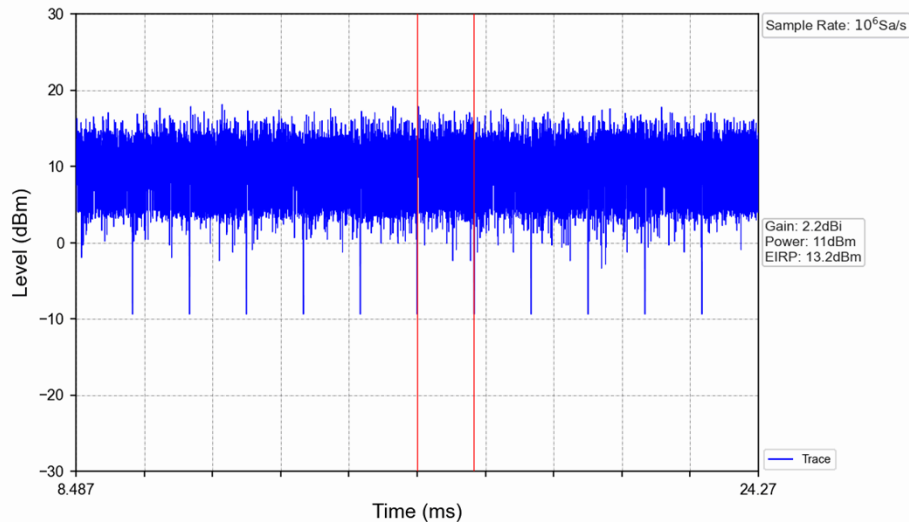
802.11n(HT20)_2442MHz_Ant1 (SISO)_LTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.301	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.299	1.300	1.300	1.300
Power (dBm)	11.16	11.12	11.24	11.18	11.12	11.20	11.40	11.16	11.24	11.29	11.10	11.24
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

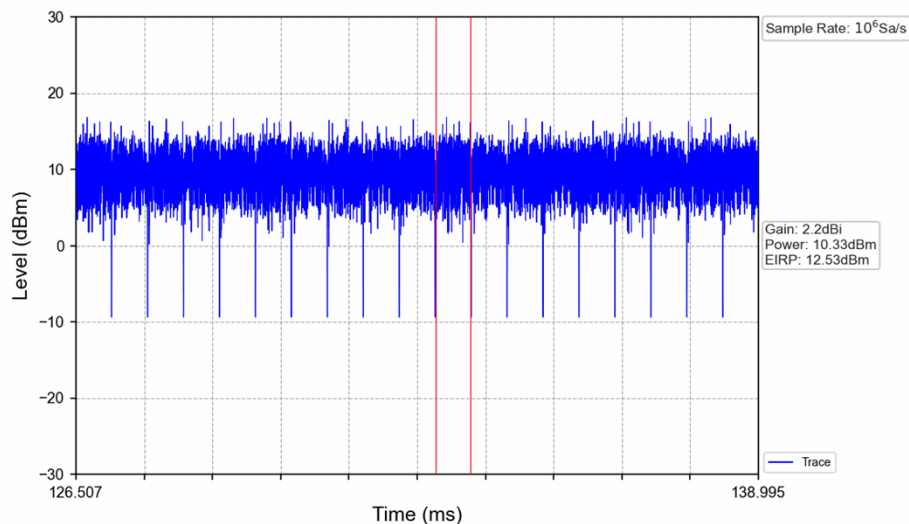


802.11n(HT20)_2472MHz_Ant1 (SISO)_LTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	1.301	1.300	1.300	1.301	1.300	1.300	1.300	1.300	1.299	1.300	1.300	1.300
Power (dBm)	10.80	10.80	10.86	10.81	10.75	10.90	11.00	10.77	10.85	10.91	10.75	10.85
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

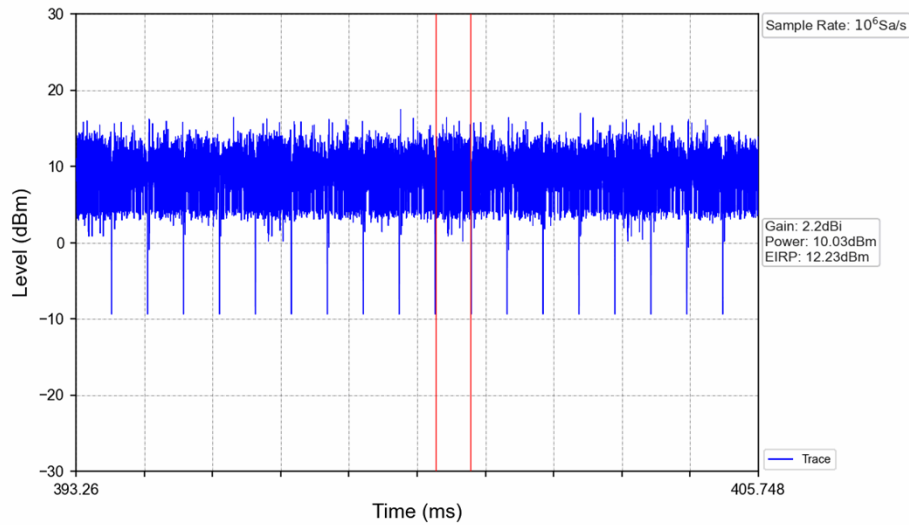
802.11n(HT40)_2422MHz_Ant1 (SISO)_LTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	0.648	1.963	0.648	0.648	1.963	0.648	0.648	1.963	0.648	0.648	1.305	0.648
Power (dBm)	10.32	10.09	10.12	10.30	10.11	10.11	10.33	10.13	10.10	10.31	10.13	10.16
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

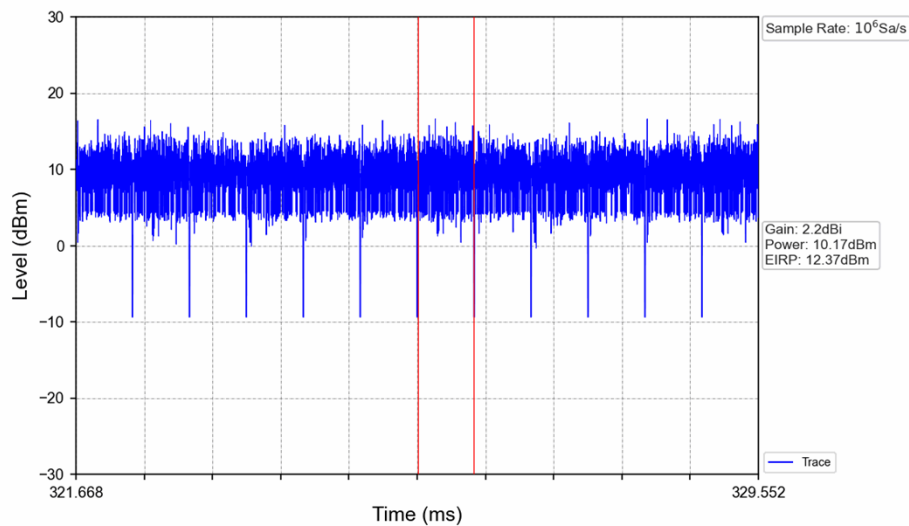


802.11n(HT40)_2442MHz_Ant1 (SISO)_LTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	0.648	1.963	0.648	0.648	1.963	0.648	0.648	1.963	0.648	0.648	1.305	0.648
Power (dBm)	10.00	9.80	9.86	10.01	9.83	9.94	10.03	9.84	9.90	10.00	9.84	9.87
Remark	/	/	/	/	/	/	Max	/	/	/	/	/

802.11n(HT40)_2462MHz_Ant1 (SISO)_LTNV



Burst No.	1	2	3	4	5	6	7	8	9	10	11	12
Length (ms)	0.648	0.648	0.647	0.648	0.648	0.648	0.648	0.647	0.648	0.648	0.648	0.648
Power (dBm)	9.99	10.16	9.96	9.96	10.02	9.96	10.17	10.04	9.94	10.01	10.00	10.17
Remark	/	/	/	/	/	/	Max	/	/	/	/	/



2. Power Spectral Density

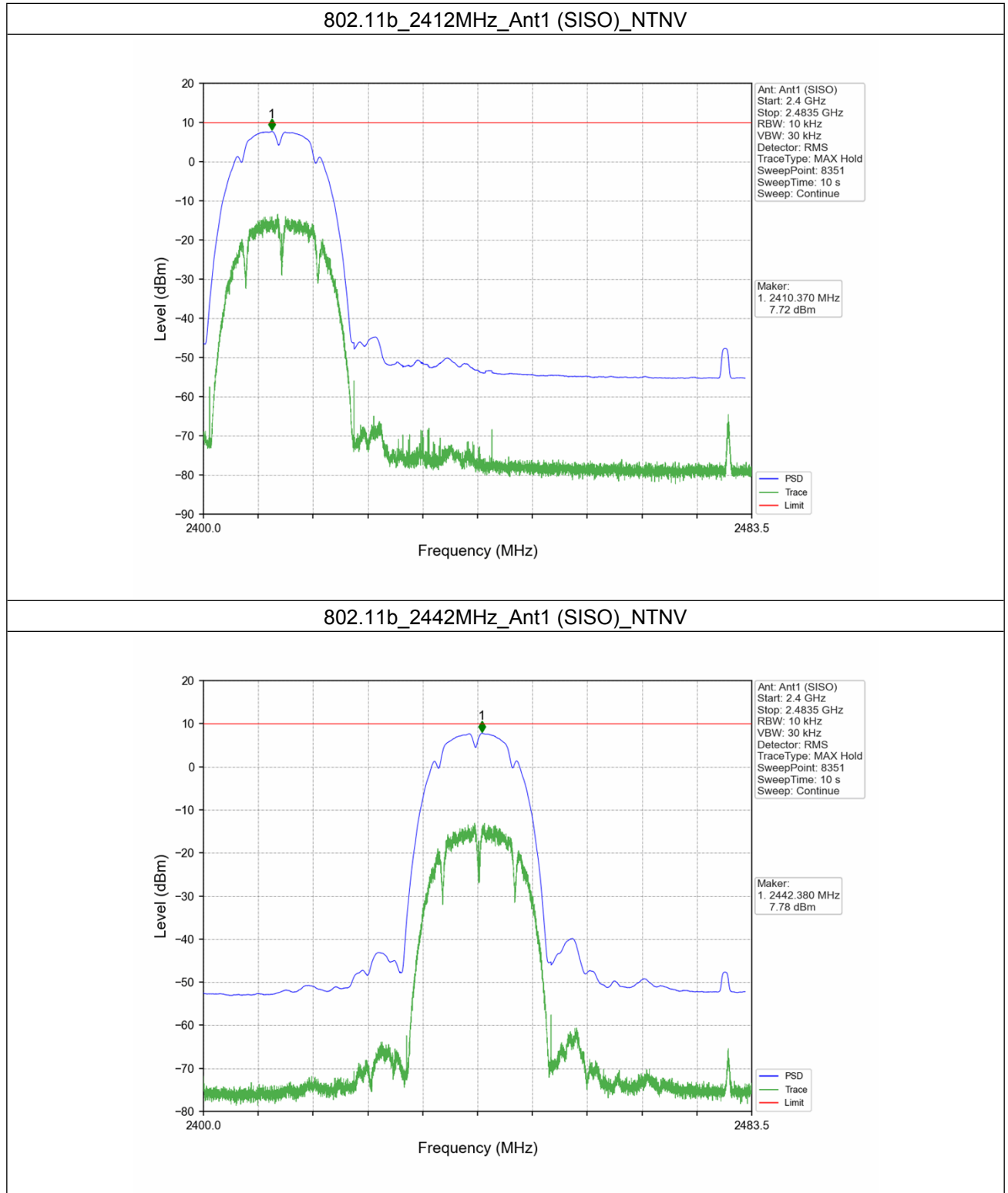
2.1 PSD

2.1.1 Test Result

ENV	Mode	TX Type	Frequency (MHz)	ANT	E.I.R.PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NTNV	802.11b	SISO	2412	1	7.72	<=10	Pass
			2442	1	7.78	<=10	Pass
			2472	1	7.09	<=10	Pass
	802.11g	SISO	2412	1	4.10	<=10	Pass
			2442	1	3.99	<=10	Pass
			2472	1	3.70	<=10	Pass
	802.11n (HT20)	SISO	2412	1	2.70	<=10	Pass
			2442	1	2.52	<=10	Pass
			2472	1	2.13	<=10	Pass
	802.11n (HT40)	SISO	2422	1	-1.19	<=10	Pass
			2442	1	-1.39	<=10	Pass
			2462	1	-1.21	<=10	Pass



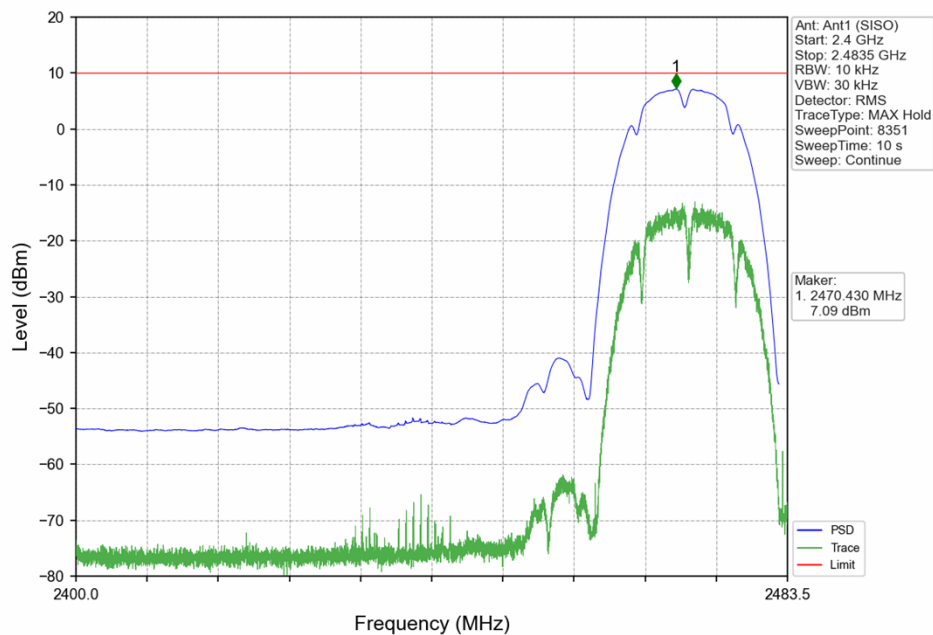
2.1.2 Test Graph



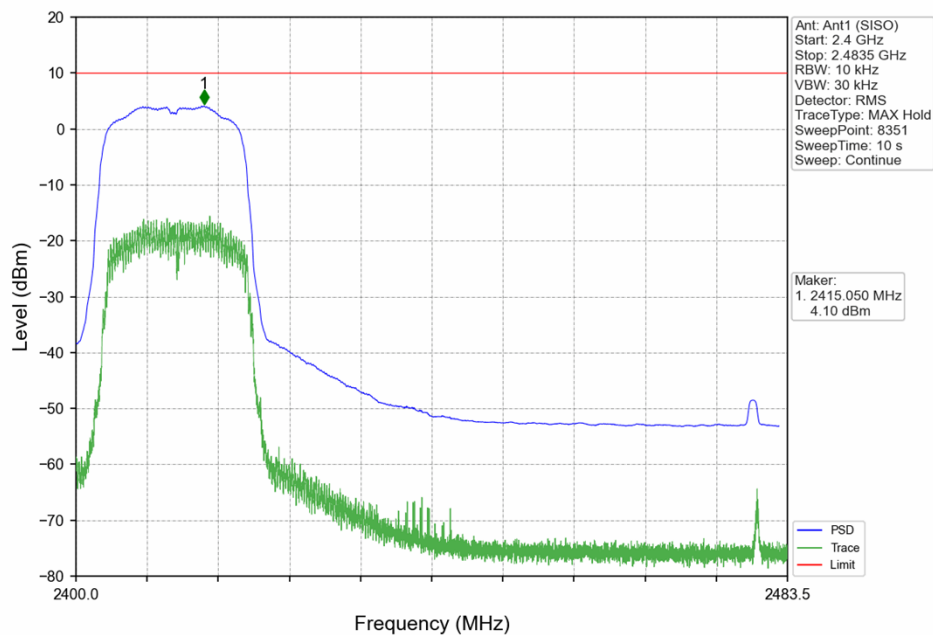
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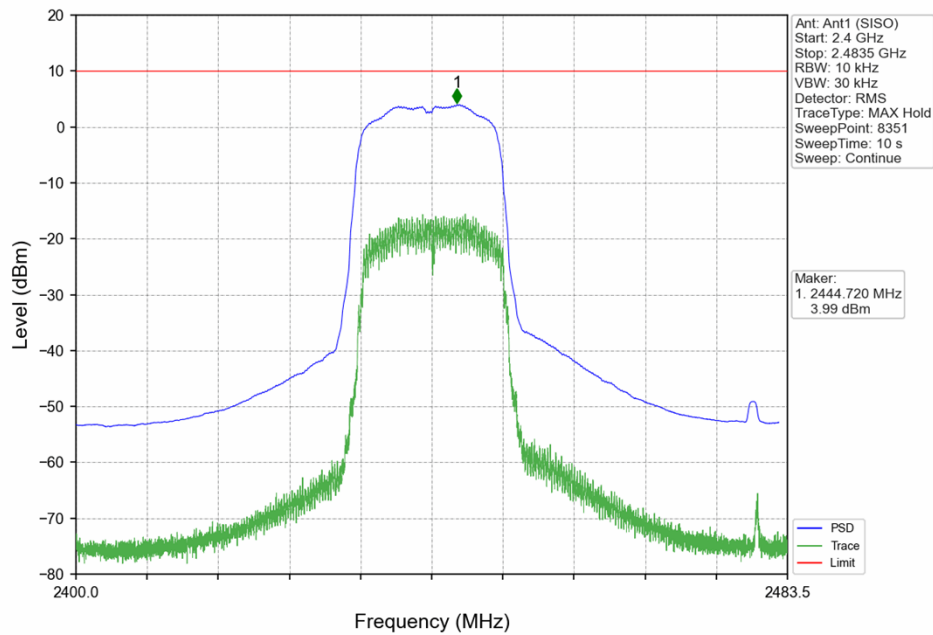
802.11b_2472MHz_Ant1 (SISO)_NTNV



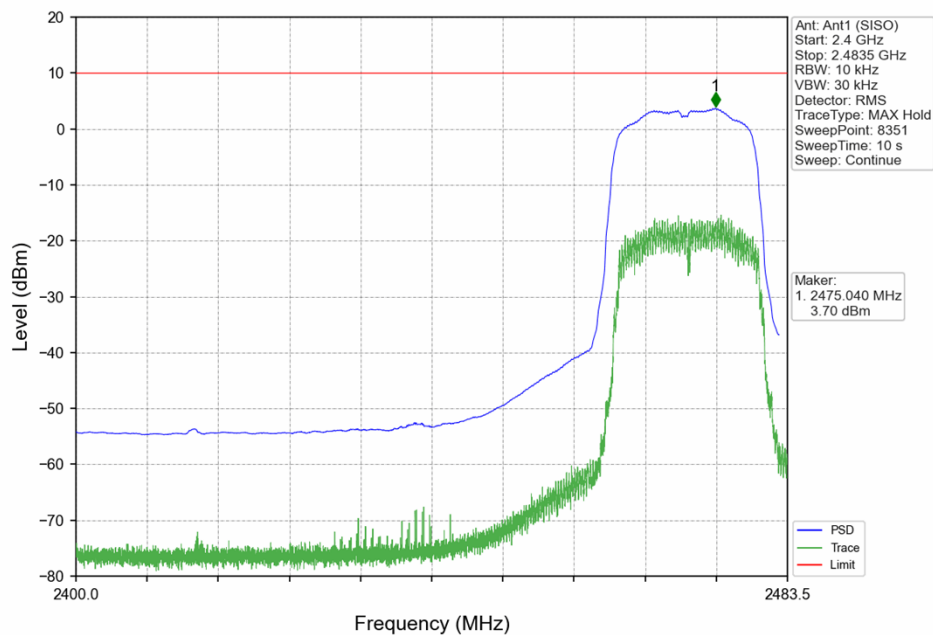
802.11g_2412MHz_Ant1 (SISO)_NTNV



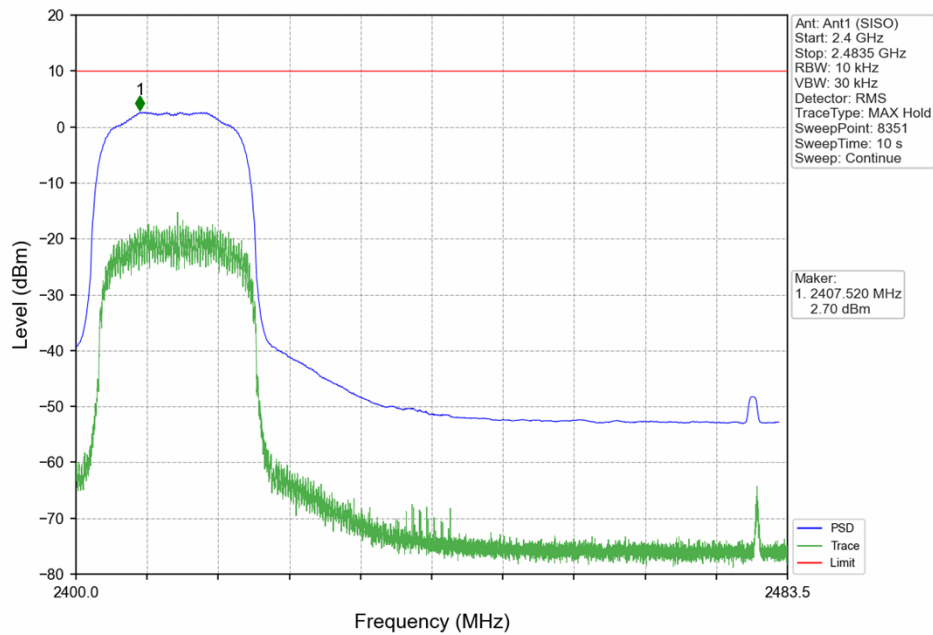
802.11g_2442MHz_Ant1 (SISO)_NTNV



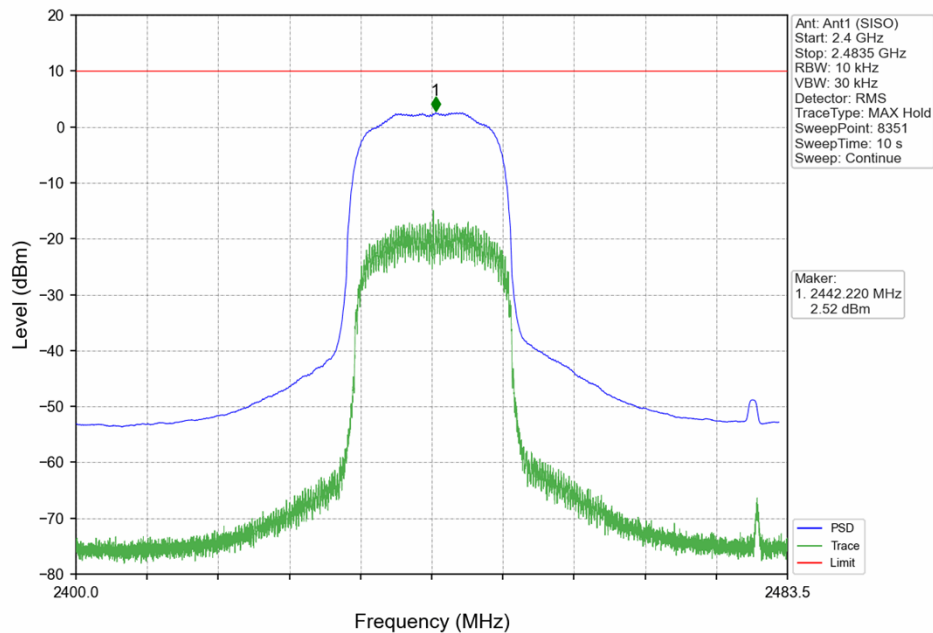
802.11g_2472MHz_Ant1 (SISO)_NTNV



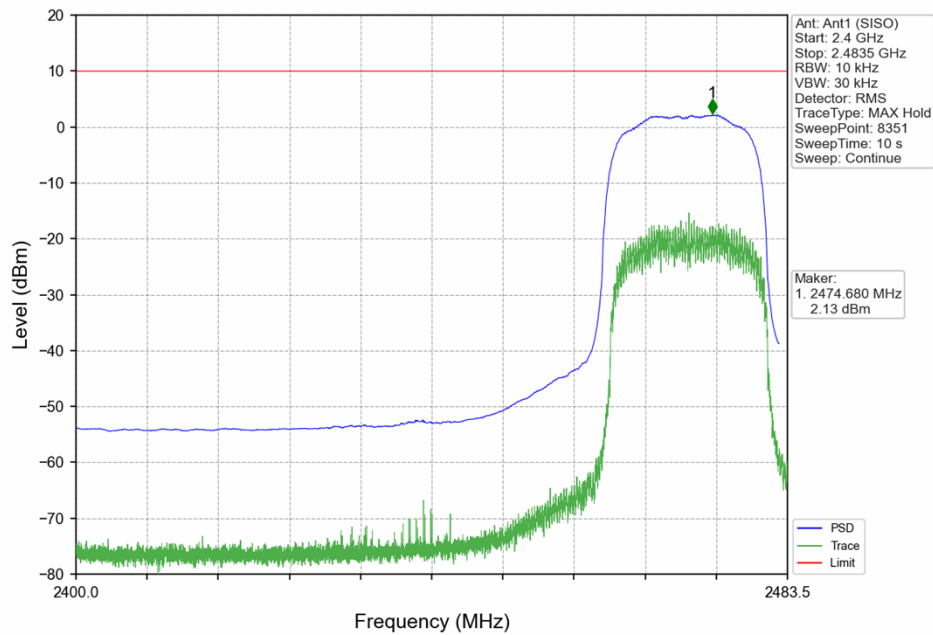
802.11n(HT20)_2412MHz_Ant1 (SISO)_NTNV



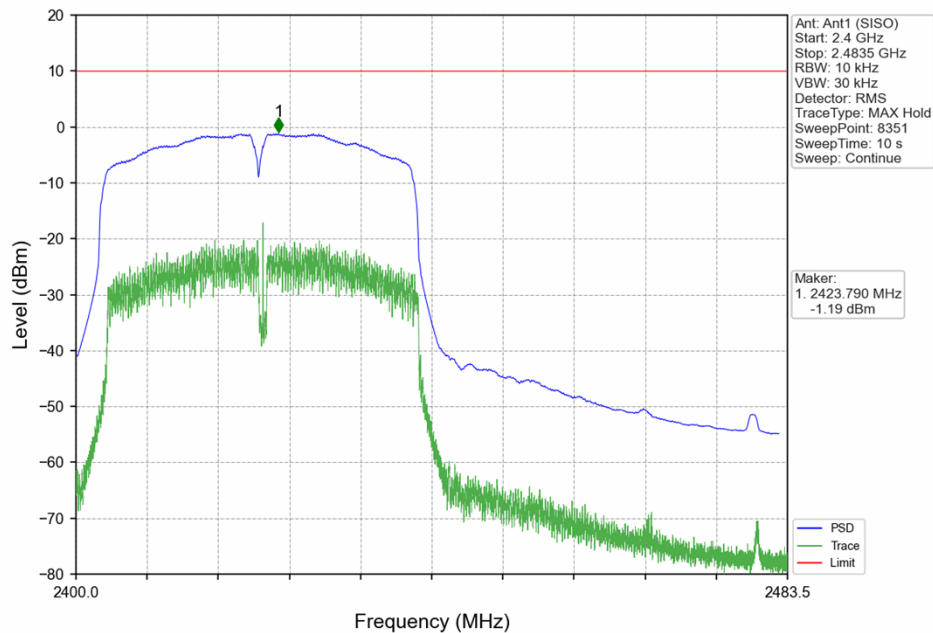
802.11n(HT20)_2442MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_2472MHz_Ant1 (SISO)_NTNV



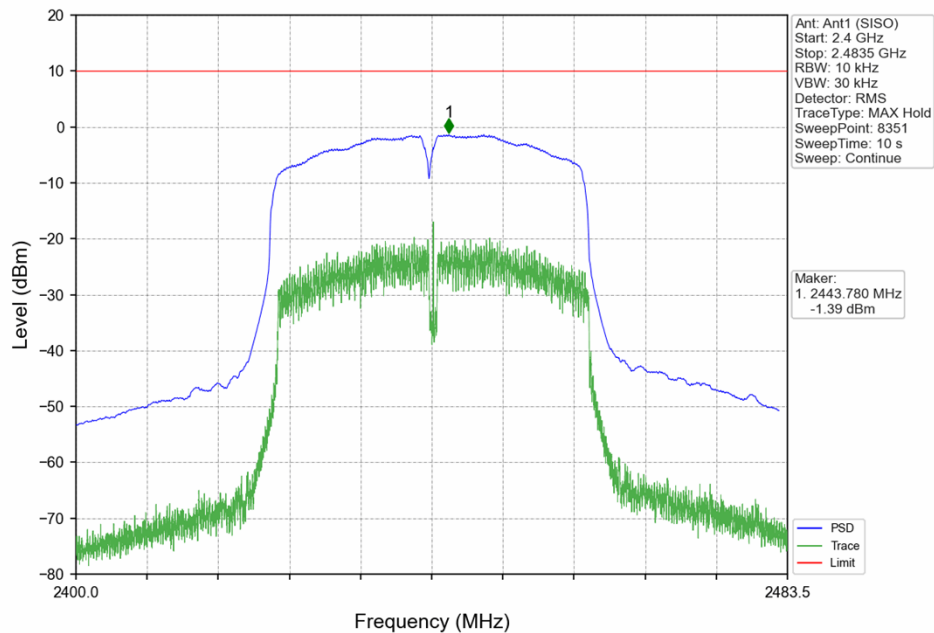
802.11n(HT40)_2422MHz_Ant1 (SISO)_NTNV



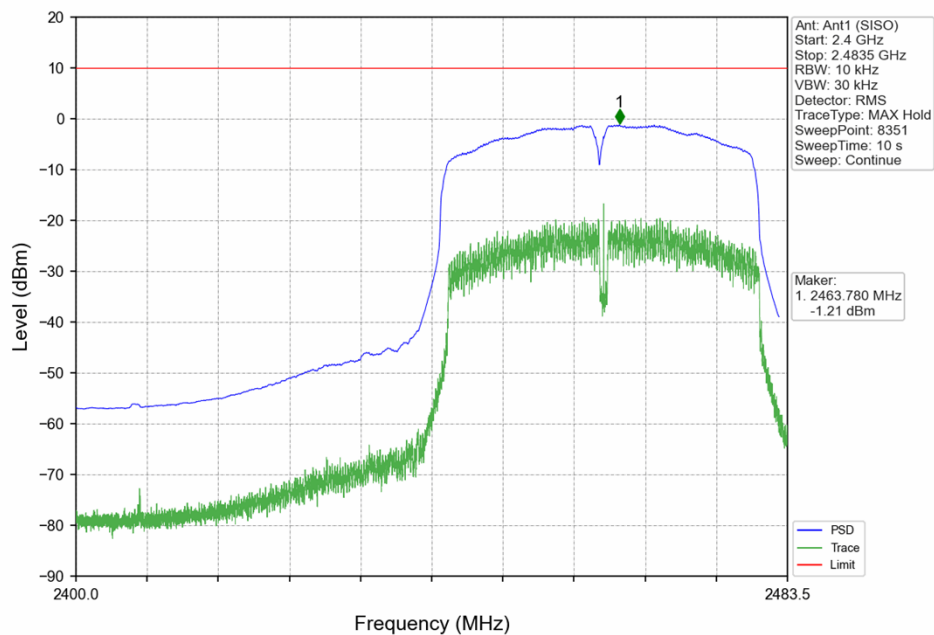
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802.11n(HT40)_2442MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_2462MHz_Ant1 (SISO)_NTNV



3. Adaptivity (Channel Access Mechanism)

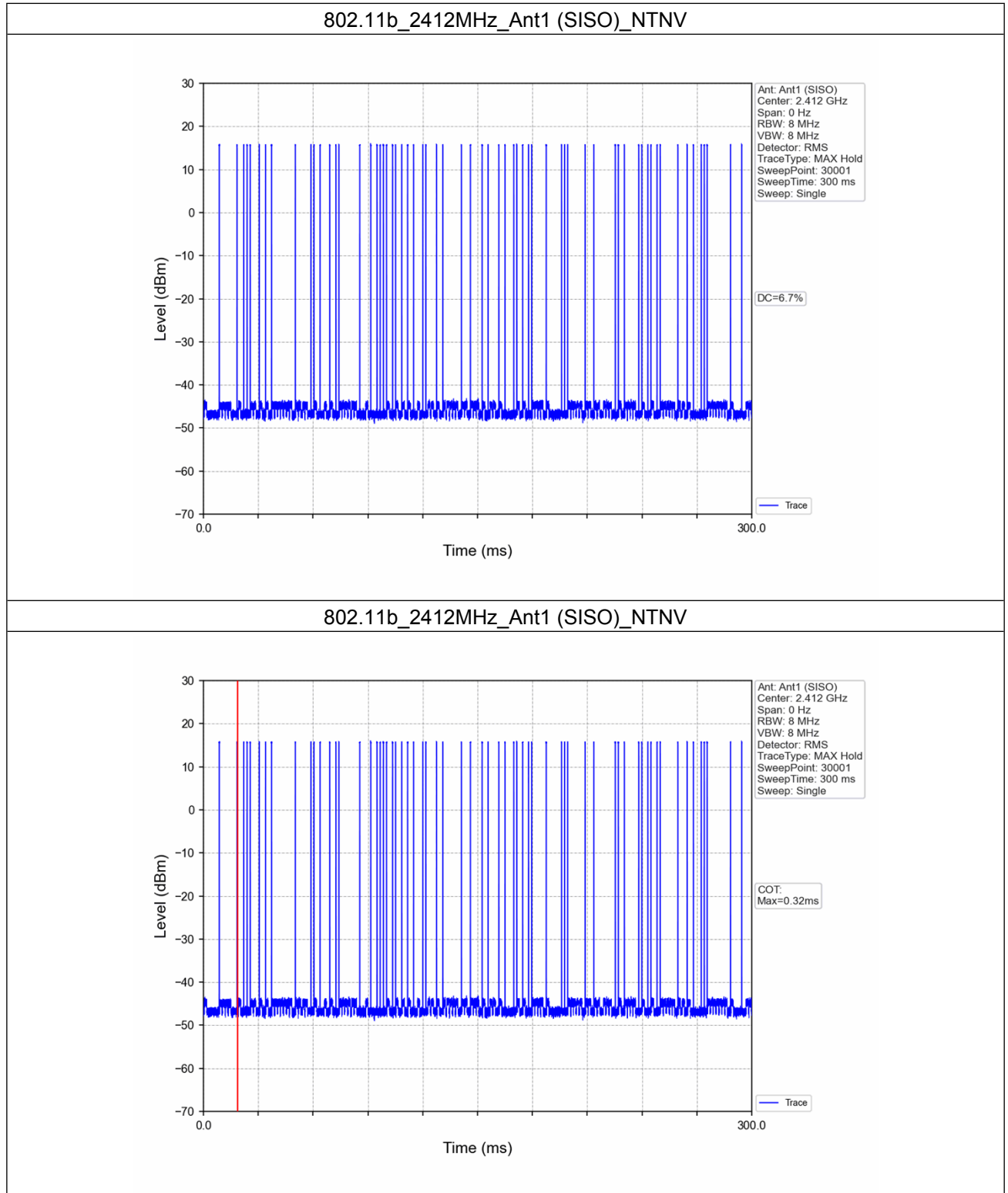
3.1 COT

3.1.1 Test Result

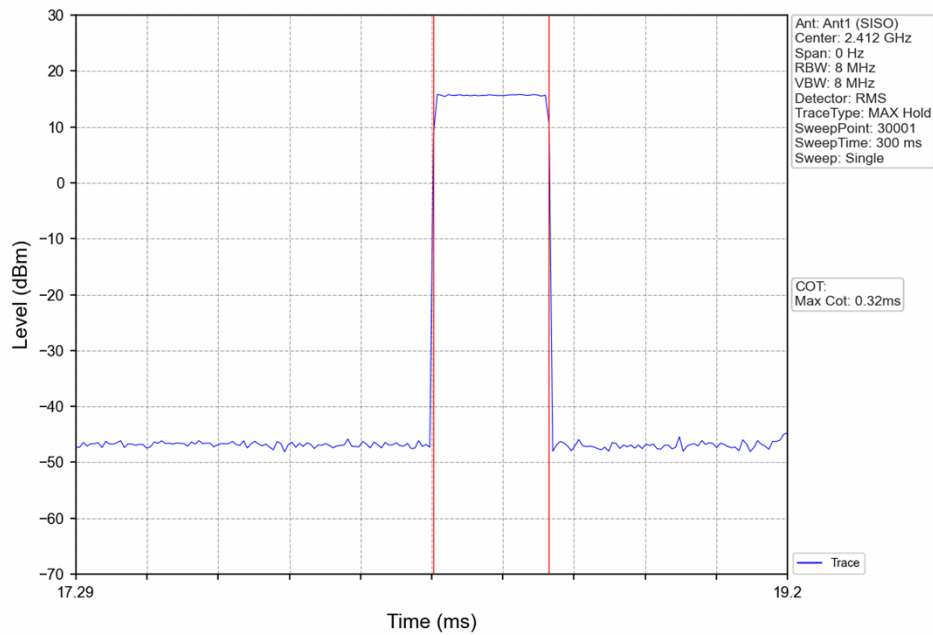
ENV	Mode	TX Type	Frequency (MHz)	ANT	Min Idle Time (ms)		Max COT (ms)		Verdict
					Result	Limit	Result	Limit	
NTNV	802.11b	SISO	2412	1	1.320	>=0.018	0.320	<=13	Pass
			2472	1	0.070	>=0.018	0.420	<=13	Pass



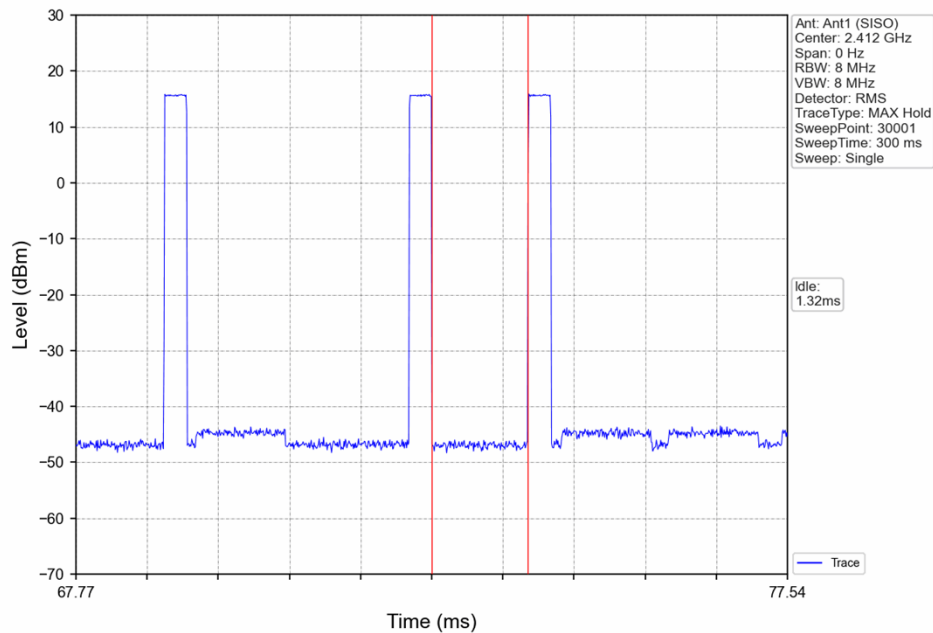
3.1.2 Test Graph



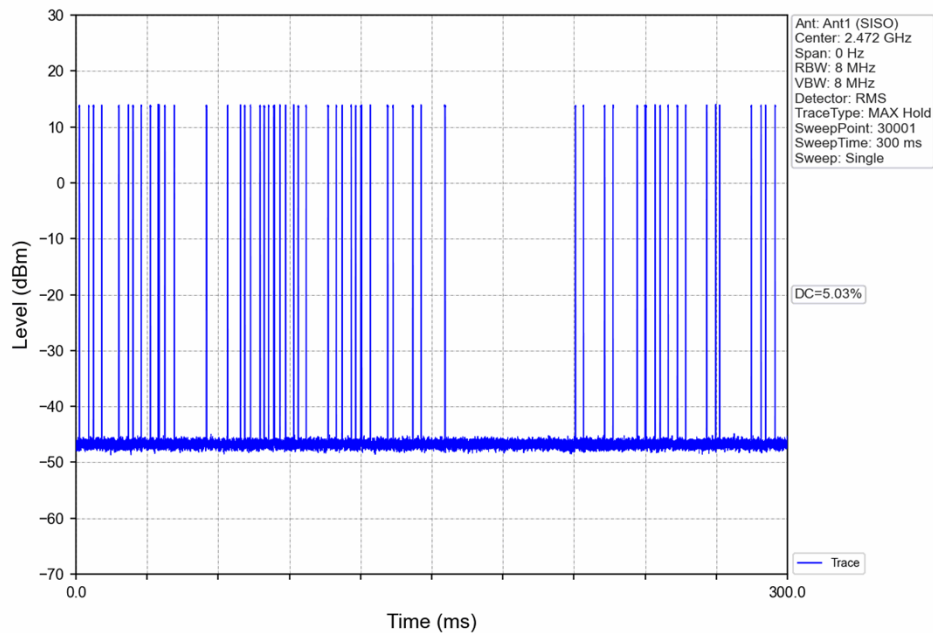
802.11b_2412MHz_Ant1 (SISO)_NTNV



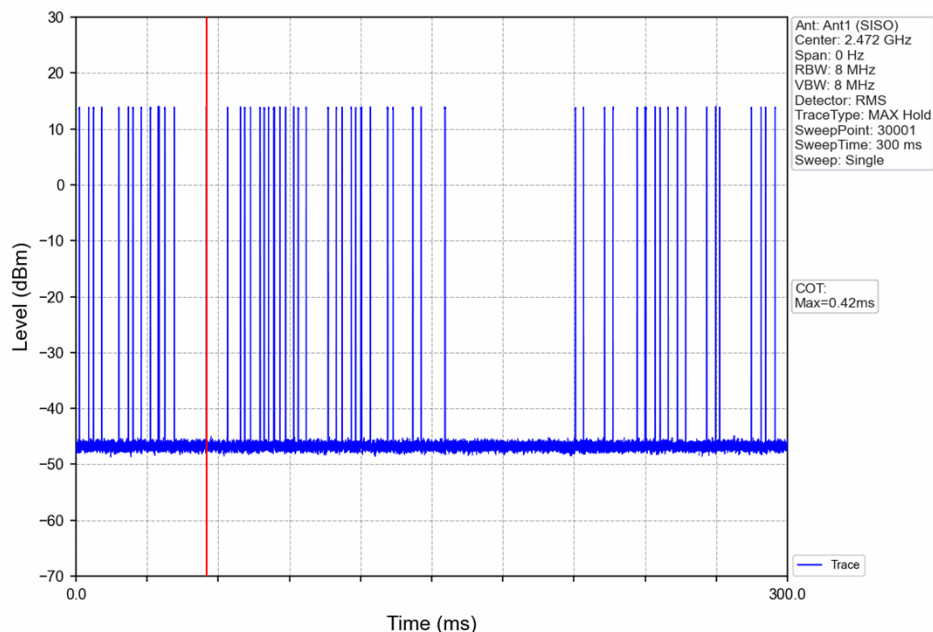
802.11b_2412MHz_Ant1 (SISO)_NTNV



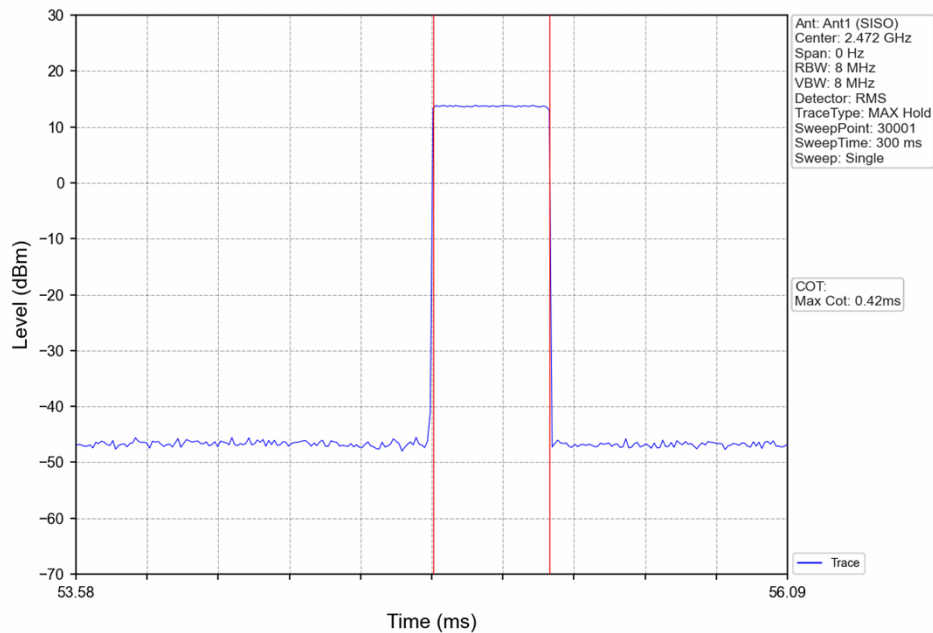
802.11b_2472MHz_Ant1 (SISO)_NTNV



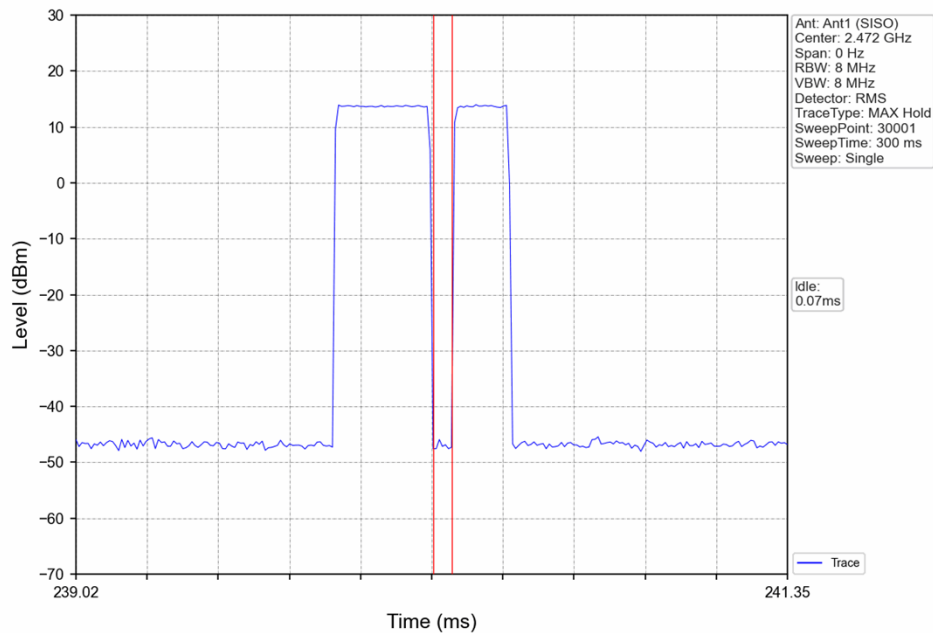
802.11b_2472MHz_Ant1 (SISO)_NTNV



802.11b_2472MHz_Ant1 (SISO)_NTNV



802.11b_2472MHz_Ant1 (SISO)_NTNV



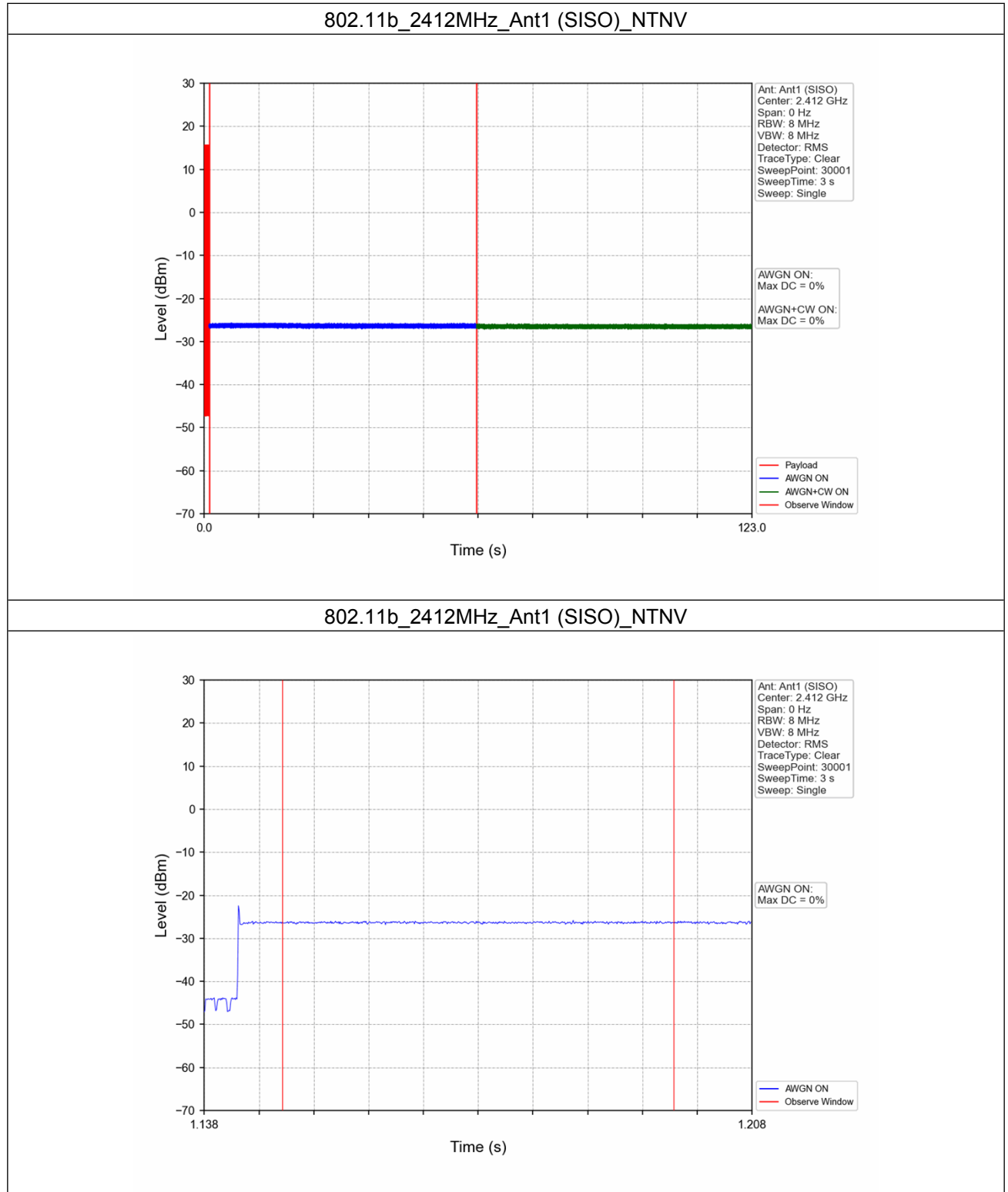
3.2 Adaptivity

3.2.1 Test Result

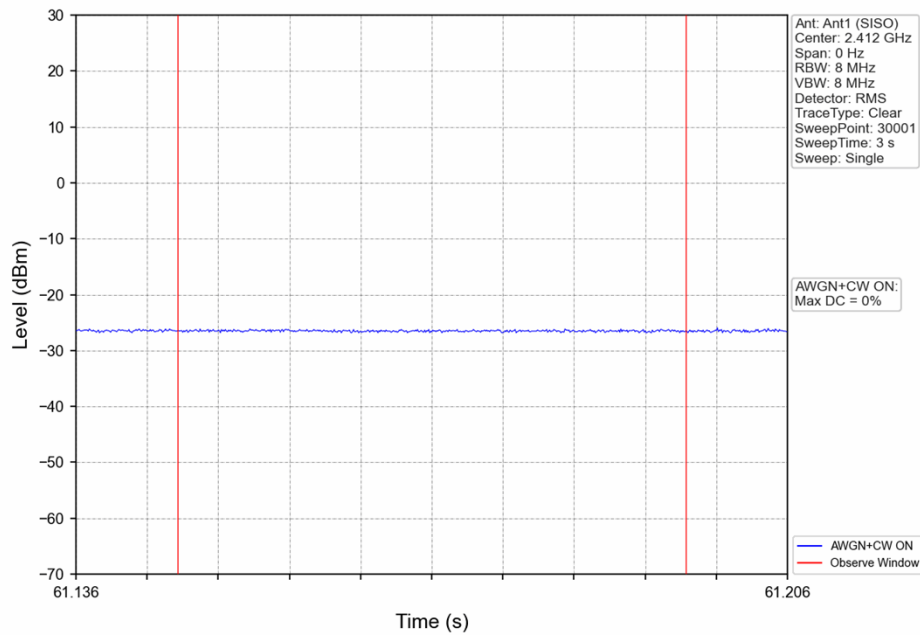
ENV	Mode	TX Type	Frequency (MHz)	ANT	Interference Signal			Max. Short Control Signal		Verdict
					Type	Add Time (s)	Level (dBm/MHz)	Duty Cycle (%)	Limit (%)	
NTNV	802.11b	SISO	2412	1	AWGN	1.148	-65.02	0.00	<=10	Pass
					AWGN+CW	61.148	-65.02	0.00	<=10	Pass
			2472	1	AWGN	1.148	-64.38	0.00	<=10	Pass
					AWGN+CW	61.148	-64.38	0.00	<=10	Pass



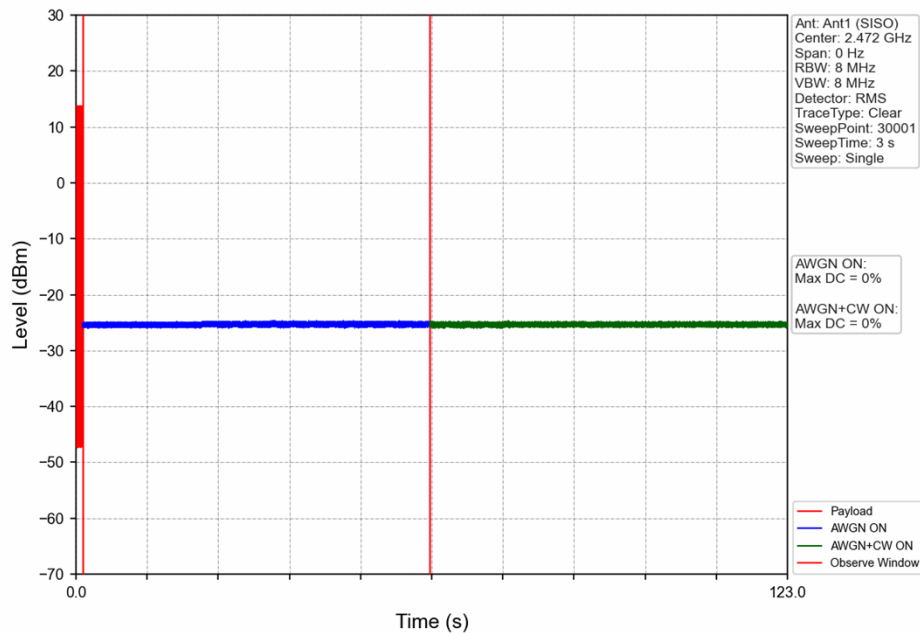
3.2.2 Test Graph



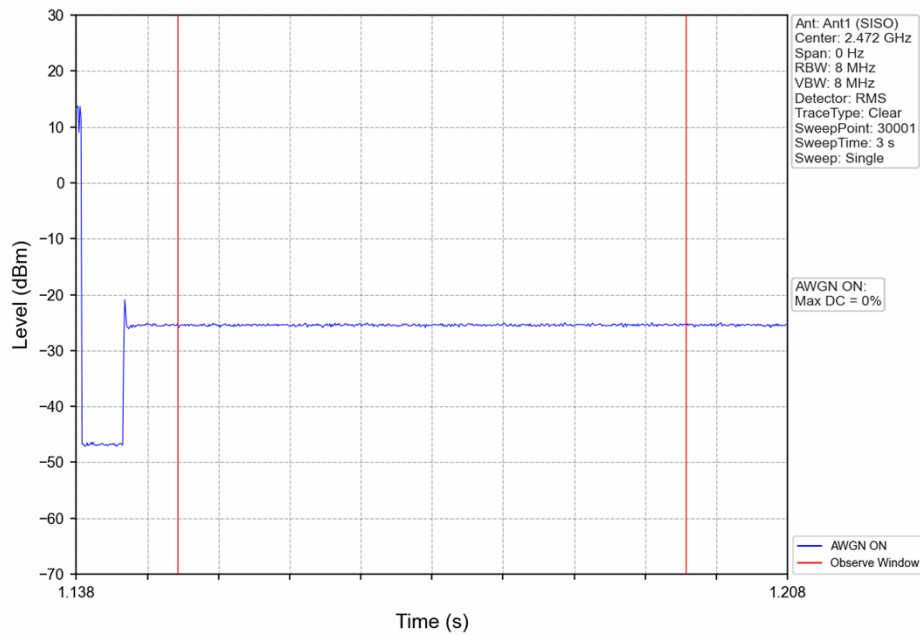
802.11b_2412MHz_Ant1 (SISO)_NTNV



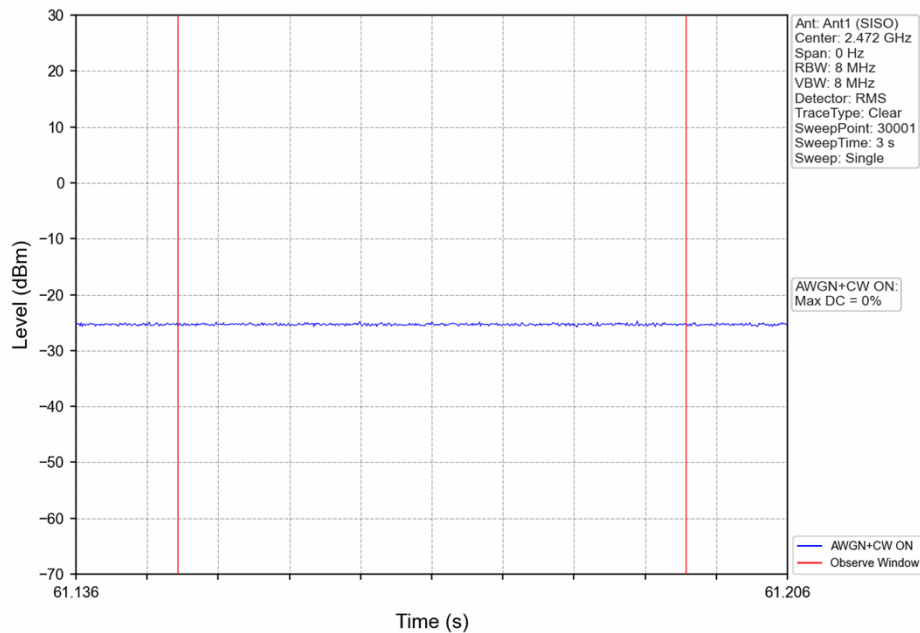
802.11b_2472MHz_Ant1 (SISO)_NTNV



802.11b_2472MHz_Ant1 (SISO)_NTNV



802.11b_2472MHz_Ant1 (SISO)_NTNV



4. Occupied Channel Bandwidth

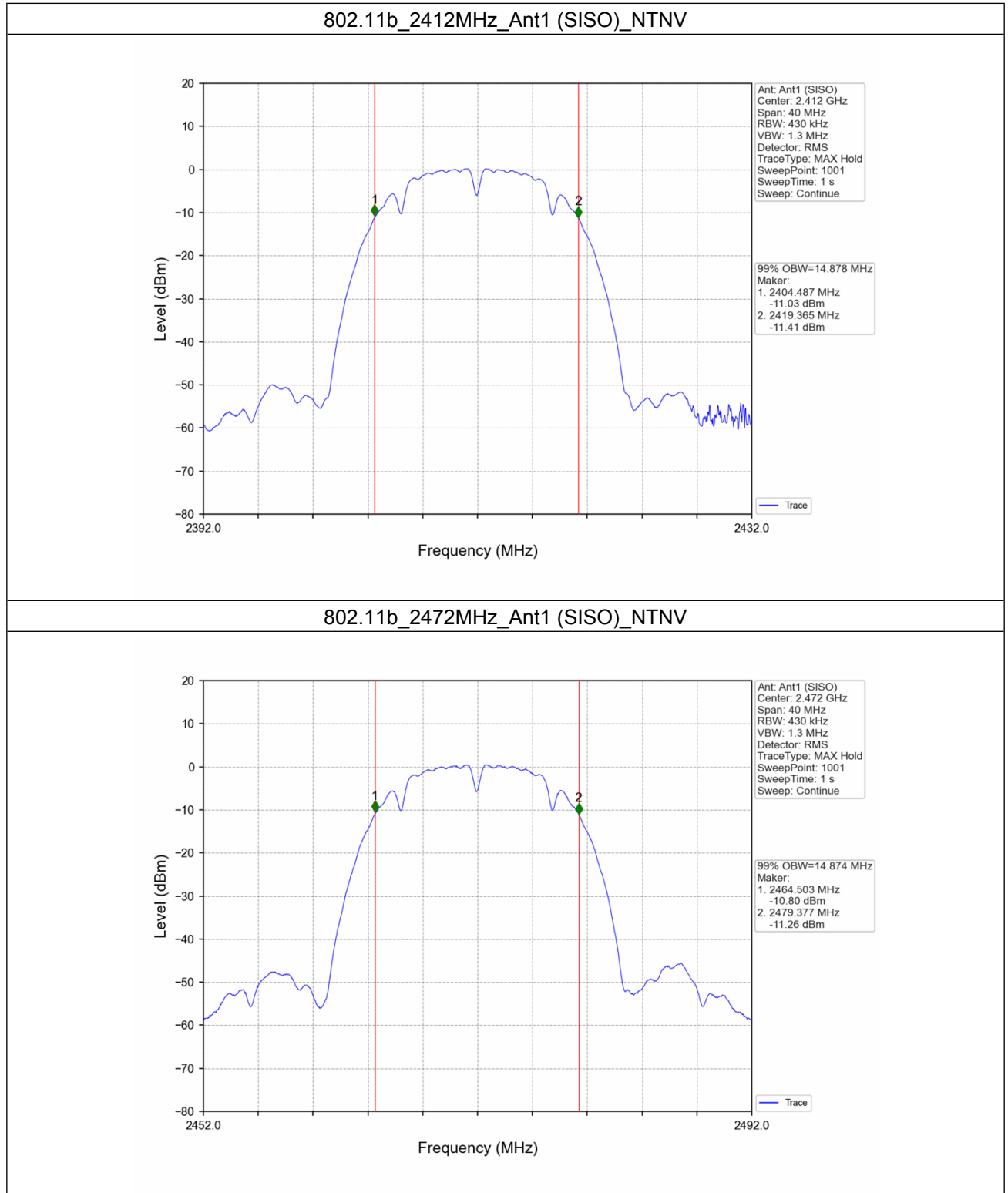
4.1 OBW_Ant1

4.1.1 Test Result

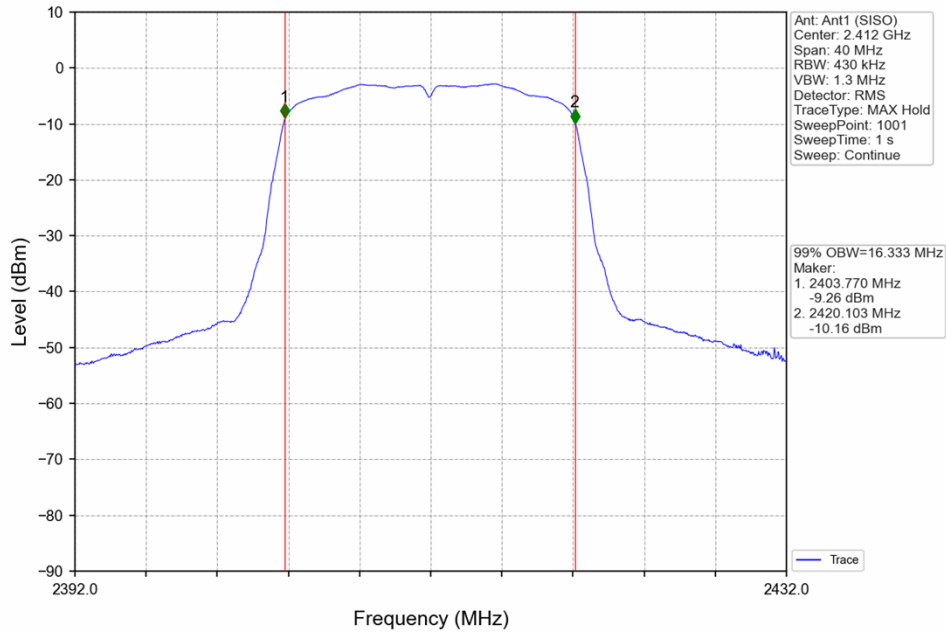
Ant1								
ENV	Mode	TX Type	Frequency (MHz)	OBW (MHz)	Frequency Range (MHz)			Verdict
				Result	FL	FH	Limit	
NTNV	802.11b	SISO	2412	14.878	2404.487	/	>=2400	Pass
			2472	14.874	/	2479.377	<=2483.5	Pass
	802.11g	SISO	2412	16.333	2403.770	/	>=2400	Pass
			2472	16.331	/	2480.123	<=2483.5	Pass
	802.11n (HT20)	SISO	2412	17.082	2403.407	/	>=2400	Pass
			2472	17.073	/	2480.512	<=2483.5	Pass
	802.11n (HT40)	SISO	2422	35.534	2404.211	/	>=2400	Pass
			2462	35.474	/	2479.760	<=2483.5	Pass



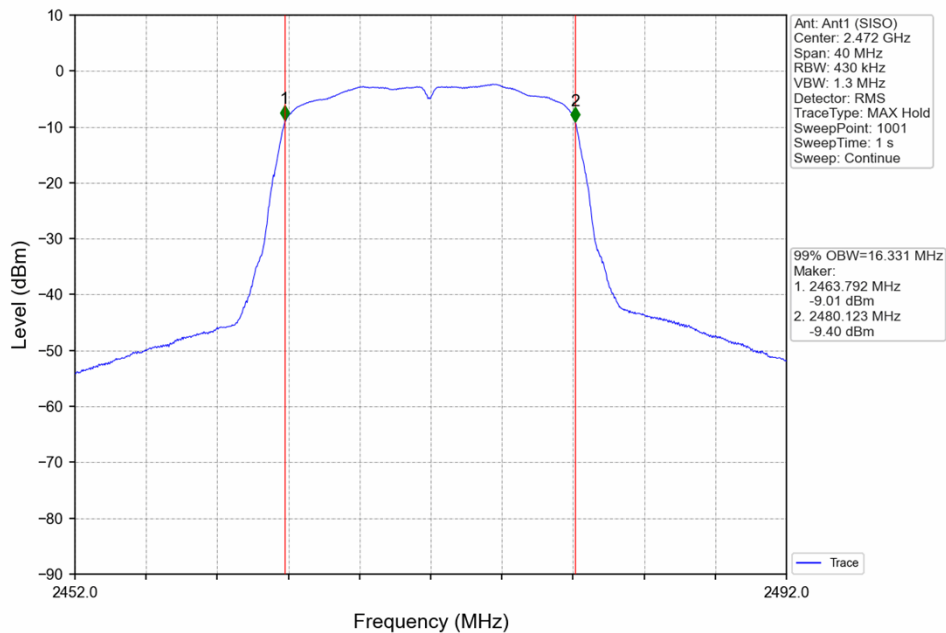
4.1.2 Test Graph



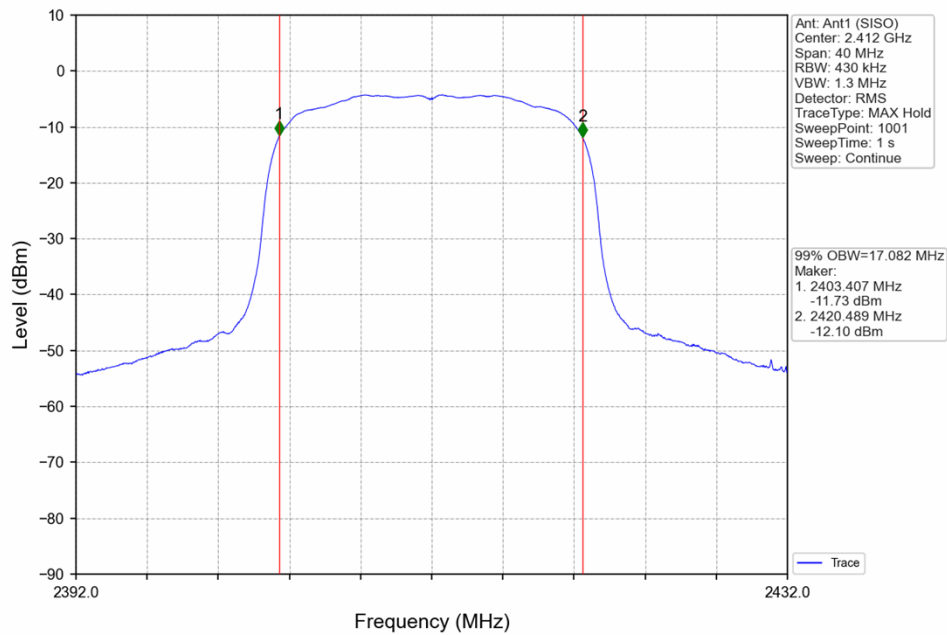
802.11g_2412MHz_Ant1 (SISO)_NTNV



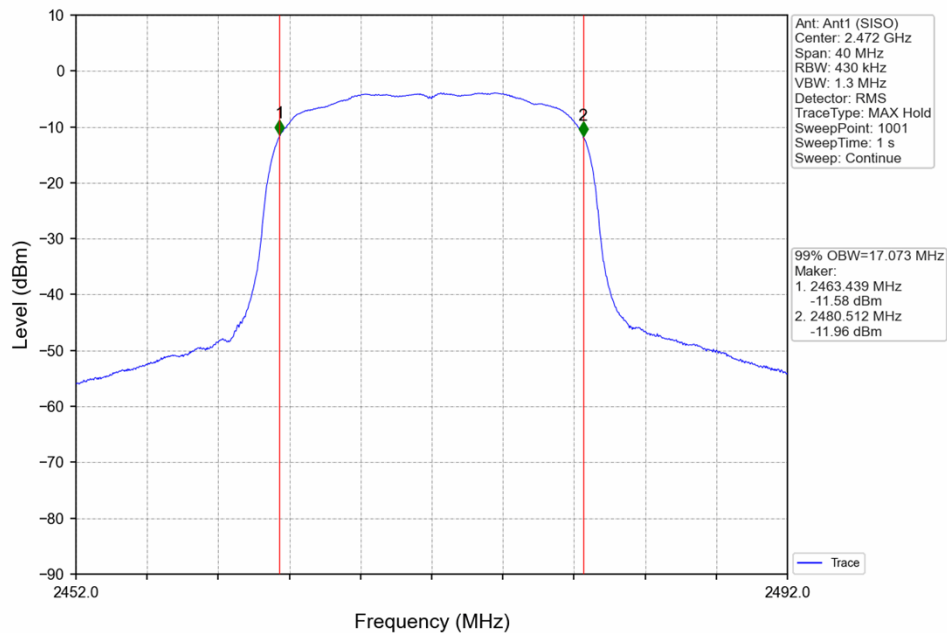
802.11g_2472MHz_Ant1 (SISO)_NTNV



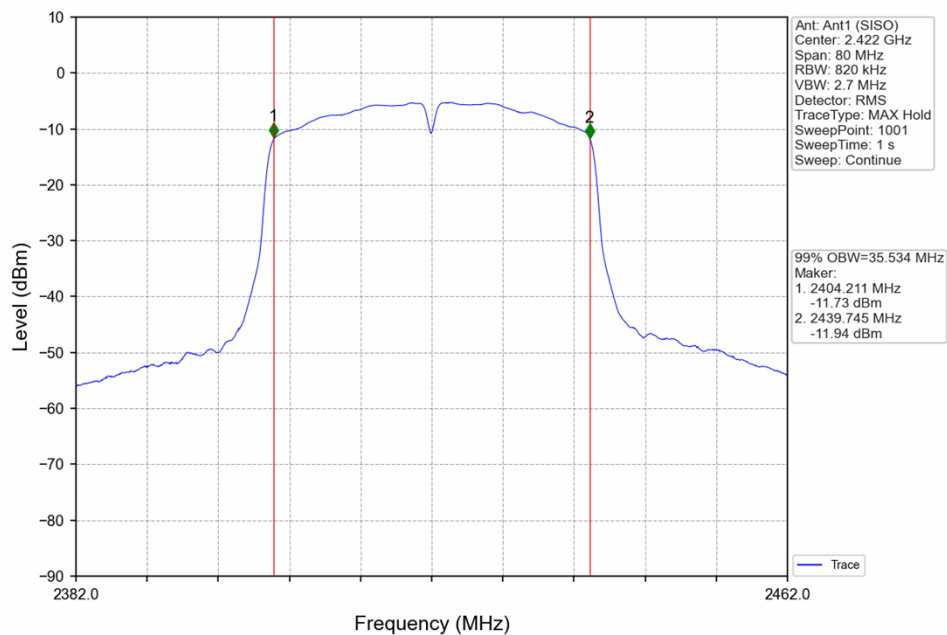
802.11n(HT20)_2412MHz_Ant1 (SISO)_NTNV



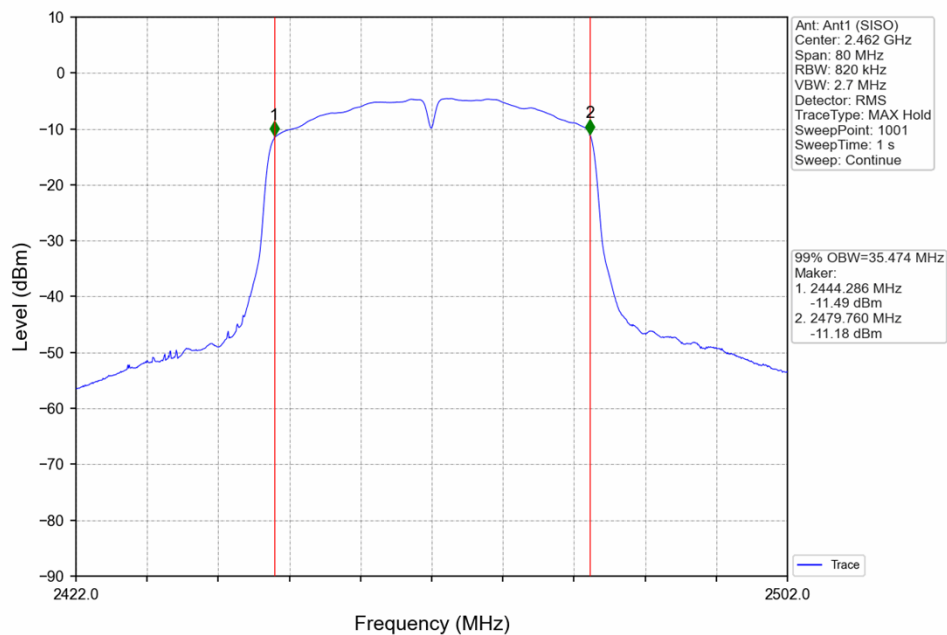
802.11n(HT20)_2472MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_2462MHz_Ant1 (SISO)_NTNV



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5. Transmitter Unwanted Emissions In The Out-Of-Band Domain

5.1 802.11b-NTNV

5.1.1 Test Result

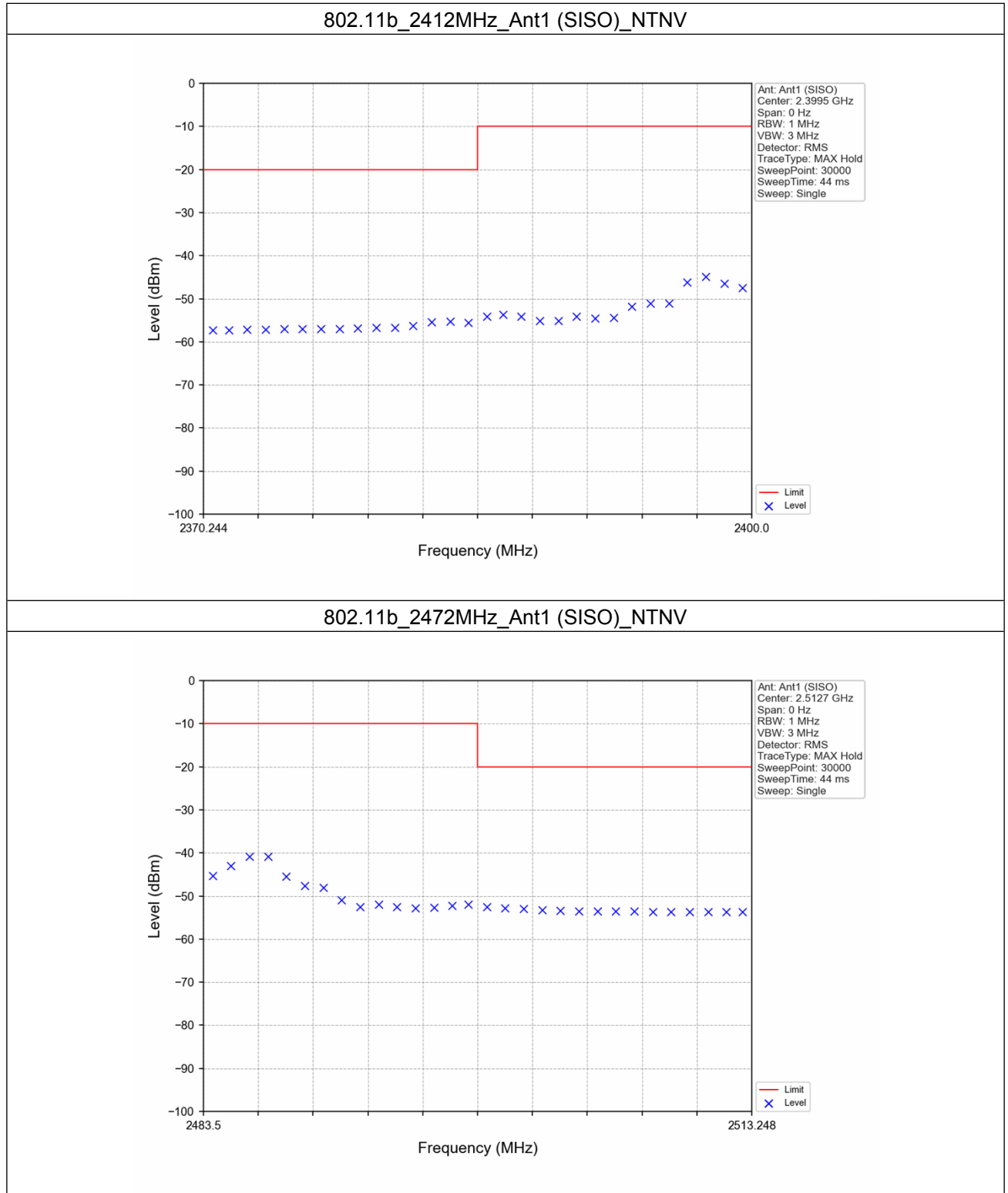
NTNV							
Mode	TX Type	Frequency (MHz)	ANT	Test Freq (MHz)	Result (dBm/MHz)	Limit (dBm/MHz)	Verdict
802.11b	SISO	2412	1	2370.744	-57.35	<=-20	Pass
				2371.622	-57.23	<=-20	Pass
				2372.622	-57.16	<=-20	Pass
				2373.622	-57.15	<=-20	Pass
				2374.622	-57.02	<=-20	Pass
				2375.622	-56.95	<=-20	Pass
				2376.622	-57.01	<=-20	Pass
				2377.622	-56.94	<=-20	Pass
				2378.622	-56.89	<=-20	Pass
				2379.622	-56.78	<=-20	Pass
				2380.622	-56.70	<=-20	Pass
				2381.622	-56.23	<=-20	Pass
				2382.622	-55.38	<=-20	Pass
				2383.622	-55.32	<=-20	Pass
				2384.622	-55.56	<=-20	Pass
				2385.622	-54.18	<=-10	Pass
				2386.500	-53.68	<=-10	Pass
				2387.500	-54.05	<=-10	Pass
				2388.500	-55.19	<=-10	Pass
				2389.500	-55.19	<=-10	Pass
				2390.500	-54.11	<=-10	Pass
				2391.500	-54.51	<=-10	Pass
				2392.500	-54.47	<=-10	Pass
				2393.500	-51.86	<=-10	Pass
				2394.500	-51.02	<=-10	Pass
				2395.500	-51.02	<=-10	Pass
				2396.500	-46.19	<=-10	Pass
				2397.500	-44.91	<=-10	Pass
				2398.500	-46.50	<=-10	Pass
				2399.500	-47.43	<=-10	Pass
		2472	1	2484.000	-45.36	<=-10	Pass



				2485.000	-43.05	<=-10	Pass
				2486.000	-40.87	<=-10	Pass
				2487.000	-40.89	<=-10	Pass
				2488.000	-45.41	<=-10	Pass
				2489.000	-47.61	<=-10	Pass
				2490.000	-47.99	<=-10	Pass
				2491.000	-50.98	<=-10	Pass
				2492.000	-52.56	<=-10	Pass
				2493.000	-51.90	<=-10	Pass
				2494.000	-52.54	<=-10	Pass
				2495.000	-52.83	<=-10	Pass
				2496.000	-52.63	<=-10	Pass
				2497.000	-52.18	<=-10	Pass
				2497.874	-51.94	<=-10	Pass
				2498.874	-52.55	<=-20	Pass
				2499.874	-52.85	<=-20	Pass
				2500.874	-52.99	<=-20	Pass
				2501.874	-53.26	<=-20	Pass
				2502.874	-53.38	<=-20	Pass
				2503.874	-53.48	<=-20	Pass
				2504.874	-53.50	<=-20	Pass
				2505.874	-53.55	<=-20	Pass
				2506.874	-53.60	<=-20	Pass
				2507.874	-53.61	<=-20	Pass
				2508.874	-53.65	<=-20	Pass
				2509.874	-53.66	<=-20	Pass
				2510.874	-53.72	<=-20	Pass
				2511.874	-53.72	<=-20	Pass
				2512.748	-53.70	<=-20	Pass



5.1.2 Test Graph



5.2 802.11g-NTNV

5.2.1 Test Result

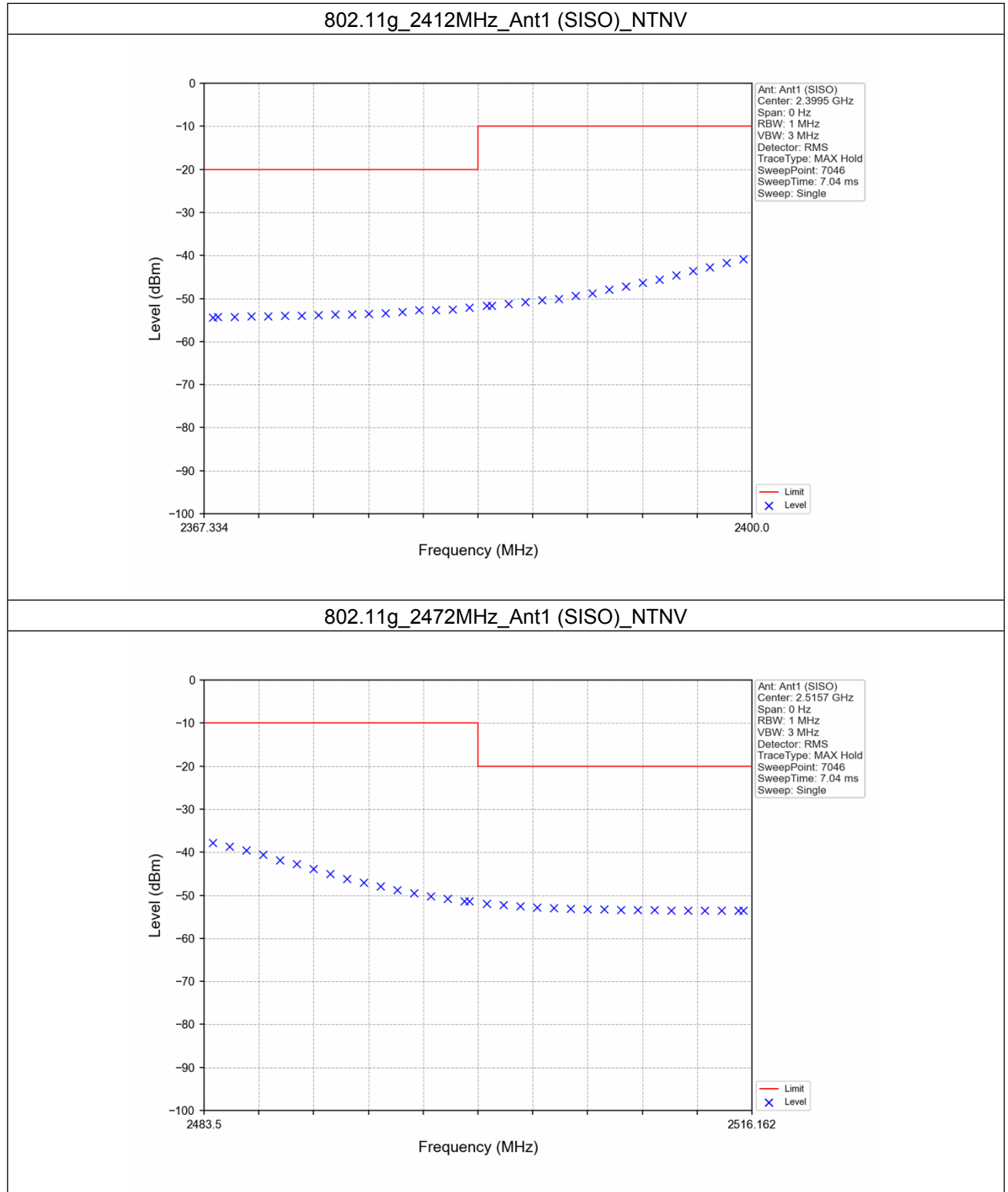
NTNV							
Mode	TX Type	Frequency (MHz)	ANT	Test Freq (MHz)	Result (dBm/MHz)	Limit (dBm/MHz)	Verdict
802.11g	SISO	2412	1	2367.834	-54.34	<=-20	Pass
				2368.167	-54.25	<=-20	Pass
				2369.167	-54.19	<=-20	Pass
				2370.167	-54.18	<=-20	Pass
				2371.167	-54.10	<=-20	Pass
				2372.167	-53.95	<=-20	Pass
				2373.167	-53.92	<=-20	Pass
				2374.167	-53.88	<=-20	Pass
				2375.167	-53.75	<=-20	Pass
				2376.167	-53.73	<=-20	Pass
				2377.167	-53.54	<=-20	Pass
				2378.167	-53.41	<=-20	Pass
				2379.167	-53.04	<=-20	Pass
				2380.167	-52.74	<=-20	Pass
				2381.167	-52.64	<=-20	Pass
				2382.167	-52.52	<=-20	Pass
				2383.167	-52.11	<=-20	Pass
				2384.167	-51.71	<=-10	Pass
				2384.500	-51.67	<=-10	Pass
				2385.500	-51.21	<=-10	Pass
				2386.500	-50.75	<=-10	Pass
				2387.500	-50.38	<=-10	Pass
				2388.500	-50.06	<=-10	Pass
				2389.500	-49.28	<=-10	Pass
				2390.500	-48.72	<=-10	Pass
				2391.500	-47.86	<=-10	Pass
				2392.500	-47.21	<=-10	Pass
				2393.500	-46.34	<=-10	Pass
				2394.500	-45.53	<=-10	Pass
				2395.500	-44.62	<=-10	Pass
				2396.500	-43.54	<=-10	Pass
				2397.500	-42.73	<=-10	Pass
				2398.500	-41.65	<=-10	Pass



				2399.500	-40.79	<=-10	Pass
				2484.000	-37.81	<=-10	Pass
				2485.000	-38.65	<=-10	Pass
				2486.000	-39.51	<=-10	Pass
				2487.000	-40.61	<=-10	Pass
				2488.000	-41.79	<=-10	Pass
				2489.000	-42.72	<=-10	Pass
				2490.000	-43.89	<=-10	Pass
				2491.000	-45.05	<=-10	Pass
				2492.000	-46.11	<=-10	Pass
				2493.000	-47.07	<=-10	Pass
				2494.000	-47.94	<=-10	Pass
				2495.000	-48.71	<=-10	Pass
				2496.000	-49.50	<=-10	Pass
				2497.000	-50.26	<=-10	Pass
				2498.000	-50.74	<=-10	Pass
				2499.000	-51.34	<=-10	Pass
				2499.331	-51.41	<=-10	Pass
				2500.331	-51.98	<=-20	Pass
				2501.331	-52.26	<=-20	Pass
				2502.331	-52.59	<=-20	Pass
				2503.331	-52.78	<=-20	Pass
				2504.331	-52.91	<=-20	Pass
				2505.331	-53.07	<=-20	Pass
				2506.331	-53.19	<=-20	Pass
				2507.331	-53.31	<=-20	Pass
				2508.331	-53.39	<=-20	Pass
				2509.331	-53.34	<=-20	Pass
				2510.331	-53.43	<=-20	Pass
				2511.331	-53.51	<=-20	Pass
				2512.331	-53.57	<=-20	Pass
				2513.331	-53.47	<=-20	Pass
				2514.331	-53.57	<=-20	Pass
				2515.331	-53.58	<=-20	Pass
				2515.662	-53.57	<=-20	Pass



5.2.2 Test Graph



5.3 802.11n(HT20)-NTNV

5.3.1 Test Result

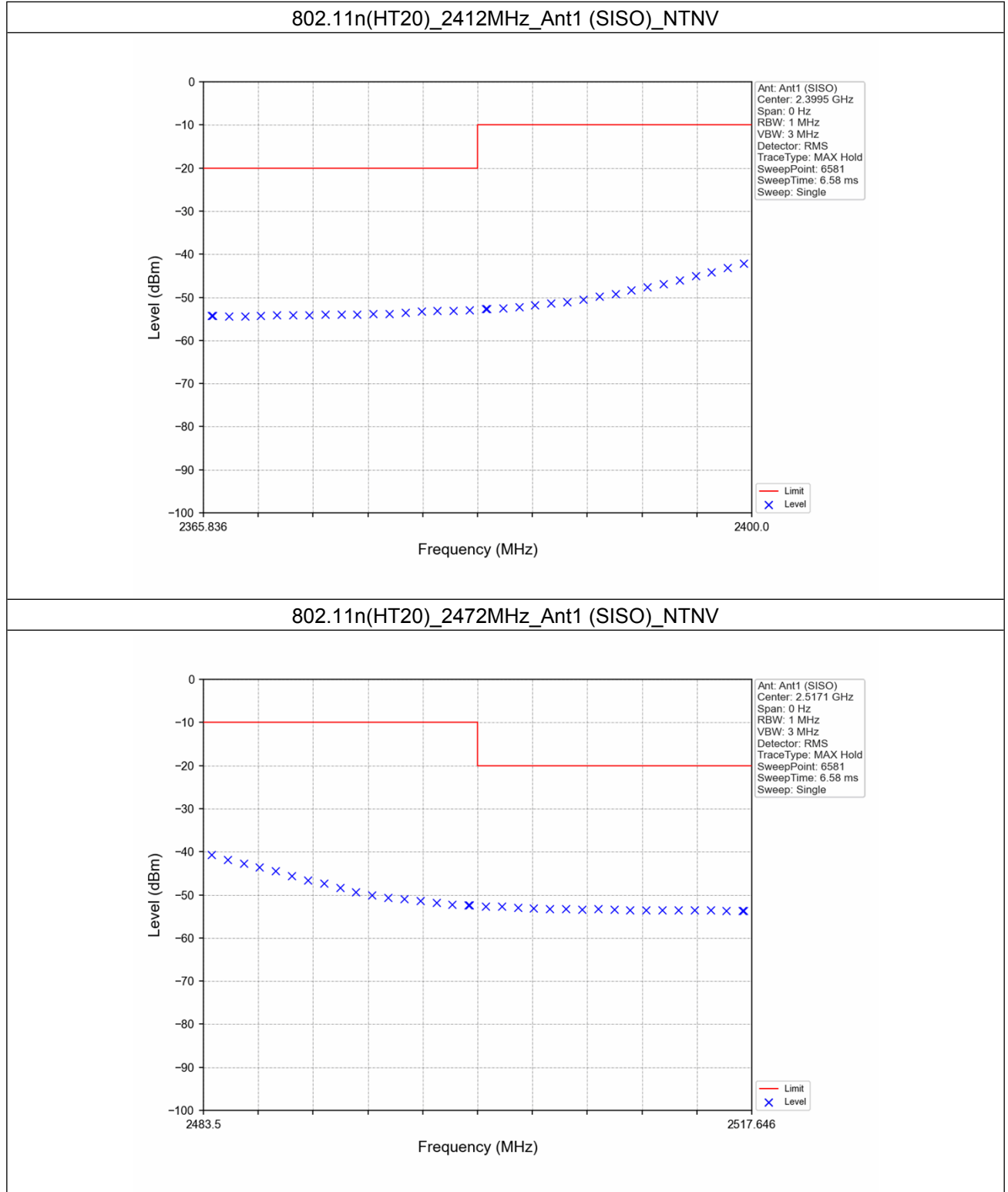
NTNV							
Mode	TX Type	Frequency (MHz)	ANT	Test Freq (MHz)	Result (dBm/MHz)	Limit (dBm/MHz)	Verdict
802.11n (HT20)	SISO	2412	1	2366.336	-54.29	<=-20	Pass
				2366.418	-54.26	<=-20	Pass
				2367.418	-54.34	<=-20	Pass
				2368.418	-54.34	<=-20	Pass
				2369.418	-54.28	<=-20	Pass
				2370.418	-54.17	<=-20	Pass
				2371.418	-54.14	<=-20	Pass
				2372.418	-54.11	<=-20	Pass
				2373.418	-54.02	<=-20	Pass
				2374.418	-53.99	<=-20	Pass
				2375.418	-53.94	<=-20	Pass
				2376.418	-53.85	<=-20	Pass
				2377.418	-53.78	<=-20	Pass
				2378.418	-53.54	<=-20	Pass
				2379.418	-53.26	<=-20	Pass
				2380.418	-53.08	<=-20	Pass
				2381.418	-53.11	<=-20	Pass
				2382.418	-52.99	<=-20	Pass
				2383.418	-52.71	<=-10	Pass
				2383.500	-52.69	<=-10	Pass
				2384.500	-52.47	<=-10	Pass
				2385.500	-52.17	<=-10	Pass
				2386.500	-51.81	<=-10	Pass
				2387.500	-51.40	<=-10	Pass
				2388.500	-51.08	<=-10	Pass
				2389.500	-50.51	<=-10	Pass
				2390.500	-49.76	<=-10	Pass
				2391.500	-49.14	<=-10	Pass
				2392.500	-48.36	<=-10	Pass
				2393.500	-47.64	<=-10	Pass
				2394.500	-46.83	<=-10	Pass
				2395.500	-46.06	<=-10	Pass
				2396.500	-44.96	<=-10	Pass



				2397.500	-44.12	<=-10	Pass
				2398.500	-43.20	<=-10	Pass
				2399.500	-42.14	<=-10	Pass
				2484.000	-40.72	<=-10	Pass
				2485.000	-41.78	<=-10	Pass
				2486.000	-42.77	<=-10	Pass
				2487.000	-43.54	<=-10	Pass
				2488.000	-44.41	<=-10	Pass
				2489.000	-45.54	<=-10	Pass
				2490.000	-46.59	<=-10	Pass
				2491.000	-47.35	<=-10	Pass
				2492.000	-48.33	<=-10	Pass
				2493.000	-49.41	<=-10	Pass
				2494.000	-50.06	<=-10	Pass
				2495.000	-50.63	<=-10	Pass
				2496.000	-50.93	<=-10	Pass
				2497.000	-51.44	<=-10	Pass
				2498.000	-51.85	<=-10	Pass
				2499.000	-52.21	<=-10	Pass
				2500.000	-52.41	<=-10	Pass
				2500.073	-52.36	<=-10	Pass
				2501.073	-52.61	<=-20	Pass
				2502.073	-52.72	<=-20	Pass
				2503.073	-53.02	<=-20	Pass
				2504.073	-53.10	<=-20	Pass
				2505.073	-53.20	<=-20	Pass
				2506.073	-53.21	<=-20	Pass
				2507.073	-53.39	<=-20	Pass
				2508.073	-53.30	<=-20	Pass
				2509.073	-53.38	<=-20	Pass
				2510.073	-53.51	<=-20	Pass
				2511.073	-53.55	<=-20	Pass
				2512.073	-53.55	<=-20	Pass
				2513.073	-53.55	<=-20	Pass
				2514.073	-53.58	<=-20	Pass
				2515.073	-53.59	<=-20	Pass
				2516.073	-53.66	<=-20	Pass
				2517.073	-53.68	<=-20	Pass
				2517.146	-53.73	<=-20	Pass



5.3.2 Test Graph



5.4 802.11n(HT40)-NTNV

5.4.1 Test Result

NTNV							
Mode	TX Type	Frequency (MHz)	ANT	Test Freq (MHz)	Result (dBm/MHz)	Limit (dBm/MHz)	Verdict
802.11n (HT40)	SISO	2422	1	2329.432	-58.52	<=-20	Pass
				2329.966	-58.54	<=-20	Pass
				2330.966	-58.37	<=-20	Pass
				2331.966	-58.41	<=-20	Pass
				2332.966	-58.33	<=-20	Pass
				2333.966	-58.45	<=-20	Pass
				2334.966	-58.21	<=-20	Pass
				2335.966	-58.30	<=-20	Pass
				2336.966	-58.20	<=-20	Pass
				2337.966	-58.30	<=-20	Pass
				2338.966	-58.01	<=-20	Pass
				2339.966	-56.63	<=-20	Pass
				2340.966	-58.18	<=-20	Pass
				2341.966	-58.30	<=-20	Pass
				2342.966	-58.13	<=-20	Pass
				2343.966	-58.06	<=-20	Pass
				2344.966	-58.00	<=-20	Pass
				2345.966	-57.88	<=-20	Pass
				2346.966	-57.90	<=-20	Pass
				2347.966	-57.85	<=-20	Pass
				2348.966	-57.81	<=-20	Pass
				2349.966	-57.76	<=-20	Pass
				2350.966	-57.67	<=-20	Pass
				2351.966	-57.66	<=-20	Pass
				2352.966	-57.63	<=-20	Pass
				2353.966	-57.65	<=-20	Pass
				2354.966	-57.43	<=-20	Pass
				2355.966	-57.29	<=-20	Pass
				2356.966	-57.35	<=-20	Pass
				2357.966	-57.18	<=-20	Pass
				2358.966	-56.57	<=-20	Pass
				2359.966	-54.55	<=-20	Pass
				2360.966	-56.45	<=-20	Pass



				2361.966	-56.80	<=-20	Pass
				2362.966	-56.65	<=-20	Pass
				2363.966	-56.62	<=-20	Pass
				2364.966	-56.21	<=-10	Pass
				2365.500	-56.37	<=-10	Pass
				2366.500	-56.22	<=-10	Pass
				2367.500	-56.00	<=-10	Pass
				2368.500	-55.84	<=-10	Pass
				2369.500	-55.72	<=-10	Pass
				2370.500	-55.39	<=-10	Pass
				2371.500	-55.52	<=-10	Pass
				2372.500	-55.25	<=-10	Pass
				2373.500	-54.91	<=-10	Pass
				2374.500	-54.72	<=-10	Pass
				2375.500	-54.42	<=-10	Pass
				2376.500	-54.30	<=-10	Pass
				2377.500	-54.29	<=-10	Pass
				2378.500	-54.01	<=-10	Pass
				2379.500	-53.65	<=-10	Pass
				2380.500	-53.41	<=-10	Pass
				2381.500	-53.08	<=-10	Pass
				2382.500	-52.84	<=-10	Pass
				2383.500	-52.44	<=-10	Pass
				2384.500	-52.15	<=-10	Pass
				2385.500	-51.48	<=-10	Pass
				2386.500	-51.16	<=-10	Pass
				2387.500	-50.68	<=-10	Pass
				2388.500	-50.42	<=-10	Pass
				2389.500	-49.67	<=-10	Pass
				2390.500	-49.35	<=-10	Pass
				2391.500	-49.30	<=-10	Pass
				2392.500	-48.89	<=-10	Pass
				2393.500	-48.75	<=-10	Pass
				2394.500	-47.31	<=-10	Pass
				2395.500	-47.43	<=-10	Pass
				2396.500	-47.04	<=-10	Pass
				2397.500	-46.63	<=-10	Pass
				2398.500	-46.09	<=-10	Pass
				2399.500	-44.59	<=-10	Pass
		2462	1	2484.000	-41.48	<=-10	Pass
				2485.000	-42.48	<=-10	Pass



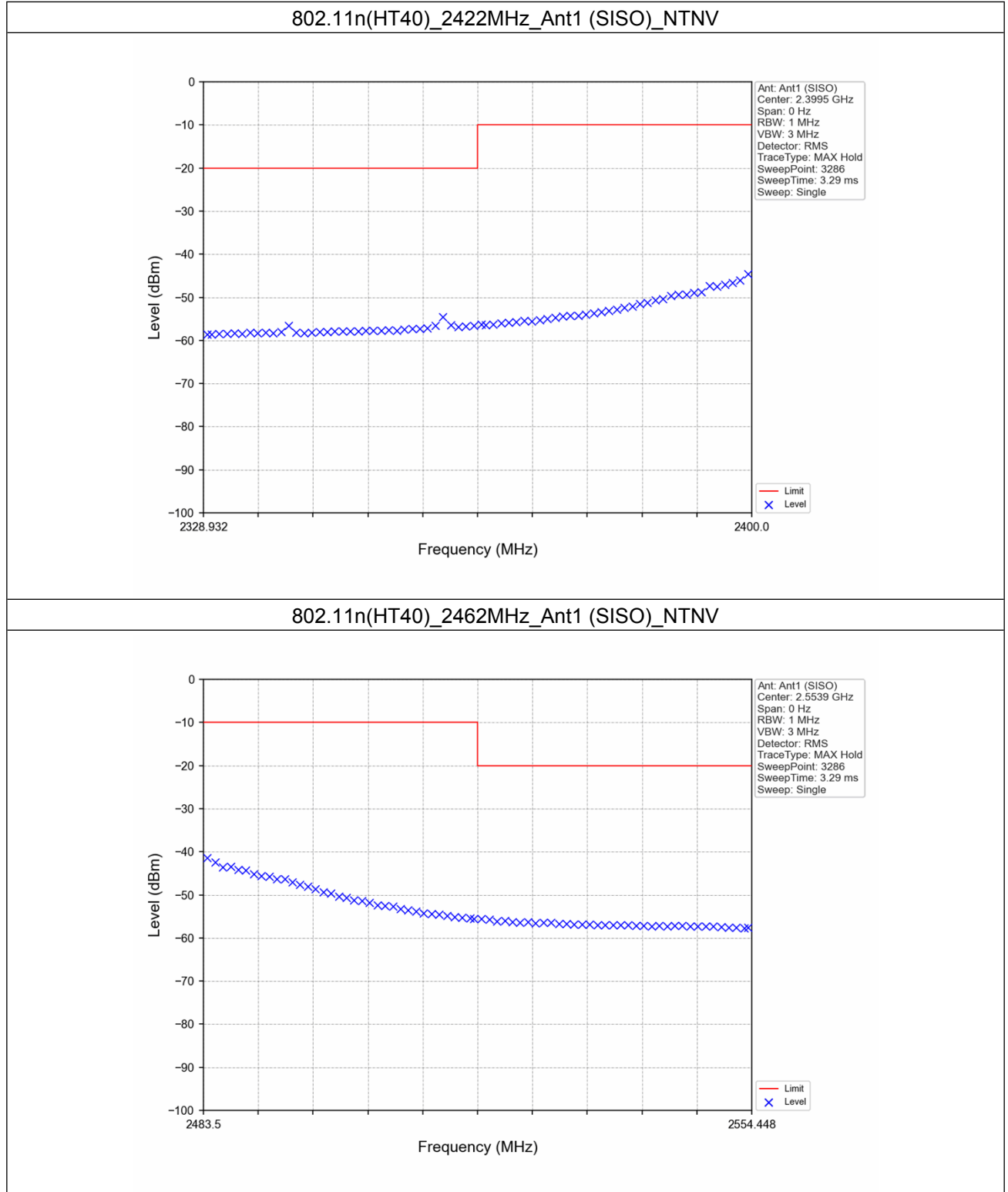
				2486.000	-43.60	<=-10	Pass
				2487.000	-43.47	<=-10	Pass
				2488.000	-44.22	<=-10	Pass
				2489.000	-44.34	<=-10	Pass
				2490.000	-45.17	<=-10	Pass
				2491.000	-45.58	<=-10	Pass
				2492.000	-45.69	<=-10	Pass
				2493.000	-46.31	<=-10	Pass
				2494.000	-46.35	<=-10	Pass
				2495.000	-47.01	<=-10	Pass
				2496.000	-47.56	<=-10	Pass
				2497.000	-48.06	<=-10	Pass
				2498.000	-48.69	<=-10	Pass
				2499.000	-49.31	<=-10	Pass
				2500.000	-49.71	<=-10	Pass
				2501.000	-50.31	<=-10	Pass
				2502.000	-50.66	<=-10	Pass
				2503.000	-51.23	<=-10	Pass
				2504.000	-51.42	<=-10	Pass
				2505.000	-51.81	<=-10	Pass
				2506.000	-52.33	<=-10	Pass
				2507.000	-52.49	<=-10	Pass
				2508.000	-52.69	<=-10	Pass
				2509.000	-53.18	<=-10	Pass
				2510.000	-53.54	<=-10	Pass
				2511.000	-53.89	<=-10	Pass
				2512.000	-54.24	<=-10	Pass
				2513.000	-54.38	<=-10	Pass
				2514.000	-54.60	<=-10	Pass
				2515.000	-54.83	<=-10	Pass
				2516.000	-55.07	<=-10	Pass
				2517.000	-55.26	<=-10	Pass
				2518.000	-55.45	<=-10	Pass
				2518.474	-55.52	<=-10	Pass
				2519.474	-55.59	<=-20	Pass
				2520.474	-55.67	<=-20	Pass
				2521.474	-56.11	<=-20	Pass
				2522.474	-56.00	<=-20	Pass
				2523.474	-56.21	<=-20	Pass
				2524.474	-56.44	<=-20	Pass
				2525.474	-56.32	<=-20	Pass



			2526.474	-56.58	<=-20	Pass
			2527.474	-56.47	<=-20	Pass
			2528.474	-56.45	<=-20	Pass
			2529.474	-56.68	<=-20	Pass
			2530.474	-56.72	<=-20	Pass
			2531.474	-56.85	<=-20	Pass
			2532.474	-56.80	<=-20	Pass
			2533.474	-56.90	<=-20	Pass
			2534.474	-57.05	<=-20	Pass
			2535.474	-57.02	<=-20	Pass
			2536.474	-56.94	<=-20	Pass
			2537.474	-57.02	<=-20	Pass
			2538.474	-57.07	<=-20	Pass
			2539.474	-57.19	<=-20	Pass
			2540.474	-57.09	<=-20	Pass
			2541.474	-57.27	<=-20	Pass
			2542.474	-57.17	<=-20	Pass
			2543.474	-57.33	<=-20	Pass
			2544.474	-57.19	<=-20	Pass
			2545.474	-57.15	<=-20	Pass
			2546.474	-57.31	<=-20	Pass
			2547.474	-57.24	<=-20	Pass
			2548.474	-57.24	<=-20	Pass
			2549.474	-57.27	<=-20	Pass
			2550.474	-57.47	<=-20	Pass
			2551.474	-57.55	<=-20	Pass
			2552.474	-57.56	<=-20	Pass
			2553.474	-57.76	<=-20	Pass
			2553.948	-57.56	<=-20	Pass



5.4.2 Test Graph



6. Receiver Blocking

6.1 Ant1

6.1.1 Test Result

Ant1									
ENV	Mode	TX Type	Frequency (MHz)	Wanted signal level (dBm)	Blocking Signal		PER (%)	Limit (%)	Verdict
					Frequency (MHz)	Power (dBm)			
NTNV	802.11b	SISO	2412	-71.8	2300	-31.8	9.50	<=10	Pass
					2330	-31.8	5.30	<=10	Pass
					2360	-31.8	7.90	<=10	Pass
			2472	-65.8	2380	-31.8	9.30	<=10	Pass
				-65.8	2504	-31.8	9.10	<=10	Pass
				-71.8	2524	-31.8	8.10	<=10	Pass
					2584	-31.8	1.80	<=10	Pass
					2674	-31.8	9.60	<=10	Pass

Note1: Receiver Category=1

- End of the Report -