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

No. 1 Workshop, M-10, Middle section, Science & Technology Park,
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TEST REPORT

Application No.:	SZEM1810008844CR
Applicant:	Jinan USR IOT Technology Limited
Address of Applicant:	Floor 2, Wuzhou Scientific Research Building, No.1100 Shunfeng Street, Gaoxin District, Jinan, Shandong, 250101, China
Manufacturer:	Jinan USR IOT Technology Limited
Address of Manufacturer:	Floor 2, Wuzhou Scientific Research Building, No.1100 Shunfeng Street, Gaoxin District, Jinan, Shandong, 250101, China
Factory:	Jinan USR IOT Technology Limited
Address of Factory:	Floor 2, Wuzhou Scientific Research Building, No.1100 Shunfeng Street, Gaoxin District, Jinan, Shandong, 250101, China
Equipment Under Test (EUT):	
EUT Name:	Serial to WIFI Module
Model No.:	USR-C216
Standard(s) :	EN 300 328 V2.1.1
Date of Receipt:	2018-10-10
Date of Test:	2018-10-12 to 2018-10-26
Date of Issue:	2018-12-11
Test Result:	**Pass***

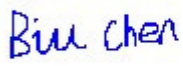
* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Keny Xu
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2018-12-11		Original

Authorized for issue by:				
				
		Bill Chen /Project Engineer		
				
		Eric Fu /Reviewer		

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Geo-location capability	EN 300 328 V2.1.1	EN 300 328 V2.1.1	EN 300 328 Clause 4.3.2.12	Customer Declaration

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
RF Output Power	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.2.2.1.2	EN 300 328 Clause 4.3.2.2	Pass
Power Spectral Density	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.3.2.1	EN 300 328 Clause 4.3.2.3	Pass
Adaptivity	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.6.2	EN 300 328 Clause 4.3.2.6	Pass
Occupied Channel Bandwidth	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.7.2.1	EN 300 328 Clause 4.3.2.7	Pass
Transmitter unwanted emissions in the out-of-band domain	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.8.2.1	EN 300 328 Clause 4.3.2.8	Pass
Transmitter unwanted emissions in the spurious domain	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.9.2	EN 300 328 Clause 4.3.2.9	Pass
Receiver spurious emissions	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.10.2	EN 300 328 Clause 4.3.2.10	Pass
Receiver Blocking	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.11.2	EN 300 328 Clause 4.3.2.11	Pass

3 Contents

4 General Information

4.1 Details of E.U.T.

	Power supply:	Supply by test board
	Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
	Number of Channels	802.11b/g/n(HT20): 13 802.11n(HT40):9
	Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2472MHz 802.11n(HT40): 2422MHz to 2462MHz
	Channel Spacing	5MHz
	Antenna Type	PIFA
	Antenna Gain	1.3dBi

4.2 Description of Support Units

Description	Manufacturer	Model No.
Test board	Customer to provide	N/A
Adapter	Customer to provide	N/A

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10^{-8}
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	RF conducted power	± 0.75dB
5	RF power density	± 2.84dB
6	Conducted Spurious emissions	± 0.75dB
7	RF Radiated power	± 4.5dB (below 1GHz)
		± 4.8dB (above 1GHz)
8	Radiated Spurious emission test	± 4.5dB (Below 1GHz)
		± 4.8dB (Above 1GHz)
9	Temperature test	± 1℃
10	Humidity test	± 3%
11	Supply voltages	± 1.5%
12	Time	± 3%

4.4 Test Location

All tests were performed at:

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

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

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

No tests were sub-contracted.

4.5 Test Facility

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

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC

Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• 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

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. 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: CN1178

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

Designation Number: CN1178. Test Firm Registration Number: 406779.

• 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

5 Equipment List

RF Output Power					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EXA Spectrum Analyzer	KEYSIGHT	N9010A	SEM004-12	2018-04-13	2019-04-12
Signal Generator (9kHz-3GHz)	KEYSIGHT	N5171B	SEM006-13	2018-04-13	2019-04-12
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2018-07-12	2019-07-11
MXG Vector Signal Generator	KEYSIGHT	N5182A	SEM006-14	2018-04-13	2019-04-12
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-13	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-14	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2018-04-13	2019-04-12
Bluetooth Tester	Rohde & Schwarz	CBT	W060-01	2018-06-21	2019-06-20
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2018-04-02	2019-04-01
ESG Vector Signal Generator	Agilent	E4438C	SEM006-15	2018-09-27	2019-09-26

Power Spectral Density					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EXA Spectrum Analyzer	KEYSIGHT	N9010A	SEM004-12	2018-04-13	2019-04-12
Signal Generator (9kHz-3GHz)	KEYSIGHT	N5171B	SEM006-13	2018-04-13	2019-04-12
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2018-07-12	2019-07-11
MXG Vector Signal Generator	KEYSIGHT	N5182A	SEM006-14	2018-04-13	2019-04-12
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-13	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-14	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2018-04-13	2019-04-12
Bluetooth Tester	Rohde & Schwarz	CBT	W060-01	2018-06-21	2019-06-20
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2018-04-02	2019-04-01

ESG Vector Signal Generator	Agilent	E4438C	SEM006-15	2018-09-27	2019-09-26

Adaptivity					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EXA Spectrum Analyzer	KEYSIGHT	N9010A	SEM004-12	2018-04-13	2019-04-12
Signal Generator (9kHz-3GHz)	KEYSIGHT	N5171B	SEM006-13	2018-04-13	2019-04-12
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2018-07-12	2019-07-11
MXG Vector Signal Generator	KEYSIGHT	N5182A	SEM006-14	2018-04-13	2019-04-12
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-13	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-14	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2018-04-13	2019-04-12
Bluetooth Tester	Rohde & Schwarz	CBT	W060-01	2018-06-21	2019-06-20
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2018-04-02	2019-04-01
ESG Vector Signal Generator	Agilent	E4438C	SEM006-15	2018-09-27	2019-09-26

Occupied Channel Bandwidth					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EXA Spectrum Analyzer	KEYSIGHT	N9010A	SEM004-12	2018-04-13	2019-04-12
Signal Generator (9kHz-3GHz)	KEYSIGHT	N5171B	SEM006-13	2018-04-13	2019-04-12
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2018-07-12	2019-07-11
MXG Vector Signal Generator	KEYSIGHT	N5182A	SEM006-14	2018-04-13	2019-04-12
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-13	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-14	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2018-04-13	2019-04-12
Bluetooth Tester	Rohde & Schwarz	CBT	W060-01	2018-06-21	2019-06-20

Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2018-04-02	2019-04-01
ESG Vector Signal Generator	Agilent	E4438C	SEM006-15	2018-09-27	2019-09-26

Transmitter unwanted emissions in the out-of-band domain					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EXA Spectrum Analyzer	KEYSIGHT	N9010A	SEM004-12	2018-04-13	2019-04-12
Signal Generator (9kHz-3GHz)	KEYSIGHT	N5171B	SEM006-13	2018-04-13	2019-04-12
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2018-07-12	2019-07-11
MXG Vector Signal Generator	KEYSIGHT	N5182A	SEM006-14	2018-04-13	2019-04-12
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-13	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-14	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2018-04-13	2019-04-12
Bluetooth Tester	Rohde & Schwarz	CBT	W060-01	2018-06-21	2019-06-20
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2018-04-02	2019-04-01
ESG Vector Signal Generator	Agilent	E4438C	SEM006-15	2018-09-27	2019-09-26

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	2018-03-13	2021-03-12
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2018-07-12	2019-07-11
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2018-04-02	2019-04-01
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Horn Antenna (15GHz-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16
Pre-amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2018-09-25	2019-09-24

Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2018-09-27	2019-09-26
Pre-amplifier(18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2018-04-02	2019-04-01
Pre-amplifier (26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2018-04-02	2019-04-01
DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2018-09-25	2019-09-24
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21
Band filter	N/A	N/A	SEM023-01	N/A	N/A

Receiver spurious emissions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2018-07-12	2019-07-11
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2018-04-02	2019-04-01
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Horn Antenna (15GHz-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16
Pre-amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2018-09-25	2019-09-24
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2018-09-27	2019-09-26
Pre-amplifier(18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2018-04-02	2019-04-01
Pre-amplifier (26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2018-04-02	2019-04-01
DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2018-09-25	2019-09-24
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21
Band filter	N/A	N/A	SEM023-01	N/A	N/A

Receiver Blocking					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EXA Spectrum Analyzer	KEYSIGHT	N9010A	SEM004-12	2018-04-13	2019-04-12
Signal Generator (9kHz-3GHz)	KEYSIGHT	N5171B	SEM006-13	2018-04-13	2019-04-12
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM028-01	2018-07-12	2019-07-11

MXG Vector Signal Generator	KEYSIGHT	N5182A	SEM006-14	2018-04-13	2019-04-12
DC Power Supply	KEYSIGHT	E3642A	SEM011-07	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2018-04-13	2019-04-12
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-13	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-14	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2018-04-13	2019-04-12
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2018-04-13	2019-04-12
Bluetooth Tester	Rohde & Schwarz	CBT	W060-01	2018-06-21	2019-06-20
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2018-04-02	2019-04-01
ESG Vector Signal Generator	Agilent	E4438C	SEM006-15	2018-09-27	2019-09-26

General used equipment

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2018-09-27	2019-09-26
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2018-09-27	2019-09-26
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2018-09-27	2019-09-26
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2018-04-08	2019-04-07

6 Radio Spectrum Technical Requirement

6.1 Geo-location capability

6.1.1 Test Requirement:

EN 300 328 Clause 4.3.2.12

Limit: This requirement only applies to equipment with geo-location capability as defined in clause 4.3.1.13.2.

6.1.2 Conclusion

Standard Requirement:

The geographical location determined by the equipment as defined in clause below shall not be accessible to the user.

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.

The applicant declares:

The product has the geo-location function and the geo-location capability present in the equipment. The geo-location capability operates at the same geographical location during the initial power up of the equipment, and the equipment shall not be accessible to the user.

7 Radio Spectrum Matter Test Results

7.1 RF Output Power

Test Requirement EN 300 328 Clause 4.3.2.2
Test Method: EN 300 328 V2.1.1 clause 5.4.2.2.1.2
Limit: 20dBm/(100mw) (e.i.r.p)

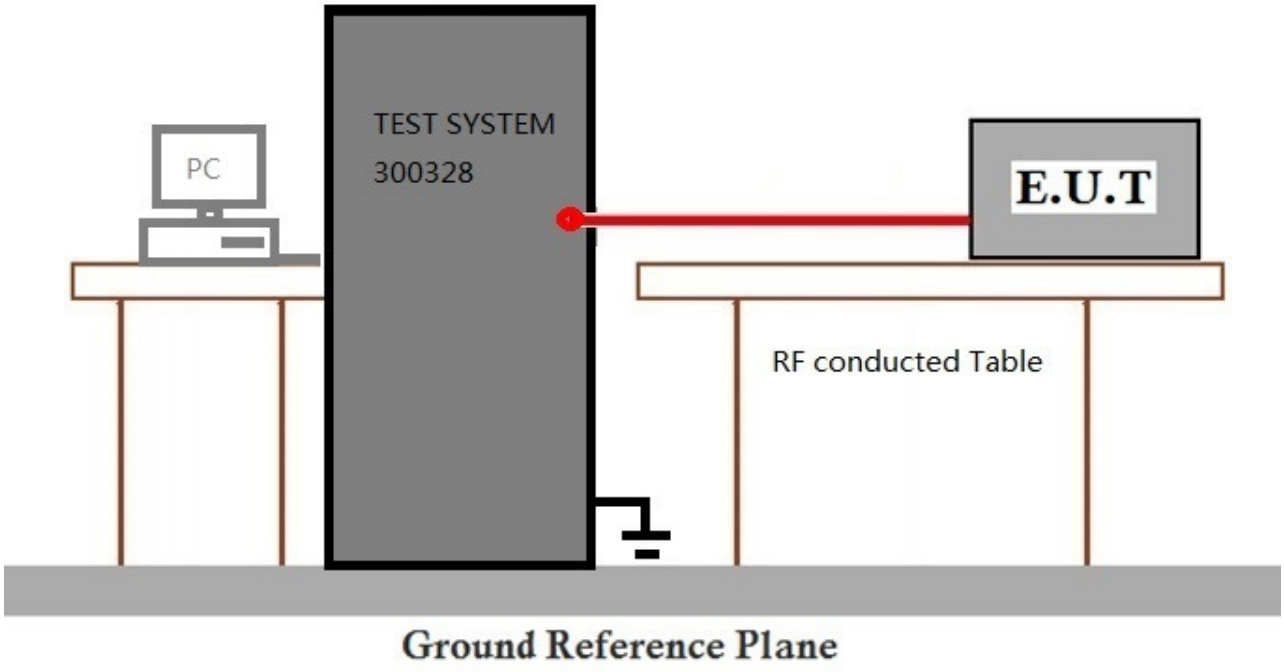
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 46 % RH Atmospheric Pressure: 1010 mbar

Test mode a: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.

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

The detailed test data see: Appendix 300328

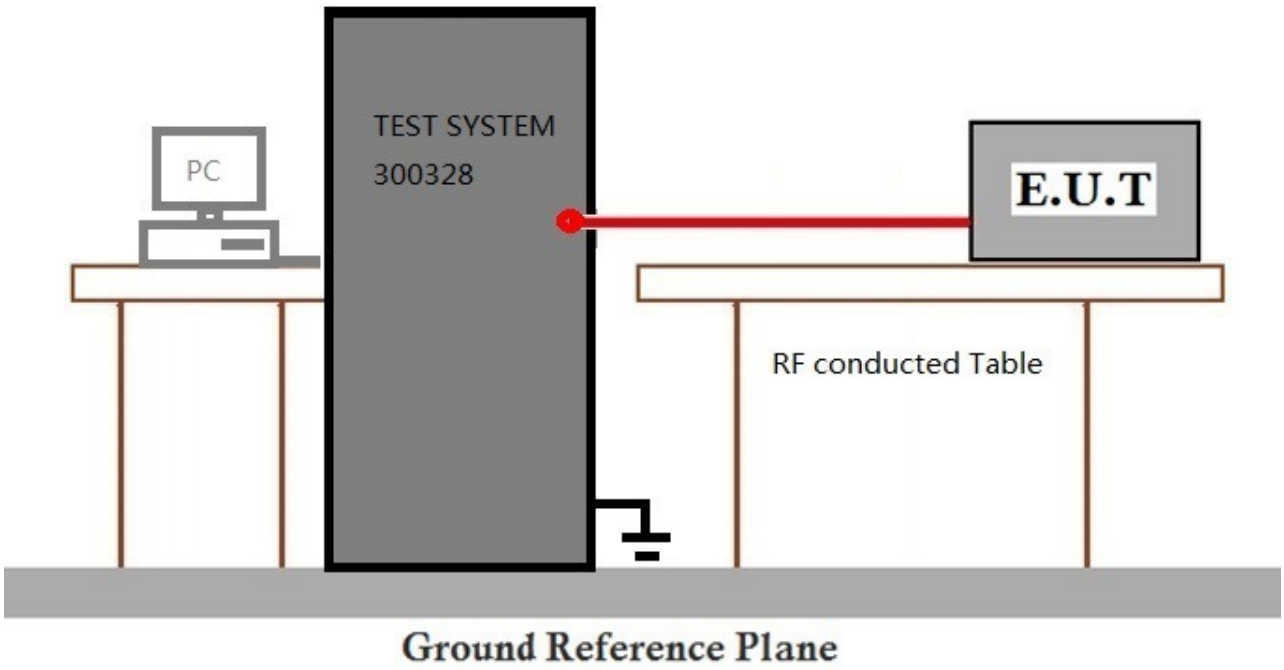
7.2 Power Spectral Density

Test Requirement EN 300 328 Clause 4.3.2.3
Test Method: EN 300 328 V2.1.1 clause 5.4.3.2.1
Limit: ≤10dBm per MHz

7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 23 °C Humidity: 45.9 % RH Atmospheric Pressure: 1010 mbar
Test mode a: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.

7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 300328

7.3 Adaptivity

Test Requirement EN 300 328 Clause 4.3.2.6

Test Method: EN 300 328 V2.1.1 clause 5.4.6.2

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 µs.
	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 µs.
	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 µs 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 µs.
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 µs.
	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 dBm/MHz + 10 × log10 (100 mW / Pout) (Pout 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 µs.
	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.)

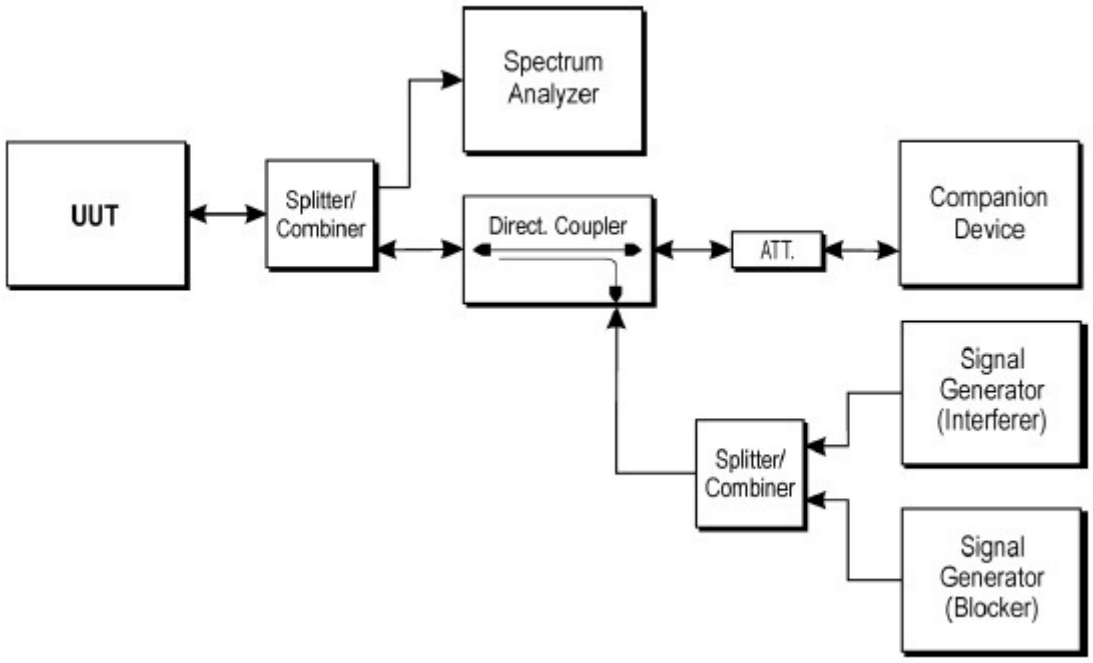
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 46 % RH Atmospheric Pressure: 1010 mbar

Test mode c:Normal operating_Keep the EUT communication with the companion device.

7.3.2 Test Setup Diagram



7.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 300328

7.4 Occupied Channel Bandwidth

Test Requirement EN 300 328 Clause 4.3.2.7

Test Method: EN 300 328 V2.1.1 clause 5.4.7.2.1

Limit: The Occupied Channel Bandwidth shall fall completely within the band given in clause 1. For non-adaptive Frequency Hopping equipment with e.i.r.p. greater than 10 dBm, the Occupied Channel Bandwidth for every occupied hopping frequency shall be equal to or less than the Nominal Channel Bandwidth declared by the manufacturer. See clause 5.4.1 j). This declared value shall not be greater than 5 MHz.

The Occupied Channel Bandwidth shall fall completely within the band given in table 1. In addition, for non-adaptive equipment using wide band modulations other than FHSS and with e.i.r.p. greater than 10 dBm, the occupied channel bandwidth shall be less than 20 MHz.

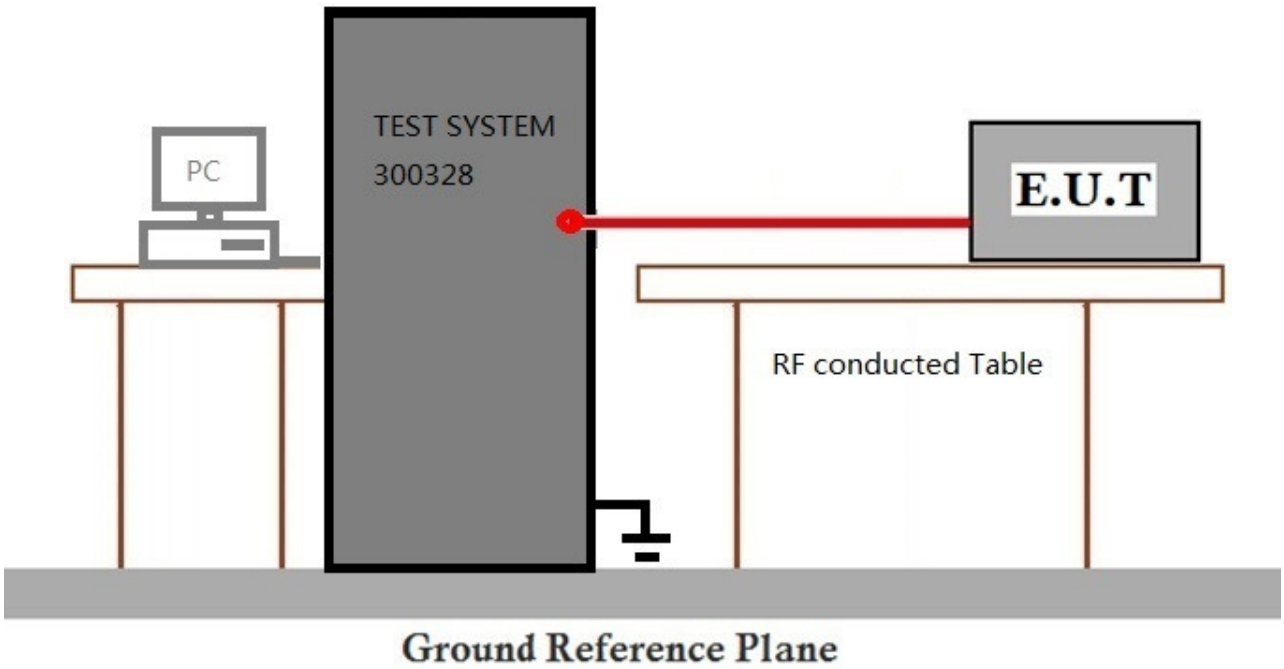
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 46 % RH Atmospheric Pressure: 1010 mbar

Test mode a: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.

7.4.2 Test Setup Diagram



7.4.3 Measurement Procedure and Data

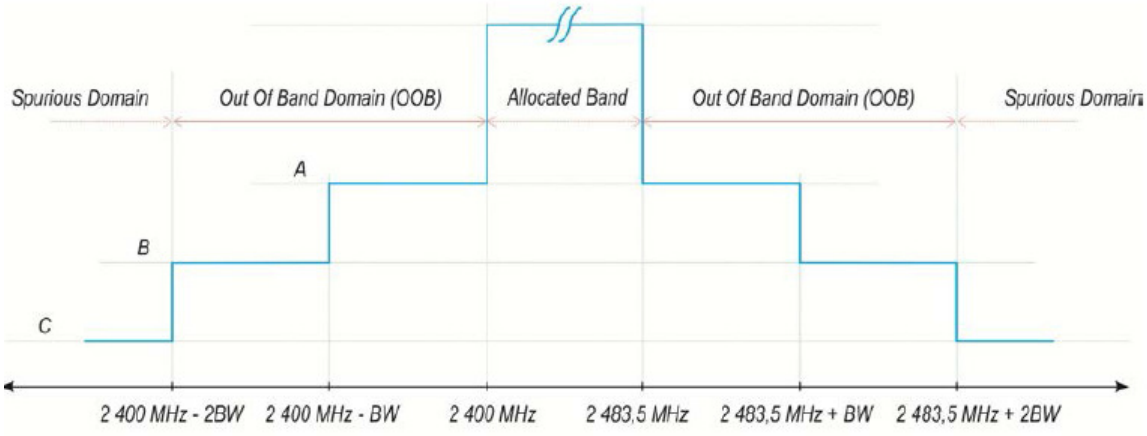
The detailed test data see: Appendix 300328

7.5 Transmitter unwanted emissions in the out-of-band domain

Test Requirement EN 300 328 Clause 4.3.2.8

Test Method: EN 300 328 V2.1.1 clause 5.4.8.2.1

Limit:



A: -10 dBm/MHz e.i.r.p.
B: -20 dBm/MHz e.i.r.p.
C: Spurious Domain limits

BW = Occupied Channel Bandwidth in MHz or 1 MHz whichever is greater

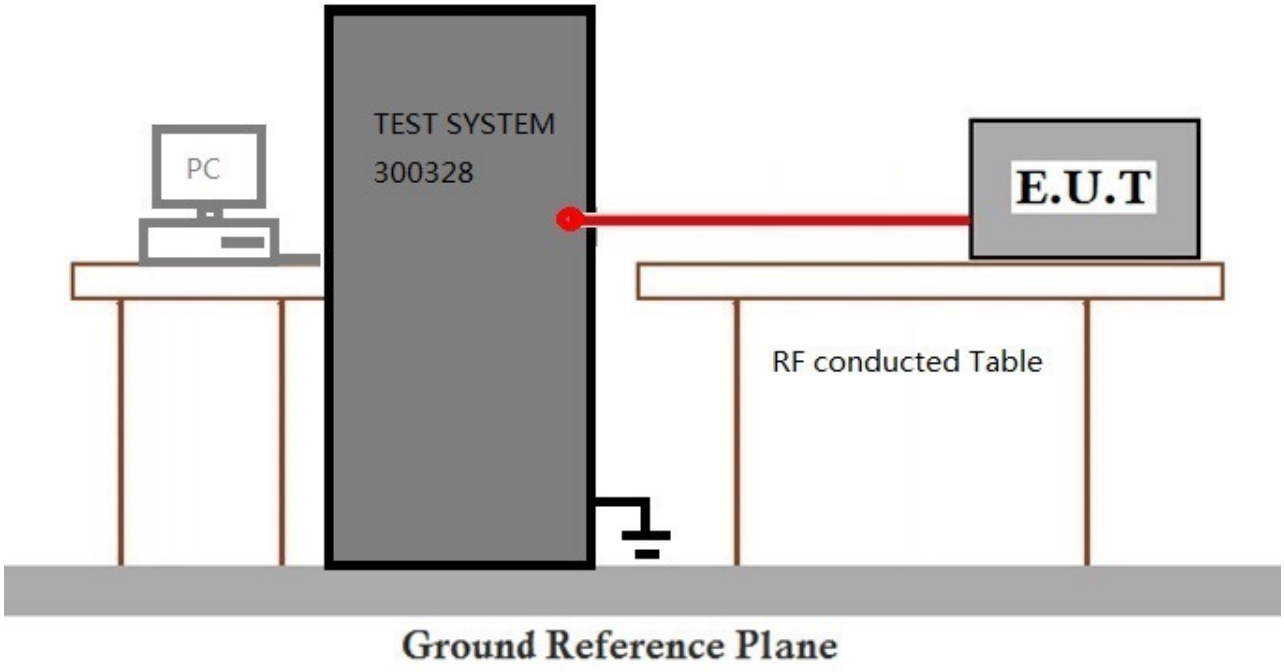
7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 45.9 % RH Atmospheric Pressure: 1010 mbar

Test mode a: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.

7.5.2 Test Setup Diagram



7.5.3 Measurement Procedure and Data

The detailed test data see: Appendix 300328

7.6 Transmitter unwanted emissions in the spurious domain

Test Requirement EN 300 328 Clause 4.3.2.9
Test Method: EN 300 328 V2.1.1 clause 5.4.9.2
Measurement Distance: 3m
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 862 MHz	-54dBm	100 kHz
862 MHz to 1 GHz	-36dBm	100 kHz
1 GHz to 12,75 GHz	-30dBm	1MHz

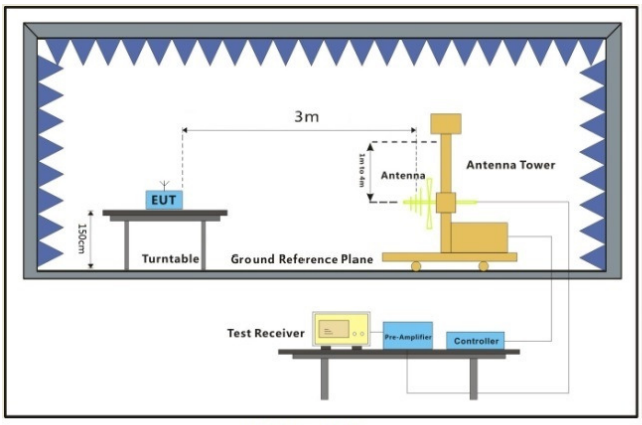
7.6.1 E.U.T. Operation

Operating Environment:

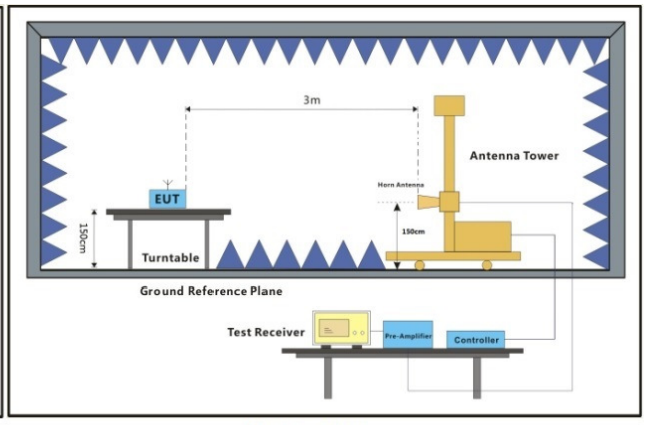
Temperature: 21.8 °C Humidity: 63.4 % RH Atmospheric Pressure: 1010 mbar

Test mode a: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.

7.6.2 Test Setup Diagram



30MHz-1GHz



Above 1GHz

7.6.3 Measurement Procedure and Data

1. Scan from 30MHz to 12.75GHz, find the maximum radiation frequency to measure.

2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT.

Below 1GHz 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. modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.

2) Rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

3) Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.

5) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions.

6) The output power into the substitution antenna was then measured.

7) Steps 5) and 6)were repeated with both antennas vertically polarized.

8) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

where:

Pg is the generator output power into the substitution antenna.

Above 1GHz test procedure as below:

1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber.

2) Calculate power in dBm by the following formula:

EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

EIRP=ERP+2.15dB

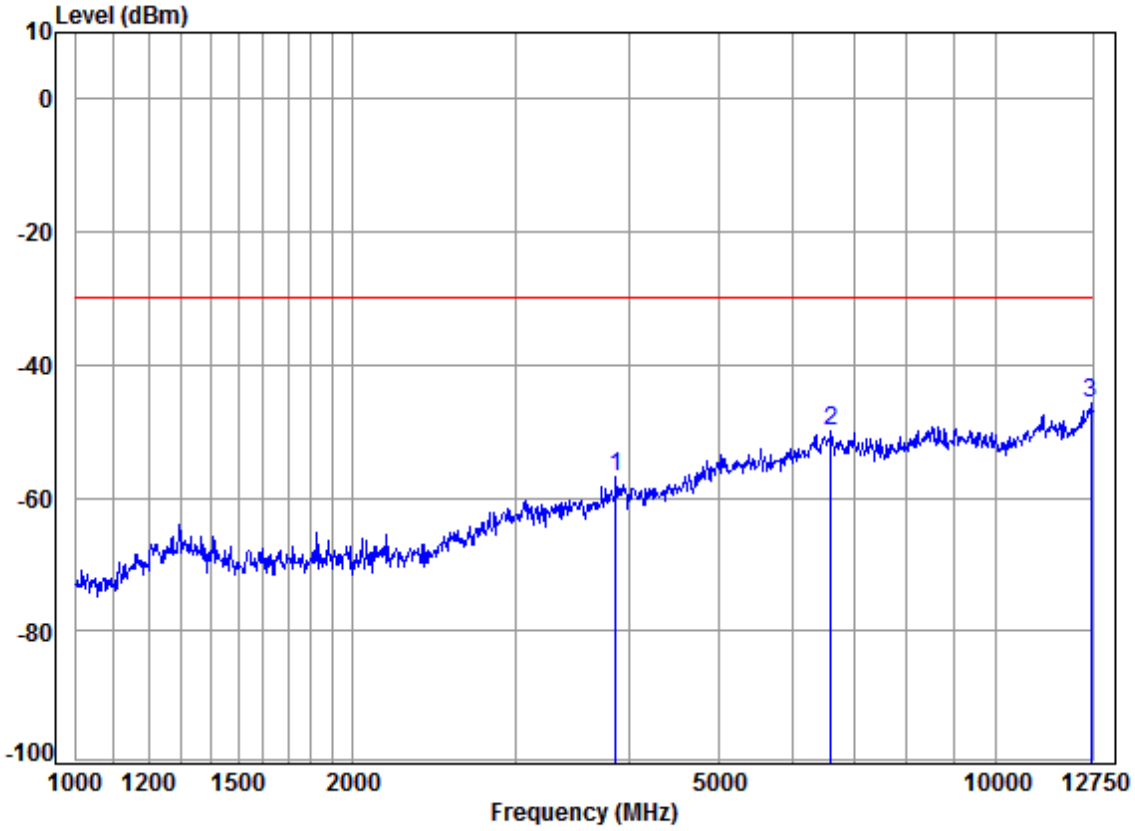
where:

Pg is the generator output power into the substitution antenna.

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.

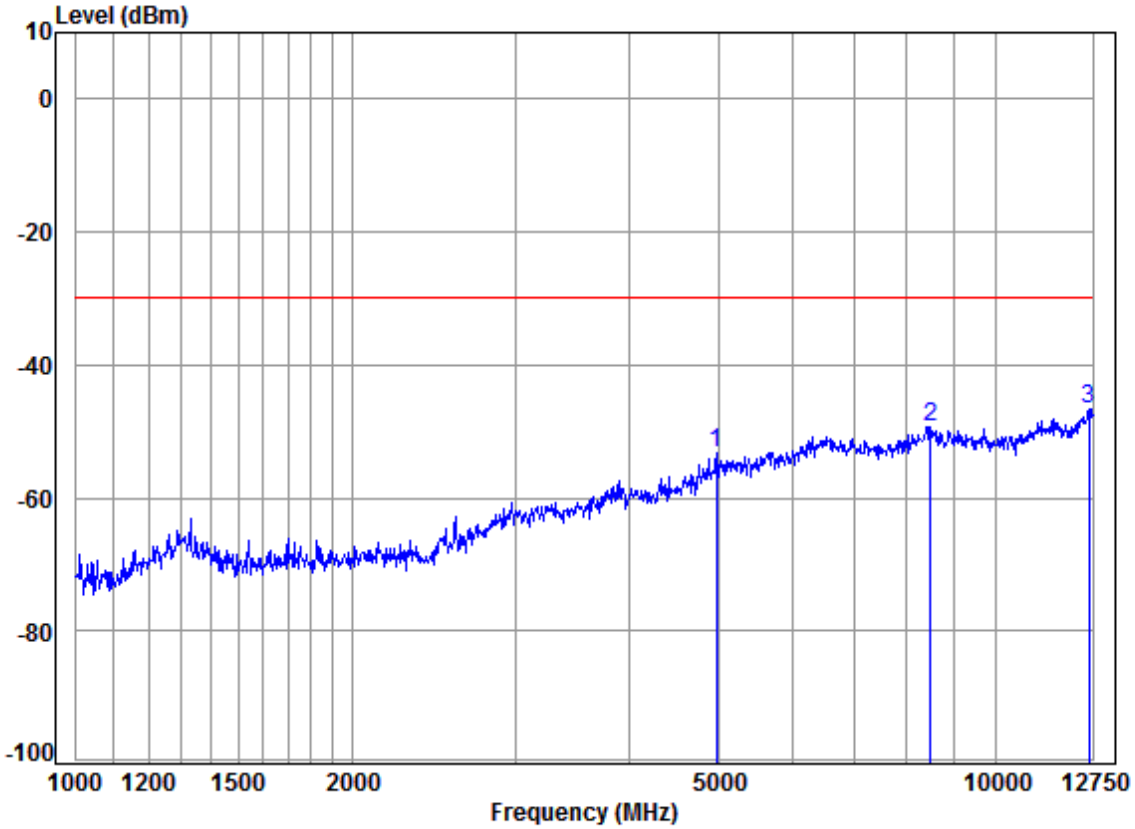
Mode:a; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2412 TX RSE
MEMO: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3863.90	-56.97	-30.00	-26.97
2	6611.33	-49.92	-30.00	-19.92
3	12685.25	-45.74	-30.00	-15.74

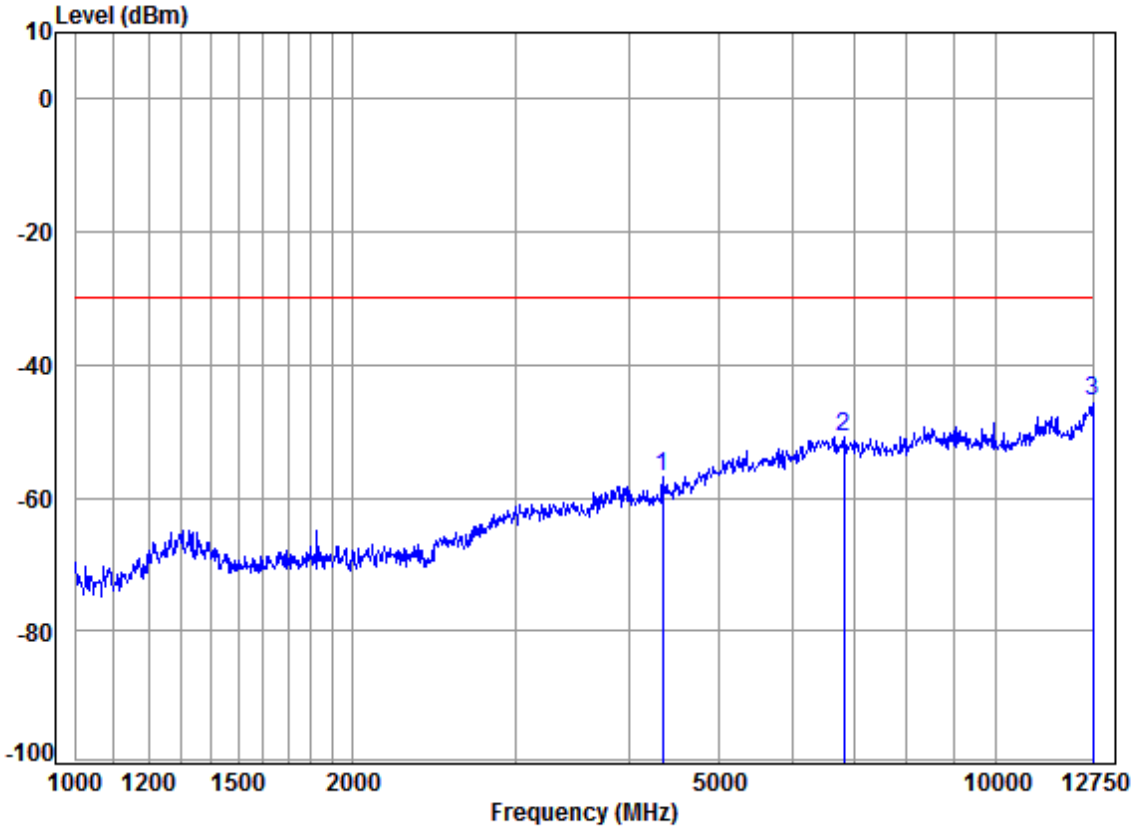
Mode:a; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2412 TX RSE
MEMO: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	4971.32	-53.22	-30.00	-23.22
2	8484.55	-49.27	-30.00	-19.27
3	12620.84	-46.53	-30.00	-16.53

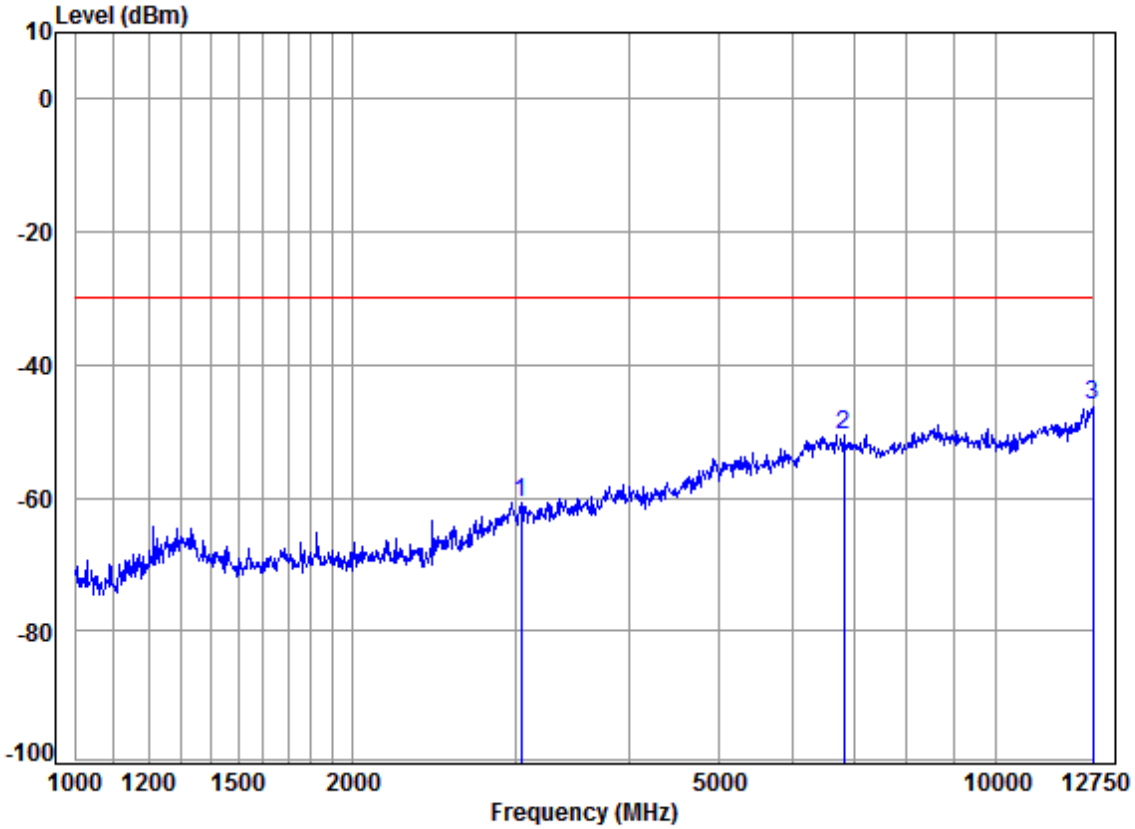
Mode:a; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2472 TX RSE
MEMO: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	4343.90	-56.77	-30.00	-26.77
2	6833.77	-50.81	-30.00	-20.81
3	12750.00	-45.50	-30.00	-15.50

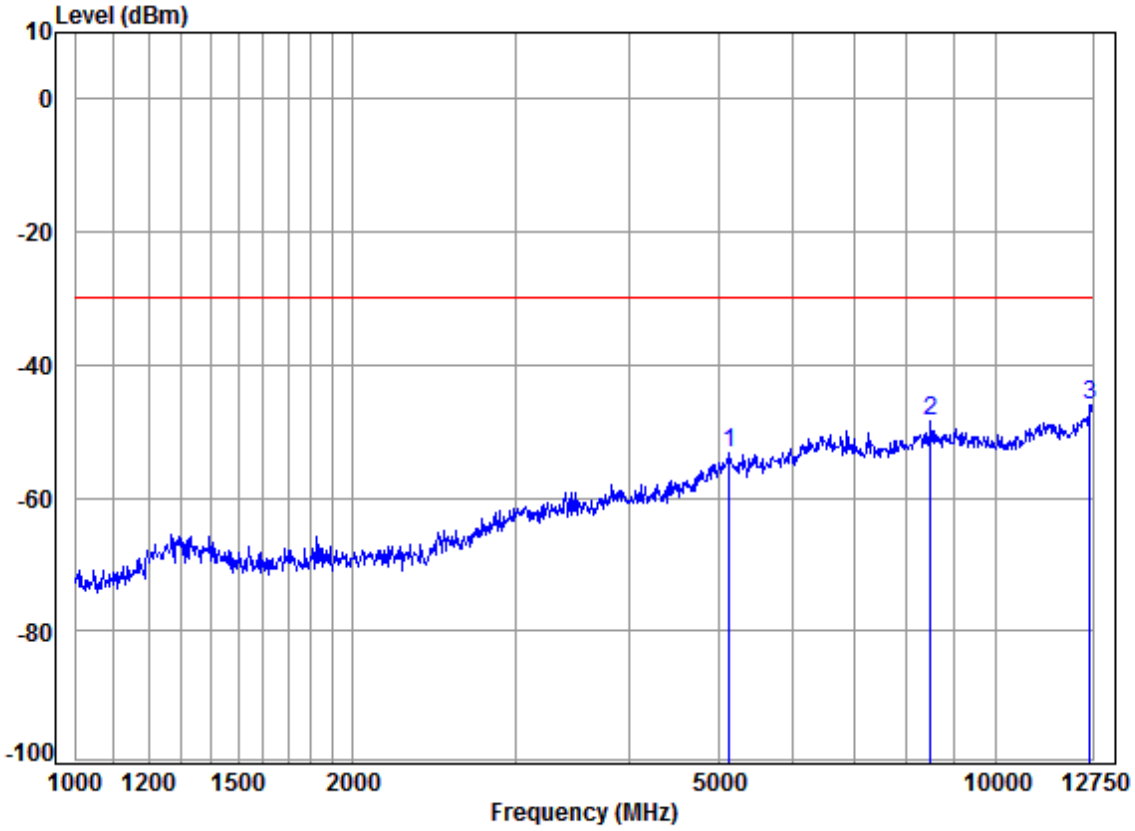
Mode:a; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2472 TX RSE
MEMO: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3049.39	-60.87	-30.00	-30.87
2	6833.77	-50.52	-30.00	-20.52
3	12750.00	-46.04	-30.00	-16.04

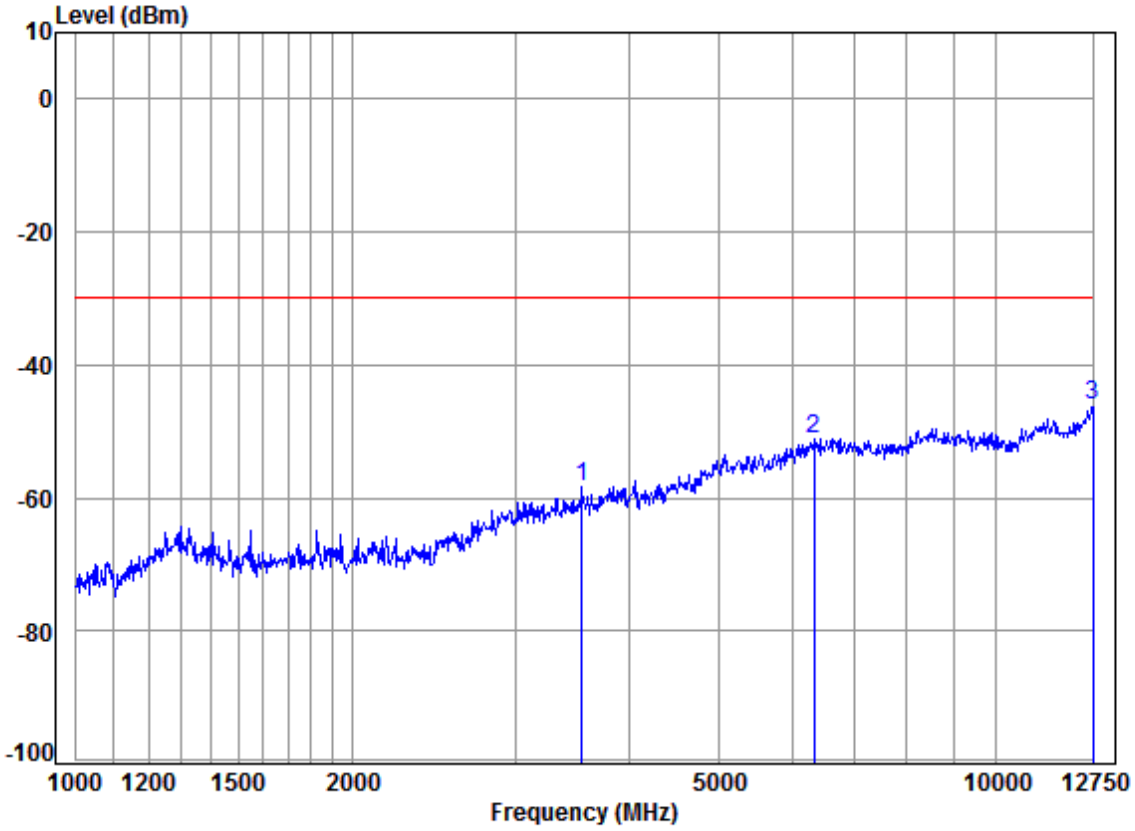
Mode:a; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2412 TX RSE
MEMO: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5125.52	-53.37	-30.00	-23.37
2	8484.55	-48.39	-30.00	-18.39
3	12653.00	-45.97	-30.00	-15.97

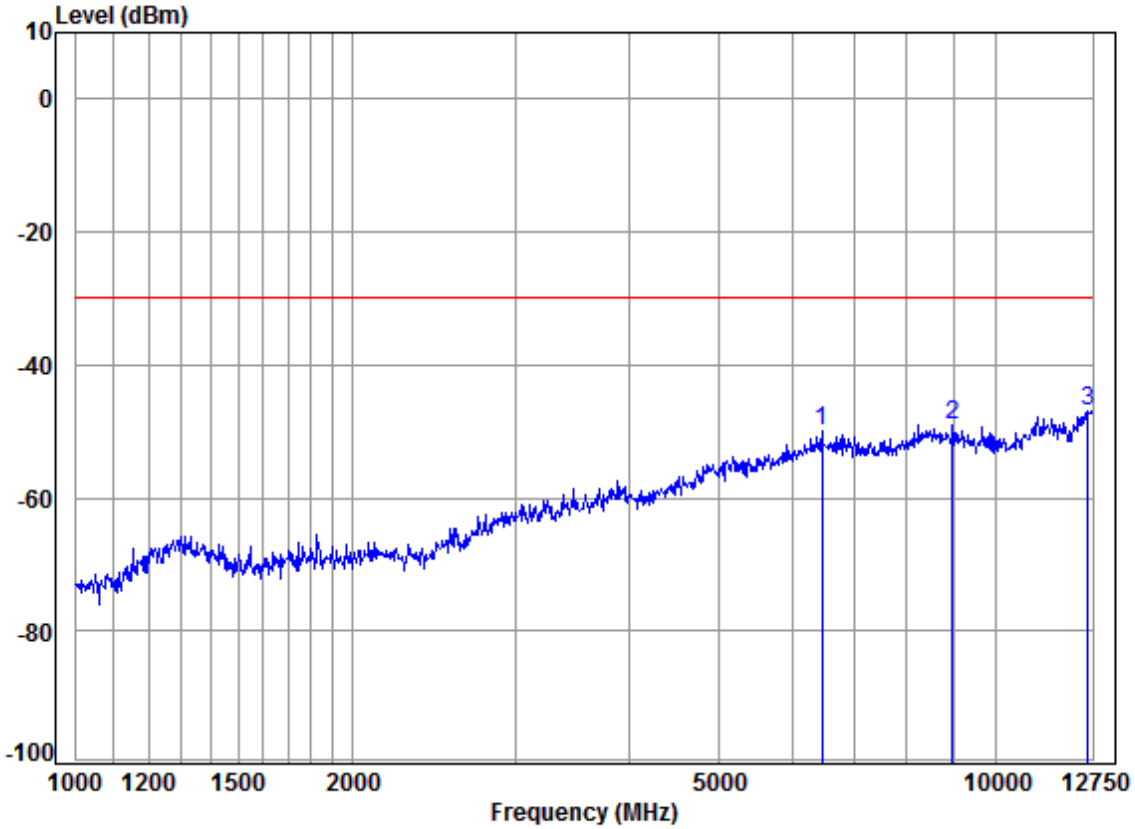
Mode:a; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2412 TX RSE
MEMO: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3552.58	-58.45	-30.00	-28.45
2	6347.47	-51.06	-30.00	-21.06
3	12750.00	-46.02	-30.00	-16.02

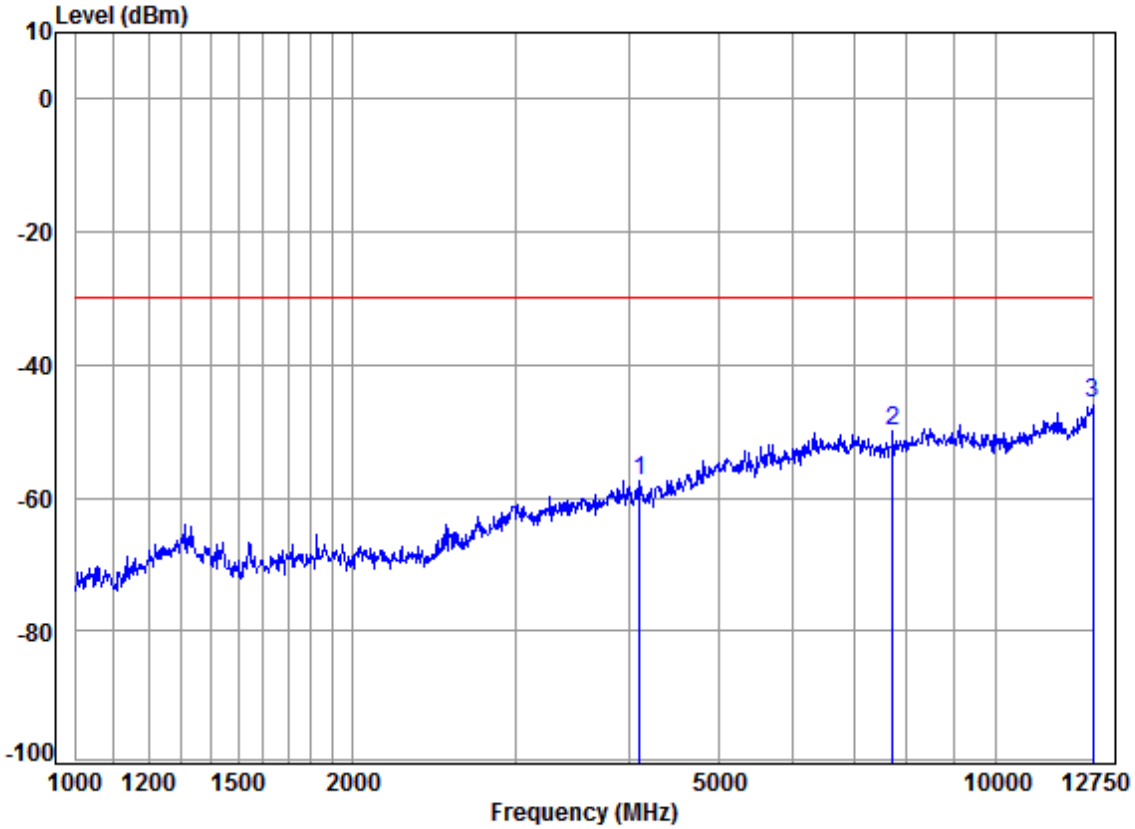
Mode:a; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2472 TX RSE
MEMO: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	6478.05	-49.89	-30.00	-19.89
2	8973.25	-48.99	-30.00	-18.99
3	12588.75	-46.87	-30.00	-16.87

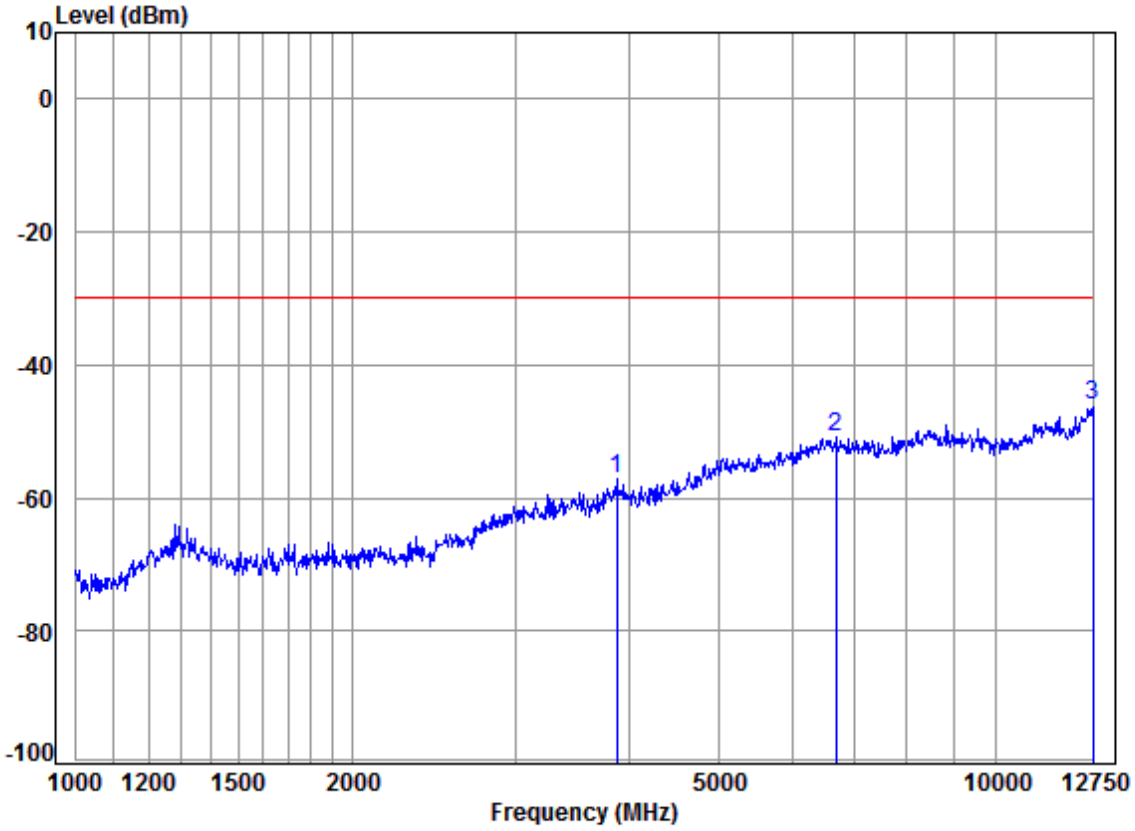
Mode:a; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2472 TX RSE
MEMO: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	4096.88	-57.44	-30.00	-27.44
2	7721.91	-49.91	-30.00	-19.91
3	12750.00	-45.69	-30.00	-15.69

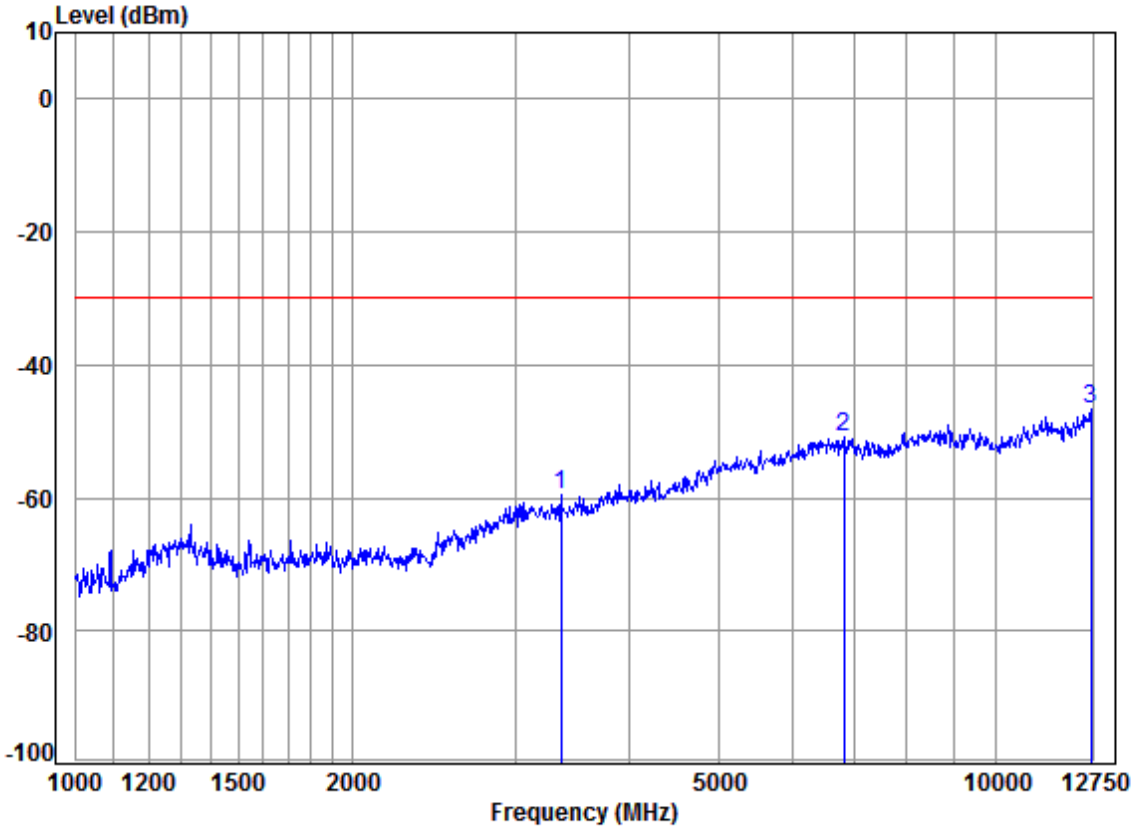
Mode:a; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2412 TX RSE
MEMO: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3873.75	-57.28	-30.00	-27.28
2	6696.01	-50.97	-30.00	-20.97
3	12750.00	-45.92	-30.00	-15.92

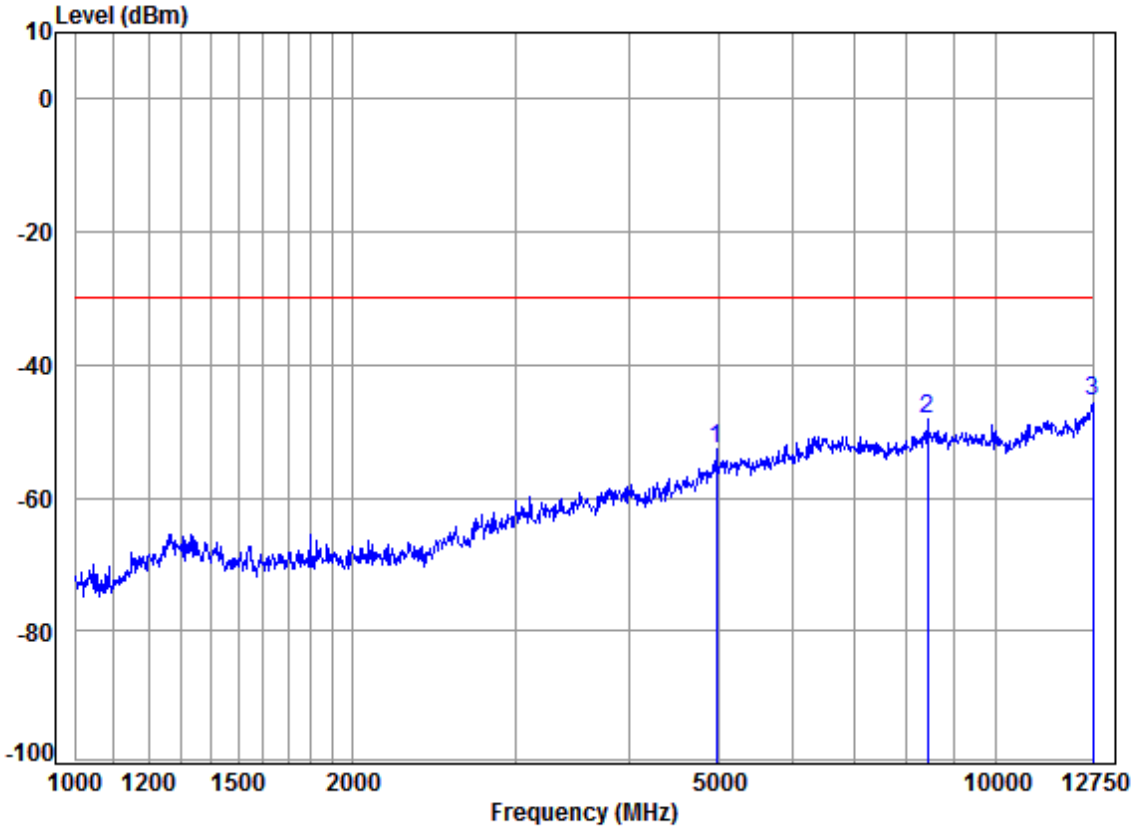
Mode:a; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2412 TX RSE
MEMO: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3367.66	-59.61	-30.00	-29.61
2	6833.77	-50.81	-30.00	-20.81
3	12685.25	-46.60	-30.00	-16.60

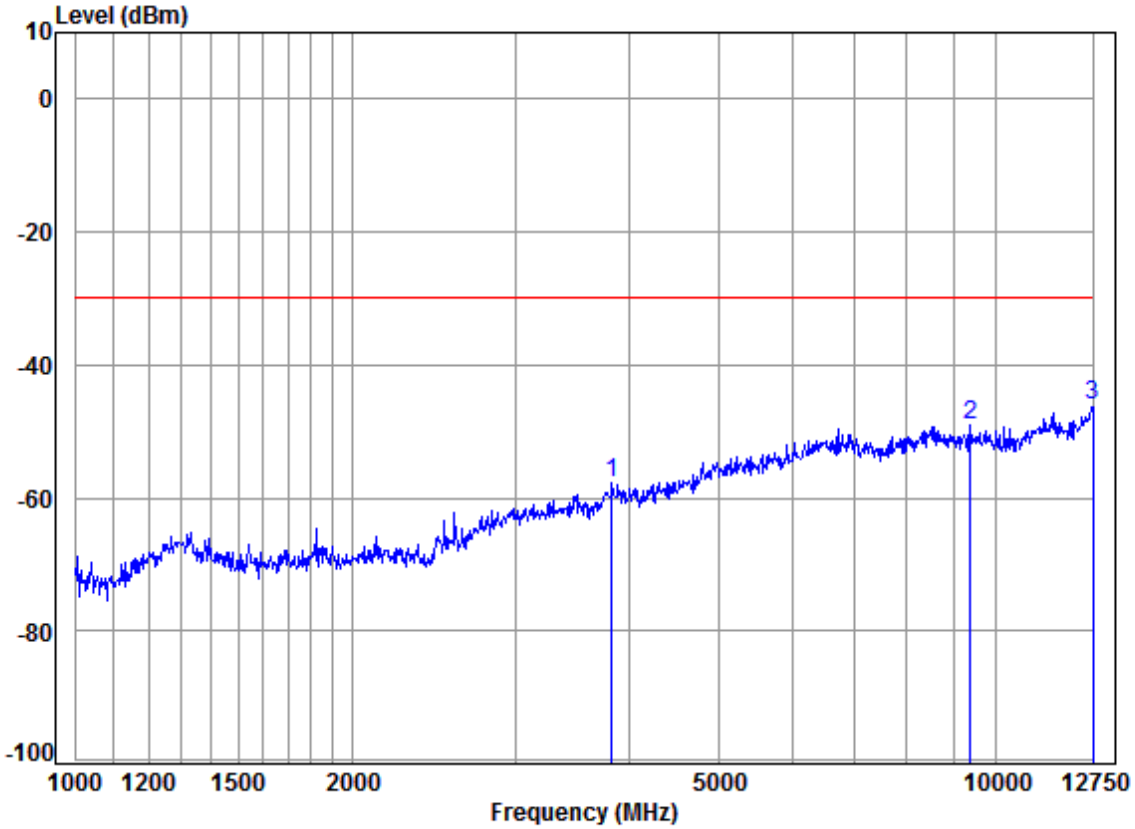
Mode:a; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2472 TX RSE
MEMO: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	4971.32	-52.77	-30.00	-22.77
2	8420.00	-48.10	-30.00	-18.10
3	12750.00	-45.47	-30.00	-15.47

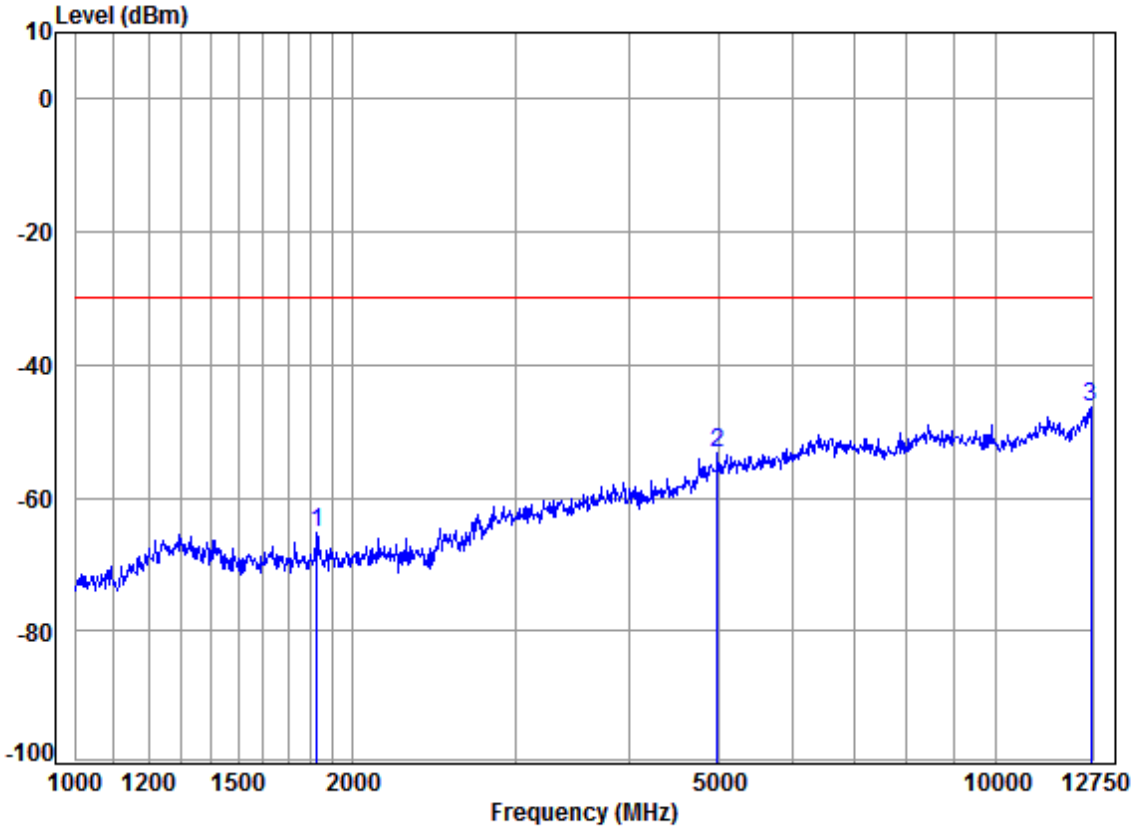
Mode:a; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2472 TX RSE
MEMO: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3824.76	-57.80	-30.00	-27.80
2	9370.08	-49.14	-30.00	-19.14
3	12750.00	-45.96	-30.00	-15.96

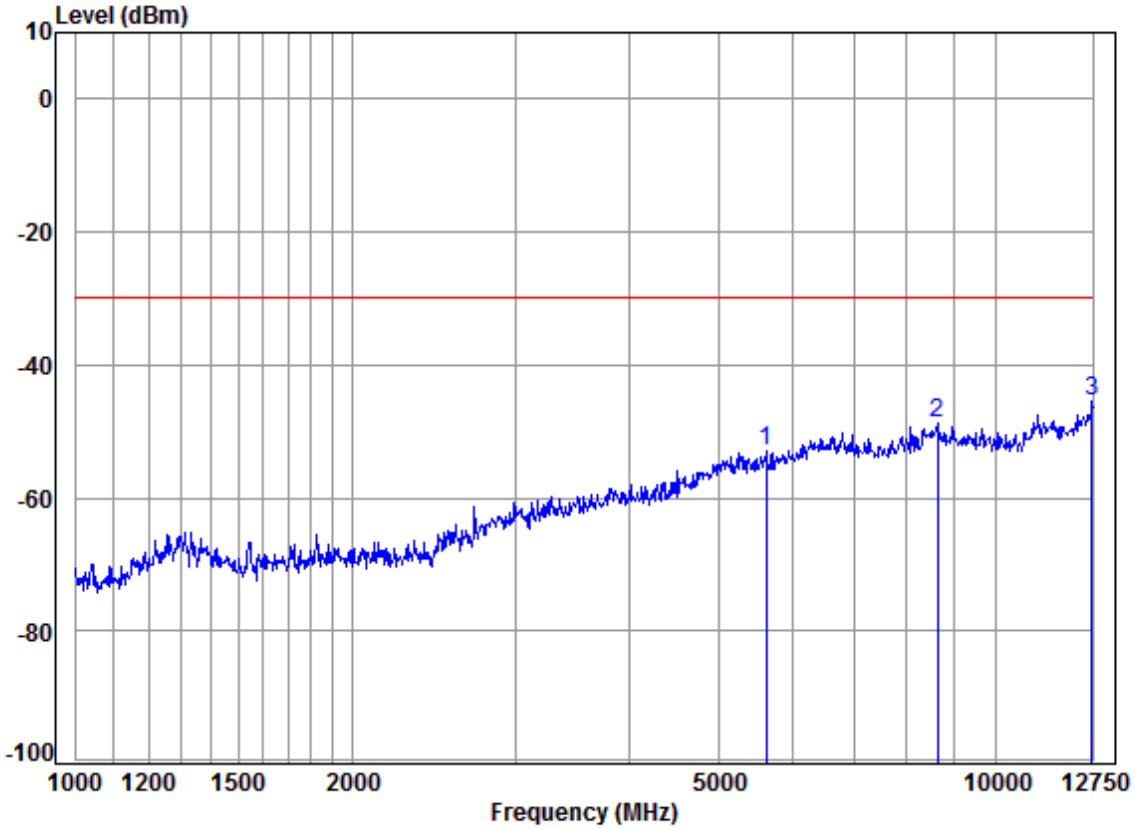
Mode:a; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2422 TX RSE
MEMO: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1828.13	-65.27	-30.00	-35.27
2	4983.99	-53.23	-30.00	-23.23
3	12685.25	-46.33	-30.00	-16.33

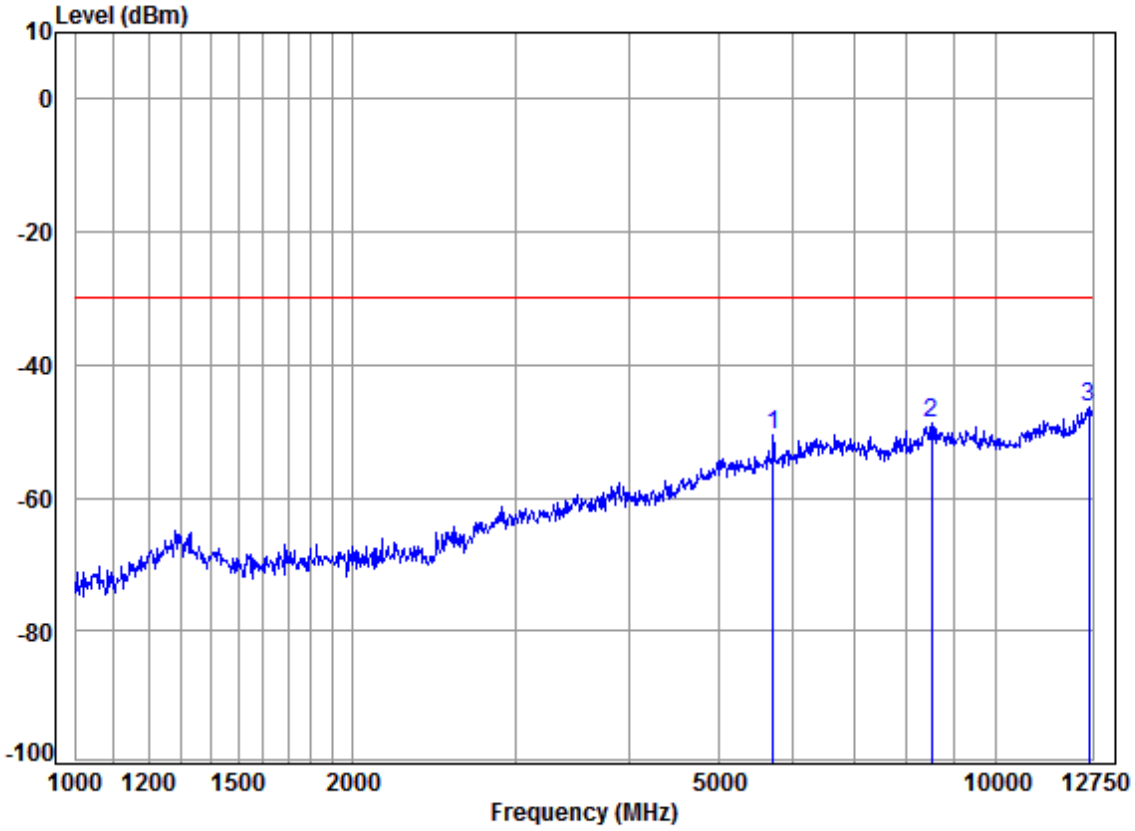
Mode:a; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2422 TX RSE
MEMO: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5631.73	-53.01	-30.00	-23.01
2	8637.08	-48.86	-30.00	-18.86
3	12717.59	-45.50	-30.00	-15.50

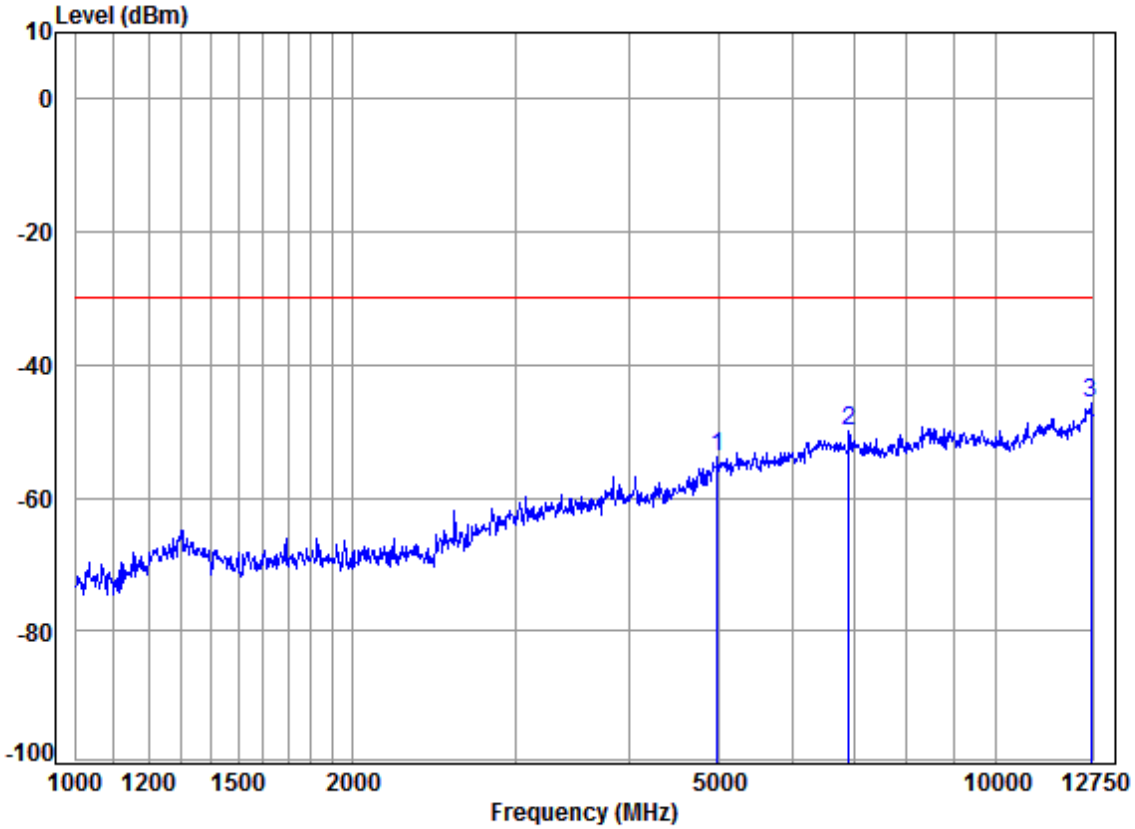
Mode:a; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2462 TX RSE
MEMO: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5732.97	-50.55	-30.00	-20.55
2	8506.17	-48.78	-30.00	-18.78
3	12620.84	-46.42	-30.00	-16.42

Mode:a; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:High



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2462 TX RSE
MEMO: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	4983.99	-53.83	-30.00	-23.83
2	6921.30	-49.94	-30.00	-19.94
3	12685.25	-45.68	-30.00	-15.68

7.7 Receiver spurious emissions

Test Requirement EN 300 328 Clause 4.3.2.10
Test Method: EN 300 328 V2.1.1 clause 5.4.10.2
Measurement Distance: 3m
Limit:

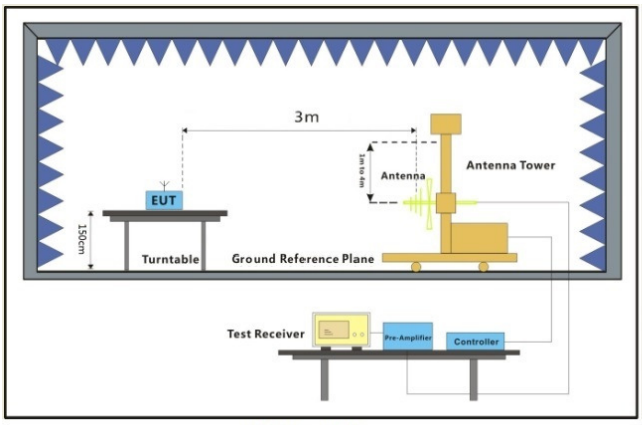
The spurious emissions of the receiver shall not exceed the values in tables in the indicated bands:

Frequency Range	Limit
25MHz to 1GHz	2nw(-57dBm)
Above 1GHz	20nw(-47dBm)

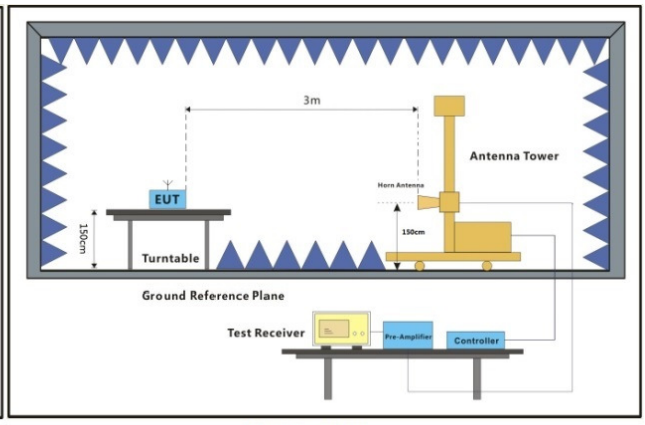
7.7.1 E.U.T. Operation

Operating Environment:
Temperature: 21.8 °C Humidity: 63.2 % RH Atmospheric Pressure: 1010 mbar
Test mode b: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.

7.7.2 Test Setup Diagram



30MHz-1GHz



Above 1GHz

7.7.3 Measurement Procedure and Data

1. Scan from 30MHz to 12.75GHz, find the maximum radiation frequency to measure.

2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT.

Below 1GHz 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. modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.

2) Rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

3) Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.

5) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions.

6) The output power into the substitution antenna was then measured.

7) Steps 5) and 6)were repeated with both antennas vertically polarized.

8) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

where:

Pg is the generator output power into the substitution antenna.

Above 1GHz test procedure as below:

1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber.

2) Calculate power in dBm by the following formula:

EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

EIRP=ERP+2.15dB

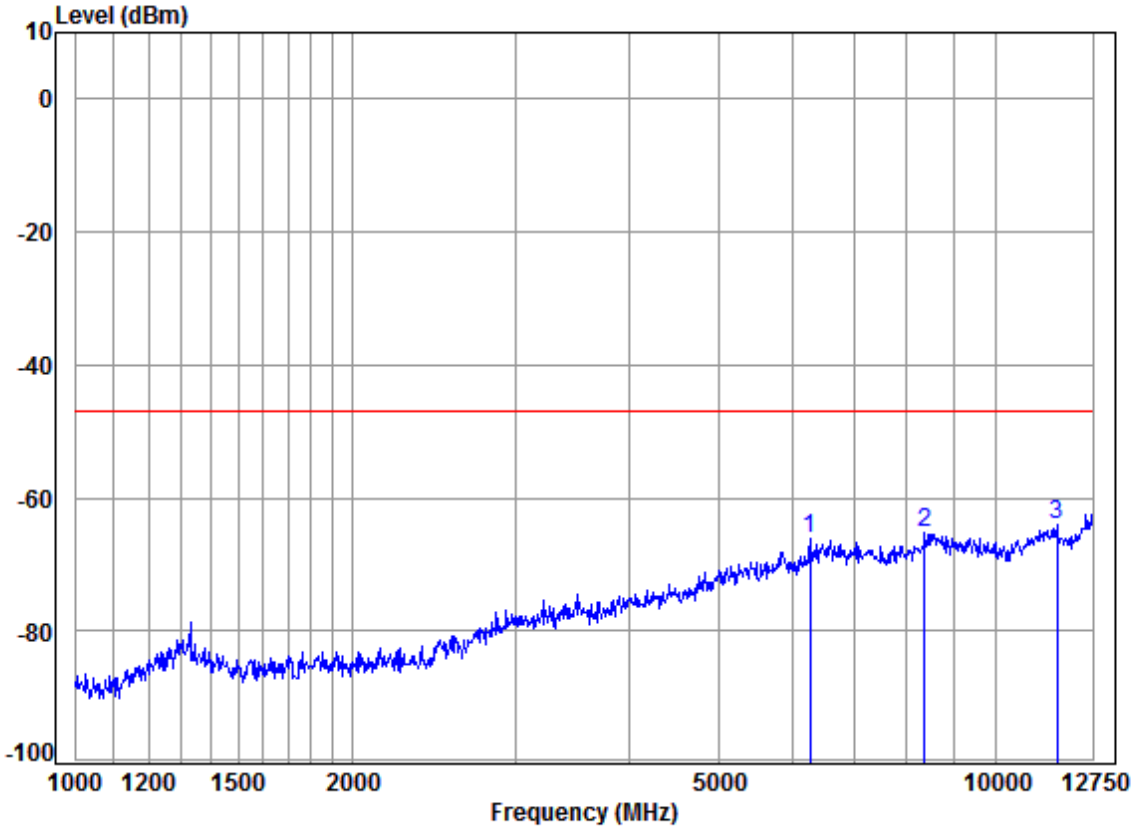
where:

Pg is the generator output power into the substitution antenna.

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.

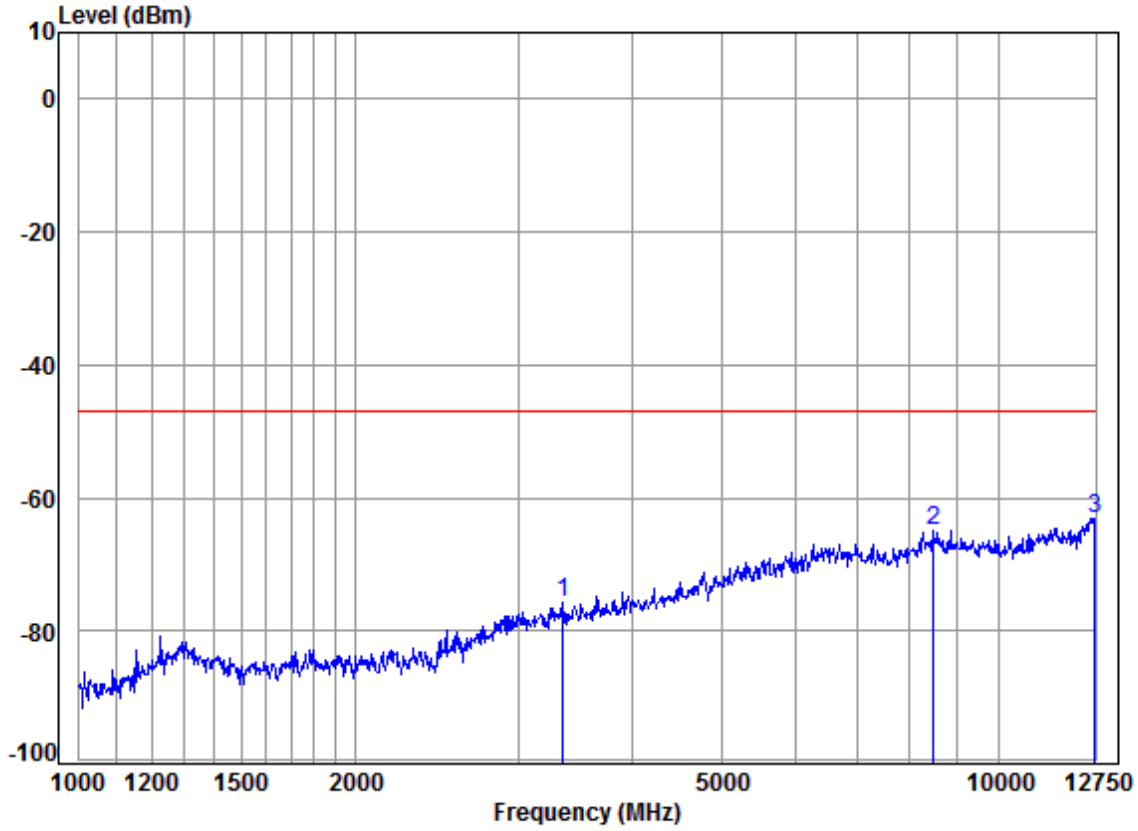
Mode:b; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2412 RX RSE
MEMO: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	6283.16	-66.25	-47.00	-19.25
2	8355.94	-65.20	-47.00	-18.20
3	11663.19	-64.06	-47.00	-17.06

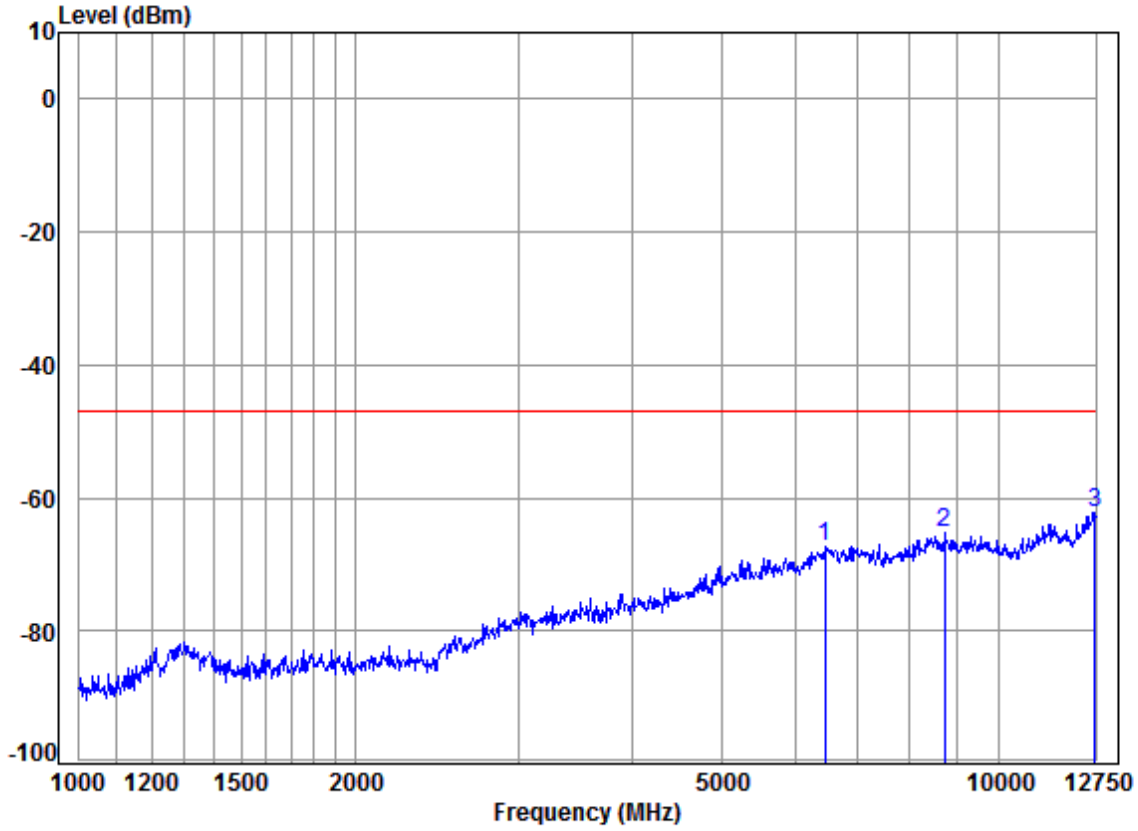
Mode:b; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2412 RX RSE
MEMO: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3359.10	-75.73	-47.00	-28.73
2	8484.55	-64.81	-47.00	-17.81
3	12717.59	-63.02	-47.00	-16.02

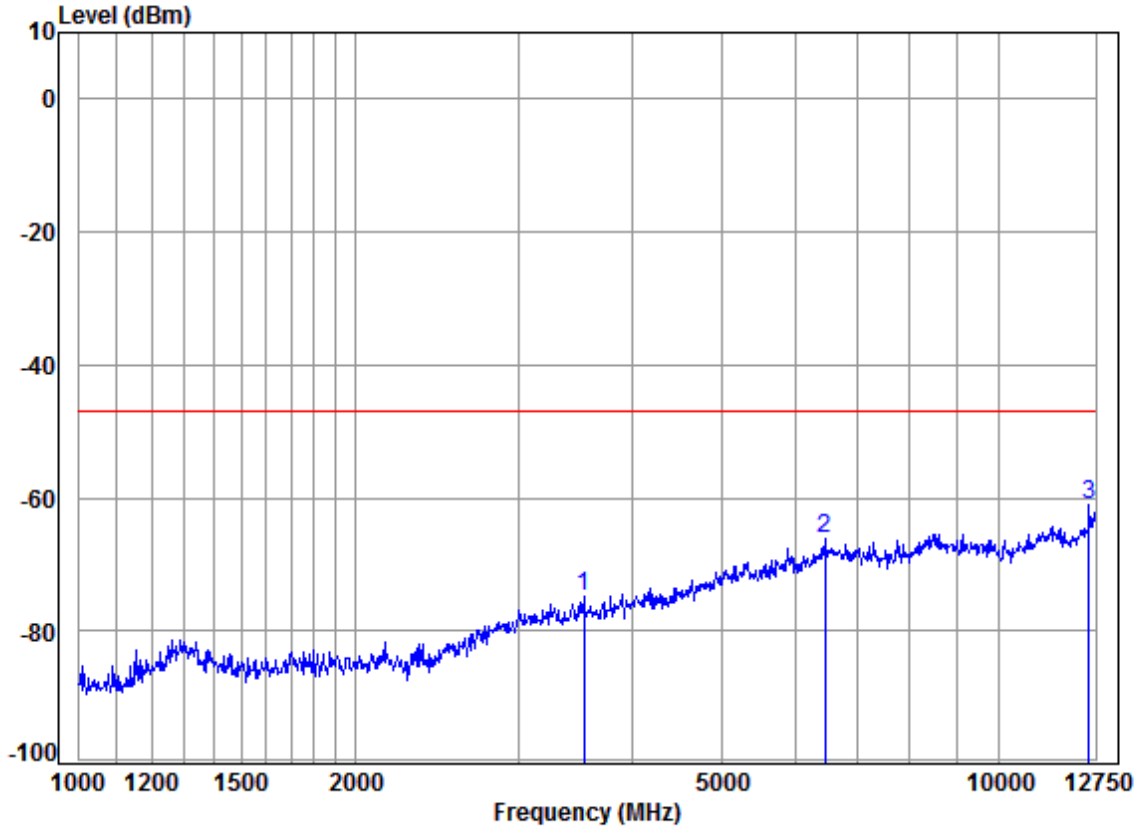
Mode:b; Polarization:Horizontal; Modulation:802.11b; bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2472 RX RSE
MEMO: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	6478.05	-67.34	-47.00	-20.34
2	8725.48	-65.11	-47.00	-18.11
3	12717.59	-62.24	-47.00	-15.24

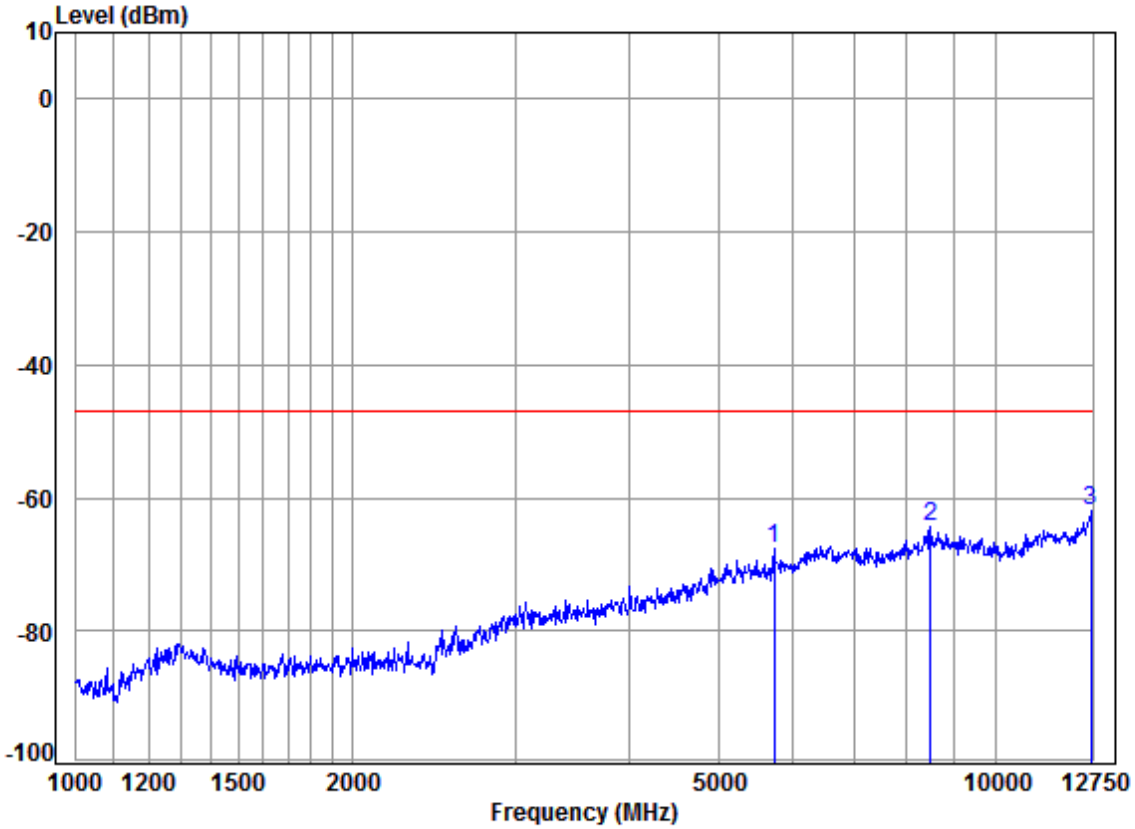
Mode:b; Polarization:Vertical; Modulation:802.11b; bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2472 RX RSE
MEMO: 2.4G WIFI 11B

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3543.55	-74.81	-47.00	-27.81
2	6478.05	-66.10	-47.00	-19.10
3	12524.82	-61.16	-47.00	-14.16

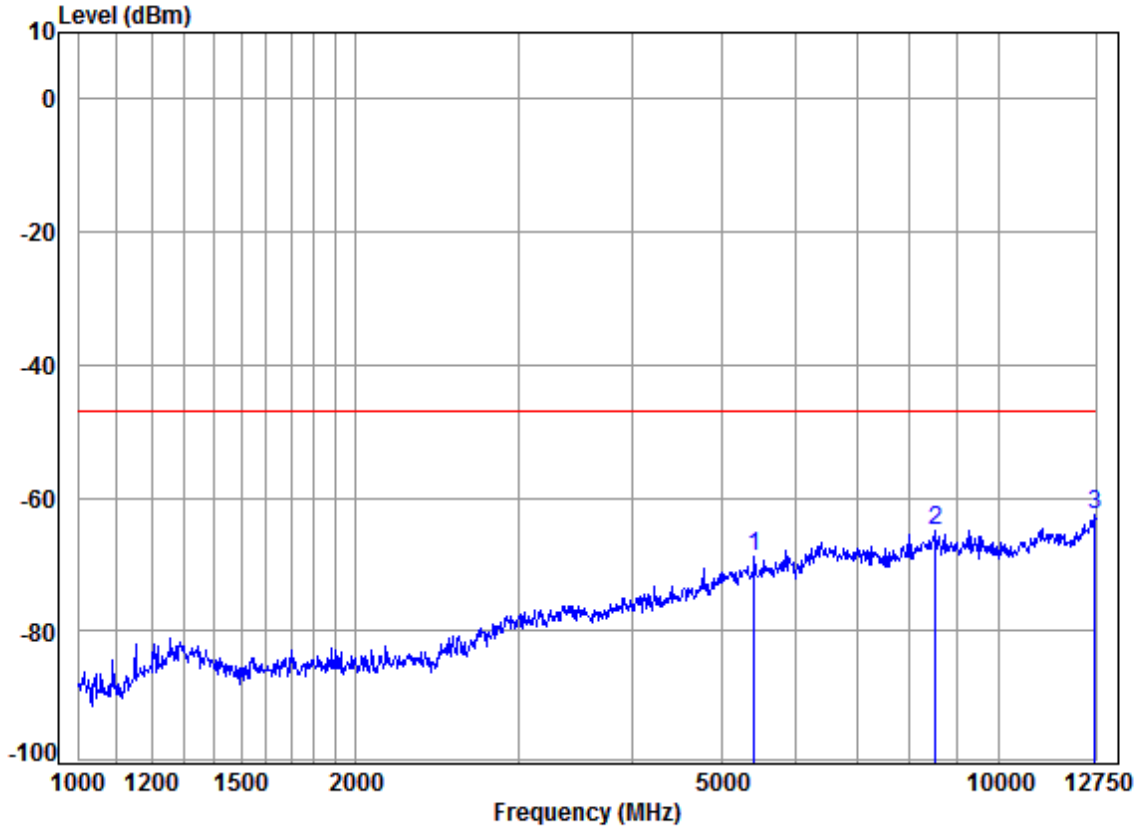
Mode:b; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2412 RX RSE
MEMO: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5747.59	-67.65	-47.00	-20.65
2	8484.55	-64.24	-47.00	-17.24
3	12685.25	-61.94	-47.00	-14.94

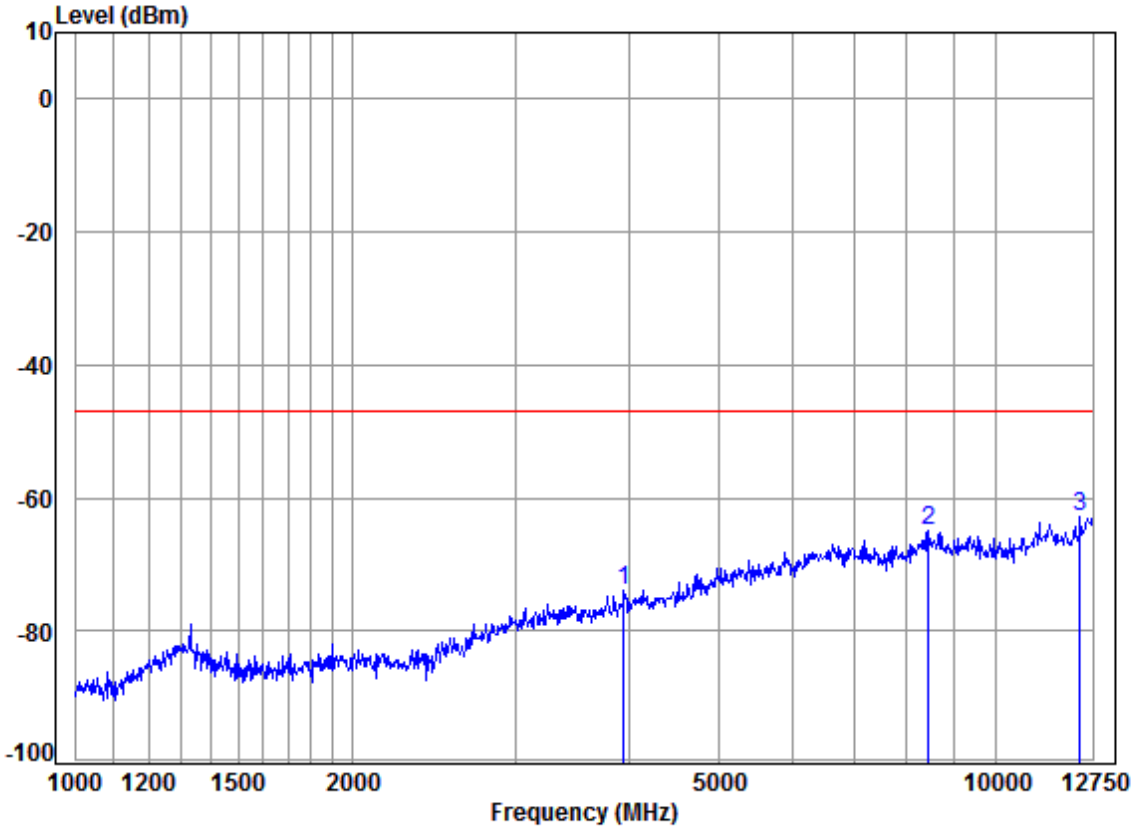
Mode:b; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2412 RX RSE
MEMO: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5420.74	-68.86	-47.00	-21.86
2	8527.85	-64.94	-47.00	-17.94
3	12717.59	-62.60	-47.00	-15.60

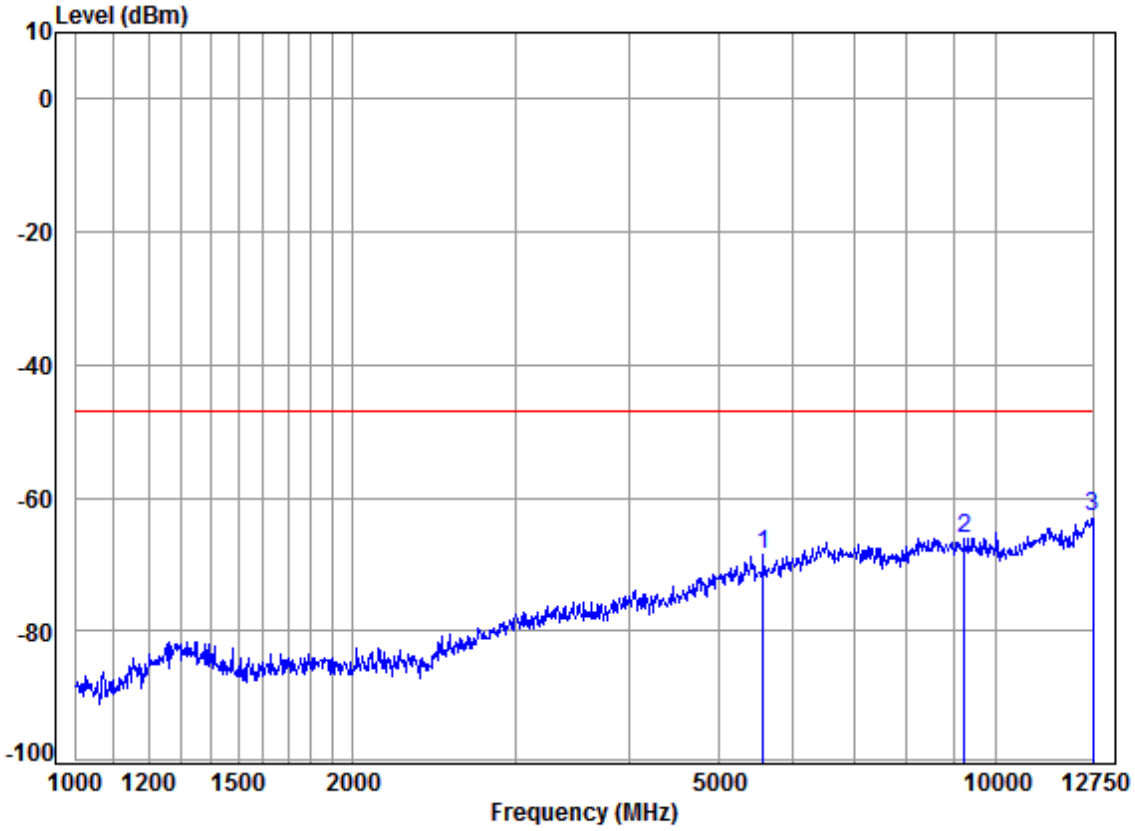
Mode:b; Polarization:Horizontal; Modulation:802.11g; bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2472 RX RSE
MEMO: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3943.39	-73.91	-47.00	-26.91
2	8441.46	-64.94	-47.00	-17.94
3	12334.98	-62.95	-47.00	-15.95

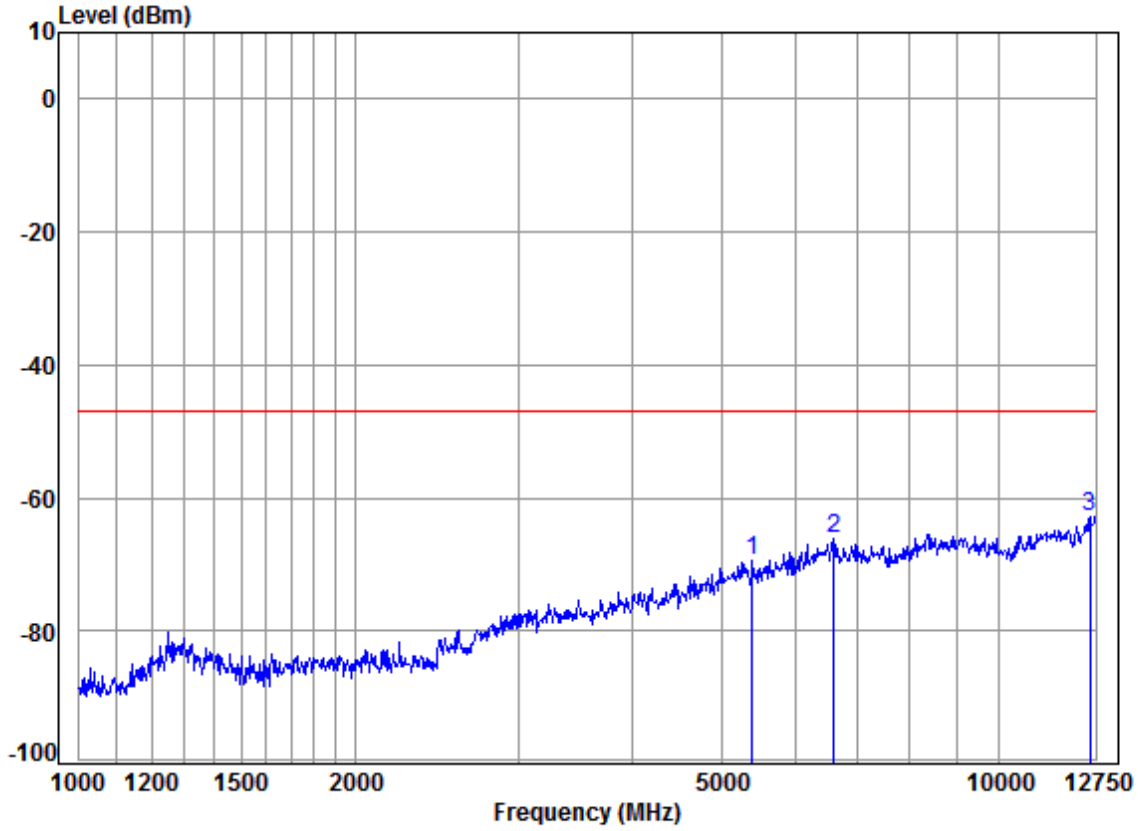
Mode:b; Polarization:Vertical; Modulation:802.11g; bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2472 RX RSE
MEMO: 2.4G WIFI 11G

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5588.88	-68.65	-47.00	-21.65
2	9251.58	-66.06	-47.00	-19.06
3	12750.00	-62.83	-47.00	-15.83

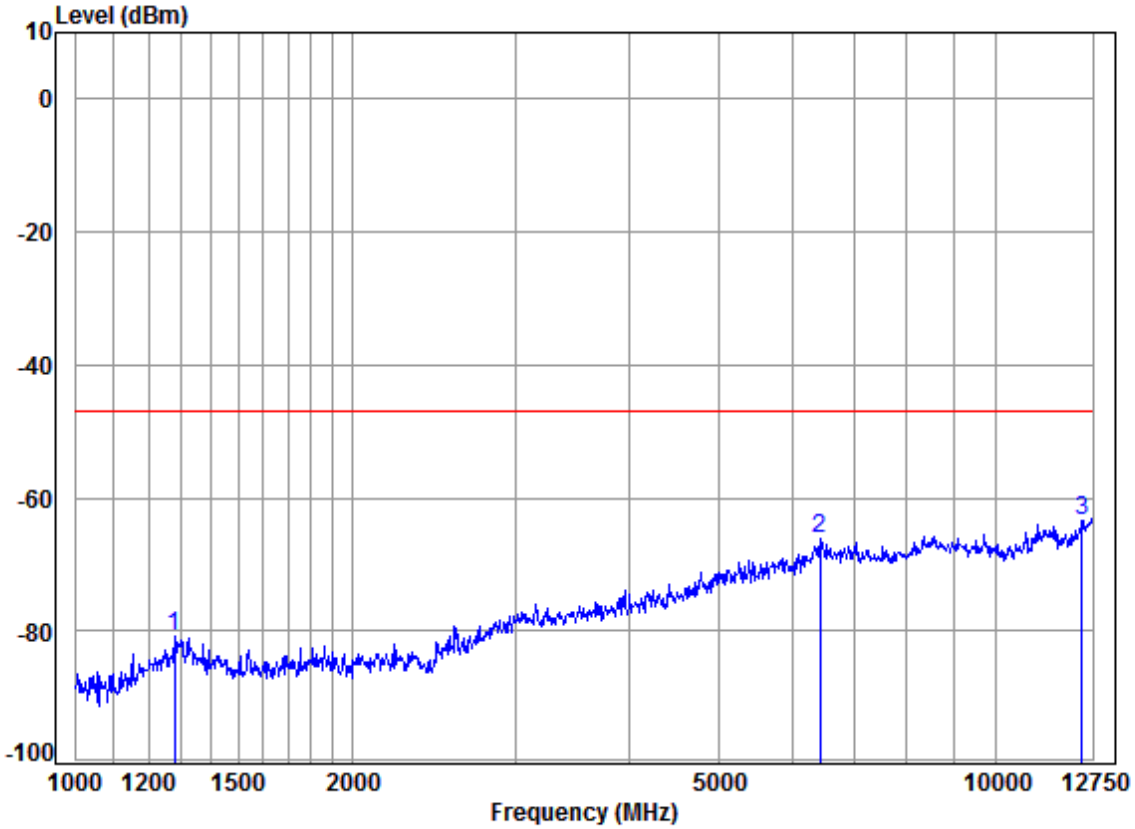
Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2412 RX RSE
MEMO: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5393.22	-69.31	-47.00	-22.31
2	6611.33	-66.03	-47.00	-19.03
3	12556.75	-62.87	-47.00	-15.87

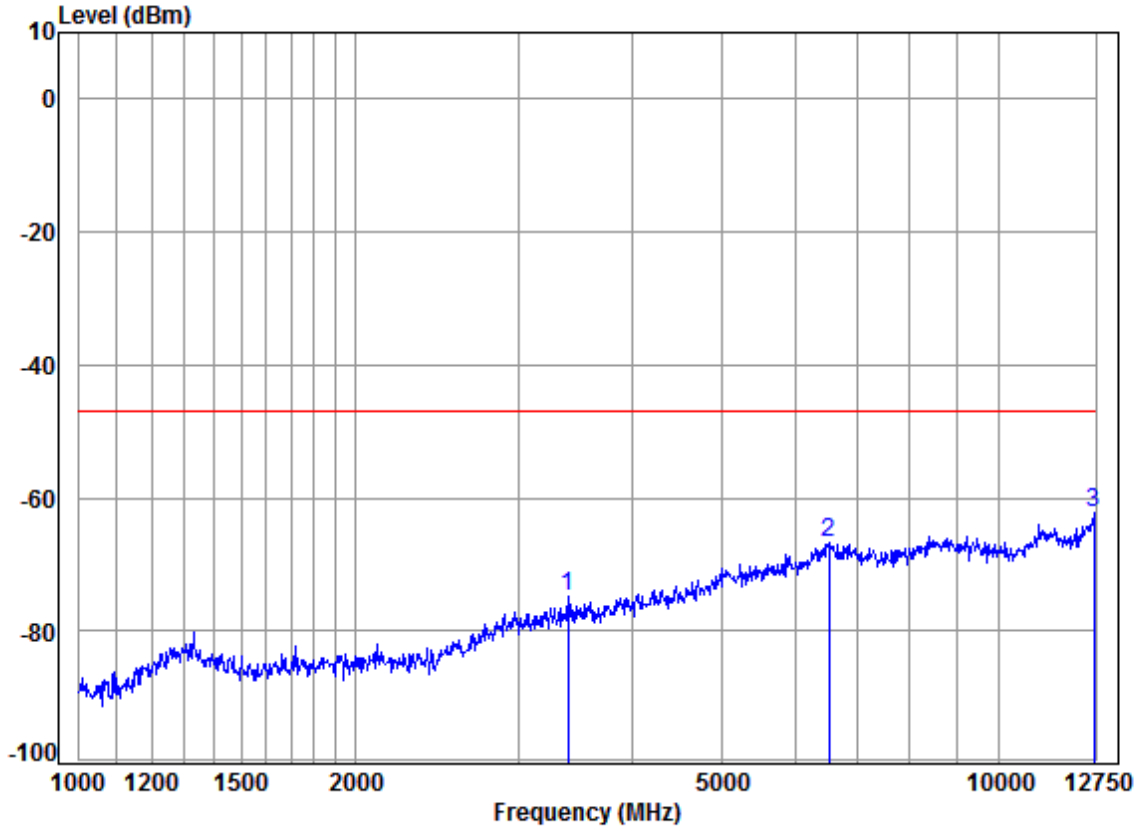
Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2412 RX RSE
MEMO: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	1280.07	-80.88	-47.00	-33.88
2	6445.16	-66.08	-47.00	-19.08
3	12397.94	-63.49	-47.00	-16.49

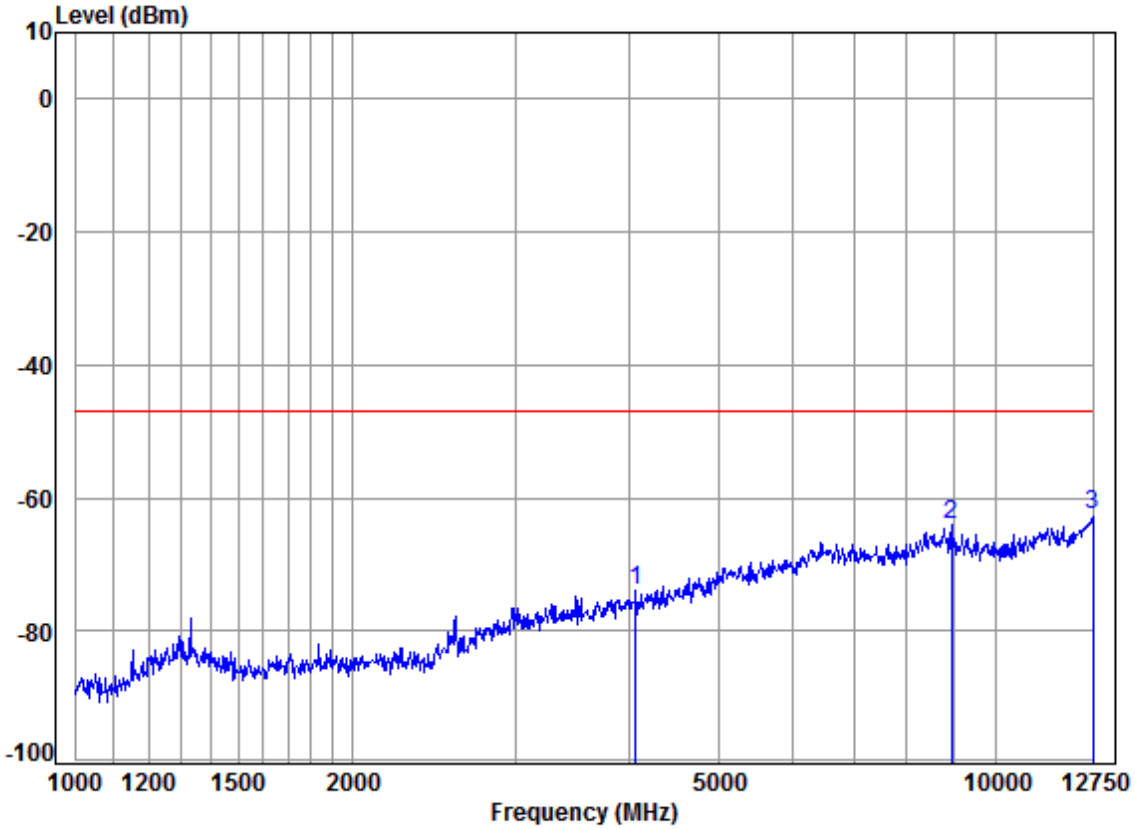
Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2472 RX RSE
MEMO: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3402.13	-74.74	-47.00	-27.74
2	6527.71	-66.71	-47.00	-19.71
3	12685.25	-62.33	-47.00	-15.33

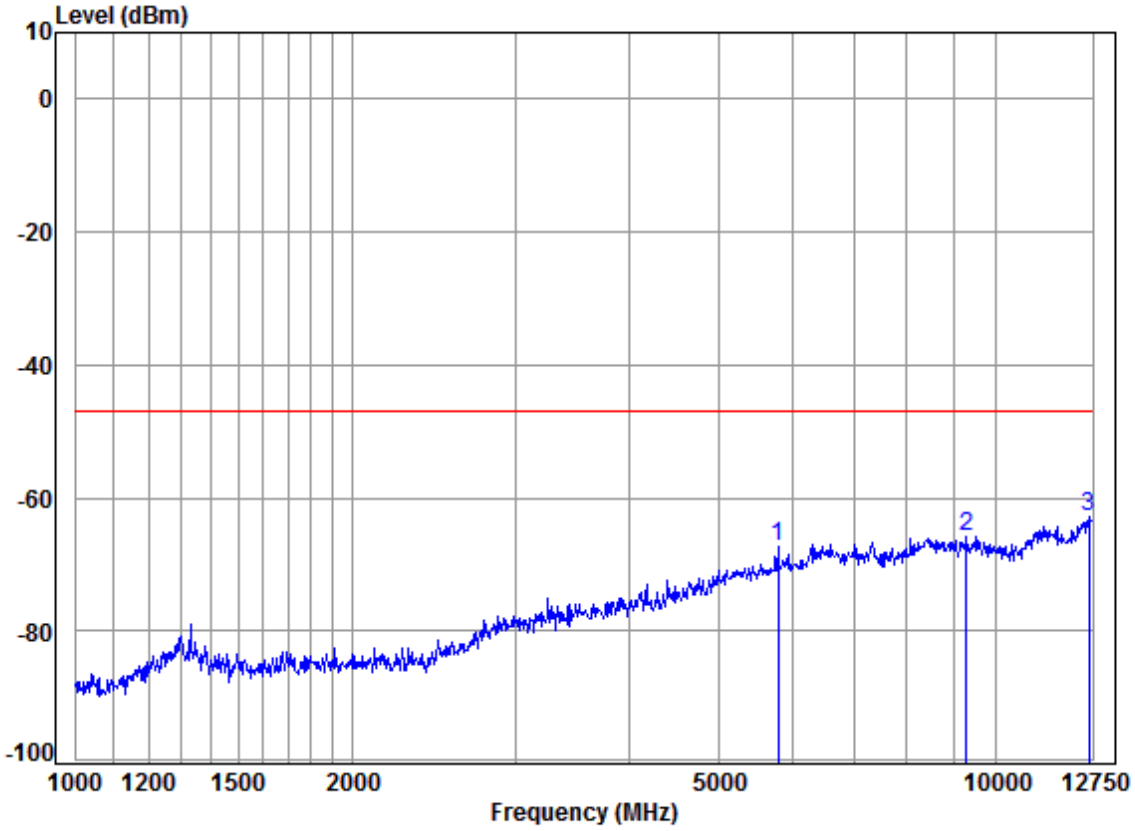
Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2472 RX RSE
MEMO: 2.4G WIFI 11N 20

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	4055.37	-73.82	-47.00	-26.82
2	8950.44	-64.17	-47.00	-17.17
3	12750.00	-62.51	-47.00	-15.51

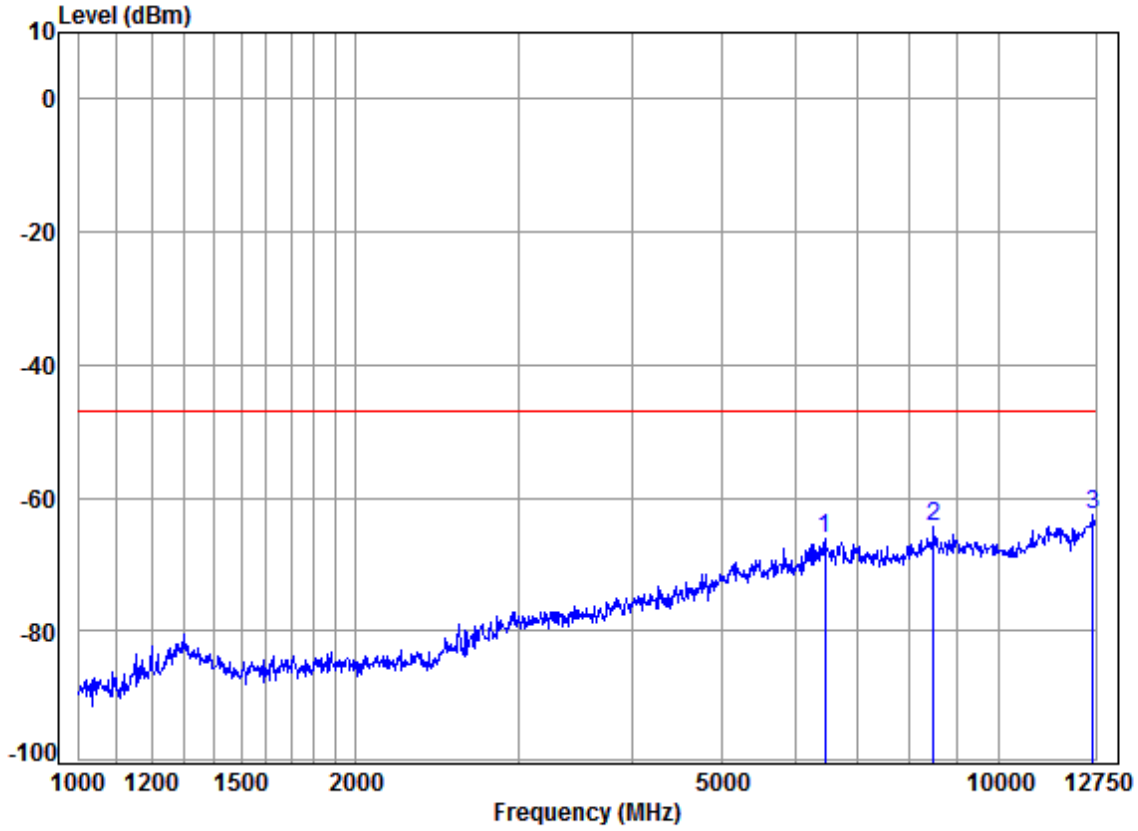
Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2422 RX RSE
MEMO: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	5791.65	-67.36	-47.00	-20.36
2	9298.80	-65.89	-47.00	-18.89
3	12620.84	-62.84	-47.00	-15.84

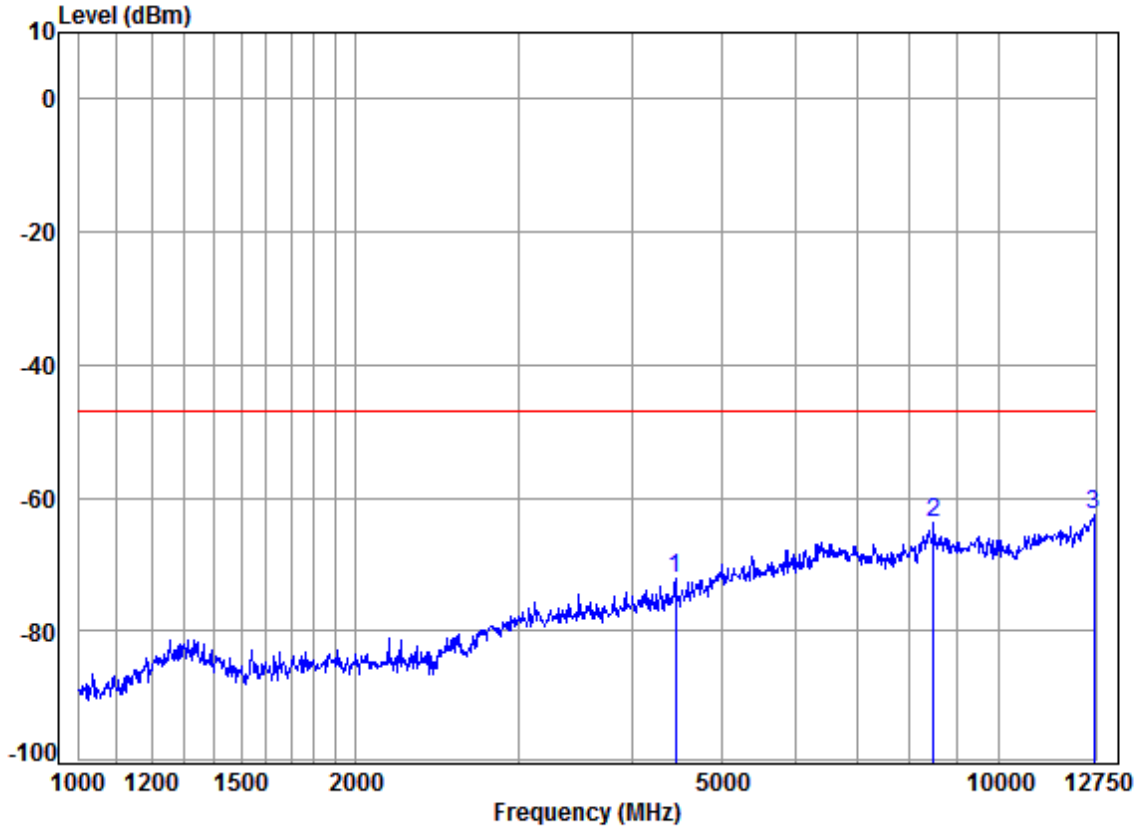
Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:Low



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2422 RX RSE
MEMO: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	6478.05	-66.27	-47.00	-19.27
2	8484.55	-64.33	-47.00	-17.33
3	12653.00	-62.54	-47.00	-15.54

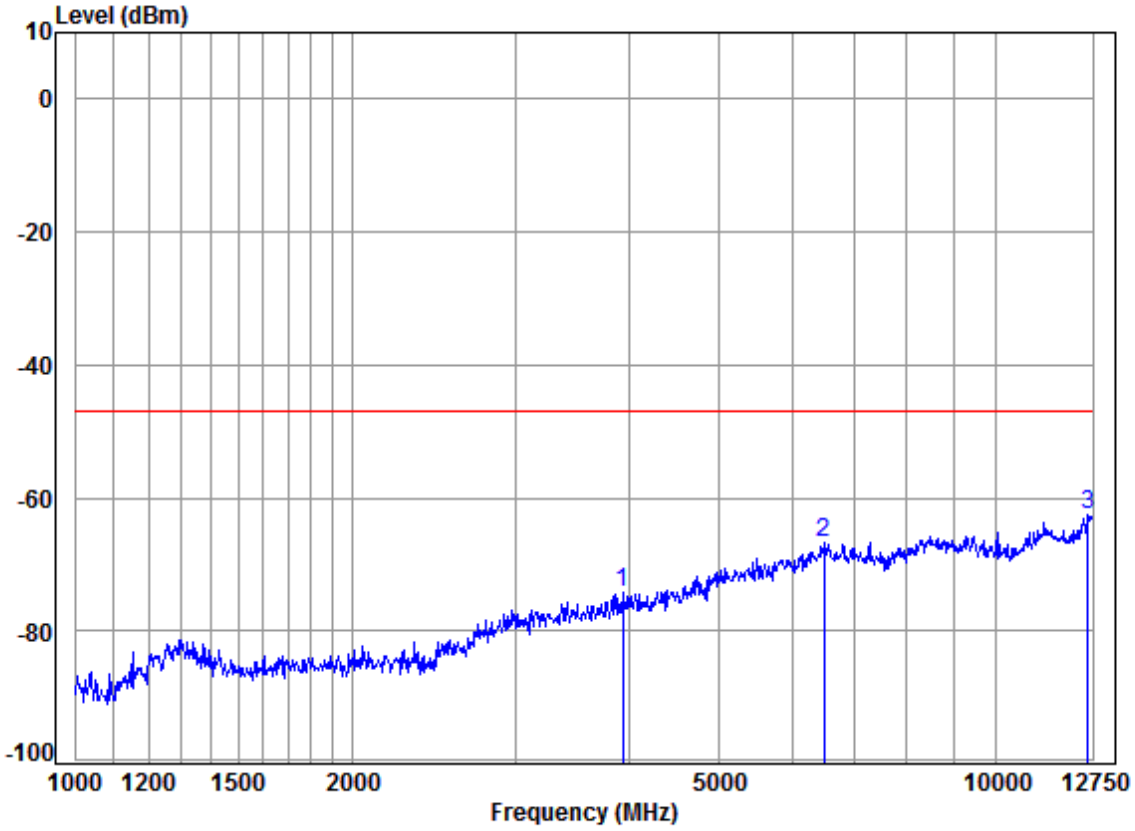
Mode:b; Polarization:Horizontal; Modulation:802.11n; bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL
Job No.: 08844CR
Test mode: 2462 RX RSE
MEMO: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	4455.89	-72.08	-47.00	-25.08
2	8484.55	-63.88	-47.00	-16.88
3	12685.25	-62.48	-47.00	-15.48

Mode:b; Polarization:Vertical; Modulation:802.11n; bandwidth:40MHz; Channel:High



Condition: 3m VERTICAL
Job No.: 08844CR
Test mode: 2462 RX RSE
MEMO: 2.4G WIFI 11N 40

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	3933.37	-74.13	-47.00	-27.13
2	6511.12	-66.64	-47.00	-19.64
3	12588.75	-62.63	-47.00	-15.63

7.8 Receiver Blocking

Test Requirement EN 300 328 Clause 4.3.2.11
Test Method: EN 300 328 V2.1.1 clause 5.4.11.2
Limit:

While maintaining the minimum performance criteria as, the blocking levels at specified frequency offsets shall be equal to or greater than the limits defined for the applicable receiver category provided in below table.

Receiver Blocking parameters for Receiver Category 1 equipment			
Wanted signal mean power from companion device (dBm)	**Blocking signal frequency (MHz)**	**Blocking signal power (dBm) (see note 2)**	**Type of blocking signal**
Pmin + 6 dB	2380 2503.5	-53	CW
Pmin + 6 dB	2300 2330 2360	-47	CW
Pmin + 6 dB	2523.5 2553.5 2583.5 2613.5 2643.5 2673.5	-47	CW
NOTE 1: Pmin is the minimum level of wanted signal (in dBm) required to meet the minimum performance criteria in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Receiver Blocking parameters for Receiver Category 2 equipment			
Wanted signal mean power from companion device (dBm)	**Blocking signal frequency (MHz)**	**Blocking signal power (dBm) (see note 2)**	**Type of blocking signal**
Pmin + 6 dB	2380 2503.5	-57	CW
Pmin + 6 dB	2300 2583.5	-47	CW
NOTE 1: Pmin is the minimum level of wanted signal (in dBm) required to meet the minimum performance criteria as defined in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Receiver Blocking parameters for Receiver Category 3 equipment			
Wanted signal mean power from companion device (dBm)	**Blocking signal frequency (MHz)**	**Blocking signal power (dBm) (see note 2)**	**Type of blocking signal**
Pmin + 12 dB	2380 2503.5	-57	CW
Pmin + 12 dB	2300 2583.5	-47	CW
NOTE 1: Pmin is the minimum level of wanted signal (in dBm) required to meet the minimum performance criteria as defined in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

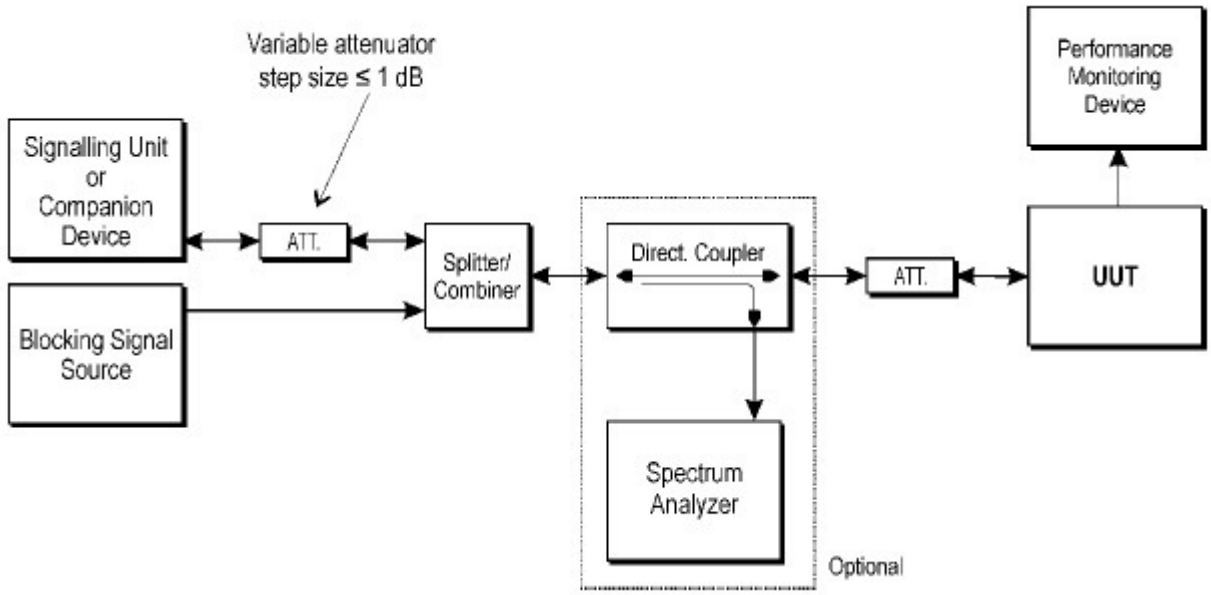
7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 46 % RH Atmospheric Pressure: 1010 mbar

Test mode c:Normal operating_Keep the EUT communication with the companion device.

7.8.2 Test Setup Diagram

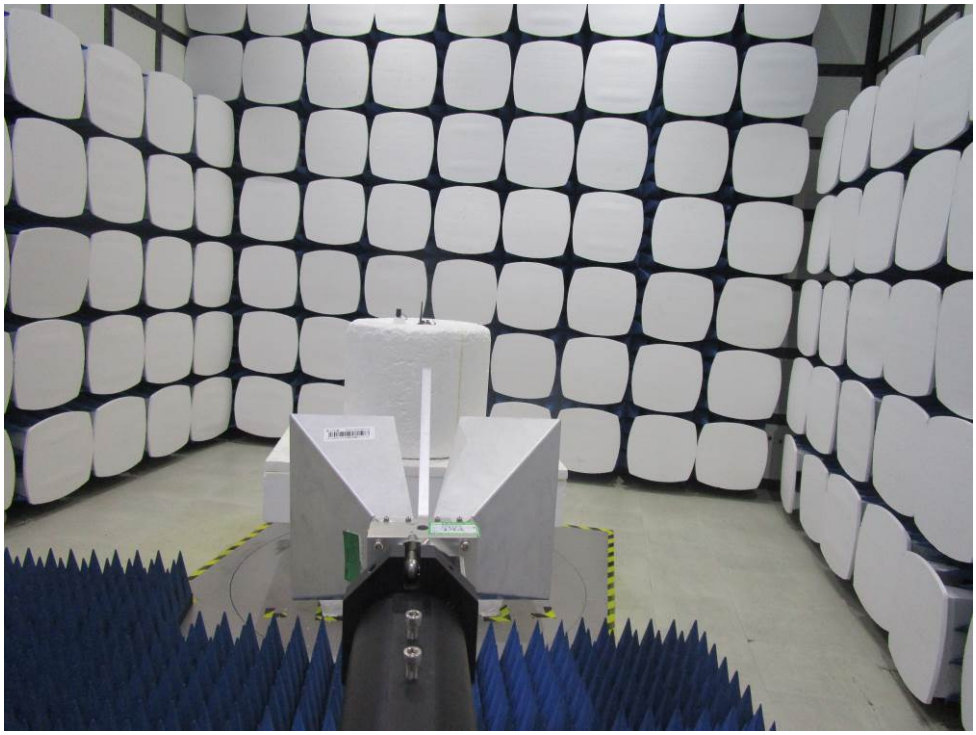


7.8.3 Measurement Procedure and Data

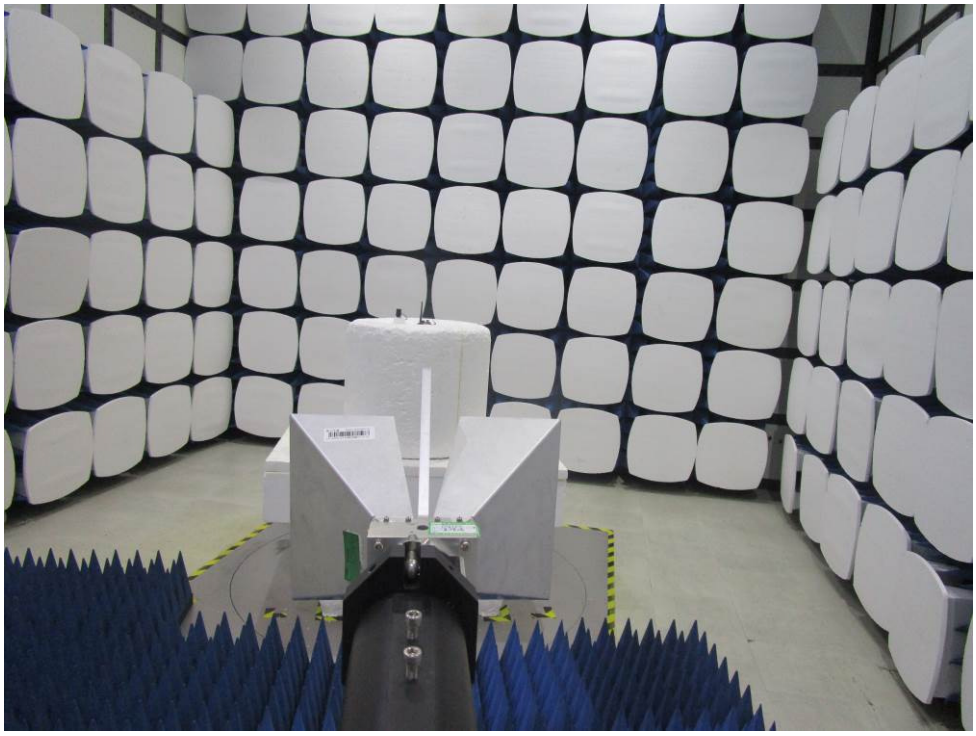
Receiver Category	Test Channel	Pmin (dBm)	Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	PER (%)	Limit (%)	Result
1	Lowest	-82	Pmin + 6 dB	2380	-53	4.3	10	Pass
				2300	-47	4.5	10	Pass
				2330	-47	3.6	10	Pass
				2360	-47	5.4	10	Pass
	Highest	-82	Pmin + 6 dB	2503.5	-53	4.6	10	Pass
				2523.5	-47	3.8	10	Pass
				2553.5	-47	6.2	10	Pass
				2583.5	-47	7.3	10	Pass
				2613.5	-47	4.9	10	Pass
				2643.5	-47	6.5	10	Pass
				2673.5	-47	5.2	10	Pass

8 Photographs

8.1 Transmitter unwanted emissions in the spurious domain Test Setup



8.2 Receiver spurious emissions Test Setup



8.3 EUT Constructional Details (EUT Photos)

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1810008844CR.

9 Appendix

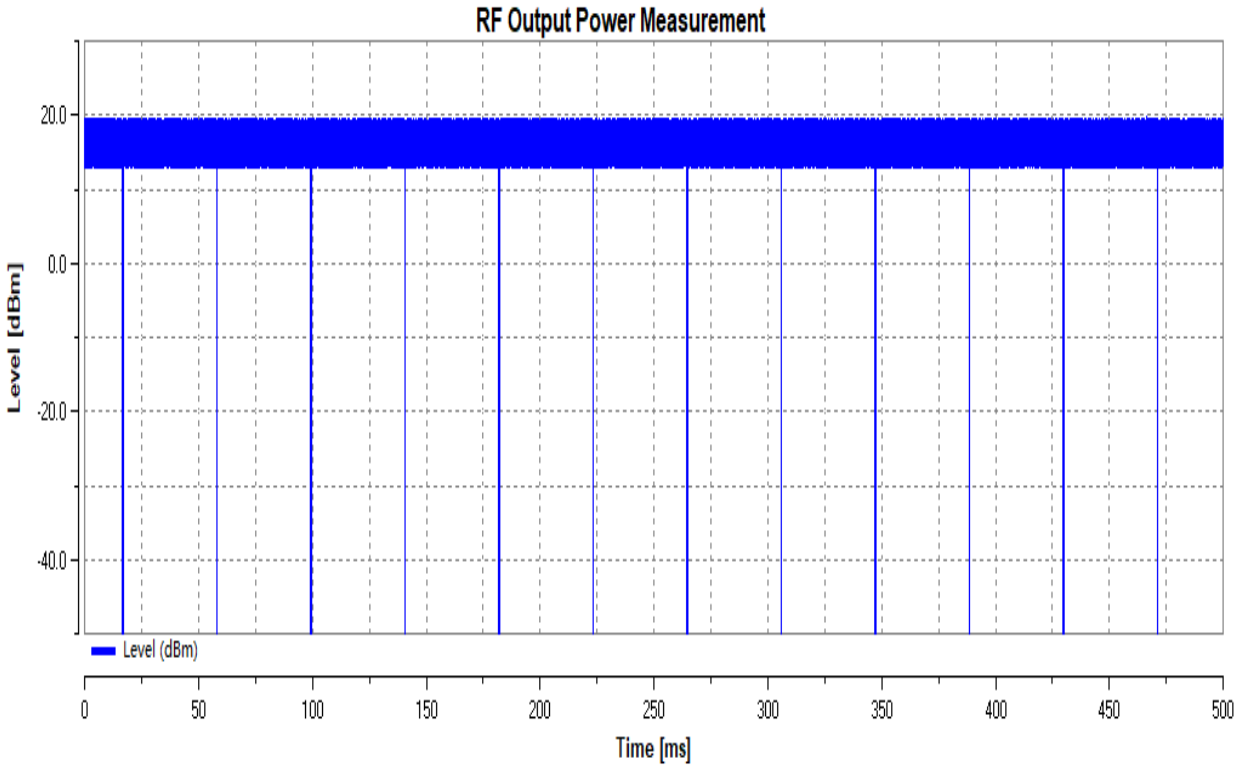
9.1 Appendix 300328

1.RF Output Power

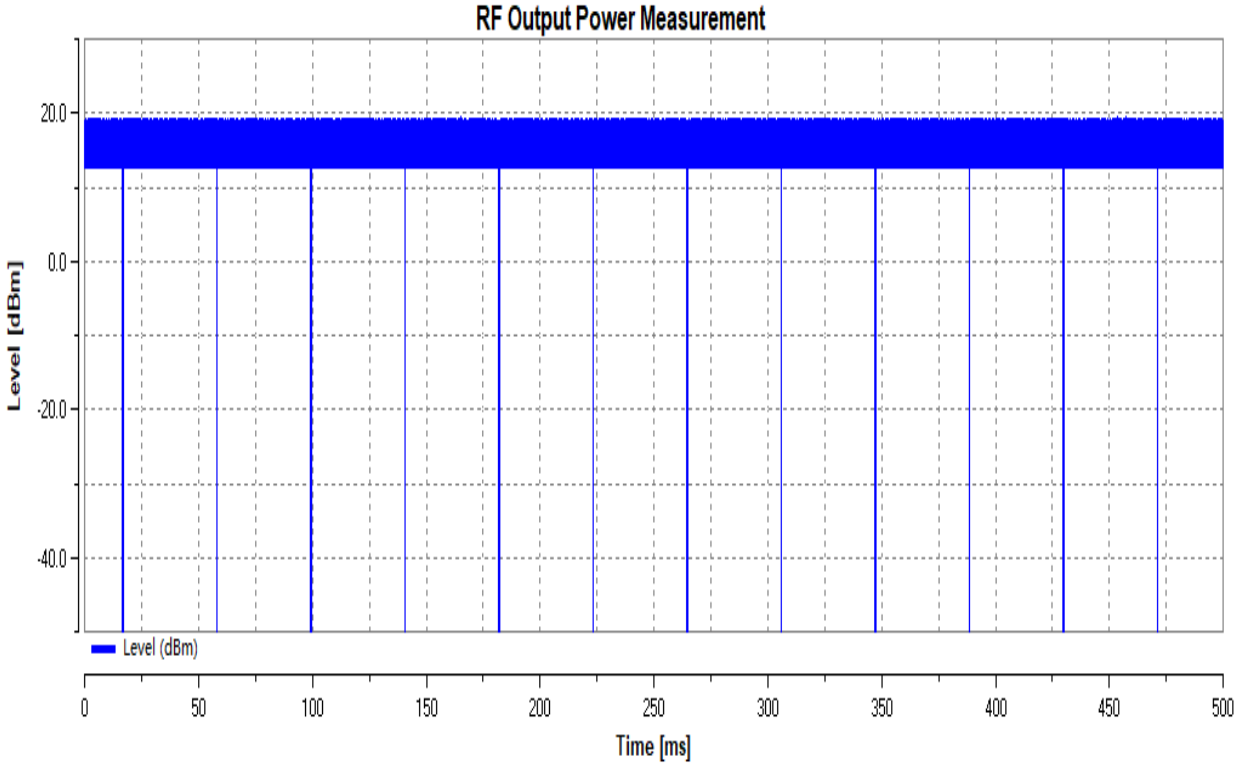
Test Condition	Test Mode	Test Channel	Ant	Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
TNVN	11B	2412	Ant1	16.75	18.05	<=20	PASS
TNVN	11B	2442	Ant1	16.46	17.76	<=20	PASS
TNVN	11B	2472	Ant1	15.72	17.02	<=20	PASS
TNVN	11G	2412	Ant1	16.11	17.41	<=20	PASS
TNVN	11G	2442	Ant1	15.94	17.24	<=20	PASS
TNVN	11G	2472	Ant1	14.07	15.37	<=20	PASS
TNVN	11N20SISO	2412	Ant1	16.1	17.4	<=20	PASS
TNVN	11N20SISO	2442	Ant1	14.77	16.07	<=20	PASS
TNVN	11N20SISO	2472	Ant1	15.21	16.51	<=20	PASS
TNVN	11N40SISO	2422	Ant1	15.6	16.9	<=20	PASS
TNVN	11N40SISO	2442	Ant1	15.7	17	<=20	PASS
TNVN	11N40SISO	2462	Ant1	14.31	15.61	<=20	PASS
TLVN	11B	2412	Ant1	16.78	18.08	<=20	PASS
TLVN	11B	2442	Ant1	16.66	17.96	<=20	PASS
TLVN	11B	2472	Ant1	16.05	17.35	<=20	PASS
TLVN	11G	2412	Ant1	16.03	17.33	<=20	PASS
TLVN	11G	2442	Ant1	16.25	17.55	<=20	PASS
TLVN	11G	2472	Ant1	14.15	15.45	<=20	PASS
TLVN	11N20SISO	2412	Ant1	15.92	17.22	<=20	PASS
TLVN	11N20SISO	2442	Ant1	15.08	16.38	<=20	PASS
TLVN	11N20SISO	2472	Ant1	15.03	16.33	<=20	PASS
TLVN	11N40SISO	2422	Ant1	14.38	15.68	<=20	PASS
TLVN	11N40SISO	2442	Ant1	15	16.3	<=20	PASS
TLVN	11N40SISO	2462	Ant1	14.52	15.82	<=20	PASS
THVN	11B	2412	Ant1	16.61	17.91	<=20	PASS
THVN	11B	2442	Ant1	16.76	18.06	<=20	PASS
THVN	11B	2472	Ant1	15.67	16.97	<=20	PASS
THVN	11G	2412	Ant1	16.86	18.16	<=20	PASS

THVN	11G	2442	Ant1	16.25	17.55	<=20	PASS
THVN	11G	2472	Ant1	14.12	15.42	<=20	PASS
THVN	11N20SISO	2412	Ant1	15.97	17.27	<=20	PASS
THVN	11N20SISO	2442	Ant1	14.78	16.08	<=20	PASS
THVN	11N20SISO	2472	Ant1	15.04	16.34	<=20	PASS
THVN	11N40SISO	2422	Ant1	15.61	16.91	<=20	PASS
THVN	11N40SISO	2442	Ant1	16.1	17.4	<=20	PASS
THVN	11N40SISO	2462	Ant1	14.3	15.6	<=20	PASS

RF Output Power_TNVN_11B_2412_Ant1



RF Output Power_TNVN_11B_2442_Ant1



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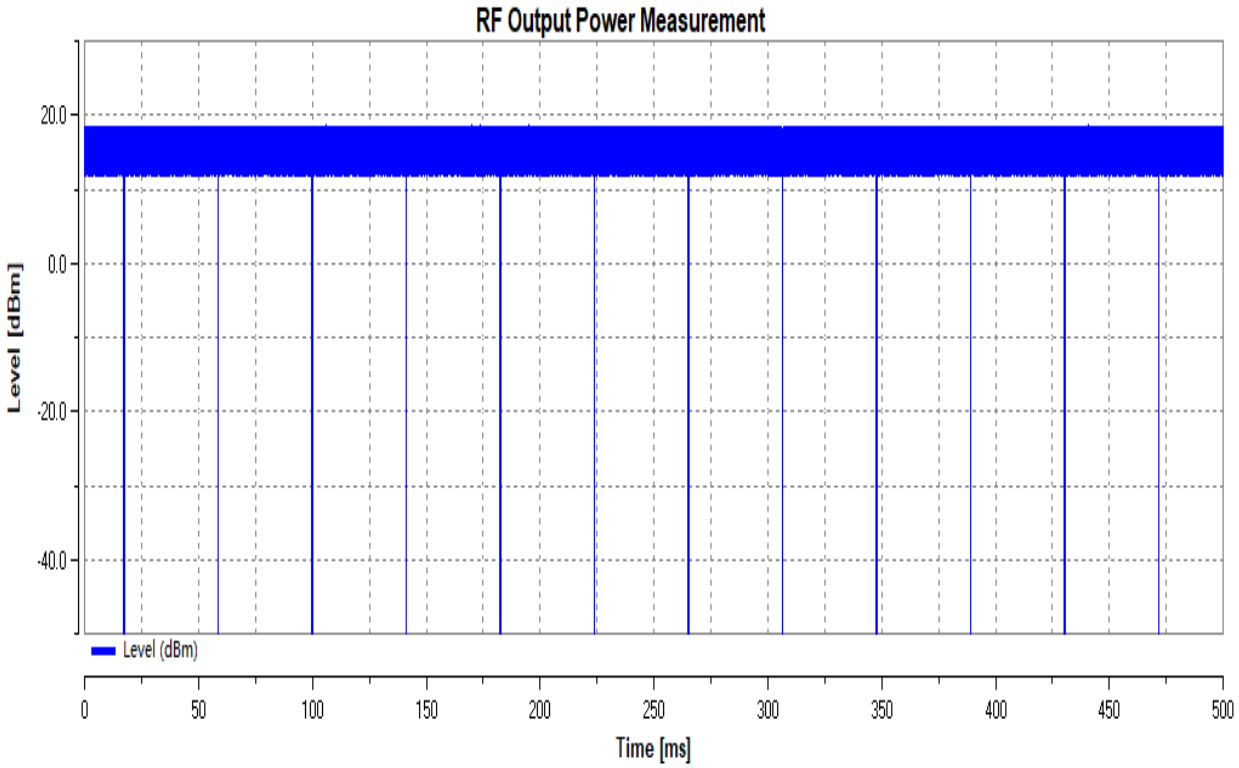

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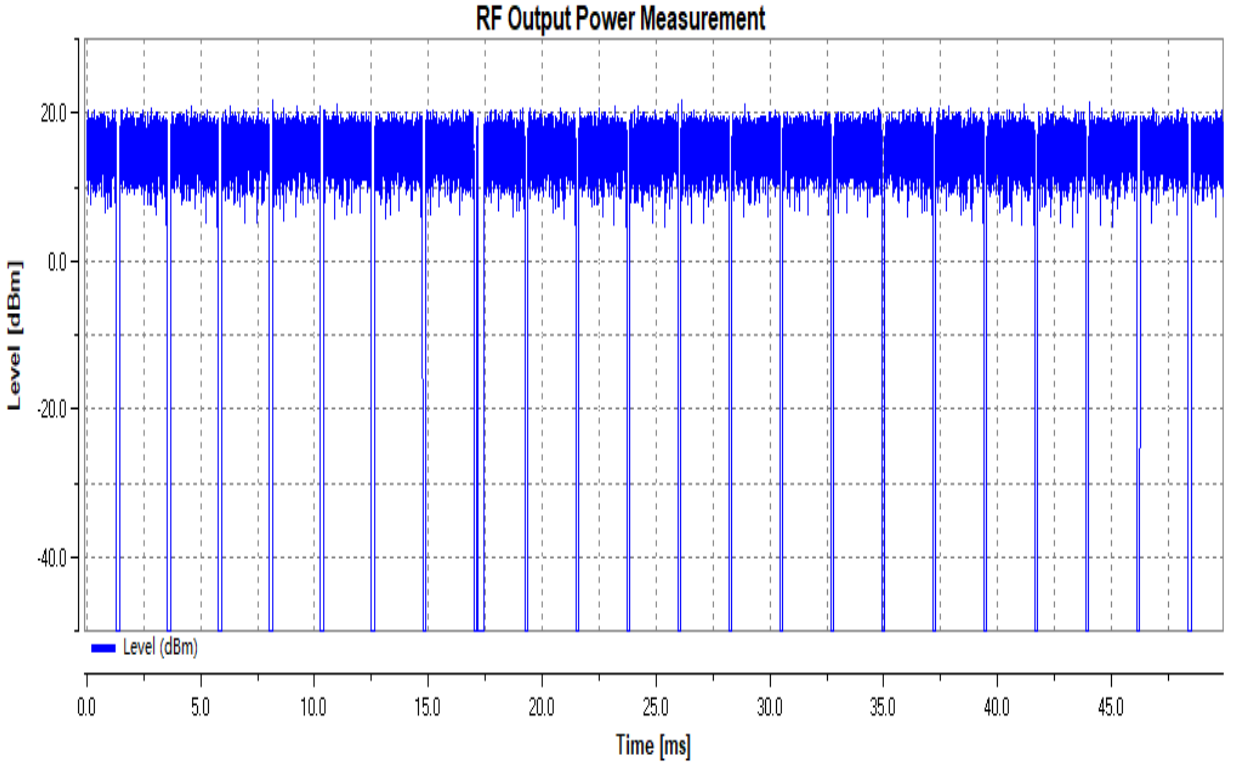
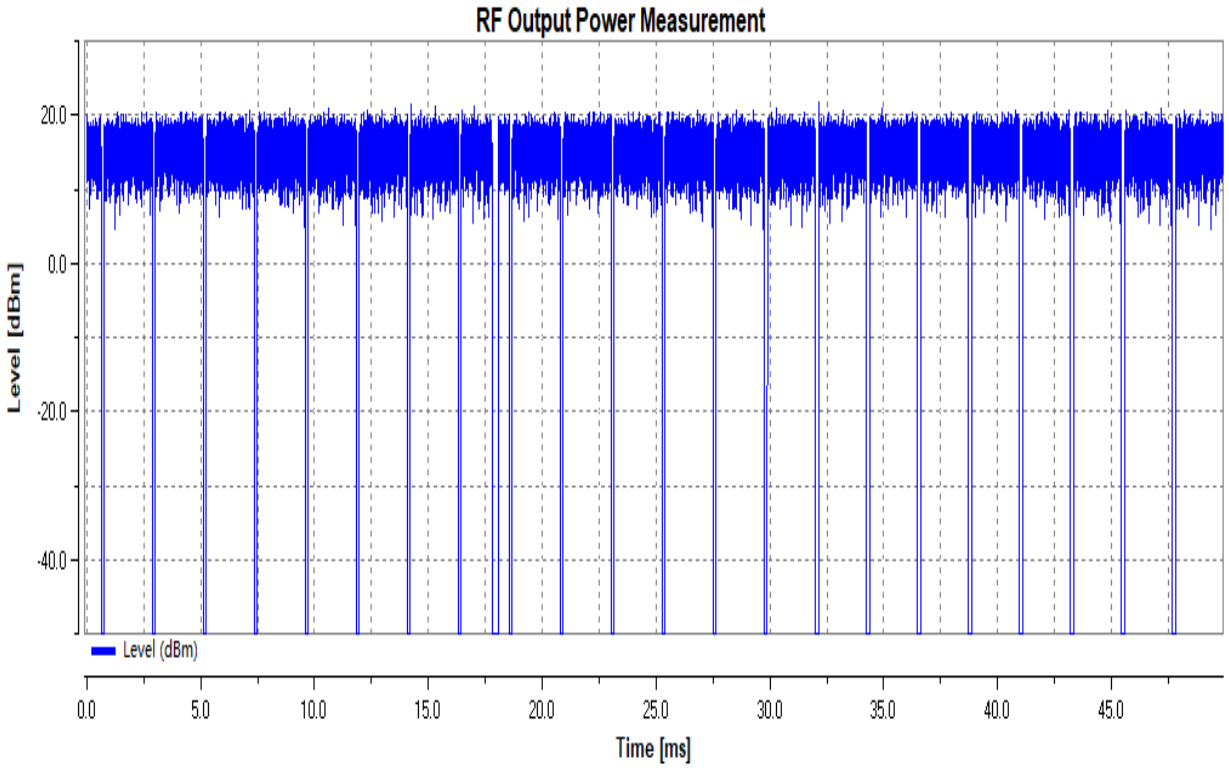
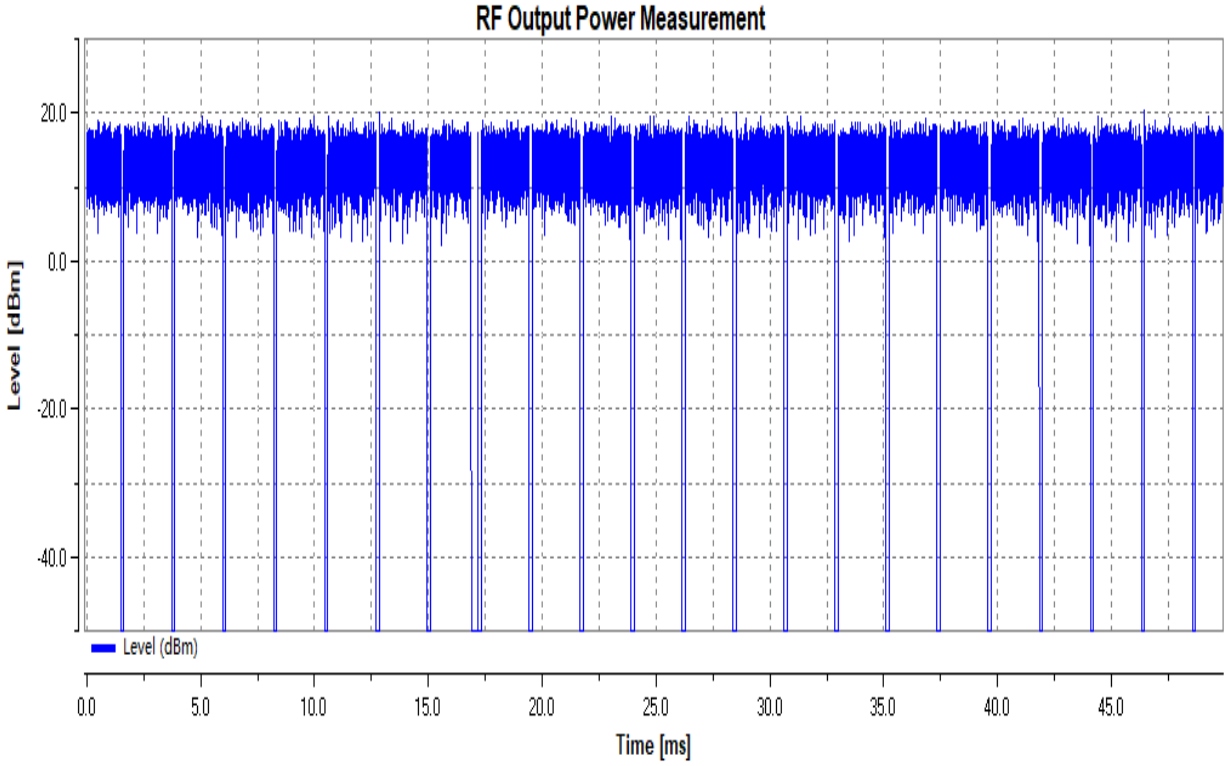


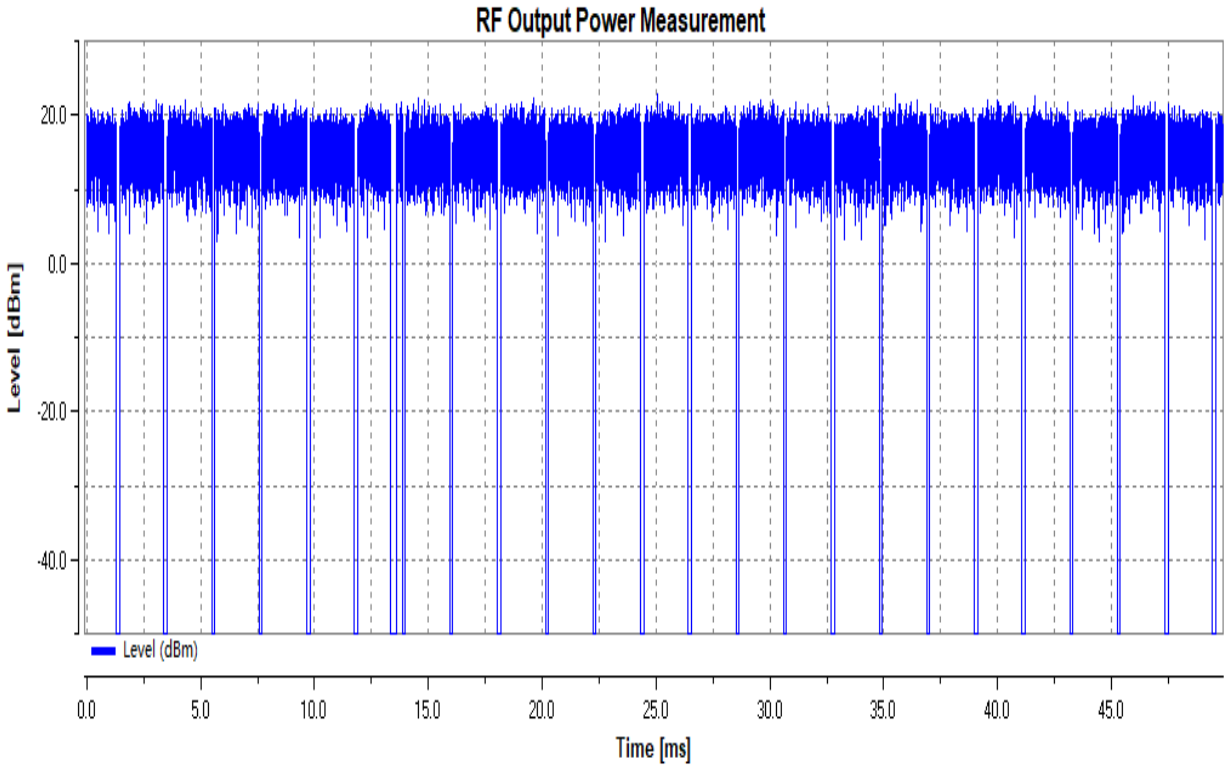
RF Output Power_TNVN_11G_2442_Ant1



RF Output Power_TNVN_11G_2472_Ant1



RF Output Power_TNVN_11N20SISO_2412_Ant1



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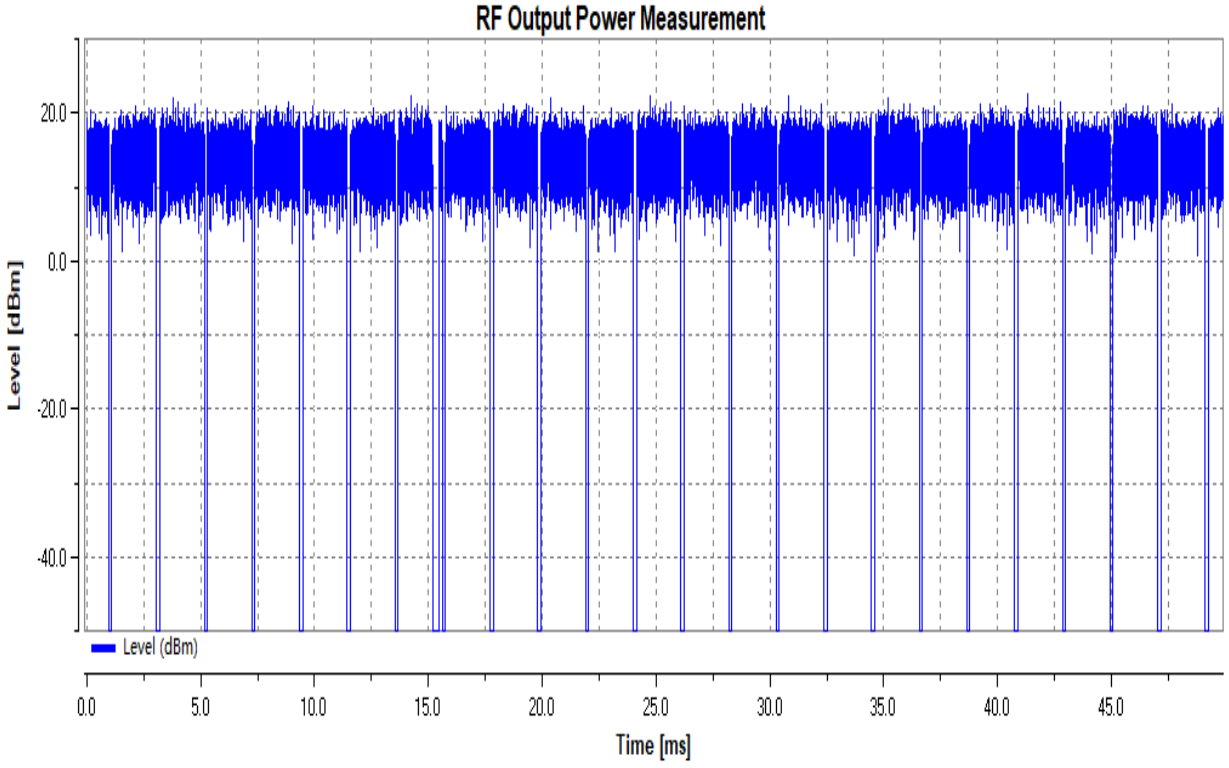

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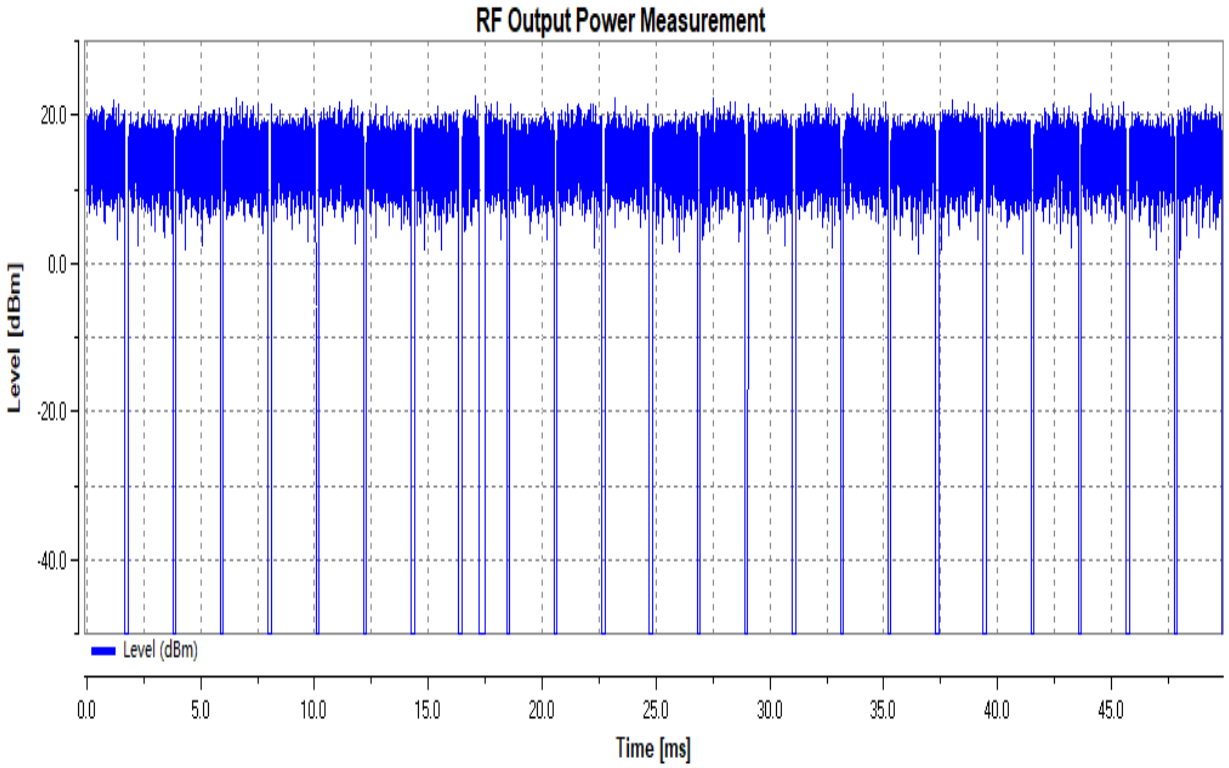

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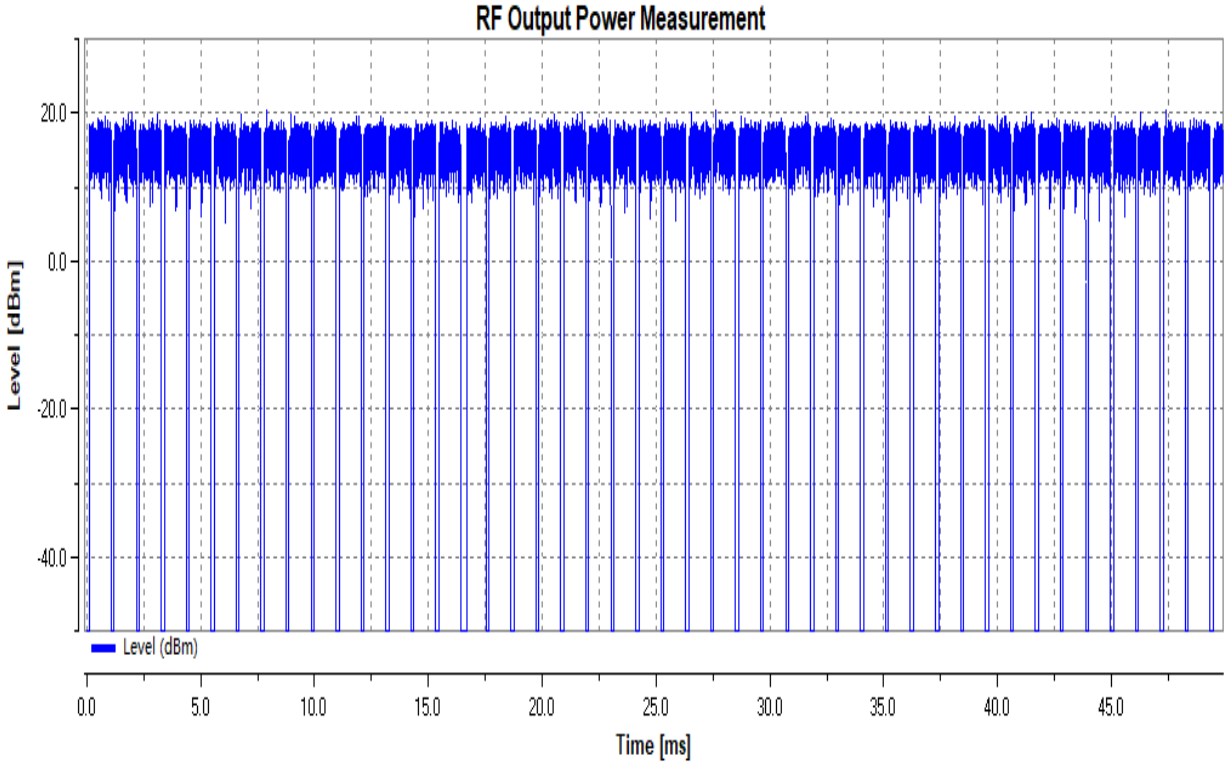

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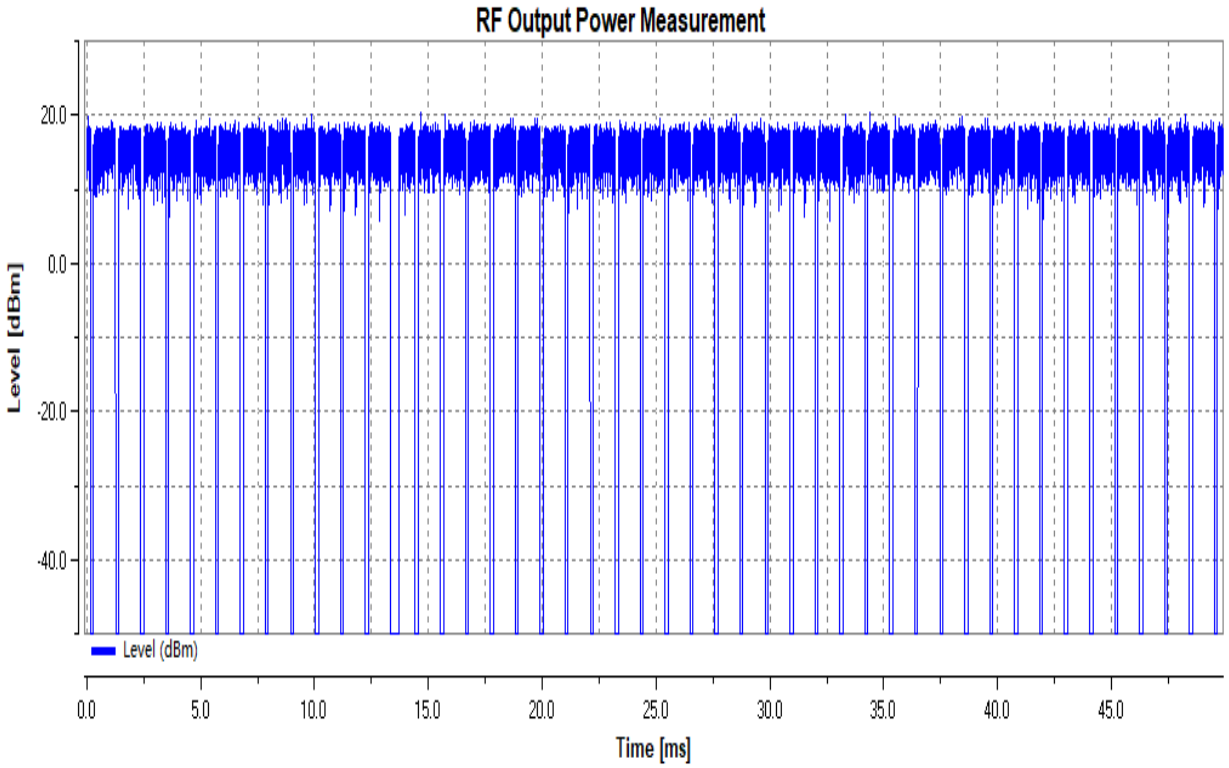
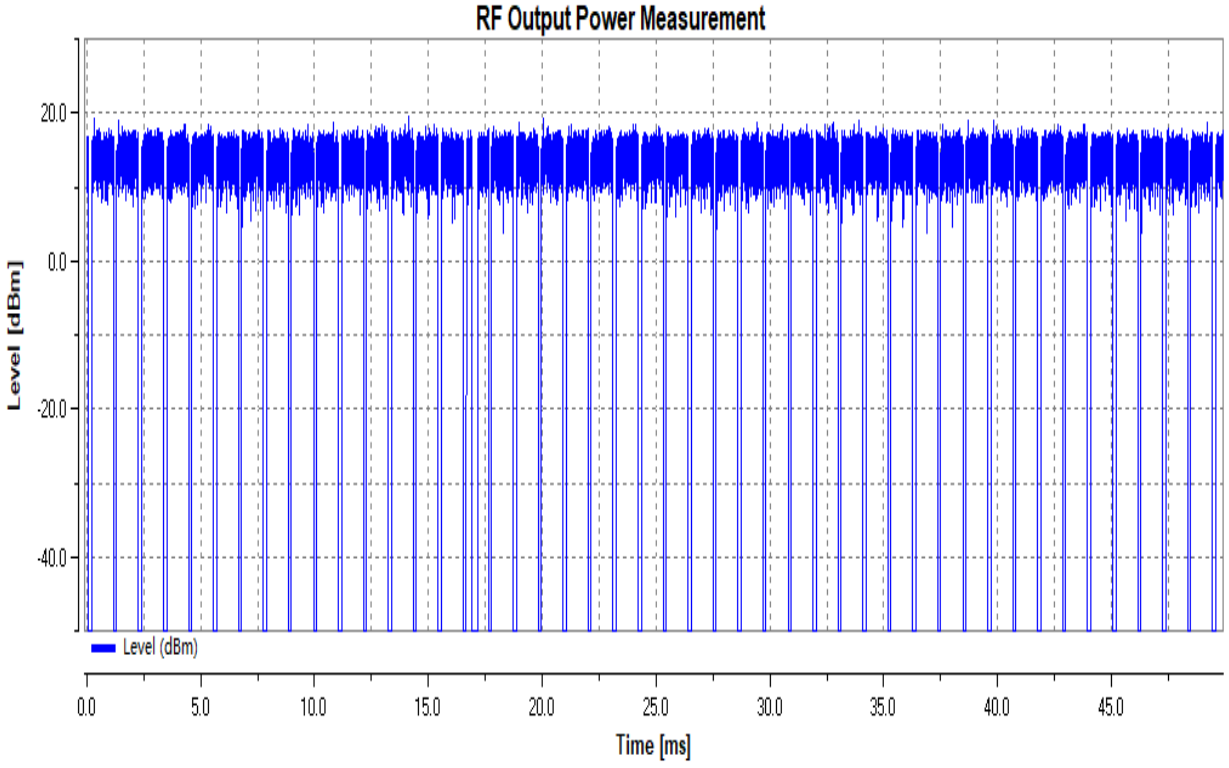
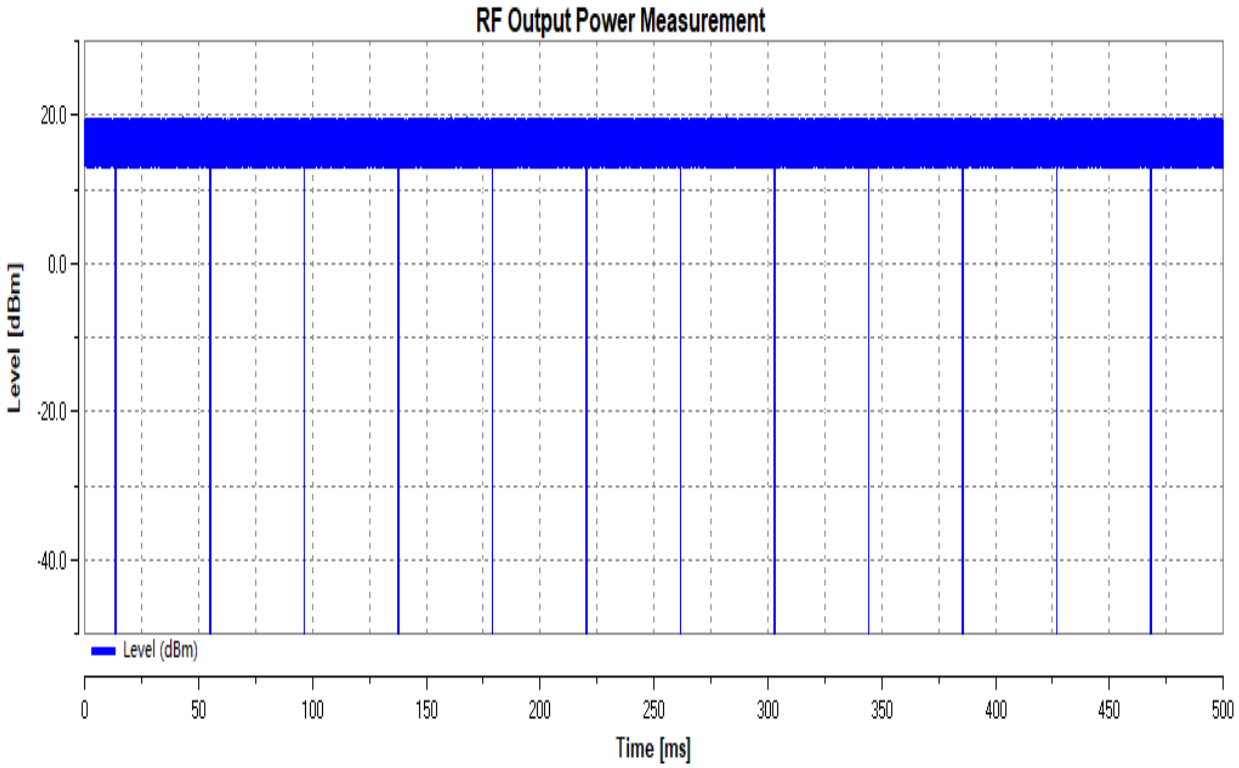


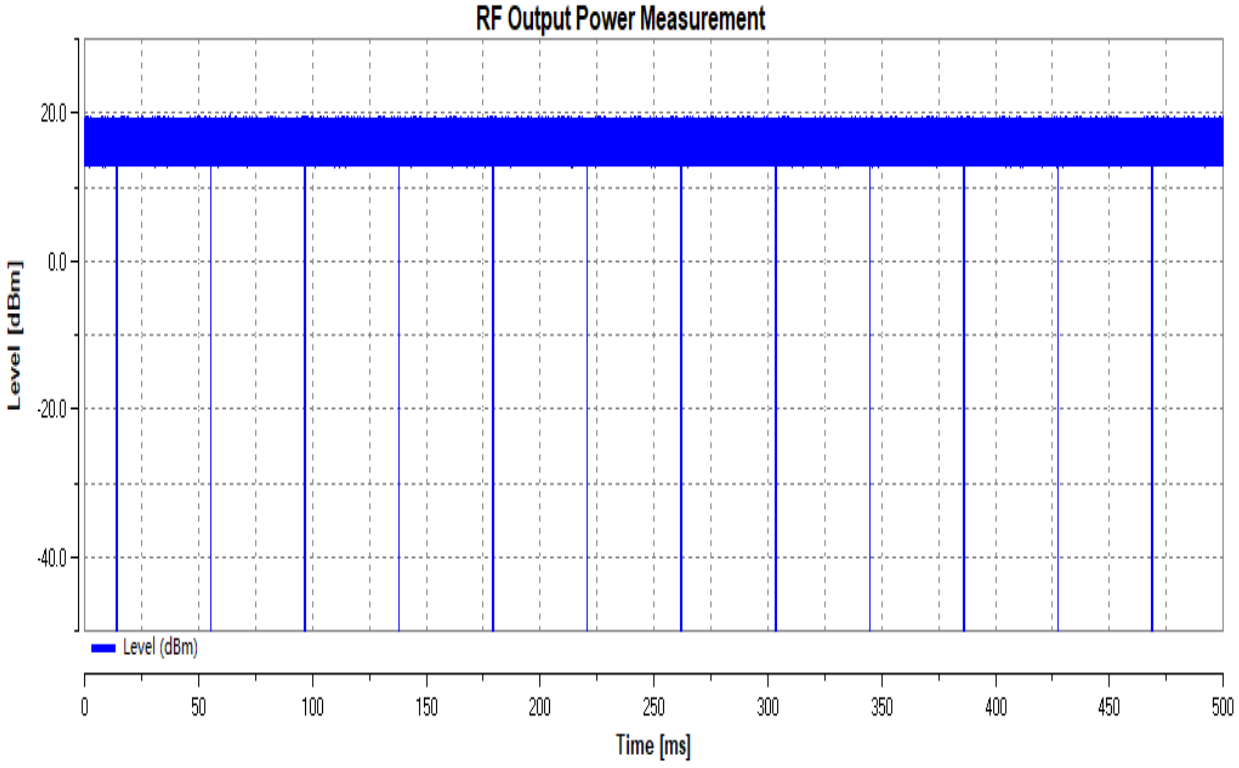
RF Output Power_TNVN_11N40SISO_2462_Ant1



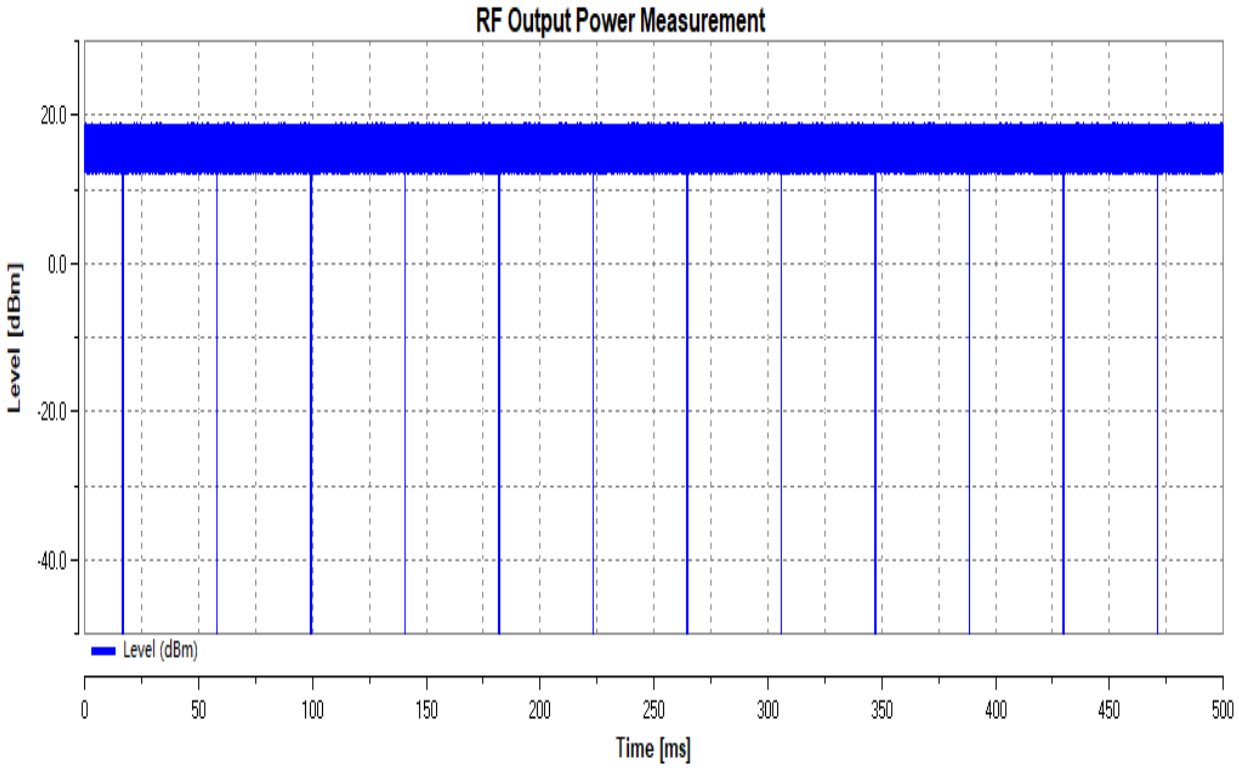
RF Output Power_TLVN_11B_2412_Ant1



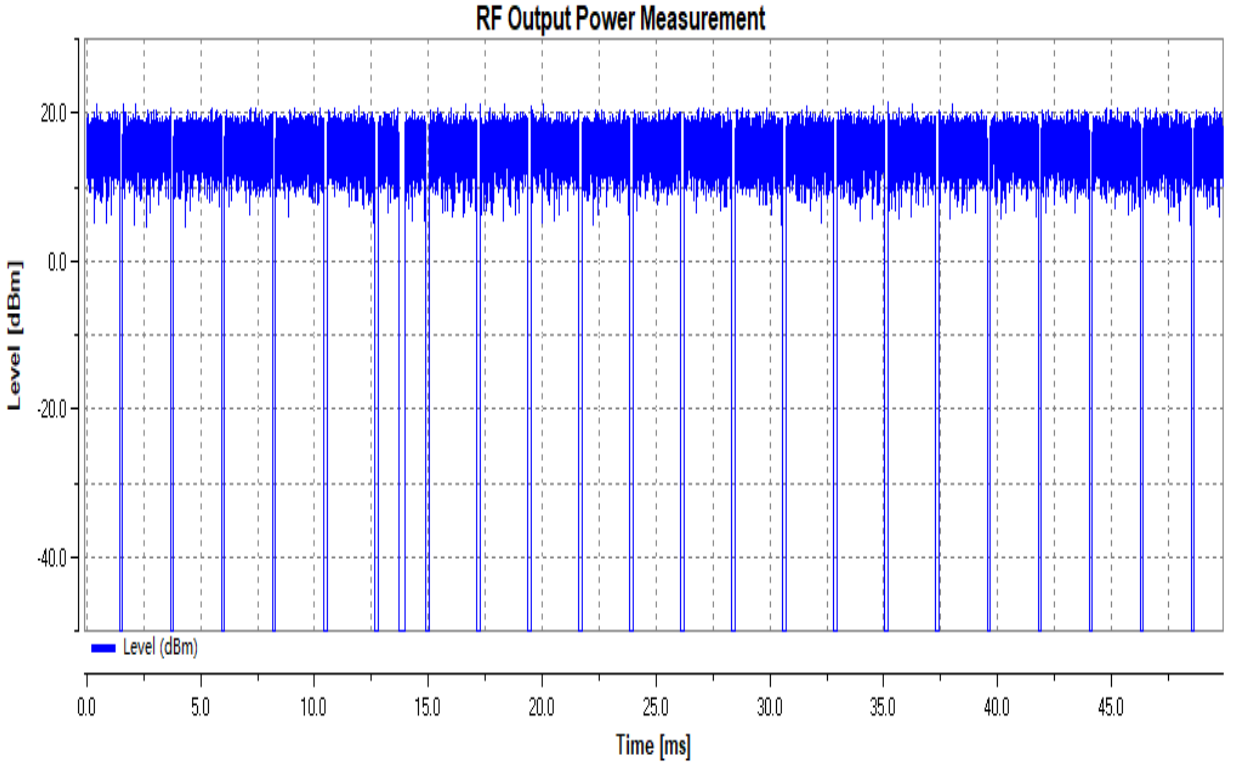
RF Output Power_TLVN_11B_2442_Ant1



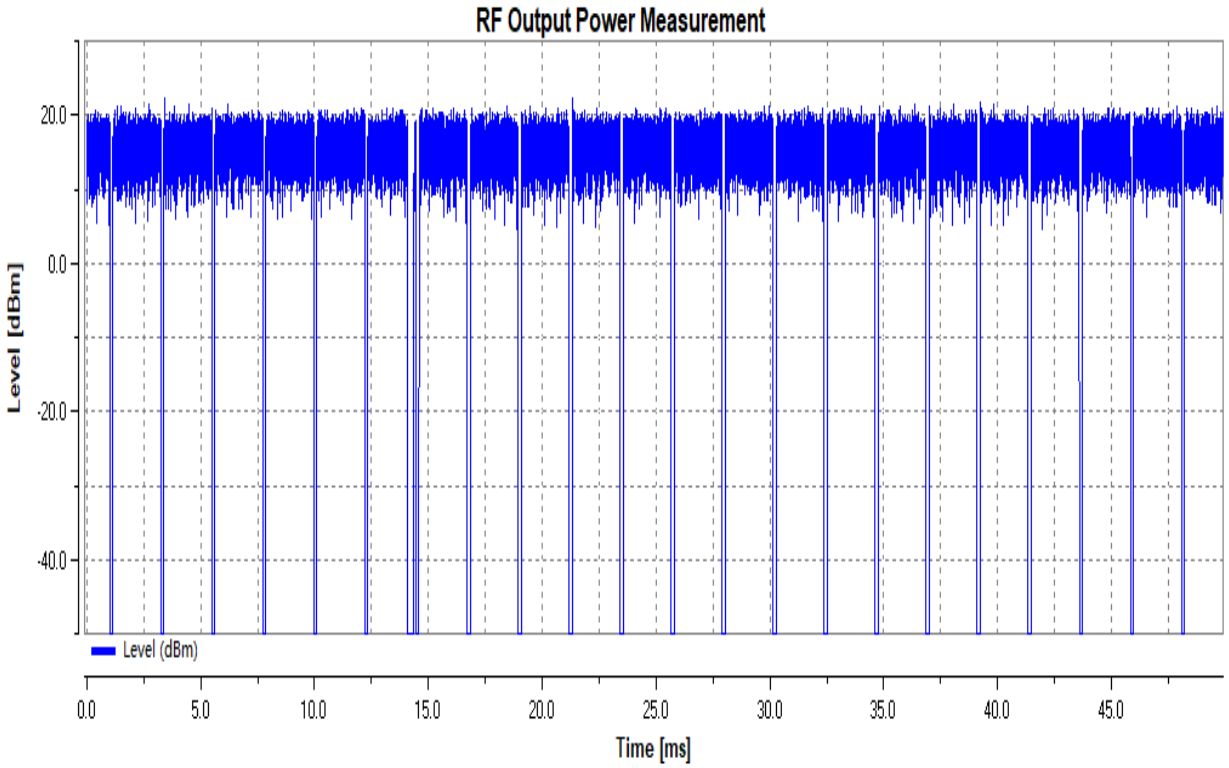
RF Output Power_TLVN_11B_2472_Ant1



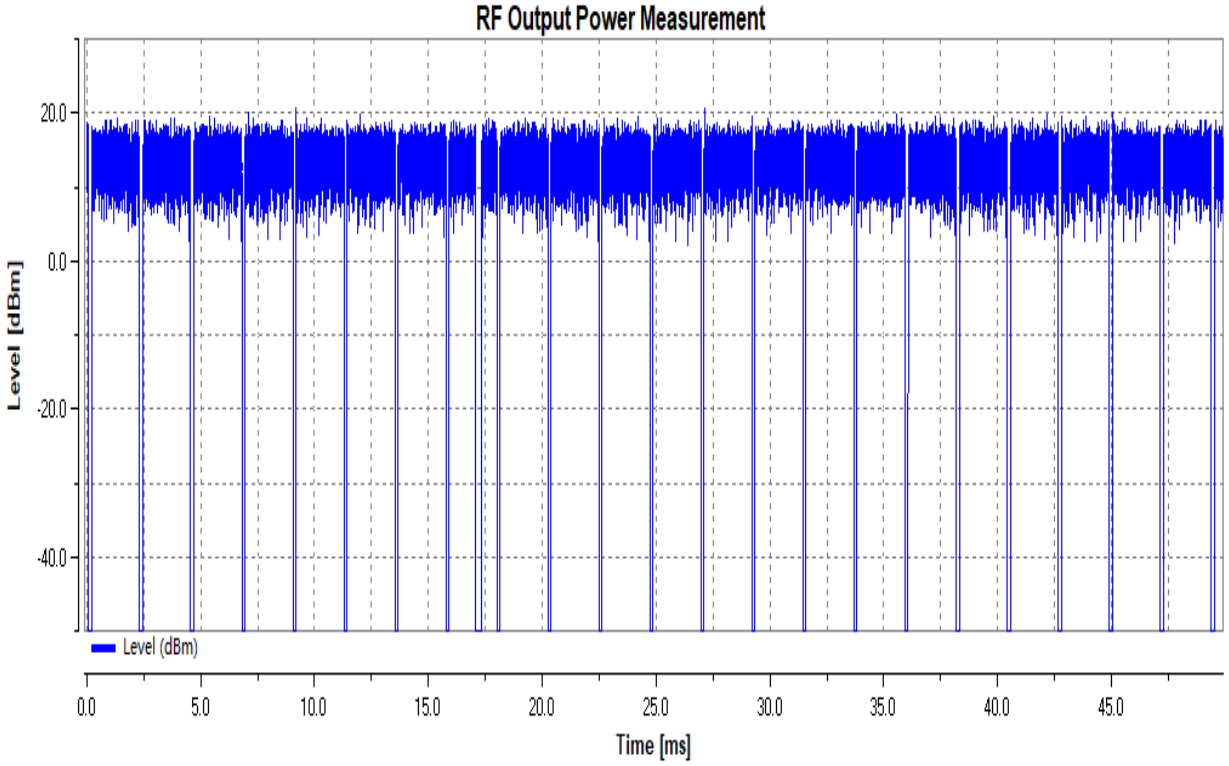
RF Output Power_TLVN_11G_2412_Ant1



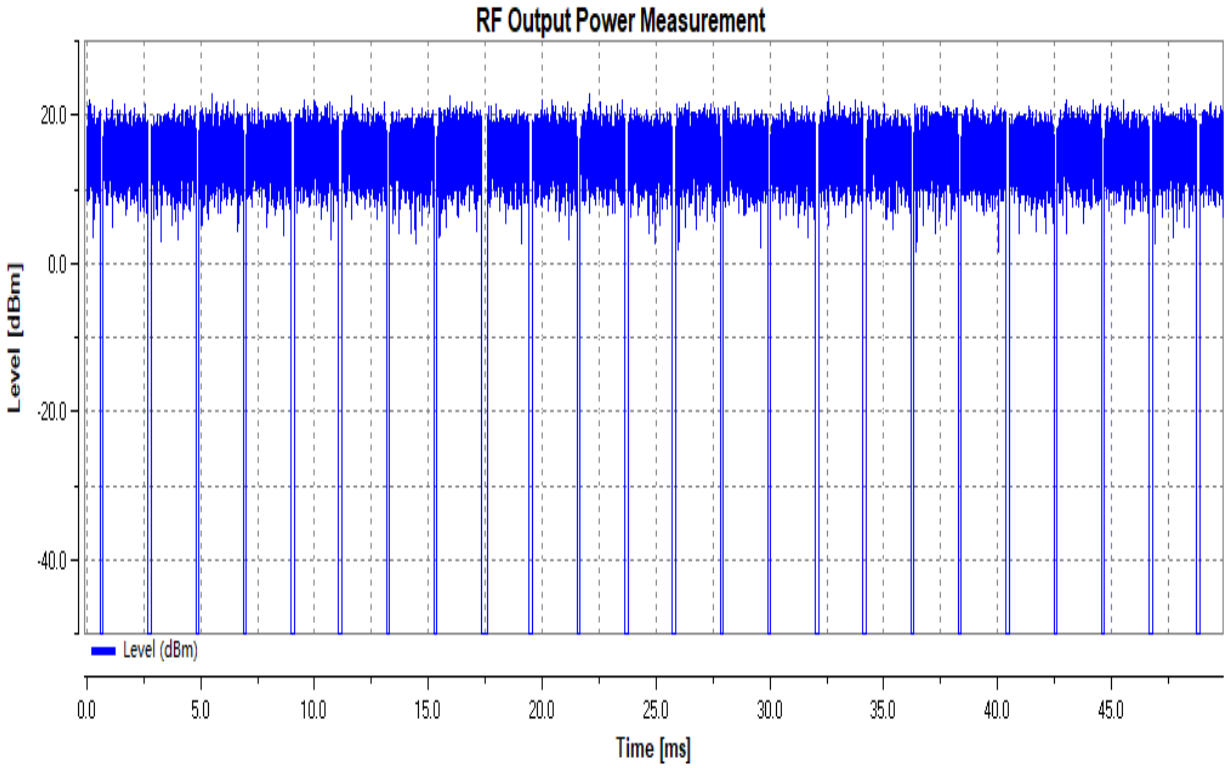
RF Output Power_TLVN_11G_2442_Ant1



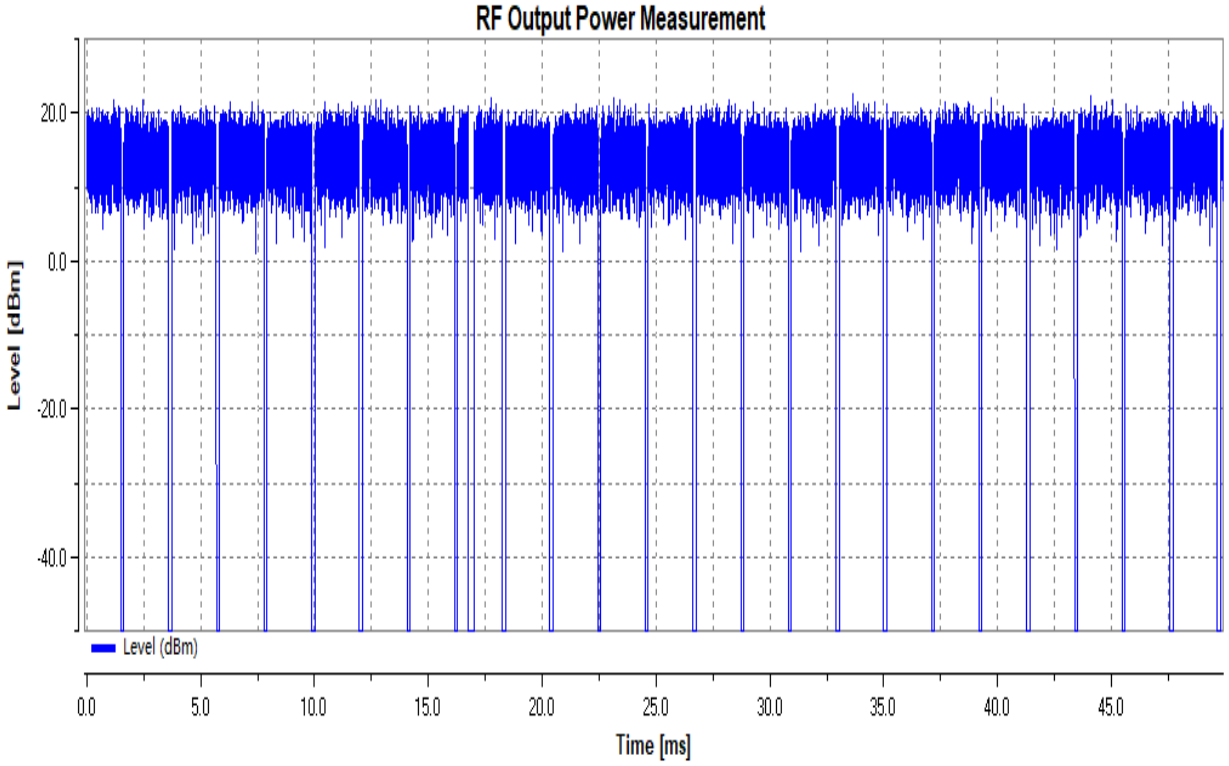
RF Output Power_TLVN_11G_2472_Ant1



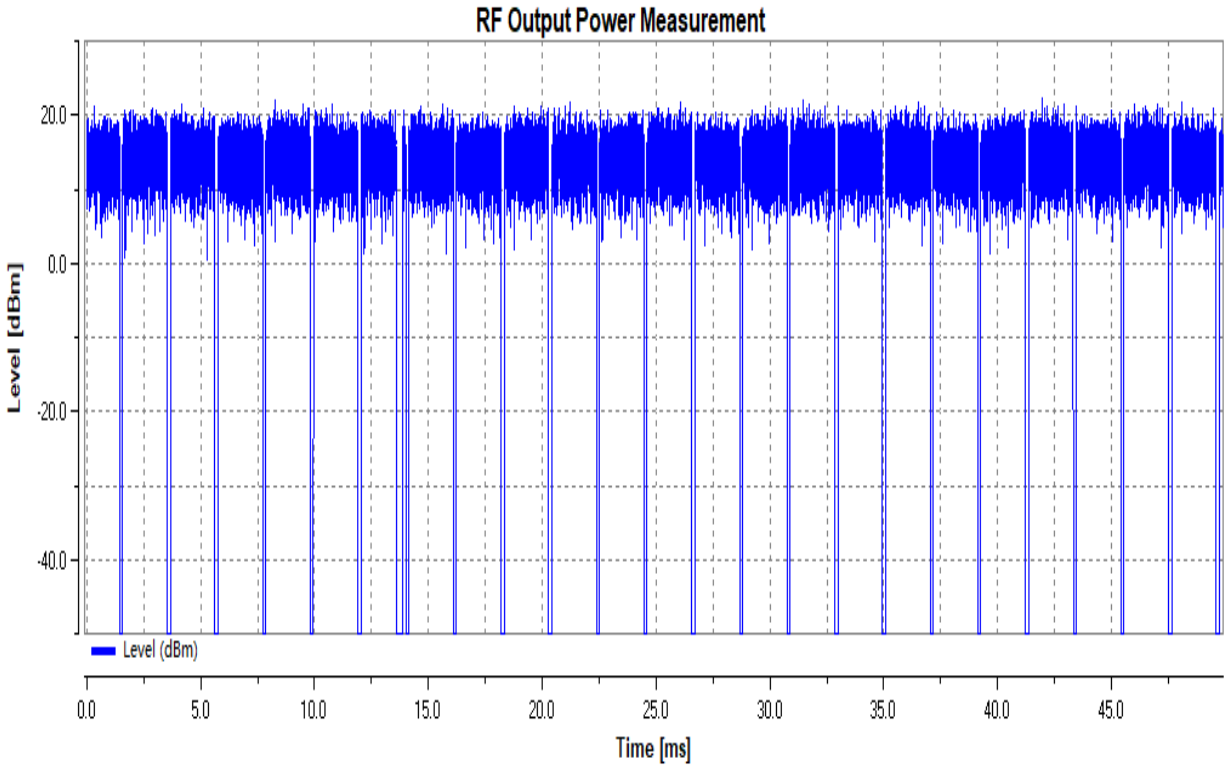
RF Output Power_TLVN_11N20SISO_2412_Ant1



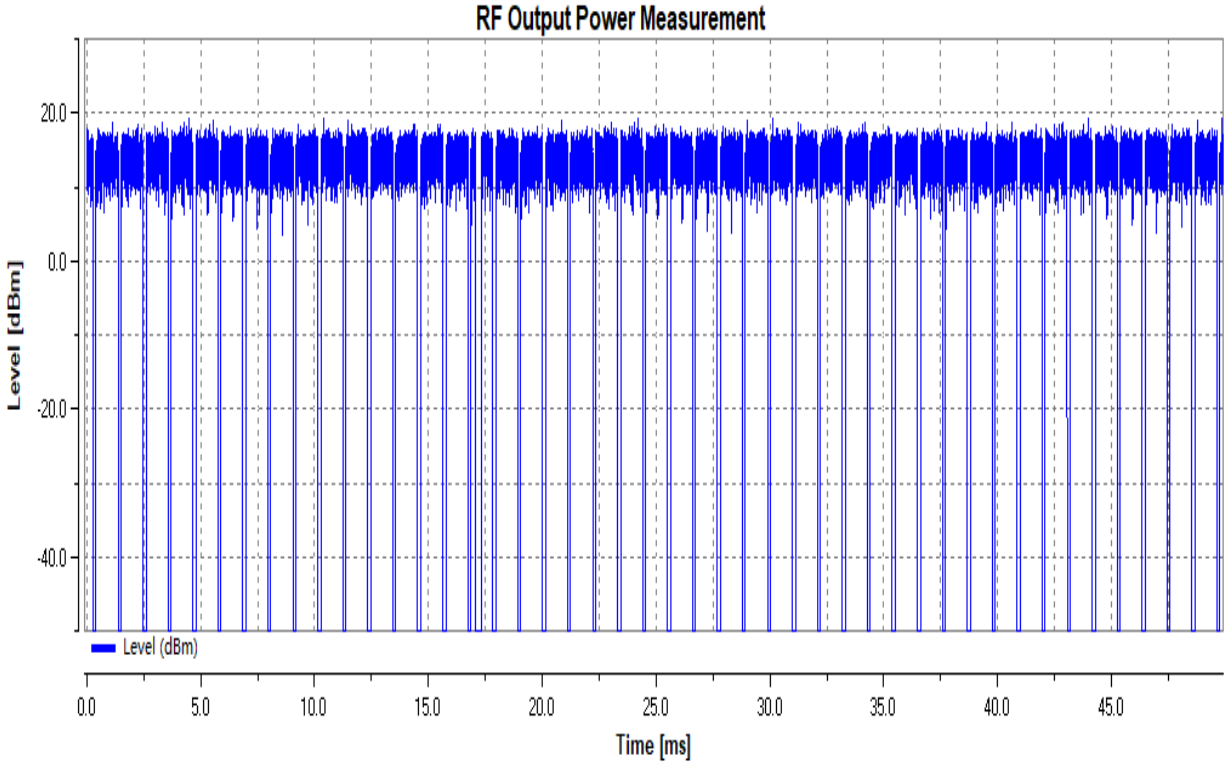
RF Output Power_TLVN_11N20SISO_2442_Ant1



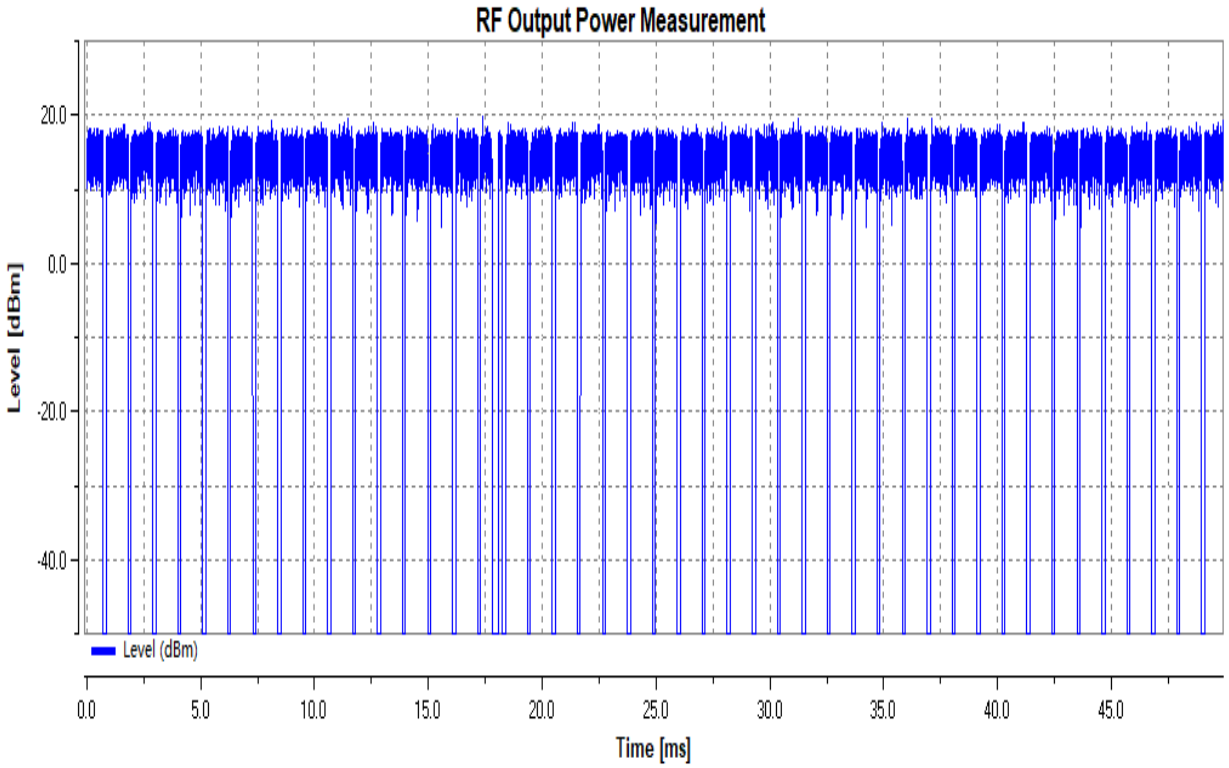
RF Output Power_TLVN_11N20SISO_2472_Ant1



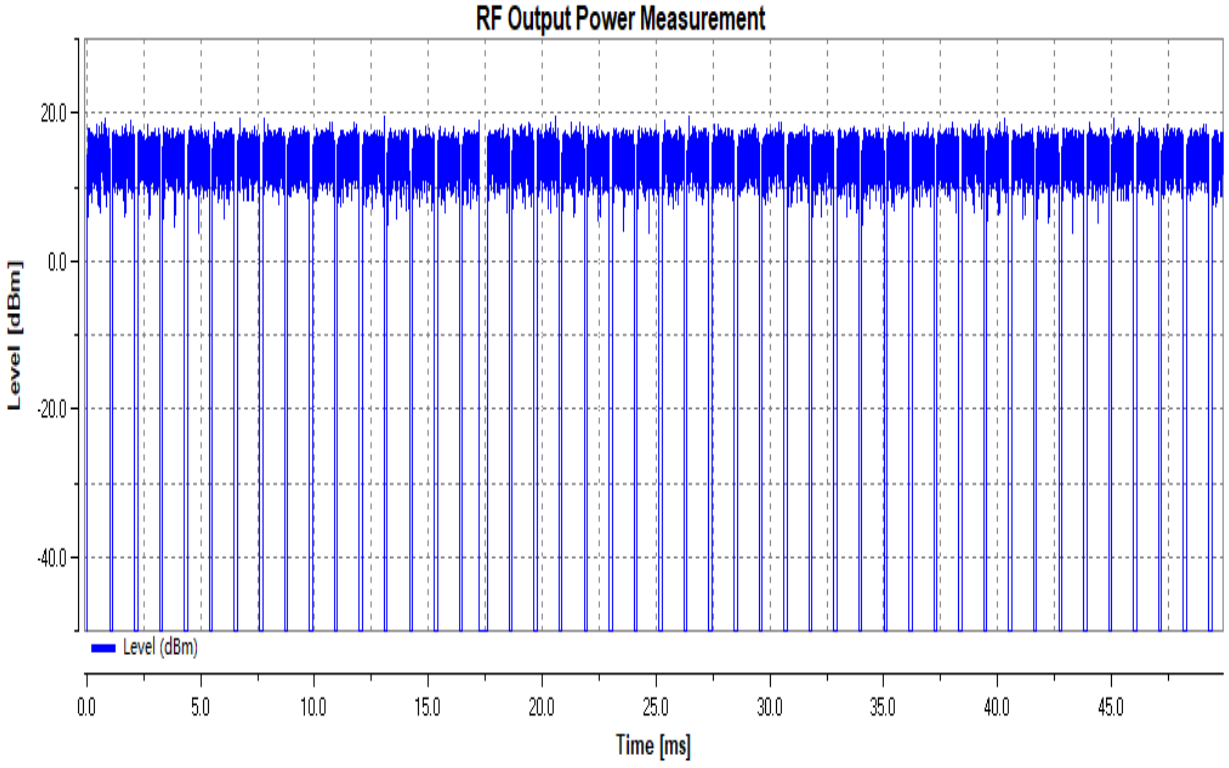
RF Output Power_TLVN_11N40SISO_2422_Ant1



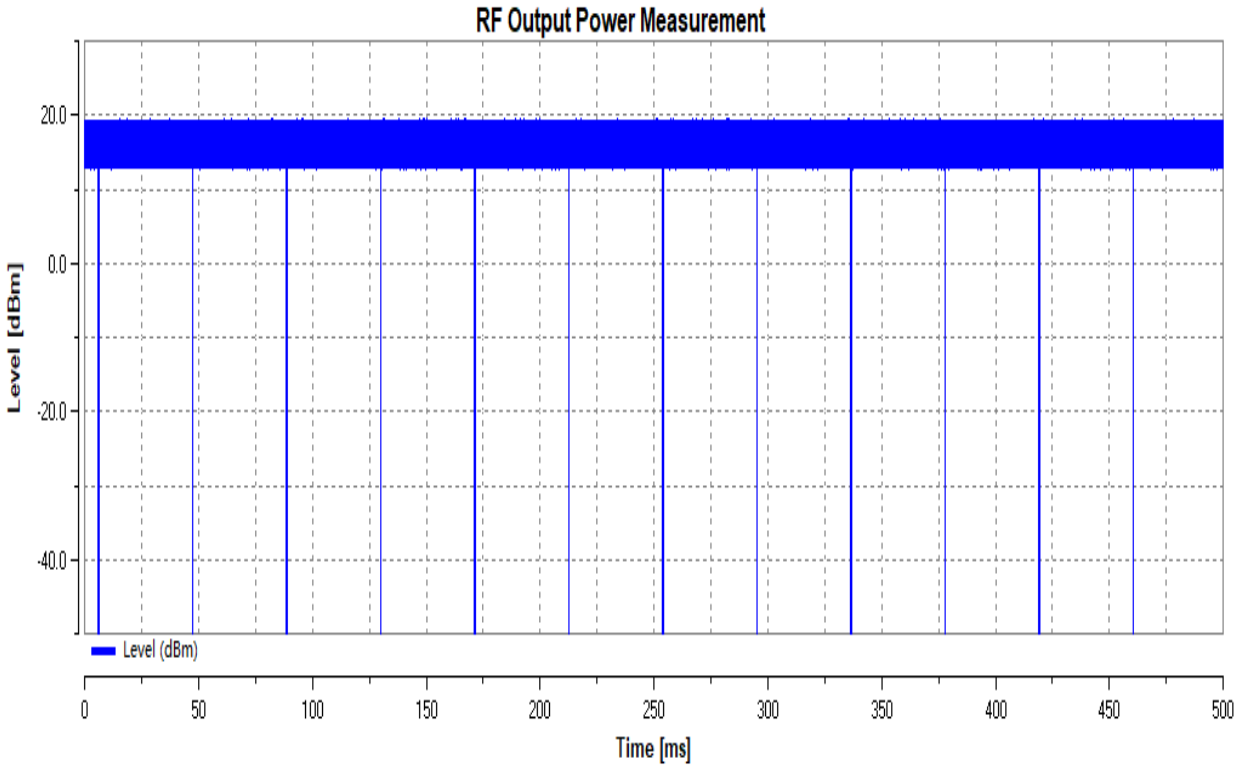
RF Output Power_TLVN_11N40SISO_2442_Ant1



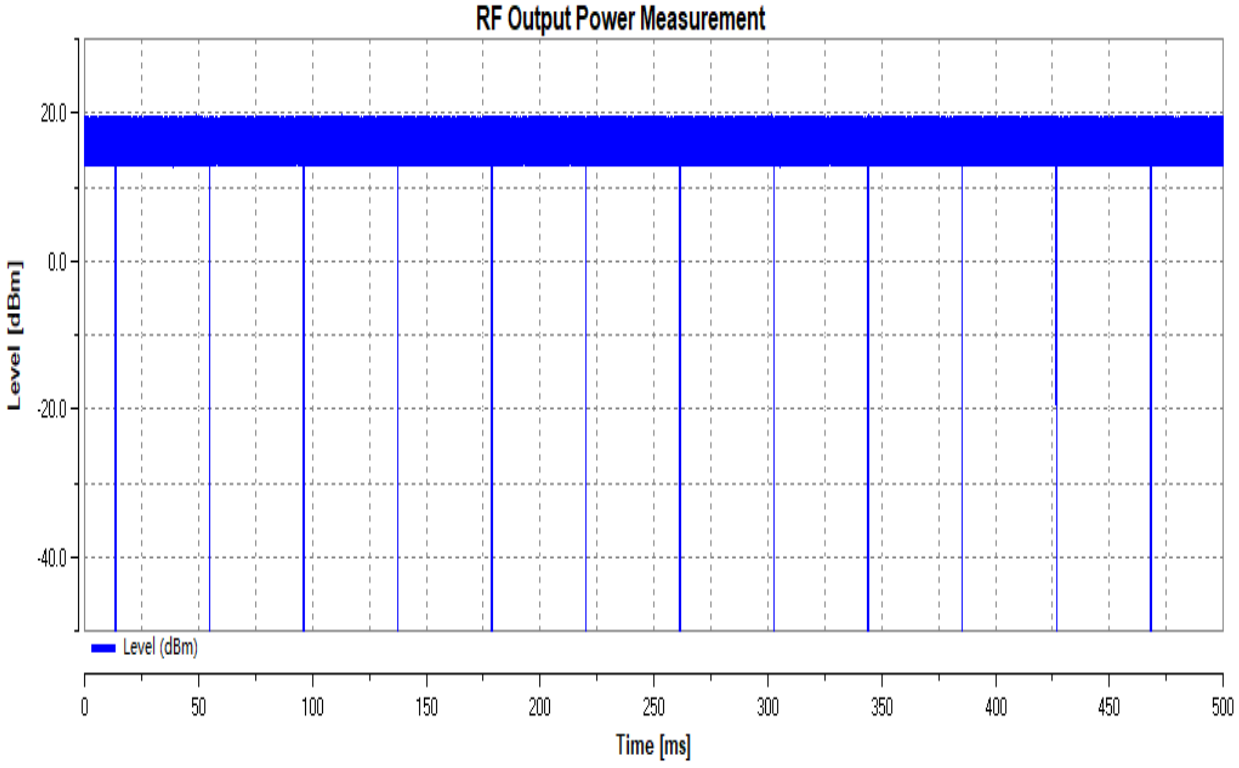
RF Output Power_TLVN_11N40SISO_2462_Ant1



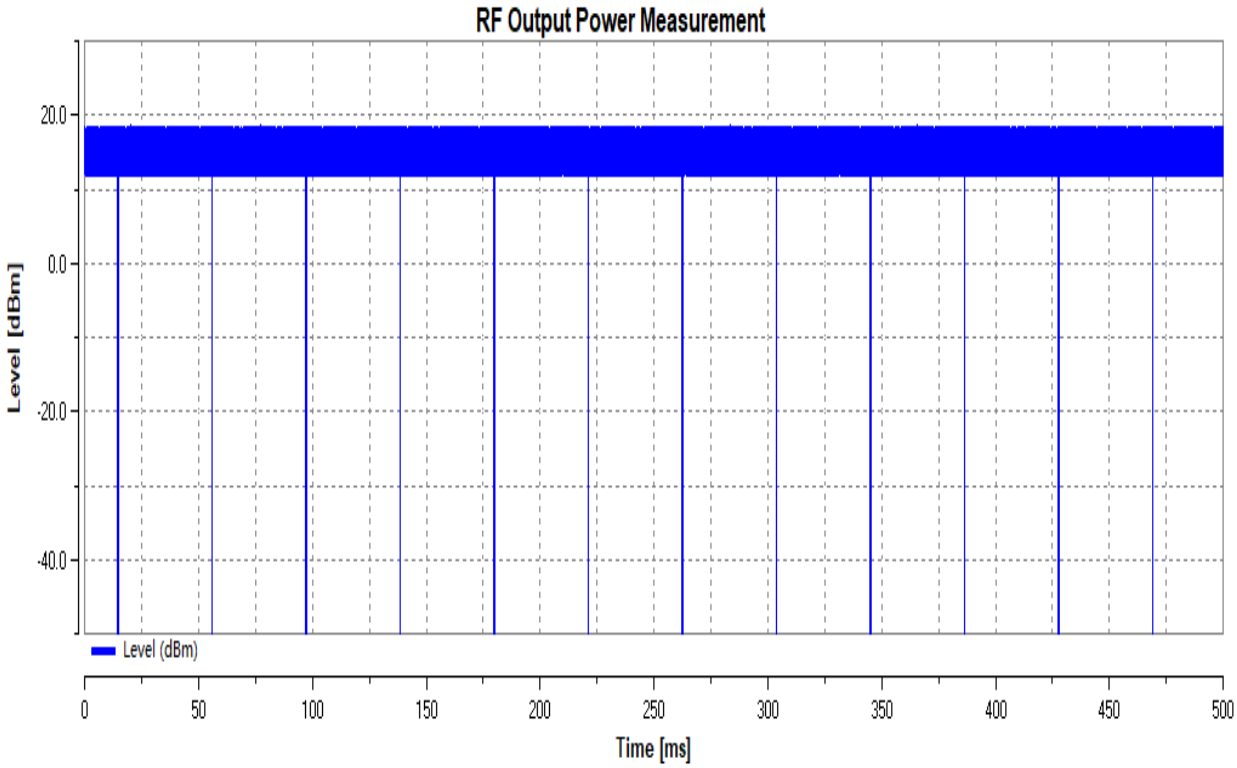
RF Output Power_THVN_11B_2412_Ant1



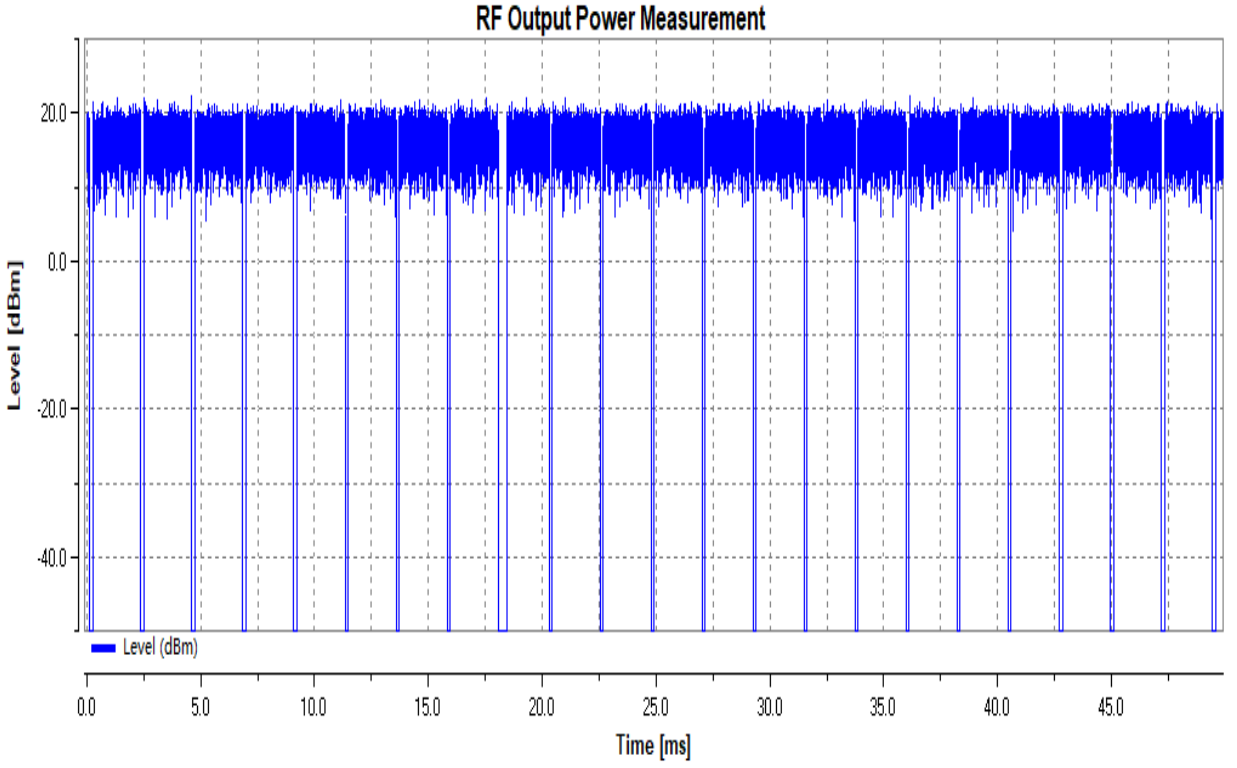
RF Output Power_THVN_11B_2442_Ant1



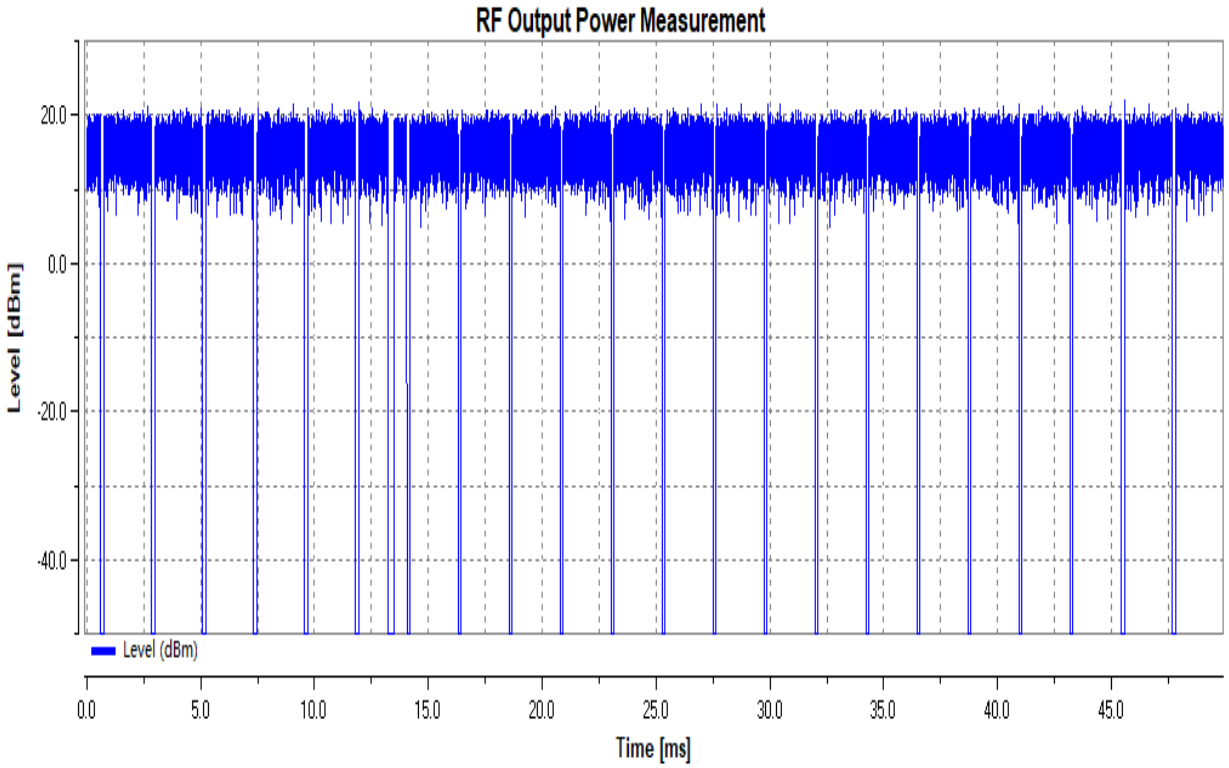
RF Output Power_THVN_11B_2472_Ant1



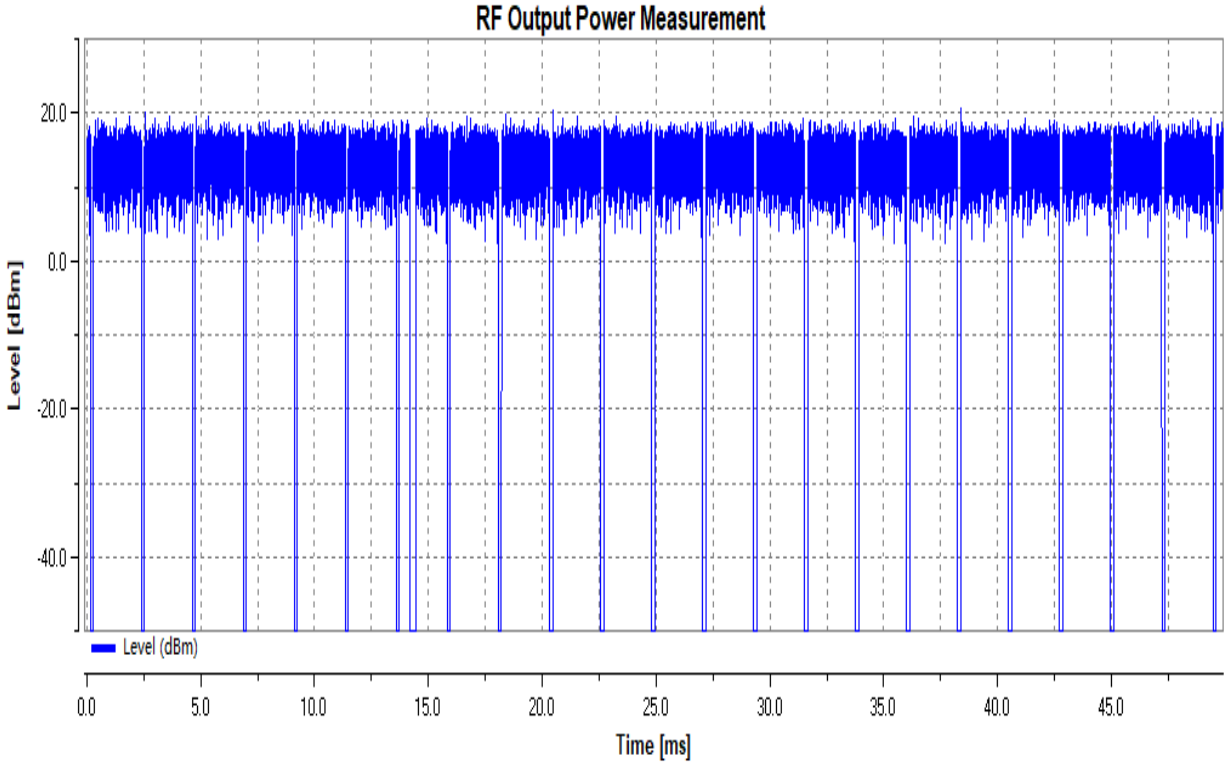
RF Output Power_THVN_11G_2412_Ant1



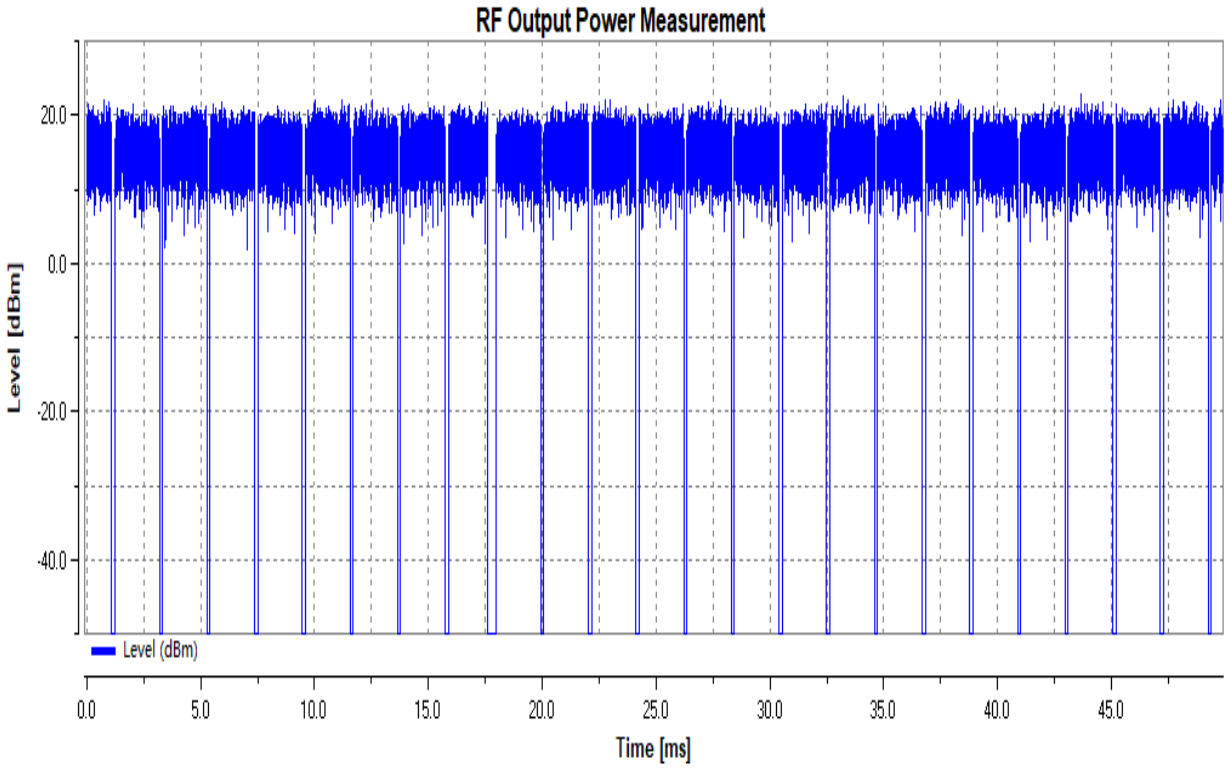
RF Output Power_THVN_11G_2442_Ant1



RF Output Power_THVN_11G_2472_Ant1



RF Output Power_THVN_11N20SISO_2412_Ant1



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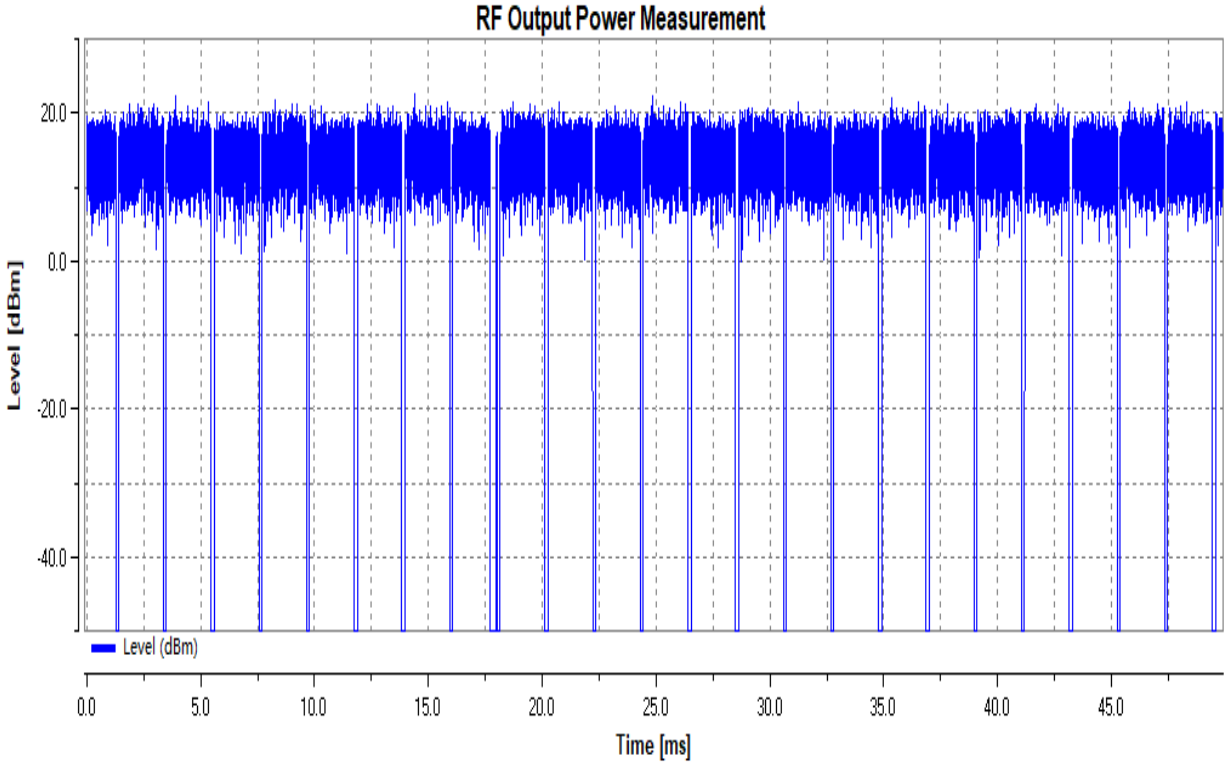
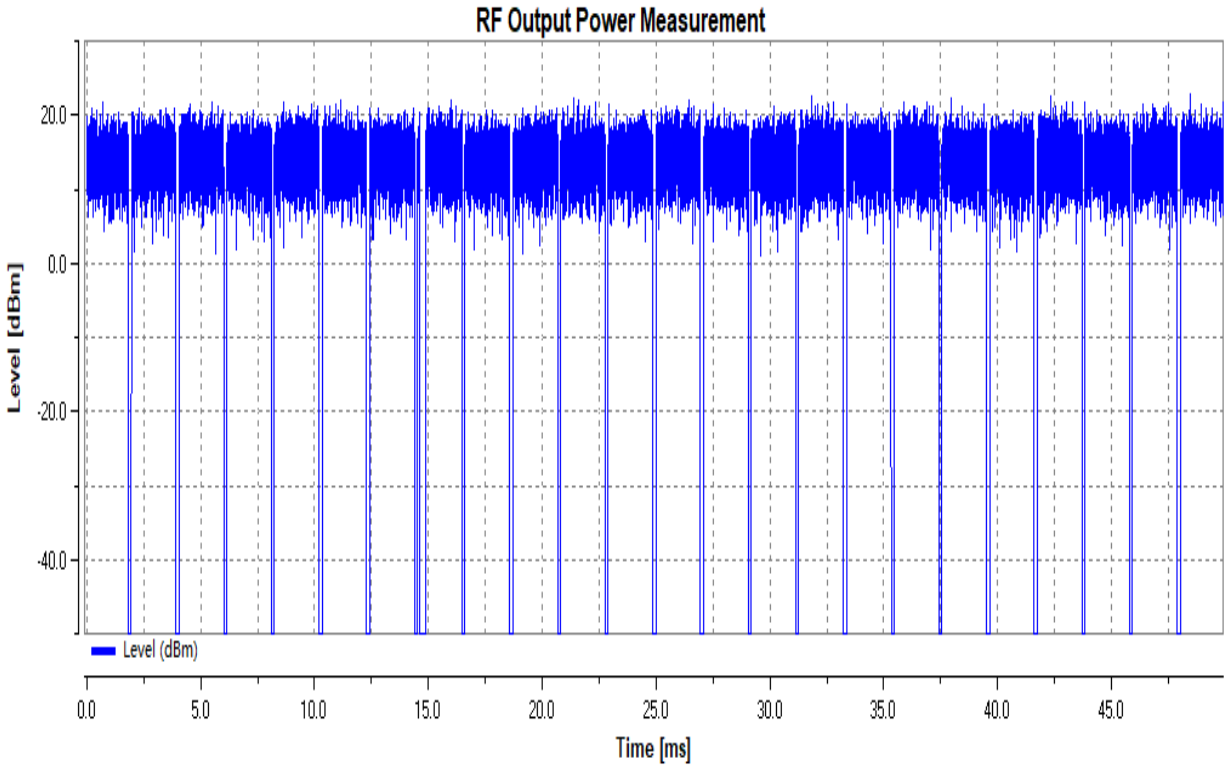
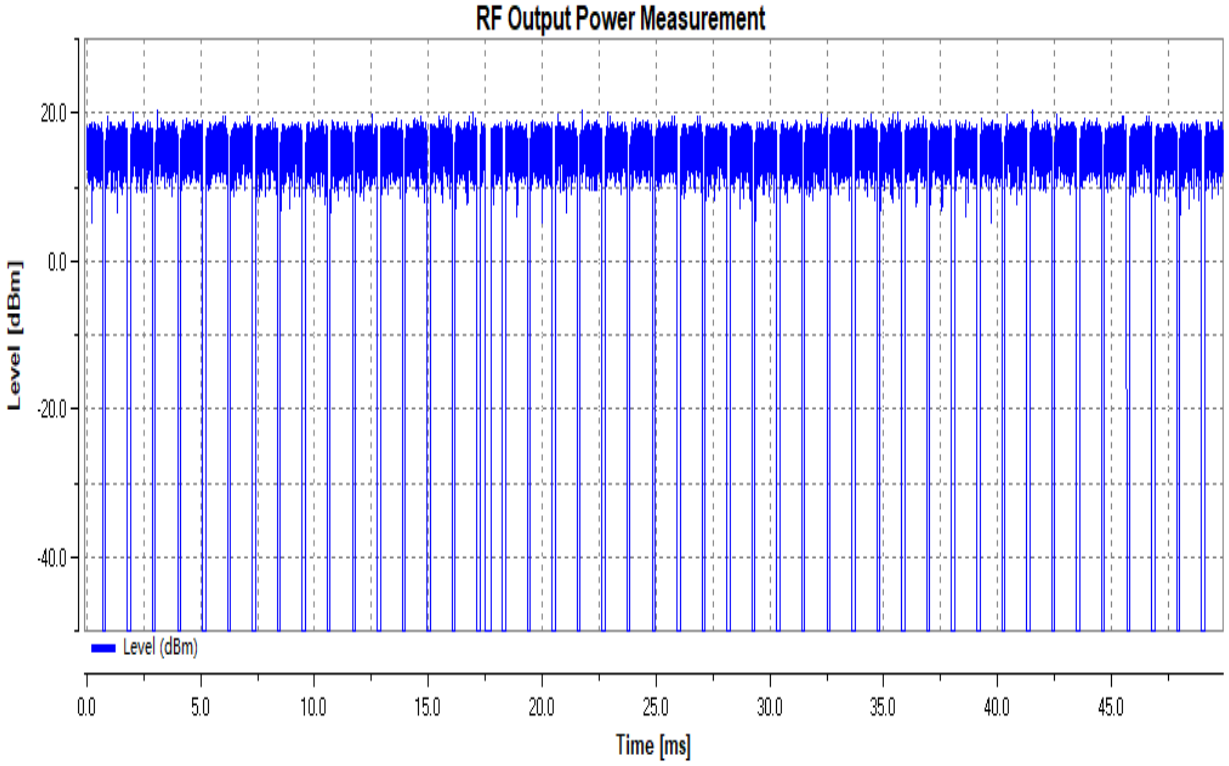


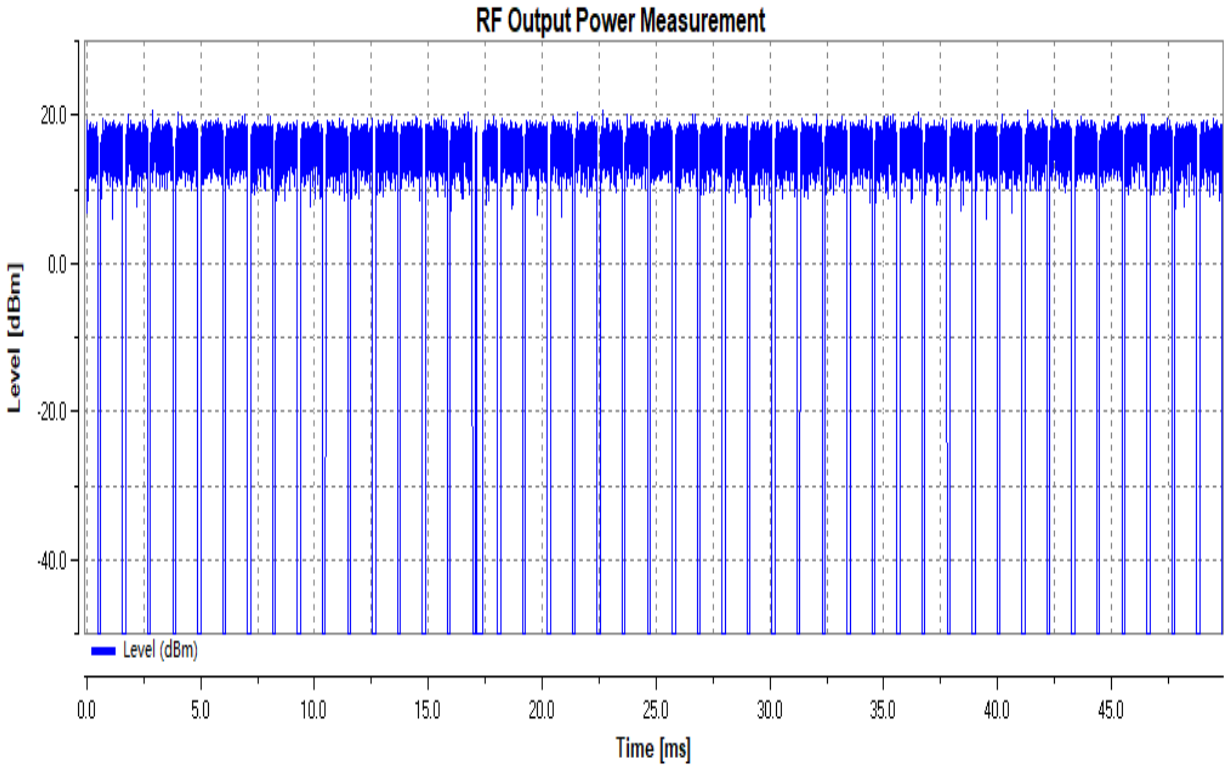
RF Output Power_THVN_11N20SISO_2472_Ant1



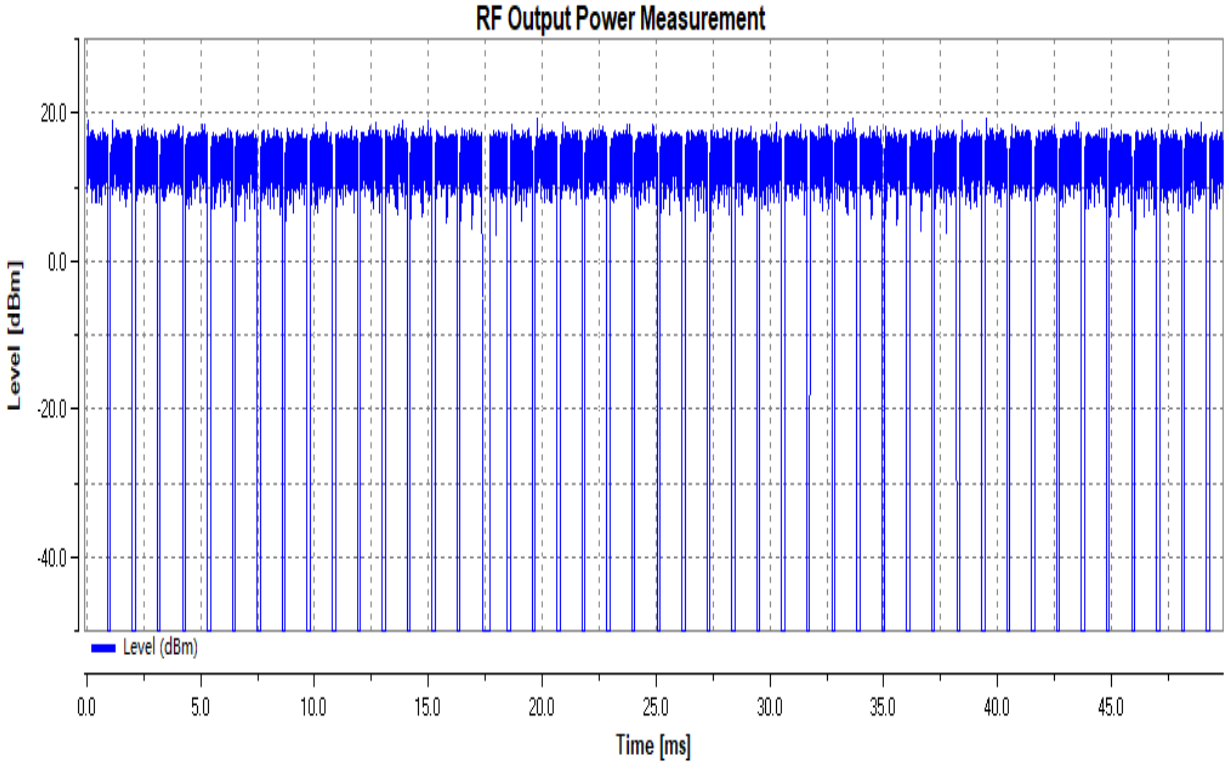
RF Output Power_THVN_11N40SISO_2422_Ant1



RF Output Power_THVN_11N40SISO_2442_Ant1



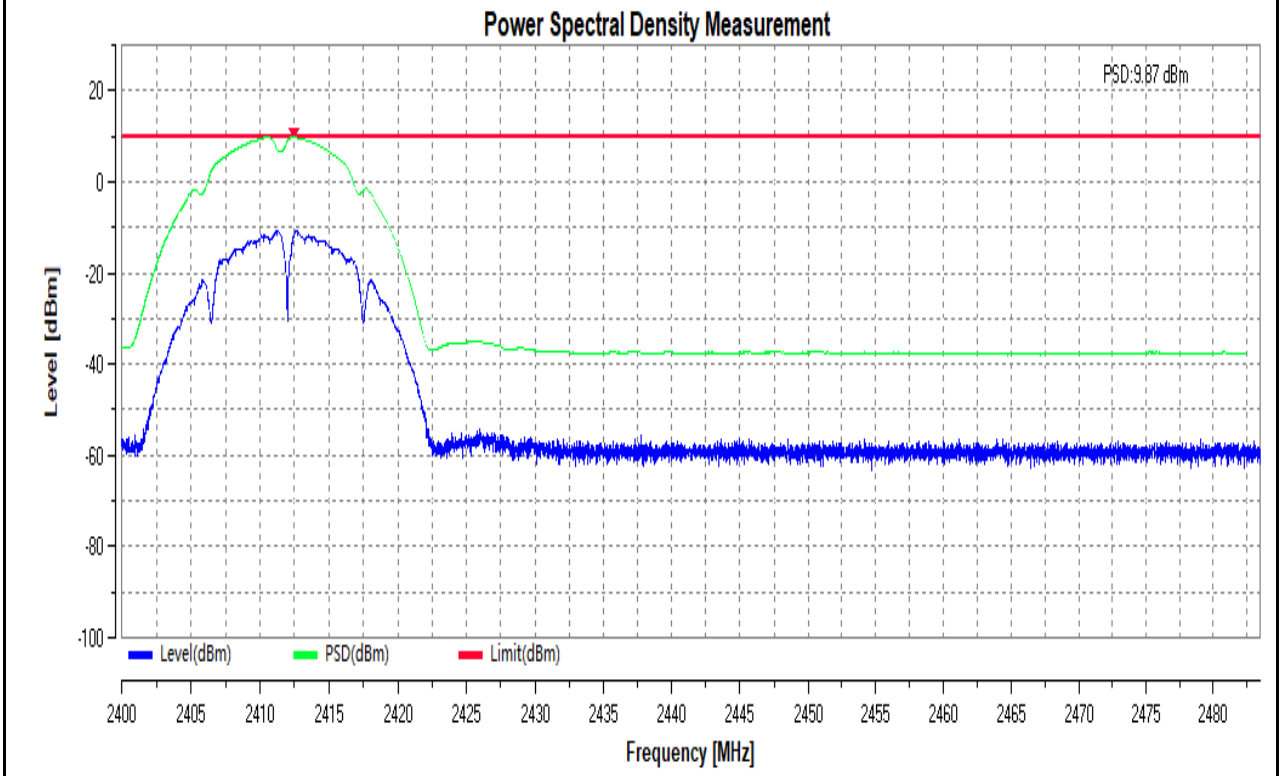
RF Output Power_THVN_11N40SISO_2462_Ant1



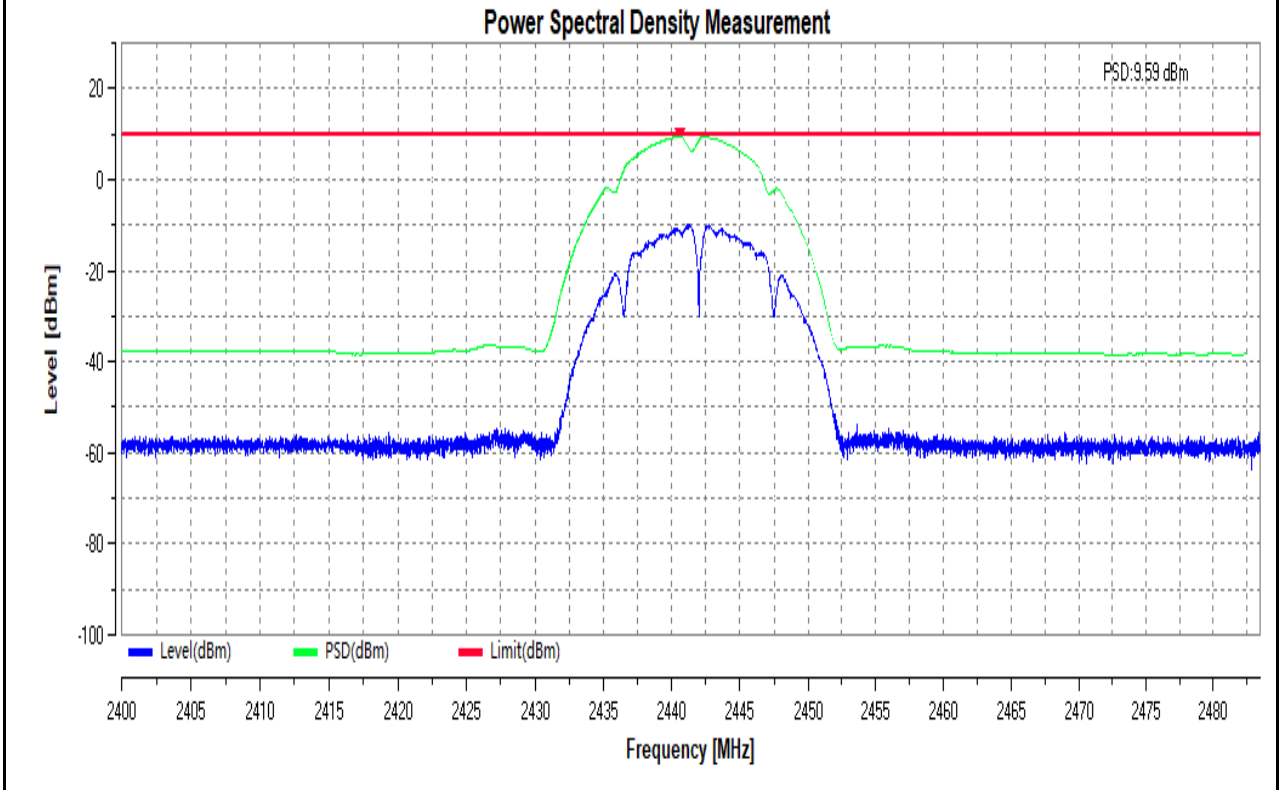
2.Power Spectral Density

Test Condition	Test Mode	Test Channel	Ant	PSD [dBm/MHz]	Limit [dBm/MHz]	Verdict
TNVN	11B	2412	Ant1	9.87	<=10	PASS
TNVN	11B	2442	Ant1	9.59	<=10	PASS
TNVN	11B	2472	Ant1	8.87	<=10	PASS
TNVN	11G	2412	Ant1	5.70	<=10	PASS
TNVN	11G	2442	Ant1	5.50	<=10	PASS
TNVN	11G	2472	Ant1	3.67	<=10	PASS
TNVN	11N20SISO	2412	Ant1	5.47	<=10	PASS
TNVN	11N20SISO	2442	Ant1	4.06	<=10	PASS
TNVN	11N20SISO	2472	Ant1	4.63	<=10	PASS
TNVN	11N40SISO	2422	Ant1	1.93	<=10	PASS
TNVN	11N40SISO	2442	Ant1	2.11	<=10	PASS
TNVN	11N40SISO	2462	Ant1	0.80	<=10	PASS

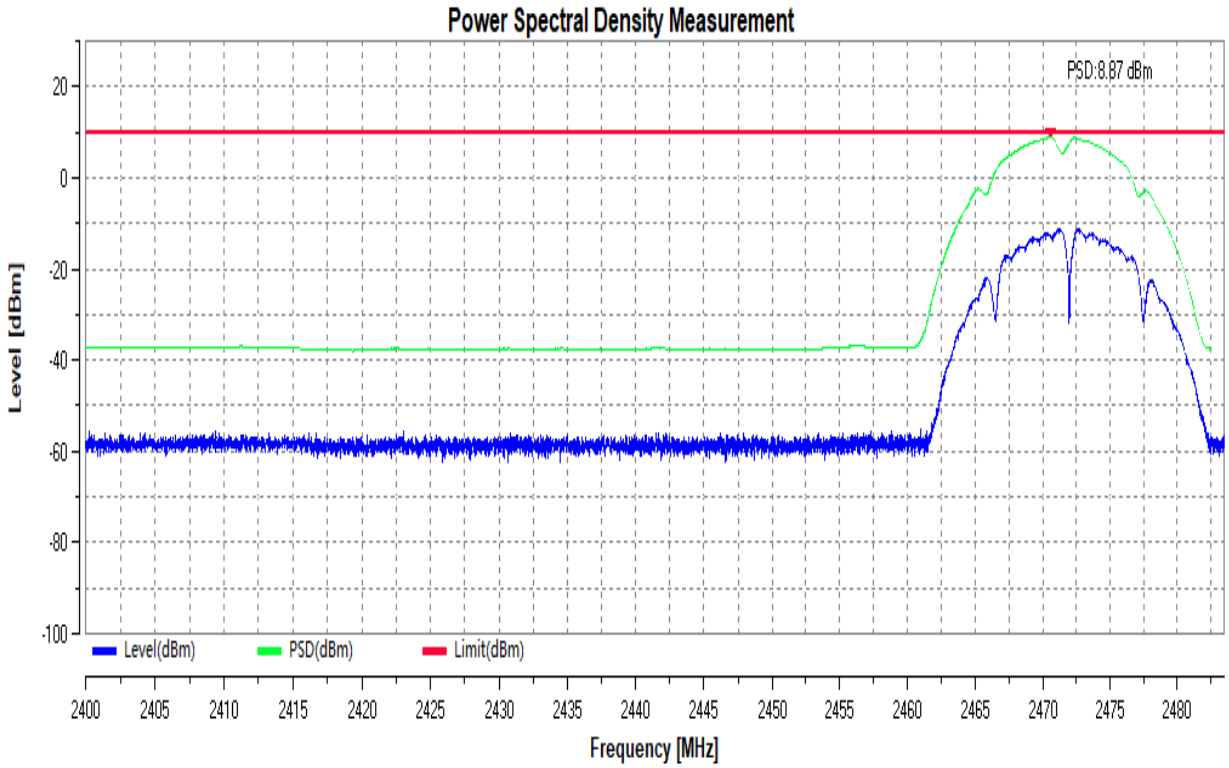
Power Spectral Density_TNVN_11B_2412_Ant1



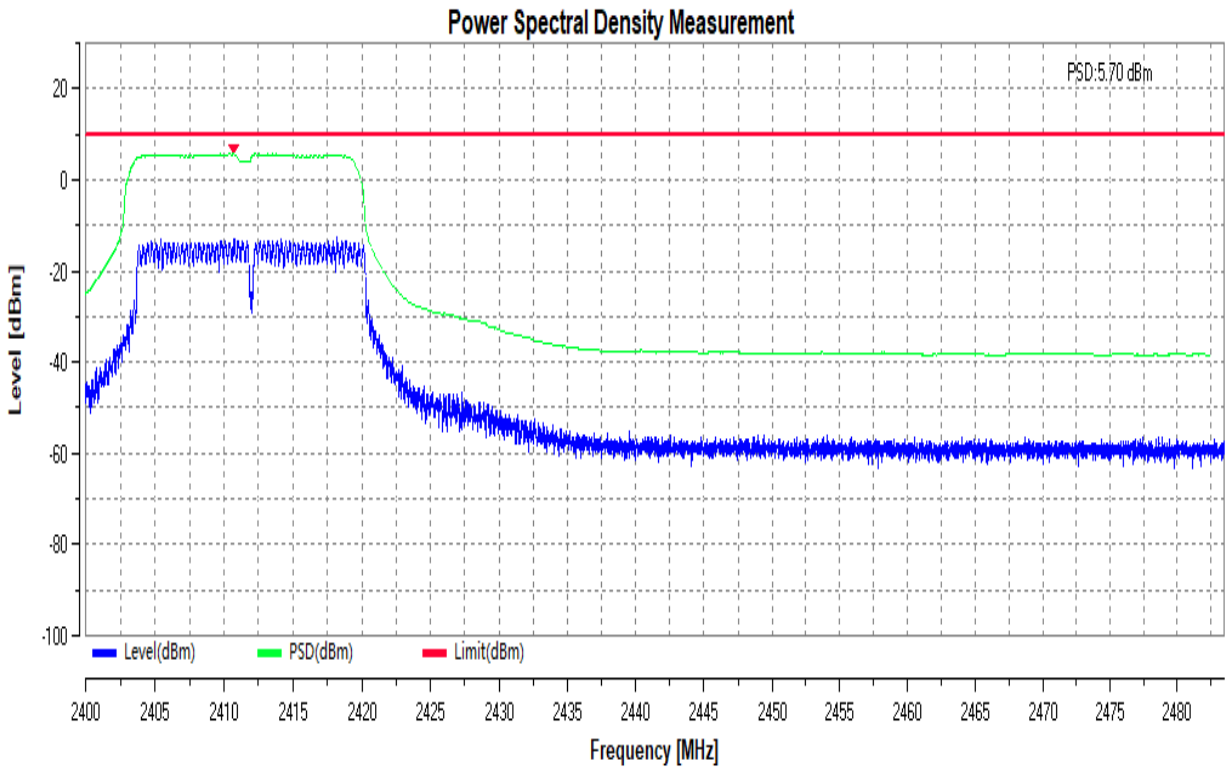
Power Spectral Density_TNVN_11B_2442_Ant1



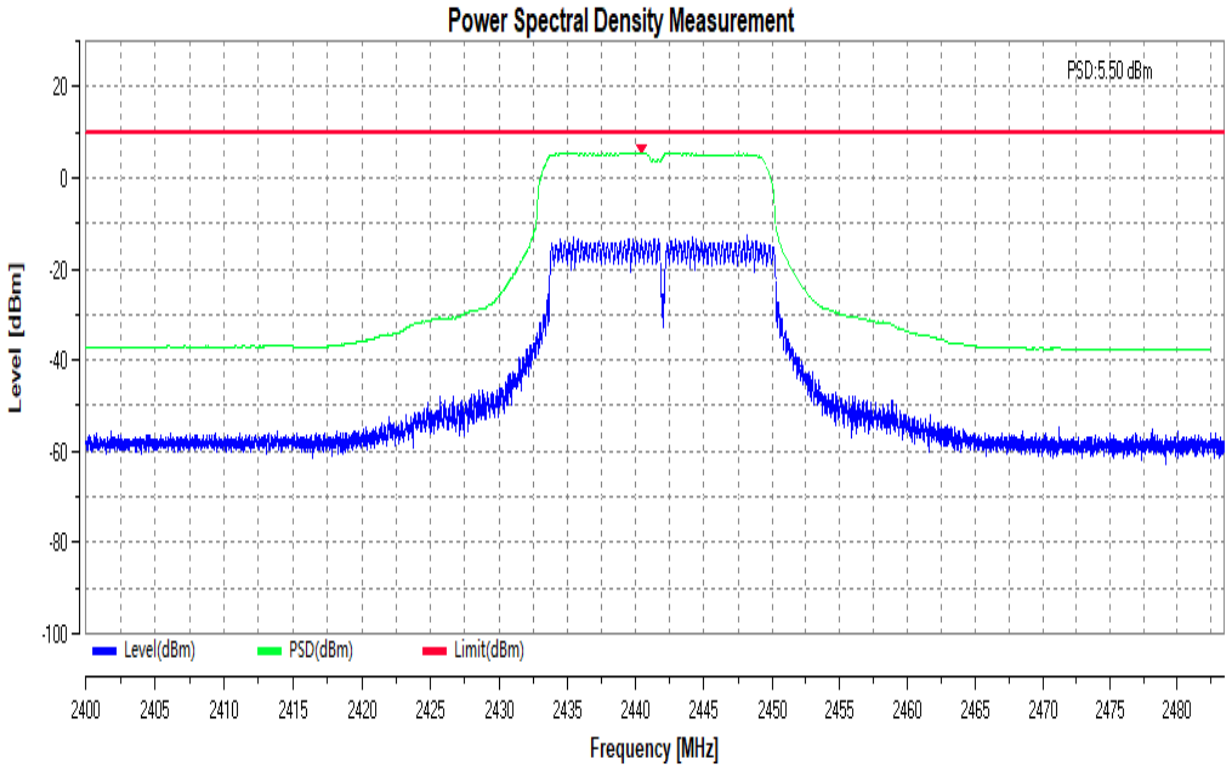
Power Spectral Density_TNVN_11B_2472_Ant1



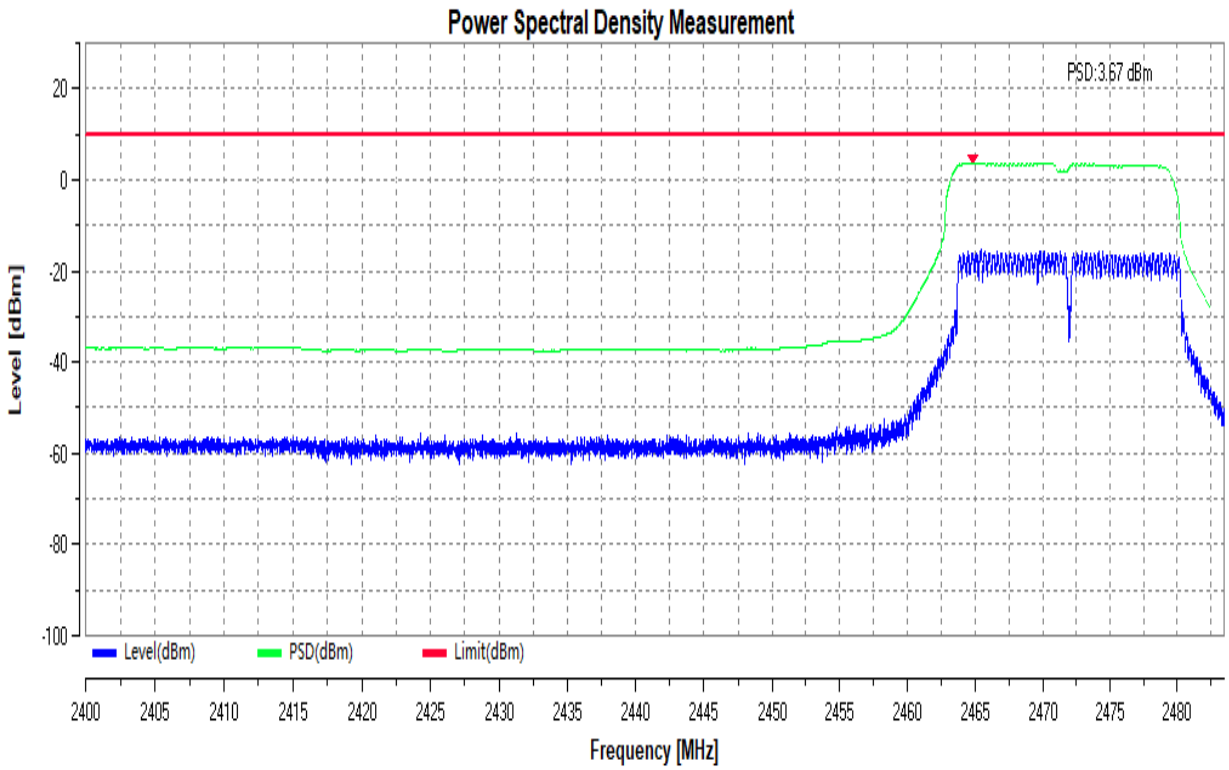
Power Spectral Density_TNVN_11G_2412_Ant1



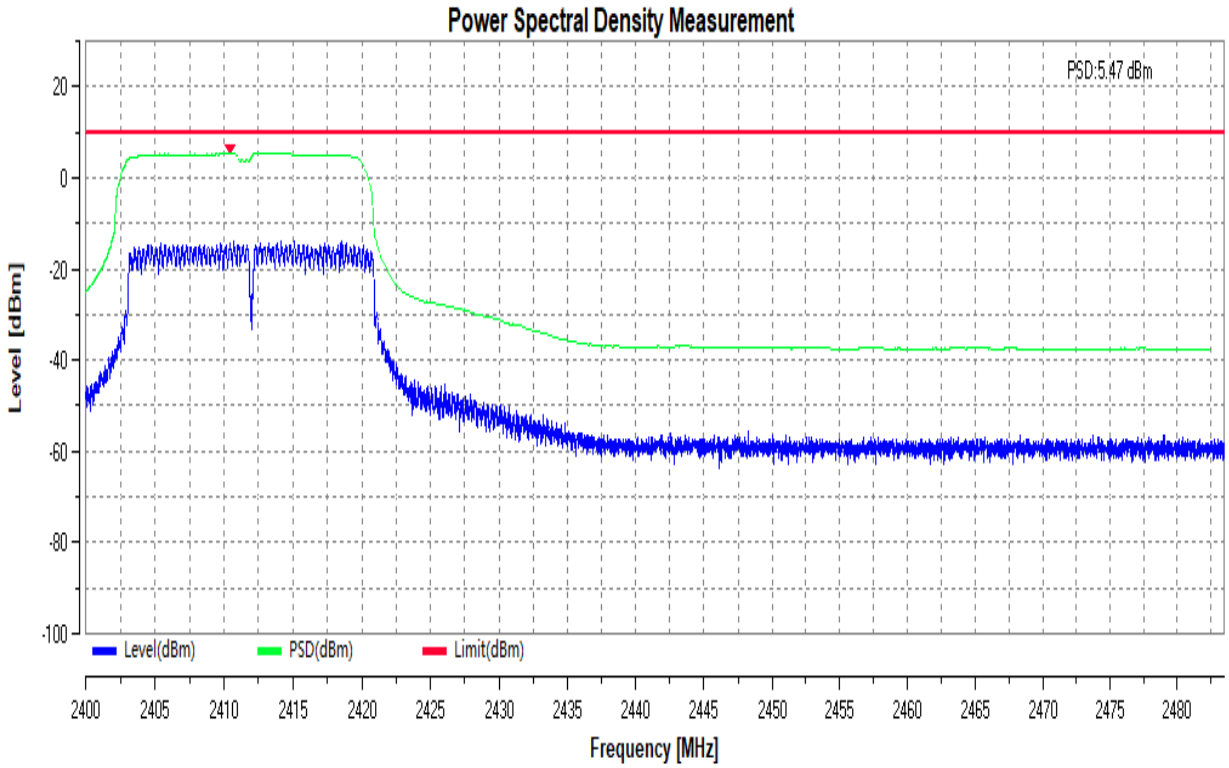
Power Spectral Density_TNVN_11G_2442_Ant1



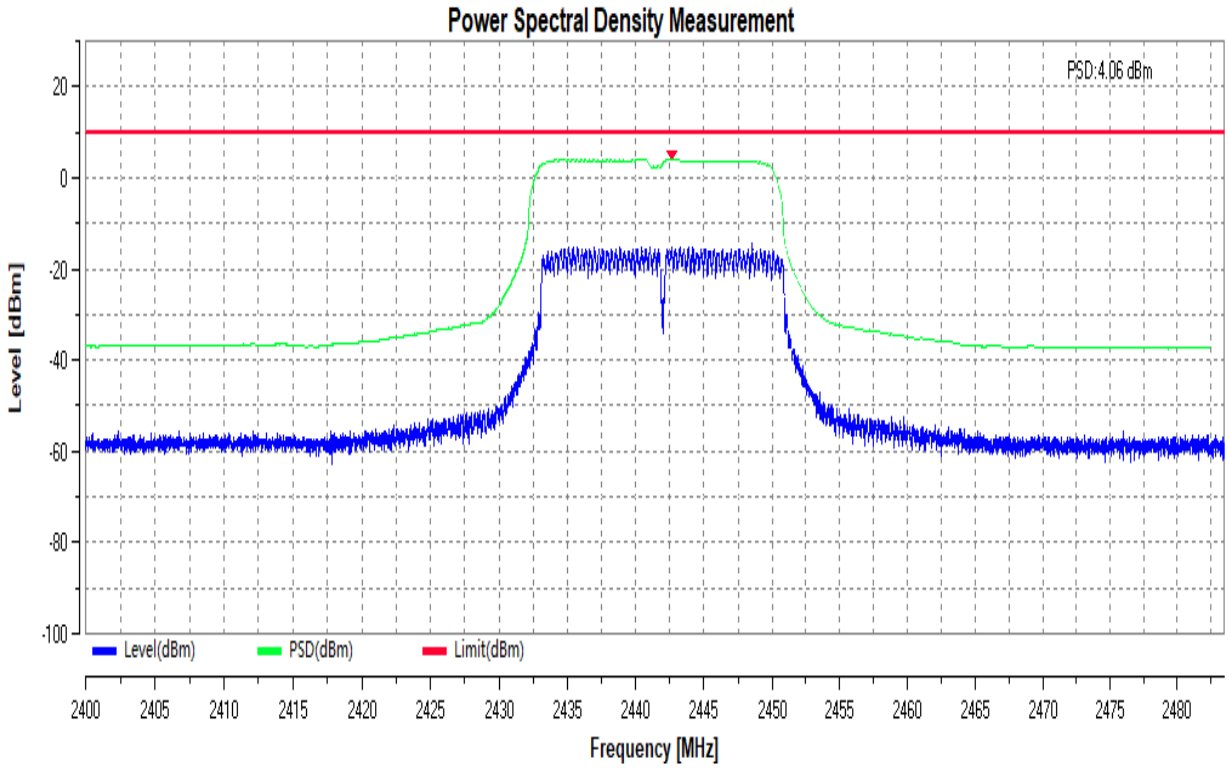
Power Spectral Density_TNVN_11G_2472_Ant1



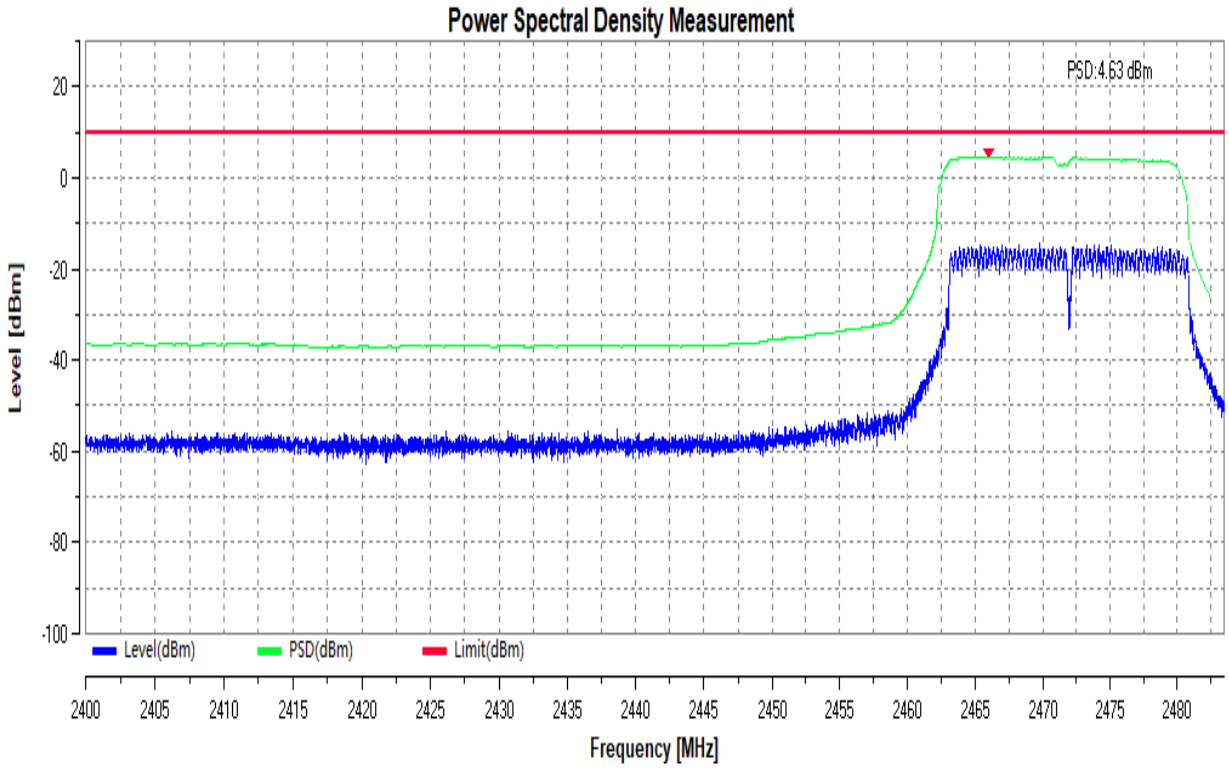
Power Spectral Density_TNVN_11N20SISO_2412_Ant1



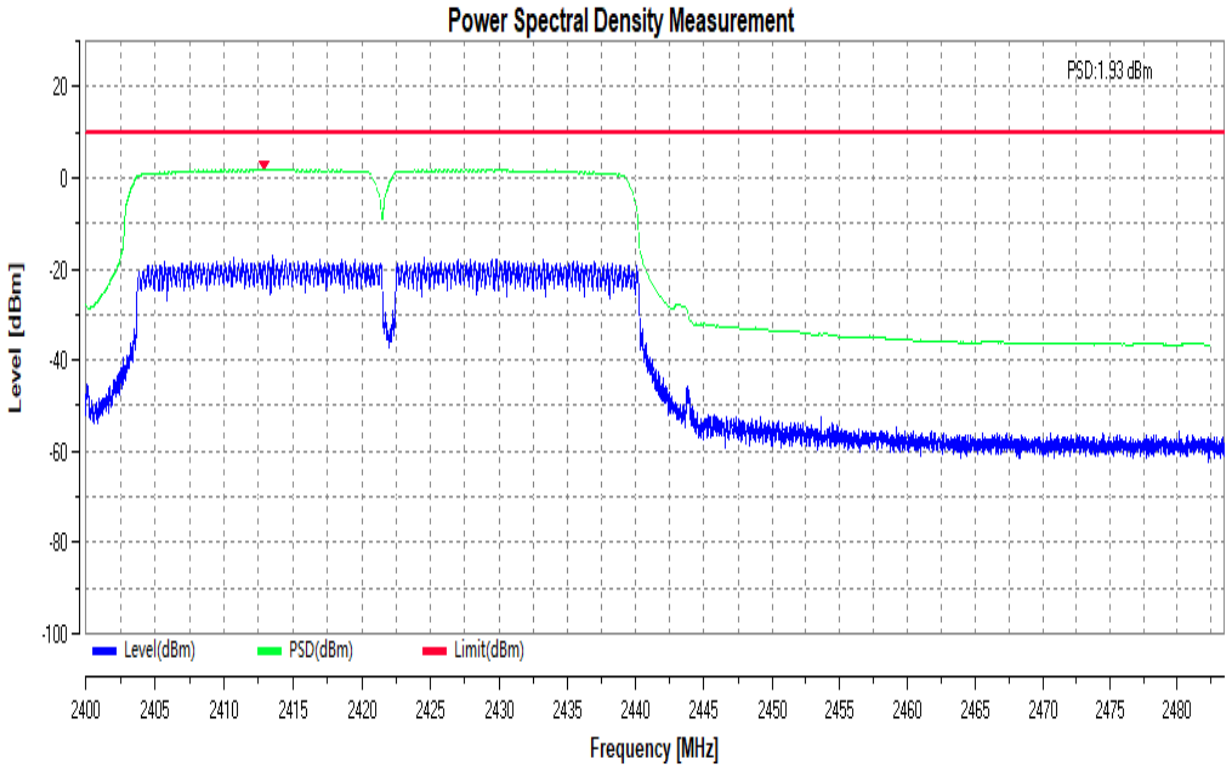
Power Spectral Density_TNVN_11N20SISO_2442_Ant1



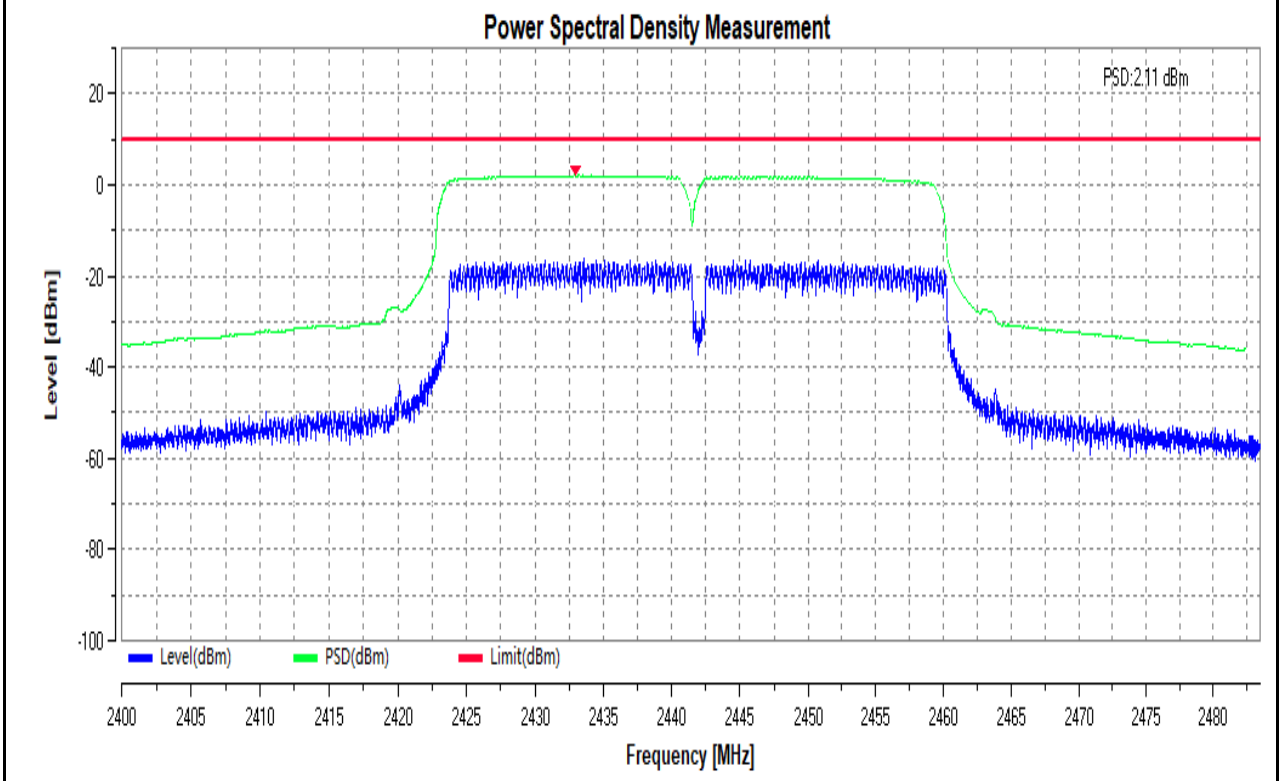
Power Spectral Density_TNVN_11N20SISO_2472_Ant1



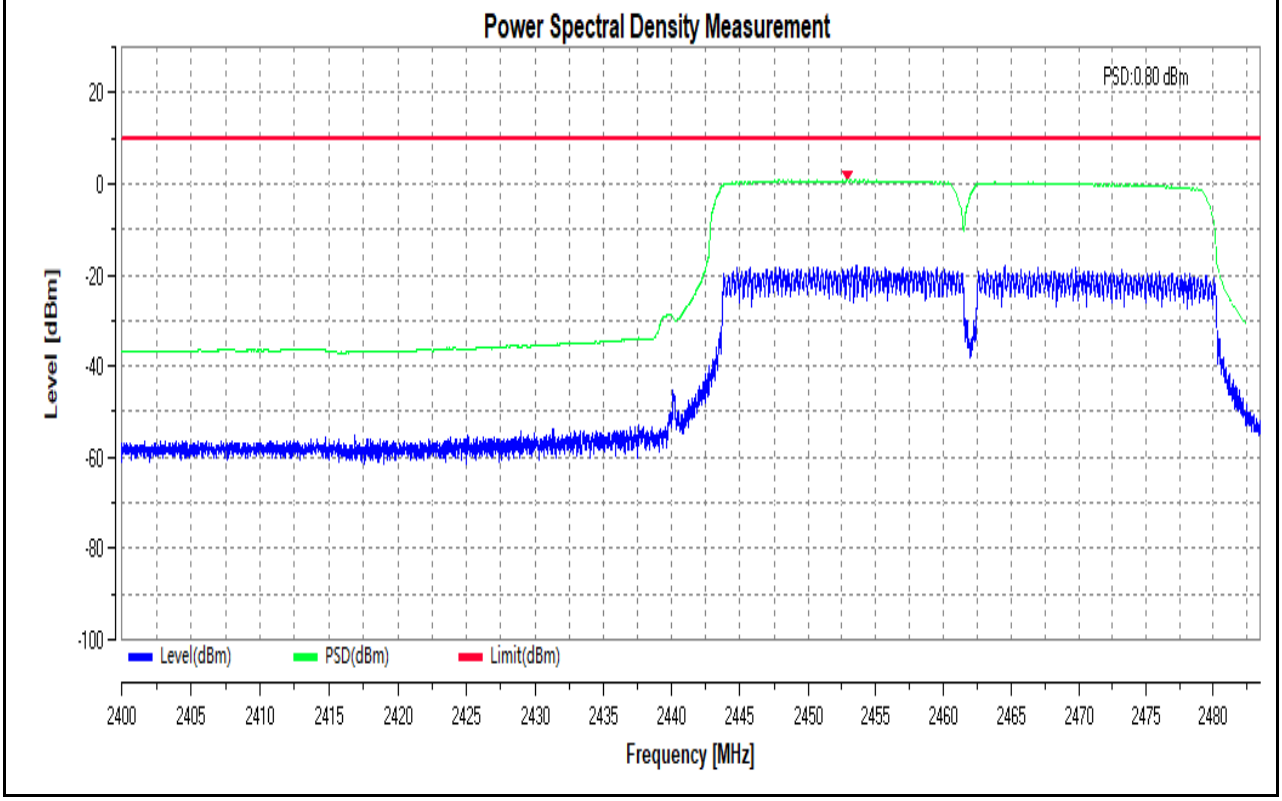
Power Spectral Density_TNVN_11N40SISO_2422_Ant1



Power Spectral Density_TNVN_11N40SISO_2442_Ant1



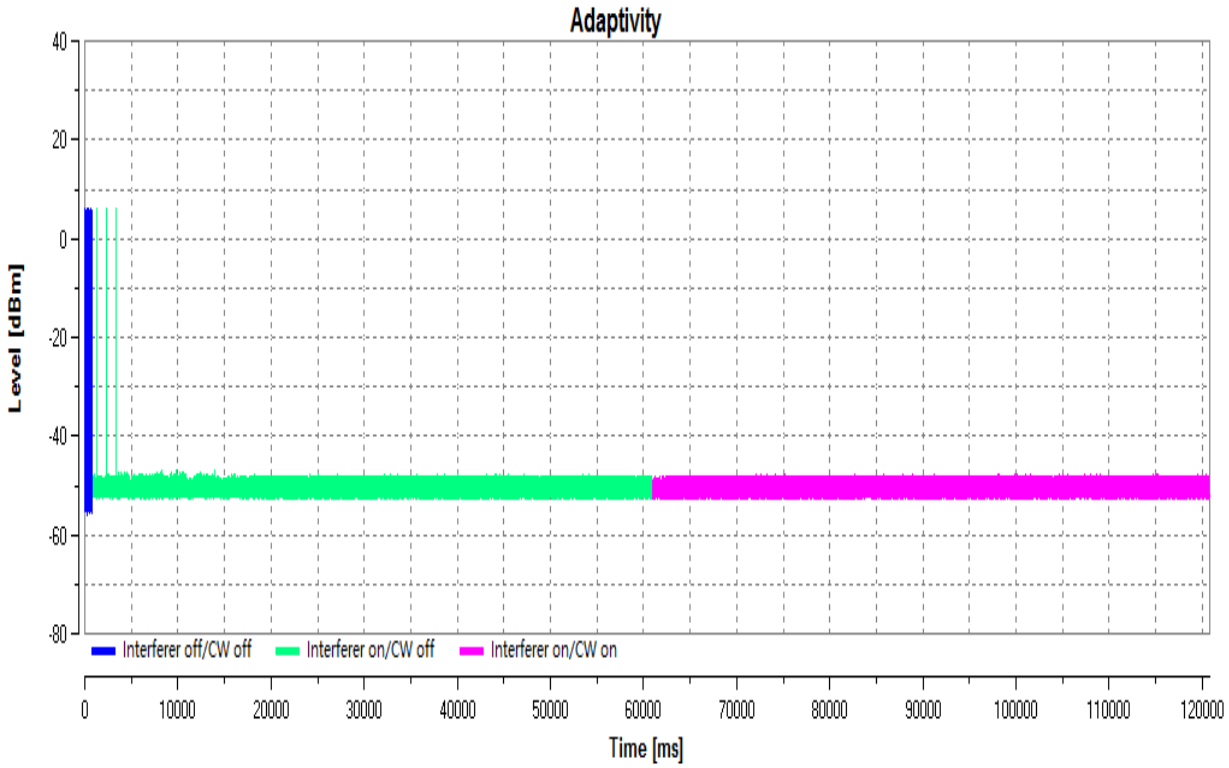
Power Spectral Density_TNVN_11N40SISO_2462_Ant1



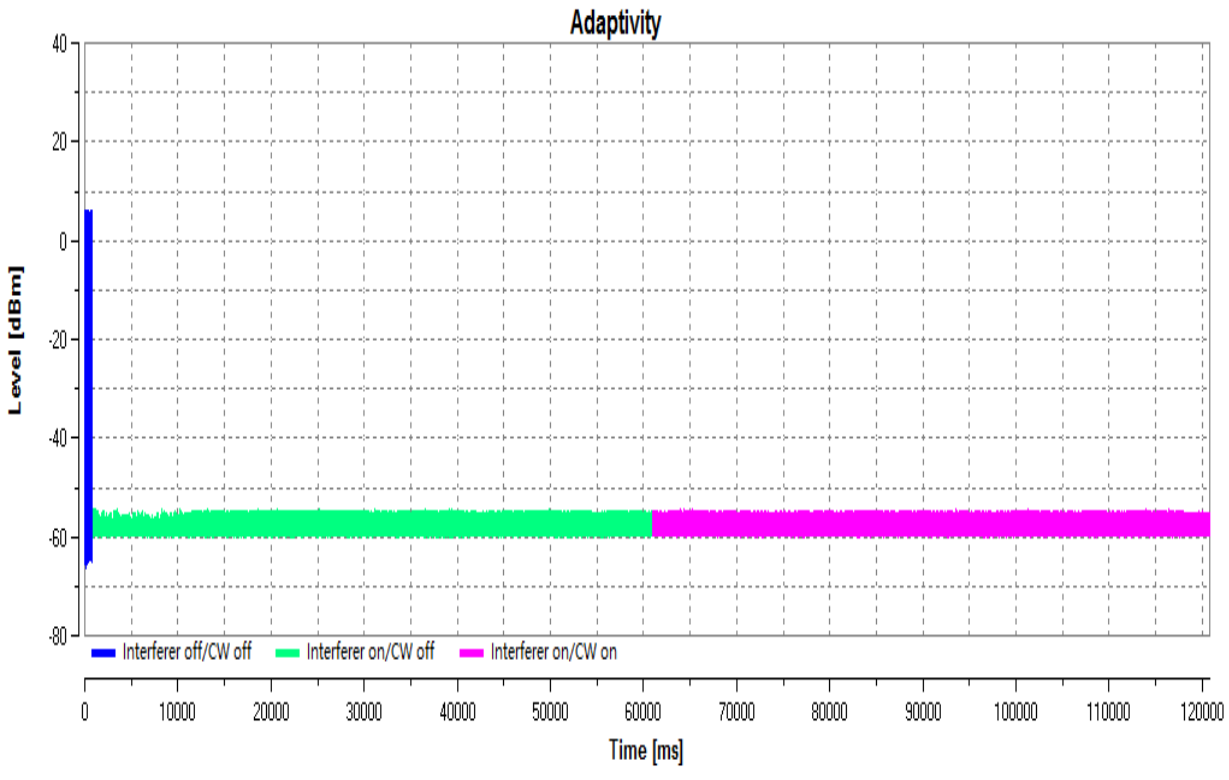
3.Adaptivity

Test Condition	Test Mode	Test Channel	Ant	Max. COT [ms]	Min. Idel Time [ms]	Add AWGN Time [ms]	AWGN Level [dBm/MHz]	Adaptivity Short Control [%]	Add CW Time [ms]	CW Level [dBm]	CW Short Control [%]	Verdict
TNVN	11B	2412	Ant1	5.333	0.061	800	-66.8	1	60800	-33.7	0	PASS
TNVN	11B	2472	Ant1	5.312	0.066	800	-66.8	0	60800	-33.7	0	PASS

Adaptivity_TNVN_11B_2412_Ant1



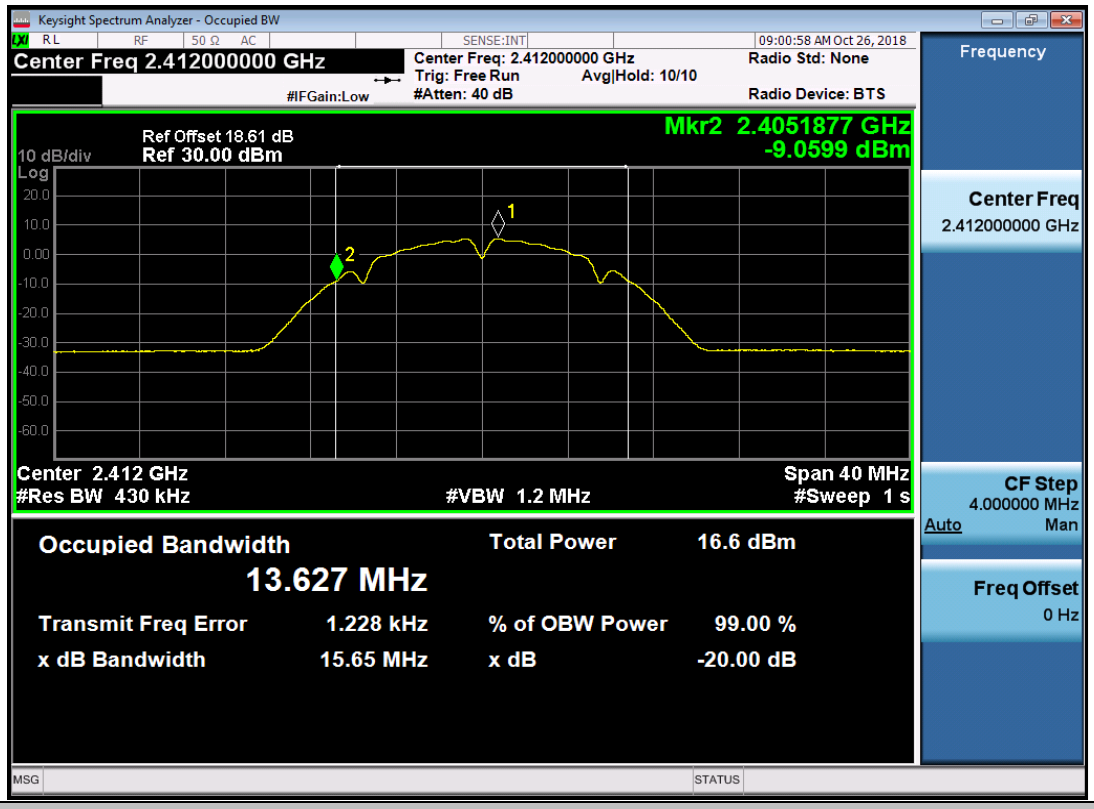
Adaptivity_TNVN_11B_2472_Ant1



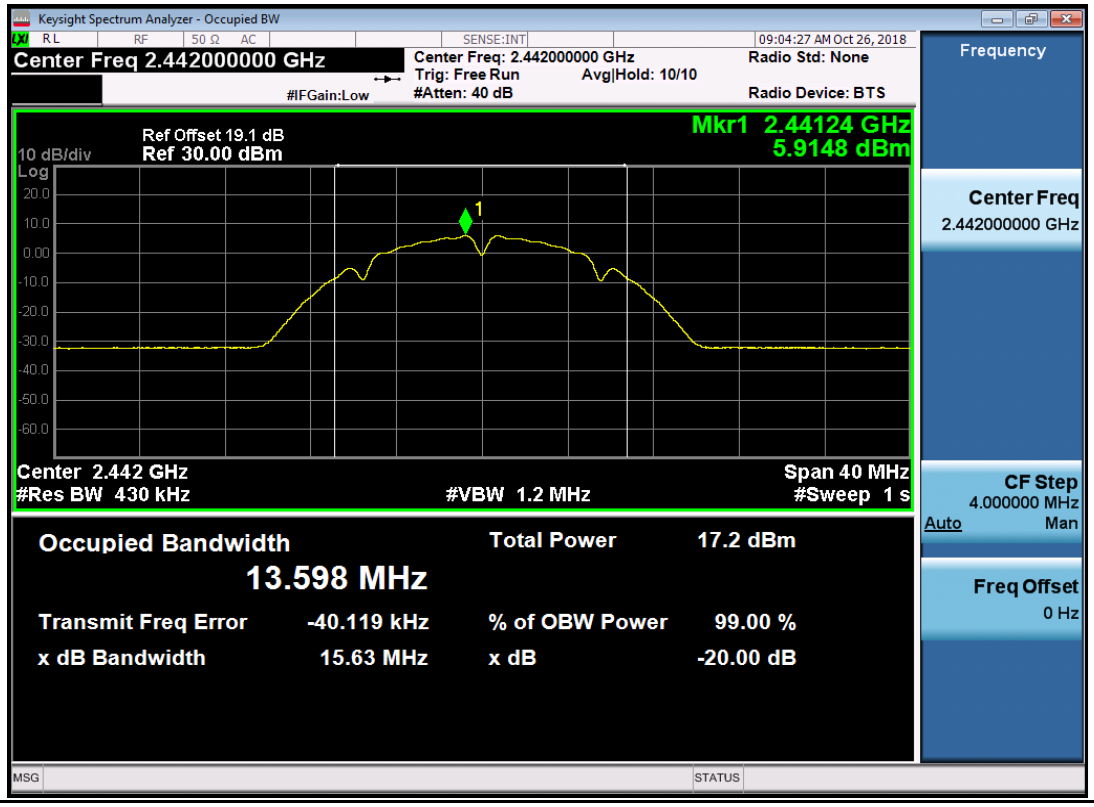
4.Occupied Channel Bandwidth

Test Condition	Test Mode	Test Channel	Ant	OBW [MHz]	FL OBW [MHz]	FH OBW [MHz]	Verdict
TNVN	11B	2412	Ant1	13.627	2405.18773	---	PASS
TNVN	11B	2442	Ant1	13.598	---	---	PASS
TNVN	11B	2472	Ant1	13.598	---	2478.73753	PASS
TNVN	11G	2412	Ant1	16.623	2403.67123	---	PASS
TNVN	11G	2442	Ant1	16.620	---	---	PASS
TNVN	11G	2472	Ant1	16.631	---	2480.28098	PASS
TNVN	11N20SISO	2412	Ant1	17.777	2403.09574	---	PASS
TNVN	11N20SISO	2442	Ant1	17.771	---	---	PASS
TNVN	11N20SISO	2472	Ant1	17.763	---	2480.84478	PASS
TNVN	11N40SISO	2422	Ant1	36.398	2403.79073	---	PASS
TNVN	11N40SISO	2442	Ant1	36.377	---	---	PASS
TNVN	11N40SISO	2462	Ant1	36.424	---	2480.13604	PASS

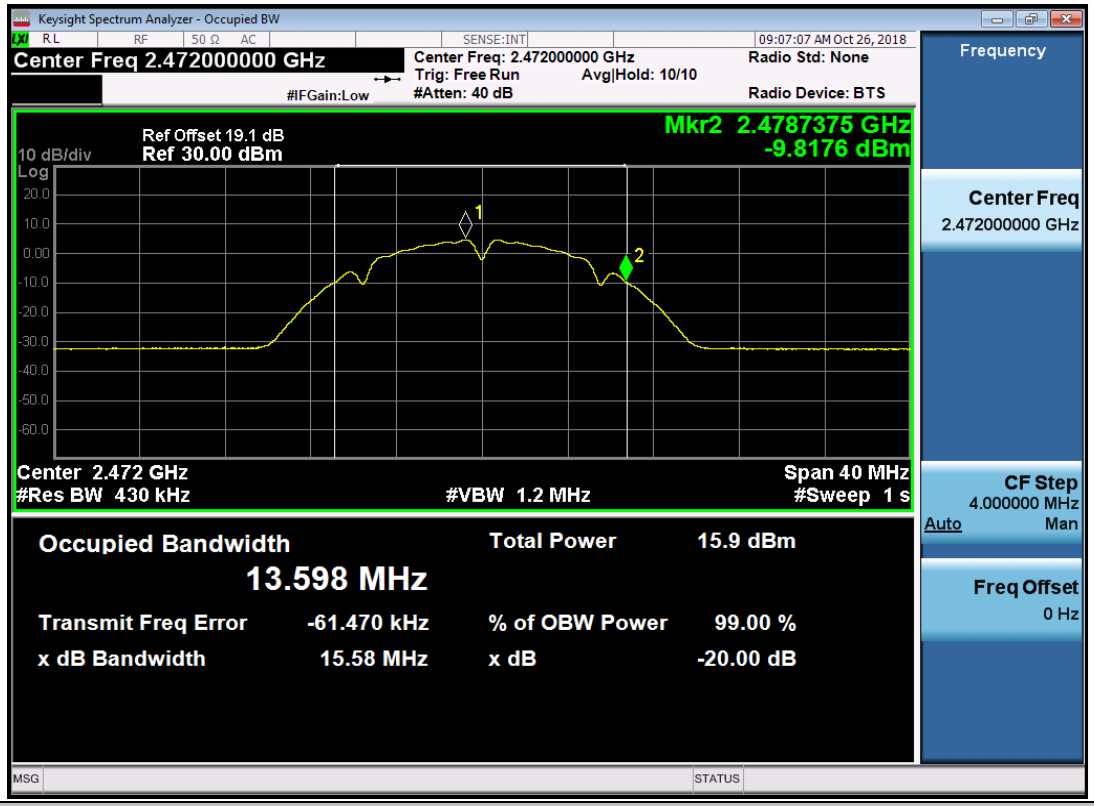
Occupied Channel Bandwidth_TNVN_11B_2412_Ant1



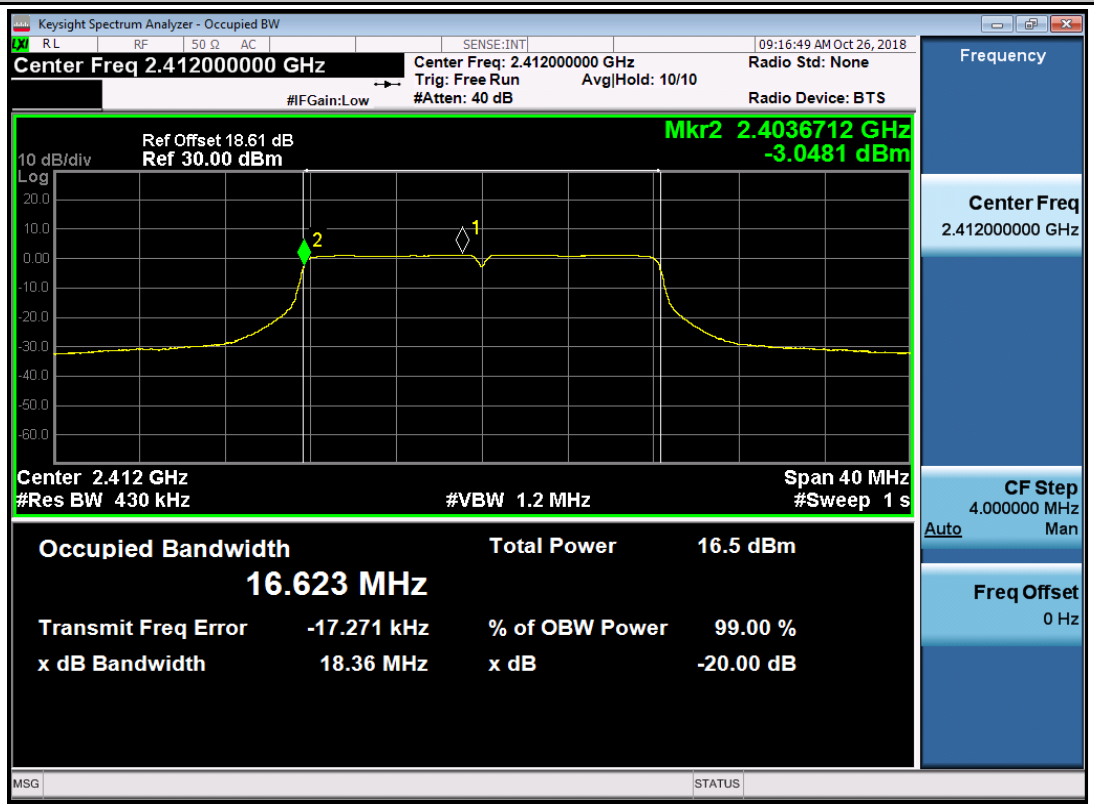
Occupied Channel Bandwidth_TNVN_11B_2442_Ant1



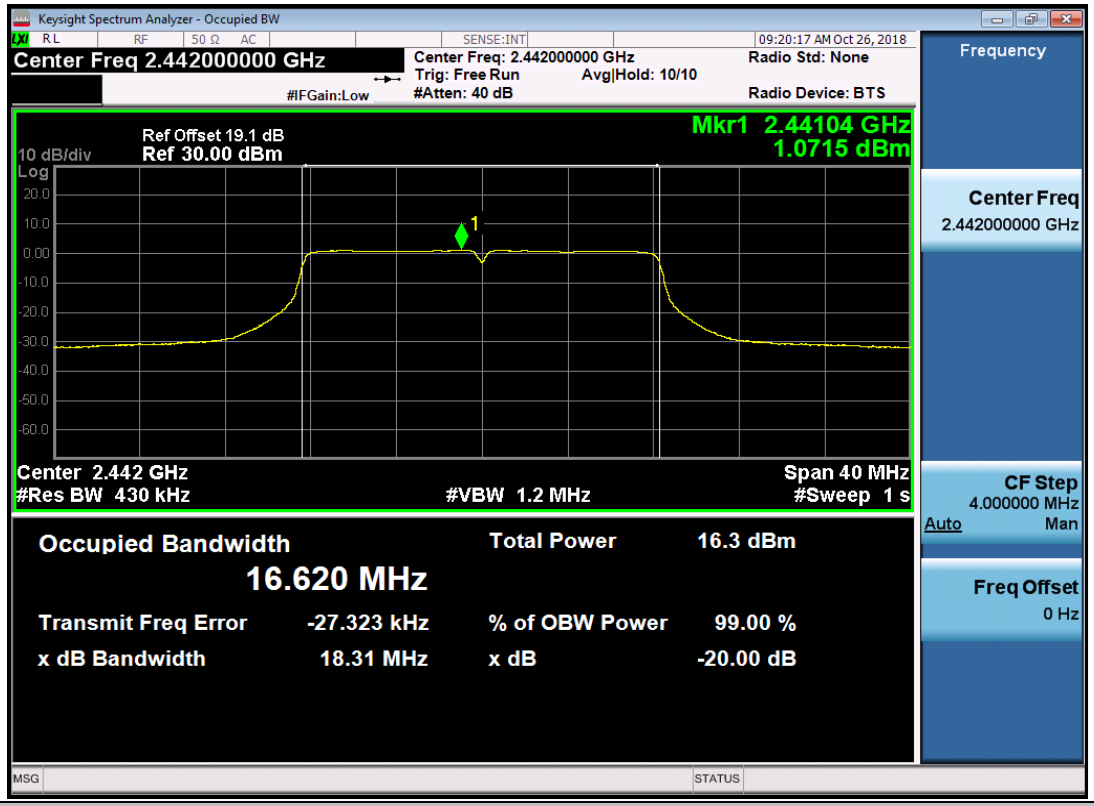
Occupied Channel Bandwidth_TNVN_11B_2472_Ant1



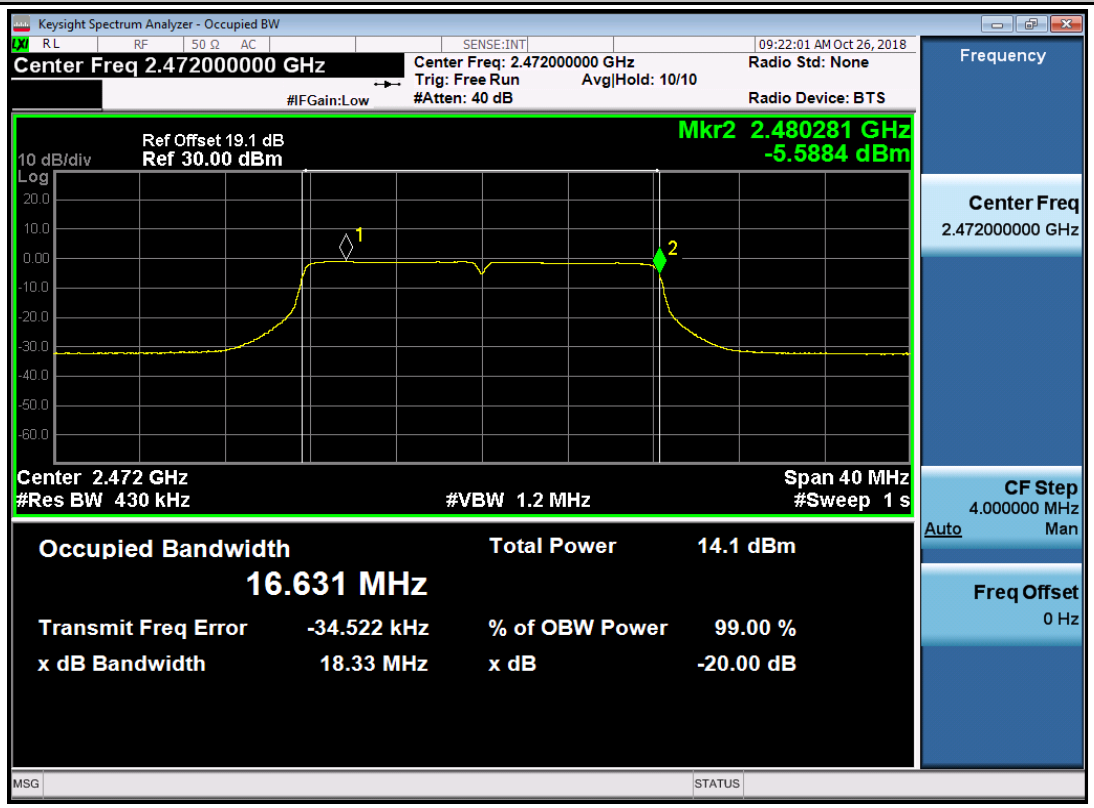
Occupied Channel Bandwidth_TNVN_11G_2412_Ant1



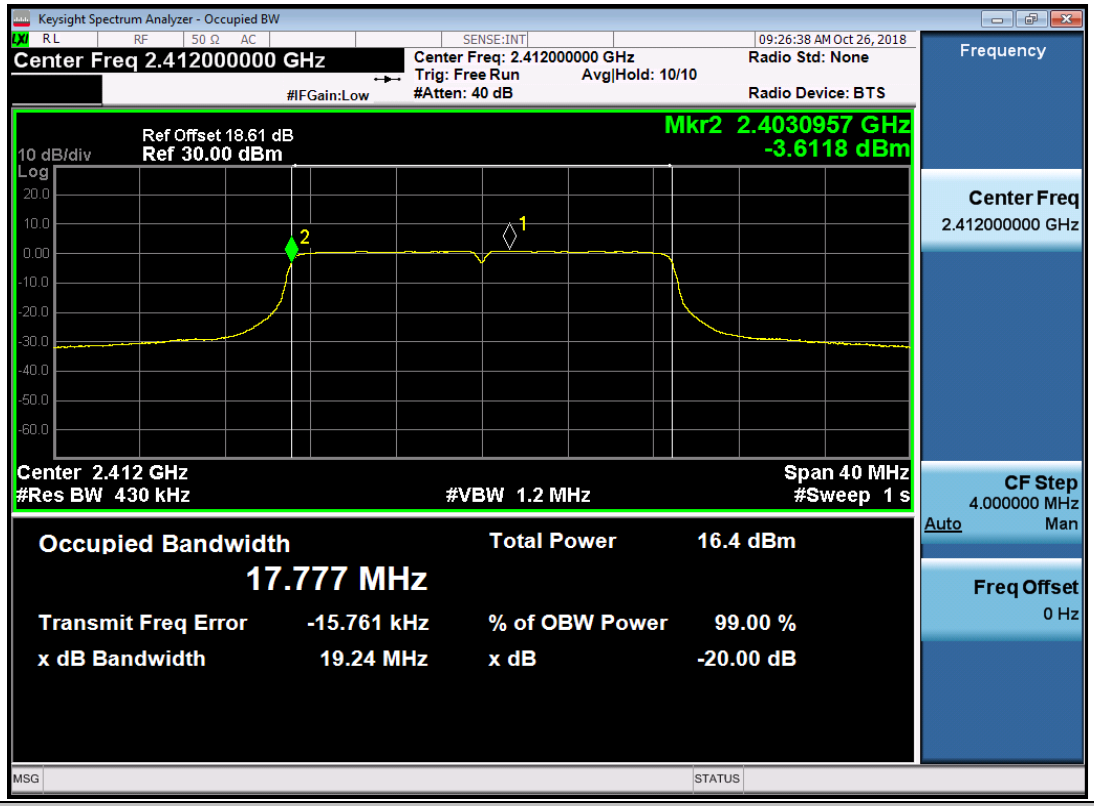
Occupied Channel Bandwidth_TNVN_11G_2442_Ant1



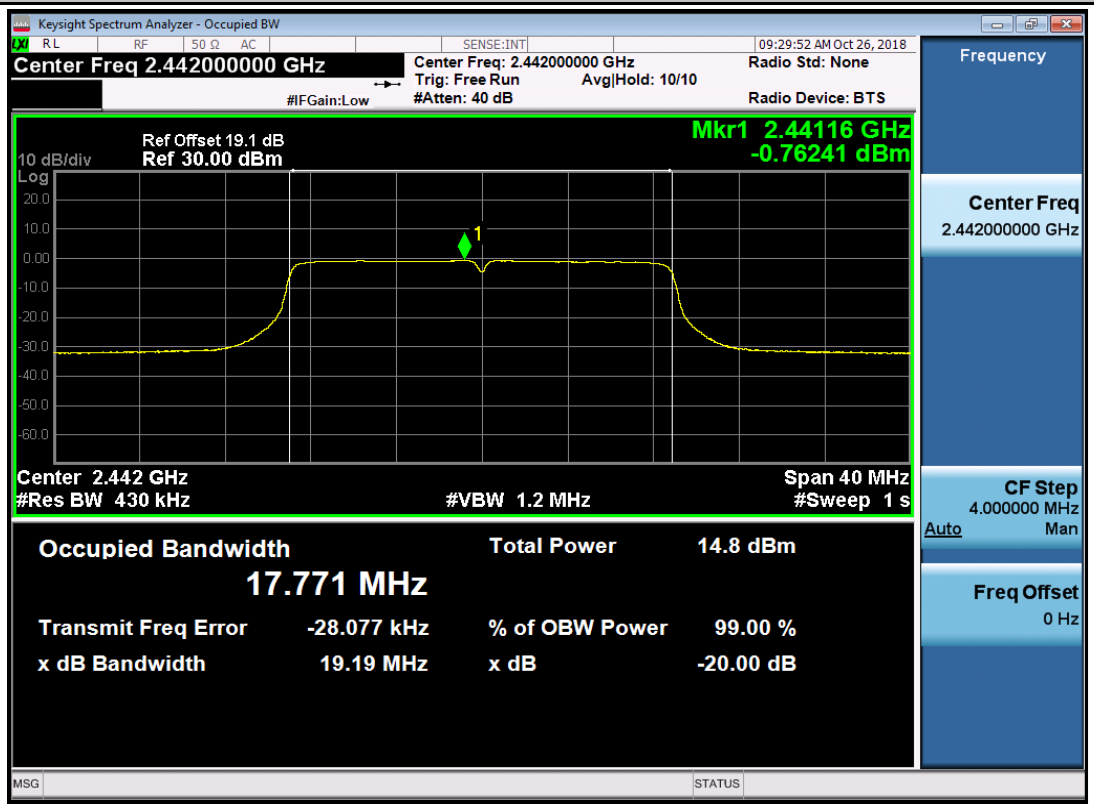
Occupied Channel Bandwidth_TNVN_11G_2472_Ant1



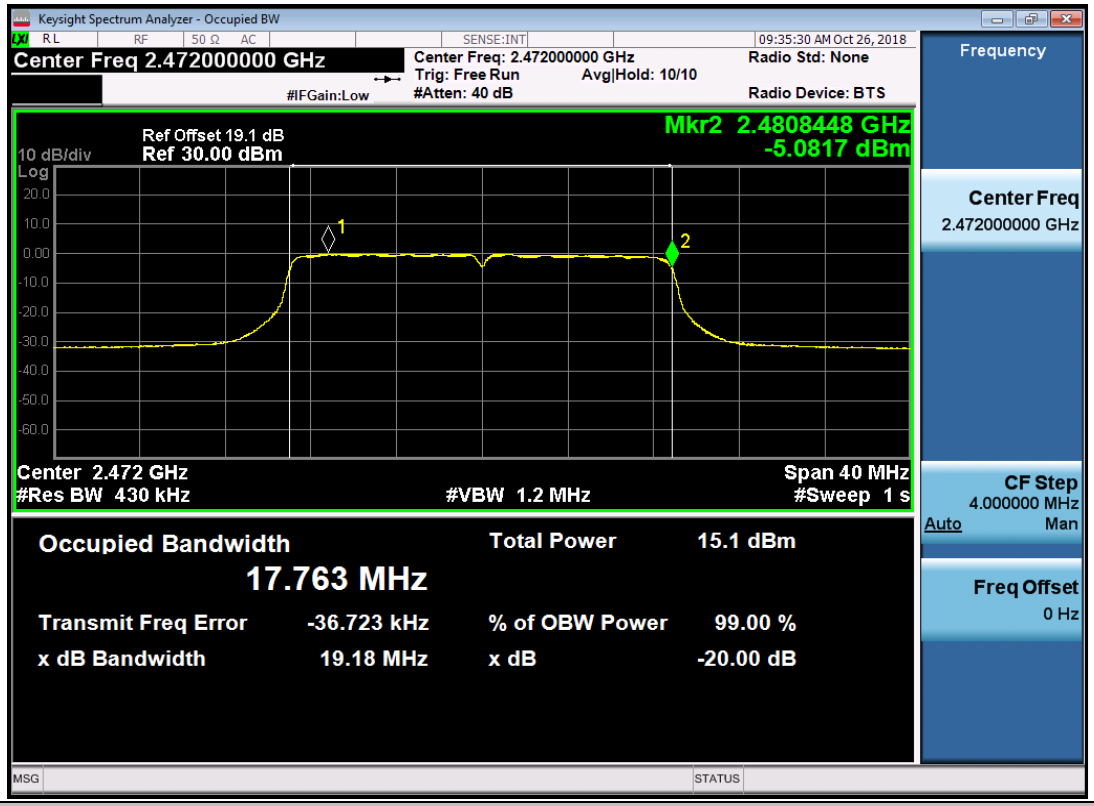
Occupied Channel Bandwidth_TNVN_11N20SISO_2412_Ant1



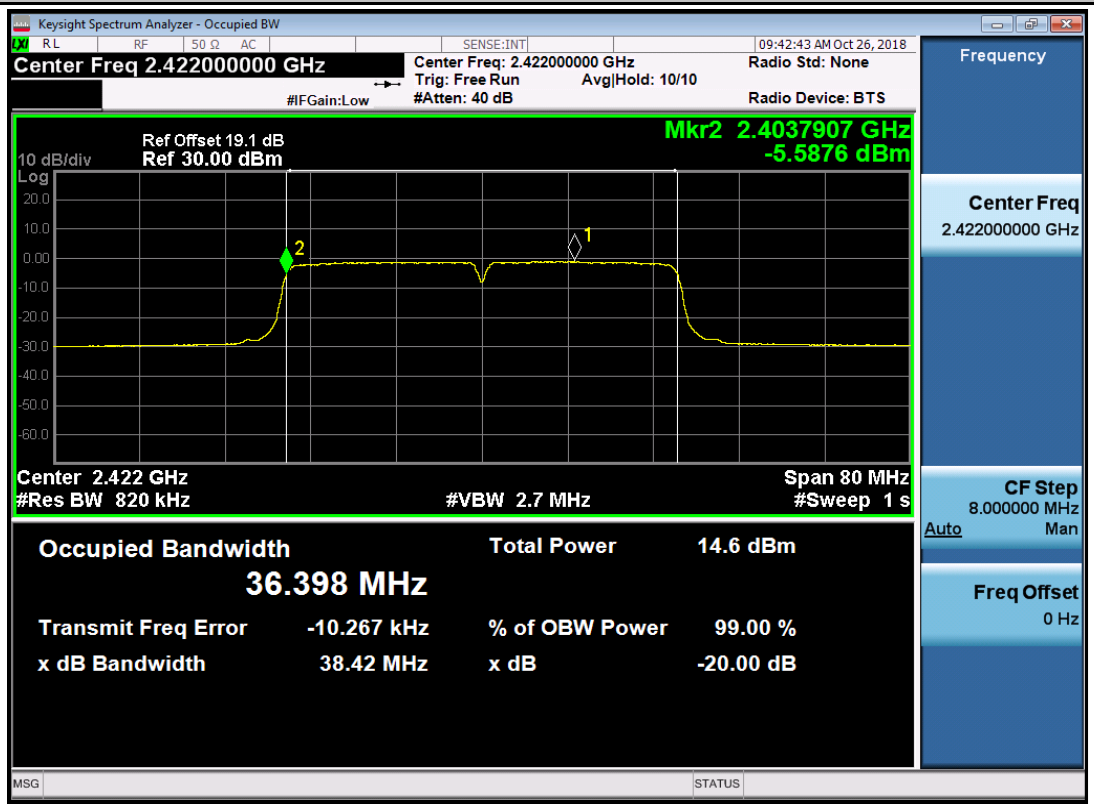
Occupied Channel Bandwidth_TNVN_11N20SISO_2442_Ant1



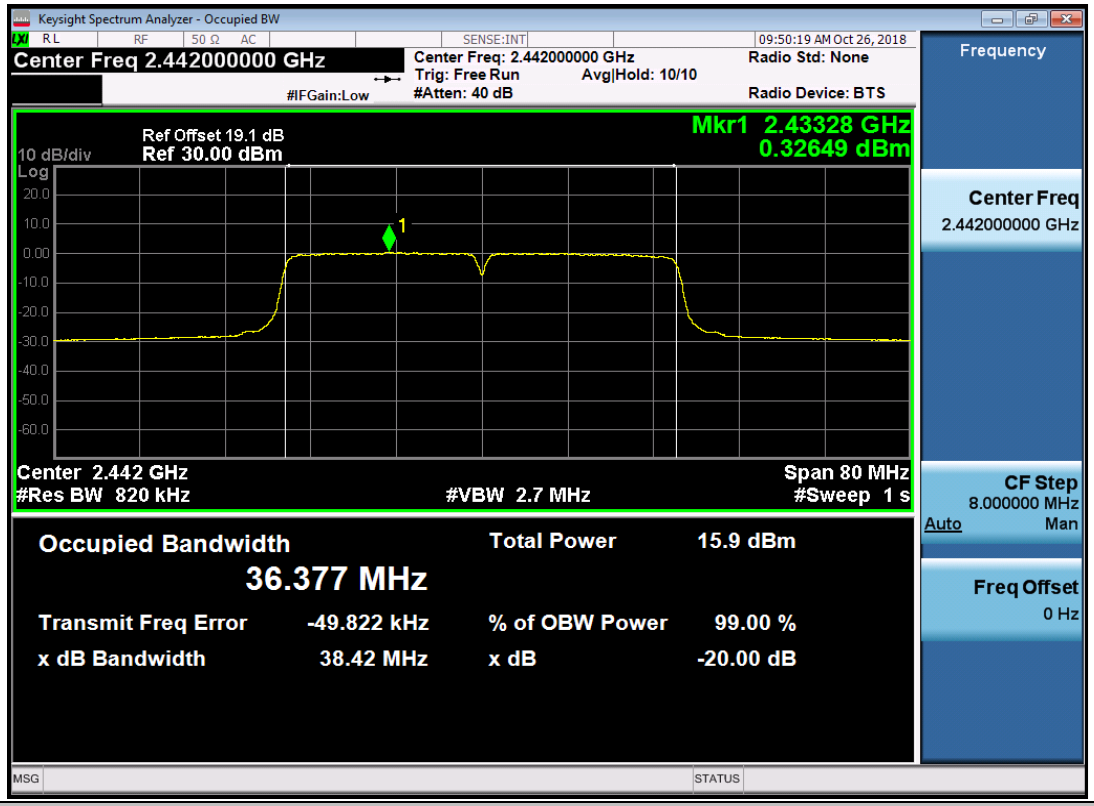
Occupied Channel Bandwidth_TNVN_11N20SISO_2472_Ant1



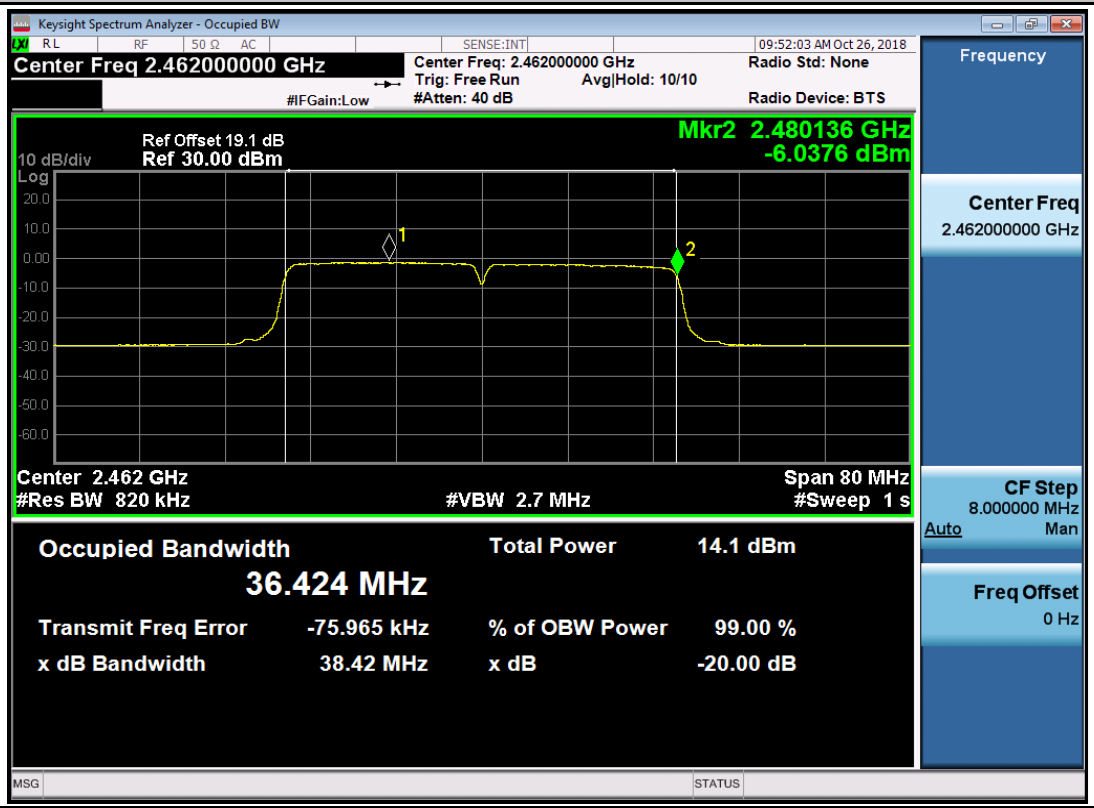
Occupied Channel Bandwidth_TNVN_11N40SISO_2422_Ant1



Occupied Channel Bandwidth_TNVN_11N40SISO_2442_Ant1



Occupied Channel Bandwidth_TNVN_11N40SISO_2462_Ant1



5.Transmitter unwanted emissions in the out-of-band domain

Test Condition	Test Mode	Test Channel	Ant	Freq [MHz]	Result [dBm]	Limit [dBm]	Verdict
TNVN	11B	2412	Ant1	2372.873	-48.26	<=-20	PASS
TNVN	11B	2412	Ant1	2373.246	-46.97	<=-20	PASS
TNVN	11B	2412	Ant1	2373.873	-48.06	<=-20	PASS
TNVN	11B	2412	Ant1	2374.873	-48.59	<=-20	PASS
TNVN	11B	2412	Ant1	2375.873	-49.46	<=-20	PASS
TNVN	11B	2412	Ant1	2376.873	-48.95	<=-20	PASS
TNVN	11B	2412	Ant1	2377.873	-49.28	<=-20	PASS
TNVN	11B	2412	Ant1	2378.873	-49.70	<=-20	PASS
TNVN	11B	2412	Ant1	2379.873	-48.94	<=-20	PASS
TNVN	11B	2412	Ant1	2380.873	-49.07	<=-20	PASS
TNVN	11B	2412	Ant1	2381.873	-48.63	<=-20	PASS
TNVN	11B	2412	Ant1	2382.873	-48.98	<=-20	PASS
TNVN	11B	2412	Ant1	2383.873	-48.05	<=-20	PASS
TNVN	11B	2412	Ant1	2384.873	-48.42	<=-20	PASS
TNVN	11B	2412	Ant1	2385.873	-47.90	<=-20	PASS
TNVN	11B	2412	Ant1	2386.500	-48.02	<=-10	PASS
TNVN	11B	2412	Ant1	2386.873	-47.52	<=-10	PASS
TNVN	11B	2412	Ant1	2387.500	-48.00	<=-10	PASS
TNVN	11B	2412	Ant1	2388.500	-47.69	<=-10	PASS
TNVN	11B	2412	Ant1	2389.500	-48.54	<=-10	PASS
TNVN	11B	2412	Ant1	2390.500	-47.32	<=-10	PASS
TNVN	11B	2412	Ant1	2391.500	-46.93	<=-10	PASS
TNVN	11B	2412	Ant1	2392.500	-44.69	<=-10	PASS
TNVN	11B	2412	Ant1	2393.500	-42.23	<=-10	PASS
TNVN	11B	2412	Ant1	2394.500	-40.46	<=-10	PASS
TNVN	11B	2412	Ant1	2395.500	-39.74	<=-10	PASS
TNVN	11B	2412	Ant1	2396.500	-37.52	<=-10	PASS
TNVN	11B	2412	Ant1	2397.500	-36.45	<=-10	PASS
TNVN	11B	2412	Ant1	2398.500	-37.23	<=-10	PASS
TNVN	11B	2412	Ant1	2399.500	-37.35	<=-10	PASS

TNVN	11B	2472	Ant1	2484.000	-40.38	<=-10	PASS
TNVN	11B	2472	Ant1	2485.000	-41.32	<=-10	PASS
TNVN	11B	2472	Ant1	2486.000	-41.39	<=-10	PASS
TNVN	11B	2472	Ant1	2487.000	-41.75	<=-10	PASS
TNVN	11B	2472	Ant1	2488.000	-42.80	<=-10	PASS
TNVN	11B	2472	Ant1	2489.000	-43.99	<=-10	PASS
TNVN	11B	2472	Ant1	2490.000	-45.43	<=-10	PASS
TNVN	11B	2472	Ant1	2491.000	-45.77	<=-10	PASS
TNVN	11B	2472	Ant1	2492.000	-47.80	<=-10	PASS
TNVN	11B	2472	Ant1	2493.000	-48.42	<=-10	PASS
TNVN	11B	2472	Ant1	2494.000	-48.27	<=-10	PASS
TNVN	11B	2472	Ant1	2495.000	-48.00	<=-10	PASS
TNVN	11B	2472	Ant1	2496.000	-48.21	<=-10	PASS
TNVN	11B	2472	Ant1	2496.598	-49.13	<=-10	PASS
TNVN	11B	2472	Ant1	2497.000	-48.94	<=-10	PASS
TNVN	11B	2472	Ant1	2497.598	-48.96	<=-20	PASS
TNVN	11B	2472	Ant1	2498.598	-48.79	<=-20	PASS
TNVN	11B	2472	Ant1	2499.598	-48.12	<=-20	PASS
TNVN	11B	2472	Ant1	2500.598	-48.35	<=-20	PASS
TNVN	11B	2472	Ant1	2501.598	-49.62	<=-20	PASS
TNVN	11B	2472	Ant1	2502.598	-49.46	<=-20	PASS
TNVN	11B	2472	Ant1	2503.598	-49.79	<=-20	PASS
TNVN	11B	2472	Ant1	2504.598	-48.78	<=-20	PASS
TNVN	11B	2472	Ant1	2505.598	-49.02	<=-20	PASS
TNVN	11B	2472	Ant1	2506.598	-48.89	<=-20	PASS
TNVN	11B	2472	Ant1	2507.598	-49.90	<=-20	PASS
TNVN	11B	2472	Ant1	2508.598	-48.95	<=-20	PASS
TNVN	11B	2472	Ant1	2509.598	-48.87	<=-20	PASS
TNVN	11B	2472	Ant1	2510.196	-47.30	<=-20	PASS
TNVN	11B	2472	Ant1	2510.598	-49.33	<=-20	PASS
TNVN	11G	2412	Ant1	2366.877	-43.52	<=-20	PASS
TNVN	11G	2412	Ant1	2367.254	-43.31	<=-20	PASS
TNVN	11G	2412	Ant1	2367.877	-42.57	<=-20	PASS

TNVN	11G	2412	Ant1	2368.877	-40.45	<=-20	PASS
TNVN	11G	2412	Ant1	2369.877	-41.54	<=-20	PASS
TNVN	11G	2412	Ant1	2370.877	-40.54	<=-20	PASS
TNVN	11G	2412	Ant1	2371.877	-42.93	<=-20	PASS
TNVN	11G	2412	Ant1	2372.877	-42.00	<=-20	PASS
TNVN	11G	2412	Ant1	2373.877	-41.94	<=-20	PASS
TNVN	11G	2412	Ant1	2374.877	-42.42	<=-20	PASS
TNVN	11G	2412	Ant1	2375.877	-41.38	<=-20	PASS
TNVN	11G	2412	Ant1	2376.877	-41.91	<=-20	PASS
TNVN	11G	2412	Ant1	2377.877	-39.79	<=-20	PASS
TNVN	11G	2412	Ant1	2378.877	-39.49	<=-20	PASS
TNVN	11G	2412	Ant1	2379.877	-40.63	<=-20	PASS
TNVN	11G	2412	Ant1	2380.877	-39.49	<=-20	PASS
TNVN	11G	2412	Ant1	2381.877	-39.28	<=-20	PASS
TNVN	11G	2412	Ant1	2382.877	-39.71	<=-20	PASS
TNVN	11G	2412	Ant1	2383.500	-38.32	<=-10	PASS
TNVN	11G	2412	Ant1	2383.877	-37.50	<=-10	PASS
TNVN	11G	2412	Ant1	2384.500	-38.64	<=-10	PASS
TNVN	11G	2412	Ant1	2385.500	-38.27	<=-10	PASS
TNVN	11G	2412	Ant1	2386.500	-36.23	<=-10	PASS
TNVN	11G	2412	Ant1	2387.500	-36.90	<=-10	PASS
TNVN	11G	2412	Ant1	2388.500	-35.91	<=-10	PASS
TNVN	11G	2412	Ant1	2389.500	-34.51	<=-10	PASS
TNVN	11G	2412	Ant1	2390.500	-32.85	<=-10	PASS
TNVN	11G	2412	Ant1	2391.500	-31.05	<=-10	PASS
TNVN	11G	2412	Ant1	2392.500	-30.95	<=-10	PASS
TNVN	11G	2412	Ant1	2393.500	-29.98	<=-10	PASS
TNVN	11G	2412	Ant1	2394.500	-29.68	<=-10	PASS
TNVN	11G	2412	Ant1	2395.500	-27.01	<=-10	PASS
TNVN	11G	2412	Ant1	2396.500	-27.99	<=-10	PASS
TNVN	11G	2412	Ant1	2397.500	-28.31	<=-10	PASS
TNVN	11G	2412	Ant1	2398.500	-26.18	<=-10	PASS
TNVN	11G	2412	Ant1	2399.500	-27.33	<=-10	PASS

TNVN	11G	2472	Ant1	2484.000	-28.09	<=-10	PASS
TNVN	11G	2472	Ant1	2485.000	-36.59	<=-10	PASS
TNVN	11G	2472	Ant1	2486.000	-37.00	<=-10	PASS
TNVN	11G	2472	Ant1	2487.000	-36.31	<=-10	PASS
TNVN	11G	2472	Ant1	2488.000	-35.79	<=-10	PASS
TNVN	11G	2472	Ant1	2489.000	-36.66	<=-10	PASS
TNVN	11G	2472	Ant1	2490.000	-35.78	<=-10	PASS
TNVN	11G	2472	Ant1	2491.000	-37.38	<=-10	PASS
TNVN	11G	2472	Ant1	2492.000	-38.96	<=-10	PASS
TNVN	11G	2472	Ant1	2493.000	-41.52	<=-10	PASS
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TNVN	11G	2472	Ant1	2495.000	-41.13	<=-10	PASS
TNVN	11G	2472	Ant1	2496.000	-46.65	<=-10	PASS
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TNVN	11G	2472	Ant1	2499.000	-46.97	<=-10	PASS
TNVN	11G	2472	Ant1	2499.631	-48.38	<=-10	PASS
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TNVN	11G	2472	Ant1	2501.631	-48.56	<=-20	PASS
TNVN	11G	2472	Ant1	2502.631	-48.74	<=-20	PASS
TNVN	11G	2472	Ant1	2503.631	-49.14	<=-20	PASS
TNVN	11G	2472	Ant1	2504.631	-49.52	<=-20	PASS
TNVN	11G	2472	Ant1	2505.631	-47.83	<=-20	PASS
TNVN	11G	2472	Ant1	2506.631	-48.98	<=-20	PASS
TNVN	11G	2472	Ant1	2507.631	-49.87	<=-20	PASS
TNVN	11G	2472	Ant1	2508.631	-49.09	<=-20	PASS
TNVN	11G	2472	Ant1	2509.631	-49.09	<=-20	PASS
TNVN	11G	2472	Ant1	2510.631	-48.52	<=-20	PASS
TNVN	11G	2472	Ant1	2511.631	-49.10	<=-20	PASS
TNVN	11G	2472	Ant1	2512.631	-47.69	<=-20	PASS
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TNVN	11G	2472	Ant1	2514.631	-49.66	<=-20	PASS

TNVN	11G	2472	Ant1	2515.631	-49.25	<=-20	PASS
TNVN	11G	2472	Ant1	2516.262	-48.47	<=-20	PASS
TNVN	11G	2472	Ant1	2516.631	-50.24	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2364.723	-42.14	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2364.946	-41.86	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2365.723	-41.28	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2366.723	-42.32	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2367.723	-41.37	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2368.723	-42.45	<=-20	PASS
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TNVN	11N20SISO	2412	Ant1	2370.723	-39.38	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2371.723	-39.45	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2372.723	-40.89	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2373.723	-40.79	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2374.723	-38.63	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2375.723	-36.04	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2376.723	-37.56	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2377.723	-38.48	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2378.723	-39.21	<=-20	PASS
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TNVN	11N20SISO	2412	Ant1	2381.723	-34.39	<=-20	PASS
TNVN	11N20SISO	2412	Ant1	2382.500	-35.88	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2382.723	-37.99	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2383.500	-39.11	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2384.500	-36.87	<=-10	PASS
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TNVN	11N20SISO	2412	Ant1	2387.500	-33.17	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2388.500	-33.03	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2389.500	-30.40	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2390.500	-28.46	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2391.500	-26.93	<=-10	PASS

TNVN	11N20SISO	2412	Ant1	2392.500	-23.68	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2393.500	-22.60	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2394.500	-24.53	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2395.500	-25.36	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2396.500	-21.75	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2397.500	-23.21	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2398.500	-23.26	<=-10	PASS
TNVN	11N20SISO	2412	Ant1	2399.500	-25.39	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2484.000	-24.83	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2485.000	-27.94	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2486.000	-27.10	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2487.000	-26.90	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2488.000	-25.49	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2489.000	-25.24	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2490.000	-25.94	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2491.000	-25.78	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2492.000	-27.06	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2493.000	-29.54	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2494.000	-31.93	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2495.000	-34.47	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2496.000	-35.04	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2497.000	-36.04	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2498.000	-36.29	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2499.000	-36.47	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2500.000	-35.74	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2500.763	-35.94	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2501.000	-36.28	<=-10	PASS
TNVN	11N20SISO	2472	Ant1	2501.763	-37.12	<=-20	PASS
TNVN	11N20SISO	2472	Ant1	2502.763	-37.09	<=-20	PASS
TNVN	11N20SISO	2472	Ant1	2503.763	-39.42	<=-20	PASS
TNVN	11N20SISO	2472	Ant1	2504.763	-38.55	<=-20	PASS
TNVN	11N20SISO	2472	Ant1	2505.763	-38.96	<=-20	PASS
TNVN	11N20SISO	2472	Ant1	2506.763	-38.94	<=-20	PASS

TNVN	11N20SISO	2472	Ant1	2507.763	-38.38	<=-20	PASS
TNVN	11N20SISO	2472	Ant1	2508.763	-40.12	<=-20	PASS
TNVN	11N20SISO	2472	Ant1	2509.763	-40.10	<=-20	PASS
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TNVN	11N20SISO	2472	Ant1	2511.763	-43.62	<=-20	PASS
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TNVN	11N20SISO	2472	Ant1	2513.763	-43.24	<=-20	PASS
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TNVN	11N20SISO	2472	Ant1	2516.763	-40.78	<=-20	PASS
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TNVN	11N40SISO	2422	Ant1	2333.102	-48.23	<=-20	PASS
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TNVN	11N40SISO	2422	Ant1	2384.500	-36.53	<=-10	PASS
TNVN	11N40SISO	2422	Ant1	2385.500	-34.43	<=-10	PASS
TNVN	11N40SISO	2422	Ant1	2386.500	-35.05	<=-10	PASS
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TNVN	11N40SISO	2422	Ant1	2389.500	-36.36	<=-10	PASS
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TNVN	11N40SISO	2422	Ant1	2391.500	-35.16	<=-10	PASS
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TNVN	11N40SISO	2422	Ant1	2393.500	-34.68	<=-10	PASS
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TNVN	11N40SISO	2422	Ant1	2395.500	-32.01	<=-10	PASS
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TNVN	11N40SISO	2462	Ant1	2529.424	-45.41	<=-20	PASS
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TNVN	11N40SISO	2462	Ant1	2545.424	-47.27	<=-20	PASS
TNVN	11N40SISO	2462	Ant1	2546.424	-48.20	<=-20	PASS
TNVN	11N40SISO	2462	Ant1	2547.424	-47.39	<=-20	PASS
TNVN	11N40SISO	2462	Ant1	2548.424	-46.92	<=-20	PASS
TNVN	11N40SISO	2462	Ant1	2549.424	-48.08	<=-20	PASS
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TNVN	11N40SISO	2462	Ant1	2551.424	-48.00	<=-20	PASS
TNVN	11N40SISO	2462	Ant1	2552.424	-45.50	<=-20	PASS
TNVN	11N40SISO	2462	Ant1	2553.424	-46.76	<=-20	PASS
TNVN	11N40SISO	2462	Ant1	2554.424	-47.06	<=-20	PASS
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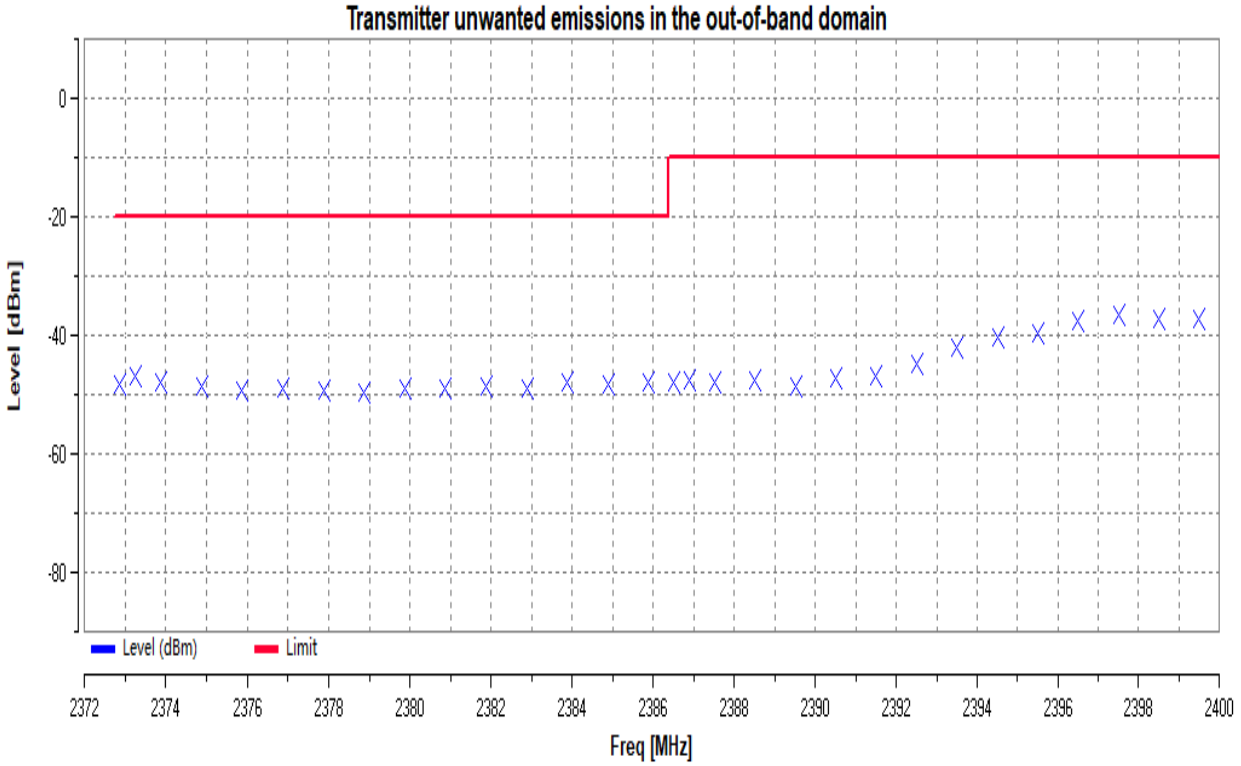
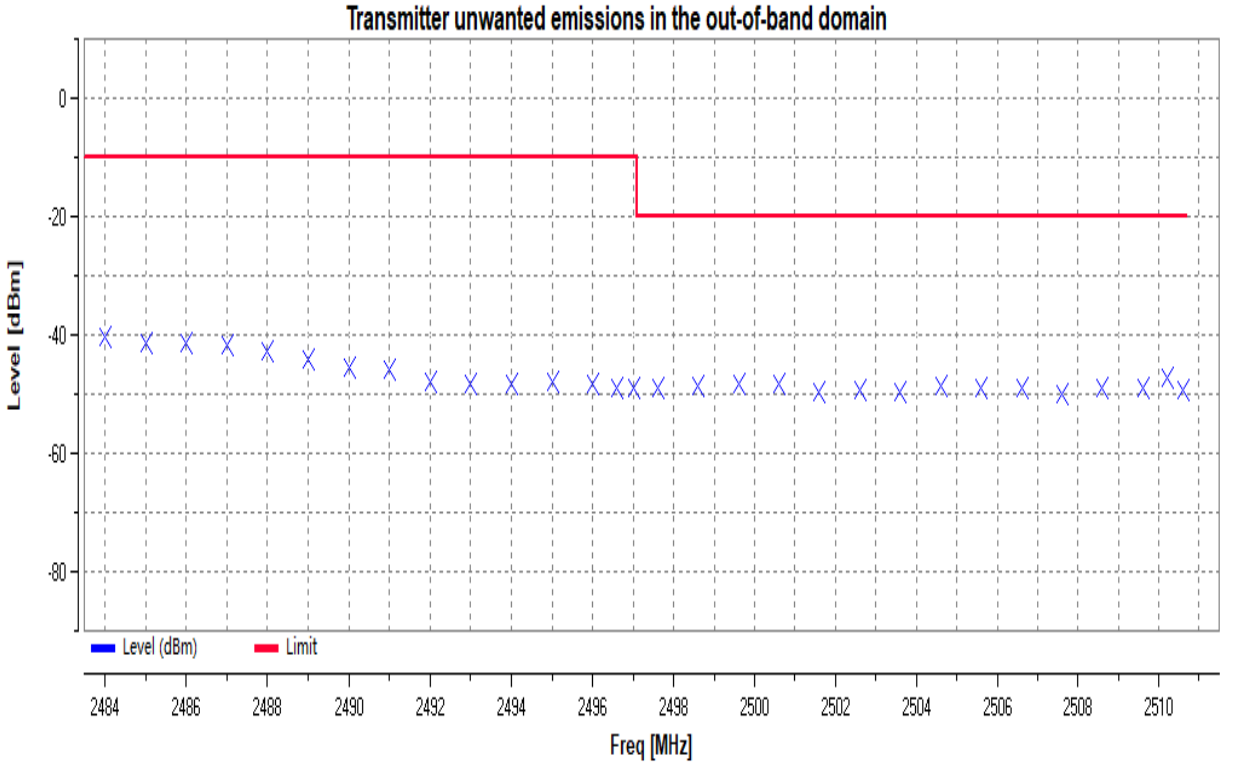
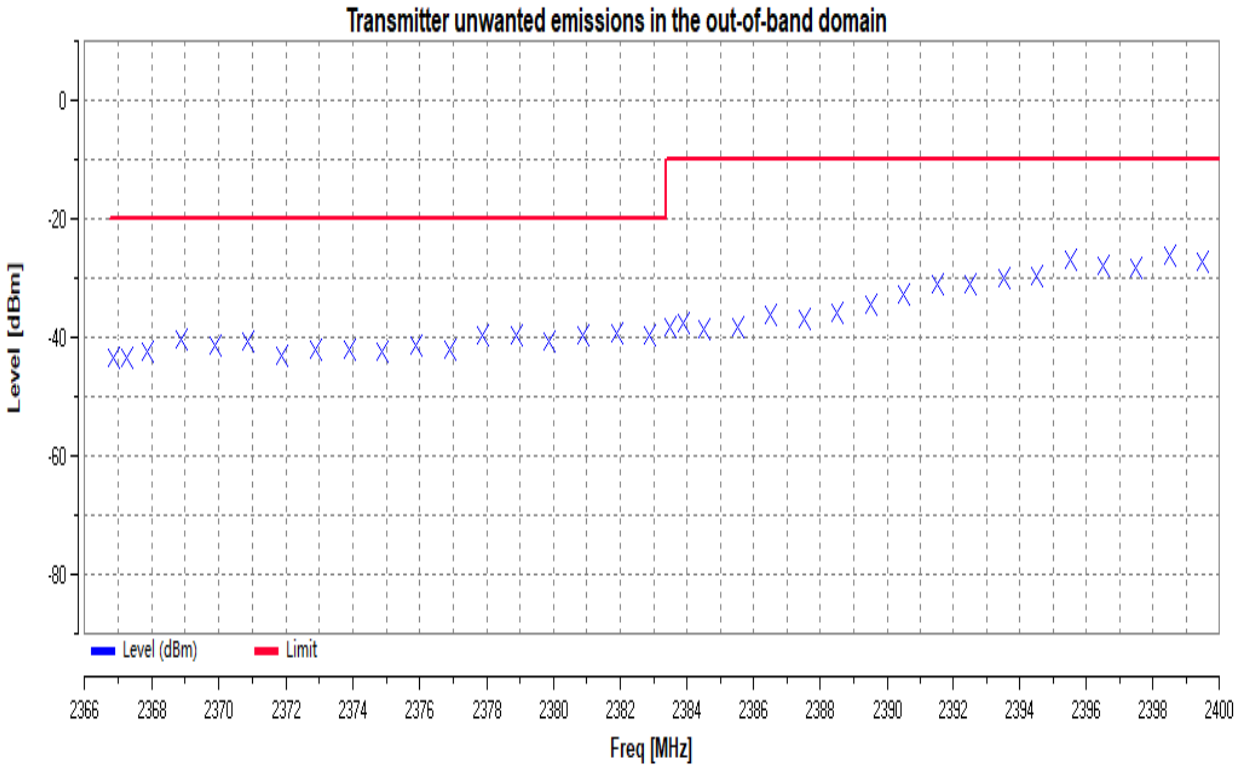
TX_OOB_TNVN_11B_2412_Ant1_2400MHz-2BW to 2400MHz



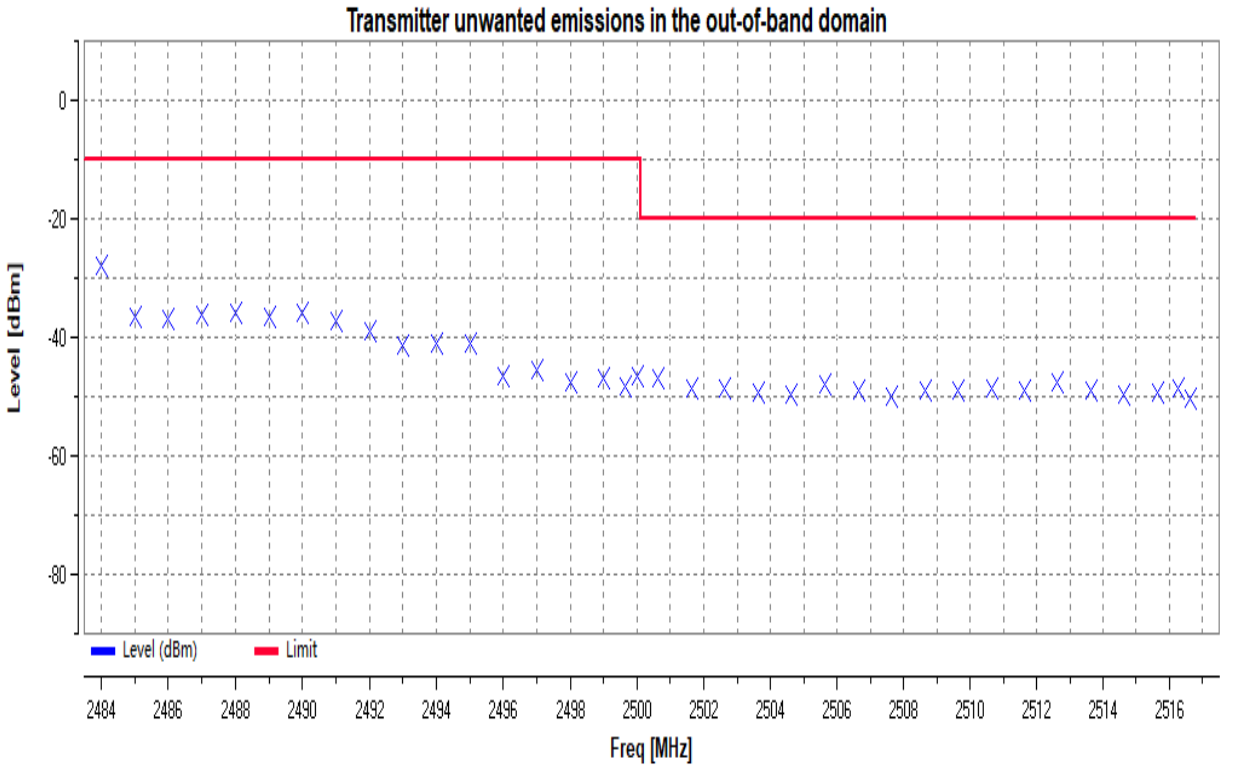
TX_OOB_TNVN_11B_2472_Ant1_2483.5MHz to 2483.5MHz+2BW



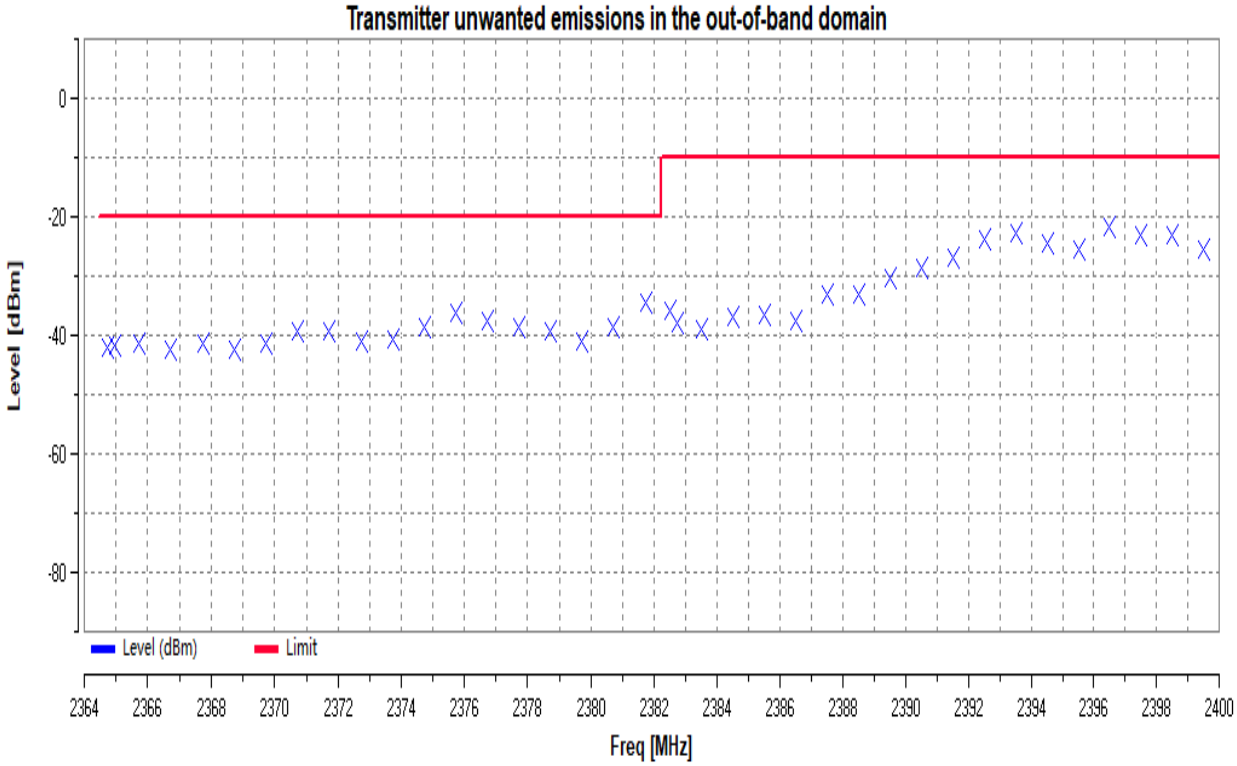
TX_OOB_TNVN_11G_2412_Ant1_2400MHz-2BW to 2400MHz



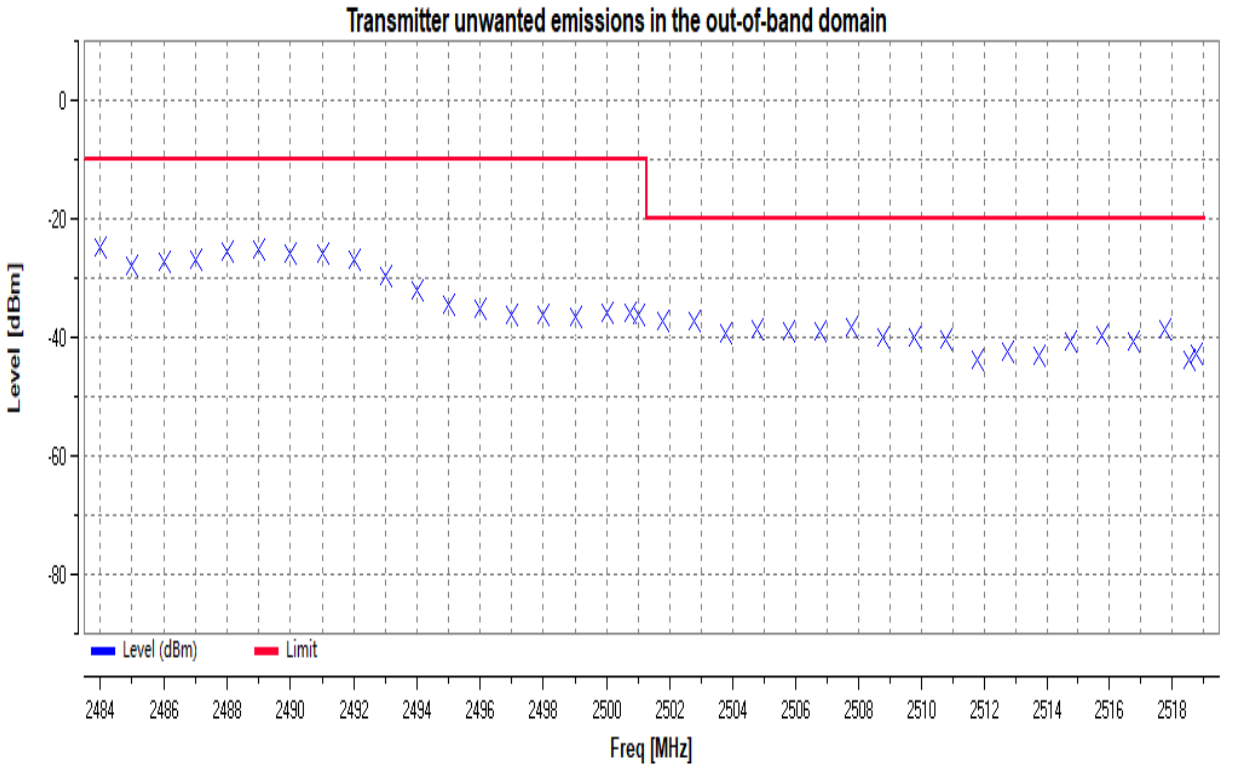
TX_OOB_TNVN_11G_2472_Ant1_2483.5MHz to 2483.5MHz+2BW



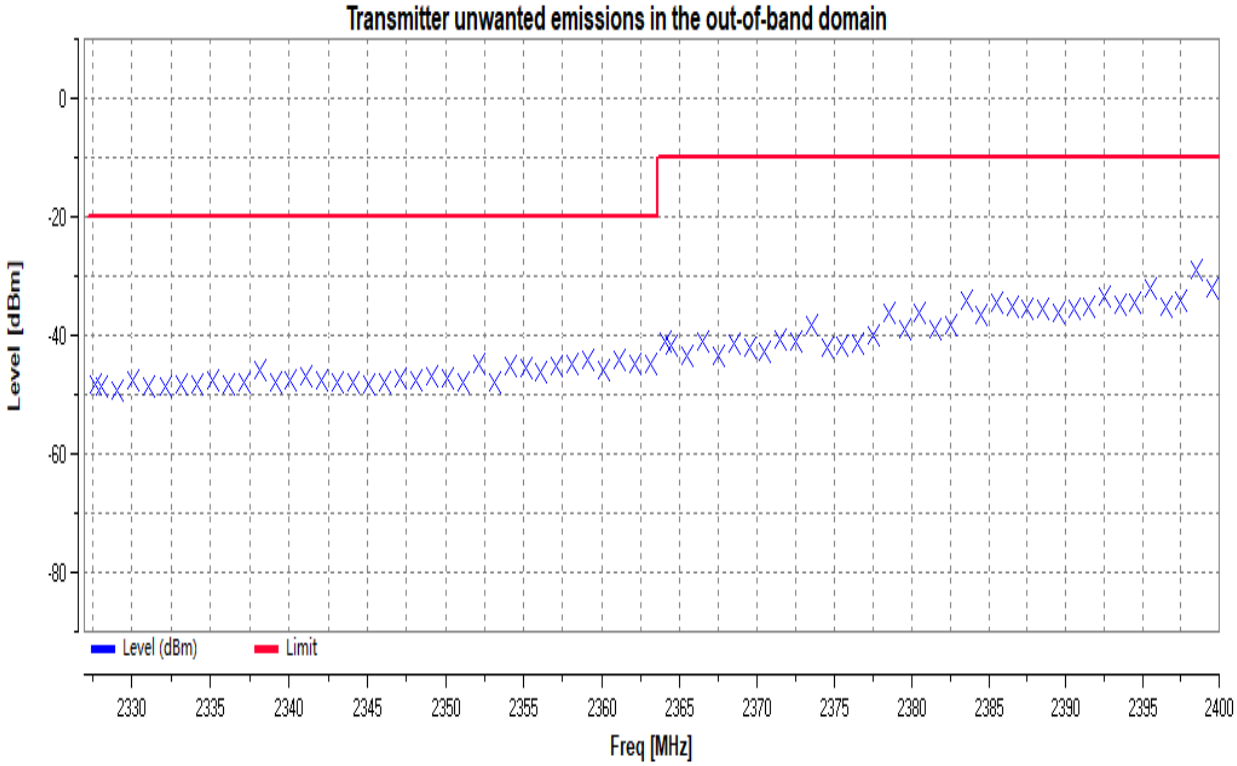
TX_OOB_TNVN_11N20SISO_2412_Ant1_2400MHz-2BW to 2400MHz



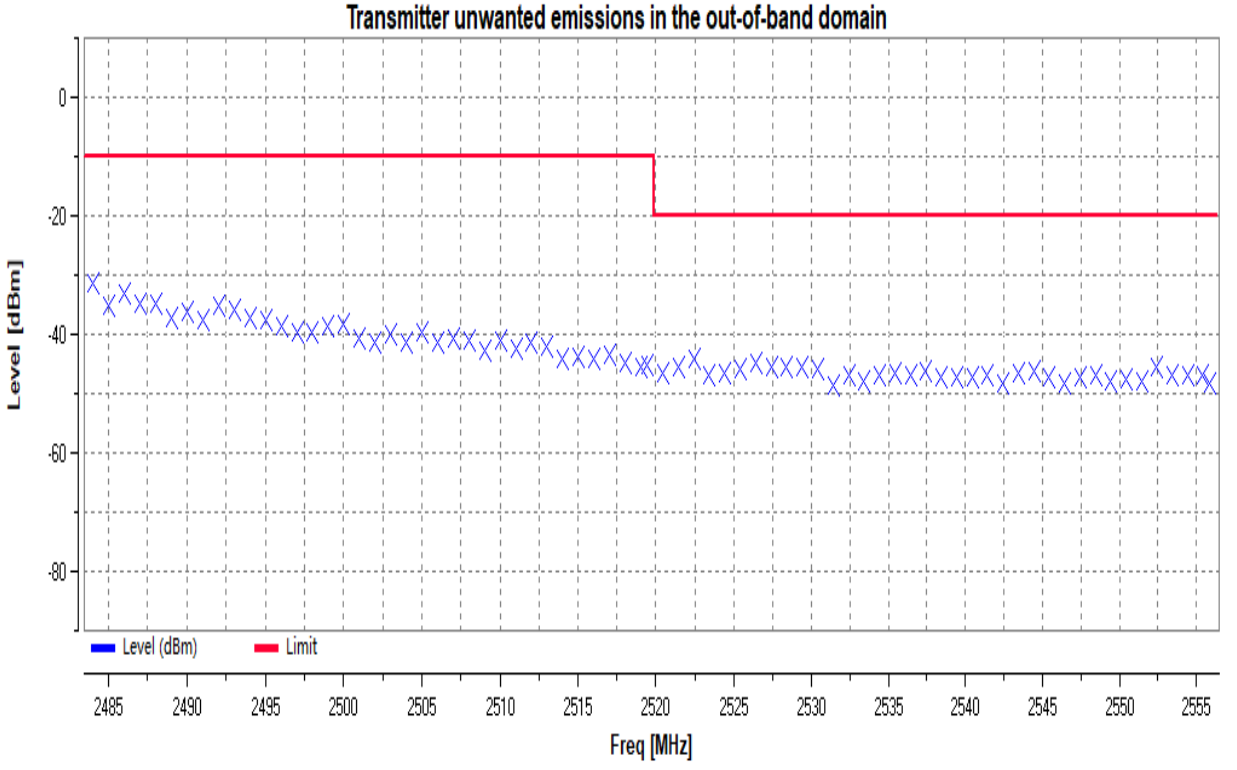
TX_OOB_TNVN_11N20SISO_2472_Ant1_2483.5MHz to 2483.5MHz+2BW



TX_OOB_TNVN_11N40SISO_2422_Ant1_2400MHz-2BW to 2400MHz



TX_OOB_TNVN_11N40SISO_2462_Ant1_2483.5MHz to 2483.5MHz+2BW



- End of the Report -