TEST REPORT

Application No.:	SZEM2012012652CR
Applicant:	KanDao Technology Co., Ltd.
Address of Applicant:	201 Sino-Steel building, Maqueling Industrial District, Maling Area, Yuehai Street, Nanshan, Shenzhen
Manufacturer:	KanDao Technology Co., Ltd.
Address of Manufacturer:	201 Sino-Steel building, Maqueling Industrial District, Maling Area, Yuehai Street, Nanshan, Shenzhen
Factory:	SKY LIGHT ELECTRONIC (SHENZHEN) LIMITED
Address of Factory:	1F-2F OF NO.9, 1F-5F OF NO.8, ANTUOSHAN HIGH-TECH. INDUSTRIAL PARK, SHAER COMMUNITY, SHAJING STREET, BAO'AN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE
Equipment Under Test (EUT):	
EUT Name:	Kandao Meeting Pro 360 Conferencing Camera
Model No.:	MT0822
Trade Mark:	KanDao
FCC ID:	2ATPV-KDMT
Standard(s) :	47 CFR Part 15, Subpart C 15.247
Date of Receipt:	2020-12-10
Date of Test:	2020-12-14 to 2020-12-25
Date of Issue:	2020-12-25
Test Result:	**Pass***

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

Keny. xu

Keny Xu
EMC Laboratory Manager

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Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2020-12-25		Original

Authorized for issue by:				
		Damon Su **Damon Su/Project Engineer**		
		Eric Fu **Eric Fu/Reviewer**		

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2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass

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4 General Information

4.1 Details of E.U.T.

Rated voltage:	AC 120V
Test voltage:	AC 120V
Power adapter:	Adapter1 Model No: ASSA112w-P60W20 Input: AC 100-240V 50/60Hz 1.5A Output: DC 5V 3A or 9V 3A or 12V 3A or 15V 3A or 20V 3A Adapter2 Model No.: P0571-BZ Input: AC 100-240V 50/60Hz 1.5A PD Output: 60W(5V 3A, 9V 3A, 12V 3A, 15V 3A, 20V 3A)
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz, 802.11n(HT40): 2422MHz to 2452MHz
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): 11, 802.11n(HT40):7
Antenna Type:	PIFA Antenna
Antenna Gain:	3.0dBi

4.2 Cable

Cable	Length	Shielding	Core
HDMI Cable	1.0m	Shielded	With-Core
Type-C Cable	3.0m	Shielded	Non-Core

4.3 Description of Support Units

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

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4.4 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	± 3.0dB (150kHz to 30MHz)
Conducted Peak Output Power	± 0.75dB
Minimum 6dB Bandwidth	± 3%
Power Spectrum Density	± 2.84dB
Conducted Band Edges Measurement	± 0.75dB
Conducted Spurious Emissions	± 0.75dB
Radiated Emissions which fall in the restricted bands	± 4.5dB (Below 1GHz);± 4.8dB (Above 1GHz)
Radiated Spurious Emissions	± 4.5dB (Below 1GHz);± 4.8dB (Above 1GHz)
Remark: The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty), so the test results – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.	

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4.5 Test Location

All tests were performed at:

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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

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.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

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5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2019-06-13	2022-06-12
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2020-03-24	2021-03-23
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2020-07-10	2021-07-09
LISN	Rohde&Schwarz	ENV216	SEM007-01	2020-09-23	2021-09-22
LISN	ETS-LINDGREN	3816/2	SEM007-02	2020-04-01	2021-03-31

Conducted Peak Output Power					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2020-04-01	2021-03-31
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2020-05-21	2021-05-20

Minimum 6dB Bandwidth					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2020-04-01	2021-03-31
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2020-05-21	2021-05-20

Power Spectrum Density					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2020-04-01	2021-03-31
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22

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Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2020-05-21	2021-05-20

Conducted Band Edges Measurement					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2020-04-01	2021-03-31
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2020-05-21	2021-05-20

Conducted Spurious Emissions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2020-04-01	2021-03-31
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2020-05-21	2021-05-20

Radiated Emissions which fall in the restricted bands					
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
EXA Signal Analyzer	Agilent Technologies Inc	N9010A	SEM004-12	2020-04-09	2021-04-08
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2020-09-23	2021-09-22
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2020-07-10	2021-07-09
Horn Antenna	Schwarzbeck	BBHA 9170	SEM003-15	2020-11-14	2023-11-13

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Pre-Amplifier	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2020-04-01	2021-03-31

Radiated 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
EXA Signal Analyzer	Agilent Technologies Inc	N9010A	SEM004-12	2020-04-09	2021-04-08
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2020-09-23	2021-09-22
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2020-07-10	2021-07-09
Horn Antenna	Schwarzbeck	BBHA 9170	SEM003-15	2020-11-14	2023-11-13
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2020-04-01	2021-03-31

Radiated Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2020-07-10	2021-07-09
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-15	2020-11-02	2021-11-01
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-02	2019-05-24	2022-05-23
Pre-amplifier	Agilent Technologies	8447D	SEM005-01	2020-04-01	2021-03-31

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2020-09-15	2021-09-14
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2020-09-15	2021-09-14
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-04-07	2021-04-06

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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

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

Limit:

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 3dBi.

Antenna location: Refer to Internal photos.

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7 Radio Spectrum Matter Test Results

7.1 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)
Test Method: ANSI C63.10 (2013) Section 11.9.1

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥50 hopping channels
	0.25 for 25≤ hopping channels <50
	1 for digital modulation
2400-2483.5	1 for ≥75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 26.8 °C Humidity: 26.8 % RH Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

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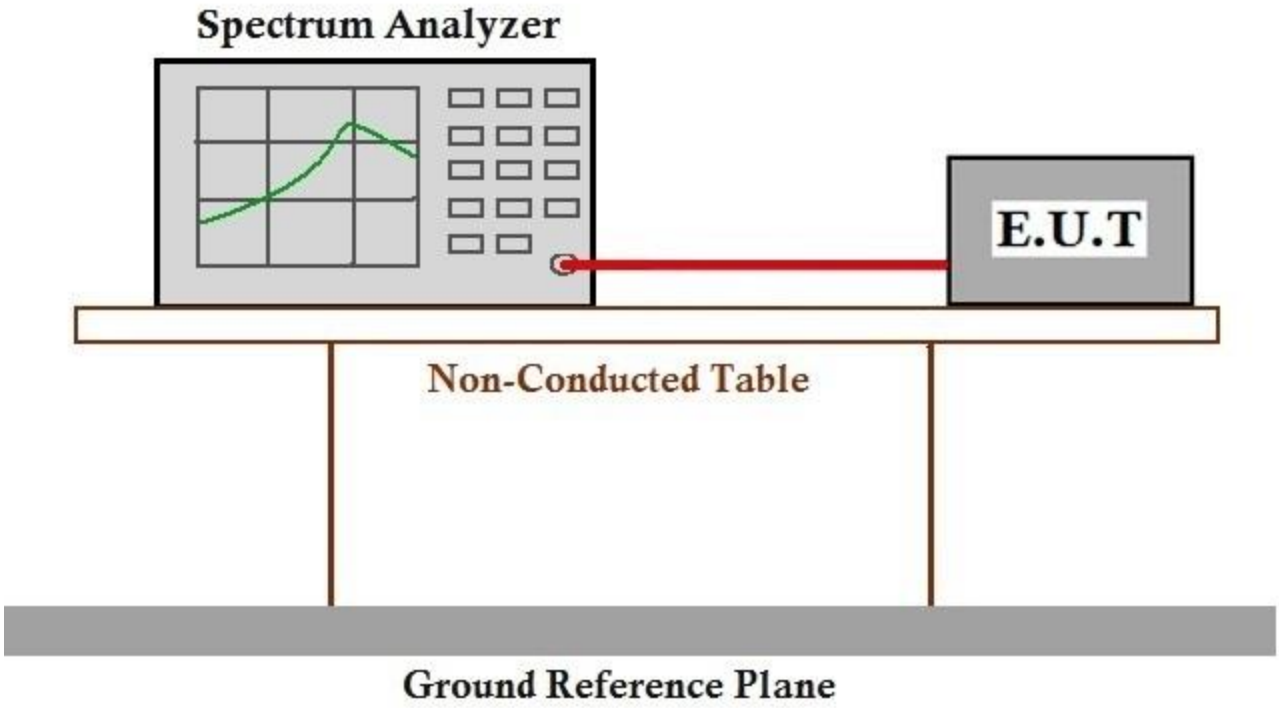
7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

Please Refer To Appendix For Details

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7.2 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)
Test Method: ANSI C63.10 (2013) Section 11.8.1

Limit:
≥500 kHz

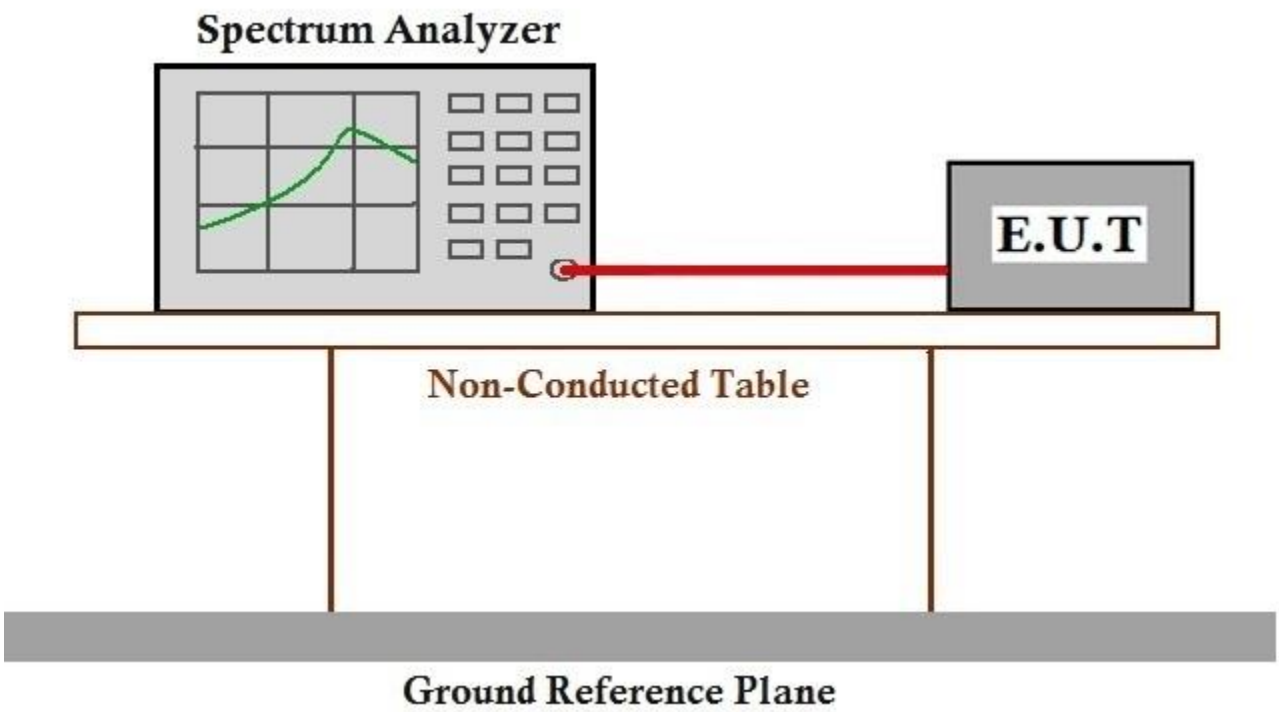
7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 26.8 °C Humidity: 26.8 % RH Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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

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7.3 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)
Test Method: ANSI C63.10 (2013) Section 11.10.2

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

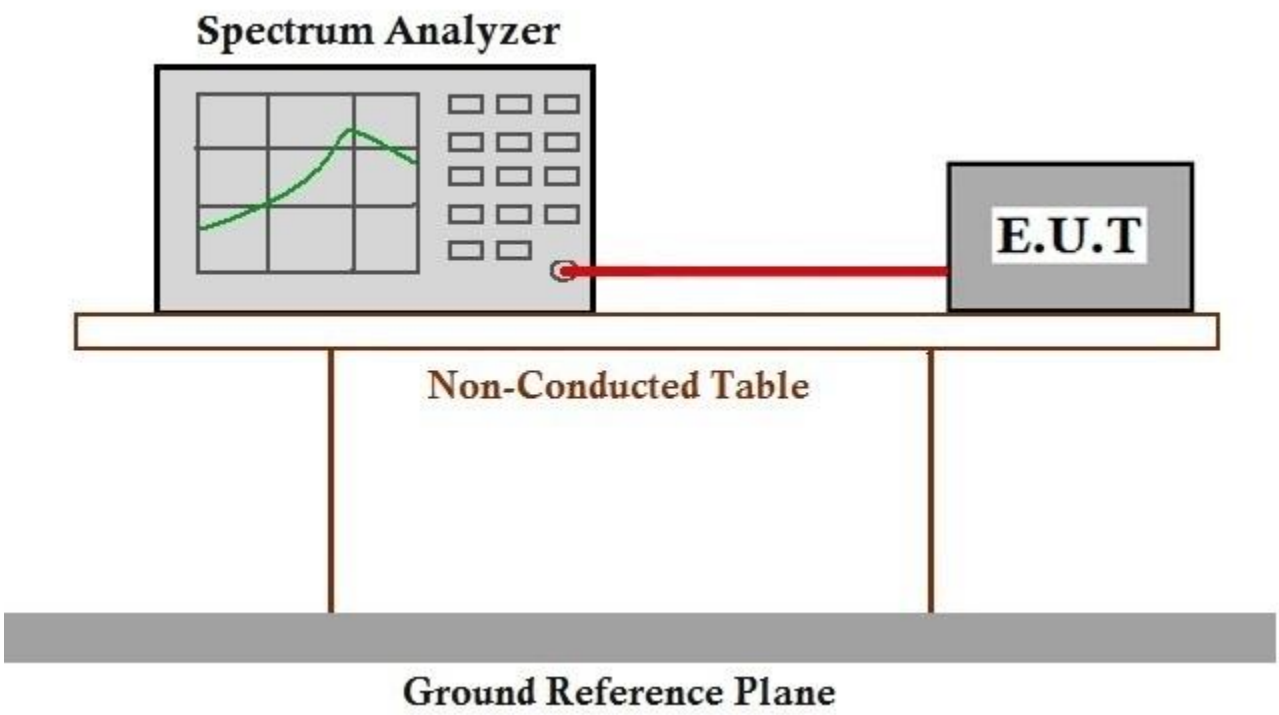
7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 26.8 °C Humidity: 26.8 % RH Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

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7.4 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
Test Method: ANSI C63.10 (2013) Section 11.13.3.2

Limit:

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

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 26.8 °C Humidity: 26.8 % RH Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

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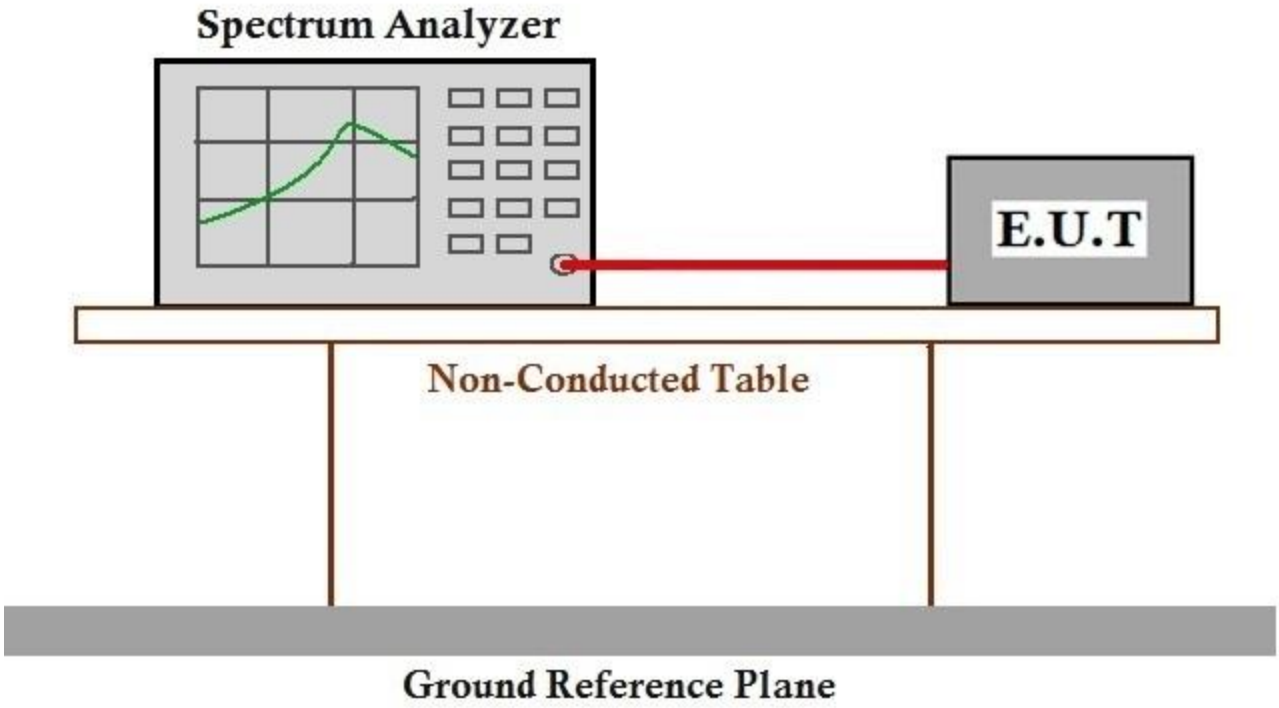
7.4.3 Test Setup Diagram



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7.5 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
Test Method: ANSI C63.10 (2013) Section 11.11

Limit:

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

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 26.8 °C Humidity: 26.8 % RH Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

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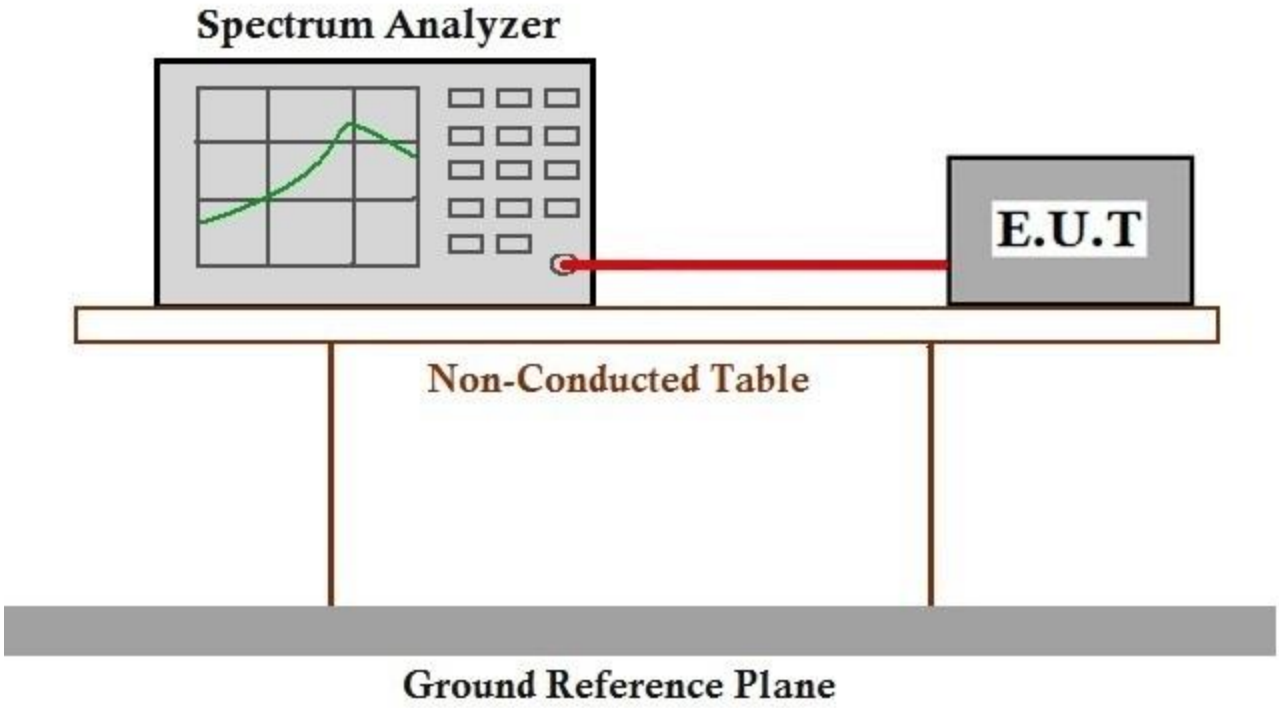
7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Please Refer To Appendix For Details

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7.6 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
Test Method: ANSI C63.10 (2013) Section 6.10.5

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.		

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 25.1 °C Humidity: 45.3 % RH Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

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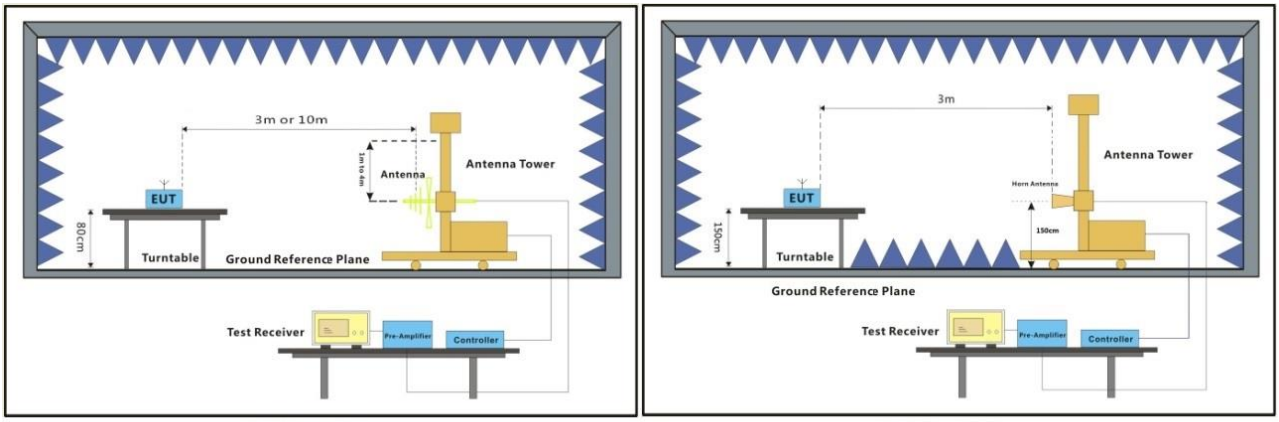
7.6.3 Test Setup Diagram



30MHz-1GHz　　Above 1GHz

7.6.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

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

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

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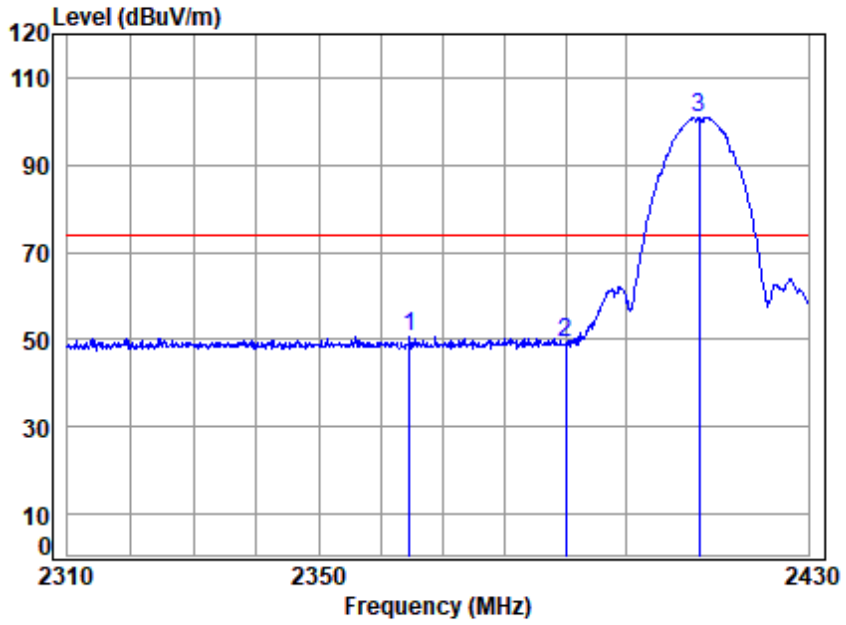
Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2364.685	4.30	28.48	40.41	58.20	50.57	74.00	-23.43	peak
2	2390.000	4.34	28.52	40.42	56.64	49.08	74.00	-24.92	peak
3 *	2412.000	4.38	28.56	40.43	108.52	101.03	74.00	27.03	peak

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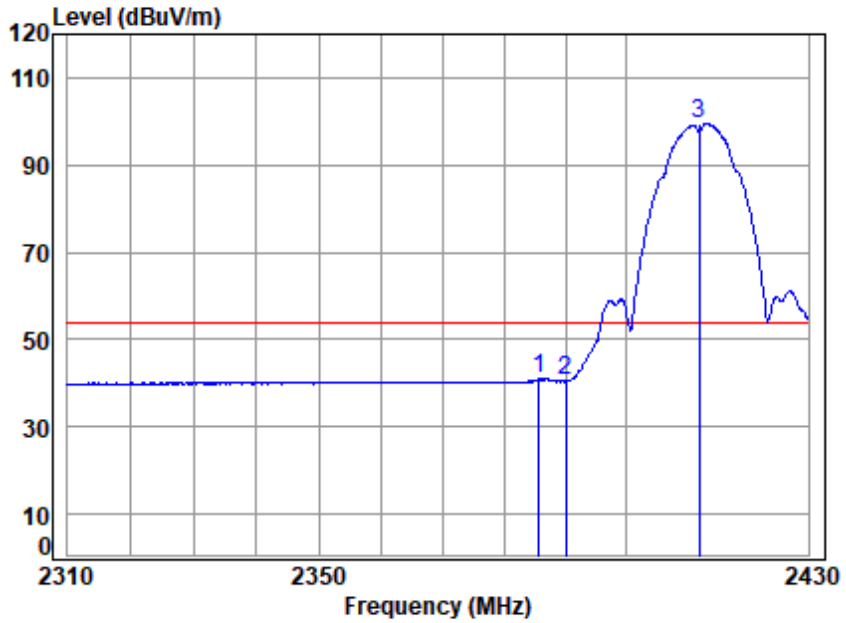

Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2385.615	4.34	28.51	40.42	48.79	41.22	54.00	-12.78	Average
2	2390.000	4.34	28.52	40.42	48.07	40.51	54.00	-13.49	Average
3 *	2412.000	4.38	28.56	40.43	106.91	99.42	54.00	45.42	Average

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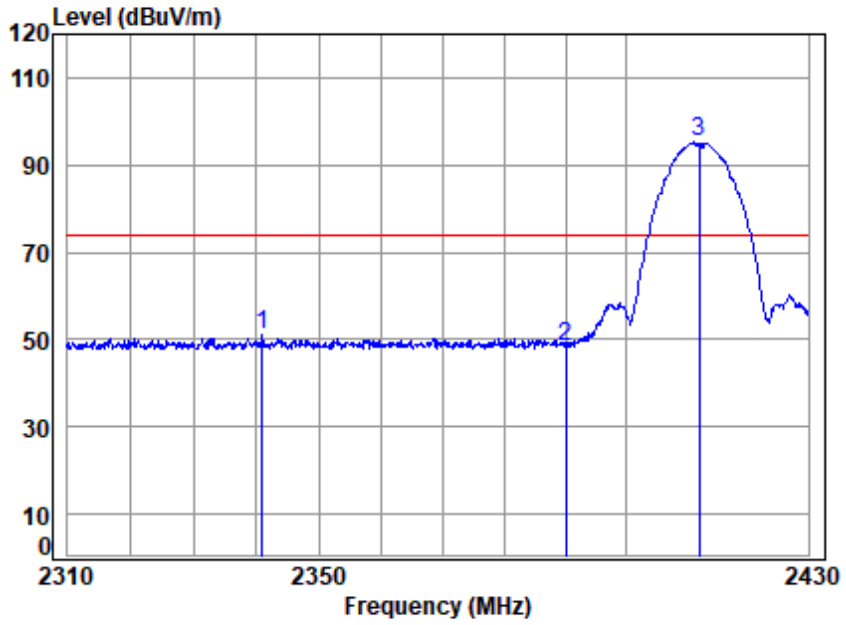

Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2340.973	4.26	28.43	40.39	58.81	51.11	74.00	-22.89	Peak
2	2390.000	4.34	28.52	40.42	55.88	48.32	74.00	-25.68	Peak
3 *	2412.000	4.38	28.56	40.43	102.69	95.20	74.00	21.20	Peak

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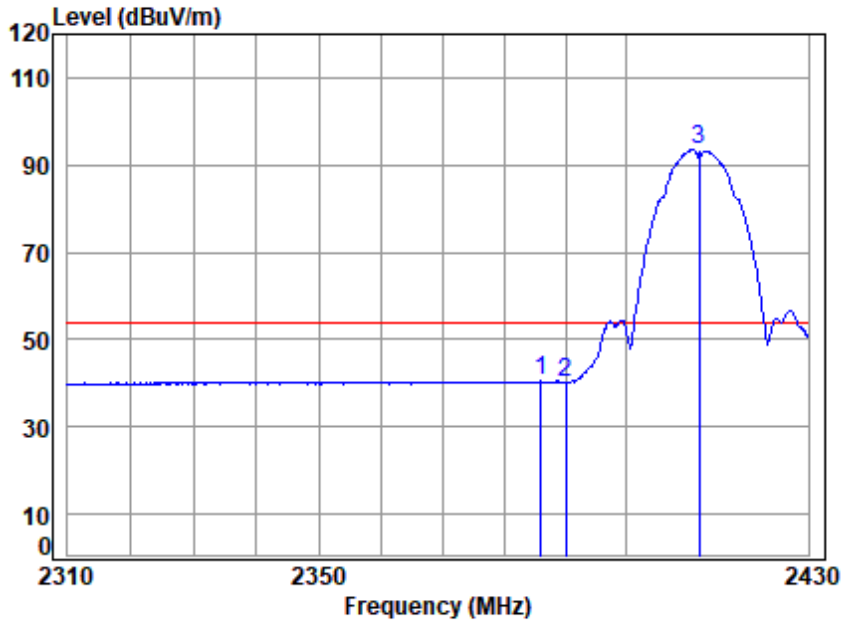
Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2385.978	4.34	28.51	40.42	48.07	40.50	54.00	-13.50	Average
2	2390.000	4.34	28.52	40.42	47.73	40.17	54.00	-13.83	Average
3 *	2412.000	4.38	28.56	40.43	100.96	93.47	54.00	39.47	Average

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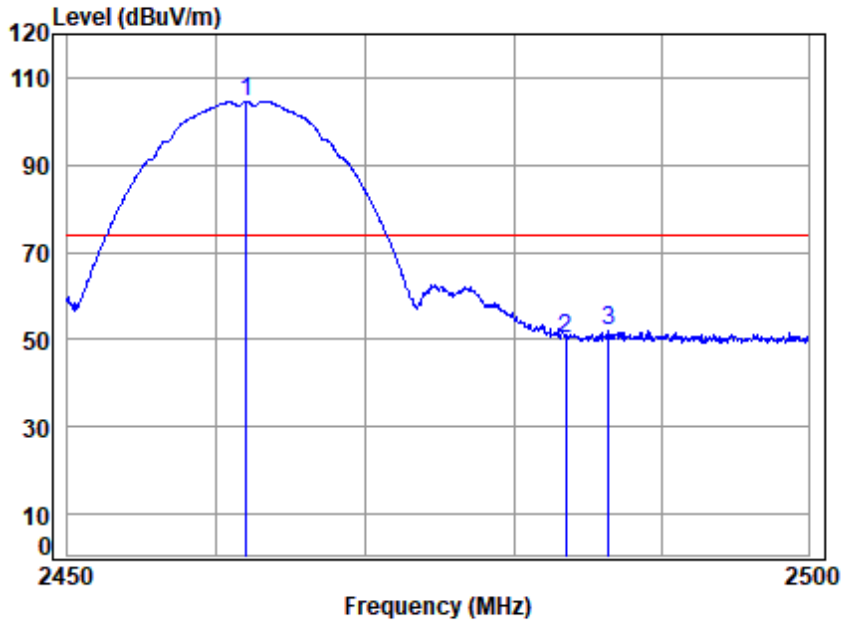
Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	111.96	104.60	74.00	30.60	peak
2	2483.500	4.49	28.67	40.47	57.29	49.98	74.00	-24.02	peak
3	2486.450	4.50	28.68	40.47	59.28	51.99	74.00	-22.01	peak

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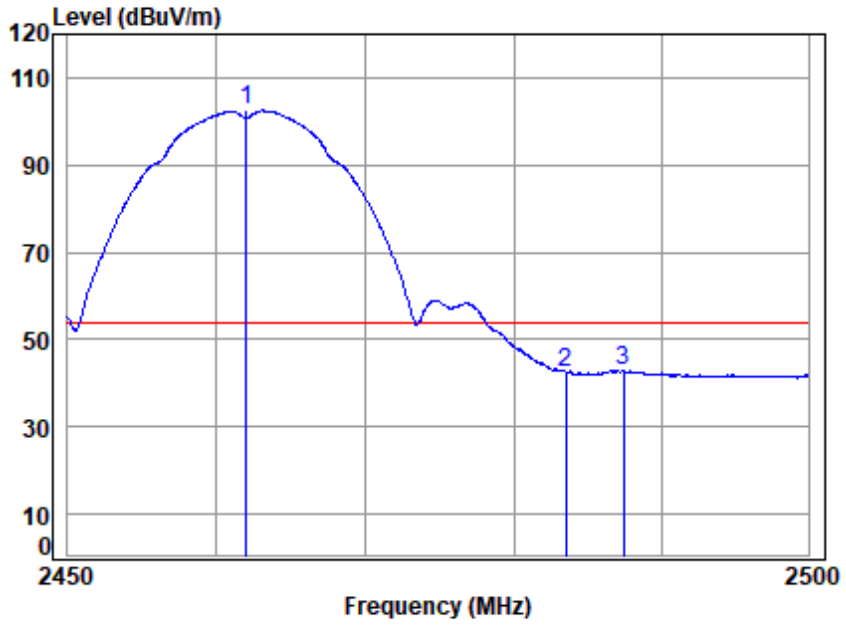
Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	109.80	102.44	54.00	48.44	Average
2	2483.500	4.49	28.67	40.47	49.79	42.48	54.00	-11.52	Average
3	2487.405	4.50	28.68	40.47	50.25	42.96	54.00	-11.04	Average

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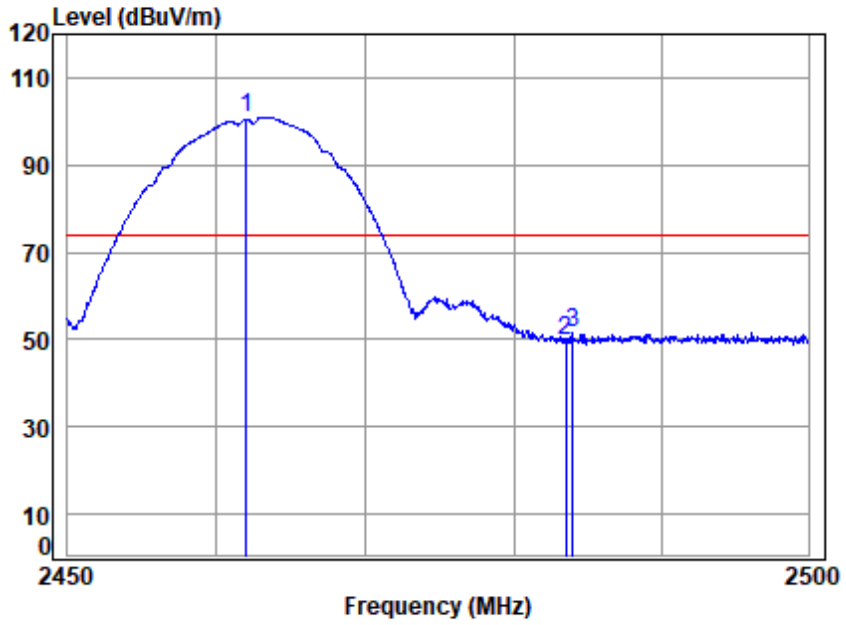
Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	108.39	101.03	74.00	27.03	Peak
2	2483.500	4.49	28.67	40.47	57.07	49.76	74.00	-24.24	Peak
3	2483.990	4.49	28.67	40.47	58.68	51.37	74.00	-22.63	Peak

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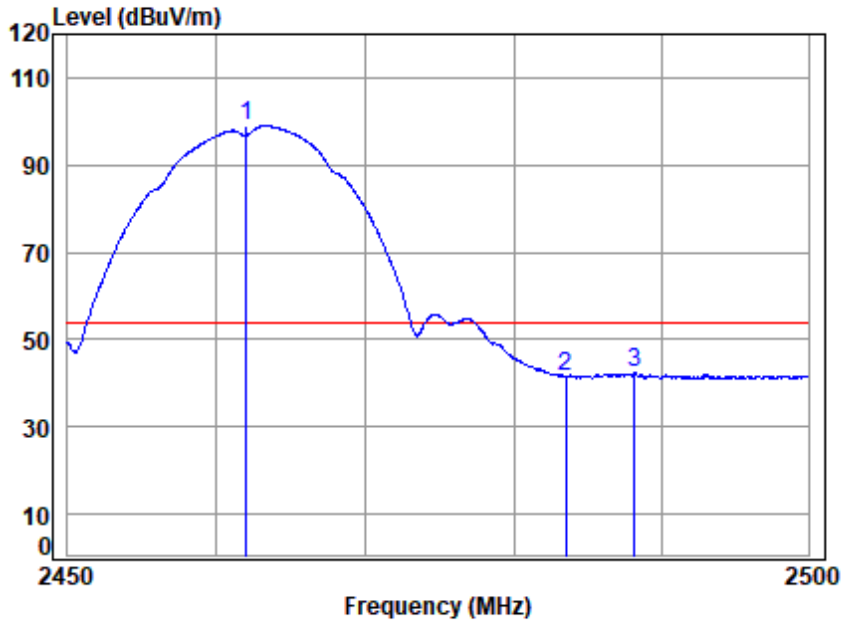
Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	106.29	98.93	54.00	44.93	Average
2	2483.500	4.49	28.67	40.47	48.85	41.54	54.00	-12.46	Average
3	2488.209	4.50	28.68	40.47	49.61	42.32	54.00	-11.68	Average

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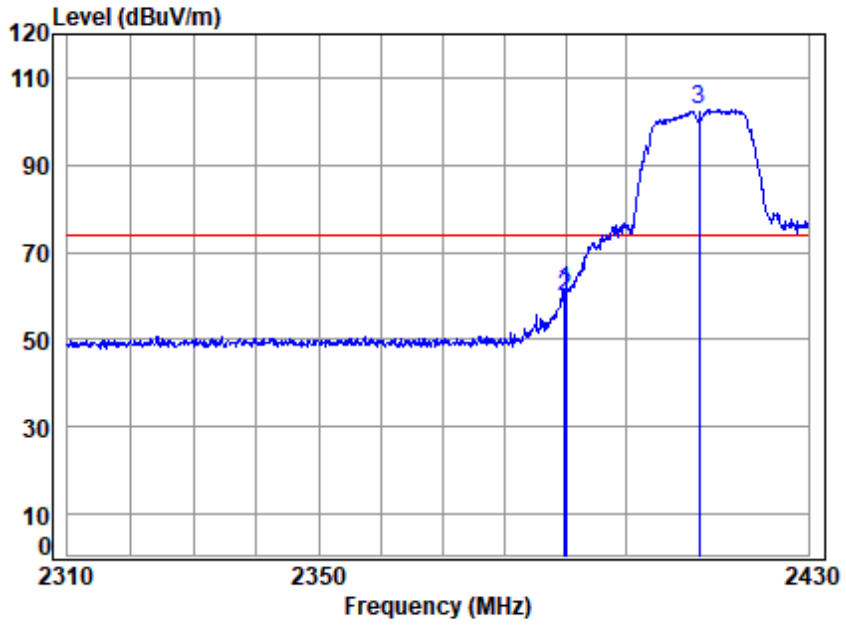
Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.847	4.34	28.52	40.42	68.55	60.99	74.00	-13.01	peak
2	2390.000	4.34	28.52	40.42	67.19	59.63	74.00	-14.37	peak
3 *	2412.000	4.38	28.56	40.43	110.22	102.73	74.00	28.73	peak

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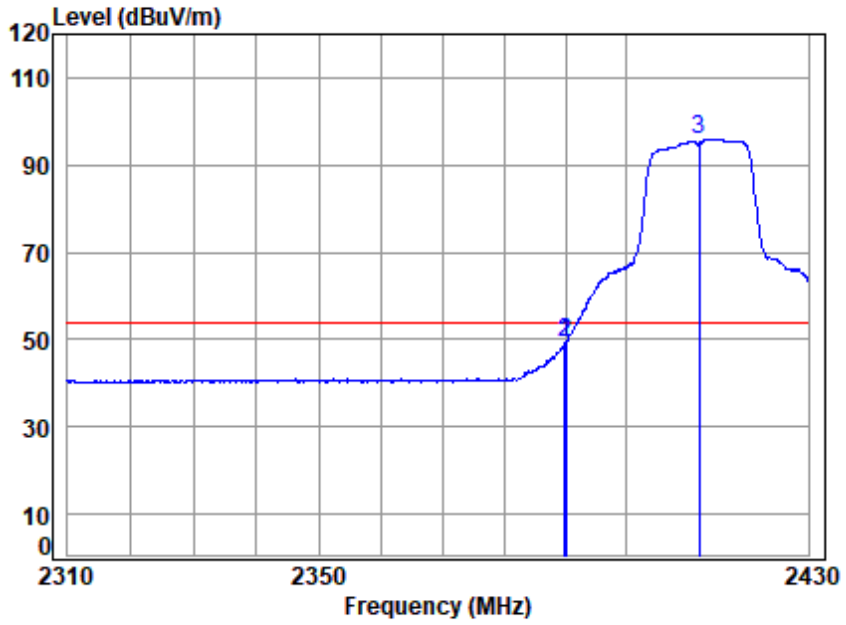
Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.847	4.34	28.52	40.42	56.91	49.35	54.00	-4.65	Average
2	2390.000	4.34	28.52	40.42	56.78	49.22	54.00	-4.78	Average
3 *	2412.000	4.38	28.56	40.43	103.33	95.84	54.00	41.84	Average

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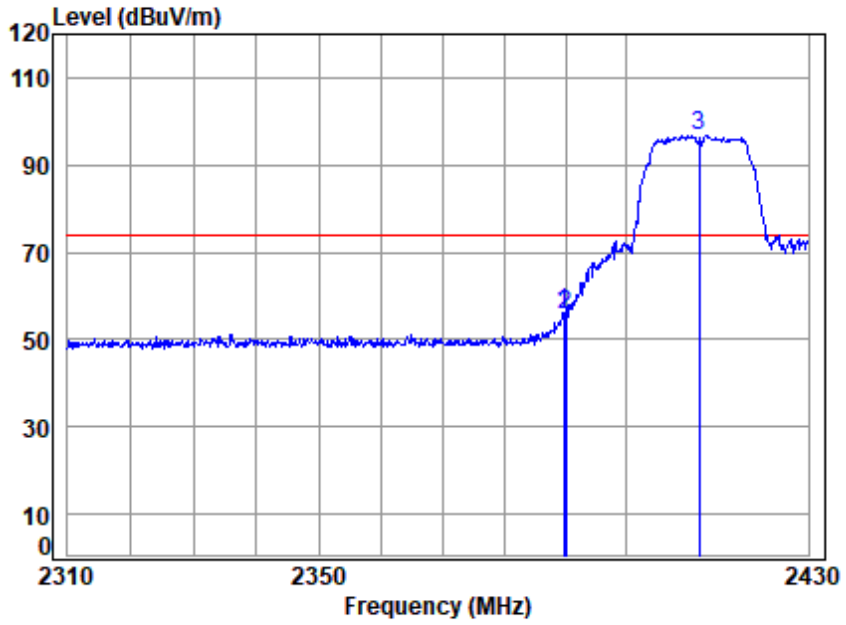
Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.726	4.34	28.52	40.42	63.87	56.31	74.00	-17.69	Peak
2	2390.000	4.34	28.52	40.42	63.39	55.83	74.00	-18.17	Peak
3 *	2412.000	4.38	28.56	40.43	104.27	96.78	74.00	22.78	Peak

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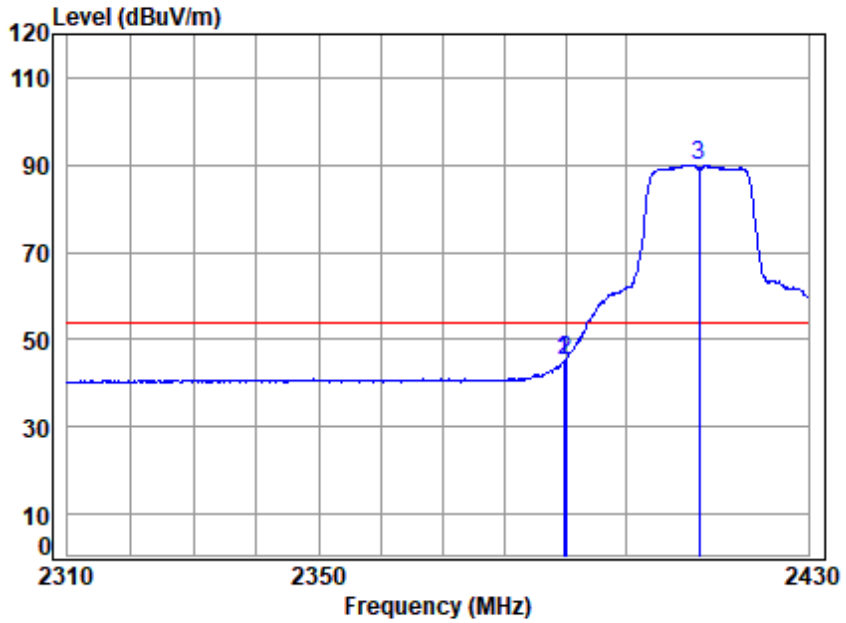
Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.726	4.34	28.52	40.42	52.71	45.15	54.00	-8.85	Average
2	2390.000	4.34	28.52	40.42	52.59	45.03	54.00	-8.97	Average
3 *	2412.000	4.38	28.56	40.43	97.42	89.93	54.00	35.93	Average

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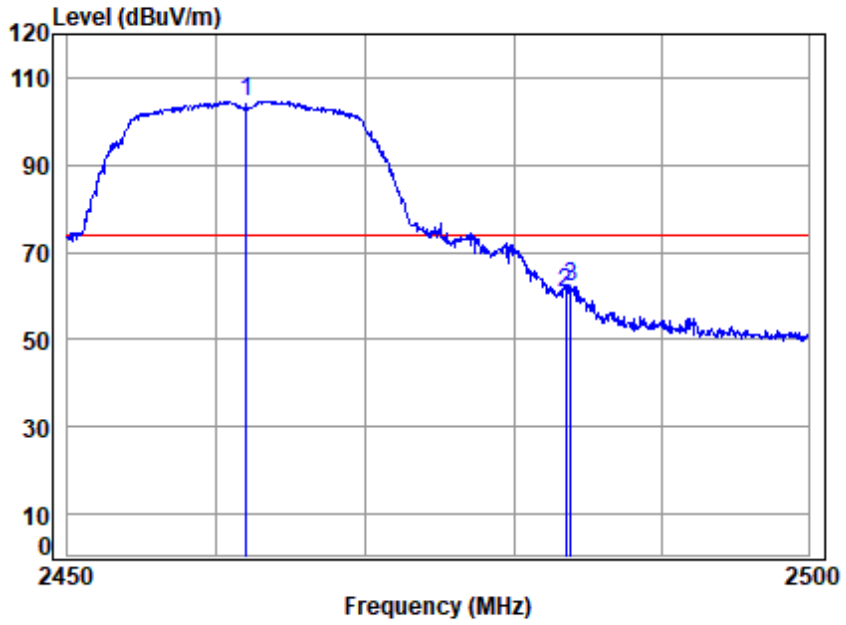
Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	112.06	104.70	74.00	30.70	peak
2	2483.500	4.49	28.67	40.47	68.03	60.72	74.00	-13.28	peak
3	2483.890	4.49	28.67	40.47	69.37	62.06	74.00	-11.94	peak

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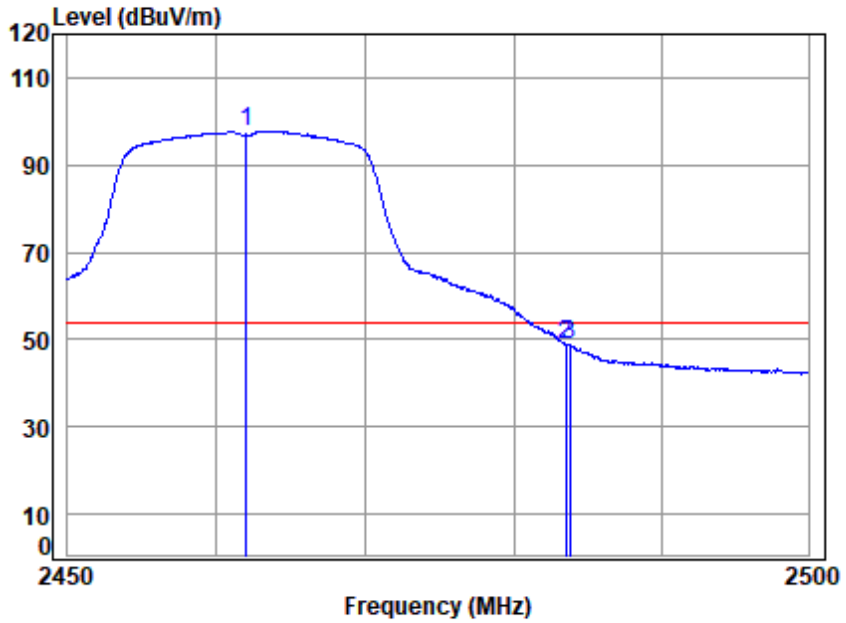

Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	105.22	97.86	54.00	43.86	Average
2	2483.500	4.49	28.67	40.47	56.21	48.90	54.00	-5.10	Average
3	2483.790	4.49	28.67	40.47	55.96	48.65	54.00	-5.35	Average

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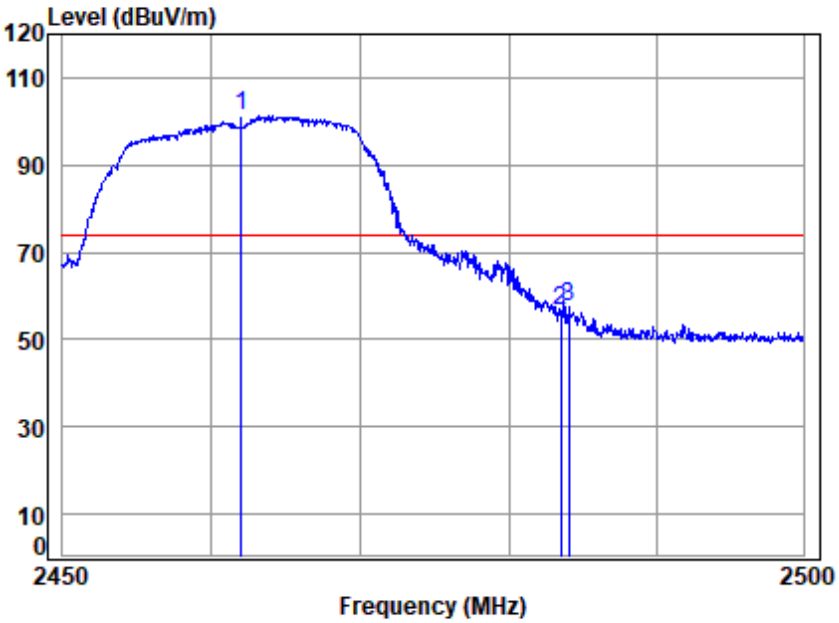

Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	108.53	101.17	74.00	27.17	Peak
2	2483.500	4.49	28.67	40.47	63.79	56.48	74.00	-17.52	Peak
3	2484.091	4.50	28.67	40.47	64.91	57.61	74.00	-16.39	Peak

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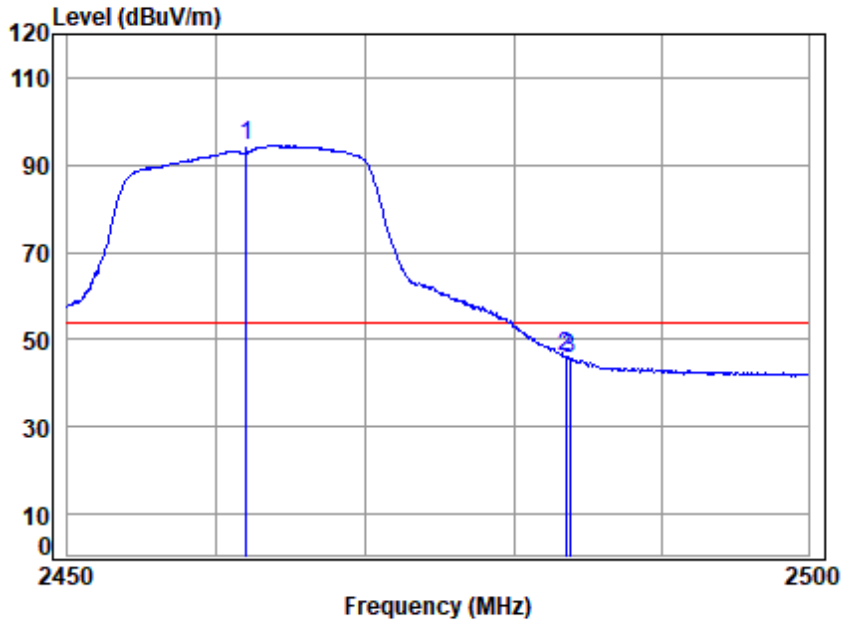
Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	101.81	94.45	54.00	40.45	Average
2	2483.500	4.49	28.67	40.47	53.56	46.25	54.00	-7.75	Average
3	2483.790	4.49	28.67	40.47	53.10	45.79	54.00	-8.21	Average

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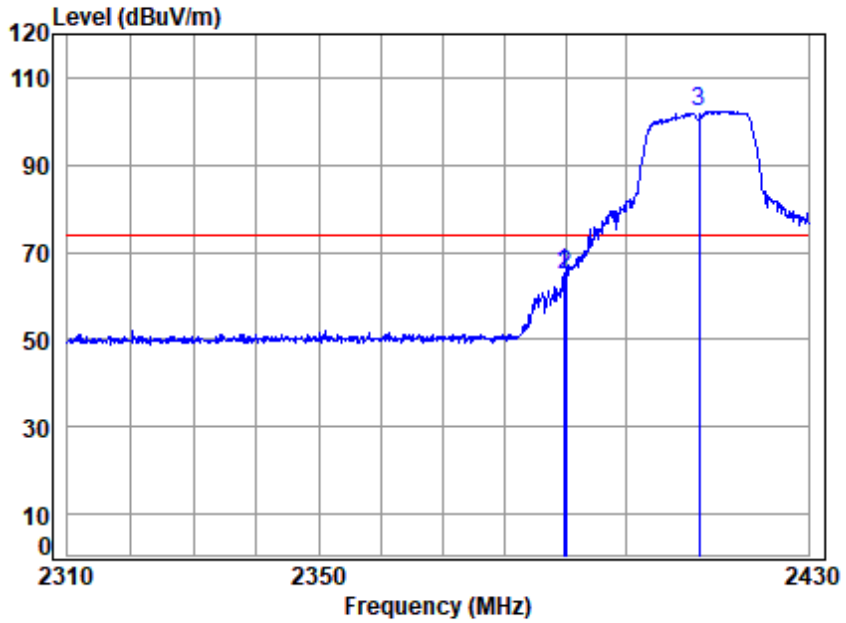
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.726	4.34	28.52	40.42	72.82	65.26	74.00	-8.74	peak
2	2390.000	4.34	28.52	40.42	72.15	64.59	74.00	-9.41	peak
3 *	2412.000	4.38	28.56	40.43	109.88	102.39	74.00	28.39	peak

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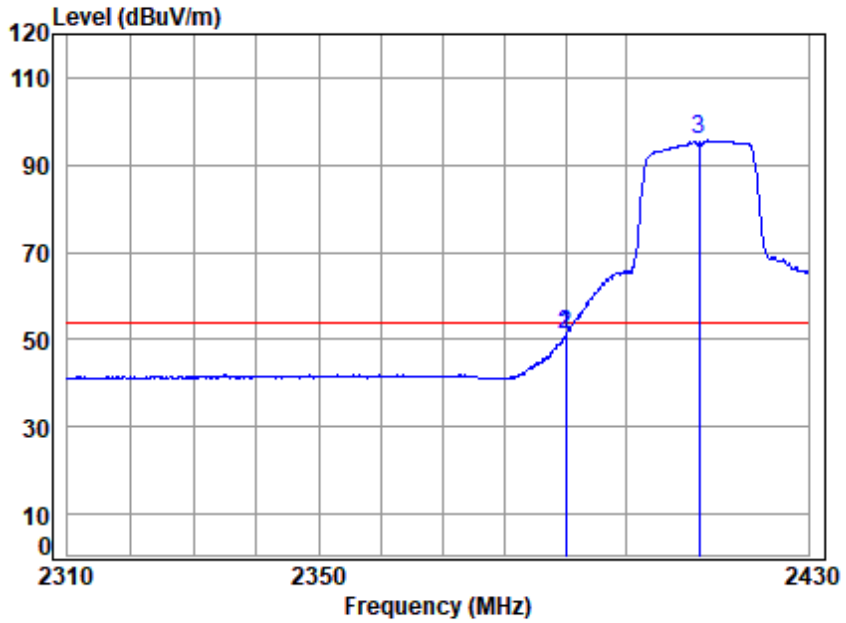
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.968	4.34	28.52	40.42	58.44	50.88	54.00	-3.12	Average
2	2390.000	4.34	28.52	40.42	58.45	50.89	54.00	-3.11	Average
3 *	2412.000	4.38	28.56	40.43	103.11	95.62	54.00	41.62	Average

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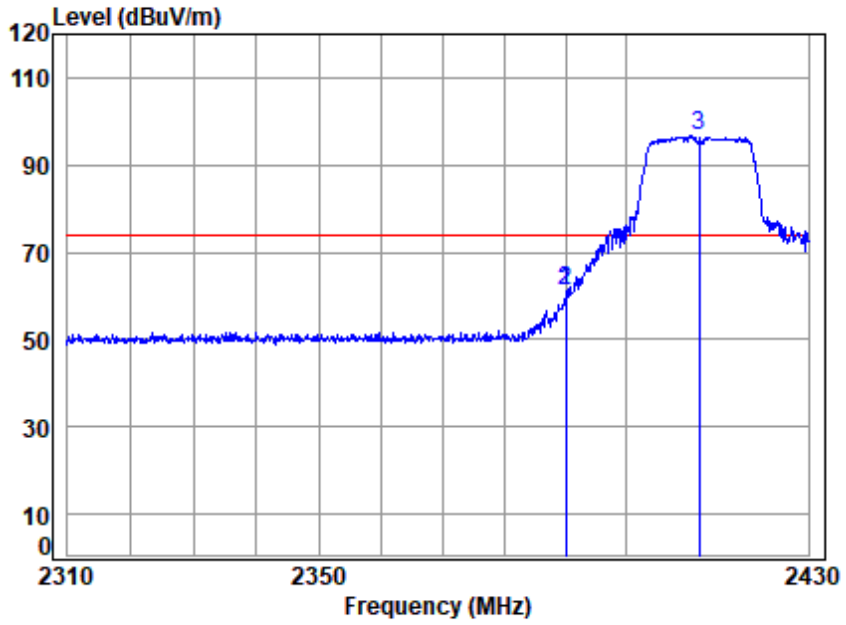
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.968	4.34	28.52	40.42	68.49	60.93	74.00	-13.07	Peak
2	2390.000	4.34	28.52	40.42	68.49	60.93	74.00	-13.07	Peak
3 *	2412.000	4.38	28.56	40.43	104.20	96.71	74.00	22.71	Peak

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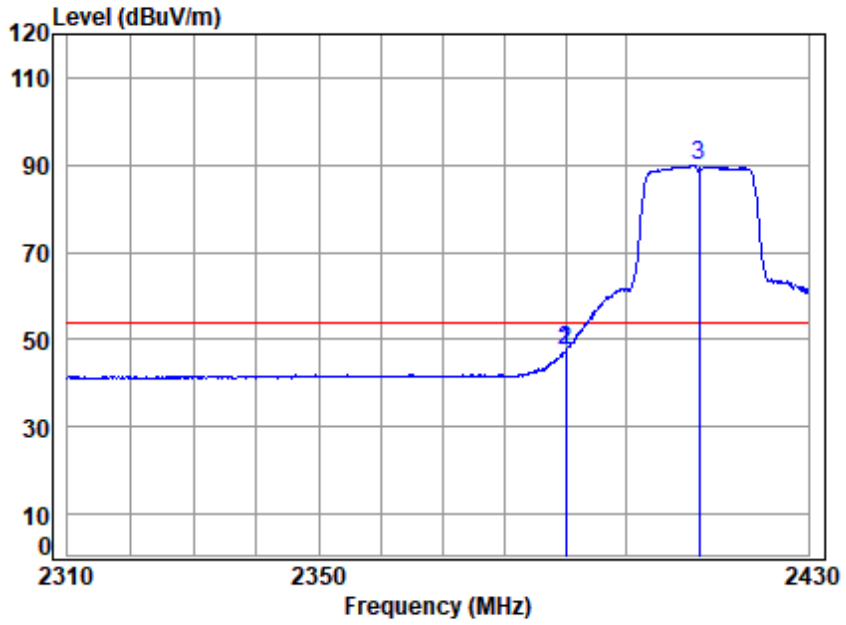
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2412 Band edge
Note : WIFI 2.4G 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.968	4.34	28.52	40.42	55.18	47.62	54.00	-6.38	Average
2	2390.000	4.34	28.52	40.42	55.18	47.62	54.00	-6.38	Average
3 *	2412.000	4.38	28.56	40.43	97.30	89.81	54.00	35.81	Average

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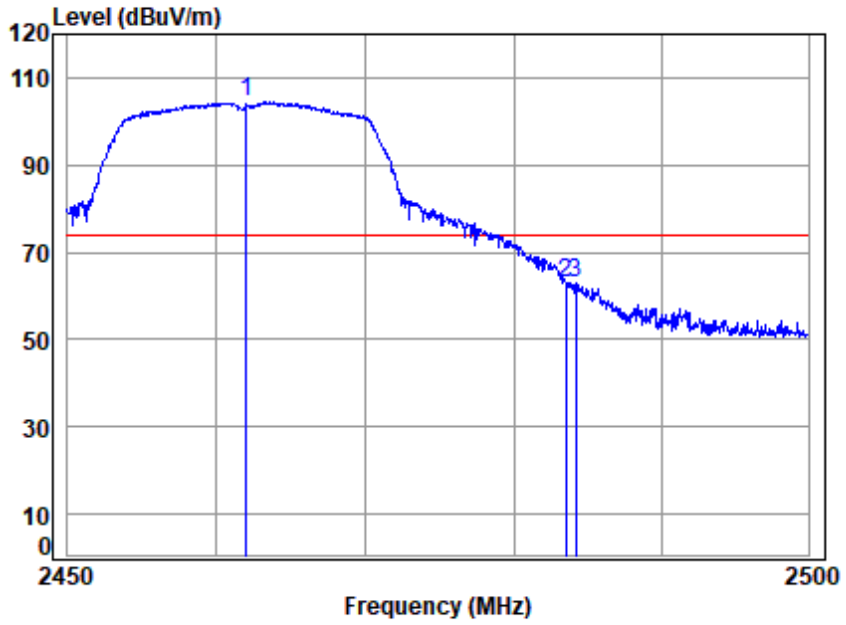
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	111.69	104.33	74.00	30.33	peak
2	2483.500	4.49	28.67	40.47	70.46	63.15	74.00	-10.85	peak
3	2484.191	4.50	28.67	40.47	70.14	62.84	74.00	-11.16	peak

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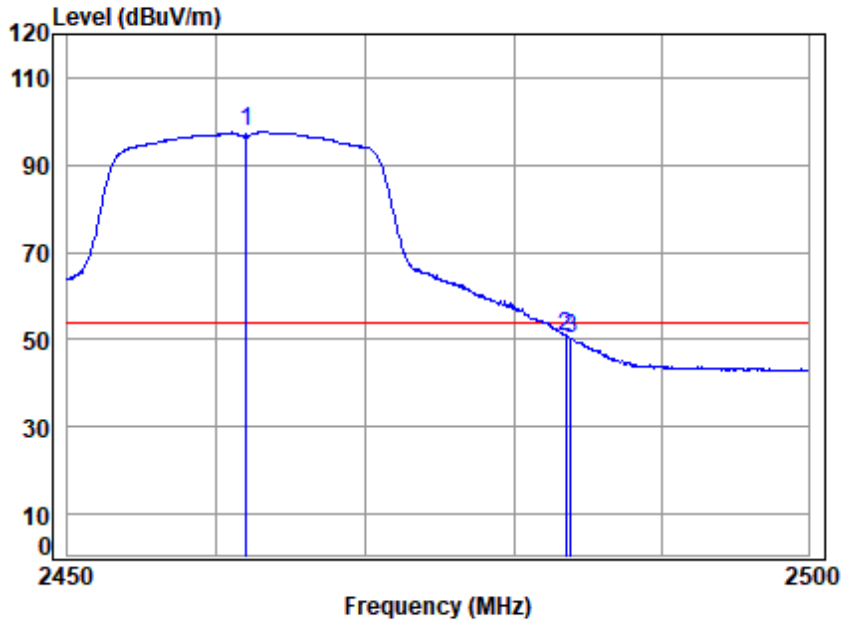
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	104.93	97.57	54.00	43.57	Average
2	2483.500	4.49	28.67	40.47	58.11	50.80	54.00	-3.20	Average
3	2483.840	4.49	28.67	40.47	57.59	50.28	54.00	-3.72	Average

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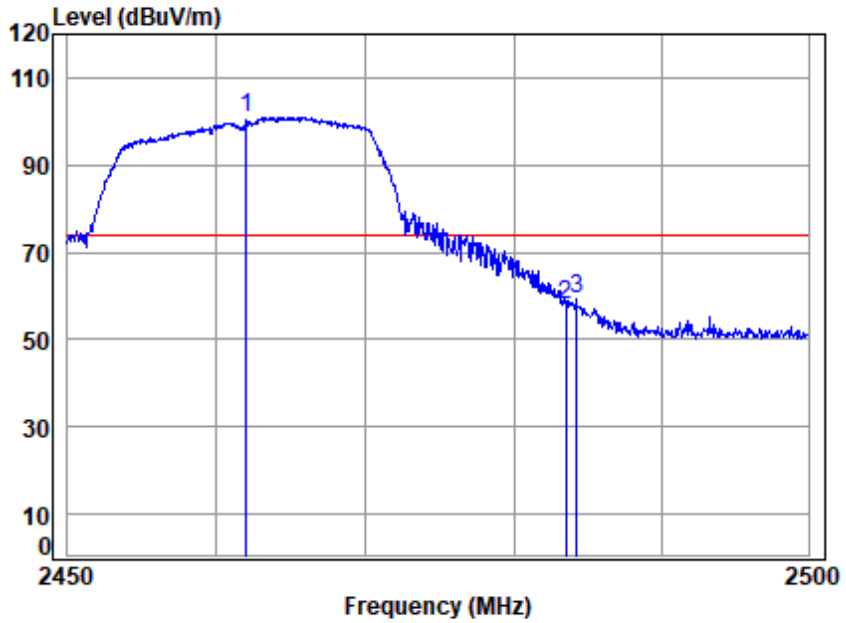
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	108.27	100.91	74.00	26.91	Peak
2	2483.500	4.49	28.67	40.47	65.07	57.76	74.00	-16.24	Peak
3	2484.241	4.50	28.67	40.47	66.83	59.53	74.00	-14.47	Peak

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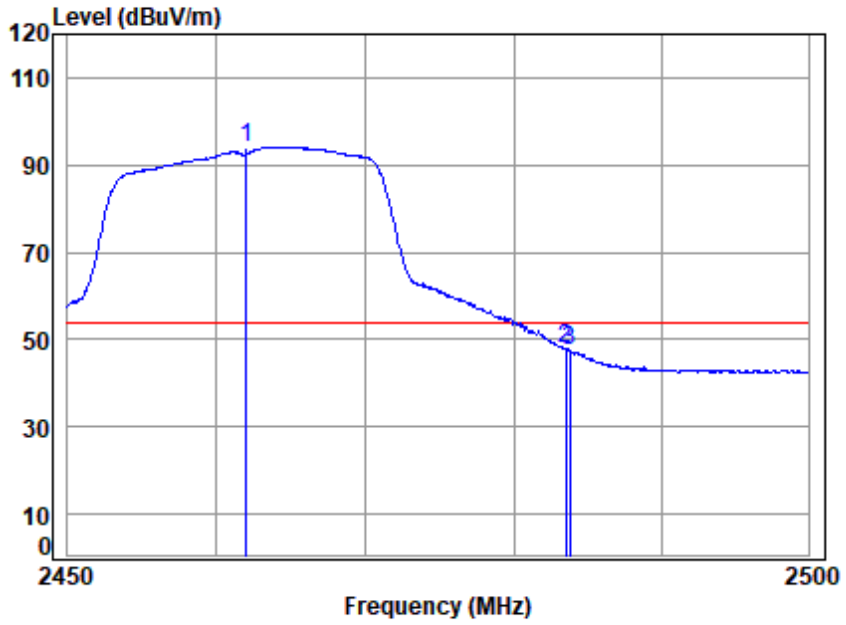
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2462 Band edge
Note : WIFI 2.4G 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	4.46	28.64	40.46	101.43	94.07	54.00	40.07	Average
2	2483.500	4.49	28.67	40.47	55.11	47.80	54.00	-6.20	Average
3	2483.790	4.49	28.67	40.47	54.86	47.55	54.00	-6.45	Average

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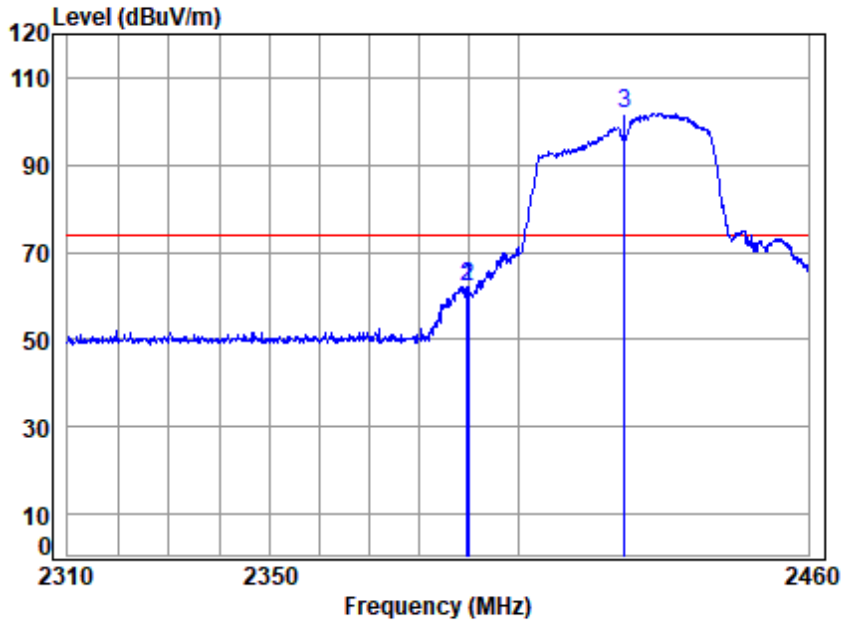
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2422 Band edge
Note : WIFI 2.4G 11N40
: P=17

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.677	4.34	28.52	40.42	69.72	62.16	74.00	-11.84	peak
2	2390.000	4.34	28.52	40.42	69.49	61.93	74.00	-12.07	peak
3 *	2422.000	4.40	28.57	40.44	109.35	101.88	74.00	27.88	peak

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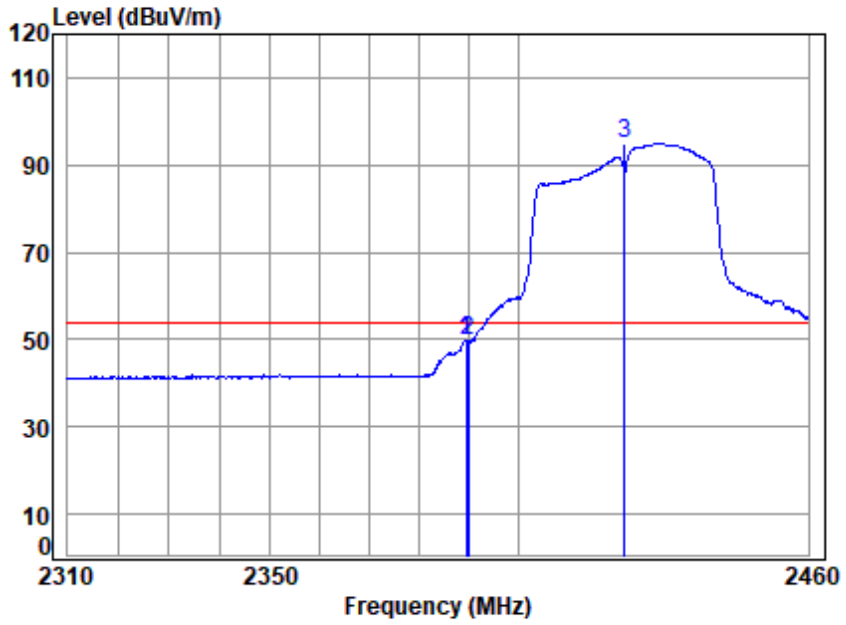
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2422 Band edge
Note : WIFI 2.4G 11N40
: P=17

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.526	4.34	28.52	40.42	57.52	49.96	54.00	-4.04	Average
2	2390.000	4.34	28.52	40.42	57.19	49.63	54.00	-4.37	Average
3 *	2422.000	4.40	28.57	40.44	102.36	94.89	54.00	40.89	Average

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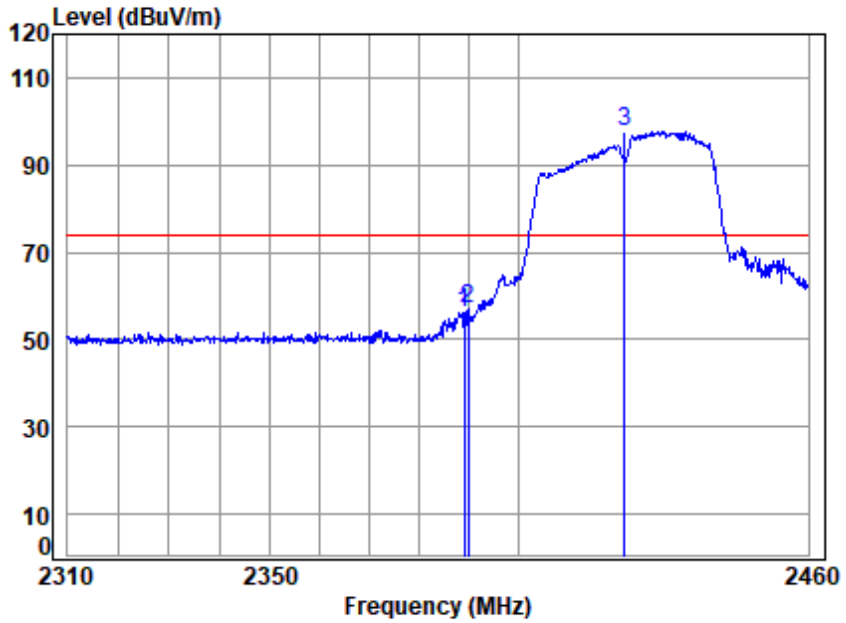
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2422 Band edge
Note : WIFI 2.4G 11N40
: P=17

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.226	4.34	28.52	40.42	63.61	56.05	74.00	-17.95	Peak
2	2390.000	4.34	28.52	40.42	64.60	57.04	74.00	-16.96	Peak
3 *	2422.000	4.40	28.57	40.44	105.18	97.71	74.00	23.71	Peak

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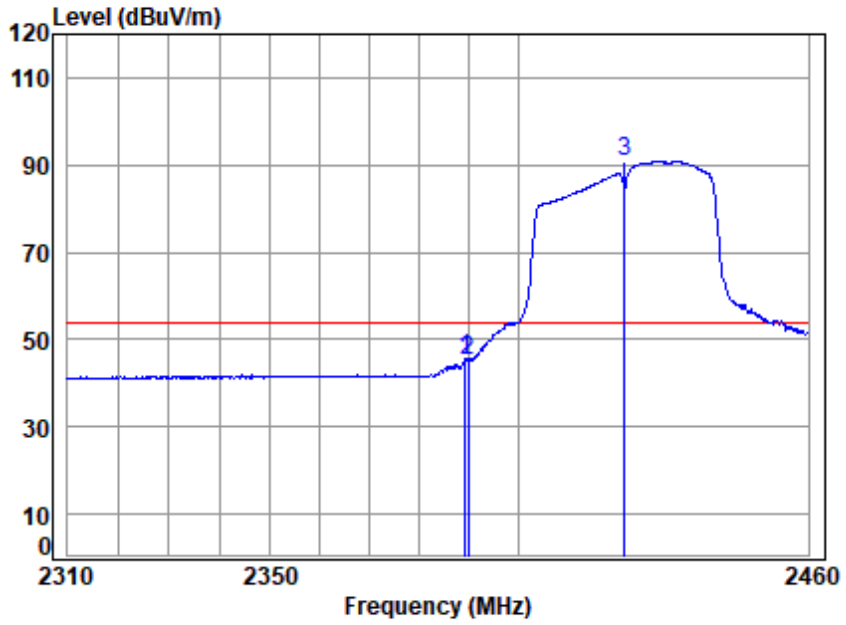

Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2422 Band edge
Note : WIFI 2.4G 11N40
: P=17

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.376	4.34	28.52	40.42	53.12	45.56	54.00	-8.44	Average
2	2390.000	4.34	28.52	40.42	52.95	45.39	54.00	-8.61	Average
3 *	2422.000	4.40	28.57	40.44	98.30	90.83	54.00	36.83	Average

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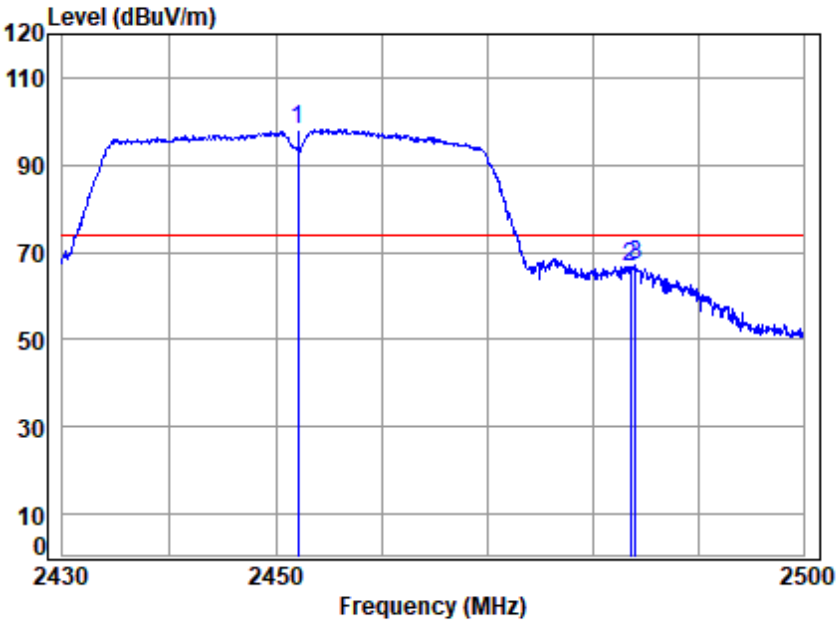
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2452 Band edge
Note : WIFI 2.4G 11N40
: P=13

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2452.000	4.44	28.62	40.45	105.68	98.29	74.00	24.29	peak
2	2483.500	4.49	28.67	40.47	73.95	66.64	74.00	-7.36	peak
3	2484.006	4.49	28.67	40.47	74.39	67.08	74.00	-6.92	peak

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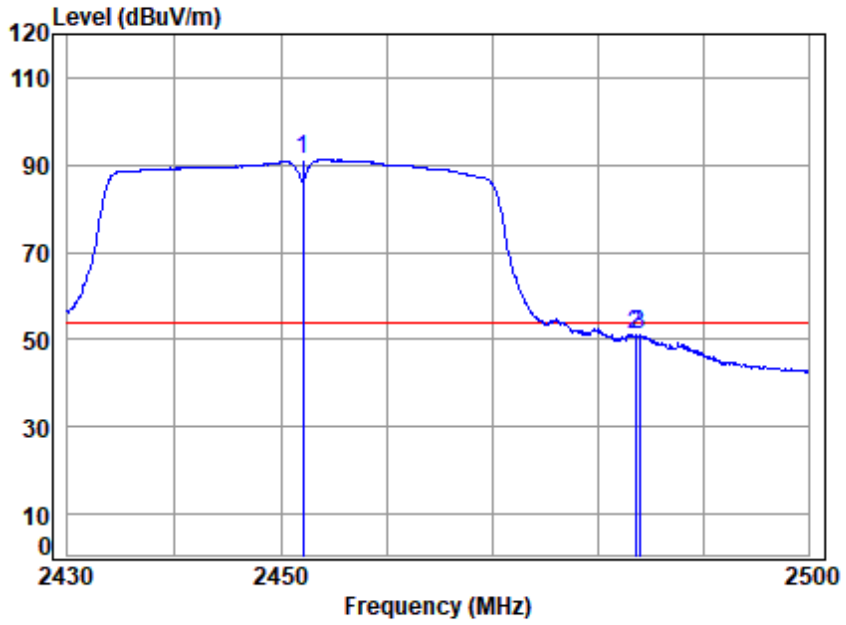
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2452 Band edge
Note : WIFI 2.4G 11N40
: P=13

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2452.000	4.44	28.62	40.45	98.61	91.22	54.00	37.22	Average
2	2483.500	4.49	28.67	40.47	58.29	50.98	54.00	-3.02	Average
3	2483.865	4.49	28.67	40.47	58.28	50.97	54.00	-3.03	Average

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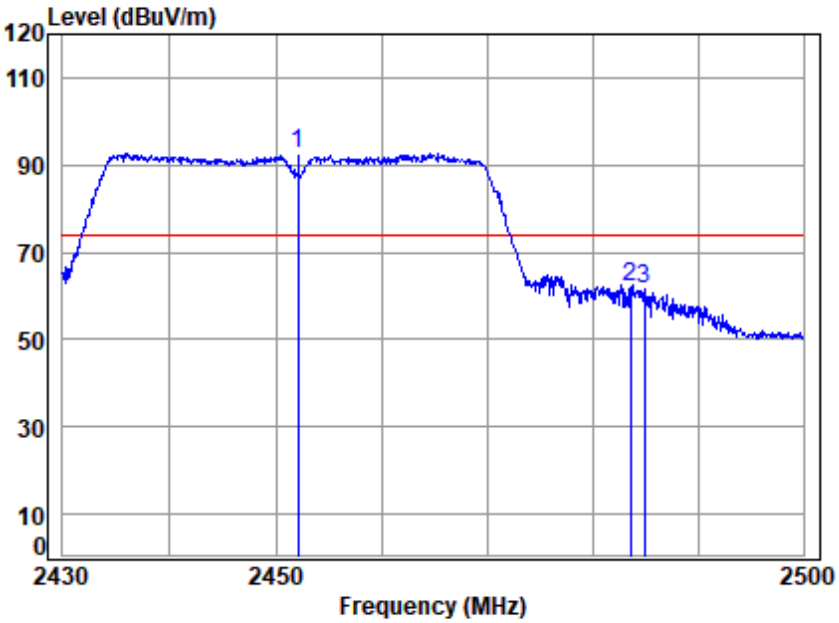
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2452 Band edge
Note : WIFI 2.4G 11N40
: P=13

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2452.000	4.44	28.62	40.45	99.93	92.54	74.00	18.54	Peak
2	2483.500	4.49	28.67	40.47	69.47	62.16	74.00	-11.84	Peak
3	2484.782	4.50	28.68	40.47	68.81	61.52	74.00	-12.48	Peak

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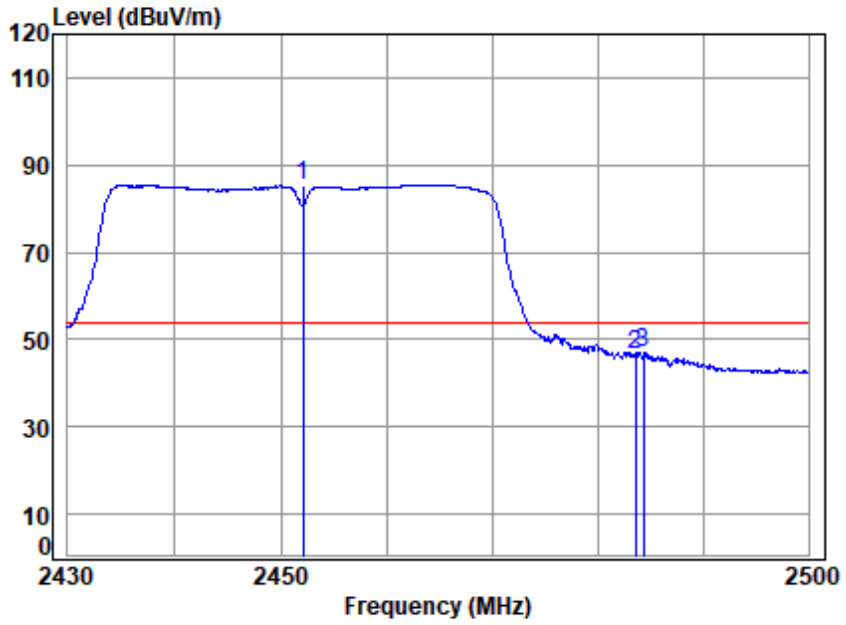

Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2452 Band edge
Note : WIFI 2.4G 11N40
: P=13

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2452.000	4.44	28.62	40.45	92.92	85.53	54.00	31.53	Average
2	2483.500	4.49	28.67	40.47	53.68	46.37	54.00	-7.63	Average
3	2484.288	4.50	28.67	40.47	54.43	47.13	54.00	-6.87	Average

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7.7 Radiated Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
Test Method: ANSI C63.10 (2013) Section 6.4,6.5,6.6
Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.		

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 54.6 % RH Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

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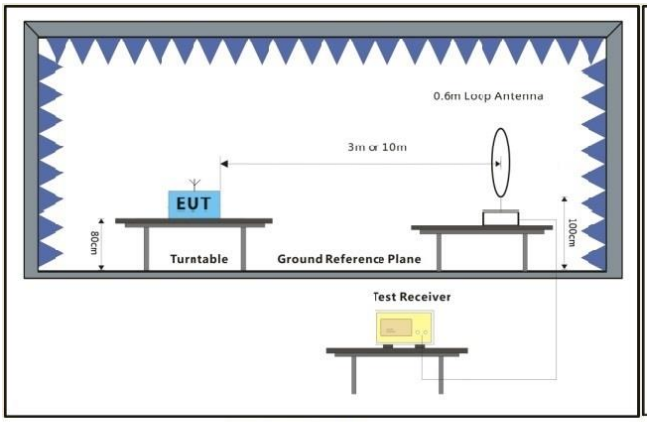
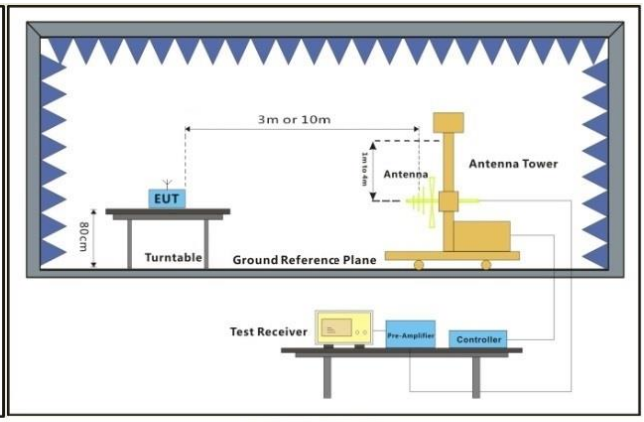
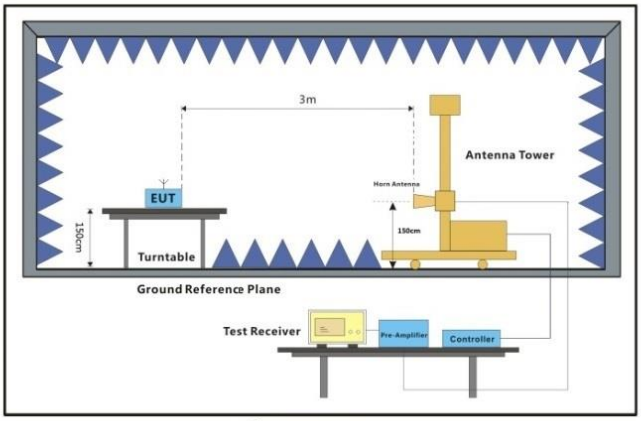
7.7.3 Test Setup Diagram



Below 30MHz



30MHz-1GHz



Above 1GHz

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7.7.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

Remark:

1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

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

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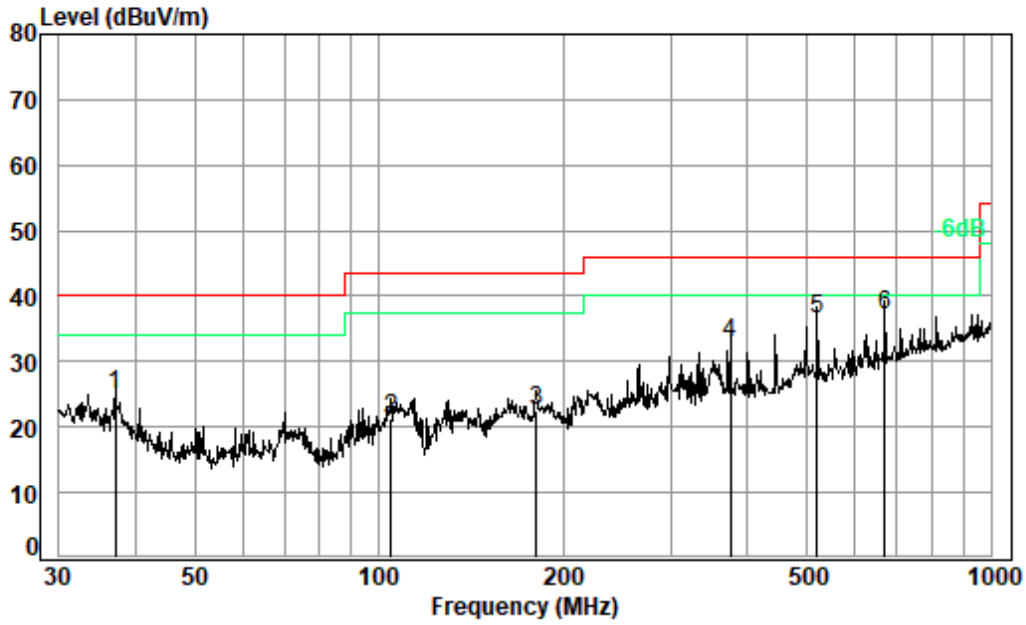
Adapter1

Test Mode: 03; Polarity: Horizontal



Condition: 3m HORIZONTAL
Job No. : 12652CR
Test Mode: 03
: 1# adapter

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	37.15	0.67	19.41	27.71	32.68	25.05	40.00	-14.95	QP
2	104.54	1.11	13.86	27.58	33.93	21.32	43.50	-22.18	QP
3	180.65	1.19	15.41	27.21	33.22	22.61	43.50	-20.89	QP
4	374.62	2.23	22.20	27.27	35.61	32.77	46.00	-13.23	QP
5	519.06	2.54	24.57	27.87	37.23	36.47	46.00	-9.53	QP
6 pp	670.49	2.84	27.10	27.98	35.15	37.11	46.00	-8.89	QP

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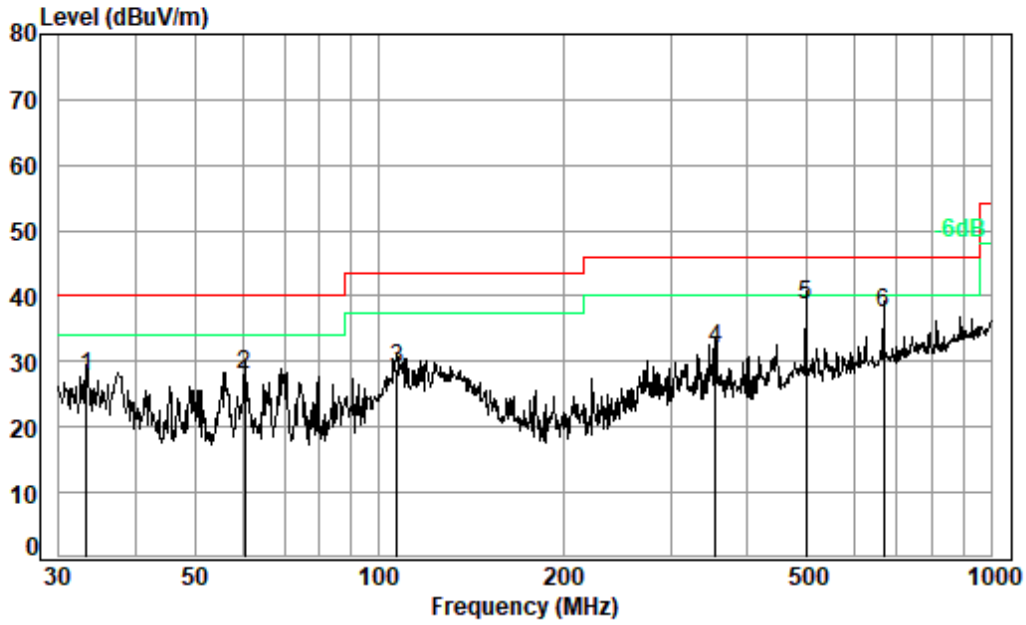
Test Mode: 03; Polarity: Vertical



Condition: 3m VERTICAL
Job No. : 12652CR
Test Mode: 03
: 1# adapter

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	33.33	0.64	21.10	27.72	33.59	27.61	40.00	-12.39	QP
2	60.28	0.80	12.83	27.66	42.01	27.98	40.00	-12.02	QP
3	107.13	1.11	13.78	27.56	41.68	29.01	43.50	-14.49	QP
4	354.18	2.17	21.30	27.17	35.56	31.86	46.00	-14.14	QP
5 pp	499.42	2.50	24.11	27.80	39.90	38.71	46.00	-7.29	QP
6	668.14	2.84	27.04	27.98	35.47	37.37	46.00	-8.63	QP

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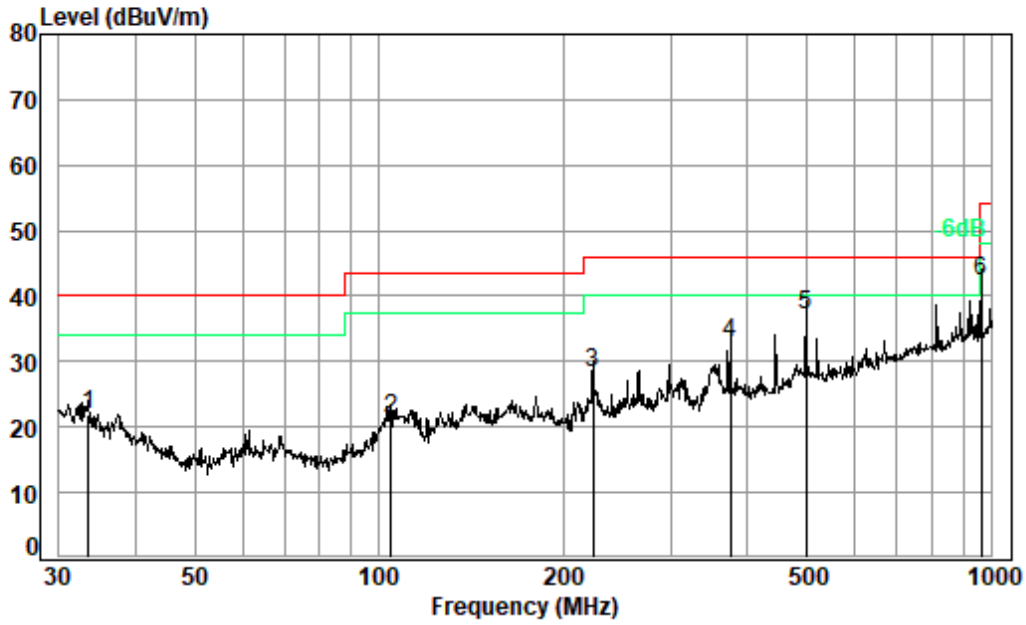
Adapter2

Test Mode: 03; Polarity: Horizontal



Condition: 3m HORIZONTAL
Job No. : 12652CR
Test Mode: 03
: 2# adapter

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	33.56	0.64	21.03	27.72	27.94	21.89	40.00	-18.11	QP
2	104.54	1.11	13.86	27.58	33.93	21.32	43.50	-22.18	QP
3	223.73	1.42	16.99	27.07	36.91	28.25	46.00	-17.75	QP
4	374.62	2.23	22.20	27.27	35.61	32.77	46.00	-13.23	QP
5 pp	499.42	2.50	24.11	27.80	38.33	37.14	46.00	-8.86	QP
6	965.54	3.57	29.50	26.83	35.95	42.19	54.00	-11.81	QP

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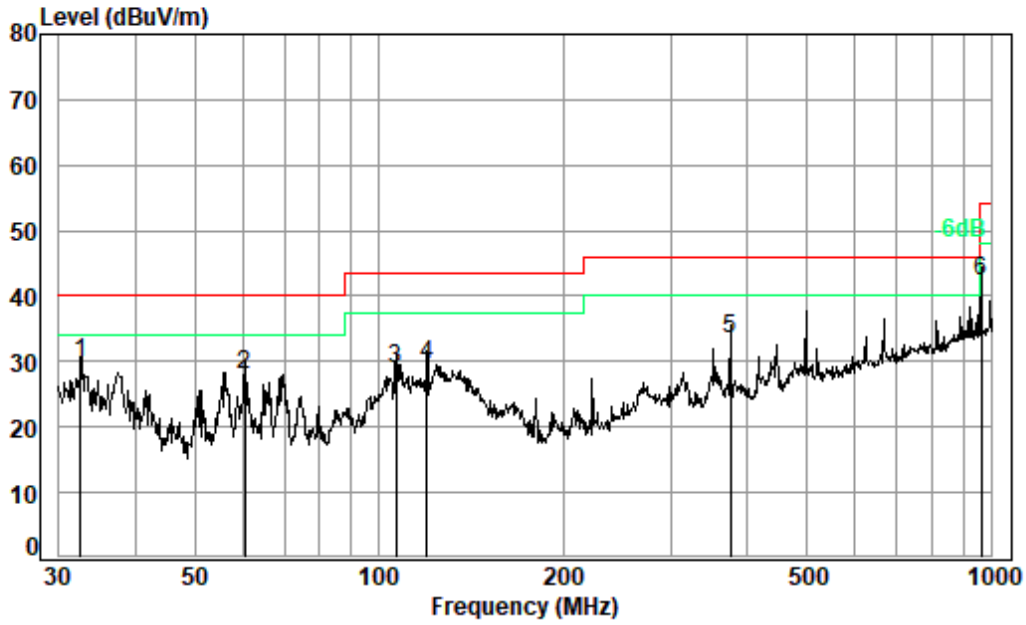
Test Mode: 03; Polarity: Vertical



Condition: 3m VERTICAL
Job No. : 12652CR
Test Mode: 03
: 2# adapter

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	32.52	0.63	21.34	27.73	35.54	29.78	40.00	-10.22	QP
2	60.28	0.80	12.83	27.66	42.01	27.98	40.00	-12.02	QP
3	106.76	1.11	13.79	27.57	41.66	28.99	43.50	-14.51	QP
4	119.86	1.13	13.01	27.49	42.86	29.51	43.50	-13.99	QP
5	374.62	2.23	22.20	27.27	36.39	33.55	46.00	-12.45	QP
6	965.54	3.57	29.50	26.83	36.12	42.36	54.00	-11.64	QP

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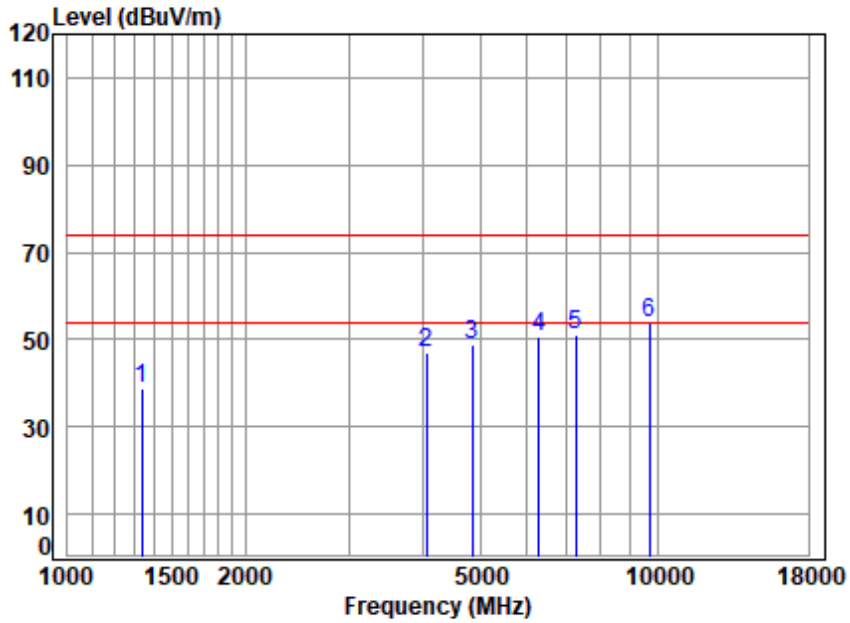
Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2412 TX RSE
Note : 2.4G WIFI 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1335.141	3.00	25.17	39.85	50.29	38.61	74.00	-35.39	peak
2	4050.904	6.33	32.80	41.45	49.12	46.80	74.00	-27.20	peak
3	4844.000	7.14	34.02	42.17	49.77	48.76	74.00	-25.24	peak
4	6303.890	8.27	35.41	42.18	49.16	50.66	74.00	-23.34	peak
5	7266.000	8.79	36.12	41.45	47.62	51.08	74.00	-22.92	peak
6	9688.000	10.78	37.71	37.63	42.80	53.66	74.00	-20.34	peak

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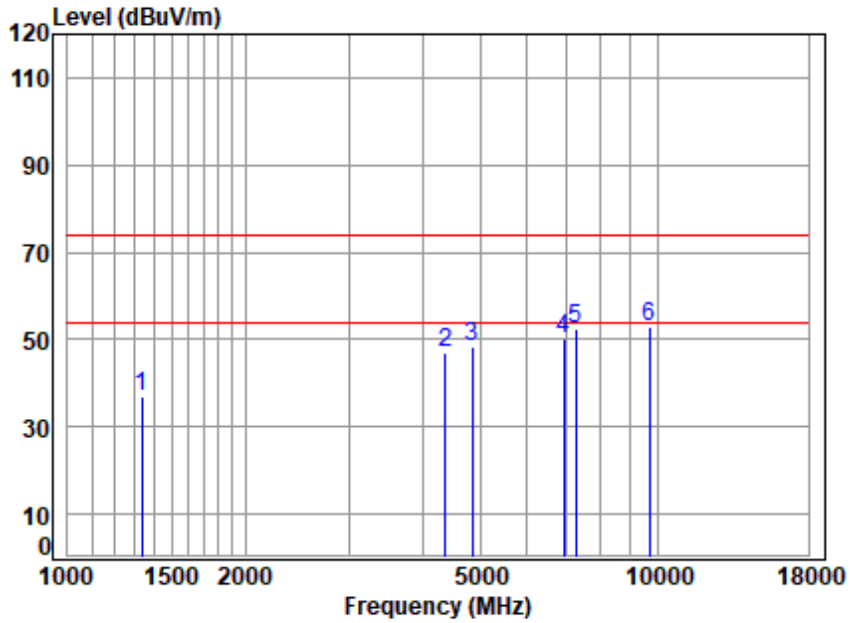
Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2412 TX RSE
Note : 2.4G WIFI 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1335.141	3.00	25.17	39.85	48.72	37.04	74.00	-36.96	peak
2	4367.058	6.64	33.37	41.75	48.64	46.90	74.00	-27.10	peak
3	4844.000	7.14	34.02	42.17	49.20	48.19	74.00	-25.81	peak
4	6934.778	8.51	35.86	41.74	47.57	50.20	74.00	-23.80	peak
5	7266.000	8.79	36.12	41.45	48.93	52.39	74.00	-21.61	peak
6	9688.000	10.78	37.71	37.63	42.12	52.98	74.00	-21.02	peak

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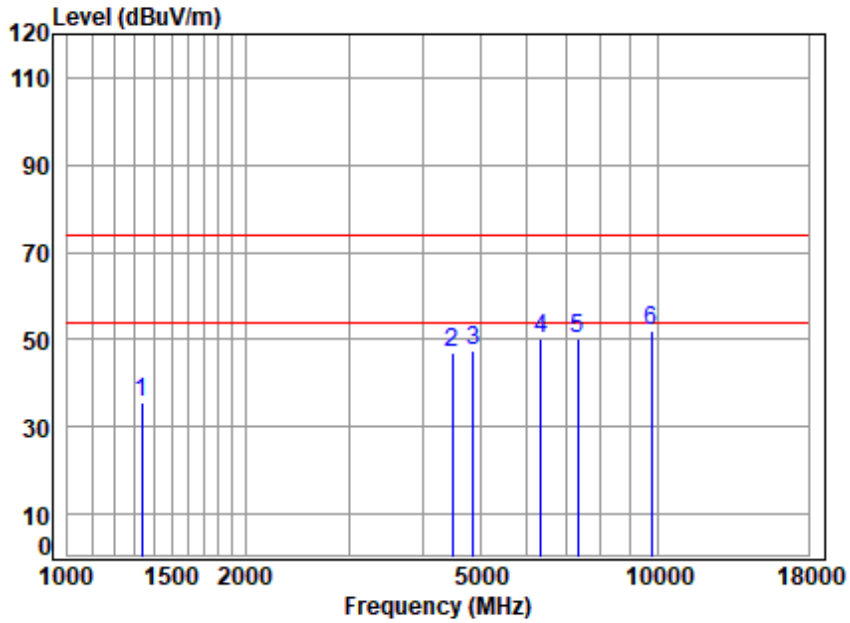
Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2437 TX RSE
Note : 2.4G WIFI 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1335.141	3.00	25.17	39.85	47.45	35.77	74.00	-38.23	peak
2	4495.125	6.76	33.59	41.87	48.31	46.79	74.00	-27.21	peak
3	4874.000	7.17	34.05	42.20	48.43	47.45	74.00	-26.55	peak
4	6340.436	8.27	35.44	42.15	48.53	50.09	74.00	-23.91	peak
5	7311.000	8.84	36.15	41.41	46.80	50.38	74.00	-23.62	peak
6	9748.000	10.76	37.75	37.52	41.04	52.03	74.00	-21.97	peak

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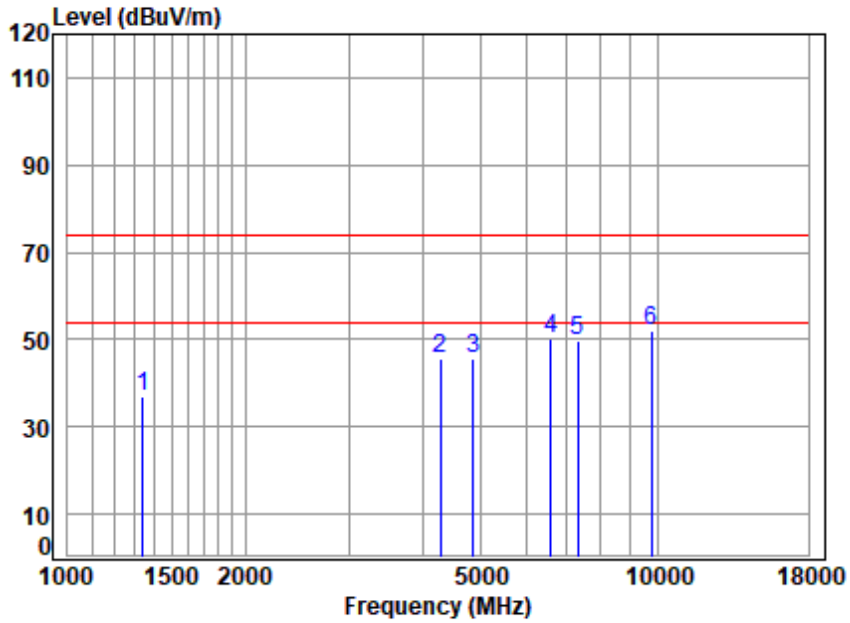
Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2437 TX RSE
Note : 2.4G WIFI 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1339.006	3.01	25.18	39.85	48.62	36.96	74.00	-37.04	peak
2	4279.589	6.56	33.22	41.67	47.61	45.72	74.00	-28.28	peak
3	4874.000	7.17	34.05	42.20	46.55	45.57	74.00	-28.43	peak
4	6583.209	8.32	35.65	41.98	48.18	50.17	74.00	-23.83	peak
5	7311.000	8.84	36.15	41.41	46.13	49.71	74.00	-24.29	peak
6	9748.000	10.76	37.75	37.52	40.84	51.83	74.00	-22.17	peak

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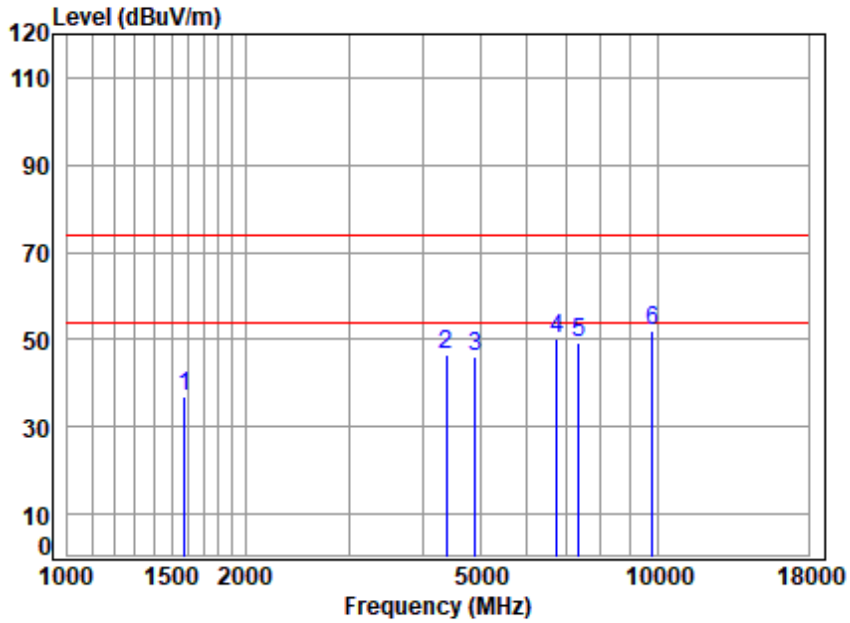
Test Mode: 03; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2462 TX RSE
Note : 2.4G WIFI 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1578.822	3.33	26.16	40.00	47.63	37.12	74.00	-36.88	peak
2	4379.699	6.65	33.39	41.77	48.38	46.65	74.00	-27.35	peak
3	4904.000	7.20	34.09	42.22	46.99	46.06	74.00	-27.94	peak
4	6756.708	8.42	35.76	41.86	47.80	50.12	74.00	-23.88	peak
5	7356.000	8.88	36.19	41.37	45.55	49.25	74.00	-24.75	peak
6	9808.000	10.75	37.79	37.42	40.96	52.08	74.00	-21.92	peak

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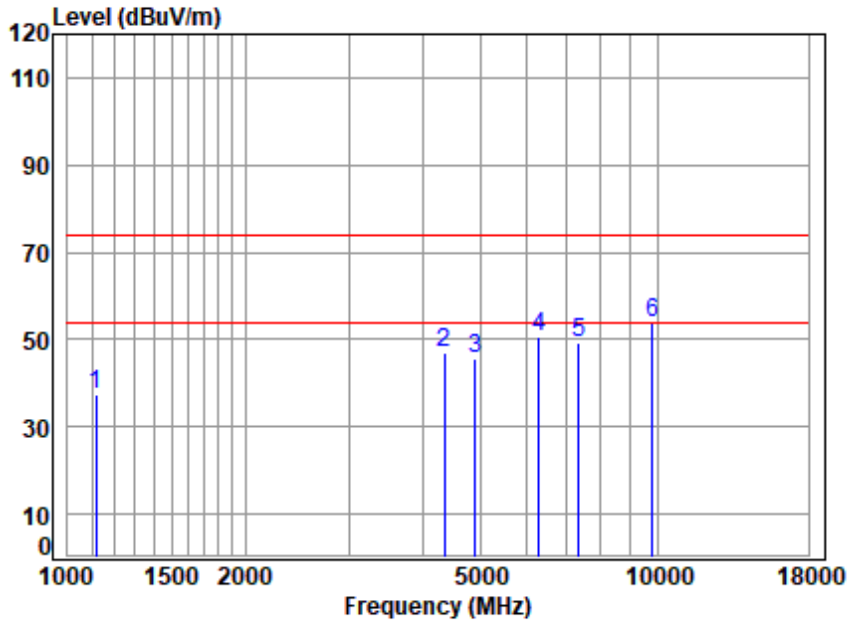
Test Mode: 03; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2462 TX RSE
Note : 2.4G WIFI 11B

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1116.093	2.60	24.20	39.70	50.12	37.22	74.00	-36.78	peak
2	4354.454	6.63	33.35	41.74	48.58	46.82	74.00	-27.18	peak
3	4904.000	7.20	34.09	42.22	46.53	45.60	74.00	-28.40	peak
4	6303.890	8.27	35.41	42.18	49.27	50.77	74.00	-23.23	peak
5	7356.000	8.88	36.19	41.37	45.62	49.32	74.00	-24.68	peak
6	9808.000	10.75	37.79	37.42	42.66	53.78	74.00	-20.22	peak

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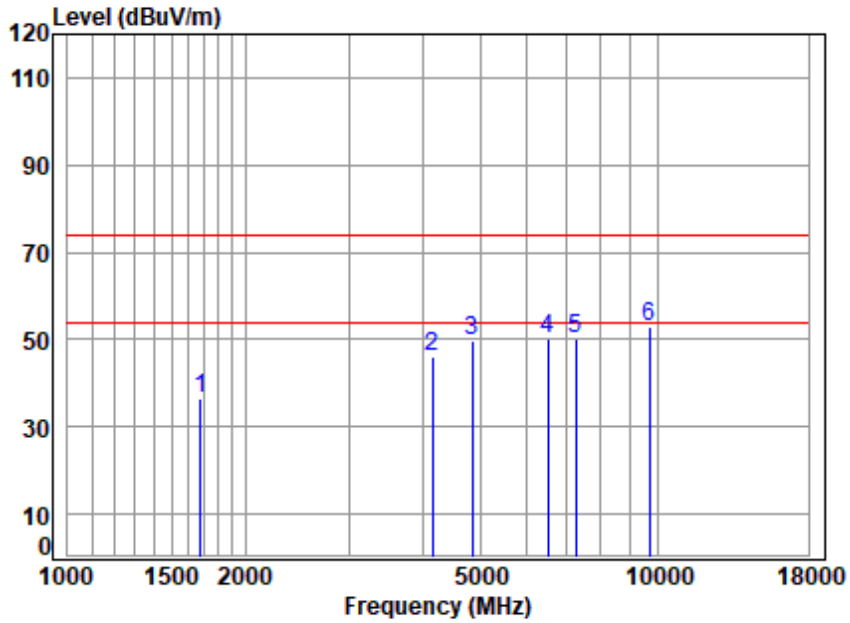
Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2412 TX RSE
Note : 2.4G WIFI 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1682.477	3.42	26.60	40.05	46.42	36.39	74.00	-37.61	peak
2	4157.664	6.44	33.00	41.56	48.41	46.29	74.00	-27.71	peak
3	4844.000	7.14	34.02	42.17	50.59	49.58	74.00	-24.42	peak
4	6526.373	8.29	35.62	42.02	48.49	50.38	74.00	-23.62	peak
5	7266.000	8.79	36.12	41.45	46.58	50.04	74.00	-23.96	peak
6	9688.000	10.78	37.71	37.63	41.97	52.83	74.00	-21.17	peak

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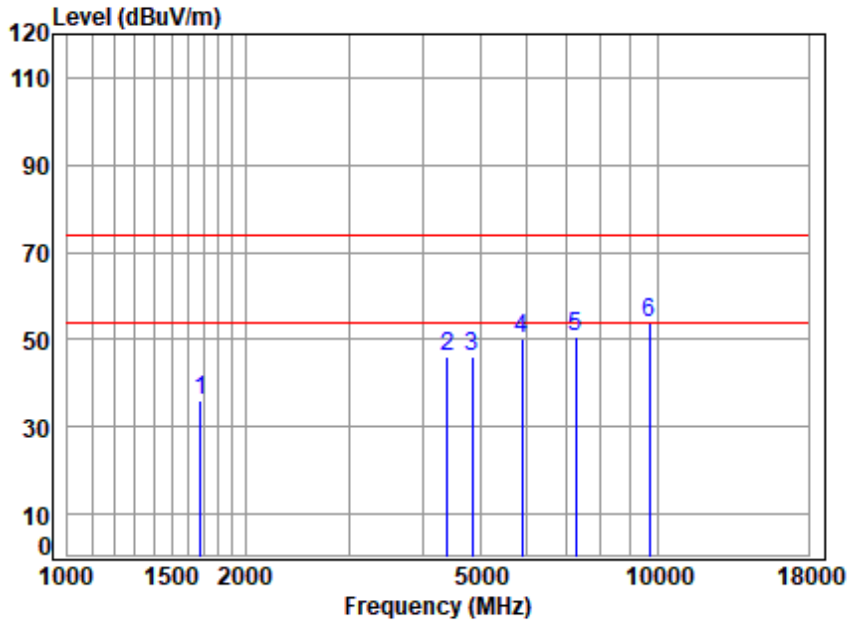
Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2412 TX RSE
Note : 2.4G WIFI 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1677.621	3.41	26.58	40.05	45.90	35.84	74.00	-38.16	peak
2	4405.090	6.67	33.44	41.79	47.94	46.26	74.00	-27.74	peak
3	4844.000	7.14	34.02	42.17	47.04	46.03	74.00	-27.97	peak
4	5881.418	8.24	34.99	42.39	49.46	50.30	74.00	-23.70	peak
5	7266.000	8.79	36.12	41.45	47.11	50.57	74.00	-23.43	peak
6	9688.000	10.78	37.71	37.63	42.98	53.84	74.00	-20.16	peak

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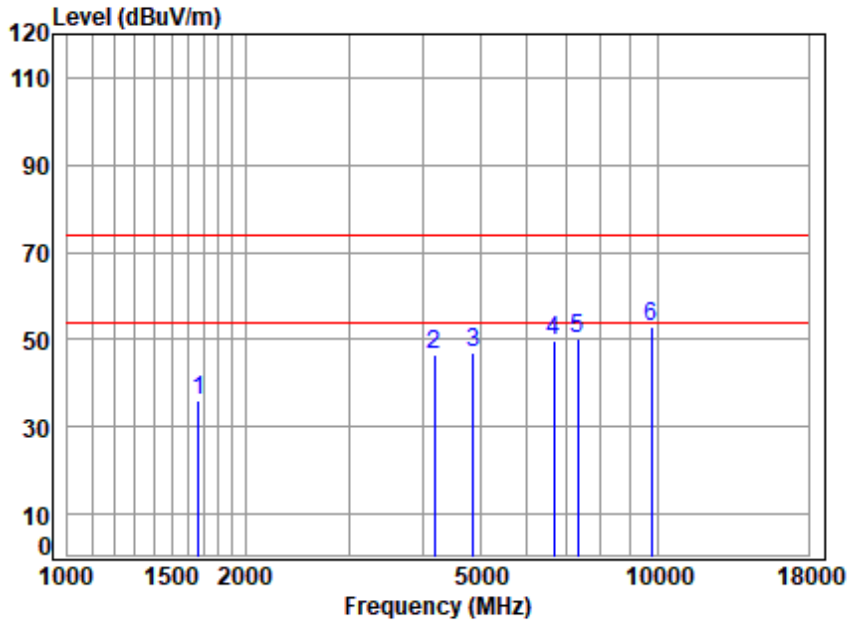
Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2437 TX RSE
Note : 2.4G WIFI 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1667.951	3.40	26.54	40.04	46.18	36.08	74.00	-37.92	peak
2	4181.768	6.46	33.04	41.58	48.51	46.43	74.00	-27.57	peak
3	4874.000	7.17	34.05	42.20	48.08	47.10	74.00	-26.90	peak
4	6679.040	8.38	35.71	41.91	47.61	49.79	74.00	-24.21	peak
5	7311.000	8.84	36.15	41.41	46.49	50.07	74.00	-23.93	peak
6	9748.000	10.76	37.75	37.52	42.13	53.12	74.00	-20.88	peak

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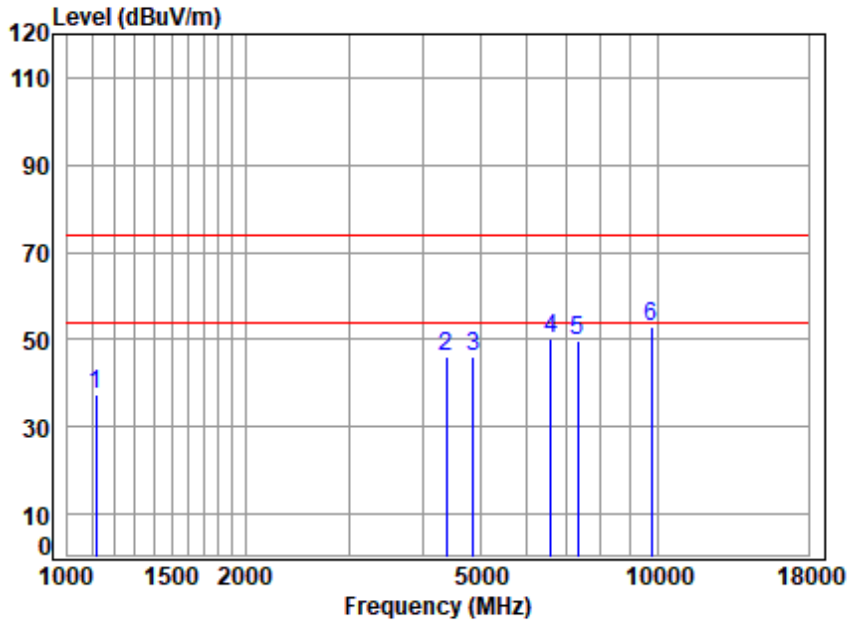
Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2437 TX RSE
Note : 2.4G WIFI 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1116.093	2.60	24.20	39.70	50.40	37.50	74.00	-36.50	peak
2	4379.699	6.65	33.39	41.77	47.82	46.09	74.00	-27.91	peak
3	4874.000	7.17	34.05	42.20	47.13	46.15	74.00	-27.85	peak
4	6583.209	8.32	35.65	41.98	48.17	50.16	74.00	-23.84	peak
5	7311.000	8.84	36.15	41.41	46.08	49.66	74.00	-24.34	peak
6	9748.000	10.76	37.75	37.52	42.13	53.12	74.00	-20.88	peak

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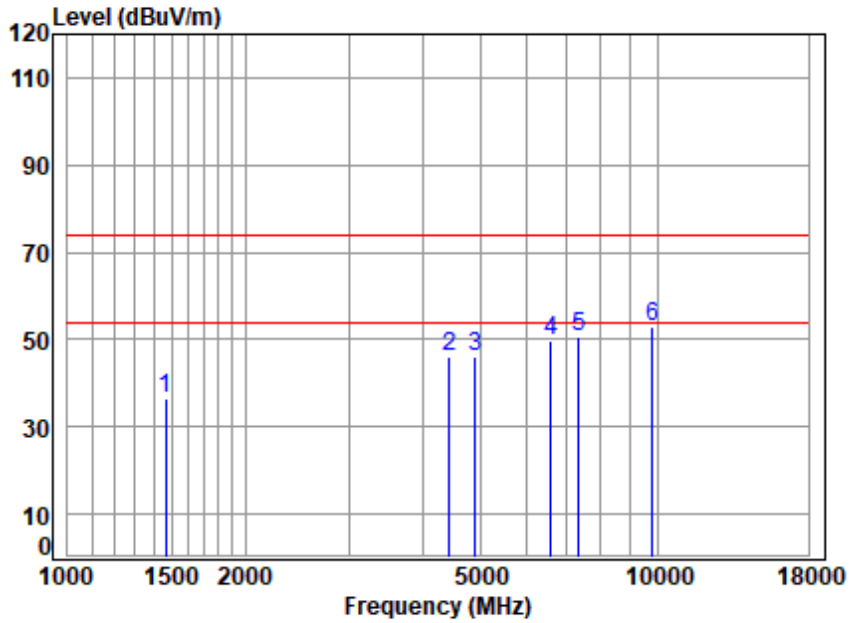
Test Mode: 03; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2462 TX RSE
Note : 2.4G WIFI 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1464.522	3.21	25.67	39.93	47.56	36.51	74.00	-37.49	peak
2	4430.628	6.70	33.48	41.81	47.87	46.24	74.00	-27.76	peak
3	4904.000	7.20	34.09	42.22	47.22	46.29	74.00	-27.71	peak
4	6583.209	8.32	35.65	41.98	47.68	49.67	74.00	-24.33	peak
5	7356.000	8.88	36.19	41.37	46.76	50.46	74.00	-23.54	peak
6	9808.000	10.75	37.79	37.42	42.01	53.13	74.00	-20.87	peak

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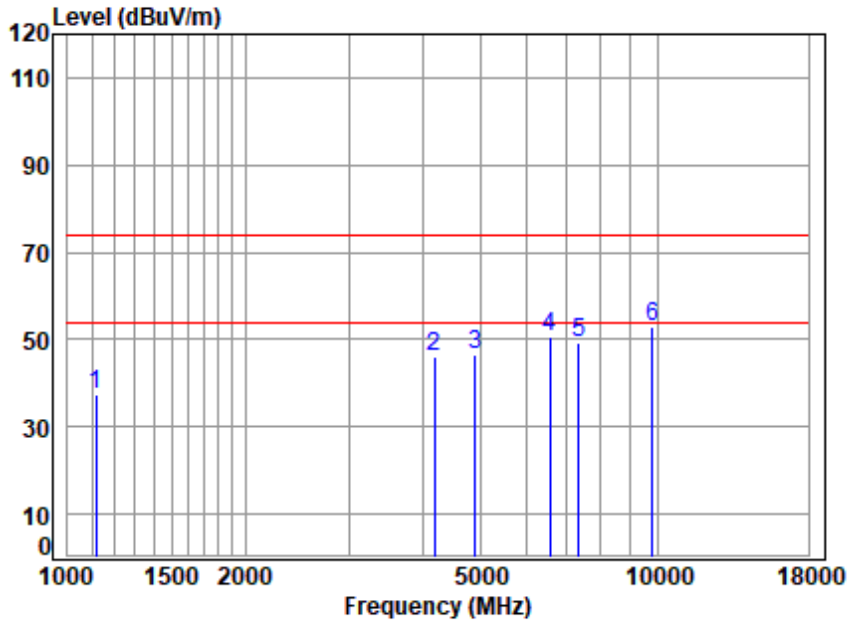
Test Mode: 03; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2462 TX RSE
Note : 2.4G WIFI 11G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1116.093	2.60	24.20	39.70	50.25	37.35	74.00	-36.65	peak
2	4181.768	6.46	33.04	41.58	48.25	46.17	74.00	-27.83	peak
3	4904.000	7.20	34.09	42.22	47.46	46.53	74.00	-27.47	peak
4	6564.209	8.31	35.64	41.99	48.91	50.87	74.00	-23.13	peak
5	7356.000	8.88	36.19	41.37	45.58	49.28	74.00	-24.72	peak
6	9808.000	10.75	37.79	37.42	41.69	52.81	74.00	-21.19	peak

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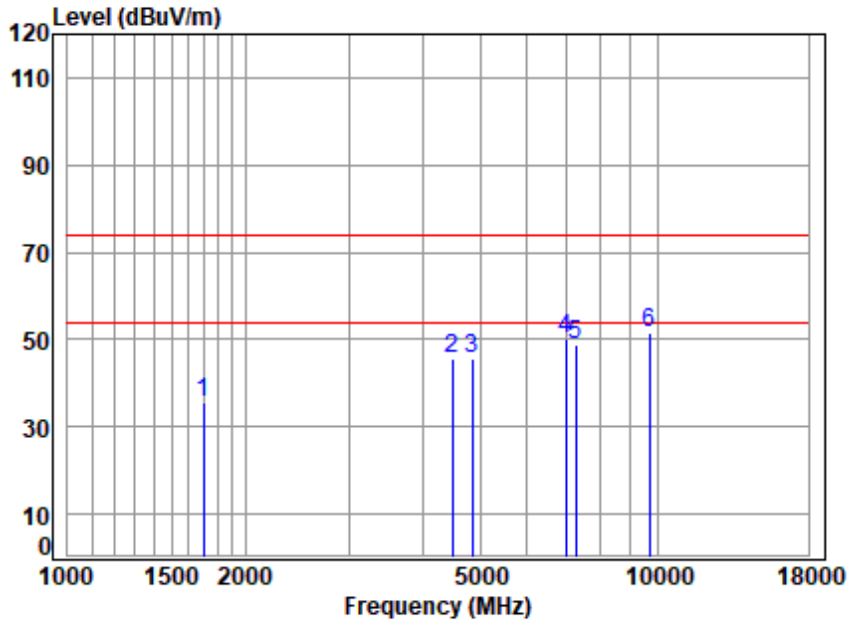
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2412 TX RSE
Note : 2.4G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1702.042	3.43	26.68	40.06	45.38	35.43	74.00	-38.57	peak
2	4482.150	6.74	33.57	41.86	47.37	45.82	74.00	-28.18	peak
3	4844.000	7.14	34.02	42.17	46.46	45.45	74.00	-28.55	peak
4	6974.982	8.53	35.89	41.72	47.65	50.35	74.00	-23.65	peak
5	7266.000	8.79	36.12	41.45	45.29	48.75	74.00	-25.25	peak
6	9688.000	10.78	37.71	37.63	40.50	51.36	74.00	-22.64	peak

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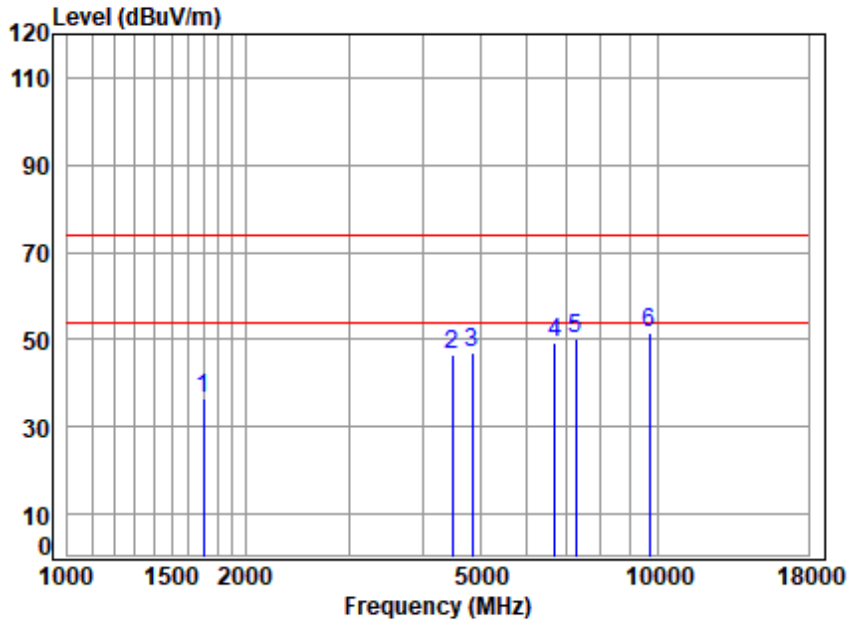
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2412 TX RSE
Note : 2.4G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1697.129	3.43	26.66	40.06	46.69	36.72	74.00	-37.28	peak
2	4482.150	6.74	33.57	41.86	48.11	46.56	74.00	-27.44	peak
3	4844.000	7.14	34.02	42.17	47.78	46.77	74.00	-27.23	peak
4	6698.373	8.39	35.72	41.90	47.29	49.50	74.00	-24.50	peak
5	7266.000	8.79	36.12	41.45	46.75	50.21	74.00	-23.79	peak
6	9688.000	10.78	37.71	37.63	40.86	51.72	74.00	-22.28	peak

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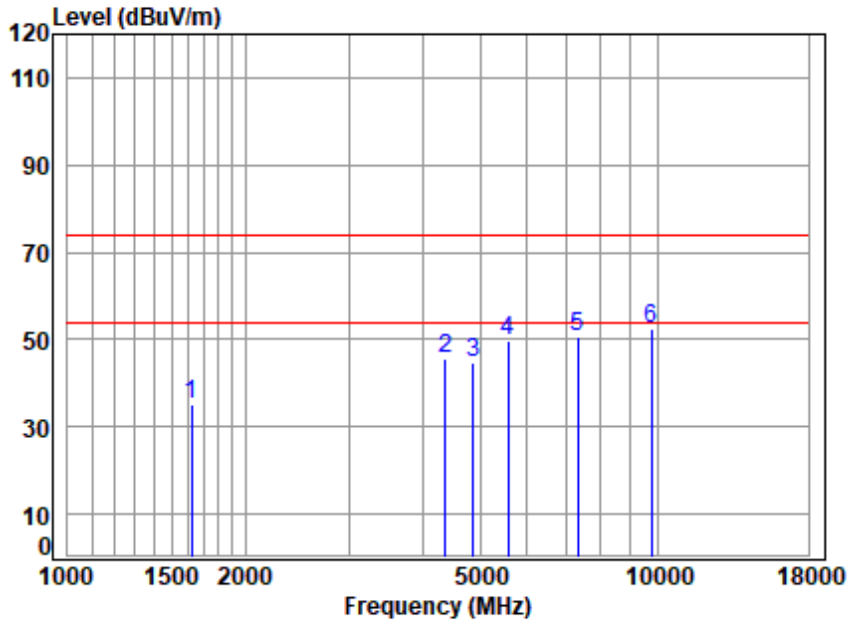
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2437 TX RSE
Note : 2.4G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1620.431	3.36	26.34	40.02	45.35	35.03	74.00	-38.97	peak
2	4367.058	6.64	33.37	41.75	47.20	45.46	74.00	-28.54	peak
3	4874.000	7.17	34.05	42.20	45.74	44.76	74.00	-29.24	peak
4	5583.251	8.19	34.69	42.36	49.20	49.72	74.00	-24.28	peak
5	7311.000	8.84	36.15	41.41	46.86	50.44	74.00	-23.56	peak
6	9748.000	10.76	37.75	37.52	41.41	52.40	74.00	-21.60	peak

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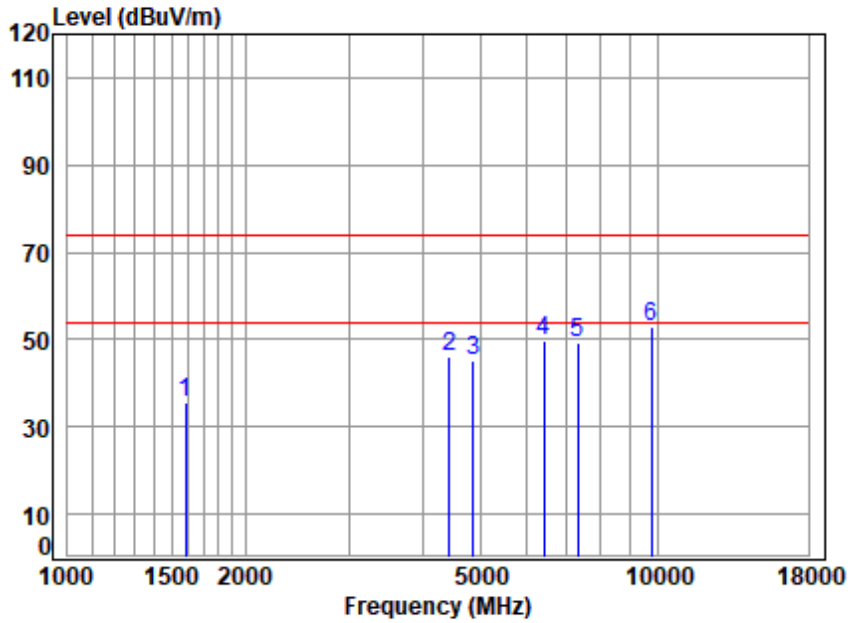
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2437 TX RSE
Note : 2.4G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1587.975	3.34	26.20	40.00	46.03	35.57	74.00	-38.43	peak
2	4443.453	6.71	33.50	41.82	47.91	46.30	74.00	-27.70	peak
3	4874.000	7.17	34.05	42.20	46.16	45.18	74.00	-28.82	peak
4	6414.167	8.28	35.52	42.10	48.07	49.77	74.00	-24.23	peak
5	7311.000	8.84	36.15	41.41	45.90	49.48	74.00	-24.52	peak
6	9748.000	10.76	37.75	37.52	41.97	52.96	74.00	-21.04	peak

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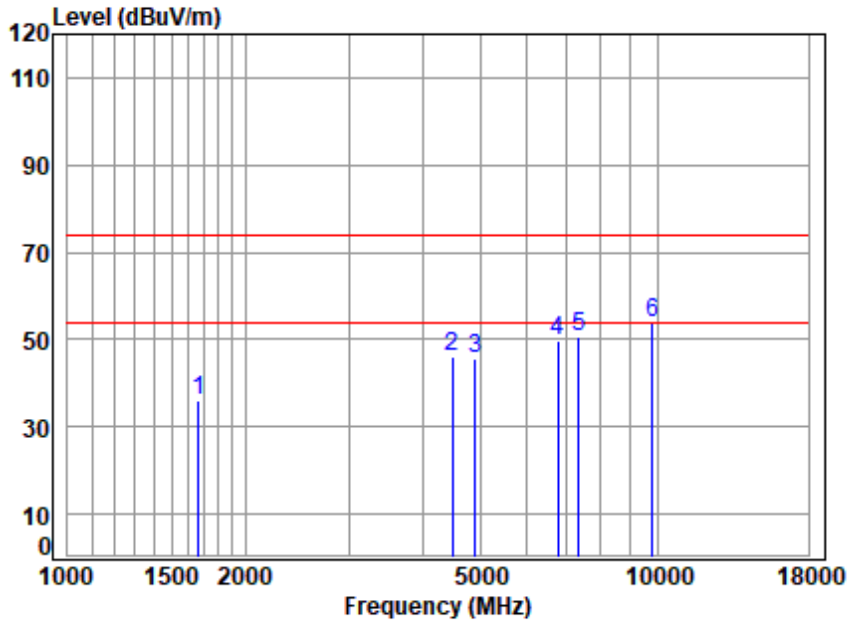

Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2462 TX RSE
Note : 2.4G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1667.951	3.40	26.54	40.04	45.94	35.84	74.00	-38.16	peak
2	4482.150	6.74	33.57	41.86	47.84	46.29	74.00	-27.71	peak
3	4904.000	7.20	34.09	42.22	46.45	45.52	74.00	-28.48	peak
4	6776.265	8.43	35.77	41.85	47.36	49.71	74.00	-24.29	peak
5	7356.000	8.88	36.19	41.37	46.83	50.53	74.00	-23.47	peak
6	9808.000	10.75	37.79	37.42	42.59	53.71	74.00	-20.29	peak

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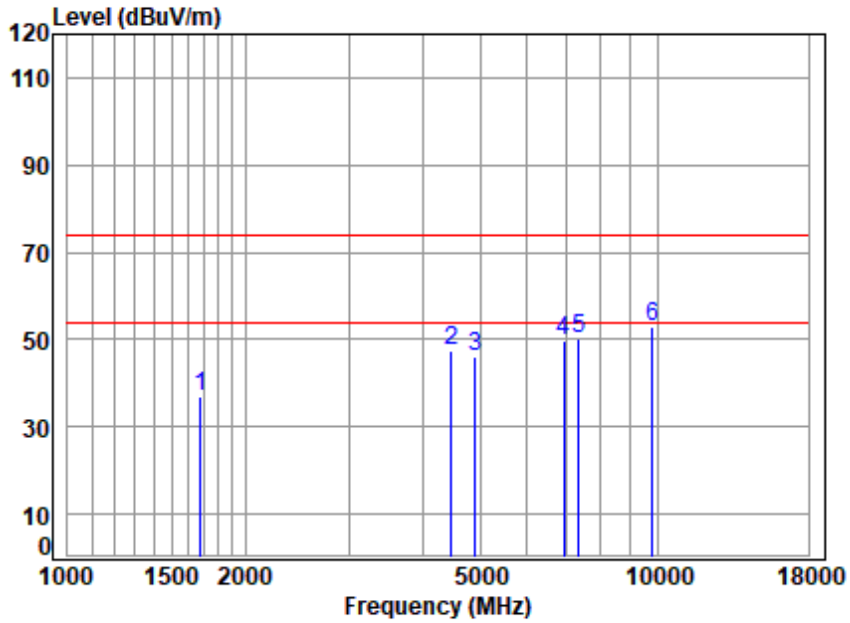
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2462 TX RSE
Note : 2.4G WIFI 11N20

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1677.621	3.41	26.58	40.05	46.88	36.82	74.00	-37.18	peak
2	4469.214	6.73	33.55	41.85	48.87	47.30	74.00	-26.70	peak
3	4904.000	7.20	34.09	42.22	46.81	45.88	74.00	-28.12	peak
4	6934.778	8.51	35.86	41.74	47.18	49.81	74.00	-24.19	peak
5	7356.000	8.88	36.19	41.37	46.51	50.21	74.00	-23.79	peak
6	9808.000	10.75	37.79	37.42	41.59	52.71	74.00	-21.29	peak

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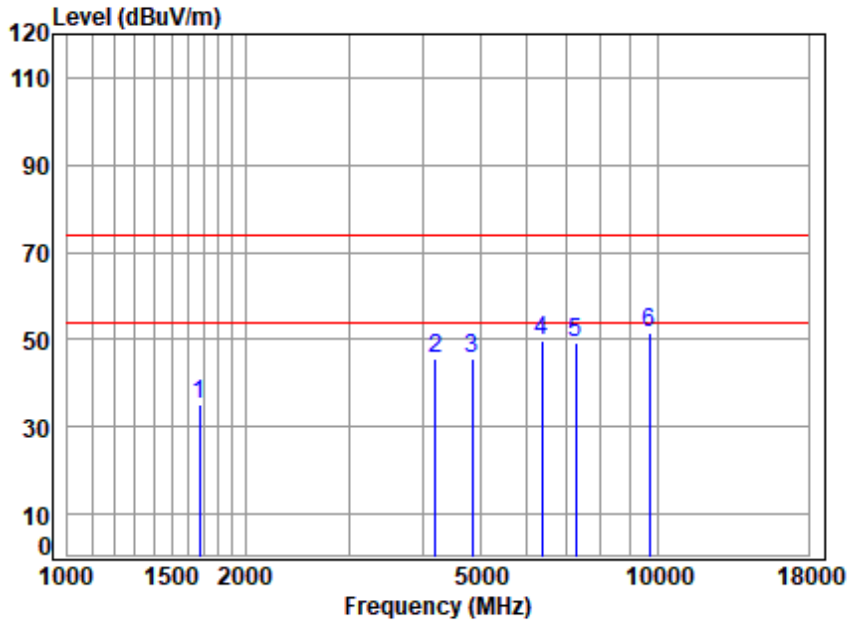

Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2422 TX RSE
Note : 2.4G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1672.779	3.41	26.56	40.05	45.06	34.98	74.00	-39.02	peak
2	4206.011	6.48	33.08	41.60	47.47	45.43	74.00	-28.57	peak
3	4844.000	7.14	34.02	42.17	46.46	45.45	74.00	-28.55	peak
4	6358.789	8.27	35.46	42.14	48.26	49.85	74.00	-24.15	peak
5	7266.000	8.79	36.12	41.45	45.81	49.27	74.00	-24.73	peak
6	9688.000	10.78	37.71	37.63	40.50	51.36	74.00	-22.64	peak

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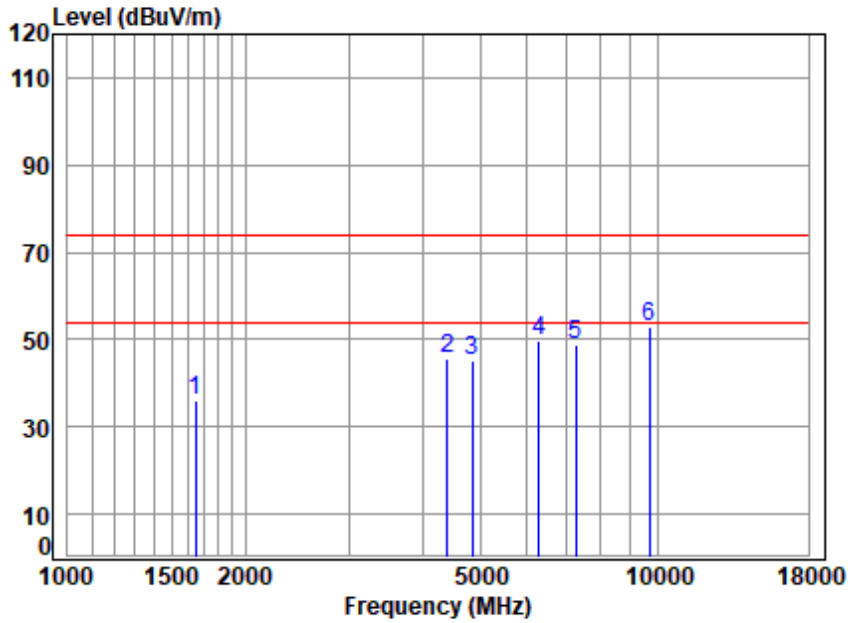
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2422 TX RSE
Note : 2.4G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1648.778	3.39	26.46	40.03	46.27	36.09	74.00	-37.91	peak
2	4405.090	6.67	33.44	41.79	47.29	45.61	74.00	-28.39	peak
3	4844.000	7.14	34.02	42.17	46.33	45.32	74.00	-28.68	peak
4	6285.695	8.27	35.39	42.19	48.31	49.78	74.00	-24.22	peak
5	7266.000	8.79	36.12	41.45	45.32	48.78	74.00	-25.22	peak
6	9688.000	10.78	37.71	37.63	42.19	53.05	74.00	-20.95	peak

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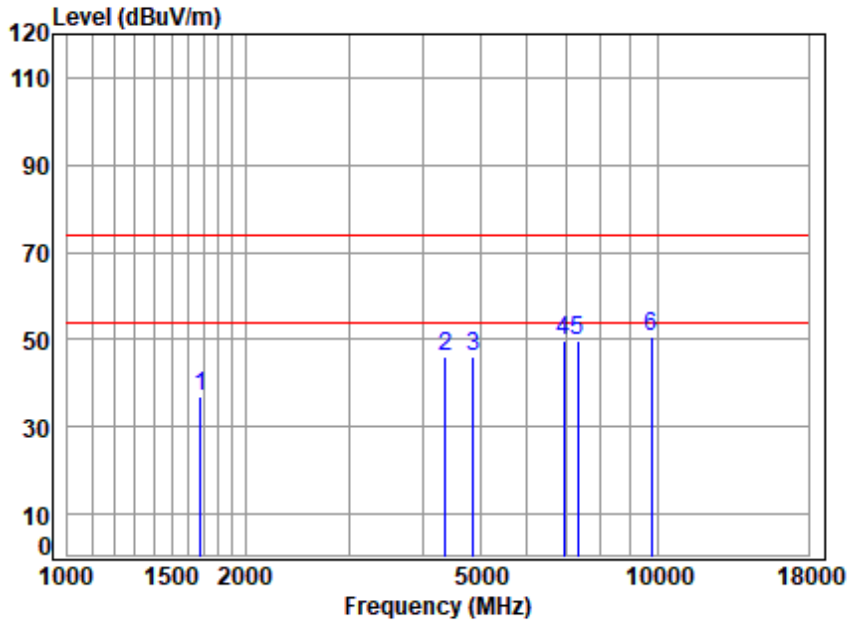
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2437 TX RSE
Note : 2.4G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1677.621	3.41	26.58	40.05	46.92	36.86	74.00	-37.14	peak
2	4367.058	6.64	33.37	41.75	47.70	45.96	74.00	-28.04	peak
3	4874.000	7.17	34.05	42.20	47.03	46.05	74.00	-27.95	peak
4	6934.778	8.51	35.86	41.74	47.20	49.83	74.00	-24.17	peak
5	7311.000	8.84	36.15	41.41	45.94	49.52	74.00	-24.48	peak
6	9748.000	10.76	37.75	37.52	39.78	50.77	74.00	-23.23	peak

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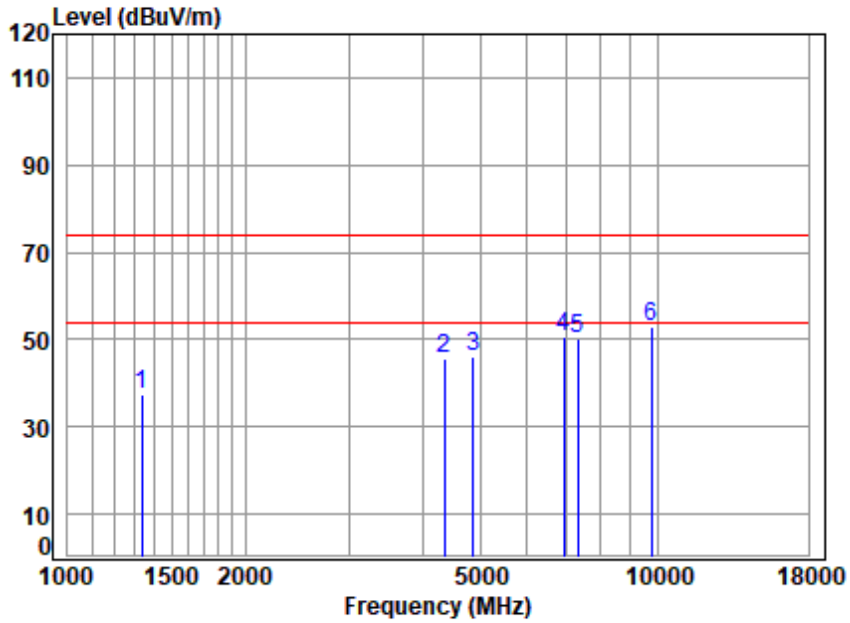
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2437 TX RSE
Note : 2.4G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1335.141	3.00	25.17	39.85	49.01	37.33	74.00	-36.67	peak
2	4354.454	6.63	33.35	41.74	47.51	45.75	74.00	-28.25	peak
3	4874.000	7.17	34.05	42.20	47.15	46.17	74.00	-27.83	peak
4	6934.778	8.51	35.86	41.74	47.92	50.55	74.00	-23.45	peak
5	7311.000	8.84	36.15	41.41	46.48	50.06	74.00	-23.94	peak
6	9748.000	10.76	37.75	37.52	41.76	52.75	74.00	-21.25	peak

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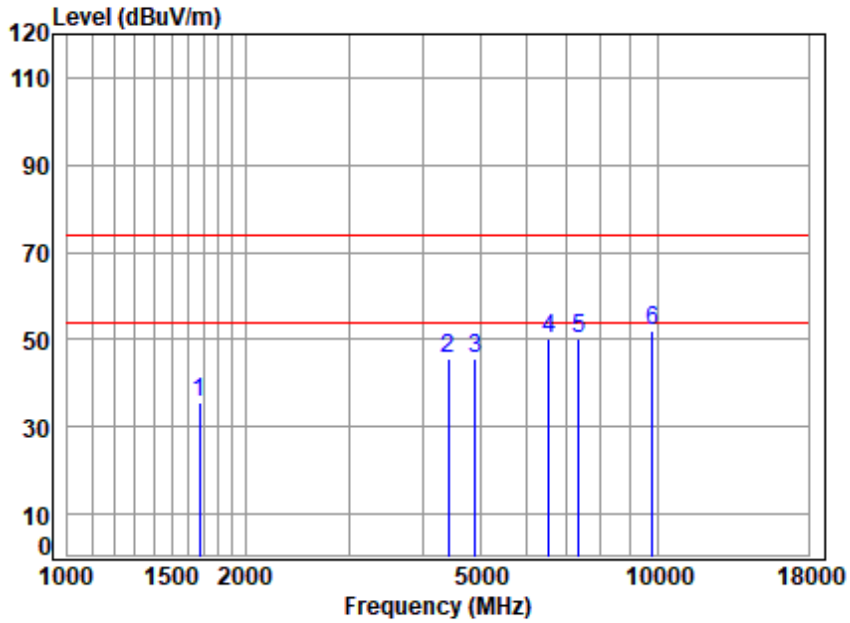
Test Mode: 03; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12652CR
Mode : 2452 TX RSE
Note : 2.4G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1672.779	3.41	26.56	40.05	45.74	35.66	74.00	-38.34	peak
2	4417.841	6.68	33.46	41.80	47.26	45.60	74.00	-28.40	peak
3	4904.000	7.20	34.09	42.22	46.56	45.63	74.00	-28.37	peak
4	6545.263	8.30	35.63	42.01	48.31	50.23	74.00	-23.77	peak
5	7356.000	8.88	36.19	41.37	46.43	50.13	74.00	-23.87	peak
6	9808.000	10.75	37.79	37.42	40.80	51.92	74.00	-22.08	peak

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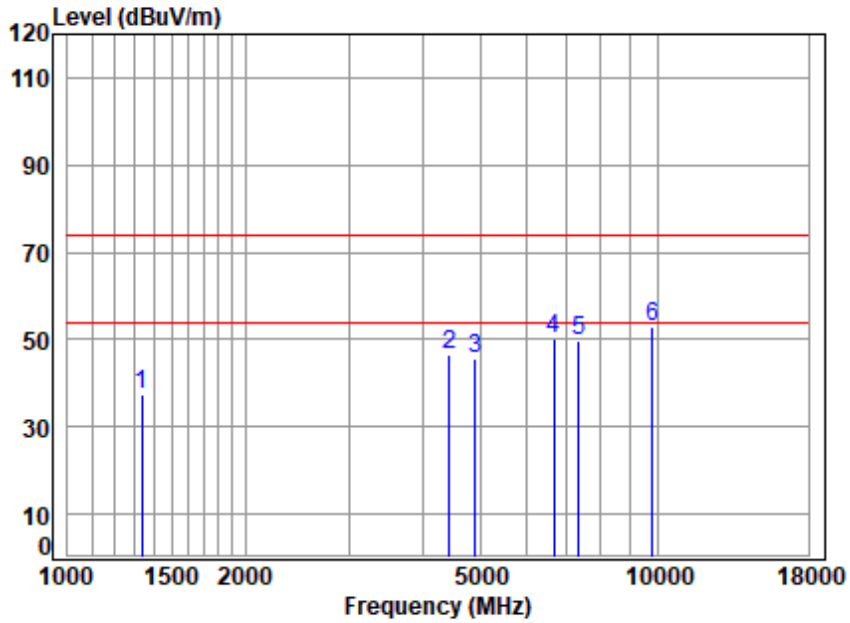
Test Mode: 03; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12652CR
Mode : 2452 TX RSE
Note : 2.4G WIFI 11N40

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1335.141	3.00	25.17	39.85	49.05	37.37	74.00	-36.63	peak
2	4443.453	6.71	33.50	41.82	48.05	46.44	74.00	-27.56	peak
3	4904.000	7.20	34.09	42.22	46.46	45.53	74.00	-28.47	peak
4	6679.040	8.38	35.71	41.91	48.17	50.35	74.00	-23.65	peak
5	7356.000	8.88	36.19	41.37	46.19	49.89	74.00	-24.11	peak
6	9808.000	10.75	37.79	37.42	41.68	52.80	74.00	-21.20	peak

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8 Emission Test Results

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

Test Requirement: 47 CFR Part 15, Subpart C 15.207
Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

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

8.1.1 E.U.T. Operation

Operating Environment:
Temperature: 23.2 °C Humidity: 46.1 % RH Atmospheric Pressure: 1010 mbar

8.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

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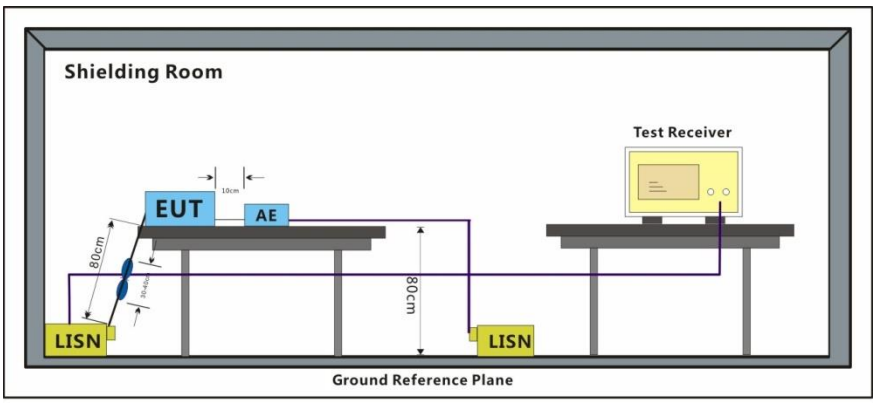
8.1.3 Test Setup Diagram



8.1.4 Measurement Procedure and Data

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.

4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

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

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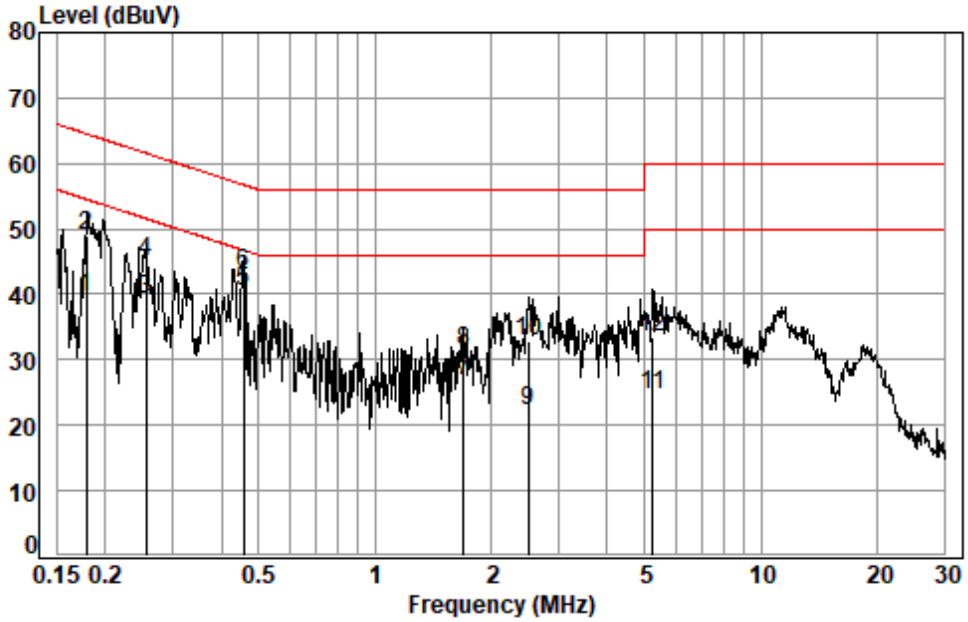
Adapter1

Test Mode: 03



Site : Shielding Room
Condition: Line
Job No. : 12652CR
Test mode: 03
Adapter : #1

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1787	0.03	9.71	29.82	39.56	54.55	-14.99	Average
2	0.1787	0.03	9.71	39.14	48.88	64.55	-15.67	QP
3	0.2548	0.05	9.74	29.42	39.21	51.60	-12.39	Average
4	0.2548	0.05	9.74	35.16	44.95	61.60	-16.65	QP
5	0.4564	0.07	9.77	30.72	40.56	46.76	-6.20	Average
6	0.4564	0.07	9.77	33.37	43.21	56.76	-13.55	QP
7	1.6981	0.12	9.80	16.90	26.82	46.00	-19.18	Average
8	1.6981	0.12	9.80	21.46	31.38	56.00	-24.62	QP
9	2.5000	0.13	9.82	12.36	22.31	46.00	-23.69	Average
10	2.5000	0.13	9.82	22.83	32.78	56.00	-23.22	QP
11	5.2491	0.16	9.94	14.49	24.59	50.00	-25.41	Average
12	5.2491	0.16	9.94	23.34	33.44	60.00	-26.56	QP

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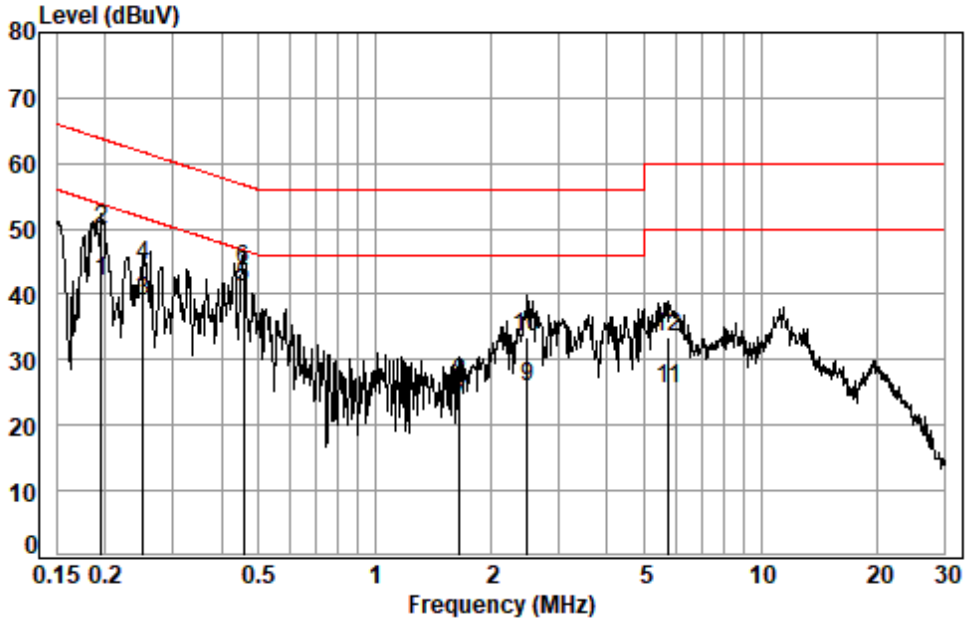
Test Mode: 03



Site : Shielding Room
Condition: Neutral
Job No. : 12652CR
Test mode: 03
Adapter : #1

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1955	0.04	9.72	32.25	42.01	53.80	-11.79	Average
2	0.1955	0.04	9.72	39.97	49.73	63.80	-14.07	QP
3	0.2508	0.05	9.73	29.12	38.90	51.73	-12.83	Average
4	0.2508	0.05	9.73	34.68	44.46	61.73	-17.27	QP
5	0.4564	0.07	9.76	31.32	41.15	46.76	-5.61	Average
6	0.4564	0.07	9.76	34.10	43.93	56.76	-12.83	QP
7	1.6537	0.12	9.80	13.33	23.25	46.00	-22.75	Average
8	1.6537	0.12	9.80	16.57	26.49	56.00	-29.51	QP
9	2.4868	0.13	9.82	16.03	25.98	46.00	-20.02	Average
10	2.4868	0.13	9.82	23.54	33.49	56.00	-22.51	QP
11	5.7743	0.16	9.98	15.39	25.53	50.00	-24.47	Average
12	5.7743	0.16	9.98	23.20	33.34	60.00	-26.66	QP

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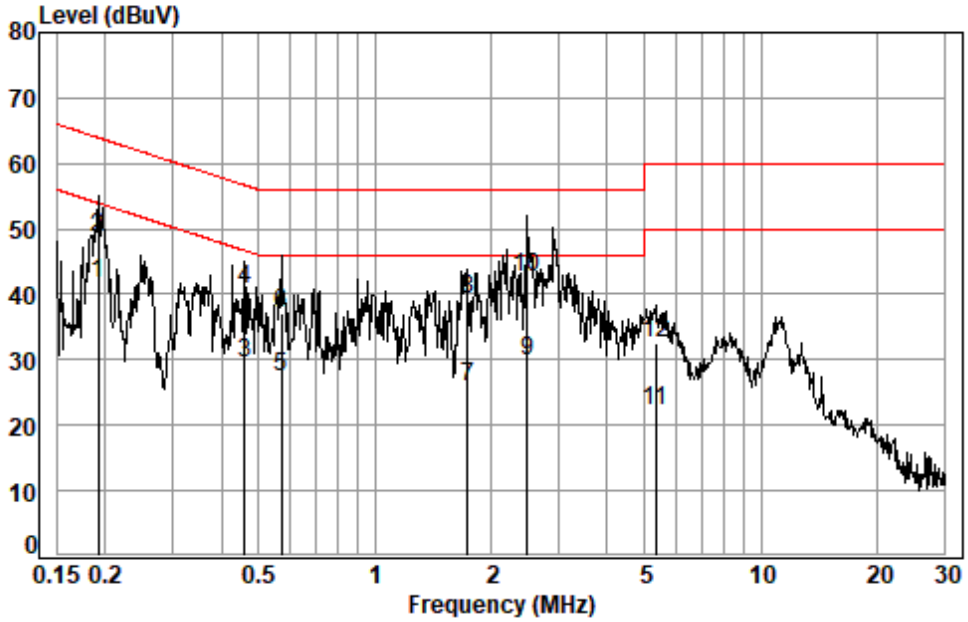
Adapter2

Test Mode: 03



Site : Shielding Room
Condition: Line
Job No. : 12652CR
Test mode: 03
Adapter : #2

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1924	0.04	9.72	32.02	41.78	53.93	-12.15	Average
2	0.1924	0.04	9.72	38.85	48.61	63.93	-15.32	QP
3	0.4588	0.07	9.77	19.69	29.53	46.71	-17.18	Average
4	0.4588	0.07	9.77	30.92	40.76	56.71	-15.95	QP
5	0.5731	0.08	9.77	17.64	27.49	46.00	-18.51	Average
6	0.5731	0.08	9.77	27.32	37.17	56.00	-18.83	QP
7	1.7345	0.12	9.81	15.99	25.92	46.00	-20.08	Average
8	1.7345	0.12	9.81	29.27	39.20	56.00	-16.80	QP
9	2.4868	0.13	9.82	19.99	29.94	46.00	-16.06	Average
10	2.4868	0.13	9.82	32.58	42.53	56.00	-13.47	QP
11	5.3332	0.16	9.95	12.20	22.31	50.00	-27.69	Average
12	5.3332	0.16	9.95	22.53	32.64	60.00	-27.36	QP

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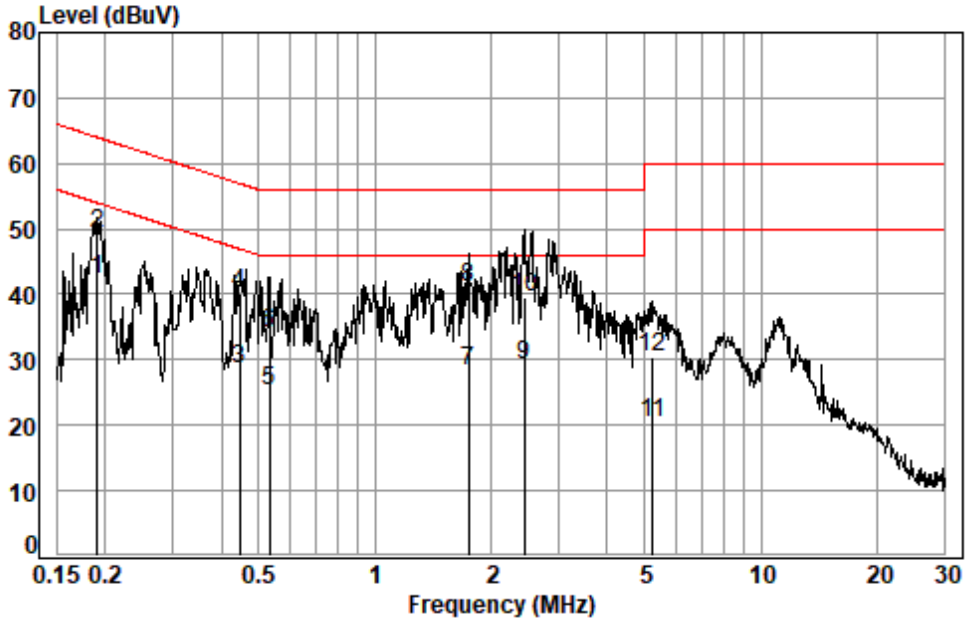
Test Mode: 03



Site : Shielding Room
Condition: Neutral
Job No. : 12652CR
Test mode: 03
Adapter : #2

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1914	0.04	9.72	32.58	42.34	53.98	-11.64	Average
2	0.1914	0.04	9.72	39.52	49.28	63.98	-14.70	QP
3	0.4468	0.07	9.75	18.67	28.49	46.93	-18.44	Average
4	0.4468	0.07	9.75	30.22	40.04	56.93	-16.89	QP
5	0.5322	0.08	9.76	15.44	25.28	46.00	-20.72	Average
6	0.5322	0.08	9.76	24.38	34.22	56.00	-21.78	QP
7	1.7529	0.12	9.80	18.31	28.23	46.00	-17.77	Average
8	1.7529	0.12	9.80	31.17	41.09	56.00	-14.91	QP
9	2.4346	0.13	9.82	19.24	29.19	46.00	-16.81	Average
10	2.4346	0.13	9.82	29.47	39.42	56.00	-16.58	QP
11	5.2491	0.16	9.95	10.36	20.47	50.00	-29.53	Average
12	5.2491	0.16	9.95	20.29	30.40	60.00	-29.60	QP

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9 Test Setup Photo

Please refer to setup photos.

10 EUT Constructional Details (EUT Photos)

Please Refer to external and internal photos for details.

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11 Appendix

Appendix for 15.247

1. Duty Cycle

1.1 Test Result

Test Mode	Channel Frequency(MHz)	TX Type	ANT No.	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
802.11b	2412	SISO	1	8.380	8.420	99.52	0.02
	2437	SISO	1	8.380	8.410	99.64	0.02
	2462	SISO	1	8.380	8.410	99.64	0.02
802.11g	2412	SISO	1	1.361	1.397	97.42	0.11
	2437	SISO	1	1.361	1.397	97.42	0.11
	2462	SISO	1	1.360	1.396	97.42	0.11
802.11n(HT20)	2412	SISO	1	1.300	1.336	97.31	0.12
	2437	SISO	1	1.299	1.336	97.23	0.12
	2462	SISO	1	1.299	1.335	97.30	0.12
802.11n(HT40)	2422	SISO	1	0.618	0.653	94.64	0.24
	2437	SISO	1	0.618	0.653	94.64	0.24
	2452	SISO	1	0.618	0.652	94.79	0.23

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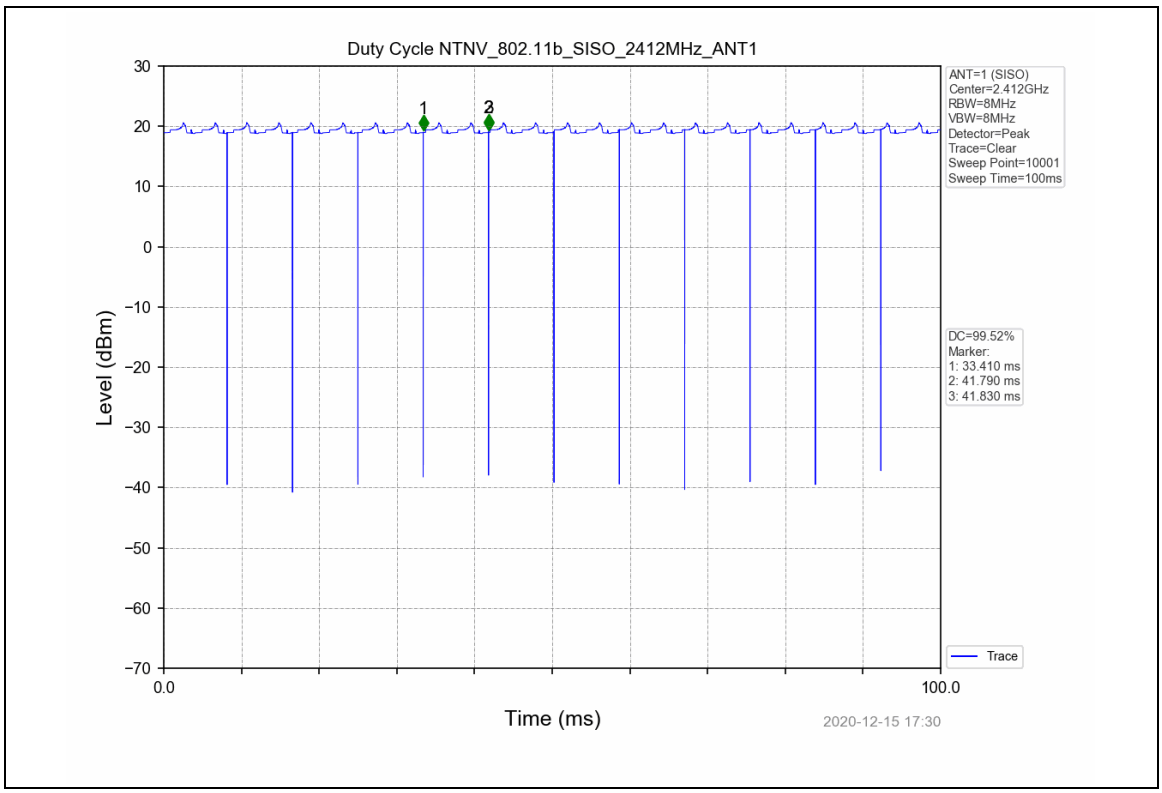
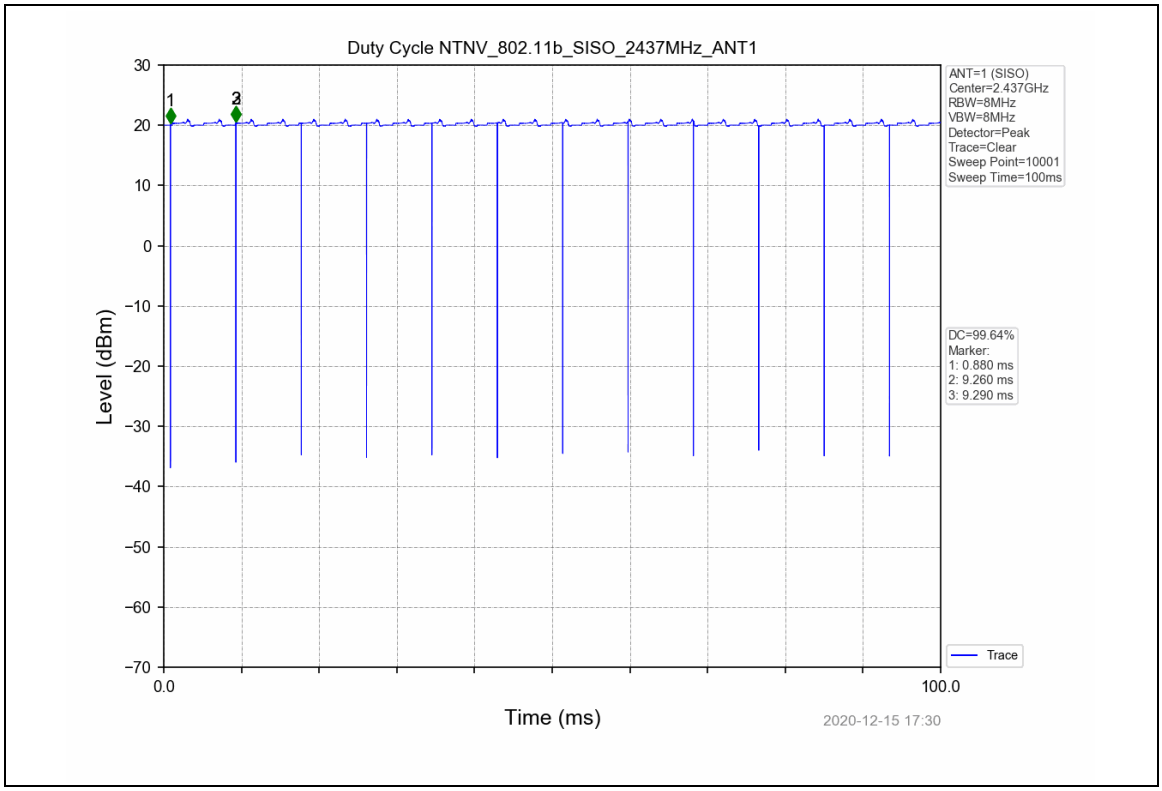
1.2 Test Graph





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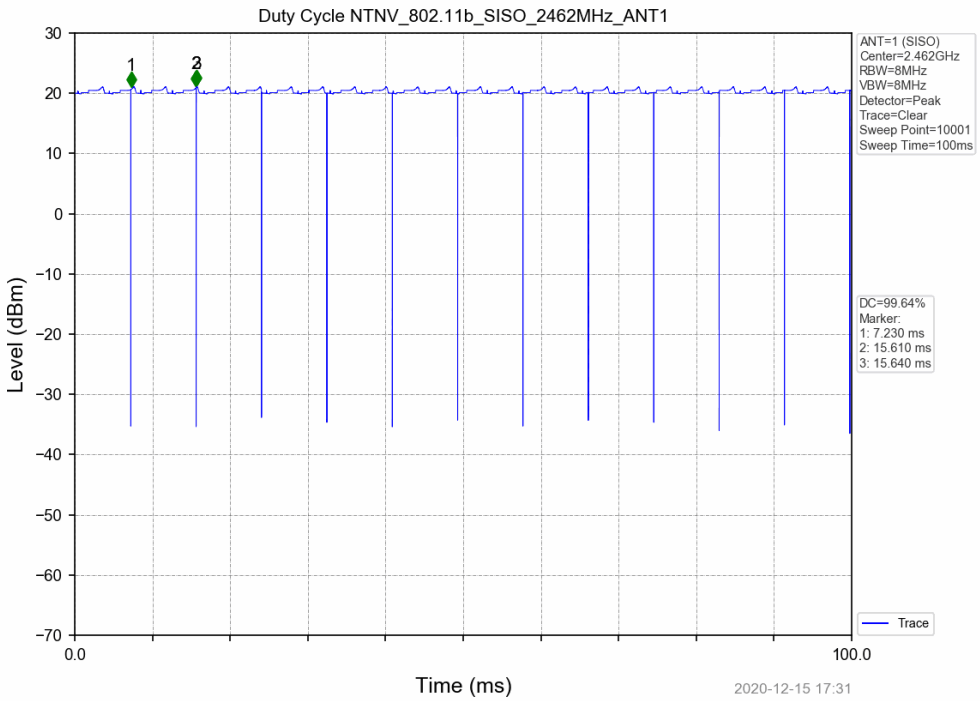

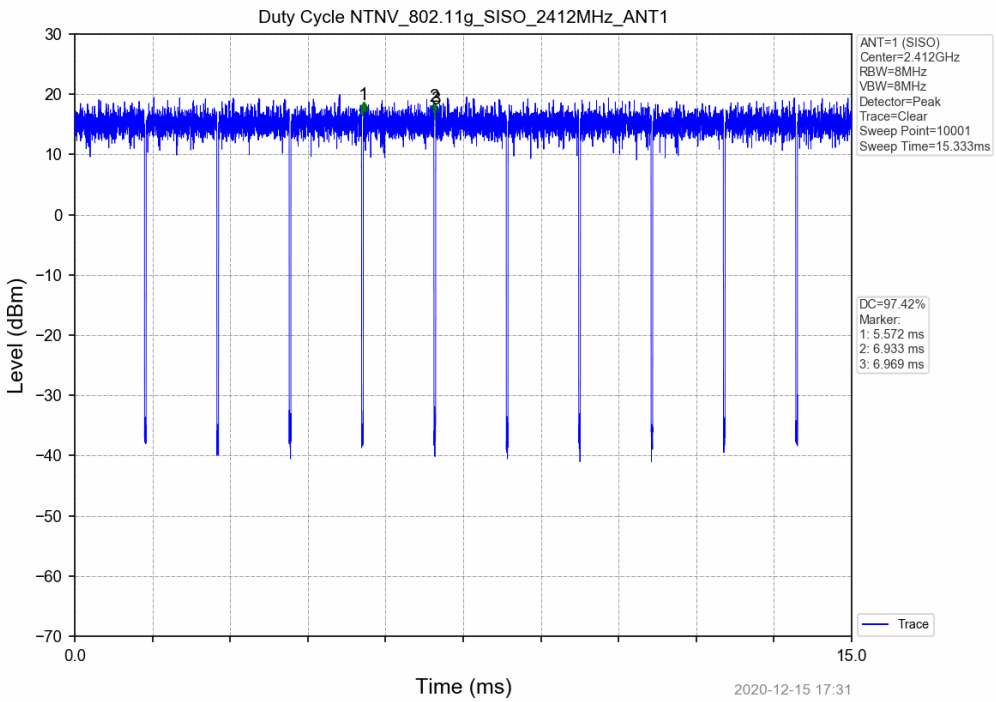

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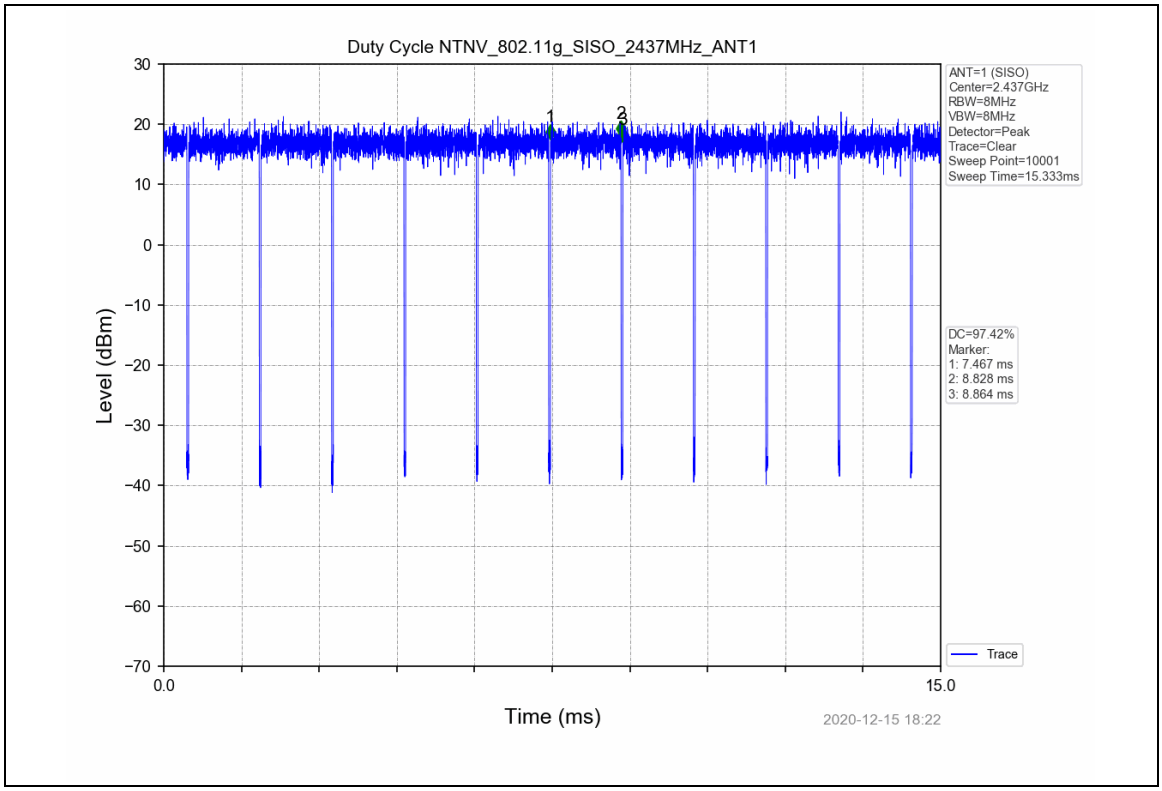

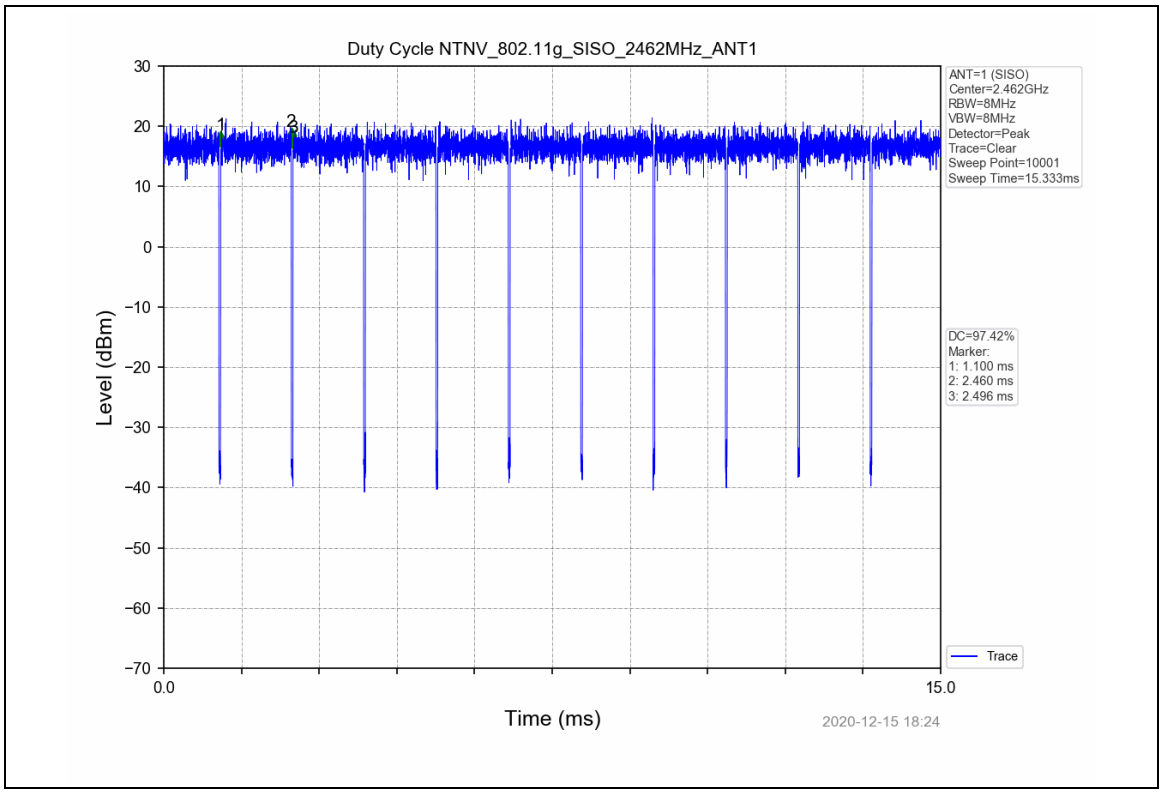

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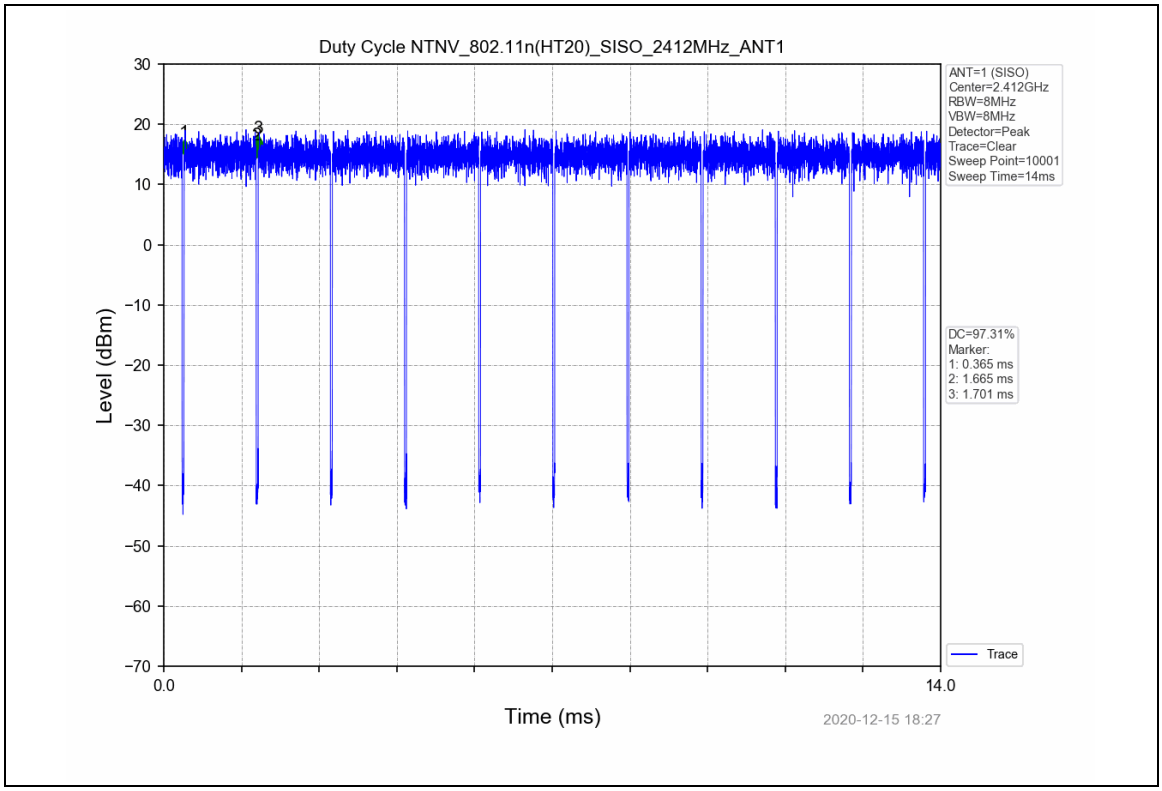

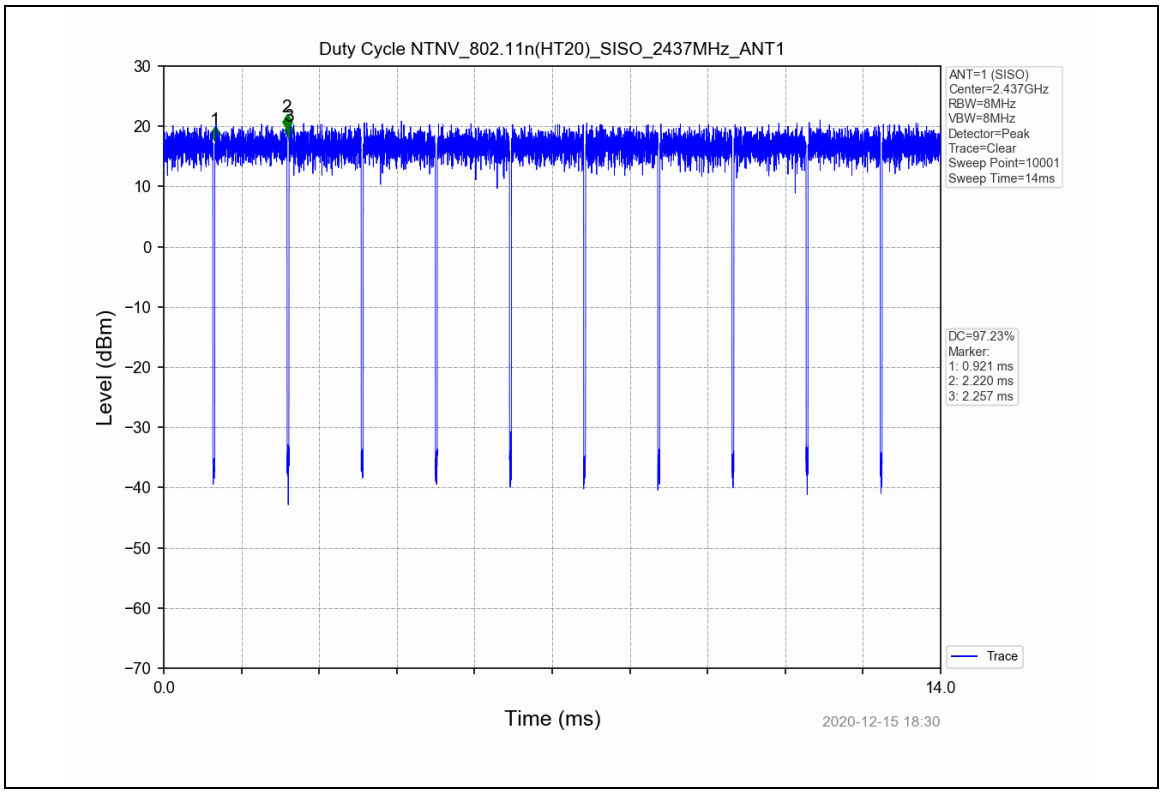

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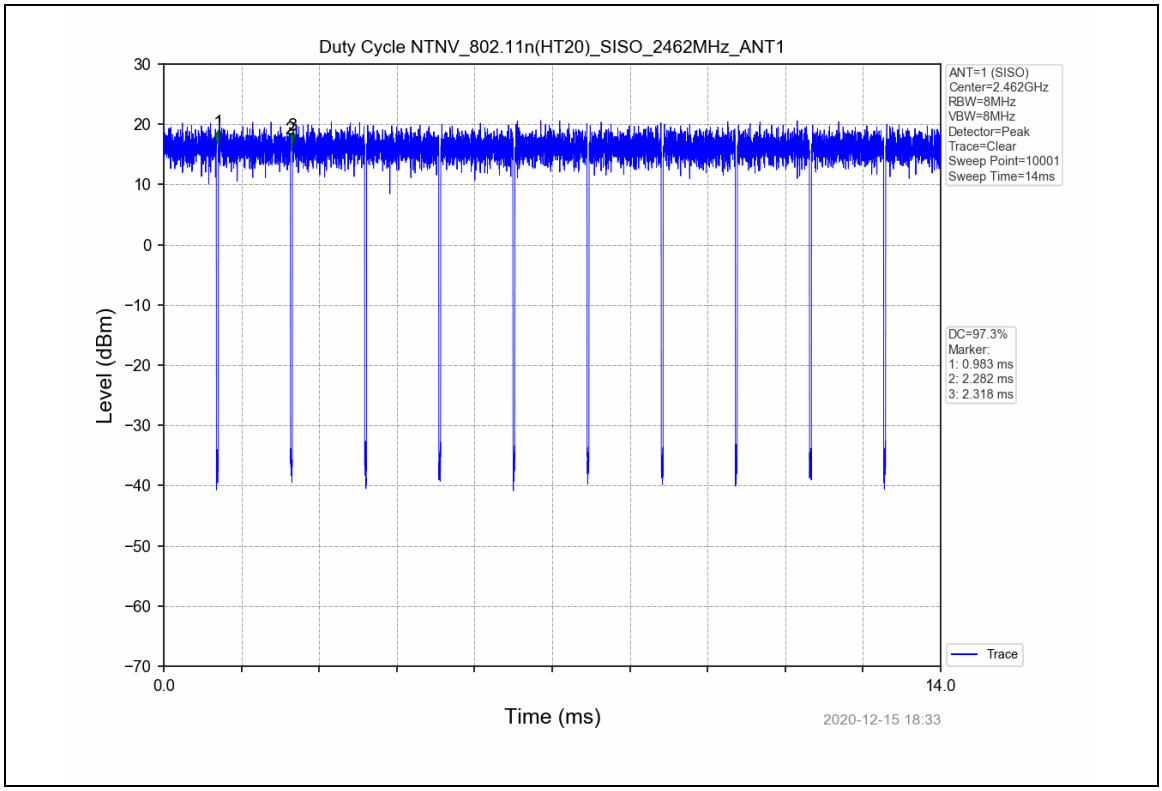

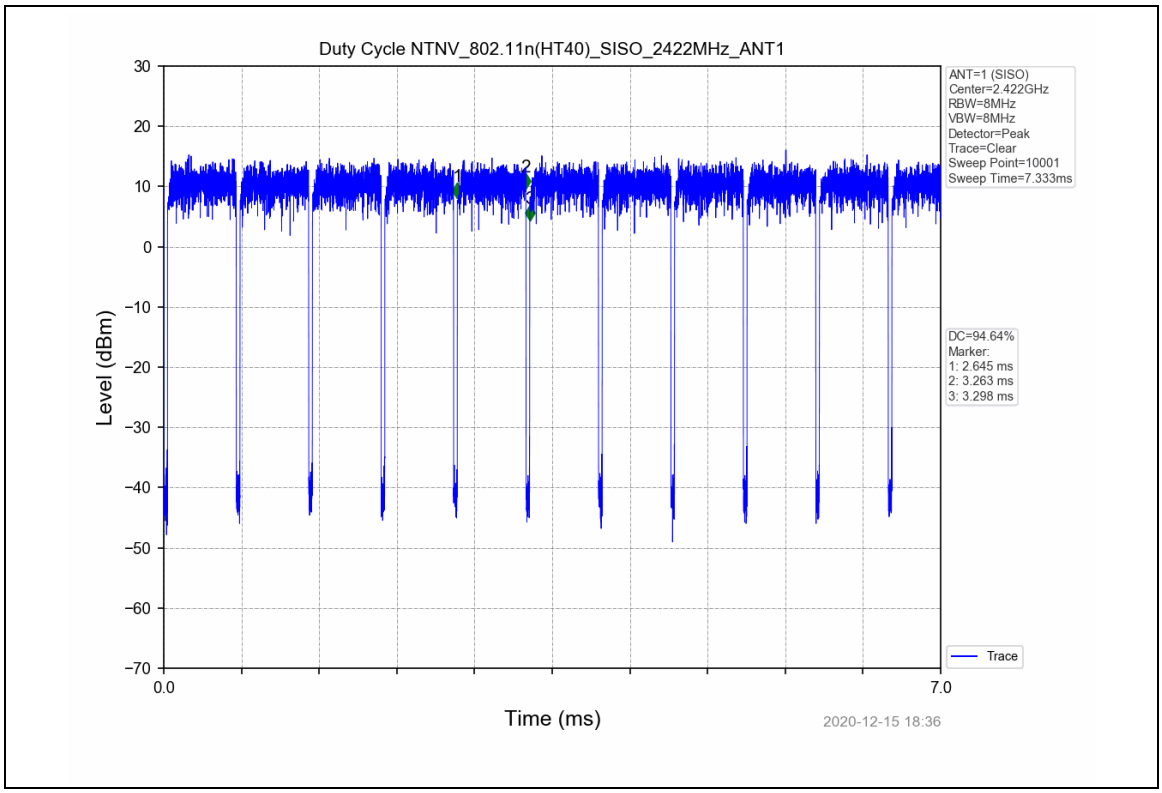

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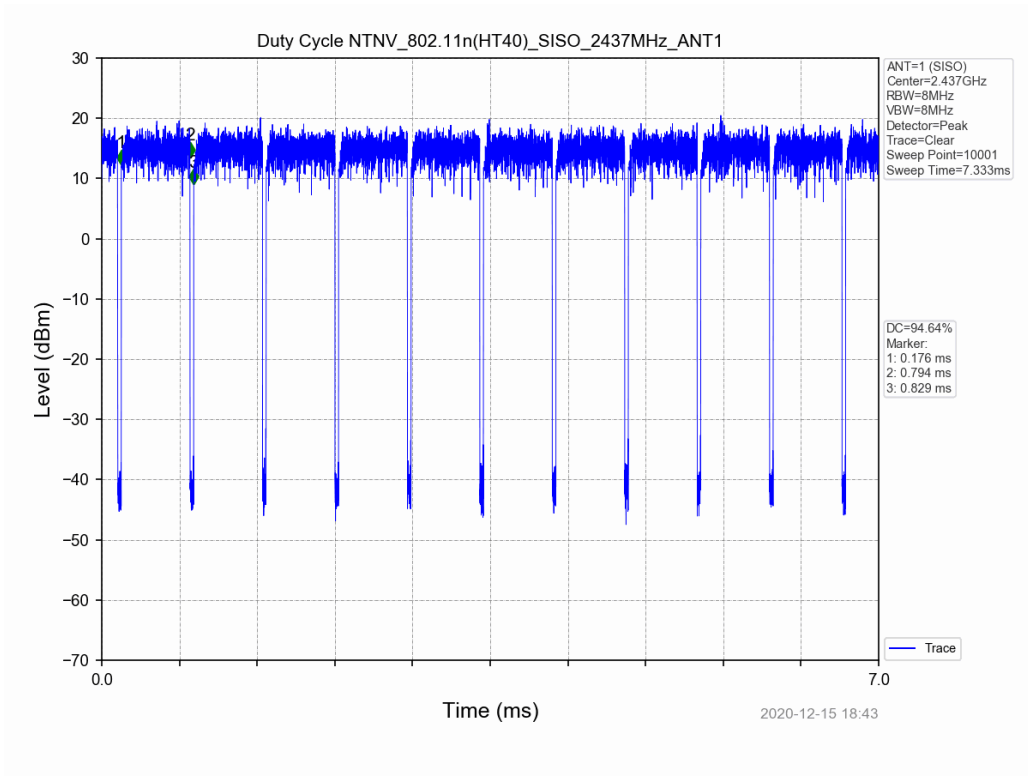

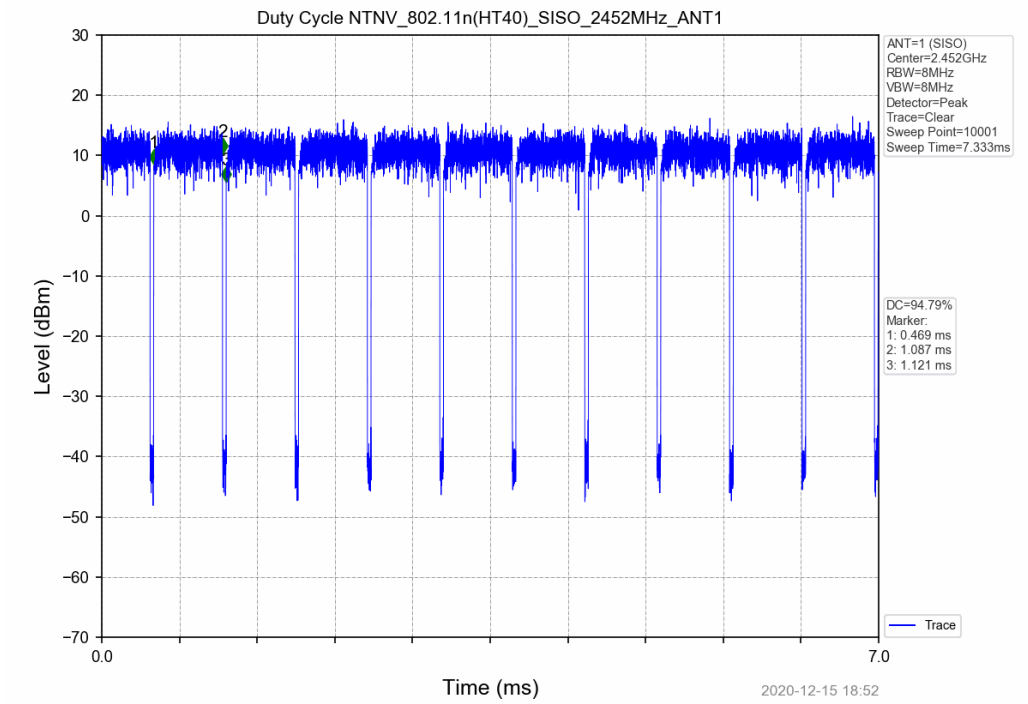

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2. Bandwidth

2.1 Test Result

Test Mode	Frequency (MHz)	TX Type	ANT No.	6dB Bandwidth Test Result (MHz)	Verdict
802.11b	2412	SISO	1	9.099	PASS
	2437	SISO	1	7.617	PASS
	2462	SISO	1	8.619	PASS
802.11g	2412	SISO	1	15.710	PASS
	2437	SISO	1	12.624	PASS
	2462	SISO	1	15.717	PASS
802.11n(HT20)	2412	SISO	1	17.205	PASS
	2437	SISO	1	13.831	PASS
	2462	SISO	1	16.355	PASS
802.11n(HT40)	2422	SISO	1	35.660	PASS
	2437	SISO	1	20.085	PASS
	2452	SISO	1	35.157	PASS

Test Mode	Frequency (MHz)	TX Type	ANT No.	99% Occupied Bandwidth Test Result (MHz)	
802.11b	2412	SISO	1	14.406	Only for Report Use
	2437	SISO	1	12.549	Only for Report Use
	2462	SISO	1	13.614	Only for Report Use
802.11g	2412	SISO	1	17.258	Only for Report Use
	2437	SISO	1	16.395	Only for Report Use
	2462	SISO	1	17.061	Only for Report Use
802.11n(HT20)	2412	SISO	1	18.065	Only for Report Use
	2437	SISO	1	17.396	Only for Report Use
	2462	SISO	1	17.914	Only for Report Use
802.11n(HT40)	2422	SISO	1	37.276	Only for Report Use
	2437	SISO	1	35.398	Only for Report Use
	2452	SISO	1	36.939	Only for Report Use

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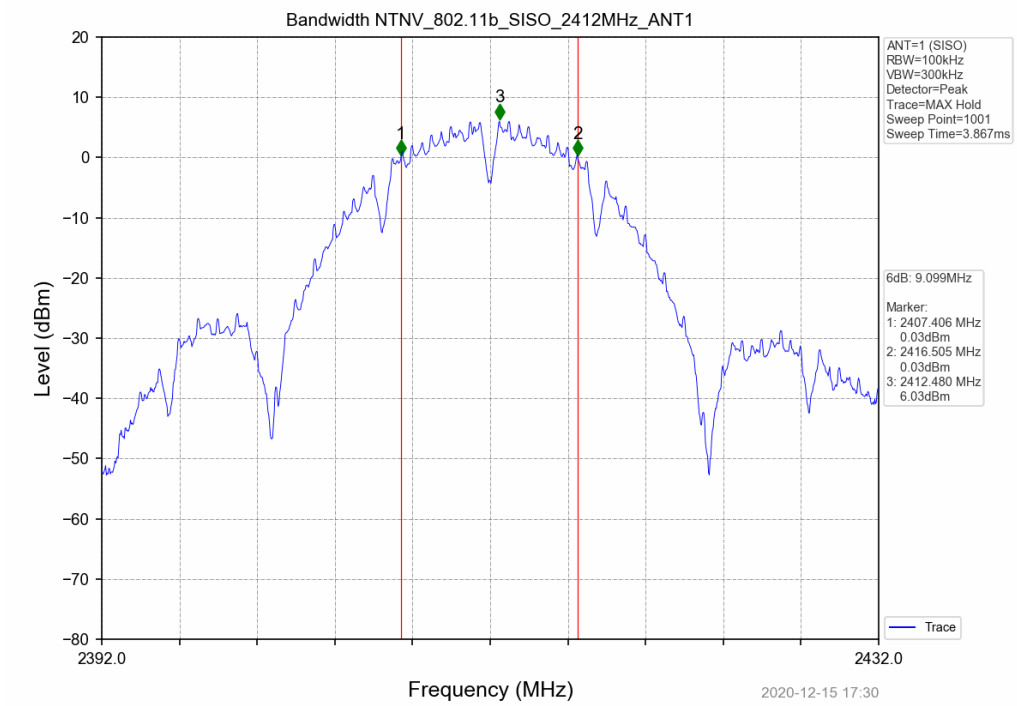
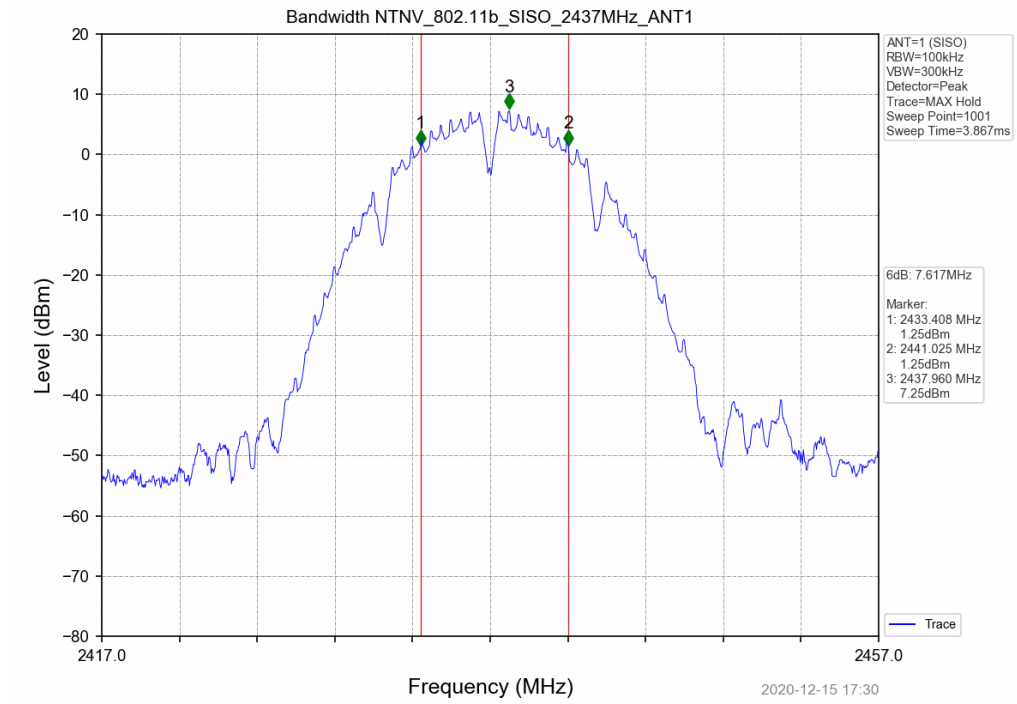
2.2 Test Graph - 6dB Bandwidth





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