Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China
Telephone: +86-755-26648640
Fax: +86-755-26648637
Website: www.cqa-cert.com

Report Template Version: V05
Report Template Revision Date: 2021-11-03

Test Report

Report No.:	CQASZ20220901542E-02
Applicant:	Guangdong Lilin Intelligent Technology Co., Ltd.
Address of Applicant:	Room 601, Building 8, No.31 Duimianling Street, Dalingshan Town, Dongguan City, Guangdong Province, China

Equipment Under Test (EUT):

Product:	Robot Vacuum Cleaner
Model No.:	R200, R201, R202, R203, R2001, R2002, R2003, R2004, Redkey Q10, R200A, R200A1, R200A2, R200A3, R200B, R200B1, R200B2, R200B3, R200C, R200C1, R200C2, R200C3, R200D1, R200D2, R200D3, D200D4, R200E1, R200E2, R200E3, R200A4, R200B4, R200C4, R200F1, R200F2, R200F1, R200F2, R200F3, R200F4, R200Z1, R200Z2, R200Z3, R200Z4
Test Model No.:	R200
Brand Name:	N/A
FCC ID:	2A7XF-R200
Standards:	47 CFR Part 15, Subpart C
Date of Receipt:	2022-09-09
Date of Test:	2022-09-09 to 2022-11-10
Date of Issue:	2022-12-26
Test Result :	**PASS***

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

Tested By: lewis zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Jack
(Jack Ai)

SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD
华夏准测
APPROVED

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China
Telephone: +86-755-26648640
Fax: +86-755-26648637
Website: www.cqa-cert.com

Report Template Version: V05
Report Template Revision Date: 2021-11-03

Test Report

Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20220901542E-02	Rev.01	Initial report	2022-12-26

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China
Telephone: +86-755-26648640
Fax: +86-755-26648637
Website: www.cqa-cert.com

Test Report

1 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	ANSI C63.10 2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 2013	PASS
Conducted Peak & Average Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(3)	ANSI C63.10 2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(2)	ANSI C63.10 2013	PASS
Power Spectral Density	47 CFR Part 15, Subpart C Section 15.247 (e)	ANSI C63.10 2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS

Test Report

2 Contents

Test Report

3 General Information

3.1 Client Information

Applicant:	Guangdong Lilin Intelligent Technology Co., Ltd.
Address of Applicant:	Room 601, Building 8, No.31 Duimianling Street, Dalingshan Town, Dongguan City, Guangdong Province, China
Manufacturer:	Guangdong Lilin Intelligent Technology Co., Ltd.
Address of Manufacturer:	Room 601, Building 8, No.31 Duimianling Street, Dalingshan Town, Dongguan City, Guangdong Province, China
Factory:	Guangdong Lilin Intelligent Technology Co., Ltd.
Address of Factory:	Room 601, Building 8, No.31 Duimianling Street, Dalingshan Town, Dongguan City, Guangdong Province, China

3.2 General Description of EUT

Product Name:	Robot Vacuum Cleaner
Model No.:	R200, R201, R202, R203, R2001, R2002, R2003, R2004, Redkey Q10, R200A, R200A1, R200A2, R200A3, R200B, R200B1, R200B2, R200B3, R200C, R200C1, R200C2, R200C3, R200D1, R200D2, R200D3, D200D4, R200E1, R200E2, R200E3, R200A4, R200B4, R200C4, R200F1, R200F2, R200F1, R200F2, R200F3, R200F4, R200Z1, R200Z2, R200Z3, R200Z4
Test Model No.:	R200
Trade Mark:	N/A
Software Version:	V2.4.6
Hardware Version:	V1.1.29
Power Supply:	1# Li-ion battery: DC 14.4V 5000mAh, Charge by DC 24V for Charging Base 2# Li-ion battery: DC 14.4V 2500mAh, Charge by DC 24V for Charging Base 3# Li-ion battery: DC 16.8V 5200mAh, Charge by DC 24V for Charging Base 4# Li-ion battery: DC 14.4V 5000mAh, Charge by DC 24V for Charging Base 5# Li-ion battery: DC 14.4V 5000mAh, Charge by DC 24V for Charging Base 6# Li-ion battery: DC 14.4V 5000mAh, Charge by DC 24V for Charging Base
	Charging Base:Output:19V 1A Dust collecting bucket:Power AC 120V~ 60Hz
	Model:AD-0191900100US Input:100-240V~50/60Hz 0.8A Output:19V 1A

EUT Supports Radios application:	BT: 2402-2480MHz 2.4GHz: Wi-Fi: 802.11b/g/n(HT20): 2412MHz~2462MHz;

3.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Transfer Rate:	IEEE for 802.11b: 1Mbps/2Mbps/5.5Mbps/11Mbps IEEE for 802.11g : 6Mbps/9Mbps/12Mbps/18Mbps/24Mbps/36Mbps/48Mbps/54Mbps IEEE for 802.11n(HT20) : 6.5Mbps/13Mbps/19.5Mbps/26Mbps/39Mbps/52Mbps/58.5Mbps/65Mbps
Product Type:	☒ Mobile ☐ Portable
Test Software of EUT:	rtworiv_V2
Antenna Type:	FPC antenna
Antenna Gain:	3.84 dBi

Note:

The only difference between # 2 and # 1 battery is the battery capacity.

The only difference between # 3 and # 1 is battery capacity and output voltage.

The only difference between # 4 and # 1 is that the power supply mode is changed from dust collecting bucket to charging base.

The only difference between # 5 and # 1 is that the power plate of the dust collecting bucket is different.

The only difference between # 6 and # 1 is that the wheel motor suppliers are different.

Test Report

Operation Frequency each of channel(802.11b/g/n HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

For 802.11b/g/n (HT20):

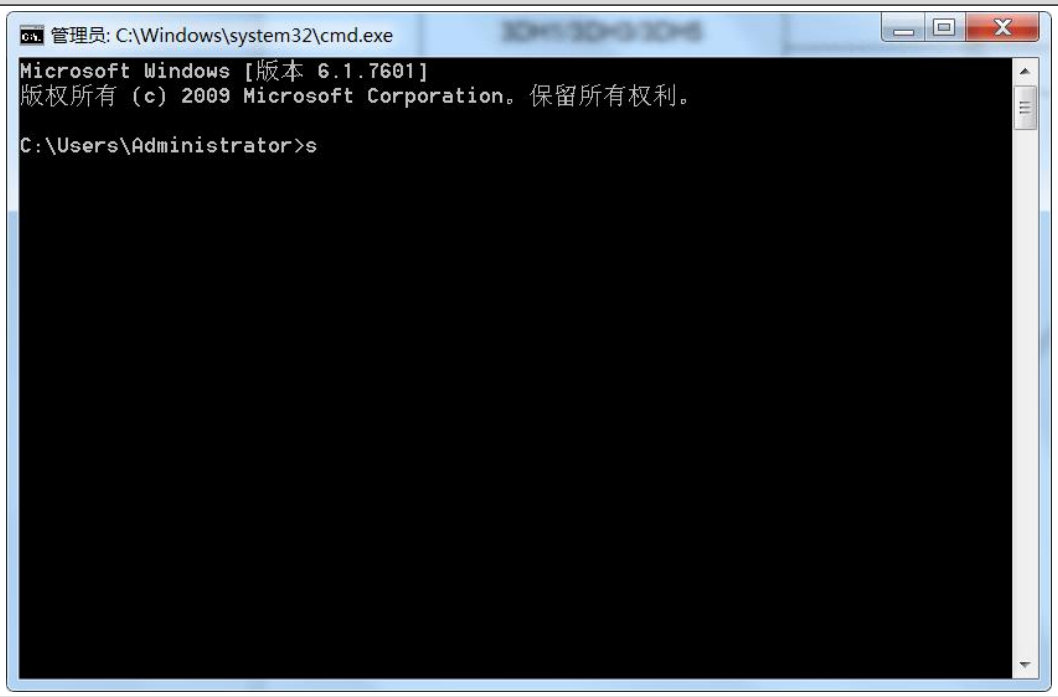
Channel	Frequency
The Lowest channel	2412MHz
The Middle channel	2437MHz
The Highest channel	2462MHz

Note:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3.4 Test Environment and Mode

Operating Environment:	
Radiated Emissions:	
Temperature:	25.3 °C
Humidity:	55 % RH
Atmospheric Pressure:	1009 mbar
Conducted Emissions:	
Temperature:	25.6 °C
Humidity:	60 % RH
Atmospheric Pressure:	1009 mbar
Radio conducted item test (RF Conducted test room):	
Temperature:	25.5 °C
Humidity:	52 % RH
Atmospheric Pressure:	1009 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.
Run Software:	



3.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Computer	Lenovo	/	/	CQA

2) Cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

3.6 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua New District, Shenzhen, Guangdong, China

3.7 Test Facility

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

- **A2LA (Certificate No. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

- **FCC Registration No.: 522263**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

3.8 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

No.	Item	Uncertainty	Notes
1	Radiated Emission (Below 1GHz)	5.12dB	(1)
2	Radiated Emission (Above 1GHz)	4.60dB	(1)
3	Conducted Disturbance (0.15~30MHz)	3.34dB	(1)
4	Radio Frequency	3×10^{-8}	(1)
5	Duty cycle	0.6 %.	(1)
6	Occupied Bandwidth	1.1%	(1)
7	RF conducted power	0.86dB	(1)
8	RF power density	0.74	(1)
9	Conducted Spurious emissions	0.86dB	(1)
10	Temperature test	0.8℃	(1)
11	Humidity test	2.0%	(1)
12	Supply voltages	0.5 %.	(1)
13	Frequency Error	5.5 Hz	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.9 Deviation from Standards

None.

3.10 Abnormalities from Standard Conditions

None.

3.11 Other Information Requested by the Customer

None.

3.12 Equipment List

Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2022/9/9	2023/9/8
Spectrum analyzer	R&S	FSU26	CQA-038	2022/9/9	2023/9/8
Spectrum analyzer	R&S	FSU40	CQA-075	2022/9/9	2023/9/8
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2022/9/9	2023/9/8
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2022/9/9	2023/9/8
Preamplifier	EMCI	EMC184055SE	CQA-089	2022/9/9	2023/9/8
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2021/09/16	2024/09/15
Bilog Antenna	R&S	HL562	CQA-011	2021/09/16	2024/09/15
Horn Antenna	R&S	HF906	CQA-012	2021/09/16	2024/09/15
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2021/09/16	2024/09/15
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2022/9/9	2023/9/8
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2022/9/9	2023/9/8
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2022/9/9	2023/9/8
Antenna Connector	CQA	RFC-01	CQA-080	2022/9/9	2023/9/8
Power Sensor	KEYSIGHT	U2021XA	CQA-30	2022/9/9	2023/9/8
N1918A Power Analysis Manager Power Panel	Agilent	N1918A	CQA-074	2022/9/9	2023/9/8
Power meter	R&S	NRVD	CQA-029	2022/9/9	2023/9/8
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2022/9/9	2023/9/8
EMI Test Receiver	R&S	ESR7	CQA-005	2022/9/9	2023/9/8
LISN	R&S	ENV216	CQA-003	2022/9/9	2023/9/8
Coaxial cable	CQA	N/A	CQA-C009	2022/9/9	2023/9/8
DC power	KEYSIGHT	E3631A	CQA-028	2022/9/9	2023/9/8

Test software:

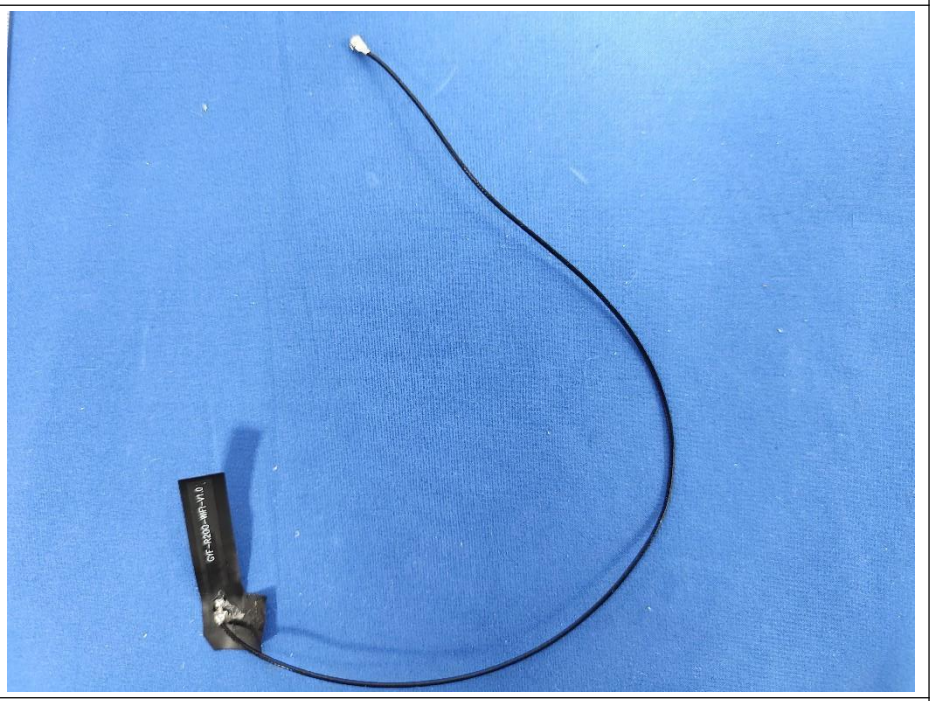
	Manufacturer	Software brand

Test Report

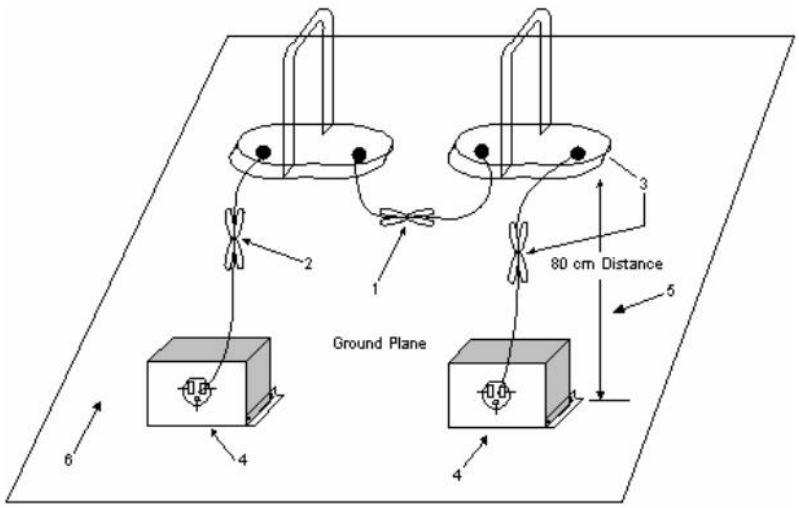
Radiated Emissions test software	Tonscend	JS1120-3
Conducted Emissions test software	Audix	e3
RF Conducted test software	Audix	e3

4 Test results and Measurement Data

4.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 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 FPC antenna. The best case gain of the antenna is 3.84 dBi.	

4.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	150kHz to 30MHz
Limit:	Frequency range (MHz) / Limit (dBuV): 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.
Test Procedure:	1—Excess I/O cables shall be bundled in the center. If bundling is not possible, then the cables shall be arranged in serpentine fashion. Bundling shall not exceed 40 cm in length . 2—Excess power cords shall be bundled in the center or shortened to an appropriate length. 3—EUT and all cables shall be insulated, if required, from the ground plane by up to 12 mm of insulating material . 4—EUT connected to one LISN. LISN may be placed on top of, or immediately beneath, the ground plane. i All other equipment powered from a second LISN or additional LISN(s). ii A multiple-outlet strip may be used for multiple power cords of non-EUT equipment. 5—Horizontal projection from the closest point of EUT to the nearest point of the LISN. For radiated emission testing, the LISNs shall be removed. 6—Ground reference plane.
Test Setup:	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and

Test Report

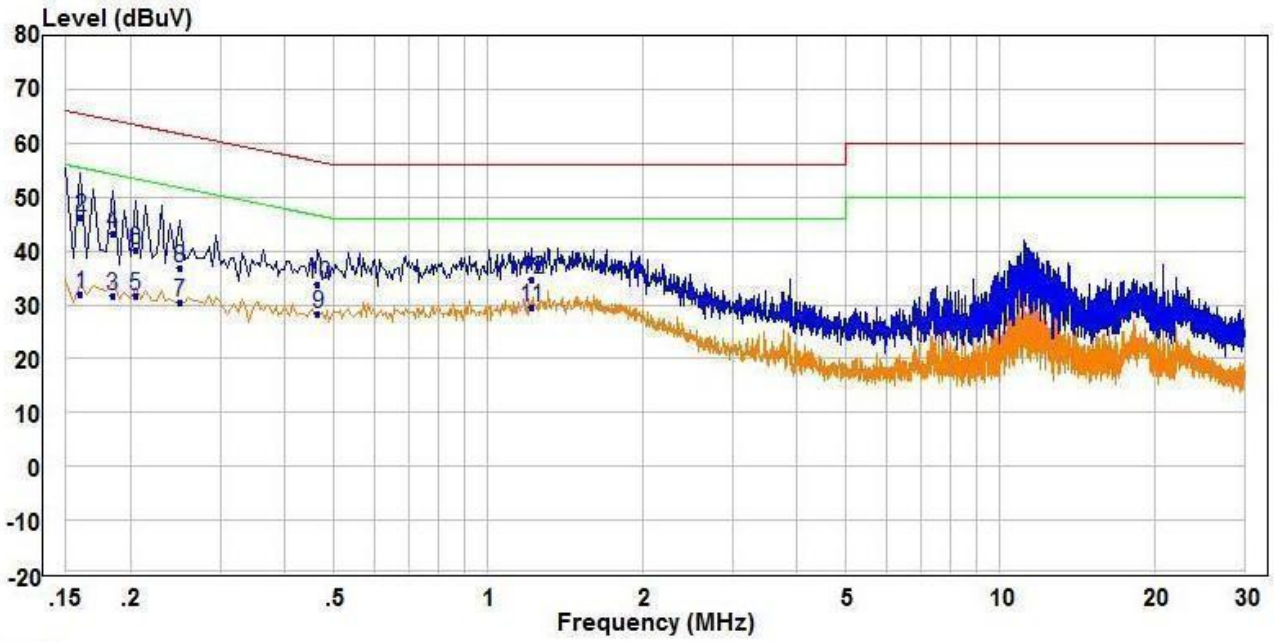
	highest channel.
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate of 802.11b at middle channel is the worst case. Only the worst case is recorded in the report.
Test Voltage:	AC120V/60Hz
Test Results:	Pass

Test Report

1#

Measurement Data

Live Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.16	22.45	9.58	32.13	55.46	-23.33	Average	Line
2	0.16	36.51	9.58	46.19	65.46	-19.27	QP	Line
3	0.19	21.90	9.54	31.54	54.26	-22.72	Average	Line
4	0.19	33.60	9.54	43.24	64.26	-21.02	QP	Line
5	0.21	22.01	9.51	31.62	53.41	-21.79	Average	Line
6	0.21	30.71	9.51	40.32	63.41	-23.09	QP	Line
7	0.25	21.04	9.45	30.59	51.76	-21.17	Average	Line
8	0.25	27.33	9.45	36.88	61.76	-24.88	QP	Line
9	0.47	18.82	9.57	28.49	46.60	-18.11	Average	Line
10	0.47	24.11	9.57	33.78	56.60	-22.82	QP	Line
11	1.22	19.31	10.13	29.55	46.00	-16.45	Average	Line
12	1.22	24.57	10.13	34.81	56.00	-21.19	QP	Line

Remark:

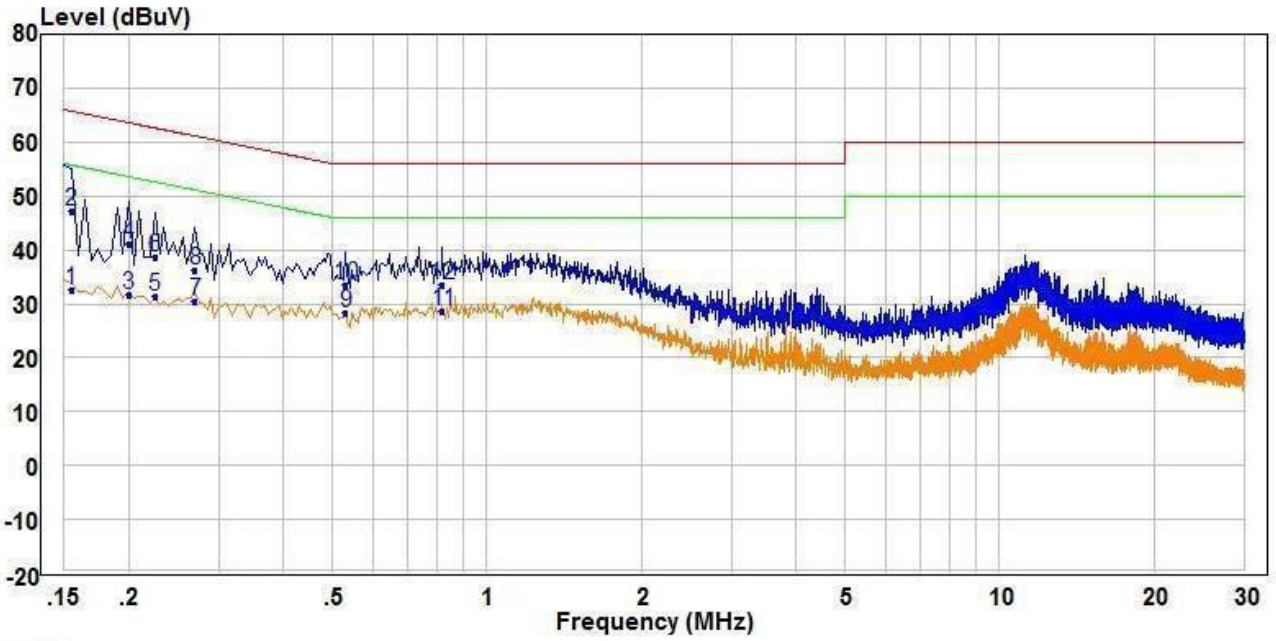
1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

Test Report

Neutral Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.16	22.82	9.59	32.51	55.73	-23.22	Average	Neutral
2	0.16	37.40	9.59	47.09	65.73	-18.64	QP	Neutral
3	0.20	21.98	9.51	31.59	53.61	-22.02	Average	Neutral
4	0.20	31.38	9.51	40.99	63.61	-22.62	QP	Neutral
5	0.23	21.72	9.47	31.29	52.63	-21.34	Average	Neutral
6	0.23	29.02	9.47	38.59	62.63	-24.04	QP	Neutral
7	0.27	20.83	9.41	30.34	51.12	-20.78	Average	Neutral
8	0.27	26.76	9.41	36.27	61.12	-24.85	QP	Neutral
9	0.53	18.51	9.60	28.24	46.00	-17.76	Average	Neutral
10	0.53	23.83	9.60	33.56	56.00	-22.44	QP	Neutral
11	0.82	18.72	9.60	28.54	46.00	-17.46	Average	Neutral
12	0.82	23.64	9.60	33.46	56.00	-22.54	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

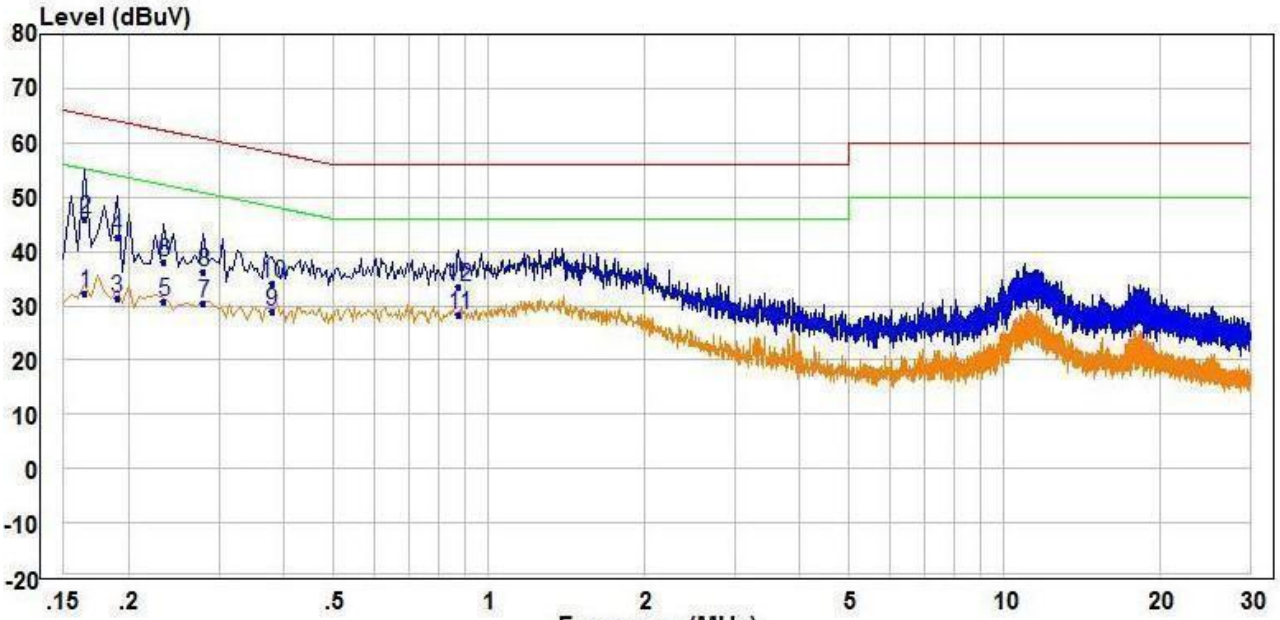
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

2#

Measurement Data

Live Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.17	22.54	9.57	32.21	55.21	-23.00	Average	Line
2	0.17	36.26	9.57	45.93	65.21	-19.28	QP	Line
3	0.19	21.80	9.53	31.43	54.04	-22.61	Average	Line
4	0.19	33.00	9.53	42.63	64.04	-21.41	QP	Line
5	0.24	21.31	9.46	30.87	52.27	-21.40	Average	Line
6	0.24	28.58	9.46	38.14	62.27	-24.13	QP	Line
7	0.28	21.00	9.41	30.51	50.82	-20.31	Average	Line
8	0.28	26.71	9.41	36.22	60.82	-24.60	QP	Line
9	0.38	19.29	9.49	28.88	48.28	-19.40	Average	Line
10	0.38	24.42	9.49	34.01	58.28	-24.27	QP	Line
11	0.88	18.71	9.60	28.49	46.00	-17.51	Average	Line
12	0.88	23.85	9.60	33.63	56.00	-22.37	QP	Line

Remark:

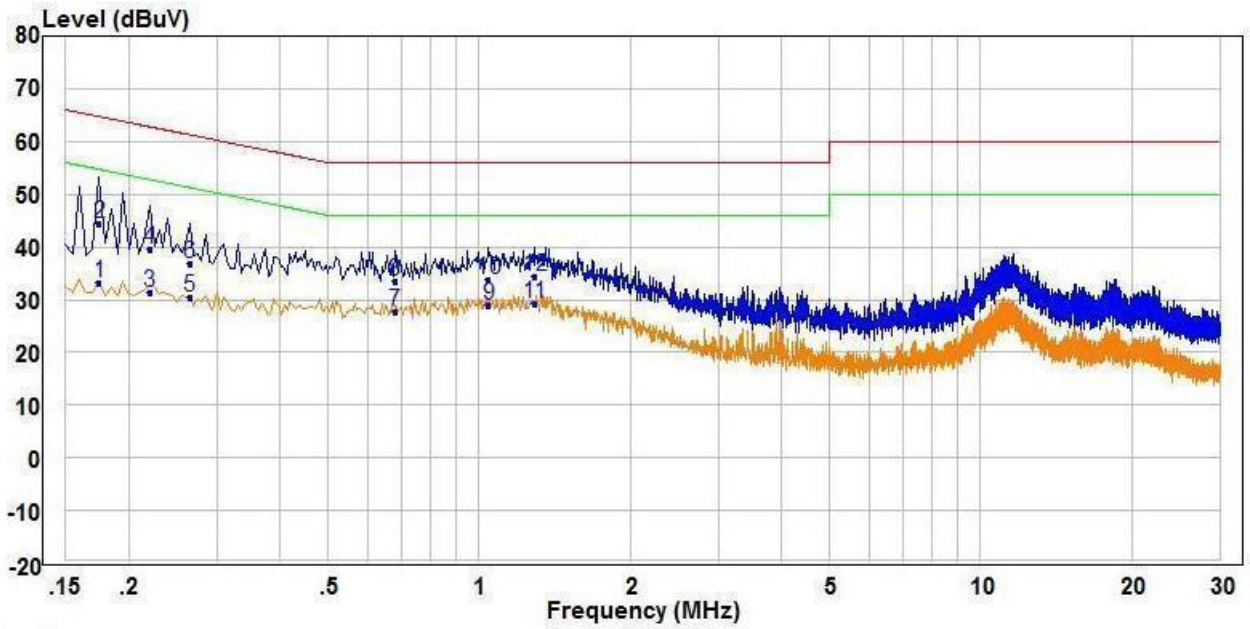
1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

Test Report

Neutral Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.18	23.44	9.55	33.09	54.72	-21.63	Average	Neutral
2	0.18	34.91	9.55	44.56	64.72	-20.16	QP	Neutral
3	0.22	21.86	9.48	31.44	52.82	-21.38	Average	Neutral
4	0.22	29.99	9.48	39.57	62.82	-23.25	QP	Neutral
5	0.27	20.89	9.42	30.41	51.27	-20.86	Average	Neutral
6	0.27	27.21	9.42	36.73	61.27	-24.54	QP	Neutral
7	0.68	17.99	9.60	27.87	46.00	-18.13	Average	Neutral
8	0.68	23.58	9.60	33.46	56.00	-22.54	QP	Neutral
9	1.05	19.22	9.60	28.92	46.00	-17.08	Average	Neutral
10	1.05	24.17	9.60	33.87	56.00	-22.13	QP	Neutral
11	1.29	19.67	9.60	29.38	46.00	-16.62	Average	Neutral
12	1.29	24.63	9.60	34.34	56.00	-21.66	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

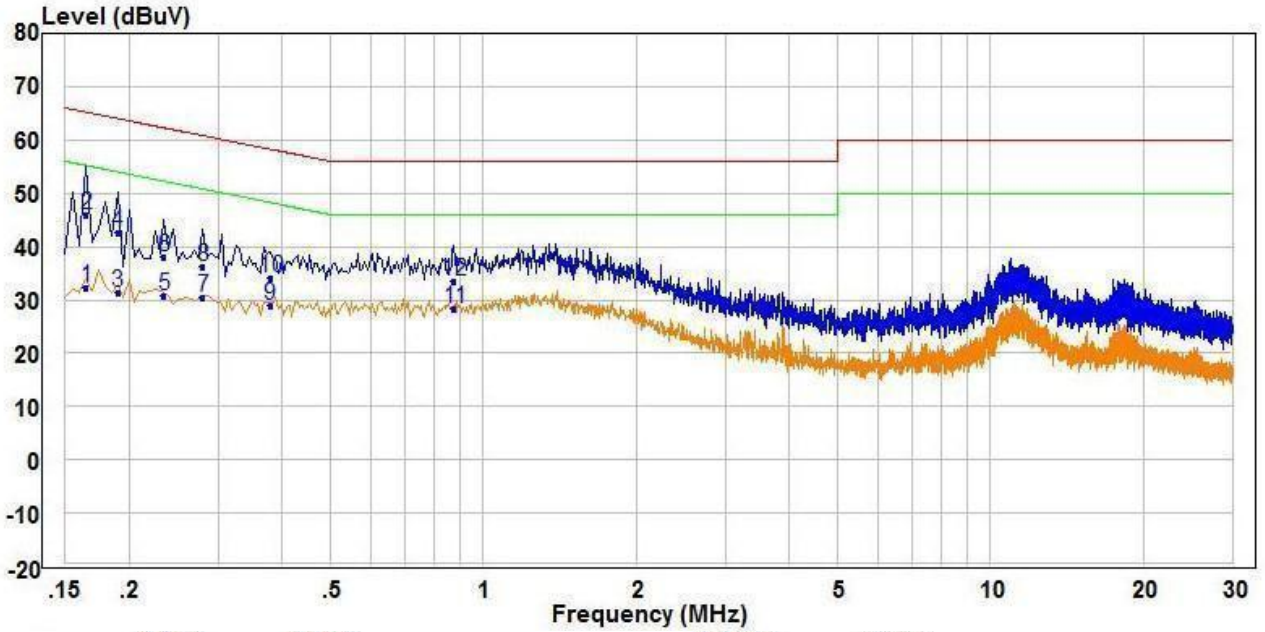
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

3#

Measurement Data

Live Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.17	22.54	9.57	32.21	55.21	-23.00	Average	Line
2	0.17	36.26	9.57	45.93	65.21	-19.28	QP	Line
3	0.19	21.80	9.53	31.43	54.04	-22.61	Average	Line
4	0.19	33.00	9.53	42.63	64.04	-21.41	QP	Line
5	0.24	21.31	9.46	30.87	52.27	-21.40	Average	Line
6	0.24	28.58	9.46	38.14	62.27	-24.13	QP	Line
7	0.28	21.00	9.41	30.51	50.82	-20.31	Average	Line
8	0.28	26.71	9.41	36.22	60.82	-24.60	QP	Line
9	0.38	19.29	9.49	28.88	48.28	-19.40	Average	Line
10	0.38	24.42	9.49	34.01	58.28	-24.27	QP	Line
11	0.88	18.71	9.60	28.49	46.00	-17.51	Average	Line
12	0.88	23.85	9.60	33.63	56.00	-22.37	QP	Line

Remark:

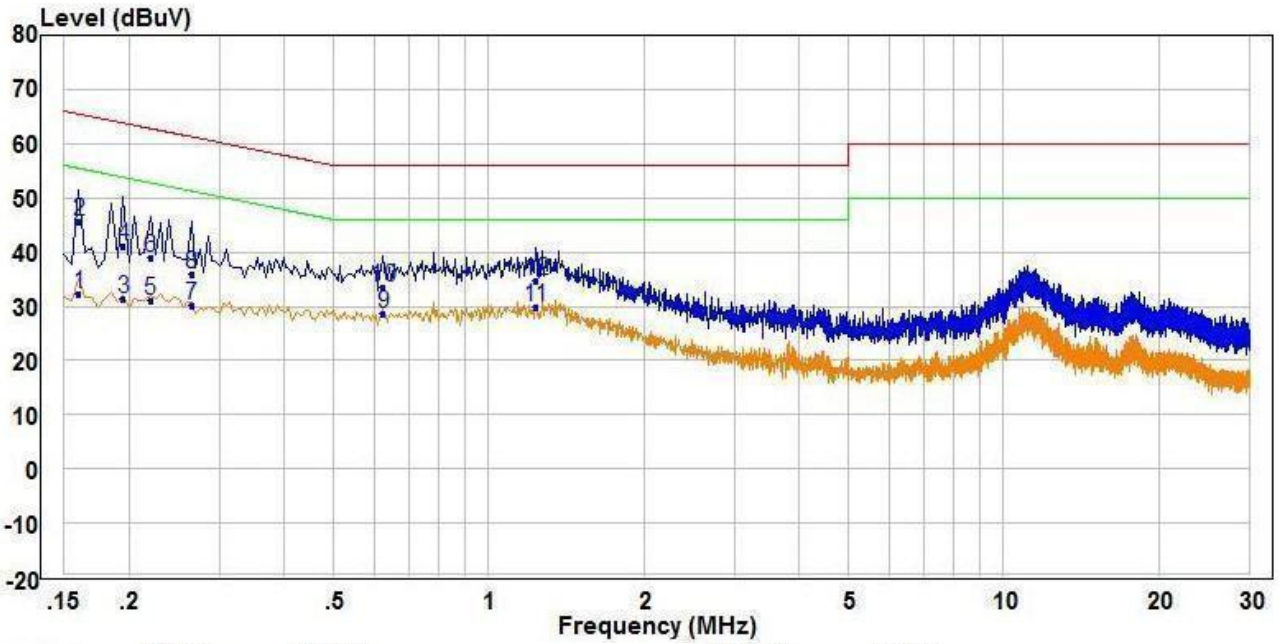
1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

Test Report

Neutral Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.16	22.70	9.58	32.38	55.46	-23.08	Average	Neutral
2	0.16	35.92	9.58	45.60	65.46	-19.86	QP	Neutral
3	0.20	21.80	9.52	31.42	53.82	-22.40	Average	Neutral
4	0.20	31.34	9.52	40.96	63.82	-22.86	QP	Neutral
5	0.22	21.52	9.48	31.10	52.82	-21.72	Average	Neutral
6	0.22	29.38	9.48	38.96	62.82	-23.86	QP	Neutral
7	0.27	20.60	9.42	30.12	51.27	-21.15	Average	Neutral
8	0.27	26.37	9.42	35.89	61.27	-25.38	QP	Neutral
9	0.63	18.81	9.60	28.64	46.00	-17.36	Average	Neutral
10	0.63	23.82	9.60	33.65	56.00	-22.35	QP	Neutral
11	1.24	20.01	9.60	29.72	46.00	-16.28	Average	Neutral
12	1.24	24.93	9.60	34.64	56.00	-21.36	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

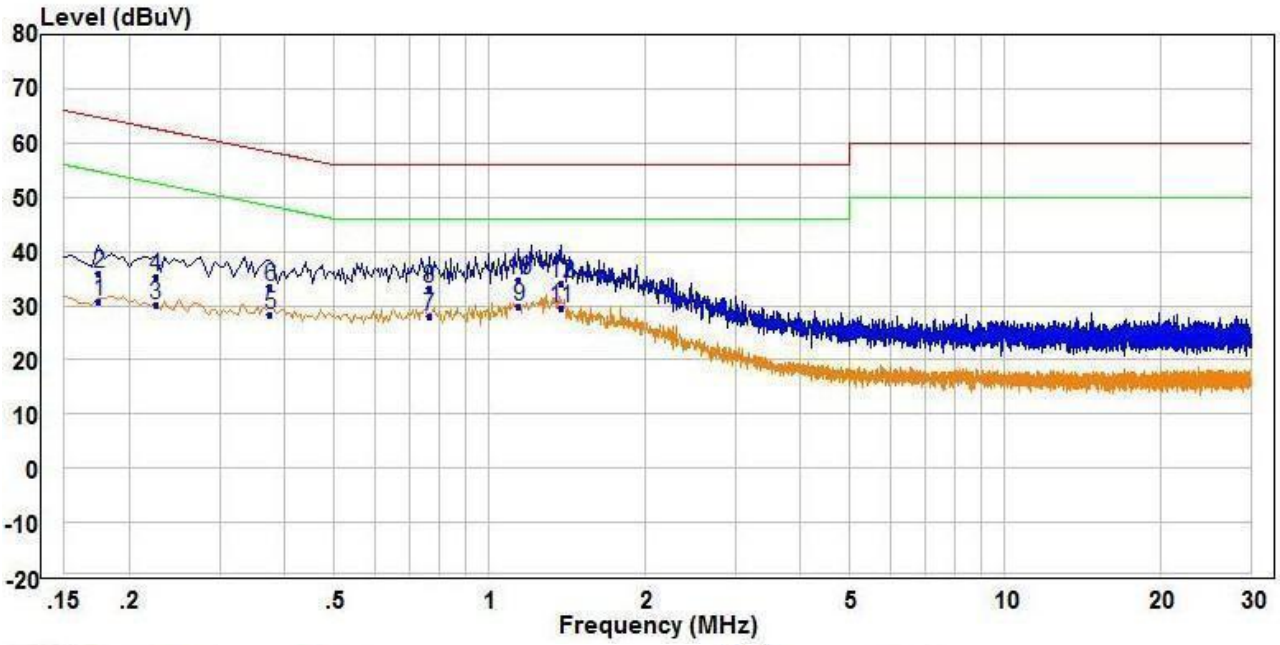
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

4#

Measurement Data

Live Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.18	21.15	9.55	30.80	54.72	-23.92	Average	Line
2	0.18	26.34	9.55	35.99	64.72	-28.73	QP	Line
3	0.23	20.66	9.48	30.24	52.63	-22.39	Average	Line
4	0.23	25.73	9.48	35.31	62.63	-27.32	QP	Line
5	0.38	18.85	9.48	28.43	48.39	-19.96	Average	Line
6	0.38	24.02	9.48	33.60	58.39	-24.79	QP	Line
7	0.77	18.30	9.60	28.16	46.00	-17.84	Average	Line
8	0.77	23.23	9.60	33.09	56.00	-22.91	QP	Line
9	1.14	19.69	9.96	29.76	46.00	-16.24	Average	Line
10	1.14	24.71	9.96	34.78	56.00	-21.22	QP	Line
11	1.38	18.94	10.47	29.53	46.00	-16.47	Average	Line
12	1.38	23.63	10.47	34.22	56.00	-21.78	QP	Line

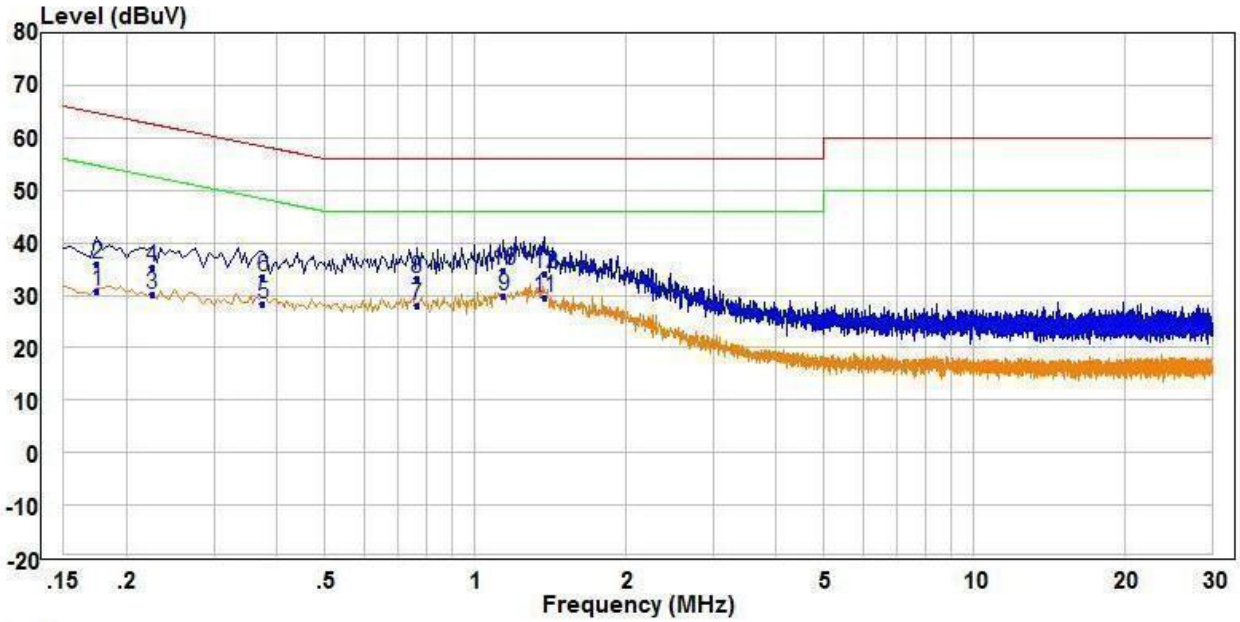
Remark:

Test Report

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Test Report

Neutral Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.18	21.32	9.55	30.97	54.72	-23.75	Average	Neutral
2	0.18	26.34	9.55	35.99	64.72	-28.73	QP	Neutral
3	0.25	22.89	9.44	32.43	51.92	-19.49	Average	Neutral
4	0.25	27.89	9.44	37.43	61.92	-24.49	QP	Neutral
5	0.45	18.64	9.55	28.29	46.88	-18.59	Average	Neutral
6	0.45	23.54	9.55	33.19	56.88	-23.69	QP	Neutral
7	0.68	18.70	9.60	28.58	46.00	-17.42	Average	Neutral
8	0.68	23.36	9.60	33.24	56.00	-22.76	QP	Neutral
9	0.91	18.74	9.60	28.50	46.00	-17.50	Average	Neutral
10	0.91	23.74	9.60	33.50	56.00	-22.50	QP	Neutral
11	1.21	20.09	9.60	29.80	46.00	-16.20	Average	Neutral
12	1.21	24.90	9.60	34.61	56.00	-21.39	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

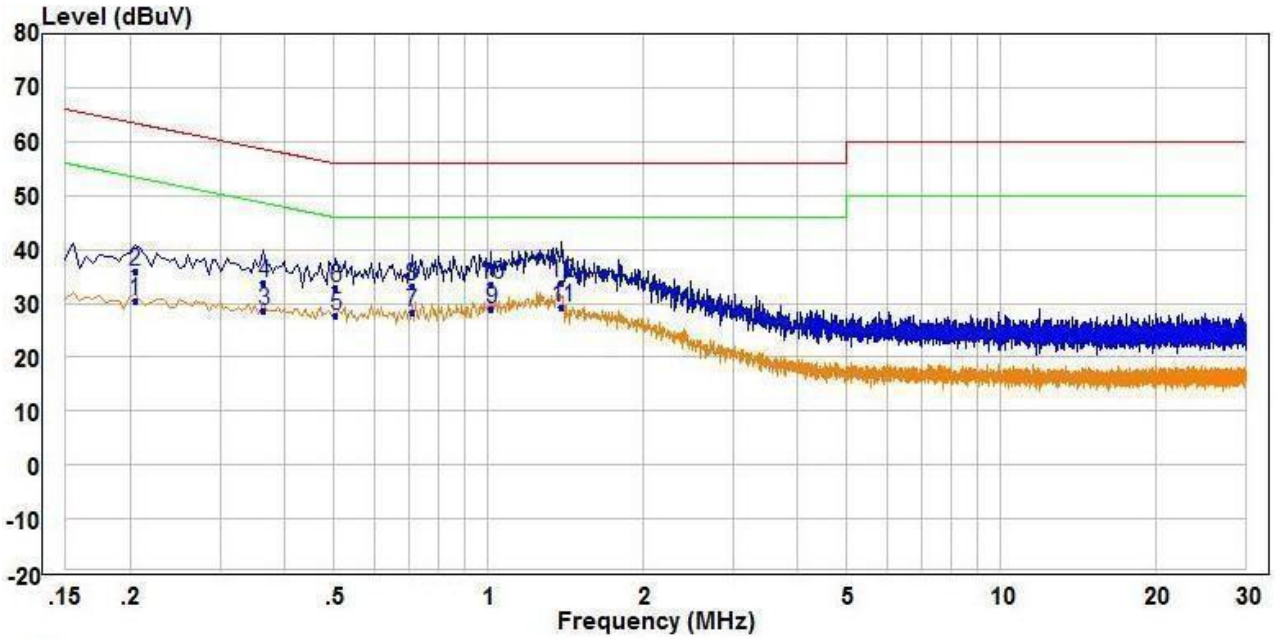
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

5#

Measurement Data

Live Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.21	20.99	9.51	30.60	53.41	-22.81	Average	Line
2	0.21	26.20	9.51	35.81	63.41	-27.60	QP	Line
3	0.37	18.97	9.47	28.54	48.61	-20.07	Average	Line
4	0.37	24.21	9.47	33.78	58.61	-24.83	QP	Line
5	0.51	18.17	9.60	27.88	46.00	-18.12	Average	Line
6	0.51	23.17	9.60	32.88	56.00	-23.12	QP	Line
7	0.71	18.57	9.60	28.46	46.00	-17.54	Average	Line
8	0.71	23.46	9.60	33.35	56.00	-22.65	QP	Line
9	1.02	19.07	9.64	28.81	46.00	-17.19	Average	Line
10	1.02	23.90	9.64	33.64	56.00	-22.36	QP	Line
11	1.39	18.51	10.50	29.13	46.00	-16.87	Average	Line
12	1.39	23.29	10.50	33.91	56.00	-22.09	QP	Line

Remark:

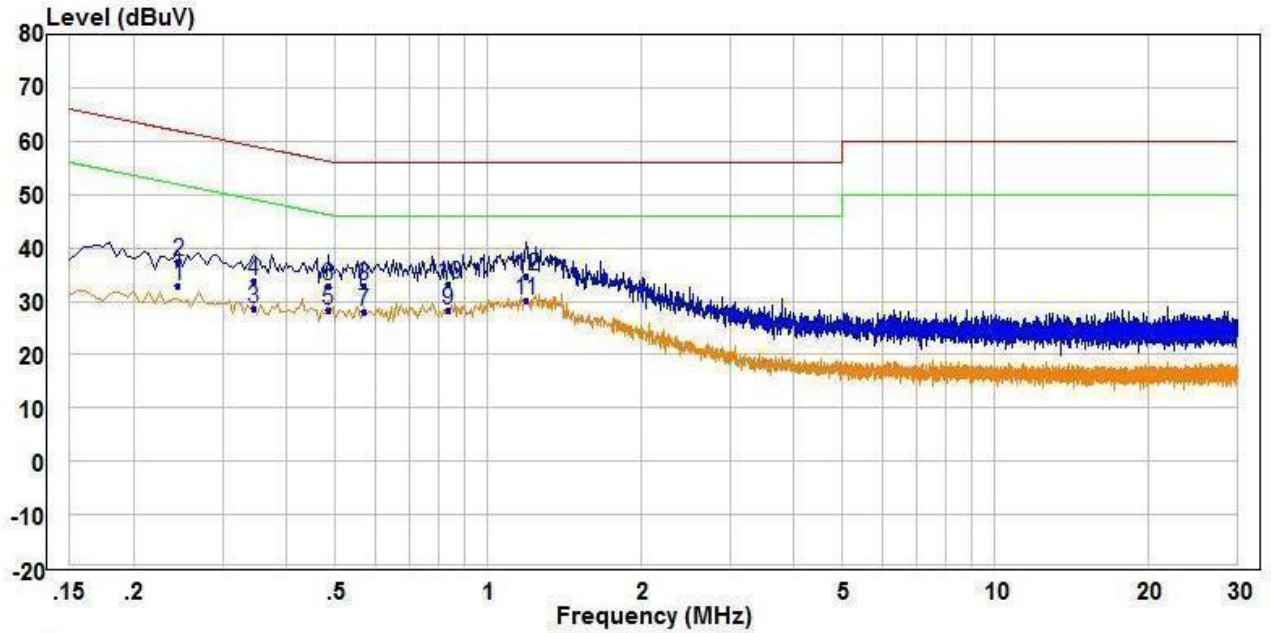
1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

Test Report

Neutral Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.25	23.39	9.44	32.93	51.92	-18.99	Average	Neutral
2	0.25	27.87	9.44	37.41	61.92	-24.51	QP	Neutral
3	0.35	19.16	9.44	28.70	49.08	-20.38	Average	Neutral
4	0.35	24.12	9.44	33.66	59.08	-25.42	QP	Neutral
5	0.49	18.79	9.59	28.48	46.25	-17.77	Average	Neutral
6	0.49	23.25	9.59	32.94	56.25	-23.31	QP	Neutral
7	0.57	18.39	9.60	28.16	46.00	-17.84	Average	Neutral
8	0.57	23.11	9.60	32.88	56.00	-23.12	QP	Neutral
9	0.84	18.59	9.60	28.40	46.00	-17.60	Average	Neutral
10	0.84	23.35	9.60	33.16	56.00	-22.84	QP	Neutral
11	1.19	20.40	9.60	30.11	46.00	-15.89	Average	Neutral
12	1.19	25.10	9.60	34.81	56.00	-21.19	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

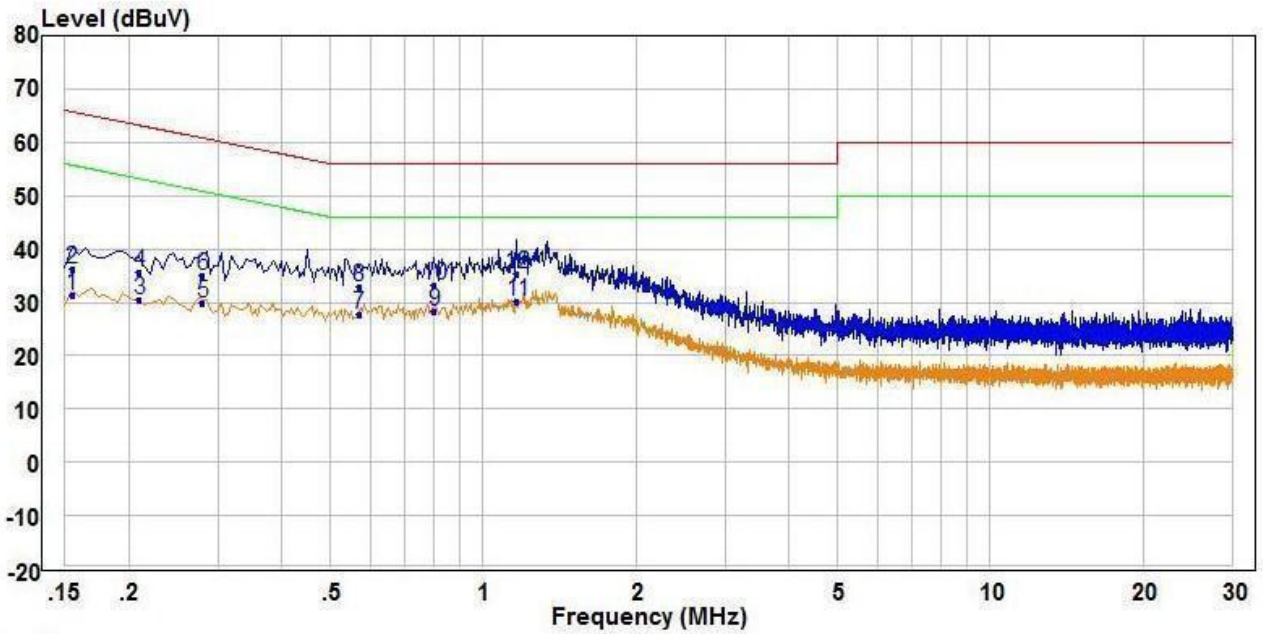
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

6#

Measurement Data

Live Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.16	21.56	9.59	31.25	55.73	-24.48	Average	Line
2	0.16	26.62	9.59	36.31	65.73	-29.42	QP	Line
3	0.21	21.01	9.50	30.61	53.21	-22.60	Average	Line
4	0.21	26.13	9.50	35.73	63.21	-27.48	QP	Line
5	0.28	20.49	9.41	30.00	50.82	-20.82	Average	Line
6	0.28	25.40	9.41	34.91	60.82	-25.91	QP	Line
7	0.57	18.11	9.60	27.88	46.00	-18.12	Average	Line
8	0.57	23.07	9.60	32.84	56.00	-23.16	QP	Line
9	0.80	18.37	9.60	28.20	46.00	-17.80	Average	Line
10	0.80	23.37	9.60	33.20	56.00	-22.80	QP	Line
11	1.17	20.13	10.02	30.26	46.00	-15.74	Average	Line
12	1.17	25.08	10.02	35.21	56.00	-20.79	QP	Line

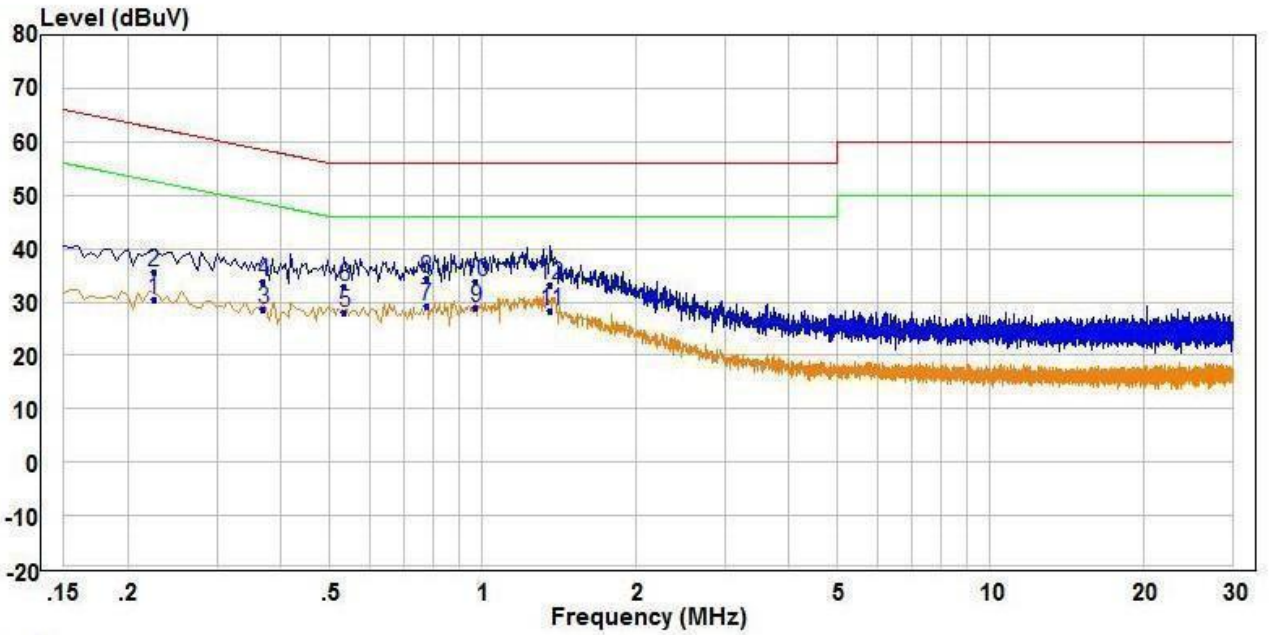
Remark:

Test Report

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Test Report

Neutral Line:



	Freq.	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV		
1	0.23	20.97	9.47	30.54	52.63	-22.09	Average	Neutral
2	0.23	26.09	9.47	35.66	62.63	-26.97	QP	Neutral
3	0.37	19.16	9.47	28.73	48.50	-19.77	Average	Neutral
4	0.37	24.11	9.47	33.68	58.50	-24.82	QP	Neutral
5	0.54	18.23	9.60	27.97	46.00	-18.03	Average	Neutral
6	0.54	23.23	9.60	32.97	56.00	-23.03	QP	Neutral
7	0.78	19.46	9.60	29.31	46.00	-16.69	Average	Neutral
8	0.78	24.44	9.60	34.29	56.00	-21.71	QP	Neutral
9	0.97	19.27	9.60	28.99	46.00	-17.01	Average	Neutral
10	0.97	24.14	9.60	33.86	56.00	-22.14	QP	Neutral
11	1.36	18.57	9.60	28.29	46.00	-17.71	Average	Neutral
12	1.36	23.52	9.60	33.24	56.00	-22.76	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

4.3 Conducted Peak & Average Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20). Only the worst case is recorded in the report.
Limit:	30dBm
Test Results:	Pass

Test Report

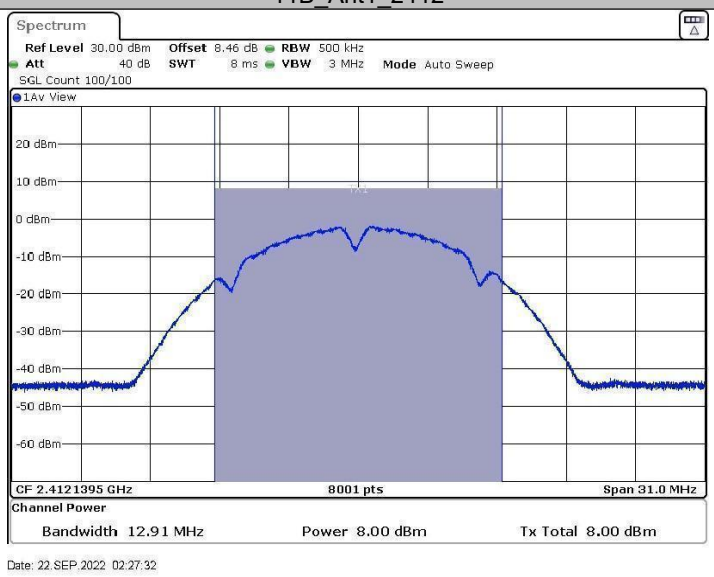
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	8.00	≤30	PASS
		2437	8.77	≤30	PASS
		2462	8.76	≤30	PASS
11G	Ant1	2412	7.79	≤30	PASS
		2437	8.47	≤30	PASS
		2462	8.55	≤30	PASS
11N20SISO	Ant1	2412	7.76	≤30	PASS
		2437	8.56	≤30	PASS
		2462	8.40	≤30	PASS

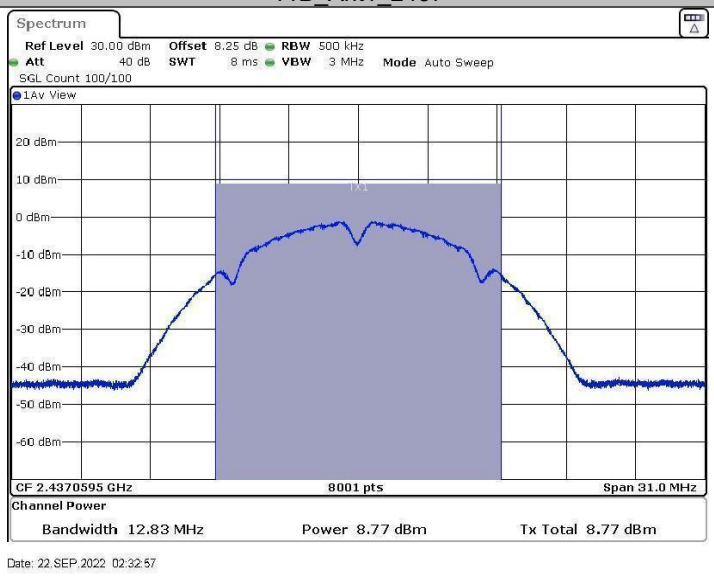
Test Report

Test Graphs

11B_Ant1_2412

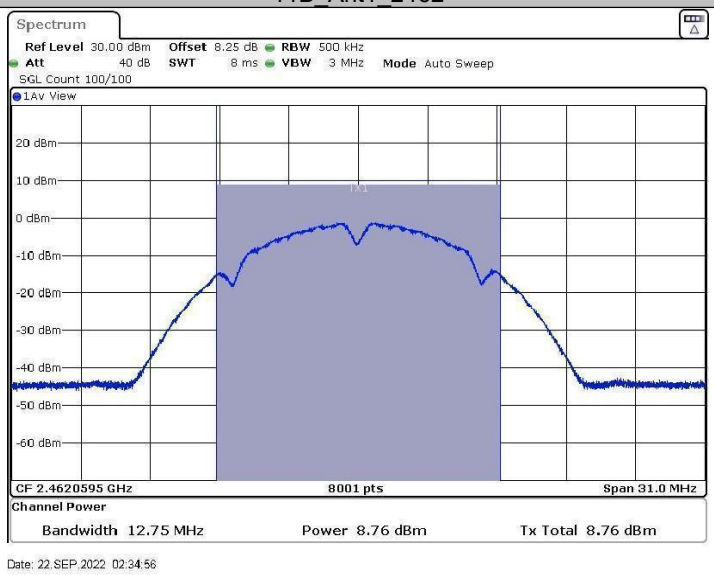


11B_Ant1_2437

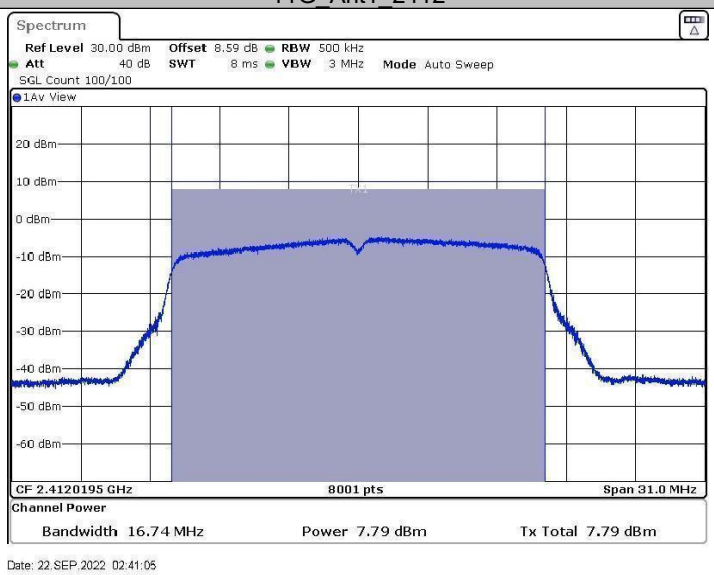


Test Report

11B_Ant1_2462

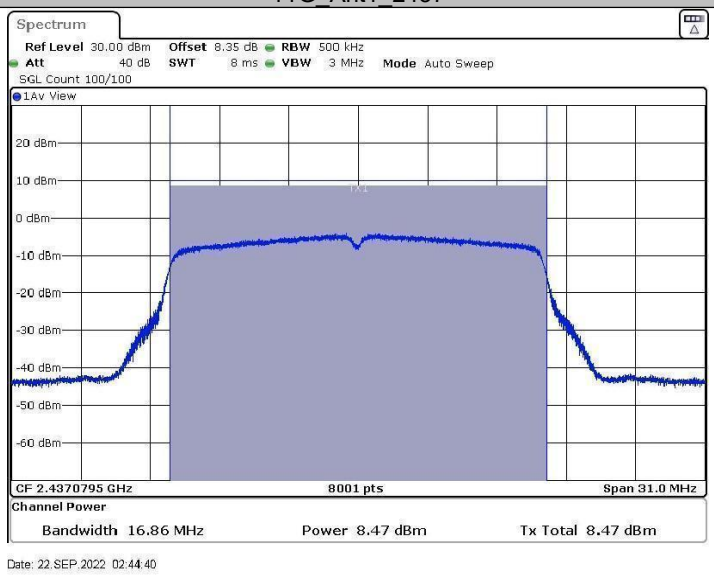


11G_Ant1_2412

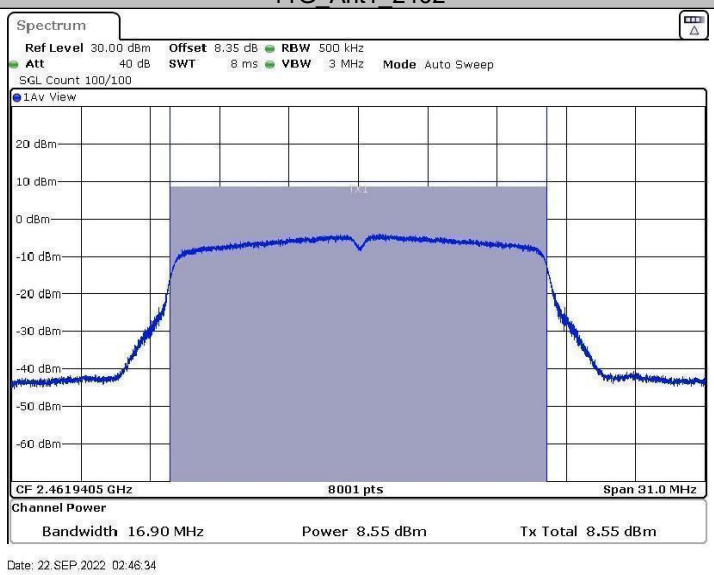


Test Report

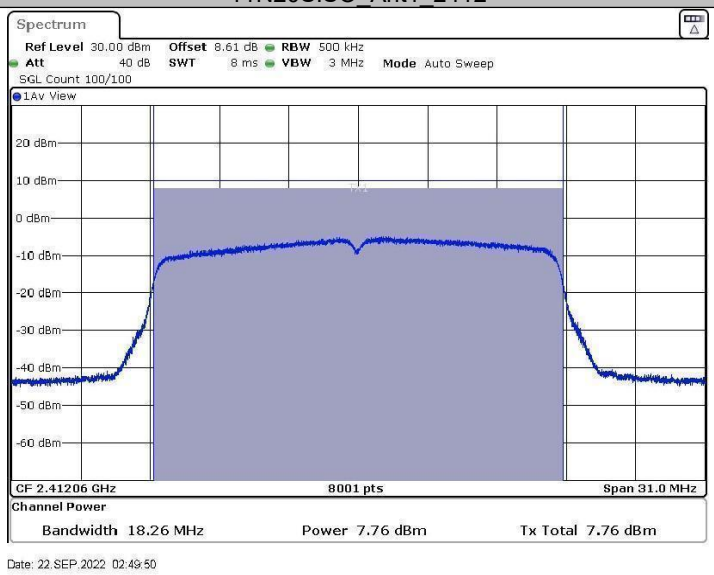
11G_Ant1_2437



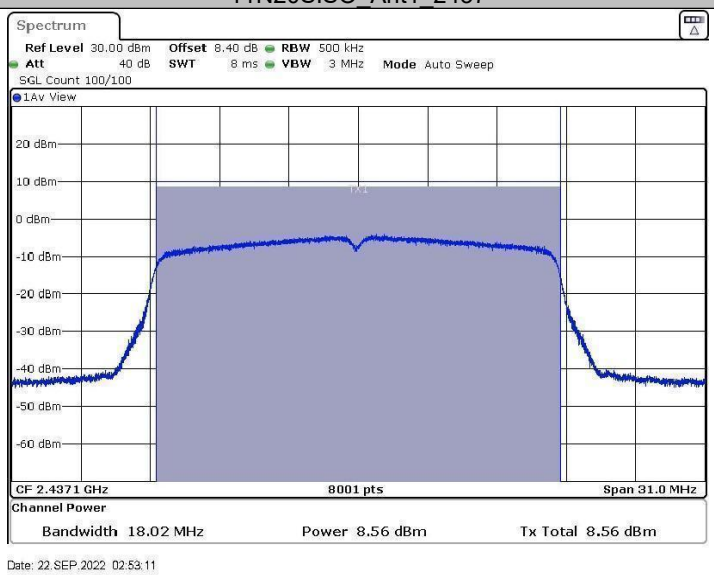
11G_Ant1_2462



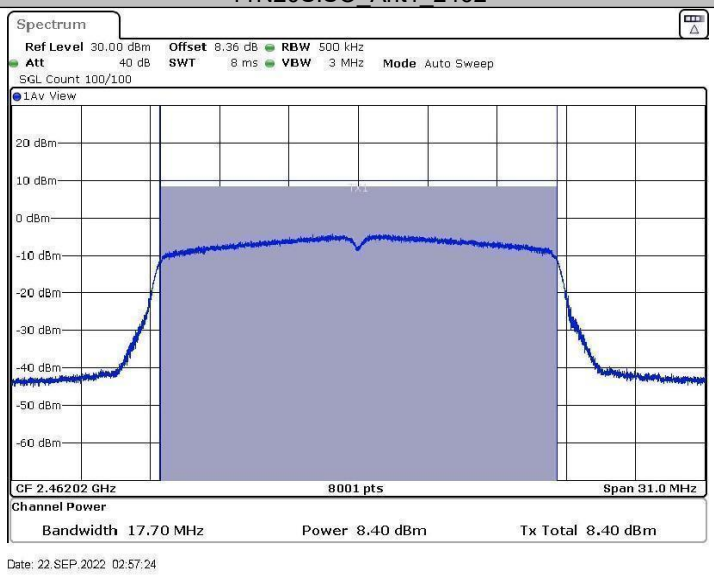
11N20SISO_Ant1_2412



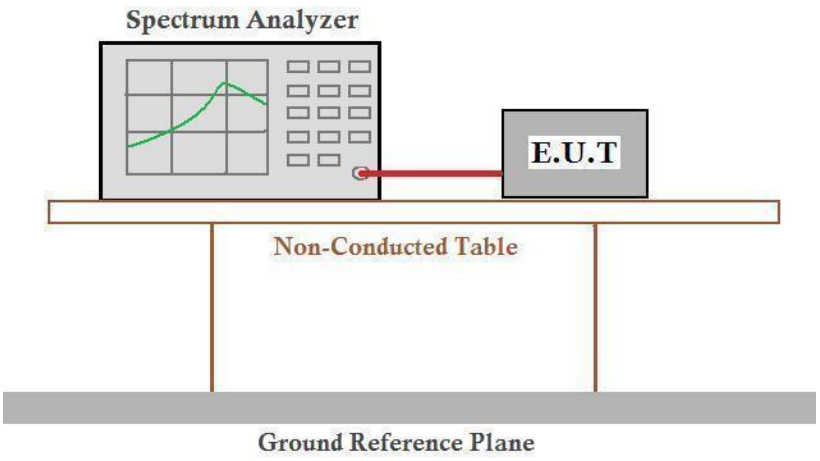
11N20SISO_Ant1_2437



Test Report

11N20SISO_Ant1_2462


4.4 6dB Occupy Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10: 2013
Test Setup:	 Offset=cable loss+ attenuation factor
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20). Only the worst case is recorded in the report.
Limit:	≥ 500 kHz
Test Results:	Pass

Test Report

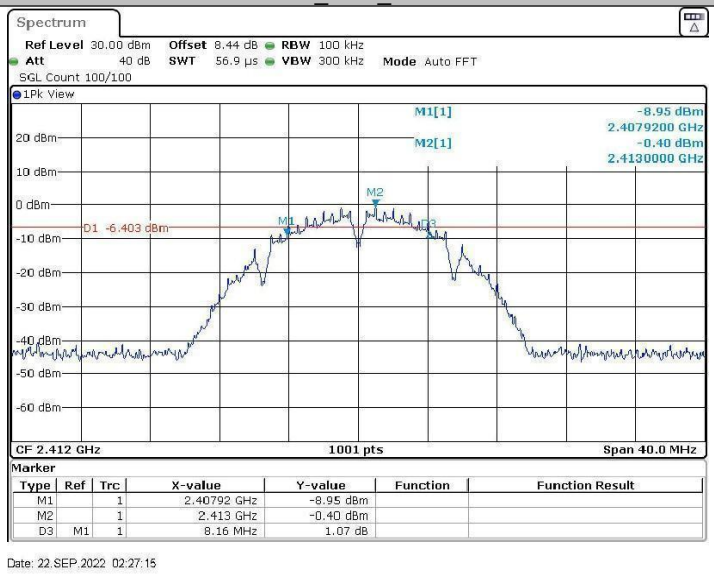
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	8.160	2407.920	2416.080	0.5	PASS
		2437	7.640	2433.400	2441.040	0.5	PASS
		2462	8.160	2457.920	2466.080	0.5	PASS
11G	Ant1	2412	15.760	2404.440	2420.200	0.5	PASS
		2437	16.400	2428.800	2445.200	0.5	PASS
		2462	15.200	2454.400	2469.600	0.5	PASS
11N20SISO	Ant1	2412	17.680	2403.160	2420.840	0.5	PASS
		2437	17.680	2428.160	2445.840	0.5	PASS
		2462	13.920	2455.640	2469.560	0.5	PASS

Test Report

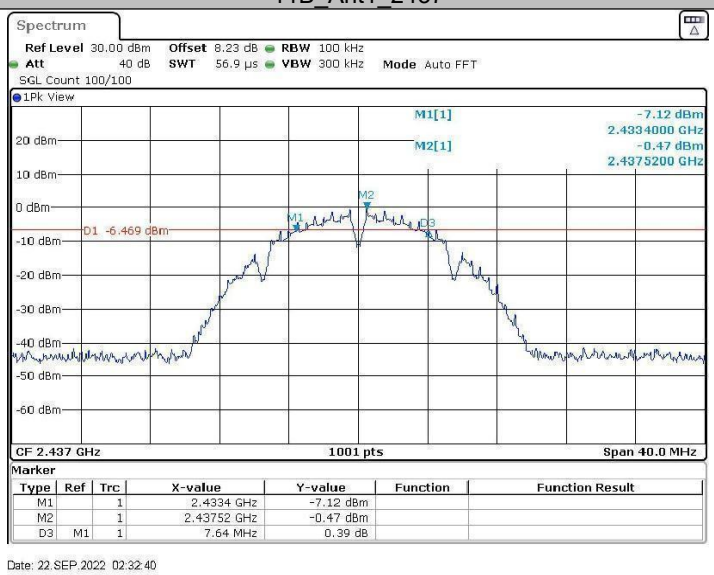
Test Graphs

11B_Ant1_2412



Date: 22.SEP.2022 02:27:15

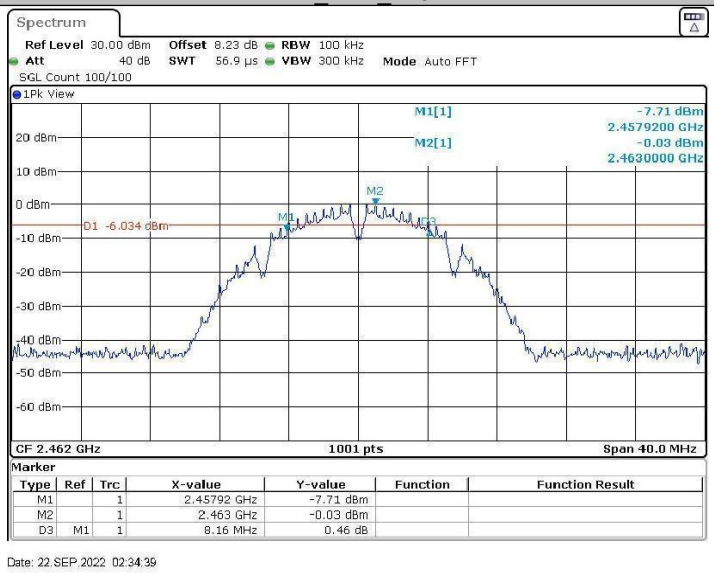
11B_Ant1_2437



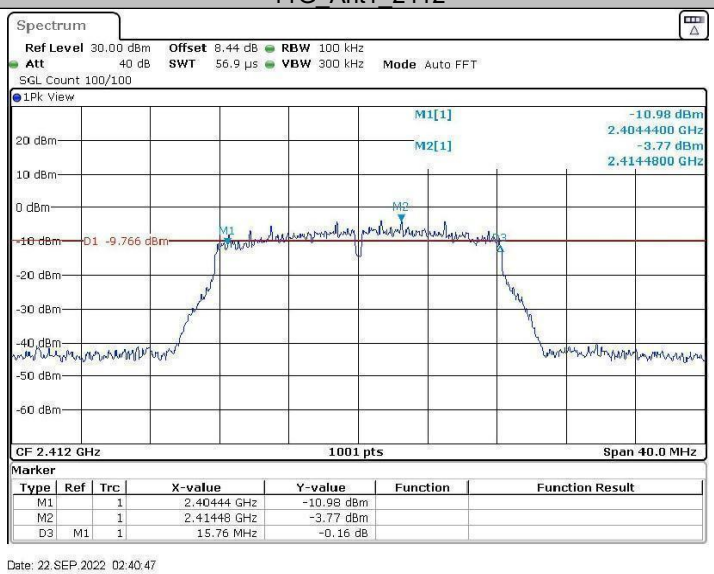
Date: 22.SEP.2022 02:32:40

Test Report

11B_Ant1_2462

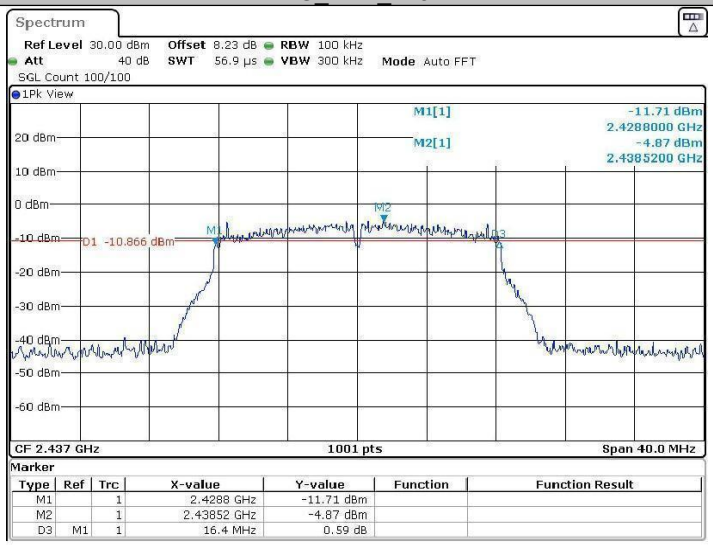


11G_Ant1_2412

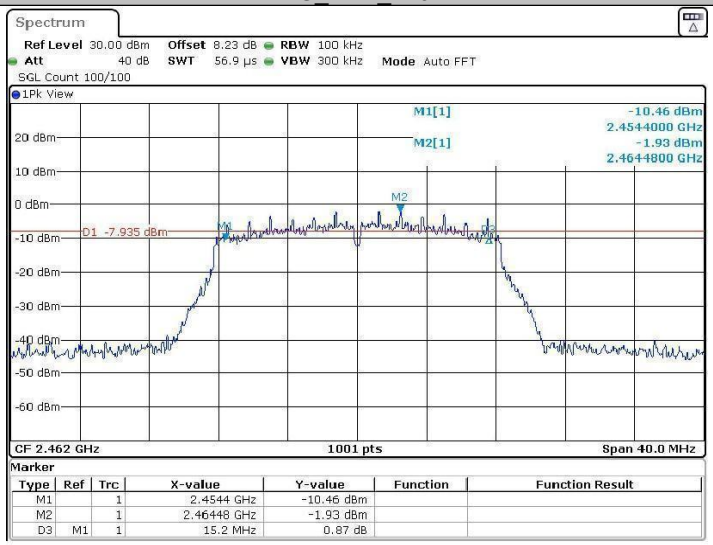


Test Report

11G_Ant1_2437

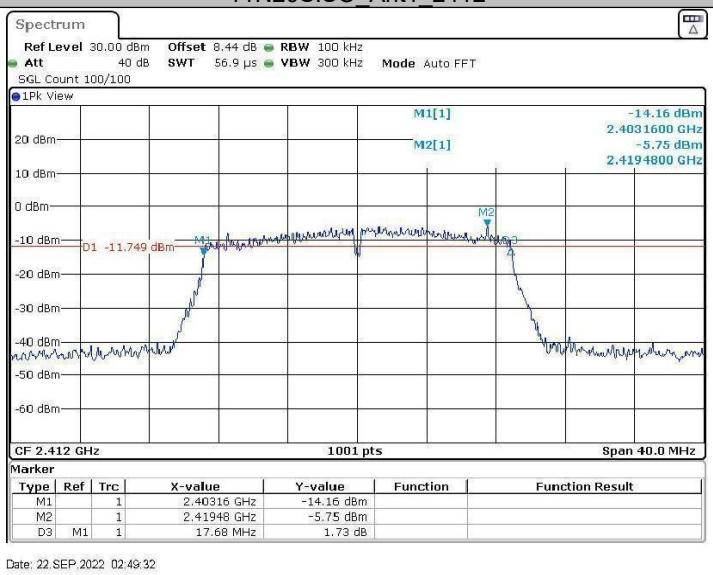


11G_Ant1_2462

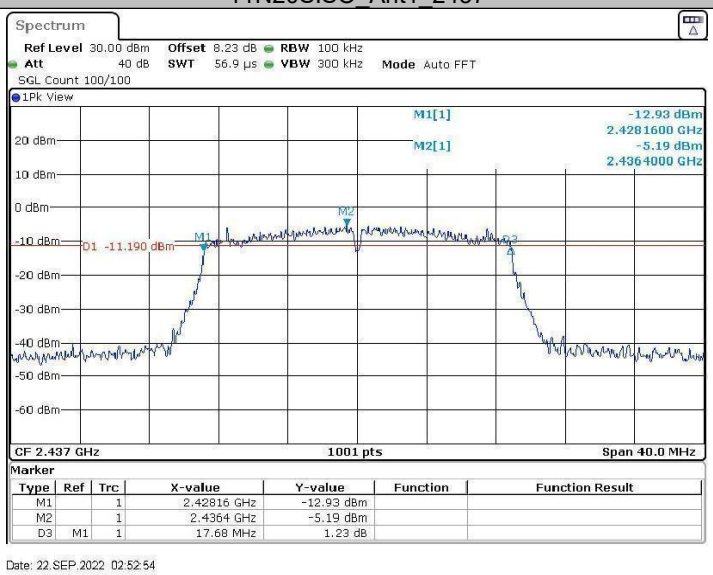


Test Report

11N20SISO_Ant1_2412

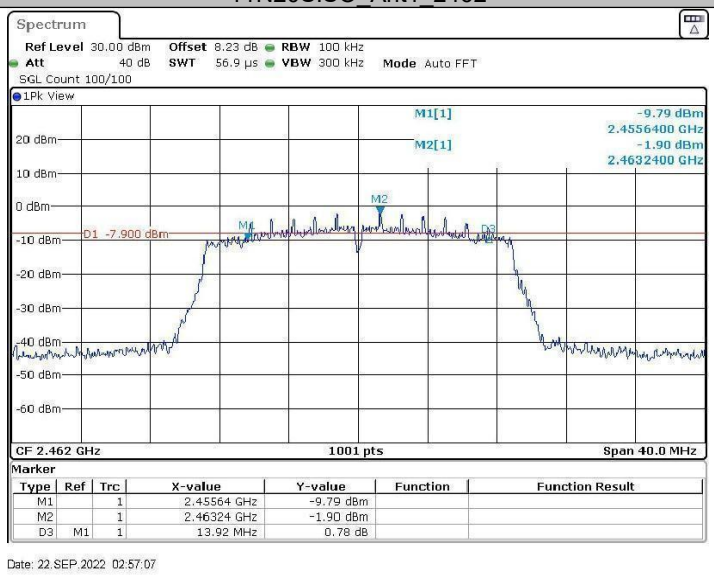


11N20SISO_Ant1_2437

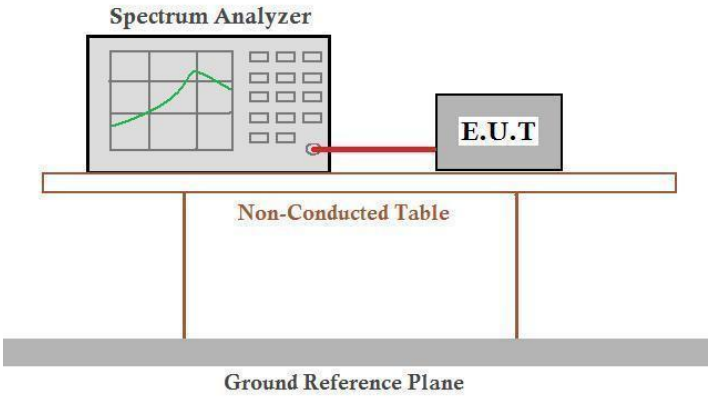


Test Report

11N20SISO_Ant1_2462



4.5 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10: 2013
Test Setup:	 Offset=cable loss+ attenuation factor
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20). Only the worst case is recorded in the report.
Limit:	≤8.00dBm/3kHz
Test Results:	Pass

Test Report

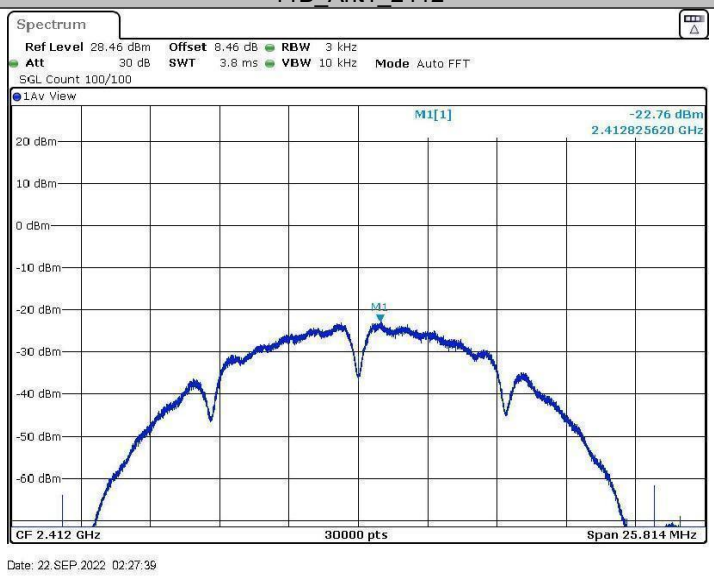
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-22.76	≤8	PASS
		2437	-21.84	≤8	PASS
		2462	-18.11	≤8	PASS
11G	Ant1	2412	-25.01	≤8	PASS
		2437	-20.6	≤8	PASS
		2462	-24.29	≤8	PASS
11N20SISO	Ant1	2412	-24.97	≤8	PASS
		2437	-20.62	≤8	PASS
		2462	-24.45	≤8	PASS

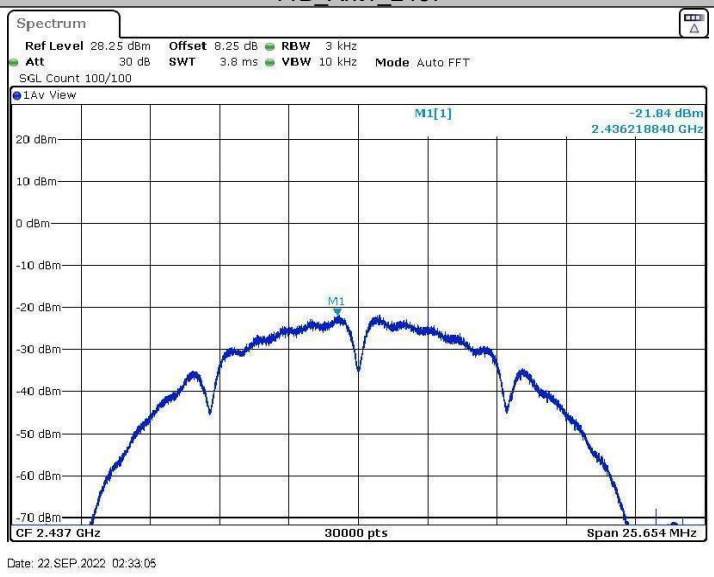
Test Report

Test Graphs

11B_Ant1_2412

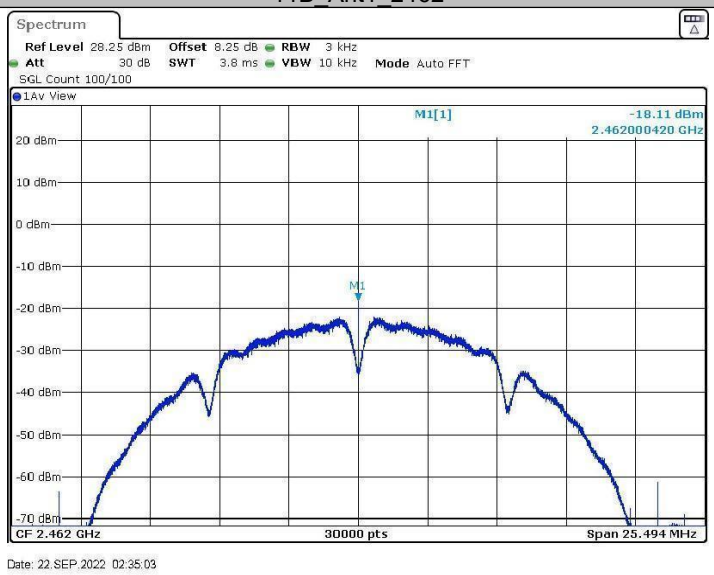


11B_Ant1_2437

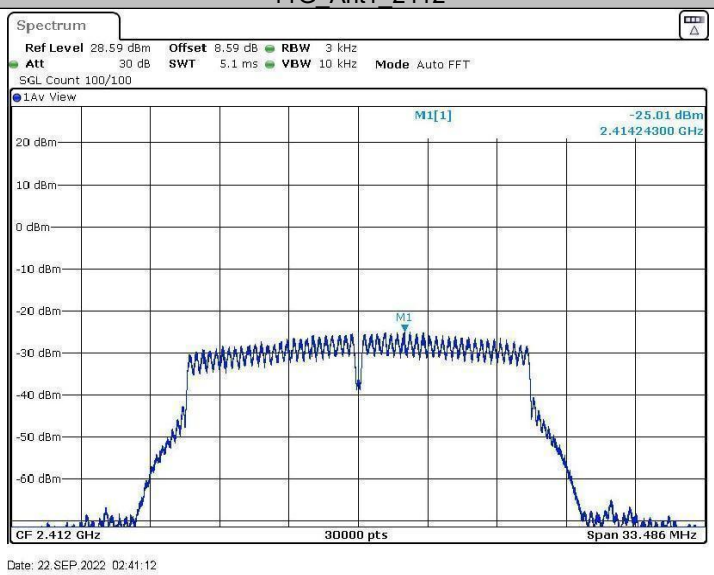


Test Report

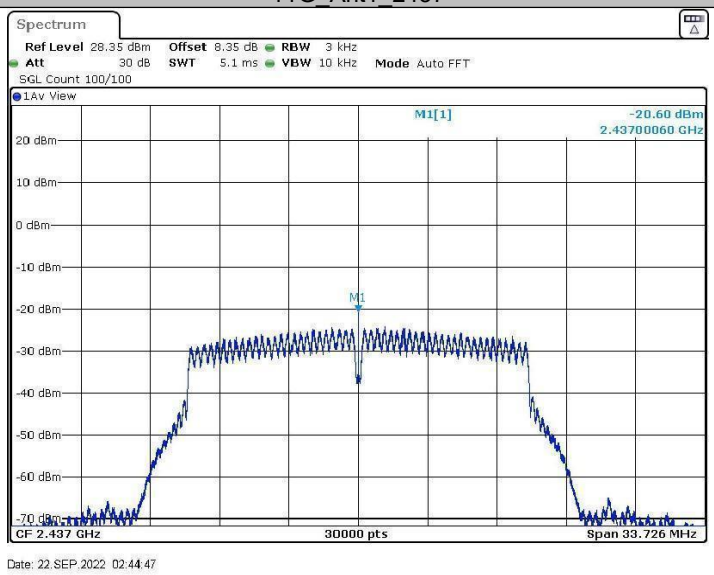
11B_Ant1_2462



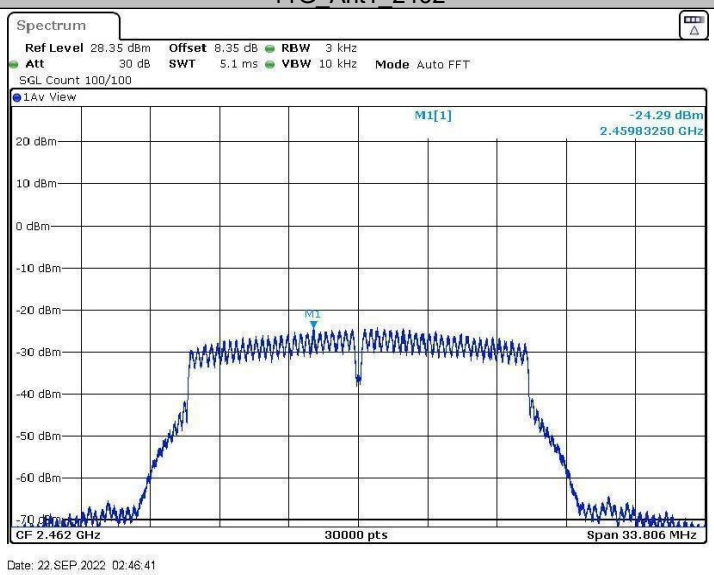
11G_Ant1_2412



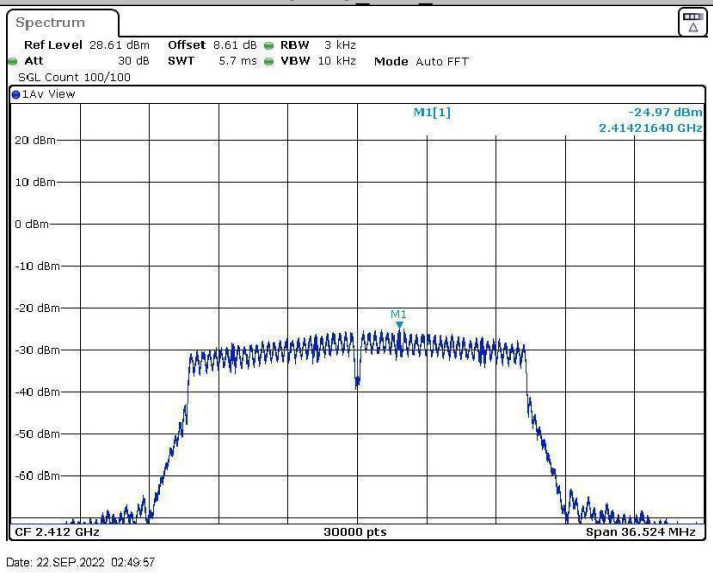
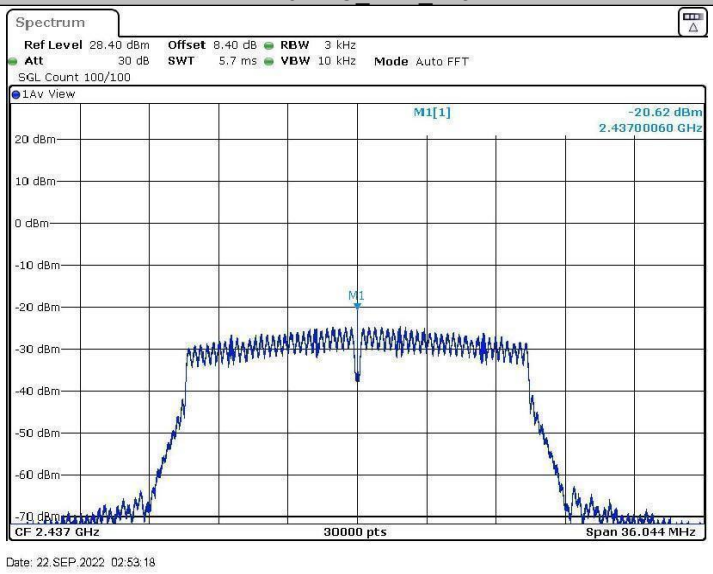
11G_Ant1_2437



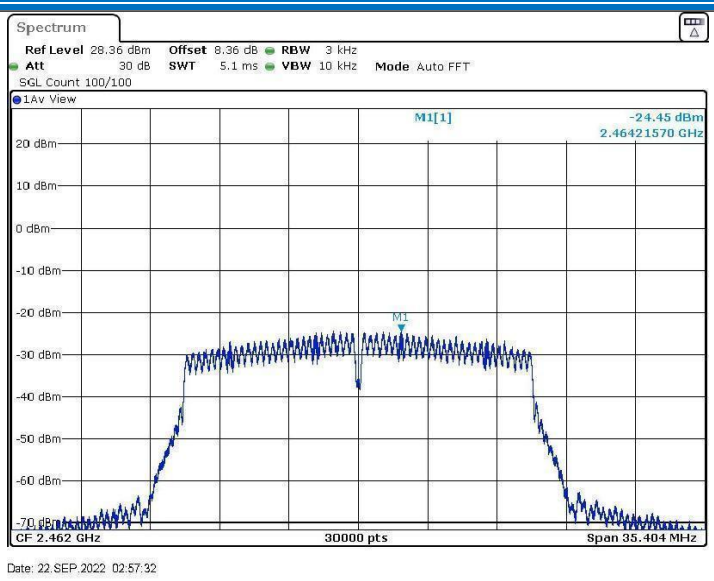
11G_Ant1_2462



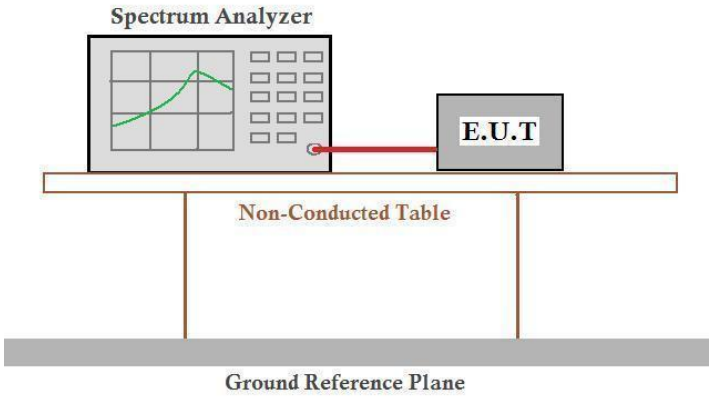
Test Report

11N20SISO_Ant1_2412

11N20SISO_Ant1_2437

11N20SISO_Ant1_2462

Test Report


Spectrum
Ref Level 28.36 dBm Offset 8.36 dB RBW 3 kHz
Att 30 dB SWT 5.1 ms VBW 10 kHz Mode Auto FFT
SGL Count 100/100
1Av View
M1[1]
-24.45 dBm
2.46421570 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.462 GHz
30000 pts
Span 35.404 MHz
Date: 22.SEP.2022 02:57:32

4.6 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013
Test Setup:	 Offset=cable loss+ attenuation factor
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20). Only the worst case is recorded in the report.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test Results:	Pass

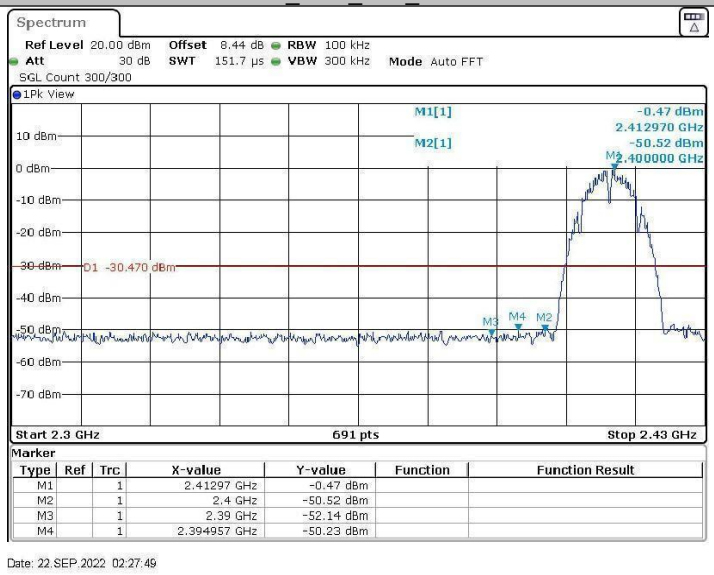
Test Report

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	-0.47	-50.23	≤-30.47	PASS
		High	2462	-0.25	-49.39	≤-30.25	PASS
11G	Ant1	Low	2412	-2.51	-45.32	≤-32.51	PASS
		High	2462	-1.72	-48.98	≤-31.72	PASS
11N20SISO	Ant1	Low	2412	-3.48	-41.86	≤-33.48	PASS
		High	2462	-2.77	-49.23	≤-32.77	PASS

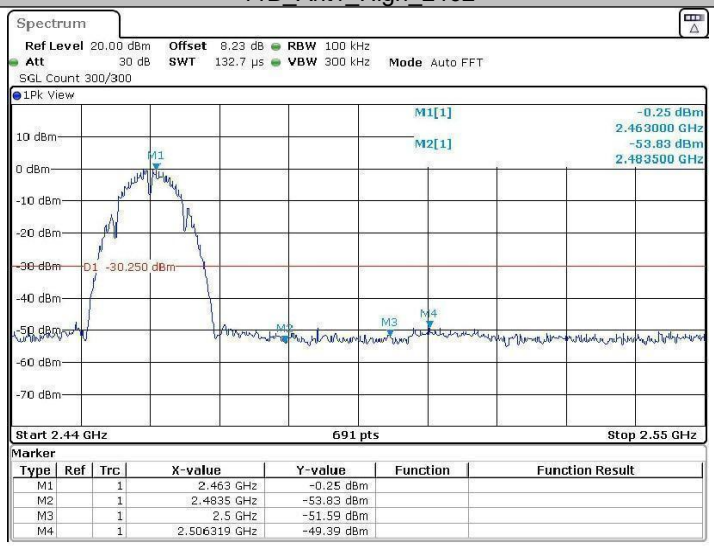
4.6.1 Test Graphs

11B_Ant1_Low_2412



Date: 22.SEP.2022 02:27:49

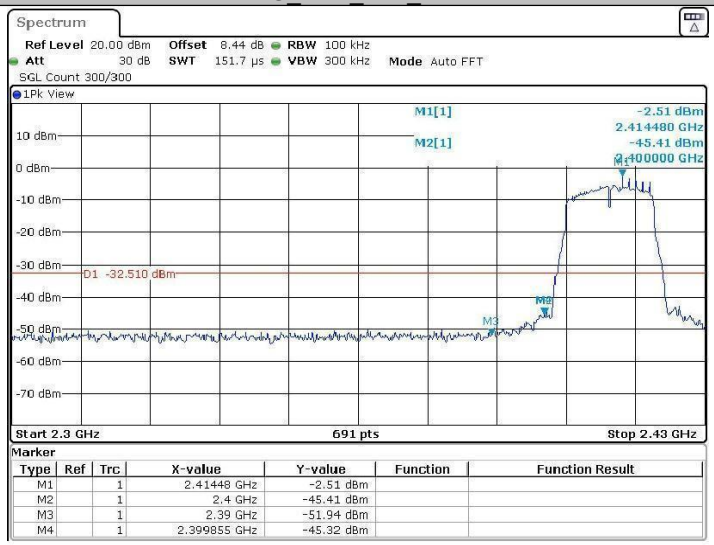
11B_Ant1_High_2462



Date: 22.SEP.2022 02:35:13

Test Report

11G_Ant1_Low_2412

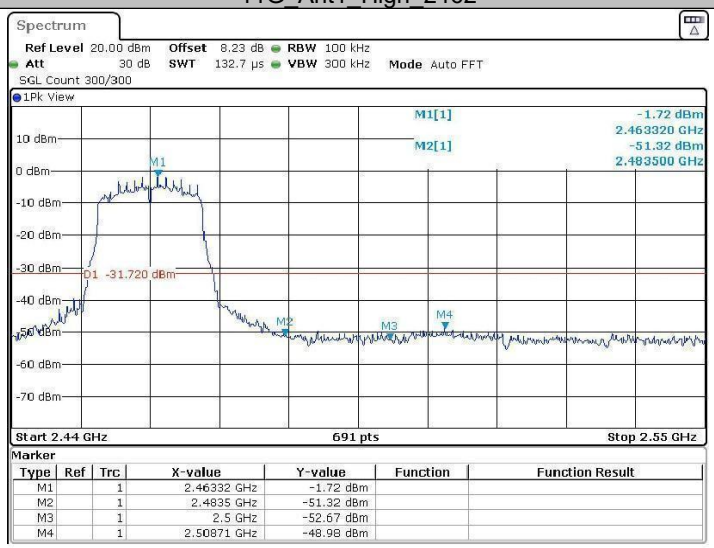


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41448 GHz	-2.51 dBm		
M2		1	2.4 GHz	-45.41 dBm		
M3		1	2.39 GHz	-51.94 dBm		
M4		1	2.399855 GHz	-45.32 dBm		

Date: 22.SEP.2022 02:41:22

11G_Ant1_High_2462



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46332 GHz	-1.72 dBm		
M2		1	2.4835 GHz	-51.32 dBm		
M3		1	2.5 GHz	-52.67 dBm		
M4		1	2.50871 GHz	-48.98 dBm		

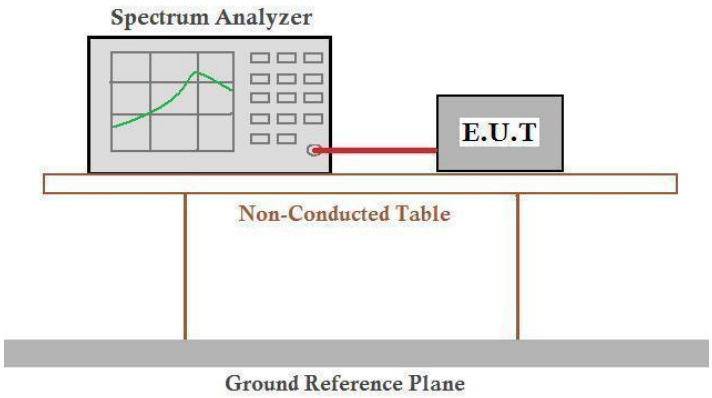
Date: 22.SEP.2022 02:46:51

Test Report

11N20SISO_Ant1_Low_2412

11N20SISO_Ant1_High_2462

4.7 RF Conducted Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013
Test Setup:	 Offset=cable loss+ attenuation factor
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20). Only the worst case is recorded in the report.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test Results:	Pass