



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.: CQASZ20221101970E-01

Applicant: Shenzhen Deepsea Innovation Technology Co., Ltd.

Address of Applicant: Room 1901, Jinqizhigu Building, Tangling Road, Nanshan District, Shenzhen, CN

Equipment Under Test (EUT):

Product: Atom SE

Model No.: DSRC02A, DSRC02B, DSRC02C

Teat Model No.: DSRC02A

Brand Name: N/A

FCC ID: 2AYUO-DSRC02A

Standards: 47 CFR Part 15, Subpart C

ANSI C63.10: 2013

KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

Date of Receipt: 2022-11-22

Date of Test: 2022-11-22 to 2022-12-06

Date of Issue: 2023-01-30

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 Ai

(Jack Ai)





Shenzhen Huaxia Testing Technology Co., Ltd.

Report No.: CQASZ20221101970E-01

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20221101970E-01	Rev.01	Initial report	2023-01-30

2 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

3 Contents

	Page
1 VERSION.....	2
2 TEST SUMMARY.....	3
3 CONTENTS.....	4
4 GENERAL INFORMATION.....	5
4.1 CLIENT INFORMATION	5
4.2 GENERAL DESCRIPTION OF EUT	5
4.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	5
4.4 TEST ENVIRONMENT AND MODE	7
4.5 DESCRIPTION OF SUPPORT UNITS.....	14
4.6 TEST LOCATION.....	14
4.7 TEST FACILITY	14
4.8 STATEMENT OF THE MEASUREMENT UNCERTAINTY.....	15
4.9 DEVIATION FROM STANDARDS	15
4.10 ABNORMALITIES FROM STANDARD CONDITIONS	15
4.11 OTHER INFORMATION REQUESTED BY THE CUSTOMER	15
4.12 EQUIPMENTS LIST	16
5 TEST RESULTS AND MEASUREMENT DATA.....	17
5.1 ANTENNA REQUIREMENT	17
5.2 CONDUCTED EMISSIONS	18
5.3 CONDUCTED PEAK & AVERAGE OUTPUT POWER.....	24
5.4 6dB OCCUPY BANDWIDTH	28
<i>Test Result</i>	31
<i>Test Graphs</i>	36
<i>Test Graphs</i>	46
5.5 POWER SPECTRAL DENSITY	51
5.6 BAND-EDGE FOR RF CONDUCTED EMISSIONS	65
5.7 RF CONDUCTED SPURIOUS EMISSIONS	73
5.8 RADIATED SPURIOUS EMISSIONS	102
<i>5.8.1 Radiated emission below 1GHz</i>	105
<i>5.8.2 Transmitter emission above 1GHz</i>	109
5.9 RESTRICTED BANDS AROUND FUNDAMENTAL FREQUENCY	113
6 PHOTOGRAPHS - EUT TEST SETUP	121
6.1 RADIATED EMISSION	121
6.2 CONDUCTED EMISSION	122
7 PHOTOGRAPHS - EUT CONSTRUCTIONAL DETAILS	123

4 General Information

4.1 Client Information

Applicant:	Shenzhen Deepsea Innovation Technology Co., Ltd.
Address of Applicant:	Room 1901, Jinqizhigu Building, Tangling Road, Nanshan District, Shenzhen, CN
Manufacturer:	Shenzhen Deepsea excellence technology Co.,Ltd
Address of Manufacturer:	5th Floor, Building 7, Hongfa High-tech Park, Keji 4th Road, Shiyan Street, Baoan District, Shenzhen
Factory:	Shenzhen Deepsea excellence technology Co.,Ltd
Address of Factory:	5th Floor, Building 7, Hongfa High-tech Park, Keji 4th Road, Shiyan Street, Baoan District, Shenzhen

4.2 General Description of EUT

Product Name:	Atom SE
Model No.:	DSRC02A, DSRC02B, DSRC02C
Test Model No.:	DSRC02A
Trade Mark:	N/A
Software Version:	2.2.1
Hardware Version:	V05
Power Supply:	Li-ion battery DC 3.7V 2200mAh, Charge by DC 5V for adapter
EUT Supports Radios application:	2.4GHz: Wi-Fi: 802.11b/g/n(HT20): 2412MHz~2462MHz;

4.3 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:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable
Test Software of EUT:	MobaXterm_Installer_v22.2
Antenna Type:	FPC antenna
Antenna Gain:	Ant 1: 2.3 dBi; Ant2: 2.3 dBi (provided by the applicant)

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:

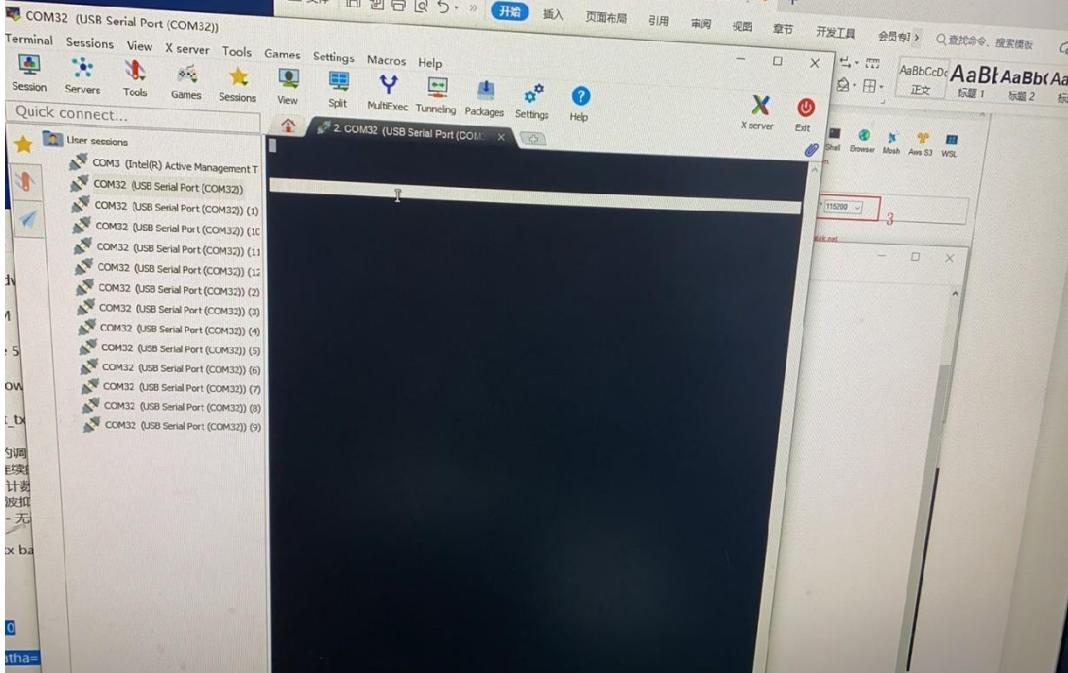
For 802.11b/g/n (HT20):

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.

4.4 Test Environment and Mode

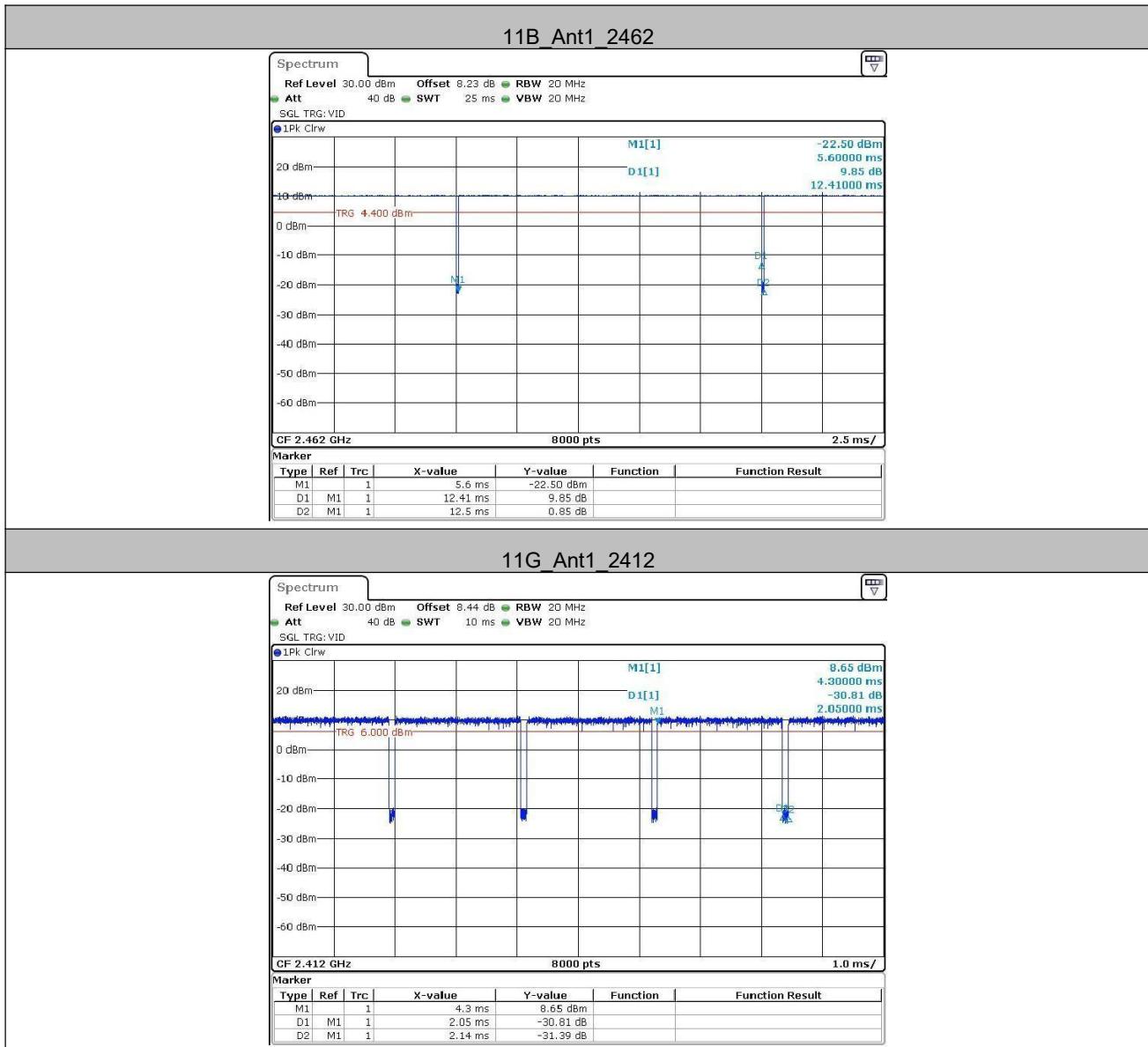
Operating Environment:	
Radiated Emissions:	
Temperature:	25.3 °C
Humidity:	55 % RH
Atmospheric Pressure:	1009 mbar
Conducted Emissions:	
Temperature:	25.6 °C
Humidity:	60 % RH
Atmospheric Pressure:	1009 mbar
Radio conducted item test (RF Conducted test room):	
Temperature:	25.5 °C
Humidity:	52 % RH
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:	
	

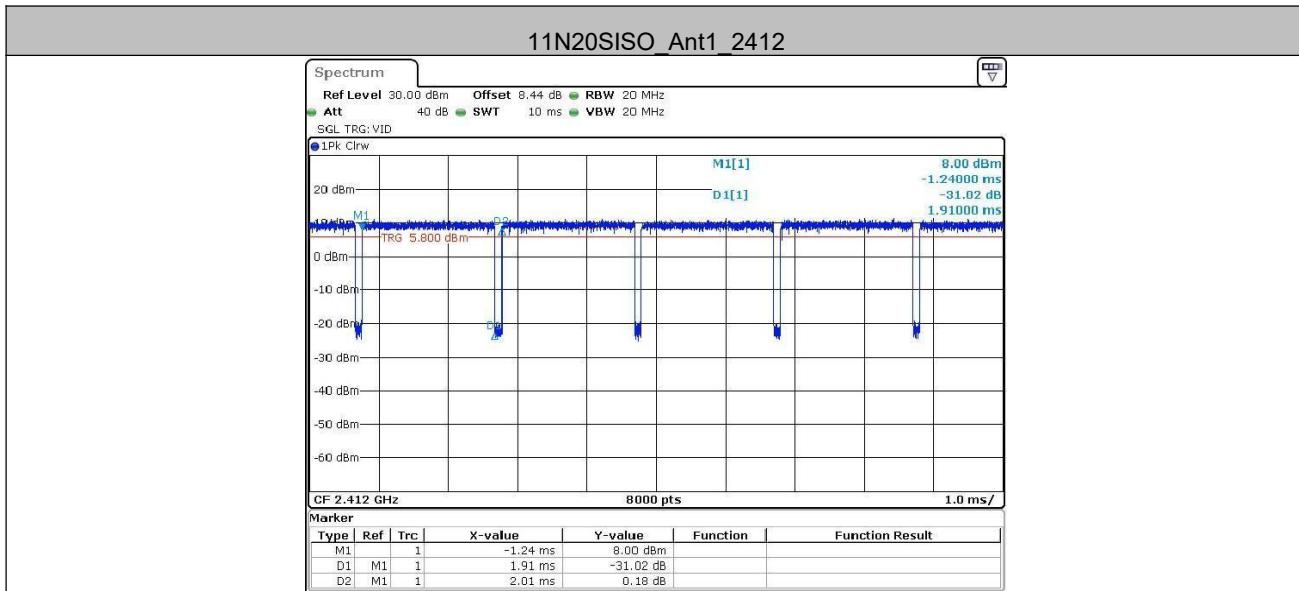
Ant1

Operated Mode for Worst Duty Cycle:		
Test Mode	Duty Cycle(%)	Average correction factor(dB)
IEEE802.11b	99.28	0.03
IEEE802.11g	95.79	0.20
IEEE802.11n (HT20)	95.02	0.22

Remark:

- 1) Duty cycle= On Time/ Period;
- 2) Duty Cycle factor = $10 * \log(1/ \text{Duty cycle})$;





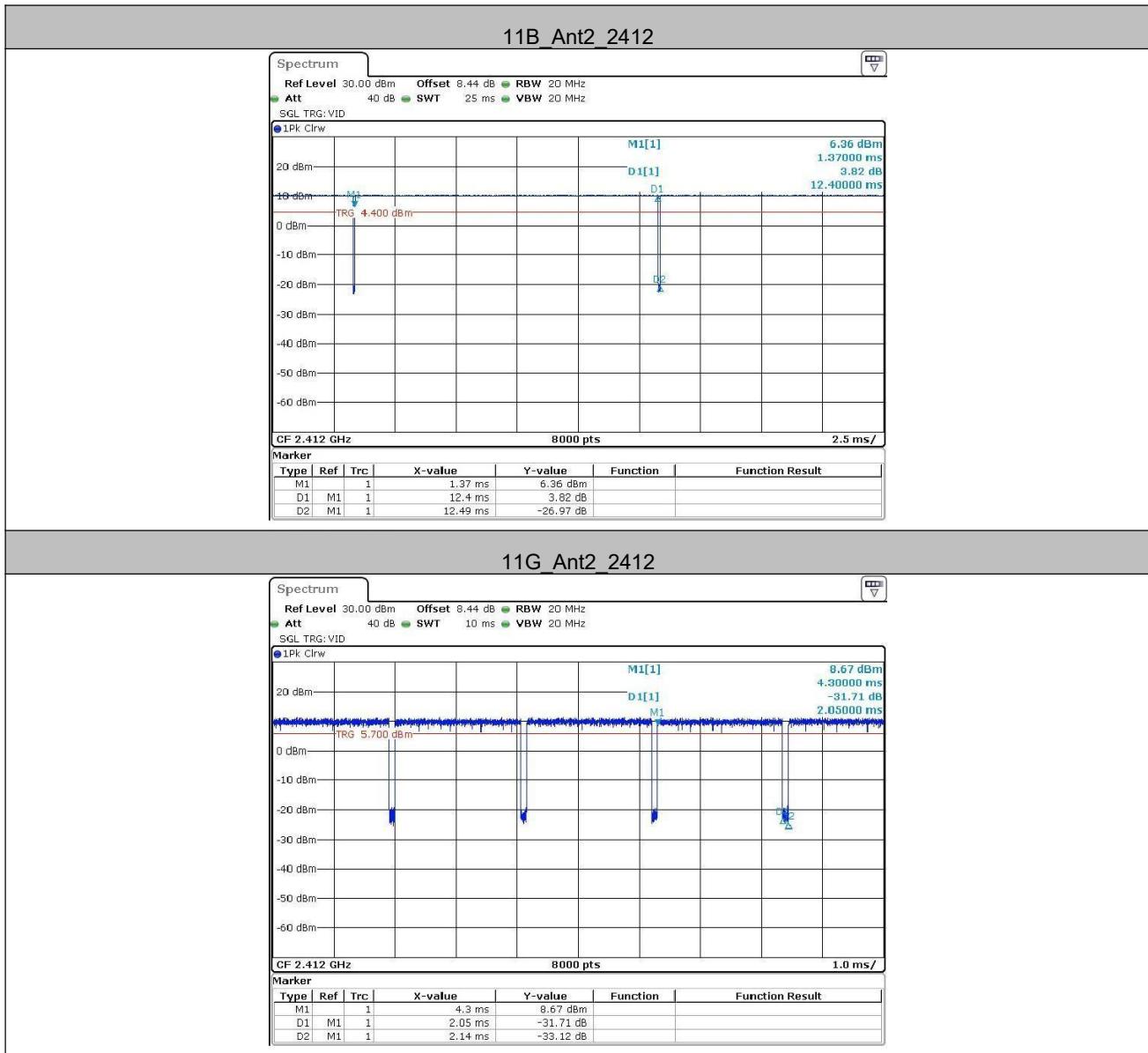
Ant2

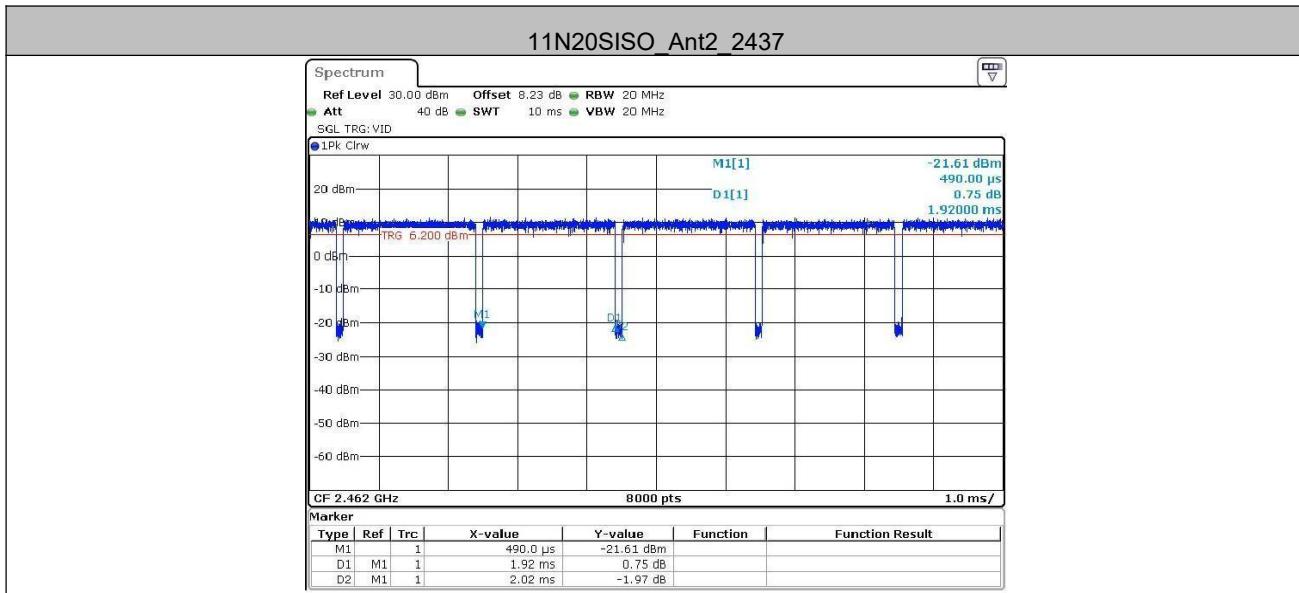
Operated Mode for Worst Duty Cycle:

Test Mode	Duty Cycle(%)	Average correction factor(dB)
IEEE802.11b	99.28	0.03
IEEE802.11g	95.79	0.19
IEEE802.11n (HT20)	95.05	0.22

Remark:

- 1) Duty cycle= On Time/ Period;
- 2) Duty Cycle factor = $10 * \log(1/ \text{Duty cycle})$;





4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

2) Cable

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

4.6 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

4.7 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

4.8 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°C	(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.

4.9 Deviation from Standards

None.

4.10 Abnormalities from Standard Conditions

None.

4.11 Other Information Requested by the Customer

None.

4.12 Equipments List

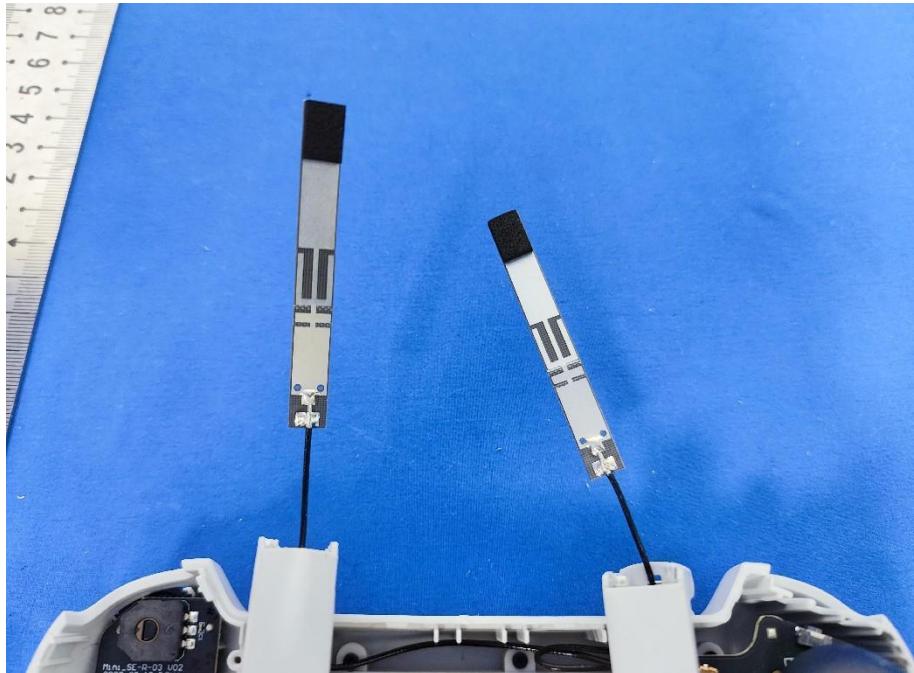
Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2022/09/09	2023/09/08
Spectrum analyzer	R&S	FSU26	CQA-038	2022/09/09	2023/09/08
Spectrum analyzer	R&S	FSU40	CQA-075	2022/09/09	2023/09/08
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2022/09/09	2023/09/08
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2022/09/09	2023/09/08
Preamplifier	EMCI	EMC184055SE	CQA-089	2022/09/09	2023/09/08
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	2022/09/09	2023/09/08
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2022/09/09	2023/09/08
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2022/09/09	2023/09/08
Antenna Connector	CQA	RFC-01	CQA-080	2022/09/09	2023/09/08
Power Sensor	KEYSIGHT	U2021XA	CQA-30	2022/09/09	2023/09/08
N1918A Power Analysis Manager Power Panel	Agilent	N1918A	CQA-074	2022/09/09	2023/09/08
Power meter	R&S	NRVD	CQA-029	2022/09/09	2023/09/08
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2022/09/09	2023/09/08
EMI Test Receiver	R&S	ESR7	CQA-005	2022/09/09	2023/09/08
LISN	R&S	ENV216	CQA-003	2022/09/09	2023/09/08
Coaxial cable	CQA	N/A	CQA-C009	2022/09/09	2023/09/08
DC power	KEYSIGHT	E3631A	CQA-028	2022/09/09	2023/09/08

Test software:

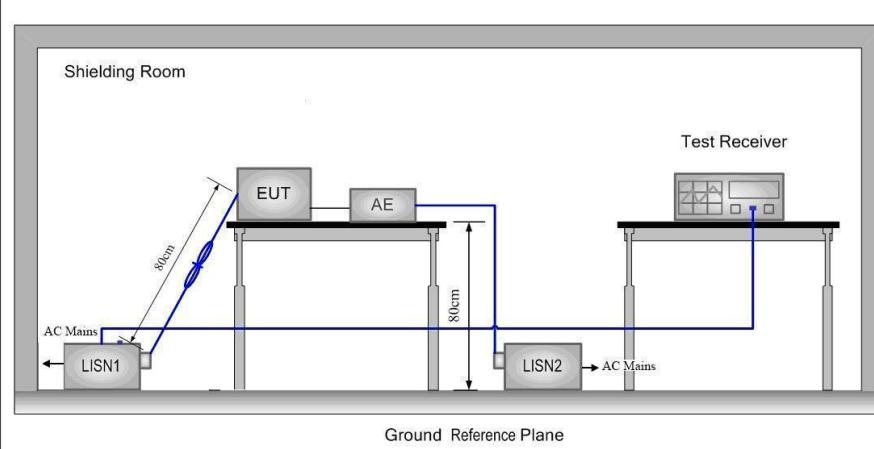
	Manufacturer	Software brand
Radiated Emissions test software	Tonscend	JS1120-3
Conducted Emissions test software	Audix	e3
RF Conducted test software	Audix	e3

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
EUT Antenna:	
The antenna is FPC antenna. Ant 1: 2.3 dBi; Ant2: 2.3 dBi (provided by the applicant)	

5.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207																
Test Method:	ANSI C63.10: 2013																
Test Frequency Range:	150kHz to 30MHz																
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr> <tr> <th>Quasi-peak</th><th>Average</th></tr> </thead> <tbody> <tr> <td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr> <tr> <td>0.5-5</td><td>56</td><td>46</td></tr> <tr> <td>5-30</td><td>60</td><td>50</td></tr> </tbody> </table>			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
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:	<ol style="list-style-type: none"> 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 $50\Omega/50\mu\text{H} + 5\Omega$ 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: 2013 on conducted measurement. 																
Test Setup:																	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and																

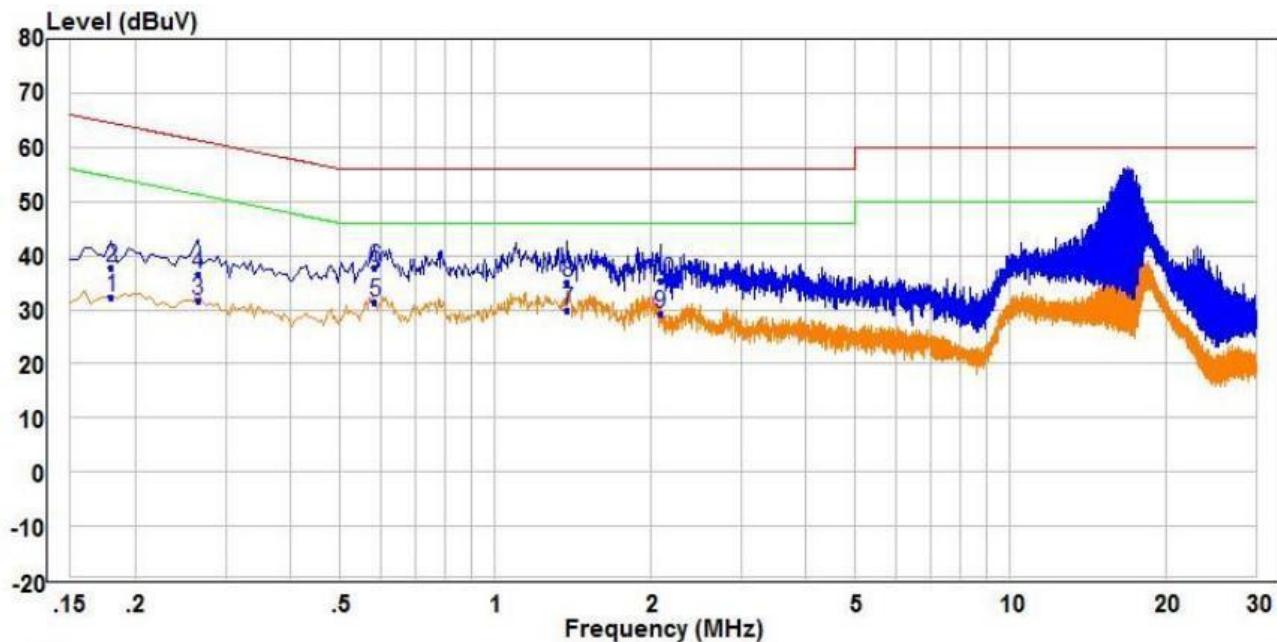


	highest channel.
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate of 802.11b at middle channel is the worst case. Only the worst case is recorded in the report.
Test Voltage:	AC120V/60Hz
Test Results:	Pass

Ant 1

Measurement Data

Live Line:

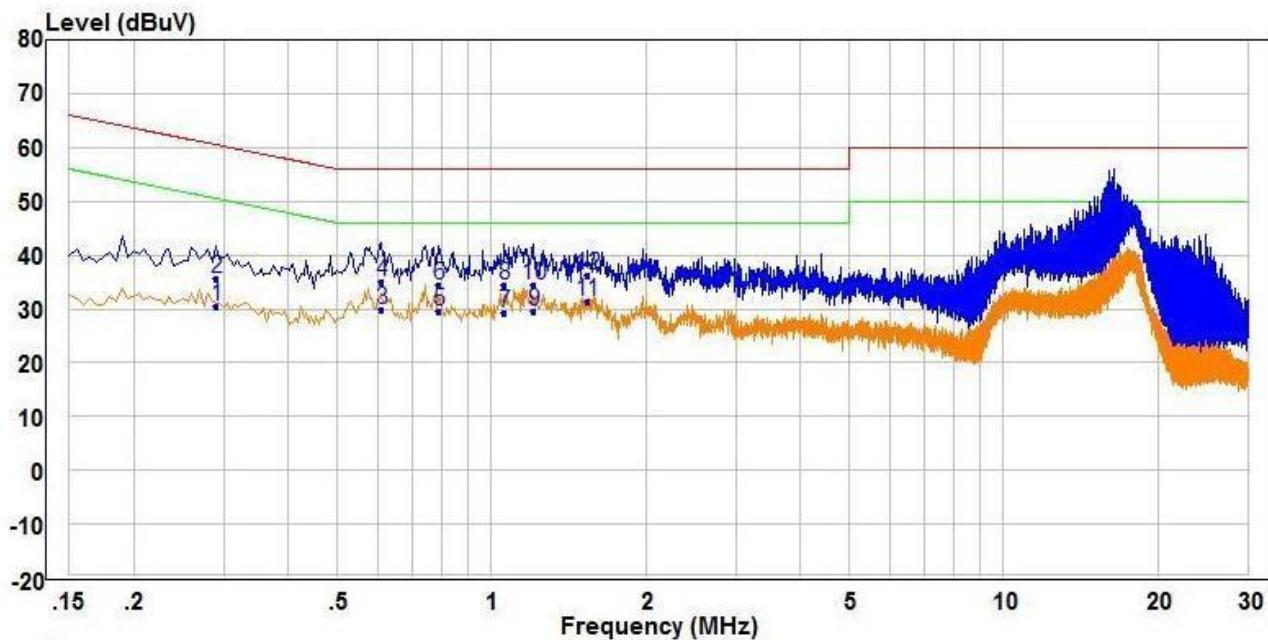


Freq.	Read	Factor	Level	Limit	Over	Over	Pol/Phase
	Level			Line			
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV	
1	0.18	22.57	9.54	32.21	54.49	-22.28	Average Line
2	0.18	27.97	9.54	37.61	64.49	-26.88	QP Line
3	0.27	22.15	9.43	31.68	51.27	-19.59	Average Line
4	0.27	27.14	9.43	36.67	61.27	-24.60	QP Line
5	0.59	21.54	9.60	31.33	46.00	-14.67	Average Line
6	0.59	27.84	9.60	37.63	56.00	-18.37	QP Line
7	1.38	19.28	10.48	29.88	46.00	-16.12	Average Line
8	1.38	24.47	10.48	35.07	56.00	-20.93	QP Line
9	2.10	17.78	11.40	29.33	46.00	-16.67	Average Line
10	2.10	23.65	11.40	35.20	56.00	-20.80	QP Line
11	16.94	24.28	9.60	34.05	50.00	-15.95	Average Line
12	16.94	39.39	9.60	49.16	60.00	-10.84	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.

Neutral Line:



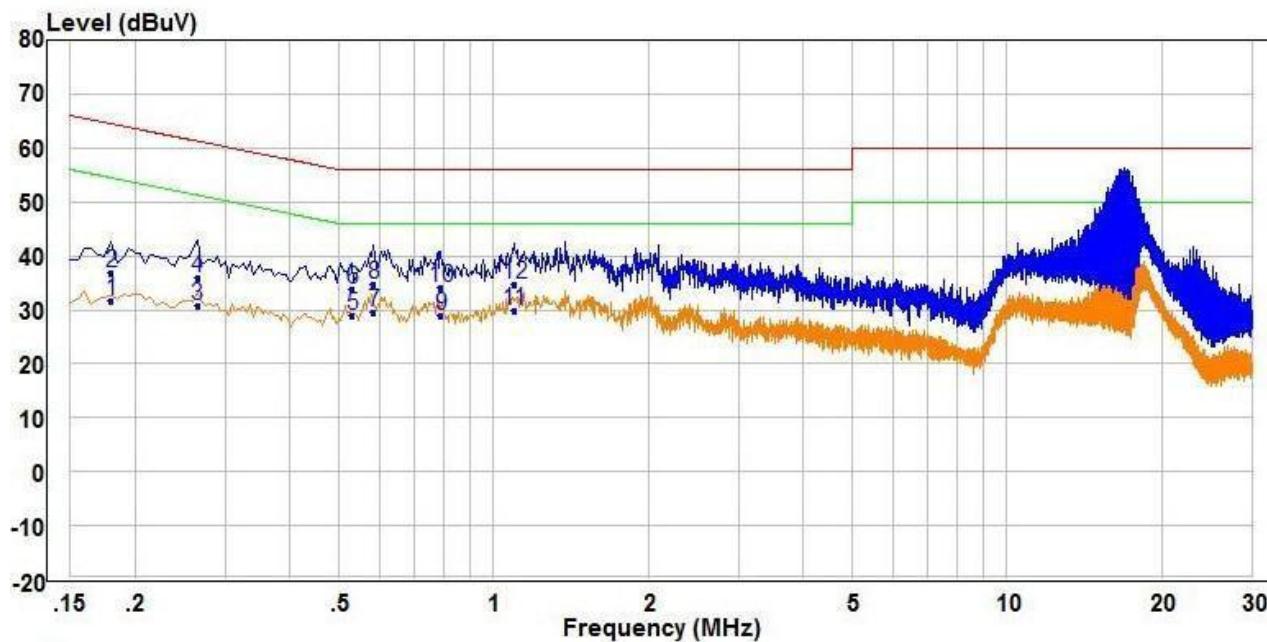
Freq	Read	Factor	Level	Limit	Over	Remark	Pol/Phase
	MHz			dBuV	dB		
1	0.290	20.97	9.49	30.46	50.52	-20.06	Average
2	0.290	26.10	9.49	35.59	60.52	-24.93	QP
3	0.610	20.02	9.81	29.83	46.00	-16.17	Average
4	0.610	25.19	9.81	35.00	56.00	-21.00	QP
5	0.790	19.66	9.84	29.50	46.00	-16.50	Average
6	0.790	24.58	9.84	34.42	56.00	-21.58	QP
7	1.060	19.62	9.70	29.32	46.00	-16.68	Average
8	1.060	24.72	9.70	34.42	56.00	-21.58	QP
9	1.210	19.97	9.71	29.68	46.00	-16.32	Average
10	1.210	24.81	9.71	34.52	56.00	-21.48	QP
11	PP	1.540	21.78	9.73	31.51	46.00	-14.49
12	QP	1.540	26.64	9.73	36.37	56.00	-19.63

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.

Ant 2
Measurement Data

Live Line:

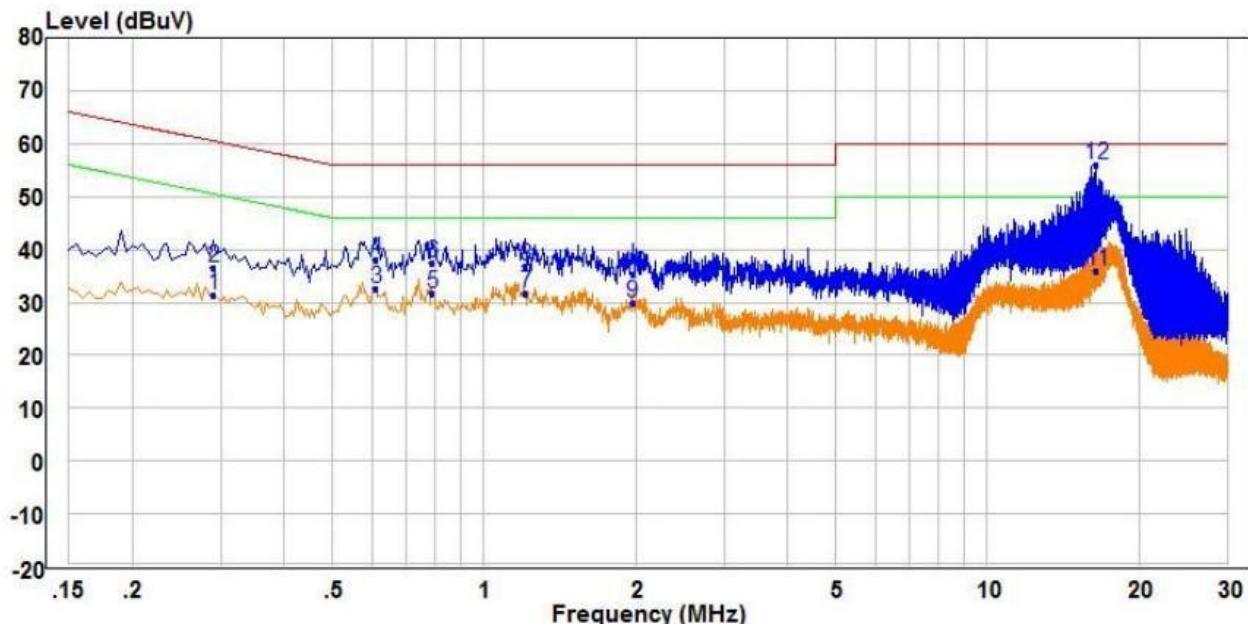


Freq	Read		Limit		Over		Pol/Phase
	MHz	dBuV	Factor	Level	Line	Limit	
1	0.180	22.11	9.64	31.75	54.49	-22.74	Average Line
2	0.180	27.15	9.64	36.79	64.49	-27.70	QP Line
3	0.265	21.23	9.53	30.76	51.27	-20.51	Average Line
4	0.265	26.45	9.53	35.98	61.27	-25.29	QP Line
5	0.530	19.20	9.73	28.93	46.00	-17.07	Average Line
6	0.530	24.11	9.73	33.84	56.00	-22.16	QP Line
7	0.585	19.86	9.79	29.65	46.00	-16.35	Average Line
8 QP	0.585	25.04	9.79	34.83	56.00	-21.17	QP Line
9	0.790	19.20	9.84	29.04	46.00	-16.96	Average Line
10	0.790	24.31	9.84	34.15	56.00	-21.85	QP Line
11 PP	1.095	19.91	9.95	29.86	46.00	-16.14	Average Line
12	1.095	24.72	9.95	34.67	56.00	-21.33	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.

Neutral Line:

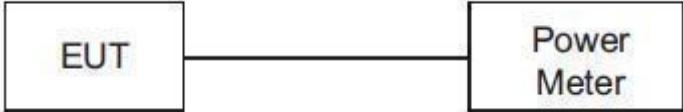


Freq.	Read	Factor	Level	Limit	Over	Remark	Pol/Phase
	Level			Line			
	dBuV	dBuV	dBuV	dBuV	dBuV	dBuV	
1	0.29	21.87	9.39	31.36	50.52	-19.16	Average Neutral
2	0.29	27.00	9.39	36.49	60.52	-24.03	QP Neutral
3	0.61	22.76	9.60	32.57	46.00	-13.43	Average Neutral
4	0.61	28.36	9.60	38.17	56.00	-17.83	QP Neutral
5	0.79	21.69	9.60	31.53	46.00	-14.47	Average Neutral
6	0.79	27.68	9.60	37.52	56.00	-18.48	QP Neutral
7	1.21	21.90	9.60	31.61	46.00	-14.39	Average Neutral
8	1.21	27.18	9.60	36.89	56.00	-19.11	QP Neutral
9	1.98	20.26	9.60	30.01	46.00	-15.99	Average Neutral
10	1.98	25.46	9.60	35.21	56.00	-20.79	QP Neutral
11	16.46	26.17	9.60	35.93	50.00	-14.07	Average Neutral
12	16.46	46.17	9.60	55.93	60.00	-4.07	Peak Neutral
13	16.46	36.31	9.60	46.07	60.00	-13.93	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.

5.3 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

Measurement Data
Ant 1

802.11b mode				
Test channel	Measured Average Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)	Result
Lowest	9.60	9.63	30.00	Pass
Middle	10.99	11.02	30.00	Pass
Highest	11.82	11.85	30.00	Pass
802.11g mode				
Test channel	Measured Average Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)	Result
Lowest	7.95	8.15	30.00	Pass
Middle	8.93	9.13	30.00	Pass
Highest	10.09	10.29	30.00	Pass
802.11n(HT20)mode				
Test channel	Measured Average Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)	Result
Lowest	7.09	7.31	30.00	Pass
Middle	7.94	8.16	30.00	Pass
Highest	9.09	9.31	30.00	Pass

Remark:

1. Average Output Power was for reference only
2. Average Output Power had added duty cycle factor

Ant 2

802.11b mode				
Test channel	Measured Average Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)	Result
Lowest	9.47	9.50	30.00	Pass
Middle	10.87	10.90	30.00	Pass
Highest	11.96	11.99	30.00	Pass
802.11g mode				
Test channel	Measured Average Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)	Result
Lowest	7.99	8.18	30.00	Pass
Middle	9.02	9.21	30.00	Pass
Highest	10.03	10.22	30.00	Pass
802.11n(HT20)mode				
Test channel	Measured Average Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)	Result
Lowest	6.90	6.93	30.00	Pass
Middle	7.82	7.85	30.00	Pass
Highest	9.04	9.07	30.00	Pass

Remark:

1. Average Output Power was for reference only
2. Average Output Power had added duty cycle factor

Ant 1+Ant 2

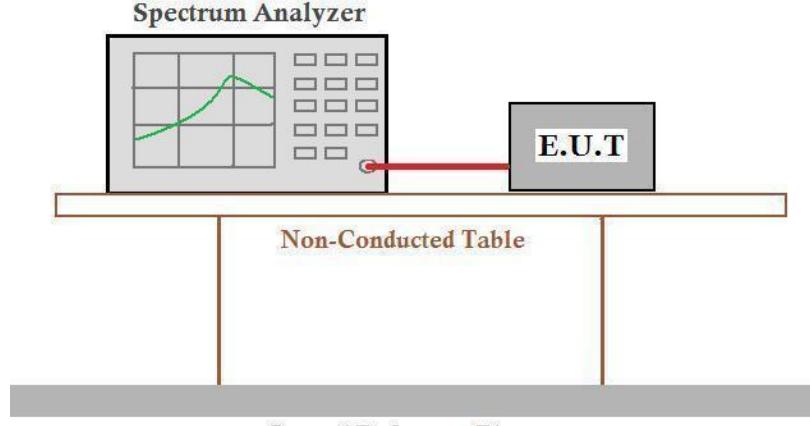
802.11n(HT20)mode				
Test channel	Measured Average Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)	Result
Lowest	10.01	10.23	30.00	Pass
Middle	10.89	11.11	30.00	Pass
Highest	12.08	12.30	30.00	Pass

Remark:

1. Average Output Power was for reference only
2. Average Output Power had added duty cycle factor
3. The EUT supports MIMO and transmit signals are correlated with each other, then

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] \text{ dBi} = 5.41 \text{ dBi} < 6 \text{ dBi}$

5.4 6dB Occupy Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10: 2013
Test Setup:	<p style="text-align: center;">Spectrum Analyzer</p>  <p style="text-align: center;">Non-Conducted Table</p> <p style="text-align: center;">Ground Reference Plane</p> <p>Offset=cable loss+ attenuation factor</p>
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

Measurement Data

Ant 1

802.11b mode				
Test channel	6dB Occupy Bandwidth (MHz)	99% OBW [MHz]	Limit (kHz)	Result
Lowest	11.160	15.465	≥500	Pass
Middle	12.560	15.385	≥500	Pass
Highest	11.320	15.305	≥500	Pass
802.11g mode				
Test channel	6dB Occupy Bandwidth (MHz)	99% OBW [MHz]	Limit (kHz)	Result
Lowest	17.480	17.183	≥500	Pass
Middle	13.880	16.663	≥500	Pass
Highest	16.760	17.782	≥500	Pass
802.11n(HT20) mode				
Test channel	6dB Occupy Bandwidth (MHz)	99% OBW [MHz]	Limit (kHz)	Result
Lowest	17.720	17.982	≥500	Pass
Middle	17.760	18.102	≥500	Pass
Highest	18.320	18.262	≥500	Pass

Remark:

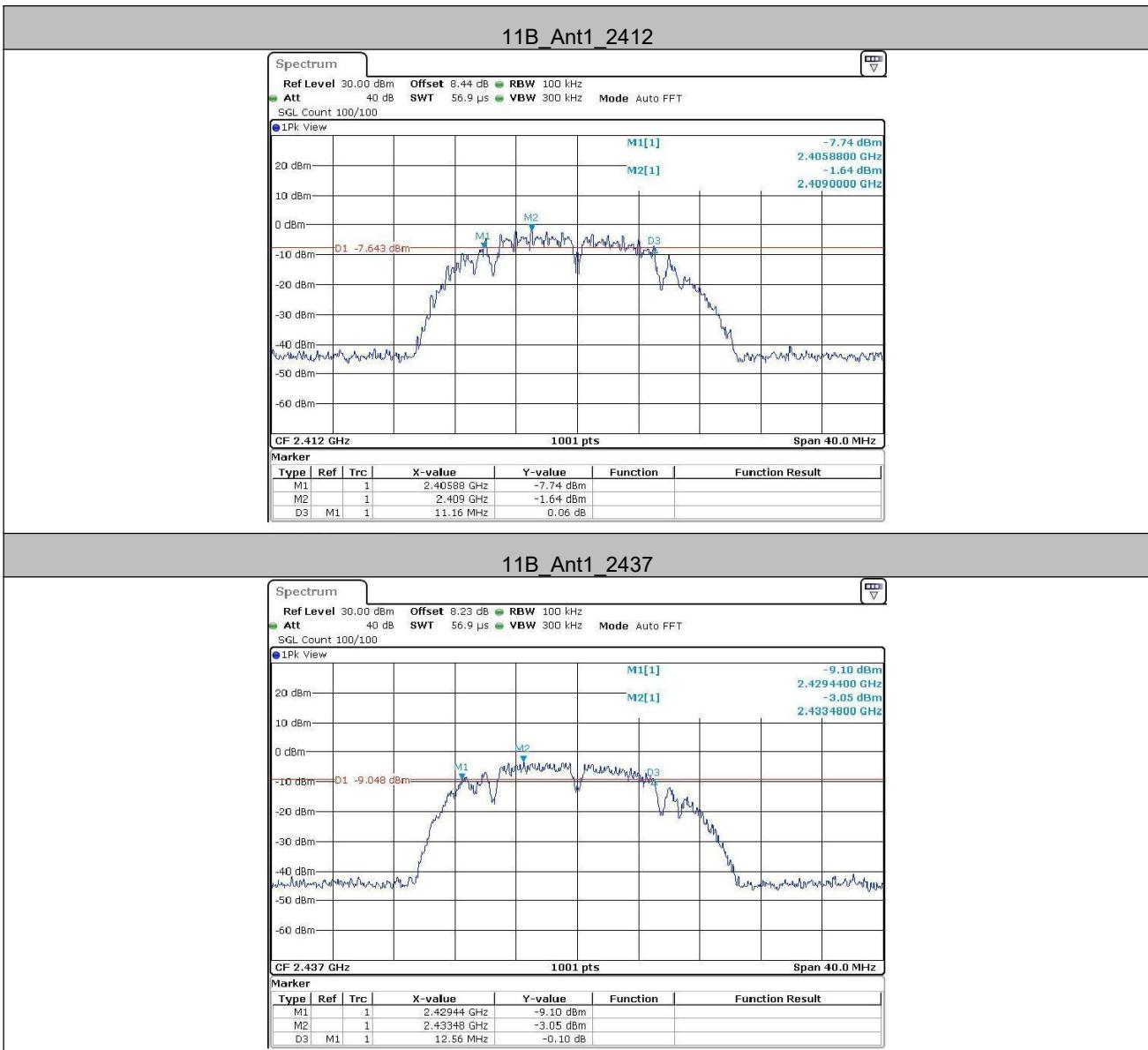
1. 99% OBW was for reference only

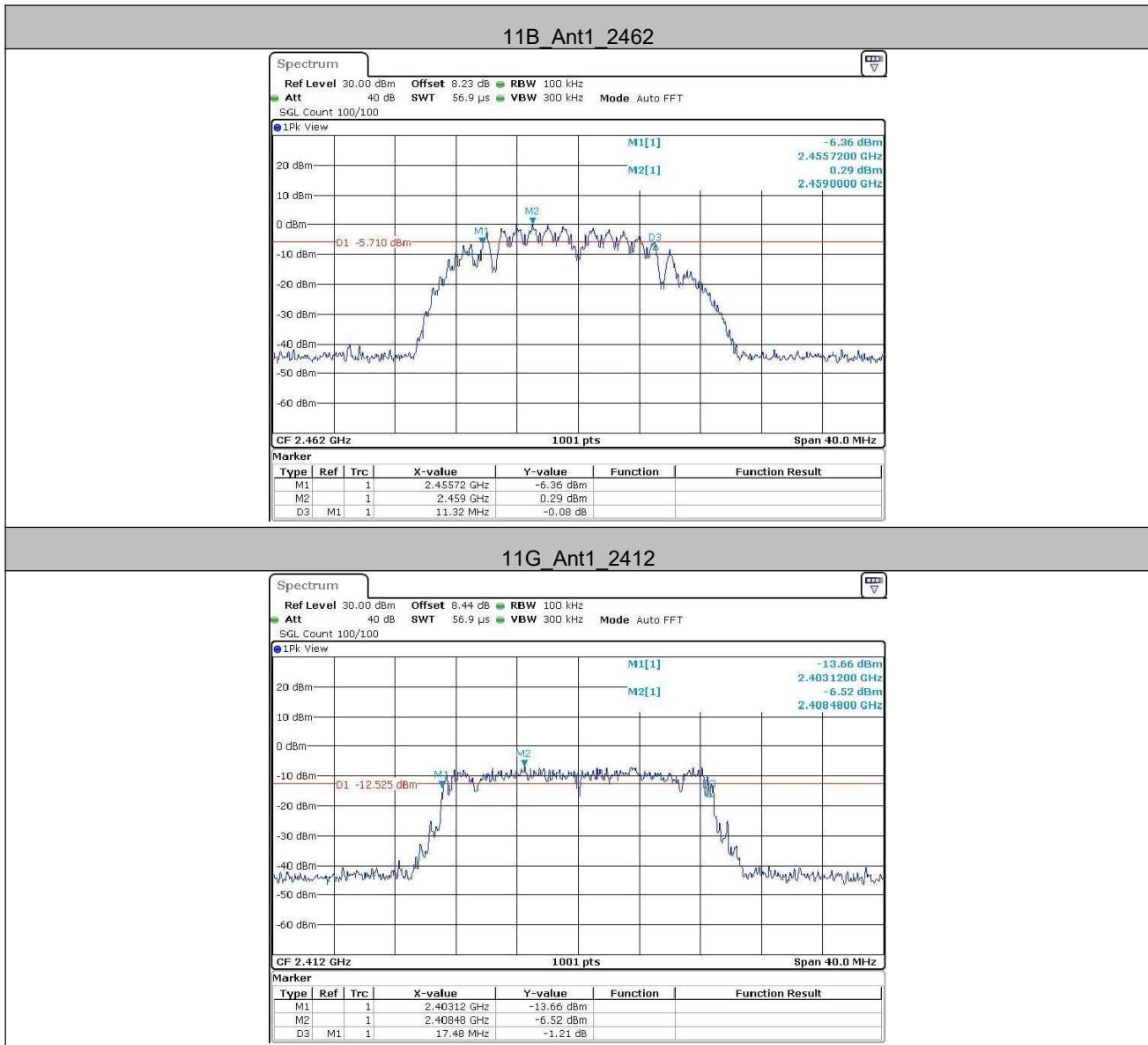
Ant 2

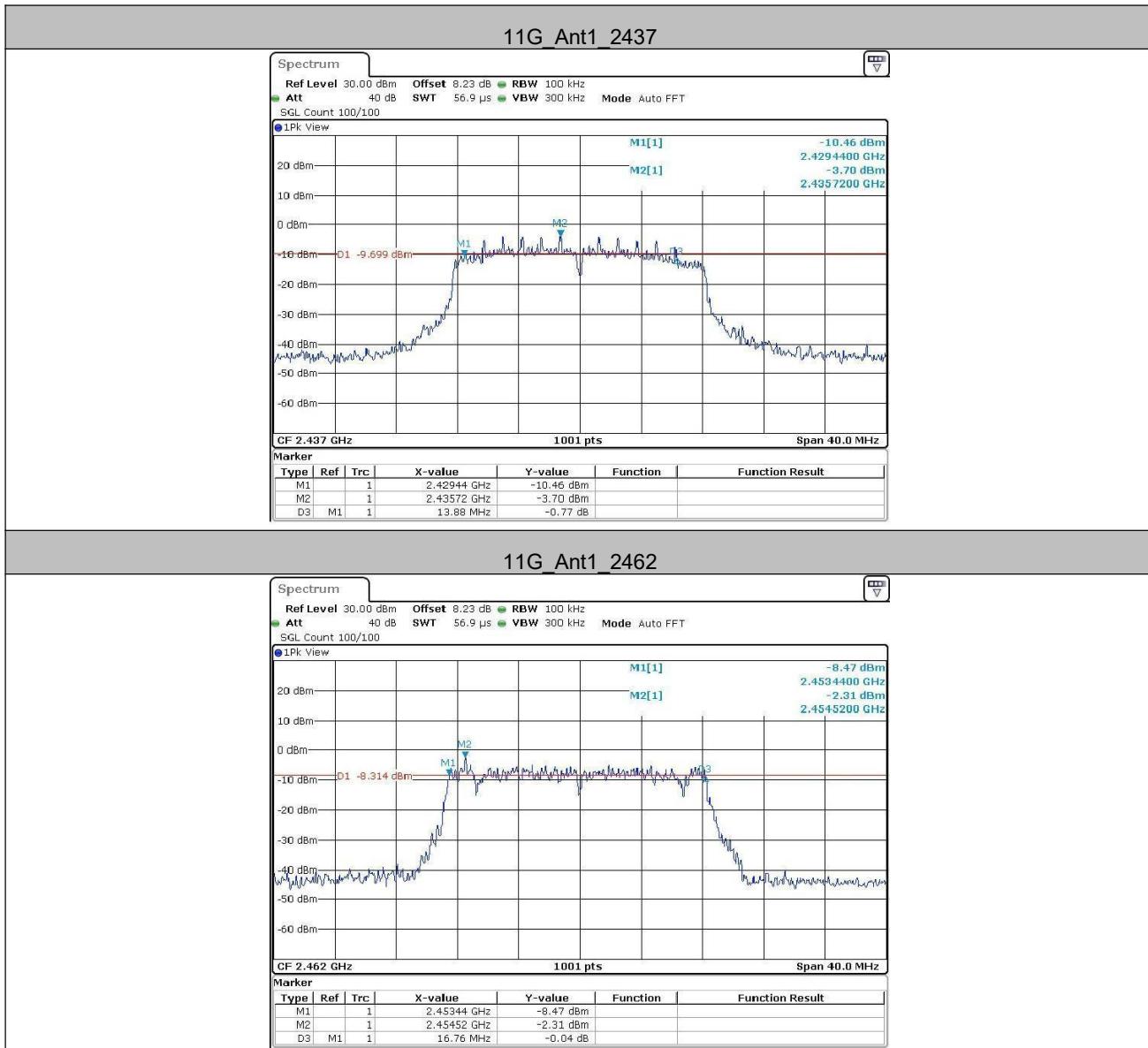
802.11b mode				
Test channel	6dB Occupy Bandwidth (MHz)	99% OBW [MHz]	Limit (kHz)	Result
Lowest	11.320	15.544	≥500	Pass
Middle	11.360	15.345	≥500	Pass
Highest	10.640	15.305	≥500	Pass
802.11g mode				
Test channel	6dB Occupy Bandwidth (MHz)	99% OBW [MHz]	Limit (kHz)	Result
Lowest	16.400	17.782	≥500	Pass
Middle	15.800	17.622	≥500	Pass
Highest	16.600	16.823	≥500	Pass
802.11n(HT20) mode				
Test channel	6dB Occupy Bandwidth (MHz)	99% OBW [MHz]	Limit (kHz)	Result
Lowest	18.120	18.581	≥500	Pass
Middle	17.640	17.902	≥500	Pass
Highest	17.720	17.902	≥500	Pass

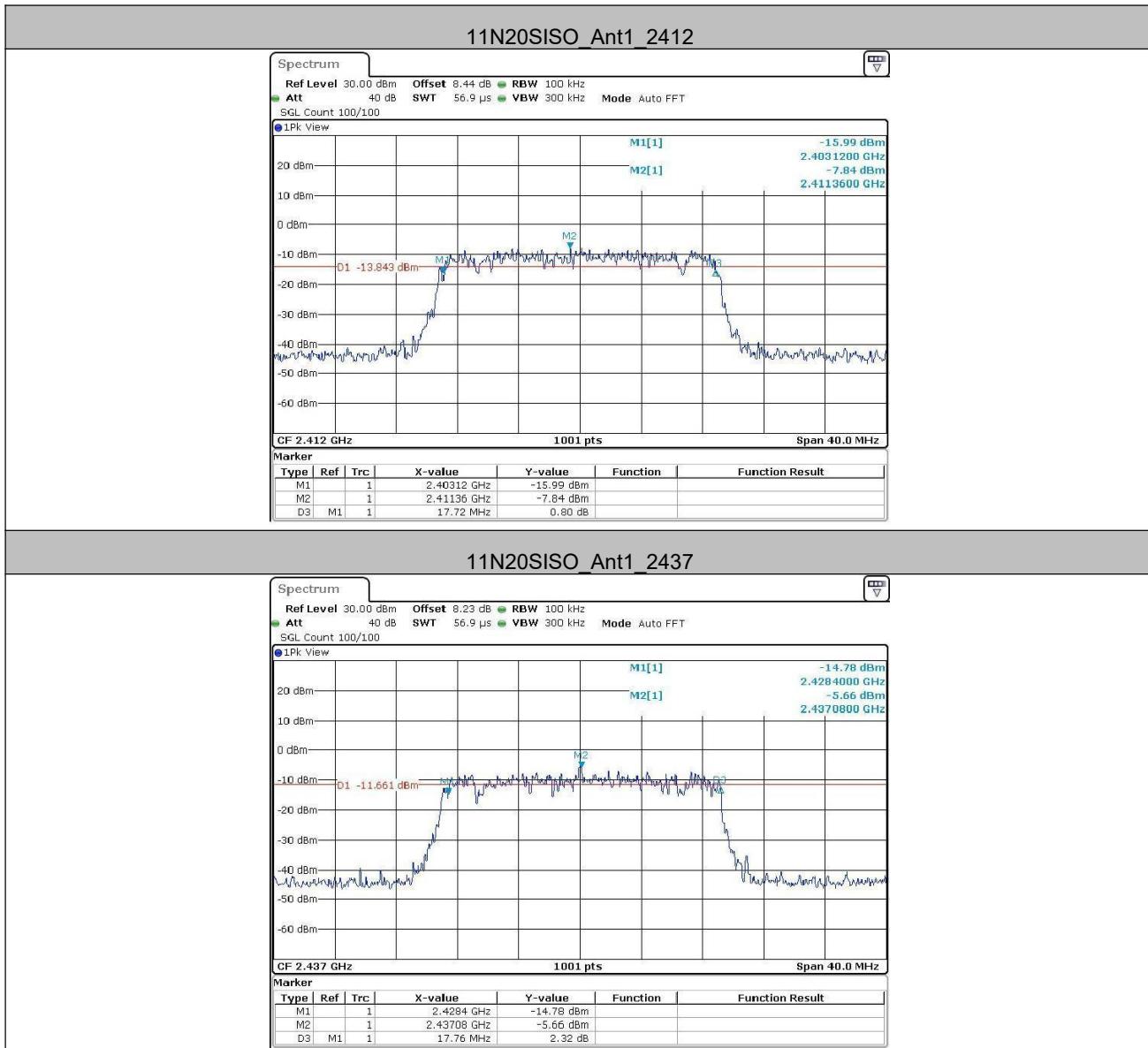
Remark:

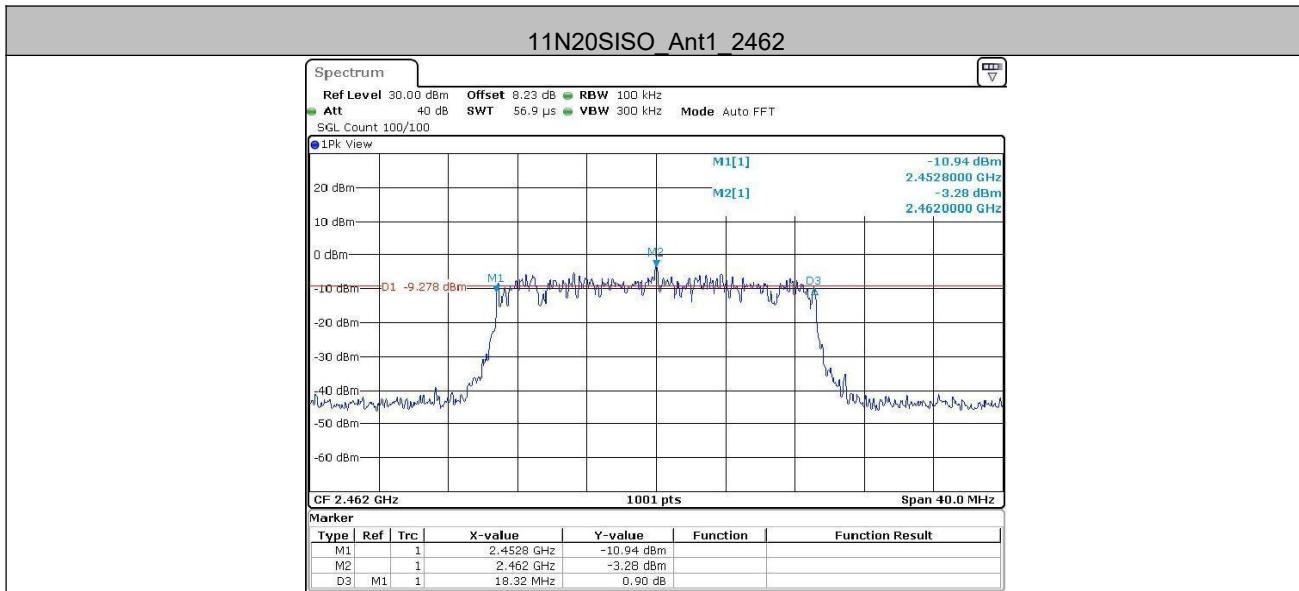
1. 99% OBW was for reference only

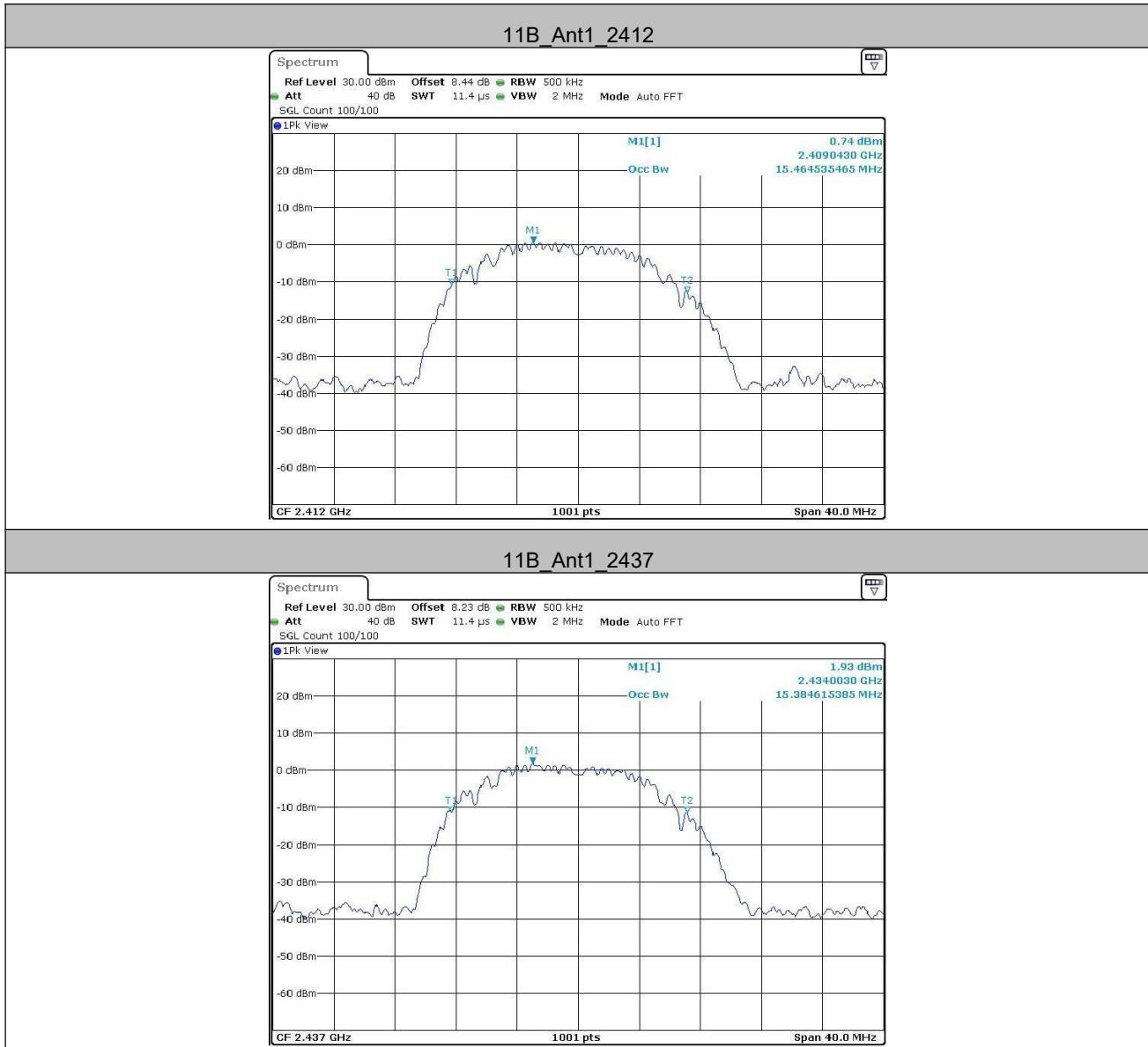
**Ant1
Test Result**


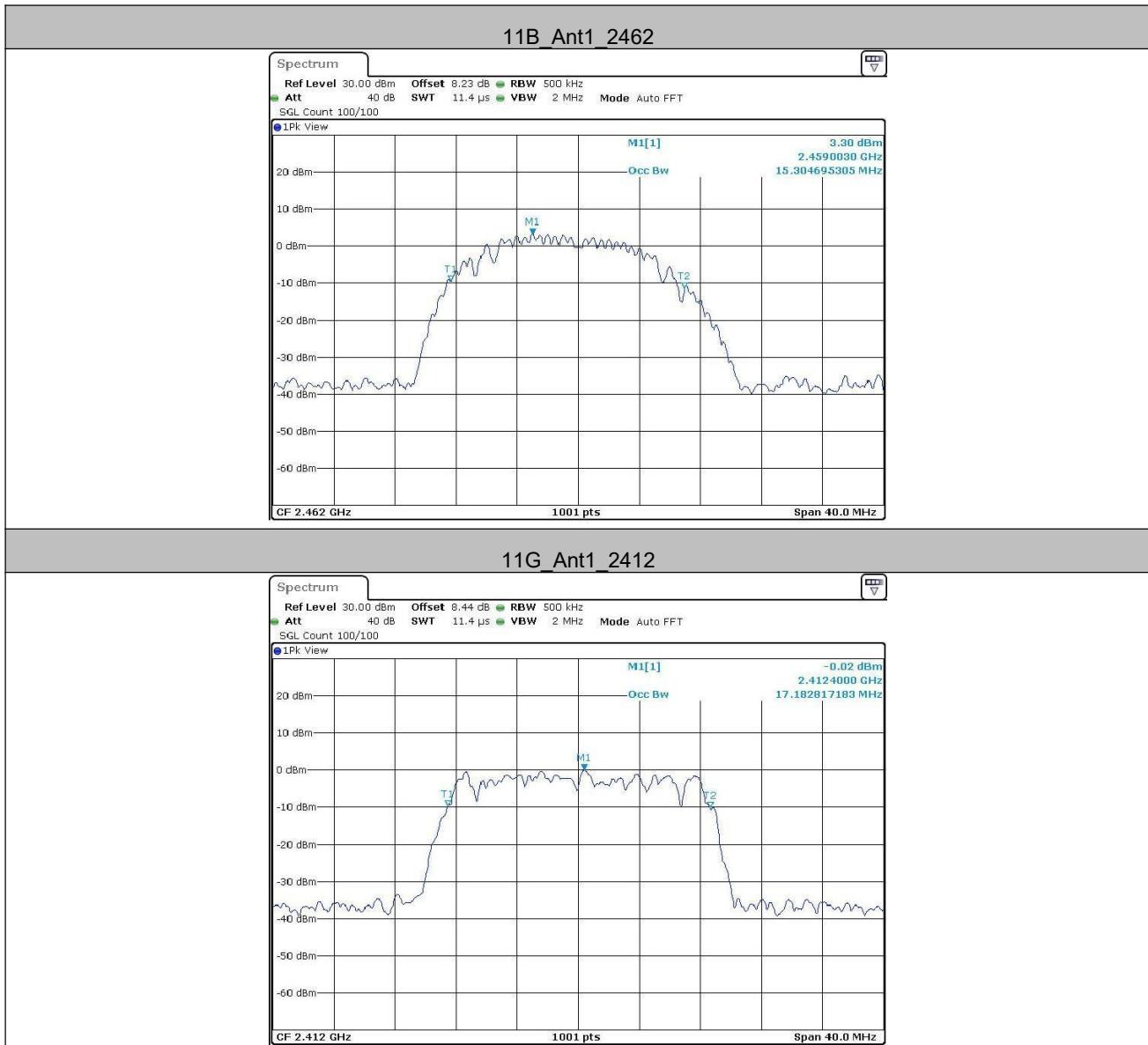


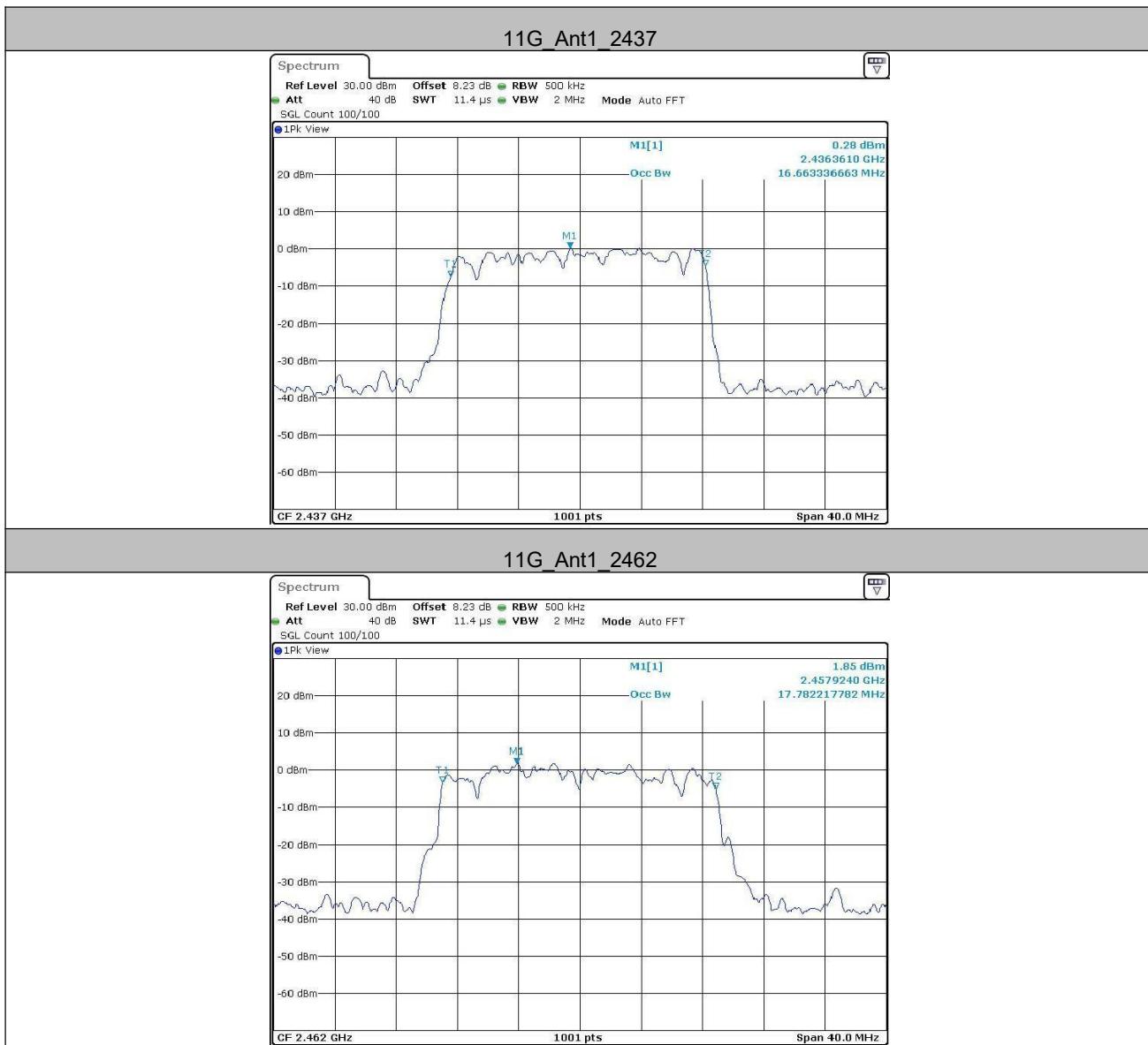


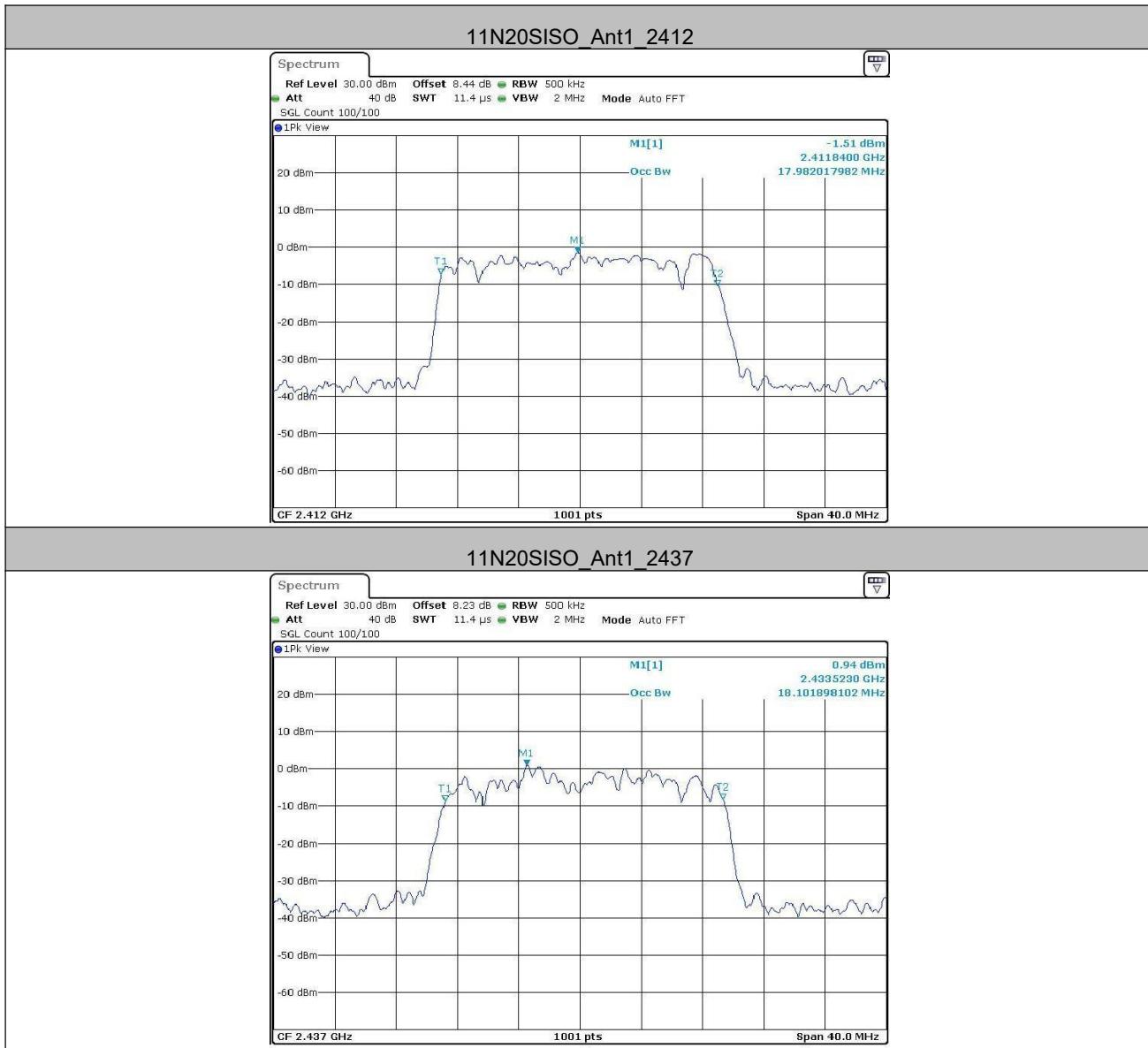


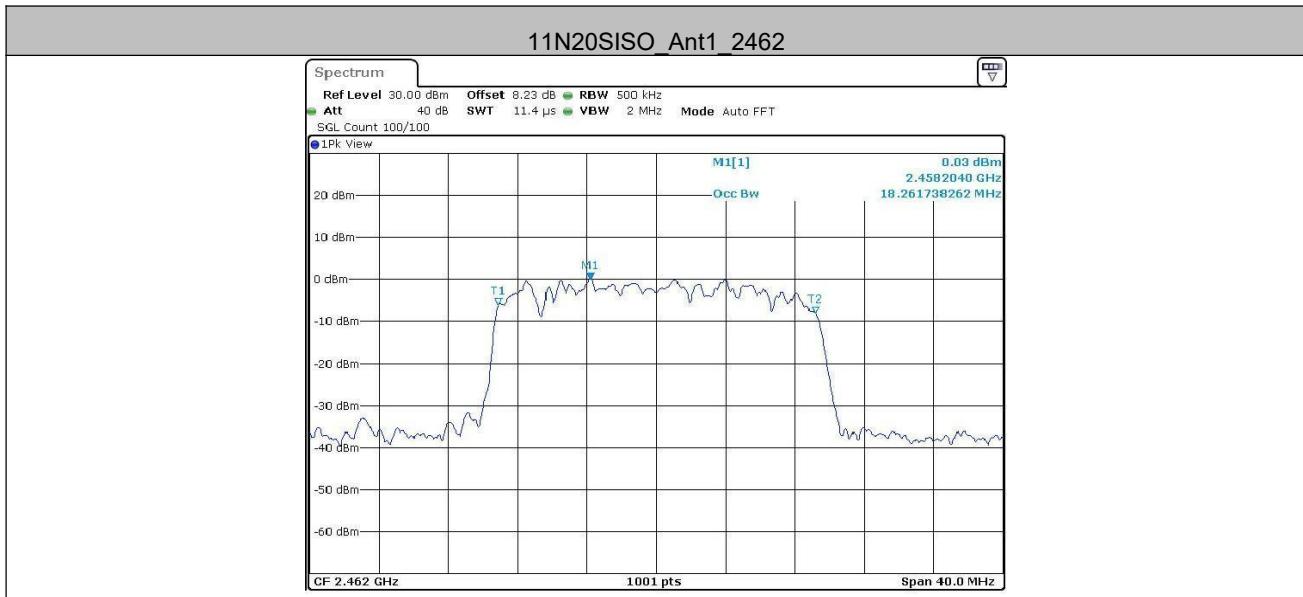


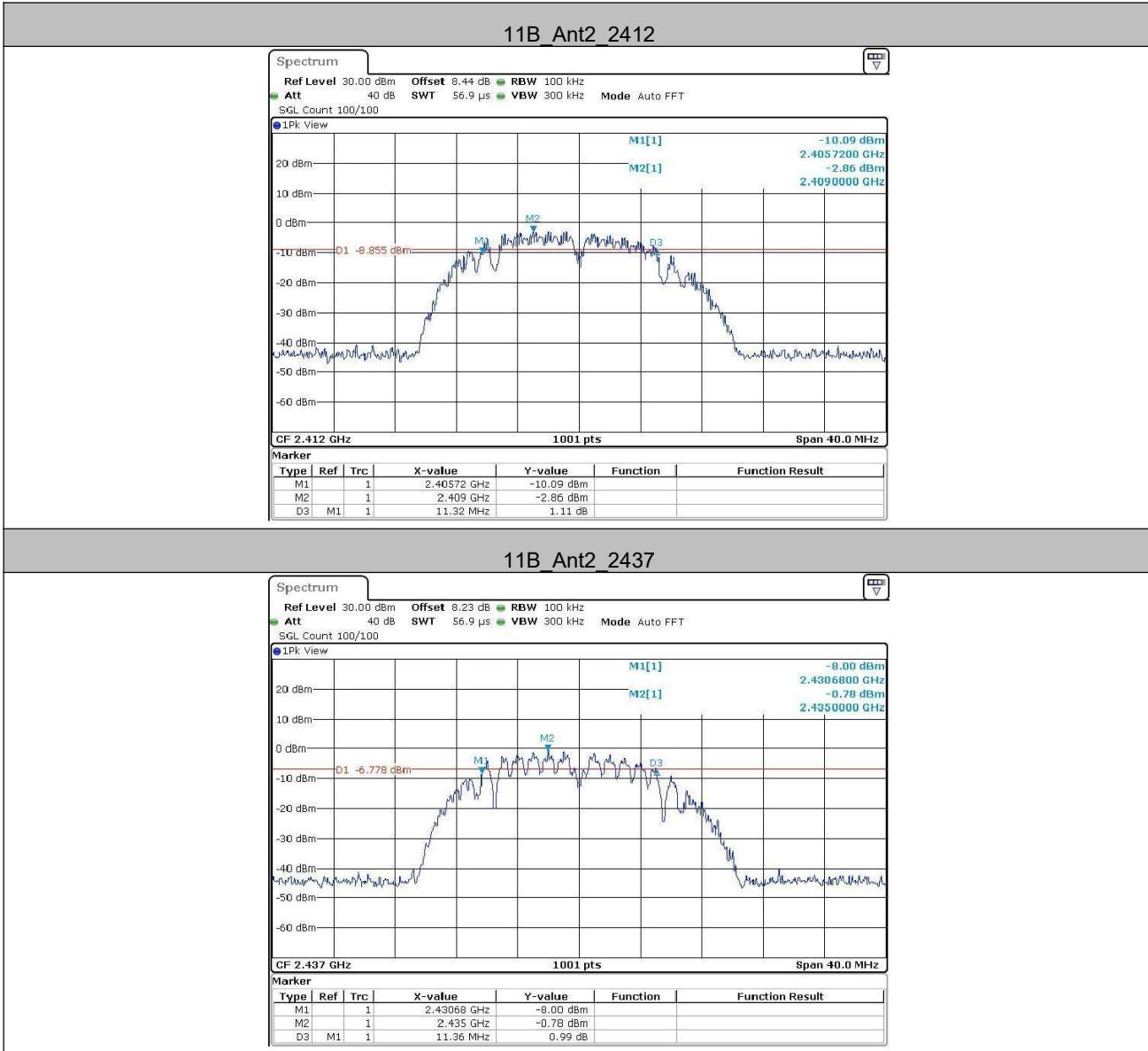
**Occupied Channel Bandwidth
Test Graphs**


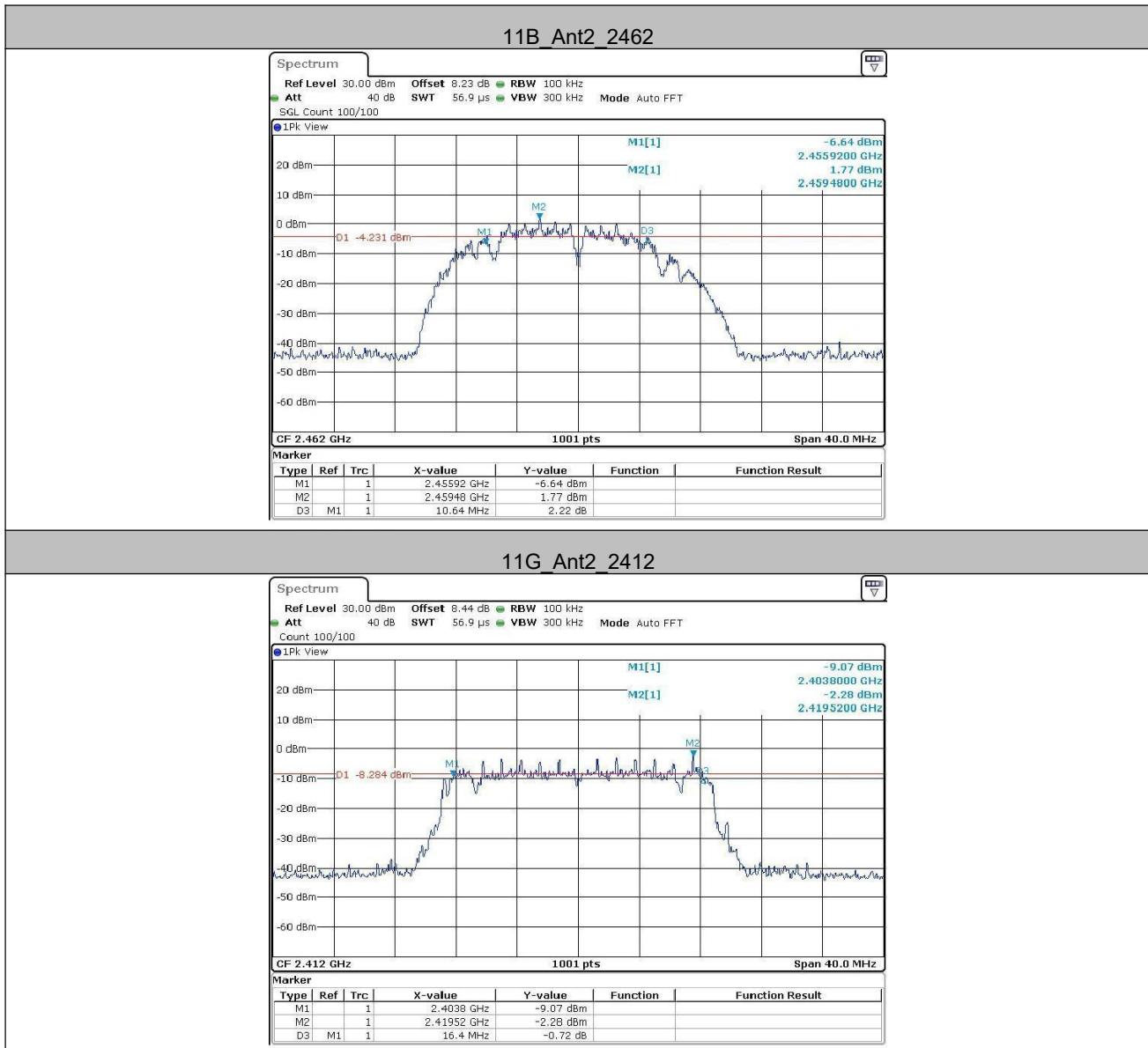


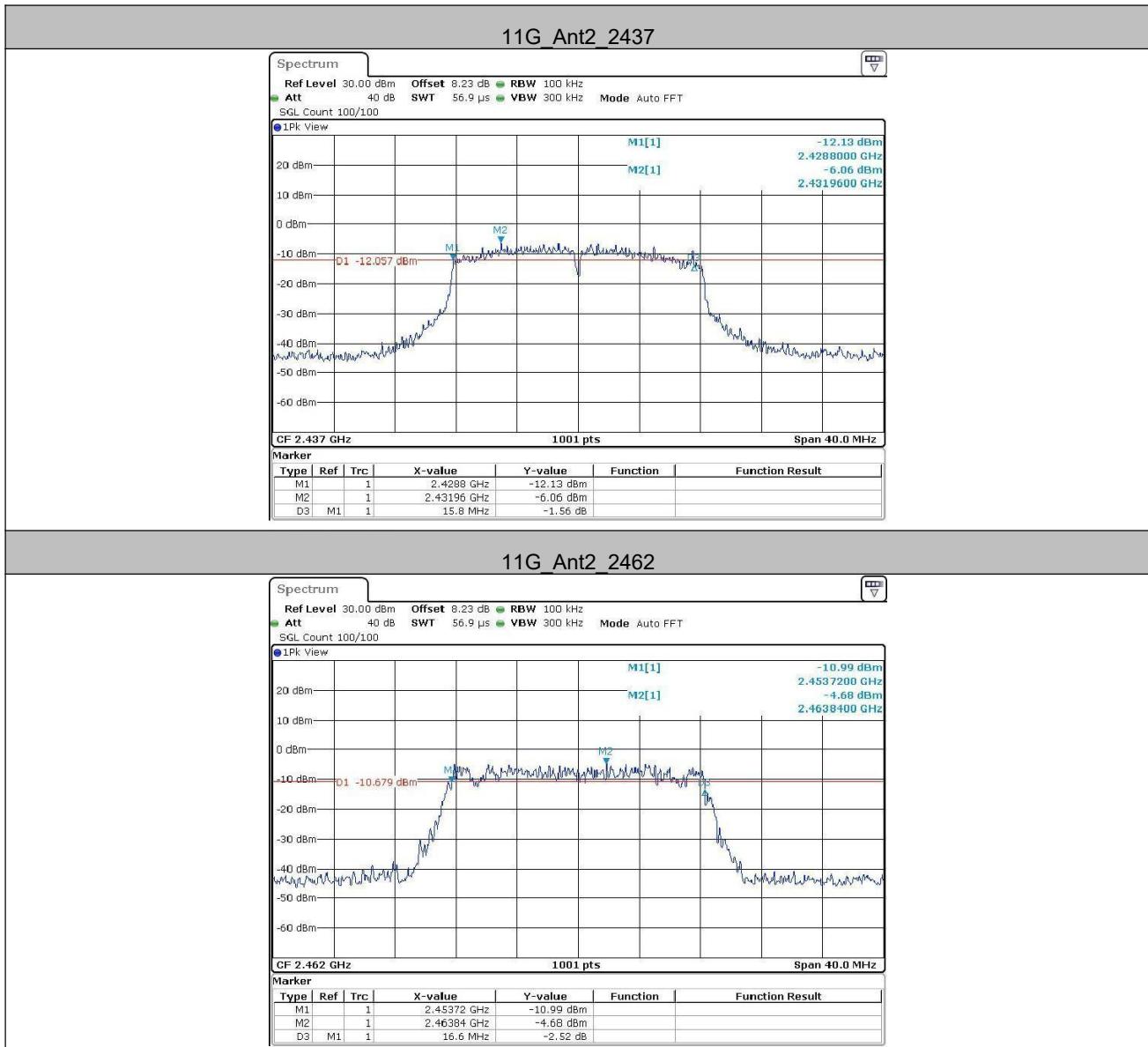


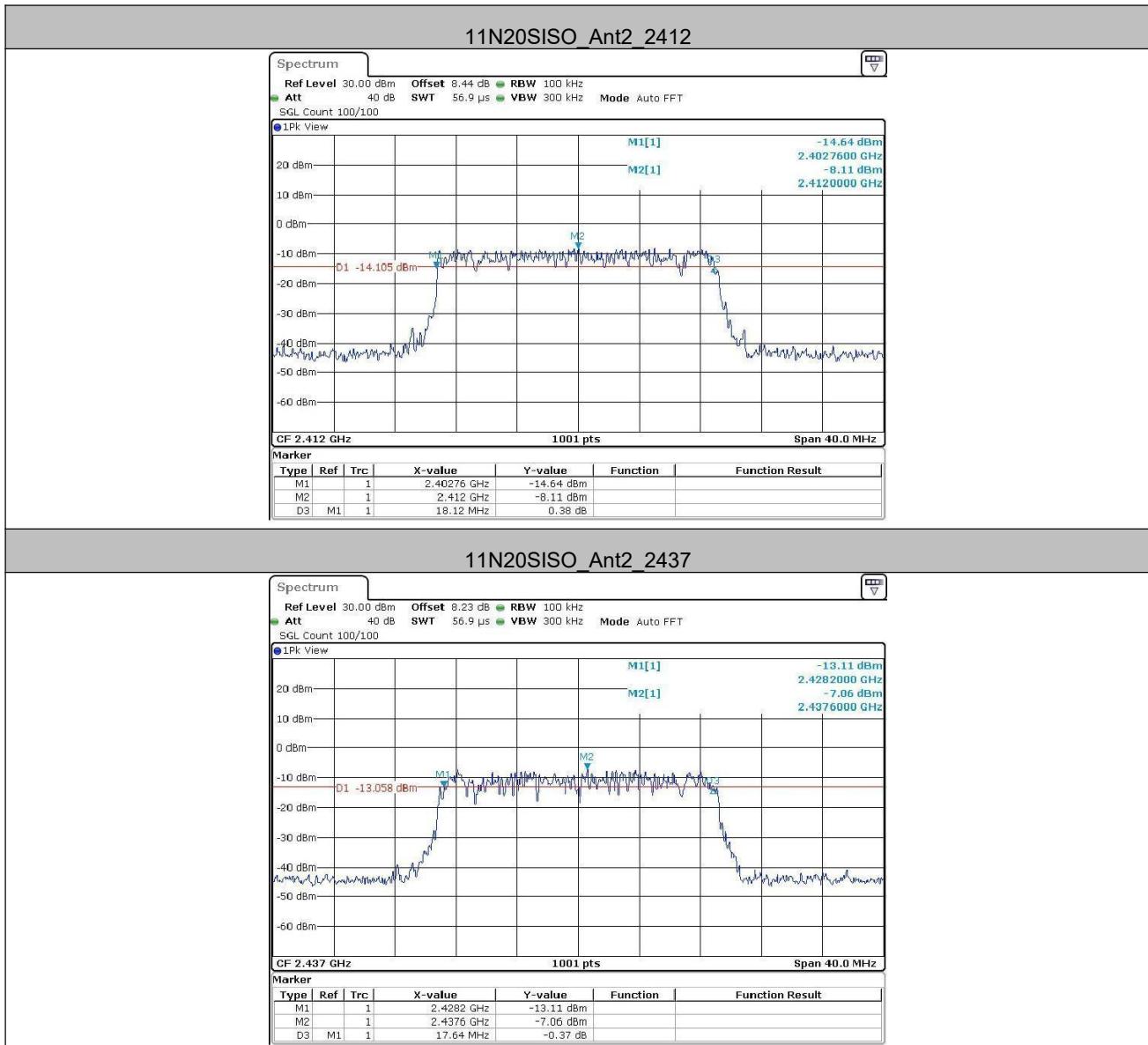


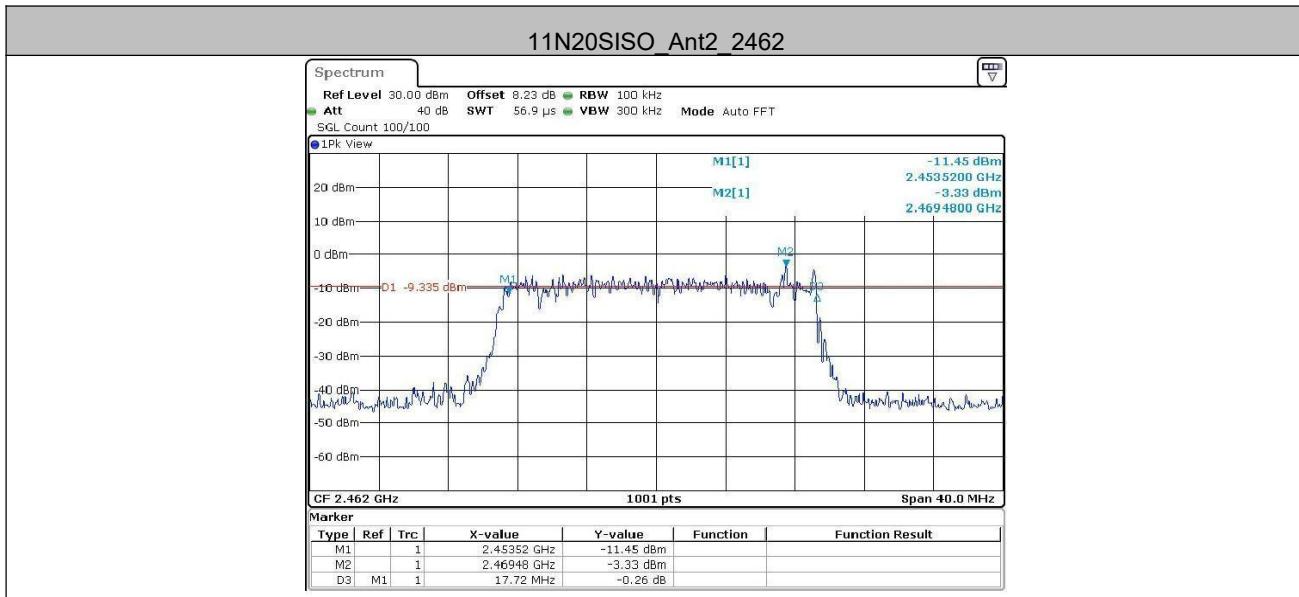


Ant2










**Occupied Channel Bandwidth
Test Graphs**
