

FCC - TEST REPORT

Report Number : **68.930.20.0019.01** Date of Issue: **August 16, 2020**

Model : **GBF-1717-W**

Product Type : Body Fat Analyzer

Applicant : Zhongshan Transtek Electronics Co., Ltd

Address : No.23 Jin'an Road, Minzhong, 528441 Zhongshan, Guangdong,

PEOPLE'S REPUBLIC OF CHINA

Manufacturer : Zhongshan Transtek Electronics Co., Ltd

Address : No.23 Jin'an Road, Minzhong, 528441 Zhongshan, Guangdong,

PEOPLE'S REPUBLIC OF CHINA

Factory

: Zhongshan Transtek Electronics Co., Ltd

Address : No.23 Jin'an Road, Minzhong, 528441 Zhongshan, Guangdong,

PEOPLE'S REPUBLIC OF CHINA

Test Result : Positive Negative

Total pages including Appendices : **82**

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13, Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2, Nanshan District,
Shenzhen City, 518052,
P. R. China

FCC Registration No.: 502708

Telephone: 86 755 8828 6998
Fax: 86 755 8828 5299

3 Description of the Equipment Under Test

Product:	Body Fat Analyzer
Model no.:	GBF-1717-W
Brand Name	N/A
FCC ID:	2AOJNGBF-1717-W
IC Number:	N/A
Options and accessories:	N/A
Input Rating:	DC 6V (4*1.5 AAA battery)
RF Transmission Frequency:	2412-2462MHz
No. of Operated Channel:	11
Modulation:	DSSS, OFDM
Antenna Type:	Internal Antenna
Antenna Gain:	1.5dBi
Description of the EUT:	The Equipment Under Test (EUT) is a Body Fat Analyzer which support 2.4G Wi-Fi, 5G Wi-Fi and BLE function. The 2.4G Wi-Fi, BLE operated at 2402MHz to 2480MHz, The 5G Wi-Fi operation 5150MHz to 5250MHz, 5250MHz to 5350MHz and 5725MHz to 5825MHz. Only 2.4G Wi-Fi test data include in this report.

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2019 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB 558074 D01 DTS Measurement Guidance v05 DTS Measurement Guidance and ANSI C63.10 (2013).

5 Summary of Test Results

Technical Requirements						
FCC Part 15 Subpart C						
Test Condition	Pages	Test Site	Test Result			
			Pass	Fail	N/A	
§15.207	Conducted emission AC power port	---	---	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
§15.247 (b) (1)	Conducted peak output power	10	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.247(a)(1)	20dB bandwidth	---	---	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
§15.247(a)(1)	Carrier frequency separation	---	---	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
§15.247(a)(1)(iii)	Number of hopping frequencies	---	---	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
§15.247(a)(1)(iii)	Dwell Time	---	---	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
§15.247(a)(2)	6dB bandwidth and 99% Occupied Bandwidth	12	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.247(e)	Power spectral density	17	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.247(d)	Spurious RF conducted emissions	22	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.247(d)	Band edge	37	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.247(d) & §15.209	Spurious radiated emissions for transmitter	41	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.203	Antenna requirement	See note 2		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note 1: N/A=Not Applicable.

Note 2: The EUT uses an internal antenna, which gain is 1.5dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2AOJNGBF-1717-W, complies with Section 15.209, 15.247 of the FCC Part 15, Subpart C rules.

The Equipment Under Test (EUT) is a Body Fat Analyzer which support 2.4G Wi-Fi, 5G Wi-Fi and BLE function. The 2.4G Wi-Fi and BLE operated at 2400MHz to 2483.5MHz, The 5G Wi-Fi operation 5150MHz to 5250MHz, 5250MHz to 5350MHz and 5725MHz to 5825MHz.

SUMMARY:

All tests according to the regulations cited on page 5 were

n - Performed

o - **Not** Performed

The Equipment Under Test

n - **Fulfills** the general approval requirements.

o - **Does not** fulfill the general approval requirements.

Sample Received Date: June 30, 2020

Testing Start Date: July 26, 2020

Testing End Date: July 30, 2020

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Reviewed by:



John Zhi
Section Manager

Prepared by:



Grace Gao
Project Engineer

Tested by:

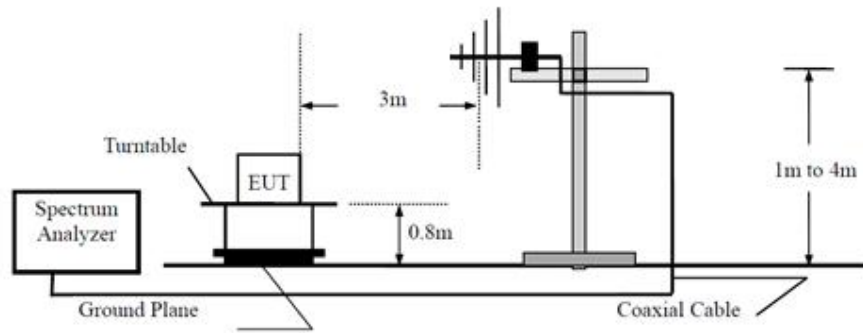


Louise Liu
Test Engineer

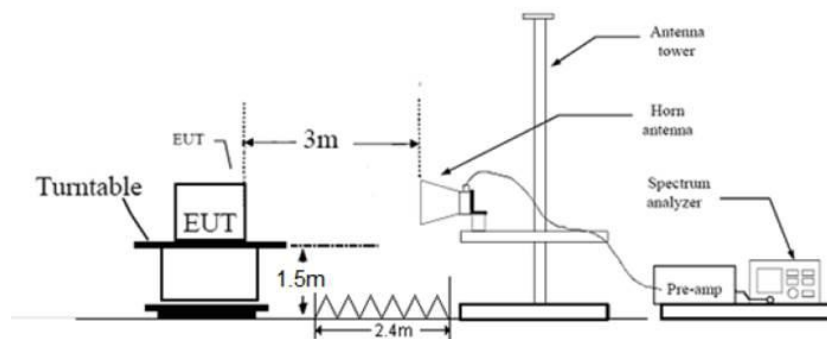
7 Test Setups

7.1 Radiated test setups

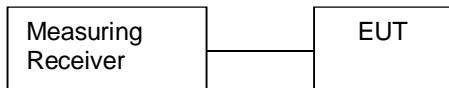
Below 1GHz



Above 1GHz



7.2 Conducted RF test setups



8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Notebook	Lenovo	E470c	

Test software: RF test tool

Test Channel:	L	M	H
11B	2412	2437	2462
11G	2412	2437	2462
11N_20	2412	2437	2462
11N_40	2422	2437	2452

9 Technical Requirement

9.1 Conducted peak output power

Test Method

1. Connect the power meter to the EUT
 - a) The EUT is configured to transmit continuously, or to transmit with a constant duty factor.
 - b) At all times the EUT is transmitting at its maximum power control level.
 - c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Adjust the measurement in dBm by adding $10\log(1/x)$, where x is the duty cycle to the measurement result.

Limits

According to §15.247 (b) (1), conducted peak output power limit as below:

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤1	≤30

Test result as below table

802.11b modulation Test Result

Frequency (MHz)	Conducted Peak Output Power (dBm)	Limit (dBm)	Result
Low channel 2412MHz	17.0	30	Pass
Middle channel 2437MHz	16.8	30	Pass
High channel 2462MHz	16.5	30	Pass

802.11g modulation Test Result

Frequency (MHz)	Conducted Peak Output Power (dBm)	Limit (dBm)	Result
Low channel 2412MHz	15.1	30	Pass
Middle channel 2437MHz	15.1	30	Pass
High channel 2462MHz	14.5	30	Pass

802.11n20 modulation Test Result

Frequency (MHz)	Conducted Peak Output Power (dBm)	Limit (dBm)	Result
Low channel 2412MHz	14.0	30	Pass
Middle channel 2437MHz	14.1	30	Pass
High channel 2462MHz	13.7	30	Pass

802.11n40 modulation Test Result

Frequency (MHz)	Conducted Peak Output Power (dBm)	Limit (dBm)	Result
Low channel 2422MHz	13.1	30	Pass
Middle channel 2437MHz	13.0	30	Pass
High channel 2452MHz	13.2	30	Pass

9.2 6dB bandwidth and 99% Occupied Bandwidth

Test Method for 6 dB Bandwidth

1. Use the following spectrum analyzer settings:
RBW=100K, VBW \geq 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, may be employed using the X dB bandwidth mode with X set to 6 dB, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be \geq 6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

802.11b modulation Test Result

Frequency (MHz)	6dB bandwidth (MHz)	99 bandwidth (MHz)	Limit (MHz)	Result
Low channel 2412MHz	9.600	14.346	/	Pass
Middle channel 2437MHz	10.080	14.226	/	Pass
High channel 2462MHz	9.600	14.226	/	Pass

802.11g modulation Test Result

Frequency (MHz)	6dB bandwidth (MHz)	99 bandwidth (MHz)	Limit (MHz)	Result
Low channel 2412MHz	16.360	17.103	/	Pass
Middle channel 2437MHz	16.400	17.143	/	Pass
High channel 2462MHz	16.400	17.143	/	Pass

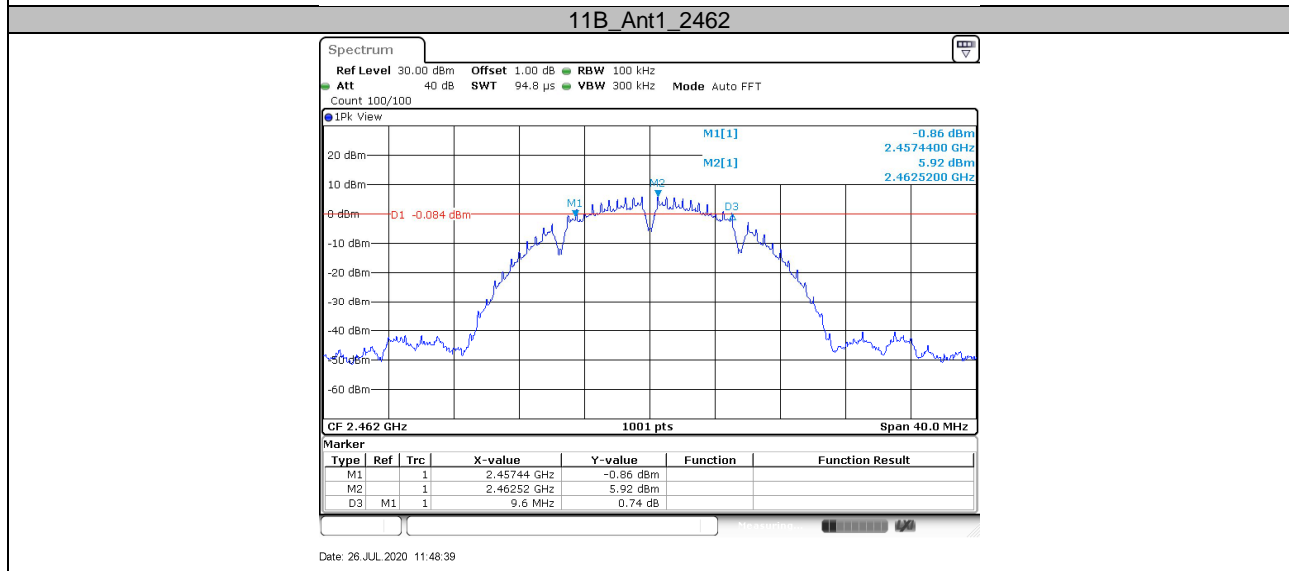
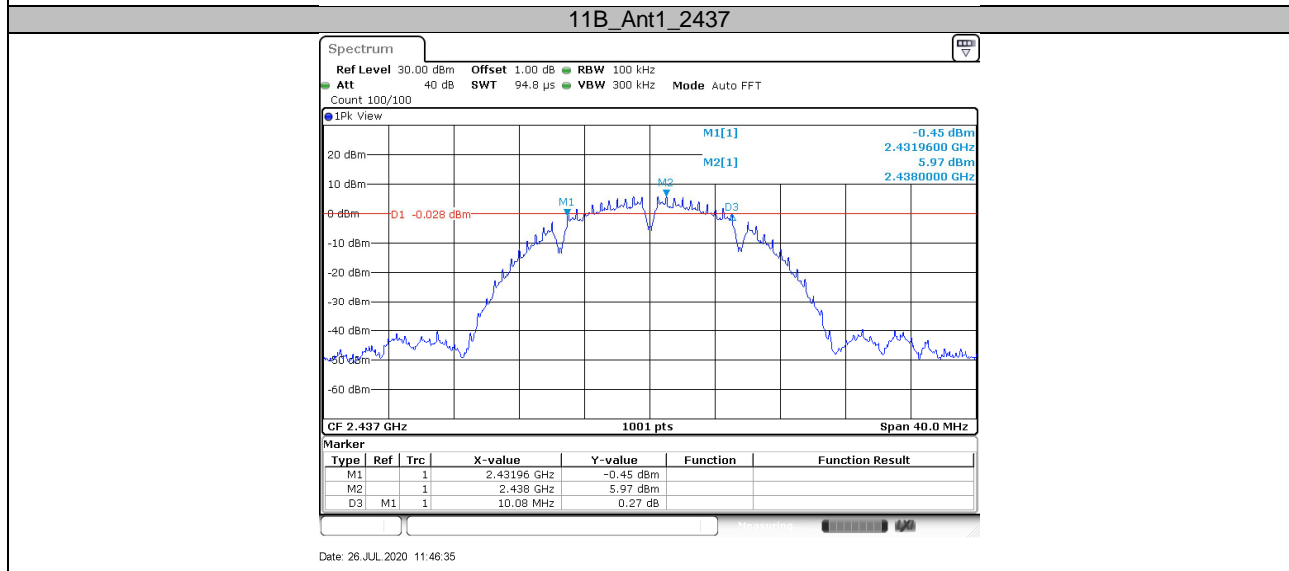
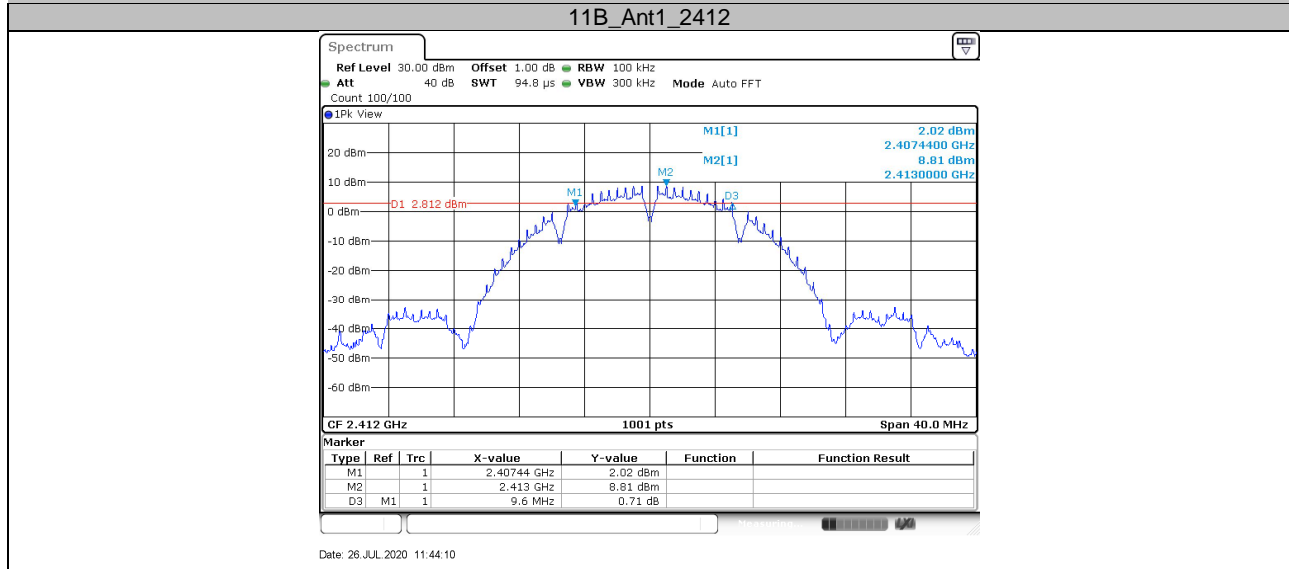
802.11n-HT20 modulation Test Result

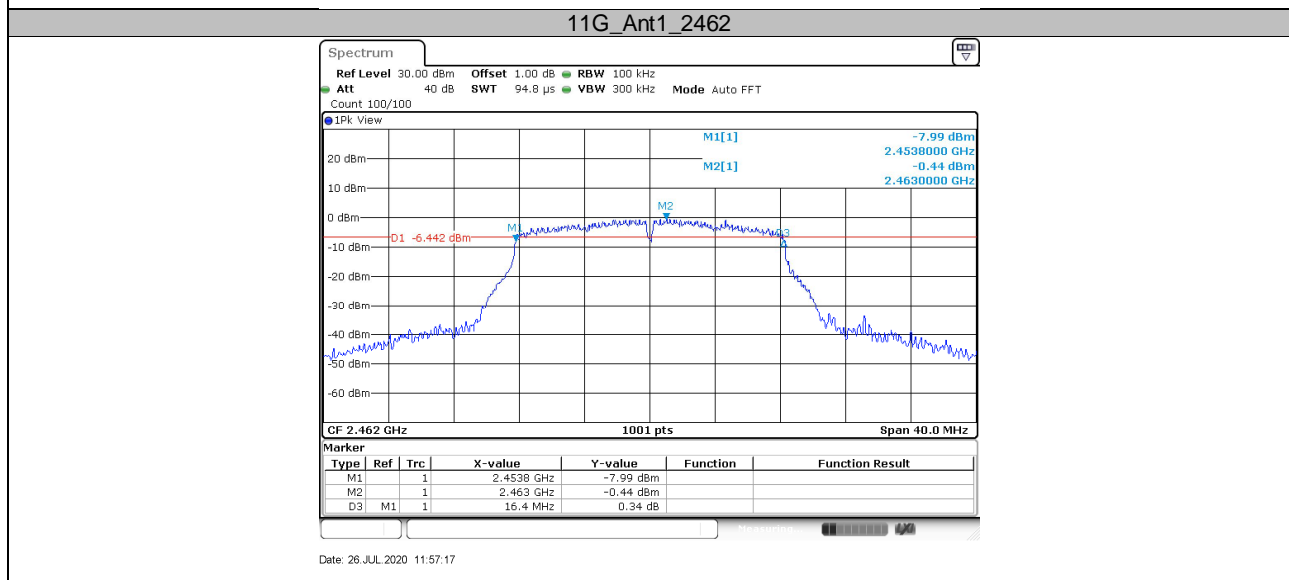
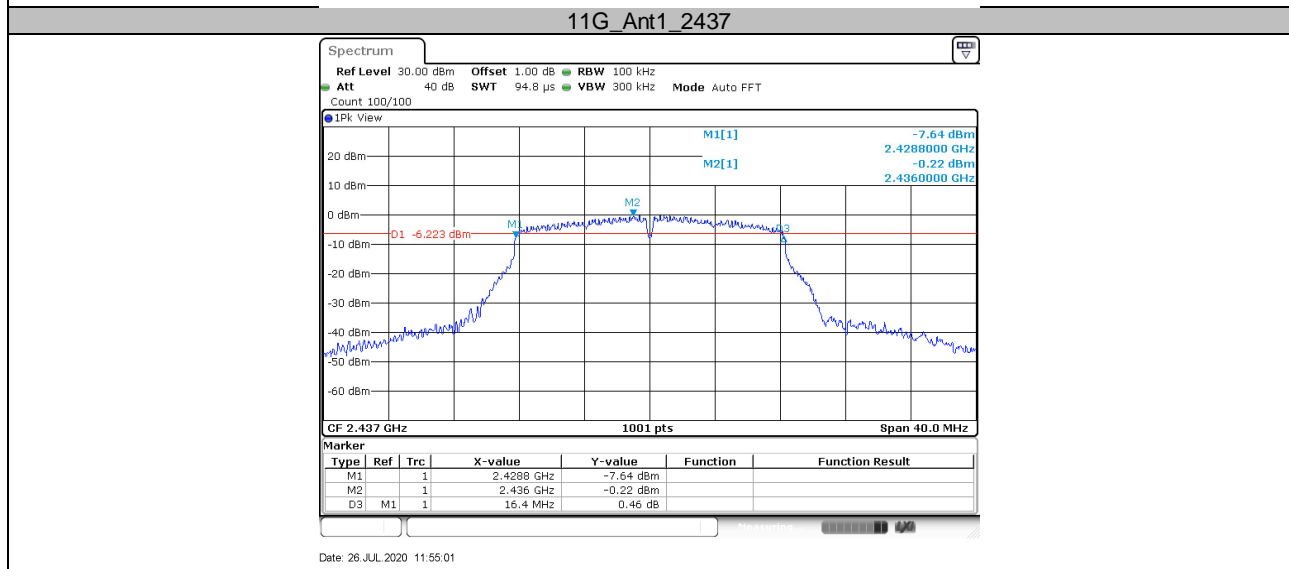
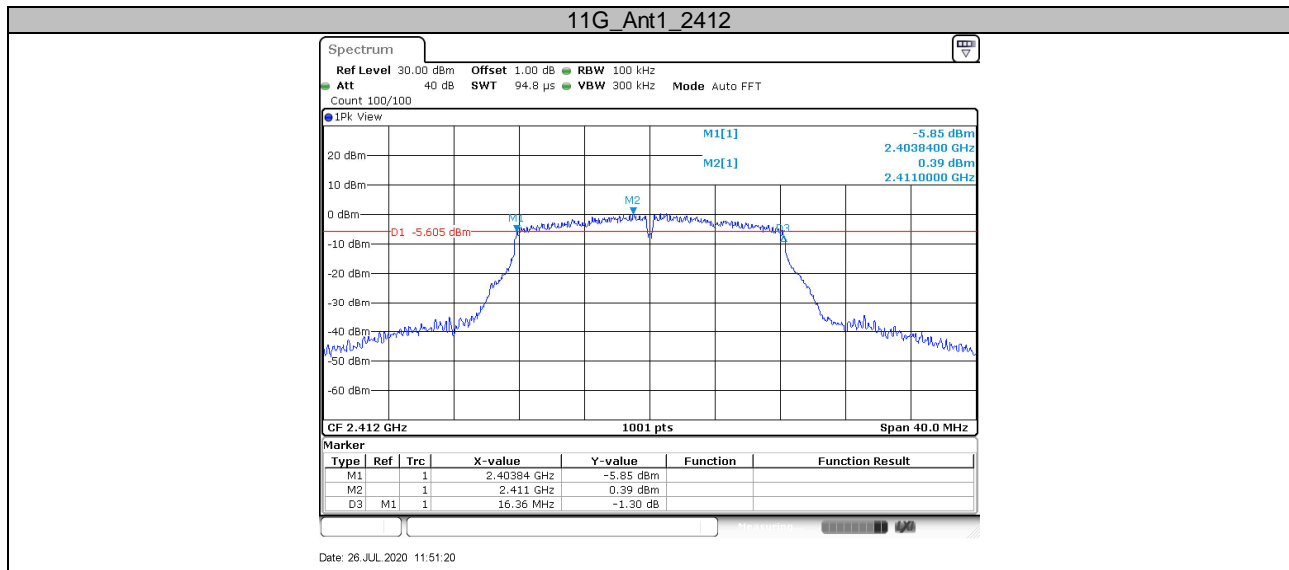
Frequency (MHz)	6dB bandwidth (MHz)	99 bandwidth (MHz)	Limit (MHz)	Result
Low channel 2412MHz	17.600	17.982	/	Pass
Middle channel 2437MHz	17.640	18.062	/	Pass
High channel 2462MHz	17.640	17.982	/	Pass

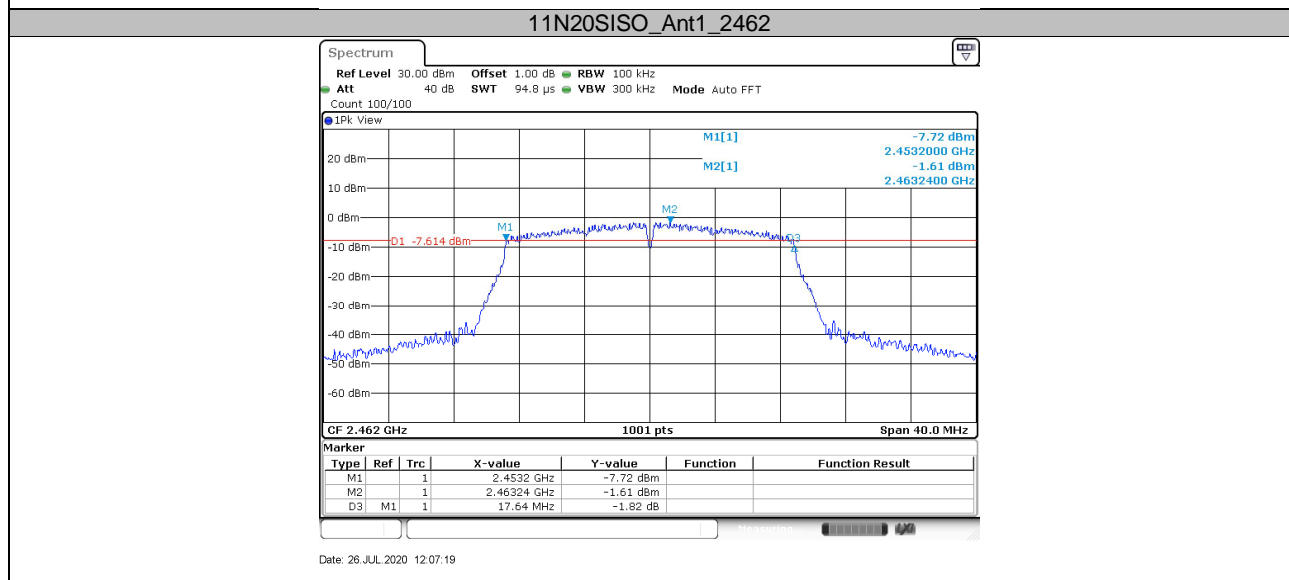
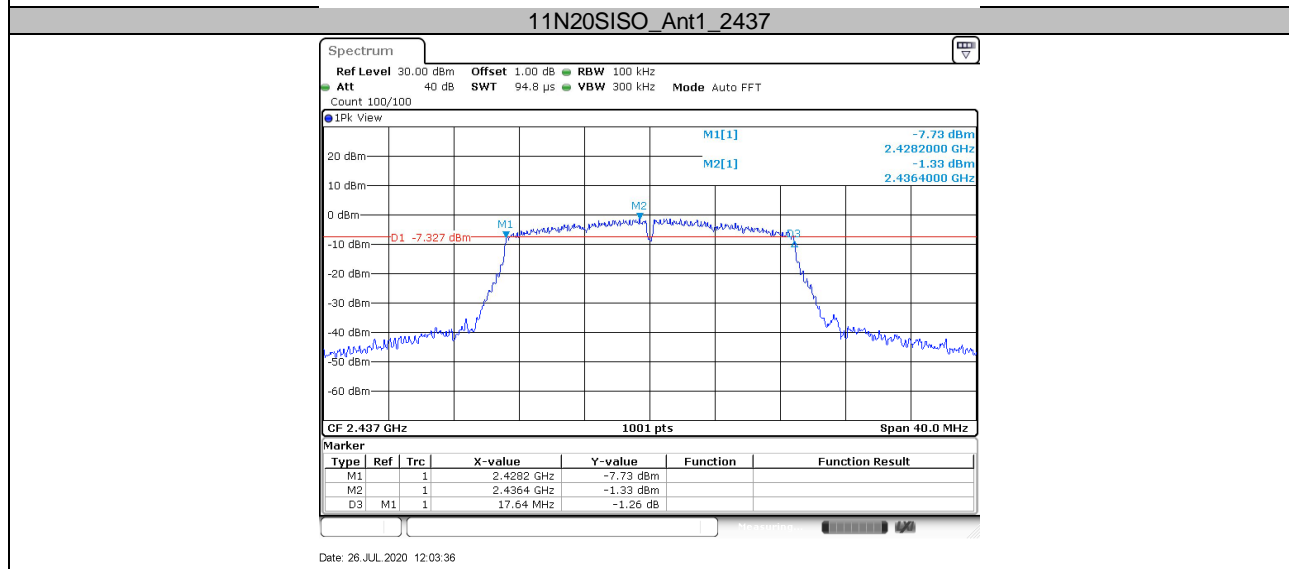
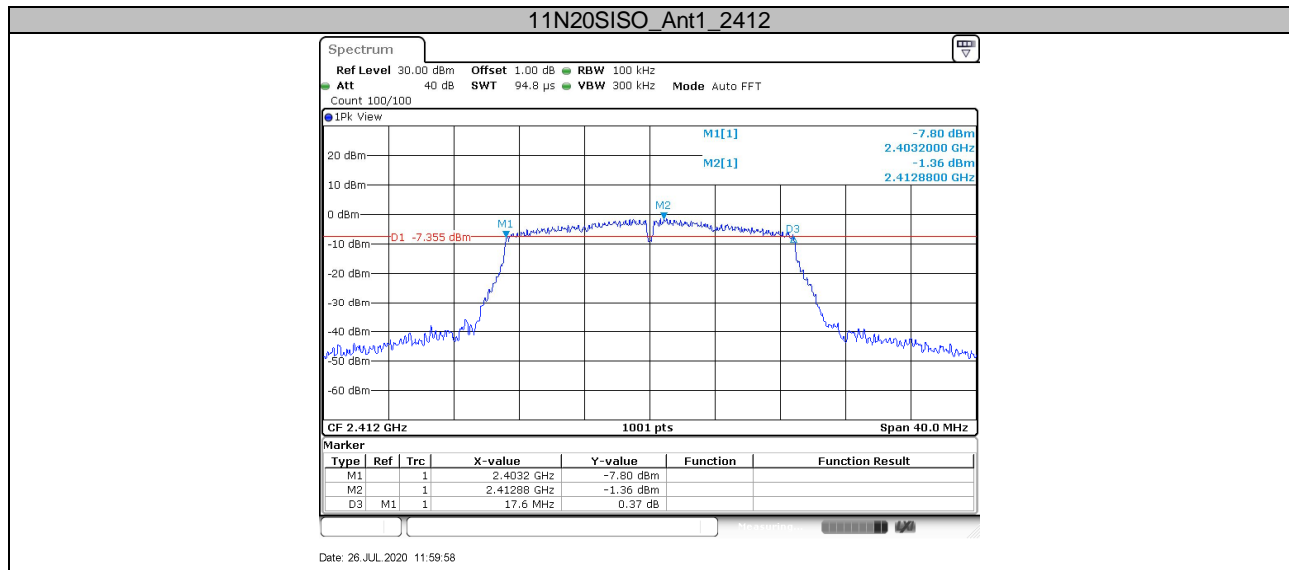
802.11n-HT40 modulation Test Result

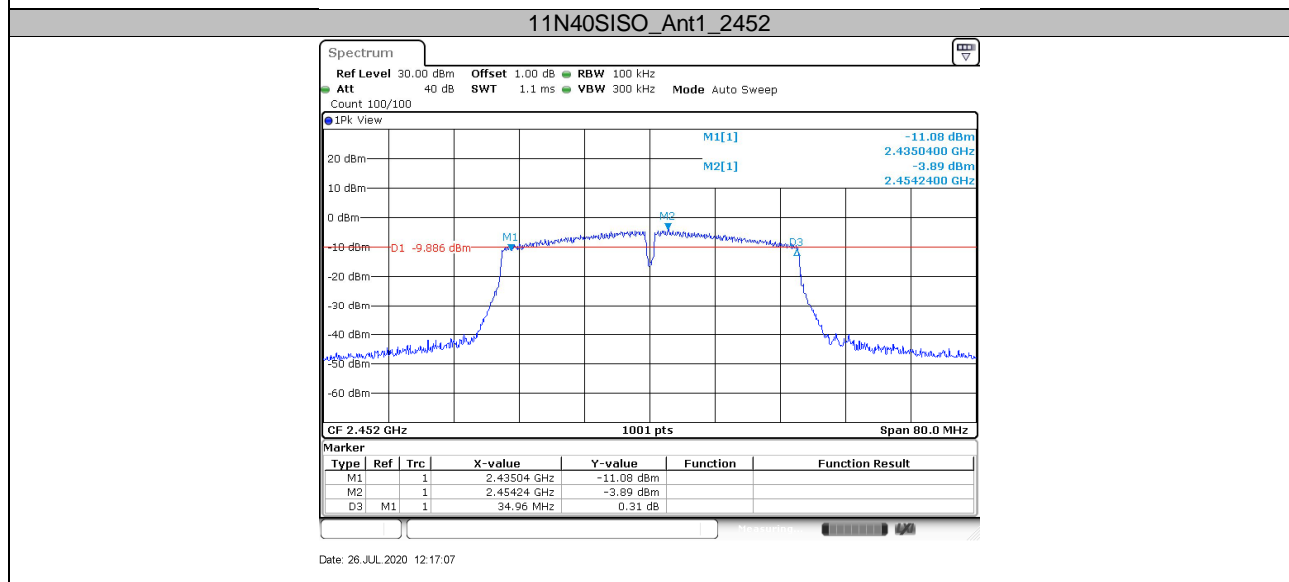
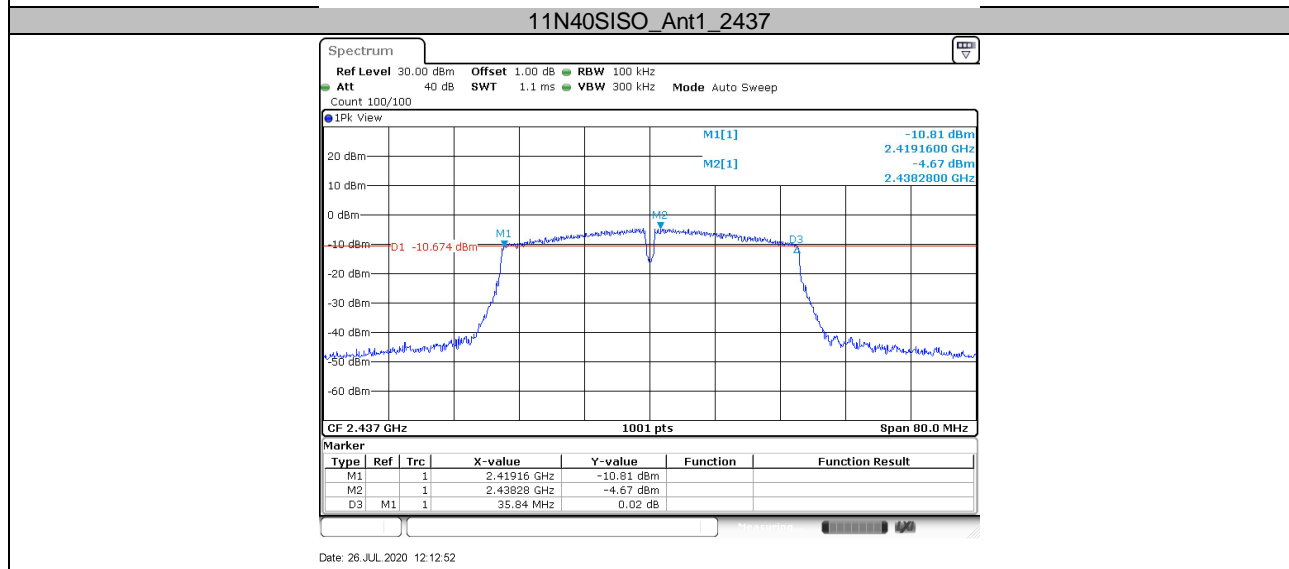
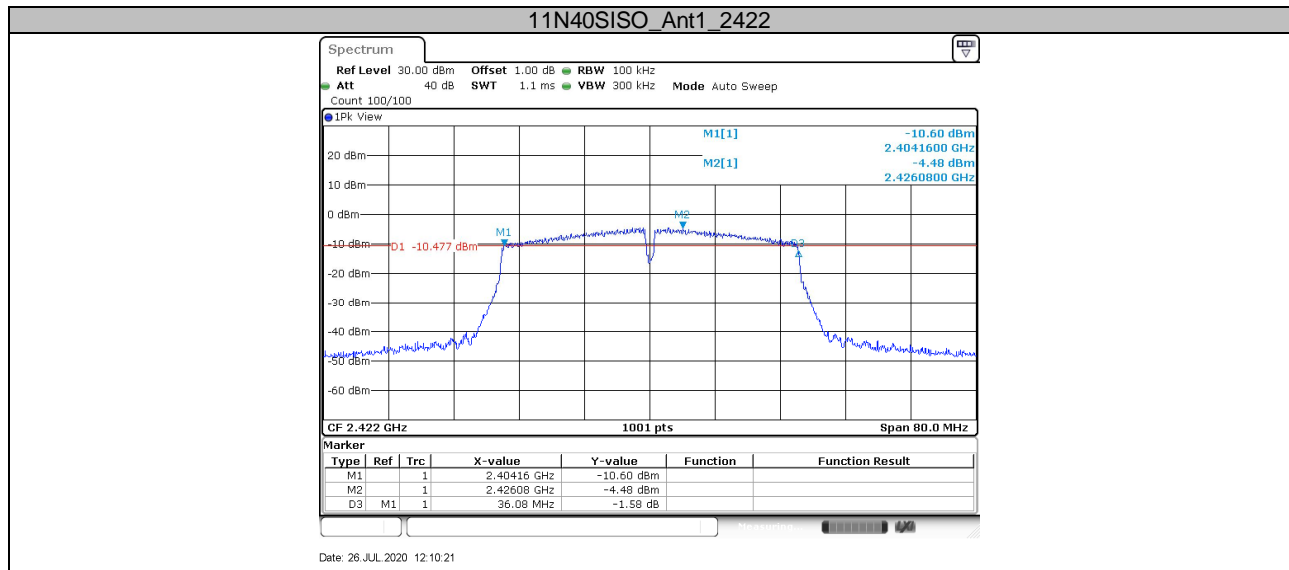
Frequency (MHz)	6dB bandwidth (MHz)	99 bandwidth (MHz)	Limit (MHz)	Result
Low channel 2422MHz	36.080	36.364	/	Pass
Middle channel 2437MHz	35.840	36.364	/	Pass
High channel 2452MHz	34.960	36.364	/	Pass

6 dB Bandwidth









9.3 Power spectral density

Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

1. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW \geq 3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
2. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
3. Repeat above procedures until other frequencies measured were completed.
4. PSD(RBW2)=PSD(RBW1)Value-10lg(RBW1/RBW2)

Limit

Limit [dBm/3KHz]

≤ 8

802.11b modulation Test Result

Frequency (MHz)	Power spectral density (dBm/10KHz)	Power spectral density (dBm/3KHz)	Limit (dBm)	Result
Low channel 2412MHz	-0.25	-5.48	8	Pass
Middle channel 2437MHz	-2.29	-7.52	8	Pass
High channel 2462MHz	-3.54	-8.77	8	Pass

802.11g modulation Test Result

Frequency (MHz)	Power spectral density (dBm/10KHz)	Power spectral density (dBm/3KHz)	Limit (dBm)	Result
Low channel 2412MHz	-6.14	-11.37	8	Pass
Middle channel 2437MHz	-5.64	-10.87	8	Pass
High channel 2462MHz	-6.84	-12.07	8	Pass

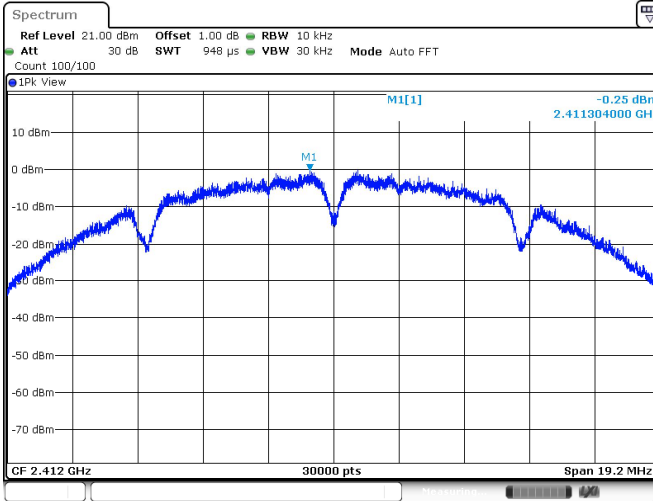
802.11n-HT20 modulation Test Result

Frequency (MHz)	Power spectral density (dBm/10KHz)	Power spectral density (dBm/3KHz)	Limit (dBm)	Result
Low channel 2412MHz	-6.79	-12.02	8	Pass
Middle channel 2437MHz	-7	-12.23	8	Pass
High channel 2462MHz	-7.84	-13.07	8	Pass

802.11n-HT40 modulation Test Result

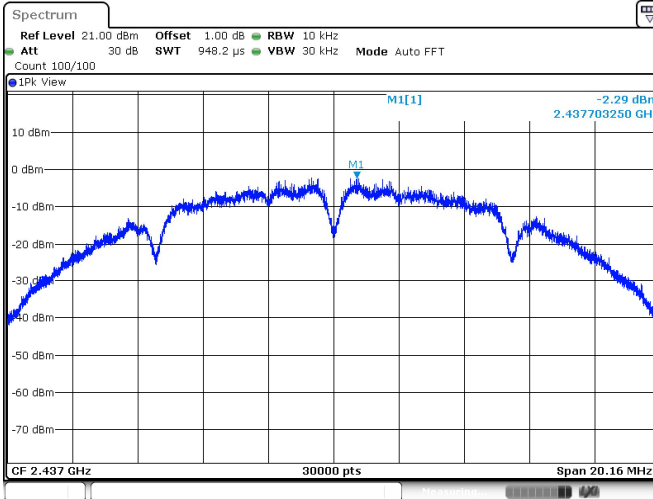
Frequency (MHz)	Power spectral density (dBm/10KHz)	Power spectral density (dBm/3KHz)	Limit (dBm)	Result
Low channel 2422MHz	-10.62	-15.85	8	Pass
Middle channel 2437MHz	-10.49	-15.72	8	Pass
High channel 2452MHz	-9.46	-14.69	8	Pass

11B_Ant1_2412



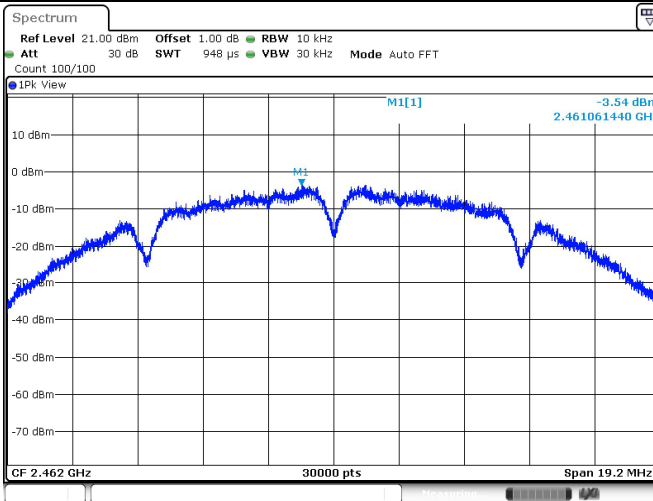
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11B_Ant1_2437

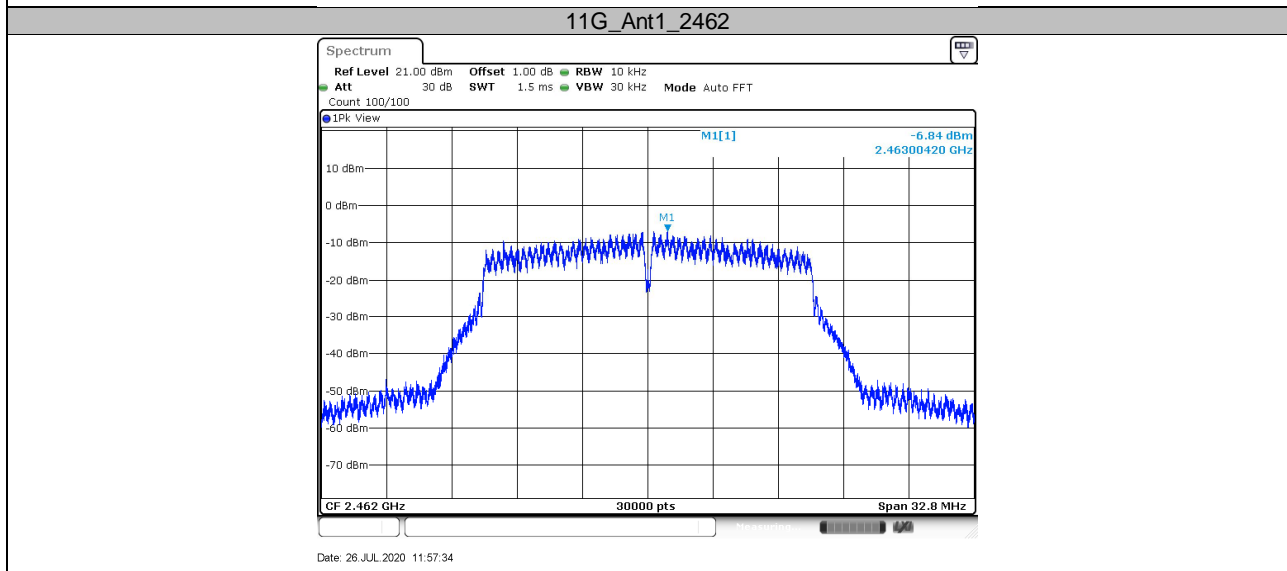
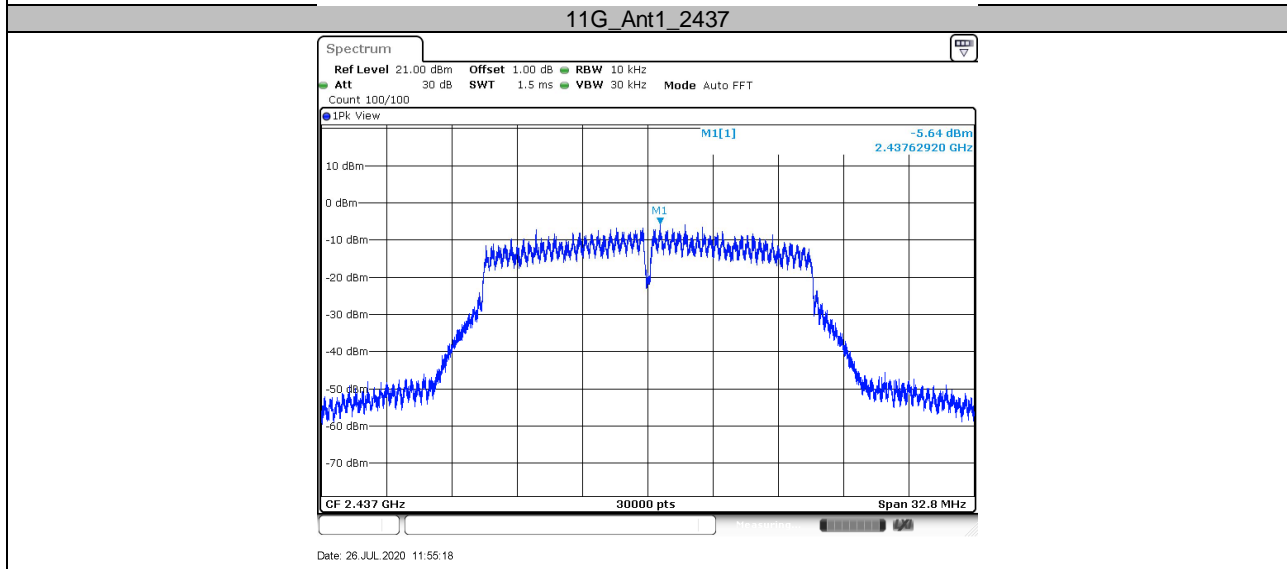
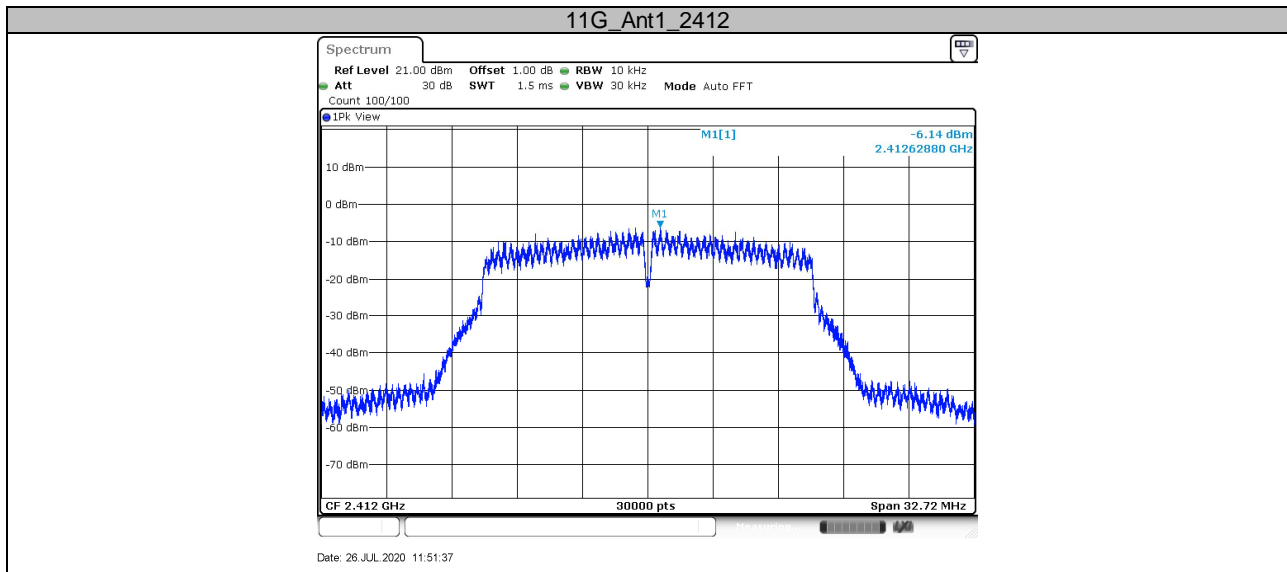


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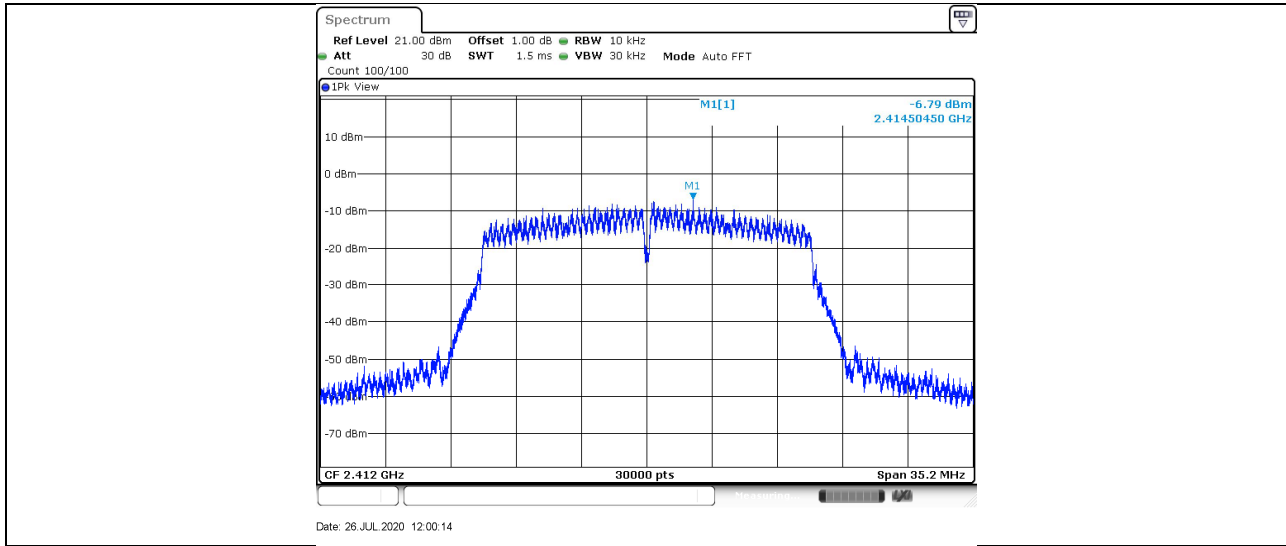
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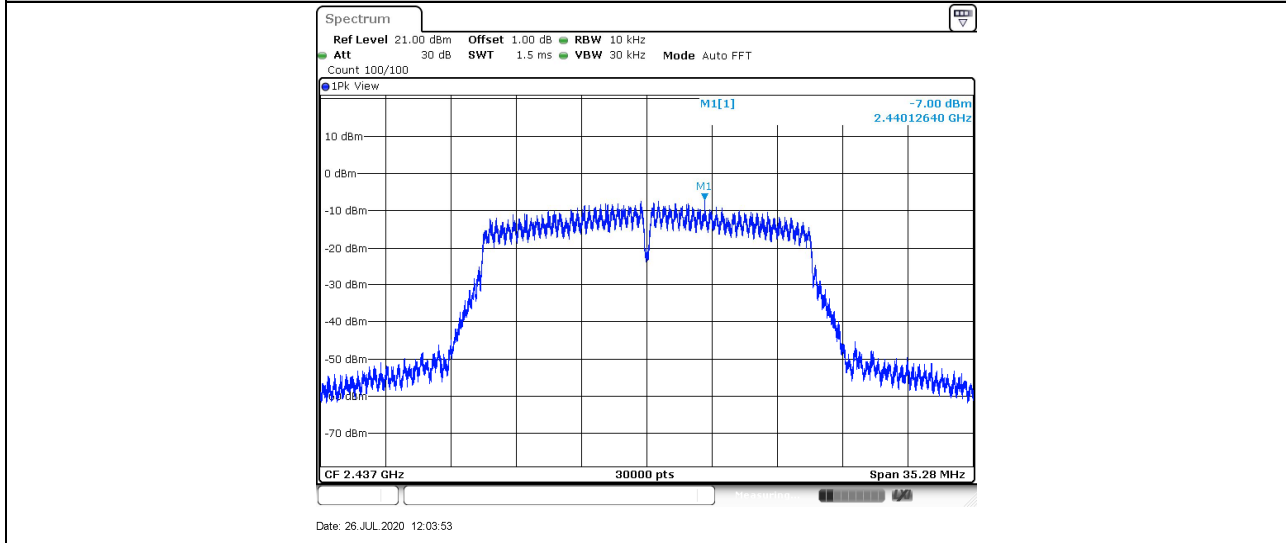
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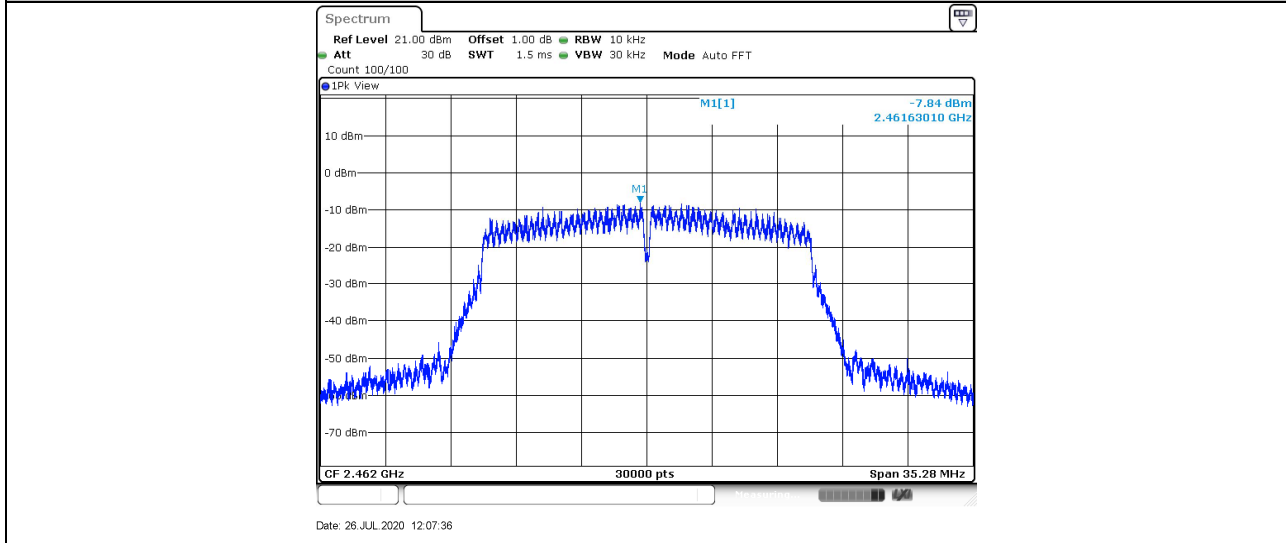
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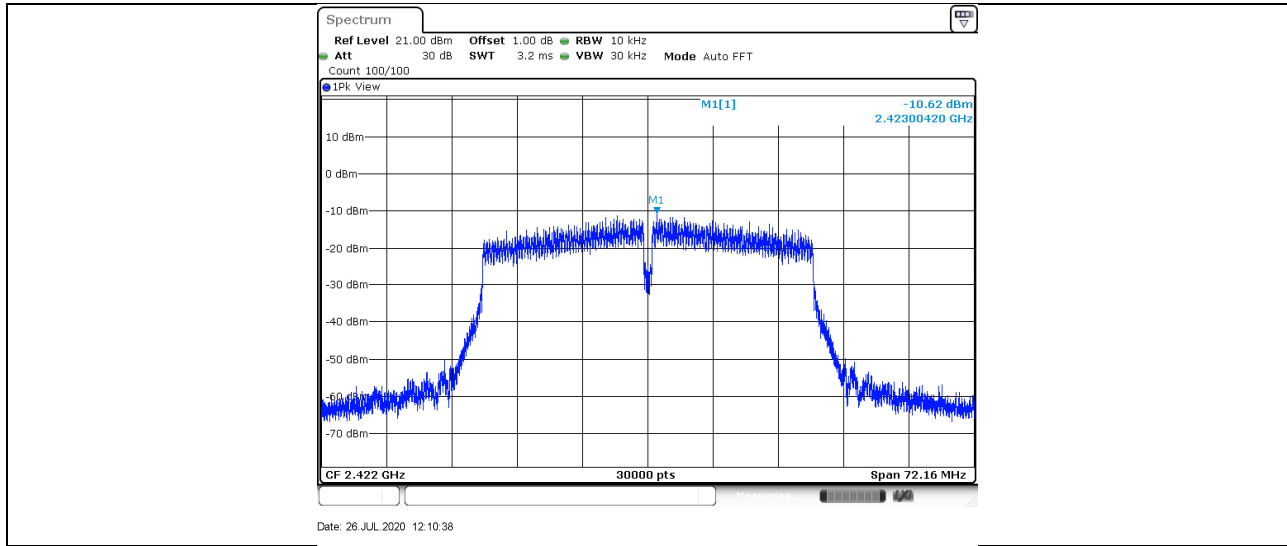
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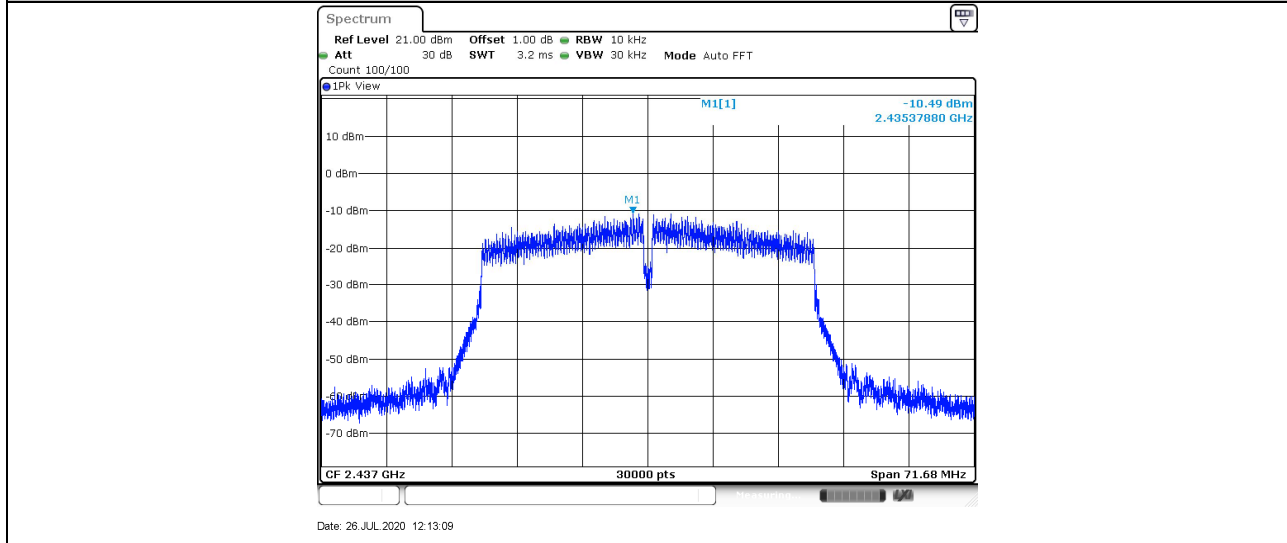
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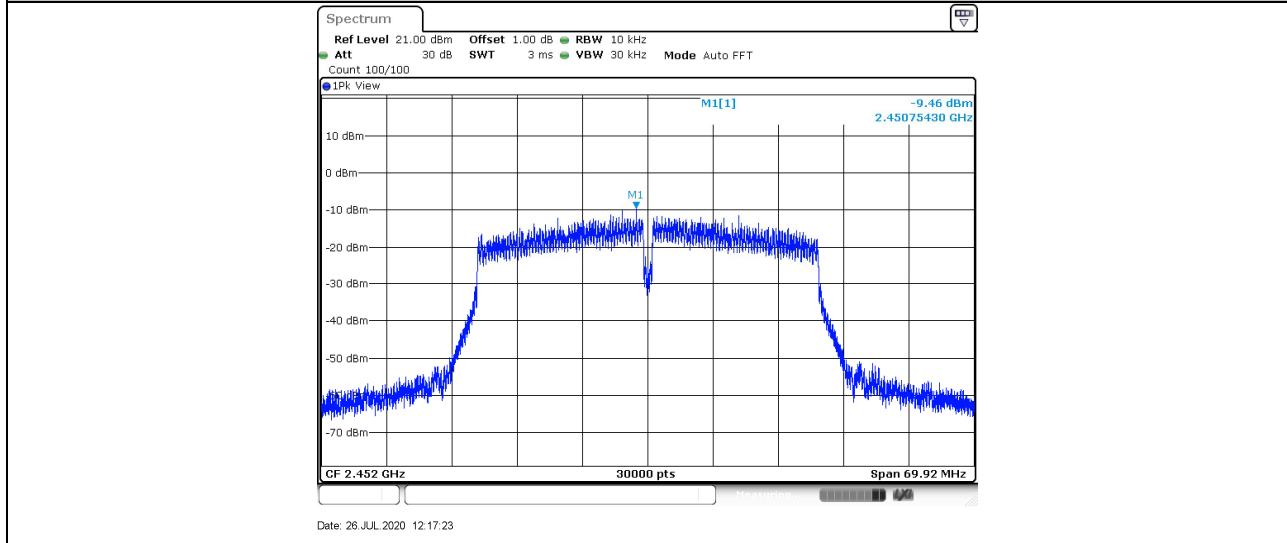
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11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



9.4 Spurious RF conducted emissions

Test Method

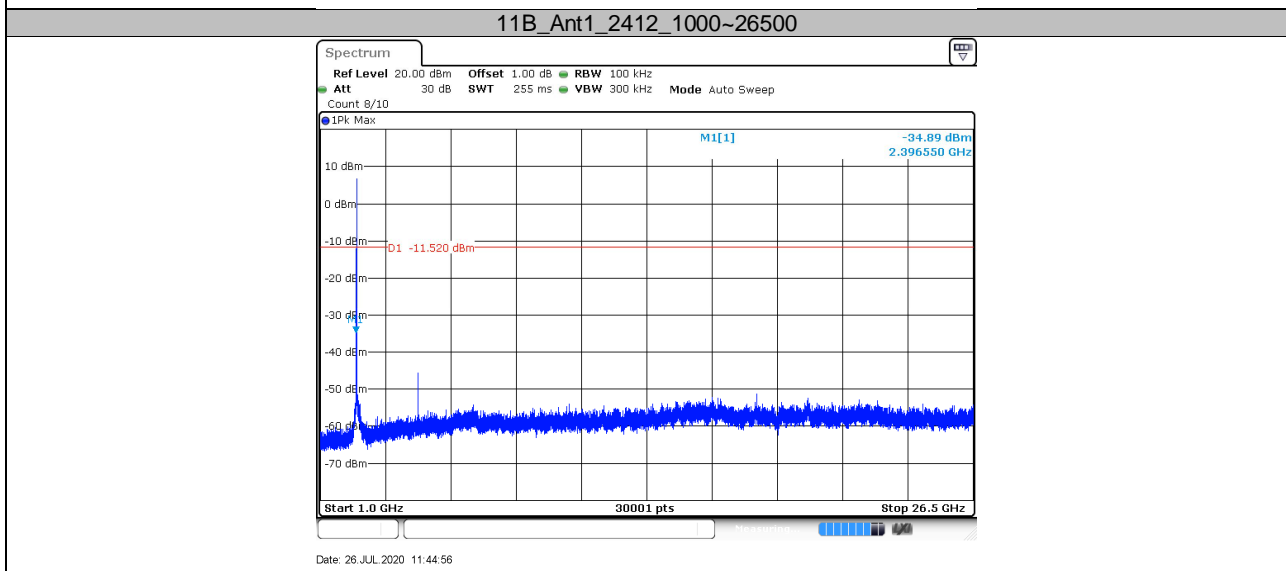
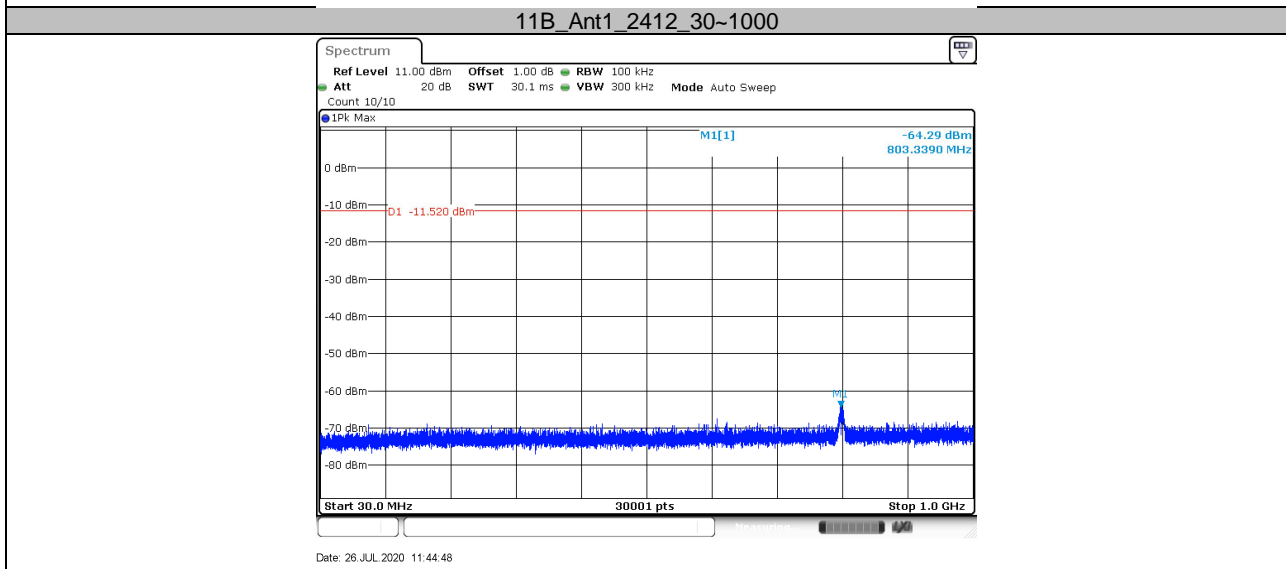
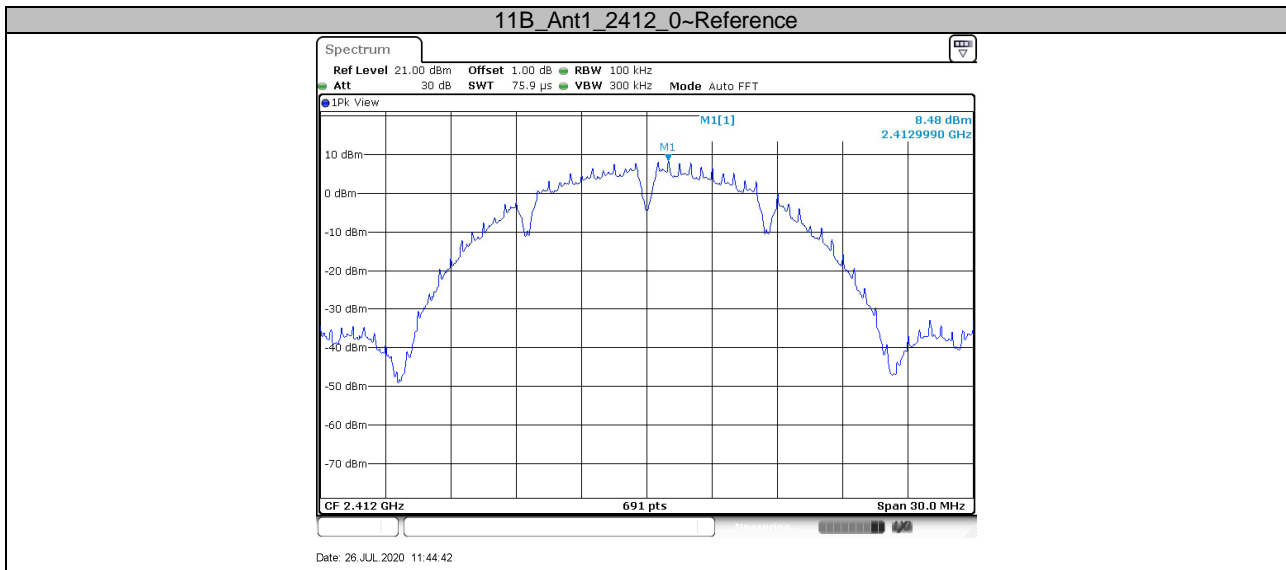
1. Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
RBW = 100 kHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
3. The level displayed must comply with the limit specified in this Section. Submit these plots.
4. Repeat above procedures until all frequencies measured were complete.

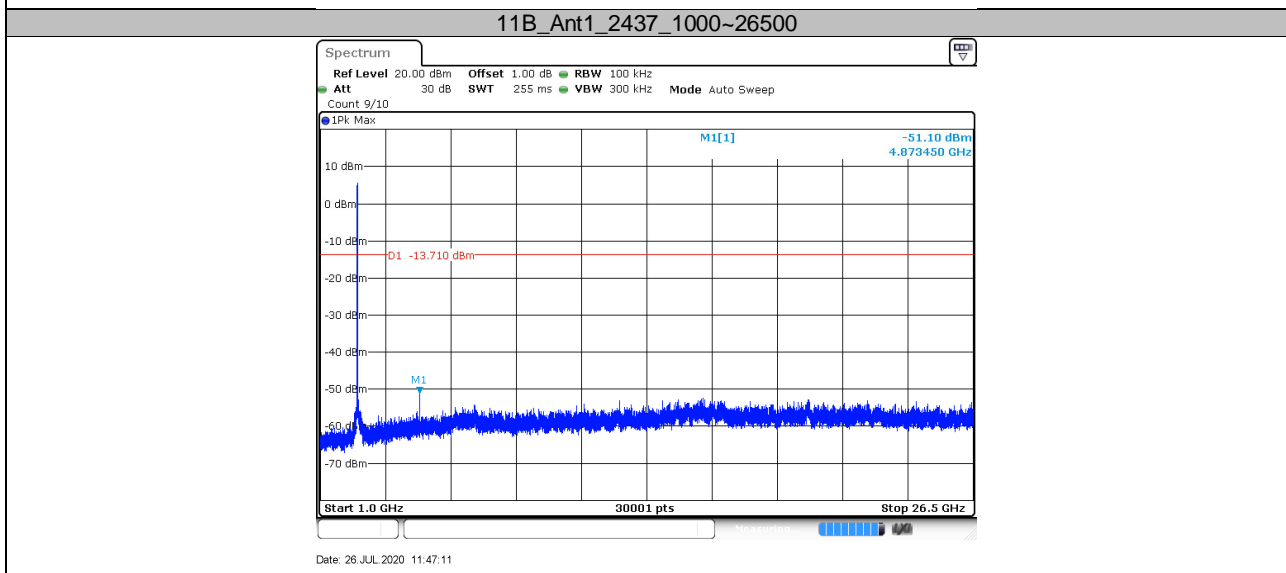
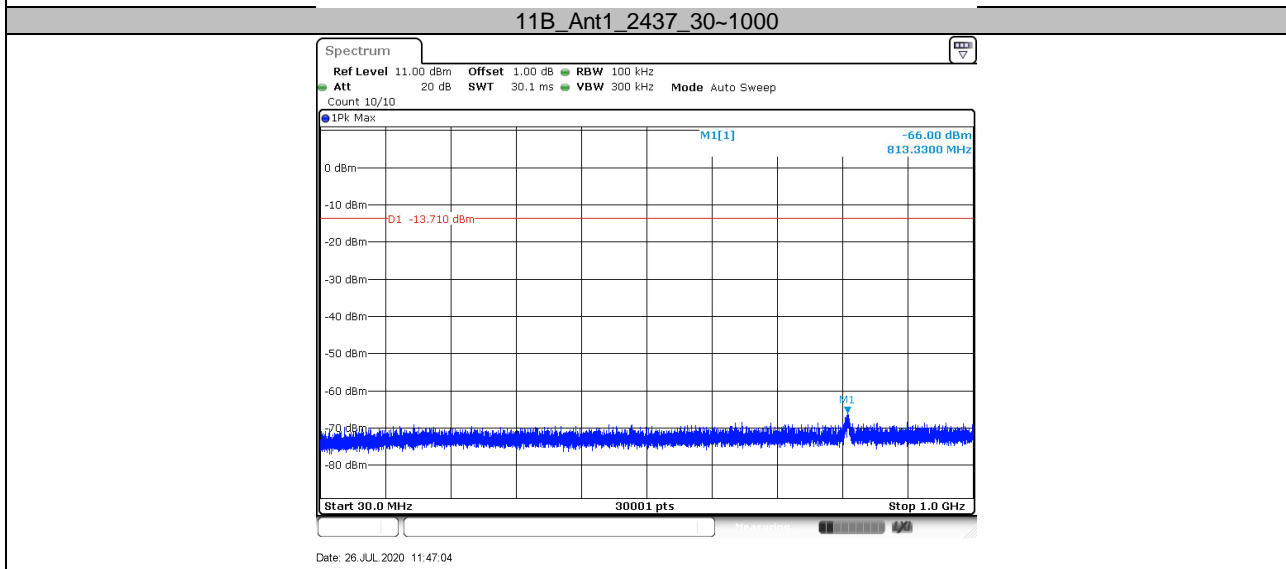
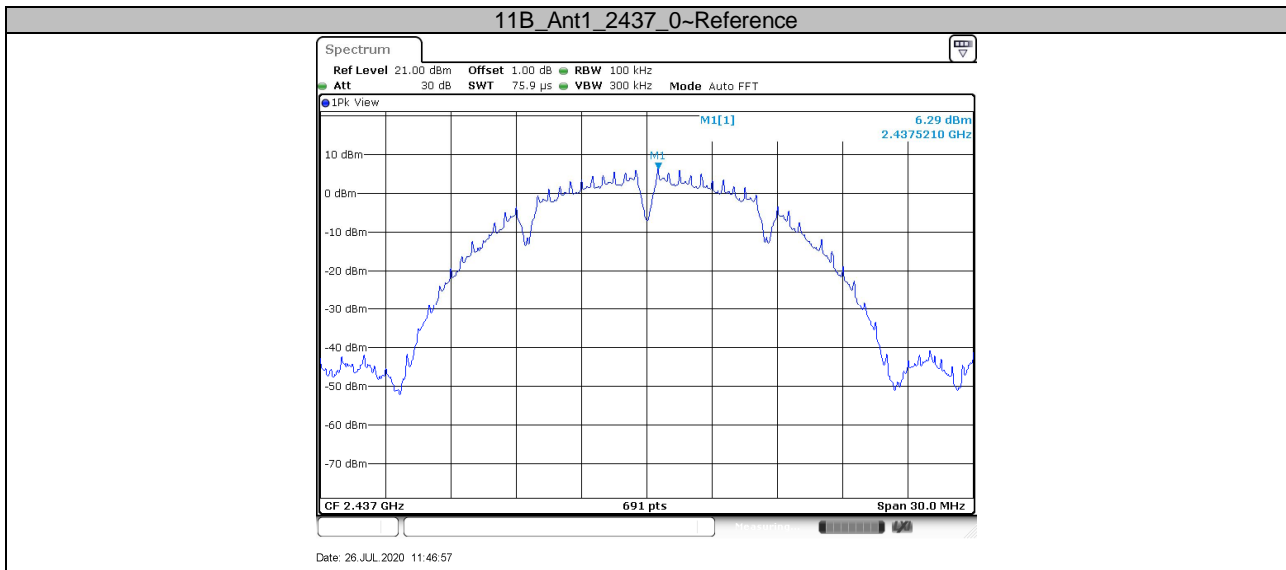
Limit

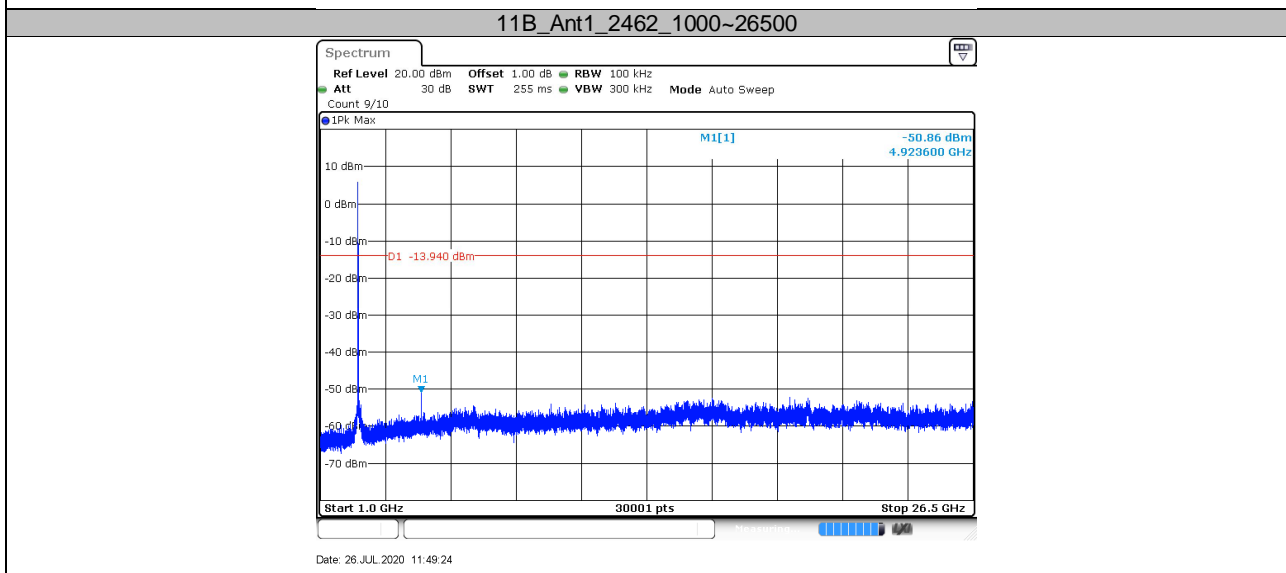
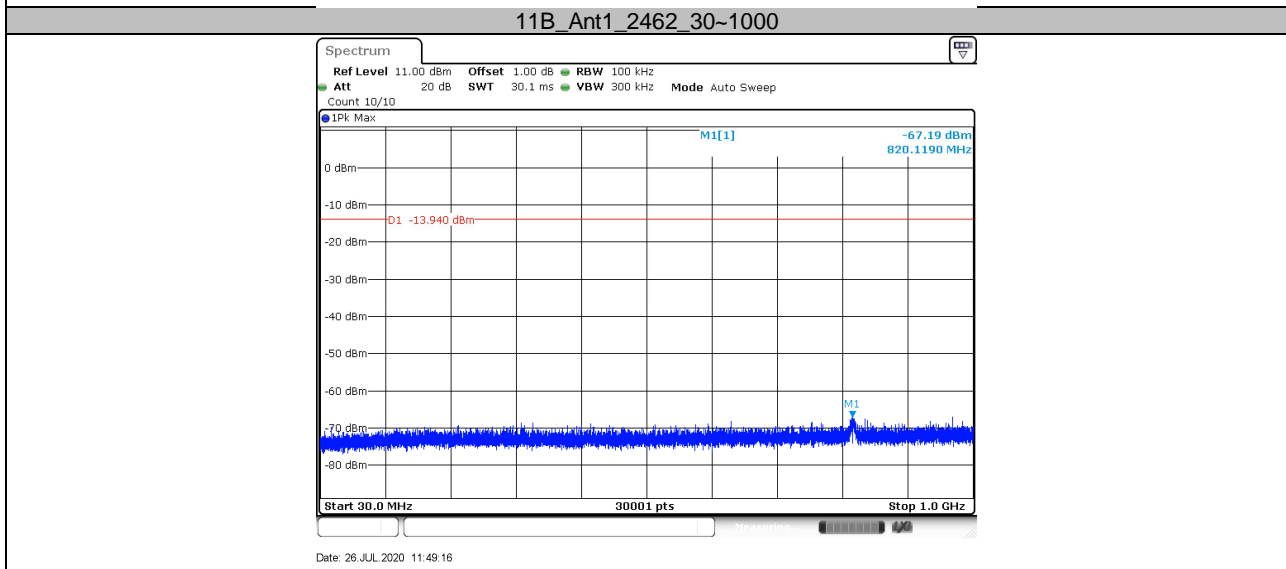
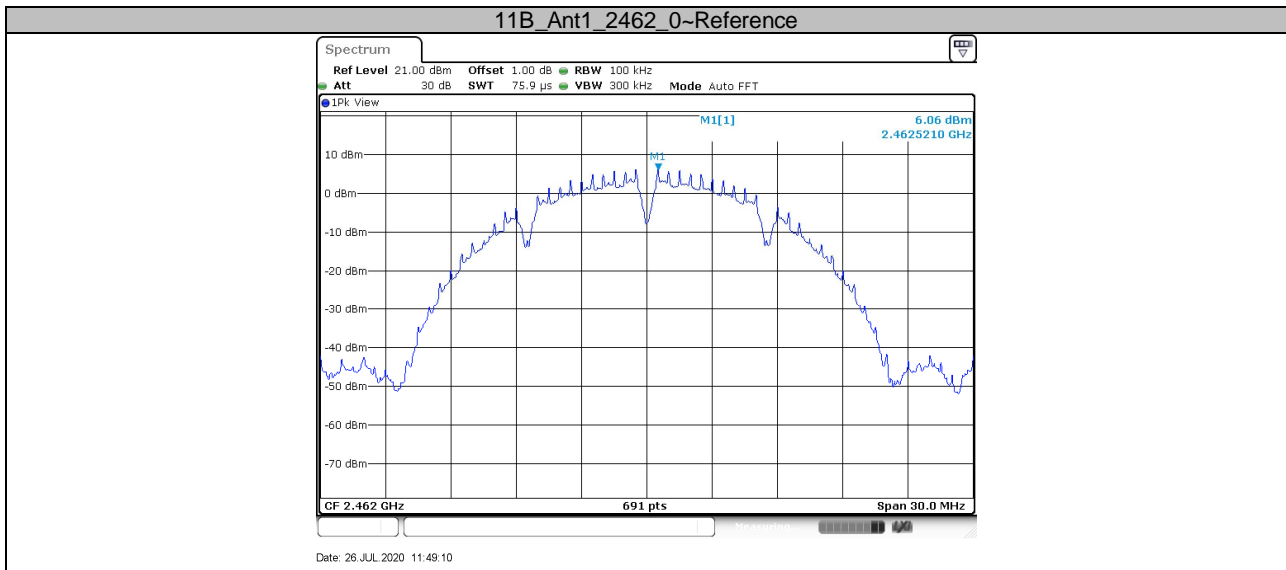
Frequency Range MHz	Limit (dBc)
30-25000	-20

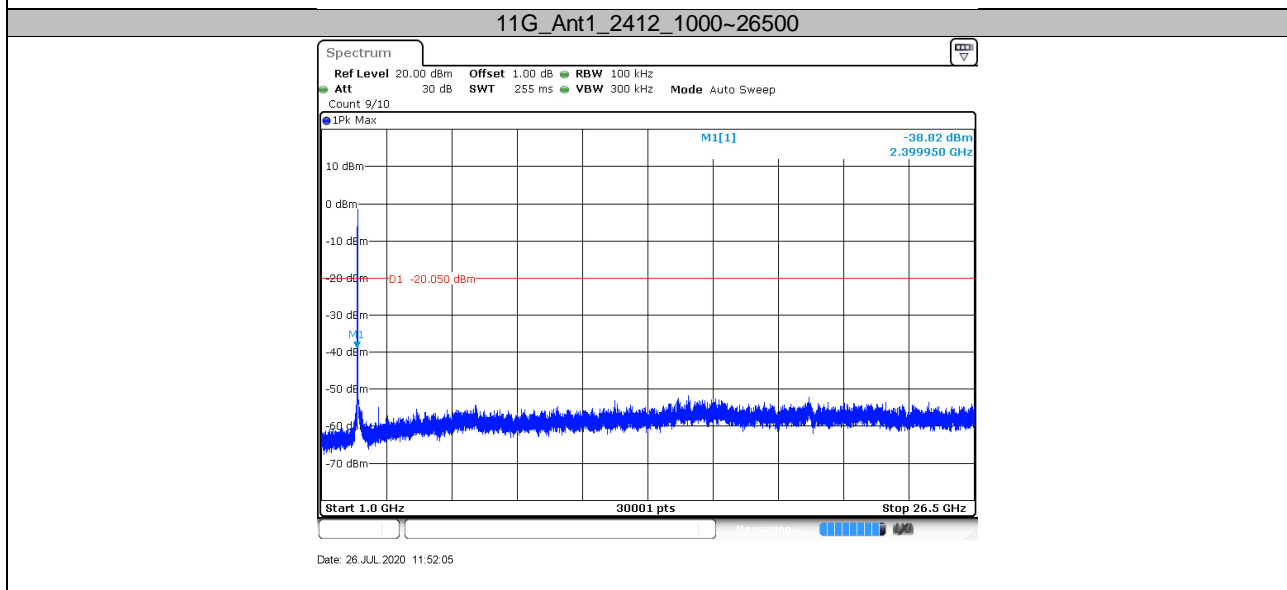
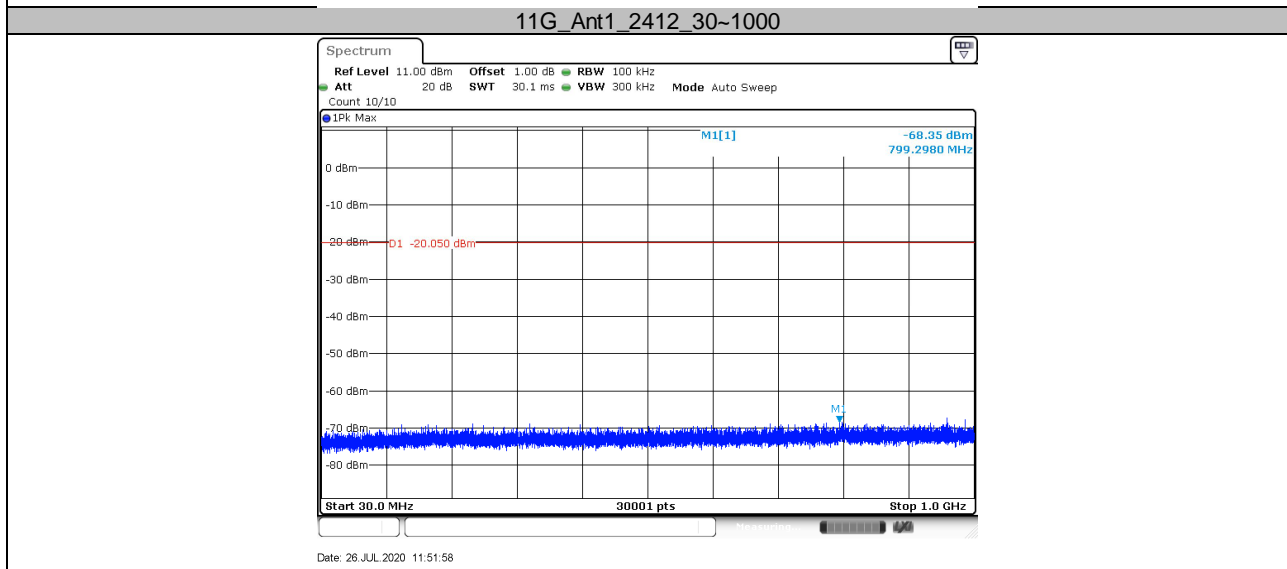
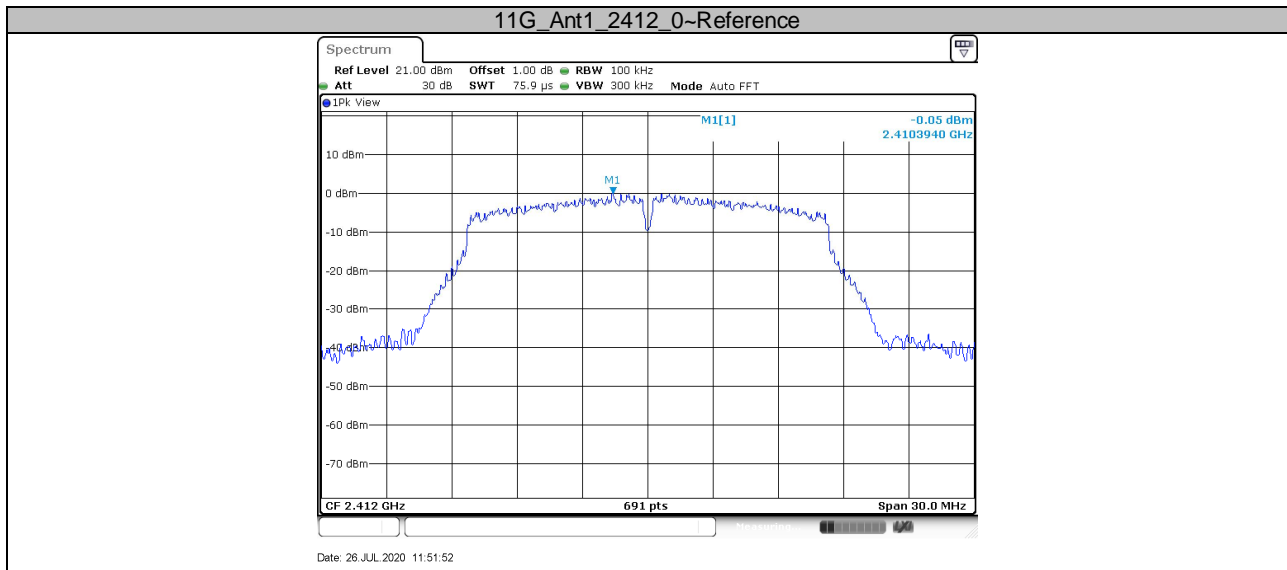
Spurious RF conducted emissions

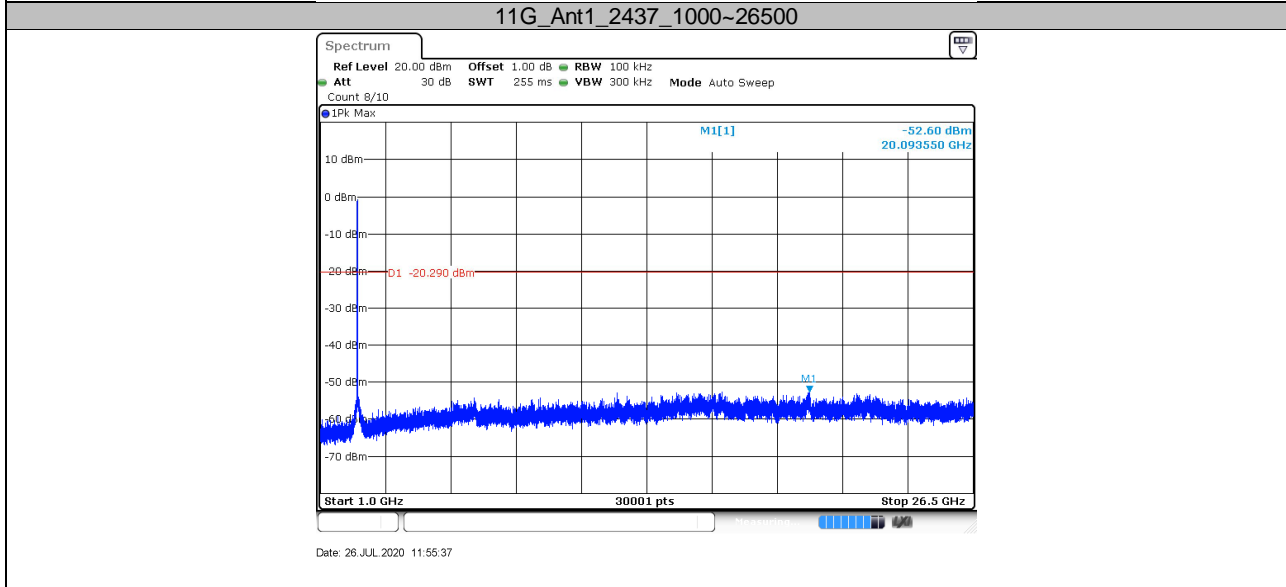
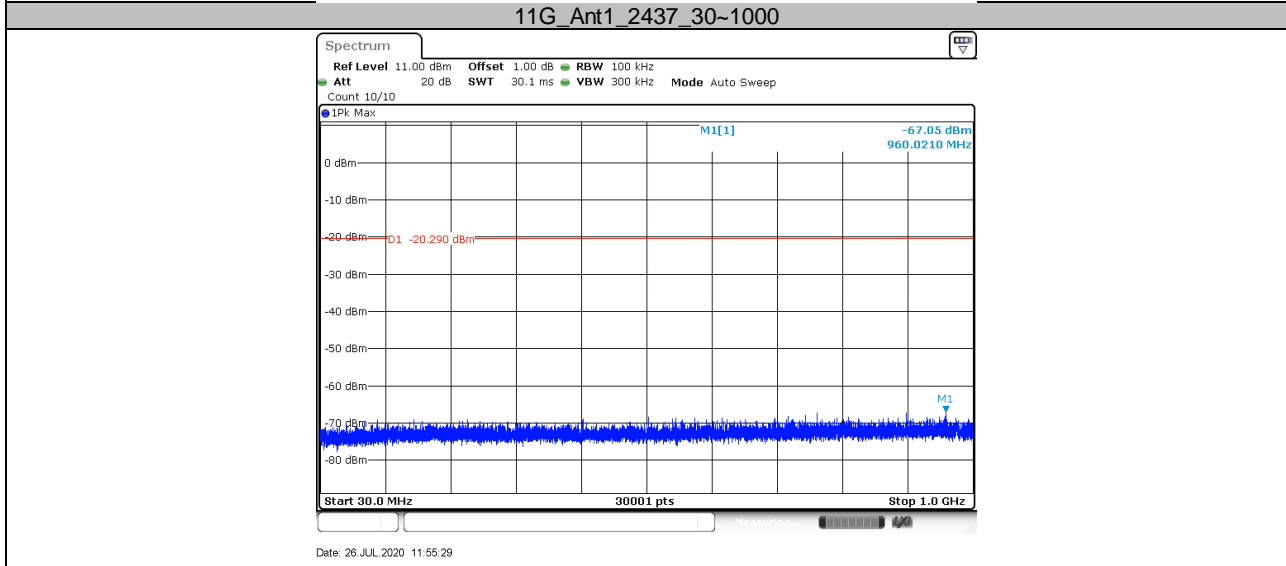
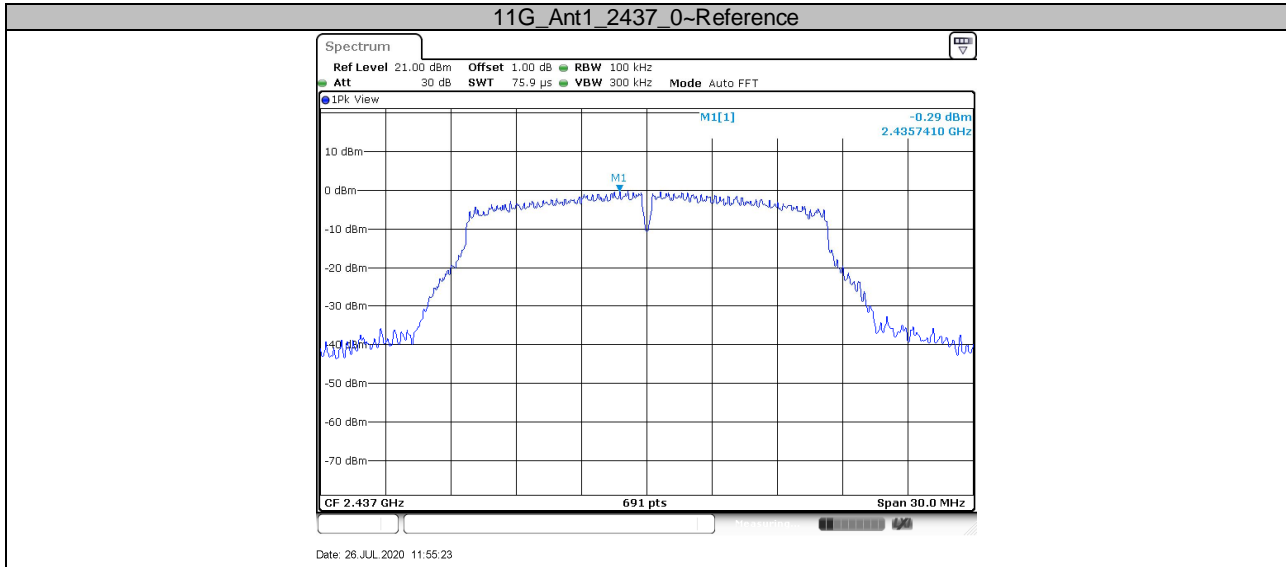
TestMode	Antenna	Channel(MHz)	FreqRange(MHz)	RefLevel(MHz)	Result(dBm)	Limit(dBm)	Verdict
11B	Ant1	2412	Reference	4.10	8.48	---	PASS
		2412	30~1000	30~1000	-64.29	<=-15.9	PASS
		2412	1000~26500	1000~26500	-34.89	<=-15.9	PASS
		2437	Reference	3.73	6.29	---	PASS
		2437	30~1000	30~1000	-66	<=-16.27	PASS
		2437	1000~26500	1000~26500	-51.26	<=-16.27	PASS
		2462	Reference	3.61	6.06	---	PASS
		2462	30~1000	30~1000	-67.19	<=-16.39	PASS
11G	Ant1	2412	Reference	0.13	-0.05	---	PASS
		2412	30~1000	30~1000	-68.35	<=-19.87	PASS
		2412	1000~26500	1000~26500	-40.17	<=-19.87	PASS
		2437	Reference	-0.30	-0.29	---	PASS
		2437	30~1000	30~1000	-67.05	<=-20.3	PASS
		2437	1000~26500	1000~26500	-52.6	<=-20.3	PASS
		2462	Reference	-0.20	-0.49	---	PASS
		2462	30~1000	30~1000	-67.98	<=-20.2	PASS
11N20SISO	Ant1	2412	Reference	-2.44	-1.71	---	PASS
		2412	30~1000	30~1000	-67.71	<=-22.44	PASS
		2412	1000~26500	1000~26500	-42.06	<=-22.44	PASS
		2437	Reference	-1.10	-1.09	---	PASS
		2437	30~1000	30~1000	-67.55	<=-21.1	PASS
		2437	1000~26500	1000~26500	-51.58	<=-21.1	PASS
		2462	Reference	-1.64	-1.83	---	PASS
		2462	30~1000	30~1000	-67.12	<=-21.64	PASS
11N40SISO	Ant1	2422	Reference	-3.93	-4.55	---	PASS
		2422	30~1000	30~1000	-67.94	<=-23.93	PASS
		2422	1000~26500	1000~26500	-44.02	<=-23.93	PASS
		2437	Reference	-4.10	-4.78	---	PASS
		2437	30~1000	30~1000	-68.09	<=-24.1	PASS
		2437	1000~26500	1000~26500	-52.23	<=-24.1	PASS
		2452	Reference	-3.89	-4.72	---	PASS
		2452	30~1000	30~1000	-66.16	<=-23.89	PASS
		2452	1000~26500	1000~26500	-49.3	<=-23.89	PASS

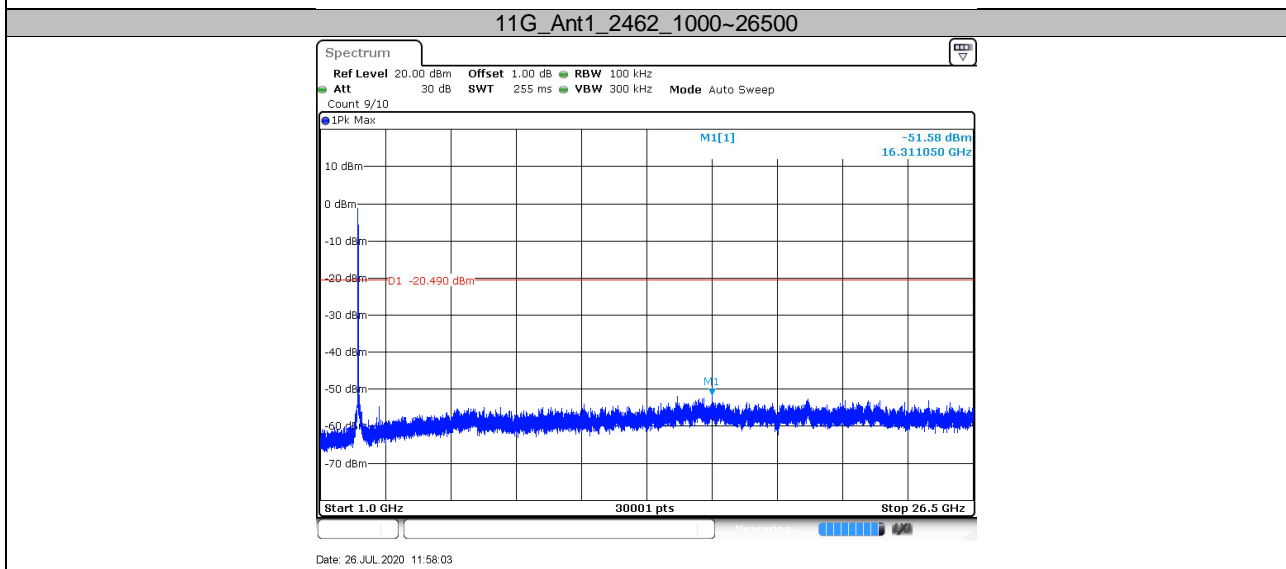
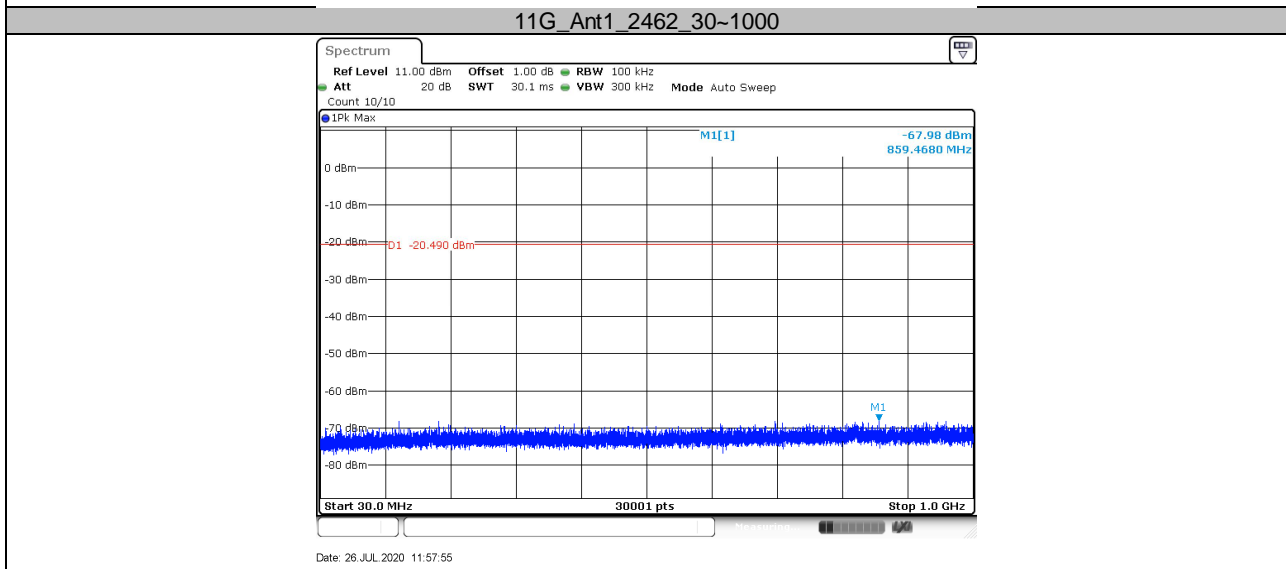
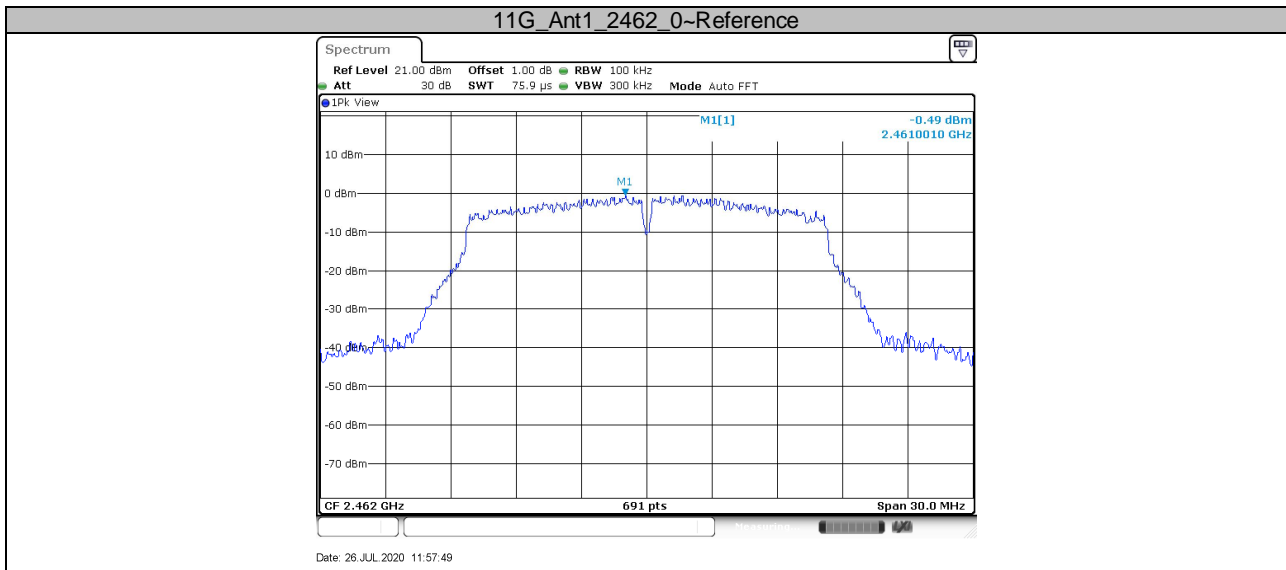




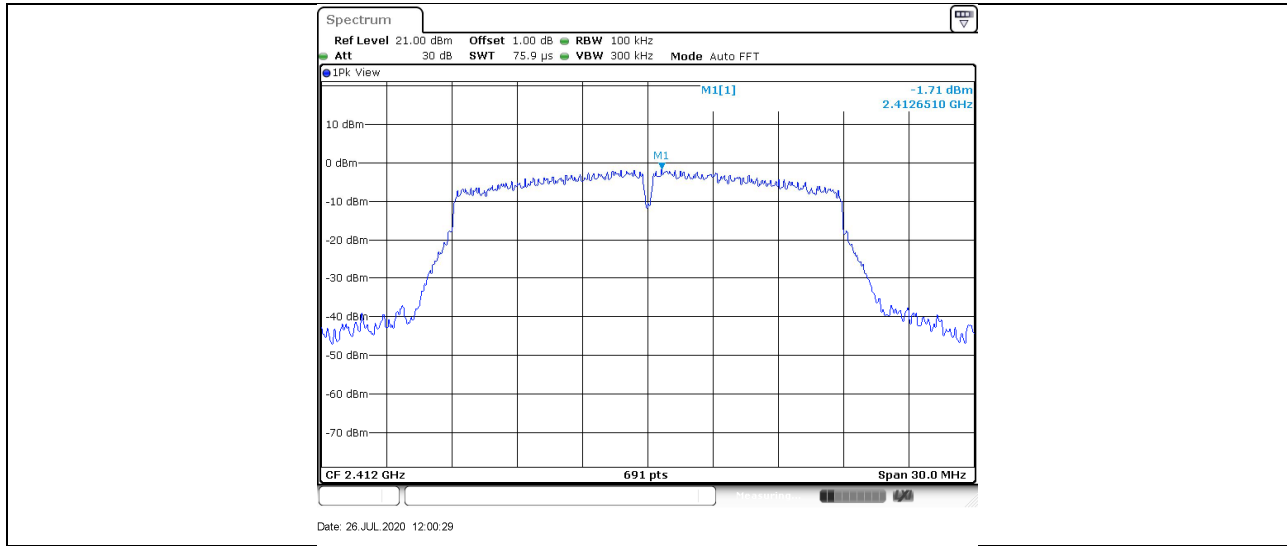




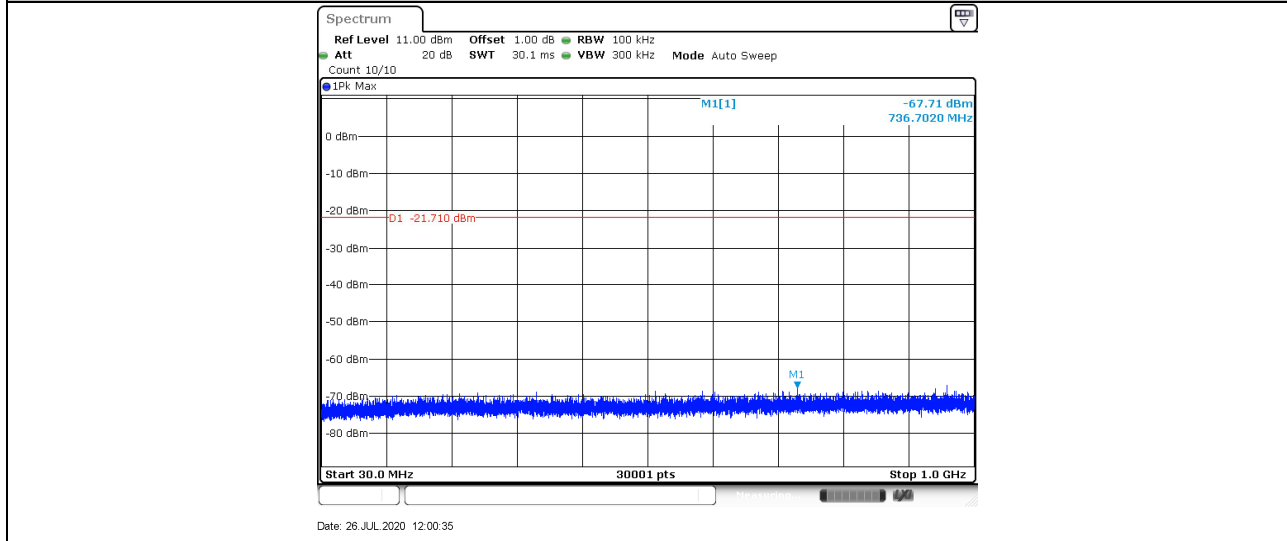




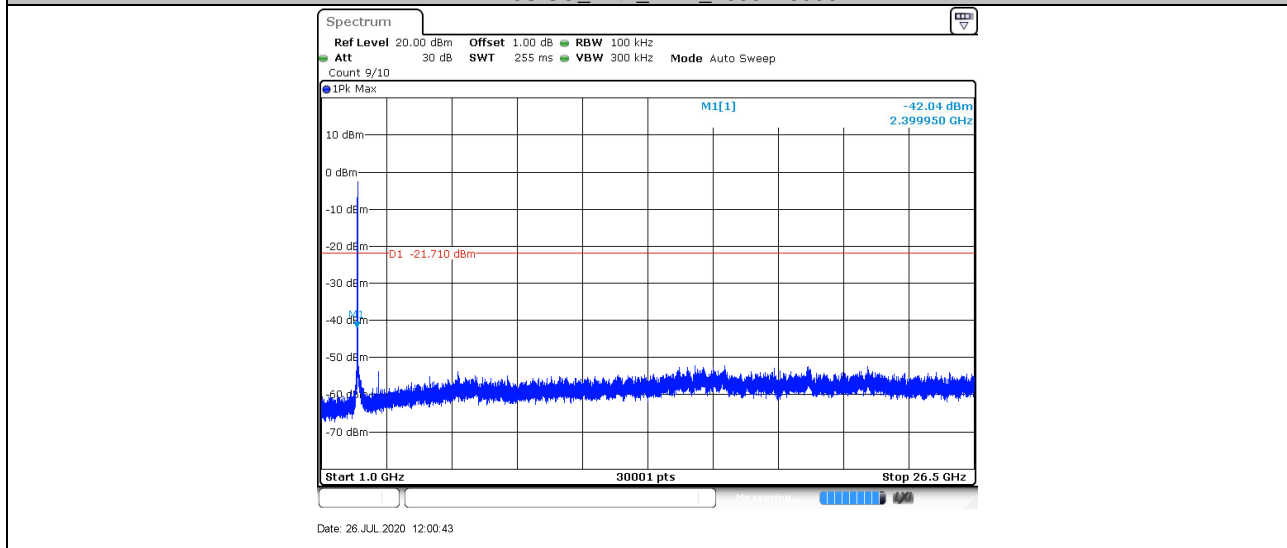
11N20SISO_Ant1_2412_0~Reference

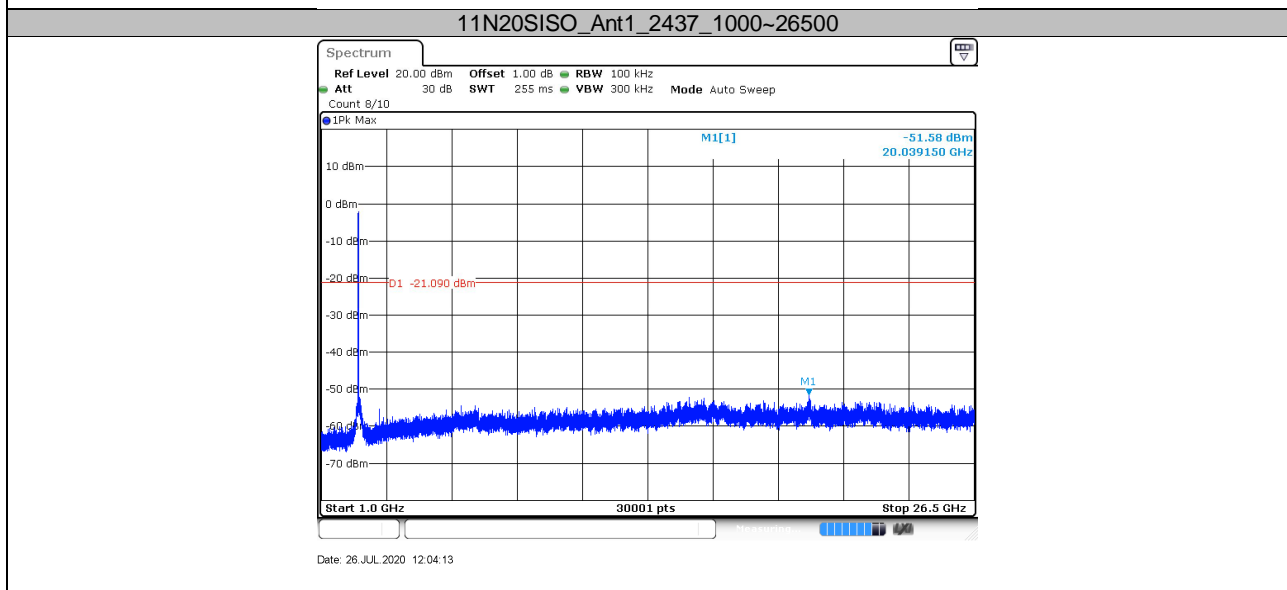
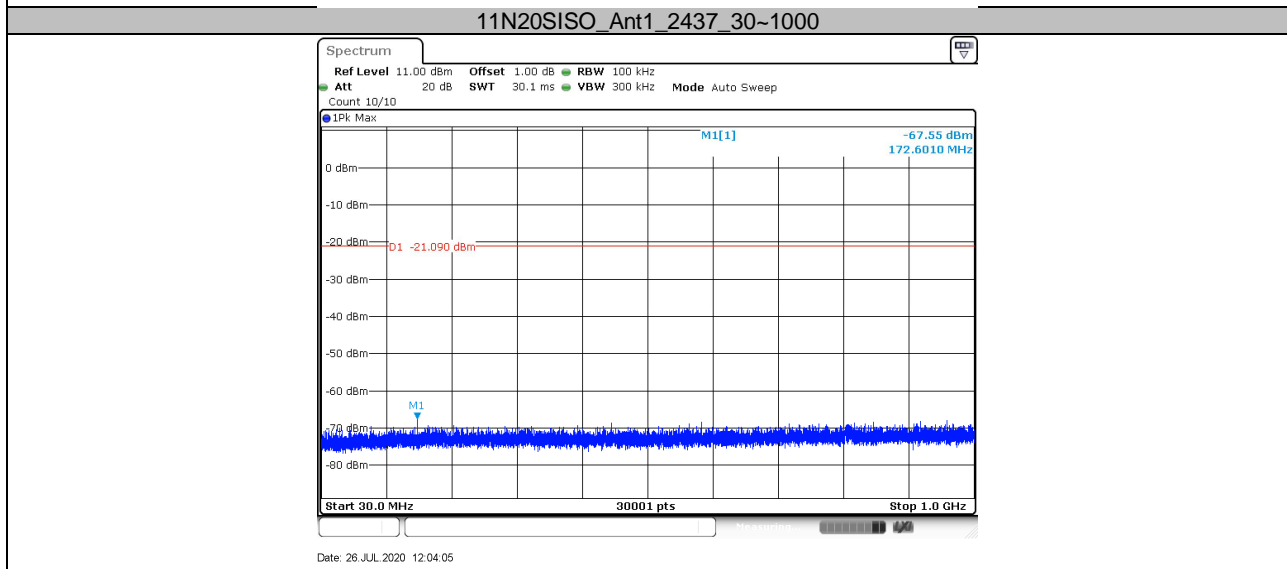
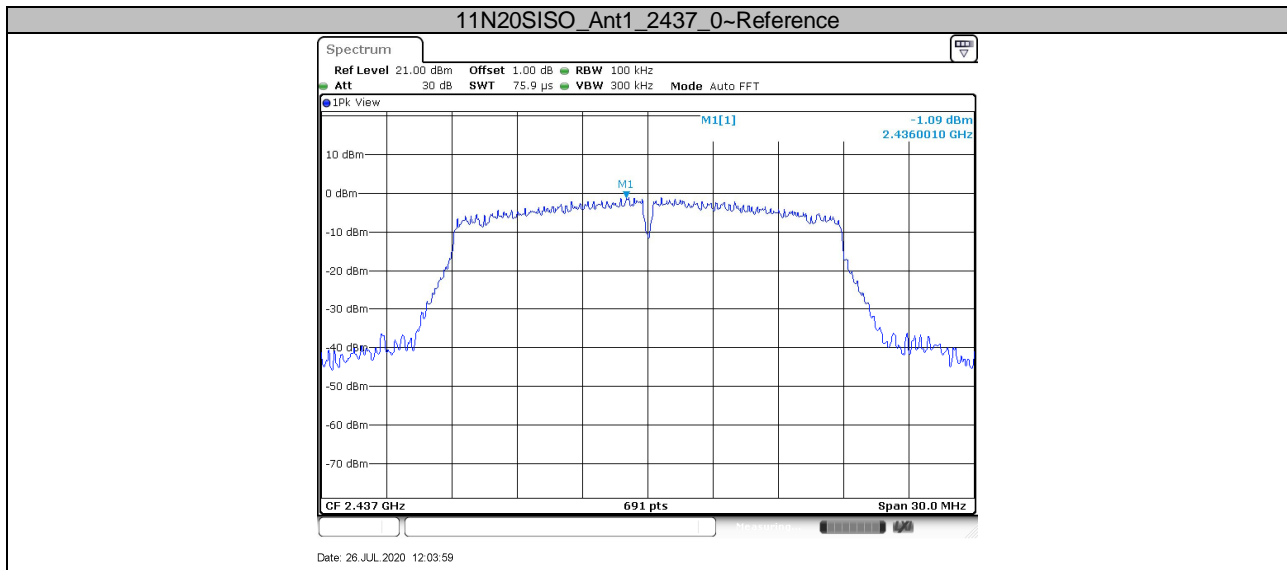


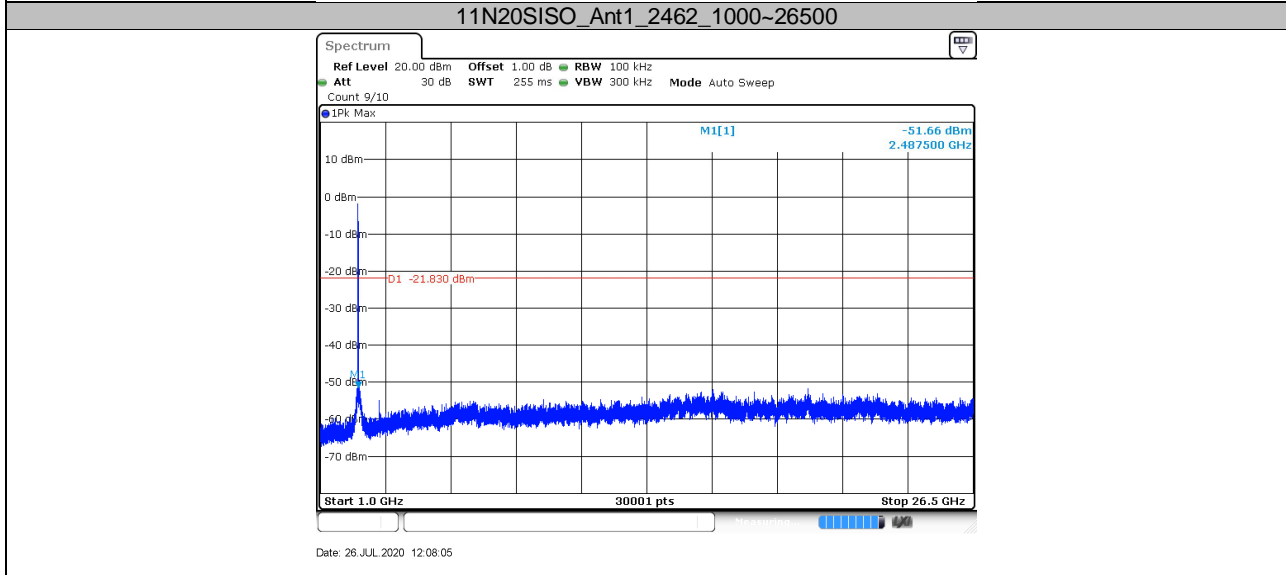
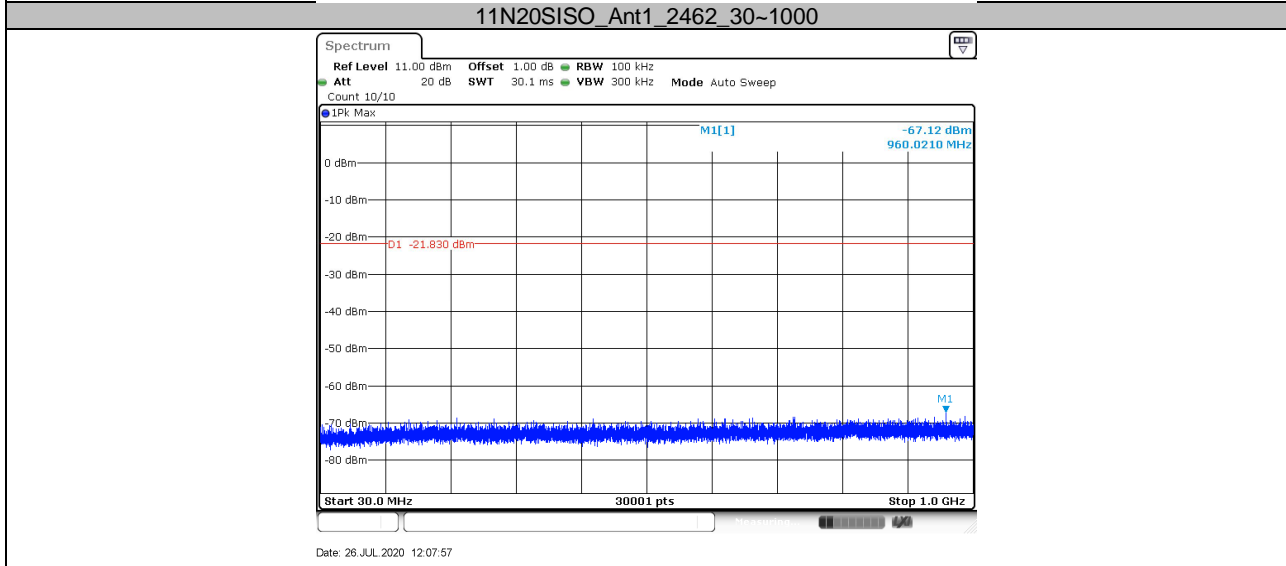
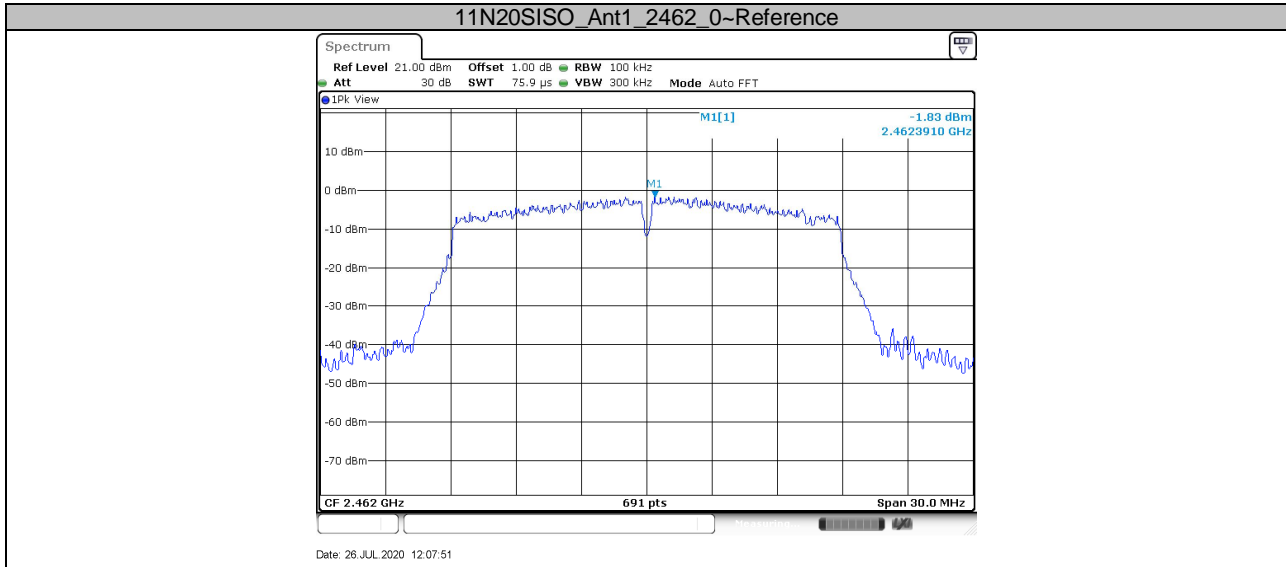
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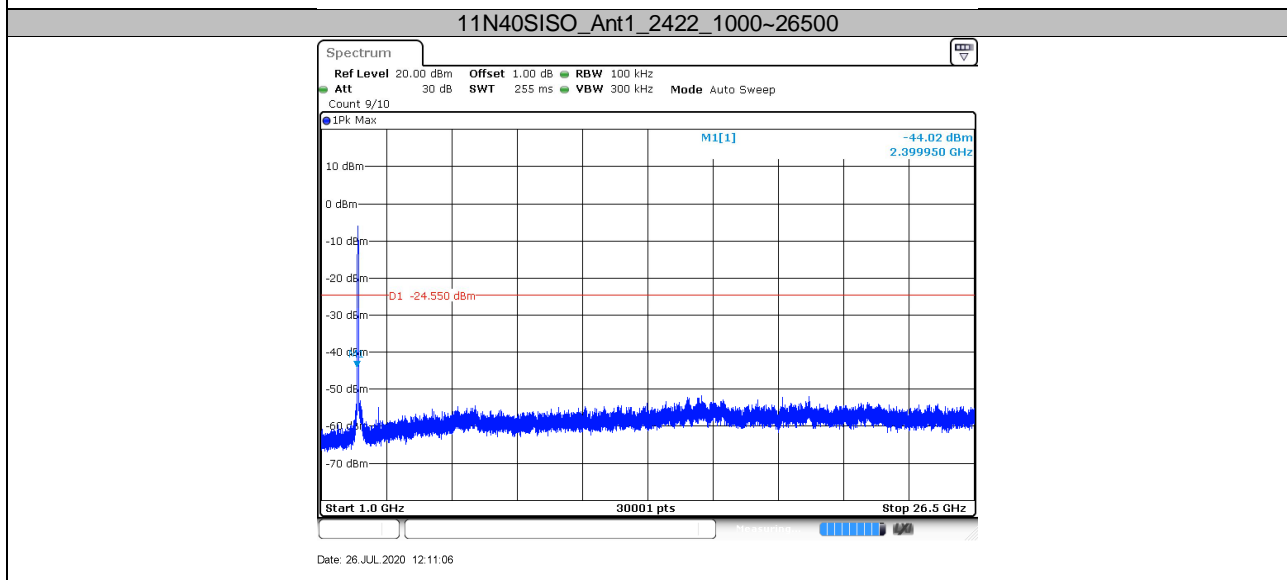
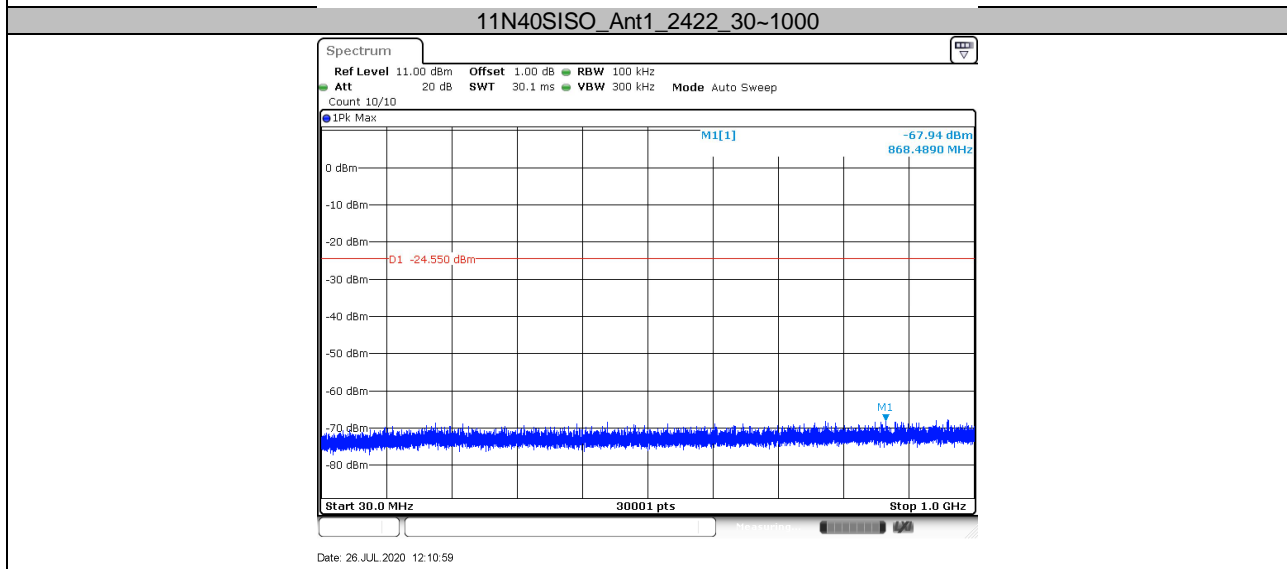
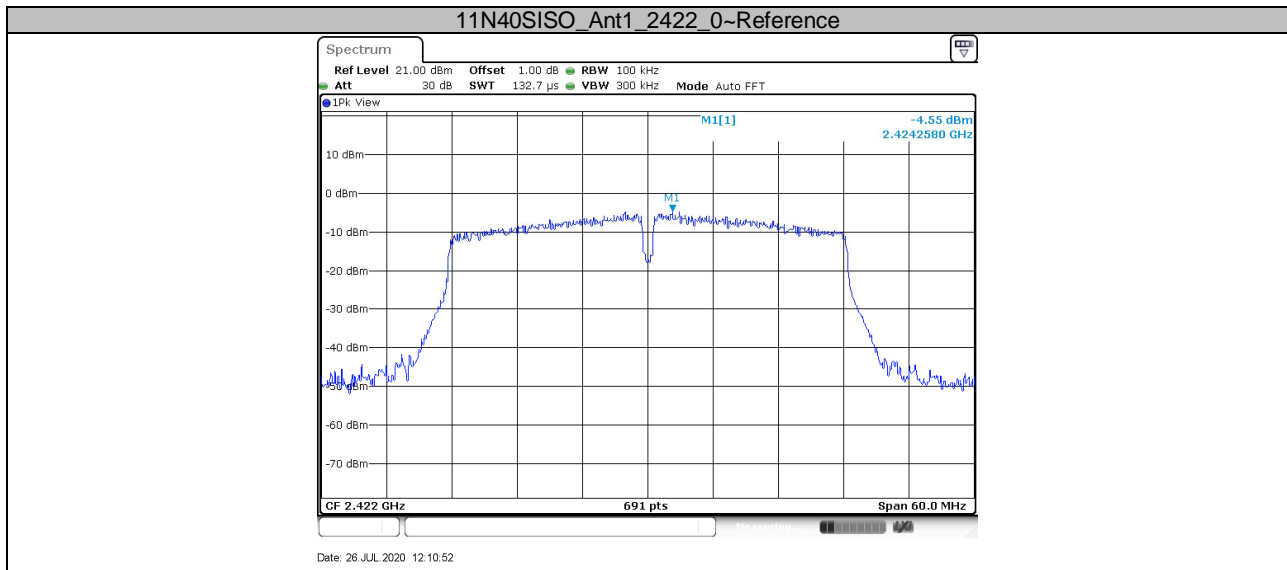


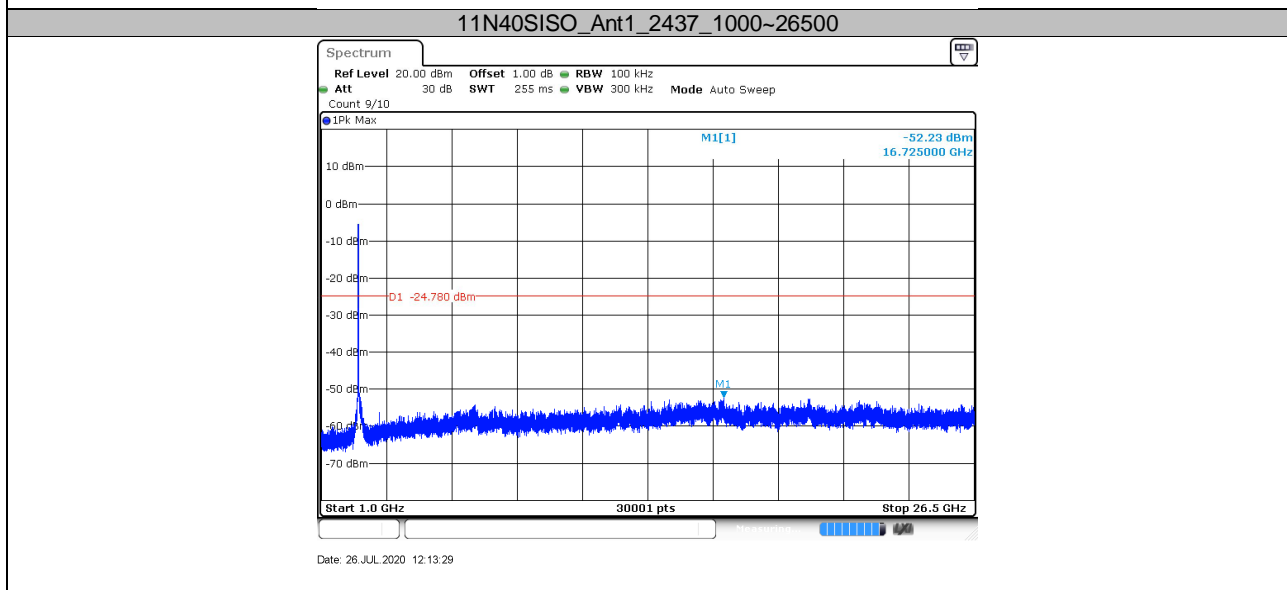
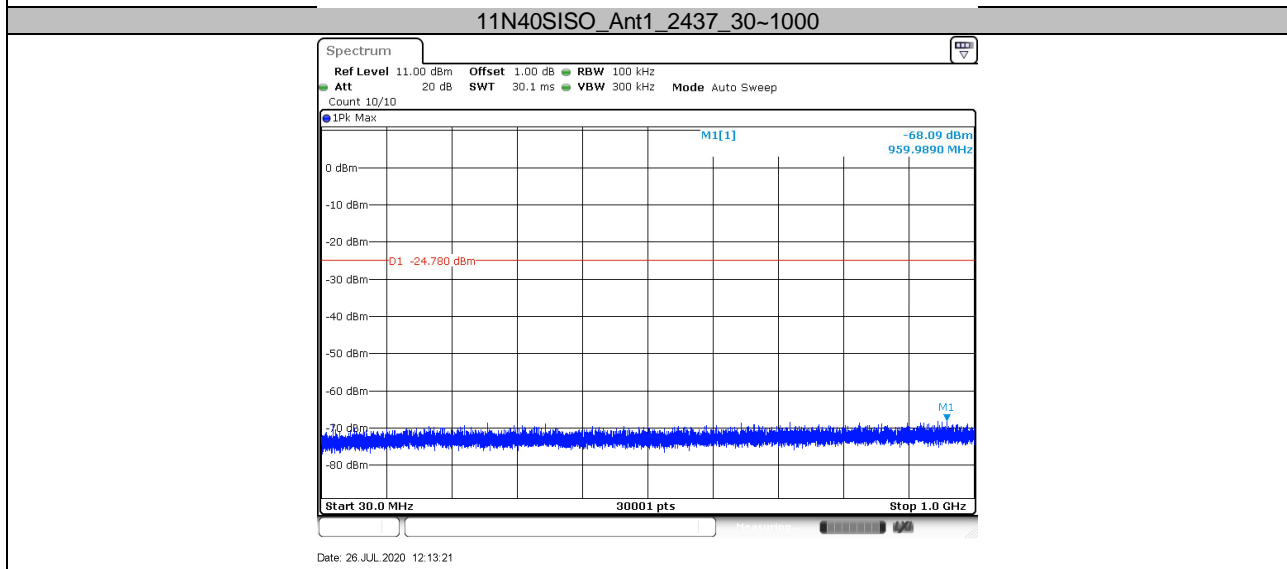
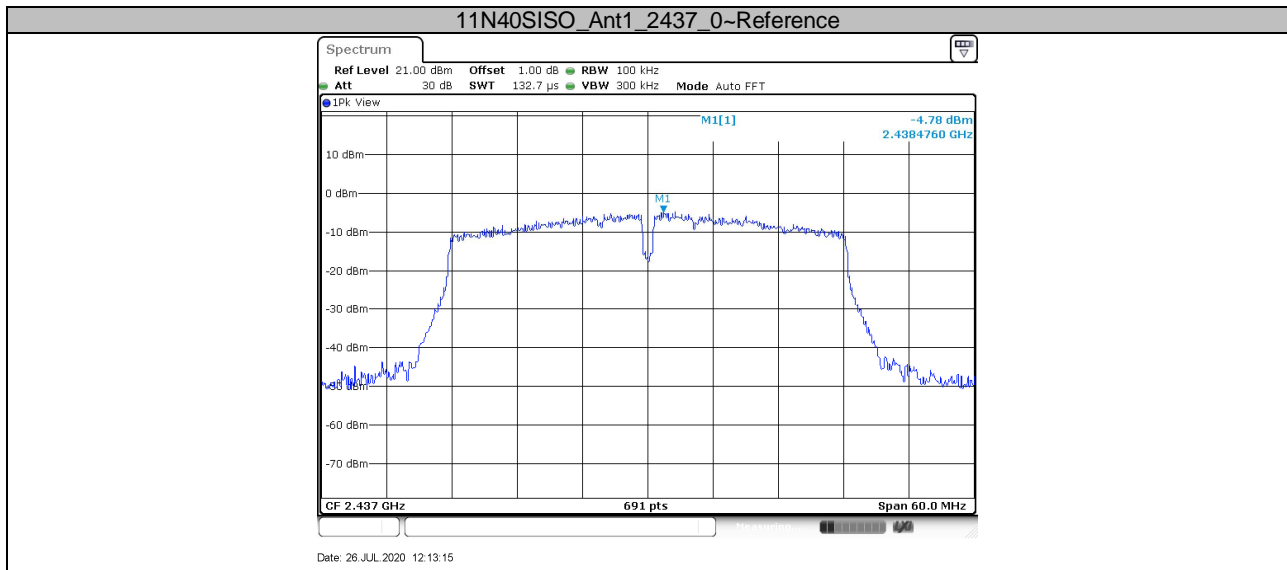
11N20SISO_Ant1_2412_1000~26500

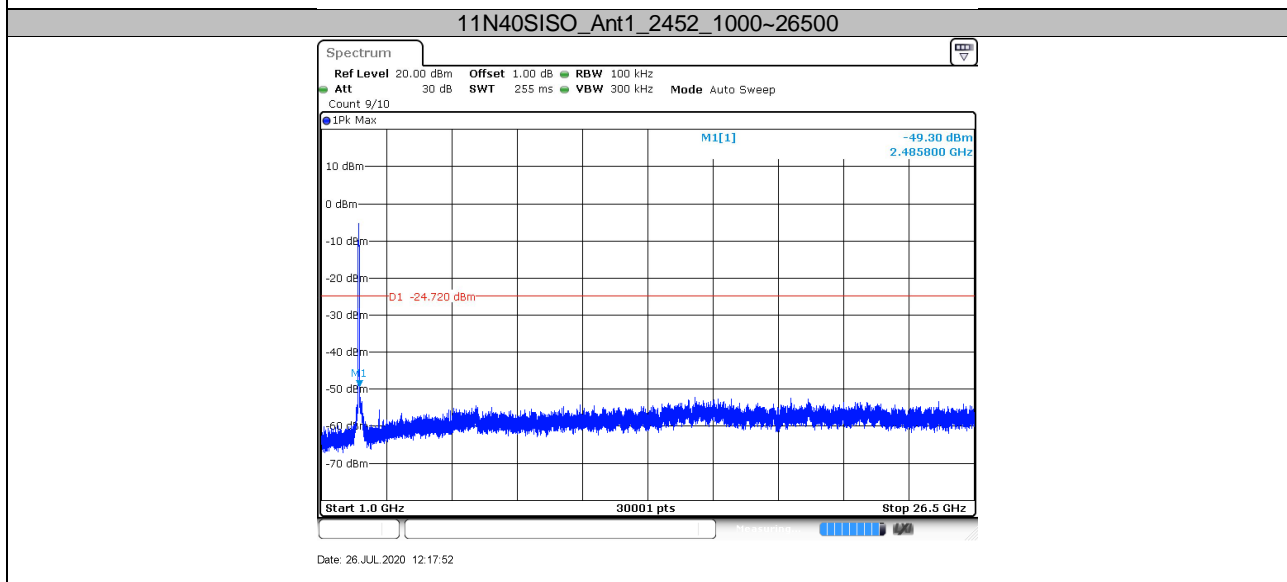
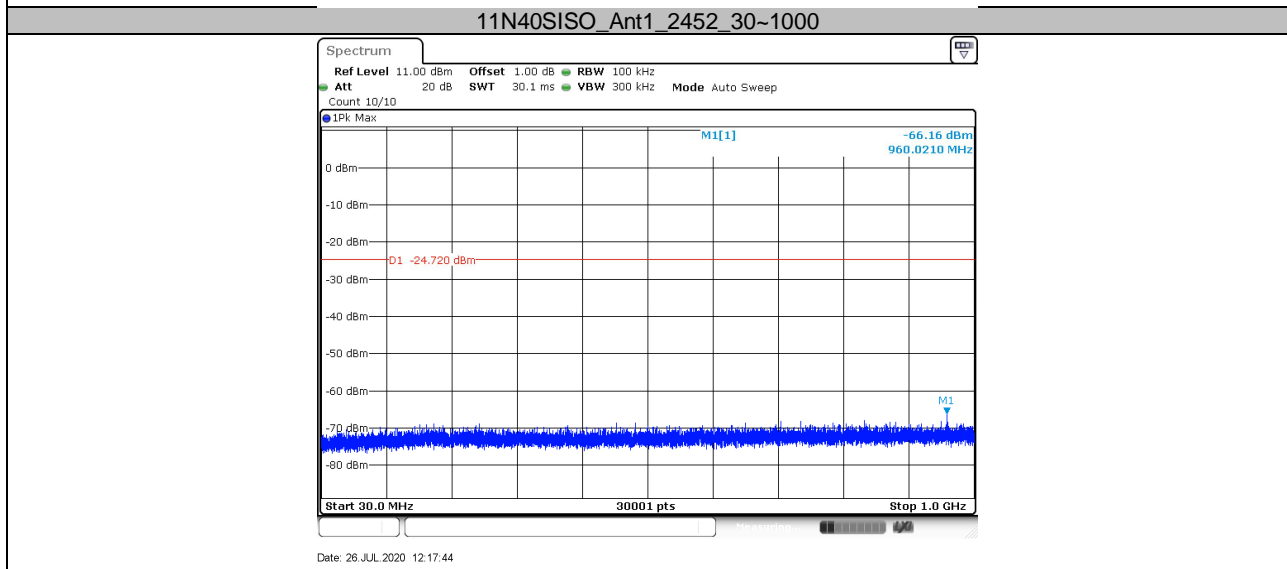
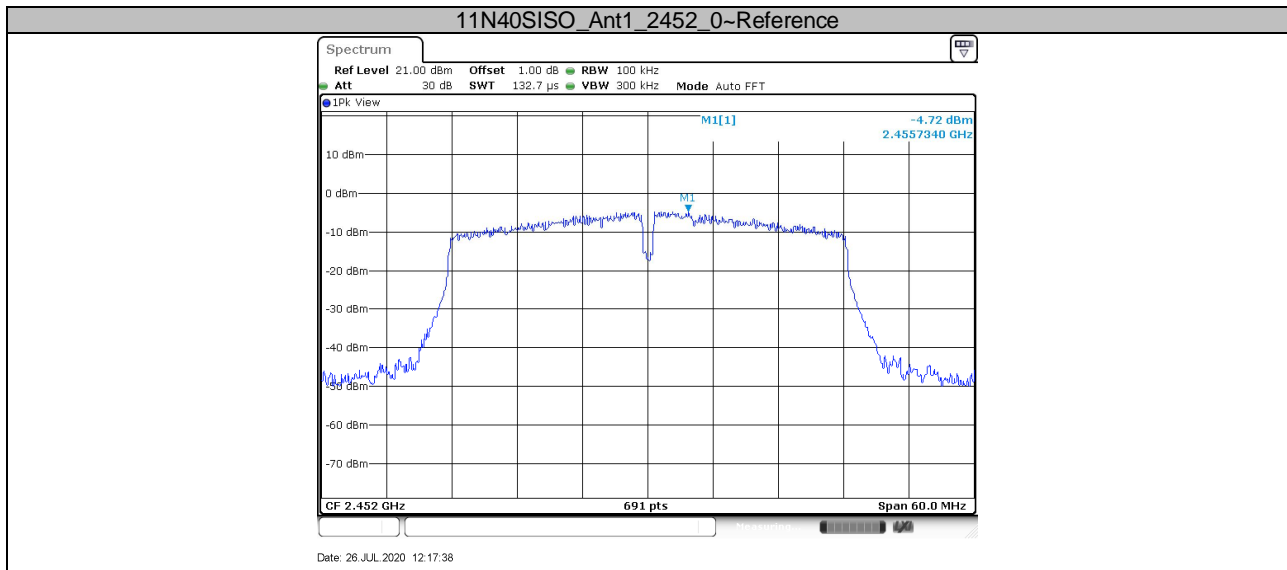












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Remark: Test of above 1GHz were performed with 1MHz RBW, we can't find any burst, so they are considered to fulfill the requirement with 100KHz RBW without further testing.

9.5 Band edge testing

Test Method

- 1 Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz, VBW \geq RBW, Sweep = auto, Detector function = peak, Trace = max hold
- 2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
- 3 The level displayed must comply with the limit specified in this Section. .
- 4 Repeat the test at the hopping off and hopping on mode, submit all the plots.

Limit:

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands 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, provided the transmitter demonstrates compliance with the peak conducted power limits. 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 Section 15.205(c)).

Frequency Range MHz	Limit (dBc)
30-25000	-20

Test result:

TestMode	Antenna	ChName	Channel(MHz)	RefLevel(dBm)	Result(dBm)	Limit(dBm)	Verdict
11B	Ant1	Low	2412	8.59	-34.52	<=-11.36	PASS
		High	2462	5.81	-52.04	<=-11.99	PASS
11G	Ant1	Low	2412	-0.59	-38.17	<=-15.61	PASS
		High	2462	-0.74	-50.42	<=-17.79	PASS
11N20SISO	Ant1	Low	2412	-1.78	-40.22	<=-18.44	PASS
		High	2462	-1.77	-50.1	<=-18.87	PASS
11N40SISO	Ant1	Low	2422	-5.00	-41.42	<=-19.89	PASS
		High	2452	-4.50	-48.4	<=-19.74	PASS

