

FCC - TEST REPORT

Report Number : **68.950.18.0471.01** Date of Issue: November 30, 2018

Model : **HD-VWT8005**

Product Type : Small-sized graphical vehicle-mounted wireless terminal

Applicant : YANTAI HUADONG ELECTRON TECHNOLOGY CO., LTD.

Address : Huadong Elec-Tech Building, Gaoxin District, 264003 yantai, China

Production Facility : YANTAI HUADONG ELECTRON TECHNOLOGY CO., LTD.

Address : Huadong Elec-Tech Building, Gaoxin District, 264003 yantai, China

Test Result : **n Positive** **o Negative**

Total pages including
Appendices : **45**

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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,
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FCC Registration Number: 514049

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

3 Description of the Equipment under Test

Product:	Small-sized graphical vehicle-mounted wireless terminal
Model no.:	HD-VWT8005
FCC ID:	2AROX-HDVWT8005
Rating:	24VDC, 0.84A, Max
RF Transmission Frequency:	2412MHz-2462MHz for 802.11b/g/n HT20
No. of Operated Channel:	11
Modulation:	802.11b: BPSK, QPSK, CCK, 802.11g/802.11n HT20: BPSK, QPSK, 16-QAM, 64-QAM
Antenna Type:	external antenna
Antenna Gain:	5dBi max for 2.4GHz
Description of the EUT:	The Equipment Under Test (EUT) is a Small-sized graphical vehicle-mounted wireless terminal supports 2.4GHz WIFI functions.

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2017 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB558074 D01 v5.0 DTS Measurement Guidance and ANSI C63.10 (2013).

5 Summary of Test Results

Technical Requirements				
FCC Part 15 Subpart C				
Test Condition		Pages	Test Result	Test Site
§15.207	Conducted emission AC power port	--	N/A	--
§15.247(b)(1)	Conducted AV output power for FHSS	--	N/A	--
§15.247(b)(3)	Conducted AV output power for DTS	10	Pass	Site 1
§15.247(e)	Power spectral density	23	Pass	Site 1
§15.247(a)(2)	6dB bandwidth	13	Pass	Site 1
§15.247(a)(1)	20dB Occupied bandwidth	--	N/A	--
§15.247(a)(2)	99% Occupied Bandwidth	17	Pass	Site 1
§15.247(a)(1)	Carrier frequency separation	--	N/A	--
§15.247(a)(1)(iii)	Number of hopping frequencies	--	N/A	--
§15.247(a)(1)(iii)	Dwell Time	--	N/A	--
§15.247(d)	Spurious RF conducted emissions	29	Pass	Site 1
§15.247(d)	Band edge	36	Pass	Site 1
§15.247(d) & §15.209 & §15.205	Spurious radiated emissions for transmitter	39	Pass	Site 1
§15.203	Antenna requirement	See note 2	Pass	--

Note 1: N/A – Not Applicable.

Note 2: The EUT uses an external Antenna 5dBi max. According 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: 2AROX-HDVWT8005, complies with Section 15.207, 15.209, 15.205, 15.247 of the FCC Part 15, Subpart C rules.

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: September 05, 2018

Testing Start Date: September 05, 2018

Testing End Date: October 19, 2018

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

Reviewed by:

Prepared by:

Tested by:



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EMC Project Manager



Mark Chen
EMC Project Engineer

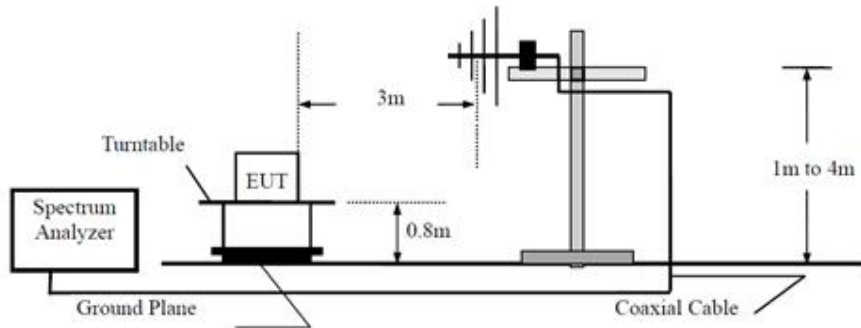


Carry Cai
EMC Test Engineer

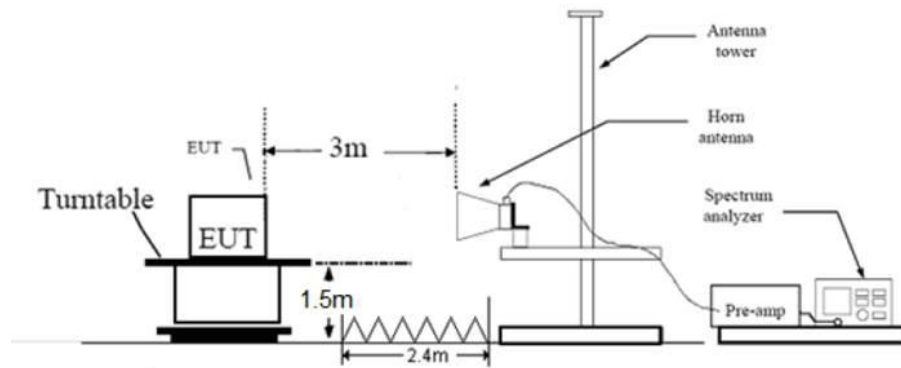
7 Test Setups

7.1 Radiated test setups

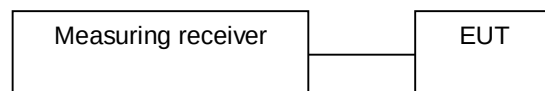
Below 1GHz



Above 1GHz



7.2 Conducted RF test setups



8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.	S/N
Laptop	Lenovo	T460S	---
USB Type C cable	GoPro	0.55m (Length)	---
AC Adapter	Apple	A1401	---

Test Channel information:

Test Mode	Channel (MHz)		
802.11b	CH 1: 2412MHz	CH 6: 2437MHz	CH 11: 2462MHz
802.11g	CH 1: 2412MHz	CH 6: 2437MHz	CH 11: 2462MHz
802.11n HT20	CH 1: 2412MHz	CH 6: 2437MHz	CH 11: 2462MHz

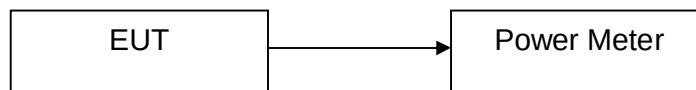
9 Technical Requirement

9.1 Conducted Average output power

Test Method

1. Setting the highest output power level of the EUT:
2. Connect to gated RF power meter.

Test Setup



Limits

According to §15.247 (b) (3), conducted Average output power limit as below:

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

Test result as below table

802.11b

Frequency MHz	Conducted Average Output Power dBm	Result
Top channel 2412MHz	11.1	Pass
Middle channel 2437MHz	11.3	Pass
Bottom channel 2462MHz	11.9	Pass

802.11g

Frequency MHz	Conducted Average Output Power dBm	Result
Top channel 2412MHz	14.2	Pass
Middle channel 2437MHz	15.1	Pass
Bottom channel 2462MHz	14.4	Pass

802.11n HT20

Frequency MHz	Conducted Average Output Power dBm	Result
Top channel 2412MHz	14.0	Pass
Middle channel 2437MHz	14.9	Pass
Bottom channel 2462MHz	14.4	Pass

9.2 6dB bandwidth

Test Method

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 ≥ 6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

Limit

Limit [kHz]

≥ 500

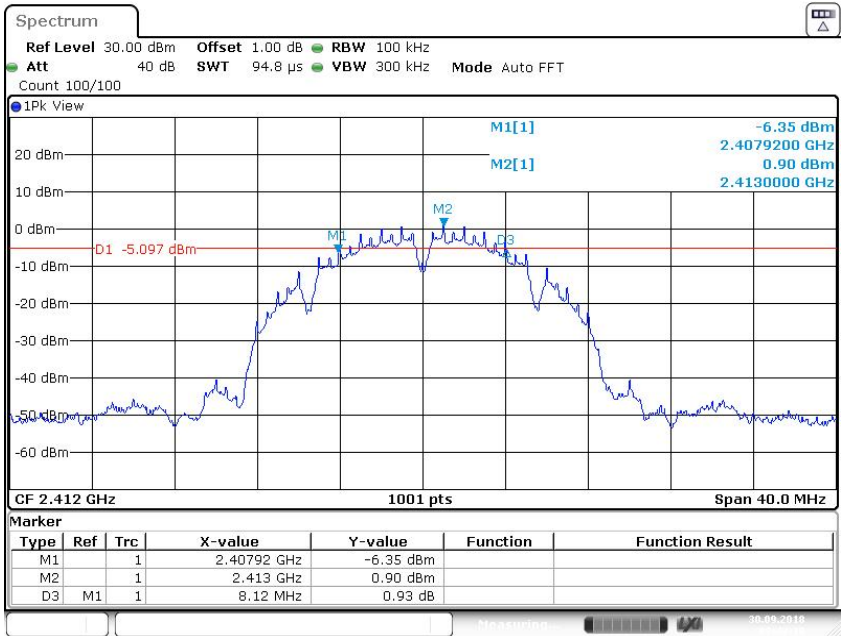
Test result

Test Mode	Channel (MHz)	Result (MHz)	Limit (KHz)	Verdict
11b	2412	8.12	≥ 500	PASS
11b	2437	8.12	≥ 500	PASS
11b	2462	8.12	≥ 500	PASS
11g	2412	15.16	≥ 500	PASS
11g	2437	15.20	≥ 500	PASS
11g	2462	15.24	≥ 500	PASS
11n HT20	2412	16.0	≥ 500	PASS
11n HT20	2437	15.2	≥ 500	PASS
11n HT20	2462	15.2	≥ 500	PASS

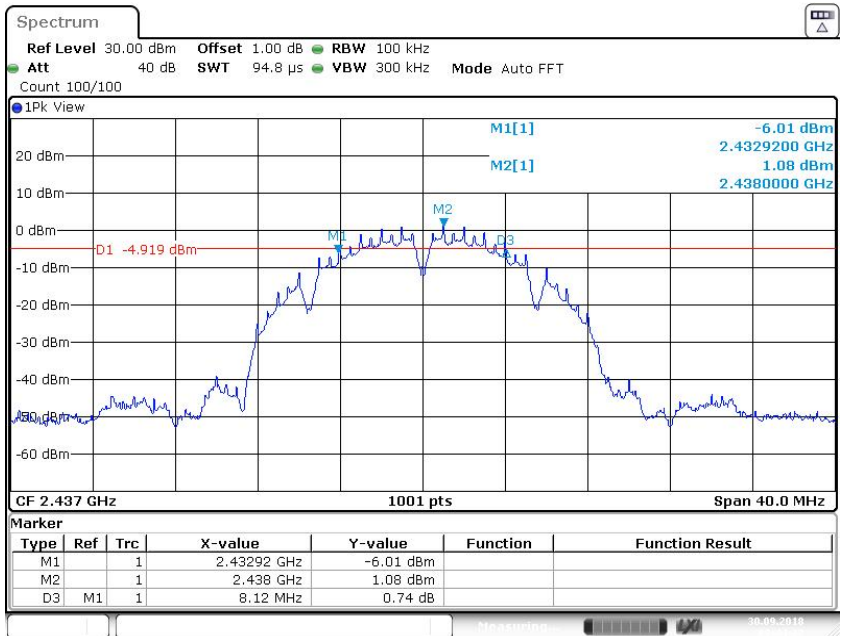


6 dB Bandwidth

11B Low channel 2412MHz

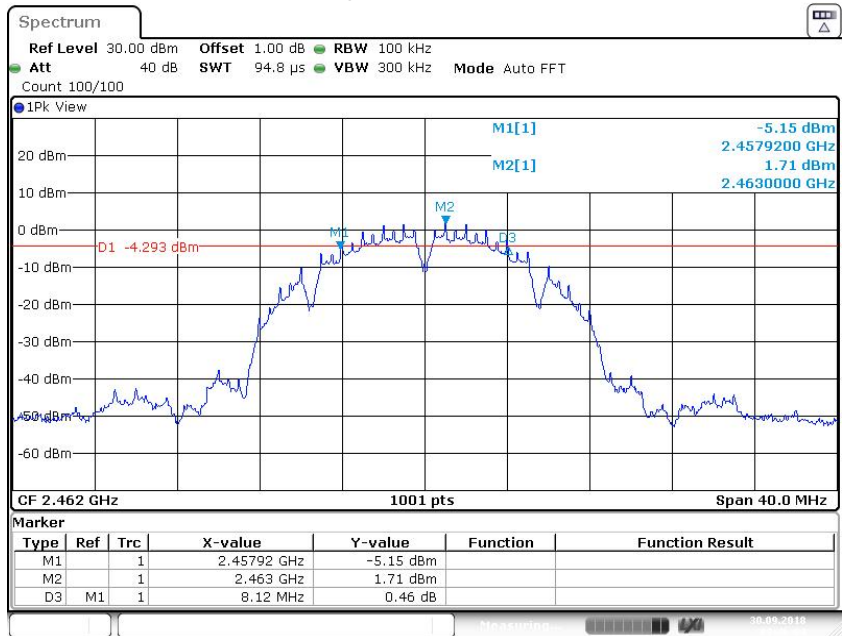


11B Middle channel 2437MHz



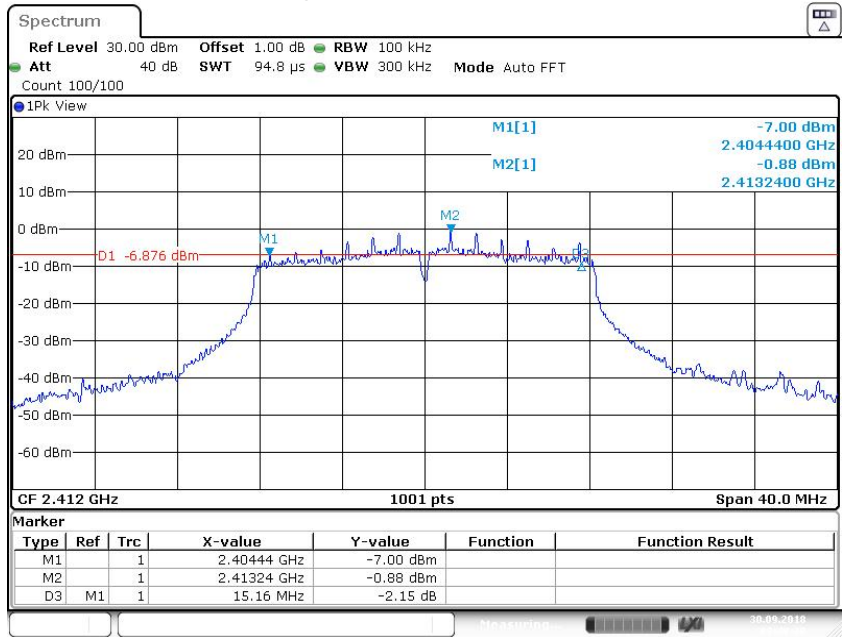


11B High channel 2462MHz



Date: 30 SEP 2018 09:46:04

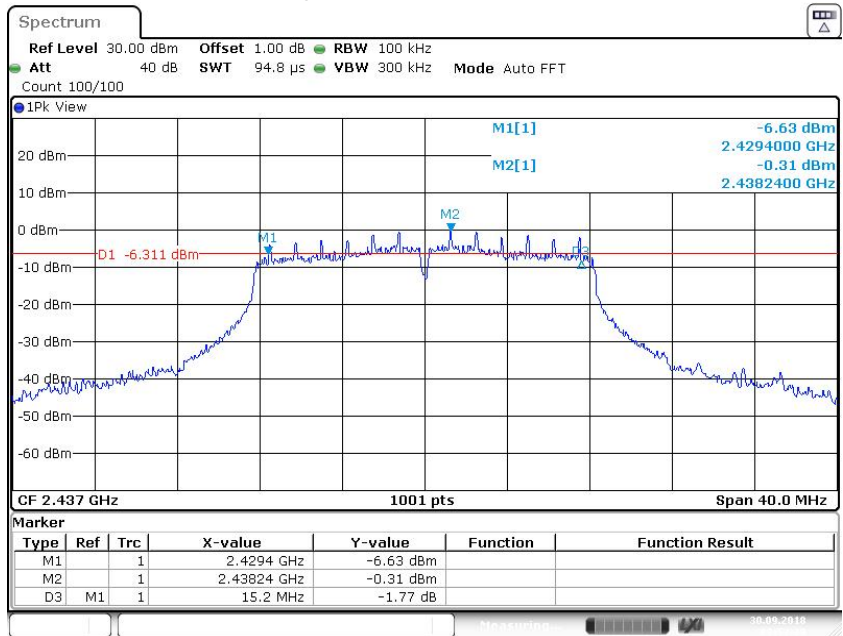
11g Low channel 2412MHz



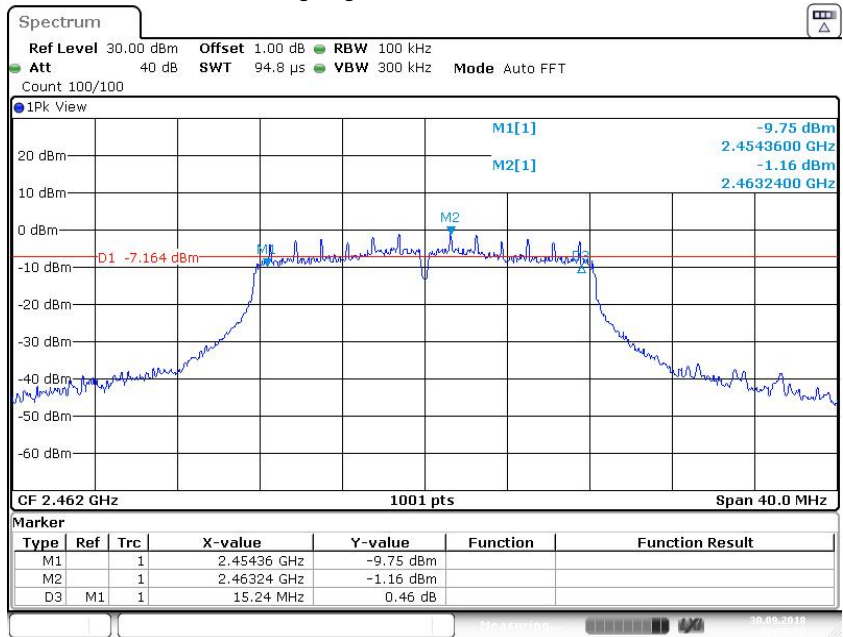
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11g Low channel 2437MHz

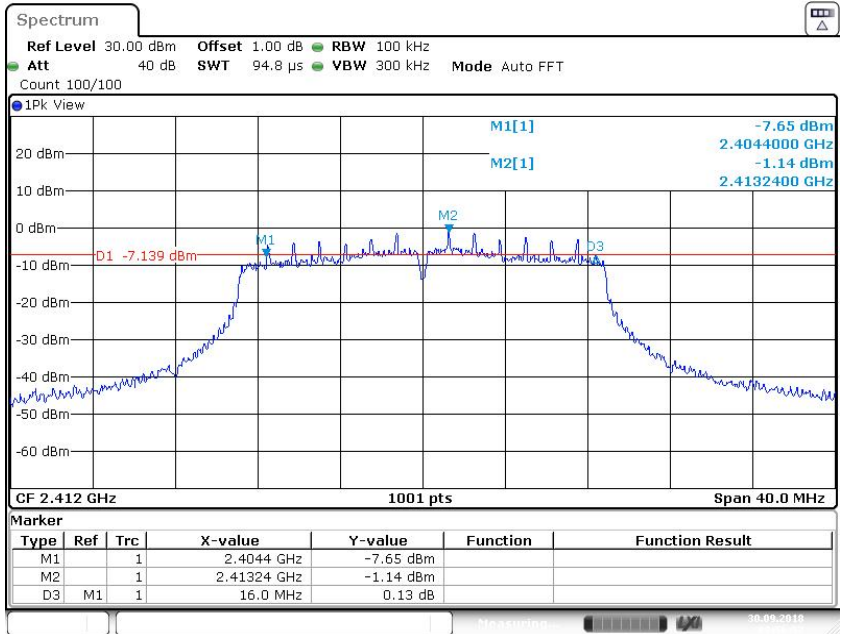


11g High channel 2462MHz



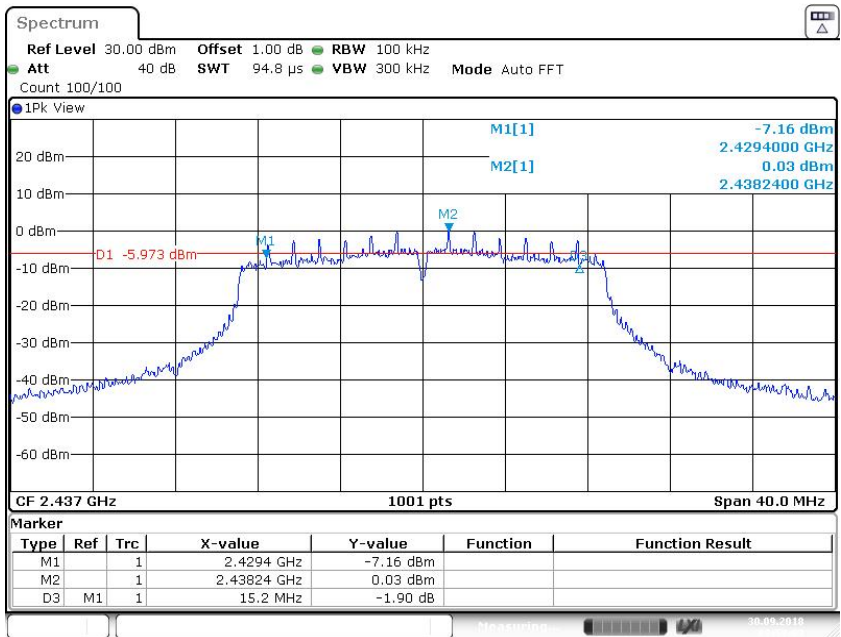


11n(20MHz) Low channel 2412MHz



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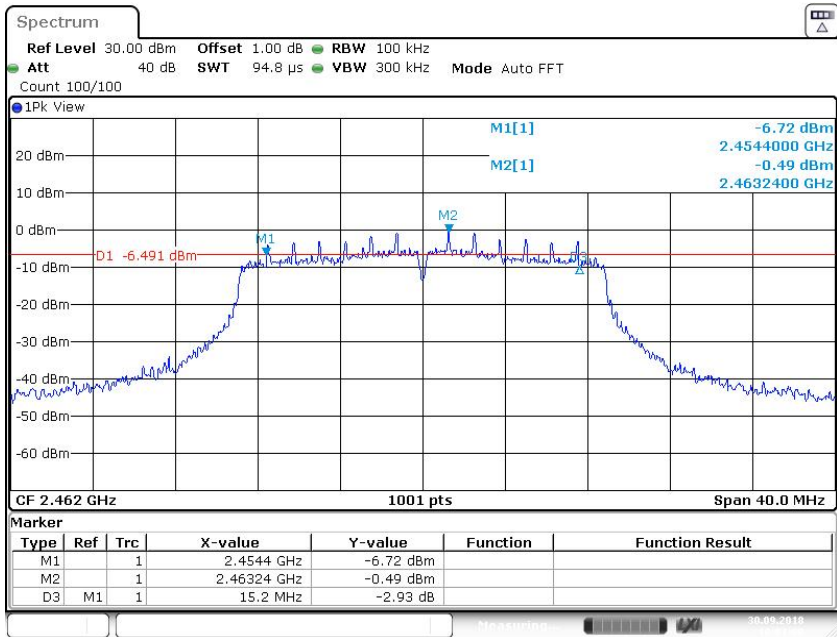
11n(20MHz) Low channel 2437MHz



Date: 30 SEP 2018 09:59:03



11n(20MHz) Low channel 2462MHz



Date: 30 SEP 2018 10:01:01

9.3 99% bandwidth

Test Method

4. Use the following spectrum analyzer settings:
RBW=100K, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
5. Use the automatic bandwidth measurement capability of an instrument, may be employed using the OBW bandwidth mode.
6. Allow the trace to stabilize, record the OBW Bandwidth value.

Limit

Limit [kHz]

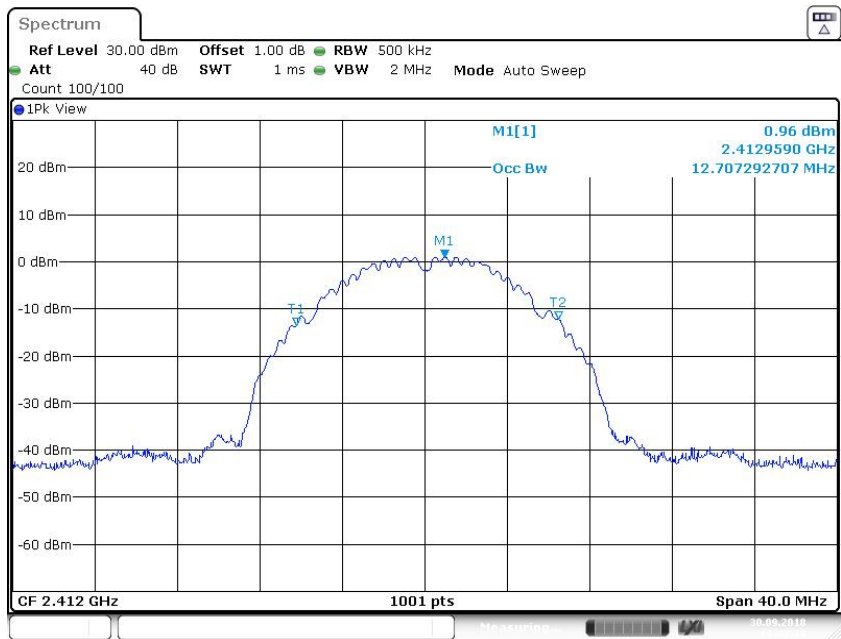
--

Test Result

Test Mode	Channel (MHz)	Result (MHz)	Limit (KHz)	Verdict
11b	2412	12.707	---	PASS
11b	2437	12.707	---	PASS
11b	2462	12.747	---	PASS
11g	2412	17.423	---	PASS
11g	2437	17.423	---	PASS
11g	2462	17.463	---	PASS
11n HT20	2412	18.382	---	PASS
11n HT20	2437	18.342	---	PASS
11n HT20	2462	18.382	---	PASS

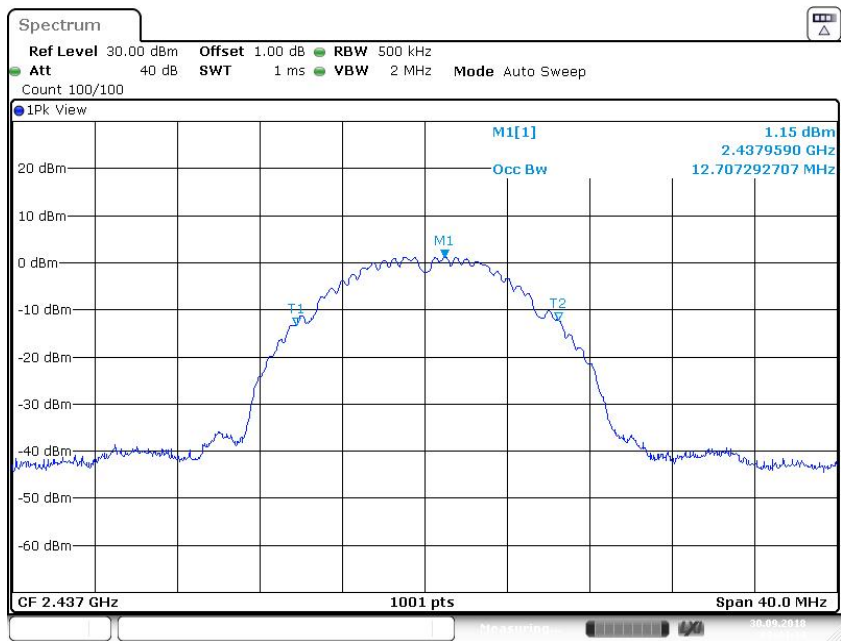


11B Low channel 2412MHz



Date: 30 SEP 2018 09:42:29

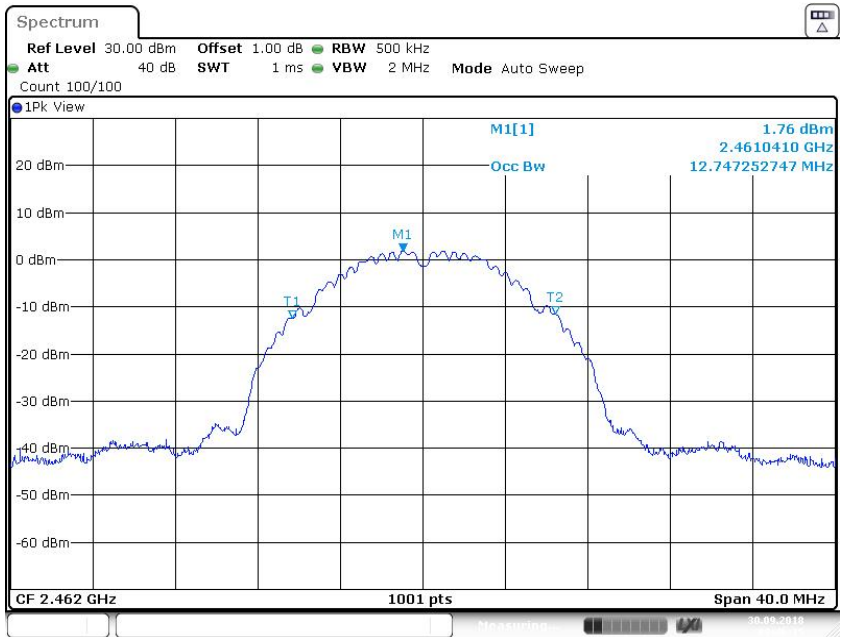
11B Middle channel 2437MHz



Date: 30 SEP 2018 09:44:34

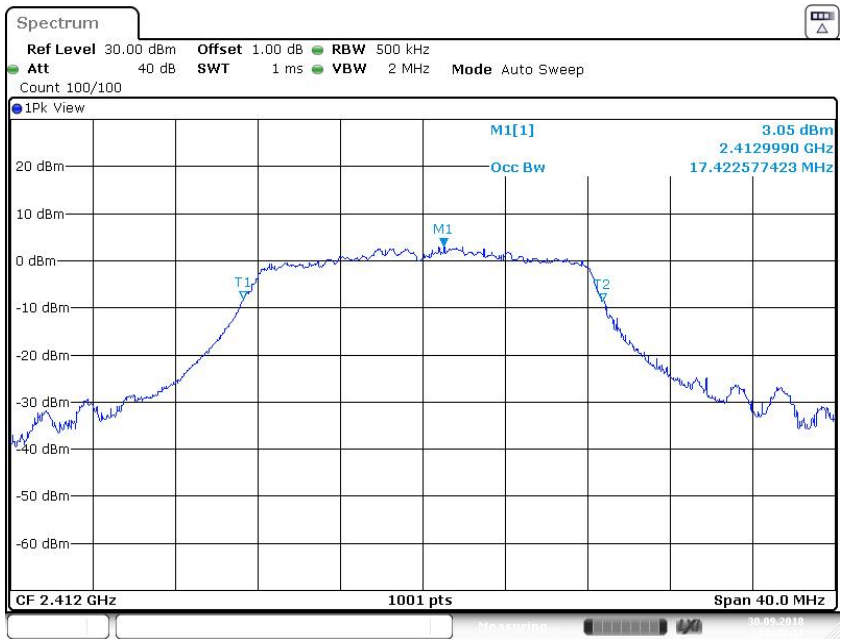


11B High channel 2462MHz



Date: 30 SEP 2018 09:46:15

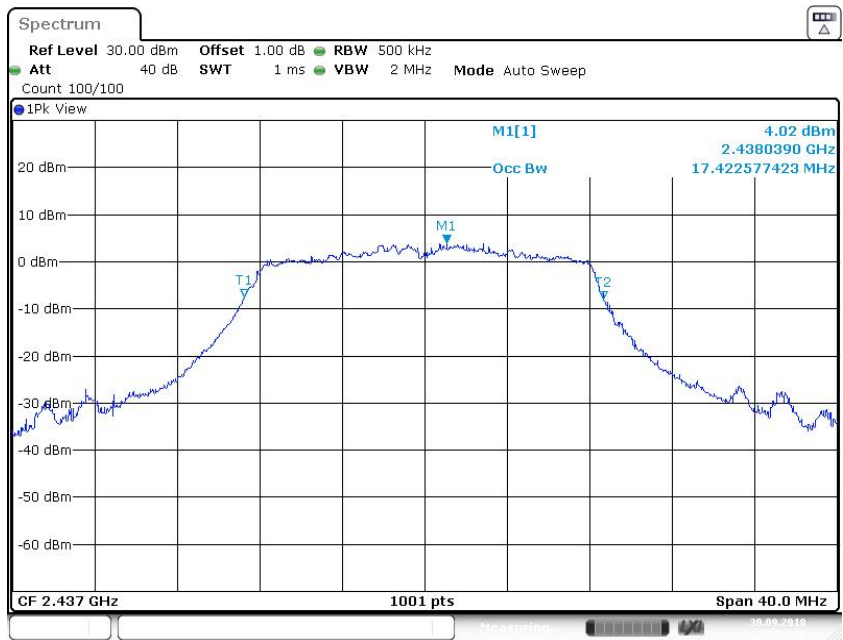
11g Low channel 2412MHz



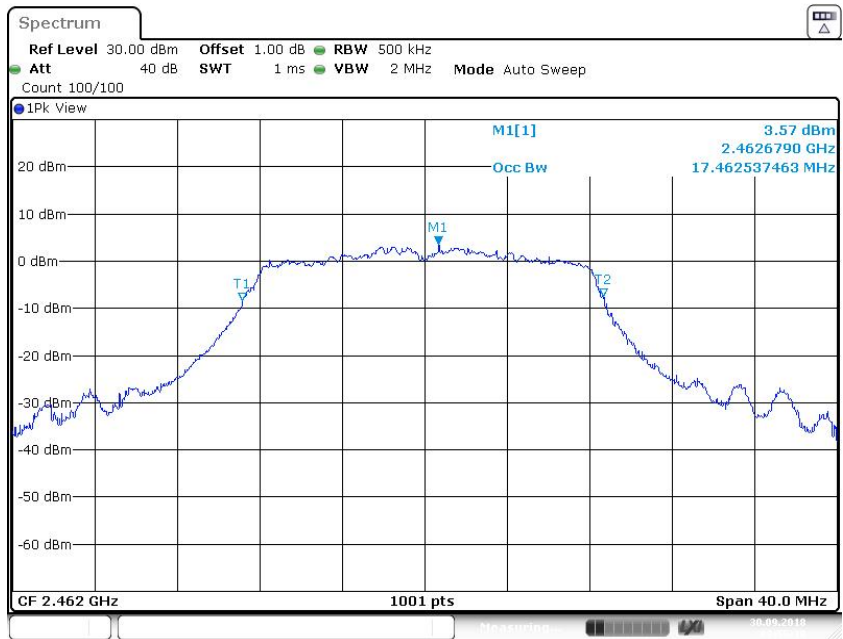
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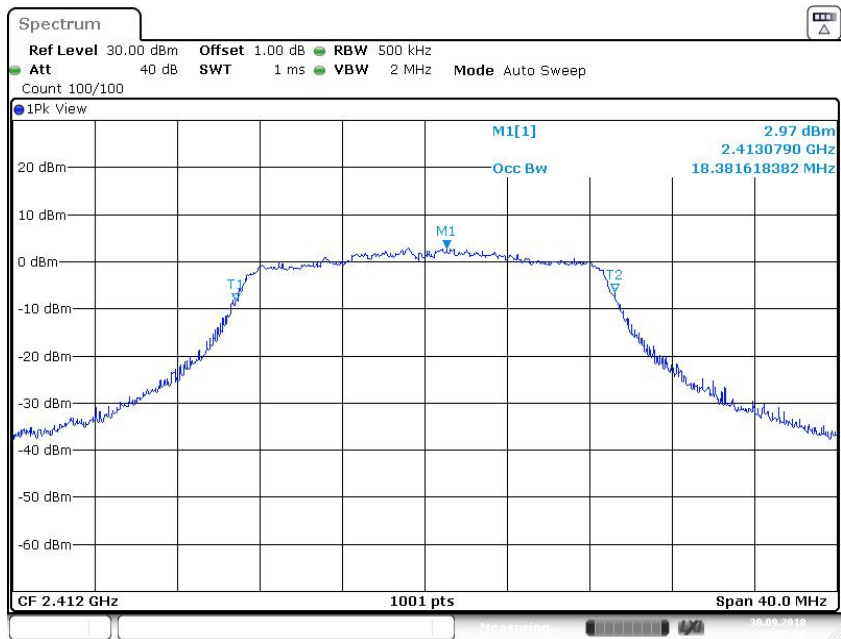
11g Middle channel 2437MHz



11g High channel 2462MHz

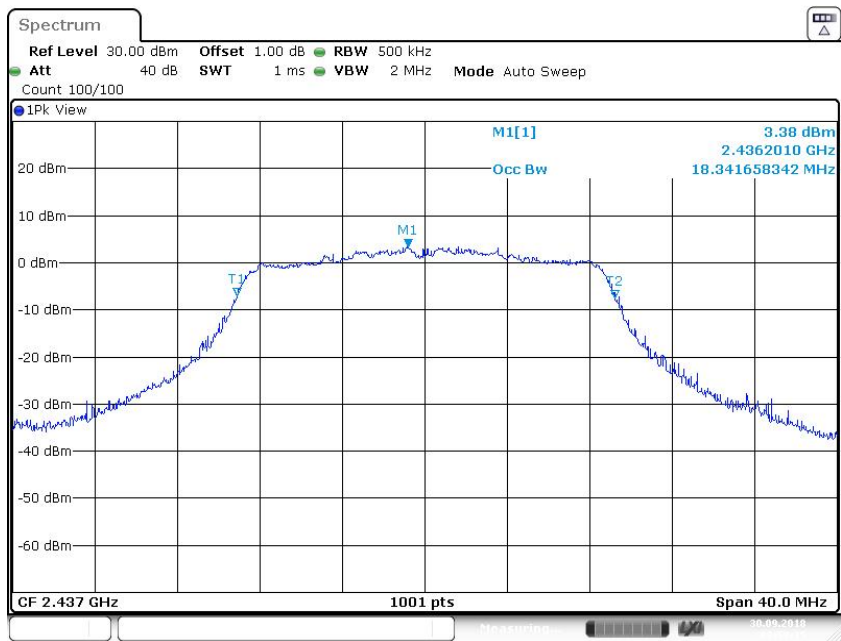


11n(20MHz) Low channel 2412MHz



Date: 30 SEP 2018 09:57:08

11n(20MHz) middle channel 2437MHz



Date: 30 SEP 2018 09:59:15

Spectrum

Ref Level 30.00 dBm Offset 1.00 dB RBW 500 kHz
 Att 40 dB SWT 1 ms VBW 2 MHz Mode Auto Sweep
 Count 100/100

1Pk View

M1[1] 2.89 dBm
 2.4609610 GHz
 18.381618382 MHz

Occ Bw

M1

T1

T2

CF 2.462 GHz 1001 pts Span 40.0 MHz

Date: 30 SEP 2018 10:01:12

9.4 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.

Limit

Limit [dBm]

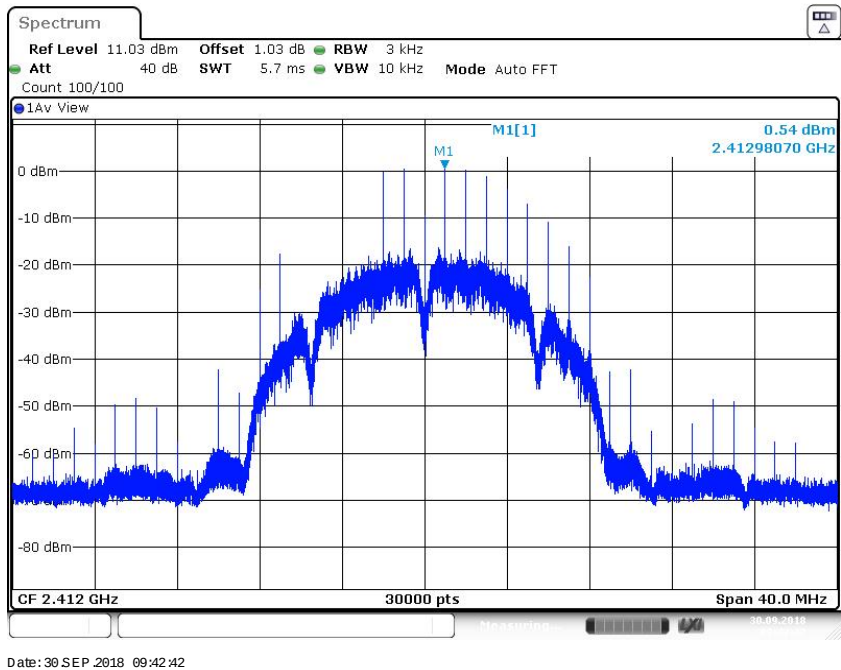
≤ 8

Test result

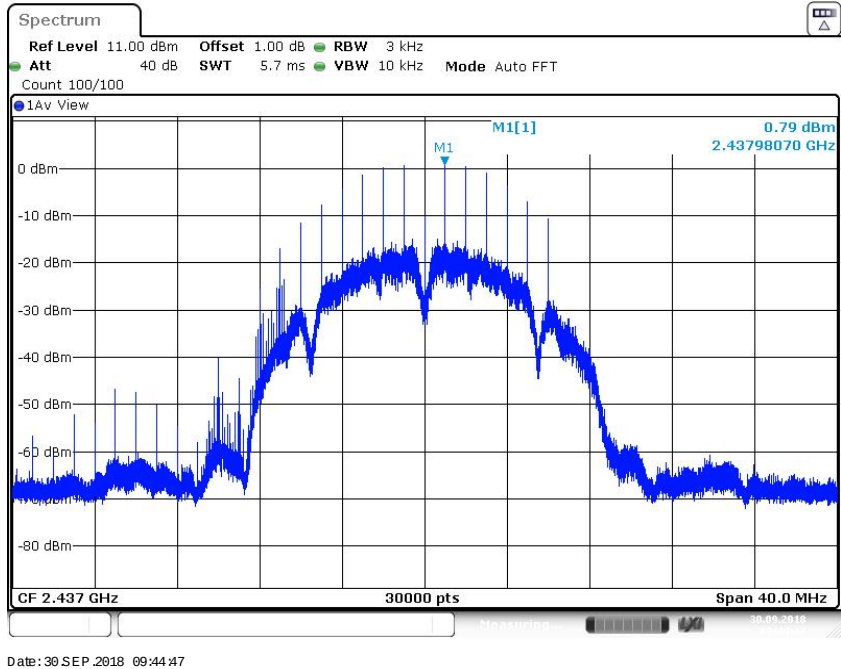
Test Mode	Channel (MHz)	Result (dBm)	Limit (dBm)	Verdict
11b	2412	0.54	8	PASS
11b	2437	0.79	8	PASS
11b	2462	1.10	8	PASS
11g	2412	-17.8	8	PASS
11g	2437	-16.9	8	PASS
11g	2462	-17.6	8	PASS
11n HT20	2412	-16.7	8	PASS
11n HT20	2437	-16.7	8	PASS
11n HT20	2462	-16.5	8	PASS



11B Low channel 2412MHz

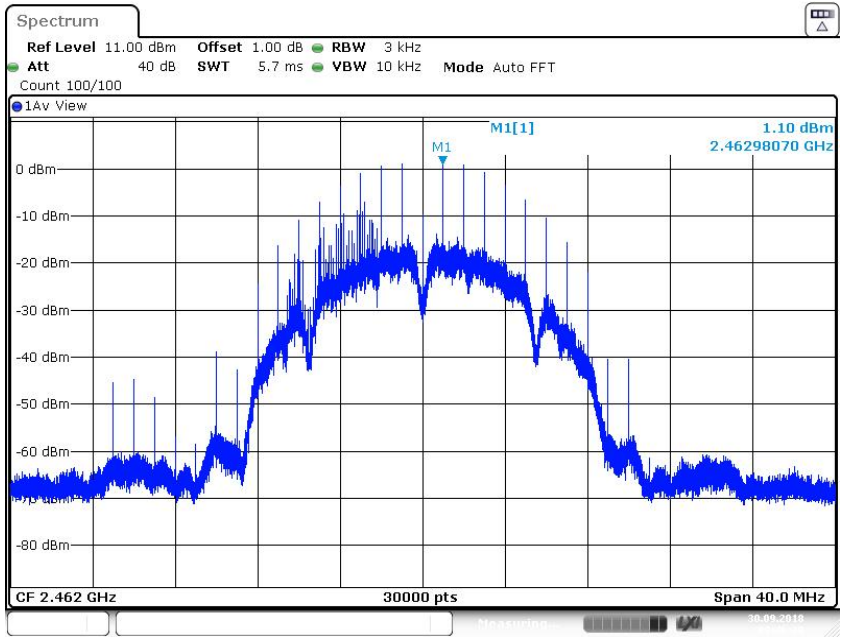


11B Middle channel 2437MHz



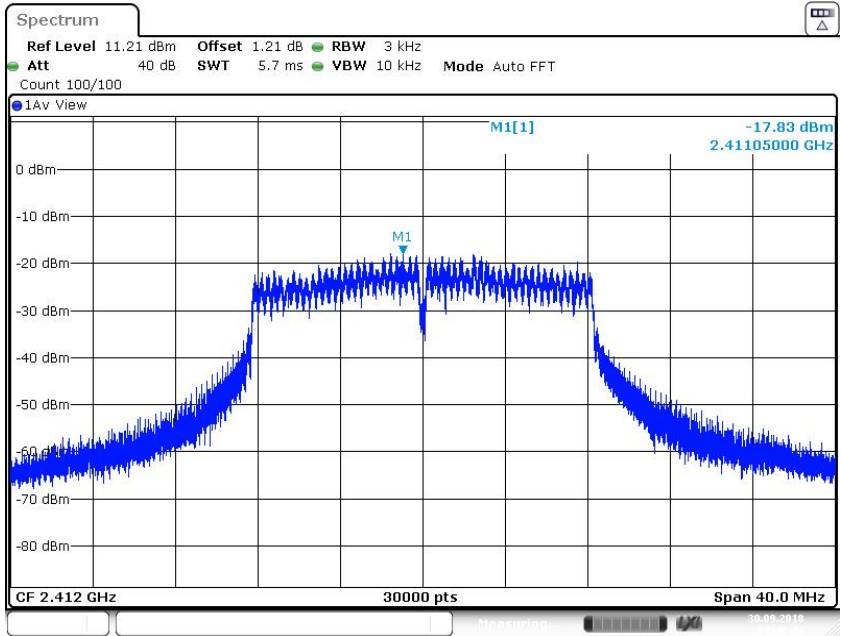


11B High channel 2462MHz



Date: 30 SEP 2018 09:46:28

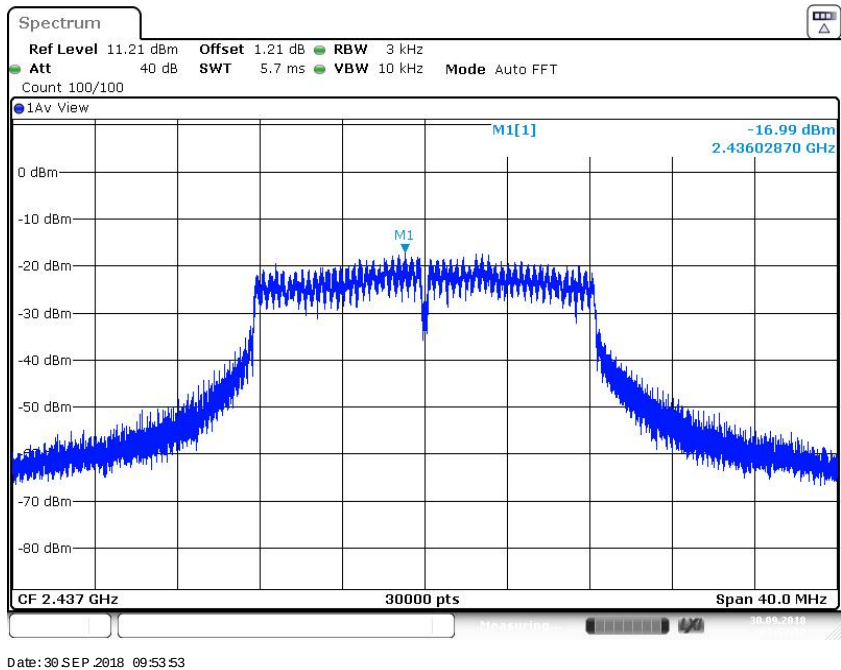
11g Low channel 2412MHz



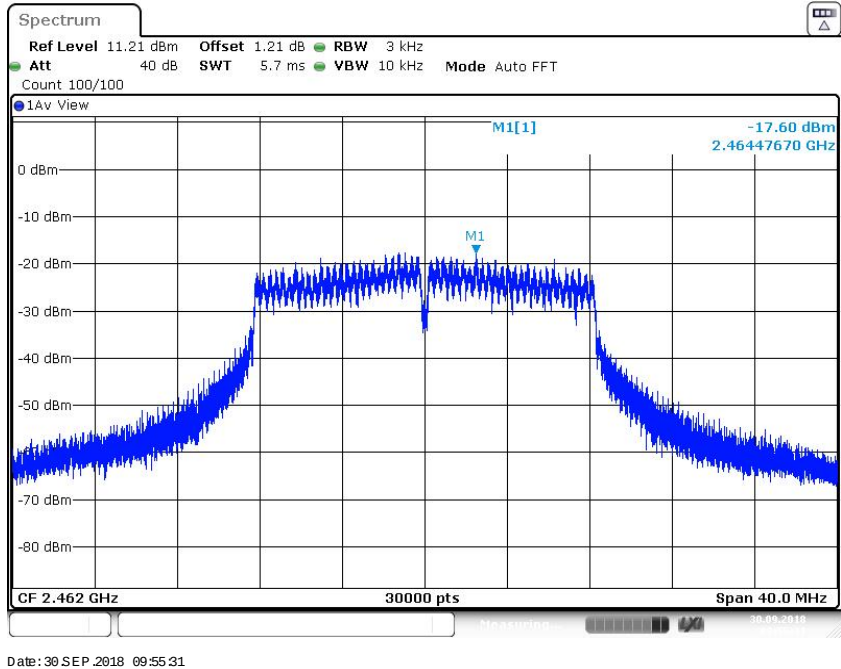
Date: 30 SEP 2018 09:48:44



11g Middle channel 2437MHz

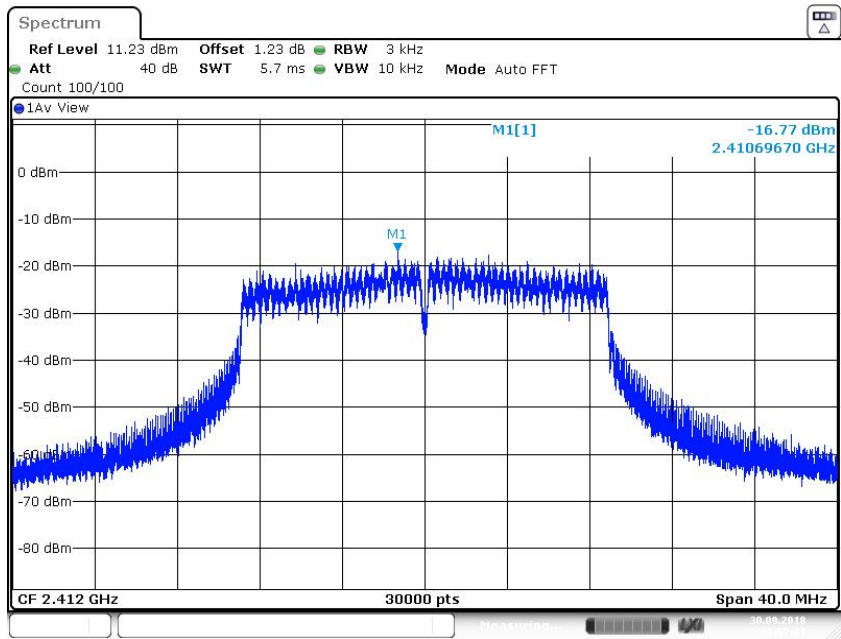


11g High channel 2462MHz



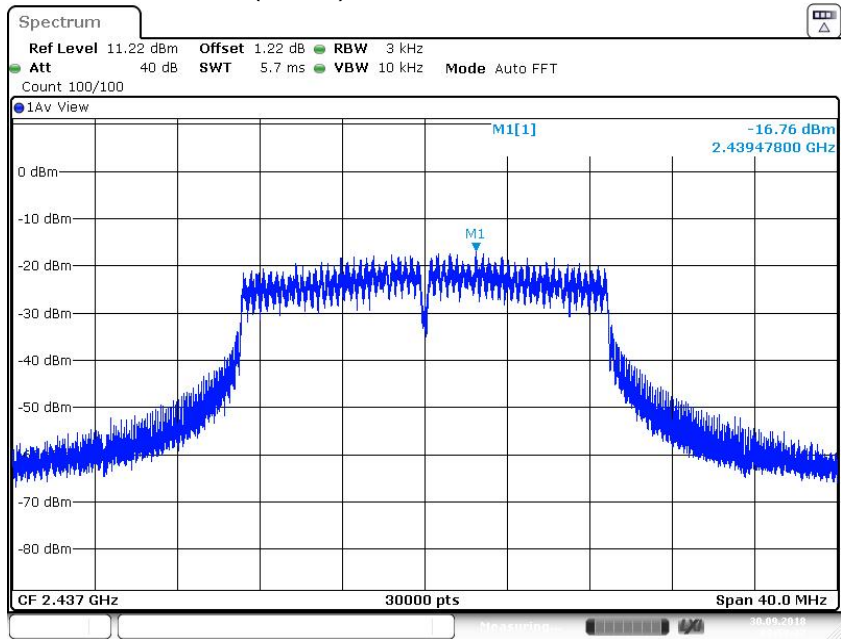


11n(20MHz) Low channel 2412MHz

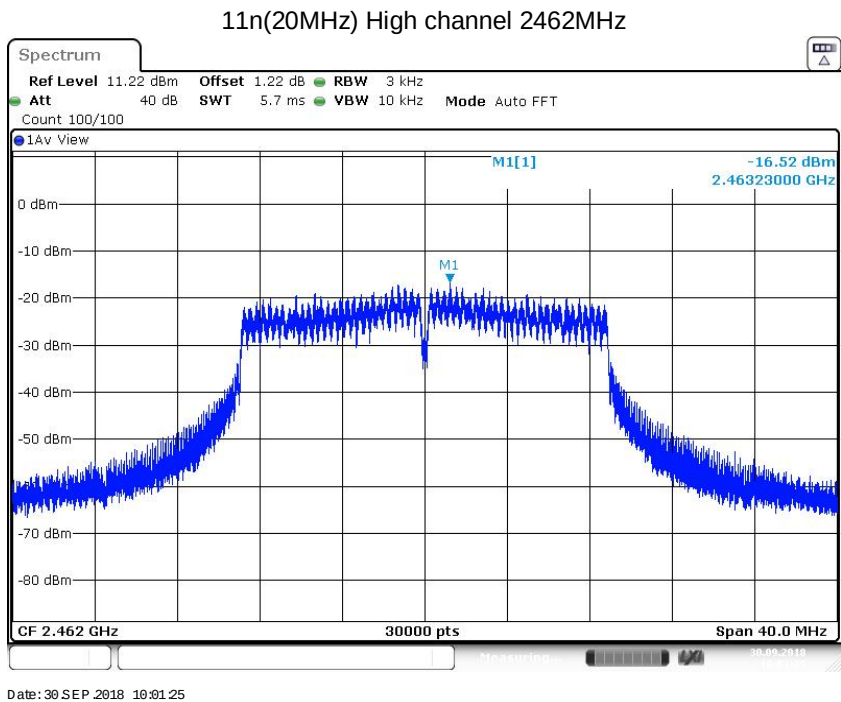


Date: 30 SEP 2018 09:57:21

11n(20MHz) Middle channel 2437MHz



Date: 30 SEP 2018 09:59:27



9.5 Spurious RF conducted emissions

Test Method

1. Establish a reference level by using the following procedure:
 - a. Set RBW=100 kHz. VBW $\geq$ 3RBW. Detector =peak, Sweep time = auto couple, Trace mode = max hold.
 - b. Allow trace to fully stabilize, use the peak marker function to determine the maximum PSD level.
2. Use the maximum PSD level to establish the reference level.
 - a. Set the center frequency and span to encompass frequency range to be measured.
 - b. Use the peak marker function to determine the maximum amplitude level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements, report the three highest emissions relative to the limit.
3. Repeat above procedures until other frequencies measured were completed.

Limit

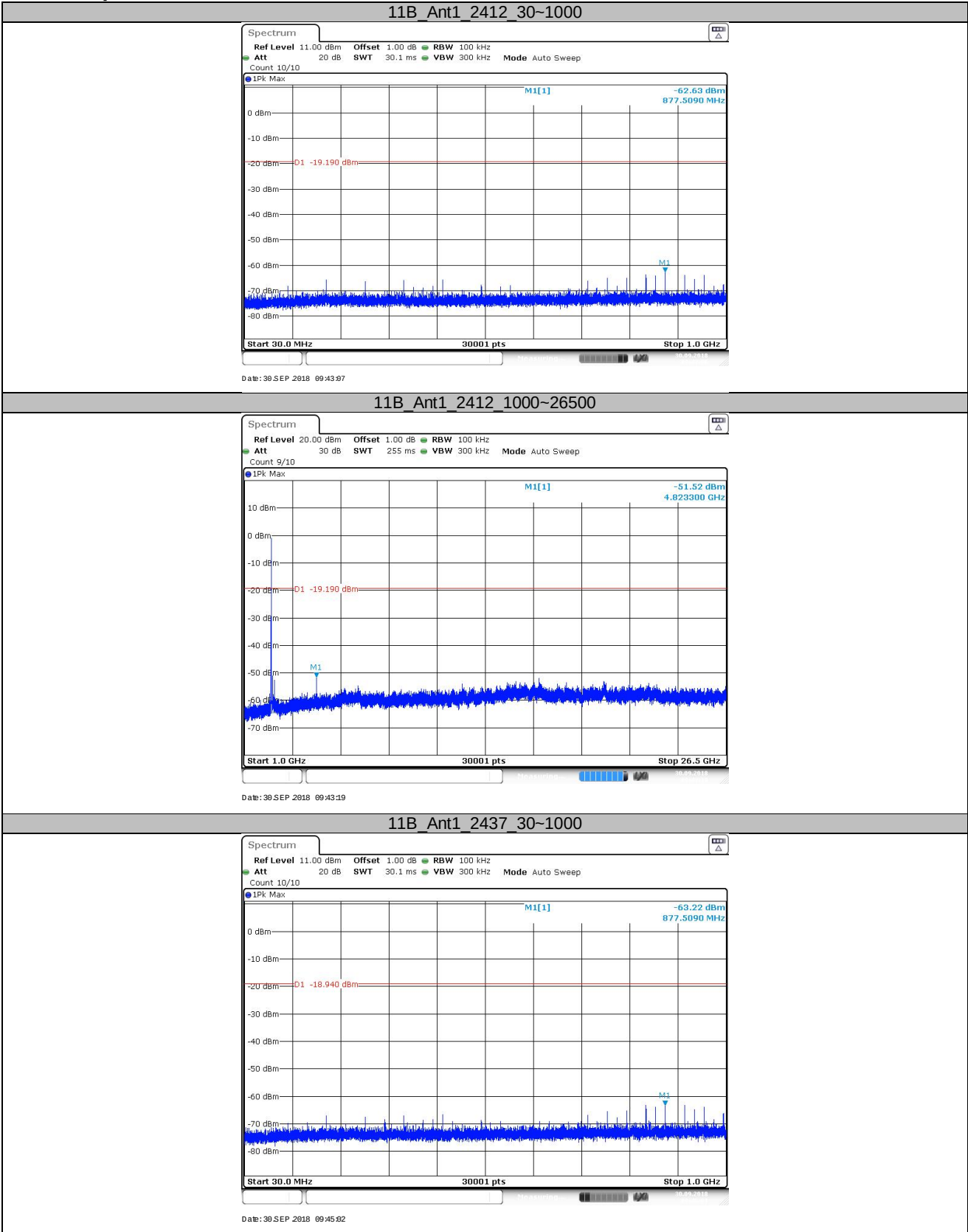
Frequency Range MHz	Limit (dBc)
30-25000	-20

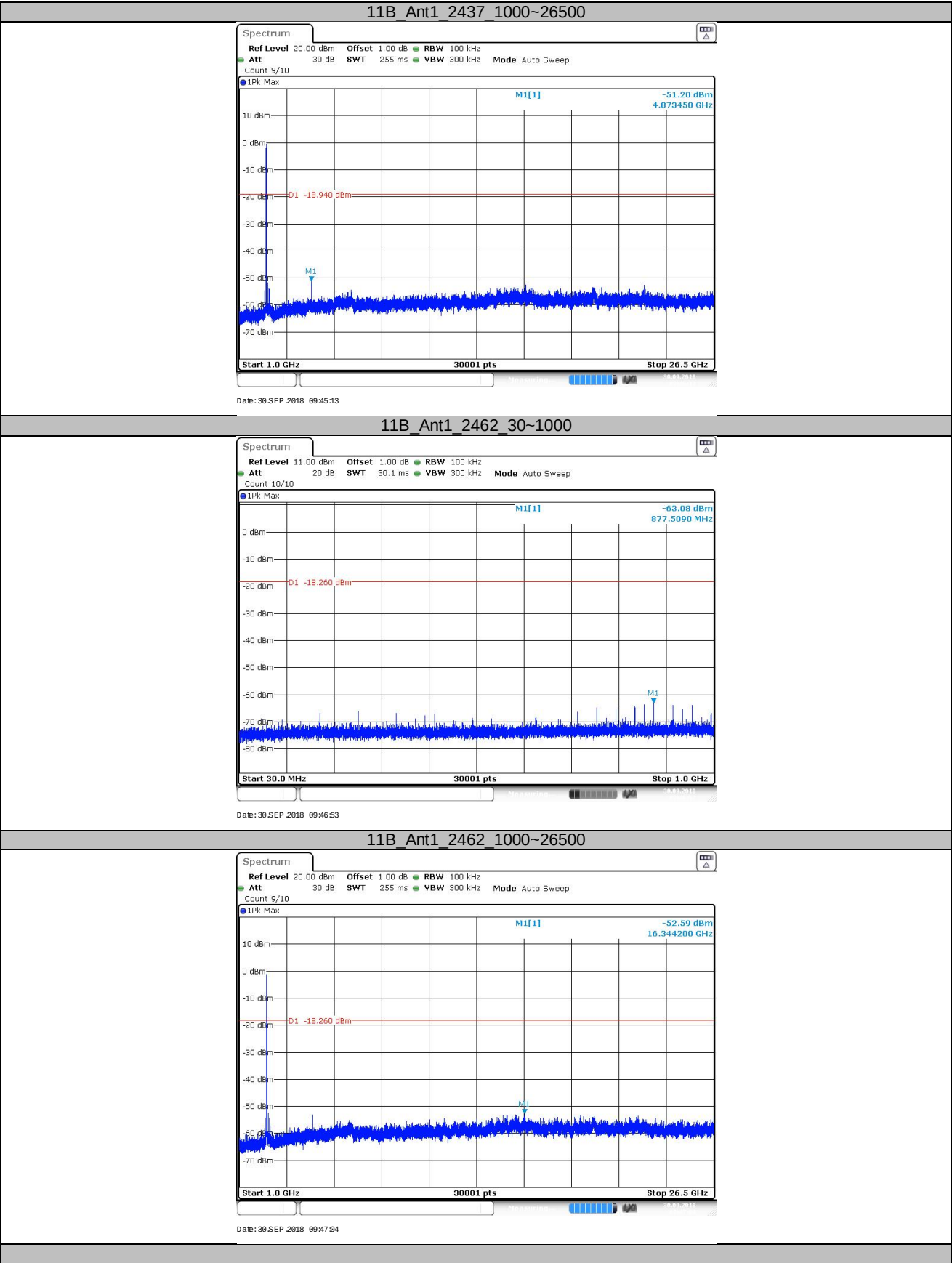
Test Result

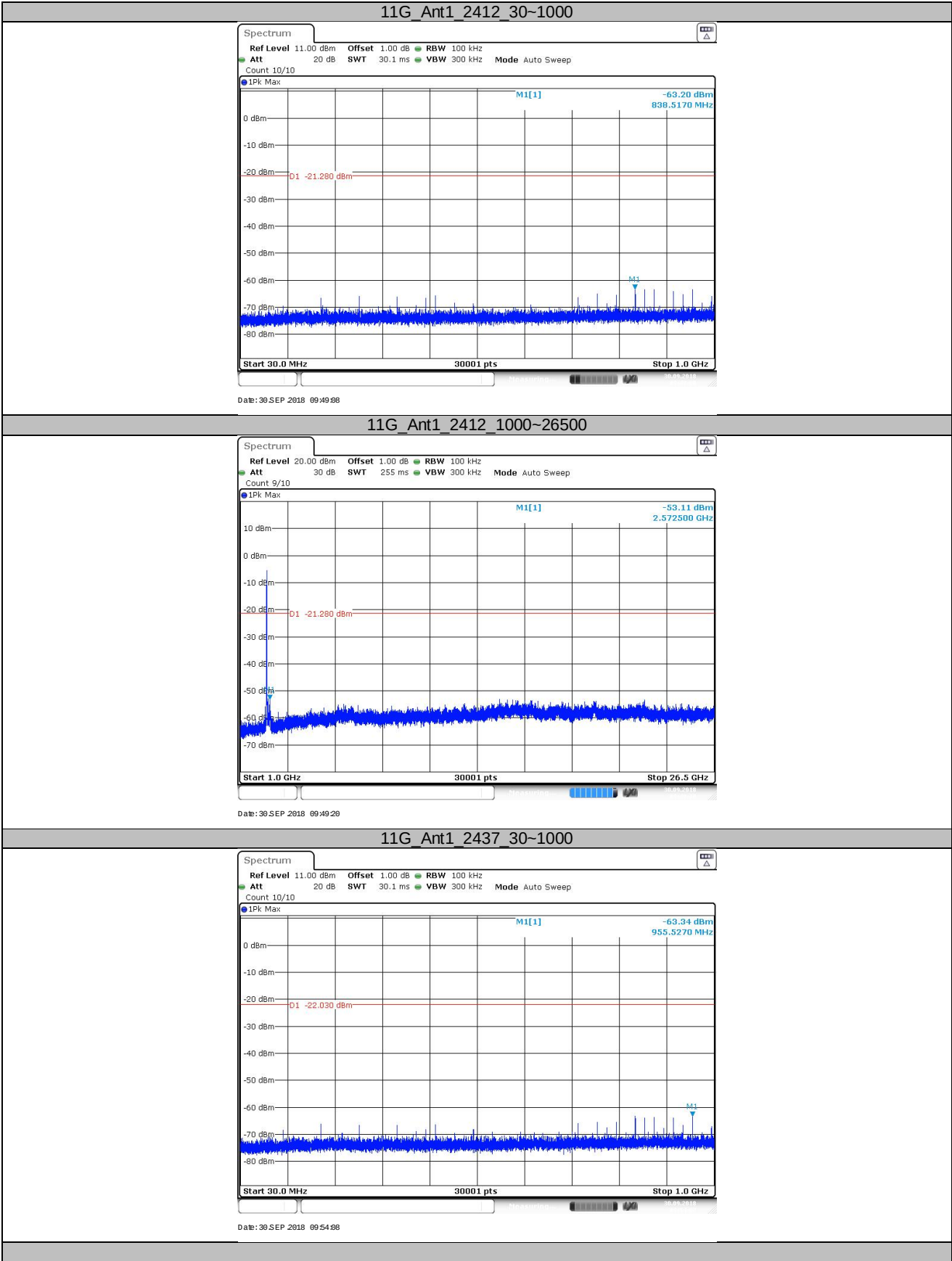
Test Mode	Channel (MHz)	Freq Range (MHz)	Result (dBm)	Limit (dBm)	Verdict
11b	2412	30~1000	-62.63	-13.38	PASS
11b	2412	1000~26500	-51.52	-13.38	PASS
11b	2437	30~1000	-63.22	-13.23	PASS
11b	2437	1000~26500	-51.2	-13.23	PASS
11b	2462	30~1000	-63.08	-12.72	PASS
11b	2462	1000~26500	-52.59	-12.72	PASS
11g	2412	30~1000	-63.2	-14.15	PASS
11g	2412	1000~26500	-53.11	-14.15	PASS
11g	2437	30~1000	-63.34	-14.5	PASS
11g	2437	1000~26500	-52.56	-14.5	PASS
11g	2462	30~1000	-63.46	-14.26	PASS
11g	2462	1000~26500	-52.55	-14.26	PASS
11n HT20	2412	30~1000	-63.21	-14.44	PASS
11n HT20	2412	1000~26500	-52.38	-14.44	PASS
11n HT20	2437	30~1000	-63.39	-14.17	PASS
11n HT20	2437	1000~26500	-52.8	-14.17	PASS
11n HT20	2462	30~1000	-63.28	-14.16	PASS
11n HT20	2462	1000~26500	-53.2	-14.16	PASS

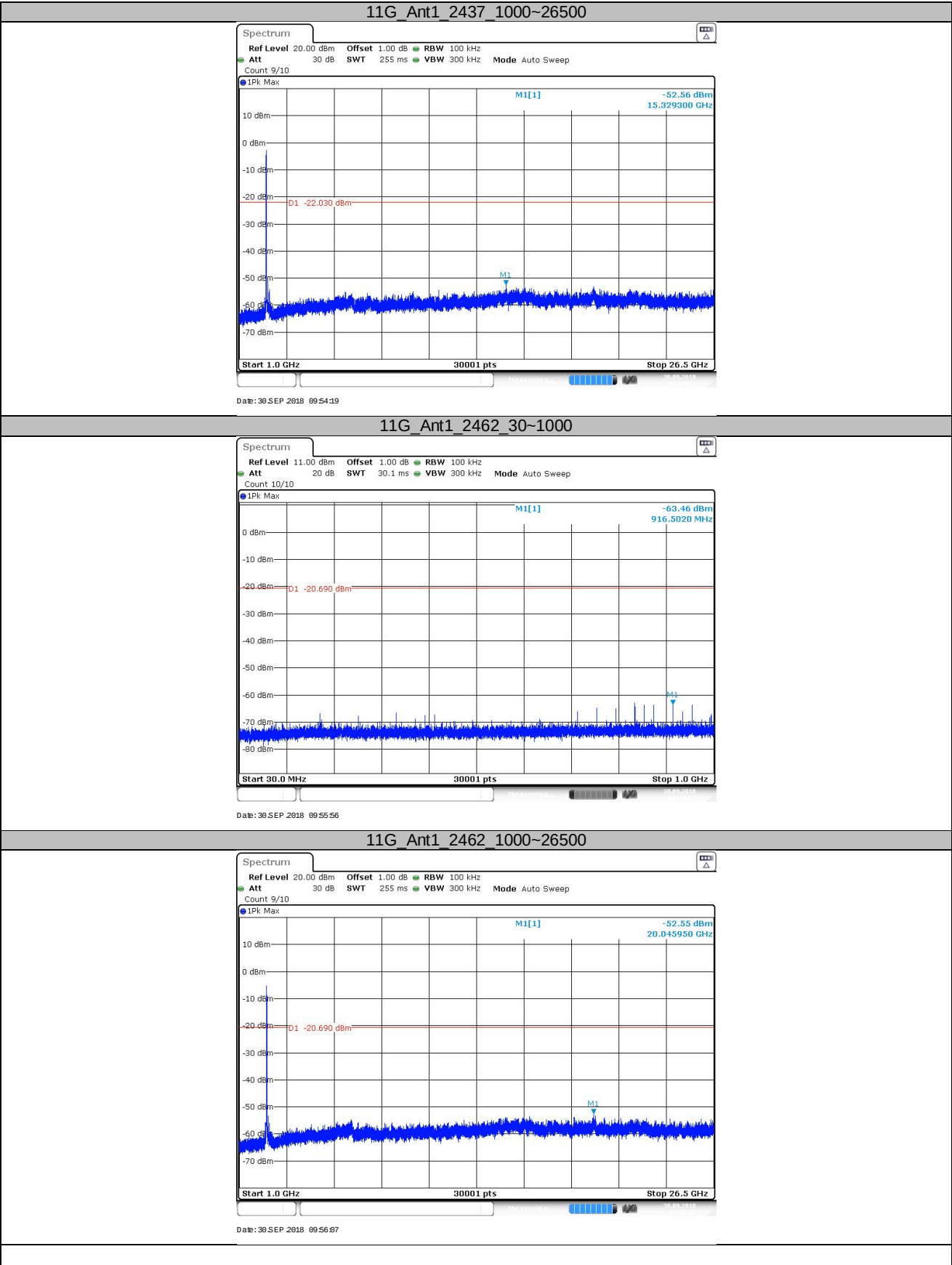


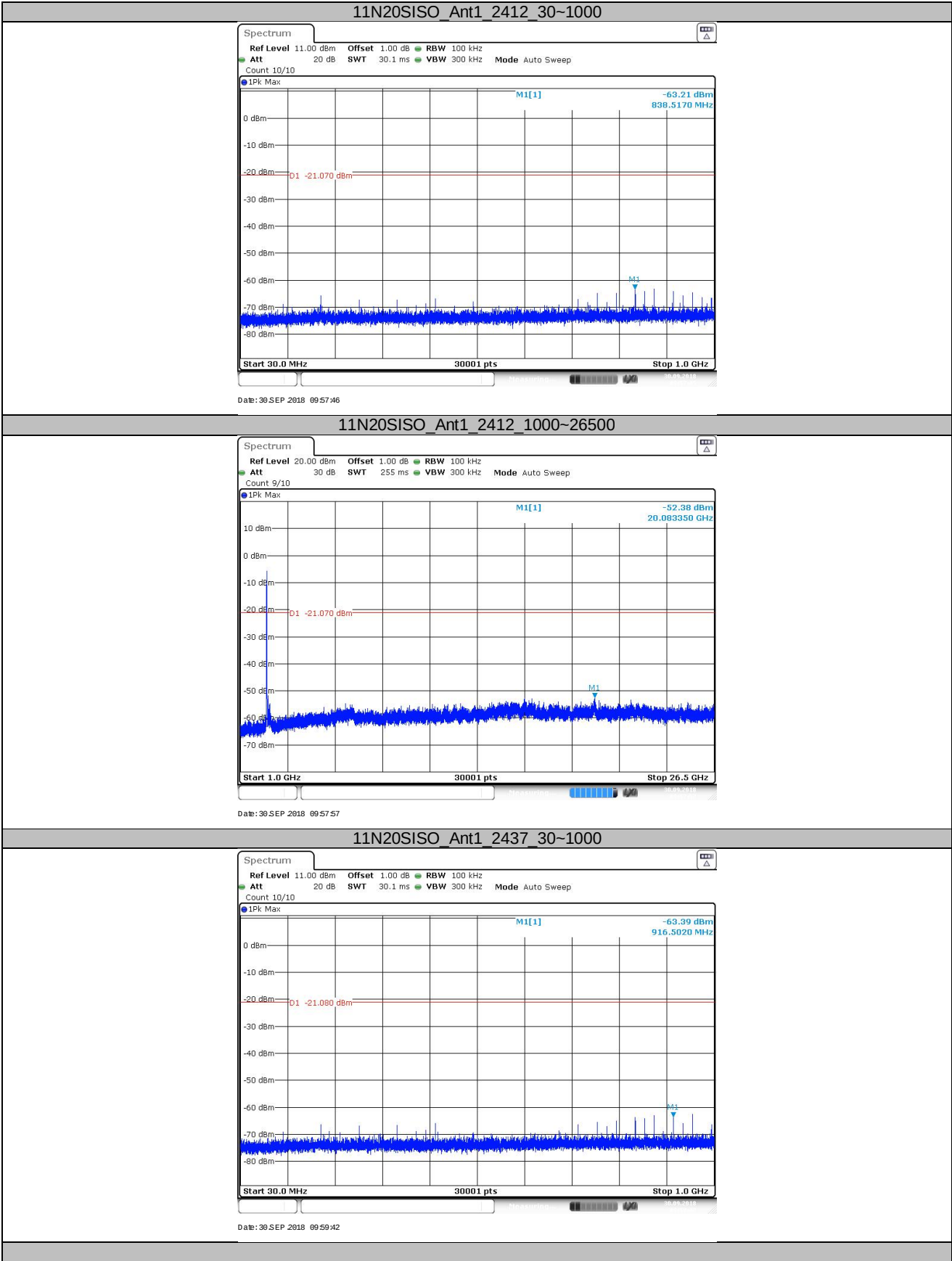
Test Graphs



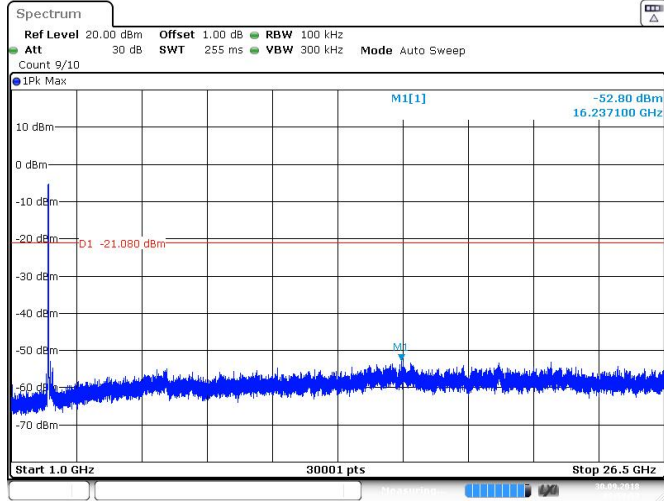






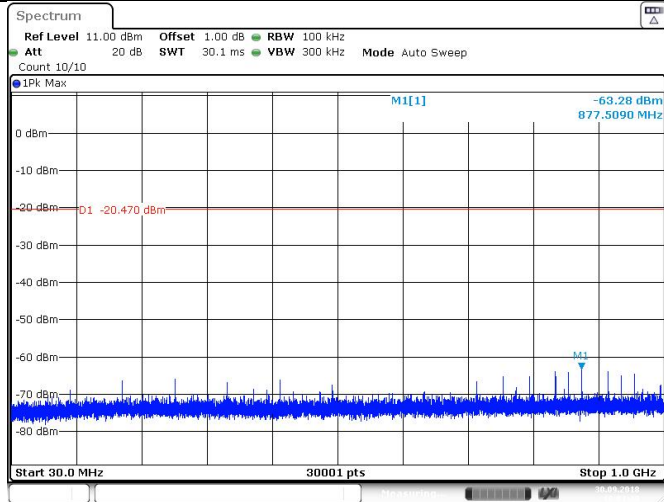


11N20SISO_Ant1_2437_1000~26500



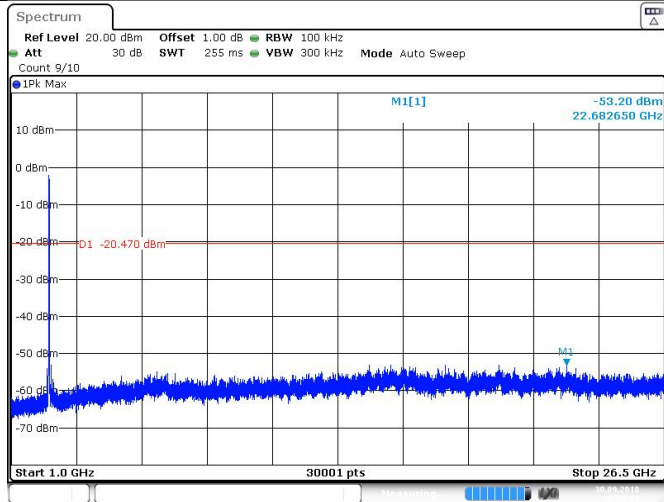
Date: 30 SEP 2018 09:59:54

11N20SISO_Ant1_2462_30~1000



Date: 30 SEP 2018 10:01:50

11N20SISO_Ant1_2462_1000~26500



Date: 30 SEP 2018 10:02:01

9.6 Band edge

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.

Limit

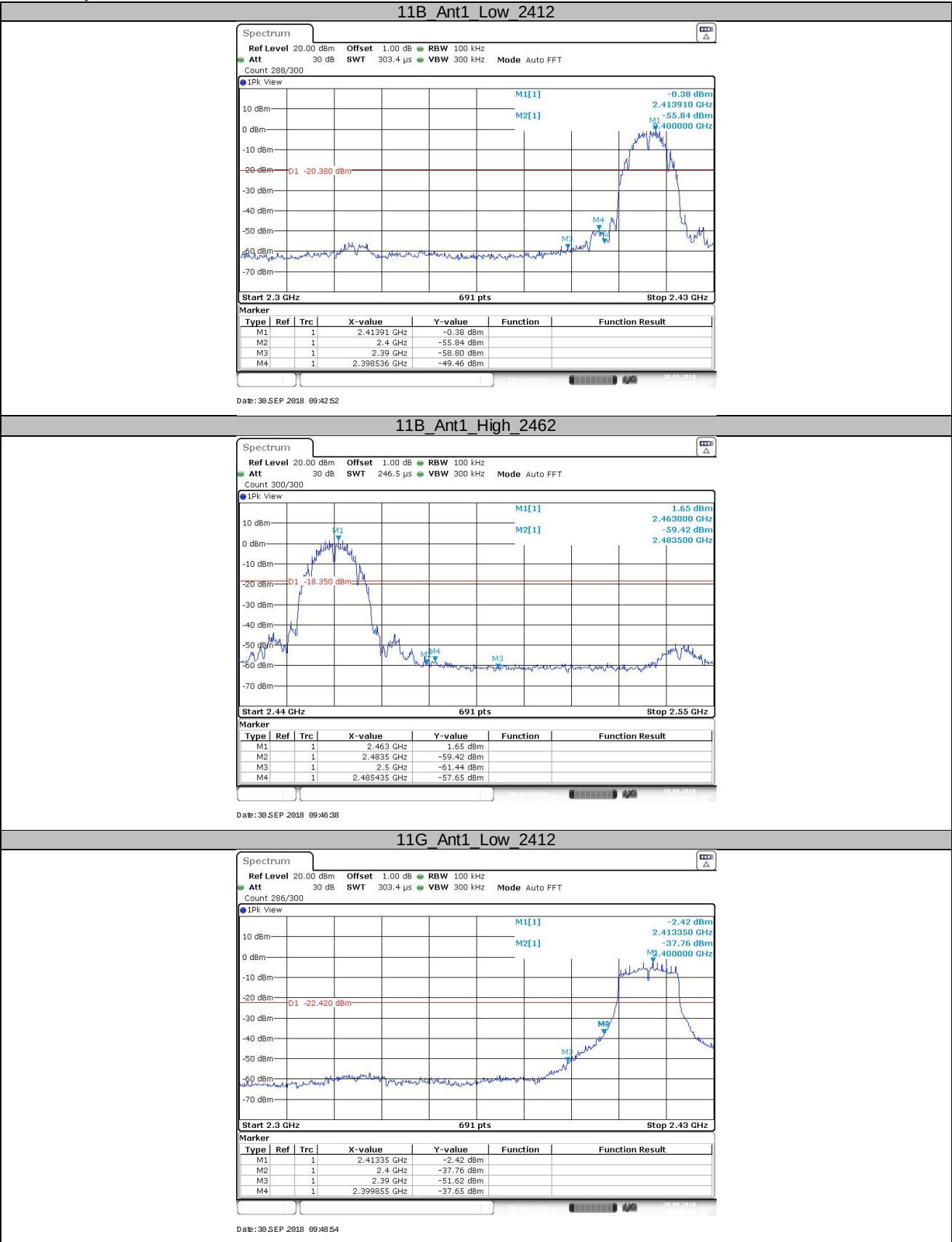
Frequency Range MHz	Limit (dBc)
30-25000	-20

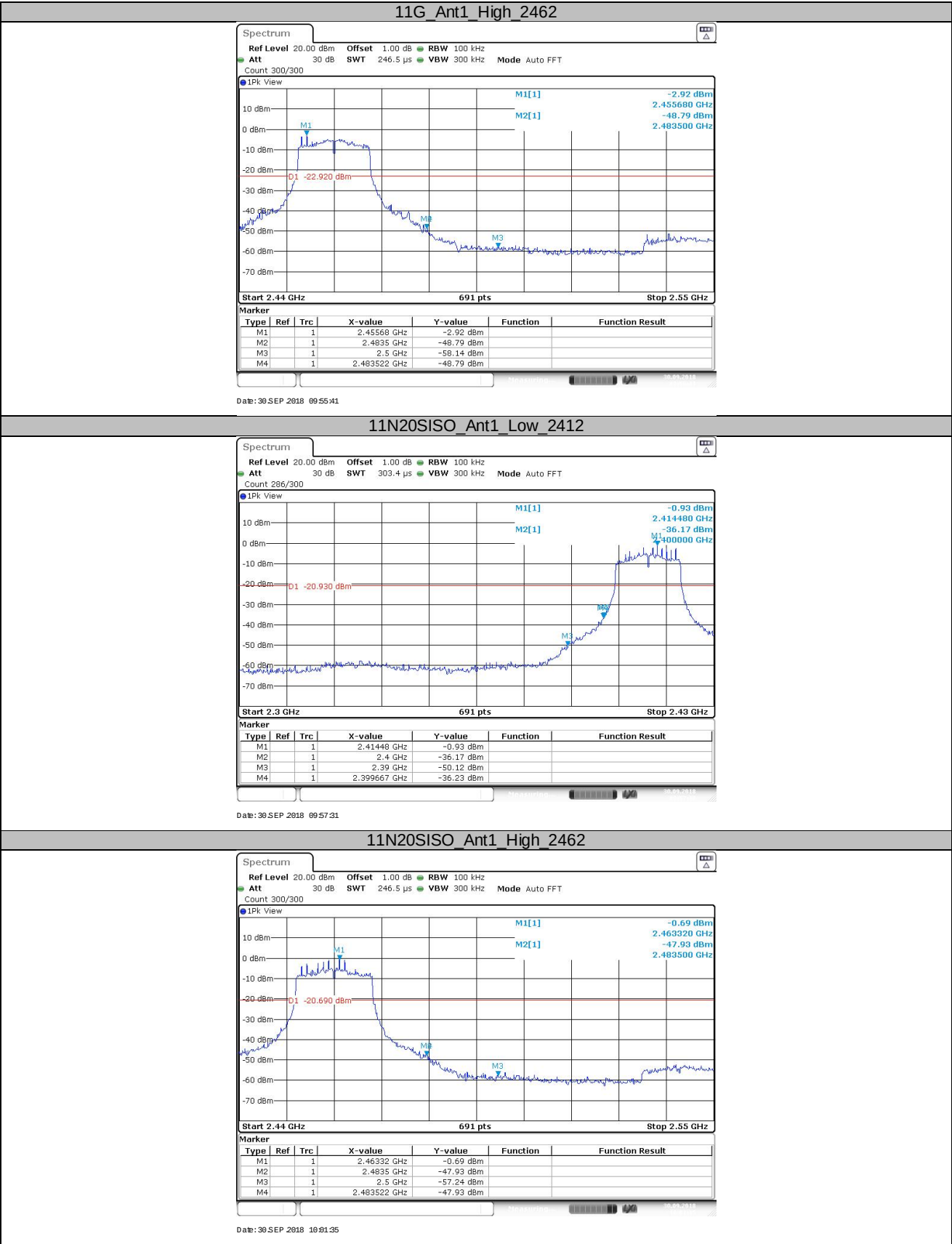
Test result

Test Mode	Ch Name	Channel	Result	Limit	Verdict
11b	Low	2412	-49.46	-20.38	PASS
11b	High	2462	-57.65	-18.35	PASS
11g	Low	2412	-37.65	-22.42	PASS
11g	High	2462	-48.79	-22.92	PASS
11n HT20	Low	2412	-36.23	-20.93	PASS
11n HT20	High	2462	-47.93	-20.69	PASS



Test Graphs





9.7 Spurious radiated emissions for transmitter

Test Method

- 1: The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2: The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
- 3: The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4: For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5: Use the following spectrum analyzer settings According to C63.10:

For Above 1GHz

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 1MHz, VBW $\geq$ RBW for peak measurement and VBW = 10Hz for average measurement, Sweep = auto, Detector function = peak, Trace = max hold.

For Below 1GHz

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 for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Note:

- 1: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for peak detection (PK) at frequency above 1GHz.
- 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average ((duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($20\log(1/\text{duty cycle})$).
- 4: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.

Limit

The radio emission outside the operating frequency band 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. Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Field Strength dBμV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Transmitting spurious emission test result as below:

11B:

Low channel 2412MHz Test Result

Frequency Band	Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Margin dBuV/m	Correct factor (dB)	Result
30-1000MHz	586.67	35.74	H	46	QP	10.26	-9.9	Pass
	586.67	37.94	V	46	QP	8.06	19.9	Pass
1000-25000MHz	--	--	H	74	PK	--	--	Pass
	--	--	H	54	AV	--	--	Pass
	--	--	V	74	PK	--	--	Pass
	--	--	V	54	AV	--	--	Pass

11B:

Middle channel 2437MHz Test Result

Frequency Band	Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Margin dBuV/m	Correct factor (dB)	Result
30-1000MHz	--	--	H	43.5	QP	--	--	Pass
	--	--	H	46	QP	--	--	Pass
1000-25000MHz	--	--	H	74	PK	--	--	Pass
	--	--	H	54	AV	--	--	Pass
	--	--	V	74	PK	--	--	Pass
	--	--	V	54	AV	--	--	Pass

11B:

High channel 2462MHz Test Result

Frequency Band	Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Margin dBuV/m	Correct factor (dB)	Result
30-1000MHz	--	--	H	43.5	QP	--	--	Pass
	--	--	H	46	QP	--	--	Pass
1000-25000MHz	--	--	H	74	PK	--	--	Pass
	--	--	H	54	AV	--	--	Pass
	--	--	V	74	PK	--	--	Pass
	--	--	V	54	AV	--	--	Pass

11G:

Low channel 2412MHz Test Result

Frequency Band	Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBμV/m	Detector	Margin dBuV/m	Correct factor (dB)	Result
30-1000MHz	--	--	H	46	QP	--	--	Pass
	--	--	V	46	QP	--	--	Pass
1000-25000MHz	--	--	H	74	PK	--	--	Pass
	--	--	H	54	AV	--	--	Pass
	--	--	V	74	PK	--	--	Pass
	--	--	V	54	AV	--	--	Pass

11G:

Middle channel 2437MHz Test Result

Frequency Band	Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBμV/m	Detector	Margin dBuV/m	Correct factor (dB)	Result
30-1000MHz	--	--	H	43.5	QP	--	--	Pass
	--	--	H	46	QP	--	--	Pass
1000-25000MHz	--	--	H	74	PK	--	--	Pass
	--	--	H	54	AV	--	--	Pass
	--	--	V	74	PK	--	--	Pass
	--	--	V	54	AV	--	--	Pass

11G:

High channel 2462MHz Test Result

Frequency Band	Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBμV/m	Detector	Margin dBuV/m	Correct factor (dB)	Result
30-1000MHz	--	--	H	43.5	QP	--	--	Pass
	--	--	H	46	QP	--	--	Pass
1000-25000MHz	--	--	H	74	PK	--	--	Pass
	--	--	H	54	AV	--	--	Pass
	--	--	V	74	PK	--	--	Pass
	--	--	V	54	AV	--	--	Pass

11N(20MHz):

Low channel 2412MHz Test Result

Frequency Band	Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Margin dBuV/m	Correct factor (dB)	Result
30-1000MHz	586.67	35.74	H	46	QP	10.26	-9.9	Pass
	586.67	37.94	V	46	QP	8.06	19.9	Pass
1000-25000MHz	--	--	H	74	PK	--	--	Pass
	--	--	H	54	AV	--	--	Pass
	--	--	V	74	PK	--	--	Pass
	--	--	V	54	AV	--	--	Pass

11N(20MHz):

Middle channel 2437MHz Test Result

Frequency Band	Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Margin dBuV/m	Correct factor (dB)	Result
30-1000MHz	--	--	H	43.5	QP	--	--	Pass
	--	--	H	46	QP	--	--	Pass
1000-25000MHz	--	--	H	74	PK	--	--	Pass
	--	--	H	54	AV	--	--	Pass
	--	--	V	74	PK	--	--	Pass
	--	--	V	54	AV	--	--	Pass

11N(20MHz):

High channel 2462MHz Test Result

Frequency Band	Frequency MHz	Emission Level dBuV/m	Polarization	Limit dBuV/m	Detector	Margin dBuV/m	Correct factor (dB)	Result
30-1000MHz	--	--	H	43.5	QP	--	--	Pass
	--	--	H	46	QP	--	--	Pass
1000-25000MHz	--	--	H	74	PK	--	--	Pass
	--	--	H	54	AV	--	--	Pass
	--	--	V	74	PK	--	--	Pass
	--	--	V	54	AV	--	--	Pass

Remark:

- (1) "*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.
- (2) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are the noise floor or attenuated more than 10dB below the permissible limits or the field strength is too small to be measured.
- (3) Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain.
- (4) Below 1GHz: Corrector factor = Antenna Factor + Cable Loss.

10 Test Equipment List

Radiated Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2019-7-6
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2019-6-28
Horn Antenna	Rohde & Schwarz	HF907	102294	2019-6-28
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2019-7-6
Signal Generator	Rohde & Schwarz	SMY01	839369/005	2019-7-6
Attenuator	Agilent	8491A	MY39264334	2019-7-6
3m Semi-anechoic chamber	TDK	9X6X6	----	2020-7-7
Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

TS8997 Test System

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMB100A	108272	2019-7-6
Vector Signal Generator	Rohde & Schwarz	SMBV100A	262825	2019-7-6
Communication Synthetical Test Instrument	Rohde & Schwarz	CMW 270	101251	2019-5-31
Signal Analyzer	Rohde & Schwarz	FSV40	101030	2019-7-6
Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	2019-7-6
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	2019-7-6
Power Splitter	Weinschel	1580	SC319	2019-7-5
10dB Attenuator	Weinschel	4M-10	43152	2019-7-6
10dB Attenuator	R&S	DNF	DNF-001	2019-7-6
10dB Attenuator	R&S	DNF	DNF-002	2019-7-6
10dB Attenuator	R&S	DNF	DNF-003	2019-7-6
10dB Attenuator	R&S	DNF	DNF-004	2019-7-6
Test software	Rohde & Schwarz	EMC32	Version 10.38.00	N/A
Test software	Tonscend	System for BT/WIFI	Version 2.6	N/A

11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Items	Extended Uncertainty
Uncertainty for Radiated Spurious Emission 25MHz-3000MHz	Horizontal: 4.80dB; Vertical: 4.87dB;
Uncertainty for Radiated Spurious Emission 3000MHz-18000MHz	Horizontal: 4.59dB; Vertical: 4.58dB;
Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz	Horizontal: 5.05dB; Vertical: 5.04dB;
Uncertainty for Conducted RF test with TS 8997	RF Power Conducted: 1.16dB Frequency test involved: 0.6×10 ⁻⁷ or 1%