

FCC RADIO TEST REPORT

FCC ID : U8G-P1941

Equipment : PEPWAVE / peplink Wireless Product

Brand Name : PEPWAVE / peplink

Model Name : UBR LTE
MAX UBR LTE
MAX UBR
MAX UBR LTEA
UBR
MAX BR2 Pro
BR2 Pro
MAX BR2 Pro LTE
MAX BR2 Pro LTEA
MAX-CX2-Mini
MAX CX2 Mini
CX2 Mini
MAX-BR2-PRO-LTEA-W-T
MAX-BR2-PRO-LTE-US-T
Pismo941
UBR-LTE
UBR-LTE-US-T
UBR-LTE-US-T-PRM
UBR-LTEA-W-T
UBR-LTEA-W-T-PRM
MAX BR1 Pro
MAX BR1 Pro LTE
MAX BR1 Pro LTEA
MAX-BR1-PRO-LTEA-W-T
MAX-BR1-PRO-LTE-US-T

Applicant : PISMO LABS TECHNOLOGY LIMITED
A8, 5/F, HK Spinners Industrial Building, Phase 6,
481 Castle Peak Road, Cheung Sha Wan, Hong Kong

Manufacturer : PISMO LABS TECHNOLOGY LIMITED
A8, 5/F, HK Spinners Industrial Building, Phase 6,
481 Castle Peak Road, Cheung Sha Wan, Hong Kong

Standard : FCC Part 15 Subpart C §15.247



The detailed of model name can be referred PISMO_FCC_model_confirmation_to_Sporton_UBR LTE List

The product was received on Nov. 01, 2019 and testing was started from Nov. 08, 2019 and completed on Mar. 23, 2020. We, SPORTON INTERNATIONAL INC., EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issued Date
FR9N0104A	01	Initial issue of report	Mar. 18, 2020
FR9N0104A	02	1. Revise 802.11b conducted test result 2. Revise antenna type, model name, and table of contents	Mar. 26, 2020
FR9N0104A	03	Revise Brand Name and Model Name	Mar. 30, 2020
FR9N0104A	04	Revise power setting of peak output power	Apr. 07, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(a)(2)	6dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.247(b)	Power Output Measurement	Pass	-
3.3	15.247(e)	Power Spectral Density	Pass	-
3.4	15.247(d)	Conducted Band Edges	Pass	-
		Conducted Spurious Emission	Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	Under limit 1.04 dB at 2386.125 MHz
3.6	15.207	AC Conducted Emission	Pass	Under limit 16.00 dB at 0.155 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	Pass	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang

Report Producer: Dara Chiu



1 General Description

1.1 Product Feature of Equipment Under Test

WCDMA/LTE, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n, and GNSS

Product Specification subjective to this standard	
Integrated WWAN Module 1	Brand Name: Sierra Model Name: MC7455 FCC ID: N7NMC7455
Integrated WWAN Module 2	Brand Name: Telit Model Name: LE910C4-NF FCC ID: RI7LE910CXNF
Antenna Type	WWAN: Omni-directional Antenna WLAN: Omni-directional Antenna GPS: Directional Antenna
Serial Number	Conducted: 2937-8EEB-A663 AC Conducted Emission: 2937-1BEC-3318 radiation spurious emission: 2937-8EEB-A663

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH05-HY	CO05-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH16-HY	

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190 and TW0007



1.4 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in two types of antenna angle, horizontal and vertical. The worst cases (vertical) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

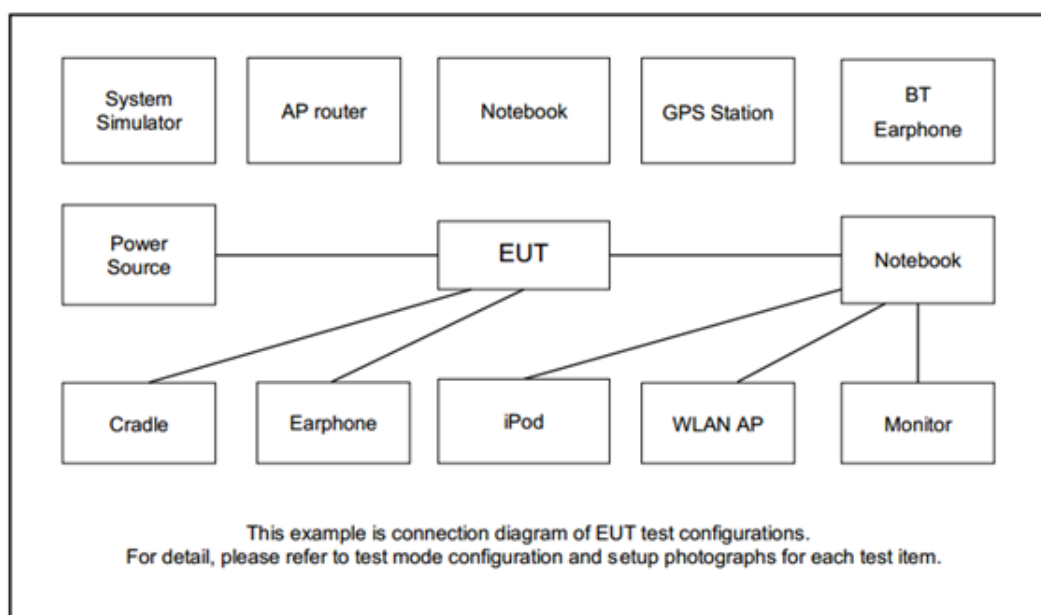
Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

Test Cases	
AC Conducted Emission	Mode 1 :WLAN (2.4GHz) Link + Adapter + WAN Link + LAN Link
Remark: For AC Conducted Emission, the test voltage 120Vac was the worst case.	

Ch. #	2400-2483.5 MHz			
	802.11b	802.11g	802.11n HT20	802.11n HT40
Low	01	01	01	03
Middle	06	06	06	06
High	11	11	11	09

Remark: For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Latitude E3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Notebook	DELL	P20G	FCC DoC/ Contains FCC ID: QDS-BRCM1051	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “Artgui Tool” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

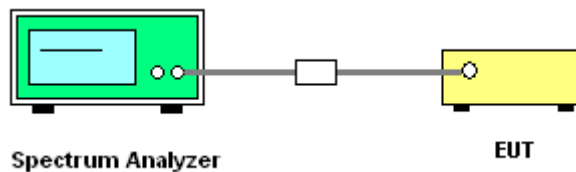
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) $\geq 3 * RBW$.
6. Measure and record the results in the test report.

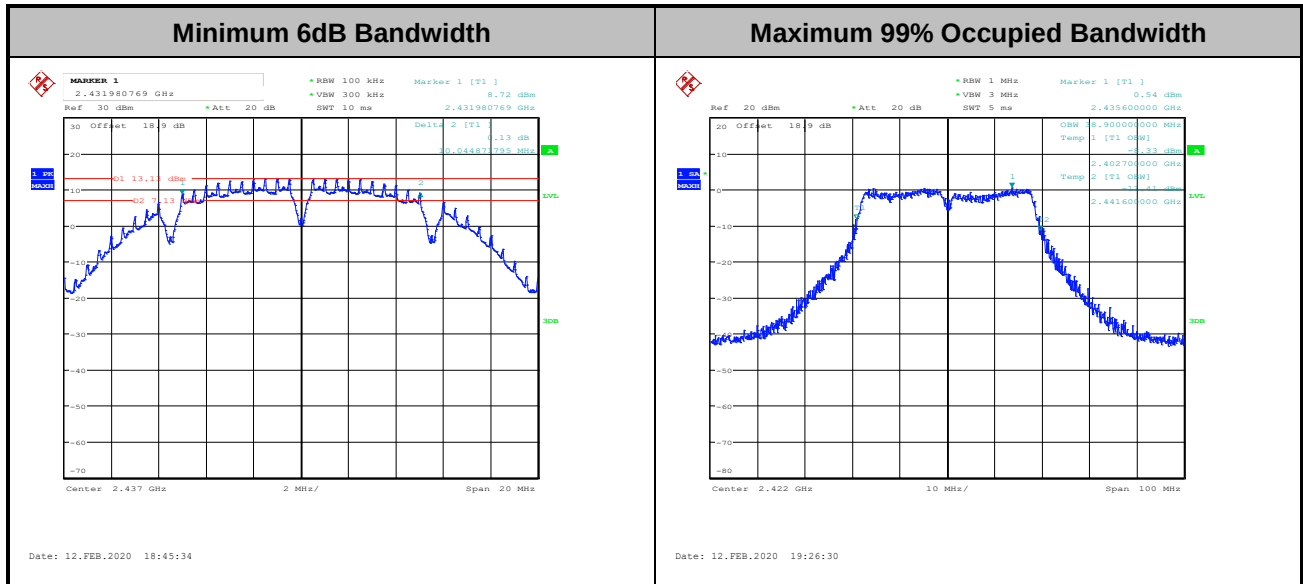
3.1.4 Test Setup





3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A.



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

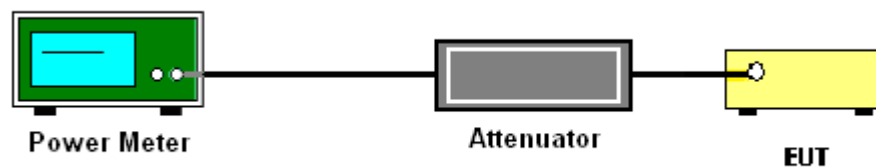
3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

3.2.3 Test Procedures

1. For Peak Power, the testing follows ANSI C63.10 Section 11.9.1.3 PKPM1
2. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.1 Method AVGPM
3. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Measure the conducted output power and record the results in the test report.
6. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.2.6 Test Result of Average Output Power (Reporting Only)

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

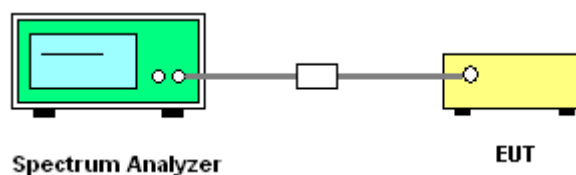
If measurements performed using method (2) plus $10 \log(N)$ exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

Method (1): Measure and sum the spectra across the outputs.

The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

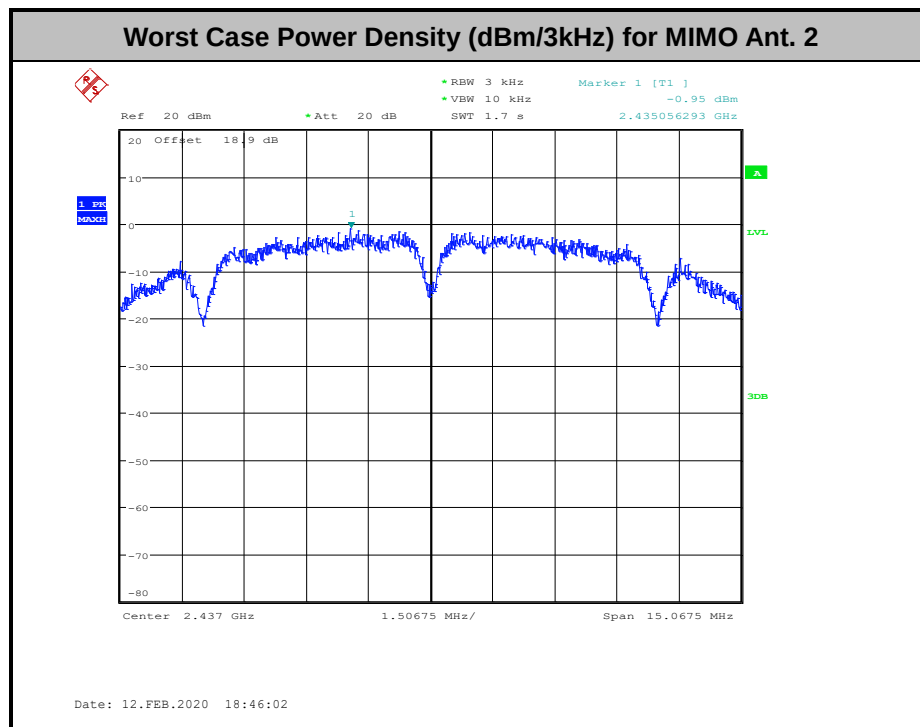
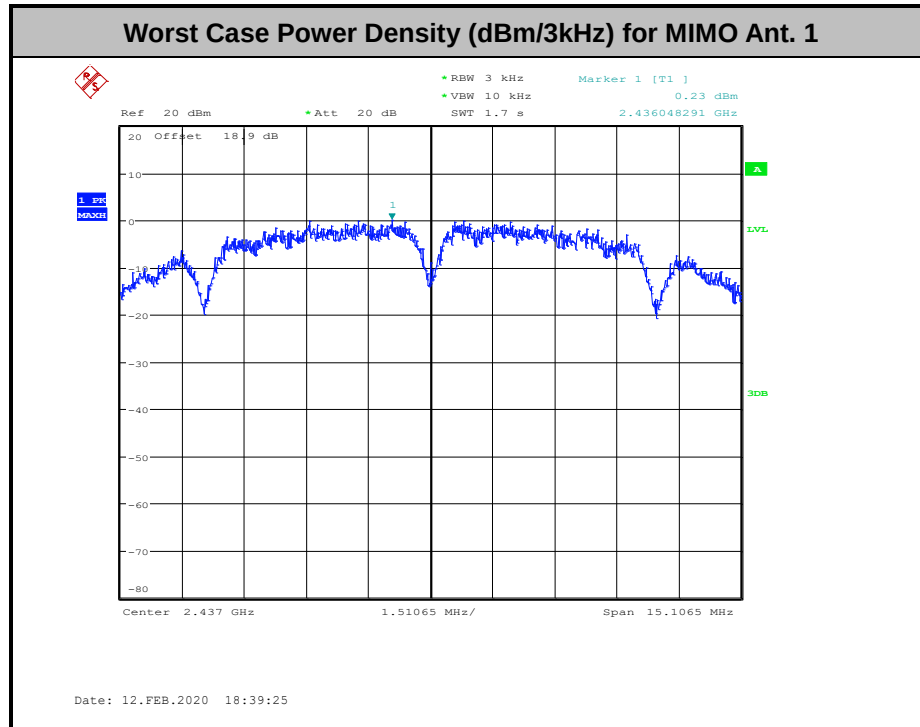
Method (2): Measure and add $10 \log(N)$ dB, where N is the number of outputs. (N=2)

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

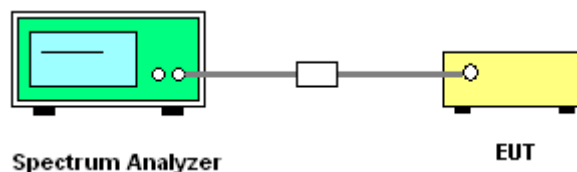
3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.11.3 Emission level measurement.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



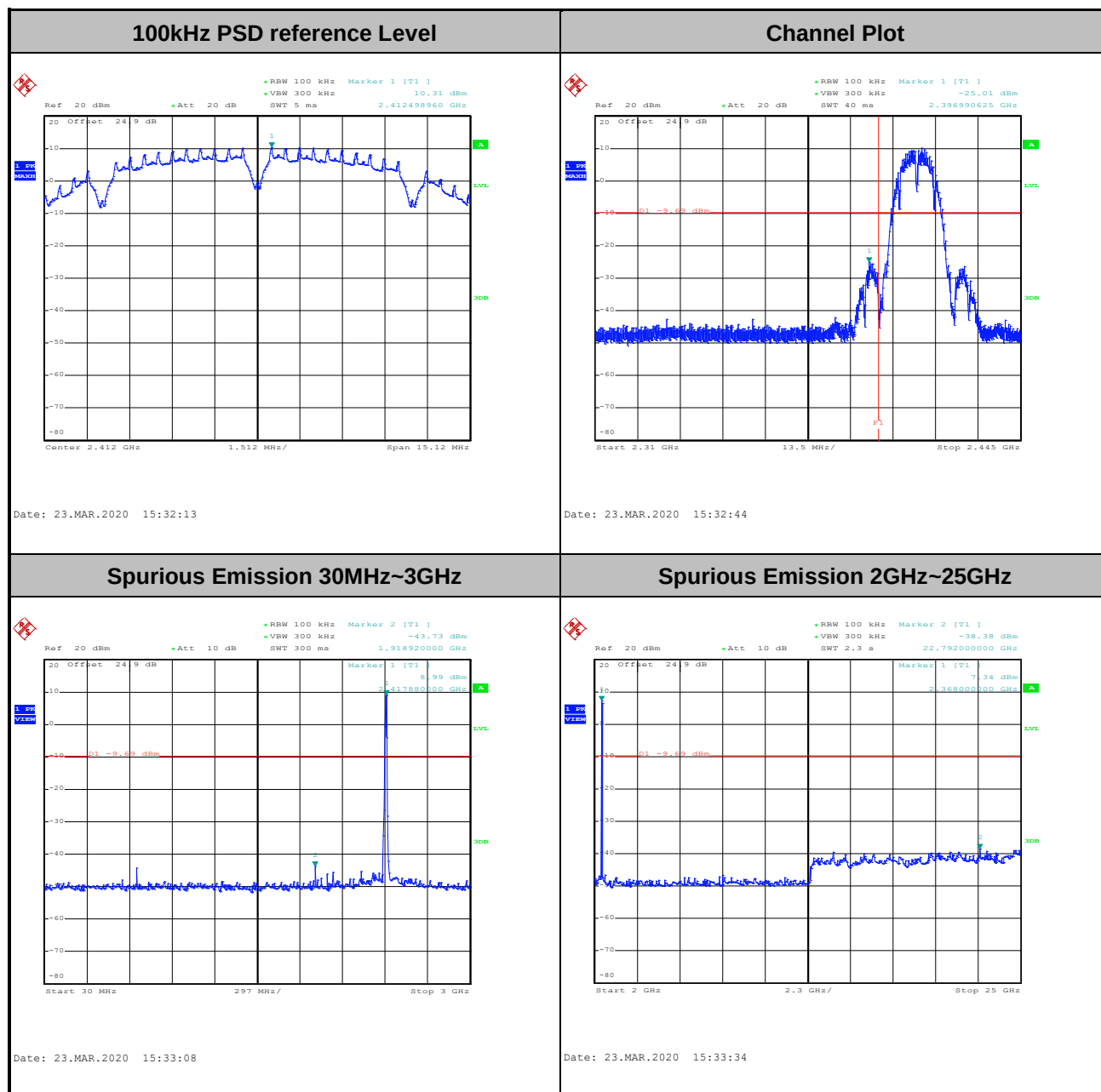


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Engineer :	Hank Hsu	Temperature :	21~25°C
		Relative Humidity :	51~54%

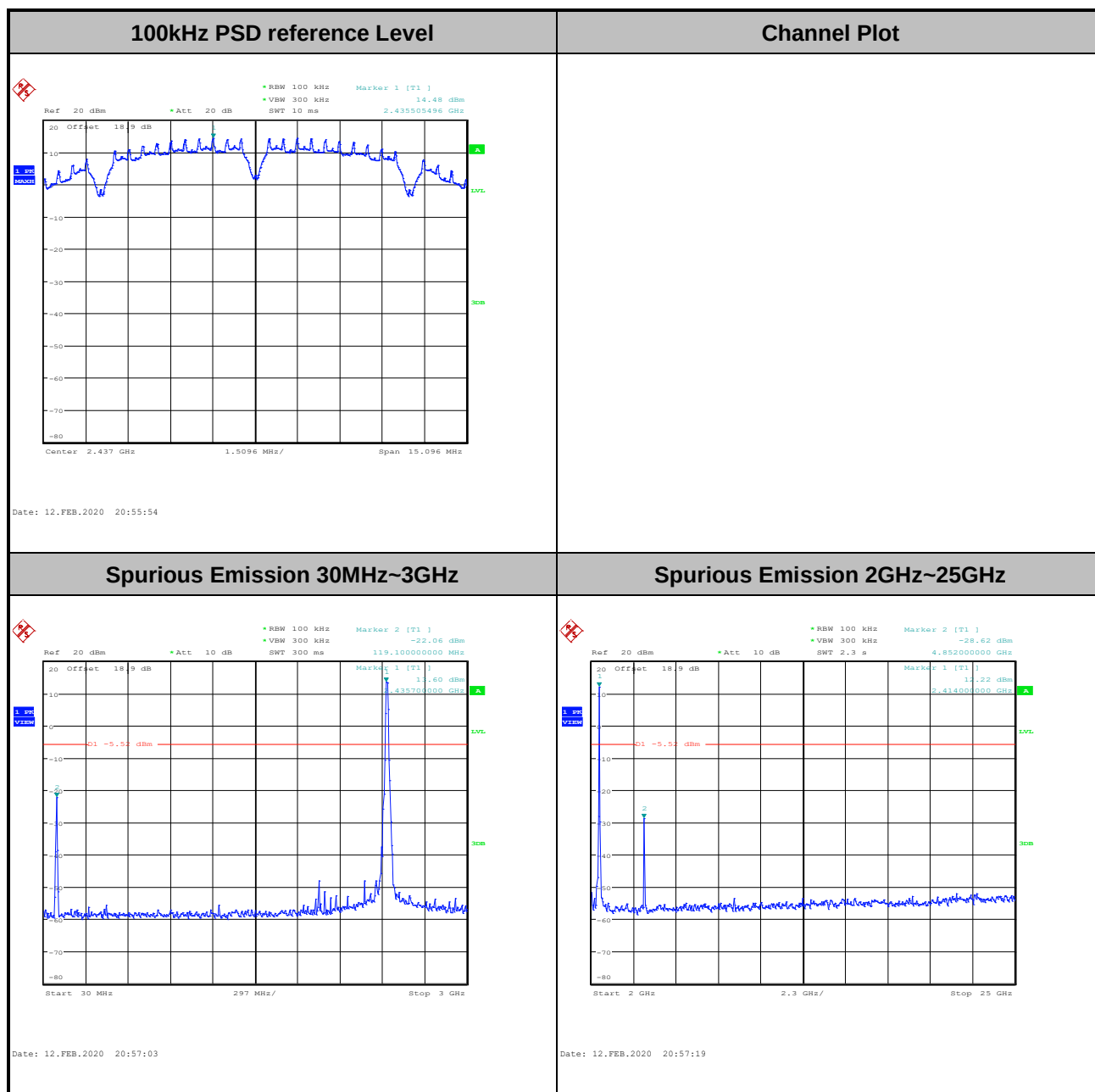
Number of TX = 1, Ant. 1 (Measured)

Test Mode :	802.11b	Test Channel :	01
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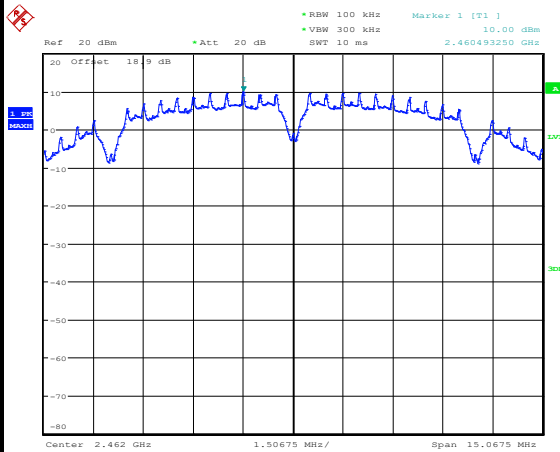
Test Mode :	802.11b	Test Channel :	06
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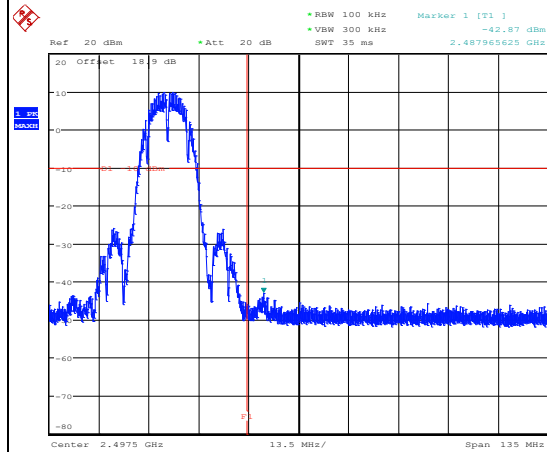
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100kHz PSD reference Level



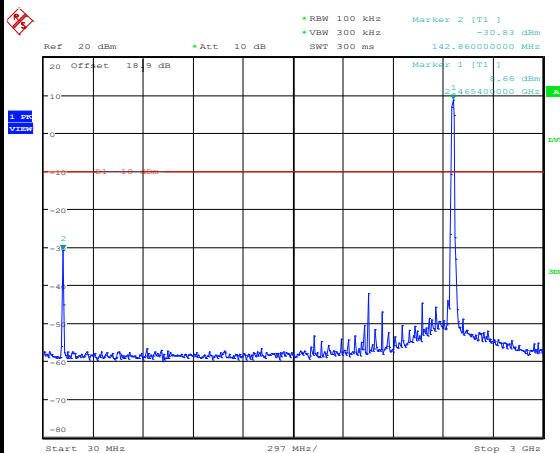
Date: 12.FEB.2020 21:08:08

Channel Plot



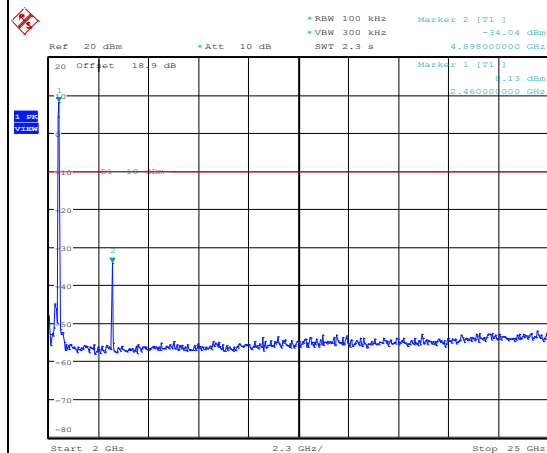
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Spurious Emission 30MHz~3GHz



Date: 12.FEB.2020 21:09:12

Spurious Emission 2GHz~25GHz

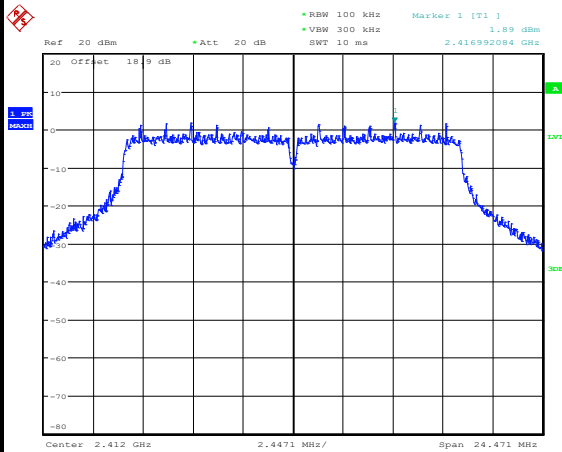


Date: 12.FEB.2020 21:09:29



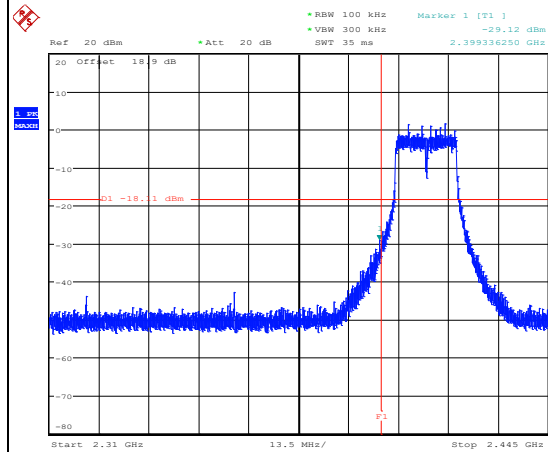
Test Mode :	802.11g	Test Channel :	01
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100kHz PSD reference Level



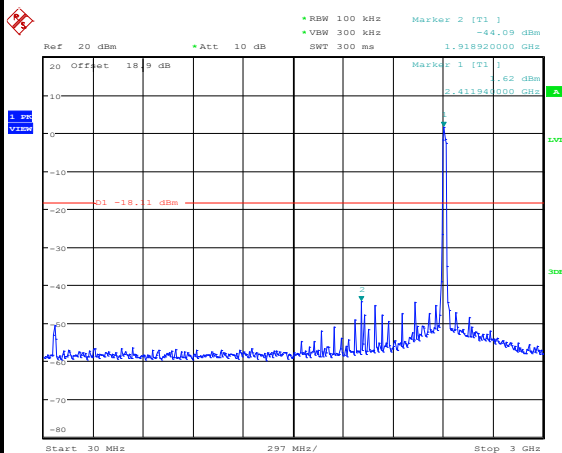
Date: 13.FEB.2020 11:31:36

Channel Plot



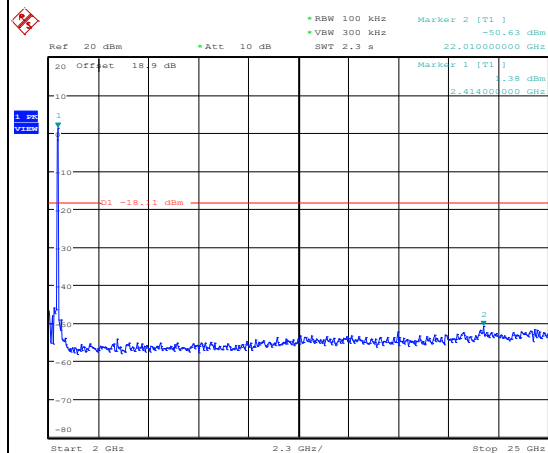
Date: 13.FEB.2020 11:31:48

Spurious Emission 30MHz~3GHz



Date: 13.FEB.2020 11:33:03

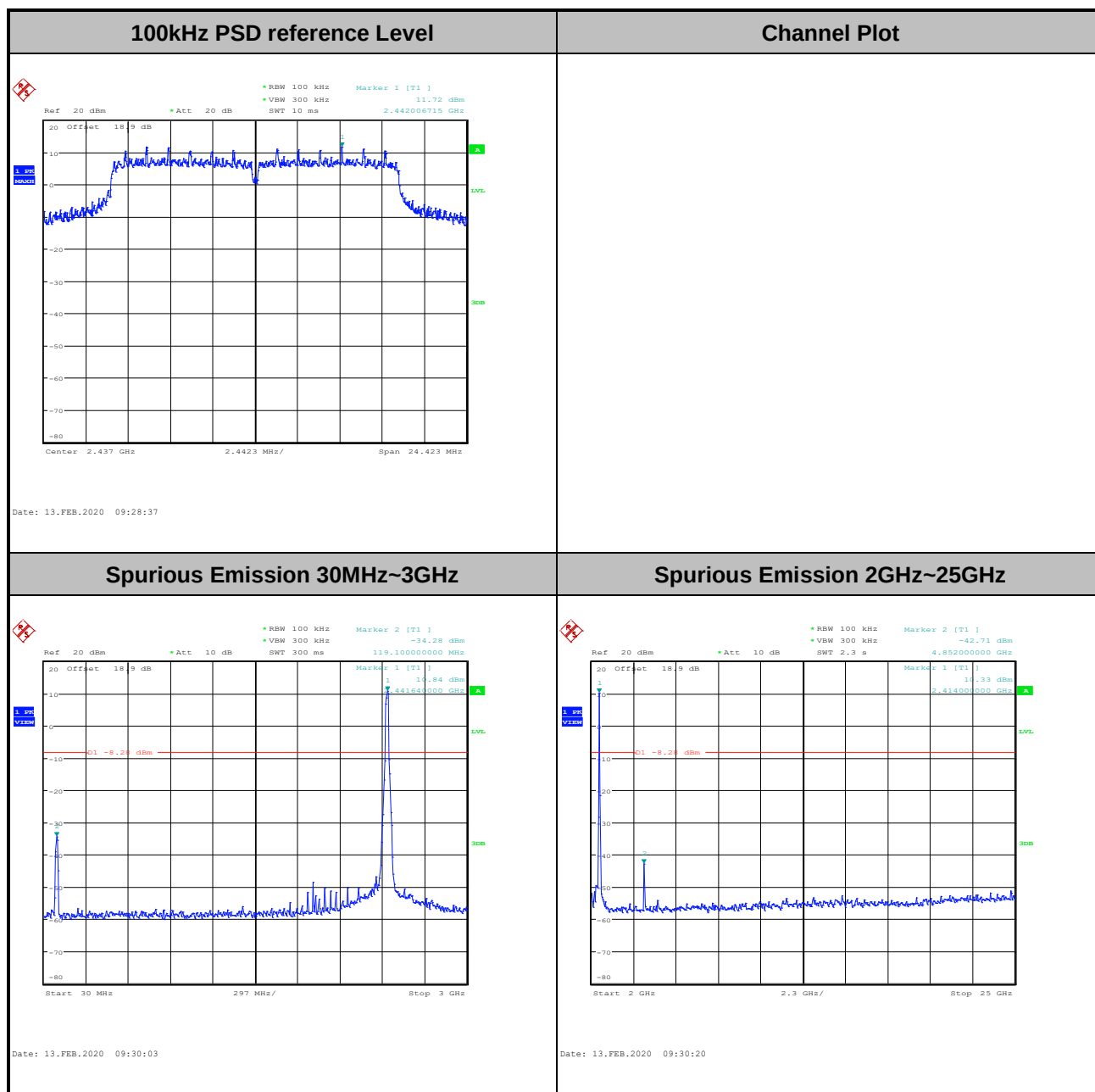
Spurious Emission 2GHz~25GHz



Date: 13.FEB.2020 11:33:40

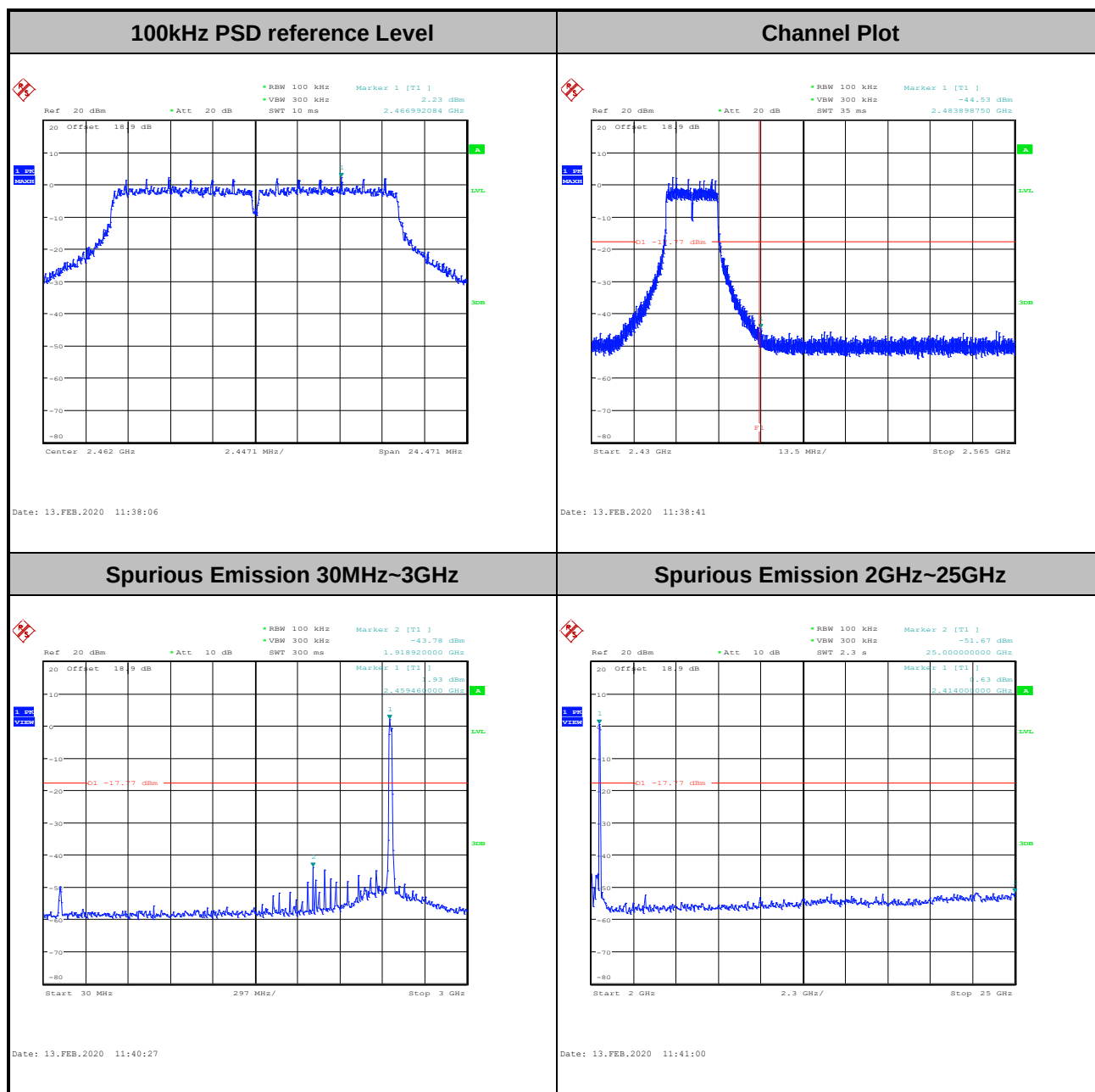


Test Mode :	802.11g	Test Channel :	06
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Test Mode :	802.11g	Test Channel :	11
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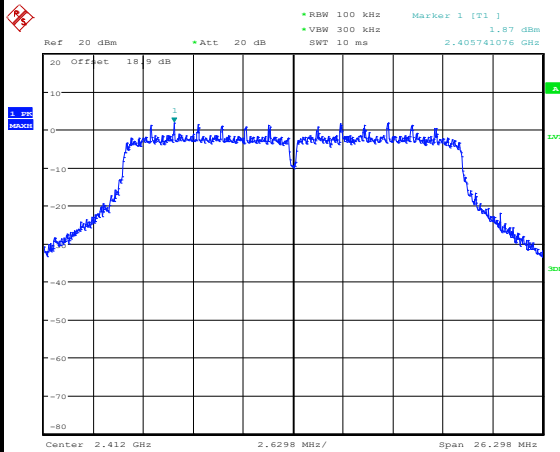




Test Mode : 802.11n HT20

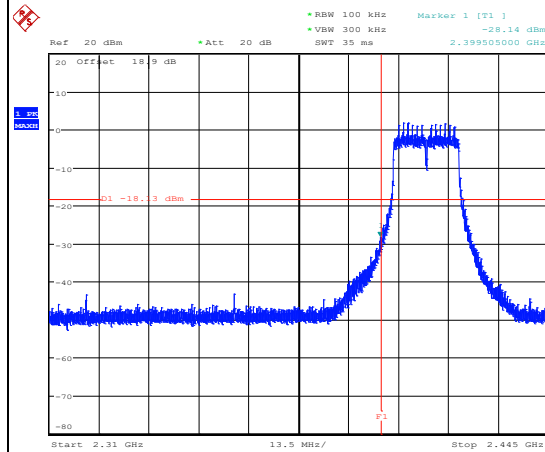
Test Channel : 01

100kHz PSD reference Level



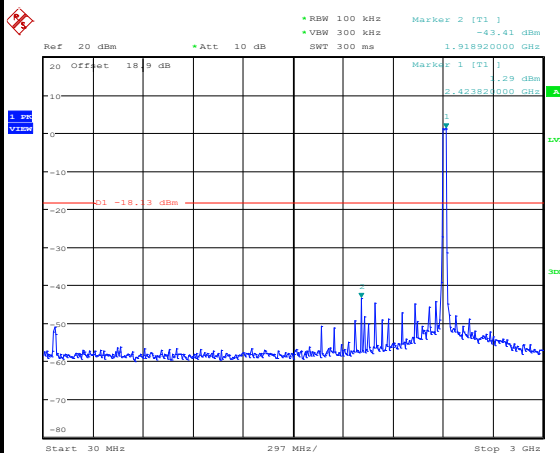
Date: 13.FEB.2020 14:58:16

Channel Plot



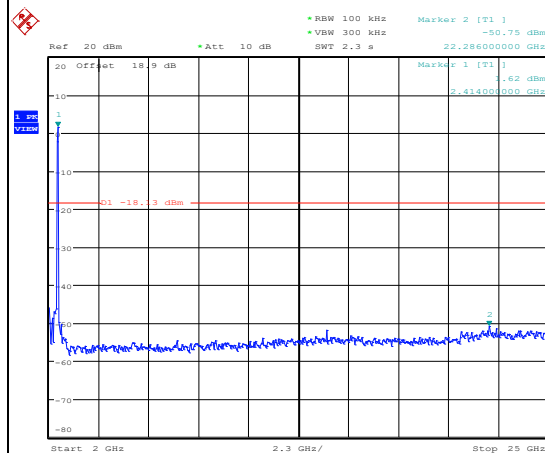
Date: 13.FEB.2020 14:58:57

Spurious Emission 30MHz~3GHz



Date: 13.FEB.2020 15:02:37

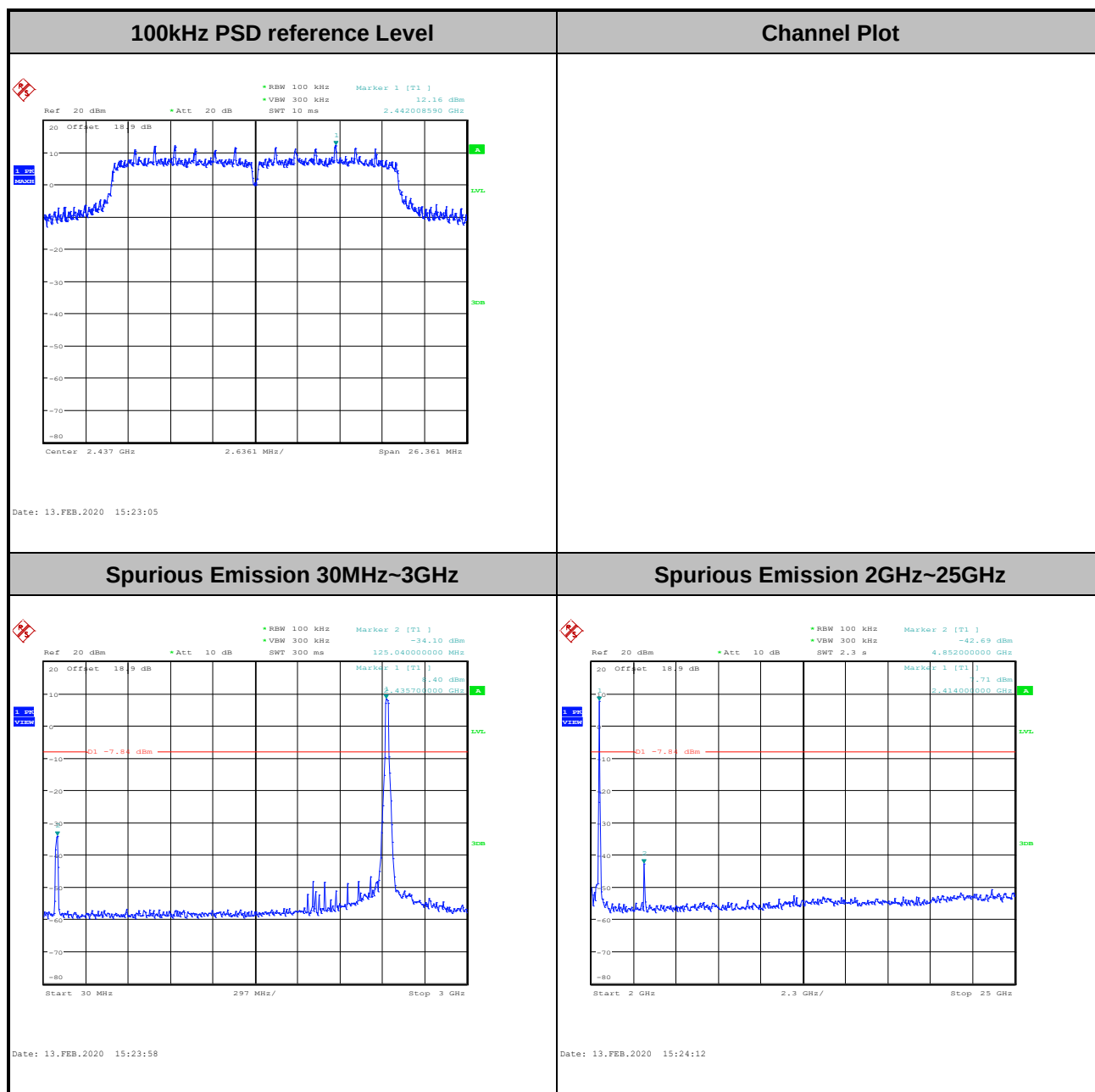
Spurious Emission 2GHz~25GHz



Date: 13.FEB.2020 15:03:45

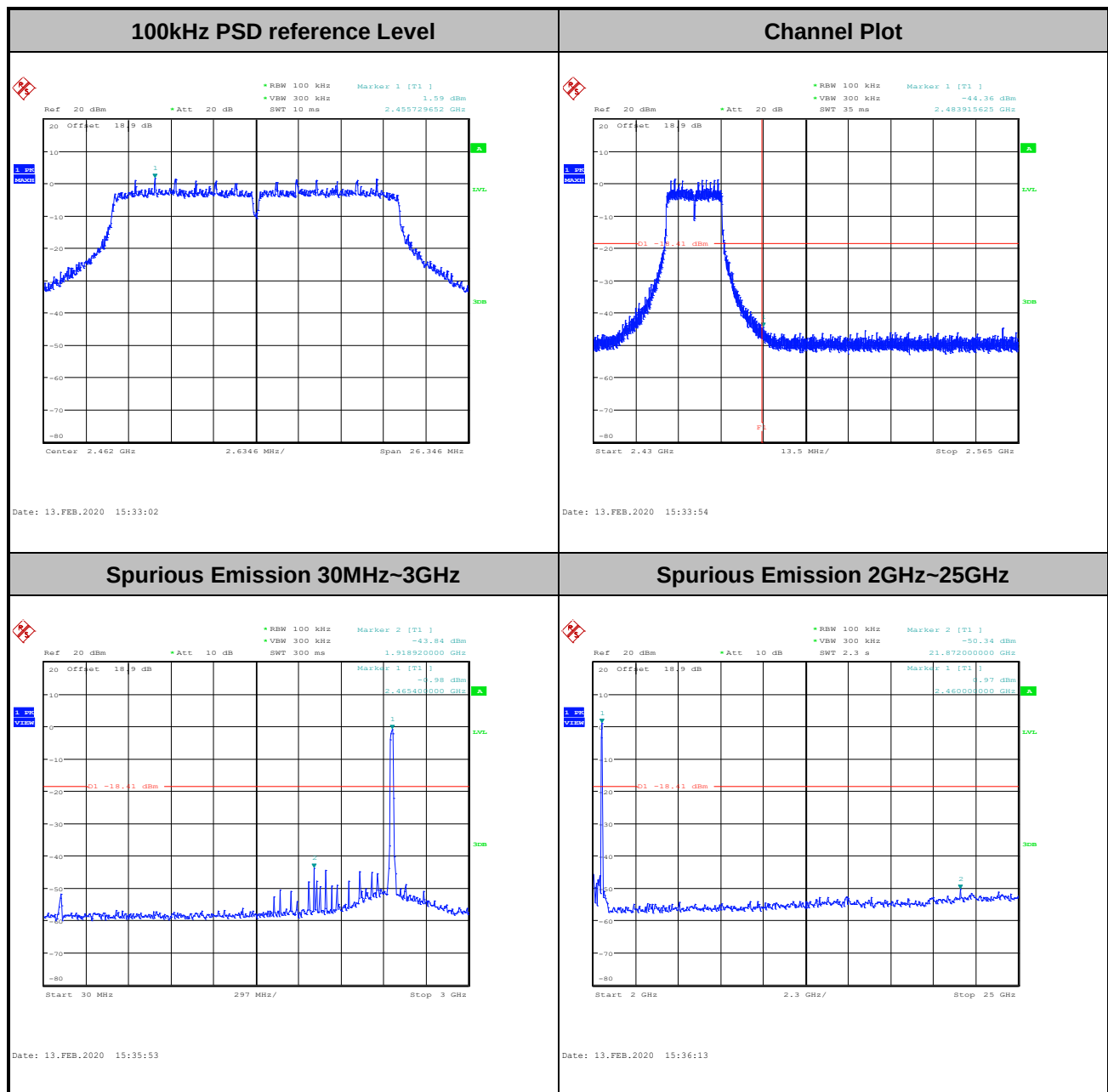


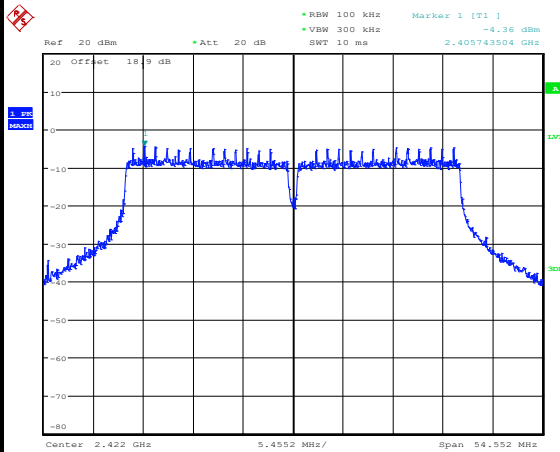
Test Mode :	802.11n HT20	Test Channel :	06
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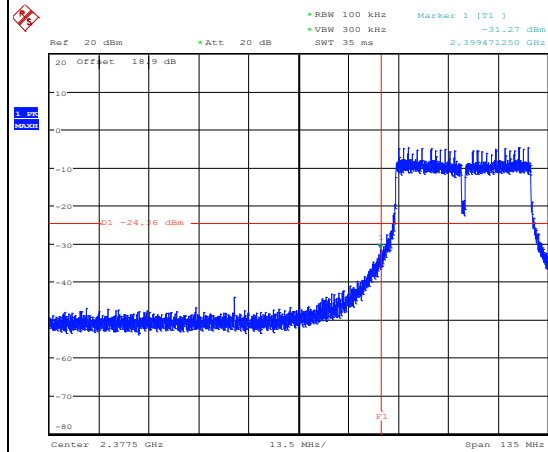


Test Mode :	802.11n HT20	Test Channel :	11
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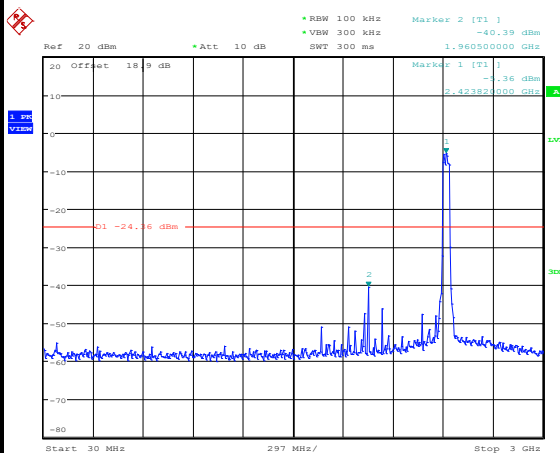


**Test Mode :** 802.11n HT40**Test Channel :** 03**100kHz PSD reference Level**

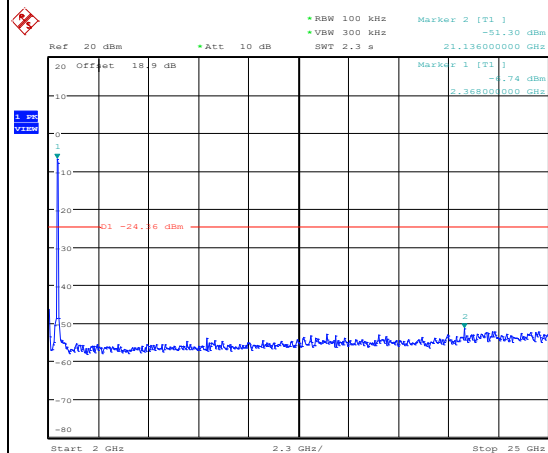
Date: 12.FEB.2020 21:16:20

Channel Plot

Date: 12.FEB.2020 21:16:51

Spurious Emission 30MHz~3GHz

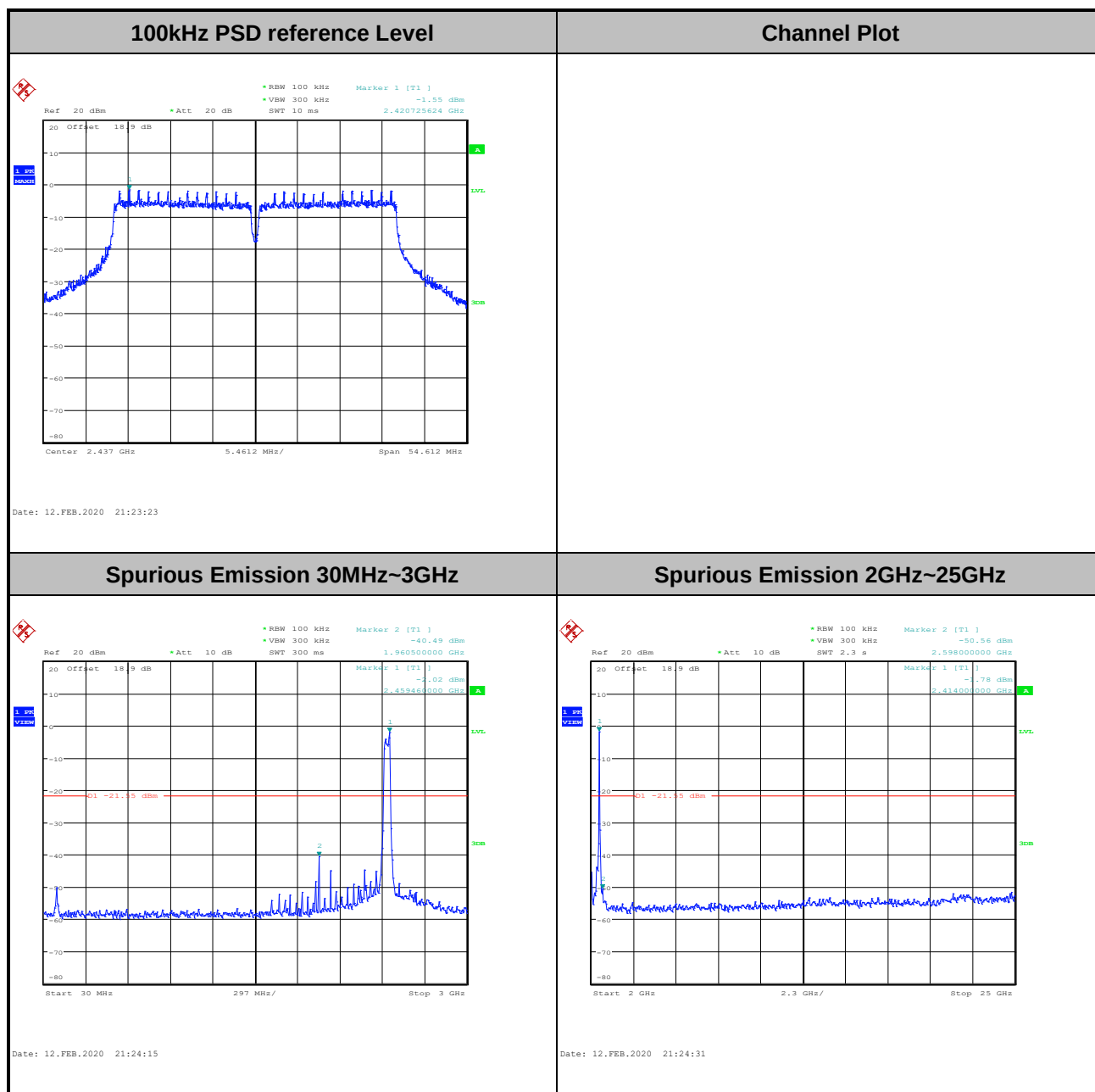
Date: 12.FEB.2020 21:17:13

Spurious Emission 2GHz~25GHz

Date: 12.FEB.2020 21:17:28



Test Mode :	802.11n HT40	Test Channel :	06
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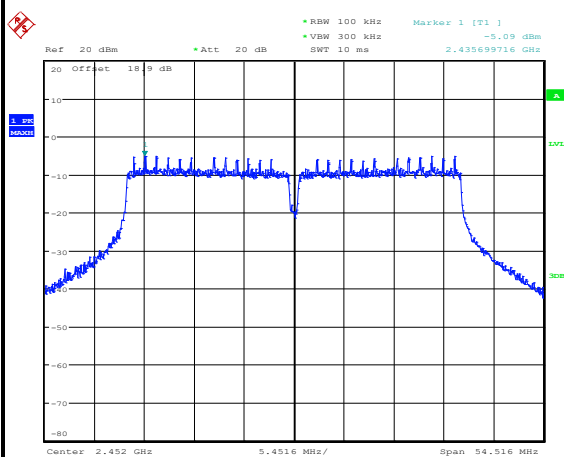




Test Mode : 802.11n HT40

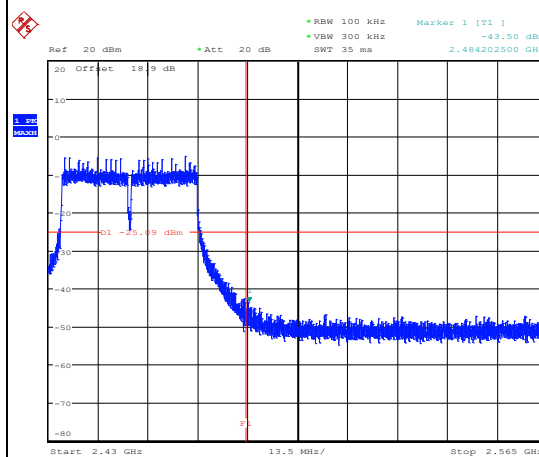
Test Channel : 09

100kHz PSD reference Level



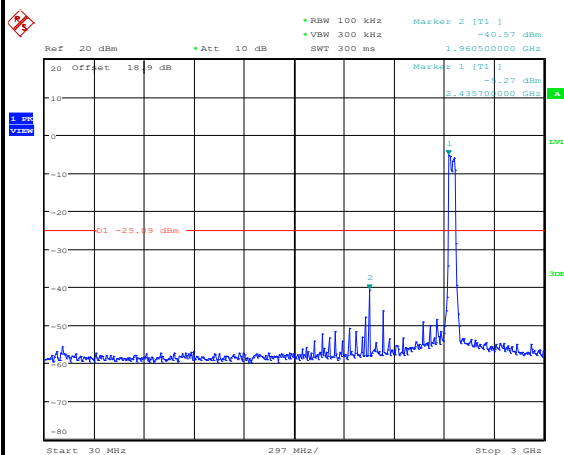
Date: 12.FEB.2020 21:27:57

Channel Plot



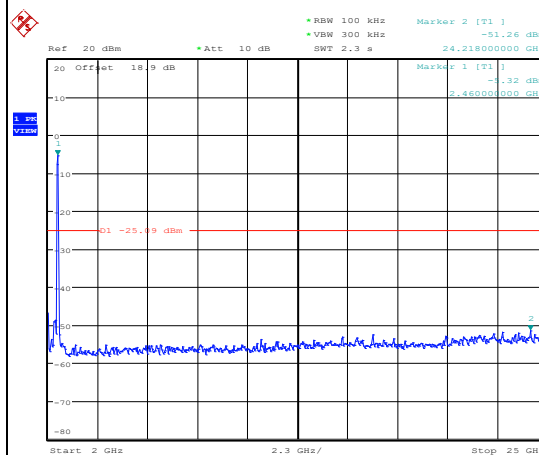
Date: 12.FEB.2020 21:28:10

Spurious Emission 30MHz~3GHz



Date: 12.FEB.2020 21:30:50

Spurious Emission 2GHz~25GHz

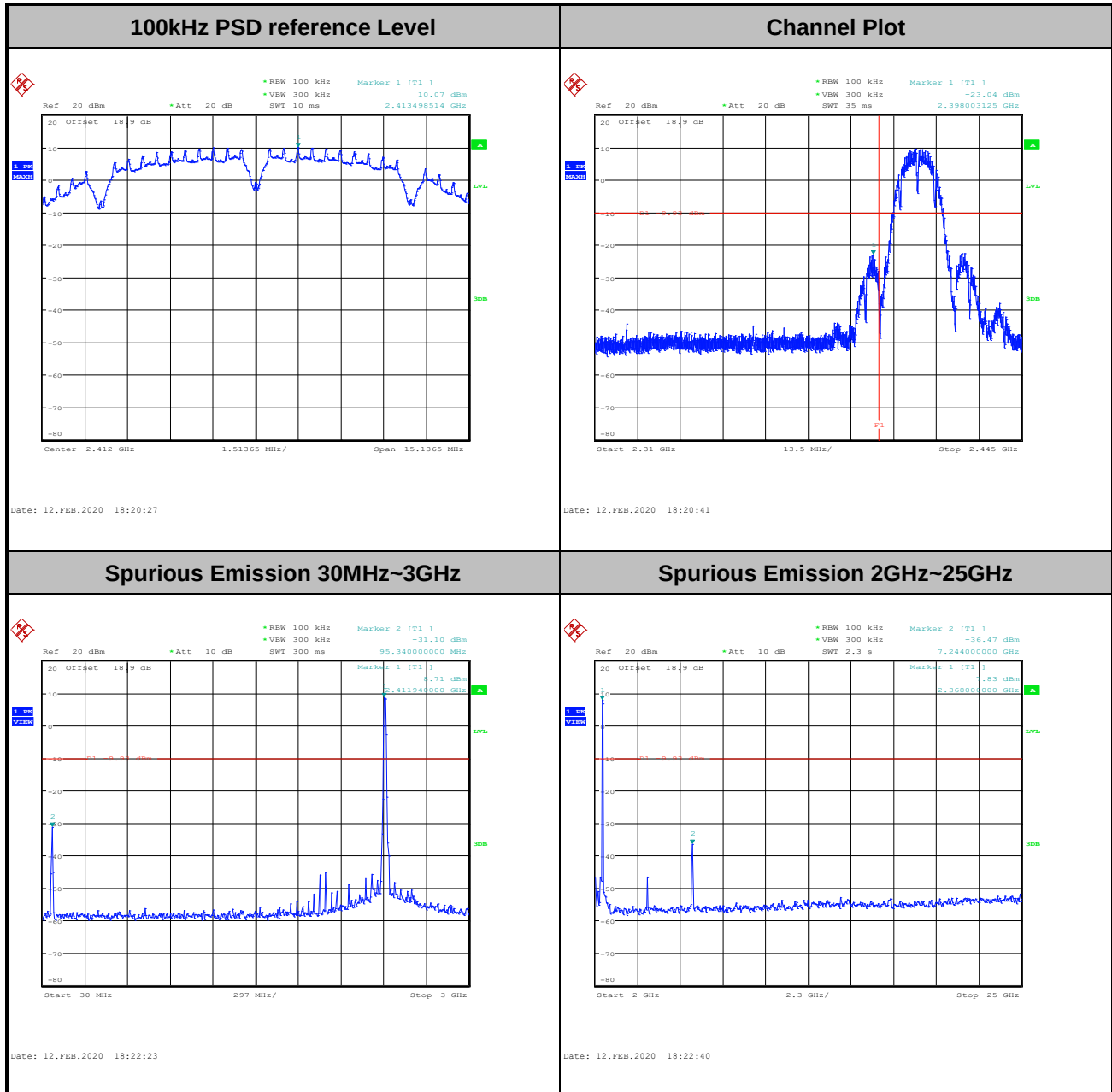


Date: 12.FEB.2020 21:31:11



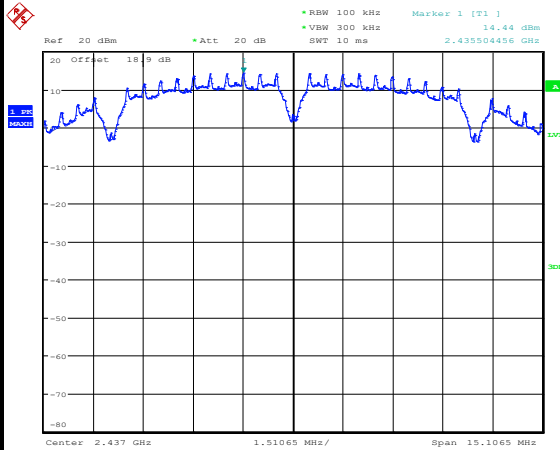
Number of TX = 2, Ant. 1 (Measured)

Test Mode :	802.11b	Test Channel :	01
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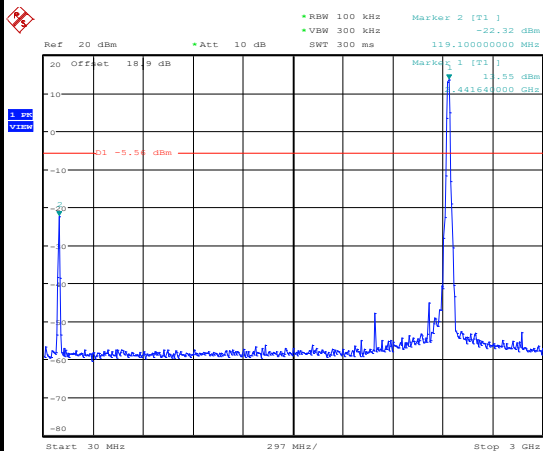




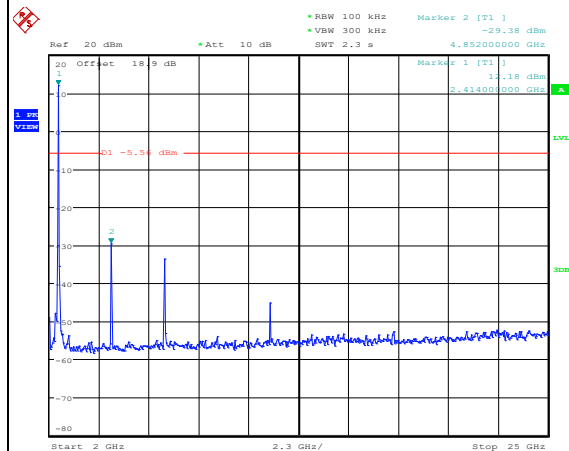
Test Mode :	802.11b	Test Channel :	06
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100kHz PSD reference Level

Date: 12.FEB.2020 18:39:48

Channel Plot**Spurious Emission 30MHz~3GHz**

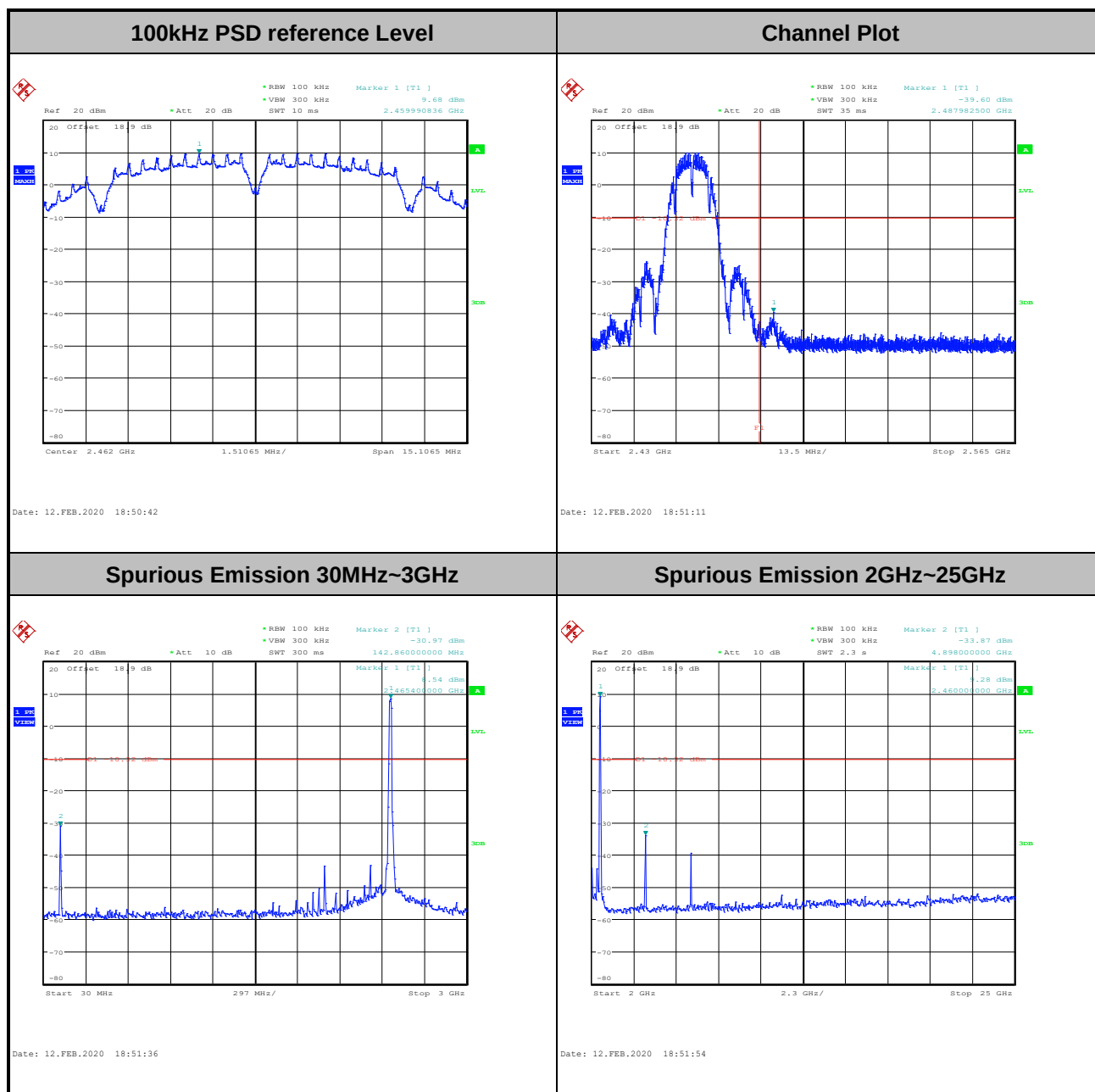
Date: 12.FEB.2020 18:42:28

Spurious Emission 2GHz~25GHz

Date: 12.FEB.2020 18:42:45

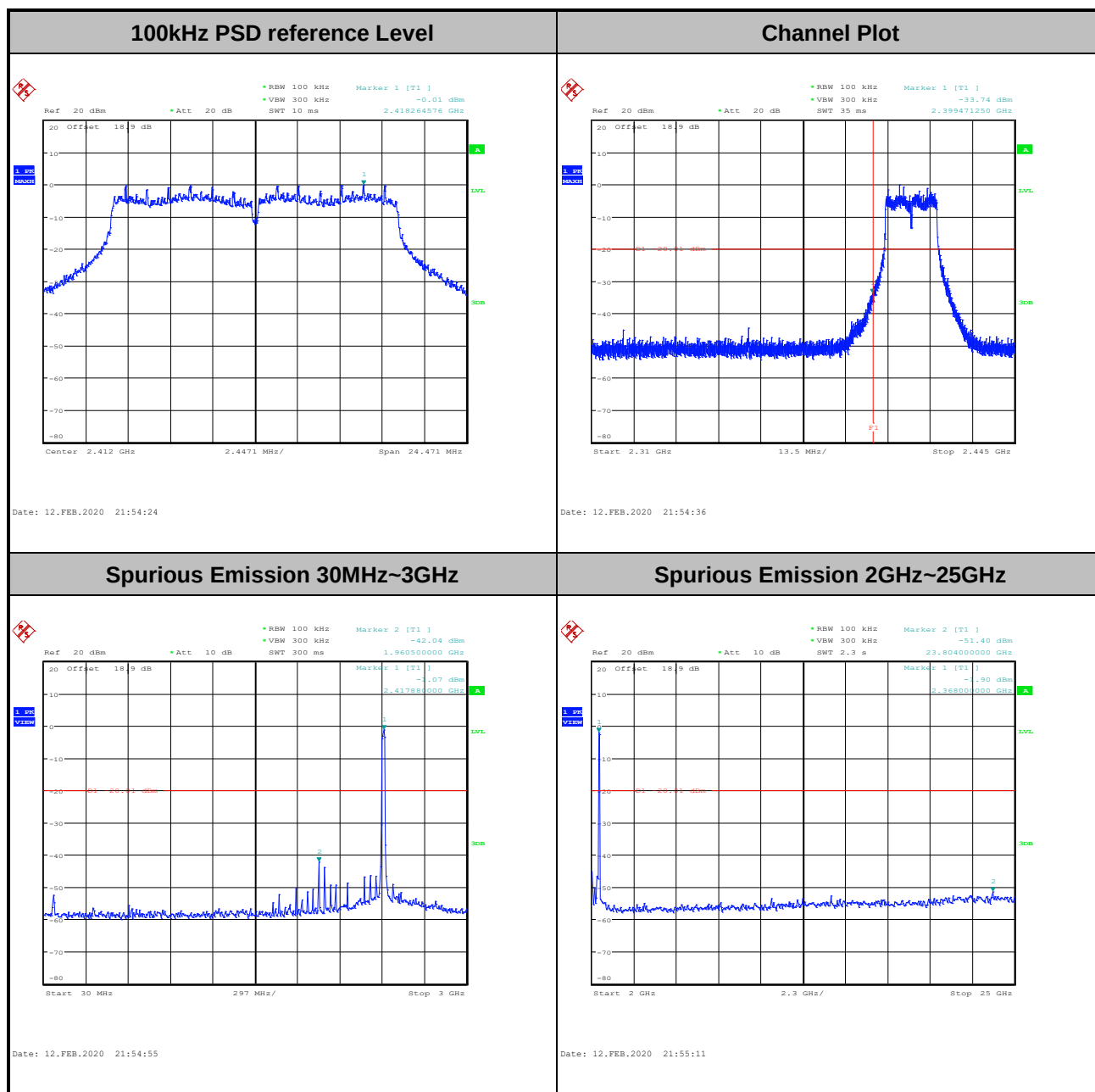


Test Mode :	802.11b	Test Channel :	11
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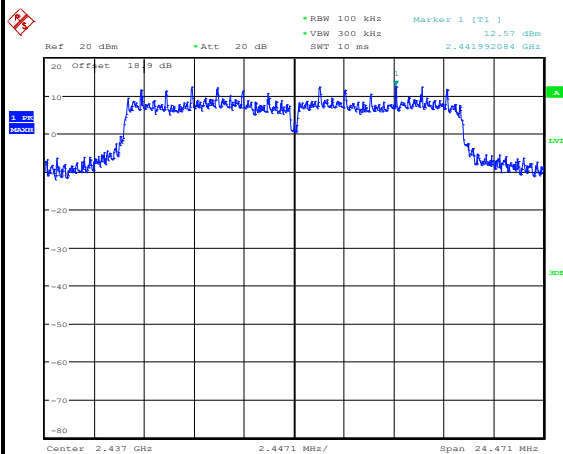
Test Mode :	802.11g	Test Channel :	01
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Test Mode :	802.11g	Test Channel :	06
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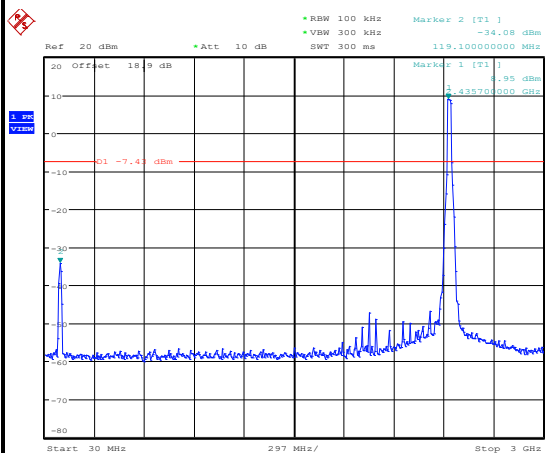
100kHz PSD reference Level



Date: 13.FEB.2020 22:13:22

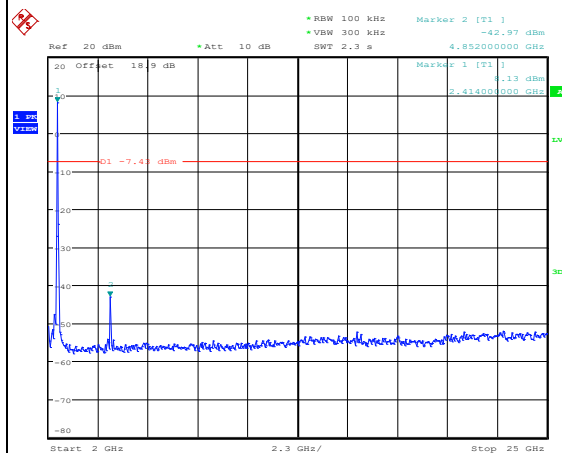
Channel Plot

Spurious Emission 30MHz~3GHz



Date: 14.FEB.2020 16:36:54

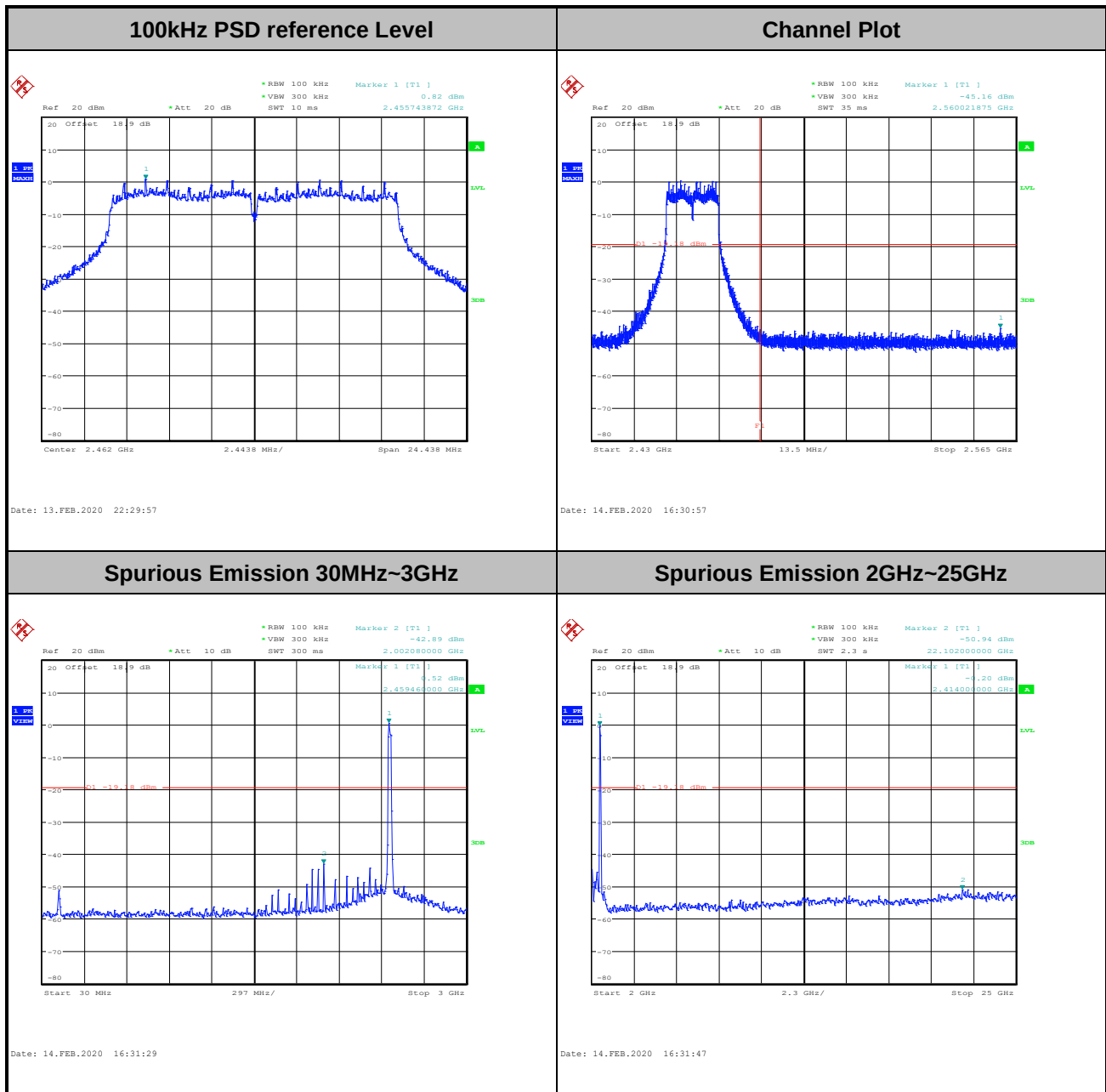
Spurious Emission 2GHz~25GHz



Date: 14.FEB.2020 16:37:24

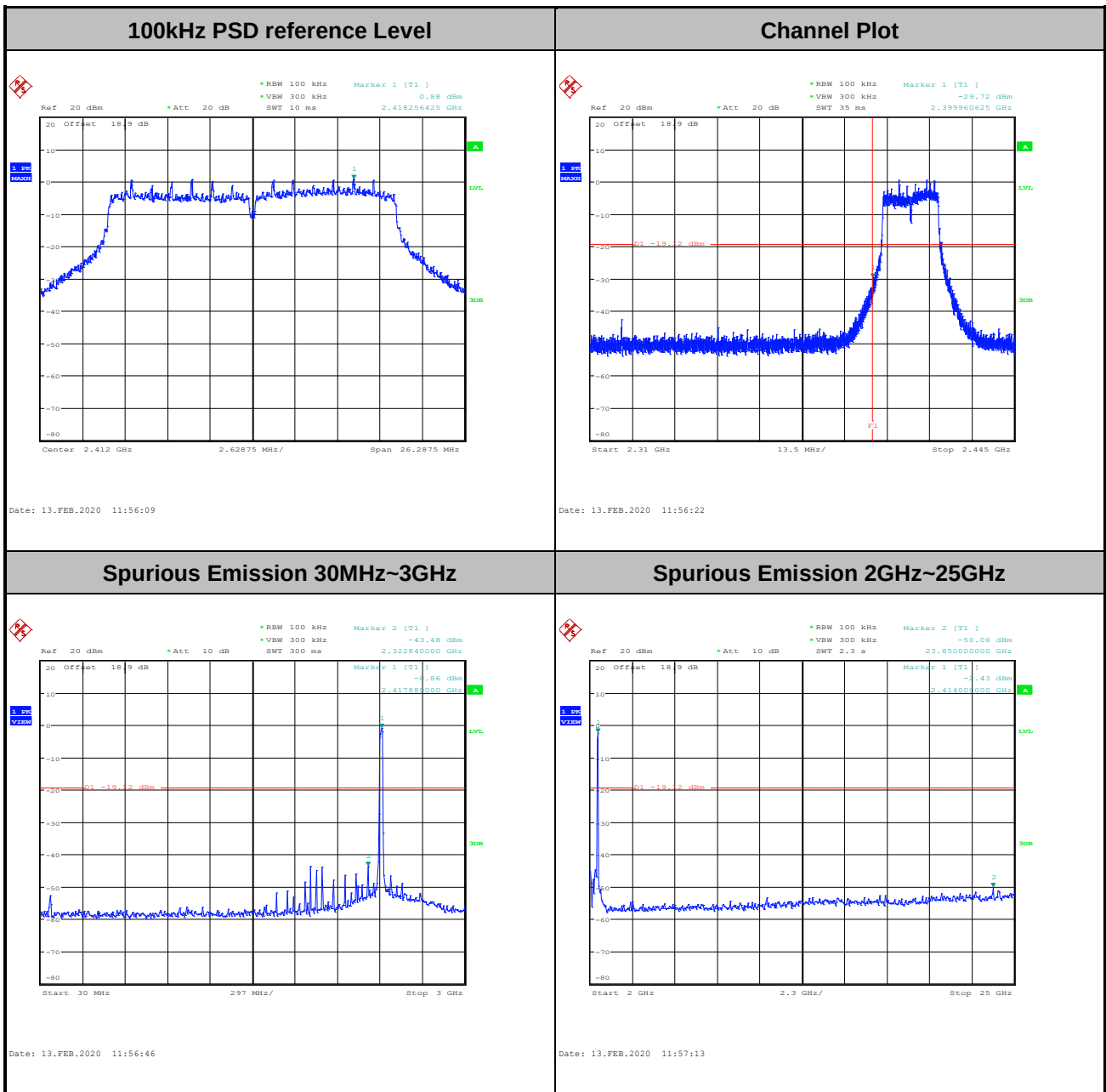


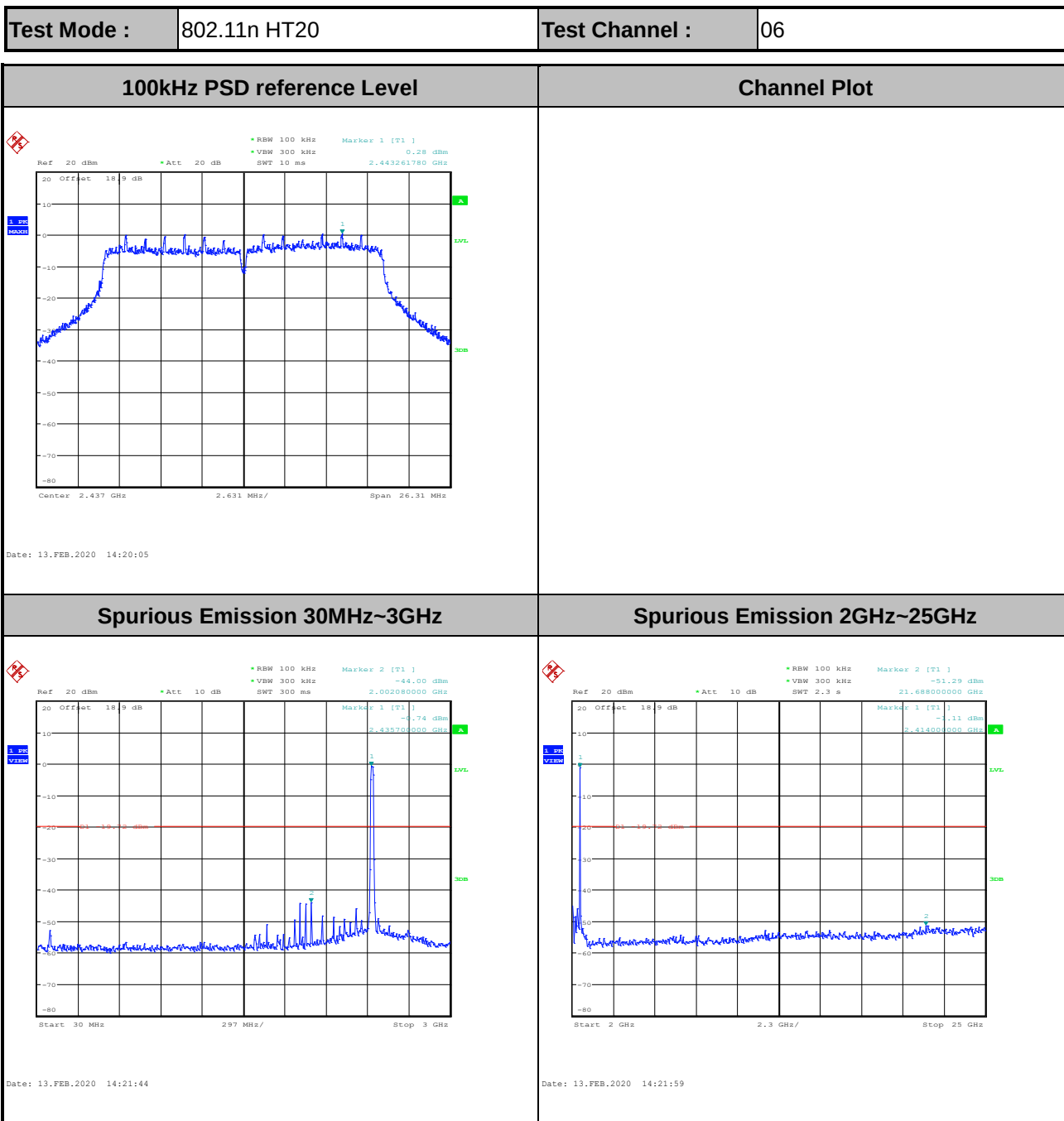
Test Mode :	802.11g	Test Channel :	11
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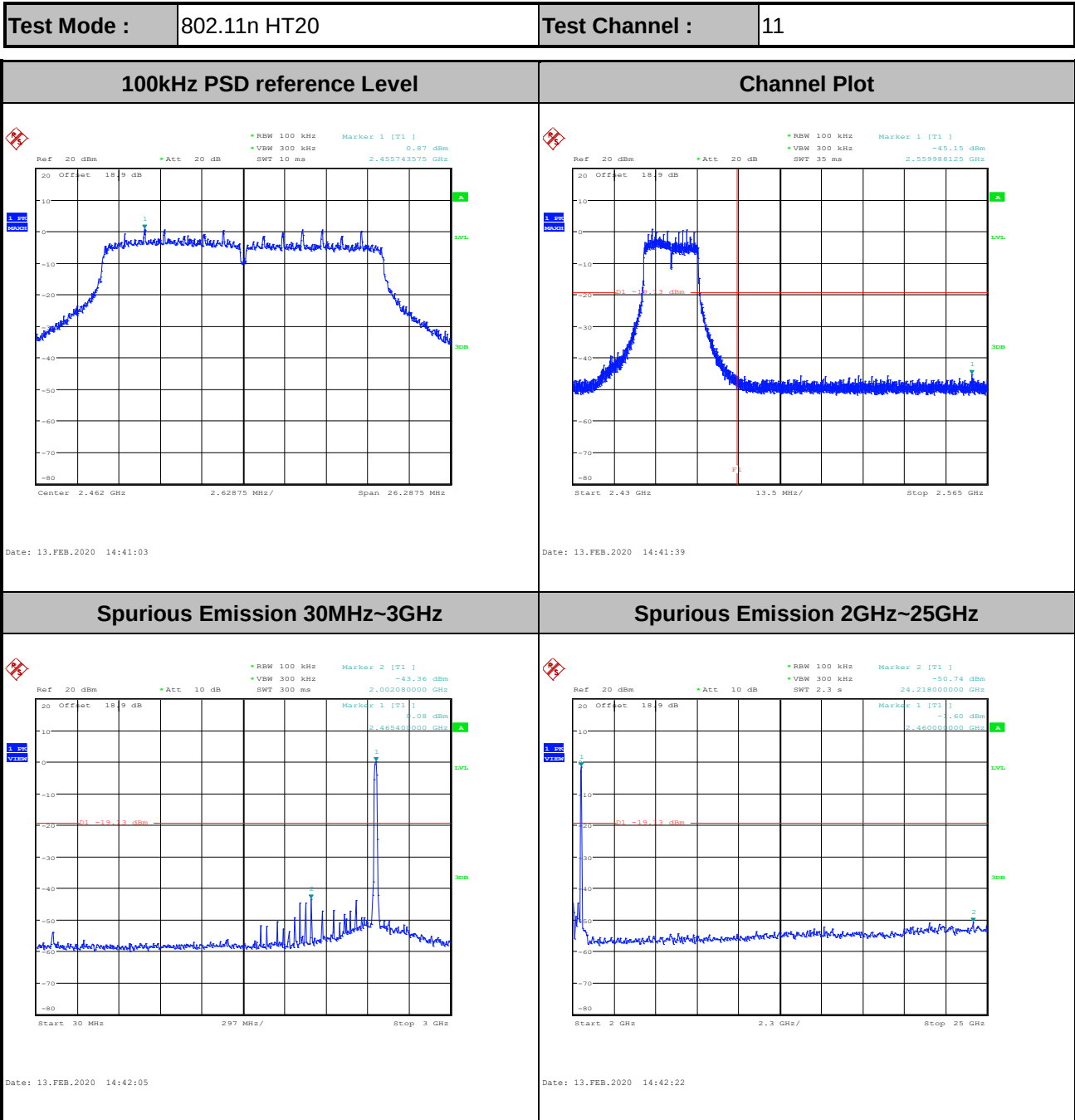


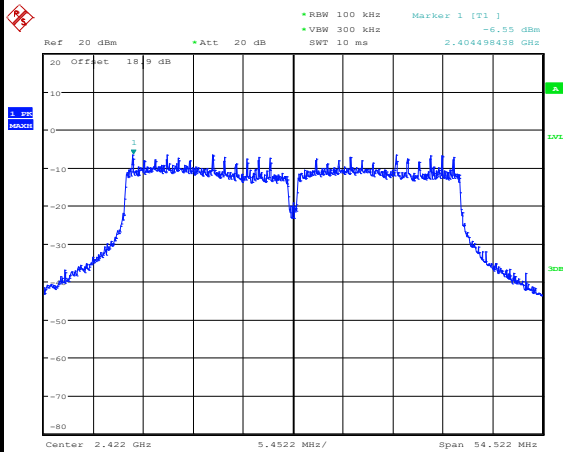


Test Mode :	802.11n HT20	Test Channel :	01
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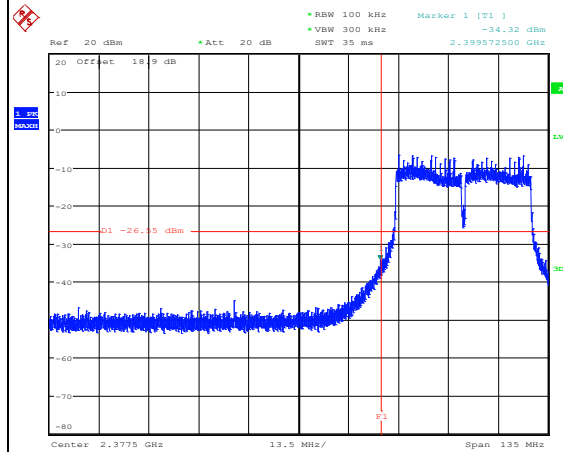




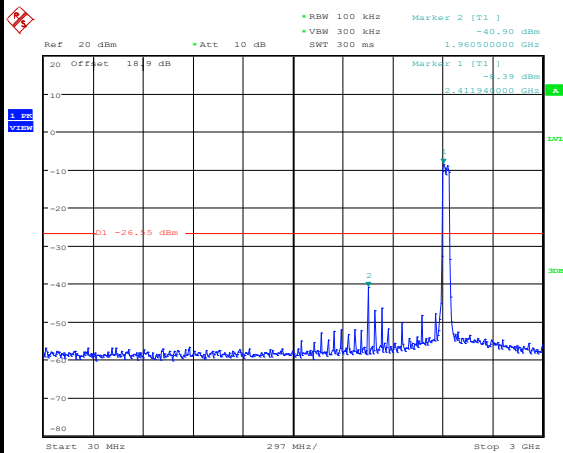


**Test Mode :** 802.11n HT40**Test Channel :** 03**100kHz PSD reference Level**

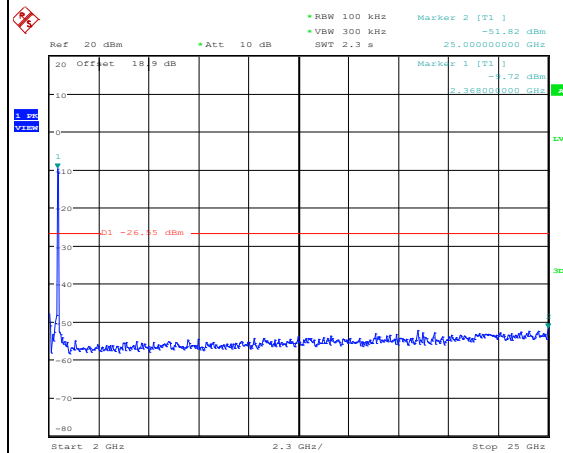
Date: 12.FEB.2020 19:17:09

Channel Plot

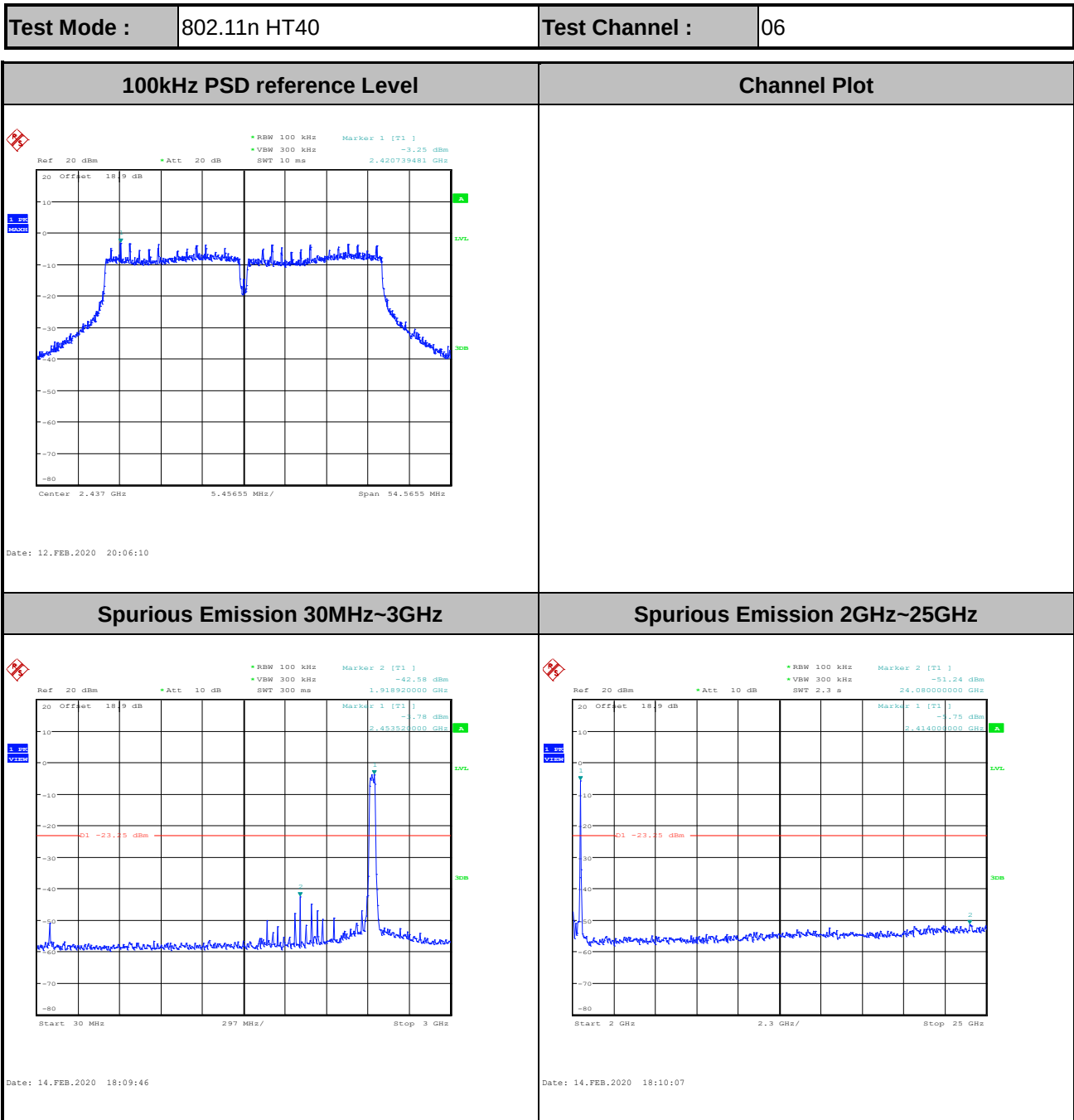
Date: 12.FEB.2020 19:17:42

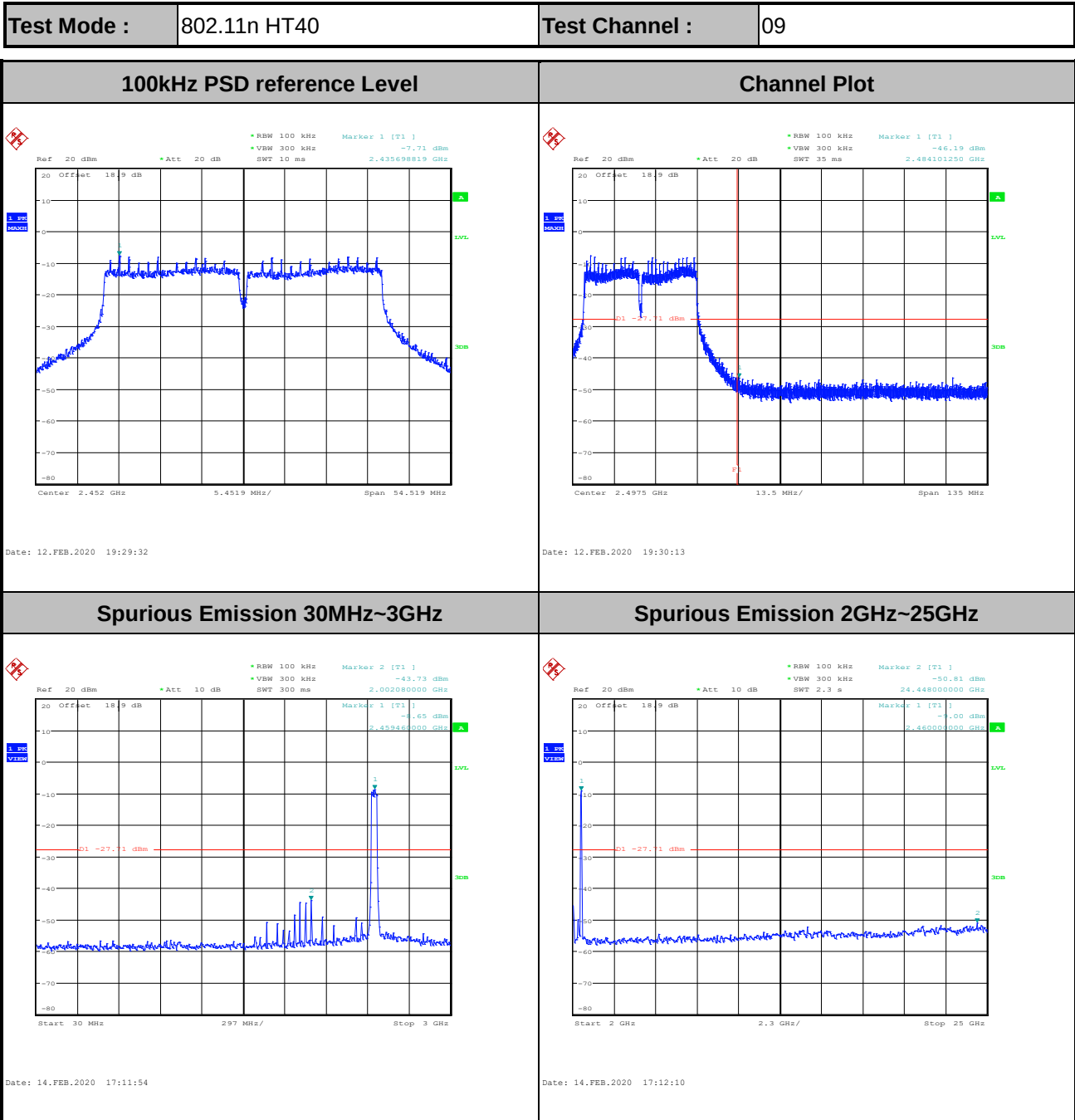
Spurious Emission 30MHz~3GHz

Date: 12.FEB.2020 19:18:00

Spurious Emission 2GHz~25GHz

Date: 12.FEB.2020 19:18:21

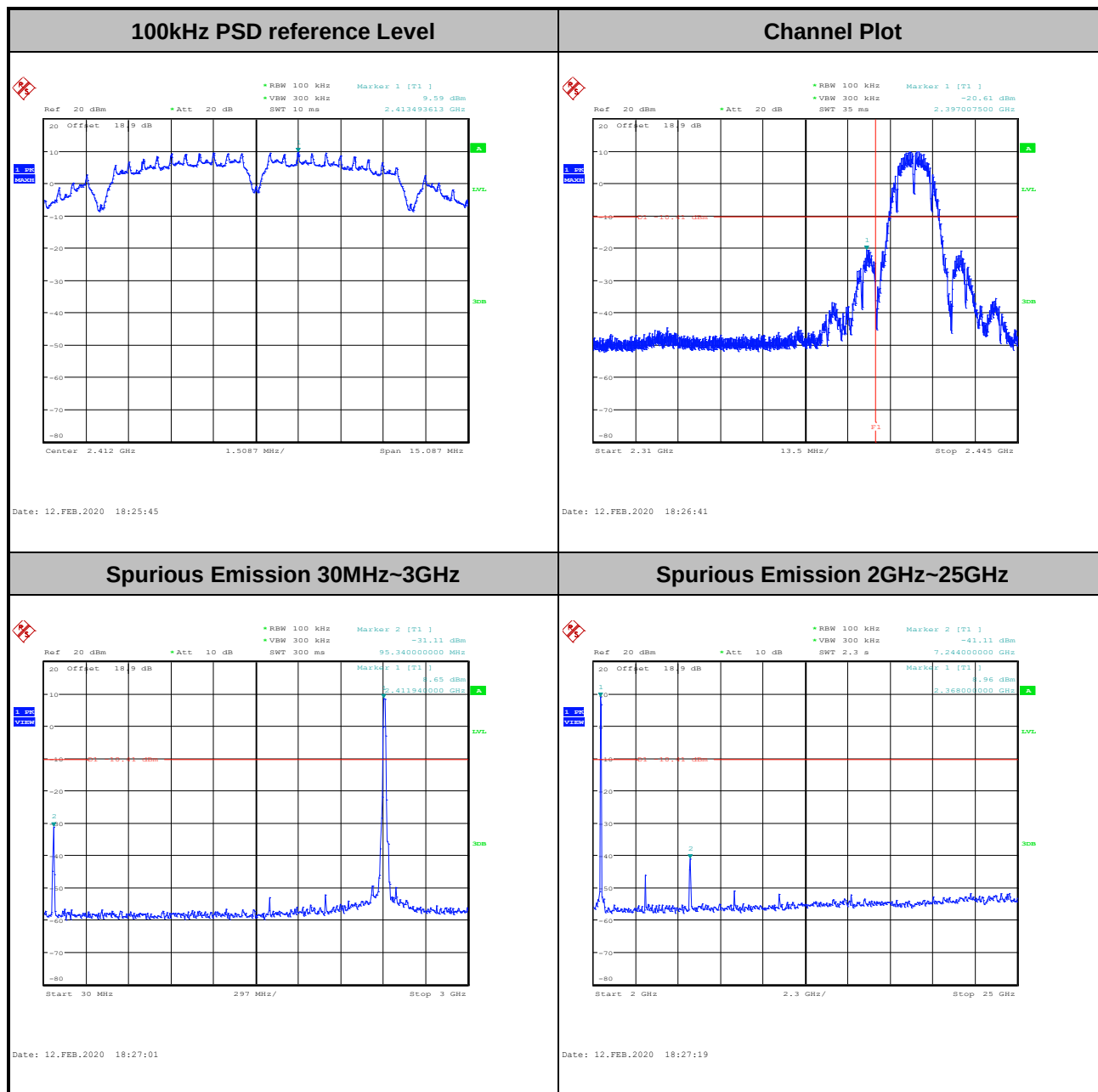






Number of TX = 2, Ant. 2 (Measured)

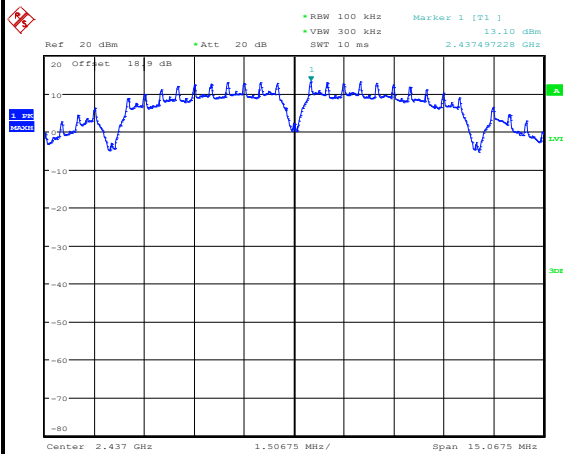
Test Mode :	802.11b	Test Channel :	01
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Test Mode :	802.11b	Test Channel :	06
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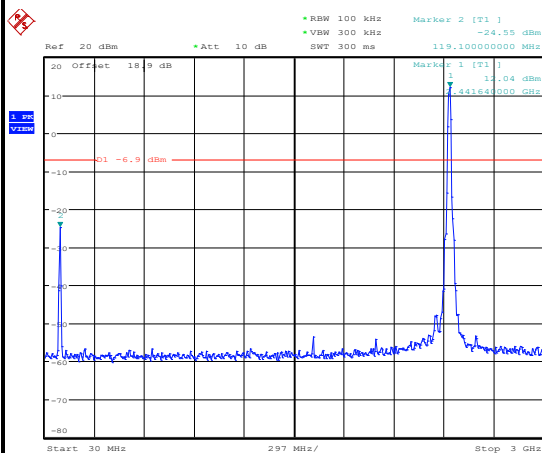
100kHz PSD reference Level



Date: 12.FEB.2020 18:46:15

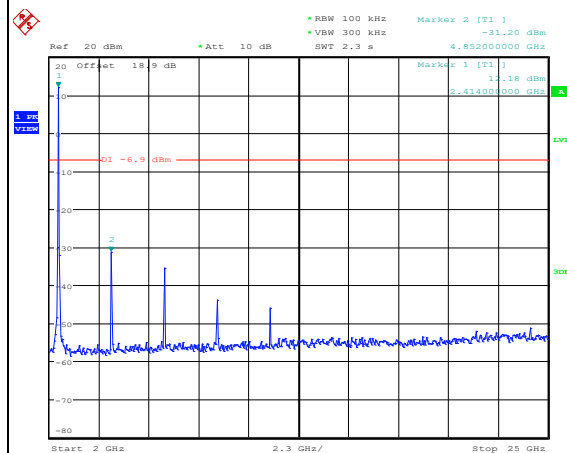
Channel Plot

Spurious Emission 30MHz~3GHz



Date: 12.FEB.2020 18:47:10

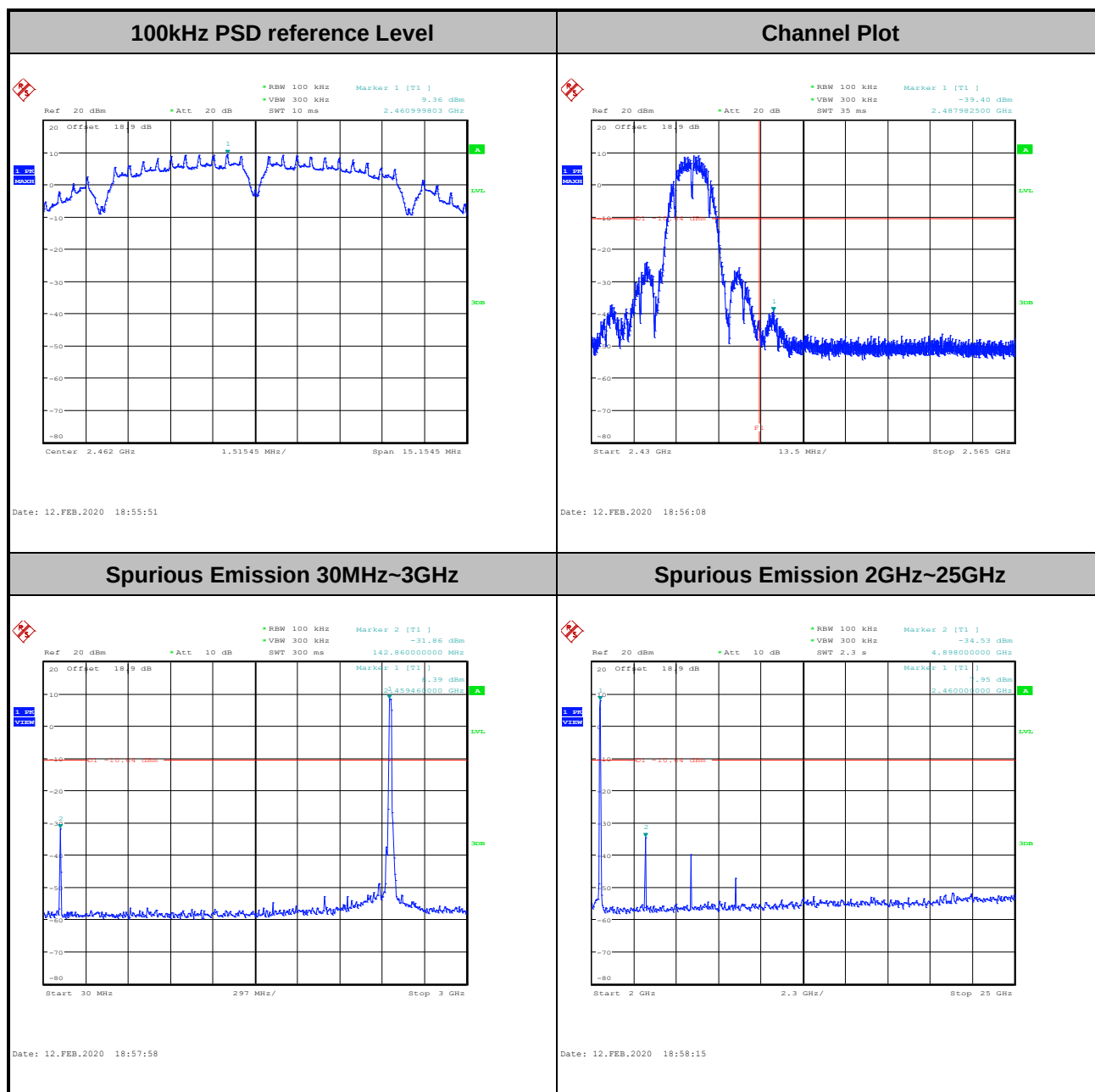
Spurious Emission 2GHz~25GHz



Date: 12.FEB.2020 18:47:28



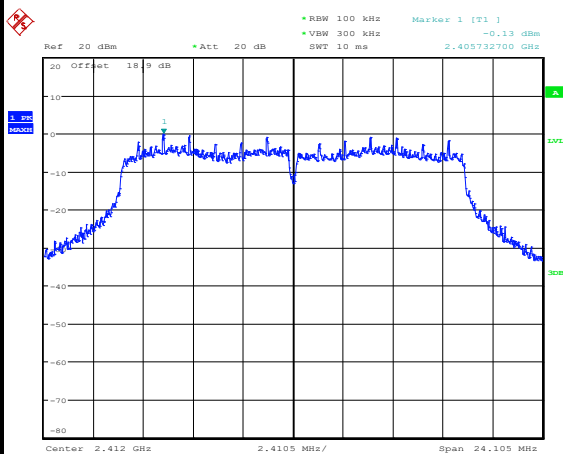
Test Mode :	802.11b	Test Channel :	11
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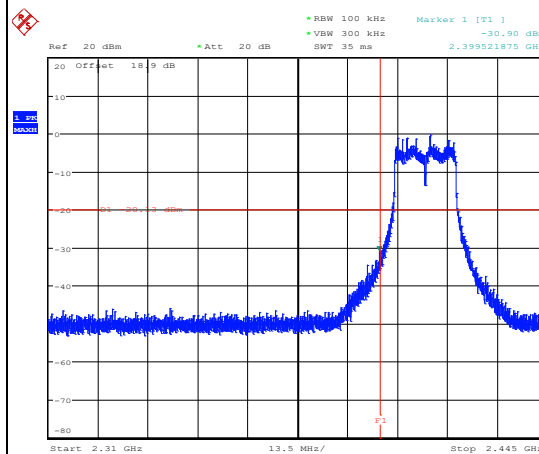
Test Mode :	802.11g	Test Channel :	01
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100kHz PSD reference Level



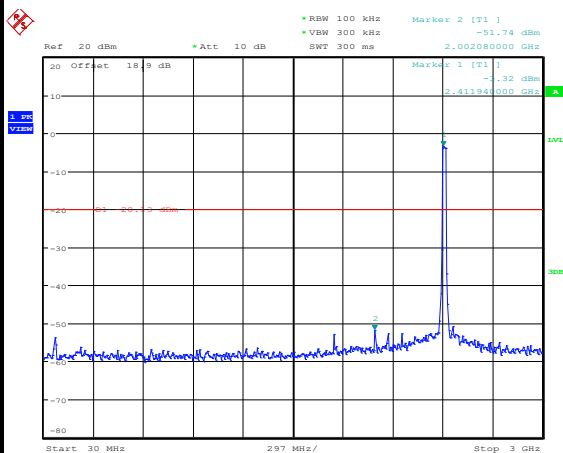
Date: 12.FEB.2020 21:59:43

Channel Plot



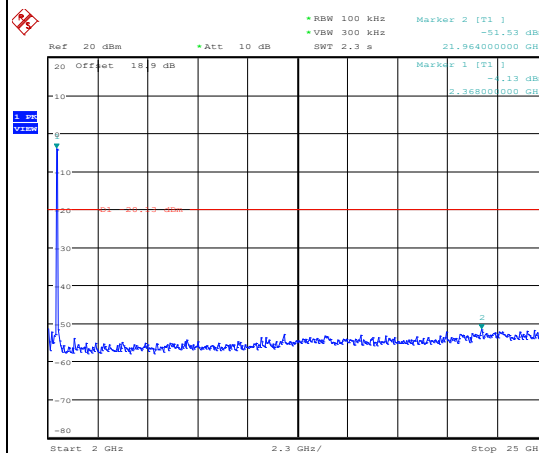
Date: 13.FEB.2020 14:53:19

Spurious Emission 30MHz~3GHz



Date: 13.FEB.2020 14:53:51

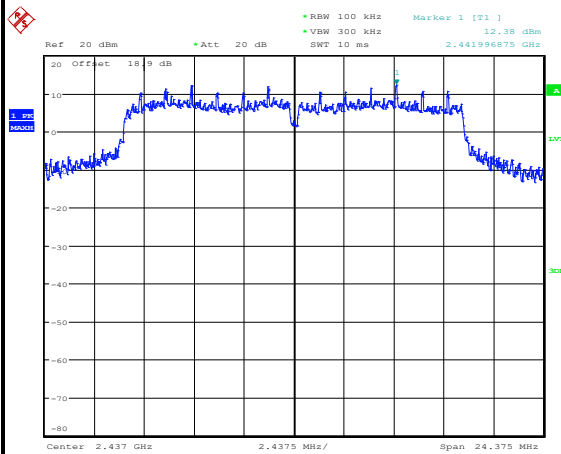
Spurious Emission 2GHz~25GHz



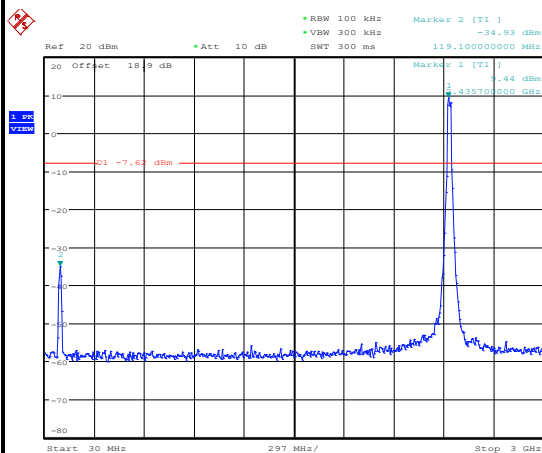
Date: 13.FEB.2020 14:54:09



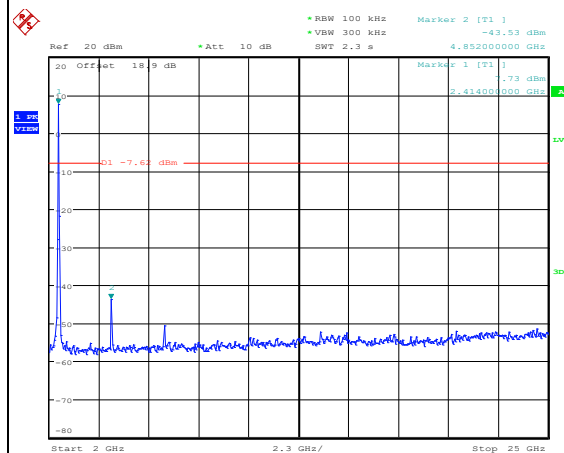
Test Mode :	802.11g	Test Channel :	06
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100kHz PSD reference Level

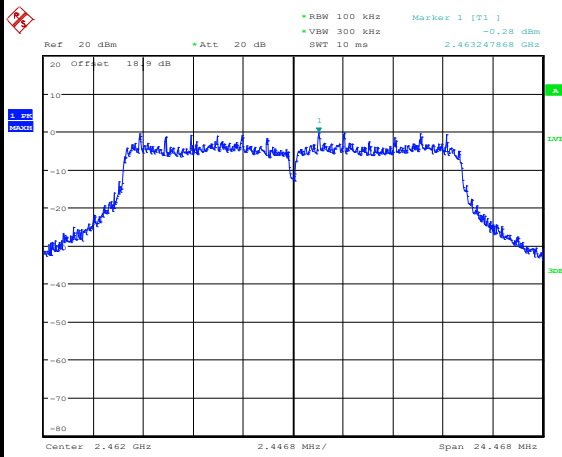
Date: 13.FEB.2020 22:18:11

Channel Plot**Spurious Emission 30MHz~3GHz**

Date: 14.FEB.2020 16:41:06

Spurious Emission 2GHz~25GHz

Date: 14.FEB.2020 16:41:22



The screenshot shows a Spectrum Analyzer interface with the following details:

- Top Bar:**
 - Left: A red square icon with a white 'X' and a small '1' in the top-left corner.
 - Center: Two green status indicators:
 - *BW 100 kHz
 - *VBW 300 kHz
 - Right: Two green status indicators:
 - Marker 1 [T1]
 - 45.60 dBm
- Measurement Data:**
 - Ref 20 dBm
 - *Att 20 dB
 - SWT 35 ms
 - 2.487003750 GHz
- Plot Area:**
 - A grid with a vertical red line at 2.487 GHz.
 - A blue signal trace showing a peak at the vertical line.
 - A horizontal red line at -20 dBm.
 - Labels 'P1' and 'P2' are visible near the horizontal line.
- Bottom Bar:**
 - Start 2.43 GHz
 - 13.5 MHz/
 - Stop 2.565 GHz
- Left Margin:**
 - A blue button labeled '100 MHz'.

Ref 20 dBm Att 10 dB SWT 300 ms 2.16246000 GHz

20 Offset 18.9 dB

Marker 1 [T1] -49.48 dBm 2.45946000 GHz

Marker 2 [T2] -28.28 dBm 2.16246000 GHz

Start 30 MHz 297 MHz/ Stop 3 GHz

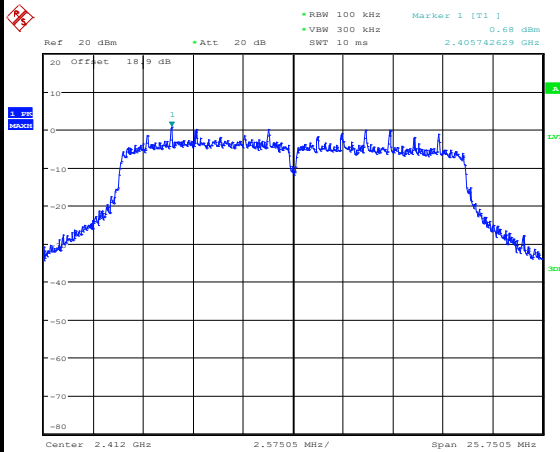
*BW 100 kHz
 *VW 300 kHz
 *Att 10 dB
 Ref 20 dBm
 SWT 2.3 s
 Marker 2 [1]
 -50.83 dBm
 24.08000000 GHz

20 OffSet 18.9 dB
 Marker 1 [1]
 -1.36 dBm
 2.46000000 GHz

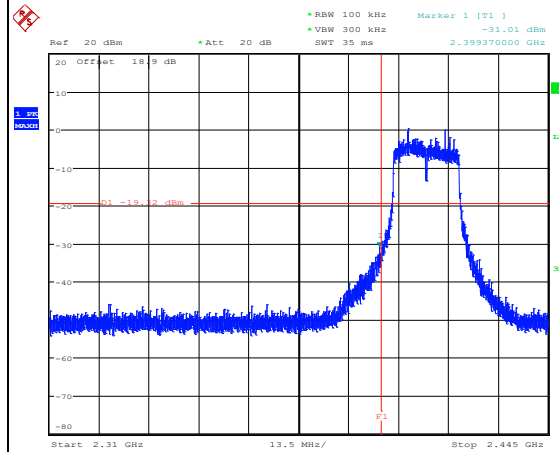
2
 1
 0
 -10
 -20
 -30
 -40
 -50
 -60
 -70
 -80

Start 2 GHz
 2.3 GHz/
 Stop 25 GHz

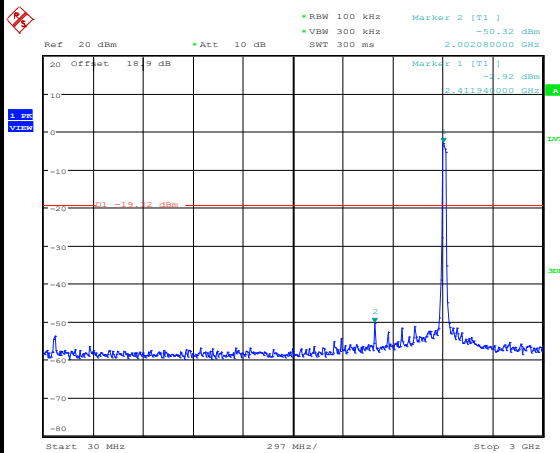
Page Number : 46 of 61
Issued Date : Apr. 07, 2020
Report Version : 04

**Test Mode :** 802.11n HT20**Test Channel :** 01**100kHz PSD reference Level**

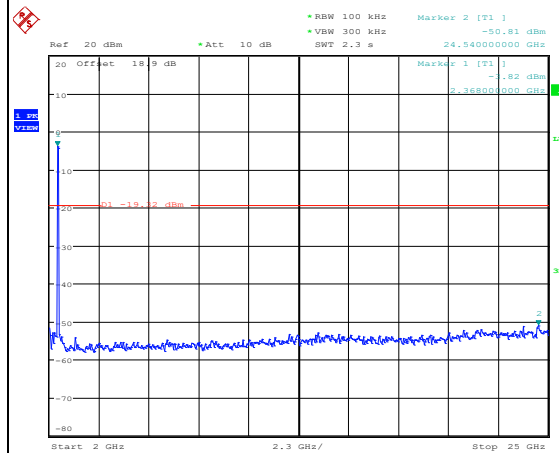
Date: 13.FEB.2020 13:49:35

Channel Plot

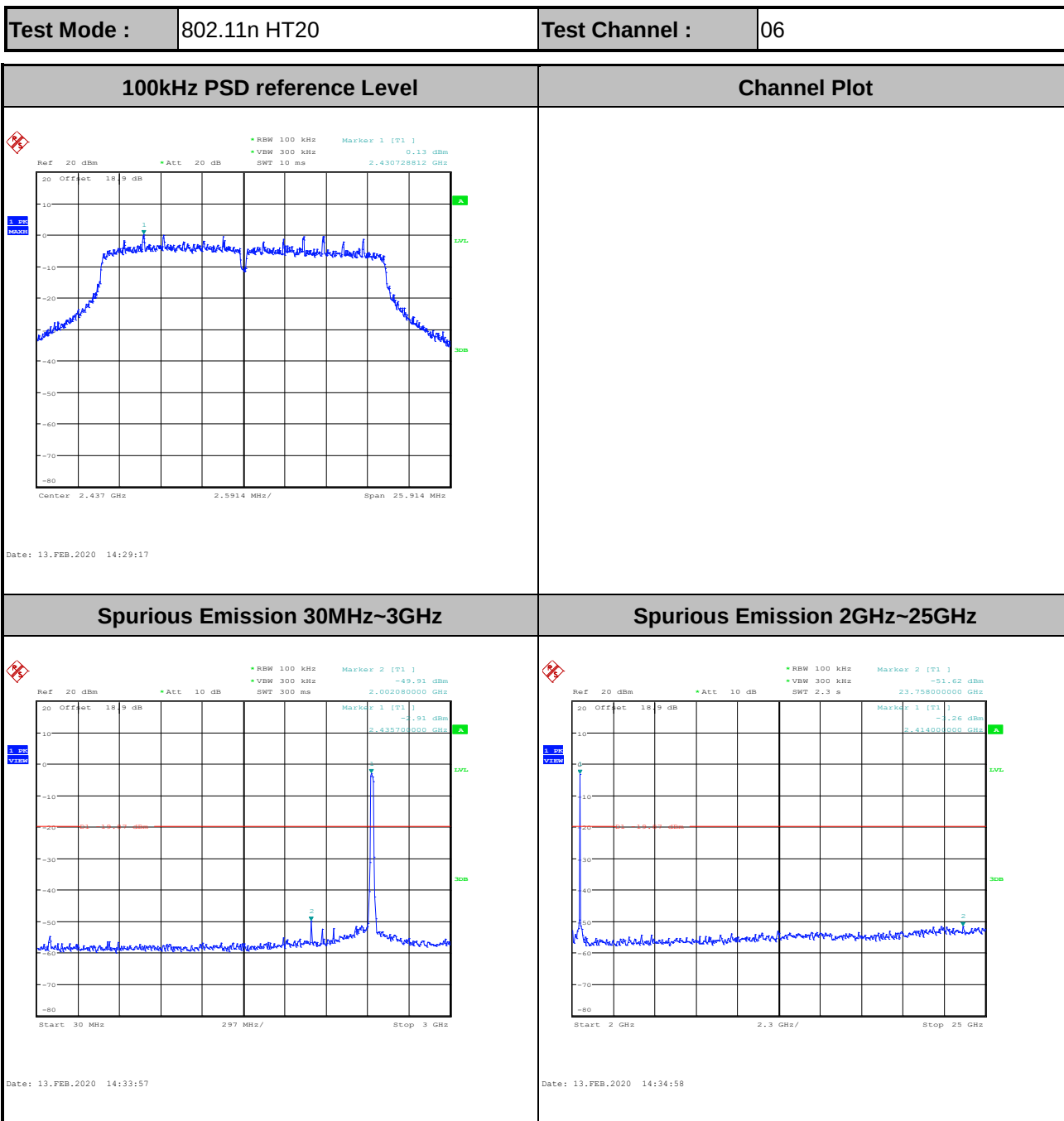
Date: 13.FEB.2020 13:49:49

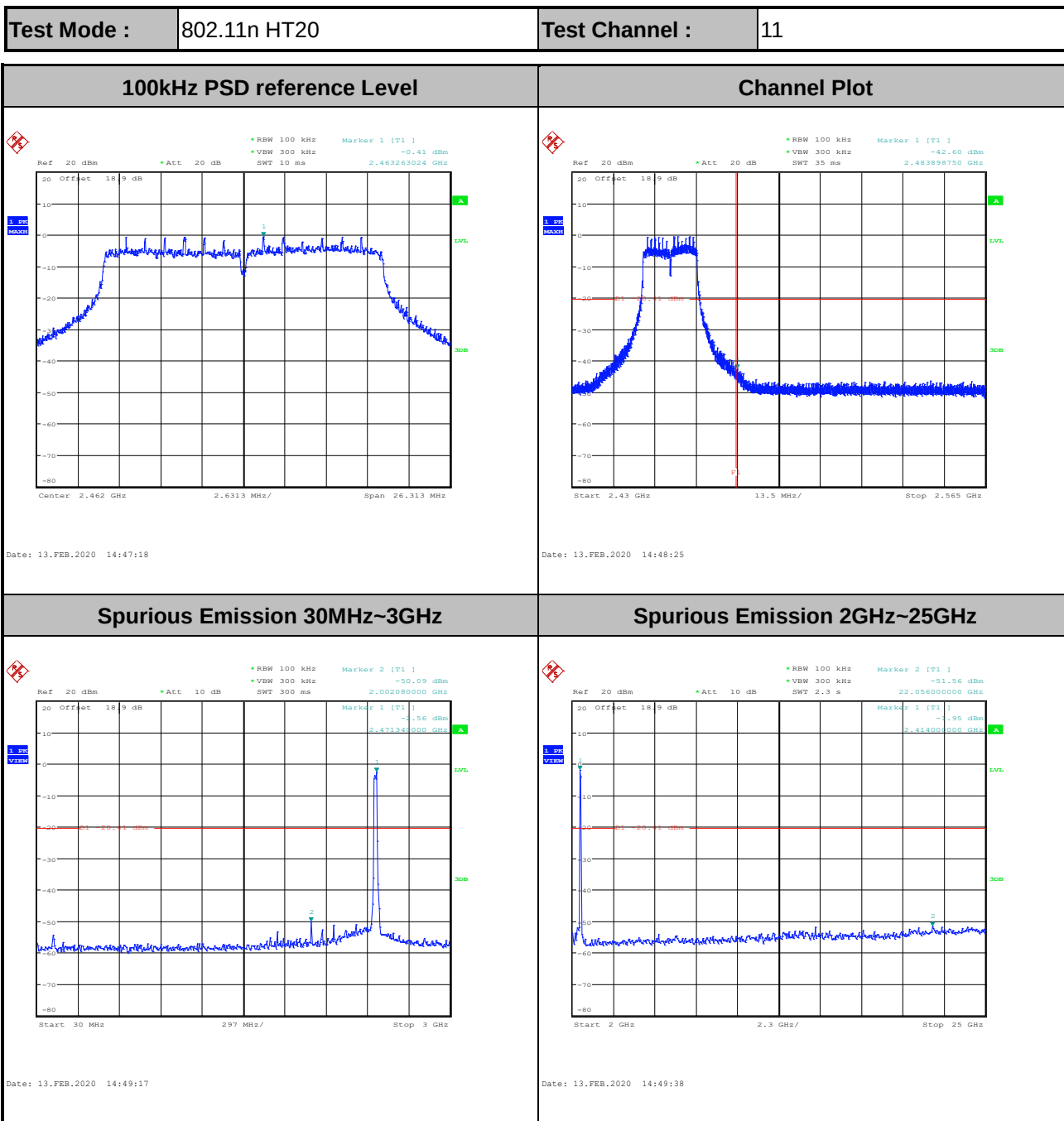
Spurious Emission 30MHz~3GHz

Date: 13.FEB.2020 13:50:11

Spurious Emission 2GHz~25GHz

Date: 13.FEB.2020 13:50:26



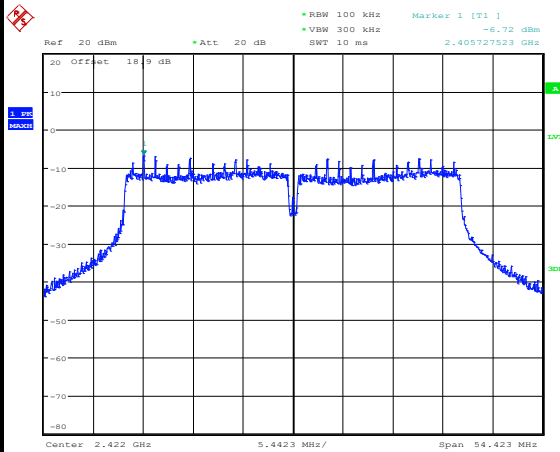




Test Mode : 802.11n HT40

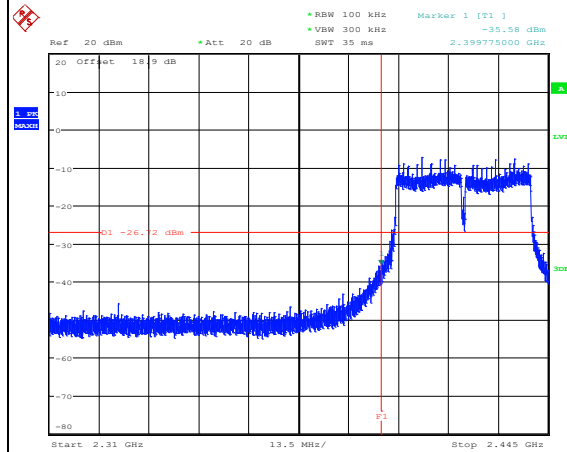
Test Channel : 03

100kHz PSD reference Level



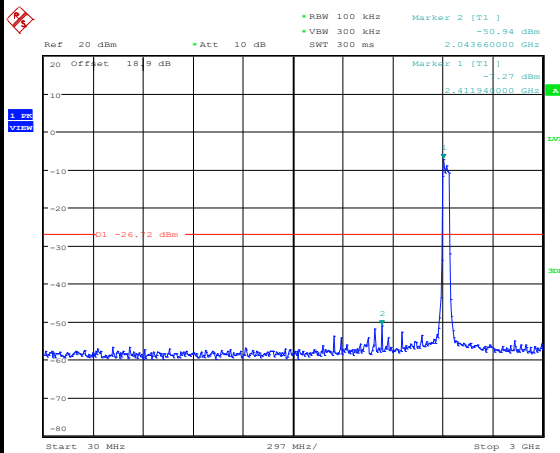
Date: 12.FEB.2020 19:23:11

Channel Plot



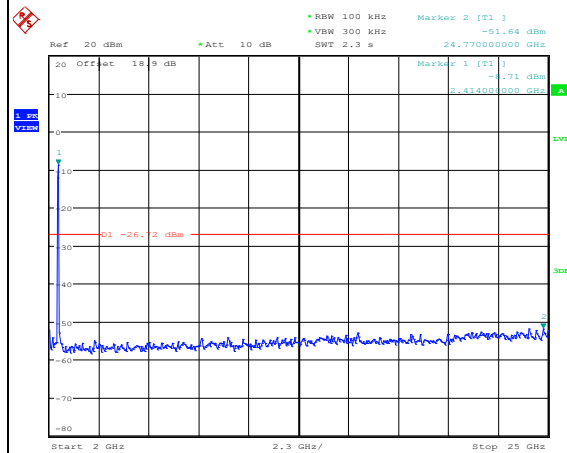
Date: 12.FEB.2020 19:23:25

Spurious Emission 30MHz~3GHz



Date: 12.FEB.2020 19:24:33

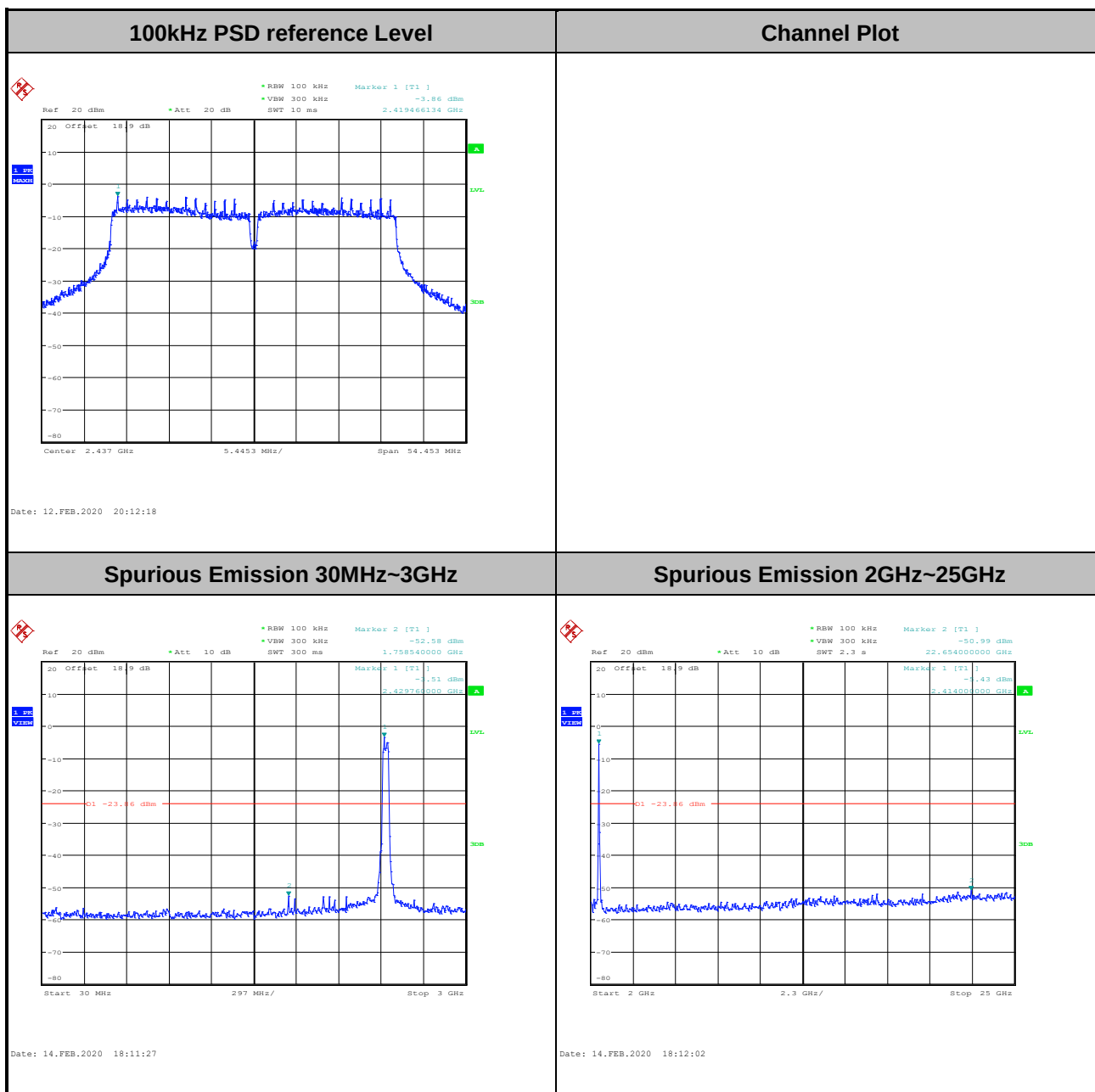
Spurious Emission 2GHz~25GHz

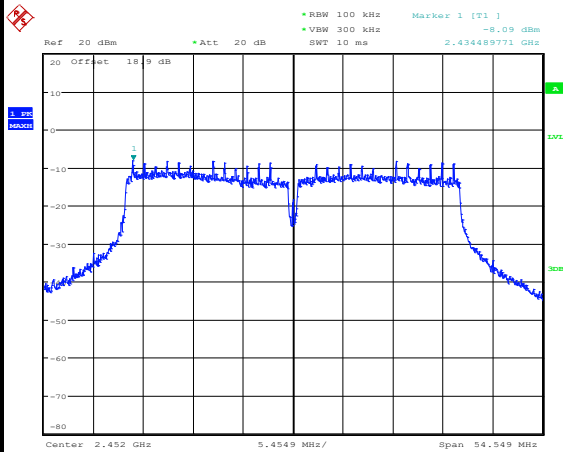


Date: 12.FEB.2020 19:25:04

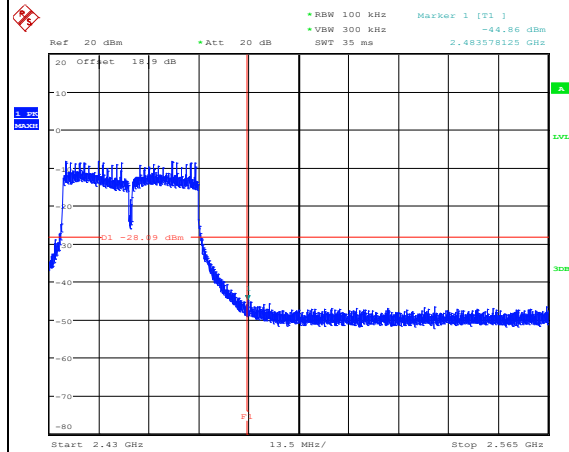


Test Mode :	802.11n HT40	Test Channel :	06
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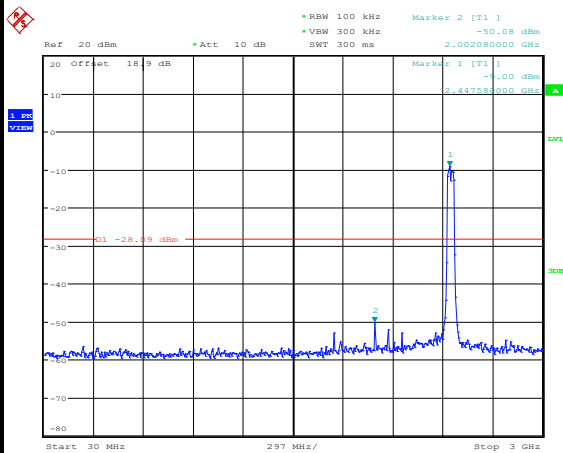


**Test Mode :** 802.11n HT40**Test Channel :** 09**100kHz PSD reference Level**

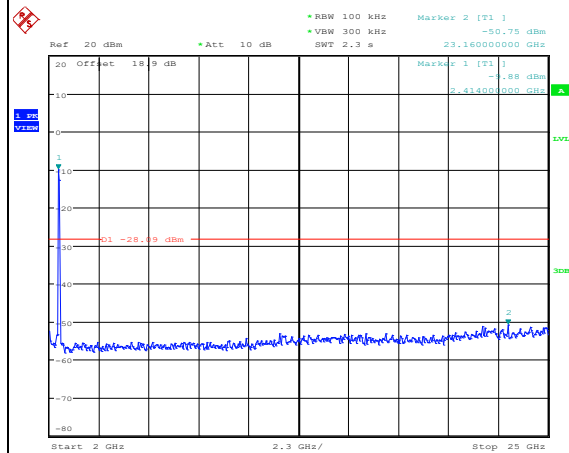
Date: 13.FEB.2020 13:58:35

Channel Plot

Date: 13.FEB.2020 14:06:50

Spurious Emission 30MHz~3GHz

Date: 13.FEB.2020 14:09:24

Spurious Emission 2GHz~25GHz

Date: 13.FEB.2020 14:09:40



3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

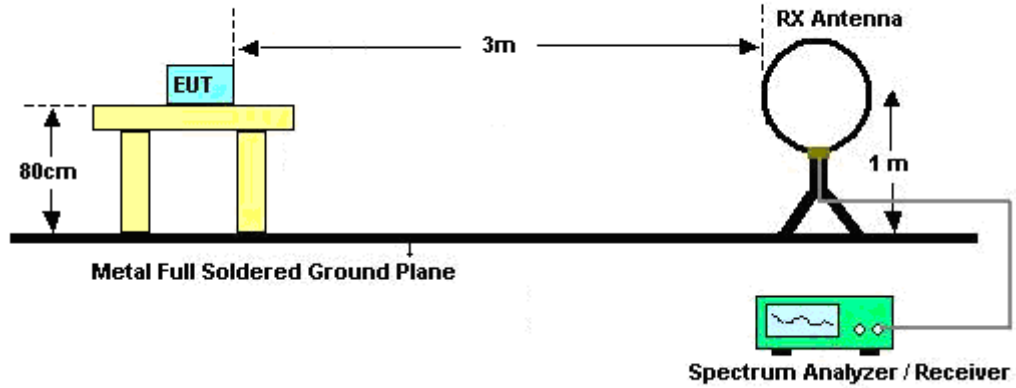
See list of measuring equipment of this test report.

3.5.3 Test Procedures

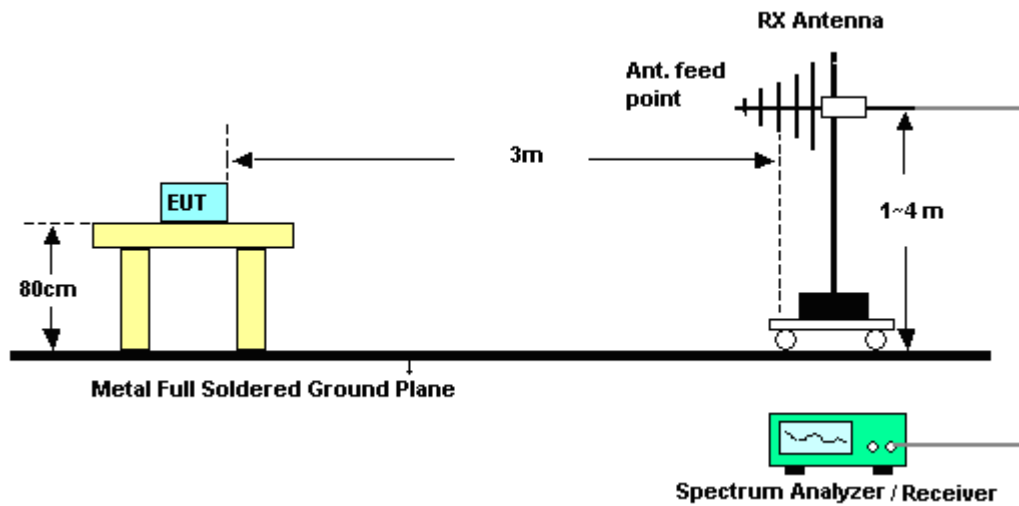
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.
For average measurement:
 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

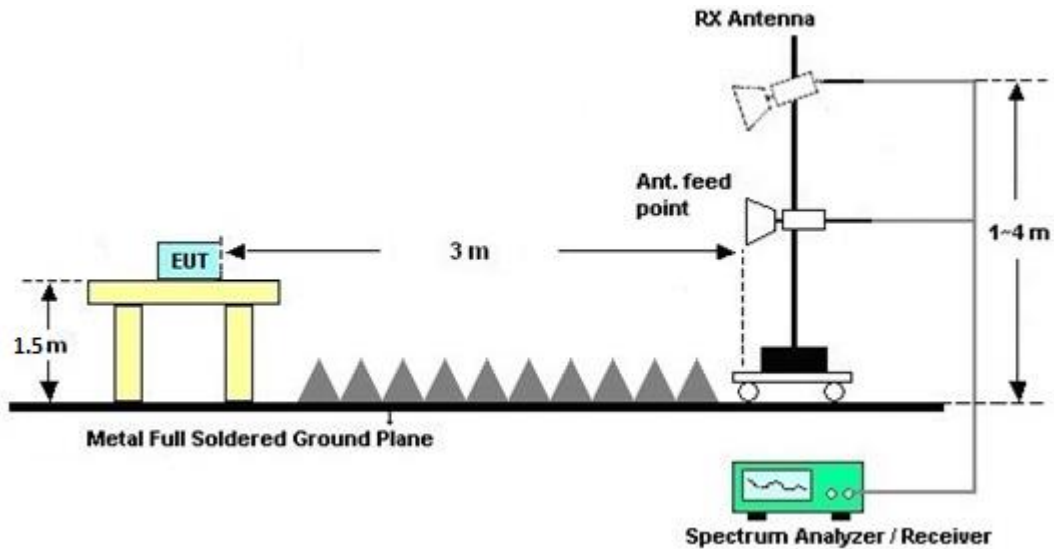
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.5.7 Duty Cycle

Please refer to Appendix E.

3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	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.

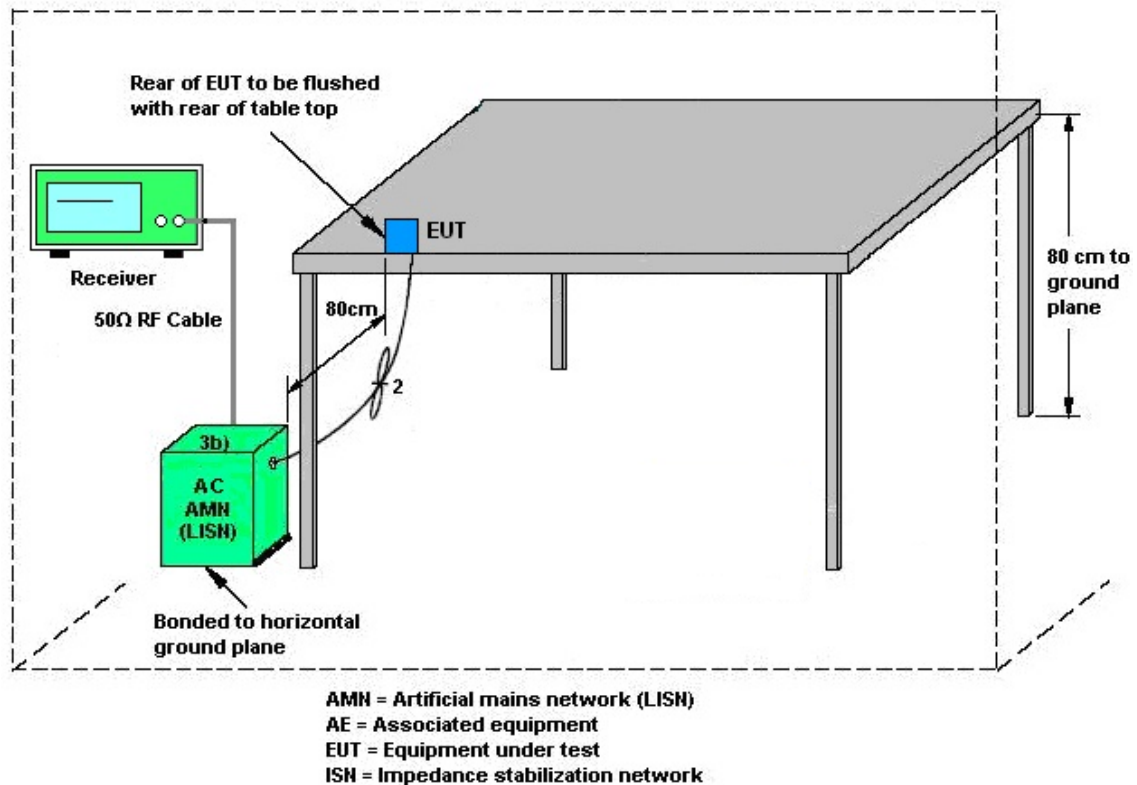
3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

<CDD Modes>						
			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant. 1 (dBi)	Ant. 2 (dBi)				
2.4 GHz	2.44	2.44	2.44	5.45	0.00	0.00

Power Limit Reduction = $DG(\text{Power}) - 6\text{dBi}$, (min = 0)

PSD Limit Reduction = $DG(\text{PSD}) - 6\text{dBi}$, (min = 0)



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H2	41410069	N/A	Jun. 17, 2019	Feb. 10, 2020~ Mar. 23, 2020	Jun. 16, 2020	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	13I00030SNO 32	9kHz~6GHz	Dec. 17, 2019	Feb. 10, 2020~ Mar. 23, 2020	Dec. 16, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSQ	200578/026	20Hz~26.5GHz	Jul. 10, 2019	Feb. 10, 2020~ Mar. 23, 2020	Jul. 09, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1208382	N/A	Mar. 27, 2019	Feb. 10, 2020~ Mar. 23, 2020	Mar. 26, 2020	Conducted (TH05-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Oct. 03, 2019	Feb. 10, 2020~ Mar. 23, 2020	Oct. 02, 2020	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Oct. 03, 2019	Feb. 10, 2020~ Mar. 23, 2020	Oct. 02, 2020	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Nov. 08, 2019	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 12, 2018	Nov. 08, 2019	Nov. 11, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 14, 2018	Nov. 08, 2019	Nov. 13, 2019	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Nov. 08, 2019	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Dec. 31, 2018	Nov. 08, 2019	Dec. 30, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Dec. 31, 2018	Nov. 08, 2019	Dec. 30, 2019	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Dec. 26, 2019	Jan. 18, 2020~ Jan. 25, 2020	Dec. 25, 2020	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL6111D&00 802N1D01N-0 6	47020&06	30MHz to 1GHz	Oct. 13, 2019	Jan. 19, 2020~ Jan. 25, 2020	Oct. 12, 2020	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1G~18GHz	Sep. 19, 2019	Jan. 19, 2020~ Jan. 25, 2020	Sep. 18, 2020	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1000MHz	Oct. 01, 2019	Jan. 19, 2020~ Jan. 25, 2020	Sep. 30, 2020	Radiation (03CH16-HY)
Preamplifier	Jet-Power	JPA0118-55-30 3	17100018000 54001	1GHz~18GHz	May 19, 2019	Jan. 19, 2020~ Jan. 25, 2020	May 18, 2020	Radiation (03CH16-HY)
Preamplifier	EMEC	EMC184045B	980192	18GHz ~40GHz	Jul. 10, 2019	Jan. 19, 2020~ Jan. 25, 2020	Jul. 09, 2020	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY53270264	1GHz~26.5GHz	Dec. 11, 2019	Jan. 19, 2020~ Jan. 25, 2020	Dec.10, 2020	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY55420170	20MHz~8.4GHz	Mar. 08, 2019	Jan. 19, 2020~ Jan. 25, 2020	Mar. 07, 2020	Radiation (03CH16-HY)
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	Apr. 29, 2019	Jan. 19, 2020~ Jan. 25, 2020	Apr. 28, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11680/4P E	NA	Aug. 30, 2019	Jan. 19, 2020~ Jan. 25, 2020	Aug. 29, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11688/4P E	NA	Aug. 30, 2019	Jan. 19, 2020~ Jan. 25, 2020	Aug. 29, 2020	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	EC-A5-300-5 757	NA	Aug. 30, 2019	Jan. 19, 2020~ Jan. 25, 2020	Aug. 29, 2020	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Jan. 19, 2020~ Jan. 25, 2020	N/A	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917057 6	18GHz- 40GHz	May 14, 2019	Jan. 19, 2020~ Jan. 25, 2020	May 13, 2020	Radiation (03CH16-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.0
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.9
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.7
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.9
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu	Temperature:	21~25	°C
Test Date:	2020/2/10~2020/3/23	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band Single Antenna										
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	99% Occupied BW (MHz)		6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
					Ant1	Ant2	Ant1	Ant2		
11b	1Mbps	1	1	2412	14.10	-	10.08	-	0.50	Pass
11b	1Mbps	1	6	2437	15.90	-	10.06	-	0.50	Pass
11b	1Mbps	1	11	2462	14.15	-	10.05	-	0.50	Pass
11g	6Mbps	1	1	2412	17.00	-	16.31	-	0.50	Pass
11g	6Mbps	1	6	2437	23.60	-	16.28	-	0.50	Pass
11g	6Mbps	1	11	2462	17.10	-	16.31	-	0.50	Pass
HT20	MCS0	1	1	2412	18.15	-	17.53	-	0.50	Pass
HT20	MCS0	1	6	2437	25.10	-	17.57	-	0.50	Pass
HT20	MCS0	1	11	2462	18.20	-	17.56	-	0.50	Pass
HT40	MCS0	1	3	2422	38.50	-	36.37	-	0.50	Pass
HT40	MCS0	1	6	2437	38.40	-	36.41	-	0.50	Pass
HT40	MCS0	1	9	2452	38.80	-	36.34	-	0.50	Pass

2.4GHz Band MIMO										
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	99% Occupied BW (MHz)		6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
					Ant1	Ant2	Ant1	Ant2		
11b	1Mbps	2	1	2412	14.35	14.35	10.09	10.06	0.50	Pass
11b	1Mbps	2	6	2437	15.45	15.05	10.07	10.05	0.50	Pass
11b	1Mbps	2	11	2462	14.20	14.20	10.07	10.10	0.50	Pass
11g	6Mbps	2	1	2412	16.85	17.00	16.31	16.07	0.50	Pass
11g	6Mbps	2	6	2437	23.35	23.45	16.31	16.25	0.50	Pass
11g	6Mbps	2	11	2462	16.80	17.10	16.29	16.31	0.50	Pass
HT20	MCS0	2	1	2412	18.10	18.00	17.53	17.17	0.50	Pass
HT20	MCS0	2	6	2437	18.05	18.00	17.54	17.28	0.50	Pass
HT20	MCS0	2	11	2462	18.00	18.25	17.53	17.54	0.50	Pass
HT40	MCS0	2	3	2422	37.80	38.90	36.35	36.28	0.50	Pass
HT40	MCS0	2	6	2437	38.30	38.40	36.38	36.30	0.50	Pass
HT40	MCS0	2	9	2452	37.90	38.30	36.35	36.37	0.50	Pass

TEST RESULTS DATA**Peak Output Power**

2.4GHz Band Single Antenna																
Mod.	Data Rate	N _{Tx}	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	1	1	2412	22.05	21.90		30.00	30.00	2.44	2.44	24.49	24.34	36.00	36.00	Pass
11b	1Mbps	1	6	2437	26.02	25.52		30.00	30.00	2.44	2.44	28.46	27.96	36.00	36.00	Pass
11b	1Mbps	1	11	2462	22.02	21.75		30.00	30.00	2.44	2.44	24.46	24.19	36.00	36.00	Pass
11g	6Mbps	1	1	2412	22.65	22.35		30.00	30.00	2.44	2.44	25.09	24.79	36.00	36.00	Pass
11g	6Mbps	1	6	2437	26.88	26.22		30.00	30.00	2.44	2.44	29.32	28.66	36.00	36.00	Pass
11g	6Mbps	1	11	2462	23.49	23.37		30.00	30.00	2.44	2.44	25.93	25.81	36.00	36.00	Pass
HT20	MCS0	1	1	2412	23.07	22.21		30.00	30.00	2.44	2.44	25.51	24.65	36.00	36.00	Pass
HT20	MCS0	1	6	2437	27.02	26.28		30.00	30.00	2.44	2.44	29.46	28.72	36.00	36.00	Pass
HT20	MCS0	1	11	2462	23.04	22.33		30.00	30.00	2.44	2.44	25.48	24.77	36.00	36.00	Pass
HT40	MCS0	1	3	2422	22.51	22.49	30.00	30.00	2.44	2.44	24.95	24.93	36.00	36.00	Pass	
HT40	MCS0	1	6	2437	24.39	24.15	30.00	30.00	2.44	2.44	26.83	26.59	36.00	36.00	Pass	
HT40	MCS0	1	9	2452	22.03	22.28	30.00	30.00	2.44	2.44	24.47	24.72	36.00	36.00	Pass	

Setting	
Ant 1	Ant 2
19	19
27.5	27.5
19.5	20
12.5	12.5
24.5	24.5
13	13
12.5	12
25	25
12.5	12
9	9.5
12.5	12.5
9	9.5

2.4GHz Band MIMO																
Mod.	Data Rate	N _{Tx}	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	22.13	22.12	25.14	30.00		2.44		27.58		36.00		Pass
11b	1Mbps	2	6	2437	25.55	24.71	28.16	30.00		2.44		30.60		36.00		Pass
11b	1Mbps	2	11	2462	22.18	21.45	24.84	30.00		2.44		27.28		36.00		Pass
11g	6Mbps	2	1	2412	21.56	21.03	24.31	30.00		2.44		26.75		36.00		Pass
11g	6Mbps	2	6	2437	26.88	26.08	29.51	30.00		2.44		31.95		36.00		Pass
11g	6Mbps	2	11	2462	22.02	21.46	24.76	30.00		2.44		27.20		36.00		Pass
HT20	MCS0	2	1	2412	22.39	21.51	24.98	30.00		2.44		27.42		36.00		Pass
HT20	MCS0	2	6	2437	22.21	21.87	25.05	30.00		2.44		27.49		36.00		Pass
HT20	MCS0	2	11	2462	22.34	21.47	24.94	30.00		2.44		27.38		36.00		Pass
HT40	MCS0	2	3	2422	20.15	20.19	23.18	30.00		2.44		25.62		36.00		Pass
HT40	MCS0	2	6	2437	23.11	22.44	25.80	30.00		2.44		28.24		36.00		Pass
HT40	MCS0	2	9	2452	19.01	19.15	22.09	30.00		2.44		24.53		36.00		Pass

Setting	
Ant 1	Ant 2
20.50	
26.50	
20.00	
10.50	
25.00	
11.00	
11.00	
11.50	
11.00	
6.00	
10.00	
5.50	

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Average Output Power
(Reporting Only)

2.4GHz Band Single Antenna							
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average Conducted Power (dBm)		
					Ant1	Ant2	SUM
11b	1Mbps	1	1	2412	19.60	19.50	
11b	1Mbps	1	6	2437	25.00	24.60	
11b	1Mbps	1	11	2462	20.10	19.90	
11g	6Mbps	1	1	2412	14.10	14.00	
11g	6Mbps	1	6	2437	23.20	22.90	
11g	6Mbps	1	11	2462	14.50	14.40	
HT20	MCS0	1	1	2412	14.00	13.50	
HT20	MCS0	1	6	2437	23.50	23.20	
HT20	MCS0	1	11	2462	14.00	13.70	
HT40	MCS0	1	3	2422	11.10	11.00	
HT40	MCS0	1	6	2437	13.90	13.50	
HT40	MCS0	1	9	2452	10.60	10.50	

Setting	
Ant 1	Ant 2
19.00	19.00
27.50	27.50
19.50	20.00
12.50	12.50
24.50	24.50
13.00	13.00
12.50	12.00
25.00	25.00
12.50	12.00
9.00	9.50
12.50	12.50
9.00	9.50

2.4GHz Band MIMO							
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Average Conducted Power (dBm)		
					Ant1	Ant2	SUM
11b	1Mbps	2	1	2412	20.60	20.30	23.46
11b	1Mbps	2	6	2437	24.20	23.70	26.97
11b	1Mbps	2	11	2462	20.70	19.20	23.02
11g	6Mbps	2	1	2412	12.60	11.90	15.27
11g	6Mbps	2	6	2437	23.50	22.90	26.22
11g	6Mbps	2	11	2462	12.70	11.90	15.33
HT20	MCS0	2	1	2412	12.80	12.20	15.52
HT20	MCS0	2	6	2437	12.80	12.30	15.57
HT20	MCS0	2	11	2462	12.70	11.80	15.28
HT40	MCS0	2	3	2422	8.30	7.60	10.97
HT40	MCS0	2	6	2437	11.70	11.30	14.51
HT40	MCS0	2	9	2452	7.30	6.80	10.07

Setting	
Ant 1	Ant 2
20.50	
26.50	
20.00	
10.50	
25.00	
11.00	
11.00	
11.50	
11.00	
6.00	
10.00	
5.50	

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Peak Power Spectral Density

2.4GHz Band Single Antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
					Ant1	Ant2	Worse + 3.01	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	1	1	2412	-0.85	-		2.44	2.44	8.00	8.00	Pass
11b	1Mbps	1	6	2437	0.14	-		2.44	2.44	8.00	8.00	Pass
11b	1Mbps	1	11	2462	-4.88	-		2.44	2.44	8.00	8.00	Pass
11g	6Mbps	1	1	2412	-12.03	-		2.44	2.44	8.00	8.00	Pass
11g	6Mbps	1	6	2437	-3.01	-		2.44	2.44	8.00	8.00	Pass
11g	6Mbps	1	11	2462	-11.81	-		2.44	2.44	8.00	8.00	Pass
HT20	MCS0	1	1	2412	-13.20	-		2.44	2.44	8.00	8.00	Pass
HT20	MCS0	1	6	2437	-3.10	-		2.44	2.44	8.00	8.00	Pass
HT20	MCS0	1	11	2462	-13.13	-		2.44	2.44	8.00	8.00	Pass
HT40	MCS0	1	3	2422	-18.47	-		2.44	2.44	8.00	8.00	Pass
HT40	MCS0	1	6	2437	-15.66	-		2.44	2.44	8.00	8.00	Pass
HT40	MCS0	1	9	2452	-19.40	-		2.44	2.44	8.00	8.00	Pass

2.4GHz Band MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)			DG (dBi)		Peak PSD Limit (dBm/3kHz)		Pass/Fail
					Ant1	Ant2	Worse + 3.01	Ant1	Ant2	Ant1	Ant2	
11b	1Mbps	2	1	2412	-4.30	-4.45	-1.29	5.45		8.00		Pass
11b	1Mbps	2	6	2437	0.23	-0.95	3.24	5.45		8.00		Pass
11b	1Mbps	2	11	2462	-4.34	-4.92	-1.33	5.45		8.00		Pass
11g	6Mbps	2	1	2412	-12.66	-14.70	-9.65	5.45		8.00		Pass
11g	6Mbps	2	6	2437	-1.39	-3.30	1.62	5.45		8.00		Pass
11g	6Mbps	2	11	2462	-14.31	-14.07	-11.06	5.45		8.00		Pass
HT20	MCS0	2	1	2412	-13.80	-13.82	-10.79	5.45		8.00		Pass
HT20	MCS0	2	6	2437	-14.52	-13.93	-10.92	5.45		8.00		Pass
HT20	MCS0	2	11	2462	-13.82	-13.63	-10.62	5.45		8.00		Pass
HT40	MCS0	2	3	2422	-20.28	-20.81	-17.27	5.45		8.00		Pass
HT40	MCS0	2	6	2437	-16.06	-17.32	-13.05	5.45		8.00		Pass
HT40	MCS0	2	9	2452	-22.25	-22.73	-19.24	5.45		8.00		Pass

Measured power density (dBm) has offset with cable loss.



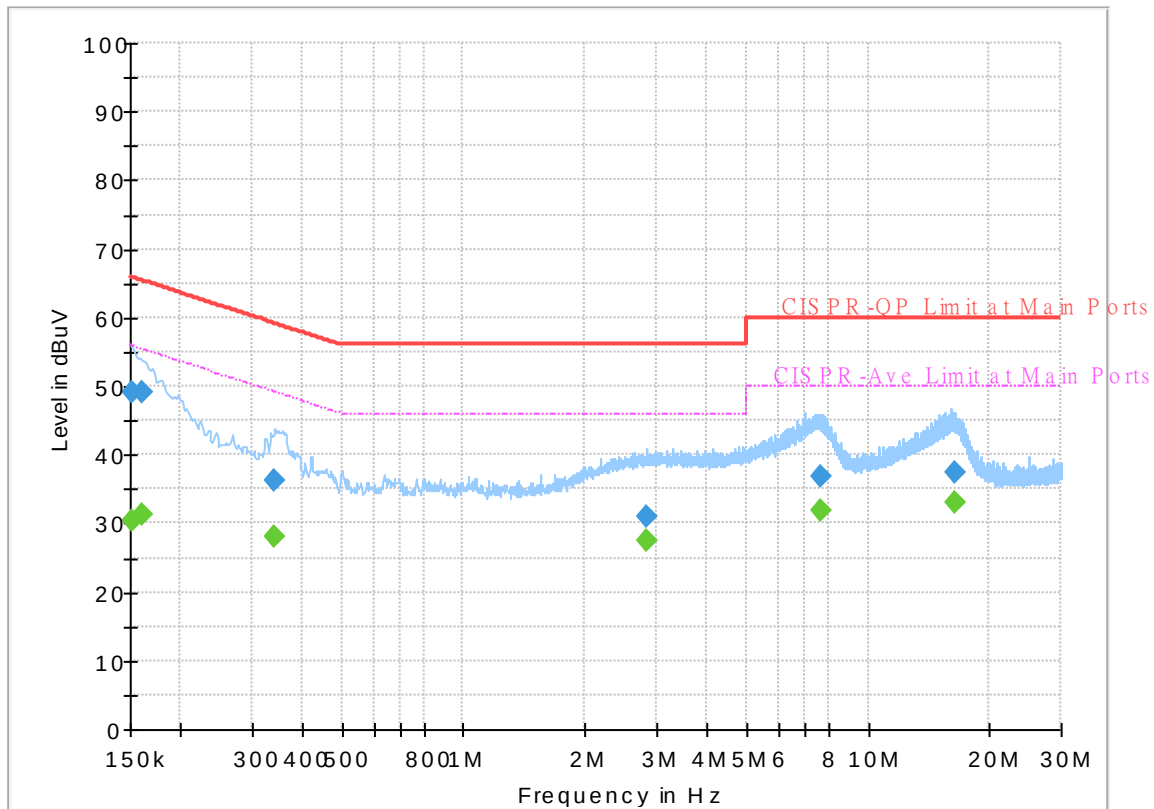
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	Temperature :	24.2~25.6℃
		Relative Humidity :	48.5~52.3%

EUT Information

Report NO : 9N0104
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

Full Spectrum



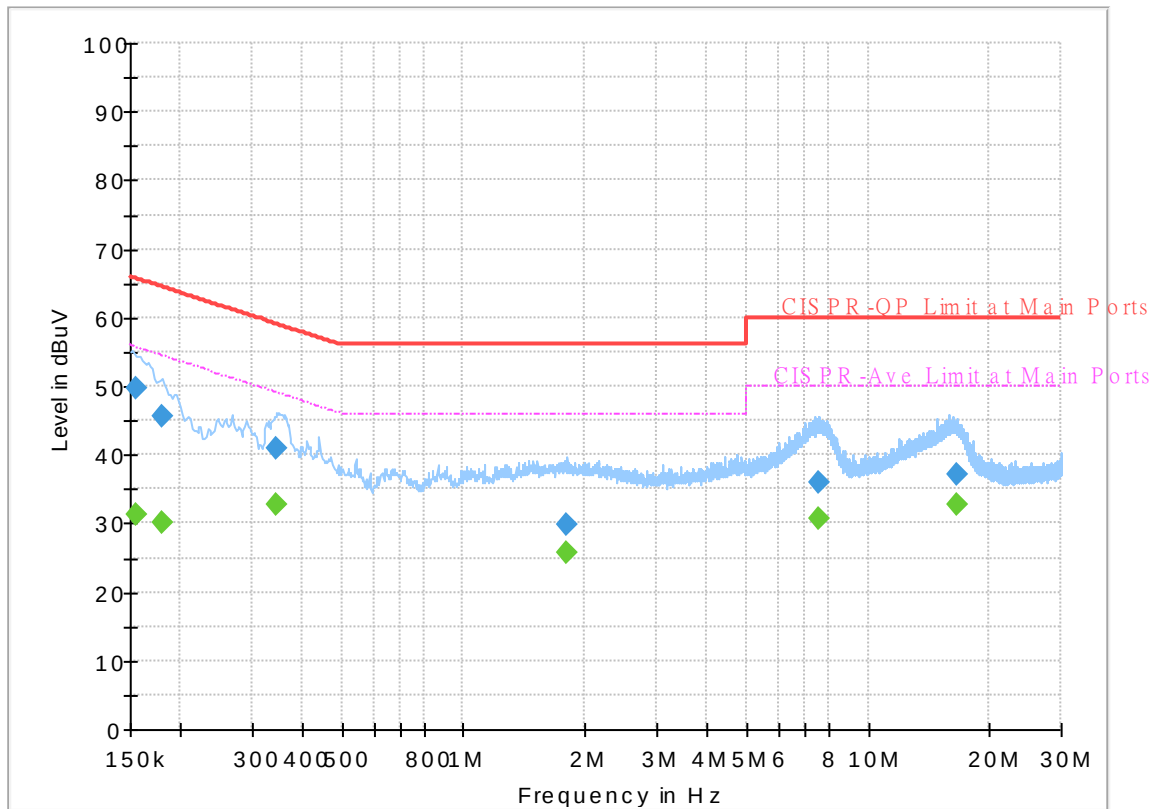
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	30.41	55.88	25.47	L1	OFF	19.4
0.152250	49.12	---	65.88	16.76	L1	OFF	19.4
0.161250	---	31.27	55.40	24.13	L1	OFF	19.4
0.161250	49.01	---	65.40	16.39	L1	OFF	19.4
0.341250	---	27.94	49.17	21.23	L1	OFF	19.4
0.341250	36.40	---	59.17	22.77	L1	OFF	19.4
2.825250	---	27.44	46.00	18.56	L1	OFF	19.5
2.825250	31.06	---	56.00	24.94	L1	OFF	19.5
7.678500	---	31.76	50.00	18.24	L1	OFF	19.7
7.678500	36.85	---	60.00	23.15	L1	OFF	19.7
16.471500	---	33.04	50.00	16.96	L1	OFF	20.0
16.471500	37.57	---	60.00	22.43	L1	OFF	20.0

EUT Information

Report NO : 9N0104
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154500	---	31.26	55.75	24.49	N	OFF	19.5
0.154500	49.75	---	65.75	16.00	N	OFF	19.5
0.179250	---	30.11	54.52	24.41	N	OFF	19.5
0.179250	45.71	---	64.52	18.81	N	OFF	19.5
0.345750	---	32.84	49.06	16.22	N	OFF	19.5
0.345750	41.01	---	59.06	18.05	N	OFF	19.5
1.808250	---	25.80	46.00	20.20	N	OFF	19.6
1.808250	29.79	---	56.00	26.21	N	OFF	19.6
7.586250	---	30.70	50.00	19.30	N	OFF	19.8
7.586250	35.93	---	60.00	24.07	N	OFF	19.8
16.552500	---	32.80	50.00	17.20	N	OFF	20.1
16.552500	37.17	---	60.00	22.83	N	OFF	20.1



Appendix C. Radiated Spurious Emission

Test Engineer :	Jacky Hung, Andy Yang, and CR Liro	Temperature :	20~25°C
		Relative Humidity :	50~60%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		2332.26	57.49	-16.51	74	41.38	27.87	8.08	29.76	123	133	P	H
		2386.125	46.71	-7.29	54	30.74	27.66	8.17	29.78	123	133	A	H
	*	2412	99.32	-	-	83.38	27.6	8.21	29.79	123	133	P	H
	*	2412	96.3	-	-	80.36	27.6	8.21	29.79	123	133	A	H
													H
													H
		2331.84	62.2	-11.8	74	46.09	27.87	8.08	29.76	190	206	P	V
		2386.125	52.96	-1.04	54	36.99	27.66	8.17	29.78	190	206	A	V
	*	2412	109.75	-	-	93.81	27.6	8.21	29.79	190	206	P	V
	*	2412	106.68	-	-	90.74	27.6	8.21	29.79	190	206	A	V
													V
													V
802.11b CH 06 2437MHz		2381.4	56.76	-17.24	74	40.79	27.67	8.16	29.78	100	131	P	H
		2389.38	45.96	-8.04	54	30.01	27.64	8.17	29.78	100	131	A	H
	*	2437	104.45	-	-	88.48	27.6	8.25	29.8	100	131	P	H
	*	2437	101.31	-	-	85.34	27.6	8.25	29.8	100	131	A	H
		2485.09	57.45	-16.55	74	41.49	27.53	8.33	29.82	100	131	P	H
		2483.97	45.36	-8.64	54	29.41	27.53	8.32	29.82	100	131	A	H
		2358.58	64.16	-9.84	74	48.12	27.77	8.12	29.77	233	211	P	V
		2389.24	52.17	-1.83	54	36.22	27.64	8.17	29.78	233	211	A	V
	*	2437	115.32	-	-	99.35	27.6	8.25	29.8	233	211	P	V
	*	2437	112.15	-	-	96.18	27.6	8.25	29.8	233	211	A	V
		2483.83	59.14	-14.86	74	43.19	27.53	8.32	29.82	233	211	P	V
		2484.04	50.79	-3.21	54	34.84	27.53	8.32	29.82	233	211	A	V



802.11b CH 11 2462MHz	*	2462	99.09	-	-	83.11	27.58	8.29	29.81	100	131	P	H
	*	2462	95.93	-	-	79.95	27.58	8.29	29.81	100	131	A	H
		2496	56.82	-17.18	74	40.88	27.51	8.34	29.83	100	131	P	H
		2487.56	45.45	-8.55	54	29.5	27.52	8.33	29.82	100	131	A	H
													H
													H
	*	2462	110.78	-	-	94.8	27.58	8.29	29.81	178	203	P	V
	*	2462	107.64	-	-	91.66	27.58	8.29	29.81	178	203	A	V
		2483.52	60.66	-13.34	74	44.71	27.53	8.32	29.82	178	203	P	V
		2487.72	52.31	-1.69	54	36.36	27.52	8.33	29.82	178	203	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	40.96	-33.04	74	55.47	31.15	11.92	58.11	100	0	P	H
													H
													H
													H
		4824	44.2	-29.8	74	58.71	31.15	11.92	58.11	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4874	46.11	-27.89	74	60.63	31.1	11.98	58.12	100	0	P	H
		7311	43.93	-30.07	74	49.39	36.44	15.25	57.5	100	0	P	H
													H
													H
		4874	49.53	-24.47	74	64.05	31.1	11.98	58.12	100	0	P	V
		7311	54.78	-19.22	74	60.24	36.44	15.25	57.5	197	328	P	V
		7311	50.66	-3.34	54	56.12	36.44	15.25	57.5	197	328	A	V
													V
802.11b CH 11 2462MHz		4924	43.42	-30.58	74	57.92	31.1	12.03	58.13	100	0	P	H
		7386	43.4	-30.6	74	48.67	36.53	15.31	57.4	100	0	P	H
													H
													H
		4924	45.61	-28.39	74	60.11	31.1	12.03	58.13	100	0	P	V
		7386	49.73	-24.27	74	55	36.53	15.31	57.4	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2327.115	57.3	-16.7	74	41.18	27.89	8.07	29.76	126	131	P	H
		2389.695	46.66	-7.34	54	30.71	27.64	8.17	29.78	126	131	A	H
	*	2412	95.79	-	-	79.85	27.6	8.21	29.79	126	131	P	H
	*	2412	87.72	-	-	71.78	27.6	8.21	29.79	126	131	A	H
													H
													H
		2389.8	65.25	-8.75	74	49.3	27.64	8.17	29.78	225	170	P	V
		2390	52.04	-1.96	54	36.09	27.64	8.17	29.78	225	170	A	V
	*	2412	105.85	-	-	89.91	27.6	8.21	29.79	225	170	P	V
	*	2412	98.18	-	-	82.24	27.6	8.21	29.79	225	170	A	V
													V
													V
802.11g CH 06 2437MHz		2356.2	57.43	-16.57	74	41.38	27.78	8.12	29.77	100	133	P	H
		2389.24	46.28	-7.72	54	30.33	27.64	8.17	29.78	100	133	A	H
	*	2437	105.26	-	-	89.29	27.6	8.25	29.8	100	133	P	H
	*	2437	97.49	-	-	81.52	27.6	8.25	29.8	100	133	A	H
		2483.9	57.08	-16.92	74	41.13	27.53	8.32	29.82	100	133	P	H
		2483.55	46.27	-7.73	54	30.32	27.53	8.32	29.82	100	133	A	H
		2387.84	65.01	-8.99	74	49.05	27.65	8.17	29.78	184	167	P	V
		2388.82	52.29	-1.71	54	36.34	27.64	8.17	29.78	184	167	P	V
	*	2437	116.59	-	-	100.62	27.6	8.25	29.8	184	167	P	V
	*	2437	108.6	-	-	92.63	27.6	8.25	29.8	184	167	A	V
		2485.65	66.43	-7.57	74	50.47	27.53	8.33	29.82	184	167	P	V
		2483.62	52.09	-1.91	54	36.14	27.53	8.32	29.82	184	167	A	V



802.11g CH 11 2462MHz	*	2462	97.51	-	-	81.53	27.58	8.29	29.81	100	131	P	H
	*	2462	89.91	-	-	73.93	27.58	8.29	29.81	100	131	A	H
		2484	57.32	-16.68	74	41.37	27.53	8.32	29.82	100	131	P	H
		2483.84	46.79	-7.21	54	30.84	27.53	8.32	29.82	100	131	A	H
													H
													H
	*	2462	107.56	-	-	91.58	27.58	8.29	29.81	220	165	P	V
	*	2462	99.76	-	-	83.78	27.58	8.29	29.81	220	165	A	V
		2484.08	65.33	-8.67	74	49.38	27.53	8.32	29.82	220	165	P	V
		2483.52	52.77	-1.23	54	36.82	27.53	8.32	29.82	220	165	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	37.05	-36.95	74	51.56	31.15	11.92	58.11	100	0	P	H
													H
													H
													H
		4824	38.49	-35.51	74	53	31.15	11.92	58.11	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4874	42.45	-31.55	74	56.97	31.1	11.98	58.12	100	0	P	H
		7311	43.3	-30.7	74	48.76	36.44	15.25	57.5	100	0	P	H
													H
													H
		4874	43.8	-30.2	74	58.32	31.1	11.98	58.12	100	0	P	V
		7311	55.8	-18.2	74	61.26	36.44	15.25	57.5	233	7	P	V
		7311	46.04	-7.96	54	51.5	36.44	15.25	57.5	233	7	A	V
													V
802.11g CH 11 2462MHz		4924	37.17	-36.83	74	51.67	31.1	12.03	58.13	100	0	P	H
		7386	42.3	-31.7	74	47.57	36.53	15.31	57.4	100	0	P	H
													H
													H
		4924	39.23	-34.77	74	53.73	31.1	12.03	58.13	100	0	P	V
		7386	46.15	-27.85	74	51.42	36.53	15.31	57.4	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2326.695	57.66	-16.34	74	41.54	27.89	8.07	29.76	124	131	P	H
		2389.905	47.16	-6.84	54	31.21	27.64	8.17	29.78	124	131	A	H
	*	2412	95.09	-	-	79.15	27.6	8.21	29.79	124	131	P	H
	*	2412	87.42	-	-	71.48	27.6	8.21	29.79	124	131	A	H
													H
													H
		2388.96	64.68	-9.32	74	48.73	27.64	8.17	29.78	254	315	P	V
		2390	52.32	-1.68	54	36.37	27.64	8.17	29.78	254	315	A	V
	*	2412	104.96	-	-	89.02	27.6	8.21	29.79	254	315	P	V
	*	2412	97.33	-	-	81.39	27.6	8.21	29.79	254	315	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2388.26	58.21	-15.79	74	42.25	27.65	8.17	29.78	100	132	P	H
		2389.38	46.85	-7.15	54	30.9	27.64	8.17	29.78	100	132	A	H
	*	2437	105.22	-	-	89.25	27.6	8.25	29.8	100	132	P	H
	*	2437	97.47	-	-	81.5	27.6	8.25	29.8	100	132	A	H
		2483.62	57.12	-16.88	74	41.17	27.53	8.32	29.82	100	132	P	H
		2483.55	46.58	-7.42	54	30.63	27.53	8.32	29.82	100	132	A	H
		2388.12	65.61	-8.39	74	49.65	27.65	8.17	29.78	225	313	P	V
		2389.94	51.54	-2.46	54	35.59	27.64	8.17	29.78	225	313	A	V
	*	2437	115.52	-	-	99.55	27.6	8.25	29.8	225	313	P	V
	*	2437	107.67	-	-	91.7	27.6	8.25	29.8	225	313	A	V
		2483.97	65.93	-8.07	74	49.98	27.53	8.32	29.82	225	313	P	V
		2483.62	52.39	-1.61	54	36.44	27.53	8.32	29.82	225	313	A	V



802.11n HT20 CH 11 2462MHz	*	2462	95.37	-	-	79.39	27.58	8.29	29.81	100	131	P	H
	*	2462	87.66	-	-	71.68	27.58	8.29	29.81	100	131	A	H
		2485	56.78	-17.22	74	40.82	27.53	8.33	29.82	100	131	P	H
		2483.76	46.5	-7.5	54	30.55	27.53	8.32	29.82	100	131	A	H
													H
													H
	*	2462	106.36	-	-	90.38	27.58	8.29	29.81	251	315	P	V
	*	2462	98.3	-	-	82.32	27.58	8.29	29.81	251	315	A	V
		2483.88	64.97	-9.03	74	49.02	27.53	8.32	29.82	251	315	P	V
		2483.52	52.5	-1.5	54	36.55	27.53	8.32	29.82	251	315	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	37.06	-36.94	74	51.57	31.15	11.92	58.11	100	0	P	H
													H
													H
													H
		4824	37.54	-36.46	74	52.05	31.15	11.92	58.11	100	0	P	V
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4874	42.67	-31.33	74	57.19	31.1	11.98	58.12	100	0	P	H
		7311	43.36	-30.64	74	48.82	36.44	15.25	57.5	100	0	P	H
													H
													H
		4874	44.33	-29.67	74	58.85	31.1	11.98	58.12	100	0	P	V
		7311	55.49	-18.51	74	60.95	36.44	15.25	57.5	218	7	P	V
		7311	46.01	-7.99	54	51.47	36.44	15.25	57.5	218	7	A	V
													V
802.11n HT20 CH 11 2462MHz		4924	37.47	-36.53	74	51.97	31.1	12.03	58.13	100	0	P	H
		7386	42.65	-31.35	74	47.92	36.53	15.31	57.4	100	0	P	H
													H
													H
		4924	37.91	-36.09	74	52.41	31.1	12.03	58.13	100	0	P	V
		7386	46.43	-27.57	74	51.7	36.53	15.31	57.4	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		2387.98	57.31	-16.69	74	41.35	27.65	8.17	29.78	126	130	P	H
		2388.96	47.5	-6.5	54	31.55	27.64	8.17	29.78	126	130	A	H
	*	2422	88.6	-	-	72.65	27.6	8.23	29.8	126	130	P	H
	*	2422	81.17	-	-	65.22	27.6	8.23	29.8	126	130	A	H
		2498.6	56.16	-17.84	74	40.22	27.5	8.35	29.83	126	130	P	H
		2488.66	46.85	-7.15	54	30.91	27.52	8.33	29.83	126	130	A	H
		2389.24	65.23	-8.77	74	49.28	27.64	8.17	29.78	254	315	P	V
		2389.52	52.38	-1.62	54	36.43	27.64	8.17	29.78	254	315	A	V
	*	2422	99.06	-	-	83.11	27.6	8.23	29.8	254	315	P	V
	*	2422	91.13	-	-	75.18	27.6	8.23	29.8	254	315	A	V
		2491.95	57.46	-16.54	74	41.51	27.52	8.34	29.83	254	315	P	V
		2484.81	47.72	-6.28	54	31.76	27.53	8.33	29.82	254	315	A	V
802.11n HT40 CH 06 2437MHz		2350.88	56.9	-17.1	74	40.84	27.8	8.11	29.77	123	131	P	H
		2311.26	47.15	-6.85	54	30.99	27.95	8.04	29.75	123	131	A	H
	*	2437	92.32	-	-	76.35	27.6	8.25	29.8	123	131	P	H
	*	2437	84.81	-	-	68.84	27.6	8.25	29.8	123	131	A	H
		2485.02	56.66	-17.34	74	40.7	27.53	8.33	29.82	123	131	P	H
		2496.57	47.11	-6.89	54	31.17	27.51	8.34	29.83	123	131	A	H
		2388.26	61.78	-12.22	74	45.82	27.65	8.17	29.78	220	326	P	V
		2389.38	51.85	-2.15	54	35.9	27.64	8.17	29.78	220	326	A	V
	*	2437	102.78	-	-	86.81	27.6	8.25	29.8	220	326	P	V
	*	2437	94.65	-	-	78.68	27.6	8.25	29.8	220	326	A	V
		2483.55	60.08	-13.92	74	44.13	27.53	8.32	29.82	220	326	P	V
		2483.55	50.66	-3.34	54	34.71	27.53	8.32	29.82	220	326	A	V



802.11n HT40 CH 09 2452MHz		2327.92	57.06	-16.94	74	40.94	27.89	8.07	29.76	100	133	P	H
		2374.82	46.84	-7.16	54	30.85	27.7	8.15	29.78	100	133	A	H
	*	2452	88.87	-	-	72.89	27.6	8.27	29.81	100	133	P	H
	*	2452	81.5	-	-	65.52	27.6	8.27	29.81	100	133	A	H
		2483.62	56.93	-17.07	74	40.98	27.53	8.32	29.82	100	133	P	H
		2483.83	47.14	-6.86	54	31.19	27.53	8.32	29.82	100	133	A	H
		2329.04	57.58	-16.42	74	41.47	27.88	8.07	29.76	252	315	P	V
		2384.34	47.45	-6.55	54	31.49	27.66	8.16	29.78	252	315	A	V
	*	2452	99.84	-	-	83.86	27.6	8.27	29.81	252	315	P	V
	*	2452	91.97	-	-	75.99	27.6	8.27	29.81	252	315	A	V
		2483.62	64.59	-9.41	74	48.64	27.53	8.32	29.82	252	315	P	V
		2483.76	52.47	-1.53	54	36.52	27.53	8.32	29.82	252	315	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		4844	36.21	-37.79	74	50.7	31.19	11.94	58.12	100	0	P	H
		7266	43.2	-30.8	74	48.75	36.33	15.21	57.56	100	0	P	H
													H
													H
		4844	36.89	-37.11	74	51.38	31.19	11.94	58.12	100	0	P	V
		7266	44.64	-29.36	74	50.19	36.33	15.21	57.56	100	0	P	V
													V
													V
802.11n HT40 CH 06 2437MHz		4874	36.61	-37.39	74	51.15	31.1	11.98	58.12	100	0	P	H
		7311	43.18	-30.82	74	48.56	36.44	15.25	57.5	100	0	P	H
													H
													H
		4874	37.72	-36.28	74	52.26	31.1	11.98	58.12	100	0	P	V
		7311	45.29	-28.71	74	50.67	36.44	15.25	57.5	100	0	P	V
													V
													V
802.11n HT40 CH 09 2452MHz		4904	36.59	-37.41	74	51.2	31.02	12.01	58.13	100	0	P	H
		7356	43.2	-30.8	74	48.39	36.59	15.28	57.44	100	0	P	H
													H
													H
		4904	36.49	-37.51	74	51.1	31.02	12.01	58.13	100	0	P	V
		7356	43.32	-30.68	74	48.51	36.59	15.28	57.44	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz WIFI 802.11b (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11b LF		73.65	31.5	-8.5	40	49.95	12.45	1.42	32.34	-	-	P	H
		375.32	41.59	-4.41	46	49.58	20.94	3.26	32.24	100	48	QP	H
		500.45	37.28	-8.72	46	41.7	23.92	3.7	32.09	-	-	P	H
		624.61	35.05	-10.95	46	36.79	25.96	4.19	31.98	-	-	P	H
		675.05	36.21	-9.79	46	37.52	26.33	4.33	32.09	-	-	P	H
		900.09	40.94	-5.06	46	38.72	28.99	4.99	31.92	100	339	QP	H
													H
													H
													H
													H
													H
													H
													H
		53.28	30.31	-9.69	40	48.67	12.82	1.23	32.42	100	31	QP	V
		375.32	38.99	-7.01	46	46.98	20.94	3.26	32.24	-	-	P	V
		450.01	34.84	-11.16	46	40.26	23.11	3.57	32.14	-	-	P	V
		500.45	39.1	-6.9	46	43.52	23.92	3.7	32.09	-	-	P	V
		624.61	37.65	-8.35	46	39.39	25.96	4.19	31.98	-	-	P	V
		900.09	37.79	-8.21	46	35.57	28.99	4.99	31.92	-	-	P	V
													V
													V
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2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2386.23	57.56	-16.44	74	41.59	27.66	18.09	29.78	101	180	P	H
		2386.23	45.75	-8.25	54	29.78	27.66	18.09	29.78	101	180	A	H
	*	2412	103.3	-	-	87.36	27.6	18.13	29.79	101	180	P	H
	*	2412	100.14	-	-	84.2	27.6	18.13	29.79	101	180	A	H
													H
													H
		2331.735	64.77	-9.23	74	48.66	27.87	18	29.76	253	146	P	V
		2386.23	52.35	-1.65	54	36.38	27.66	18.09	29.78	253	146	A	V
	*	2412	115.04	-	-	99.1	27.6	18.13	29.79	253	146	P	V
	*	2412	111.89	-	-	95.95	27.6	18.13	29.79	253	146	A	V
													V
													V
802.11b CH 06 2437MHz		2358.72	57.75	-16.25	74	41.71	27.77	18.04	29.77	107	132	P	H
		2356.06	45.72	-8.28	54	29.67	27.78	18.04	29.77	107	132	A	H
	*	2437	106.83	-	-	90.86	27.6	18.17	29.8	107	132	P	H
	*	2437	103.78	-	-	87.81	27.6	18.17	29.8	107	132	A	H
		2496.64	57.09	-16.91	74	41.15	27.51	18.26	29.83	107	132	P	H
		2483.76	44.95	-9.05	54	29	27.53	18.24	29.82	107	132	A	H
		2356.9	67	-7	74	50.96	27.77	18.04	29.77	217	211	P	V
		2356.34	52.6	-1.4	54	36.56	27.77	18.04	29.77	217	211	A	V
	*	2437	118.87	-	-	102.9	27.6	18.17	29.8	217	211	P	V
	*	2437	115.83	-	-	99.86	27.6	18.17	29.8	217	211	A	V
		2484.04	59.64	-14.36	74	43.69	27.53	18.24	29.82	217	211	P	V
		2483.83	49.83	-4.17	54	33.88	27.53	18.24	29.82	217	211	A	V



802.11b CH 11 2462MHz	*	2462	102.37	-	-	86.39	27.58	18.21	29.81	100	133	P	H
	*	2462	99.26	-	-	83.28	27.58	18.21	29.81	100	133	A	H
		2486.6	57	-17	74	41.04	27.53	18.25	29.82	100	133	P	H
		2487.88	45.74	-8.26	54	29.79	27.52	18.25	29.82	100	133	A	H
													H
													H
	*	2462	114.52	-	-	98.54	27.58	18.21	29.81	266	211	P	V
	*	2462	111.48	-	-	95.5	27.58	18.21	29.81	266	211	A	V
		2488.56	61.79	-12.21	74	45.85	27.52	18.25	29.83	266	211	P	V
		2488	52.38	-1.62	54	36.43	27.52	18.25	29.82	266	211	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	41.26	-32.74	74	55.79	31.15	12.43	58.11	100	0	P	H
													H
													H
													H
		4824	51.69	-22.31	74	66.22	31.15	12.43	58.11	190	4	P	V
		4824	50.19	-3.81	54	64.72	31.15	12.43	58.11	190	4	A	V
													V
													V
802.11b CH 06 2437MHz		4874	44.71	-29.29	74	59.25	31.1	12.48	58.12	100	0	P	H
		7311	45.05	-28.95	74	50.43	36.44	15.68	57.5	100	0	P	H
													H
													H
		4874	53.44	-20.56	74	67.98	31.1	12.48	58.12	189	3	P	V
		4874	52.15	-1.85	54	66.69	31.1	12.48	58.12	189	3	A	V
		7311	53.47	-20.53	74	58.85	36.44	15.68	57.5	200	7	P	V
		7311	49.03	-4.97	54	54.41	36.44	15.68	57.5	200	7	A	V
802.11b CH 11 2462MHz		4924	43.22	-30.78	74	57.73	31.1	12.52	58.13	100	0	P	H
		7386	43.59	-30.41	74	48.8	36.53	15.66	57.4	100	0	P	H
													H
													H
		4924	52.31	-21.69	74	66.82	31.1	12.52	58.13	162	6	P	V
		4924	51.43	-2.57	54	65.94	31.1	12.52	58.13	162	6	A	V
		7386	47.61	-26.39	74	52.82	36.53	15.66	57.4	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2311.68	57.21	-16.79	74	41.05	27.95	17.96	29.75	205	28	P	H
		2320.395	45.99	-8.01	54	29.84	27.92	17.98	29.75	205	28	A	H
	*	2412	95.52	-	-	79.58	27.6	18.13	29.79	205	28	P	H
	*	2412	88.1	-	-	72.16	27.6	18.13	29.79	205	28	A	H
													H
													H
		2389.695	63.47	-10.53	74	47.52	27.64	18.09	29.78	188	175	P	V
		2319.975	52.55	-1.45	54	36.4	27.92	17.98	29.75	188	175	A	V
	*	2412	107.96	-	-	92.02	27.6	18.13	29.79	188	175	P	V
	*	2412	100.35	-	-	84.41	27.6	18.13	29.79	188	175	A	V
													V
													V
802.11g CH 06 2437MHz		2353.26	57.08	-16.92	74	41.03	27.79	18.03	29.77	199	27	P	H
		2359.98	46.36	-7.64	54	30.33	27.76	18.04	29.77	199	27	A	H
	*	2437	107.69	-	-	91.72	27.6	18.17	29.8	199	27	P	H
	*	2437	100.19	-	-	84.22	27.6	18.17	29.8	199	27	A	H
		2493.56	57.34	-16.66	74	41.4	27.51	18.26	29.83	199	27	P	H
		2483.62	46.61	-7.39	54	30.66	27.53	18.24	29.82	199	27	A	H
		2354.94	66	-8	74	49.95	27.78	18.04	29.77	210	198	P	V
		2388.82	52.93	-1.07	54	36.98	27.64	18.09	29.78	210	198	A	V
	*	2437	119.96	-	-	103.99	27.6	18.17	29.8	210	198	P	V
	*	2437	112.65	-	-	96.68	27.6	18.17	29.8	210	198	A	V
		2483.62	67.6	-6.4	74	51.65	27.53	18.24	29.82	210	198	P	V
		2483.5	52.34	-1.66	54	36.39	27.53	18.24	29.82	210	198	A	V



802.11g CH 11 2462MHz		2318.55	56.86	-17.14	74	40.7	27.93	17.98	29.75	194	28	P	H
		2360.16	46.08	-7.92	54	30.05	27.76	18.04	29.77	194	28	A	H
	*	2462	95.89	-	-	79.91	27.58	18.21	29.81	194	28	P	H
	*	2462	88.69	-	-	72.71	27.58	18.21	29.81	194	28	A	H
		2488.72	56.37	-17.63	74	40.43	27.52	18.25	29.83	194	28	P	H
		2498.8	46.17	-7.83	54	30.23	27.5	18.27	29.83	194	28	A	H
		2360.16	59.88	-14.12	74	43.85	27.76	18.04	29.77	206	180	P	V
		2359.97	51.96	-2.04	54	35.93	27.76	18.04	29.77	206	180	A	V
	*	2462	109.24	-	-	93.26	27.58	18.21	29.81	206	180	P	V
	*	2462	101.88	-	-	85.9	27.58	18.21	29.81	206	180	A	V
		2484.08	61.28	-12.72	74	45.33	27.53	18.24	29.82	206	180	P	V
		2483.6	50.92	-3.08	54	34.97	27.53	18.24	29.82	206	180	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	36.27	-37.73	74	50.8	31.15	12.43	58.11	100	0	P	H
													H
													H
													H
		4824	40.76	-33.24	74	55.29	31.15	12.43	58.11	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4874	43.69	-30.31	74	58.23	31.1	12.48	58.12	100	0	P	H
		7311	43.95	-30.05	74	49.33	36.44	15.68	57.5	100	0	P	H
													H
													H
		4874	47.96	-26.04	74	62.5	31.1	12.48	58.12	100	0	P	V
		7311	57.28	-16.72	74	62.66	36.44	15.68	57.5	199	9	P	V
		7311	46.97	-7.03	54	52.35	36.44	15.68	57.5	199	9	A	V
													V
802.11g CH 11 2462MHz		4924	35.94	-38.06	74	50.45	31.1	12.52	58.13	100	0	P	H
		7386	42.54	-31.46	74	47.75	36.53	15.66	57.4	100	0	P	H
													H
													H
		4924	40.84	-33.16	74	55.35	31.1	12.52	58.13	100	0	P	V
		7386	45.02	-28.98	74	50.23	36.53	15.66	57.4	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2365.23	56.69	-17.31	74	40.67	27.74	18.05	29.77	101	177	P	H
		2388.645	45.87	-8.13	54	29.91	27.65	18.09	29.78	101	177	A	H
	*	2412	95.32	-	-	79.38	27.6	18.13	29.79	101	177	P	H
	*	2412	87.58	-	-	71.64	27.6	18.13	29.79	101	177	A	H
													H
													H
		2389.17	63.59	-10.41	74	47.64	27.64	18.09	29.78	217	190	P	V
		2359.98	52.65	-1.35	54	36.62	27.76	18.04	29.77	217	190	A	V
	*	2412	108.71	-	-	92.77	27.6	18.13	29.79	217	190	P	V
	*	2412	101.16	-	-	85.22	27.6	18.13	29.79	217	190	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2335.34	57.65	-16.35	74	41.55	27.86	18	29.76	100	181	P	H
		2366.14	45.9	-8.1	54	29.88	27.74	18.05	29.77	100	181	A	H
	*	2437	96.08	-	-	80.11	27.6	18.17	29.8	100	181	P	H
	*	2437	88.46	-	-	72.49	27.6	18.17	29.8	100	181	A	H
		2493.35	56.6	-17.4	74	40.66	27.51	18.26	29.83	100	181	P	H
		2498.74	45.96	-8.04	54	30.02	27.5	18.27	29.83	100	181	A	H
		2362.22	60.84	-13.16	74	44.81	27.75	18.05	29.77	218	195	P	V
		2359.98	52.37	-1.63	54	36.34	27.76	18.04	29.77	218	195	A	V
	*	2437	109.04	-	-	93.07	27.6	18.17	29.8	218	195	P	V
	*	2437	101.28	-	-	85.31	27.6	18.17	29.8	218	195	A	V
		2491.32	58.82	-15.18	74	42.87	27.52	18.26	29.83	218	195	P	V
		2499.51	48.35	-5.65	54	32.41	27.5	18.27	29.83	218	195	A	V



802.11n HT20 CH 11 2462MHz		2359.97	56.66	-17.34	74	40.63	27.76	18.04	29.77	127	143	P	H
		2356.36	45.73	-8.27	54	29.69	27.77	18.04	29.77	127	143	A	H
	*	2462	96.1	-	-	80.12	27.58	18.21	29.81	127	143	P	H
	*	2462	88.17	-	-	72.19	27.58	18.21	29.81	127	143	A	H
		2483.6	57.25	-16.75	74	41.3	27.53	18.24	29.82	127	143	P	H
		2485.44	45.99	-8.01	54	30.03	27.53	18.25	29.82	127	143	A	H
		2382.58	59.51	-14.49	74	43.54	27.67	18.08	29.78	202	165	P	V
		2359.97	52.31	-1.69	54	36.28	27.76	18.04	29.77	202	165	A	V
	*	2462	110.31	-	-	94.33	27.58	18.21	29.81	202	165	P	V
	*	2462	101.85	-	-	85.87	27.58	18.21	29.81	202	165	A	V
		2484.88	64.08	-9.92	74	48.12	27.53	18.25	29.82	202	165	P	V
		2483.6	51.64	-2.36	54	35.69	27.53	18.24	29.82	202	165	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	37.34	-36.66	74	51.87	31.15	12.43	58.11	100	0	P	H
													H
													H
													H
		4824	41.78	-32.22	74	56.31	31.15	12.43	58.11	100	0	P	V
													V
													V
													V
802.11n HT20 CH 06 2437MHz		4874	36.51	-37.49	74	51.05	31.1	12.48	58.12	100	0	P	H
		7311	42.92	-31.08	74	48.3	36.44	15.68	57.5	100	0	P	H
													H
													H
		4874	42.41	-31.59	74	56.95	31.1	12.48	58.12	100	0	P	V
		7311	44.95	-29.05	74	50.33	36.44	15.68	57.5	100	0	P	V
													V
													V
802.11n HT20 CH 11 2462MHz		4924	36.78	-37.22	74	51.29	31.1	12.52	58.13	100	0	P	H
		7386	42.94	-31.06	74	48.15	36.53	15.66	57.4	100	0	P	H
													H
													H
		4924	43.21	-30.79	74	57.72	31.1	12.52	58.13	100	0	P	V
		7386	44.29	-29.71	74	49.5	36.53	15.66	57.4	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		2373.42	56.96	-17.04	74	40.96	27.71	18.07	29.78	100	181	P	H
		2332.82	46.75	-7.25	54	30.64	27.87	18	29.76	100	181	A	H
	*	2422	88.94	-	-	72.99	27.6	18.15	29.8	100	181	P	H
	*	2422	81.47	-	-	65.52	27.6	18.15	29.8	100	181	A	H
		2493.84	56.72	-17.28	74	40.78	27.51	18.26	29.83	100	181	P	H
		2500	46.99	-7.01	54	31.05	27.5	18.27	29.83	100	181	A	H
		2389.8	64.61	-9.39	74	48.66	27.64	18.09	29.78	215	162	P	V
		2389.94	52.84	-1.16	54	36.89	27.64	18.09	29.78	215	162	A	V
	*	2422	101.5	-	-	85.55	27.6	18.15	29.8	215	162	P	V
	*	2422	94.1	-	-	78.15	27.6	18.15	29.8	215	162	A	V
		2499.44	59.73	-14.27	74	43.79	27.5	18.27	29.83	215	162	P	V
		2494.68	48.51	-5.49	54	32.57	27.51	18.26	29.83	215	162	A	V
802.11n HT40 CH 06 2437MHz		2315.46	56.31	-17.69	74	40.15	27.94	17.97	29.75	113	177	P	H
		2345.56	46.54	-7.46	54	30.47	27.82	18.02	29.77	113	177	A	H
	*	2437	92.69	-	-	76.72	27.6	18.17	29.8	113	177	P	H
	*	2437	85.03	-	-	69.06	27.6	18.17	29.8	113	177	A	H
		2490.97	56.42	-17.58	74	40.47	27.52	18.26	29.83	113	177	P	H
		2491.46	46.72	-7.28	54	30.77	27.52	18.26	29.83	113	177	A	H
		2389.66	60.91	-13.09	74	44.96	27.64	18.09	29.78	202	193	P	V
		2319.94	51.96	-2.04	54	35.81	27.92	17.98	29.75	202	193	A	V
	*	2437	105.06	-	-	89.09	27.6	18.17	29.8	202	193	P	V
	*	2437	97.58	-	-	81.61	27.6	18.17	29.8	202	193	A	V
		2497.2	59.35	-14.65	74	43.4	27.51	18.27	29.83	202	193	P	V
		2483.55	49.91	-4.09	54	33.96	27.53	18.24	29.82	202	193	A	V



802.11n HT40 CH 09 2452MHz		2335.06	57.21	-16.79	74	41.11	27.86	18	29.76	140	175	P	H
		2331.42	46.95	-7.05	54	30.84	27.87	18	29.76	140	175	A	H
	*	2452	87.31	-	-	71.33	27.6	18.19	29.81	140	175	P	H
	*	2452	80.02	-	-	64.04	27.6	18.19	29.81	140	175	A	H
		2485.51	56.53	-17.47	74	40.57	27.53	18.25	29.82	140	175	P	H
		2488.8	46.95	-7.05	54	31.01	27.52	18.25	29.83	140	175	A	H
		2380.56	58.79	-15.21	74	42.81	27.68	18.08	29.78	216	162	P	V
		2359.98	50.2	-3.8	54	34.17	27.76	18.04	29.77	216	162	A	V
	*	2452	100.83	-	-	84.85	27.6	18.19	29.81	216	162	P	V
	*	2452	93.53	-	-	77.55	27.6	18.19	29.81	216	162	A	V
		2483.69	63.96	-10.04	74	48.01	27.53	18.24	29.82	216	162	P	V
		2483.55	52.93	-1.06	54	36.98	27.53	18.24	29.82	216	162	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		4844	36.38	-37.62	74	50.87	31.19	12.44	58.12	100	0	P	H
		7266	42.44	-31.56	74	47.99	36.33	15.68	57.56	100	0	P	H
													H
													H
		4844	37.31	-36.69	74	51.8	31.19	12.44	58.12	100	0	P	V
		7266	43.59	-30.41	74	49.14	36.33	15.68	57.56	100	0	P	V
													V
													V
802.11n HT40 CH 06 2437MHz		4874	36.58	-37.42	74	51.1	31.1	12.5	58.12	100	0	P	H
		7311	41.86	-32.14	74	47.32	36.44	15.6	57.5	100	0	P	H
													H
													H
		4874	38.7	-35.3	74	53.22	31.1	12.5	58.12	100	0	P	V
		7311	44.07	-29.93	74	49.53	36.44	15.6	57.5	100	0	P	V
													V
													V
802.11n HT40 CH 09 2452MHz		4904	36.73	-37.27	74	51.32	31.02	12.52	58.13	100	0	P	H
		7356	45.05	-28.95	74	50.31	36.59	15.59	57.44	100	0	P	H
													H
													H
		4904	36.93	-37.07	74	51.52	31.02	12.52	58.13	100	0	P	V
		7356	44.51	-29.49	74	49.77	36.59	15.59	57.44	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz WIFI 802.11n HT40 (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT40 LF		73.65	29.52	-10.48	40	47.97	12.45	1.44	32.34			P	H
		182.29	30.37	-13.13	43.5	45.53	14.8	2.35	32.31			P	H
		375.32	36.45	-9.55	46	44.44	20.94	3.31	32.24			P	H
		500.45	37.29	-8.71	46	41.71	23.92	3.75	32.09			P	H
		675.05	36.25	-9.75	46	37.56	26.33	4.45	32.09			P	H
		900.09	41.59	-4.41	46	39.37	28.99	5.15	31.92	100	355	QP	H
													H
													H
													H
													H
													H
													H
		53.28	29.29	-10.71	40	47.65	12.82	1.24	32.42	100	28	QP	V
		375.32	33.57	-12.43	46	41.56	20.94	3.31	32.24			P	V
		500.45	38.26	-7.74	46	42.68	23.92	3.75	32.09			P	V
		624.61	34.31	-11.69	46	36.05	25.96	4.28	31.98			P	V
		674.08	33.23	-12.77	46	34.55	26.32	4.45	32.09			P	V
		900.09	38.61	-7.39	46	36.39	28.99	5.15	31.92			P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical

A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)

2. Level(dBμV/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.



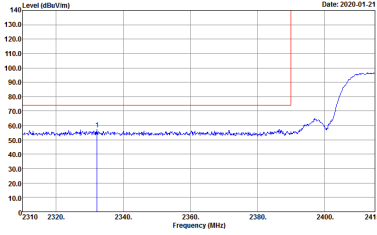
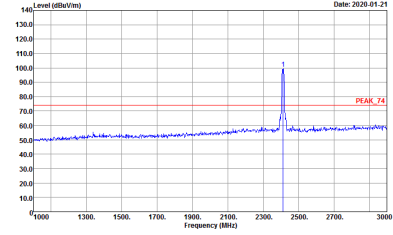
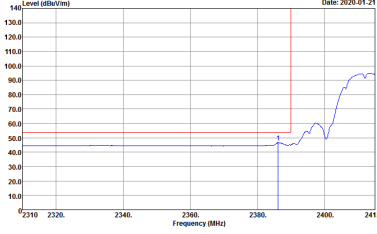
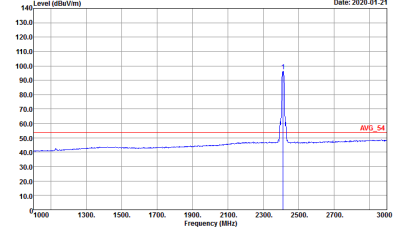
Appendix D. Radiated Spurious Emission Plots

Test Engineer :	Jacky Hung, Andy Yang, and CR Liro	Temperature :	20~25°C
		Relative Humidity :	50~60%

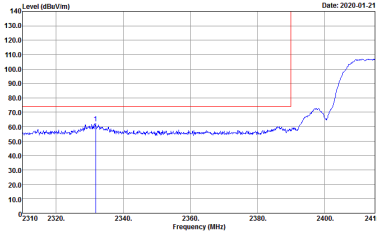
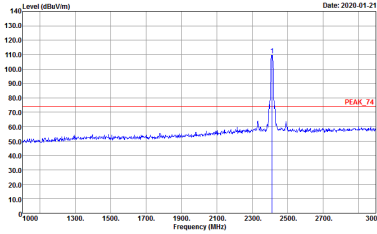
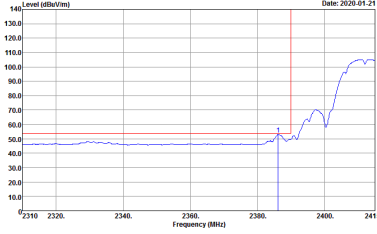
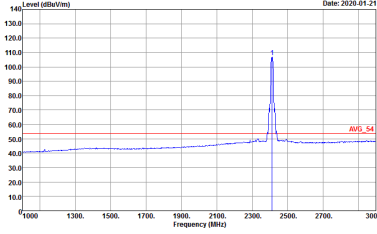
Note symbol

-L	Low channel location
-R	High channel location

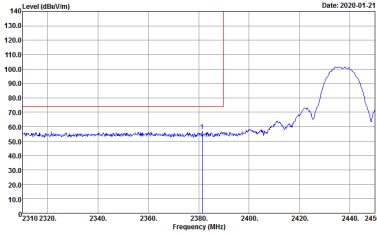
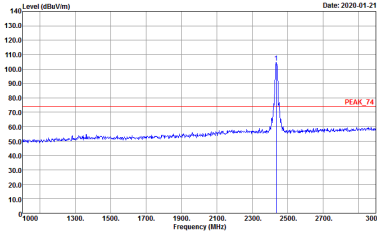
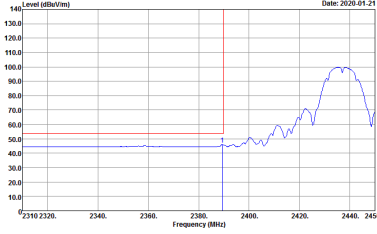
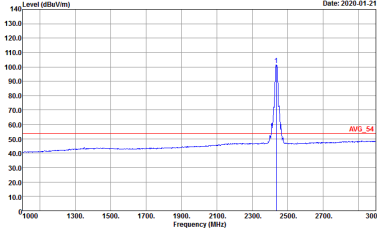
2.4GHz 2400~2483.5MHz
WIFI 802.11b (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9N0104 Setting : 20	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9N0104 Setting : 20
	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9N0104 Setting : 20	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9N0104 Setting : 20

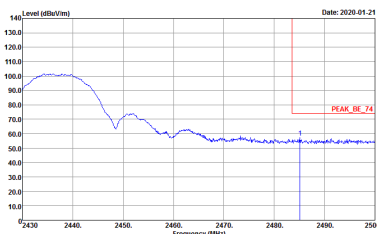
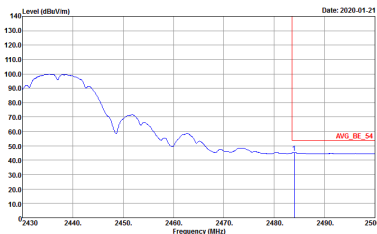


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Setting : 9N0104 Setting : 20	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Setting : 9N0104 Setting : 20
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak Setting : 9N0104 Setting : 20	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak Setting : 9N0104 Setting : 20

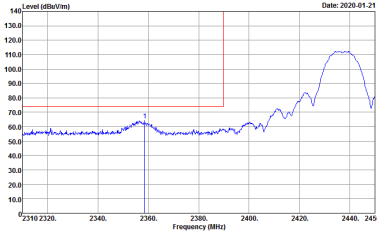
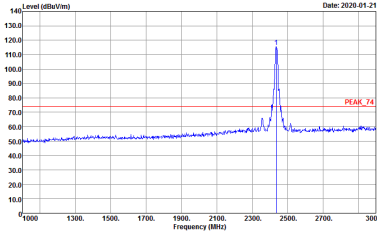
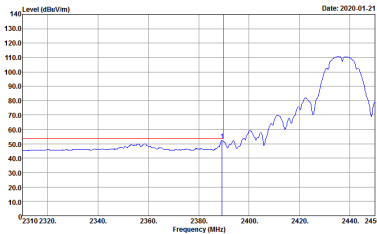
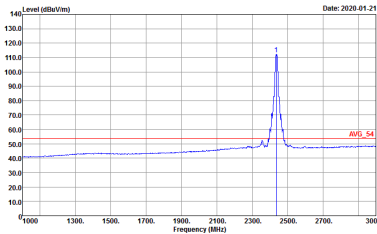


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Setting : 9N0104 Setting : 27.5	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Setting : 9N0104 Setting : 27.5
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak Setting : 9N0104 Setting : 27.5	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 HORIZONTAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak Setting : 9N0104 Setting : 27.5

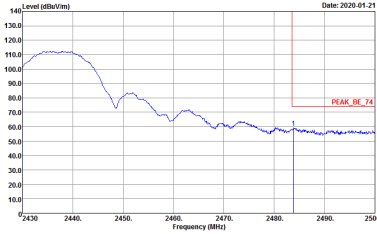
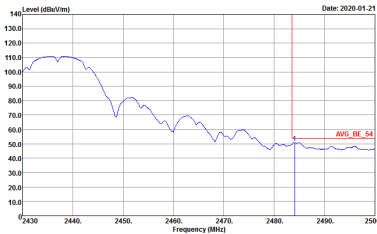


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9N0104 Setting : 27.5	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9N0104 Setting : 27.5	Left blank

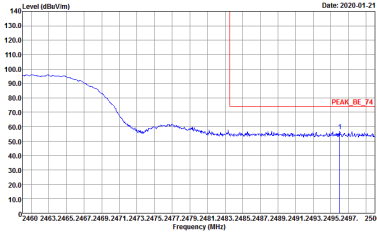
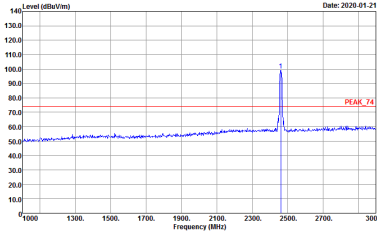
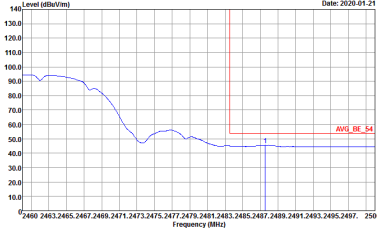
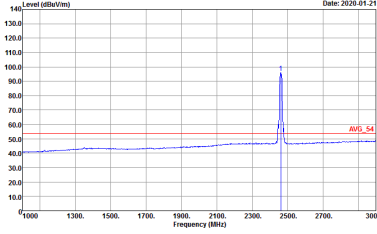


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Setting : 9N0104 : 27.5	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Setting : 9N0104 : 27.5
	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak Setting : 9N0104 : 27.5	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 VERTICAL Detector : RBW:1000.000KHz VBW:0.010KHz SWT:Auto Project : Peak Setting : 9N0104 : 27.5
Avg.		



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1	Vertical	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9N0104 Setting : 27.5	Left blank
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 9N0104 Setting : 27.5	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH16-HY Condition : PEAK_BE_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9N0104 Setting : 19.5	 Site : 03CH16-HY Condition : PEAK_74 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9N0104 Setting : 19.5
Avg.	 Site : 03CH16-HY Condition : AVG_BE_54 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9N0104 Setting : 19.5	 Site : 03CH16-HY Condition : AVG_54 3m 91200_1522 HORIZONTAL Detector : Peak Project : 9N0104 Setting : 19.5