



FCC RADIO TEST REPORT

FCC ID : S9E-121900
Equipment : Rugged Handheld Computer
Brand Name : Trimble
Model Name : 121900
Marketing Name : TSC5
Applicant : Trimble Inc.
5475 Kellenburger Rd., Dayton, Ohio, United States 45424
Manufacturer : Trimble Inc.
5475 Kellenburger Rd., Dayton, Ohio, United States 45424
Standard : FCC Part 15 Subpart C §15.247

The product was received on Aug. 19, 2020 and testing was started from Sep. 10, 2020 and completed on Oct. 12, 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 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.

Approved by: Louis Wu

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



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 Product Feature of Equipment Under Test.....	5
1.2 Modification of EUT	5
1.3 Testing Location	5
1.4 Applicable Standards.....	6
2 Test Configuration of Equipment Under Test	7
2.1 Carrier Frequency and Channel	7
2.2 Test Mode.....	8
2.3 Connection Diagram of Test System.....	9
2.4 Support Unit used in test configuration and system	9
2.5 EUT Operation Test Setup	10
2.6 Measurement Results Explanation Example.....	10
3 Test Result	11
3.1 6dB and 99% Bandwidth Measurement	11
3.2 Output Power Measurement.....	13
3.3 Power Spectral Density Measurement	14
3.4 Conducted Band Edges and Spurious Emission Measurement	16
3.5 Radiated Band Edges and Spurious Emission Measurement	41
3.6 AC Conducted Emission Measurement.....	46
3.7 Antenna Requirements	48
4 List of Measuring Equipment.....	49
5 Uncertainty of Evaluation	51
Appendix A. Conducted Test Results	
Appendix B. AC Conducted Emission Test Result	
Appendix C. Radiated Spurious Emission	
Appendix D. Radiated Spurious Emission Plots	
Appendix E. Duty Cycle Plots	
Appendix F. Setup Photographs	



History of this test report

Report No.	Version	Description	Issued Date
FR081931C	01	Initial issue of report	Oct. 28, 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 1.12 dB at 4824.000 MHz
3.6	15.207	AC Conducted Emission	Pass	Under limit 10.18 dB at 0.172 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: Lucy Wu

1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Antenna Type	WWAN: PIFA Antenna WLAN <Ant. 1>: Dipole Antenna <Ant. 2>: Dipole Antenna Bluetooth: Dipole Antenna GPS/Glonass/BDS/Galileo: Patch Antenna

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.	
	03CH15-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:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

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 three orthogonal panels, X, Y, Z. The worst cases (Z plane) 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.

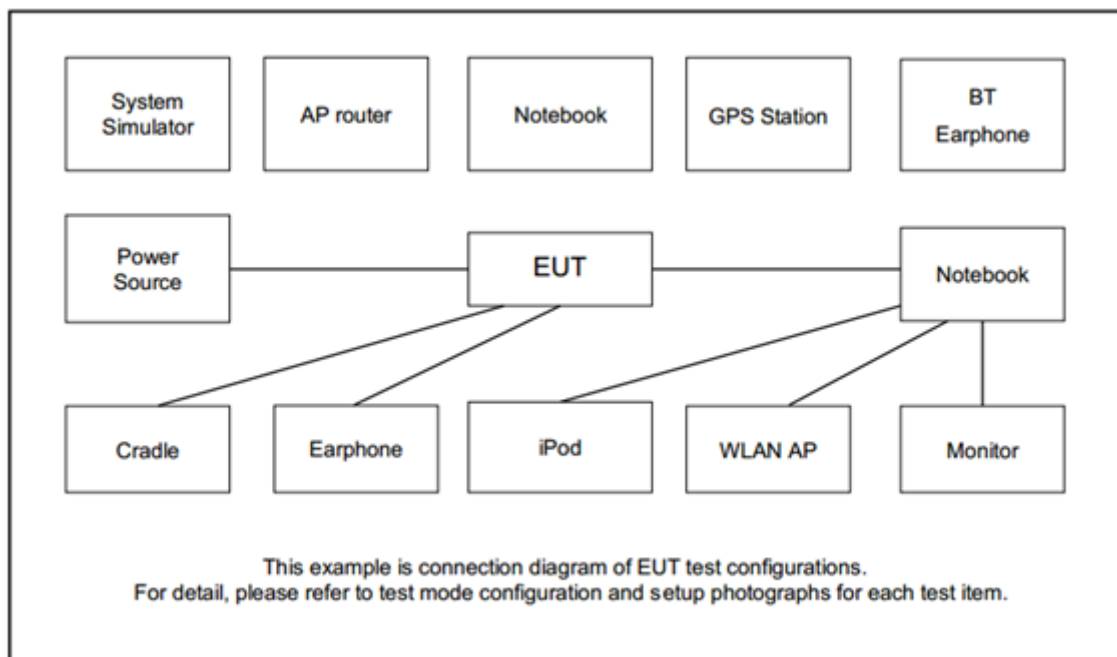
Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20 (Covered by VHT20)	MCS0
802.11n HT40 (Covered by VHT40)	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0

Test Cases	
AC Conducted Emission	Mode 1: LTE Band 41 Link + WLAN (2.4GHz) Link + Bluetooth Link + Color Bar + USB Cable (Charging from AC Adapter) Mode 2: LTE Band 41 Idle + WLAN (2.4GHz) Idle + Bluetooth Idle + Color Bar + USB Cable (Charging from AC Adapter)
Remark: The worst case of conducted emission is mode 1; only the test data of it was reported.	

Ch. #	2400-2483.5 MHz			
	802.11b	802.11g	802.11ac VHT20	802.11ac VHT40
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	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Battery	Trimble	U80596R01	N/A	N/A	N/A



2.5 EUT Operation Test Setup

The RF test items, utility "QRCT4.0" 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.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$

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.

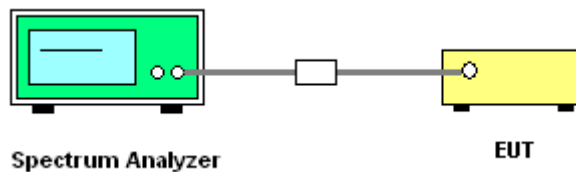
3.1.2 Measuring Instruments

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.

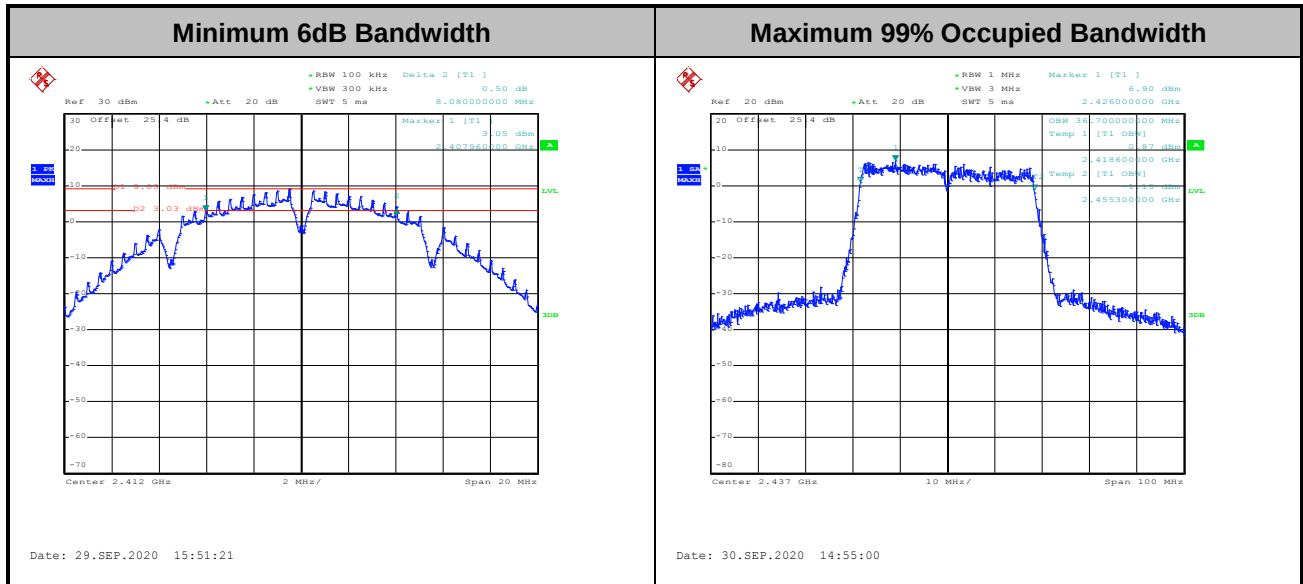
3.1.4 Test Setup





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 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.

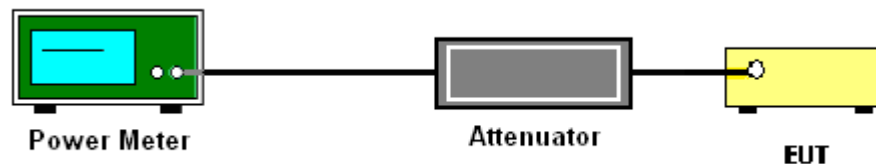
3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

3.2.3 Test Procedures

1. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.
5. 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 Average Output Power

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.

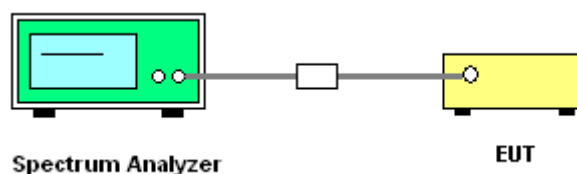
If measurements performed using method (2) plus $10 \log(N)$ exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

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.

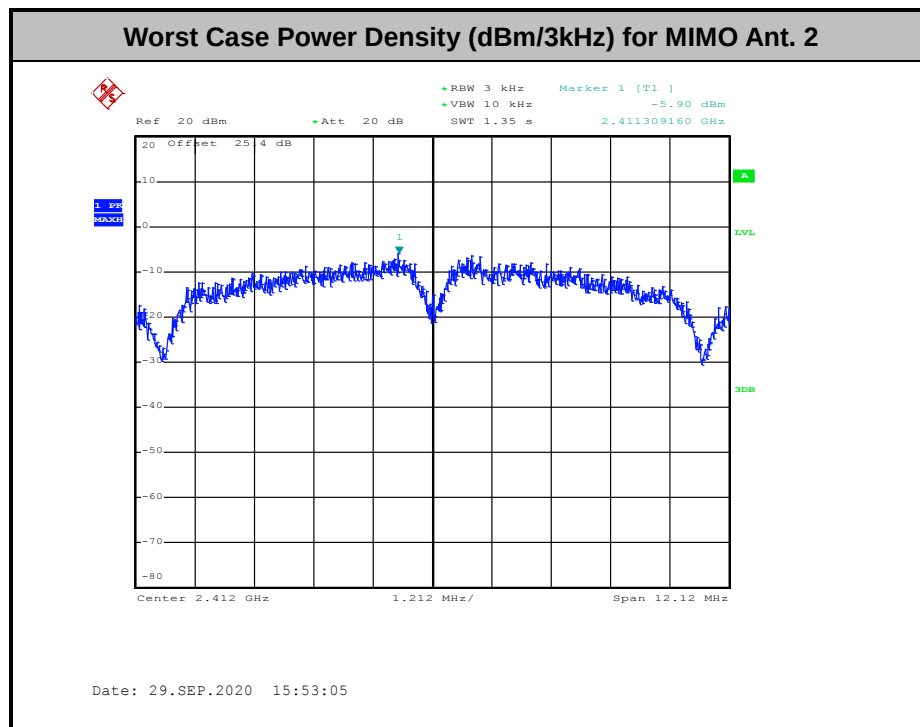
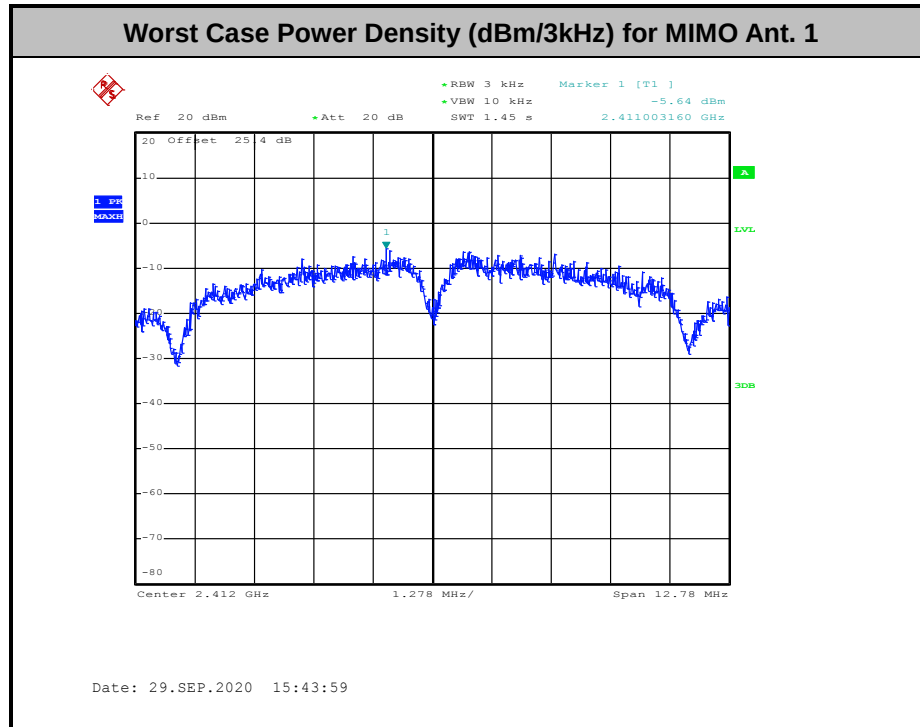
Method (2): Measure and add $10 \log(N)$ dB, where N is the number of outputs. (N=2)

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.

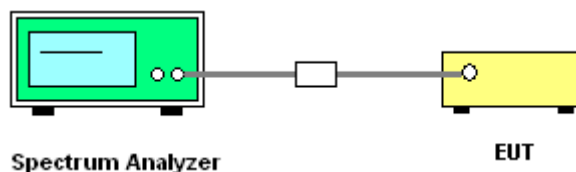
3.4.2 Measuring Instruments

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



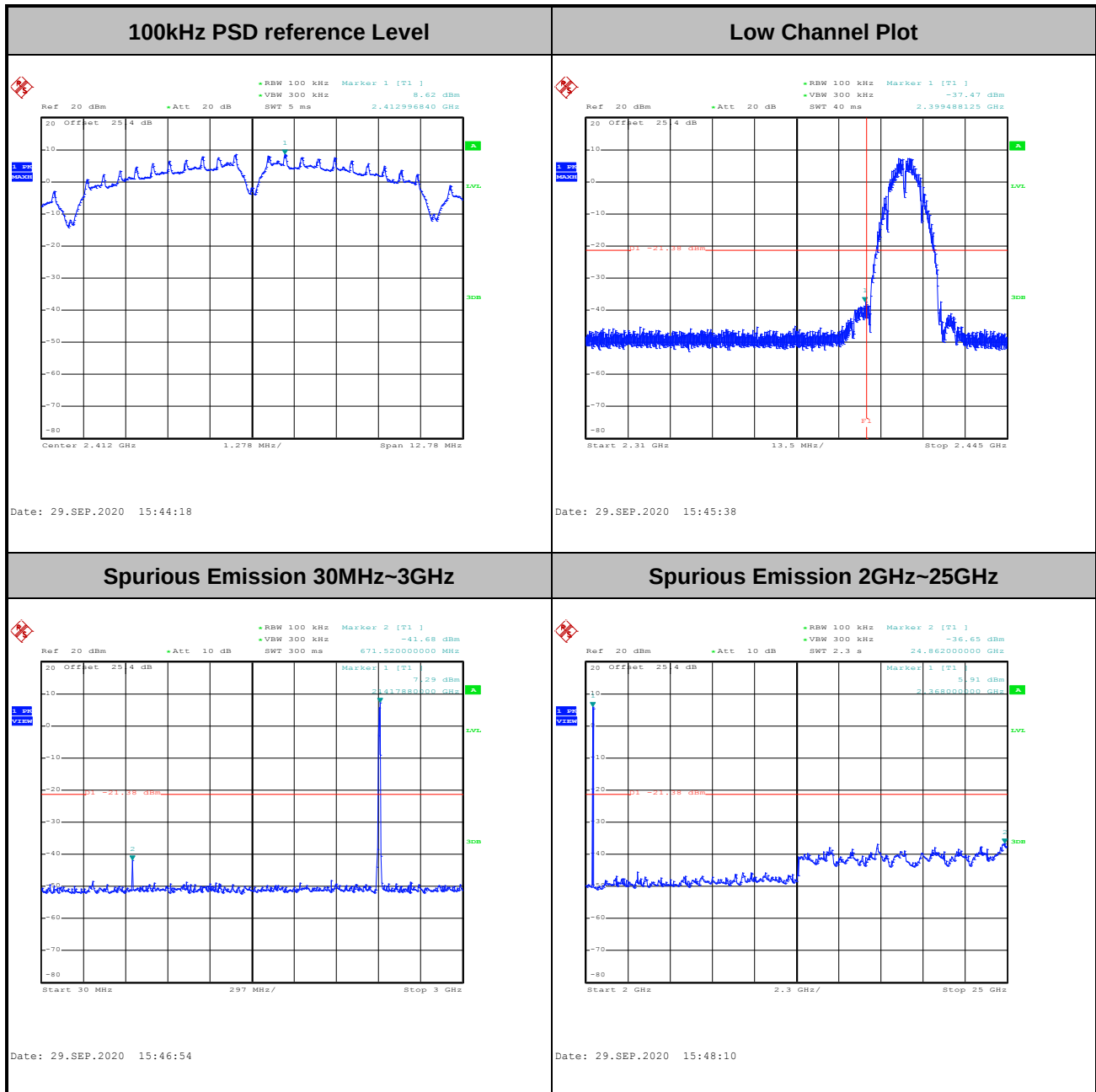


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Engineer :	Kathy Chen	Temperature :	22.7~24°C
		Relative Humidity :	53.5~55%

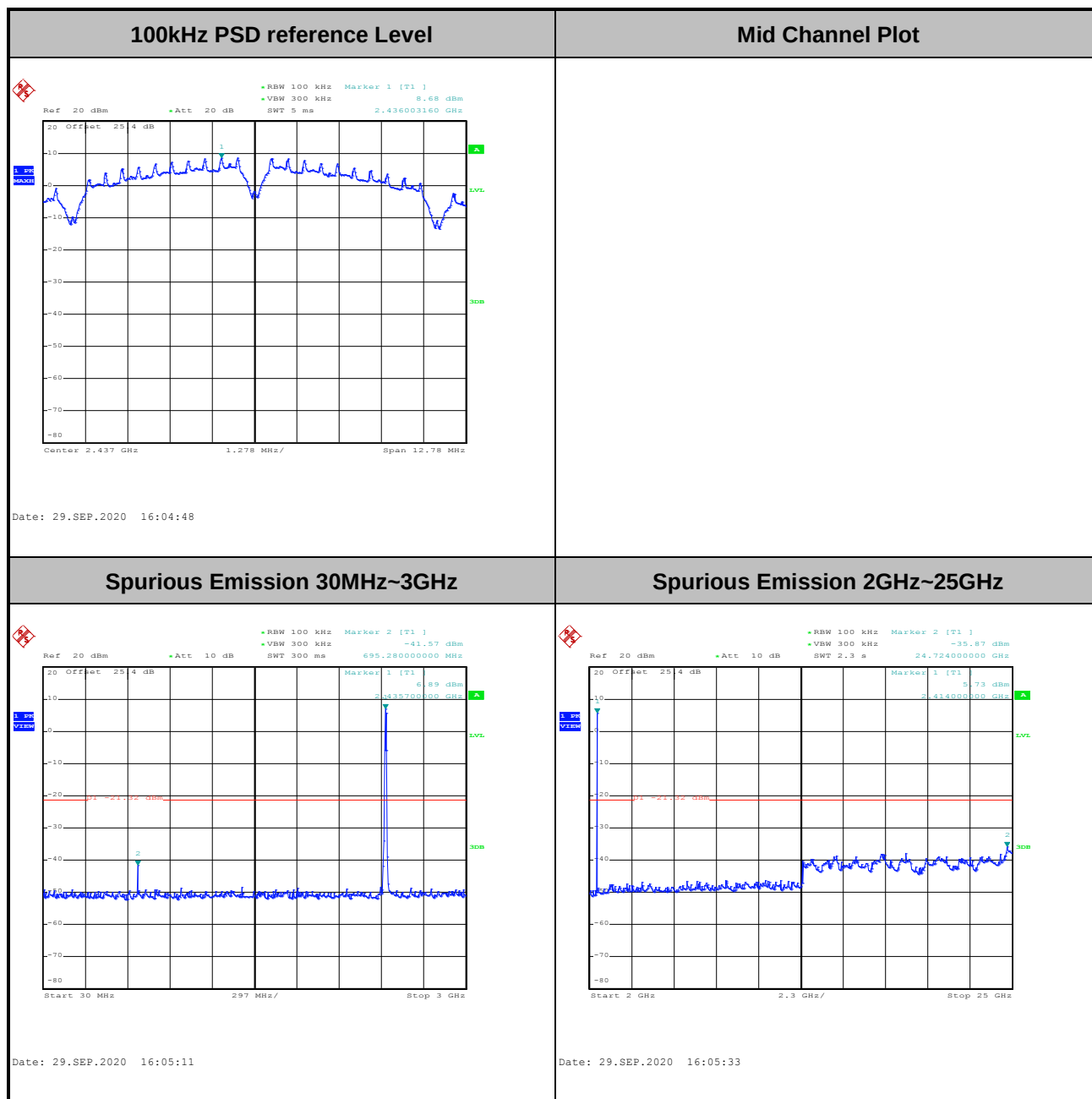
Number of TX = 2, Ant. 1 (Measured)

Test Mode :	802.11b	Test Channel :	01
-------------	---------	----------------	----





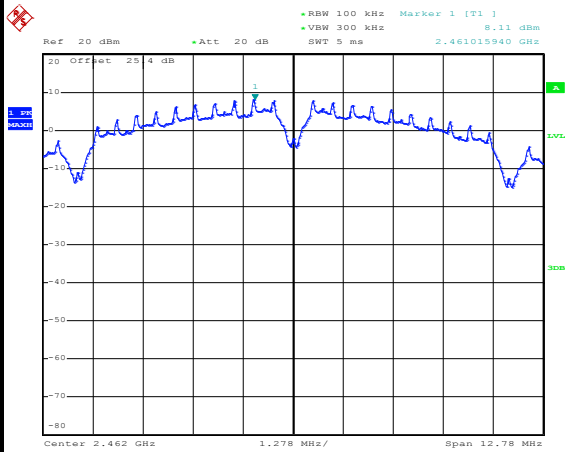
Test Mode :	802.11b	Test Channel :	06
-------------	---------	----------------	----





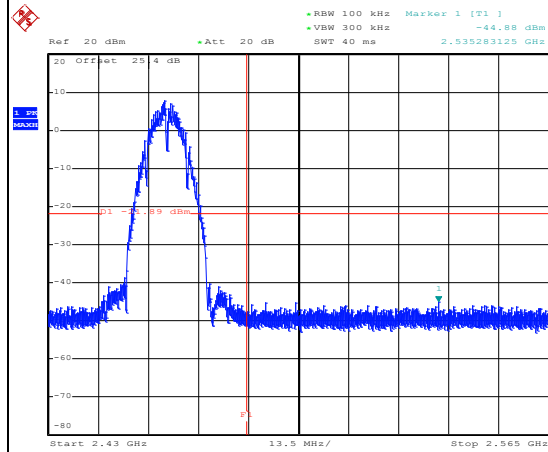
Test Mode :	802.11b	Test Channel :	11
-------------	---------	----------------	----

100kHz PSD reference Level



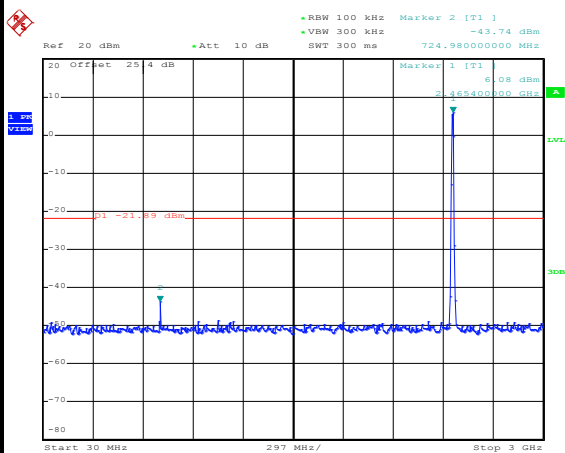
Date: 29.SEP.2020 16:26:02

High Channel Plot



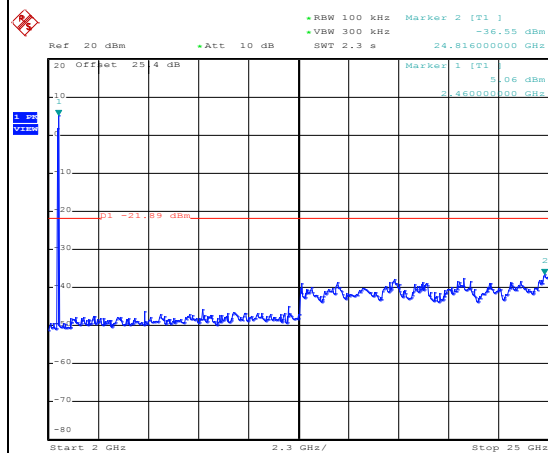
Date: 29.SEP.2020 16:28:06

Spurious Emission 30MHz~3GHz



Date: 29.SEP.2020 16:28:57

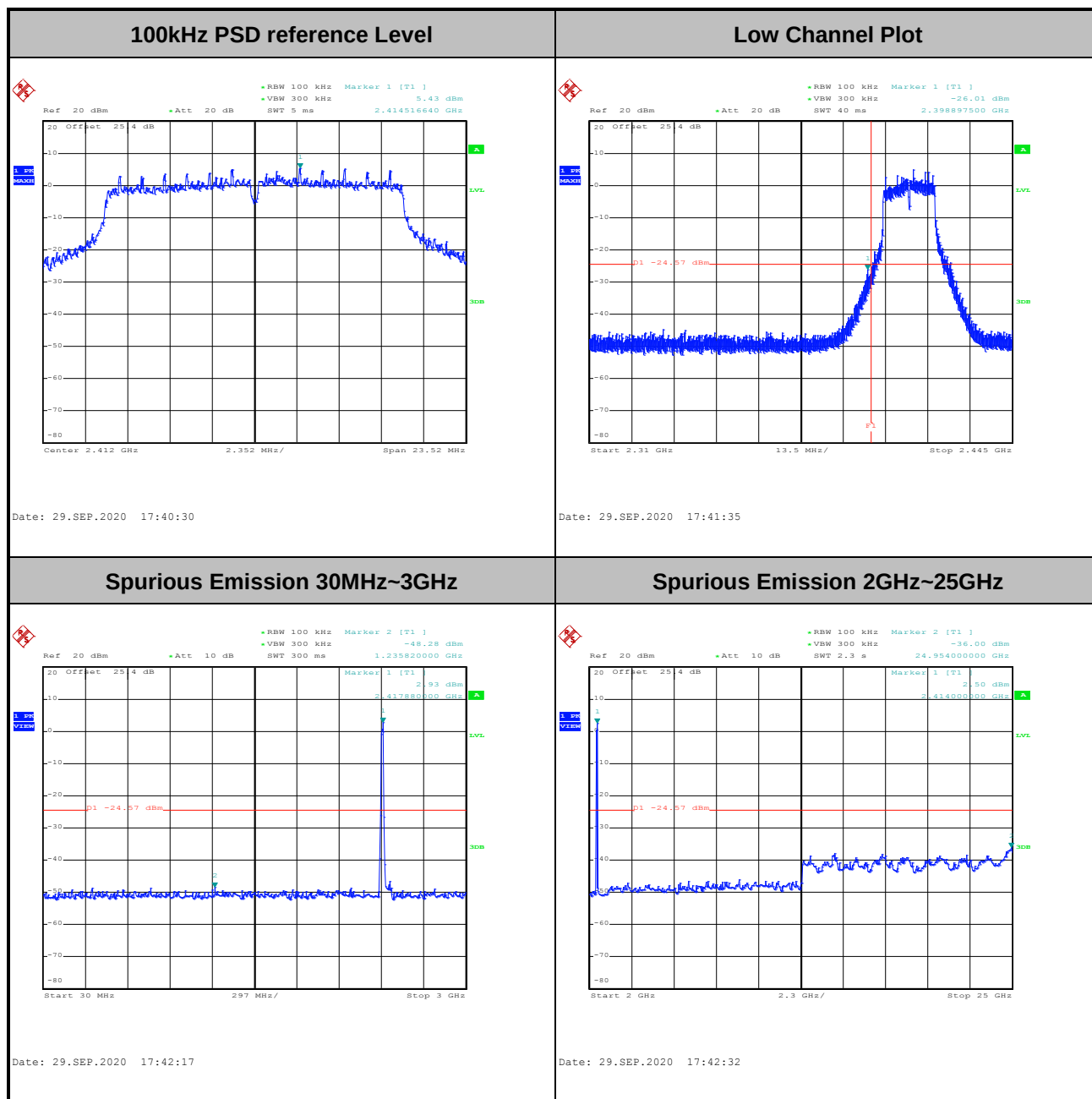
Spurious Emission 2GHz~25GHz



Date: 29.SEP.2020 16:29:16

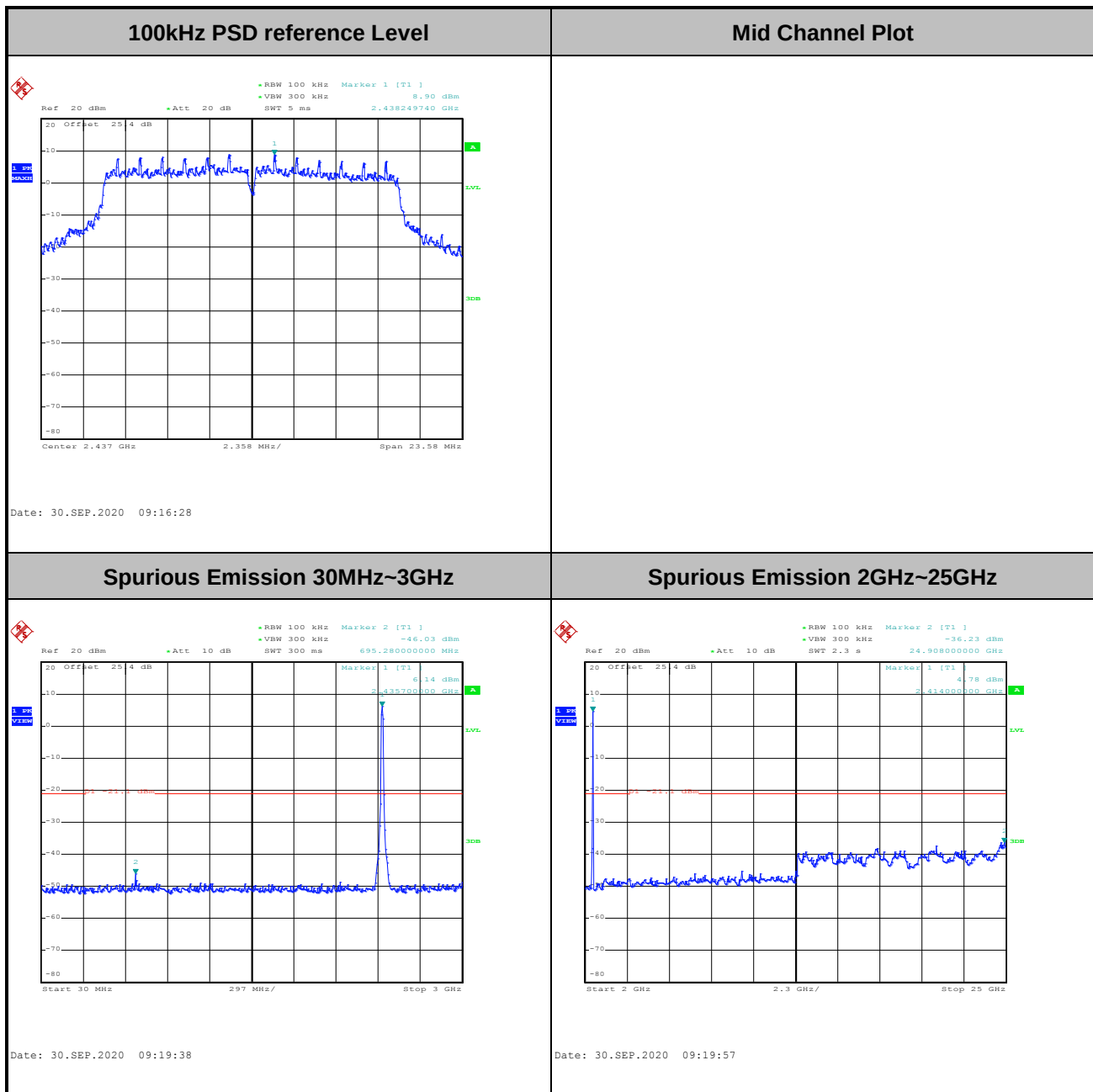


Test Mode :	802.11g	Test Channel :	01
-------------	---------	----------------	----



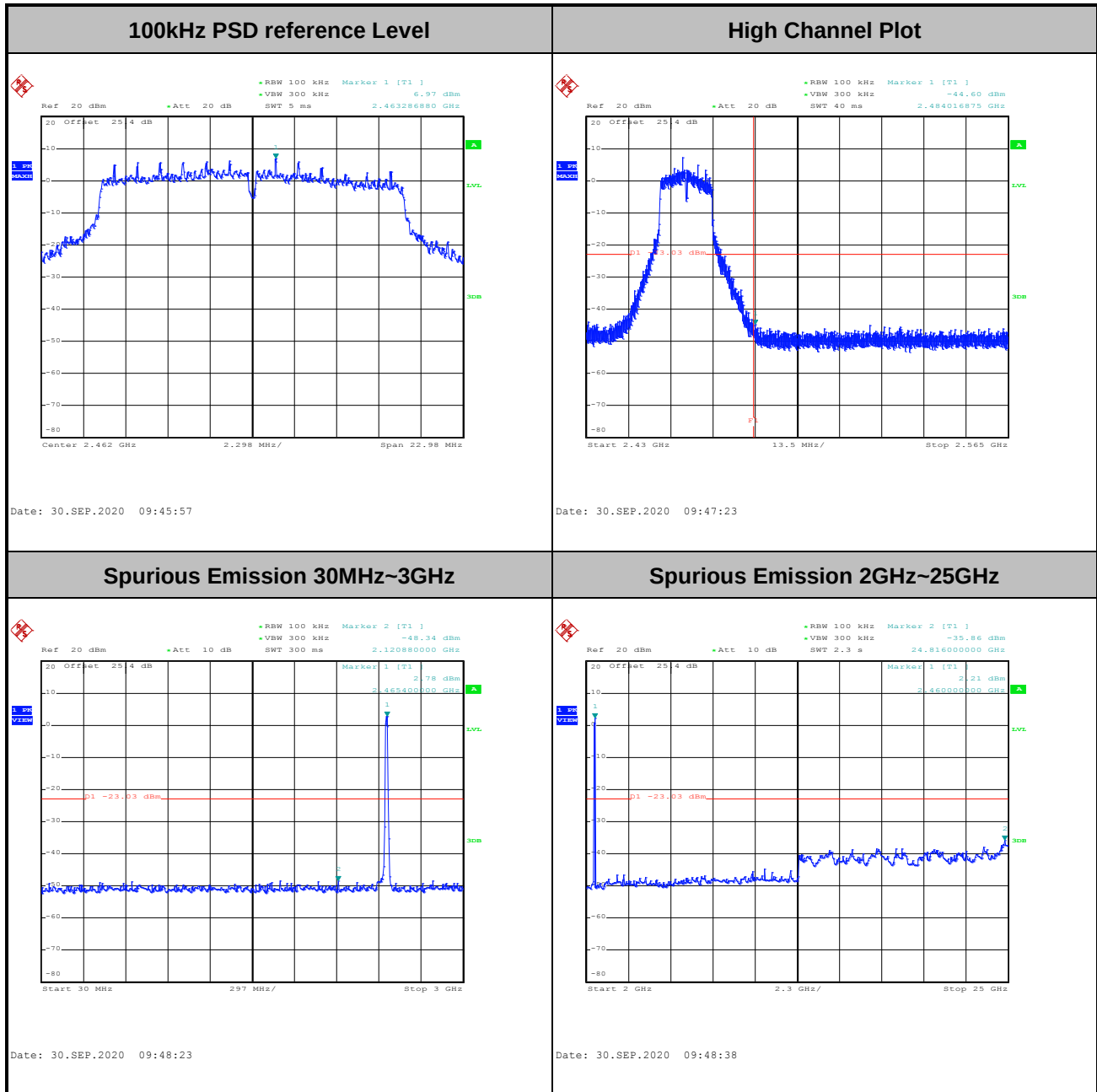


Test Mode :	802.11g	Test Channel :	06
-------------	---------	----------------	----



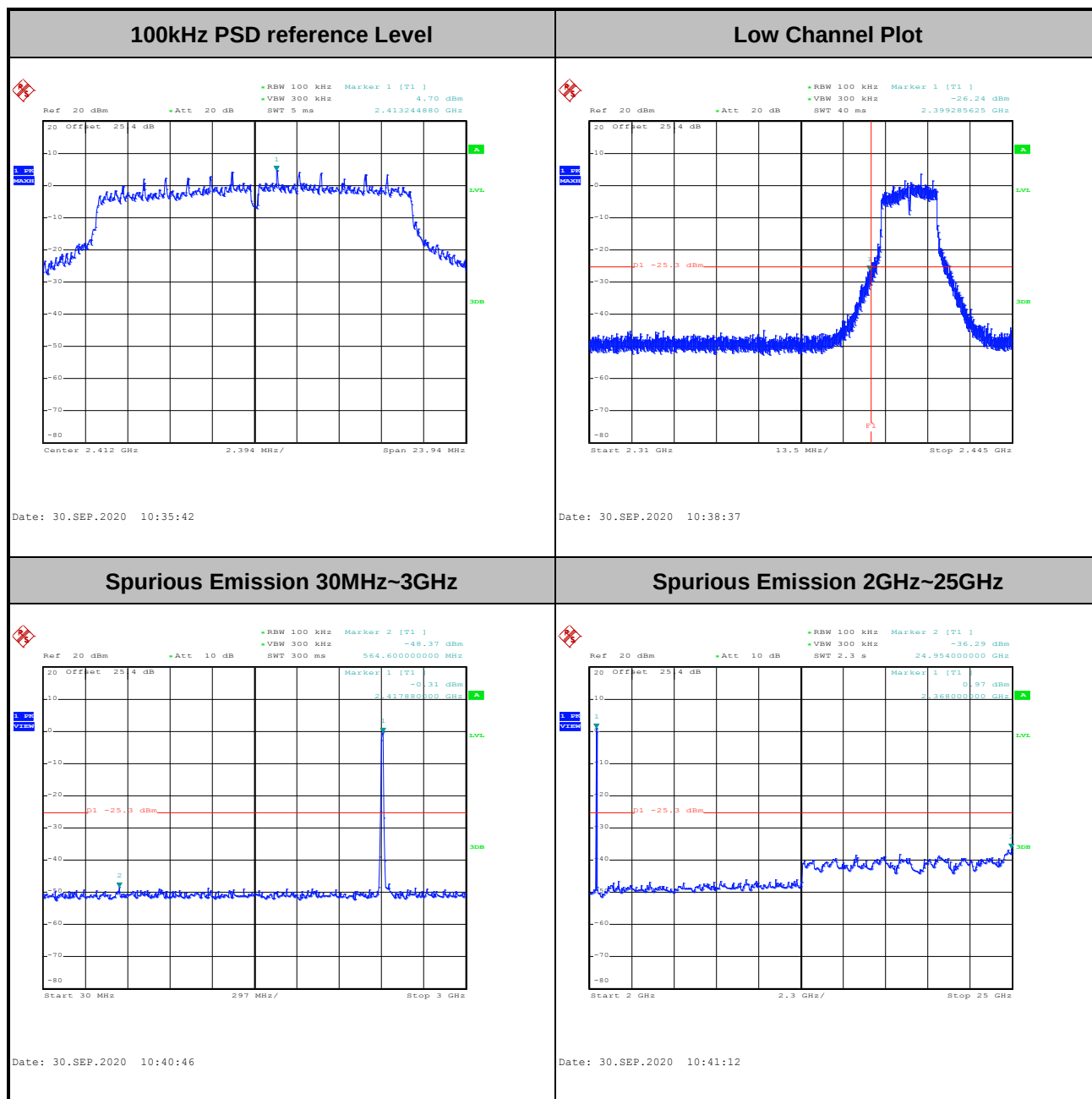


Test Mode :	802.11g	Test Channel :	11
--------------------	---------	-----------------------	----



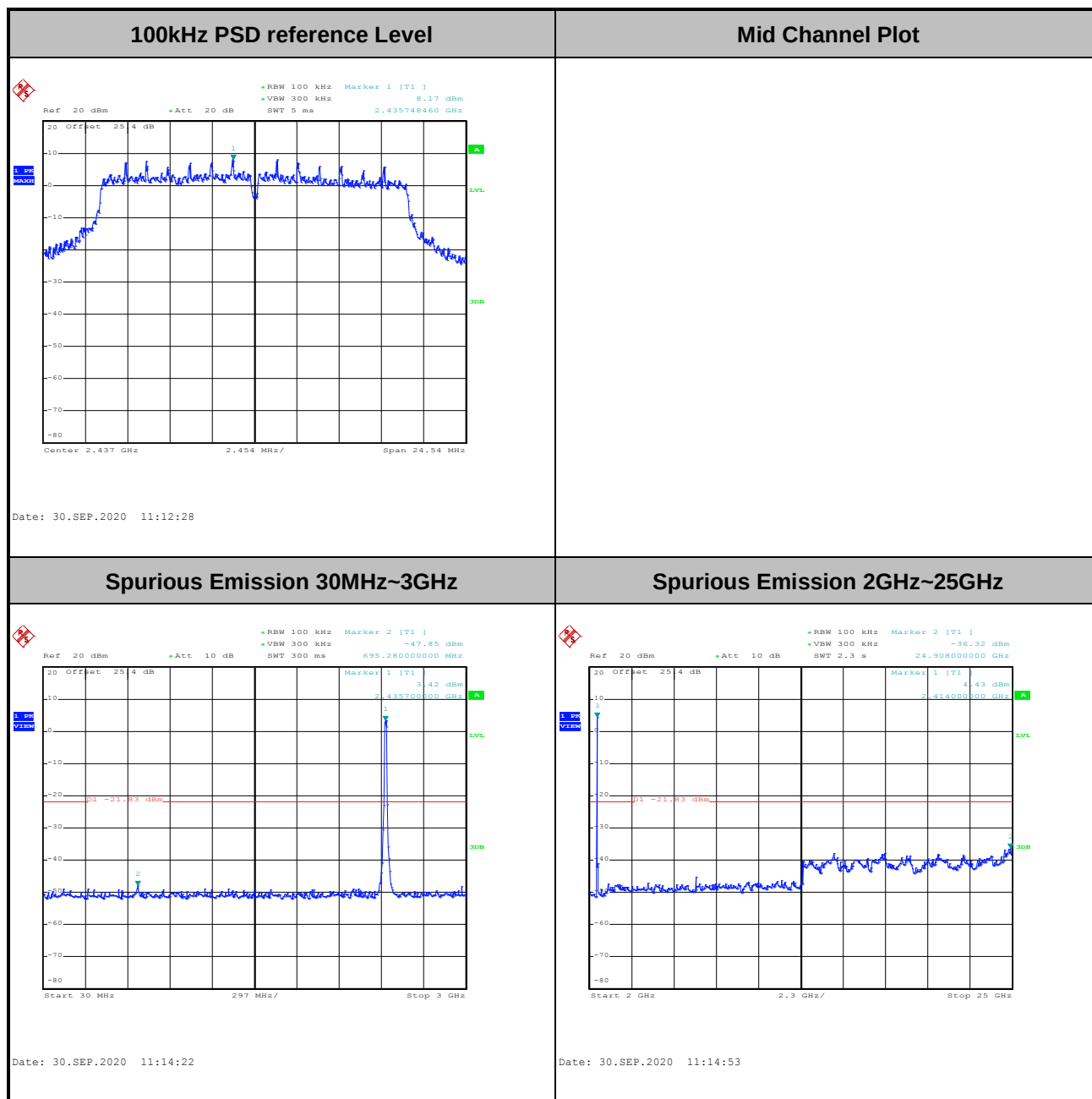


Test Mode :	802.11ac VHT20	Test Channel :	01
-------------	----------------	----------------	----



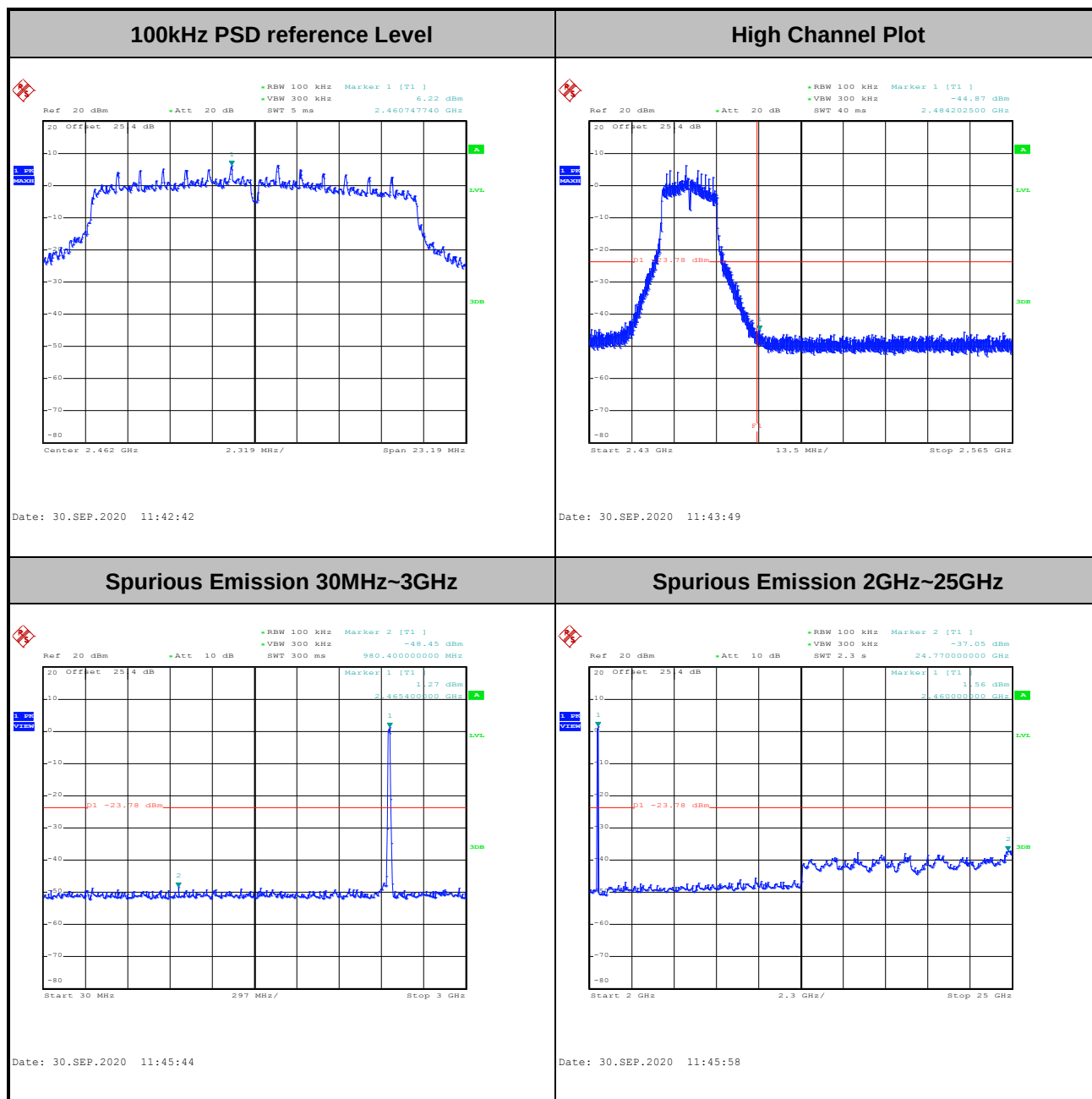


Test Mode :	802.11ac VHT20	Test Channel :	06
-------------	----------------	----------------	----



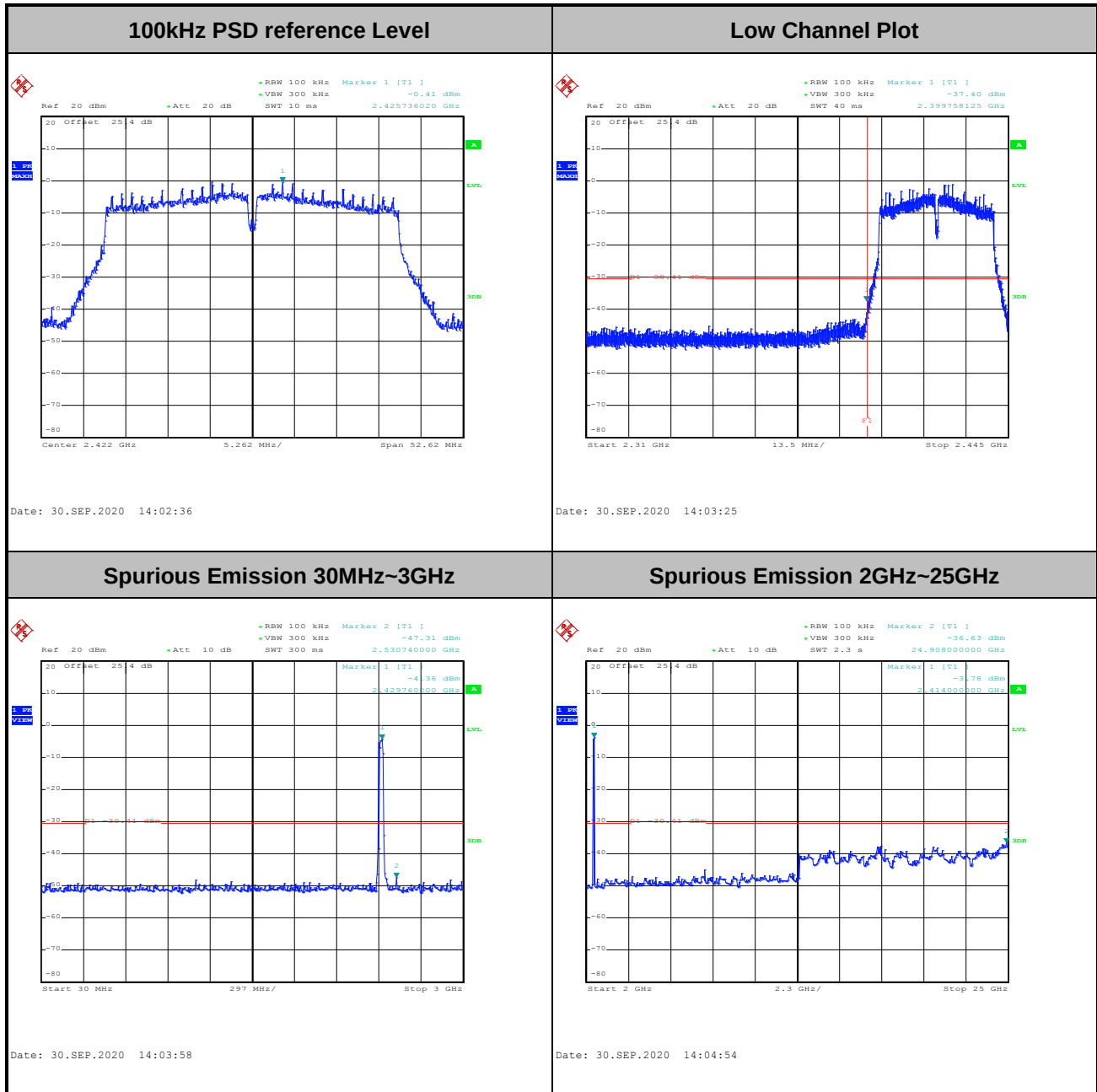


Test Mode :	802.11ac VHT20	Test Channel :	11
-------------	----------------	----------------	----



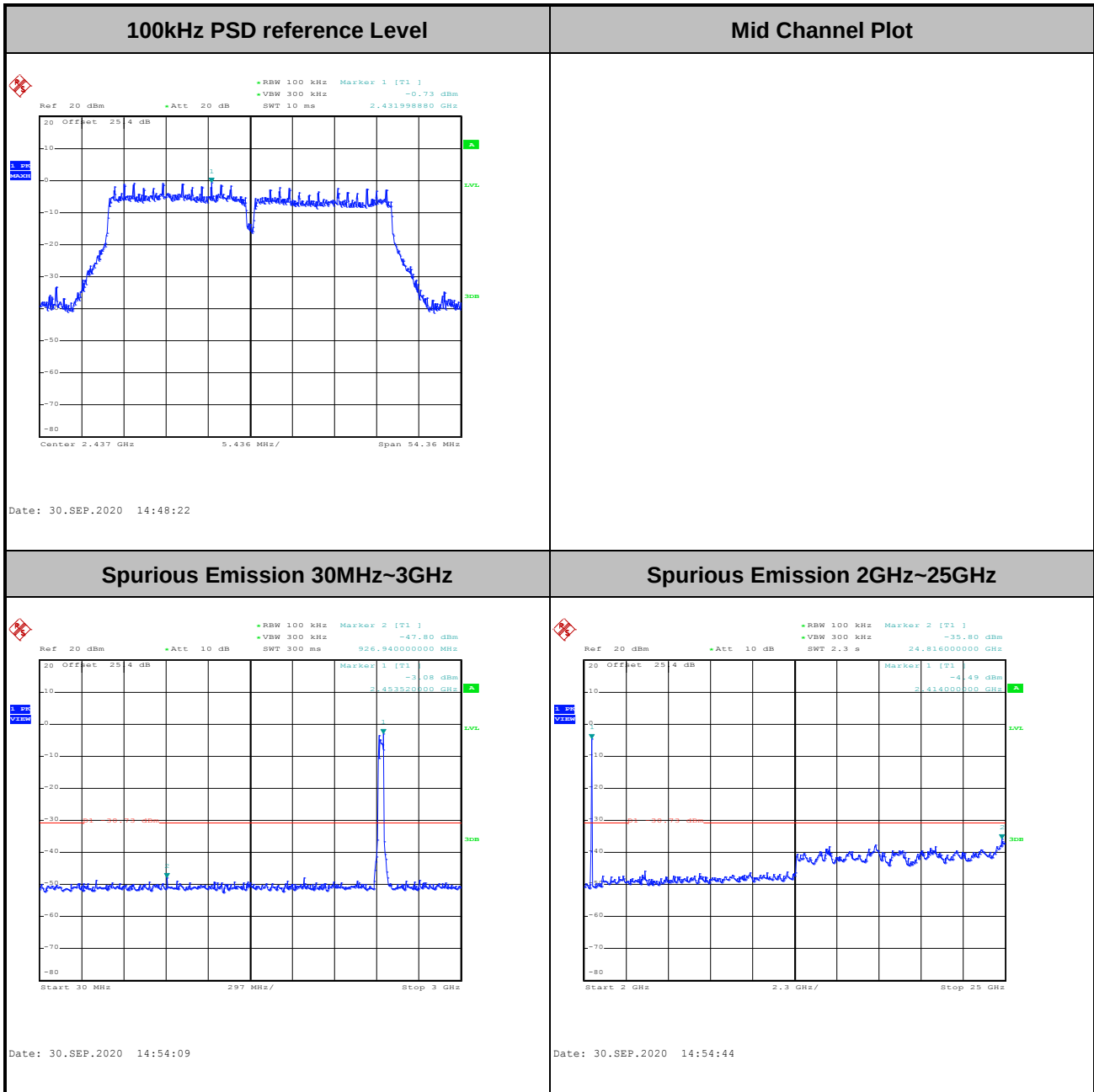


Test Mode :	802.11ac VHT40	Test Channel :	03
-------------	----------------	----------------	----



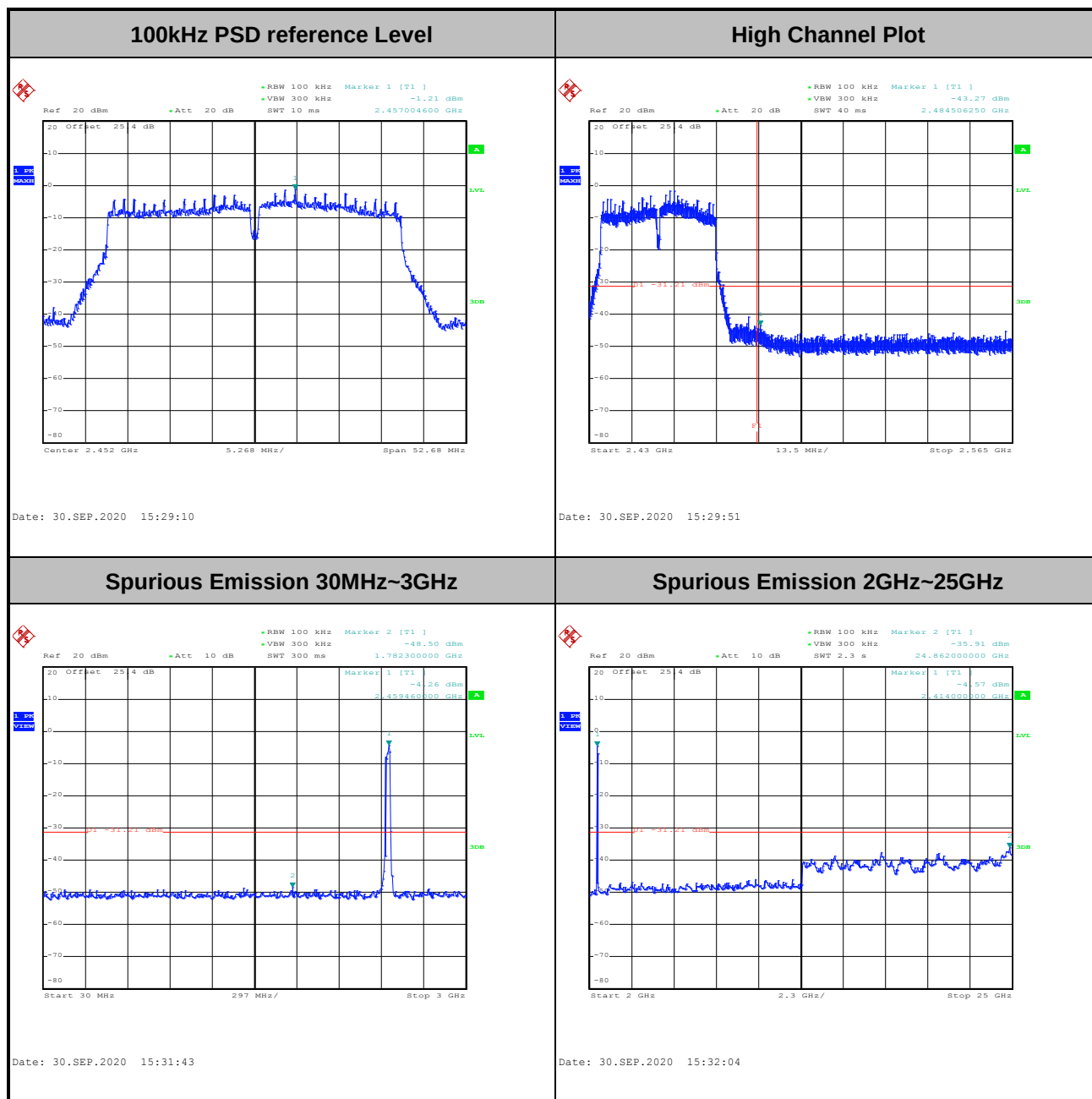


Test Mode :	802.11ac VHT40	Test Channel :	06
--------------------	----------------	-----------------------	----





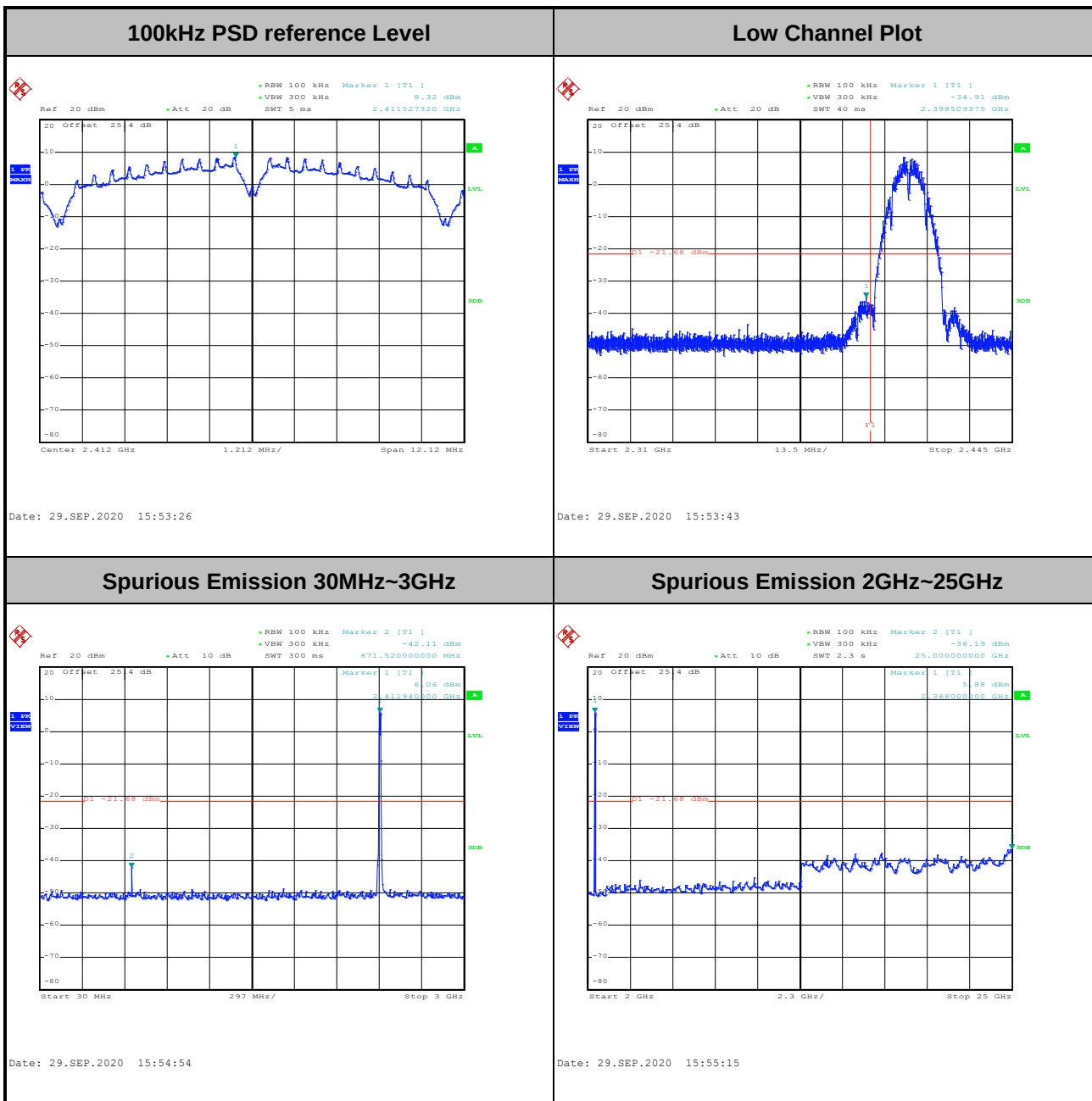
Test Mode :	802.11ac VHT40	Test Channel :	09
-------------	----------------	----------------	----





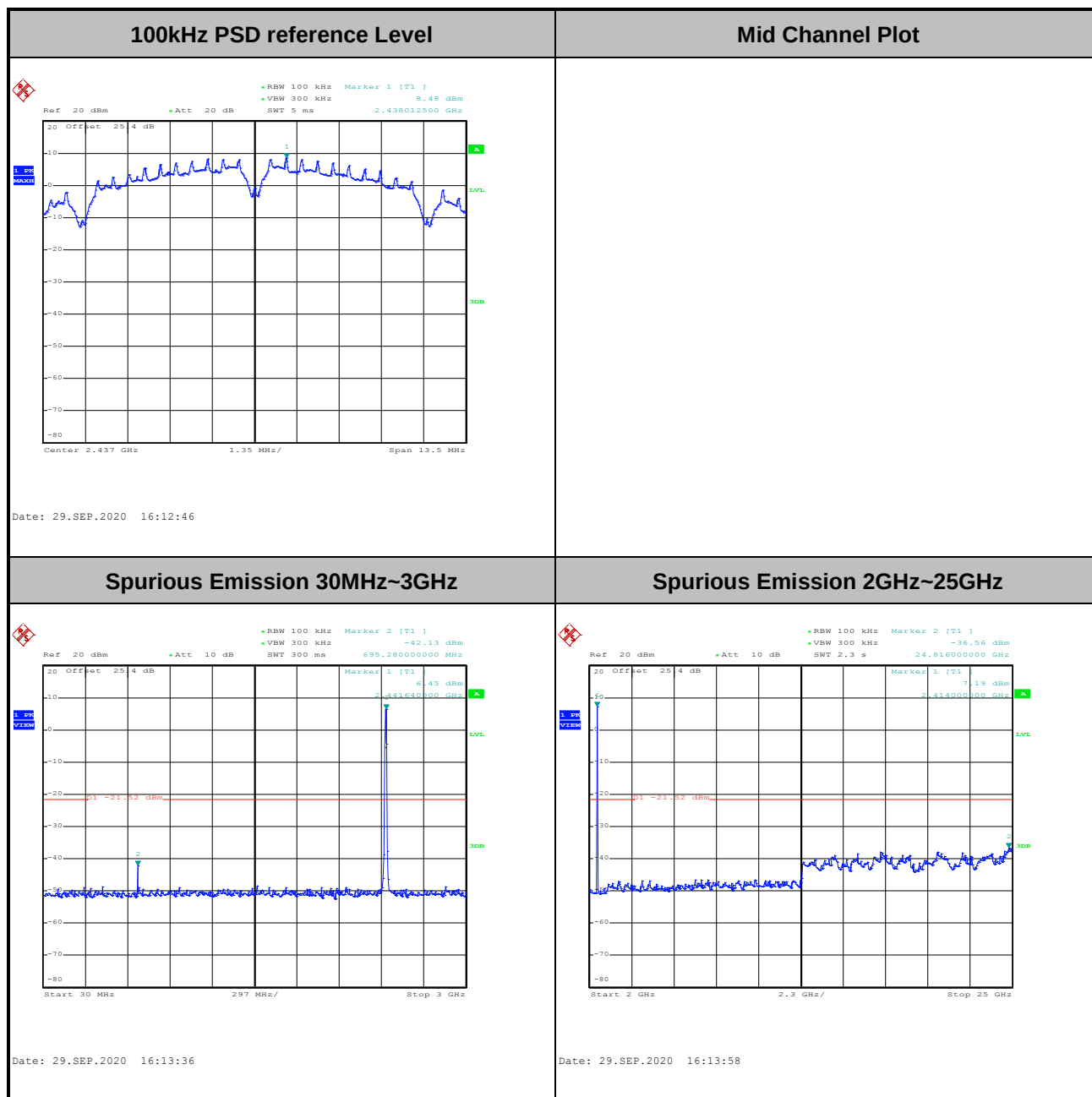
Number of TX = 2, Ant. 2 (Measured)

Test Mode :	802.11b	Test Channel :	01
-------------	---------	----------------	----





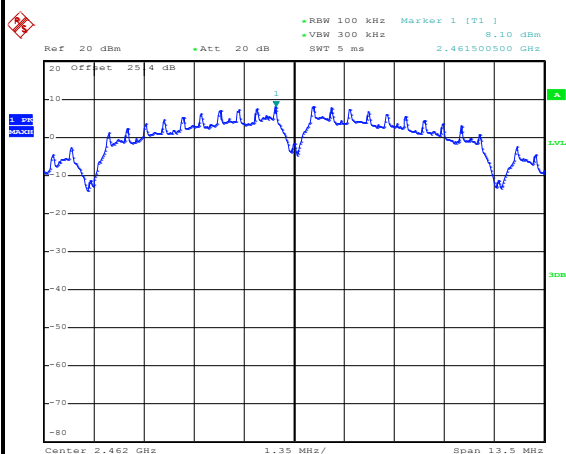
Test Mode :	802.11b	Test Channel :	06
-------------	---------	----------------	----





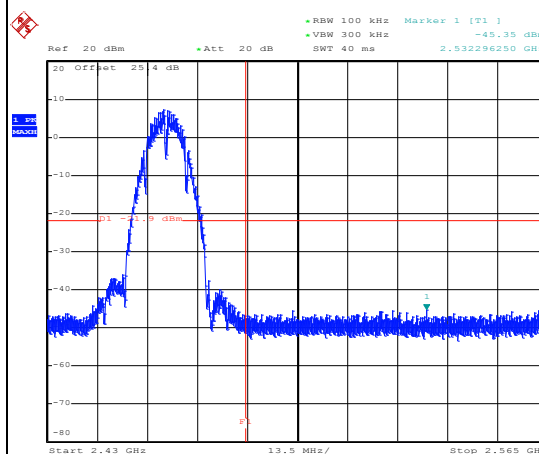
Test Mode :	802.11b	Test Channel :	11
-------------	---------	----------------	----

100kHz PSD reference Level



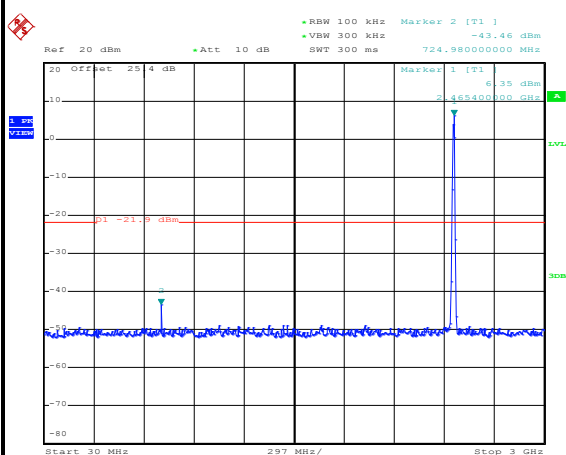
Date: 29.SEP.2020 16:34:27

High Channel Plot



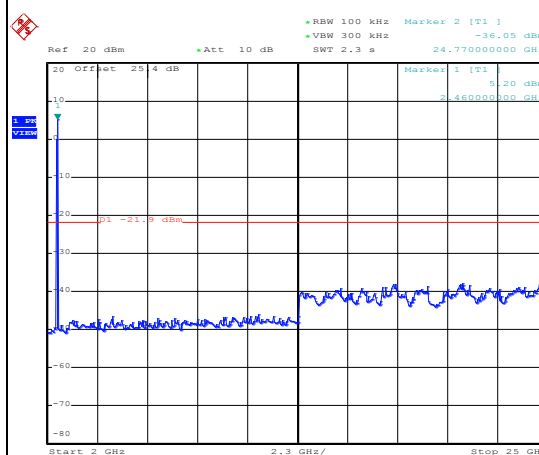
Date: 29.SEP.2020 16:35:31

Spurious Emission 30MHz~3GHz



Date: 29.SEP.2020 16:36:10

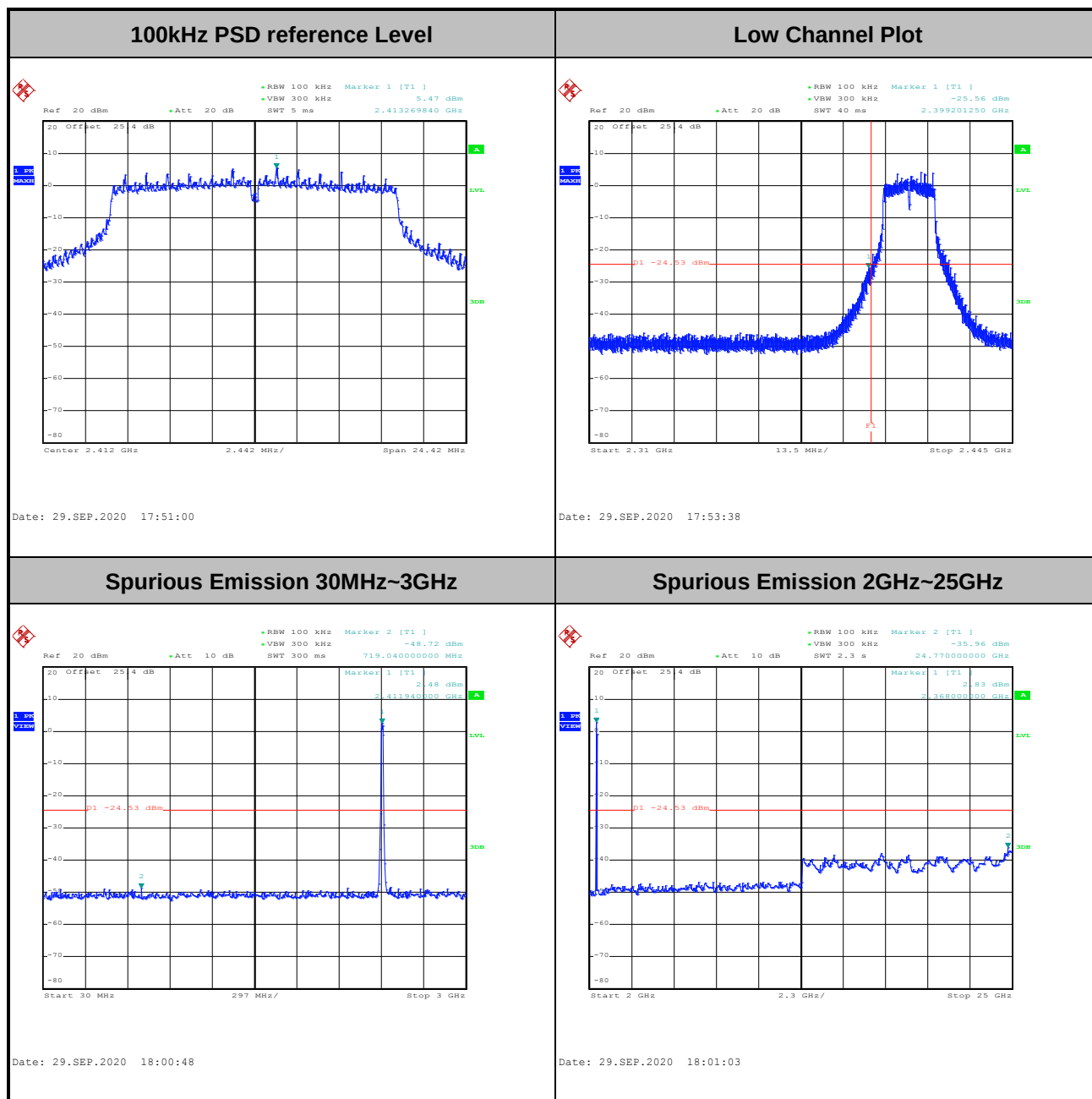
Spurious Emission 2GHz~25GHz



Date: 29.SEP.2020 16:36:27

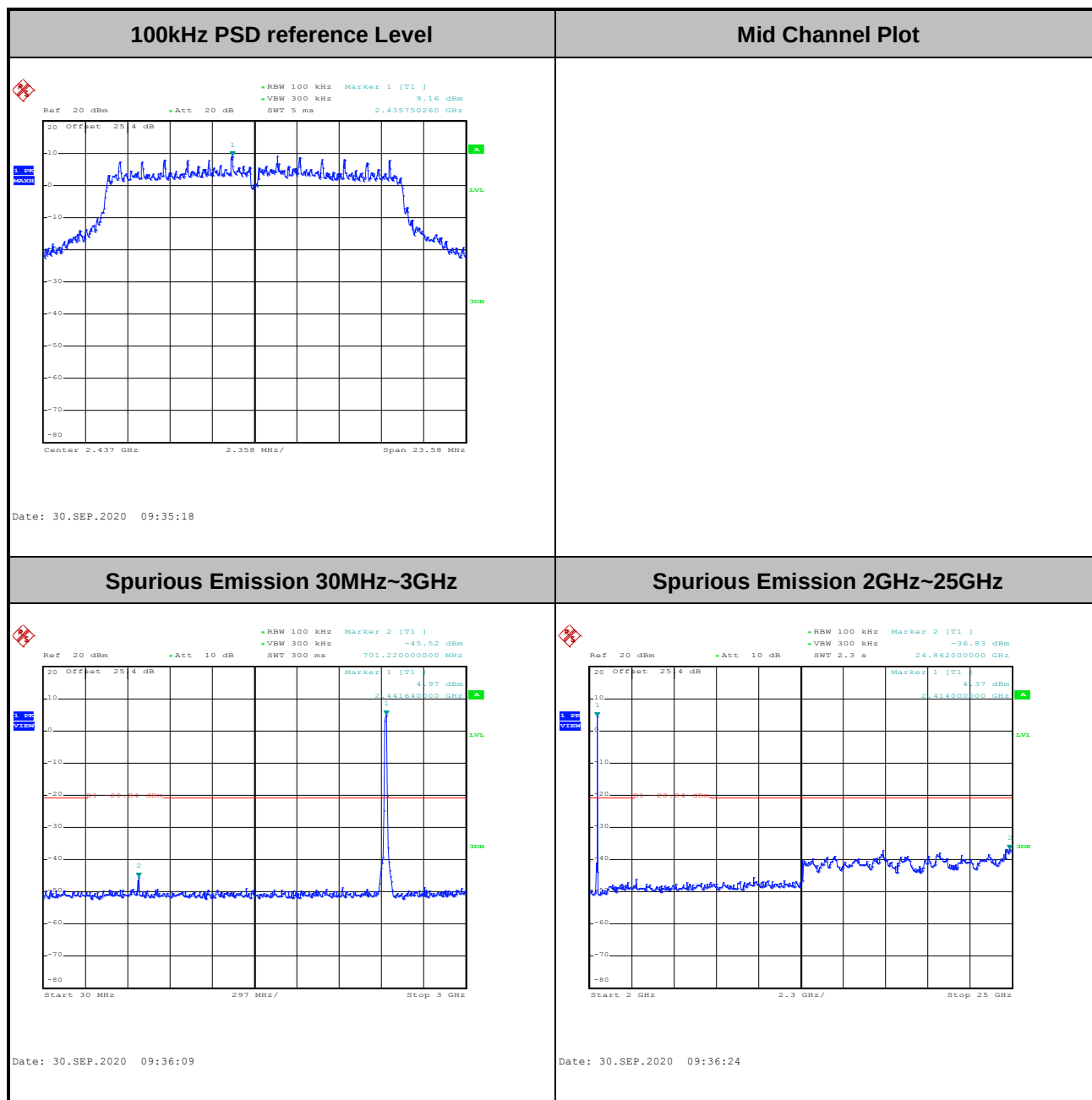


Test Mode :	802.11g	Test Channel :	01
-------------	---------	----------------	----





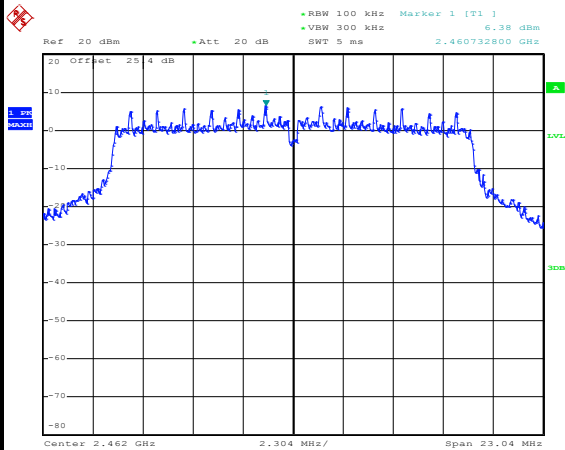
Test Mode :	802.11g	Test Channel :	06
-------------	---------	----------------	----





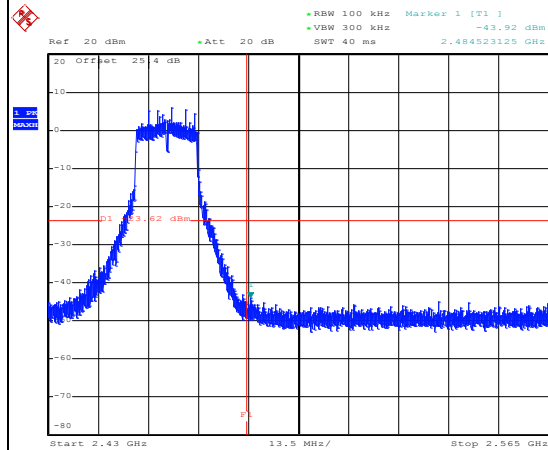
Test Mode :	802.11g	Test Channel :	11
-------------	---------	----------------	----

100kHz PSD reference Level



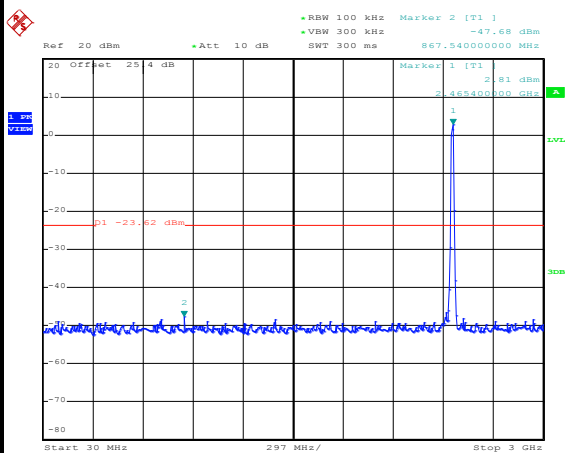
Date: 30.SEP.2020 09:54:48

High Channel Plot



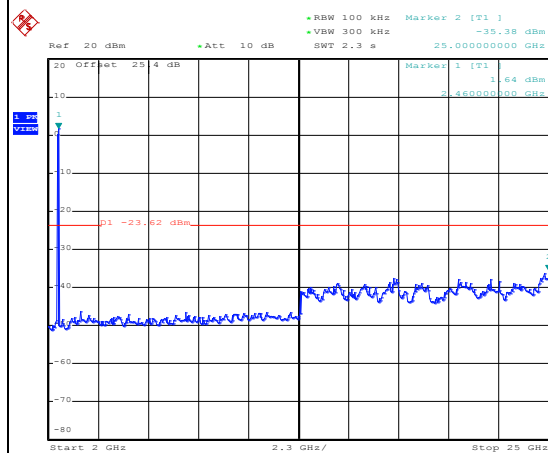
Date: 30.SEP.2020 09:55:39

Spurious Emission 30MHz~3GHz



Date: 30.SEP.2020 09:57:37

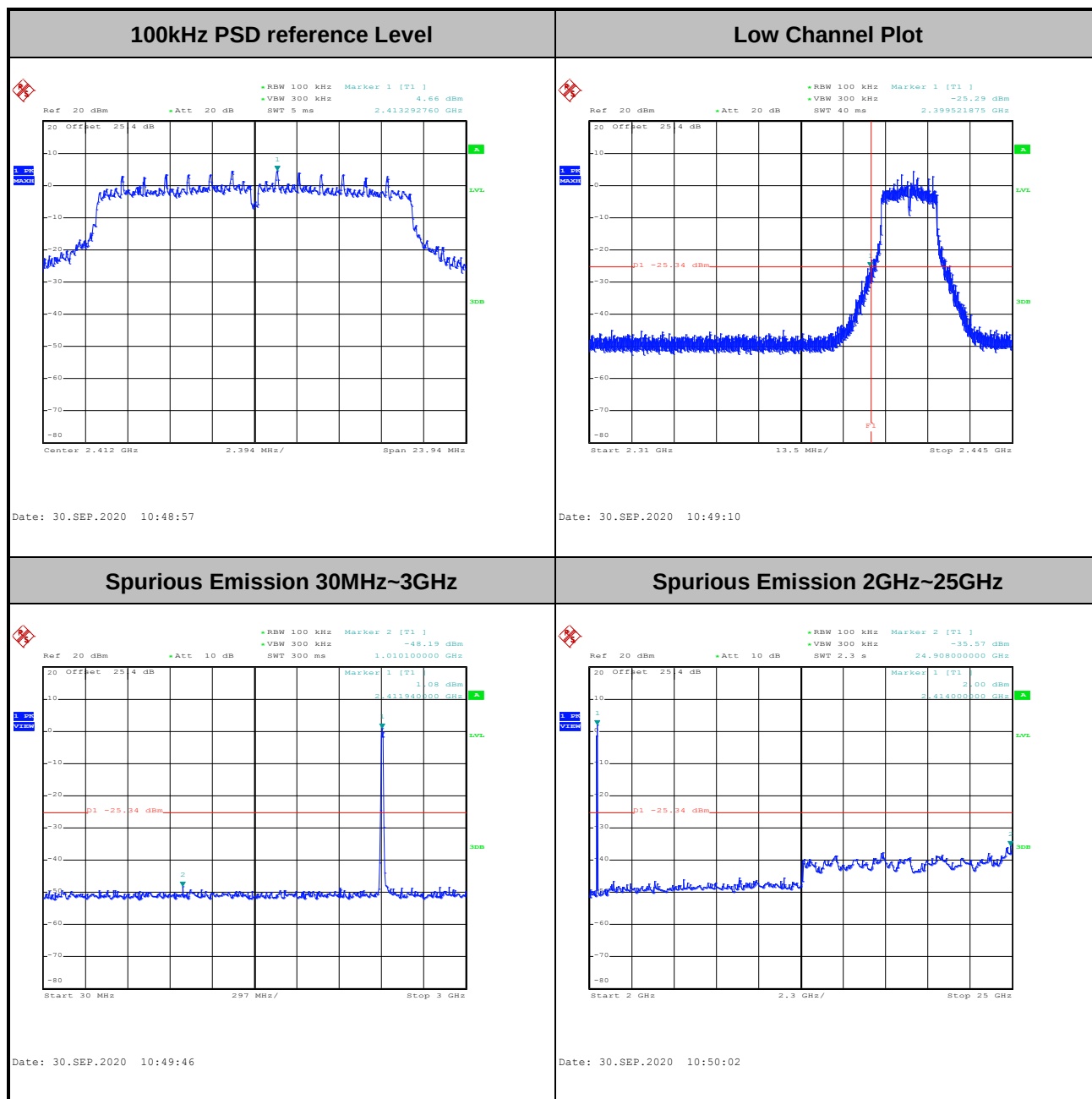
Spurious Emission 2GHz~25GHz



Date: 30.SEP.2020 09:57:53

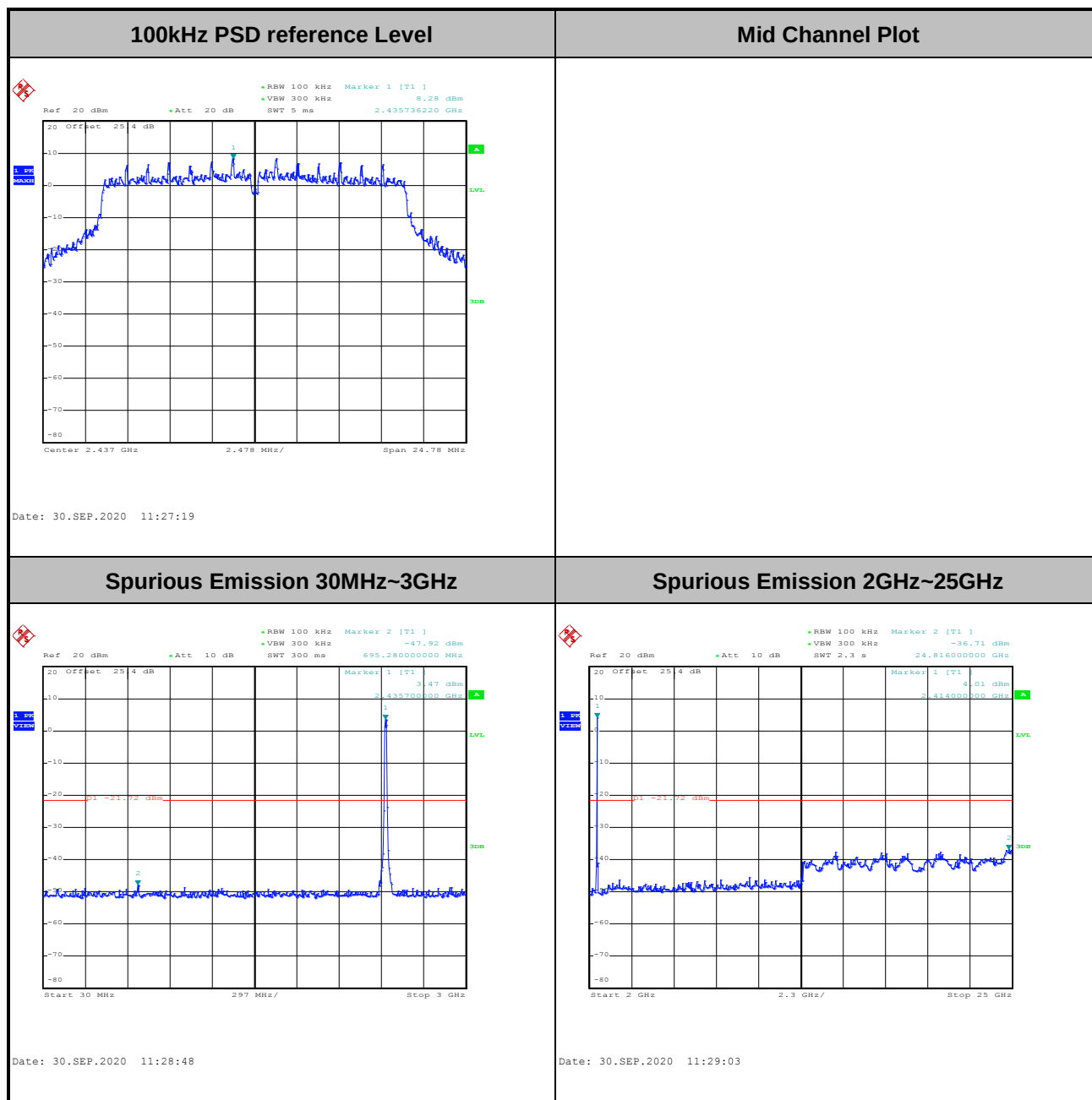


Test Mode :	802.11ac VHT20	Test Channel :	01
-------------	----------------	----------------	----



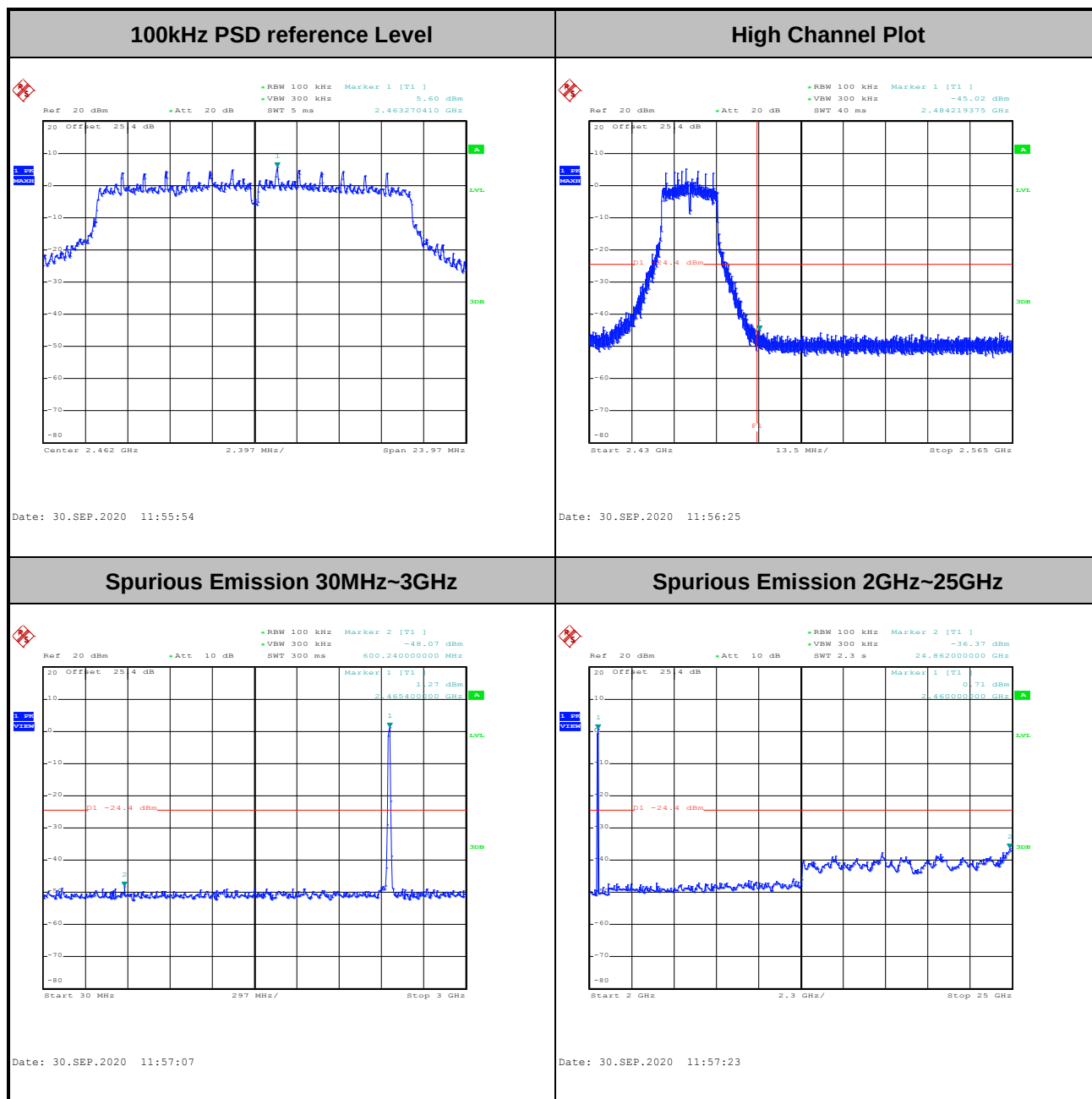


Test Mode :	802.11ac VHT20	Test Channel :	06
-------------	----------------	----------------	----



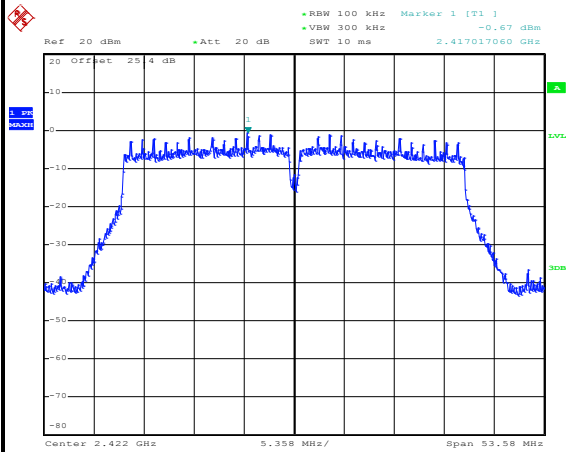


Test Mode :	802.11ac VHT20	Test Channel :	11
-------------	----------------	----------------	----



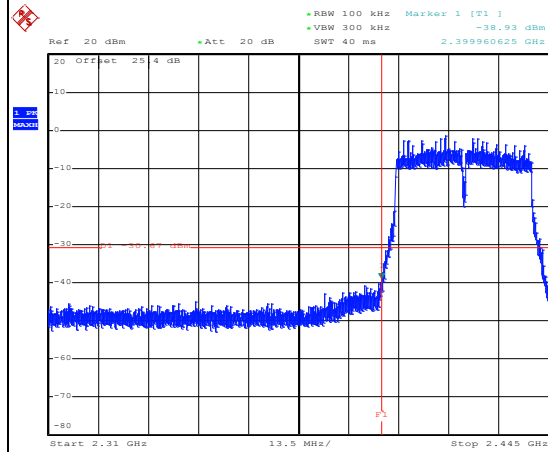
Test Mode :	802.11ac VHT40	Test Channel :	03
--------------------	----------------	-----------------------	----

100kHz PSD reference Level



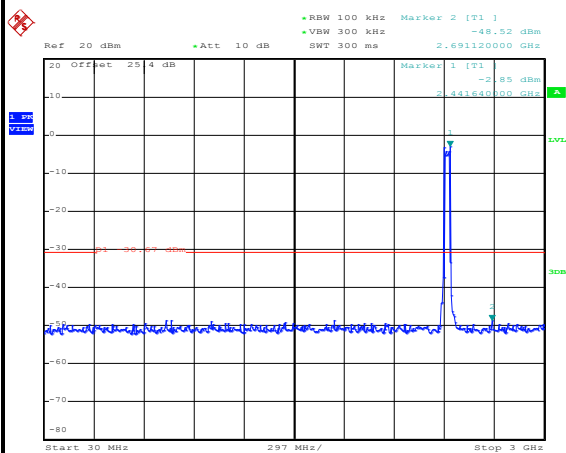
Date: 30.SEP.2020 14:17:34

Low Channel Plot



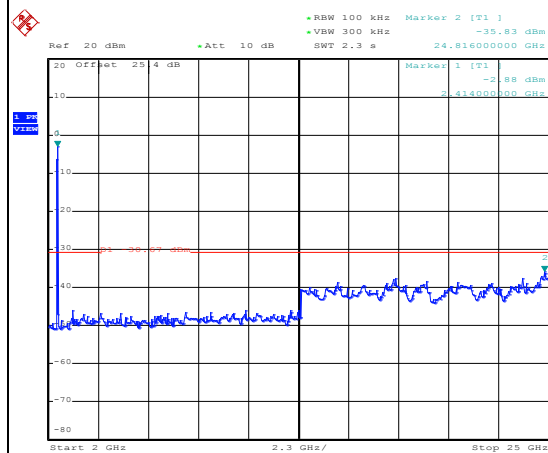
Date: 30.SEP.2020 14:17:49

Spurious Emission 30MHz~3GHz



Date: 30.SEP.2020 14:18:22

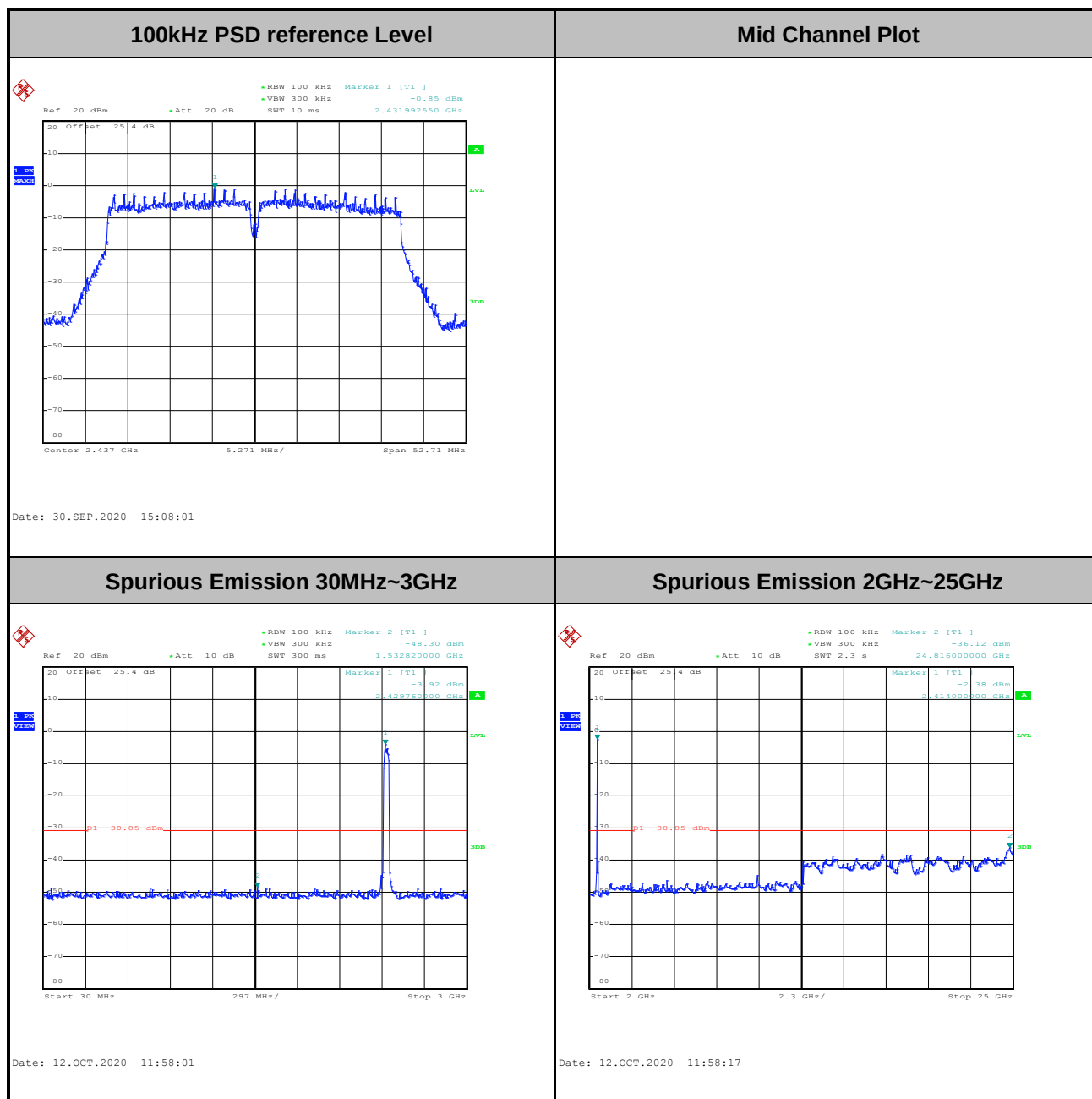
Spurious Emission 2GHz~25GHz

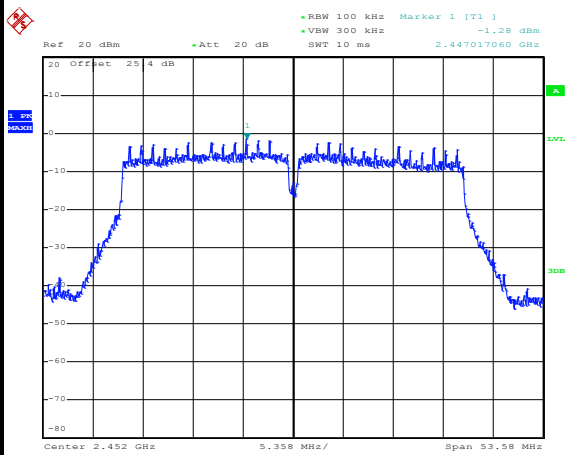


Date: 30.SEP.2020 14:18:37



Test Mode :	802.11ac VHT40	Test Channel :	06
-------------	----------------	----------------	----





Ref 20 dBm +Att 20 dB

•RBW 100 kHz Marker 1 [T1] -43.61 dBm
 •VBW 300 kHz
 •SWT 40 ms 2.484489375 GHz

Start 2.43 GHz 13.5 MHz/ Stop 2.565 GHz

Ref 20 dBm Att 10 dB SWT 300 ms 2.548560000 GHz

20 Offset 25.4 dB

Marker 1 [T1] -4.38 dBm 2.547580000 GHz

Start 30 MHz 2.57 MHz/ Stop 3 GHz

•BW 100 kHz Marker 1 [T1]
 •VBW 300 kHz -35.37 dBm
 •SWT 2.3 s 24.954000000 GHz
 Ref 20 dBm •Att 10 dB
 Marker 2 [T2]
 -35.37 dBm
 24.954000000 GHz
 2.0 GHz 2.3 GHz 2.5 GHz
 -80 -70 -60 -50 -40 -30 -20 -10 0 dBm
 Start 2.0 GHz 2.3 GHz/ Stop 2.5 GHz

Page Number : 40 of 51
Issued Date : Oct. 28, 2020
Report Version : 01



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

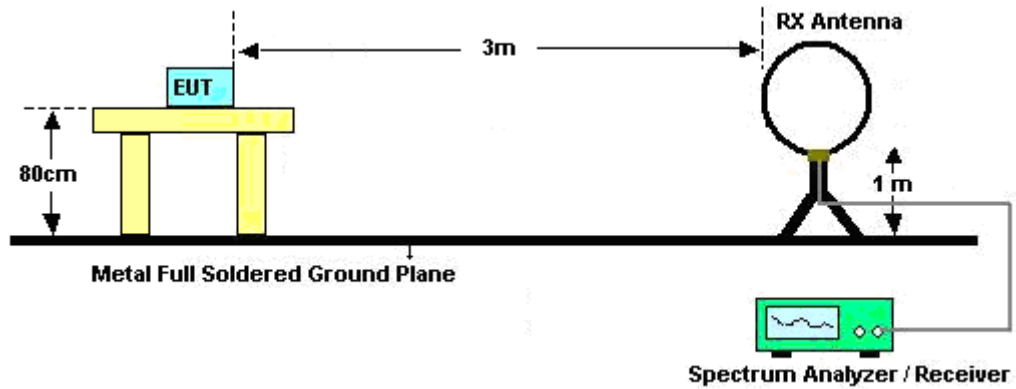
See list of measuring equipment of this test report.

3.5.3 Test Procedures

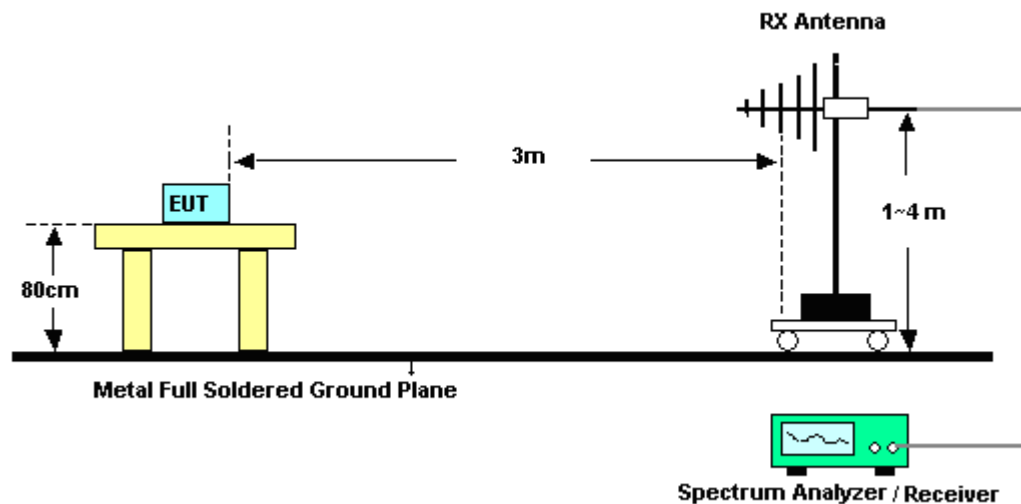
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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

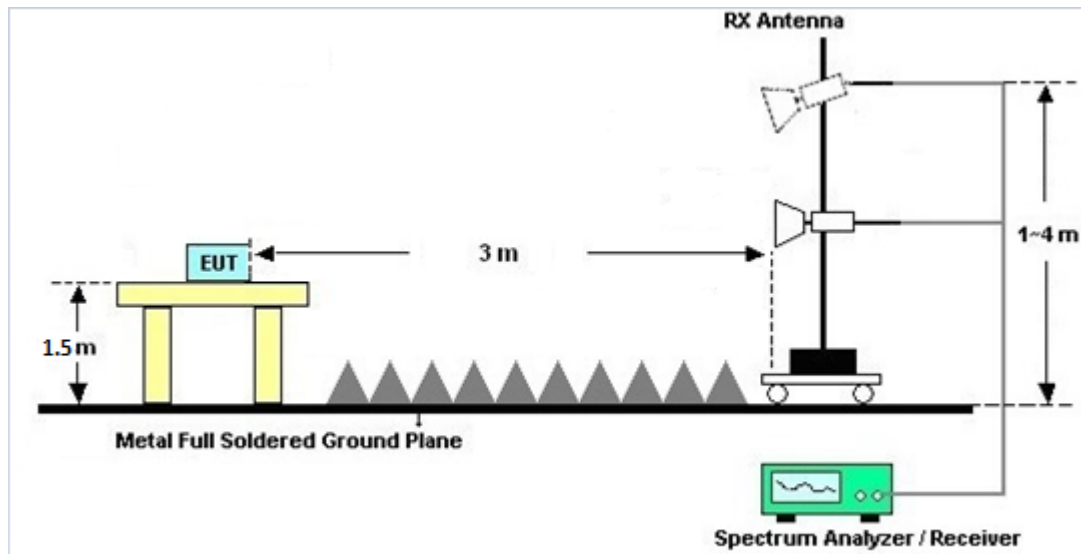
For radiated emissions below 30MHz



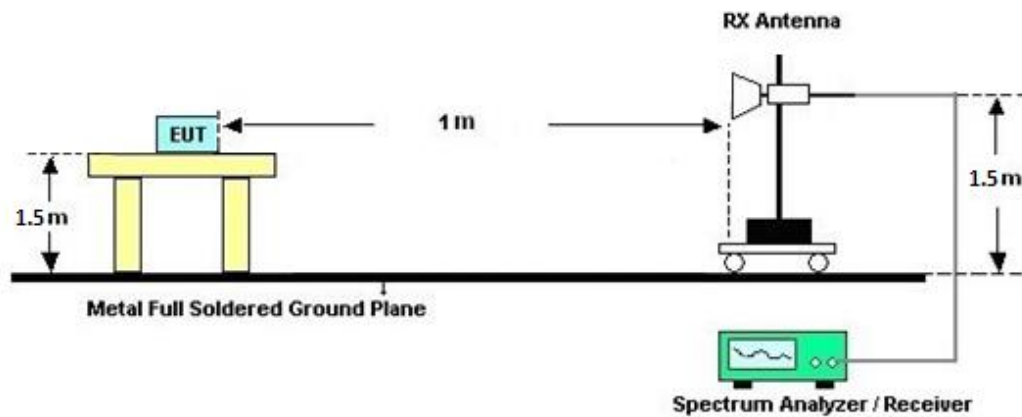
For radiated emissions from 30MHz to 1GHz



For radiated emissions from 1GHz to 18GHz



For radiated emissions above 18GHz



**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.

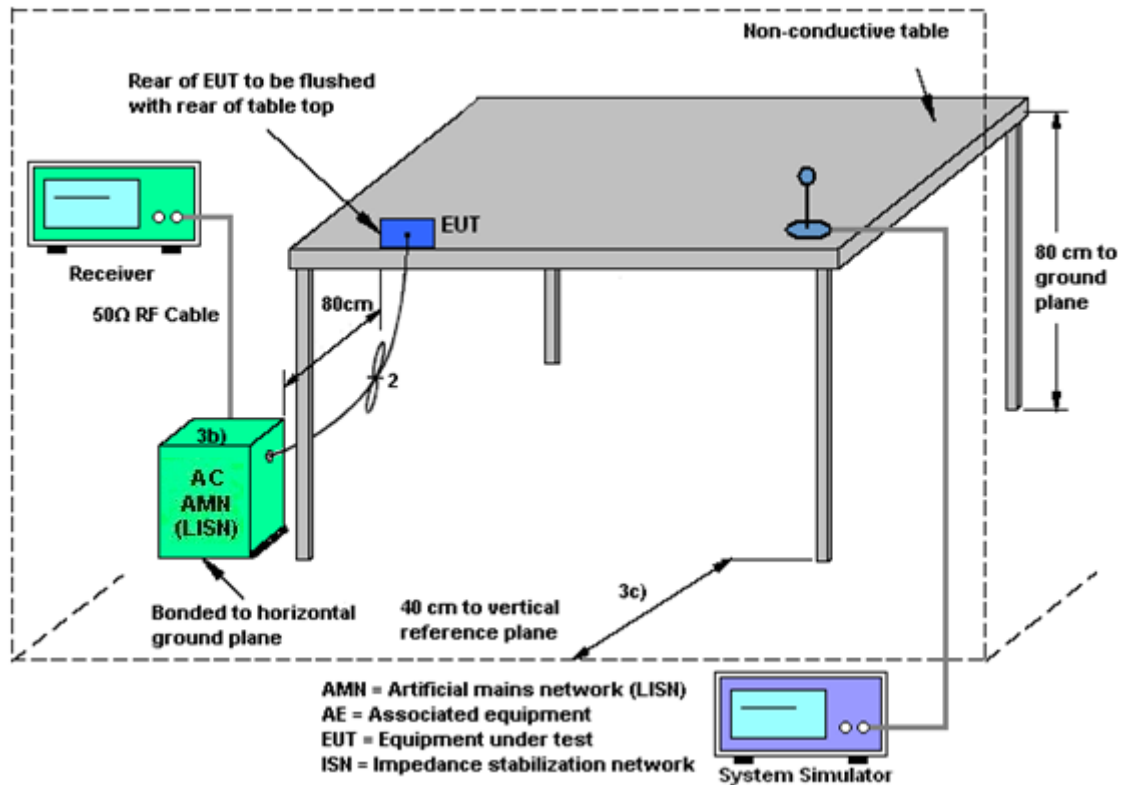
3.6.2 Measuring Instruments

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	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 1	Ant. 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
2.4 GHz	3.10	1.40	3.10	5.30	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	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 09, 2020	Sep. 17, 2020~ Oct. 08, 2020	Jan. 08, 2021	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D& 00800N1D0 1N-06	41912&05	30MHz to 1GHz	Feb. 09, 2020	Sep. 17, 2020~ Oct. 08, 2020	Feb. 08, 2021	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 27, 2019	Sep. 17, 2020~ Oct. 08, 2020	Dec. 26, 2020	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1620	1-18GHz	Oct. 28, 2019	Sep. 17, 2020~ Oct. 08, 2020	Oct. 27, 2020	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Dec. 10, 2019	Sep. 17, 2020~ Oct. 08, 2020	Dec. 09, 2020	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55- 303	171000180005 5006	1GHz~18GHz	May 07, 2020	Sep. 17, 2020~ Oct. 08, 2020	May 06, 2021	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 21, 2020	Sep. 17, 2020~ Oct. 08, 2020	Aug. 20, 2021	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 13, 2019	Sep. 17, 2020~ Oct. 08, 2020	Dec. 12, 2020	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MX E)	MY54130085	20MHz~8.4GHz	Nov. 01, 2019	Sep. 17, 2020~ Oct. 08, 2020	Oct. 31, 2020	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	May 04, 2020	Sep. 17, 2020~ Oct. 08, 2020	May 03, 2021	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Sep. 17, 2020~ Oct. 08, 2020	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Sep. 17, 2020~ Oct. 08, 2020	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24(k5)	RK-000451	N/A	N/A	Sep. 17, 2020~ Oct. 08, 2020	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY36980/4	30M-18G	Apr. 14, 2020	Sep. 17, 2020~ Oct. 08, 2020	Apr. 13, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9838/4PE	30M-18G	Apr. 14, 2020	Sep. 17, 2020~ Oct. 08, 2020	Apr. 13, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY37710/4	30M-18G	Apr. 17, 2020	Sep. 17, 2020~ Oct. 08, 2020	Apr. 16, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz-40GHz	Feb. 25, 2020	Sep. 17, 2020~ Oct. 08, 2020	Feb. 24, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz-40GHz	Feb. 25, 2020	Sep. 17, 2020~ Oct. 08, 2020	Feb. 24, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 12, 2020	Sep. 17, 2020~ Oct. 08, 2020	Mar. 11, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WLK4-1000- 1530-8000-4 OSS	SN4	1.53G Low Pass	Jul. 03, 2020	Sep. 17, 2020~ Oct. 08, 2020	Jul. 02, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WHKX12-27 00-3000-180 00-60ST	SN4	3GHz High Pass Filter	Sep. 16, 2020	Sep. 17, 2020~ Oct. 08, 2020	Sep. 15, 2021	Radiation (03CH15-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H1	34893241	N/A	Mar. 02, 2020	Sep. 10, 2020~ Oct. 12, 2020	Mar. 01, 2021	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054S NO10	10MHz~6GHz	Dec. 23, 2019	Sep. 10, 2020~ Oct. 12, 2020	Dec. 22, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Dec. 30, 2019	Sep. 10, 2020~ Oct. 12, 2020	Dec. 29, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2020	Sep. 10, 2020~ Oct. 12, 2020	Mar. 16, 2021	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Sep. 28, 2020	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 15, 2019	Sep. 28, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 07, 2019	Sep. 28, 2020	Nov. 06, 2020	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 15, 2019	Sep. 28, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Sep. 28, 2020	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 02, 2020	Sep. 28, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 02, 2020	Sep. 28, 2020	Jan. 01, 2021	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3
---	-----

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0
---	-----

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.4
---	-----

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0
---	-----

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Kathy Chen	Temperature:	22.7~24	°C
Test Date:	2020/09/10~2020/10/12	Relative Humidity:	53.5~55	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

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	13.75	13.95	8.52	8.08	0.50	Pass
11b	1Mbps	2	6	2437	14.00	13.95	8.52	9.00	0.50	Pass
11b	1Mbps	2	11	2462	13.50	13.90	8.52	9.00	0.50	Pass
11g	6Mbps	2	1	2412	16.90	16.75	15.68	16.28	0.50	Pass
11g	6Mbps	2	6	2437	16.85	16.65	15.72	15.72	0.50	Pass
11g	6Mbps	2	11	2462	16.65	16.65	15.32	15.36	0.50	Pass
VHT20	MCS0	2	1	2412	17.95	17.90	15.96	15.96	0.50	Pass
VHT20	MCS0	2	6	2437	18.00	17.85	16.36	16.52	0.50	Pass
VHT20	MCS0	2	11	2462	17.80	17.85	15.46	15.98	0.50	Pass
VHT40	MCS0	2	3	2422	36.20	36.60	35.08	35.72	0.50	Pass
VHT40	MCS0	2	6	2437	36.70	36.50	36.24	35.14	0.50	Pass
VHT40	MCS0	2	9	2452	36.40	36.50	35.12	35.72	0.50	Pass

TEST RESULTS DATA
Average Output Power

2.4GHz Band MIMO																
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Average 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	17.30	17.00	20.16	30.00		3.10		23.26		36.00		Pass
11b	1Mbps	2	6	2437	17.40	17.30	20.36	30.00		3.10		23.46		36.00		Pass
11b	1Mbps	2	11	2462	16.60	16.80	19.71	30.00		3.10		22.81		36.00		Pass
11g	6Mbps	2	1	2412	15.90	16.00	18.96	30.00		3.10		22.06		36.00		Pass
11g	6Mbps	2	6	2437	19.10	19.40	22.26	30.00		3.10		25.36		36.00		Pass
11g	6Mbps	2	11	2462	17.00	16.90	19.96	30.00		3.10		23.06		36.00		Pass
HT20	MCS0	2	1	2412	14.60	14.80	17.71	30.00		3.10		20.81		36.00		Pass
HT20	MCS0	2	6	2437	17.80	17.90	20.86	30.00		3.10		23.96		36.00		Pass
HT20	MCS0	2	11	2462	15.80	15.70	18.76	30.00		3.10		21.86		36.00		Pass
HT40	MCS0	2	3	2422	12.60	12.80	15.71	30.00		3.10		18.81		36.00		Pass
HT40	MCS0	2	6	2437	12.90	12.80	15.86	30.00		3.10		18.96		36.00		Pass
HT40	MCS0	2	9	2452	11.80	11.90	14.86	30.00		3.10		17.96		36.00		Pass
VHT20	MCS0	2	1	2412	14.70	14.90	17.81	30.00		3.10		20.91		36.00		Pass
VHT20	MCS0	2	6	2437	18.20	18.40	21.31	30.00		3.10		24.41		36.00		Pass
VHT20	MCS0	2	11	2462	15.90	15.80	18.86	30.00		3.10		21.96		36.00		Pass
VHT40	MCS0	2	3	2422	12.70	12.90	15.81	30.00		3.10		18.91		36.00		Pass
VHT40	MCS0	2	6	2437	13.00	12.90	15.96	30.00		3.10		19.06		36.00		Pass
VHT40	MCS0	2	9	2452	11.90	12.00	14.96	30.00		3.10		18.06		36.00		Pass

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

TEST RESULTS DATA
Peak Power Spectral Density

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	-5.64	-5.90	-2.63	5.30		8.00		Pass
11b	1Mbps	2	6	2437	-5.87	-5.67	-2.66	5.30		8.00		Pass
11b	1Mbps	2	11	2462	-6.19	-5.93	-2.92	5.30		8.00		Pass
11g	6Mbps	2	1	2412	-9.31	-9.32	-6.30	5.30		8.00		Pass
11g	6Mbps	2	6	2437	-6.73	-6.14	-3.13	5.30		8.00		Pass
11g	6Mbps	2	11	2462	-8.55	-8.80	-5.54	5.30		8.00		Pass
VHT20	MCS0	2	1	2412	-11.52	-11.49	-8.48	5.30		8.00		Pass
VHT20	MCS0	2	6	2437	-7.70	-8.13	-4.69	5.30		8.00		Pass
VHT20	MCS0	2	11	2462	-10.56	-10.79	-7.55	5.30		8.00		Pass
VHT40	MCS0	2	3	2422	-16.68	-16.43	-13.42	5.30		8.00		Pass
VHT40	MCS0	2	6	2437	-16.19	-16.20	-13.18	5.30		8.00		Pass
VHT40	MCS0	2	9	2452	-17.50	-17.39	-14.38	5.30		8.00		Pass

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



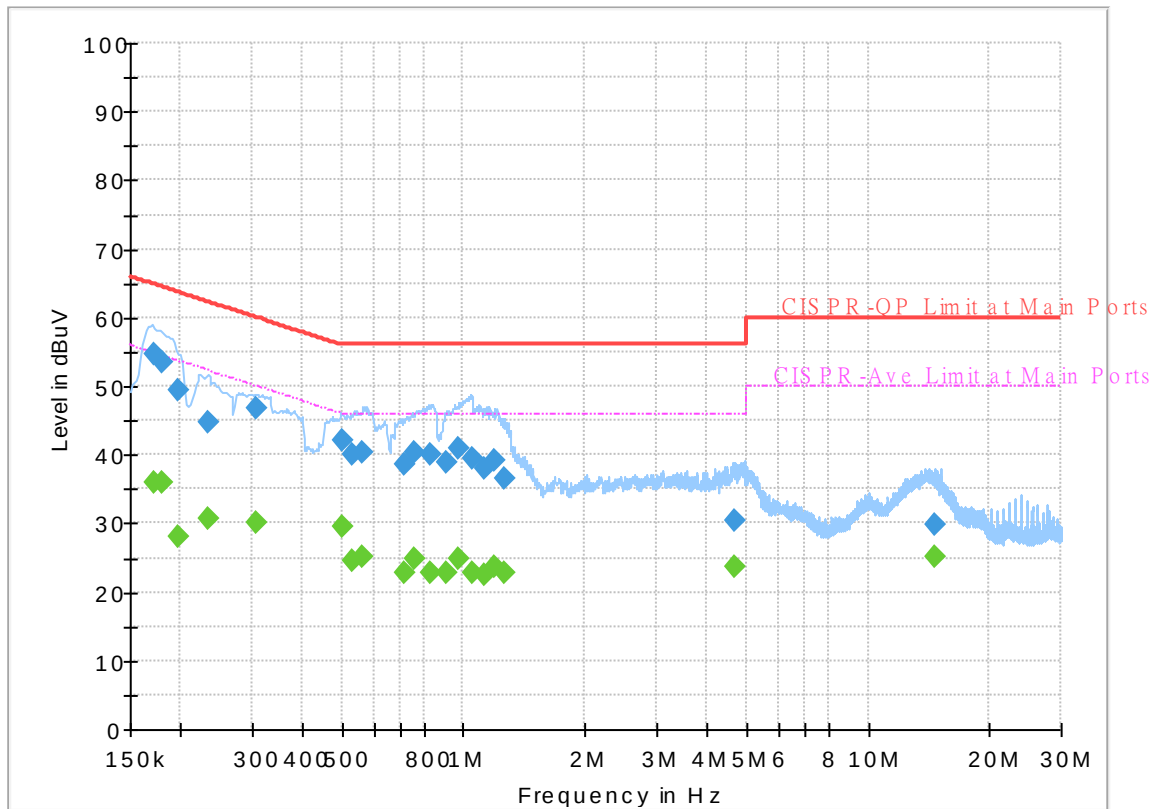
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Tom Lee	Temperature :	24~26℃
		Relative Humidity :	42~50%

EUT Information

Report NO : 081931
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



Final Result

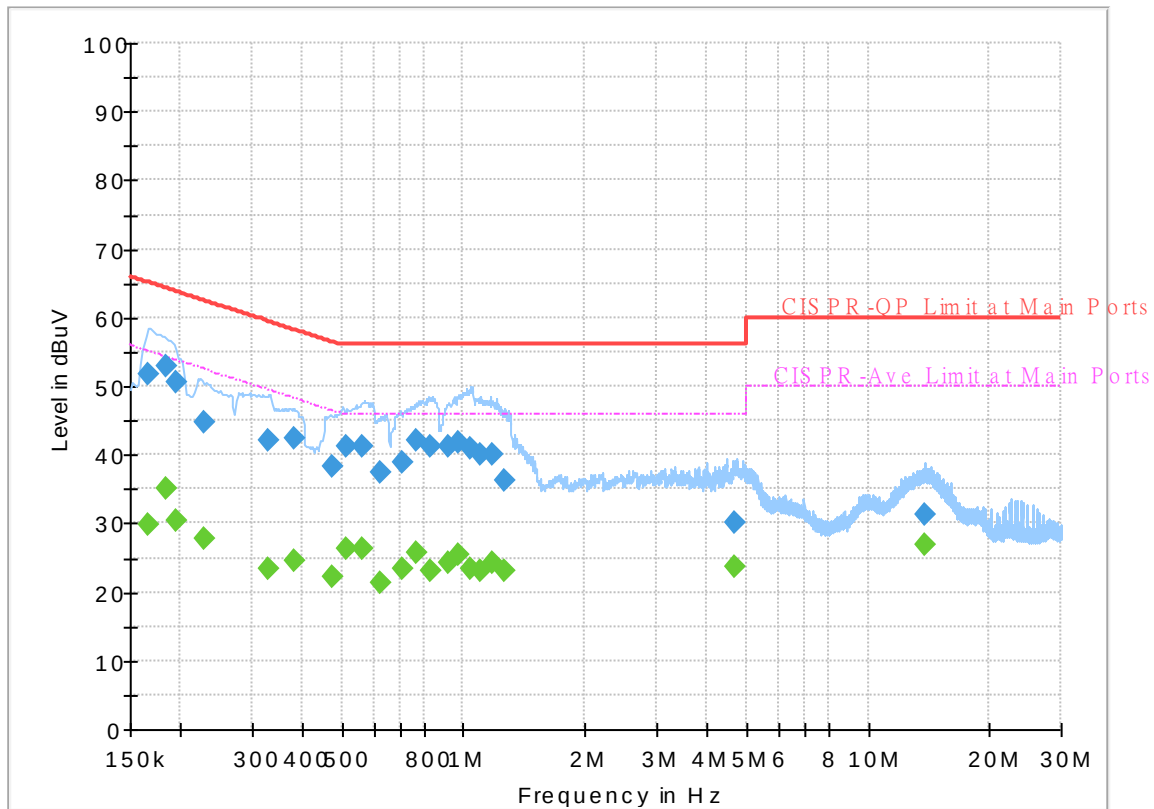
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.171600	54.70	---	64.88	10.18	L1	OFF	19.6
0.171600	---	35.82	54.88	19.06	L1	OFF	19.6
0.181000	53.59	---	64.44	10.85	L1	OFF	19.6
0.181000	---	35.97	54.44	18.47	L1	OFF	19.6
0.197250	49.46	---	63.73	14.27	L1	OFF	19.6
0.197250	---	28.20	53.73	25.53	L1	OFF	19.6
0.234240	44.79	---	62.30	17.51	L1	OFF	19.6
0.234240	---	30.82	52.30	21.48	L1	OFF	19.6
0.307500	46.71	---	60.04	13.33	L1	OFF	19.6
0.307500	---	30.25	50.04	19.79	L1	OFF	19.6
0.501000	42.21	---	56.00	13.79	L1	OFF	19.6
0.501000	---	29.47	46.00	16.53	L1	OFF	19.6
0.530250	40.16	---	56.00	15.84	L1	OFF	19.6
0.530250	---	24.44	46.00	21.56	L1	OFF	19.6
0.560490	40.46	---	56.00	15.54	L1	OFF	19.6
0.560490	---	25.02	46.00	20.98	L1	OFF	19.6
0.714480	38.48	---	56.00	17.52	L1	OFF	19.6
0.714480	---	22.77	46.00	23.23	L1	OFF	19.6
0.759390	40.44	---	56.00	15.56	L1	OFF	19.6
0.759390	---	24.91	46.00	21.09	L1	OFF	19.6
0.831750	39.97	---	56.00	16.03	L1	OFF	19.6

0.831750	---	22.80	46.00	23.20	L1	OFF	19.6
0.906000	38.85	---	56.00	17.15	L1	OFF	19.6
0.906000	---	22.77	46.00	23.23	L1	OFF	19.6
0.971700	40.89	---	56.00	15.11	L1	OFF	19.6
0.971700	---	24.99	46.00	21.01	L1	OFF	19.6
1.050000	39.59	---	56.00	16.41	L1	OFF	19.6
1.050000	---	22.77	46.00	23.23	L1	OFF	19.6
1.121550	37.92	---	56.00	18.08	L1	OFF	19.6
1.121550	---	22.42	46.00	23.58	L1	OFF	19.6
1.192830	39.28	---	56.00	16.72	L1	OFF	19.6
1.192830	---	23.82	46.00	22.18	L1	OFF	19.6
1.261500	36.60	---	56.00	19.40	L1	OFF	19.6
1.261500	---	22.91	46.00	23.09	L1	OFF	19.6
4.695090	30.29	---	56.00	25.71	L1	OFF	19.7
4.695090	---	23.67	46.00	22.33	L1	OFF	19.7
14.559180	29.91	---	60.00	30.09	L1	OFF	20.0
14.559180	---	25.17	50.00	24.83	L1	OFF	20.0

EUT Information

Report NO : 081931
 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)
0.165570	---	29.91	55.18	25.27	N	OFF	19.6
0.165570	51.76	---	65.18	13.42	N	OFF	19.6
0.183750	---	35.23	54.31	19.08	N	OFF	19.6
0.183750	52.85	---	64.31	11.46	N	OFF	19.6
0.195490	---	30.49	53.80	23.31	N	OFF	19.6
0.195490	50.68	---	63.80	13.12	N	OFF	19.6
0.228750	---	27.76	52.50	24.74	N	OFF	19.6
0.228750	44.64	---	62.50	17.86	N	OFF	19.6
0.329640	---	23.39	49.46	26.07	N	OFF	19.6
0.329640	41.98	---	59.46	17.48	N	OFF	19.6
0.381750	---	24.59	48.24	23.65	N	OFF	19.6
0.381750	42.27	---	58.24	15.97	N	OFF	19.6
0.476250	---	22.35	46.40	24.05	N	OFF	19.6
0.476250	38.42	---	56.40	17.98	N	OFF	19.6
0.515040	---	26.26	46.00	19.74	N	OFF	19.6
0.515040	41.18	---	56.00	14.82	N	OFF	19.6
0.564000	---	26.31	46.00	19.69	N	OFF	19.6
0.564000	41.35	---	56.00	14.65	N	OFF	19.6
0.622770	---	21.21	46.00	24.79	N	OFF	19.6
0.622770	37.51	---	56.00	18.49	N	OFF	19.6
0.703950	---	23.45	46.00	22.55	N	OFF	19.6

0.703950	38.96	---	56.00	17.04	N	OFF	19.6
0.767490	---	25.75	46.00	20.25	N	OFF	19.6
0.767490	42.02	---	56.00	13.98	N	OFF	19.6
0.827250	---	23.11	46.00	22.89	N	OFF	19.6
0.827250	41.22	---	56.00	14.78	N	OFF	19.6
0.919500	---	24.19	46.00	21.81	N	OFF	19.6
0.919500	41.26	---	56.00	14.74	N	OFF	19.6
0.969000	---	25.45	46.00	20.55	N	OFF	19.6
0.969000	41.90	---	56.00	14.10	N	OFF	19.6
1.043250	---	23.48	46.00	22.52	N	OFF	19.6
1.043250	41.03	---	56.00	14.97	N	OFF	19.6
1.103100	---	23.09	46.00	22.91	N	OFF	19.6
1.103100	39.93	---	56.00	16.07	N	OFF	19.6
1.182210	---	24.25	46.00	21.75	N	OFF	19.6
1.182210	39.94	---	56.00	16.06	N	OFF	19.6
1.264110	---	22.98	46.00	23.02	N	OFF	19.6
1.264110	36.14	---	56.00	19.86	N	OFF	19.6
4.695000	---	23.82	46.00	22.18	N	OFF	19.8
4.695000	30.13	---	56.00	25.87	N	OFF	19.8
13.799850	---	26.79	50.00	23.21	N	OFF	20.1
13.799850	31.37	---	60.00	28.63	N	OFF	20.1



Appendix C. Radiated Spurious Emission

Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	22.1~23.2°C
		Relative Humidity :	45~59%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preampl Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2319.765	56.5	-17.5	74	42.18	28.06	17.21	30.95	286	319	P	H
		2386.125	45.61	-8.39	54	31.41	27.78	17.34	30.92	286	319	A	H
	*	2412	106.17	-	-	92.01	27.68	17.39	30.91	286	319	P	H
	*	2412	103.82	-	-	89.66	27.68	17.39	30.91	286	319	A	H
													H
													H
		2386.65	56.63	-17.37	74	42.43	27.78	17.34	30.92	385	26	P	V
		2390	45.09	-8.91	54	30.9	27.76	17.35	30.92	385	26	A	V
	*	2412	108.48	-	-	94.32	27.68	17.39	30.91	385	26	P	V
	*	2412	105.29	-	-	91.13	27.68	17.39	30.91	385	26	A	V
													V
													V
802.11b CH 06 2437MHz		2326.48	56.62	-17.38	74	42.29	28.05	17.22	30.94	204	208	P	H
		2389.52	45.52	-8.48	54	31.33	27.76	17.35	30.92	204	208	A	H
	*	2437	110.91	-	-	96.75	27.63	17.43	30.9	204	208	P	H
	*	2437	107.71	-	-	93.55	27.63	17.43	30.9	204	208	A	H
		2494.96	57.06	-16.94	74	42.88	27.51	17.54	30.87	204	208	P	H
		2483.62	45.33	-8.67	54	31.16	27.53	17.52	30.88	204	208	A	H
		2331.44	56.94	-17.06	74	42.61	28.04	17.23	30.94	393	217	P	V
		2388.56	45.05	-8.95	54	30.86	27.77	17.34	30.92	393	217	A	V
	*	2437	109.43	-	-	95.27	27.63	17.43	30.9	393	217	P	V
	*	2437	106.48	-	-	92.32	27.63	17.43	30.9	393	217	A	V
		2483.98	55.71	-18.29	74	41.54	27.53	17.52	30.88	393	217	P	V
		2483.89	45.16	-8.84	54	30.99	27.53	17.52	30.88	393	217	A	V



802.11b CH 11 2462MHz	*	2462	107.34	-	-	93.17	27.58	17.48	30.89	228	212	P	H
	*	2462	104.06	-	-	89.89	27.58	17.48	30.89	228	212	A	H
		2487.48	55.91	-18.09	74	41.74	27.53	17.52	30.88	228	212	P	H
		2486.68	45.29	-8.71	54	31.12	27.53	17.52	30.88	228	212	A	H
													H
													H
	*	2462	109.3	-	-	95.13	27.58	17.48	30.89	392	218	P	V
	*	2462	106.17	-	-	92	27.58	17.48	30.89	392	218	A	V
		2488.24	56.51	-17.49	74	42.33	27.52	17.53	30.87	392	218	P	V
		2486.56	45.3	-8.7	54	31.13	27.53	17.52	30.88	392	218	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	47.51	-26.49	74	64.74	31.25	10.61	59.09	100	146	P	H
		4824	44.77	-9.23	54	62	31.25	10.61	59.09	100	146	A	H
													H
													H
		4824	54.72	-19.28	74	71.95	31.25	10.61	59.09	100	118	P	V
		4824	52.88	-1.12	54	70.11	31.25	10.61	59.09	100	118	A	V
													V
													V
802.11b CH 06 2437MHz		4874	49.65	-24.35	74	66.9	31.25	10.62	59.12	100	140	P	H
		4874	46.91	-7.09	54	64.16	31.25	10.62	59.12	100	140	A	H
		7311	45.89	-28.11	74	55.34	36.52	12.59	58.56	100	140	P	H
													H
		4874	54.42	-19.58	74	71.67	31.25	10.62	59.12	100	122	P	V
		4874	52.85	-1.15	54	70.1	31.25	10.62	59.12	100	122	A	V
		7311	44.79	-29.21	74	54.24	36.52	12.59	58.56	100	0	P	V
													V
802.11b CH 11 2462MHz		4924	51.41	-22.59	74	68.6	31.34	10.62	59.15	100	149	P	H
		4924	49.1	-4.9	54	66.29	31.34	10.62	59.15	100	149	A	H
		7386	45.14	-28.86	74	54.43	36.46	12.71	58.46	100	0	P	H
													H
		4924	54.43	-19.57	74	71.62	31.34	10.62	59.15	288	232	P	V
		4924	52.48	-1.52	54	69.67	31.34	10.62	59.15	288	232	A	V
		7386	45.27	-28.73	74	54.56	36.46	12.71	58.46	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		2388.96	60.95	-13.05	74	46.75	27.77	17.35	30.92	231	205	P	H
		2390	50.97	-3.03	54	36.78	27.76	17.35	30.92	231	205	A	H
	*	2412	112.21	-	-	98.05	27.68	17.39	30.91	231	205	P	H
	*	2412	104.46	-	-	90.3	27.68	17.39	30.91	231	205	A	H
													H
													H
		2389.59	57.95	-16.05	74	43.76	27.76	17.35	30.92	359	221	P	V
		2390	48.34	-5.66	54	34.15	27.76	17.35	30.92	359	221	A	V
	*	2412	109.68	-	-	95.52	27.68	17.39	30.91	359	221	P	V
	*	2412	102.24	-	-	88.08	27.68	17.39	30.91	359	221	A	V
													V
													V
802.11g CH 06 2437MHz		2389.68	59.4	-14.6	74	45.21	27.76	17.35	30.92	150	212	P	H
		2390	48.94	-5.06	54	34.75	27.76	17.35	30.92	150	212	A	H
	*	2437	113.81	-	-	99.65	27.63	17.43	30.9	150	212	P	H
	*	2437	106.27	-	-	92.11	27.63	17.43	30.9	150	212	A	H
		2483.8	58.64	-15.36	74	44.47	27.53	17.52	30.88	150	212	P	H
		2483.53	48.19	-5.81	54	34.02	27.53	17.52	30.88	150	212	A	H
		2388.56	57.64	-16.36	74	43.45	27.77	17.34	30.92	400	221	P	V
		2390	47.81	-6.19	54	33.62	27.76	17.35	30.92	400	221	A	V
	*	2437	114.81	-	-	100.65	27.63	17.43	30.9	400	221	P	V
	*	2437	107.15	-	-	92.99	27.63	17.43	30.9	400	221	A	V
		2483.71	58.46	-15.54	74	44.29	27.53	17.52	30.88	400	221	P	V
		2483.53	47.63	-6.37	54	33.46	27.53	17.52	30.88	400	221	A	V



802.11g CH 11 2462MHz	*	2462	113.15	-	-	98.98	27.58	17.48	30.89	199	214	P	H
	*	2462	105.55	-	-	91.38	27.58	17.48	30.89	199	214	A	H
		2483.52	64.9	-9.1	74	50.73	27.53	17.52	30.88	199	214	P	H
		2483.52	52.12	-1.88	54	37.95	27.53	17.52	30.88	199	214	A	H
													H
													H
	*	2462	112.49	-	-	98.32	27.58	17.48	30.89	384	218	P	V
	*	2462	104.78	-	-	90.61	27.58	17.48	30.89	384	218	A	V
		2483.6	63.34	-10.66	74	49.17	27.53	17.52	30.88	384	218	P	V
		2483.52	50.75	-3.25	54	36.58	27.53	17.52	30.88	384	218	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 802.11g (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	42.55	-31.45	74	59.78	31.25	10.61	59.09	100	0	P	H
													H
													H
													H
		4824	46.73	-27.27	74	63.96	31.25	10.61	59.09	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4874	48.17	-25.83	74	65.42	31.25	10.62	59.12	100	0	P	H
		7311	45.34	-28.66	74	54.79	36.52	12.59	58.56	100	0	P	H
													H
													H
		4874	52.74	-21.26	74	69.99	31.25	10.62	59.12	100	127	P	V
		4874	43.1	-10.9	54	60.35	31.25	10.62	59.12	100	127	A	V
		7311	45.29	-28.71	74	54.74	36.52	12.59	58.56	100	0	P	V
													V
802.11g CH 11 2462MHz		4924	46.12	-27.88	74	63.31	31.34	10.62	59.15	100	0	P	H
		7386	45.2	-28.8	74	54.49	36.46	12.71	58.46	100	0	P	H
													H
													H
		4924	48.55	-25.45	74	65.74	31.34	10.62	59.15	100	0	P	V
		7386	45.65	-28.35	74	54.94	36.46	12.71	58.46	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 802.11ac VHT20 (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)
802.11ac VHT20 CH 01 2412MHz		2390	63.04	-10.96	74	48.85	27.76	17.35	30.92	227	211	P	H
		2390	51.89	-2.11	54	37.7	27.76	17.35	30.92	227	211	A	H
	*	2412	110.42	-	-	96.26	27.68	17.39	30.91	227	211	P	H
	*	2412	102.76	-	-	88.6	27.68	17.39	30.91	227	211	A	H
													H
													H
		2389.59	59.37	-14.63	74	45.18	27.76	17.35	30.92	400	217	P	V
		2390	49.59	-4.41	54	35.4	27.76	17.35	30.92	400	217	A	V
	*	2412	109.13	-	-	94.97	27.68	17.39	30.91	400	217	P	V
	*	2412	101.04	-	-	86.88	27.68	17.39	30.91	400	217	A	V
													V
													V
802.11ac VHT20 CH 06 2437MHz		2389.2	57.95	-16.05	74	43.76	27.76	17.35	30.92	150	208	P	H
		2390	48.37	-5.63	54	34.18	27.76	17.35	30.92	150	208	A	H
	*	2437	113.28	-	-	99.12	27.63	17.43	30.9	150	208	P	H
	*	2437	105.3	-	-	91.14	27.63	17.43	30.9	150	208	A	H
		2484.16	58.1	-15.9	74	43.93	27.53	17.52	30.88	150	208	P	H
		2484.16	48.24	-5.76	54	34.07	27.53	17.52	30.88	150	208	A	H
		2388.56	56.74	-17.26	74	42.55	27.77	17.34	30.92	391	219	P	V
		2389.36	47.64	-6.36	54	33.45	27.76	17.35	30.92	391	219	A	V
	*	2437	113.55	-	-	99.39	27.63	17.43	30.9	391	219	P	V
	*	2437	105.18	-	-	91.02	27.63	17.43	30.9	391	219	A	V
		2484.16	57.45	-16.55	74	43.28	27.53	17.52	30.88	391	219	P	V
		2483.53	47.66	-6.34	54	33.49	27.53	17.52	30.88	391	219	A	V



802.11ac VHT20 CH 11 2462MHz	*	2462	110.58	-	-	96.41	27.58	17.48	30.89	227	211	P	H
	*	2462	102.88	-	-	88.71	27.58	17.48	30.89	227	211	A	H
		2484.4	63.11	-10.89	74	48.94	27.53	17.52	30.88	227	211	P	H
		2483.52	52.62	-1.38	54	38.45	27.53	17.52	30.88	227	211	A	H
													H
													H
	*	2462	110.17	-	-	96.01	27.58	17.47	30.89	393	220	P	V
	*	2462	102.24	-	-	88.08	27.58	17.47	30.89	393	220	A	V
		2484.16	61.61	-12.39	74	47.44	27.53	17.52	30.88	393	220	P	V
		2483.52	49.19	-4.81	54	35.02	27.53	17.52	30.88	393	220	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 802.11ac VHT20 (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)
802.11ac VHT20 CH 01 2412MHz		4824	43.29	-30.71	74	60.52	31.25	10.61	59.09	100	0	P	H
													H
													H
													H
		4824	45.5	-28.5	74	62.73	31.25	10.61	59.09	100	0	P	V
													V
													V
802.11ac VHT20 CH 06 2437MHz		4874	47.07	-26.93	74	64.32	31.25	10.62	59.12	100	0	P	H
		7311	44.99	-29.01	74	54.44	36.52	12.59	58.56	100	0	P	H
													H
													H
		4874	49.75	-24.25	74	67	31.25	10.62	59.12	100	0	P	V
		7311	45.16	-28.84	74	54.61	36.52	12.59	58.56	100	0	P	V
													V
802.11ac VHT20 CH 11 2462MHz		4924	46.72	-27.28	74	63.91	31.34	10.62	59.15	100	0	P	H
		7386	44.71	-29.29	74	54	36.46	12.71	58.46	100	0	P	H
													H
													H
		4924	48.28	-25.72	74	65.47	31.34	10.62	59.15	100	0	P	V
		7386	44.98	-29.02	74	54.27	36.46	12.71	58.46	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 802.11ac VHT40 (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)
802.11ac VHT40 CH 03 2422MHz		2390	61.16	-12.84	74	46.97	27.76	17.35	30.92	219	202	P	H
		2389.68	52.44	-1.56	54	38.25	27.76	17.35	30.92	219	202	A	H
	*	2422	106.15	-	-	91.98	27.66	17.41	30.9	219	202	P	H
	*	2422	98.65	-	-	84.48	27.66	17.41	30.9	219	202	A	H
		2498.11	55.88	-18.12	74	41.71	27.5	17.54	30.87	219	202	P	H
		2486.14	46.99	-7.01	54	32.82	27.53	17.52	30.88	219	202	A	H
		2390	59.82	-14.18	74	45.63	27.76	17.35	30.92	400	220	P	V
		2389.36	51.6	-2.4	54	37.41	27.76	17.35	30.92	400	220	A	V
	*	2422	105.5	-	-	91.33	27.66	17.41	30.9	400	220	P	V
	*	2422	97.85	-	-	83.68	27.66	17.41	30.9	400	220	A	V
		2484.79	56.7	-17.3	74	42.53	27.53	17.52	30.88	400	220	P	V
		2485.6	46.86	-7.14	54	32.69	27.53	17.52	30.88	400	220	A	V
802.11ac VHT40 CH 06 2437MHz		2389.68	61.9	-12.1	74	47.71	27.76	17.35	30.92	260	208	P	H
		2389.84	52.06	-1.94	54	37.87	27.76	17.35	30.92	260	208	A	H
	*	2437	106.67	-	-	92.51	27.63	17.43	30.9	260	208	P	H
	*	2437	98.17	-	-	84.01	27.63	17.43	30.9	260	208	A	H
		2483.53	59.56	-14.44	74	45.39	27.53	17.52	30.88	260	208	P	H
		2483.53	51.05	-2.95	54	36.88	27.53	17.52	30.88	260	208	A	H
		2389.68	58.3	-15.7	74	44.11	27.76	17.35	30.92	400	226	P	V
		2390	49.4	-4.6	54	35.21	27.76	17.35	30.92	400	226	A	V
	*	2437	105.28	-	-	91.12	27.63	17.43	30.9	400	226	P	V
	*	2437	97.66	-	-	83.5	27.63	17.43	30.9	400	226	A	V
		2483.71	58.08	-15.92	74	43.91	27.53	17.52	30.88	400	226	P	V
		2483.53	49.59	-4.41	54	35.42	27.53	17.52	30.88	400	226	A	V



802.11ac VHT40 CH 09 2452MHz		2374.96	57.11	-16.89	74	42.86	27.85	17.32	30.92	175	207	P	H
		2389.84	47.4	-6.6	54	33.21	27.76	17.35	30.92	175	207	A	H
	*	2452	106.62	-	-	92.45	27.6	17.46	30.89	175	207	P	H
	*	2452	98.58	-	-	84.41	27.6	17.46	30.89	175	207	A	H
		2484.34	60.73	-13.27	74	46.56	27.53	17.52	30.88	175	207	P	H
		2484.43	52.62	-1.38	54	38.45	27.53	17.52	30.88	175	207	A	H
		2327.12	56.99	-17.01	74	42.66	28.05	17.22	30.94	386	225	P	V
		2385.68	47.2	-6.8	54	32.99	27.79	17.34	30.92	386	225	A	V
	*	2452	105.05	-	-	90.88	27.6	17.46	30.89	386	225	P	V
	*	2452	96.92	-	-	82.75	27.6	17.46	30.89	386	225	A	V
		2483.89	59.98	-14.02	74	45.81	27.53	17.52	30.88	386	225	P	V
		2483.53	51.88	-2.12	54	37.71	27.53	17.52	30.88	386	225	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 802.11ac VHT40 (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)
802.11ac VHT40 CH 03 2422MHz		4844	40.81	-33.19	74	58.02	31.29	10.61	59.11	100	0	P	H
		7266	45.96	-28.04	74	55.57	36.5	12.52	58.63	100	0	P	H
													H
													H
		4844	40.71	-33.29	74	57.92	31.29	10.61	59.11	100	0	P	V
		7266	44.9	-29.1	74	54.51	36.5	12.52	58.63	100	0	P	V
													V
													V
802.11ac VHT40 CH 06 2437MHz		4874	40.1	-33.9	74	57.35	31.25	10.62	59.12	100	0	P	H
		7311	45.45	-28.55	74	54.9	36.52	12.59	58.56	100	0	P	H
													H
													H
		4874	41.1	-32.9	74	58.35	31.25	10.62	59.12	100	0	P	V
		7311	45.32	-28.68	74	54.77	36.52	12.59	58.56	100	0	P	V
													V
													V
802.11ac VHT40 CH 09 2452MHz		4904	41.61	-32.39	74	58.91	31.22	10.62	59.14	100	0	P	H
		7356	45.86	-28.14	74	55.12	36.58	12.66	58.5	100	0	P	H
													H
													H
		4904	41.58	-32.42	74	58.88	31.22	10.62	59.14	100	0	P	V
		7356	45.8	-28.2	74	55.06	36.58	12.66	58.5	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Emission above 18GHz****2.4GHz WIFI 802.11b (SHF)**

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 802.11b SHF		22389	40.72	-33.28	74	42.86	38.52	12.82	53.48	150	0	P	H
													H
													H
													H
		23502	42.11	-31.89	74	42.68	39.7	13.03	53.3	150	0	P	V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against 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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11b LF		97.9	32.19	-11.31	43.5	47.21	15.91	1.35	32.28	-	-	P	H
		188.11	30.77	-12.73	43.5	46.24	14.97	1.94	32.38	-	-	P	H
		217.21	31.85	-14.15	46	47.17	14.97	2.1	32.39	-	-	P	H
		481.05	32.07	-13.93	46	38.07	23.45	3.04	32.49	-	-	P	H
		729.37	33.39	-12.61	46	34.8	27.26	3.77	32.44	-	-	P	H
		777.87	38.94	-7.06	46	39.53	27.7	3.91	32.2	100	0	P	H
													H
													H
													H
													H
													H
													H
													H
		64.92	29.55	-10.45	40	48.07	12.24	1.05	31.81	-	-	P	V
		97.9	32.21	-11.29	43.5	47.23	15.91	1.35	32.28	-	-	P	V
		191.02	25.23	-18.27	43.5	40.67	14.98	1.96	32.38	-	-	P	V
		478.14	30.4	-15.6	46	36.47	23.41	3.02	32.5	-	-	P	V
		718.7	34.55	-11.45	46	36.41	26.83	3.73	32.42	-	-	P	V
		777.87	38.99	-7.01	46	39.58	27.7	3.91	32.2	100	0	P	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	Peak or Average
H/V	Horizontal or Vertical

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 :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	22.1~23.2°C
		Relative Humidity :	45~59%

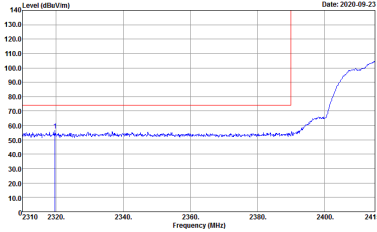
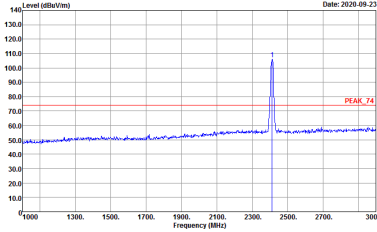
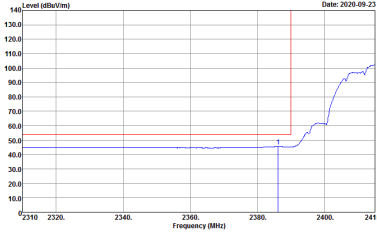
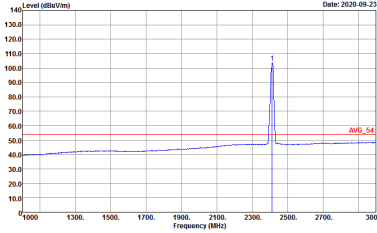
Note symbol

-L	Low channel location
-R	High channel location



2.4GHz 2400~2483.5MHz

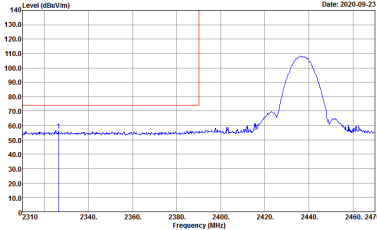
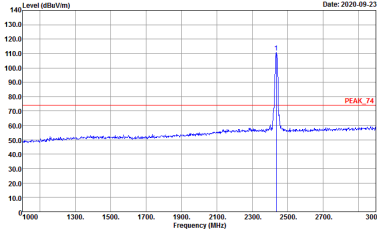
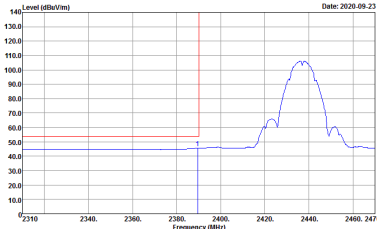
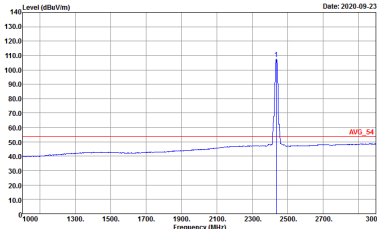
WIFI 802.11b (Band Edge @ 3m)

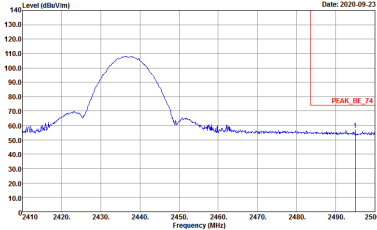
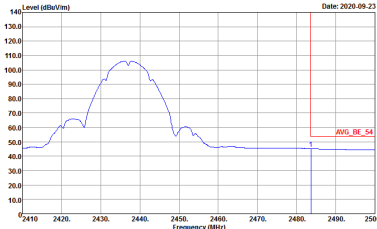
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:0.010KHz SWT:Auto Detector : Peak Project : 081931



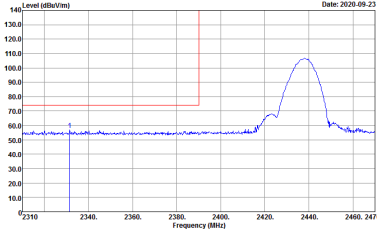
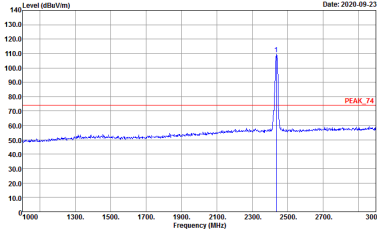
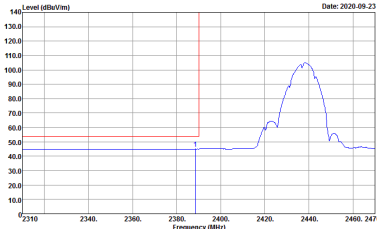
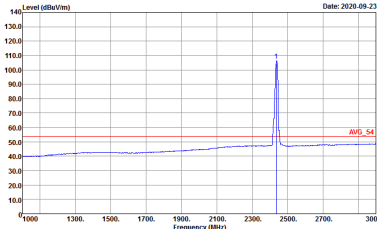
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931	Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931
	Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931	Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931



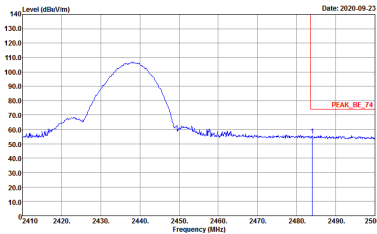
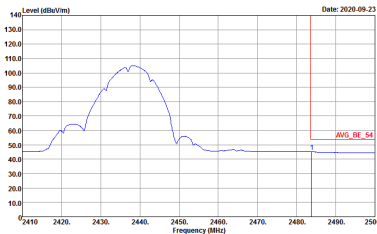
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left blank

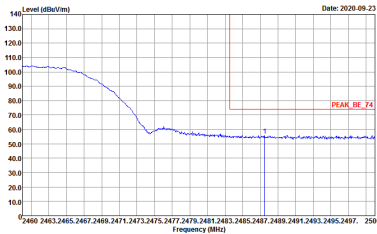
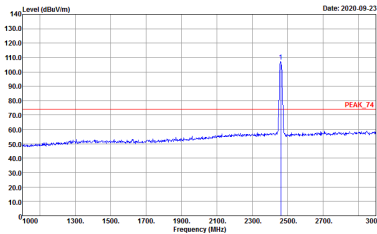
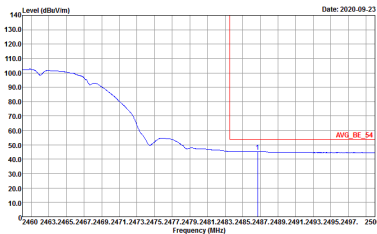
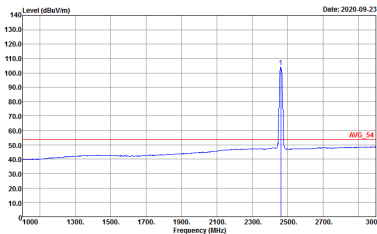


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931

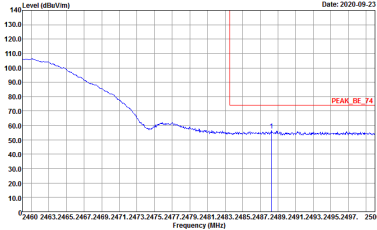
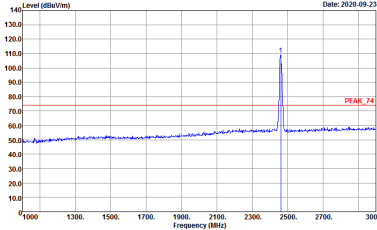
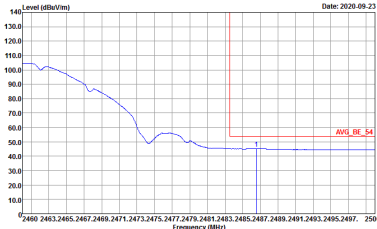
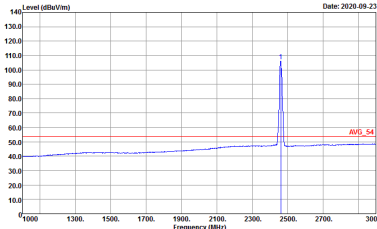


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH06 2437MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left blank



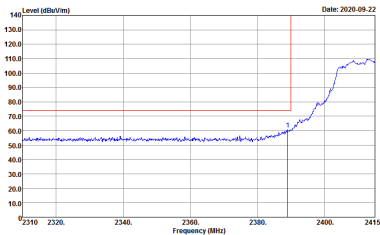
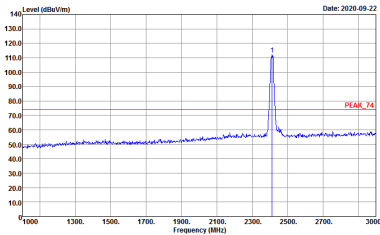
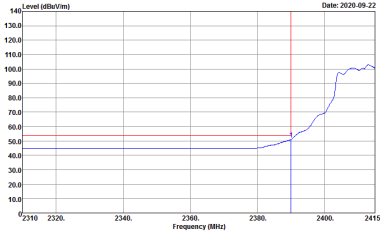
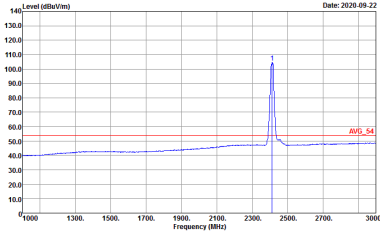
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931



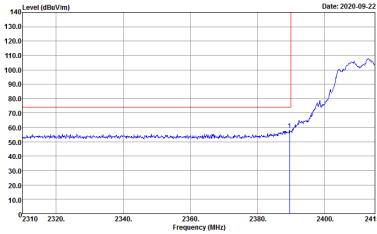
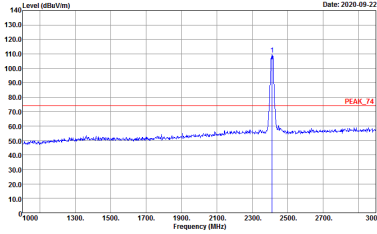
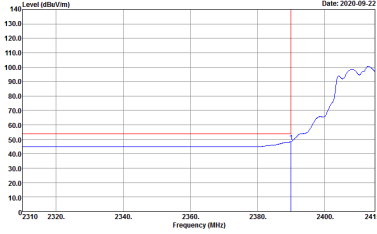
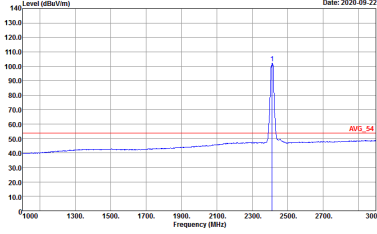
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11b CH11 2462MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931



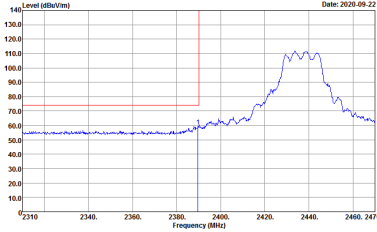
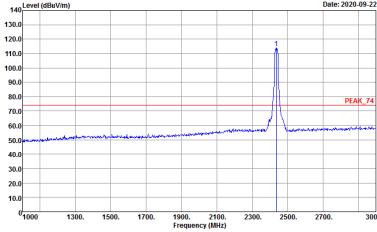
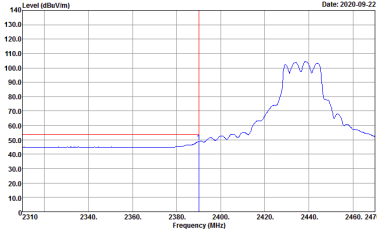
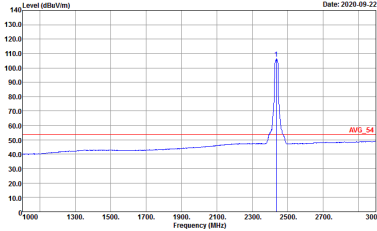
2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931

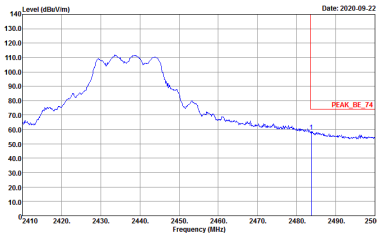
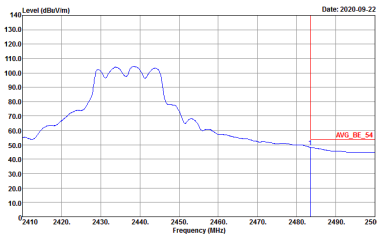


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Project : 081931
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Avg. Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Project : 081931

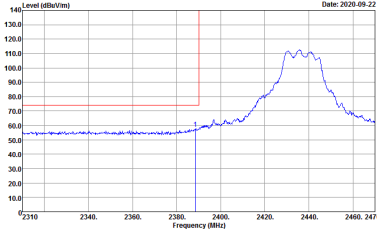
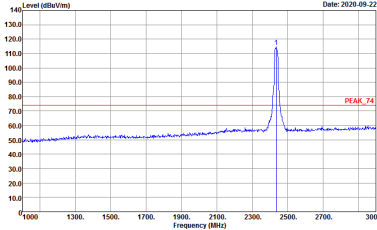
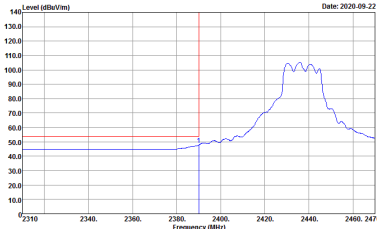
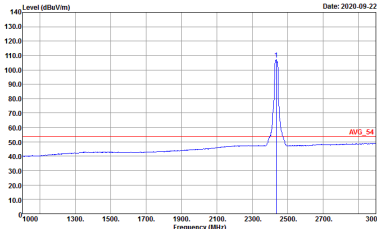


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931

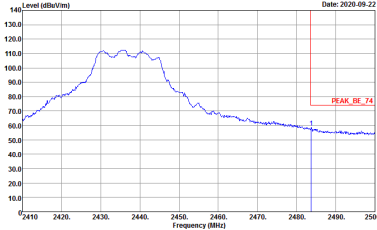
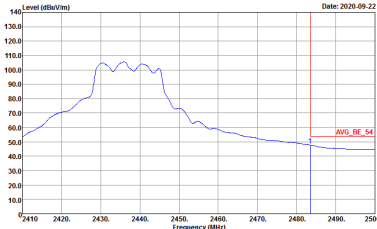


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left blank

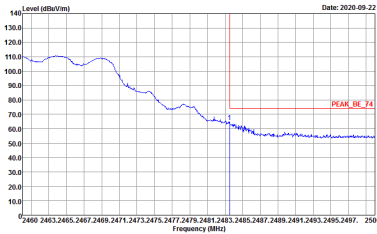
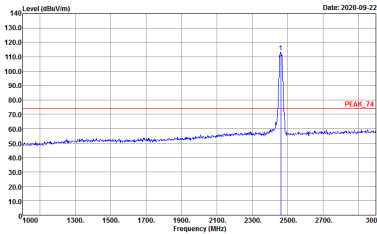
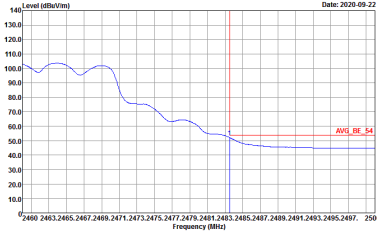
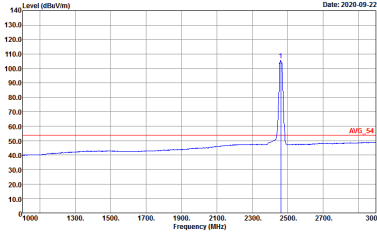


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931
Avg.		

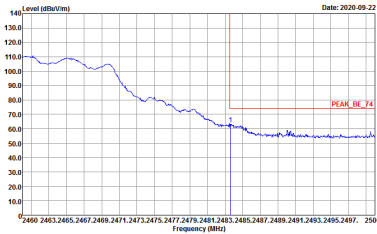
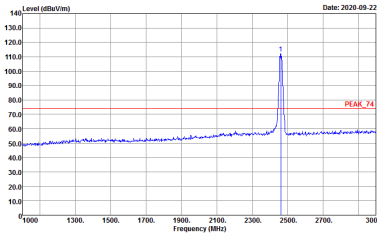
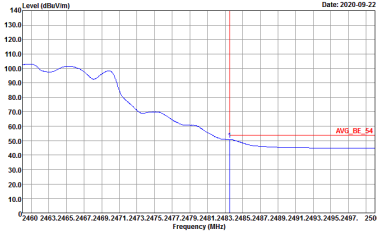
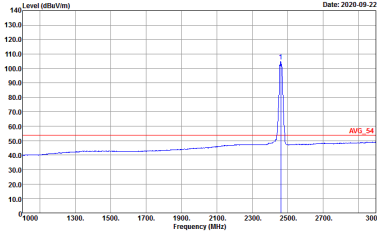


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH06 2437MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left Blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left Blank

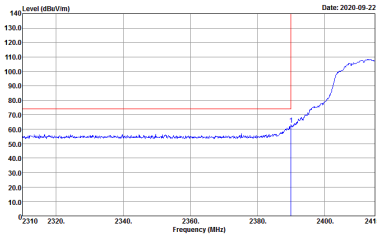
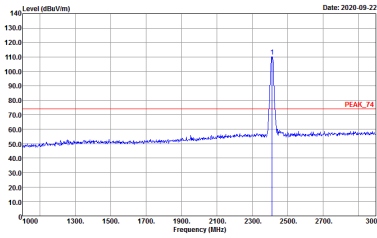
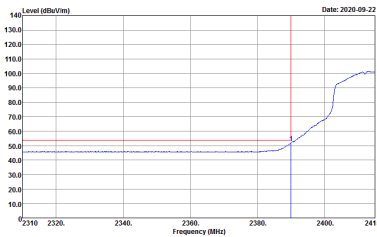
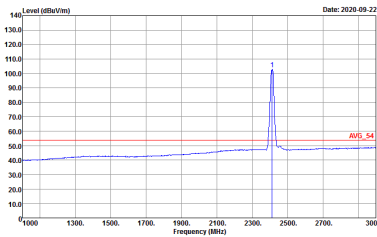


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

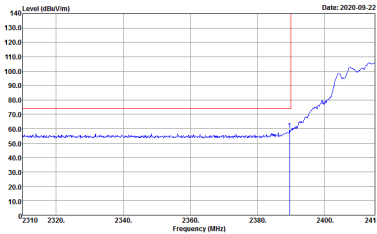
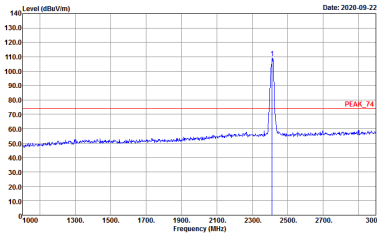
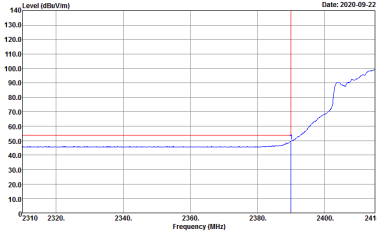
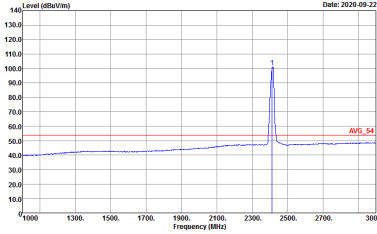


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:0.010KHz SWT:Auto

2.4GHz 2400~2483.5MHz
WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH01 2412MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto

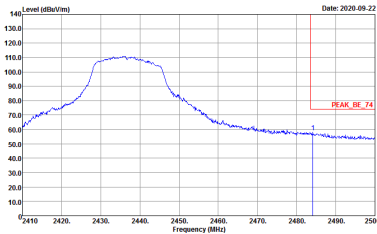
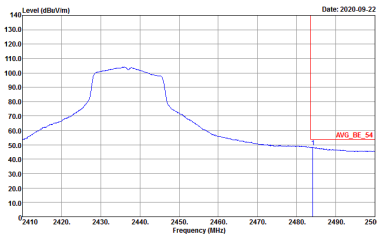


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH01 2412MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto

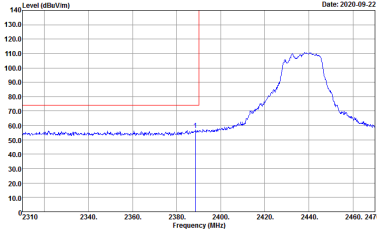
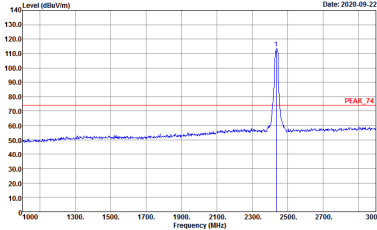
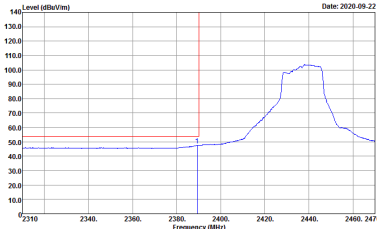
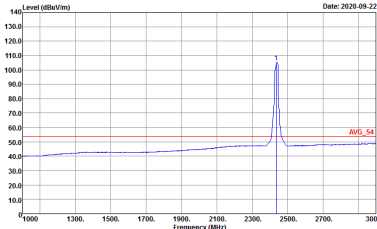


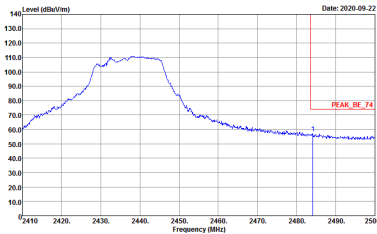
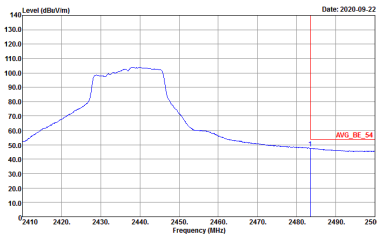
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VHT20 CH06 2437MHz - L	
1+2	Horizontal	Fundamental
Peak	Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931
Avg.	Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931

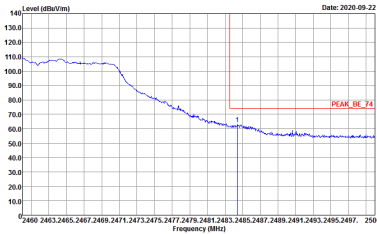
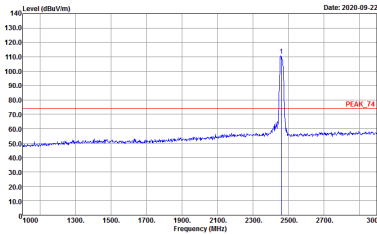
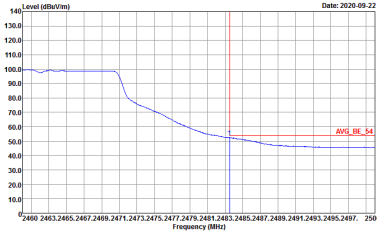
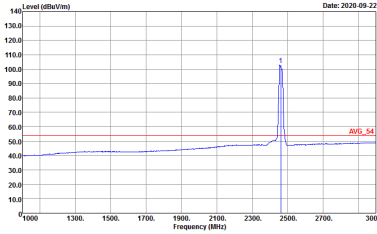


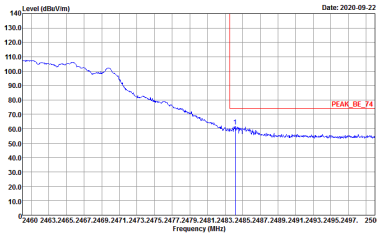
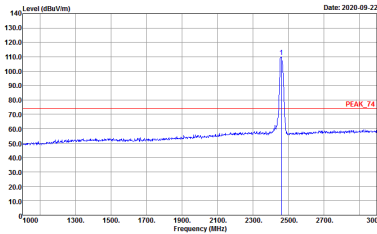
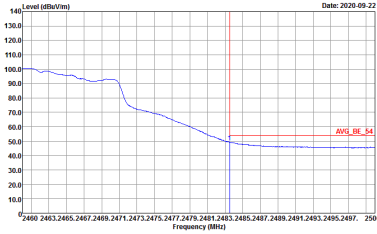
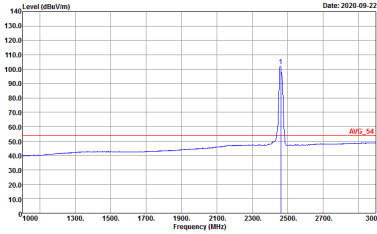
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH20 CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak Project : 081931	Left blank



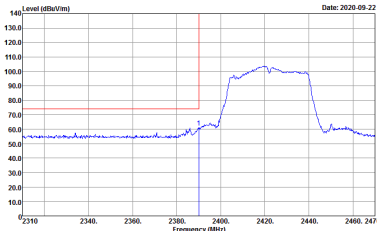
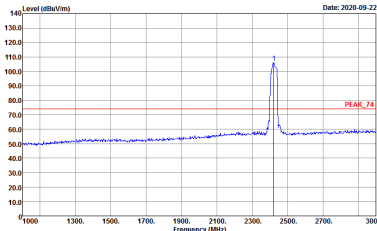
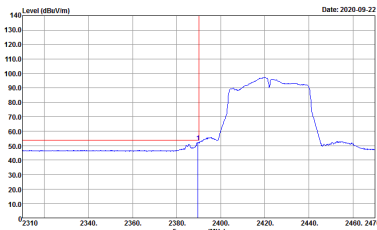
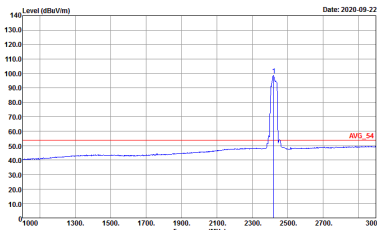
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH20 CH06 2437MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL Detector : RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak Project : 081931

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH20 CH06 2437MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 081931	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto Detector : Peak Project : 081931	Left blank

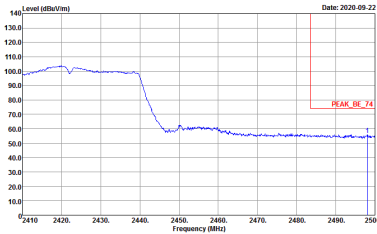
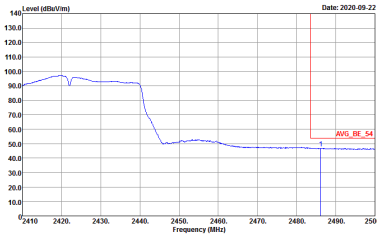
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH20 CH11 2462MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:1000KHz SWT:Auto

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH20 CH11 2462MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:1000KHz SWT:Auto

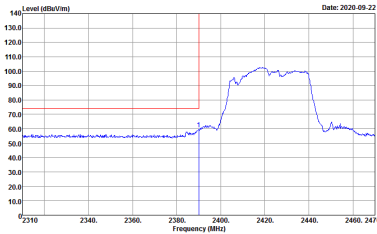
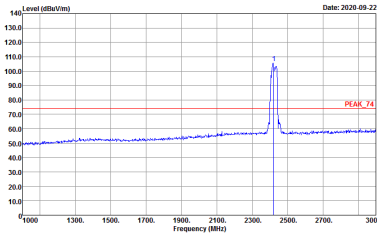
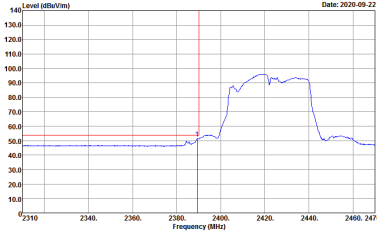
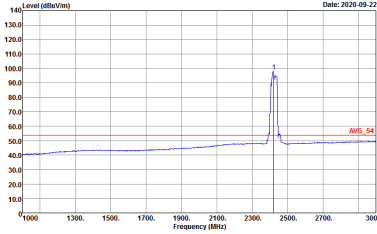
2.4GHz 2400~2483.5MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH03 2422MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto

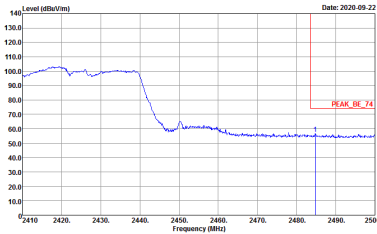
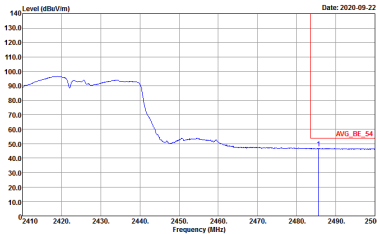


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH03 2422MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH03 2422MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto

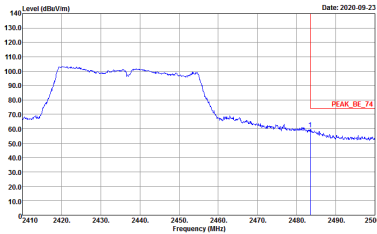
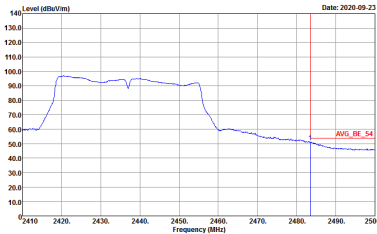


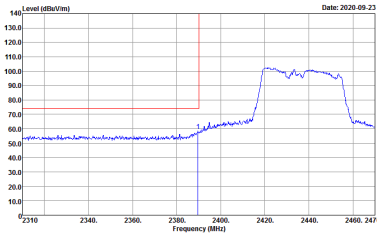
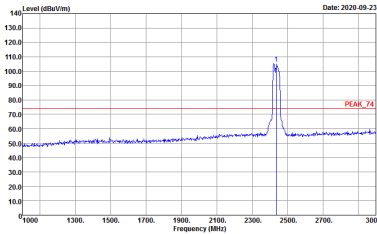
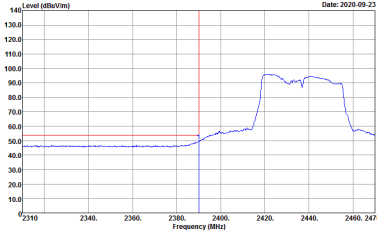
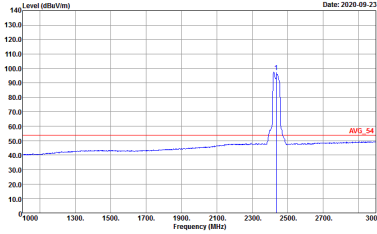
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH03 2422MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



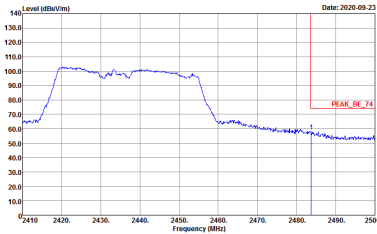
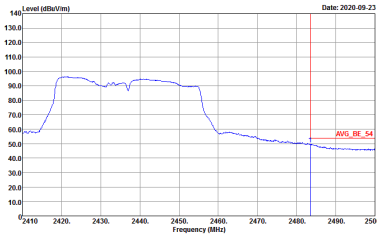
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH06 2437MHz - L	
1+2	Horizontal	Fundamental
Peak	Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto



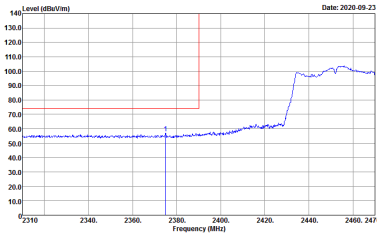
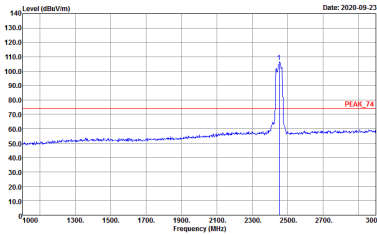
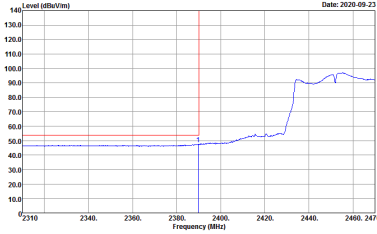
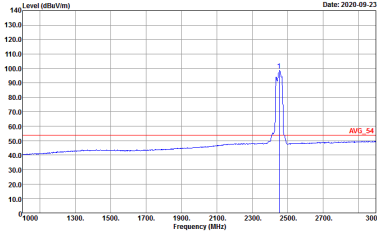
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH06 2437MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH06 2437MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.		

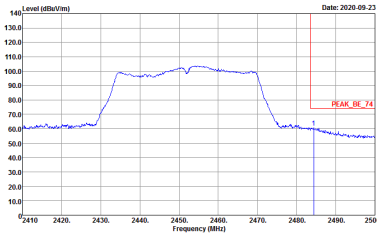
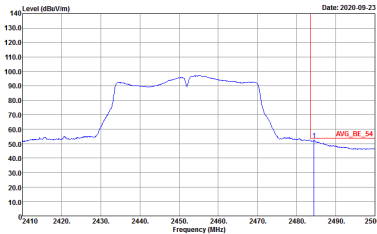


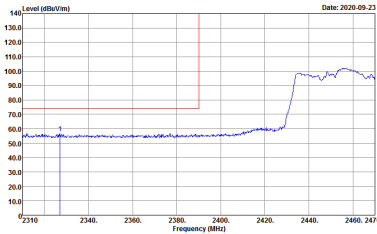
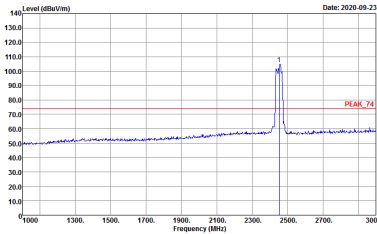
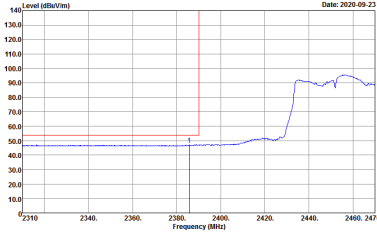
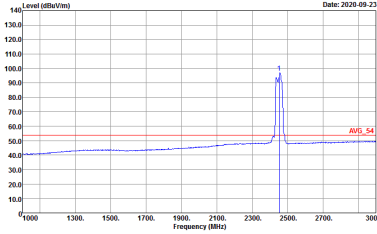
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH06 2437MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



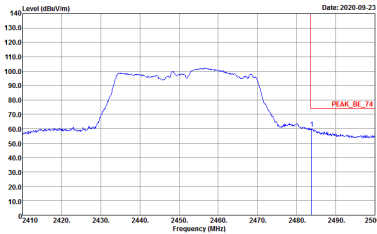
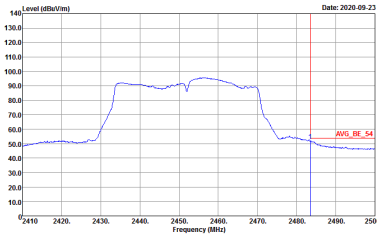
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH09 2452MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto



WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH09 2452MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH09 2452MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto	 Site : 03CH15-HY Condition : AVG_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3.000KHz SWT:Auto
Avg.		

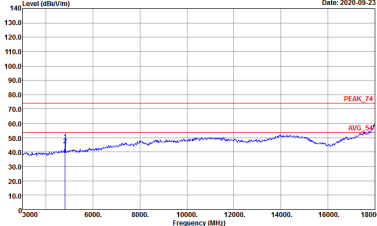
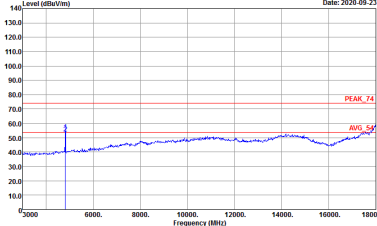


WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11ac VH40 CH09 2452MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE_74 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank
Avg.	 Site : 03CH15-HY Condition : AVG_BE_54 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank

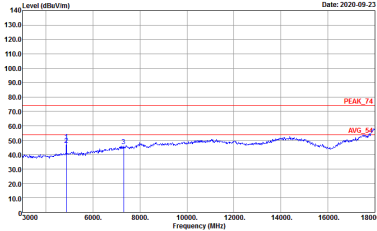
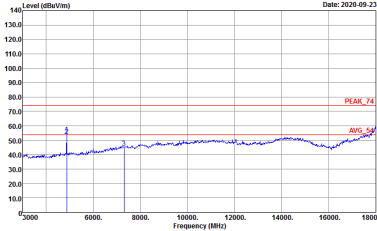


2.4GHz 2400~2483.5MHz

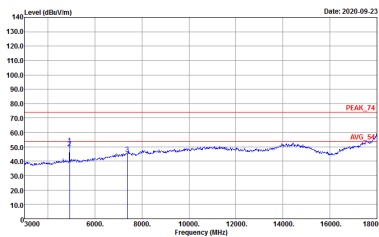
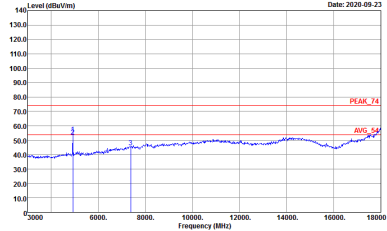
WIFI 802.11b (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL



WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL

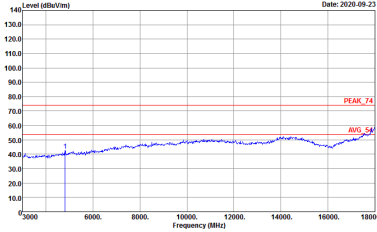
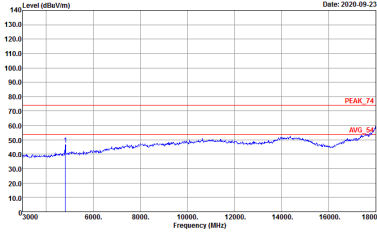


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL

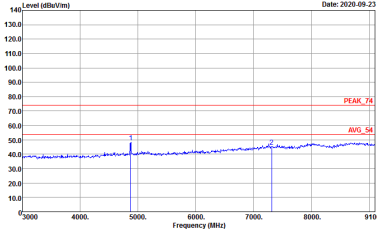
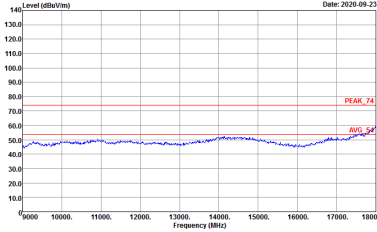


2.4GHz 2400~2483.5MHz

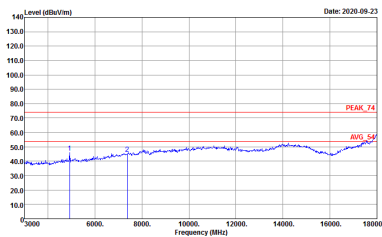
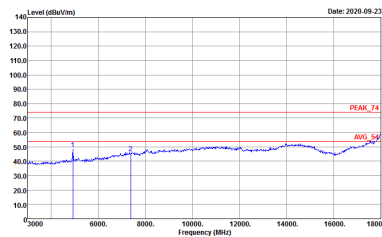
WIFI 802.11g (Harmonic @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH01 2412MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931

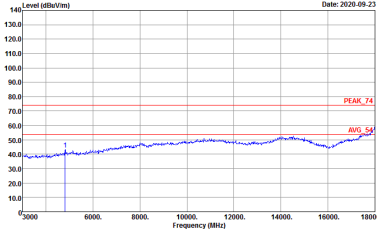
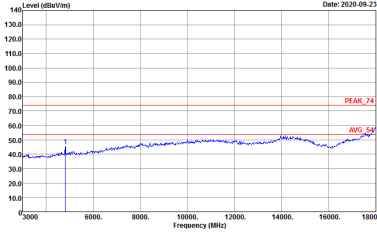


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931

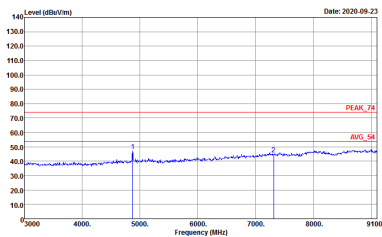
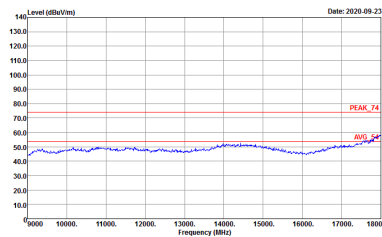


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11g CH11 2462MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931

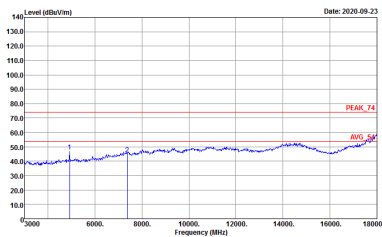
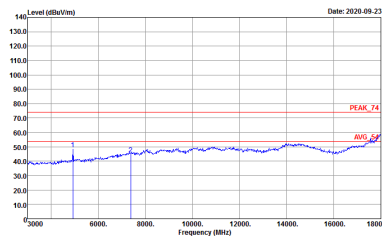
**2.4GHz 2400~2483.5MHz****WIFI 802.11ac VHT20 (Harmonic @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH01 2412MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931

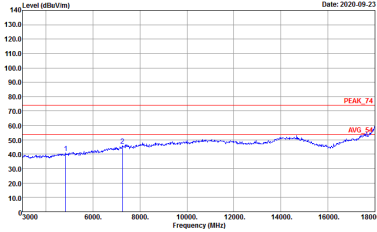
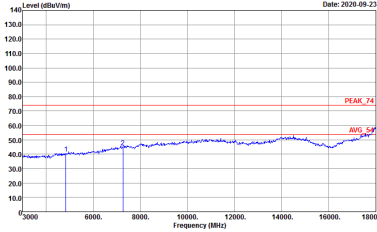


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931

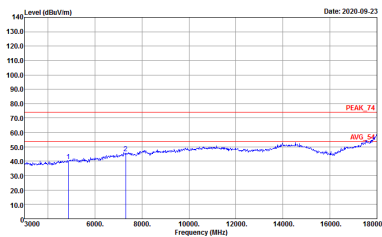
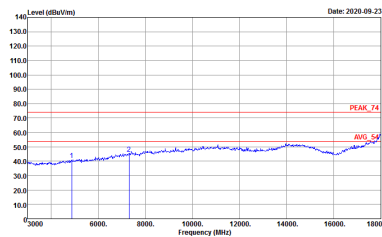


WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ac VHT20 CH11 2462MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931

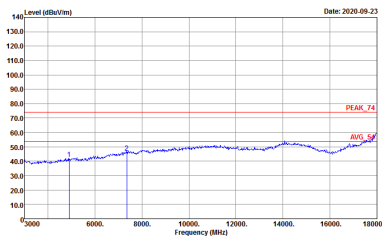
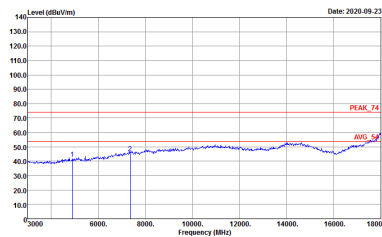
**2.4GHz 2400~2483.5MHz****WIFI 802.11ac VHT40 (Harmonic @ 3m)**

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH03 2422MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931



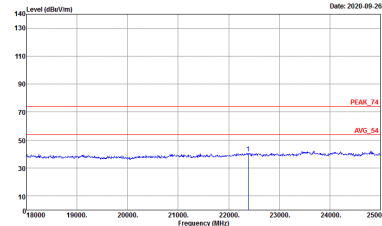
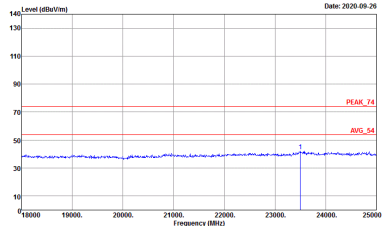
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH06 2437MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931



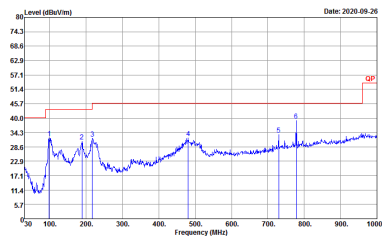
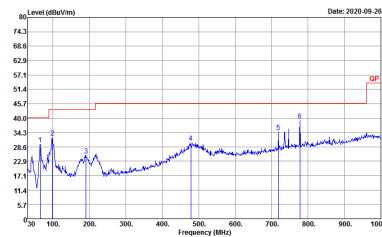
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11ac VHT40 CH09 2452MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-11Y Condition : PEAK_74 3m 91200_15_1620 VERTICAL Detector : Peak Project : 081931



Emission above 18GHz
2.4GHz WIFI 802.11b (SHF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b SHF	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK_74 In SHF HORN BBHA9170584 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : PEAK_74 In SHF HORN BBHA9170584 VERTICAL Detector : Peak Project : 081931

Emission below 1GHz
2.4GHz WIFI 802.11b (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11b LF	
1+2	Horizontal	Vertical
QP / Peak	 Site : 03CH15-HY Condition : QP 3m B1LOG_15_41912 HORIZONTAL Detector : Peak Project : 081931	 Site : 03CH15-HY Condition : QP 3m B1LOG_15_41912 VERTICAL Detector : Peak Project : 081931



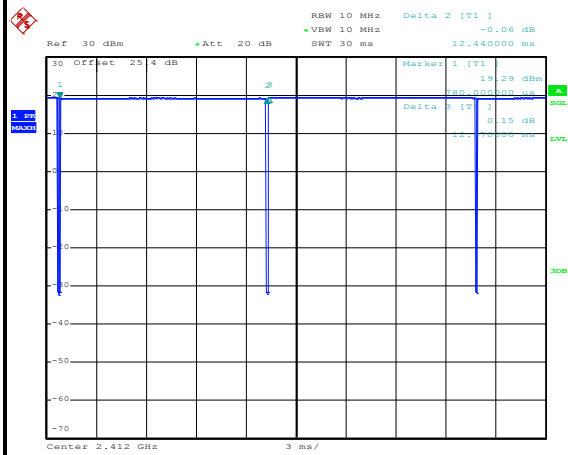
Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1+2	802.11b for Ant1	98.97	-	-	10Hz	0.04
1+2	802.11b for Ant2	99.00	-	-	10Hz	0.04
1+2	802.11g for Ant1	98.11	-	-	10Hz	0.08
1+2	802.11g for Ant2	98.34	-	-	10Hz	0.07
1+2	2.4GHz 802.11ac20 for Ant1	97.98	1940	0.52	1kHz	0.09
1+2	2.4GHz 802.11ac20 for Ant2	97.97	1935	0.52	1kHz	0.09
1+2	2.4GHz 802.11ac40 for Ant1	94.09	955	1.05	3kHz	0.26
1+2	2.4GHz 802.11ac40 for Ant2	94.53	950	1.05	3kHz	0.24



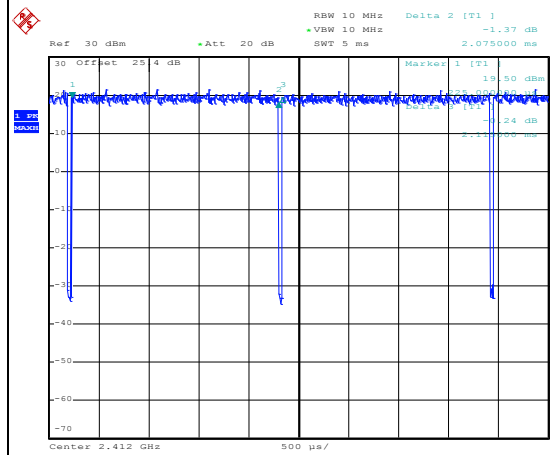
MIMO <Ant. 1>

802.11b



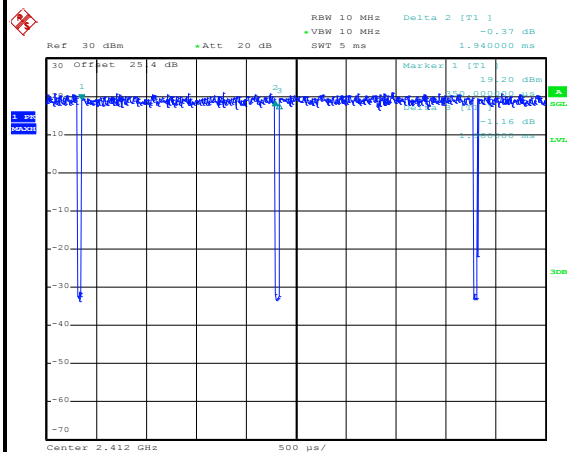
Date: 10.SEP.2020 14:19:52

802.11g



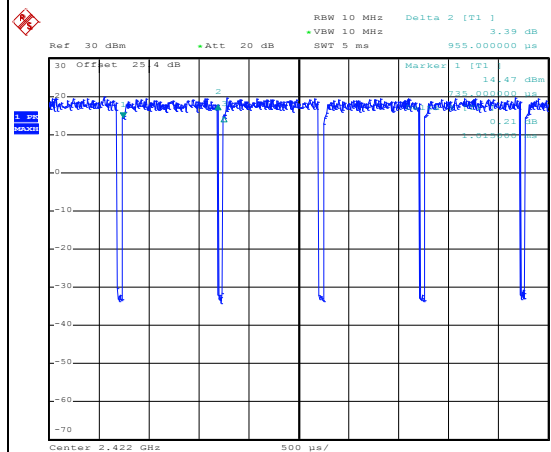
Date: 10.SEP.2020 14:22:07

802.11ac VHT20



Date: 10.SEP.2020 14:36:37

802.11ac VHT40



Date: 10.SEP.2020 14:41:38

