FCC RADIO TEST REPORT

FCC ID	:	**PKRISGMD2000**
Equipment	:	**Wireless Module**
Brand Name	:	**Inseego**
Model Name	:	**MD2000**
Applicant	:	**Inseego Corporation** **9710 Scranton Road Suite 200, San Diego, CA 92121**
Manufacturer	:	**Inseego Corporation** **9710 Scranton Road Suite 200, San Diego, CA 92121**
Standard	:	**FCC Part 15 Subpart E §15.407**

The product was received on Sep. 11, 2020 and testing was started from Sep. 23, 2020 and completed on Sep. 29, 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.

Louis Wu

Approved by: Louis Wu

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

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History of this test report

Report No.	Version	Description	Issued Date
FR090125C	01	Initial issue of report	Oct. 08, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403 (i)	6dB & 26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407 (a)	Maximum Conducted Output Power	Pass	-
3.3	15.407 (a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	Under limit 5.91 dB at 5650.000 MHz
-	15.207	AC Conducted Emission	Not Required	-
3.5	15.407 (c)	Automatically Discontinue Transmission	Pass	-
3.6	15.203 & 15.407 (a)	Antenna Requirement	Pass	-

Note: Not required means after assessing, test items are not necessary to carry out.

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: Vivian Hsu

1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Antenna Type	WWAN: Monopole Antenna WLAN: <Ant. 0>: Monopole Antenna <Ant. 1>: Monopole Antenna GPS/BDS/Galileo/GLONASS: Monopole 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

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 E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- 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: 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 two degrees (0° and 90°). The worst cases (Degree 0) were recorded in this report.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155#	5775	165	5825

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40, 802.11ac VHT40 and 802.11ax HE40
2. The above Frequency and Channel in "#" were 802.11ac VHT80 and 802.11ax HE80.

2.2 Test Mode

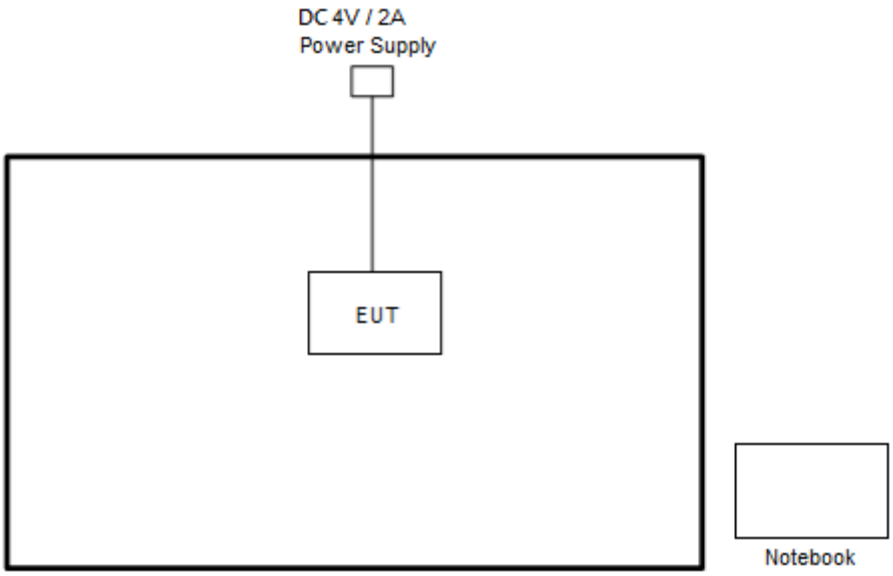
Final test modes are considering the modulation and worse data rates as below table. The CDD mode is chosen as worst case configuration for all test cases due to higher power than SISO mode.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20 (Covered by HE20)	MCS0
802.11n HT40 (Covered by HE40)	MCS0
802.11ac VHT20 (Covered by HE20)	MCS0
802.11ac VHT40 (Covered by HE40)	MCS0
802.11ac VHT80 (Covered by HE80)	MCS0
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0

Ch. #		Band IV：5725-5850 MHz			
		802.11a	802.11ax HE20	802.11ax HE40	802.11ax HE80
L	Low	149	149	151	-
M	Middle	157	-	-	155
H	High	165	165	159	-

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.	Power Supply	GW Instek	GPE-2323	N/A	N/A	N/A
2.	Notebook	HP	15-cs3019nr	N/A	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “QRCT V4.0.00172.0” 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.

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

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

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

26dB and 99% Occupied bandwidth are reporting only.

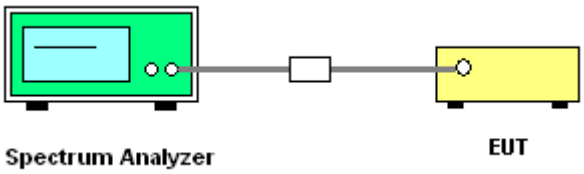
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

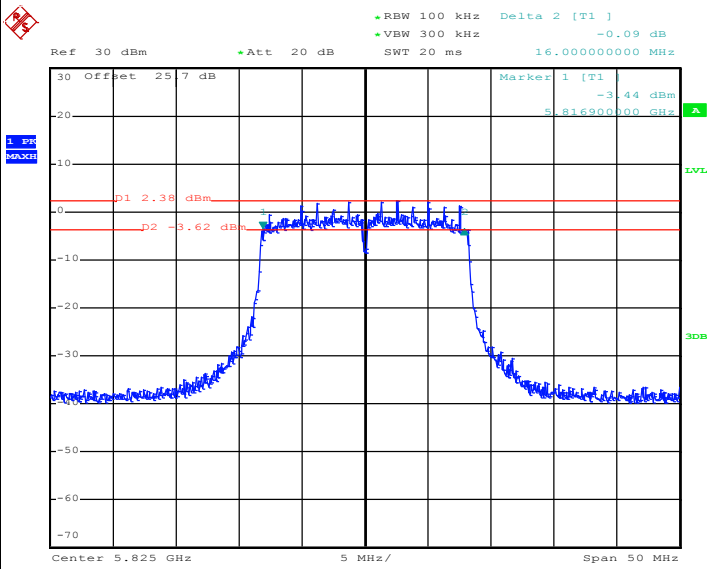
3.1.4 Test Setup



3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.

Minimum 6dB Bandwidth



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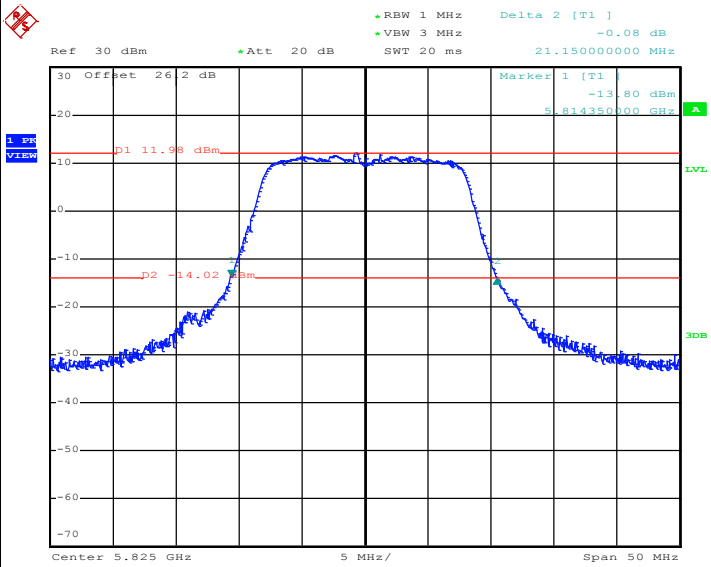
Maximum 26dB Bandwidth



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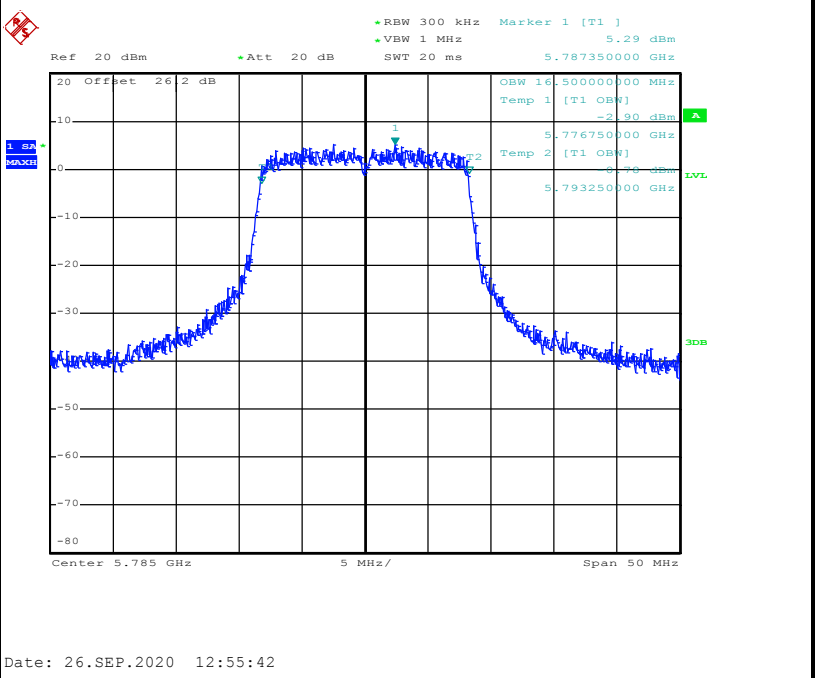
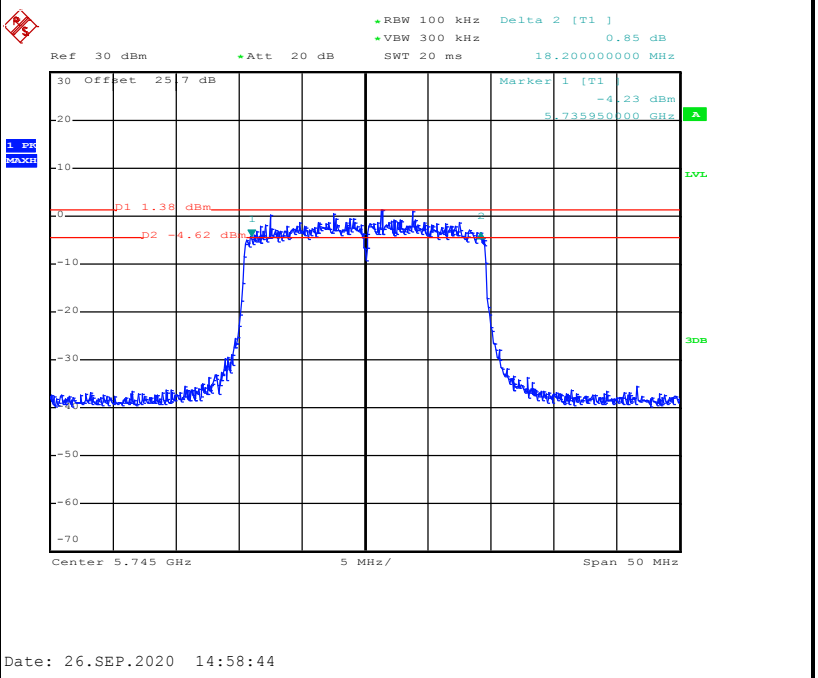
Maximum 99% Occupied Bandwidth



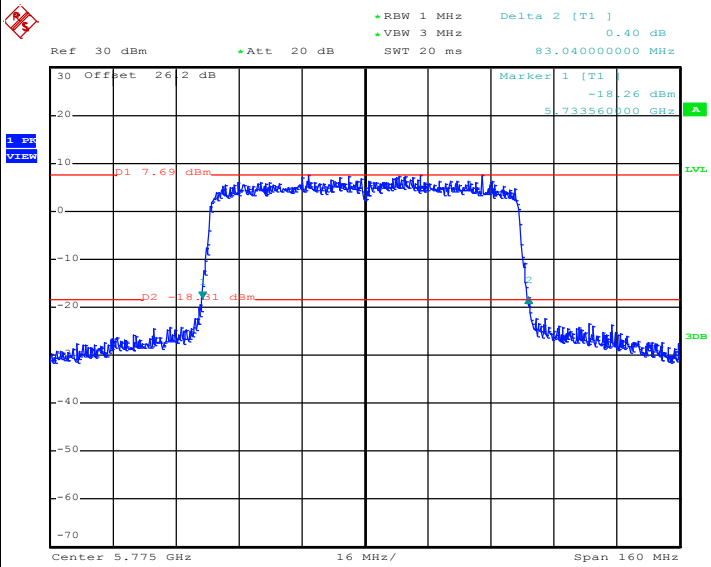
Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<For 802.11ax Mode>

Minimum 6dB Bandwidth



Maximum 26dB Bandwidth



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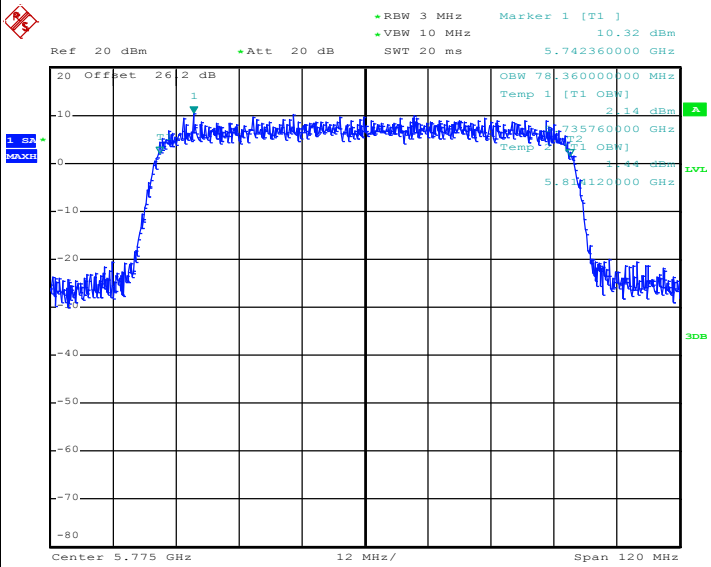
Maximum 99% Occupied Bandwidth



Date: 26.SEP.2020 13:15:27

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

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

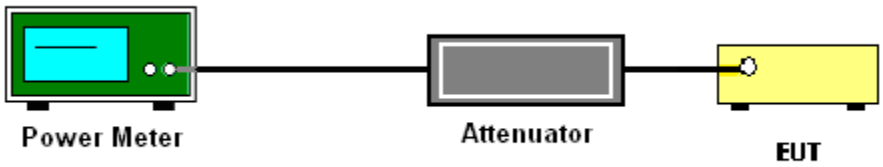
3.2.3 Test Procedures

The testing follows Method PM-G of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM-G (Measurement using a gated RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit at its maximum power control level.
3. Measure the average power of the transmitter
4. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section F) Maximum power spectral density.

 # Method SA-3 #

(power averaging (rms) detection with max hold):

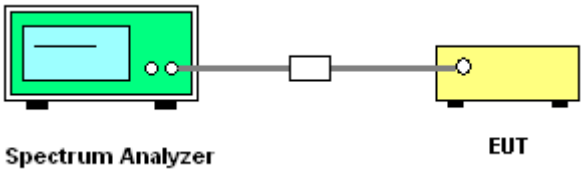
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time ≤ (number of points in sweep) × T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
- Detector = power averaging (rms).
- Trace mode = max hold.
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

   Method (c): Measure and add 10 log(N_{ANT}) dB.

   With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity 10 log(N_{ANT}) dB is added to each spectrum value before comparing to the emission limit. The addition of 10 log(N_{ANT}) dB serves to apportion the emission limit among the N_{ANT} outputs so that each output is permitted to contribute no more than $1/N_{ANT}$ th of the PSD limit.

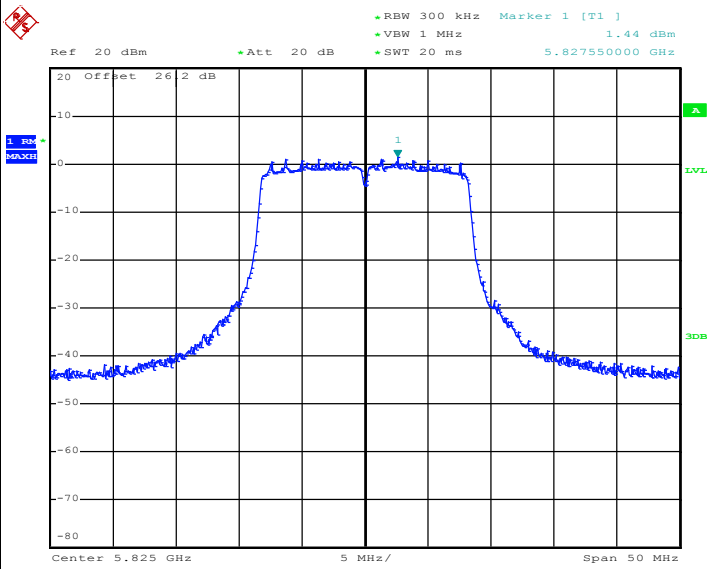
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

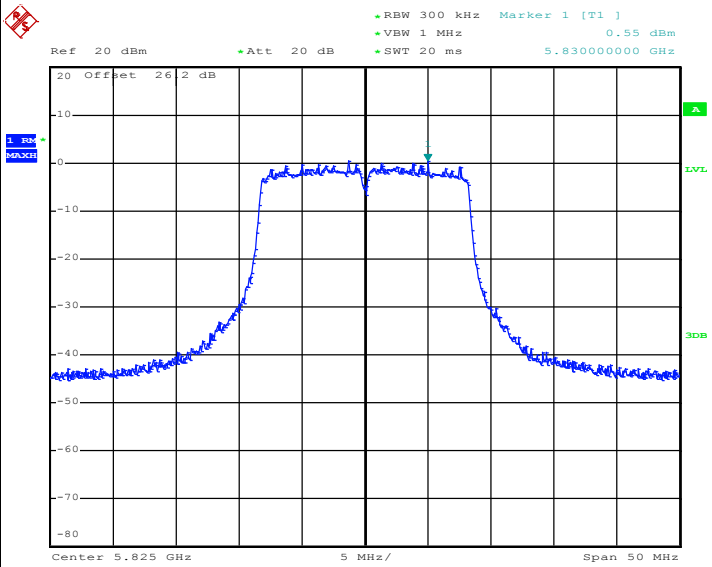
Please refer to Appendix A.

Worst Case Power Density (dBm/MHz) for MIMO Ant. 0



Date: 24.SEP.2020 16:38:04

Worst Case Power Density (dBm/MHz) for MIMO Ant. 1



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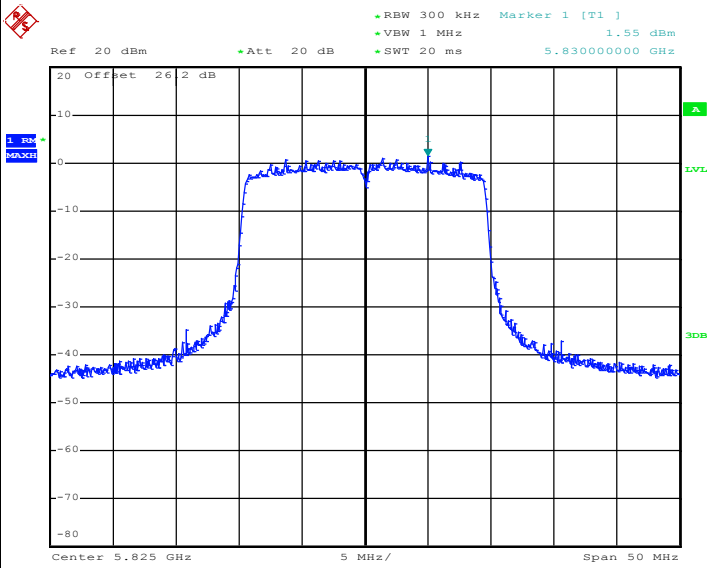
<For 802.11ax Mode>

Worst Case Power Density (dBm/MHz) for MIMO Ant. 0



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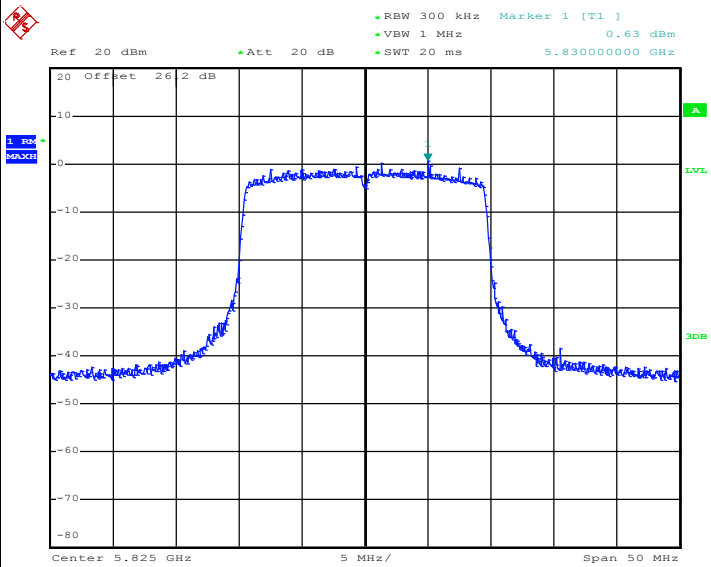
Worst Case Power Density (dBm/MHz) for MIMO Ant. 1



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3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

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

Note: The following formula is used to convert the EIRP to field strength.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

EIRP (dBm)	Field Strength at 3m (dBµV/m)
- 27	68.3

(3) KDB789033 D02 v02r01 G)2)c)

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of −27 dBm/MHz.

(ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are based on the use of a peak detector.

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

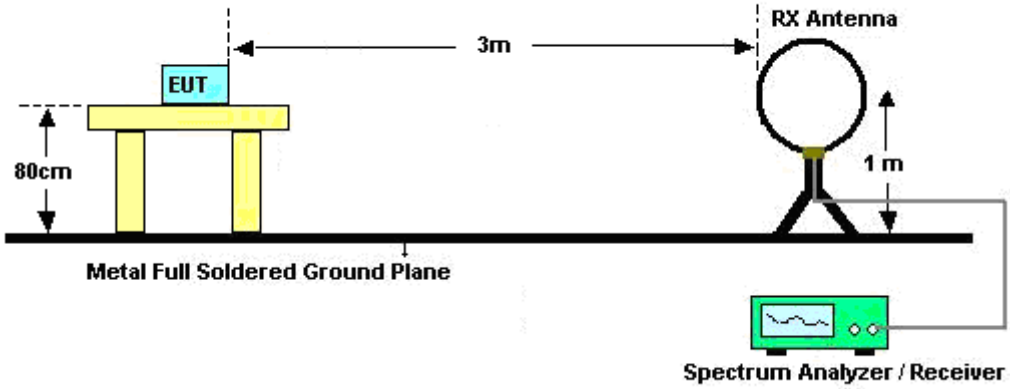
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 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.

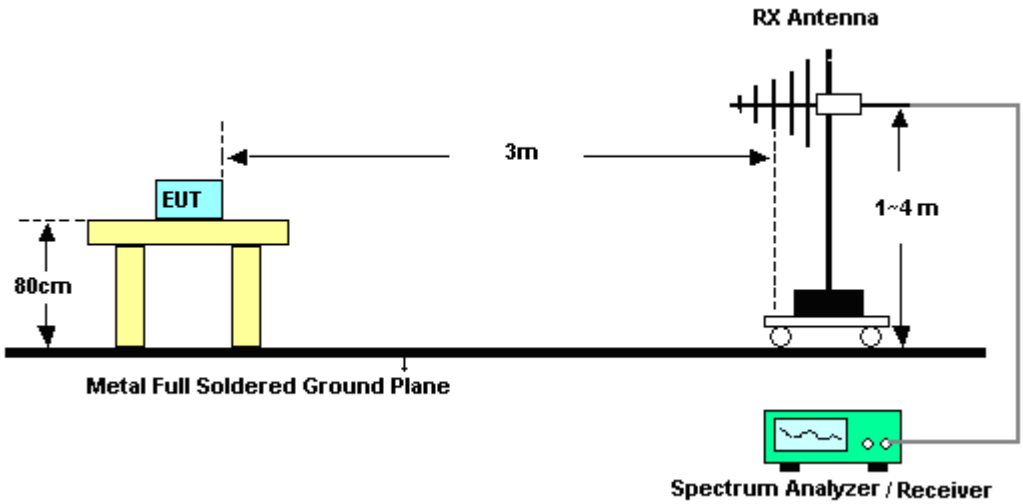
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
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.

3.4.4 Test Setup

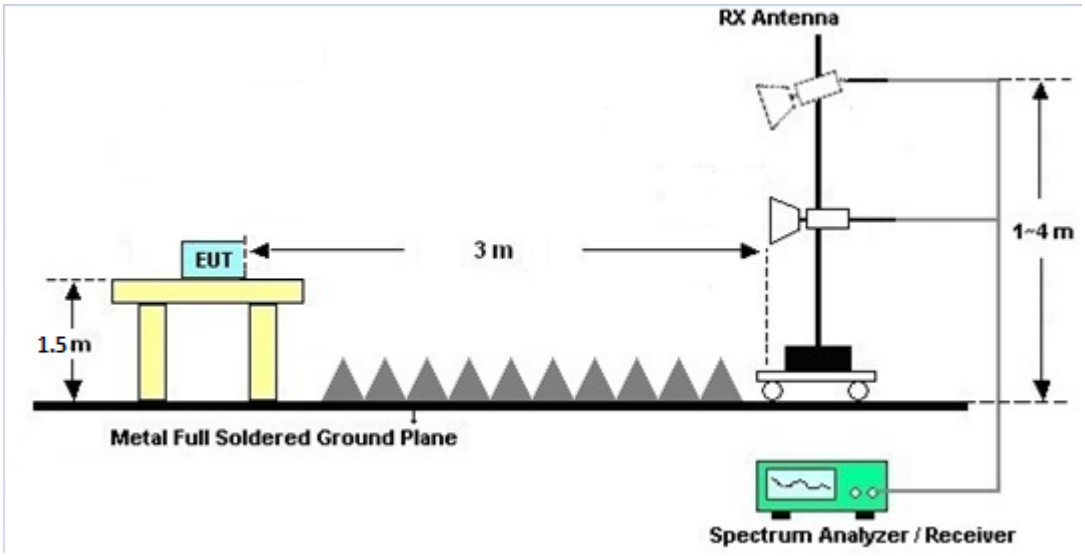
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

3.5 Automatically Discontinue Transmission

3.5.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.6 Antenna Requirements

3.6.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.6.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

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

Array Gain = 10 log(NANT/NSS=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT 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>

	Ant. 1 (dBi)	Ant. 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band IV	3.10	3.10	3.10	6.11	0.00	0.11

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (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. 27, 2020~ Sep. 29, 2020	Jan. 08, 2021	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D&00800N1D01N-06	41912&05	30MHz to 1GHz	Feb. 09, 2020	Sep. 27, 2020~ Sep. 29, 2020	Feb. 08, 2021	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 27, 2019	Sep. 27, 2020~ Sep. 29, 2020	Dec. 26, 2020	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1620	1-18GHz	Oct. 28, 2019	Sep. 27, 2020~ Sep. 29, 2020	Oct. 27, 2020	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Dec. 10, 2019	Sep. 27, 2020~ Sep. 29, 2020	Dec. 09, 2020	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055006	1GHz~18GHz	May 07, 2020	Sep. 27, 2020~ Sep. 29, 2020	May 06, 2021	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 21, 2020	Sep. 27, 2020~ Sep. 29, 2020	Aug. 20, 2021	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 13, 2019	Sep. 27, 2020~ Sep. 29, 2020	Dec. 12, 2020	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY54130085	20MHz~8.4GHz	Nov. 01, 2019	Sep. 27, 2020~ Sep. 29, 2020	Oct. 31, 2020	Radiation (03CH15-HY
Spectrum Analyzer	Agilent	E4446A	MY50180136	3Hz~44GHz	May 04, 2020	Sep. 27, 2020~ Sep. 29, 2020	May 03, 2021	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Sep. 27, 2020~ Sep. 29, 2020	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Sep. 27, 2020~ Sep. 29, 2020	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24(k5)	RK-000451	N/A	N/A	Sep. 27, 2020~ Sep. 29, 2020	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY36980/4	30M-18G	Apr. 14, 2020	Sep. 27, 2020~ Sep. 29, 2020	Apr. 13, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9838/4PE	30M-18G	Apr. 14, 2020	Sep. 27, 2020~ Sep. 29, 2020	Apr. 13, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY37710/4	30M-18G	Apr. 17, 2020	Sep. 27, 2020~ Sep. 29, 2020	Apr. 16, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz-40GHz	Feb. 25, 2020	Sep. 27, 2020~ Sep. 29, 2020	Feb. 24, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz-40GHz	Feb. 25, 2020	Sep. 27, 2020~ Sep. 29, 2020	Feb. 24, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 12, 2020	Sep. 27, 2020~ Sep. 29, 2020	Mar. 11, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN4	1.53G Low Pass	Jul. 03, 2020	Sep. 27, 2020~ Sep. 29, 2020	Jul. 02, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN6	6.75GHz High Pass Filter	Jul. 03, 2020	Sep. 27, 2020~ Sep. 29, 2020	Jul. 02, 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. 23, 2020~ Sep. 29, 2020	Mar. 01, 2021	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054S NO10	10MHz~6GHz	Dec. 23, 2019	Sep. 23, 2020~ Sep. 29, 2020	Dec. 22, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Dec. 30, 2019	Sep. 23, 2020~ Sep. 29, 2020	Dec. 29, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2020	Sep. 23, 2020~ Sep. 29, 2020	Mar. 16, 2021	Conducted (TH05-HY)

5 Uncertainty of Evaluation

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:	Mina Liu	Temperature:	23.6~23.7	°C
Test Date:	2020/9/23~2020/9/29	Relative Humidity:	53.5~54.1	%

Report Number : FR090125C

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

Band IV MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1		
11a	6Mbps	2	149	5745	16.45	16.45	21.05	20.95	16.25	16.25	0.5	Pass
11a	6Mbps	2	157	5785	16.45	16.50	21.05	20.45	16.05	16.25	0.5	Pass
11a	6Mbps	2	165	5825	16.45	16.45	21.15	20.90	16.00	16.30	0.5	Pass

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TEST RESULTS DATA
Average Power Table

Band IV single antenna												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	1	149	5745	13.90	13.40		30.00	30.00	3.10	3.10	Pass
11a	6Mbps	1	157	5785	13.80	13.50		30.00	30.00	3.10	3.10	Pass
11a	6Mbps	1	165	5825	13.90	13.00		30.00	30.00	3.10	3.10	Pass
HT20	MCS0	1	149	5745	13.70	13.10		30.00	30.00	3.10	3.10	Pass
HT20	MCS0	1	157	5785	13.70	13.30		30.00	30.00	3.10	3.10	Pass
HT20	MCS0	1	165	5825	13.90	12.80		30.00	30.00	3.10	3.10	Pass
HT40	MCS0	1	151	5755	13.80	13.40		30.00	30.00	3.10	3.10	Pass
HT40	MCS0	1	159	5795	13.80	13.20		30.00	30.00	3.10	3.10	Pass
VHT20	MCS0	1	149	5745	13.70	13.10		30.00	30.00	3.10	3.10	Pass
VHT20	MCS0	1	157	5785	13.70	13.30		30.00	30.00	3.10	3.10	Pass
VHT20	MCS0	1	165	5825	13.90	12.80		30.00	30.00	3.10	3.10	Pass
VHT40	MCS0	1	151	5755	13.80	13.40		30.00	30.00	3.10	3.10	Pass
VHT40	MCS0	1	159	5795	13.80	13.20		30.00	30.00	3.10	3.10	Pass
VHT80	MCS0	1	155	5775	13.70	13.30		30.00	30.00	3.10	3.10	Pass

Band IV MIMO												
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	2	149	5745	14.00	13.50	16.77	30.00		3.10		Pass
11a	6Mbps	2	157	5785	13.90	13.60	16.76	30.00		3.10		Pass
11a	6Mbps	2	165	5825	14.30	13.10	16.75	30.00		3.10		Pass
HT20	MCS0	2	149	5745	13.80	13.20	16.52	30.00		3.10		Pass
HT20	MCS0	2	157	5785	13.80	13.40	16.61	30.00		3.10		Pass
HT20	MCS0	2	165	5825	14.20	12.90	16.61	30.00		3.10		Pass
HT40	MCS0	2	151	5755	14.10	13.50	16.82	30.00		3.10		Pass
HT40	MCS0	2	159	5795	14.20	13.30	16.78	30.00		3.10		Pass
VHT20	MCS0	2	149	5745	13.80	13.20	16.52	30.00		3.10		Pass
VHT20	MCS0	2	157	5785	13.80	13.40	16.61	30.00		3.10		Pass
VHT20	MCS0	2	165	5825	14.20	12.90	16.61	30.00		3.10		Pass
VHT40	MCS0	2	151	5755	14.10	13.50	16.82	30.00		3.10		Pass
VHT40	MCS0	2	159	5795	14.20	13.30	16.78	30.00		3.10		Pass
VHT80	MCS0	2	155	5775	13.80	13.40	16.61	30.00		3.10		Pass

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TEST RESULTS DATA
Power Spectral Density

Band IV MIMO															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 0	Ant 1	Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
11a	6Mbps	2	149	5745	2.22		3.26	3.09	6.27	29.89		6.11		Pass
11a	6Mbps	2	157	5785	2.22		3.49	3.18	6.50	29.89		6.11		Pass
11a	6Mbps	2	165	5825	2.22		3.66	2.77	6.67	29.89		6.11		Pass

Note: PSD Sum = Max PSD(Ant. 1, Ant. 2) + 10 log (n)

Report Number : FR090125C

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

Band IV MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	99% Bandwidth (MHz)		26dB Bandwidth (MHz)		6 dB Bandwidth (MHz)		6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
						Ant 0	Ant 1	Ant 0	Ant 1	Ant 0	Ant 1		
HE20	MCS0	2	149	5745	Full	19.00	18.90	22.40	22.45	18.50	18.20	0.5	Pass
HE20	MCS0	2	157	5785	Full	19.00	18.90	22.65	22.80	18.35	18.60	0.5	Pass
HE20	MCS0	2	165	5825	Full	18.95	19.00	22.85	22.35	18.30	18.25	0.5	Pass
HE40	MCS0	2	151	5755	Full	38.00	37.90	41.76	41.64	37.35	37.26	0.5	Pass
HE40	MCS0	2	159	5795	Full	38.00	38.00	41.52	41.88	37.17	36.90	0.5	Pass
HE80	MCS0	2	155	5775	Full	78.36	78.12	83.04	82.72	76.96	75.36	0.5	Pass

Report Number : FR090125C

TEST RESULTS DATA
Average Power Table

Band IV single antenna													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
						Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
HE20	MCS0	1	149	5745	Full	13.80	13.20		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	149	5745	26/0	6.30	5.20		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	149	5745	52/37	9.60	8.60		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	149	5745	106/53	12.20	11.20		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	157	5785	Full	13.80	13.40		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	157	5785	26/4	6.10	5.80		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	157	5785	52/38	9.20	8.70		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	157	5785	106/53	12.00	11.70		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	165	5825	Full	14.20	12.90		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	165	5825	26/8	6.90	5.60		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	165	5825	52/40	9.60	8.80		30.00	30.00	3.10	3.10	Pass
HE20	MCS0	1	165	5825	106/54	12.40	11.10		30.00	30.00	3.10	3.10	Pass
HE40	MCS0	1	151	5755	Full	13.90	13.50		30.00	30.00	3.10	3.10	Pass
HE40	MCS0	1	151	5755	242/61	13.00	12.00		30.00	30.00	3.10	3.10	Pass
HE40	MCS0	1	159	5795	Full	13.90	13.30		30.00	30.00	3.10	3.10	Pass
HE40	MCS0	1	159	5795	242/62	12.70	11.40		30.00	30.00	3.10	3.10	Pass
HE80	MCS0	1	155	5775	Full	13.80	13.40		30.00	30.00	3.10	3.10	Pass
HE80	MCS0	1	155	5775	484/65	12.40	11.90		30.00	30.00	3.10	3.10	Pass
HE80	MCS0	1	155	5775	484/66	12.40	11.60		30.00	30.00	3.10	3.10	Pass

Band IV MIMO													
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
						Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
HE20	MCS0	2	149	5745	Full	13.90	13.30	16.62	30.00		3.10		Pass
HE20	MCS0	2	149	5745	26/0	6.40	5.30	8.90	30.00		3.10		Pass
HE20	MCS0	2	149	5745	52/37	9.70	8.70	12.24	30.00		3.10		Pass
HE20	MCS0	2	149	5745	106/53	12.30	11.30	14.84	30.00		3.10		Pass
HE20	MCS0	2	157	5785	Full	13.90	13.50	16.71	30.00		3.10		Pass
HE20	MCS0	2	157	5785	26/4	6.20	5.90	9.06	30.00		3.10		Pass
HE20	MCS0	2	157	5785	52/38	9.30	8.80	12.07	30.00		3.10		Pass
HE20	MCS0	2	157	5785	106/53	12.10	11.80	14.96	30.00		3.10		Pass
HE20	MCS0	2	165	5825	Full	14.30	13.00	16.71	30.00		3.10		Pass
HE20	MCS0	2	165	5825	26/8	7.00	5.70	9.41	30.00		3.10		Pass
HE20	MCS0	2	165	5825	52/40	9.70	8.90	12.33	30.00		3.10		Pass
HE20	MCS0	2	165	5825	106/54	12.50	11.20	14.91	30.00		3.10		Pass
HE40	MCS0	2	151	5755	Full	14.20	13.60	16.92	30.00		3.10		Pass
HE40	MCS0	2	151	5755	242/61	13.10	12.10	15.64	30.00		3.10		Pass
HE40	MCS0	2	159	5795	Full	14.30	13.40	16.88	30.00		3.10		Pass
HE40	MCS0	2	159	5795	242/62	12.80	11.50	15.21	30.00		3.10		Pass
HE80	MCS0	2	155	5775	Full	13.90	13.50	16.71	30.00		3.10		Pass
HE80	MCS0	2	155	5775	484/65	12.50	12.00	15.27	30.00		3.10		Pass
HE80	MCS0	2	155	5775	484/66	12.50	11.70	15.13	30.00		3.10		Pass

Report Number : FR090125C

TEST RESULTS DATA
Power Spectral Density

Band IV MIMO															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
						Ant 0	Ant 1	Ant 0	Ant 1	SUM	Ant 0	Ant 1	Ant 0	Ant 1	
HE20	MCS0	2	149	5745	Full	2.22		3.51	2.53	6.52	29.89		6.11		Pass
HE20	MCS0	2	149	5745	26/0	2.22		3.16	2.13	6.17	29.89		6.11		Pass
HE20	MCS0	2	149	5745	52/37	2.22		3.38	2.38	6.39	29.89		6.11		Pass
HE20	MCS0	2	149	5745	106/53	2.22		3.31	2.25	6.32	29.89		6.11		Pass
HE20	MCS0	2	157	5785	Full	2.22		3.70	3.07	6.71	29.89		6.11		Pass
HE20	MCS0	2	157	5785	26/4	2.22		3.29	2.96	6.30	29.89		6.11		Pass
HE20	MCS0	2	157	5785	52/38	2.22		3.34	2.65	6.35	29.89		6.11		Pass
HE20	MCS0	2	157	5785	106/53	2.22		3.23	3.06	6.24	29.89		6.11		Pass
HE20	MCS0	2	165	5825	Full	2.22		3.77	2.85	6.78	29.89		6.11		Pass
HE20	MCS0	2	165	5825	26/8	2.22		3.67	2.45	6.68	29.89		6.11		Pass
HE20	MCS0	2	165	5825	52/40	2.22		3.68	2.46	6.69	29.89		6.11		Pass
HE20	MCS0	2	165	5825	106/54	2.22		3.66	2.71	6.67	29.89		6.11		Pass
HE40	MCS0	2	151	5755	Full	2.22		0.65	0.28	3.66	29.89		6.11		Pass
HE40	MCS0	2	151	5755	242/61	2.22		0.62	-0.13	3.63	29.89		6.11		Pass
HE40	MCS0	2	159	5795	Full	2.22		0.77	0.21	3.78	29.89		6.11		Pass
HE40	MCS0	2	159	5795	242/62	2.22		0.41	-0.03	3.42	29.89		6.11		Pass
HE80	MCS0	2	155	5775	Full	2.22		-2.15	-3.24	0.86	29.89		6.11		Pass
HE80	MCS0	2	155	5775	484/65	2.22		-2.57	-3.35	0.44	29.89		6.11		Pass
HE80	MCS0	2	155	5775	484/66	2.22		-2.45	-3.62	0.56	29.89		6.11		Pass

Note: PSD Sum = Max PSD(Ant. 1, Ant. 2) + 10 log (n)

Appendix B. Radiated Spurious Emission

Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	Temperature :	22.3~23.1°C
		Relative Humidity :	48~55%

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
0+1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5642.6	53.03	-15.17	68.2	40.42	31.81	10.89	30.09	116	59	P	H
		5694	53.41	-47.37	100.78	40.68	31.98	10.88	30.13	116	59	P	H
		5720	65.1	-45.7	110.8	52.38	32	10.87	30.15	116	59	P	H
		5720.6	70.18	-41.99	112.17	57.46	32	10.87	30.15	116	59	P	H
	*	5745	115.59	-	-	102.9	32	10.86	30.17	116	59	P	H
	*	5745	107.75	-	-	95.06	32	10.86	30.17	116	59	A	H
													H
													H
		5610	52.01	-16.19	68.2	39.31	31.88	10.89	30.07	370	85	P	V
		5659.2	53.37	-21.66	75.03	40.75	31.84	10.88	30.1	370	85	P	V
		5719.4	62.1	-48.53	110.63	49.38	32	10.87	30.15	370	85	P	V
		5724.8	69.46	-52.28	121.74	56.74	32	10.87	30.15	370	85	P	V
	*	5745	112.41	-	-	99.72	32	10.86	30.17	370	85	P	V
	*	5745	104.72	-	-	92.03	32	10.86	30.17	370	85	A	V
													V
													V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		5611.4	52.63	-15.57	68.2	39.93	31.88	10.89	30.07	100	57	P	H
		5655	53.44	-18.47	71.91	40.84	31.82	10.88	30.1	100	57	P	H
		5719.8	52.55	-58.19	110.74	39.83	32	10.87	30.15	100	57	P	H
		5725	52.17	-70.03	122.2	39.45	32	10.87	30.15	100	57	P	H
	*	5785	116.06	-	-	103.27	32.14	10.85	30.2	100	57	P	H
	*	5785	108.19	-	-	95.4	32.14	10.85	30.2	100	57	A	H
		5852.2	52.8	-64.38	117.18	39.85	32.21	10.98	30.24	100	57	P	H
		5871.8	52.47	-53.62	106.09	39.41	32.29	11.03	30.26	100	57	P	H
		5905	52.98	-29.98	82.96	39.74	32.41	11.11	30.28	100	57	P	H
		5932.6	53.06	-15.14	68.2	39.71	32.47	11.18	30.3	100	57	P	H
													H
													H
		5613.4	53.02	-15.18	68.2	40.33	31.87	10.89	30.07	384	86	P	V
		5651.6	52.05	-17.34	69.39	39.45	31.81	10.89	30.1	384	86	P	V
		5701.6	51.73	-53.92	105.65	39	32	10.87	30.14	384	86	P	V
		5721.4	50.32	-63.67	113.99	37.6	32	10.87	30.15	384	86	P	V
	*	5785	113.09	-	-	100.3	32.14	10.85	30.2	384	86	P	V
	*	5785	105.19	-	-	92.4	32.14	10.85	30.2	384	86	A	V
		5854.8	51.18	-60.08	111.26	38.22	32.22	10.99	30.25	384	86	P	V
		5874.4	52.27	-53.1	105.37	39.19	32.3	11.04	30.26	384	86	P	V
		5914.8	53.89	-21.83	75.72	40.61	32.43	11.14	30.29	384	86	P	V
		5937.8	52.78	-15.42	68.2	39.41	32.48	11.2	30.31	384	86	P	V
													V
													V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	*	5825	115.36	-	-	102.47	32.2	10.91	30.22	100	57	P	H
	*	5825	107.53	-	-	94.64	32.2	10.91	30.22	100	57	A	H
		5851.6	63.85	-54.7	118.55	50.9	32.21	10.98	30.24	100	57	P	H
		5855	60.31	-50.49	110.8	47.35	32.22	10.99	30.25	100	57	P	H
		5875.6	53.78	-50.97	104.75	40.7	32.3	11.04	30.26	100	57	P	H
		5931.8	52.8	-15.4	68.2	39.46	32.46	11.18	30.3	100	57	P	H
													H
802.11a													H
CH 165	*	5825	112.56	-	-	99.67	32.2	10.91	30.22	374	85	P	V
5825MHz	*	5825	104.84	-	-	91.95	32.2	10.91	30.22	374	85	A	V
		5850	62.36	-59.84	122.2	49.42	32.2	10.98	30.24	374	85	P	V
		5855	55.1	-55.7	110.8	42.14	32.22	10.99	30.25	374	85	P	V
		5877.4	52.49	-50.93	103.42	39.4	32.31	11.04	30.26	374	85	P	V
		5928.6	52.82	-15.38	68.2	39.49	32.46	11.17	30.3	374	85	P	V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	49.99	-24.01	74	55.52	40.48	14.89	60.9	100	0	P	H
		17235	50.9	-17.3	68.2	49.81	40.94	18.97	58.82	100	0	P	H
													H
													H
		11490	49.69	-24.31	74	55.22	40.48	14.89	60.9	100	0	P	V
		17235	51.57	-16.63	68.2	50.48	40.94	18.97	58.82	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	48.93	-25.07	74	54.64	40.29	14.98	60.98	100	0	P	H
		17355	53.51	-14.69	68.2	51.32	41.75	19.11	58.67	100	0	P	H
													H
													H
		11570	49.48	-24.52	74	55.19	40.29	14.98	60.98	100	0	P	V
		17355	56.6	-11.6	68.2	54.41	41.75	19.11	58.67	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	49.27	-24.73	74	55.44	39.85	15.06	61.08	100	0	P	H
		17475	53.17	-15.03	68.2	49.96	42.5	19.24	58.53	100	0	P	H
													H
													H
		11650	48.4	-25.6	74	54.57	39.85	15.06	61.08	100	0	P	V
		17475	55.58	-12.62	68.2	52.37	42.5	19.24	58.53	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11ax HE20_Full (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5601.2	52.75	-15.45	68.2	40.01	31.9	10.9	30.06	100	115	P	H
		5699.8	52.62	-52.43	105.05	39.88	32	10.87	30.13	100	115	P	H
		5717.6	63.88	-46.25	110.13	51.16	32	10.87	30.15	100	115	P	H
		5724.4	69.28	-51.55	120.83	56.56	32	10.87	30.15	100	115	P	H
	*	5745	115.99	-	-	103.3	32	10.86	30.17	100	115	P	H
	*	5745	104.74	-	-	92.05	32	10.86	30.17	100	115	A	H
802.11ax													H
HE20 Full													H
CH 149		5646.8	52.63	-15.57	68.2	40.03	31.81	10.89	30.1	400	90	P	V
5745MHz		5697.6	52.66	-50.77	103.43	39.93	31.99	10.87	30.13	400	90	P	V
		5719.4	66.45	-44.18	110.63	53.73	32	10.87	30.15	400	90	P	V
		5723.8	72.87	-46.59	119.46	60.15	32	10.87	30.15	400	90	P	V
	*	5745	115.85	-	-	103.16	32	10.86	30.17	400	90	P	V
	*	5745	104.5	-	-	91.81	32	10.86	30.17	400	90	A	V
													V
													V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	*	5825	114.72	-	-	101.83	32.2	10.91	30.22	294	60	P	H
	*	5825	103.95	-	-	91.06	32.2	10.91	30.22	294	60	A	H
		5850.2	67.94	-53.8	121.74	55	32.2	10.98	30.24	294	60	P	H
		5856.2	63.79	-46.67	110.46	50.83	32.22	10.99	30.25	294	60	P	H
		5880.4	54.16	-47.03	101.19	41.05	32.32	11.05	30.26	294	60	P	H
		5937.6	53.69	-14.51	68.2	40.32	32.48	11.2	30.31	294	60	P	H
802.11ax													H
HE40 Full													H
CH 165	*	5825	115.17	-	-	102.28	32.2	10.91	30.22	400	84	P	V
5825MHz	*	5825	104.71	-	-	91.82	32.2	10.91	30.22	400	84	A	V
		5850.6	67.56	-53.27	120.83	54.62	32.2	10.98	30.24	400	84	P	V
		5855.4	65.41	-45.28	110.69	52.45	32.22	10.99	30.25	400	84	P	V
		5880.2	53.76	-47.58	101.34	40.65	32.32	11.05	30.26	400	84	P	V
		5930.2	54.4	-13.8	68.2	41.06	32.46	11.18	30.3	400	84	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

Band 4 5725~5850MHz

WIFI 802.11ax HE20_Partial 106 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Partial 106/53 CH 149 5745MHz		5630.8	54.33	-13.87	68.2	41.68	31.84	10.89	30.08	281	62	P	H
		5693.6	53.16	-47.32	100.48	40.44	31.97	10.88	30.13	281	62	P	H
		5719.2	65.92	-44.66	110.58	53.2	32	10.87	30.15	281	62	P	H
		5720.8	66.23	-46.39	112.62	53.51	32	10.87	30.15	281	62	P	H
	*	5745	116.82	-	-	104.13	32	10.86	30.17	281	62	P	H
	*	5745	105.21	-	-	92.52	32	10.86	30.17	281	62	A	H
													H
													H
		5615.6	53.19	-15.01	68.2	40.5	31.87	10.89	30.07	400	82	P	V
		5694	53.34	-47.44	100.78	40.61	31.98	10.88	30.13	400	82	P	V
		5715.2	67.11	-42.35	109.46	54.38	32	10.87	30.14	400	82	P	V
		5724.4	67.4	-53.43	120.83	54.68	32	10.87	30.15	400	82	P	V
	*	5745	117.47	-	-	104.78	32	10.86	30.17	400	82	P	V
	*	5745	105.91	-	-	93.22	32	10.86	30.17	400	82	A	V
													V
													V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Partial 106/54 CH 165 5825MHz	*	5825	114.63	-	-	101.74	32.2	10.91	30.22	288	62	P	H
	*	5825	105.16	-	-	92.27	32.2	10.91	30.22	288	62	A	H
		5854.8	67.37	-43.89	111.26	54.41	32.22	10.99	30.25	288	62	P	H
		5855	67.35	-43.45	110.8	54.39	32.22	10.99	30.25	288	62	P	H
		5880.6	54.02	-47.02	101.04	40.91	32.32	11.05	30.26	288	62	P	H
		5943.8	54.28	-13.92	68.2	40.89	32.49	11.21	30.31	288	62	P	H
													H
													H
	*	5825	117.33	-	-	104.44	32.2	10.91	30.22	381	87	P	V
	*	5825	106.99	-	-	94.1	32.2	10.91	30.22	381	87	A	V
		5851.4	64.92	-54.09	119.01	51.97	32.21	10.98	30.24	381	87	P	V
		5855.2	67.31	-43.43	110.74	54.35	32.22	10.99	30.25	381	87	P	V
		5916.2	54.68	-20.01	74.69	41.4	32.43	11.14	30.29	381	87	P	V
		5948.4	53.74	-14.46	68.2	40.33	32.5	11.22	30.31	381	87	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11ax HE40_Full (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5614.8	54.19	-14.01	68.2	41.5	31.87	10.89	30.07	298	64	P	H
		5698.8	65.75	-38.57	104.32	53.01	32	10.87	30.13	298	64	P	H
		5719.6	77.29	-33.4	110.69	64.57	32	10.87	30.15	298	64	P	H
		5724.4	78.86	-41.97	120.83	66.14	32	10.87	30.15	298	64	P	H
	*	5755	112.13	-	-	99.42	32.02	10.86	30.17	298	64	P	H
	*	5755	101.28	-	-	88.57	32.02	10.86	30.17	298	64	A	H
		5852	53.55	-64.09	117.64	40.6	32.21	10.98	30.24	298	64	P	H
		5871.4	53.54	-52.67	106.21	40.48	32.29	11.03	30.26	298	64	P	H
		5921.6	53.71	-17	70.71	40.4	32.44	11.16	30.29	298	64	P	H
		5949.8	53.97	-14.23	68.2	40.55	32.5	11.23	30.31	298	64	P	H
802.11ax													H
HE40 Full													H
CH 151		5632	53.48	-14.72	68.2	40.84	31.84	10.89	30.09	400	90	P	V
5755MHz		5697.2	63.94	-39.2	103.14	51.21	31.99	10.87	30.13	400	90	P	V
		5717.6	75.51	-34.62	110.13	62.79	32	10.87	30.15	400	90	P	V
		5723	78.77	-38.87	117.64	66.05	32	10.87	30.15	400	90	P	V
	*	5755	114.01	-	-	101.3	32.02	10.86	30.17	400	90	P	V
	*	5755	102.52	-	-	89.81	32.02	10.86	30.17	400	90	A	V
		5850.4	52.91	-68.38	121.29	39.97	32.2	10.98	30.24	400	90	P	V
		5865.2	52.9	-55.04	107.94	39.88	32.26	11.01	30.25	400	90	P	V
		5916.6	54.25	-20.14	74.39	40.97	32.43	11.14	30.29	400	90	P	V
		5949.6	54.4	-13.8	68.2	40.98	32.5	11.23	30.31	400	90	P	V
													V
													V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5622	53.46	-14.74	68.2	40.79	31.86	10.89	30.08	300	65	P	H
		5696.8	54.88	-47.96	102.84	42.15	31.99	10.87	30.13	300	65	P	H
		5717.4	62.96	-47.11	110.07	50.24	32	10.87	30.15	300	65	P	H
		5722	62.34	-53.02	115.36	49.62	32	10.87	30.15	300	65	P	H
	*	5795	112.96	-	-	100.13	32.18	10.85	30.2	300	65	P	H
	*	5795	101.64	-	-	88.81	32.18	10.85	30.2	300	65	A	H
		5850	65.01	-57.19	122.2	52.07	32.2	10.98	30.24	300	65	P	H
		5855.8	62.97	-47.61	110.58	50.01	32.22	10.99	30.25	300	65	P	H
		5880	56.5	-44.99	101.49	43.39	32.32	11.05	30.26	300	65	P	H
		5944	54.54	-13.66	68.2	41.15	32.49	11.21	30.31	300	65	P	H
802.11ax													H
HE40 Full													H
CH 159		5603.4	54.17	-14.03	68.2	41.44	31.89	10.9	30.06	364	86	P	V
5795MHz		5695.4	53.21	-48.6	101.81	40.48	31.98	10.88	30.13	364	86	P	V
		5719.6	57.67	-53.02	110.69	44.95	32	10.87	30.15	364	86	P	V
		5724	60.86	-59.06	119.92	48.14	32	10.87	30.15	364	86	P	V
	*	5795	113.91	-	-	101.08	32.18	10.85	30.2	364	86	P	V
	*	5795	102.75	-	-	89.92	32.18	10.85	30.2	364	86	A	V
		5850.4	65.7	-55.59	121.29	52.76	32.2	10.98	30.24	364	86	P	V
		5857.2	63.49	-46.69	110.18	50.52	32.23	10.99	30.25	364	86	P	V
		5880	55.39	-46.1	101.49	42.28	32.32	11.05	30.26	364	86	P	V
		5933.6	54.12	-14.08	68.2	40.76	32.47	11.19	30.3	364	86	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

Band 4 5725~5850MHz

WIFI 802.11ax HE40_Partial 242 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5641	55.71	-12.49	68.2	43.09	31.82	10.89	30.09	124	58	P	H
		5696.2	67.75	-34.65	102.4	55.03	31.98	10.87	30.13	124	58	P	H
		5719.4	79.71	-30.92	110.63	66.99	32	10.87	30.15	124	58	P	H
		5720.8	83.32	-29.3	112.62	70.6	32	10.87	30.15	124	58	P	H
	*	5755	113.22	-	-	100.51	32.02	10.86	30.17	124	58	P	H
	*	5755	103.07	-	-	90.36	32.02	10.86	30.17	124	58	A	H
		5850.8	57.16	-63.22	120.38	44.22	32.2	10.98	30.24	124	58	P	H
		5866.4	57.72	-49.89	107.61	44.68	32.27	11.02	30.25	124	58	P	H
		5890.2	54.11	-39.81	93.92	40.94	32.36	11.08	30.27	124	58	P	H
802.11ax		5928.6	53.72	-14.48	68.2	40.39	32.46	11.17	30.3	124	58	P	H
HE40													H
Partial													H
262/61		5610.6	53.33	-14.87	68.2	40.63	31.88	10.89	30.07	400	82	P	V
CH 151		5698	66.29	-37.44	103.73	53.56	31.99	10.87	30.13	400	82	P	V
5755MHz		5718.8	78.62	-31.84	110.46	65.9	32	10.87	30.15	400	82	P	V
		5724.6	82.12	-39.17	121.29	69.4	32	10.87	30.15	400	82	P	V
	*	5755	113.63	-	-	100.92	32.02	10.86	30.17	400	82	P	V
	*	5755	103.71	-	-	91	32.02	10.86	30.17	400	82	A	V
		5852	54.37	-63.27	117.64	41.42	32.21	10.98	30.24	400	82	P	V
		5866.6	56.02	-51.53	107.55	42.98	32.27	11.02	30.25	400	82	P	V
		5914.8	53.55	-22.17	75.72	40.27	32.43	11.14	30.29	400	82	P	V
		5942.2	55.39	-12.81	68.2	42.01	32.48	11.21	30.31	400	82	P	V
													V
													V

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5645	53.55	-14.65	68.2	40.94	31.81	10.89	30.09	290	61	P	H
		5679	55.92	-33.78	89.7	43.24	31.92	10.88	30.12	290	61	P	H
		5719.8	63.65	-47.09	110.74	50.93	32	10.87	30.15	290	61	P	H
		5720	63.31	-47.49	110.8	50.59	32	10.87	30.15	290	61	P	H
	*	5795	112.63	-	-	99.8	32.18	10.85	30.2	290	61	P	H
	*	5795	101.88	-	-	89.05	32.18	10.85	30.2	290	61	A	H
		5851.4	69.71	-49.3	119.01	56.76	32.21	10.98	30.24	290	61	P	H
		5858.2	64.87	-45.03	109.9	51.89	32.23	11	30.25	290	61	P	H
		5885.4	60.74	-36.74	97.48	47.61	32.34	11.06	30.27	290	61	P	H
802.11ax		5944.2	54.46	-13.74	68.2	41.07	32.49	11.21	30.31	290	61	P	H
HE40													H
Partial													H
262/62		5613.2	53.51	-14.69	68.2	40.82	31.87	10.89	30.07	388	87	P	V
CH 159		5698.6	56.68	-47.49	104.17	43.95	31.99	10.87	30.13	388	87	P	V
5795MHz		5718.2	61.87	-48.43	110.3	49.15	32	10.87	30.15	388	87	P	V
		5723.8	61.05	-58.41	119.46	48.33	32	10.87	30.15	388	87	P	V
	*	5795	114.73	-	-	101.9	32.18	10.85	30.2	388	87	P	V
	*	5795	103.91	-	-	91.08	32.18	10.85	30.2	388	87	A	V
		5850.2	68.91	-52.83	121.74	55.97	32.2	10.98	30.24	388	87	P	V
		5855	68.65	-42.15	110.8	55.69	32.22	10.99	30.25	388	87	P	V
		5880.6	63.41	-37.63	101.04	50.3	32.32	11.05	30.26	388	87	P	V
		5937.2	54.68	-13.52	68.2	41.32	32.47	11.19	30.3	388	87	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

Band 4 5725~5850MHz

WIFI 802.11ax HE80_Full (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5650	62.29	-5.91	68.2	49.7	31.8	10.89	30.1	123	58	P	H
		5696.8	73.22	-29.62	102.84	60.49	31.99	10.87	30.13	123	58	P	H
		5715.6	77.53	-32.04	109.57	64.81	32	10.87	30.15	123	58	P	H
		5722.4	78.33	-37.94	116.27	65.61	32	10.87	30.15	123	58	P	H
	*	5775	111.88	-	-	99.11	32.1	10.86	30.19	123	58	P	H
	*	5775	100.44	-	-	87.67	32.1	10.86	30.19	123	58	A	H
		5850.6	73.6	-47.23	120.83	60.66	32.2	10.98	30.24	123	58	P	H
		5867.6	74.25	-33.02	107.27	61.21	32.27	11.02	30.25	123	58	P	H
		5875.2	65.67	-39.38	105.05	52.59	32.3	11.04	30.26	123	58	P	H
		5928.8	58.08	-10.12	68.2	44.75	32.46	11.17	30.3	123	58	P	H
802.11ax													H
HE80 Full													H
CH 155		5648	60.57	-7.63	68.2	47.98	31.8	10.89	30.1	370	86	P	V
5775MHz		5699.8	75.02	-30.03	105.05	62.28	32	10.87	30.13	370	86	P	V
		5719.6	76.48	-34.21	110.69	63.76	32	10.87	30.15	370	86	P	V
		5723.8	75.84	-43.62	119.46	63.12	32	10.87	30.15	370	86	P	V
	*	5775	112.62	-	-	99.85	32.1	10.86	30.19	370	86	P	V
	*	5775	99.78	-	-	87.01	32.1	10.86	30.19	370	86	A	V
		5850.2	73.16	-48.58	121.74	60.22	32.2	10.98	30.24	370	86	P	V
		5867.2	73.94	-33.44	107.38	60.9	32.27	11.02	30.25	370	86	P	V
		5875	67.98	-37.22	105.2	54.9	32.3	11.04	30.26	370	86	P	V
		5926	56.37	-11.83	68.2	43.05	32.45	11.17	30.3	370	86	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

Band 4 5725~5850MHz

WIFI 802.11ax HE80_Partial 484 (Band Edge @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Partial 484/65 CH 155 5775MHz		5649.6	61.83	-6.37	68.2	49.24	31.8	10.89	30.1	104	60	P	H
		5687.2	78.33	-17.43	95.76	65.62	31.95	10.88	30.12	104	60	P	H
		5719.4	75.11	-35.52	110.63	62.39	32	10.87	30.15	104	60	P	H
		5723.8	77.93	-41.53	119.46	65.21	32	10.87	30.15	104	60	P	H
	*	5775	111.59	-	-	98.82	32.1	10.86	30.19	104	60	P	H
	*	5775	101.41	-	-	88.64	32.1	10.86	30.19	104	60	A	H
		5850	74.16	-48.04	122.2	61.22	32.2	10.98	30.24	104	60	P	H
		5865.6	72.77	-35.06	107.83	59.74	32.26	11.02	30.25	104	60	P	H
		5877.6	65.68	-37.59	103.27	52.58	32.31	11.05	30.26	104	60	P	H
		5930	54.8	-13.4	68.2	41.46	32.46	11.18	30.3	104	60	P	H
													H
													H
		5649	59.38	-8.82	68.2	46.79	31.8	10.89	30.1	375	87	P	V
		5685.4	76.55	-17.88	94.43	63.85	31.94	10.88	30.12	375	87	P	V
		5719	74.35	-36.17	110.52	61.63	32	10.87	30.15	375	87	P	V
		5725	77.52	-44.68	122.2	64.8	32	10.87	30.15	375	87	P	V
	*	5775	111.92	-	-	99.15	32.1	10.86	30.19	375	87	P	V
	*	5775	101.78	-	-	89.01	32.1	10.86	30.19	375	87	A	V
		5851.8	71.68	-46.42	118.1	58.73	32.21	10.98	30.24	375	87	P	V
		5864.6	71.37	-36.74	108.11	58.35	32.26	11.01	30.25	375	87	P	V
		5875.2	65.44	-39.61	105.05	52.36	32.3	11.04	30.26	375	87	P	V
		5944.2	54.34	-13.86	68.2	40.95	32.49	11.21	30.31	375	87	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5647	57.32	-10.88	68.2	44.72	31.81	10.89	30.1	100	124	P	H
		5688.8	75.66	-21.28	96.94	62.95	31.96	10.88	30.13	100	124	P	H
		5718.8	74.67	-35.79	110.46	61.95	32	10.87	30.15	100	124	P	H
		5724.2	76.96	-43.42	120.38	64.24	32	10.87	30.15	100	124	P	H
	*	5775	111.36	-	-	98.59	32.1	10.86	30.19	100	124	P	H
	*	5775	100.41	-	-	87.64	32.1	10.86	30.19	100	124	A	H
		5851.4	67.51	-51.5	119.01	54.56	32.21	10.98	30.24	100	124	P	H
		5863.8	70.78	-37.55	108.33	57.76	32.26	11.01	30.25	100	124	P	H
		5875.6	62.55	-42.2	104.75	49.47	32.3	11.04	30.26	100	124	P	H
802.11ax		5942.2	54.06	-14.14	68.2	40.68	32.48	11.21	30.31	100	124	P	H
HE80													H
Partial													H
484/66		5649.2	58.91	-9.29	68.2	46.32	31.8	10.89	30.1	361	86	P	V
CH 155		5686	76.88	-17.99	94.87	64.18	31.94	10.88	30.12	361	86	P	V
5775MHz		5720	73.98	-36.82	110.8	61.26	32	10.87	30.15	361	86	P	V
		5724	76.53	-43.39	119.92	63.81	32	10.87	30.15	361	86	P	V
	*	5785	110.17	-	-	97.38	32.14	10.85	30.2	361	86	P	V
	*	5785	100.28	-	-	87.49	32.14	10.85	30.2	361	86	A	V
		5850.2	71.97	-49.77	121.74	59.03	32.2	10.98	30.24	361	86	P	V
		5865.8	71.31	-36.46	107.77	58.28	32.26	11.02	30.25	361	86	P	V
		5875.8	64.53	-40.08	104.61	51.45	32.3	11.04	30.26	361	86	P	V
		5925.8	54.08	-14.12	68.2	40.76	32.45	11.17	30.3	361	86	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.

Emission below 1GHz

WIFI 802.11ax HE80 Full (LF @ 3m)

WIFI Ant. 0+1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Full LF		32.91	21.01	-18.99	40	30.91	21.69	0.74	32.33	-	-	P	H
		87.23	22.2	-17.8	40	38.79	14.53	1.27	32.39	-	-	P	H
		174.53	33.32	-10.18	43.5	48.31	15.54	1.86	32.39	-	-	P	H
		216.24	33.25	-12.75	46	48.63	14.92	2.09	32.39	-	-	P	H
		715.79	36.44	-9.56	46	38.46	26.67	3.73	32.42	100	0	P	H
		914.64	33.6	-12.4	46	32.11	28.87	4.35	31.73	-	-	P	H
													H
													H
													H
													H
													H
													H
		31.94	21.41	-18.59	40	31.17	21.84	0.73	32.33	-	-	P	V
		78.5	21.23	-18.77	40	39.09	13.48	1.19	32.53	-	-	P	V
		174.53	27.22	-16.28	43.5	42.21	15.54	1.86	32.39	-	-	P	V
		462.62	25.67	-20.33	46	32.11	23.18	2.93	32.55	-	-	P	V
		565.44	27.52	-18.48	46	30.72	25.91	3.29	32.4	-	-	P	V
		735.19	38.38	-7.62	46	39.45	27.59	3.79	32.45	100	0	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

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

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

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

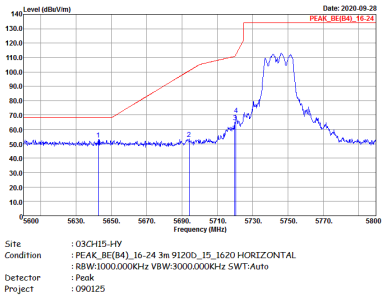
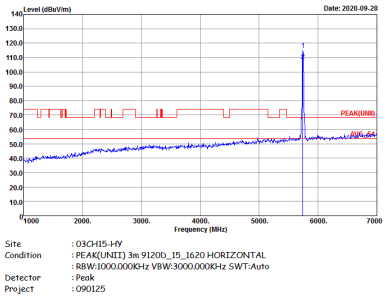
Test Engineer :	Leo Lee, Mancy Chou and Bigshow Wang	**Temperature :**	22.3~23.1°C
		Relative Humidity :	48~55%

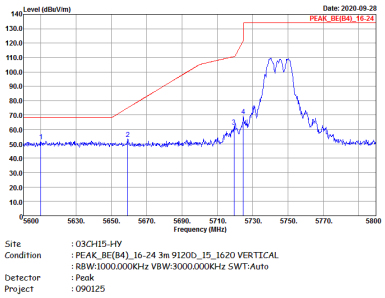
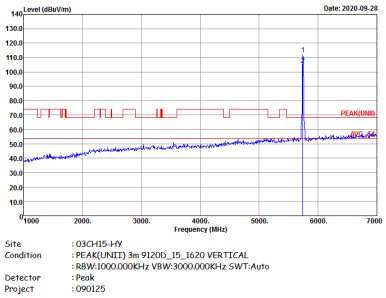
Note symbol

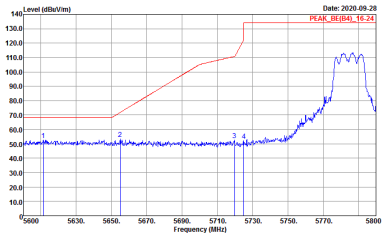
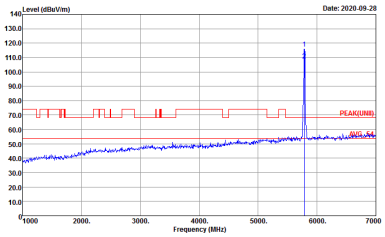
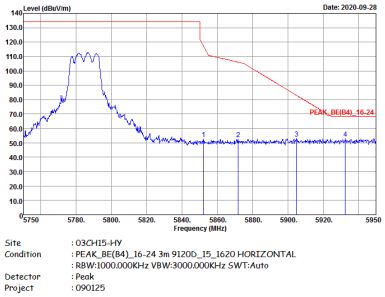
-L	**Low channel location**
-R	**High channel location**

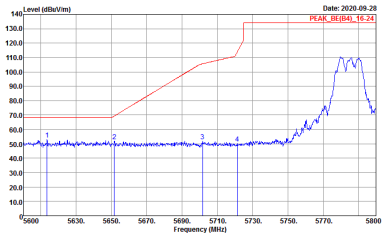
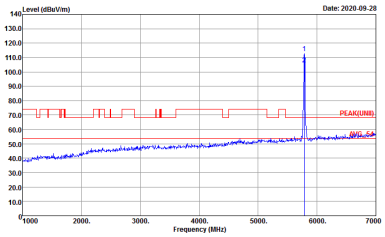
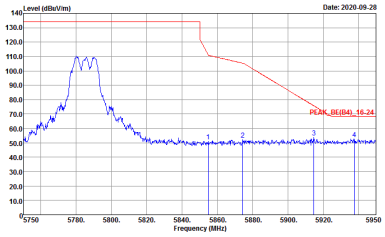
Band 4 - 5725~5850MHz

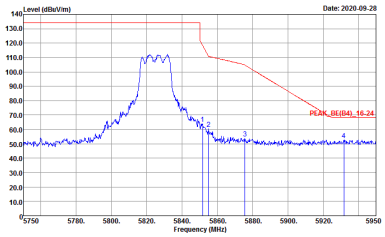
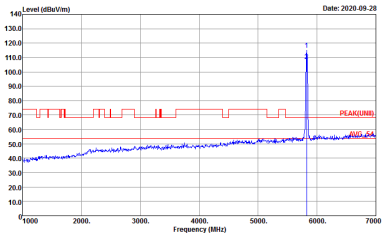
WIFI 802.11a (Band Edge @ 3m)

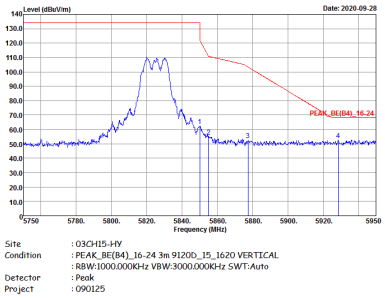
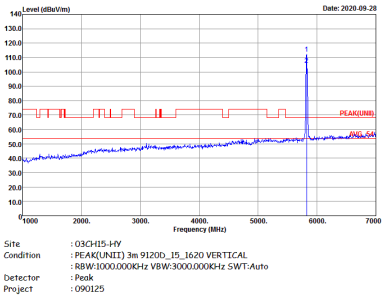
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
0+1	Horizontal	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
0+1	Vertical	Fundamental
Peak		

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
0+1	Horizontal	Fundamental
Peak		
Peak		Left blank

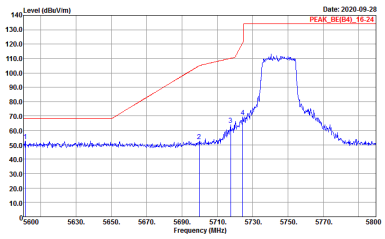
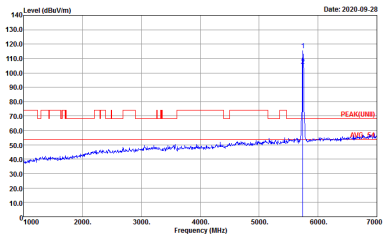
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125	Left blank

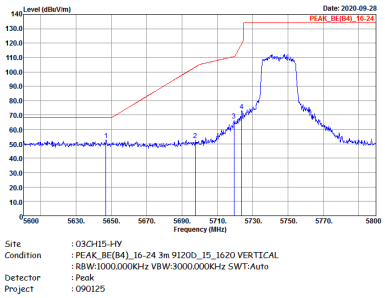
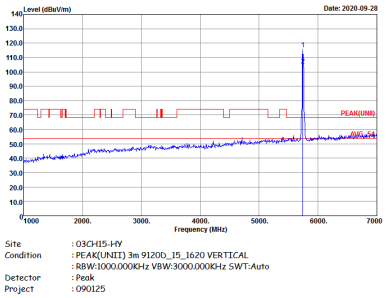
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125

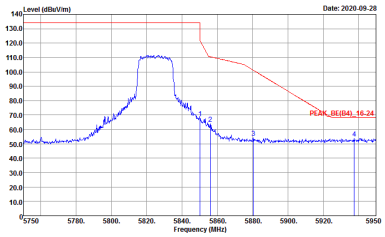
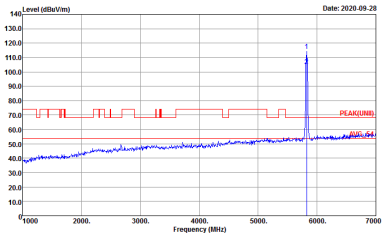
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
0+1	Vertical	Fundamental
Peak		

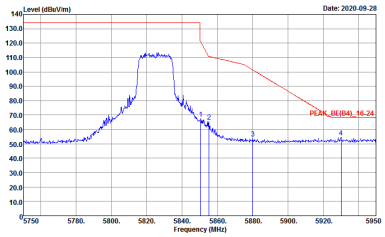
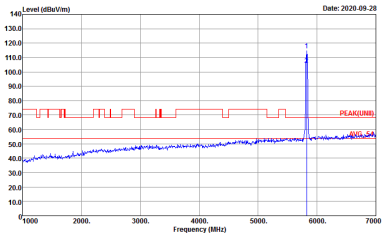
Band 4 5725~5850MHz

WIFI 802.11ax HE20 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125

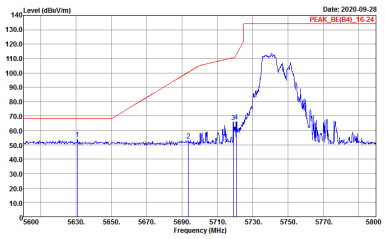
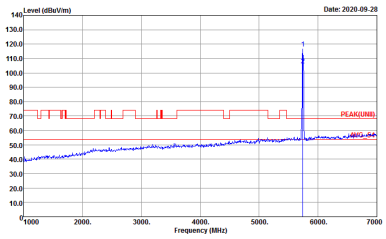
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
0+1	Vertical	Fundamental
Peak		

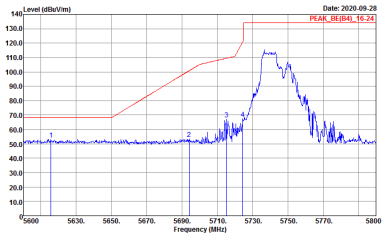
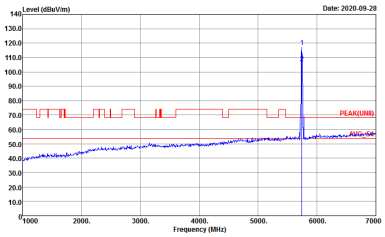
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125

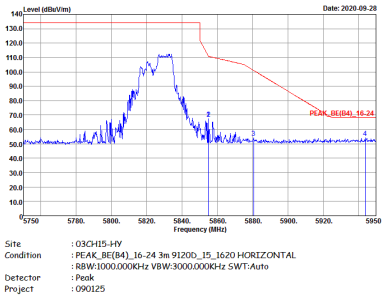
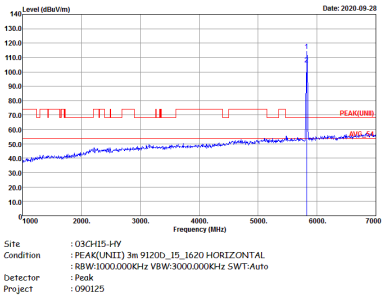
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125

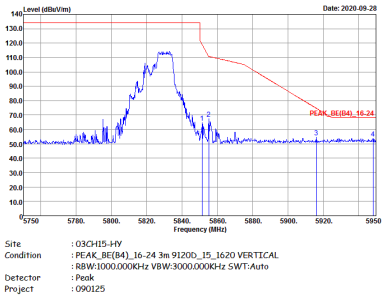
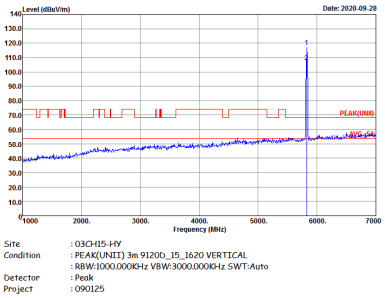
Band 4 5725~5850MHz

WIFI 802.11ax HE20 Partial 106 (Band Edge @ 3m)

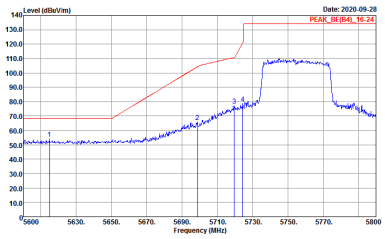
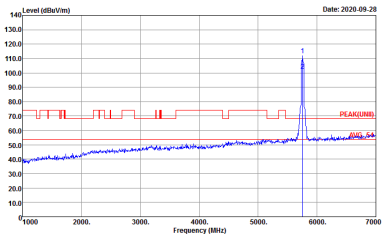
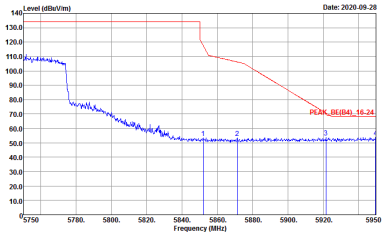
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/53 CH149 5745MHz	
0+1	Horizontal	Fundamental
Peak		

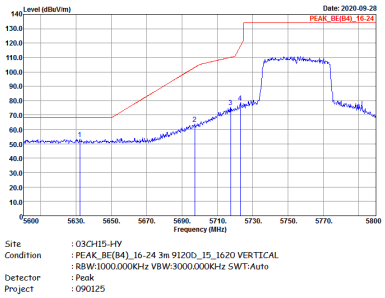
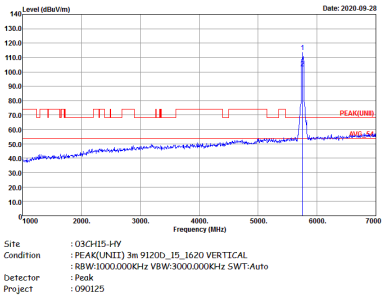
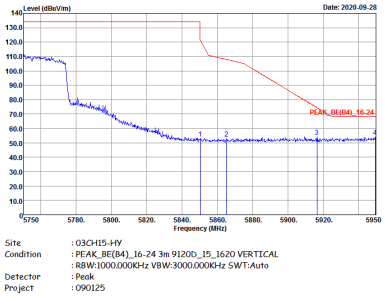
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/53 CH149 5745MHz	
0+1	Vertical	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125

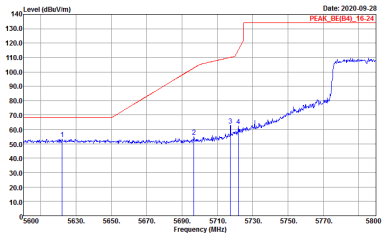
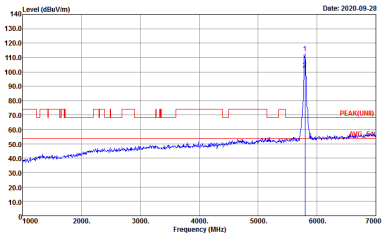
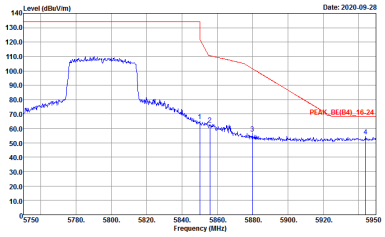
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/54 CH165 5825MHz	
0+1	Horizontal	Fundamental
Peak		

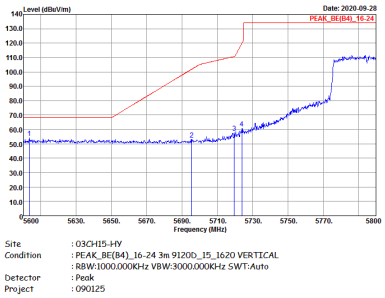
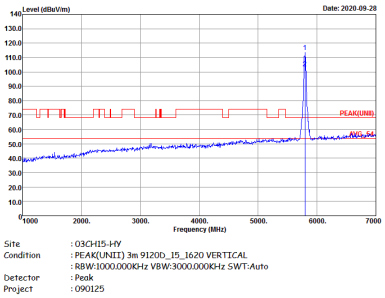
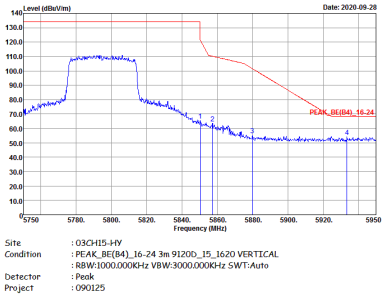
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 106/54 CH165 5825MHz	
0+1	Vertical	Fundamental
Peak		

Band 4 5725~5850MHz
WIFI 802.11ax HE40 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
0+1	Horizontal	Fundamental
Peak		
Peak		Left blank

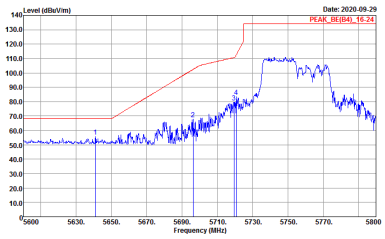
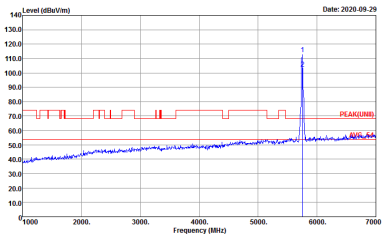
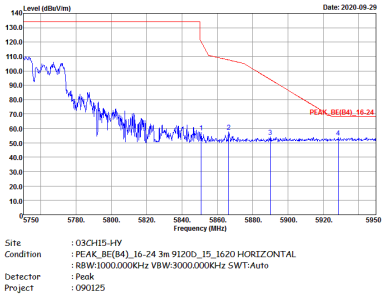
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
0+1	Vertical	Fundamental
Peak		
Peak		Left blank

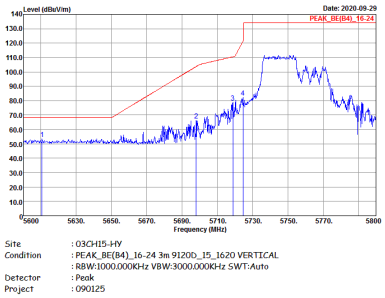
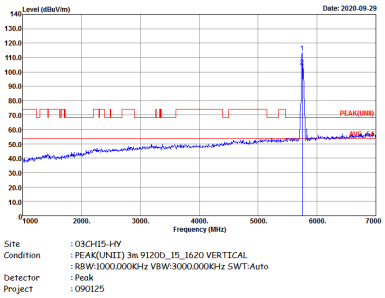
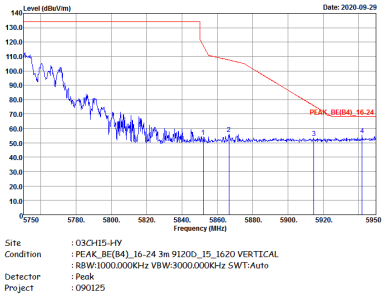
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full HT40 CH159 5795MHz	
0+1	Horizontal	Fundamental
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125
Peak	 Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 9120D_15_1620 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 090125	Left blank

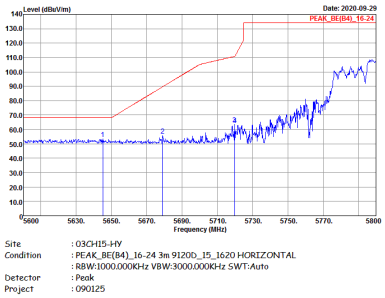
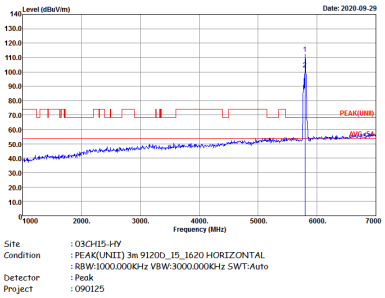
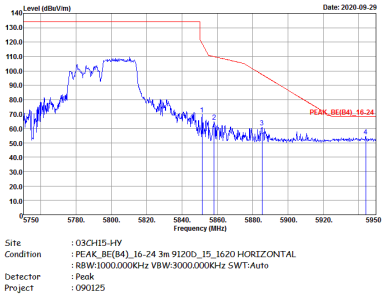
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
0+1	Vertical	Fundamental
Peak		
Peak		Left blank

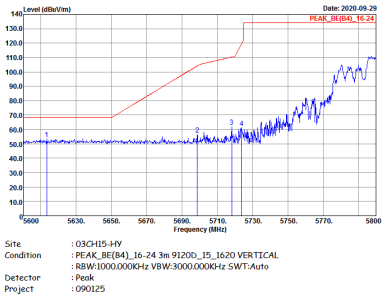
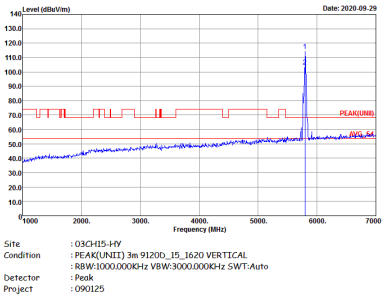
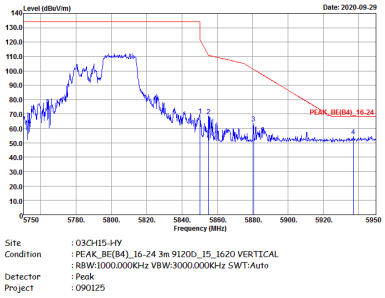
Band 4 5725~5850MHz

WIFI 802.11ax HE40 Partial 242 (Band Edge @ 3m)

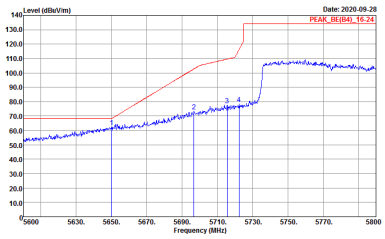
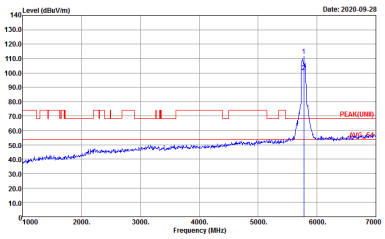
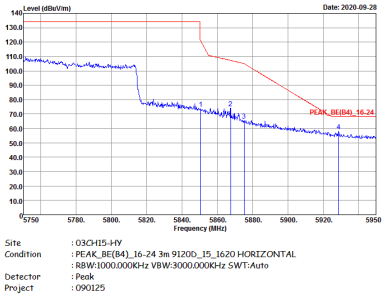
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/61 CH151 5755MHz	
0+1	Horizontal	Fundamental
Peak		
Peak		Left blank

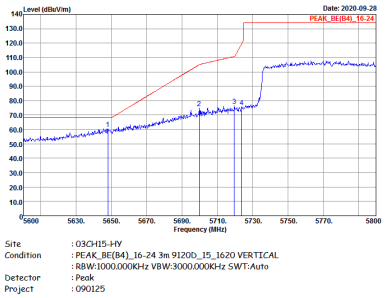
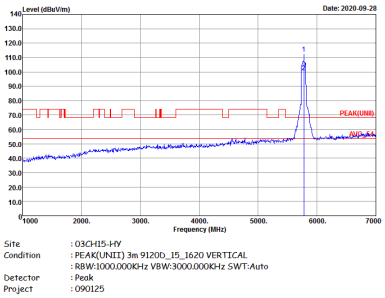
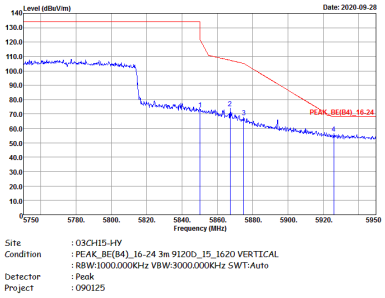
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/61 CH151 5755MHz	
0+1	Vertical	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/62 CH159 5795MHz	
0+1	Horizontal	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Partial 242/62 CH159 5795MHz	
0+1	Vertical	Fundamental
Peak		
Peak		Left blank

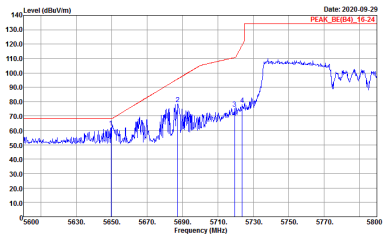
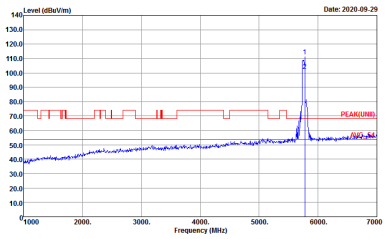
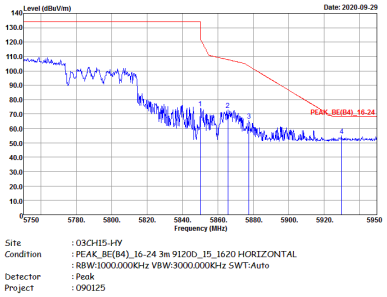
Band 4 5725~5850MHz
WIFI 802.11ax HE80 Full (Band Edge @ 3m)

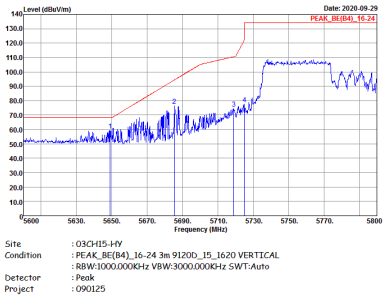
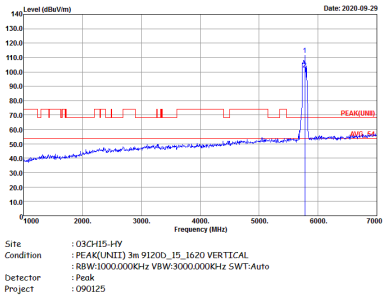
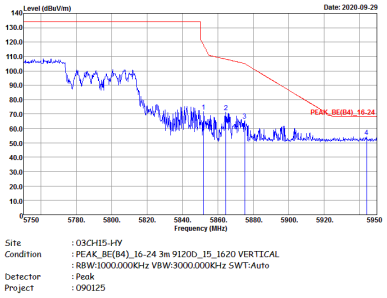
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
0+1	Horizontal	Fundamental
Peak		
Peak		Left blank

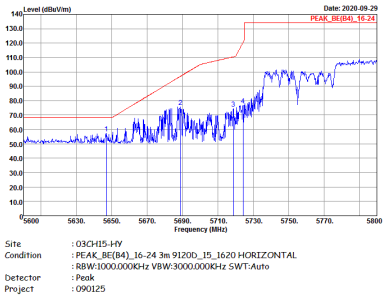
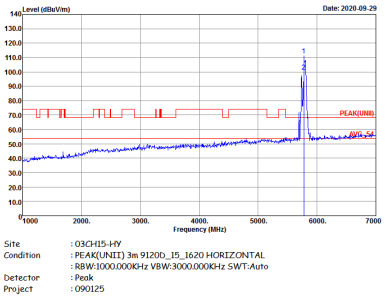
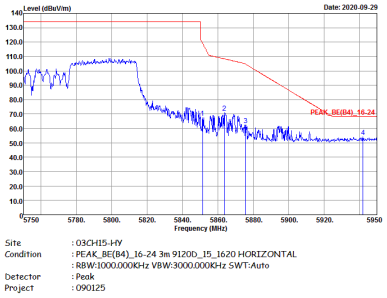
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
0+1	Vertical	Fundamental
Peak		
Peak		Left blank

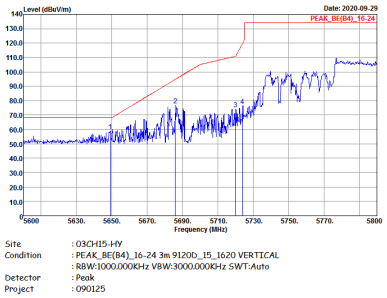
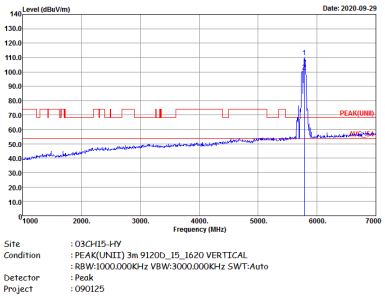
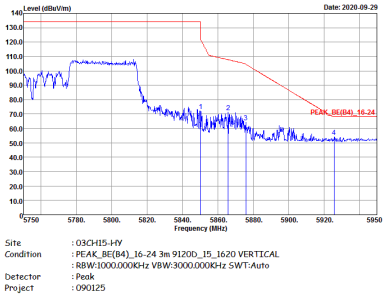
Band 4 5725~5850MHz

WIFI 802.11ax HE80 Partial 242 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/65 CH155 5775MHz	
0+1	Horizontal	Fundamental
Peak		
Peak		Left blank

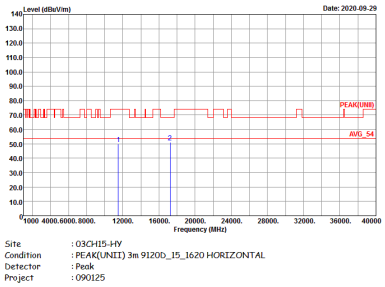
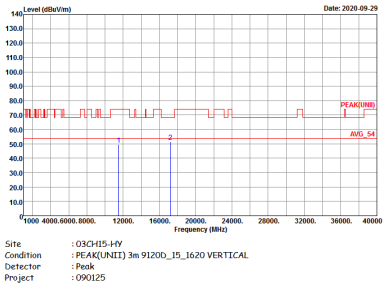
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/65 CH155 5775MHz	
0+1	Vertical	Fundamental
Peak		
Peak		Left blank

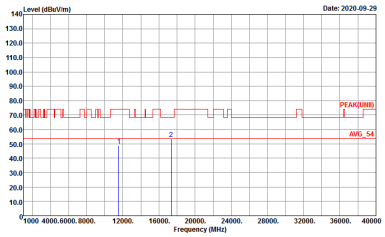
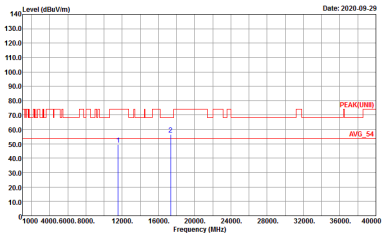
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/66 CH155 5775MHz	
0+1	Horizontal	Fundamental
Peak		
Peak		Left blank

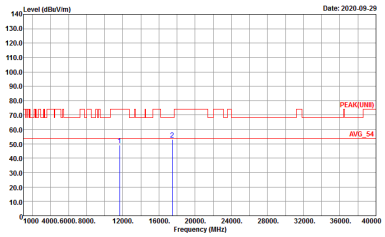
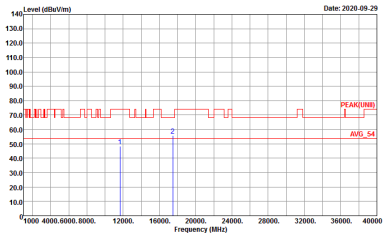
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Partial 484/66 CH155 5775MHz	
0+1	Vertical	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

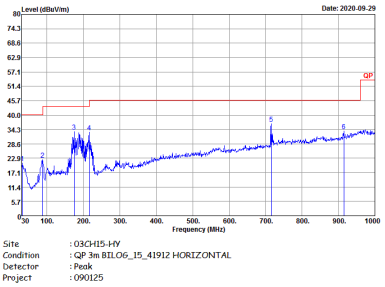
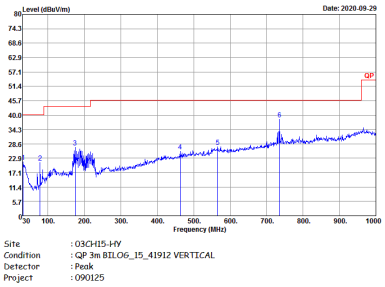
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
0+1	Horizontal	Vertical
Peak Avg.		

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 HORIZONTAL Detector : Peak Project : 090125	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 VERTICAL Detector : Peak Project : 090125

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
0+1	Horizontal	Vertical
Peak Avg.	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 HORIZONTAL Detector : Peak Project : 090125	 Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 VERTICAL Detector : Peak Project : 090125

Emission below 1GHz

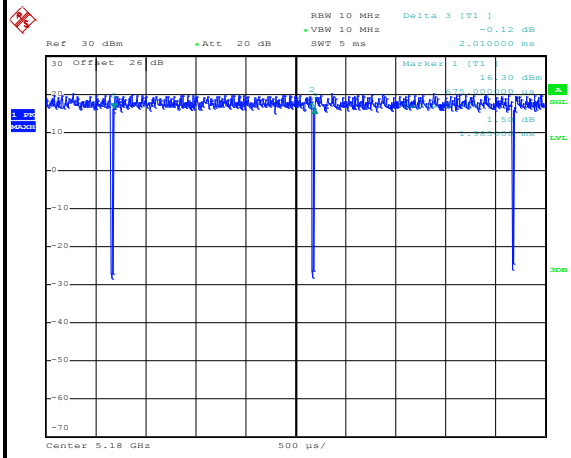
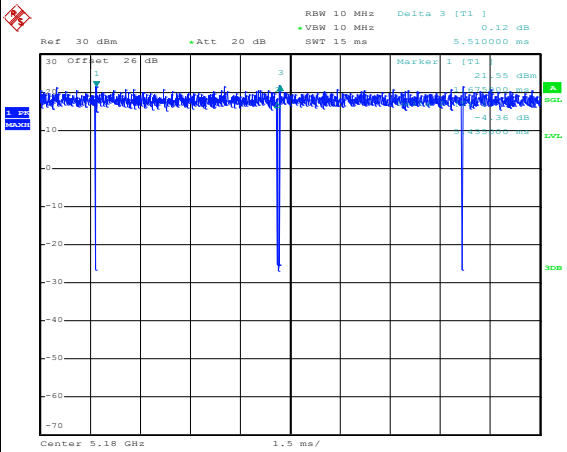
5GHz WIFI 802.11ax HE80 Full (LF)

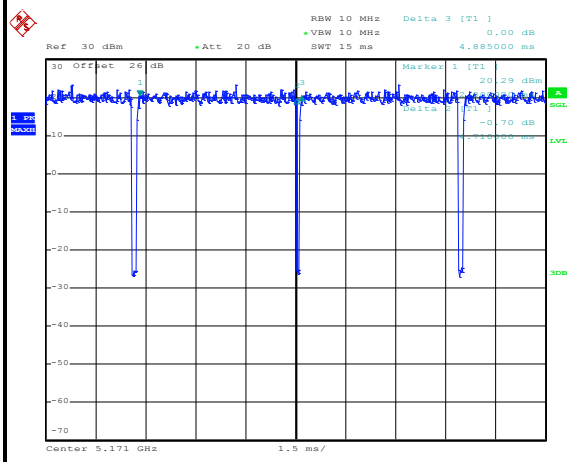
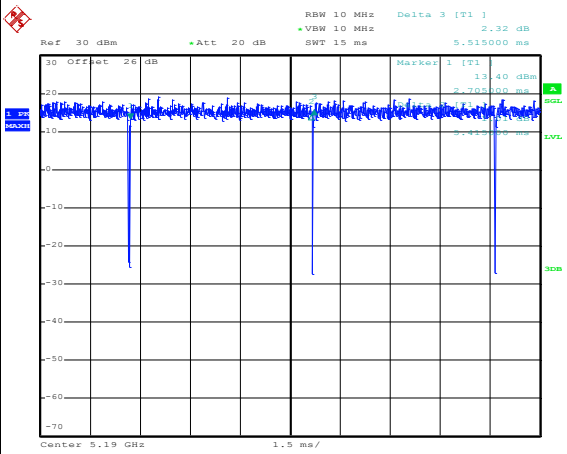
WIFI	5GHz WIFI	
ANT	802.11ax HE80 Full LF	
0+1	Horizontal	Vertical
QP / Peak		

Appendix D. Duty Cycle Plots

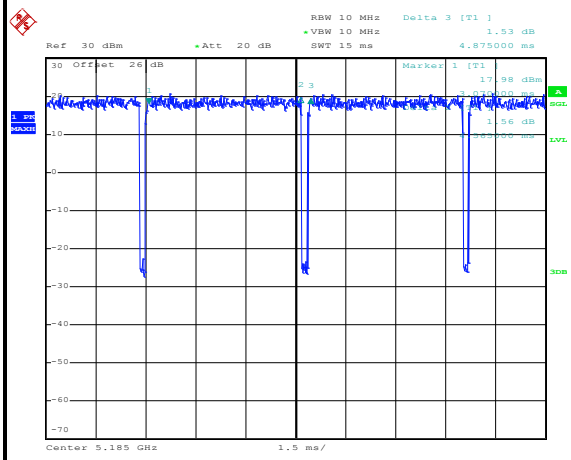
Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
0+1	802.11a for Ant. 0	98.76	-	-	10Hz	0.05
0+1	802.11a for Ant. 1	99.00	-	-	10Hz	0.04
0+1	5GHz 802.11ax HE20 Full RU for Ant. 0	98.64	-	-	10Hz	0.06
0+1	5GHz 802.11ax HE20 Full RU for Ant. 1	98.73	-	-	10Hz	0.06
0+1	5GHz 802.11ax HE20 106 RU for Ant. 0	96.42	4710	0.21	300Hz	0.16
0+1	5GHz 802.11ax HE20 106 RU for Ant. 1	95.52	4690	0.21	300Hz	0.20
0+1	5GHz 802.11ax HE40 Full RU for Ant. 0	98.19	-	-	10Hz	0.08
0+1	5GHz 802.11ax HE40 Full RU for Ant. 1	98.36	-	-	10Hz	0.07
0+1	5GHz 802.11ax HE40 242 RU for Ant. 0	93.64	4565	0.22	300Hz	0.29
0+1	5GHz 802.11ax HE40 242 RU for Ant. 1	96.64	4605	0.22	300Hz	0.15
0+1	5GHz 802.11ax HE80 Full RU for Ant. 0	98.90	-	-	10Hz	0.05
0+1	5GHz 802.11ax HE80 Full RU for Ant. 1	98.73	-	-	10Hz	0.06
0+1	5GHz 802.11ax HE80 484 RU for Ant. 0	97.99	4630	0.22	300Hz	0.09
0+1	5GHz 802.11ax HE80 484 RU for Ant. 1	95.83	4595	0.22	300Hz	0.18

MIMO <Ant. 0>

802.11a	802.11ax HE20 Full RU
	
Date: 24.SEP.2020 10:21:06	Date: 24.SEP.2020 10:49:08

802.11ax HE20 106 RU	802.11ax HE40 Full RU
	
Date: 24.SEP.2020 11:13:31	Date: 24.SEP.2020 10:52:37

802.11ax HE40 242 RU



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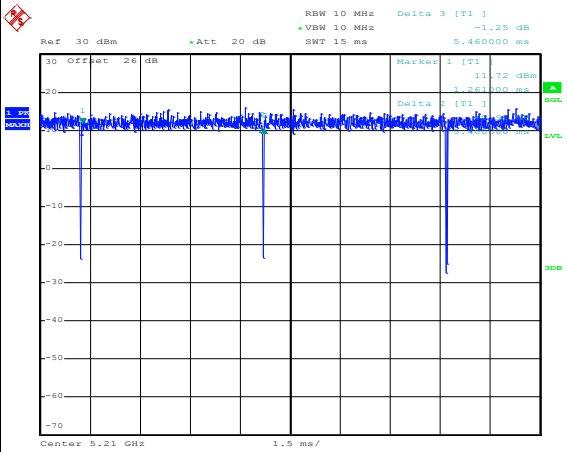
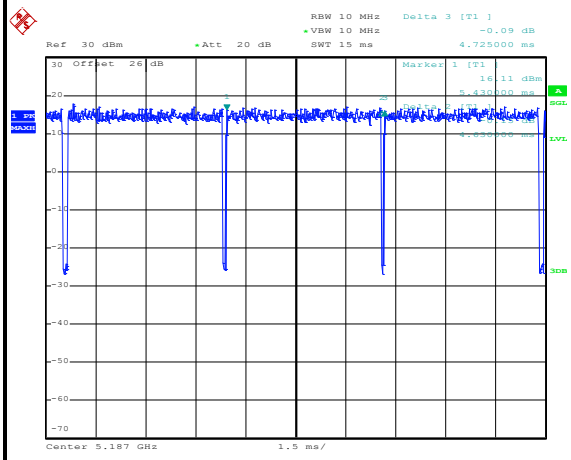
802.11ax HE80 Full RU



Date: 24.SEP.2020 10:56:00

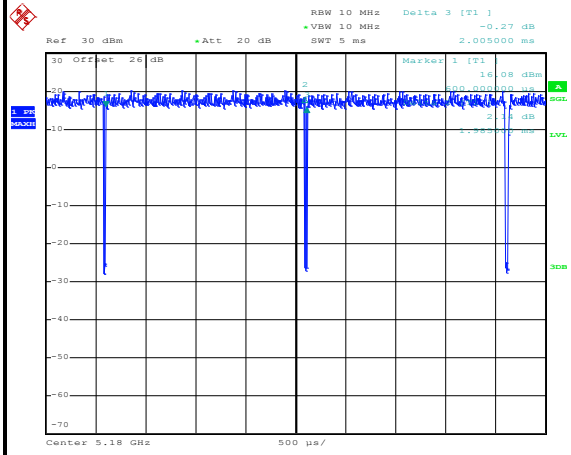
802.11ax HE80 484 RU



Date: 24.SEP.2020 11:34:14

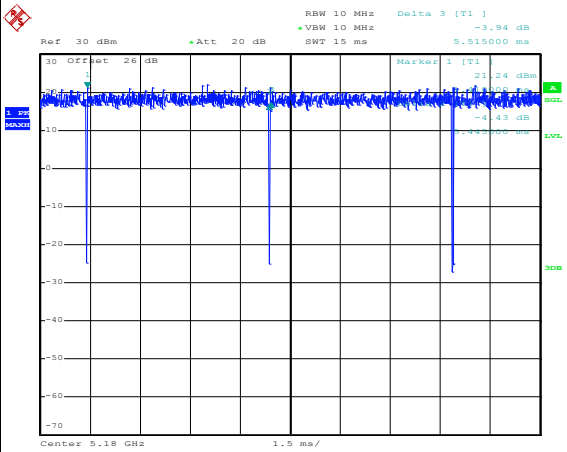
MIMO <Ant. 1>

802.11a



Date: 24.SEP.2020 10:22:19

802.11ax HE20 Full RU



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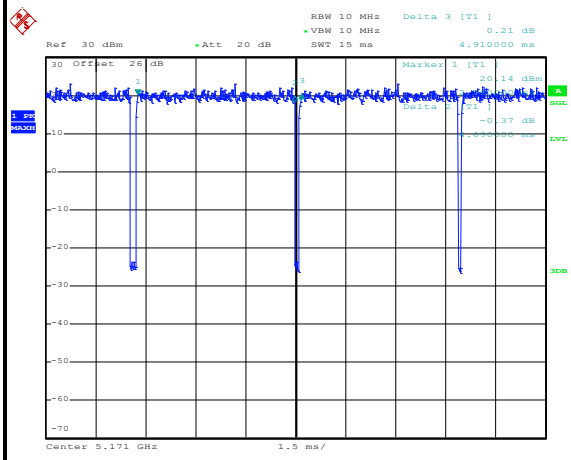
802.11ax HE20 106 RU



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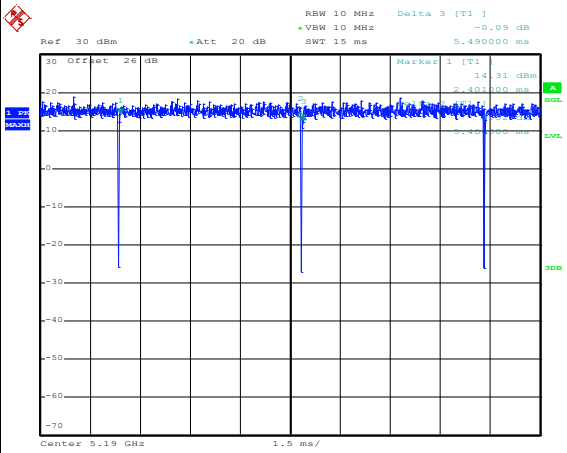
802.11ax HE40 Full RU



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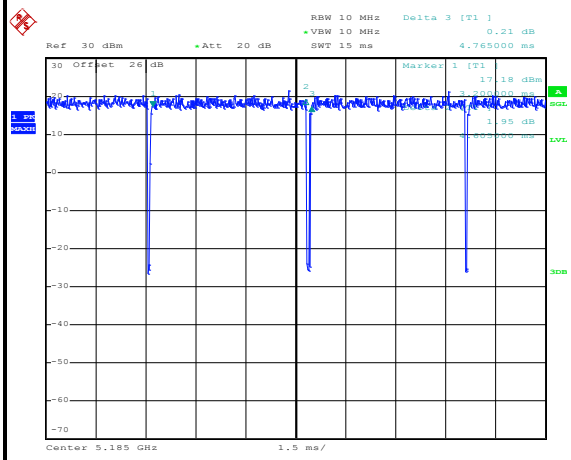
802.11ax HE40 242 RU



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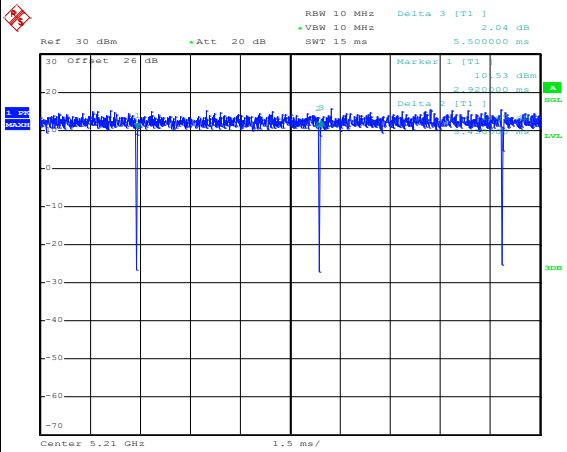
802.11ax HE80 Full RU



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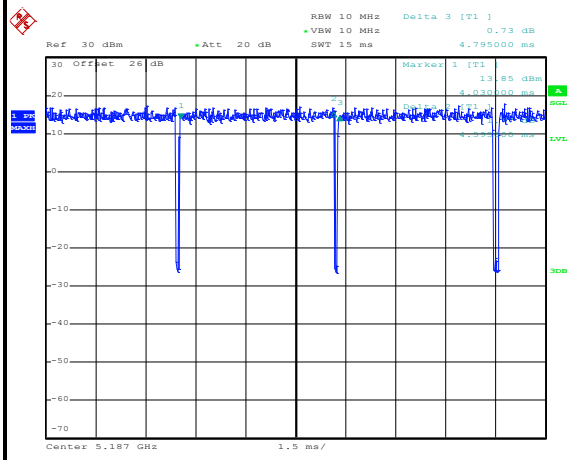
802.11ax HE80 484 RU



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