



FCC RADIO TEST REPORT

FCC ID : B94-C09CWLM
Equipment : Wireless Module
Brand Name : HP
Model Name : LBEE58D1VF
Applicant : HP Inc.
1501 Page Mill Road, Palo Alto CA 94304 USA
Standard : FCC Part 15 Subpart E §15.407

The product was received on Aug. 21, 2020 and testing was started from Sep. 20, 2020 and completed on Oct. 07, 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
FR001919E	01	Initial issue of report	Oct. 20, 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 6.12 dB at 30.000 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 6.63 dB at 0.152 MHz
3.6	15.407 (c)	Automatically Discontinue Transmission	Pass	-
3.7	15.203 & 15.407 (a)	Antenna Requirement	Pass	-

Declaration of Conformity:

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

Comments and Explanations:

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

Reviewed by: Wii Chang

Report Producer: Ruby Zou

1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Installed into host	Brand Name: HP Model Name: HSN-C09C
Antenna Type	WLAN <Ant. 1>: Couple Antenna <Ant. 2>: Couple Antenna Bluetooth: Couple Antenna

Antenna Information					
NB Mode	Ant. Type	Couple		Ant. Type	Couple
	Part No.	260-24315 (DC33002FX20)	TX1 Antenna	Part No.	260-24315 (DC33002FX20) TX2 Antenna
	Peak Gain (dBi)	WLAN (5GHz B4): -3.34		WLAN (5GHz B4): -6.14	
TB Mode	Ant. Type	Couple		Ant. Type	Couple
	Part No.	260-24315 (DC33002FX20)	TX1 Antenna	Part No.	260-24315 (DC33002FX20) TX2 Antenna
	Peak Gain (dBi)	WLAN (5GHz B4): -6.96		WLAN (5GHz B4): -6.11	

1.2 Modification of EUT

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



1.3 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory		
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	Sporton Site No.		
	TH05-HY	CO05-HY	03CH07-HY

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

FCC designation No.: TW1190

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.

2 Test Configuration of Equipment Under Test

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

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
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.

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

Test Cases	
AC Conducted Emission	Mode 1 :Bluetooth Link + WLAN (5GHz) Link + Earphone + Data Link with HD + Adapter

Remark: Data Link with HD means data application transferred mode between EUT and HD.

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.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
4.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P : Unshielded, 1.2m DC O/P : Shielded, 1.8m
5.	HD	Lenovo	F310S	FCC DoC	Shielded, 1.0m	N/A



2.5 EUT Operation Test Setup

The RF test items, utility “QRCT V4.0.00156.0” was installed in EUT which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

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

3 Test Result

3.1 6dB and 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

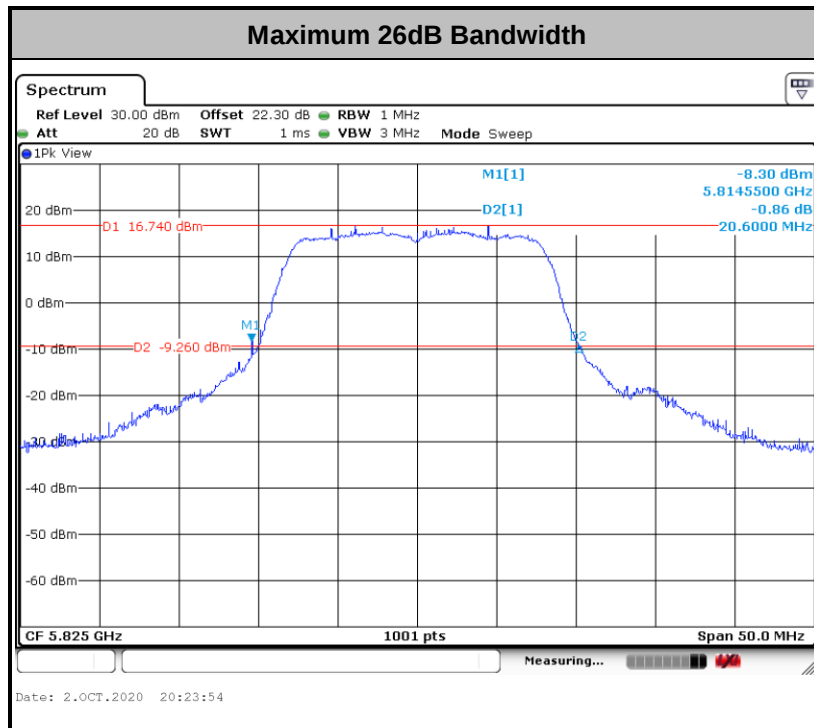
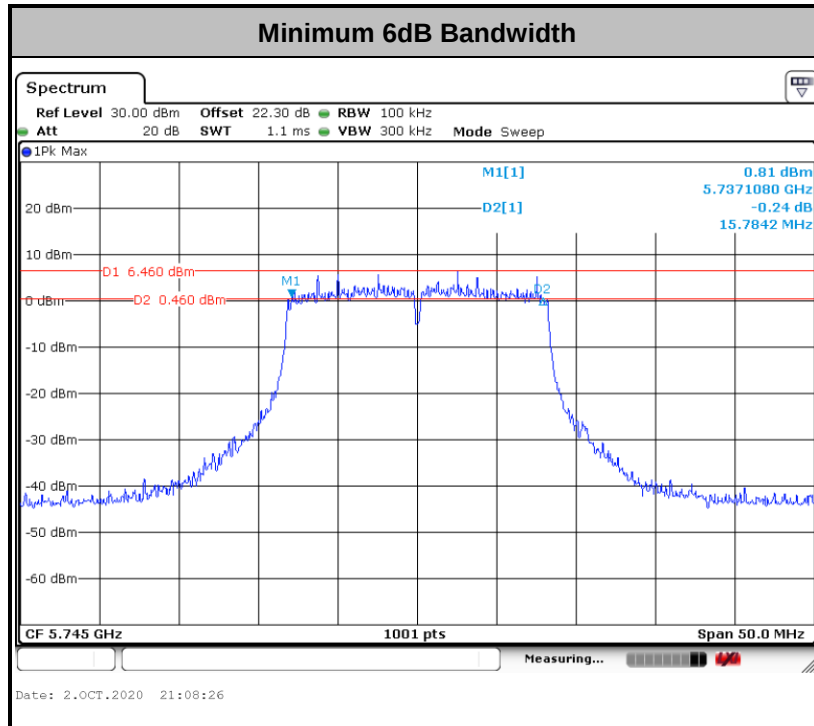
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is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

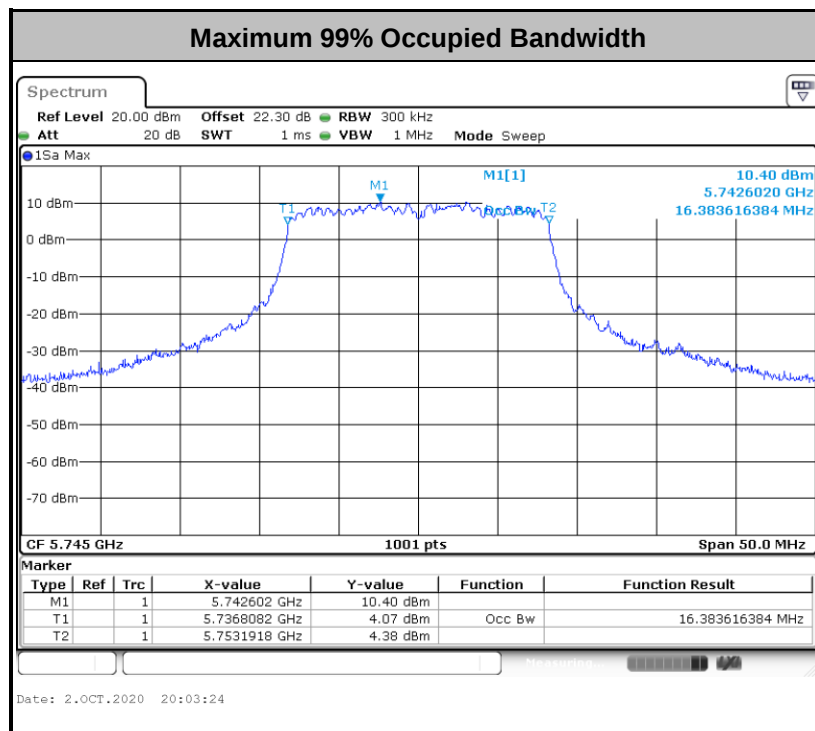
3.1.4 Test Setup



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

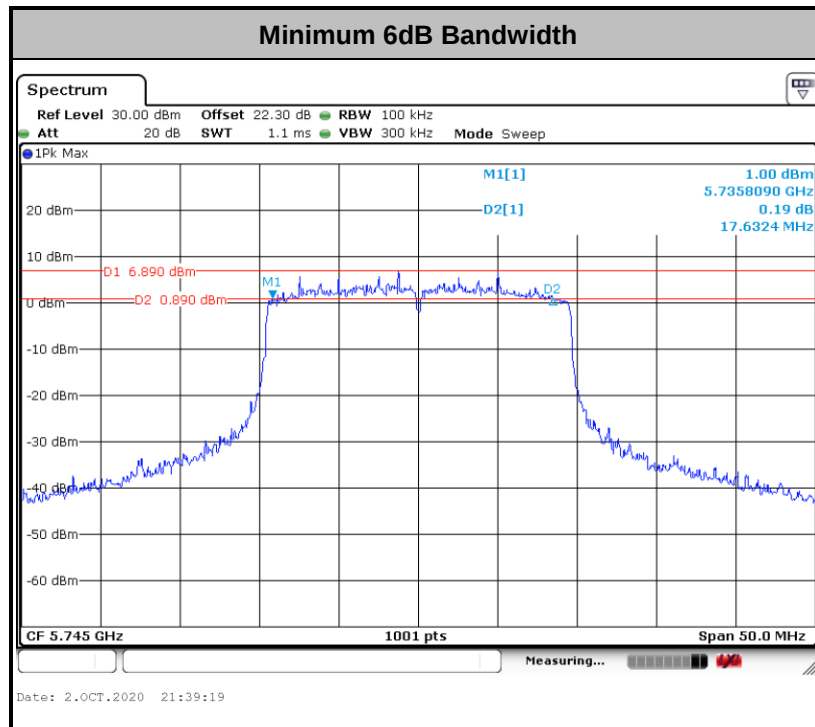
Please refer to Appendix A.

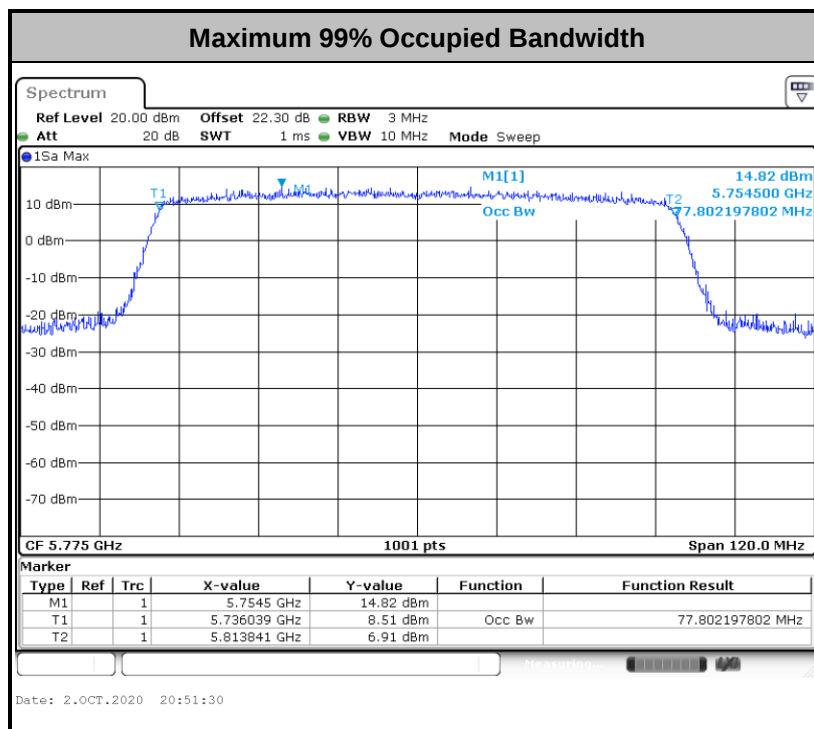
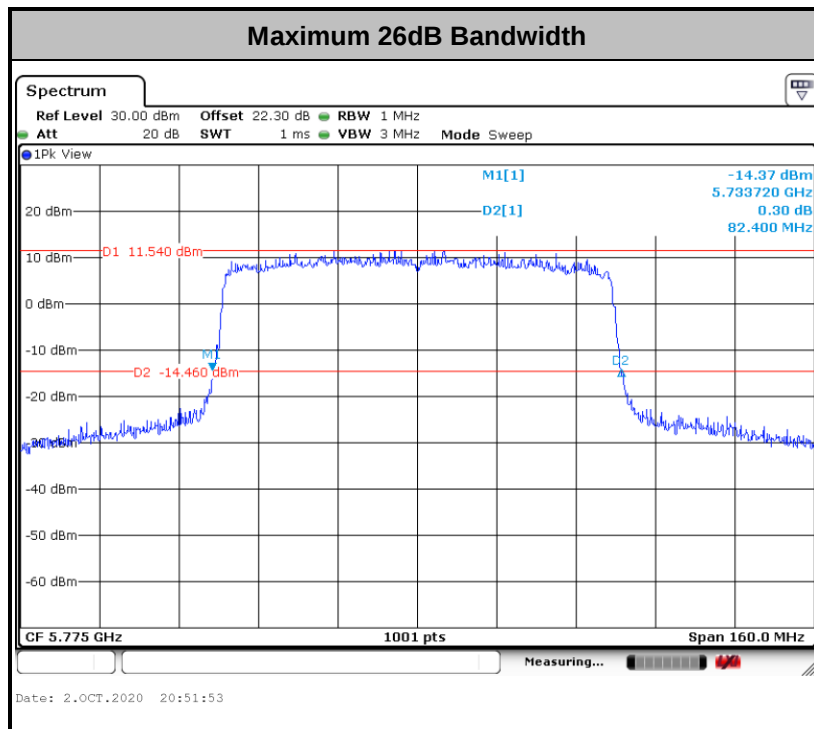




Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

<For 802.11ax Mode>





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):

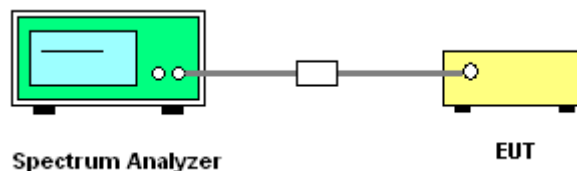
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW $\geq$ 1 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time $\leq$ (number of points in sweep) $\times$ T, when duty cycle is less than 98 percent where T is the minimum transmission 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 PSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

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

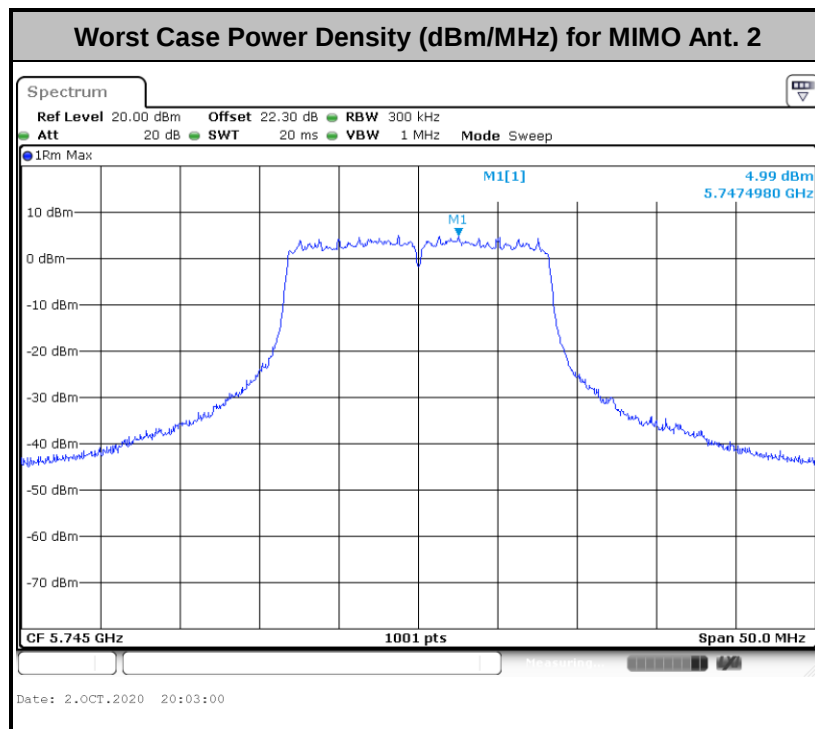
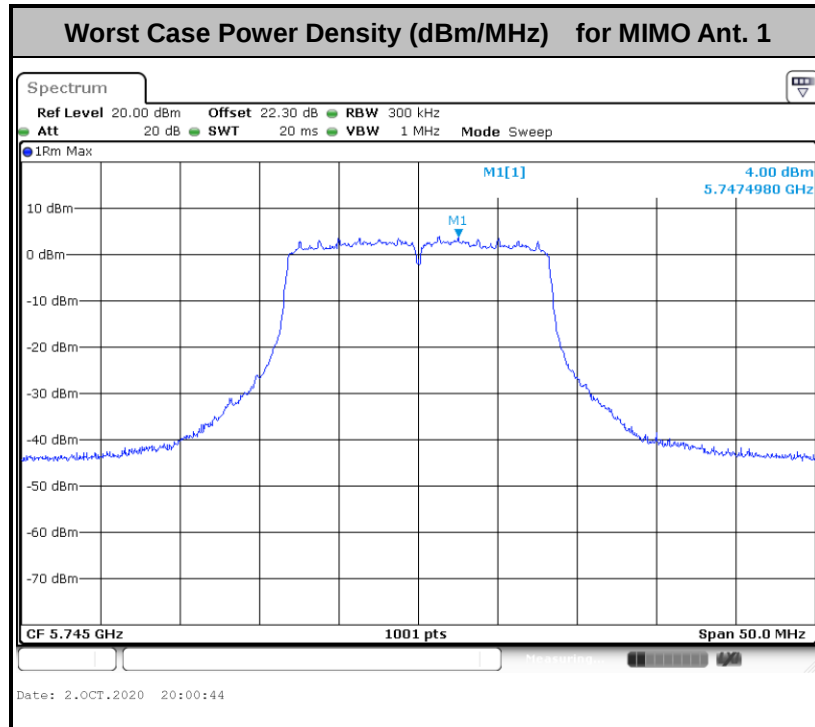
With this technique, spectrum measurements are performed at each output of the device, but rather than summing the spectra or the spectral peaks across the outputs, the quantity $10 \log(N_{\text{ANT}})$ dB is added to each spectrum value before comparing to the emission limit. The addition of $10 \log(N_{\text{ANT}})$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

3.3.4 Test Setup



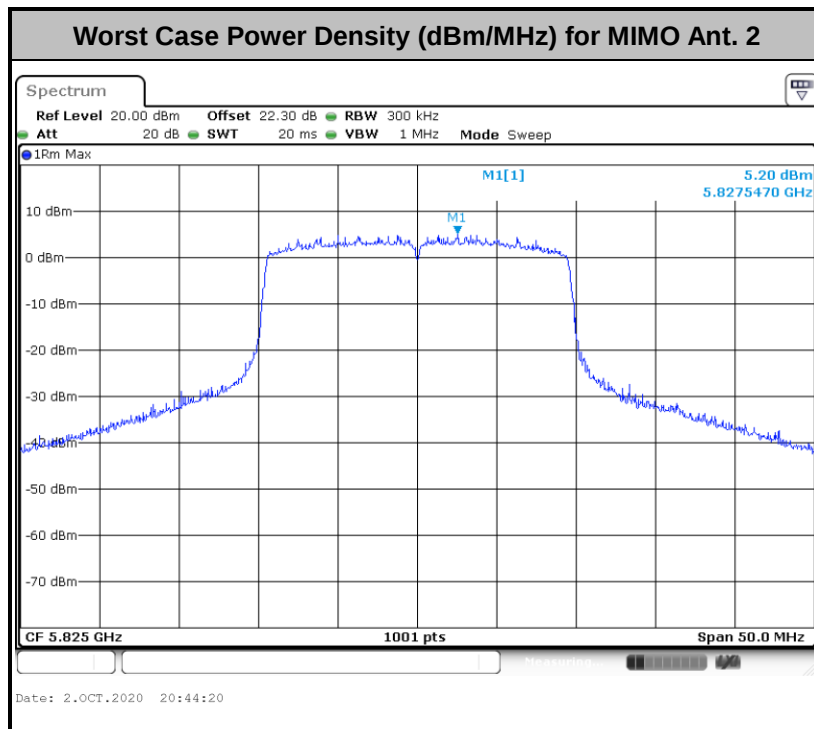
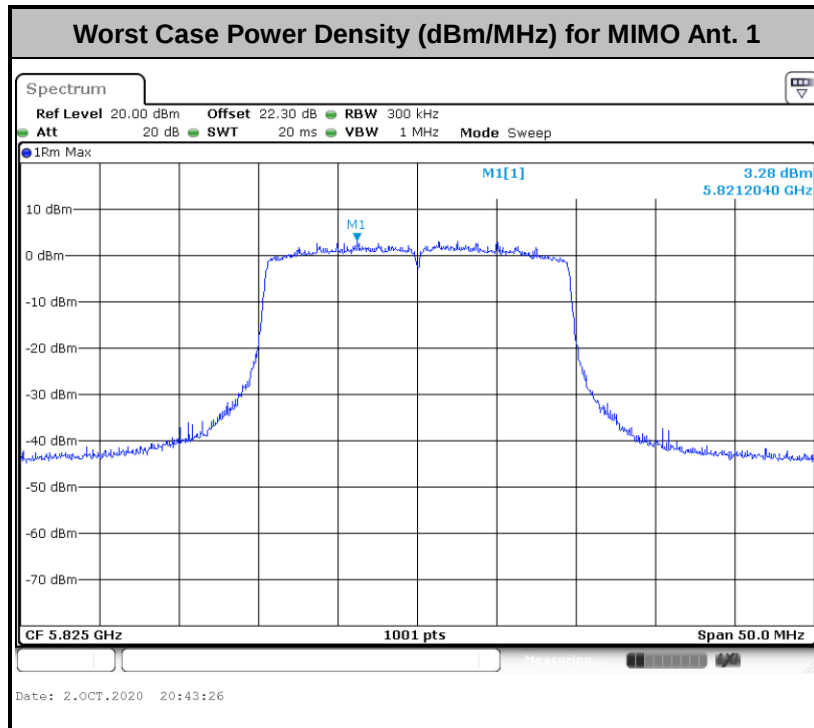
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.





<For 802.11ax Mode>



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.

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

EIRP (dBm)	Field Strength at 3m (dB μ V/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 $\geq$ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

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

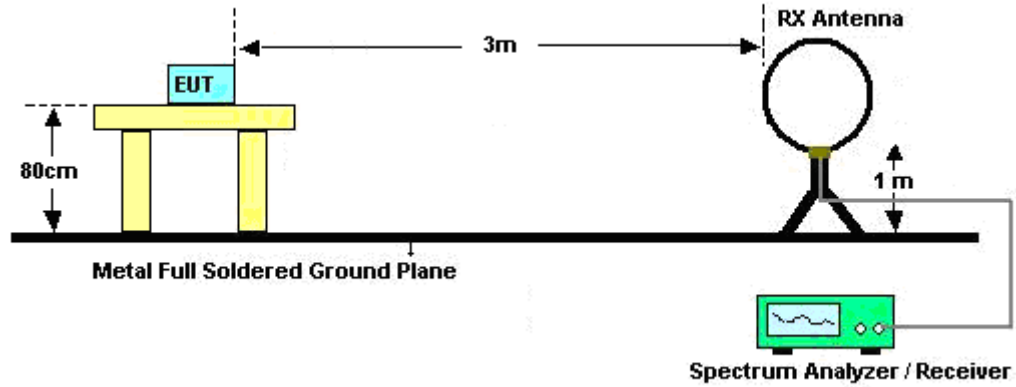
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



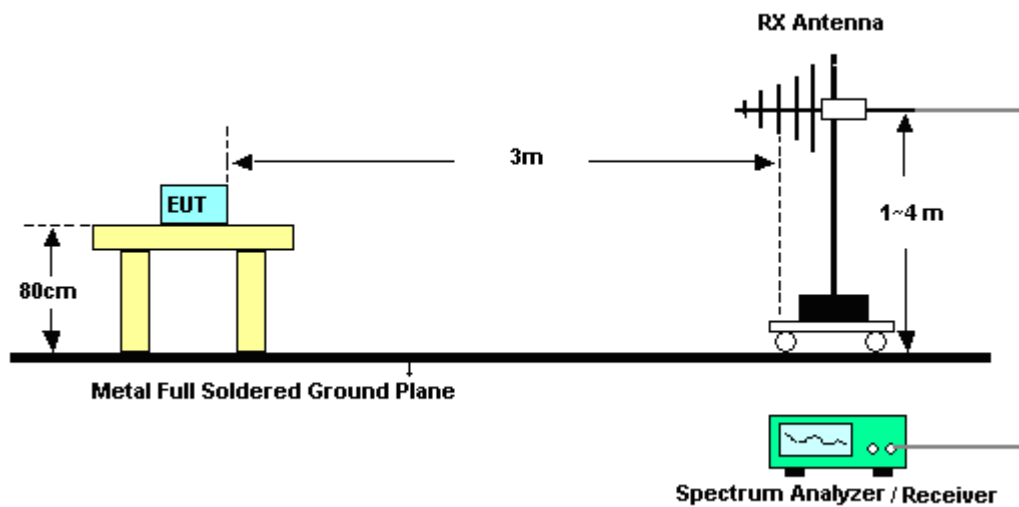
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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

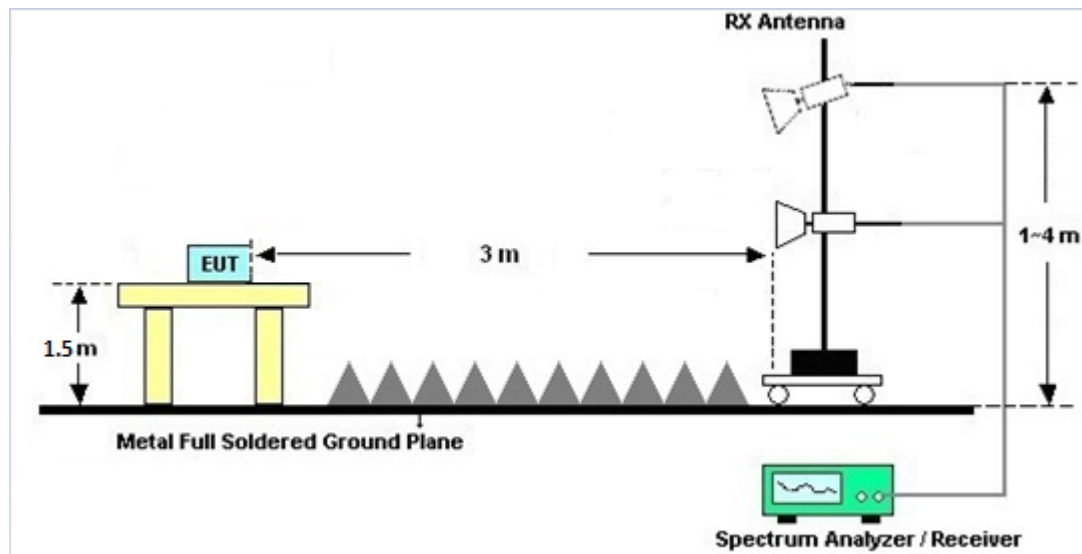
For radiated emissions below 30MHz



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 Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

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

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

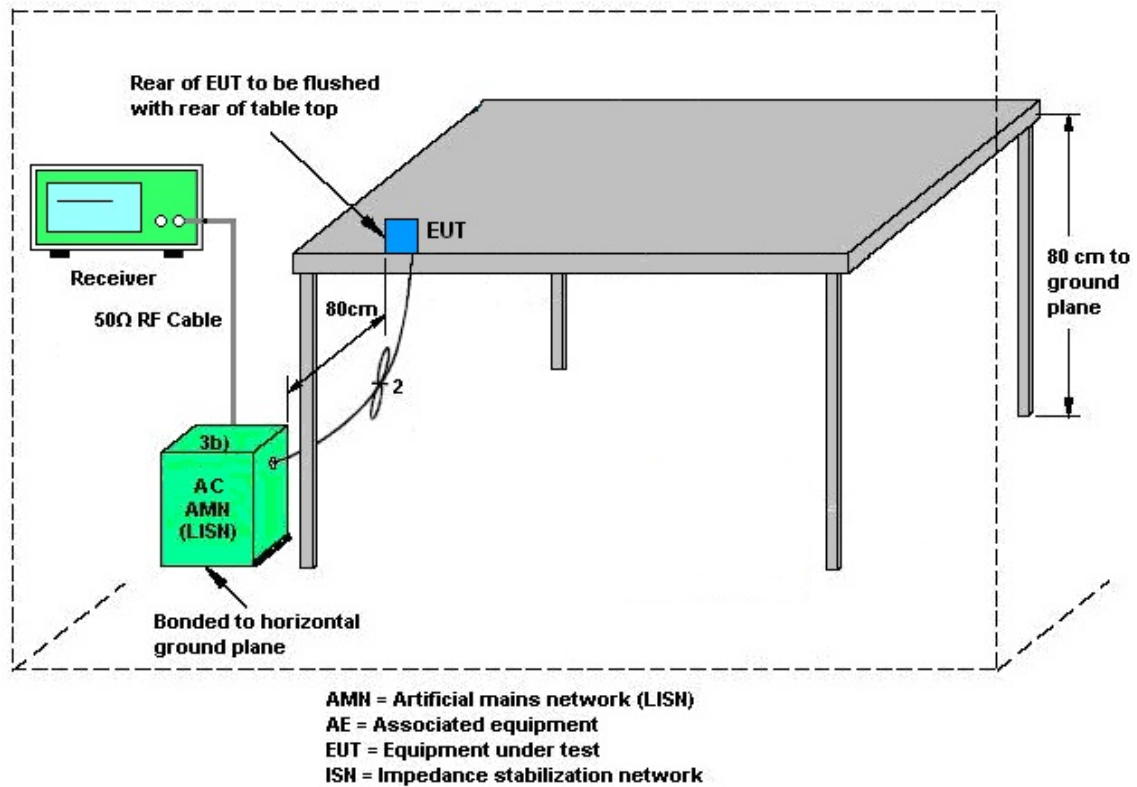
3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Automatically Discontinue Transmission

3.6.1 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.

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 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.

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

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

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

For power measurements on IEEE 802.11 devices,

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

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

The EUT supports CDD mode.

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

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

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

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

<CDD Modes>						
			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 1	Ant. 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	-3.34	-6.14	-3.34	-1.62	0.00	0.00

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

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



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Dec. 26, 2019	Oct. 02, 2020~ Oct. 07, 2020	Dec. 25, 2020	Radiation (03CH07-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D0 1N-06	35419 & 03	30MHz~1GHz	Apr. 29, 2020	Oct. 02, 2020~ Oct. 07, 2020	Apr. 28, 2021	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 06, 2019	Oct. 02, 2020~ Oct. 07, 2020	Dec. 05, 2020	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917058 4	18GHz~40GHz	Dec. 10, 2019	Oct. 02, 2020~ Oct. 07, 2020	Dec. 09, 2020	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A(MX E)	MY53290053	20Hz~26.5GHz	May 21, 2020	Oct. 02, 2020~ Oct. 07, 2020	May 20, 2021	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Jun. 09, 2020	Oct. 02, 2020~ Oct. 07, 2020	Jun. 08, 2021	Radiation (03CH07-HY)
Preamplifier	COM-POWE R	PA-103A	161241	10MHz~1GHz	May 19, 2020	Oct. 02, 2020~ Oct. 07, 2020	May 18, 2021	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-001 01800-30-10 P	1590075	1GHz~18GHz	Apr. 23, 2020	Oct. 02, 2020~ Oct. 07, 2020	Apr. 22, 2021	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Nov. 01, 2019	Oct. 02, 2020~ Oct. 07, 2020	Oct. 31, 2020	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 13, 2019	Oct. 02, 2020~ Oct. 07, 2020	Dec. 12, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2,80 1606/2	18GHz~40GHz	Feb. 25, 2020	Oct. 02, 2020~ Oct. 07, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4, MY28655/4	9kHz~30MHz	Feb. 25, 2020	Oct. 02, 2020~ Oct. 07, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	30MHz~1GHz	Feb. 25, 2020	Oct. 02, 2020~ Oct. 07, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	1GHz~18GHz	Feb. 25, 2020	Oct. 02, 2020~ Oct. 07, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	801606/2	9KHz ~ 40GHz	N/A	Oct. 02, 2020~ Oct. 07, 2020	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Oct. 02, 2020~ Oct. 07, 2020	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Oct. 02, 2020~ Oct. 07, 2020	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	N/A	Oct. 02, 2020~ Oct. 07, 2020	N/A	Radiation (03CH07-HY)
Software	Audix	E3 6.2009-8-24	N/A	N/A	N/A	Oct. 02, 2020~ Oct. 07, 2020	N/A	Radiation (03CH07-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. 20, 2020~ Oct. 02, 2020	Mar. 01, 2021	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	16I00054S NO10	10MHz~6GHz	Dec. 23, 2019	Sep. 20, 2020~ Oct. 02, 2020	Dec. 22, 2020	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 15, 2019	Sep. 20, 2020~ Oct. 02, 2020	Nov. 14, 2020	Conducted (TH05-HY)
Switch Box & RF Cable	EM Electronics	EMSW18SE	SW200302	N/A	Mar. 17, 2020	Sep. 20, 2020~ Oct. 02, 2020	Mar. 16, 2021	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Sep. 23, 2020	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Nov. 15, 2019	Sep. 23, 2020	Nov. 14, 2020	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 15, 2019	Sep. 23, 2020	Nov. 14, 2020	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Sep. 23, 2020	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 02, 2020	Sep. 23, 2020	Jan. 01, 2021	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 02, 2020	Sep. 23, 2020	Jan. 01, 2021	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.3
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu	Temperature:	21~25	°C
Test Date:	2020/9/20~2020/10/2	Relative Humidity:	51~54	%

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 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	2	149	5745	16.33	16.38	20.25	20.00	15.78	16.33	0.5	Pass
11a	6Mbps	2	157	5785	16.33	16.38	20.55	20.50	16.03	16.28	0.5	Pass
11a	6Mbps	2	165	5825	16.33	16.38	20.20	20.60	15.78	16.33	0.5	Pass

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 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	17.30	18.20		30.00	30.00	-3.34	-6.14	Pass
11a	6Mbps	1	157	5785	16.60	18.20		30.00	30.00	-3.34	-6.14	Pass
11a	6Mbps	1	165	5825	16.30	18.00		30.00	30.00	-3.34	-6.14	Pass
HT20	MCS0	1	149	5745	17.00	18.00		30.00	30.00	-3.34	-6.14	Pass
HT20	MCS0	1	157	5785	16.80	18.40		30.00	30.00	-3.34	-6.14	Pass
HT20	MCS0	1	165	5825	16.40	18.20		30.00	30.00	-3.34	-6.14	Pass
HT40	MCS0	1	151	5755	16.80	17.90		30.00	30.00	-3.34	-6.14	Pass
HT40	MCS0	1	159	5795	16.40	18.20		30.00	30.00	-3.34	-6.14	Pass
VHT20	MCS0	1	149	5745	17.00	18.00		30.00	30.00	-3.34	-6.14	Pass
VHT20	MCS0	1	157	5785	16.80	18.40		30.00	30.00	-3.34	-6.14	Pass
VHT20	MCS0	1	165	5825	16.40	18.20		30.00	30.00	-3.34	-6.14	Pass
VHT40	MCS0	1	151	5755	16.80	17.90		30.00	30.00	-3.34	-6.14	Pass
VHT40	MCS0	1	159	5795	16.40	18.20		30.00	30.00	-3.34	-6.14	Pass
VHT80	MCS0	1	155	5775	16.70	17.80		30.00	30.00	-3.34	-6.14	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 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	17.50	18.40	20.98	30.00		-3.34		Pass
11a	6Mbps	2	157	5785	16.80	18.50	20.74	30.00		-3.34		Pass
11a	6Mbps	2	165	5825	16.50	18.30	20.50	30.00		-3.34		Pass
HT20	MCS0	2	149	5745	17.30	18.20	20.78	30.00		-3.34		Pass
HT20	MCS0	2	157	5785	17.00	18.60	20.88	30.00		-3.34		Pass
HT20	MCS0	2	165	5825	16.60	18.60	20.72	30.00		-3.34		Pass
HT40	MCS0	2	151	5755	17.10	18.20	20.70	30.00		-3.34		Pass
HT40	MCS0	2	159	5795	16.70	18.50	20.70	30.00		-3.34		Pass
VHT20	MCS0	2	149	5745	17.30	18.20	20.78	30.00		-3.34		Pass
VHT20	MCS0	2	157	5785	17.00	18.60	20.88	30.00		-3.34		Pass
VHT20	MCS0	2	165	5825	16.60	18.60	20.72	30.00		-3.34		Pass
VHT40	MCS0	2	151	5755	17.10	18.20	20.70	30.00		-3.34		Pass
VHT40	MCS0	2	159	5795	16.70	18.50	20.70	30.00		-3.34		Pass
VHT80	MCS0	2	155	5775	17.00	18.10	20.60	30.00		-3.34		Pass

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 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	2.22		6.22	7.21	10.22	30.00		-1.62		Pass
11a	6Mbps	2	157	5785	2.22		5.22	6.98	9.99	30.00		-1.62		Pass
11a	6Mbps	2	165	5825	2.22		5.12	7.16	10.17	30.00		-1.62		Pass

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

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 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
HE20	MCS0	2	149	5745	Full	18.88	18.78	22.10	22.35	18.18	17.63	0.5	Pass
HE20	MCS0	2	157	5785	Full	18.88	18.88	22.00	22.25	18.53	18.03	0.5	Pass
HE20	MCS0	2	165	5825	Full	18.88	18.88	22.05	22.15	18.43	18.23	0.5	Pass
HE40	MCS0	2	151	5755	Full	37.76	37.86	41.13	41.31	37.49	36.05	0.5	Pass
HE40	MCS0	2	159	5795	Full	37.76	37.76	41.31	41.31	37.67	37.31	0.5	Pass
HE80	MCS0	2	155	5775	Full	77.80	77.80	82.08	82.40	77.04	76.08	0.5	Pass

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 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	1	149	5745	Full	17.10	18.10		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	149	5745	26/0	10.20	11.00		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	149	5745	52/37	10.40	11.00		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	149	5745	106/53	10.60	11.30		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	157	5785	Full	16.90	18.50		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	157	5785	26/4	9.40	11.10		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	157	5785	52/38	9.60	11.30		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	157	5785	106/53	9.80	11.60		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	165	5825	Full	16.50	18.30		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	165	5825	26/8	8.90	10.80		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	165	5825	52/40	9.20	11.00		30.00	30.00	-3.34	-6.14	Pass
HE20	MCS0	1	165	5825	106/54	9.40	11.30		30.00	30.00	-3.34	-6.14	Pass
HE40	MCS0	1	151	5755	Full	16.90	18.00		30.00	30.00	-3.34	-6.14	Pass
HE40	MCS0	1	151	5755	242/61	15.10	15.90		30.00	30.00	-3.34	-6.14	Pass
HE40	MCS0	1	159	5795	Full	16.50	17.90		30.00	30.00	-3.34	-6.14	Pass
HE40	MCS0	1	159	5795	242/62	14.70	15.80		30.00	30.00	-3.34	-6.14	Pass
HE80	MCS0	1	155	5775	Full	16.80	17.90		30.00	30.00	-3.34	-6.14	Pass
HE80	MCS0	1	155	5775	484/65	12.60	13.60		30.00	30.00	-3.34	-6.14	Pass
HE80	MCS0	1	155	5775	484/66	12.70	13.50		30.00	30.00	-3.34	-6.14	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 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	2	149	5745	Full	17.40	18.30	20.88	30.00		-3.34		Pass
HE20	MCS0	2	149	5745	26/0	10.40	11.20	13.83	30.00		-3.34		Pass
HE20	MCS0	2	149	5745	52/37	10.60	11.20	13.92	30.00		-3.34		Pass
HE20	MCS0	2	149	5745	106/53	10.80	11.50	14.17	30.00		-3.34		Pass
HE20	MCS0	2	157	5785	Full	17.10	18.70	20.98	30.00		-3.34		Pass
HE20	MCS0	2	157	5785	26/4	9.60	11.40	13.60	30.00		-3.34		Pass
HE20	MCS0	2	157	5785	52/38	9.80	11.50	13.74	30.00		-3.34		Pass
HE20	MCS0	2	157	5785	106/53	10.00	11.70	13.94	30.00		-3.34		Pass
HE20	MCS0	2	165	5825	Full	16.70	18.70	20.82	30.00		-3.34		Pass
HE20	MCS0	2	165	5825	26/8	9.10	11.00	13.16	30.00		-3.34		Pass
HE20	MCS0	2	165	5825	52/40	9.40	11.20	13.40	30.00		-3.34		Pass
HE20	MCS0	2	165	5825	106/54	9.60	11.50	13.66	30.00		-3.34		Pass
HE40	MCS0	2	151	5755	Full	17.20	18.30	20.80	30.00		-3.34		Pass
HE40	MCS0	2	151	5755	242/61	15.50	16.40	18.98	30.00		-3.34		Pass
HE40	MCS0	2	159	5795	Full	16.80	18.60	20.80	30.00		-3.34		Pass
HE40	MCS0	2	159	5795	242/62	14.90	16.30	18.67	30.00		-3.34		Pass
HE80	MCS0	2	155	5775	Full	17.10	18.20	20.70	30.00		-3.34		Pass
HE80	MCS0	2	155	5775	484/65	13.10	14.10	16.64	30.00		-3.34		Pass
HE80	MCS0	2	155	5775	484/66	13.00	13.70	16.37	30.00		-3.34		Pass

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 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
HE20	MCS0	2	149	5745	Full	2.22		6.13	7.24	10.25	30.00		-1.62		Pass
HE20	MCS0	2	149	5745	26/0	2.22		6.04	6.90	9.91	30.00		-1.62		Pass
HE20	MCS0	2	157	5785	Full	2.22		6.00	7.10	10.11	30.00		-1.62		Pass
HE20	MCS0	2	157	5785	26/4	2.22		5.18	6.95	9.96	30.00		-1.62		Pass
HE20	MCS0	2	165	5825	Full	2.22		5.50	7.42	10.43	30.00		-1.62		Pass
HE20	MCS0	2	165	5825	26/8	2.22		5.35	7.30	10.31	30.00		-1.62		Pass
HE40	MCS0	2	151	5755	Full	2.22		2.52	3.66	6.67	30.00		-1.62		Pass
HE40	MCS0	2	151	5755	242/61	2.22		2.29	3.21	6.22	30.00		-1.62		Pass
HE40	MCS0	2	159	5795	Full	2.22		2.41	3.72	6.73	30.00		-1.62		Pass
HE40	MCS0	2	159	5795	242/62	2.22		1.86	3.35	6.36	30.00		-1.62		Pass
HE80	MCS0	2	155	5775	Full	2.22		0.46	1.26	4.27	30.00		-1.62		Pass
HE80	MCS0	2	155	5775	484/65	2.22		0.20	0.88	3.89	30.00		-1.62		Pass
HE80	MCS0	2	155	5775	484/66	2.22		-0.16	0.73	3.74	30.00		-1.62		Pass

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



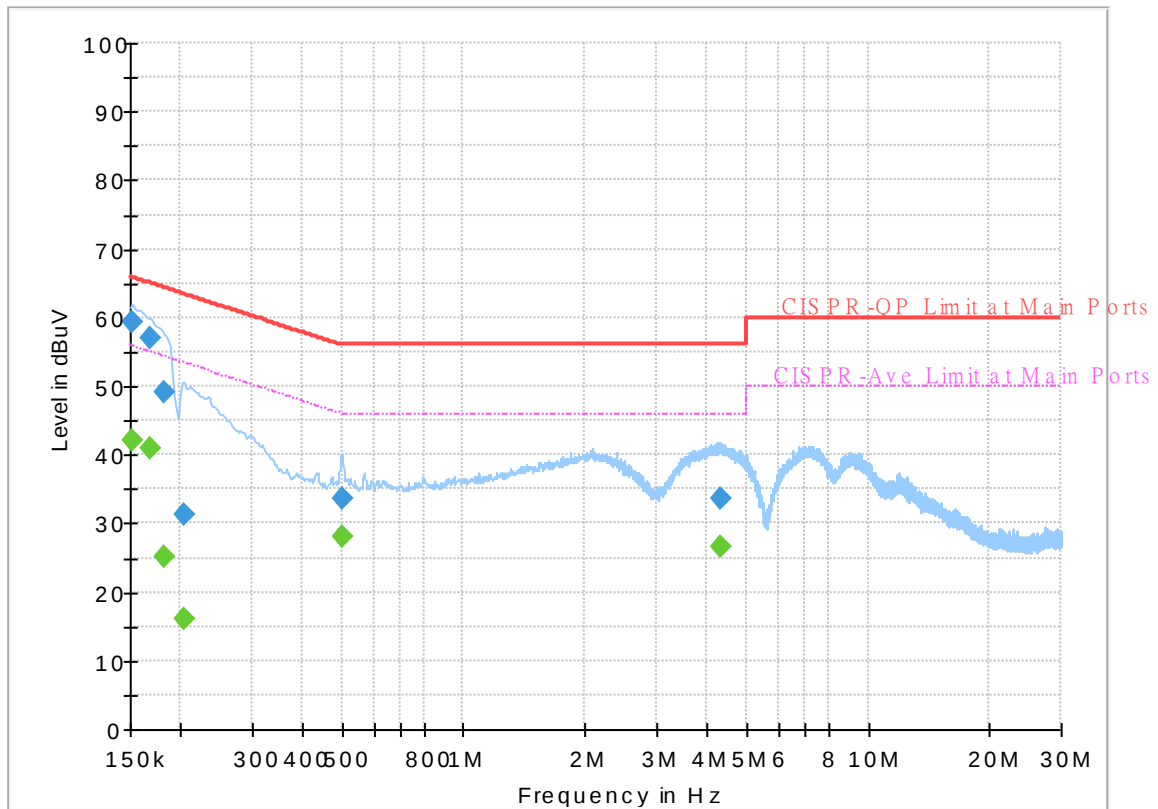
Appendix B. AC Conducted Emission Test Results

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

EUT Information

Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



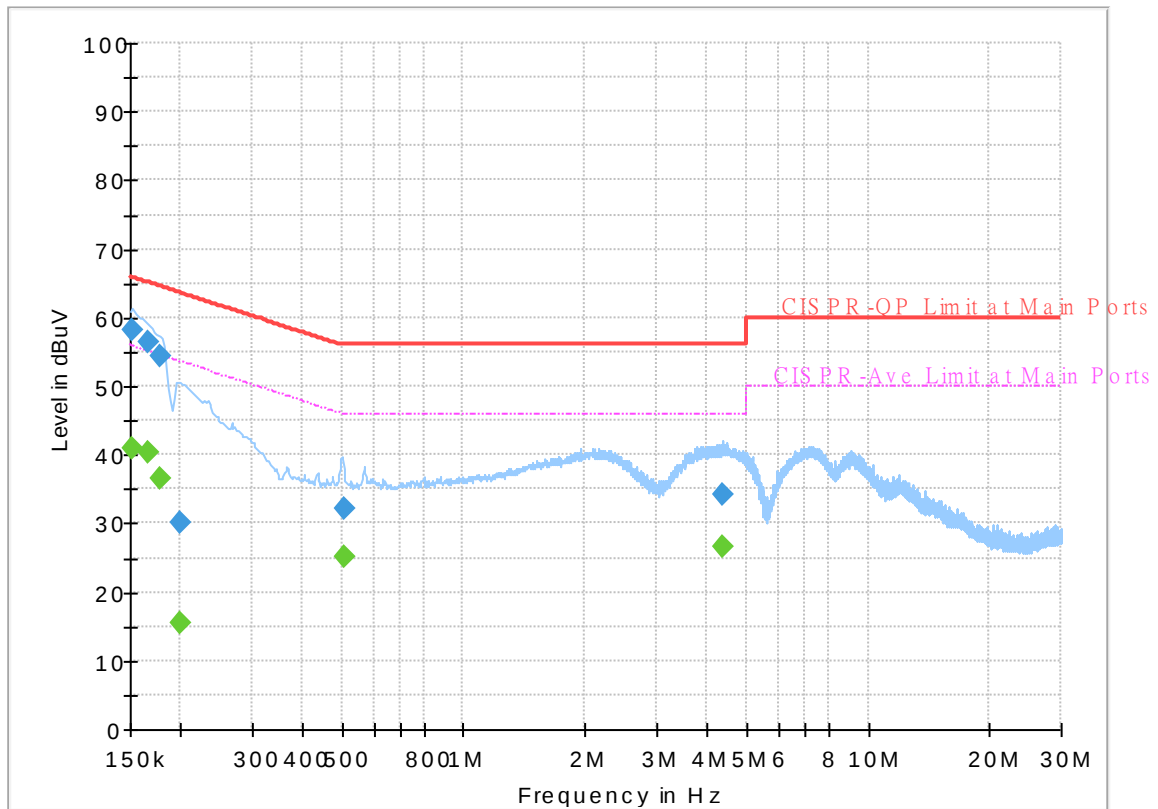
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	42.21	55.88	13.67	L1	OFF	19.5
0.152250	59.25	---	65.88	6.63	L1	OFF	19.5
0.168000	---	40.80	55.06	14.26	L1	OFF	19.5
0.168000	56.96	---	65.06	8.10	L1	OFF	19.5
0.181500	---	25.12	54.42	29.30	L1	OFF	19.5
0.181500	48.98	---	64.42	15.44	L1	OFF	19.5
0.204000	---	16.02	53.45	37.43	L1	OFF	19.5
0.204000	31.24	---	63.45	32.21	L1	OFF	19.5
0.502440	---	28.10	46.00	17.90	L1	OFF	19.5
0.502440	33.77	---	56.00	22.23	L1	OFF	19.5
4.321500	---	26.63	46.00	19.37	L1	OFF	19.6
4.321500	33.64	---	56.00	22.36	L1	OFF	19.6

EUT Information

Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	40.84	55.88	15.04	N	OFF	19.5
0.152250	58.11	---	65.88	7.77	N	OFF	19.5
0.165750	---	40.49	55.17	14.68	N	OFF	19.5
0.165750	56.35	---	65.17	8.82	N	OFF	19.5
0.177000	---	36.41	54.63	18.22	N	OFF	19.5
0.177000	54.30	---	64.63	10.33	N	OFF	19.5
0.199500	---	15.53	53.63	38.10	N	OFF	19.5
0.199500	30.05	---	63.63	33.58	N	OFF	19.5
0.505500	---	25.12	46.00	20.88	N	OFF	19.5
0.505500	32.19	---	56.00	23.81	N	OFF	19.5
4.362000	---	26.72	46.00	19.28	N	OFF	19.6
4.362000	34.19	---	56.00	21.81	N	OFF	19.6



Appendix C. Radiated Spurious Emission

Test Engineer :	Jesse Wang, Stan Hsieh and Ken Wu	Temperature :	22~23°C
		Relative Humidity :	51~58%

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	Preampl Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5643.8	47.94	-20.26	68.2	36.34	34.8	12.11	35.31	100	64	P	H
		5669.2	49.06	-33.39	82.45	37.38	34.85	12.15	35.32	100	64	P	H
		5720	52.33	-58.47	110.8	40.41	35	12.24	35.32	100	64	P	H
		5720.4	57.41	-54.3	111.71	45.49	35	12.24	35.32	100	64	P	H
	*	5745	108.9	-	-	96.94	35	12.28	35.32	100	64	P	H
	*	5745	101.28	-	-	89.32	35	12.28	35.32	100	64	A	H
													H
													H
		5604.8	48.37	-19.83	68.2	36.63	35	12.05	35.31	100	318	P	V
		5659.4	48.67	-26.51	75.18	37.15	34.7	12.14	35.32	100	318	P	V
		5719.6	54.68	-56.01	110.69	42.76	35	12.24	35.32	100	318	P	V
		5724.4	59.79	-61.04	120.83	47.86	35	12.25	35.32	100	318	P	V
	*	5745	107.85	-	-	95.89	35	12.28	35.32	100	318	P	V
	*	5745	100.65	-	-	88.69	35	12.28	35.32	100	318	A	V
													V
													V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		5641.6	48.45	-19.75	68.2	36.85	34.8	12.11	35.31	100	63	P	H
		5663.6	48.95	-29.35	78.3	37.43	34.7	12.14	35.32	100	63	P	H
		5713.2	49.04	-59.86	108.9	37.13	35	12.23	35.32	100	63	P	H
		5722.8	47.04	-70.14	117.18	35.12	35	12.24	35.32	100	63	P	H
	*	5785	108.85	-	-	96.83	35	12.35	35.33	100	63	P	H
	*	5785	101.17	-	-	89.15	35	12.35	35.33	100	63	A	H
		5854.6	49.28	-62.43	111.71	37.15	35.07	12.4	35.34	100	63	P	H
		5855.2	49.12	-61.62	110.74	36.99	35.07	12.4	35.34	100	63	P	H
		5898.2	50.96	-37.03	87.99	38.68	35.2	12.42	35.34	100	63	P	H
		5929.4	49.13	-19.07	68.2	36.84	35.2	12.43	35.34	100	63	P	H
													H
													H
		5631.2	47.75	-20.45	68.2	36.07	34.9	12.09	35.31	103	319	P	V
		5687.2	49.22	-46.54	95.76	37.36	35	12.18	35.32	103	319	P	V
		5718	48.01	-62.23	110.24	36.1	35	12.23	35.32	103	319	P	V
		5724	47.43	-72.49	119.92	35.51	35	12.24	35.32	103	319	P	V
	*	5785	107.93	-	-	95.91	35	12.35	35.33	103	319	P	V
	*	5785	100.66	-	-	88.64	35	12.35	35.33	103	319	A	V
		5852.8	49.13	-66.69	115.82	37.07	35	12.4	35.34	103	319	P	V
		5856.4	51.2	-59.21	110.41	39.07	35.07	12.4	35.34	103	319	P	V
		5891.8	50.24	-42.49	92.73	37.96	35.2	12.42	35.34	103	319	P	V
		5946.6	50.51	-17.69	68.2	38.21	35.2	12.44	35.34	103	319	P	V
													V
													V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz	*	5825	109.15	-	-	97.1	35	12.38	35.33	100	66	P	H
	*	5825	101.71	-	-	89.66	35	12.38	35.33	100	66	A	H
		5850.8	54.52	-65.86	120.38	42.46	35	12.4	35.34	100	66	P	H
		5855.4	51.56	-59.13	110.69	39.43	35.07	12.4	35.34	100	66	P	H
		5906.8	50.19	-31.44	81.63	37.91	35.2	12.42	35.34	100	66	P	H
		5930.2	49.66	-18.54	68.2	37.36	35.2	12.44	35.34	100	66	P	H
													H
													H
	*	5825	109	-	-	96.95	35	12.38	35.33	100	320	P	V
	*	5825	101.5	-	-	89.45	35	12.38	35.33	100	320	A	V
		5853.8	55.01	-58.53	113.54	42.88	35.07	12.4	35.34	100	320	P	V
		5855	55.74	-55.06	110.8	43.61	35.07	12.4	35.34	100	320	P	V
		5907.2	49.74	-31.6	81.34	37.46	35.2	12.42	35.34	100	320	P	V
		5937	49.51	-18.69	68.2	37.21	35.2	12.44	35.34	100	320	P	V
													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. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	45.25	-28.75	74	46.11	38.18	18.48	57.52	100	0	P	H
		17235	49.44	-18.76	68.2	41.27	41.53	22.95	56.31	100	0	P	H
													H
													H
		11490	47.49	-26.51	74	48.35	38.18	18.48	57.52	100	0	P	V
		17235	49.54	-18.66	68.2	41.37	41.53	22.95	56.31	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	45.14	-28.86	74	45.6	38.33	18.55	57.34	100	0	P	H
		17355	50.32	-17.88	68.2	42.15	41.5	23.02	56.35	100	0	P	H
													H
													H
		11570	48.26	-25.74	74	48.72	38.33	18.55	57.34	100	0	P	V
		17355	49.8	-18.4	68.2	41.63	41.5	23.02	56.35	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	44.73	-29.27	74	44.81	38.44	18.63	57.15	100	0	P	H
		17475	48.58	-19.62	68.2	40.54	41.33	23.09	56.38	100	0	P	H
													H
													H
		11650	46.17	-27.83	74	46.25	38.44	18.63	57.15	100	0	P	V
		17475	49.27	-18.93	68.2	41.23	41.33	23.09	56.38	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. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 149 5745MHz		5628.2	49.22	-18.98	68.2	37.54	34.9	12.09	35.31	100	62	P	H
		5679.8	48.68	-41.61	90.29	36.98	34.85	12.17	35.32	100	62	P	H
		5719	53.68	-56.84	110.52	41.76	35	12.24	35.32	100	62	P	H
		5724.6	60.06	-61.23	121.29	48.13	35	12.25	35.32	100	62	P	H
	*	5745	108.17	-	-	96.21	35	12.28	35.32	100	62	P	H
	*	5745	99.96	-	-	88	35	12.28	35.32	100	62	A	H
													H
													H
		5611.4	48.58	-19.62	68.2	36.83	35	12.06	35.31	100	332	P	V
		5670	48.39	-34.65	83.04	36.7	34.85	12.16	35.32	100	332	P	V
		5719.2	54	-56.58	110.58	42.08	35	12.24	35.32	100	332	P	V
		5724.6	57.59	-63.7	121.29	45.66	35	12.25	35.32	100	332	P	V
	*	5745	108.51	-	-	96.55	35	12.28	35.32	100	332	P	V
	*	5745	99.94	-	-	87.98	35	12.28	35.32	100	332	A	V
													V
													V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 165 5825MHz	*	5825	110.45	-	-	98.4	35	12.38	35.33	100	61	P	H
	*	5825	100.87	-	-	88.82	35	12.38	35.33	100	61	A	H
		5850.2	55.41	-66.33	121.74	43.35	35	12.4	35.34	100	61	P	H
		5857	51.68	-58.56	110.24	39.55	35.07	12.4	35.34	100	61	P	H
		5882	49.56	-50.44	100	37.36	35.13	12.41	35.34	100	61	P	H
		5948.6	50.16	-18.04	68.2	37.86	35.2	12.44	35.34	100	61	P	H
													H
													H
	*	5825	110.86	-	-	98.81	35	12.38	35.33	106	329	P	V
	*	5825	101.85	-	-	89.8	35	12.38	35.33	106	329	A	V
		5850.2	55.03	-66.71	121.74	42.97	35	12.4	35.34	106	329	P	V
		5856.2	54.71	-55.75	110.46	42.58	35.07	12.4	35.34	106	329	P	V
		5876.8	50.2	-53.66	103.86	38	35.13	12.41	35.34	106	329	P	V
		5949	49.95	-18.25	68.2	37.65	35.2	12.44	35.34	106	329	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 802.11ax HE20 Full (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Full CH 149 5745MHz		11490	45.7	-28.3	74	46.56	38.18	18.48	57.52	100	0	P	H
		17235	48.93	-19.27	68.2	40.76	41.53	22.95	56.31	100	0	P	H
													H
													H
		11490	48.1	-25.9	74	48.96	38.18	18.48	57.52	100	0	P	V
		17235	49.95	-18.25	68.2	41.78	41.53	22.95	56.31	100	0	P	V
													V
													V
802.11ax HE20 Full CH 165 5825MHz		11650	44.52	-29.48	74	44.6	38.44	18.63	57.15	100	0	P	H
		17475	48.92	-19.28	68.2	40.88	41.33	23.09	56.38	100	0	P	H
													H
													H
		11650	48.03	-25.97	74	48.11	38.44	18.63	57.15	100	0	P	V
		17475	51.96	-16.24	68.2	43.92	41.33	23.09	56.38	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_Partial 26 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE20 Partial 26/8 CH 165 5825MHz	*	5825	116.03	-	-	103.98	35	12.38	35.33	100	350	P	H
	*	5825	108.61	-	-	96.56	35	12.38	35.33	100	350	A	H
		5852	62.27	-55.37	117.64	50.21	35	12.4	35.34	100	350	P	H
		5862.6	54.33	-54.34	108.67	42.2	35.07	12.4	35.34	100	350	P	H
		5897.6	49.49	-38.95	88.44	37.21	35.2	12.42	35.34	100	350	P	H
		5949.8	49.75	-18.45	68.2	37.45	35.2	12.44	35.34	100	350	P	H
													H
													H
	*	5825	117.8	-	-	105.75	35	12.38	35.33	100	354	P	V
	*	5825	110.53	-	-	98.48	35	12.38	35.33	100	354	A	V
		5852	60.41	-57.23	117.64	48.35	35	12.4	35.34	100	354	P	V
		5855.6	53.35	-57.28	110.63	41.22	35.07	12.4	35.34	100	354	P	V
		5899.2	49.18	-38.07	87.25	36.9	35.2	12.42	35.34	100	354	P	V
		5934.2	49.08	-19.12	68.2	36.78	35.2	12.44	35.34	100	354	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. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE40 Full CH 151 5755MHz		5636	48.46	-19.74	68.2	36.87	34.8	12.1	35.31	100	62	P	H
		5697	49.43	-53.56	102.99	37.55	35	12.2	35.32	100	62	P	H
		5720	66.18	-44.62	110.8	54.26	35	12.24	35.32	100	62	P	H
		5724.4	62.5	-58.33	120.83	50.57	35	12.25	35.32	100	62	P	H
	*	5755	106.35	-	-	94.38	35	12.3	35.33	100	62	P	H
	*	5755	97.24	-	-	85.27	35	12.3	35.33	100	62	A	H
		5851.8	47.14	-70.96	118.1	35.08	35	12.4	35.34	100	62	P	H
		5870.4	50.4	-56.09	106.49	38.26	35.07	12.41	35.34	100	62	P	H
		5911.2	50.58	-27.8	78.38	38.29	35.2	12.43	35.34	100	62	P	H
		5933.6	49.4	-18.8	68.2	37.1	35.2	12.44	35.34	100	62	P	H
													H
													H
		5633.6	49.26	-18.94	68.2	37.67	34.8	12.1	35.31	106	332	P	V
		5699.8	50.73	-54.32	105.05	38.85	35	12.2	35.32	106	332	P	V
		5718.4	62.68	-47.67	110.35	50.76	35	12.24	35.32	106	332	P	V
		5725	60.07	-62.13	122.2	48.14	35	12.25	35.32	106	332	P	V
	*	5755	105.56	-	-	93.59	35	12.3	35.33	106	332	P	V
	*	5755	97.55	-	-	85.58	35	12.3	35.33	106	332	A	V
		5853.6	49.27	-64.72	113.99	37.14	35.07	12.4	35.34	106	332	P	V
		5871.6	49.76	-56.39	106.15	37.56	35.13	12.41	35.34	106	332	P	V
		5875.4	49.97	-54.93	104.9	37.77	35.13	12.41	35.34	106	332	P	V
		5945.6	49.69	-18.51	68.2	37.39	35.2	12.44	35.34	106	332	P	V
													V
													V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE40 Full CH 159 5795MHz		5624.4	49.44	-18.76	68.2	37.77	34.9	12.08	35.31	123	1	P	H
		5671.8	48.55	-35.82	84.37	36.86	34.85	12.16	35.32	123	1	P	H
		5702.4	48.57	-57.3	105.87	36.68	35	12.21	35.32	123	1	P	H
		5723.4	47.81	-70.74	118.55	35.89	35	12.24	35.32	123	1	P	H
	*	5795	104.67	-	-	92.64	35	12.36	35.33	123	1	P	H
	*	5795	97.73	-	-	85.7	35	12.36	35.33	123	1	A	H
		5850.6	51.84	-68.99	120.83	39.78	35	12.4	35.34	123	1	P	H
		5858.2	52.06	-57.84	109.9	39.93	35.07	12.4	35.34	123	1	P	H
		5870.4	50.11	-56.38	106.49	37.97	35.07	12.41	35.34	123	1	P	H
		5937.4	50.08	-18.12	68.2	37.78	35.2	12.44	35.34	123	1	P	H
													H
													H
		5641.6	48.21	-19.99	68.2	36.61	34.8	12.11	35.31	100	328	P	V
		5677	48.86	-39.36	88.22	37.16	34.85	12.17	35.32	100	328	P	V
		5714.2	49.28	-59.9	109.18	37.37	35	12.23	35.32	100	328	P	V
		5724.8	47.56	-74.18	121.74	35.63	35	12.25	35.32	100	328	P	V
	*	5795	106.11	-	-	94.08	35	12.36	35.33	100	328	P	V
	*	5795	97.56	-	-	85.53	35	12.36	35.33	100	328	A	V
		5850.2	50.12	-71.62	121.74	38.06	35	12.4	35.34	100	328	P	V
		5856.2	51.13	-59.33	110.46	39	35.07	12.4	35.34	100	328	P	V
		5906.8	49.36	-32.27	81.63	37.08	35.2	12.42	35.34	100	328	P	V
		5949.8	49.3	-18.9	68.2	37	35.2	12.44	35.34	100	328	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. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ax HE80 Full CH 155 5775MHz		5615.2	48.61	-19.59	68.2	36.85	35	12.07	35.31	126	2	P	H
		5697.4	59.17	-44.11	103.28	47.29	35	12.2	35.32	126	2	P	H
		5712.8	61.21	-47.58	108.79	49.3	35	12.23	35.32	126	2	P	H
		5722	62.78	-52.58	115.36	50.86	35	12.24	35.32	126	2	P	H
	*	5775	102.38	-	-	90.38	35	12.33	35.33	126	2	P	H
	*	5775	94.01	-	-	82.01	35	12.33	35.33	126	2	A	H
		5851.8	61.61	-56.49	118.1	49.55	35	12.4	35.34	126	2	P	H
		5860	62.6	-46.8	109.4	50.47	35.07	12.4	35.34	126	2	P	H
		5879.4	54.08	-47.85	101.93	41.88	35.13	12.41	35.34	126	2	P	H
		5925.6	52.05	-16.15	68.2	39.76	35.2	12.43	35.34	126	2	P	H
													H
													H
		5604.2	48.4	-19.8	68.2	36.66	35	12.05	35.31	100	354	P	V
		5699.4	57.39	-47.37	104.76	45.51	35	12.2	35.32	100	354	P	V
		5718.4	60.32	-50.03	110.35	48.4	35	12.24	35.32	100	354	P	V
		5724.8	58.83	-62.91	121.74	46.9	35	12.25	35.32	100	354	P	V
	*	5775	102.02	-	-	90.02	35	12.33	35.33	100	354	P	V
	*	5775	94.44	-	-	82.44	35	12.33	35.33	100	354	A	V
		5854.4	58.32	-53.85	112.17	46.19	35.07	12.4	35.34	100	354	P	V
		5856.6	59.87	-50.48	110.35	47.74	35.07	12.4	35.34	100	354	P	V
		5883.2	52.88	-46.23	99.11	40.68	35.13	12.41	35.34	100	354	P	V
		5946.4	49.86	-18.34	68.2	37.56	35.2	12.44	35.34	100	354	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	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)
802.11ax HE80 Full LF		175.53	34.93	-8.57	43.5	47.24	15.18	2.45	29.94	100	0	P	H
		250.32	33.51	-12.49	46	42.47	18.2	2.75	29.91	-	-	P	H
		282.72	35.33	-10.67	46	43.43	18.85	2.96	29.91	-	-	P	H
		335	34.33	-11.67	46	41.12	19.82	3.28	29.89	-	-	P	H
		881.7	32.69	-13.31	46	27.49	28.87	5.4	29.07	-	-	P	H
		942.6	33.89	-12.11	46	27.24	29.78	5.61	28.74	-	-	P	H
													H
													H
													H
													H
													H
													H
		30	33.88	-6.12	40	38.6	24.32	0.97	30.01	100	0	P	V
		147.72	31.94	-11.56	43.5	42.42	17.27	2.2	29.95	-	-	P	V
		175.53	36.55	-6.95	43.5	48.86	15.18	2.45	29.94	-	-	P	V
		342	30.88	-15.12	46	37.39	20.06	3.32	29.89	-	-	P	V
		837.6	31.66	-14.34	46	27.38	28.38	5.18	29.28	-	-	P	V
		943.3	34.36	-11.64	46	27.69	29.8	5.61	28.74	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

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



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

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

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)
 = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
 = 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
 = 55.45 (dBμV/m)
2. Over Limit(dB)
 = Level(dBμV/m) – Limit Line(dBμV/m)
 = 55.45(dBμV/m) – 74(dBμV/m)
 = -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)
 = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
 = 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
 = 43.54 (dBμV/m)
2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)
 = 43.54(dBμV/m) – 54(dBμV/m)
 = -10.46(dB)

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



Appendix D. Radiated Spurious Emission Plots

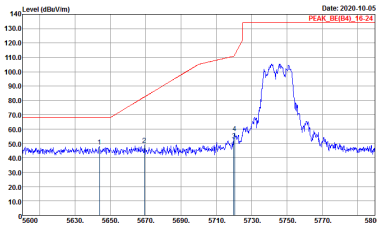
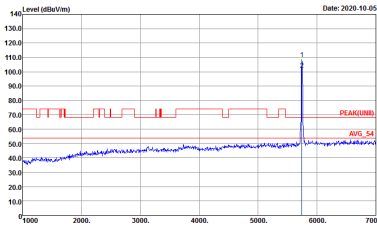
Test Engineer :	Jesse Wang, Stan Hsieh and Ken Wu	Temperature :	22~23°C
		Relative Humidity :	51~58%

Note symbol

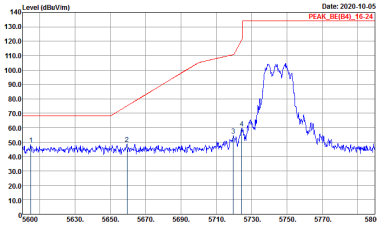
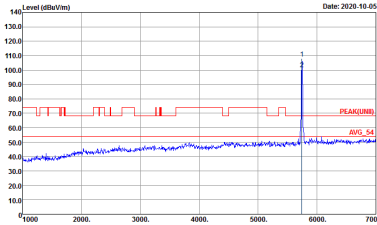
-L	Low channel location
-R	High channel location

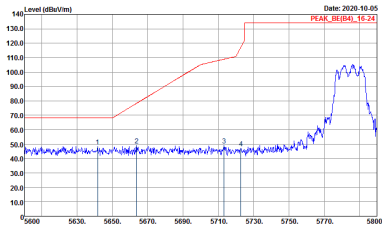
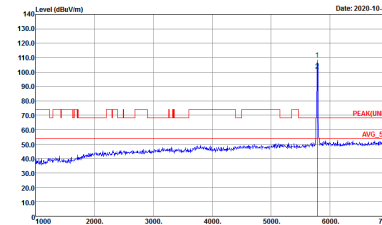
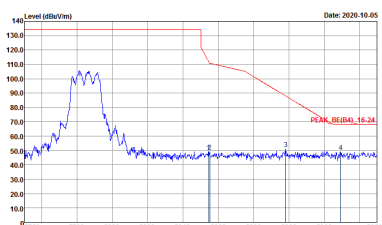


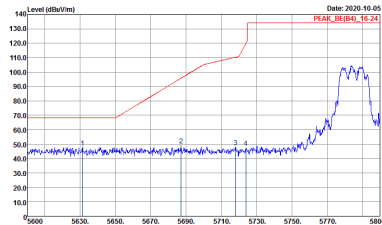
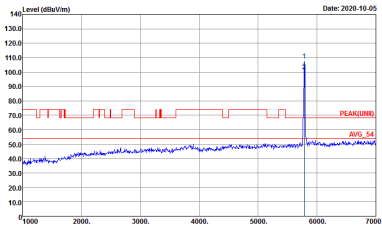
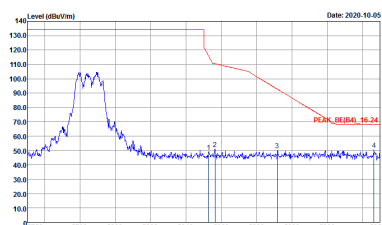
Band 4 - 5725~5850MHz
WIFI 802.11a (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_REIM_16-24 3m HF_ANT_00075962 HORIZONTAL REW:3000.000kHz VIEW:3000.000kHz SWTAUTO	 Site : 03CH07-HY Condition : PEAK(LIN) 3m HF_ANT_00075962 HORIZONTAL REW:3000.000kHz VIEW:3000.000kHz SWTAUTO

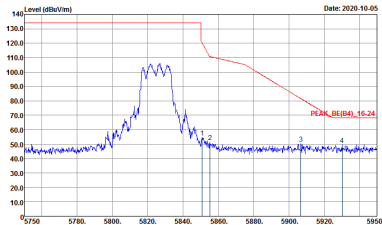
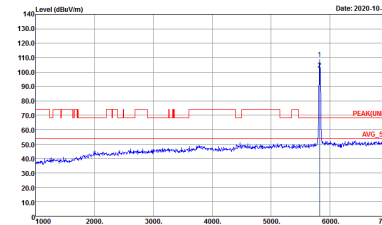


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_REI04_15-24 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK_UNI01_3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

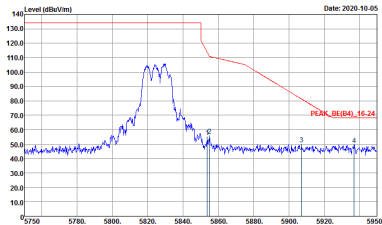
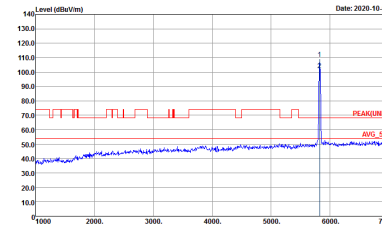
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site Condition : 03CH07-HY : PEAK(LNB) 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site Condition : 03CH07-HY : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Left blank



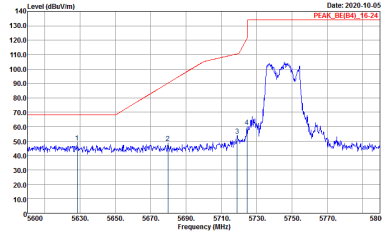
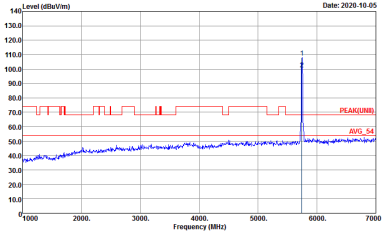
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_RE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK_UN(B) 3m HF_ANT_00075962 HORIZONTAL RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto



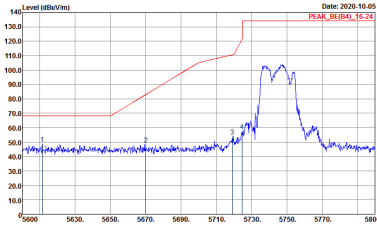
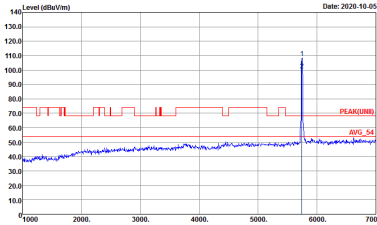
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_RE(B4)_16-24 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK(UNB) 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto



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	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH07-4H Condition : PEAK_RE(149)_E(20) 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWTAuto	 Site : 03CH07-4H Condition : PEAK_RE(149)_E(20) 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWTAuto

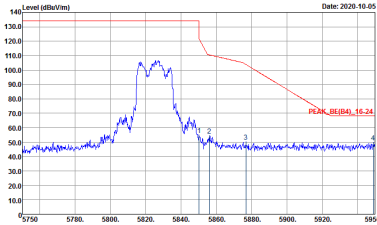
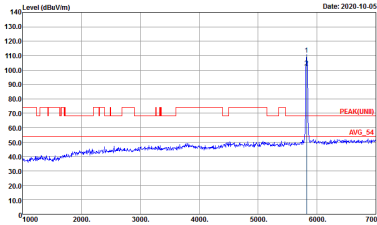


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_REIB4_15-24 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK_UNI1 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto



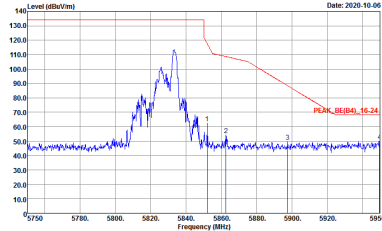
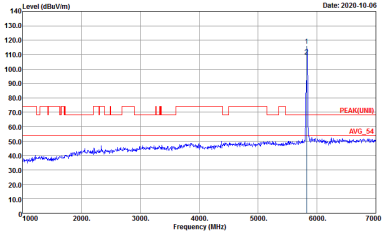
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	Level (dBm/100MHz) Date: 2020-10-05 Site : 03CH07-HY Condition : PEAK_RE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto	Level (dBm/100MHz) Date: 2020-10-05 Site : 03CH07-HY Condition : PEAK(UNB) 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto



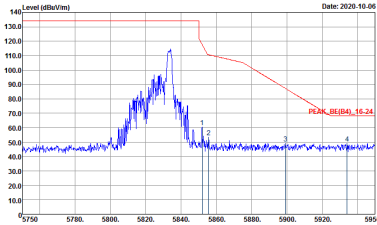
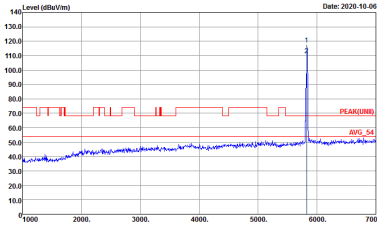
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_RE(B4)_16-24 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK(FUNB) 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto



Band 4 5725~5850MHz
WIFI 802.11ax HE20 Partial 26 (Band Edge @ 3m)

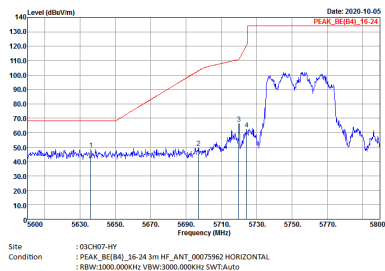
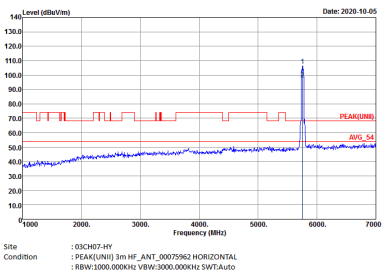
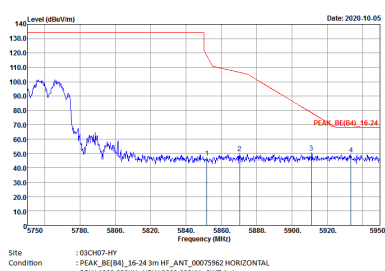
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 26/8 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH07-4H Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto	 Site : 03CH07-4H Condition : PEAK(BB) 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto



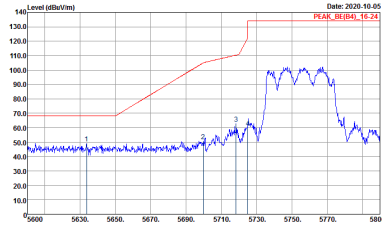
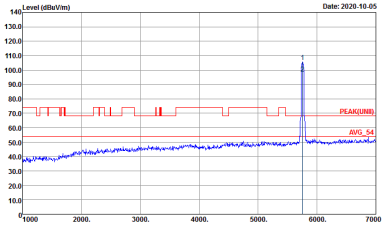
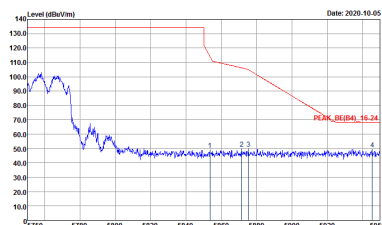
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE20 Partial 26/8 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_RE(B4)_16-24 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK(FUNB) 3m HF_ANT_00075962 VERTICAL RBW:1000.000kHz VIEW:3000.000kHz SWT:Auto

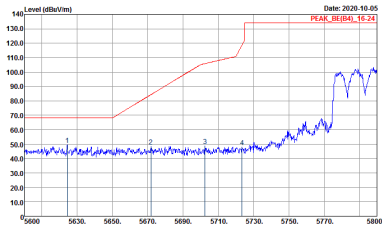
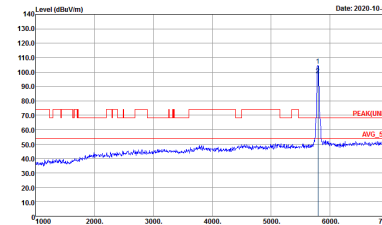
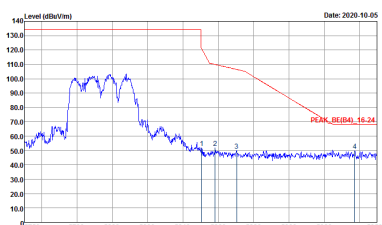


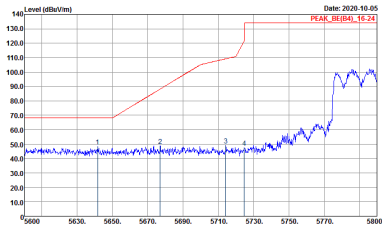
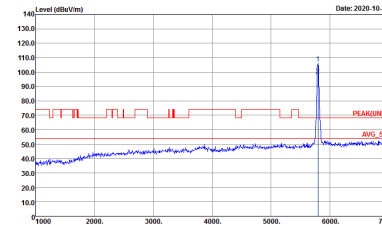
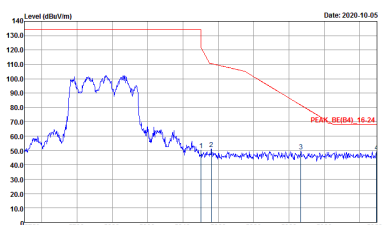
Band 4 5725~5850MHz
WIFI 802.11ax HE40 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWTAuto	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWTAuto
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWTAuto	Left blank

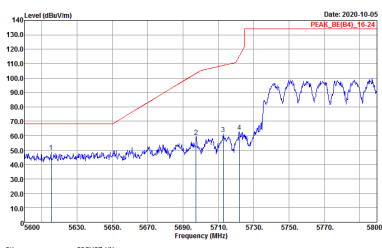
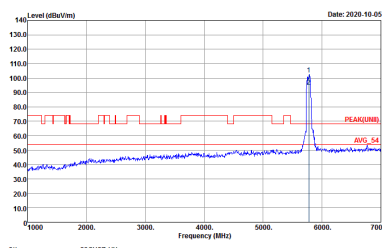
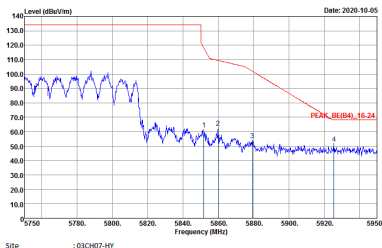


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto	 Site Condition : 03CH07-HY : PEAK(LNB) 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWTAuto	Left blank

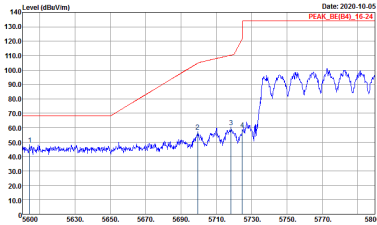
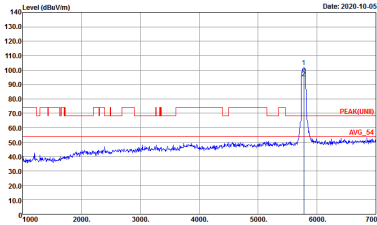
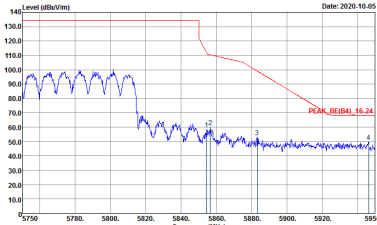
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site Condition : 03CH07-HY : PEAK(LNB) 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE40 Full CH159 5795MHz	
1+2	Vertical	Fundamental
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWTAuto	 Site Condition : 03CH07-HY : PEAK(UNB) 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWTAuto
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWTAuto	Left blank

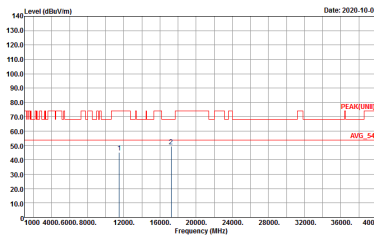
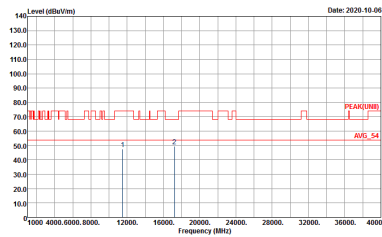
Band 4 5725~5850MHz
WIFI 802.11ax HE80 Full (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_15-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Peak	 Site : 03CH07-HY Condition : PEAK_BE(B4)_15-24 3m HF_ANT_00075962 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ax HE80 Full CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto
Peak	 Site Condition : 03CH07-HY : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto	Left blank

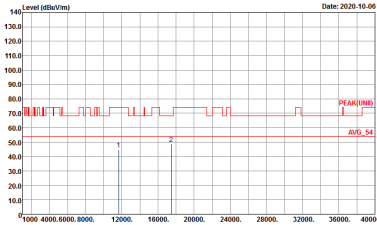
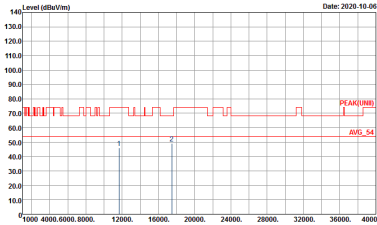
Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak



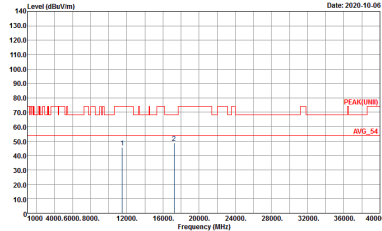
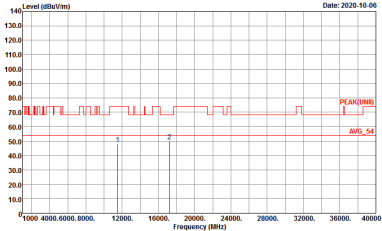
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.	Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak	Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak	 Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak



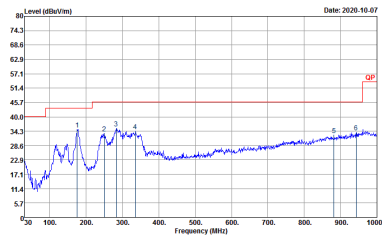
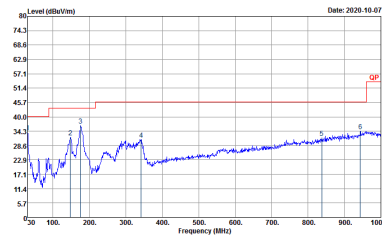
Band 4 5725~5850MHz
WIFI 802.11ax HE20 Full (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH07-4H Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak	 Site : 03CH07-4H Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ax HE20 Full CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 HORIZONTAL Detector : Peak	Site : 03CH07-HY Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL Detector : Peak

Emission below 1GHz
5GHz WIFI 802.11ax HE80 Full (LF)

WIFI	5GHz WIFI	
ANT	802.11ax HE80 Full LF	
1+2	Horizontal	Vertical
QP / Peak	 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(s) HORIZONTAL Detector : Peak	 Site : 03CH07-HY Condition : QP 3m LF-ANT-35419(s) VERTICAL Detector : Peak

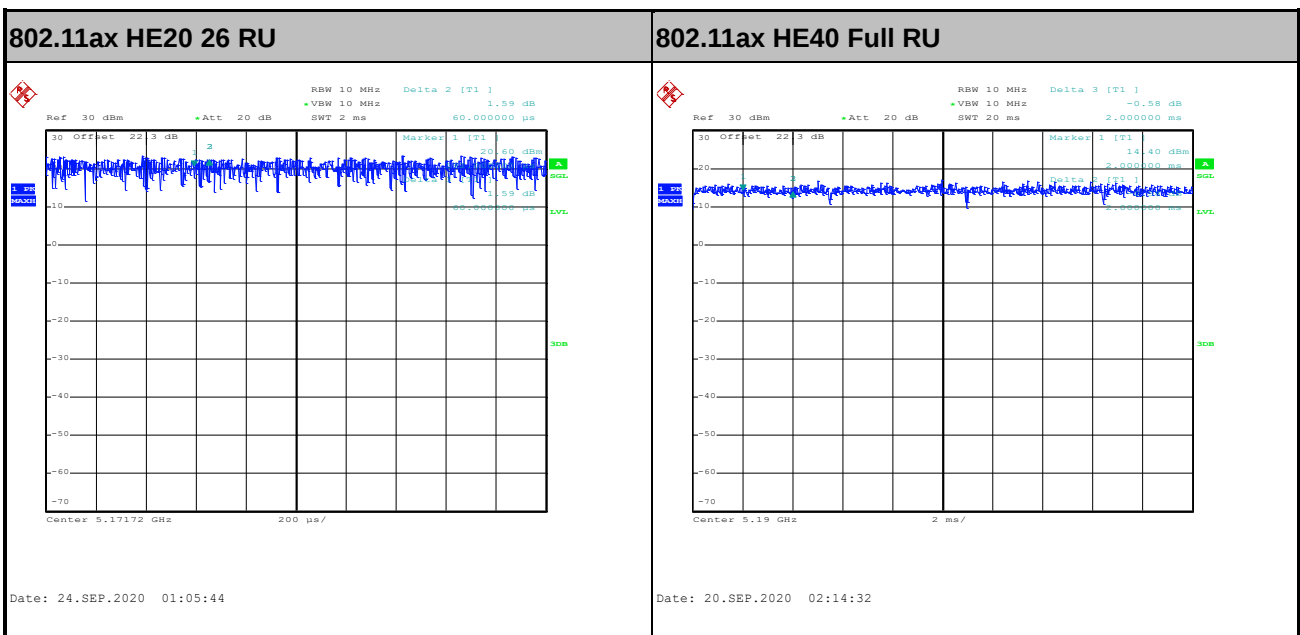
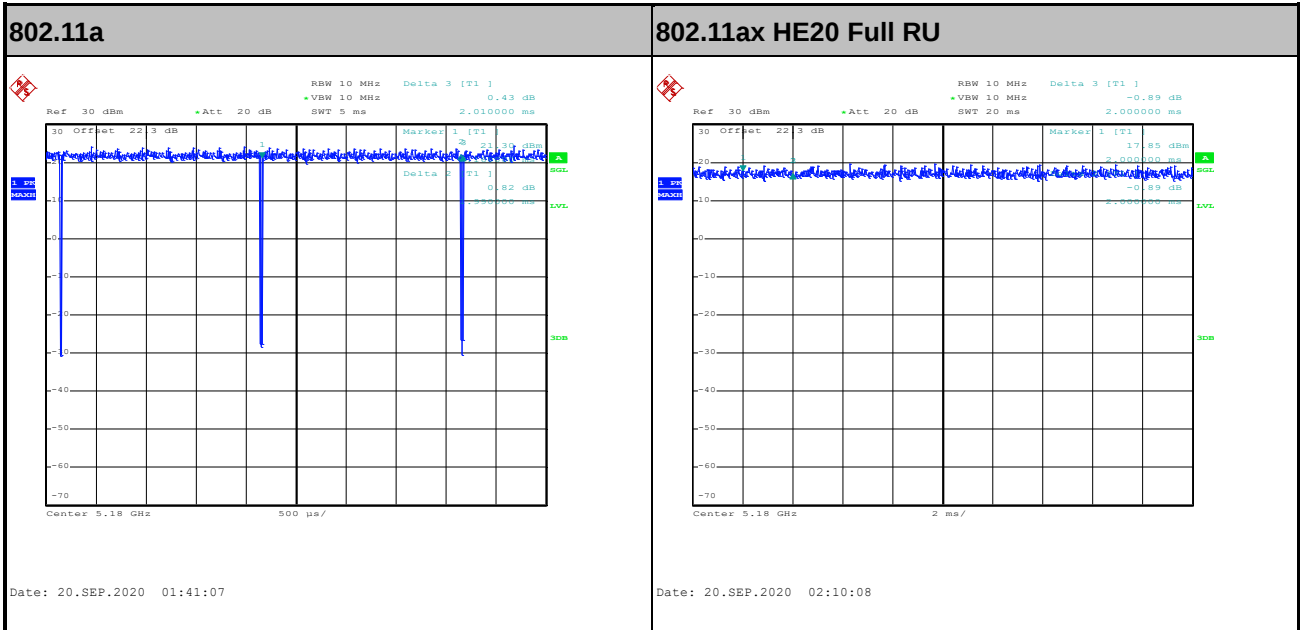


Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1+2	802.11a for Ant 1	99.00	-	-	10Hz	0.04
1+2	802.11a for Ant 2	99.00	-	-	10Hz	0.04
1+2	5GHz 802.11ax HE20 Full RU for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ax HE20 Full RU for Ant 2	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ax HE20 26 RU for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ax HE20 26 RU for Ant 2	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ax HE40 Full RU for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ax HE40 Full RU for Ant 2	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ax HE80 Full RU for Ant 1	100.00	-	-	10Hz	0.00
1+2	5GHz 802.11ax HE80 Full RU for Ant 2	100.00	-	-	10Hz	0.00

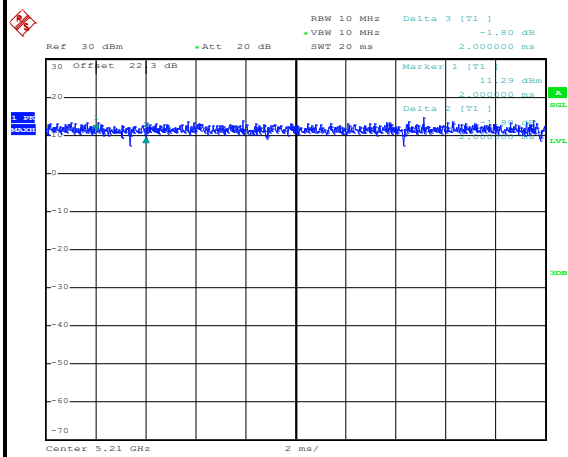


MIMO <Ant. 1>





802.11ax HE80 Full RU

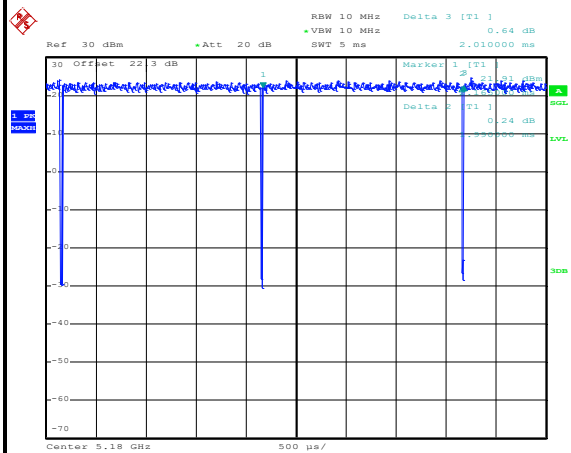


Date: 20.SEP.2020 02:16:10



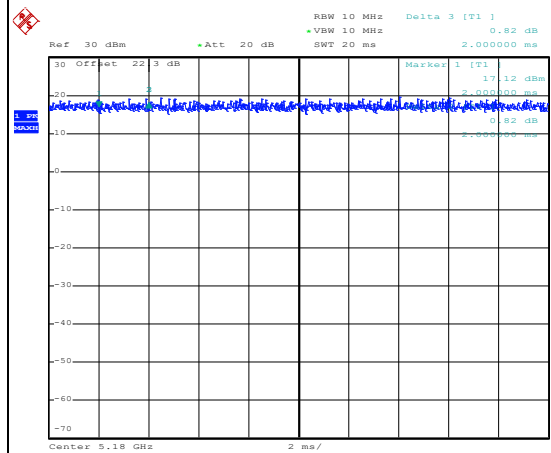
MIMO <Ant. 2>

802.11a



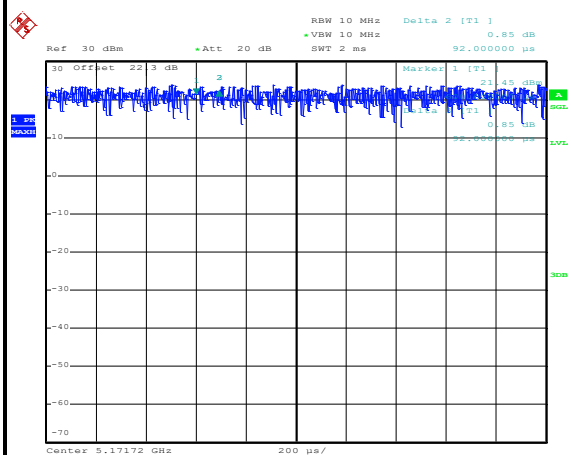
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802.11ax HE20 Full RU



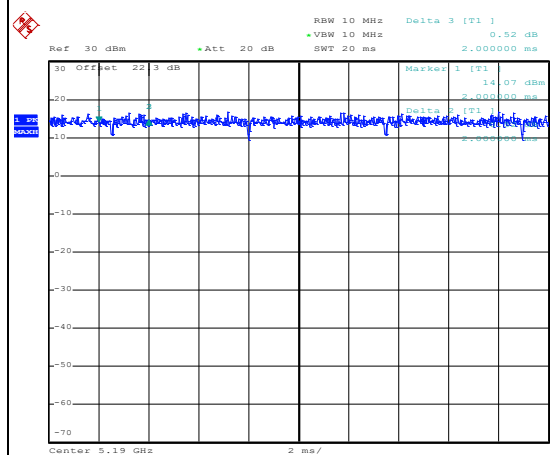
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802.11ax HE20 26 RU



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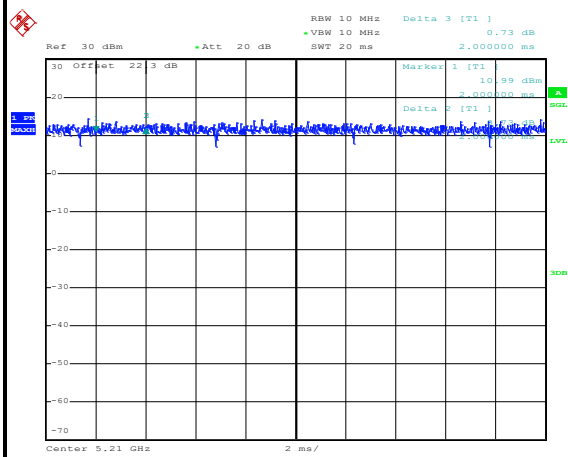
802.11ax HE40 Full RU



Date: 20.SEP.2020 02:14:59



802.11ax HE80 Full RU



Date: 20.SEP.2020 02:15:46