



FCC CO-LOCATION TEST REPORT

FCC ID : S9GT750
Equipment : Access point
Brand Name : RUCKUS
Model Name : T750
Applicant : Ruckus Wireless Inc.
350 W. Java Dr., Sunnyvale CA 94089 USA
Manufacturer : Ruckus Wireless Inc.
350 W. Java Dr., Sunnyvale CA 94089 USA
Standard : FCC Part 15 Subpart E §15.407

The product was received on Jun. 21, 2019 and testing was started from Sep. 02, 2019 and completed on Sep. 27, 2019. We, Sporton International (USA) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (USA) Inc., the test report shall not be reproduced except in full.

Approved by: Ken Chen

Sporton International (USA) Inc.
1175 Montague Expressway, Milpitas, CA 95035



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History of this test report

Report No.	Version	Description	Issued Date
FR190621001F	01	Initial issue of report	Nov. 25, 2019

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.407(b)	Unwanted Emissions	Pass	Under limit 0.68 dB at 30.000 MHz for Quasi-Peak
3.2	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.



1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Antenna Type	WLAN: <Ant. 1> Omni Antenna <Ant. 2> Omni Antenna <Ant. 3> Omni Antenna <Ant. 4> Omni Antenna Bluetooth: Omni Antenna Zigbee: Omni 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 (USA) Inc.	
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300	
Test Site No.	Sporton Site No.	
	03CH01-CA	03CH02-CA

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

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.
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- ♦ ANSI C63.10-2013

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

2 Test Configuration of Equipment Under Test

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 in three orthogonal panels, X, Y, Z. The worst cases (x plane) were recorded in this report.

2.1 Carrier Frequency and Channel

Zigbee		WLAN 2.4GHz		WLAN 5GHz	
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
25	2475	01	2412	36	5180

5150-5250MHz 802.11ax HE80		5250-5350MHz 802.11ax HE80		5470-5725MHz 802.11ax HE80		5725-5850MHz 802.11ax HE80	
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
42	5210	58	5290	106	5530	155	5775

2.2 Test Mode

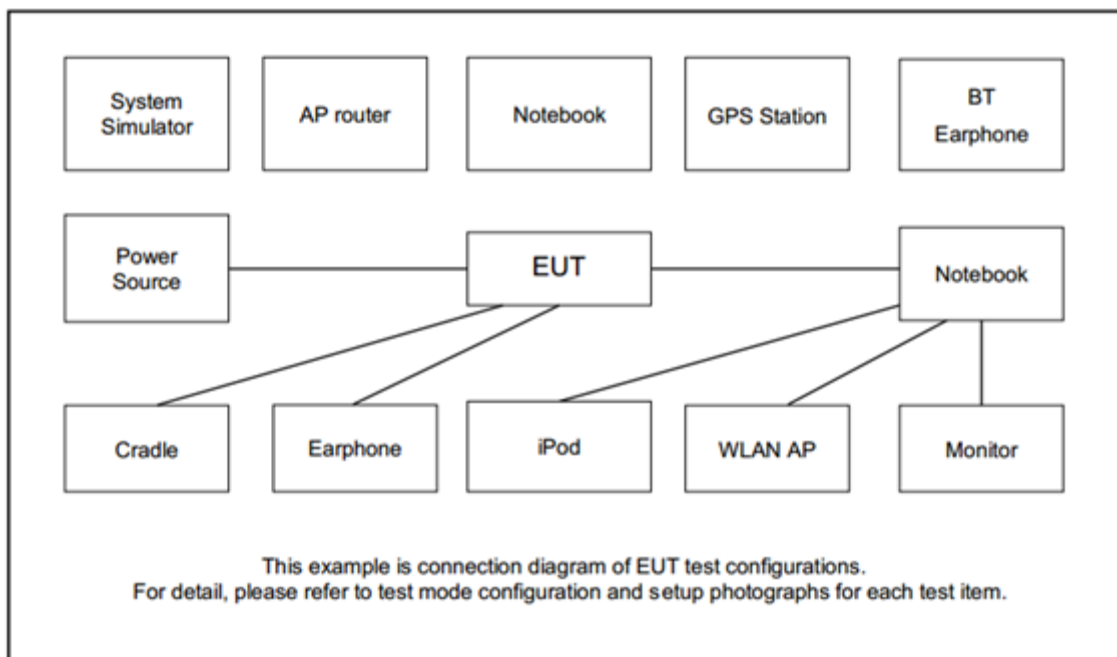
Final test modes are considering the modulation and worse data rates as below table.

<Co-Location>

Modulation	Data Rate
Zigbee + WLAN 2.4GHz + WLAN 5GHz	250kbps + MCS0 + MCS0
5GHz 802.11ax HE80 + 5GHz 802.11ax HE80	MCS0 + MCS0

Remark: The testing for co-transit mode subjects to intermodulation signal which is based on customer's requirement.

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Laptop	HP	15t-cu000	PD97265NG	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 "Putty v0.6" 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.

3 Test Result

3.1 Unwanted Emissions Measurement

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

3.1.1 Limit of Unwanted Emissions

- (1) 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.

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

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.

3.1.2 Measuring Instruments

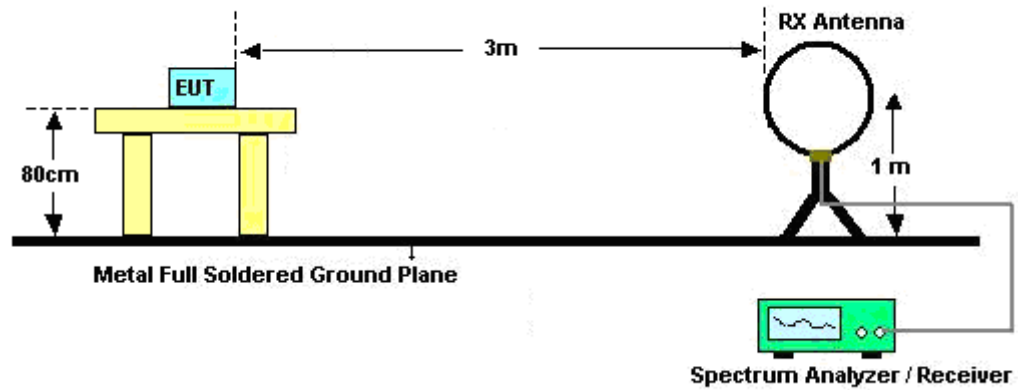
See list of measuring equipment of this test report.

3.1.3 Test Procedures

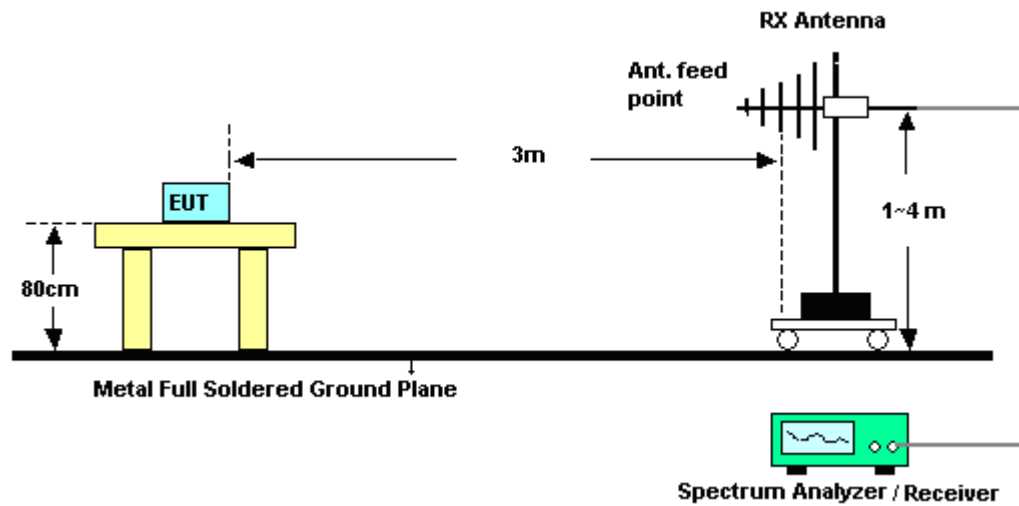
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules **v02r01**.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for 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.

3.1.4 Test Setup

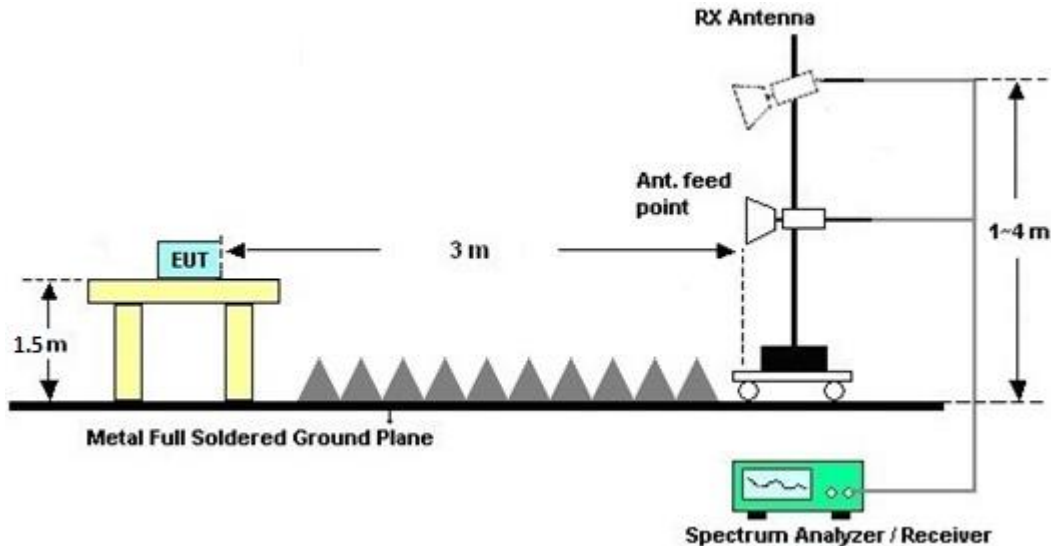
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.1.5 Test Results of Radiated Spurious 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.

3.1.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A and B.

3.1.7 Duty Cycle

Please refer to Appendix C.

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

Please refer to Appendix A and B.



3.2 Antenna Requirements

3.2.1 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.

3.2.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.2.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	6111D	50391	30MHz~1GHz	Jun. 26, 2019	Sep. 27, 2019	Jun. 25, 2020	Radiation (03CH01-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120D	02140	1GHz~18GHz	Aug. 19, 2019	Sep. 27, 2019	Aug. 18, 2020	Radiation (03CH01-CA)
Amplifier	SONOMA	310N	372241	N/A	Jul. 26, 2019	Sep. 27, 2019	Jul. 25, 2020	Radiation (03CH01-CA)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055007	1GHz~18GHz	Apr. 01, 2019	Sep. 27, 2019	Mar. 31, 2020	Radiation (03CH01-CA)
Preamplifier	Keysight	83017A	MY53270323	1GHz~26.5GHz	Jul. 26, 2019	Sep. 27, 2019	Jul. 25, 2020	Radiation (03CH01-CA)
EMI Test Receiver	R&S	ESU26	100049	20Hz~26.5GHz	Jul. 31, 2019	Sep. 27, 2019	Jul. 30, 2020	Radiation (03CH01-CA)
Filter	Wainwright	WLK12-1200-1272-11000-40SS	SN1	1.2G Low Pass	Aug. 02, 2019	Sep. 27, 2019	Aug. 01, 2020	Radiation (03CH01-CA)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN9	3G High pass	Aug. 02, 2019	Sep. 27, 2019	Aug. 01, 2020	Radiation (03CH01-CA)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN8	6.75 High pass	Aug. 02, 2019	Sep. 27, 2019	Aug. 01, 2020	Radiation (03CH01-CA)
Notch Filter	Wainwright	WRCJV10-2375-2400-2483-2508-40SS	SN4	Notch Filter	Aug. 02, 2019	Sep. 27, 2019	Aug. 01, 2020	Radiation (03CH01-CA)
Notch Filter	Wainwright	WRCJV12-5120-5150-5350-5380-40SS	SN14	Notch Filter	Aug. 02, 2019	Sep. 27, 2019	Aug. 01, 2020	Radiation (03CH01-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Sep. 27, 2019	N/A	Radiation (03CH01-CA)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Sep. 27, 2019	N/A	Radiation (03CH01-CA)
Bilog Antenna	TESEQ	6111D	50392	30MHz~1GHz	May 15, 2019	Sep. 02, 2019~Sep. 03, 2019	May 14, 2020	Radiation (03CH02-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120D	01894	1GHz~18GHz	Jul. 22, 2019	Sep. 02, 2019~Sep. 03, 2019	Jul. 21, 2020	Radiation (03CH02-CA)
Amplifier	SONOMA	310N	372240	N/A	Aug. 13, 2019	Sep. 02, 2019~Sep. 03, 2019	Aug. 12, 2020	Radiation (03CH02-CA)
Preamplifier	Keysight	83017A	MY53270323	1GHz~26.5GHz	Sep. 11, 2018	Sep. 02, 2019~Sep. 03, 2019	Sep. 10, 2019	Radiation (03CH02-CA)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055007	1GHz~18GHz	Apr. 01, 2019	Sep. 02, 2019~Sep. 03, 2019	Mar. 31, 2020	Radiation (03CH02-CA)
EMI Test Receiver	R&S	ESU26	100049	20Hz~26.5GHz	Jul. 31, 2019	Sep. 02, 2019~Sep. 03, 2019	Jul. 30, 2020	Radiation (03CH02-CA)
Filter	Wainwright	WLK12-1200-1272-11000-40SS	SN2	1.2G Low Pass	Aug. 02, 2019	Sep. 02, 2019~Sep. 03, 2019	Aug. 01, 2020	Radiation (03CH02-CA)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Notch Filter	Wainwright	WRCJV12-51 20-5150-5350 -5380-40SS	SN14	Notch Filter	Aug. 02, 2019	Sep. 02, 2019~ Sep. 03, 2019	Aug. 01, 2020	Radiation (03CH02-CA)
Notch Filter	Wainwright	WRCJV12-56 95-5725-5850 -5880-40SS	SN18	Notch Filter	Aug. 02, 2019	Sep. 02, 2019~ Sep. 03, 2019	Aug. 01, 2020	Radiation (03CH02-CA)
Notch Filter	Wainwright	WRCJV16-54 40-5470-5725 -5755-40SS	SN20	Notch Filter	Aug. 02, 2019	Sep. 02, 2019~ Sep. 03, 2019	Aug. 01, 2020	Radiation (03CH02-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Sep. 02, 2019~ Sep. 03, 2019	N/A	Radiation (03CH02-CA)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Sep. 02, 2019~ Sep. 03, 2019	N/A	Radiation (03CH02-CA)

5 Uncertainty of Evaluation

<03CH01-CA>

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.4
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.5
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.9
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<03CH02-CA>

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.4
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.5
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.3
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Appendix A. Radiated Spurious Emission

Test Engineer :	Eric Jeng	Temperature :	23~25°C
		Relative Humidity :	44~48%

Zigbee_Tx_CH25 + 2.4G_Tx_Ch01+5G_Tx_Ch36

Zigbee_Tx_Ch25 (Band Edge @ 3m)

Zigbee	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)
CH 25 2475MHz	*	2475	90.63	-	-	77.22	27.61	17.07	31.28	347	324	P	H
	*	2475	86.93	-	-	73.53	27.61	17.07	31.28	347	324	A	H
		2485.64	56	-18	74	42.58	27.61	17.09	31.28	347	324	P	H
		2497.48	46.21	-7.79	54	32.73	27.64	17.11	31.27	347	324	A	H
	*	2475	103.97	-	-	90.59	27.58	17.07	31.28	316	274	P	V
	*	2475	100.9	-	-	87.53	27.58	17.07	31.28	316	274	A	V
		2497.2	56.94	-17.06	74	43.48	27.62	17.11	31.27	316	274	P	V
		2485.08	46.96	-7.04	54	33.57	27.58	17.09	31.28	316	274	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4G_Tx_Ch01 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
CH 01 2412MHz		2389.485	70.78	-3.22	74	57.54	27.62	16.93	31.31	324	332	P	H
		2389.905	51.5	-2.5	54	38.26	27.62	16.93	31.31	324	332	A	H
	*	2412	118.72	-	-	105.45	27.6	16.97	31.3	324	332	P	H
	*	2412	107.49	-	-	94.22	27.6	16.97	31.3	324	332	A	H
		2387.49	68.81	-5.19	74	54.7	27.64	16.93	31.31	305	258	P	V
		2389.59	53.32	-0.68	54	39.2	27.64	16.93	31.31	305	258	A	V
	*	2412	120.79	-	-	106.66	27.59	16.97	31.3	305	258	P	V
	*	2412	116.34	-	-	103.08	27.59	16.97	31.3	305	258	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



5G_Tx_Ch36 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
CH 36 5180MHz		5148.98	69.79	-4.21	74	57.09	32.08	10.53	29.91	312	318	P	H
		5148.98	52.43	-1.57	54	39.73	32.08	10.53	29.91	312	318	A	H
	*	5180	118.01	-	-	105.47	31.87	10.57	29.9	312	318	P	H
	*	5180	111.21	-	-	98.67	31.87	10.57	29.9	312	318	A	H
		5145.34	68.13	-5.87	74	55.42	32.1	10.52	29.91	301	252	P	V
		5148.46	53.29	-0.71	54	40.57	32.1	10.53	29.91	301	252	A	V
	*	5180	117.6	-	-	105.01	31.92	10.57	29.9	301	252	P	V
	*	5180	108.9	-	-	96.31	31.92	10.57	29.9	301	252	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



FCC CO-LOCATION TEST REPORT

Report No. : FR190621001F

Co-location mode (Harmonic @ 3m)

Co-location	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
Co-location mode		2388	64.46	-9.54	74	60.83	27.62	7.18	31.17	300	341	P	H
		2388	49.93	-4.07	54	46.3	27.62	7.18	31.17	300	341	A	H
		4824	48.23	-25.77	74	61.46	31.43	11.79	56.45	100	0	P	H
		4950	50.41	-23.59	74	63.59	31.46	11.96	56.6	100	0	P	H
		5128	61.93	-12.07	74	74.31	32.11	12.49	56.98	303	324	P	H
		5128	51.51	-2.49	54	63.89	32.11	12.49	56.98	303	324	A	H
		5432	58.71	-15.29	74	70.64	31.76	13.39	57.08	302	263	P	H
		5432	50.75	-3.25	54	62.68	31.76	13.39	57.08	302	263	A	H
		7425	45.61	-28.39	74	52.48	36.5	13.17	56.54	100	0	P	H
		10360	48.22	-19.98	68.2	52.18	39.39	15.35	58.7	100	0	P	H
		15540	46.96	-27.04	74	51.87	38.74	18	61.65	100	0	P	H
		2388	62.11	-11.89	74	58.46	27.64	7.18	31.17	303	321	P	V
		2388	48.25	-5.75	54	44.6	27.64	7.18	31.17	303	321	A	V
		4824	52	-22	74	65.25	31.41	11.79	56.45	267	29	P	V
		4824	42.64	-11.36	54	55.89	31.41	11.79	56.45	267	29	A	V
		4950	51.9	-22.1	74	65.07	31.47	11.96	56.6	266	33	P	V
		4950	42.73	-11.27	54	55.9	31.47	11.96	56.6	266	33	A	V
		5060	59.09	-14.91	74	71.72	31.91	12.25	56.79	276	27	P	V
		5060	47.31	-6.69	54	59.94	31.91	12.25	56.79	276	27	A	V
		5128	61.43	-12.57	74	73.84	32.08	12.49	56.98	268	144	P	V
		5128	50.9	-3.1	54	63.31	32.08	12.49	56.98	268	144	A	V
		5436	61.46	-12.54	74	73.36	31.81	13.37	57.08	309	301	P	V
		5436	51.84	-2.16	54	63.74	31.81	13.37	57.08	309	301	A	V
		7425	45.55	-28.45	74	52.4	36.52	13.17	56.54	100	0	P	V
		10360	48.01	-20.19	68.2	51.86	39.5	15.35	58.7	100	0	P	V
		15540	46.95	-27.05	74	52.03	38.57	18	61.65	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz
Co-location mode (LF @ 3m)

Co-location	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	Limit (dB)	Line (dBμV/m)	Level (dBμV)	Factor (dB/m)	Loss (dB)	Factor (dB)	Pos (cm)	Pos (deg)	QP (P/QP)	(H/V)
Co-location mode		126.03	42.32	-1.18	43.5	55.21	17.6	1.93	32.42	292	318	QP	H
		126.03	44.62	1.12	43.5	57.51	17.6	1.93	32.42	292	318	P	H
		150.28	39.6	-3.9	43.5	52.7	17.18	2.13	32.41	233	70	QP	H
		150.28	40.9	-2.6	43.5	54	17.18	2.13	32.41	233	70	P	H
		227.88	38.85	-7.15	46	52.59	15.99	2.67	32.4	144	54	QP	H
		227.88	43.65	-2.35	46	57.39	15.99	2.67	32.4	144	54	P	H
		242.43	39	-7	46	50.97	17.59	2.85	32.41	-	-	P	H
		273.47	36.1	-9.9	46	46.68	18.89	2.94	32.41	-	-	P	H
		423.82	37.73	-8.27	46	44.27	22.65	3.3	32.49	-	-	P	H
		30	39.32	-0.68	40	45.6	25	1.2	32.48	100	355	QP	V
		30	46.52	6.52	40	52.8	25	1.2	32.48	100	355	P	V
		53.28	36.04	-3.96	40	53.9	12.89	1.69	32.44	100	21	QP	V
		53.28	41.44	1.44	40	59.3	12.89	1.69	32.44	100	21	P	V
		122.15	41.05	-2.45	43.5	54	17.6	1.87	32.42	100	355	QP	V
		122.15	43.05	-0.45	43.5	56	17.6	1.87	32.42	100	355	P	V
		168.71	40.59	-2.91	43.5	54.99	15.83	2.17	32.4	100	0	QP	V
		168.71	43.59	0.09	43.5	57.99	15.83	2.17	32.4	100	0	P	V
		263.77	37.47	-8.53	46	46.75	20.18	2.95	32.41	-	-	P	V
		879.72	38.21	-7.79	46	35.88	29.21	4.89	31.77	-	-	P	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
P/QP	Peak or Quasi-Peak
H/V	Horizontal or Vertical

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(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”.



FCC CO-LOCATION TEST REPORT

Report No. : FR190621001F

Test Engineer :	Hao Syu	Temperature :	23~26°C
		Relative Humidity :	42~51%

11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58

WIFI 802.11ax HE80 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE80 CH 42 5210MHz		5150	60.34	-13.66	74	47.66	31.62	10.99	29.93	283	106	P	H
		5147.94	49.57	-4.43	54	36.89	31.62	10.99	29.93	283	106	A	H
	*	5210	108.42	-	-	95.52	31.67	11.15	29.92	283	106	P	H
	*	5210	95.77	-	-	82.87	31.67	11.15	29.92	283	106	A	H
		5350.8	61.36	-12.64	74	48.16	31.78	11.33	29.91	283	106	P	H
		5369.84	50.37	-3.63	54	37.13	31.8	11.35	29.91	283	106	A	H
		5146.12	59.39	-14.61	74	46.5	31.84	10.98	29.93	263	328	P	V
		5149.5	48.54	-5.46	54	35.64	31.84	10.99	29.93	263	328	A	V
	*	5210	110.81	-	-	97.7	31.88	11.15	29.92	263	328	P	V
	*	5210	97.86	-	-	84.75	31.88	11.15	29.92	263	328	A	V
		5350.52	60.35	-13.65	74	46.97	31.96	11.33	29.91	263	328	P	V
		5351.36	48.71	-5.29	54	35.33	31.96	11.33	29.91	263	328	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



FCC CO-LOCATION TEST REPORT

Report No. : FR190621001F

WIFI 802.11ax HE80 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE80 CH 58 5290MHz		5147.9	60.36	-13.64	74	47.68	31.62	10.99	29.93	232	111	P	H
		5149.6	49.51	-4.49	54	36.83	31.62	10.99	29.93	232	111	A	H
	*	5290	106.61	-	-	93.55	31.73	11.25	29.92	232	111	P	H
	*	5290	93.94	-	-	80.88	31.73	11.25	29.92	232	111	A	H
		5352	62.24	-11.76	74	49.04	31.78	11.33	29.91	232	111	P	H
		5370	51.76	-2.24	54	38.52	31.8	11.35	29.91	232	111	A	H
		5147.22	58.19	-15.81	74	45.3	31.84	10.98	29.93	301	201	P	V
		5148.92	46.25	-7.75	54	33.35	31.84	10.99	29.93	301	201	A	V
	*	5290	108.99	-	-	95.74	31.92	11.25	29.92	301	201	P	V
	*	5290	96.63	-	-	83.38	31.92	11.25	29.92	301	201	A	V
		5350.56	60.34	-13.66	74	46.96	31.96	11.33	29.91	301	201	P	V
		5351.28	49.59	-4.41	54	36.21	31.96	11.33	29.91	301	201	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Co-location mode (Harmonic @ 3m)

Co-location	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
Co-location mode		10420	47.41	-20.79	68.2	52.17	39.59	16.56	60.91	100	0	P	H
		10580	47.47	-20.73	68.2	52.21	39.81	16.65	61.2	100	0	P	H
		15630	47.26	-26.74	74	50.32	38.34	20.04	61.44	100	0	P	H
		15870	46.96	-27.04	74	50.08	37.86	20.18	61.16	100	0	P	H
		10420	47.36	-20.84	68.2	52.11	39.6	16.56	60.91	100	0	P	V
		10580	48.34	-19.86	68.2	53.05	39.84	16.65	61.2	100	0	P	V
		15630	47.96	-26.04	74	50.8	38.56	20.04	61.44	100	0	P	V
		15870	46.06	-27.94	74	48.89	38.15	20.18	61.16	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106

WIFI 802.11ax HE80 (Band Edge @ 3m)

WIFI	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 CH 42 5210MHz		5146.64	62.15	-11.85	74	49.48	31.62	10.98	29.93	356	90	P	H
		5149.76	50.69	-3.31	54	38.01	31.62	10.99	29.93	356	90	A	H
	*	5210	110.75	-	-	97.85	31.67	11.15	29.92	356	90	P	H
	*	5210	97.84	-	-	84.94	31.67	11.15	29.92	356	90	A	H
		5456.92	59.4	-14.6	74	46	31.87	11.43	29.9	356	90	P	H
		5460	48.32	-5.68	54	34.92	31.87	11.43	29.9	356	90	A	H
		5146.64	61.38	-12.62	74	48.49	31.84	10.98	29.93	265	118	P	V
		5147.42	49.45	-4.55	54	36.56	31.84	10.98	29.93	265	118	A	V
	*	5210	111.95	-	-	98.84	31.88	11.15	29.92	265	118	P	V
	*	5210	98.87	-	-	85.76	31.88	11.15	29.92	265	118	A	V
		5455.24	60.57	-13.43	74	47.02	32.02	11.43	29.9	265	118	P	V
		5459.44	48.7	-5.3	54	35.15	32.02	11.43	29.9	265	118	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



FCC CO-LOCATION TEST REPORT

Report No. : FR190621001F

WIFI 802.11ax HE80 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE80 CH 106 5530MHz		5458.48	62.47	-11.53	74	49.07	31.87	11.43	29.9	250	210	P	H
		5468.08	64.24	-3.96	68.2	50.82	31.88	11.44	29.9	250	210	P	H
		5459.92	51.25	-2.75	54	37.85	31.87	11.43	29.9	250	210	A	H
	*	5530	112.43	-	-	98.92	31.94	11.48	29.91	250	210	P	H
	*	5530	99.26	-	-	85.75	31.94	11.48	29.91	250	210	A	H
		5758.385	57.44	-10.76	68.2	43.38	32.27	11.78	29.99	250	210	P	H
		5455.6	66.08	-7.92	74	52.53	32.02	11.43	29.9	316	93	P	V
		5466.4	67.37	-0.83	68.2	53.8	32.03	11.44	29.9	316	93	P	V
		5459.92	53.49	-0.51	54	39.93	32.03	11.43	29.9	316	93	A	V
	*	5530	112.49	-	-	98.84	32.08	11.48	29.91	316	93	P	V
	*	5530	99.92	-	-	86.27	32.08	11.48	29.91	316	93	A	V
		5757.125	55.54	-12.66	68.2	41.41	32.35	11.77	29.99	316	93	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



FCC CO-LOCATION TEST REPORT

Report No. : FR190621001F

Co-location mode (Harmonic @ 3m)

Co-location	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
Co-location mode		10420	48.02	-20.18	68.2	52.78	39.59	16.56	60.91	100	0	P	H
		11060	55.75	-18.25	74	60.32	40.23	16.96	61.76	263	35	P	H
		11060	42.04	-11.96	54	46.61	40.23	16.96	61.76	263	35	A	H
		15630	48.31	-25.69	74	51.37	38.34	20.04	61.44	100	0	P	H
		16590	48.19	-20.01	68.2	48.06	39.1	20.71	59.68	100	0	P	H
		10420	47.86	-20.34	68.2	52.61	39.6	16.56	60.91	100	0	P	V
		11060	55.03	-18.97	74	59.52	40.31	16.96	61.76	187	349	P	V
		11060	41.84	-12.16	54	46.33	40.31	16.96	61.76	187	349	A	V
		15630	49.37	-24.63	74	52.21	38.56	20.04	61.44	100	0	P	V
		16590	48.42	-19.78	68.2	48.07	39.32	20.71	59.68	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz
Co-location mode (LF)

Co-location	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)
Co-location mode LF		32.91	21.03	-18.97	40	28.9	23.62	0.98	32.47	-	-	P	H
		120.21	30.96	-12.54	43.5	44.11	17.52	1.75	32.42	100	0	P	H
		178.41	29	-14.5	43.5	44.11	15.1	2.2	32.41	-	-	P	H
		477.17	30.72	-15.28	46	36.05	23.6	3.6	32.53	-	-	P	H
		802.12	30.69	-15.31	46	30.21	28.06	4.62	32.2	-	-	P	H
		950.53	32.11	-13.89	46	27.45	30.81	5.01	31.16	-	-	P	H
													H
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													H
		31.94	24.43	-15.57	40	32.1	23.83	0.97	32.47	-	-	P	V
		94.02	34.24	-9.26	43.5	49.81	15.3	1.56	32.43	-	-	P	V
		123.12	31.18	-12.32	43.5	44.2	17.6	1.8	32.42	100	5	QP	V
		123.12	41.61	-1.89	43.5	54.63	17.6	1.8	32.42	100	5	P	V
		480.08	28.41	-17.59	46	33.75	23.6	3.6	32.54	-	-	P	V
		640.13	30.58	-15.42	46	32.59	26.5	4.06	32.57	-	-	P	V
		957.32	33.05	-12.95	46	28.14	30.95	5.06	31.1	-	-	P	V
													V
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													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155
WIFI 802.11ax HE80 (Band Edge @ 3m)

WIFI	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 CH 42 5210MHz		5147.94	63.37	-10.63	74	50.69	31.62	10.99	29.93	330	92	P	H
		5150	51.66	-2.34	54	38.98	31.62	10.99	29.93	330	92	A	H
	*	5210	113.08	-	-	100.18	31.67	11.15	29.92	330	92	P	H
	*	5210	99.94	-	-	87.04	31.67	11.15	29.92	330	92	A	H
		5398.96	57.76	-16.24	74	44.46	31.82	11.39	29.91	330	92	P	H
		5376	45.26	-8.74	54	32.01	31.8	11.36	29.91	330	92	A	H
		5091	64.59	-9.41	74	51.89	31.81	10.82	29.93	294	332	P	V
		5150	52.78	-1.22	54	39.88	31.84	10.99	29.93	294	332	A	V
	*	5210	113.39	-	-	100.28	31.88	11.15	29.92	294	332	P	V
	*	5210	100.39	-	-	87.28	31.88	11.15	29.92	294	332	A	V
		5350	57.12	-16.88	74	43.74	31.96	11.33	29.91	294	332	P	V
		5376.28	46.02	-7.98	54	32.59	31.98	11.36	29.91	294	332	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



WIFI 802.11ax HE80 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ax HE80 CH 155 5775MHz		5614.625	56.92	-11.28	68.2	43.24	32.07	11.55	29.94	242	201	P	H
		5696.3	61.78	-40.69	102.47	47.89	32.18	11.68	29.97	242	201	P	H
		5713.625	64.08	-44.94	109.02	50.13	32.21	11.71	29.97	242	201	P	H
		5720.6	64.72	-47.45	112.17	50.76	32.22	11.72	29.98	242	201	P	H
	*	5775	111.35	-	-	97.24	32.3	11.8	29.99	242	201	P	H
	*	5775	98.75	-	-	84.64	32.3	11.8	29.99	242	201	A	H
		5850	60.34	-61.86	122.2	46.09	32.4	11.87	30.02	242	201	P	H
		5857	59.26	-50.98	110.24	45	32.41	11.87	30.02	242	201	P	H
		5913.2	58.28	-18.62	76.9	43.93	32.49	11.9	30.04	242	201	P	H
		5933.2	56.75	-11.45	68.2	42.37	32.52	11.91	30.05	242	201	P	H
		5648.825	58.88	-9.32	68.2	45	32.22	11.61	29.95	320	210	P	V
		5695.85	63.68	-38.46	102.14	49.69	32.28	11.68	29.97	320	210	P	V
		5718.575	66.01	-44.39	110.4	51.97	32.3	11.71	29.97	320	210	P	V
		5720.6	65.24	-46.93	112.17	51.2	32.3	11.72	29.98	320	210	P	V
	*	5775	114.43	-	-	100.25	32.37	11.8	29.99	320	210	P	V
	*	5775	101.42	-	-	87.24	32.37	11.8	29.99	320	210	A	V
		5850.4	60.17	-61.12	121.29	45.86	32.46	11.87	30.02	320	210	P	V
		5859.8	59.49	-49.96	109.45	45.17	32.47	11.87	30.02	320	210	P	V
		5895.8	58.67	-31.1	89.77	44.3	32.51	11.89	30.03	320	210	P	V
		5947.6	57.06	-11.14	68.2	42.62	32.57	11.92	30.05	320	210	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



FCC CO-LOCATION TEST REPORT

Report No. : FR190621001F

Co-location mode (Harmonic @ 3m)

Co-location	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
Co-location mode		10420	47.56	-20.64	68.2	52.32	39.59	16.56	60.91	100	0	P	H
		11550	54.95	-19.05	74	59.73	40.19	17.27	62.24	219	41	P	H
		11550	41.25	-12.75	54	46.03	40.19	17.27	62.24	219	41	A	H
		15630	47.82	-26.18	74	50.88	38.34	20.04	61.44	100	0	P	H
		17325	49.96	-18.24	68.2	45.77	41.79	21.28	58.88	100	0	P	H
		10420	47.83	-20.37	68.2	52.58	39.6	16.56	60.91	100	0	P	V
		11550	55.9	-18.1	74	60.61	40.26	17.27	62.24	276	322	P	V
		11550	42.95	-11.05	54	47.66	40.26	17.27	62.24	276	322	A	V
		15630	47.38	-26.62	74	50.22	38.56	20.04	61.44	100	0	P	V
		17325	49.87	-18.33	68.2	45.6	41.87	21.28	58.88	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz
Co-location mode (LF)

Co-location	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)
Co-location mode LF		30	21.3	-18.7	40	28.15	24.7	0.93	32.48	-	-	P	H
		91.11	28.2	-15.3	43.5	44.14	14.91	1.59	32.44	-	-	P	H
		122.15	28.32	-15.18	43.5	41.36	17.6	1.78	32.42	-	-	P	H
		347.19	26.13	-19.87	46	35.28	20.39	2.9	32.44	-	-	P	H
		479.11	30.24	-15.76	46	35.58	23.6	3.6	32.54	-	-	P	H
		957.32	32.45	-13.55	46	27.54	30.95	5.06	31.1	100	0	P	H
													H
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													H
													H
		49.4	23.51	-16.49	40	40.2	14.5	1.25	32.44	-	-	P	V
		92.08	32.87	-10.63	43.5	48.72	15.01	1.58	32.44	-	-	P	V
		122.15	34.51	-8.99	43.5	47.55	17.6	1.78	32.42	100	0	P	V
		478.14	28.76	-17.24	46	34.11	23.6	3.59	32.54	-	-	P	V
		641.1	29.73	-16.27	46	31.72	26.5	4.08	32.57	-	-	P	V
		950.53	32.04	-13.96	46	27.38	30.81	5.01	31.16	-	-	P	V
													V
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													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:

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 00 2402MHz		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:

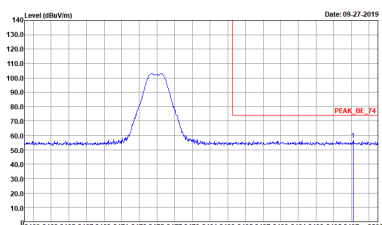
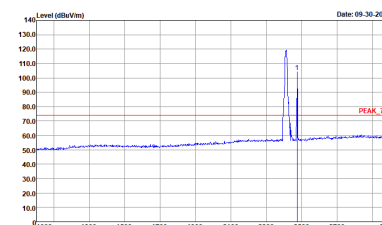
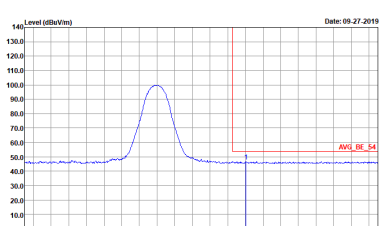
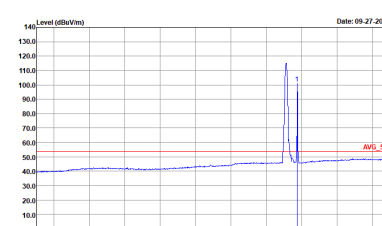
1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
2. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

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

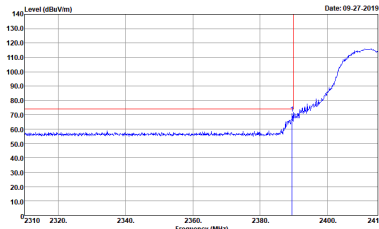
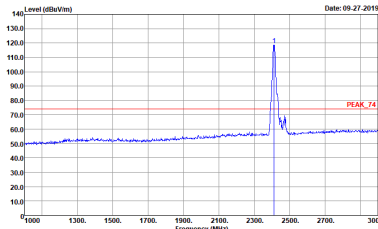
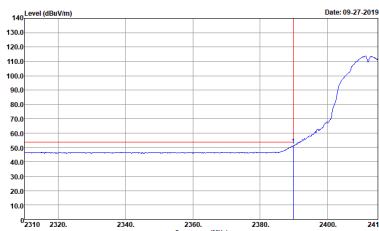
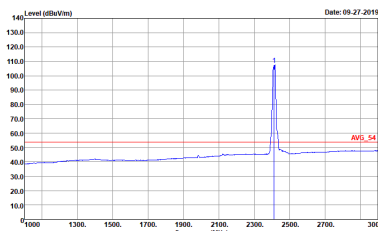


Appendix B. Radiated Spurious Emission Plots

Test Engineer :	Eric Jeng	Temperature :	23~25°C
		Relative Humidity :	44~48%

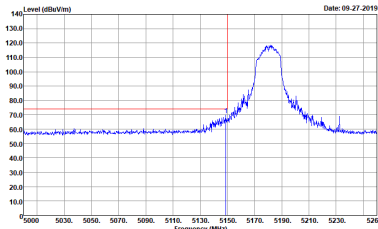
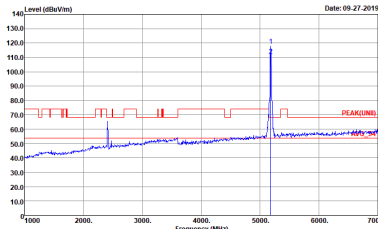
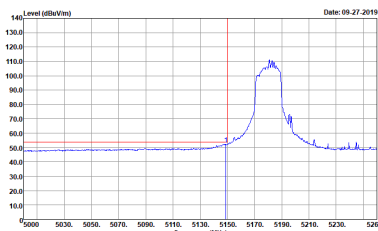
Zigbee		2.4GHz 2400~2483.5MHz Band Edge @ 3m																																																												
		Zigbee_Tx_Ch25 2475MHz																																																												
	Vertical	Fundamental																																																												
Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02140 VERTICAL Detector : Peak Project : 190621001 Power : 120Vac/60Hz Mode : I Plane : X Setting : Wifi 2.4G Ch01 iperf Wifi 5G Ch36 iperf Zigbee Ch25 Normal <table><thead><tr><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr></thead><tbody><tr><td>1</td><td>2497.20</td><td>56.94</td><td>-17.06</td><td>74.00</td><td>43.48</td><td>27.62</td><td>7.13</td><td>31.27</td><td>274 Peak</td></tr></tbody></table>	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	1	2497.20	56.94	-17.06	74.00	43.48	27.62	7.13	31.27	274 Peak	 Site : 03CH01-CA Condition : PEAK_74 3m HORN 9120D-HF_02140 VERTICAL Detector : Peak Project : 190621001 Power : 120Vac/60Hz Mode : I Plane : X Setting : Wifi 2.4G Ch01 iperf Wifi 5G Ch36 iperf Zigbee Ch25 Normal <table><thead><tr><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr></thead><tbody><tr><td>1</td><td>2475.00</td><td>103.97</td><td>29.97</td><td>74.00</td><td>90.60</td><td>27.58</td><td>7.09</td><td>31.28</td><td>274 Peak</td></tr></tbody></table>	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	1	2475.00	103.97	29.97	74.00	90.60	27.58	7.09	31.28	274 Peak
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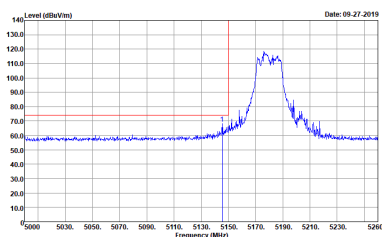
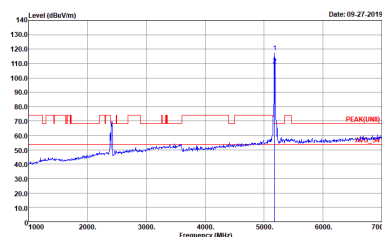
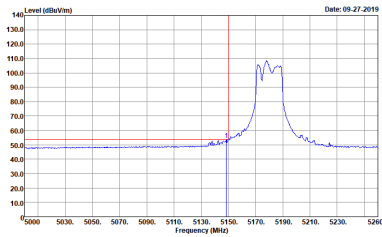
2.4G_Tx_Ch01 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m																																																																	
	2.4G_Tx_Ch01 2412MHz																																																																	
	Horizontal	Fundamental																																																																
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2.4G_Tx_Ch01 2412MHz										
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Peak										

5G_Tx_Ch36 (Band Edge @ 3m)

WIFI	Band 1 5150~5250MHz Band Edge @ 3m																																																																
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Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_02140 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Power : 120Vac/60Hz Mode : 1 Plane : X Setting : Wifi 2.4G Ch01 iperf Wifi 5G Ch36 iperf Zigbee Ch25 Normal <table><thead><tr><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>Freq</th><th>Level</th><th>Line</th><th>Level</th><th>Factor</th><th>Loss</th><th></th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dB/m</th><th>dB</th><th>cm deg</th></tr></thead><tbody><tr><td>1</td><td>5148.98</td><td>69.79</td><td>-4.21</td><td>74.00</td><td>57.09</td><td>32.08 10.53 29.91 312 318 Peak</td></tr></tbody></table>	Over	Limit	ReadAntenna	Cable Preamp	A/Pos	T/Pos	Remark	Freq	Level	Line	Level	Factor	Loss		MHz	dBuV/m	dB	dBuV/m	dB/m	dB	cm deg	1	5148.98	69.79	-4.21	74.00	57.09	32.08 10.53 29.91 312 318 Peak	 Site : 03CH01-CA Condition : PEAK(UNI) 3m HORN 9120D-HF_02140 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Power : 120Vac/60Hz Mode : 1 Plane : X Setting : Wifi 2.4G Ch01 iperf Wifi 5G Ch36 iperf Zigbee Ch25 Normal <table><thead><tr><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>Freq</th><th>Level</th><th>Line</th><th>Level</th><th>Factor</th><th>Loss</th><th></th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dB/m</th><th>dB</th><th>cm deg</th></tr></thead><tbody><tr><td>1 *</td><td>5180.00</td><td>118.01</td><td>49.81</td><td>68.20</td><td>105.47</td><td>31.87 10.57 29.90 312 318 Peak</td></tr><tr><td>2 *</td><td>5180.00</td><td>111.21</td><td>57.21</td><td>54.00</td><td>98.67</td><td>31.87 10.57 29.90 312 318 Average</td></tr></tbody></table>	Over	Limit	ReadAntenna	Cable Preamp	A/Pos	T/Pos	Remark	Freq	Level	Line	Level	Factor	Loss		MHz	dBuV/m	dB	dBuV/m	dB/m	dB	cm deg	1 *	5180.00	118.01	49.81	68.20	105.47	31.87 10.57 29.90 312 318 Peak	2 *	5180.00	111.21	57.21	54.00	98.67	31.87 10.57 29.90 312 318 Average
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5G_Tx_Ch36 5180MHz																																																																								
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Peak	 Site : 03CH01-CA Condition : PEAK_BE_74 3m HORN 91200-HF_02140 VERTICAL Detector : Peak Project : 190621001 Power : 120Vac/60Hz Mode : I Plane : X Setting : Wifi 2.46 Ch01 iperf Wifi 56 Ch36 iperf Zigbee Ch25 Normal <table><thead><tr><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr></thead><tbody><tr><td>1</td><td>5145.34</td><td>68.13</td><td>-5.87</td><td>74.00</td><td>55.42</td><td>32.10</td><td>10.52</td><td>29.91</td><td>301 252 Peak</td></tr></tbody></table>	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	1	5145.34	68.13	-5.87	74.00	55.42	32.10	10.52	29.91	301 252 Peak	 Site : 03CH01-CA Condition : PEAK(UNIT) 3m HORN 91200-HF_02140 VERTICAL Detector : Peak Project : 190621001 Power : 120Vac/60Hz Mode : I Plane : X Setting : Wifi 2.46 Ch01 iperf Wifi 56 Ch36 iperf Zigbee Ch25 Normal <table><thead><tr><th>Freq</th><th>Level</th><th>Over</th><th>Limit</th><th>ReadAntenna</th><th>Cable</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dB</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr></thead><tbody><tr><td>1</td><td>5180.00</td><td>117.60</td><td>49.40</td><td>68.20</td><td>105.01</td><td>31.92</td><td>10.57</td><td>29.90</td><td>301 252 Peak</td></tr><tr><td>2</td><td>5180.00</td><td>108.90</td><td>54.90</td><td>54.00</td><td>96.31</td><td>31.92</td><td>10.57</td><td>29.90</td><td>301 252 Average</td></tr></tbody></table>	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	1	5180.00	117.60	49.40	68.20	105.01	31.92	10.57	29.90	301 252 Peak	2	5180.00	108.90	54.90	54.00	96.31	31.92	10.57	29.90	301 252 Average
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Zigbee_Tx_CH25 + 2.4G_Tx_Ch01+5G_Tx_Ch36

Co-location mode (Harmonic @ 3m)

Co-location mode Harmonic @ 3m										
	Horizontal									
	Vertical									
Peak Avg.										

Emission below 1GHz

Co-location mode (LF)

Co-location mode LF

Horizontal

Level (dBuV/m)

Frequency (MHz)

Date: 09-30-2019

QP /
Peak

Site : 03CH01-CA
Condition : QP 3m BIL06 6111D-LF_50391 HORIZONTAL
Detector : Peak
Project : 190621001
Power : 120Wac/60Hz
Mode : 1
Plane : X
Setting : Wifi 246 Ch01 iperf
: Wifi 56 Ch36 iperf
: Zigbee Ch25 Normal

	Over	Limit	ReadAntenna	Cable Preamp	A/Pos	T/Pos	Remark
Freq	Level	Line	Level	Factor	Loss Factor		
MHz	dBuV/m	dB	dBuV/m	dB/m	dB	cm	deg
1	126.03	42.32	-1.18	43.50	55.21	17.60	1.81 32.42 292 318 QP
2 *	126.03	44.62	1.12	43.50	57.51	17.60	1.81 32.42 292 318 Peak
3	150.20	39.60	-3.90	43.50	52.70	17.10	1.96 32.41 233 70 QP
4	150.20	40.90	-2.60	43.50	54.00	17.10	1.96 32.41 233 70 Peak
5	227.88	38.85	-7.15	46.00	52.59	15.99	2.42 32.40 144 54 QP
6	227.88	43.65	-2.35	46.00	57.39	15.99	2.42 32.40 144 54 Peak
7	242.43	39.00	-7.00	46.00	50.97	17.59	2.50 32.41 --- --- Peak
8	273.47	36.10	-9.90	46.00	46.60	10.89	2.68 32.41 --- --- Peak
9	423.02	37.73	-8.27	46.00	44.27	22.65	3.14 32.40 --- --- Peak

Vertical

Level (dBuV/m)

Frequency (MHz)

Date: 09-30-2019

Site : 03CH01-CA
Condition : QP 3m BIL06 6111D-LF_50391 VERTICAL
Detector : Peak
Project : 190621001
Power : 120Wac/60Hz
Mode : 1
Plane : X
Setting : Wifi 246 Ch01 iperf
: Wifi 56 Ch36 iperf
: Zigbee Ch25 Normal

	Over	Limit	ReadAntenna	Cable Preamp	A/Pos	T/Pos	Remark
Freq	Level	Line	Level	Factor	Loss Factor		
MHz	dBuV/m	dB	dBuV/m	dB/m	dB	cm	deg
1	30.00	39.32	-0.68	40.00	45.60	25.00	1.15 32.48 100 355 QP
2 *	30.00	46.52	6.52	40.00	52.00	25.00	1.15 32.48 100 355 Peak
3	51.20	36.04	-3.96	40.00	53.90	12.89	1.38 32.44 100 21 QP
4 *	51.20	41.44	1.44	40.00	59.30	12.89	1.38 32.44 100 21 Peak
5	122.15	41.05	-2.45	43.50	54.00	17.60	1.79 32.42 100 355 QP
6	122.15	43.05	-0.45	43.50	56.00	17.60	1.79 32.42 100 355 Peak
7	168.71	40.59	-2.91	43.50	54.99	15.83	2.07 32.40 100 0 QP
8 *	168.71	43.59	0.09	43.50	57.99	15.83	2.07 32.40 100 0 Peak
9	263.77	37.47	-6.53	46.00	46.75	20.10	2.63 32.41 --- --- Peak
10	879.72	38.21	-7.79	46.00	35.88	29.21	4.48 31.77 --- --- Peak



FCC CO-LOCATION TEST REPORT

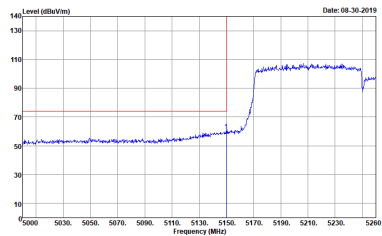
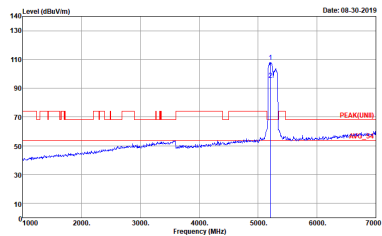
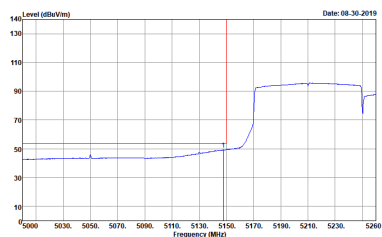
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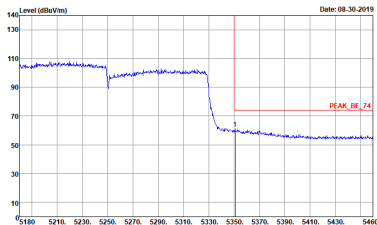
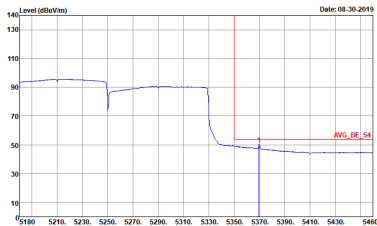
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		Relative Humidity :	42~51%

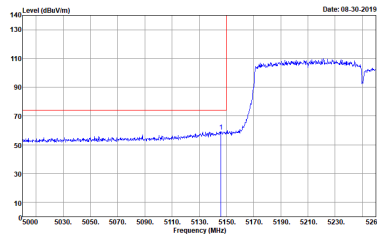
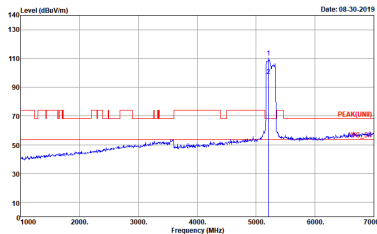
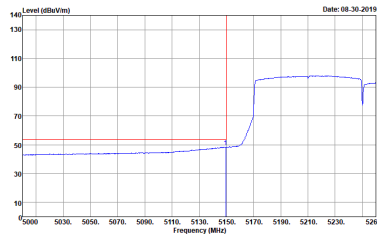
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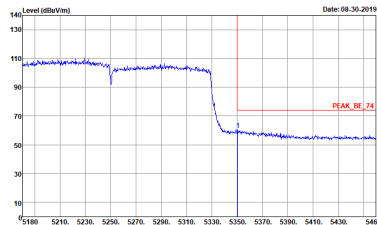
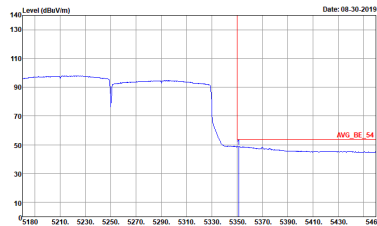
-L	Low channel location
-R	High channel location

11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58
WIFI 802.11ax HE80 (Band Edge @ 3m)

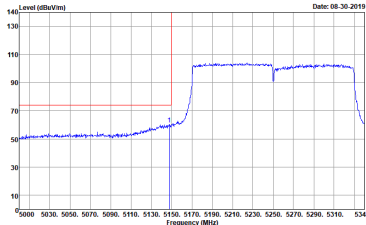
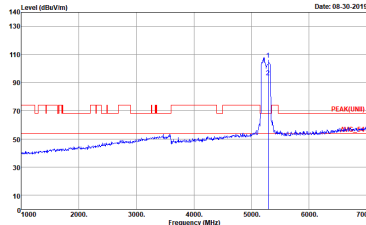
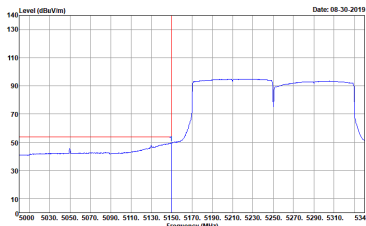
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	802.11ax HE80 CH42 5210MHz - L	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	 Site : 03CH02-CA Condition : PEAK(UNIT) 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank

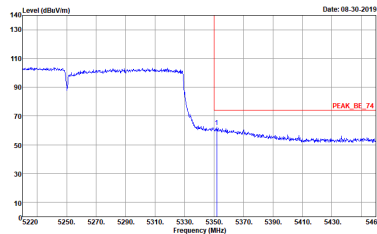
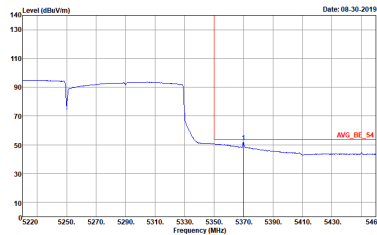
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - R	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank

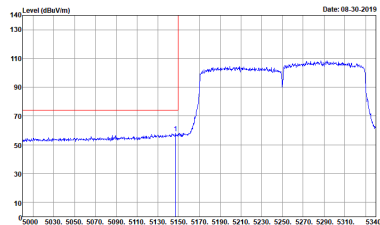
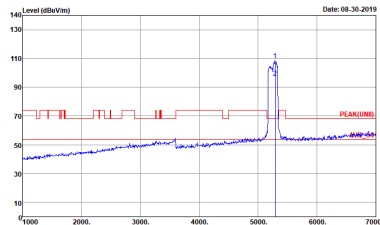
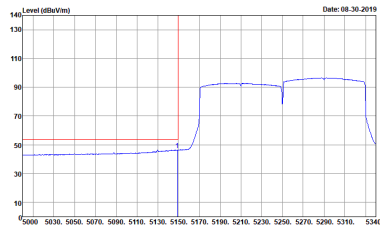
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	 Site : 03CH02-CA Condition : PEAK(UNIT) 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58
Avg	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank

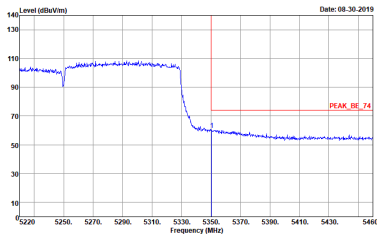
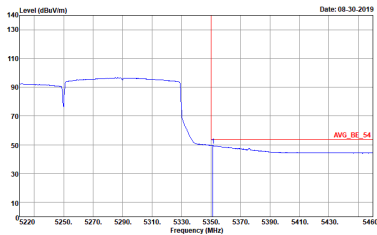
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank
Avg	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank

WIFI 802.11ax VHT80 (Band Edge @ 3m)

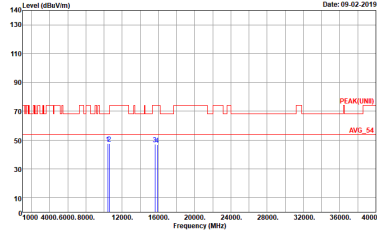
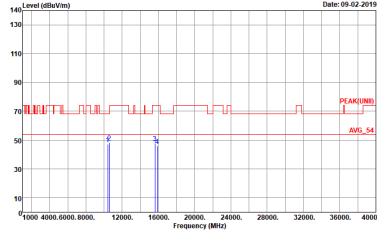
WIFI	Band 2 5250~5350MHz Band Edge @ 3m 802.11ax HE80 CH58 5290MHz - L	
	Horizontal	Fundamental
Peak	 Date: 08-30-2019 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_CH42+11ax(80)_Tx_CH58	 Date: 08-30-2019 Site : 03CH02-CA Condition : PEAK(UNIT) 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_CH42+11ax(80)_Tx_CH58
Avg.	 Date: 08-30-2019 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_CH42+11ax(80)_Tx_CH58	Left blank

WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
	802.11ax HE80 CH58 5290MHz - R	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank

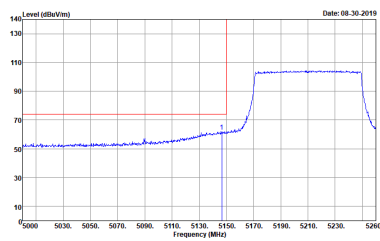
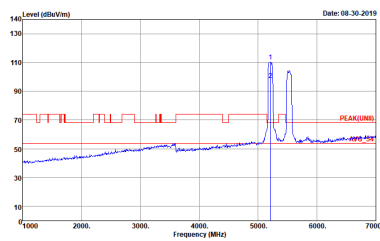
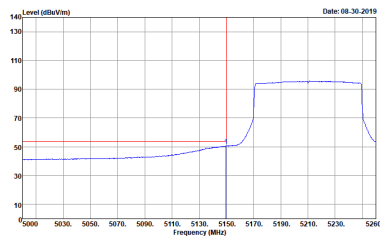
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
	802.11ax HE80 CH58 5290MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	 Site : 03CH02-CA Condition : PEAK(UNIT) 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank

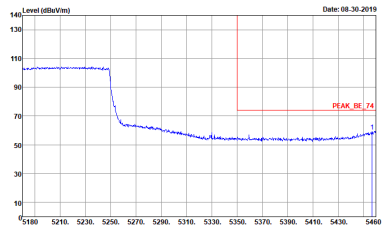
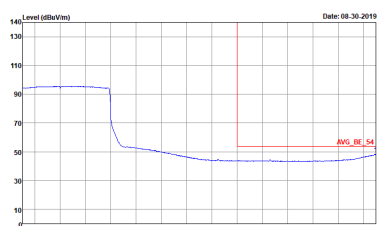
WIFI	Band 2 5250~5350MHz Band Edge @ 3m	
	802.11ax HE80 CH58 5290MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 1 Plane : X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch58	Left blank

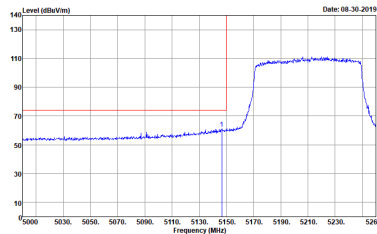
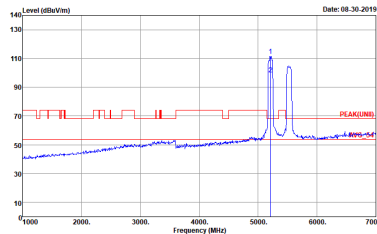
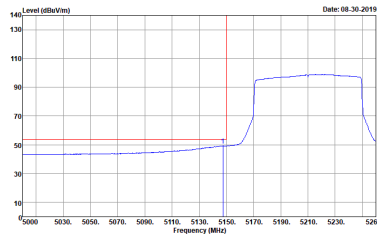
Co-location mode (Harmonic @ 3m)

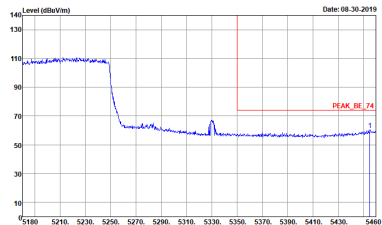
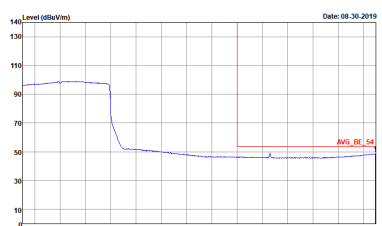
	Co-location mode Harmonic @ 3m	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 1 Plane : -X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch58	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 1 Plane : -X_With POE Setting : 29.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch58

11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106
WIFI 802.11ax VHT80 (Band Edge @ 3m)

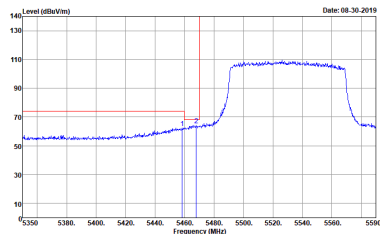
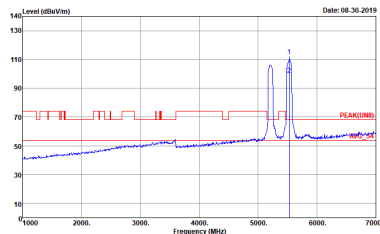
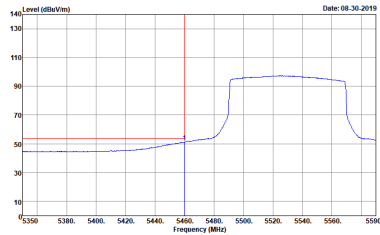
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - L	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : Z Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	 Site : 03CH02-CA Condition : PEAK(UNIT) 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : Z Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : Z Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - R	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : Z Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : Z Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank

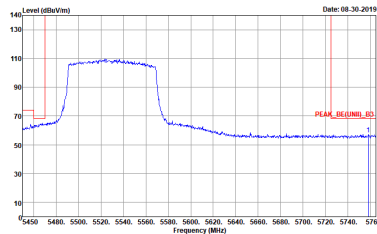
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 2 Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	 Site : 03CH02-CA Condition : PEAK(UNIT) 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 2 Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106
Avg	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 2 Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank

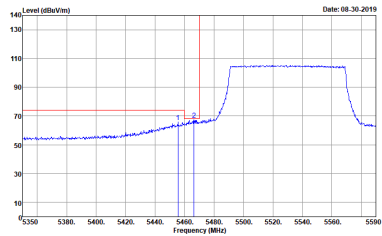
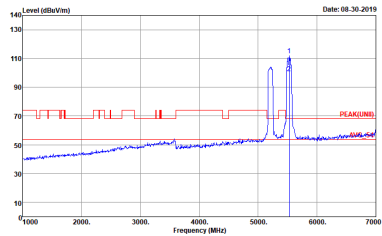
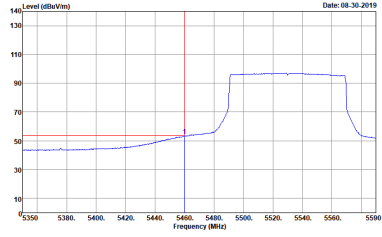
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : Z Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank
Avg	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : Z Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank

WIFI 802.11ax VHT80 (Band Edge @ 3m)

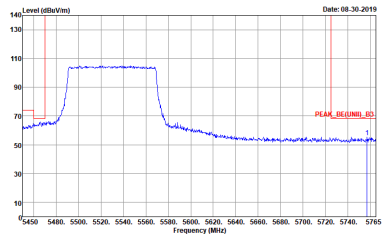
WIFI	Band 3 5470~5725MHz Band Edge @ 3m 802.11ax HE80 CH106 5530MHz - L	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(UNIT1)_B3 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 2 Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	 Site : 03CH02-CA Condition : PEAK(UNIT1) 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 2 Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106
Avg.	 Site : 03CH02-CA Condition : AVG_BE(UNIT1)_B3 3m HORN 9120D-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 2 Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank



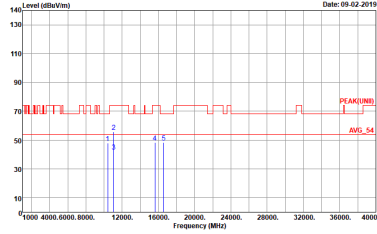
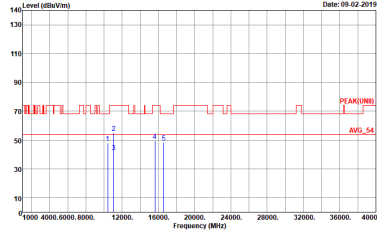
WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
	802.11ax HE80 CH106 5530MHz - R	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(UNIT1)_B3 3m HORN 9120D+HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : Z Plane : X_With POE Setting : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank

WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
	802.11ax HE80 CH106 5530MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(UNIT1)_B3 3m HORN 9120D-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 2 Plane : X_With POE Setting : 33.5 Setting : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	 Site : 03CH02-CA Condition : PEAK(UNIT1) 3m HORN 9120D-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 2 Plane : X_With POE Setting : 33.5 Setting : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106
Avg.	 Site : 03CH02-CA Condition : AVG_BE(UNIT1)_B3 3m HORN 9120D-HF_01894 VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 2 Plane : X_With POE Setting : 33.5 Setting : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank



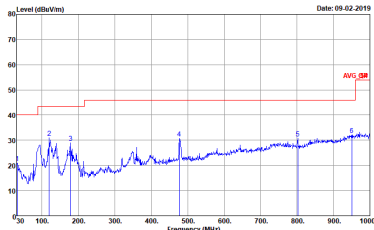
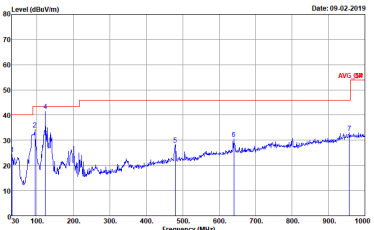
WIFI	Band 3 5470~5725MHz Band Edge @ 3m	
	802.11ax HE80 CH106 5530MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(UNIT1)_B3 3m HORN 9120D+HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : Z Plane : X_With POE Setting : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch106	Left blank

Co-location mode (Harmonic @ 3m)

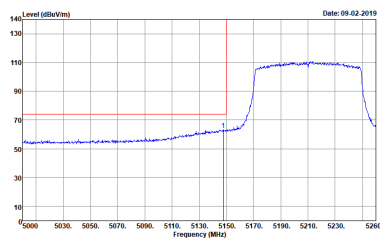
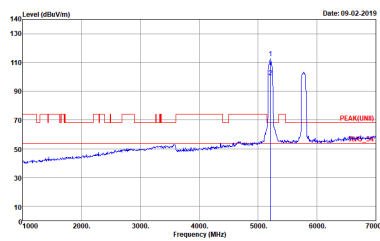
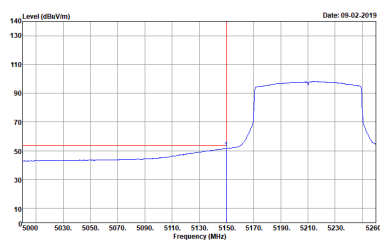
Co-location mode Harmonic @ 3m		
	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 2 Plane : -X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch106	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 2 Plane : -X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch106

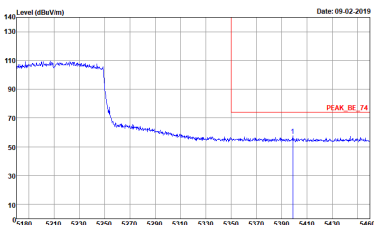
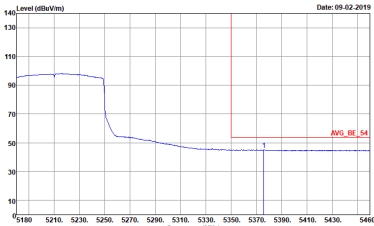
Emission below 1GHz

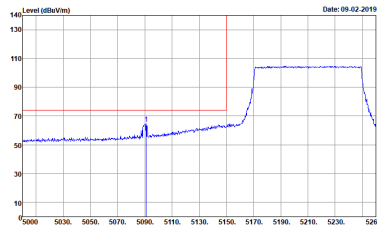
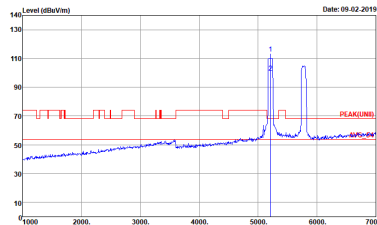
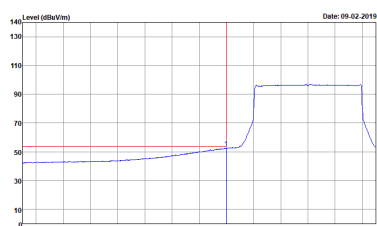
Co-location mode (LF)

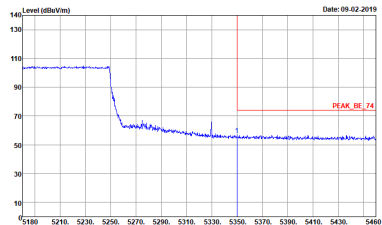
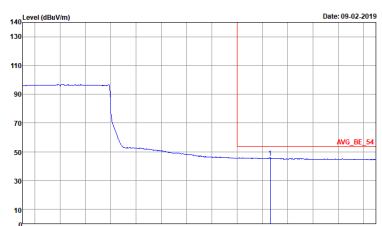
Co-location mode LF		
	Horizontal	Vertical
QP / Peak	 Site : 03CH02-CA Condition : QP 3m BIL06 6111D-LF_50392 HORIZONTAL Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch106	 Site : 03CH02-CA Condition : QP 3m BIL06 6111D-LF_50392 VERTICAL Detector : Peak Project : 190621001 Mode : 4 Plane : X_With POE Setting : 33.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch106

11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155
WIFI 802.11ax VHT80 (Band Edge @ 3m)

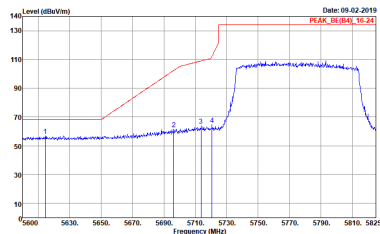
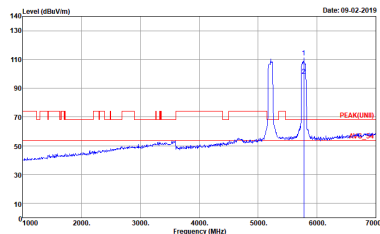
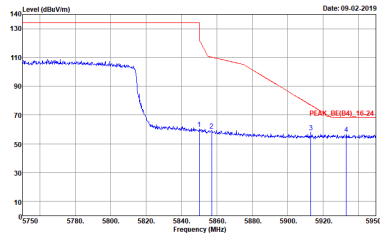
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - L	
	Horizontal	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	 Site : 03CH02-CA Condition : PEAK(UNIT) 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155
Avg.	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	Left blank

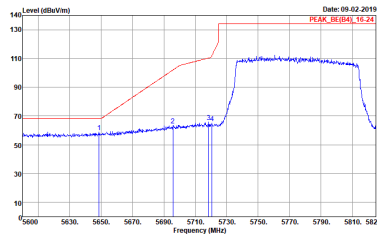
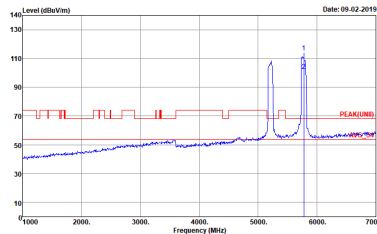
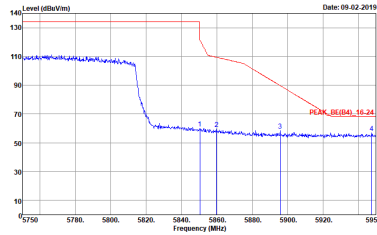
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - R	
	Horizontal	Fundamental
Peak	 Level (dBuV/m) Frequency (MHz) Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	Left blank
Avg.	 Level (dBuV/m) Frequency (MHz) Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000KHz VBW:0.300KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	Left blank

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	 Site : 03CH02-CA Condition : PEAK(UNIT) 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155
Avg	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	Left blank

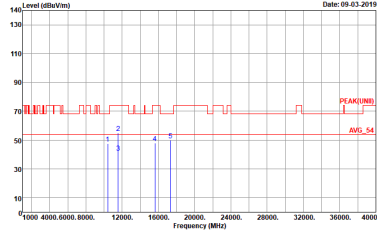
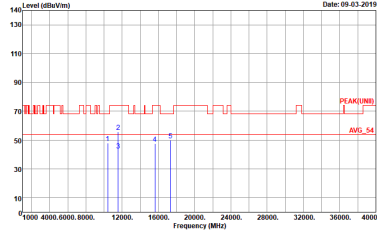
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
	802.11ax HE80 CH42 5210MHz - R	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE_74 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	Left blank
Avg	 Site : 03CH02-CA Condition : AVG_BE_54 3m HORN 91200-HF_01894 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	Left blank

WIFI 802.11ax VHT80 (Band Edge @ 3m)

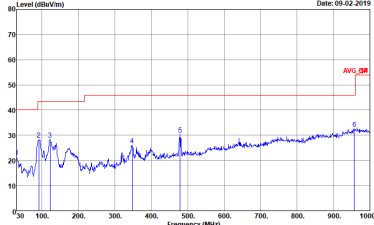
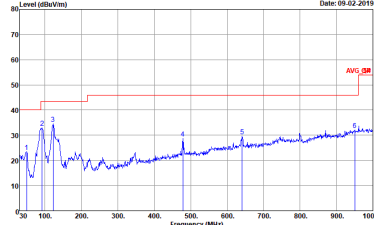
WIFI	Band 4 5725~5850MHz Band Edge @ 3m 802.11ax HE80 CH155 5775MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH402-CA Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	 Site : 03CH402-CA Condition : PEAK(UNIT) 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155
Peak	 Site : 03CH402-CA Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF_01894 HORIZONTAL RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
	802.11ax HE80 CH155 5775MHz	
	Vertical	Fundamental
Peak	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155
Peak.	 Site : 03CH02-CA Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 3 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42+11ax(80)_Tx_Ch155	Left blank

Co-location mode (Harmonic @ 3m)

	Co-location mode Harmonic @ 3m	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN 91200-HF_01894 HORIZONTAL Detector : Peak Project : 190621001 Mode : 3 Plane : -X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch155	 Site : 03CH02-CA Condition : PEAK(UNII) 3m HORN 91200-HF_01894 VERTICAL Detector : Peak Project : 190621001 Mode : 3 Plane : -X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch155

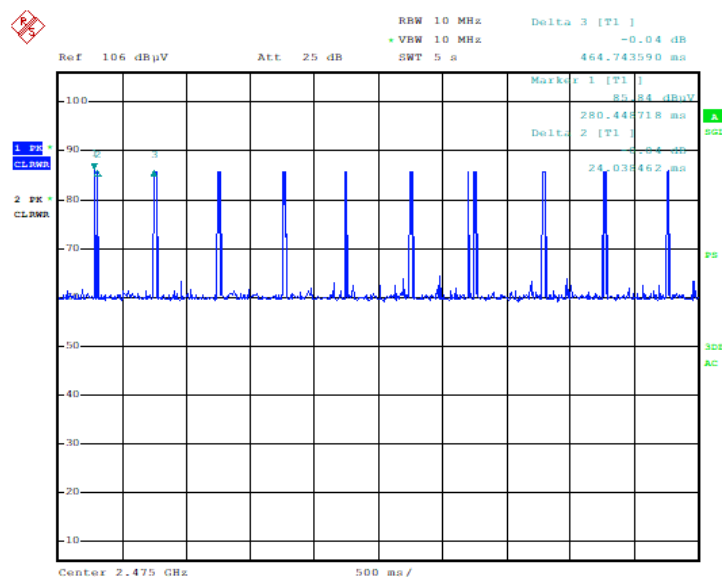
Emission below 1GHz
Co-location mode (LF)

	Co-location mode LF	
	Horizontal	Vertical
QP / Peak	 Site : 03CH02-CA Condition : QP 3m BIL06 6111D-LF_50392 HORIZONTAL Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch155	 Site : 03CH02-CA Condition : QP 3m BIL06 6111D-LF_50392 VERTICAL Detector : Peak Project : 190621001 Mode : 5 Plane : X_With POE Setting : 34.5 : 11ax(80)_Tx_Ch42-11ax(80)_Tx_Ch155

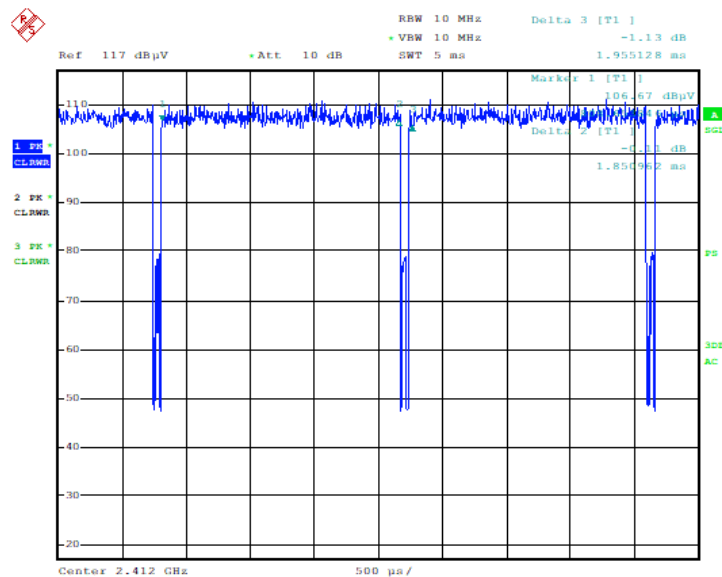
Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle (%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor (dB)
-	Zigbee	5.17	24038	0.04	10kHz	12.87
1+2+3+4	WLAN 2.4GHz	94.67	1850	0.54	1kHz	0.24
1+2+3+4	WLAN 5GHz	96.65	1940	0.52	1kHz	0.15
1+2+3+4	5GHz 802.11ax HE80 for Band 1~3	95.38	5456	0.18	300Hz	0.21
1+2+3+4	5GHz 802.11ax HE80 for Band 4	95.38	5456	0.18	300Hz	0.21

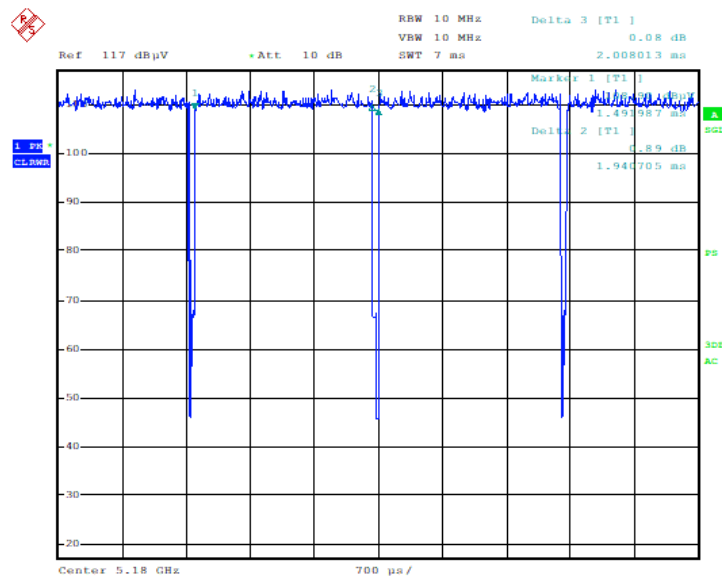
Zigbee



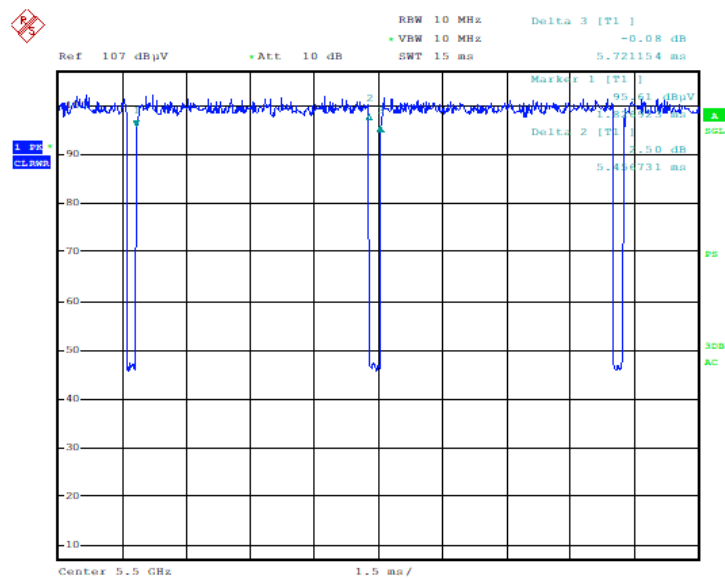
WLAN 2.4GHz



WLAN 5GHz

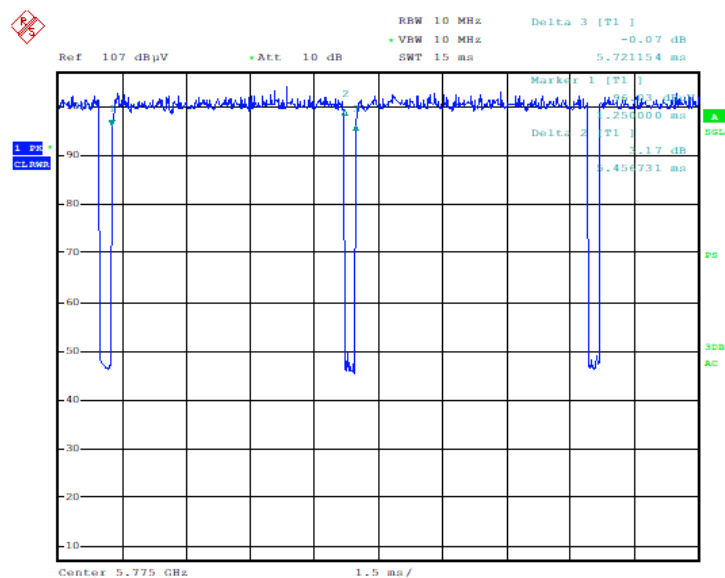


WLAN 5GHz 802.11ax HE80 for Band 1~3



Date: 25.JAN.2003 21:23:54

WLAN 5GHz 802.11ax HE80 for Band 4



Date: 28.JAN.2003 21:27:05