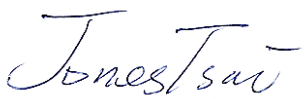
FCC CO-LOCATION RADIO TEST REPORT

FCC ID	:	**U8G-P1MBX**
Equipment	:	**PEPWAVE / peplink Wireless Product**
Brand Name	:	**PEPWAVE / peplink**
Model Name	:	**1. MAX-HD4-MBX-LTEA-R-T 2. MAX HD4 MBX 3. HD4 MBX 4. MBX 5. MAX HD4 MBX LTEA 6. EXM-T4-LTEA-R 7. Peplink Balance 310X 8. Balance 310X**
Applicant	:	**PISMO LABS TECHNOLOGY LIMITED A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong**
Manufacturer	:	**PISMO LABS TECHNOLOGY LIMITED A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong**
Standard	:	**FCC Part 15 Subpart E §15.407**

The product was received on Dec. 06, 2018 and testing was started from Mar. 03, 2019 and completed on Jul. 03, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

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



Approved by: Jones Tsai

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
FR8D0607	01	Initial issue of report	Aug. 07, 2019

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(b) 15.407(a)	Maximum Conducted Output Power	Pass	-
3.2	15.407(b)	Unwanted Emissions	Pass	Under limit 1.66 dB at 5134.000 MHz
3.3	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: Aileen Huang

1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Integrated WWAN Module	Brand Name: Sierra Model Name: EM7511 FCC ID: N7NEM75S
Antenna Type	WWAN: Replacement Antenna WLAN: Replacement Antenna

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	**Sporton Site No.**	
	03CH11-HY	

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

FCC Designation No.: TW0007

1.4 Applicable Standards

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

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- 47 CFR Part 2, 27
- 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. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

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).

2.1 Carrier Frequency and Channel

2400-2483.5 MHz 802.11an HT20		5150-5250 MHz 802.11an HT40		5725-5850 MHz 802.11an HT80	
Channel	**Freq. (MHz)**	**Channel**	**Freq. (MHz)**	**Channel**	**Freq. (MHz)**
6	2437	46	5230	165	5825

2.2 Test Mode

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

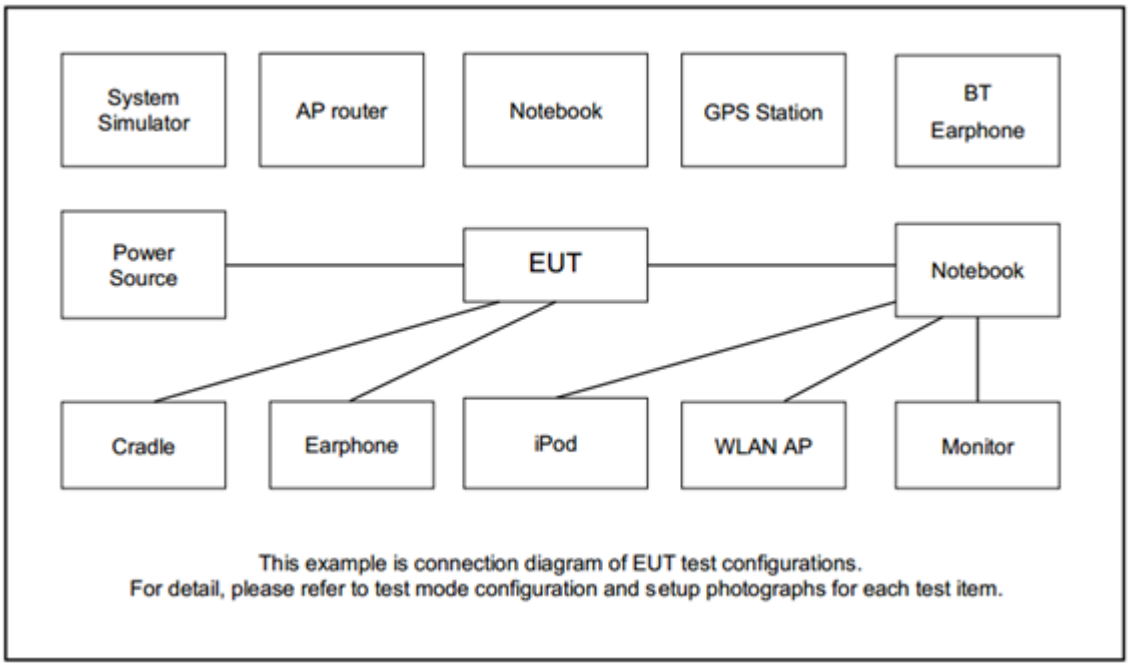
<Co-Location>

Modulation	Data Rate
2.4 GHz 11an HT20	**MCS0**
5GHz 802.11an HT40	**MCS0**
5GHz 802.11an HT40	**MCS0**

Remark:

1. During the Radiated Spurious Emission test, the EUT turn on the WWAN functions simultaneously.
2. The test configuration was designated by manufacturer.

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	AP-Link	TL-WR841HP	30B5C282ADC6	N/A	Unshielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility “Tool” 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.

3 Test Result

3.1 Maximum Conducted Output Power Measurement

3.1.1 Limit of Maximum Conducted Output Power

<FCC 15.247>

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

<FCC 14-30 CFR 15.407>

For the 5.15–5.25 GHz bands:

- For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

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.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

<For FCC 15.247>

1. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.

Measure the conducted output power and record the results in the test report.

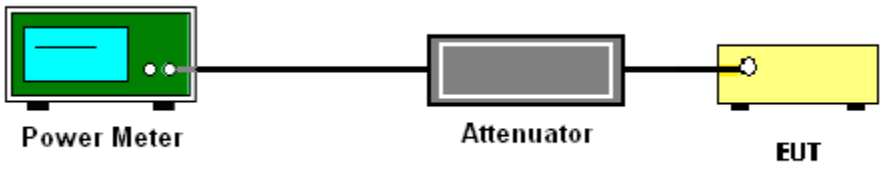
<For FCC 15.407>

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

Method PM-G (Measurement using an 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.

3.1.4 Test Setup



3.1.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.2 Unwanted Emissions Measurement

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

3.2.1 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.

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

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

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

(i) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits 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.[3]

(ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.[4]

Note 3: An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.

Note 4: Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

3.2.3 Test Procedures

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

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

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

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

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

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

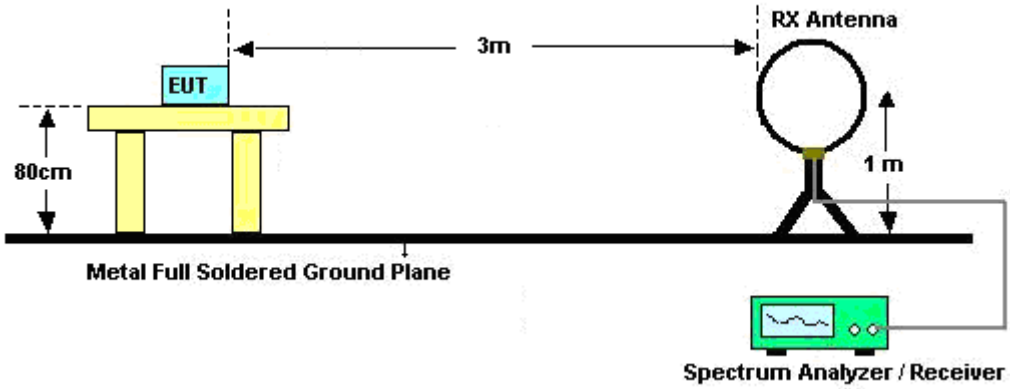
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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

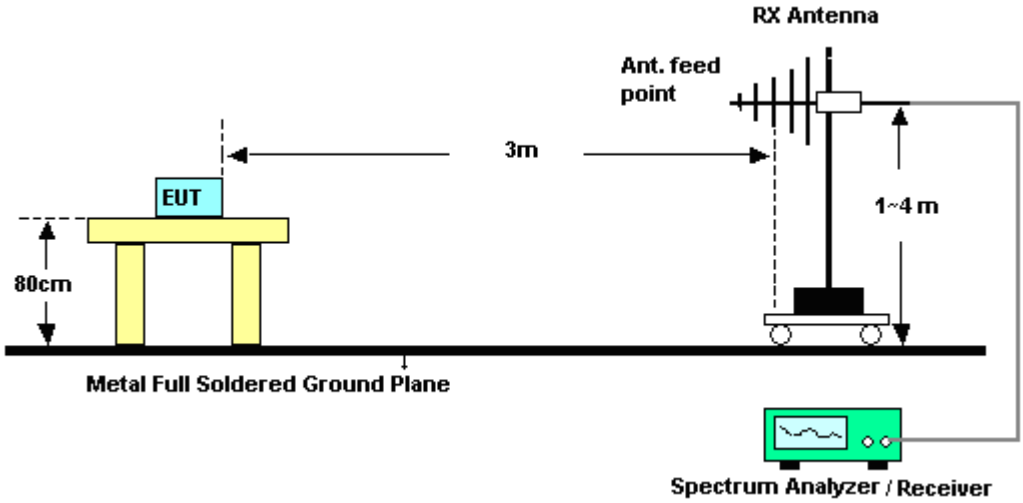
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.2.4 Test Setup

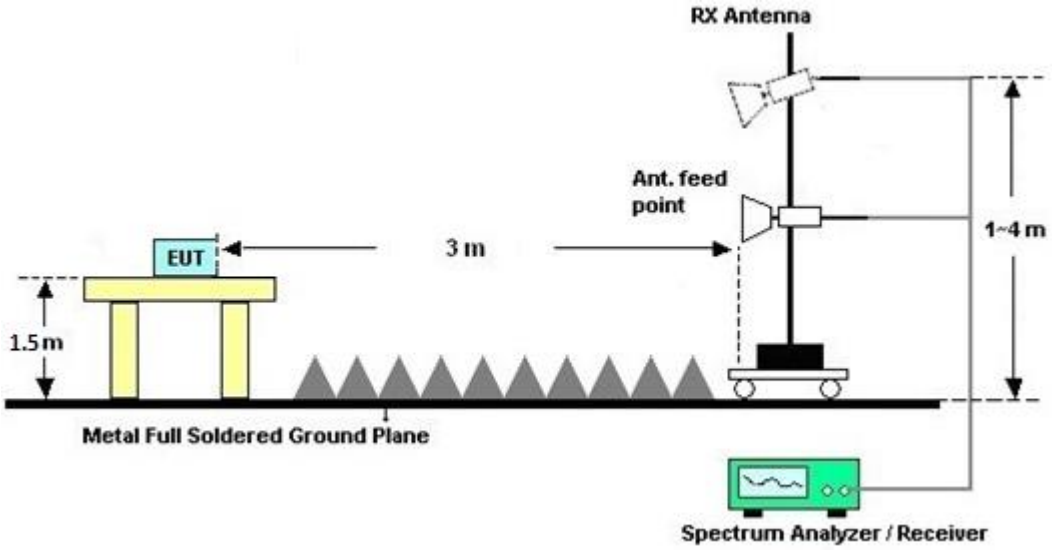
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5 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.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.2.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

3.3 Antenna Requirements

3.3.1 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.

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.3.3 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
Power Sensor	DARE	RPR3006W	13I00030SNO 32	9kHz~6GHz	Dec. 03, 2018	Mar. 06, 2019~ Jul. 03, 2019	Dec. 02, 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Nov. 21, 2018	Mar. 06, 2019~ Jul. 03, 2019	Nov. 20, 2019	Conducted (TH05-HY)
Switch Box & RF Cable	EM	EMSW18	SW1070903	N/A	Dec. 19, 2018	Mar. 06, 2019~ Jul. 03, 2019	Dec.18, 2019	Conducted (TH05-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 06, 2018	May 15, 2019~ Jul. 01, 2019	Dec. 05, 2019	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 04, 2018	May 15, 2019~ Jul. 01, 2019	Dec. 03, 2019	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-06	35414&AT-N0 602	30MHz~1GHz	Oct. 13, 2018	May 15, 2019~ Jul. 01, 2019	Oct. 12, 2019	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 30, 2018	May 15, 2019~ Jul. 01, 2019	Oct. 29, 2019	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 07, 2019	May 15, 2019~ Jul. 01, 2019	Jan. 06, 2020	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 14, 2018	May 15, 2019~ Jul. 01, 2019	Nov. 13, 2020	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Oct. 19, 2018	May 15, 2019~ Jul. 01, 2019	Oct. 18, 2019	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	May 15, 2019~ Jul. 01, 2019	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	May 15, 2019~ Jul. 01, 2019	N/A	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-303	17100018000 55007	1GHz~18GHz	Apr. 01, 2019	May 15, 2019~ Jul. 01, 2019	Mar. 31, 2020	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Dec. 05, 2018	May 15, 2019~ Jul. 01, 2019	Dec. 04, 2019	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	N/A	Nov. 01, 2018	May 15, 2019~ Jul. 01, 2019	Oct. 31, 2019	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001042	N/A	N/A	May 15, 2019~ Jul. 01, 2019	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz-30MHz	Mar. 13, 2019	May 15, 2019~ Jul. 01, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 13, 2019	May 15, 2019~ Jul. 01, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	30M-18G	Mar. 13, 2019	May 15, 2019~ Jul. 01, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30MHz-40GHz	Mar. 13, 2019	May 15, 2019~ Jul. 01, 2019	Mar. 12, 2020	Radiation (03CH11-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN11	1G Low Pass	Sep. 16, 2018	May 15, 2019~ Jul. 01, 2019	Sep. 17, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60SS	SN3	2.7G High Pass	Sep. 17, 2018	May 15, 2019~ Jul. 01, 2019	Sep. 16, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN3	6.75GHz High Pass	Sep. 17, 2018	May 15, 2019~ Jul. 01, 2019	Sep. 16, 2019	Radiation (03CH11-HY)
Notch Filter	Wainwright	WRCT2500/2570-10/40-10SSK	SN1 R	LTE Band 7	Aug. 23, 2018	May 15, 2019~ Jul. 01, 2019	Aug. 22, 2019	Radiation (03CH11-HY)
Notch Filter	Wainwright	WRCJV12-5695-5725-5850-5880-40SS	SN1	5G Band 4	Mar. 14, 2019	May 15, 2019~ Jul. 01, 2019	Mar. 13, 2020	Radiation (03CH11-HY)
Notch Filter	Wainwright	WRCJV12-5120-5150-5350-5380-40SS	SN7	5G Band 1~2	Jul. 05, 2018	May 15, 2019~ Jul. 01, 2019	Jul. 04, 2019	Radiation (03CH11-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.2**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.5**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.2**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Luffy Lin and Richard Qiu	Temperature:	21~25	°C
Test Date:	2019/3/6~2019/7/3	Relative Humidity:	51~54	%

Report Number : FR8D0607

TEST RESULTS DATA
Average Output Power

2.4GHz Band																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	1	1	2412	21.10	21.10		30.00	30.00	2.44	2.44	23.54	23.54	36.00	36.00	Pass
11b	1Mbps	1	6	2437	21.20	21.50		30.00	30.00	2.44	2.44	23.64	23.94	36.00	36.00	Pass
11b	1Mbps	1	11	2462	20.90	21.50		30.00	30.00	2.44	2.44	23.34	23.94	36.00	36.00	Pass
11g	6Mbps	1	1	2412	18.20	17.40		30.00	30.00	2.44	2.44	20.64	19.84	36.00	36.00	Pass
11g	6Mbps	1	6	2437	21.50	21.20		30.00	30.00	2.44	2.44	23.94	23.64	36.00	36.00	Pass
11g	6Mbps	1	11	2462	17.50	17.20		30.00	30.00	2.44	2.44	19.94	19.64	36.00	36.00	Pass
HT20	MCS0	1	1	2412	15.10	15.50	-	30.00	30.00	2.44	2.44	17.54	17.94	36.00	36.00	Pass
HT20	MCS0	1	6	2437	20.50	21.00		30.00	30.00	2.44	2.44	22.94	23.44	36.00	36.00	Pass
HT20	MCS0	1	11	2462	15.30	16.00		30.00	30.00	2.44	2.44	17.74	18.44	36.00	36.00	Pass
HT40	MCS0	1	3	2422	11.20	11.10		30.00	30.00	2.44	2.44	13.64	13.54	36.00	36.00	Pass
HT40	MCS0	1	6	2437	13.90	15.70		30.00	30.00	2.44	2.44	16.34	18.14	36.00	36.00	Pass
HT40	MCS0	1	9	2452	12.30	13.10		30.00	30.00	2.44	2.44	14.74	15.54	36.00	36.00	Pass
HT20	MCS0	2	1	2412	15.20	15.20	18.21	30.00		2.44		20.65		36.00		Pass
HT20	MCS0	2	6	2437	17.00	17.40	20.21	30.00		2.44		22.65		36.00		Pass
HT20	MCS0	2	11	2462	15.40	15.70	18.56	30.00		2.44		21.00		36.00		Pass
HT40	MCS0	2	3	2422	11.20	11.40	14.31	30.00		2.44		16.75		36.00		Pass
HT40	MCS0	2	6	2437	14.90	15.20	18.06	30.00		2.44		20.50		36.00		Pass
HT40	MCS0	2	9	2452	12.70	13.00	15.86	30.00		2.44		18.30		36.00		Pass

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

Report Number : FR8D0607

TEST RESULTS DATA
Average Power Table

FCC Band I													
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	36	5180	11.60	12.10		30.00	30.00	4.10	4.10		Pass
11a	6Mbps	1	44	5220	10.40	12.40		30.00	30.00	4.10	4.10		Pass
11a	6Mbps	1	48	5240	11.70	12.80		30.00	30.00	4.10	4.10		Pass
HT20	MCS0	1	36	5180	9.20	9.80		30.00	30.00	4.10	4.10		Pass
HT20	MCS0	1	44	5220	9.30	9.40		30.00	30.00	4.10	4.10		Pass
HT20	MCS0	1	48	5240	9.60	9.90		30.00	30.00	4.10	4.10		Pass
HT40	MCS0	1	38	5190	8.30	9.40		30.00	30.00	4.10	4.10		Pass
HT40	MCS0	1	46	5230	14.30	14.40		30.00	30.00	4.10	4.10		Pass
VHT20	MCS0	1	36	5180	9.50	9.80		30.00	30.00	4.10	4.10		Pass
VHT20	MCS0	1	44	5220	9.90	10.20		30.00	30.00	4.10	4.10		Pass
VHT20	MCS0	1	48	5240	10.00	10.10		30.00	30.00	4.10	4.10		Pass
VHT40	MCS0	1	38	5190	10.30	10.00		30.00	30.00	4.10	4.10		Pass
VHT40	MCS0	1	46	5230	14.80	14.50		30.00	30.00	4.10	4.10		Pass
VHT80	MCS0	1	42	5210	7.70	8.10		30.00	30.00	4.10	4.10		Pass
HT20	MCS0	2	36	5180	9.70	9.60	12.66	30.00		4.10			Pass
HT20	MCS0	2	44	5220	9.50	8.90	12.22	30.00		4.10			Pass
HT20	MCS0	2	48	5240	9.70	10.00	12.86	30.00		4.10			Pass
HT40	MCS0	2	38	5190	9.10	8.90	12.01	30.00		4.10			Pass
HT40	MCS0	2	46	5230	14.20	14.40	17.31	30.00		4.10			Pass
VHT20	MCS0	2	36	5180	9.50	9.40	12.46	30.00		4.10			Pass
VHT20	MCS0	2	44	5220	10.30	9.90	13.11	30.00		4.10			Pass
VHT20	MCS0	2	48	5240	10.10	9.80	12.96	30.00		4.10			Pass
VHT40	MCS0	2	38	5190	10.10	10.00	13.06	30.00		4.10			Pass
VHT40	MCS0	2	46	5230	14.40	14.50	17.46	30.00		4.10			Pass
VHT80	MCS0	2	42	5210	7.90	7.20	10.57	30.00		4.10			Pass

Report Number : FR8D0607

TEST RESULTS DATA
Average Power Table

Band IV												
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	18.90	18.70		30.00	30.00	4.73	4.73	Pass
11a	6Mbps	1	157	5785	16.50	16.50		30.00	30.00	4.73	4.73	Pass
11a	6Mbps	1	165	5825	20.10	19.90		30.00	30.00	4.73	4.73	Pass
HT20	MCS0	1	149	5745	13.10	12.70		30.00	30.00	4.73	4.73	Pass
HT20	MCS0	1	157	5785	16.50	16.70		30.00	30.00	4.73	4.73	Pass
HT20	MCS0	1	165	5825	14.00	15.40		30.00	30.00	4.73	4.73	Pass
HT40	MCS0	1	151	5755	15.00	15.00		30.00	30.00	4.73	4.73	Pass
HT40	MCS0	1	159	5795	19.90	19.20		30.00	30.00	4.73	4.73	Pass
VHT20	MCS0	1	149	5745	13.90	13.90		30.00	30.00	4.73	4.73	Pass
VHT20	MCS0	1	157	5785	16.10	16.40		30.00	30.00	4.73	4.73	Pass
VHT20	MCS0	1	165	5825	13.80	15.50		30.00	30.00	4.73	4.73	Pass
VHT40	MCS0	1	151	5755	14.60	14.10		30.00	30.00	4.73	4.73	Pass
VHT40	MCS0	1	159	5795	19.80	19.10		30.00	30.00	4.73	4.73	Pass
VHT80	MCS0	1	155	5775	16.30	15.60		30.00	30.00	4.73	4.73	Pass
HT20	MCS0	2	149	5745	13.30	12.80	16.07	30.00		4.73		Pass
HT20	MCS0	2	157	5785	16.80	16.90	19.86	30.00		4.73		Pass
HT20	MCS0	2	165	5825	13.90	15.40	17.72	30.00		4.73		Pass
HT40	MCS0	2	151	5755	14.90	15.10	18.01	30.00		4.73		Pass
HT40	MCS0	2	159	5795	19.60	19.80	22.71	30.00		4.73		Pass
VHT20	MCS0	2	149	5745	14.20	13.20	16.74	30.00		4.73		Pass
VHT20	MCS0	2	157	5785	16.20	16.50	19.36	30.00		4.73		Pass
VHT20	MCS0	2	165	5825	13.90	15.40	17.72	30.00		4.73		Pass
VHT40	MCS0	2	151	5755	14.40	14.50	17.46	30.00		4.73		Pass
VHT40	MCS0	2	159	5795	18.90	19.30	22.11	30.00		4.73		Pass
VHT80	MCS0	2	155	5775	15.30	16.60	19.01	30.00		4.73		Pass

Appendix B. Radiated Spurious Emission

Test Engineer :	HAO, Fu Chen and Ken WU	Temperature :	11~26°C
		Relative Humidity :	52~57%

Colocation Mode

WIFI 802.11n HT20 (Band Edge @ 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)
802.11n HT20 CH 06 2412MHz		2322.8	59.34	-14.66	74	47.33	27.71	16.56	33.65	100	310	P	H
		2322.16	48.49	-5.51	54	36.48	27.71	16.56	33.65	100	310	A	H
	*	2437	105.47	-	-	93.63	27.33	16.69	33.61	100	310	P	H
	*	2437	97.78	-	-	85.94	27.33	16.69	33.61	100	310	A	H
		2498.24	53.95	-20.05	74	42.05	27.3	16.75	33.59	100	310	P	H
		2499.36	44.24	-9.76	54	32.34	27.3	16.75	33.59	100	310	A	H
		2321.36	65.54	-8.46	74	53.53	27.71	16.56	33.65	271	338	P	V
		2321.84	53.58	-0.42	54	41.57	27.71	16.56	33.65	271	338	A	V
	*	2437	117.01	-	-	105.17	27.33	16.69	33.61	271	338	P	V
	*	2437	109.43	-	-	97.59	27.33	16.69	33.61	271	338	A	V
		2499.2	56.54	-17.46	74	44.64	27.3	16.75	33.59	271	338	P	V
		2483.68	47.2	-6.8	54	35.32	27.3	16.74	33.6	271	338	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Colocation 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)
802.11n HT20 CH 06 2412MHz		4874	39.53	-34.47	74	56.59	31.05	11.06	59.17	100	0	P	H
		7311	41.79	-32.21	74	50.79	36.52	13.66	59.18	100	0	P	H
													H
													H
													H
													H
													H
													H
		4874	52.78	-21.22	74	69.84	31.05	11.06	59.17	205	15	P	V
		4874	42.63	-11.37	54	59.69	31.05	11.06	59.17	205	15	A	V
		7311	46.52	-27.48	74	55.52	36.52	13.66	59.18	100	0	P	V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

Colocation Mode (LF @ 3m)

Co-location	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)
		30	21.43	-18.57	40	29.03	24.01	0.77	32.38			P	H
		84.32	21	-19	40	38.4	13.68	1.26	32.34			P	H
		103.72	29.6	-13.9	43.5	44.31	16.25	1.36	32.32			P	H
		465.53	35.5	-10.5	46	41.52	23.23	2.91	32.16	100	0	P	H
		699.3	34.09	-11.91	46	36.01	26.59	3.62	32.13			P	H
		948.59	33.6	-12.4	46	29.7	30.49	4.31	30.9			P	H
													H
													H
													H
													H
802.11n													H
HT20													H
CH 06		30.97	30.92	-9.08	40	38.93	23.58	0.78	32.37			P	V
2412MHz		38.73	28.59	-11.41	40	40.4	19.74	0.82	32.37			P	V
		147.37	31.82	-11.68	43.5	45.46	17	1.64	32.28			P	V
		464.56	39.25	-6.75	46	45.29	23.21	2.91	32.16	100	0	P	V
		699.3	31.75	-14.25	46	33.67	26.59	3.62	32.13			P	V
		938.89	33.04	-12.96	46	29.84	29.9	4.29	30.99			P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Colocation Mode

WIFI 802.11n HT40 (Band Edge @ 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)
802.11n HT40 CH 46 5230MHz		5046.8	51.16	-22.84	74	41.33	31.59	11.36	33.12	303	265	P	H
		5066.82	43.87	-10.13	54	33.94	31.67	11.38	33.12	303	265	A	H
	*	5230	93.48	-	-	83.6	31.48	11.52	33.12	303	265	P	H
	*	5230	86.26	-	-	76.38	31.48	11.52	33.12	303	265	A	H
		5458.6	51.2	-22.8	74	40.94	31.73	11.64	33.11	303	265	P	H
		5453.56	42.05	-11.95	54	31.82	31.71	11.63	33.11	303	265	A	H
		5098.8	57.59	-16.41	74	47.49	31.8	11.42	33.12	221	350	P	V
		5102.18	49.14	-4.86	54	39.04	31.8	11.42	33.12	221	350	A	V
	*	5230	110.75	-	-	100.87	31.48	11.52	33.12	221	350	P	V
	*	5230	103.16	-	-	93.28	31.48	11.52	33.12	221	350	A	V
		5452.16	54.19	-19.81	74	43.96	31.71	11.63	33.11	221	350	P	V
		5419.96	45.24	-8.76	54	35.13	31.64	11.58	33.11	221	350	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Colocation 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)
		10460	42.95	-25.25	68.2	48.06	39.7	16.19	61	100	0	P	H
		15690	43.99	-30.01	74	47.28	37.55	20.53	61.37	100	0	P	H
													H
													H
													H
													H
802.11n													H
HT40													H
CH 46		10460	43.91	-24.29	68.2	49.02	39.7	16.19	61	100	0	P	V
5230MHz		15690	44.18	-29.82	74	47.47	37.55	20.53	61.37	100	0	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

Colocation Mode (LF @ 3m)

Co-location	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)
		30.97	21.42	-18.58	40	29.43	23.58	0.78	32.37	-	-	P	H
		51.34	22.39	-17.61	40	40.28	13.53	0.95	32.37	-	-	P	H
		105.66	30.23	-13.27	43.5	44.68	16.49	1.38	32.32	-	-	P	H
		464.56	35.42	-10.58	46	41.46	23.21	2.91	32.16	100	0	P	H
		699.3	32.2	-13.8	46	34.12	26.59	3.62	32.13	-	-	P	H
		959.26	34.29	-11.71	46	29.78	30.97	4.34	30.8	-	-	P	H
													H
													H
													H
													H
802.11n													H
HT40													H
CH 46		30	31.89	-8.11	40	39.49	24.01	0.77	32.38	-	-	P	V
5230MHz		42.61	30.09	-9.91	40	43.84	17.75	0.87	32.37	-	-	P	V
		112.45	29.61	-13.89	43.5	43.68	16.83	1.41	32.31	-	-	P	V
		180.35	29.2	-14.3	43.5	44.78	14.78	1.9	32.26	-	-	P	V
		464.56	31.03	-14.97	46	37.07	23.21	2.91	32.16	107	185	QP	V
		464.56	42.44	-3.56	46	48.48	23.21	2.91	32.16	107	185	P	V
		697.36	33.15	-12.85	46	35.1	26.57	3.61	32.13	-	-	P	V
													V
													V
													V
													V
													V

Remark

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

Colocation Mode

WIFI 802.11n HT20 (Band Edge @ 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)
802.11n HT20 CH 165 5825MHz	*	5825	103.09	-	-	93.47	32.25	10.58	33.21	298	199	P	H
	*	5825	94.89	-	-	85.27	32.25	10.58	33.21	298	199	A	H
		5850.2	50.81	-70.93	121.74	41.14	32.3	10.59	33.22	298	199	P	H
		5874.2	50.1	-55.32	105.42	40.33	32.4	10.6	33.23	298	199	P	H
		5913	50.16	-26.89	77.05	40.25	32.53	10.62	33.24	298	199	P	H
		5926.2	51.09	-17.11	68.2	41.17	32.55	10.62	33.25	298	199	P	H
	*	5825	118.69	-	-	109.07	32.25	10.58	33.21	205	346	P	V
	*	5825	110.79	-	-	101.17	32.25	10.58	33.21	205	346	A	V
		5850	60.17	-62.03	122.2	50.5	32.3	10.59	33.22	205	346	P	V
		5861	57.91	-51.21	109.12	48.21	32.34	10.59	33.23	205	346	P	V
		5879.8	55.07	-46.56	101.63	45.28	32.42	10.6	33.23	205	346	P	V
		5926.2	53.74	-14.46	68.2	43.82	32.55	10.62	33.25	205	346	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Colocation 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)
802.11n HT20 CH 165 5825MHz		11650	46.57	-27.43	74	52.23	39.2	17.46	62.32	100	0	P	H
		17475	48.3	-19.9	68.2	42.99	41.58	22.29	58.56	100	0	P	H
													H
													H
													H
													H
													H
													H
		3274	67.73	-0.47	68.2	64.97	28.4	7.83	33.47	199	351	P	V
		5134	61.99	-12.01	74	53.22	31.87	10.02	33.12	217	351	P	V
		5134	52.34	-1.66	54	43.57	31.87	10.02	33.12	217	351	A	V
		5374	63.12	-10.88	74	54.65	31.44	10.14	33.11	200	342	P	V
		5374	53.07	-0.93	54	44.6	31.44	10.14	33.11	200	342	A	V
		11650	45.61	-28.39	74	51.27	39.2	17.46	62.32	100	0	P	V
		17475	48.26	-19.94	68.2	42.95	41.58	22.29	58.56	100	0	P	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

Colocation Mode (LF @ 3m)

Co-location	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)
		31.94	22.17	-17.83	40	30.59	23.16	0.79	32.37	-	-	P	H
		105.66	28.34	-15.16	43.5	42.79	16.49	1.38	32.32	-	-	P	H
		259.89	27.47	-18.53	46	37.91	19.56	2.2	32.2	-	-	P	H
		465.53	34.78	-11.22	46	40.8	23.23	2.91	32.16	100	0	P	H
		497.54	32.27	-13.73	46	37.73	23.7	3	32.16	-	-	P	H
		956.35	33.27	-12.73	46	28.92	30.85	4.33	30.83	-	-	P	H
													H
													H
													H
													H
802.11n													H
HT20													H
CH 165		34.85	31.34	-8.66	40	41.02	21.88	0.81	32.37	-	-	P	V
5825MHz		38.73	32.76	-7.24	40	44.57	19.74	0.82	32.37	-	-	P	V
		85.29	26.88	-13.12	40	44.12	13.83	1.26	32.33	-	-	P	V
		121.18	30.01	-13.49	43.5	43.47	17.37	1.47	32.3	-	-	P	V
		465.53	39.23	-6.77	46	45.25	23.23	2.91	32.16	100	0	P	V
		949.56	34.03	-11.97	46	30.06	30.55	4.31	30.89	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

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

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

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

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

Appendix C. Radiated Spurious Emission Plots

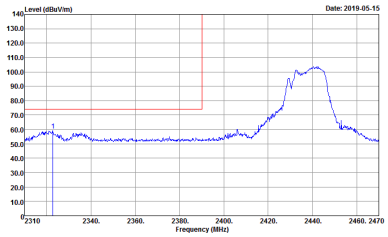
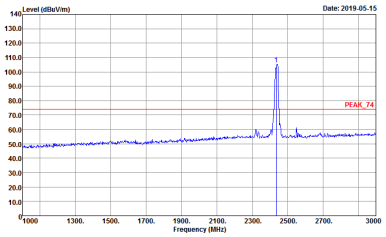
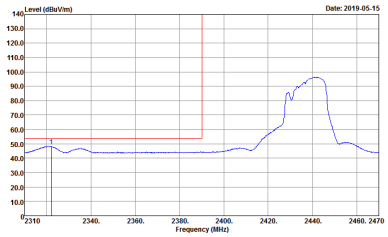
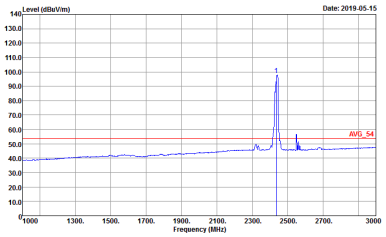
Test Engineer :	HAO, Fu Chen and Ken WU	**Temperature :**	11~26°C
		Relative Humidity :	52~57%

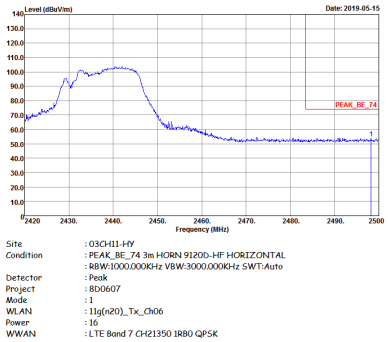
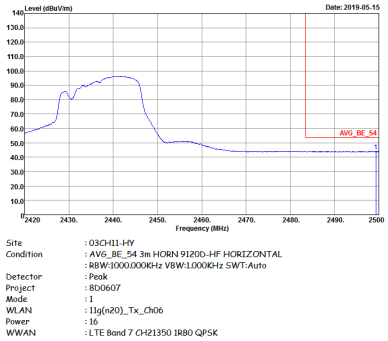
Note symbol

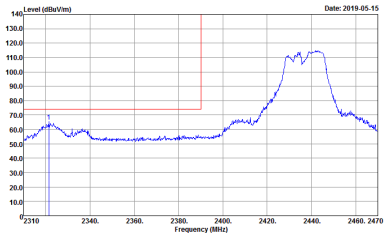
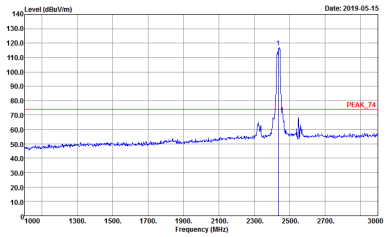
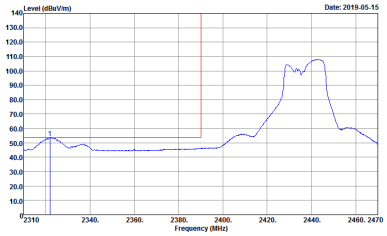
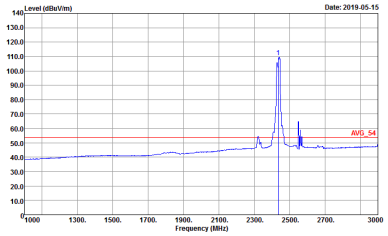
-L	**Low channel location**
-R	**High channel location**

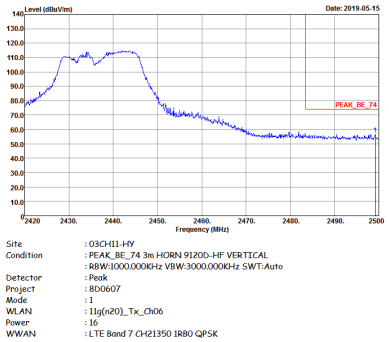
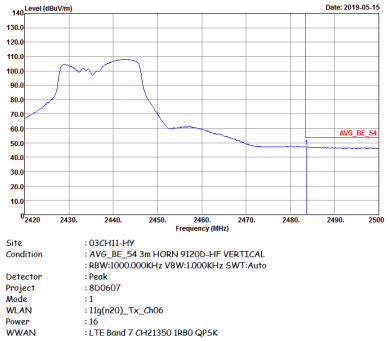
Colocation Mode

WIFI 802.11n HT20 (Band Edge @ 3m)

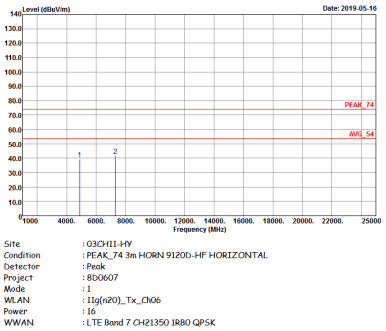
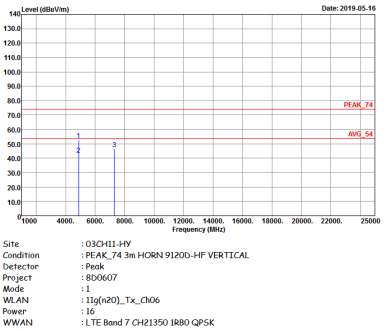
Simultaneously	802.11n HT20 CH06 2437MHz - L	
	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11g(n20)_Tx_Ch06 Power : 16 WWAN : LTE Band 7 CH21350 1RB0 QPSK	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11g(n20)_Tx_Ch06 Power : 16 WWAN : LTE Band 7 CH21350 1RB0 QPSK
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11g(n20)_Tx_Ch06 Power : 16 WWAN : LTE Band 7 CH21350 1RB0 QPSK	 Site : 03CH11-HY Condition : AVG_54 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11g(n20)_Tx_Ch06 Power : 16 WWAN : LTE Band 7 CH21350 1RB0 QPSK

Simultaneously	802.11n HT20 CH06 2437MHz - R	
	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

Simultaneously	802.11n HT20 CH06 2437MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11g(n20)_Tx_Ch06 Power : 16 WWAN : LTE Band 7 CH21350 1RB0 QPSK	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11g(n20)_Tx_Ch06 Power : 16 WWAN : LTE Band 7 CH21350 1RB0 QPSK
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11g(n20)_Tx_Ch06 Power : 16 WWAN : LTE Band 7 CH21350 1RB0 QPSK	 Site : 03CH11-HY Condition : AVG_54 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11g(n20)_Tx_Ch06 Power : 16 WWAN : LTE Band 7 CH21350 1RB0 QPSK

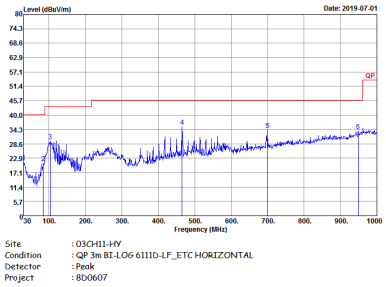
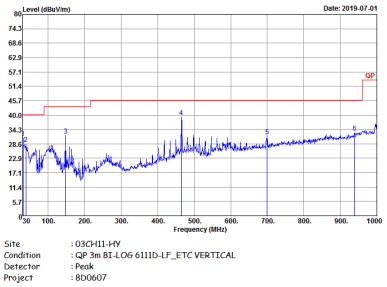
Simultaneously	802.11n HT20 CH06 2437MHz - R	
	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

Colocation Mode (Hamonic @ 3m)

Simultaneously	Colocation Mode	
	Horizontal	Vertical
Peak Avg.		

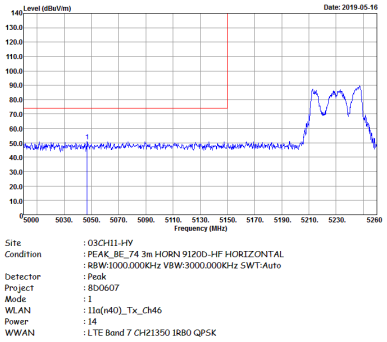
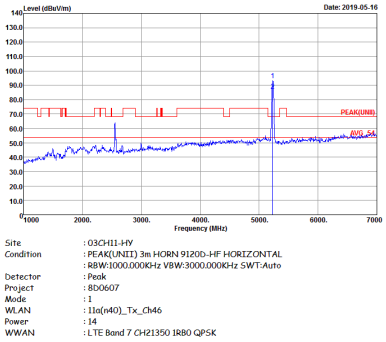
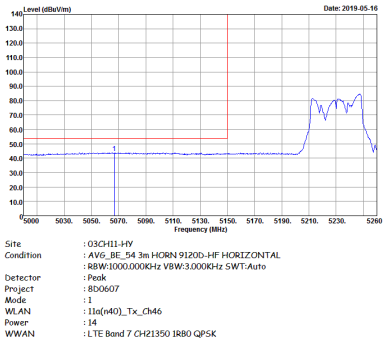
Emission below 1GHz

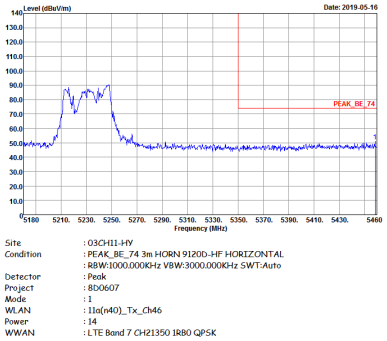
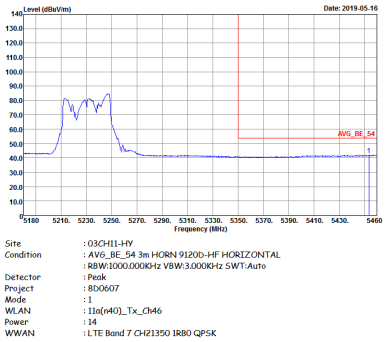
Colocation Mode (LF @ 3m))

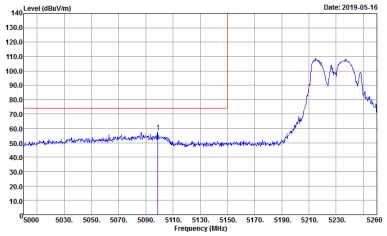
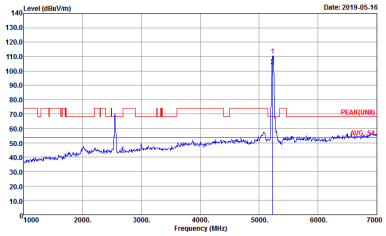
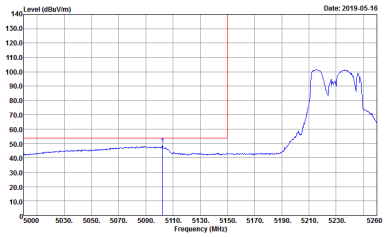
Simultaneously	Colocation Mode	
	Horizontal	Vertical
QP / Peak		

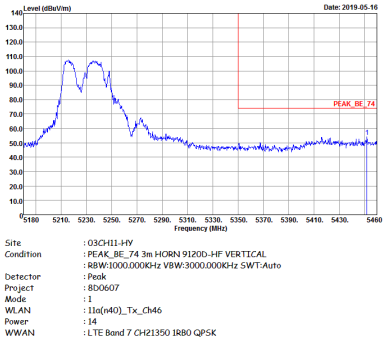
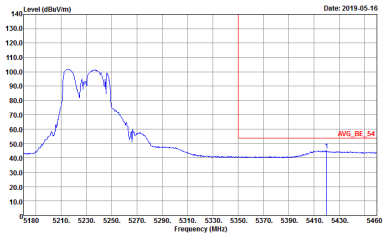
Colocation Mode

WIFI 802.11n HT40 (Band Edge @ 3m)

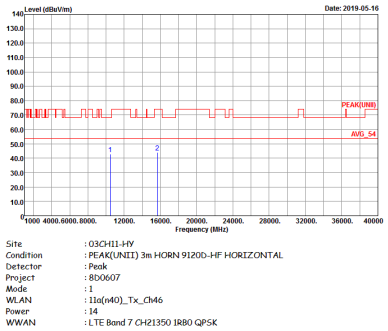
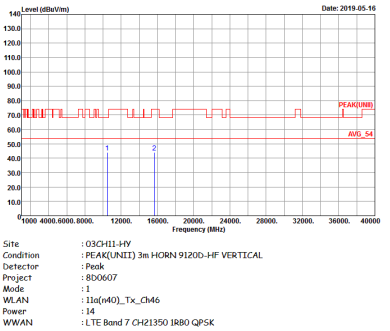
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH46 5230MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH46 5230MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11a(n40)_Tx_Ch46 Power : 14 WWAN : LTE Band 7 CH21350 1RB0 QPSK	Left blank
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11a(n40)_Tx_Ch46 Power : 14 WWAN : LTE Band 7 CH21350 1RB0 QPSK	Left blank

WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH46 5230MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11a(n40)_Tx_Ch46 Power : 14 WWAN : LTE Band 7 CH21350 1RB0 QPSK	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11a(n40)_Tx_Ch46 Power : 14 WWAN : LTE Band 7 CH21350 1RB0 QPSK
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11a(n40)_Tx_Ch46 Power : 14 WWAN : LTE Band 7 CH21350 1RB0 QPSK	Left blank

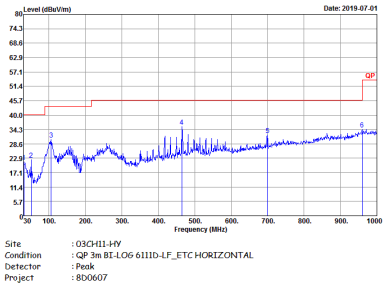
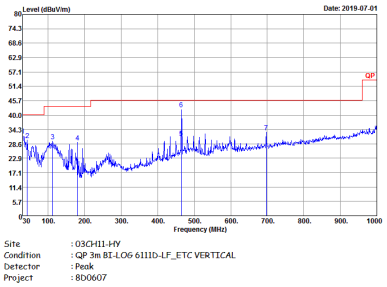
WIFI	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	802.11n HT40 CH46 5230MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11a(n40)_Tx_Ch46 Power : 14 WWAN : LTE Band 7 CH21350 1RB0 QPSK	Left blank
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8D0607 Mode : 1 WLAN : 11a(n40)_Tx_Ch46 Power : 14 WWAN : LTE Band 7 CH21350 1RB0 QPSK	Left blank

Colocation Mode (Hamonic @ 3m)

Simultaneously	Colocation Mode	
	Horizontal	Vertical
Peak Avg.		

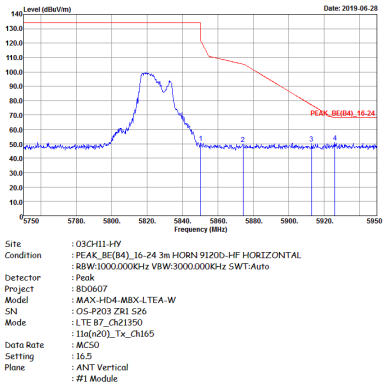
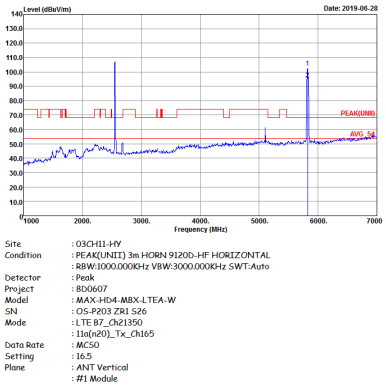
Emission below 1GHz

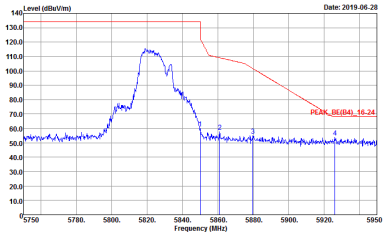
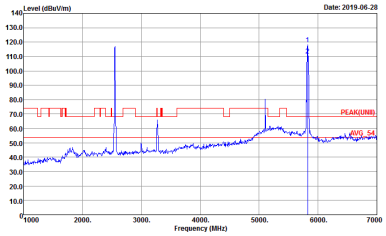
Colocation Mode (LF @ 3m))

Simultaneously	Colocation Mode	
	Horizontal	Vertical
QP / Peak		

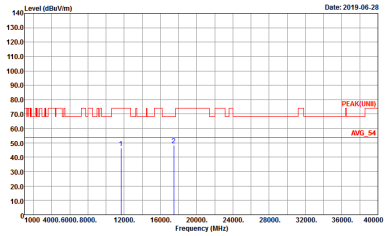
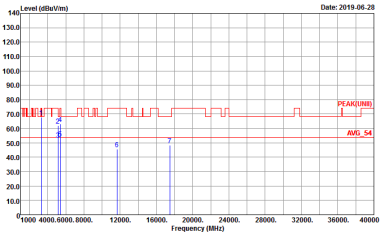
Colocation Mode

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak		

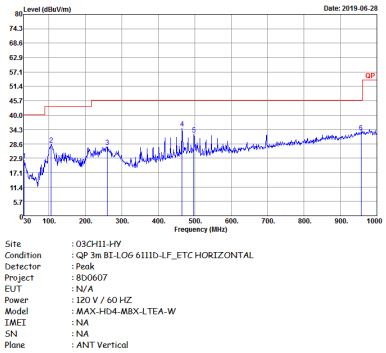
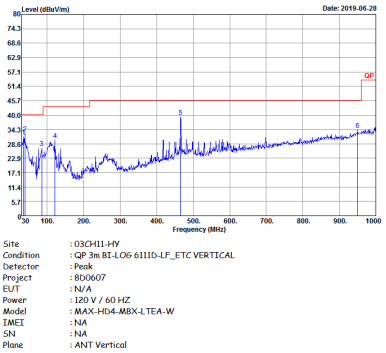
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Model : MAX-HD4-MBX-LTEA-W SN : OS-P203 ZR1 S26 Mode : LTE B7_Ch21350 : 11a(n20)_Tx_Ch165 Data Rate : MCS0 Setting : 16.5 Plane : ANT Vertical : #1 Module	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8D0607 Model : MAX-HD4-MBX-LTEA-W SN : OS-P203 ZR1 S26 Mode : LTE B7_Ch21350 : 11a(n20)_Tx_Ch165 Data Rate : MCS0 Setting : 16.5 Plane : ANT Vertical : #1 Module

Colocation Mode (Hamonic @ 3m)

Simultaneously	Colocation Mode	
	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8D0607 Model : MAX-HD4-M8X-LTEA-W SN : OS-P203 ZR1 526 Mode : LTE B7_Ch21350 : 11a(n20)_Tx_Ch165 Data Rate : MCS0 Setting : 16.5 Plane : ANT Vertical : #1 Module	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8D0607 Model : MAX-HD4-M8X-LTEA-W SN : OS-P203 ZR1 526 Mode : LTE B7_Ch21350 : 11a(n20)_Tx_Ch165 Data Rate : MCS0 Setting : 16.5 Plane : ANT Vertical : #1 Module

Emission below 1GHz

Colocation Mode (LF @ 3m))

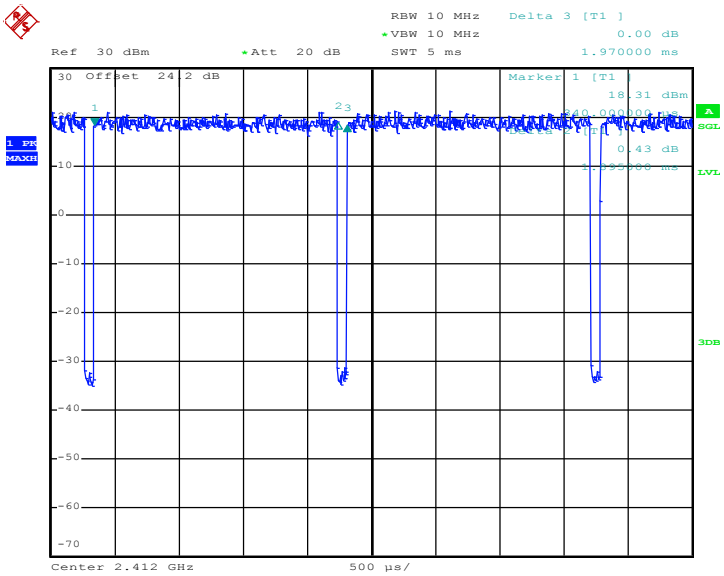
Simultaneously	Colocation Mode	
	Horizontal	Vertical
QP / Peak	 Site : 03CH11-HY Condition : QP 3m BI-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak Project : 8D0607 EUT : N/A Power : 120 V / 60 HZ Model : MAX-HD4-MBX-LTEA-W IMEI : NA SN : NA Plane : ANT Vertical	 Site : 03CH11-HY Condition : QP 3m BI-LOG 6111D-LF_ETC VERTICAL Detector : Peak Project : 8D0607 EUT : N/A Power : 120 V / 60 HZ Model : MAX-HD4-MBX-LTEA-W IMEI : NA SN : NA Plane : ANT Vertical

Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1+2	2.4GHz 802.11n HT20 for Ant. 1	96.19	1895	0.53	1kHz	0.17
1+2	2.4GHz 802.11n HT20 for Ant. 2	96.18	1890	0.53	1kHz	0.17
1+2	5GHz 802.11n HT20 for Ant. 1	96.23	1888	0.53	1kHz	0.17
1+2	5GHz 802.11n HT20 for Ant. 2	96.42	1884	0.53	1kHz	0.16
1+2	5GHz 802.11n HT40 for Ant. 1	93.00	930	1.08	3kHz	0.32
1+2	5GHz 802.11n HT40 for Ant. 2	92.96	925	1.08	3kHz	0.32

MIMO <Ant. 1>

2.4GHz 802.11n HT20



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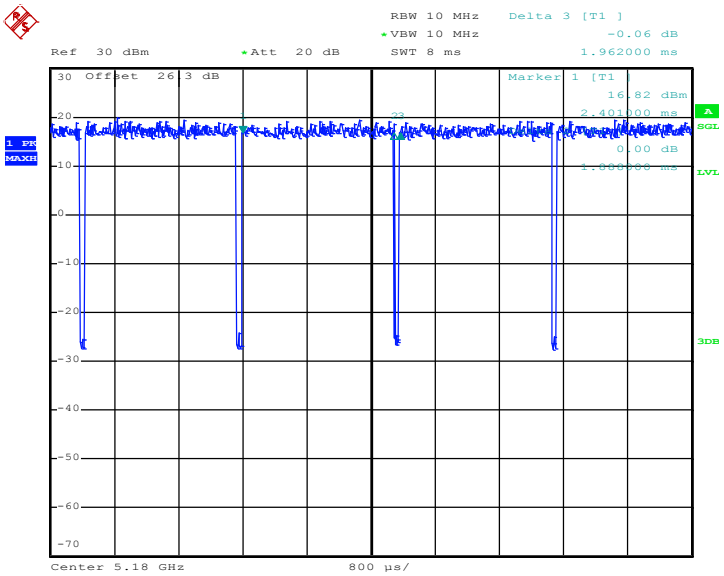
5GHz 802.11n HT20



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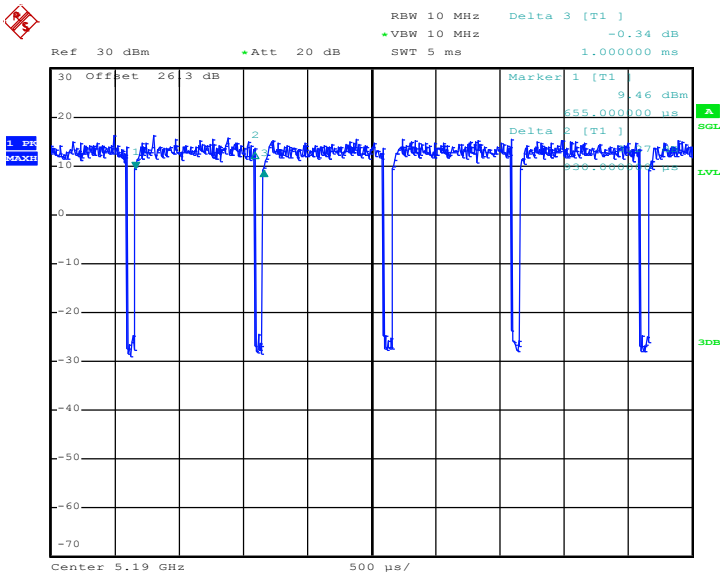
5GHz 802.11n HT40



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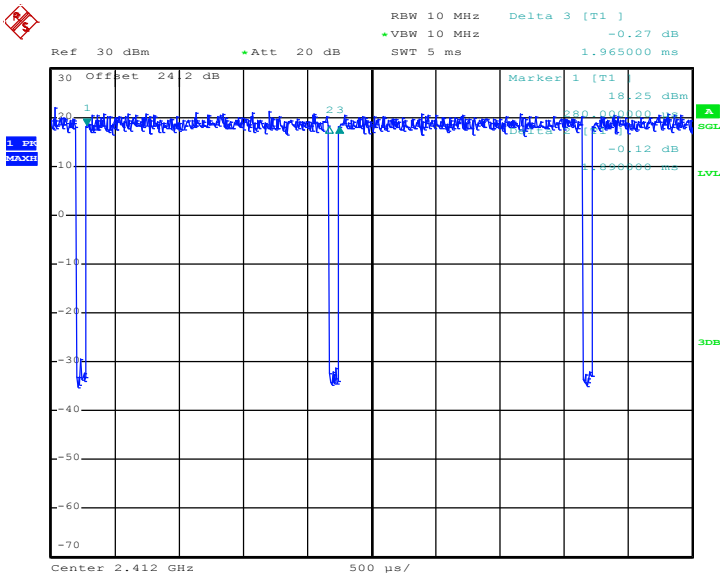
MIMO <Ant. 2>

2.4GHz 802.11n HT20



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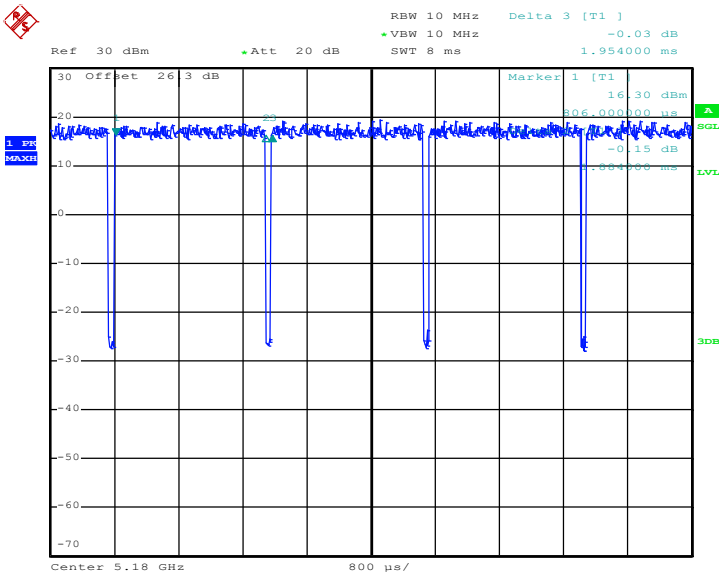
5GHz 802.11n HT20



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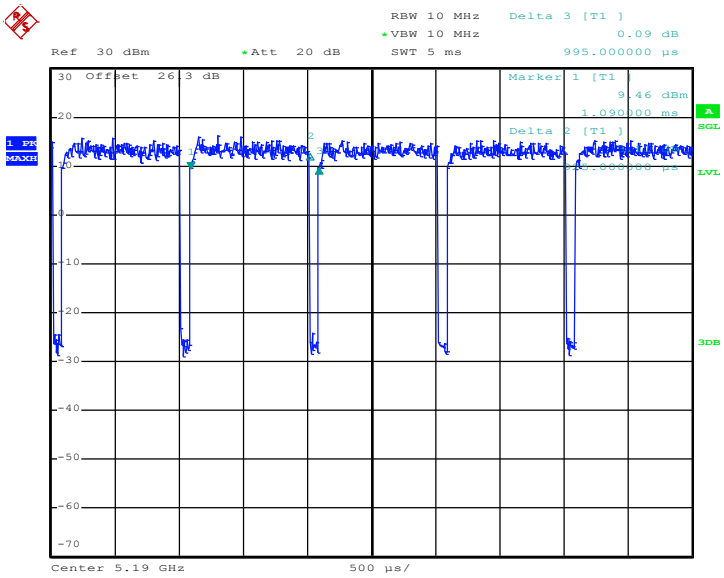
5GHz 802.11n HT40



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