FCC RADIO TEST REPORT

FCC ID	**:**	**EJE-WB0109**
Equipment	**:**	**STYLISTIC Q739**
Brand Name	**:**	**FUJITSU**
Model name	**:**	**PQ13B**
Applicant	**:**	**FUJITSU CLIENT COMPUTING LIMITED** **1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki, 211-8588 Japan**
Manufacturer	**:**	**FUJITSU CLIENT COMPUTING LIMITED** **1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki, 211-8588 Japan**
Standard	**:**	**FCC Part 15 Subpart E §15.407**

The product was received on Dec. 17, 2018 and testing was started from Dec. 19, 2018 and completed on Feb. 22, 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 partial 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.

Jones Tsai

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
FR8D1723E	01	Initial issue of report	Mar. 13, 2019
FR8D1723E	02	Revise the FCC ID in the cover page	Apr. 01, 2019

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.407 (a)	Maximum Conducted Output Power	Pass	-
3.2	15.407(b)	Unwanted Emissions	Pass	Under limit 6.18 dB at 145.290 MHz
3.3	15.207	AC Conducted Emission	Pass	Under limit 10.79 dB at 0.191 MHz
3.4	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: Maggie Chiang

1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Integrated WLAN Module	Brand Name: Intel Model Name: 9560NGW
Antenna Type	WLAN: <Ant. 1> PIFA Antenna <Ant. 2> PIFA Antenna Bluetooth: PIFA 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.	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH05-HY	CO05-HY

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

Test Site	SPORTON INTERNATIONAL INC.
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.**
	03CH16-HY

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

FCC Designation No. TW1190 and TW0007

1.4 Applicable Standards

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

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

Remark: 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

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

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

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

Note:

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

2.2 Test Mode

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

Single Mode

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT80	MCS0

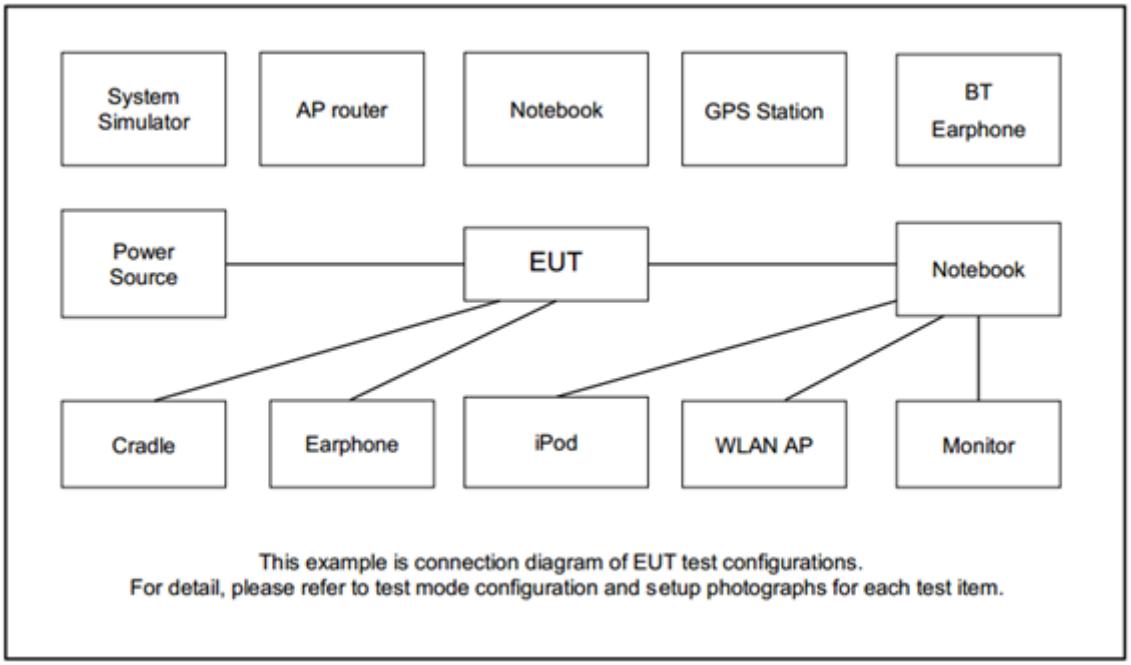
MIMO Mode

Modulation	Data Rate
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT80	MCS0

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

Ch. #		Band IV：5725-5850 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	-	-	151	-
M	Middle	-	157	-	155
H	High	165	-	159	-

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	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “DRTU” 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

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

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

3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

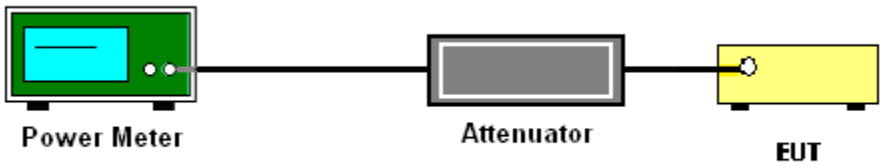
3.1.3 Test Procedures

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

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

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

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

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

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

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

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

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

(i) 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

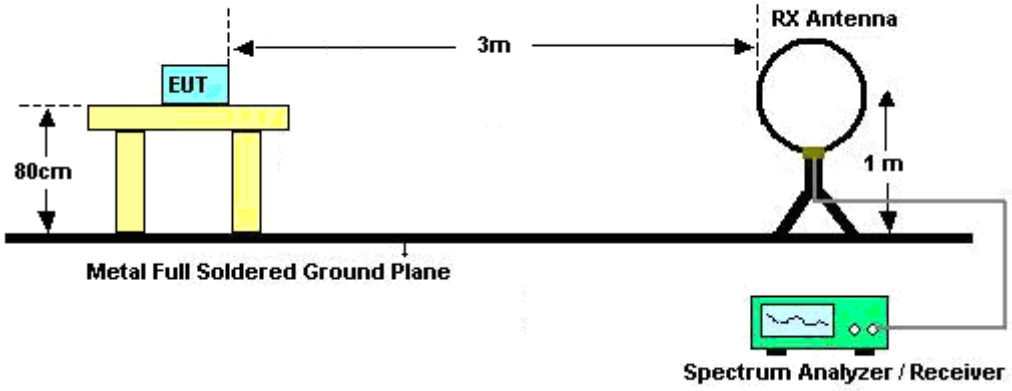
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- 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.

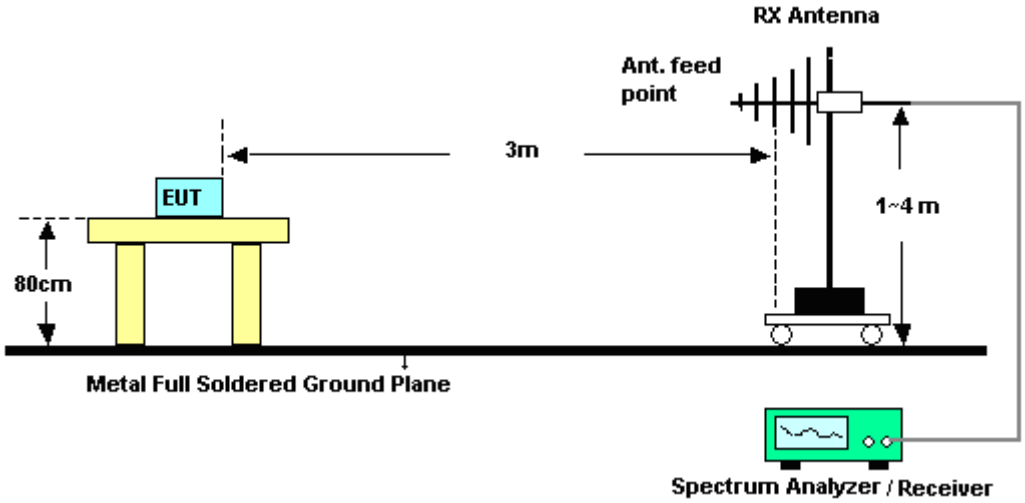
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

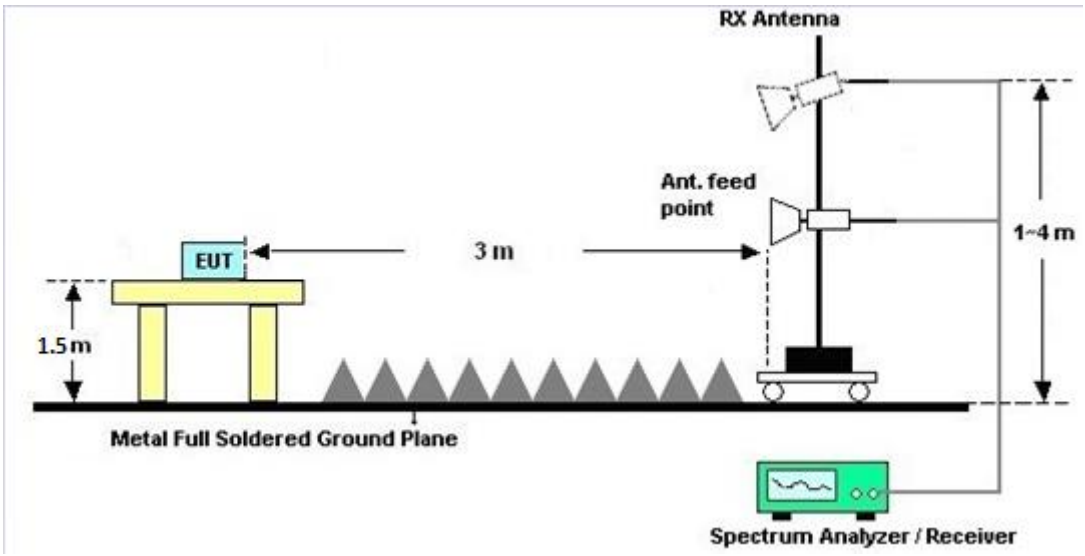
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5 Test Results of Radiated 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 Band Edges

Please refer to Appendix C and D.

3.2.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

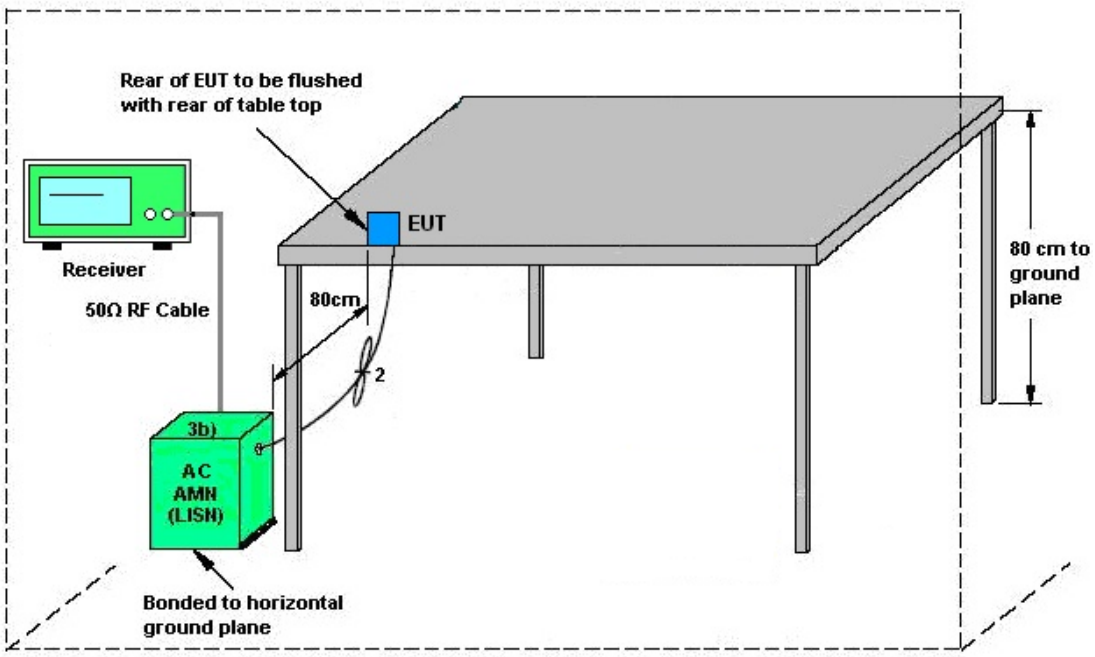
3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

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

3.3.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.3.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.4 Antenna Requirements

3.4.1 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.

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.4.3 Antenna Gain

<CDD Modes>

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

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

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

For power measurements on IEEE 802.11 devices,

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

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

The EUT supports CDD mode.

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

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

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

The directional gain “DG” is calculated as following table.

<CDD Modes>

			DG for Power	Power Limit Reduction
	Ant. 1 (dBi)	Ant. 2 (dBi)	(dBi)	(dB)
Band IV	-1.26	2.18	2.18	0.00

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

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1132003	N/A	Aug. 16, 2018	Dec. 19, 2018~ Feb. 22, 2019	Aug. 15, 2019	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1126017	300MHz~40GHz	Aug. 16, 2018	Dec. 19, 2018~ Feb. 22, 2019	Aug. 15, 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV 30	100895	9kHz~30GHz	Apr. 20, 2018	Dec. 19, 2018~ Feb. 22, 2019	Apr. 19, 2019	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1300484	N/A	Mar. 01, 2018	Dec. 19, 2018~ Feb. 22, 2019	Feb. 28, 2019	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jan. 27, 2019	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9KHz~3.6GHz	Nov. 12, 2018	Jan. 27, 2019	Nov. 11, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 14, 2018	Jan. 27, 2019	Nov. 13, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 09, 2018	Jan. 27, 2019	Nov. 08, 2019	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jan. 27, 2019	N/A	Conduction (CO05-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Sep. 14, 2018	Jan. 27, 2019	Sep. 13, 2019	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jan. 27, 2019	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Nov. 08, 2018	Jan. 27, 2019	Nov. 07, 2019	Conduction (CO05-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Nov. 23, 2017	Jan. 03, 2019~ Jan. 11, 2019	Nov. 22, 2019	Radiation (03CH16-HY)
Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz,VSWR : 2.5:1 max	Jul. 16, 2018	Jan. 03, 2019~ Jan. 11, 2019	Jul. 15, 2019	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz ~ 40GHz	May 08, 2018	Jan. 03, 2019~ Jan. 11, 2019	May 07, 2019	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Jan. 03, 2019~ Jan. 11, 2019	N/A	Radiation (03CH16-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800054001	1GHz~18GHz	Apr. 16, 2018	Jan. 03, 2019~ Jan. 11, 2019	Apr. 15, 2019	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY57290111	3Hz~26.5GHz	Nov. 29, 2018	Jan. 03, 2019~ Jan. 11, 2019	Nov. 28, 2019	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1G~18GHz	Sep. 07, 2018	Jan. 03, 2019~ Jan. 11, 2019	Sep. 06, 2019	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY53270147	1GHz~26.5GHz	Feb. 02, 2018	Jan. 03, 2019~ Jan. 11, 2019	Feb. 01, 2019	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30M-18G	Jan. 22, 2018	Jan. 03, 2019~ Jan. 11, 2019	Jan. 21, 2019	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	335041/4	30M-18G	Jan. 22, 2018	Jan. 03, 2019~ Jan. 11, 2019	Jan. 21, 2019	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24961/4	30M~18GHz	Jan. 22, 2018	Jan. 03, 2019~ Jan. 11, 2019	Jan. 21, 2019	Radiation (03CH16-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Apr. 17, 2018	Jan. 03, 2019~ Jan. 11, 2019	Apr. 16, 2019	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24961/4	30M~18GHz	Jan. 22, 2018	Jan. 03, 2019~ Jan. 11, 2019	Jan. 21, 2019	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL6111D&00802N1D01N-06	47020&06	30MHz to 1GHz	Oct. 13. 2018	Jan. 03, 2019~ Jan. 11, 2019	Oct. 12, 2019	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1000MHz	Oct. 02, 2018	Jan. 03, 2019~ Jan. 11, 2019	Oct. 01, 2019	Radiation (03CH16-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.2**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.9**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.8**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.9**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Derek Hsu	Temperature:	21~25	°C
Test Date:	2018/12/19~2019/02/22	Relative Humidity:	51~54	%

TEST RESULTS DATA
Average Power Table

Band IV									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Ant 1	Ant 2	Ant 1	Ant 2	SUM
11a	6Mbps	1	149	5745	0.08	0.08	13.42	13.23	
11a	6Mbps	1	157	5785	0.08	0.08	13.48	13.21	
11a	6Mbps	1	165	5825	0.08	0.08	13.41	13.28	
HT20	MCS0	1	149	5745	0.09	0.09	13.41	13.17	
HT20	MCS0	1	157	5785	0.09	0.09	13.49	13.24	
HT20	MCS0	1	165	5825	0.09	0.09	13.39	13.20	
HT40	MCS0	1	151	5755	0.18	0.23	13.32	13.23	
HT40	MCS0	1	159	5795	0.18	0.23	13.48	13.21	
VHT20	MCS0	1	149	5745	0.09	0.09	13.35	13.16	
VHT20	MCS0	1	157	5785	0.09	0.09	13.45	13.17	
VHT20	MCS0	1	165	5825	0.09	0.09	13.22	13.19	
VHT40	MCS0	1	151	5755	0.18	0.18	13.26	13.16	
VHT40	MCS0	1	159	5795	0.18	0.18	13.43	13.10	
VHT80	MCS0	1	155	5775	0.36	0.36	13.36	13.22	
HT20	MCS0	2	149	5745	0.11	0.11	13.17	13.22	16.21
HT20	MCS0	2	157	5785	0.11	0.11	13.27	13.12	16.21
HT20	MCS0	2	165	5825	0.11	0.11	13.49	13.39	16.45
HT40	MCS0	2	151	5755	0.18	0.23	13.17	13.29	16.24
HT40	MCS0	2	159	5795	0.18	0.23	13.43	13.31	16.38
VHT20	MCS0	2	149	5745	0.09	0.22	13.02	13.18	16.11
VHT20	MCS0	2	157	5785	0.09	0.22	13.20	13.08	16.15
VHT20	MCS0	2	165	5825	0.09	0.22	13.25	13.38	16.32
VHT40	MCS0	2	151	5755	0.42	0.41	13.15	13.27	16.22
VHT40	MCS0	2	159	5795	0.42	0.41	13.42	13.29	16.37
VHT80	MCS0	2	155	5775	0.61	0.60	13.27	13.22	16.26

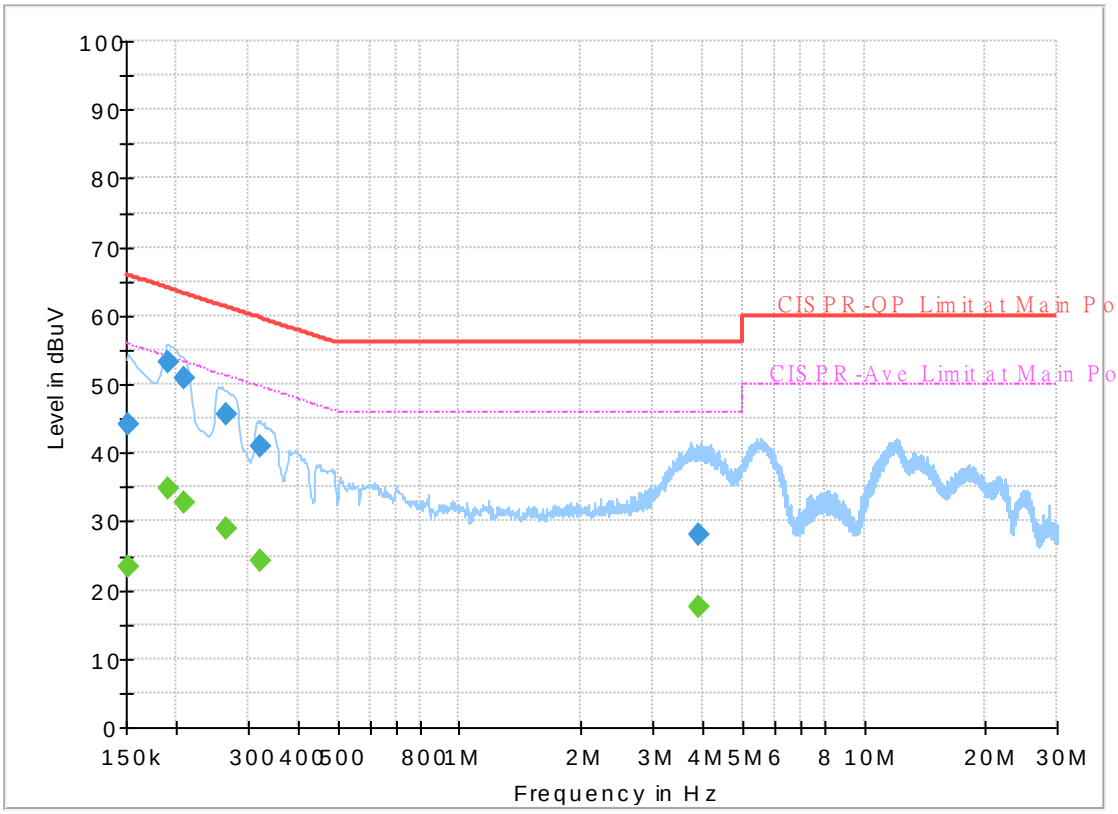
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Eric Jeng	**Temperature :**	22~25℃
		Relative Humidity :	52~55%

EUT Information

Report NO :	8D1723
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



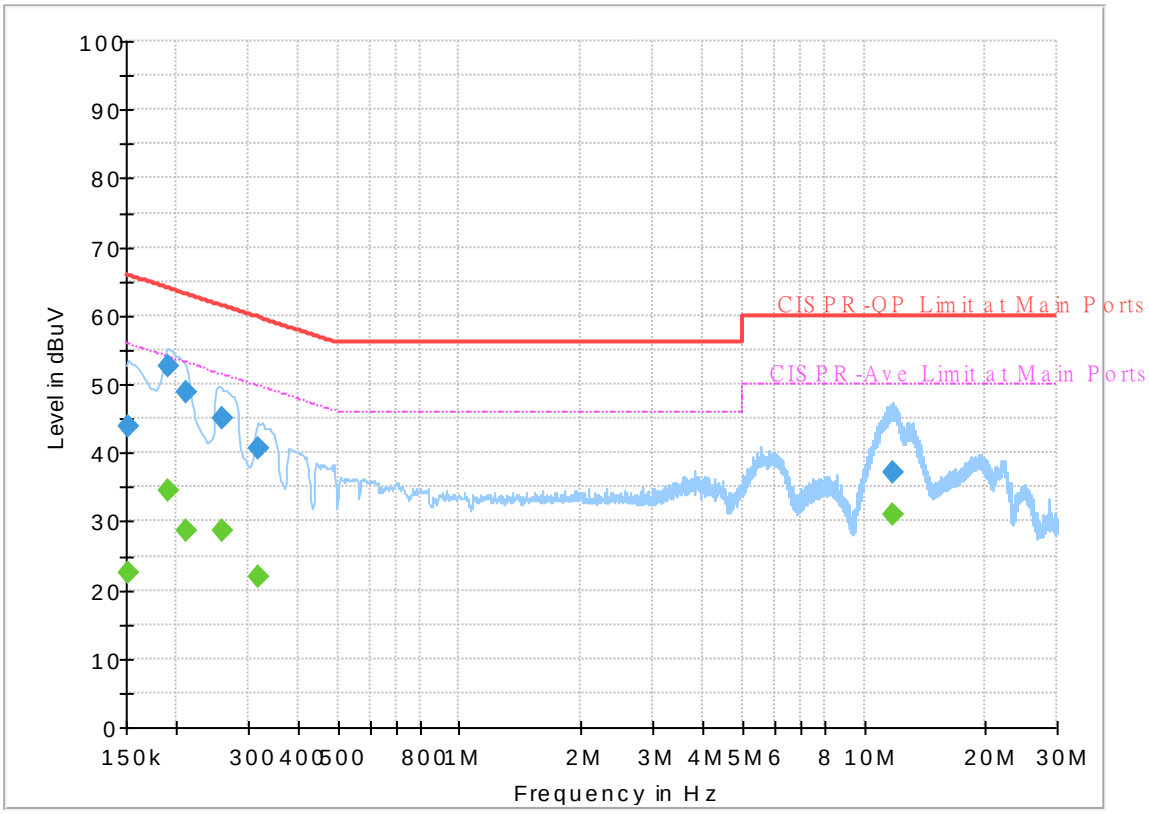
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	23.29	55.88	32.59	L1	OFF	19.5
0.152250	44.29	---	65.88	21.59	L1	OFF	19.5
0.190500	---	34.90	54.02	19.12	L1	OFF	19.5
0.190500	53.23	---	64.02	10.79	L1	OFF	19.5
0.208500	---	32.67	53.27	20.60	L1	OFF	19.5
0.208500	50.94	---	63.27	12.33	L1	OFF	19.5
0.264750	---	28.94	51.28	22.34	L1	OFF	19.5
0.264750	45.57	---	61.28	15.71	L1	OFF	19.5
0.323250	---	24.33	49.62	25.29	L1	OFF	19.5
0.323250	40.99	---	59.62	18.63	L1	OFF	19.5
3.882750	---	17.45	46.00	28.55	L1	OFF	19.6
3.882750	28.20	---	56.00	27.80	L1	OFF	19.6

EUT Information

Report NO :	8D1723
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	22.48	55.88	33.40	N	OFF	19.5
0.152250	43.82	---	65.88	22.06	N	OFF	19.5
0.190500	---	34.38	54.02	19.64	N	OFF	19.5
0.190500	52.65	---	64.02	11.37	N	OFF	19.5
0.210750	---	28.67	53.18	24.51	N	OFF	19.5
0.210750	48.69	---	63.18	14.49	N	OFF	19.5
0.258000	---	28.71	51.50	22.79	N	OFF	19.5
0.258000	45.11	---	61.50	16.39	N	OFF	19.5
0.316500	---	22.01	49.80	27.79	N	OFF	19.5
0.316500	40.51	---	59.80	19.29	N	OFF	19.5
11.811750	---	30.86	50.00	19.14	N	OFF	19.7
11.811750	37.17	---	60.00	22.83	N	OFF	19.7

Appendix C. Radiated Spurious Emission

Test Engineer :	Jacky Hung, CR Liao, and Andy Yang	Temperature :	23~25°C
		Relative Humidity :	55~57%

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
	*	5825	103.79	-	-	87.04	32.22	14.12	29.59	100	319	P	H
	*	5825	95.25	-	-	78.5	32.22	14.12	29.59	100	319	A	H
		5852	54.3	-63.34	117.64	37.61	32.26	14.03	29.6	100	319	P	H
		5871.8	54.37	-51.72	106.09	37.74	32.29	13.96	29.62	100	319	P	H
		5921	54.56	-16.59	71.15	38.04	32.37	13.79	29.64	100	319	P	H
		5945.2	54.63	-13.57	68.2	38.17	32.41	13.71	29.66	100	319	P	H
802.11n													H
HT20													H
CH 165	*	5825	102.51	-	-	85.76	32.22	14.12	29.59	262	95	P	V
5825MHz	*	5825	93.97	-	-	77.22	32.22	14.12	29.59	262	95	A	V
		5850.4	53.64	-67.65	121.29	36.95	32.26	14.03	29.6	262	95	P	V
		5857.4	54.28	-55.85	110.13	37.6	32.27	14.01	29.6	262	95	P	V
		5910.2	54.15	-24.97	79.12	37.6	32.36	13.83	29.64	262	95	P	V
		5942.8	54.62	-13.58	68.2	38.15	32.41	13.72	29.66	262	95	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11650	46.12	-27.88	74	49.69	39.6	18.5	61.67	100	0	P	H
		17475	49.88	-18.32	68.2	40.95	42.5	23.59	57.16	100	0	P	H
802.11n													H
HT20													H
CH 165		11650	46	-28	74	49.57	39.6	18.5	61.67	100	0	P	V
5825MHz		17475	50.4	-17.8	68.2	41.47	42.5	23.59	57.16	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5609.4	53.95	-14.25	68.2	37.87	31.88	13.69	29.49	101	319	P	H
		5699	54.26	-50.2	104.46	37.84	32.02	13.93	29.53	101	319	P	H
		5719	57.85	-52.67	110.52	41.36	32.05	13.98	29.54	101	319	P	H
		5724.2	59.4	-60.98	120.38	42.88	32.06	14	29.54	101	319	P	H
	*	5755	100.89	-	-	84.26	32.11	14.08	29.56	101	319	P	H
	*	5755	92.58	-	-	75.95	32.11	14.08	29.56	101	319	A	H
		5855	54.49	-56.31	110.8	37.8	32.27	14.02	29.6	101	319	P	H
		5869.8	53.72	-52.93	106.65	37.08	32.29	13.97	29.62	101	319	P	H
		5907.2	54.2	-27.14	81.34	37.64	32.35	13.84	29.63	101	319	P	H
		5946	53.8	-14.4	68.2	37.34	32.41	13.71	29.66	101	319	P	H
802.11n													H
HT40													H
CH 151		5648.8	53.82	-14.38	68.2	37.6	31.94	13.79	29.51	297	117	P	V
5755MHz		5698	53.91	-49.82	103.73	37.5	32.02	13.92	29.53	297	117	P	V
		5717.6	56.75	-53.38	110.13	40.26	32.05	13.98	29.54	297	117	P	V
		5723.4	57.51	-61.04	118.55	41	32.06	13.99	29.54	297	117	P	V
	*	5755	98.94	-	-	82.31	32.11	14.08	29.56	297	117	P	V
	*	5755	90.72	-	-	74.09	32.11	14.08	29.56	297	117	A	V
		5850	53.31	-68.89	122.2	36.62	32.26	14.03	29.6	297	117	P	V
		5871.4	53.75	-52.46	106.21	37.12	32.29	13.96	29.62	297	117	P	V
		5894.4	54.99	-35.82	90.81	38.41	32.33	13.88	29.63	297	117	P	V
		5925.6	53.49	-14.71	68.2	36.97	32.38	13.78	29.64	297	117	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11510	46.87	-27.13	74	50.02	39.88	18.39	61.42	100	0	P	H
		17265	49.82	-18.38	68.2	42.52	41.71	23.3	57.71	100	0	P	H
802.11n													H
HT40													H
CH 151		11510	46.68	-27.32	74	49.83	39.88	18.39	61.42	100	0	P	V
5755MHz		17265	49.48	-18.72	68.2	42.18	41.71	23.3	57.71	100	0	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5622	53.26	-14.94	68.2	37.13	31.9	13.72	29.49	100	320	P	H
		5698	55.35	-48.38	103.73	38.94	32.02	13.92	29.53	100	320	P	H
		5708.6	55.47	-52.14	107.61	39.03	32.03	13.95	29.54	100	320	P	H
		5724.2	56.45	-63.93	120.38	39.93	32.06	14	29.54	100	320	P	H
	*	5775	97.97	-	-	81.27	32.14	14.13	29.57	100	320	P	H
	*	5775	90.57	-	-	73.87	32.14	14.13	29.57	100	320	A	H
		5852.4	53.29	-63.44	116.73	36.61	32.26	14.02	29.6	100	320	P	H
		5858.2	54.92	-54.98	109.9	38.26	32.27	14.01	29.62	100	320	P	H
		5876	53.92	-50.54	104.46	37.29	32.3	13.95	29.62	100	320	P	H
		5928.2	54.44	-13.76	68.2	37.92	32.39	13.77	29.64	100	320	P	H
802.11ac													H
VHT80													H
CH 155		5607.2	54.03	-14.17	68.2	37.97	31.87	13.68	29.49	283	112	P	V
5775MHz		5693	54.34	-45.7	100.04	37.95	32.01	13.91	29.53	283	112	P	V
		5709.8	55.47	-52.48	107.95	39.01	32.04	13.96	29.54	283	112	P	V
		5723.4	57.34	-61.21	118.55	40.83	32.06	13.99	29.54	283	112	P	V
	*	5775	96.67	-	-	79.97	32.14	14.13	29.57	283	112	P	V
	*	5775	88.68	-	-	71.98	32.14	14.13	29.57	283	112	A	V
		5854.6	52.96	-58.75	111.71	36.27	32.27	14.02	29.6	283	112	P	V
		5856.6	53.8	-56.55	110.35	37.12	32.27	14.01	29.6	283	112	P	V
		5907.4	54.73	-26.46	81.19	38.17	32.35	13.84	29.63	283	112	P	V
		5925	53.96	-14.24	68.2	37.44	32.38	13.78	29.64	283	112	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11550	46.41	-27.59	74	49.68	39.8	18.42	61.49	100	0	P	H
		17325	49.1	-19.1	68.2	41.34	41.93	23.39	57.56	100	0	P	H
802.11ac													H
VHT80													H
CH 155		11550	47.27	-26.73	74	50.54	39.8	18.42	61.49	100	0	P	V
5775MHz		17325	48.92	-19.28	68.2	41.16	41.93	23.39	57.56	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
		5603.4	53.73	-14.47	68.2	37.68	31.87	13.67	29.49	104	352	P	H
		5689.2	54.61	-42.63	97.24	38.24	32	13.9	29.53	104	352	P	H
		5707.8	54.32	-53.07	107.39	37.88	32.03	13.95	29.54	104	352	P	H
		5722.4	54.64	-61.63	116.27	38.13	32.06	13.99	29.54	104	352	P	H
	*	5785	109.61	-	-	92.87	32.16	14.16	29.58	104	352	P	H
	*	5785	101.75	-	-	85.01	32.16	14.16	29.58	104	352	A	H
		5850.2	53.13	-68.61	121.74	36.44	32.26	14.03	29.6	104	352	P	H
		5855.2	54.61	-56.13	110.74	37.92	32.27	14.02	29.6	104	352	P	H
		5895.6	54.31	-35.61	89.92	37.73	32.33	13.88	29.63	104	352	P	H
		5930.6	53.5	-14.7	68.2	36.99	32.39	13.76	29.64	104	352	P	H
802.11n													H
HT20													H
CH 157		5642.6	53.96	-14.24	68.2	37.76	31.93	13.78	29.51	101	106	P	V
5785MHz		5669.8	54.61	-28.28	82.89	38.31	31.97	13.85	29.52	101	106	P	V
		5706.6	53.99	-53.06	107.05	37.55	32.03	13.95	29.54	101	106	P	V
		5721	53.07	-60.01	113.08	36.57	32.05	13.99	29.54	101	106	P	V
	*	5785	105.32	-	-	88.58	32.16	14.16	29.58	101	106	P	V
	*	5785	97.3	-	-	80.56	32.16	14.16	29.58	101	106	A	V
		5852.6	53.21	-63.06	116.27	36.53	32.26	14.02	29.6	101	106	P	V
		5873.6	54.27	-51.32	105.59	37.64	32.3	13.95	29.62	101	106	P	V
		5881.8	54.86	-45.29	100.15	38.24	32.31	13.93	29.62	101	106	P	V
		5929	54.38	-13.82	68.2	37.86	32.39	13.77	29.64	101	106	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11570	46.39	-27.61	74	49.72	39.76	18.44	61.53	100	0	P	H
		17355	49.48	-18.72	68.2	41.48	42.05	23.43	57.48	100	0	P	H
802.11n													H
HT20													H
CH 157		11570	46.35	-27.65	74	49.68	39.76	18.44	61.53	100	0	P	V
5785MHz		17355	49.4	-18.8	68.2	41.4	42.05	23.43	57.48	100	0	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5620	53.97	-14.23	68.2	37.86	31.89	13.71	29.49	104	352	P	H
		5661.6	55.13	-21.68	76.81	38.86	31.96	13.83	29.52	104	352	P	H
		5714.8	55.64	-53.71	109.35	39.17	32.04	13.97	29.54	104	352	P	H
		5721.4	56.06	-57.93	113.99	39.56	32.05	13.99	29.54	104	352	P	H
	*	5795	106.91	-	-	90.13	32.17	14.19	29.58	104	352	P	H
	*	5795	99.52	-	-	82.74	32.17	14.19	29.58	104	352	A	H
		5853.4	54.25	-60.2	114.45	37.56	32.27	14.02	29.6	104	352	P	H
		5856.6	54.8	-55.55	110.35	38.12	32.27	14.01	29.6	104	352	P	H
		5879.8	54.57	-47.06	101.63	37.95	32.31	13.93	29.62	104	352	P	H
		5940	53.94	-14.26	68.2	37.47	32.4	13.73	29.66	104	352	P	H
802.11n													H
HT40													H
CH 159		5618.6	53.11	-15.09	68.2	37	31.89	13.71	29.49	100	106	P	V
5795MHz		5672	54.33	-30.19	84.52	38.02	31.98	13.85	29.52	100	106	P	V
		5712.4	54.53	-54.14	108.67	38.07	32.04	13.96	29.54	100	106	P	V
		5723.8	53.99	-65.47	119.46	37.48	32.06	13.99	29.54	100	106	P	V
	*	5795	102.5	-	-	85.72	32.17	14.19	29.58	100	106	P	V
	*	5795	95.04	-	-	78.26	32.17	14.19	29.58	100	106	A	V
		5850	53.02	-69.18	122.2	36.33	32.26	14.03	29.6	100	106	P	V
		5861	53.87	-55.25	109.12	37.21	32.28	14	29.62	100	106	P	V
		5876.6	54.17	-49.84	104.01	37.55	32.3	13.94	29.62	100	106	P	V
		5926.8	54.1	-14.1	68.2	37.58	32.38	13.78	29.64	100	106	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11590	46.48	-27.52	74	49.86	39.72	18.46	61.56	100	0	P	H
		17385	49.58	-18.62	68.2	41.35	42.16	23.47	57.4	100	0	P	H
802.11n													H
HT40													H
CH 159		11590	46.72	-27.28	74	50.1	39.72	18.46	61.56	100	0	P	V
5795MHz		17385	49.64	-18.56	68.2	41.41	42.16	23.47	57.4	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5623	54.7	-13.5	68.2	38.57	31.9	13.72	29.49	100	348	P	H
		5695.6	56.56	-45.4	101.96	40.16	32.01	13.92	29.53	100	348	P	H
		5718.4	58.82	-51.53	110.35	42.33	32.05	13.98	29.54	100	348	P	H
		5722.6	59.63	-57.1	116.73	43.12	32.06	13.99	29.54	100	348	P	H
	*	5775	103.37	-	-	86.67	32.14	14.13	29.57	100	348	P	H
	*	5775	96.7	-	-	80	32.14	14.13	29.57	100	348	A	H
		5850.6	56.04	-64.79	120.83	39.35	32.26	14.03	29.6	100	348	P	H
		5858.2	56.63	-53.27	109.9	39.97	32.27	14.01	29.62	100	348	P	H
		5924	55.57	-13.37	68.94	39.05	32.38	13.78	29.64	100	348	P	H
		5935.4	54.39	-13.81	68.2	37.9	32.4	13.75	29.66	100	348	P	H
802.11ac													H
VHT80													H
CH 155		5617.2	53.96	-14.24	68.2	37.85	31.89	13.71	29.49	100	106	P	V
5775MHz		5699.8	56.17	-48.88	105.05	39.75	32.02	13.93	29.53	100	106	P	V
		5711.4	56.41	-51.98	108.39	39.95	32.04	13.96	29.54	100	106	P	V
		5723.4	58.52	-60.03	118.55	42.01	32.06	13.99	29.54	100	106	P	V
	*	5775	99.19	-	-	82.49	32.14	14.13	29.57	100	106	P	V
	*	5775	92.61	-	-	75.91	32.14	14.13	29.57	100	106	A	V
		5854.6	56.09	-55.62	111.71	39.4	32.27	14.02	29.6	100	106	P	V
		5882.4	54.04	-45.66	99.7	37.43	32.31	13.92	29.62	100	106	P	V
		5901.4	53.65	-31.97	85.62	37.08	32.34	13.86	29.63	100	106	P	V
		5928.4	54.65	-13.55	68.2	38.13	32.39	13.77	29.64	100	106	P	V
													V
													V

Remark

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

Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		11550	46.88	-27.12	74	50.15	39.8	18.42	61.49	400	0	P	H
		17325	49.24	-18.96	68.2	41.48	41.93	23.39	57.56	100	0	P	H
802.11ac													H
VHT80													H
CH 155		11550	45.89	-28.11	74	49.16	39.8	18.42	61.49	100	0	P	V
5775MHz		17325	49.7	-18.5	68.2	41.94	41.93	23.39	57.56	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

WIFI 802.11n VHT80 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n VHT80 LF		145.29	37.32	-6.18	43.5	50.28	17.94	1.46	32.36	100	0	P	H
		216.03	35.29	-10.71	46	49.42	16.3	1.93	32.36	-	-	P	H
		244.11	33.29	-12.71	46	45.16	18.31	2.21	32.39	-	-	P	H
		348.3	35.05	-10.95	46	43.56	21.14	2.81	32.46	-	-	P	H
		743.1	30.61	-15.39	46	31.05	27.55	4.47	32.46	-	-	P	H
		941.2	32.29	-13.71	46	29.19	29.91	4.62	31.43	-	-	P	H
													H
													H
													H
													H
													H
													H
		144.75	28.76	-14.74	43.5	41.7	17.96	1.46	32.36	-	-	P	V
		215.76	29.5	-14	43.5	43.64	16.3	1.92	32.36	-	-	P	V
		236.82	28.96	-17.04	46	41.57	17.63	2.14	32.38	-	-	P	V
		364.4	29.38	-16.62	46	37.33	21.58	2.94	32.47	-	-	P	V
		768.3	30.07	-15.93	46	30.17	27.85	4.46	32.41	-	-	P	V
		939.1	32.03	-13.97	46	29	29.86	4.62	31.45	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.												

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.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

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

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

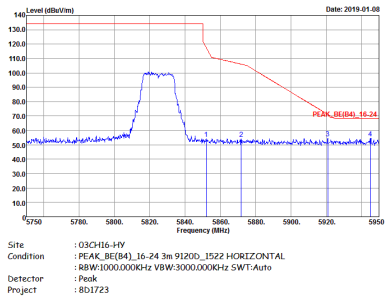
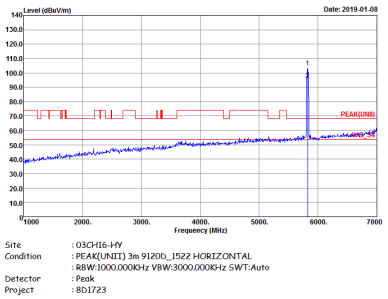
Both peak and average measured complies with the limit line, so test result is "PASS".

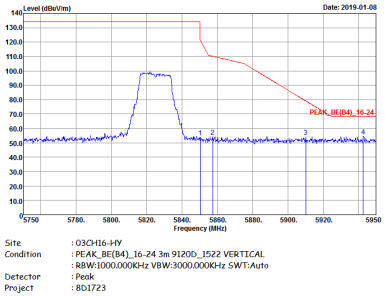
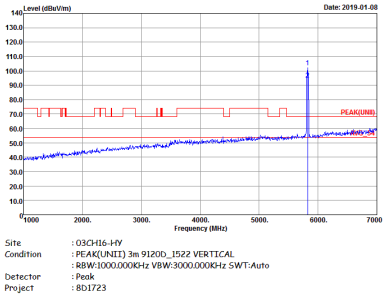
Appendix D. Radiated Spurious Emission Plots

Test Engineer :	Jacky Hung, CR Liao, and Andy Yang	**Temperature :**	23~25°C
		Relative Humidity :	55~57%

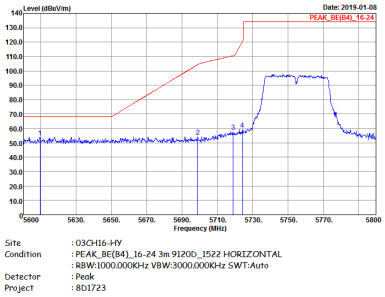
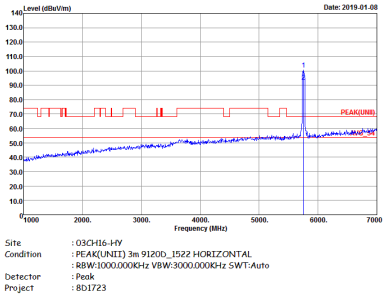
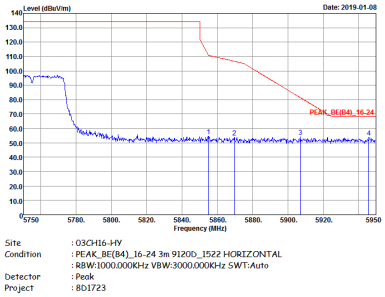
Band 4 - 5725~5850MHz

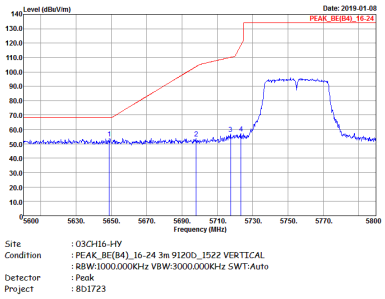
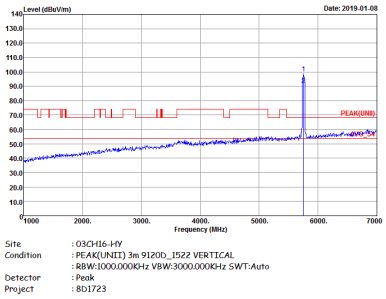
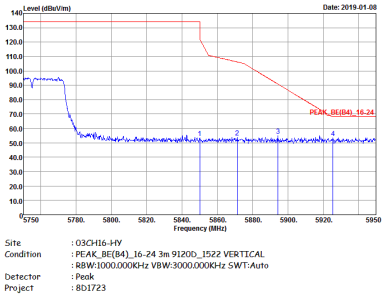
WIFI 802.11n HT20 (Band Edge @ 3m)

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

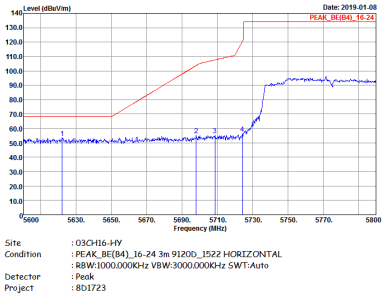
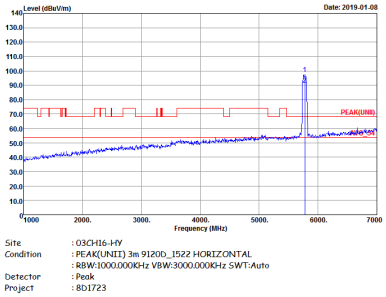
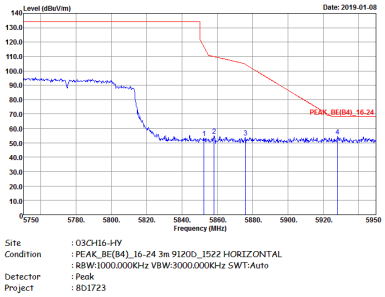
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Vertical	Fundamental
Peak		

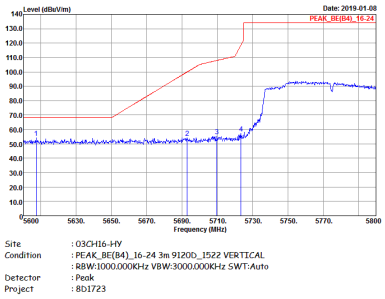
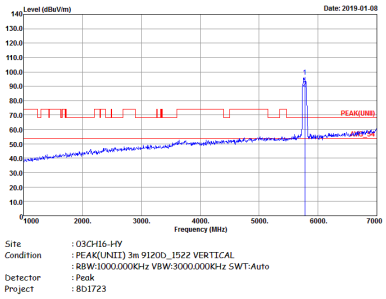
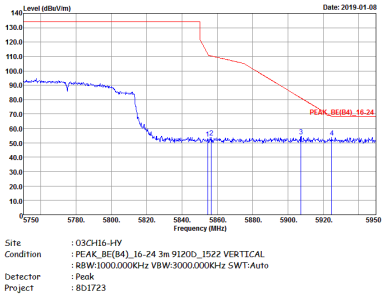
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Vertical	Fundamental
Peak		
Peak		Left blank

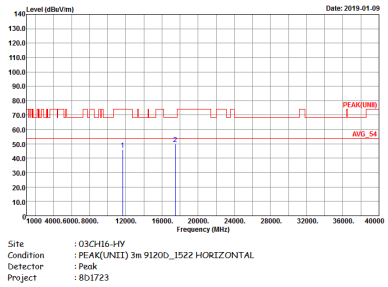
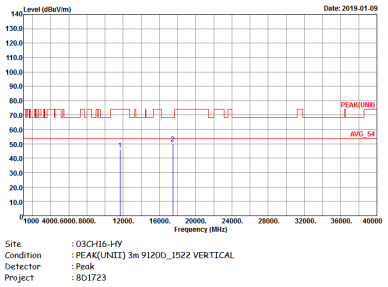
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Fundamental
Peak		
Peak		Left blank

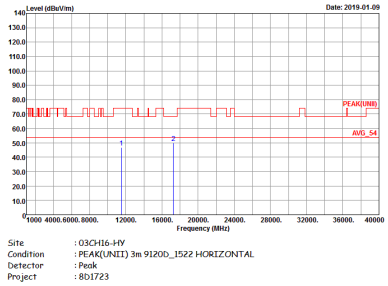
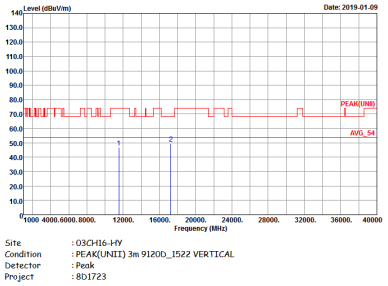
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Vertical	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

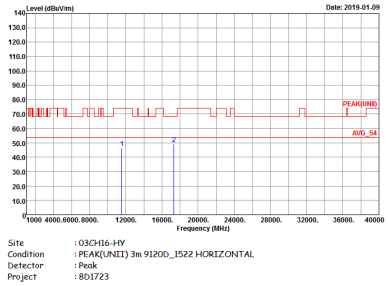
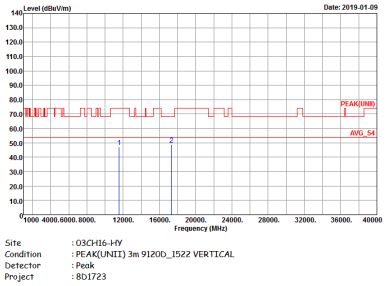
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Vertical
Peak Avg.		

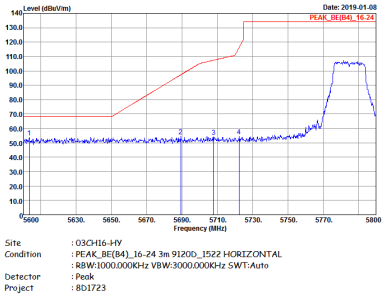
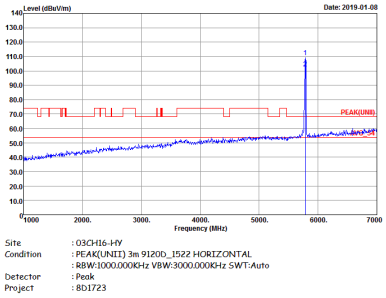
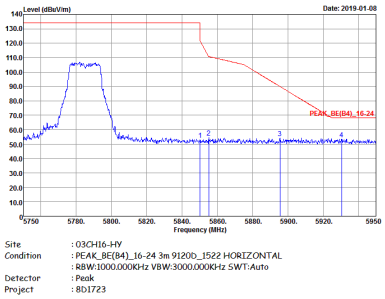
Band 4 5725~5850MHz

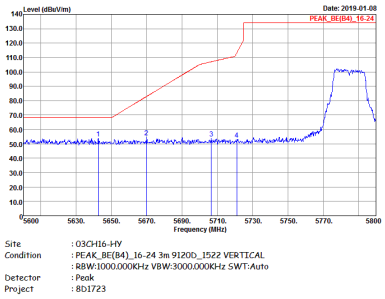
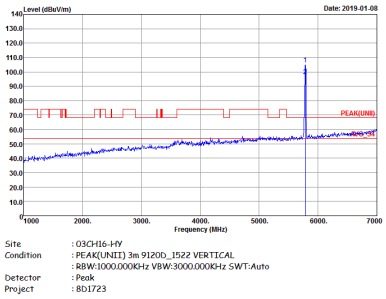
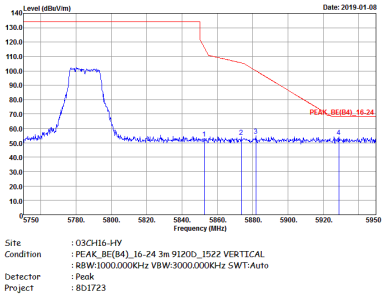
WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Vertical
Peak Avg.		

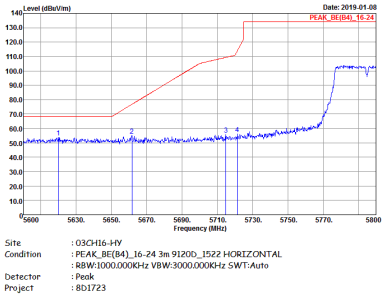
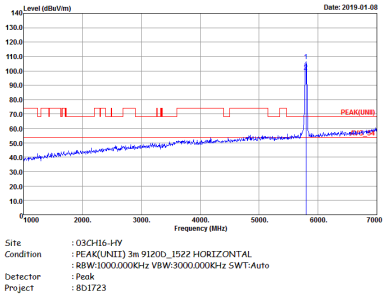
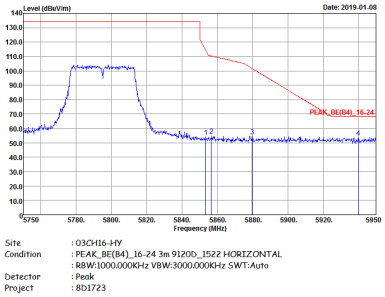
Band 4 - 5725~5850MHz

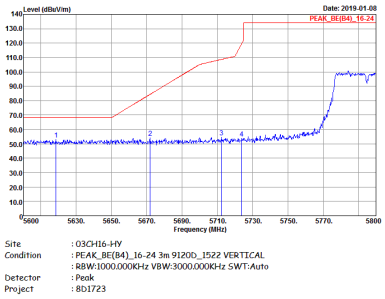
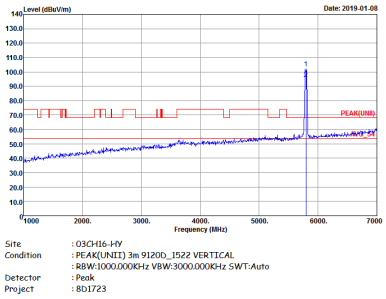
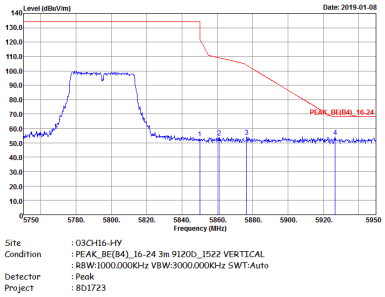
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

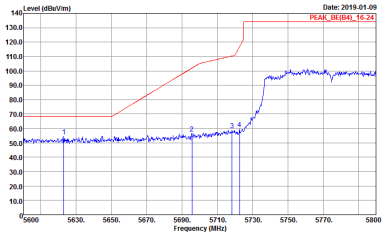
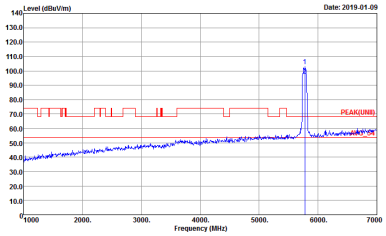
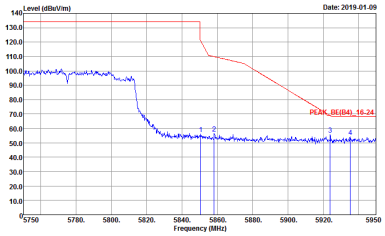
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

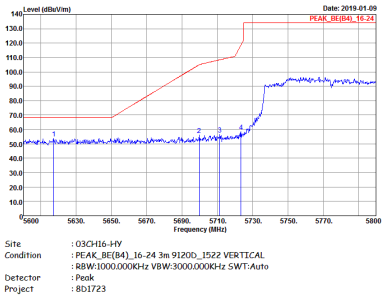
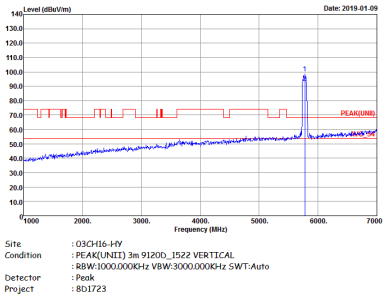
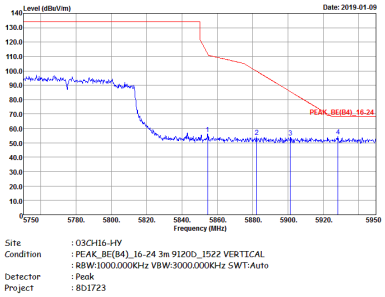
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

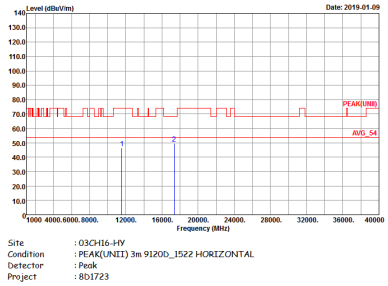
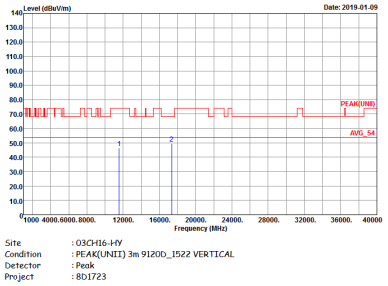
Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak		
Peak		Left blank

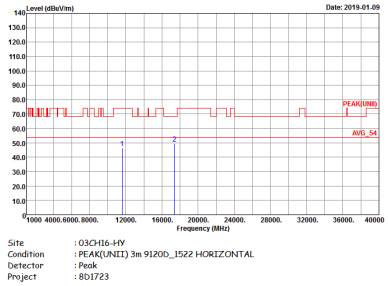
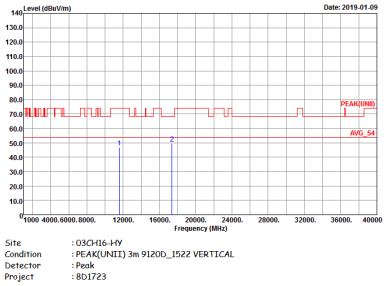
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak		
Peak		Left blank

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

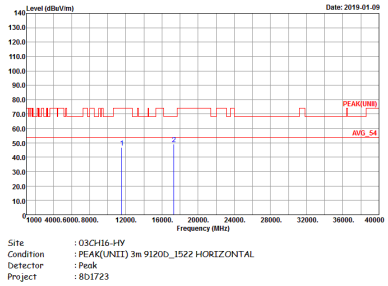
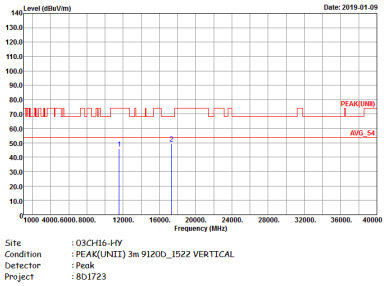
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.		

Band 4 5725~5850MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.		

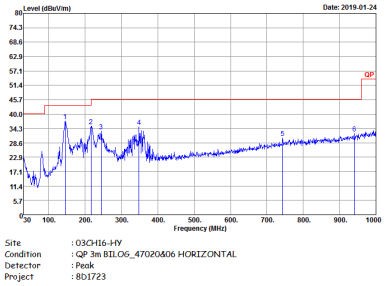
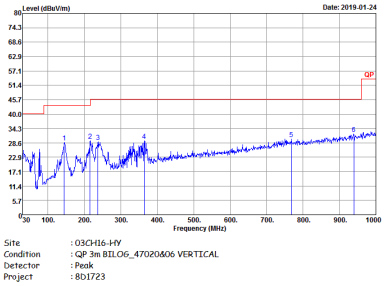
Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF)

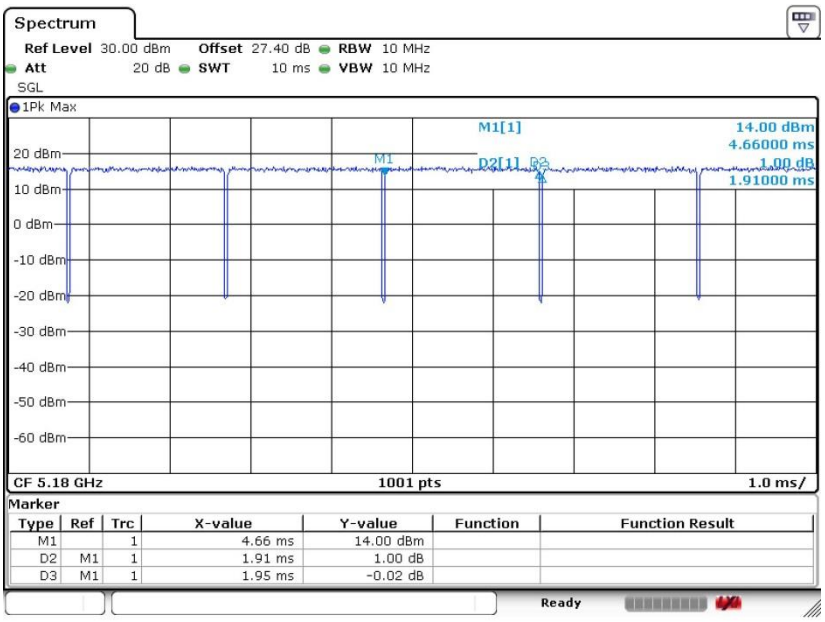
WIFI	5GHz 5725~5850MHz	
ANT	802.11ac VHT80 LF	
1+2	Horizontal	Vertical
QP / Peak		

Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1	5GHz 802.11n HT20	97.95	1910	0.52	1kHz	0.09
1+2	5GHz 802.11n HT20 for Ant. 1	97.45	1910	0.52	1kHz	0.11
1+2	5GHz 802.11n HT20 for Ant. 2	97.45	1910	0.52	1kHz	0.11
1	5GHz 802.11n HT40	95.92	940	1.06	3kHz	0.18
1+2	5GHz 802.11n HT40 for Ant. 1	95.92	940	1.06	3kHz	0.18
1+2	5GHz 802.11n HT40 for Ant. 2	94.90	930	1.08	3kHz	0.23
1	5GHz 802.11ac VHT80	92.03	462	2.16	3kHz	0.36
1+2	5GHz 802.11ac VHT80 for Ant. 1	86.96	320	3.13	10kHz	0.61
1+2	5GHz 802.11ac VHT80 for Ant. 2	87.03	322	3.11	10kHz	0.60

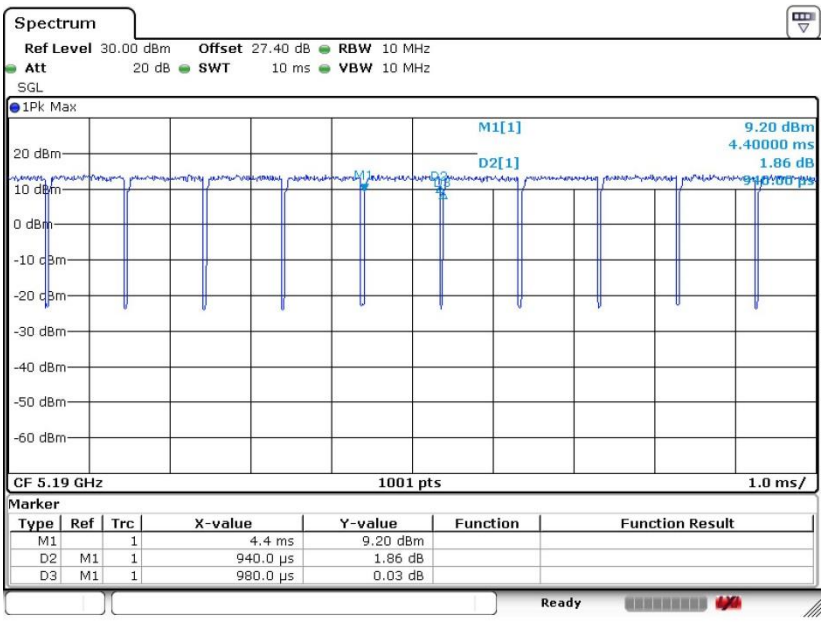
<Ant. 1>

802.11n HT20



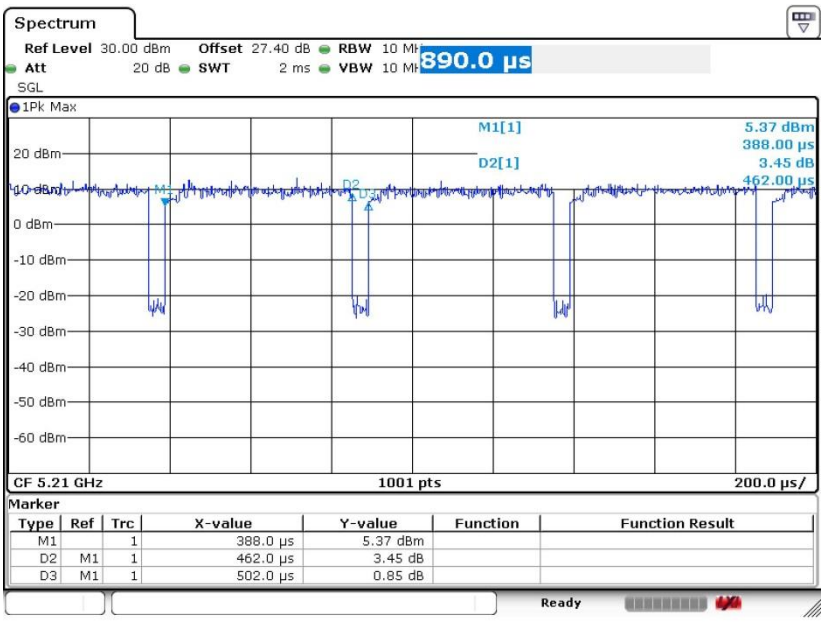
Date: 19.DEC.2018 13:54:24

802.11n HT40



Date: 19.DEC.2018 14:43:24

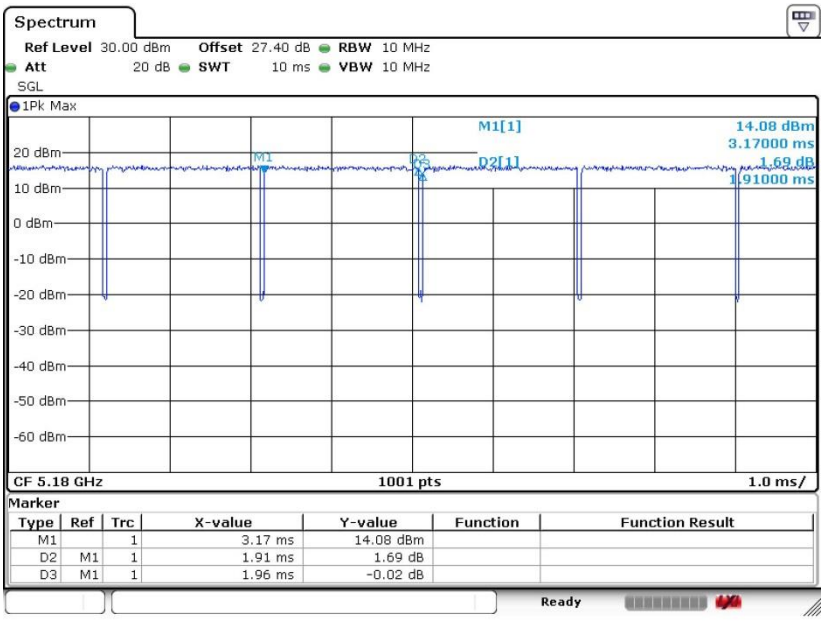
802.11ac VHT80



Date: 20.DEC.2018 09:58:42

MIMO <Ant. 1>

802.11n HT20



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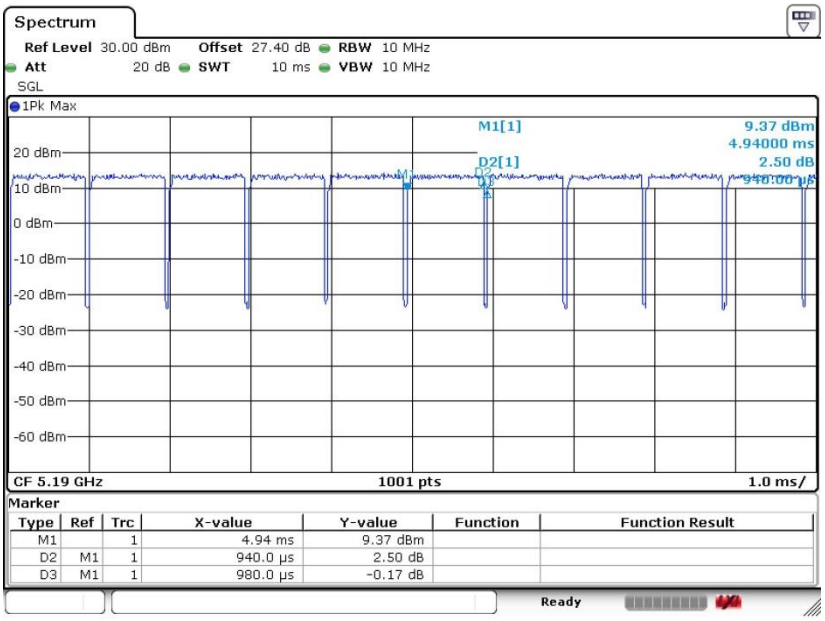
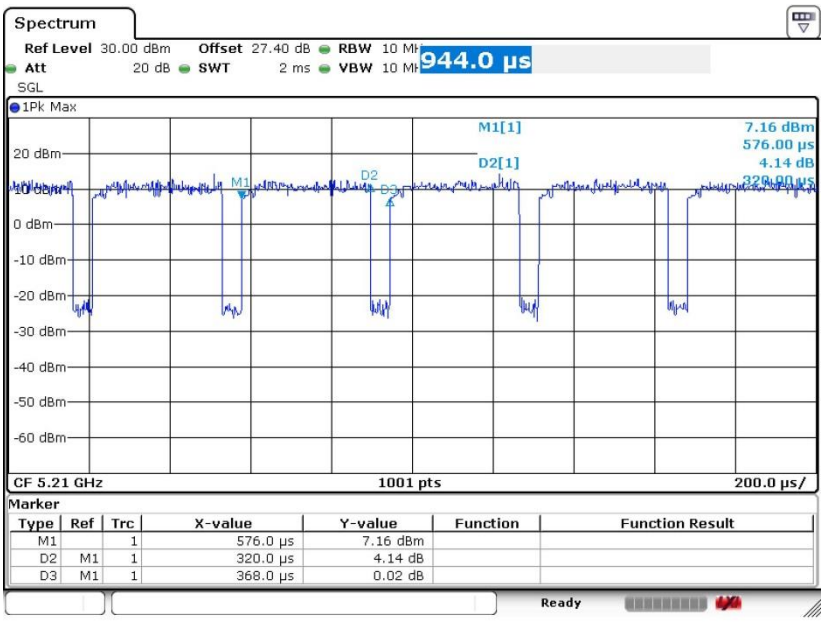
802.11n HT40



Date: 19.DEC.2018 15:03:25

802.11ac VHT80



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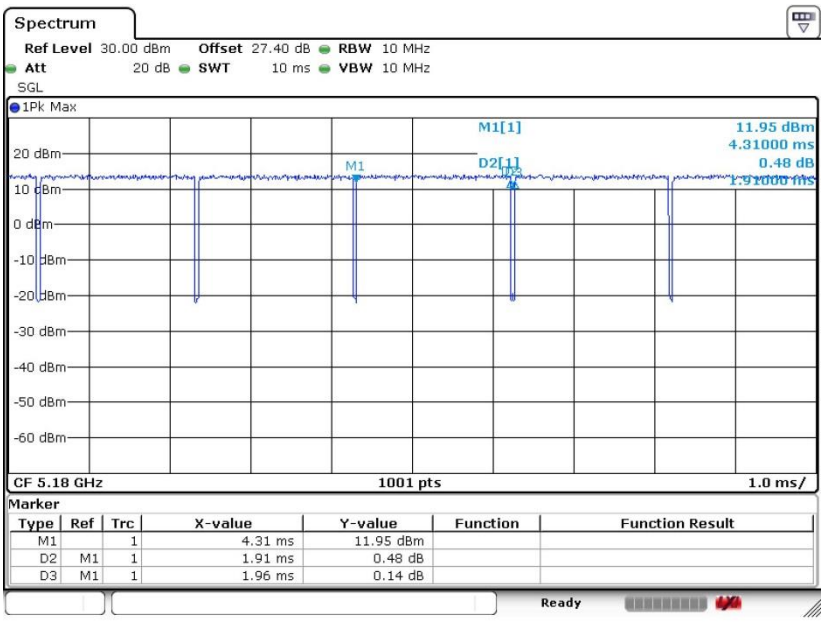
MIMO <Ant. 2>

802.11n HT20



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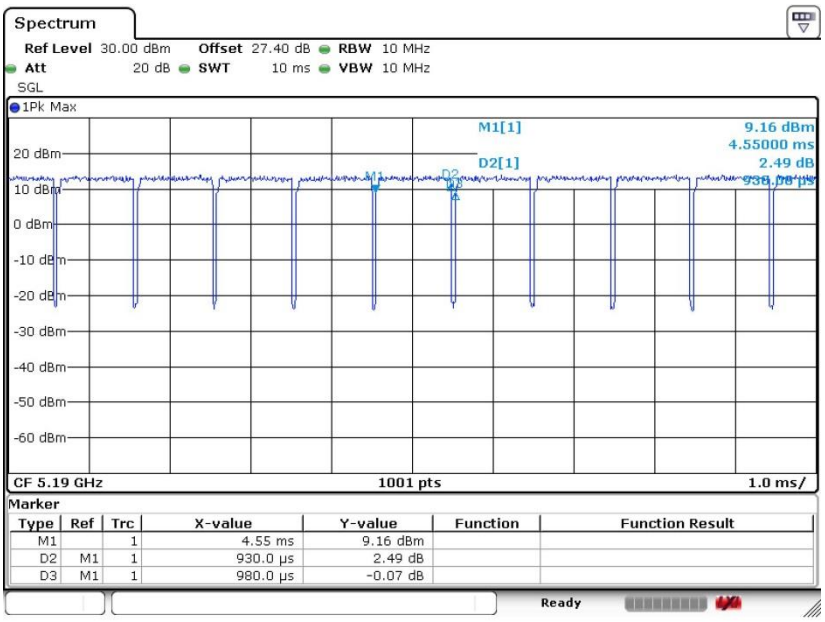
802.11n HT40



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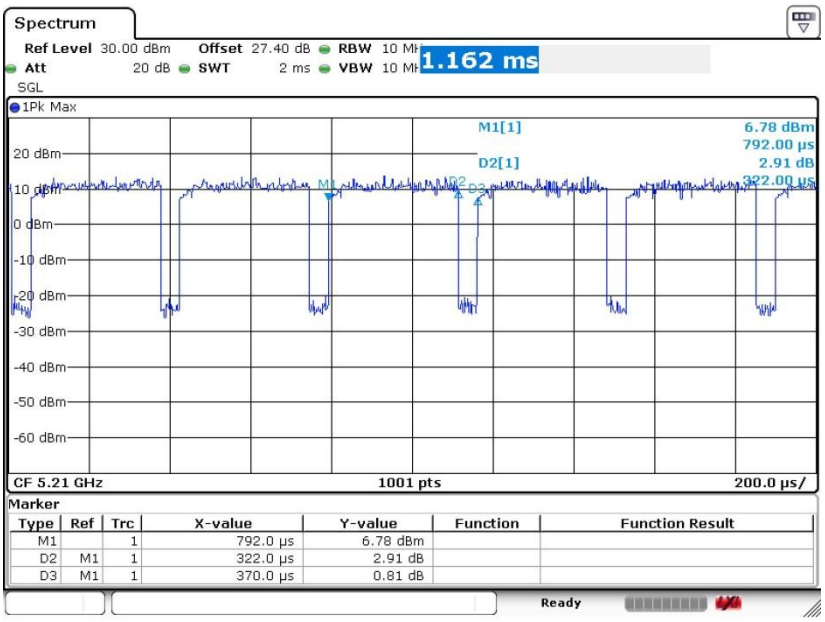
802.11ac VHT80



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