



FCC RF Test Report

APPLICANT : Fluke Corporation
EQUIPMENT : CableAnalyzer
BRAND NAME : Fluke
MODEL NAME : Versiv 2,DSX-602
FCC ID : T68-VERSIV2
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Jun. 21, 2017 and testing was completed on Aug. 06, 2017. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



Testing Laboratory
1190

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.



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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
-	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Not Required-	-
2.7	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
-	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Not Required	-
2.8	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 3.60 dB at 33.510 MHz
2.9	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 15.70 dB at 0.366 MHz
2.10	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
2.11	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
2.12	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

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



1 General Description

1.1 Applicant

Fluke Corporation
6920 Seaway Blvd, Everett, WA, 98203

1.2 Manufacturer

Fluke Corporation
6920 Seaway Blvd, Everett, WA, 98203

1.3 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Antenna Type	Bluetooth: Chip Antenna WLAN: Ant. 1: Chip Antenna Ant. 2: Chip Antenna

1.4 Modification of EUT

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



1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan 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. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-3273456 FAX: +886-3-3284978	
Test Site No.	Sporton Site No.	
	03CH15-HY	

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



1.6 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 v01r03.
- ♦ 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

- 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 (Y 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
	-	-	-	-
	-	-	165	5825

Note: The above Frequency and Channel in "*" were 802.11n HT40



2.2 Test Mode

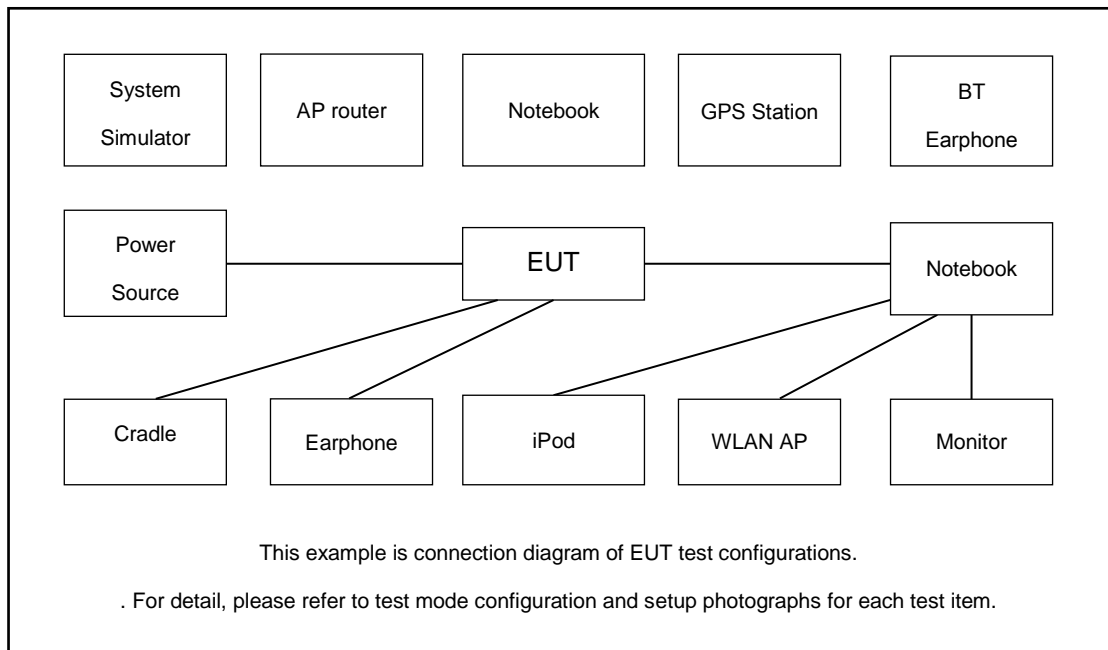
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

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

Test Cases	
AC Conducted Emission	Mode 1 : WLAN (5GHz) Link + Bluetooth LE Tx + LAN Load + USB cable connect to Notebook + USB port connect to USB storage devices + Earphone + Adapter

Ch. #		Band IV : 5725-5850 MHz		
		802.11a	802.11n HT20	802.11n HT40
L	Low	149	149	151
M	Middle	157	157	-
H	High	165	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, 1.8m
2.	iPod	Apple	A1285	DoC	Shielded, 1.0m	N/A
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.2m	N/A
4.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	USB Dongle	Transcend	TS8GJF300	FCC DoC	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, programmed RF utility, “tera term” installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.



2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

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

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

2.7 Maximum Conducted Output Power Measurement

2.7.1 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.

2.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

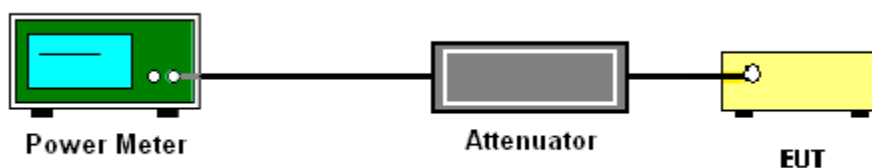
2.7.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

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.

2.7.4 Test Setup



2.7.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



2.8 Unwanted Emissions Measurement

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

2.8.1 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 per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 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.

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



EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
- 27	68.3

(3) KDB789033 D02 v01r03 G)2)c)

- (i) Section 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and 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. However, 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 dBm/MHz peak emission limit.
- (ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). 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 alternative limit.

2.8.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.8.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. 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

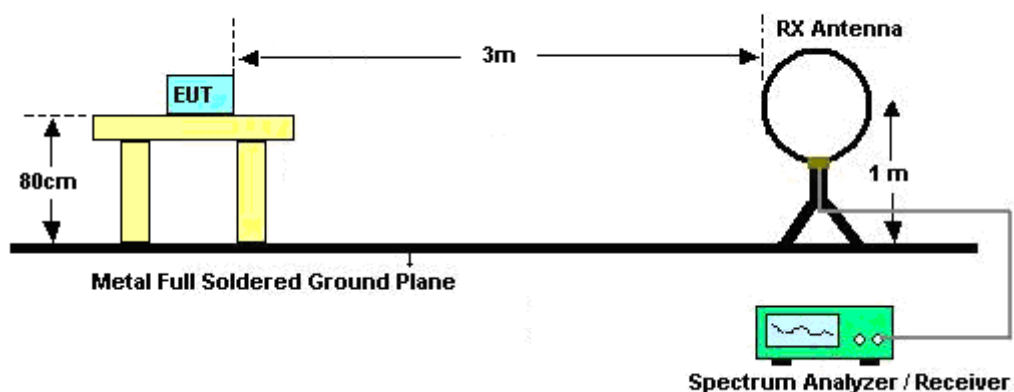
- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

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

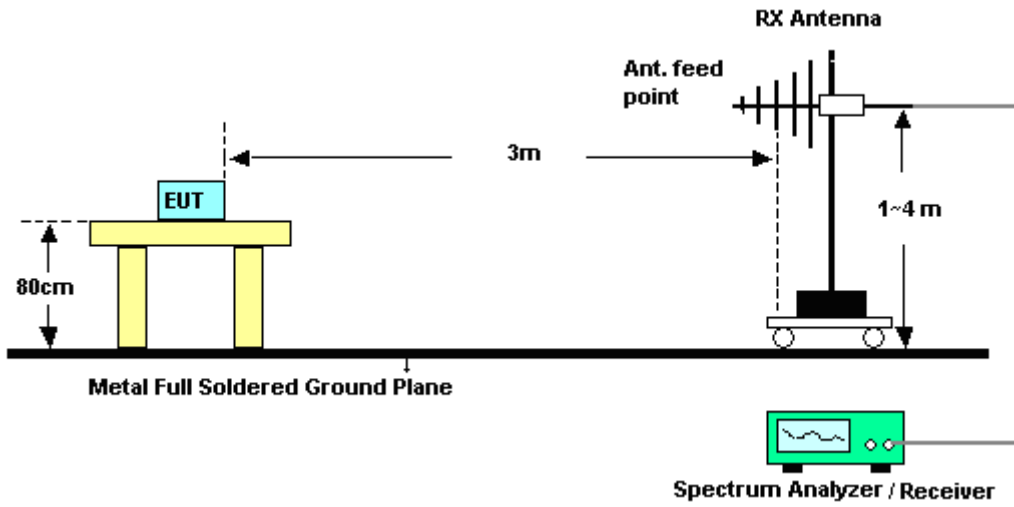
- RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
 3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
 4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
 5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
 6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
 7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

2.8.4 Test Setup

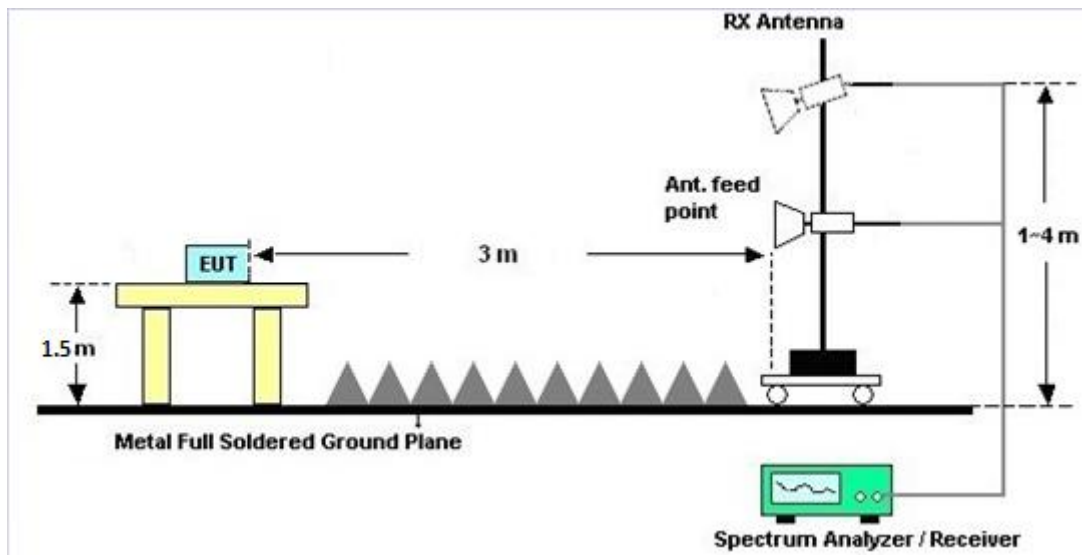
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





2.8.5 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.

2.8.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

2.8.7 Duty Cycle

Please refer to Appendix E.

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

Please refer to Appendix C and D.



2.9 AC Conducted Emission Measurement

2.9.1 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 (dB μ V)	
	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.

2.9.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.9.3 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.

2.9.4 Test Setup



2.9.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

2.10 Frequency Stability Measurement

2.10.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

2.10.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.10.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

2.10.4 Test Setup



2.10.5 Test Result of Frequency Stability

Please refer to Appendix A.



2.11 Automatically Discontinue Transmission

2.11.1 Limit of Automatically Discontinue Transmission

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

2.11.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

2.11.3 Test Result of Automatically Discontinue Transmission

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



2.12 Antenna Requirements

2.12.1 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.

2.12.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

2.12.3 Antenna Gain

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



3 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	0932001	300MHz~40GHz	Sep. 29, 2016	Jul. 13, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 29, 2016	Jul. 13, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	Jul. 13, 2017	Jul. 16, 2017	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40°C ~90°C	Sep. 01, 2016	Jul. 13, 2017	Aug. 31, 2017	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 11, 2016	Jul. 13, 2017	Oct. 10, 2017	Conducted (TH05-HY)
AC Power Source	AC POWER	AFC-500W	F104070011	50Hz~60Hz	Dec 01.2016	Jul. 13, 2017	Nov 30 2017	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Aug. 06, 2017	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Aug. 06, 2017	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	Aug. 06, 2017	Nov. 28, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 06, 2016	Aug. 06, 2017	Dec. 05, 2017	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	May 15, 2017	Jul. 22, 2017 ~ Jul. 26, 2017	May 14, 2019	Radiation (03CH15-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800	2025787	1G~18GHz	Feb. 13, 2017	Jul. 22, 2017 ~ Jul. 26, 2017	Feb. 12, 2018	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917057 6	18GHz ~ 40GHz	Apr. 27, 2017	Jul. 22, 2017 ~ Jul. 26, 2017	Apr. 26, 2018	Radiation (03CH15-HY)
Preamplifier	MITEQ	TTA 1840-35-HG	1887435	18GHz ~ 40GHz	Oct. 13, 2016	Jul. 22, 2017 ~ Jul. 26, 2017	Oct. 12, 2017	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Nov. 09, 2016	Jul. 22, 2017 ~ Jul. 26, 2017	Nov. 08, 2017	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D&00 800N1D01N-0 6	41912&05	30MHz to 1GHz	Jan. 07, 2017	Jul. 22, 2017 ~ Jul. 26, 2017	Jan. 06, 2018	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120D	9120D-1620	1G~18GHz	Sep. 30, 2016	Jul. 22, 2017 ~ Jul. 26, 2017	Sep. 29, 2017	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 24, 2016	Jul. 22, 2017 ~ Jul. 26, 2017	Aug. 23, 2017	Radiation (03CH15-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 23, 2017	Jul. 22, 2017 ~ Jul. 26, 2017	Mar. 22, 2018	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jul. 22, 2017 ~ Jul. 26, 2017	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jul. 22, 2017 ~ Jul. 26, 2017	N/A	Radiation (03CH15-HY)



4 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.70
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.14
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.48
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.12
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Reece Lin	Temperature:	21~25	°C
Test Date:	2017/7/13	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)			FCC Conducted Power Limit (dBm)		DG (dBi)		Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	1	149	5745	0.43	0.43	11.05	11.39		30.00	30.00	4.50	4.50	Pass
11a	6Mbps	1	157	5785	0.43	0.43	16.54	16.39		30.00	30.00	4.50	4.50	Pass
11a	6Mbps	1	165	5825	0.43	0.43	12.95	11.98		30.00	30.00	4.50	4.50	Pass
HT20	MCS0	1	149	5745	0.46	0.44	10.98	11.77		30.00	30.00	4.50	4.50	Pass
HT20	MCS0	1	157	5785	0.46	0.44	16.26	16.04		30.00	30.00	4.50	4.50	Pass
HT20	MCS0	1	165	5825	0.46	0.44	13.13	12.29		30.00	30.00	4.50	4.50	Pass
HT40	MCS0	1	151	5755	0.85	0.85	9.17	8.90		30.00	30.00	4.50	4.50	Pass
HT40	MCS0	1	159	5795	0.85	0.85	12.83	12.71		30.00	30.00	4.50	4.50	Pass



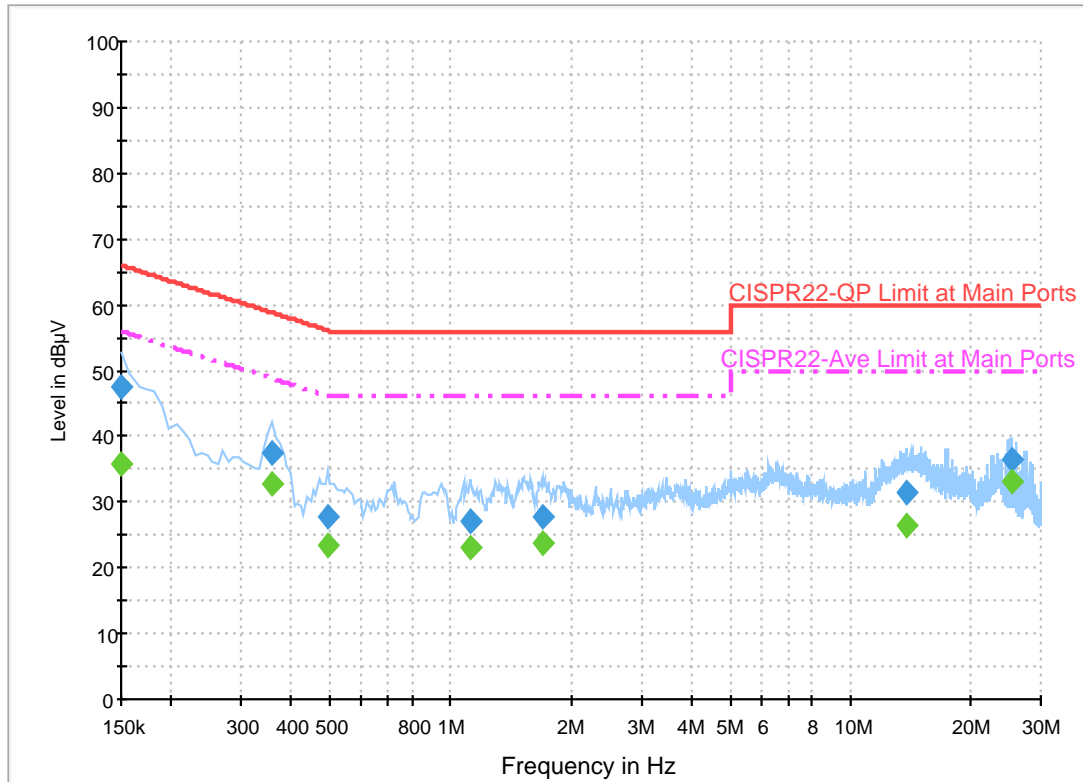
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Kai-Chun Chu	Temperature :	26~27°C
		Relative Humidity :	53~54%

EUT Information

Report NO : 762122
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

ENV216 Auto Test FCC Power Bar - L



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	47.5	Off	L1	19.6	18.5	66.0
0.358000	37.6	Off	L1	19.6	21.2	58.8
0.494000	27.8	Off	L1	19.6	28.3	56.1
1.118000	27.2	Off	L1	19.6	28.8	56.0
1.694000	27.6	Off	L1	19.6	28.4	56.0
13.854000	31.5	Off	L1	20.3	28.5	60.0
25.502000	36.5	Off	L1	20.8	23.5	60.0

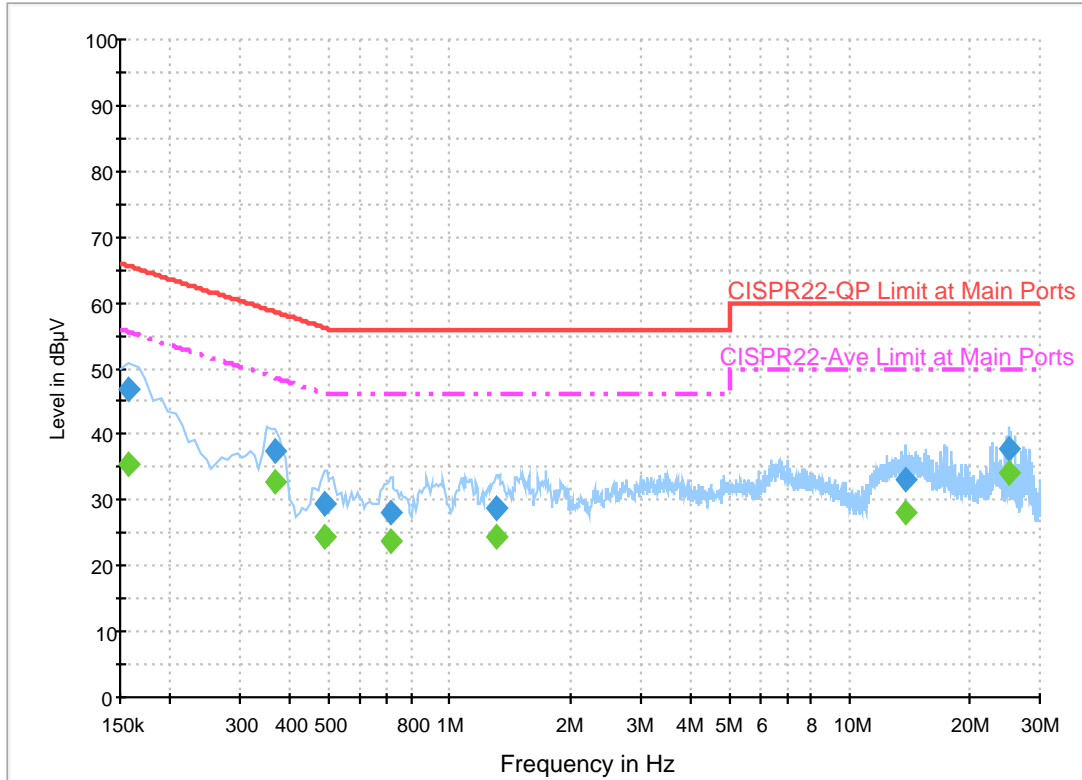
Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	35.7	Off	L1	19.6	20.3	56.0
0.358000	32.9	Off	L1	19.6	15.9	48.8
0.494000	23.3	Off	L1	19.6	22.8	46.1
1.118000	23.1	Off	L1	19.6	22.9	46.0
1.694000	23.6	Off	L1	19.6	22.4	46.0
13.854000	26.3	Off	L1	20.3	23.7	50.0
25.502000	33.1	Off	L1	20.8	16.9	50.0

EUT Information

Report NO : 762122
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Neutral

ENV216 Auto Test FCC Power Bar - N



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	46.7	Off	N	19.5	18.9	65.6
0.366000	37.5	Off	N	19.5	21.1	58.6
0.486000	29.3	Off	N	19.5	26.9	56.2
0.710000	28.2	Off	N	19.5	27.8	56.0
1.310000	28.8	Off	N	19.6	27.2	56.0
13.878000	33.2	Off	N	20.3	26.8	60.0
25.126000	37.7	Off	N	21.0	22.3	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	35.4	Off	N	19.5	20.2	55.6
0.366000	32.9	Off	N	19.5	15.7	48.6
0.486000	24.6	Off	N	19.5	21.6	46.2
0.710000	23.7	Off	N	19.5	22.3	46.0
1.310000	24.4	Off	N	19.6	21.6	46.0
13.878000	27.9	Off	N	20.3	22.1	50.0
25.126000	34.2	Off	N	21.0	15.8	50.0



Appendix C. Radiated Spurious Emission

Test Engineer :	Karl Hou and Watt Tseng	Temperature :	22~24°C
		Relative Humidity :	45~47%

<Antenna 1>

Band 4 - 5725~5850MHz

WIFI 802.11a (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)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11a CH 149 5745MHz		5631.6	46.32	-21.88	68.2	38.24	32.14	6.22	30.28	100	141	P	H	
		5668	47.67	-33.89	81.56	39.49	32.24	6.23	30.29	100	141	P	H	
		5707.4	46.52	-60.75	107.27	38.3	32.31	6.23	30.32	100	141	P	H	
		5724.4	45.27	-75.56	120.83	37	32.35	6.24	30.32	100	141	P	H	
	*	5745	83.64	-	-	75.35	32.38	6.24	30.33	100	141	P	H	
	*	5745	76.31	-	-	68.02	32.38	6.24	30.33	100	141	A	H	
														H
														H
			5604.2	46.5	-21.7	68.2	38.44	32.11	6.21	30.26	400	112	P	V
			5682.4	46.73	-45.48	92.21	38.56	32.24	6.23	30.3	400	112	P	V
			5711.4	47.08	-61.31	108.39	38.86	32.31	6.23	30.32	400	112	P	V
			5720	45.52	-65.28	110.8	37.25	32.35	6.24	30.32	400	112	P	V
	*		5745	78.58	-	-	70.29	32.38	6.24	30.33	400	112	P	V
	*		5745	71.59	-	-	63.3	32.38	6.24	30.33	400	112	A	V
														V
													V	



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5614	46.8	-21.4	68.2	38.74	32.11	6.21	30.26	100	145	P	H
		5653.2	47.63	-22.95	70.58	39.48	32.21	6.22	30.28	100	145	P	H
		5715	45.65	-63.75	109.4	37.43	32.31	6.23	30.32	100	145	P	H
		5724.8	46.32	-75.42	121.74	38.05	32.35	6.24	30.32	100	145	P	H
	*	5785	88.31	-	-	79.97	32.45	6.25	30.36	100	145	P	H
	*	5785	81.17	-	-	72.83	32.45	6.25	30.36	100	145	A	H
		5852.4	47.11	-69.62	116.73	38.61	32.59	6.29	30.38	100	145	P	H
		5863.8	47.16	-61.17	108.33	38.64	32.62	6.3	30.4	100	145	P	H
		5924	47.77	-21.17	68.94	39.11	32.76	6.32	30.42	100	145	P	H
		5929	47.42	-20.78	68.2	38.76	32.76	6.32	30.42	100	145	P	H
													H
													H
802.11a													
CH 157													
5785MHz		5602.4	46.39	-21.81	68.2	38.32	32.11	6.21	30.25	400	110	P	V
		5678.8	47.57	-41.98	89.55	39.39	32.24	6.23	30.29	400	110	P	V
		5711.8	46.25	-62.26	108.51	38.03	32.31	6.23	30.32	400	110	P	V
		5724	47.72	-72.2	119.92	39.45	32.35	6.24	30.32	400	110	P	V
	*	5785	84.15	-	-	75.81	32.45	6.25	30.36	400	110	P	V
	*	5785	77.23	-	-	68.89	32.45	6.25	30.36	400	110	A	V
		5855	46.77	-64.03	110.8	38.24	32.62	6.29	30.38	400	110	P	V
		5864.8	47.87	-60.18	108.05	39.35	32.62	6.3	30.4	400	110	P	V
		5913	48.48	-28.57	77.05	39.86	32.73	6.31	30.42	400	110	P	V
		5946.2	47.38	-20.82	68.2	38.68	32.8	6.33	30.43	400	110	P	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11a CH 165 5825MHz	*	5825	83.87	-	-	75.41	32.56	6.27	30.37	101	141	P	H	
	*	5825	76.74	-	-	68.28	32.56	6.27	30.37	101	141	A	H	
		5850	47.76	-74.44	122.2	39.26	32.59	6.29	30.38	101	141	P	H	
		5872.4	48.53	-57.4	105.93	39.97	32.66	6.3	30.4	101	141	P	H	
		5917.4	47	-26.8	73.8	38.37	32.73	6.32	30.42	101	141	P	H	
		5926.8	48.71	-19.49	68.2	40.05	32.76	6.32	30.42	101	141	P	H	
														H
														H
	*	5825	79.01	-	-	70.55	32.56	6.27	30.37	392	108	P	V	
	*	5825	73.02	-	-	64.56	32.56	6.27	30.37	392	108	A	V	
		5850	45.66	-76.54	122.2	37.16	32.59	6.29	30.38	392	108	P	V	
		5871	46.83	-59.49	106.32	38.27	32.66	6.3	30.4	392	108	P	V	
		5883.2	47.84	-51.27	99.11	39.27	32.66	6.31	30.4	392	108	P	V	
		5936.2	46.65	-21.55	68.2	37.99	32.76	6.33	30.43	392	108	P	V	
														V
														V
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



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

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	47.08	-26.92	74	62.03	39.55	10.32	65.39	100	0	P	H
		17235	50.55	-17.65	68.2	59.73	41.87	12.77	64.27	100	0	P	H
													H
													H
		11490	46.65	-27.35	74	61.6	39.55	10.32	65.39	100	0	P	V
		17235	50.68	-17.52	68.2	59.86	41.87	12.77	64.27	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	47.43	-26.57	74	62.39	39.5	10.37	65.37	100	0	P	H
		17355	50.2	-18	68.2	58.64	42.41	12.82	64.11	100	0	P	H
													H
													H
		11570	46.88	-27.12	74	61.84	39.5	10.37	65.37	100	0	P	V
		17355	49.95	-18.25	68.2	58.39	42.41	12.82	64.11	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	46.46	-27.54	74	61.36	39.5	10.43	65.34	100	0	P	H
		17475	51.55	-16.65	68.2	59.29	42.95	12.87	63.95	100	0	P	H
													H
													H
		11650	47.12	-26.88	74	62.02	39.5	10.43	65.34	100	0	P	V
		17475	51.28	-16.92	68.2	59.02	42.95	12.87	63.95	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
5GHz WIFI 802.11a (LF @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	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)	
5GHz 802.11a LF		78.06	26.31	-13.69	40	44.89	13.18	0.74	32.59	-	-	P	H	
		137.19	28.55	-14.95	43.5	42.54	17.56	0.93	32.56	-	-	P	H	
		264.09	37.45	-8.55	46	48.73	19.78	1.29	32.54	100	0	P	H	
		343.4	34.52	-11.48	46	45.33	20.23	1.44	32.56	-	-	P	H	
		390.3	32.11	-13.89	46	41.49	21.55	1.55	32.56	-	-	P	H	
		861.4	31.09	-14.91	46	31.15	29.39	2.31	31.96	-	-	P	H	
														H
														H
														H
														H
														H
														H
			33.51	36.4	-3.6	40	46.16	22.36	0.46	32.59	100	0	P	V
			46.74	29.09	-10.91	40	45.11	15.94	0.59	32.57	-	-	P	V
			264.09	35.57	-10.43	46	46.85	19.78	1.29	32.54	-	-	P	V
			343.4	30.9	-15.1	46	41.71	20.23	1.44	32.56	-	-	P	V
			390.3	31.55	-14.45	46	40.93	21.55	1.55	32.56	-	-	P	V
			442.1	30.85	-15.15	46	38.69	22.99	1.67	32.59	-	-	P	V
														V
														V
													V	
													V	
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



<Antenna 2>

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11a CH 149 5745MHz		5608	45.96	-22.24	68.2	37.9	32.11	6.21	30.26	249	162	P	H	
		5654.6	46.51	-25.11	71.62	38.37	32.21	6.22	30.29	249	162	P	H	
		5707.8	47.47	-59.92	107.39	39.25	32.31	6.23	30.32	249	162	P	H	
		5720.4	46.13	-65.58	111.71	37.86	32.35	6.24	30.32	249	162	P	H	
	*	5745	85.99	-	-	77.7	32.38	6.24	30.33	249	162	P	H	
	*	5745	78.72	-	-	70.43	32.38	6.24	30.33	249	162	A	H	
														H
														H
			5634.4	46.21	-21.99	68.2	38.09	32.18	6.22	30.28	380	124	P	V
			5695.6	46.76	-55.2	101.96	38.55	32.28	6.23	30.3	380	124	P	V
			5713.4	46.07	-62.88	108.95	37.85	32.31	6.23	30.32	380	124	P	V
			5720.6	46.27	-65.9	112.17	38	32.35	6.24	30.32	380	124	P	V
	*		5745	81.54	-	-	73.25	32.38	6.24	30.33	380	124	P	V
	*		5745	73.31	-	-	65.02	32.38	6.24	30.33	380	124	A	V
														V
													V	



WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		5628.4	46.52	-21.68	68.2	38.44	32.14	6.22	30.28	247	163	P	H
		5680	46.72	-43.72	90.44	38.55	32.24	6.23	30.3	247	163	P	H
		5713.8	46.6	-62.47	109.07	38.38	32.31	6.23	30.32	247	163	P	H
		5724.4	45.96	-74.87	120.83	37.69	32.35	6.24	30.32	247	163	P	H
	*	5785	90.33	-	-	81.99	32.45	6.25	30.36	247	163	P	H
	*	5785	83.66	-	-	75.32	32.45	6.25	30.36	247	163	A	H
		5853.2	46.83	-68.07	114.9	38.33	32.59	6.29	30.38	247	163	P	H
		5858.6	47.24	-62.55	109.79	38.73	32.62	6.29	30.4	247	163	P	H
		5901	47.14	-38.78	85.92	38.55	32.69	6.31	30.41	247	163	P	H
		5925.4	48.94	-19.26	68.2	40.28	32.76	6.32	30.42	247	163	P	H
													H
													H
802.11a													
CH 157													
5785MHz		5642.4	45.95	-22.25	68.2	37.83	32.18	6.22	30.28	393	123	P	V
		5673.6	46.72	-38.98	85.7	38.54	32.24	6.23	30.29	393	123	P	V
		5713.2	45.81	-63.09	108.9	37.59	32.31	6.23	30.32	393	123	P	V
		5720	44.52	-66.28	110.8	36.25	32.35	6.24	30.32	393	123	P	V
	*	5785	84.26	-	-	75.92	32.45	6.25	30.36	393	123	P	V
	*	5785	78.11	-	-	69.77	32.45	6.25	30.36	393	123	A	V
		5852	45.85	-71.79	117.64	37.35	32.59	6.29	30.38	393	123	P	V
		5863.6	46.98	-61.41	108.39	38.46	32.62	6.3	30.4	393	123	P	V
		5912.6	47.23	-30.12	77.35	38.61	32.73	6.31	30.42	393	123	P	V
		5947.8	47.94	-20.26	68.2	39.24	32.8	6.33	30.43	393	123	P	V
													V
													V



WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)	
802.11a CH 165 5825MHz	*	5825	87.08	-	-	78.62	32.56	6.27	30.37	257	164	P	H	
	*	5825	79.28	-	-	70.82	32.56	6.27	30.37	257	164	A	H	
		5851.6	48.03	-70.52	118.55	39.53	32.59	6.29	30.38	257	164	P	H	
		5873	46.44	-59.32	105.76	37.88	32.66	6.3	30.4	257	164	P	H	
		5876.4	47.91	-56.25	104.16	39.35	32.66	6.3	30.4	257	164	P	H	
		5945.2	49.48	-18.72	68.2	40.78	32.8	6.33	30.43	257	164	P	H	
														H
														H
	*	5825	81.34	-	-	72.88	32.56	6.27	30.37	386	125	P	V	
	*	5825	73.56	-	-	65.1	32.56	6.27	30.37	386	125	A	V	
		5854.4	45.79	-66.38	112.17	37.26	32.62	6.29	30.38	386	125	P	V	
		5860.2	47.9	-61.44	109.34	39.39	32.62	6.29	30.4	386	125	P	V	
		5897.2	47.54	-41.19	88.73	38.95	32.69	6.31	30.41	386	125	P	V	
		5946.4	47.6	-20.6	68.2	38.9	32.8	6.33	30.43	386	125	P	V	
														V
														V
														V
	Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	47.31	-26.69	74	62.26	39.55	10.32	65.39	100	0	P	H
		17235	49.88	-18.32	68.2	59.06	41.87	12.77	64.27	100	0	P	H
													H
													H
		11490	47.33	-26.67	74	62.28	39.55	10.32	65.39	100	0	P	V
		17235	50.08	-18.12	68.2	59.26	41.87	12.77	64.27	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	46.17	-27.83	74	61.13	39.5	10.37	65.37	100	0	P	H
		17355	50.55	-17.65	68.2	58.99	42.41	12.82	64.11	100	0	P	H
													H
													H
		11570	46.37	-27.63	74	61.33	39.5	10.37	65.37	100	0	P	V
		17355	50.14	-18.06	68.2	58.58	42.41	12.82	64.11	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	47.16	-26.84	74	62.06	39.5	10.43	65.34	100	0	P	H
		17475	50.61	-17.59	68.2	58.35	42.95	12.87	63.95	100	0	P	H
													H
													H
		11650	47.1	-26.9	74	62	39.5	10.43	65.34	100	0	P	V
		17475	51.08	-17.12	68.2	58.82	42.95	12.87	63.95	100	0	P	V
													V
													V
Remark	3. No other spurious found. 4. 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	Peak or Average
H/V	Horizontal or Vertical



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	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		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

- Level(dBμV/m) =
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable 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)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable 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)
- 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 :	Karl Hou and Watt Tseng	Temperature :	22~24°C
		Relative Humidity :	45~47%

Note symbol

-L	Low channel location
-R	High channel location

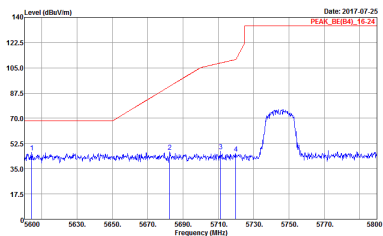
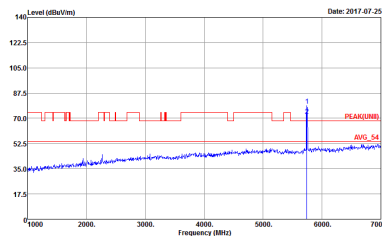


<Antenna 1>

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

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 21</p>	<p>Site : 03CH15-HY Condition : PEAK(LINII) 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 21</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_8E(84)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : Z1</p>	 <p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : Z1</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : Z2</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : Z2</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : Z2</p>	Left blank

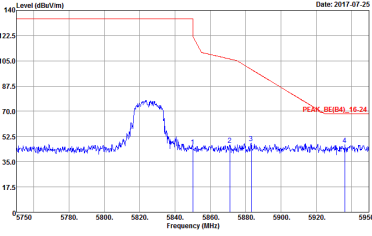
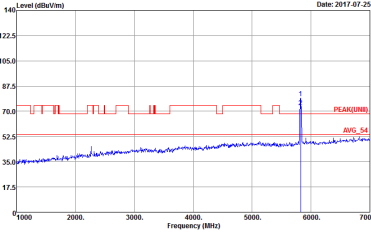


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 22</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 22</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 22</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 23</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 23</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : 23</p>	 <p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : 23</p>



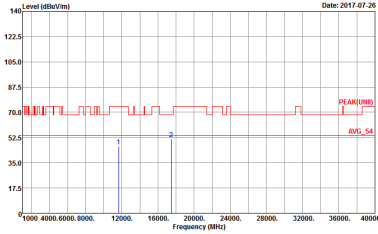
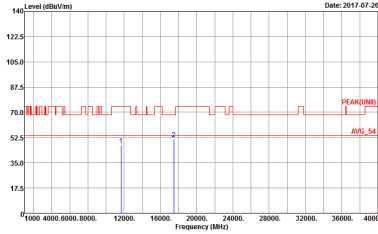
Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 21</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 21</p>



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : ZF</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : ZF</p>



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Vertical
<p>Peak</p> <p>Avg.</p>	 <p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 23</p>	 <p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 23</p>



Emission below 1GHz
5GHz WIFI 802.11a (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11a LF	
1	Horizontal	Vertical
QP / Peak	<p>Site : 03CH15-HY Condition : QP 3m BTL0G_15_41912 HORIZONTAL Detector : Peak Project : 762122 Mode : 24</p>	<p>Site : 03CH15-HY Condition : QP 3m BTL0G_15_41912 VERTICAL Detector : Peak Project : 762122 Mode : 24</p>



<Antenna 2>

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

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
2	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 25</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII)_3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 25</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
2	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : 25</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : 25</p>

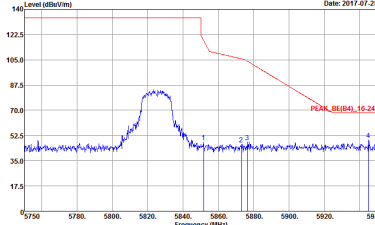
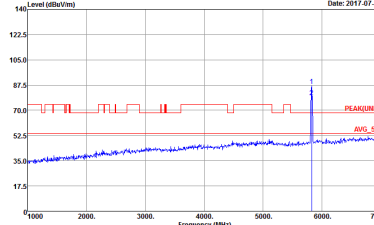


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
2	Horizontal	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 26</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 26</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 26</p>	Left blank

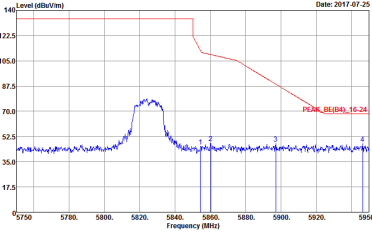
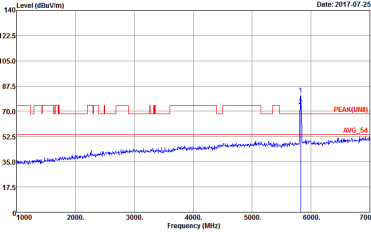


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
2	Vertical	Fundamental
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 26</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 26</p>
Peak	<p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 26</p>	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
2	Horizontal	Fundamental
<p>Peak</p>	 <p>Site : 03CH15-HY Condition : PEAK_BE(B4)_16-24 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : Z7</p>	 <p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : Z7</p>



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
2	Vertical	Fundamental
Peak	 <p>Site : 03CH15-HY Condition : PEAK_BE(84)_16-24 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : 27</p>	 <p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 762122 Mode : 27</p>



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

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
2	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 25</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 9120D_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 25</p>



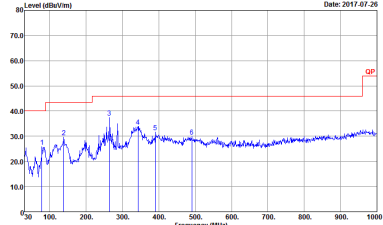
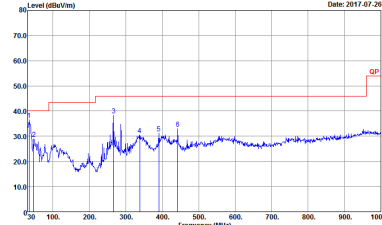
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
2	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 20</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 20</p>



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
2	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 HORIZONTAL Detector : Peak Project : 762122 Mode : 27</p>	<p>Site : 03CH15-HY Condition : PEAK(UNII) 3m 91200_15_1620 VERTICAL Detector : Peak Project : 762122 Mode : 27</p>



Emission below 1GHz
5GHz WIFI 802.11a (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11a LF	
2	Horizontal	Vertical
QP / Peak	 <p>Site : 03CH15-HY Condition : QP 3m BTL0G_15_41912 HORIZONTAL Detector : Peak Project : 762122 Mode : 28</p>	 <p>Site : 03CH15-HY Condition : QP 3m BTL0G_15_41912 VERTICAL Detector : Peak Project : 762122 Mode : 28</p>



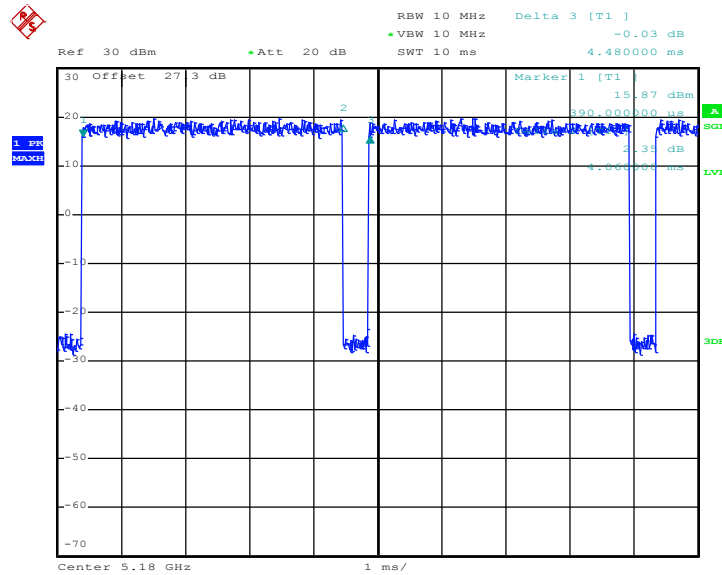
Appendix E. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11a	90.63	4060	0.25	300Hz
1	5GHz 802.11n HT20	89.95	3760	0.27	300Hz
1	5GHz 802.11n HT40	82.14	1840	0.54	1kHz
2	802.11a	90.63	4060	0.25	300Hz
2	5GHz 802.11n HT20	90.43	3780	0.26	300Hz
2	5GHz 802.11n HT40	82.22	1850	0.54	1kHz



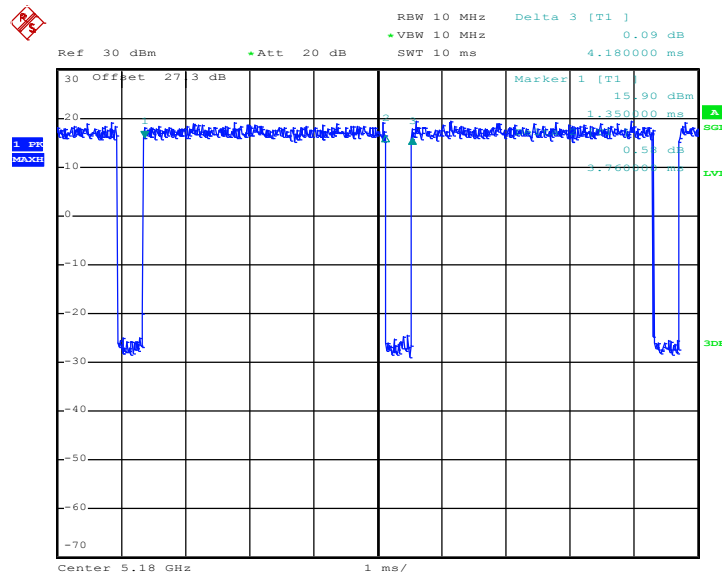
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802.11a



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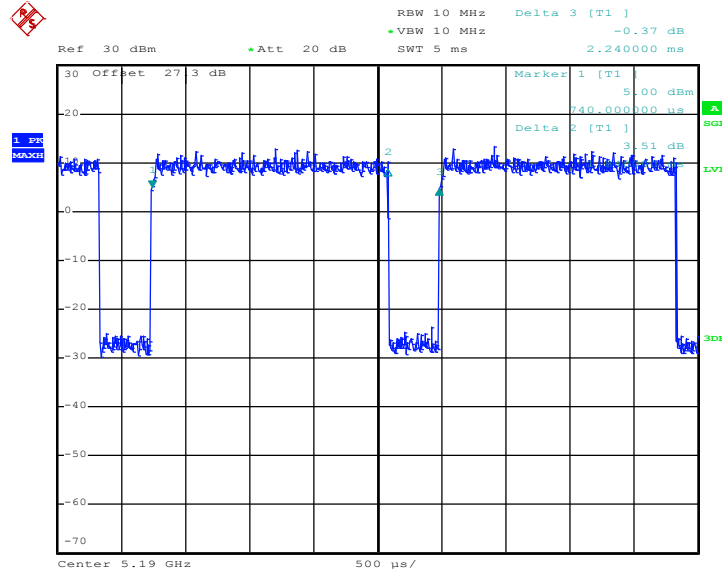
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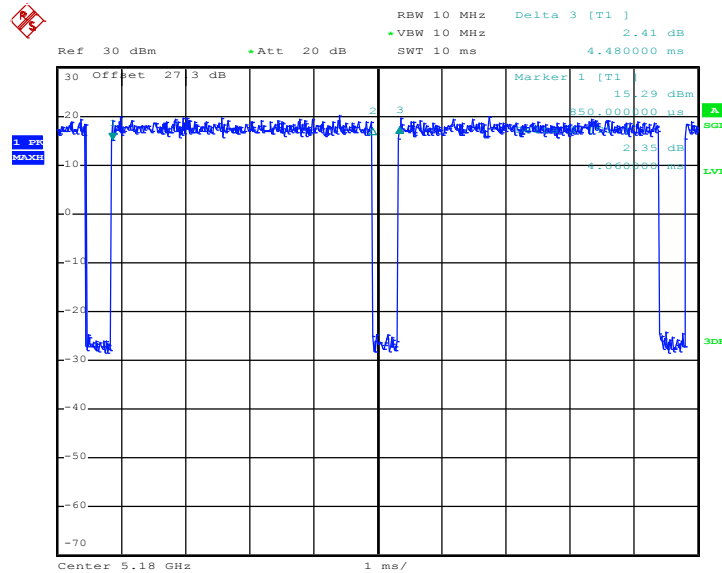
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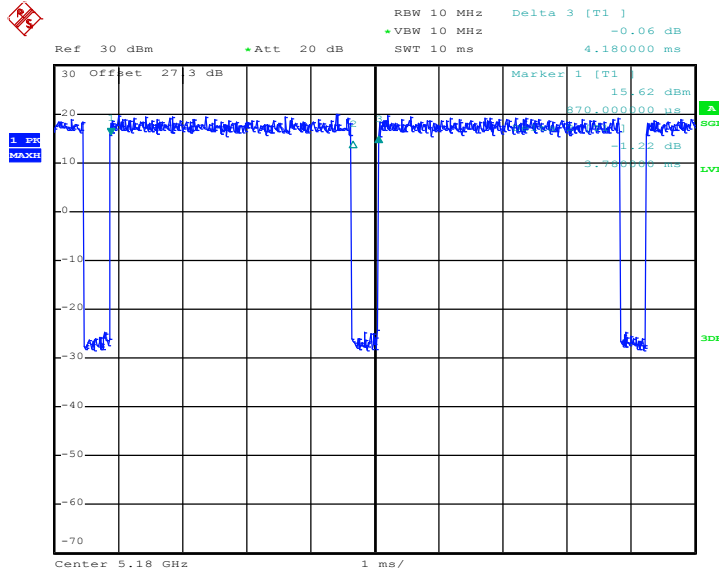
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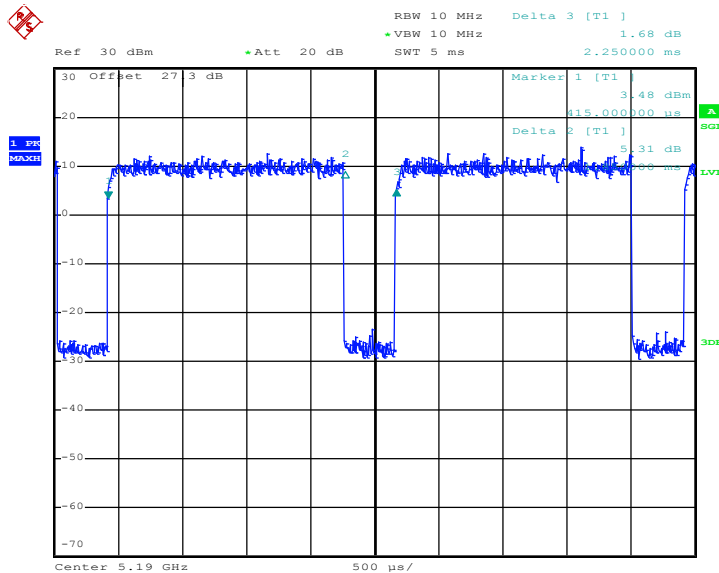


802.11n HT20



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802.11n HT40



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