

FCC RF Test Report

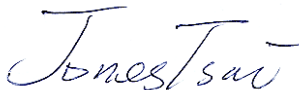
APPLICANT : FUJITSU LIMITED
EQUIPMENT : FUJITSU STYLISTIC Q series
BRAND NAME : FUJITSU
MODEL NAME : Q507
FCC ID : EJE-WB0103
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

This is a partial report. The product was received on Mar. 28, 2017 and testing was completed on Jun. 02, 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



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TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant.....	5
1.2 Manufacturer.....	5
1.3 Product Feature of Equipment Under Test.....	5
1.4 Modification of EUT	5
1.5 Testing Location	6
1.6 Applicable Standards.....	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 Carrier Frequency and Channel	7
2.2 Pre-Scanned RF Power	8
2.3 Test Mode.....	11
2.4 Connection Diagram of Test System.....	12
2.5 Support Unit used in test configuration and system	12
2.6 EUT Operation Test Setup	12
3 TEST RESULT	13
3.1 Unwanted Emissions Measurement	13
3.2 AC Conducted Emission Measurement.....	18
3.3 Antenna Requirements	20
4 LIST OF MEASURING EQUIPMENT	21
5 UNCERTAINTY OF EVALUATION	22
APPENDIX A. AC CONDUCTED EMISSION TEST RESULT	
APPENDIX B. RADIATED SPURIOUS EMISSION	
APPENDIX C. RADIATED SPURIOUS EMISSION PLOTS	
APPENDIX D. DUTY CYCLE PLOTS	
APPENDIX E. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR732858E	Rev. 01	Initial issue of report	Jun. 01, 2017
FR732858E	Rev. 02	Adding AC Conducted Emission test data	Jun. 05, 2017



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 6.74 dB at 34.850 MHz
3.2	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 13.90 dB at 0.150 MHz
3.3	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

FUJITSU LIMITED

1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki, 211-8588 Japan

1.2 Manufacturer

FUJITSU LIMITED

1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki, 211-8588 Japan

1.3 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Integrated WLAN Module	Brand Name: Intel Model Name: 7265D2W
Antenna Type	WLAN: PIFA Antenna Bluetooth: PIFA Antenna

1.4 Modification of EUT

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

1.5 Testing Location

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 (KUNSHAN) INC.	
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958	
Test Site No.	Sporton Site No.	FCC Registration No.
	03CH03-KS	306251

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 v01r04
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- FCC KDB 644545 D03 Guidance for IEEE 802.11ac New Rules v01
- 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).
- 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 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test in the following tables.

SISO <Ant. 1>

5GHz 802.11a mode Output Power (dBm)			
Channel	CH 149	CH 157	CH 165
Frequency (MHz)	5745	5785	5825
Avg. Power	12.95	12.76	12.74

5GHz 802.11n HT20 mode Output Power (dBm)			
Channel	CH 149	CH 157	CH 165
Frequency (MHz)	5745	5785	5825
Avg. Power	12.87	12.77	12.82

5GHz 802.11n HT40 mode Output Power (dBm)		
Channel	CH 151	CH 159
Frequency (MHz)	5755	5795
Avg. Power	12.83	12.93

5GHz 802.11n VHT20 mode Output Power (dBm)			
Channel	CH 149	CH 157	CH 165
Frequency (MHz)	5745	5785	5825
Avg. Power	12.91	12.79	12.81

5GHz 802.11n HT40 mode Output Power (dBm)		
Channel	CH 151	CH 159
Frequency (MHz)	5755	5795
Avg. Power	12.94	12.89

5GHz 802.11n VHT80 mode Output Power (dBm)	
Channel	CH155
Frequency (MHz)	5775
Avg. Power	12.94

**SISO <Ant. 2>**

5GHz 802.11a mode Output Power (dBm)			
Channel	CH 149	CH 157	CH 165
Frequency (MHz)	5745	5785	5825
Avg. Power	12.83	12.51	12.50

5GHz 802.11n HT20 mode Output Power (dBm)			
Channel	CH 149	CH 157	CH 165
Frequency (MHz)	5745	5785	5825
Avg. Power	12.79	12.51	12.81

5GHz 802.11n HT40 mode Output Power (dBm)		
Channel	CH 151	CH 159
Frequency (MHz)	5755	5795
Avg. Power	12.55	12.83

5GHz 802.11n VHT20 mode Output Power (dBm)			
Channel	CH 149	CH 157	CH 165
Frequency (MHz)	5745	5785	5825
Avg. Power	12.72	12.57	12.87

5GHz 802.11n HT40 mode Output Power (dBm)		
Channel	CH 151	CH 159
Frequency (MHz)	5755	5795
Avg. Power	12.83	12.76

5GHz 802.11n VHT80 mode Output Power (dBm)	
Channel	CH155
Frequency (MHz)	5775
Avg. Power	12.69

MIMO <Ant. 1+2>

5GHz 802.11n HT20 mode Output Power (dBm)			
Channel	CH 149	CH 157	CH 165
Frequency (MHz)	5745	5785	5825
Avg. Power	12.66	12.58	12.63

5GHz 802.11n HT40 mode Output Power (dBm)		
Channel	CH 151	CH 159
Frequency (MHz)	5755	5795
Avg. Power	12.96	12.83

5GHz 802.11n VHT20 mode Output Power (dBm)			
Channel	CH 149	CH 157	CH 165
Frequency (MHz)	5745	5785	5825
Avg. Power	12.63	12.51	12.57

5GHz 802.11n HT40 mode Output Power (dBm)		
Channel	CH 151	CH 159
Frequency (MHz)	5755	5795
Avg. Power	12.98	12.90

5GHz 802.11n VHT80 mode Output Power (dBm)	
Channel	CH155
Frequency (MHz)	5775
Avg. Power	12.59

2.3 Test Mode

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

Single Antenna

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

MIMO Antenna

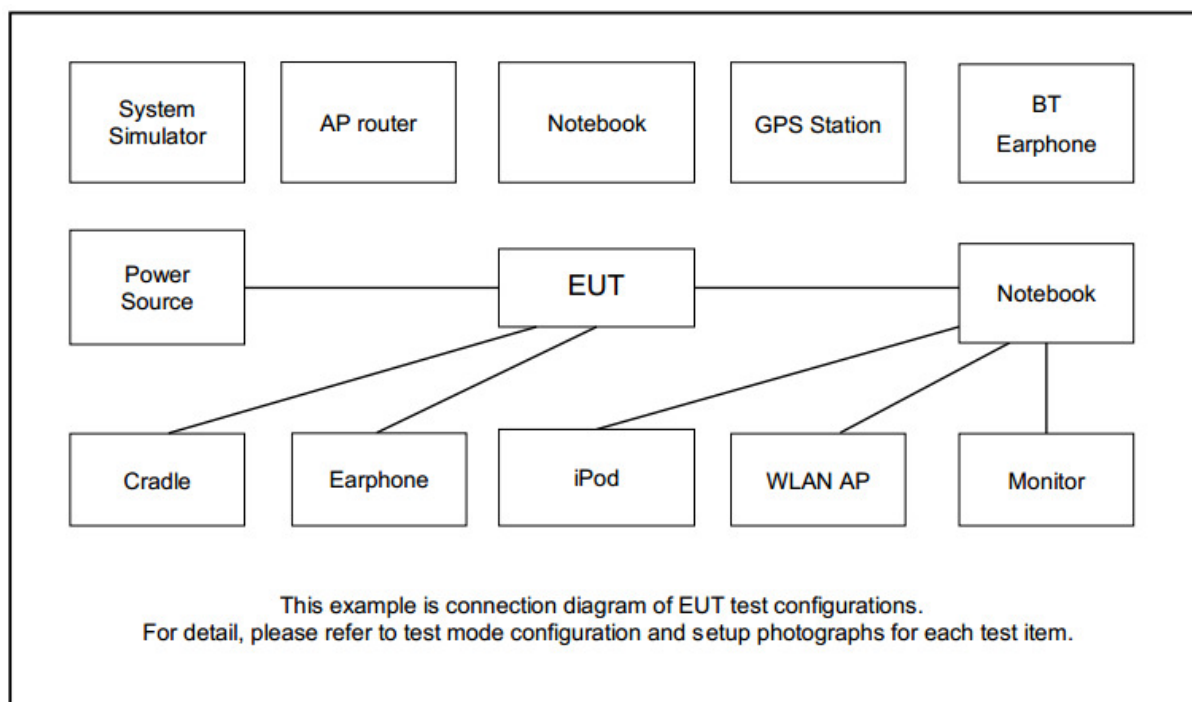
Modulation	Data Rate
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 :WLAN (5GHz) Link + Bluetooth Link + TC + TF
Remark: 1. TC stands for Test Configuration, and consists of Adapter, USB (USB device), SD Card, earphone, and HDMI Cable. 2. TF stands for Test Function, and consists of H-Pattern, MPEG4 and Camera.	

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

Ch. #		Band IV : 5725-5850 MHz		
		802.11ac VHT20	802.11ac VHT40	802.11ac VHT80
L	Low	149	151	-
M	Middle	157	-	155
H	High	165	159	-

2.4 Connection Diagram of Test System



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	D-Link	DIR-865L	KA2IR865LA1	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	P20G	FCC DoC/ Contains FCC ID: QDS-BRCM1051	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
5.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
6.	USB3.0 HD	Lenovo	F310S	FCC DoC	Shielded, 0.5 m	N/A
7.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.6 EUT Operation Test Setup

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

3 Test Result

3.1 Unwanted Emissions Measurement

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

3.1.1 Limit of Unwanted Emissions

- (1) 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.

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

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

(3) KDB789033 D02 v01r04 G)2)c)

- (i) Sections 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).

3.1.2 Measuring Instruments

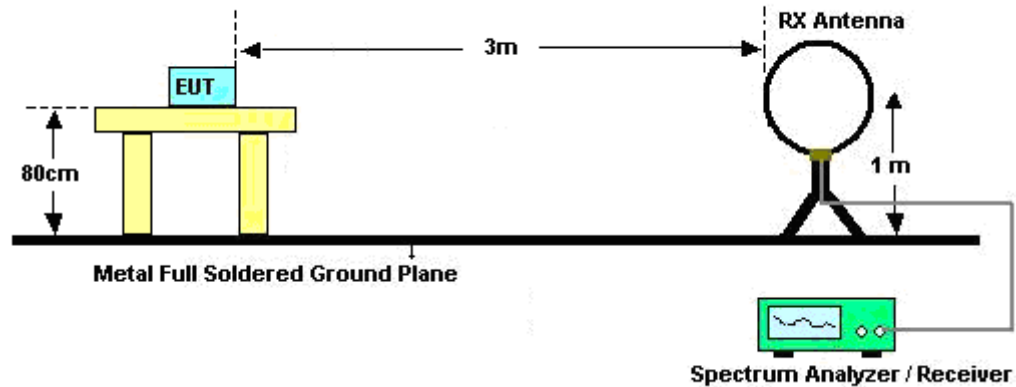
The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

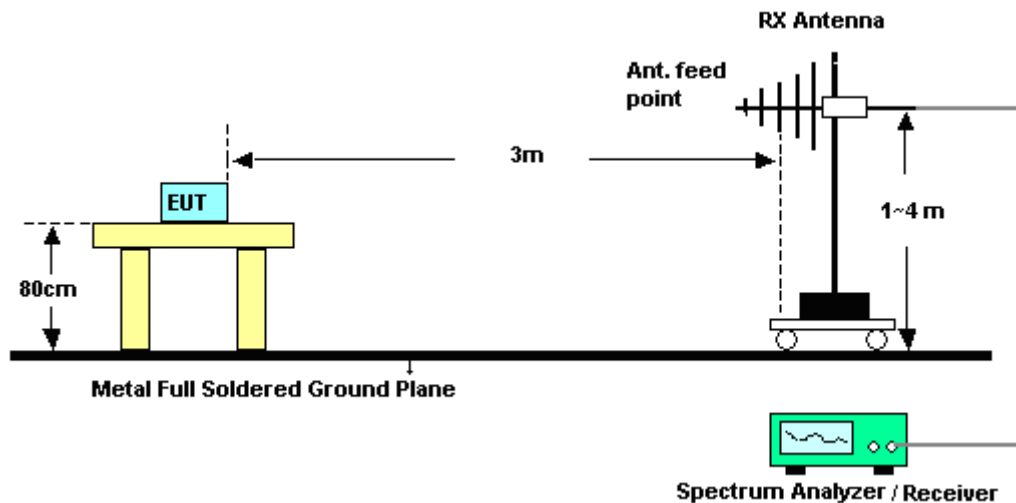
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.1.4 Test Setup

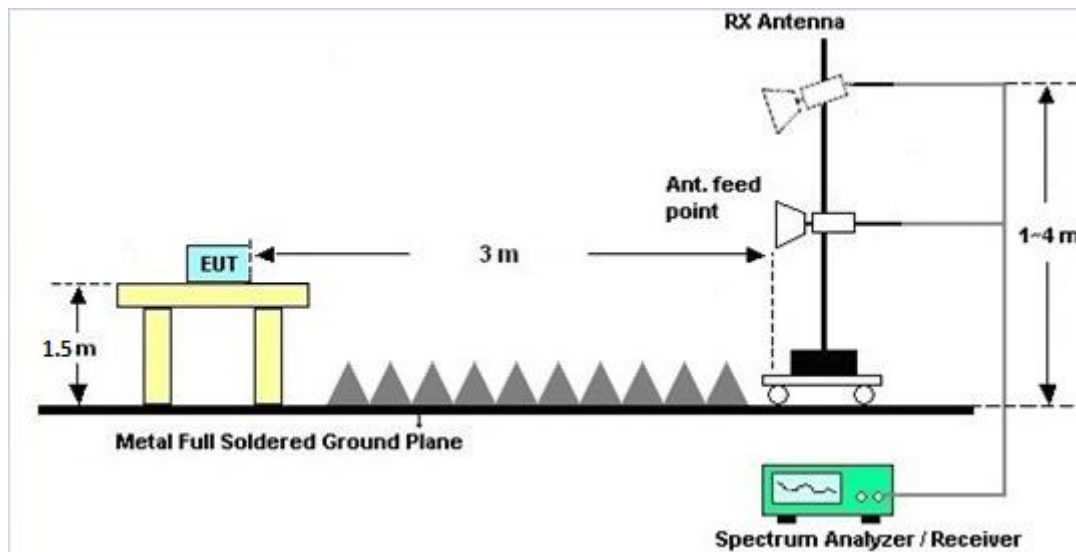
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.1.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

3.1.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.1.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

3.2 AC Conducted Emission Measurement

3.2.1 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.

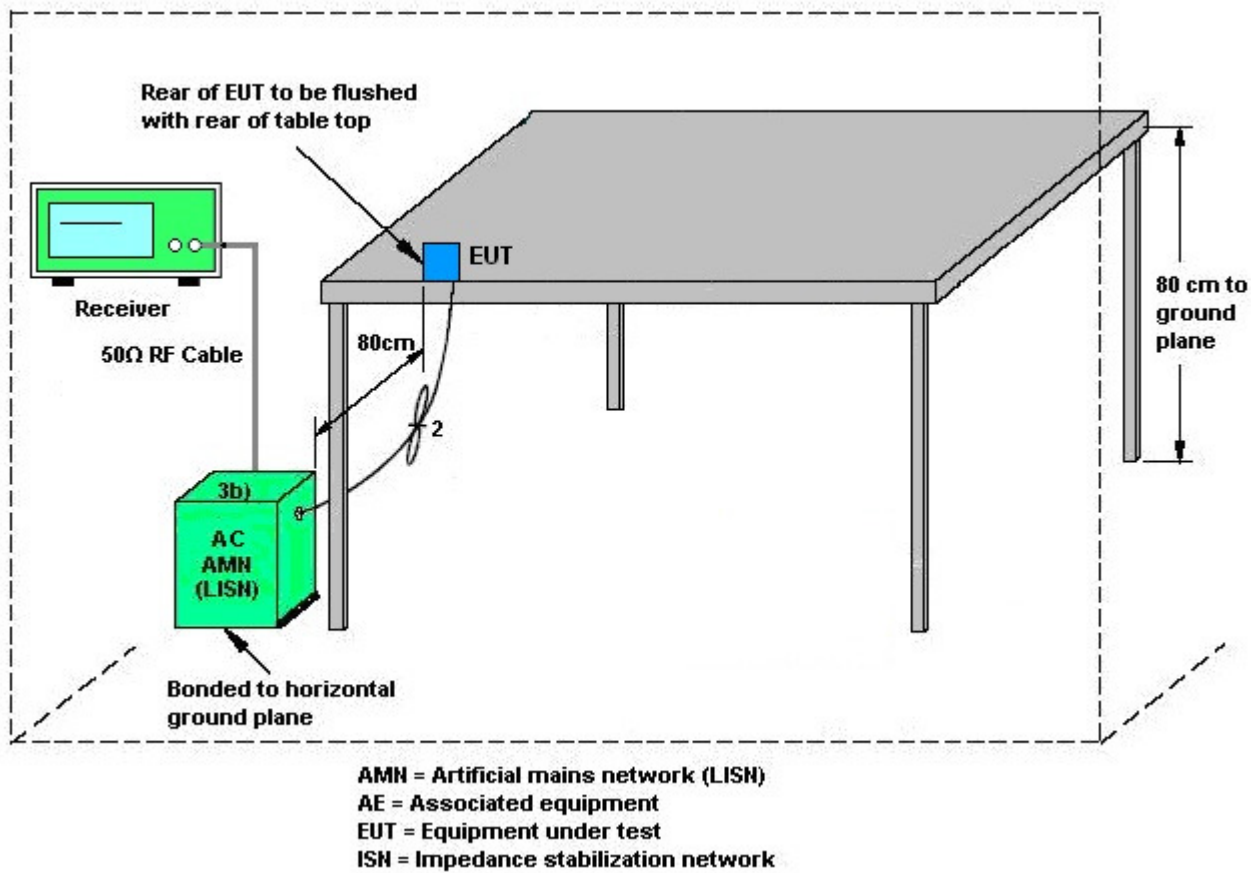
3.2.2 Measuring Instruments

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

3.2.3 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.

3.2.4 Test Setup



3.2.5 Test Result of AC Conducted Emission

Please refer to Appendix A.



3.3 Antenna Requirements

3.3.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.3.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

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

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

For power measurements on IEEE 802.11 devices,

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

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

The EUT supports CDD mode.

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

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

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

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

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant 1	Ant 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	-1.15	-1.19	-1.15	1.84	0.00	0.00

Power limit reduction = Composite gain – 6dBi, (min = 0)

PSD limit reduction = Composite gain + PSD Array gain – 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	0932001	300MHz~40GHz	Sep. 29, 2016	Apr. 29, 2017 ~ May 02 2017	Sep. 28, 2017	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 29, 2016	Apr. 29, 2017 ~ May 02 2017	Sep. 28, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	Apr. 29, 2017 ~ May 02 2017	Jul. 16, 2017	Conducted (TH05-HY)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz;Ma x 30dBm	Oct..22.2016	May 27, 2017 ~ May 30, 2017	Oct..21.2017	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44GHz	Apr. 18, 2017	May 27, 2017 ~ May 30, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 23, 2016	May 27, 2017 ~ May 30, 2017	Nov. 22, 2017	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz-2GHz	Apr. 22, 2017	May 27, 2017 ~ May 30, 2017	Apr. 21, 2018	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 22, 2017	May 27, 2017 ~ May 30, 2017	Apr. 21, 2018	Radiation (03CH03-KS)
SHF-EHF Horn	com-power	AH-840	101070	18GHz ~40GHz	Oct. 19, 2016	May 27, 2017 ~ May 30, 2017	Oct. 18, 2017	Radiation (03CH03-KS)
Amplifier	com-power	PA-103A	161069	1MHz ~1000MHz / 32 dB	Apr. 18, 2017	May 27, 2017 ~ May 30, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-H G	1887435	18~40GHz	Oct. 13, 2016	May 27, 2017 ~ May 30, 2017	Oct. 12, 2017	Radiation (03CH03-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025788	1Ghz-18Ghz	Apr. 18, 2017	May 27, 2017 ~ May 30, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 13, 2016	May 27, 2017 ~ May 30, 2017	Oct. 12, 2017	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 27, 2017 ~ May 30, 2017	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 27, 2017 ~ May 30, 2017	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 27, 2017 ~ May 30, 2017	NCR	Radiation (03CH03-KS)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jun. 02, 2017	N/A	Conduction (CO05-HY)
DC- LISN	Rohde & Schwarz	ESH3-Z6	100485	0.1MHz-200MHz	Jun. 04, 2016	Jun. 02, 2017	Jun. 03, 2017	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Jun. 02, 2017	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	Jun. 02, 2017	Nov. 28, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 06, 2016	Jun. 02, 2017	Dec. 05, 2017	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.7
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.6
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5
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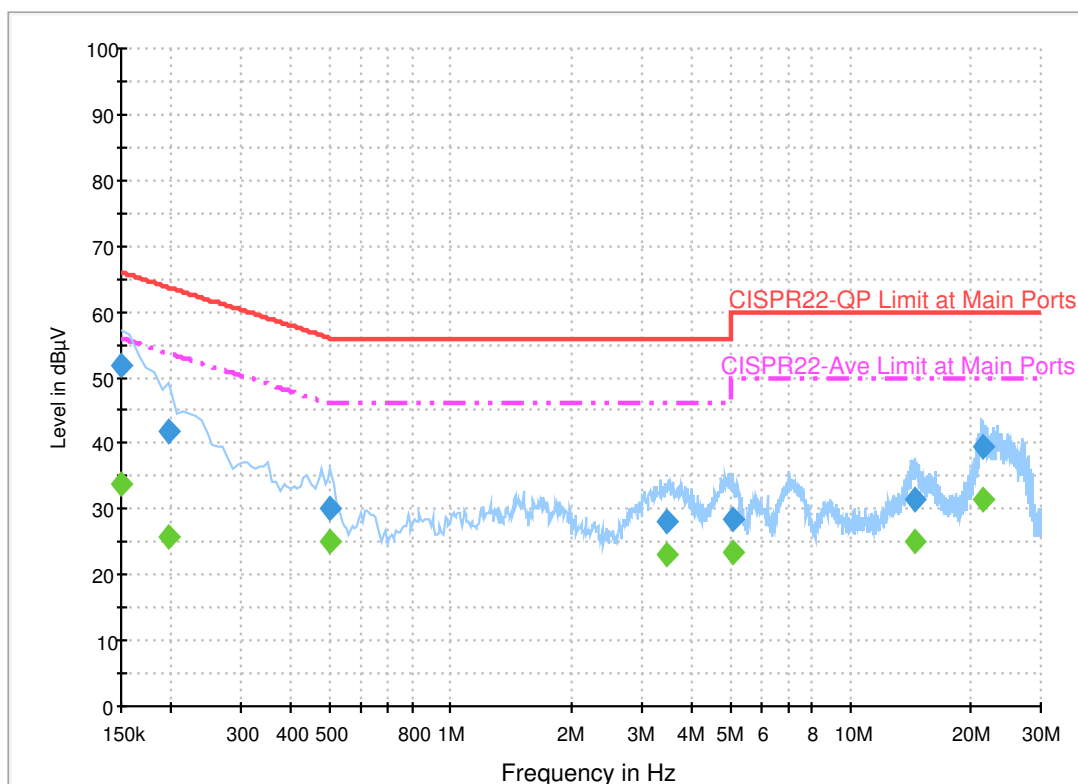
Appendix A. AC Conducted Emission Test Results

Test Engineer :	Marlowe Ho	Temperature :	24~25°C
		Relative Humidity :	58~60%

EUT Information

Report NO : 732858
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	52.0	Off	L1	19.6	14.0	66.0
0.198000	41.7	Off	L1	19.6	22.0	63.7
0.502000	30.2	Off	L1	19.6	25.8	56.0
3.478000	28.0	Off	L1	19.7	28.0	56.0
5.102000	28.4	Off	L1	19.8	31.6	60.0
14.470000	31.4	Off	L1	20.3	28.6	60.0
21.462000	39.4	Off	L1	20.7	20.6	60.0

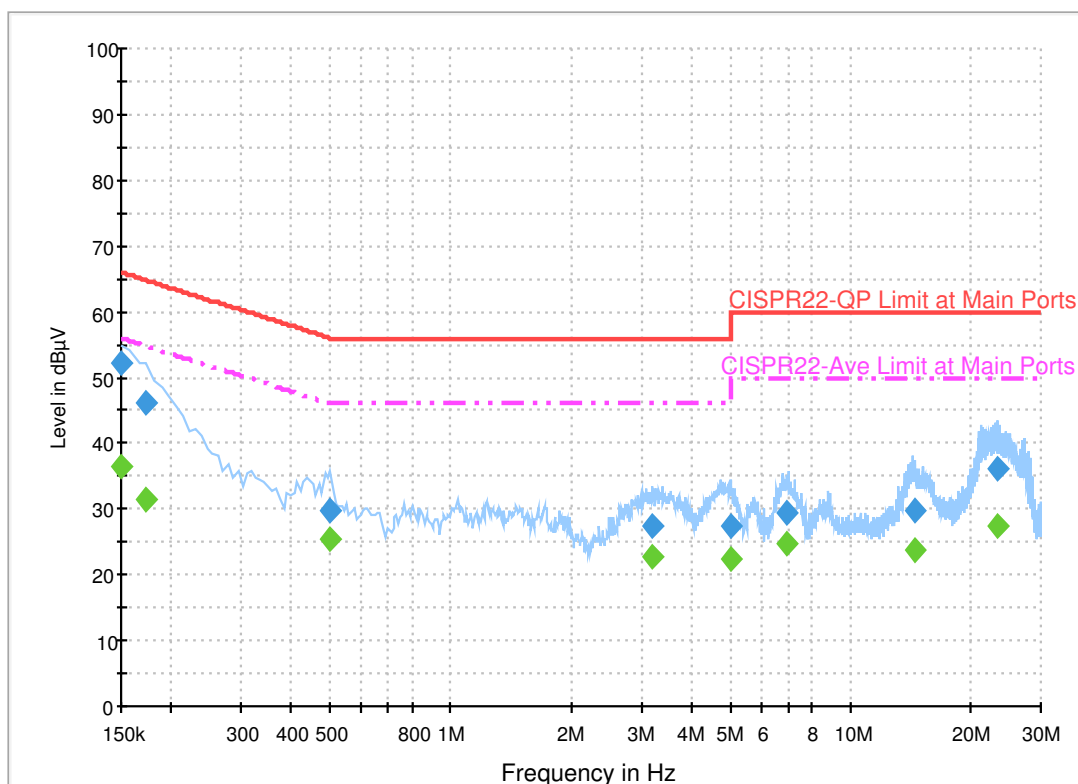
Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	33.7	Off	L1	19.6	22.3	56.0
0.198000	25.7	Off	L1	19.6	28.0	53.7
0.502000	25.0	Off	L1	19.6	21.0	46.0
3.478000	23.2	Off	L1	19.7	22.8	46.0
5.102000	23.5	Off	L1	19.8	26.5	50.0
14.470000	25.2	Off	L1	20.3	24.8	50.0
21.462000	31.3	Off	L1	20.7	18.7	50.0

EUT Information

Report NO : 732858
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)
0.150000	52.1	Off	N	19.5	13.9	66.0
0.174000	46.2	Off	N	19.5	18.6	64.8
0.502000	29.8	Off	N	19.5	26.2	56.0
3.190000	27.6	Off	N	19.6	28.4	56.0
5.038000	27.4	Off	N	19.8	32.6	60.0
6.918000	29.5	Off	N	19.9	30.5	60.0
14.478000	29.8	Off	N	20.4	30.2	60.0
23.294000	36.3	Off	N	20.9	23.7	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	36.5	Off	N	19.5	19.5	56.0
0.174000	31.5	Off	N	19.5	23.3	54.8
0.502000	25.5	Off	N	19.5	20.5	46.0
3.190000	22.7	Off	N	19.6	23.3	46.0
5.038000	22.3	Off	N	19.8	27.7	50.0
6.918000	24.7	Off	N	19.9	25.3	50.0
14.478000	23.9	Off	N	20.4	26.1	50.0
23.294000	27.3	Off	N	20.9	22.7	50.0



Appendix B. Radiated Spurious Emission

Test Engineer :	Genry Long	Temperature :	21~23°C
		Relative Humidity :	41~43%

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (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)
802.11n HT20 CH 149 5745MHz		5606.4	44.8	-23.5	68.3	42.28	30.73	8.1	36.31	301	295	P	H
		5694.4	46.62	-54.55	101.17	43.59	31.07	8.25	36.29	301	295	P	H
		5711.2	48.31	-60.13	108.44	45.12	31.19	8.28	36.28	301	295	P	H
		5724.8	53.67	-68.17	121.84	50.32	31.32	8.31	36.28	301	295	P	H
	*	5748	96.21	-----	-----	92.71	31.44	8.34	36.28	301	295	P	H
	*	5748	89.53	-----	-----	86.03	31.44	8.34	36.28	301	295	A	H
													H
													H
		5610.8	45.04	-23.26	68.3	42.52	30.73	8.1	36.31	302	360	P	V
		5692.8	48.27	-51.72	99.99	45.24	31.07	8.25	36.29	302	360	P	V
		5714.4	49.33	-60	109.33	46.14	31.19	8.28	36.28	302	360	P	V
		5724	52.31	-67.71	120.02	48.96	31.32	8.31	36.28	302	360	P	V
	*	5744	95.49	-----	-----	91.99	31.44	8.34	36.28	302	360	P	V
	*	5744	88.28	-----	-----	84.78	31.44	8.34	36.28	302	360	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)
802.11n HT20 CH 157 5785MHz		5618.8	45.07	-23.23	68.3	42.52	30.72	8.13	36.3	340	268	P	H
		5697.6	45.7	-57.83	103.53	42.67	31.07	8.25	36.29	340	268	P	H
		5702	45.49	-60.37	105.86	42.3	31.19	8.28	36.28	340	268	P	H
		5722	46.08	-69.38	115.46	42.73	31.32	8.31	36.28	340	268	P	H
	*	5780	97.34	-----	-----	93.54	31.68	8.4	36.28	340	268	P	H
	*	5780	89.74	-----	-----	85.94	31.68	8.4	36.28	340	268	A	H
		5851.2	46.21	-73.35	119.56	41.81	32.18	8.49	36.27	340	268	P	H
		5871.2	46.71	-59.65	106.36	42.11	32.35	8.53	36.28	340	268	P	H
		5894.8	46.46	-44.15	90.61	41.79	32.41	8.55	36.29	340	268	P	H
		5973.2	47.07	-21.23	68.3	42.09	32.67	8.65	36.34	340	268	P	H
													H
													H
		5607.6	44.98	-23.32	68.3	42.46	30.73	8.1	36.31	100	8	P	V
		5664.4	44.49	-34.5	78.99	41.77	30.82	8.19	36.29	100	8	P	V
		5714.8	46.5	-62.95	109.45	43.31	31.19	8.28	36.28	100	8	P	V
		5724.8	44.45	-77.39	121.84	41.1	31.32	8.31	36.28	100	8	P	V
	*	5788	89.29	-----	-----	85.33	31.81	8.43	36.28	100	8	P	V
	*	5788	81.95	-----	-----	77.99	31.81	8.43	36.28	100	8	A	V
		5850.8	45.93	-74.55	120.48	41.53	32.18	8.49	36.27	100	8	P	V
		5874.8	45.34	-60.02	105.36	40.74	32.35	8.53	36.28	100	8	P	V
		5900.4	47.08	-39.38	86.46	42.41	32.41	8.55	36.29	100	8	P	V
		5935.6	46.59	-21.71	68.3	41.8	32.51	8.59	36.31	100	8	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)
802.11n HT20 CH 165 5825MHz	*	5822	95.43	-----	-----	91.18	32.05	8.47	36.27	339	299	P	H
	*	5822	87.92	-----	-----	83.67	32.05	8.47	36.27	339	299	A	H
		5850.8	49.85	-70.63	120.48	45.45	32.18	8.49	36.27	339	299	P	H
		5859.2	48.15	-61.57	109.72	43.61	32.3	8.51	36.27	339	299	P	H
		5891.6	47.44	-45.54	92.98	42.77	32.41	8.55	36.29	339	299	P	H
		5998.8	47.34	-20.96	68.3	42.3	32.72	8.67	36.35	339	299	P	H
													H
													H
	*	5824	92.72	-----	-----	88.47	32.05	8.47	36.27	300	360	P	V
	*	5824	85.52	-----	-----	81.27	32.05	8.47	36.27	300	360	A	V
		5854.4	47.11	-65.16	112.27	42.57	32.3	8.51	36.27	300	360	P	V
		5855.6	48.14	-62.59	110.73	43.6	32.3	8.51	36.27	300	360	P	V
		5898	47.6	-40.64	88.24	42.93	32.41	8.55	36.29	300	360	P	V
		5994.4	47.17	-21.13	68.3	42.13	32.72	8.67	36.35	300	360	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)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		11490	41.21	-32.79	74	55.41	38.58	12.57	65.35	100	0	P	H
													H
													H
													H
		11490	41.95	-32.05	74	56.15	38.58	12.57	65.35	100	360	P	V
													V
													V
													V
802.11n HT20 CH 157 5785MHz		11570	42.11	-31.89	74	56.49	38.43	12.63	65.44	100	360	P	H
													H
													H
													H
		11570	41.82	-32.18	74	56.2	38.43	12.63	65.44	100	0	P	V
													V
													V
													V
802.11n HT20 CH 165 5825MHz		11650	41.4	-32.6	74	56	38.27	12.67	65.54	100	0	P	H
													H
													H
													H
		11650	41.95	-32.05	74	56.55	38.27	12.67	65.54	300	360	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 802.11n 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)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 151 5755MHz		5605.2	44.4	-23.9	68.3	41.88	30.73	8.1	36.31	100	243	P	H
		5691.6	45.72	-53.39	99.11	42.69	31.07	8.25	36.29	100	243	P	H
		5716.8	47.59	-62.42	110.01	44.4	31.19	8.28	36.28	100	243	P	H
		5723.6	50.2	-68.91	119.11	46.85	31.32	8.31	36.28	100	243	P	H
	*	5764	90.79	-----	-----	87.14	31.56	8.37	36.28	100	243	P	H
	*	5764	82.37	-----	-----	78.72	31.56	8.37	36.28	100	243	A	H
		5854	45.43	-67.75	113.18	40.89	32.3	8.51	36.27	100	243	P	H
		5866.8	46.83	-60.76	107.59	42.29	32.3	8.51	36.27	100	243	P	H
		5906.4	47.35	-34.68	82.03	42.62	32.46	8.57	36.3	100	243	P	H
		5984	46.78	-21.52	68.3	41.8	32.67	8.65	36.34	100	243	P	H
													H
													H
		5607.6	45.86	-22.44	68.3	43.34	30.73	8.1	36.31	100	280	P	V
		5698.8	47.71	-56.71	104.42	44.68	31.07	8.25	36.29	100	280	P	V
		5718	50.95	-59.39	110.34	47.6	31.32	8.31	36.28	100	280	P	V
		5721.6	50.59	-63.96	114.55	47.24	31.32	8.31	36.28	100	280	P	V
	*	5752	92.13	-----	-----	88.48	31.56	8.37	36.28	100	280	P	V
	*	5752	84.86	-----	-----	81.21	31.56	8.37	36.28	100	280	A	V
		5850.01	45.74	-76.54	122.28	41.34	32.18	8.49	36.27	100	280	P	V
		5858.4	46.82	-63.13	109.95	42.28	32.3	8.51	36.27	100	280	P	V
		5898	47.61	-40.63	88.24	42.94	32.41	8.55	36.29	100	280	P	V
		5956.4	46.34	-21.96	68.3	41.42	32.62	8.63	36.33	100	280	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)
802.11n HT40 CH 159 5795MHz		5648	44.98	-23.32	68.3	42.41	30.7	8.16	36.29	100	243	P	H
		5687.2	45.03	-50.83	95.86	42	31.07	8.25	36.29	100	243	P	H
		5718.8	45.86	-64.7	110.56	42.51	31.32	8.31	36.28	100	243	P	H
		5723.2	45.55	-72.65	118.2	42.2	31.32	8.31	36.28	100	243	P	H
	*	5790	91.35	-----	-----	87.39	31.81	8.43	36.28	100	243	P	H
	*	5790	84.07	-----	-----	80.11	31.81	8.43	36.28	100	243	A	H
		5851.2	46.87	-72.69	119.56	42.47	32.18	8.49	36.27	100	243	P	H
		5866.4	46.53	-61.18	107.71	41.99	32.3	8.51	36.27	100	243	P	H
		5878	46.66	-56.41	103.07	42.06	32.35	8.53	36.28	100	243	P	H
		5950.4	46.72	-21.58	68.3	41.86	32.57	8.61	36.32	100	243	P	H
													H
													H
		5630.8	45.14	-23.16	68.3	42.59	30.72	8.13	36.3	100	256	P	V
		5695.2	45.03	-56.73	101.76	42	31.07	8.25	36.29	100	256	P	V
		5706.4	45.49	-61.6	107.09	42.3	31.19	8.28	36.28	100	256	P	V
		5723.6	46.63	-72.48	119.11	43.28	31.32	8.31	36.28	100	256	P	V
	*	5786	92.28	-----	-----	88.32	31.81	8.43	36.28	100	256	P	V
	*	5786	85.04	-----	-----	81.08	31.81	8.43	36.28	100	256	A	V
		5854.8	46.83	-64.53	111.36	42.29	32.3	8.51	36.27	100	256	P	V
		5856	47.16	-63.46	110.62	42.62	32.3	8.51	36.27	100	256	P	V
		5882.4	46.49	-53.31	99.8	41.89	32.35	8.53	36.28	100	256	P	V
		5934.4	46.63	-21.67	68.3	41.84	32.51	8.59	36.31	100	256	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)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		5639.2	50.65	-17.65	68.3	48.08	30.7	8.16	36.29	299	111	P	H
		5700	58.82	-46.48	105.3	55.79	31.07	8.25	36.29	299	111	P	H
		5705.2	60.23	-46.53	106.76	57.04	31.19	8.28	36.28	299	111	P	H
		5720	58.58	-52.32	110.9	55.23	31.32	8.31	36.28	299	111	P	H
	*	5760	92.59	-----	-----	88.94	31.56	8.37	36.28	299	111	P	H
	*	5760	87.2	-----	-----	83.55	31.56	8.37	36.28	299	111	A	H
		5852.8	60.83	-55.09	115.92	56.43	32.18	8.49	36.27	299	111	P	H
		5858	60.05	-50.01	110.06	55.51	32.3	8.51	36.27	299	111	P	H
		5882	48.32	-51.78	100.1	43.72	32.35	8.53	36.28	299	111	P	H
		5953.6	46.29	-22.01	68.3	41.43	32.57	8.61	36.32	299	111	P	H
													H
													H
		5634	48.51	-19.79	68.3	45.94	30.7	8.16	36.29	100	270	P	V
		5697.2	55.02	-48.22	103.24	51.99	31.07	8.25	36.29	100	270	P	V
		5708.8	57.48	-50.29	107.77	54.29	31.19	8.28	36.28	100	270	P	V
		5725	57	-65.3	122.3	53.65	31.32	8.31	36.28	100	270	P	V
	*	5768	89.85	-----	-----	86.2	31.56	8.37	36.28	100	270	P	V
	*	5768	84.9	-----	-----	81.25	31.56	8.37	36.28	100	270	A	V
		5852	54.74	-63	117.74	50.34	32.18	8.49	36.27	100	270	P	V
		5858.4	57.21	-52.74	109.95	52.67	32.3	8.51	36.27	100	270	P	V
		5878	47.19	-55.88	103.07	42.59	32.35	8.53	36.28	100	270	P	V
		5959.6	46.26	-22.04	68.3	41.34	32.62	8.63	36.33	100	270	P	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	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

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. 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)

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) + 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)

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”.



Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 149 5745MHz		5604.8	45.3	-23	68.3	42.78	30.73	8.1	36.31	360	109	P	H
		5697.6	45.74	-57.79	103.53	42.71	31.07	8.25	36.29	360	109	P	H
		5719.99	48.95	-61.95	110.9	45.6	31.32	8.31	36.28	360	109	P	H
		5721.2	54.16	-59.48	113.64	50.81	31.32	8.31	36.28	360	109	P	H
	*	5742	97.06	-----	-----	93.56	31.44	8.34	36.28	360	109	P	H
	*	5742	89.13	-----	-----	85.63	31.44	8.34	36.28	360	109	A	H
													H
													H
		5614	46.35	-21.95	68.3	43.83	30.73	8.1	36.31	302	153	P	V
		5698	45.9	-57.93	103.83	42.87	31.07	8.25	36.29	302	153	P	V
		5719.99	51.55	-59.35	110.9	48.2	31.32	8.31	36.28	302	153	P	V
		5723.2	49.88	-68.32	118.2	46.53	31.32	8.31	36.28	302	153	P	V
	*	5740	96.46	-----	-----	92.96	31.44	8.34	36.28	302	153	P	V
	*	5740	88.93	-----	-----	85.43	31.44	8.34	36.28	302	153	A	V
													V
													V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 157 5785MHz		5616.4	45.08	-23.22	68.3	42.53	30.72	8.13	36.3	301	116	P	H
		5693.6	45.65	-54.93	100.58	42.62	31.07	8.25	36.29	301	116	P	H
		5702.8	45.49	-60.6	106.09	42.3	31.19	8.28	36.28	301	116	P	H
		5722	45.58	-69.88	115.46	42.23	31.32	8.31	36.28	301	116	P	H
	*	5784	95.89	-----	-----	92.09	31.68	8.4	36.28	301	116	P	H
	*	5784	88.09	-----	-----	84.29	31.68	8.4	36.28	301	116	A	H
		5851.2	47.92	-71.64	119.56	43.52	32.18	8.49	36.27	301	116	P	H
		5872	47	-59.14	106.14	42.4	32.35	8.53	36.28	301	116	P	H
		5902.4	48.29	-36.7	84.99	43.62	32.41	8.55	36.29	301	116	P	H
		5946	48.83	-19.47	68.3	43.97	32.57	8.61	36.32	301	116	P	H
													H
													H
		5624	45.38	-22.92	68.3	42.83	30.72	8.13	36.3	300	150	P	V
		5685.2	45.47	-48.91	94.38	42.44	31.07	8.25	36.29	300	150	P	V
		5700	44.91	-60.39	105.3	41.88	31.07	8.25	36.29	300	150	P	V
		5722.4	45.81	-70.56	116.37	42.46	31.32	8.31	36.28	300	150	P	V
	*	5788	97.09	-----	-----	93.13	31.81	8.43	36.28	300	150	P	V
	*	5788	88.36	-----	-----	84.4	31.81	8.43	36.28	300	150	A	V
		5854	45.82	-67.36	113.18	41.28	32.3	8.51	36.27	300	150	P	V
		5873.6	47.63	-58.06	105.69	43.03	32.35	8.53	36.28	300	150	P	V
		5922.8	47.36	-22.56	69.92	42.57	32.51	8.59	36.31	300	150	P	V
		5927.6	46.68	-21.62	68.3	41.89	32.51	8.59	36.31	300	150	P	V
													V
													V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 165 5825MHz	*	5822	97.99	-----	-----	93.74	32.05	8.47	36.27	305	112	P	H
	*	5822	89.89	-----	-----	85.64	32.05	8.47	36.27	305	112	A	H
		5851.2	51.04	-68.52	119.56	46.64	32.18	8.49	36.27	305	112	P	H
		5857.2	48.68	-61.6	110.28	44.14	32.3	8.51	36.27	305	112	P	H
		5891.2	48.29	-44.99	93.28	43.62	32.41	8.55	36.29	305	112	P	H
		5963.2	48.13	-20.17	68.3	43.21	32.62	8.63	36.33	305	112	P	H
													H
													H
	*	5830	96.73	-----	-----	92.48	32.05	8.47	36.27	314	154	P	V
	*	5830	89.08	-----	-----	84.83	32.05	8.47	36.27	314	154	A	V
		5851.2	51.3	-68.26	119.56	46.9	32.18	8.49	36.27	314	154	P	V
		5868.4	47.57	-59.58	107.15	43.03	32.3	8.51	36.27	314	154	P	V
		5886	47.95	-49.18	97.13	43.35	32.35	8.53	36.28	314	154	P	V
		5979.6	48.55	-19.75	68.3	43.57	32.67	8.65	36.34	314	154	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)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		11490	39.34	-34.66	74	53.54	38.58	12.57	65.35	100	0	P	H
													H
													H
													H
		11490	39.4	-34.6	74	53.6	38.58	12.57	65.35	100	360	P	V
													V
													V
													V
802.11n HT20 CH 157 5785MHz		11570	39.88	-34.12	74	54.26	38.43	12.63	65.44	100	0	P	H
													H
													H
													H
		11570	41.25	-32.75	74	55.63	38.43	12.63	65.44	100	360	P	V
													V
													V
													V
802.11n HT20 CH 165 5825MHz		11650	40.26	-33.74	74	54.86	38.27	12.67	65.54	100	0	P	H
													H
													H
													H
		11650	40.73	-33.27	74	55.33	38.27	12.67	65.54	100	360	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 802.11n 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)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 151 5755MHz		5647.6	44.98	-23.32	68.3	42.41	30.7	8.16	36.29	283	110	P	H
		5700	48.93	-56.37	105.3	45.9	31.07	8.25	36.29	283	110	P	H
		5710.8	52.65	-55.68	108.33	49.46	31.19	8.28	36.28	283	110	P	H
		5724.8	52.35	-69.49	121.84	49	31.32	8.31	36.28	283	110	P	H
	*	5758	94.31	-----	-----	90.66	31.56	8.37	36.28	283	110	P	H
	*	5758	87.1	-----	-----	83.45	31.56	8.37	36.28	283	110	A	H
		5852.4	46.87	-69.96	116.83	42.47	32.18	8.49	36.27	283	110	P	H
		5870	46.8	-59.9	106.7	42.26	32.3	8.51	36.27	283	110	P	H
		5883.2	47.64	-51.57	99.21	43.04	32.35	8.53	36.28	283	110	P	H
		5925.2	46.49	-21.81	68.3	41.7	32.51	8.59	36.31	283	110	P	H
													H
													H
		5600	45.4	-22.9	68.3	42.88	30.73	8.1	36.31	100	264	P	V
		5699.6	47.25	-57.76	105.01	44.22	31.07	8.25	36.29	100	264	P	V
		5713.2	49.51	-59.49	109	46.32	31.19	8.28	36.28	100	264	P	V
		5724.4	50.73	-70.2	120.93	47.38	31.32	8.31	36.28	100	264	P	V
	*	5762	91.55	-----	-----	87.9	31.56	8.37	36.28	100	264	P	V
	*	5762	84.26	-----	-----	80.61	31.56	8.37	36.28	100	264	A	V
		5850.8	46.46	-74.02	120.48	42.06	32.18	8.49	36.27	100	264	P	V
		5860	46.25	-63.25	109.5	41.71	32.3	8.51	36.27	100	264	P	V
		5900.8	46.36	-39.81	86.17	41.69	32.41	8.55	36.29	100	264	P	V
		5956.8	46.92	-21.38	68.3	42	32.62	8.63	36.33	100	264	P	V
													V
													V



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 159 5795MHz		5630.4	45.28	-23.02	68.3	42.73	30.72	8.13	36.3	286	109	P	H
		5683.6	45.34	-47.86	93.2	42.31	31.07	8.25	36.29	286	109	P	H
		5712.4	45.98	-62.79	108.77	42.79	31.19	8.28	36.28	286	109	P	H
		5724	46.8	-73.22	120.02	43.45	31.32	8.31	36.28	286	109	P	H
	*	5796	94.79	-----	-----	90.83	31.81	8.43	36.28	286	109	P	H
	*	5796	87.01	-----	-----	83.05	31.81	8.43	36.28	286	109	A	H
		5851.6	46.65	-72	118.65	42.25	32.18	8.49	36.27	286	109	P	H
		5873.2	46.99	-58.81	105.8	42.39	32.35	8.53	36.28	286	109	P	H
		5894	48.02	-43.18	91.2	43.35	32.41	8.55	36.29	286	109	P	H
		5934.8	46.39	-21.91	68.3	41.6	32.51	8.59	36.31	286	109	P	H
													H
													H
		5625.6	45.21	-23.09	68.3	42.66	30.72	8.13	36.3	100	264	P	V
		5676.8	45	-43.17	88.17	42.12	30.95	8.22	36.29	100	264	P	V
		5712.4	45.67	-63.1	108.77	42.48	31.19	8.28	36.28	100	264	P	V
		5724	44.75	-75.27	120.02	41.4	31.32	8.31	36.28	100	264	P	V
	*	5800	91.89	-----	-----	87.93	31.81	8.43	36.28	100	264	P	V
	*	5800	83.86	-----	-----	79.9	31.81	8.43	36.28	100	264	A	V
		5850.8	47.62	-72.86	120.48	43.22	32.18	8.49	36.27	100	264	P	V
		5861.2	46.07	-63.09	109.16	41.53	32.3	8.51	36.27	100	264	P	V
		5897.6	46.34	-42.2	88.54	41.67	32.41	8.55	36.29	100	264	P	V
		5956.8	46.84	-21.46	68.3	41.92	32.62	8.63	36.33	100	264	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)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		5631.6	51.83	-16.47	68.3	49.28	30.72	8.13	36.3	400	108	P	H
		5691.2	56.6	-42.21	98.81	53.57	31.07	8.25	36.29	400	108	P	H
		5718.8	56.45	-54.11	110.56	53.1	31.32	8.31	36.28	400	108	P	H
		5722.4	55.19	-61.18	116.37	51.84	31.32	8.31	36.28	400	108	P	H
	*	5782	91.12	-----	-----	87.32	31.68	8.4	36.28	400	108	P	H
	*	5782	85.01	-----	-----	81.21	31.68	8.4	36.28	400	108	A	H
		5851.6	55.73	-62.92	118.65	51.33	32.18	8.49	36.27	400	108	P	H
		5858.8	54.62	-55.21	109.83	50.08	32.3	8.51	36.27	400	108	P	H
		5885.2	53.95	-43.78	97.73	49.35	32.35	8.53	36.28	400	108	P	H
		5928.8	53.51	-14.79	68.3	48.72	32.51	8.59	36.31	400	108	P	H
													H
													H
		5648	53.03	-15.27	68.3	50.46	30.7	8.16	36.29	301	153	P	V
		5698	55.24	-48.59	103.83	52.21	31.07	8.25	36.29	301	153	P	V
		5708.4	55.6	-52.05	107.65	52.41	31.19	8.28	36.28	301	153	P	V
		5722	54.58	-60.88	115.46	51.23	31.32	8.31	36.28	301	153	P	V
	*	5758	91.87	-----	-----	88.22	31.56	8.37	36.28	301	153	P	V
	*	5758	84.08	-----	-----	80.43	31.56	8.37	36.28	301	153	A	V
		5850.4	55.24	-66.15	121.39	50.84	32.18	8.49	36.27	301	153	P	V
		5857.2	55.84	-54.44	110.28	51.3	32.3	8.51	36.27	301	153	P	V
		5874.8	53.99	-51.37	105.36	49.39	32.35	8.53	36.28	301	153	P	V
		5952.8	53.13	-15.17	68.3	48.27	32.57	8.61	36.32	301	153	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 802.11ac VHT80 (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+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11ac VHT80 LF		34.85	33.26	-6.74	40	38.2	25.7	0.71	31.35	100	25	P	H
		48.43	29.26	-10.74	40	42.63	17.2	0.84	31.41	-	-	P	H
		75.59	29.71	-10.29	40	45.16	15	1.06	31.51	-	-	P	H
		229.82	28.26	-17.74	46	40.88	17.12	1.73	31.47	-	-	P	H
		323.91	33.09	-12.91	46	41.57	20.61	2.21	31.3	-	-	P	H
		487.84	27.65	-18.35	46	32.33	23.82	2.76	31.26	-	-	P	H
													H
													H
													H
													H
													H
													H
		35.82	29.13	-10.87	40	34.56	25.2	0.72	31.35	120	30	P	V
		199.75	32.33	-11.17	43.5	45.09	17	1.73	31.49	-	-	P	V
		220.12	30.19	-15.81	46	42.85	17.08	1.73	31.47	-	-	P	V
		288.02	29.69	-16.31	46	40.08	18.96	2.04	31.39	-	-	P	V
		345.25	33.29	-12.71	46	40.65	21.58	2.29	31.23	-	-	P	V
		550.89	28.95	-17.05	46	32.31	24.89	2.93	31.18	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	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.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. 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)

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) + 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)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

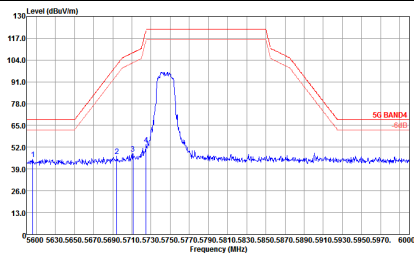
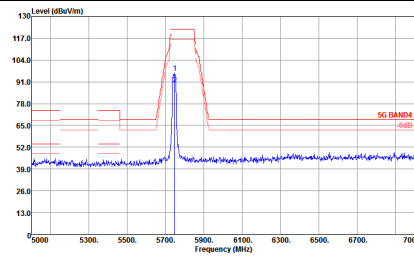


Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Genry Long	Temperature :	21~23°C
		Relative Humidity :	41~43%

Band 4 - 5725~5850MHz

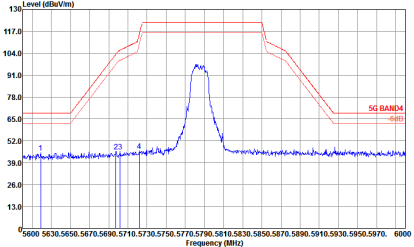
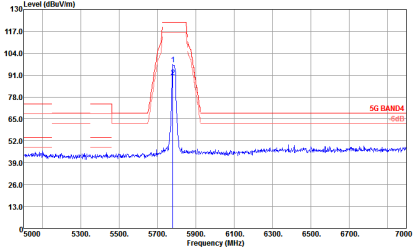
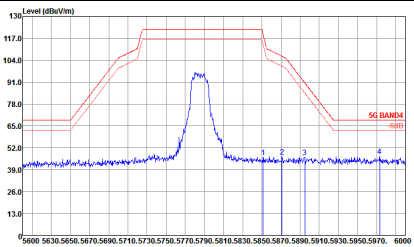
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Fundamental
Peak	 Site Condition : 802.11n HT20 : 5G BAND4 3m HP ANT-281784-91280 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SMT:Auto	 Site Condition : 802.11n HT20 : 5G BAND4 3m HP ANT-281784-91280 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SMT:Auto



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Vertical	Fundamental
Peak	Site Condition : 802.11n HT20 CH149 : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site Condition : 802.11n HT20 CH149 : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Fundamental
Peak	 Site Condition : 83CH83-KS : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site Condition : 83CH83-KS : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site Condition : 83CH83-KS : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Vertical	Fundamental
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank



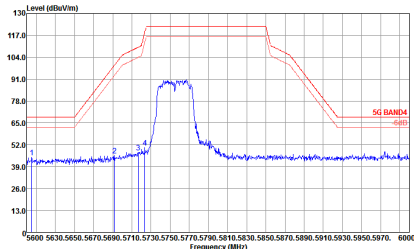
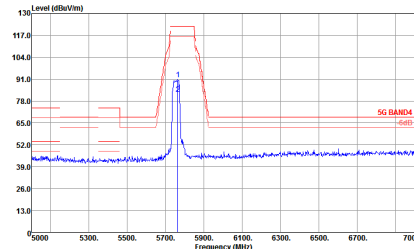
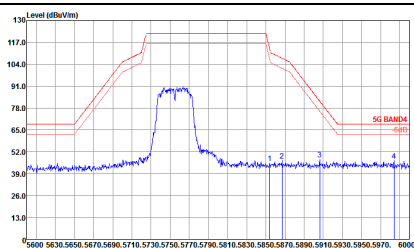
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Fundamental
Peak	Site Condition : 802.11n HT20 CH165 : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Site Condition : 802.11n HT20 CH165 : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto



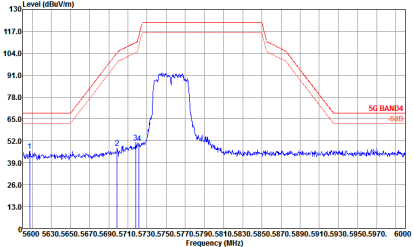
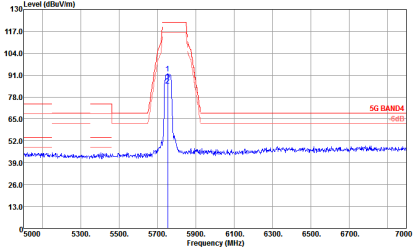
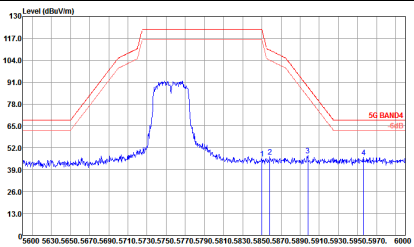
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Vertical	Fundamental
Peak	Site Condition : 802.11n HT20 CH165 : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site Condition : 802.11n HT20 CH165 : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



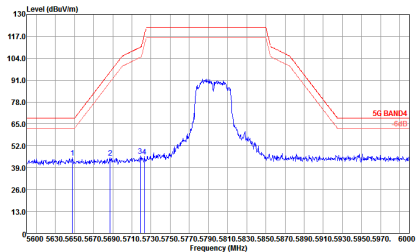
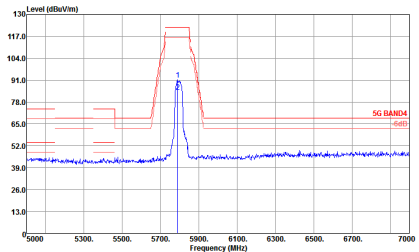
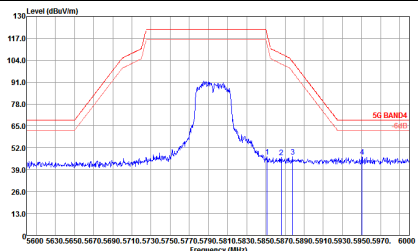
Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Horizontal	Fundamental
Peak	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000KHz VSW:3000.0000KHz SMT:Auto	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000KHz VSW:3000.0000KHz SMT:Auto
Peak	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000KHz VSW:3000.0000KHz SMT:Auto	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1	Vertical	Fundamental
Peak	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
Peak	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank



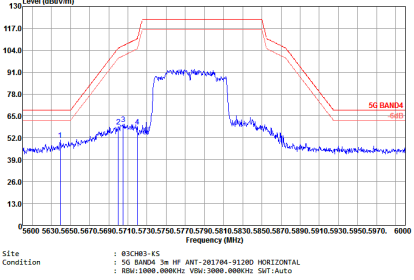
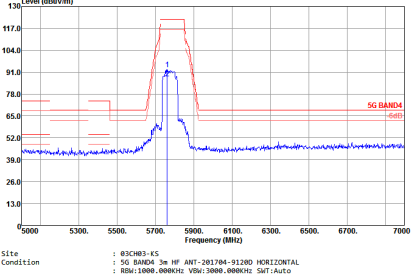
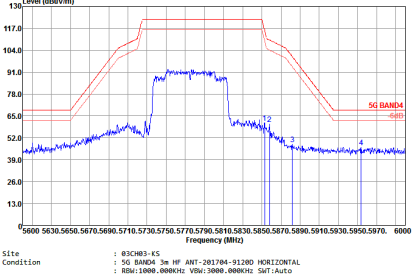
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Horizontal	Fundamental
Peak	 Site Condition : 83CH83-KS : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site Condition : 83CH83-KS : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
Peak	 Site Condition : 83CH83-KS : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1	Vertical	Fundamental
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank



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

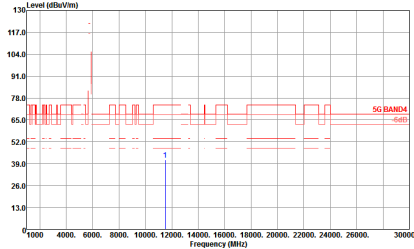
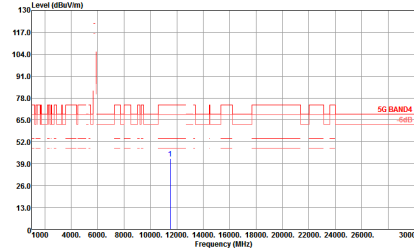
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Horizontal	Fundamental
Peak	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000KHz VSW:3000.0000KHz SMT:Auto	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000KHz VSW:3000.0000KHz SMT:Auto
Peak	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000KHz VSW:3000.0000KHz SMT:Auto	Left blank



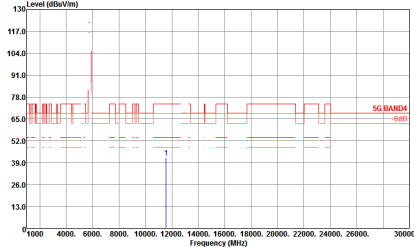
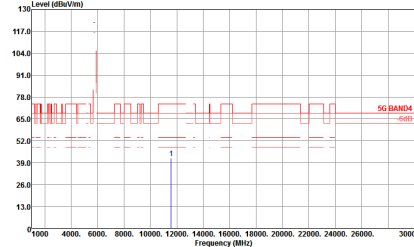
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1	Vertical	Fundamental
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank



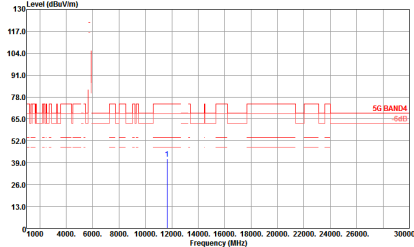
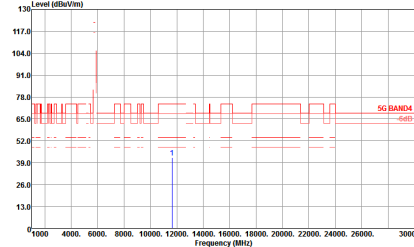
Band 4 - 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 802.11n-ES Condition : 5G BAND4 3m HP ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SMT:Auto	 Site : 802.11n-ES Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SMT:Auto



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	 Site Condition : 802.11n HT20 CH157 5785MHz : 5G BAND4 3m HP ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site Condition : 802.11n HT20 CH157 5785MHz : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



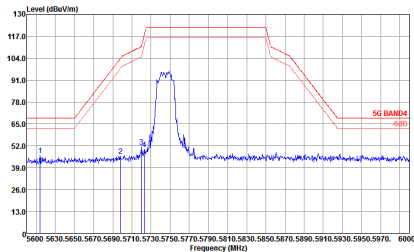
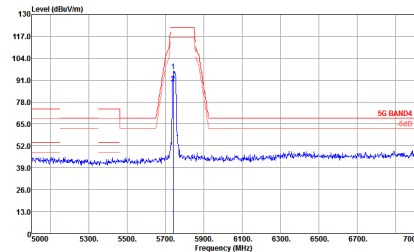
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.	 Site Condition : 802.11n HT20 CH165 5825MHz : 5G BAND4 3m HP ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site Condition : 802.11n HT20 CH165 5825MHz : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



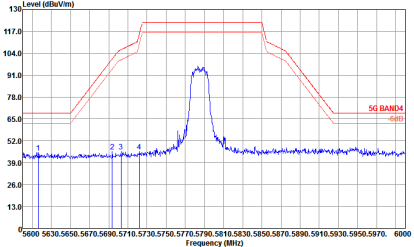
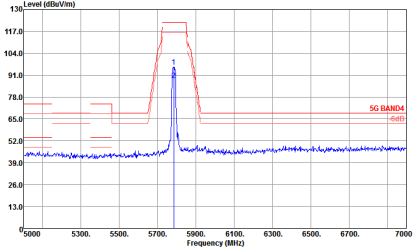
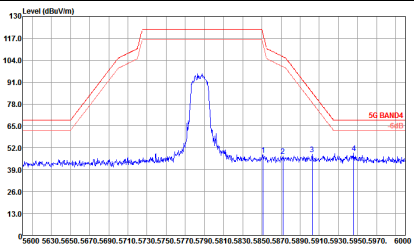
Band 4 - 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak	Site : 802.11n HT20 Condition : 5G BAND4 3m HF ANT-201704-91280 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SMT:Auto	Site : 802.11n HT20 Condition : 5G BAND4 3m HF ANT-201704-91280 HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SMT:Auto



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Vertical	Fundamental
Peak	 Site Condition : 83CH03-ES : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site Condition : 83CH03-ES : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Site Condition : 83CH03-KS : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site Condition : 83CH03-KS : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site Condition : 83CH03-KS : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
	Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank



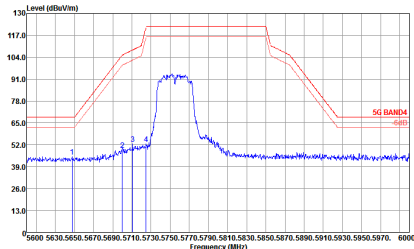
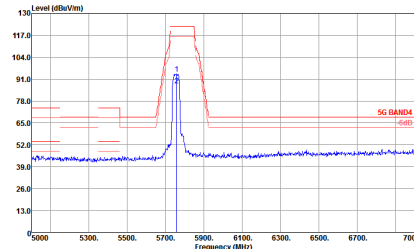
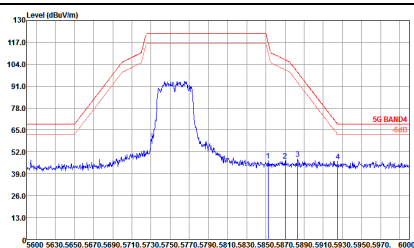
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	Site Condition : 802.11n HT20 CH165 : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site Condition : 802.11n HT20 CH165 : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	Site : 83CH03-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 83CH03-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



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+2	Horizontal	Fundamental
Peak	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000KHz VSW:3000.0000KHz SMT:Auto	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000KHz VSW:3000.0000KHz SMT:Auto
Peak	 Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000KHz VSW:3000.0000KHz SMT:Auto	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
	Site : 83CH83-KS Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank



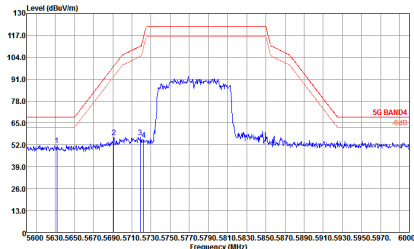
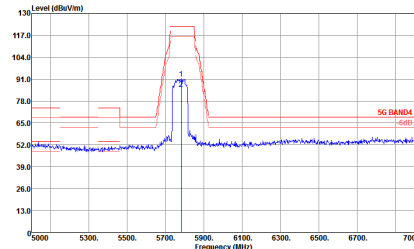
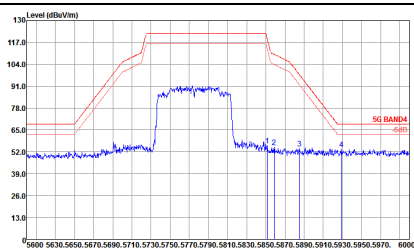
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	Left blank



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

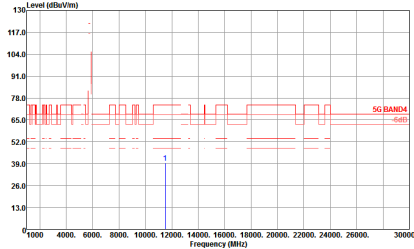
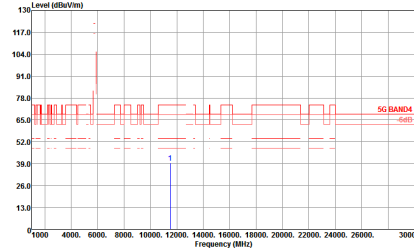
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 83CH83-KS Condition : SG BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000Hz VSW:3000.0000Hz SMT:Auto	 Site : 83CH83-KS Condition : SG BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000Hz VSW:3000.0000Hz SMT:Auto
Peak	 Site : 83CH83-KS Condition : SG BAND4 3m HP ANT-201704-91200 HORIZONTAL : RBW:1000.0000Hz VSW:3000.0000Hz SMT:Auto	Left blank



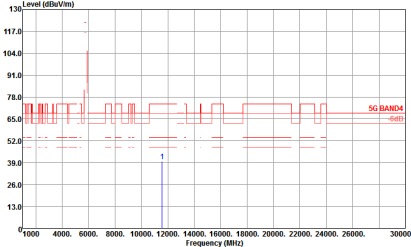
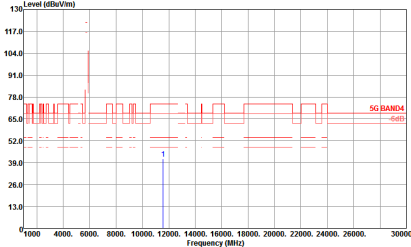
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto
Peak	Site : 83CH83-KS Condition : 5G BAND4 3m HF ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	Left blank



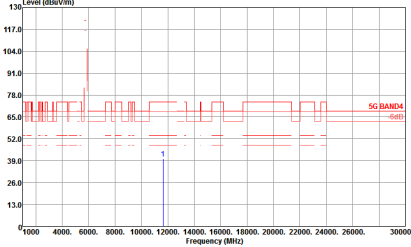
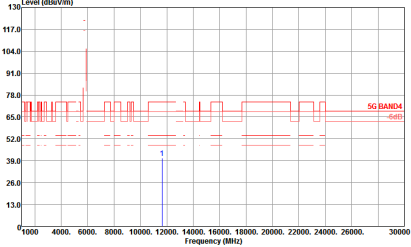
Band 4 - 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 802.11n-ES Condition : 5G BAND4 3m HP ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SMT:Auto	 Site : 802.11n-ES Condition : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SMT:Auto



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site Condition : 83CH03-ES : 5G BAND4 3m HP ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site Condition : 83CH03-ES : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto



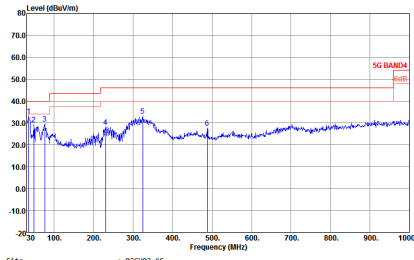
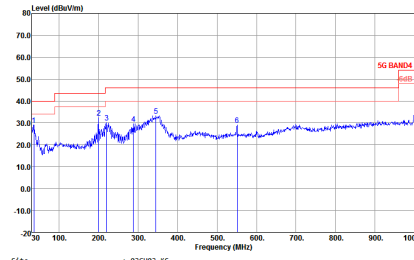
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site Condition : 802.11n HT20 CH165 5825MHz : 5G BAND4 3m HP ANT-281784-91280 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site Condition : 802.11n HT20 CH165 5825MHz : 5G BAND4 3m HP ANT-281784-91280 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



Band 4 5725~5850MHz

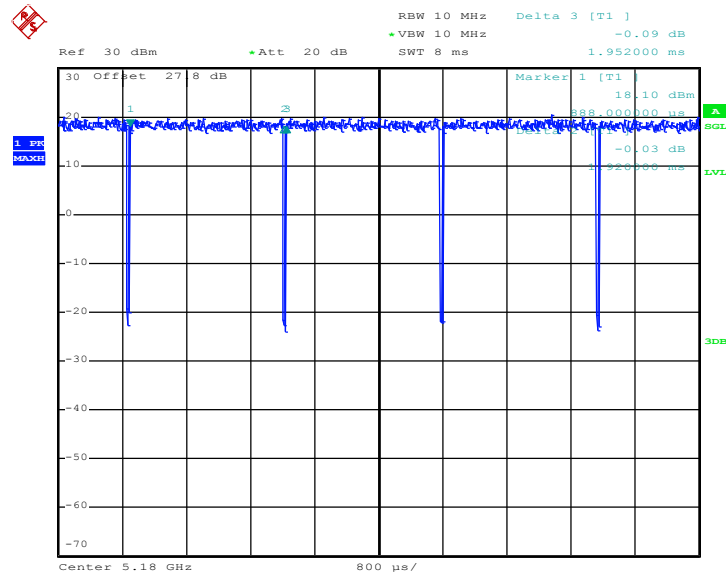
Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF)

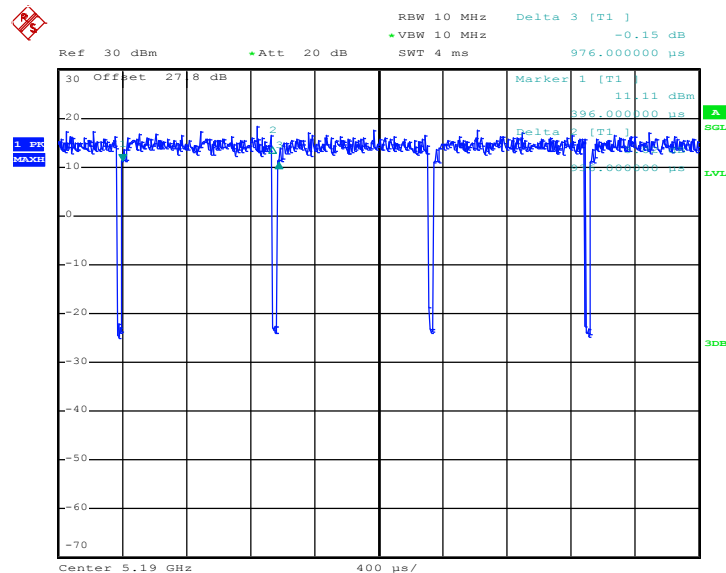
WIFI	5GHz 5725~5850MHz	
ANT	802.11ac VHT80 LF	
1+2	Horizontal	Vertical
QP / Peak	 Site Condition : 802.11ac VHT80 LF : 5G BAND4 3m LF ANT 608 201704 HORIZONTAL : RBW:100.000KHz VBW:300.000KHz SMT:Auto	 Site Condition : 802.11ac VHT80 LF : 5G BAND4 3m LF ANT 608 201704 VERTICAL : RBW:100.000KHz VBW:300.000KHz SMT:Auto

Appendix D. Duty Cycle Plots

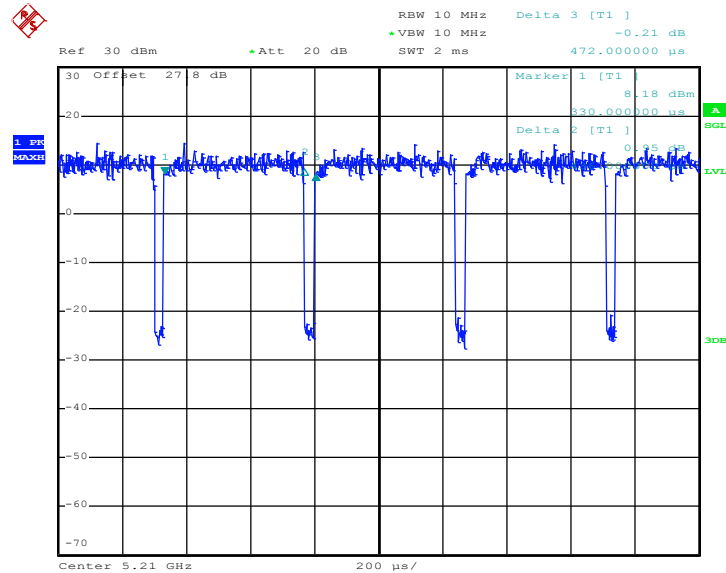
Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1	5GHz 802.11n HT20	98.36	-	-	10Hz
1	5GHz 802.11n HT40	95.90	0.94	1.07	3kHz
1	5GHz 802.11ac VHT80	92.37	0.44	2.29	3kHz
1+2	5GHz 802.11n HT20 for Ant. 1	98.36	-	-	10Hz
1+2	5GHz 802.11n HT20 for Ant. 2	98.36	-	-	10Hz
1+2	5GHz 802.11n HT40 for Ant. 1	96.72	0.94	1.06	3kHz
1+2	5GHz 802.11n HT40 for Ant. 2	96.72	0.94	1.06	3kHz
1+2	5GHz 802.11ac VHT80 for Ant. 1	89.44	0.25	3.94	10kHz
1+2	5GHz 802.11ac VHT80 for Ant. 2	89.44	0.25	3.94	10kHz

SISO <Ant. 1>
802.11n HT20


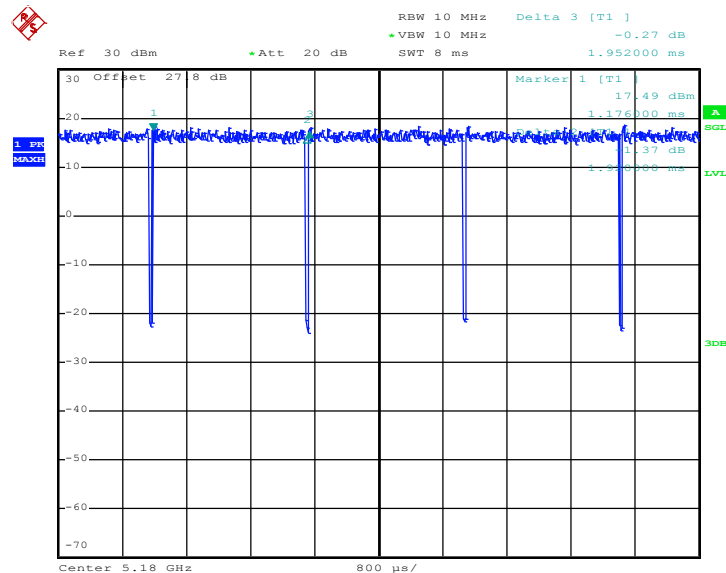
Date: 29.APR.2017 11:39:34

802.11n HT40


Date: 29.APR.2017 11:43:01

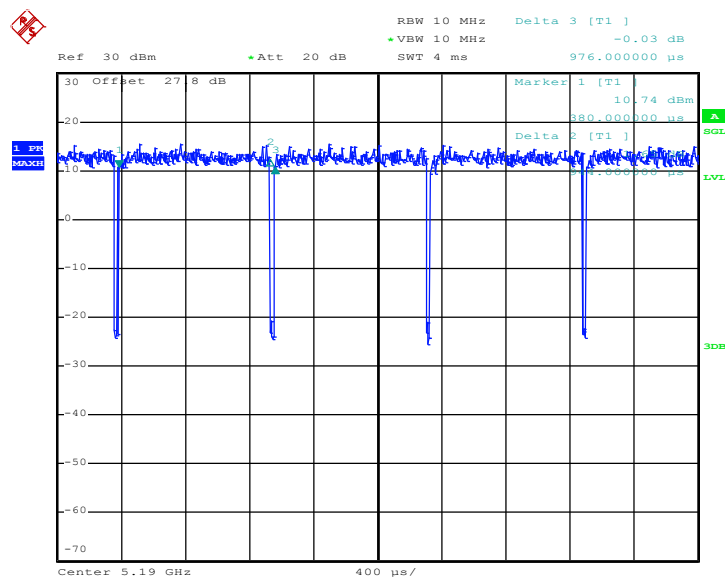
802.11ac VHT80


Date: 29.APR.2017 11:52:11

<MIMO Ant. 1>
802.11n HT20


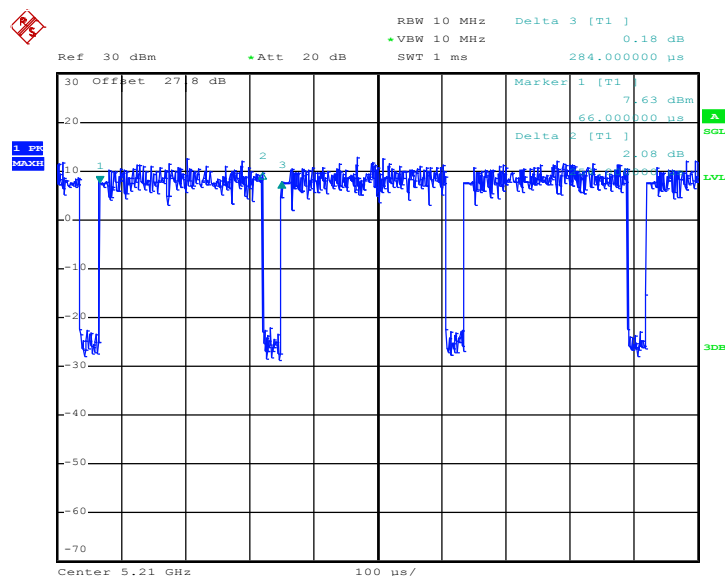
Date: 29.APR.2017 11:41:18

802.11n HT40

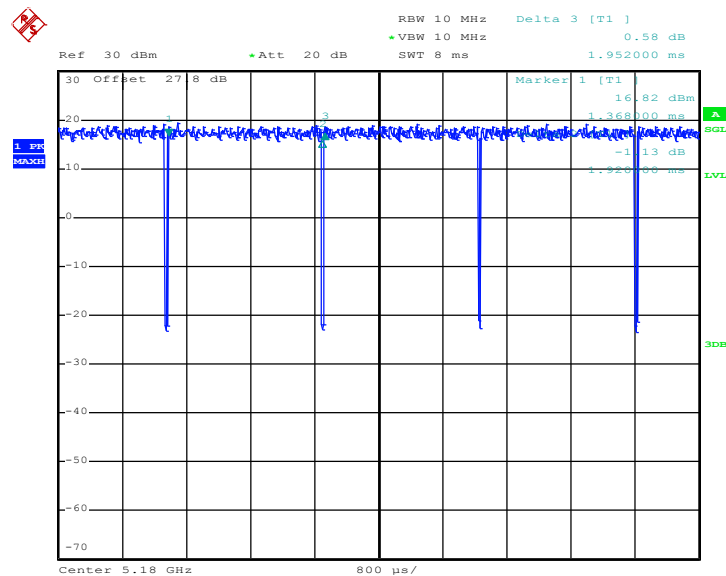


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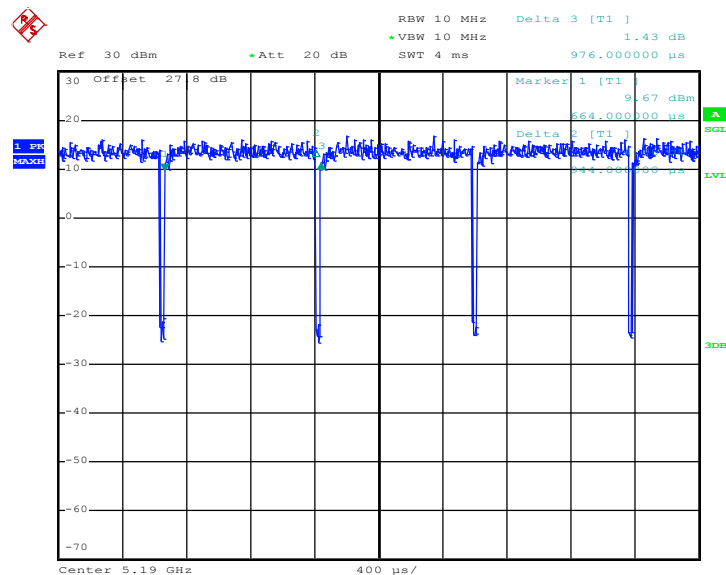
802.11ac VHT80



Date: 29.APR.2017 11:53:35

<MIMO Ant. 2>
802.11n HT20


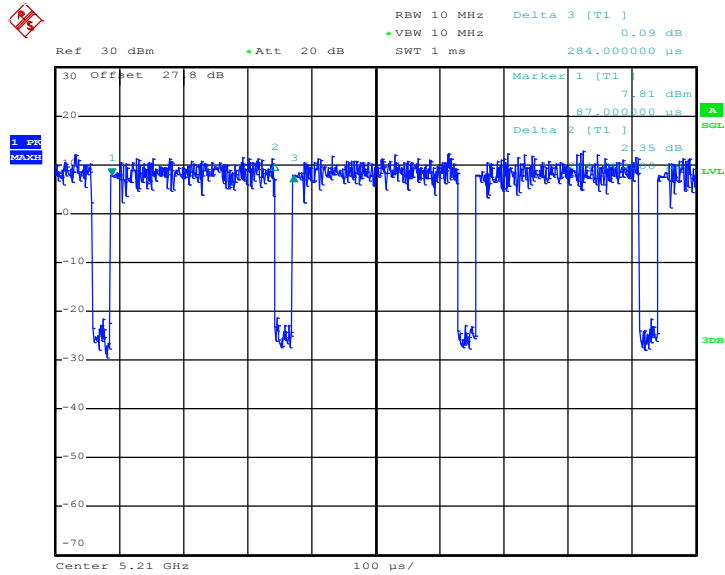
Date: 29.APR.2017 11:41:58

802.11n HT40


Date: 29.APR.2017 11:44:50



802.11ac VHT80



Date: 29.APR.2017 11:54:09