



FCC RF Test Report

APPLICANT : LC Future Center
EQUIPMENT : Tablet PC
BRAND NAME : Lenovo
MODEL NAME : TP00089A
FCC ID : 2AJN7-TP00089ASI
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product were integrated the WWAN module (Model Name: EM7455, FCC ID: N7NEM7455) and the BT/WLAN module: 2x2 PCIe M.2 1216 SD adapter card (Brand Name: Intel, Model Name: 8265D2W, FCC ID: PD98265D2) during the test.

The product was received on Sep. 08, 2017 and testing was completed on Nov. 21, 2017. We, Sporton International (Kunshan) 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 (Kunshan) Inc., the test report shall not be reproduced except in full.



Approved by: James Huang / Manager

Sporton International (Kunshan) Inc.

***No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335
China***



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR790812F	Rev. 01	Initial issue of report	Nov. 29, 2017

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
-	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	1
3.1	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
-	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Pass	1
3.2	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) $\leq -17, -27$ dBm/MHz & 15.209(a)	Pass	Under limit 7.44 dB at 36.790 MHz
3.3	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 13.03 dB at 15.146 MHz
-	15.407(g)	Frequency Stability	Within Operation Band	Pass	1
3.4	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.5	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-
Remark 1: The conducted test items were leverage from module RF report "160321-02 .TR03".					

1 General Description

1.1 Applicant

LC Future Center

7F., No.780,Beian Rd., Zhongshan Dist.,Taipei. Taiwan

1.2 Manufacturer

Lenovo PC HK Limited

23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, HongKong

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC
Brand Name	Lenovo
Model Name	TP00089A
FCC ID	2AJN7-TP00089ASI
EUT supports Radios application	WCDMA/HSPA/DC-HSDPA/ HSPA+ (16QAM uplink is not supported)/LTE WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth v3.0+EDR/ Bluetooth v4.0 LE/ Bluetooth v4.1 LE
IMEI Code	Conduction: NA Radiation: NA for Sample 1/014583000472224 for Sample 2
HW Version	1.0
SW Version	Win 10 Pro 10.0.15063
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two samples of EUT, the only difference between two samples are just for the WWAN antenna and WLAN/BT antenna with different suppliers, they are equivalent-type antennas , antenna type and gain are all the same between sample 1 and sample 2 . According to the difference, we evaluate sample 1 for full test, sample 2 only verified the worst cases of sample 1 for RSE test item.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification			
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz		
Maximum Output Power	<5745 MHz ~ 5825 MHz> 802.11a : 13.56 dBm / 0.0227 W 802.11n HT20 : 15.38 dBm / 0.0345 W 802.11n HT40 : 15.42 dBm / 0.0348 W 802.11ac VHT20: 15.37 dBm / 0.0344 W 802.11ac VHT40: 15.36 dBm / 0.0344 W 802.11ac VHT80: 15.38 dBm / 0.0345 W		
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)		
Antenna Type / Gain	Ant. 1 : PCB Antenna type with gain 0.50 dBi Ant. 2 : PCB Antenna type with gain 0.50 dBi		
Antenna Function Description		Chain Port 1	Chain Port 2
	802.11a/n/ac SISO	V	V
	802.11n/ac MIMO	V	V

Note:

1. 802.11a only support SISO mode, 802.11n/ac support SISO & MIMO mode.
2. MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.
3. For 802.11n HT20/11ac VHT20 and 802.11n HT40/11ac VHT40 mode, the whole testing has assessed only 802.11n HT20 / HT40 by referring to their higher conducted power.



1.5 Modification of EUT

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

1.6 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No is CN5013.

Test Site	Sporton International (Kunshan) Inc.			
Test Site Location	No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China TEL : +86-512-57900158 FAX : +86-512-57900958			
Test Site No.	Sporton Site No.			FCC Test Firm Registration No.
	TH01-KS	03CH03-KS	CO01-KS	630927

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

1.7 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:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated 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 were recorded in this report.

2.1 Carrier Frequency and Channel

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

Note:

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

2.2 Test Mode

Final test mode of Radiated Spurious Emissions are considering the modulation and worse data rates as below table.

Single Antenna

Modulation	Data Rate
802.11a	6 Mbps

MIMO Antenna

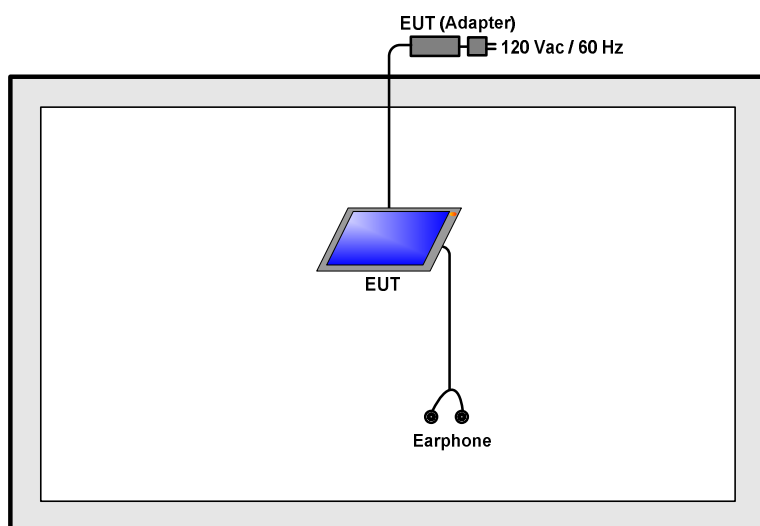
Modulation	Data Rate
802.11n HT20	MCS8
802.11n HT40	MCS8
802.11ac VHT80	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : WCDMA Band V Idle + Bluetooth Link + WLAN Link(5G) + Adaptor + display with type C1 cable + Earphone
	Mode 2 : WCDMA Band V Idle + Bluetooth Link + WLAN Link(5G) + Adaptor + display with type C2 cable + Earphone
Remark: The worst case of conducted emission is mode 1; only the test data of it was reported.	

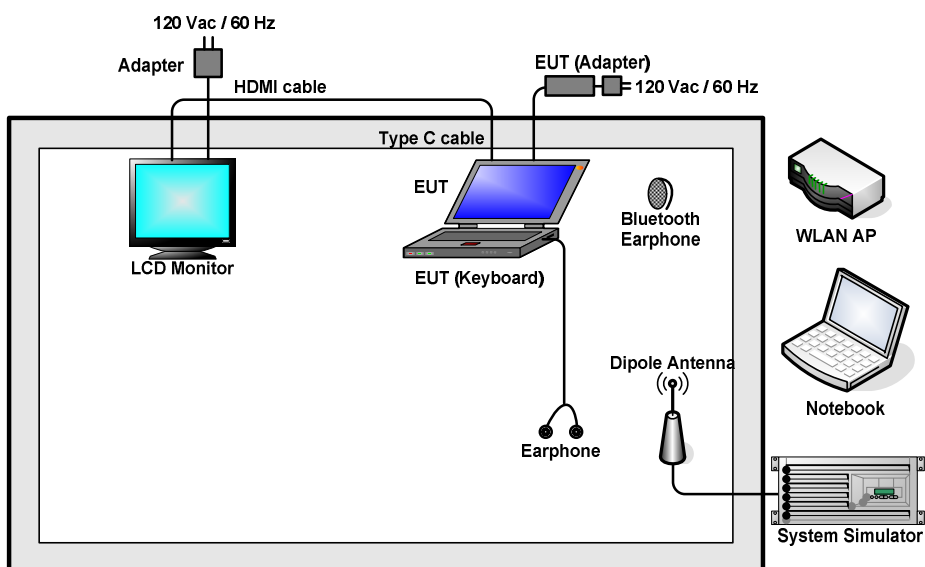
Ch. #		Band IV : 5725-5850 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	LINKSYS	WRT600N	Q87-WRT600NV11	N/A	Unshielded, 1.8 m
3.	Notebook	Lenovo	G480	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	LCD Monitor	Dell	N/A	N/A	N/A	N/A
5.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
6.	Earphone	Lenovo	LH102	FCC DoC	N/A	Shielded, 1.8 m
7.	SD Card	Kingston	SDC4/4GB	N/A	N/A	N/A

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

3 Test Result

3.1 Maximum Conducted Output Power Measurement

3.1.1 Limit of Maximum Conducted Output Power

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

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

3.1.2 Measuring Instruments

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

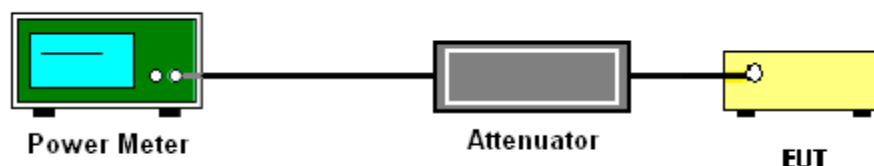
3.1.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.

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

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

3.1.4 Test Setup



3.1.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.2 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part 15.205.

3.2.1 Limit of Unwanted Emissions

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

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

- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part 15.205 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.

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

EIRP (dBm)	Field Strength at 3m (dB μ V/m)
- 27	68.3

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

- (i) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.³
- (ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.⁴

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

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

3.2.2 Measuring Instruments

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

3.2.3 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

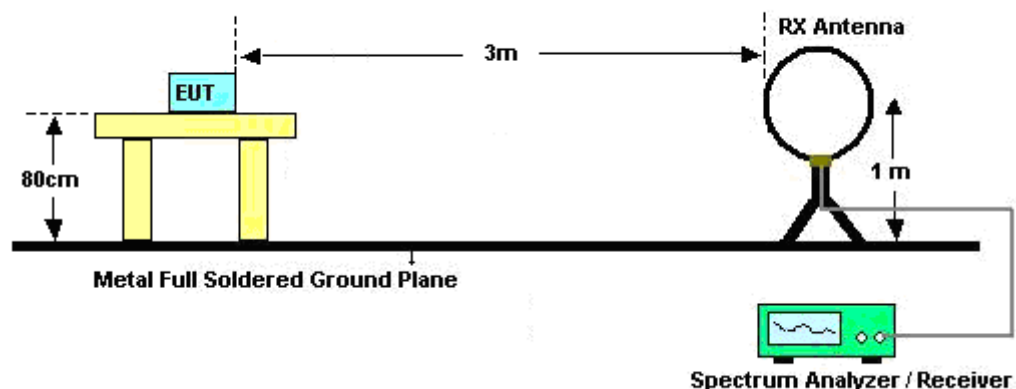
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- 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.

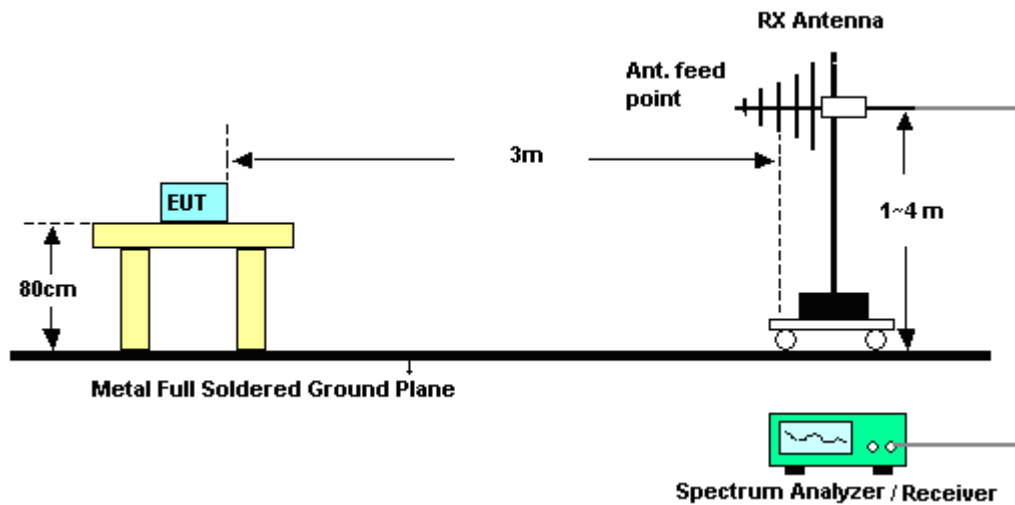
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband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

3.2.4 Test Setup

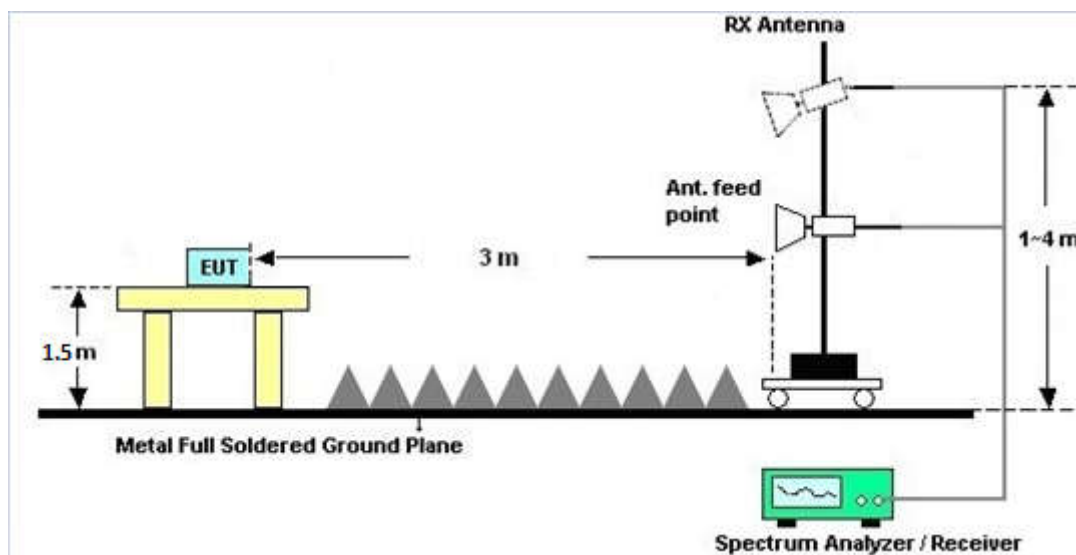
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.2.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix B and C.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

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

Frequency of emission (MHz)	Conducted limit (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.

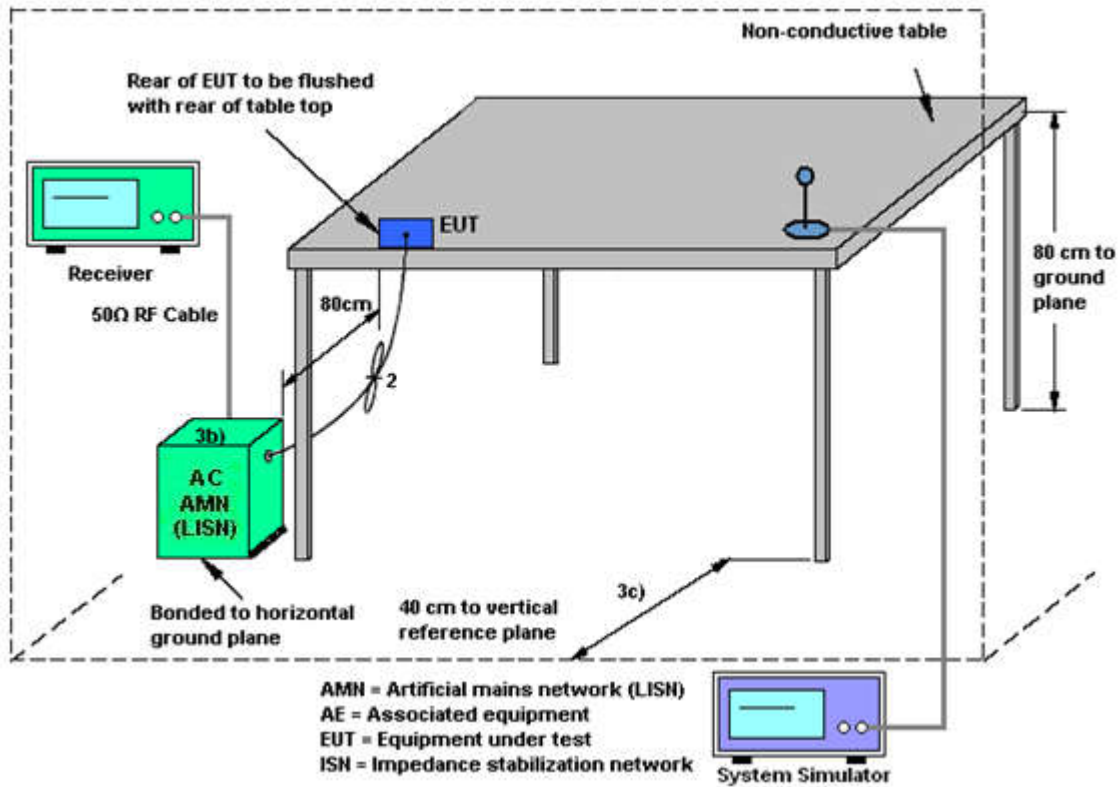
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

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

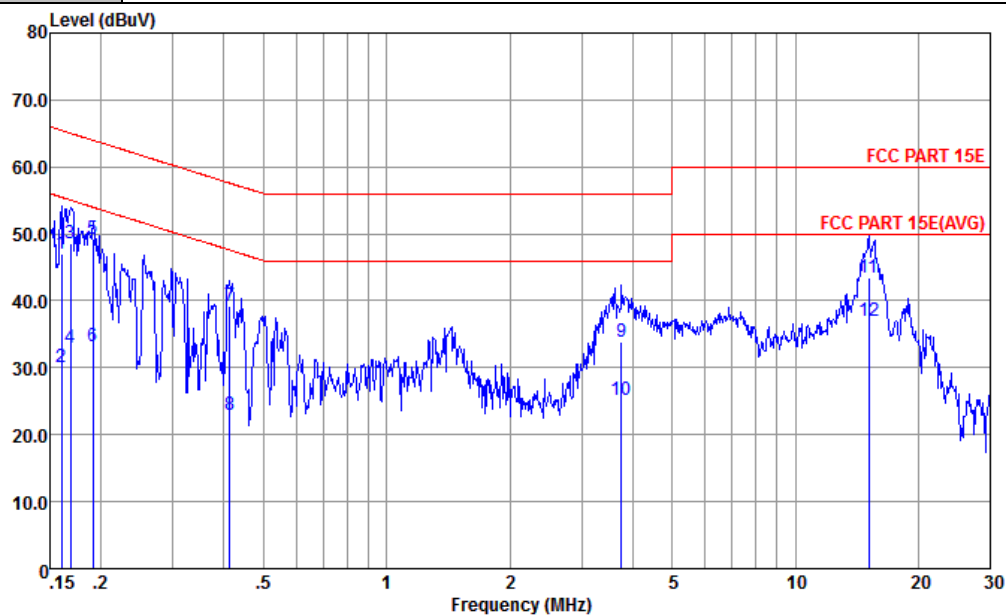
3.3.4 Test Setup





3.3.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~24℃
Test Engineer :	Amos Zhang	Relative Humidity :	42~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN Link(5G) + Adaptor + display with type C1 cable + Earphone		

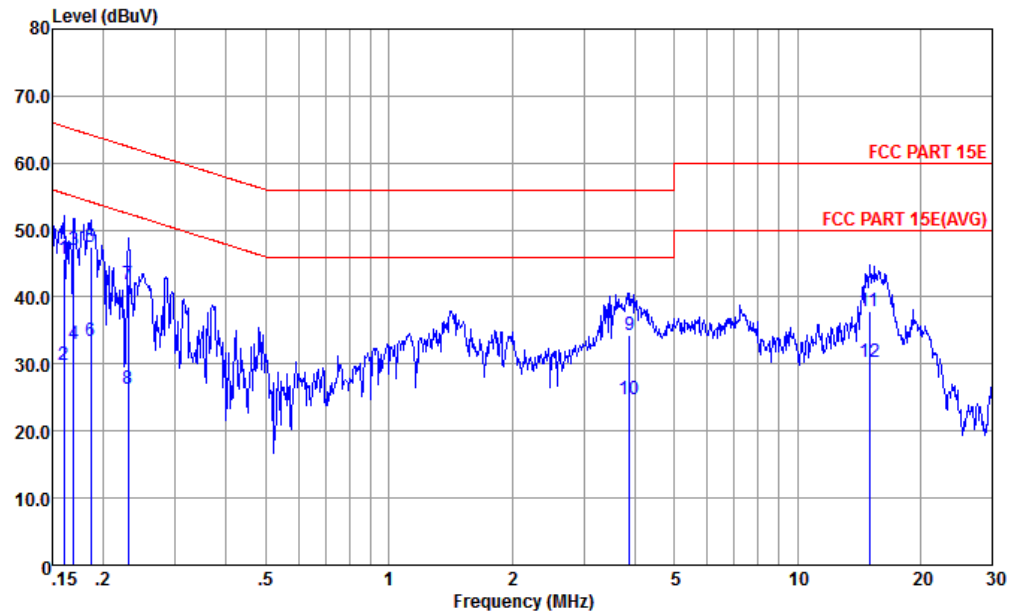


Site : CO01-KS
Condition : FCC PART 15E LISN-L-171013-060103 LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.160	46.95	-18.52	65.47	36.20	0.17	10.58	QP
2	0.160	30.05	-25.42	55.47	19.30	0.17	10.58	Average
3	0.169	48.53	-16.50	65.03	37.80	0.18	10.55	QP
4	0.169	33.03	-22.00	55.03	22.30	0.18	10.55	Average
5	0.191	49.18	-14.80	63.98	38.51	0.19	10.48	QP
6	0.191	33.28	-20.70	53.98	22.61	0.19	10.48	Average
7	0.413	39.24	-18.35	57.59	28.60	0.25	10.39	QP
8	0.413	22.94	-24.65	47.59	12.30	0.25	10.39	Average
9	3.759	33.81	-22.19	56.00	23.30	0.34	10.17	QP
10	3.759	25.11	-20.89	46.00	14.60	0.34	10.17	Average
11	15.146	43.47	-16.53	60.00	32.80	0.26	10.41	QP
12 *	15.146	36.97	-13.03	50.00	26.30	0.26	10.41	Average



Test Mode :	Mode 1	Temperature :	22~24℃
Test Engineer :	Amos Zhang	Relative Humidity :	42~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN Link(5G) + Adaptor + display with type C1 cable + Earphone		



Site : CO01-KS
Condition : FCC PART 15E LISN-N-171013-060103 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.160	45.76	-19.71	65.47	34.90	0.28	10.58	QP
2	0.160	29.76	-25.71	55.47	18.90	0.28	10.58	Average
3	0.169	47.03	-17.96	64.99	36.20	0.28	10.55	QP
4	0.169	32.93	-22.06	54.99	22.10	0.28	10.55	Average
5 *	0.186	47.38	-16.82	64.20	36.60	0.28	10.50	QP
6	0.186	33.38	-20.82	54.20	22.60	0.28	10.50	Average
7	0.230	41.93	-20.51	62.44	31.20	0.28	10.45	QP
8	0.230	26.33	-26.11	52.44	15.60	0.28	10.45	Average
9	3.881	34.40	-21.60	56.00	23.90	0.33	10.17	QP
10	3.881	24.80	-21.20	46.00	14.30	0.33	10.17	Average
11	14.986	37.82	-22.18	60.00	27.20	0.21	10.41	QP
12	14.986	30.22	-19.78	50.00	19.60	0.21	10.41	Average



3.4 Automatically Discontinue Transmission

3.4.1 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.

3.4.2 Measuring Instruments

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

3.4.3 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.

3.5 Antenna Requirements

3.5.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,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.

3.5.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.5.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

MIMO mode does not support Nss = 1.

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.

	Chain Port 0 Ant 1 (dBi)	Chain Port 1 Ant 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
5.8G Band	0.50	0.50	0.50	0.50	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
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 19, 2017	Nov. 21, 2017	Jan. 19, 2018	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 19, 2017	Nov. 21, 2017	Jan. 19, 2018	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 08, 2017	Nov. 21, 2017	Aug. 07, 2018	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz; Max 30dBm	Oct. 19, 2017	Nov. 20, 2017	Oct. 18, 2018	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44GHz	Apr. 18, 2017	Nov. 20, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 23, 2016	Nov. 20, 2017	Nov. 22, 2017	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz~2GHz	Apr. 22, 2017	Nov. 20, 2017	Apr. 21, 2018	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 22, 2017	Nov. 20, 2017	Apr. 21, 2018	Radiation (03CH03-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Feb. 15, 2017	Nov. 20, 2017	Feb. 14, 2018	Radiation (03CH03-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1000MHz / 32 dB	Apr. 18, 2017	Nov. 20, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-H G	1887435	18GHz~40GHz	Oct. 12, 2017	Nov. 20, 2017	Oct. 11, 2018	Radiation (03CH03-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025788	1GHz~18GHz	Apr. 18, 2017	Nov. 20, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Nov. 20, 2017	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Nov. 20, 2017	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Nov. 20, 2017	NCR	Radiation (03CH03-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 20, 2017	Nov. 16, 2017	Apr. 19, 2018	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2017	Nov. 16, 2017	Oct. 12, 2018	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2017	Nov. 16, 2017	Oct. 12, 2018	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2017	Nov. 16, 2017	Oct. 11, 2018	Conduction (CO01-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.3 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.7 dB
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Appendix A. Conducted Test Results

Report Number : FR790812F

Test Engineer:	Ivan Zhang	Temperature:	21~25	°C
Test Date:	2017/11/21	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	0.24	0.24	12.47	13.45		30.00	30.00	0.50	0.50	Pass
11a	6Mbps	1	157	5785	0.24	0.24	12.49	13.56		30.00	30.00	0.50	0.50	Pass
11a	6Mbps	1	165	5825	0.24	0.24	12.51	13.46		30.00	30.00	0.50	0.50	Pass
HT20	MCS0	1	149	5745	0.19	0.19	11.84	12.83		30.00	30.00	0.50	0.50	Pass
HT20	MCS0	1	157	5785	0.19	0.19	11.73	12.81		30.00	30.00	0.50	0.50	Pass
HT20	MCS0	1	165	5825	0.19	0.19	11.83	12.82		30.00	30.00	0.50	0.50	Pass
HT40	MCS0	1	151	5755	0.74	0.74	11.79	12.86		30.00	30.00	0.50	0.50	Pass
HT40	MCS0	1	159	5795	0.74	0.74	11.85	12.91		30.00	30.00	0.50	0.50	Pass
VHT20	MCS0	1	149	5745	0.22	0.19	11.78	12.86		30.00	30.00	0.50	0.50	Pass
VHT20	MCS0	1	157	5785	0.22	0.19	11.75	12.82		30.00	30.00	0.50	0.50	Pass
VHT20	MCS0	1	165	5825	0.22	0.19	11.79	12.85		30.00	30.00	0.50	0.50	Pass
VHT40	MCS0	1	151	5755	0.74	0.73	11.77	12.86		30.00	30.00	0.50	0.50	Pass
VHT40	MCS0	1	159	5795	0.74	0.73	11.83	12.82		30.00	30.00	0.50	0.50	Pass
VHT80	MCS0	1	155	5775	0.75	0.75	11.81	12.86		30.00	30.00	0.50	0.50	Pass
HT20	MCS8	2	149	5745	0.19	0.19	11.84	12.83	15.38	30.00		0.50		Pass
HT20	MCS8	2	157	5785	0.19	0.19	11.73	12.81	15.32	30.00		0.50		Pass
HT20	MCS8	2	165	5825	0.19	0.19	11.83	12.82	15.37	30.00		0.50		Pass
HT40	MCS8	2	151	5755	0.74	0.74	11.79	12.86	15.37	30.00		0.50		Pass
HT40	MCS8	2	159	5795	0.74	0.74	11.85	12.91	15.42	30.00		0.50		Pass
VHT20	MCS0	2	149	5745	0.22	0.19	11.78	12.86	15.37	30.00		0.50		Pass
VHT20	MCS0	2	157	5785	0.22	0.19	11.75	12.82	15.33	30.00		0.50		Pass
VHT20	MCS0	2	165	5825	0.22	0.19	11.79	12.85	15.37	30.00		0.50		Pass
VHT40	MCS0	2	151	5755	0.74	0.73	11.77	12.86	15.36	30.00		0.50		Pass
VHT40	MCS0	2	159	5795	0.74	0.73	11.83	12.82	15.36	30.00		0.50		Pass
VHT80	MCS0	2	155	5775	0.75	0.75	11.81	12.86	15.38	30.00		0.50		Pass



Appendix B. Radiated Spurious Emission

For Sample 1

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5622	49.97	-18.33	68.3	43.47	30.72	12.46	36.68	100	315	P	H
		5671.6	50.45	-33.87	84.32	43.7	30.95	12.52	36.72	100	315	P	H
		5719.9	57.09	-53.78	110.87	50.01	31.32	12.57	36.81	100	315	P	H
		5724.4	59.95	-60.98	120.93	52.87	31.32	12.57	36.81	100	315	P	H
		5748	103.95	-	-	96.77	31.44	12.59	36.85	100	315	P	H
		5748	96.19	-	-	89.01	31.44	12.59	36.85	100	315	A	H
		5612	48.92	-19.38	68.3	42.43	30.73	12.44	36.68	359	271	P	V
		5699.2	49.42	-55.29	104.71	42.59	31.07	12.53	36.77	359	271	P	V
		5717.2	54.1	-56.02	110.12	47.17	31.19	12.55	36.81	359	271	P	V
		5723.6	56.31	-62.8	119.11	49.23	31.32	12.57	36.81	359	271	P	V
		5746	99.81	-	-	92.63	31.44	12.59	36.85	359	271	P	V
		5746	93.66	-	-	86.48	31.44	12.59	36.85	359	271	A	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 157 5785MHz		5636.8	48.99	-19.31	68.3	42.49	30.7	12.48	36.68	100	319	P	H
		5676	49.15	-38.43	87.58	42.4	30.95	12.52	36.72	100	319	P	H
		5701.6	49.62	-56.13	105.75	42.65	31.19	12.55	36.77	100	319	P	H
		5724.8	49.71	-72.13	121.84	42.63	31.32	12.57	36.81	100	319	P	H
		5788	102.1	-	-	94.59	31.81	12.64	36.94	100	319	P	H
		5788	94.5	-	-	86.99	31.81	12.64	36.94	100	319	A	H
		5853.6	51.94	-62.15	114.09	43.96	32.3	12.71	37.03	100	319	P	H
		5859.6	51.37	-58.24	109.61	43.38	32.3	12.71	37.02	100	319	P	H
		5920.8	50.66	-20.74	71.4	42.43	32.46	12.76	36.99	100	319	P	H
		5972.8	51.22	-17.08	68.3	42.67	32.67	12.84	36.96	100	319	P	H
		5648	48.6	-19.7	68.3	42.1	30.7	12.48	36.68	299	204	P	V
		5672.8	48.97	-36.24	85.21	42.22	30.95	12.52	36.72	299	204	P	V
		5715.2	50.3	-59.26	109.56	43.37	31.19	12.55	36.81	299	204	P	V
		5724	48.88	-71.14	120.02	41.8	31.32	12.57	36.81	299	204	P	V
		5790	101.32	-	-	93.81	31.81	12.64	36.94	299	204	P	V
		5790	94.17	-	-	86.66	31.81	12.64	36.94	299	204	A	V
		5852.8	49.93	-65.99	115.92	42.09	32.18	12.69	37.03	299	204	P	V
		5861.6	50.54	-58.51	109.05	42.55	32.3	12.71	37.02	299	204	P	V
		5889.2	50.4	-44.36	94.76	42.24	32.41	12.75	37	299	204	P	V
		5934.4	51.96	-16.34	68.3	43.64	32.51	12.78	36.97	299	204	P	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		5824	103.75	-	-	96.02	32.05	12.67	36.99	100	312	P	H
		5824	95.91	-	-	88.18	32.05	12.67	36.99	100	312	A	H
		5851.2	54.42	-65.14	119.56	46.58	32.18	12.69	37.03	100	312	P	H
		5856.4	53.85	-56.66	110.51	45.87	32.3	12.71	37.03	100	312	P	H
		5895.6	52.45	-37.57	90.02	44.29	32.41	12.75	37	100	312	P	H
		5961.2	51.98	-16.32	68.3	43.5	32.62	12.82	36.96	100	312	P	H
		5828	96.69	-	-	88.96	32.05	12.67	36.99	294	172	P	V
		5828	89.66	-	-	81.93	32.05	12.67	36.99	294	172	A	V
		5850.8	51.94	-68.54	120.48	44.1	32.18	12.69	37.03	294	172	P	V
		5870.4	50.8	-55.79	106.59	42.81	32.3	12.71	37.02	294	172	P	V
		5878.8	50.46	-52.02	102.48	42.4	32.35	12.73	37.02	294	172	P	V
		5938	51.1	-17.2	68.3	42.78	32.51	12.78	36.97	294	172	P	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. 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		11490	45.49	-28.51	74	56.13	38.58	16.13	65.35	300	0	P	H
5745MHz		11490	45.43	-28.57	74	56.07	38.58	16.13	65.35	300	360	P	V
802.11a CH 157		11570	44.27	-29.73	74	55.06	38.43	16.22	65.44	100	0	P	H
5785MHz		11570	44.5	-29.5	74	55.29	38.43	16.22	65.44	100	360	P	V
802.11a CH 165		11650	44.31	-29.69	74	55.29	38.27	16.29	65.54	100	0	P	H
5825MHz		11650	44.84	-29.16	74	55.82	38.27	16.29	65.54	100	0	P	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 (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		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 165 5825MHz		5824	103.11	-	-	95.38	32.05	12.67	36.99	336	6	P	H
		5824	95.83	-	-	88.1	32.05	12.67	36.99	336	6	A	H
		5851.2	56.79	-62.77	119.56	48.95	32.18	12.69	37.03	336	6	P	H
		5855.6	55.69	-55.04	110.73	47.71	32.3	12.71	37.03	336	6	P	H
		5889.2	51.12	-43.64	94.76	42.96	32.41	12.75	37	336	6	P	H
		5946.4	50.44	-17.86	68.3	42.04	32.57	12.8	36.97	336	6	P	H
		5822	98.73	-	-	91	32.05	12.67	36.99	368	34	P	V
		5822	91.58	-	-	83.85	32.05	12.67	36.99	368	34	A	V
		5850.8	55.7	-64.78	120.48	47.86	32.18	12.69	37.03	368	34	P	V
		5857.6	52.52	-57.65	110.17	44.54	32.3	12.71	37.03	368	34	P	V
		5876.01	50.58	-53.97	104.55	42.52	32.35	12.73	37.02	368	34	P	V
		5948	50.18	-18.12	68.3	41.78	32.57	12.8	36.97	368	34	P	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. 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		11650	44.32	-29.68	74	55.3	38.27	16.29	65.54	100	360	P	H
CH 165 5825MHz		11650	44.54	-29.46	74	55.52	38.27	16.29	65.54	300	360	P	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	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		5647.2	49.93	-18.37	68.3	43.43	30.7	12.48	36.68	307	119	P	H
		5698.8	56.23	-48.19	104.42	49.4	31.07	12.53	36.77	307	119	P	H
		5719.2	63.75	-46.93	110.68	56.67	31.32	12.57	36.81	307	119	P	H
		5724.8	65.13	-56.71	121.84	58.05	31.32	12.57	36.81	307	119	P	H
		5750	104.42	-	-	97.24	31.44	12.59	36.85	307	119	P	H
		5750	98.06	-	-	90.88	31.44	12.59	36.85	307	119	A	H
		5621.2	49.61	-18.69	68.3	43.11	30.72	12.46	36.68	100	237	P	V
		5692.8	57.07	-42.92	99.99	50.24	31.07	12.53	36.77	100	237	P	V
		5714.8	67.16	-42.29	109.45	60.23	31.19	12.55	36.81	100	237	P	V
		5724.4	69.69	-51.24	120.93	62.61	31.32	12.57	36.81	100	237	P	V
		5744	108.38	-	-	101.2	31.44	12.59	36.85	100	237	P	V
		5744	101.44	-	-	94.26	31.44	12.59	36.85	100	237	A	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		5608	49.79	-18.51	68.3	43.3	30.73	12.44	36.68	302	116	P	H
		5685.2	50.48	-43.9	94.38	43.65	31.07	12.53	36.77	302	116	P	H
		5712.4	52.17	-56.6	108.77	45.24	31.19	12.55	36.81	302	116	P	H
		5722	50.19	-65.27	115.46	43.11	31.32	12.57	36.81	302	116	P	H
		5788	105.01	-	-	97.5	31.81	12.64	36.94	302	116	P	H
		5788	97.24	-	-	89.73	31.81	12.64	36.94	302	116	A	H
		5850.4	51.13	-70.26	121.39	43.29	32.18	12.69	37.03	302	116	P	H
		5870	52.11	-54.59	106.7	44.12	32.3	12.71	37.02	302	116	P	H
		5902.4	51.72	-33.27	84.99	43.56	32.41	12.75	37	302	116	P	H
		5931.6	51.31	-16.99	68.3	43.01	32.51	12.78	36.99	302	116	P	H
		5628	49.4	-18.9	68.3	42.9	30.72	12.46	36.68	100	244	P	V
		5680.4	49.67	-41.16	90.83	42.97	30.95	12.52	36.77	100	244	P	V
		5717.6	52.64	-57.59	110.23	45.56	31.32	12.57	36.81	100	244	P	V
		5722.8	52.28	-65	117.28	45.2	31.32	12.57	36.81	100	244	P	V
		5786	106.53	-	-	99.02	31.81	12.64	36.94	100	244	P	V
		5786	98.96	-	-	91.45	31.81	12.64	36.94	100	244	A	V
		5850.01	52.48	-69.8	122.28	44.64	32.18	12.69	37.03	100	244	P	V
		5860	54.53	-54.97	109.5	46.54	32.3	12.71	37.02	100	244	P	V
		5877.6	52.17	-51.2	103.37	44.11	32.35	12.73	37.02	100	244	P	V
		5950	51.86	-16.44	68.3	43.46	32.57	12.8	36.97	100	244	P	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		5826	104.55	-	-	96.82	32.05	12.67	35.49	101	360	P	H
		5826	97.03	-	-	89.3	32.05	12.67	36.99	304	115	A	H
		5852.8	57.23	-58.69	115.92	49.39	32.18	12.69	37.03	304	115	P	H
		5856	52.38	-58.24	110.62	44.4	32.3	12.71	37.03	304	115	P	H
		5903.2	52.21	-32.18	84.39	44.05	32.41	12.75	37	304	115	P	H
		5937.2	50.98	-17.32	68.3	42.66	32.51	12.78	36.97	304	115	P	H
		5828	106.16	-	-	98.43	32.05	12.67	0	101	180	P	V
		5828	99.29	-	-	91.56	32.05	12.67	36.99	100	313	A	V
		5854	57.98	-55.2	113.18	50	32.3	12.71	37.03	100	180	P	V
		5856.4	59.07	-51.44	110.51	51.09	32.3	12.71	37.03	100	313	P	V
		5888	52.69	-42.96	95.65	44.53	32.41	12.75	37	100	313	P	V
		5964.4	53.08	-15.22	68.3	44.6	32.62	12.82	36.96	100	313	P	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	45.76	-28.24	74	56.4	38.58	16.13	65.35	300	0	P	H
		11490	45.88	-28.12	74	56.52	38.58	16.13	65.35	300	360	P	V
802.11n HT20 CH 157 5785MHz		11570	44.68	-29.32	74	55.47	38.43	16.22	65.44	300	360	P	H
		11570	45.97	-28.03	74	56.76	38.43	16.22	65.44	300	360	P	V
802.11n HT20 CH 165 5825MHz		11650	44.99	-29.01	74	55.97	38.27	16.29	65.54	300	360	P	H
		11650	44.08	-29.92	74	55.06	38.27	16.29	65.54	300	360	P	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		5646	52.65	-15.65	68.3	46.15	30.7	12.48	36.68	385	355	P	H
		5683.6	59.91	-33.29	93.2	53.08	31.07	12.53	36.77	385	355	P	H
		5717.6	69.08	-41.15	110.23	62	31.32	12.57	36.81	385	355	P	H
		5722.4	69.06	-47.31	116.37	61.98	31.32	12.57	36.81	385	355	P	H
		5766	106.31	-	-	99.05	31.56	12.6	36.9	385	355	P	H
		5766	99.51	-	-	92.25	31.56	12.6	36.9	385	355	A	H
		5852.4	52.89	-63.94	116.83	45.05	32.18	12.69	37.03	385	355	P	H
		5859.6	53.12	-56.49	109.61	45.13	32.3	12.71	37.02	385	355	P	H
		5910.8	54.18	-24.6	78.78	45.95	32.46	12.76	36.99	385	355	P	H
		5996	50.85	-17.45	68.3	42.22	32.72	12.85	36.94	385	355	P	H
		5616.4	50.4	-17.9	68.3	43.9	30.72	12.46	36.68	300	190	P	V
		5684.4	55.96	-37.83	93.79	49.13	31.07	12.53	36.77	300	190	P	V
		5719.9	62.74	-48.13	110.87	55.66	31.32	12.57	36.81	300	190	P	V
		5722.4	65.21	-51.16	116.37	58.13	31.32	12.57	36.81	300	190	P	V
		5766	102.5	-	-	95.24	31.56	12.6	36.9	300	190	P	V
		5766	95.7	-	-	88.44	31.56	12.6	36.9	300	190	A	V
		5852	52.01	-65.73	117.74	44.17	32.18	12.69	37.03	300	190	P	V
		5856.8	50.18	-60.22	110.4	42.2	32.3	12.71	37.03	300	190	P	V
		5890.4	50.8	-43.07	93.87	42.64	32.41	12.75	37	300	190	P	V
		5962.4	50.9	-17.4	68.3	42.42	32.62	12.82	36.96	300	190	P	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		5622	50.07	-18.23	68.3	43.57	30.72	12.46	36.68	400	349	P	H
		5699.2	51.25	-53.46	104.71	44.42	31.07	12.53	36.77	400	349	P	H
		5719.9	56.1	-54.77	110.87	49.02	31.32	12.57	36.81	400	349	P	H
		5722.8	57.04	-60.24	117.28	49.96	31.32	12.57	36.81	400	349	P	H
		5798	103.56	-	-	96.05	31.81	12.64	36.94	400	349	P	H
		5798	94.11	-	-	86.6	31.81	12.64	36.94	400	349	A	H
		5850.01	57.7	-64.58	122.28	49.86	32.18	12.69	37.03	400	349	P	H
		5859.2	58.25	-51.47	109.72	50.26	32.3	12.71	37.02	400	349	P	H
		5878.4	54.15	-48.62	102.77	46.09	32.35	12.73	37.02	400	349	P	H
		5928.8	53.76	-14.54	68.3	45.46	32.51	12.78	36.99	400	349	P	H
		5645.2	49.15	-19.15	68.3	42.65	30.7	12.48	36.68	308	211	P	V
		5670.8	49.24	-34.49	83.73	42.49	30.95	12.52	36.72	308	211	P	V
		5717.6	50.39	-59.84	110.23	43.31	31.32	12.57	36.81	308	211	P	V
		5720.8	51.04	-61.68	112.72	43.96	31.32	12.57	36.81	308	211	P	V
		5804	101.5	-	-	93.85	31.93	12.66	36.94	308	211	P	V
		5804	93.97	-	-	86.32	31.93	12.66	36.94	308	211	A	V
		5850.4	53.14	-68.25	121.39	45.3	32.18	12.69	37.03	308	211	P	V
		5857.6	53.48	-56.69	110.17	45.5	32.3	12.71	37.03	308	211	P	V
		5906.4	51.18	-30.85	82.03	42.96	32.46	12.76	37	308	211	P	V
		5994	51.12	-17.18	68.3	42.49	32.72	12.85	36.94	308	211	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	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		11510	45.67	-28.33	74	56.27	38.6	16.14	65.34	100	0	P	H
		11510	43.93	-30.07	74	54.53	38.6	16.14	65.34	100	0	P	V
802.11n HT40 CH 159 5795MHz		11590	44.75	-29.25	74	55.59	38.39	16.24	65.47	300	360	P	H
		11590	45.25	-28.75	74	56.09	38.39	16.24	65.47	300	360	P	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		5648	53.61	-14.69	68.3	47.11	30.7	12.48	36.68	100	322	P	H
		5697.2	58.45	-44.79	103.24	51.62	31.07	12.53	36.77	100	322	P	H
		5718.4	63.11	-47.34	110.45	56.03	31.32	12.57	36.81	100	322	P	H
		5724.8	63.24	-58.6	121.84	56.16	31.32	12.57	36.81	100	322	P	H
		5772	100.78	-	-	93.38	31.68	12.62	36.9	100	322	P	H
		5772	92.15	-	-	84.75	31.68	12.62	36.9	100	322	A	H
		5853.6	61.31	-52.78	114.09	53.33	32.3	12.71	37.03	100	322	P	H
		5866	59.57	-48.25	107.82	51.58	32.3	12.71	37.02	100	322	P	H
		5875.2	55.12	-50.03	105.15	47.06	32.35	12.73	37.02	100	322	P	H
		5938.8	50.87	-17.43	68.3	42.47	32.57	12.8	36.97	100	322	P	H
		5629.6	52.17	-16.13	68.3	45.67	30.72	12.46	36.68	312	197	P	V
		5696	56.58	-45.77	102.35	49.75	31.07	12.53	36.77	312	197	P	V
		5714.8	59.21	-50.24	109.45	52.28	31.19	12.55	36.81	312	197	P	V
		5723.6	61.34	-57.77	119.11	54.26	31.32	12.57	36.81	312	197	P	V
		5772	98.17	-	-	90.77	31.68	12.62	36.9	312	197	P	V
		5772	91.91	-	-	84.51	31.68	12.62	36.9	312	197	A	V
		5851.6	59.79	-58.86	118.65	51.95	32.18	12.69	37.03	312	197	P	V
		5858.8	57.8	-52.03	109.83	49.81	32.3	12.71	37.02	312	197	P	V
		5880.4	53.23	-48.06	101.29	45.17	32.35	12.73	37.02	312	197	P	V
		5942.4	51.26	-17.04	68.3	42.86	32.57	12.8	36.97	312	197	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

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

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80		11550	43.93	-30.07	74	54.67	38.48	16.2	65.42	300	360	P	H
CH 155 5775MHz		11550	43.83	-30.17	74	54.57	38.48	16.2	65.42	300	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



For Sample 2

Band 4 - 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 CH 159 5795MHz		5634	50.11	-18.19	68.3	43.55	30.2	8.56	32.2	100	317	P	H
		5697.8	50.75	-52.93	103.68	43.9	30.62	8.57	32.34	100	317	P	H
		5716.6	50.82	-59.13	109.95	43.87	30.75	8.58	32.38	100	317	P	H
		5723.8	52.23	-67.33	119.56	45.19	30.89	8.58	32.43	100	317	P	H
		5788	101.52	-	-	94.09	31.45	8.6	32.62	100	317	P	H
		5788	92.39	-	-	84.96	31.45	8.6	32.62	100	317	A	H
		5850.5	53.79	-67.37	121.16	46.07	31.86	8.61	32.75	100	317	P	H
		5857.5	52.6	-57.6	110.2	44.78	32	8.62	32.8	100	317	P	H
		5875.75	52.04	-52.7	104.74	44.15	32.05	8.62	32.78	100	317	P	H
		5942.75	50.3	-18	68.3	42.1	32.27	8.64	32.71	100	317	P	H
		5642.6	48.73	-19.57	68.3	42.17	30.2	8.56	32.2	280	105	P	V
		5666.6	48.97	-31.65	80.62	42.21	30.48	8.57	32.29	280	105	P	V
		5712.2	50.32	-58.4	108.72	43.37	30.75	8.58	32.38	280	105	P	V
		5724.2	49.8	-70.68	120.48	42.76	30.89	8.58	32.43	280	105	P	V
		5800	98.18	-	-	90.75	31.45	8.6	32.62	280	105	P	V
		5800	89.56	-	-	82.13	31.45	8.6	32.62	280	105	A	V
		5852	52.57	-65.17	117.74	44.85	31.86	8.61	32.75	280	105	P	V
		5864.5	51.8	-56.44	108.24	43.98	32	8.62	32.8	280	105	P	V
		5878.25	51.14	-51.75	102.89	43.25	32.05	8.62	32.78	280	105	P	V
		5952	49.39	-18.91	68.3	41.19	32.27	8.64	32.71	280	105	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	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		11590	44.99	-29.01	74	55.57	39.34	12.82	62.74	100	62	P	H
		11590	45.93	-28.07	74	56.51	39.34	12.82	62.74	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

Emission below 1GHz

5GHz WIFI 802.11n HT40 (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)
5GHz 802.11n HT40 LF		30.97	25.54	-14.46	40	30.3	25.74	0.58	31.08	106	47	P	H
		74.62	17.76	-22.24	40	33.64	14.6	0.92	31.4	-	-	P	H
		99.84	18.89	-24.61	43.5	30.72	17.8	1.07	30.7	-	-	P	H
		170.65	22.96	-20.54	43.5	35.88	16.64	1.42	30.98	-	-	P	H
		233.7	25.32	-20.68	46	37.66	17.18	1.65	31.17	-	-	P	H
		919.49	29.72	-16.28	46	27.93	29.53	3.44	31.18	-	-	P	H
		36.79	32.56	-7.44	40	40.84	22.14	0.66	31.08	100	164	P	V
		79.47	22.55	-17.45	40	37.73	15.27	0.95	31.4	-	-	P	V
		102.75	22.99	-20.51	43.5	34.83	17.77	1.1	30.71	-	-	P	V
		159.98	21.79	-21.71	43.5	34.36	16.99	1.38	30.94	-	-	P	V
		232.73	23.4	-22.6	46	35.78	17.14	1.65	31.17	-	-	P	V
		905.91	29.73	-16.27	46	28.18	29.23	3.44	31.12	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Band 4 5725~5850MHz

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)

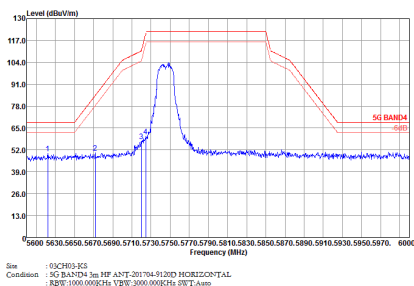
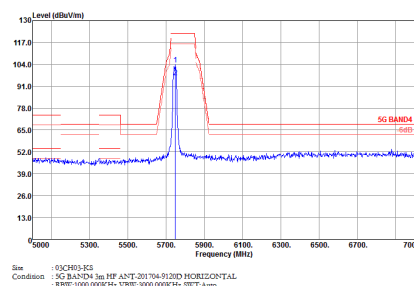
Both peak and average measured complies with the limit line, so test result is “PASS”.



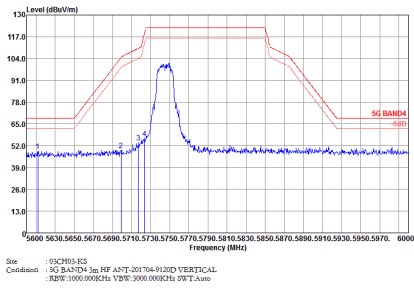
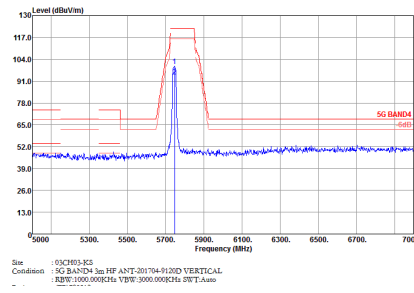
Appendix C. Radiated Spurious Emission Plots

For Sample 1

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	 Site : 03CH03-RS Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL : RBW:1000.000GHz VBW:3000.000GHz SWT:AUTO	 Site : 03CH03-RS Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL : RBW:1000.000GHz VBW:3000.000GHz SWT:AUTO

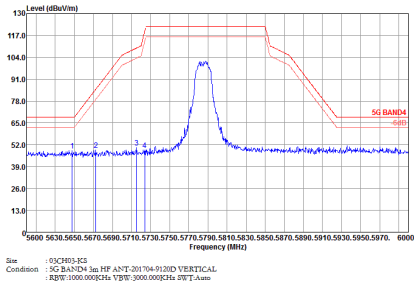
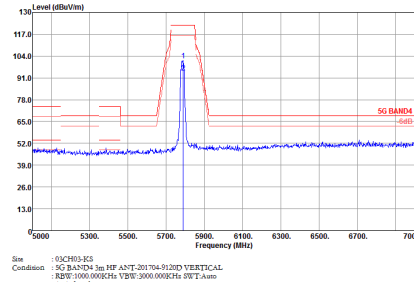
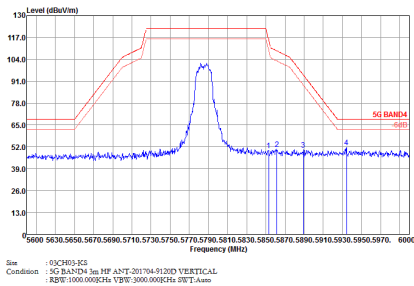


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
2	Vertical	Fundamental
Peak	 Size : 01CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-9120D VERTICAL RBW:1000.000KHz VBW:3000.000KHz SFT:Auto	 Size : 01CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-9120D VERTICAL RBW:1000.000KHz VBW:3000.000KHz SFT:Auto

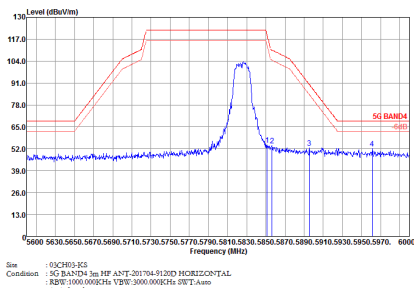
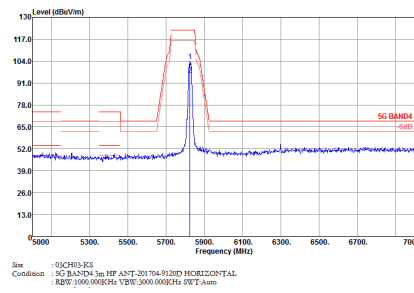


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
2	Horizontal	Fundamental
Peak	Site : 01C3403-KCS Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz DET:Auto	Site : 01C3403-KCS Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz DET:Auto
Peak	Site : 01C3403-KCS Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz DET:Auto	

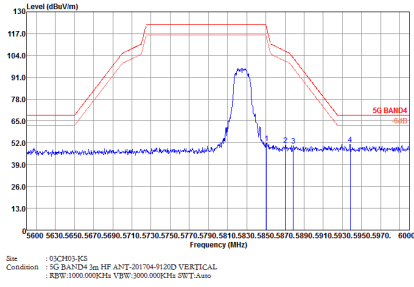
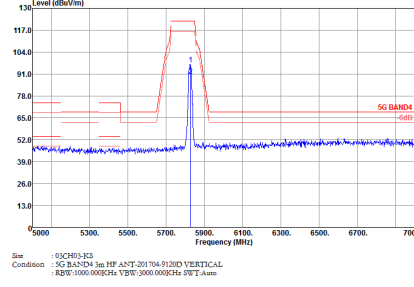


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
2	Vertical	Fundamental
Peak	 Site : 03CH03-K2 Condition : 5G BAND4 3m HP ANT-201704-912D VERTICAL RBW:1000.0000Hz VBW:3000.0000Hz SWT:A=auto	 Site : 03CH03-K2 Condition : 5G BAND4 3m HP ANT-201704-912D VERTICAL RBW:1000.0000Hz VBW:3000.0000Hz SWT:A=auto
Peak	 Site : 03CH03-K2 Condition : 5G BAND4 3m HP ANT-201704-912D VERTICAL RBW:1000.0000Hz VBW:3000.0000Hz SWT:A=auto	



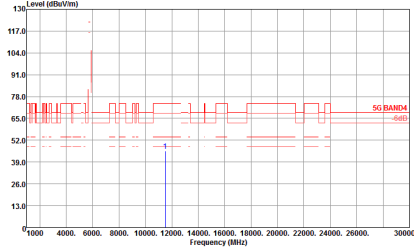
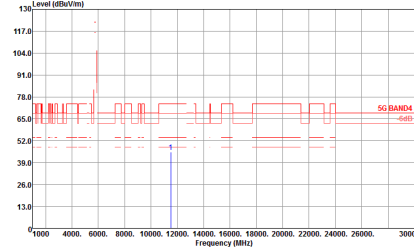
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
2	Horizontal	Fundamental
Peak		



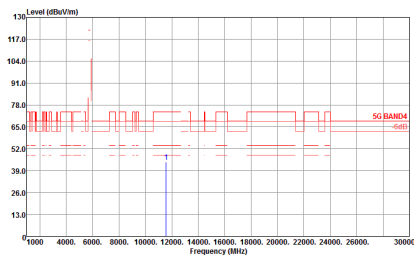
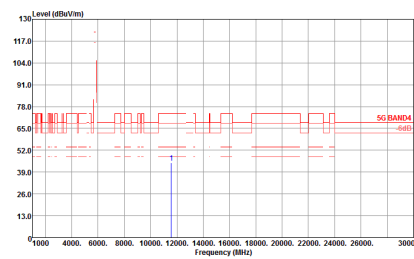
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
2	Vertical	Fundamental
Peak	 Site : 03CH03-K3 Condition : 5G BAND4 3m HP ANT-201704-9120D VERTICAL RBW: 1000.000CHz VBW: 3000.000CHz SFT: Auto	 Site : 03CH03-K3 Condition : 5G BAND4 3m HP ANT-201704-9120D VERTICAL RBW: 1000.000CHz VBW: 3000.000CHz SFT: Auto



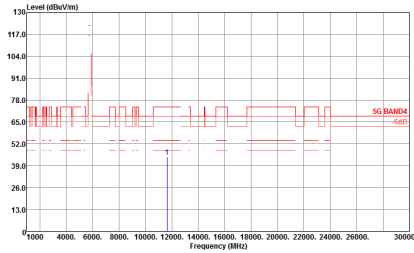
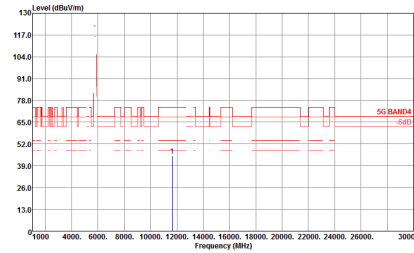
Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : 03CH03-KS Condition : 5G BAND4 3m HP ANT-201704-912D HORIZONTAL RBW:1000.000Hz VBW:3000.000Hz SWT:Auto	 Site : 03CH03-KS Condition : 5G BAND4 3m HP ANT-201704-912D VERTICAL RBW:1000.000Hz VBW:3000.000Hz SWT:Auto



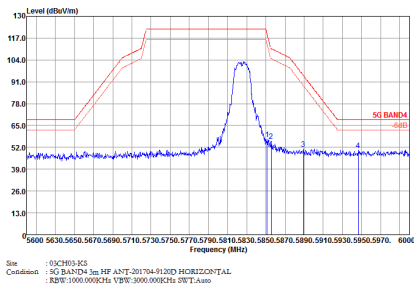
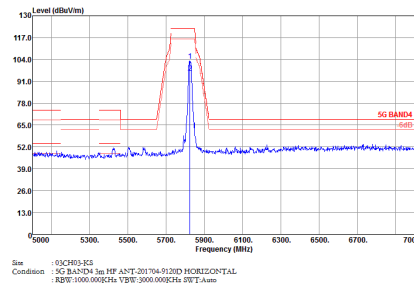
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : 01CH03-KS Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz DET:Auto	 Site : 01CH03-KS Condition : 5G BAND4 3m HP ANT-201704-9120D VERTICAL RBW:1000.000KHz VBW:3000.000KHz DET:Auto



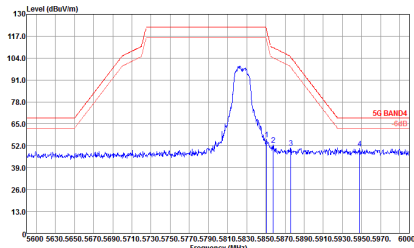
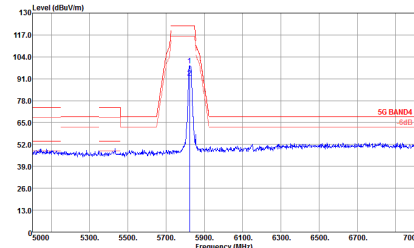
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : 03CM03-JCS Condition : 5G BAND4 3m HF ANT-201704-9120D HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SFT:Auto	 Site : 03CM03-JCS Condition : 5G BAND4 3m HF ANT-201704-9120D VERTICAL RBW:1000.000KHz VBW:3000.000KHz SFT:Auto



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

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHZ	
1	Horizontal	Fundamental
Peak	 Site : 03CH03-JCS Condition : 5G BAND4 3m HP ANT-201704-912ED HORIZONTAL : RBW:1000.000Hz VBW:3000.000Hz SFT:Auto	 Site : 03CH03-JCS Condition : 5G BAND4 3m HP ANT-201704-912ED HORIZONTAL : RBW:1000.000Hz VBW:3000.000Hz SFT:Auto

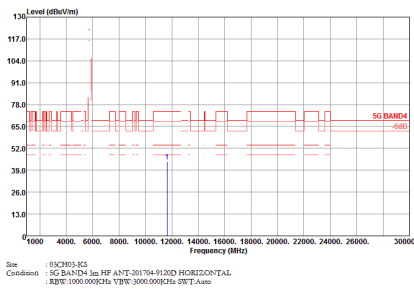
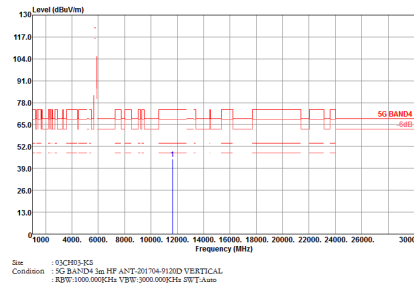


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Vertical	Fundamental
Peak	 Size : 03CH03-JC5 Condition : 5G BAND4 3m HF ANT-201704-9120D VERTICAL : RBW:1000.000GHz VBW:3000.000GHz SFT:Auto	 Size : 03CH03-JC5 Condition : 5G BAND4 3m HF ANT-201704-9120D VERTICAL : RBW:1000.000GHz VBW:3000.000GHz SFT:Auto



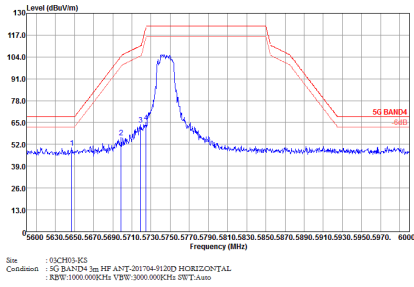
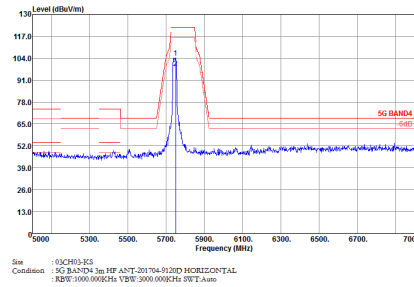
Band 4 - 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

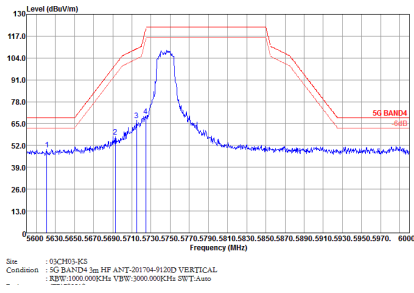
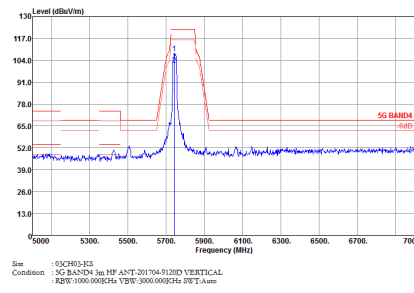
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.		



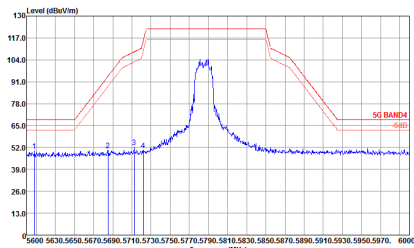
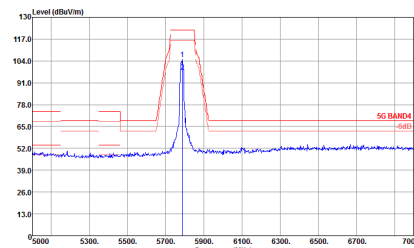
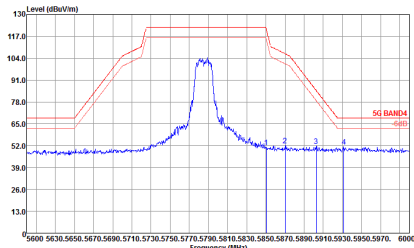
Band 4 - 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH03-RS Condition : 5G BAND4 3m HF ANT-201704-9120D HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto	 Site : 03CH03-RS Condition : 5G BAND4 3m HF ANT-201704-9120D HORIZONTAL : RBW:1000.000KHz VSW:3000.000KHz SWT:Auto

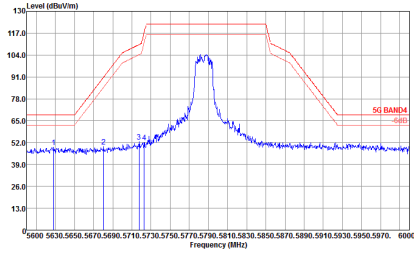
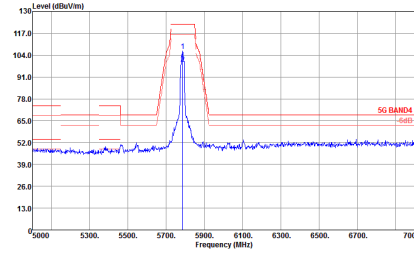
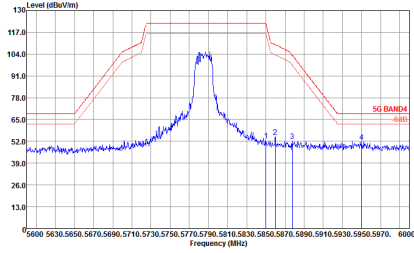


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Vertical	Fundamental
Peak		



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Fundamental
Peak	 Size : 01CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-0120D HORIZONTAL RBW:1000.000CHz VBW:3000.000CHz DET:Auto	 Size : 01CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-0120D HORIZONTAL RBW:1000.000CHz VBW:3000.000CHz DET:Auto
Peak	 Size : 01CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-0120D HORIZONTAL RBW:1000.000CHz VBW:3000.000CHz DET:Auto	

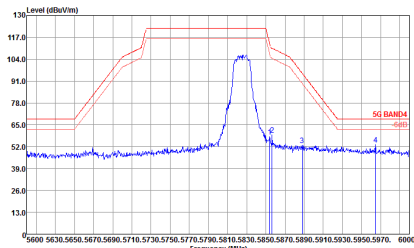
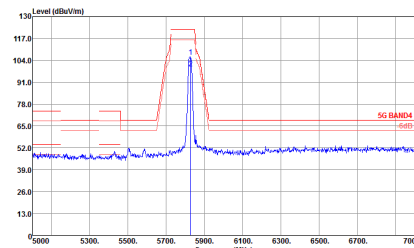


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Vertical	Fundamental
Peak	 Size : 01CH03-K5 Condition : 5G BAND4 3m HF ANT-201704-0120D VERTICAL RBW:1000.000GHz VBW:3000.000GHz SFT:Auto	 Size : 01CH03-K5 Condition : 5G BAND4 3m HF ANT-201704-0120D VERTICAL RBW:1000.000GHz VBW:3000.000GHz SFT:Auto
Peak	 Size : 01CH03-K5 Condition : 5G BAND4 3m HF ANT-201704-0120D VERTICAL RBW:1000.000GHz VBW:3000.000GHz SFT:Auto	

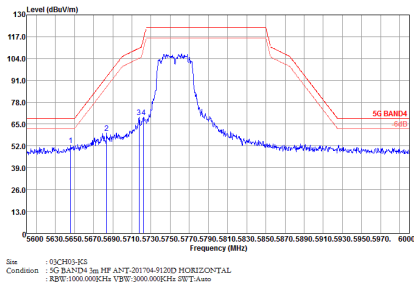
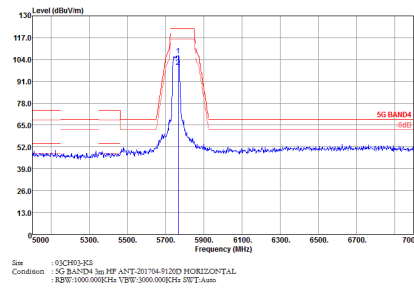
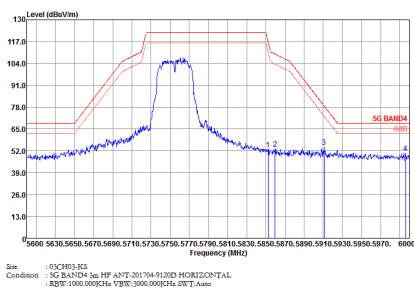


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Fundamental
Peak	Site : 03CH03-JCS Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SFT:Auto	Site : 03CH03-JCS Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SFT:Auto



WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CMI03-ES Condition : SG BAND4 3m HP ANT-201704-912ID VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CMI03-ES Condition : SG BAND4 3m HP ANT-201704-912ID 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 : 03CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-0120D HORIZONTAL RBW:1000.0000Hz VBW:3000.0000Hz SFT:1.0um	 Site : 03CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-0120D HORIZONTAL RBW:1000.0000Hz VBW:3000.0000Hz SFT:1.0um
Peak	 Site : 03CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-0120D HORIZONTAL RBW:1000.0000Hz VBW:3000.0000Hz SFT:1.0um	

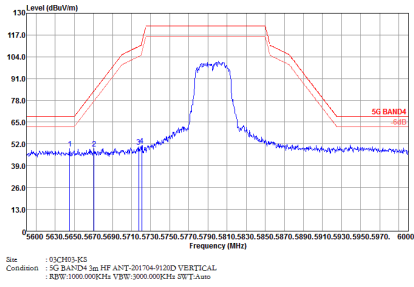
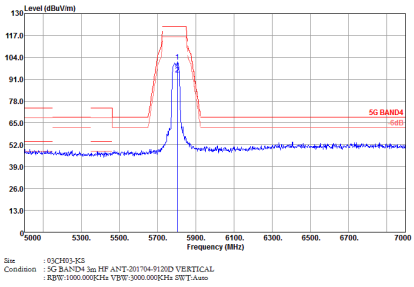
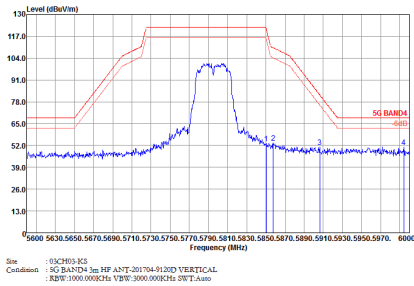


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Vertical	Fundamental
Peak	Site : 01C103-K3 Condition : 5G BAND4 3m HF ANT-201704-9120D VERTICAL RBW:1000.000GHz VBW:3000.000GHz SFT:Auto	Site : 01C103-K3 Condition : 5G BAND4 3m HF ANT-201704-9120D VERTICAL RBW:1000.000GHz VBW:3000.000GHz SFT:Auto
Peak	Site : 01C103-K3 Condition : 5G BAND4 3m HF ANT-201704-9120D VERTICAL RBW:1000.000GHz VBW:3000.000GHz SFT:Auto	

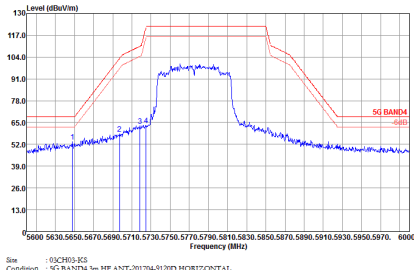
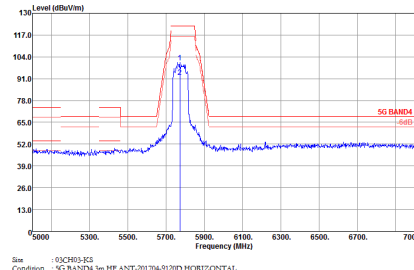
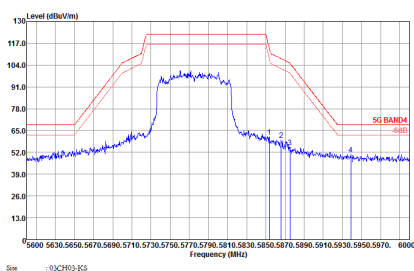


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak	Site : 01CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-012D HORIZONTAL RBW:1000.000Hz VBW:3000.000Hz SFT:Auto	Site : 01CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-012D HORIZONTAL RBW:1000.000Hz VBW:3000.000Hz SFT:Auto
Peak	Site : 01CH03-K3 Condition : 5G BAND4 3m HF ANT-201704-012D HORIZONTAL RBW:1000.000Hz VBW:3000.000Hz SFT:Auto	

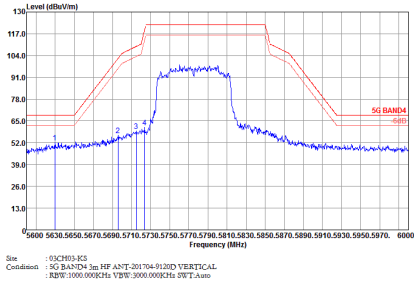
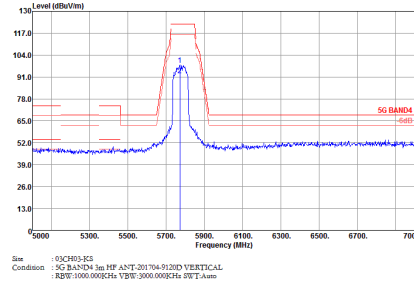
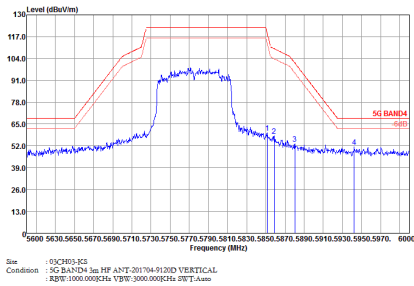


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak	 Site : 01CH03-KS Condition : SG BAND4 3m HF ANT-201704-9120D VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 01CH03-KS Condition : SG BAND4 3m HF ANT-201704-9120D VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto
Peak	 Site : 01CH03-KS Condition : SG BAND4 3m HF ANT-201704-9120D VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	

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

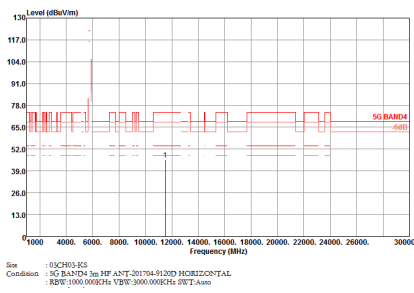
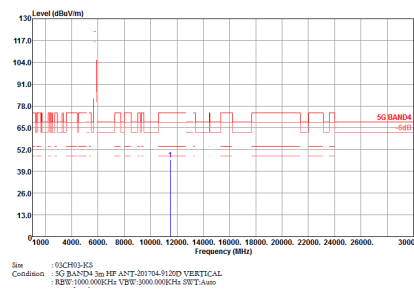
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Fundamental
Peak	 Size : 01CH03-K5 Condition : 5G BAND4 3m HP ANT-201704-0120D HORIZONTAL RBW:1000.000CHz VBW:3000.000CHz DET:Auto	 Size : 01CH03-K5 Condition : 5G BAND4 3m HP ANT-201704-0120D HORIZONTAL RBW:1000.000CHz VBW:3000.000CHz DET:Auto
Peak	 Size : 01CH03-K5 Condition : 5G BAND4 3m HP ANT-201704-0120D HORIZONTAL RBW:1000.000CHz VBW:3000.000CHz DET:Auto	



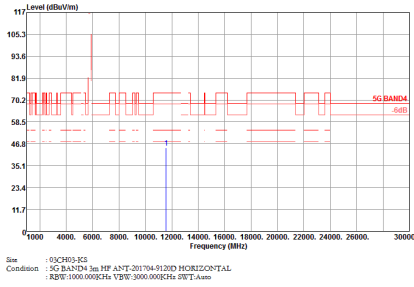
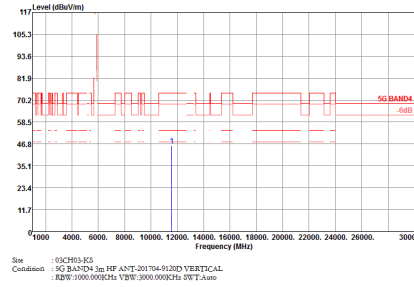
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Vertical	Fundamental
Peak	 Size : 01CM03-K3 Condition : 5G BAND4 3m HF ANT-201704-912HD VERTICAL RBW:1000.0000Hz VBW:3000.0000Hz SFT:Auto	 Size : 01CM03-K3 Condition : 5G BAND4 3m HF ANT-201704-912HD VERTICAL RBW:1000.0000Hz VBW:3000.0000Hz SFT:Auto
Peak	 Size : 01CM03-K3 Condition : 5G BAND4 3m HF ANT-201704-912HD VERTICAL RBW:1000.0000Hz VBW:3000.0000Hz SFT:Auto	



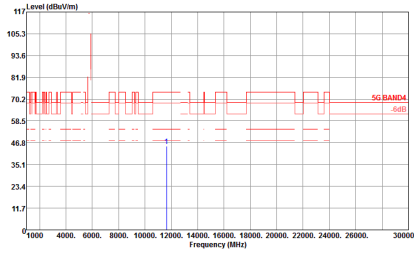
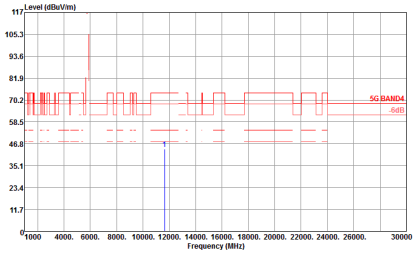
Band 4 - 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Size : 01CH03-K5 Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL RBW : 1000.0000Hz VBW : 3000.0000Hz REF: Auto	 Size : 01CH03-K5 Condition : 5G BAND4 3m HP ANT-201704-9120D VERTICAL RBW : 1000.0000Hz VBW : 3000.0000Hz REF: Auto



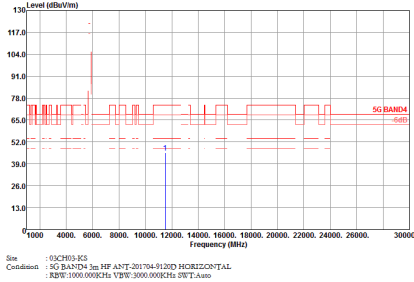
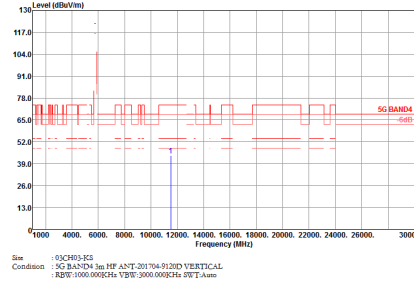
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH03-RS Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto	 Site : 03CH03-RS Condition : 5G BAND4 3m HP ANT-201704-9120D VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto



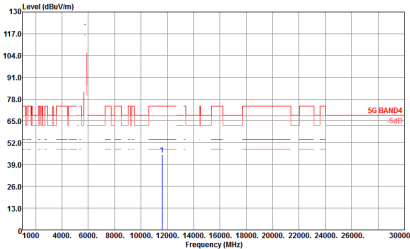
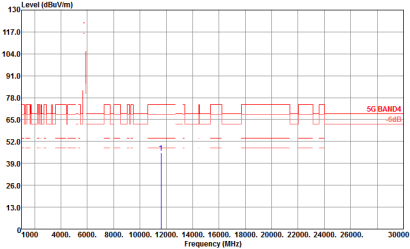
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Size : 01CH03-K3 Condition : 5G BAND4 3m HP ANT-201704-9120D HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz DFT:Auto	 Size : 01CH03-K3 Condition : 5G BAND4 3m HP ANT-201704-9120D VERTICAL RBW:1000.000KHz VBW:3000.000KHz DFT:Auto



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

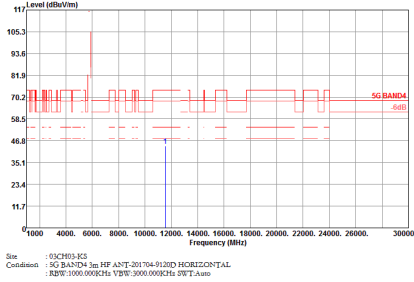
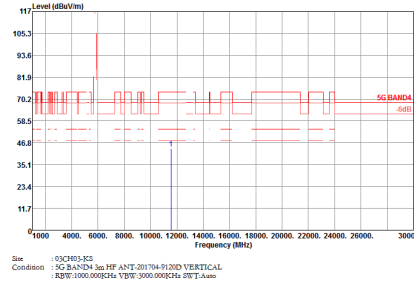
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH151 5755MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH03-K5 Condition : 5G BAND4 3m HP ANT 201704-0120D HORIZONTAL : RBW:1000.000Hz VBW:3000.000Hz SFT:Auto	 Site : 03CH03-K5 Condition : 5G BAND4 3m HP ANT 201704-0120D VERTICAL : RBW:1000.000Hz VBW:3000.000Hz SFT:Auto



WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Size : 01CH03-K5 Condition : 5G BAND4 3m HF ANT-201704-912HD HORIZONTAL RBW:1000.000GHz VBW:3000.000GHz REF:Auto	 Size : 01CH03-K5 Condition : 5G BAND4 3m HF ANT-201704-912HD VERTICAL RBW:1000.000GHz VBW:3000.000GHz REF:Auto

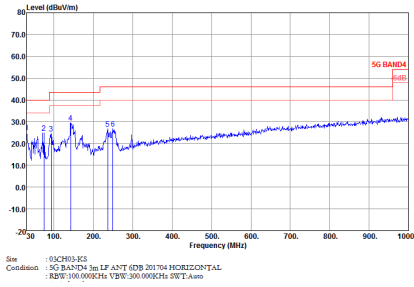
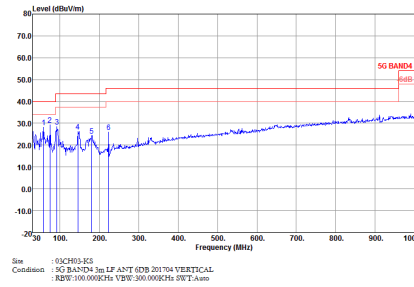


Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11ac VHT80 CH155 5775MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Size : 01CH03-K5 Condition : SG BAND4 3m HP ANT 201704-0120D HORIZONTAL RBW:1000.000CH VSW:3000.000CH SWT:Auto	 Size : 01CH03-K5 Condition : SG BAND4 3m HP ANT 201704-0120D VERTICAL RBW:1000.000CH VSW:3000.000CH SWT:Auto



Emission below 1GHz
5GHz WIFI 802.11n HT40 (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT40 LF	
1+2	Horizontal	Vertical
QP / Peak	 Site : 03CH03-KS Condition : 5G BAND4 3m LF ANT (DB 201704 HORIZONTAL RBW:100.000GHz VBW:300.000GHz SWT:AUTO	 Site : 03CH03-KS Condition : 5G BAND4 3m LF ANT (DB 201704 VERTICAL RBW:100.000GHz VBW:300.000GHz SWT:AUTO



For Sample 2

Band 4 - 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Fundamental
Peak	Site : 83CMB3-K5 Condition : 5G BAND4 3m 966-84 HF ANT HORIZONTAL RBW:1000,000KHz VBW:3000,000KHz SMT:Auto	Site : 83CMB3-K5 Condition : 5G BAND4 3m 966-84 HF ANT HORIZONTAL RBW:1000,000KHz VBW:3000,000KHz SMT:Auto
Peak	Site : 83CMB3-K5 Condition : 5G BAND4 3m 966-84 HF ANT HORIZONTAL RBW:1000,000KHz VBW:3000,000KHz SMT:Auto	



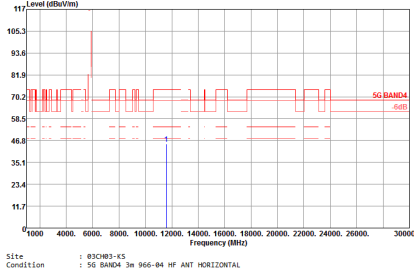
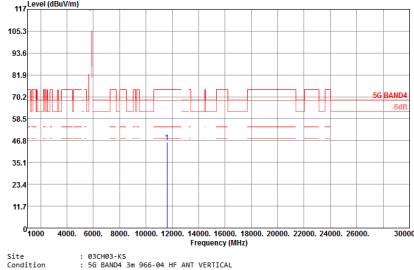
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Vertical	Fundamental
Peak		
Peak		



Band 4 5725~5850MHz

Band 4 - 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

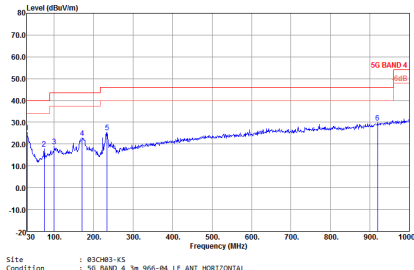
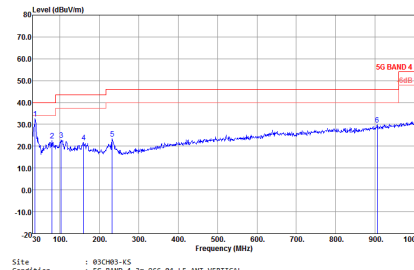
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT40 CH159 5795MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 83CH83-KS Condition : 5G BAND4 3m 966-84 HF ANT HORIZONTAL	 Site : 83CH83-KS Condition : 5G BAND4 3m 966-84 HF ANT VERTICAL



Band 4 5725~5850MHz

Emission below 1GHz

5GHz WIFI 802.11n HT40 (LF)

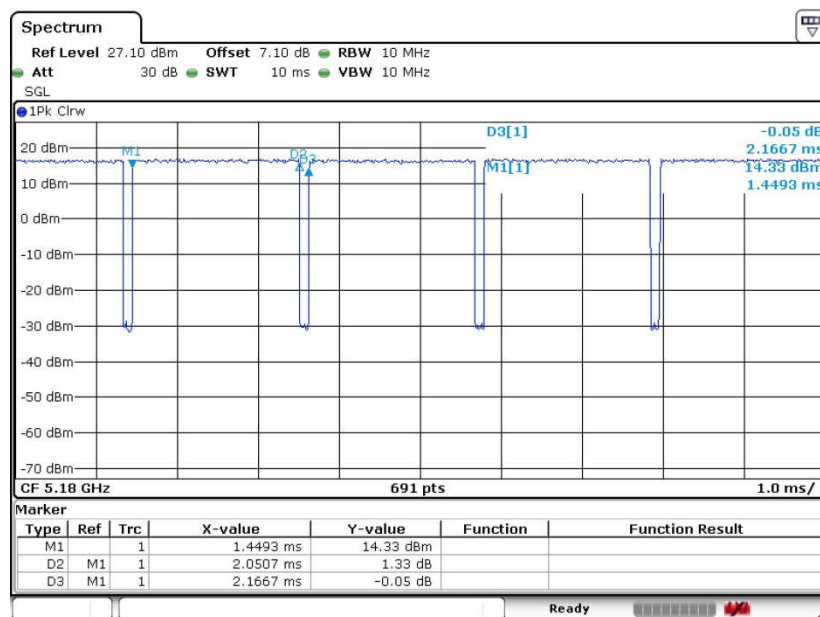
WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT40 LF	
1+2	Horizontal	Vertical
QP / Peak	 Site : 83CMB3-K5 Condition : 5G BAND 4 3m 966-04 LF ANT HORIZONTAL	 Site : 83CMB3-K5 Condition : 5G BAND 4 3m 966-04 LF ANT VERTICAL

Appendix D. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1	802.11a	94.65	2.051	0.488	1KHz
2	802.11a	94.66	2.055	0.487	1KHz
1+2	802.11n HT20	95.64	1.910	0.524	1KHz
1+2	802.11n HT40	84.38	0.939	1.065	3KHz
1+2	802.11ac VHT80	84.08	0.459	2.179	3KHz

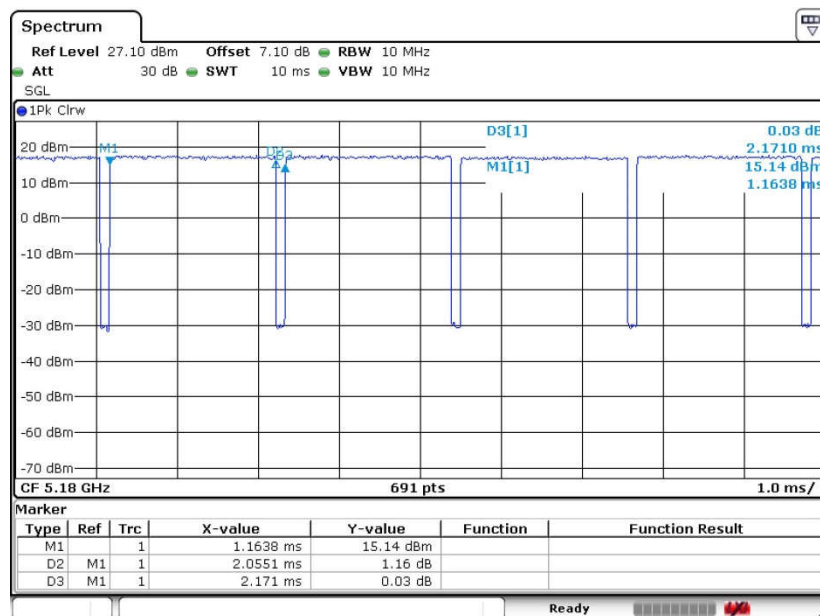


802.11a ANT.1



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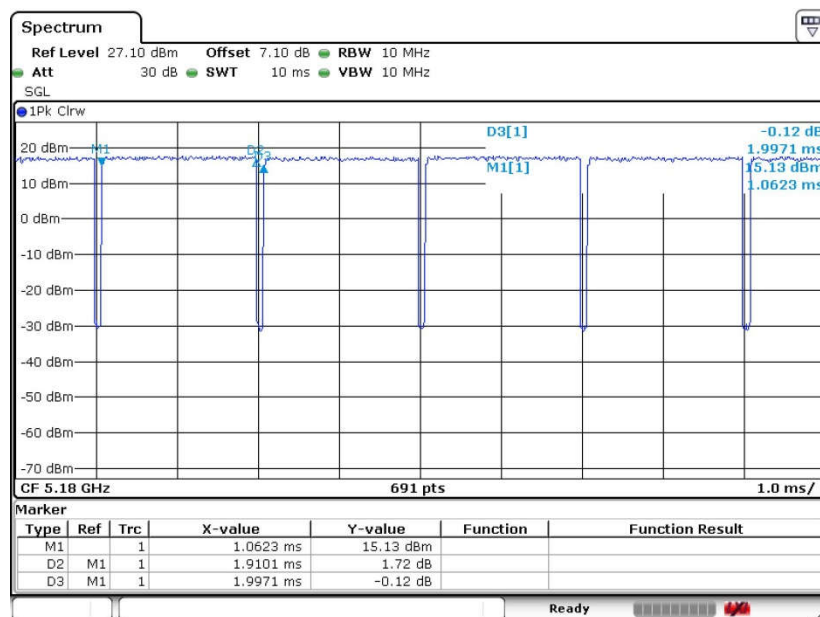
802.11a ANT.2



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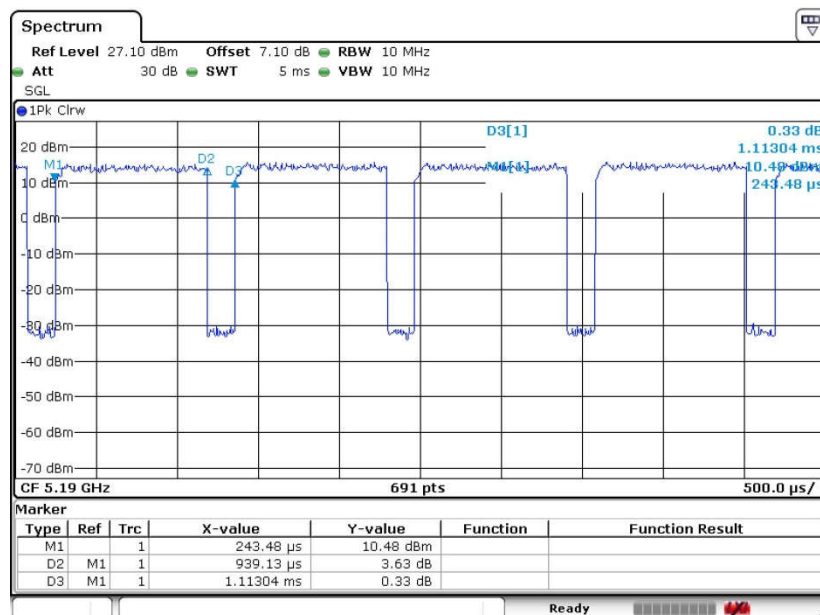


802.11n HT20 ANT.1+2



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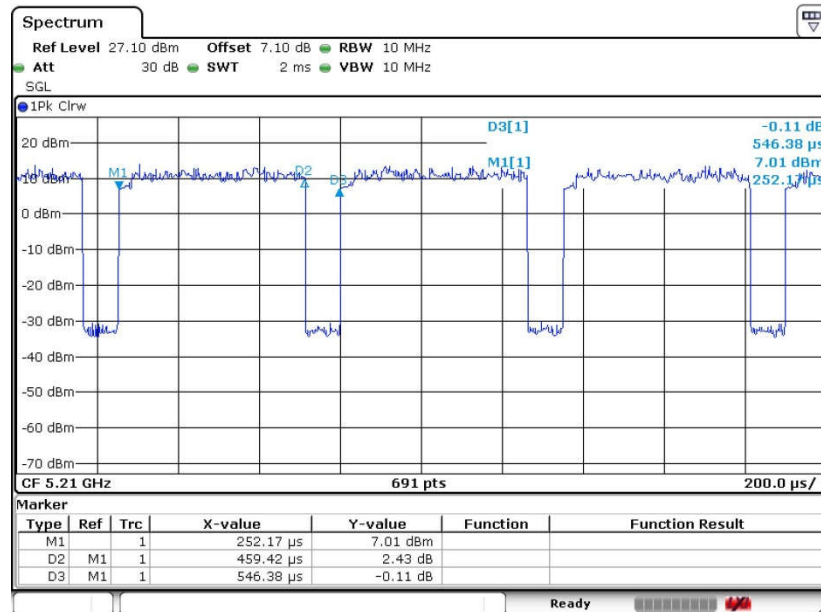
802.11n HT40 ANT.1+2



Date: 25.OCT.2017 19:01:42



802.11ac VHT80 ANT.1+2



Date: 25.OCT.2017 19:44:17