FCC RF Test Report

APPLICANT	:	**Lenovo(Shanghai) Electronics Technology Co., Ltd.**
EQUIPMENT	:	**Portable Tablet Computer**
BRAND NAME	:	**Lenovo**
MODEL NAME	:	**Lenovo TB-X505L**
FCC ID	:	**O57TBX505L**
STANDARD	:	**FCC Part 15 Subpart E §15.407**
CLASSIFICATION	:	**(NII) Unlicensed National Information Infrastructure**

This is a data re-used report which is only valid together with the original test report. The product was received on Jan. 25, 2019 and testing was completed on Mar. 29, 2019. 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.

James Huang

Approved by: James Huang / Manager

TESTING
NVLAP LAB CODE 600155-0

Sporton International (Kunshan) Inc.
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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR912504-01D	Rev. 01	Initial issue of report	Apr. 29, 2019

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
-	2.1049 & 15.403(i)	26dB & 99% Bandwidth	-	Not Required	1
-	15.407(a)	Maximum Conducted Output Power	≤ 24 dBm	Not Required	1
-	15.407(a)	Power Spectral Density	≤ 11 dBm	Not Required	1
3.1	15.407(b)	Unwanted Emissions	15.407(b) & 15.209(a)	Pass	Under limit 3.64 dB at 5459.600 MHz
3.2	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 12.08 dB at 0.634 MHz
3.3	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.4	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-
Remark 1: Test items are performed on original report which can be referred to Sporton report number FR912606D.					

1 General Description

1.1 Applicant

Lenovo(Shanghai) Electronics Technology Co., Ltd.
NO.68 BUILDING, 199 FENJU RD, Pilot Free Trade Zone, 200131, China

1.2 Manufacturer

Lenovo PC HK Limited
23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Portable Tablet Computer
Brand Name	Lenovo
Model Name	Lenovo TB-X505L
FCC ID	O57TBX505L
EUT supports Radios application	GPRS/EGPRS/WCDMA/HSPA/ DC-HSDPA/HSPA+(16QAM uplink is not supported)/ LTE WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR / EDR / LE FM Receiver/GNSS
IMEI Code	Conduction: 865781040011057 Radiation:865781040012733
HW Version	Lenovo Tablet TB-X505L
SW Version	TB-X505L_RF01_190118
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 seven types of EUT, the differences of them described on operate description submitted separately. According to the difference, we choose the sample 1 to full test

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5720 MHz
Antenna Type / Gain	**<5180 MHz ~ 5240 MHz >** FPC Antenna with gain 1.43 dBi **<5260 MHz ~ 5320 MHz >** FPC Antenna with gain 1.16 dBi **<5500 MHz ~ 5720 MHz >** FPC Antenna with gain 1.39 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

1.5 Modification of EUT

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

1.6 Re-use of Measured Data

1.6.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: Lenovo TB-X505L, FCC ID: O57TBX505L) is electrically identical to the reference device (Model: Lenovo TB-X505F, FCC ID: O57TBX505F) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 484596 D01.

1.6.2 Difference Section

For details concerning the similarity with respect to component placement, mechanical/electrical design etc., please refer to the Product Equality Declaration.

The re-used RF data includes the following bands provided in Appendix A (Sporton RF Report No. FR912606D for the reference device Model: Lenovo TB-X505F, FCC ID: O57TBX505F).

1.6.3 Reference detail Section:

Equipment Class	Reference FCC ID	Folder Test	Report Title/Section
NII (B1~3)	O57TBX505F	Part15E(FR912606D)	All sections applicable except AC Conducted Emission and RSE
NII (B4)	O57TBX505F	Part15E(FR912606E)	All sections applicable except AC Conducted Emission and RSE
NII (DFS)	O57TBX505F	Part15E(FZ912606)	All sections applicable

1.6.4 Spot Check Verification Data Section

In order to confirm hardware similarity of the subject device with the reference device, spot check measurements were performed on the subject device for the following test items, the test result were consistent with FCC ID: O57TBX505F.

Assertions concerning the similarity of these devices are based on representations by the applicant. The applicant accepts full responsibility for the validity of the similarity claim, and for the determination that verification test data are sufficient to support it.

Test Item	Mode	O57TBX505F Worst Result	O57TBX505L Worst Result	Difference (dB)
Peak Conducted Power (dBm)	11a	14.82	15.19	-0.37
	11n-HT20	14.84	15.17	-0.33
	11n-HT40	14.79	14.52	0.27
	11ac VHT20	14.90	14.99	-0.09
	11ac VHT40	14.80	15.17	-0.37
	11ac VHT80	14.82	14.69	0.13

1.7 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. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	**Sporton Site No.**		**FCC Test Firm Registration No.**
	03CH05-KS	CO01-KS	630927

1.8 Applicable Standards

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

- 47 CFR Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- 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.

1.9 Specification of Accessory

Specification of Accessory				
AC Adapter 1(US)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-41
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(EU)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-42
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(UK)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-43
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(IN)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-44
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(AU)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-45
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(AR)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-46
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 1(KR)	**Brand Name**	Lenovo (Salom)	**Model Name**	SC-49
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 2(US)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-41
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 2(EU)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-42
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 2(UK)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-43
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 2(AU)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-45
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
AC Adapter 2(AR)	**Brand Name**	Lenovo (Acbel)	**Model Name**	SC-46
	Power Rating	I/P: 100-240 Vac, 0.3A, O/P: 5Vdc,2A		
Battery 1	**Brand Name**	Lenovo (NVT+ATL)	**Model Name**	L18D1P32
	Power Rating	3.85Vdc,4850mAh	**Type**	Li-ion, Polymer
Battery 2	**Brand Name**	Lenovo (Suwnoda + Liwnon)	**Model Name**	L18D1P32
	Power Rating	3.85Vdc,4850mAh	**Type**	Li-ion, Polymer
USB Cable 1	**Brand Name**	Lenovo (LiQI)	**Model Name**	Lqc0350083
	Signal Line Type	0.7 meter, shielded cable, without ferrite core		
USB Cable 2	**Brand Name**	Lenovo (JIEYE)	**Model Name**	JY-C003-292
	Signal Line Type	0.7 meter, shielded cable, without ferrite core		

2 Test Configuration of Equipment Under Test

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

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

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5180-5240 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	42#	5210		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5260-5320 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	58#	5290		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5720 MHz Band 3 (U-NII-2C)	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	106#	5530	134*	5670
	108	5540	136	5680
	110*	5550	140	5700

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
TDWR Channel	118*	5590	124	5620
	120	5600	126*	5630
	122#	5610	128	5640

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Straddle Channel	138#	5690	144	5720
	142*	5710		

Note:

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

2.2 Test Mode

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

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

Test Cases	
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN Link(5G) + Battery 1 + Earphone + USB Cable 1(Charging from Adapter 1) for Sample1
Remark: For Radiated Test Cases, The tests were performed with Adapter 1, Battery 1, Earphone, USB Cable 1 and Sample 1	

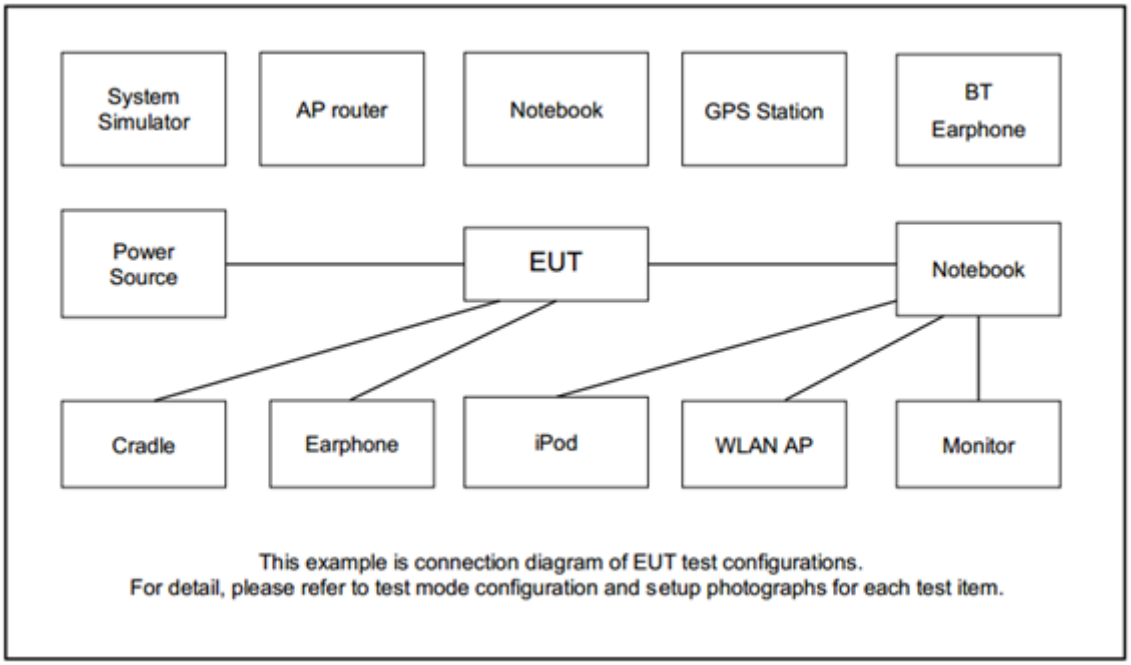
Ch. #		Band I：5180-5240 MHz	Band II：5260-5320 MHz	Band III：5500-5720MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

Ch. #		Band I：5180-5240 MHz	Band II：5260-5320 MHz	Band III：5500-5720MHz
		802.11ac VHT20	802.11ac VHT20	802.11ac VHT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

Ch. #		Band I：5180-5240 MHz	Band II：5260-5320 MHz	Band III：5500-5720MHz
		802.11ac VHT40	802.11ac VHT40	802.11ac VHT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134
Straddle		-	-	142

Ch. #		Band I：5180-5240 MHz	Band II：5260-5320 MHz	Band III：5500-5720MHz
		802.11ac VHT80	802.11ac VHT80	802.11ac VHT80
L	Low	-	-	106
M	Middle	42	58	-
H	High	-	-	122
Straddle		-	-	138

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
3.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.8m DC O/P: Shielded, 1.8 m
4.	Earphone	Lenovo	P121	N/A	Unshielded,1.2m	N/A
5.	SD Card	Kingston	8GB	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 continuously 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 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 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of –27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

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

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

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

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

$$EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

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 v02r01. Section G) Unwanted emissions measurement.

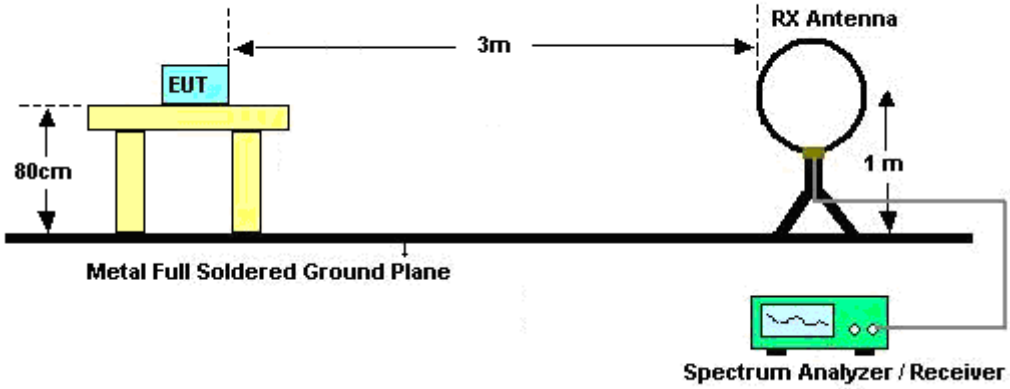
   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

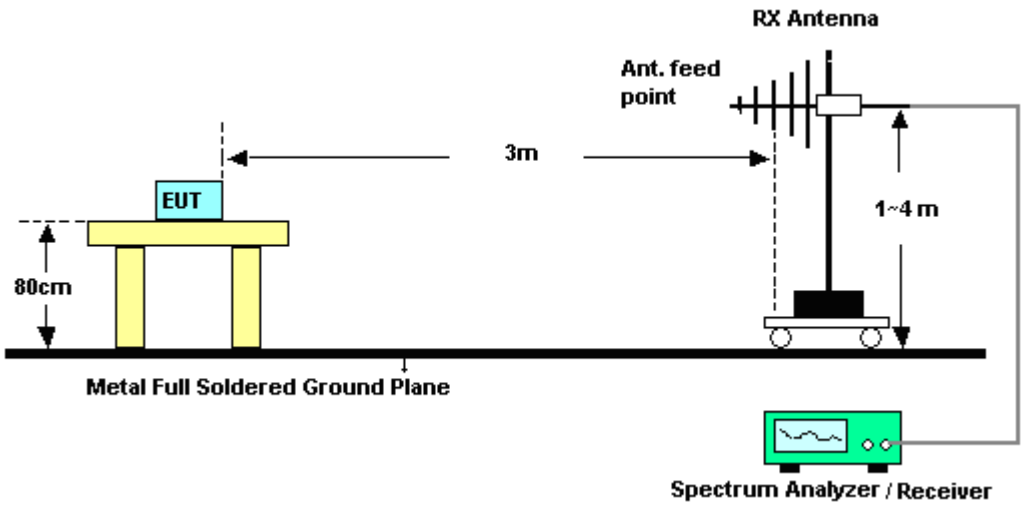
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting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

3.1.4 Test Setup

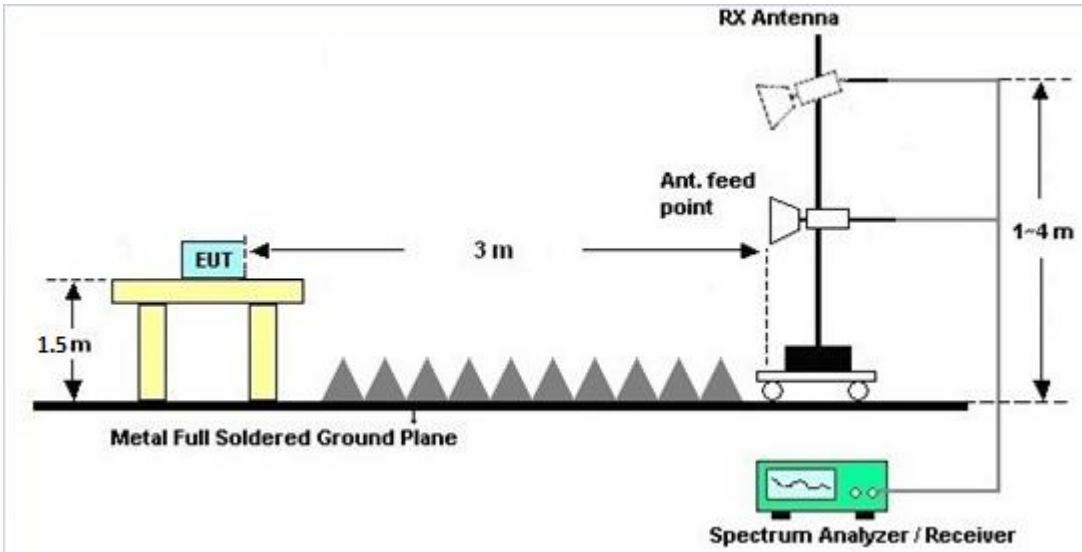
For radiated emissions below 30MHz



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.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.1.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

3.1.7 Duty Cycle

Please refer to Appendix C.

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

Please refer to Appendix B.

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 (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

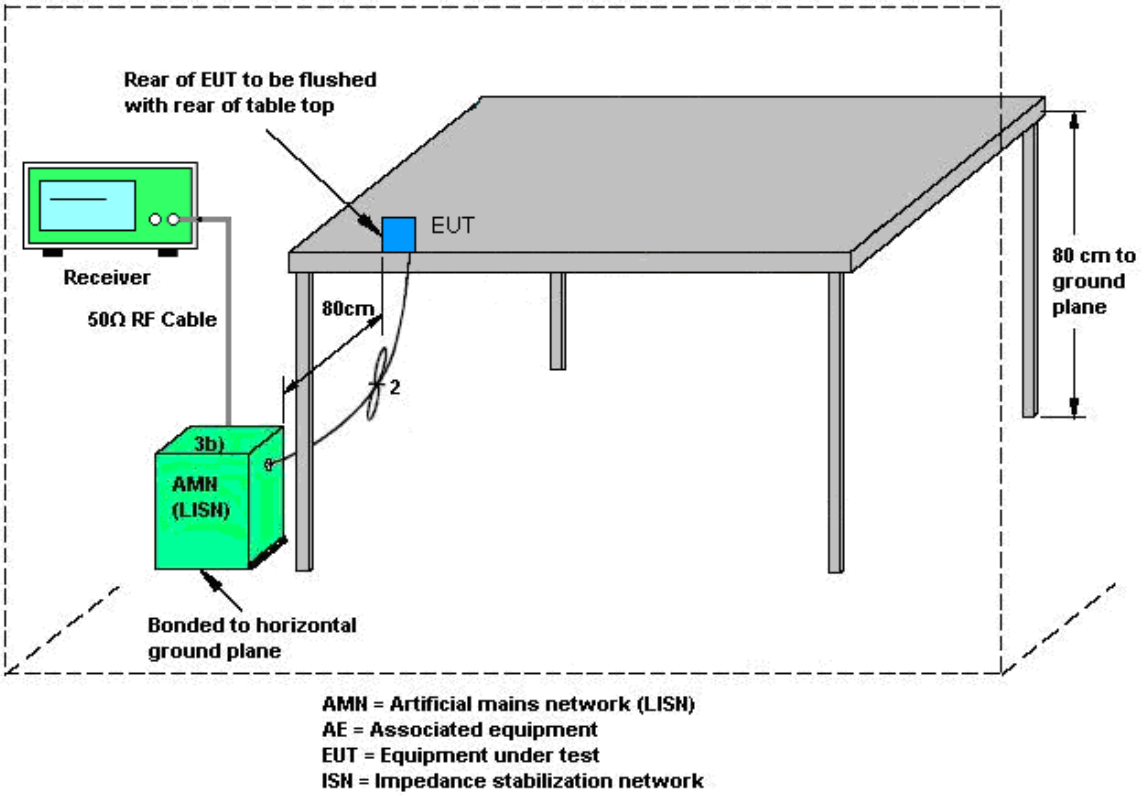
3.2.2 Measuring Instruments

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 Automatically Discontinue Transmission

3.3.1 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.

3.3.2 Measuring Instruments

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

3.3.3 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.

3.4 Antenna Requirements

3.4.1 Standard Applicable

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

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.4.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A	MY57290151	3Hz~8.5GHz;Max 30dBm	Jun. 25. 2018	Mar. 29, 2019	Jun. 24. 2019	Radiation (03CH05-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44GHz	Apr. 17, 2018	Mar. 29, 2019	Apr. 16, 2019	Radiation (03CH05-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 19, 2018	Mar. 29, 2019	Oct. 18, 2019	Radiation (03CH05-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Jun. 12, 2018	Mar. 29, 2019	Jun. 11, 2019	Radiation (03CH05-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 27, 2019	Mar. 29, 2019	Jan. 26, 2020	Radiation (03CH05-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2019	Mar. 29, 2019	Jan. 04, 2020	Radiation (03CH05-KS)
Amplifier	com-power	PA-103A	161069	1MHz ~1000MHz / 32 dB	Apr. 17, 2018	Mar. 29, 2019	Apr. 16, 2019	Radiation (03CH05-KS)
Amplifier	MITEQ	TTA1840-35-HG	2014749	18~40GHz	Jan. 14, 2019	Mar. 29, 2019	Jan. 13, 2020	Radiation (03CH05-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2025788	1Ghz-18Ghz	Apr. 17. 2018	Mar. 29, 2019	Apr. 16, 2019	Radiation (03CH05-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Apr. 18. 2018	Mar. 29, 2019	Apr. 17. 2019	Radiation (03CH05-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Mar. 29, 2019	NCR	Radiation (03CH05-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Mar. 29, 2019	NCR	Radiation (03CH05-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Mar. 29, 2019	NCR	Radiation (03CH05-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 19, 2018	Mar. 24, 2019	Apr. 18, 2019	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 12, 2018	Mar. 24, 2019	Oct. 11, 2019	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Nov. 19, 2018	Mar. 24, 2019	Nov. 18, 2019	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2018	Mar. 24, 2019	Oct. 11, 2019	Conduction (CO01-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.9 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0 dB**

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

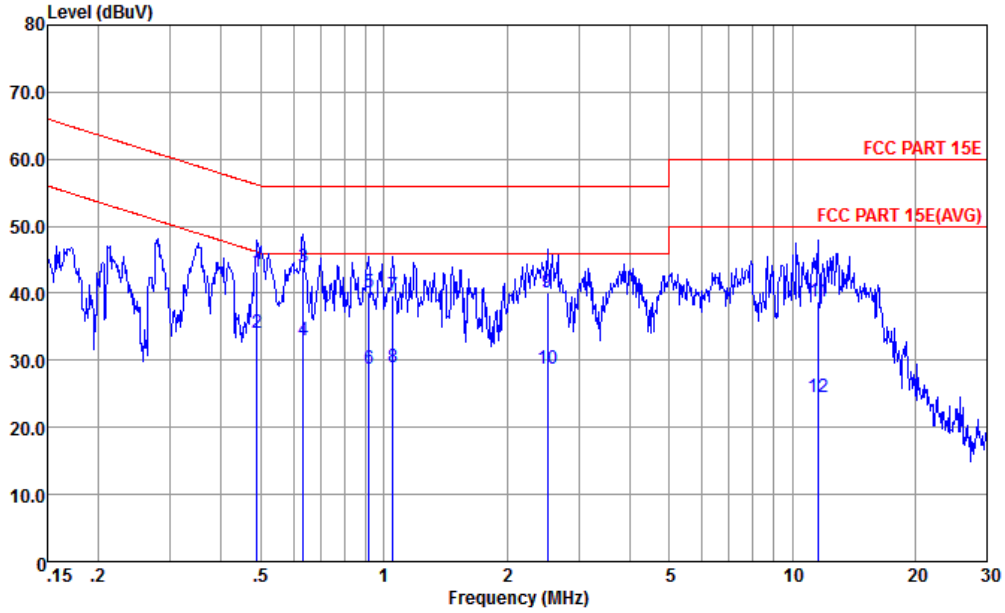
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0 dB**

Appendix A. AC Conducted Emission Test Results

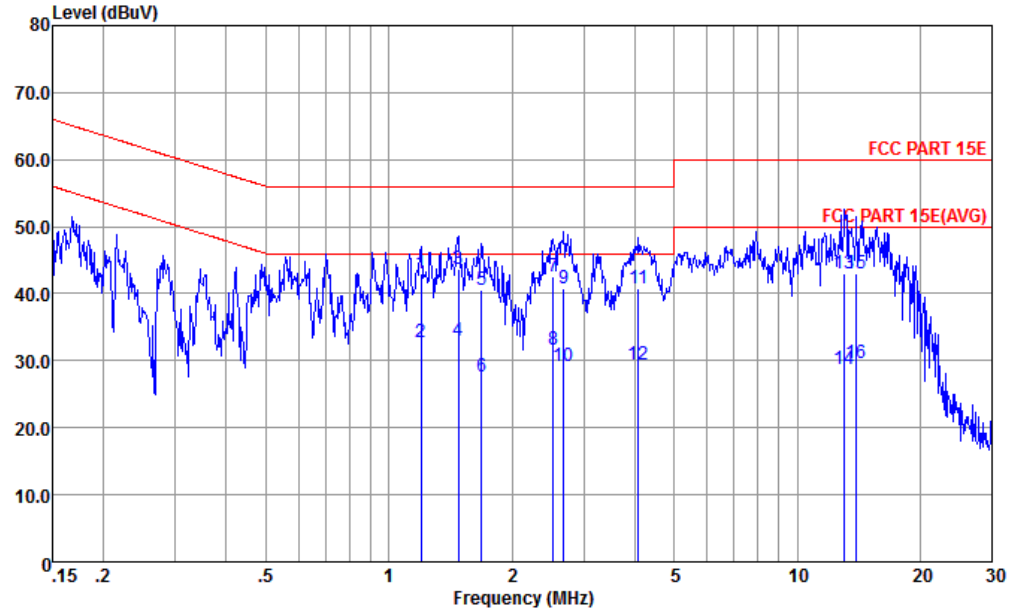
Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line



Site : CO01-KS
Condition : FCC PART 15E LISN-L-181119-060105 LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.489	43.31	-12.88	56.19	32.90	0.17	10.24	QP
2		0.489	34.01	-12.18	46.19	23.60	0.17	10.24	Average
3	*	0.634	43.92	-12.08	56.00	33.50	0.18	10.24	QP
4		0.634	33.02	-12.98	46.00	22.60	0.18	10.24	Average
5		0.918	40.03	-15.97	56.00	29.59	0.20	10.24	QP
6		0.918	28.73	-17.27	46.00	18.29	0.20	10.24	Average
7		1.054	39.63	-16.37	56.00	29.20	0.20	10.23	QP
8		1.054	29.03	-16.97	46.00	18.60	0.20	10.23	Average
9		2.513	40.06	-15.94	56.00	29.59	0.23	10.24	QP
10		2.513	28.76	-17.24	46.00	18.29	0.23	10.24	Average
11		11.621	38.80	-21.20	60.00	28.20	0.24	10.36	QP
12		11.621	24.50	-25.50	50.00	13.90	0.24	10.36	Average

Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral



Site : CO01-KS
Condition : FCC PART 15E LISN-N-181119-060105 NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	1.197	42.97	-13.03	56.00	32.60	0.14	10.23	QP
2	1.197	32.87	-13.13	46.00	22.50	0.14	10.23	Average
3 *	1.480	43.57	-12.43	56.00	33.20	0.14	10.23	QP
4	1.480	32.97	-13.03	46.00	22.60	0.14	10.23	Average
5	1.689	40.57	-15.43	56.00	30.19	0.15	10.23	QP
6	1.689	27.67	-18.33	46.00	17.29	0.15	10.23	Average
7	2.527	42.59	-13.41	56.00	32.19	0.16	10.24	QP
8	2.527	31.59	-14.41	46.00	21.19	0.16	10.24	Average
9	2.678	40.70	-15.30	56.00	30.30	0.16	10.24	QP
10	2.678	29.30	-16.70	46.00	18.90	0.16	10.24	Average
11	4.092	40.73	-15.27	56.00	30.31	0.17	10.25	QP
12	4.092	29.33	-16.67	46.00	18.91	0.17	10.25	Average
13	13.057	43.11	-16.89	60.00	32.59	0.14	10.38	QP
14	13.057	28.71	-21.29	50.00	18.19	0.14	10.38	Average
15	13.989	43.12	-16.88	60.00	32.60	0.13	10.39	QP
16	13.989	29.72	-20.28	50.00	19.20	0.13	10.39	Average

Appendix B. Radiated Spurious Emission

Band 1 - 5150~5250MHz

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.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		5149.76	57.65	-16.35	74	51.71	34.3	8.14	36.5	100	184	P	H
		5127.68	47.31	-6.69	54	41.4	34.27	8.14	36.5	100	184	A	H
	*	5176	107.51	-	-	101.46	34.37	8.17	36.49	100	184	P	H
		5176	101.02	-	-	94.97	34.37	8.17	36.49	100	184	A	H
		5149.6	54.53	-19.47	74	48.59	34.3	8.14	36.5	374	341	P	V
		5127.68	42.21	-11.79	54	36.3	34.27	8.14	36.5	374	341	A	V
	*	5180	103.6	-	-	97.55	34.37	8.17	36.49	374	341	P	V
		5180	97.12	-	-	91.07	34.37	8.17	36.49	374	341	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 36 5180MHz		10360	42.04	-26.26	68.3	55.56	37.67	11.87	63.06	100	360	P	H
		10360	43.93	-24.37	68.3	57.45	37.67	11.87	63.06	100	360	P	V
802.11a CH 44 5220MHz		10440	42.2	-26.1	68.3	55.58	37.73	11.93	63.04	100	360	P	H
		10440	43.81	-24.49	68.3	57.19	37.73	11.93	63.04	100	360	P	V
802.11a CH 48 5240MHz		10480	41.64	-26.66	68.3	54.92	37.78	11.97	63.03	100	360	P	H
		10480	43.98	-24.32	68.3	57.26	37.78	11.97	63.03	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

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 36 5180MHz		5127.84	56.25	-17.75	74	50.34	34.27	8.14	36.5	100	183	P	H
		5128.16	47.97	-6.03	54	42.06	34.27	8.14	36.5	100	183	A	H
	*	5186	107.39	-	-	101.34	34.37	8.17	36.49	100	183	P	H
		5186	100	-	-	93.95	34.37	8.17	36.49	100	183	A	H
		5127.84	51.95	-22.05	74	46.04	34.27	8.14	36.5	356	344	P	V
		5128.32	44.01	-9.99	54	38.1	34.27	8.14	36.5	356	344	A	V
	*	5174	103.62	-	-	97.57	34.37	8.17	36.49	356	344	P	V
		5174	96.64	-	-	90.59	34.37	8.17	36.49	356	344	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

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 36 5180MHz		10360	41.91	-26.39	68.3	55.43	37.67	11.87	63.06	100	360	P	H
		10360	45.36	-22.94	68.3	58.88	37.67	11.87	63.06	100	360	P	V
802.11n HT20 CH 44 5220MHz		10440	41.99	-26.31	68.3	55.37	37.73	11.93	63.04	100	360	P	H
		10440	44.23	-24.07	68.3	57.61	37.73	11.93	63.04	100	360	P	V
802.11n HT20 CH 48 5240MHz		10480	42.12	-26.18	68.3	55.4	37.78	11.97	63.03	100	360	P	H
		10480	45.94	-22.36	68.3	59.22	37.78	11.97	63.03	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

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 HT20 CH 38 5190MHz		5149.12	62.07	-11.93	74	56.13	34.3	8.14	36.5	100	182	P	H
		5149.12	45.24	-8.76	54	39.3	34.3	8.14	36.5	100	182	A	H
	*	5178	104.95	-	-	98.9	34.37	8.17	36.49	100	182	P	H
		5178	97.51	-	-	91.46	34.37	8.17	36.49	100	182	A	H
		5384.16	48.84	-25.16	74	42.29	34.7	8.3	36.45	100	182	P	H
		5350.68	39.12	-14.88	54	32.57	34.7	8.3	36.45	100	182	A	H
		5147.68	53.66	-20.34	74	47.72	34.3	8.14	36.5	355	343	P	V
		5148.96	42.56	-11.44	54	36.62	34.3	8.14	36.5	355	343	A	V
	*	5178	100.88	-	-	94.83	34.37	8.17	36.49	355	343	P	V
		5178	93.73	-	-	87.68	34.37	8.17	36.49	355	343	A	V
		5372.46	48.03	-25.97	74	41.48	34.7	8.3	36.45	355	343	P	V
		5376.96	38.87	-15.13	54	32.32	34.7	8.3	36.45	355	343	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 38 5190MHz		10380	42.51	-25.79	68.3	55.98	37.68	11.9	63.05	100	360	P	H
		10380	44.7	-23.6	68.3	58.17	37.68	11.9	63.05	100	360	P	V
802.11n HT40 CH 46 5230MHz		10460	42.35	-25.95	68.3	55.67	37.75	11.97	63.04	100	360	P	H
		10460	44.34	-23.96	68.3	57.66	37.75	11.97	63.04	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

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 42 5210MHz		5148.48	64.22	-9.78	74	58.28	34.3	8.14	36.5	100	183	P	H
		5149.28	47.86	-6.14	54	41.92	34.3	8.14	36.5	100	183	A	H
	*	5214	102.18	-	-	96.03	34.43	8.2	36.48	100	183	P	H
		5214	95.15	-	-	89	34.43	8.2	36.48	100	183	A	H
		5381.46	48.18	-25.82	74	41.63	34.7	8.3	36.45	100	183	P	H
		5354.28	40.13	-13.87	54	33.58	34.7	8.3	36.45	100	183	A	H
		5147.52	54.95	-19.05	74	49.01	34.3	8.14	36.5	370	342	P	V
		5146.72	42.37	-11.63	54	36.43	34.3	8.14	36.5	370	342	A	V
	*	5212	98.47	-	-	92.32	34.43	8.2	36.48	370	342	P	V
		5212	91.43	-	-	85.28	34.43	8.2	36.48	370	342	A	V
		5353.38	50.2	-23.8	74	43.65	34.7	8.3	36.45	370	342	P	V
		5372.1	40.28	-13.72	54	33.73	34.7	8.3	36.45	370	342	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 42 5210MHz		10420	42.8	-25.5	68.3	56.2	37.72	11.93	63.05	100	360	P	H
		10420	45.75	-22.55	68.3	59.15	37.72	11.93	63.05	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 - 5250~5350MHz

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.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 64 5320MHz	*	5314	108.56	-	-	102.12	34.63	8.27	36.46	100	183	P	H
		5314	101.25	-	-	94.81	34.63	8.27	36.46	100	183	A	H
		5372.5	55.16	-18.84	74	48.61	34.7	8.3	36.45	100	183	P	H
		5372.4	46.56	-7.44	54	40.01	34.7	8.3	36.45	100	183	A	H
	*	5316	103.82	-	-	97.38	34.63	8.27	36.46	336	1	P	V
		5316	97.07	-	-	90.63	34.63	8.27	36.46	336	1	A	V
		5352.7	53.22	-20.78	74	46.67	34.7	8.3	36.45	336	1	P	V
		5372.5	43.41	-10.59	54	36.86	34.7	8.3	36.45	336	1	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 52 5260MHz		10520	44.12	-24.18	68.3	57.33	37.82	12	63.03	100	360	P	H
		10520	44.51	-23.79	68.3	57.72	37.82	12	63.03	100	360	P	V
802.11a CH 60 5300MHz		10600	42.42	-31.58	74	55.47	37.9	12.06	63.01	100	360	P	H
		10600	43.82	-30.18	74	56.87	37.9	12.06	63.01	100	360	P	V
802.11a CH 64 5320MHz		10640	45.04	-28.96	74	58.05	37.9	12.09	63	100	360	P	H
		10640	44.68	-29.32	74	57.69	37.9	12.09	63	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

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 64 5320MHz	*	5314	107.68	-	-	101.24	34.63	8.27	36.46	100	183	P	H
		5314	100.74	-	-	94.3	34.63	8.27	36.46	100	183	A	H
		5350.4	59.71	-14.29	74	53.16	34.7	8.3	36.45	100	183	P	H
		5371.6	47.18	-6.82	54	40.63	34.7	8.3	36.45	100	183	A	H
	*	5314	104.15	-	-	97.71	34.63	8.27	36.46	321	358	P	V
		5314	97.32	-	-	90.88	34.63	8.27	36.46	321	358	A	V
		5371.3	50.38	-23.62	74	43.83	34.7	8.3	36.45	321	358	P	V
		5371.8	43.66	-10.34	54	37.11	34.7	8.3	36.45	321	358	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

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 52 5260MHz		10520	42.59	-25.71	68.3	55.8	37.82	12	63.03	100	360	P	H
		10520	44.41	-23.89	68.3	57.62	37.82	12	63.03	100	360	P	V
802.11n HT20 CH 60 5300MHz		10600	41.97	-32.03	74	55.02	37.9	12.06	63.01	100	360	P	H
		10600	45.76	-28.24	74	58.81	37.9	12.06	63.01	100	360	P	V
802.11n HT20 CH 64 5320MHz		10640	42.72	-31.28	74	55.73	37.9	12.09	63	100	360	P	H
		10640	44.8	-29.2	74	57.81	37.9	12.09	63	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

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 62 5310MHz		5121.76	50.46	-23.54	74	44.6	34.23	8.14	36.51	117	182	P	H
		5106.4	40.68	-13.32	54	34.86	34.23	8.1	36.51	117	182	A	H
	*	5300	105.15	-	-	98.77	34.6	8.25	36.47	117	182	P	H
		5300	97.81	-	-	91.43	34.6	8.25	36.47	117	182	A	H
		5350.2	63.53	-10.47	74	56.98	34.7	8.3	36.45	117	182	P	H
		5350.4	48.96	-5.04	54	42.41	34.7	8.3	36.45	117	182	A	H
		5119.68	50.68	-23.32	74	44.82	34.23	8.14	36.51	335	312	P	V
		5124.96	40.07	-13.93	54	34.16	34.27	8.14	36.5	335	312	A	V
	*	5312	102.38	-	-	95.94	34.63	8.27	36.46	335	312	P	V
		5312	95.07	-	-	88.63	34.63	8.27	36.46	335	312	A	V
		5351.3	55.73	-18.27	74	49.18	34.7	8.3	36.45	335	312	P	V
		5350	43.34	-10.66	54	36.79	34.7	8.3	36.45	335	312	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 54 5270MHz		10540	42.41	-25.89	68.3	55.57	37.83	12.03	63.02	100	360	P	H
		10540	44.28	-24.02	68.3	57.44	37.83	12.03	63.02	100	360	P	V
802.11n HT40 CH 62 5310MHz		10620	42.66	-31.34	74	55.68	37.9	12.09	63.01	100	360	P	H
		10620	44.5	-29.5	74	57.52	37.9	12.09	63.01	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

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 58 5290MHz		5133.44	51.22	-22.78	74	45.31	34.27	8.14	36.5	100	181	P	H
		5112.32	41.42	-12.58	54	35.6	34.23	8.1	36.51	100	181	A	H
	*	5298	100.85	-	-	94.47	34.6	8.25	36.47	100	181	P	H
		5298	94.12	-	-	87.74	34.6	8.25	36.47	100	181	A	H
		5374.4	60.98	-13.02	74	54.43	34.7	8.3	36.45	100	181	P	H
		5350.3	50.06	-3.94	54	43.51	34.7	8.3	36.45	100	181	A	H
		5113.76	50.51	-23.49	74	44.69	34.23	8.1	36.51	370	288	P	V
		5117.6	41.34	-12.66	54	35.48	34.23	8.14	36.51	370	288	A	V
	*	5284	99.17	-	-	92.82	34.57	8.25	36.47	370	288	P	V
		5284	91.94	-	-	85.59	34.57	8.25	36.47	370	288	A	V
		5372.6	56.26	-17.74	74	49.71	34.7	8.3	36.45	370	288	P	V
		5350.3	45.29	-8.71	54	38.74	34.7	8.3	36.45	370	288	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 58 5290MHz		10580	43.64	-24.66	68.3	56.71	37.88	12.06	63.01	100	360	P	H
		10580	45.58	-22.72	68.3	58.65	37.88	12.06	63.01	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

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.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 100 5500MHz		5446.48	54.9	-19.1	74	48.27	34.7	8.36	36.43	110	264	P	H
		5469.84	50.5	-17.8	68.3	43.83	34.7	8.4	36.43	110	264	P	H
		5447.44	48.82	-5.18	54	42.19	34.7	8.36	36.43	110	264	A	H
	*	5506	108.67	-	-	101.95	34.7	8.44	36.42	110	264	P	H
		5506	101.9	-	-	95.18	34.7	8.44	36.42	110	264	A	H
		5447.12	52.04	-21.96	74	45.41	34.7	8.36	36.43	286	359	P	V
		5462.96	47.84	-20.46	68.3	41.21	34.7	8.36	36.43	286	359	P	V
		5447.6	44.89	-9.11	54	38.26	34.7	8.36	36.43	286	359	A	V
	*	5494	105.95	-	-	99.27	34.7	8.4	36.42	286	359	P	V
		5494	98.67	-	-	91.99	34.7	8.4	36.42	286	359	A	V
802.11a CH 140 5700MHz	*	5694	108.11	-	-	101.25	34.7	8.58	36.42	100	254	P	H
		5694	100.81	-	-	93.95	34.7	8.58	36.42	100	254	A	H
		5725.64	57.29	-11.01	68.3	50.34	34.77	8.61	36.43	100	254	P	H
	*	5704	106.6	-	-	99.68	34.73	8.61	36.42	359	340	P	V
		5704	98.8	-	-	91.88	34.73	8.61	36.42	359	340	A	V
		5726.84	56.08	-12.22	68.3	49.13	34.77	8.61	36.43	359	340	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 100 5500MHz		11000	43.49	-30.51	74	56.15	37.9	12.37	62.93	100	360	P	H
		11000	43.97	-30.03	74	56.63	37.9	12.37	62.93	100	360	P	V
802.11a CH 116 5580MHz		11160	45.78	-28.22	74	58.27	37.9	12.51	62.9	100	360	P	H
		11160	44.18	-29.82	74	56.67	37.9	12.51	62.9	100	360	P	V
802.11a CH 140 5700MHz		11400	42.73	-31.27	74	54.9	38	12.68	62.85	100	360	P	H
		11400	44.25	-29.75	74	56.42	38	12.68	62.85	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

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 100 5500MHz		5448.24	55.12	-18.88	74	48.49	34.7	8.36	36.43	111	267	P	H
		5464.72	48.97	-19.33	68.3	42.34	34.7	8.36	36.43	111	267	P	H
		5448.24	48.69	-5.31	54	42.06	34.7	8.36	36.43	111	267	A	H
	*	5496	109.07	-	-	102.39	34.7	8.4	36.42	111	267	P	H
		5496	100.79	-	-	94.11	34.7	8.4	36.42	111	267	A	H
		5447.76	52.12	-21.88	74	45.49	34.7	8.36	36.43	287	358	P	V
		5469.04	48.18	-20.12	68.3	41.51	34.7	8.4	36.43	287	358	P	V
		5448.24	45.28	-8.72	54	38.65	34.7	8.36	36.43	287	358	A	V
	*	5504	105.11	-	-	98.43	34.7	8.4	36.42	287	358	P	V
		5504	98.05	-	-	91.37	34.7	8.4	36.42	287	358	A	V
802.11n HT20 CH 140 5700MHz	*	5696	107.22	-	-	100.36	34.7	8.58	36.42	102	270	P	H
		5696	100.18	-	-	93.32	34.7	8.58	36.42	102	270	A	H
		5726.76	56.77	-11.53	68.3	49.82	34.77	8.61	36.43	102	270	P	H
	*	5696	106.06	-	-	99.2	34.7	8.58	36.42	333	282	P	V
		5696	98.73	-	-	91.87	34.7	8.58	36.42	333	282	A	V
		5727.96	54.34	-13.96	68.3	47.39	34.77	8.61	36.43	333	282	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

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 100 5500MHz		11000	43.59	-30.41	74	56.25	37.9	12.37	62.93	100	360	P	H
		11000	43.8	-30.2	74	56.46	37.9	12.37	62.93	100	360	P	V
802.11n HT20 CH 116 5580MHz		11160	42.4	-31.6	74	54.89	37.9	12.51	62.9	100	360	P	H
		11160	43.87	-30.13	74	56.36	37.9	12.51	62.9	100	360	P	V
802.11n HT20 CH 140 5700MHz		11400	41.95	-32.05	74	54.12	38	12.68	62.85	100	360	P	H
		11400	45.19	-28.81	74	57.36	38	12.68	62.85	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

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 102 5510MHz		5455.92	53.69	-20.31	74	47.06	34.7	8.36	36.43	113	264	P	H
		5464.56	58.25	-10.05	68.3	51.62	34.7	8.36	36.43	113	264	P	H
		5406.96	44.46	-9.54	54	37.88	34.7	8.32	36.44	113	264	A	H
	*	5506	106.2	-	-	99.48	34.7	8.44	36.42	113	264	P	H
		5506	98.7	-	-	91.98	34.7	8.44	36.42	113	264	A	H
		5760.12	49.65	-18.65	68.3	42.63	34.83	8.64	36.45	113	264	P	H
		5404.56	49.81	-24.19	74	43.23	34.7	8.32	36.44	339	280	P	V
		5468.4	55.15	-13.15	68.3	48.48	34.7	8.4	36.43	339	280	P	V
		5407.12	41.99	-12.01	54	35.41	34.7	8.32	36.44	339	280	A	V
	*	5500	104.25	-	-	97.57	34.7	8.4	36.42	339	280	P	V
		5500	97.1	-	-	90.42	34.7	8.4	36.42	339	280	A	V
		5749.72	50.18	-18.12	68.3	43.18	34.8	8.64	36.44	339	280	P	V
802.11n HT40 CH 134 5670MHz		5362	48.88	-25.12	74	42.33	34.7	8.3	36.45	100	270	P	H
		5460.08	47.95	-20.35	68.3	41.32	34.7	8.36	36.43	100	270	P	H
		5370	39.9	-14.1	54	33.35	34.7	8.3	36.45	100	270	A	H
	*	5660	105.74	-	-	98.89	34.7	8.55	36.4	100	270	P	H
		5660	98.3	-	-	91.45	34.7	8.55	36.4	100	270	A	H
		5725.4	55.77	-12.53	68.3	48.82	34.77	8.61	36.43	100	270	P	H
		5423.92	49.1	-24.9	74	42.52	34.7	8.32	36.44	337	281	P	V
		5464.24	47.8	-20.5	68.3	41.17	34.7	8.36	36.43	337	281	P	V
		5369.36	39.63	-14.37	54	33.08	34.7	8.3	36.45	337	281	A	V
	*	5668	103.75	-	-	96.88	34.7	8.58	36.41	337	281	P	V
		5668	96.7	-	-	89.83	34.7	8.58	36.41	337	281	A	V
		5732.52	50.83	-17.47	68.3	43.88	34.77	8.61	36.43	337	281	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 102 5510MHz		11020	42.05	-31.95	74	54.68	37.9	12.4	62.93	100	360	P	H
		11020	43.82	-30.18	74	56.45	37.9	12.4	62.93	100	360	P	V
802.11n HT40 CH 110 5550MHz		11100	42.5	-31.5	74	55.06	37.9	12.45	62.91	100	360	P	H
		11100	45.25	-28.75	74	57.81	37.9	12.45	62.91	100	360	P	V
802.11n HT40 CH 134 5670MHz		11340	40.82	-33.18	74	53.13	37.93	12.62	62.86	100	360	P	H
		11340	44.73	-29.27	74	57.04	37.93	12.62	62.86	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

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 106 5530MHz		5459.98	61.45	-12.55	74	54.82	34.7	8.36	36.43	100	249	P	H
		5468.4	62.43	-5.87	68.3	55.76	34.7	8.4	36.43	100	249	P	H
		5459.6	50.36	-3.64	54	43.73	34.7	8.36	36.43	100	249	A	H
	*	5510	104.71	-	-	97.99	34.7	8.44	36.42	100	249	P	H
		5510	96.67	-	-	89.95	34.7	8.44	36.42	100	249	A	H
		5732.92	50.53	-17.77	68.3	43.58	34.77	8.61	36.43	100	249	P	H
		5459.92	57.34	-16.66	74	50.71	34.7	8.36	36.43	320	276	P	V
		5468.88	58.05	-10.25	68.3	51.38	34.7	8.4	36.43	320	276	P	V
		5459.98	46.09	-7.91	54	39.46	34.7	8.36	36.43	320	276	A	V
	*	5512	101.92	-	-	95.2	34.7	8.44	36.42	320	276	P	V
		5512	94.87	-	-	88.15	34.7	8.44	36.42	320	276	A	V
		5737.08	49.87	-18.43	68.3	42.9	34.8	8.61	36.44	320	276	P	V
802.11ac VHT80 CH 122 5610MHz		5451.28	51.04	-22.96	74	44.41	34.7	8.36	36.43	109	249	P	H
		5468.88	50.8	-17.5	68.3	44.13	34.7	8.4	36.43	109	249	P	H
		5450	42.12	-11.88	54	35.49	34.7	8.36	36.43	109	249	A	H
	*	5604	104.47	-	-	97.75	34.6	8.52	36.4	109	249	P	H
		5604	97.46	-	-	90.74	34.6	8.52	36.4	109	249	A	H
		5726.76	53.13	-15.17	68.3	46.18	34.77	8.61	36.43	109	249	P	H
		5453.04	49.67	-24.33	74	43.04	34.7	8.36	36.43	328	275	P	V
		5466.96	49.37	-18.93	68.3	42.7	34.7	8.4	36.43	328	275	P	V
		5453.84	41.29	-12.71	54	34.66	34.7	8.36	36.43	328	275	A	V
	*	5586	102.63	-	-	95.88	34.63	8.52	36.4	328	275	P	V
		5586	95.85	-	-	89.1	34.63	8.52	36.4	328	275	A	V
		5726.2	51.74	-16.56	68.3	44.79	34.77	8.61	36.43	328	275	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 5470~5725MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 106 5530MHz		11060	43.5	-30.5	74	56.1	37.9	12.42	62.92	100	360	P	H
		11060	44.24	-29.76	74	56.84	37.9	12.42	62.92	100	360	P	V
802.11ac VHT80 CH 122 5610MHz		11220	43.42	-30.58	74	55.87	37.9	12.54	62.89	100	360	P	H
		11220	44.98	-29.02	74	57.43	37.9	12.54	62.89	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

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 106 5530MHz		5458.48	56.57	-17.43	74	49.94	34.7	8.36	36.43	316	295	P	H
		5469.68	57.24	-11.06	68.3	50.57	34.7	8.4	36.43	316	295	P	H
		5459.92	47.23	-6.77	54	40.6	34.7	8.36	36.43	316	295	A	H
	*	5524	101.99	-	-	95.27	34.7	8.44	36.42	316	295	P	H
		5524	95.05	-	-	88.33	34.7	8.44	36.42	316	295	A	H
		5761.4	49.89	-18.41	68.3	42.87	34.83	8.64	36.45	316	295	P	H
		5459.92	58.19	-15.81	74	51.56	34.7	8.36	36.43	130	244	P	V
		5469.36	59.61	-8.69	68.3	52.94	34.7	8.4	36.43	130	244	P	V
		5459.44	48.59	-5.41	54	41.96	34.7	8.36	36.43	130	244	A	V
	*	5522	102.07	-	-	95.35	34.7	8.44	36.42	130	244	P	V
		5522	94.76	-	-	88.04	34.7	8.44	36.42	130	244	A	V
		5744.44	50.3	-18	68.3	43.3	34.8	8.64	36.44	130	244	P	V

Band 3 5470~5725MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 106 5530MHz		11060	44.74	-29.26	74	57.34	37.9	12.42	62.92	100	0	P	H
		11060	43.34	-30.66	74	55.94	37.9	12.42	62.92	100	360	P	V

Band 3 - Straddle Channel

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.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 144 5720MHz	*	5722	107.61	-	-	100.66	34.77	8.61	36.43	100	251	P	H
		5722	100.49	-	-	93.54	34.77	8.61	36.43	100	251	A	H
	*	5724	107.19	-	-	100.24	34.77	8.61	36.43	300	286	P	V
		5724	99.05	-	-	92.1	34.77	8.61	36.43	300	286	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - Straddle Channel

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 144 5720MHz		11440	42.62	-31.38	74	54.72	38.03	12.71	62.84	100	360	P	H
		11440	46.22	-27.78	74	58.32	38.03	12.71	62.84	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - Straddle Channel

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 144 5720MHz	*	5712	107.14	-	-	100.22	34.73	8.61	36.42	100	252	P	H
		5712	99.79	-	-	92.87	34.73	8.61	36.42	100	252	A	H
	*	5716	105.66	-	-	98.74	34.73	8.61	36.42	316	288	P	V
		5716	98.47	-	-	91.55	34.73	8.61	36.42	316	288	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - Straddle Channel

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 144 5720MHz		11440	43.08	-30.92	74	55.18	38.03	12.71	62.84	100	360	P	H
		11440	46.92	-27.08	74	59.02	38.03	12.71	62.84	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - Straddle Channel

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	*	5706	105.11	-	-	98.19	34.73	8.61	36.42	100	255	P	H
HT40		5706	97.95	-	-	91.03	34.73	8.61	36.42	100	255	A	H
CH 142	*	5704	103.77	-	-	96.85	34.73	8.61	36.42	359	339	P	V
5710MHz		5704	96.19	-	-	89.27	34.73	8.61	36.42	359	339	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - Straddle Channel

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 142 5710MHz		11420	42.73	-31.27	74	54.88	38.02	12.68	62.85	100	360	P	H
		11420	45.24	-28.76	74	57.39	38.02	12.68	62.85	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - Straddle Channel

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	*	5684	104.66	-	-	97.8	34.7	8.58	36.42	107	251	P	H
VHT80		5684	97.08	-	-	90.22	34.7	8.58	36.42	107	251	A	H
CH 138	*	5670	101.75	-	-	94.88	34.7	8.58	36.41	336	280	P	V
5690MHz		5670	95.02	-	-	88.15	34.7	8.58	36.41	336	280	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - Straddle Channel

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 138 5690MHz		11380	41.94	-32.06	74	54.16	37.98	12.65	62.85	100	360	P	H
		11380	45.92	-28.08	74	58.14	37.98	12.65	62.85	100	360	P	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 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 LF		31.94	16.29	-23.71	40	25.54	22.04	0.68	31.97	-	-	P	H
		102.75	14.17	-29.33	43.5	28.15	16.78	1.17	31.93	-	-	P	H
		173.56	18.26	-25.24	43.5	32.77	15.88	1.53	31.92	-	-	P	H
		230.79	21.71	-24.29	46	34.79	17.08	1.78	31.94	-	-	P	H
		292.87	26.07	-19.93	46	37.11	19.06	1.96	32.06	100	10	P	H
		630.43	23.19	-22.81	46	27.83	24.9	2.84	32.38	-	-	P	H
		47.46	19.47	-20.53	40	36.1	14.5	0.81	31.94	100	10	P	V
		109.54	16.92	-26.58	43.5	30.92	16.72	1.21	31.93	-	-	P	V
		176.47	20.84	-22.66	43.5	35.41	15.82	1.53	31.92	-	-	P	V
		293.84	20.48	-25.52	46	31.5	19.08	1.97	32.07	-	-	P	V
		551.86	23.96	-22.04	46	28.69	24.98	2.63	32.34	-	-	P	V
		793.39	25.19	-20.81	46	28.09	25.99	3.25	32.14	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

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

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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	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)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. 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)

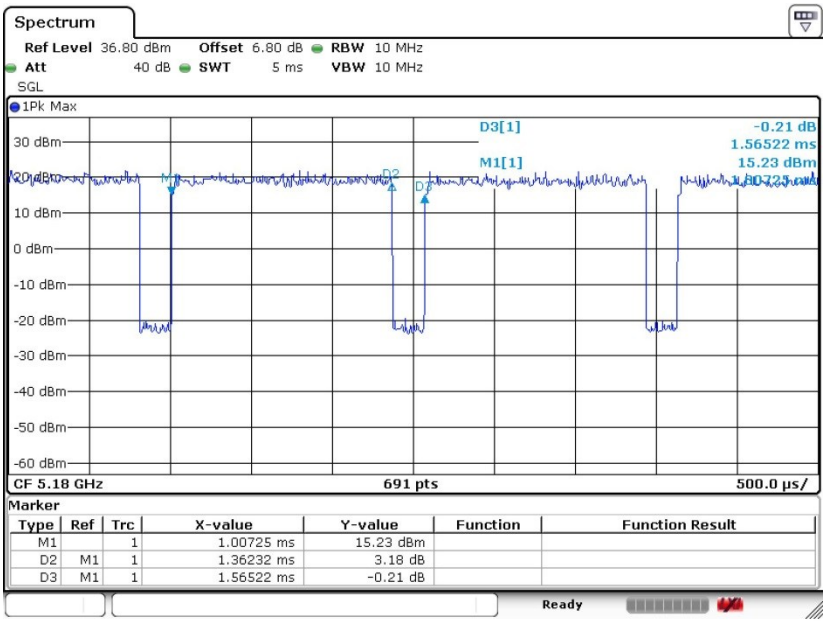
= -10.46(dB)

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

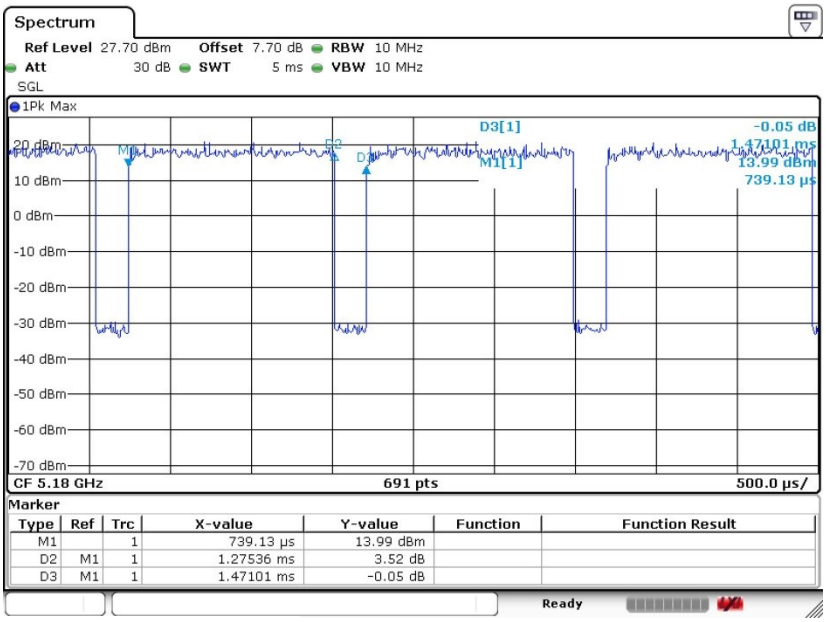
Appendix C. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.04	1.362	0.734	0.75Khz
802.11an HT 20	86.70	1.275	0.784	0.82Khz
802.11an HT 40	85.48	1.220	0.819	0.82Khz
802.11ac VHT80	85.52	0.248	4.032	4.30Khz

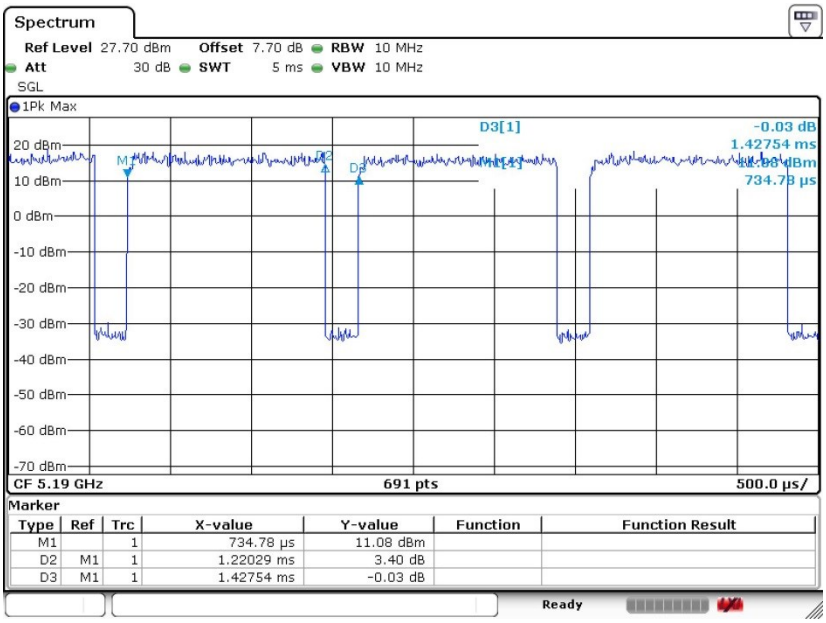
802.11a



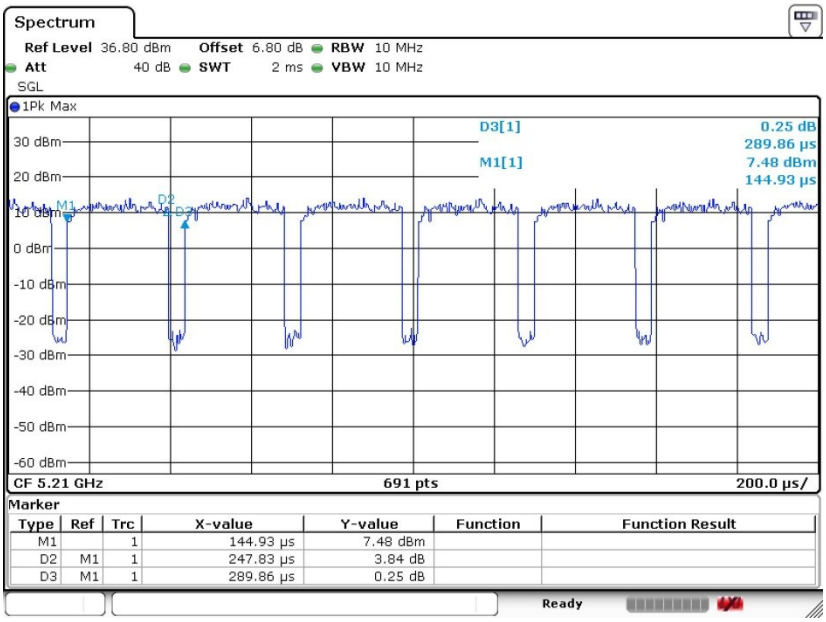
802.11an HT20



802.11an HT40



802.11ac VHT80



Appendix E. Reference Report

Please refer to Sporton report number FR912606D which is issued separately.