



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.

Approved by: James Huang / Manager



Sporton International (Kunshan) Inc.
No. 1098, Pengxi North Road, Kunshan Economic Development Zone,
Jiangsu Province 215335, China



TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant.....	5
1.2 Manufacturer.....	5
1.3 Product Feature of Equipment Under Test.....	5
1.4 Product Specification of Equipment Under Test.....	6
1.5 Modification of EUT	6
1.6 Re-use of Measured Data	7
1.7 Testing Location	9
1.8 Applicable Standards.....	9
1.9 Specification of Accessory.....	10
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	11
2.1 Carrier Frequency and Channel	11
2.2 Test Mode.....	12
2.3 Connection Diagram of Test System.....	13
2.4 Support Unit used in test configuration and system	13
2.5 EUT Operation Test Setup	14
3 TEST RESULT	15
3.1 Unwanted Emissions Measurement	15
3.2 AC Conducted Emission Measurement.....	20
3.3 Automatically Discontinue Transmission	22
3.4 Antenna Requirements.....	23
4 LIST OF MEASURING EQUIPMENT	24
5 UNCERTAINTY OF EVALUATION	25
APPENDIX A. AC CONDUCTED EMISSION TEST RESULT	
APPENDIX B. RADIATED SPURIOUS EMISSION	
APPENDIX C. DUTY CYCLE PLOTS	
APPENDIX D. SETUP PHOTOGRAPHS	
APPENDIX E. REFERENCE REPORT	



REVISION HISTORY

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

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
-	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	1
-	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	1
-	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Pass	1
3.1	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 16.91 dB at 5959.200 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 FR912606E.					



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 Channel Frequency Range	5745 MHz ~ 5825 MHz
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Antenna Type / Gain	FPC Antenna with gain 1.83 dBi

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. FR912606E 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	14.70	15.21	-0.51
	11n-HT20	14.57	15.04	-0.47
	11n-HT40	14.77	14.90	-0.13
	11ac VHT20	14.77	14.86	-0.09
	11ac VHT40	14.55	14.74	-0.19
	11ac VHT80	14.47	14.85	-0.38



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.
	03CH05KS	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)
5745-5825 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155 [#]	5775	165	5825

Note:

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

2.2 Test Mode

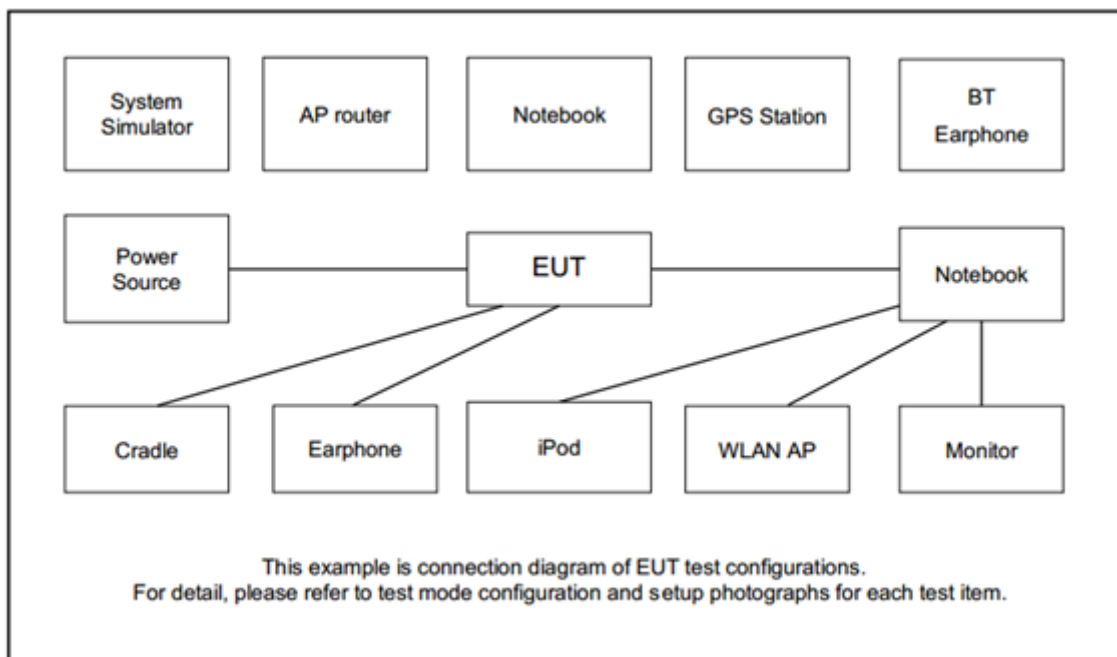
Final test modes are considering the modulation and worse data rates as below table.

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 IV : 5745-5825 MHz			
		802.11a	802.11ac VHT20	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



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 5.725-5.85 GHz band:
15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

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

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

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

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

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

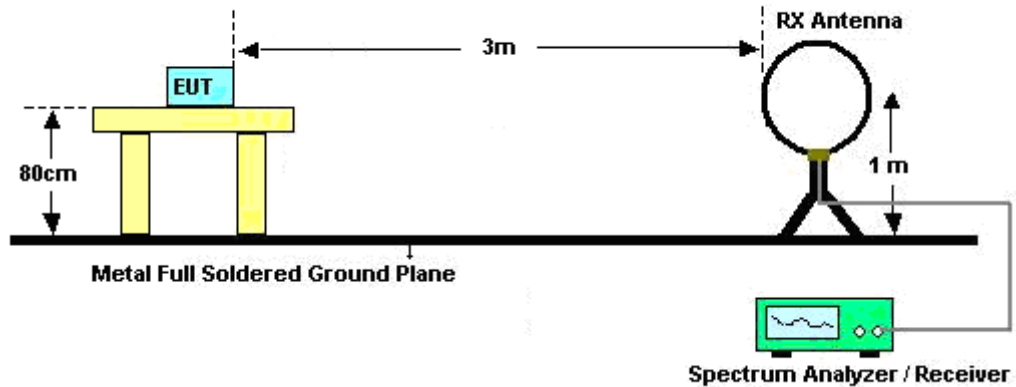
The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

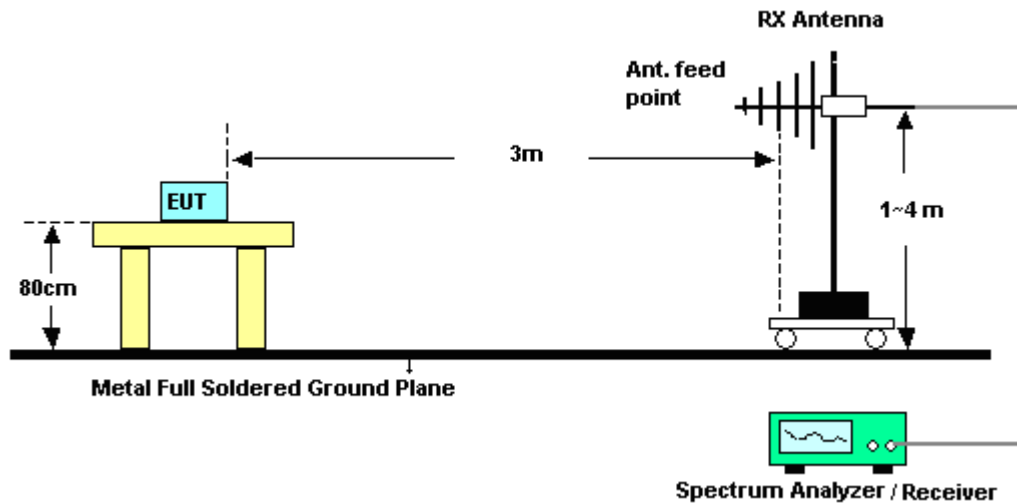
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.1.4 Test Setup

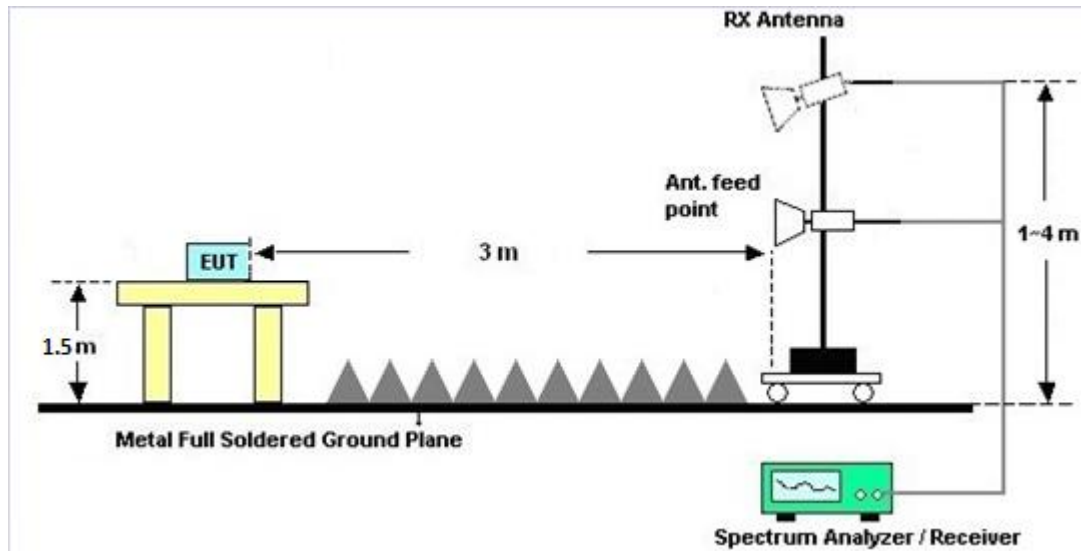
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.1.5 Test Results of Radiated 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 Band Edges

Please refer to Appendix B.

3.1.7 Duty Cycle

Please refer to Appendix C.

3.1.8 Test Result of Unwanted Radiated Emission (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 (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

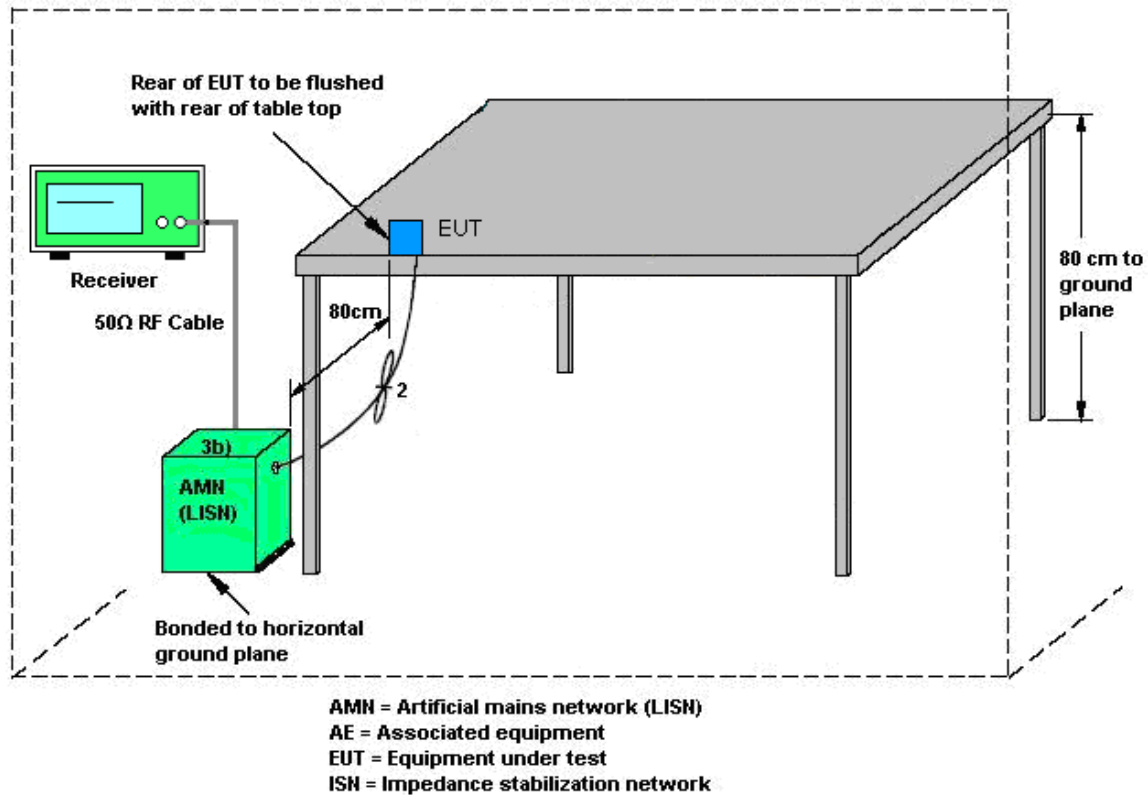
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

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

3.2.4 Test Setup



3.2.5 Test Result of AC Conducted Emission

Please refer to Appendix A.



3.3 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-0010 1800-30-10P	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)

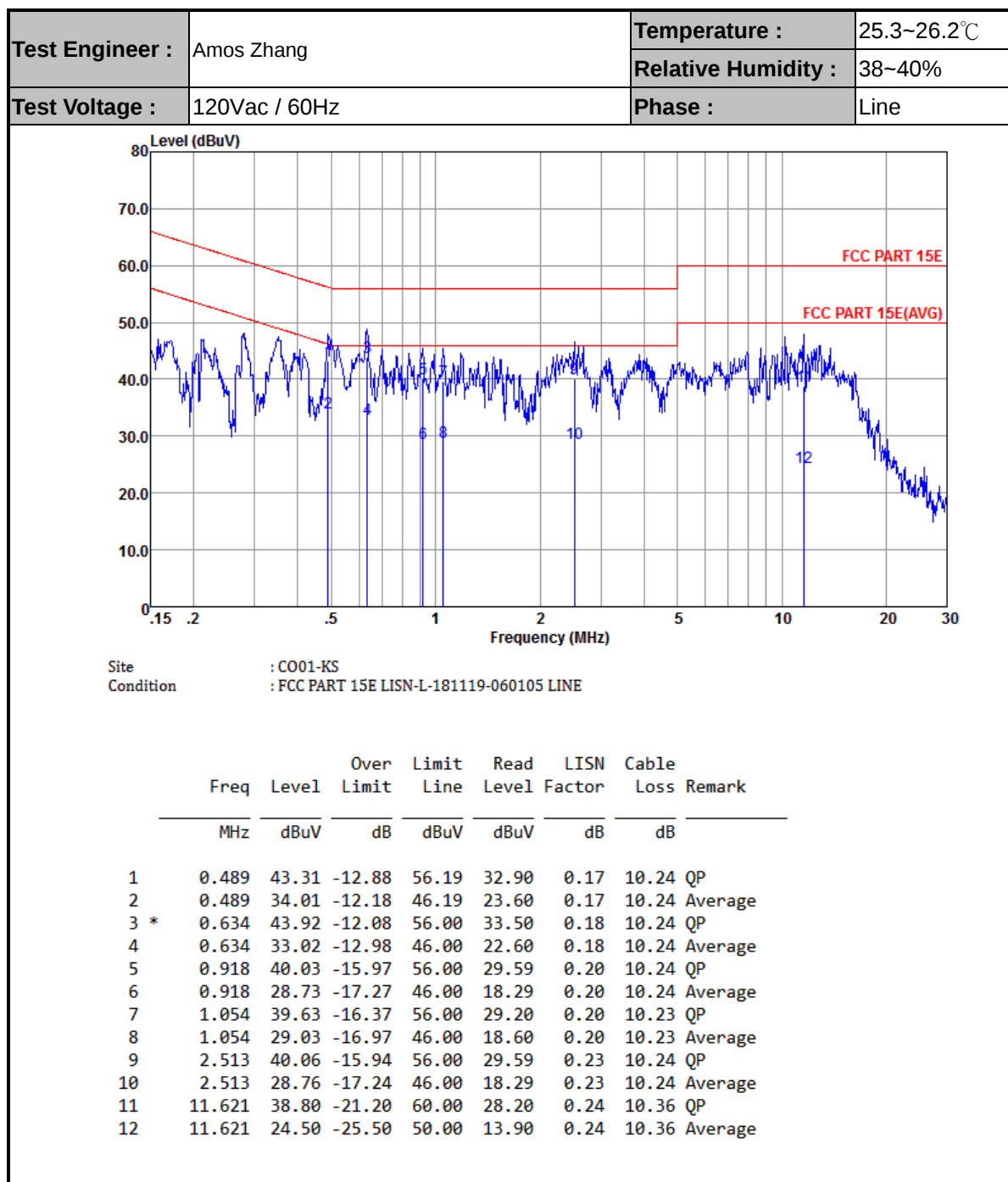
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0 dB
---	--------

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

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

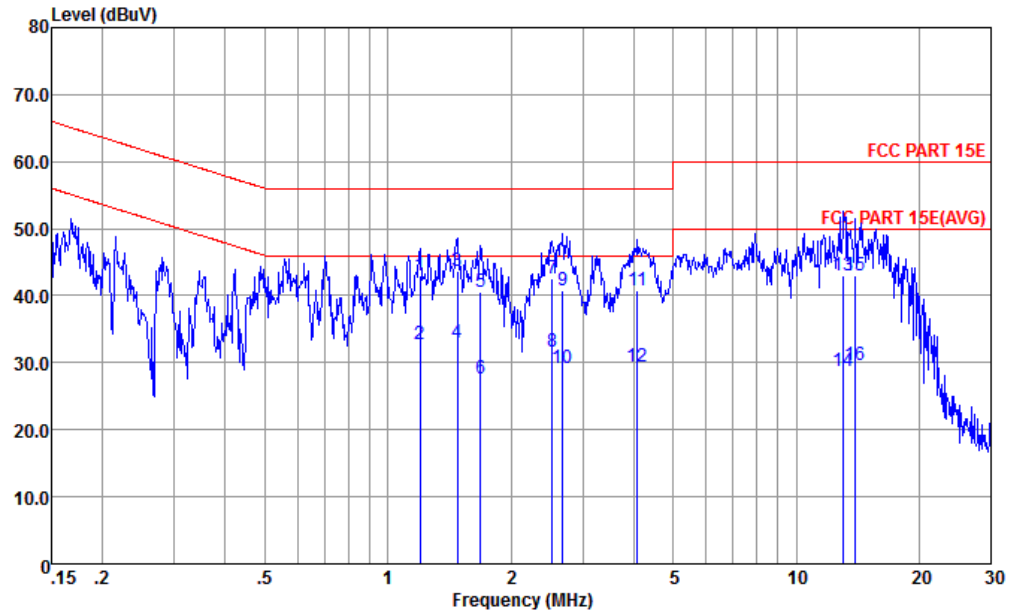


Appendix A. AC Conducted Emission Test Results





Test Engineer :	Amos Zhang	Temperature :	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	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 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preampl 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 149 5745MHz		5600	49.63	-18.67	68.3	42.91	34.6	8.52	36.4	100	274	P	H
		5693.2	54.85	-45.44	100.29	47.99	34.7	8.58	36.42	100	274	P	H
		5719.6	54.67	-56.12	110.79	47.72	34.77	8.61	36.43	100	274	P	H
		5723.2	60.92	-57.28	118.2	53.97	34.77	8.61	36.43	100	274	P	H
		5744	107.99	-	-	100.99	34.8	8.64	36.44	100	274	P	H
		5744	100.59	-	-	93.59	34.8	8.64	36.44	100	274	A	H
		5644.8	49.32	-18.98	68.3	42.49	34.67	8.55	36.39	299	290	P	V
		5692.4	53.31	-46.39	99.7	46.45	34.7	8.58	36.42	299	290	P	V
		5716	51.99	-57.79	109.78	45.07	34.73	8.61	36.42	299	290	P	V
		5724.8	64.3	-57.54	121.84	57.35	34.77	8.61	36.43	299	290	P	V
		5738	105.88	-	-	98.91	34.8	8.61	36.44	299	290	P	V
		5738	98.84	-	-	91.87	34.8	8.61	36.44	299	290	A	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz		5830	108.75	-	-	101.54	34.97	8.72	36.48	100	190	P	H
		5830	100.81	-	-	93.6	34.97	8.72	36.48	100	190	A	H
		5851.2	61.54	-58.02	119.56	54.31	35	8.72	36.49	100	190	P	H
		5856	52.5	-58.12	110.62	45.2	35.03	8.77	36.5	100	190	P	H
		5877.2	55.43	-48.24	103.67	48.1	35.07	8.77	36.51	100	190	P	H
		5941.2	50.55	-17.75	68.3	43	35.2	8.88	36.53	100	190	P	H
		5820	107.42	-	-	100.21	34.97	8.72	36.48	347	342	P	V
		5820	99.58	-	-	92.37	34.97	8.72	36.48	347	342	A	V
		5850	57.01	-65.29	122.3	49.78	35	8.72	36.49	347	342	P	V
		5854.8	51.3	-60.06	111.36	44.05	35.03	8.72	36.5	347	342	P	V
		5878	52.55	-50.52	103.07	45.22	35.07	8.77	36.51	347	342	P	V
		5930.4	50.26	-18.04	68.3	42.79	35.17	8.82	36.52	347	342	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. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	43.39	-30.61	74	55.4	38.08	12.74	62.83	100	360	P	H
		11490	46.61	-27.39	74	58.62	38.08	12.74	62.83	100	360	P	V
802.11a CH 157 5785MHz		11570	44.03	-29.97	74	55.89	38.17	12.79	62.82	100	360	P	H
		11570	46.34	-27.66	74	58.2	38.17	12.79	62.82	100	360	P	V
802.11a CH 165 5825MHz		11650	43.13	-30.87	74	54.85	38.24	12.85	62.81	100	360	P	H
		11650	44.94	-29.06	74	56.66	38.24	12.85	62.81	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

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		5643.2	48.73	-19.57	68.3	41.9	34.67	8.55	36.39	101	191	P	H
		5692.8	54.98	-45.01	99.99	48.12	34.7	8.58	36.42	101	191	P	H
		5718	54.25	-56.09	110.34	47.3	34.77	8.61	36.43	101	191	P	H
		5724.8	61.77	-60.07	121.84	54.82	34.77	8.61	36.43	101	191	P	H
		5740	107.62	-	-	100.62	34.8	8.64	36.44	101	191	P	H
		5740	100.28	-	-	93.28	34.8	8.64	36.44	101	191	A	H
		5618	49.48	-18.82	68.3	42.72	34.63	8.52	36.39	284	291	P	V
		5692.8	53.52	-46.47	99.99	46.66	34.7	8.58	36.42	284	291	P	V
		5720	53.18	-57.72	110.9	46.23	34.77	8.61	36.43	284	291	P	V
		5724.8	58.91	-62.93	121.84	51.96	34.77	8.61	36.43	284	291	P	V
		5742	104.9	-	-	97.9	34.8	8.64	36.44	284	291	P	V
		5742	97.9	-	-	90.9	34.8	8.64	36.44	284	291	A	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 165 5825MHz		5818	108.02	-	-	100.84	34.93	8.72	36.47	100	189	P	H
		5818	100.07	-	-	92.89	34.93	8.72	36.47	100	189	A	H
		5850.8	57.44	-63.04	120.48	50.21	35	8.72	36.49	100	189	P	H
		5855.2	53.63	-57.21	110.84	46.38	35.03	8.72	36.5	100	189	P	H
		5877.6	56.19	-47.18	103.37	48.86	35.07	8.77	36.51	100	189	P	H
		5946	50.52	-17.78	68.3	42.97	35.2	8.88	36.53	100	189	P	H
		5830	106.64	-	-	99.43	34.97	8.72	36.48	345	344	P	V
		5830	98.76	-	-	91.55	34.97	8.72	36.48	345	344	A	V
		5850	53.17	-69.13	122.3	45.94	35	8.72	36.49	345	344	P	V
		5856	50.53	-60.09	110.62	43.23	35.03	8.77	36.5	345	344	P	V
		5876.4	53.73	-50.53	104.26	46.4	35.07	8.77	36.51	345	344	P	V
		5959.2	51.39	-16.91	68.3	43.81	35.23	8.88	36.53	345	344	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	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		11490	43.91	-30.09	74	55.92	38.08	12.74	62.83	100	360	P	H
CH 149 5745MHz		11490	45.77	-28.23	74	57.78	38.08	12.74	62.83	100	360	P	V
802.11n HT20		11570	43	-31	74	54.86	38.17	12.79	62.82	100	360	P	H
CH 157 5785MHz		11570	47.38	-26.62	74	59.24	38.17	12.79	62.82	100	360	P	V
802.11n HT20		11650	43.85	-30.15	74	55.57	38.24	12.85	62.81	100	360	P	H
CH 165 5825MHz		11650	47.15	-26.85	74	58.87	38.24	12.85	62.81	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

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 151 5755MHz		5649.6	50.1	-18.2	68.3	43.25	34.7	8.55	36.4	100	194	P	H
		5698	55.55	-48.28	103.83	48.69	34.7	8.58	36.42	100	194	P	H
		5716	62.56	-47.22	109.78	55.64	34.73	8.61	36.42	100	194	P	H
		5722	66.6	-48.86	115.46	59.65	34.77	8.61	36.43	100	194	P	H
		5746	104.78	-	-	97.78	34.8	8.64	36.44	100	194	P	H
		5746	97.34	-	-	90.34	34.8	8.64	36.44	100	194	A	H
		5851.2	49.58	-69.98	119.56	42.35	35	8.72	36.49	100	194	P	H
		5857.2	52.42	-57.86	110.28	45.12	35.03	8.77	36.5	100	194	P	H
		5901.2	50.7	-35.17	85.87	43.29	35.1	8.82	36.51	100	194	P	H
		5958.4	50.71	-17.59	68.3	43.13	35.23	8.88	36.53	100	194	P	H
		5650	50.02	-18.28	68.3	43.17	34.7	8.55	36.4	299	289	P	V
		5650.4	50.98	-17.62	68.6	44.13	34.7	8.55	36.4	299	289	P	V
		5718.8	58.48	-52.08	110.56	51.53	34.77	8.61	36.43	299	289	P	V
		5724	64.38	-55.64	120.02	57.43	34.77	8.61	36.43	299	289	P	V
		5746	102.62	-	-	95.62	34.8	8.64	36.44	299	289	P	V
		5746	95.25	-	-	88.25	34.8	8.64	36.44	299	289	A	V
		5854	50.13	-63.05	113.18	42.88	35.03	8.72	36.5	299	289	P	V
		5863.6	50.43	-58.06	108.49	43.13	35.03	8.77	36.5	299	289	P	V
		5875.2	51	-54.15	105.15	43.67	35.07	8.77	36.51	299	289	P	V
		5941.2	50.01	-18.29	68.3	42.46	35.2	8.88	36.53	299	289	P	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 159 5795MHz		5640	50.22	-18.08	68.3	43.39	34.67	8.55	36.39	100	191	P	H
		5693.2	51.58	-48.71	100.29	44.72	34.7	8.58	36.42	100	191	P	H
		5708.4	50.19	-57.46	107.65	43.27	34.73	8.61	36.42	100	191	P	H
		5720.4	49.29	-62.52	111.81	42.34	34.77	8.61	36.43	100	191	P	H
		5788	105.03	-	-	97.93	34.9	8.67	36.47	100	191	P	H
		5788	97.41	-	-	90.31	34.9	8.67	36.47	100	191	A	H
		5854.4	51.32	-60.95	112.27	44.07	35.03	8.72	36.5	100	191	P	H
		5860	51.08	-58.42	109.5	43.78	35.03	8.77	36.5	100	191	P	H
		5902.4	51.6	-33.39	84.99	44.19	35.1	8.82	36.51	100	191	P	H
		5956.8	50.08	-18.22	68.3	42.5	35.23	8.88	36.53	100	191	P	H
		5600.4	50.16	-18.14	68.3	43.44	34.6	8.52	36.4	349	341	P	V
		5690	53.23	-44.7	97.93	46.37	34.7	8.58	36.42	349	341	P	V
		5702.4	48.89	-57.08	105.97	41.97	34.73	8.61	36.42	349	341	P	V
		5722.4	48.46	-67.91	116.37	41.51	34.77	8.61	36.43	349	341	P	V
		5806	104.06	-	-	96.93	34.93	8.67	36.47	349	341	P	V
		5806	96.35	-	-	89.22	34.93	8.67	36.47	349	341	A	V
		5850	50.98	-71.32	122.3	43.75	35	8.72	36.49	349	341	P	V
		5856.8	49.35	-61.05	110.4	42.05	35.03	8.77	36.5	349	341	P	V
		5891.6	51.69	-41.29	92.98	44.33	35.1	8.77	36.51	349	341	P	V
		5931.6	50.13	-18.17	68.3	42.66	35.17	8.82	36.52	349	341	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	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	43.92	-30.08	74	55.91	38.1	12.74	62.83	100	360	P	H
		11510	46.56	-27.44	74	58.55	38.1	12.74	62.83	100	360	P	V
802.11n HT40 CH 159 5795MHz		11590	44	-30	74	55.81	38.18	12.82	62.81	100	360	P	H
		11590	48.25	-25.75	74	60.06	38.18	12.82	62.81	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

WIFI 802.11ac VHT80 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80 CH 155 5775MHz		5648	49.39	-18.91	68.3	42.56	34.67	8.55	36.39	100	190	P	H
		5699.2	58.38	-46.33	104.71	51.52	34.7	8.58	36.42	100	190	P	H
		5718	66.32	-44.02	110.34	59.37	34.77	8.61	36.43	100	190	P	H
		5722.8	67.15	-50.13	117.28	60.2	34.77	8.61	36.43	100	190	P	H
		5768	103.17	-	-	96.15	34.83	8.64	36.45	100	190	P	H
		5768	95.85	-	-	88.83	34.83	8.64	36.45	100	190	A	H
		5853.2	66.67	-48.33	115	59.44	35	8.72	36.49	100	190	P	H
		5862	66.9	-42.04	108.94	59.6	35.03	8.77	36.5	100	190	P	H
		5877.6	56.28	-47.09	103.37	48.95	35.07	8.77	36.51	100	190	P	H
		5998.8	50.82	-17.48	68.3	43.13	35.3	8.93	36.54	100	190	P	H
		5643.2	51.31	-16.99	68.3	44.48	34.67	8.55	36.39	353	344	P	V
		5674.8	55.22	-31.47	86.69	48.35	34.7	8.58	36.41	353	344	P	V
		5717.2	60.72	-49.4	110.12	53.8	34.73	8.61	36.42	353	344	P	V
		5724.8	61.34	-60.5	121.84	54.39	34.77	8.61	36.43	353	344	P	V
		5778	101.78	-	-	94.7	34.87	8.67	36.46	353	344	P	V
		5778	94.96	-	-	87.88	34.87	8.67	36.46	353	344	A	V
		5850.4	61.15	-60.24	121.39	53.92	35	8.72	36.49	353	344	P	V
		5866	60.83	-46.99	107.82	53.53	35.03	8.77	36.5	353	344	P	V
		5879.2	52.96	-49.22	102.18	45.63	35.07	8.77	36.51	353	344	P	V
		5940.8	50.9	-17.4	68.3	43.35	35.2	8.88	36.53	353	344	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	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	44.12	-29.88	74	56	38.15	12.79	62.82	100	360	P	H
CH 155 5775MHz		11550	48.27	-25.73	74	60.15	38.15	12.79	62.82	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

5GHz WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11n HT20 LF		30	17.37	-22.63	40	25.91	22.8	0.64	31.98	-	-	P	H
		107.6	14.76	-28.74	43.5	28.75	16.74	1.2	31.93	-	-	P	H
		175.5	18.76	-24.74	43.5	33.31	15.84	1.53	31.92	-	-	P	H
		235.64	22.57	-23.43	46	35.35	17.36	1.8	31.94	-	-	P	H
		283.17	27.01	-18.99	46	38.24	18.87	1.94	32.04	100	30	P	H
		608.12	22.81	-23.19	46	27.77	24.68	2.76	32.4	-	-	P	H
		46.49	19.42	-20.58	40	35.74	14.83	0.79	31.94	100	30	P	V
		111.48	16.93	-26.57	43.5	30.93	16.71	1.22	31.93	-	-	P	V
		176.47	20.87	-22.63	43.5	35.44	15.82	1.53	31.92	-	-	P	V
		294.81	19.78	-26.22	46	30.78	19.1	1.97	32.07	-	-	P	V
		501.42	23.18	-22.82	46	29.55	23.33	2.56	32.26	-	-	P	V
		731.31	23.36	-22.64	46	26.98	25.56	3.1	32.28	-	-	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.	
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”.

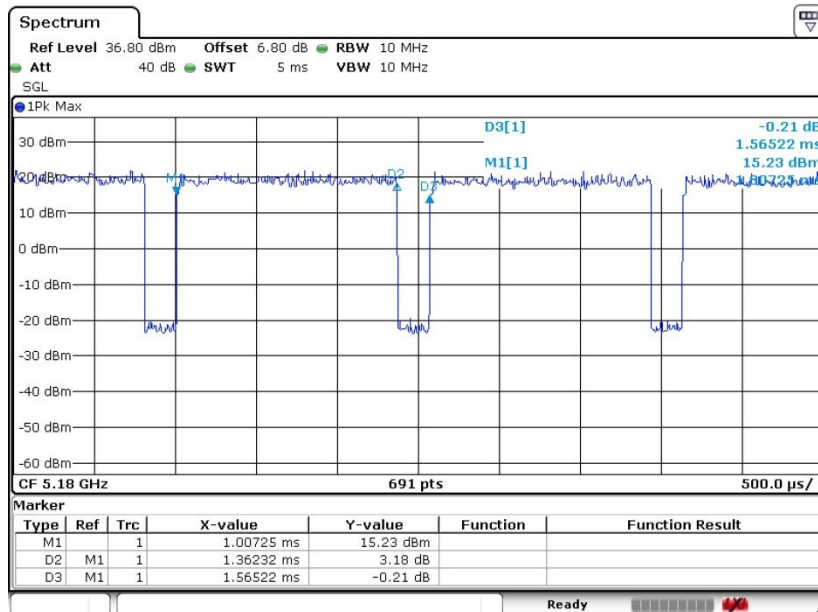


Appendix C. Duty Cycle Plots

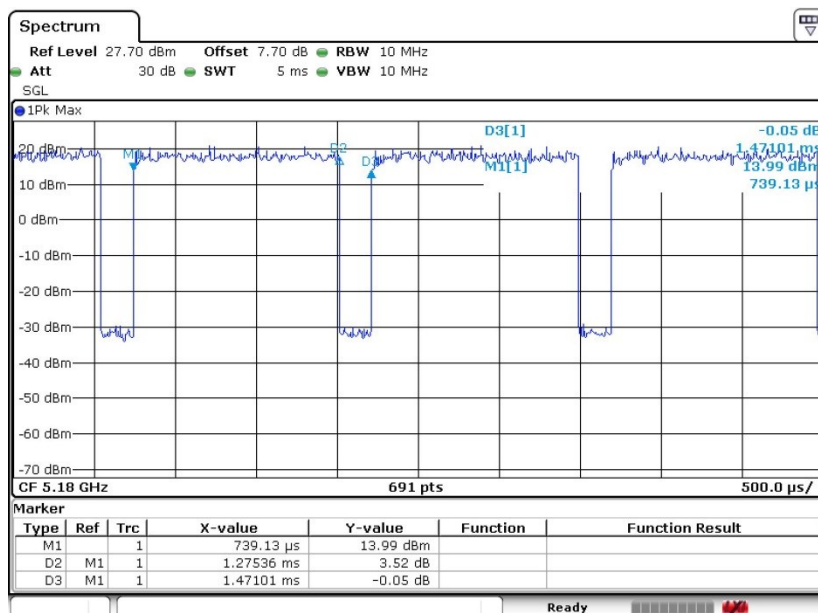
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.04	1.362	0.734	0.75Khz
802.11an HT 20	86.70	1.275	0.784	0.82Khz
802.11an HT 40	85.48	1.220	0.819	0.82Khz
802.11ac VHT80	85.52	0.248	4.032	4.30Khz



802.11a

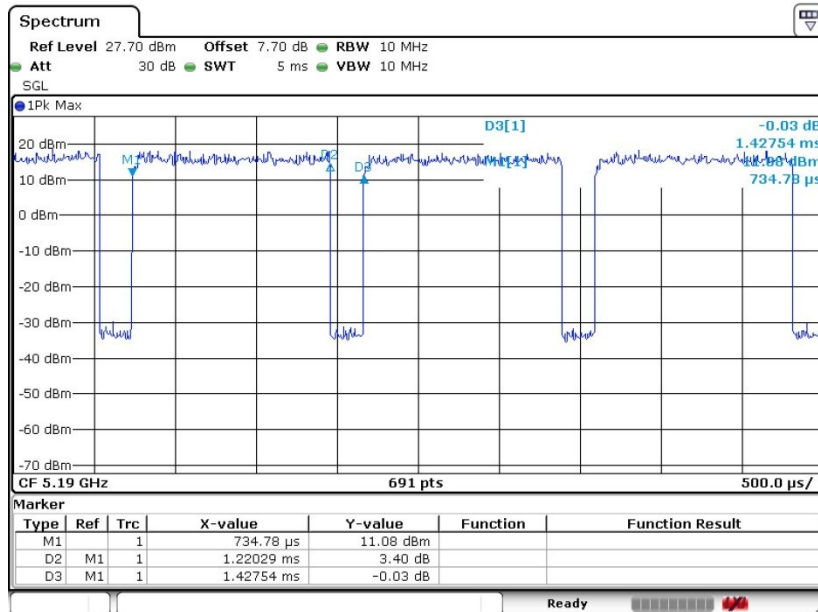


802.11an HT20

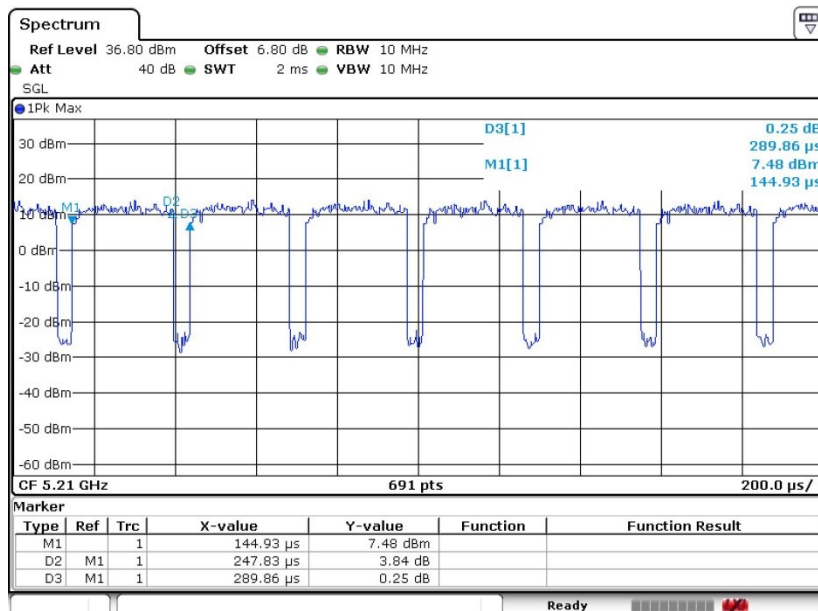




802.11an HT40



802.11ac VHT80





Appendix E. Reference Report

Please refer to Sporton report number FR912606E which is issued separately.