FCC RF Test Report

APPLICANT	:	Hangzhou Tuya Information Technology Co., Ltd
EQUIPMENT	:	Module
MODEL NAME	:	WBR3D
FCC ID	:	2ANDL-WBR3D
STANDARD	:	FCC Part 15 Subpart E §15.407
CLASSIFICATION	:	(NII) Unlicensed National Information Infrastructure

The product was received on Sep. 25, 2019 and testing was completed on Nov. 06, 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.

Jason Jia

Reviewed by: Jason Jia / Supervisor

James Huang

Approved by: James Huang / Manager

ACCREDITED Cert #5145.02

Sporton International (Kunshan) Inc.
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR992508D	Rev. 01	Initial issue of report	Nov. 19, 2019

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	6dB, 26dB and 99% Occupied Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) &15.209(a)	Pass	Under limit 11.13 dB at 320.030 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 15.71 dB at 0.158 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.7	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Applicant

Hangzhou Tuya Information Technology Co., Ltd
Room701, Building3, More Center,No.87 GuDun Road, Hangzhou, Zhejiang, China

1.2 Manufacturer

Hangzhou Tuya Information Technology Co., Ltd
Room701, Building3, More Center,No.87 GuDun Road, Hangzhou, Zhejiang, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Module
Model Name	WBR3D
FCC ID	2ANDL-WBR3D
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth LE
HW Version	V1.0.2
SW Version	2V1

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power	**<5745 MHz ~ 5825 MHz>** 802.11a : 14.93 dBm / 0.0311 W 802.11n HT20 : 13.58 dBm / 0.0228 W 802.11n HT40 : 12.29 dBm / 0.0169 W
99% Occupied Bandwidth	802.11a : 18.08 MHz 802.11n HT20 : 18.83 MHz 802.11n HT40 : 35.96 MHz
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
Antenna Type / Gain	PCB Antenna with gain 2.60 dBi

1.5 Modification of EUT

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

1.6 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	CO01-KS 03CH05-KS TH01-KS	CN1257	314309

1.7 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.

2 Test Configuration of Equipment Under Test

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

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

2.1 Carrier Frequency and Channel

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

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

2.2 Test Mode

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

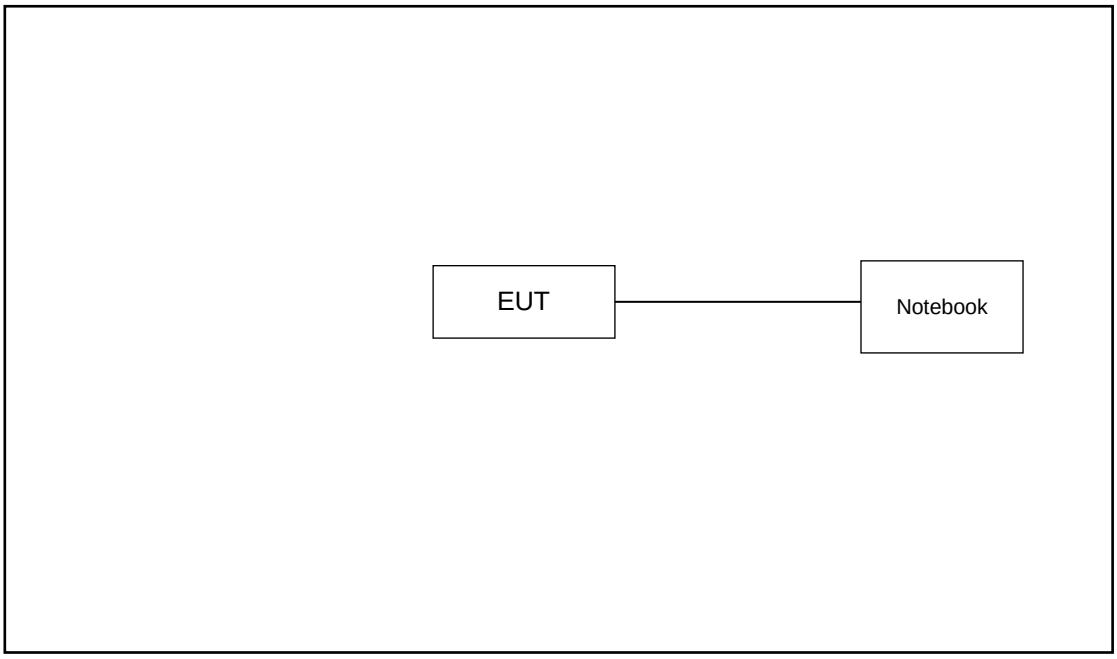
Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

AC Conducted Emission	Mode 1： Bluetooth Link + WLAN Link(5G) + Charging from Notebook

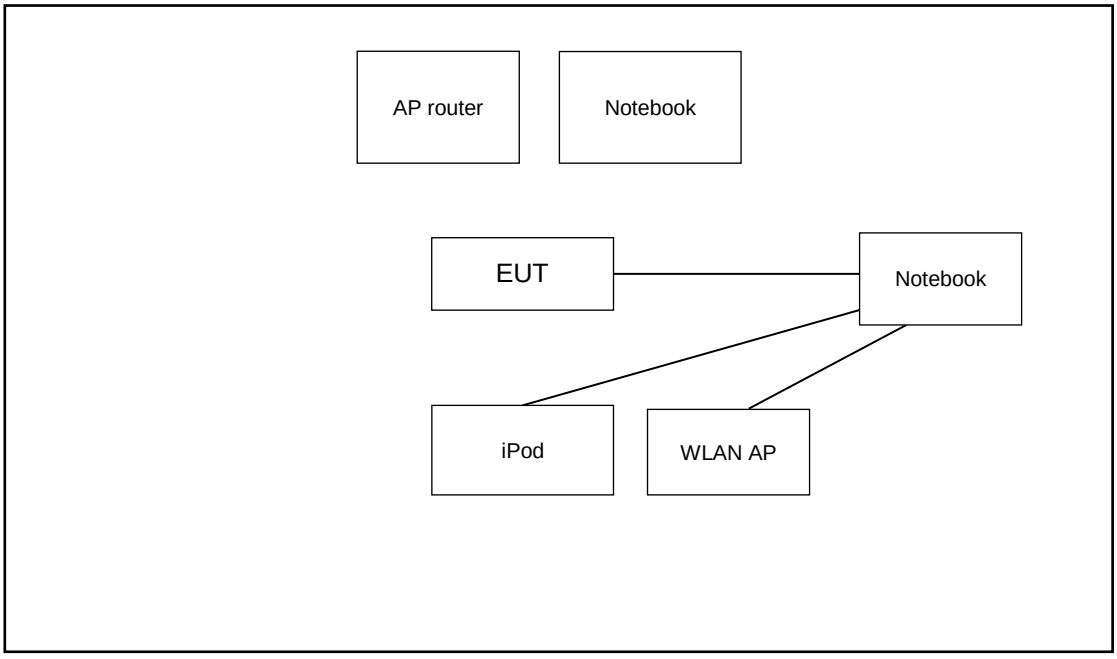
Ch. #		Band IV：5745-5825 MHz		
		802.11a	802.11n HT20	802.11n HT40
L	Low	149	149	151
M	Middle	157	157	-
H	High	165	165	159

2.3 Connection Diagram of Test System

For Radiation



For Conducted Emission



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-655	KA21R655B1	N/A	Unshielded,1.8m
2.	Notebook	Lenovo	V130	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
3.	Notebook	Dell	Latitude3440	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
4.	iPod	Apple	A1199	Fcc DoC	Shielded, 1.2m	N/A
5.	Phone	Apple	Iphone 6s	BCG-E2946A	N/A	N/A

2.5 EUT Operation Test Setup

For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

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

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss.

Following shows an offset computation example with cable loss 6.2 dB.

Offset(dB) = RF cable loss(dB)

= 6.2 (dB)

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

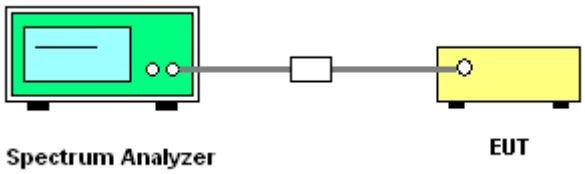
3.1.2 Measuring Instruments

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 C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

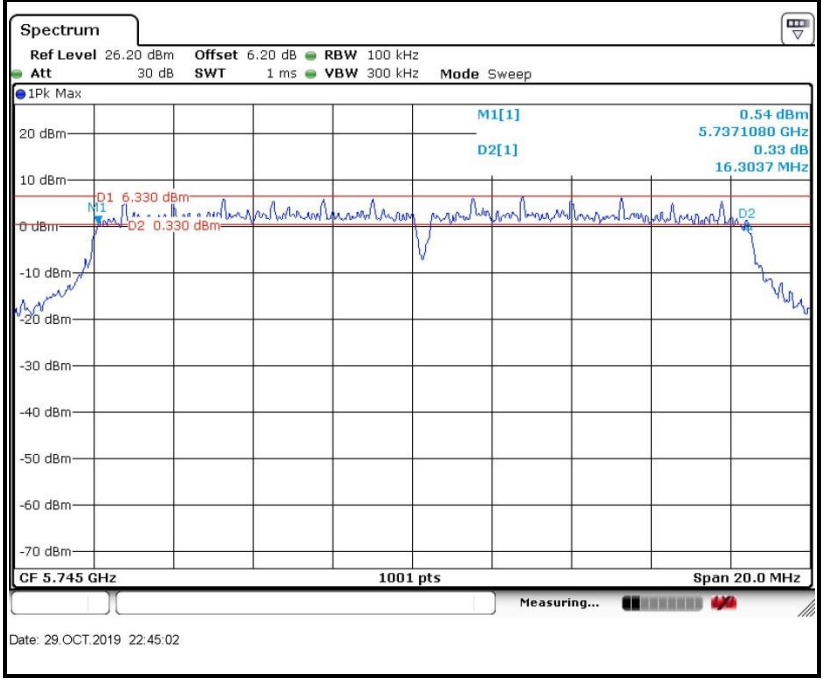
3.1.4 Test Setup



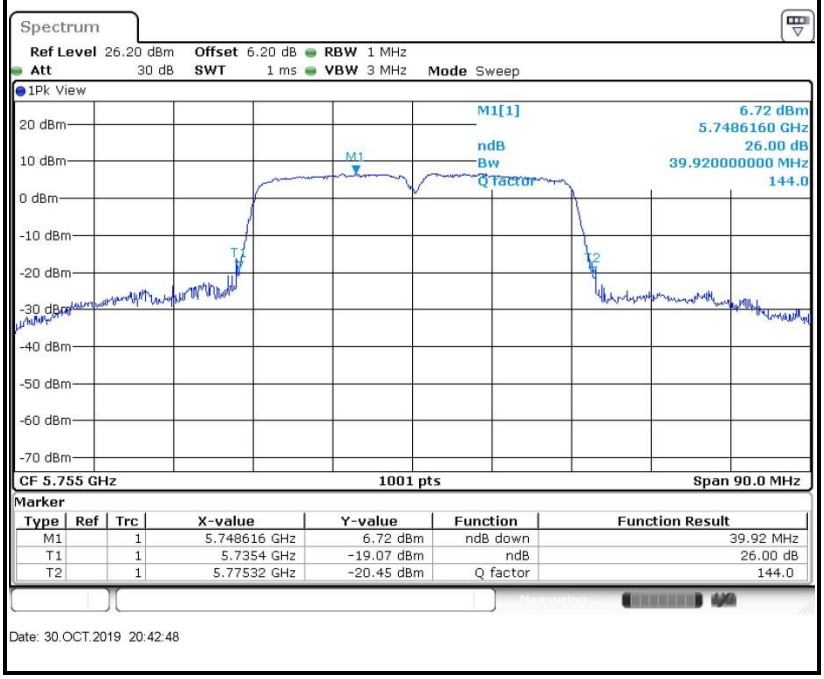
3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

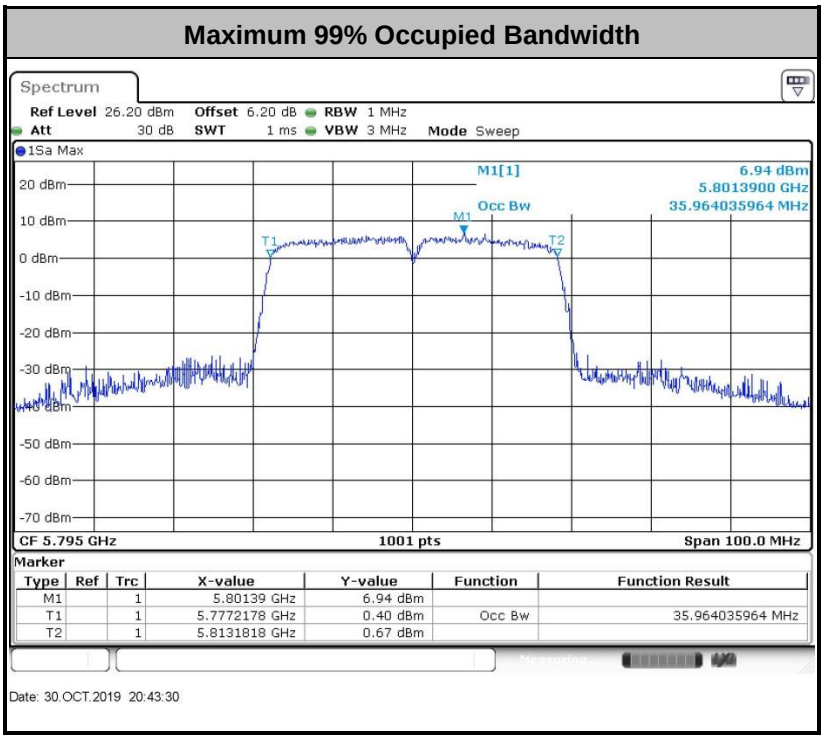
Minimum 6dB Bandwidth



Maximum 26dB Bandwidth



Maximum 99% Occupied Bandwidth



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

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

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

3.2.2 Measuring Instruments

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

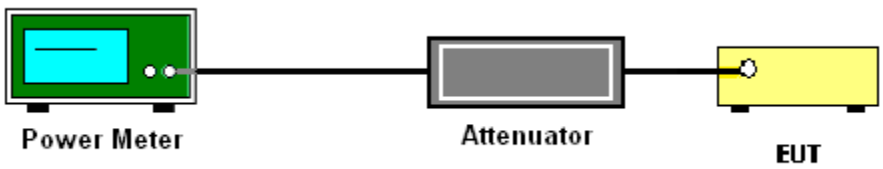
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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

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

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

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

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section F) Maximum power spectral density.

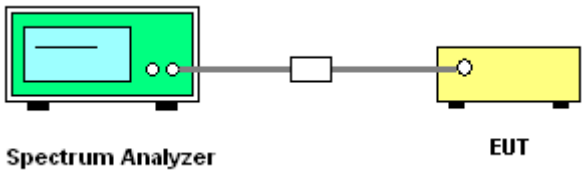
 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz.
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(500kHz/RBW) to the test result.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

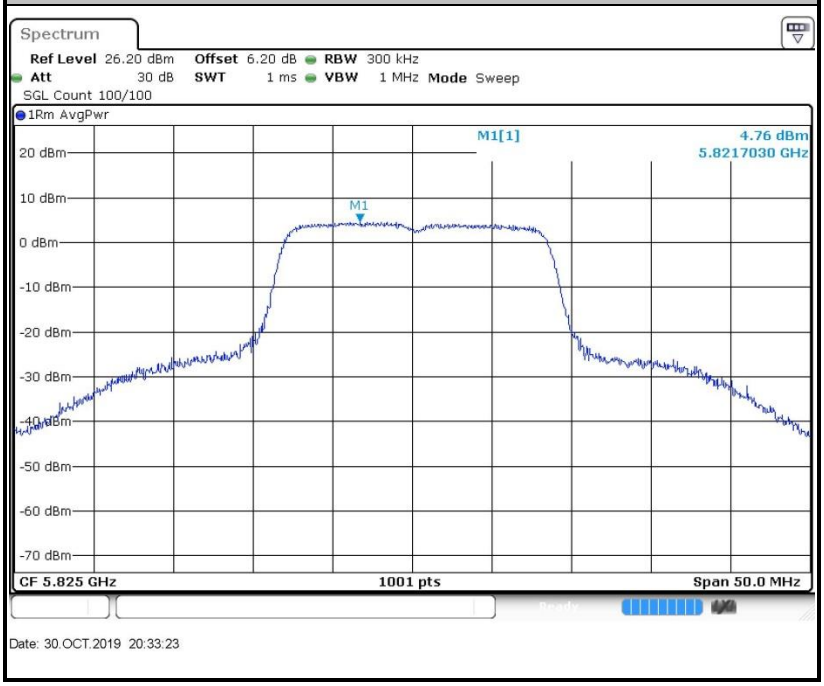
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

Worst Case Power Density (dBm/300kHz)



3.4 Unwanted Emissions Measurement

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

3.4.1 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.

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

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

3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.

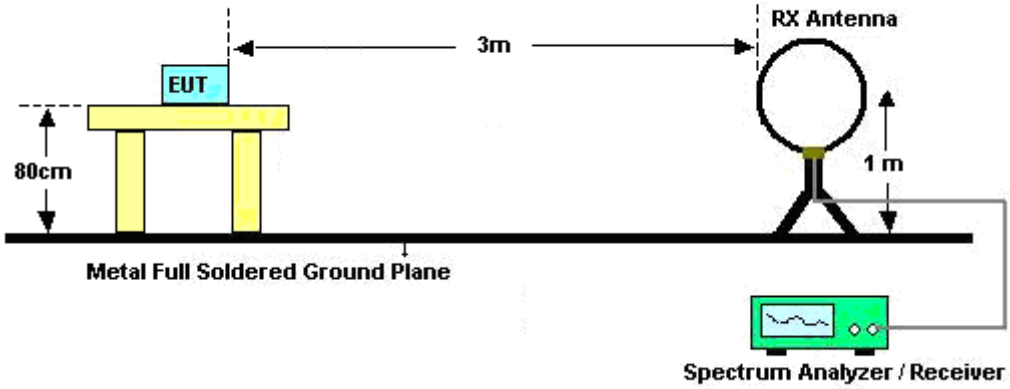
   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (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

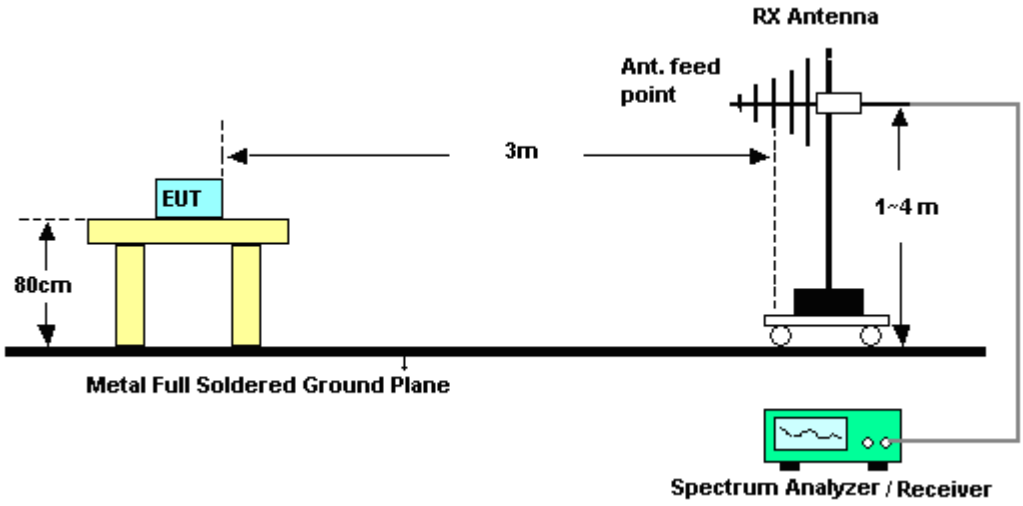
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting 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.

3.4.4 Test Setup

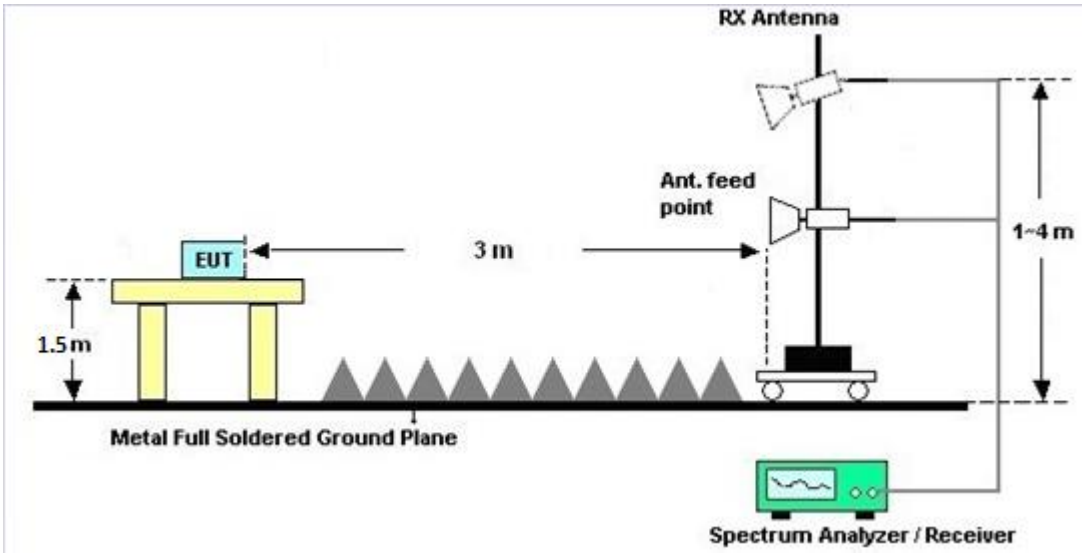
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 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.

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

3.5 AC Conducted Emission Measurement

3.5.1 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.

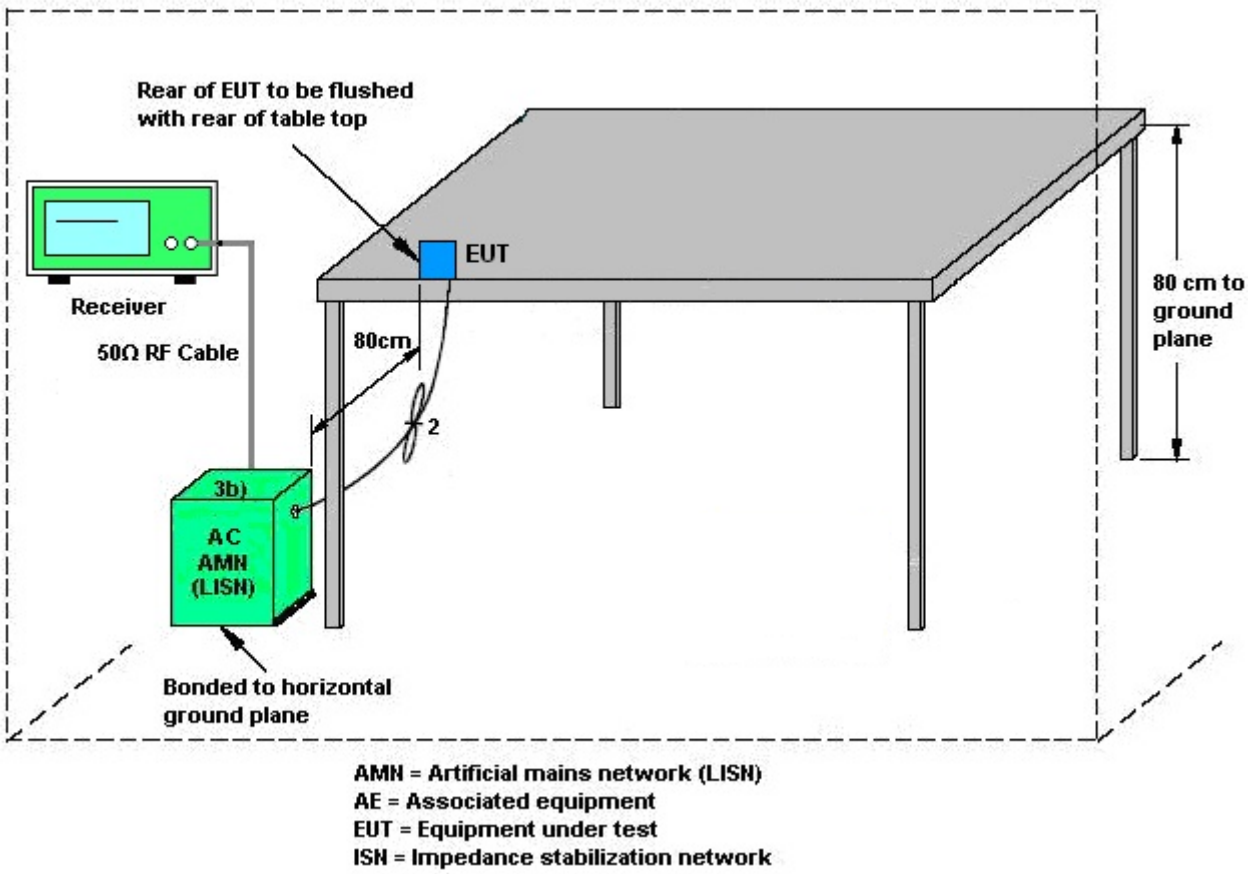
3.5.2 Measuring Instruments

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

3.5.3 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.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Automatically Discontinue Transmission

3.6.1 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.

3.6.2 Measuring Instruments

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

3.6.3 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.

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 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
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 06, 2019	Oct. 29, 2019~ Oct. 30, 2019	Aug. 05, 2020	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 14, 2019	Oct. 29, 2019~ Oct. 30, 2019	Jan. 13, 2020	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 14, 2019	Oct. 29, 2019~ Oct. 30, 2019	Jan. 13, 2020	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY57290151	3Hz~8.5GHz;Max 30dBm	Jul. 18, 2019	Nov. 06, 2019	Jul. 17, 2020	Radiation (03CH05-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr. 16, 2019	Nov. 06, 2019	Apr. 15, 2020	Radiation (03CH05-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 18, 2019	Nov. 06, 2019	Oct. 17, 2020	Radiation (03CH05-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Dec. 28, 2018	Nov. 06, 2019	Dec. 27, 2019	Radiation (03CH05-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 27, 2019	Nov. 06, 2019	Jan. 26, 2020	Radiation (03CH05-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2019	Nov. 06, 2019	Jan. 04, 2020	Radiation (03CH05-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Aug. 06, 2019	Nov. 06, 2019	Aug. 05, 2020	Radiation (03CH05-KS)
Amplifier	MITEQ	TTA1840-35-HG	2014749	18~40GHz	Jan. 14, 2019	Nov. 06, 2019	Jan. 13, 2020	Radiation (03CH05-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2025788	1Ghz-18Ghz	Aug. 17, 2019	Nov. 06, 2019	Aug. 16, 2020	Radiation (03CH05-KS)
Amplifier	Keysight	83017A	MY53270316	500MHz~26.5GHz	Dec. 22, 2018	Nov. 06, 2019	Dec. 21, 2019	Radiation (03CH05-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Nov. 06, 2019	NCR	Radiation (03CH05-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Nov. 06, 2019	NCR	Radiation (03CH05-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Nov. 06, 2019	NCR	Radiation (03CH05-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 16, 2019	Oct. 30, 2019	Apr. 15, 2020	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2019	Oct. 30, 2019	Oct. 10, 2020	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Nov. 19, 2018	Oct. 30, 2019	Nov. 18, 2019	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2019	Oct. 30, 2019	Oct. 10, 2020	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))	**2.9dB**

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

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

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

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

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

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

Appendix A. Conducted Test Results

Report Number : FR992508D

Test Engineer:	Aly Cao	Temperature:	21~25	°C
Test Date:	2019/10/29~2019/10/30	Relative Humidity:	51~54	%

Report Number : FR992508D

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

Band IV									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	6 dB Bandwidth (MHz)	6dB Bandwidth min. Limit (MHz)	Pass/Fail
11a	6M bps	1	149	5745	18.08	24.326	16.3037	0.5	Pass
11a	6Mbps	1	157	5785	17.78	23.926	16.3037	0.5	Pass
11a	6Mbps	1	165	5825	17.98	24.126	16.3037	0.5	Pass
HT20	MCS 0	1	149	5745	18.83	24.076	17.5025	0.5	Pass
HT20	MCS 0	1	157	5785	18.78	24.276	17.2627	0.5	Pass
HT20	MCS 0	1	165	5825	18.68	23.776	17.5225	0.5	Pass
HT40	MCS 0	1	151	5755	35.96	39.92	35.1249	0.5	Pass
HT40	MCS 0	1	159	5795	35.96	39.56	35.1249	0.5	Pass

Report Number : FR992508D

TEST RESULTS DATA
Average Power Table

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6M bps	1	149	5745	0.27	14.93	30.00	2.60		Pass
11a	6Mbps	1	157	5785	0.27	14.01	30.00	2.60		Pass
11a	6Mbps	1	165	5825	0.27	13.68	30.00	2.60		Pass
HT20	MCS 0	1	149	5745	0.29	13.58	30.00	2.60		Pass
HT20	MCS 0	1	157	5785	0.29	12.72	30.00	2.60		Pass
HT20	MCS 0	1	165	5825	0.29	12.27	30.00	2.60		Pass
HT40	MCS 0	1	151	5755	0.56	12.29	30.00	2.60		Pass
HT40	MCS 0	1	159	5795	0.56	11.11	30.00	2.60		Pass

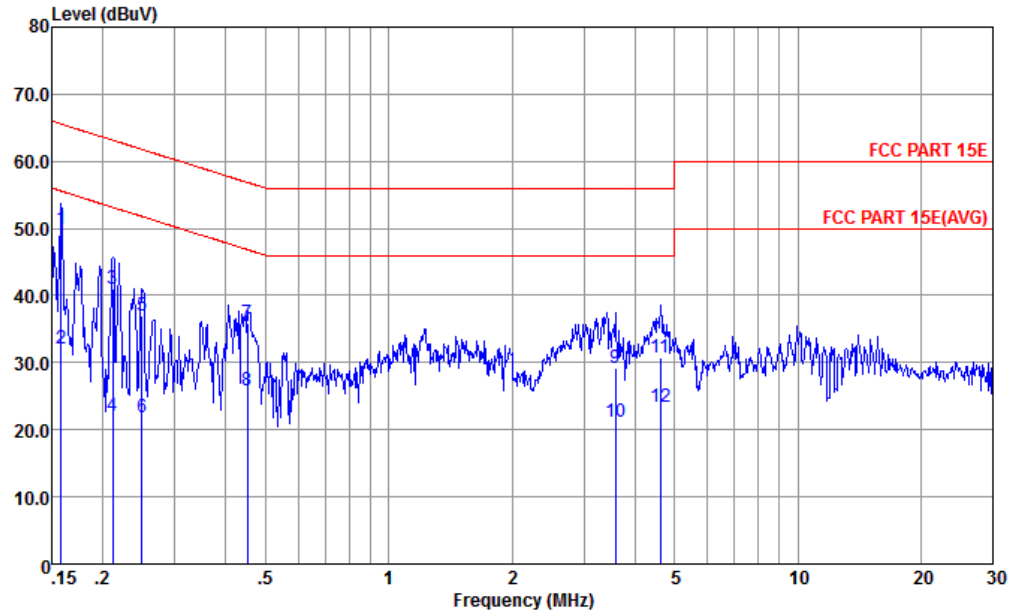
Report Number : FR992508D

TEST RESULTS DATA
Power Spectral Density

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	10log (500kHz /RBW) Factor (dB)	Average Power Density (dBm/500kHz)	Average PSD Limit (dBm/500kHz)	DG (dBi)	Pass/Fail
11a	6M bps	1	149	5745	0.27	2.22	6.82	30.00	2.60	Pass
11a	6Mbps	1	157	5785	0.27	2.22	7.08	30.00	2.60	Pass
11a	6Mbps	1	165	5825	0.27	2.22	7.24	30.00	2.60	Pass
HT20	MCS 0	1	149	5745	0.29	2.22	0.03	30.00	2.60	Pass
HT20	MCS 0	1	157	5785	0.29	2.22	-0.32	30.00	2.60	Pass
HT20	MCS 0	1	165	5825	0.29	2.22	-0.99	30.00	2.60	Pass
HT40	MCS 0	1	151	5755	0.56	2.22	-3.86	30.00	2.60	Pass
HT40	MCS 0	1	159	5795	0.56	2.22	-4.66	30.00	2.60	Pass

Appendix B. AC Conducted Emission Test Results

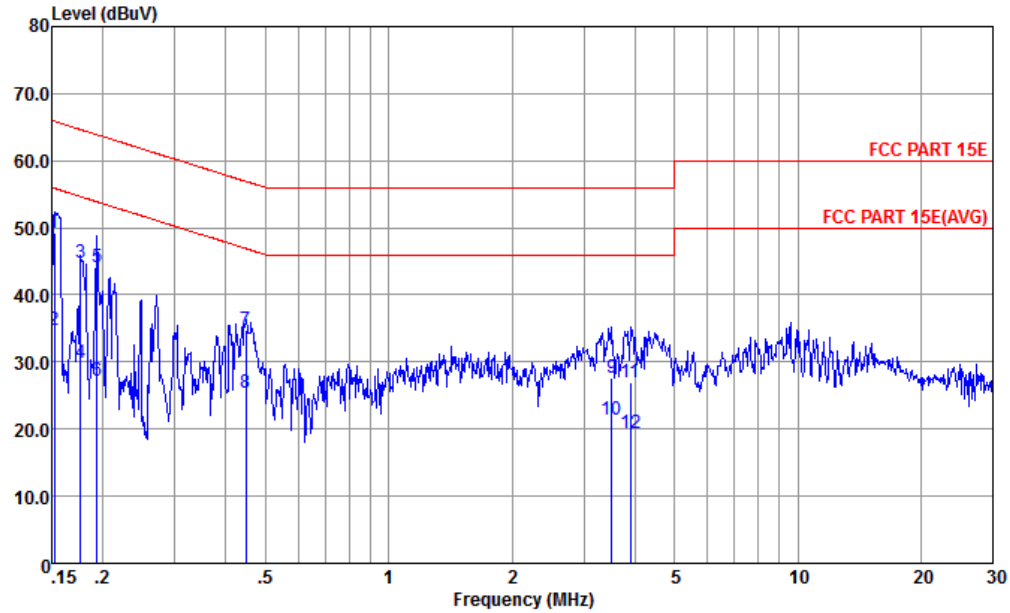
Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line



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	*	0.158	49.85	-15.71	65.56	39.29	0.10	10.46	QP
2		0.158	32.15	-23.41	55.56	21.59	0.10	10.46	Average
3		0.212	41.08	-22.06	63.14	30.60	0.12	10.36	QP
4		0.212	22.11	-31.03	53.14	11.63	0.12	10.36	Average
5		0.249	37.07	-24.71	61.78	26.61	0.13	10.33	QP
6		0.249	21.77	-30.01	51.78	11.31	0.13	10.33	Average
7		0.452	35.91	-20.94	56.85	25.50	0.16	10.25	QP
8		0.452	25.91	-20.94	46.85	15.50	0.16	10.25	Average
9		3.584	29.09	-26.91	56.00	18.60	0.24	10.25	QP
10		3.584	21.09	-24.91	46.00	10.60	0.24	10.25	Average
11		4.622	30.81	-25.19	56.00	20.30	0.25	10.26	QP
12		4.622	23.41	-22.59	46.00	12.90	0.25	10.26	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 *	0.152	49.25	-16.62	65.87	38.60	0.18	10.47	QP
2	0.152	34.85	-21.02	55.87	24.20	0.18	10.47	Average
3	0.177	44.79	-19.85	64.64	34.20	0.18	10.41	QP
4	0.177	29.89	-24.75	54.64	19.30	0.18	10.41	Average
5	0.193	44.15	-19.74	63.89	33.60	0.17	10.38	QP
6	0.193	27.15	-26.74	53.89	16.60	0.17	10.38	Average
7	0.447	34.70	-22.23	56.93	24.30	0.15	10.25	QP
8	0.447	25.50	-21.43	46.93	15.10	0.15	10.25	Average
9	3.509	27.62	-28.38	56.00	17.20	0.17	10.25	QP
10	3.509	21.32	-24.68	46.00	10.90	0.17	10.25	Average
11	3.901	26.92	-29.08	56.00	16.50	0.17	10.25	QP
12	3.901	19.32	-26.68	46.00	8.90	0.17	10.25	Average

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)

Appendix C. 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	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 149 5745MHz		5632	53.8	-14.5	68.3	40.9	35.29	8.55	30.94	305	271	P	H
		5673.2	53.77	-31.74	85.51	40.9	35.27	8.58	30.98	305	271	P	H
		5720	58.69	-52.21	110.9	45.89	35.22	8.61	31.03	305	271	P	H
		5724	59.98	-60.04	120.02	47.2	35.22	8.61	31.05	305	271	P	H
		5740	101.95	-	-	89.15	35.21	8.64	31.05	305	271	P	H
		5740	94.22	-	-	81.42	35.21	8.64	31.05	305	271	A	H
		5630.8	56.13	-12.17	68.3	43.23	35.29	8.55	30.94	108	257	P	V
		5660	56.19	-19.54	75.73	43.32	35.28	8.55	30.96	108	257	P	V
		5712.4	61.45	-47.32	108.77	48.63	35.24	8.61	31.03	108	257	P	V
		5723.2	66.67	-51.53	118.2	53.89	35.22	8.61	31.05	108	257	P	V
		5740	106.47	-	-	93.67	35.21	8.64	31.05	108	257	P	V
		5740	98.54	-	-	85.74	35.21	8.64	31.05	108	257	A	V
802.11a CH 165 5825MHz		5824	100.33	-	-	87.68	35.13	8.72	31.2	283	269	P	H
		5824	92.88	-	-	80.23	35.13	8.72	31.2	283	269	A	H
		5850.4	55.13	-66.26	121.39	42.55	35.12	8.72	31.26	283	269	P	H
		5855.2	53.15	-57.69	110.84	40.6	35.1	8.72	31.27	283	269	P	H
		5900	53.52	-33.24	86.76	40.88	35.1	8.82	31.28	283	269	P	H
		5985.2	54.9	-13.4	68.3	42.19	35.09	8.93	31.31	283	269	P	H
		5818	105.3	-	-	92.63	35.15	8.72	31.2	109	255	P	V
		5818	97.82	-	-	85.15	35.15	8.72	31.2	109	255	A	V
		5850	59.43	-62.87	122.3	46.85	35.12	8.72	31.26	109	255	P	V
		5855.2	55.68	-55.16	110.84	43.13	35.1	8.72	31.27	109	255	P	V
		5881.2	54.46	-46.23	100.69	41.87	35.1	8.77	31.28	109	255	P	V
		5940.4	54.48	-13.82	68.3	41.81	35.09	8.88	31.3	109	255	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	44.86	-29.14	74	56.96	37.99	12.74	62.83	100	360	P	H
		11490	44.15	-29.85	74	56.25	37.99	12.74	62.83	100	360	P	V
802.11a CH 157 5785MHz		11570	45.21	-28.79	74	57.18	38.06	12.79	62.82	100	199	P	H
		11570	44.89	-29.11	74	56.86	38.06	12.79	62.82	100	360	P	V
802.11a CH 165 5825MHz		11650	45.95	-28.05	74	57.8	38.11	12.85	62.81	100	360	P	H
		11650	45.81	-28.19	74	57.66	38.11	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		5602.8	54.62	-13.68	68.3	41.76	35.28	8.52	30.94	100	15	P	H
		5686.4	54.33	-40.94	95.27	41.51	35.25	8.58	31.01	100	15	P	H
		5716	53.43	-56.35	109.78	40.61	35.24	8.61	31.03	100	15	P	H
		5723.2	57.02	-61.18	118.2	44.24	35.22	8.61	31.05	100	15	P	H
		5752	99.01	-	-	86.25	35.19	8.64	31.07	100	15	P	H
		5752	92.41	-	-	79.65	35.19	8.64	31.07	100	15	A	H
		5630	55.88	-12.42	68.3	42.98	35.29	8.55	30.94	109	256	P	V
		5660.4	55.22	-20.8	76.02	42.35	35.28	8.55	30.96	109	256	P	V
		5719.2	55.3	-55.38	110.68	42.5	35.22	8.61	31.03	109	256	P	V
		5724.4	59.88	-61.05	120.93	47.1	35.22	8.61	31.05	109	256	P	V
		5752	104.55	-	-	91.79	35.19	8.64	31.07	109	256	P	V
		5752	97.22	-	-	84.46	35.19	8.64	31.07	109	256	A	V
802.11n HT20 CH 165 5825MHz		5824	95.85	-	-	83.2	35.13	8.72	31.2	107	43	P	H
		5824	88.68	-	-	76.03	35.13	8.72	31.2	107	43	A	H
		5852.4	52.87	-63.96	116.83	40.29	35.12	8.72	31.26	107	43	P	H
		5870.8	53.12	-53.35	106.47	40.52	35.1	8.77	31.27	107	43	P	H
		5880.8	54.19	-46.8	100.99	41.6	35.1	8.77	31.28	107	43	P	H
		5927.6	53.42	-14.88	68.3	40.8	35.09	8.82	31.29	107	43	P	H
		5830	103.53	-	-	90.88	35.13	8.72	31.2	104	297	P	V
		5830	95.89	-	-	83.24	35.13	8.72	31.2	104	297	A	V
		5852	54.8	-62.94	117.74	42.22	35.12	8.72	31.26	104	297	P	V
		5868.4	54.1	-53.05	107.15	41.5	35.1	8.77	31.27	104	297	P	V
		5894	53.72	-37.48	91.2	41.13	35.1	8.77	31.28	104	297	P	V
		5942.4	53.25	-15.05	68.3	40.58	35.09	8.88	31.3	104	297	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 CH 149 5745MHz		11490	43.9	-30.1	74	56	37.99	12.74	62.83	100	360	P	H
		11490	44.65	-29.35	74	56.75	37.99	12.74	62.83	100	360	P	V
802.11n HT20 CH 157 5785MHz		11570	43.59	-30.41	74	55.56	38.06	12.79	62.82	100	360	P	H
		11570	44.39	-29.61	74	56.36	38.06	12.79	62.82	100	360	P	V
802.11n HT20 CH 165 5825MHz		11650	43.94	-30.06	74	55.79	38.11	12.85	62.81	100	360	P	H
		11650	43.42	-30.58	74	55.27	38.11	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)
		5609.2	52.19	-16.11	68.3	39.33	35.28	8.52	30.94	100	47	P	H
		5698.8	53.95	-50.47	104.42	41.13	35.25	8.58	31.01	100	47	P	H
		5718.8	53.71	-56.85	110.56	40.91	35.22	8.61	31.03	100	47	P	H
		5724.4	54.06	-66.87	120.93	41.28	35.22	8.61	31.05	100	47	P	H
		5758	93.5	-	-	80.74	35.19	8.64	31.07	100	47	P	H
		5758	85.88	-	-	73.12	35.19	8.64	31.07	100	47	A	H
		5852.4	51.63	-65.2	116.83	39.05	35.12	8.72	31.26	100	47	P	H
		5858.4	53.28	-56.67	109.95	40.68	35.1	8.77	31.27	100	47	P	H
802.11n		5876	53.22	-51.34	104.56	40.63	35.1	8.77	31.28	100	47	P	H
HT40		5934	53.19	-15.11	68.3	40.52	35.09	8.88	31.3	100	47	P	H
CH 151		5641.6	55.06	-13.24	68.3	42.15	35.3	8.55	30.94	110	258	P	V
5755MHz		5652.8	54.62	-15.76	70.38	41.75	35.28	8.55	30.96	110	258	P	V
		5713.6	57.74	-51.37	109.11	44.92	35.24	8.61	31.03	110	258	P	V
		5721.6	60.21	-54.34	114.55	47.43	35.22	8.61	31.05	110	258	P	V
		5746	101.17	-	-	88.39	35.21	8.64	31.07	110	258	P	V
		5746	93.8	-	-	81.02	35.21	8.64	31.07	110	258	A	V
		5850.8	53.23	-67.25	120.48	40.65	35.12	8.72	31.26	110	258	P	V
		5861.6	52.64	-56.41	109.05	40.04	35.1	8.77	31.27	110	258	P	V
		5906	54.44	-27.88	82.32	41.81	35.09	8.82	31.28	110	258	P	V
		5958	53.3	-15	68.3	40.64	35.09	8.88	31.31	110	258	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)
		5644.8	53.23	-15.07	68.3	40.32	35.3	8.55	30.94	321	251	P	H
		5684.8	52.96	-41.13	94.09	40.14	35.25	8.58	31.01	321	251	P	H
		5708.4	52.97	-54.68	107.65	40.15	35.24	8.61	31.03	321	251	P	H
		5720.4	51.95	-59.86	111.81	39.15	35.22	8.61	31.03	321	251	P	H
		5794	93.85	-	-	81.14	35.16	8.67	31.12	321	251	P	H
		5794	85.95	-	-	73.24	35.16	8.67	31.12	321	251	A	H
		5851	51.94	-68.08	120.02	39.36	35.12	8.72	31.26	321	251	P	H
		5874.8	52.28	-53.08	105.36	39.69	35.1	8.77	31.28	321	251	P	H
802.11n		5900.8	53.72	-32.45	86.17	41.08	35.1	8.82	31.28	321	251	P	H
HT40		5941.2	52.99	-15.31	68.3	40.32	35.09	8.88	31.3	321	251	P	H
CH 159		5615.2	53.98	-14.32	68.3	41.12	35.28	8.52	30.94	100	296	P	V
5795MHz		5683.2	53.9	-39	92.9	41.03	35.27	8.58	30.98	100	296	P	V
		5708	55	-52.54	107.54	42.18	35.24	8.61	31.03	100	296	P	V
		5721.2	53.48	-60.16	113.64	40.68	35.22	8.61	31.03	100	296	P	V
		5800	100.85	-	-	88.16	35.16	8.67	31.14	100	296	P	V
		5800	93.72	-	-	81.03	35.16	8.67	31.14	100	296	A	V
		5854	52.46	-60.72	113.18	39.9	35.1	8.72	31.26	100	296	P	V
		5863.6	53.61	-54.88	108.49	41.01	35.1	8.77	31.27	100	296	P	V
		5900	53.18	-33.58	86.76	40.54	35.1	8.82	31.28	100	296	P	V
		5946.8	53.94	-14.36	68.3	41.27	35.09	8.88	31.3	100	296	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	42.19	-31.81	74	54.28	38	12.74	62.83	100	360	P	H
		11510	43.42	-30.58	74	55.51	38	12.74	62.83	100	360	P	V
802.11n HT40 CH 159 5795MHz		11590	44.01	-29.99	74	55.93	38.07	12.82	62.81	100	360	P	H
		11590	42.59	-31.41	74	54.51	38.07	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

Emission below 1GHz

5GHz WIFI 802.11a (LF @ 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)
5GHz 802.11a LF		159.98	26.46	-17.04	43.5	40.11	16.79	1.49	31.93	-	-	P	H
		191.99	23.08	-20.42	43.5	37.96	15.43	1.6	31.91	-	-	P	H
		240.49	25.79	-20.21	46	37.91	18.01	1.82	31.95	-	-	P	H
		320.03	34.87	-11.13	46	45.05	19.82	2.03	32.03	100	0	P	H
		815.7	27.3	-18.7	46	27.47	28.55	3.3	32.02	-	-	P	H
		931.13	28.49	-17.51	46	25.88	30.27	3.51	31.17	-	-	P	H
		35.82	17.19	-22.81	40	26.81	21.62	0.72	31.96	-	-	P	V
		159.98	21.08	-22.42	43.5	34.73	16.79	1.49	31.93	-	-	P	V
		191.99	19.5	-24	43.5	34.38	15.43	1.6	31.91	-	-	P	V
		320.03	23.81	-22.19	46	33.99	19.82	2.03	32.03	-	-	P	V
		455.83	25.71	-20.29	46	32.31	23.22	2.4	32.22	-	-	P	V
		934.04	28.01	-17.99	46	25.26	30.37	3.52	31.14	100	0	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 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)

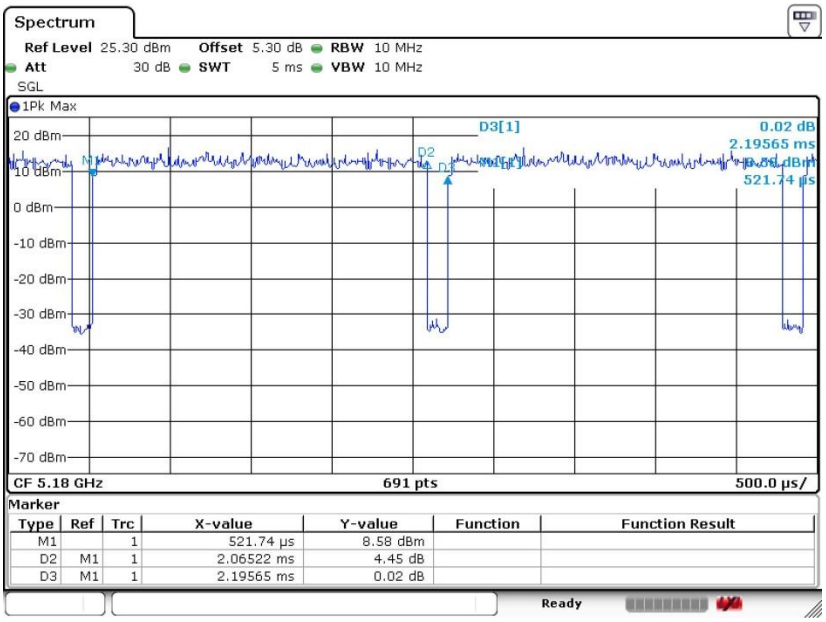
= -10.46(dB)

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

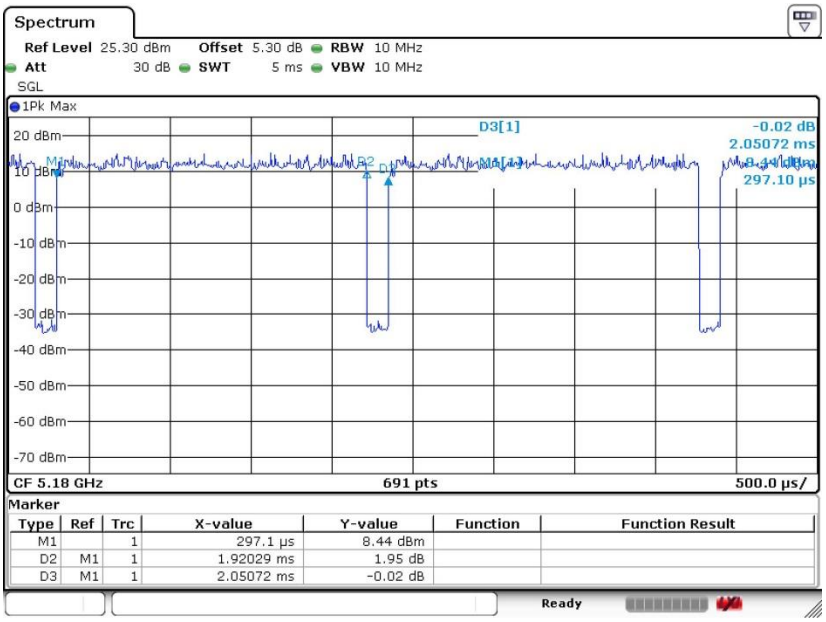
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	94.06	2.065	0.484	0.51kHz
802.11n HT20	93.64	1.920	0.521	0.56kHz
802.11n HT40	87.84	0.942	1.062	1.1kHz

802.11a



802.11n HT20



802.11n HT40