FCC RF Test Report

APPLICANT	:	**PAX Technology Limited**
EQUIPMENT	:	**Wireless POS Terminal**
BRAND NAME	:	**PAX**
MODEL NAME	:	**D220**
FCC ID	:	**V5P-D2204GMV**
STANDARD	:	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	:	**(DTS) Digital Transmission System**

The product was received on Aug. 28, 2018 and testing was completed on Nov. 06, 2018. We, Sporton International (Shenzhen) 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 (Shenzhen) Inc., the test report shall not be reproduced except in full.

TESTING
NVLAP LAB CODE 600156-0

Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen City, Guangdong Province 518055, China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR882809C	Rev. 01	Initial issue of report	Dec. 10, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges	≤ 20dBc	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 8.38 dB at 98.87 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 16.59 dB at 0.43 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

PAX Technology Limited
Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong

1.2 Manufacturer

PAX Computer Technology (Shenzhen) Co., Ltd.
4/F, No.3 Building, Software Park, Second Central Science-Tech Road, High-Tech industrial Park, Shenzhen, Guangdong, P.R.C.

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Wireless POS Terminal
Brand Name	PAX
Model Name	D220
FCC ID	V5P-D2204GMV
EUT supports Radios application	LTE / NFC Bluetooth BR/EDR/LE WLAN 2.4GHz 802.11b/g/n HT20
IMEI Code	Conducted, AC Conduction: N/A Radiation: 354183090008570
EUT Stage	Identical Prototype

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	2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to antenna	802.11b : 17.95 dBm (0.0624 W) 802.11g : 22.29 dBm (0.1694 W) 802.11n HT20 : 21.70 dBm (0.1479 W)
Antenna Type / Gain	FPC Antenna with gain 0.60 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Modification of EUT

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

1.6 Testing Location

Sporton International (Shenzhen) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0).

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen City, Guangdong Province 518055, China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595		
Test Site No.	**Sporton Site No.**	**FCC designation No.**	**FCC Test Firm Registration No.**
	TH01-SZ CO01-SZ	CN5018	337463

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District, Shenzhen City, Guangdong Province 518055, China TEL: +86-755- 3320-2398		
Test Site No.	**Sporton Site No.**	**FCC designation No.**	**FCC Test Firm Registration No.**
	03CH03-SZ	CN5019	577730

1.7 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05
- 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 (Z 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)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

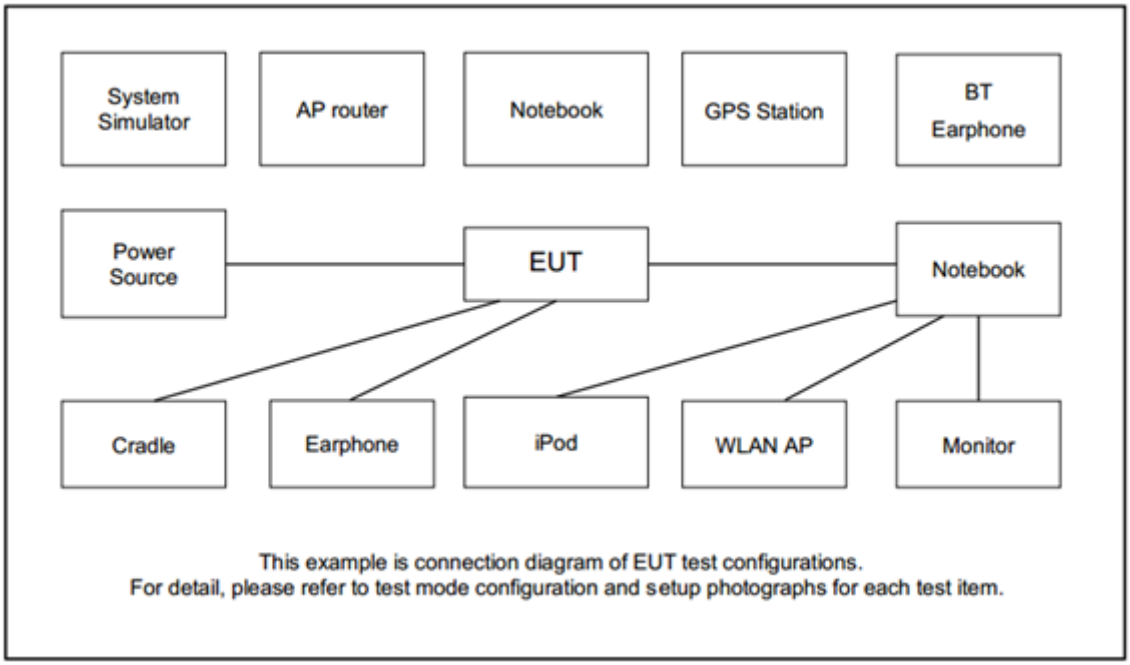
2.2 Test Mode

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

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : LTE Cat M1 Band 13 Idle + WLAN Link + Battery + USB Cable (Charging from Adapter1)
Remark: For Radiated Test Cases, The tests were performance with Adapter and USB Cable.	

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.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	BT Base Station	R&S	CBT	N/A	N/A	Unshielded,1.8m
3.	WLAN AP	D-Link	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
4.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Phone	moto	Lenovo K	N/A	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 + attenuator factor.
Following shows an offset computation example with cable loss 5.0 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 5.0 + 10 = 15.0 (dB)

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

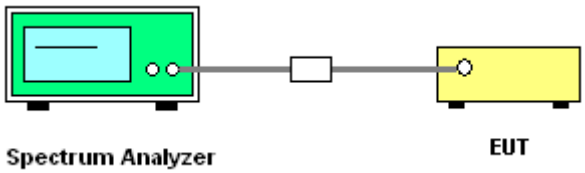
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. Measure and record the results in the test report.

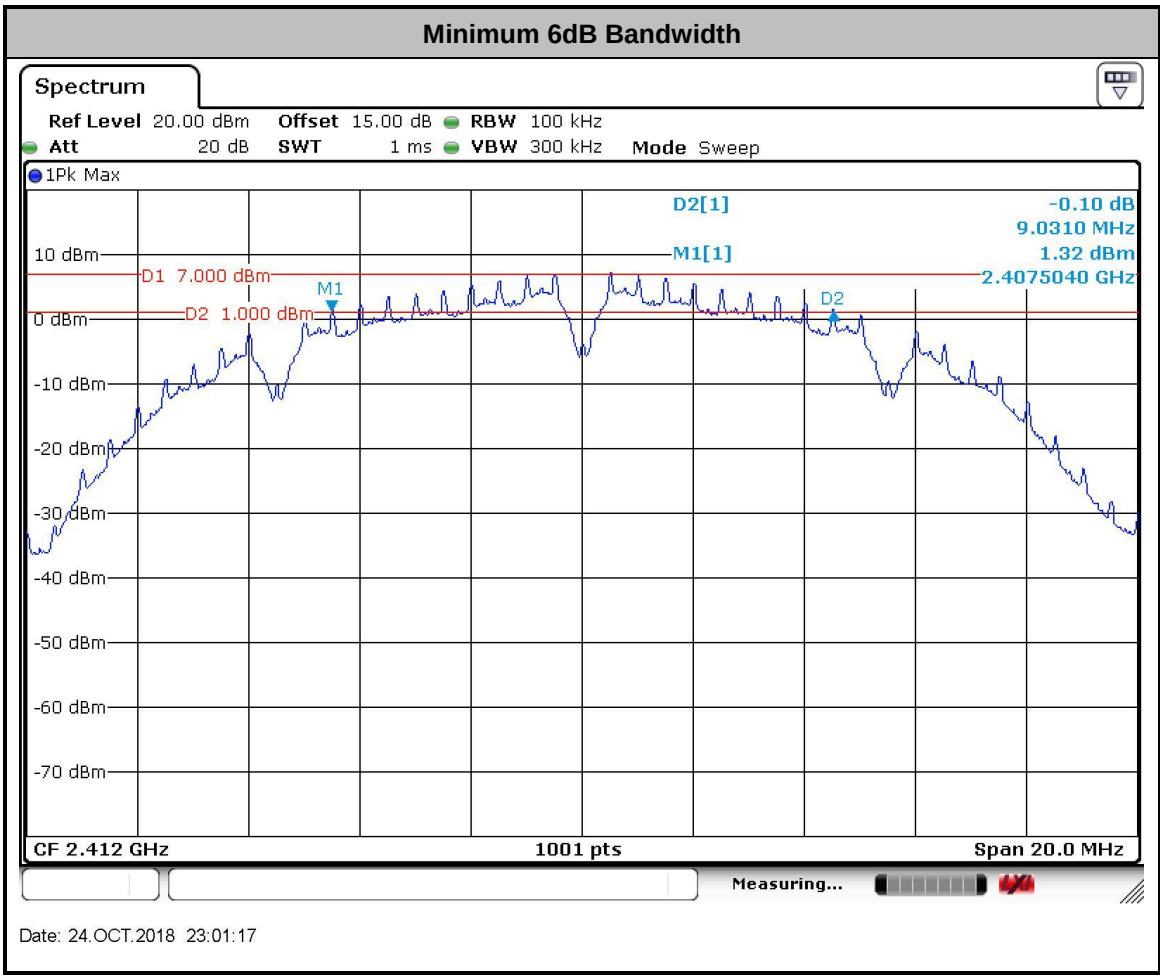
3.1.4 Test Setup



3.1.5 Test Result of 6dB Occupied Bandwidth

Please refer to Appendix A.

Minimum 6dB Bandwidth



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

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

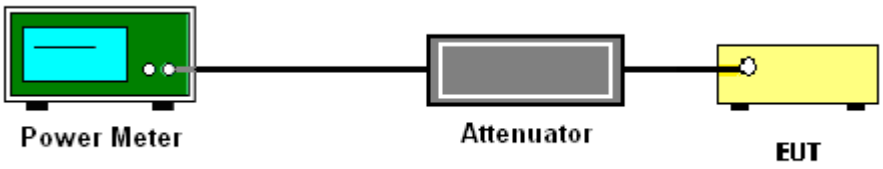
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v05 section 9.1.3 PKPM1 Peak power meter method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

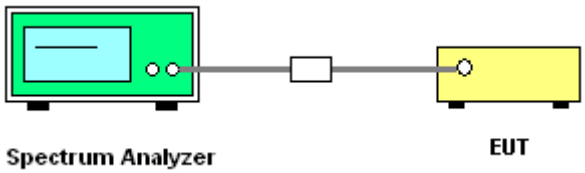
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

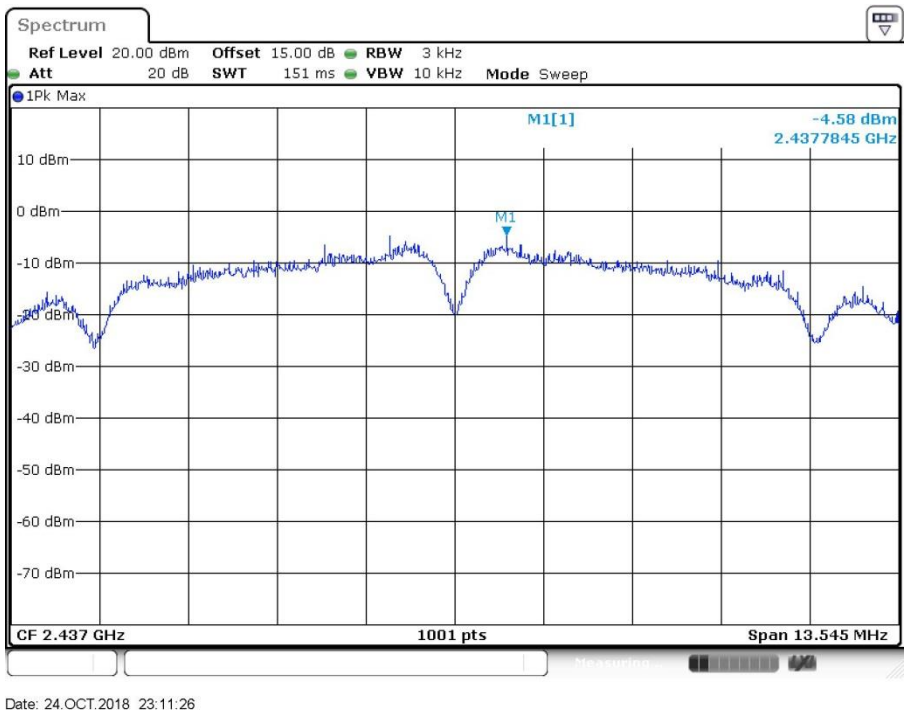
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

Worst Case Power Density (dBm/3kHz)



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

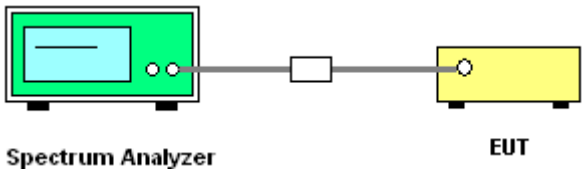
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

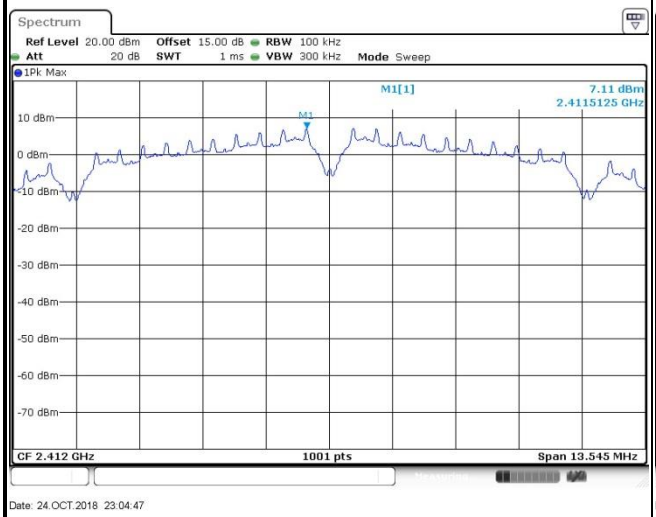
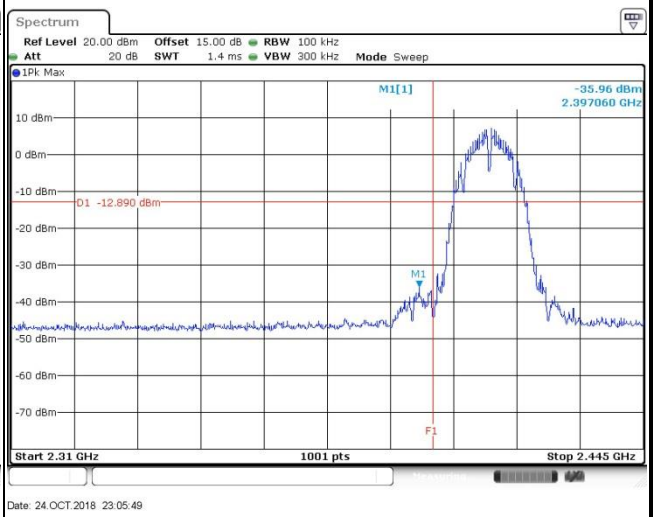
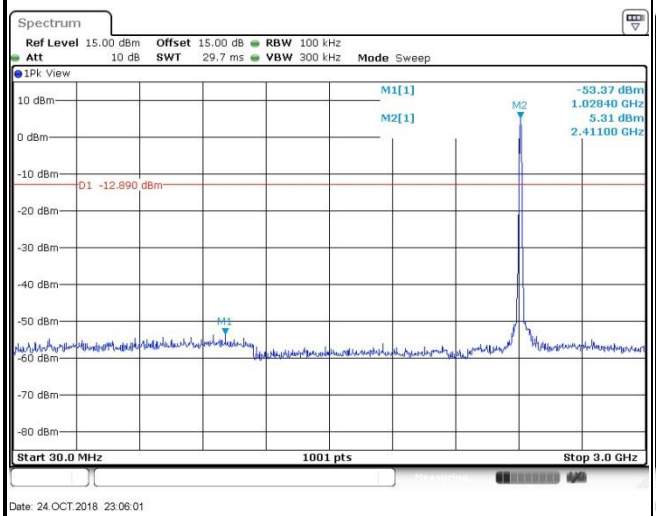
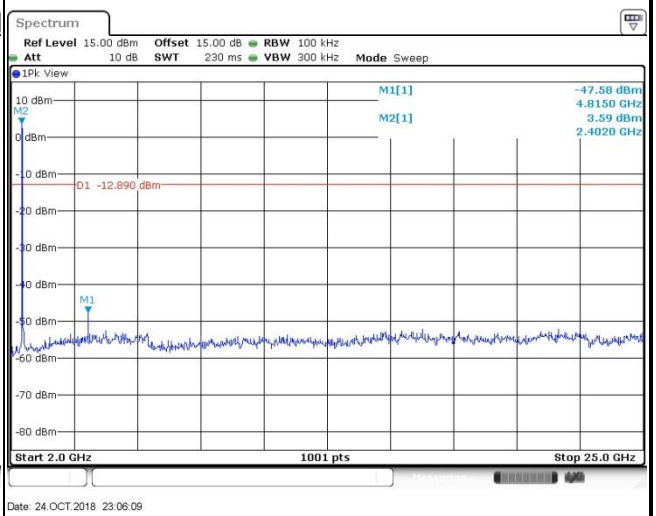
3.4.4 Test Setup



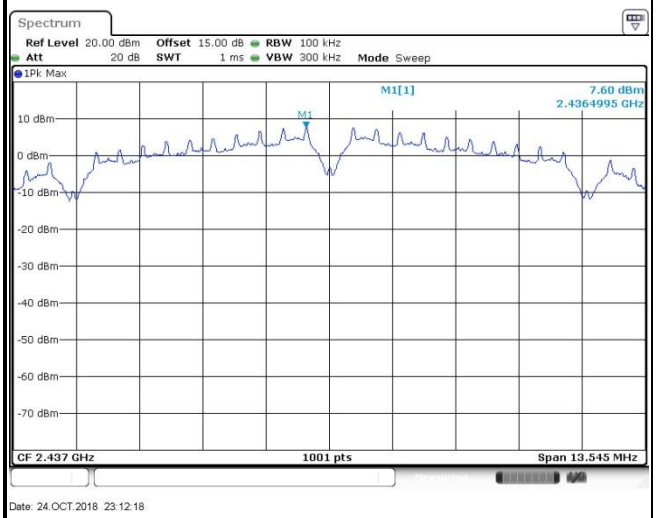
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

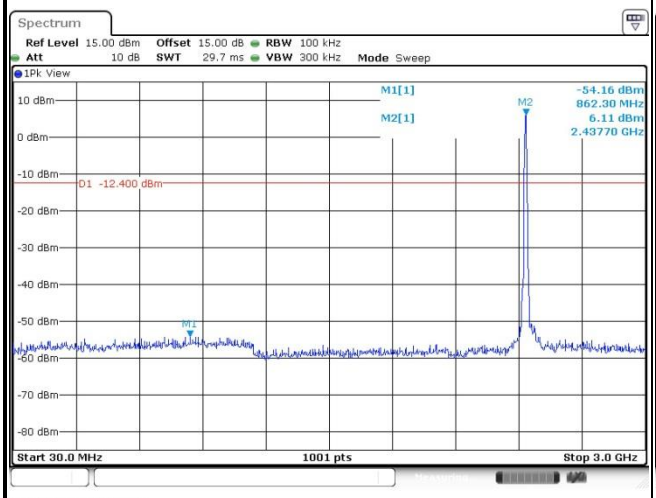
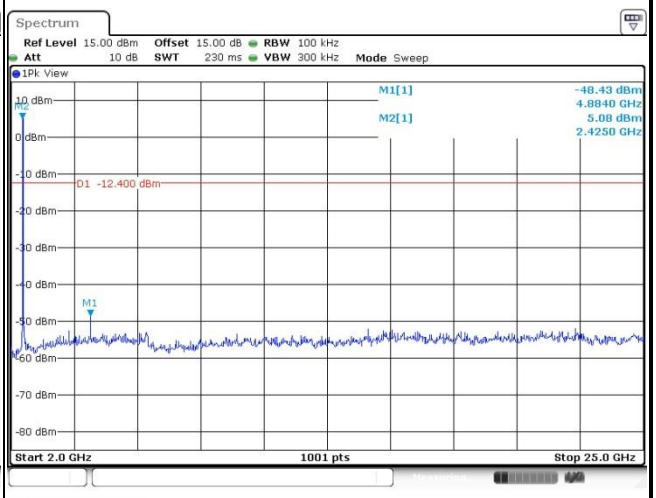
Test Engineer :	Hayden Chen	**Temperature :**	24~26℃
		Relative Humidity :	50~53%

Test Mode :	802.11b	**Test Channel :**	01

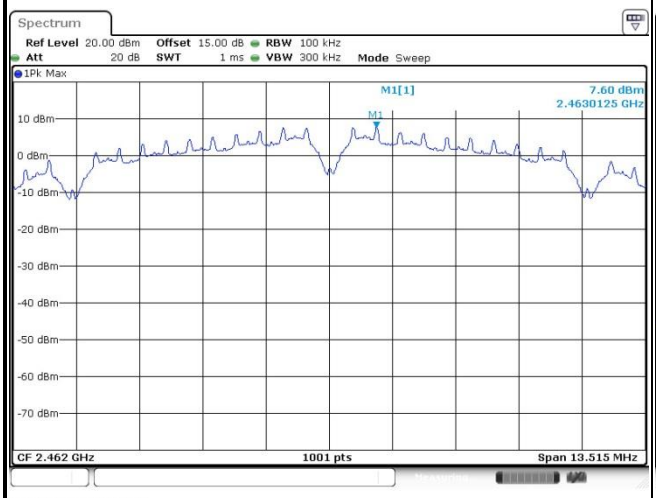
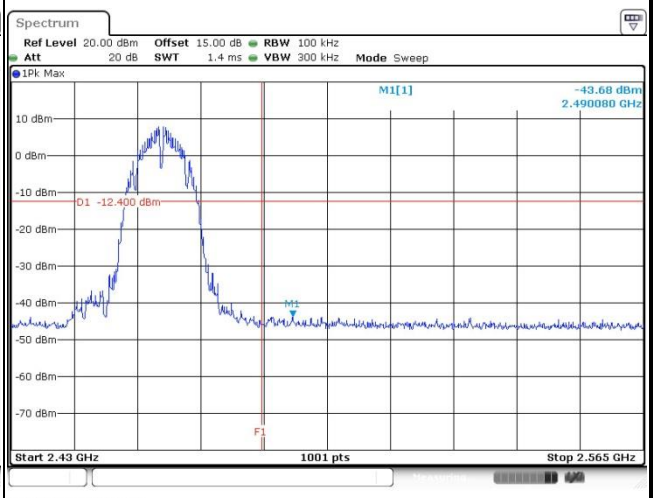
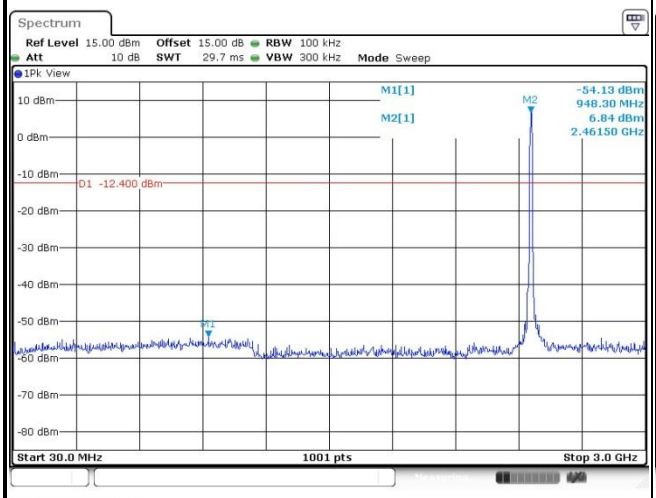
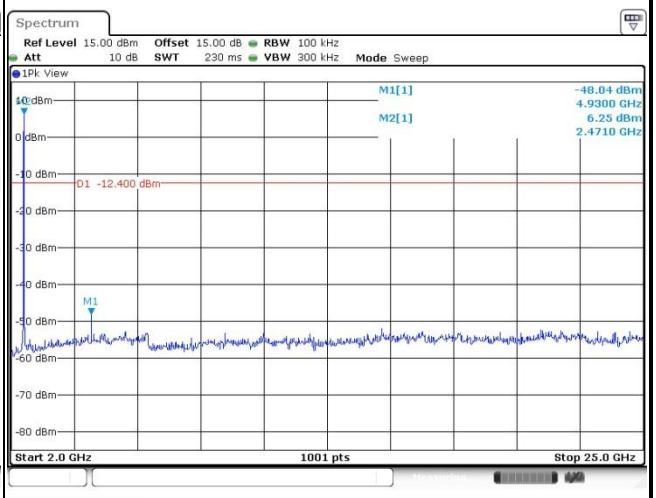
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11b	Test Channel :	06

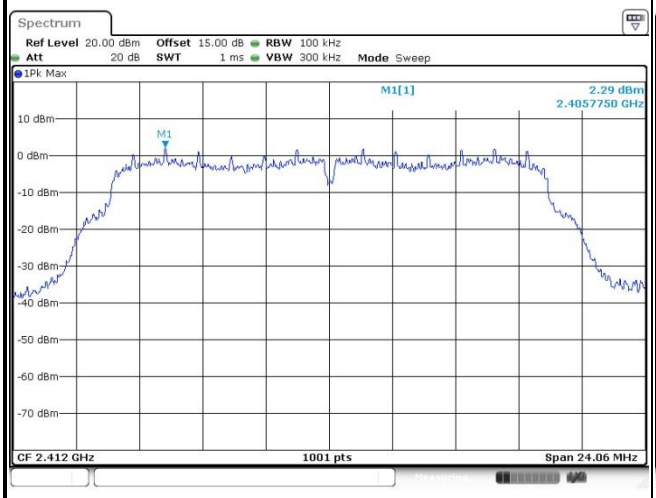
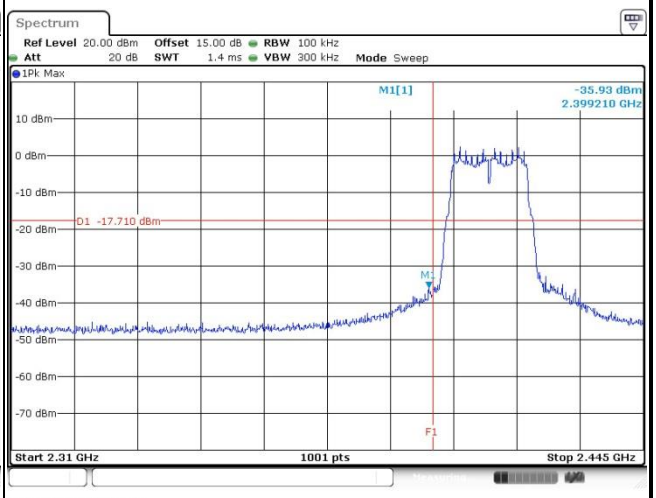
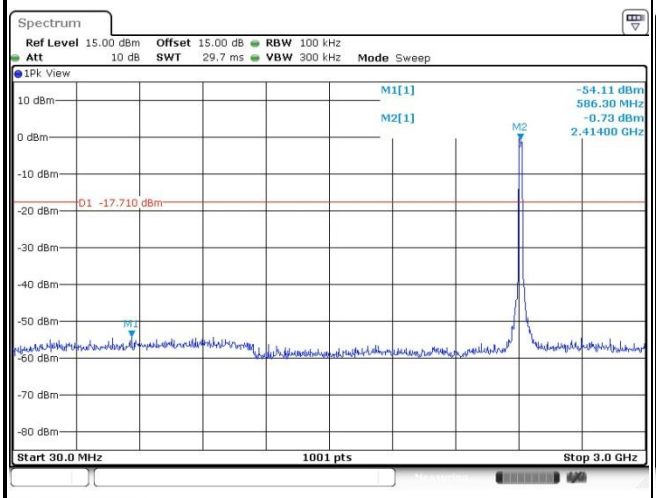
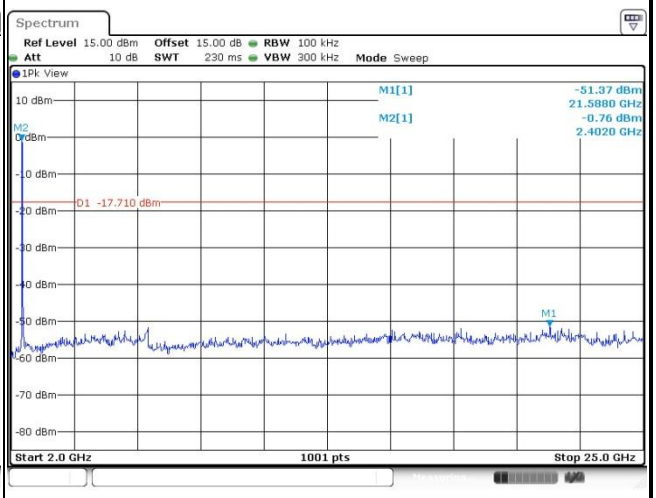
100kHz PSD reference Level	
	

Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
	

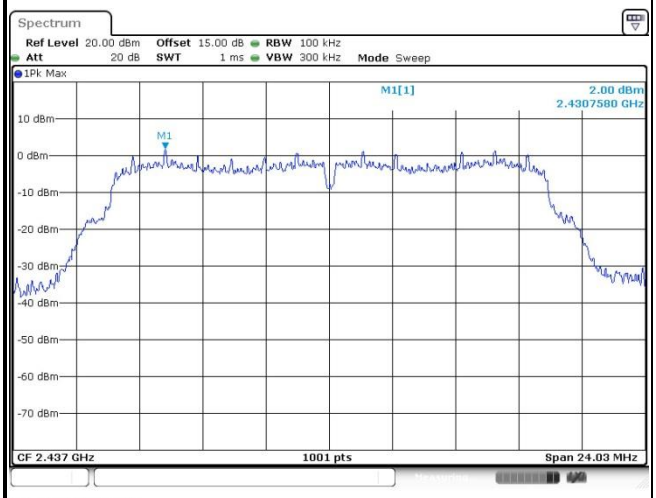
Test Mode :	802.11b	Test Channel :	11

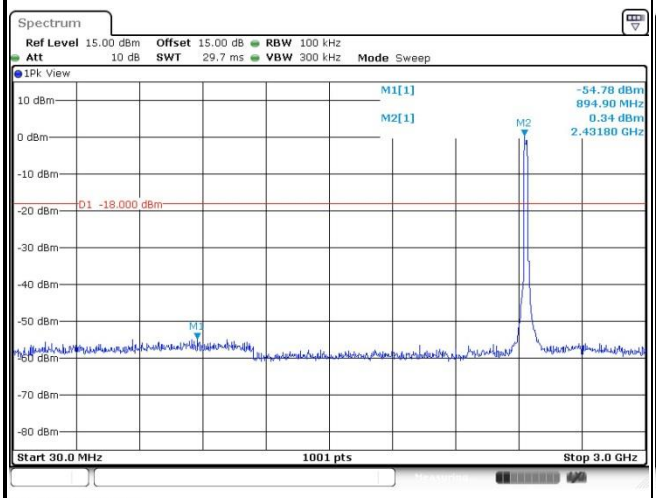
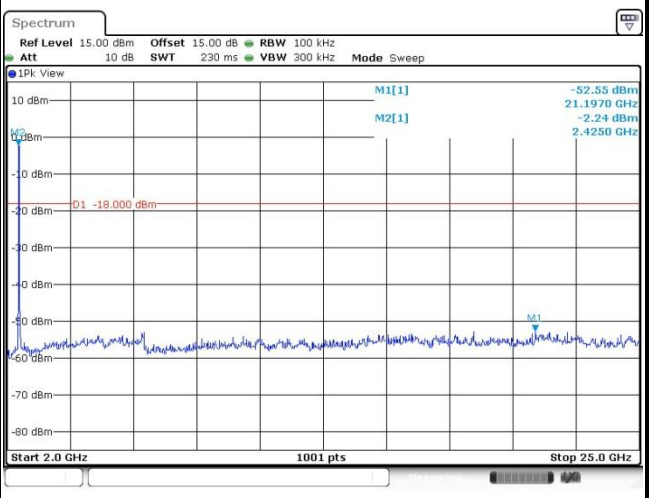
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11g	Test Channel :	01

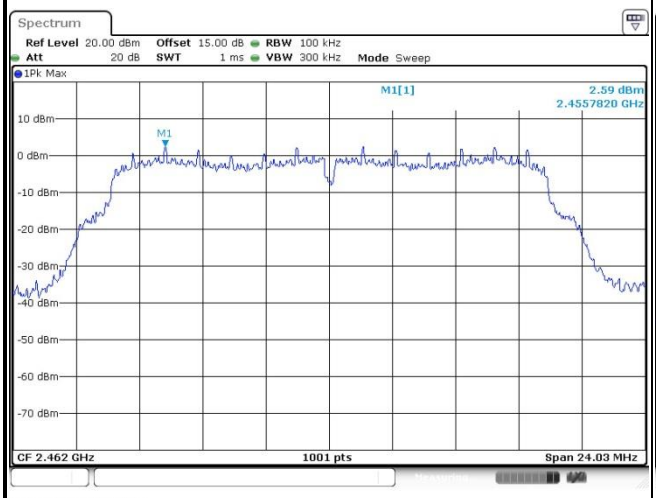
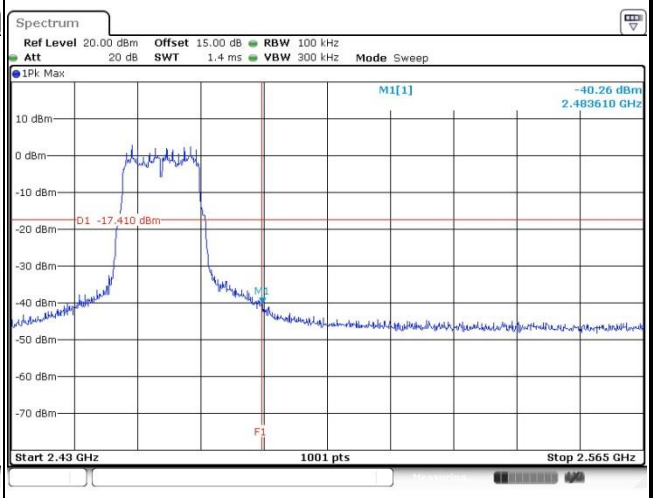
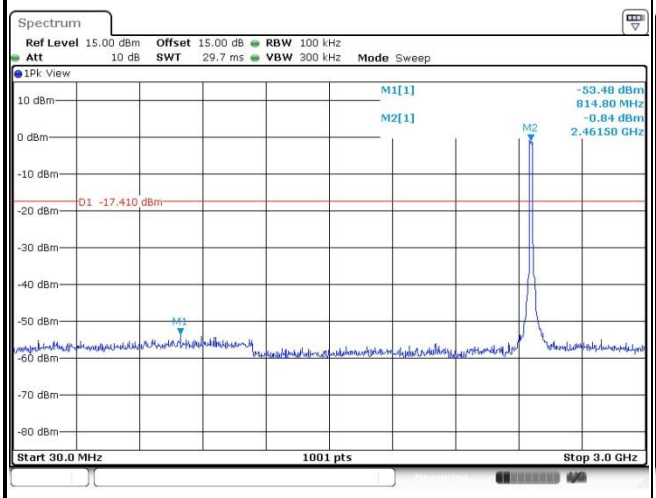
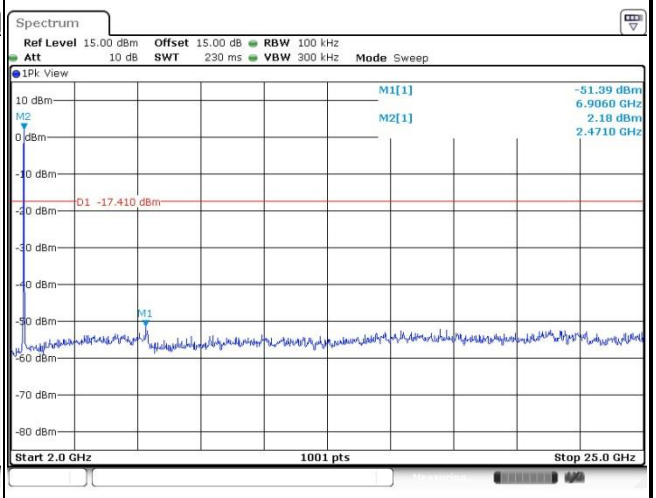
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11g	Test Channel :	06

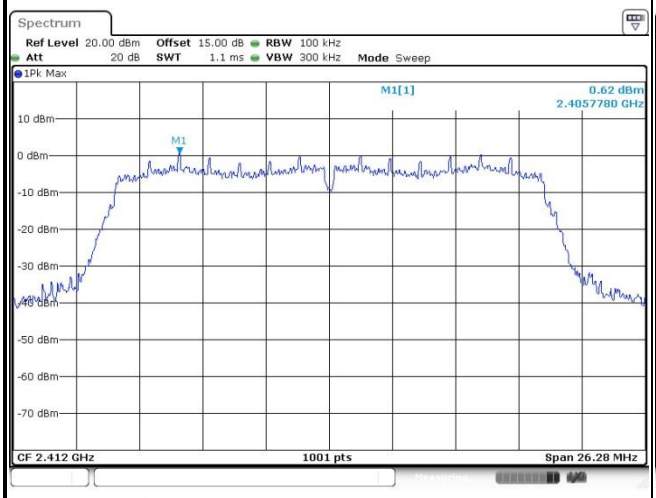
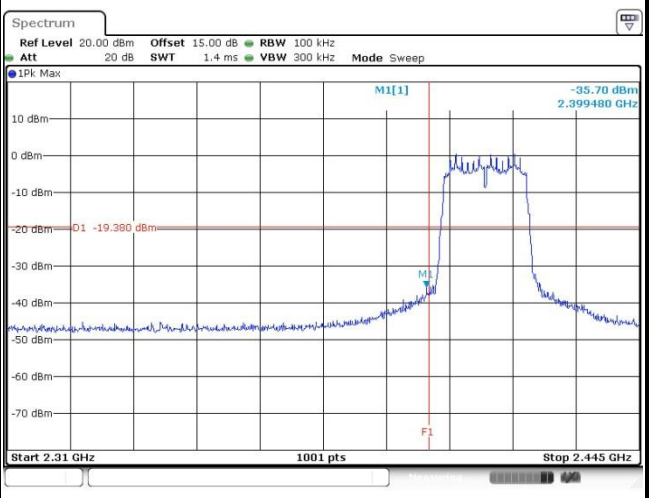
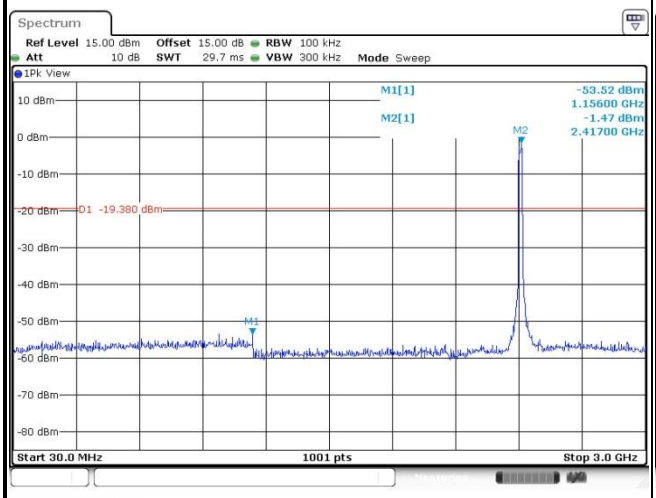
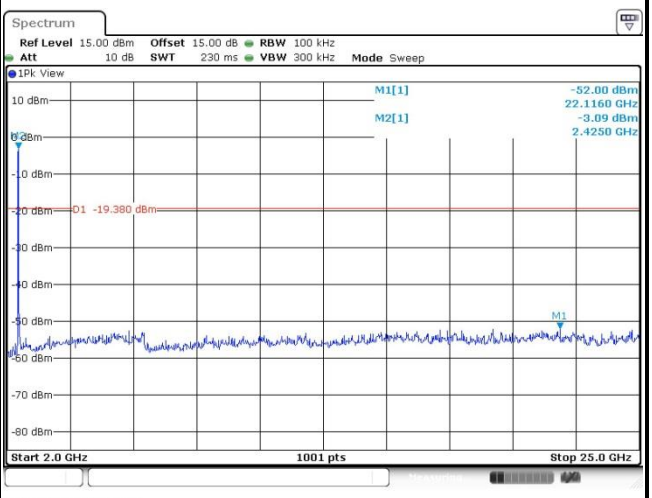
100kHz PSD reference Level	
	

Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
	

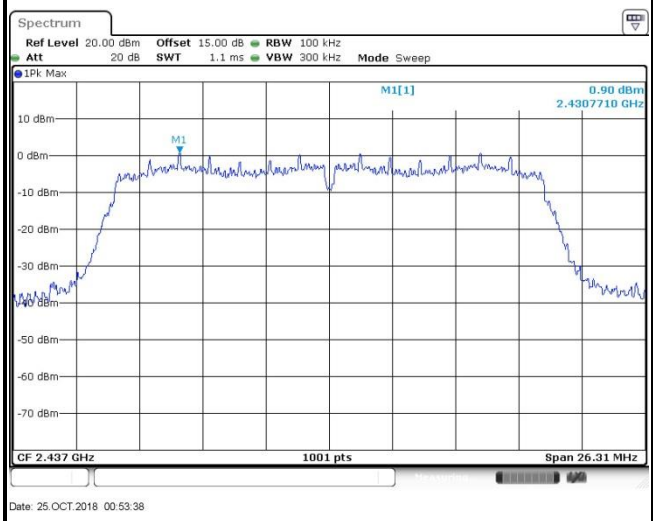
Test Mode :	802.11g	Test Channel :	11

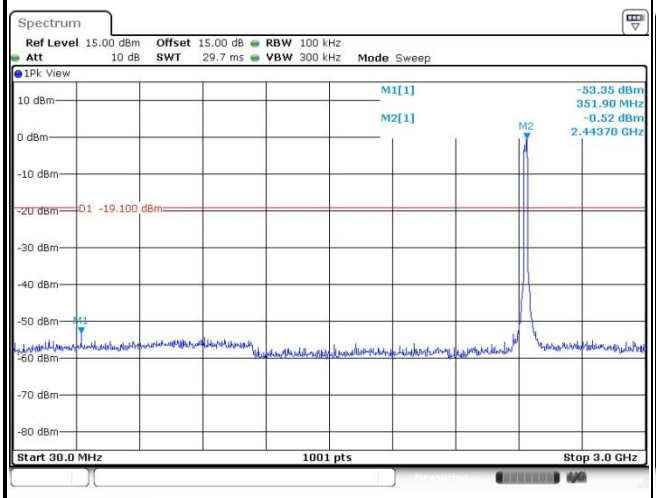
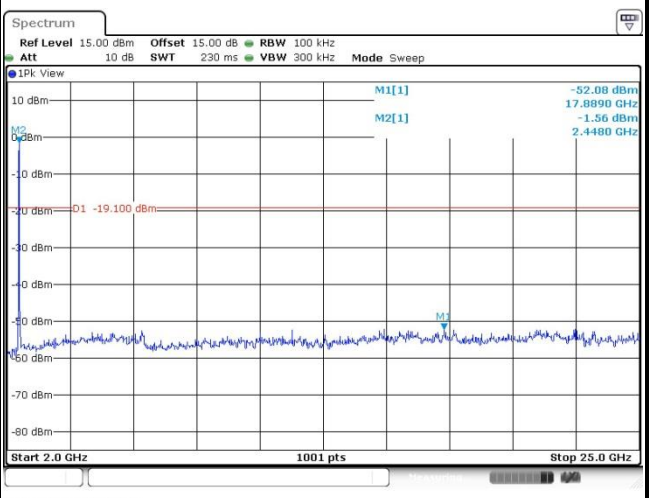
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11n HT20	Test Channel :	01

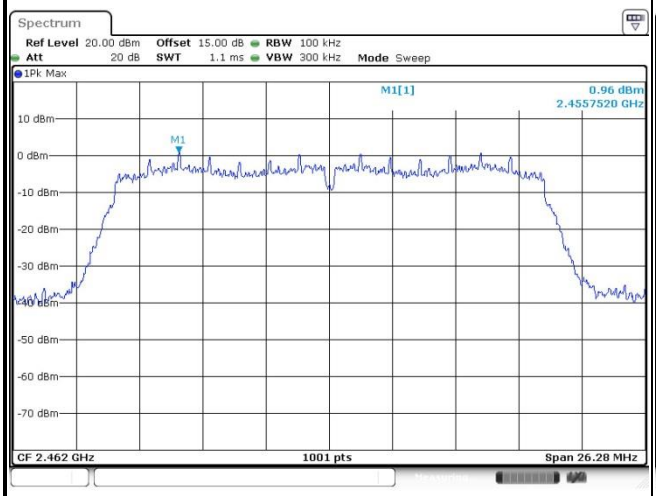
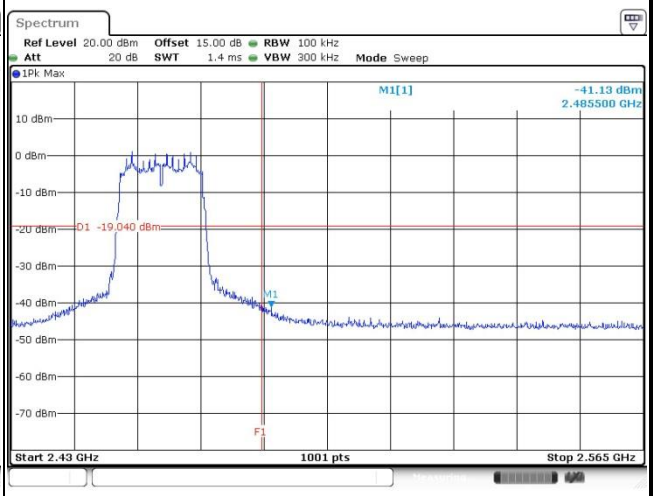
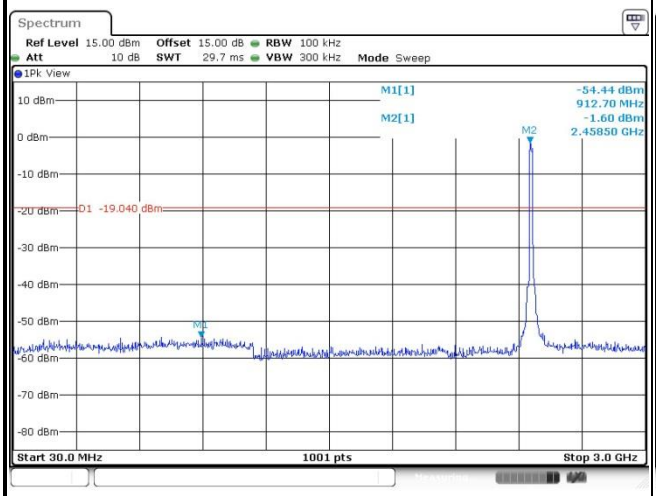
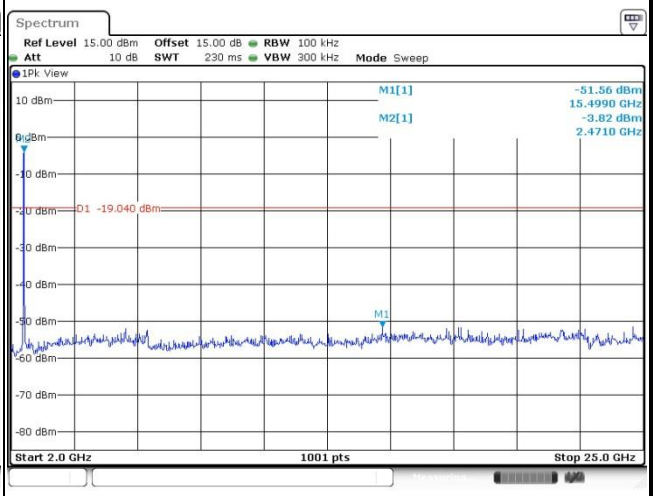
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11n HT20	Test Channel :	06

100kHz PSD reference Level	
	

Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
	

Test Mode :	802.11n HT20	Test Channel :	11

100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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

3.5.2 Measuring Instruments

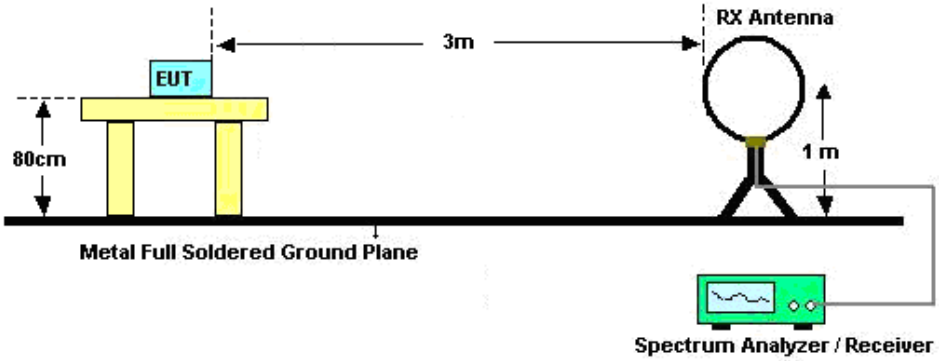
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

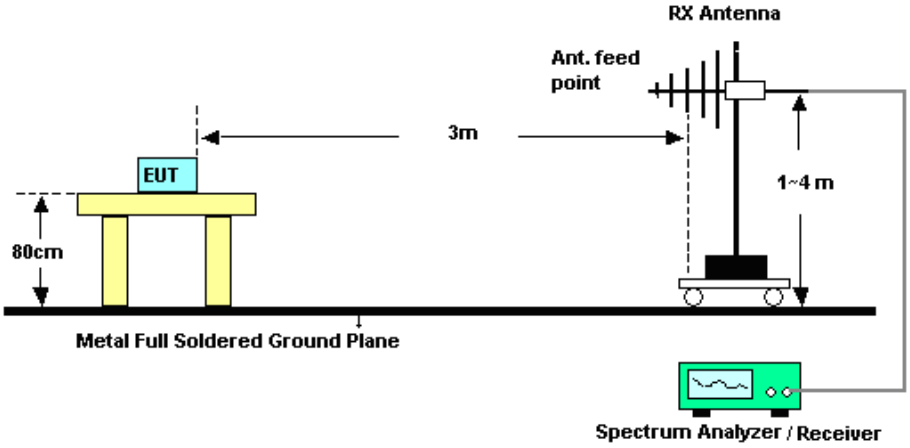
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. 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.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
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.
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - 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.

3.5.4 Test Setup

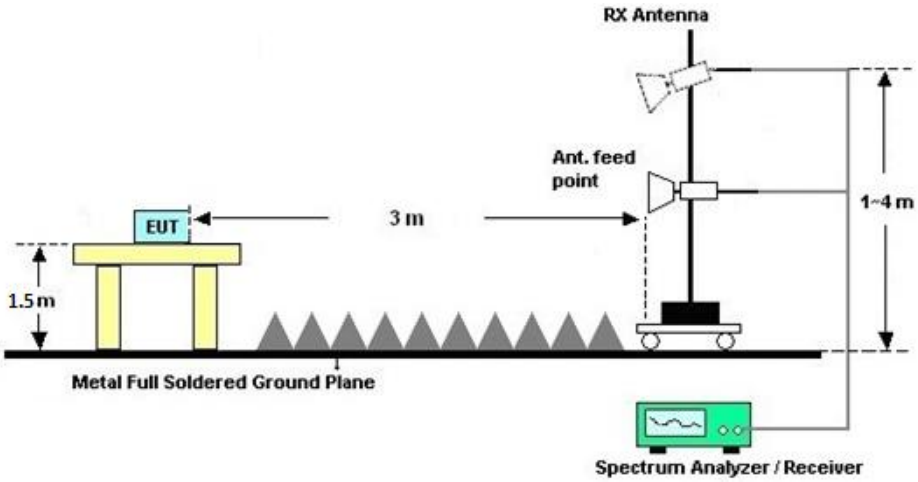
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.5.7 Duty Cycle

Please refer to Appendix D.

3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

3.6 AC Conducted Emission Measurement

3.6.1 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.

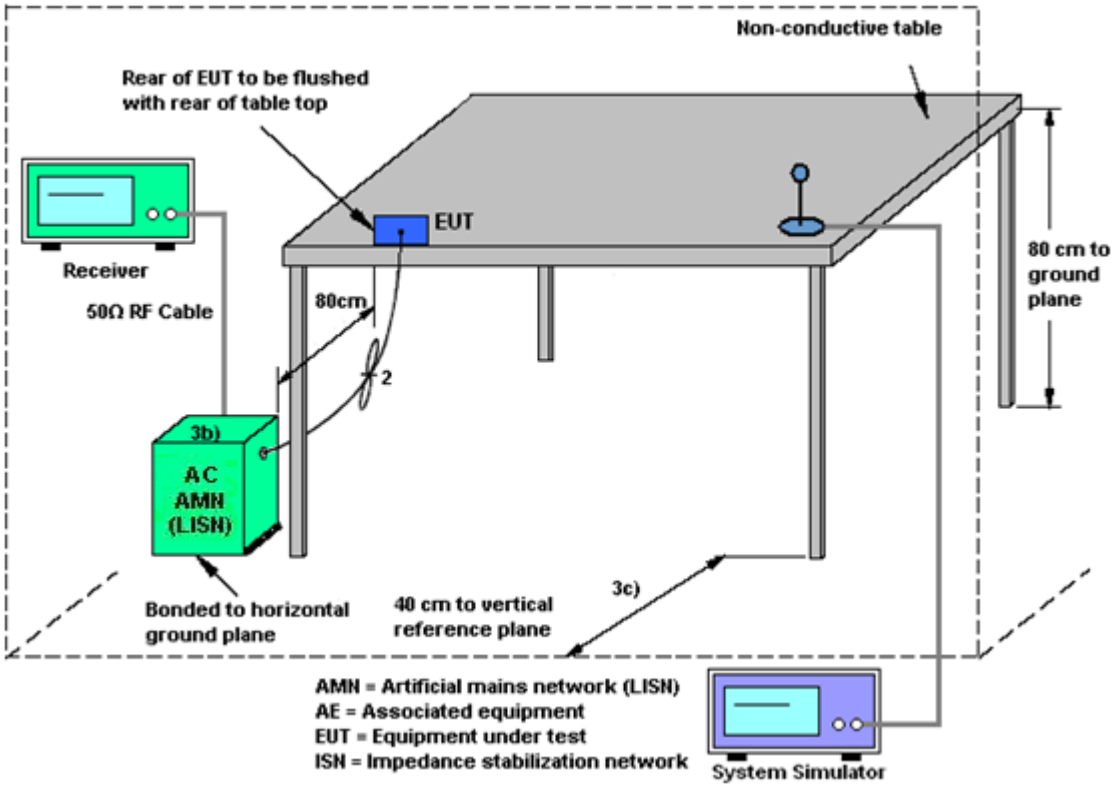
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it 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 (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

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	FSP30	101400	9kHz~30GHz	Dec. 26, 2017	Oct. 24, 2018~ Nov. 06, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	Apr. 19, 2018	Oct. 24, 2018~ Nov. 06, 2018	Apr. 18, 2019	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1207253	30MHz~40GHz	Dec. 26, 2017	Oct. 24, 2018~ Nov. 06, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Dec. 26, 2017	Oct. 24, 2018~ Nov. 06, 2018	Dec. 25, 2018	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 19, 2018	Oct. 20, 2018~ Oct. 23, 2018	Apr. 18, 2019	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 19, 2018	Oct. 20, 2018~ Oct. 23, 2018	Apr. 18, 2019	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 14, 2018	Oct. 20, 2018~ Oct. 23, 2018	May 13, 2019	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Apr. 19, 2018	Oct. 20, 2018~ Oct. 23, 2018	Apr. 18, 2019	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Mar. 29, 2018	Oct. 20, 2018~ Oct. 23, 2018	Mar. 28, 2019	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Mar. 30, 2018	Oct. 20, 2018~ Oct. 23, 2018	Mar. 29, 2019	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 18, 2018	Oct. 20, 2018~ Oct. 23, 2018	Oct. 17, 2019	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 18, 2018	Oct. 20, 2018~ Oct. 23, 2018	Oct. 17, 2019	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 27, 2017	Oct. 20, 2018~ Oct. 23, 2018	Dec. 26, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 30, 2018	Oct. 20, 2018~ Oct. 23, 2018	Jul. 30, 2019	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Oct. 20, 2018~ Oct. 23, 2018	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Oct. 20, 2018~ Oct. 23, 2018	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Oct. 20, 2018~ Oct. 23, 2018	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 26, 2017	Oct. 15, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Dec. 26, 2017	Oct. 15, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103892	9kHz~30MHz	Nov. 01, 2017	Oct. 15, 2018	Oct. 31, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 18, 2018	Oct. 15, 2018	Jul. 17, 2019	Conduction (CO01-SZ)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.6 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))	**4.8 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.6 dB**

Appendix A. Conducted test result

Report Number : FR882809A

A1 - DTS Part

Test Engineer:	Hayden Chen	Temperature:	24~26	°C
Test Date:	2018/10/24~2018/11/06	Relative Humidity:	50~53	%

Report Number : FR882809A

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band								
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	14.14	9.03	0.50	Pass
11b	1Mbps	1	6	2437	14.09	9.03	0.50	Pass
11b	1Mbps	1	11	2462	14.09	9.03	0.50	Pass
11g	6Mbps	1	1	2412	18.08	16.04	0.50	Pass
11g	6Mbps	1	6	2437	18.18	16.02	0.50	Pass
11g	6Mbps	1	11	2462	18.13	16.02	0.50	Pass
HT20	MCS0	1	1	2412	18.93	17.52	0.50	Pass
HT20	MCS0	1	6	2437	18.73	17.54	0.50	Pass
HT20	MCS0	1	11	2462	18.88	17.52	0.50	Pass

TEST RESULTS DATA
Peak Power Table

2.4GHz Band										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
11b	1Mbps	1	1	2412	17.82	30.00	0.60	18.42	36.00	Pass
11b	1Mbps	1	6	2437	17.95	30.00	0.60	18.55	36.00	Pass
11b	1Mbps	1	11	2462	17.90	30.00	0.60	18.50	36.00	Pass
11g	6Mbps	1	1	2412	22.29	30.00	0.60	22.89	36.00	Pass
11g	6Mbps	1	6	2437	22.25	30.00	0.60	22.85	36.00	Pass
11g	6Mbps	1	11	2462	22.07	30.00	0.60	22.67	36.00	Pass
HT20	MCS0	1	1	2412	21.70	30.00	0.60	22.30	36.00	Pass
HT20	MCS0	1	6	2437	21.07	30.00	0.60	21.67	36.00	Pass
HT20	MCS0	1	11	2462	21.03	30.00	0.60	21.63	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

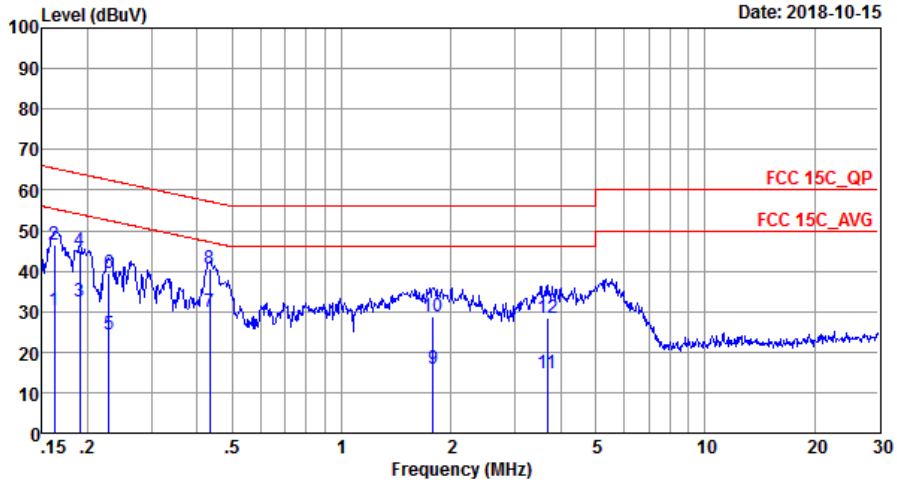
2.4GHz Band						
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.10	15.03
11b	1Mbps	1	6	2437	0.10	15.10
11b	1Mbps	1	11	2462	0.10	15.09
11g	6Mbps	1	1	2412	0.58	12.81
11g	6Mbps	1	6	2437	0.58	12.76
11g	6Mbps	1	11	2462	0.58	12.73
HT20	MCS0	1	1	2412	0.62	11.01
HT20	MCS0	1	6	2437	0.62	11.02
HT20	MCS0	1	11	2462	0.62	11.04

TEST RESULTS DATA
Peak Power Density

2.4GHz Band								
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
11b	1Mbps	1	1	2412	-5.28	0.60	8.00	Pass
11b	1Mbps	1	6	2437	-4.58	0.60	8.00	Pass
11b	1Mbps	1	11	2462	-5.21	0.60	8.00	Pass
11g	6Mbps	1	1	2412	-11.80	0.60	8.00	Pass
11g	6Mbps	1	6	2437	-11.71	0.60	8.00	Pass
11g	6Mbps	1	11	2462	-10.76	0.60	8.00	Pass
HT20	MCS0	1	1	2412	-13.98	0.60	8.00	Pass
HT20	MCS0	1	6	2437	-12.58	0.60	8.00	Pass
HT20	MCS0	1	11	2462	-13.32	0.60	8.00	Pass

Appendix B. AC Conducted Emission Test Results

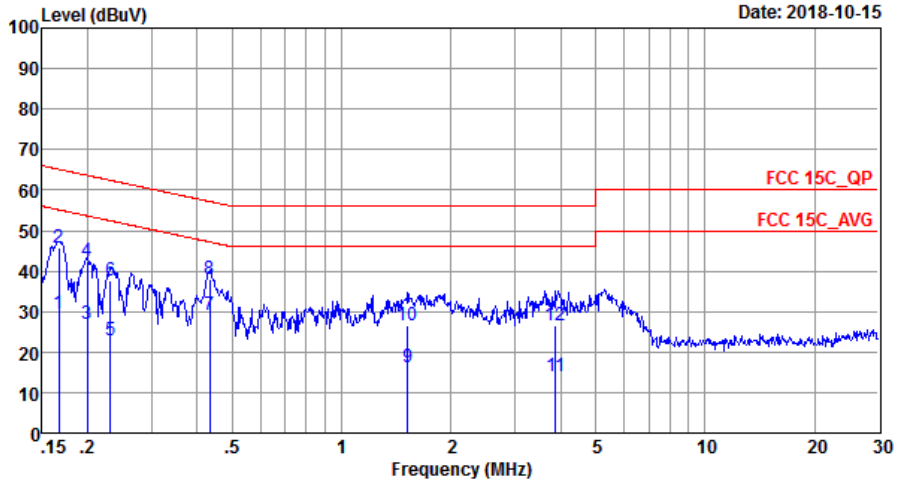
Test Engineer :	ZhangXu	Temperature :	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Site : CO01-SZ
Condition: FCC 15C_QP LISN_20180719_L LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.16	30.19	-25.15	55.34	20.10	0.03	10.06	Average
2		0.16	46.59	-18.75	65.34	36.50	0.03	10.06	QP
3		0.19	32.40	-21.62	54.02	22.30	0.03	10.07	Average
4		0.19	44.90	-19.12	64.02	34.80	0.03	10.07	QP
5		0.23	24.50	-27.98	52.48	14.40	0.03	10.07	Average
6		0.23	39.40	-23.08	62.48	29.30	0.03	10.07	QP
7		0.43	29.81	-17.39	47.20	19.70	0.03	10.08	Average
8	*	0.43	40.61	-16.59	57.20	30.50	0.03	10.08	QP
9		1.78	16.01	-29.99	46.00	5.80	0.10	10.11	Average
10		1.78	28.91	-27.09	56.00	18.70	0.10	10.11	QP
11		3.68	14.83	-31.17	46.00	4.50	0.17	10.16	Average
12		3.68	28.33	-27.67	56.00	18.00	0.17	10.16	QP

Test Engineer :	ZhangXu	**Temperature :**	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral



Site : CO01-SZ
Condition: FCC 15C_QP LISN_20180719_N NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.17	29.69	-25.43	55.12	19.59	0.03	10.07	Average
2		0.17	45.90	-19.22	65.12	35.80	0.03	10.07	QP
3		0.20	27.00	-26.62	53.62	16.90	0.03	10.07	Average
4		0.20	42.50	-21.12	63.62	32.40	0.03	10.07	QP
5		0.23	23.00	-29.39	52.39	12.90	0.03	10.07	Average
6		0.23	37.70	-24.69	62.39	27.60	0.03	10.07	QP
7	*	0.43	29.20	-18.00	47.20	19.10	0.02	10.08	Average
8		0.43	38.10	-19.10	57.20	28.00	0.02	10.08	QP
9		1.52	16.35	-29.65	46.00	6.20	0.05	10.10	Average
10		1.52	26.55	-29.45	56.00	16.40	0.05	10.10	QP
11		3.88	14.01	-31.99	46.00	3.80	0.05	10.16	Average
12		3.88	26.41	-29.59	56.00	16.20	0.05	10.16	QP

Appendix C. Radiated Spurious Emission

Test Engineer :	Liangliang Lu	Temperature :	23~25°C
		Relative Humidity :	48~52%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (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)
802.11b CH 01 2412MHz		2380.77	49.71	-24.29	74	51.08	27.83	5.02	34.22	115	55	P	H
		2383.92	41.12	-12.88	54	42.49	27.83	5.02	34.22	115	55	A	H
	*	2412	100.14	-	-	101.51	27.77	5.06	34.2	115	55	P	H
	*	2412	97.95	-	-	99.32	27.77	5.06	34.2	115	55	A	H
		2372.79	49.98	-24.02	74	51.35	27.83	5.02	34.22	100	233	P	V
		2383.92	39.7	-14.3	54	41.07	27.83	5.02	34.22	100	233	A	V
	*	2412	97.95	-	-	99.32	27.77	5.06	34.2	100	233	P	V
	*	2412	96.34	-	-	97.71	27.77	5.06	34.2	100	233	A	V
802.11b CH 06 2437MHz		2324	49.35	-24.65	74	50.72	27.91	4.98	34.26	136	57	P	H
		2389.94	39.5	-14.5	54	40.84	27.8	5.06	34.2	136	57	A	H
	*	2437	99.96	-	-	101.31	27.71	5.12	34.18	136	57	P	H
	*	2437	97.39	-	-	98.74	27.71	5.12	34.18	136	57	A	H
		2492.37	49.9	-24.1	74	51.19	27.63	5.19	34.11	136	57	P	H
		2489.71	40.11	-13.89	54	41.42	27.63	5.19	34.13	136	57	A	H
		2325.12	48.68	-25.32	74	50.05	27.91	4.98	34.26	100	235	P	V
		2384.2	38.66	-15.34	54	40.03	27.83	5.02	34.22	100	235	A	V
	*	2437	95.47	-	-	96.82	27.71	5.12	34.18	100	235	P	V
	*	2437	93.68	-	-	95.03	27.71	5.12	34.18	100	235	A	V
		2491.6	48.8	-25.2	74	50.11	27.63	5.19	34.13	100	235	P	V
		2492.09	38.69	-15.31	54	39.98	27.63	5.19	34.11	100	235	A	V

802.11b CH 11 2462MHz	*	2462	100.6	-	-	101.94	27.69	5.12	34.15	157	47	P	H
	*	2462	98.87	-	-	100.21	27.69	5.12	34.15	157	47	A	H
		2488.76	50.7	-23.3	74	52.01	27.63	5.19	34.13	157	47	P	H
		2490.72	40.9	-13.1	54	42.21	27.63	5.19	34.13	157	47	A	H
	*	2462	96.07	-	-	97.41	27.69	5.12	34.15	105	231	P	V
	*	2462	94.32	-	-	95.66	27.69	5.12	34.15	105	231	A	V
		2498.24	49.79	-24.21	74	51.08	27.63	5.19	34.11	105	231	P	V
		2490.8	39.38	-14.62	54	40.69	27.63	5.19	34.13	105	231	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11b (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)
802.11b CH 01 2412MHz		4824	38.11	-35.89	74	56.74	31.12	8.59	58.34	145	274	P	H
		4824	37.9	-36.1	74	56.53	31.12	8.59	58.34	191	220	P	V
802.11b CH 06 2437MHz		4874	38.56	-35.44	74	57.12	31.17	8.6	58.33	112	229	P	H
		7311	44.46	-29.54	74	57.59	36.03	10.24	59.4	174	100	P	H
		4874	39.65	-34.35	74	58.21	31.17	8.6	58.33	251	0	P	V
		7311	46.64	-27.36	74	59.77	36.03	10.24	59.4	120	106	P	V
802.11b CH 11 2462MHz		4924	39	-35	74	57.47	31.22	8.64	58.33	133	180	P	H
		7386	43.74	-30.26	74	56.69	36.29	10.2	59.44	145	274	P	H
		4924	40.08	-33.92	74	58.55	31.22	8.64	58.33	251	0	P	V
		7386	45.15	-28.85	74	58.1	36.29	10.2	59.44	166	210	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11g (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)
802.11g CH 01 2412MHz		2387.595	53.97	-20.03	74	55.33	27.8	5.06	34.22	112	53	P	H
		2390	42.83	-11.17	54	44.17	27.8	5.06	34.2	112	53	A	H
	*	2412	98.43	-	-	99.8	27.77	5.06	34.2	112	53	P	H
	*	2412	90.95	-	-	92.32	27.77	5.06	34.2	112	53	A	H
		2387.07	50.48	-23.52	74	51.84	27.8	5.06	34.22	100	236	P	V
		2389.59	41.12	-12.88	54	42.48	27.8	5.06	34.22	100	236	A	V
	*	2412	95.01	-	-	96.38	27.77	5.06	34.2	100	236	P	V
	*	2412	89.03	-	-	90.4	27.77	5.06	34.2	100	236	A	V
802.11g CH 06 2437MHz		2361.24	48.78	-25.22	74	50.15	27.85	5.02	34.24	109	47	P	H
		2389.52	39.34	-14.66	54	40.7	27.8	5.06	34.22	109	47	A	H
	*	2437	98.48	-	-	99.83	27.71	5.12	34.18	109	47	P	H
	*	2437	91.92	-	-	93.27	27.71	5.12	34.18	109	47	A	H
		2488.87	49.1	-24.9	74	50.41	27.63	5.19	34.13	109	47	P	H
		2484.11	39.52	-14.48	54	40.8	27.66	5.19	34.13	109	47	A	H
		2373.56	49.08	-24.92	74	50.45	27.83	5.02	34.22	109	229	P	V
		2378.6	38.78	-15.22	54	40.15	27.83	5.02	34.22	109	229	A	V
	*	2437	96.18	-	-	97.53	27.71	5.12	34.18	109	229	P	V
	*	2437	89.8	-	-	91.15	27.71	5.12	34.18	109	229	A	V
		2484.39	48.55	-25.45	74	49.83	27.66	5.19	34.13	109	229	P	V
		2483.76	38.86	-15.14	54	40.14	27.66	5.19	34.13	109	229	A	V

802.11g CH 11 2462MHz	*	2462	98.83	-	-	100.17	27.69	5.12	34.15	101	53	P	H
	*	2462	92.25	-	-	93.59	27.69	5.12	34.15	101	53	A	H
		2485.4	56.59	-17.41	74	57.87	27.66	5.19	34.13	101	53	P	H
		2483.56	44.63	-9.37	54	45.91	27.66	5.19	34.13	101	53	A	H
	*	2462	95.87	-	-	97.21	27.69	5.12	34.15	100	237	P	V
	*	2462	88.68	-	-	90.02	27.69	5.12	34.15	100	237	A	V
		2486.72	54.17	-19.83	74	55.45	27.66	5.19	34.13	100	237	P	V
		2483.56	41.95	-12.05	54	43.23	27.66	5.19	34.13	100	237	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11g (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)
802.11g CH 01 2412MHz		4824	38.01	-35.99	74	56.64	31.12	8.59	58.34	145	274	P	H
		4824	38.07	-35.93	74	56.7	31.12	8.59	58.34	191	220	P	V
802.11g CH 06 2437MHz		4874	39.05	-34.95	74	57.61	31.17	8.6	58.33	112	229	P	H
		7311	45.49	-28.51	74	58.62	36.03	10.24	59.4	174	100	P	H
		4874	38.54	-35.46	74	57.1	31.17	8.6	58.33	251	0	P	V
		7311	45.69	-28.31	74	58.82	36.03	10.24	59.4	120	106	P	V
802.11g CH 11 2462MHz		4924	39.79	-34.21	74	58.26	31.22	8.64	58.33	133	180	P	H
		7386	44.32	-29.68	74	57.27	36.29	10.2	59.44	145	274	P	H
		4924	39.3	-34.7	74	57.77	31.22	8.64	58.33	252	0	P	V
		7386	45.05	-28.95	74	58	36.29	10.2	59.44	166	210	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

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)
		2389.485	53.01	-20.99	74	54.37	27.8	5.06	34.22	114	49	P	H
		2389.695	42.17	-11.83	54	43.53	27.8	5.06	34.22	114	49	A	H
802.11n	*	2412	95.74	-	-	97.11	27.77	5.06	34.2	114	49	P	H
HT20	*	2412	88.79	-	-	90.16	27.77	5.06	34.2	114	49	A	H
CH 01		2389.275	51.52	-22.48	74	52.88	27.8	5.06	34.22	102	234	P	V
2412MHz		2389.695	40.72	-13.28	54	42.08	27.8	5.06	34.22	102	234	A	V
	*	2412	93.6	-	-	94.97	27.77	5.06	34.2	102	234	P	V
	*	2412	86.95	-	-	88.32	27.77	5.06	34.2	102	234	A	V
		2387.98	49.28	-24.72	74	50.64	27.8	5.06	34.22	108	45	P	H
		2389.8	39.18	-14.82	54	40.52	27.8	5.06	34.2	108	45	A	H
	*	2437	95.71	-	-	97.06	27.71	5.12	34.18	108	45	P	H
	*	2437	89.68	-	-	91.03	27.71	5.12	34.18	108	45	A	H
802.11n		2495.73	49.24	-24.76	74	50.53	27.63	5.19	34.11	108	45	P	H
HT20		2493.91	39.44	-14.56	54	40.73	27.63	5.19	34.11	108	45	A	H
CH 06		2326.1	48.46	-25.54	74	49.83	27.91	4.98	34.26	109	238	P	V
2437MHz		2321.34	38.99	-15.01	54	40.36	27.91	4.98	34.26	109	238	A	V
	*	2437	93.82	-	-	95.17	27.71	5.12	34.18	109	238	P	V
	*	2437	87.03	-	-	88.38	27.71	5.12	34.18	109	238	A	V
		2489.15	48.51	-25.49	74	49.82	27.63	5.19	34.13	109	238	P	V
		2485.44	39.06	-14.94	54	40.34	27.66	5.19	34.13	109	238	A	V

802.11n HT20 CH 11 2462MHz	*	2462	96.28	-	-	97.62	27.69	5.12	34.15	156	48	P	H
	*	2462	89.29	-	-	90.63	27.69	5.12	34.15	156	48	A	H
		2486.64	55.55	-18.45	74	56.83	27.66	5.19	34.13	156	48	P	H
		2483.64	42.52	-11.48	54	43.8	27.66	5.19	34.13	156	48	A	H
	*	2462	93.23	-	-	94.57	27.69	5.12	34.15	141	203	P	V
	*	2462	87.01	-	-	88.35	27.69	5.12	34.15	141	203	A	V
		2491.6	52.16	-21.84	74	53.47	27.63	5.19	34.13	141	203	P	V
		2483.92	41.22	-12.78	54	42.5	27.66	5.19	34.13	141	203	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

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 01 2412MHz		4824	38.21	-35.79	74	56.84	31.12	8.59	58.34	145	274	P	H
		4824	38.91	-35.09	74	57.54	31.12	8.59	58.34	191	220	P	V
802.11n HT20 CH 06 2437MHz		4874	39.53	-34.47	74	58.09	31.17	8.6	58.33	112	229	P	H
		7311	43.97	-30.03	74	57.1	36.03	10.24	59.4	174	100	P	H
		4874	39.6	-34.4	74	58.16	31.17	8.6	58.33	156	360	P	V
		7311	44.4	-29.6	74	57.53	36.03	10.24	59.4	120	106	P	V
802.11n HT20 CH 11 2462MHz		4924	39.67	-34.33	74	58.14	31.22	8.64	58.33	133	180	P	H
		7386	43.98	-30.02	74	56.93	36.29	10.2	59.44	145	274	P	H
		4924	40.31	-33.69	74	58.78	31.22	8.64	58.33	156	360	P	V
		7386	42.79	-31.21	74	55.74	36.29	10.2	59.44	166	210	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz WIFI 802.11g (LF)

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)
2.4GHz 802.11g LF		30	22.6	-17.4	40	30.34	24.3	0.56	32.6	-	-	P	H
		102.75	32.32	-11.18	43.5	46.41	16.97	1.04	32.1	149	73	P	H
		312.27	29.1	-16.9	46	39.7	19.52	1.86	31.98	-	-	P	H
		399.57	24.8	-21.2	46	32.88	21.7	2.12	31.9	-	-	P	H
		615.88	27.93	-18.07	46	32.06	24.76	2.71	31.6	-	-	P	H
		892.33	29.81	-16.19	46	31.29	26.66	3.3	31.44	-	-	P	H
		30	27.57	-12.43	40	35.31	24.3	0.56	32.6	-	-	P	V
		55.22	24.91	-15.09	40	43.55	13.1	0.76	32.5	-	-	P	V
		98.87	35.12	-8.38	43.5	49.42	16.58	1.02	31.9	135	60	P	V
		165.8	27.28	-16.22	43.5	42.06	15.77	1.33	31.88	-	-	P	V
		309.36	23.83	-22.17	46	34.52	19.44	1.85	31.98	-	-	P	V
		921.43	29.51	-16.49	46	30.55	26.83	3.35	31.22	-	-	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)

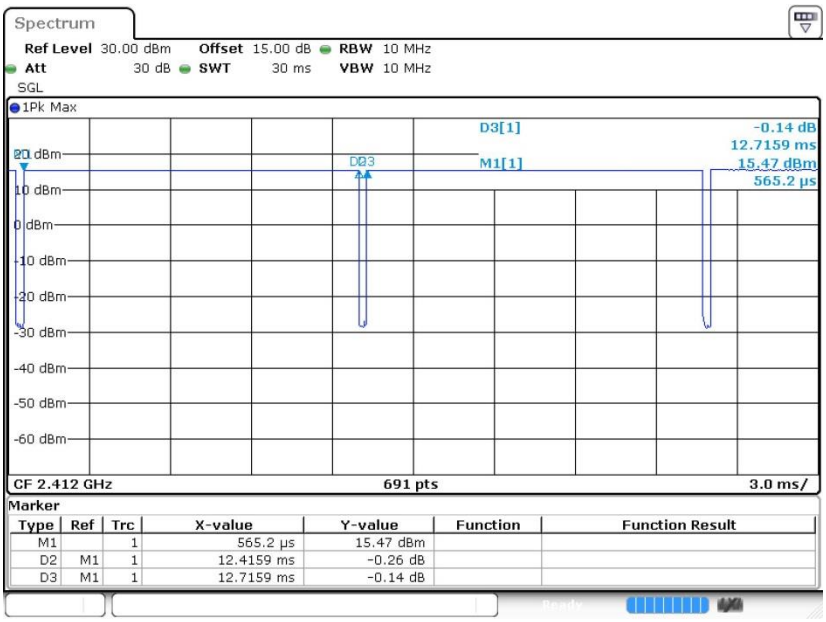
= -10.46(dB)

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

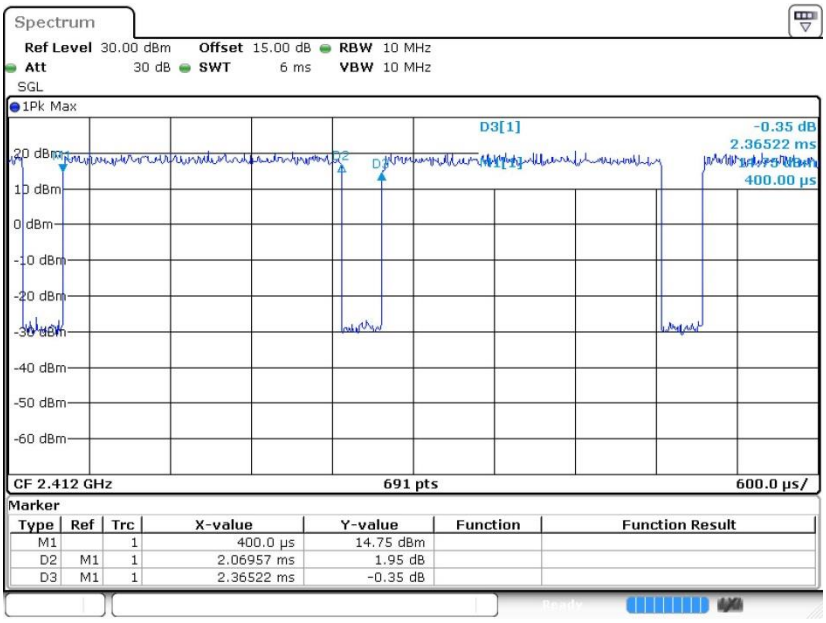
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	97.64	12.416	0.081	100Hz
802.11g	87.50	2.070	0.483	1KHz
802.11n HT20	86.79	1.923	0.520	1KHz

802.11b



802.11g



802.11n20