FCC RF Test Report

APPLICANT	:	**Xiaomi Communications Co., Ltd.**
EQUIPMENT	:	**Mobile Phone**
BRAND NAME	:	**MI**
MODEL NAME	:	**M1805D1SG**
FCC ID	:	**2AFZZ-RMSD1SG**
STANDARD	:	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	:	**(DTS) Digital Transmission System**

The product was received on Apr. 04, 2018 and testing was completed on Apr. 19, 2018. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

James Huang

Approved by: James Huang / Manager

NVLAP®
TESTING
NVLAP LAB CODE 600155-0

Sporton International (Kunshan) Inc.
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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR840407C	Rev. 01	Initial issue of report	May 16, 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 3.25 dB at 2484.460 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 4.35 dB at 0.179 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Xiaomi Communications Co., Ltd.
The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China

1.2 Manufacturer

Xiaomi Communications Co., Ltd.
The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	MI
Model Name	M1805D1SG
FCC ID	2AFZZ-RMSD1SG
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/ WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth v3.0 + EDR/Bluetooth v4.0 LE/Bluetooth v4.2 LE
IMEI Code	Conducted: 868137030013172/868137030013180 Conduction: 868137030013610/868137030013628 Radiation: 868137030012935/868137030012943
HW Version	P2
SW Version	OPM1.171019.019 V9
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 : 21.51 dBm (0.1416 W) 802.11g : 23.36 dBm (0.2168 W) 802.11n HT20 : 23.60 dBm (0.2291 W) 802.11n HT40 : 23.67 dBm (0.2328 W)
Antenna Type / Gain	PIFA Antenna with gain -1.80 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 (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No. is CN5013.

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

Sporton International (Shenzhen) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No. is CN5019.

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 Test Firm Registration No.**
	03CH02-SZ	577730

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

1.7 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04
- 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 (X plane) were recorded in this report.

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

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
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		

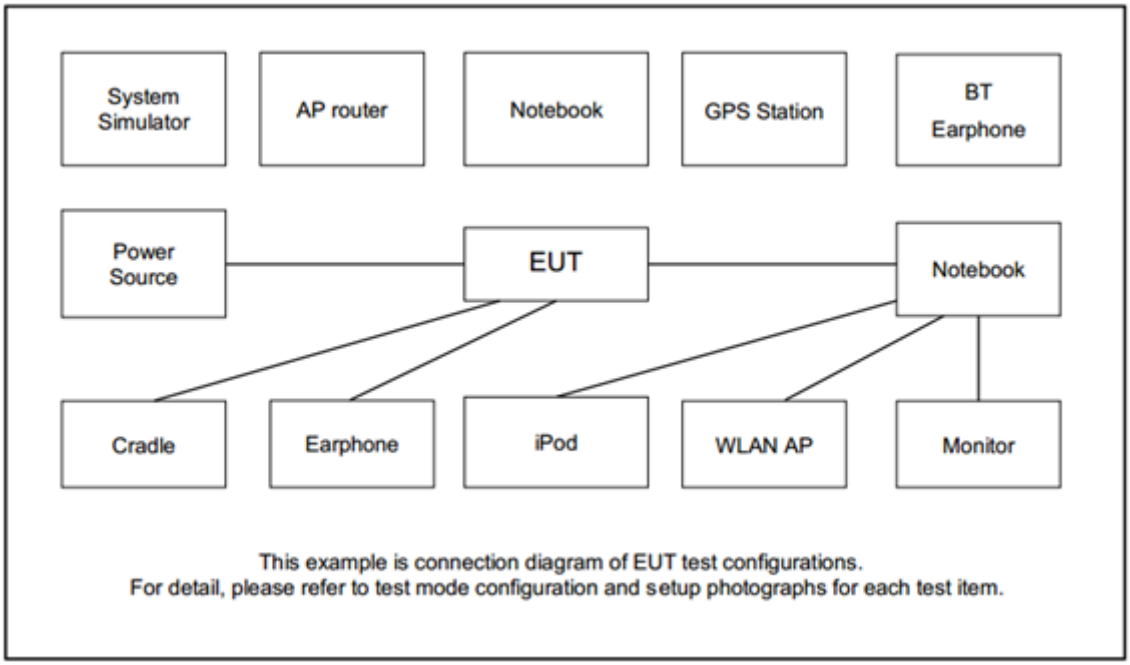
2.2 Test Mode

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**
802.11n HT40	**MCS0**

Test Cases	
AC Conducted Emission	Mode 1 :**GSM850 Idle + Bluetooth Link + WLAN Link(2.4GHz) + USB Cable (Charging from Adapter 1) + Earphone** Mode 2 GSM850 Idle + Bluetooth Link + WLAN Link(2.4GHz) + USB Cable (Charging from Adapter 2) + Earphone
Remark: **1.** The worst case of conducted emission is mode 1; only the test data of it was reported. **2.** For Radiated Test Cases, The tests were performed with Adapter 1, Earphone and USB Cable 1.	

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, 1.8 m
2.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
3.	Notebook	Lenovo	E540	N/A	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Xiaomi	LYEJ02LM	N/A	N/A	N/A

2.5 EUT Operation Test Setup

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

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

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 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.

Offset = RF cable loss

Following shows an offset computation example with cable loss 5.4 dB.

Offset(dB) = RF cable loss(dB).

= 5.4 (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.

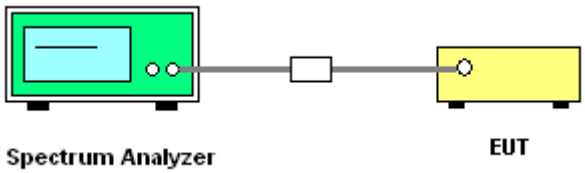
3.1.2 Measuring Instruments

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 v04.
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.

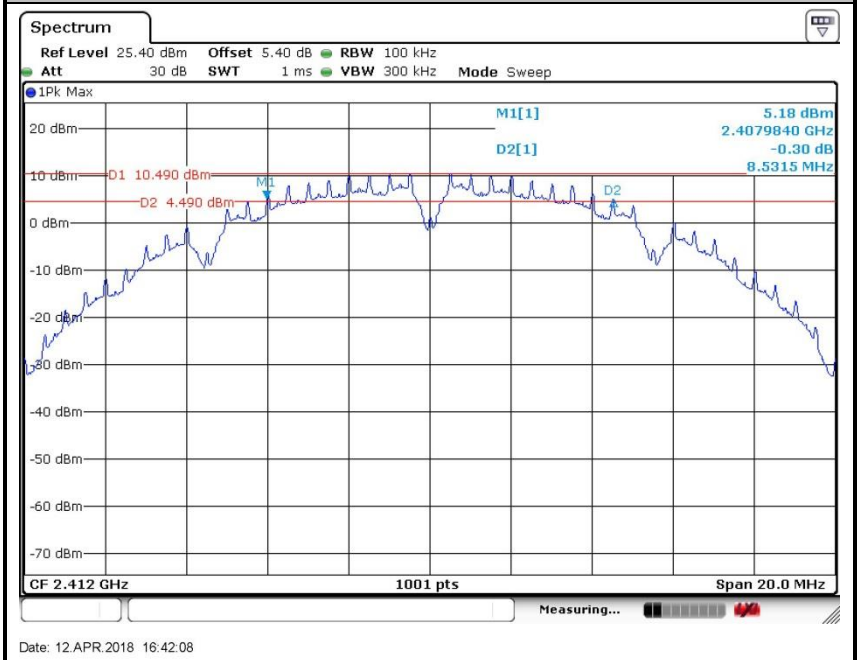
3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

Minimum 6dB Bandwidth



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.

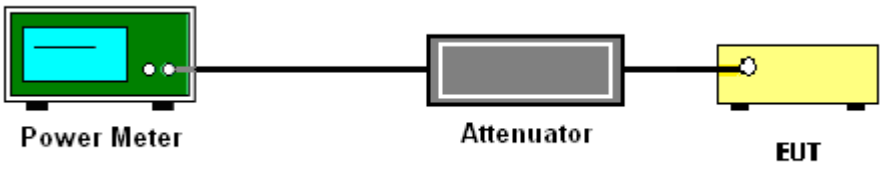
3.2.2 Measuring Instruments

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 v04 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.

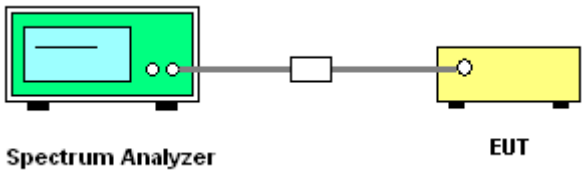
3.3.2 Measuring Instruments

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 v04
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.

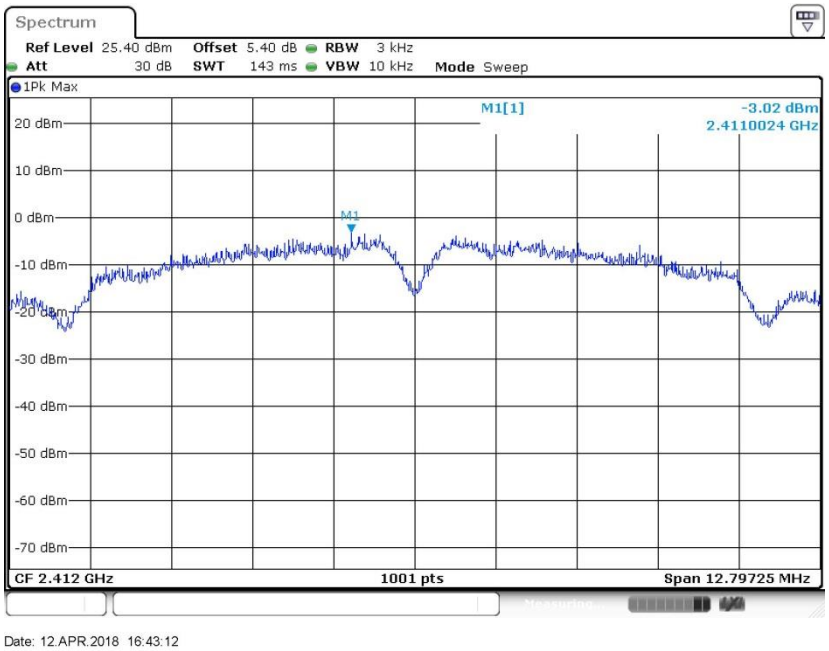
3.3.4 Test Setup



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.

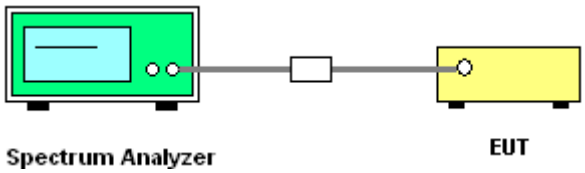
3.4.2 Measuring Instruments

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 v04.
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.

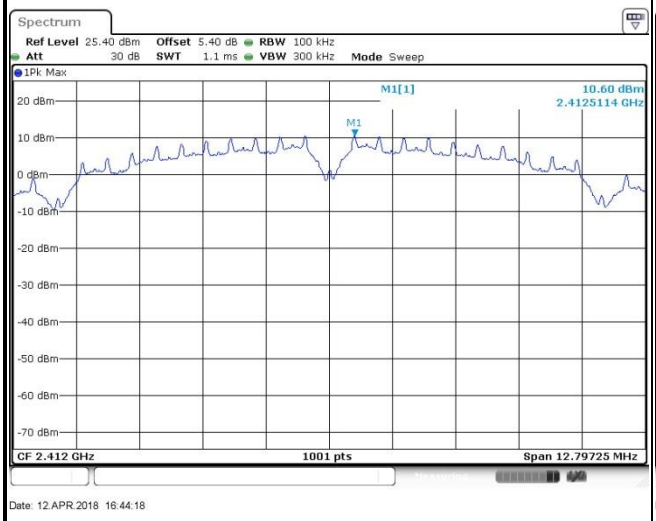
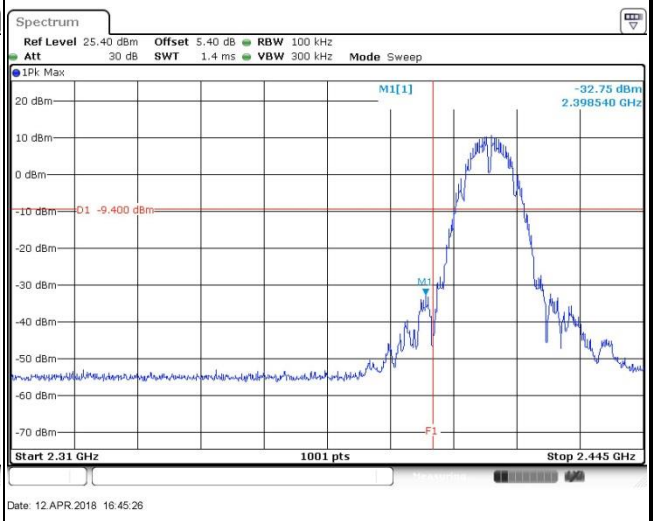
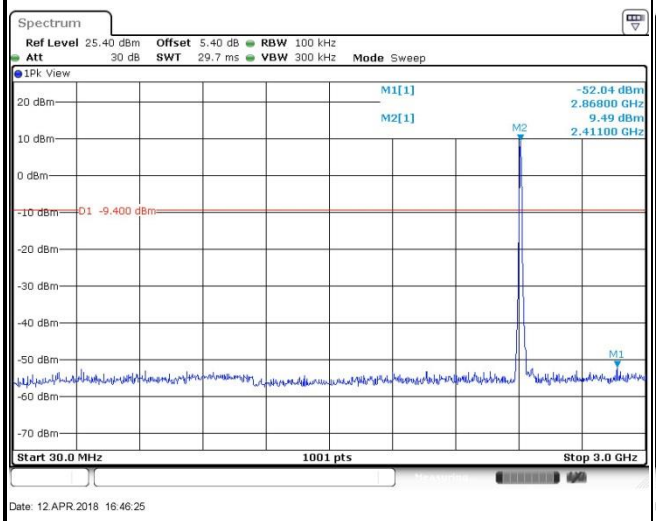
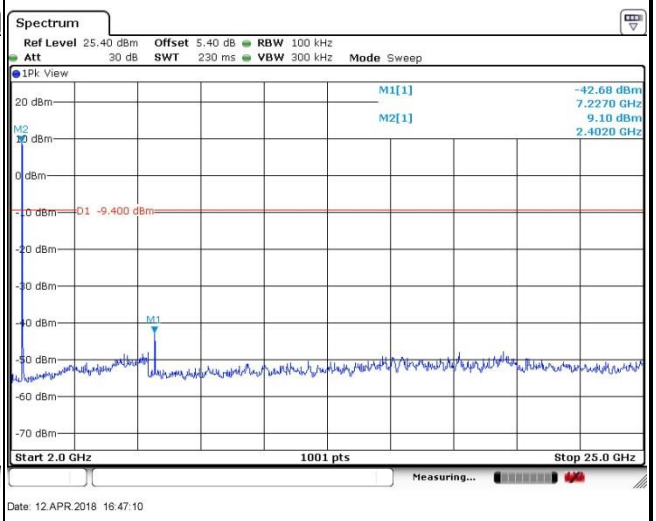
3.4.4 Test Setup



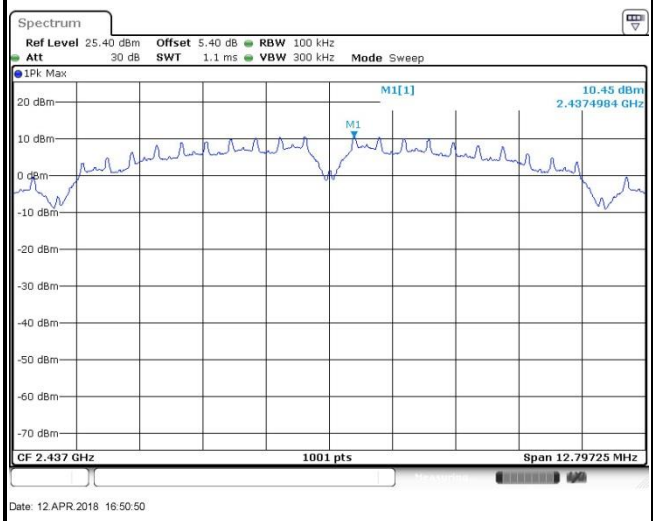
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

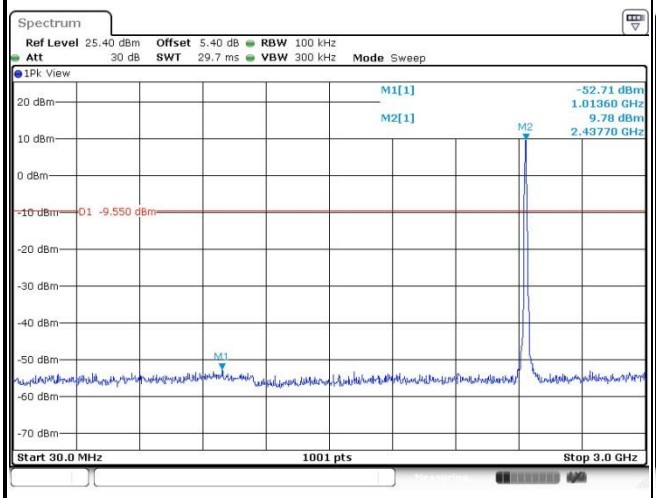
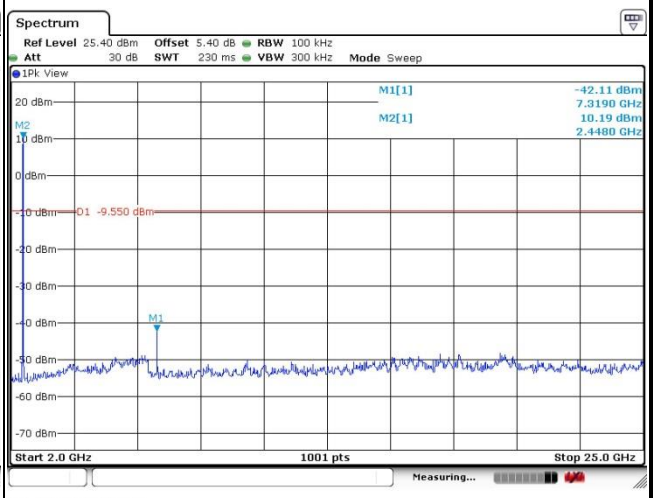
Test Engineer :	Silent Hai	**Temperature :**	21~25℃
		Relative Humidity :	51~55%

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

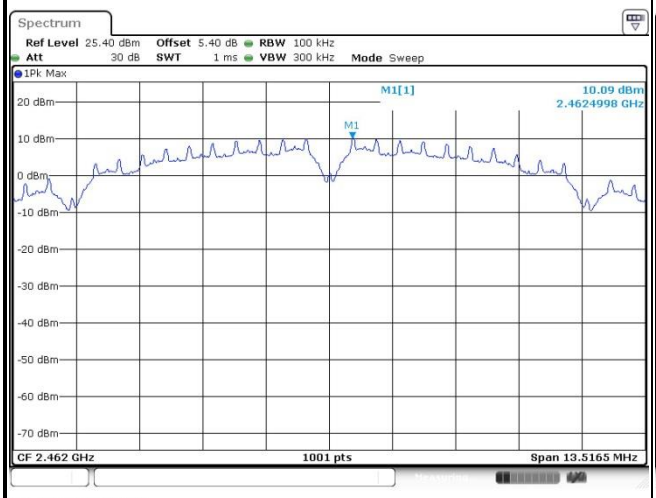
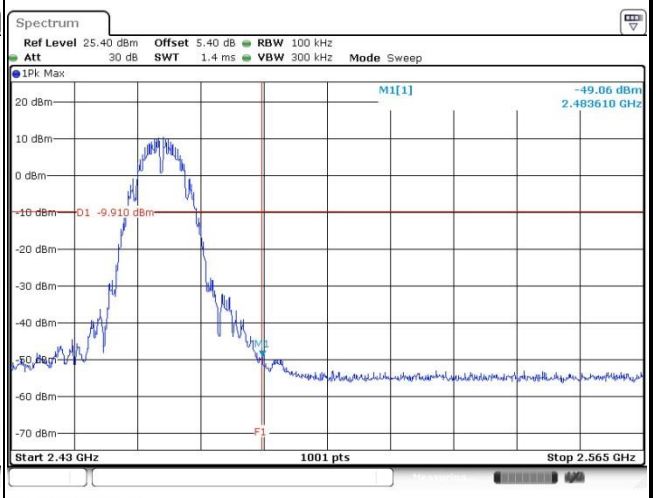
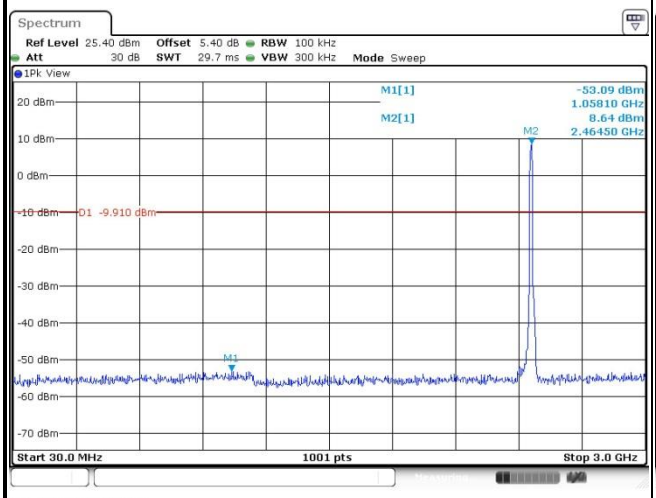
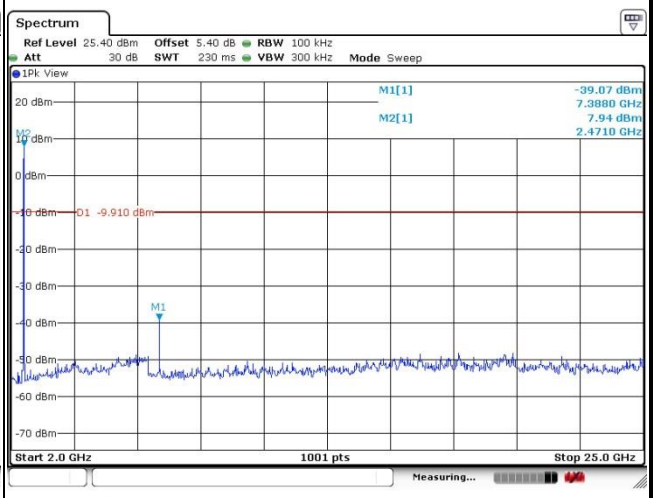
100kHz PSD reference Level	Low Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11b	Test Channel :	06

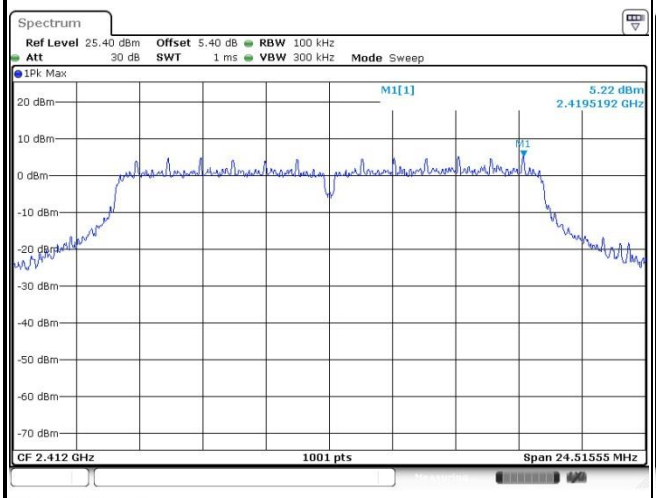
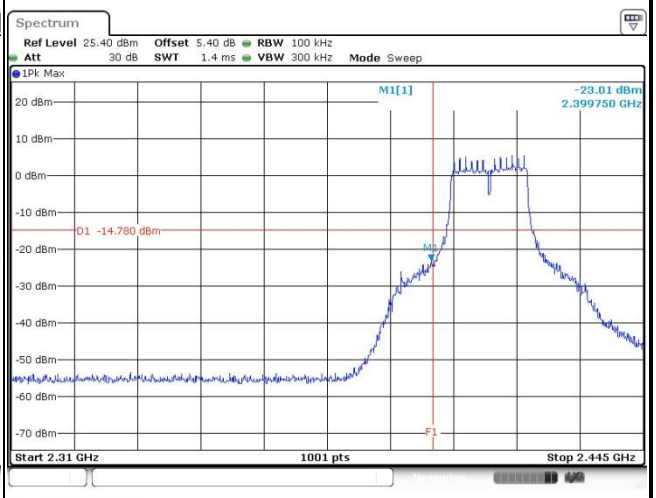
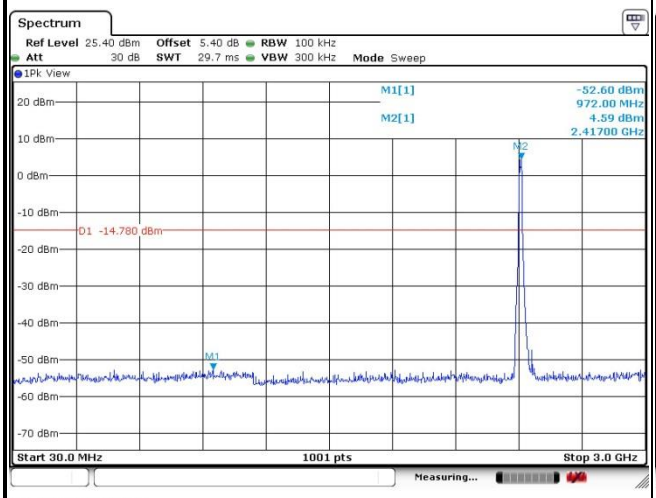
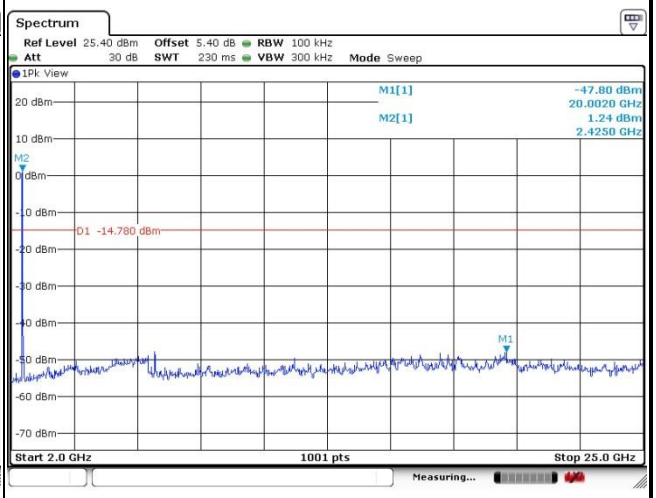
100kHz PSD reference Level	
	

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

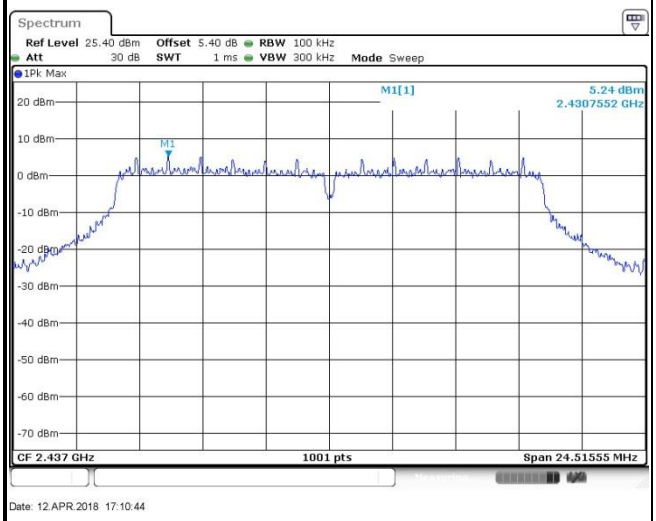
Test Mode :	802.11b	Test Channel :	11

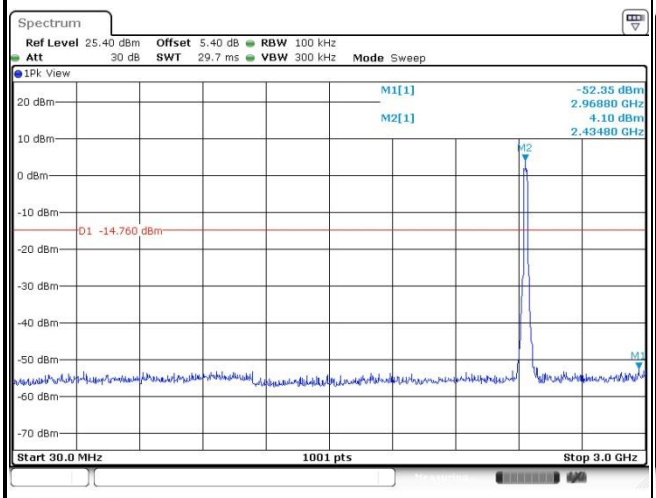
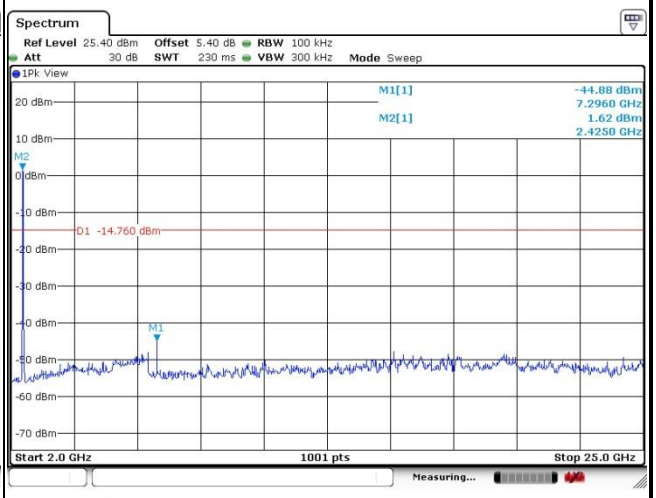
100kHz PSD reference Level	High Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11g	Test Channel :	01

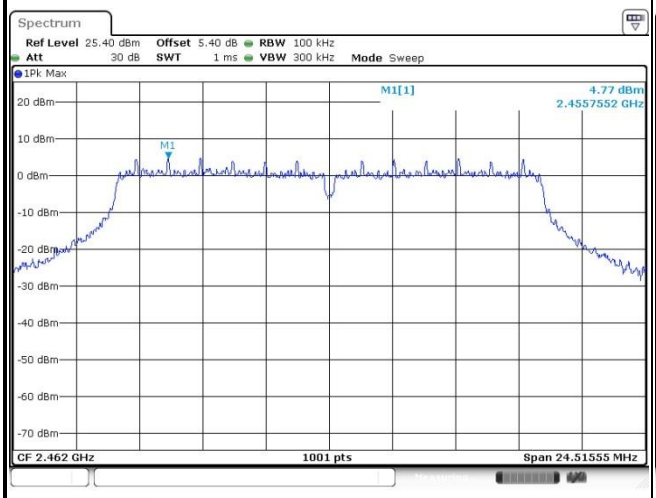
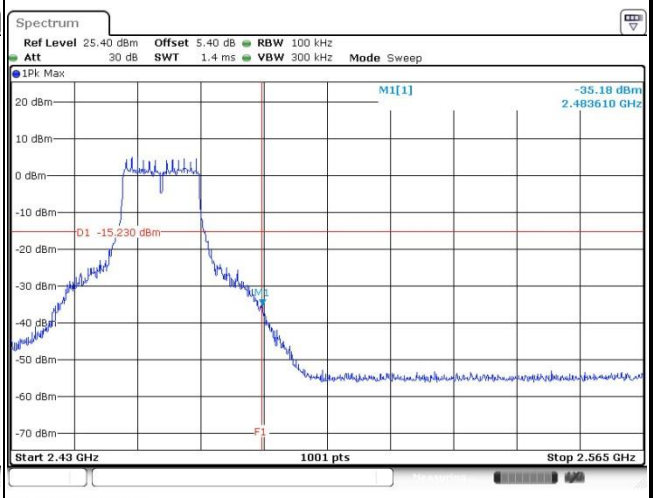
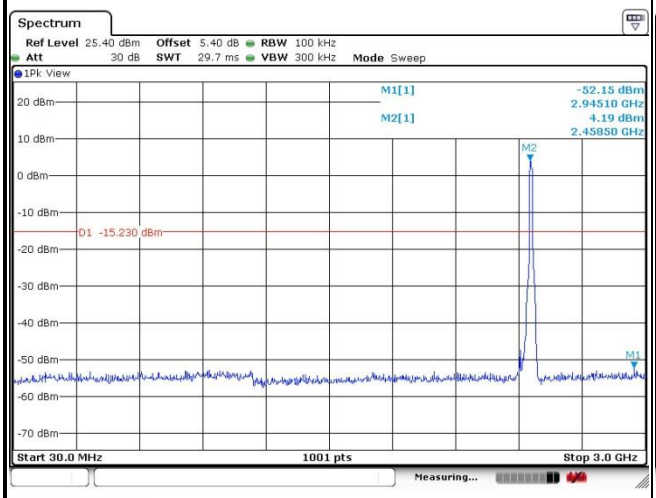
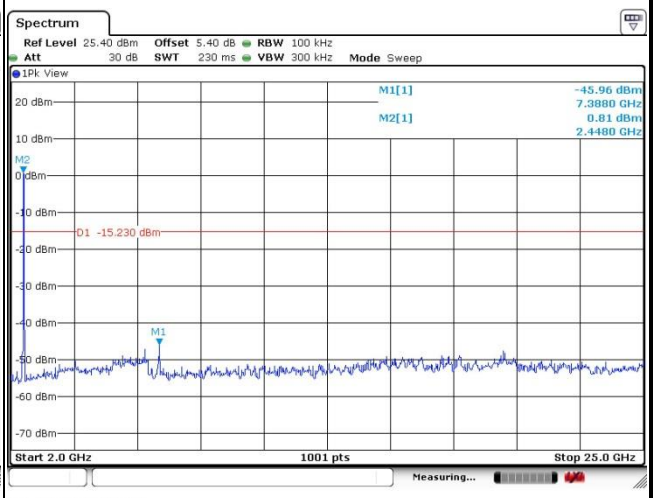
100kHz PSD reference Level	Low Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11g	Test Channel :	06

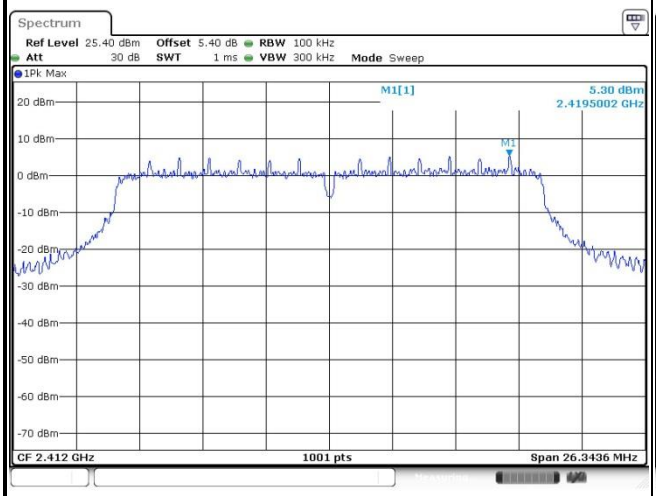
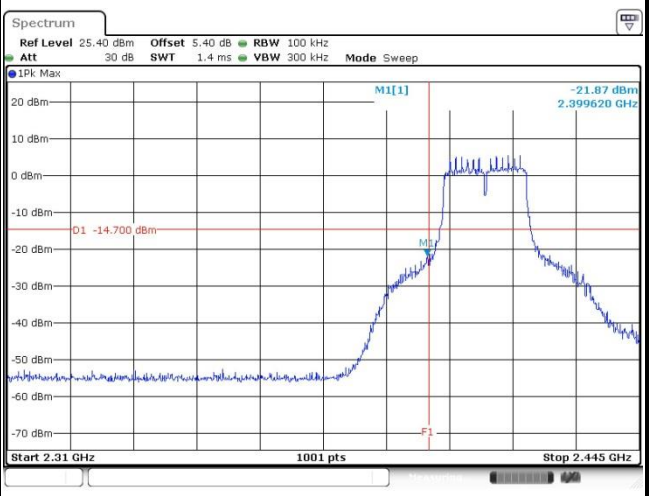
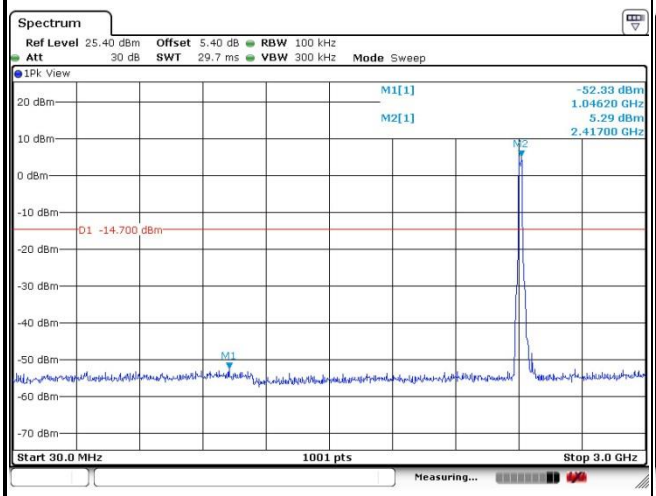
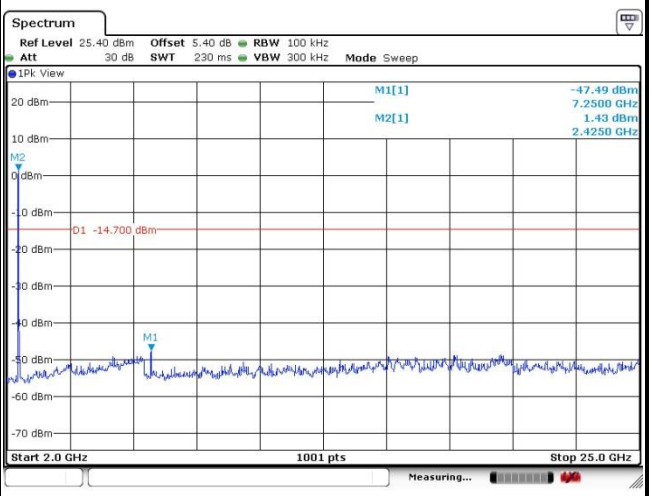
100kHz PSD reference Level	
	

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

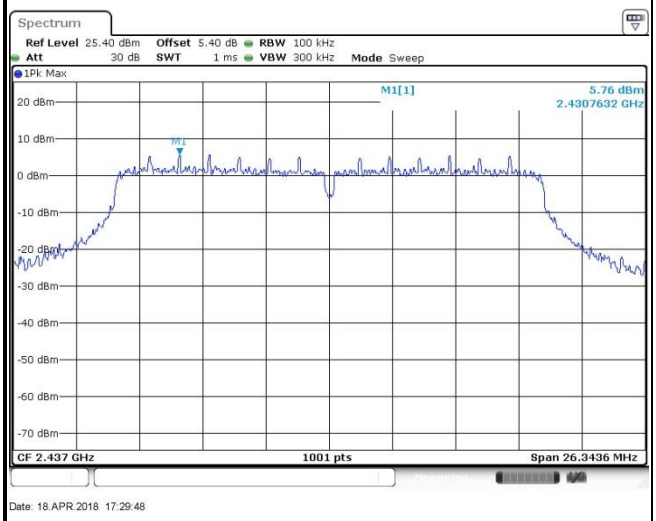
Test Mode :	802.11g	Test Channel :	11

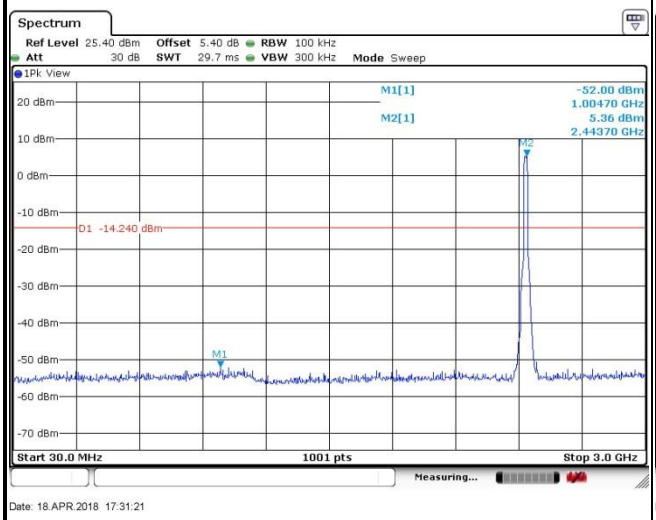
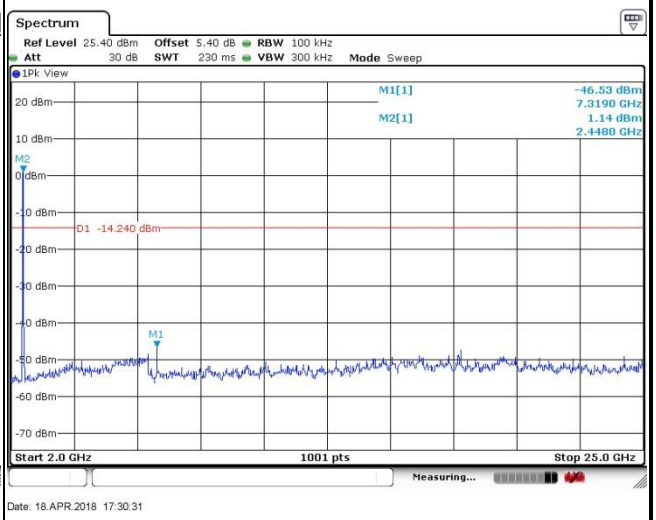
100kHz PSD reference Level	High Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11n HT20	Test Channel :	01

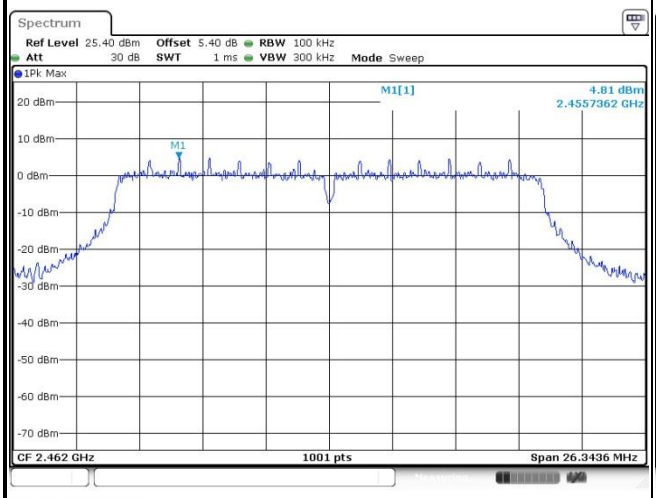
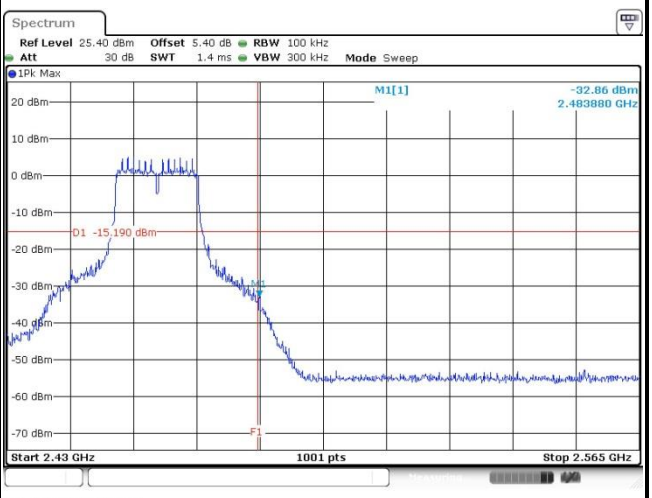
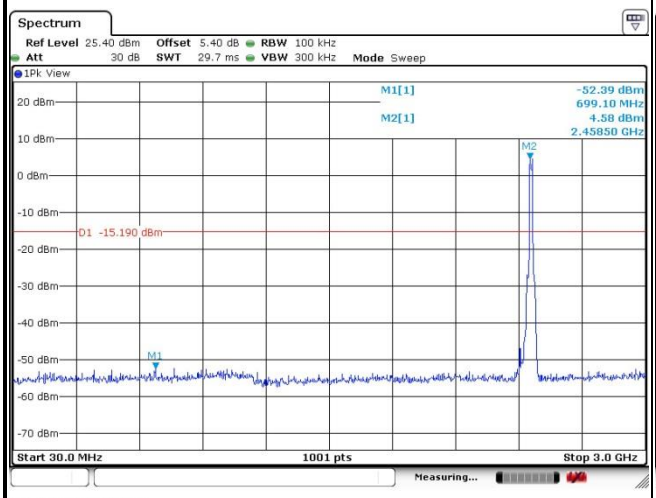
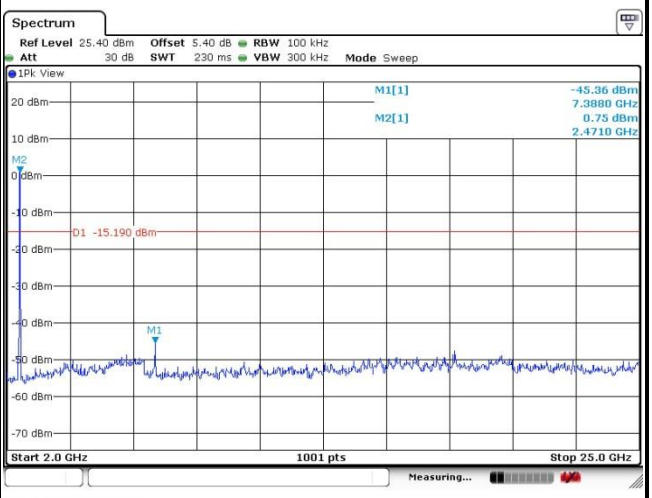
100kHz PSD reference Level	Low Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11n HT20	Test Channel :	06

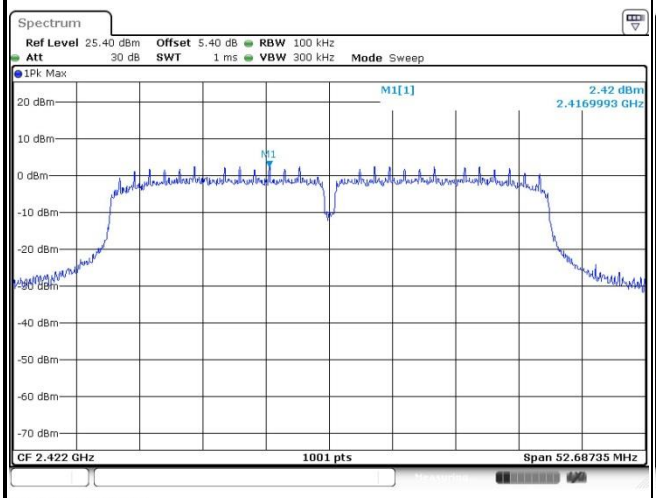
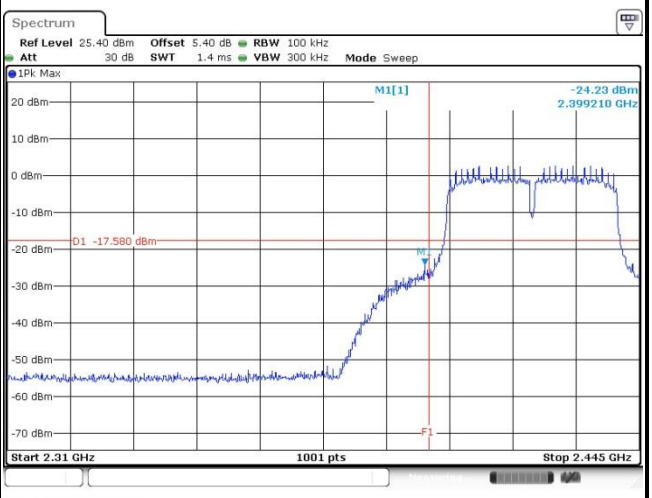
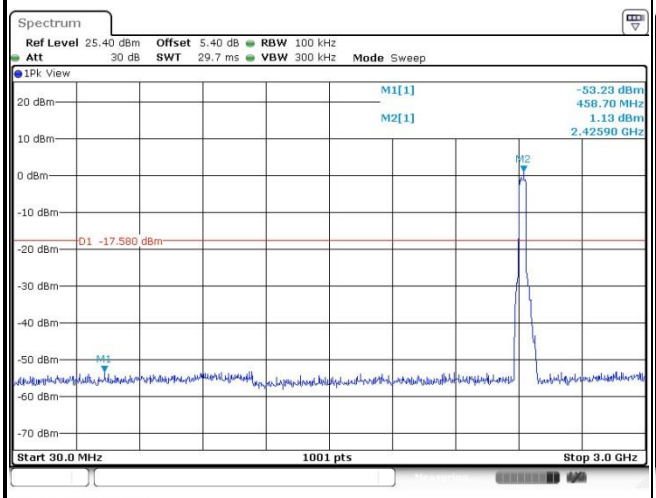
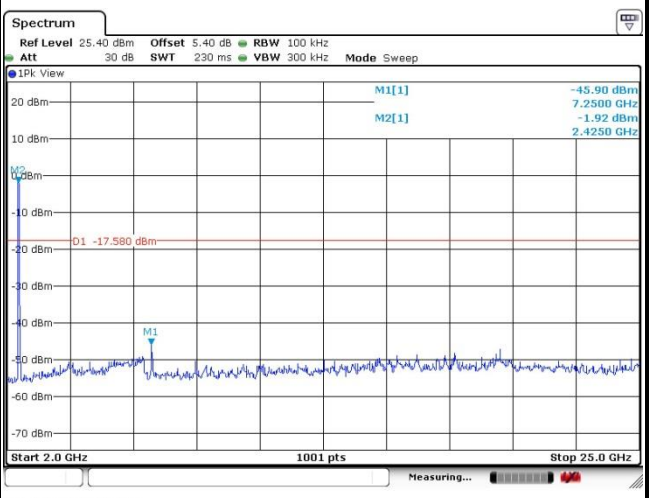
100kHz PSD reference Level	
	

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

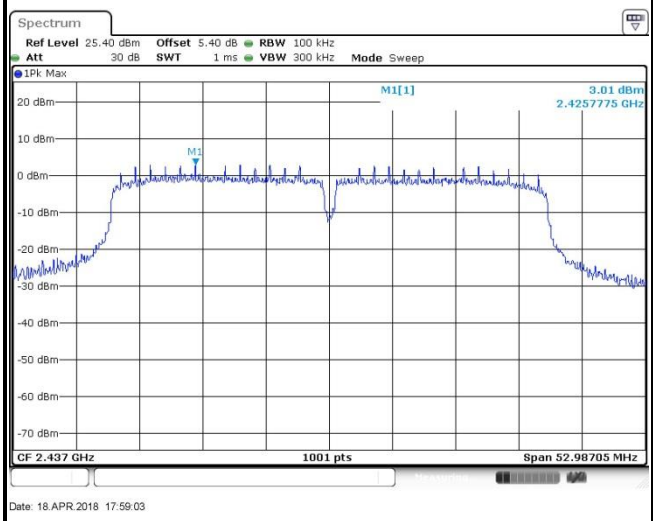
Test Mode :	802.11n HT20	Test Channel :	11

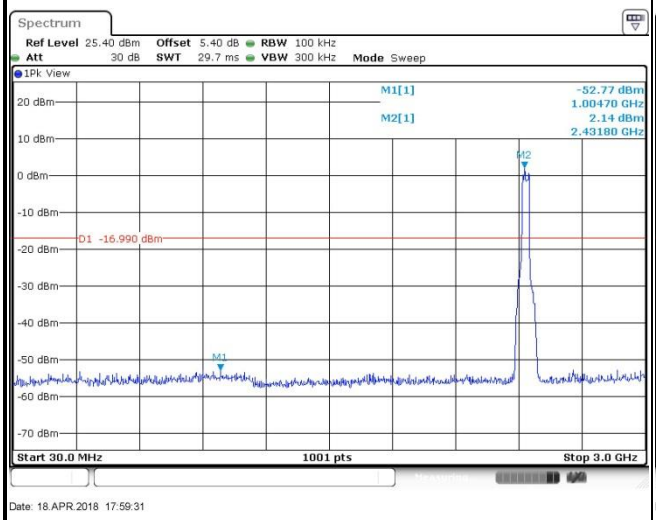
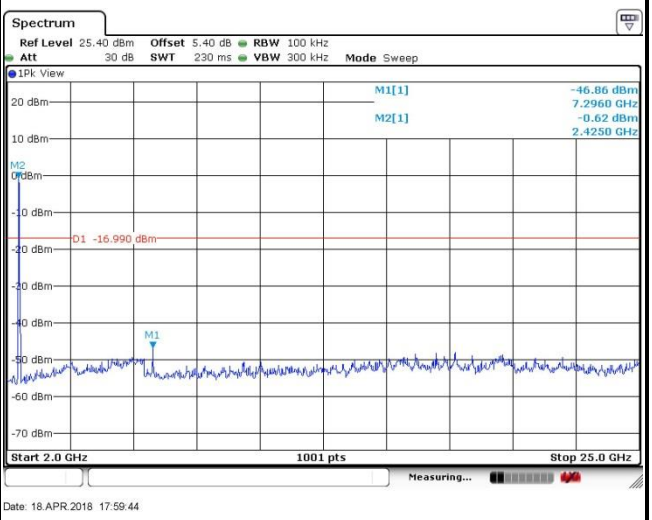
100kHz PSD reference Level	High Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11n HT40	Test Channel :	03

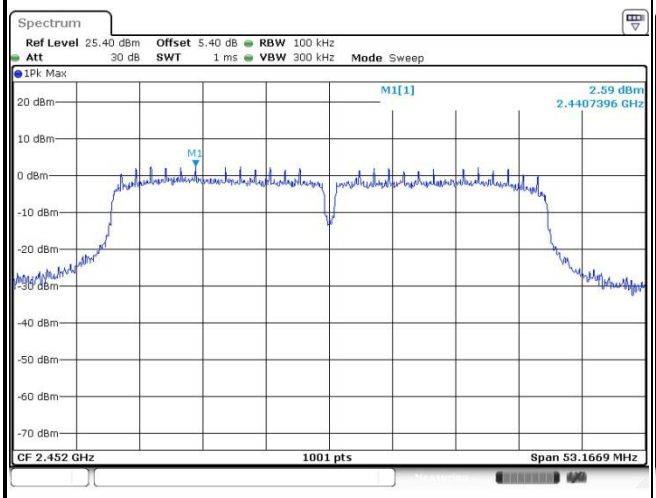
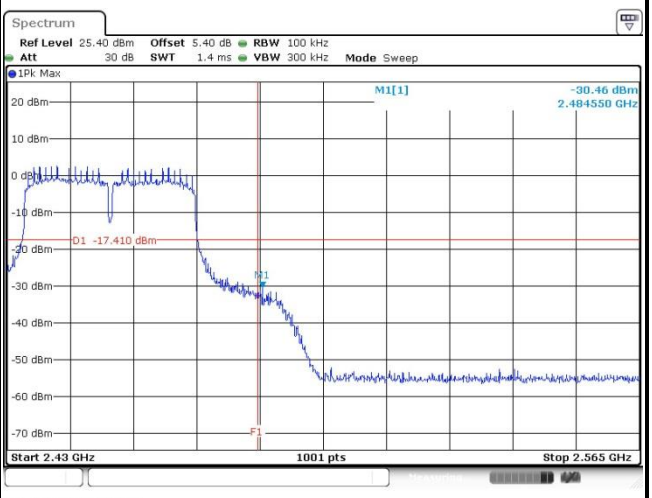
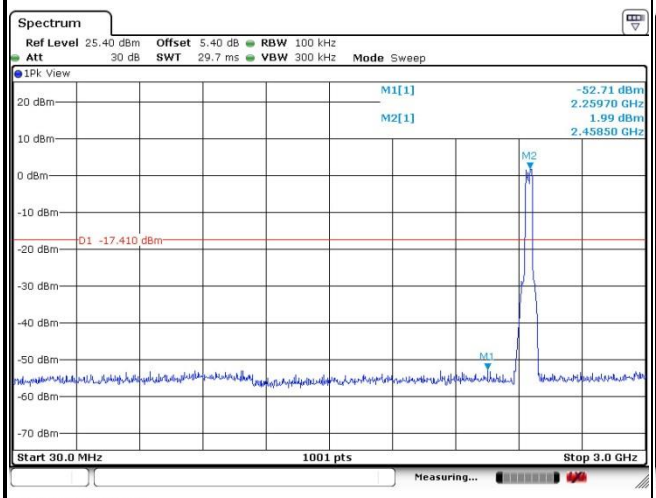
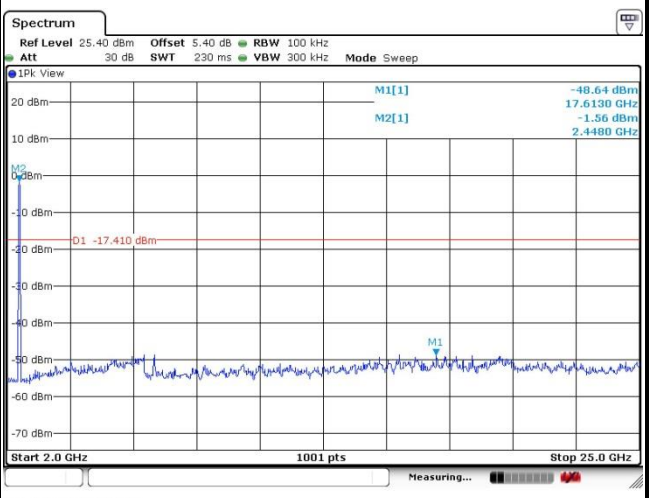
100kHz PSD reference Level	Low Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11n HT40	Test Channel :	06

100kHz PSD reference Level	
	

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

Test Mode :	802.11n HT40	Test Channel :	09

100kHz PSD reference Level	High 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

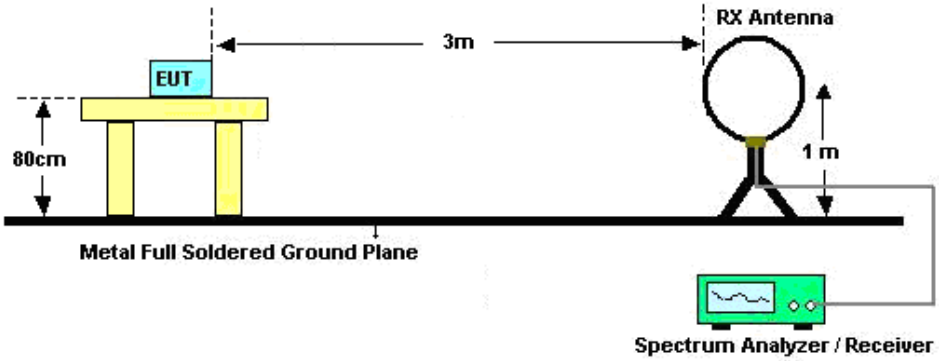
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

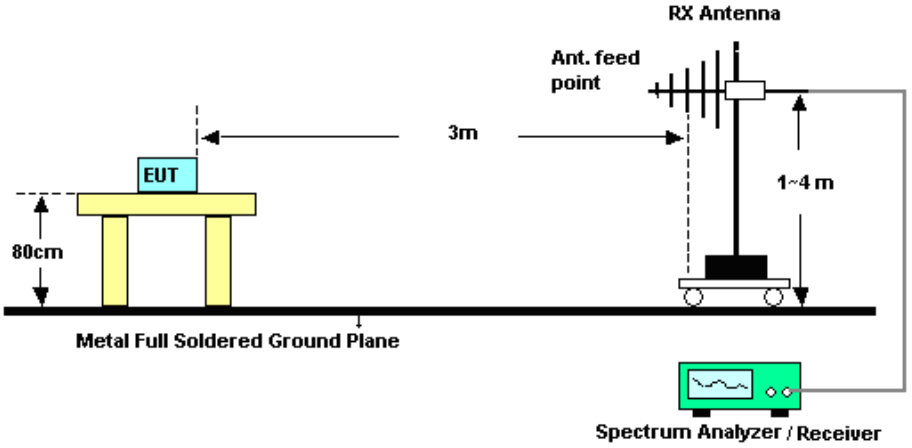
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test 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

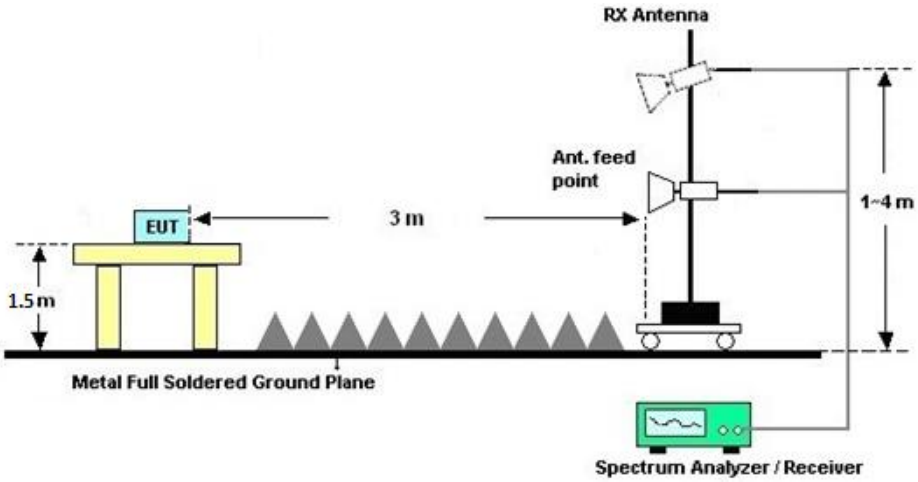
For radiated emissions below 30MHz



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.

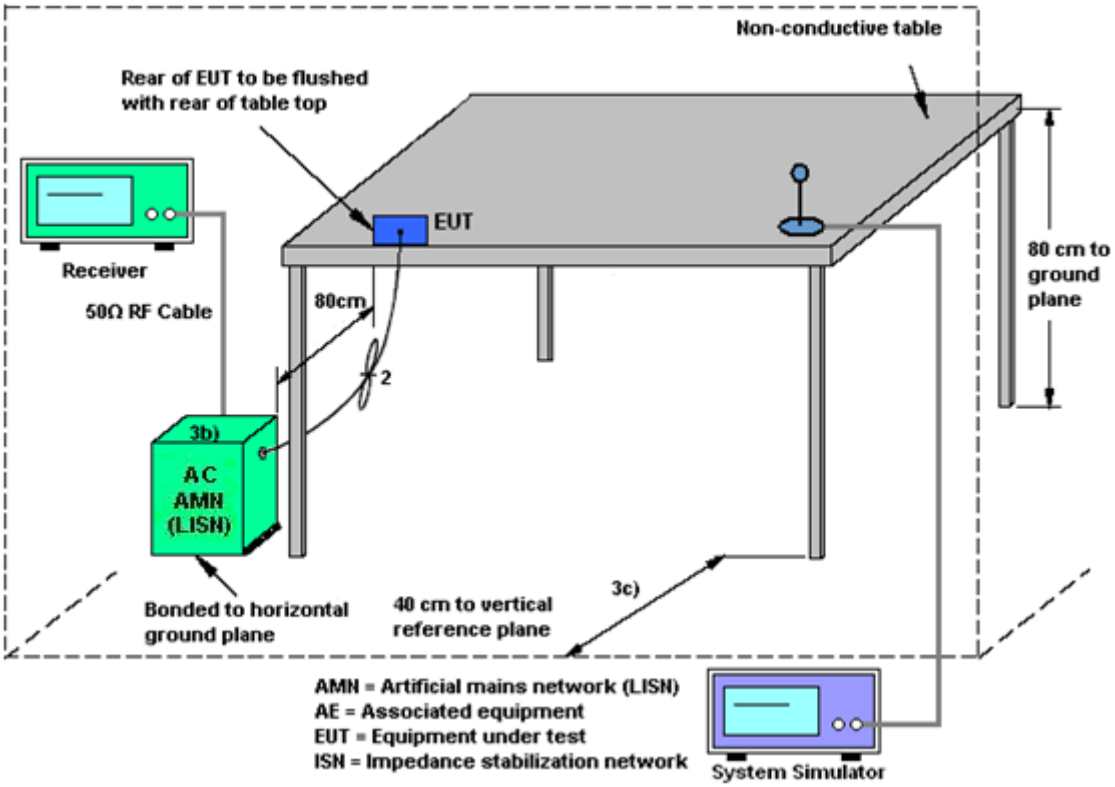
3.6.2 Measuring Instruments

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	FSV40	101040	10Hz~40GHz	Aug. 08, 2017	Apr. 12, 2018~ Apr. 18, 2018	Aug. 07, 2018	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 18, 2018	Apr. 12, 2018~ Apr. 18, 2018	Jan. 17, 2019	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 18, 2018	Apr. 12, 2018~ Apr. 18, 2018	Jan. 17, 2019	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV40	101041	10kHz~40GHz; Max 30dBm	Oct. 19, 2017	Apr. 19, 2018	Oct. 18, 2018	Radiation (03CH02-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 14, 2017	Apr. 19, 2018	May 13, 2018	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	May 10, 2017	Apr. 19, 2018	May 09, 2018	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1285	1GHz~18GHz	Dec. 13, 2017	Apr. 19, 2018	Dec. 12, 2018	Radiation (03CH02-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Jun. 16, 2017	Apr. 19, 2018	Jun. 15, 2018	Radiation (03CH02-SZ)
LF Amplifier	Burgeon	BPA-530	102211	0.01~3000Mhz	Oct. 19, 2017	Apr. 19, 2018	Oct. 18, 2018	Radiation (03CH02-SZ)
Amplifier	Agilent	8449B	3008A01023	1GHz~26.5GHz	Oct. 19, 2017	Apr. 19, 2018	Oct. 18, 2018	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 21, 2017	Apr. 19, 2018	Jul. 20, 2018	Radiation (03CH02-SZ)
AC Power Source	Chroma	61601	616010002470	N/A	NCR	Apr. 19, 2018	NCR	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Apr. 19, 2018	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Apr. 19, 2018	NCR	Radiation (03CH02-SZ)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 20, 2017	Apr. 16, 2018	Apr. 19, 2018	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2017	Apr. 16, 2018	Oct. 12, 2018	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2017	Apr. 16, 2018	Oct. 12, 2018	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 12, 2017	Apr. 16, 2018	Oct. 11, 2018	Conduction (CO01-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.3dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.1dB**

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))	**4.4dB**

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A1 - DTS Part

Test Engineer:	Silent Hai	Temperature:	21~25	°C
Test Date:	2018/4/12 ~ 2018/4/18	Relative Humidity:	51~55	%

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	13.59	8.53	0.50	Pass
11b	1Mbps	1	6	2437	13.59	8.53	0.50	Pass
11b	1Mbps	1	11	2462	13.64	9.01	0.50	Pass
11g	6Mbps	1	1	2412	19.63	16.34	0.50	Pass
11g	6Mbps	1	6	2437	19.48	16.34	0.50	Pass
11g	6Mbps	1	11	2462	19.08	16.34	0.50	Pass
HT20	MCS0	1	1	2412	20.23	17.56	0.50	Pass
HT20	MCS0	1	6	2437	20.43	17.56	0.50	Pass
HT20	MCS0	1	11	2462	19.78	17.56	0.50	Pass
HT40	MCS0	1	3	2422	36.66	35.12	0.50	Pass
HT40	MCS0	1	6	2437	36.96	35.32	0.50	Pass
HT40	MCS0	1	9	2452	37.06	35.44	0.50	Pass

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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	21.02	30.00	-1.80	19.22	36.00	Pass
11b	1Mbps	1	6	2437	21.51	30.00	-1.80	19.71	36.00	Pass
11b	1Mbps	1	11	2462	20.67	30.00	-1.80	18.87	36.00	Pass
11g	6Mbps	1	1	2412	22.76	30.00	-1.80	20.96	36.00	Pass
11g	6Mbps	1	6	2437	23.36	30.00	-1.80	21.56	36.00	Pass
11g	6Mbps	1	11	2462	22.93	30.00	-1.80	21.13	36.00	Pass
HT20	MCS0	1	1	2412	23.19	30.00	-1.80	21.39	36.00	Pass
HT20	MCS0	1	6	2437	23.60	30.00	-1.80	21.80	36.00	Pass
HT20	MCS0	1	11	2462	23.17	30.00	-1.80	21.37	36.00	Pass
HT40	MCS0	1	3	2422	23.42	30.00	-1.80	21.62	36.00	Pass
HT40	MCS0	1	6	2437	23.67	30.00	-1.80	21.87	36.00	Pass
HT40	MCS0	1	9	2452	23.33	30.00	-1.80	21.53	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

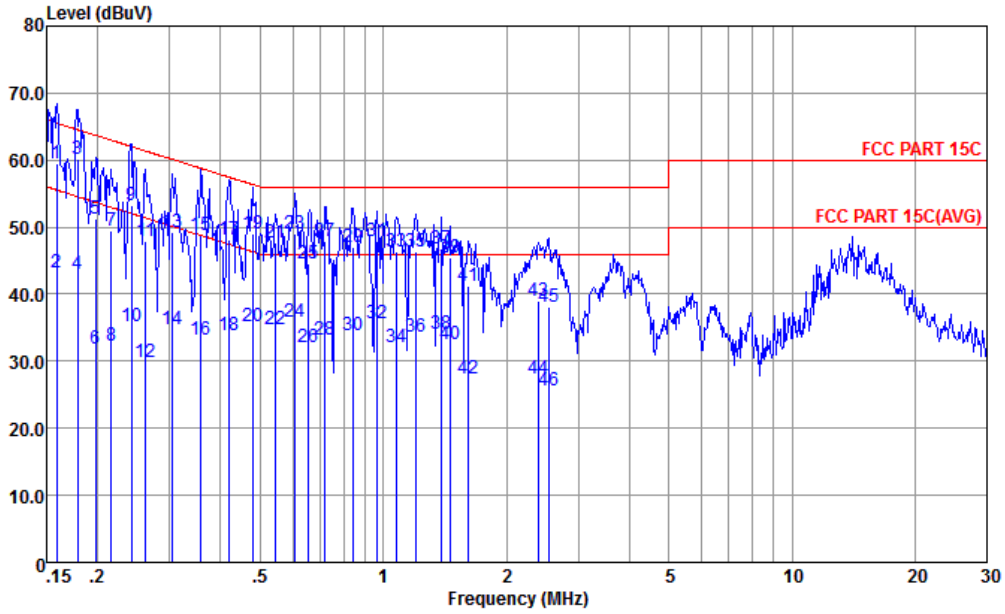
2.4GHz Band						
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.09	18.35
11b	1Mbps	1	6	2437	0.09	18.95
11b	1Mbps	1	11	2462	0.09	18.02
11g	6Mbps	1	1	2412	0.58	15.61
11g	6Mbps	1	6	2437	0.58	16.06
11g	6Mbps	1	11	2462	0.58	15.23
HT20	MCS0	1	1	2412	0.62	15.87
HT20	MCS0	1	6	2437	0.62	15.98
HT20	MCS0	1	11	2462	0.62	15.20
HT40	MCS0	1	3	2422	0.67	15.78
HT40	MCS0	1	6	2437	0.67	16.43
HT40	MCS0	1	9	2452	0.67	15.32

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	-3.02	-1.80	8.00	Pass
11b	1Mbps	1	6	2437	-3.57	-1.80	8.00	Pass
11b	1Mbps	1	11	2462	-3.17	-1.80	8.00	Pass
11g	6Mbps	1	1	2412	-8.25	-1.80	8.00	Pass
11g	6Mbps	1	6	2437	-8.98	-1.80	8.00	Pass
11g	6Mbps	1	11	2462	-8.80	-1.80	8.00	Pass
HT20	MCS0	1	1	2412	-8.36	-1.80	8.00	Pass
HT20	MCS0	1	6	2437	-7.80	-1.80	8.00	Pass
HT20	MCS0	1	11	2462	-8.75	-1.80	8.00	Pass
HT40	MCS0	1	3	2422	-12.75	-1.80	8.00	Pass
HT40	MCS0	1	6	2437	-11.89	-1.80	8.00	Pass
HT40	MCS0	1	9	2452	-11.19	-1.80	8.00	Pass

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Amos Zhang	**Temperature :**	20.1~20.7℃
		Relative Humidity :	38~39%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line

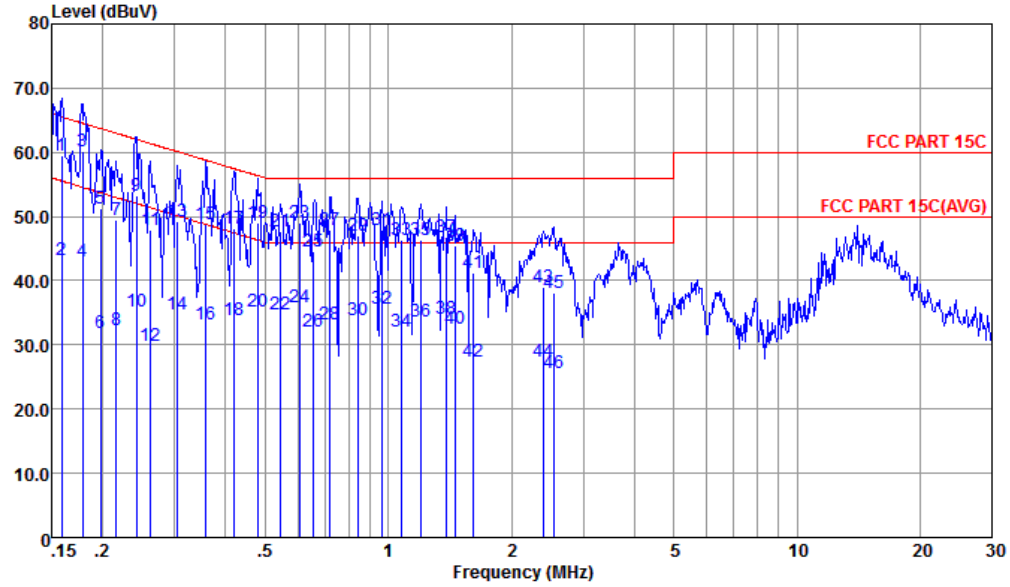


Site : CO01-KS
Condition : FCC PART 15C LISN-L-171013-060103 LINE

mode : Mode 1
: 868137030013610/868137030013628 #10

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.159	59.55	-5.97	65.52	48.79	0.17	10.59	QP
2		0.159	43.25	-12.27	55.52	32.49	0.17	10.59	Average
3	*	0.179	60.20	-4.35	64.55	49.50	0.18	10.52	QP
4		0.179	43.00	-11.55	54.55	32.30	0.18	10.52	Average
5		0.198	51.26	-12.45	63.71	40.60	0.20	10.46	QP
6		0.198	31.96	-21.75	53.71	21.30	0.20	10.46	Average
7		0.216	49.56	-13.40	62.96	38.90	0.21	10.45	QP
8		0.216	32.26	-20.70	52.96	21.60	0.21	10.45	Average
9		0.242	53.25	-8.79	62.04	42.60	0.21	10.44	QP
10		0.242	35.25	-16.79	52.04	24.60	0.21	10.44	Average
11		0.262	47.85	-13.53	61.38	37.19	0.22	10.44	QP
12		0.262	29.95	-21.43	51.38	19.29	0.22	10.44	Average
13		0.303	49.15	-11.00	60.15	38.49	0.23	10.43	QP
14		0.303	34.75	-15.40	50.15	24.09	0.23	10.43	Average
15		0.358	48.75	-10.03	58.78	38.10	0.24	10.41	QP
16		0.358	33.25	-15.53	48.78	22.60	0.24	10.41	Average
17		0.419	48.24	-9.22	57.46	37.60	0.25	10.39	QP

Test Engineer :	Amos Zhang	Temperature :	20.1~20.7℃
		Relative Humidity :	38~39%
Test Voltage :	120Vac / 60Hz	Phase :	Line

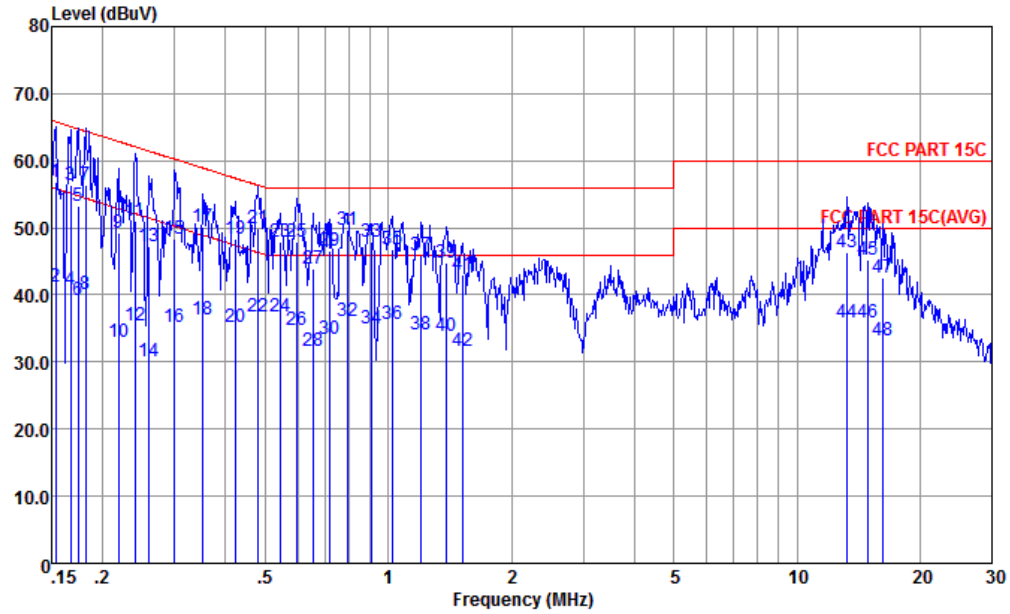


Site : CO01-KS
Condition : FCC PART 15C LISN-L-171013-060103 LINE

mode : Mode 1
: 868137030013610/868137030013628 #10

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18	0.419	33.94	-13.52	47.46	23.30	0.25	10.39	Average
19	0.479	49.08	-7.28	56.36	38.50	0.26	10.32	QP
20	0.479	35.18	-11.18	46.36	24.60	0.26	10.32	Average
21	0.546	47.63	-8.37	56.00	37.10	0.26	10.27	QP
22	0.546	34.83	-11.17	46.00	24.30	0.26	10.27	Average
23	0.608	49.08	-6.92	56.00	38.60	0.26	10.22	QP
24	0.608	35.78	-10.22	46.00	25.30	0.26	10.22	Average
25	0.658	44.65	-11.35	56.00	34.20	0.26	10.19	QP
26	0.658	32.05	-13.95	46.00	21.60	0.26	10.19	Average
27	0.720	47.91	-8.09	56.00	37.50	0.26	10.15	QP
28	0.720	33.31	-12.69	46.00	22.90	0.26	10.15	Average
29	0.844	46.96	-9.04	56.00	36.60	0.26	10.10	QP
30	0.844	33.96	-12.04	46.00	23.60	0.26	10.10	Average
31	0.968	47.97	-8.03	56.00	37.60	0.26	10.11	QP
32	0.968	35.67	-10.33	46.00	25.30	0.26	10.11	Average
33	1.077	46.28	-9.72	56.00	35.90	0.26	10.12	QP
34	1.077	31.98	-14.02	46.00	21.60	0.26	10.12	Average
35	1.203	46.30	-9.70	56.00	35.89	0.27	10.14	QP
36	1.203	33.70	-12.30	46.00	23.29	0.27	10.14	Average
37	1.388	46.73	-9.27	56.00	36.30	0.27	10.16	QP
38	1.388	34.03	-11.97	46.00	23.60	0.27	10.16	Average
39	1.456	45.54	-10.46	56.00	35.10	0.27	10.17	QP
40	1.456	32.54	-13.46	46.00	22.10	0.27	10.17	Average
41	1.610	41.25	-14.75	56.00	30.80	0.27	10.18	QP
42	1.610	27.35	-18.65	46.00	16.90	0.27	10.18	Average
43	2.396	39.10	-16.90	56.00	28.60	0.30	10.20	QP
44	2.396	27.40	-18.60	46.00	16.90	0.30	10.20	Average
45	2.540	38.00	-18.00	56.00	27.50	0.30	10.20	QP
46	2.540	25.70	-20.30	46.00	15.20	0.30	10.20	Average

Test Engineer :	Amos Zhang	Temperature :	20.1~20.7℃
		Relative Humidity :	38~39%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral

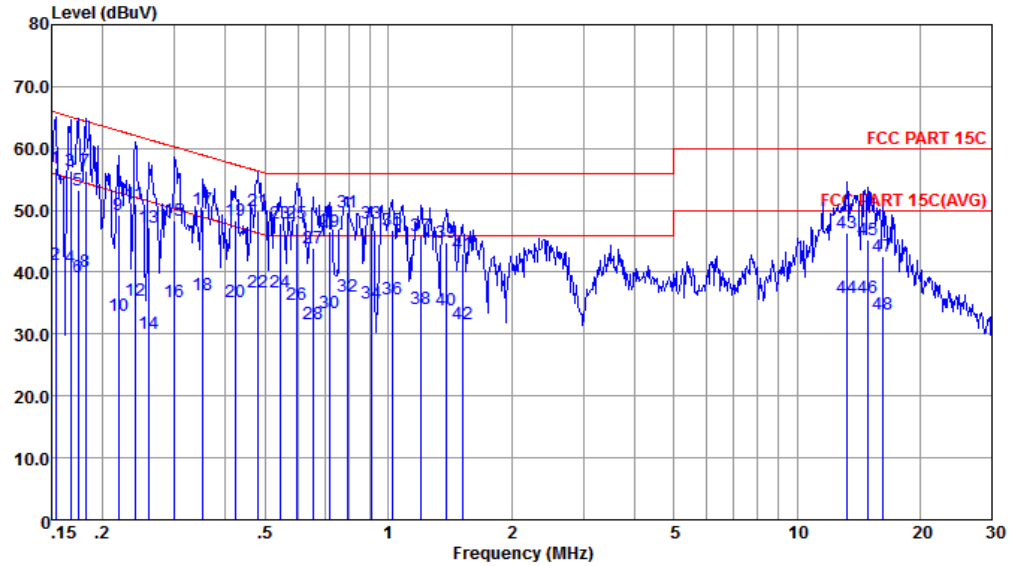


Site : CO01-KS
Condition : FCC PART 15C LISN-N-171013-060103 NEUTRAL

mode : Mode 1
: 868137030013610/868137030013628 #10

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.153	56.79	-9.03	65.82	45.90	0.28	10.61	QP
2	0.153	41.19	-14.63	55.82	30.30	0.28	10.61	Average
3	0.167	56.44	-8.68	65.12	45.60	0.28	10.56	QP
4	0.167	40.74	-14.38	55.12	29.90	0.28	10.56	Average
5	0.174	53.32	-11.45	64.77	42.50	0.28	10.54	QP
6	0.174	39.12	-15.65	54.77	28.30	0.28	10.54	Average
7	0.182	56.39	-8.03	64.42	45.60	0.28	10.51	QP
8	0.182	40.09	-14.33	54.42	29.30	0.28	10.51	Average
9	0.219	49.33	-13.55	62.88	38.60	0.28	10.45	QP
10	0.219	33.03	-19.85	52.88	22.30	0.28	10.45	Average
11	0.240	51.02	-11.06	62.08	40.30	0.28	10.44	QP
12	0.240	35.32	-16.76	52.08	24.60	0.28	10.44	Average
13	0.260	47.32	-14.10	61.42	36.60	0.28	10.44	QP
14	0.260	30.02	-21.40	51.42	19.30	0.28	10.44	Average
15	0.300	48.31	-11.93	60.24	37.60	0.28	10.43	QP
16	0.300	35.21	-15.03	50.24	24.50	0.28	10.43	Average
17	0.352	50.20	-8.71	58.91	39.49	0.29	10.42	QP

Test Engineer :	Amos Zhang	Temperature :	20.1~20.7℃
		Relative Humidity :	38~39%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



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

mode : Mode 1
: 868137030013610/868137030013628 #10

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
18		0.352	36.30	-12.61	48.91	25.59	0.29	10.42	Average
19		0.421	48.27	-9.15	57.42	37.60	0.29	10.38	QP
20		0.421	35.17	-12.25	47.42	24.50	0.29	10.38	Average
21		0.481	49.81	-6.51	56.32	39.20	0.29	10.32	QP
22		0.481	36.81	-9.51	46.32	26.20	0.29	10.32	Average
23		0.546	47.86	-8.14	56.00	37.30	0.29	10.27	QP
24		0.546	36.86	-9.14	46.00	26.30	0.29	10.27	Average
25		0.595	47.83	-8.17	56.00	37.30	0.30	10.23	QP
26		0.595	34.83	-11.17	46.00	24.30	0.30	10.23	Average
27		0.654	43.99	-12.01	56.00	33.50	0.30	10.19	QP
28		0.654	31.69	-14.31	46.00	21.20	0.30	10.19	Average
29		0.720	46.65	-9.35	56.00	36.20	0.30	10.15	QP
30		0.720	33.35	-12.65	46.00	22.90	0.30	10.15	Average
31	*	0.792	49.61	-6.39	56.00	39.20	0.30	10.11	QP
32		0.792	36.21	-9.79	46.00	25.80	0.30	10.11	Average
33		0.914	47.91	-8.09	56.00	37.49	0.31	10.11	QP
34		0.914	35.01	-10.99	46.00	24.59	0.31	10.11	Average
35		1.021	46.72	-9.28	56.00	36.30	0.31	10.11	QP
36		1.021	35.62	-10.38	46.00	25.20	0.31	10.11	Average
37		1.203	45.95	-10.05	56.00	35.50	0.31	10.14	QP
38		1.203	34.05	-11.95	46.00	23.60	0.31	10.14	Average
39		1.388	44.77	-11.23	56.00	34.30	0.31	10.16	QP
40		1.388	33.77	-12.23	46.00	23.30	0.31	10.16	Average
41		1.519	43.09	-12.91	56.00	32.60	0.32	10.17	QP
42		1.519	31.69	-14.31	46.00	21.20	0.32	10.17	Average
43		13.197	46.42	-13.58	60.00	35.79	0.24	10.39	QP
44		13.197	35.92	-14.08	50.00	25.29	0.24	10.39	Average
45		14.907	45.22	-14.78	60.00	34.60	0.21	10.41	QP
46		14.907	35.92	-14.08	50.00	25.30	0.21	10.41	Average
47		16.226	42.51	-17.49	60.00	31.90	0.18	10.43	QP
48		16.226	33.21	-16.79	50.00	22.60	0.18	10.43	Average

Appendix C. Radiated Spurious Emission

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		2387.595	50.01	-23.99	74	47.55	27.09	6.65	31.28	138	99	P	H
		2390	38.55	-15.45	54	36.09	27.09	6.65	31.28	138	99	A	H
	*	2412	103.72	-	-	101.18	27.14	6.66	31.26	138	99	P	H
	*	2412	99.56	-	-	97.02	27.14	6.66	31.26	138	99	A	H
		2386.86	48.6	-25.4	74	46.14	27.09	6.65	31.28	266	180	P	V
		2390	36.63	-17.37	54	34.17	27.09	6.65	31.28	266	180	A	V
	*	2412	99.28	-	-	96.74	27.14	6.66	31.26	266	180	P	V
	*	2412	94.97	-	-	92.43	27.14	6.66	31.26	266	180	A	V
802.11b CH 06 2437MHz		2388.82	47.87	-26.13	74	45.41	27.09	6.65	31.28	138	99	P	H
		2389.94	36.23	-17.77	54	33.77	27.09	6.65	31.28	138	99	A	H
	*	2437	103.97	-	-	101.36	27.24	6.63	31.26	138	99	P	H
	*	2437	99.52	-	-	96.91	27.24	6.63	31.26	138	99	A	H
		2490.13	48.37	-25.63	74	45.59	27.4	6.58	31.2	138	99	P	H
		2484.11	35.87	-18.13	54	33.16	27.35	6.58	31.22	138	99	A	H
		2345.98	48.02	-25.98	74	45.84	26.93	6.58	31.33	266	180	P	V
		2388.82	35.87	-18.13	54	33.41	27.09	6.65	31.28	266	180	A	V
	*	2437	100.71	-	-	98.1	27.24	6.63	31.26	266	180	P	V
	*	2437	96.32	-	-	93.71	27.24	6.63	31.26	266	180	A	V
		2483.62	48.5	-25.5	74	45.79	27.35	6.58	31.22	266	180	P	V
		2491.81	36.01	-17.99	54	33.23	27.4	6.58	31.2	266	180	A	V

802.11b CH 11 2462MHz	*	2462	102.47	-	-	99.8	27.3	6.61	31.24	137	99	P	H
	*	2462	98.17	-	-	95.5	27.3	6.61	31.24	137	99	A	H
		2483.76	49.63	-24.37	74	46.92	27.35	6.58	31.22	137	99	P	H
		2483.64	37.78	-16.22	54	35.07	27.35	6.58	31.22	137	99	A	H
	*	2462	98.12	-	-	95.45	27.3	6.61	31.24	266	180	P	V
	*	2462	93.87	-	-	91.2	27.3	6.61	31.24	266	180	A	V
		2493.48	48.36	-25.64	74	45.58	27.4	6.58	31.2	266	180	P	V
		2483.64	36.68	-17.32	54	33.97	27.35	6.58	31.22	266	180	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	42.86	-31.14	74	60.19	31.42	9.44	58.19	185	255	P	H
		4824	42.78	-31.22	74	60.11	31.42	9.44	58.19	185	255	P	V
802.11b CH 06 2437MHz		4874	42.21	-31.79	74	59.4	31.51	9.4	58.1	165	106	P	H
		7311	49.45	-24.55	74	59.01	36.36	12	57.92	174	100	P	H
		4874	41.54	-32.46	74	58.73	31.51	9.4	58.1	165	106	P	V
		7311	49.54	-24.46	74	59.1	36.36	12	57.92	174	100	P	V
802.11b CH 11 2462MHz		4924	42.25	-31.75	74	59.25	31.59	9.43	58.02	150	285	P	H
		7386	49.12	-24.88	74	58.11	36.65	12.01	57.65	155	274	P	H
		4924	41.8	-32.2	74	58.8	31.59	9.43	58.02	150	285	P	V
		7386	49.22	-24.78	74	58.21	36.65	12.01	57.65	155	274	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		2389.695	66.13	-7.87	74	63.67	27.09	6.65	31.28	134	164	P	H
		2389.905	47.82	-6.18	54	45.36	27.09	6.65	31.28	134	164	A	H
	*	2412	102.25	-	-	99.71	27.14	6.66	31.26	134	38	P	H
	*	2412	92.58	-	-	90.04	27.14	6.66	31.26	134	38	A	H
		2388.645	53.53	-20.47	74	51.07	27.09	6.65	31.28	134	338	P	V
		2389.905	39.51	-14.49	54	37.05	27.09	6.65	31.28	134	338	A	V
	*	2412	93.63	-	-	91.09	27.14	6.66	31.26	134	338	P	V
	*	2412	83.47	-	-	80.93	27.14	6.66	31.26	134	338	A	V
802.11g CH 06 2437MHz		2383.78	49.27	-24.73	74	46.89	27.04	6.65	31.31	134	38	P	H
		2384.9	37.01	-16.99	54	34.63	27.04	6.65	31.31	134	38	A	H
	*	2437	103.43	-	-	100.82	27.24	6.63	31.26	134	38	P	H
	*	2437	93.35	-	-	90.74	27.24	6.63	31.26	134	38	A	H
		2483.83	49.17	-24.83	74	46.46	27.35	6.58	31.22	134	38	P	H
		2488.94	37.31	-16.69	54	34.55	27.4	6.58	31.22	134	38	A	H
		2329.04	49.1	-24.9	74	47.02	26.88	6.55	31.35	134	255	P	V
		2385.32	36.52	-17.48	54	34.11	27.04	6.65	31.28	134	255	A	V
	*	2437	93.34	-	-	90.73	27.24	6.63	31.26	134	255	P	V
	*	2437	83.39	-	-	80.78	27.24	6.63	31.26	134	255	A	V
		2490.41	48.58	-25.42	74	45.8	27.4	6.58	31.2	134	255	P	V
		2489.29	36.61	-17.39	54	33.83	27.4	6.58	31.2	134	255	A	V

802.11g CH 11 2462MHz	*	2462	102.41	-	-	99.74	27.3	6.61	31.24	134	38	P	H
	*	2462	92.57	-	-	89.9	27.3	6.61	31.24	134	38	A	H
		2483.56	64.1	-9.9	74	61.39	27.35	6.58	31.22	134	38	P	H
		2483.64	45.9	-8.1	54	43.19	27.35	6.58	31.22	134	38	A	H
	*	2462	92.63	-	-	89.96	27.3	6.61	31.24	134	255	P	V
	*	2462	83.16	-	-	80.49	27.3	6.61	31.24	134	255	A	V
		2483.88	54.83	-19.17	74	52.12	27.35	6.58	31.22	134	255	P	V
		2483.72	39.23	-14.77	54	36.52	27.35	6.58	31.22	134	255	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	38.42	-35.58	74	55.75	31.42	9.44	58.19	185	255	P	H
		4824	39.2	-34.8	74	56.53	31.42	9.44	58.19	185	255	P	V
802.11g CH 06 2437MHz		4874	39.61	-34.39	74	56.8	31.51	9.4	58.1	165	106	P	H
		7311	46.78	-27.22	74	56.34	36.36	12	57.92	174	100	P	H
		4874	39.05	-34.95	74	56.24	31.51	9.4	58.1	165	106	P	V
		7311	46.31	-27.69	74	55.87	36.36	12	57.92	174	100	P	V
802.11g CH 11 2462MHz		4924	40.58	-33.42	74	57.58	31.59	9.43	58.02	150	285	P	H
		7386	45.55	-28.45	74	54.54	36.65	12.01	57.65	155	274	P	H
		4924	39.55	-34.45	74	56.55	31.59	9.43	58.02	150	285	P	V
		7386	46.77	-27.23	74	55.76	36.65	12.01	57.65	155	274	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)
		2389.59	65.96	-8.04	74	63.5	27.09	6.65	31.28	134	158	P	H
		2389.905	49.14	-4.86	54	46.68	27.09	6.65	31.28	134	158	A	H
802.11n	*	2412	102.11	-	-	99.57	27.14	6.66	31.26	134	158	P	H
HT20	*	2412	92.09	-	-	89.55	27.14	6.66	31.26	134	158	A	H
CH 01		2389.485	62.07	-11.93	74	59.61	27.09	6.65	31.28	266	180	P	V
2412MHz		2389.905	43.82	-10.18	54	41.36	27.09	6.65	31.28	266	180	A	V
	*	2412	97.57	-	-	95.03	27.14	6.66	31.26	266	180	P	V
	*	2412	87.94	-	-	85.4	27.14	6.66	31.26	266	180	A	V
		2385.88	47.7	-26.3	74	45.24	27.09	6.65	31.28	100	121	P	H
		2385.46	38.65	-15.35	54	36.24	27.04	6.65	31.28	100	121	A	H
	*	2437	102.37	-	-	99.76	27.24	6.63	31.26	100	121	P	H
	*	2437	94.52	-	-	91.91	27.24	6.63	31.26	100	121	A	H
802.11n		2494.54	47.63	-26.37	74	44.85	27.4	6.58	31.2	100	121	P	H
HT20		2488.45	38.58	-15.42	54	35.82	27.4	6.58	31.22	100	121	A	H
CH 06		2344.02	47.39	-26.61	74	45.21	26.93	6.58	31.33	270	242	P	V
2437MHz		2385.74	37.24	-16.76	54	34.78	27.09	6.65	31.28	270	242	A	V
	*	2437	95.52	-	-	92.91	27.24	6.63	31.26	270	242	P	V
	*	2437	87.91	-	-	85.3	27.24	6.63	31.26	270	242	A	V
		2496.22	47.47	-26.53	74	44.69	27.4	6.58	31.2	270	242	P	V
		2485.02	37.54	-16.46	54	34.83	27.35	6.58	31.22	270	242	A	V

	*	2462	101.49	-	-	98.82	27.3	6.61	31.24	100	67	P	H
	*	2462	93.77	-	-	91.1	27.3	6.61	31.24	100	67	A	H
802.11n		2484.08	66	-8	74	63.29	27.35	6.58	31.22	100	67	P	H
HT20		2483.52	49.54	-4.46	54	46.83	27.35	6.58	31.22	134	37	A	H
CH 11	*	2462	91.85	-	-	89.18	27.3	6.61	31.24	100	265	P	V
2462MHz	*	2462	84.1	-	-	81.43	27.3	6.61	31.24	100	265	A	V
		2483.88	55.78	-18.22	74	53.07	27.35	6.58	31.22	100	265	P	V
		2483.84	42.39	-11.61	54	39.68	27.35	6.58	31.22	100	265	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	39.49	-34.51	74	56.82	31.42	9.44	58.19	185	255	P	H
		4824	39.23	-34.77	74	56.56	31.42	9.44	58.19	185	255	P	V
802.11n HT20 CH 06 2437MHz		4874	38.85	-35.15	74	56.04	31.51	9.4	58.1	165	106	P	H
		7311	47.26	-26.74	74	56.82	36.36	12	57.92	174	100	P	H
		4874	38.79	-35.21	74	55.98	31.51	9.4	58.1	165	106	P	V
		7311	46.5	-27.5	74	56.06	36.36	12	57.92	174	100	P	V
802.11n HT20 CH 11 2462MHz		4924	38.62	-35.38	74	55.62	31.59	9.43	58.02	150	285	P	H
		7386	46.19	-27.81	74	55.18	36.65	12.01	57.65	155	274	P	H
		4924	40.23	-33.77	74	57.23	31.59	9.43	58.02	150	285	P	V
		7386	46.19	-27.81	74	55.18	36.65	12.01	57.65	155	274	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 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)
		2388.68	67.41	-6.59	74	64.95	27.09	6.65	31.28	134	163	P	H
		2389.8	49.87	-4.13	54	47.41	27.09	6.65	31.28	134	163	A	H
	*	2422	99.4	-	-	96.81	27.19	6.66	31.26	134	163	P	H
	*	2422	88.5	-	-	85.91	27.19	6.66	31.26	134	163	A	H
802.11n		2484.81	48.64	-25.36	74	45.93	27.35	6.58	31.22	134	163	P	H
HT40		2484.88	37.28	-16.72	54	34.57	27.35	6.58	31.22	134	163	A	H
CH 03		2389.52	60.05	-13.95	74	57.59	27.09	6.65	31.28	266	180	P	V
2422MHz		2389.94	43.87	-10.13	54	41.41	27.09	6.65	31.28	266	180	A	V
	*	2422	95.22	-	-	92.63	27.19	6.66	31.26	266	180	P	V
	*	2422	85.15	-	-	82.56	27.19	6.66	31.26	266	180	A	V
		2484.18	49	-25	74	46.29	27.35	6.58	31.22	266	180	P	V
		2483.76	36.8	-17.2	54	34.09	27.35	6.58	31.22	266	180	A	V
		2389.94	61.39	-12.61	74	58.93	27.09	6.65	31.28	100	64	P	H
		2389.94	48.17	-5.83	54	45.71	27.09	6.65	31.28	100	64	A	H
	*	2437	100.44	-	-	97.83	27.24	6.63	31.26	100	64	P	H
	*	2437	92.72	-	-	90.11	27.24	6.63	31.26	100	64	A	H
802.11n		2485.51	54.87	-19.13	74	52.16	27.35	6.58	31.22	100	64	P	H
HT40		2483.9	43.02	-10.98	54	40.31	27.35	6.58	31.22	100	64	A	H
CH 06		2388.68	54.99	-19.01	74	52.53	27.09	6.65	31.28	269	256	P	V
2437MHz		2389.94	42.75	-11.25	54	40.29	27.09	6.65	31.28	269	256	A	V
	*	2437	93.39	-	-	90.78	27.24	6.63	31.26	269	256	P	V
	*	2437	85.66	-	-	83.05	27.24	6.63	31.26	269	256	A	V
		2483.83	48.41	-25.59	74	45.7	27.35	6.58	31.22	269	256	P	V
		2486.35	38.04	-15.96	54	35.33	27.35	6.58	31.22	269	256	A	V

		2388.82	50.07	-23.93	74	47.61	27.09	6.65	31.28	134	154	P	H
		2389.94	37.02	-16.98	54	34.56	27.09	6.65	31.28	134	154	A	H
	*	2452	99.53	-	-	96.92	27.24	6.61	31.24	134	154	P	H
	*	2452	88.93	-	-	86.32	27.24	6.61	31.24	134	154	A	H
802.11n		2485.79	68.18	-5.82	74	65.47	27.35	6.58	31.22	134	154	P	H
HT40		2484.46	50.75	-3.25	54	48.04	27.35	6.58	31.22	134	154	A	H
CH 09		2388.96	48.4	-25.6	74	45.94	27.09	6.65	31.28	266	180	P	V
2452MHz		2389.94	36.53	-17.47	54	34.07	27.09	6.65	31.28	266	180	A	V
	*	2452	95.66	-	-	93.05	27.24	6.61	31.24	266	180	P	V
	*	2452	84.92	-	-	82.31	27.24	6.61	31.24	266	180	A	V
		2485.3	64.01	-9.99	74	61.3	27.35	6.58	31.22	266	180	P	V
		2483.76	44.85	-9.15	54	42.14	27.35	6.58	31.22	266	180	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 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		4844	40.46	-33.54	74	57.74	31.45	9.43	58.16	150	350	P	H
HT40		7266	46.14	-27.86	74	55.97	36.24	11.96	58.03	200	360	P	H
CH 03		4844	39.7	-34.3	74	56.98	31.45	9.43	58.16	150	350	P	V
2422MHz		7266	46.18	-27.82	74	56.01	36.24	11.96	58.03	200	360	P	V
802.11n		4874	39.45	-34.55	74	56.64	31.51	9.4	58.1	165	230	P	H
HT40		7311	46.15	-27.85	74	55.71	36.36	12	57.92	186	323	P	H
CH 06		4874	39.09	-34.91	74	56.28	31.51	9.4	58.1	165	230	P	V
2437MHz		7311	47.23	-26.77	74	56.79	36.36	12	57.92	186	323	P	V
802.11n		4904	39.43	-34.57	74	56.53	31.56	9.38	58.04	150	360	P	H
HT40		7356	46.16	-27.84	74	55.38	36.53	12.01	57.76	165	335	P	H
CH 09		4904	39.1	-34.9	74	56.2	31.56	9.38	58.04	150	360	P	V
2452MHz		7356	47.58	-26.42	74	56.8	36.53	12.01	57.76	165	335	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

Emission below 1GHz

2.4GHz WIFI 802.11n HT40(LF)

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)
2.4GHz 802.11n HT40 LF		30.97	26.37	-13.63	40	30.3	27.42	0.25	31.6	100	0	P	H
		240.49	21.91	-24.09	46	31.28	19.86	1.81	31.04	-	-	P	H
		439.34	28.33	-17.67	46	30.67	26.23	2.53	31.1	-	-	P	H
		610.06	31.02	-14.98	46	32.26	26.92	3.04	31.2	-	-	P	H
		659.53	30.54	-15.46	46	31.11	27.46	3.17	31.2	-	-	P	H
		957.32	32.12	-13.88	46	29.59	29.87	3.98	31.32	-	-	P	H
		30	27.87	-12.13	40	31.54	27.7	0.23	31.6	100	0	P	V
		90.14	22.1	-21.4	43.5	35.33	17.5	0.77	31.5	-	-	P	V
		446.13	28.14	-17.86	46	30.15	26.53	2.56	31.1	-	-	P	V
		610.06	31.49	-14.51	46	32.73	26.92	3.04	31.2	-	-	P	V
		699.3	30.51	-15.49	46	30.75	27.69	3.27	31.2	-	-	P	V
		919.49	32.12	-13.88	46	30.64	28.91	3.87	31.3	-	-	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)

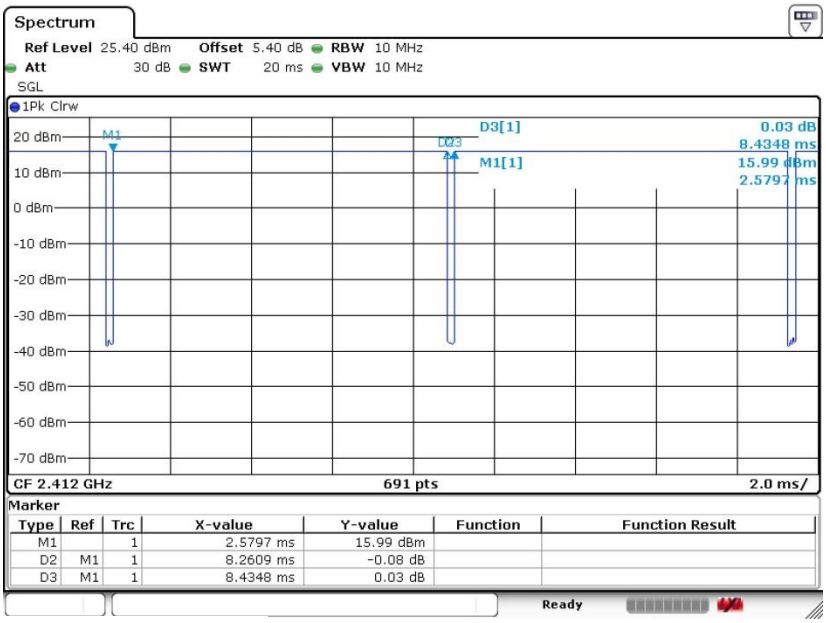
= -10.46(dB)

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

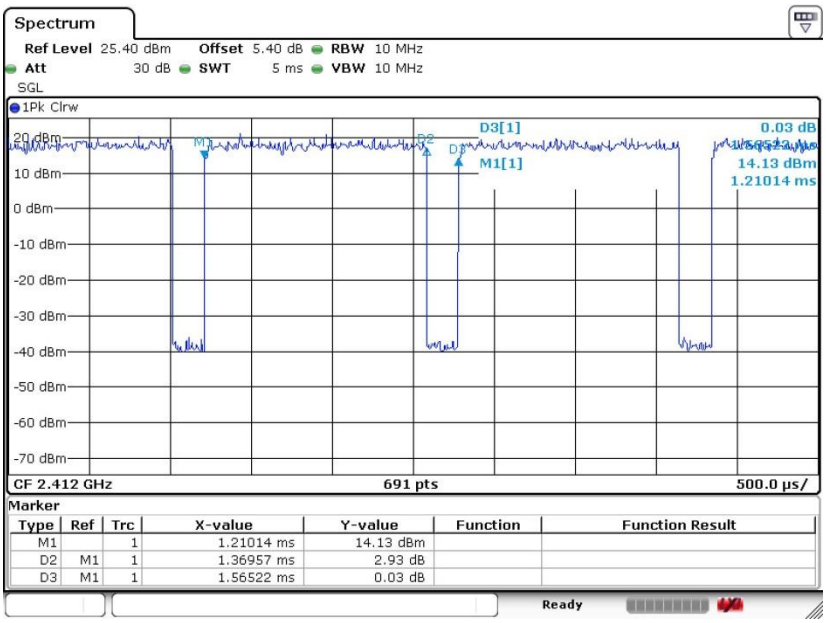
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
11b	97.94	8.261	0.121	300Hz
11g	87.50	1.370	0.730	1kHz
11n HT20	86.70	1.275	0.784	1kHz
11n HT40	85.79	1.225	0.817	1kHz

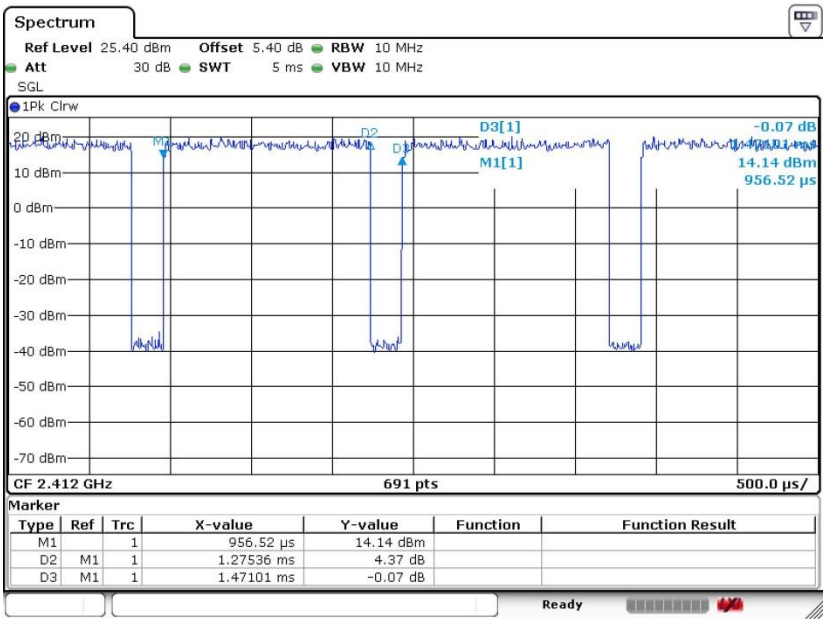
11b


Spectrum
Ref Level 25.40 dBm Offset 5.40 dB RBW 10 MHz
Att 30 dB SWT 20 ms VBW 10 MHz
SGL
1Pk Clrw
D3[1] 0.03 dB
8.4348 ms
M1[1] 15.99 dBm
2.5797 ms
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.412 GHz 691 pts 2.0 ms/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.5797 ms 15.99 dBm
D2 M1 1 8.2609 ms -0.08 dB
D3 M1 1 8.4348 ms 0.03 dB
Ready

11g


Spectrum
Ref Level 25.40 dBm Offset 5.40 dB RBW 10 MHz
Att 30 dB SWT 5 ms VBW 10 MHz
SGL
1Pk Clrw
D3[1] 0.03 dB
M1[1] 14.13 dBm
1.21014 ms
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.412 GHz 691 pts 500.0 µs/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 1.21014 ms 14.13 dBm
D2 M1 1 1.36957 ms 2.93 dB
D3 M1 1 1.56522 ms 0.03 dB
Ready

11n HT20



11n HT40