FCC RF Test Report

APPLICANT	:	Luxottica Group S.p.A
EQUIPMENT	:	Ray-Ban Stories
BRAND NAME	:	Ray Ban
MODEL NAME	:	RW4002, RW4003, RW4004, RW4005
FCC ID	:	2AYOA-4002
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Jan. 08, 2021 and testing was completed on Jan. 30, 2021. 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.

Reviewed by: Derreck Chen / Supervisor

Approved by: Eric Shih / Manager

ACCREDITED Cert #5145.01

Sporton International (ShenZhen) Inc.

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055

People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR110802C	Rev. 01	Initial issue of report	May 24, 2021

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	99% Bandwidth	-	N/A	-
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	≤ 30dBc	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 3.29 dB at 2390.000 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 20.17 dB at 0.200 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	N/A	-

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

1 General Description

1.1 Applicant

Luxottica Group S.p.A
Piazzale Cadorna 3, 20123 Milano

1.2 Manufacturer

Luxottica Tristar (Dongguan) Optical Co., Ltd.
Oudeng Zone, Gaobu Town, Dongguan City, Guangdong Province 523268, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Ray-Ban Stories
Brand Name	Ray Ban
Model Name	RW4002, RW4003, RW4004, RW4005
FCC ID	2AYOA-4002
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20 WLAN 5GHz 802.11ac VHT20 Bluetooth BR/EDR/LE
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. The manufacturer declares that all the equipment and models share the same radio characteristics and Software/Firmware, the only differences between each of them are color of frames, lenses, and sizes which certainly do not affect the test results. Therefore, the test is mainly performed on the Model RW4002 as a representative for the others.
3. The device has two power states, one is SoftAP mode (non-charging mode) with low rated RF power and SoftAP mode will disable 5G bands (U-NII-1, U-NII-2A, U-NII-2C), another is STA mode (charging mode) with high rated RF power. This report test STA mode (charging mode) with high rated RF power.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Maximum (AV) Output Power to antenna	802.11b : 19.20 dBm (0.0832 W) 802.11g : 18.00 dBm (0.0631 W) 802.11n HT20 : 15.00 dBm (0.0316 W)
99% Occupied Bandwidth	802.11b : 11.69MHz 802.11g : 17.23MHz 802.11n HT20 : 18.28MHz
Antenna Type / Gain	PCBA Antenna type with gain 2.30 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

<FCC>-SZ

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	CO01-SZ TH01-SZ DFS01-SZ	CN1256	421272

Test Firm	Sporton International (Shenzhen) Inc.		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103 TEL: +86-755-33202398		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH04-SZ	CN1256	421272

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b

1.8 Applicable Standards

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

- 47 CFR Part 15 Subpart C §15.247
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

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

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

2.1 Carrier Frequency and Channel

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

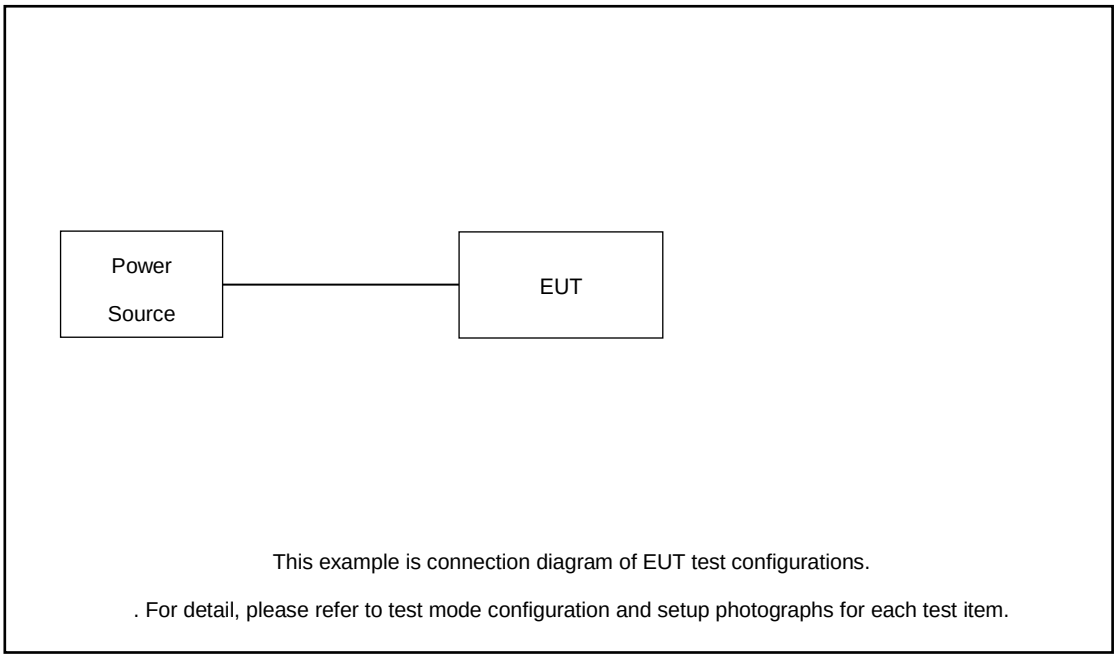
Final test modes are considering the modulation and worse data rates as below table.

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

Test Cases	
AC Conducted Emission	Mode 1 :BT Link to Mobile Phone + 2.4 Wifi Link to AP + Type C USB cable + EUT with Titan Charging Case + With apple power adapter(18w) for Sample 1

2.3 Connection Diagram of Test System

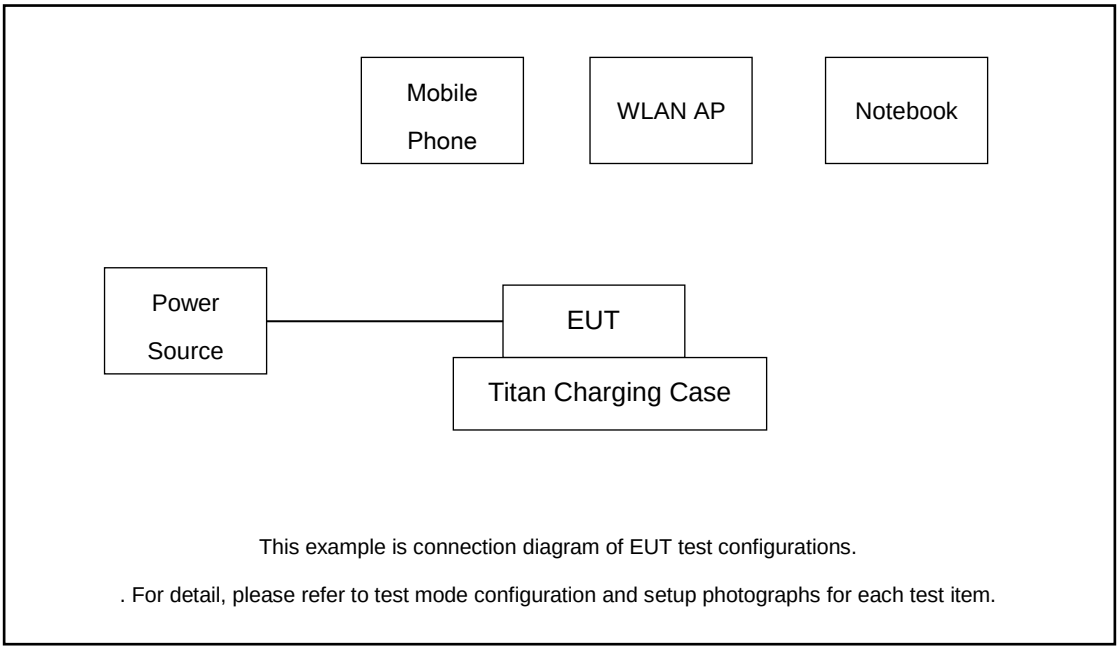
For Radiation



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

For Conducted Emission



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
2.	NOTE BOOK	Lenovo	E540	FCC DoC	AC I/P : Unshielded, 1.2m DC O/P : Shielded, 1.8m	N/A
3.	USB cable	N/A	N/A	N/A	N/A	N/A
4.	apple adapter	N/A	N/A	N/A	N/A	N/A
5.	Mobile Phone	iPhone	11	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 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 1.2 dB and 20dB attenuator.

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

= 1.2 + 20 = 21.2 (dB)

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% 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.

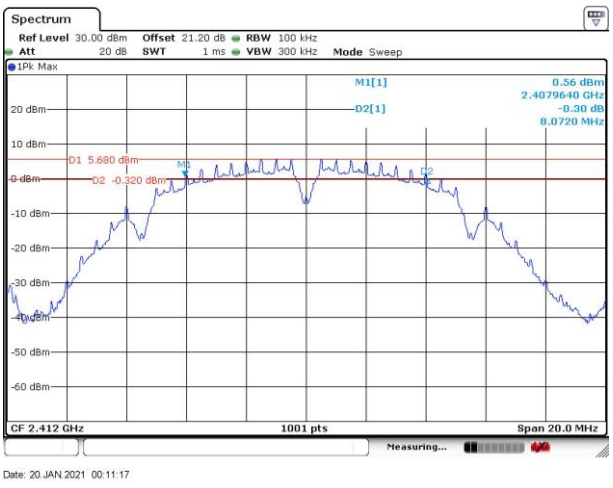
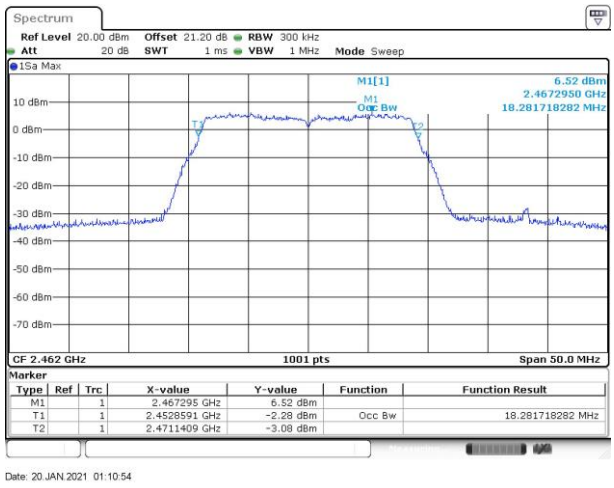
3.1.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 11.8
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. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

3.1.4 Test Setup

3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A.

Minimum 6dB Bandwidth	Maximum 99% Occupied 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 output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the 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.

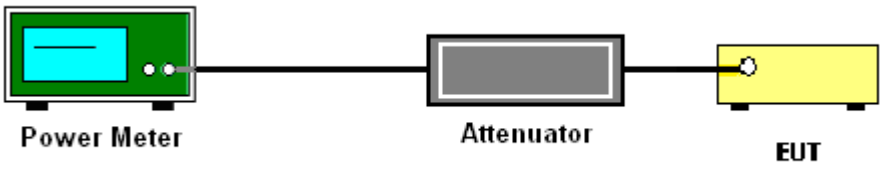
3.2.2 Measuring Instruments

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 ANSI C63.10-2013 clause 11.9.1.3 PKPM1 Peak power meter or ANSI C63.10-2013 clause 11.9.2.3.2 Method AVGPM-G 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 Average output Power

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.

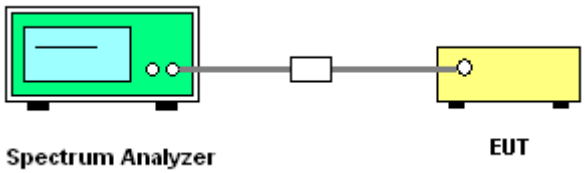
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows Measurement Procedure of ANSI C63.10-2013 clause 11.10.2 Method PKPSD.
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.

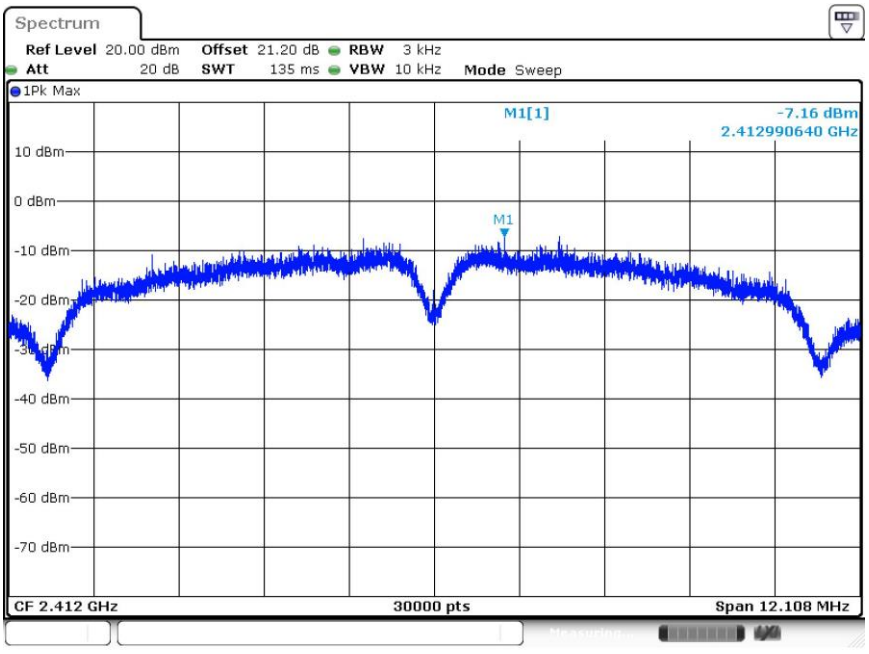
3.3.4 Test Setup



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.

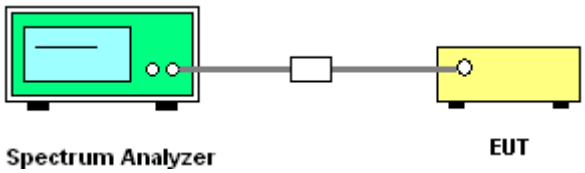
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 11.13
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

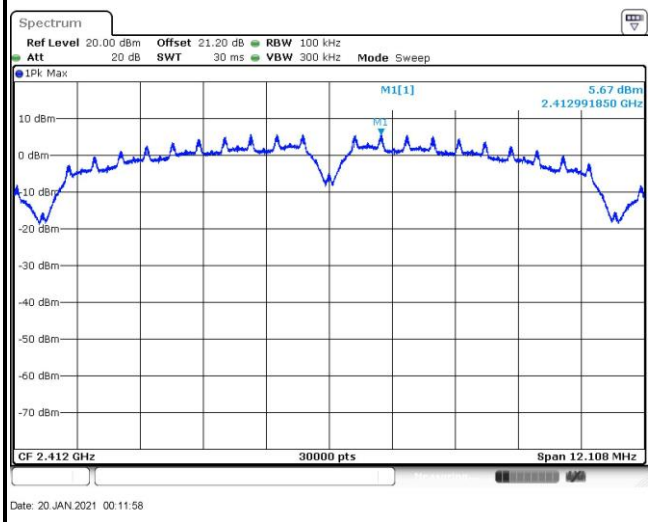
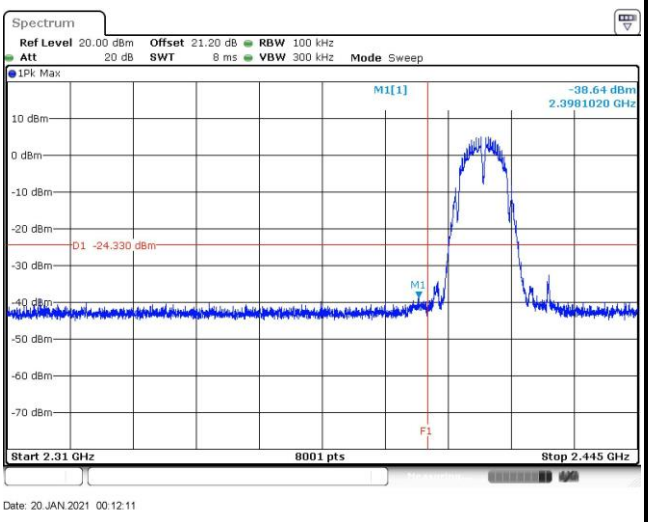
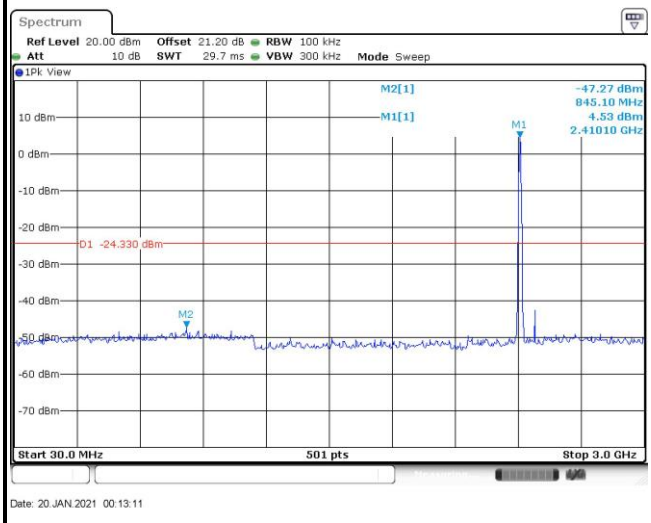
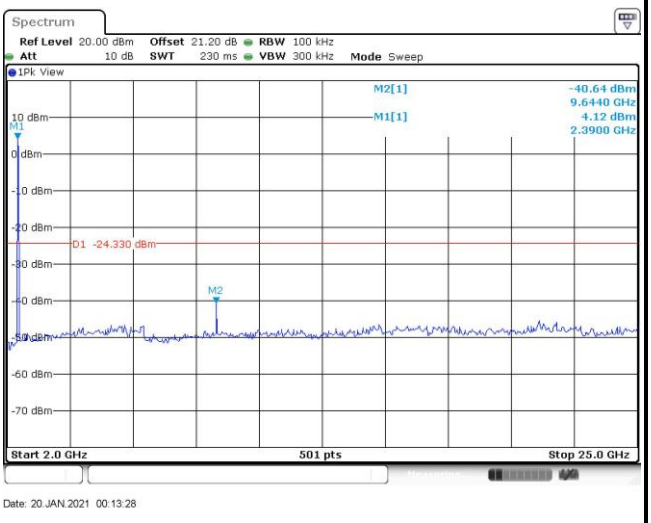


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

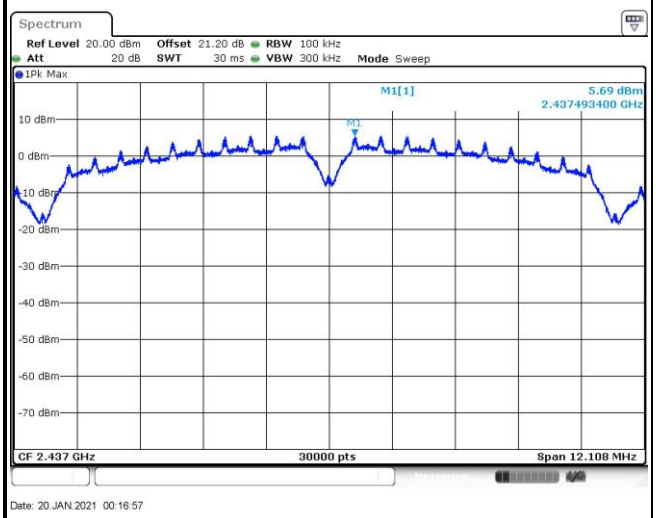
Test Engineer :	Zhang Xue Yi	**Temperature :**	21~25℃
		Relative Humidity :	51~54%

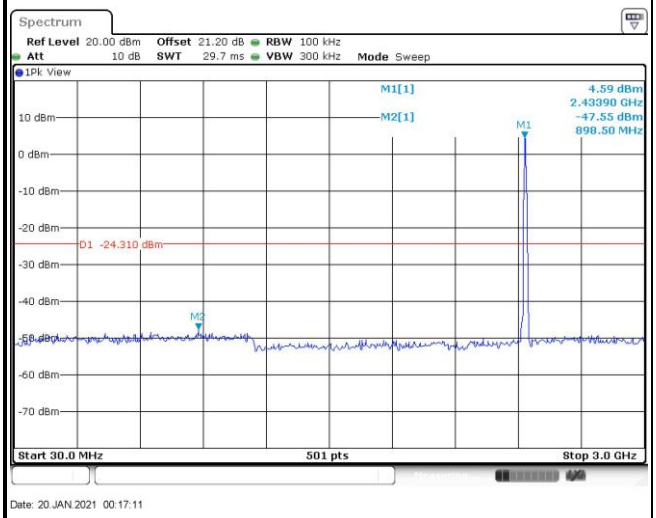
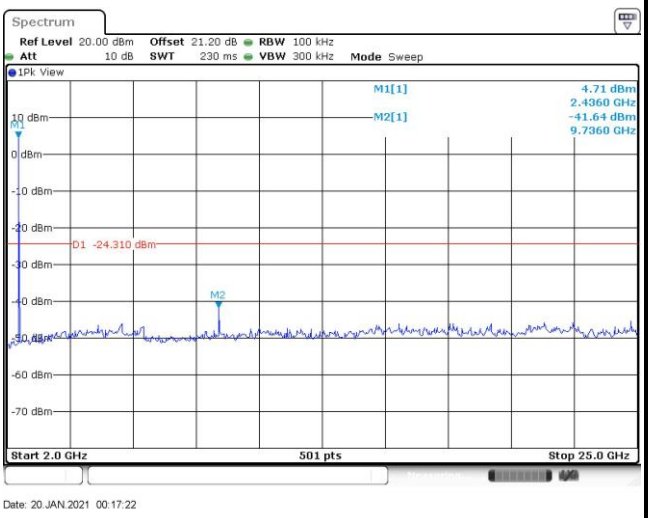
Number of TX = 1, Ant. 1 (Measured)

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

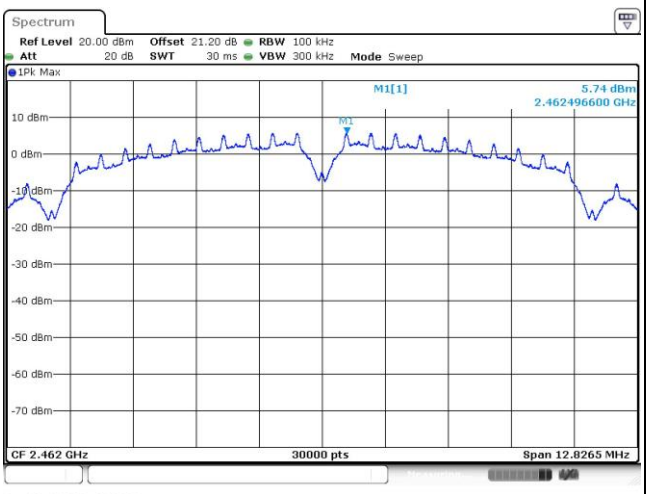
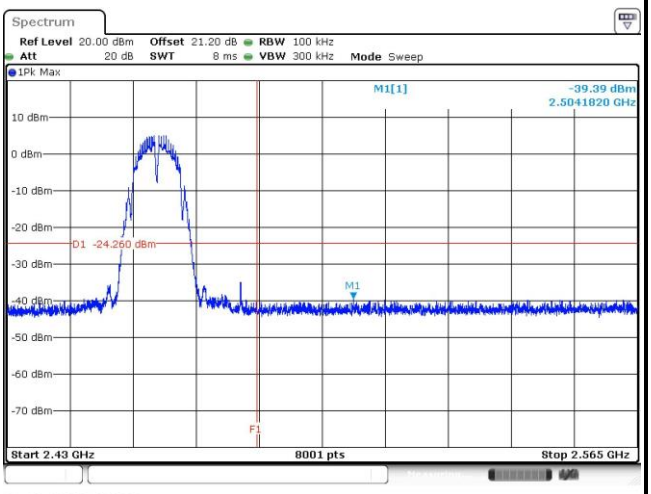
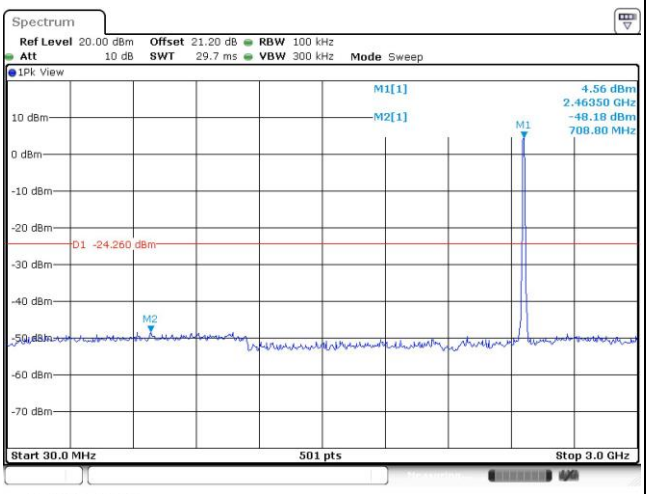
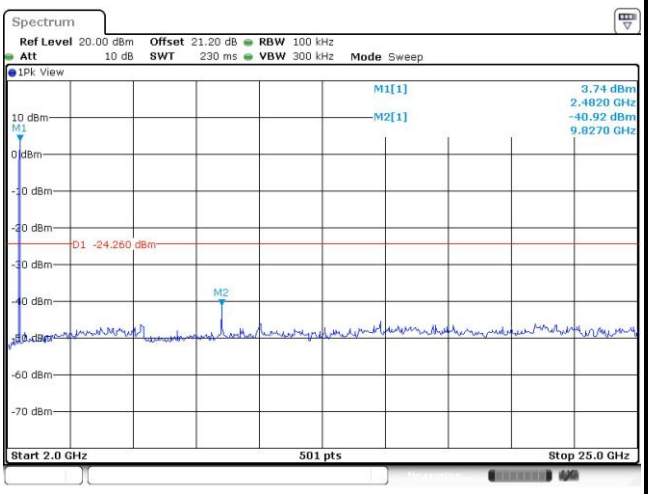
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11b	Test Channel :	06

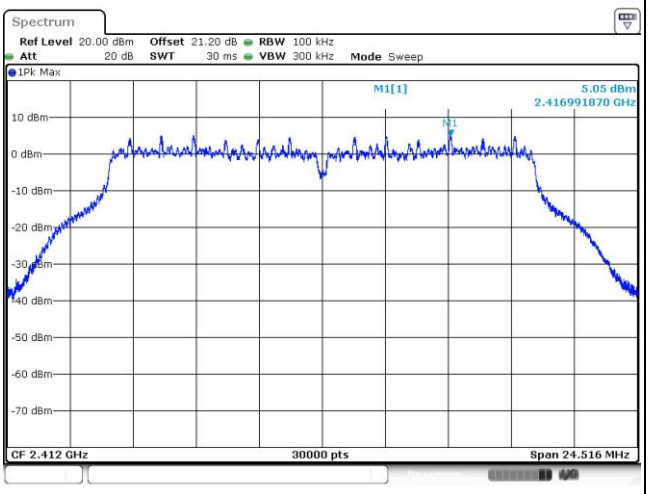
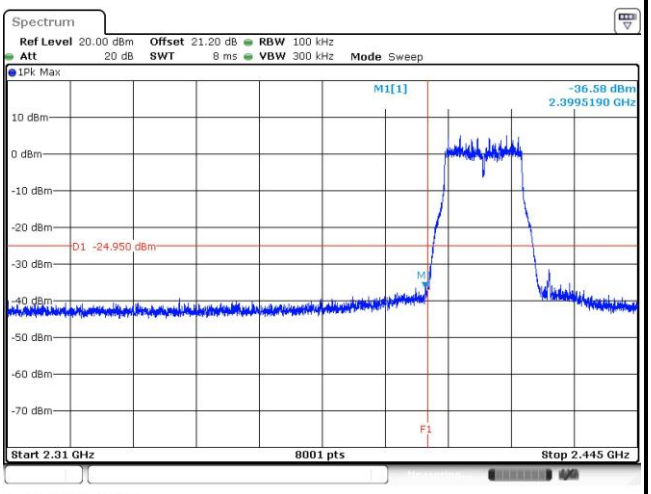
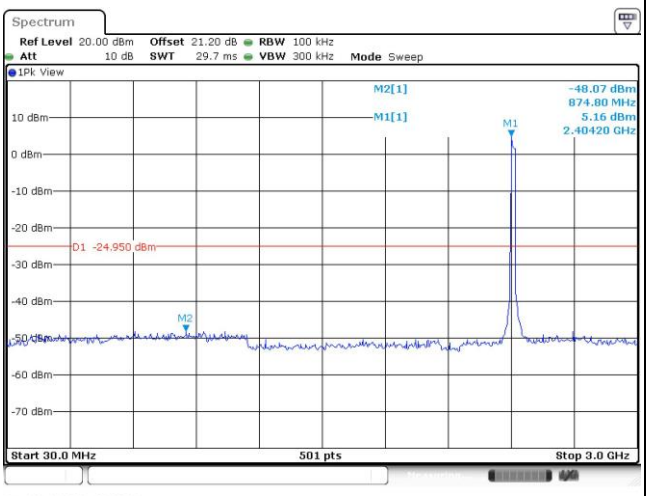
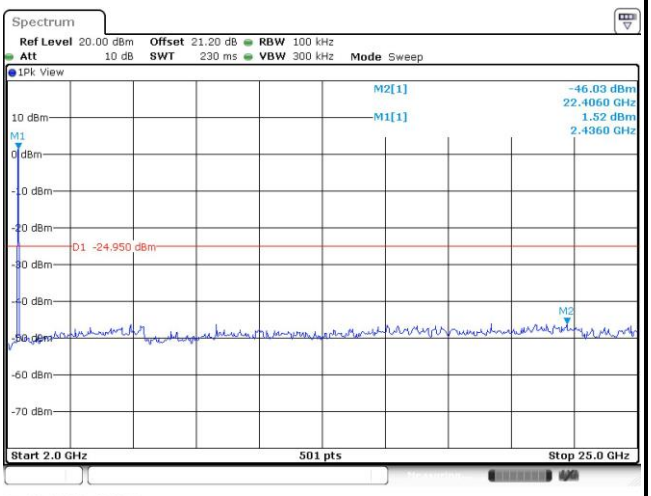
100kHz PSD reference Level	Channel Plot
	

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

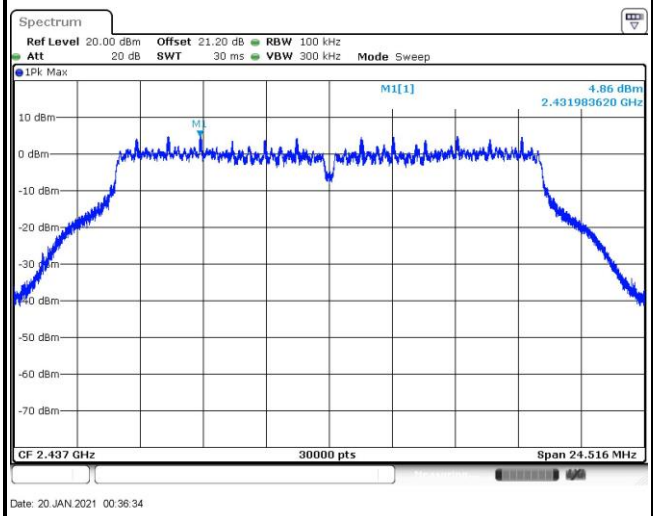
Test Mode :	802.11b	Test Channel :	11

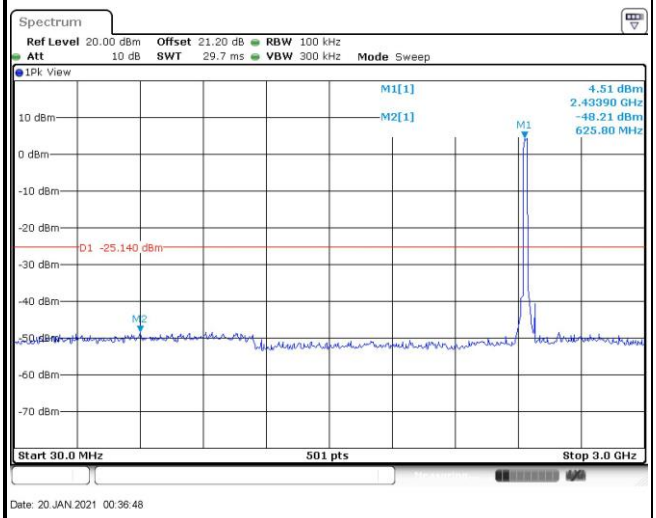
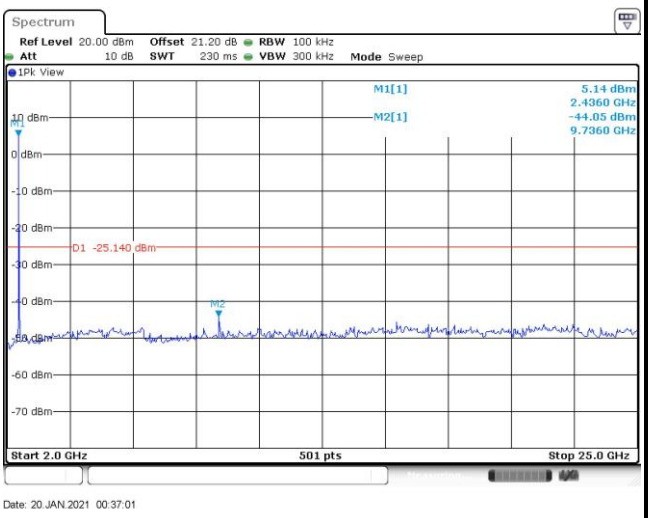
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11g	Test Channel :	01

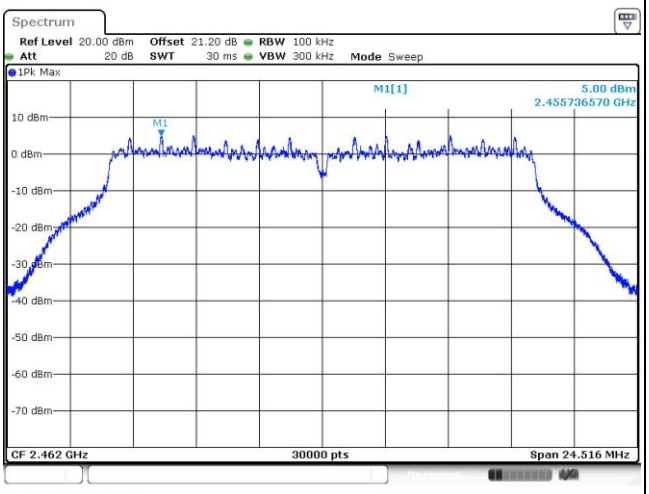
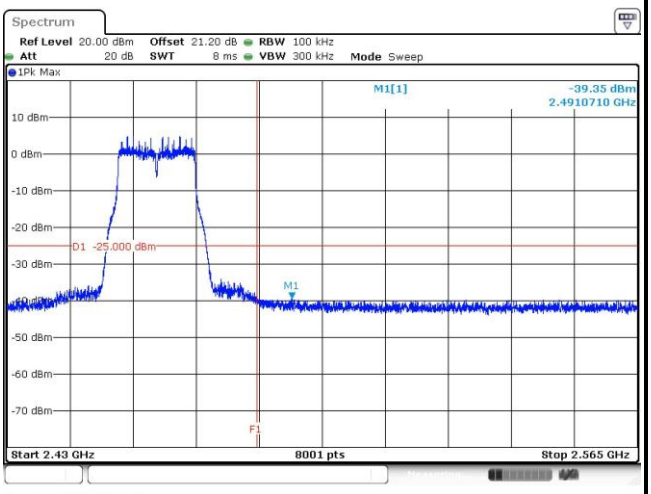
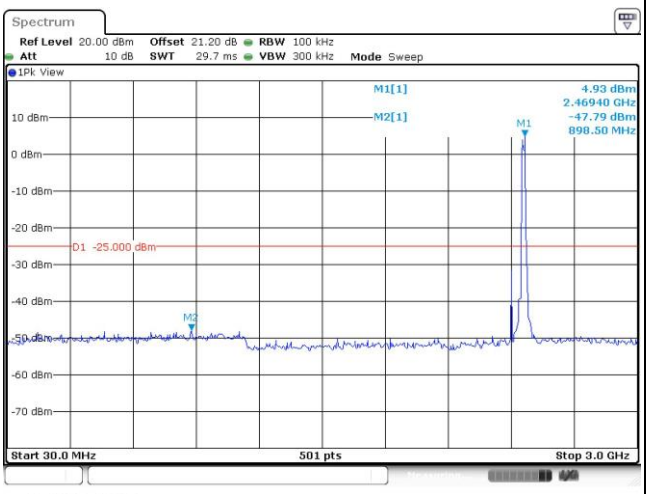
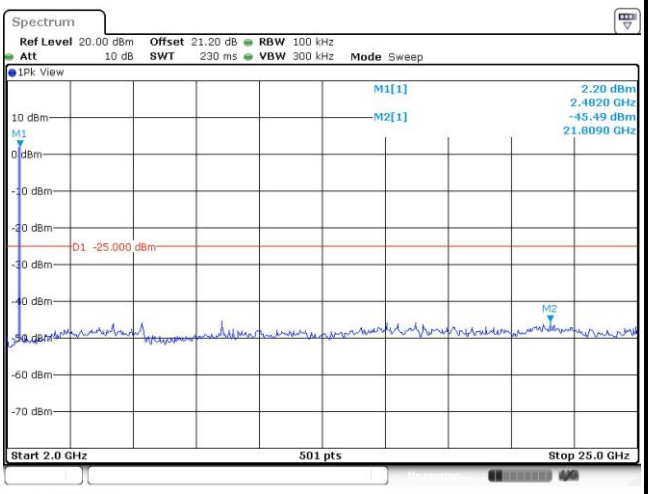
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11g	Test Channel :	06

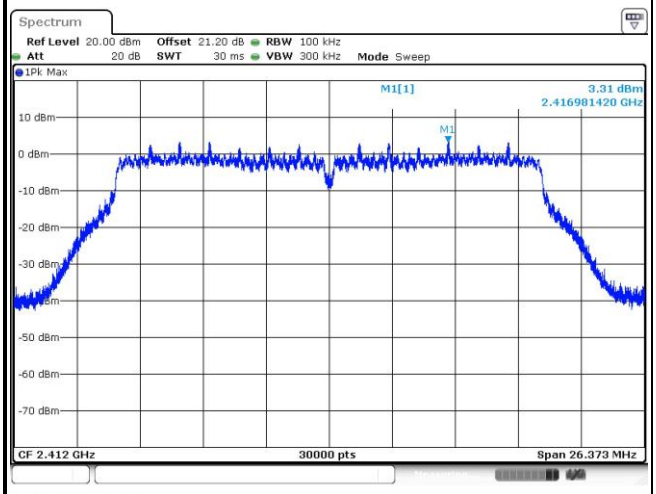
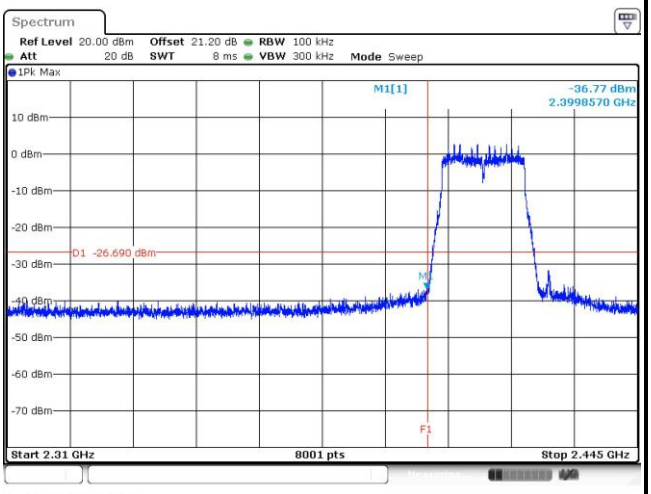
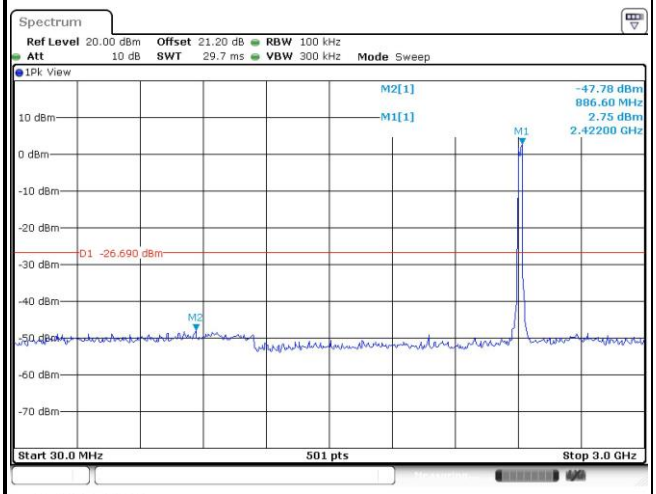
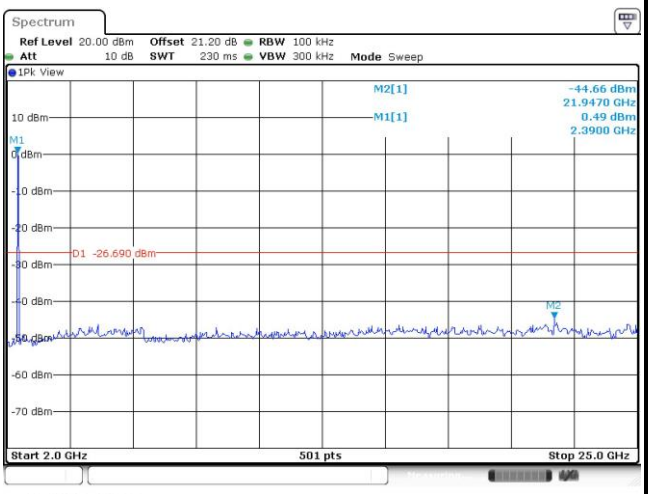
100kHz PSD reference Level	Channel Plot
	

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

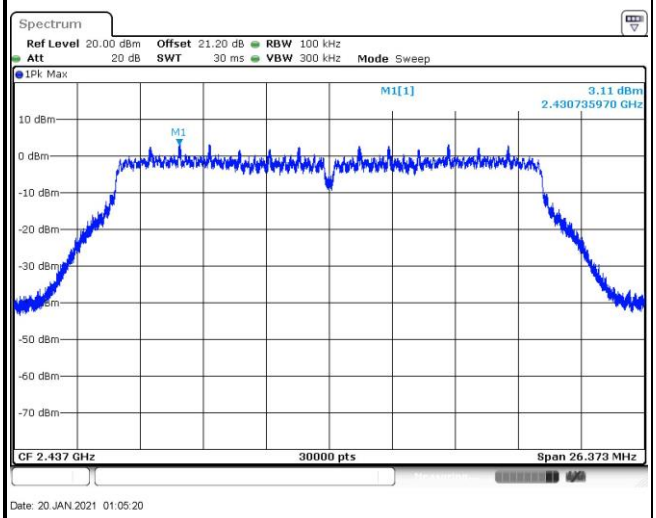
Test Mode :	802.11g	Test Channel :	11

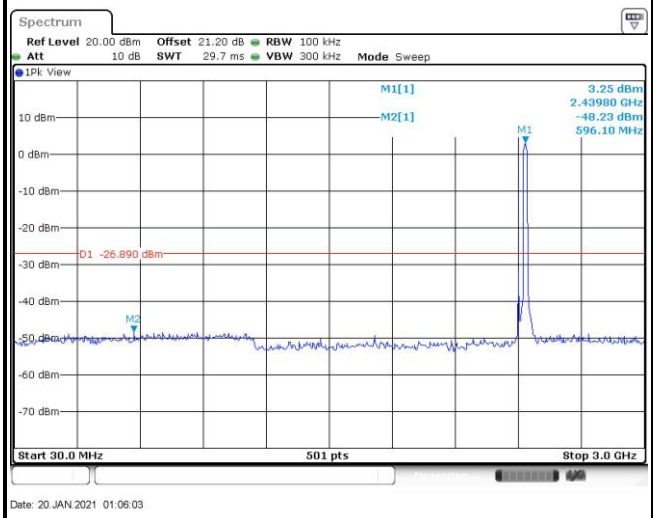
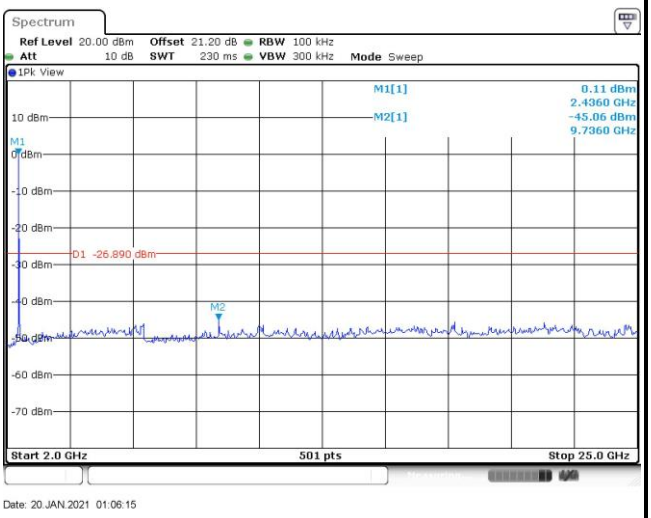
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11n HT20	Test Channel :	01

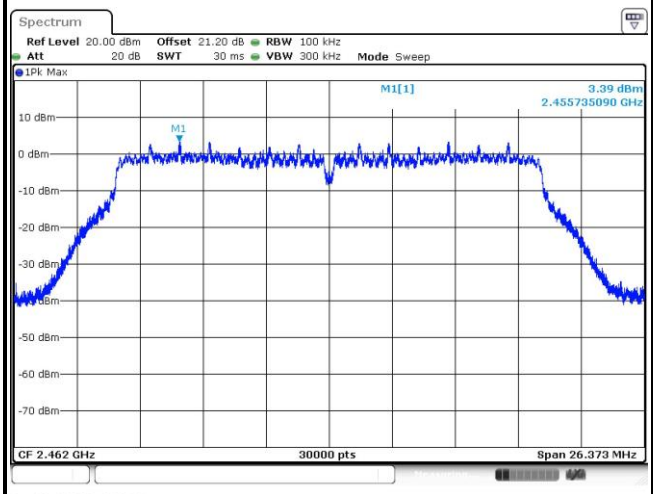
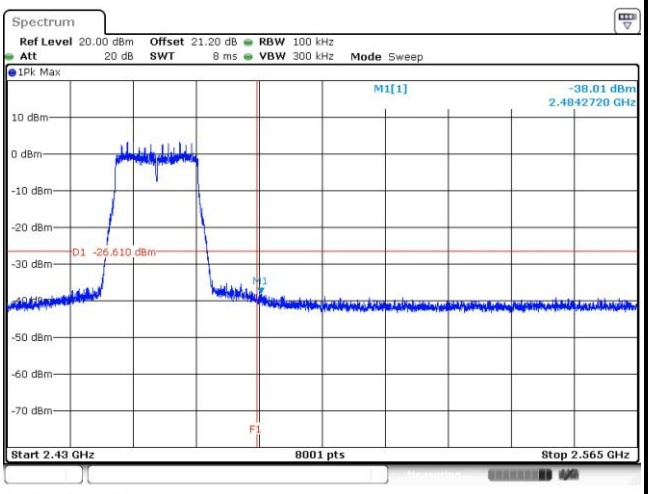
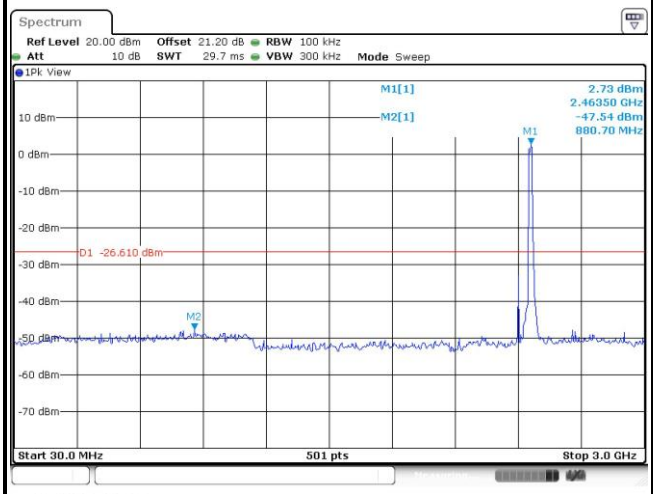
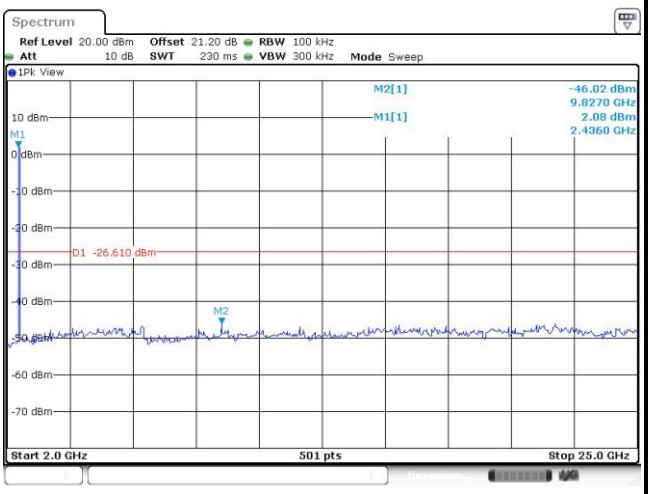
100kHz PSD reference Level	Channel Plot
	
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
	

Test Mode :	802.11n HT20	Test Channel :	06

100kHz PSD reference Level	Channel Plot
	

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

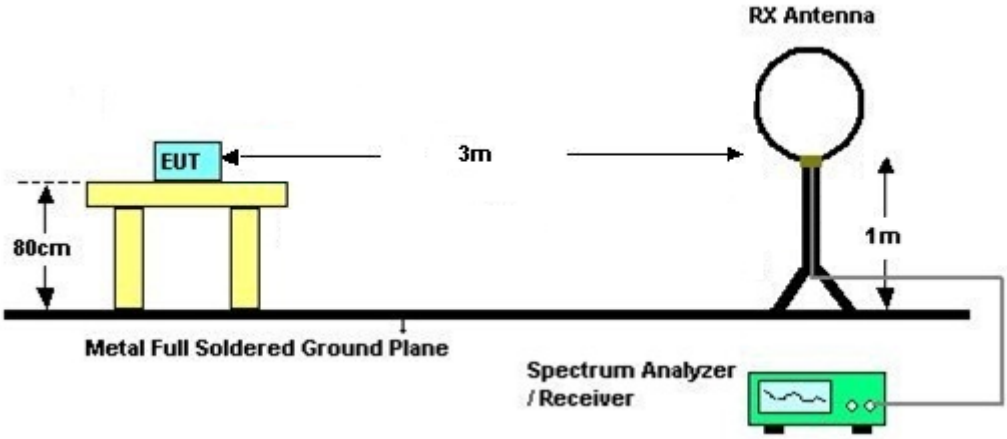
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

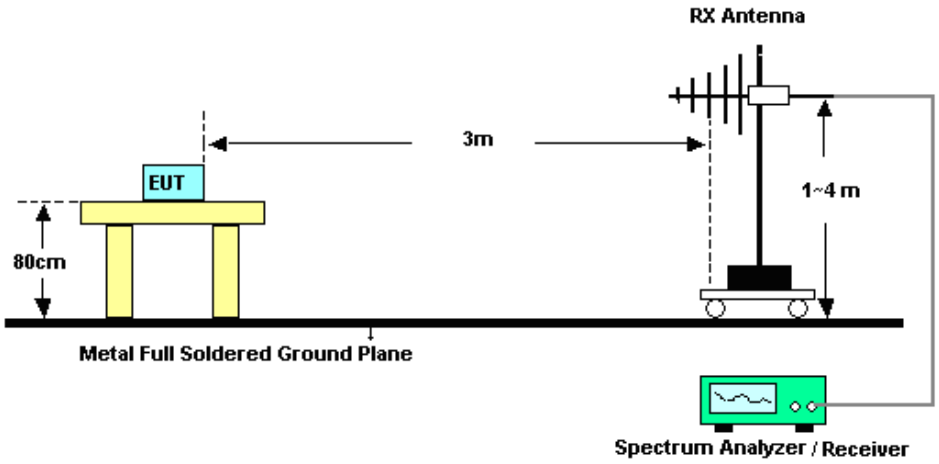
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better 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 peak 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

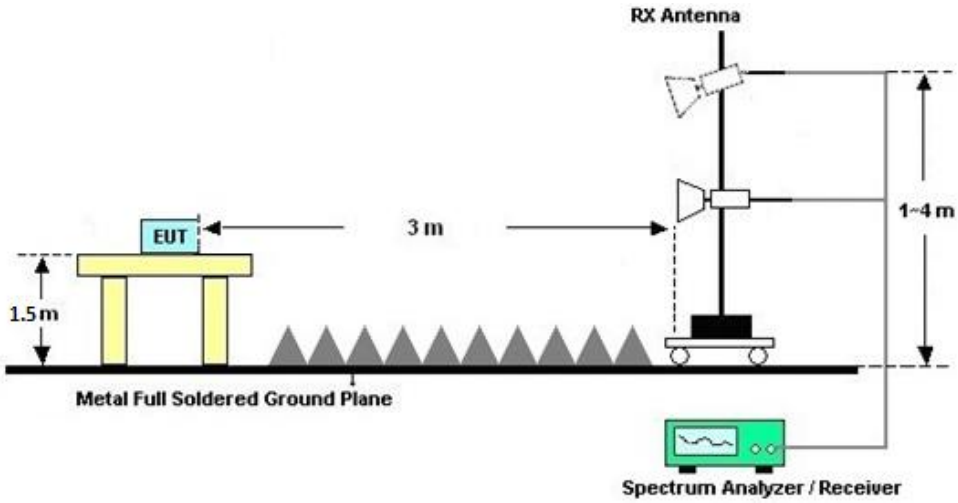
For radiated emissions below 30MHz



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 or 40GHz, whichever is lower)

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.

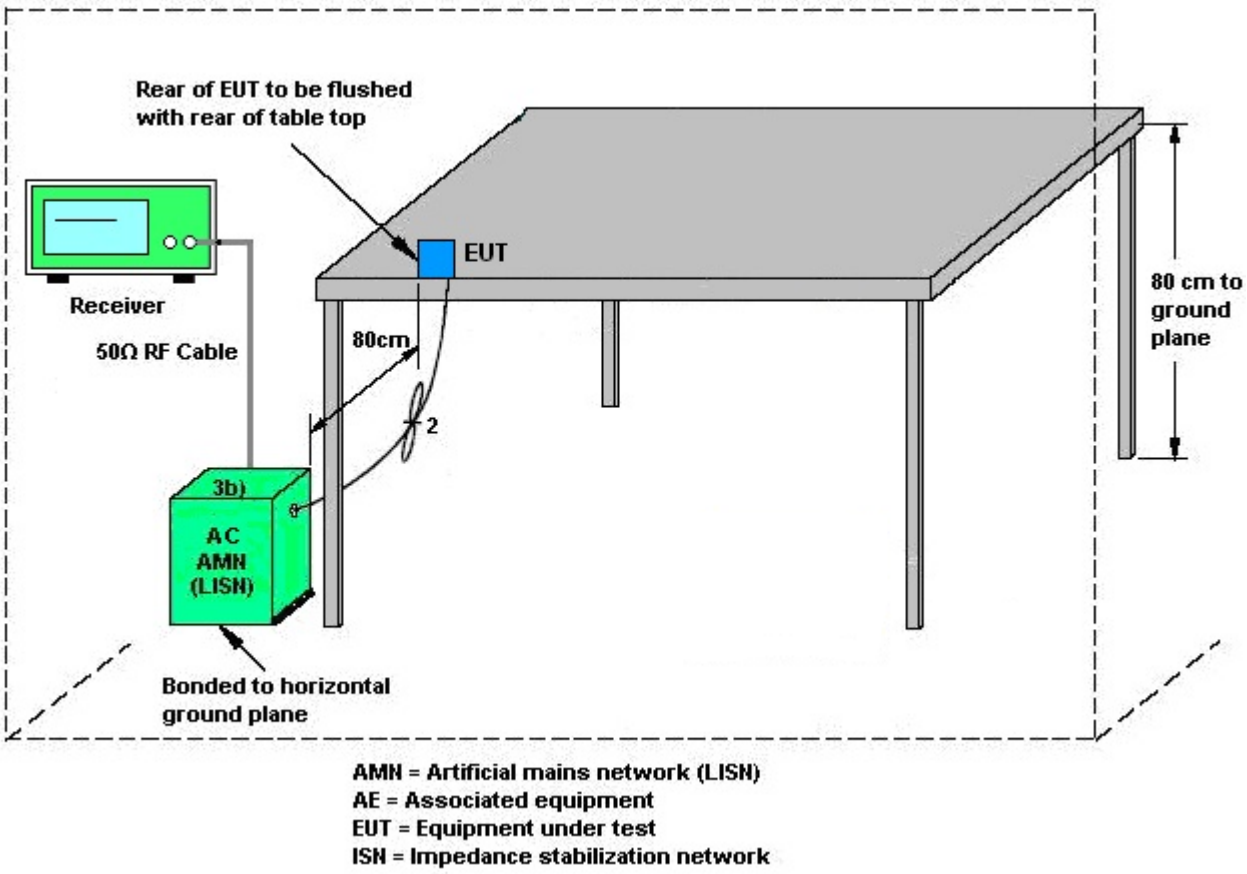
3.6.2 Measuring Instruments

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. 25, 2020	Jan. 20, 2021	Dec. 24, 2021	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1207253	30MHz~40GHz	Dec. 25, 2020	Jan. 20, 2021	Dec. 24, 2021	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Dec. 25, 2020	Jan. 20, 2021	Dec. 24, 2021	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Oct. 16, 2020	Jan. 27, 2021	Oct. 15, 2021	Radiation (03CH04-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 21, 2020	Jan. 27, 2021	Jul. 20, 2021	Radiation (03CH04-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jun. 22, 2020	Jan. 27, 2021	Jun. 21, 2022	Radiation (03CH04-SZ)
Bilog Antenna	TeseQ	CBL6111D	41909	30MHz~1GHz	Nov. 07, 2020	Jan. 27, 2021	Nov. 06, 2021	Radiation (03CH04-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1474	1GHz~18GHz	Mar. 23, 2020	Jan. 27, 2021	Mar. 22, 2021	Radiation (03CH04-SZ)
Horn Antenna	SCHWARZBECK	BBHA9170	9170#679	15GHz~40GHz	Jul. 26, 2020	Jan. 27, 2021	Jul. 25, 2021	Radiation (03CH04-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 16, 2020	Jan. 27, 2021	Oct. 15, 2021	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 17, 2020	Jan. 27, 2021	Oct. 16, 2021	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 21. 2020	Jan. 27, 2021	Jul. 20. 2021	Radiation (03CH04-SZ)
Amplifier	Agilent Technologies	83017A	MY53270156	500MHz~26.5GHz	Oct.17, 2020	Jan. 27, 2021	Oct.16, 2021	Radiation (03CH04-SZ)
AC Power Source	Chroma	61601	N/A	N/A	NCR	Jan. 27, 2021	NCR	Radiation (03CH04-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jan. 27, 2021	NCR	Radiation (03CH04-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jan. 27, 2021	NCR	Radiation (03CH04-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Mar. 08, 2020	Jan. 30, 2021	Mar. 07, 2021	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2 LISN	00103912	9kHz~30MHz	Dec. 25, 2020	Jan. 30, 2021	Dec 24, 2021	Conduction (CO01-SZ)
AC LISN (for auxiliary	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 15, 2020	Jan. 30, 2021	Oct. 14, 2021	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 21, 2020	Jan. 30, 2021	Jul. 20, 2021	Conduction (CO01-SZ)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.2dB**

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))	**4.8dB**

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

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

Appendix A. Conducted Test Results

Appendix A. Test Result of Conducted Test Items

Test Engineer:	2021/1/20	Temperature:	21~25	°C
Test Date:	Zhang Xue Yi	Relative Humidity:	51~54	%

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
					Ant 1	Ant 1		
11b	1Mbps	1	1	2412	11.64	8.07	0.50	Pass
11b	1Mbps	1	6	2437	11.69	8.07	0.50	Pass
11b	1Mbps	1	11	2462	11.59	8.55	0.50	Pass
11g	6Mbps	1	1	2412	17.23	16.34	0.50	Pass
11g	6Mbps	1	6	2437	17.23	16.34	0.50	Pass
11g	6Mbps	1	11	2462	17.23	16.34	0.50	Pass
HT20	MCS0	1	1	2412	18.23	17.58	0.50	Pass
HT20	MCS0	1	6	2437	18.28	17.58	0.50	Pass
HT20	MCS0	1	11	2462	18.28	17.58	0.50	Pass

TEST RESULTS DATA
Average Output Power

2.4GHz Band										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
					Ant 1	Ant 1	Ant 1	Ant 1	Ant 1	
11b	1Mbps	1	1	2412	19.20	30.00	2.30	21.50	36.00	Pass
11b	1Mbps	1	6	2437	19.10	30.00	2.30	21.40	36.00	Pass
11b	1Mbps	1	11	2462	19.00	30.00	2.30	21.30	36.00	Pass
11g	6Mbps	1	1	2412	14.90	30.00	2.30	17.20	36.00	Pass
11g	6Mbps	1	6	2437	18.00	30.00	2.30	20.30	36.00	Pass
11g	6Mbps	1	11	2462	16.40	30.00	2.30	18.70	36.00	Pass
HT20	MCS0	1	1	2412	13.10	30.00	2.30	15.40	36.00	Pass
HT20	MCS0	1	6	2437	15.00	30.00	2.30	17.30	36.00	Pass
HT20	MCS0	1	11	2462	13.50	30.00	2.30	15.80	36.00	Pass

Note: Measured power (dBm) has offset with cable loss.

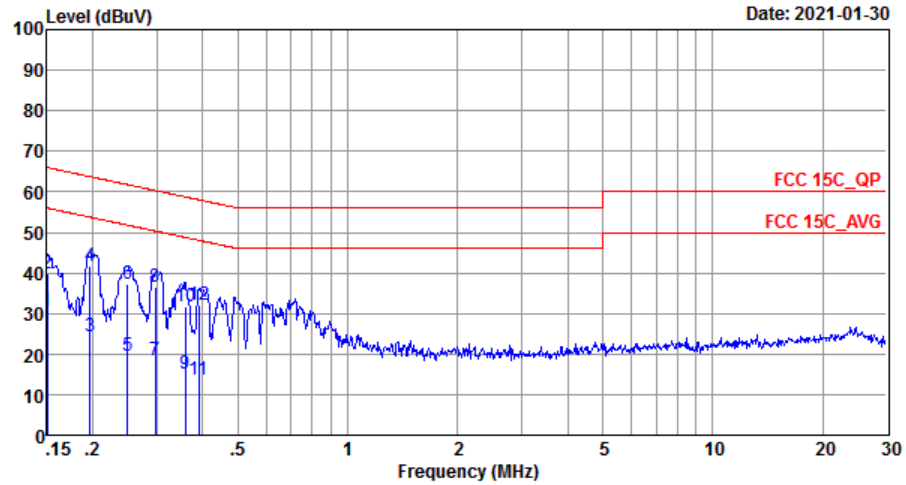
TEST RESULTS DATA
Peak Power Spectral Density

2.4GHz Band								
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)	DG (dBi)	Peak PSD Limit (dBm/3kHz)	Pass/Fail
					Ant 1	Ant 1	Ant 1	
11b	1Mbps	1	1	2412	-7.16	2.30	8.00	Pass
11b	1Mbps	1	6	2437	-7.28	2.30	8.00	Pass
11b	1Mbps	1	11	2462	-7.93	2.30	8.00	Pass
11g	6Mbps	1	1	2412	-9.04	2.30	8.00	Pass
11g	6Mbps	1	6	2437	-8.08	2.30	8.00	Pass
11g	6Mbps	1	11	2462	-8.02	2.30	8.00	Pass
HT20	MCS0	1	1	2412	-9.92	2.30	8.00	Pass
HT20	MCS0	1	6	2437	-10.75	2.30	8.00	Pass
HT20	MCS0	1	11	2462	-10.85	2.30	8.00	Pass

Measured power density (dBm) has offset with cable loss.

Appendix B. AC Conducted Emission Test Results

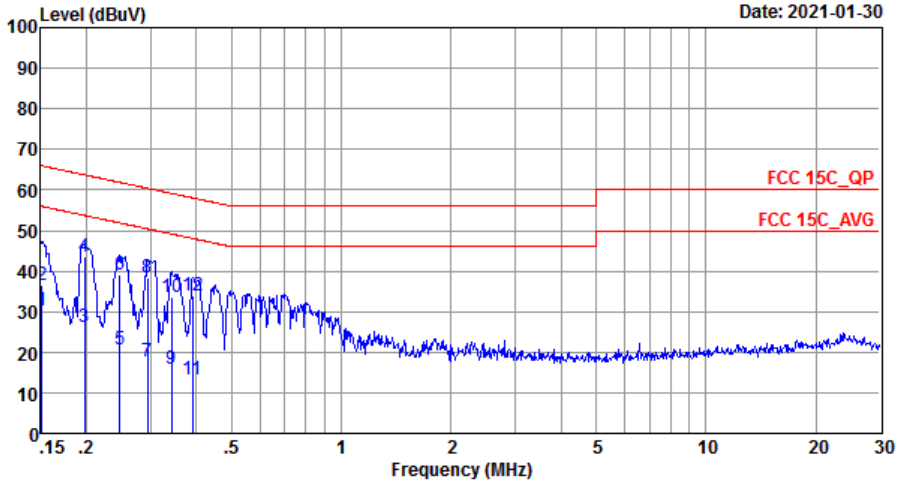
Test Engineer :	Xie YuQiang	**Temperature :**	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15C_QP LISN_20200719_L LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.15	30.54	-25.46	56.00	20.50	0.03	10.01	Average
2		0.15	39.94	-26.06	66.00	29.90	0.03	10.01	QP
3		0.20	24.24	-29.52	53.76	14.20	0.03	10.01	Average
4	*	0.20	41.74	-22.02	63.76	31.70	0.03	10.01	QP
5		0.25	19.74	-32.04	51.78	9.70	0.03	10.01	Average
6		0.25	37.34	-24.44	61.78	27.30	0.03	10.01	QP
7		0.30	18.54	-31.78	50.32	8.50	0.03	10.01	Average
8		0.30	36.64	-23.68	60.32	26.60	0.03	10.01	QP
9		0.36	15.14	-33.60	48.74	5.10	0.03	10.01	Average
10		0.36	31.74	-27.00	58.74	21.70	0.03	10.01	QP
11		0.39	13.64	-34.39	48.03	3.60	0.03	10.01	Average
12		0.39	31.94	-26.09	58.03	21.90	0.03	10.01	QP

Test Engineer :	Xie YuQiang	**Temperature :**	22~25℃
		Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15C QP LISN_20200719_N NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.15	30.34	-25.62	55.96	20.30	0.03	10.01	Average
2		0.15	36.44	-29.52	65.96	26.40	0.03	10.01	QP
3		0.20	26.14	-27.57	53.71	16.10	0.03	10.01	Average
4	*	0.20	43.54	-20.17	63.71	33.50	0.03	10.01	QP
5		0.25	20.84	-31.02	51.86	10.80	0.03	10.01	Average
6		0.25	38.94	-22.92	61.86	28.90	0.03	10.01	QP
7		0.29	17.74	-32.67	50.41	7.70	0.03	10.01	Average
8		0.29	38.34	-22.07	60.41	28.30	0.03	10.01	QP
9		0.34	16.04	-33.09	49.13	6.00	0.03	10.01	Average
10		0.34	33.74	-25.39	59.13	23.70	0.03	10.01	QP
11		0.39	13.13	-34.90	48.03	3.10	0.02	10.01	Average
12		0.39	34.13	-23.90	58.03	24.10	0.02	10.01	QP

Note:

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

Appendix C. Radiated Spurious Emission

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		2382.87	66.56	-7.44	74	66.74	27.83	5.34	33.35	100	253	P	H
		2387.175	46.46	-7.54	54	46.62	27.82	5.37	33.35	100	253	A	H
		2412	107.98	-	-	108.16	27.79	5.37	33.34	100	253	P	H
		2412	103.9	-	-	104.08	27.79	5.37	33.34	100	253	A	H
		2386.65	60.32	-13.68	74	60.48	27.82	5.37	33.35	128	6	P	V
		2387.175	42.65	-11.35	54	42.81	27.82	5.37	33.35	128	6	A	V
		2412	102.13	-	-	102.31	27.79	5.37	33.34	128	6	P	V
		2412	99	-	-	99.18	27.79	5.37	33.34	128	6	A	V
802.11b CH 06 2437MHz		2388.68	58.48	-15.52	74	58.64	27.82	5.37	33.35	119	219	P	H
		2389.38	38.4	-15.6	54	38.56	27.82	5.37	33.35	119	219	A	H
		2437	108.19	-	-	108.33	27.78	5.41	33.33	119	219	P	H
		2437	105.19	-	-	105.33	27.78	5.41	33.33	119	219	A	H
		2486.56	57.93	-16.07	74	58.02	27.76	5.46	33.31	119	219	P	H
		2486	38.04	-15.96	54	38.13	27.76	5.46	33.31	119	219	A	H
		2389.8	53.93	-20.07	74	54.08	27.82	5.37	33.34	100	58	P	V
		2389.94	37.61	-16.39	54	37.76	27.82	5.37	33.34	100	58	A	V
		2437	102.35	-	-	102.49	27.78	5.41	33.33	100	58	P	V
		2437	99.34	-	-	99.48	27.78	5.41	33.33	100	58	A	V
		2485.44	51.61	-22.39	74	51.7	27.76	5.46	33.31	100	58	P	V
		2486.77	37.5	-16.5	54	37.59	27.76	5.46	33.31	100	58	A	V

802.11b CH 11 2462MHz		2462	108.04	-	-	108.18	27.77	5.41	33.32	337	242	P	H
		2462	104.91	-	-	105.05	27.77	5.41	33.32	337	242	A	H
		2485.48	62.45	-11.55	74	62.54	27.76	5.46	33.31	337	242	P	H
		2483.52	42.8	-11.2	54	42.89	27.76	5.46	33.31	337	242	A	H
		2462	102.26	-	-	102.4	27.77	5.41	33.32	100	337	P	V
		2462	99.14	-	-	99.28	27.77	5.41	33.32	100	337	A	V
		2483.96	61.13	-12.87	74	61.22	27.76	5.46	33.31	100	337	P	V
		2483.52	40.52	-13.48	54	40.61	27.76	5.46	33.31	100	337	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	45	-29	74	54.06	31.32	8.88	49.26	141	214	P	H
		4824	45.45	-28.55	74	54.51	31.32	8.88	49.26	141	214	P	V
802.11b CH 06 2437MHz		4874	45.46	-28.54	74	54.33	31.37	8.76	49	122	136	P	H
		7311	44.34	-29.66	74	49.76	36.21	10.18	51.81	112	298	P	H
		4874	45.33	-28.67	74	54.2	31.37	8.76	49	233	102	P	V
		7311	44.01	-29.99	74	49.43	36.21	10.18	51.81	185	32	P	V
802.11b CH 11 2462MHz		4924	45.68	-28.32	74	54.47	31.42	8.53	48.74	102	203	P	H
		7386	44.11	-29.89	74	49.54	36.29	10.18	51.9	172	214	P	H
		4924	45.55	-28.45	74	54.34	31.42	8.53	48.74	102	203	P	V
		7386	44.58	-29.42	74	50.01	36.29	10.18	51.9	172	214	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		2388.855	60.47	-13.53	74	60.63	27.82	5.37	33.35	100	241	P	H
		2390	50.71	-3.29	54	50.87	27.81	5.37	33.34	100	241	A	H
		2412	106.86	-	-	107.04	27.79	5.37	33.34	100	241	P	H
		2412	99.26	-	-	99.44	27.79	5.37	33.34	100	241	A	H
		2389.485	55.26	-18.74	74	55.42	27.82	5.37	33.35	111	178	P	V
		2390	44.71	-9.29	54	44.87	27.81	5.37	33.34	111	178	A	V
		2412	100.87	-	-	101.05	27.79	5.37	33.34	111	178	P	V
		2412	93.21	-	-	93.39	27.79	5.37	33.34	111	178	A	V
802.11g CH 06 2437MHz		2389.94	52.06	-21.94	74	50.77	27.82	5.37	31.9	113	97	P	H
		2389.94	42.66	-11.34	54	41.37	27.82	5.37	31.9	113	97	A	H
		2437	112.85	-	-	111.54	27.78	5.41	31.88	113	97	P	H
		2437	105.14	-	-	103.83	27.78	5.41	31.88	113	97	A	H
		2486.56	54.69	-19.31	74	53.29	27.76	5.46	31.82	113	97	P	H
		2483.5	44.39	-9.61	54	42.99	27.76	5.46	31.82	113	97	A	H
		2387.56	50.54	-23.46	74	49.27	27.82	5.37	31.92	357	68	P	V
		2389.94	40.78	-13.22	54	39.49	27.82	5.37	31.9	357	68	A	V
		2437	110.87	-	-	109.56	27.78	5.41	31.88	357	68	P	V
		2437	102.96	-	-	101.65	27.78	5.41	31.88	357	68	A	V
		2483.9	51.84	-22.16	74	50.44	27.76	5.46	31.82	357	68	P	V
		2483.5	41.59	-12.41	54	40.19	27.76	5.46	31.82	357	68	A	V

802.11g CH 11 2462MHz		2462	108.68	-	-	108.82	27.77	5.41	33.32	110	227	P	H
		2462	101.03	-	-	101.17	27.77	5.41	33.32	110	227	A	H
		2483.8	62.71	-11.29	74	62.8	27.76	5.46	33.31	110	227	P	H
		2483.52	49.98	-4.02	54	50.07	27.76	5.46	33.31	110	227	A	H
		2462	101.85	-	-	101.99	27.77	5.41	33.32	158	189	P	V
		2462	94.17	-	-	94.31	27.77	5.41	33.32	158	189	A	V
		2484.08	55.21	-18.79	74	55.3	27.76	5.46	33.31	158	189	P	V
		2483.52	43.65	-10.35	54	43.74	27.76	5.46	33.31	158	189	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	44.14	-29.86	74	53.2	31.32	8.88	49.26	141	214	P	H
		4824	44.57	-29.43	74	53.63	31.32	8.88	49.26	141	214	P	V
802.11g CH 06 2437MHz		4874	43.85	-30.15	74	52.72	31.37	8.76	49	122	136	P	H
		7311	44.38	-29.62	74	49.8	36.21	10.18	51.81	112	298	P	H
		4874	45.31	-28.69	74	54.18	31.37	8.76	49	233	102	P	V
		7311	44.2	-29.8	74	49.62	36.21	10.18	51.81	185	32	P	V
802.11g CH 11 2462MHz		4924	42.64	-31.36	74	51.43	31.42	8.53	48.74	102	203	P	H
		7386	44.38	-29.62	74	49.81	36.29	10.18	51.9	172	214	P	H
		4924	43	-31	74	51.79	31.42	8.53	48.74	102	203	P	V
		7386	45.61	-28.39	74	51.04	36.29	10.18	51.9	172	214	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)
		2389.17	60.21	-13.79	74	60.37	27.82	5.37	33.35	100	221	P	H
		2389.8	49.27	-4.73	54	49.42	27.82	5.37	33.34	100	221	A	H
802.11n		2412	103.82	-	-	104	27.79	5.37	33.34	100	221	P	H
HT20		2412	96.37	-	-	96.55	27.79	5.37	33.34	100	221	A	H
CH 01		2389.275	56.83	-17.17	74	56.99	27.82	5.37	33.35	129	11	P	V
2412MHz		2389.8	45.22	-8.78	54	45.37	27.82	5.37	33.34	129	11	A	V
		2412	98.74	-	-	98.92	27.79	5.37	33.34	129	11	P	V
		2412	91	-	-	91.18	27.79	5.37	33.34	129	11	A	V
		2389.38	51.57	-22.43	74	51.73	27.82	5.37	33.35	124	223	P	H
		2389.94	40.5	-13.5	54	40.65	27.82	5.37	33.34	124	223	A	H
		2437	106.59	-	-	106.73	27.78	5.41	33.33	124	223	P	H
		2437	98.06	-	-	98.2	27.78	5.41	33.33	124	223	A	H
802.11n		2486.56	49.22	-24.78	74	49.31	27.76	5.46	33.31	124	223	P	H
HT20		2483.97	39.73	-14.27	54	39.82	27.76	5.46	33.31	124	223	A	H
CH 06		2387.28	49.31	-24.69	74	49.47	27.82	5.37	33.35	107	336	P	V
2437MHz		2389.94	38.68	-15.32	54	38.83	27.82	5.37	33.34	107	336	A	V
		2437	101.2	-	-	101.34	27.78	5.41	33.33	107	336	P	V
		2437	93.24	-	-	93.38	27.78	5.41	33.33	107	336	A	V
		2487.19	49.17	-24.83	74	49.26	27.76	5.46	33.31	107	336	P	V
		2485.65	38.57	-15.43	54	38.66	27.76	5.46	33.31	107	336	A	V

802.11n HT20 CH 11 2462MHz		2462	104.69	-	-	104.83	27.77	5.41	33.32	117	220	P	H
		2462	97.11	-	-	97.25	27.77	5.41	33.32	117	220	A	H
		2484.56	61.8	-12.2	74	61.89	27.76	5.46	33.31	117	220	P	H
		2483.52	50.69	-3.31	54	50.78	27.76	5.46	33.31	117	220	A	H
		2462	99.68	-	-	99.82	27.77	5.41	33.32	100	8	P	V
		2462	91.97	-	-	92.11	27.77	5.41	33.32	100	8	A	V
		2483.52	56.7	-17.3	74	56.79	27.76	5.46	33.31	100	8	P	V
		2483.52	45.87	-8.13	54	45.96	27.76	5.46	33.31	100	8	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	43.99	-30.01	74	53.05	31.32	8.88	49.26	141	214	P	H
		4824	43.99	-30.01	74	53.05	31.32	8.88	49.26	141	214	P	V
802.11n HT20 CH 06 2437MHz		4874	44.45	-29.55	74	53.32	31.37	8.76	49	122	136	P	H
		7311	44.01	-29.99	74	49.43	36.21	10.18	51.81	112	298	P	H
		4874	44.25	-29.75	74	53.12	31.37	8.76	49	233	102	P	V
		7311	44.37	-29.63	74	49.79	36.21	10.18	51.81	185	32	P	V
802.11n HT20 CH 11 2462MHz		4924	42.51	-31.49	74	51.3	31.42	8.53	48.74	102	203	P	H
		7386	44.89	-29.11	74	50.32	36.29	10.18	51.9	172	214	P	H
		4924	42.24	-31.76	74	51.03	31.42	8.53	48.74	102	203	P	V
		7386	44.97	-29.03	74	50.4	36.29	10.18	51.9	172	214	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 802.11g (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 802.11g LF		30.97	27.58	-12.42	40	34.74	24.7	0.54	32.4	102	145	P	H
		135.73	22.35	-21.15	43.5	35.66	17.7	1.19	32.2	-	-	P	H
		304.51	35.42	-10.58	46	45.92	19.38	1.82	31.7	-	-	P	H
		569.32	29.01	-16.99	46	31.07	26.26	2.5	30.82	-	-	P	H
		790.48	32.54	-13.46	46	32.48	28.4	2.92	31.26	-	-	P	H
		967.02	35.69	-18.31	54	32.48	31.3	3.26	31.35	-	-	P	H
		30.97	26.33	-13.67	40	33.49	24.7	0.54	32.4	-	-	P	V
		187.14	23.25	-20.25	43.5	39.18	14.8	1.39	32.12	-	-	P	V
		304.51	34	-12	46	44.5	19.38	1.82	31.7	100	214	P	V
		465.53	26.54	-19.46	46	32.14	23.42	2.24	31.26	-	-	P	V
		738.1	27.67	-18.33	46	27.74	28.12	2.83	31.02	-	-	P	V
		963.14	30.63	-23.37	54	27.5	31.26	3.25	31.38	-	-	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)

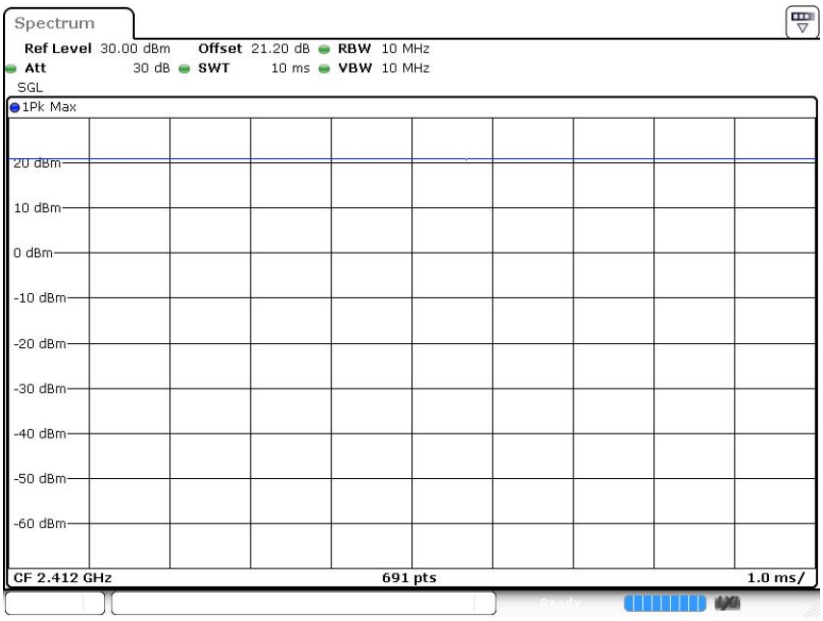
= -10.46(dB)

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

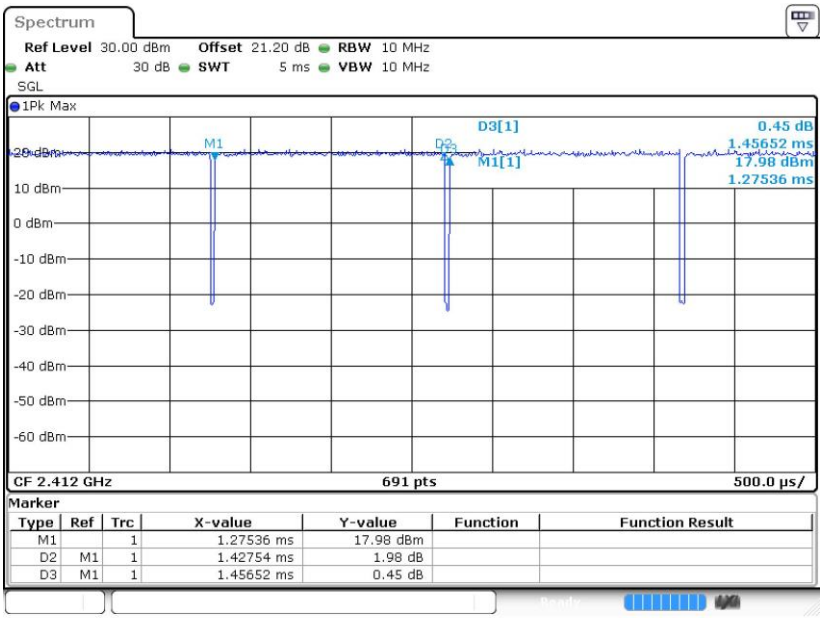
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	100	-	-	10Hz
802.11g	98.01	-	-	10Hz
802.11n HT20	97.88	1.341	0.746	1KHz

802.11b



802.11g



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