



FCC RF Test Report

APPLICANT : Shanghai MXCHIP Information Technology Co., Ltd.
EQUIPMENT : Embedded WIFI module
BRAND NAME : MXCHIP
MODEL NAME : EMW3090-P, EMW3090-E
FCC ID : P53-EMW3090
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Sep. 13, 2017 and testing was completed on Oct. 27, 2017. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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



Approved by: James Huang / Manager

Sporton International (Kunshan) Inc.

***No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335
China***



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR791305	Rev. 01	Initial issue of report	Oct. 31, 2017

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	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 2.64 dB at 4926.000 MHz
-	15.207	AC Conducted Emission	15.207(a)	Not Required	-
3.6	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

Note: Not required means after assessing, test items are not necessary to carry out.



1 General Description

1.1 Applicant

Shanghai MXCHIP Information Technology Co., Ltd.

9thFloor, No.5 Lane2145JinshaJiangRoad, Putuo District, ShangHai(200333)

1.2 Manufacturer

Shanghai MXCHIP Information Technology Co., Ltd.

9thFloor, No.5 Lane2145JinshaJiangRoad, Putuo District, ShangHai(200333)

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Embedded WIFI module
Brand Name	MXCHIP
Model Name	EMW3090-P, EMW3090-E
FCC ID	P53-EMW3090
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40
HW Version	V2.0
SW Version	0000.0000.AT14
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two types of EUT, the differences between two samples are only for the WLAN antenna type. The sample 1(Model name: EMW3090-P) is internal (PCB) antenna, and the sample 2(Model name: EMW3090-E) is external (PIFA) antenna. For Conducted test Item, we choose the sample 1 to test. Internal and external antenna can't transmit simultaneously.

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 : 18.84 dBm (0.0766 W) 802.11g : 24.26 dBm (0.2667 W) 802.11n HT20 : 22.82 dBm (0.1914 W) 802.11n HT40 : 23.01 dBm (0.2000 W)
Antenna Type / Gain	PCB Antenna with gain 2.0 dBi for sample 1 PIFA Antenna with gain 2.0 dBi for sample 2
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 Lab 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	03CH03-KS	630927

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

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: radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the worst cases were recorded in this report.

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	-	-



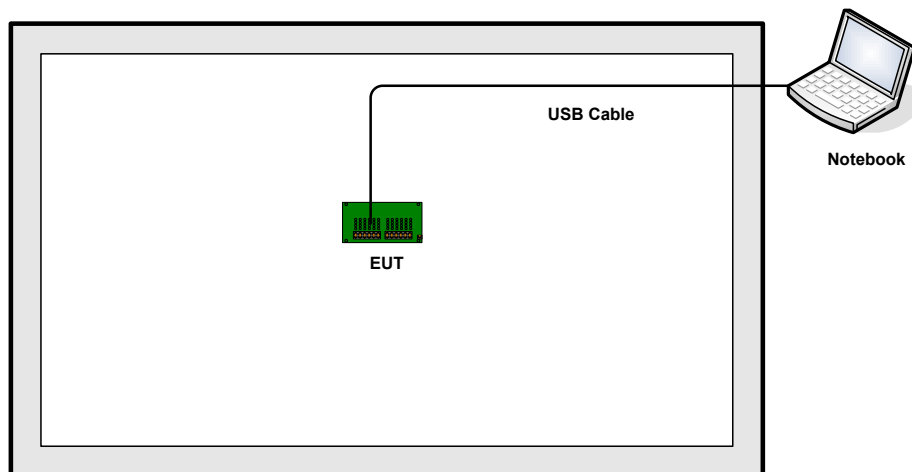
2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions 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

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	USB Cable	MOTO	N/A	N/A	N/A	N/A
3.	Test jig	N/A	N/A	N/A	N/A	N/A
4.	PIFA Antenna	N/A	N/A	N/A	N/A	N/A

2.5 EUT Operation Test Setup

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



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 5.8 dB.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)}. \\ &= 5.8 \text{ (dB)}\end{aligned}$$

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.

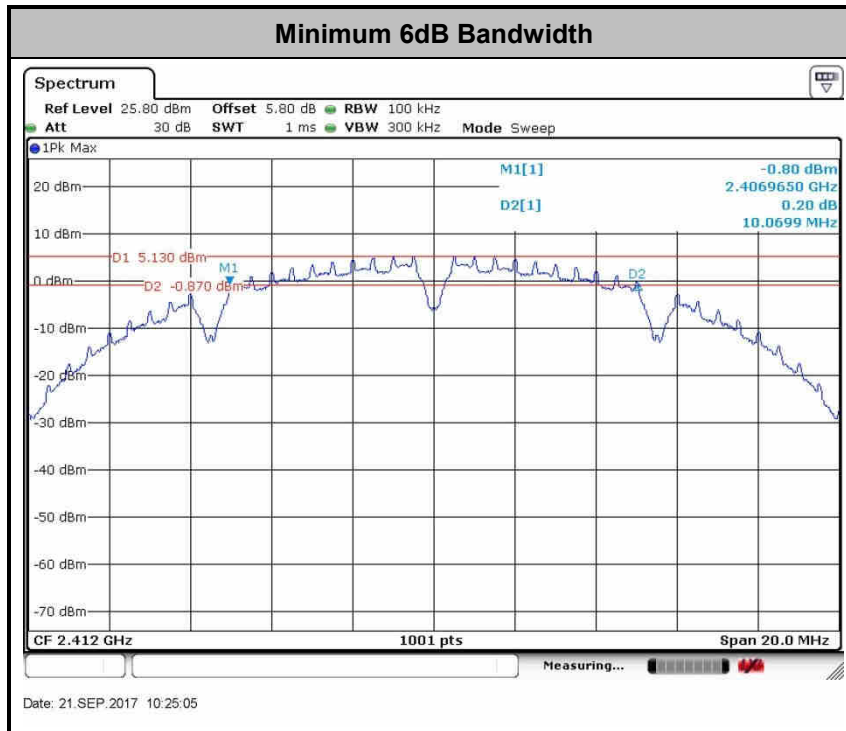
3.1.4 Test Setup





3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.



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 of directional gain greater than 6dBi are 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 9.1.2 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

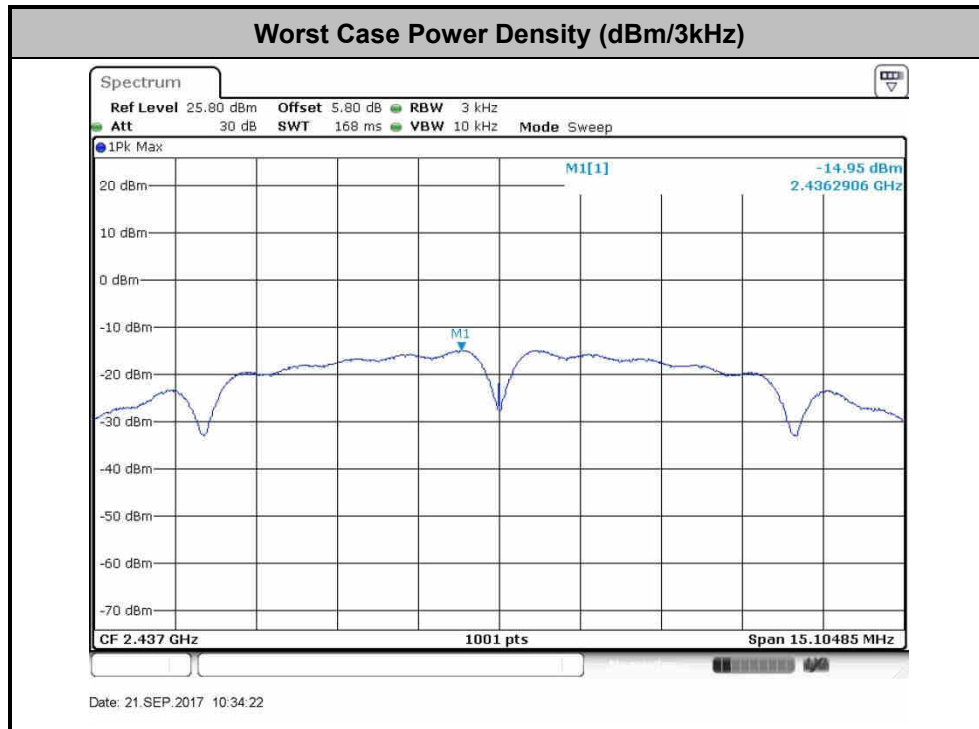
1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum 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.



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.

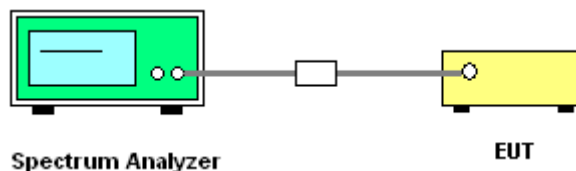
3.4.2 Measuring Instruments

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.
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.

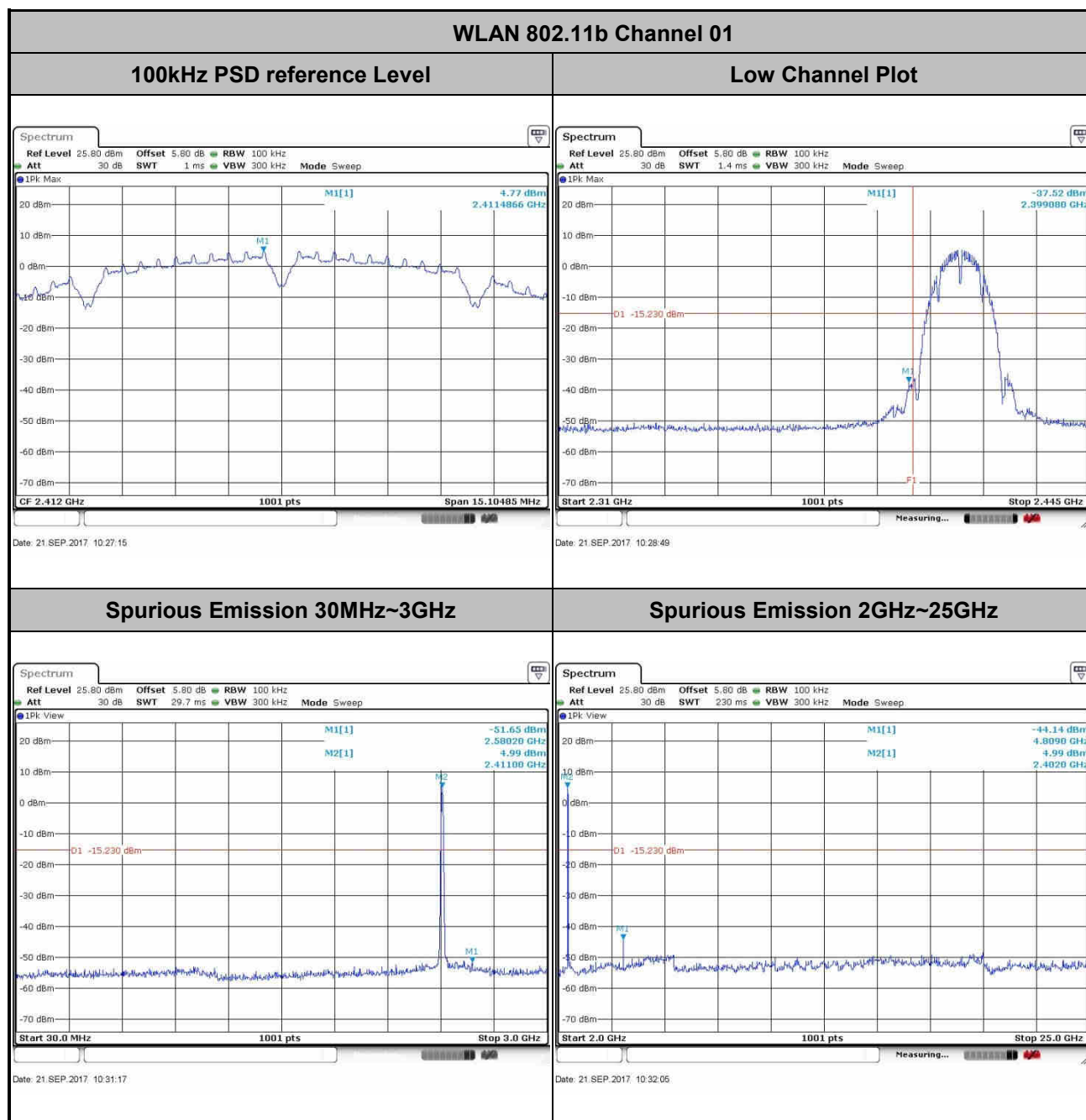
3.4.4 Test Setup





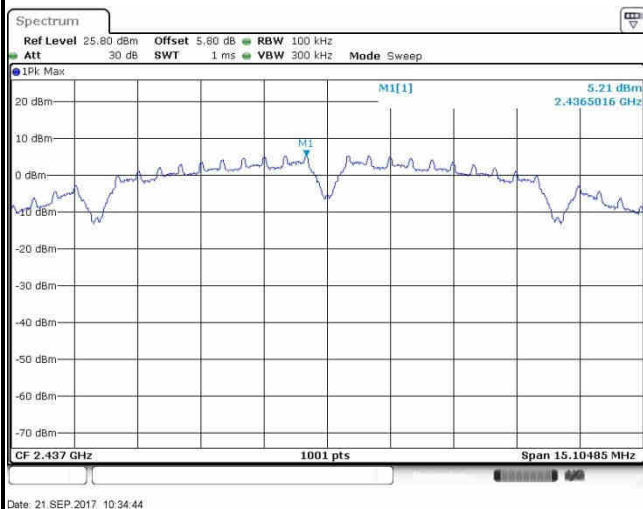
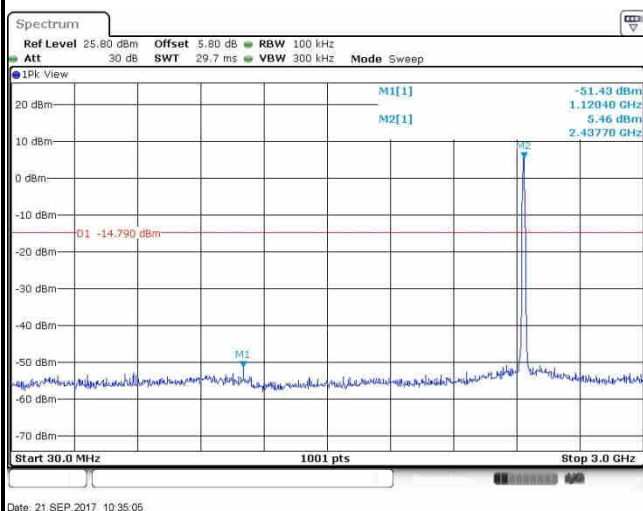
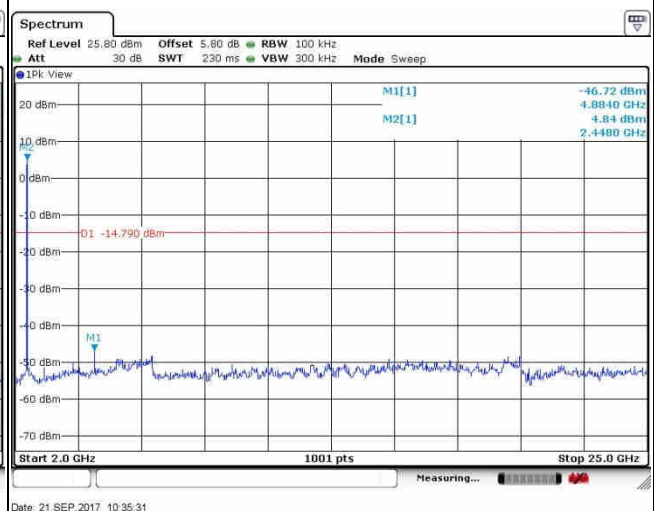
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~55%
Test Channel :	01	Test Engineer :	Silent Hai





Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~55%
Test Channel :	06	Test Engineer :	Silent Hai

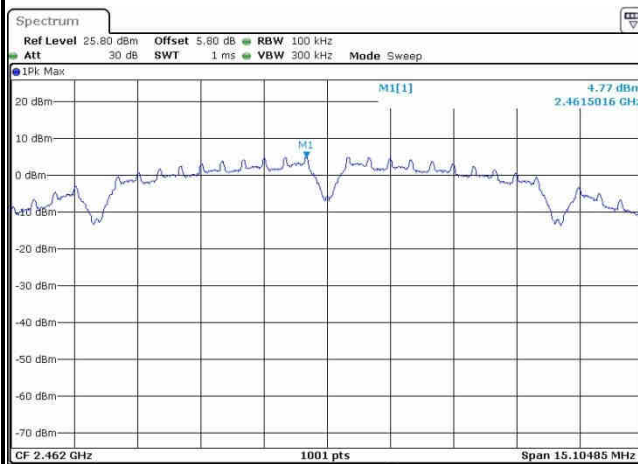
WLAN 802.11b Channel 06**100kHz PSD reference Level****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



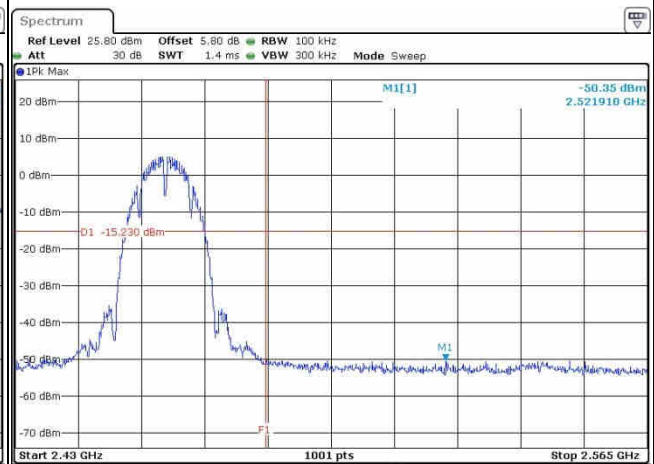
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~55%
Test Channel :	11	Test Engineer :	Silent Hai

WLAN 802.11b Channel 11

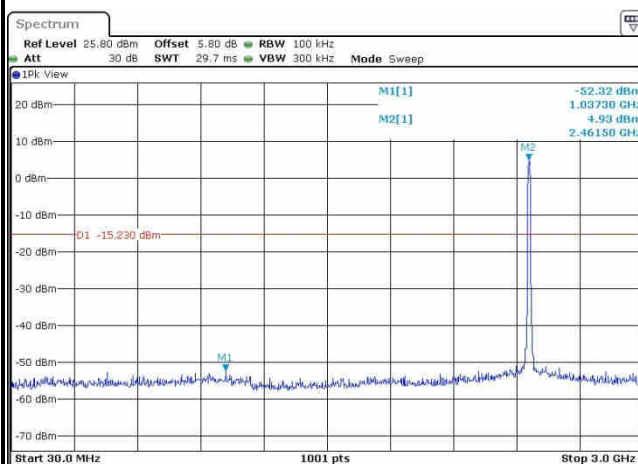
100kHz PSD reference Level



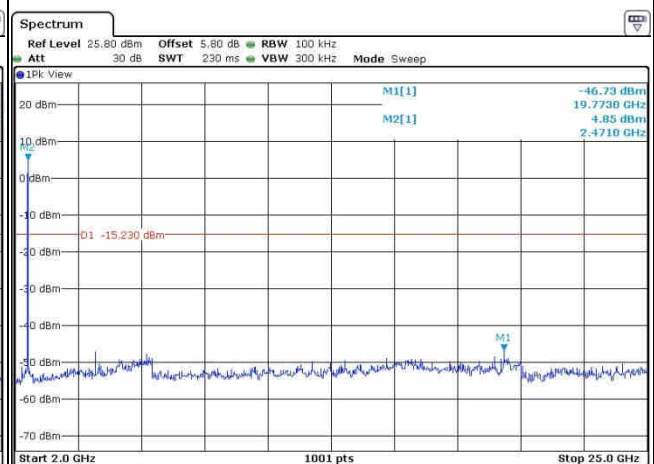
High Channel Plot



Spurious Emission 30MHz~3GHz

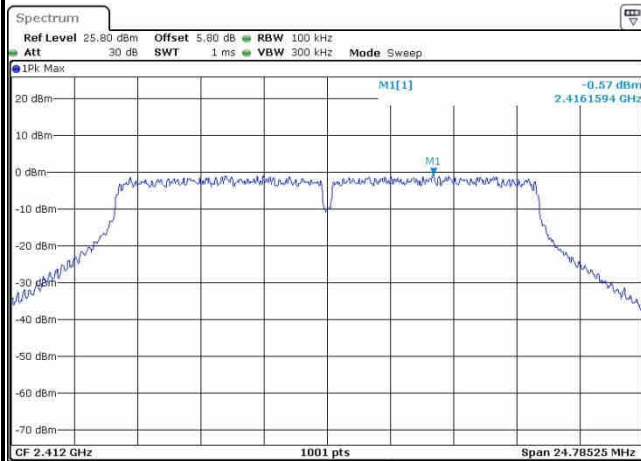


Spurious Emission 2GHz~25GHz

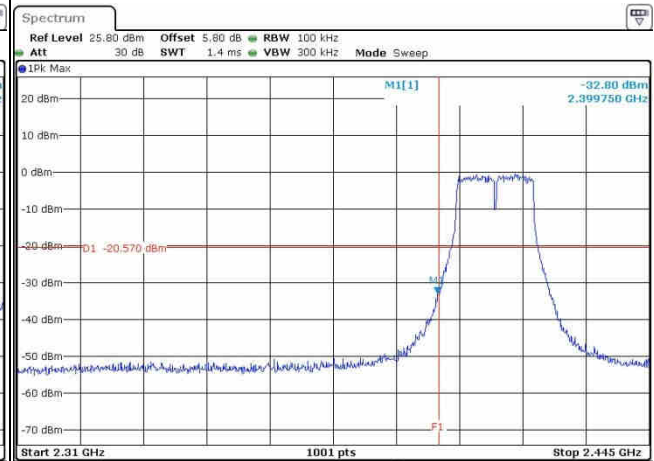




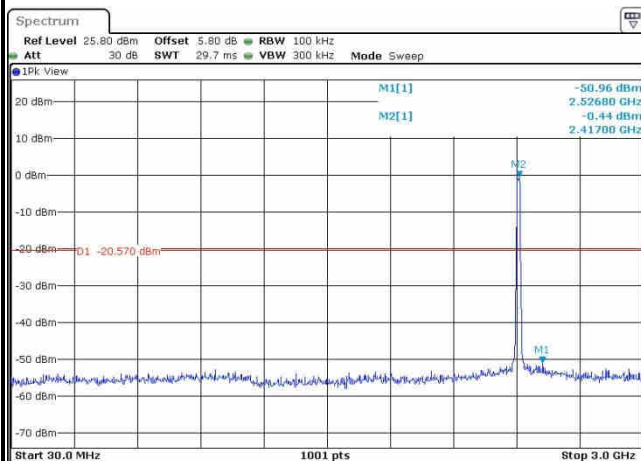
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~55%
Test Channel :	01	Test Engineer :	Silent Hai

WLAN 802.11g Channel 01**100kHz PSD reference Level**

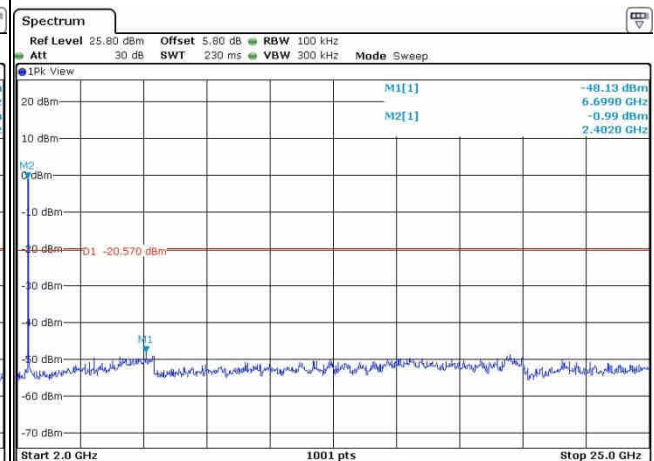
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Low Channel Plot

Date: 21 SEP.2017, 10:45:09

Spurious Emission 30MHz~3GHz

Date: 21 SEP.2017, 10:45:20

Spurious Emission 2GHz~25GHz

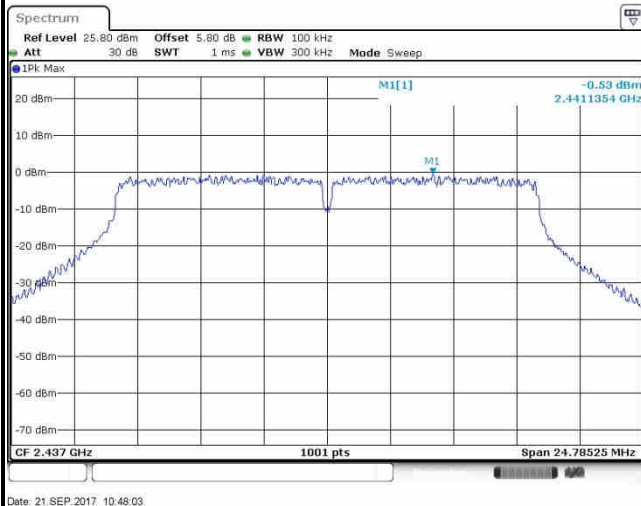
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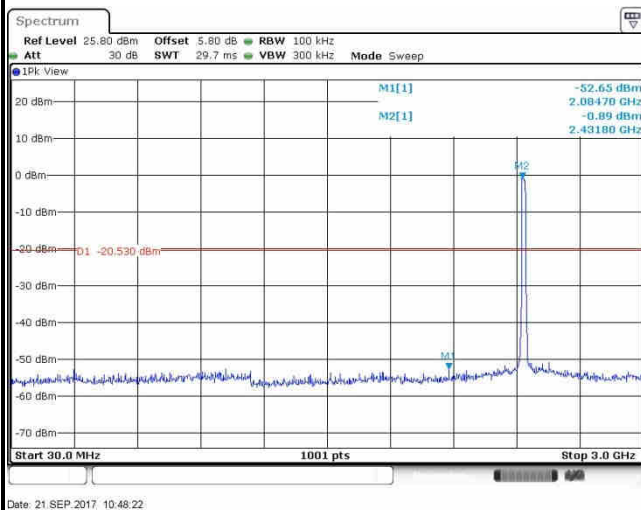
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~55%
Test Channel :	06	Test Engineer :	Silent Hai

WLAN 802.11g Channel 06

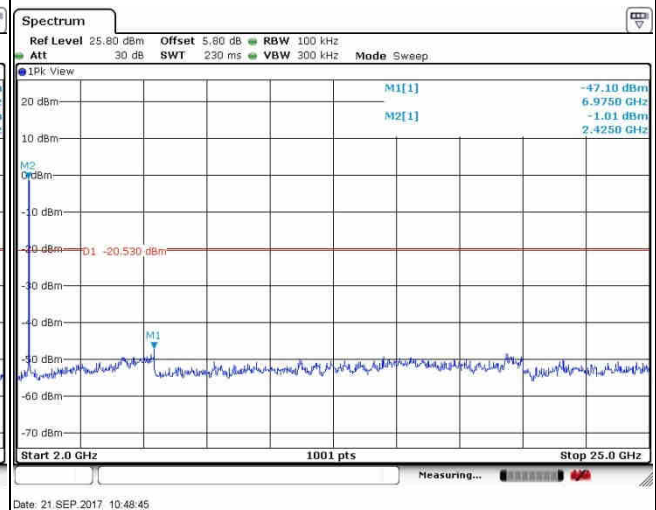
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

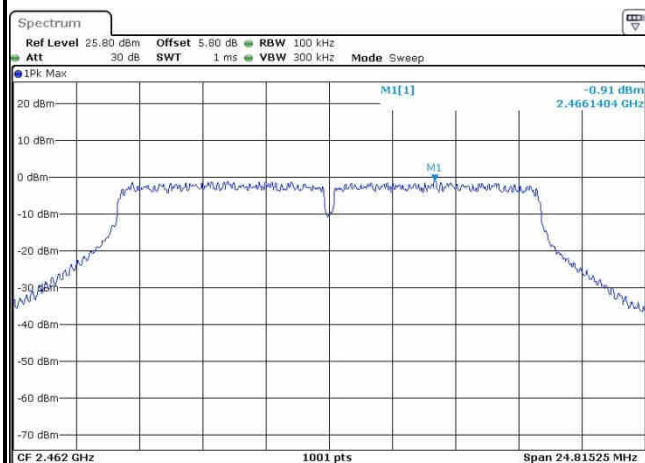




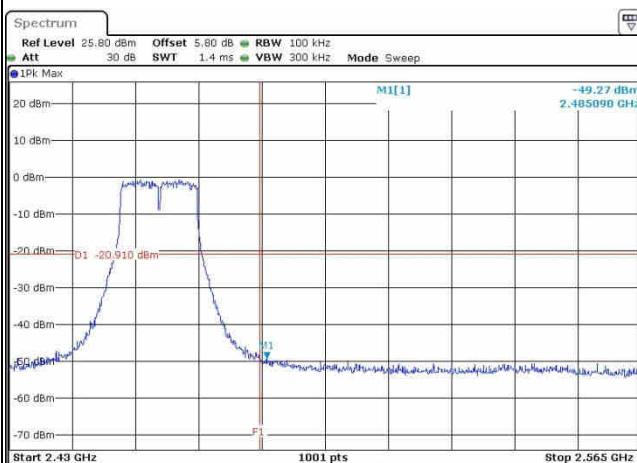
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~55%
Test Channel :	11	Test Engineer :	Silent Hai

WLAN 802.11g Channel 11

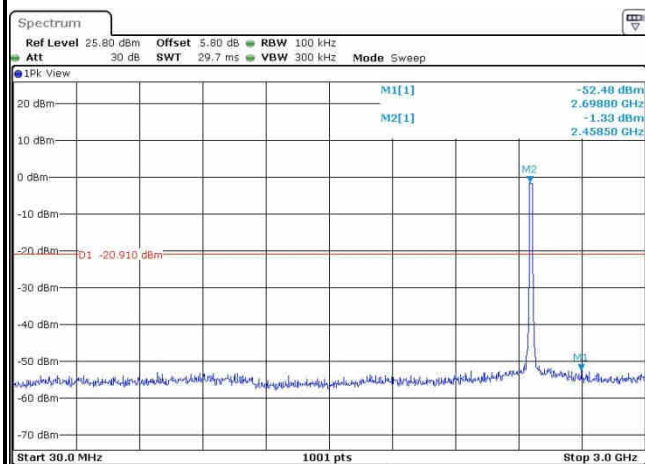
100kHz PSD reference Level



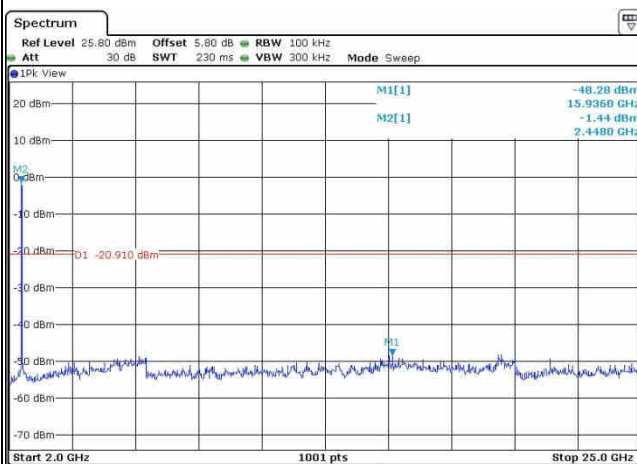
High Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

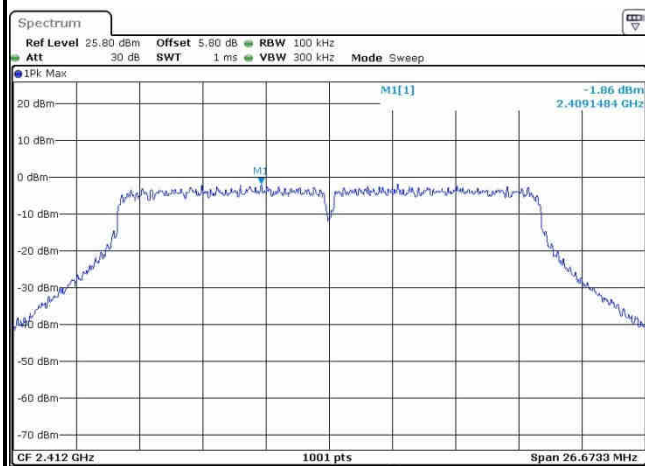




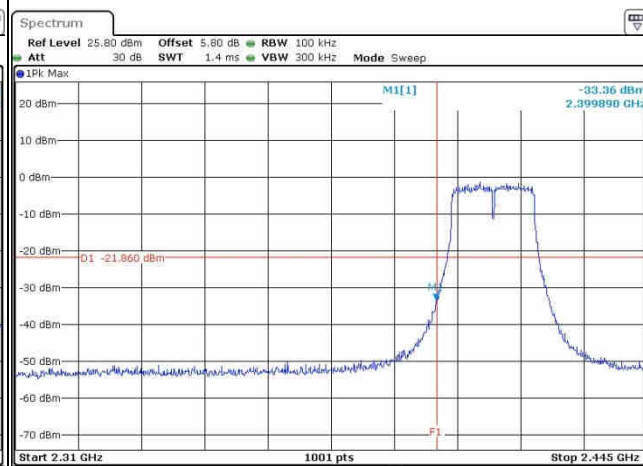
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~55%
Test Channel :	01	Test Engineer :	Silent Hai

WLAN 802.11n HT20 Channel 01

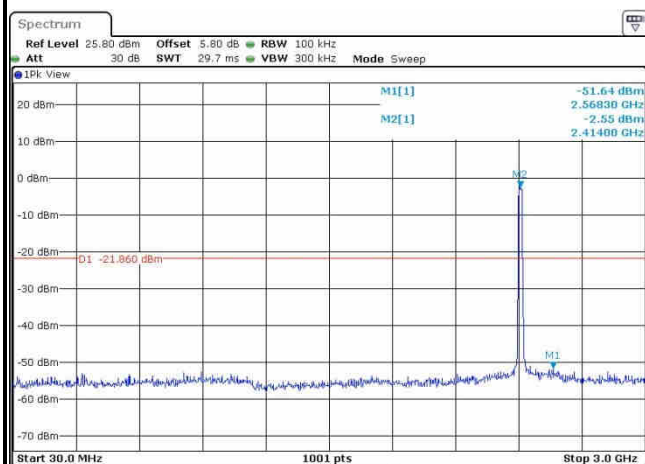
100kHz PSD reference Level



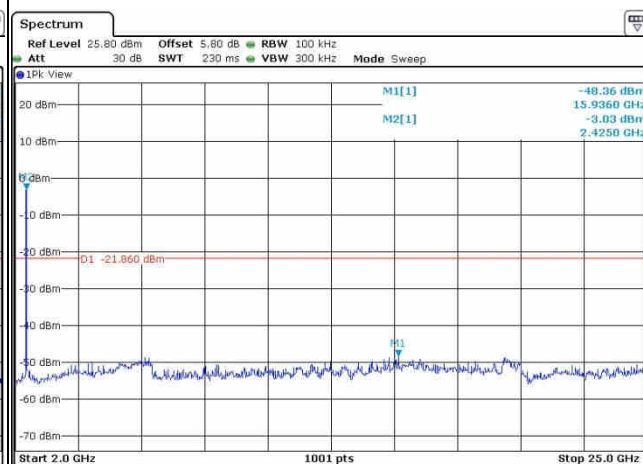
Low Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

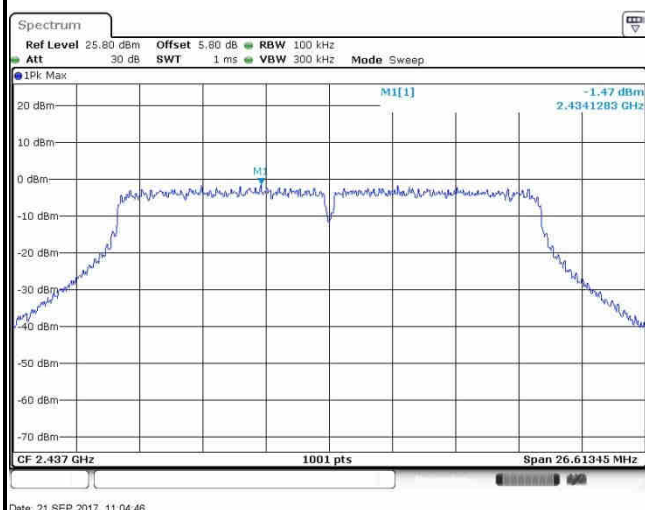




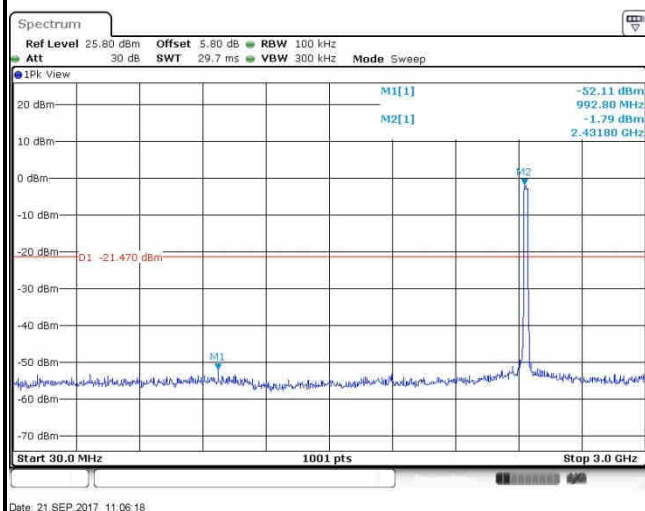
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~55%
Test Channel :	06	Test Engineer :	Silent Hai

WLAN 802.11n HT20 Channel 06

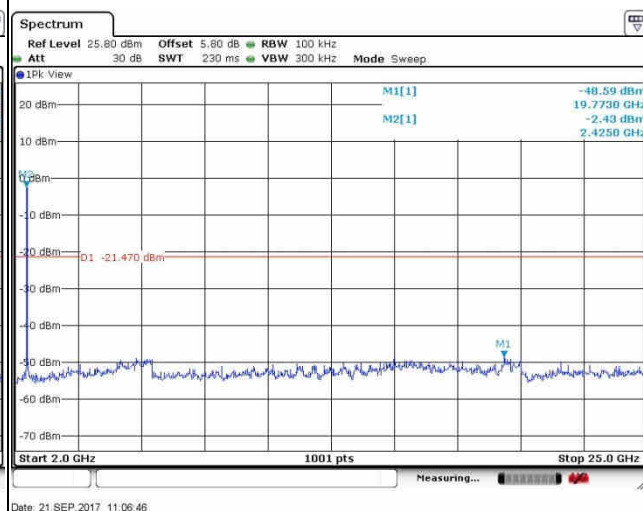
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

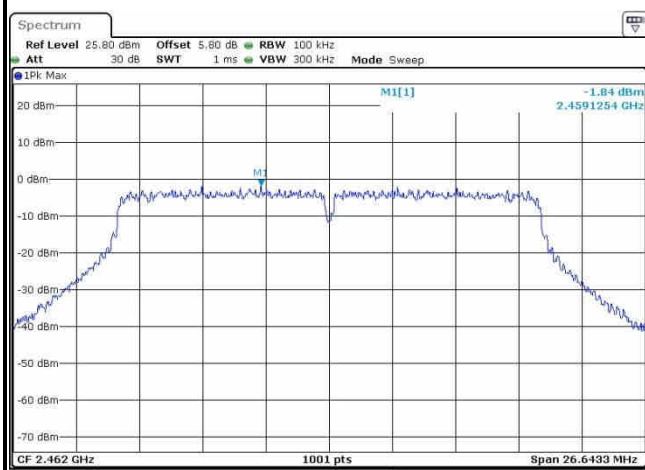




Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~55%
Test Channel :	11	Test Engineer :	Silent Hai

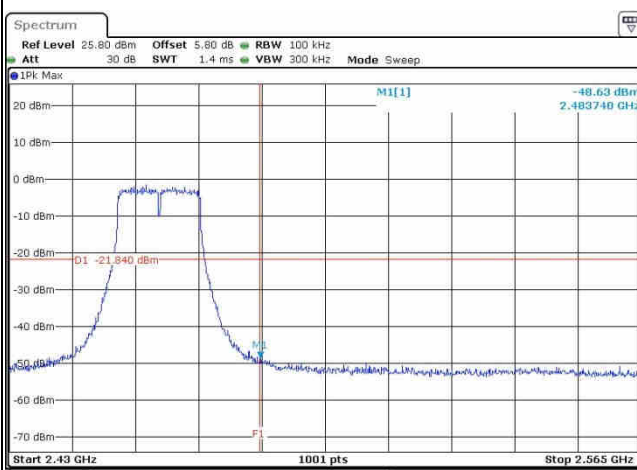
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



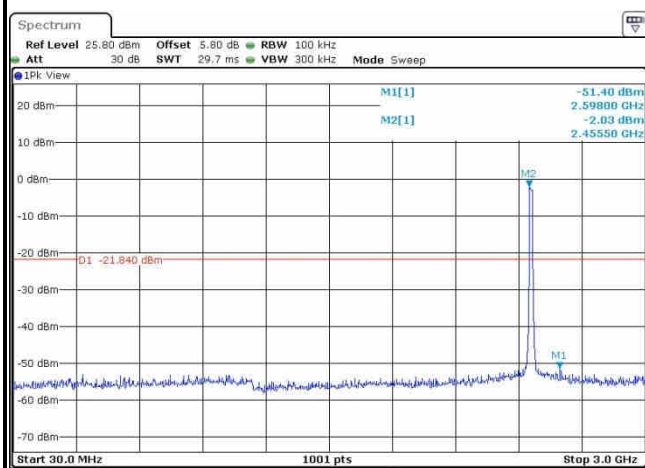
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High Channel Plot



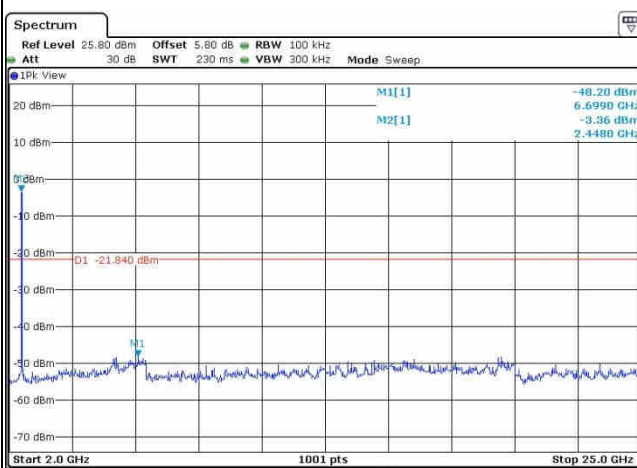
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Spurious Emission 30MHz~3GHz



Date: 21.SEP.2017 11:11:15

Spurious Emission 2GHz~25GHz



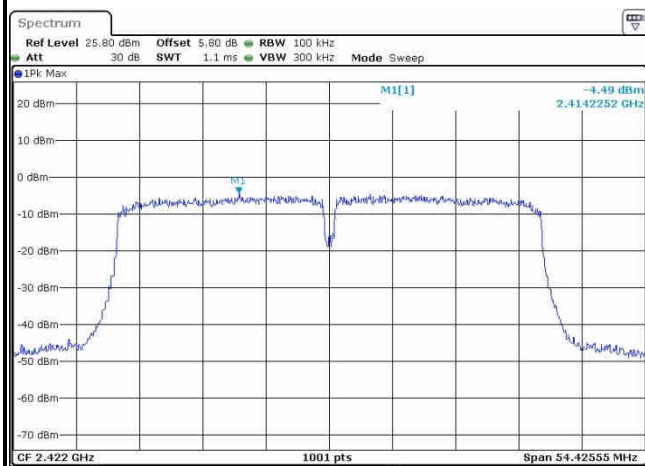
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Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~55%
Test Channel :	03	Test Engineer :	Silent Hai

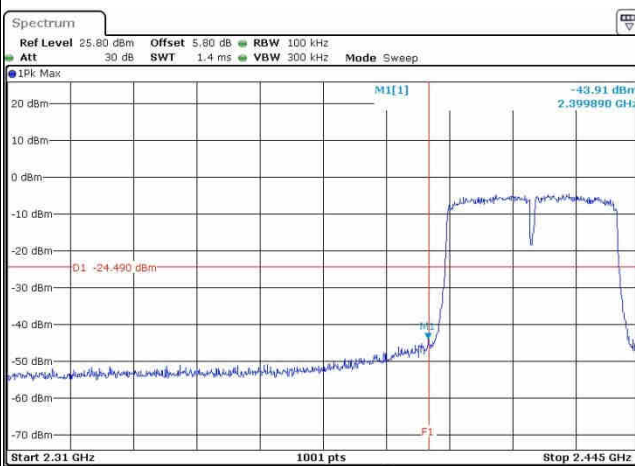
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



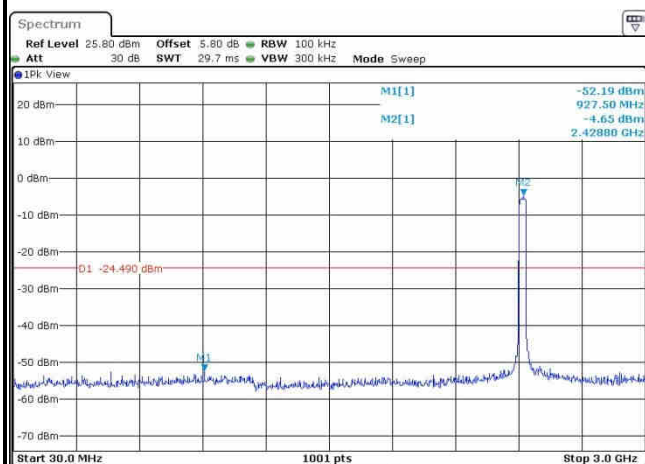
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Low Channel Plot



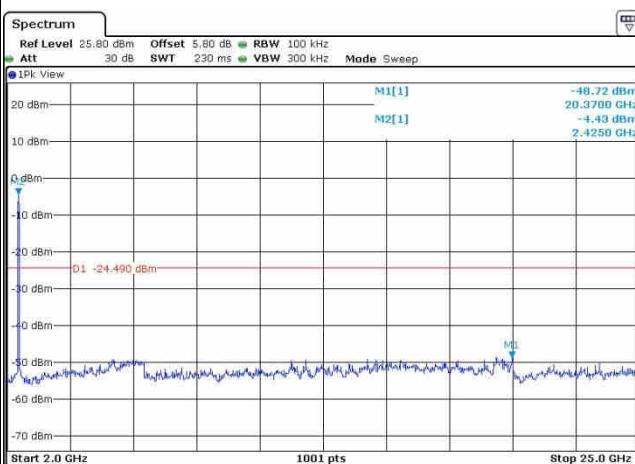
Date: 21 SEP.2017, 11:16:01

Spurious Emission 30MHz~3GHz



Date: 21 SEP.2017, 11:17:19

Spurious Emission 2GHz~25GHz



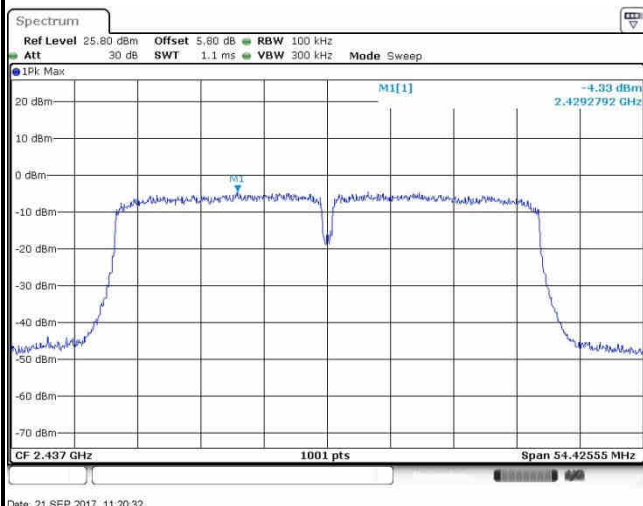
Date: 21 SEP.2017, 11:17:59



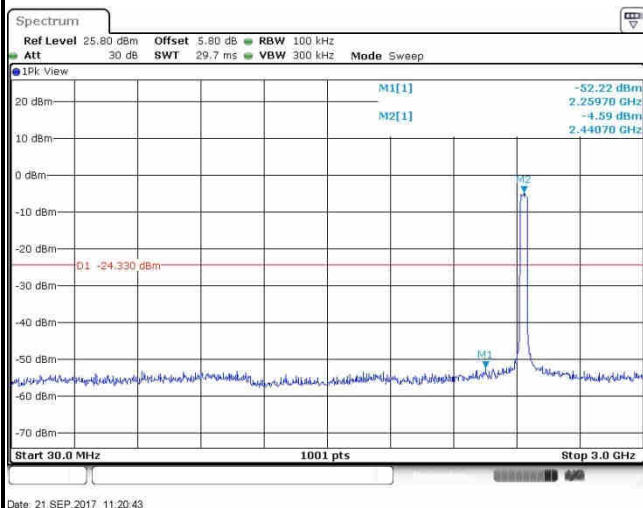
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~55%
Test Channel :	06	Test Engineer :	Silent Hai

WLAN 802.11n HT40 Channel 06

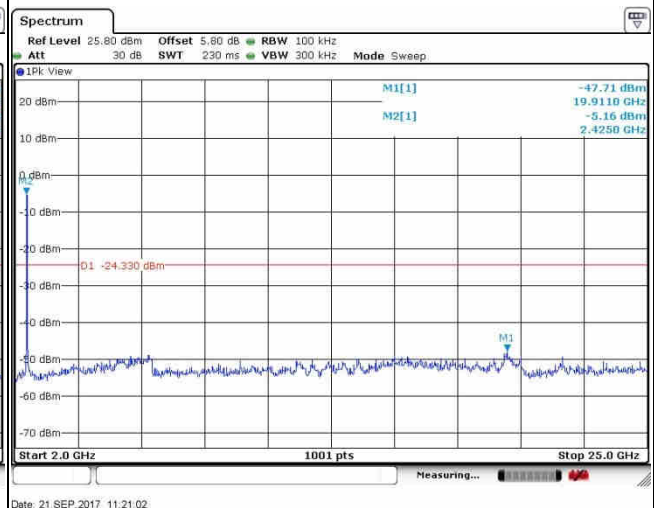
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

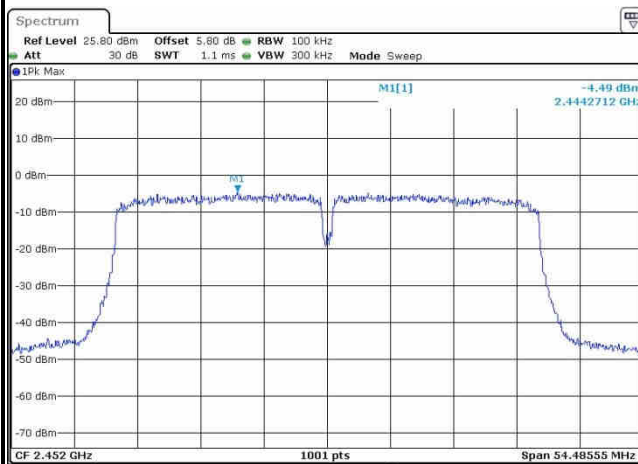




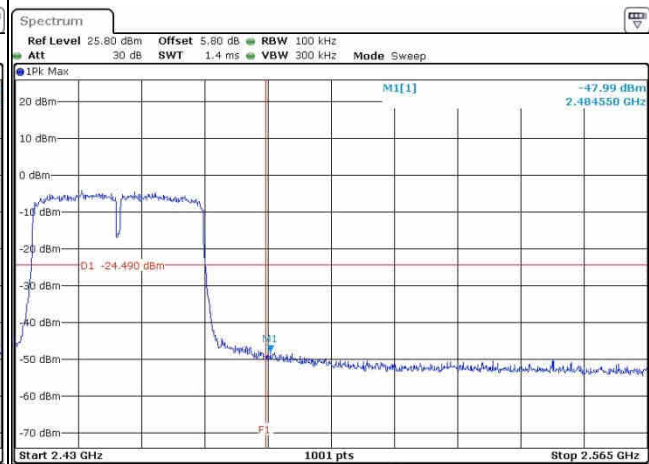
Test Mode :	802.11n HT40	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~55%
Test Channel :	09	Test Engineer :	Silent Hai

WLAN 802.11n HT40 Channel 09

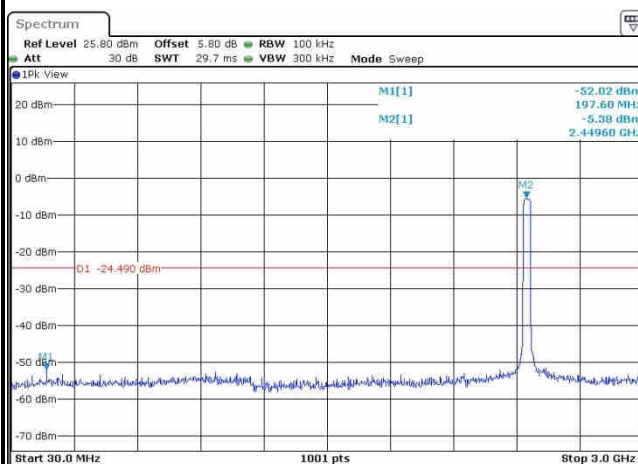
100kHz PSD reference Level



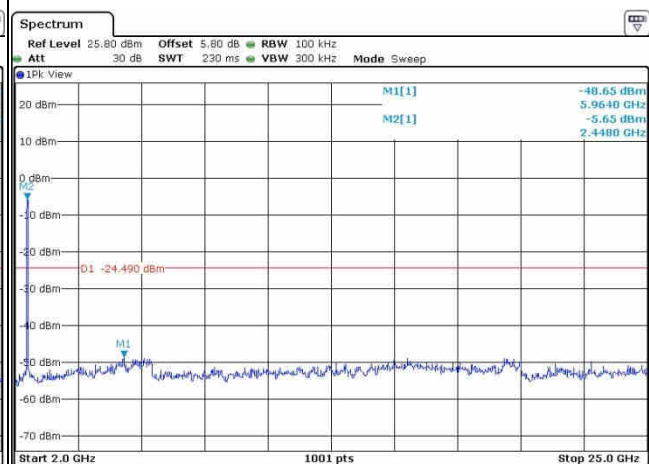
High Channel Plot



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 measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. 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 $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

For average measurement:

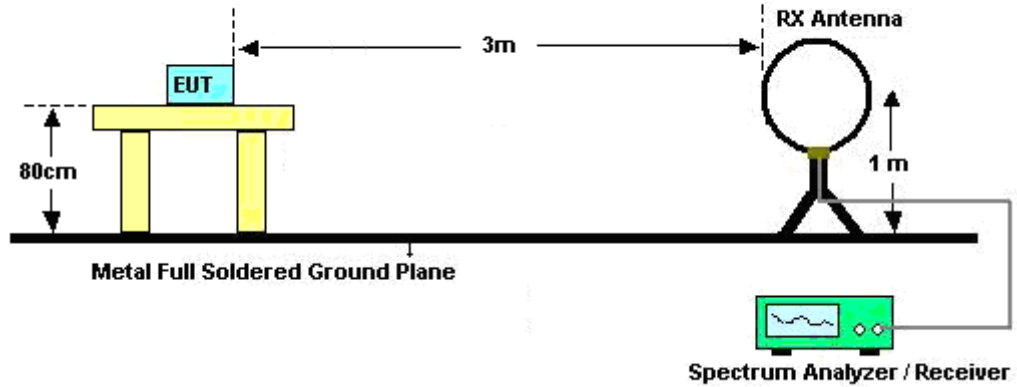
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

For average measurement:

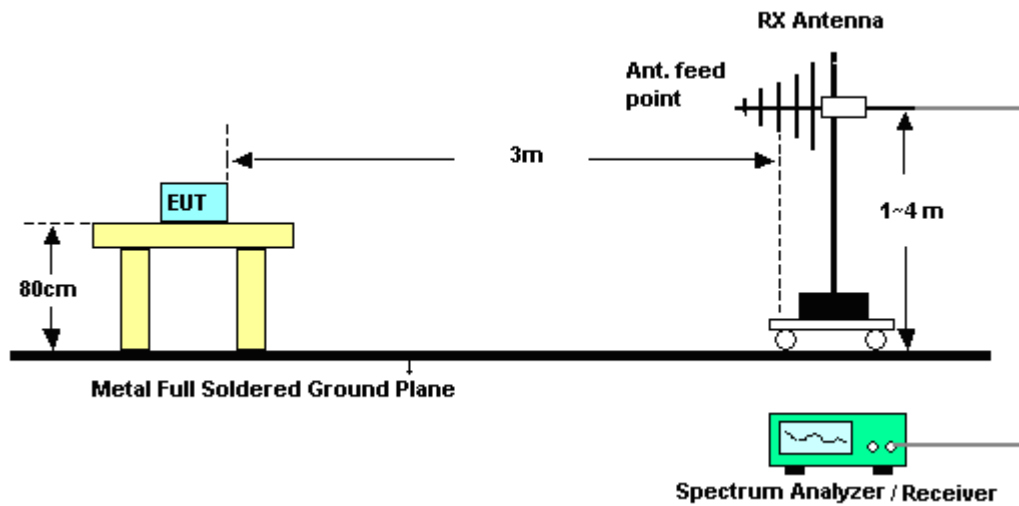
 - Detector = power averaging (rms), set sweep point ≥ 2 span / RBW.
 - Averaging type = power averaging(RMS)
 - The correction factor shall be offset is $10 \log (1/x)$, where x is the duty cycle.

3.5.4 Test Setup

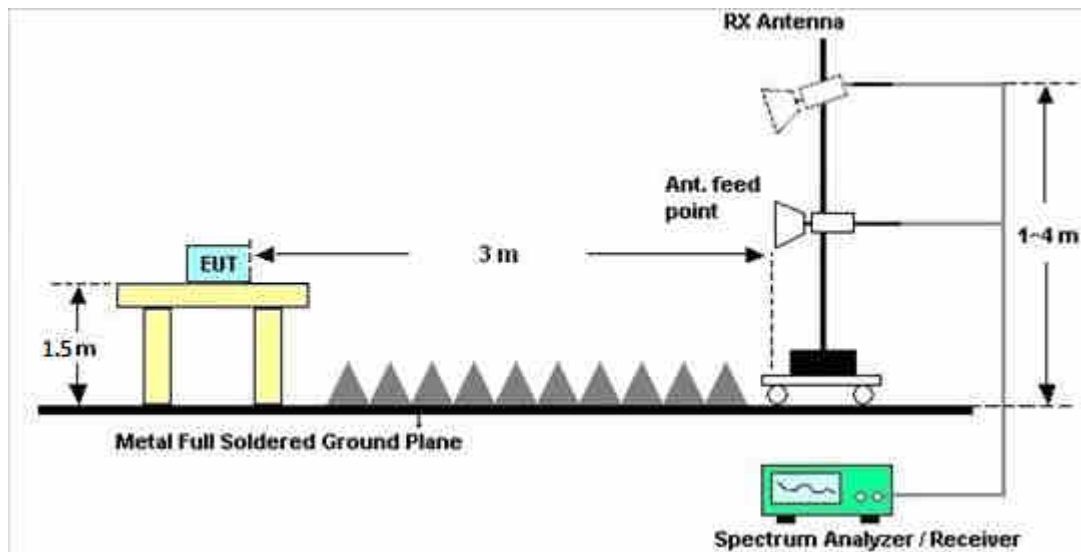
For radiated emissions below 30MHz



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.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

3.5.7 Duty Cycle

Please refer to Appendix C.

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

Please refer to Appendix B.



3.6 Antenna Requirements

3.6.1 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. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used for sample 1

Non-standard antenna connector is used for sample 2

3.6.3 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	Sep. 21, 2017	Aug. 07, 2018	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 19, 2017	Sep. 21, 2017	Jan. 18, 2018	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 19, 2017	Sep. 21, 2017	Jan. 18, 2018	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz; Max 30dBm	Oct. 19, 2017	Oct. 27, 2017	Oct. 18, 2018	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44GHz	Apr. 18, 2017	Oct. 27, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 23, 2016	Oct. 27, 2017	Nov. 22, 2017	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz~2GHz	Apr. 22, 2017	Oct. 27, 2017	Apr. 21, 2018	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 22, 2017	Oct. 27, 2017	Apr. 21, 2018	Radiation (03CH03-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Feb. 15, 2017	Oct. 27, 2017	Feb. 14, 2018	Radiation (03CH03-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1000MHz / 32 dB	Apr. 18, 2017	Oct. 27, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-HG	1887435	18GHz~40GHz	Oct. 12, 2017	Oct. 27, 2017	Oct. 11, 2018	Radiation (03CH03-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025788	1GHz~18GHz	Apr. 18, 2017	Oct. 27, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 12, 2017	Oct. 27, 2017	Oct. 11, 2018	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Oct. 27, 2017	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Oct. 27, 2017	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Oct. 27, 2017	NCR	Radiation (03CH03-KS)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.6 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7 dB
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Appendix A. Conducted Test Results

A1 - DTS Part

Test Engineer:	Silent Hai	Temperature:	21~25	°C
Test Date:	2017/9/21	Relative Humidity:	51~55	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band								
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	14.89	10.70	0.50	Pass
11b	1Mbps	1	6	2437	14.89	10.70	0.50	Pass
11b	1Mbps	1	11	2462	14.94	10.70	0.50	Pass
11g	6Mbps	1	1	2412	18.13	16.52	0.50	Pass
11g	6Mbps	1	6	2437	18.18	16.52	0.50	Pass
11g	6Mbps	1	11	2462	18.23	16.54	0.50	Pass
HT20	MCS0	1	1	2412	18.88	17.78	0.50	Pass
HT20	MCS0	1	6	2437	18.93	17.74	0.50	Pass
HT20	MCS0	1	11	2462	18.88	17.76	0.50	Pass
HT40	MCS0	1	3	2422	35.86	36.28	0.50	Pass
HT40	MCS0	1	6	2437	35.86	36.28	0.50	Pass
HT40	MCS0	1	9	2452	35.76	36.32	0.50	Pass

TEST RESULTS DATA
Peak Power Table

2.4GHz Band										
Mod.	Data Rate	N _{TX}	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	18.65	30.00	2.00	20.65	36.00	Pass
11b	1Mbps	1	6	2437	18.84	30.00	2.00	20.84	36.00	Pass
11b	1Mbps	1	11	2462	18.52	30.00	2.00	20.52	36.00	Pass
11g	6Mbps	1	1	2412	24.17	30.00	2.00	26.17	36.00	Pass
11g	6Mbps	1	6	2437	24.26	30.00	2.00	26.26	36.00	Pass
11g	6Mbps	1	11	2462	23.99	30.00	2.00	25.99	36.00	Pass
HT20	MCS0	1	1	2412	22.71	30.00	2.00	24.71	36.00	Pass
HT20	MCS0	1	6	2437	22.82	30.00	2.00	24.82	36.00	Pass
HT20	MCS0	1	11	2462	22.47	30.00	2.00	24.47	36.00	Pass
HT40	MCS0	1	3	2422	22.93	30.00	2.00	24.93	36.00	Pass
HT40	MCS0	1	6	2437	23.01	30.00	2.00	25.01	36.00	Pass
HT40	MCS0	1	9	2452	22.68	30.00	2.00	24.68	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

2.4GHz Band						
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.00	16.15
11b	1Mbps	1	6	2437	0.00	16.43
11b	1Mbps	1	11	2462	0.00	16.05
11g	6Mbps	1	1	2412	0.00	14.56
11g	6Mbps	1	6	2437	0.00	14.68
11g	6Mbps	1	11	2462	0.00	14.47
HT20	MCS0	1	1	2412	0.00	13.58
HT20	MCS0	1	6	2437	0.00	13.69
HT20	MCS0	1	11	2462	0.00	13.45
HT40	MCS0	1	3	2422	0.00	13.38
HT40	MCS0	1	6	2437	0.00	13.47
HT40	MCS0	1	9	2452	0.00	13.22

TEST RESULTS DATA
Peak Power Density

2.4GHz Band								
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
11b	1Mbps	1	1	2412	-15.28	2.00	8.00	Pass
11b	1Mbps	1	6	2437	-14.95	2.00	8.00	Pass
11b	1Mbps	1	11	2462	-15.33	2.00	8.00	Pass
11g	6Mbps	1	1	2412	-15.19	2.00	8.00	Pass
11g	6Mbps	1	6	2437	-15.12	2.00	8.00	Pass
11g	6Mbps	1	11	2462	-15.34	2.00	8.00	Pass
HT20	MCS0	1	1	2412	-16.48	2.00	8.00	Pass
HT20	MCS0	1	6	2437	-15.76	2.00	8.00	Pass
HT20	MCS0	1	11	2462	-16.09	2.00	8.00	Pass
HT40	MCS0	1	3	2422	-16.62	2.00	8.00	Pass
HT40	MCS0	1	6	2437	-15.88	2.00	8.00	Pass
HT40	MCS0	1	9	2452	-17.99	2.00	8.00	Pass



Appendix B. Radiated Spurious Emission

For Sample 1

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		2386.18	46.09	-27.91	74	47.34	25.4	5.65	32.3	255	303	P	H
		2389.95	35.42	-18.58	54	36.67	25.4	5.65	32.3	255	303	A	H
	*	2412	98.37	-	-	99.47	25.54	5.67	32.31	255	303	P	H
	*	2414	94.82	-	-	95.92	25.54	5.67	32.31	255	303	A	H
		2387.74	45.24	-28.76	74	46.49	25.4	5.65	32.3	130	167	P	V
		2389.95	33.93	-20.07	54	35.18	25.4	5.65	32.3	130	167	A	V
	*	2412	97.37	-	-	98.47	25.54	5.67	32.31	130	167	P	V
	*	2414	93.88	-	-	94.98	25.54	5.67	32.31	130	167	A	V
802.11b CH 06 2437MHz		2369.67	43.84	-30.16	74	45.14	25.35	5.63	32.28	253	302	P	H
		2389.82	32.81	-21.19	54	34.06	25.4	5.65	32.3	253	302	A	H
	*	2438	99.04	-	-	99.84	25.83	5.71	32.34	253	302	P	H
	*	2438	95.4	-	-	96.2	25.83	5.71	32.34	253	302	A	H
		2484.58	45.09	-28.91	74	45.6	26.11	5.75	32.37	253	302	P	H
		2483.8	33.7	-20.3	54	34.21	26.11	5.75	32.37	253	302	A	H
		2369.15	43.49	-30.51	74	44.79	25.35	5.63	32.28	263	143	P	V
		2357.84	32.62	-21.38	54	33.98	25.29	5.61	32.26	263	143	A	V
	*	2438	100.09	-	-	100.89	25.83	5.71	32.34	263	143	P	V
	*	2436	95.58	-	-	96.53	25.69	5.69	32.33	263	143	A	V
		2492.26	45.2	-28.8	74	45.56	26.26	5.77	32.39	263	143	P	V
		2483.5	34.64	-19.36	54	35.15	26.11	5.75	32.37	263	143	A	V



802.11b CH 11 2462MHz		2488	46.14	-27.86	74	46.5	26.26	5.77	32.39	217	302	P	H
		2483.5	35.59	-18.41	54	36.1	26.11	5.75	32.37	217	302	A	H
	*	2462	98.99	-	-	99.65	25.97	5.73	32.36	217	302	P	H
	*	2462	95.63	-	-	96.29	25.97	5.73	32.36	217	302	A	H
		2483.86	46.67	-27.33	74	47.18	26.11	5.75	32.37	144	169	P	V
		2483.5	36.6	-17.4	54	37.11	26.11	5.75	32.37	144	169	A	V
	*	2462	99.36	-	-	100.02	25.97	5.73	32.36	144	169	P	V
	*	2464	95.91	-	-	96.57	25.97	5.73	32.36	144	169	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	50.46	-23.54	74	73.01	30.9	7.86	61.31	100	14	P	H
		4824	48.02	-5.98	54	70.57	30.9	7.86	61.31	100	14	A	H
		4824	52.57	-21.43	74	75.12	30.9	7.86	61.31	100	62	P	V
		4824	50.64	-3.36	54	73.19	30.9	7.86	61.31	100	62	A	V
802.11b CH 06 2437MHz		4872	49.92	-24.08	74	72.21	31.01	7.9	61.2	100	24	P	H
		4872	44.92	-9.08	54	67.21	31.01	7.9	61.2	100	24	A	H
		7308	43.21	-30.79	74	61.47	35.34	9.5	63.1	100	0	P	H
		4872	51.62	-22.38	74	73.91	31.01	7.9	61.2	100	24	P	V
		4872	49.92	-4.08	54	72.21	31.01	7.9	61.2	100	24	A	V
		7308	43.32	-30.68	74	61.58	35.34	9.5	63.1	100	0	P	V
802.11b CH 11 2462MHz		4926	53.52	-20.48	74	75.54	31.12	7.94	61.08	122	238	P	H
		4926	51.36	-2.64	54	73.38	31.12	7.94	61.08	122	238	A	H
		7386	43.9	-30.1	74	61.99	35.55	9.53	63.17	100	0	P	H
		4926	52.92	-21.08	74	74.94	31.12	7.94	61.08	110	120	P	V
		4926	50.72	-3.28	54	72.74	31.12	7.94	61.08	110	120	A	V
		7386	43.67	-30.33	74	61.76	35.55	9.53	63.17	100	0	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		2389.69	49.06	-24.94	74	50.31	25.4	5.65	32.3	167	307	P	H
		2389.95	36.41	-17.59	54	37.66	25.4	5.65	32.3	167	307	A	H
	*	2416	98.19	-	-	99.29	25.54	5.67	32.31	167	307	P	H
	*	2416	90.55	-	-	91.65	25.54	5.67	32.31	167	307	A	H
		2389.82	51.4	-22.6	74	52.65	25.4	5.65	32.3	340	99	P	V
		2389.95	38.3	-15.7	54	39.55	25.4	5.65	32.3	340	99	A	V
	*	2416	98.66	-	-	99.76	25.54	5.67	32.31	340	99	P	V
	*	2416	91.02	-	-	92.12	25.54	5.67	32.31	340	99	A	V
802.11g CH 06 2437MHz		2325.34	43.16	-30.84	74	44.64	25.18	5.57	32.23	306	230	P	H
		2389.95	31.93	-22.07	54	33.18	25.4	5.65	32.3	306	230	A	H
	*	2434	97.7	-	-	98.65	25.69	5.69	32.33	306	230	P	H
	*	2434	89.97	-	-	90.92	25.69	5.69	32.33	306	230	A	H
		2497.18	44.1	-29.9	74	44.46	26.26	5.77	32.39	306	230	P	H
		2500	32.94	-21.06	54	33.3	26.26	5.77	32.39	306	230	A	H
		2349.91	43.43	-30.57	74	44.85	25.24	5.59	32.25	373	123	P	V
		2389.95	32.57	-21.43	54	33.82	25.4	5.65	32.3	373	123	A	V
	*	2438	99.46	-	-	100.26	25.83	5.71	32.34	373	123	P	V
	*	2440	91.8	-	-	92.6	25.83	5.71	32.34	373	123	A	V
		2491.06	46.16	-27.84	74	46.52	26.26	5.77	32.39	373	123	P	V
		2483.62	34.19	-19.81	54	34.7	26.11	5.75	32.37	373	123	A	V



802.11g CH 11 2462MHz	*	2458	97.08	-	-	97.74	25.97	5.73	32.36	300	228	P	H
	*	2458	89.31	-	-	89.97	25.97	5.73	32.36	300	228	A	H
		2483.74	49.61	-24.39	74	50.12	26.11	5.75	32.37	300	228	P	H
		2483.5	35.99	-18.01	54	36.5	26.11	5.75	32.37	300	228	A	H
	*	2458	99.63	-	-	100.29	25.97	5.73	32.36	332	126	P	V
	*	2458	91.9	-	-	92.56	25.97	5.73	32.36	332	126	A	V
		2483.68	52.5	-21.5	74	53.01	26.11	5.75	32.37	332	126	P	V
		2483.5	38.45	-15.55	54	38.96	26.11	5.75	32.37	332	126	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	52.36	-21.64	74	74.91	30.9	7.86	61.31	144	16	P	H
		4824	39.92	-14.08	54	62.47	30.9	7.86	61.31	144	16	A	H
		4824	54.39	-19.61	74	76.94	30.9	7.86	61.31	257	85	P	V
		4824	42.99	-11.01	54	65.54	30.9	7.86	61.31	257	85	A	V
802.11g CH 06 2437MHz		4872	51.28	-22.72	74	73.57	31.01	7.9	61.2	100	115	P	H
		4872	39.26	-14.74	54	61.55	31.01	7.9	61.2	100	115	A	H
		7311	44.84	-29.16	74	63.1	35.34	9.5	63.1	100	0	P	H
		4872	52.62	-21.38	74	74.91	31.01	7.9	61.2	127	114	P	V
		4872	42.75	-11.25	54	65.04	31.01	7.9	61.2	127	114	A	V
		7311	47.14	-26.86	74	65.4	35.34	9.5	63.1	100	0	P	V
802.11g CH 11 2462MHz		4926	52.98	-21.02	74	75	31.12	7.94	61.08	100	116	P	H
		4926	41.07	-12.93	54	63.09	31.12	7.94	61.08	100	116	A	H
		7386	44.19	-29.81	74	62.28	35.55	9.53	63.17	100	0	P	H
		4920	51.76	-22.24	74	73.78	31.12	7.94	61.08	100	113	P	V
		4920	39.37	-14.63	54	61.39	31.12	7.94	61.08	100	113	A	V
		7386	46.51	-27.49	74	64.6	35.55	9.53	63.17	100	0	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)
802.11n HT20 CH 01 2412MHz		2389.56	49.83	-24.17	74	51.08	25.4	5.65	32.3	166	302	P	H
		2389.95	35.81	-18.19	54	37.06	25.4	5.65	32.3	166	302	A	H
	*	2410	96.86	-	-	97.96	25.54	5.67	32.31	166	302	P	H
	*	2408	88.89	-	-	89.99	25.54	5.67	32.31	166	302	A	H
		2389.95	53.36	-20.64	74	54.61	25.4	5.65	32.3	385	104	P	V
		2389.95	37.55	-16.45	54	38.8	25.4	5.65	32.3	385	104	A	V
	*	2410	97.93	-	-	99.03	25.54	5.67	32.31	385	104	P	V
	*	2416	90.21	-	-	91.31	25.54	5.67	32.31	385	104	A	V
802.11n HT20 CH 06 2437MHz		2379.68	42.81	-31.19	74	44.11	25.35	5.63	32.28	267	226	P	H
		2389.95	31.99	-22.01	54	33.24	25.4	5.65	32.3	267	226	A	H
	*	2434	96.35	-	-	97.3	25.69	5.69	32.33	267	226	P	H
	*	2440	88.23	-	-	89.03	25.83	5.71	32.34	267	226	A	H
		2484.64	43.49	-30.51	74	44	26.11	5.75	32.37	267	226	P	H
		2487.28	32.5	-21.5	54	33.01	26.11	5.75	32.37	267	226	A	H
		2373.83	43.89	-30.11	74	45.19	25.35	5.63	32.28	379	103	P	V
		2389.3	32.93	-21.07	54	34.18	25.4	5.65	32.3	379	103	A	V
	*	2434	99.12	-	-	100.07	25.69	5.69	32.33	379	103	P	V
	*	2440	91.31	-	-	92.11	25.83	5.71	32.34	379	103	A	V
		2485.36	44.72	-29.28	74	45.23	26.11	5.75	32.37	379	103	P	V
		2493.1	34.09	-19.91	54	34.45	26.26	5.77	32.39	379	103	A	V



802.11n HT20 CH 11 2462MHz		2484.4	48.56	-25.44	74	49.07	26.11	5.75	32.37	167	300	P	H
		2483.5	36.12	-17.88	54	36.63	26.11	5.75	32.37	167	300	A	H
	*	2460	96.24	-	-	96.9	25.97	5.73	32.36	167	300	P	H
	*	2458	88.44	-	-	89.1	25.97	5.73	32.36	167	300	A	H
		2483.62	51.82	-22.18	74	52.33	26.11	5.75	32.37	330	105	P	V
		2483.5	38.65	-15.35	54	39.16	26.11	5.75	32.37	330	105	A	V
	*	2460	98.69	-	-	99.35	25.97	5.73	32.36	330	105	P	V
	*	2458	91	-	-	91.66	25.97	5.73	32.36	330	105	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	46.56	-27.44	74	69.11	30.9	7.86	61.31	100	360	P	H
		4824	48.5	-25.5	74	71.05	30.9	7.86	61.31	100	360	P	V
802.11n HT20 CH 06 2437MHz		4872	47.99	-26.01	74	70.28	31.01	7.9	61.2	100	360	P	H
		7308	40.45	-33.55	74	58.71	35.34	9.5	63.1	100	360	P	H
		4872	48.98	-25.02	74	71.27	31.01	7.9	61.2	100	360	P	V
		7308	40.33	-33.67	74	58.59	35.34	9.5	63.1	100	360	P	V
802.11n HT20 CH 11 2462MHz		4926	48.27	-25.73	74	70.29	31.12	7.94	61.08	100	360	P	H
		7386	42.09	-31.91	74	60.18	35.55	9.53	63.17	100	360	P	H
		4926	48.2	-25.8	74	70.22	31.12	7.94	61.08	100	360	P	V
		7386	42.24	-31.76	74	60.33	35.55	9.53	63.17	100	360	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)
802.11n HT40 CH 03 2422MHz		2388.78	51.74	-22.26	74	52.99	25.4	5.65	32.3	119	17	P	H
		2389.95	38.91	-15.09	54	40.16	25.4	5.65	32.3	119	17	A	H
	*	2414	95.09	-	-	96.19	25.54	5.67	32.31	119	17	P	H
	*	2416	87.36	-	-	88.46	25.54	5.67	32.31	119	17	A	H
		2493.76	46.74	-27.26	74	47.1	26.26	5.77	32.39	119	17	P	H
		2491.84	35.41	-18.59	54	35.77	26.26	5.77	32.39	119	17	A	H
		2389.04	51.05	-22.95	74	52.3	25.4	5.65	32.3	269	151	P	V
		2389.95	38.42	-15.58	54	39.67	25.4	5.65	32.3	269	151	A	V
	*	2414	93.36	-	-	94.46	25.54	5.67	32.31	269	151	P	V
	*	2430	85.57	-	-	86.52	25.69	5.69	32.33	269	151	A	V
		2496.46	46.28	-27.72	74	46.64	26.26	5.77	32.39	269	151	P	V
		2499.88	34.82	-19.18	54	35.18	26.26	5.77	32.39	269	151	A	V
802.11n HT40 CH 06 2437MHz		2389.56	45.83	-28.17	74	47.08	25.4	5.65	32.3	110	20	P	H
		2389.95	34.68	-19.32	54	35.93	25.4	5.65	32.3	110	20	A	H
	*	2430	96.42	-	-	97.37	25.69	5.69	32.33	110	20	P	H
	*	2440	88.38	-	-	89.18	25.83	5.71	32.34	110	20	A	H
		2483.74	48.12	-25.88	74	48.63	26.11	5.75	32.37	110	20	P	H
		2483.51	37.13	-16.87	54	37.64	26.11	5.75	32.37	110	20	A	H
		2388	44.8	-29.2	74	46.05	25.4	5.65	32.3	227	148	P	V
		2389.82	33.96	-20.04	54	35.21	25.4	5.65	32.3	227	148	A	V
	*	2430	93.56	-	-	94.51	25.69	5.69	32.33	227	148	P	V
	*	2430	85.76	-	-	86.71	25.69	5.69	32.33	227	148	A	V
		2485.06	46.43	-27.57	74	46.94	26.11	5.75	32.37	227	148	P	V
		2483.51	35.58	-18.42	54	36.09	26.11	5.75	32.37	227	148	A	V



802.11n HT40 CH 09 2452MHz		2382.28	44.01	-29.99	74	45.31	25.35	5.63	32.28	126	34	P	H
		2389.69	33.76	-20.24	54	35.01	25.4	5.65	32.3	126	34	A	H
	*	2460	96.78	-	-	97.44	25.97	5.73	32.36	126	34	P	H
	*	2456	88.58	-	-	89.24	25.97	5.73	32.36	126	34	A	H
		2485.42	54.16	-19.84	74	54.67	26.11	5.75	32.37	126	34	P	H
		2483.5	41.07	-12.93	54	41.58	26.11	5.75	32.37	126	34	A	H
		2387.74	44.49	-29.51	74	45.74	25.4	5.65	32.3	256	151	P	V
		2389.82	33.03	-20.97	54	34.28	25.4	5.65	32.3	256	151	A	V
	*	2458	94.99	-	-	95.65	25.97	5.73	32.36	256	151	P	V
	*	2458	86.38	-	-	87.04	25.97	5.73	32.36	256	151	A	V
		2486.14	52.01	-21.99	74	52.52	26.11	5.75	32.37	256	151	P	V
		2483.5	38.69	-15.31	54	39.2	26.11	5.75	32.37	256	151	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		4842	44.58	-29.42	74	67.05	30.93	7.87	61.27	100	360	P	H
HT40		7266	41.72	-32.28	74	60.04	35.26	9.48	63.06	100	360	P	H
CH 03		4842	47.26	-26.74	74	69.73	30.93	7.87	61.27	100	360	P	V
2422MHz		7266	40.07	-33.93	74	58.39	35.26	9.48	63.06	100	360	P	V
802.11n		4872	42.23	-31.77	74	64.52	31.01	7.9	61.2	150	360	P	H
HT40		7308	40.59	-33.41	74	58.85	35.34	9.5	63.1	150	360	P	H
CH 06		4872	47.29	-26.71	74	69.58	31.01	7.9	61.2	150	360	P	V
2437MHz		7308	40.76	-33.24	74	59.02	35.34	9.5	63.1	150	360	P	V
802.11n		4902	44.31	-29.69	74	66.42	31.08	7.93	61.12	100	360	P	H
HT40		7356	41.75	-32.25	74	59.9	35.47	9.52	63.14	100	360	P	H
CH 09		4902	45.24	-28.76	74	67.35	31.08	7.93	61.12	100	360	P	V
2452MHz		7356	40.41	-33.59	74	58.56	35.47	9.52	63.14	100	360	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 802.11b (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 802.11b LF		30.97	25.37	-14.63	40	30.13	25.74	0.58	31.08	147	58	P	H
		37.76	23.94	-16.06	40	32.93	21.46	0.67	31.12	-	-	P	H
		73.65	18.05	-21.95	40	34.16	14.38	0.91	31.4	-	-	P	H
		148.34	26.69	-16.81	43.5	38.95	17.32	1.31	30.89	-	-	P	H
		223.03	23.74	-22.26	46	36.56	16.72	1.61	31.15	-	-	P	H
		912.7	31.24	-14.76	46	29.57	29.38	3.44	31.15	-	-	P	H
		36.79	29.27	-10.73	40	37.55	22.14	0.66	31.08	-	-	P	V
		40.67	29.29	-10.71	40	40.19	19.64	0.7	31.24	100	167	P	V
		66.86	21.13	-18.87	40	38.64	13.08	0.87	31.46	-	-	P	V
		89.17	20.98	-22.52	43.5	33.94	16.76	1.04	30.76	-	-	P	V
		296.75	22.79	-23.21	46	32.88	19.5	1.89	31.48	-	-	P	V
		943.74	31.39	-14.61	46	29.13	30.07	3.46	31.27	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



For Sample 2

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		2388.26	48.25	-25.75	74	49.5	25.4	5.65	32.3	132	0	P	H
		2386.44	38.14	-15.86	54	39.39	25.4	5.65	32.3	132	0	A	H
	*	2412	102.78	-	-	103.88	25.54	5.67	32.31	132	0	P	H
	*	2410	99.28	-	-	100.38	25.54	5.67	32.31	132	0	A	H
		2387.61	44.63	-29.37	74	45.88	25.4	5.65	32.3	367	295	P	V
		2386.44	34.3	-19.7	54	35.55	25.4	5.65	32.3	367	295	A	V
	*	2412	97.42	-	-	98.52	25.54	5.67	32.31	367	295	P	V
	*	2410	93.99	-	-	95.09	25.54	5.67	32.31	367	295	A	V
802.11b CH 06 2437MHz		2388.91	46.66	-27.34	74	47.91	25.4	5.65	32.3	160	360	P	H
		2389.95	35.5	-18.5	54	36.75	25.4	5.65	32.3	160	360	A	H
	*	2438	104.3	-	-	105.1	25.83	5.71	32.34	160	360	P	H
	*	2436	100.79	-	-	101.74	25.69	5.69	32.33	160	360	A	H
		2492.08	49.54	-24.46	74	49.9	26.26	5.77	32.39	160	360	P	H
		2499.94	38.11	-15.89	54	38.47	26.26	5.77	32.39	160	360	A	H
		2386.83	42.71	-31.29	74	43.96	25.4	5.65	32.3	300	237	P	V
		2387.61	31.67	-22.33	54	32.92	25.4	5.65	32.3	300	237	A	V
	*	2438	96.91	-	-	97.71	25.83	5.71	32.34	300	237	P	V
	*	2436	93.31	-	-	94.26	25.69	5.69	32.33	300	237	A	V
		2494.48	44.08	-29.92	74	44.44	26.26	5.77	32.39	300	237	P	V
		2496.16	32.84	-21.16	54	33.2	26.26	5.77	32.39	300	237	A	V



802.11b CH 11 2462MHz	*	2462	105.4	-	-	106.06	25.97	5.73	32.36	114	0	P	H
	*	2464	101.81	-	-	102.47	25.97	5.73	32.36	114	0	A	H
		2487.46	51.77	-22.23	74	52.28	26.11	5.75	32.37	114	0	P	H
		2483.51	41.36	-12.64	54	41.87	26.11	5.75	32.37	114	0	A	H
	*	2462	96.06	-	-	96.72	25.97	5.73	32.36	242	230	P	V
	*	2464	92.66	-	-	93.32	25.97	5.73	32.36	242	230	A	V
		2498.26	43.58	-30.42	74	43.94	26.26	5.77	32.39	242	230	P	V
		2483.5	32.97	-21.03	54	33.48	26.11	5.75	32.37	242	230	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	48.33	-25.67	74	70.88	30.9	7.86	61.31	200	0	P	H
		4824	45.79	-28.21	74	68.34	30.9	7.86	61.31	100	0	P	V
802.11b CH 06 2437MHz		4872	50.53	-23.47	74	72.82	31.01	7.9	61.2	100	0	P	H
		7314	46.68	-27.32	74	64.94	35.34	9.5	63.1	100	0	P	H
		4872	49.19	-24.81	74	71.48	31.01	7.9	61.2	200	0	P	V
		7308	48.16	-25.84	74	66.42	35.34	9.5	63.1	200	0	P	V
802.11b CH 11 2462MHz		4926	52.27	-21.73	74	74.29	31.12	7.94	61.08	104	82	P	H
		4926	50.09	-3.91	54	72.11	31.12	7.94	61.08	104	82	A	H
		7386	44.63	-29.37	74	62.72	35.55	9.53	63.17	100	360	P	H
		4926	52.66	-21.34	74	74.68	31.12	7.94	61.08	105	213	P	V
		4926	50.55	-3.45	54	72.57	31.12	7.94	61.08	105	213	A	V
		7386	44.87	-29.13	74	62.96	35.55	9.53	63.17	100	0	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		2388.39	54.97	-19.03	74	56.22	25.4	5.65	32.3	115	279	P	H
		2389.95	42.12	-11.88	54	43.37	25.4	5.65	32.3	115	279	A	H
	*	2410	102.68	-	-	103.78	25.54	5.67	32.31	115	279	P	H
	*	2416	94.86	-	-	95.96	25.54	5.67	32.31	115	279	A	H
		2388.78	45.7	-28.3	74	46.95	25.4	5.65	32.3	140	163	P	V
		2389.95	33.52	-20.48	54	34.77	25.4	5.65	32.3	140	163	A	V
	*	2410	95.81	-	-	96.91	25.54	5.67	32.31	140	163	P	V
	*	2410	88.04	-	-	89.14	25.54	5.67	32.31	140	163	A	V
802.11g CH 06 2437MHz		2386.7	46.16	-27.84	74	47.41	25.4	5.65	32.3	111	271	P	H
		2389.95	35.85	-18.15	54	37.1	25.4	5.65	32.3	111	271	A	H
	*	2442	103.67	-	-	104.47	25.83	5.71	32.34	111	271	P	H
	*	2442	96.03	-	-	96.83	25.83	5.71	32.34	111	271	A	H
		2484.64	49.16	-24.84	74	49.67	26.11	5.75	32.37	111	271	P	H
		2499.76	37.56	-16.44	54	37.92	26.26	5.77	32.39	111	271	A	H
		2351.21	42.11	-31.89	74	43.53	25.24	5.59	32.25	133	163	P	V
		2357.19	30.91	-23.09	54	32.27	25.29	5.61	32.26	133	163	A	V
	*	2442	96.04	-	-	96.84	25.83	5.71	32.34	133	163	P	V
	*	2442	88.29	-	-	89.09	25.83	5.71	32.34	133	163	A	V
		2484.76	42.4	-31.6	74	42.91	26.11	5.75	32.37	133	163	P	V
		2500	31.62	-22.38	54	31.98	26.26	5.77	32.39	133	163	A	V



802.11g CH 11 2462MHz	*	2466	104.66	-	-	105.32	25.97	5.73	32.36	109	269	P	H
	*	2466	96.99	-	-	97.65	25.97	5.73	32.36	109	269	A	H
		2484.4	56.64	-17.36	74	57.15	26.11	5.75	32.37	109	269	P	H
		2483.5	43.67	-10.33	54	44.18	26.11	5.75	32.37	109	269	A	H
	*	2456	94.74	-	-	95.4	25.97	5.73	32.36	162	153	P	V
	*	2456	86.99	-	-	87.65	25.97	5.73	32.36	162	153	A	V
		2483.68	47.57	-26.43	74	48.08	26.11	5.75	32.37	162	153	P	V
		2483.5	35.55	-18.45	54	36.06	26.11	5.75	32.37	162	153	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	45.33	-28.67	74	67.88	30.9	7.86	61.31	100	360	P	H
		4824	40.24	-33.76	74	62.79	30.9	7.86	61.31	100	360	P	V
802.11g CH 06 2437MHz		4872	44.85	-29.15	74	67.14	31.01	7.9	61.2	100	360	P	H
		7308	42.48	-31.52	74	60.74	35.34	9.5	63.1	100	360	P	H
		4872	41.76	-32.24	74	64.05	31.01	7.9	61.2	100	360	P	V
		7308	42.96	-31.04	74	61.22	35.34	9.5	63.1	100	360	P	V
802.11g CH 11 2462MHz		4920	46	-28	74	68.02	31.12	7.94	61.08	100	360	P	H
		7386	44.1	-29.9	74	62.19	35.55	9.53	63.17	100	360	P	H
		4926	48.12	-25.88	74	70.14	31.12	7.94	61.08	100	360	P	V
		7386	43.14	-30.86	74	61.23	35.55	9.53	63.17	100	360	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)
802.11n HT20 CH 01 2412MHz		2389.82	52.23	-21.77	74	53.48	25.4	5.65	32.3	130	74	P	H
		2389.95	40.71	-13.29	54	41.96	25.4	5.65	32.3	130	74	A	H
	*	2416	102.73	-	-	103.83	25.54	5.67	32.31	130	74	P	H
	*	2416	95.03	-	-	96.13	25.54	5.67	32.31	130	74	A	H
		2389.43	44.94	-29.06	74	46.19	25.4	5.65	32.3	365	38	P	V
		2389.95	34.38	-19.62	54	35.63	25.4	5.65	32.3	365	38	A	V
	*	2406	94.1	-	-	95.2	25.54	5.67	32.31	365	38	P	V
	*	2406	86.22	-	-	87.32	25.54	5.67	32.31	365	38	A	V
802.11n HT20 CH 06 2437MHz		2386.05	47.18	-26.82	74	48.43	25.4	5.65	32.3	135	73	P	H
		2389.95	36.58	-17.42	54	37.83	25.4	5.65	32.3	135	73	A	H
	*	2434	103.49	-	-	104.44	25.69	5.69	32.33	135	73	P	H
	*	2440	95.68	-	-	96.48	25.83	5.71	32.34	135	73	A	H
		2491.9	49.28	-24.72	74	49.64	26.26	5.77	32.39	135	73	P	H
		2483.86	38.16	-15.84	54	38.67	26.11	5.75	32.37	135	73	A	H
		2387.22	41.59	-32.41	74	42.84	25.4	5.65	32.3	380	29	P	V
		2389.95	31.31	-22.69	54	32.56	25.4	5.65	32.3	380	29	A	V
	*	2434	97.89	-	-	98.84	25.69	5.69	32.33	380	29	P	V
	*	2434	89.77	-	-	90.72	25.69	5.69	32.33	380	29	A	V
		2497.06	43.88	-30.12	74	44.24	26.26	5.77	32.39	380	29	P	V
		2500	32.16	-21.84	54	32.52	26.26	5.77	32.39	380	29	A	V



802.11n HT20 CH 11 2462MHz	*	2466	104.28	-	-	104.94	25.97	5.73	32.36	130	73	P	H
	*	2466	96.57	-	-	97.23	25.97	5.73	32.36	130	73	A	H
		2483.56	58.06	-15.94	74	58.57	26.11	5.75	32.37	130	73	P	H
		2483.5	43.85	-10.15	54	44.36	26.11	5.75	32.37	130	73	A	H
	*	2460	97.97	-	-	98.63	25.97	5.73	32.36	365	25	P	V
	*	2458	90.01	-	-	90.67	25.97	5.73	32.36	365	25	A	V
		2483.68	49.97	-24.03	74	50.48	26.11	5.75	32.37	365	25	P	V
		2483.5	36.87	-17.13	54	37.38	26.11	5.75	32.37	365	25	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	39.43	-34.57	74	61.98	30.9	7.86	61.31	100	360	P	H
		4824	40.44	-33.56	74	62.99	30.9	7.86	61.31	100	360	P	V
802.11n HT20 CH 06 2437MHz		4872	41.35	-32.65	74	63.64	31.01	7.9	61.2	100	0	P	H
		7311	42.51	-31.49	74	60.77	35.34	9.5	63.1	100	0	P	H
		4872	44.67	-29.33	74	66.96	31.01	7.9	61.2	100	3	P	V
		7308	41.43	-32.57	74	59.69	35.34	9.5	63.1	100	3	P	V
802.11n HT20 CH 11 2462MHz		4926	45.93	-28.07	74	67.95	31.12	7.94	61.08	200	25	P	H
		7386	42.27	-31.73	74	60.36	35.55	9.53	63.17	200	25	P	H
		4926	45.71	-28.29	74	67.73	31.12	7.94	61.08	100	0	P	V
		7386	41.34	-32.66	74	59.43	35.55	9.53	63.17	100	0	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)
802.11n HT40 CH 03 2422MHz		2387.09	45.93	-28.07	74	47.18	25.4	5.65	32.3	117	76	P	H
		2389.95	35.14	-18.86	54	36.39	25.4	5.65	32.3	117	76	A	H
	*	2430	90.97	-	-	91.92	25.69	5.69	32.33	117	76	P	H
	*	2430	83.25	-	-	84.2	25.69	5.69	32.33	117	76	A	H
		2486.38	43.81	-30.19	74	44.32	26.11	5.75	32.37	117	76	P	H
		2488.72	32.46	-21.54	54	32.82	26.26	5.77	32.39	117	76	A	H
		2386.18	52.23	-21.77	74	53.48	25.4	5.65	32.3	122	78	P	V
		2389.95	40.67	-13.33	54	41.92	25.4	5.65	32.3	122	78	A	V
	*	2428	99.49	-	-	100.44	25.69	5.69	32.33	122	78	P	V
	*	2436	91	-	-	91.95	25.69	5.69	32.33	122	78	A	V
		2484.58	50.12	-23.88	74	50.63	26.11	5.75	32.37	122	78	P	V
		2484.76	39.01	-14.99	54	39.52	26.11	5.75	32.37	122	78	A	V
802.11n HT40 CH 06 2437MHz		2388.78	42.83	-31.17	74	44.08	25.4	5.65	32.3	144	78	P	H
		2389.95	31.87	-22.13	54	33.12	25.4	5.65	32.3	144	78	A	H
	*	2444	91.78	-	-	92.58	25.83	5.71	32.34	144	78	P	H
	*	2444	83.35	-	-	84.15	25.83	5.71	32.34	144	78	A	H
		2484.22	44.44	-29.56	74	44.95	26.11	5.75	32.37	144	78	P	H
		2483.5	33.62	-20.38	54	34.13	26.11	5.75	32.37	144	78	A	H
		2384.88	47.93	-26.07	74	49.23	25.35	5.63	32.28	116	78	P	V
		2389.95	37.25	-16.75	54	38.5	25.4	5.65	32.3	116	78	A	V
	*	2444	99.86	-	-	100.66	25.83	5.71	32.34	116	78	P	V
	*	2446	92.11	-	-	92.91	25.83	5.71	32.34	116	78	A	V
		2486.02	51.83	-22.17	74	52.34	26.11	5.75	32.37	116	78	P	V
		2483.5	41.22	-12.78	54	41.73	26.11	5.75	32.37	116	78	A	V



802.11n HT40 CH 09 2452MHz		2388.26	43.57	-30.43	74	44.82	25.4	5.65	32.3	111	77	P	H
		2389.95	31.35	-22.65	54	32.6	25.4	5.65	32.3	111	77	A	H
	*	2458	92.23	-	-	92.89	25.97	5.73	32.36	111	77	P	H
	*	2460	84.39	-	-	85.05	25.97	5.73	32.36	111	77	A	H
		2486.38	50.04	-23.96	74	50.55	26.11	5.75	32.37	111	77	P	H
		2483.5	37.11	-16.89	54	37.62	26.11	5.75	32.37	111	77	A	H
		2387.35	47.14	-26.86	74	48.39	25.4	5.65	32.3	101	78	P	V
		2389.56	36.3	-17.7	54	37.55	25.4	5.65	32.3	101	78	A	V
	*	2456	100.42	-	-	101.08	25.97	5.73	32.36	101	78	P	V
	*	2458	92.73	-	-	93.39	25.97	5.73	32.36	101	78	A	V
		2485.42	58.97	-15.03	74	59.48	26.11	5.75	32.37	101	78	P	V
		2483.5	45.28	-8.72	54	45.79	26.11	5.75	32.37	101	78	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		4842	40.24	-33.76	74	62.71	30.93	7.87	61.27	100	360	P	H
HT40		7266	40.22	-33.78	74	58.54	35.26	9.48	63.06	100	360	P	H
CH 03		4842	44.6	-29.4	74	67.07	30.93	7.87	61.27	100	360	P	V
2422MHz		7266	41.83	-32.17	74	60.15	35.26	9.48	63.06	100	360	P	V
802.11n		4872	39.65	-34.35	74	61.94	31.01	7.9	61.2	100	360	P	H
HT40		7308	41.69	-32.31	74	59.95	35.34	9.5	63.1	100	360	P	H
CH 06		4872	42.05	-31.95	74	64.34	31.01	7.9	61.2	100	329	P	V
2437MHz		7311	40.76	-33.24	74	59.02	35.34	9.5	63.1	100	329	P	V
802.11n		4902	40.56	-33.44	74	62.67	31.08	7.93	61.12	100	77	P	H
HT40		7356	41.92	-32.08	74	60.07	35.47	9.52	63.14	100	77	P	H
CH 09		4902	42.82	-31.18	74	64.93	31.08	7.93	61.12	200	357	P	V
2452MHz		7356	42.15	-31.85	74	60.3	35.47	9.52	63.14	200	357	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 802.11b (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 802.11b LF		30	25.9	-14.1	40	30.13	26.3	0.57	31.1	-	-	P	H
		105.66	31.61	-11.89	43.5	43.47	17.74	1.12	30.72	-	-	P	H
		147.37	31.46	-12.04	43.5	43.71	17.33	1.31	30.89	-	-	P	H
		176.47	31.95	-11.55	43.5	45.07	16.45	1.44	31.01	106	174	P	H
		270.56	31.15	-14.85	46	42.07	18.6	1.8	31.32	-	-	P	H
		930.16	31.89	-14.11	46	29.89	29.77	3.45	31.22	-	-	P	H
		36.79	29.53	-10.47	40	37.81	22.14	0.66	31.08	117	238	P	V
		57.16	28.87	-11.13	40	46.45	13.14	0.82	31.54	-	-	P	V
		102.75	30.51	-12.99	43.5	42.35	17.77	1.1	30.71	-	-	P	V
		141.55	31.98	-11.52	43.5	44.19	17.39	1.27	30.87	-	-	P	V
		178.41	31.95	-11.55	43.5	45.12	16.39	1.45	31.01	-	-	P	V
		903	31.43	-14.57	46	29.95	29.16	3.43	31.11	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

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

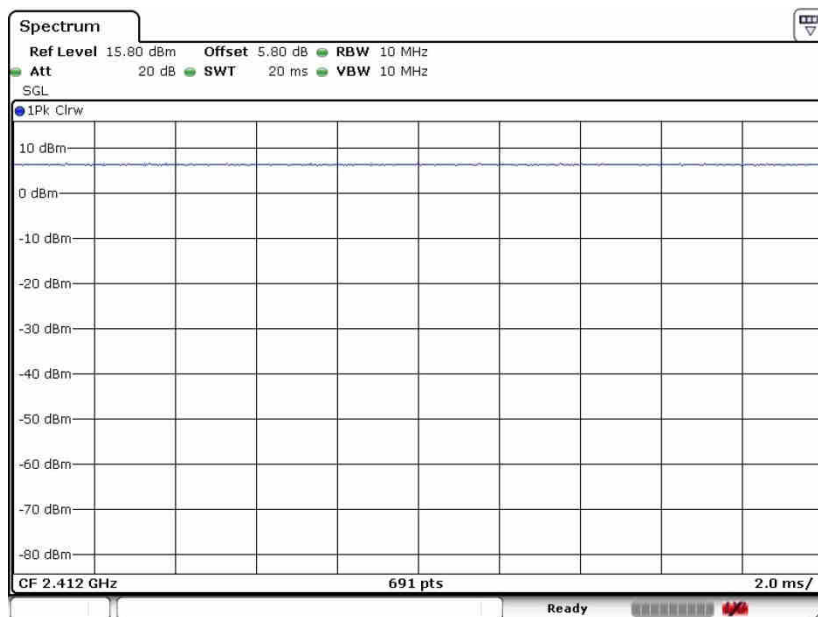


Appendix C. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	100	-	-	10Hz
802.11g	100	-	-	10Hz
802.11n HT20	100	-	-	10Hz
802.11n HT40	100	-	-	10Hz

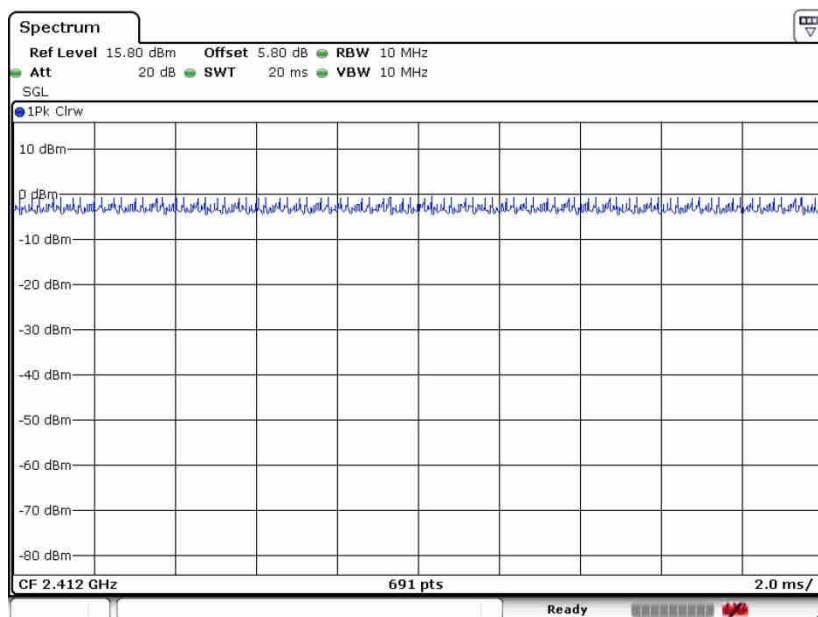


802.11b



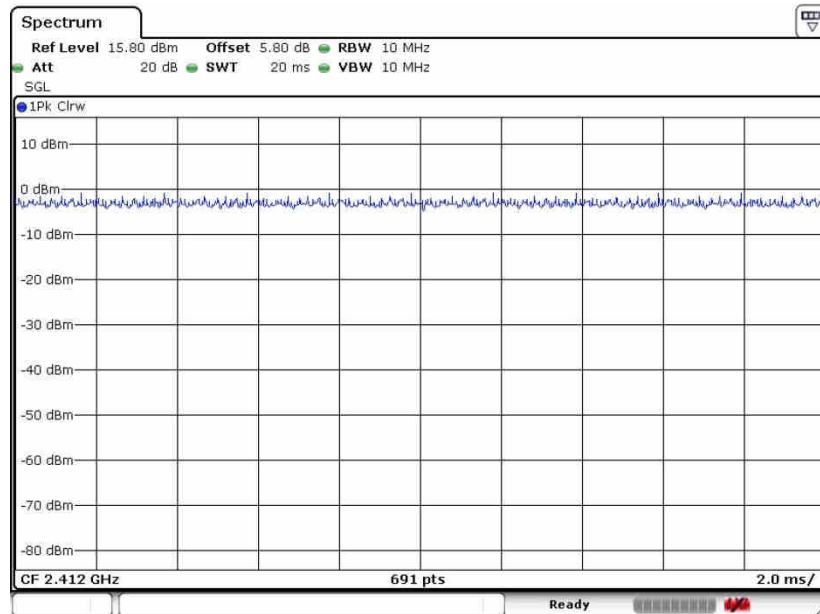


802.11g





802.11n HT20



Date: 20 SEP.2017 18:28:36



802.11n HT40

