FCC RF Test Report

APPLICANT	:	Xiaomi Communications Co., Ltd.
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	MI
MODEL NAME	:	M1804C3DG
FCC ID	:	2AFZZ-RMSC3DG
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

The product was received on Apr. 16, 2018 and testing was completed on May 14, 2018. We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR841618-01C	Rev. 01	Initial issue of report	Jun. 12, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges	≤ 20dBc	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.87 dB at 43.500 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 6.01 dB at 0.521 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

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

1.2 Manufacturer

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

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	MI
Model Name	M1804C3DG
FCC ID	2AFZZ-RMSC3DG
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ DC-HSDPA/HSPA+/LTE WLAN 2.4GHz 802.11b/g/n HT20 Bluetooth v3.0 + EDR/ Bluetooth v 4.0 LE/ Bluetooth v 4.2 LE
IMEI Code	Conducted: N/A Conduction: 868672030013954/868672030013962 Radiation: 868672030013376/868672030013384
HW Version	P2
SW Version	MIUI9
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 difference between two samples is for memory, the sample 1 is 3+32GB capacity and the sample 2 is 4+64GB capacity. According to the difference, we only choose sample 1 to perform full test.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to antenna	802.11b : 17.53 dBm (0.0566 W) 802.11g : 23.53 dBm (0.2254 W) 802.11n HT20 : 23.52 dBm (0.2249 W)
Antenna Type / Gain	IFA Antenna with gain 1.38 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

Note: For 802.11g/11n HT 20 mode, the whole testing has assessed 802.11g mode by referring to their higher conducted power for RSE testing.

1.5 Modification of EUT

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

1.6 Testing Location

SPORTON INTERNATIONAL INC. is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and under the FCC-recognized accredited testing laboratories by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH05-HY	CO05-HY

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

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No.58, Aly. 75, Ln. 564 Wenha 3rd Rd. Guishan Dist. Taoyuan City Taiwan TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	**Sporton Site No.**	**FCC designation No.**	**FCC Test Firm Registration No.**
	03CH12-HY	TW0007	214511

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

1.7 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04
- ANSI C63.10-2013

Remark:

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

2 Test Configuration of Equipment Under Test

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

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

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

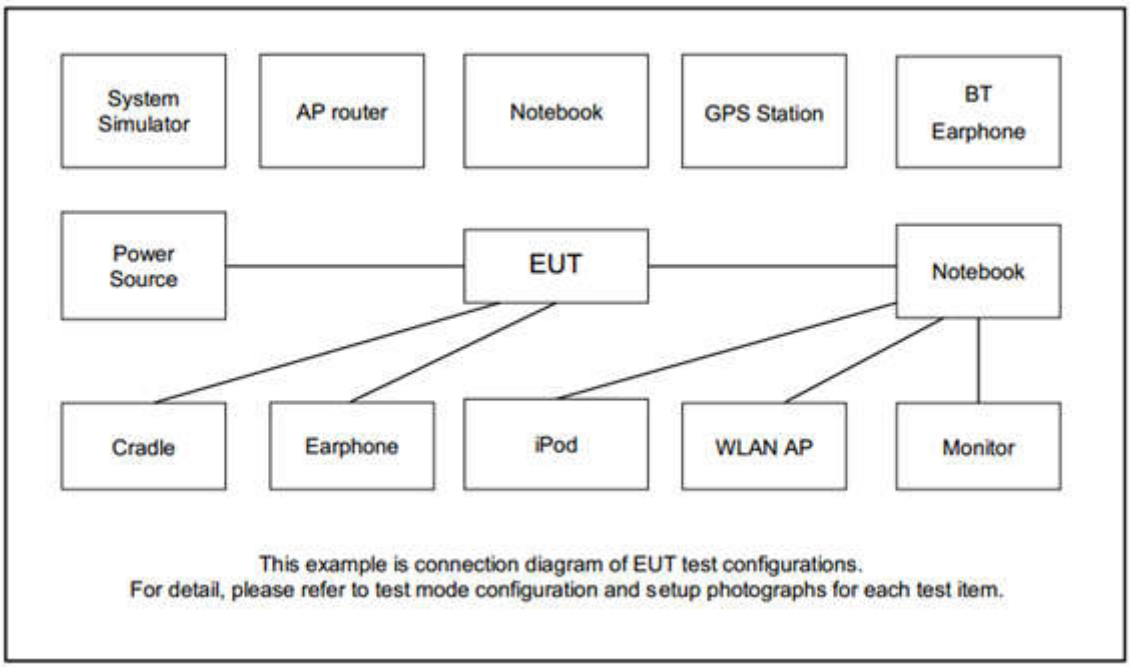
2.2 Test Mode

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

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

Test Cases	
AC Conducted Emission	Mode 1 :GSM 850 Idle + Bluetooth Link + WLAN Link (2.4G) + Camera(Rear) + USB Cable 1(Charging from Adapter1) + Earphone + SD Card + SIM 1
Remark: For Radiated Test Cases, The tests were performed with Adapter 1, Earphone and USB Cable 1.	

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
3.	Notebook	Dell	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Sony Ericsson	MW600	PY700A2029	N/A	N/A
5.	iPod Earphone	Apple	A1285	DoC	UnShielded, 1.2m	N/A
6.	SD Card	SanDisk	MicroSD HC	FCC DoC	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 Notebook under large package sizes transmission.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example:

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

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5.3 dB and 20dB attenuator.

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

= 5.3 + 20 = 25.3 (dB)

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

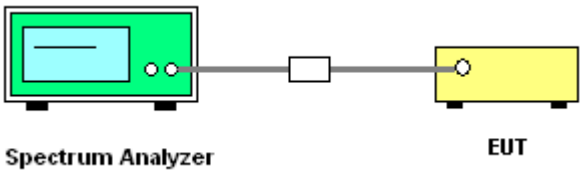
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v04.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. Measure and record the results in the test report.

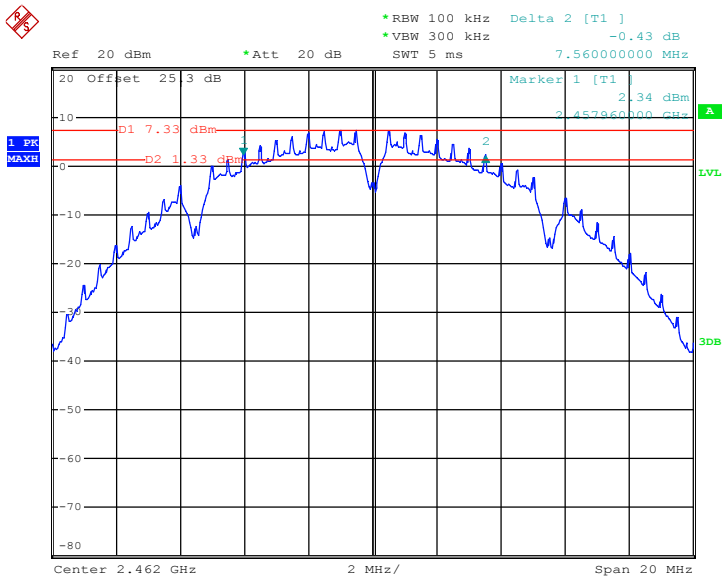
3.1.4 Test Setup



3.1.5 Test Result of 6dB Occupied Bandwidth

Please refer to Appendix A.

Minimum 6dB Bandwidth



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3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

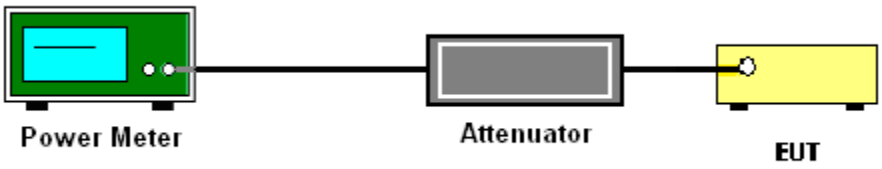
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v04 section 9.1.3 PKPM1 Peak power meter method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

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

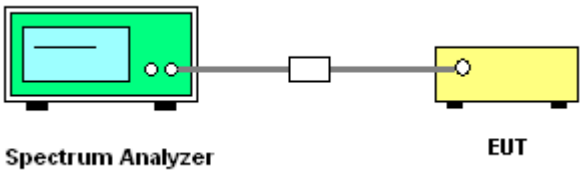
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

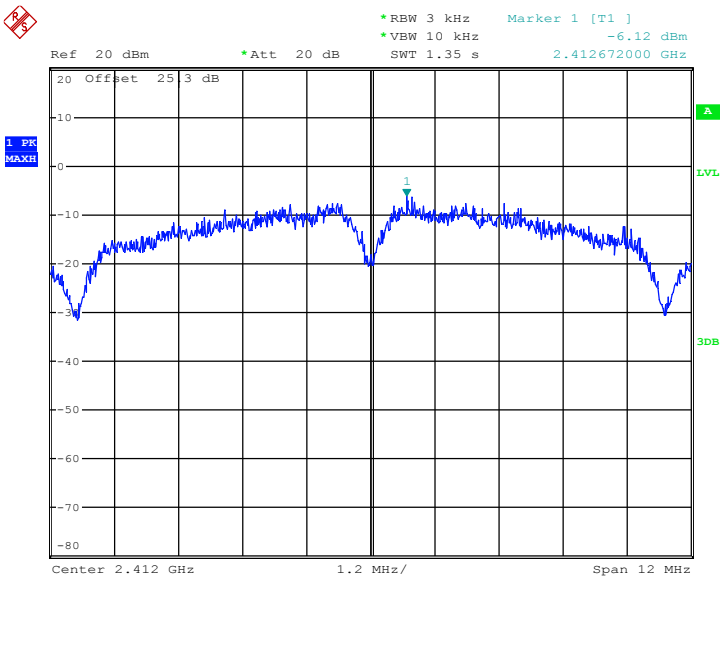
3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

Worst Case Power Density (dBm/3kHz)



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

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

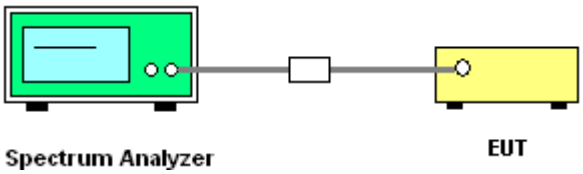
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup

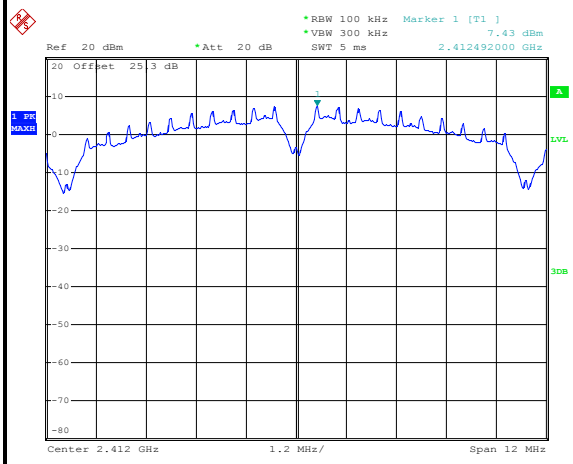


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Engineer :	Tommy Lee/Shiang Wang	**Temperature :**	21~25℃
		Relative Humidity :	51~54%

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

100kHz PSD reference Level



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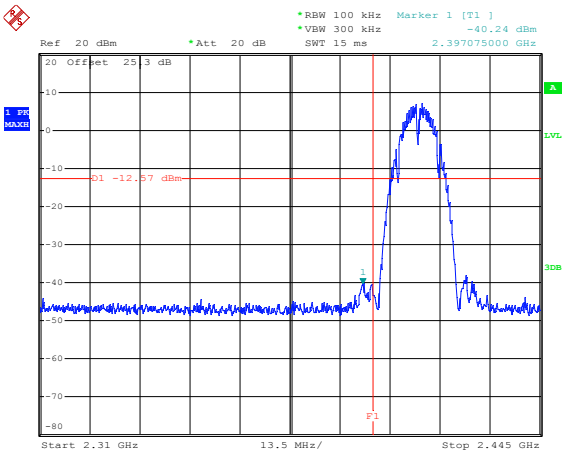
Low Channel Plot



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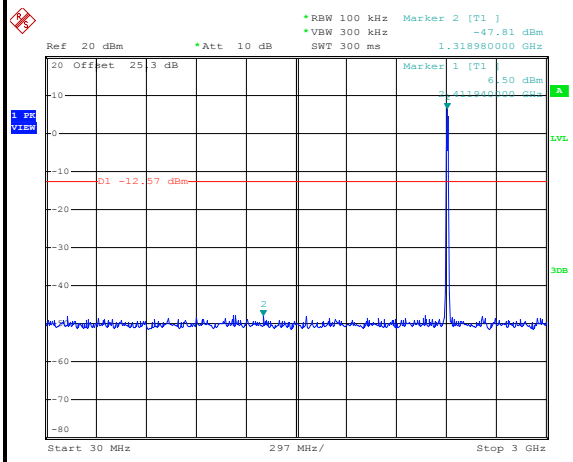
Spurious Emission 30MHz~3GHz



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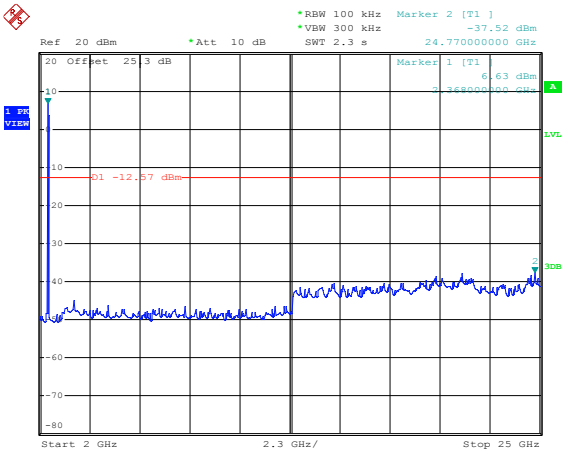
Spurious Emission 2GHz~25GHz



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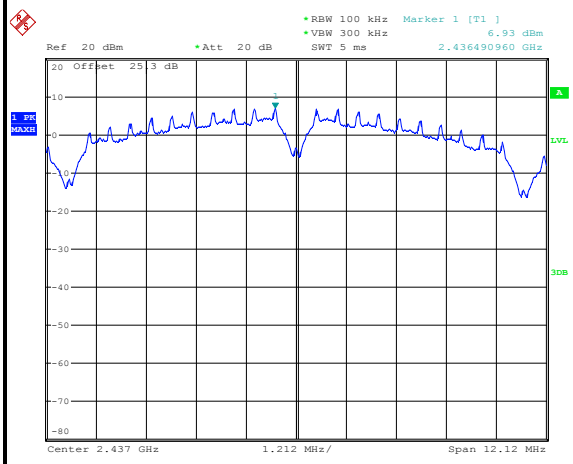
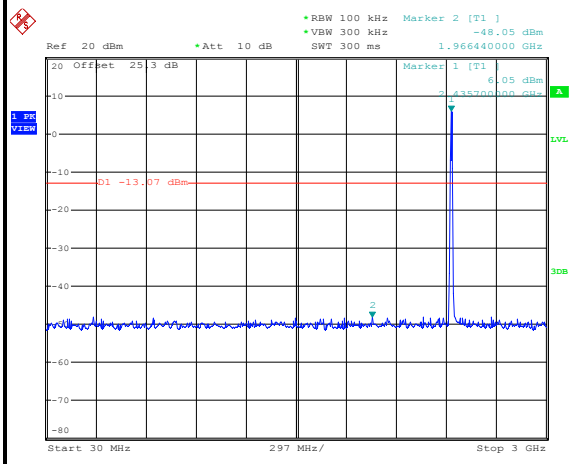
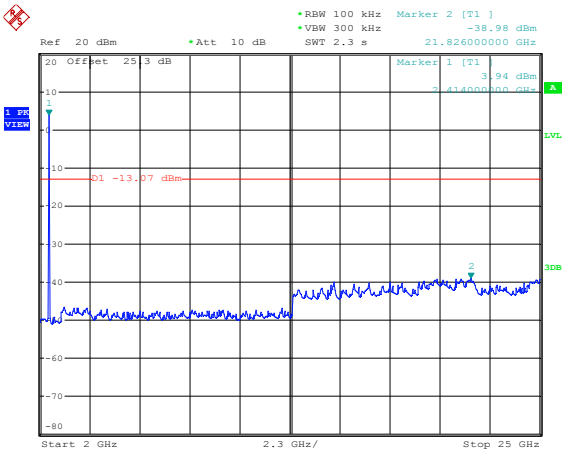
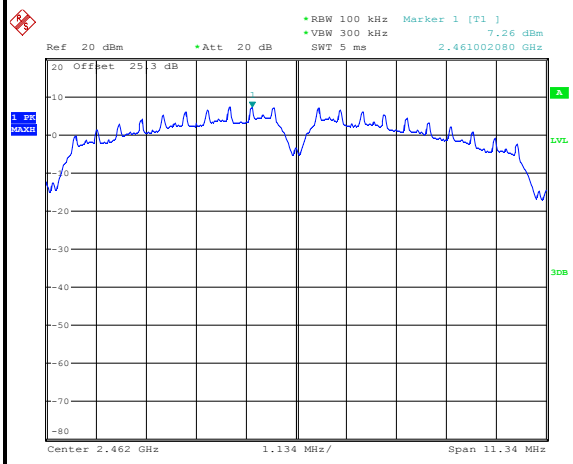
Test Mode :	802.11b	Test Channel :	06

100kHz PSD reference Level	
	

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

Test Mode :	802.11b	Test Channel :	11

100kHz PSD reference Level



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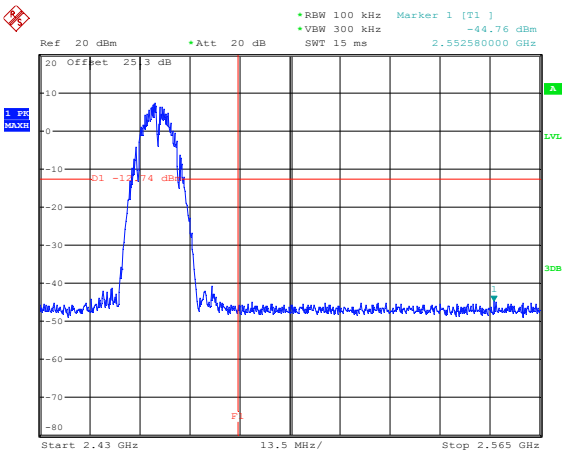
High Channel Plot



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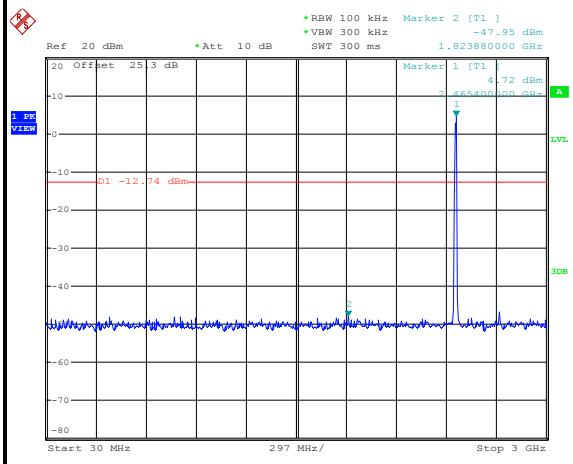
Spurious Emission 30MHz~3GHz



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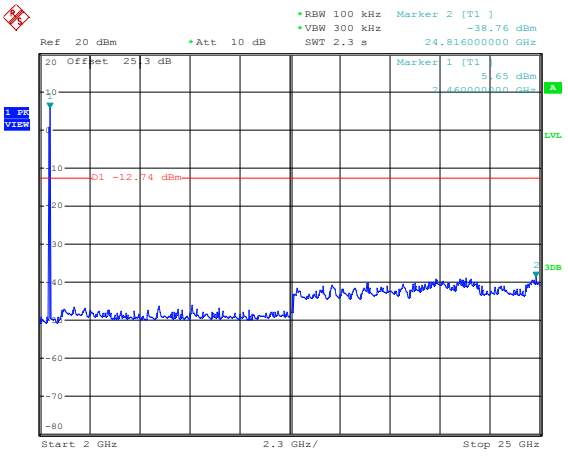
Spurious Emission 2GHz~25GHz



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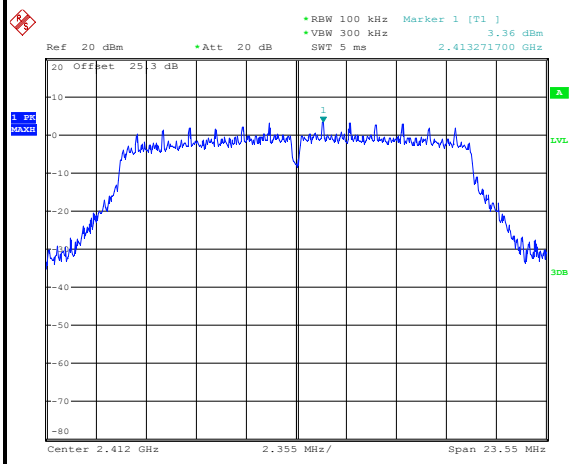
Test Mode :	802.11g	Test Channel :	01

100kHz PSD reference Level



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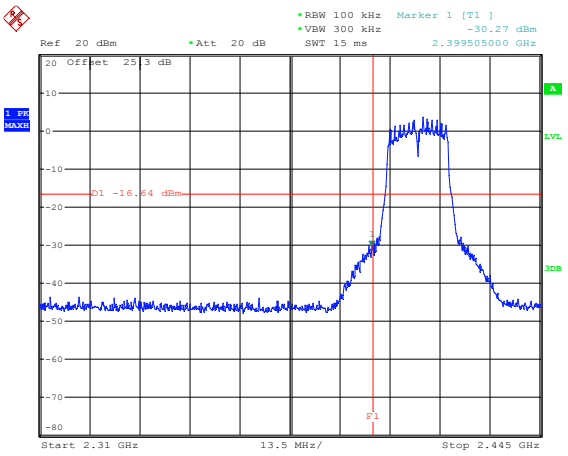
Low Channel Plot



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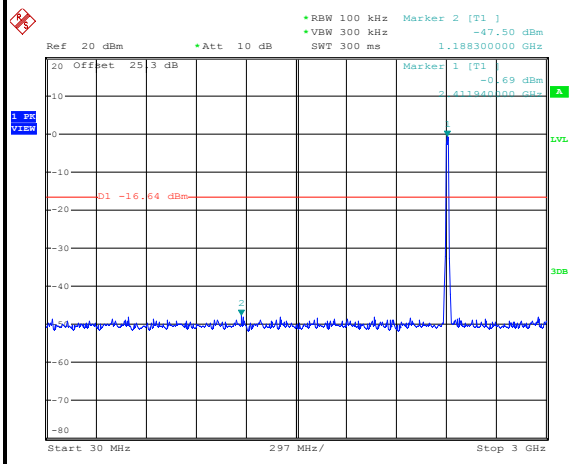
Spurious Emission 30MHz~3GHz



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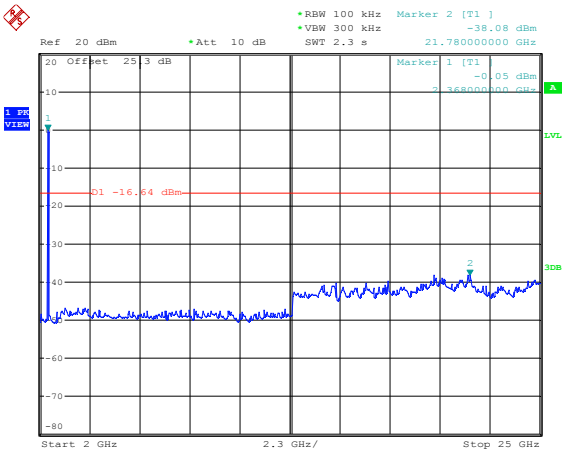
Spurious Emission 2GHz~25GHz



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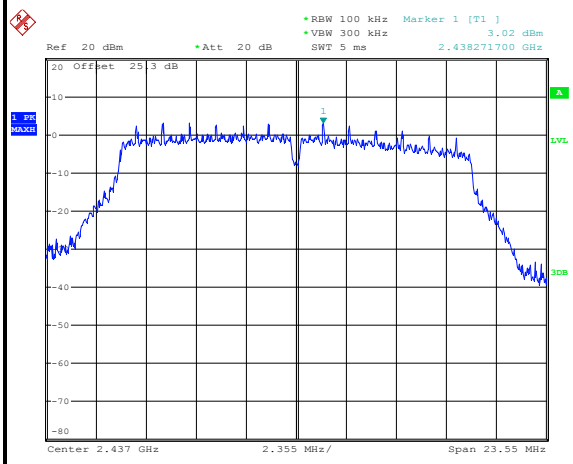
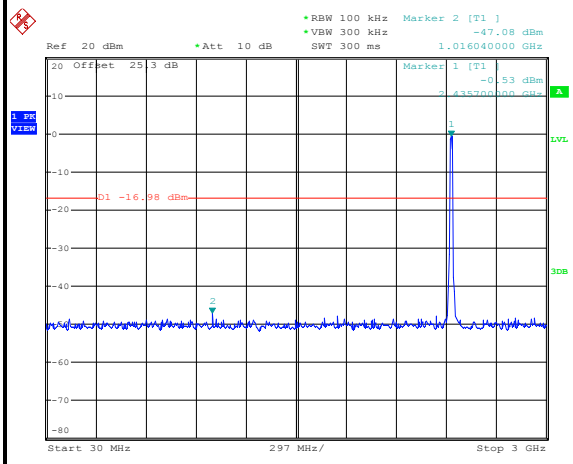
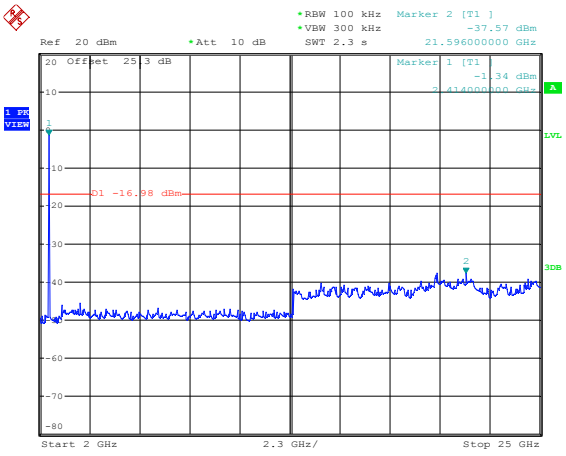
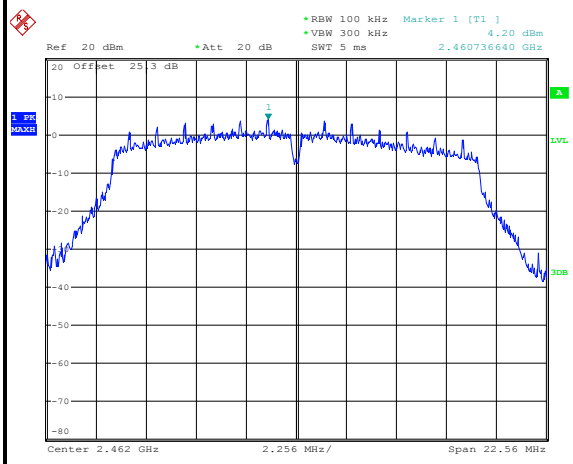
Test Mode :	802.11g	Test Channel :	06

100kHz PSD reference Level	
 Date: 4.MAY.2018 03:42:11	

Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
 Date: 4.MAY.2018 03:42:45	 Date: 4.MAY.2018 03:43:10

Test Mode :	802.11g	Test Channel :	11

100kHz PSD reference Level



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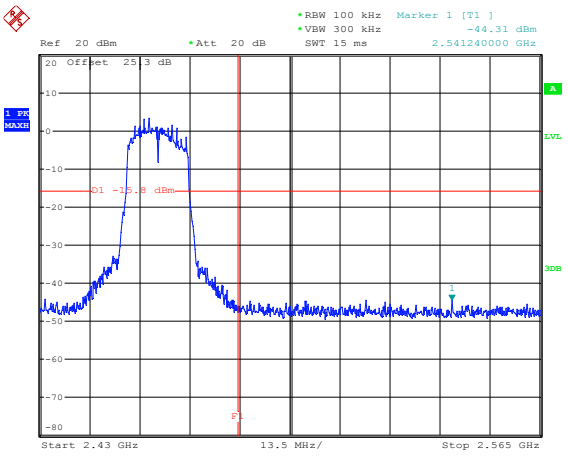
High Channel Plot



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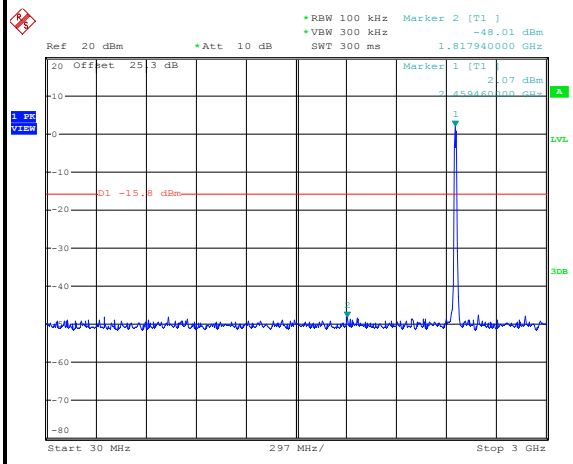
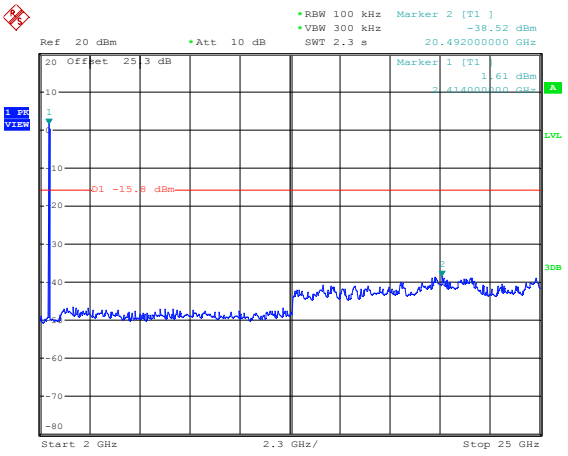
Spurious Emission 30MHz~3GHz



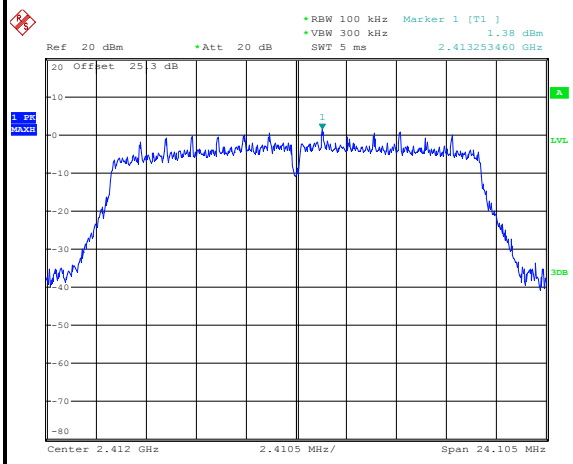
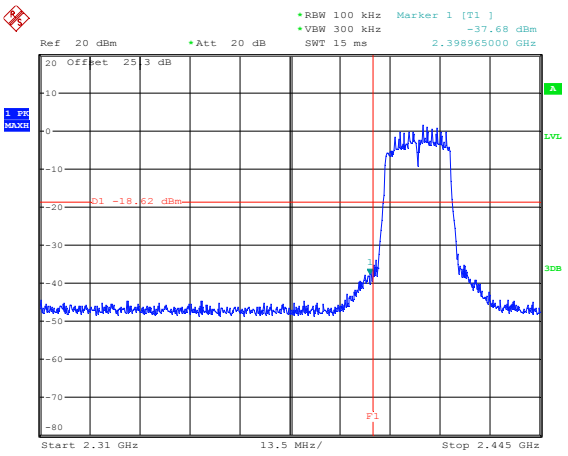
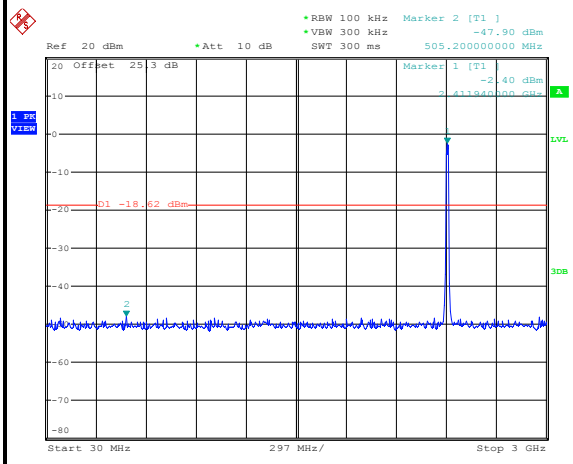
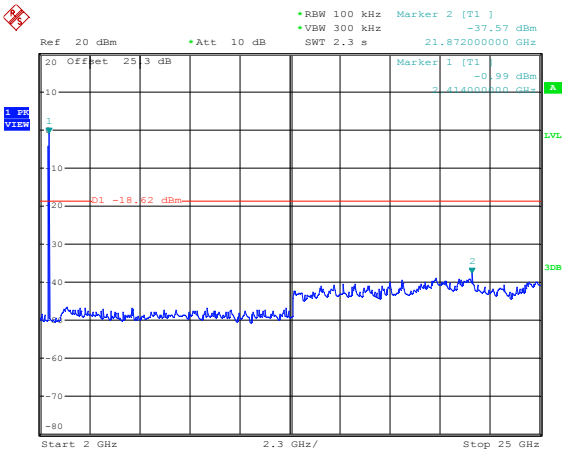
Date: 4.MAY.2018 03:48:38

Spurious Emission 2GHz~25GHz

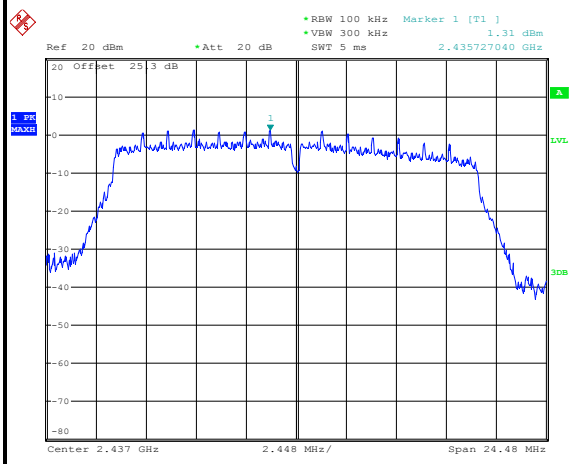


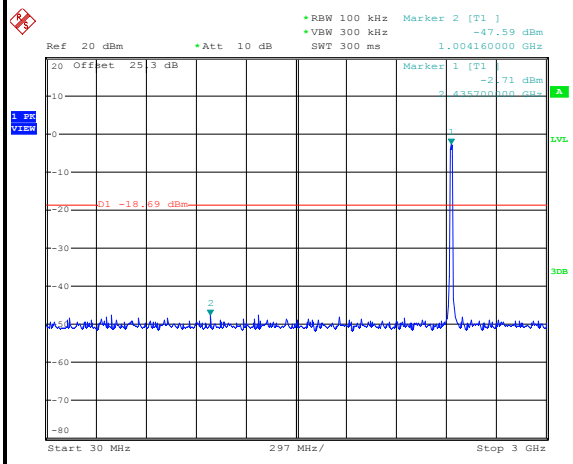
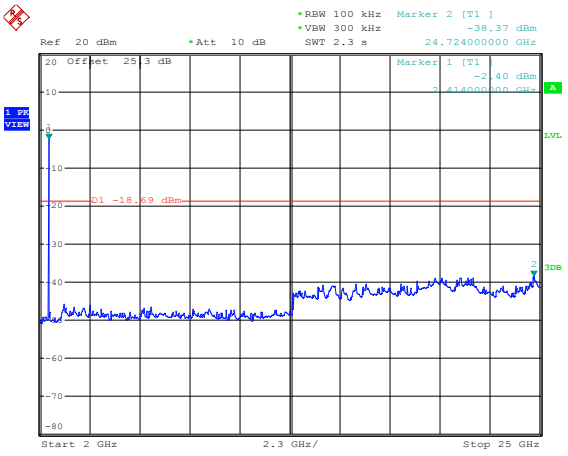
Date: 4.MAY.2018 03:48:56

Test Mode :	802.11n HT20	Test Channel :	01

100kHz PSD reference Level	Low Channel Plot
 Date: 4.MAY.2018 03:55:12	 Date: 4.MAY.2018 03:55:29
Spurious Emission 30MHz~3GHz	**Spurious Emission 2GHz~25GHz**
 Date: 4.MAY.2018 03:56:10	 Date: 4.MAY.2018 03:56:35

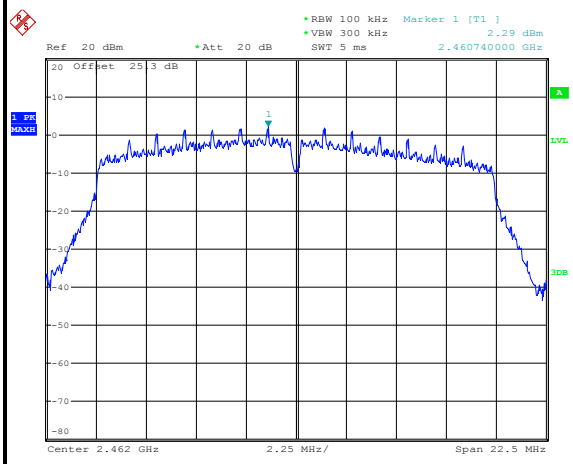
Test Mode :	802.11n HT20	Test Channel :	06

100kHz PSD reference Level	
 Date: 4.MAY.2018 04:17:38	

Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
 Date: 4.MAY.2018 04:18:04	 Date: 4.MAY.2018 04:18:21

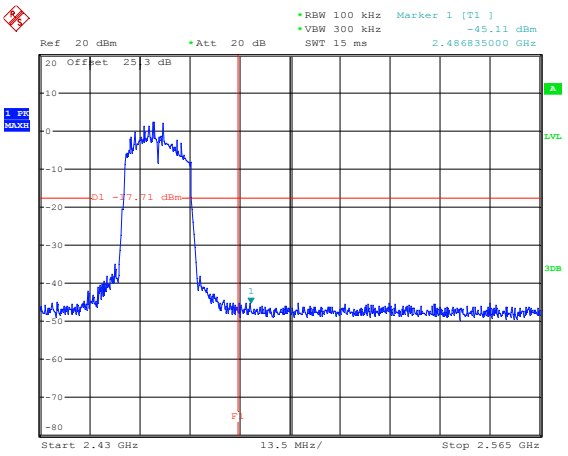
Test Mode :	802.11n HT20	Test Channel :	11

100kHz PSD reference Level



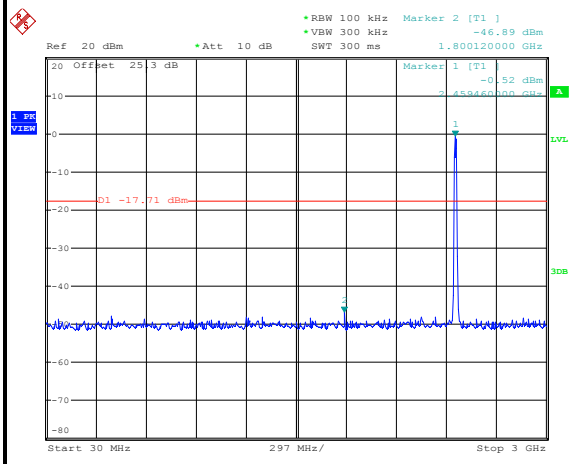
Date: 4.MAY.2018 04:26:47

High Channel Plot



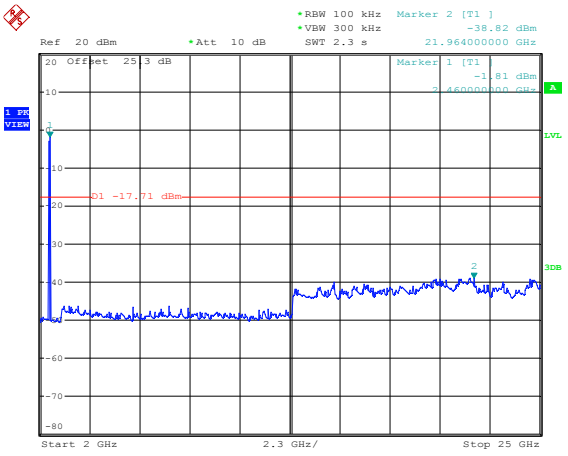
Date: 4.MAY.2018 04:27:12

Spurious Emission 30MHz~3GHz



Date: 4.MAY.2018 04:27:35

Spurious Emission 2GHz~25GHz



Date: 4.MAY.2018 04:27:55

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

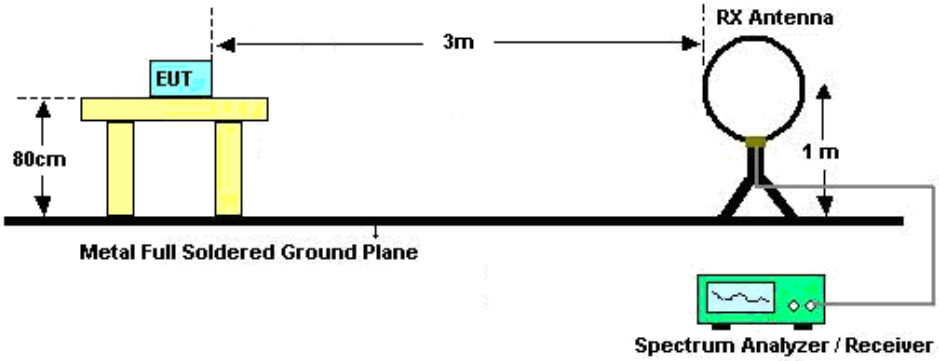
The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

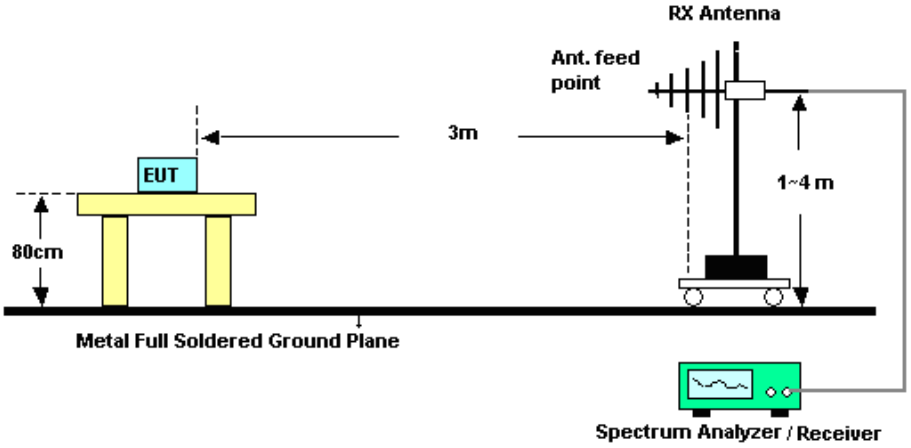
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.5.4 Test Setup

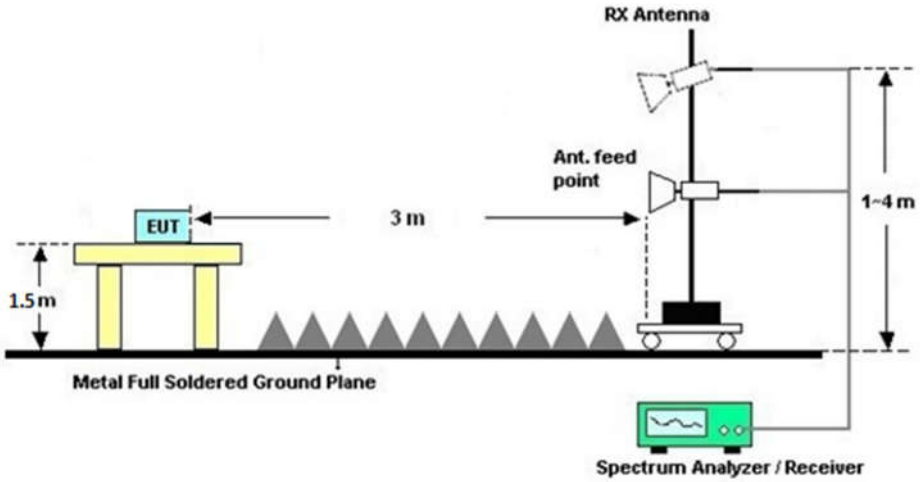
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.5.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix C.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

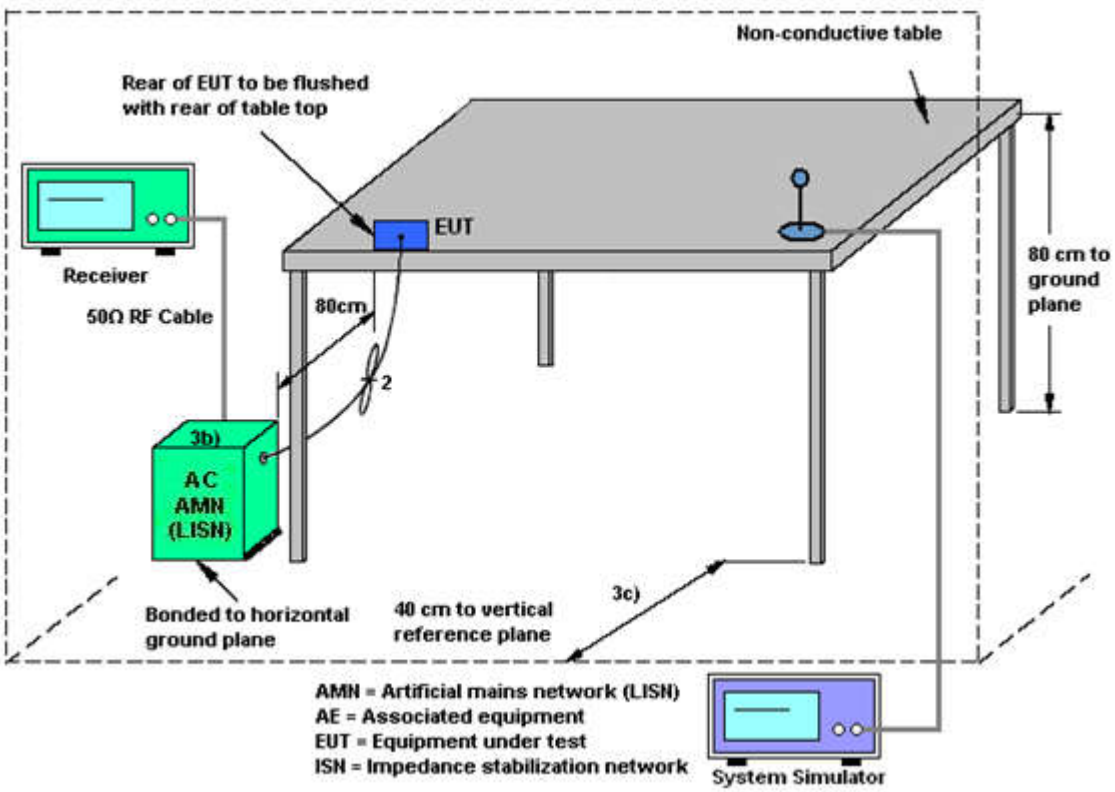
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.7 Antenna Requirements

3.7.1 Standard Applicable

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

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H1	34893241	N/A	Mar. 06, 2018	May 04, 2018	Mar. 05, 2019	Conducted (TH05-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Dec. 20, 2017	May 04, 2018	Dec. 19, 2018	Conducted (TH05-HY)
Power Sensor	Agilent	E9327A	US40441548	50MHz~18GHz	Dec. 20, 2017	May 04, 2018	Dec. 19, 2018	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9kHz ~ 30GHz	Nov. 13, 2017	May 04, 2018	Nov. 12, 2018	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	NCR	May 14, 2018	NCR	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	3.6GHz	Dec. 08, 2017	May 14, 2018	Dec. 07, 2018	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Mar. 06, 2018	May 14, 2018	Mar. 05, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	May 14, 2018	Nov. 29, 2018	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	May 14, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	May 14, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Nov. 23, 2017	May 04, 2018	Nov. 22, 2018	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL6111D&00802N1D01N-06	47020&06	30MHz to 1GHz	Nov. 20, 2017	May 04, 2018	Nov. 19, 2018	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1328	1GHz ~ 18GHz	Oct. 20, 2017	May 04, 2018	Oct. 19, 2018	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 27, 2017	May 04, 2018	Nov. 26, 2018	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 26, 2018	May 04, 2018	Mar. 25, 2019	Radiation (03CH12-HY)
Preamplifier	Jet-Power	JPA0118-55-303K	1710001800054002	1GHz~18GHz	Apr. 17, 2018	May 04, 2018	Apr. 16, 2019	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY53270148	1GHz~26.5GHz	Jan. 15, 2018	May 04, 2018	Jan. 14, 2019	Radiation (03CH12-HY)
Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 18, 2017	May 04, 2018	Jul. 17, 2018	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 25, 2017	May 04, 2018	Dec. 24, 2018	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	NCR	May 04, 2018	NCR	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	NCR	May 04, 2018	NCR	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	NCR	May 04, 2018	NCR	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-2700-3000-18000	SN2	3 GHz Highpass	Jul. 17, 2017	May 04, 2018	Jul. 16, 2018	Radiation (03CH12-HY)

		-60ST						
Attenuator	Fairview Microwave	SA18S5W-10	n/a	10db	Jul. 17, 2017	May 04, 2018	Jul. 16, 2018	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30M~40GHz	Oct. 17, 2017	May 04, 2018	Oct. 16, 2018	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30M~40GHz	Oct. 17, 2017	May 04, 2018	Oct. 16, 2018	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	MY1082/26EA	30M~18GHz	Oct. 17, 2017	May 04, 2018	Oct. 16, 2018	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP140349	N/A	Oct. 12, 2017	May 04, 2018	Oct. 11, 2018	Radiation (03CH12-HY)

NCR: No Calibration Required

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.7dB

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.2dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.7dB

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Tommy Lee/Shiang Wang	Temperature:	21~25	°C
Test Date:	2018/5/4	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB Bandwidth

2.4GHz Band							
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
					Ant 1		
11b	1Mbps	1	1	2412	8.00	0.50	Pass
11b	1Mbps	1	6	2437	8.08	0.50	Pass
11b	1Mbps	1	11	2462	7.56	0.50	Pass
11g	6Mbps	1	1	2412	15.70	0.50	Pass
11g	6Mbps	1	6	2437	15.70	0.50	Pass
11g	6Mbps	1	11	2462	15.04	0.50	Pass
HT20	MCS0	1	1	2412	16.07	0.50	Pass
HT20	MCS0	1	6	2437	16.32	0.50	Pass
HT20	MCS0	1	11	2462	15.00	0.50	Pass

TEST RESULTS DATA
Peak Output Power

2.4GHz Band										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
					Ant 1	Ant 1	Ant 1	Ant 1	Ant 1	
11b	1Mbps	1	1	2412	17.53	30.00	1.38	18.91	36.00	Pass
11b	1Mbps	1	6	2437	17.40	30.00	1.38	18.78	36.00	Pass
11b	1Mbps	1	11	2462	17.35	30.00	1.38	18.73	36.00	Pass
11g	6Mbps	1	1	2412	22.78	30.00	1.38	24.16	36.00	Pass
11g	6Mbps	1	6	2437	23.53	30.00	1.38	24.91	36.00	Pass
11g	6Mbps	1	11	2462	23.52	30.00	1.38	24.90	36.00	Pass
HT20	MCS0	1	1	2412	22.36	30.00	1.38	23.74	36.00	Pass
HT20	MCS0	1	6	2437	23.52	30.00	1.38	24.90	36.00	Pass
HT20	MCS0	1	11	2462	23.28	30.00	1.38	24.66	36.00	Pass

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

TEST RESULTS DATA
Average Output Power

2.4GHz Band									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Ant 1	Ant 2	Ant 1	Ant 2	SUM
11b	1Mbps	1	1	2412	0.04	-	15.26	-	-
11b	1Mbps	1	6	2437	0.04	-	15.09	-	
11b	1Mbps	1	11	2462	0.04	-	14.89	-	
11g	6Mbps	1	1	2412	0.15	-	13.68	-	
11g	6Mbps	1	6	2437	0.15	-	13.85	-	
11g	6Mbps	1	11	2462	0.15	-	13.99	-	
HT20	MCS0	1	1	2412	0.16	-	11.70	-	
HT20	MCS0	1	6	2437	0.16	-	11.77	-	
HT20	MCS0	1	11	2462	0.16	-	11.96	-	

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

TEST RESULTS DATA
Peak Power Spectral Density

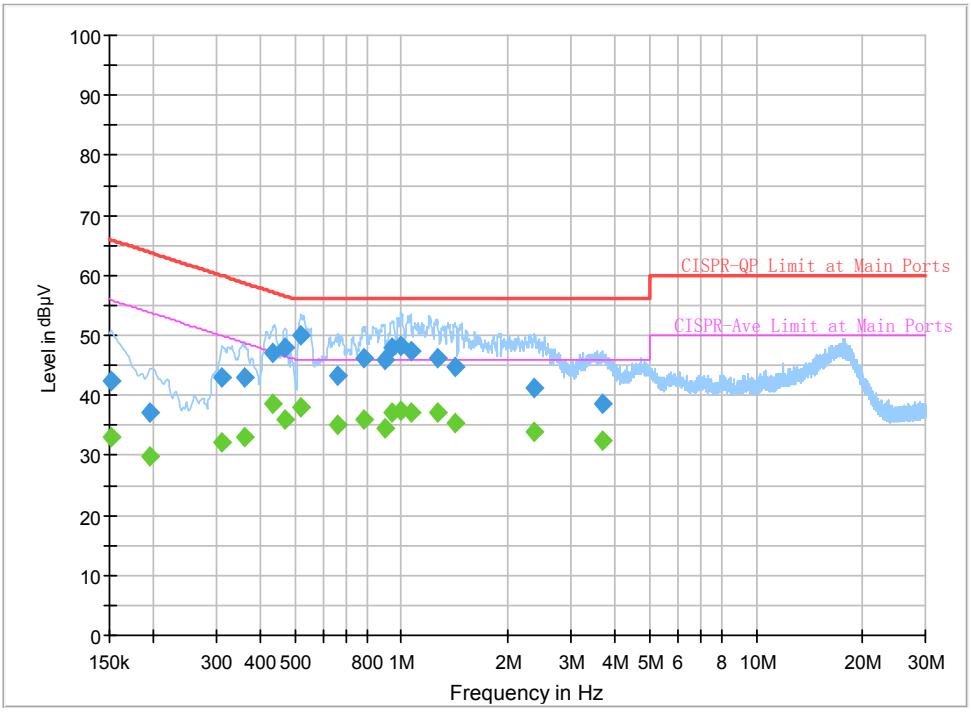
2.4GHz Band								
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm/3kHz)	DG (dBi)	Peak PSD Limit (dBm/3kHz)	Pass/Fail
					Ant 1	Ant 1	Ant 1	
11b	1Mbps	1	1	2412	-6.12	1.38	8.00	Pass
11b	1Mbps	1	6	2437	-6.78	1.38	8.00	Pass
11b	1Mbps	1	11	2462	-6.77	1.38	8.00	Pass
11g	6Mbps	1	1	2412	-10.38	1.38	8.00	Pass
11g	6Mbps	1	6	2437	-9.73	1.38	8.00	Pass
11g	6Mbps	1	11	2462	-10.36	1.38	8.00	Pass
HT20	MCS0	1	1	2412	-12.93	1.38	8.00	Pass
HT20	MCS0	1	6	2437	-12.92	1.38	8.00	Pass
HT20	MCS0	1	11	2462	-13.00	1.38	8.00	Pass

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

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Arthur Hsieh	Temperature :	21~25℃
		Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line

Full Spectrum

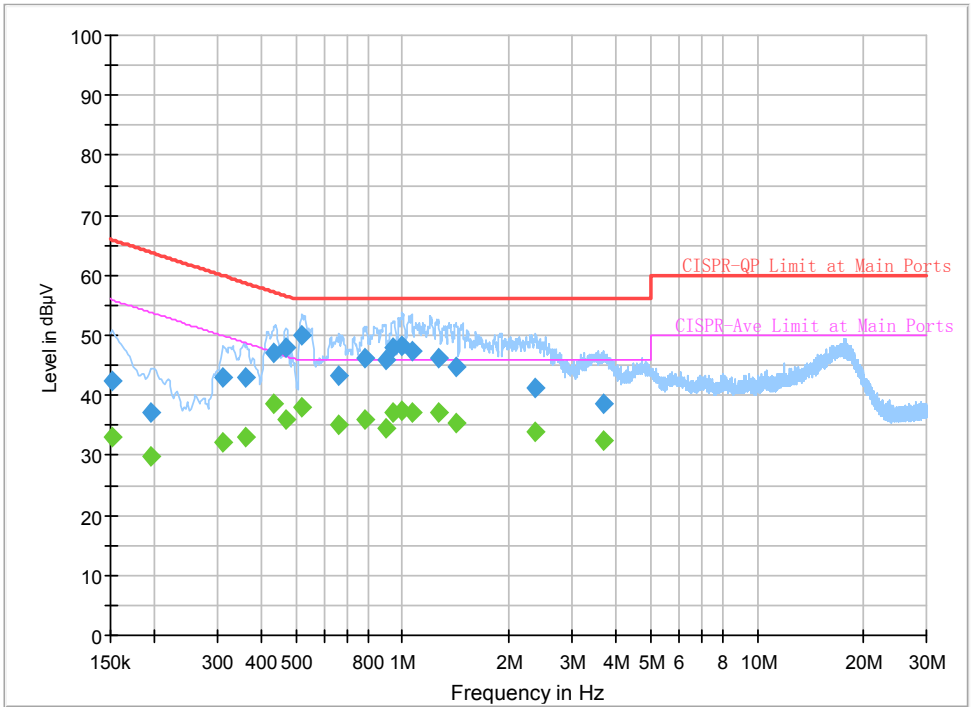


Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	33.18	55.88	22.70	L1	OFF	19.5
0.152250	42.35	---	65.88	23.53	L1	OFF	19.5
0.195000	---	29.86	53.82	23.96	L1	OFF	19.5
0.195000	37.18	---	63.82	26.64	L1	OFF	19.5
0.309750	---	32.16	49.98	17.82	L1	OFF	19.5
0.309750	42.98	---	59.98	17.00	L1	OFF	19.5
0.361500	---	33.15	48.69	15.54	L1	OFF	19.5
0.361500	43.05	---	58.69	15.64	L1	OFF	19.5
0.431250	---	38.62	47.23	8.61	L1	OFF	19.5
0.431250	46.99	---	57.23	10.24	L1	OFF	19.5
0.467250	---	35.93	46.56	10.63	L1	OFF	19.5
0.467250	47.94	---	56.56	8.62	L1	OFF	19.5
0.521250	---	37.94	46.00	8.06	L1	OFF	19.5
0.521250	49.99	---	56.00	6.01	L1	OFF	19.5
0.663000	---	35.00	46.00	11.00	L1	OFF	19.5
0.663000	43.28	---	56.00	12.72	L1	OFF	19.5
0.784500	---	35.91	46.00	10.09	L1	OFF	19.5
0.784500	46.25	---	56.00	9.75	L1	OFF	19.5

Test Engineer :	Arthur Hsieh	Temperature :	21~25℃
		Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line

Full Spectrum

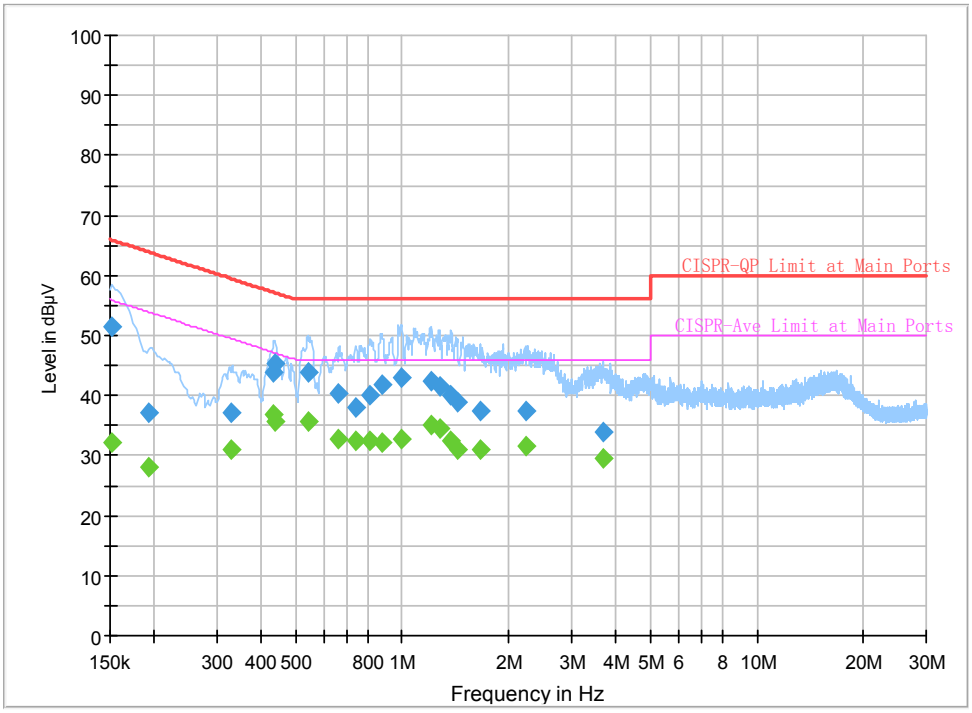


Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.892500	---	34.41	46.00	11.59	L1	OFF	19.5
0.892500	45.77	---	56.00	10.23	L1	OFF	19.5
0.937500	---	37.16	46.00	8.84	L1	OFF	19.5
0.937500	48.04	---	56.00	7.96	L1	OFF	19.5
0.993750	---	37.36	46.00	8.64	L1	OFF	19.5
0.993750	48.37	---	56.00	7.63	L1	OFF	19.5
1.059000	---	37.16	46.00	8.84	L1	OFF	19.5
1.059000	47.49	---	56.00	8.51	L1	OFF	19.5
1.257000	---	37.11	46.00	8.89	L1	OFF	19.6
1.257000	46.05	---	56.00	9.95	L1	OFF	19.6
1.423500	---	35.34	46.00	10.66	L1	OFF	19.6
1.423500	44.85	---	56.00	11.15	L1	OFF	19.6
2.375250	---	33.93	46.00	12.07	L1	OFF	19.5
2.375250	41.35	---	56.00	14.65	L1	OFF	19.5
3.669000	---	32.37	46.00	13.63	L1	OFF	19.6
3.669000	38.51	---	56.00	17.49	L1	OFF	19.6

Test Engineer :	Arthur Hsieh	Temperature :	21~25℃
		Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral

Full Spectrum

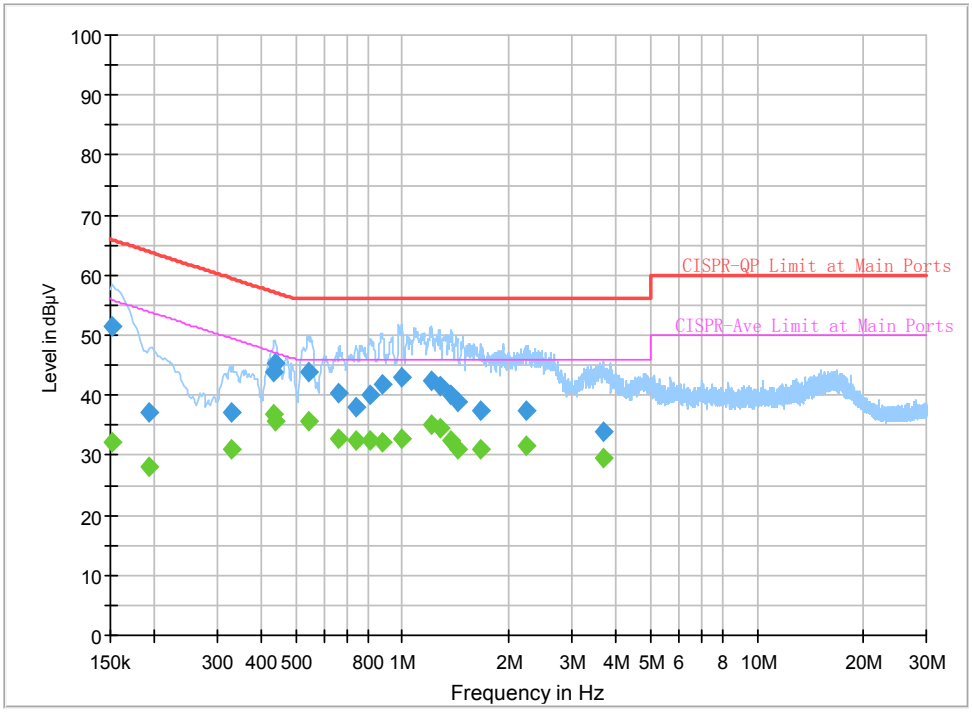


Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	32.24	55.88	23.64	N	OFF	19.5
0.152250	51.36	---	65.88	14.52	N	OFF	19.5
0.192750	---	28.17	53.92	25.75	N	OFF	19.5
0.192750	37.24	---	63.92	26.68	N	OFF	19.5
0.330000	---	31.11	49.45	18.34	N	OFF	19.5
0.330000	37.08	---	59.45	22.37	N	OFF	19.5
0.431250	---	36.83	47.23	10.40	N	OFF	19.5
0.431250	43.77	---	57.23	13.46	N	OFF	19.5
0.438000	---	35.78	47.10	11.32	N	OFF	19.5
0.438000	45.30	---	57.10	11.80	N	OFF	19.5
0.541500	---	35.79	46.00	10.21	N	OFF	19.5
0.541500	43.81	---	56.00	12.19	N	OFF	19.5
0.660750	---	32.89	46.00	13.11	N	OFF	19.5
0.660750	40.29	---	56.00	15.71	N	OFF	19.5
0.737250	---	32.53	46.00	13.47	N	OFF	19.5
0.737250	38.01	---	56.00	17.99	N	OFF	19.5

Test Engineer :	Arthur Hsieh	Temperature :	21~25℃
		Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.811500	---	32.58	46.00	13.42	N	OFF	19.5
0.811500	39.91	---	56.00	16.09	N	OFF	19.5
0.879000	---	32.15	46.00	13.85	N	OFF	19.5
0.879000	41.84	---	56.00	14.16	N	OFF	19.5
0.991500	---	32.80	46.00	13.20	N	OFF	19.5
0.991500	42.90	---	56.00	13.10	N	OFF	19.5
1.200750	---	35.21	46.00	10.79	N	OFF	19.5
1.200750	42.35	---	56.00	13.65	N	OFF	19.5
1.270500	---	34.46	46.00	11.54	N	OFF	19.5
1.270500	41.52	---	56.00	14.48	N	OFF	19.5
1.374000	---	32.52	46.00	13.48	N	OFF	19.5
1.374000	39.96	---	56.00	16.04	N	OFF	19.5
1.434750	---	30.93	46.00	15.07	N	OFF	19.5
1.434750	38.99	---	56.00	17.01	N	OFF	19.5
1.657500	---	31.04	46.00	14.96	N	OFF	19.6
1.657500	37.42	---	56.00	18.58	N	OFF	19.6
2.222250	---	31.47	46.00	14.53	N	OFF	19.4
2.222250	37.39	---	56.00	18.61	N	OFF	19.4
3.689250	---	29.46	46.00	16.54	N	OFF	19.6
3.689250	33.97	---	56.00	22.03	N	OFF	19.6

Appendix C. Radiated Spurious Emission

Test Engineer :	Karl Hou/Nick Yu	**Temperature :**	22~25°C
		Relative Humidity :	61~65%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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		2347.485	53.54	-20.46	74	44.06	27.03	14.03	31.58	149	144	P	H
		2389.905	41.97	-12.03	54	32.33	27.15	14.06	31.57	149	144	A	H
	*	2412	109.19	-	-	99.49	27.19	14.08	31.57	149	144	P	H
	*	2412	104.7	-	-	95	27.19	14.08	31.57	149	144	A	H
		2384.445	53.66	-20.34	74	44.07	27.11	14.06	31.58	315	84	P	V
		2389.8	41.44	-12.56	54	31.8	27.15	14.06	31.57	315	84	A	V
	*	2412	103.38	-	-	93.68	27.19	14.08	31.57	315	84	P	V
	*	2412	98.95	-	-	89.25	27.19	14.08	31.57	315	84	A	V
802.11b CH 06 2437MHz		2389.1	54.55	-19.45	74	44.92	27.15	14.06	31.58	120	142	P	H
		2389.94	42.55	-11.45	54	32.91	27.15	14.06	31.57	120	142	A	H
	*	2437	108.59	-	-	98.78	27.28	14.1	31.57	120	142	P	H
	*	2437	104.4	-	-	94.59	27.28	14.1	31.57	120	142	A	H
		2484.81	53.85	-20.15	74	43.91	27.36	14.14	31.56	120	142	P	H
		2486.98	42.51	-11.49	54	32.57	27.36	14.14	31.56	120	142	A	H
		2359.84	54.46	-19.54	74	44.93	27.07	14.04	31.58	349	82	P	V
		2389.94	41.56	-12.44	54	31.92	27.15	14.06	31.57	349	82	A	V
	*	2437	103.17	-	-	93.36	27.28	14.1	31.57	349	82	P	V
	*	2437	98.89	-	-	89.08	27.28	14.1	31.57	349	82	A	V
		2485.02	53.66	-20.34	74	43.72	27.36	14.14	31.56	349	82	P	V
		2487.75	41.57	-12.43	54	31.59	27.4	14.14	31.56	349	82	A	V

802.11b CH 11 2462MHz	*	2462	107.51	-	-	97.64	27.32	14.11	31.56	109	141	P	H
	*	2462	102.91	-	-	93.04	27.32	14.11	31.56	109	141	A	H
		2484.72	54.36	-19.64	74	44.42	27.36	14.14	31.56	109	141	P	H
		2486.84	42.09	-11.91	54	32.15	27.36	14.14	31.56	109	141	A	H
	*	2462	102.16	-	-	92.29	27.32	14.11	31.56	302	82	P	V
	*	2462	97.59	-	-	87.72	27.32	14.11	31.56	302	82	A	V
		2488.32	54.16	-19.84	74	44.18	27.4	14.14	31.56	302	82	P	V
		2487	41.67	-12.33	54	31.73	27.36	14.14	31.56	302	82	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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	38.51	-35.49	74	57.02	31.36	6.7	56.57	100	0	P	H
		4824	39.03	-34.97	74	57.54	31.36	6.7	56.57	100	0	P	V
802.11b CH 06 2437MHz		4874	39.07	-34.93	74	57.43	31.46	6.73	56.55	100	0	P	H
		7311	42.28	-31.72	74	54.33	36.11	8.07	56.23	100	0	P	H
		4874	38.67	-35.33	74	57.03	31.46	6.73	56.55	100	0	P	V
		7311	43.01	-30.99	74	55.06	36.11	8.07	56.23	100	0	P	V
802.11b CH 11 2462MHz		4924	39.56	-34.44	74	57.8	31.56	6.73	56.53	100	0	P	H
		7386	42.96	-31.04	74	54.76	36.33	8.01	56.14	100	0	P	H
		4924	39.55	-34.45	74	57.79	31.56	6.73	56.53	100	0	P	V
		7386	42.93	-31.07	74	54.73	36.33	8.01	56.14	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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2389.59	61.52	-12.48	74	51.89	27.15	14.06	31.58	125	107	P	H
		2389.905	46.89	-7.11	54	37.25	27.15	14.06	31.57	125	107	A	H
	*	2412	108.86	-	-	99.16	27.19	14.08	31.57	125	107	P	H
	*	2412	99	-	-	89.3	27.19	14.08	31.57	125	107	A	H
		2336.46	53.34	-20.66	74	43.89	27.03	14.01	31.59	395	81	P	V
		2390	43.29	-10.71	54	33.65	27.15	14.06	31.57	395	81	A	V
	*	2412	103.3	-	-	93.6	27.19	14.08	31.57	395	81	P	V
	*	2412	93.79	-	-	84.09	27.19	14.08	31.57	395	81	A	V
802.11g CH 06 2437MHz		2379.72	53.18	-20.82	74	43.59	27.11	14.06	31.58	142	105	P	H
		2389.38	43.36	-10.64	54	33.73	27.15	14.06	31.58	142	105	A	H
	*	2437	106.76	-	-	96.95	27.28	14.1	31.57	142	105	P	H
	*	2437	96.97	-	-	87.16	27.28	14.1	31.57	142	105	A	H
		2488.45	54.9	-19.1	74	44.92	27.4	14.14	31.56	142	105	P	H
		2487.82	43.76	-10.24	54	33.78	27.4	14.14	31.56	142	105	A	H
		2368.66	52.91	-21.09	74	43.34	27.11	14.04	31.58	388	83	P	V
		2388.26	42.12	-11.88	54	32.49	27.15	14.06	31.58	388	83	A	V
	*	2437	102.12	-	-	92.31	27.28	14.1	31.57	388	83	P	V
	*	2437	92.28	-	-	82.47	27.28	14.1	31.57	388	83	A	V
		2498.81	53.38	-20.62	74	43.39	27.4	14.14	31.55	388	83	P	V
		2487.82	42.58	-11.42	54	32.6	27.4	14.14	31.56	388	83	A	V

802.11g CH 11 2462MHz	*	2462	109.22	-	-	99.35	27.32	14.11	31.56	107	125	P	H
	*	2462	99.15	-	-	89.28	27.32	14.11	31.56	107	125	A	H
		2484.64	57.35	-16.65	74	47.41	27.36	14.14	31.56	107	125	P	H
		2486.48	43.88	-10.12	54	33.94	27.36	14.14	31.56	107	125	A	H
	*	2462	104.02	-	-	94.15	27.32	14.11	31.56	342	83	P	V
	*	2462	94.03	-	-	84.16	27.32	14.11	31.56	342	83	A	V
		2487.16	53.91	-20.09	74	43.97	27.36	14.14	31.56	342	83	P	V
		2484	42.56	-11.44	54	32.62	27.36	14.14	31.56	342	83	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)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	39.29	-34.71	74	57.8	31.36	6.7	56.57	100	0	P	H
		4824	39.04	-34.96	74	57.55	31.36	6.7	56.57	100	0	P	V
802.11g CH 06 2437MHz		4874	38.11	-35.89	74	56.47	31.46	6.73	56.55	100	0	P	H
		7311	42.97	-31.03	74	55.02	36.11	8.07	56.23	100	0	P	H
		4874	39.73	-34.27	74	58.09	31.46	6.73	56.55	100	0	P	V
		7311	42.77	-31.23	74	54.82	36.11	8.07	56.23	100	0	P	V
802.11g CH 11 2462MHz		4924	39.13	-34.87	74	57.37	31.56	6.73	56.53	100	0	P	H
		7386	43.73	-30.27	74	55.53	36.33	8.01	56.14	100	0	P	H
		4924	39.72	-34.28	74	57.96	31.56	6.73	56.53	100	0	P	V
		7386	43.46	-30.54	74	55.26	36.33	8.01	56.14	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

Emission below 1GHz

2.4GHz WIFI 802.11g (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11g LF		43.5	25.71	-14.29	40	37.4	18.08	0.61	30.38	-	-	P	H
		109.38	24.51	-18.99	43.5	36.79	17.3	0.84	30.42	-	-	P	H
		168.51	26.9	-16.6	43.5	39.8	16.2	1.25	30.35	-	-	P	H
		487.6	25.83	-20.17	46	29.69	24.12	1.83	29.81	-	-	P	H
		729.8	38.12	-7.88	46	38.04	27.25	2.28	29.45	100	0	P	H
		1000	33.61	-20.39	54	29.79	29.9	2.77	28.85	-	-	P	H
		43.5	36.13	-3.87	40	47.82	18.08	0.61	30.38	100	0	P	V
		78.6	30.23	-9.77	40	46.2	13.66	0.82	30.45	-	-	P	V
		167.7	25.3	-18.2	43.5	38.11	16.3	1.25	30.36	-	-	P	V
		498.1	25.51	-20.49	46	29.07	24.36	1.86	29.78	-	-	P	V
		747.3	37.2	-8.8	46	36.66	27.64	2.31	29.41	-	-	P	V
		955.2	33.56	-12.44	46	29.73	30.08	2.73	28.98	-	-	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	Path	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. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

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

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

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

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

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

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

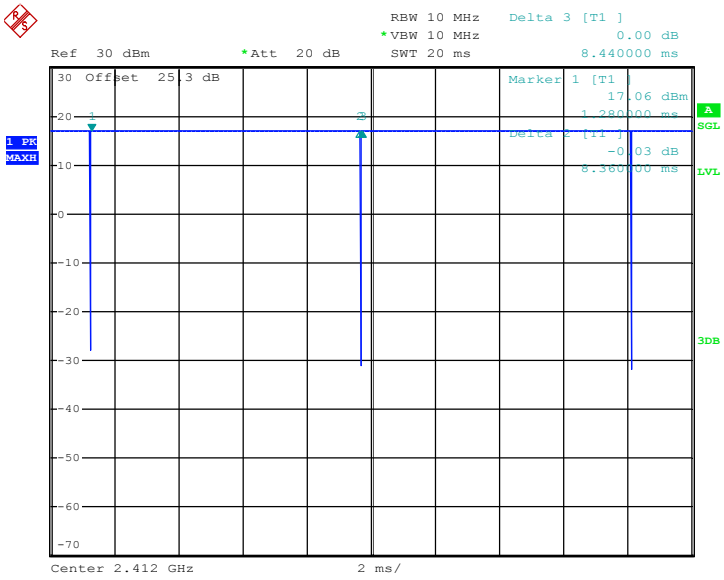
= -10.46(dB)

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

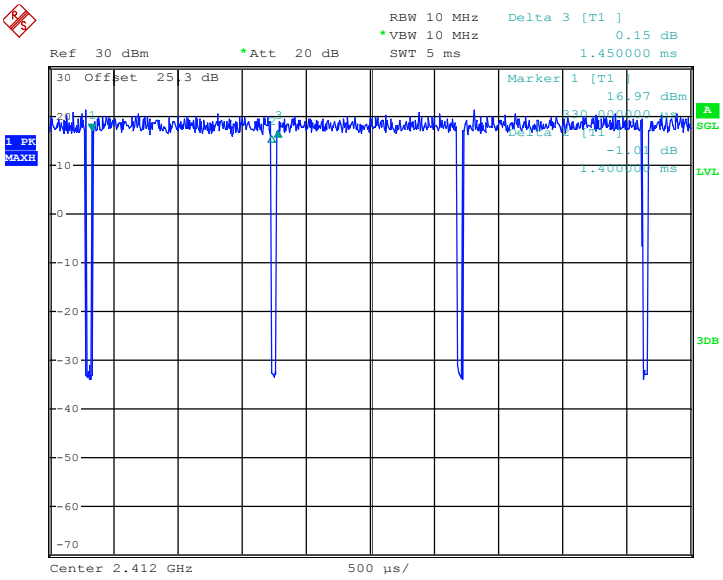
Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
11b	99.05	-	-	10Hz
11g	96.55	1.400	0.710	1kHz

11b



11g


RBW 10 MHz
VBW 10 MHz
SWT 5 ms
Delta 3 [T1]
0.15 dB
1.450000 ms
Ref 30 dBm
Att 20 dB
30 Offset 25.3 dB
Marker 1 [T1]
16.97 dBm
Delta 2 [T1]
-1.03 dB
1.400000 ms
1 PK
MAXH
A
SGL
LVL
3DB
Center 2.412 GHz
500 µs/