

FCC RF Test Report

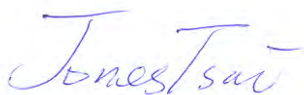
APPLICANT : ZTE CORPORATION
EQUIPMENT : LTE Ufi
BRAND NAME : ZTE
MODEL NAME : R226-Z
FCC ID : SRQ-R226-Z
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Jul. 06, 2015 and testing was completed on Aug. 10, 2015. 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.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR570601A	Rev. 01	Initial issue of report	Sep. 02, 2015

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	-
3.1	-	99% Bandwidth	-	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 10.29 dB at 2486.480 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 5.27 dB at 0.580 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057,
P. R. China

1.2 Manufacturer

ZTE CORPORATION

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057,
P. R. China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	LTE Ufi
Brand Name	ZTE
Model Name	R226-Z
FCC ID	SRQ-R226-Z
EUT supports Radios application	GPRS/EGPRS/WCDMA/HSPA/HSPA+(Downlink Only)/ WLAN2.4GHz 802.11b/g/n HT20/HT40 WLAN5GHz 802.11a/n HT20/HT40 WLAN5GHz 802.11ac VHT20/VHT40/VHT80
IMEI Code	Conducted: 353190070000080 Conduction: 353190070000163 Radiation: 353190070000270
HW Version	R226-Z.H01
SW Version	BD_R226-ZV1.0
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification subjective to this standard

Product Specification subjective to this standard				
Tx/Rx Channel Frequency Range		802.11b/g/n : 2412 MHz ~ 2462 MHz		
Maximum (Peak) Output Power to antenna		802.11b : 17.31 dBm (0.0538 W) 802.11g : 20.34 dBm (0.1081 W) 802.11n HT20 : 19.17 dBm (0.0826 W) 802.11n HT40 : 19.75 dBm (0.0944 W)		
99% Occupied Bandwidth		802.11b : 13.79MHz 802.11g : 17.33MHz 802.11n HT20 : 18.43MHz 802.11n HT40 : 36.86MHz		
Antenna Type		<Ant 1> 802.11b/g/n : IFA Antenna with gain 2.00 dBi <Ant 2> 802.11b/g/n : IFA Antenna with gain 2.00 dBi		
Type of Modulation		802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)		
Antenna Function for Transmitter				
		Ant. 1	Ant. 2	
		802.11 b	V	V
		802.11 g	V	V
		802.11 n SISO	V	V
802.11 n MIMO	V	V		

1.5 Modification of EUT

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

1.6 Testing Location

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.		
Test Site Location	1F & 2F, Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595		
Test Site No.	Sporton Site No.		
	TH01-SZ		

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC Registration No.
	03CH02-KS	CO01-KS	418269

Note: The test site complies with ANSI C63.4 2009 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 v03r03
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ 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. FCC permits the use of the 1.5 meter table for frequency above 1GHz as an alternative in C63.10-2013 through inquiry tracking number 961829.
3. 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: conducted emission (150 kHz to 30 MHz) and radiated 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 were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

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 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

<Ant. 1>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	17.21	17.12	17.06	17.09

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	19.66	19.41	19.37	19.34	19.60	19.62	19.65	19.63

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	18.02	17.56	17.61	17.54	17.89	17.92	17.93	17.87

2.4GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	18.78	18.41	18.39	18.45	18.67	18.71	18.69	18.65



<Ant. 2>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	17.31	17.28	17.27	17.30

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	20.34	19.97	19.89	19.92	20.31	20.29	20.24	20.18

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	18.48	18.01	17.98	18.06	18.41	18.45	18.42	18.37

2.4GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.16	18.78	18.85	18.83	19.06	19.12	19.11	19.08

MIMO <Ant. 1+2>

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.17	18.77	18.75	18.85	19.09	19.09	19.12	19.06

2.4GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.75	19.46	19.43	19.42	19.68	19.65	19.63	19.62

Note: MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Single Antenna

<2.4GHz>

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

MIMO Antenna

<2.4GHz>

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + WLAN (2.4G) Link + USB Cable (Charging from Adapter)

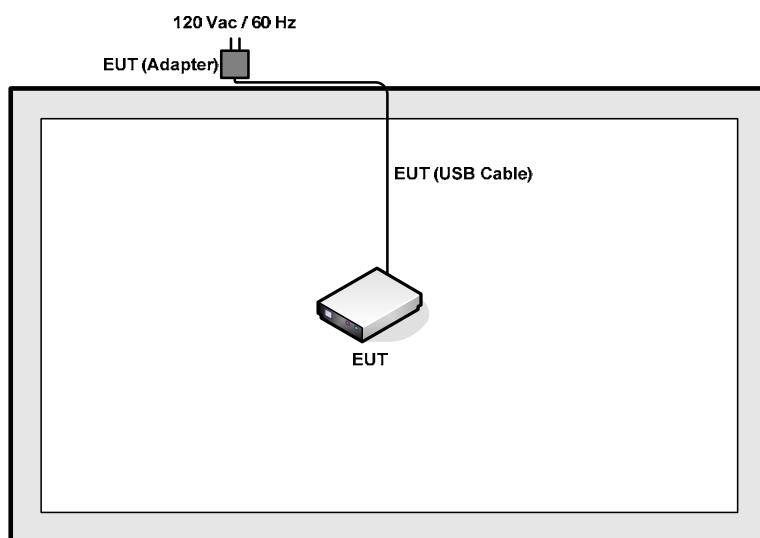
2.4 Connection Diagram of Test System

<WLAN Tx Mode>

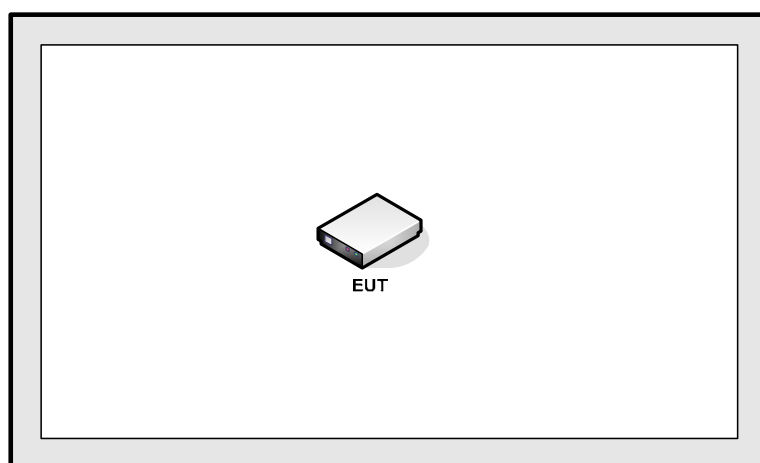
11b Tx for Ant1/2

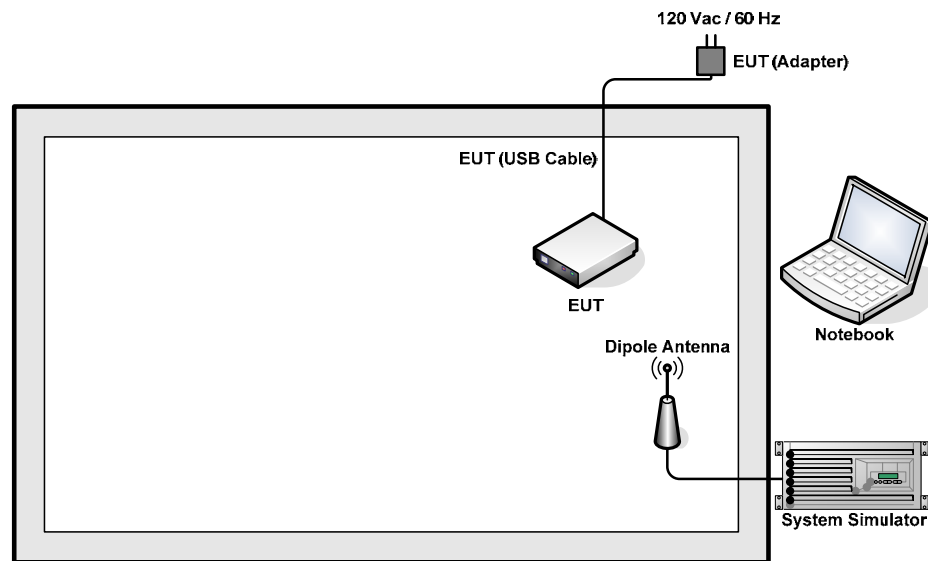
11g Tx for Ant1

11n Tx for Ant1+2



11g Tx for Ant2



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Notebook	Lenovo	G480	PRC4	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m

2.6 EUT Operation Test Setup

For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

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



2.7 Measurement Results Explanation Example

For all conducted test items:

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

Example:

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

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5.0 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 5.0 + 10 = 15.0 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

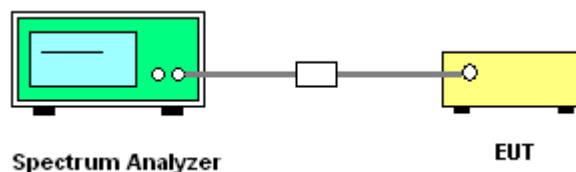
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r03.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

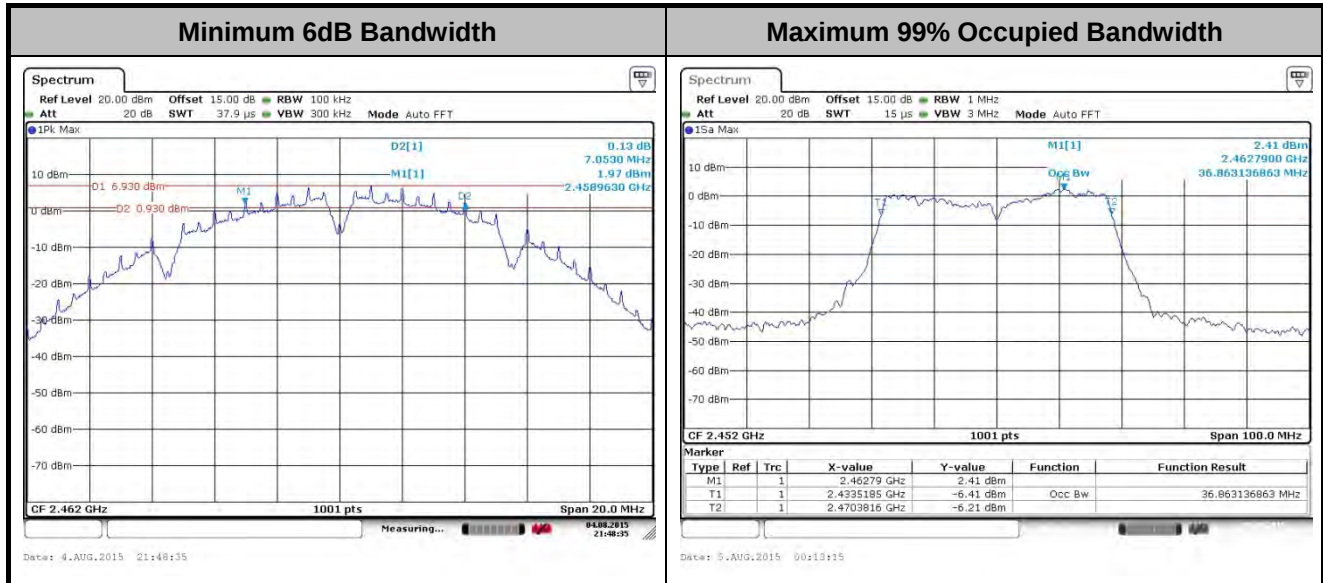
3.1.4 Test Setup





3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Please refer to Appendix A of this test report.



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

3.2 Peak Output Power Measurement

3.2.1 Limit of Peak 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.

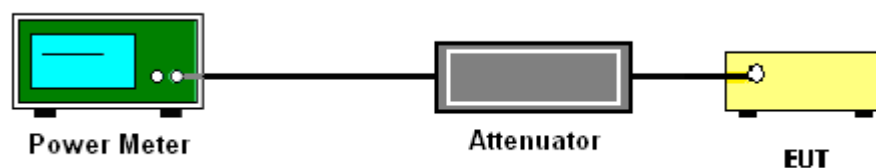
3.2.2 Measuring Instruments

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 v03r03 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.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.2.4 Test Setup





3.2.5 Test Result of Peak Output Power

Please refer to Appendix A of this test report.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A of this test report.

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 v03r03
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.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

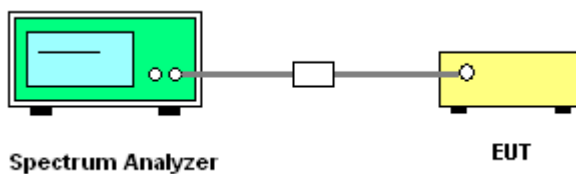
If measurements performed using method (2) plus $10 \log(N)$ exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

Method (1): Measure and sum the spectra across the outputs.

The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

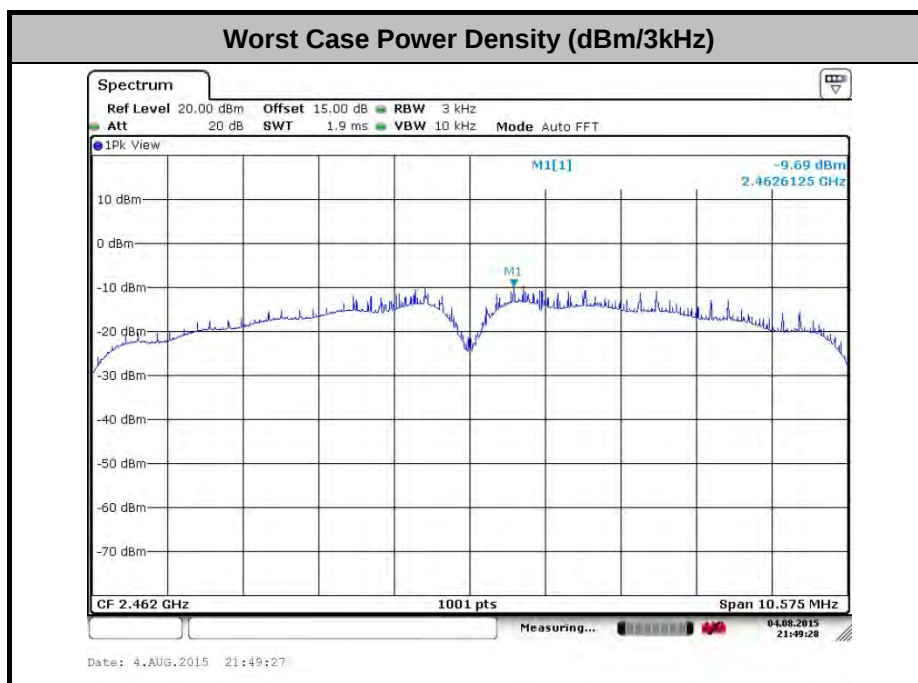
Method (2): Measure and add $10 \log(N)$ dB, where N is the number of outputs. (N=2)

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A of this test report.



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 and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

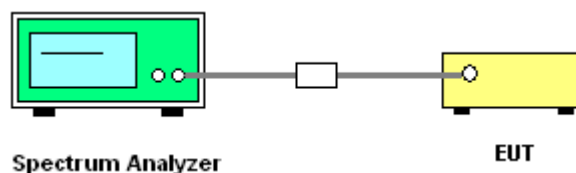
3.4.2 Measuring Instruments

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 v03r03.
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

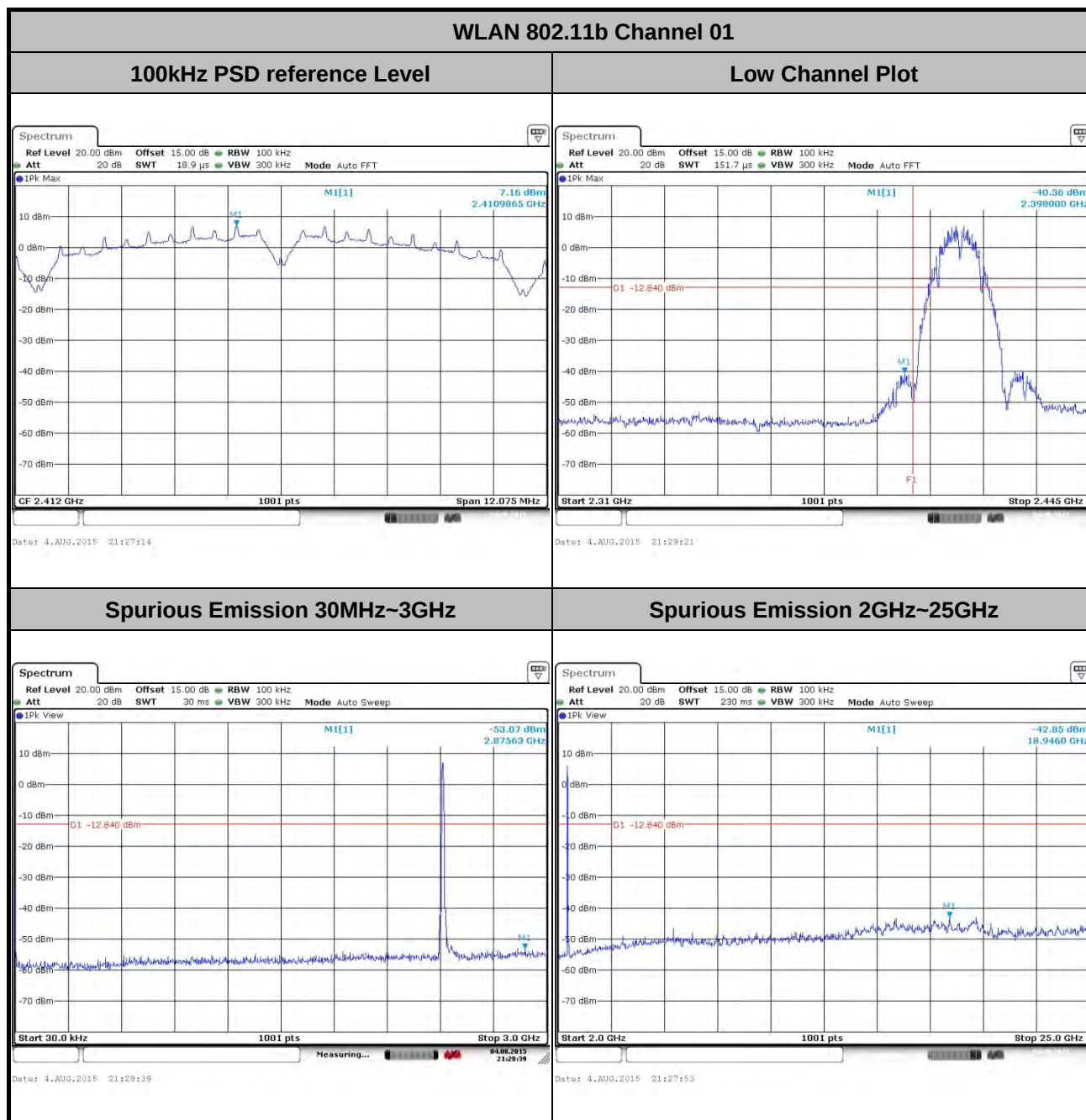




3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Number of TX = 1, Ant. 2 (Measured)

Number of TX	1	Ant. :	2
Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Sam Zheng

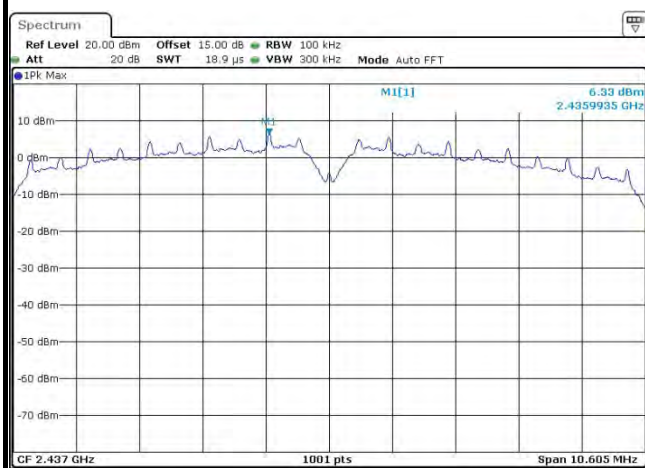




Number of TX :	1	Ant. :	2
Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

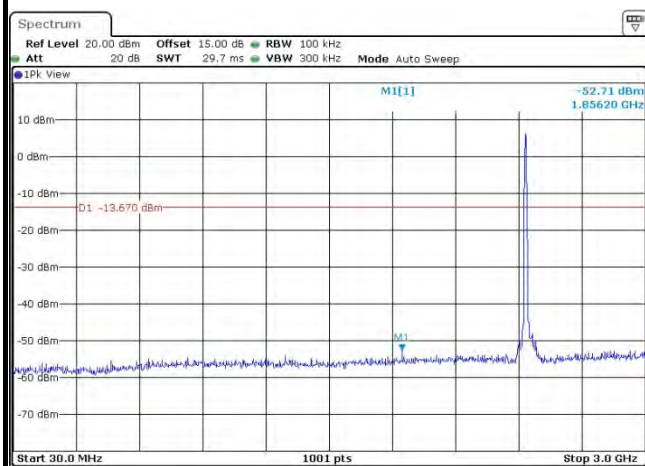
WLAN 802.11b Channel 06

100kHz PSD reference Level



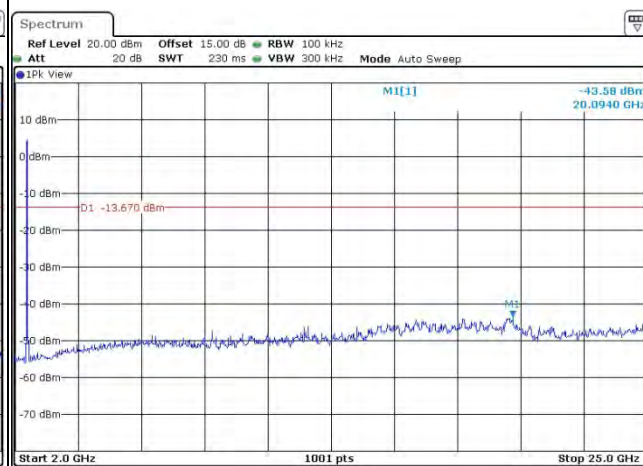
Date: 4.AUG.2015 21:39:14

Spurious Emission 30MHz~3GHz



Date: 4.AUG.2015 21:39:41

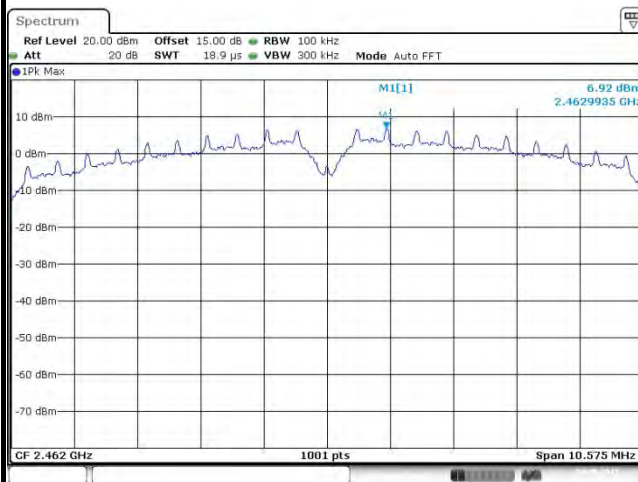
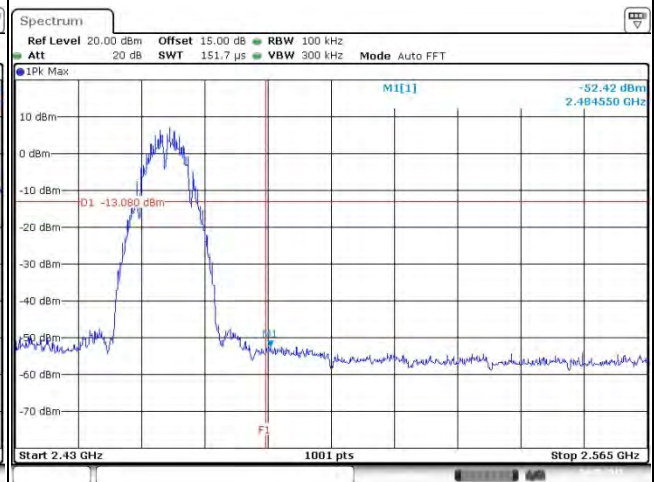
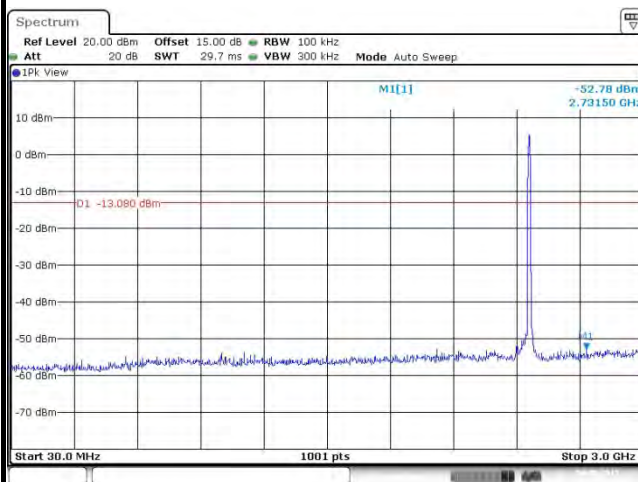
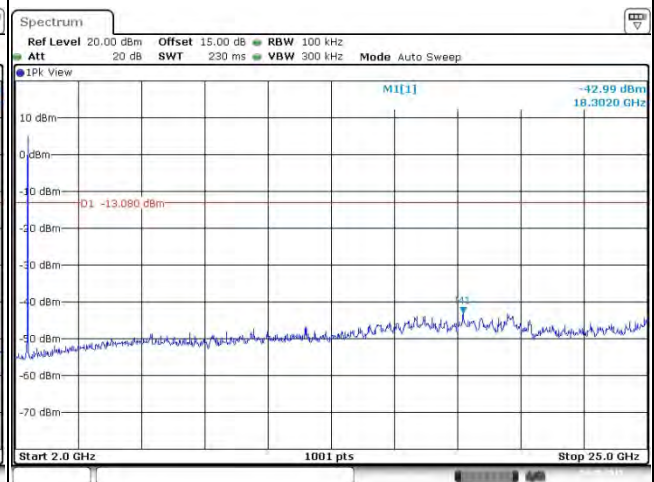
Spurious Emission 2GHz~25GHz



Date: 4.AUG.2015 21:39:59

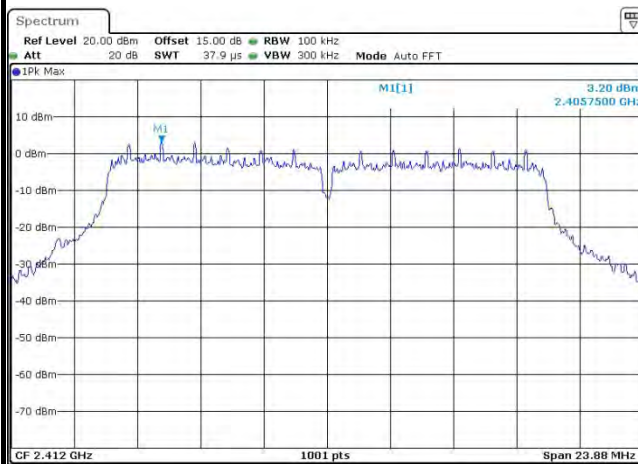
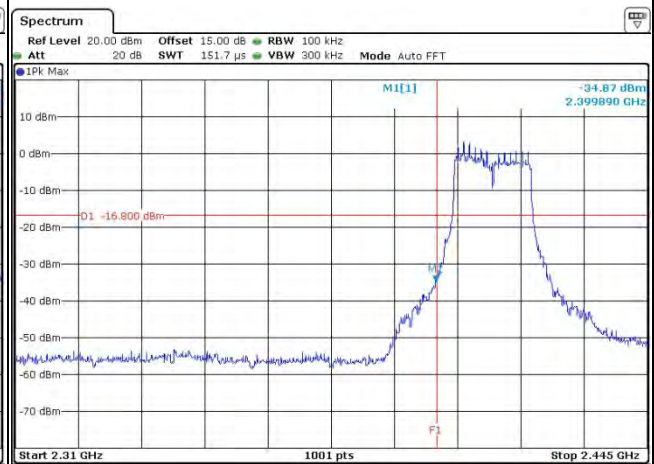
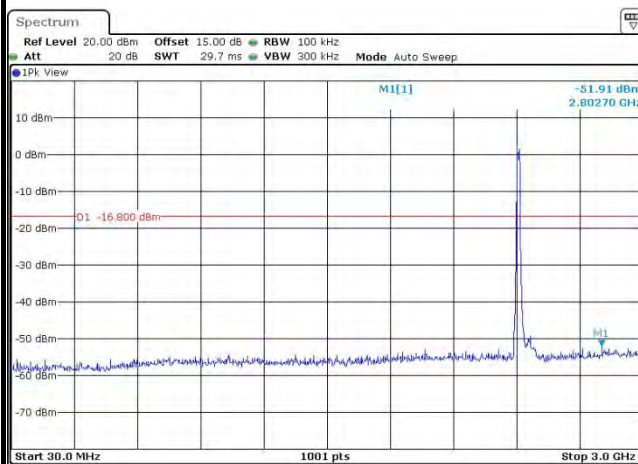
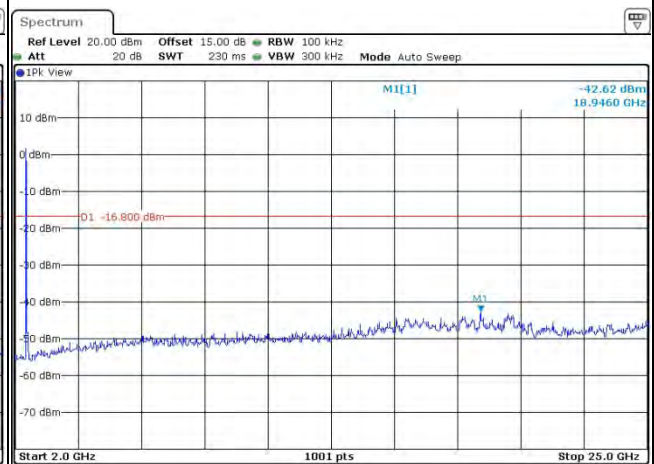


Number of TX :	1	Ant. :	2
Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng

WLAN 802.11b Channel 11**100kHz PSD reference Level****High Channel Plot****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



Number of TX :	1	Ant. :	2
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Sam Zheng

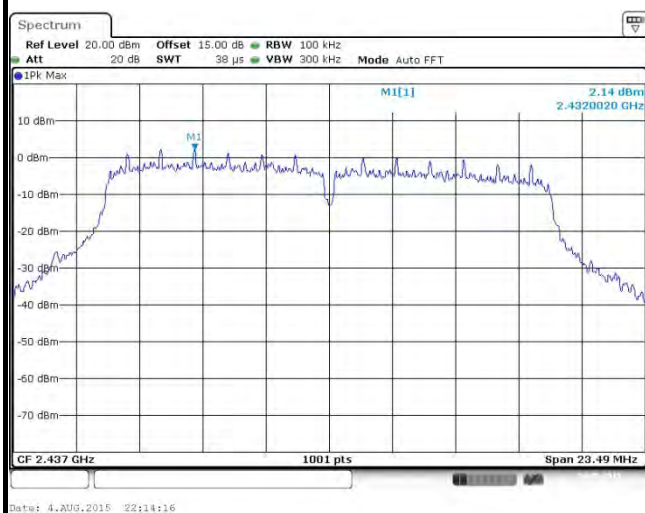
WLAN 802.11g Channel 01**100kHz PSD reference Level****Low Channel Plot****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



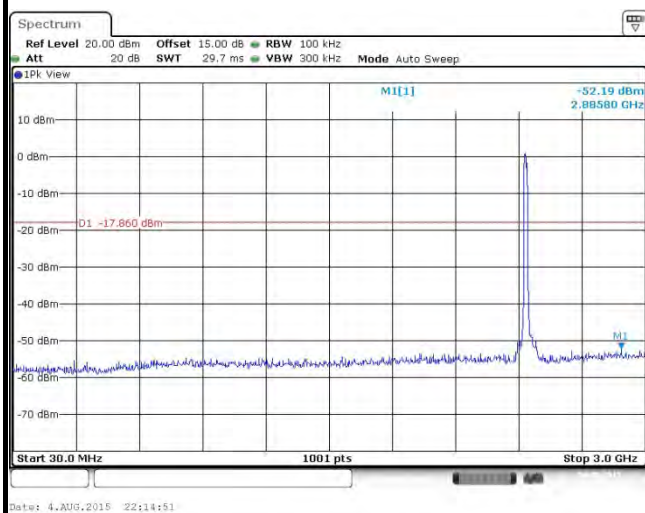
Number of TX :	1	Ant. :	2
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11g Channel 06

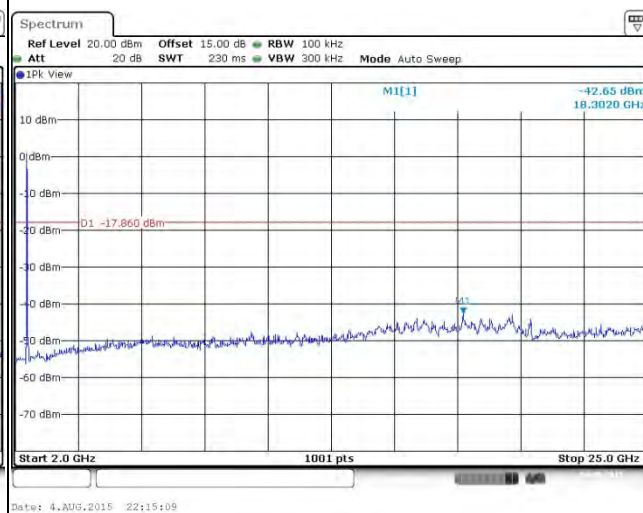
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

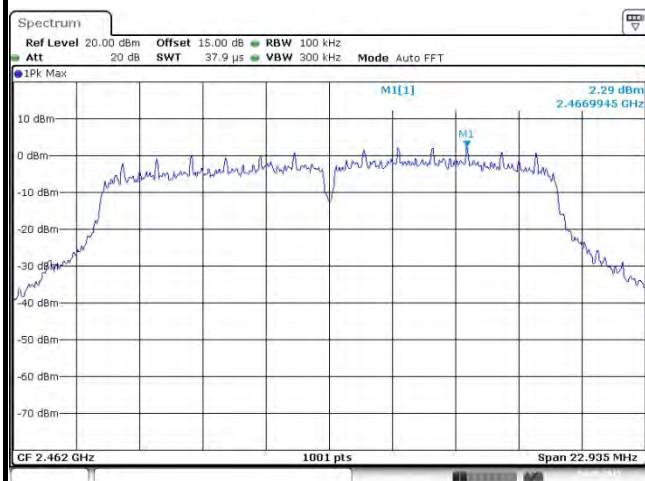




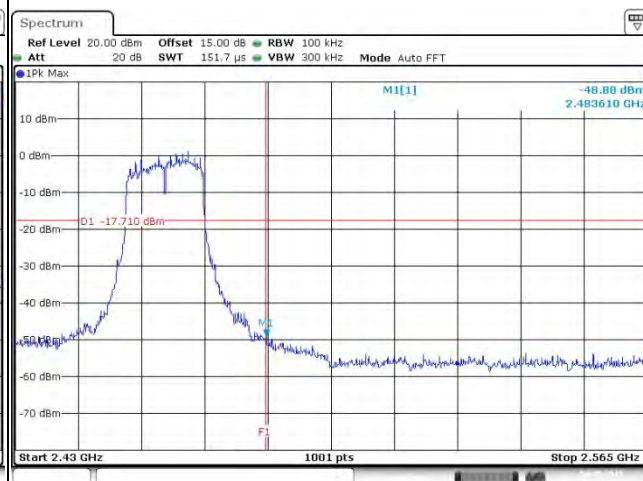
Number of TX :	1	Ant. :	2
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng

WLAN 802.11g Channel 11

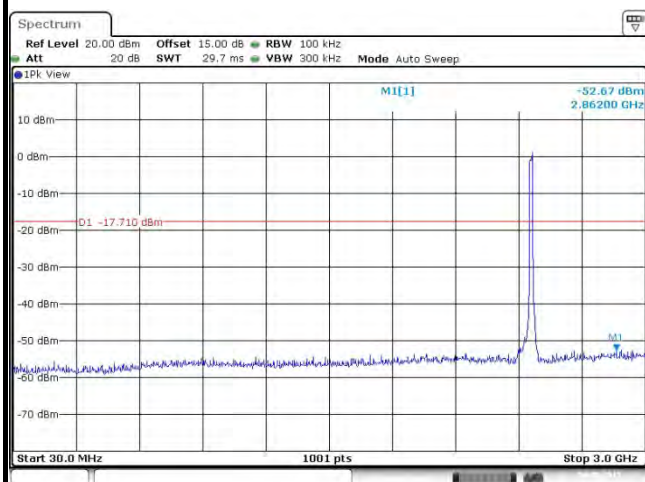
100kHz PSD reference Level



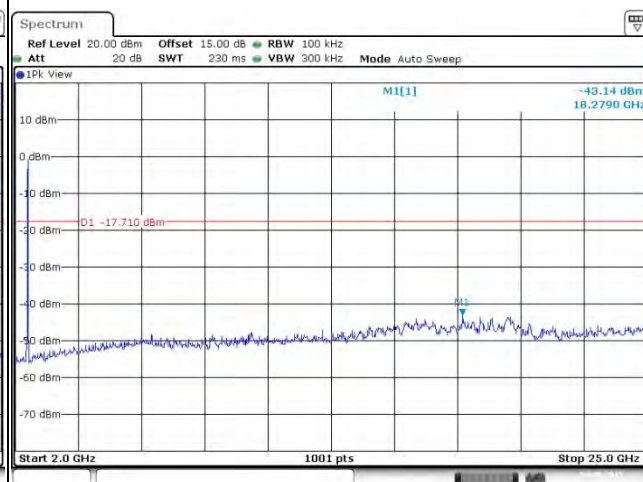
High Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

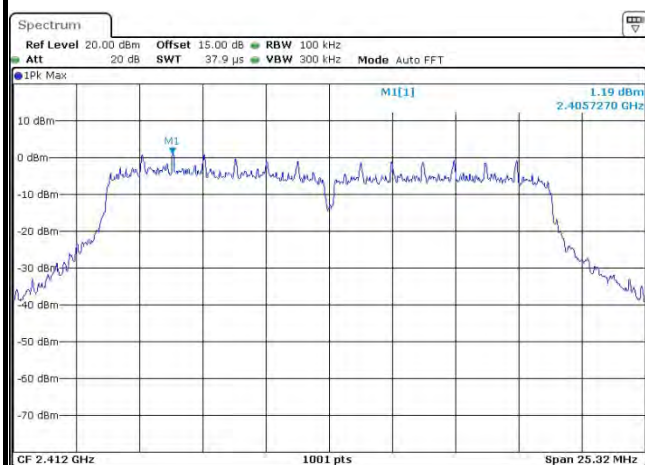




Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Sam Zheng

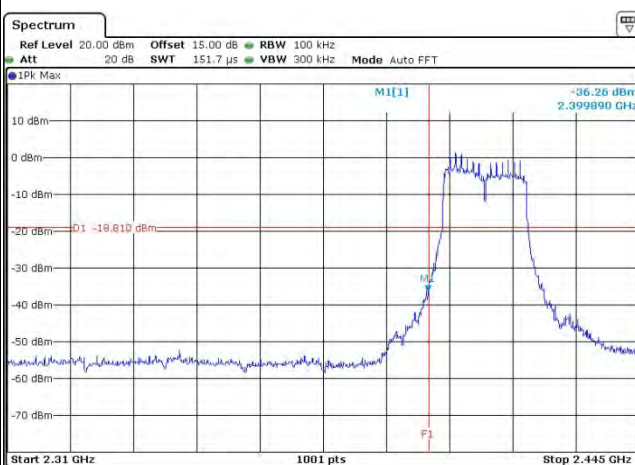
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



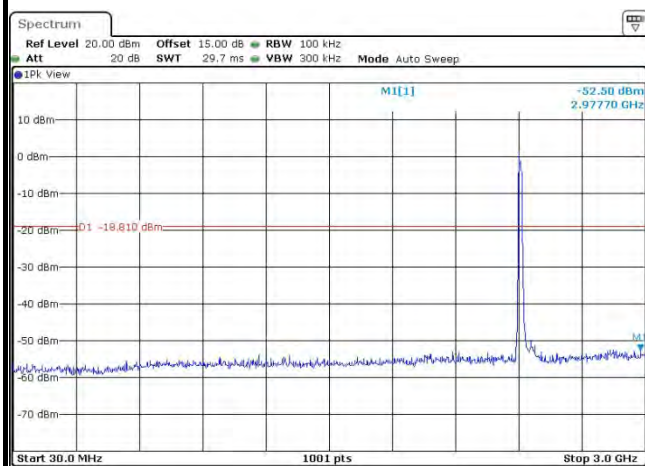
Date: 4.AUG.2015 22:28:38

Low Channel Plot



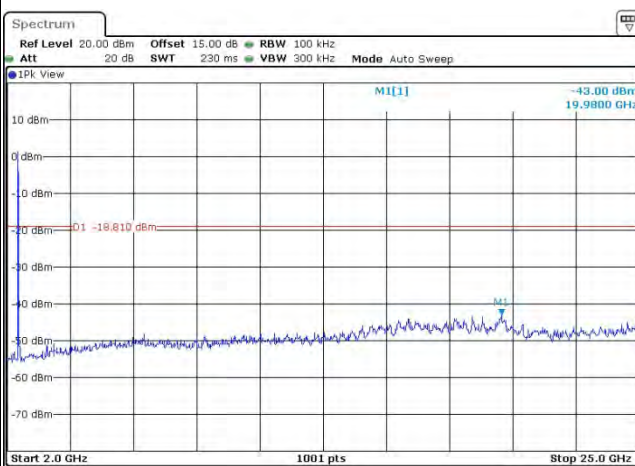
Date: 4.AUG.2015 22:30:10

Spurious Emission 30MHz~3GHz



Date: 4.AUG.2015 22:30:52

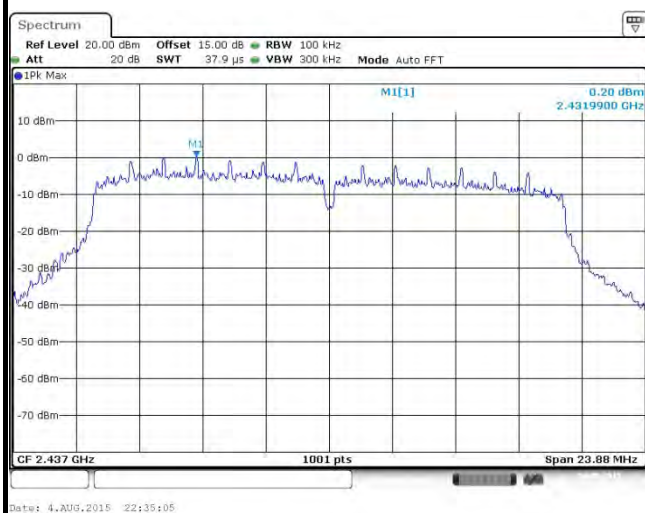
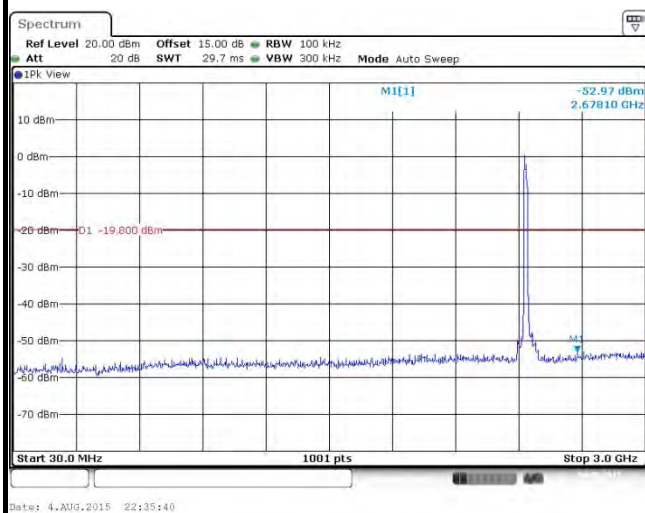
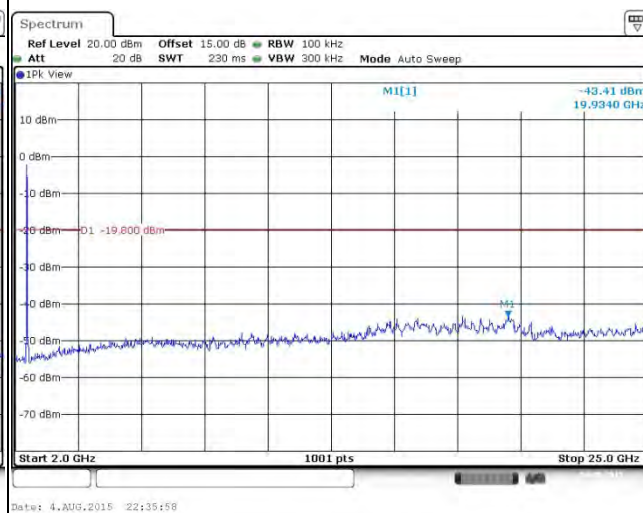
Spurious Emission 2GHz~25GHz



Date: 4.AUG.2015 22:31:10



Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

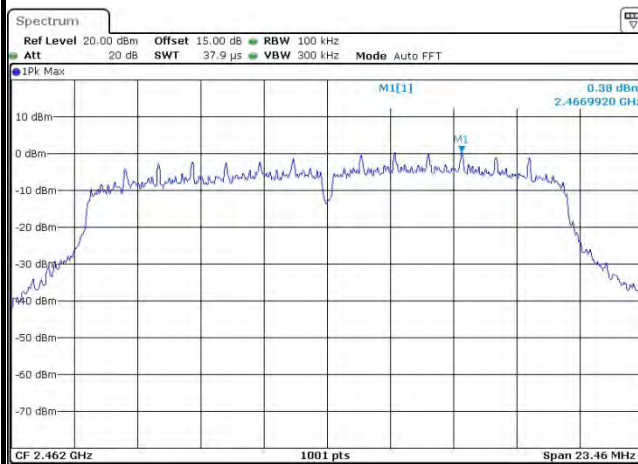
WLAN 802.11n HT20 Channel 06**100kHz PSD reference Level****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



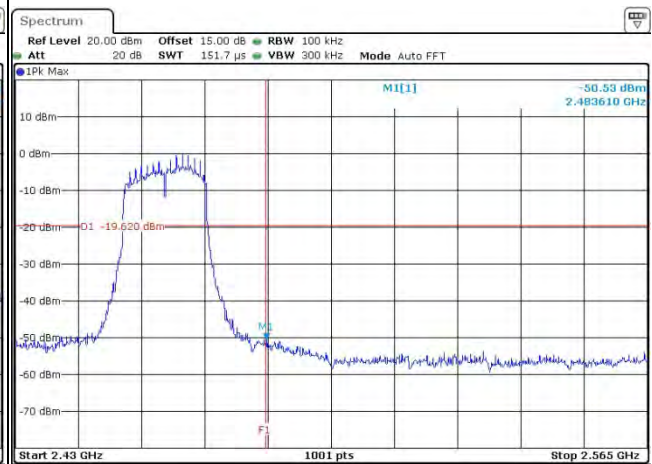
Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng

WLAN 802.11n HT20 Channel 11

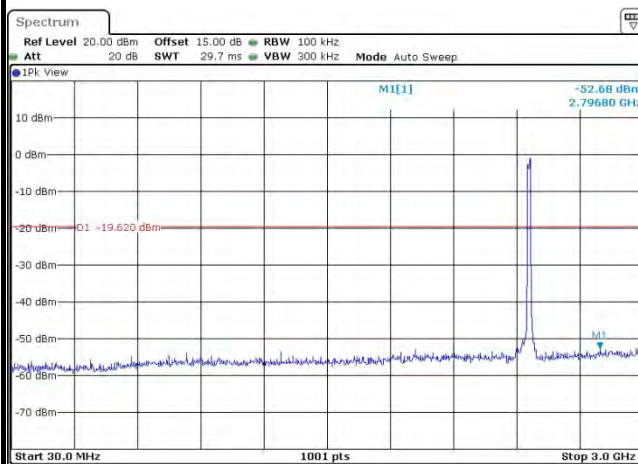
100kHz PSD reference Level



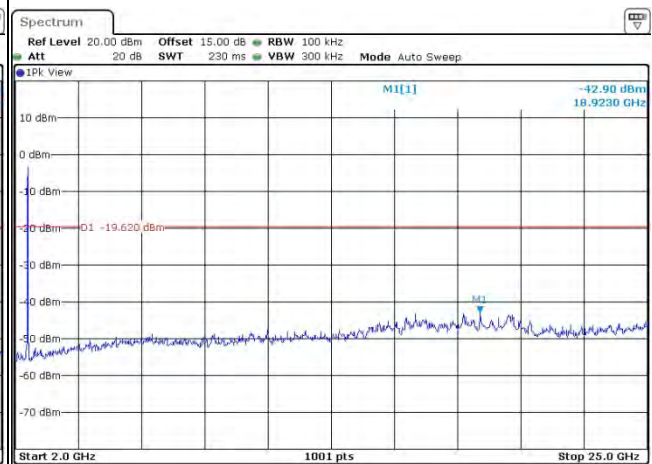
High Channel Plot



Spurious Emission 30MHz~3GHz

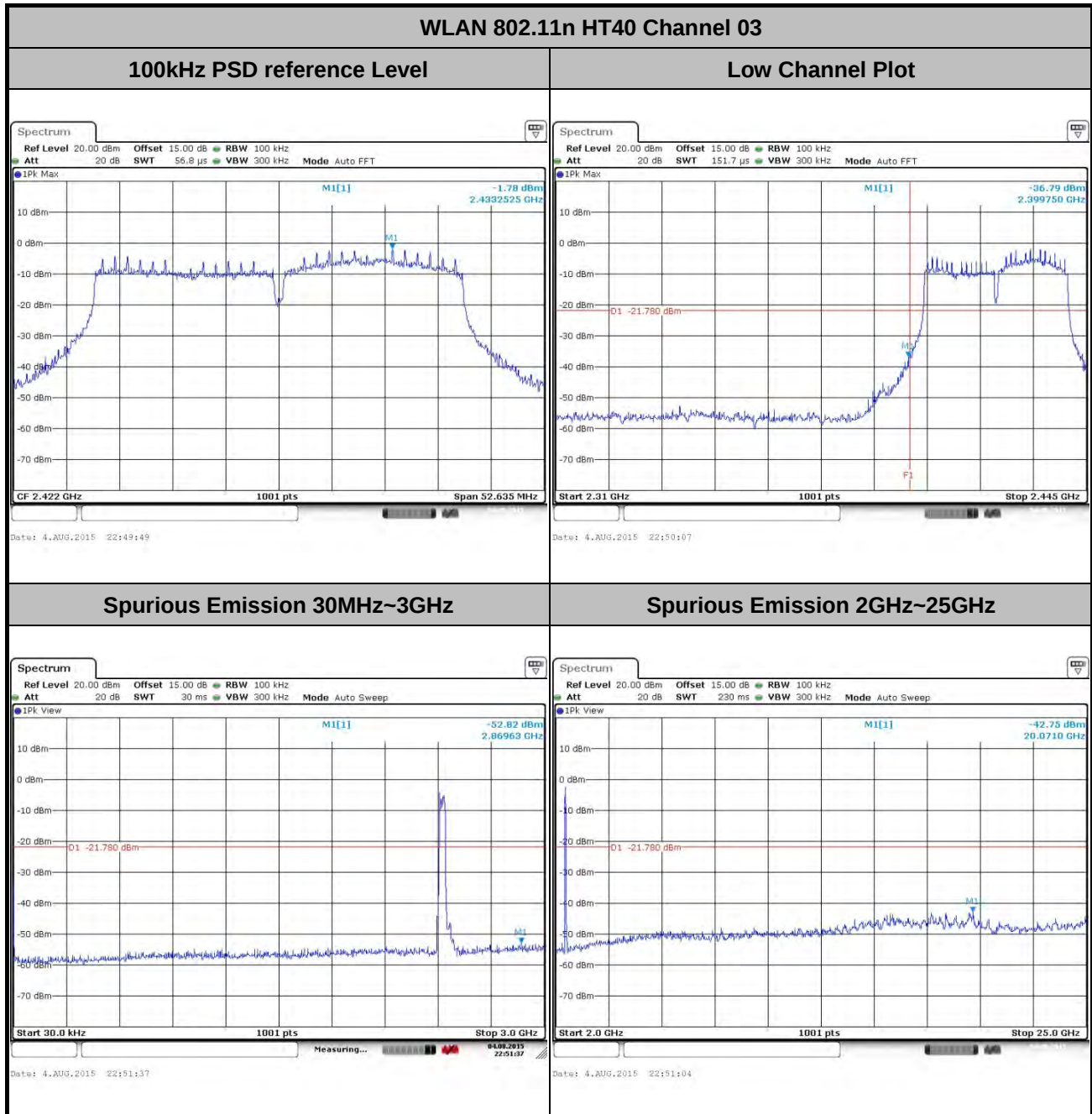


Spurious Emission 2GHz~25GHz



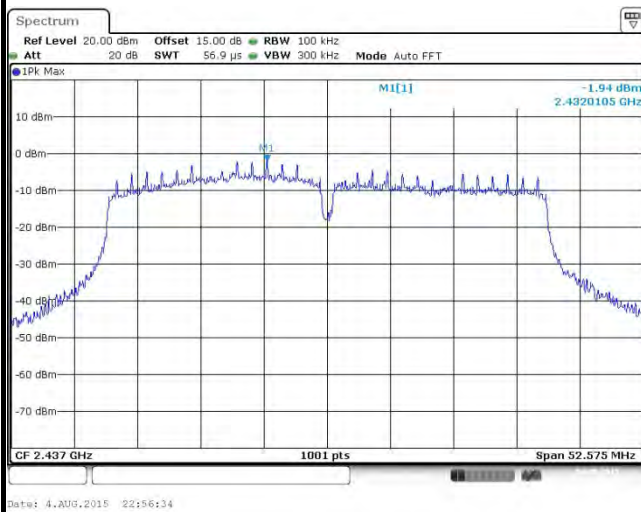
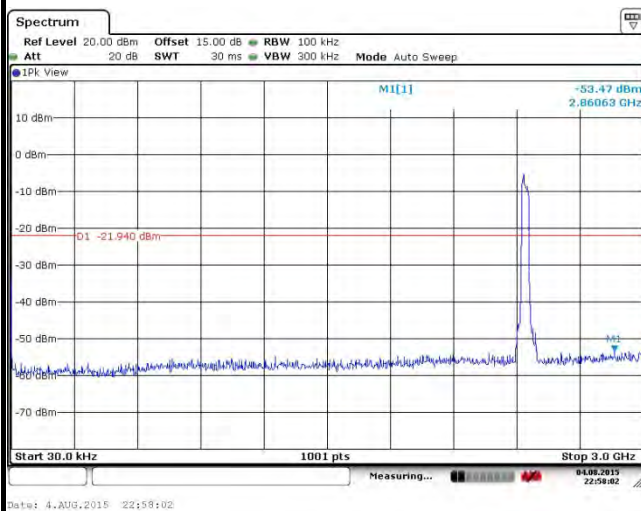
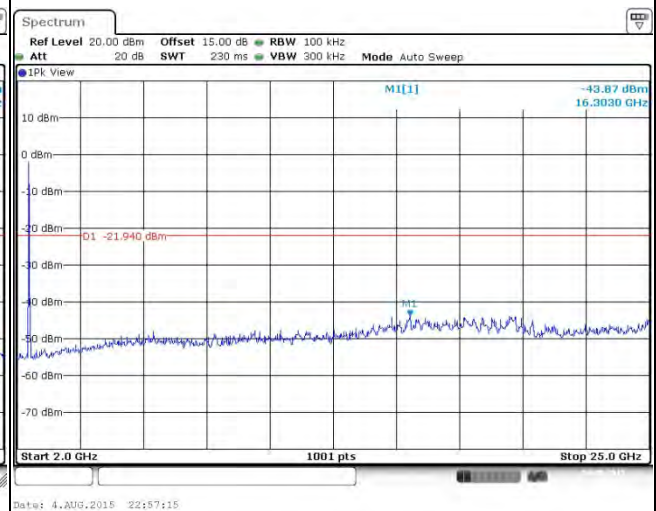


Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Sam Zheng



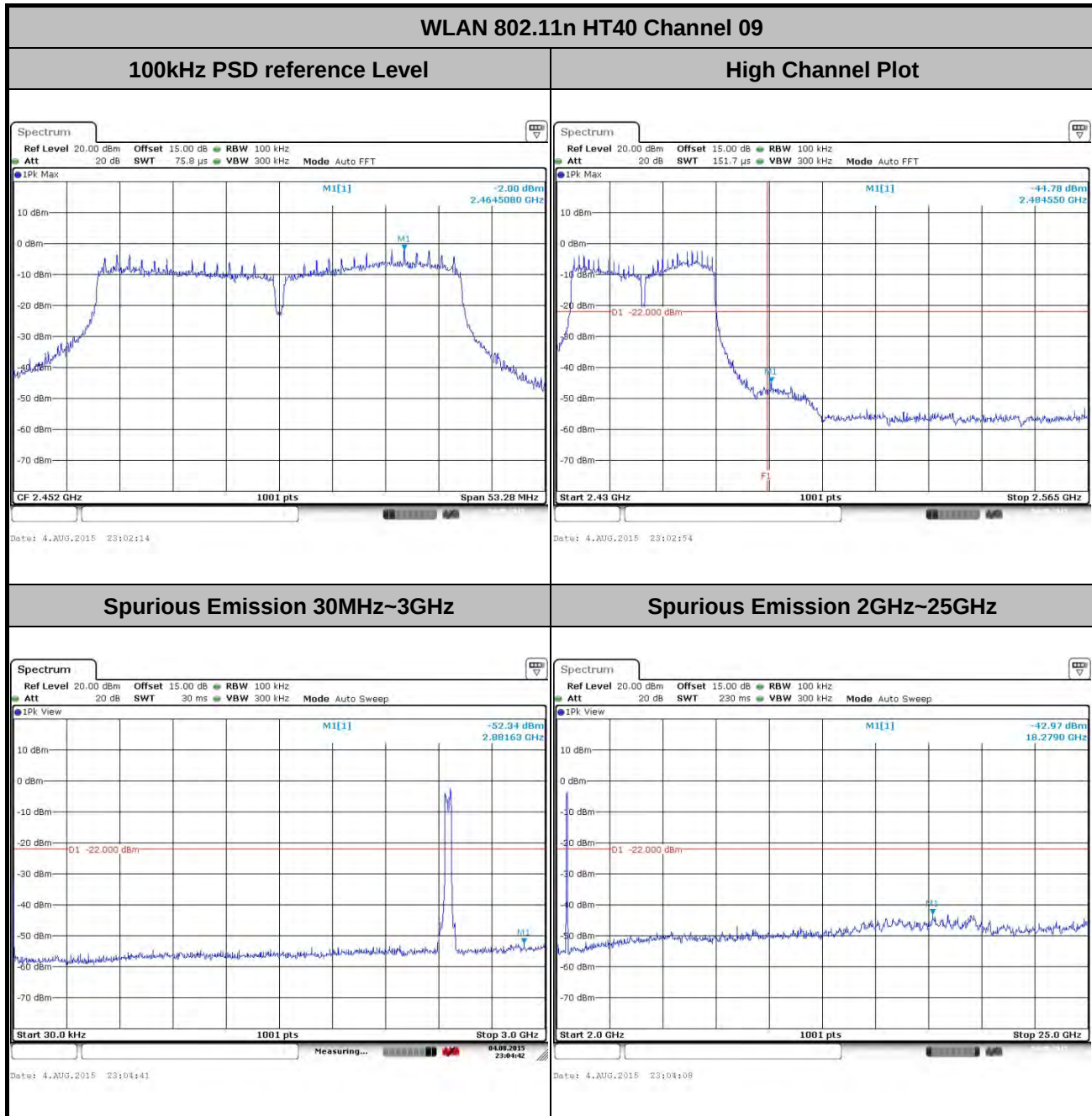


Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11n HT40 Channel 06**100kHz PSD reference Level****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**



Number of TX :	1	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	09	Test Engineer :	Sam Zheng



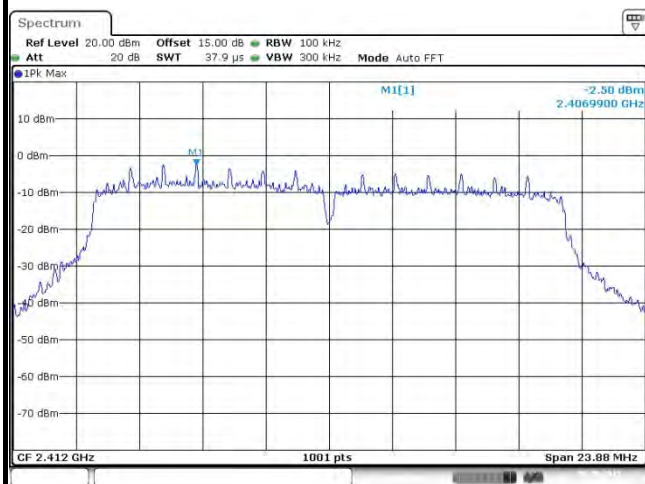


Number of TX = 2, Ant. 1 (Measured)

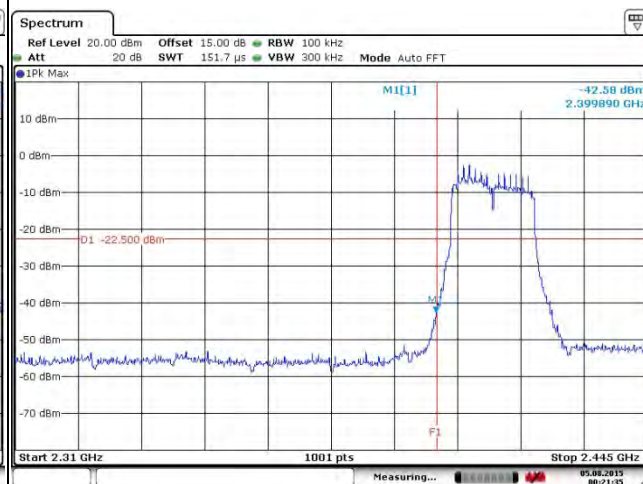
Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Sam Zheng

WLAN 802.11n HT20 Channel 01

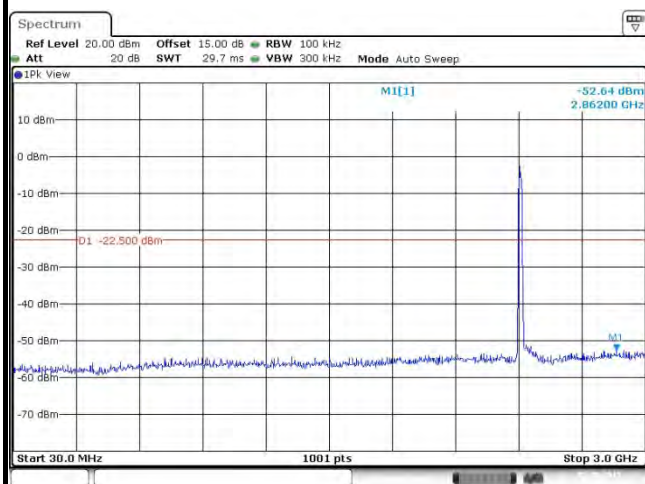
100kHz PSD reference Level



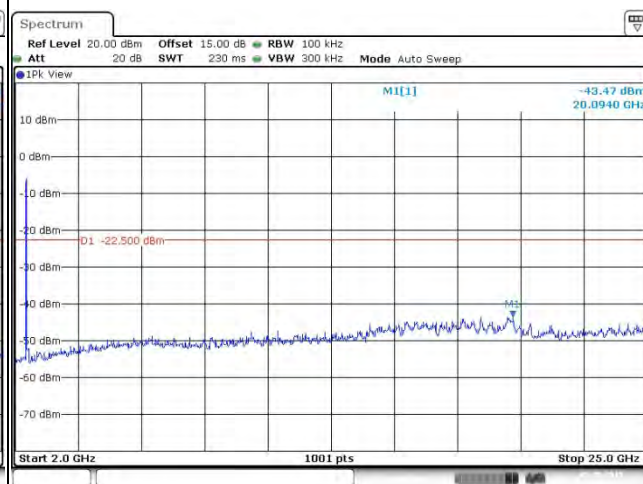
Low Channel Plot



Spurious Emission 30MHz~3GHz

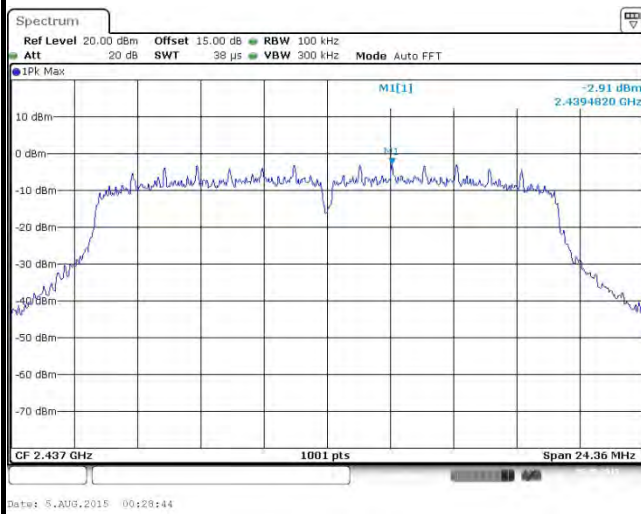
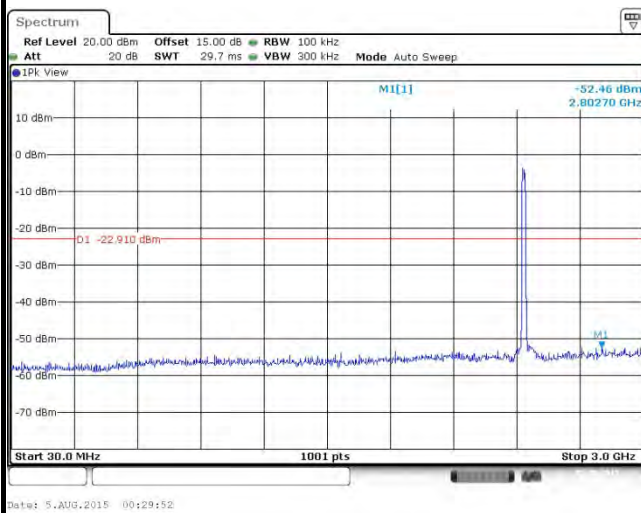
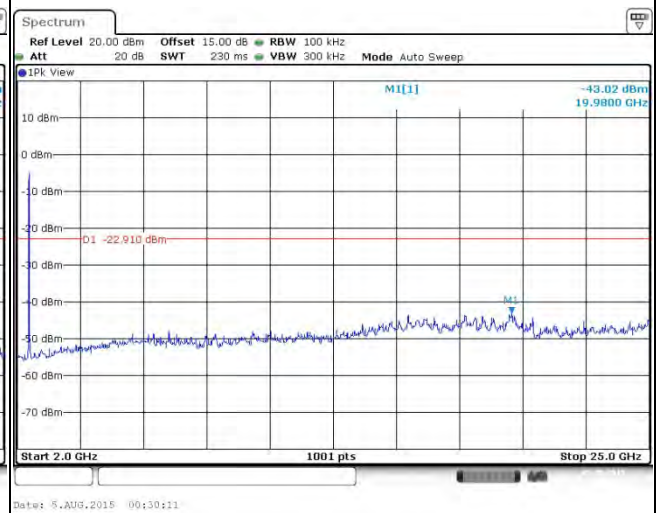


Spurious Emission 2GHz~25GHz



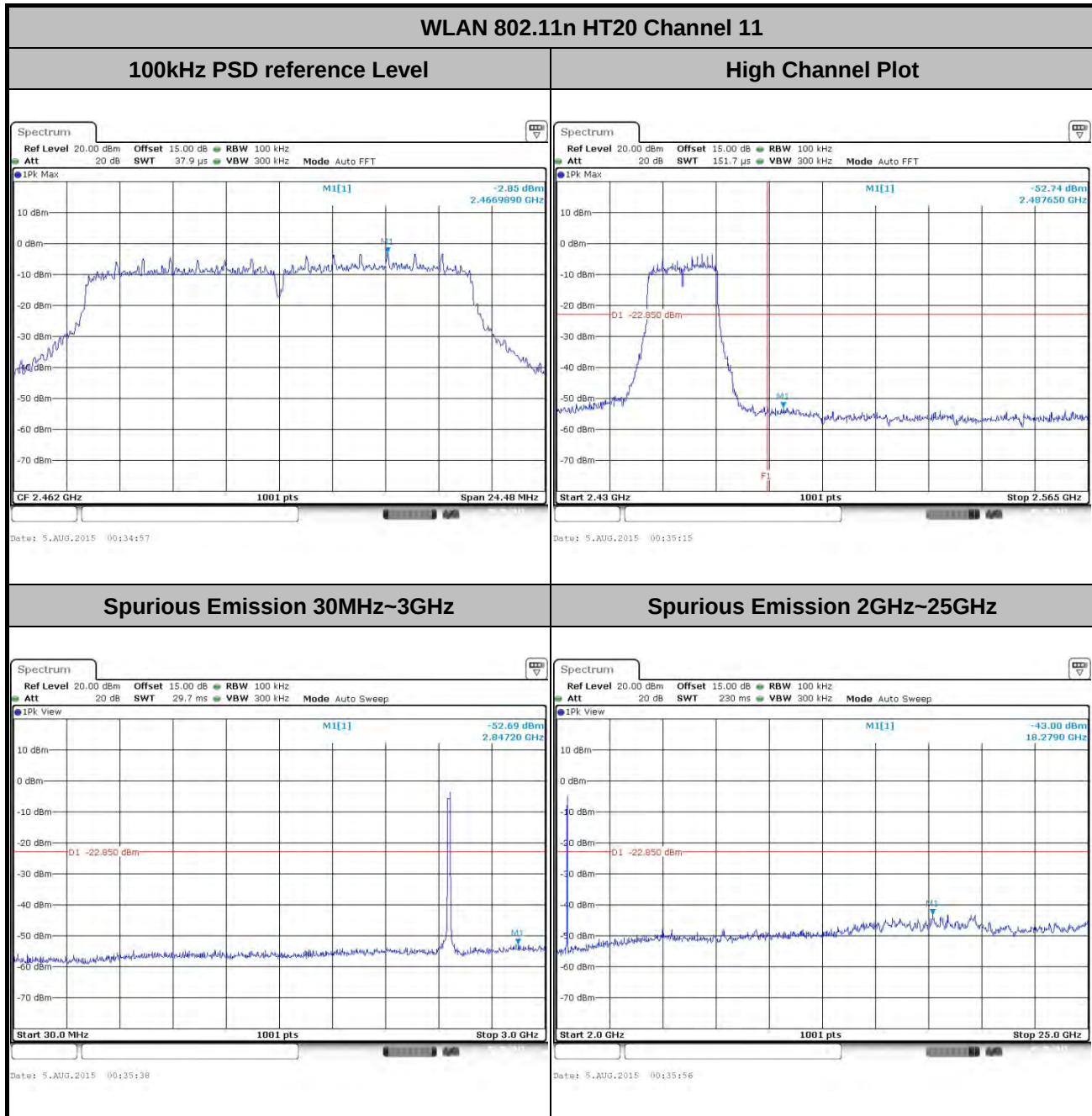


Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11n HT20 Channel 06**100kHz PSD reference Level****Spurious Emission 30MHz~3GHz****Spurious Emission 2GHz~25GHz**

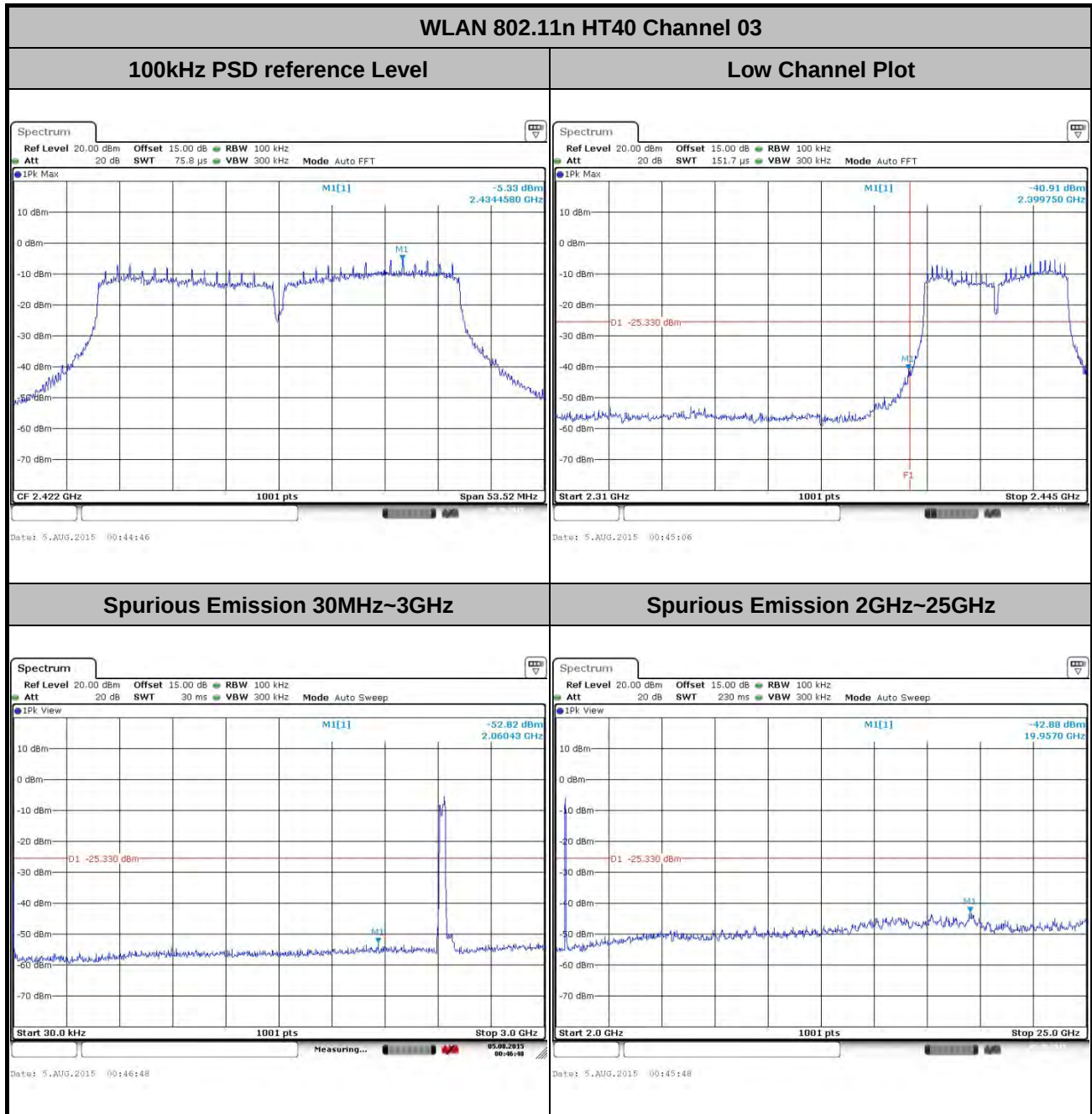


Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng





Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Sam Zheng

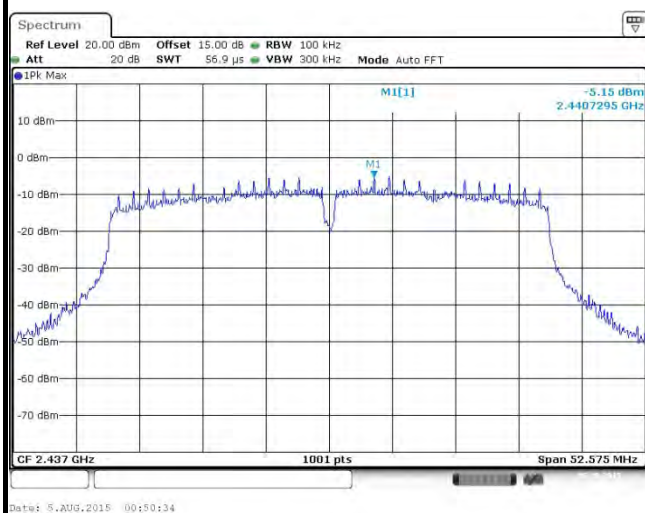




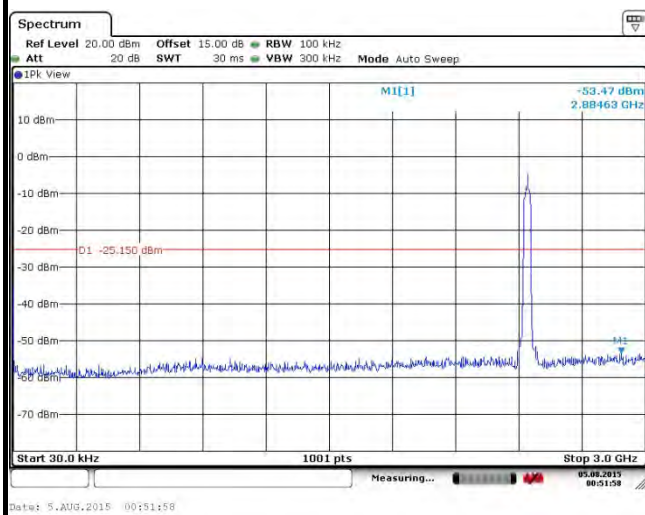
Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11n HT40 Channel 06

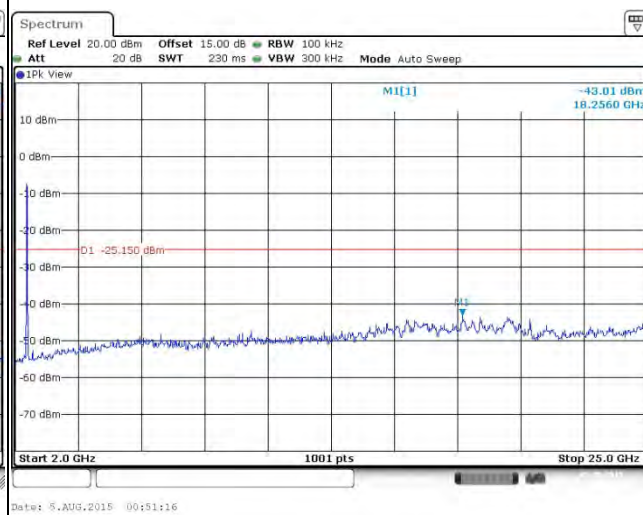
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz

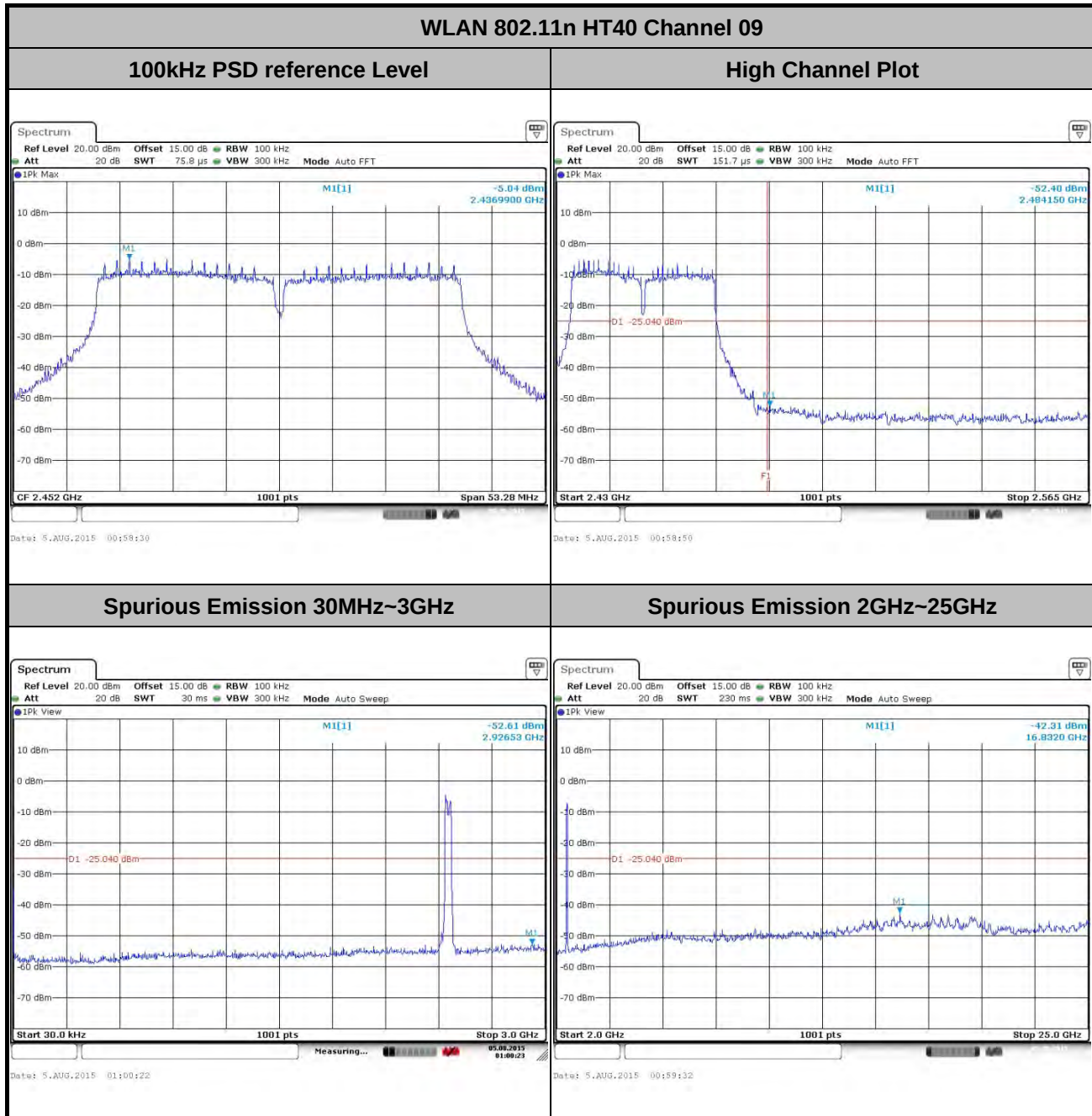


Spurious Emission 2GHz~25GHz





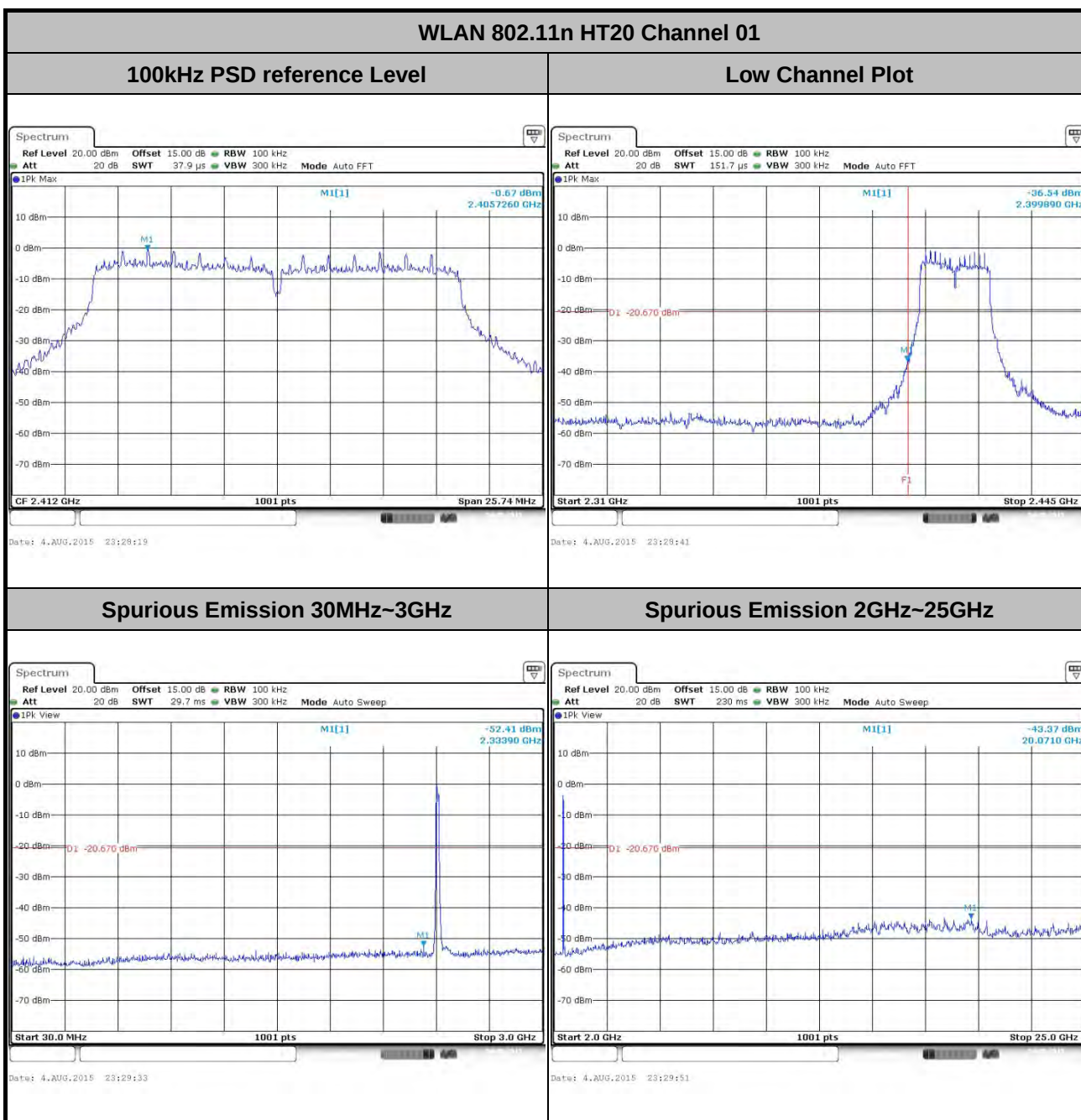
Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	09	Test Engineer :	Sam Zheng





Number of TX = 2, Ant. 2 (Measured)

Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Sam Zheng

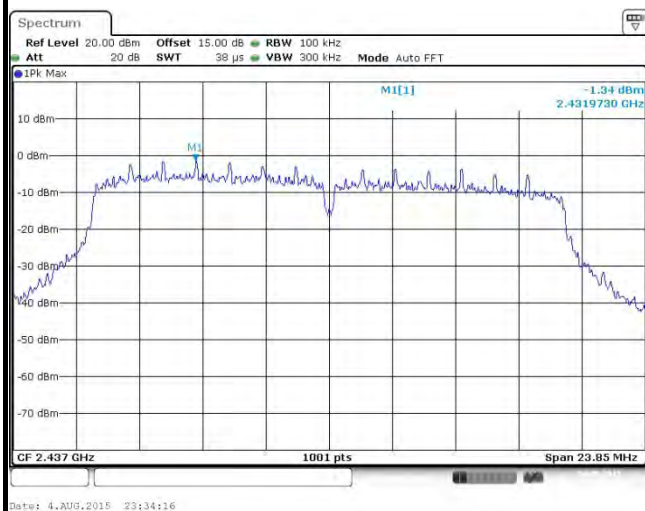




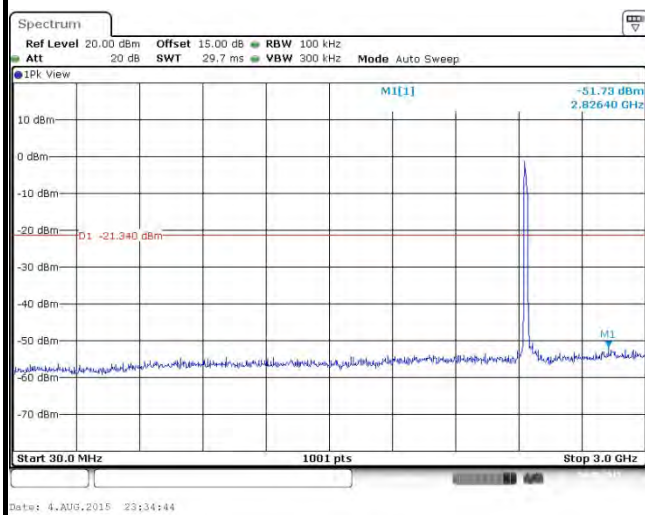
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11n HT20 Channel 06

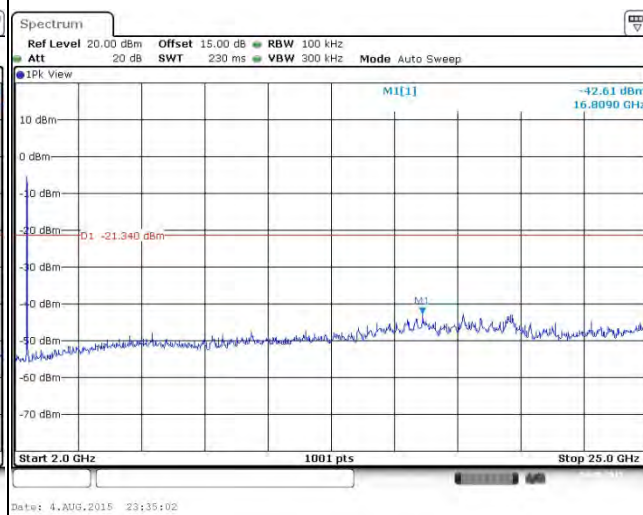
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

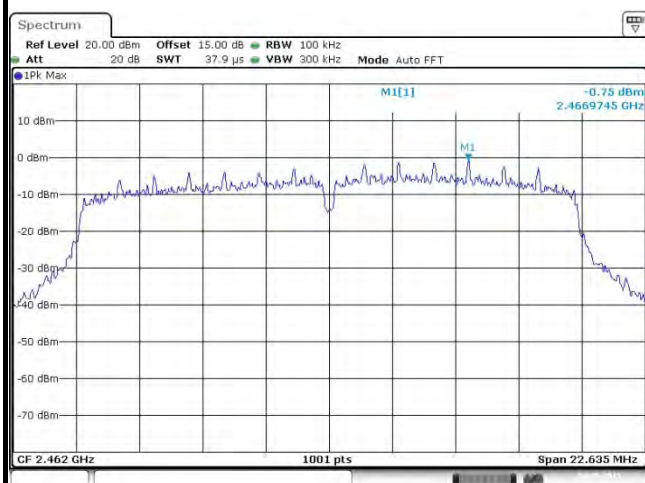




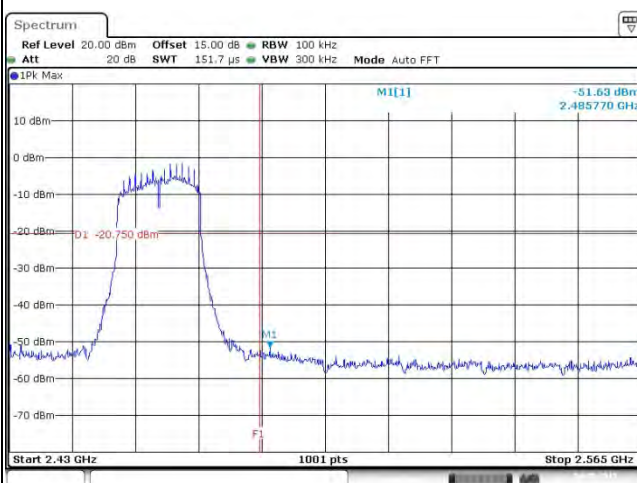
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng

WLAN 802.11n HT20 Channel 11

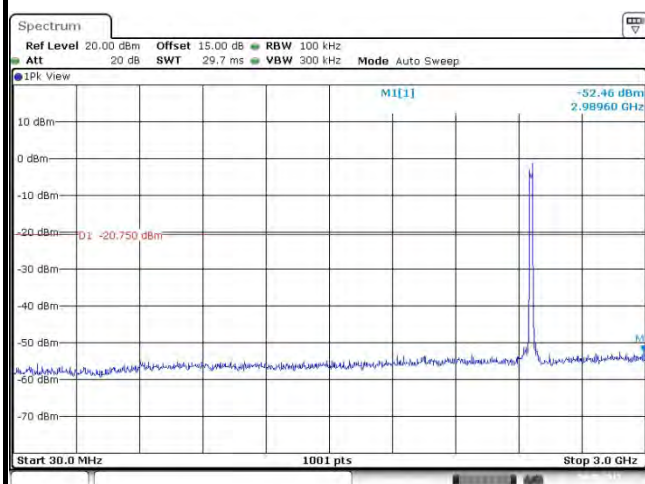
100kHz PSD reference Level



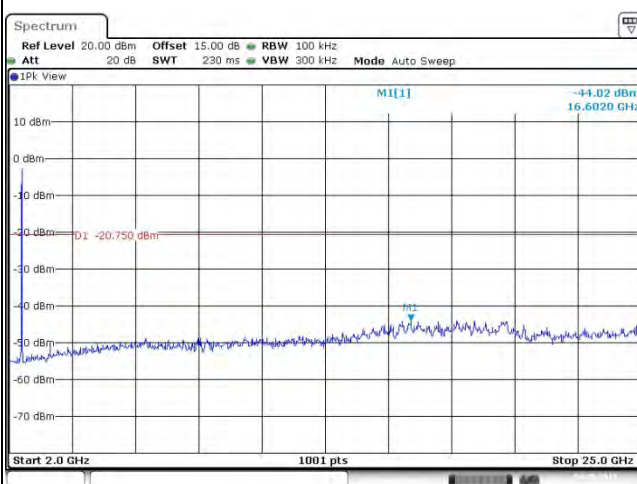
High Channel Plot



Spurious Emission 30MHz~3GHz

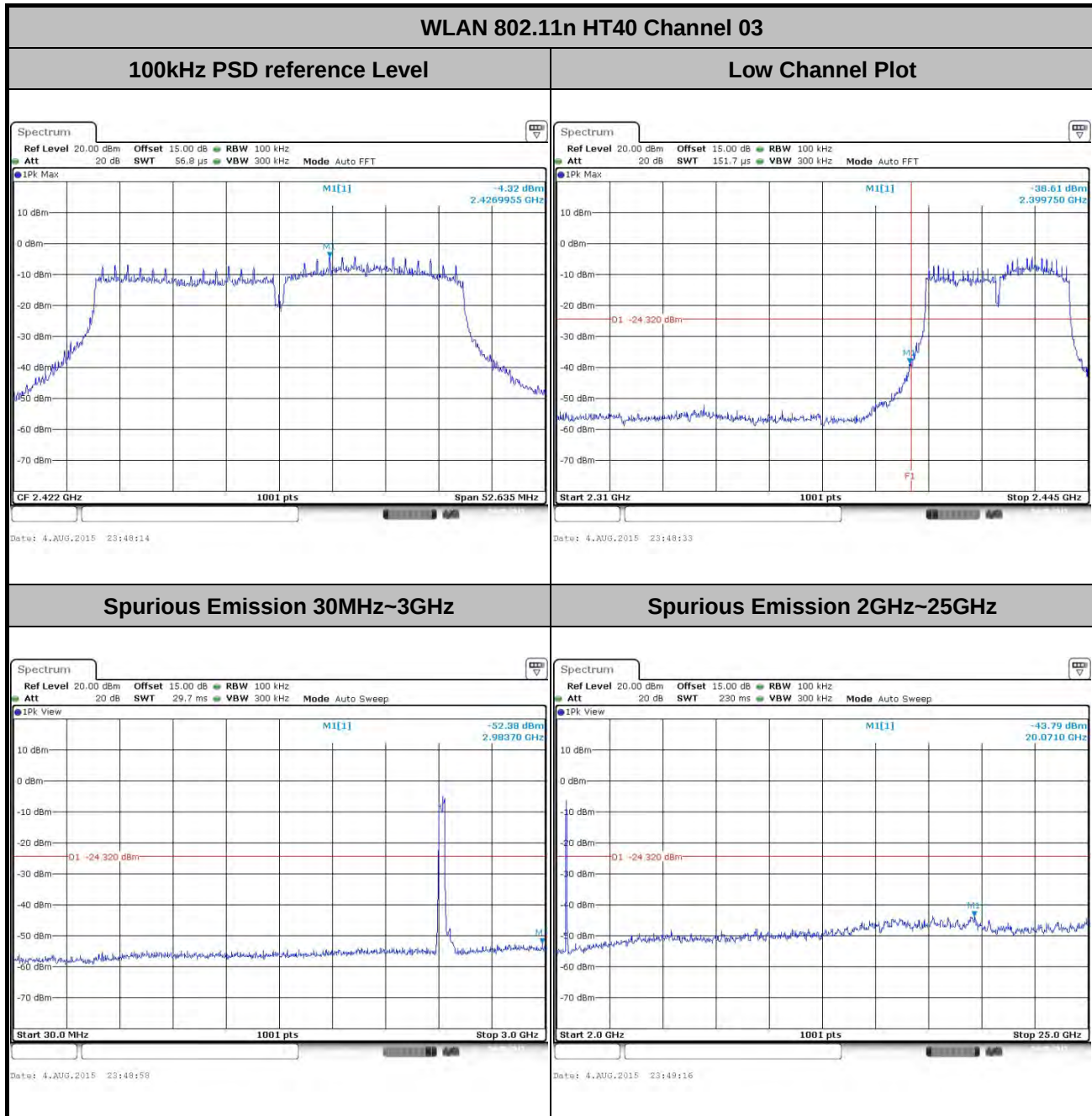


Spurious Emission 2GHz~25GHz





Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Sam Zheng

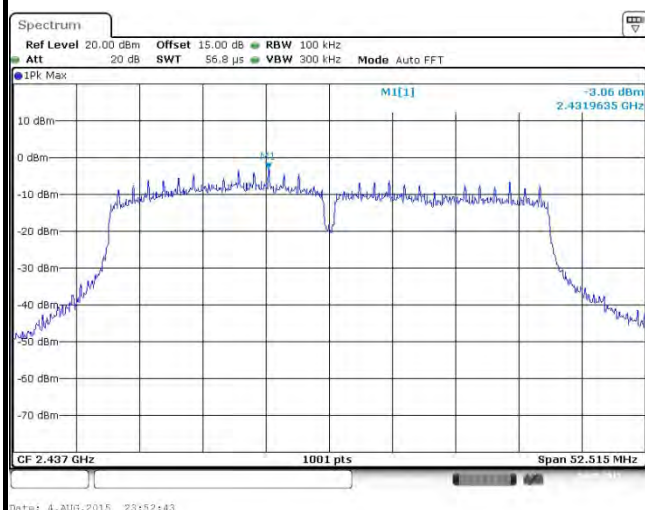




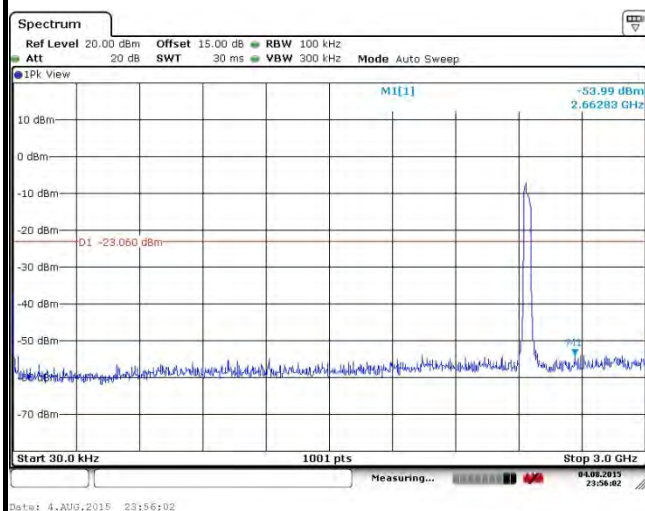
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11n HT40 Channel 06

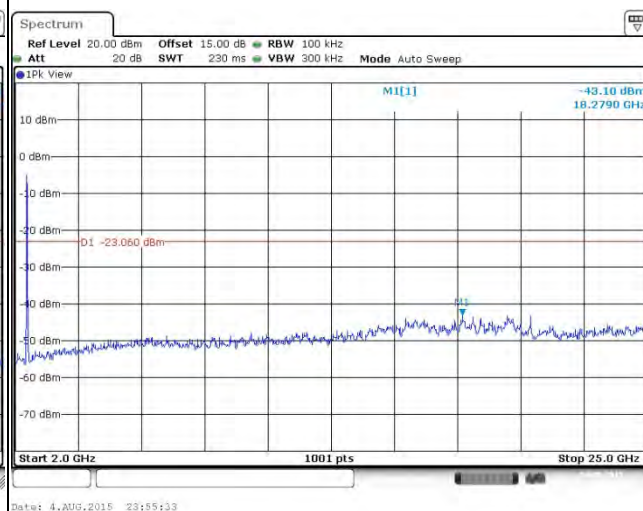
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

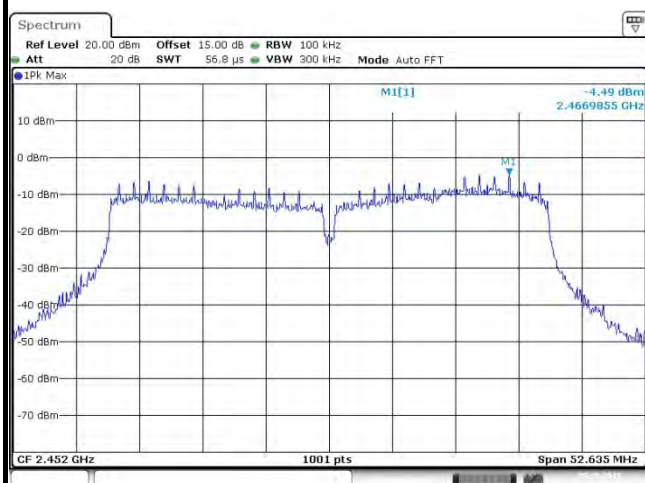




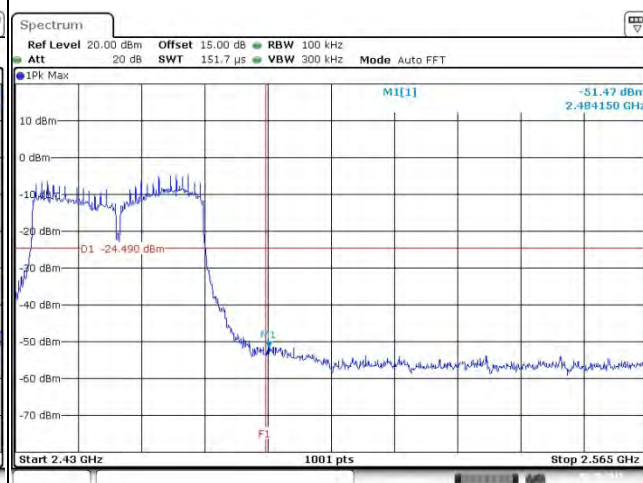
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	09	Test Engineer :	Sam Zheng

WLAN 802.11n HT40 Channel 09

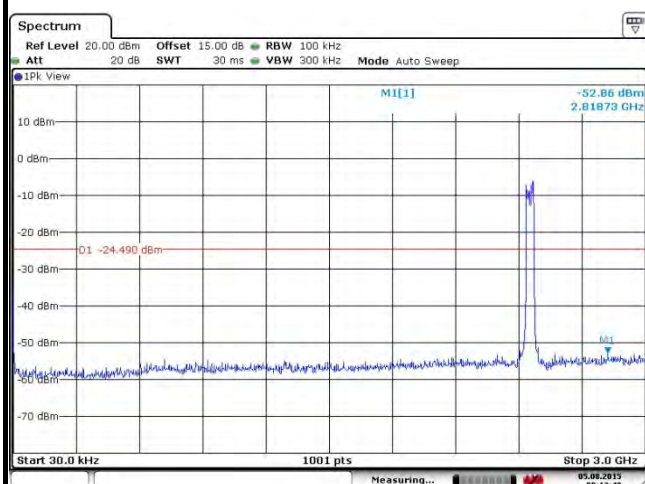
100kHz PSD reference Level



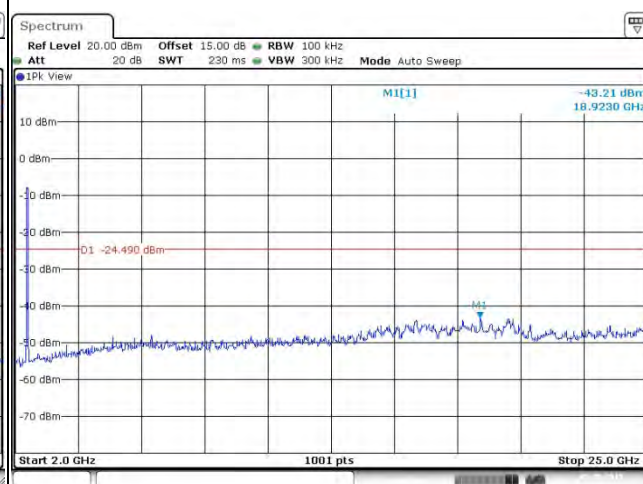
High Channel Plot



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 FCC section 15.209 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 Procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r03.
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.

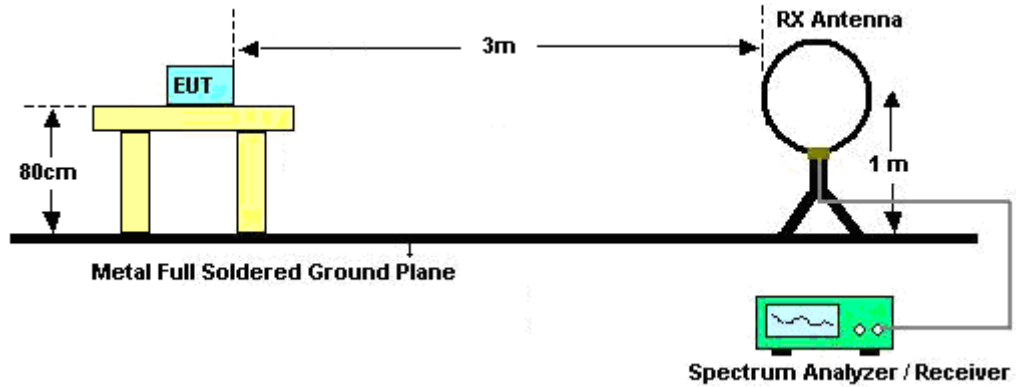
For average measurement:

 - 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.

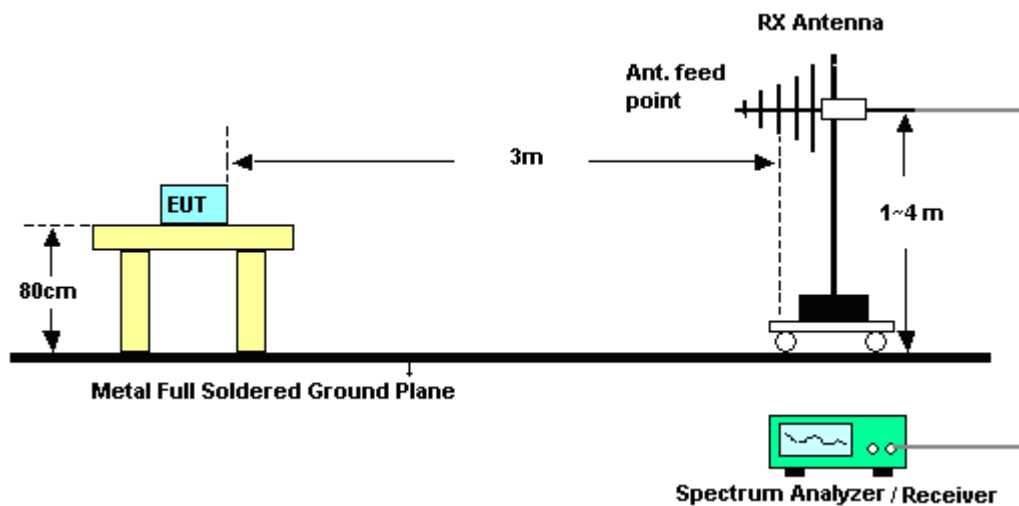
Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1	802.11b	99.04	-	-	10Hz
2	802.11b	99.04	-	-	
1	802.11g	94.95	2.07	0.48	1kHz
2	802.11g	94.95	2.07	0.48	
1+2	2.4GHz 802.11n HT20 for Ant. 1	94.18	1.91	0.52	1kHz
1+2	2.4GHz 802.11n HT20 for Ant. 2	89.73	0.94	1.06	3kHz

3.5.4 Test Setup

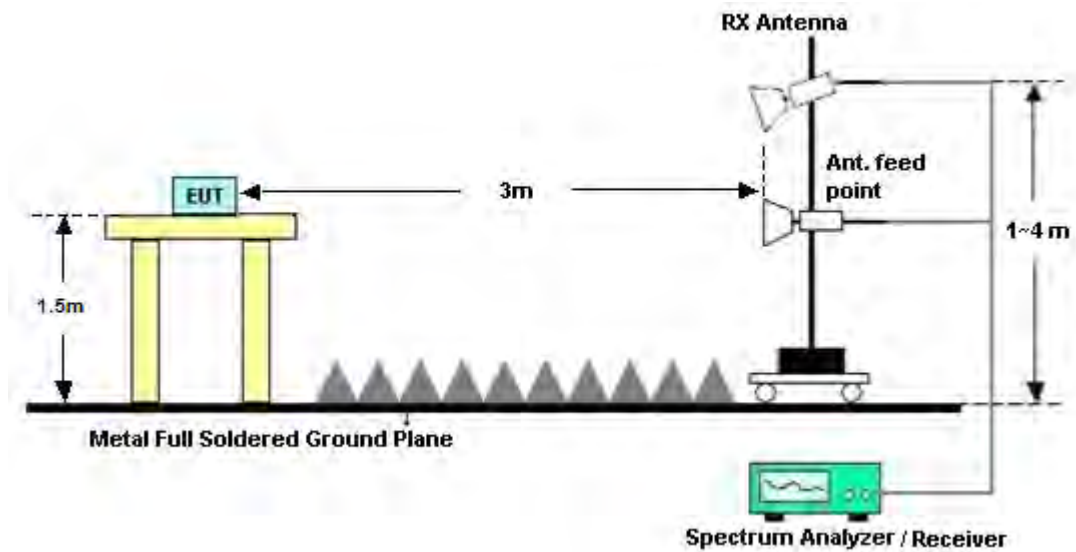
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated 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 per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B of this test report.

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 (dB μ V)	
	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.

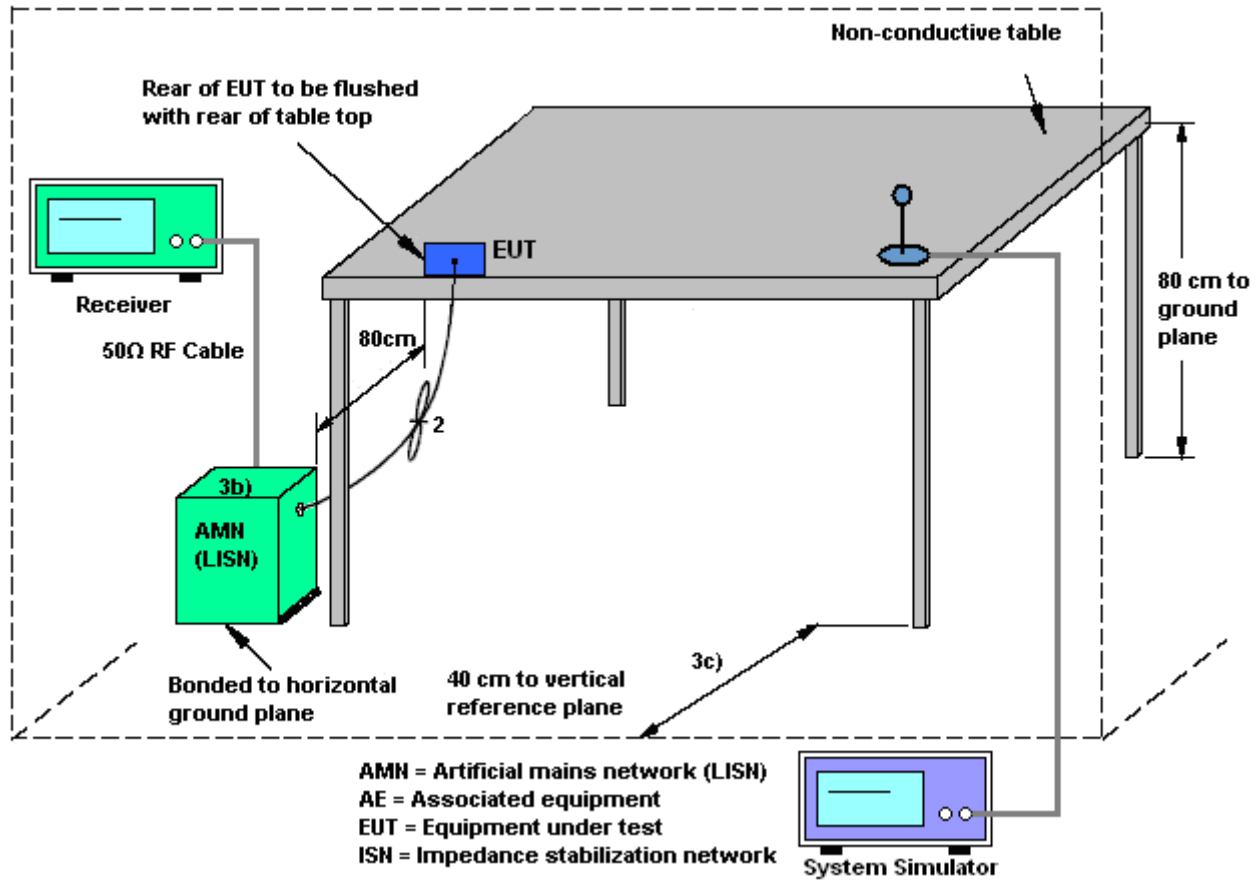
3.6.2 Measuring Instruments

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.

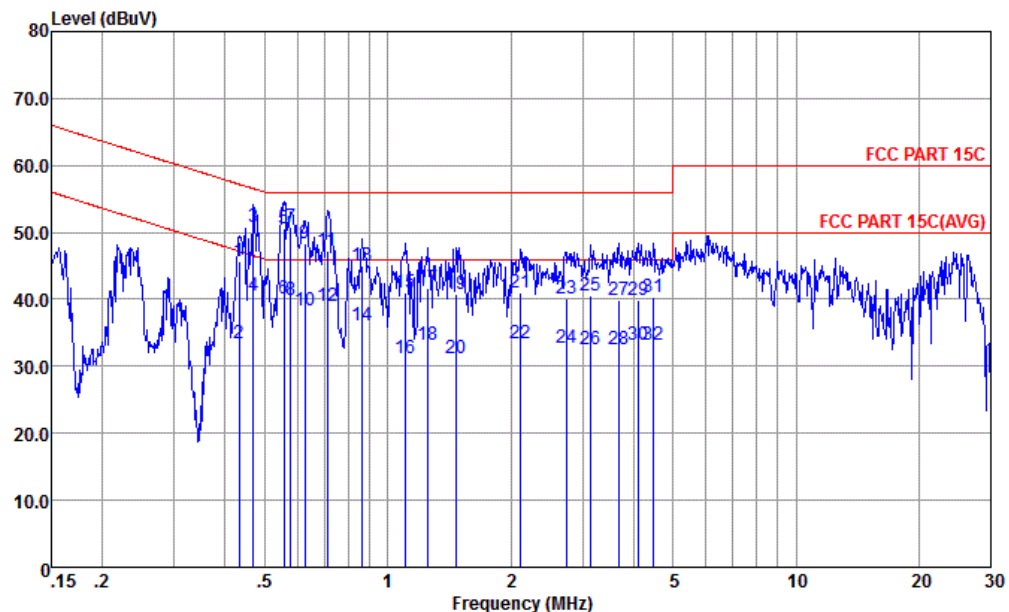
3.6.4 Test Setup





3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~24℃
Test Engineer :	Eko Guan	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + WLAN (2.4G) Link + USB Cable (Charging from Adapter)		

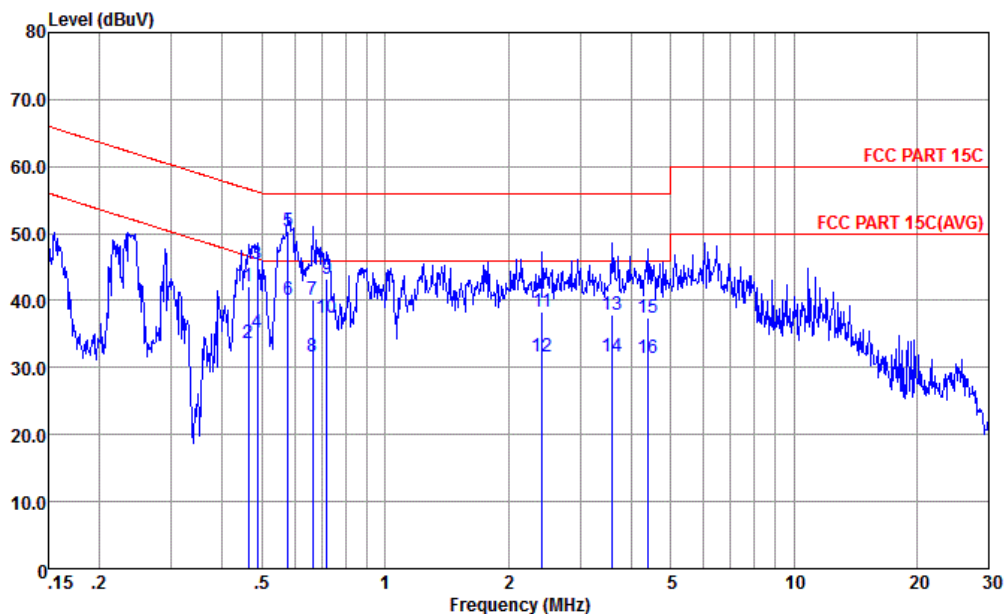


Site : CO01-KS
Condition : FCC PART 15C LISN-L20140306 LINE
mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
		dBuV	dB	dBuV	dBuV	dB	dB	
1	0.43	45.69	-11.51	57.20	34.80	0.27	10.62	QP
2	0.43	33.39	-13.81	47.20	22.50	0.27	10.62	Average
3	0.47	50.75	-5.79	56.54	39.90	0.23	10.62	QP
4	0.47	40.45	-6.09	46.54	29.60	0.23	10.62	Average
5	0.56	50.53	-5.47	56.00	39.70	0.20	10.63	QP
6	0.56	40.13	-5.87	46.00	29.30	0.20	10.63	Average
7 *	0.58	50.73	-5.27	56.00	39.90	0.20	10.63	QP
8	0.58	39.93	-6.07	46.00	29.10	0.20	10.63	Average
9	0.63	48.43	-7.57	56.00	37.60	0.20	10.63	QP
10	0.63	38.43	-7.57	46.00	27.60	0.20	10.63	Average
11	0.71	47.34	-8.66	56.00	36.50	0.20	10.64	QP
12	0.71	39.04	-6.96	46.00	28.20	0.20	10.64	Average
13	0.86	44.98	-11.02	56.00	34.19	0.14	10.65	QP
14	0.86	36.08	-9.92	46.00	25.29	0.14	10.65	Average
15	1.11	40.95	-15.05	56.00	30.20	0.10	10.65	QP
16	1.11	31.25	-14.75	46.00	20.50	0.10	10.65	Average
17	1.25	41.56	-14.44	56.00	30.80	0.10	10.66	QP
18	1.25	33.26	-12.74	46.00	22.50	0.10	10.66	Average
19	1.47	40.68	-15.32	56.00	29.90	0.10	10.68	QP
20	1.47	31.28	-14.72	46.00	20.50	0.10	10.68	Average
21	2.11	41.01	-14.99	56.00	30.20	0.10	10.71	QP
22	2.11	33.41	-12.59	46.00	22.60	0.10	10.71	Average
23	2.74	40.08	-15.92	56.00	29.21	0.12	10.75	QP
24	2.74	32.78	-13.22	46.00	21.91	0.12	10.75	Average
25	3.14	40.54	-15.46	56.00	29.59	0.15	10.80	QP
26	3.14	32.64	-13.36	46.00	21.69	0.15	10.80	Average
27	3.68	39.80	-16.20	56.00	28.80	0.18	10.82	QP
28	3.68	32.50	-13.50	46.00	21.50	0.18	10.82	Average
29	4.11	39.82	-16.18	56.00	28.80	0.19	10.83	QP
30	4.11	33.22	-12.78	46.00	22.20	0.19	10.83	Average
31	4.48	40.23	-15.77	56.00	29.20	0.19	10.84	QP
32	4.48	33.23	-12.77	46.00	22.20	0.19	10.84	Average



Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Eko Guan	Relative Humidity :	44~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + WLAN (2.4G) Link + USB Cable (Charging from Adapter)		



Site : CO01-KS
Condition : FCC PART 15C LISN-N20140306 NEUTRAL
mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.46	42.15	-14.48	56.63	31.20	0.33	10.62	QP
2	0.46	33.75	-12.88	46.63	22.80	0.33	10.62	Average
3	0.49	45.43	-10.80	56.23	34.50	0.31	10.62	QP
4	0.49	35.13	-11.10	46.23	24.20	0.31	10.62	Average
5 *	0.58	50.39	-5.61	56.00	39.50	0.26	10.63	QP
6	0.58	40.09	-5.91	46.00	29.20	0.26	10.63	Average
7	0.66	40.05	-15.95	56.00	29.20	0.21	10.64	QP
8	0.66	31.65	-14.35	46.00	20.80	0.21	10.64	Average
9	0.72	43.34	-12.66	56.00	32.51	0.19	10.64	QP
10	0.72	37.44	-8.56	46.00	26.61	0.19	10.64	Average
11	2.42	38.34	-17.66	56.00	27.51	0.11	10.72	QP
12	2.42	31.64	-14.36	46.00	20.81	0.11	10.72	Average
13	3.60	37.79	-18.21	56.00	26.80	0.17	10.82	QP
14	3.60	31.59	-14.41	46.00	20.60	0.17	10.82	Average
15	4.41	37.53	-18.47	56.00	26.50	0.19	10.84	QP
16	4.41	31.33	-14.67	46.00	20.30	0.19	10.84	Average

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. 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 FCC rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

The EUT supports CDD mode.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 1	Ant. 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
24GHz	2.00	2.00	2.00	5.01	0.00	0.00

$Power\ Limit\ Reduction = DG(Power) - 6dBi, (min = 0)$

$PSD\ Limit\ Reduction = DG(PSD) - 6dBi, (min = 0)$



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	May 05, 2015	Aug. 04, 2015~ Aug. 05, 2015	May 04, 2016	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1207253	30MHz~40GHz	Jan. 28, 2015	Aug. 04, 2015~ Aug. 05, 2015	Jan. 27, 2016	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Jan. 28, 2015	Aug. 04, 2015~ Aug. 05, 2015	Jan. 27, 2016	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Sep. 29, 2014	Aug. 10, 2015	Sep. 28, 2015	Radiation (03CH02-KS)
Spectrum Analyzer	R&S	FSV40	101040	10kHz~40GHz; Max 30dBm	Sep. 25, 2014	Aug. 10, 2015	Sep. 24, 2015	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 13, 2014	Aug. 10, 2015	Nov. 12, 2015	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz~2GHz	Sep. 13, 2014	Aug. 10, 2015	Sep. 12, 2015	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 08, 2014	Aug. 10, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 08, 2014	Aug. 10, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
SHF-EHF Horn	com-power	AH-840	101070	18GHz~40GHz	Sep. 04, 2014	Aug. 10, 2015	Sep. 03, 2015	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz~1000MHz / 32 dB	May 04, 2015	Aug. 10, 2015	May 03, 2016	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A023 84	1GHz~26.5GHz Gain 30dB	Oct. 28, 2014	Aug. 10, 2015	Oct. 27, 2015	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002 473	N/A	NCR	Aug. 10, 2015	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Aug. 10, 2015	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Aug. 10, 2015	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	May 04, 2015	Aug. 05, 2015	May 03, 2016	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 25, 2014	Aug. 05, 2015	Oct. 24, 2015	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 25, 2014	Aug. 05, 2015	Oct. 24, 2015	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	AC 0V~300V, 45Hz~1000Hz	Oct. 25, 2014	Aug. 05, 2015	Oct. 24, 2015	Conduction (CO01-KS)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1 dB
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Appendix A. Conducted Test Results

Report Number : FR570601A

Test Engineer:	Sam Zheng	Temperature:	24~26	°C
Test Date:	2015/8/4~2015/8/5	Relative Humidity:	50~53	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)		6dB BW (MHz)		6dB BW Limit (MHz)	Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2		
11b	1Mbps	1	1	2412		13.79		8.05	0.50	Pass
11b	1Mbps	1	6	2437		13.19		7.07	0.50	Pass
11b	1Mbps	1	11	2462		12.69		7.05	0.50	Pass
11g	6Mbps	1	1	2412		17.33		15.92	0.50	Pass
11g	6Mbps	1	6	2437		17.03		15.66	0.50	Pass
11g	6Mbps	1	11	2462		16.73		15.29	0.50	Pass
HT20	MCS0	1	1	2412		18.28		16.88	0.50	Pass
HT20	MCS0	1	6	2437		17.88		15.92	0.50	Pass
HT20	MCS0	1	11	2462		17.83		15.64	0.50	Pass
HT40	MCS0	1	3	2422		36.46		35.09	0.50	Pass
HT40	MCS0	1	6	2437		36.16		35.05	0.50	Pass
HT40	MCS0	1	9	2452		36.56		35.52	0.50	Pass
HT20	MCS0	2	1	2412	18.13	18.43	15.92	17.16	0.50	Pass
HT20	MCS0	2	6	2437	17.83	17.93	16.24	15.90	0.50	Pass
HT20	MCS0	2	11	2462	18.18	17.73	16.32	15.09	0.50	Pass
HT40	MCS0	2	3	2422	36.66	36.56	35.68	35.09	0.50	Pass
HT40	MCS0	2	6	2437	35.96	36.16	35.05	35.01	0.50	Pass
HT40	MCS0	2	9	2452	36.56	36.86	35.52	35.09	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 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	1	1	2412	16.33	17.31		30.00	30.00	2.00	2.00	18.33	19.31	36.00	36.00	Pass
11b	1Mbps	1	6	2437	17.21	16.29		30.00	30.00	2.00	2.00	19.21	18.29	36.00	36.00	Pass
11b	1Mbps	1	11	2462	16.55	16.95		30.00	30.00	2.00	2.00	18.55	18.95	36.00	36.00	Pass
11g	6Mbps	1	1	2412	19.09	20.34		30.00	30.00	2.00	2.00	21.09	22.34	36.00	36.00	Pass
11g	6Mbps	1	6	2437	19.66	19.42		30.00	30.00	2.00	2.00	21.66	21.42	36.00	36.00	Pass
11g	6Mbps	1	11	2462	19.43	19.73		30.00	30.00	2.00	2.00	21.43	21.73	36.00	36.00	Pass
HT20	MCS0	1	1	2412	17.62	18.48		30.00	30.00	2.00	2.00	19.62	20.48	36.00	36.00	Pass
HT20	MCS0	1	6	2437	18.02	17.46		30.00	30.00	2.00	2.00	20.02	19.46	36.00	36.00	Pass
HT20	MCS0	1	11	2462	17.69	18.11		30.00	30.00	2.00	2.00	19.69	20.11	36.00	36.00	Pass
HT40	MCS0	1	3	2422	17.38	19.16		30.00	30.00	2.00	2.00	19.38	21.16	36.00	36.00	Pass
HT40	MCS0	1	6	2437	18.78	18.61		30.00	30.00	2.00	2.00	20.78	20.61	36.00	36.00	Pass
HT40	MCS0	1	9	2452	18.53	17.97		30.00	30.00	2.00	2.00	20.53	19.97	36.00	36.00	Pass
HT20	MCS0	2	1	2412	15.17	16.97	19.17	30.00		2.00		21.17		36.00		Pass
HT20	MCS0	2	6	2437	15.32	16.16	18.77	30.00		2.00		20.77		36.00		Pass
HT20	MCS0	2	11	2462	15.09	16.80	19.04	30.00		2.00		21.04		36.00		Pass
HT40	MCS0	2	3	2422	15.44	17.74	19.75	30.00		2.00		21.75		36.00		Pass
HT40	MCS0	2	6	2437	16.43	17.00	19.73	30.00		2.00		21.73		36.00		Pass
HT40	MCS0	2	9	2452	15.59	17.59	19.71	30.00		2.00		21.71		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	0.04	14.05	15.10	
11b	1Mbps	1	6	2437	0.04	0.04	14.53	13.96	
11b	1Mbps	1	11	2462	0.04	0.04	14.01	14.41	
11g	6Mbps	1	1	2412	0.22	0.22	11.58	12.79	
11g	6Mbps	1	6	2437	0.22	0.22	12.23	11.79	
11g	6Mbps	1	11	2462	0.22	0.22	11.85	12.20	
HT20	MCS0	1	1	2412	0.26	0.26	9.69	10.92	
HT20	MCS0	1	6	2437	0.26	0.26	10.32	9.73	
HT20	MCS0	1	11	2462	0.26	0.26	10.05	10.07	
HT40	MCS0	1	3	2422	0.47	0.47	9.81	10.68	
HT40	MCS0	1	6	2437	0.47	0.47	10.26	10.44	
HT40	MCS0	1	9	2452	0.47	0.47	10.14	10.30	
HT20	MCS0	2	1	2412	0.26	0.26	7.42	9.41	11.54
HT20	MCS0	2	6	2437	0.26	0.26	7.54	8.24	10.91
HT20	MCS0	2	11	2462	0.26	0.26	6.89	8.58	10.83
HT40	MCS0	2	3	2422	0.47	0.47	7.08	9.53	11.49
HT40	MCS0	2	6	2437	0.47	0.47	7.63	8.72	11.22
HT40	MCS0	2	9	2452	0.47	0.47	7.04	9.04	11.16

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 2	Worse + 3.01	Ant 1	Ant 2	Ant 1	Ant 2	
11b	1Mbps	1	1	2412		-10.85	-	2.00	2.00	8.00	8.00	Pass
11b	1Mbps	1	6	2437		-10.07		2.00	2.00	8.00	8.00	Pass
11b	1Mbps	1	11	2462		-9.69		2.00	2.00	8.00	8.00	Pass
11g	6Mbps	1	1	2412		-12.05		2.00	2.00	8.00	8.00	Pass
11g	6Mbps	1	6	2437		-13.24		2.00	2.00	8.00	8.00	Pass
11g	6Mbps	1	11	2462		-13.34		2.00	2.00	8.00	8.00	Pass
HT20	MCS0	1	1	2412		-13.43		2.00	2.00	8.00	8.00	Pass
HT20	MCS0	1	6	2437		-15.69		2.00	2.00	8.00	8.00	Pass
HT20	MCS0	1	11	2462		-14.66		2.00	2.00	8.00	8.00	Pass
HT40	MCS0	1	3	2422		-16.02		2.00	2.00	8.00	8.00	Pass
HT40	MCS0	1	6	2437		-16.84		2.00	2.00	8.00	8.00	Pass
HT40	MCS0	1	9	2452		-16.71		2.00	2.00	8.00	8.00	Pass
HT20	MCS0	2	1	2412	-18.36	-15.19	-12.18	5.01		8.00		Pass
HT20	MCS0	2	6	2437	-17.43	-16.56	-13.55	5.01		8.00		Pass
HT20	MCS0	2	11	2462	-17.16	-16.72	-13.71	5.01		8.00		Pass
HT40	MCS0	2	3	2422	-20.13	-18.84	-15.83	5.01		8.00		Pass
HT40	MCS0	2	6	2437	-19.52	-17.91	-14.90	5.01		8.00		Pass
HT40	MCS0	2	9	2452	-20.23	-19.68	-16.67	5.01		8.00		Pass

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



Appendix B. Radiated Spurious Emission

15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2330.97	52.6	-21.4	74	46.7	31.23	6.12	31.45	165	168	P	H
		2317.38	37.9	-16.1	54	32.1	31.21	6.06	31.47	165	168	A	H
	*	2410.604	98.78	-	-	92.54	31.31	6.22	31.29	165	168	P	H
	*	2411.189	92.52	-	-	86.28	31.31	6.22	31.29	165	168	A	H
		2364.9	52.55	-21.45	74	46.53	31.26	6.17	31.41	193	21	P	V
		2389.74	38.27	-15.73	54	32.16	31.3	6.17	31.36	193	21	A	V
	*	2410.688	102.69	-	-	96.45	31.31	6.22	31.29	193	21	P	V
	*	2411.189	98.45	-	-	92.21	31.31	6.22	31.29	193	21	A	V
802.11b CH 06 2437MHz	*	2435.738	99.99	-	-	93.66	31.33	6.22	31.22	165	148	P	H
	*	2436.239	95.14	-	-	88.81	31.33	6.22	31.22	165	148	A	H
	*	2435.655	101.84	-	-	95.51	31.33	6.22	31.22	133	340	P	V
	*	2436.239	97.36	-	-	91.03	31.33	6.22	31.22	133	340	A	V
802.11b CH 11 2462MHz	*	2463.46	98.63	-	-	92.08	31.36	6.28	31.09	172	175	P	H
	*	2462.792	93.45	-	-	86.9	31.36	6.28	31.09	172	175	A	H
		2488.44	52.79	-21.21	74	46.02	31.39	6.33	30.95	172	175	P	H
		2486.64	38.57	-15.43	54	31.89	31.37	6.33	31.02	172	175	A	H
	*	2463.376	102.27	-	-	95.72	31.36	6.28	31.09	165	17	P	V
	*	2462.708	97.68	-	-	91.13	31.36	6.28	31.09	165	17	A	V
		2486.56	54.21	-19.79	74	47.53	31.37	6.33	31.02	165	17	P	V
		2486.96	39.77	-14.23	54	33.09	31.37	6.33	31.02	165	17	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		4824	47.77	-26.23	74	36.73	34.89	8.73	32.58	150	180	P	H
		4824	49.04	-24.96	74	38	34.89	8.73	32.58	150	180	P	V
802.11b CH 06 2437MHz		4875	48.52	-25.48	74	37.66	34.92	8.76	32.82	150	180	P	H
		7311	49.1	-24.9	74	37.75	35.56	10.84	35.05	150	360	P	H
		4875	49.02	-24.98	74	38.16	34.92	8.76	32.82	150	180	P	V
		7311	50.75	-23.25	74	39.4	35.56	10.84	35.05	150	0	P	V
802.11b CH 11 2462MHz		4923	49.59	-24.41	74	42.88	34.95	8.79	37.03	100	61	P	H
		7386	49	-25	74	41.72	35.58	10.89	39.19	100	161	P	H
		4923	45.01	-28.99	74	38.3	34.95	8.79	37.03	100	165	P	V
		7386	47.78	-26.22	74	40.5	35.58	10.89	39.19	100	106	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		2312.25	52.79	-21.21	74	46.99	31.21	6.06	31.47	238	176	P	H
		2389.83	38.84	-15.16	54	32.73	31.3	6.17	31.36	238	176	A	H
	*	2405.427	102.01	-	-	95.77	31.31	6.22	31.29	238	176	P	H
	*	2405.511	91.88	-	-	85.64	31.31	6.22	31.29	238	176	A	H
		2313.15	53.31	-20.69	74	47.51	31.21	6.06	31.47	230	0	P	V
		2390	38.89	-15.11	54	32.78	31.3	6.17	31.36	230	0	A	V
	*	2405.26	101.68	-	-	95.44	31.31	6.22	31.29	230	0	P	V
	*	2404.843	91.89	-	-	85.65	31.31	6.22	31.29	230	0	A	V
802.11g CH 06 2437MHz	*	2432.064	100.35	-	-	94.02	31.33	6.22	31.22	227	162	P	H
	*	2432.398	89.43	-	-	83.1	31.33	6.22	31.22	227	162	A	H
	*	2433.066	101.6	-	-	95.27	31.33	6.22	31.22	155	0	P	V
	*	2433.65	91.36	-	-	85.03	31.33	6.22	31.22	155	0	A	V
802.11g CH 11 2462MHz	*	2464.712	99.11	-	-	92.56	31.36	6.28	31.09	250	179	P	H
	*	2465.213	87.63	-	-	81.08	31.36	6.28	31.09	250	179	A	H
		2483.8	54.8	-19.2	74	48.12	31.37	6.33	31.02	250	179	P	H
		2483.64	40.32	-13.68	54	33.64	31.37	6.33	31.02	250	179	A	H
	*	2468.386	101.56	-	-	95.01	31.36	6.28	31.09	160	345	P	V
	*	2467.969	91.15	-	-	84.6	31.36	6.28	31.09	160	345	A	V
		2484	58.12	-15.88	74	51.44	31.37	6.33	31.02	160	345	P	V
		2483.56	42.78	-11.22	54	36.1	31.37	6.33	31.02	160	345	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		4824	50.83	-23.17	74	39.79	34.89	8.73	32.58	150	180	P	H
		4824	48.21	-25.79	74	37.17	34.89	8.73	32.58	150	180	P	V
802.11g CH 06 2437MHz		4875	47.76	-26.24	74	36.9	34.92	8.76	32.82	150	180	P	H
		7311	47.08	-26.92	74	35.73	35.56	10.84	35.05	150	360	P	H
		4875	47.96	-26.04	74	37.1	34.92	8.76	32.82	150	180	P	V
		7311	47.05	-26.95	74	35.7	35.56	10.84	35.05	150	0	P	V
802.11g CH 11 2462MHz		4923	49.41	-24.59	74	38.73	34.95	8.79	33.06	150	180	P	H
		7386	47.94	-26.06	74	36.86	35.58	10.89	35.39	150	360	P	H
		4923	48.97	-25.03	74	38.29	34.95	8.79	33.06	150	180	P	V
		7386	47.57	-26.43	74	36.49	35.58	10.89	35.39	150	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

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 CH 01 2412MHz		2357.61	52.61	-21.39	74	46.64	31.26	6.12	31.41	150	26	P	H
		2389.92	38.23	-15.77	54	32.12	31.3	6.17	31.36	150	26	A	H
	*	2413.36	103.03	-	-	96.79	31.31	6.22	31.29	150	26	P	H
	*	2412.775	98.59	-	-	92.35	31.31	6.22	31.29	150	26	A	H
		2315.4	56.62	-17.38	74	50.82	31.21	6.06	31.47	172	194	P	V
		2390	41.54	-12.46	54	35.43	31.3	6.17	31.36	172	194	A	V
	*	2413.277	100	-	-	93.76	31.31	6.22	31.29	172	194	P	V
	*	2412.775	95.5	-	-	89.26	31.31	6.22	31.29	172	194	A	V
802.11b CH 06 2437MHz	*	2435.738	102.51	-	-	96.18	31.33	6.22	31.22	155	34	P	H
	*	2436.239	98.37	-	-	92.04	31.33	6.22	31.22	155	34	A	H
	*	2435.738	100.09	-	-	93.76	31.33	6.22	31.22	150	62	P	V
	*	2436.323	94.92	-	-	88.59	31.33	6.22	31.22	150	62	A	V
802.11b CH 11 2462MHz	*	2460.955	102.02	-	-	95.47	31.36	6.28	31.09	150	37	P	H
	*	2461.289	98.08	-	-	91.53	31.36	6.28	31.09	150	37	A	H
		2483.72	53.26	-20.74	74	46.58	31.37	6.33	31.02	150	37	P	H
		2483.52	38.94	-15.06	54	32.26	31.37	6.33	31.02	150	37	A	H
	*	2460.788	104.24	-	-	97.69	31.36	6.28	31.09	204	92	P	V
	*	2461.206	100.25	-	-	93.7	31.36	6.28	31.09	204	92	A	V
		2484.88	53.88	-20.12	74	47.2	31.37	6.33	31.02	204	92	P	V
		2483.52	39.34	-14.66	54	32.66	31.37	6.33	31.02	204	92	A	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

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 CH 01 2412MHz		4824	48.77	-25.23	74	37.73	34.89	8.73	32.58	184	230	P	H
		4824	48.18	-25.82	74	37.14	34.89	8.73	32.58	150	180	P	V
802.11b CH 06 2437MHz		4875	49.63	-24.37	74	38.77	34.92	8.76	32.82	230	144	P	H
		7311	47.53	-26.47	74	36.18	35.56	10.84	35.05	188	57	P	H
		4874	48.07	-25.93	74	37.21	34.92	8.76	32.82	150	321	P	V
		7311	46.84	-27.16	74	35.49	35.56	10.84	35.05	162	95	P	V
802.11b CH 11 2462MHz		4924	47.77	-26.23	74	37.09	34.95	8.79	33.06	150	0	P	H
		7386	47.16	-26.84	74	36.08	35.58	10.89	35.39	162	305	P	H
		4923	47.97	-26.03	74	37.29	34.95	8.79	33.06	150	142	P	V
		7386	47.9	-26.1	74	36.82	35.58	10.89	35.39	179	41	P	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

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)
802.11g CH 01 2412MHz		2389.29	53.64	-20.36	74	47.53	31.3	6.17	31.36	162	246	P	H
		2390	39.98	-14.02	54	33.87	31.3	6.17	31.36	162	246	A	H
	*	2418.287	105.62	-	-	99.38	31.31	6.22	31.29	162	246	P	H
	*	2418.704	95.39	-	-	89.15	31.31	6.22	31.29	162	246	A	H
		2324.67	52.54	-21.46	74	46.64	31.23	6.12	31.45	334	318	P	V
		2318.01	38.93	-15.07	54	33.09	31.23	6.06	31.45	334	318	A	V
	*	2418.287	99.13	-	-	92.89	31.31	6.22	31.29	334	318	P	V
	*	2418.537	89.17	-	-	82.93	31.31	6.22	31.29	334	318	A	V
802.11g CH 06 2437MHz	*	2430.227	103.58	-	-	97.25	31.33	6.22	31.22	161	258	P	H
	*	2430.561	93.48	-	-	87.15	31.33	6.22	31.22	161	258	A	H
	*	2430.478	99.26	-	-	92.93	31.33	6.22	31.22	297	264	P	V
	*	2430.227	89.27	-	-	82.94	31.33	6.22	31.22	297	264	A	V
802.11g CH 11 2462MHz	*	2460.621	104.24	-	-	97.69	31.36	6.28	31.09	150	233	P	H
	*	2460.037	93.95	-	-	87.4	31.36	6.28	31.09	150	233	A	H
		2484.04	55.07	-18.93	74	48.39	31.37	6.33	31.02	150	233	P	H
		2483.76	41.2	-12.8	54	34.52	31.37	6.33	31.02	150	233	A	H
	*	2459.285	99.25	-	-	92.7	31.36	6.28	31.09	289	276	P	V
	*	2458.784	88.43	-	-	81.88	31.36	6.28	31.09	289	276	A	V
		2484.44	52.99	-21.01	74	46.31	31.37	6.33	31.02	289	276	P	V
		2483.6	39.69	-14.31	54	33.01	31.37	6.33	31.02	289	276	A	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

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)
802.11g CH 01 2412MHz		4824	48.93	-25.07	74	37.89	34.89	8.73	32.58	150	162	P	H
		4824	48.51	-25.49	74	37.47	34.89	8.73	32.58	150	260	P	V
802.11g CH 06 2437MHz		4875	47.95	-26.05	74	37.09	34.92	8.76	32.82	150	90	P	H
		7311	44.93	-29.07	74	33.58	35.56	10.84	35.05	154	125	P	H
		4875	46.21	-27.79	74	35.35	34.92	8.76	32.82	150	108	P	V
		7311	46.32	-27.68	74	34.97	35.56	10.84	35.05	153	20	P	V
802.11g CH 11 2462MHz		4923	47.61	-26.39	74	36.93	34.95	8.79	33.06	189	342	P	H
		7386	46.89	-27.11	74	35.81	35.58	10.89	35.39	156	286	P	H
		4923	47.1	-26.9	74	36.42	34.95	8.79	33.06	150	215	P	V
		7386	46.08	-27.92	74	35	35.58	10.89	35.39	150	17	P	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		2314.05	52.35	-21.65	74	46.55	31.21	6.06	31.47	213	166	P	H
		2390	39.33	-14.67	54	33.22	31.3	6.17	31.36	213	166	A	H
	*	2405.26	103.63	-	-	97.39	31.31	6.22	31.29	213	166	P	H
	*	2405.177	93.48	-	-	87.24	31.31	6.22	31.29	213	166	A	H
		2389.65	52.63	-21.37	74	46.52	31.3	6.17	31.36	179	305	P	V
		2389.92	39.14	-14.86	54	33.03	31.3	6.17	31.36	179	305	A	V
	*	2406.179	101.13	-	-	94.89	31.31	6.22	31.29	179	305	P	V
	*	2406.429	90.49	-	-	84.25	31.31	6.22	31.29	179	305	A	V
802.11n HT20 CH 06 2437MHz	*	2433.066	100.9	-	-	94.57	31.33	6.22	31.22	150	173	P	H
	*	2431.73	90.04	-	-	83.71	31.33	6.22	31.22	150	173	A	H
	*	2432.982	101.31	-	-	94.98	31.33	6.22	31.22	150	141	P	V
	*	2433.817	90.79	-	-	84.46	31.33	6.22	31.22	150	141	P	V
802.11n HT20 CH 11 2462MHz	*	2465.798	98.38	-	-	91.83	31.36	6.28	31.09	258	164	P	H
	*	2465.046	88.13	-	-	81.58	31.36	6.28	31.09	258	164	A	H
		2483.52	52.66	-21.34	74	45.98	31.37	6.33	31.02	258	164	P	H
		2483.76	39.2	-14.8	54	32.52	31.37	6.33	31.02	258	164	A	H
	*	2460.371	102.13	-	-	95.58	31.36	6.28	31.09	292	49	P	V
	*	2460.204	91.32	-	-	84.77	31.36	6.28	31.09	292	49	A	V
		2483.92	55.02	-18.98	74	48.34	31.37	6.33	31.02	292	49	P	V
		2484.2	40.32	-13.68	54	33.64	31.37	6.33	31.02	292	49	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		4923	48.71	-25.29	74	38.03	34.95	8.79	33.06	162	195	P	H
		4923	47.17	-26.83	74	36.49	34.95	8.79	33.06	152	130	P	V
802.11n HT20 CH 06 2437MHz		4875	49.39	-24.61	74	38.53	34.92	8.76	32.82	162	130	P	H
		7311	47.7	-26.3	74	36.35	35.56	10.84	35.05	199	230	P	H
		4875	48.45	-25.55	74	37.59	34.92	8.76	32.82	177	0	P	V
		7311	46.18	-27.82	74	34.83	35.56	10.84	35.05	260	308	P	V
802.11n HT20 CH 11 2462MHz		4923	48.71	-25.29	74	38.03	34.95	8.79	33.06	175	180	P	H
		7386	48.54	-25.46	74	37.46	35.58	10.89	35.39	188	210	P	H
		4923	47.17	-26.83	74	36.49	34.95	8.79	33.06	196	251	P	V
		7386	47.96	-26.04	74	36.88	35.58	10.89	35.39	174	214	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 CH 03 2422MHz		2389.11	53.36	-20.64	74	47.25	31.3	6.17	31.36	205	30	P	H
		2390	40.23	-13.77	54	34.12	31.3	6.17	31.36	205	30	A	H
	*	2426.553	99.74	-	-	93.41	31.33	6.22	31.22	205	30	P	H
	*	2426.302	89.32	-	-	82.99	31.33	6.22	31.22	205	30	A	H
		2483.76	52.81	-21.19	74	46.13	31.37	6.33	31.02	205	30	P	H
		2486.2	39.92	-14.08	54	33.24	31.37	6.33	31.02	205	30	A	H
		2388.39	57.62	-16.38	74	51.51	31.3	6.17	31.36	190	174	P	V
		2390	39.96	-14.04	54	33.85	31.3	6.17	31.36	190	174	A	V
	*	2428.975	101.68	-	-	95.35	31.33	6.22	31.22	190	174	P	V
	*	2430.06	91.56	-	-	85.23	31.33	6.22	31.22	190	174	A	V
		2485.36	54.07	-19.93	74	47.39	31.37	6.33	31.02	190	174	P	V
802.11n HT40 CH 06 2437MHz		2486.24	40.37	-13.63	54	33.69	31.37	6.33	31.02	190	174	A	V
		2319.27	52.2	-21.8	74	46.36	31.23	6.06	31.45	150	144	P	H
		2335.74	39.23	-14.77	54	33.29	31.25	6.12	31.43	150	144	A	H
	*	2429.392	97.85	-	-	91.52	31.33	6.22	31.22	150	144	P	H
	*	2428.975	87.38	-	-	81.05	31.33	6.22	31.22	150	144	A	H
		2486.68	58.35	-15.65	74	51.67	31.37	6.33	31.02	150	144	P	H
		2485.08	40.57	-13.43	54	33.89	31.37	6.33	31.02	150	144	A	H
		2353.47	51.37	-22.63	74	45.4	31.26	6.12	31.41	194	187	P	V
		2388.12	39.39	-14.61	54	33.28	31.3	6.17	31.36	194	187	A	V
	*	2431.813	100.32	-	-	93.99	31.33	6.22	31.22	194	186	P	V
	*	2431.396	89.98	-	-	83.65	31.33	6.22	31.22	194	187	A	V
		2483.84	58.24	-15.76	74	51.56	31.37	6.33	31.02	194	186	P	V
		2488.36	39.96	-14.04	54	33.19	31.39	6.33	30.95	194	187	A	V



802.11n HT40 CH 09 2452MHz		2390	54.14	-19.86	74	48.03	31.3	6.17	31.36	182	40	P	H
		2388.39	39.35	-14.65	54	33.24	31.3	6.17	31.36	182	40	A	H
	*	2465.046	100.04	-	-	93.49	31.36	6.28	31.09	182	40	P	H
	*	2464.629	89.53	-	-	82.98	31.36	6.28	31.09	182	40	A	H
		2486.48	63.71	-10.29	74	57.03	31.37	6.33	31.02	182	40	P	H
		2484.24	43.7	-10.3	54	37.02	31.37	6.33	31.02	182	40	A	H
		2325.03	52.76	-21.24	74	46.86	31.23	6.12	31.45	174	134	P	V
		2313.15	39.26	-14.74	54	33.46	31.21	6.06	31.47	174	134	A	V
	*	2463.543	98.06	-	-	91.51	31.36	6.28	31.09	174	134	P	V
	*	2463.794	87.81	-	-	81.26	31.36	6.28	31.09	174	134	A	V
		2485.6	62.1	-11.9	74	55.42	31.37	6.33	31.02	174	134	P	V
		2484.92	43	-11	54	36.32	31.37	6.33	31.02	174	134	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n		4845	46.71	-27.29	74	35.74	34.9	8.73	32.66	199	0	P	H
HT40		7266	48.52	-25.48	74	37.07	35.56	10.81	34.92	174	213	P	H
CH 03		4845	47.18	-26.82	74	36.21	34.9	8.73	32.66	160	214	P	V
2422MHz		7266	47.17	-26.83	74	35.72	35.56	10.81	34.92	169	95	P	V
802.11n		4875	47.75	-26.25	74	36.89	34.92	8.76	32.82	198	127	P	H
HT40		7311	49.4	-24.6	74	38.05	35.56	10.84	35.05	187	25	P	H
CH 06		4875	48.33	-25.67	74	37.47	34.92	8.76	32.82	160	338	P	V
2437MHz		7311	48.35	-25.65	74	37	35.56	10.84	35.05	150	74	P	V
802.11n		4923	49.23	-24.77	74	38.55	34.95	8.79	33.06	150	180	P	H
HT40		7356	47.22	-26.78	74	36.05	35.57	10.86	35.26	230	0	P	H
CH 09		4923	48.56	-25.44	74	37.88	34.95	8.79	33.06	150	338	P	V
2452MHz		7356	48.59	-25.41	74	37.42	35.57	10.86	35.26	160	32	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C Emission below 1GHz

2.4GHz WIFI 802.11n HT40 (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT40 LF		39.7	22.19	-17.81	40	39.26	14.3	1.23	32.6			P	H
		57.16	17.59	-22.41	40	41.99	6.88	1.32	32.6			P	H
		63.95	18.55	-21.45	40	42.95	6.94	1.25	32.59			P	H
		95.96	28.86	-14.64	43.5	48.79	10.86	1.81	32.6	130	215	P	H
		170.65	17.21	-26.29	43.5	36.6	10.92	2.2	32.51			P	H
		221.09	17.94	-28.06	46	37.18	10.77	2.49	32.5			P	H
		30	28.92	-11.08	40	41.06	19.2	1.32	32.66	148	210	P	V
		40.67	25.98	-14.02	40	43.56	13.79	1.24	32.61			P	V
		64.92	19.92	-20.08	40	44.14	7.15	1.22	32.59			P	V
		93.05	20.45	-23.05	43.5	40.75	10.53	1.77	32.6			P	V
		667.29	25.88	-20.12	46	34.22	19.61	4.01	31.96			P	V
		903	26.13	-19.87	46	30.31	22.64	4.86	31.68			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 per 15.209(c).
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical



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

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+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”.