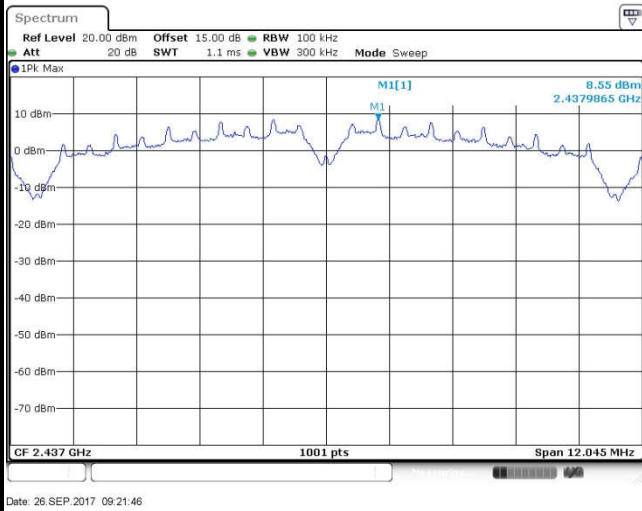




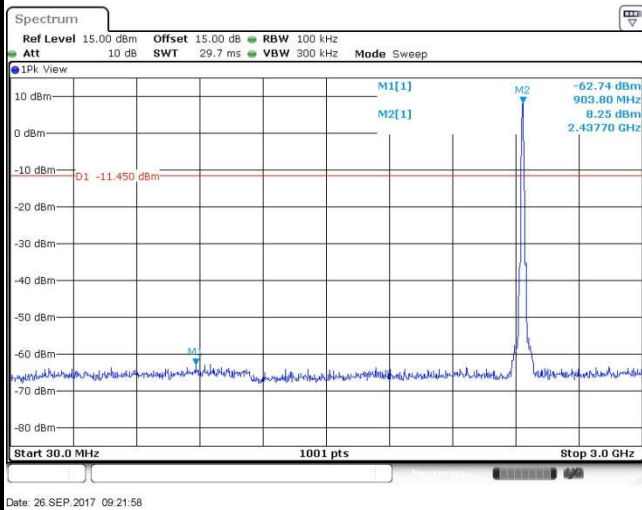
Number of TX :	2	Ant. :	1
Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11b Channel 06

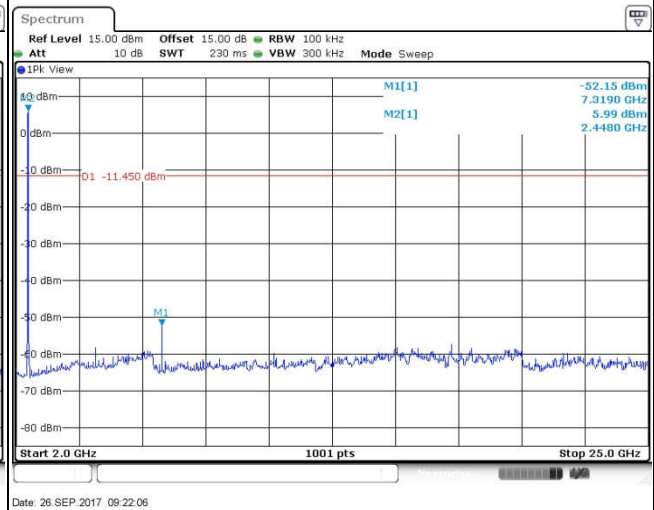
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

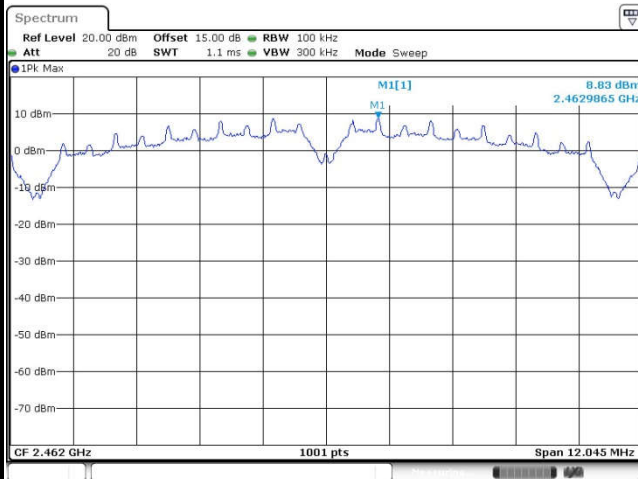




Number of TX :	2	Ant. :	1
Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng

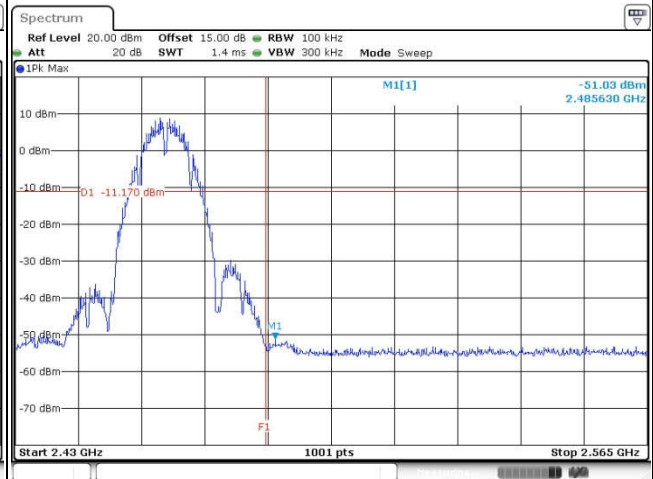
WLAN 802.11b Channel 11

100kHz PSD reference Level



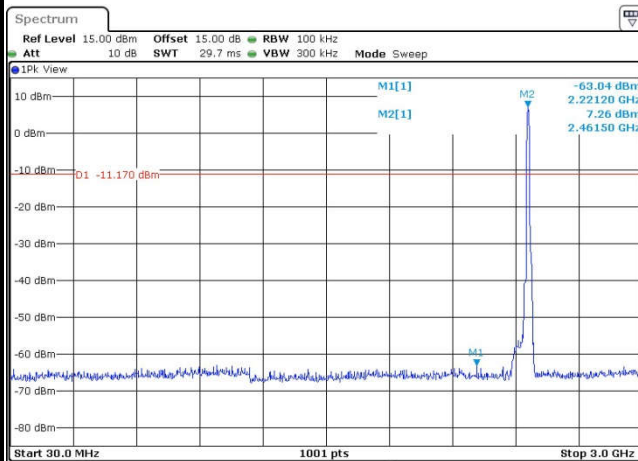
Date: 26 SEP.2017 09:26:21

High Channel Plot



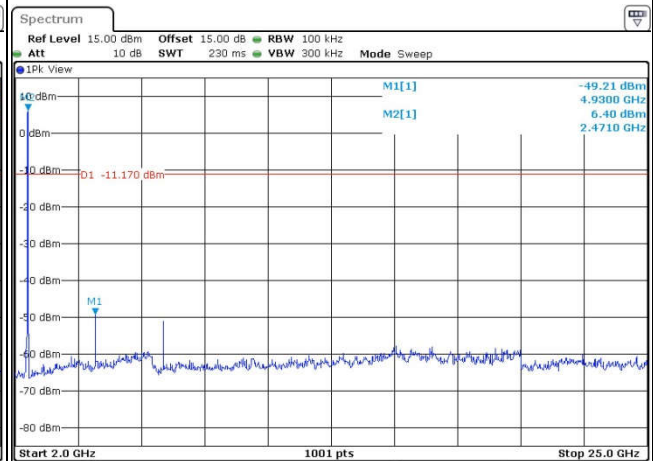
Date: 26 SEP.2017 09:27:10

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 09:27:45

Spurious Emission 2GHz~25GHz



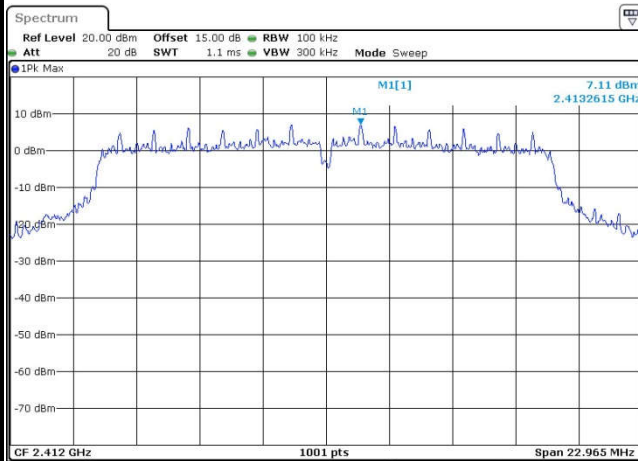
Date: 26 SEP.2017 09:27:53



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

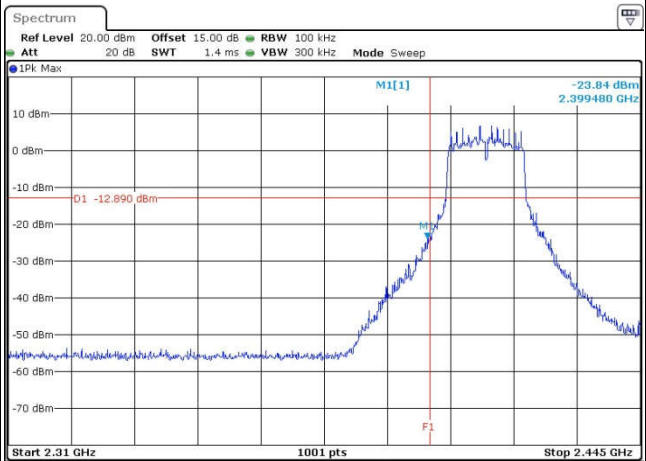
WLAN 802.11g Channel 01

100kHz PSD reference Level



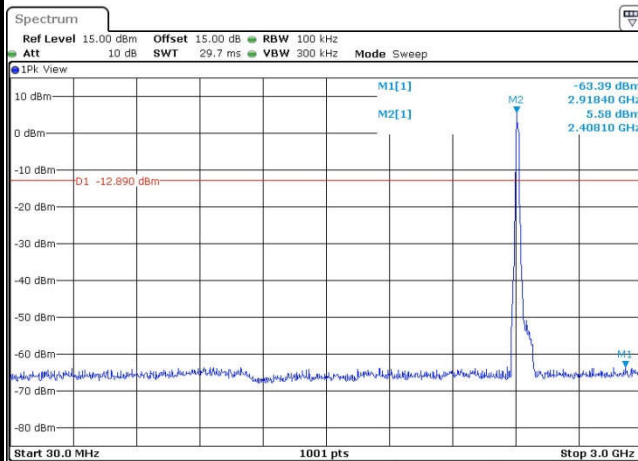
Date: 26 SEP.2017 09:33:32

Low Channel Plot



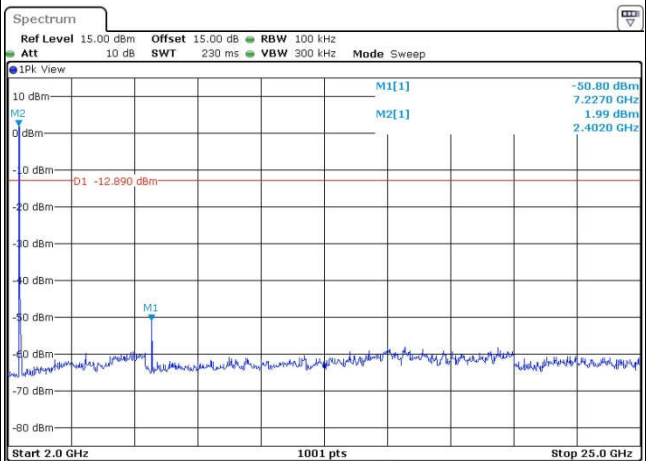
Date: 26 SEP.2017 09:34:30

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 09:34:42

Spurious Emission 2GHz~25GHz



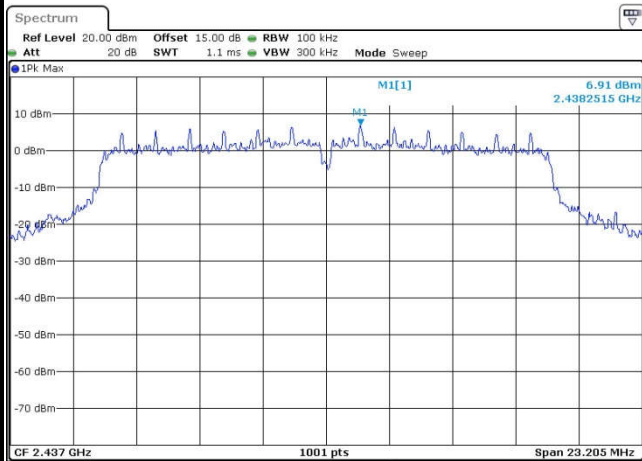
Date: 26 SEP.2017 09:34:51



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

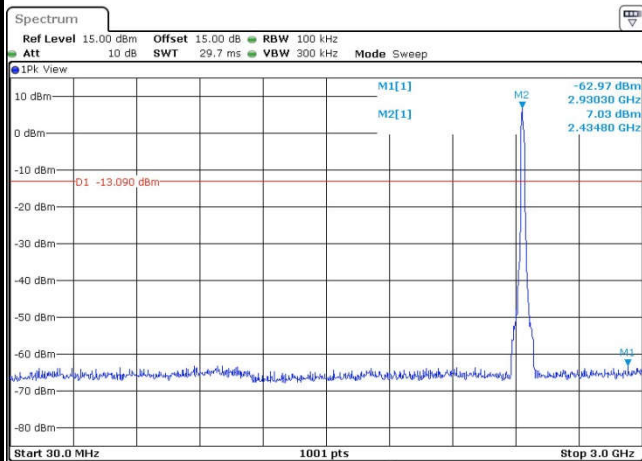
WLAN 802.11g Channel 06

100kHz PSD reference Level



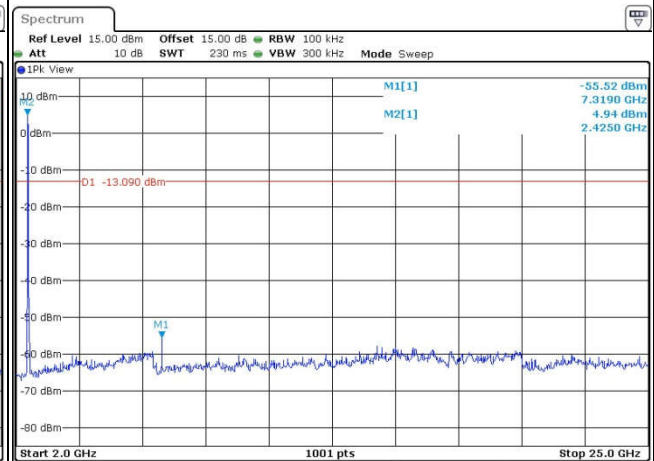
Date: 26 SEP.2017 09:38:29

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 09:38:44

Spurious Emission 2GHz~25GHz



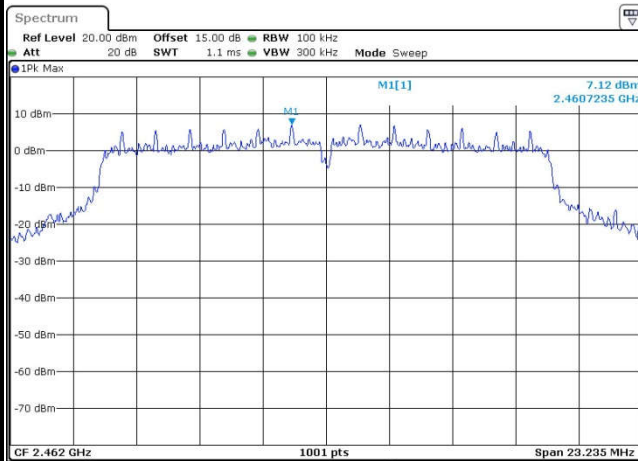
Date: 26 SEP.2017 09:38:52



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

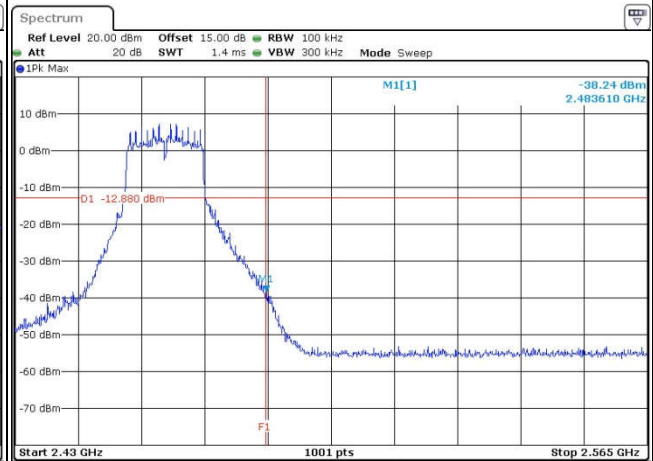
WLAN 802.11g Channel 11

100kHz PSD reference Level



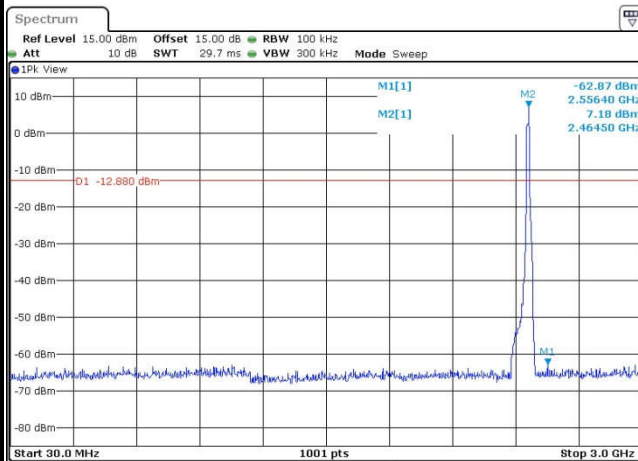
Date: 26 SEP.2017 09:43:06

High Channel Plot



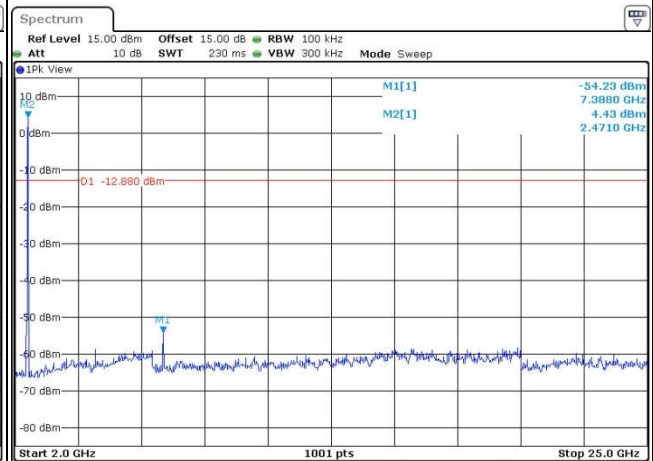
Date: 26 SEP.2017 09:43:30

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 09:43:43

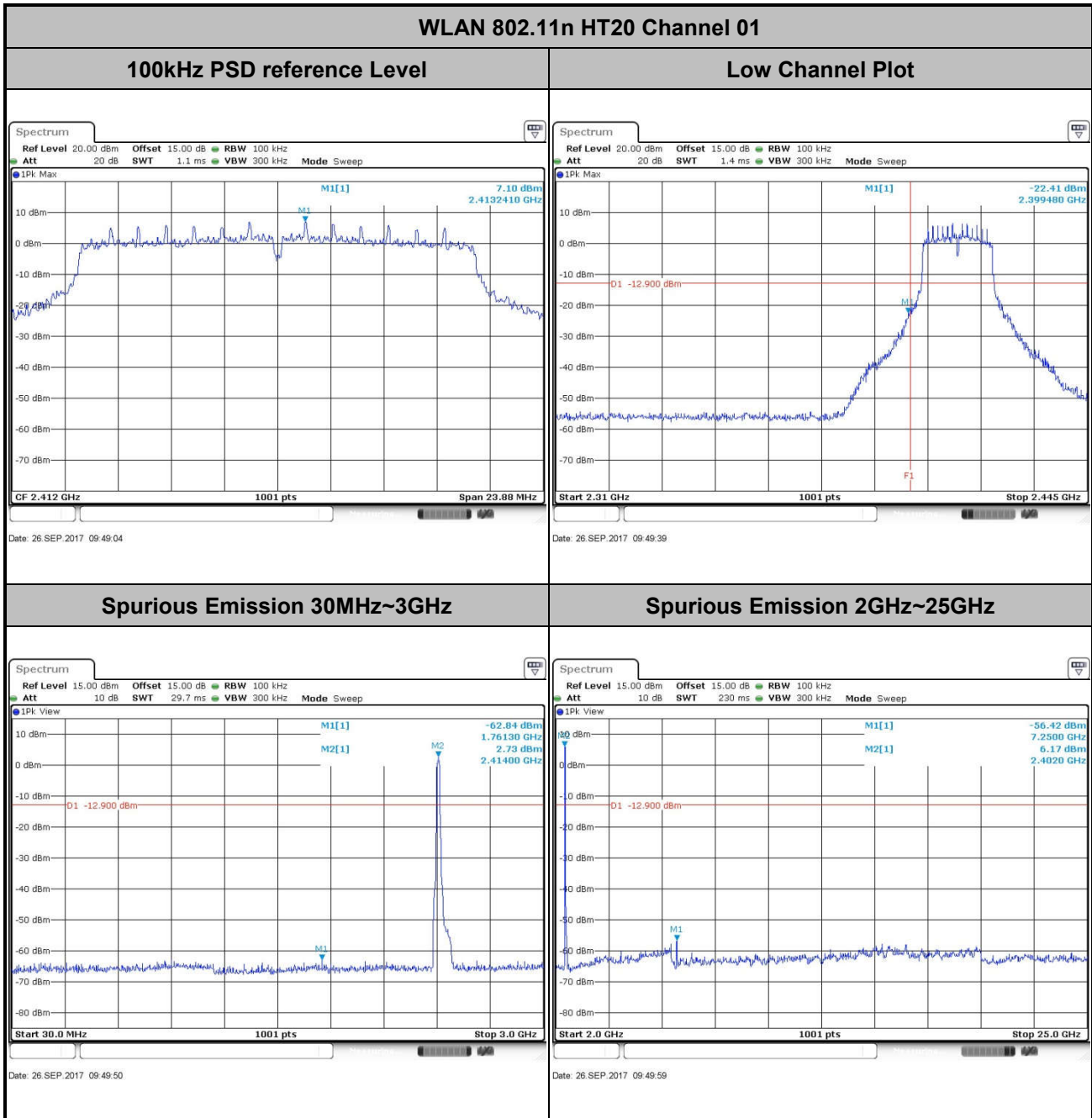
Spurious Emission 2GHz~25GHz



Date: 26 SEP.2017 09:43:51



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

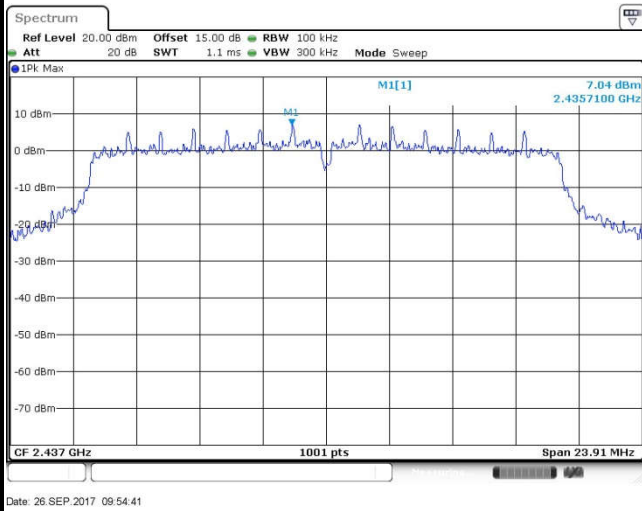




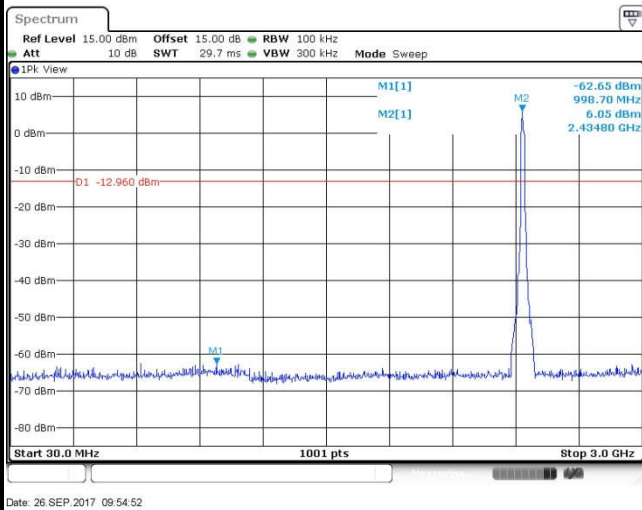
Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11n HT20 Channel 06

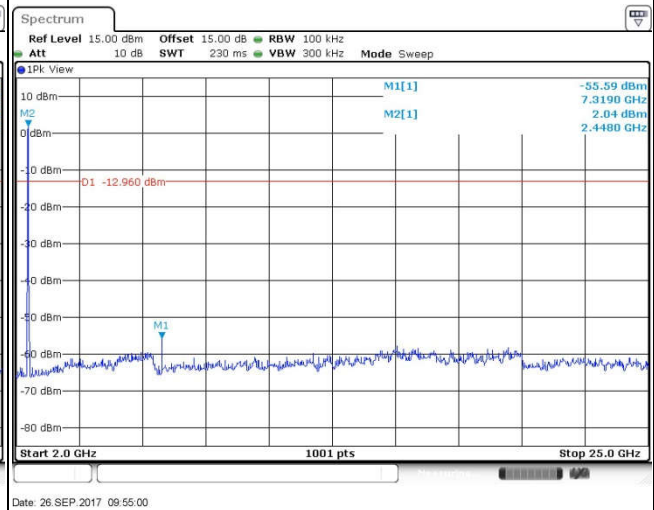
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz

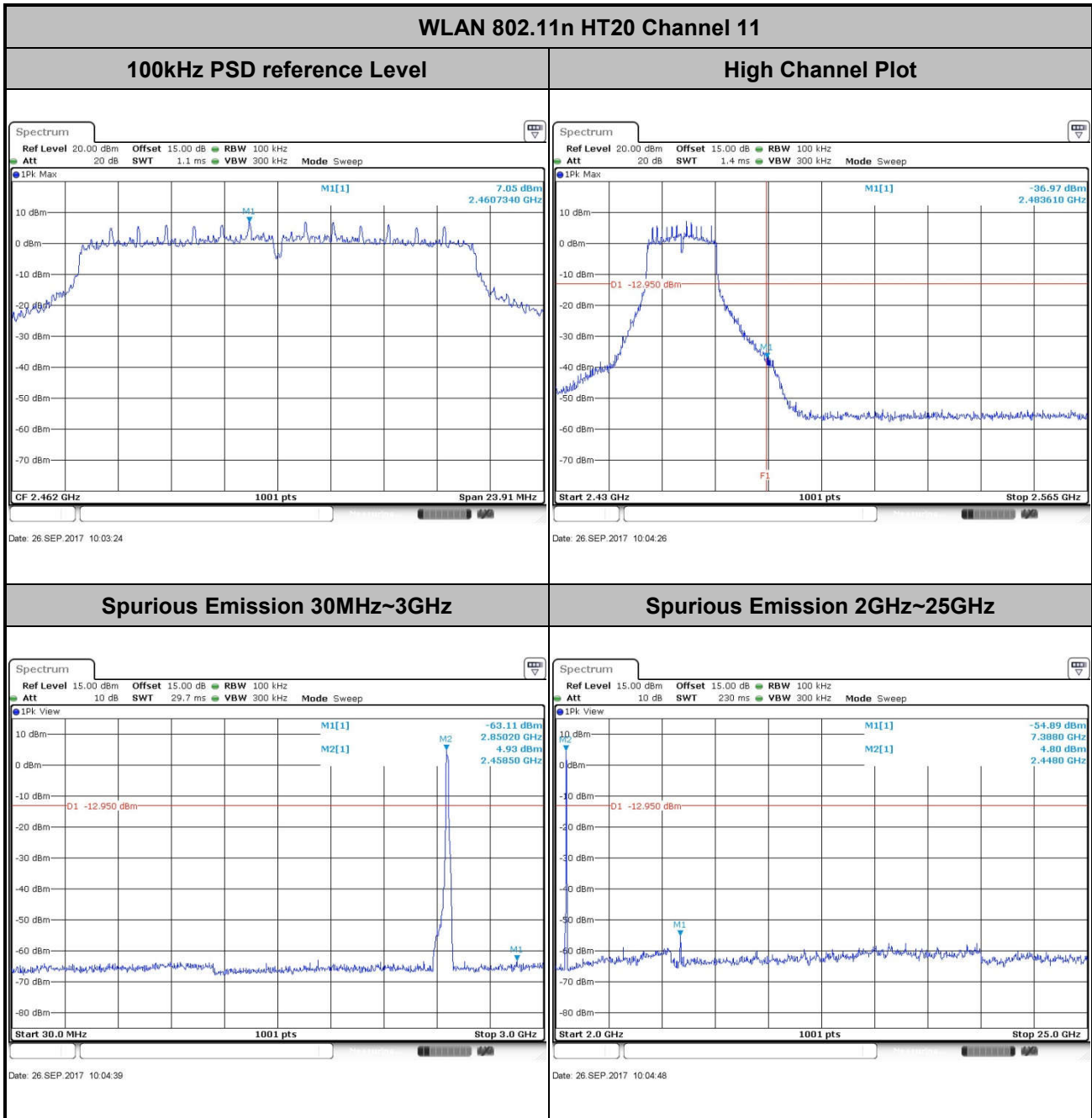


Spurious Emission 2GHz~25GHz





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



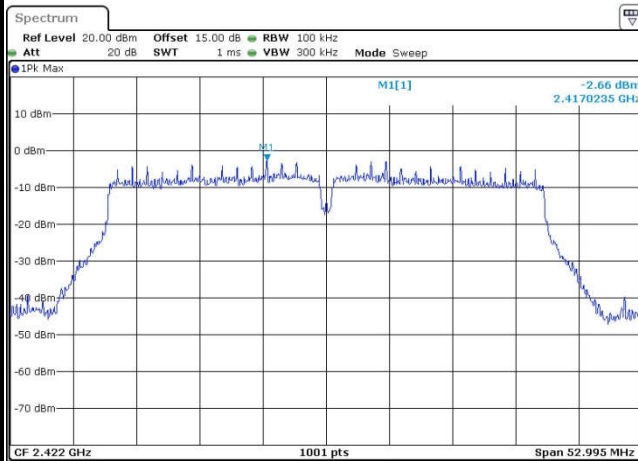




Number of TX :	2	Ant. :	1
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Sam Zheng

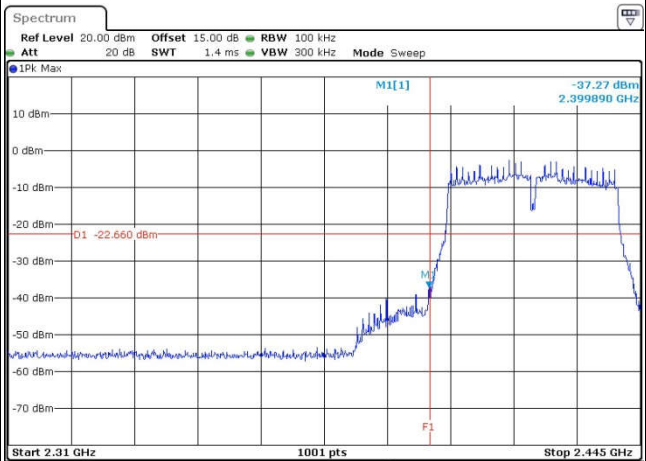
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



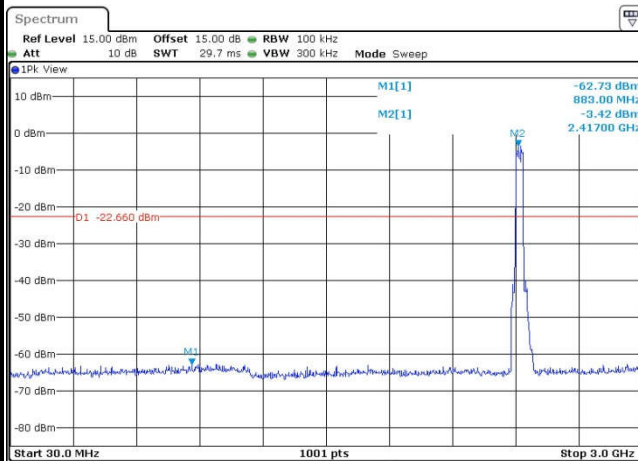
Date: 26 SEP.2017 10:09:51

Low Channel Plot



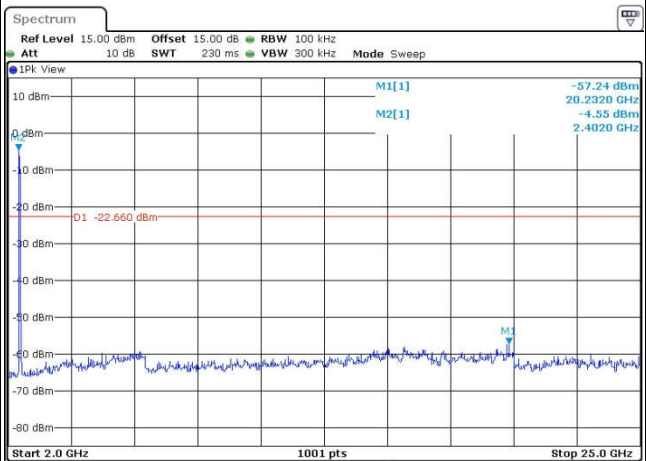
Date: 26 SEP.2017 10:10:06

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 10:15:10

Spurious Emission 2GHz~25GHz



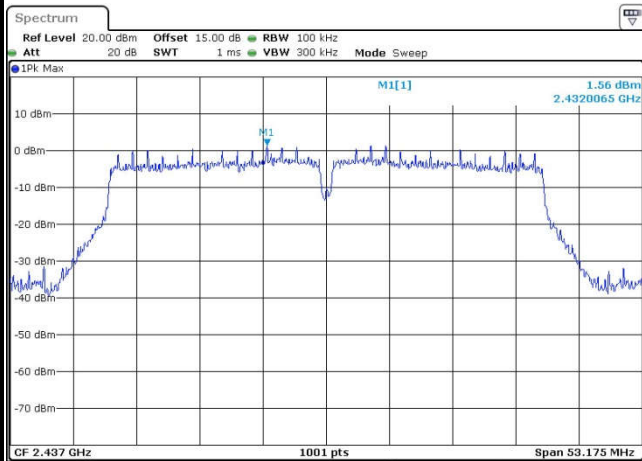
Date: 26 SEP.2017 10:12:09



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

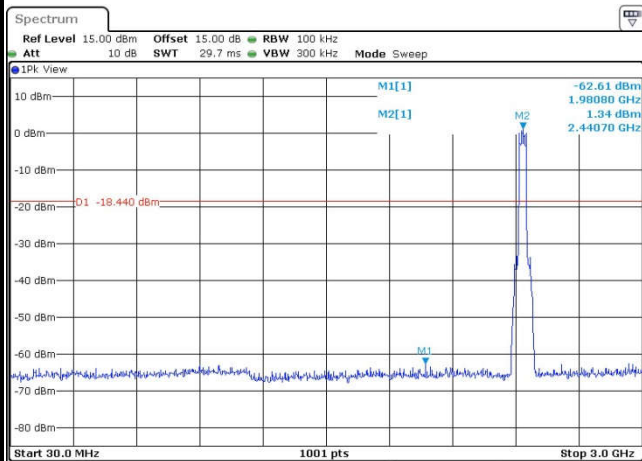
WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level



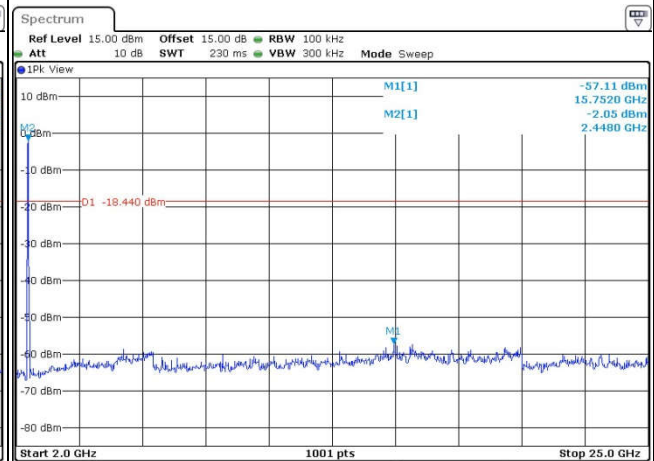
Date: 26 SEP.2017 10:21:07

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 10:22:49

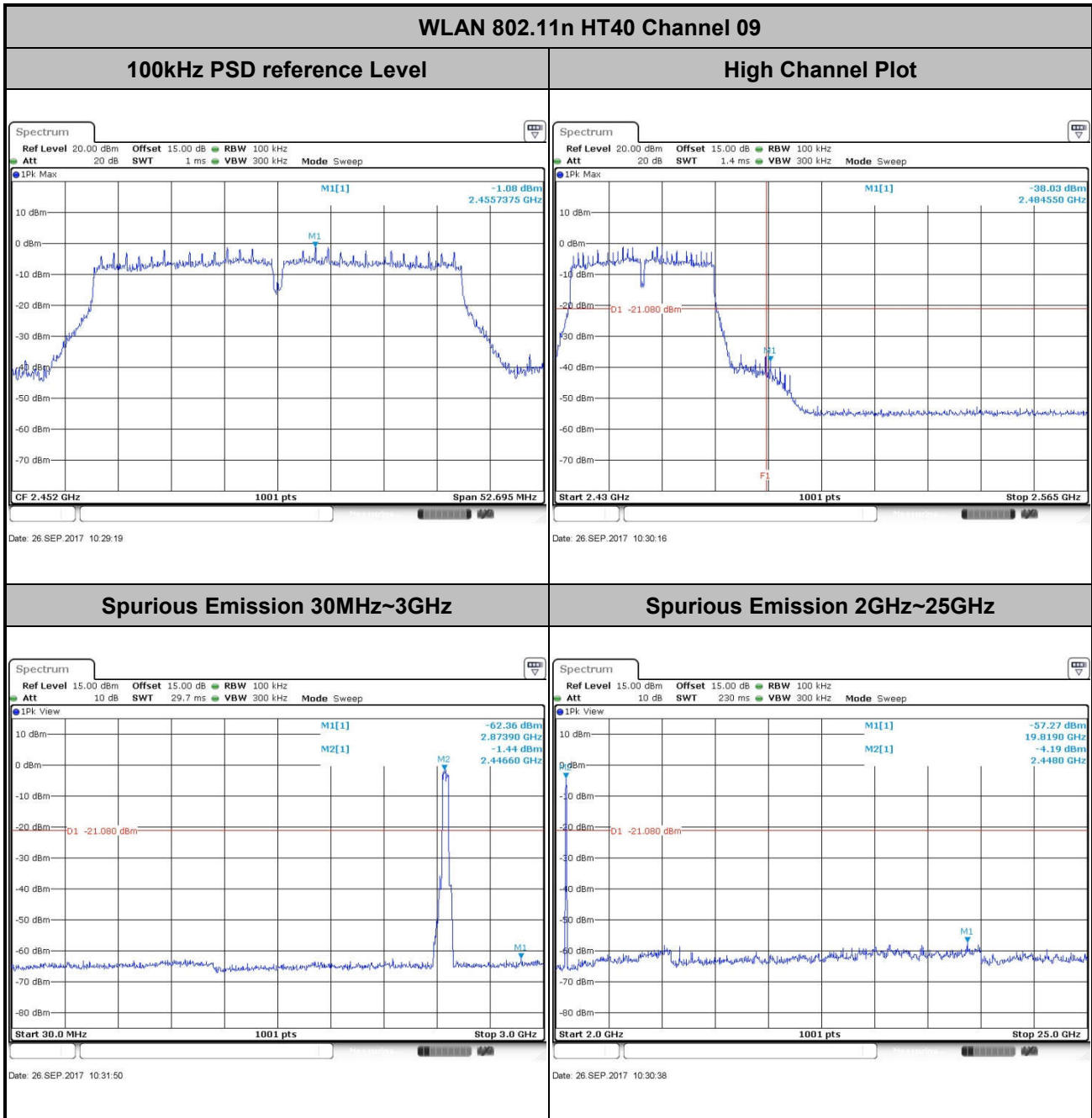
Spurious Emission 2GHz~25GHz



Date: 26 SEP.2017 10:21:27



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



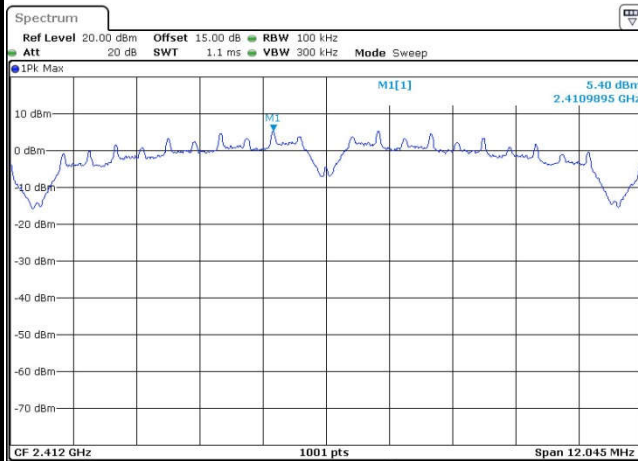


Number of TX = 2, Ant. 2 (Measured)

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

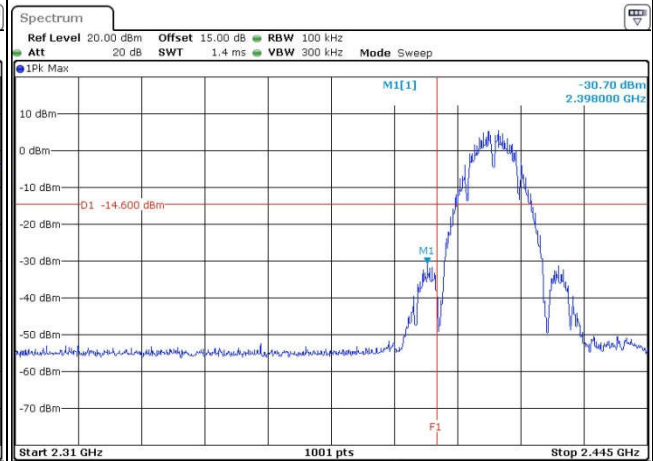
WLAN 802.11b Channel 01

100kHz PSD reference Level



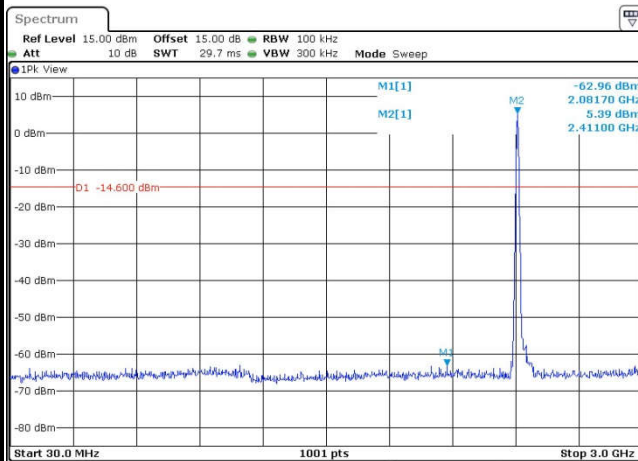
Date: 26 SEP.2017 10:44:17

Low Channel Plot



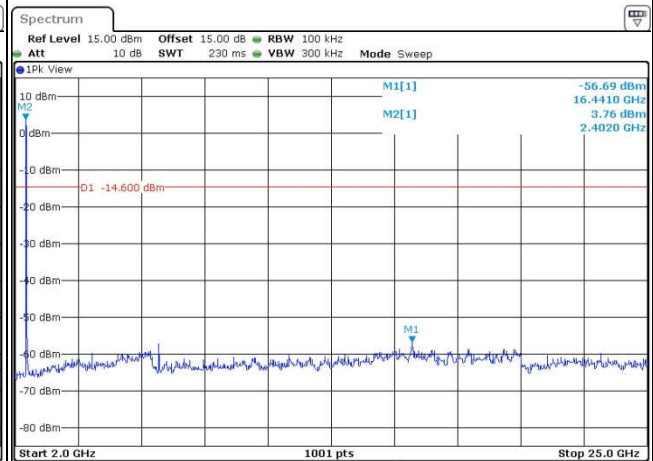
Date: 26 SEP.2017 10:45:01

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 10:45:16

Spurious Emission 2GHz~25GHz



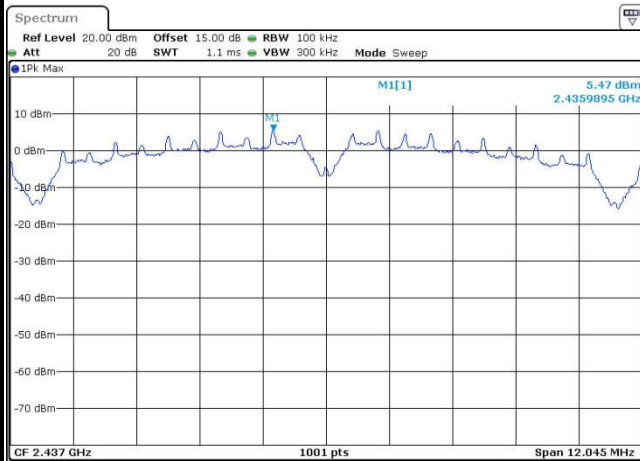
Date: 26 SEP.2017 10:45:24



Number of TX :	2	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

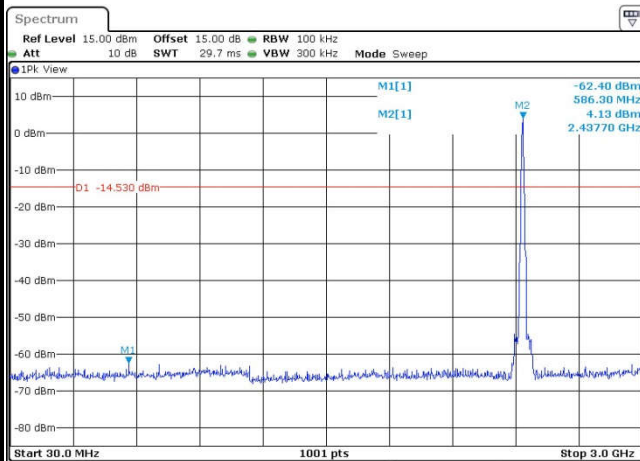
WLAN 802.11b Channel 06

100kHz PSD reference Level



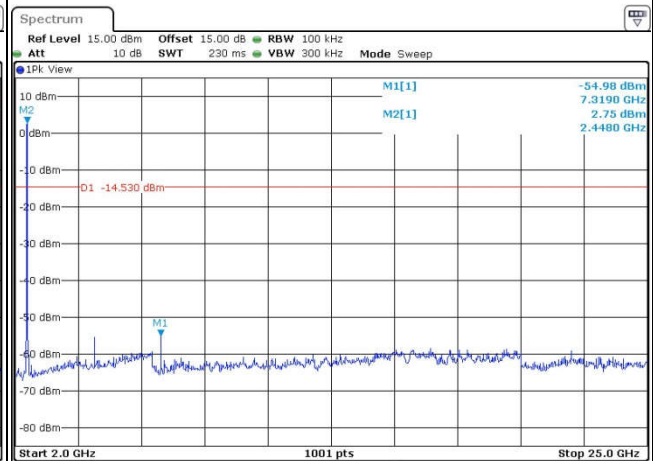
Date: 26 SEP.2017 10:50:18

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 10:50:56

Spurious Emission 2GHz~25GHz



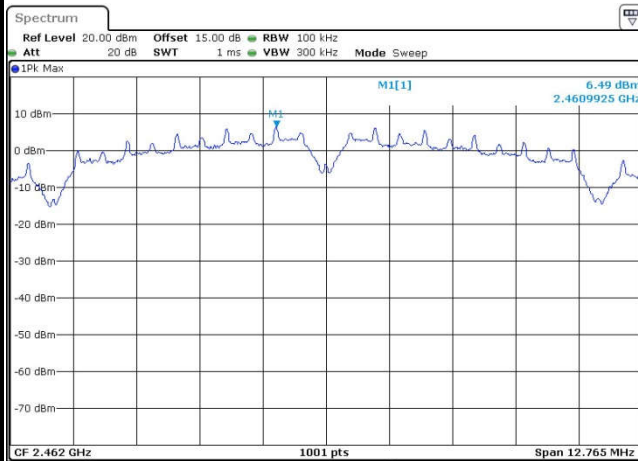
Date: 26 SEP.2017 10:51:04



Number of TX :	2	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

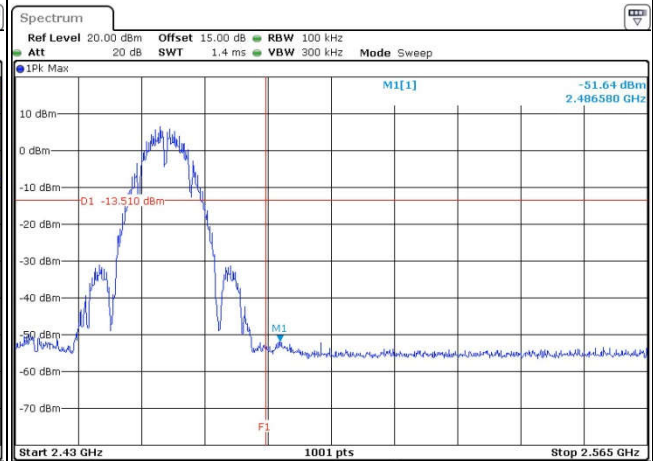
WLAN 802.11b Channel 11

100kHz PSD reference Level



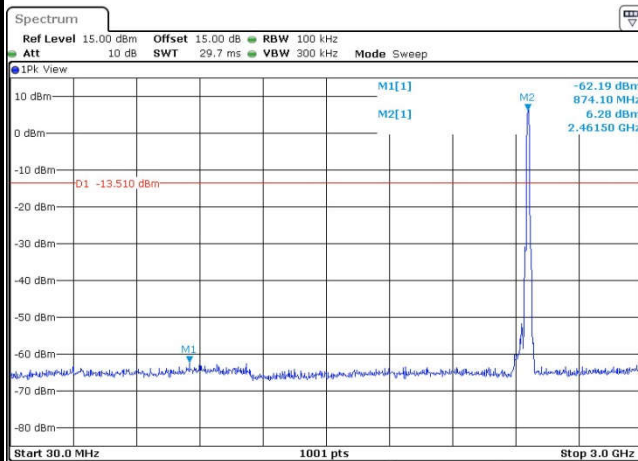
Date: 26 SEP.2017 10:56:23

High Channel Plot



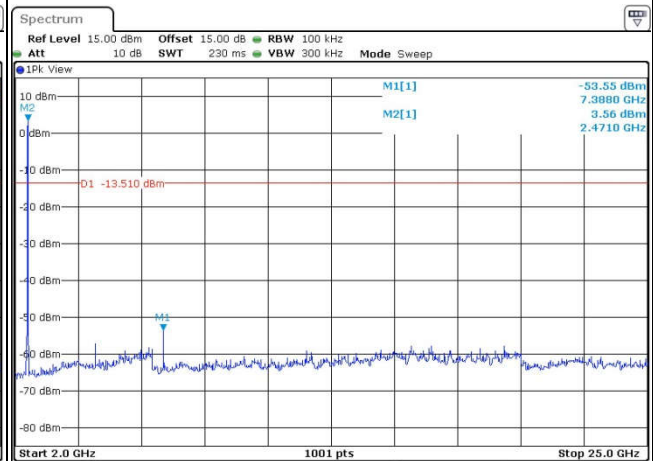
Date: 26 SEP.2017 10:56:42

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 11:02:49

Spurious Emission 2GHz~25GHz



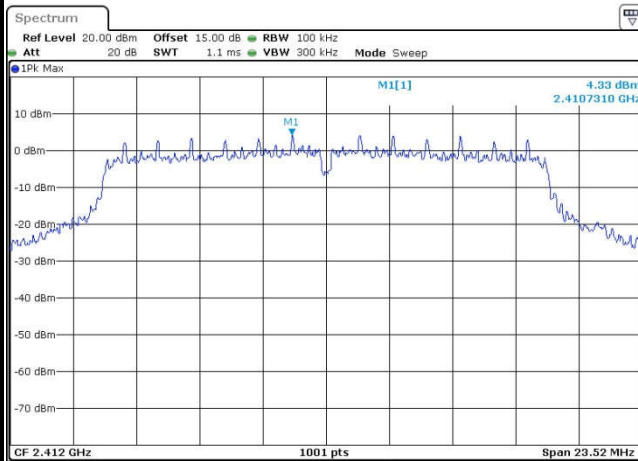
Date: 26 SEP.2017 11:01:39



Number of TX :	2	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

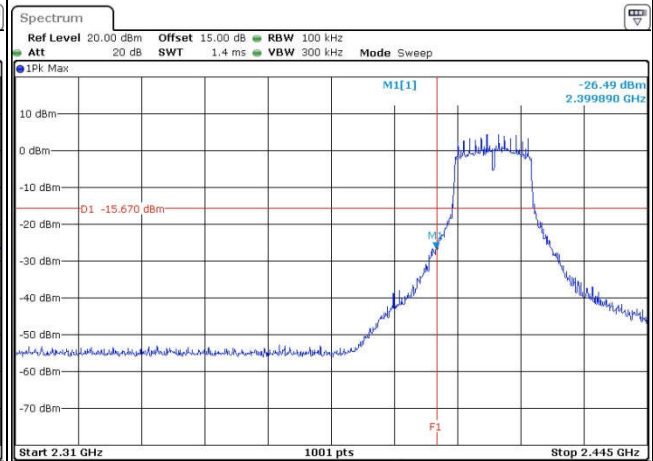
WLAN 802.11g Channel 01

100kHz PSD reference Level



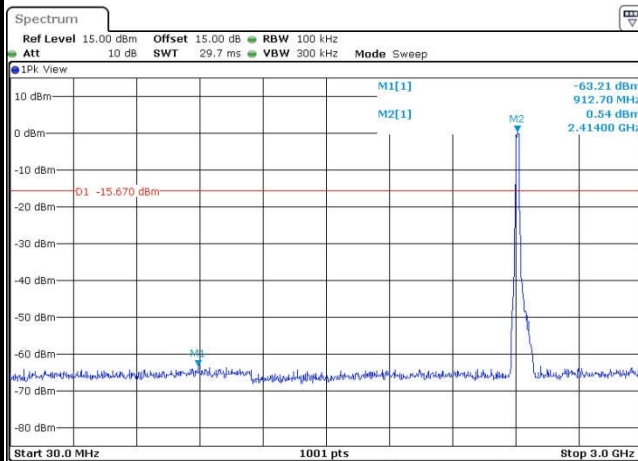
Date: 26 SEP.2017 11:11:01

Low Channel Plot



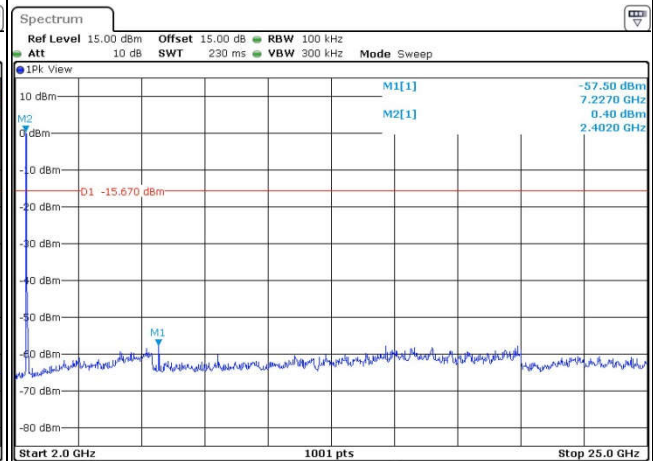
Date: 26 SEP.2017 11:11:55

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 11:12:11

Spurious Emission 2GHz~25GHz



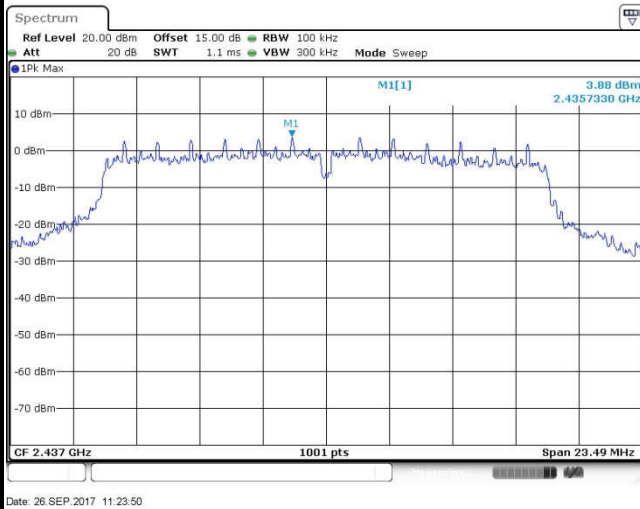
Date: 26 SEP.2017 11:12:19



Number of TX :	2	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

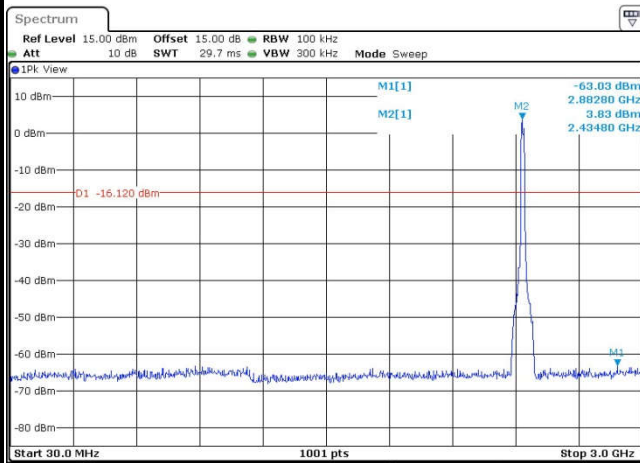
WLAN 802.11g Channel 06

100kHz PSD reference Level



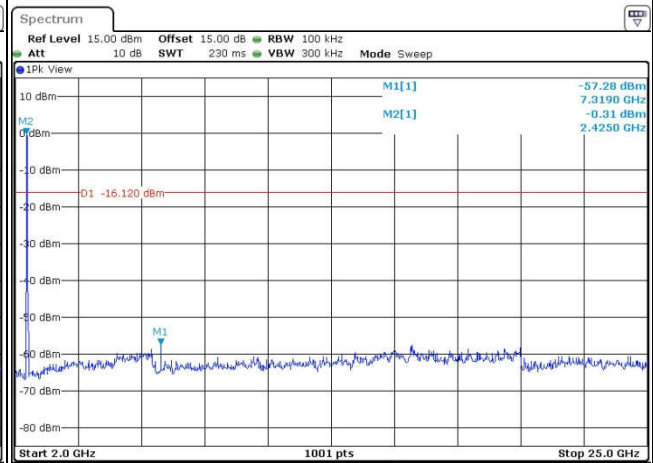
Date: 26 SEP.2017 11:23:50

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 11:23:59

Spurious Emission 2GHz~25GHz



Date: 26 SEP.2017 11:24:08

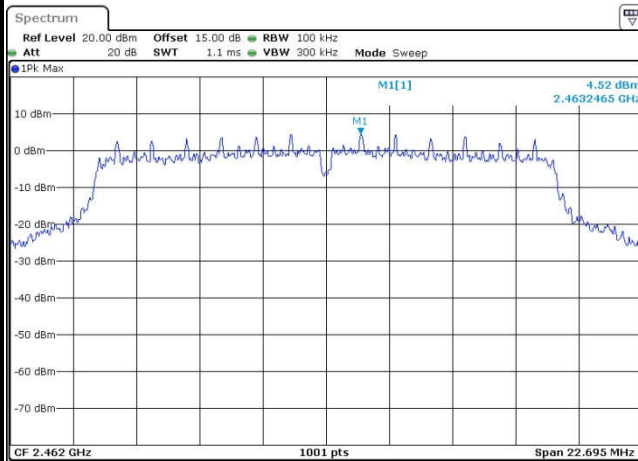




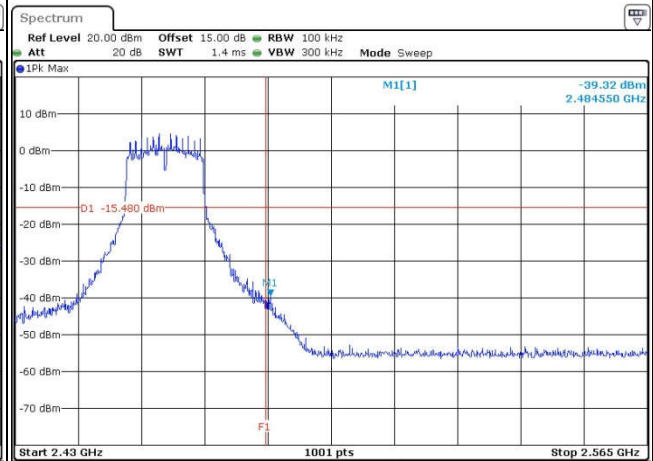
Number of TX :	2	Ant. :	2
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng

WLAN 802.11g Channel 11

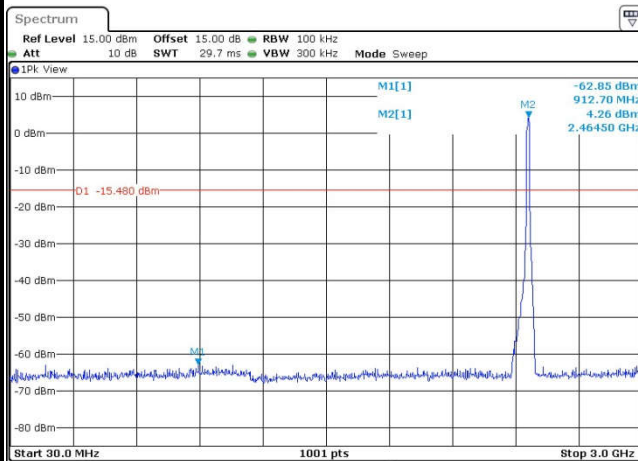
100kHz PSD reference Level



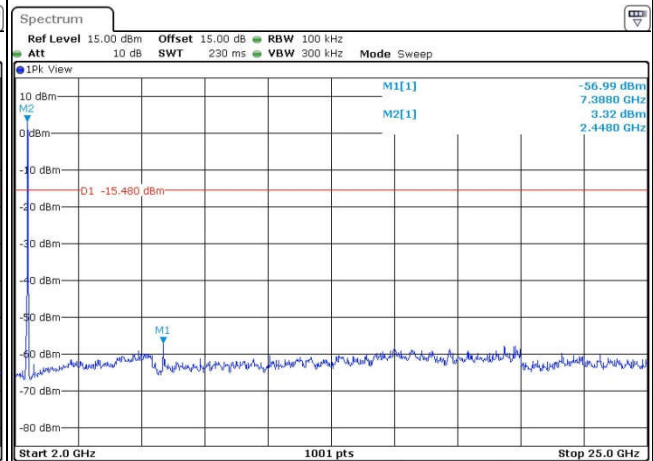
High Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

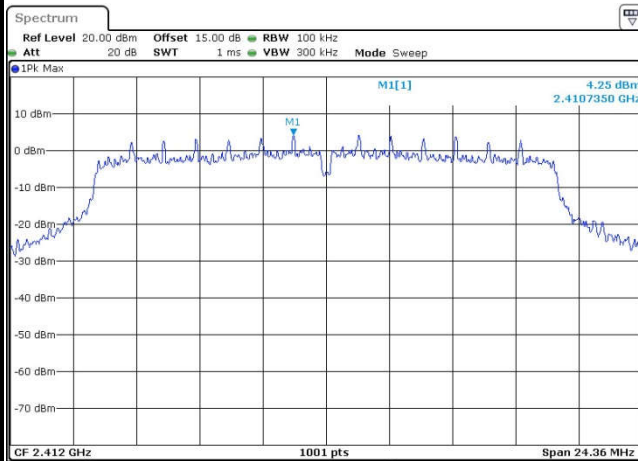




Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Sam Zheng

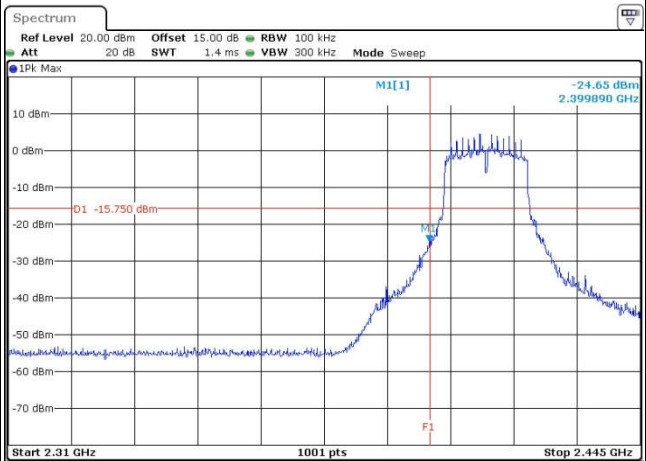
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



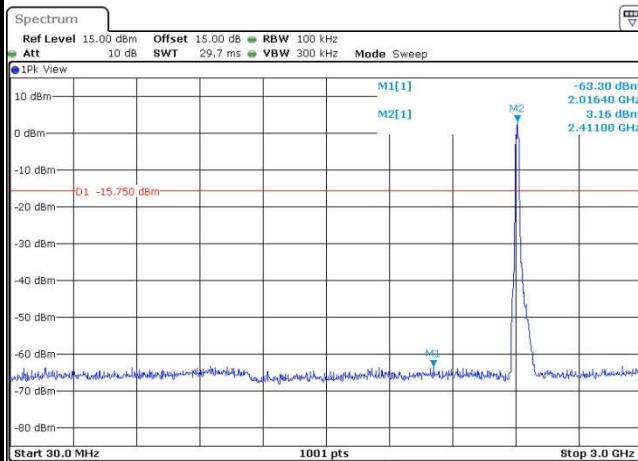
Date: 26 SEP.2017 11:34:38

Low Channel Plot



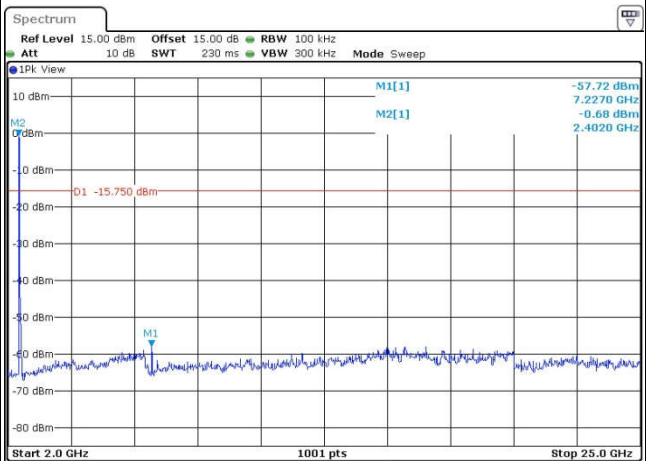
Date: 26 SEP.2017 11:35:19

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 11:35:31

Spurious Emission 2GHz~25GHz



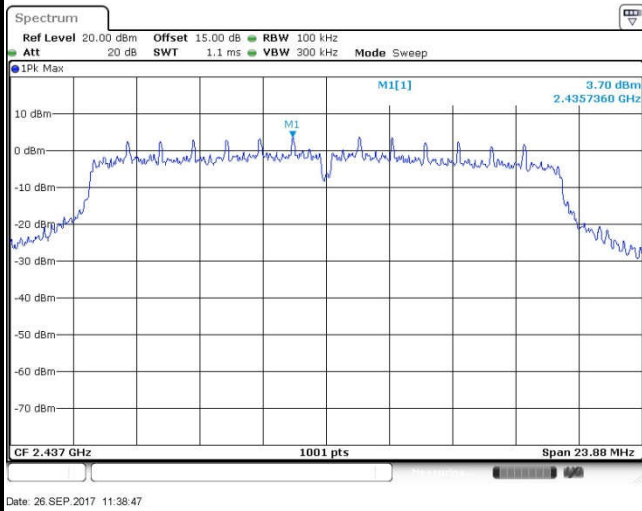
Date: 26 SEP.2017 11:35:39



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

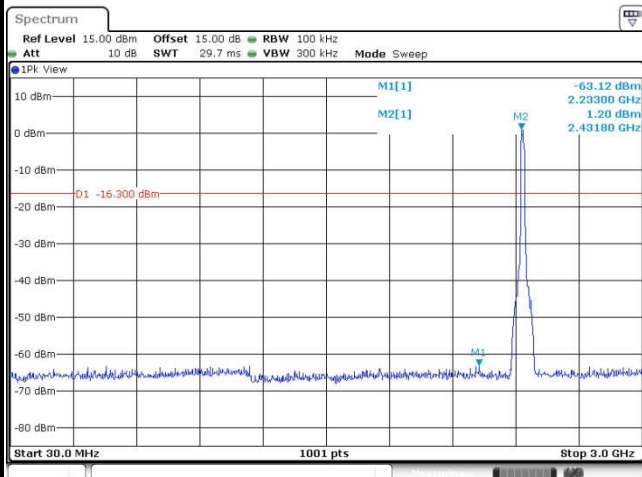
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



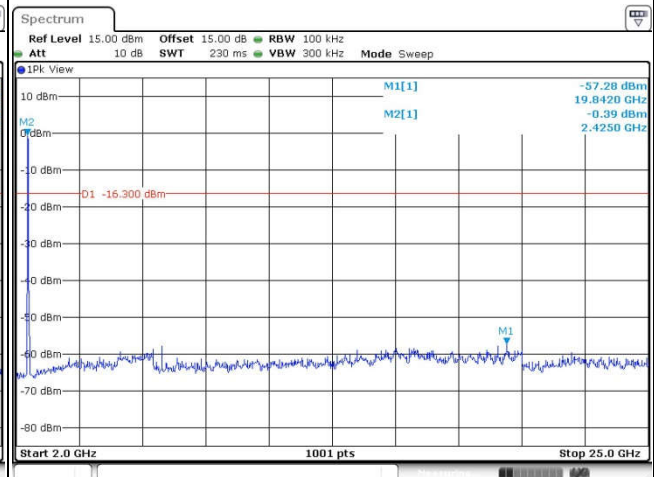
Date: 26 SEP.2017 11:38:47

Spurious Emission 30MHz~3GHz



Date: 26 SEP.2017 11:38:57

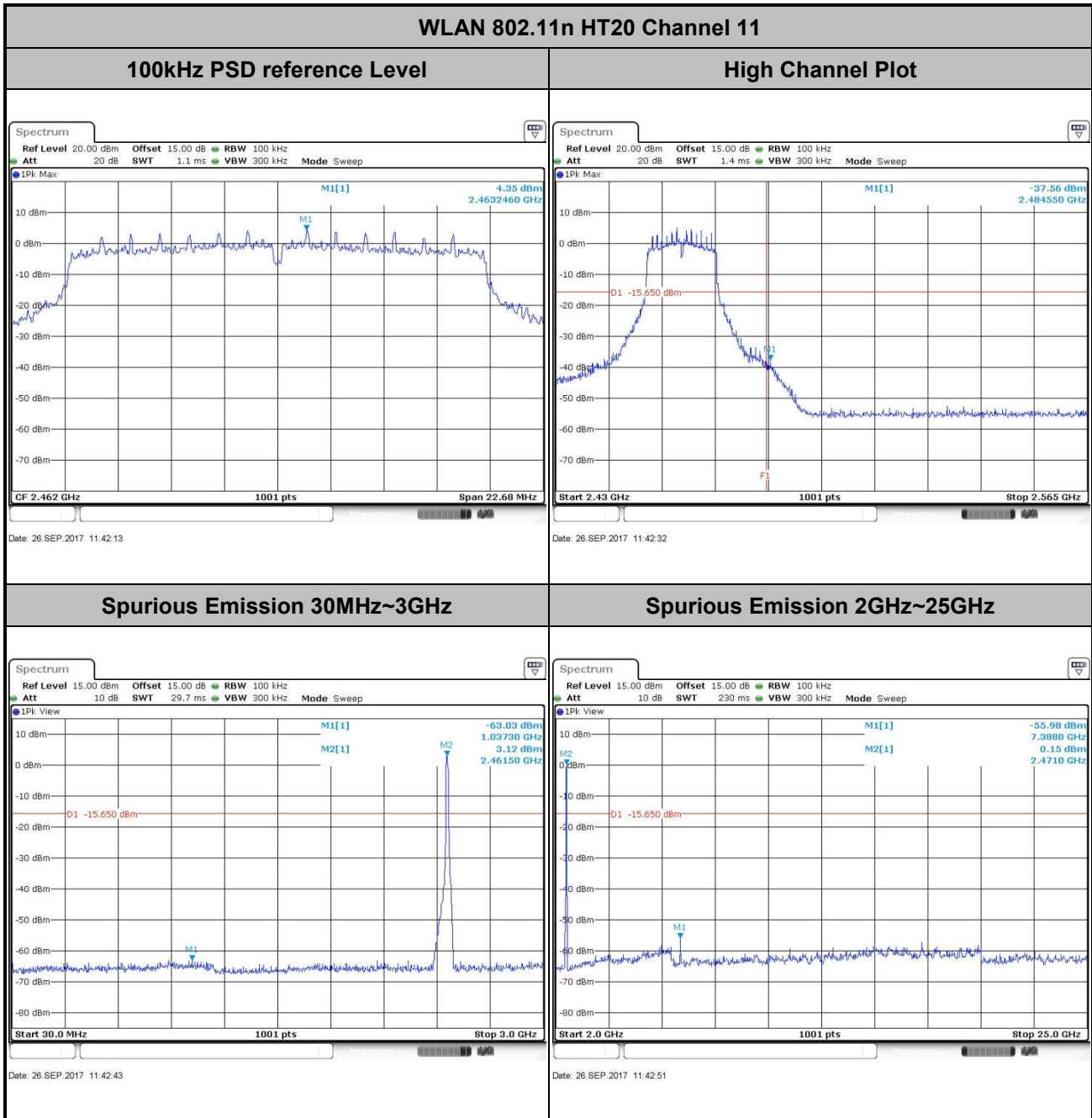
Spurious Emission 2GHz~25GHz



Date: 26 SEP.2017 11:39:05



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

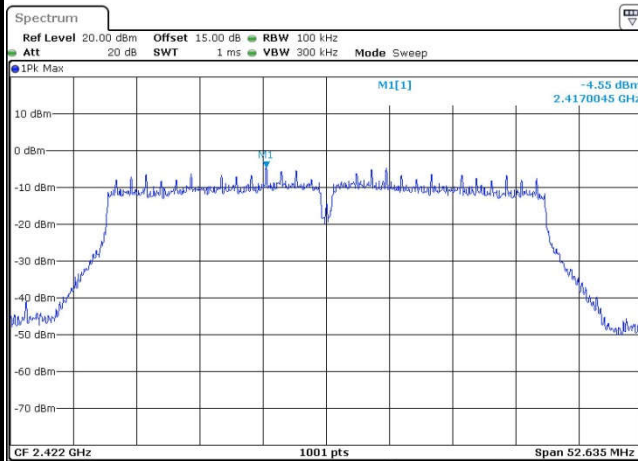




Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Sam Zheng

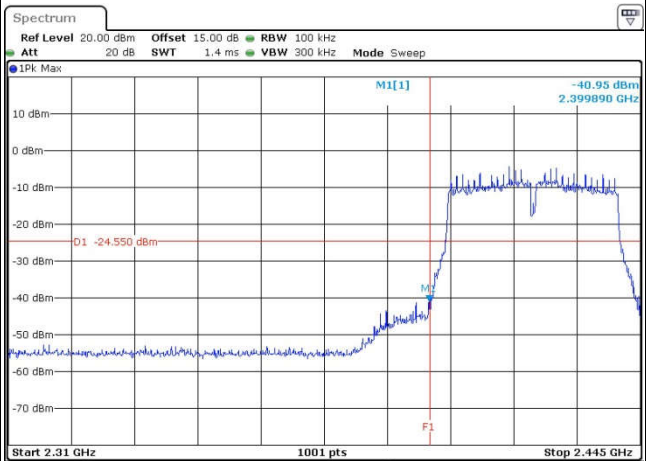
WLAN 802.11n HT40 Channel 03

100kHz PSD reference Level



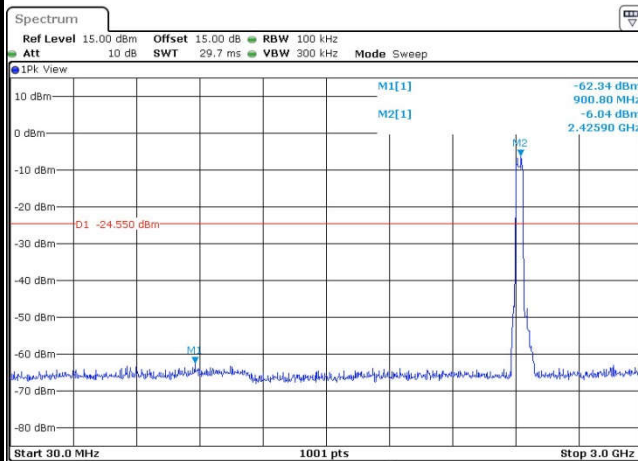
Date: 26 SEP. 2017 13:22:48

Low Channel Plot



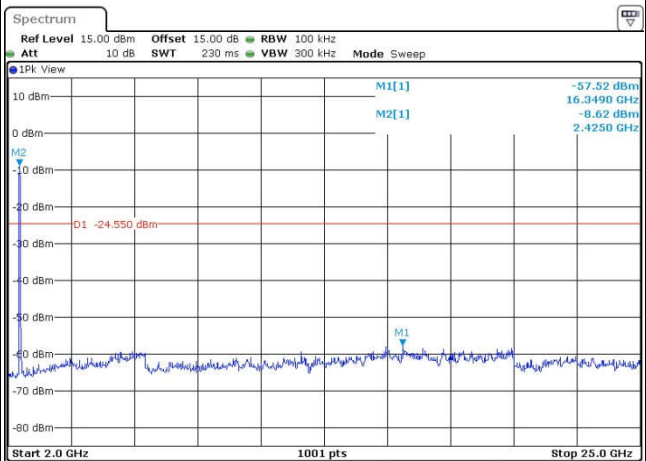
Date: 26 SEP. 2017 13:23:39

Spurious Emission 30MHz~3GHz



Date: 26 SEP. 2017 13:24:59

Spurious Emission 2GHz~25GHz



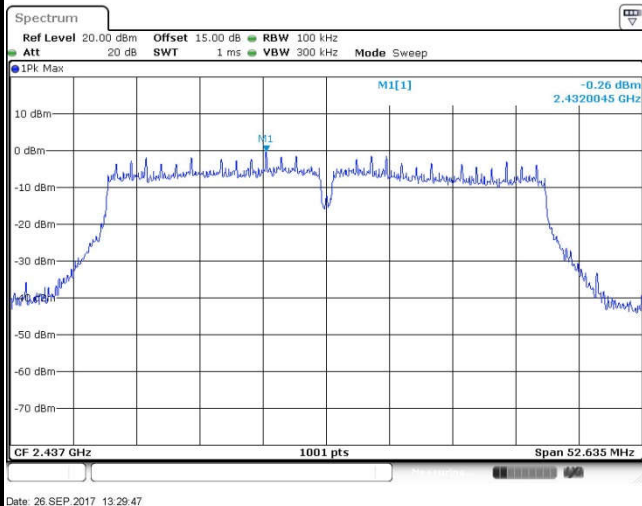
Date: 26 SEP. 2017 13:25:08



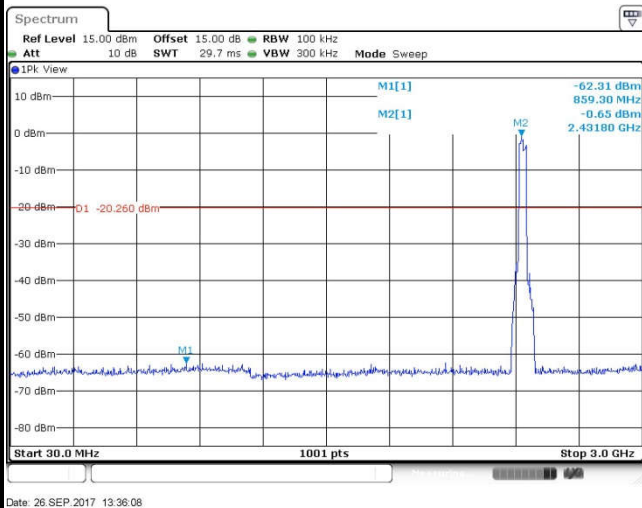
Number of TX :	2	Ant. :	2
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11n HT40 Channel 06

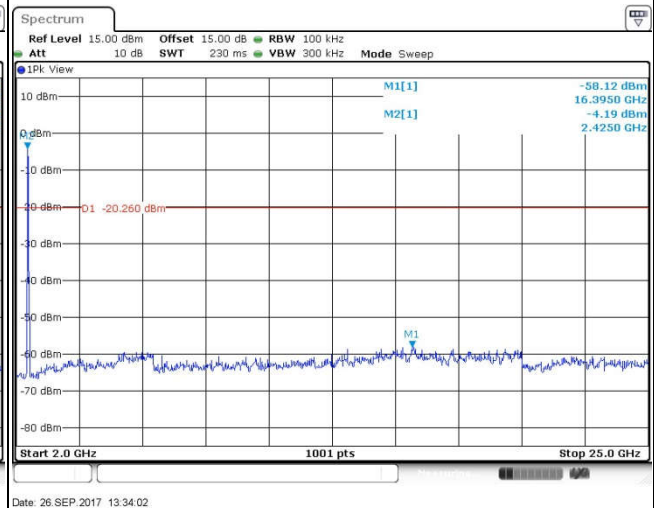
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz

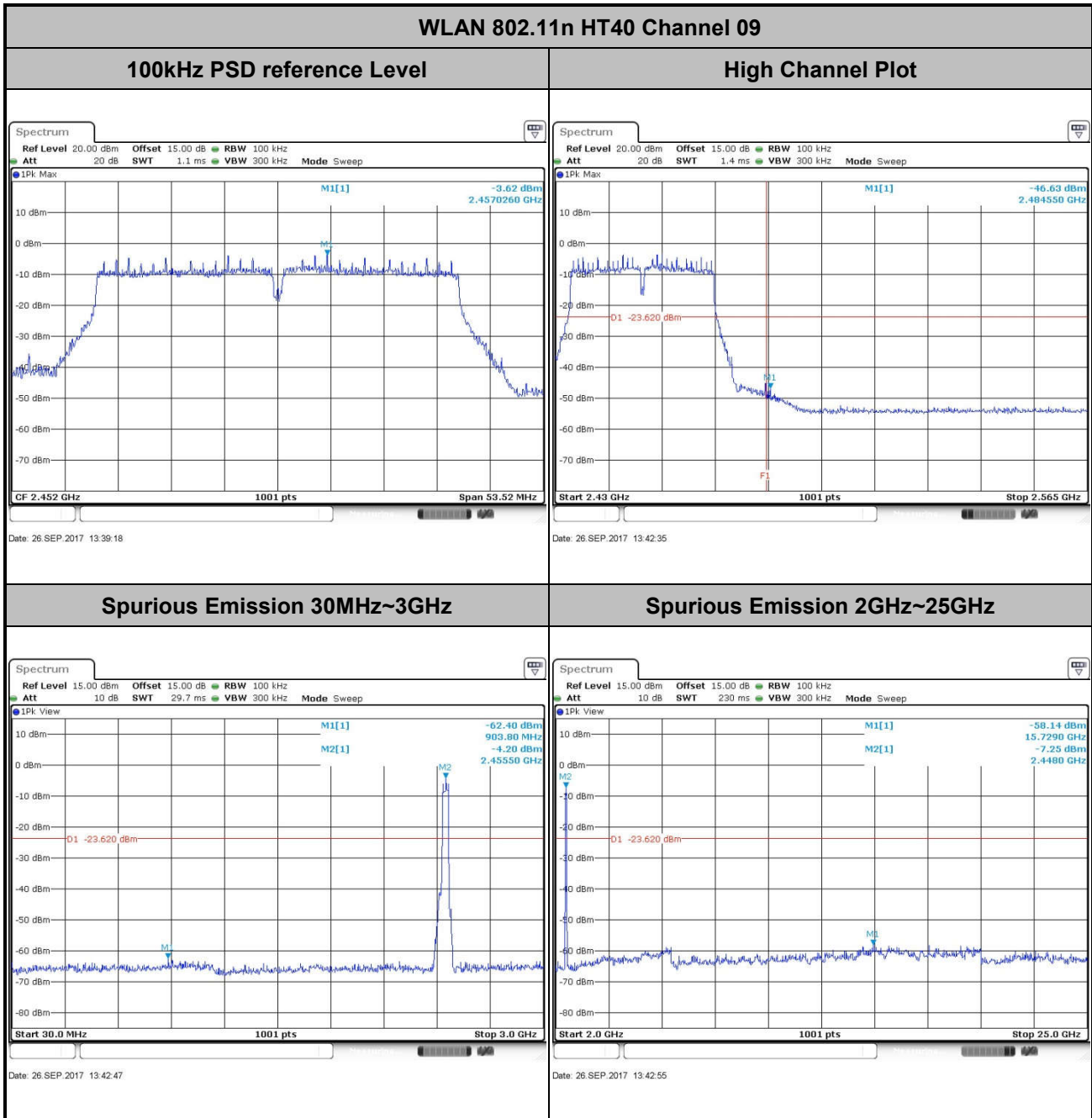


Spurious Emission 2GHz~25GHz





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





### 3.5 Radiated Band Edges and Spurious Emission Measurement

#### 3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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

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

#### 3.5.2 Measuring Instruments

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



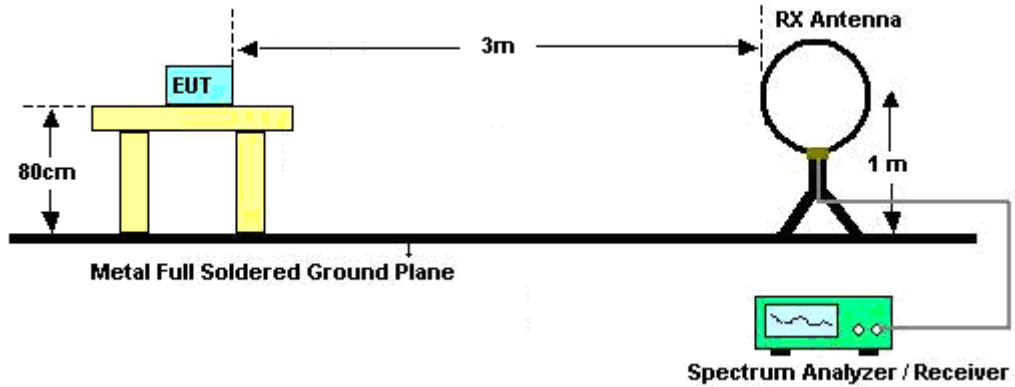


### 3.5.3 Test Procedures

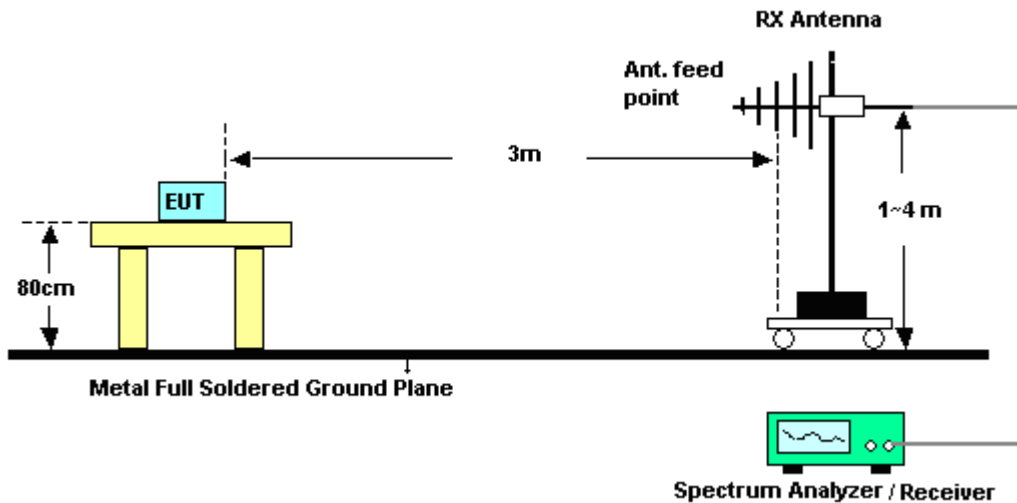
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test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

### 3.5.4 Test Setup

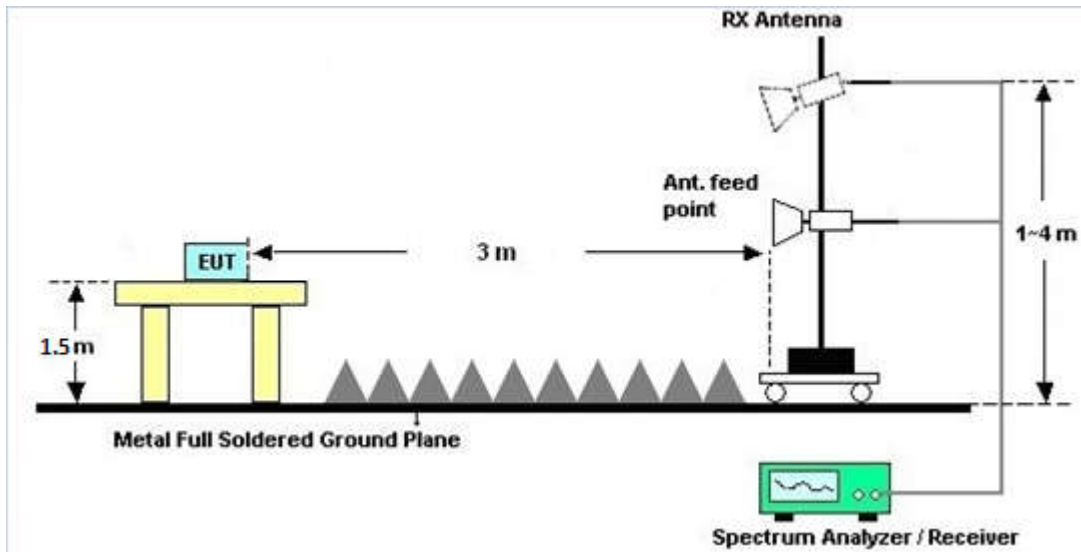
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

### 3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

### 3.5.7 Duty Cycle

Please refer to Appendix C.

### 3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10<sup>th</sup> Harmonic)

Please refer to Appendix B.



### 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.

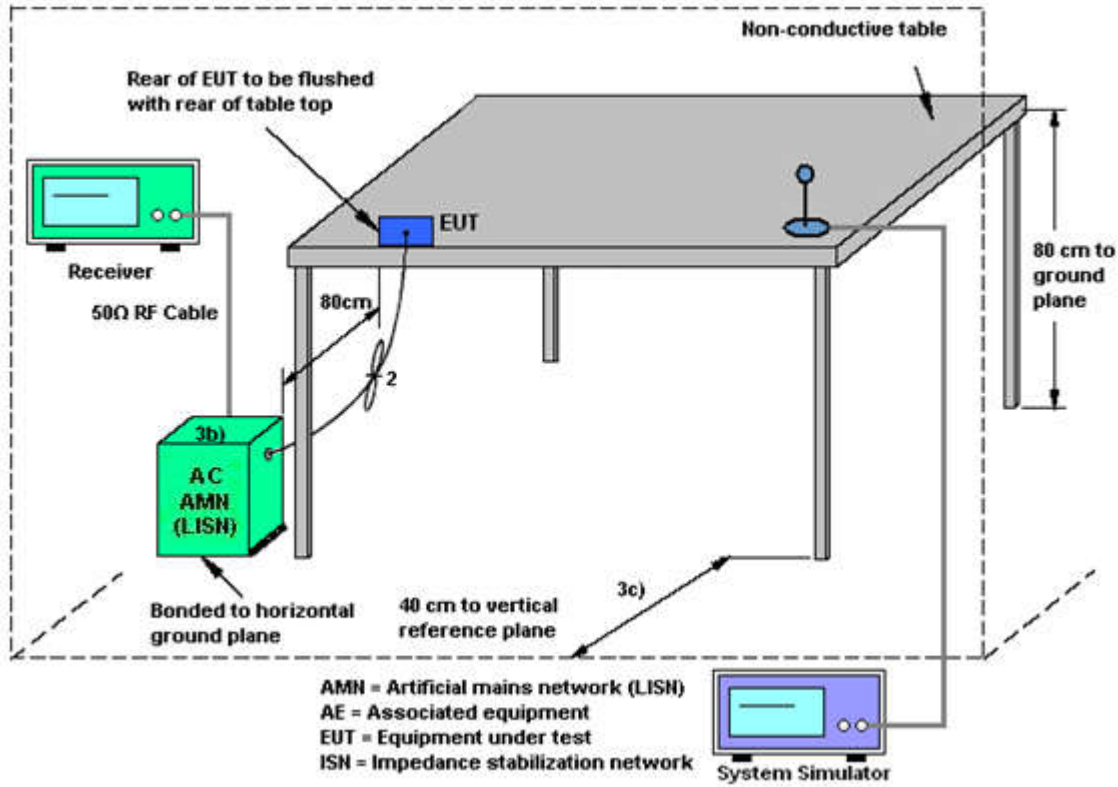
#### 3.6.2 Measuring Instruments

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.

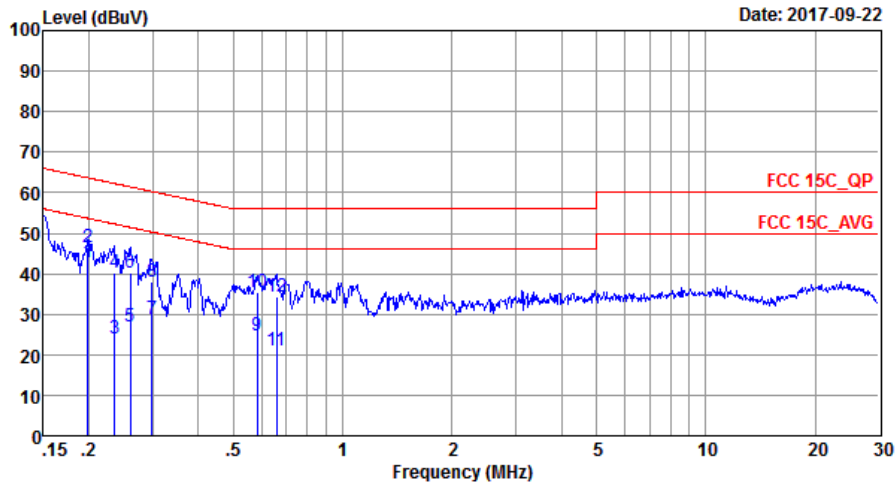
### 3.6.4 Test Setup





3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~25°C
Test Engineer :	Peng Wang	Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone + SIM 2		



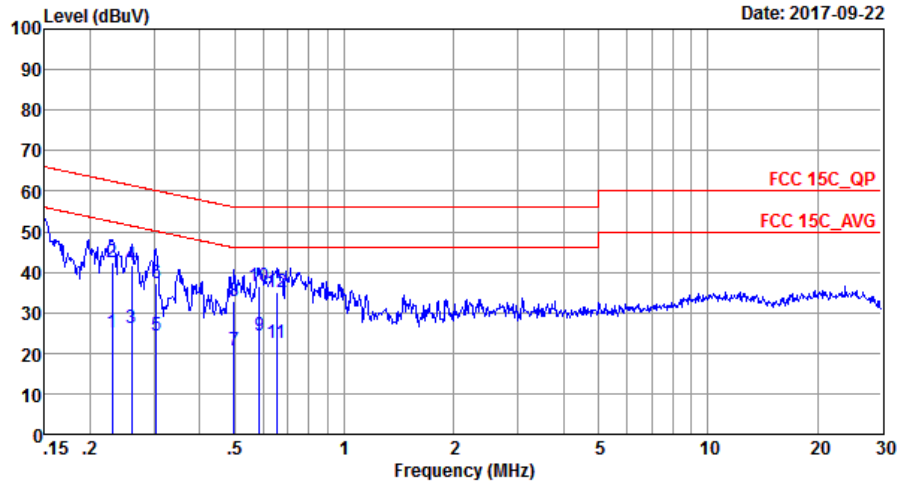
Site : CO01-SZ  
 Condition: FCC 15C QP LISN\_20170907\_L LINE

IMEI : 866817030000988/866817030000988

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.20	42.75	-10.92	53.67	32.50	0.03	10.22	Average
2	0.20	46.35	-17.32	63.67	36.10	0.03	10.22	QP
3	0.24	23.85	-28.41	52.26	13.60	0.03	10.22	Average
4	0.24	40.05	-22.21	62.26	29.80	0.03	10.22	QP
5	0.26	26.85	-24.57	51.42	16.60	0.03	10.22	Average
6	0.26	40.35	-21.07	61.42	30.10	0.03	10.22	QP
7	0.30	28.85	-21.43	50.28	18.60	0.03	10.22	Average
8	0.30	38.05	-22.23	60.28	27.80	0.03	10.22	QP
9	0.58	24.69	-21.31	46.00	14.50	0.02	10.17	Average
10	0.58	35.29	-20.71	56.00	25.10	0.02	10.17	QP
11	0.66	21.19	-24.81	46.00	11.00	0.02	10.17	Average
12	0.66	34.29	-21.71	56.00	24.10	0.02	10.17	QP



Test Mode :	Mode 1	Temperature :	22~25°C
Test Engineer :	Peng Wang	Relative Humidity :	50~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone + SIM 2		



Site : C001-SZ  
 Condition: FCC 15C\_QP LISN\_20170907\_N NEUTRAL

IMEI : 866817030000988/866817030000988

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.23	25.25	-27.19	52.44	15.00	0.03	10.22	Average
2	0.23	42.45	-19.99	62.44	32.20	0.03	10.22	QP
3	0.26	26.15	-25.27	51.42	15.90	0.03	10.22	Average
4	0.26	41.65	-19.77	61.42	31.40	0.03	10.22	QP
5	0.30	24.45	-25.70	50.15	14.20	0.03	10.22	Average
6	0.30	37.45	-22.70	60.15	27.20	0.03	10.22	QP
7	0.50	20.60	-25.45	46.05	10.40	0.02	10.18	Average
8	0.50	32.80	-23.25	56.05	22.60	0.02	10.18	QP
9	0.59	24.39	-21.61	46.00	14.20	0.02	10.17	Average
10 *	0.59	36.49	-19.51	56.00	26.30	0.02	10.17	QP
11	0.65	22.49	-23.51	46.00	12.30	0.02	10.17	Average
12	0.65	34.99	-21.01	56.00	24.80	0.02	10.17	QP



### 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

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain =  $G_{ANT} + \text{Array Gain}$ , 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  $N_{ANT} \leq 4$ .

Directional gain may be calculated by using the formulas applicable to equal gain antennas with  $G_{ANT}$  set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain  $G_{ANT}$  is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

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
	Ant. 1	Ant. 2	for	for	Limit	Limit
	(dBi)	(dBi)	Power	PSD	Reduction	Reduction
			(dBi)	(dBi)	(dB)	(dB)
24 GHz	-2.80	-3.00	-2.80	0.11	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	Apr. 20, 2017	Sep. 26, 2017~ Sep. 27, 2017	Apr. 19, 2018	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1207253	30MHz~40GHz	Jan. 06, 2017	Sep. 26, 2017~ Sep. 27, 2017	Jan. 05, 2018	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Jan. 06, 2017	Sep. 26, 2017~ Sep. 27, 2017	Jan. 05, 2018	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY544500 83	20Hz~8.4GHz	Apr. 20, 2017	Oct. 13, 2017~ Oct. 15, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY551502 46	10Hz~44GHz;	Apr. 20, 2017	Oct. 13, 2017~ Oct. 15, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 14, 2017	Oct. 13, 2017~ Oct. 15, 2017	May 13, 2018	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	May 14, 2017	Oct. 13, 2017~ Oct. 15, 2017	May 13, 2018	Radiation (03CH03-SZ)
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-128 5	1GHz~18GHz	Jan. 12, 2017	Oct. 13, 2017~ Oct. 15, 2017	Jan. 11, 2018	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Jun. 16, 2017	Oct. 13, 2017~ Oct. 15, 2017	Jun. 15, 2018	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Apr. 20, 2017	Oct. 13, 2017~ Oct. 15, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1989346	1GHz~18GHz	Jul. 27, 2017	Oct. 13, 2017~ Oct. 15, 2017	Jul. 26, 2018	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY395013 02	500MHz~26.5G Hz	Jan. 06, 2017	Oct. 13, 2017~ Oct. 15, 2017	Jan. 05, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1988315	18GHz~40GHz	Jul. 27, 2017	Oct. 13, 2017~ Oct. 15, 2017	Jul. 26, 2018	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001 985	N/A	NCR	Oct. 13, 2017~ Oct. 15, 2017	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Oct. 13, 2017~ Oct. 15, 2017	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Oct. 13, 2017~ Oct. 15, 2017	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Jan. 06, 2017	Sep. 22, 2017	Jan. 05, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Jan. 05, 2017	Sep. 22, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103892	9kHz~30MHz	Jan. 05, 2017	Sep. 22, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000 891	100Vac~250Vac	Jul. 19, 2017	Sep. 22, 2017	Jul. 18, 2018	Conduction (CO01-SZ)

NCR: No Calibration Required



## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.5 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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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.0 dB
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### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.0 dB
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## **Appendix A. Conducted Test Results**

Test Engineer:	Sam Zheng	Temperature:	24~26	°C
Test Date:	2017/9/26~2017/9/27	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	13.99	14.74	8.53	9.01	0.50	Pass
11b	1Mbps	1	6	2437	13.99	14.89	8.53	9.51	0.50	Pass
11b	1Mbps	1	11	2462	14.24	15.03	8.07	10.01	0.50	Pass
11g	6Mbps	1	1	2412	17.63	17.68	15.33	15.62	0.50	Pass
11g	6Mbps	1	6	2437	17.48	17.63	15.33	15.33	0.50	Pass
11g	6Mbps	1	11	2462	17.53	17.63	15.47	15.49	0.50	Pass
HT20	MCS0	1	1	2412	18.78	18.83	15.94	16.52	0.50	Pass
HT20	MCS0	1	6	2437	18.68	18.73	15.92	15.92	0.50	Pass
HT20	MCS0	1	11	2462	18.88	18.73	15.94	15.13	0.50	Pass
HT40	MCS0	1	3	2422	36.66	36.46	35.29	35.13	0.50	Pass
HT40	MCS0	1	6	2437	36.56	36.46	35.05	35.09	0.50	Pass
HT40	MCS0	1	9	2452	36.66	36.66	35.49	35.13	0.50	Pass
11b	1Mbps	2	1	2412	14.04	14.69	8.01	8.03	0.50	Pass
11b	1Mbps	2	6	2437	14.04	14.79	8.03	8.03	0.50	Pass
11b	1Mbps	2	11	2462	14.14	14.64	8.03	8.51	0.50	Pass
11g	6Mbps	2	1	2412	17.53	17.53	15.31	15.68	0.50	Pass
11g	6Mbps	2	6	2437	17.63	17.48	15.47	15.66	0.50	Pass
11g	6Mbps	2	11	2462	17.63	17.43	15.49	15.13	0.50	Pass
HT20	MCS0	2	1	2412	18.83	18.73	15.92	16.24	0.50	Pass
HT20	MCS0	2	6	2437	18.93	18.68	15.94	15.92	0.50	Pass
HT20	MCS0	2	11	2462	18.83	18.58	15.94	15.13	0.50	Pass
HT40	MCS0	2	3	2422	36.56	36.36	35.33	35.09	0.50	Pass
HT40	MCS0	2	6	2437	36.66	36.56	35.45	35.09	0.50	Pass
HT40	MCS0	2	9	2452	36.56	36.56	35.13	35.68	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	19.27	16.00		30.00	30.00	-2.80	-3.00	16.47	13.00	36.00	36.00	Pass
11b	1Mbps	1	6	2437	19.31	16.45		30.00	30.00	-2.80	-3.00	16.51	13.45	36.00	36.00	Pass
11b	1Mbps	1	11	2462	19.55	16.52		30.00	30.00	-2.80	-3.00	16.75	13.52	36.00	36.00	Pass
11g	6Mbps	1	1	2412	19.85	19.18		30.00	30.00	-2.80	-3.00	17.05	16.18	36.00	36.00	Pass
11g	6Mbps	1	6	2437	20.79	19.35		30.00	30.00	-2.80	-3.00	17.99	16.35	36.00	36.00	Pass
11g	6Mbps	1	11	2462	20.12	19.55		30.00	30.00	-2.80	-3.00	17.32	16.55	36.00	36.00	Pass
HT20	MCS0	1	1	2412	19.73	19.16		30.00	30.00	-2.80	-3.00	16.93	16.16	36.00	36.00	Pass
HT20	MCS0	1	6	2437	21.84	19.30		30.00	30.00	-2.80	-3.00	19.04	16.30	36.00	36.00	Pass
HT20	MCS0	1	11	2462	20.19	19.46		30.00	30.00	-2.80	-3.00	17.39	16.46	36.00	36.00	Pass
HT40	MCS0	1	3	2422	16.84	17.08		30.00	30.00	-2.80	-3.00	14.04	14.08	36.00	36.00	Pass
HT40	MCS0	1	6	2437	20.50	19.46		30.00	30.00	-2.80	-3.00	17.70	16.46	36.00	36.00	Pass
HT40	MCS0	1	9	2452	16.64	17.32		30.00	30.00	-2.80	-3.00	13.84	14.32	36.00	36.00	Pass
VHT20	MCS0	1	1	2412	18.70	18.11		30.00	30.00	-2.80	-3.00	15.90	15.11	36.00	36.00	Pass
VHT20	MCS0	1	6	2437	21.80	19.23		30.00	30.00	-2.80	-3.00	19.00	16.23	36.00	36.00	Pass
VHT20	MCS0	1	11	2462	18.93	18.20		30.00	30.00	-2.80	-3.00	16.13	15.20	36.00	36.00	Pass
VHT40	MCS0	1	3	2422	16.63	17.06		30.00	30.00	-2.80	-3.00	13.83	14.06	36.00	36.00	Pass
VHT40	MCS0	1	6	2437	19.56	19.42		30.00	30.00	-2.80	-3.00	16.76	16.42	36.00	36.00	Pass
VHT40	MCS0	1	9	2452	16.53	17.28		30.00	30.00	-2.80	-3.00	13.73	14.28	36.00	36.00	Pass
11b	1Mbps	2	1	2412	19.10	15.57	20.69	30.00		-2.80		17.89		36.00		Pass
11b	1Mbps	2	6	2437	19.32	16.12	21.02	30.00		-2.80		18.22		36.00		Pass
11b	1Mbps	2	11	2462	19.36	16.22	21.08	30.00		-2.80		18.28		36.00		Pass
11g	6Mbps	2	1	2412	18.61	16.36	20.64	30.00		-2.80		17.84		36.00		Pass
11g	6Mbps	2	6	2437	21.12	18.46	23.00	30.00		-2.80		20.20		36.00		Pass
11g	6Mbps	2	11	2462	19.03	16.70	21.03	30.00		-2.80		18.23		36.00		Pass
HT20	MCS0	2	1	2412	18.82	16.44	20.80	30.00		-2.80		18.00		36.00		Pass
HT20	MCS0	2	6	2437	21.16	18.53	23.05	30.00		-2.80		20.25		36.00		Pass
HT20	MCS0	2	11	2462	19.13	16.71	21.10	30.00		-2.80		18.30		36.00		Pass
HT40	MCS0	2	3	2422	16.05	13.83	18.09	30.00		-2.80		15.29		36.00		Pass
HT40	MCS0	2	6	2437	19.82	16.39	21.45	30.00		-2.80		18.65		36.00		Pass
HT40	MCS0	2	9	2452	15.80	12.94	17.61	30.00		-2.80		14.81		36.00		Pass
VHT20	MCS0	2	1	2412	18.80	16.42	20.78	30.00		-2.80		17.98		36.00		Pass
VHT20	MCS0	2	6	2437	21.14	18.47	23.02	30.00		-2.80		20.22		36.00		Pass
VHT20	MCS0	2	11	2462	18.88	16.63	20.91	30.00		-2.80		18.11		36.00		Pass
VHT40	MCS0	2	3	2422	16.03	13.74	18.04	30.00		-2.80		15.24		36.00		Pass
VHT40	MCS0	2	6	2437	19.66	16.38	21.33	30.00		-2.80		18.53		36.00		Pass
VHT40	MCS0	2	9	2452	15.77	12.66	17.50	30.00		-2.80		14.70		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	0.03	0.04	16.91	13.93	
11b	1Mbps	1	6	2437	0.03	0.04	16.92	14.41	
11b	1Mbps	1	11	2462	0.03	0.04	17.26	14.48	
11g	6Mbps	1	1	2412	0.24	0.24	14.94	13.90	
11g	6Mbps	1	6	2437	0.24	0.24	16.89	14.24	
11g	6Mbps	1	11	2462	0.24	0.24	15.29	14.37	
HT20	MCS0	1	1	2412	0.25	0.25	14.67	13.87	
HT20	MCS0	1	6	2437	0.25	0.25	16.91	14.21	
HT20	MCS0	1	11	2462	0.25	0.25	15.02	14.35	
HT40	MCS0	1	3	2422	0.52	0.47	10.73	10.83	
HT40	MCS0	1	6	2437	0.52	0.47	14.05	13.76	
HT40	MCS0	1	9	2452	0.52	0.47	10.50	10.84	
VHT20	MCS0	1	1	2412	0.26	0.25	13.79	13.26	
VHT20	MCS0	1	6	2437	0.26	0.25	16.89	14.04	
VHT20	MCS0	1	11	2462	0.26	0.25	14.02	13.28	
VHT40	MCS0	1	3	2422	0.52	0.46	10.72	10.81	
VHT40	MCS0	1	6	2437	0.52	0.46	13.20	13.72	
VHT40	MCS0	1	9	2452	0.52	0.46	10.48	10.83	
11b	1Mbps	2	1	2412	0.05	0.05	16.55	13.45	18.28
11b	1Mbps	2	6	2437	0.05	0.05	16.66	13.95	18.52
11b	1Mbps	2	11	2462	0.05	0.05	16.90	14.08	18.72
11g	6Mbps	2	1	2412	0.27	0.24	13.85	11.61	15.88
11g	6Mbps	2	6	2437	0.27	0.24	16.25	13.59	18.13
11g	6Mbps	2	11	2462	0.27	0.24	14.13	11.57	16.04
HT20	MCS0	2	1	2412	0.25	0.25	13.69	11.50	15.75
HT20	MCS0	2	6	2437	0.25	0.25	16.09	13.43	17.98
HT20	MCS0	2	11	2462	0.25	0.25	14.21	11.55	16.10
HT40	MCS0	2	3	2422	0.49	0.48	9.99	7.63	11.98
HT40	MCS0	2	6	2437	0.49	0.48	13.19	9.95	14.88
HT40	MCS0	2	9	2452	0.49	0.48	9.55	6.84	11.41
VHT20	MCS0	2	1	2412	0.45	0.48	13.67	11.48	15.72
VHT20	MCS0	2	6	2437	0.45	0.48	16.08	13.41	17.96
VHT20	MCS0	2	11	2462	0.45	0.48	13.99	11.53	15.94
VHT40	MCS0	2	3	2422	0.88	0.94	9.98	7.62	11.97
VHT40	MCS0	2	6	2437	0.88	0.94	13.15	9.94	14.85
VHT40	MCS0	2	9	2452	0.88	0.94	9.50	6.54	11.28

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	-8.63	-11.72	-	-2.80	-3.00	8.00	8.00	Pass
11b	1Mbps	1	6	2437	-7.72	-10.46		-2.80	-3.00	8.00	8.00	Pass
11b	1Mbps	1	11	2462	-8.27	-10.99		-2.80	-3.00	8.00	8.00	Pass
11g	6Mbps	1	1	2412	-8.58	-11.61		-2.80	-3.00	8.00	8.00	Pass
11g	6Mbps	1	6	2437	-8.92	-11.73		-2.80	-3.00	8.00	8.00	Pass
11g	6Mbps	1	11	2462	-8.24	-10.88		-2.80	-3.00	8.00	8.00	Pass
HT20	MCS0	1	1	2412	-9.13	-11.26		-2.80	-3.00	8.00	8.00	Pass
HT20	MCS0	1	6	2437	-9.12	-10.82		-2.80	-3.00	8.00	8.00	Pass
HT20	MCS0	1	11	2462	-8.06	-10.26		-2.80	-3.00	8.00	8.00	Pass
HT40	MCS0	1	3	2422	-11.80	-15.62		-2.80	-3.00	8.00	8.00	Pass
HT40	MCS0	1	6	2437	-11.31	-15.28		-2.80	-3.00	8.00	8.00	Pass
HT40	MCS0	1	9	2452	-11.53	-14.09	-2.80	-3.00	8.00	8.00	Pass	
11b	1Mbps	2	1	2412	-9.05	-11.11	-6.04	0.11		8.00		Pass
11b	1Mbps	2	6	2437	-8.22	-12.57	-5.21	0.11		8.00		Pass
11b	1Mbps	2	11	2462	-9.96	-12.18	-6.95	0.11		8.00		Pass
11g	6Mbps	2	1	2412	-9.31	-12.67	-6.30	0.11		8.00		Pass
11g	6Mbps	2	6	2437	-10.46	-11.63	-7.45	0.11		8.00		Pass
11g	6Mbps	2	11	2462	-9.88	-12.35	-6.87	0.11		8.00		Pass
HT20	MCS0	2	1	2412	-9.94	-12.00	-6.93	0.11		8.00		Pass
HT20	MCS0	2	6	2437	-9.51	-11.83	-6.50	0.11		8.00		Pass
HT20	MCS0	2	11	2462	-9.22	-11.09	-6.21	0.11		8.00		Pass
HT40	MCS0	2	3	2422	-19.28	-19.67	-16.27	0.11		8.00		Pass
HT40	MCS0	2	6	2437	-15.40	-16.91	-12.39	0.11		8.00		Pass
HT40	MCS0	2	9	2452	-17.31	-19.34	-14.30	0.11		8.00		Pass

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





## Appendix B. Radiated Spurious Emission

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+2		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
802.11b CH 01 2412MHz		2389.8	50.73	-23.27	74	52.64	27.23	5.06	34.2	123	243	P	H
		2387.385	42.65	-11.35	54	44.58	27.23	5.06	34.22	123	243	A	H
	*	2412	105.16	-	-	107.02	27.28	5.06	34.2	123	243	P	H
	*	2412	102.23	-	-	104.09	27.28	5.06	34.2	123	243	A	H
		2389.17	54.65	-19.35	74	56.58	27.23	5.06	34.22	220	279	P	V
		2387.28	47.25	-6.75	54	49.18	27.23	5.06	34.22	220	279	A	V
	*	2412	109.83	-	-	111.69	27.28	5.06	34.2	220	279	P	V
	*	2412	106.82	-	-	108.68	27.28	5.06	34.2	220	279	A	V
802.11b CH 06 2437MHz		2376.36	49.64	-24.36	74	51.65	27.19	5.02	34.22	102	243	P	H
		2389.94	39.56	-14.44	54	41.47	27.23	5.06	34.2	102	243	A	H
	*	2437	106.81	-	-	108.5	27.37	5.12	34.18	102	243	P	H
	*	2437	103.54	-	-	105.23	27.37	5.12	34.18	102	243	A	H
		2483.97	50.46	-23.54	74	51.94	27.46	5.19	34.13	102	243	P	H
		2483.5	40.36	-13.64	54	41.84	27.46	5.19	34.13	102	243	A	H
		2388.54	50.57	-23.43	74	52.5	27.23	5.06	34.22	192	278	P	V
		2389.94	40.73	-13.27	54	42.64	27.23	5.06	34.2	192	278	A	V
	*	2437	110.41	-	-	112.1	27.37	5.12	34.18	192	278	P	V
	*	2437	107.22	-	-	108.91	27.37	5.12	34.18	192	278	A	V
		2485.09	51.65	-22.35	74	53.13	27.46	5.19	34.13	192	278	P	V
	2483.5	41.36	-12.64	54	42.84	27.46	5.19	34.13	192	278	A	V	



802.11b CH 11 2462MHz	*	2462	105.34	-	-	106.96	27.41	5.12	34.15	100	240	P	H
	*	2462	102.28	-	-	103.9	27.41	5.12	34.15	100	240	A	H
		2483.64	51.94	-22.06	74	53.42	27.46	5.19	34.13	100	240	P	H
		2483.52	43.11	-10.89	54	44.59	27.46	5.19	34.13	100	240	A	H
	*	2462	110.47	-	-	112.09	27.41	5.12	34.15	215	278	P	V
	*	2462	107.39	-	-	109.01	27.41	5.12	34.15	215	278	A	V
		2484	54.85	-19.15	74	56.33	27.46	5.19	34.13	215	278	P	V
		2483.52	45.85	-8.15	54	47.33	27.46	5.19	34.13	215	278	A	V
Remark	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> </ol>												



2.4GHz 2400~2483.5MHz
WIFI 802.11b (Harmonic @ 3m)

Table with 14 columns: WIFI Ant. 1+2, Note, Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB/m), Cable Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Peak Avg. (P/A), Pol. (H/V). Rows include data for CH 01 (2412MHz) and CH 06 (2437MHz) and CH 11 (2462MHz).



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

Table with 14 columns: WIFI Ant. 1+2, Note, Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB/m), Cable Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Peak Avg. (P/A), Pol. (H/V). Rows include data for 802.11g CH 01 (2412MHz) and 802.11g CH 06 (2437MHz).



802.11g CH 11 2462MHz	*	2462	108.9	-	-	110.52	27.41	5.12	34.15	131	316	P	H
	*	2462	101.74	-	-	103.36	27.41	5.12	34.15	131	316	A	H
		2483.96	57.78	-16.22	74	59.26	27.46	5.19	34.13	131	316	P	H
		2483.6	47.99	-6.01	54	49.47	27.46	5.19	34.13	131	316	A	H
	*	2462	108.46	-	-	110.08	27.41	5.12	34.15	158	279	P	V
	*	2462	100.61	-	-	102.23	27.41	5.12	34.15	158	279	A	V
		2483.64	57.9	-16.1	74	59.38	27.46	5.19	34.13	158	279	P	V
		2483.52	47.83	-6.17	54	49.31	27.46	5.19	34.13	158	279	A	V
Remark	<ol style="list-style-type: none"> <li>No other spurious found.</li> <li>All results are PASS against Peak and Average limit line.</li> </ol>												



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

Table with 14 columns: WIFI Ant. 1+2, Note, Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB/m), Cable Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Peak Avg. (P/A), Pol. (H/V). Rows include data for 802.11g CH 01, CH 06, and CH 11 at various frequencies.



**2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI Ant. 1+2	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11n HT20 CH 01 2412MHz		2389.905	61.71	-12.29	74	63.62	27.23	5.06	34.2	100	231	P	H
		2390	51.14	-2.86	54	53.05	27.23	5.06	34.2	100	231	A	H
	*	2412	108.28	-	-	110.14	27.28	5.06	34.2	100	231	P	H
	*	2412	100.51	-	-	102.37	27.28	5.06	34.2	100	231	A	H
		2390	61.81	-12.19	74	63.72	27.23	5.06	34.2	167	276	P	V
		2390	49.9	-4.1	54	51.81	27.23	5.06	34.2	167	276	A	V
	*	2412	105.77	-	-	107.63	27.28	5.06	34.2	167	276	P	V
	*	2412	98.47	-	-	100.33	27.28	5.06	34.2	167	276	A	V
802.11n HT20 CH 06 2437MHz		2385.32	51.14	-22.86	74	53.11	27.19	5.06	34.22	100	234	P	H
		2389.8	40.96	-13.04	54	42.87	27.23	5.06	34.2	100	234	A	H
	*	2437	108.83	-	-	110.52	27.37	5.12	34.18	100	234	P	H
	*	2437	101.29	-	-	102.98	27.37	5.12	34.18	100	234	A	H
		2483.69	52.56	-21.44	74	54.04	27.46	5.19	34.13	100	234	P	H
		2483.55	42.6	-11.4	54	44.08	27.46	5.19	34.13	100	234	A	H
		2386.44	50.23	-23.77	74	52.16	27.23	5.06	34.22	182	277	P	V
		2389.8	41.44	-12.56	54	43.35	27.23	5.06	34.2	182	277	A	V
	*	2437	110.79	-	-	112.48	27.37	5.12	34.18	182	277	P	V
	*	2437	103	-	-	104.69	27.37	5.12	34.18	182	277	A	V
		2483.69	51.69	-22.31	74	53.17	27.46	5.19	34.13	182	277	P	V
	2483.55	42.66	-11.34	54	44.14	27.46	5.19	34.13	182	277	A	V	



<b>802.11n</b> <b>HT20</b> <b>CH 11</b> <b>2462MHz</b>	*	2462	105.48	-	-	107.1	27.41	5.12	34.15	137	235	P	H
	*	2462	98.15	-	-	99.77	27.41	5.12	34.15	137	235	A	H
		2483.52	58.23	-15.77	74	59.71	27.46	5.19	34.13	137	235	P	H
		2483.64	48.62	-5.38	54	50.1	27.46	5.19	34.13	137	235	A	H
	*	2462	109.31	-	-	110.93	27.41	5.12	34.15	177	254	P	V
	*	2462	101.26	-	-	102.88	27.41	5.12	34.15	177	254	A	V
		2483.56	61.4	-12.6	74	62.88	27.46	5.19	34.13	177	254	P	V
		2483.52	52.11	-1.89	54	53.59	27.46	5.19	34.13	177	254	A	V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												





**2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI Ant. 1+2	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4824	40.81	-33.19	74	58.83	31.73	8.59	58.34	161	360	P	H
		4824	40.78	-33.22	74	58.8	31.73	8.59	58.34	161	360	P	V
802.11n HT20 CH 06 2437MHz		4874	40	-34	74	57.95	31.78	8.6	58.33	159	360	P	H
		7311	45.32	-28.68	74	58.82	35.66	10.24	59.4	174	100	P	H
		4874	38.96	-35.04	74	56.91	31.78	8.6	58.33	159	360	P	V
		7311	46.3	-27.7	74	59.8	35.66	10.24	59.4	174	100	P	V
802.11n HT20 CH 11 2462MHz		4924	39.85	-34.15	74	57.71	31.83	8.64	58.33	159	360	P	H
		7386	44.85	-29.15	74	58.28	35.81	10.2	59.44	145	274	P	H
		4924	40.77	-33.23	74	58.63	31.83	8.64	58.33	159	360	P	V
		7386	45.32	-28.68	74	58.75	35.81	10.2	59.44	145	274	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz  
WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI Ant. 1+2	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
802.11n HT40 CH 03 2422MHz		2389.94	55.28	-18.72	74	57.19	27.23	5.06	34.2	133	236	P	H
		2389.66	45.8	-8.2	54	47.73	27.23	5.06	34.22	133	236	A	H
	*	2422	101.27	-	-	103.07	27.32	5.06	34.18	133	236	P	H
	*	2422	93.39	-	-	95.19	27.32	5.06	34.18	133	236	A	H
		2489.78	49.78	-24.22	74	51.22	27.5	5.19	34.13	133	236	P	H
		2487.12	40.87	-13.13	54	42.35	27.46	5.19	34.13	133	236	A	H
		2388.54	56.25	-17.75	74	58.18	27.23	5.06	34.22	146	282	P	V
		2389.38	47.84	-6.16	54	49.77	27.23	5.06	34.22	146	282	A	V
	*	2422	104.23	-	-	106.03	27.32	5.06	34.18	146	282	P	V
	*	2422	96.09	-	-	97.89	27.32	5.06	34.18	146	282	A	V
		2490.83	50.11	-23.89	74	51.55	27.5	5.19	34.13	146	282	P	V
		2483.62	41.19	-12.81	54	42.67	27.46	5.19	34.13	146	282	A	V
802.11n HT40 CH 06 2437MHz		2389.66	55.21	-18.79	74	57.14	27.23	5.06	34.22	100	234	P	H
		2389.94	46.72	-7.28	54	48.63	27.23	5.06	34.2	100	234	A	H
	*	2437	102.94	-	-	104.63	27.37	5.12	34.18	100	234	P	H
	*	2437	95.33	-	-	97.02	27.37	5.12	34.18	100	234	A	H
		2484.04	53.97	-20.03	74	55.45	27.46	5.19	34.13	100	234	P	H
		2483.5	44.6	-9.4	54	46.08	27.46	5.19	34.13	100	234	A	H
		2389.1	61.62	-12.38	74	63.55	27.23	5.06	34.22	163	271	P	V
		2389.52	50.81	-3.19	54	52.74	27.23	5.06	34.22	163	271	A	V
	*	2437	105.93	-	-	107.62	27.37	5.12	34.18	163	271	P	V
	*	2437	98.23	-	-	99.92	27.37	5.12	34.18	163	271	A	V
		2483.5	56.71	-17.29	74	58.19	27.46	5.19	34.13	163	271	P	V
		2483.62	48.61	-5.39	54	50.09	27.46	5.19	34.13	163	271	A	V



<b>802.11n</b>  <b>HT40</b>  <b>CH 09</b>  <b>2452MHz</b>		2387.98	49.16	-24.84	74	51.09	27.23	5.06	34.22	136	317	P	H
		2389.94	39.89	-14.11	54	41.8	27.23	5.06	34.2	136	317	A	H
	*	2452	101.65	-	-	103.31	27.37	5.12	34.15	136	317	P	H
	*	2452	93.87	-	-	95.53	27.37	5.12	34.15	136	317	A	H
		2483.62	55.2	-18.8	74	56.68	27.46	5.19	34.13	136	317	P	H
		2483.55	46.66	-7.34	54	48.14	27.46	5.19	34.13	136	317	A	H
		2366.28	49.38	-24.62	74	51.44	27.14	5.02	34.22	158	275	P	V
		2387.42	40.26	-13.74	54	42.19	27.23	5.06	34.22	158	275	A	V
	*	2452	101.99	-	-	103.65	27.37	5.12	34.15	158	275	P	V
	*	2452	93.89	-	-	95.55	27.37	5.12	34.15	158	275	A	V
		2484.18	59.34	-14.66	74	60.82	27.46	5.19	34.13	158	275	P	V
		2483.55	50.4	-3.6	54	51.88	27.46	5.19	34.13	158	275	A	V
<b>Remark</b>	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

Table with 14 columns: WIFI Ant. 1+2, Note, Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB/m), Cable Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Peak Avg. (P/A), Pol. (H/V). Rows include test results for 802.11n HT40 CH 03 (2422MHz) and CH 06 (2437MHz), and 802.11n HT40 CH 09 (2452MHz).

Remark

- 1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (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 HT20 LF		30	24.55	-15.45	40	29.29	26.7	0.56	32	155	80	P	H
		97.9	18.97	-24.53	43.5	31.1	18.6	1.02	31.75	-	-	P	H
		406.36	26.95	-19.05	46	30.2	25.85	2.14	31.24	-	-	P	H
		634.31	27.79	-18.21	46	31.03	25.24	2.74	31.22	-	-	P	H
		855.47	30.28	-15.72	46	30.17	28.15	3.21	31.25	-	-	P	H
		994.18	31.65	-22.35	54	29.14	30.28	3.47	31.24	-	-	P	H
		30	25.18	-14.82	40	29.92	26.7	0.56	32	-	-	P	V
		126.03	18.65	-24.85	43.5	30.84	18.28	1.16	31.63	-	-	P	V
		413.15	26.87	-19.13	46	30.24	25.7	2.16	31.23	-	-	P	V
		689.6	29.58	-16.42	46	30.8	27.19	2.84	31.25	-	-	P	V
		808.91	29.75	-16.25	46	30.31	27.52	3.12	31.2	-	-	P	V
		938.89	32.46	-13.54	46	31.08	29.21	3.37	31.2	130	50	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak</b> or <b>Average</b>
H/V	<b>Horizontal</b> or <b>Vertical</b>



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

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

**For Peak Limit @ 2390MHz:**

- 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)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 55.45(dBμV/m) – 74(dBμV/m)  
= -18.55(dB)

**For Average Limit @ 2390MHz:**

- 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)
- Over Limit(dB)  
= Level(dBμV/m) – Limit Line(dBμV/m)  
= 43.54(dBμV/m) – 54(dBμV/m)  
= -10.46(dB)

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



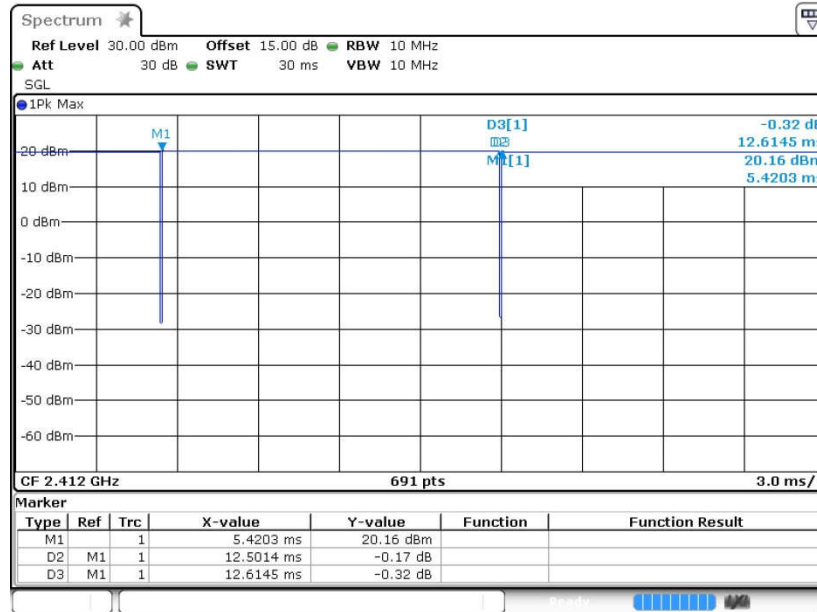
## Appendix C. Duty Cycle Plots

Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2	802.11b	99.10	-	-	10Hz
1+2	802.11g	94.68	2.065	0.484	1KHz
1+2	802.11n HT20	94.31	1.920	0.521	1KHz
1+2	802.11n HT40	89.45	0.946	1.057	3KHz

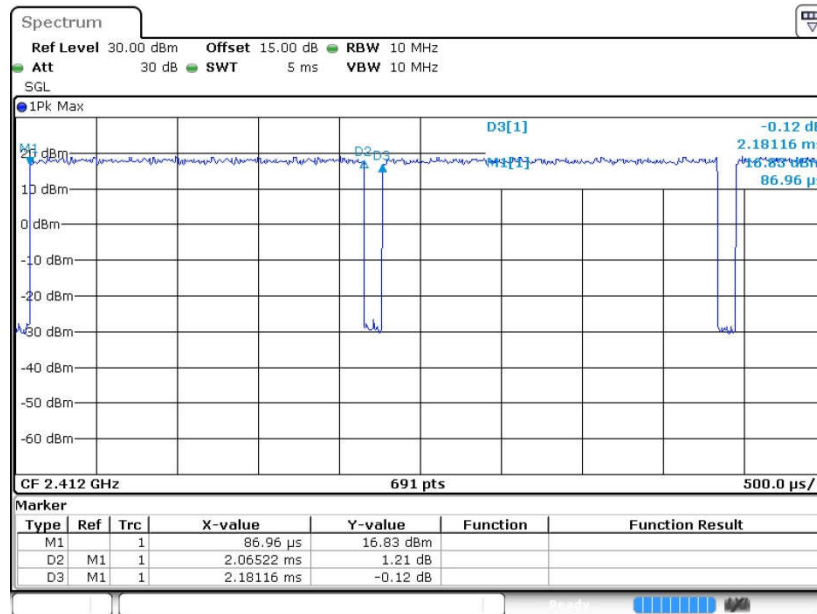




802.11b

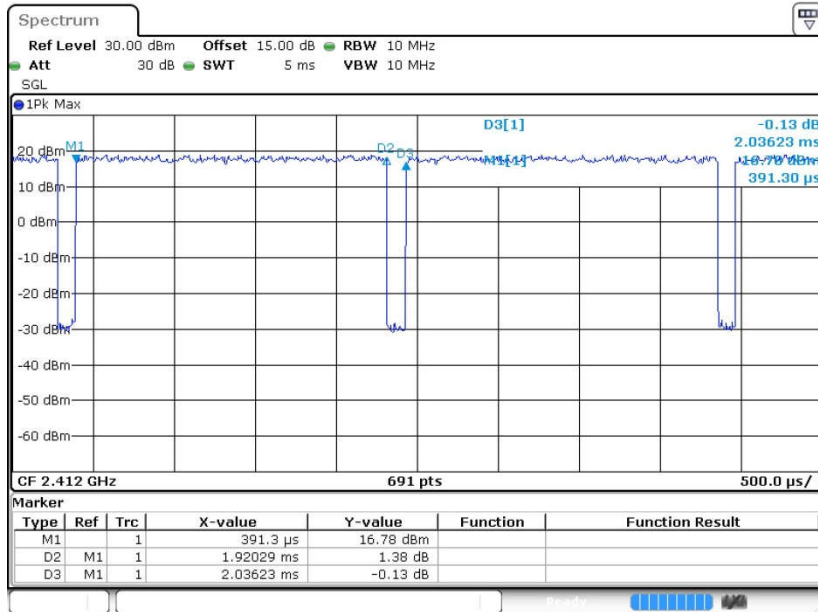


802.11g





802.11n20



802.11n40

