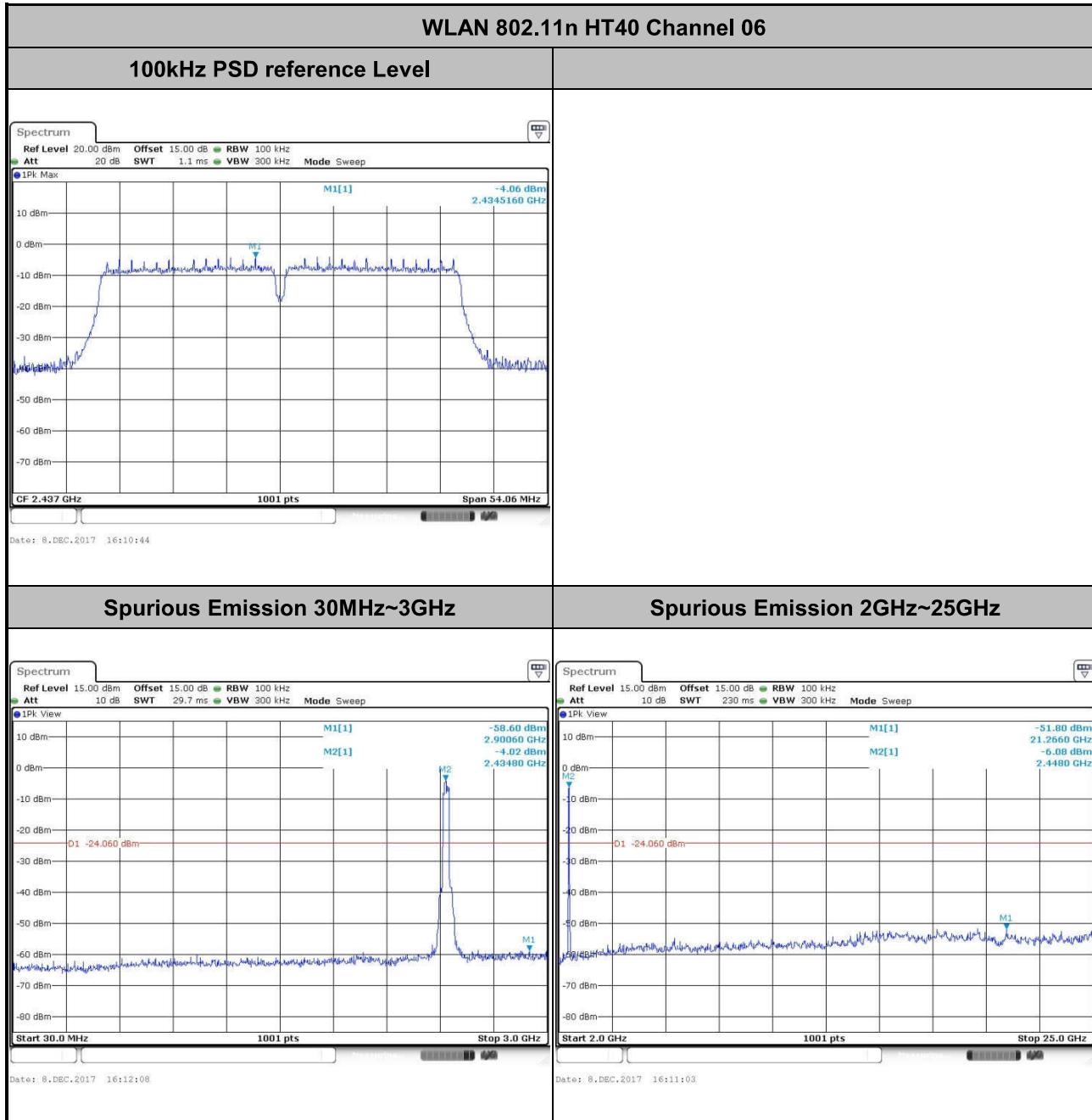


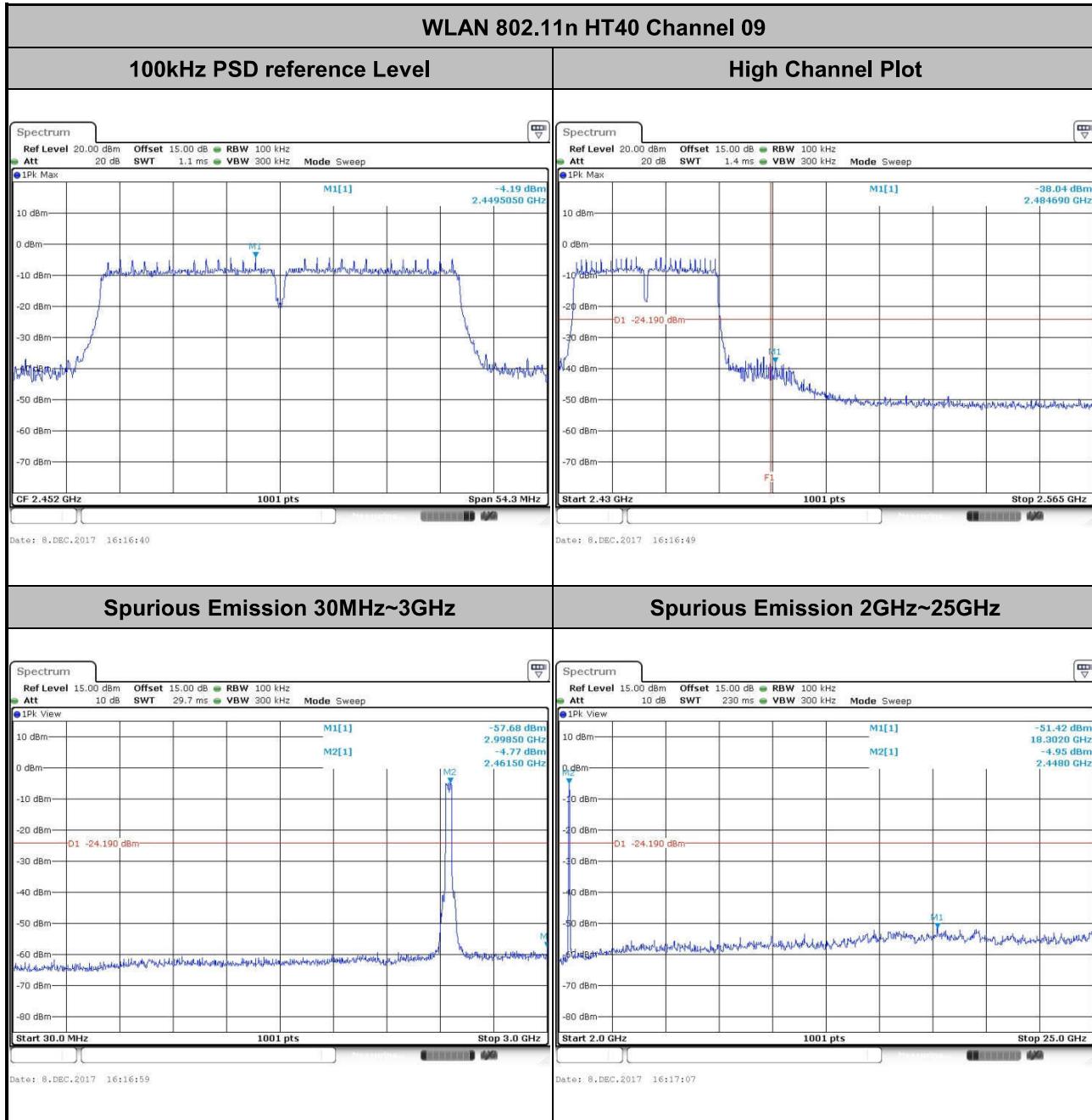


<b>Test Mode :</b>	802.11n HT40	<b>Temperature :</b>	24~25°C
<b>Test Band :</b>	2.4GHz Mid	<b>Relative Humidity :</b>	48~49%
<b>Test Channel :</b>	06	<b>Test Engineer :</b>	Vikki Zhang





<b>Test Mode :</b>	802.11n HT40	<b>Temperature :</b>	24~25°C
<b>Test Band :</b>	2.4GHz High	<b>Relative Humidity :</b>	48~49%
<b>Test Channel :</b>	09	<b>Test Engineer :</b>	Vikki Zhang





### 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

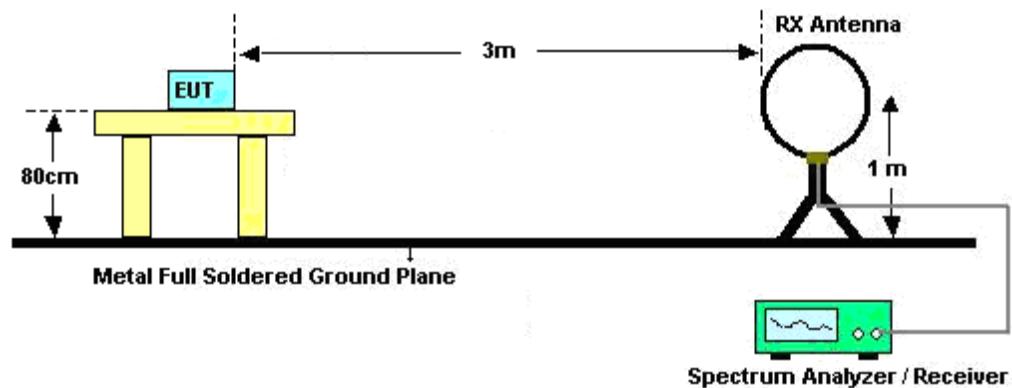
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test 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:

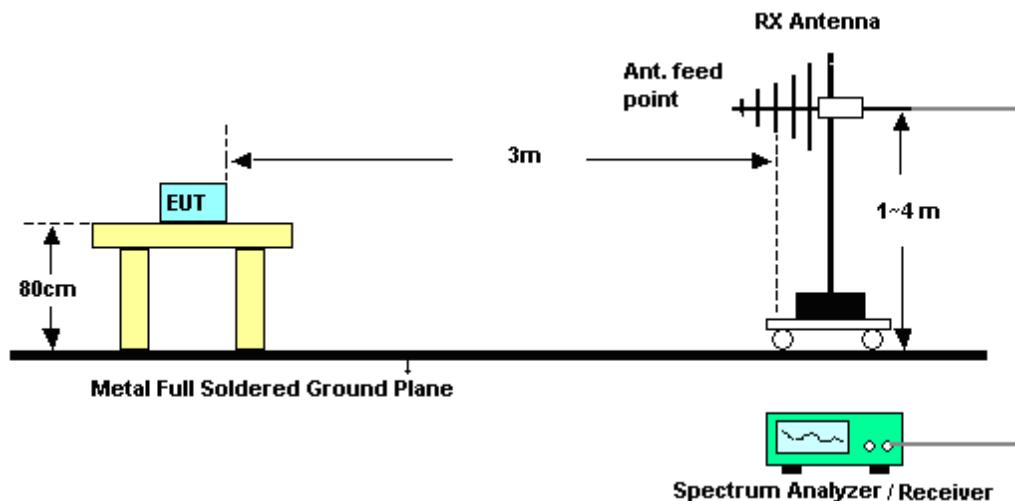
  - VBW = 10 Hz, when duty cycle is no less than 98 percent.
  - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

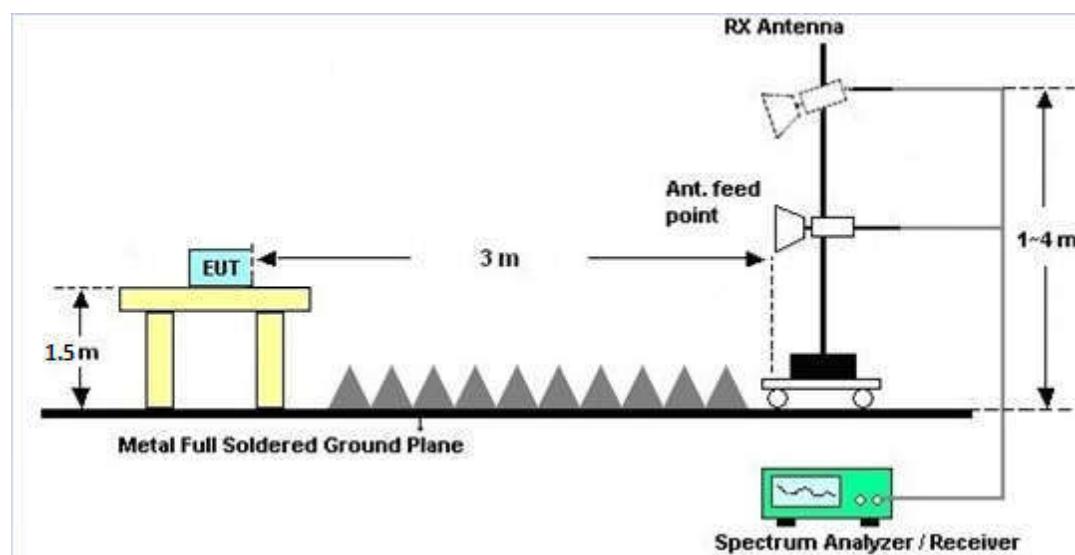
### 3.5.4 Test Setup

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 (dB $\mu$ 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.

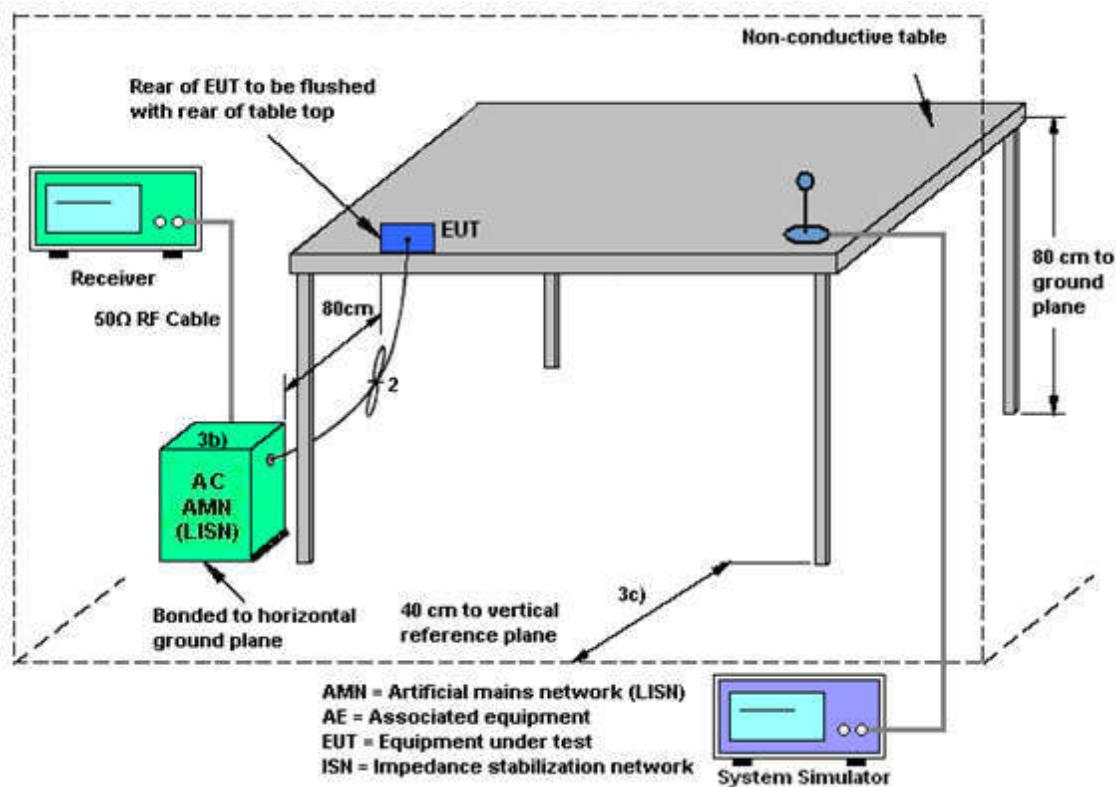
### 3.6.2 Measuring Instruments

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

### 3.6.3 Test Procedures

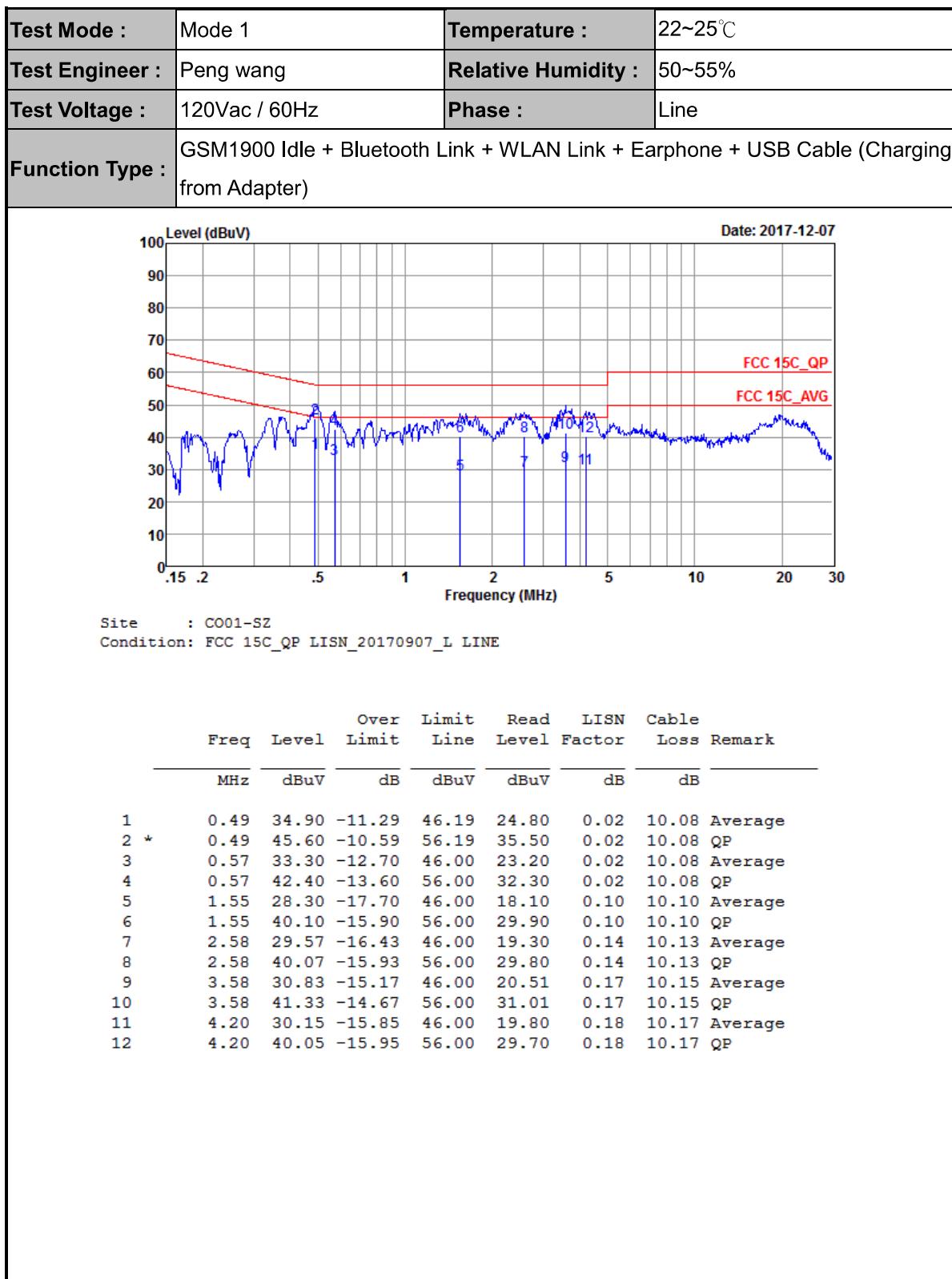
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other 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



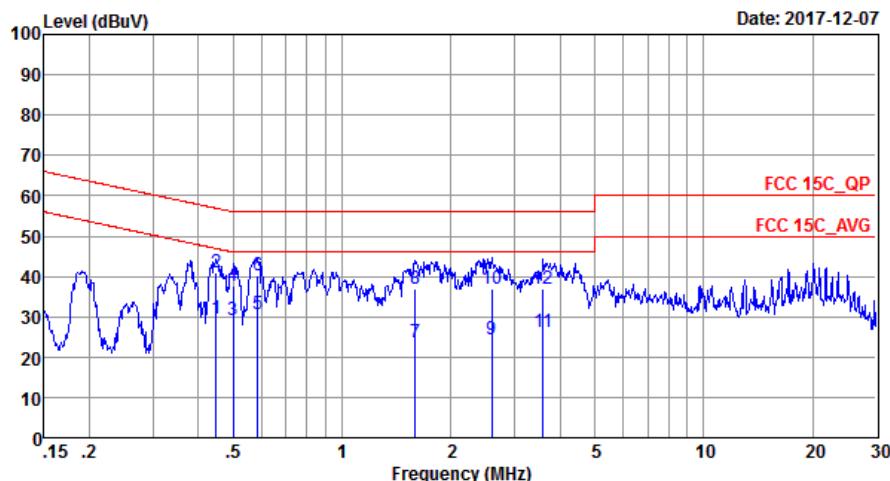


## 3.6.5 Test Result of AC Conducted Emission





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



Freq	Level	Over	Limit	Read	LISN	Cable	Remark
		Line	dBuV	Level	Factor	Loss	
MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.45	29.60	-17.29	46.89	19.50	0.02	10.08 Average
2	0.45	40.90	-15.99	56.89	30.80	0.02	10.08 QP
3	0.50	29.20	-16.81	46.01	19.10	0.02	10.08 Average
4	0.50	37.80	-18.21	56.01	27.70	0.02	10.08 QP
5 *	0.59	30.70	-15.30	46.00	20.60	0.02	10.08 Average
6	0.59	40.40	-15.60	56.00	30.30	0.02	10.08 QP
7	1.59	23.55	-22.45	46.00	13.40	0.05	10.10 Average
8	1.59	36.75	-19.25	56.00	26.60	0.05	10.10 QP
9	2.59	24.47	-21.53	46.00	14.30	0.04	10.13 Average
10	2.59	36.77	-19.23	56.00	26.60	0.04	10.13 QP
11	3.60	26.10	-19.90	46.00	15.90	0.04	10.16 Average
12	3.60	36.80	-19.20	56.00	26.60	0.04	10.16 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

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



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	Apr. 20, 2017	Dec. 07, 2017~ Dec. 08, 2017	Apr. 19, 2018	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1207253	30MHz~40GHz	Jan. 06, 2017	Dec. 07, 2017~ Dec. 08, 2017	Jan. 05, 2018	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Jan. 06, 2017	Dec. 07, 2017~ Dec. 08, 2017	Jan. 05, 2018	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY522601 85	20Hz~26.5GHz	Apr. 20, 2017	Jan. 07, 2018	Apr. 19, 2018	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 14, 2017	Jan. 07, 2018	May 13, 2018	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	23188	30MHz-2GHz	Apr. 25, 2017	Jan. 07, 2018	Apr. 24, 2018	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	119436	1GHz~18GHz	Jul. 28, 2017	Jan. 07, 2018	Jul. 27, 2018	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz~40GHz	Jun. 16, 2017	Jan. 07, 2018	Jun. 15, 2018	Radiation (03CH01-SZ)
LF Amplifier	Burjeon	BPA-530	102209	0.01~3000Mhz	Apr. 20, 2017	Jan. 07, 2018	Apr. 19, 2018	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1707137	1GHz~18GHz	Oct. 19, 2017	Jan. 07, 2018	Oct. 18, 2018	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY532701 04	0.5GHz~26.5Ghz	Oct. 19, 2017	Jan. 07, 2018	Oct. 18, 2018	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001 985	N/A	NCR	Jan. 07, 2018	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jan. 07, 2018	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jan. 07, 2018	NCR	Radiation (03CH01-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Jan. 06, 2017	Dec. 07, 2017	Jan. 05, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Jan. 05, 2017	Dec. 07, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103892	9kHz~30MHz	Jan. 05, 2017	Dec. 07, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000 891	100Vac~250Vac	Jul. 19, 2017	Dec. 07, 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% ( $U = 2U_{C(y)}$ )	2.5dB
-------------------------------------------------------------------------------	-------

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_{C(y)}$ )	5.1dB
-------------------------------------------------------------------------------	-------

### Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_{C(y)}$ )	5.2dB
-------------------------------------------------------------------------------	-------

### Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_{C(y)}$ )	5.1dB
-------------------------------------------------------------------------------	-------



## Appendix A. Conducted Test Results

**A1 - DTS Part**

Test Engineer:	Bruce Huang	Temperature:	24~26	°C
Test Date:	2017/12/07~2017/12/08	Relative Humidity:	50~53	%

**TEST RESULTS DATA**  
**6dB and 99% Occupied Bandwidth**

2.4GHz Band								
Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	12.84	10.03	0.50	Pass
11b	1Mbps	1	6	2437	12.74	10.03	0.50	Pass
11b	1Mbps	1	11	2462	12.59	10.01	0.50	Pass
11g	6Mbps	1	1	2412	17.83	15.64	0.50	Pass
11g	6Mbps	1	6	2437	17.68	15.64	0.50	Pass
11g	6Mbps	1	11	2462	17.53	15.35	0.50	Pass
HT20	MCS0	1	1	2412	18.48	17.58	0.50	Pass
HT20	MCS0	1	6	2437	18.48	17.60	0.50	Pass
HT20	MCS0	1	11	2462	18.53	17.58	0.50	Pass
HT40	MCS0	1	3	2422	36.46	36.04	0.50	Pass
HT40	MCS0	1	6	2437	36.66	36.04	0.50	Pass
HT40	MCS0	1	9	2452	36.46	36.20	0.50	Pass

**TEST RESULTS DATA**  
**Peak Power Table**

2.4GHz Band										
Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
11b	1Mbps	1	1	2412	18.78	30.00	1.60	20.38	36.00	Pass
11b	1Mbps	1	6	2437	18.36	30.00	1.60	19.96	36.00	Pass
11b	1Mbps	1	11	2462	18.46	30.00	1.60	20.06	36.00	Pass
11g	6Mbps	1	1	2412	20.92	30.00	1.60	22.52	36.00	Pass
11g	6Mbps	1	6	2437	21.36	30.00	1.60	22.96	36.00	Pass
11g	6Mbps	1	11	2462	21.06	30.00	1.60	22.66	36.00	Pass
HT20	MCS0	1	1	2412	20.36	30.00	1.60	21.96	36.00	Pass
HT20	MCS0	1	6	2437	20.41	30.00	1.60	22.01	36.00	Pass
HT20	MCS0	1	11	2462	20.29	30.00	1.60	21.89	36.00	Pass
HT40	MCS0	1	3	2422	20.98	30.00	1.60	22.58	36.00	Pass
HT40	MCS0	1	6	2437	20.84	30.00	1.60	22.44	36.00	Pass
HT40	MCS0	1	9	2452	20.93	30.00	1.60	22.53	36.00	Pass

**TEST RESULTS DATA**  
**Average Power Table**  
**(Reporting Only)**

2.4GHz Band						
Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.00	16.02
11b	1Mbps	1	6	2437	0.00	15.45
11b	1Mbps	1	11	2462	0.00	15.55
11g	6Mbps	1	1	2412	0.11	12.83
11g	6Mbps	1	6	2437	0.11	13.23
11g	6Mbps	1	11	2462	0.11	12.43
HT20	MCS0	1	1	2412	0.11	11.55
HT20	MCS0	1	6	2437	0.11	11.31
HT20	MCS0	1	11	2462	0.11	10.72
HT40	MCS0	1	3	2422	0.23	11.84
HT40	MCS0	1	6	2437	0.23	11.17
HT40	MCS0	1	9	2452	0.23	11.13

**TEST RESULTS DATA**  
**Peak Power Density**

2.4GHz Band								
Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
11b	1Mbps	1	1	2412	-6.68	1.60	8.00	Pass
11b	1Mbps	1	6	2437	-8.18	1.60	8.00	Pass
11b	1Mbps	1	11	2462	-7.37	1.60	8.00	Pass
11g	6Mbps	1	1	2412	-11.34	1.60	8.00	Pass
11g	6Mbps	1	6	2437	-11.79	1.60	8.00	Pass
11g	6Mbps	1	11	2462	-12.42	1.60	8.00	Pass
HT20	MCS0	1	1	2412	-16.09	1.60	8.00	Pass
HT20	MCS0	1	6	2437	-14.63	1.60	8.00	Pass
HT20	MCS0	1	11	2462	-15.24	1.60	8.00	Pass
HT40	MCS0	1	3	2422	-17.48	1.60	8.00	Pass
HT40	MCS0	1	6	2437	-17.45	1.60	8.00	Pass
HT40	MCS0	1	9	2452	-18.85	1.60	8.00	Pass



## Appendix B. Radiated Spurious Emission

**2.4GHz 2400~2483.5MHz**

**WIFI 802.11b (Band Edge @ 3m)**

WIFI	Note	Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		2388.96	47.38	-26.62	74	42.07	31.5	6.81	33	112	123	P	H
		2389.17	39.55	-14.45	54	34.24	31.5	6.81	33	112	123	A	H
	*	2412	99.81	-	-	94.43	31.57	6.81	33	112	123	P	H
	*	2412	97.19	-	-	91.81	31.57	6.81	33	112	123	A	H
		2388.435	46.08	-27.92	74	40.77	31.5	6.81	33	303	79	P	V
		2389.065	37.88	-16.12	54	32.57	31.5	6.81	33	303	79	A	V
	*	2412	97.97	-	-	92.59	31.57	6.81	33	303	79	P	V
	*	2412	96.37	-	-	90.99	31.57	6.81	33	303	79	A	V
802.11b CH 06 2437MHz		2326.94	46.3	-27.7	74	41.08	31.57	6.65	33	112	123	P	H
		2383.08	35.3	-18.7	54	30.05	31.52	6.73	33	112	123	A	H
	*	2437	99.02	-	-	93.45	31.71	6.86	33	112	123	P	H
	*	2437	97.26	-	-	91.69	31.71	6.86	33	112	123	A	H
		2498.39	46.49	-27.51	74	40.65	31.93	6.91	33	112	123	P	H
		2490.97	35.41	-18.59	54	29.57	31.93	6.91	33	112	123	A	H
		2354.94	44.84	-29.16	74	39.57	31.54	6.73	33	303	79	P	V
		2383.08	34.87	-19.13	54	29.62	31.52	6.73	33	303	79	A	V
	*	2437	96.98	-	-	91.41	31.71	6.86	33	303	79	P	V
	*	2437	95.19	-	-	89.62	31.71	6.86	33	303	79	A	V
		2485.65	45.65	-28.35	74	39.88	31.86	6.91	33	303	79	P	V
		2490.97	35.22	-18.78	54	29.38	31.93	6.91	33	303	79	A	V



802.11b CH 11 2462MHz	*	2462	99.54	-	-	93.89	31.79	6.86	33	112	124	P	H
	*	2462	96.81	-	-	91.16	31.79	6.86	33	112	124	A	H
		2499.52	46.11	-27.89	74	40.27	31.93	6.91	33	112	124	P	H
		2483.52	36.24	-17.76	54	30.47	31.86	6.91	33	112	124	A	H
	*	2462	97.77	-	-	92.12	31.79	6.86	33	303	79	P	V
	*	2462	96.05	-	-	90.4	31.79	6.86	33	303	79	A	V
		2495.16	45.49	-28.51	74	39.65	31.93	6.91	33	303	79	P	V
		2483.52	35.9	-18.1	54	30.13	31.86	6.91	33	303	79	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 802.11b (Harmonic @ 3m)

WIFI	Note	Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	44.55	-29.45	74	58.08	33.77	10.89	58.19	185	255	P	H
		4824	43.7	-30.3	74	57.23	33.77	10.89	58.19	185	255	P	V
802.11b CH 06 2437MHz		4874	43.48	-30.52	74	56.91	33.75	10.92	58.1	165	106	P	H
		7311	48.18	-25.82	74	57.35	35.46	13.29	57.92	174	100	P	H
		4874	43.2	-30.8	74	56.63	33.75	10.92	58.1	165	106	P	V
		7311	48.37	-25.63	74	57.54	35.46	13.29	57.92	174	100	P	V
802.11b CH 11 2462MHz		4924	43.47	-30.53	74	56.77	33.73	10.99	58.02	150	285	P	H
		7386	47.66	-26.34	74	56.58	35.61	13.12	57.65	155	274	P	H
		4924	43.66	-30.34	74	56.96	33.73	10.99	58.02	150	285	P	V
		7386	48.2	-25.8	74	57.12	35.61	13.12	57.65	155	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 802.11g (Band Edge @ 3m)**

WIFI	Note	Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2387.175	53.92	-20.08	74	48.61	31.5	6.81	33	100	124	P	H
		2389.905	43.99	-10.01	54	38.68	31.5	6.81	33	100	124	A	H
	*	2412	99.46	-	-	94.08	31.57	6.81	33	100	124	P	H
	*	2412	93.03	-	-	87.65	31.57	6.81	33	100	124	A	H
		2389.695	53.67	-20.33	74	48.36	31.5	6.81	33	271	113	P	V
		2389.8	43.97	-10.03	54	38.66	31.5	6.81	33	271	113	A	V
	*	2412	99.1	-	-	93.72	31.57	6.81	33	271	113	P	V
	*	2412	92.49	-	-	87.11	31.57	6.81	33	271	113	A	V
802.11g CH 06 2437MHz		2383.36	47.17	-26.83	74	41.92	31.52	6.73	33	100	124	P	H
		2381.68	38.14	-15.86	54	32.89	31.52	6.73	33	100	124	A	H
	*	2437	99.24	-	-	93.67	31.71	6.86	33	100	124	P	H
	*	2437	93.19	-	-	87.62	31.71	6.86	33	100	124	A	H
		2484.74	47.03	-26.97	74	41.26	31.86	6.91	33	100	124	P	H
		2485.09	37.62	-16.38	54	31.85	31.86	6.91	33	100	124	A	H
		2369.92	45.58	-28.42	74	40.33	31.52	6.73	33	271	83	P	V
		2389.66	36.89	-17.11	54	31.58	31.5	6.81	33	271	83	A	V
	*	2437	97.93	-	-	92.36	31.71	6.86	33	271	83	P	V
	*	2437	92.06	-	-	86.49	31.71	6.86	33	271	83	A	V
		2486	47.13	-26.87	74	41.36	31.86	6.91	33	271	83	P	V
		2485.86	37.3	-16.7	54	31.53	31.86	6.91	33	271	83	A	V



	*	2462	98.42	-	-	92.77	31.79	6.86	33	148	120	P	H
802.11g CH 11 2462MHz	*	2462	91.74	-	-	86.09	31.79	6.86	33	148	120	A	H
		2483.72	48.9	-25.1	74	43.13	31.86	6.91	33	148	120	P	H
		2483.6	39.22	-14.78	54	33.45	31.86	6.91	33	148	120	A	H
	*	2462	96.86	-	-	91.21	31.79	6.86	33	232	73	P	V
	*	2462	90.19	-	-	84.54	31.79	6.86	33	232	73	A	V
		2483.56	48.56	-25.44	74	42.79	31.86	6.91	33	232	73	P	V
		2483.72	38.64	-15.36	54	32.87	31.86	6.91	33	232	73	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 802.11g (Harmonic @ 3m)**

WIFI	Note	Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	43.81	-30.19	74	57.34	33.77	10.89	58.19	185	255	P	H
		4824	44.02	-29.98	74	57.55	33.77	10.89	58.19	185	255	P	V
802.11g CH 06 2437MHz		4874	43.3	-30.7	74	56.73	33.75	10.92	58.1	165	106	P	H
		7311	47.85	-26.15	74	57.02	35.46	13.29	57.92	174	100	P	H
		4874	42.99	-31.01	74	56.42	33.75	10.92	58.1	165	106	P	V
		7311	47.91	-26.09	74	57.08	35.46	13.29	57.92	174	100	P	V
802.11g CH 11 2462MHz		4924	44.31	-29.69	74	57.61	33.73	10.99	58.02	150	285	P	H
		7386	48.19	-25.81	74	57.11	35.61	13.12	57.65	155	274	P	H
		4924	44.33	-29.67	74	57.63	33.73	10.99	58.02	150	285	P	V
		7386	47.03	-26.97	74	55.95	35.61	13.12	57.65	155	274	P	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 (Band Edge @ 3m)

WIFI	Note	Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	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	55.5	-18.5	74	50.19	31.5	6.81	33	100	124	P	H
		2390	43.57	-10.43	54	38.26	31.5	6.81	33	100	124	A	H
	*	2412	96.55	-	-	91.17	31.57	6.81	33	100	124	P	H
	*	2412	89.83	-	-	84.45	31.57	6.81	33	100	124	A	H
		2389.8	55.26	-18.74	74	49.95	31.5	6.81	33	313	91	P	V
		2390	42.15	-11.85	54	36.84	31.5	6.81	33	313	91	A	V
	*	2412	96.47	-	-	91.09	31.57	6.81	33	313	91	P	V
	*	2412	89.57	-	-	84.19	31.57	6.81	33	313	91	A	V
802.11n HT20 CH 06 2437MHz		2339.82	45.54	-28.46	74	40.34	31.55	6.65	33	120	123	P	H
		2380.7	36.8	-17.2	54	31.55	31.52	6.73	33	120	123	A	H
	*	2437	96.57	-	-	91	31.71	6.86	33	120	123	P	H
	*	2437	90	-	-	84.43	31.71	6.86	33	120	123	A	H
		2486.98	45.9	-28.1	74	40.13	31.86	6.91	33	120	123	P	H
		2486	36.78	-17.22	54	31.01	31.86	6.91	33	120	123	A	H
		2372.72	46.04	-27.96	74	40.79	31.52	6.73	33	313	90	P	V
		2382.24	36.16	-17.84	54	30.91	31.52	6.73	33	313	90	A	V
	*	2437	94.44	-	-	88.87	31.71	6.86	33	313	90	P	V
	*	2437	87.91	-	-	82.34	31.71	6.86	33	313	90	A	V
		2492.3	46.6	-27.4	74	40.76	31.93	6.91	33	313	90	P	V
		2486.07	36.87	-17.13	54	31.1	31.86	6.91	33	313	90	A	V



	*	2462	95.57	-	-	89.92	31.79	6.86	33	146	124	P	H
	*	2462	88.95	-	-	83.3	31.79	6.86	33	146	124	A	H
802.11n		2484.96	50.74	-23.26	74	44.97	31.86	6.91	33	146	124	P	H
		2483.56	40	-14	54	34.23	31.86	6.91	33	146	124	A	H
HT20	*	2462	95.44	-	-	89.79	31.79	6.86	33	326	136	P	V
	*	2462	88.24	-	-	82.59	31.79	6.86	33	326	136	A	V
CH 11		2483.88	52.92	-21.08	74	47.15	31.86	6.91	33	326	136	P	V
		2483.56	40.51	-13.49	54	34.74	31.86	6.91	33	326	136	A	V
2462MHz													
	<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	Note	Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20  CH 01 2412MHz		4824	43.71	-30.29	74	57.24	33.77	10.89	58.19	185	255	P	H
		4824	43.84	-30.16	74	57.37	33.77	10.89	58.19	185	255	P	V
802.11n HT20  CH 06 2437MHz		4874	44.61	-29.39	74	58.04	33.75	10.92	58.1	165	106	P	H
		7311	47.73	-26.27	74	56.9	35.46	13.29	57.92	174	100	P	H
		4874	43.57	-30.43	74	57	33.75	10.92	58.1	165	106	P	V
		7311	47.88	-26.12	74	57.05	35.46	13.29	57.92	174	100	P	V
802.11n HT20  CH 11 2462MHz		4924	42.83	-31.17	74	56.13	33.73	10.99	58.02	150	285	P	H
		7386	48.09	-25.91	74	57.01	35.61	13.12	57.65	155	274	P	H
		4924	43.18	-30.82	74	56.48	33.73	10.99	58.02	150	285	P	V
		7386	48.55	-25.45	74	57.47	35.61	13.12	57.65	155	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	Note	Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		2388.4	59.92	-14.08	74	54.61	31.5	6.81	33	341	138	P	H
		2388.26	46.25	-7.75	54	40.94	31.5	6.81	33	341	138	A	H
	*	2422	94.69	-	-	89.24	31.64	6.81	33	341	138	P	H
	*	2422	88.28	-	-	82.83	31.64	6.81	33	341	138	A	H
		2490.69	46.37	-27.63	74	40.53	31.93	6.91	33	341	138	P	H
		2483.9	37.32	-16.68	54	31.55	31.86	6.91	33	341	138	A	H
		2389.66	60.17	-13.83	74	54.86	31.5	6.81	33	314	87	P	V
		2389.52	46.88	-7.12	54	41.57	31.5	6.81	33	314	87	A	V
	*	2422	93.42	-	-	87.97	31.64	6.81	33	314	87	P	V
	*	2422	86.75	-	-	81.3	31.64	6.81	33	314	87	A	V
802.11n HT40 CH 06 2437MHz		2487.12	46.69	-27.31	74	40.92	31.86	6.91	33	314	87	P	V
		2486.98	37.38	-16.62	54	31.61	31.86	6.91	33	314	87	A	V
		2388.54	47.53	-26.47	74	42.22	31.5	6.81	33	333	140	P	H
		2389.8	38.28	-15.72	54	32.97	31.5	6.81	33	333	140	A	H
	*	2437	94.43	-	-	88.86	31.71	6.86	33	333	140	P	H
	*	2437	87.67	-	-	82.1	31.71	6.86	33	333	140	A	H
		2484.95	49.94	-24.06	74	44.17	31.86	6.91	33	333	140	P	H
		2485.02	38.92	-15.08	54	33.15	31.86	6.91	33	333	140	A	H
		2388.82	45.56	-28.44	74	40.25	31.5	6.81	33	100	136	P	V
		2389.94	37.96	-16.04	54	32.65	31.5	6.81	33	100	136	A	V
802.11n HT40 CH 06 2437MHz	*	2437	92.89	-	-	87.32	31.71	6.86	33	100	136	P	V
	*	2437	85.99	-	-	80.42	31.71	6.86	33	100	136	A	V
		2492.93	49.51	-24.49	74	43.67	31.93	6.91	33	100	136	P	V
		2484.95	38.04	-15.96	54	32.27	31.86	6.91	33	100	136	A	V



		2312.8	44.38	-29.62	74	39.14	31.59	6.65	33	328	135	P	H
		2354.66	35.83	-18.17	54	30.56	31.54	6.73	33	328	135	A	H
	*	2452	93.81	-	-	88.24	31.71	6.86	33	328	135	P	H
	*	2452	87.41	-	-	81.84	31.71	6.86	33	328	135	A	H
802.11n		2484.67	60.98	-13.02	74	55.21	31.86	6.91	33	328	135	P	H
HT40		2484.32	46.44	-7.56	54	40.67	31.86	6.91	33	328	135	A	H
CH 09		2388.54	45.14	-28.86	74	39.83	31.5	6.81	33	100	136	P	V
2452MHz		2380.84	36.4	-17.6	54	31.15	31.52	6.73	33	100	136	A	V
	*	2452	91.45	-	-	85.88	31.71	6.86	33	100	136	P	V
	*	2452	84.69	-	-	79.12	31.71	6.86	33	100	136	A	V
		2484.81	58.5	-15.5	74	52.73	31.86	6.91	33	100	136	P	V
		2484.39	45	-9	54	39.23	31.86	6.91	33	100	136	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI	Note	Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	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		4844	43.8	-30.2	74	57.27	33.77	10.92	58.16	150	350	P	H
		7266	47.44	-26.56	74	56.69	35.4	13.38	58.03	200	360	P	H
		4844	44.15	-29.85	74	57.62	33.77	10.92	58.16	150	350	P	V
		7266	47.74	-26.26	74	56.99	35.4	13.38	58.03	200	360	P	V
802.11n HT40 CH 06 2437MHz		4874	44.58	-29.42	74	58.01	33.75	10.92	58.1	165	230	P	H
		7311	47.99	-26.01	74	57.16	35.46	13.29	57.92	186	323	P	H
		4874	44.42	-29.58	74	57.85	33.75	10.92	58.1	165	230	P	V
		7311	47.63	-26.37	74	56.8	35.46	13.29	57.92	186	323	P	V
802.11n HT40 CH 09 2452MHz		4904	44.09	-29.91	74	57.44	33.74	10.95	58.04	150	360	P	H
		7356	48.47	-25.53	74	57.47	35.55	13.21	57.76	165	335	P	H
		4904	44.4	-29.6	74	57.75	33.74	10.95	58.04	150	360	P	V
		7356	48.67	-25.33	74	57.67	35.55	13.21	57.76	165	335	P	V
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 HT40 (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.	
												Avg.		
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	(dB $\mu$ V)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)	
2.4GHz 802.11n HT40 LF		34.85	28.87	-11.13	40	33.85	26.3	0.32	31.6	100	0	P	H	
		203.63	30.79	-12.71	43.5	42.52	17.82	1.64	31.19	-	-	P	H	
		387.93	30.01	-15.99	46	34.99	23.77	2.35	31.1	-	-	P	H	
		710.94	30.89	-15.11	46	31.55	27.25	3.31	31.22	-	-	P	H	
		767.2	30.59	-15.41	46	32.5	25.88	3.51	31.3	-	-	P	H	
		997.09	34.58	-19.42	54	31.14	30.74	4.19	31.49	-	-	P	H	
		33.88	35.48	-4.52	40	40.2	26.58	0.3	31.6	100	65	QP	V	
		206.54	28.32	-15.18	43.5	39.87	17.98	1.65	31.18	-	-	P	V	
		439.34	28.74	-17.26	46	31.08	26.23	2.53	31.1	-	-	P	V	
		703.18	30.8	-15.2	46	31.15	27.58	3.28	31.21	-	-	P	V	
		961.2	33.45	-20.55	54	30.85	29.95	4	31.35	-	-	P	V	
		998.06	34.07	-19.93	54	30.6	30.76	4.2	31.49	-	-	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 or Average</b>
H/V	<b>Horizontal or Vertical</b>



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

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

1. Level(dB $\mu$ V/m) =

$$= \text{Antenna Factor(dB/m)} + \text{Cable Loss(dB)} + \text{Read Level(dB $\mu$ V)} - \text{Preamp Factor(dB)}$$

2. Over Limit(dB) = Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

#### For Peak Limit @ 2390MHz:

1. Level(dB $\mu$ V/m)

$$= \text{Antenna Factor(dB/m)} + \text{Cable Loss(dB)} + \text{Read Level(dB $\mu$ V)} - \text{Preamp Factor(dB)}$$

$$= 32.22(\text{dB/m}) + 4.58(\text{dB}) + 54.51(\text{dB $\mu$ V}) - 35.86 (\text{dB})$$

$$= 55.45 (\text{dB $\mu$ V/m})$$

2. Over Limit(dB)

$$= \text{Level(dB $\mu$ V/m)} - \text{Limit Line(dB $\mu$ V/m)}$$

$$= 55.45(\text{dB $\mu$ V/m}) - 74(\text{dB $\mu$ V/m})$$

$$= -18.55(\text{dB})$$

#### For Average Limit @ 2390MHz:

1. Level(dB $\mu$ V/m)

$$= \text{Antenna Factor(dB/m)} + \text{Cable Loss(dB)} + \text{Read Level(dB $\mu$ V)} - \text{Preamp Factor(dB)}$$

$$= 32.22(\text{dB/m}) + 4.58(\text{dB}) + 42.6(\text{dB $\mu$ V}) - 35.86 (\text{dB})$$

$$= 43.54 (\text{dB $\mu$ V/m})$$

2. Over Limit(dB)

$$= \text{Level(dB $\mu$ V/m)} - \text{Limit Line(dB $\mu$ V/m)}$$

$$= 43.54(\text{dB $\mu$ V/m}) - 54(\text{dB $\mu$ V/m})$$

$$= -10.46(\text{dB})$$

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

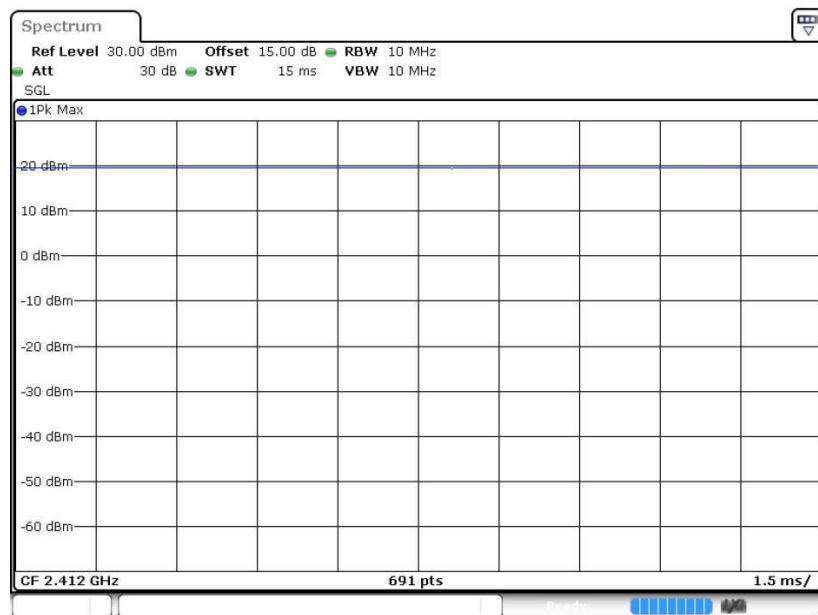


## Appendix C. Duty Cycle Plots

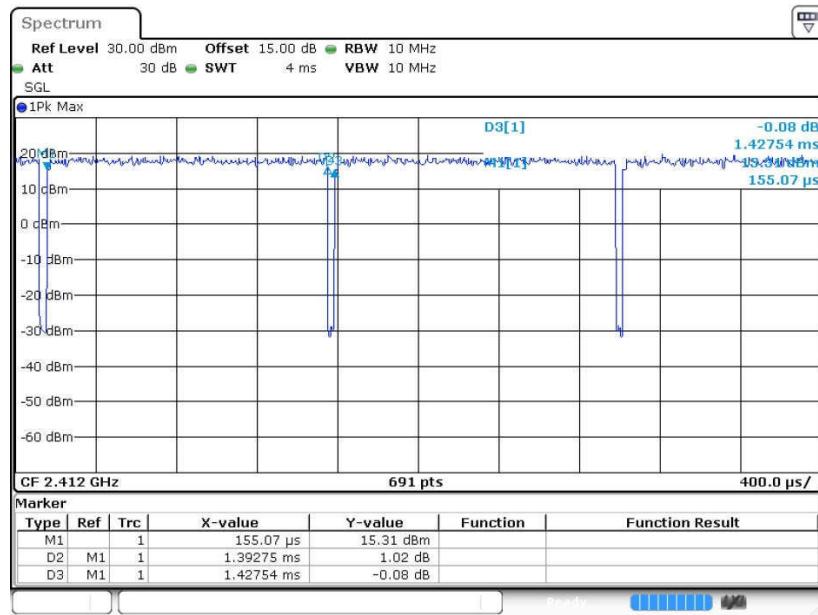
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	100	-	-	10Hz
802.11g	97.56	1.393	0.718	1kHz
802.11n HT20	97.41	1.306	0.766	1kHz
802.11n HT40	94.92	0.651	1.536	3kHz



## 802.11b

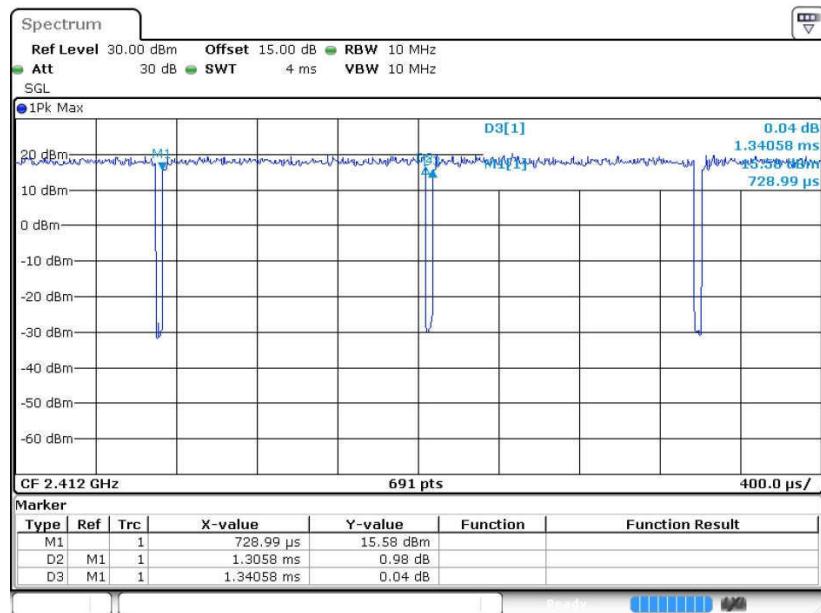


## 802.11g





## 802.11n HT20



## 802.11n HT40

