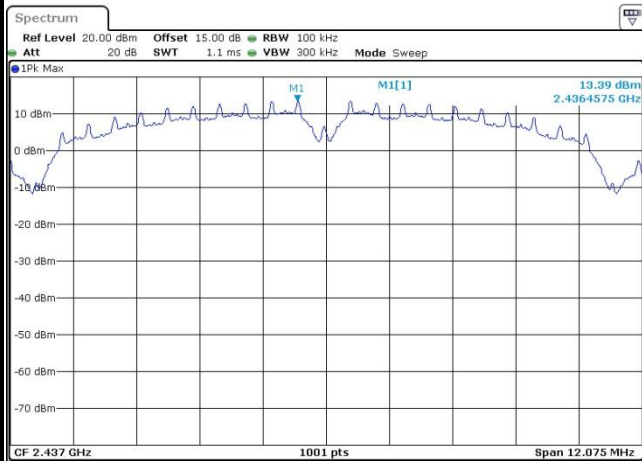




Number of TX :	3	Ant. :	3
Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

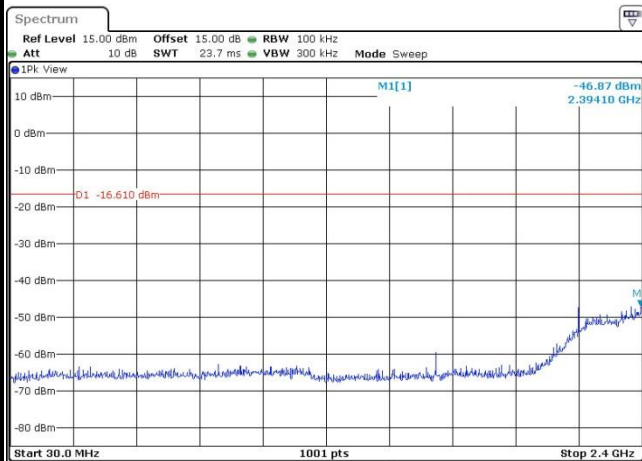
WLAN 802.11b Channel 06

100kHz PSD reference Level



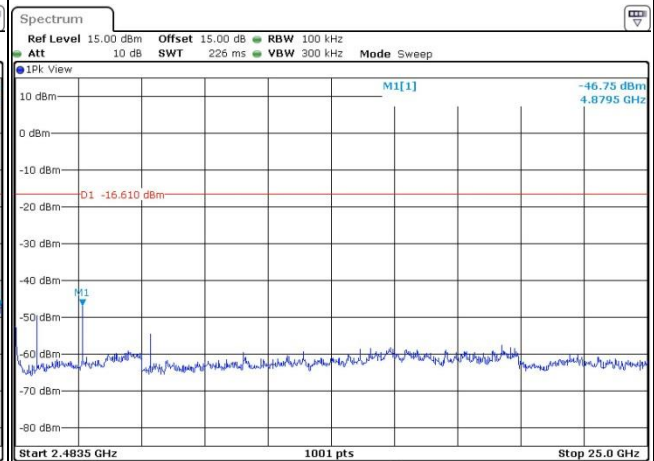
Date: 5.MAY.2017 15:55:17

Spurious Emission 30MHz~3GHz



Date: 5.MAY.2017 15:55:46

Spurious Emission 2GHz~25GHz



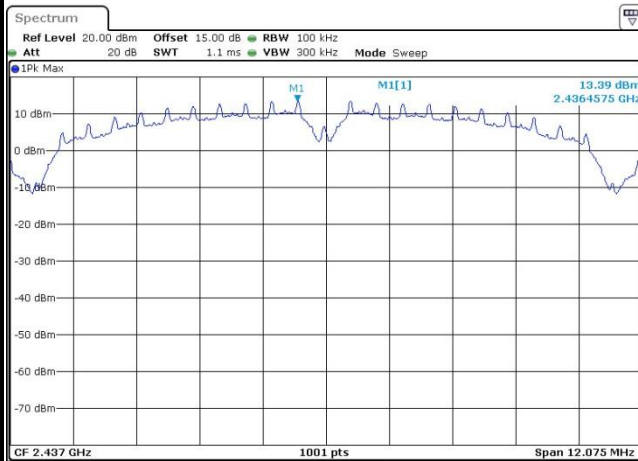
Date: 5.MAY.2017 15:55:54



Number of TX :	3	Ant. :	3
Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng

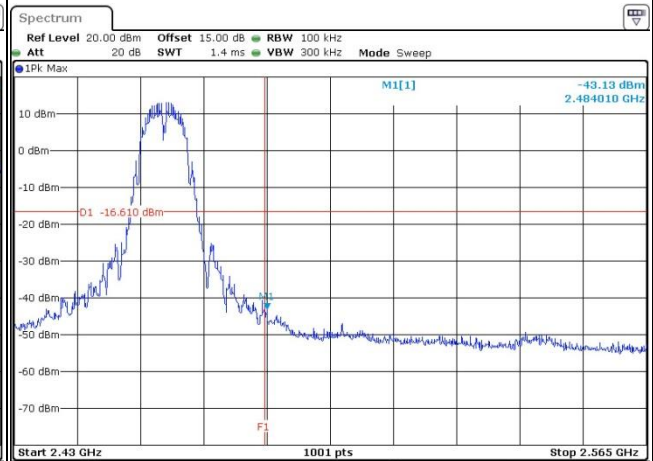
WLAN 802.11b Channel 11

100kHz PSD reference Level



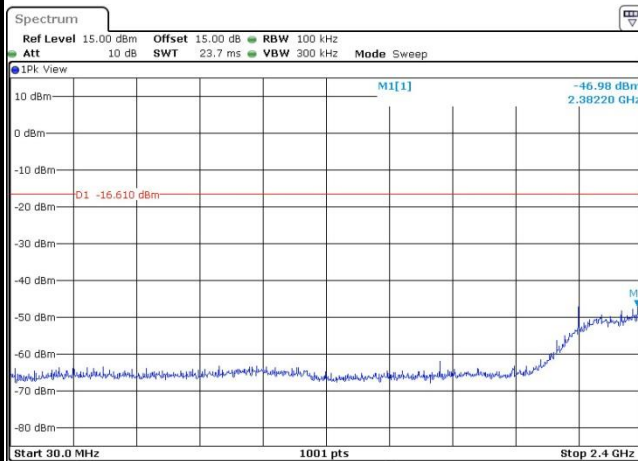
Date: 5.MAY.2017 15:55:17

High Channel Plot



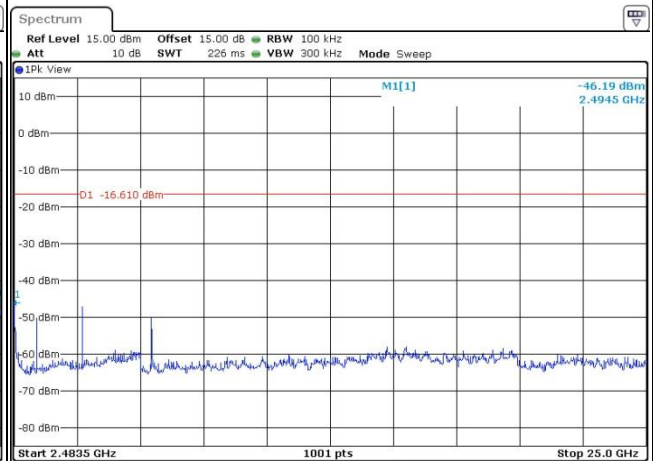
Date: 5.MAY.2017 15:57:54

Spurious Emission 30MHz~3GHz



Date: 5.MAY.2017 15:57:38

Spurious Emission 2GHz~25GHz



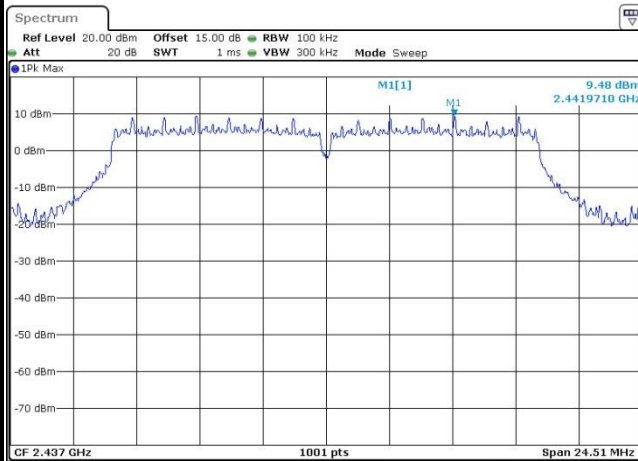
Date: 5.MAY.2017 15:57:46



Number of TX :	3	Ant. :	3
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Sam Zheng

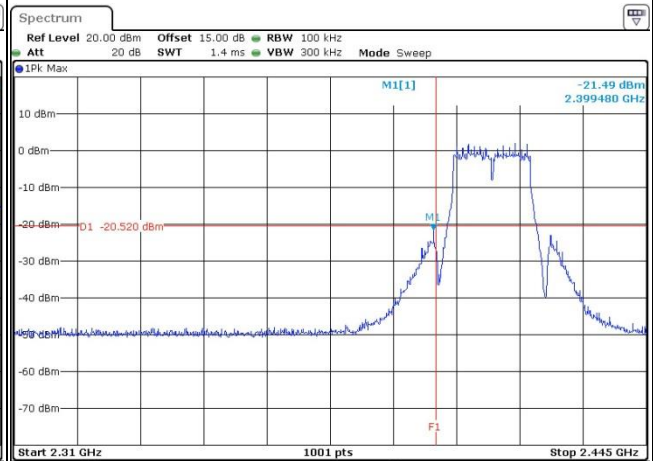
WLAN 802.11g Channel 01

100kHz PSD reference Level



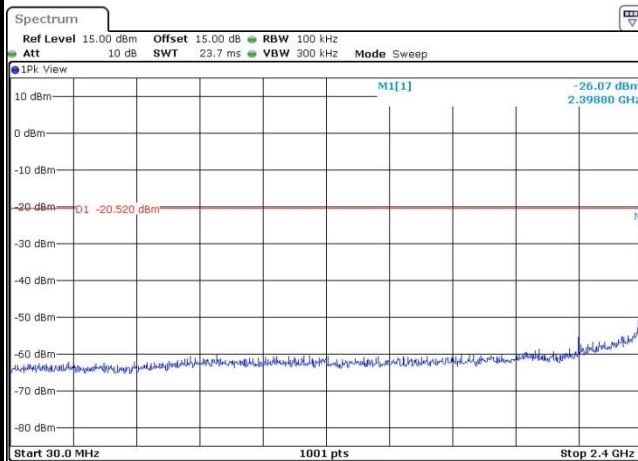
Date: 6.MAY.2017 13:15:49

Low Channel Plot



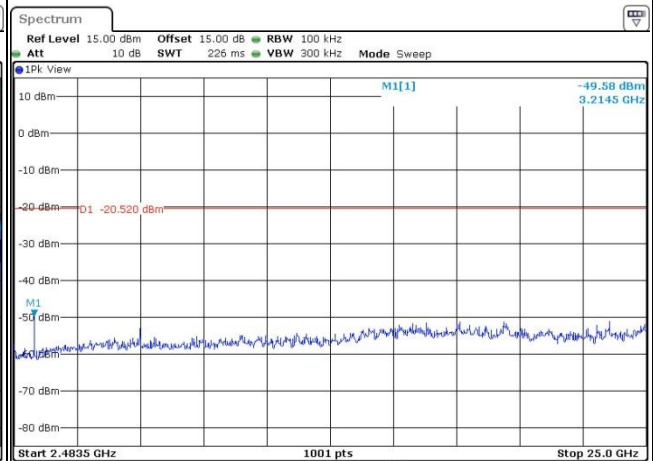
Date: 6.MAY.2017 13:18:04

Spurious Emission 30MHz~3GHz



Date: 6.MAY.2017 13:19:54

Spurious Emission 2GHz~25GHz



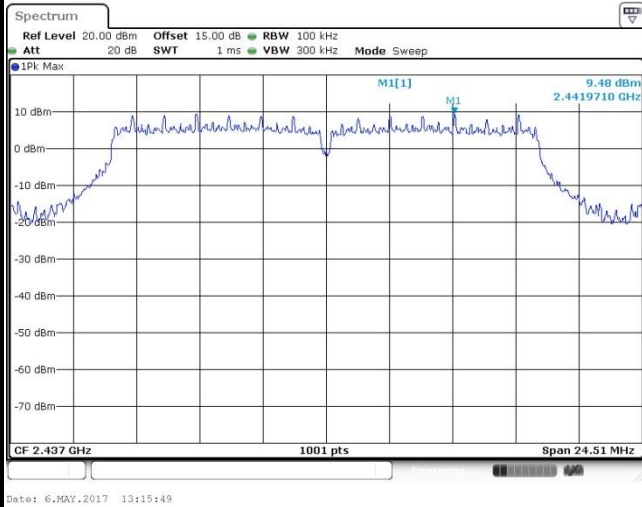
Date: 6.MAY.2017 13:20:03



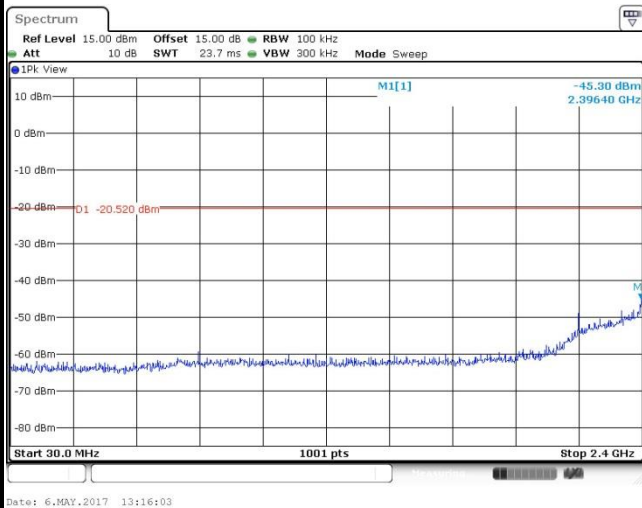
Number of TX :	3	Ant. :	3
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11g Channel 06

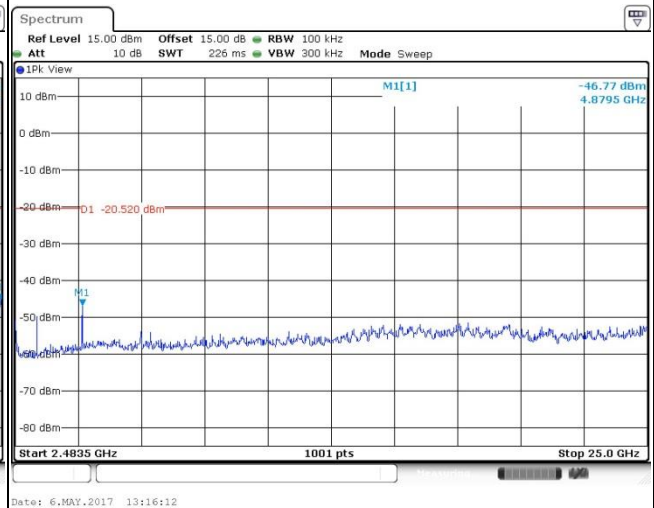
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

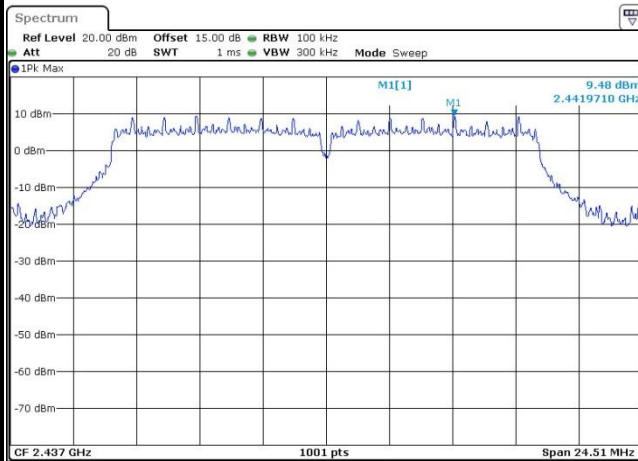




Number of TX :	3	Ant. :	3
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng

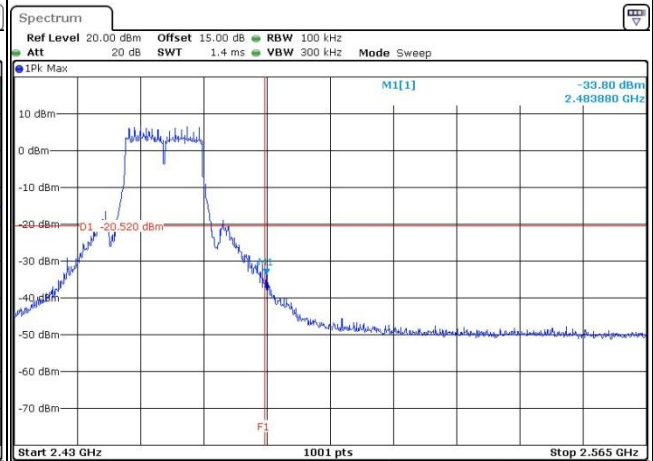
WLAN 802.11g Channel 11

100kHz PSD reference Level



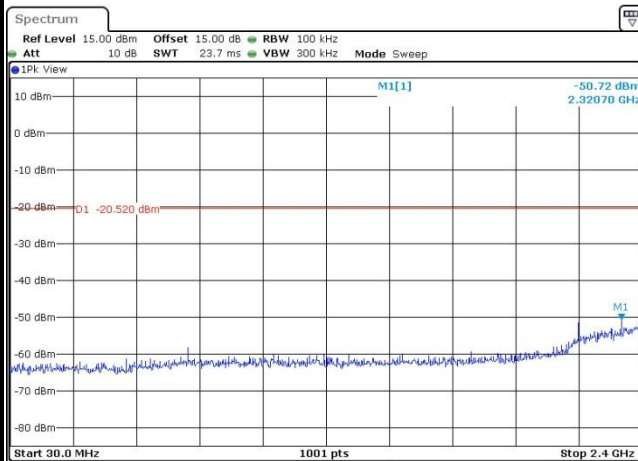
Date: 6.MAY.2017 13:15:49

High Channel Plot



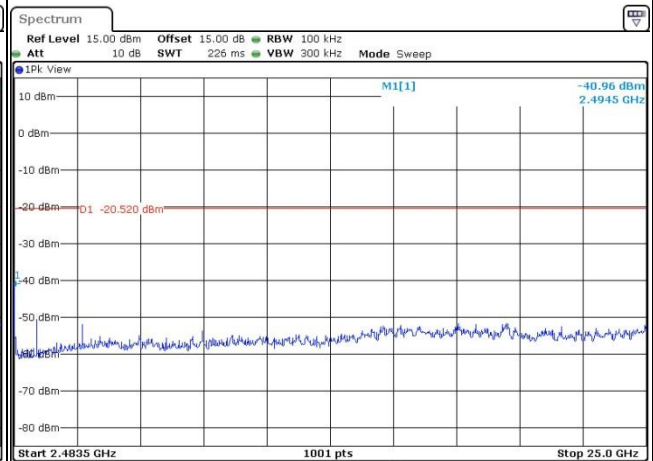
Date: 6.MAY.2017 13:58:23

Spurious Emission 30MHz~3GHz



Date: 6.MAY.2017 13:58:42

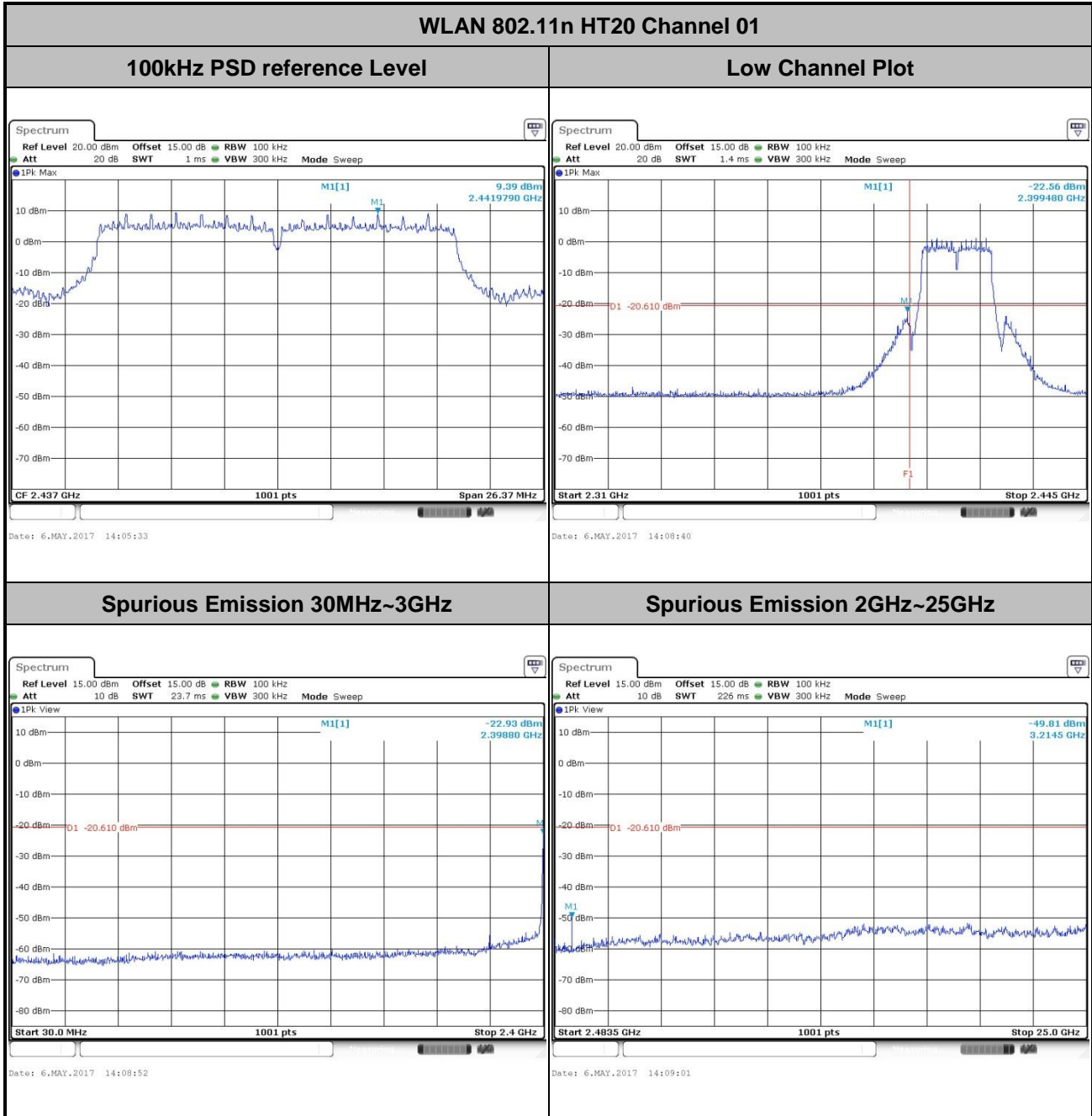
Spurious Emission 2GHz~25GHz



Date: 6.MAY.2017 13:58:51



Number of TX :	3	Ant. :	3
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

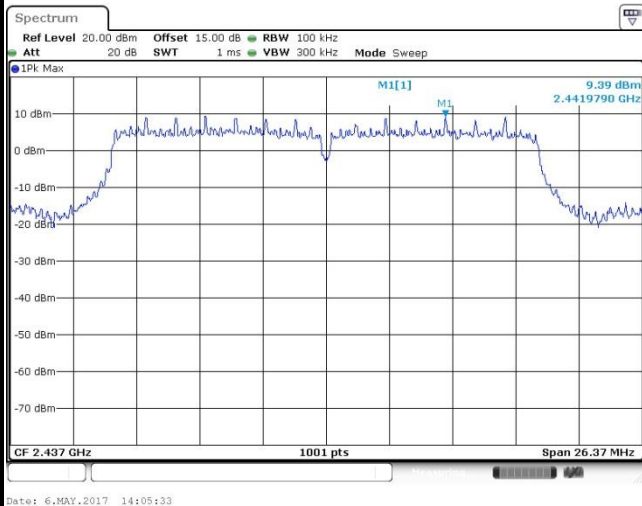




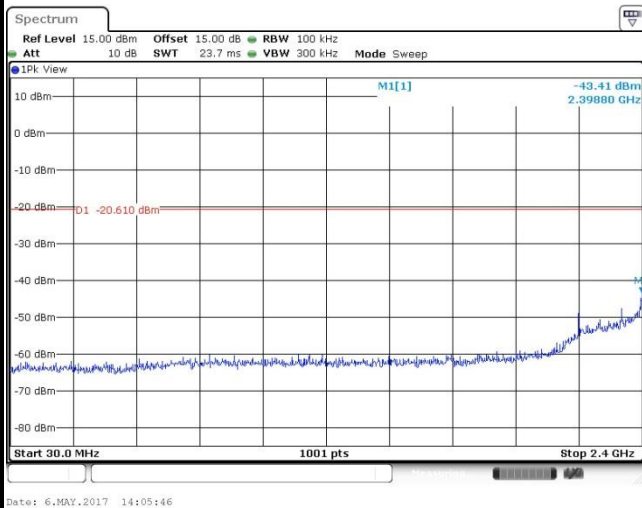
Number of TX :	3	Ant. :	3
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

WLAN 802.11n HT20 Channel 06

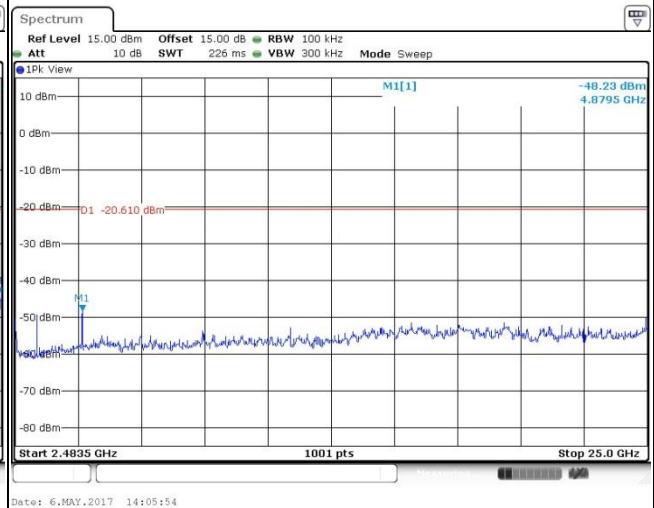
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz

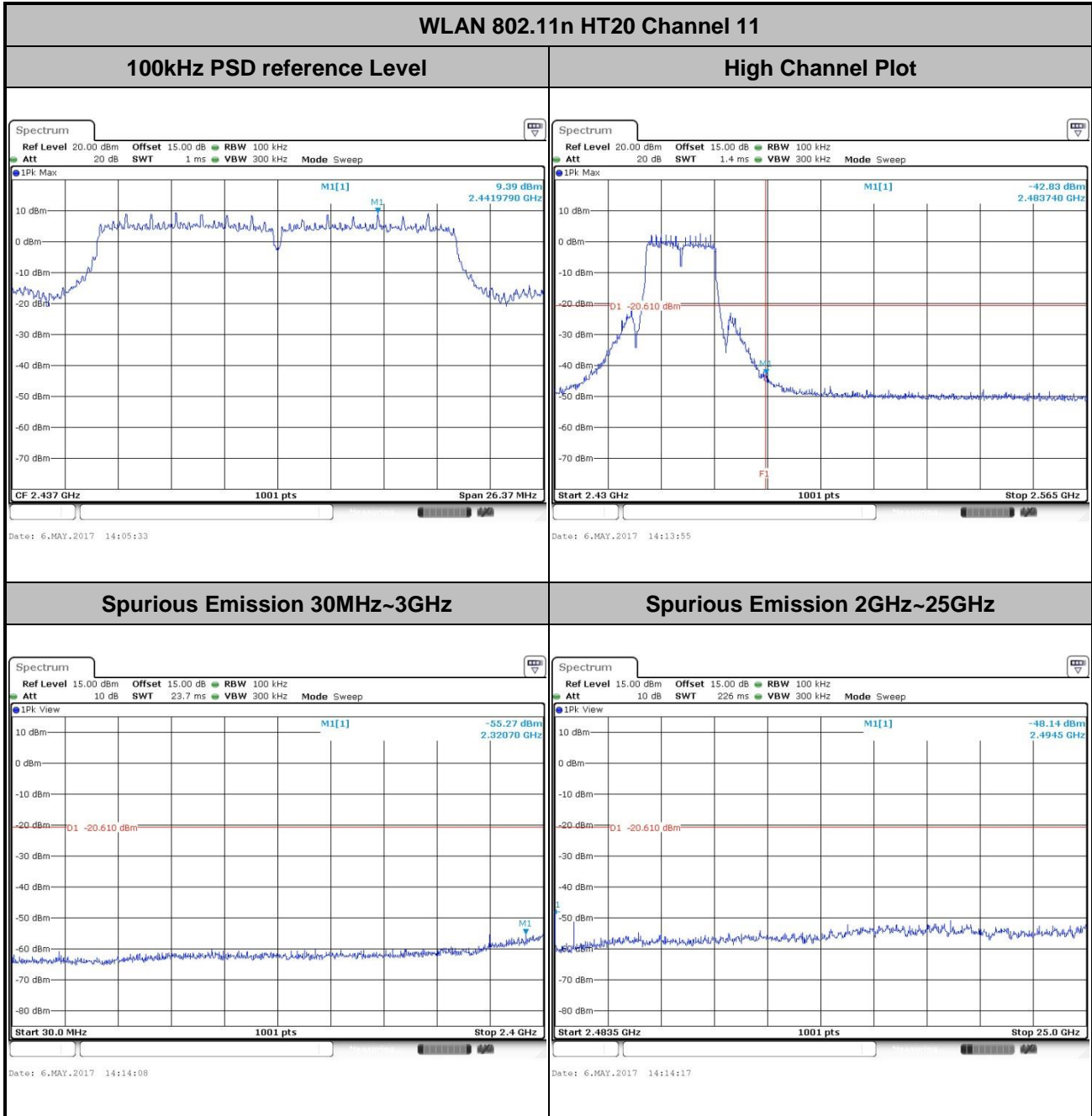


Spurious Emission 2GHz~25GHz



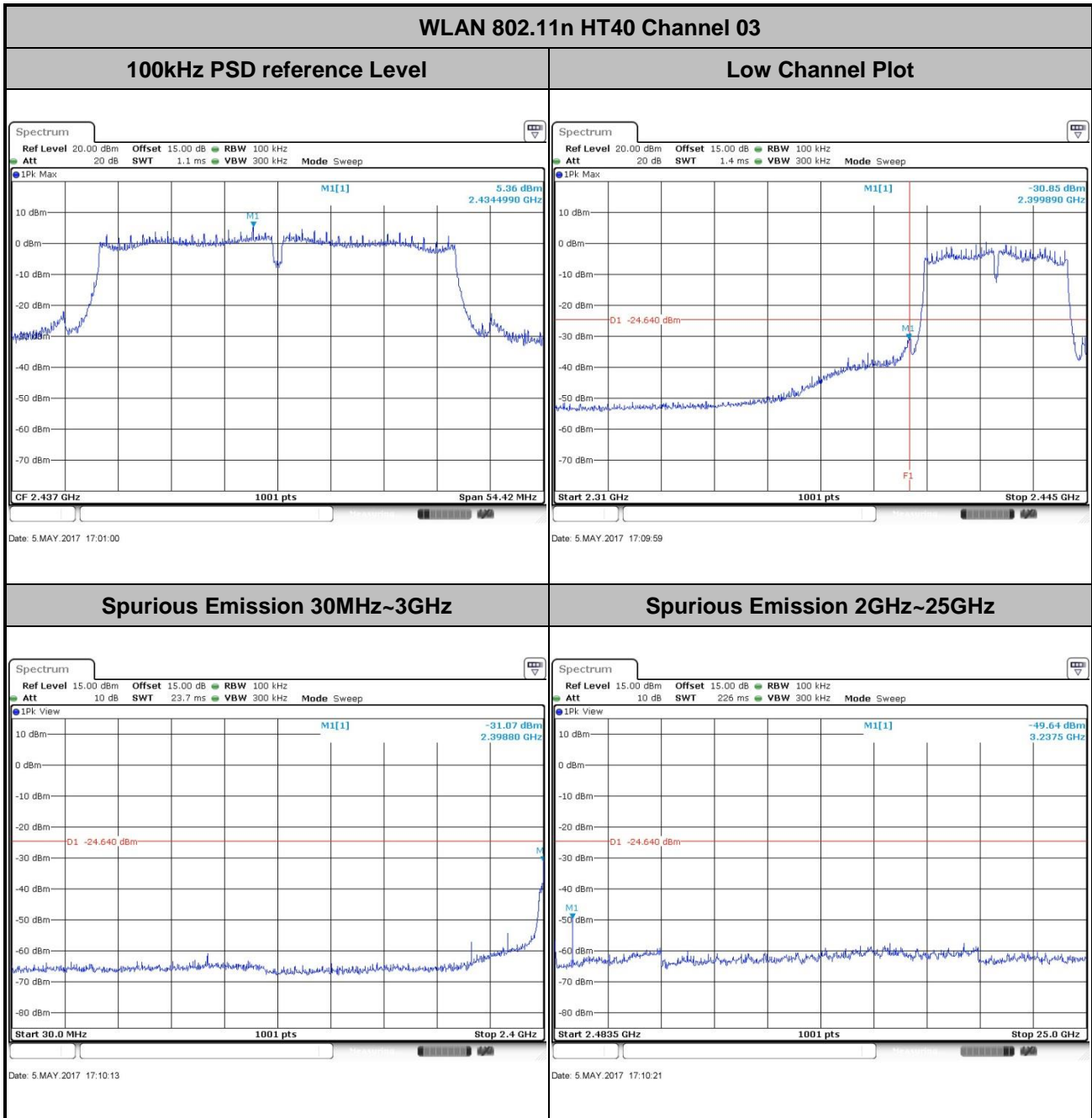


Number of TX :	3	Ant. :	3
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Sam Zheng





Number of TX :	3	Ant. :	3
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Sam Zheng

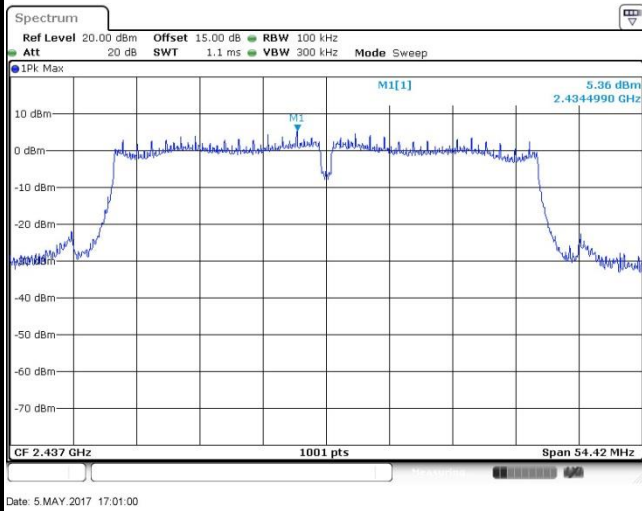




Number of TX :	3	Ant. :	3
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Sam Zheng

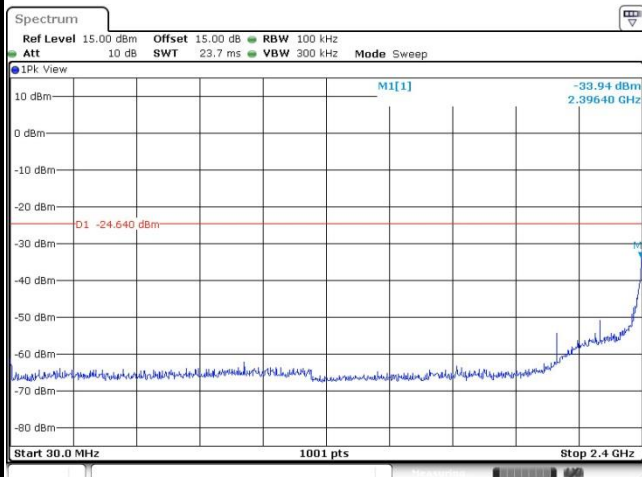
WLAN 802.11n HT40 Channel 06

100kHz PSD reference Level



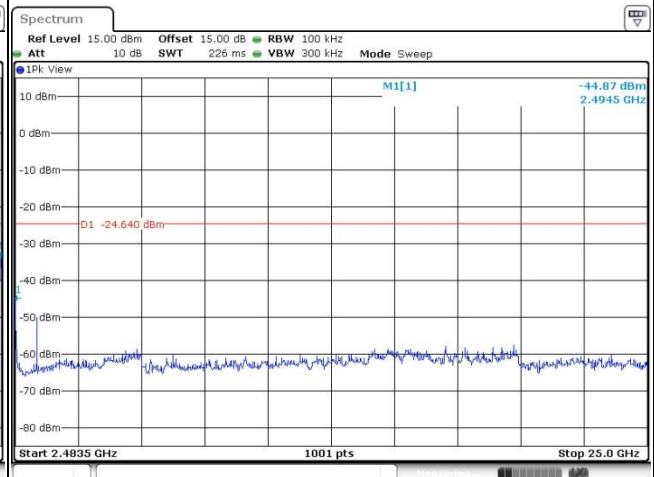
Date: 5.MAY.2017 17:01:00

Spurious Emission 30MHz~3GHz



Date: 5.MAY.2017 17:01:16

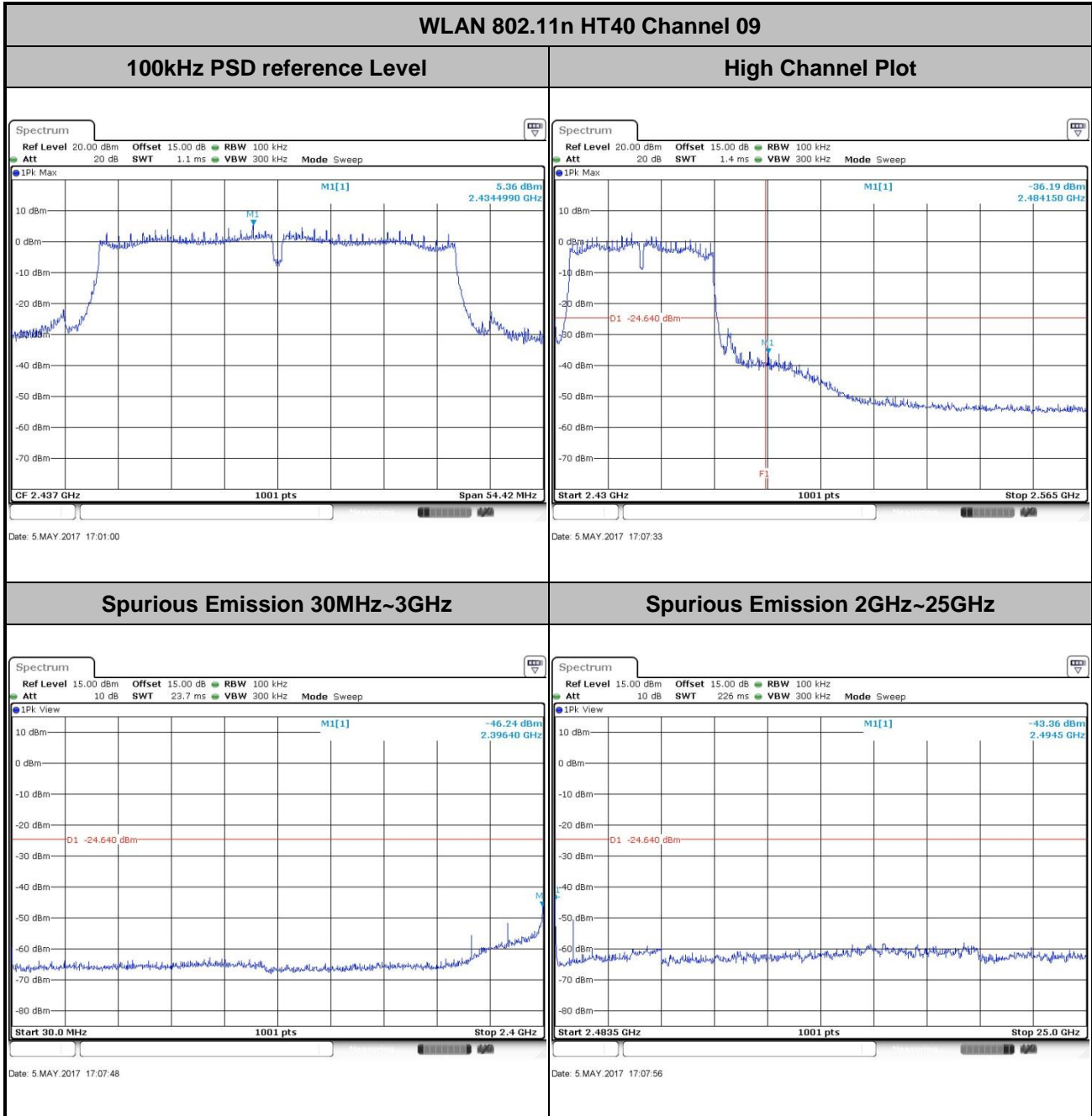
Spurious Emission 2GHz~25GHz



Date: 5.MAY.2017 17:01:24



Number of TX :	3	Ant. :	3
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	09	Test Engineer :	Sam Zheng





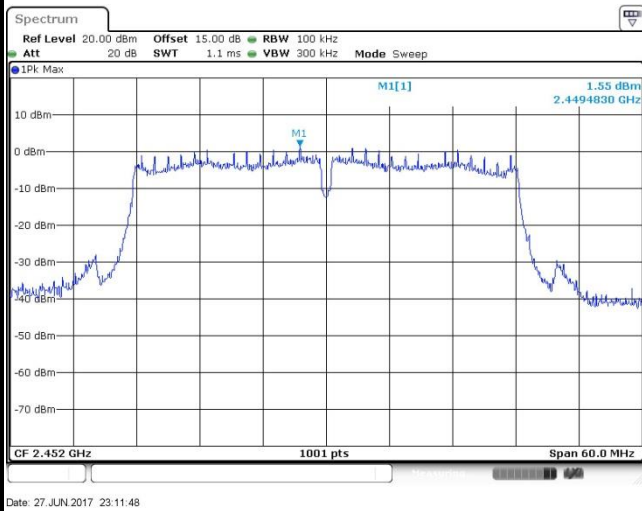
WLAN 2.4GHz + WLAN 5GHz:

Number of TX = 3, Ant. 1 (Measured)

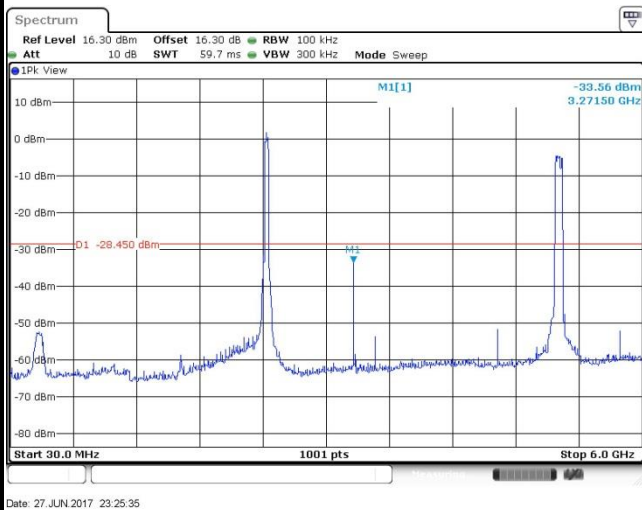
Number of TX :	3	Ant. :	1
Test Mode :	2.4G 802.11n HT40 & 5G 802.11ac VHT80	Temperature :	24~26°C
Test Band :	2.4GHz CH09 + 5GHz CH42	Relative Humidity :	50~53%
		Test Engineer :	Sam Zheng

WLAN 2.4G 802.11n HT40 Channel 09 + WLAN 5G 802.11ac VHT80 Channel 42

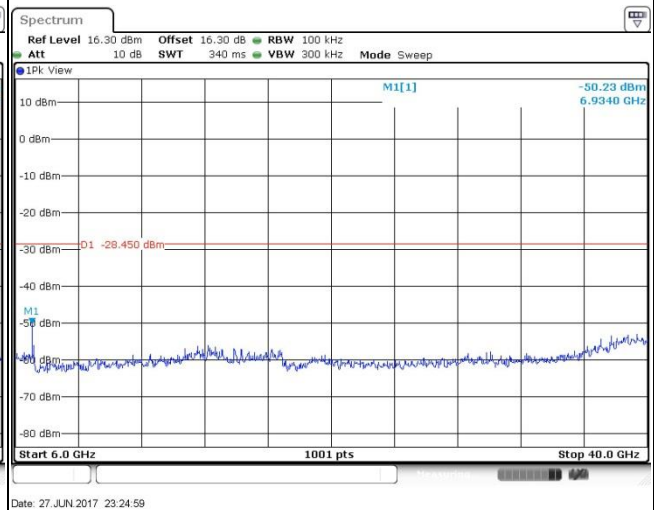
100kHz PSD reference Level



Spurious Emission 30MHz~6GHz



Spurious Emission 6GHz~40GHz

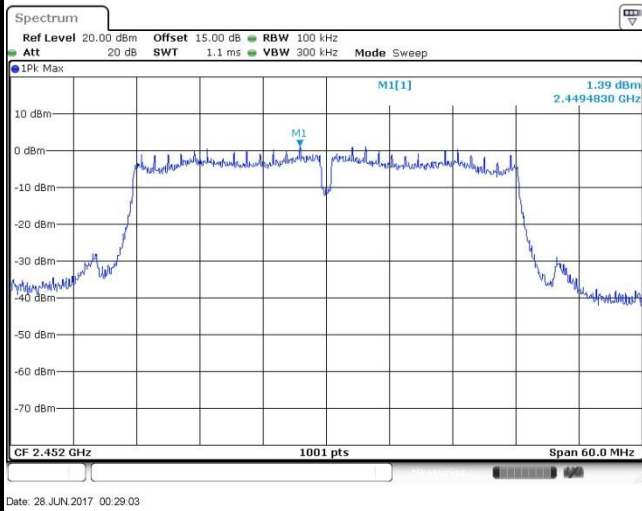




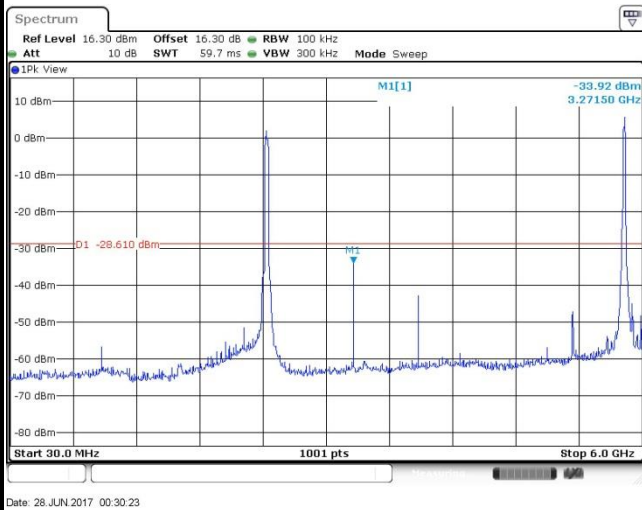
Number of TX :	3	Ant. :	1
Test Mode :	2.4G 802.11n HT40 & 5G 802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz CH09 + 5GHz CH165	Relative Humidity :	50~53%
		Test Engineer :	Sam Zheng

WLAN 2.4G 802.11n HT40 Channel 09 + WLAN 5G 802.11n HT20 Channel 165

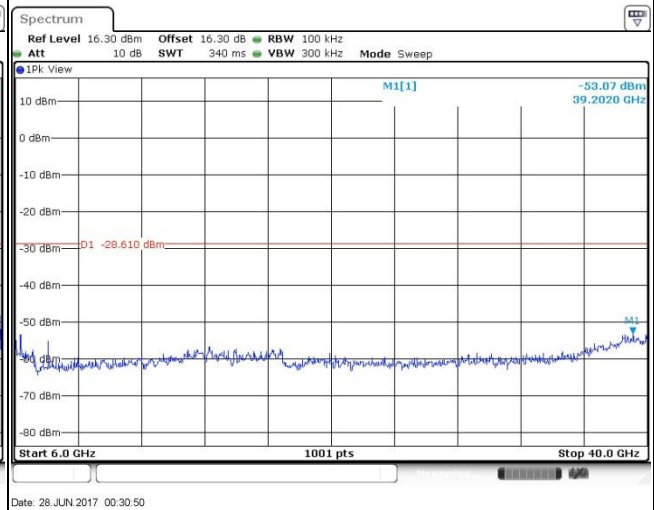
100kHz PSD reference Level



Spurious Emission 30MHz~6GHz



Spurious Emission 6GHz~40GHz



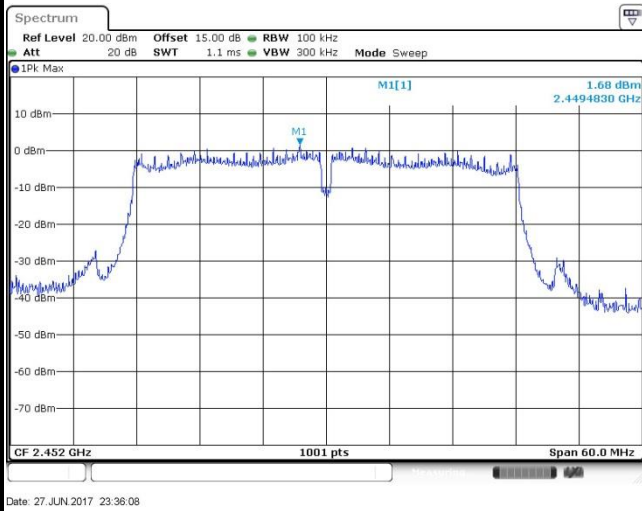


Number of TX = 3, Ant. 2 (Measured)

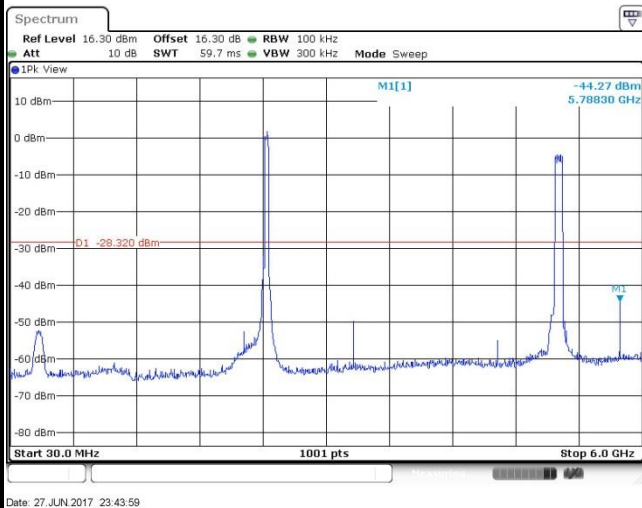
Number of TX :	3	Ant. :	2
Test Mode :	2.4G 802.11n HT40 & 5G 802.11ac VHT80	Temperature :	24~26°C
Test Band :	2.4GHz CH09 + 5GHz CH42	Relative Humidity :	50~53%
		Test Engineer :	Sam Zheng

WLAN 2.4G 802.11n HT40 Channel 09 + WLAN 5G 802.11ac VHT80 Channel 42

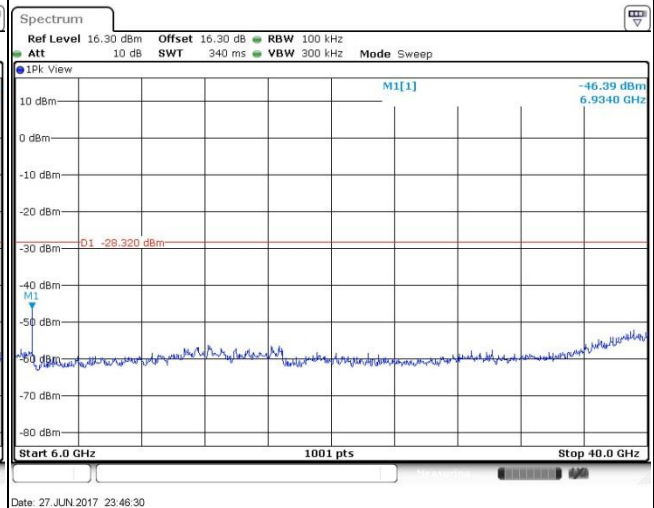
100kHz PSD reference Level



Spurious Emission 30MHz~6GHz



Spurious Emission 6GHz~40GHz

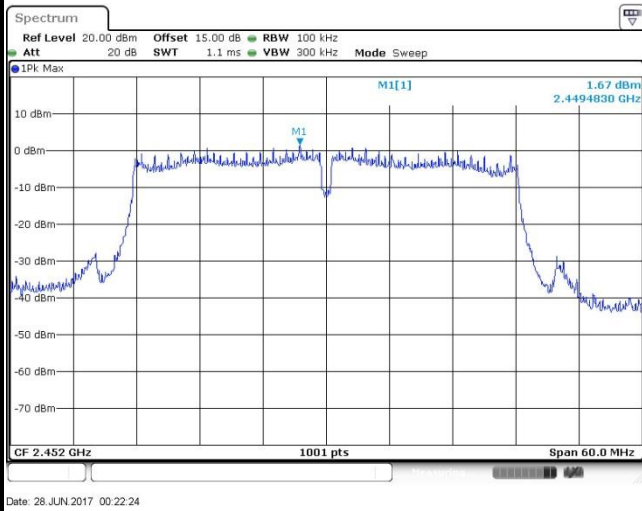




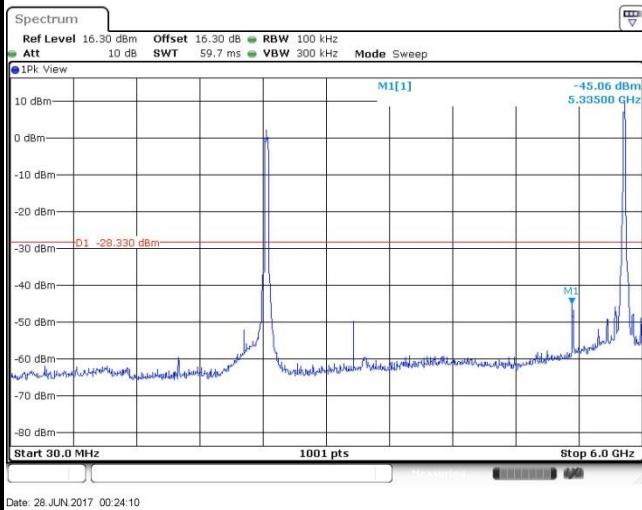
Number of TX :	3	Ant. :	2
Test Mode :	2.4G 802.11n HT40 & 5G 802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz CH09 + 5GHz CH165	Relative Humidity :	50~53%
		Test Engineer :	Sam Zheng

WLAN 2.4G 802.11n HT40 Channel 09 + WLAN 5G 802.11n HT20 Channel 165

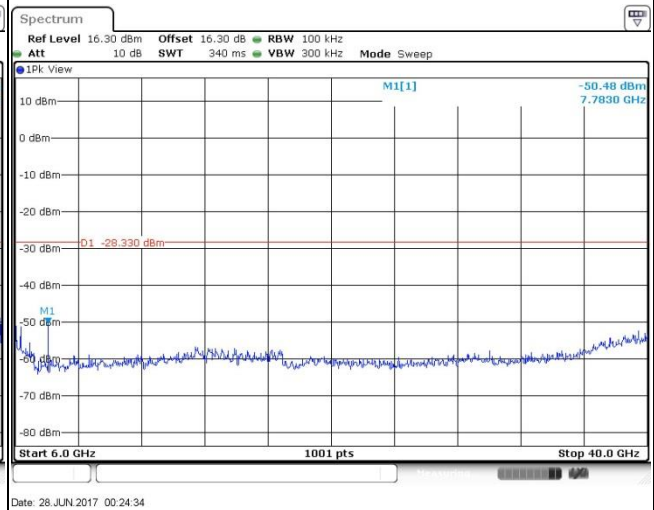
100kHz PSD reference Level



Spurious Emission 30MHz~6GHz



Spurious Emission 6GHz~40GHz



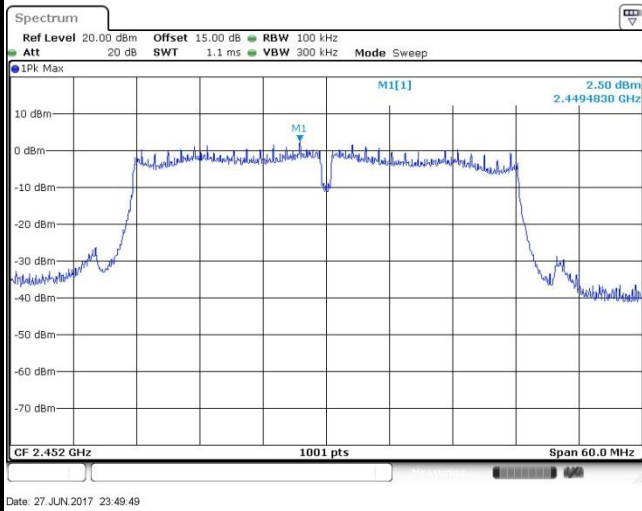


Number of TX = 3, Ant. 3 (Measured)

Number of TX :	3	Ant. :	3
Test Mode :	2.4G 802.11n HT40 & 5G 802.11ac VHT80	Temperature :	24~26°C
Test Band :	2.4GHz CH09 + 5GHz CH42	Relative Humidity :	50~53%
		Test Engineer :	Sam Zheng

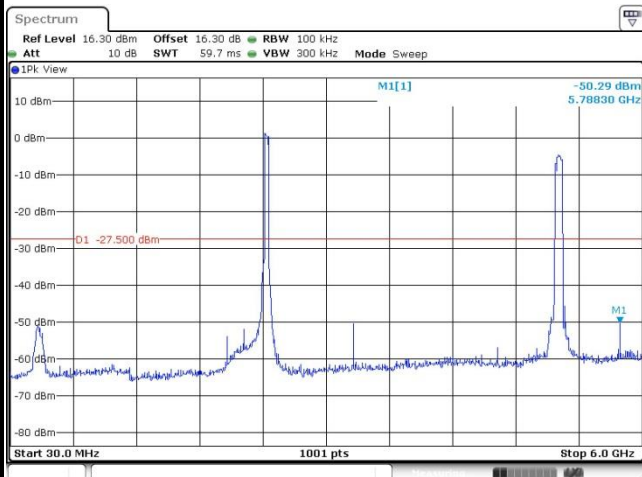
WLAN 2.4G 802.11n HT40 Channel 09 + WLAN 5G 802.11ac VHT80 Channel 42

100kHz PSD reference Level



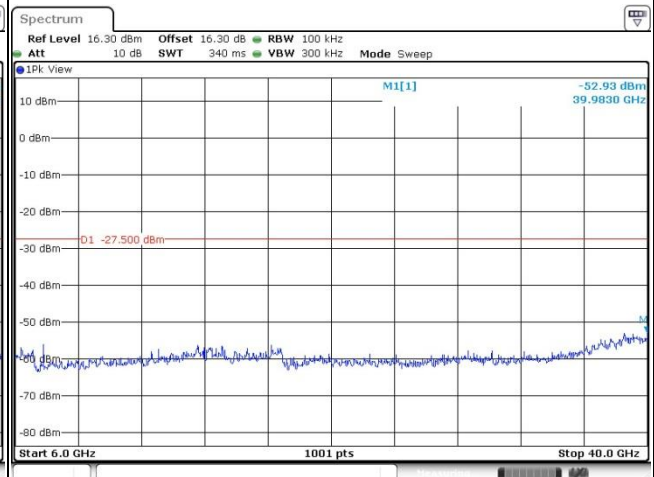
Date: 27 JUN 2017 23:49:49

Spurious Emission 30MHz~6GHz



Date: 27 JUN 2017 23:51:10

Spurious Emission 6GHz~40GHz



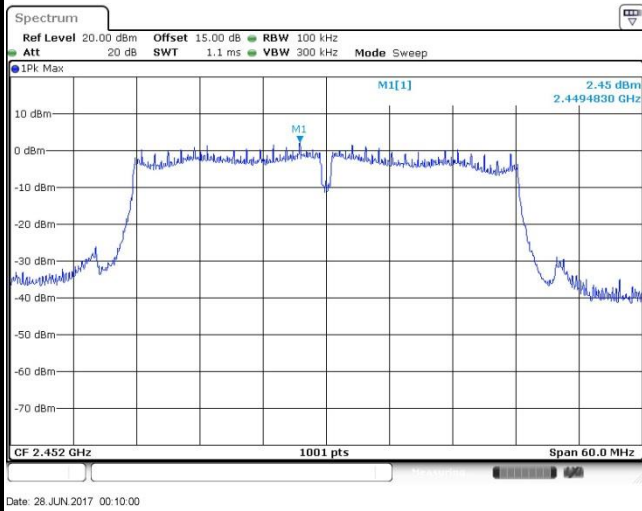
Date: 27 JUN 2017 23:51:49



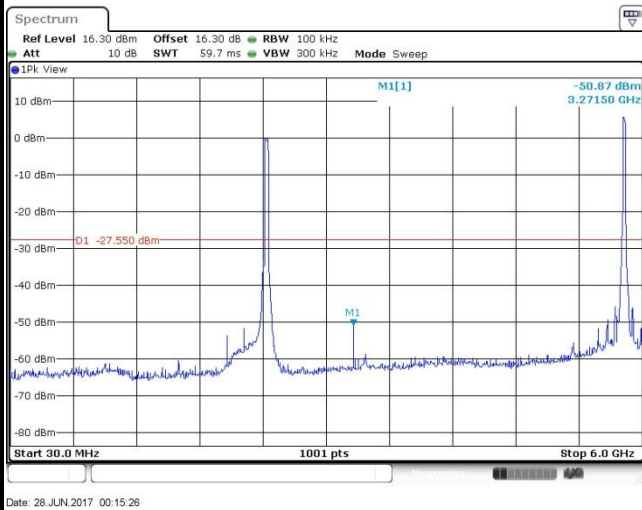
Number of TX :	3	Ant. :	3
Test Mode :	2.4G 802.11n HT40 & 5G 802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz CH09 + 5GHz CH165	Relative Humidity :	50~53%
		Test Engineer :	Sam Zheng

WLAN 2.4G 802.11n HT40 Channel 09 + WLAN 5G 802.11n HT20 Channel 165

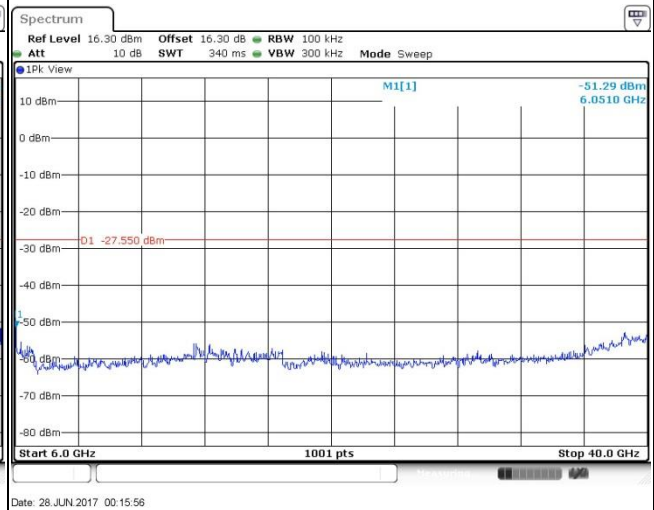
100kHz PSD reference Level



Spurious Emission 30MHz~6GHz



Spurious Emission 6GHz~40GHz





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.

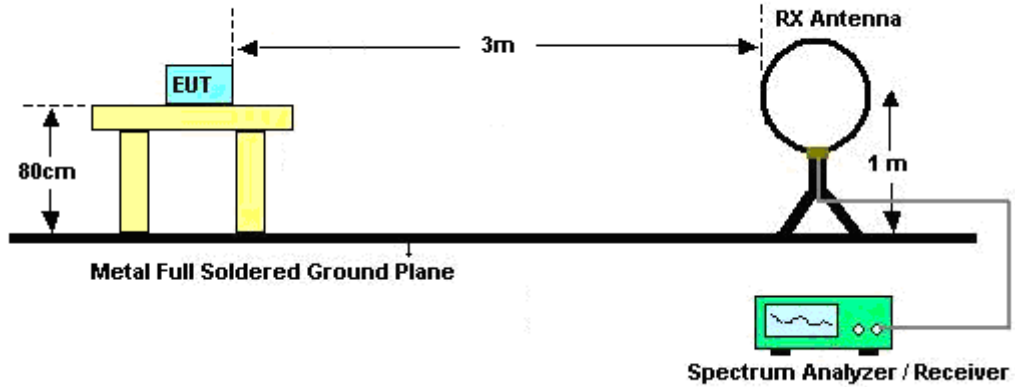


3.5.3 Test Procedures

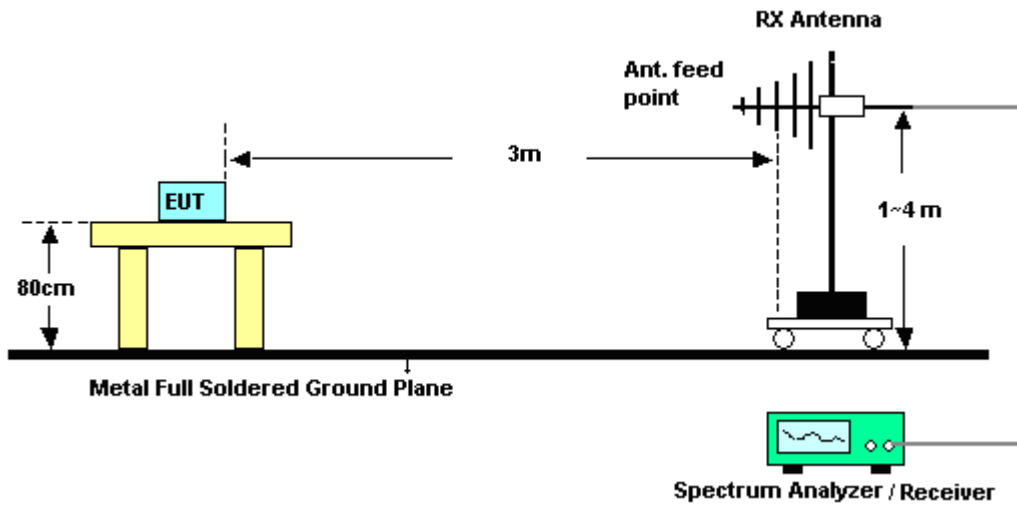
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test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

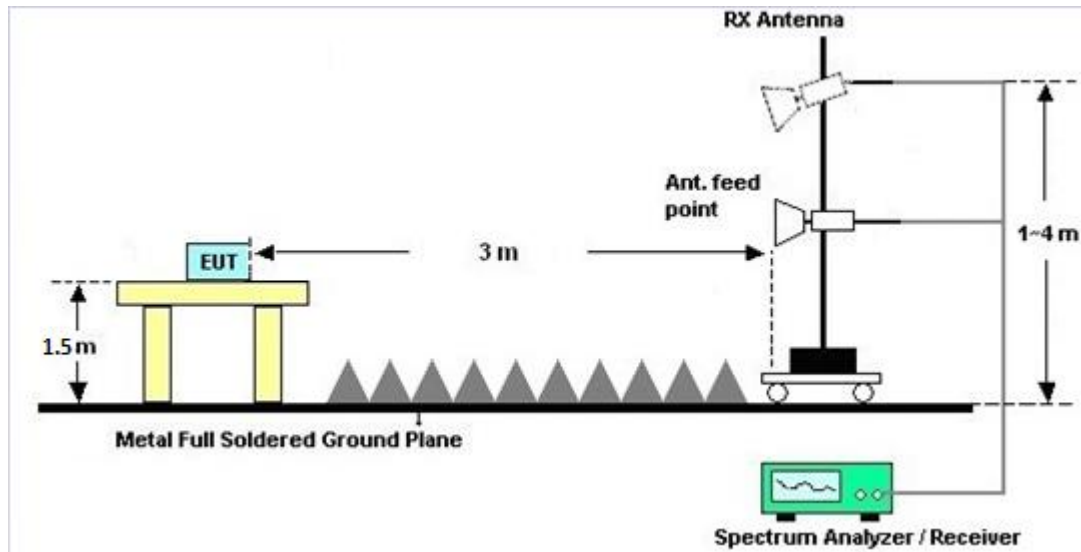
For radiated emissions below 30MHz



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 ~ 10th 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 μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

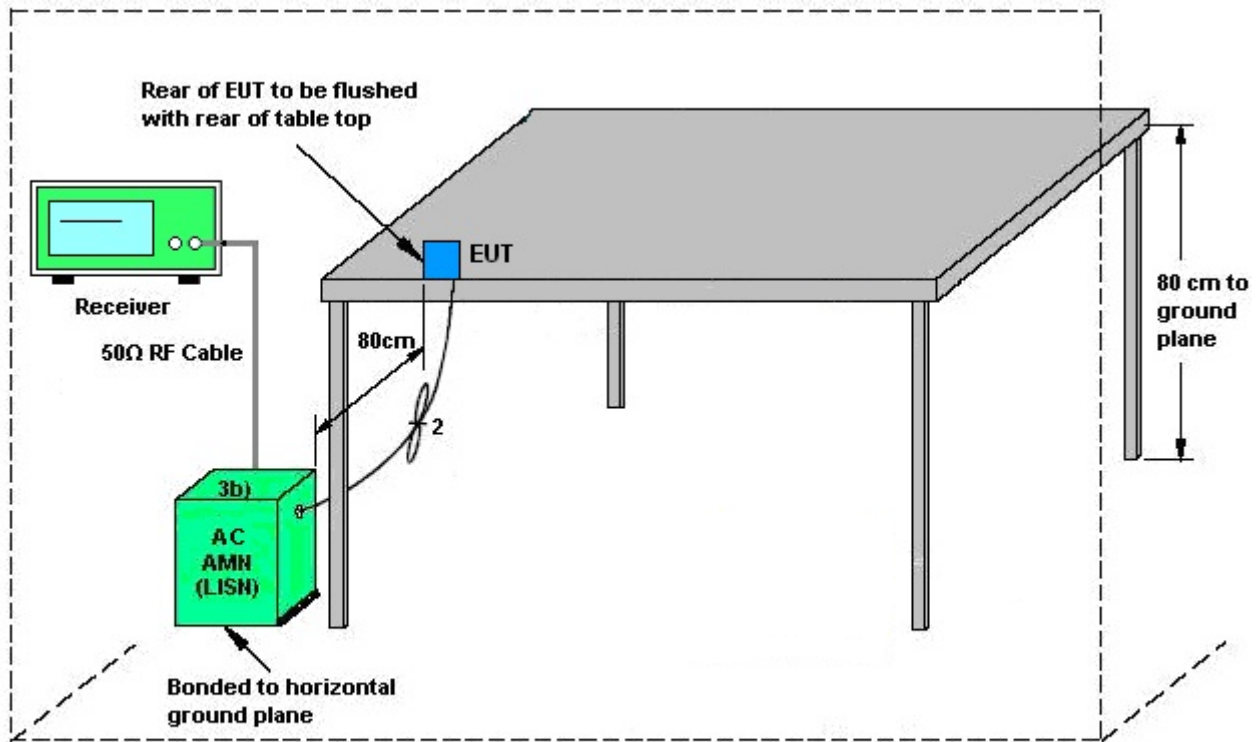
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

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

3.6.4 Test Setup

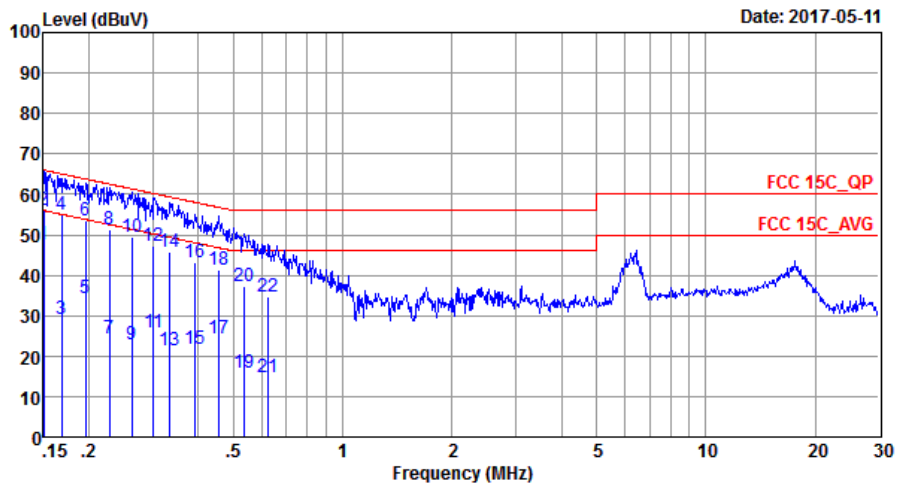


AMN = Artificial mains network (LISH)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Tao Cheng	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link(2.4G) + WAN Link + LAN Link + USB Link		

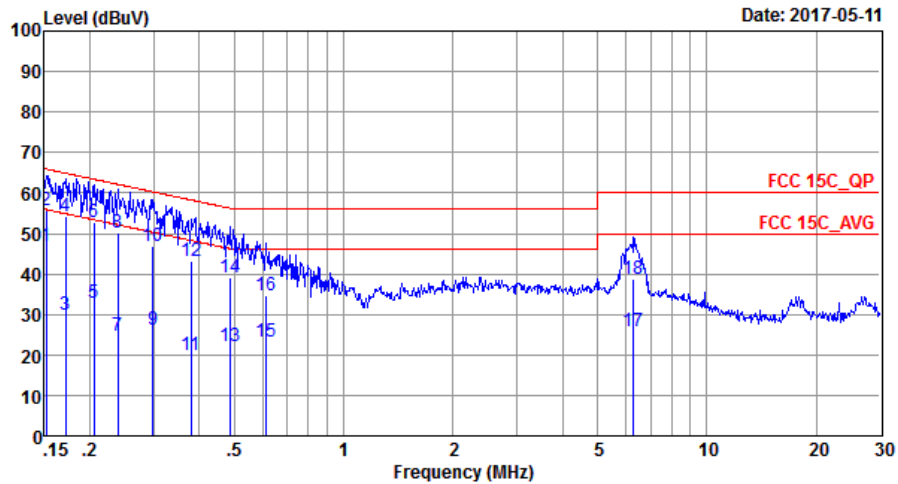


Site : CO01-SZ
 Condition: FCC 15C_QP LISN_20170301_L LINE
 Project : (FR) 721809
 Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.15	47.44	-8.56	56.00	37.00	0.03	10.41	Average
2	0.15	56.04	-9.96	66.00	45.60	0.03	10.41	QP
3	0.17	29.26	-25.77	55.03	18.90	0.03	10.33	Average
4	0.17	55.06	-9.97	65.03	44.70	0.03	10.33	QP
5	0.20	34.46	-19.34	53.80	24.20	0.03	10.23	Average
6	0.20	53.56	-10.24	63.80	43.30	0.03	10.23	QP
7	0.23	24.45	-28.07	52.52	14.20	0.03	10.22	Average
8	0.23	51.45	-11.07	62.52	41.20	0.03	10.22	QP
9	0.26	22.75	-28.59	51.34	12.50	0.03	10.22	Average
10	0.26	49.45	-11.89	61.34	39.20	0.03	10.22	QP
11	0.30	25.85	-24.34	50.19	15.60	0.03	10.22	Average
12	0.30	47.15	-13.04	60.19	36.90	0.03	10.22	QP
13	0.33	21.44	-27.91	49.35	11.20	0.03	10.21	Average
14	0.33	45.84	-13.51	59.35	35.60	0.03	10.21	QP
15	0.39	21.72	-26.27	47.99	11.50	0.03	10.19	Average
16	0.39	43.32	-14.67	57.99	33.10	0.03	10.19	QP
17	0.46	24.41	-22.35	46.76	14.21	0.02	10.18	Average
18	0.46	41.31	-15.45	56.76	31.11	0.02	10.18	QP
19	0.54	15.90	-30.10	46.00	5.70	0.02	10.18	Average
20	0.54	37.10	-18.90	56.00	26.90	0.02	10.18	QP
21	0.62	14.69	-31.31	46.00	4.50	0.02	10.17	Average
22	0.62	34.69	-21.31	56.00	24.50	0.02	10.17	QP



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Tao Cheng	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link(2.4G) + WAN Link + LAN Link + USB Link		



Site : CO01-SZ
 Condition: FCC 15C_QP LISN_20170301_N NEUTRAL
 Project : (FR)721809
 Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.15	46.93	-8.98	55.91	36.50	0.03	10.40	Average
2	0.15	55.83	-10.08	65.91	45.40	0.03	10.40	QP
3	0.17	29.85	-25.05	54.90	19.50	0.03	10.32	Average
4	0.17	54.25	-10.65	64.90	43.90	0.03	10.32	QP
5	0.21	32.75	-20.65	53.40	22.50	0.03	10.22	Average
6	0.21	52.75	-10.65	63.40	42.50	0.03	10.22	QP
7	0.24	24.85	-27.28	52.13	14.60	0.03	10.22	Average
8	0.24	50.25	-11.88	62.13	40.00	0.03	10.22	QP
9	0.30	26.15	-24.13	50.28	15.90	0.03	10.22	Average
10	0.30	46.95	-13.33	60.28	36.70	0.03	10.22	QP
11	0.38	19.82	-28.48	48.30	9.60	0.02	10.20	Average
12	0.38	43.22	-15.08	58.30	33.00	0.02	10.20	QP
13	0.49	22.00	-24.23	46.23	11.80	0.02	10.18	Average
14	0.49	39.00	-17.23	56.23	28.80	0.02	10.18	QP
15	0.61	23.09	-22.91	46.00	12.90	0.02	10.17	Average
16	0.61	34.59	-21.41	56.00	24.40	0.02	10.17	QP
17	6.29	25.98	-24.02	50.00	15.60	0.07	10.31	Average
18	6.29	38.68	-21.32	60.00	28.30	0.07	10.31	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. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the Antenna exceeds 6 dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.7.2 Antenna Anti-Replacement Construction

Non-standard antenna connector 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.

	Ant. 1 (dBi)	Ant. 2 (dBi)	Ant. 3 (dBi)	for Power (dBi)	for PSD (dBi)	Limit Reduction (dB)	Limit Reduction (dB)
2.4 GHz	3.37	3.37	3.37	3.37	8.14	0.00	2.14

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

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



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	May 05, 2017~ May 06, 2017	Apr. 19, 2018	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1207253	30MHz~40GHz	Jan. 06, 2017	May 05, 2017~ May 06, 2017	Jan. 05, 2018	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Jan. 06, 2017	May 05, 2017~ May 06, 2017	Jan. 05, 2018	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY544500 83	20Hz~8.4GHz	May 07, 2016	Apr. 25, 2017	May 06, 2017	Radiation (03CH03-SZ)
EXA Spectrum Anaizer	KEYSIGHT	N9010A	MY551502 46	10Hz~44GHz	May 07, 2016	Apr. 25, 2017	May 06, 2017	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 07, 2016	Apr. 25, 2017	May 06, 2017	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	May 21, 2016	Apr. 25, 2017	May 20, 2017	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBE CK	BBHA9120D	9120D-135 5	1GHz~18GHz	May 07, 2016	Apr. 25, 2017	May 06, 2017	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Aug. 10, 2016	Apr. 25, 2017	Aug. 09, 2017	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 11, 2016	Apr. 25, 2017	Oct. 10, 2017	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P- R	1943528	1GHz~18GHz	Oct. 11, 2016	Apr. 25, 2017	Oct. 10, 2017	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY395013 02	500MHz~26.5G Hz	Jan. 06, 2017	Apr. 25, 2017	Jan. 05, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35- HG	1871923	18GHz~40GHz	Jul. 16, 2016	Apr. 25, 2017	Jul. 15, 2017	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001 985	N/A	NCR	Apr. 25, 2017	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 25, 2017	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 25, 2017	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Jan. 06, 2017	May 11, 2017	Jan. 05, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103892	9kHz~30MHz	Jan. 05, 2017	May 11, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103912	9kHz~30MHz	Jan. 05, 2017	May 11, 2017	Jan. 04, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000 891	100Vac~250Vac	Jul. 16, 2016	May 11, 2017	Jul. 15, 2017	Conduction (CO01-SZ)
Pulse Limiter	COM-POWER	LIT-153 Transient Limiter	53139	150kHz~30MHz	Oct. 11, 2016	May 11, 2017	Oct. 10, 2017	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:	2017/5/5~2017/5/6	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 3	Ant 1	Ant 2	Ant 3		
11b	1Mbps	3	1	2412	11.14	11.14	11.14	8.07	8.03	8.07	0.50	Pass
11b	1Mbps	3	6	2437	11.14	11.14	11.14	8.07	8.07	8.05	0.50	Pass
11b	1Mbps	3	11	2462	11.19	11.19	11.14	8.07	8.05	8.05	0.50	Pass
11g	6Mbps	3	1	2412	18.38	18.28	18.08	16.36	16.38	16.36	0.50	Pass
11g	6Mbps	3	6	2437	18.83	18.83	18.68	16.34	16.34	16.34	0.50	Pass
11g	6Mbps	3	11	2462	18.43	18.33	18.28	16.42	16.36	16.36	0.50	Pass
HT20	MCS0	3	1	2412	18.93	18.78	18.78	17.58	17.60	17.58	0.50	Pass
HT20	MCS0	3	6	2437	19.73	19.48	19.58	17.58	17.58	17.58	0.50	Pass
HT20	MCS0	3	11	2462	19.03	18.78	18.83	17.56	17.60	17.58	0.50	Pass
HT40	MCS0	3	3	2422	36.66	36.86	36.66	36.24	36.28	36.28	0.50	Pass
HT40	MCS0	3	6	2437	36.76	36.76	36.86	36.24	36.28	36.28	0.50	Pass
HT40	MCS0	3	9	2452	36.76	36.76	36.76	36.28	36.28	35.68	0.50	Pass

TEST RESULTS DATA
Peak Output Power
(Reporting Only)

2.4GHz Band											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)				DG (dBi)		
					Ant 1	Ant 2	Ant 3	SUM	Ant 1	Ant 2	Ant 3
11b	1Mbps	3	1	2412	24.78	25.00	25.21	29.77	3.37		
11b	1Mbps	3	6	2437	24.73	24.96	25.04	29.68	3.37		
11b	1Mbps	3	11	2462	24.83	24.94	25.05	29.71	3.37		
11g	6Mbps	3	1	2412	24.16	24.20	24.34	29.01	3.37		
11g	6Mbps	3	6	2437	27.25	27.94	27.93	32.49	3.37		
11g	6Mbps	3	11	2462	26.80	26.93	27.13	31.73	3.37		
HT20	MCS0	3	1	2412	23.44	22.56	23.65	28.01	3.37		
HT20	MCS0	3	6	2437	27.31	27.97	27.86	32.49	3.37		
HT20	MCS0	3	11	2462	23.98	24.84	25.03	29.41	3.37		
HT40	MCS0	3	3	2422	22.75	22.85	23.28	27.74	3.37		
HT40	MCS0	3	6	2437	26.26	26.65	26.66	31.30	3.37		
HT40	MCS0	3	9	2452	24.78	24.69	24.86	29.55	3.37		

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

TEST RESULTS DATA
Average Output Power

2.4GHz Band															
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)			Average Conducted Power with Duty Factor (dBm)				Conducted Power Limit (dBm)			Pass /Fail
					Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	SUM	Ant 1	Ant 2	Ant 3	
11b	1Mbps	3	1	2412	0.22	0.22	0.22	21.18	21.53	21.52	26.18	30.00			Pass
11b	1Mbps	3	6	2437	0.22	0.22	0.22	21.16	21.52	21.44	26.15	30.00			Pass
11b	1Mbps	3	11	2462	0.22	0.22	0.22	21.25	21.50	21.46	26.18	30.00			Pass
11g	6Mbps	3	1	2412	0.22	0.22	0.22	13.04	13.15	13.57	18.03	30.00			Pass
11g	6Mbps	3	6	2437	0.22	0.22	0.22	20.58	21.05	21.08	25.68	30.00			Pass
11g	6Mbps	3	11	2462	0.22	0.22	0.22	18.02	18.37	18.37	23.03	30.00			Pass
HT20	MCS0	3	1	2412	0.21	0.21	0.21	12.75	12.29	12.88	17.42	30.00			Pass
HT20	MCS0	3	6	2437	0.21	0.21	0.21	20.57	20.91	21.02	25.61	30.00			Pass
HT20	MCS0	3	11	2462	0.21	0.21	0.21	14.03	13.84	14.45	18.88	30.00			Pass
HT40	MCS0	3	3	2422	0.43	0.43	0.44	12.52	12.53	13.09	17.49	30.00			Pass
HT40	MCS0	3	6	2437	0.43	0.43	0.44	17.81	18.15	18.21	22.83	30.00			Pass
HT40	MCS0	3	9	2452	0.43	0.43	0.44	14.99	14.86	15.46	19.88	30.00			Pass

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

TEST RESULTS DATA
Average Power Spectral Density

2.4GHz Band															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average PSD (dBm/3kHz)				DG (dBi)			Average PSD Limit (dBm/3kHz)			Pass/Fail
					Ant 1	Ant 2	Ant 3	Worse + 3.01	Ant 1	Ant 2	Ant 3	Ant 1	Ant 2	Ant 3	
11b	1Mbps	3	1	2412	-4.88	-4.51	-2.82	2.17	8.14			5.86			Pass
11b	1Mbps	3	6	2437	-4.76	-4.65	-2.57	2.42	8.14			5.86			Pass
11b	1Mbps	3	11	2462	-4.52	-4.53	-2.27	2.72	8.14			5.86			Pass
11g	6Mbps	3	1	2412	-16.45	-16.75	-16.36	-11.37	8.14			5.86			Pass
11g	6Mbps	3	6	2437	-8.96	-8.40	-8.10	-3.11	8.14			5.86			Pass
11g	6Mbps	3	11	2462	-11.69	-11.24	-11.29	-6.25	8.14			5.86			Pass
HT20	MCS0	3	1	2412	-17.05	-17.79	-16.85	-11.87	8.14			5.86			Pass
HT20	MCS0	3	6	2437	-8.87	-8.74	-8.42	-3.44	8.14			5.86			Pass
HT20	MCS0	3	11	2462	-18.41	-16.10	-15.37	-10.39	8.14			5.86			Pass
HT40	MCS0	3	3	2422	-18.42	-18.28	-17.35	-12.15	8.14			5.86			Pass
HT40	MCS0	3	6	2437	-12.54	-12.27	-12.45	-7.07	8.14			5.86			Pass
HT40	MCS0	3	9	2452	-15.10	-15.05	-14.94	-9.74	8.14			5.86			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 Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1+2+3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2374.575	49.97	-24.03	74	51.05	27.26	5.88	34.22	176	237	P	H
		2390.	40.8	-13.2	54	41.79	27.29	5.92	34.2	176	237	A	H
	*	2412	99.72	-	-	100.67	27.33	5.92	34.2	176	237	P	H
	*	2412	96.84	-	-	97.79	27.33	5.92	34.2	176	237	A	H
		2389.59	58.6	-15.4	74	59.61	27.29	5.92	34.22	159	213	P	V
		2389.275	51.67	-2.33	54	52.68	27.29	5.92	34.22	159	213	A	V
	*	2412	113.47	-	-	114.42	27.33	5.92	34.2	159	213	P	V
	*	2412	110.39	-	-	111.34	27.33	5.92	34.2	159	213	A	V
802.11b CH 03 2422MHz		2385.04	50.23	-23.77	74	51.27	27.26	5.92	34.22	183	74	P	H
		2383.36	39.02	-14.98	54	40.1	27.26	5.88	34.22	183	74	A	H
	*	2422	100.89	-	-	101.79	27.36	5.92	34.18	183	74	P	H
	*	2422	98.12	-	-	99.02	27.36	5.92	34.18	183	74	A	H
		2498.95	49.93	-24.07	74	50.59	27.5	5.95	34.11	183	74	P	H
		2499.93	40.26	-13.74	54	40.92	27.5	5.95	34.11	183	74	A	H
		2382.24	57.95	-16.05	74	59.03	27.26	5.88	34.22	157	219	P	V
		2382.94	47.32	-6.68	54	48.4	27.26	5.88	34.22	157	219	A	V
	*	2422	114.42	-	-	115.32	27.36	5.92	34.18	157	219	P	V
	*	2422	111.38	-	-	112.28	27.36	5.92	34.18	157	219	A	V
		2499.93	56.75	-17.25	74	57.41	27.5	5.95	34.11	157	219	P	V
	2500	48.42	-5.58	54	49.08	27.5	5.95	34.11	157	219	A	V	



802.11b CH 06 2437MHz		2378.88	49.9	-24.1	74	50.98	27.26	5.88	34.22	150	230	P	H
		2356.9	38.88	-15.12	54	40.02	27.22	5.88	34.24	150	230	A	H
	*	2437	99.32	-	-	100.21	27.36	5.93	34.18	150	230	P	H
	*	2437	96.47	-	-	97.36	27.36	5.93	34.18	150	230	A	H
		2499.3	50	-24	74	50.66	27.5	5.95	34.11	150	230	P	H
		2500	39.89	-14.11	54	40.55	27.5	5.95	34.11	150	230	A	H
		2379.58	56.58	-17.42	74	57.66	27.26	5.88	34.22	158	216	P	V
		2356.9	46.66	-7.34	54	47.8	27.22	5.88	34.24	158	216	A	V
	*	2437	114.57	-	-	115.46	27.36	5.93	34.18	158	216	P	V
	*	2437	111.49	-	-	112.38	27.36	5.93	34.18	158	216	A	V
		2484.04	55.69	-18.31	74	56.4	27.47	5.95	34.13	158	216	P	V
		2499.93	45.88	-8.12	54	46.54	27.5	5.95	34.11	158	216	A	V
802.11b CH 09 2452MHz		2388.82	50.67	-23.33	74	51.68	27.29	5.92	34.22	203	61	P	H
		2372.02	38.92	-15.08	54	40	27.26	5.88	34.22	203	61	A	H
	*	2452	100.89	-	-	101.71	27.4	5.93	34.15	203	61	P	H
	*	2452	98.04	-	-	98.86	27.4	5.93	34.15	203	61	A	H
		2499.93	50.87	-23.13	74	51.53	27.5	5.95	34.11	203	61	P	H
		2500	41.08	-12.92	54	41.74	27.5	5.95	34.11	203	61	A	H
		2385.6	55.64	-18.36	74	56.65	27.29	5.92	34.22	186	221	P	V
		2371.88	46.04	-7.96	54	47.12	27.26	5.88	34.22	186	221	A	V
	*	2452	114.94	-	-	115.76	27.4	5.93	34.15	186	221	P	V
	*	2452	111.97	-	-	112.79	27.4	5.93	34.15	186	221	A	V
		2490.13	56.96	-17.04	74	57.64	27.5	5.95	34.13	186	221	P	V
		2490.34	46.56	-7.44	54	47.24	27.5	5.95	34.13	186	221	A	V
802.11b CH 11 2462MHz	*	2462	99.91	-	-	100.7	27.43	5.93	34.15	175	66	P	H
	*	2462	97.08	-	-	97.87	27.43	5.93	34.15	175	66	A	H
		2483.88	50.78	-23.22	74	51.49	27.47	5.95	34.13	175	66	P	H
		2483.52	41.45	-12.55	54	42.16	27.47	5.95	34.13	175	66	A	H
	*	2462	114.31	-	-	115.1	27.43	5.93	34.15	152	218	P	V
	*	2462	111.32	-	-	112.11	27.43	5.93	34.15	152	218	A	V
		2483.64	61.21	-12.79	74	61.92	27.47	5.95	34.13	152	218	P	V
		2483.52	53.89	-0.11	54	54.6	27.47	5.95	34.13	152	218	A	V



Remark

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



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

WIFI Ant. 1+2+3	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4824	49.3	-24.7	74	66.21	32.56	8.87	58.34	150	360	P	H
		4824	51.06	-22.94	74	67.97	32.56	8.87	58.34	150	360	P	V
		4824	51.11	-2.89	54	68.02	32.56	8.87	58.34	150	360	A	V
802.11b CH 03 2422MHz		4844	49.24	-24.76	74	66.14	32.59	8.85	58.34	250	0	P	H
		7266	54.7	-19.3	74	65.36	37.66	11.06	59.38	150	0	P	H
		7266	50.59	-3.41	54	61.25	37.66	11.06	59.38	150	0	A	H
		4844	48.79	-25.21	74	65.69	32.59	8.85	58.34	250	0	P	V
802.11b CH 06 2437MHz		7266	49.9	-24.1	74	60.56	37.66	11.06	59.38	150	0	P	V
		4874	46.95	-27.05	74	63.77	32.66	8.85	58.33	150	360	P	H
		7311	54.47	-19.53	74	65.19	37.66	11.02	59.4	174	100	P	H
		7311	50.55	-3.45	54	61.27	37.66	11.02	59.4	174	100	A	H
		4874	48.88	-25.12	74	65.7	32.66	8.85	58.33	150	360	P	V
802.11b CH 09 2452MHz		7311	54.81	-19.19	74	65.53	37.66	11.02	59.4	174	100	P	V
		7311	51.14	-2.86	54	61.86	37.66	11.02	59.4	174	100	A	V
		4904	48.56	-25.44	74	65.34	32.73	8.82	58.33	150	360	P	H
		7356	55.07	-18.93	74	65.84	37.67	10.99	59.43	150	320	P	H
		7356	50.77	-3.23	54	61.54	37.67	10.99	59.43	150	320	A	H
		4904	47.6	-26.4	74	64.38	32.73	8.82	58.33	150	360	P	V
802.11b CH 11 2462MHz		7356	54.97	-19.03	74	65.74	37.67	10.99	59.43	150	320	P	V
		7356	50.49	-3.51	54	61.26	37.67	10.99	59.43	150	320	A	V
		4924	48.39	-25.61	74	65.17	32.76	8.79	58.33	150	347	P	H
		7386	54.48	-19.52	74	65.28	37.68	10.96	59.44	150	274	P	H
		7386	50.74	-3.26	54	61.54	37.68	10.96	59.44	150	274	A	H
		4924	48.23	-25.77	74	65.01	32.76	8.79	58.33	150	347	P	V
802.11b CH 11 2462MHz		7386	56.5	-17.5	74	67.3	37.68	10.96	59.44	150	274	P	V
		7386	52.6	-1.4	54	63.4	37.68	10.96	59.44	150	274	A	V
		7386	52.6	-1.4	54	63.4	37.68	10.96	59.44	150	274	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1+2+3	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2386.965	55.95	-18.05	74	56.96	27.29	5.92	34.22	179	55	P	H
		2387.07	41.52	-12.48	54	42.53	27.29	5.92	34.22	179	55	A	H
	*	2412	98.79	-	-	99.74	27.33	5.92	34.2	179	55	P	H
	*	2412	90.74	-	-	91.69	27.33	5.92	34.2	179	55	A	H
		2386.545	68.79	-5.21	74	69.8	27.29	5.92	34.22	175	3	P	V
		2387.91	53.6	-0.4	54	54.61	27.29	5.92	34.22	175	3	A	V
	*	2412	112.61	-	-	113.56	27.33	5.92	34.2	175	3	P	V
	*	2412	105.23	-	-	106.18	27.33	5.92	34.2	175	3	A	V
802.11g CH 03 2422MHz		2386.58	55.21	-18.79	74	50.23	31.38	6.81	33.21	150	45	P	H
		2386.3	42.04	-11.96	54	37.06	31.38	6.81	33.21	150	45	A	H
	*	2422	108.49	-	-	103.23	31.62	6.81	33.17	150	45	P	H
	*	2422	100.27	-	-	95.01	31.62	6.81	33.17	150	45	A	H
		2499.82	51.04	-22.96	74	45.13	32.1	6.91	33.1	150	45	P	H
		2500	46.21	-7.79	54	40.3	32.1	6.91	33.1	150	45	A	H
		2388.26	66.37	-7.63	74	67.38	27.29	5.92	34.22	241	181	P	V
		2386.3	53.12	-0.88	54	54.13	27.29	5.92	34.22	241	181	A	V
	*	2422	116.18	-	-	117.08	27.36	5.92	34.18	241	181	P	V
	*	2422	109.49	-	-	110.39	27.36	5.92	34.18	241	181	A	V
		2497.66	59.57	-14.43	74	60.23	27.5	5.95	34.11	241	181	P	V
		2500	52.36	-1.64	54	53.02	27.5	5.95	34.11	241	181	A	V



802.11g CH 06 2437MHz		2389.94	50.39	-23.61	74	51.38	27.29	5.92	34.2	172	54	P	H
		2389.94	39.75	-14.25	54	40.74	27.29	5.92	34.2	172	54	A	H
	*	2437	104.26	-	-	105.11	27.4	5.93	34.18	172	54	P	H
	*	2437	96.59	-	-	97.44	27.4	5.93	34.18	172	54	A	H
		2499.93	50.35	-23.65	74	51.01	27.5	5.95	34.11	172	54	P	H
		2499.93	42.08	-11.92	54	42.74	27.5	5.95	34.11	172	54	A	H
		2389.8	58.95	-15.05	74	59.94	27.29	5.92	34.2	189	359	P	V
		2389.94	48.4	-5.6	54	49.39	27.29	5.92	34.2	189	359	A	V
	*	2437	115.58	-	-	116.43	27.4	5.93	34.18	189	359	P	V
	*	2437	108.1	-	-	108.95	27.4	5.93	34.18	189	359	A	V
		2483.76	56.57	-17.43	74	57.28	27.47	5.95	34.13	189	359	P	V
		2483.5	46.05	-7.95	54	46.76	27.47	5.95	34.13	189	359	A	V
802.11g CH 09 2452MHz		2389.8	49.04	-24.96	74	50.03	27.29	5.92	34.2	150	54	P	H
		2387	37.98	-16.02	54	38.99	27.29	5.92	34.22	150	54	A	H
	*	2452	107.42	-	-	108.24	27.4	5.93	34.15	150	54	P	H
	*	2452	100.29	-	-	101.11	27.4	5.93	34.15	150	54	A	H
		2486.5	57.53	-16.47	74	58.24	27.47	5.95	34.13	150	54	P	H
		2499.94	45.98	-8.02	54	46.64	27.5	5.95	34.11	150	54	A	H
		2373.98	56.62	-17.38	74	57.7	27.26	5.88	34.22	201	206	P	V
		2372.02	47.5	-6.5	54	48.58	27.26	5.88	34.22	201	206	A	V
	*	2452	115.71	-	-	116.53	27.4	5.93	34.15	201	206	P	V
	*	2452	109.55	-	-	110.37	27.4	5.93	34.15	201	206	A	V
		2483.8	65.55	-8.45	74	66.26	27.47	5.95	34.13	201	206	P	V
		2483.98	52.96	-1.04	54	53.67	27.47	5.95	34.13	201	206	A	V
802.11g CH 11 2462MHz	*	2462	99.83	-	-	100.62	27.43	5.93	34.15	155	56	P	H
	*	2462	92.42	-	-	93.21	27.43	5.93	34.15	155	56	A	H
		2483.64	59.04	-14.96	74	59.75	27.47	5.95	34.13	155	56	P	H
		2483.56	44.39	-9.61	54	45.1	27.47	5.95	34.13	155	56	A	H
	*	2462	108.66	-	-	110.48	27.43	4.9	34.15	200	359	P	V
	*	2462	101.77	-	-	103.59	27.43	4.9	34.15	200	359	A	V
		2483.92	70.03	-3.97	74	71.79	27.47	4.9	34.13	200	359	P	V
		2484	53.41	-0.59	54	55.17	27.47	4.9	34.13	200	359	A	V



Remark

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



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

WIFI Ant. 1+2+3	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4824	42.43	-31.57	74	59.34	32.56	8.87	58.34	250	0	P	H
		4824	43.89	-30.11	74	60.8	32.56	8.87	58.34	250	0	P	V
802.11g CH 03 2422MHz		4844	46.59	-27.41	74	63.49	32.59	8.85	58.34	250	0	P	H
		7266	52.84	-21.16	74	63.5	37.66	11.06	59.38	150	0	P	H
		4844	45.25	-28.75	74	62.15	32.59	8.85	58.34	250	0	P	V
		7266	53.37	-20.63	74	64.03	37.66	11.06	59.38	150	0	P	V
802.11g CH 06 2437MHz		4874	46	-28	74	62.82	32.66	8.85	58.33	250	0	P	H
		7311	52.64	-21.36	74	63.36	37.66	11.02	59.4	150	0	P	H
		7311	48.87	-5.13	54	59.59	37.66	11.02	59.4	150	0	A	H
		4874	45.24	-28.76	74	62.06	32.66	8.85	58.33	250	0	P	V
		7311	49.01	-24.99	74	59.73	37.66	11.02	59.4	150	0	P	V
802.11g CH 09 2452MHz		4904	46.66	-27.34	74	63.44	32.73	8.82	58.33	250	0	P	H
		7365	52.43	-21.57	74	63.2	37.67	10.99	59.43	150	0	P	H
		7365	44.48	-9.52	54	55.25	37.67	10.99	59.43	150	0	A	H
		4904	46.31	-27.69	74	63.09	32.73	8.82	58.33	250	0	P	V
		7356	51.13	-22.87	74	61.9	37.67	10.99	59.43	150	0	P	V
		7356	41.56	-12.44	54	52.33	37.67	10.99	59.43	150	0	A	V
802.11g CH 11 2462MHz		4923	45.34	-28.66	74	62.12	32.76	8.79	58.33	250	0	P	H
		7386	49.88	-24.12	74	60.68	37.68	10.96	59.44	150	0	P	H
		4923	45.5	-28.5	74	62.28	32.76	8.79	58.33	250	0	P	V
		7386	50.75	-23.25	74	61.55	37.68	10.96	59.44	150	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1+2+3	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		2386.86	52.93	-21.07	74	53.94	27.29	5.92	34.22	175	49	P	H
		2390	42.6	-11.4	54	43.59	27.29	5.92	34.2	175	49	A	H
	*	2412	97.86	-	-	98.81	27.33	5.92	34.2	175	49	P	H
	*	2412	90.28	-	-	91.23	27.33	5.92	34.2	175	49	A	H
		2388.645	69.66	-4.34	74	70.67	27.29	5.92	34.22	157	163	P	V
		2388.435	53.43	-0.57	54	54.44	27.29	5.92	34.22	157	163	A	V
	*	2412	110	-	-	110.95	27.33	5.92	34.2	157	163	P	V
	*	2412	102.2	-	-	103.15	27.33	5.92	34.2	157	163	A	V
802.11n HT20 CH 03 2422MHz		2385.6	55.87	-18.13	74	56.88	27.29	5.92	34.22	193	45	P	H
		2389.8	43.14	-10.86	54	44.13	27.29	5.92	34.2	193	45	A	H
	*	2422	107.47	-	-	108.37	27.36	5.92	34.18	193	45	P	H
	*	2422	99.76	-	-	100.66	27.36	5.92	34.18	193	45	A	H
		2499.88	49.66	-24.34	74	50.32	27.5	5.95	34.11	193	45	P	H
		2500	42.16	-11.84	54	42.82	27.5	5.95	34.11	193	45	A	H
		2382.66	66.04	-7.96	74	67.12	27.26	5.88	34.22	150	219	P	V
		2386.86	52.76	-1.24	54	53.77	27.29	5.92	34.22	150	219	A	V
	*	2422	114.48	-	-	115.38	27.36	5.92	34.18	150	219	P	V
	*	2422	108.08	-	-	108.98	27.36	5.92	34.18	150	219	A	V
		2496.34	57.67	-16.33	74	58.33	27.5	5.95	34.11	150	219	P	V
	2500	48.7	-5.3	54	49.36	27.5	5.95	34.11	150	219	A	V	



802.11n HT20 CH 06 2437MHz		2358.16	51.78	-22.22	74	52.92	27.22	5.88	34.24	218	47	P	H	
		2356.9	41.34	-12.66	54	42.48	27.22	5.88	34.24	218	47	A	H	
	*	2437	110.37	-	-	111.22	27.4	5.93	34.18	218	47	P	H	
	*	2437	102.69	-	-	103.54	27.4	5.93	34.18	218	47	A	H	
		2485.3	54.48	-19.52	74	55.19	27.47	5.95	34.13	218	47	P	H	
		2500	43.1	-10.9	54	43.76	27.5	5.95	34.11	218	47	A	H	
		2389.94	66.39	-7.61	74	67.38	27.29	5.92	34.2	250	349	P	V	
		2389.94	53.39	-0.61	54	54.38	27.29	5.92	34.2	250	349	A	V	
	*	2437	116.74	-	-	117.59	27.4	5.93	34.18	250	349	P	V	
	*	2437	109.99	-	-	110.84	27.4	5.93	34.18	250	349	A	V	
		2484.88	63.31	-10.69	74	64.02	27.47	5.95	34.13	250	349	P	V	
		2484.88	51.11	-2.89	54	51.82	27.47	5.95	34.13	250	349	A	V	
	802.11n HT20 CH 09 2452MHz		2340.1	50.62	-23.38	74	51.83	27.19	5.84	34.24	173	48	P	H
			2319.8	39.55	-14.45	54	40.81	27.16	5.84	34.26	173	48	A	H
*		2452	105.12	-	-	105.94	27.4	5.93	34.15	173	48	P	H	
*		2452	96.34	-	-	97.16	27.4	5.93	34.15	173	48	A	H	
		2486.91	54.39	-19.61	74	55.1	27.47	5.95	34.13	173	48	P	H	
		2500	42.94	-11.06	54	43.6	27.5	5.95	34.11	173	48	A	H	
		2388.54	57.53	-16.47	74	58.54	27.29	5.92	34.22	158	161	P	V	
		2378.6	45.91	-8.09	54	46.99	27.26	5.88	34.22	158	161	A	V	
*		2452	115.3	-	-	116.12	27.4	5.93	34.15	158	161	P	V	
*		2452	107.73	-	-	108.55	27.4	5.93	34.15	158	161	A	V	
		2484.04	69.7	-4.3	74	70.41	27.47	5.95	34.13	158	161	P	V	
	2483.55	53.5	-0.5	54	54.21	27.47	5.95	34.13	158	161	A	V		
802.11n HT20 CH 11 2462MHz	*	2462	98.98	-	-	99.77	27.43	5.93	34.15	170	49	P	H	
	*	2462	90.19	-	-	90.98	27.43	5.93	34.15	170	49	A	H	
		2485.04	53.12	-20.88	74	53.83	27.47	5.95	34.13	170	49	P	H	
		2500	42.57	-11.43	54	43.23	27.5	5.95	34.11	170	49	A	H	
	*	2462	108.38	-	-	109.17	27.43	5.93	34.15	150	163	P	V	
	*	2462	100.78	-	-	101.57	27.43	5.93	34.15	150	163	A	V	
		2483.88	66.43	-7.57	74	67.14	27.47	5.95	34.13	150	163	P	V	
	2483.52	53.83	-0.17	54	54.54	27.47	5.95	34.13	150	163	A	V		



Remark

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



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

WIFI Ant. 1+2+3	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	43.82	-30.18	74	60.73	32.56	8.87	58.34	250	0	P	H
		7236	51	-23	74	61.62	37.65	11.09	59.36	150	0	P	H
		7236	46.22	-7.78	54	56.84	37.65	11.09	59.36	150	0	A	H
		4824	44.87	-29.13	74	61.78	32.56	8.87	58.34	250	0	P	V
		7236	49.25	-24.75	74	59.87	37.65	11.09	59.36	150	0	P	V
802.11n HT20 CH 03 2422MHz		4844	44.27	-29.73	74	61.17	32.59	8.85	58.34	150	360	P	H
		7266	52.78	-21.22	74	63.44	37.66	11.06	59.38	200	360	P	H
		7266	42.47	-11.53	54	53.13	37.66	11.06	59.38	200	360	A	H
		4844	46.78	-27.22	74	63.68	32.59	8.85	58.34	150	360	P	V
		7266	53.62	-20.38	74	64.28	37.66	11.06	59.38	200	360	P	V
802.11n HT20 CH 06 2437MHz		4874	47.51	-26.49	74	64.33	32.66	8.85	58.33	150	163	P	H
		7311	54.79	-19.21	74	65.51	37.66	11.02	59.4	150	360	P	H
		7311	50.71	-3.29	54	61.43	37.66	11.02	59.4	150	360	A	H
		4874	52.64	-21.36	74	69.46	32.66	8.85	58.33	150	163	P	V
		4874	47.34	-6.66	54	64.16	32.66	8.85	58.33	150	163	A	V
		7311	53.65	-20.35	74	64.37	37.66	11.02	59.4	150	360	P	V
802.11n HT20 CH 09 2452MHz		7311	49.64	-4.36	54	60.36	37.66	11.02	59.4	150	360	A	V
		4904	47.36	-26.64	74	64.14	32.73	8.82	58.33	250	0	P	H
		7356	48.9	-25.1	74	59.67	37.67	10.99	59.43	150	0	P	H
		4904	43.03	-30.97	74	59.81	32.73	8.82	58.33	250	0	P	V
		7356	52.64	-21.36	74	63.41	37.67	10.99	59.43	150	0	P	V
802.11n HT20 CH 11 2462MHz		7356	47.59	-6.41	54	58.36	37.67	10.99	59.43	150	0	A	V
		4924	42.55	-31.45	74	59.33	32.76	8.79	58.33	250	0	P	H
		7386	49.29	-24.71	74	60.09	37.68	10.96	59.44	150	0	P	H
		4924	43.06	-30.94	74	59.84	32.76	8.79	58.33	250	0	P	V
Remark		7386	49.39	-24.61	74	60.19	37.68	10.96	59.44	150	0	P	V
	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)

Table with 14 columns: WIFI Ant. 1+2+3, 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 data for 802.11n HT40 CH 03 (2422MHz) and CH 04 (2427MHz).



802.11n HT40 CH 06 2437MHz		2388.96	64.92	-9.08	74	66.99	27.29	4.86	34.22	250	163	P	H
		2388.54	51.81	-2.19	54	53.88	27.29	4.86	34.22	250	163	A	H
	*	2437	107.75	-	-	109.65	27.4	4.88	34.18	250	163	P	H
	*	2437	100.14	-	-	102.04	27.4	4.88	34.18	250	163	A	H
		2483.9	65.79	-8.21	74	67.55	27.47	4.9	34.13	250	163	P	H
		2483.5	53.45	-0.55	54	55.21	27.47	4.9	34.13	250	163	A	H
		2389.66	54.65	-19.35	74	56.72	27.29	4.86	34.22	150	43	P	V
		2389.8	43.45	-10.55	54	45.5	27.29	4.86	34.2	150	43	A	V
	*	2437	96.39	-	-	98.29	27.4	4.88	34.18	150	43	P	V
	*	2437	88.62	-	-	90.52	27.4	4.88	34.18	150	43	A	V
		2486.07	51.97	-22.03	74	53.73	27.47	4.9	34.13	150	43	P	V
		2500	41.87	-12.13	54	43.56	27.5	4.92	34.11	150	43	A	V



802.11n HT40 CH 08 2447MHz		2389.38	57.83	-16.17	74	59.9	27.29	4.86	34.22	161	191	P	H
		2389.94	44.49	-9.51	54	46.54	27.29	4.86	34.2	161	191	A	H
	*	2447	106.04	-	-	107.91	27.4	4.88	34.15	161	191	P	H
	*	2447	98.53	-	-	100.4	27.4	4.88	34.15	161	191	A	H
		2485.23	66.08	-7.92	74	67.84	27.47	4.9	34.13	161	191	P	H
		2485.3	53.32	-0.68	54	55.08	27.47	4.9	34.13	161	191	A	H
		2332.68	47.7	-26.3	74	49.98	27.16	4.82	34.26	150	48	P	V
		2389.1	38.15	-15.85	54	40.22	27.29	4.86	34.22	150	48	A	V
	*	2447	93.89	-	-	95.76	27.4	4.88	34.15	150	48	P	V
	*	2447	86.18	-	-	88.05	27.4	4.88	34.15	150	48	A	V
		2486.42	54.85	-19.15	74	56.61	27.47	4.9	34.13	150	48	P	V
		2499.93	42.39	-11.61	54	44.08	27.5	4.92	34.11	150	48	A	V
	802.11n HT40 CH 09 2452MHz		2385.46	54.46	-19.54	74	56.56	27.26	4.86	34.22	150	189	P
		2389.94	42.41	-11.59	54	44.46	27.29	4.86	34.2	150	189	A	H
*		2452	105.93	-	-	107.78	27.4	4.9	34.15	150	189	P	H
*		2452	98.02	-	-	99.87	27.4	4.9	34.15	150	189	A	H
		2485.16	68.17	-5.83	74	69.93	27.47	4.9	34.13	150	189	P	H
		2485.16	53.97	-0.03	54	55.73	27.47	4.9	34.13	150	189	A	H
		2370.76	48.47	-25.53	74	50.57	27.26	4.86	34.22	150	48	P	V
		2381.12	38.14	-15.86	54	40.24	27.26	4.86	34.22	150	48	A	V
*		2452	92.16	-	-	94.01	27.4	4.9	34.15	150	48	P	V
*		2452	85.42	-	-	87.27	27.4	4.9	34.15	150	48	A	V
	2485.79	55.35	-18.65	74	57.11	27.47	4.9	34.13	150	48	P	V	
	2499.93	42.4	-11.6	54	44.09	27.5	4.92	34.11	150	48	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



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

WIFI Ant. 1+2+3	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		4844	42.39	-31.61	74	59.29	32.59	8.85	58.34	250	0	P	H
HT40		7266	49.31	-24.69	74	59.97	37.66	11.06	59.38	150	0	P	H
CH 03		4844	42.67	-31.33	74	59.57	32.59	8.85	58.34	250	0	P	V
2422MHz		7266	49.23	-24.77	74	59.89	37.66	11.06	59.38	150	0	P	V
802.11n		4854	42.22	-31.78	74	59.09	32.62	8.85	58.34	250	0	P	H
HT40		7281	48.86	-25.14	74	59.52	37.66	11.06	59.38	150	0	P	H
CH 04		4854	42.21	-31.79	74	59.08	32.62	8.85	58.34	250	0	P	V
2427MHz		7281	49.48	-24.52	74	60.14	37.66	11.06	59.38	150	0	P	V
802.11n		4874	42.9	-31.1	74	59.72	32.66	8.85	58.33	250	0	P	H
HT40		7311	48.6	-25.4	74	59.32	37.66	11.02	59.4	150	0	P	H
CH 06		4874	41.78	-32.22	74	58.6	32.66	8.85	58.33	250	0	P	V
2437MHz		7311	49.76	-24.24	74	60.48	37.66	11.02	59.4	150	0	P	V
802.11n		4894	43.05	-30.95	74	59.87	32.69	8.82	58.33	250	0	P	H
HT40		7341	48.62	-25.38	74	59.38	37.67	10.99	59.42	150	0	P	H
CH 08		4894	43.45	-30.55	74	60.27	32.69	8.82	58.33	250	0	P	V
2447MHz		7341	48.71	-25.29	74	59.47	37.67	10.99	59.42	150	0	P	V
802.11n		4904	42.31	-31.69	74	59.09	32.73	8.82	58.33	250	0	P	H
HT40		7356	47.79	-26.21	74	58.56	37.67	10.99	59.43	150	0	P	H
CH 09		4904	42.96	-31.04	74	59.74	32.73	8.82	58.33	250	0	P	V
2452MHz		7356	48.62	-25.38	74	59.39	37.67	10.99	59.43	150	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz &5GHz
WIFI 802.11n40 & 5G Band 1 11ac(n80)_Tx_Ch42
WIFI 802.11n40 & Band 411a(n20)_Tx_Ch165
(Harmonic @ 3m)

WIFI Ant. 1+2+3	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)
802.11n40 CH 09 2452MHz& 5G Band 1 11ac(n80)_ Tx_Ch42		4904	49.54	-24.46	74	66.52	32.73	8.62	58.33	100	360	P	H
		7356	47.72	-26.28	74	59.26	37.67	10.22	59.43	100	360	P	H
		10420	50.45	-23.55	74	59.78	39.82	11.66	60.81	172	0	P	H
		15630	45.91	-28.09	74	56.28	37.89	13.94	62.2	172	0	P	H
		4904	41.58	-32.42	74	58.56	32.73	8.62	58.33	172	360	P	V
		7356	46.11	-27.89	74	57.65	37.67	10.22	59.43	172	360	P	V
		10420	49.57	-24.43	74	58.9	39.82	11.66	60.81	172	0	P	V
802.11n40 CH 09 2452MHz& 5G Band 4 11a(n20)_T x_Ch165		15630	45.36	-28.64	74	55.73	37.89	13.94	62.2	172	0	P	V
		4904	42.57	-31.43	74	59.55	32.73	8.62	58.33	151	360	P	H
		7356	47.62	-26.38	74	59.16	37.67	10.22	59.43	151	360	P	H
		11650	50.45	-23.55	74	58.4	39.62	12.1	59.67	151	0	P	H
		17475	48.21	-25.79	74	52.75	40.62	14.96	60.12	151	0	P	H
		4904	41.16	-32.84	74	58.14	32.73	8.62	58.33	160	23	P	V
		7356	46.57	-27.43	74	58.11	37.67	10.22	59.43	160	23	P	V
	11650	47.41	-26.59	74	55.36	39.62	12.1	59.67	160	211	P	V	
	17475	47.59	-26.41	74	52.13	40.62	14.96	60.12	160	211	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.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2+3		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT40 LF		30	26.17	-13.83	40	31.14	26.7	0.33	32	155	100	P	H
		161.92	22.68	-20.82	43.5	35.79	17.28	1.09	31.48	-	-	P	H
		270.56	27.38	-18.62	46	38.79	18.45	1.52	31.38	-	-	P	H
		440.31	28.37	-17.63	46	32.42	25.11	2.01	31.17	-	-	P	H
		773.99	31	-15	46	32.11	27.35	2.75	31.21	-	-	P	H
		982.54	33.55	-20.45	54	31.58	30.05	3.15	31.23	-	-	P	H
		30	32.07	-7.93	40	37.04	26.7	0.33	32	130	100	P	V
		42.61	29.77	-10.23	40	40.5	20.82	0.44	31.99	-	-	P	V
		123.12	26.37	-17.13	43.5	38.73	18.34	0.94	31.64	-	-	P	V
		179.38	25.5	-18	43.5	39.28	16.51	1.12	31.41	-	-	P	V
		402.48	28	-18	46	31.36	25.94	1.95	31.25	-	-	P	V
		1000	33.58	-20.42	54	31.22	30.4	3.2	31.24	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

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



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		(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”.



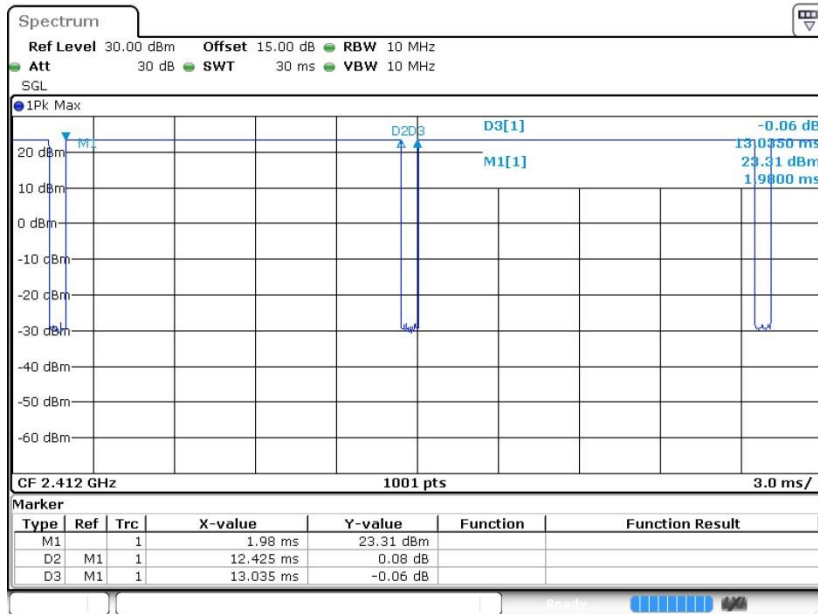
Appendix C. Duty Cycle Plots

Chain Port	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2+3	802.11b	95.32	12.425	0.080	100Hz
1+2+3	802.11g	95.16	2.065	0.484	1KHz
1+2+3	2.4GHz 802.11n HT20	95.05	1.92	0.521	1KHz
1+2+3	2.4GHz 802.11n HT40	90.69	0.945	1.058	3KHz

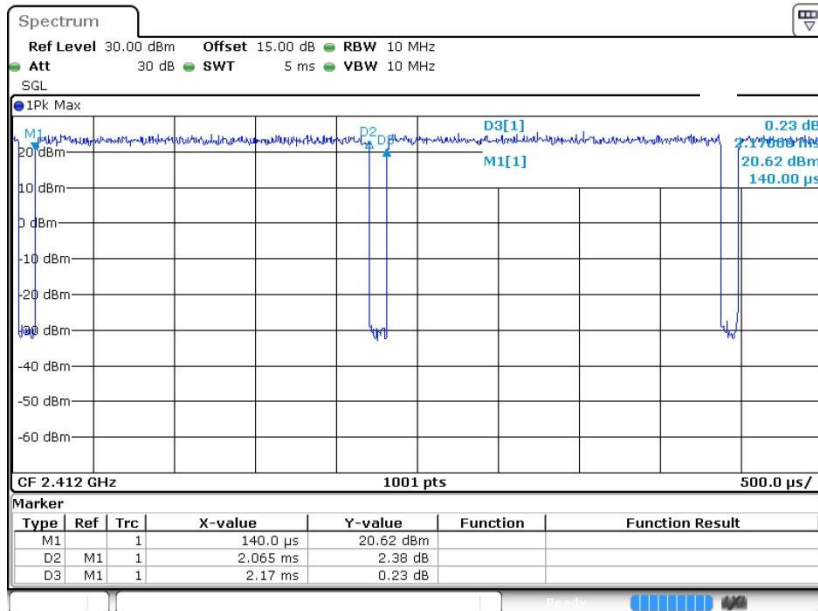


<Ant 1+2+3>

802.11b

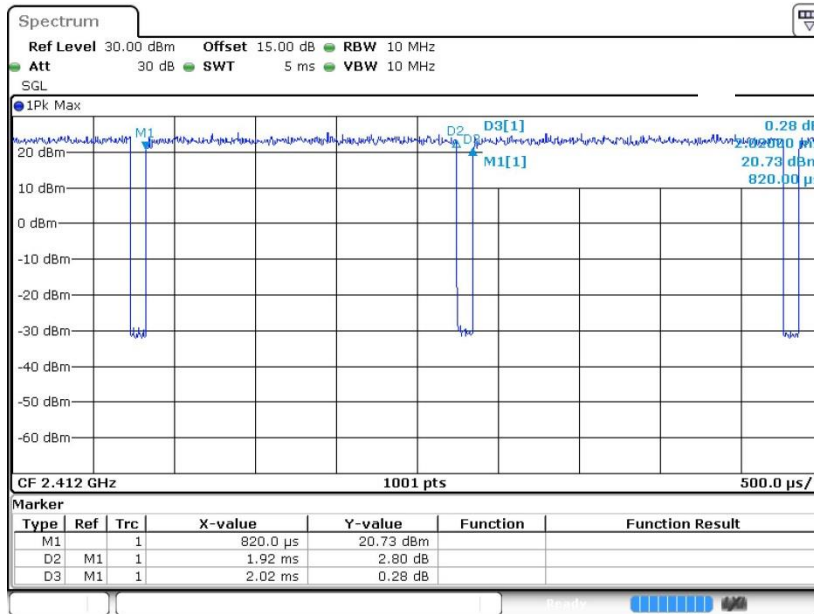


802.11g





802.11n HT20



802.11n HT40

