FCC TEST REPORT

for

Zbtlink INC

wireless router

Model Number: CSW-WR246
CSW-WR146, CSW-WR346, CSW-WR426, CSW-WR546, CSW-WR646, CSW-AP812, CSW-AP742, CSW-AP812, CSW-AP912

FCC ID: 2AL6QCSW-WR246

Prepared for	:	Zbtlink INC
Address	:	586S South 18th Avenue Suite A, Brighton, CO, 80601,United States

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TEST RESULT CERTIFICATION

Applicant: **Address:**	Zbtlink INC 586S South 18th Avenue Suite A, Brighton, CO, 80601,United States		
Manufacturer: **Address:**	SHENZHEN ZHIBOTONG ELECTRONICS CO.,LTD. 4F,Bldg A2,Hedian Industrial Park,NO.8 Shijing Rd, Guanlan, Longhua District, ShenZhen, China		
E.U.T:	Wireless router		
Model Number:	CSW-WR246 CSW-WR146, CSW-WR346, CSW-WR426, CSW-WR546, CSW-WR646, CSW-AP812, CSW-AP742, CSW-AP812, CSW-AP912		
Trade Name:	N/A	**Serial No.:**	------
Date of Receipt:	Apr. 28, 2017	**Date of Test:**	Mar 01~07, 2017
Test Specification:	FCC Part 15, Subpart C ANSI C63.10:2013 KDB558074 D01 DTS Meas Guidance v03r02		
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied. **Issue Date: May 08, 2017**		

Tested by:	Reviewed by:	Approved by:
Jack	Andy	Jade Yang
Jack Bu / Engineer	Andy Gao / Supervisor	Jade Yang/ Supervisor

Other Aspects:

None.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

This test report is based on a single evaluation of one sample of above mentioned products.

1. TEST SUMMARY

Test Items	Test Requirement	Result
Conducted Emissions	15.207	PASS
Radiated Emissions	15.205(a)15.209 15.247(d)	PASS
6dB Bandwidth	15.247(a)(2)	PASS
Power density	15.247(e)	PASS
Maximum Peak Output Power	15.247(b)(3)	PASS
Emissions from out of band	15.247(d)	PASS
Antenna Requirement	15.203	PASS

2.GENERAL PRODUCT INFORMATION

2.1. Product Function

Refer to Technical Construction Form and User Manual.

2.2. Description of Device (EUT)

Product Name:	Wireless router
Model No.:	CSW-WR246, CSW-WR146, CSW-WR346, CSW-WR426, CSW-WR546, CSW-WR646, CSW-AP812, CSW-AP742, CSW-AP812, CSW-AP912
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40))
Channel numbers:	11 for 802.11b/802.11g/802.11n(H20) , 7 for 802.11n(H40)
Channel separation:	5MHz
Modulation technology:	Direct Sequence Spread Spectrum (DSSS) for 802.11b Orthogonal Frequency Division Multiplexing(OFDM) for 802.11g/n
Data rate:	802.11b: 1Mbps, 2Mbps, 5.5Mbps, 11Mbps 802.11g: 6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps 802.11n: Up to 300Mbps
Antenna Type:	External Antenna*2
Antenna gain:	5.0dBi (declare by Applicant)
Power supply:	DC 12V from adapter
Switching power Adapter:	Manufacturer: SHENZHEN ZHIBOTONG ELECTRONICS CO.,LTD. M/N:GS-0120250 Input :AC 120-240V 50/60Hz; Output: DC 12V 2.5A

Note: The MIMO mode only support all mode, Directional Gain=5dBi+10log(2)=8.01dBi

2.3. Independent Operation Modes

The basic operation modes are:

2.3.1. EUT work continues TX mode and frequency as below:

	Channel	Frequency
802.11b	Low	2412MHz
	Middle	2437MHz
	High	2462MHz
802.11g	Low	2412MHz
	Middle	2437MHz
	High	2462MHz
802.11n(HT20)	Low	2412MHz
	Middle	2437MHz
	High	2462MHz
802.11 n(HT40)	Low	2422MHz
	Middle	2437MHz
	High	2452MHz

Remark: According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 11Mbps for 802.11b,6Mbps for 802.11g,13Mbps for 802.11n(H20), 54Mbps for 802.11n(H40).

2.4. Test Supporting System

TV	Manufacturer: SONY M/N: KDL-26X550 S/N : 1020345 FCC Approve: FCC DOC

2.5. Test Facilities

Lab Qualifications :

Certificated by FCC, USA
Registration No.: 187086
Date of Expiration: July 12, 2017

Name of Firm : Shenzhen BCTC Technology Co., Ltd.

Site Location : No.101,Yousong Road,Longhua New District, Shenzhen,China

3. LIST OF TEST AND MEASUREMENT INSTRUMENTS

3.1.1. For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 27,17	Apr. 27,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101315	Apr. 27,17	Apr. 27,18
Artificial Mains Network (AUX)	Rohde&Schwarz	ENV216	101314	Apr. 27,17	Apr. 27,18
RF Cable	FUJIKURA	3D-2W	944 Cable	Apr. 27,17	Apr. 27,18

3.1.2. For radiated emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 27,17	Apr. 27,18
System Simulator	Agilent	E5515C	GB43130245	Apr. 30,17	Apr. 30,18
Power Splitter	Weinschel	1506A	NW425	Apr. 30,17	Apr. 30,18
Bilog Antenna	ETS-LINDGREEN	3142D	135452	Apr. 27,17	Apr. 27,18
Spectrum Analyzer	Agilent	E4411B	MY4511304	Apr. 27,17	Apr. 27,18
3m Semi-anechoic Chamber	ETS-LINDGREEN	966	KW01	Apr. 27,17	Apr. 27,18
Signal Amplifier	SONOMA	310	187016	Apr. 27,17	Apr. 27,18
Signal Amplifier	Agilent	8449B	3008A00251	Apr. 27,17	Apr. 27,18
RF Cable	IMRO	IMRO-400	966 Cable 1#	N/A	N/A
MULTI-DEVICE Controller	ETS-LINDGREEN	2090	126913	N/A	N/A
Horn Antenna	DAZE	ZN30701	11003	Apr. 27,17	Apr. 27,18
Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	Apr. 27,17	Apr. 27,18
Spectrum Analyzer	Agilent	8593E	3911A04271	Apr. 27,17	Apr. 27,18
Spectrum Analyzer	Agilent	E4408B	MY44211125	Apr. 30,17	Apr. 30,18
Signal Amplifier	DAZE	ZN3380C	11001	Apr. 27,17	Apr. 27,18
High Pass filter	Micro	HPM50111	324216	Apr. 30,17	Apr. 30,18
Filter	COM-MW	ZBSF-C836.5-25-X	KW032	Apr. 30,17	Apr. 30,18
Filter	COM-MW	ZBSF-C1747.5-75-X2	KW035	Apr. 30,17	Apr. 30,18
Filter	COM-MW	ZBSF-C1880-60-X2	KW037	Apr. 30,17	Apr. 30,18
DC Power Supply	LongWei	PS-305D	010964729	Apr. 27,17	Apr. 27,18
Constant temperature and humidity box	GF	GTH-800-40-1P	MAA9906-005	Apr. 27,17	Apr. 27,18
Universal radio communication tester	Rohde&Schwarz	CMU200	3215420	Apr. 27,17	Apr. 27,18
Splitter	Agilent	11636B	0025164	Apr. 27,17	Apr. 27,18

4. TEST SET-UP AND OPERATION MODES

4.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

4.2. Block Diagram of Test Set-up

Please see item 11.

4.3. Test Operation Mode and Test Software

None.

4.4. Special Accessories and Auxiliary Equipment

None.

4.5. Countermeasures to Achieve EMC Compliance

None.

4.6. Test Environment:

Ambient conditions in the test laboratory:

Items	Actual
Temperature (℃)	21~23
Humidity (%RH)	50~65

5. EMISSION TEST RESULTS

5.1. Conducted Emission at the Mains Terminals Test

5.1.1. Limit 15.207 limits

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

5.1.2. Test Setup

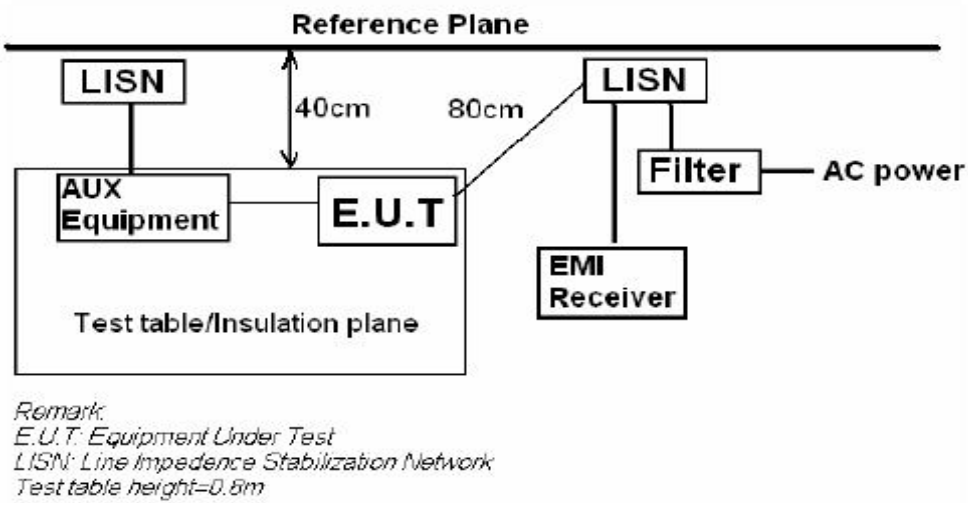
The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network (AMN). Where the mains cable supplied by the manufacture was longer than 0.8 m, the excess was folded back and forth parallel to the cable at the centre so as to form a bundle no longer than 0.4 m.

The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.

The frequency range from 150 kHz to 30 MHz was investigated.

The bandwidth of the test receiver was set at 9 kHz.

Pretest for all mode, The test data of the worst case condition(s) was reported on the following page.

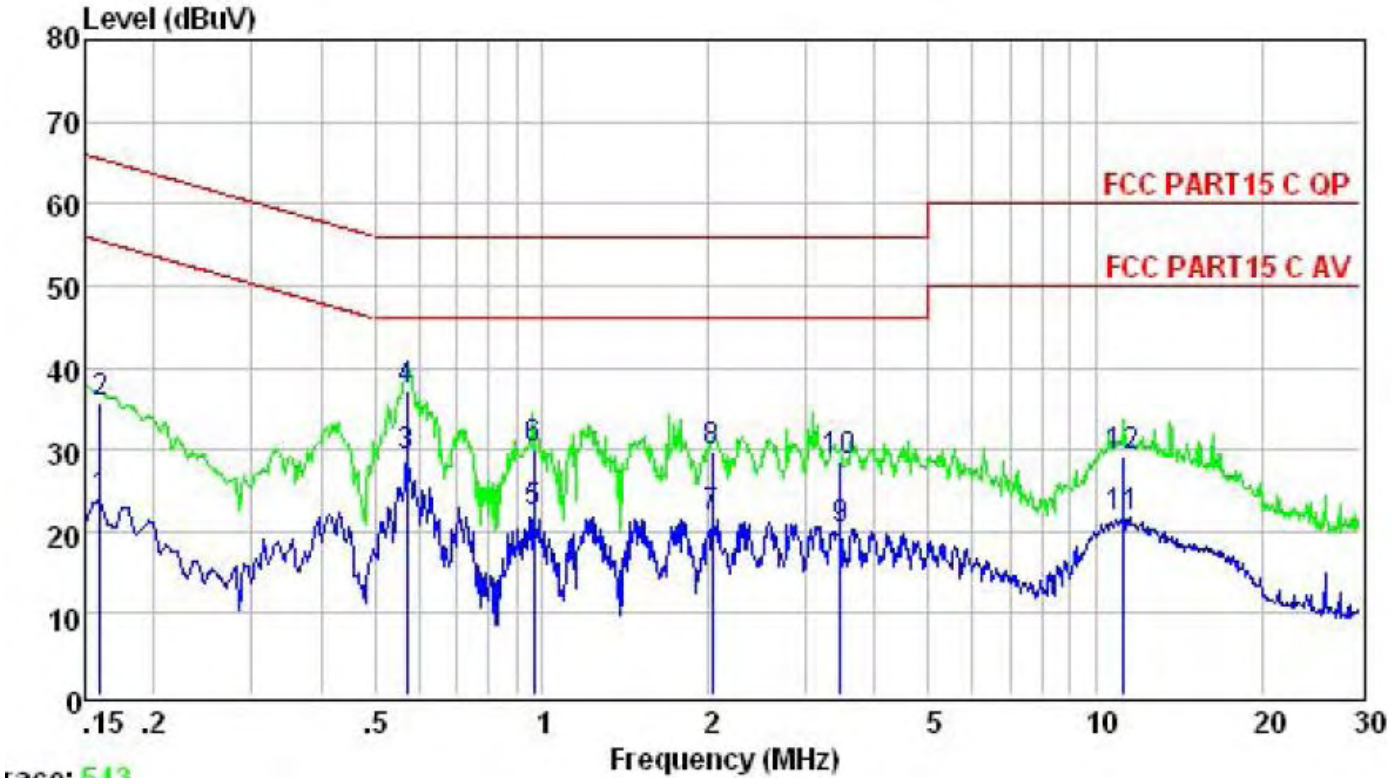


5.1.3. Test Mode

Set EUT in TX mode.

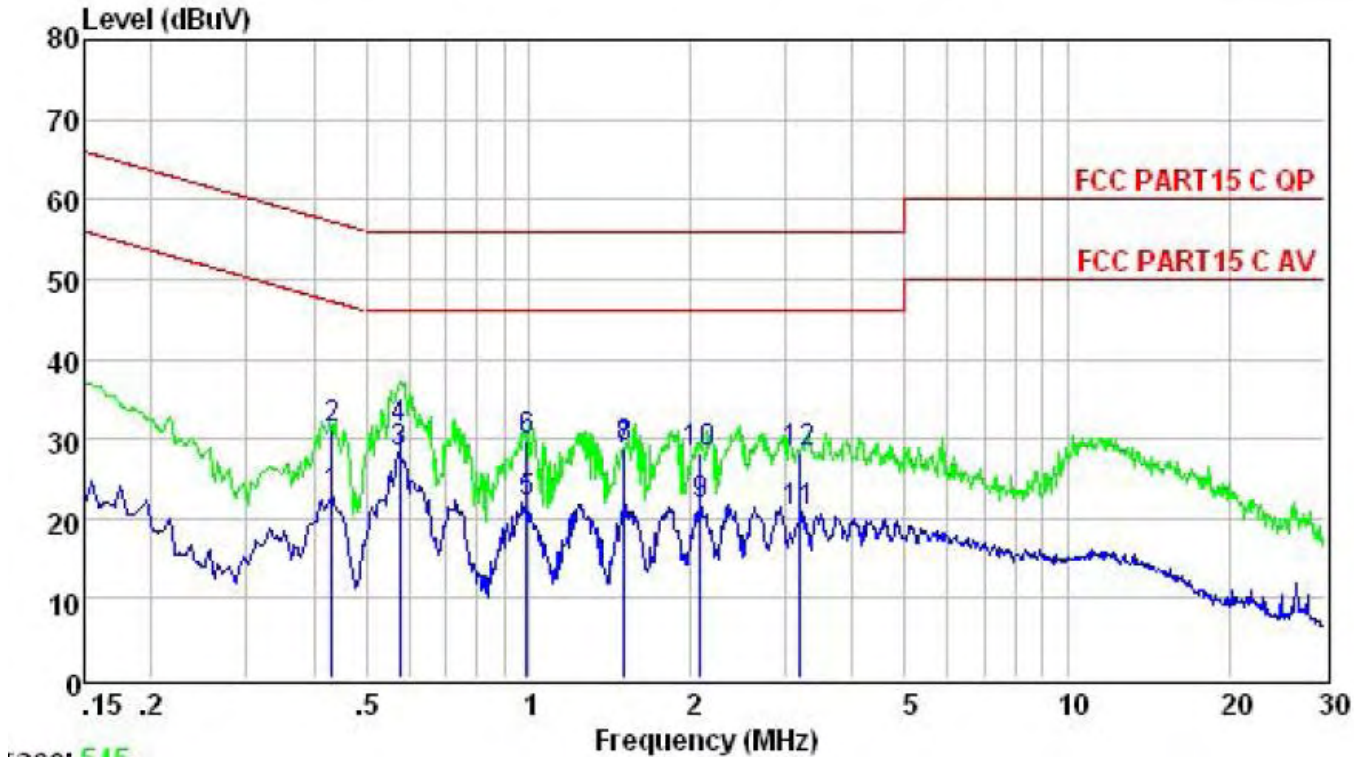
Test Data

Line



	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.160	23.80	55.47	-31.67	Average
2	0.160	35.60	65.47	-29.87	QP
3	0.570	29.03	46.00	-16.97	Average
4	0.570	37.30	56.00	-18.70	QP
5	0.968	22.21	46.00	-23.79	Average
6	0.968	30.10	56.00	-25.90	QP
7	2.033	21.84	46.00	-24.16	Average
8	2.033	29.60	56.00	-26.40	QP
9	3.454	20.17	46.00	-25.83	Average
10	3.454	28.60	56.00	-27.40	QP
11	11.257	21.78	50.00	-28.22	Average
12	11.257	29.20	60.00	-30.80	QP

Neutral



	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.433	22.96	47.20	-24.24	Average
2	0.433	31.10	57.20	-26.10	QP
3	0.576	28.35	46.00	-17.65	Average
4	0.576	31.20	56.00	-24.80	QP
5	0.994	22.03	46.00	-23.97	Average
6	0.994	29.60	56.00	-26.40	QP
7	1.503	28.60	46.00	-17.40	Average
8	1.503	28.70	56.00	-27.30	QP
9	2.088	21.66	46.00	-24.34	Average
10	2.088	28.25	56.00	-27.75	QP
11	3.190	20.89	46.00	-25.11	Average
12	3.190	28.25	56.00	-27.75	QP

5.2. Radiated Emission Test

5.2.1. Limit 15.209 limits

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

5.2.2. Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

5.2.3. Test setup

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both HORIZONTAL and VERTICAL polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz.

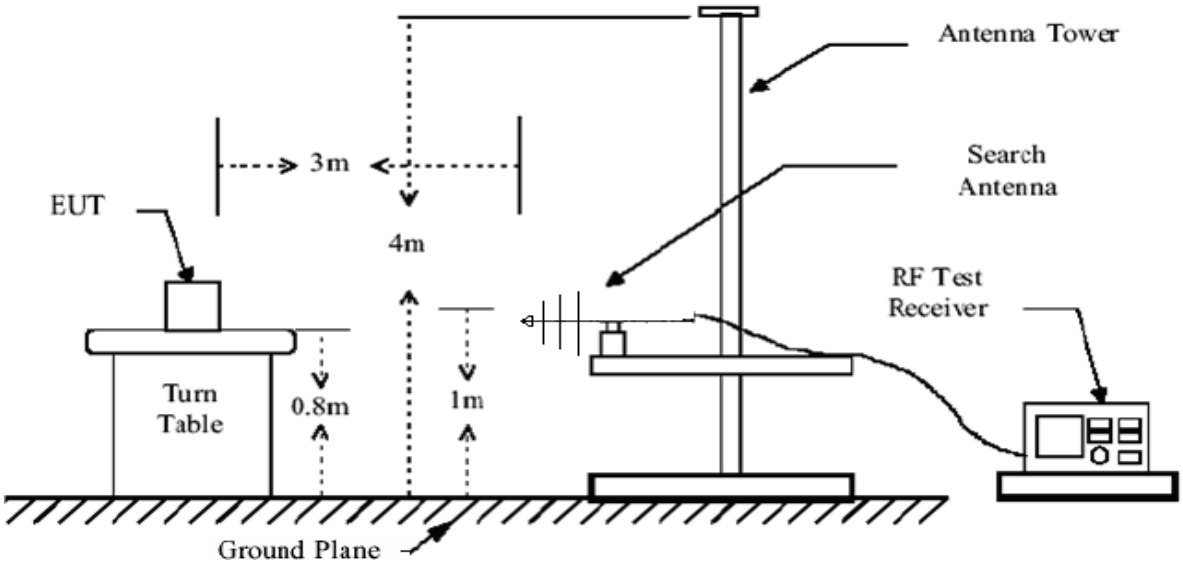
The frequency range from 30MHz to 10^{th} harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading-Preamp Factor.

2. Measurement Uncertainty: ±3.2 dB at a level of confidence of 95%.

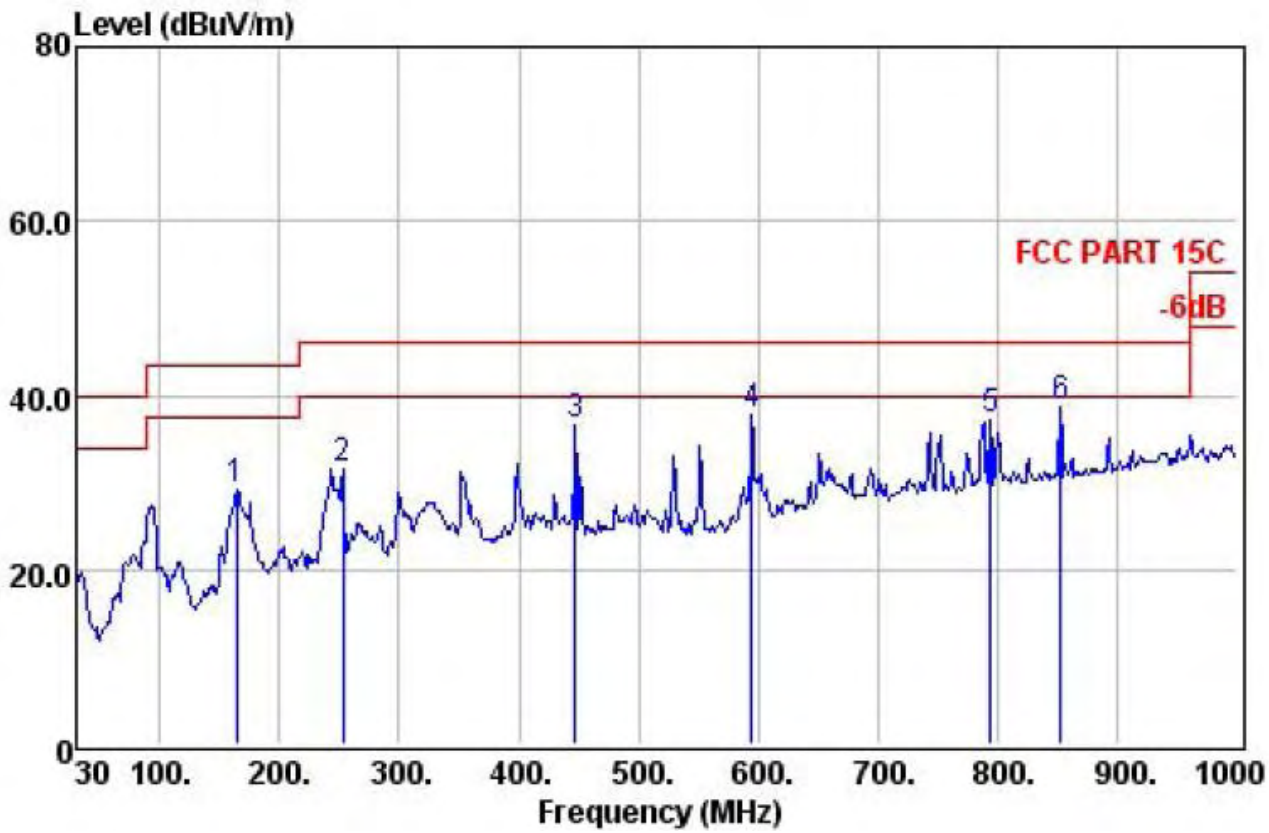
3. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

4. For emissions below 1GHz, pretest for all mode, The test data of the worst case condition(s) was reported on the following pages.



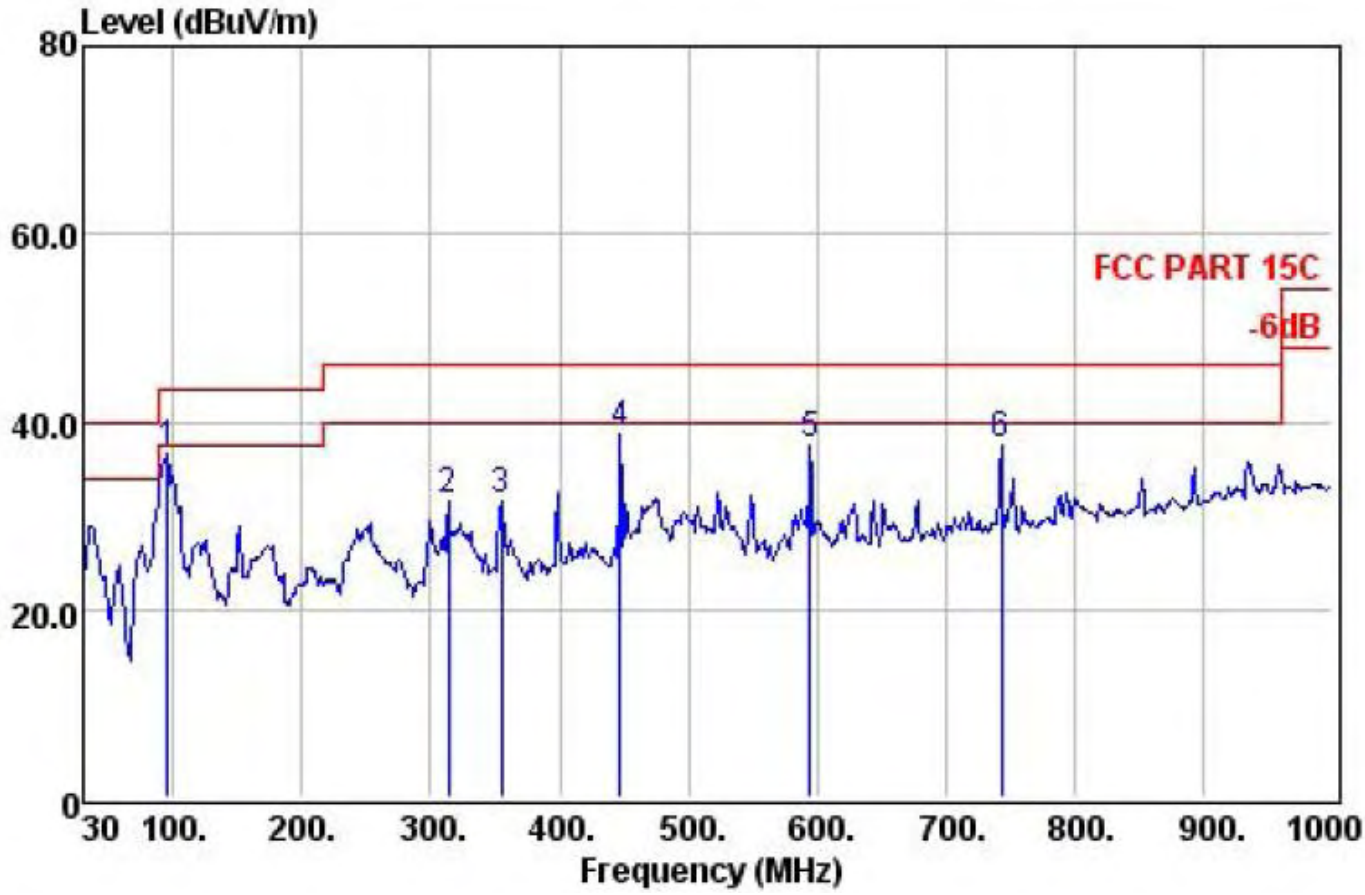
Test Data
Below 1GHz

WIFI Mode Horizontal polarizations



	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	163.86	31.21	49.52	1.30	9.55	29.16	43.50	-14.34	QP
2	253.10	30.97	47.88	1.70	12.91	31.52	46.00	-14.48	QP
3	447.10	30.61	47.00	2.62	17.54	36.55	46.00	-9.45	QP
4	594.54	30.66	44.67	3.29	20.43	37.73	46.00	-8.27	QP
5	794.36	30.58	40.59	4.29	22.93	37.23	46.00	-8.77	QP
6	852.56	30.35	41.40	4.59	23.14	38.78	46.00	-7.22	QP

WIFI Mode Vertical polarizations



	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	95.96	31.35	57.69	0.94	9.40	36.68	43.50	-6.82	QP
2	313.24	30.89	46.31	1.94	14.17	31.53	46.00	-14.47	QP
3	354.95	30.64	44.07	2.18	15.92	31.53	46.00	-14.47	QP
4	447.10	30.61	49.18	2.62	17.54	38.73	46.00	-7.27	QP
5	594.54	30.66	44.43	3.29	20.43	37.49	46.00	-8.51	QP
6	742.95	30.67	41.33	4.04	22.74	37.44	46.00	-8.56	QP

Above 1GHz

Test mode: 802.11b 2412MHz

Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4824.00	27.50	31.73	12.01	32.99	49.23	74.00	-24.77	Peak
2	7236.00	27.95	23.35	16.61	37.30	49.31	74.00	-24.69	Peak
3	8735.00	28.32	19.93	16.82	37.08	45.51	74.00	-28.49	Peak
4	10826.00	28.88	18.21	17.13	39.40	45.86	74.00	-28.14	Peak
5	13767.00	29.35	11.65	19.10	43.27	44.67	74.00	-29.33	Peak
6	15722.00	29.66	16.28	20.45	39.25	46.32	74.00	-27.68	Peak

Test mode: 802.11b 2412MHz

Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4824.00	27.50	31.76	12.01	32.99	49.26	74.00	-24.74	Peak
2	7236.00	27.95	23.46	16.61	37.30	49.42	74.00	-24.58	Peak
3	10350.00	28.84	20.05	17.04	38.96	47.21	74.00	-26.79	Peak
4	12305.00	29.06	19.67	17.62	39.46	47.69	74.00	-26.31	Peak
5	14175.00	29.43	14.01	19.47	42.50	46.55	74.00	-27.45	Peak
6	16453.00	29.88	12.94	20.95	43.09	47.10	74.00	-26.90	Peak

Test mode: 802.11b 2437MHz

Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4874.00	27.53	31.15	12.14	33.11	48.87	74.00	-25.13	Peak
2	7311.00	27.96	21.96	16.62	37.32	47.94	74.00	-26.06	Peak
3	9211.00	28.48	18.67	16.90	37.65	44.74	74.00	-29.26	Peak
4	10945.00	28.89	16.26	17.16	39.47	44.00	74.00	-30.00	Peak
5	13291.00	29.26	13.71	18.54	42.05	45.04	74.00	-28.96	Peak
6	14974.00	29.55	16.93	19.99	38.64	46.01	74.00	-27.99	Peak

Test mode: 802.11b 2437MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4874.00	27.53	30.57	12.14	33.11	48.29	74.00	-25.71	Peak
2	7311.00	27.96	22.67	16.62	37.32	48.65	74.00	-25.35	Peak
3	9415.00	28.57	18.70	16.91	37.90	44.94	74.00	-29.06	Peak
4	10962.00	28.90	19.99	17.16	39.48	47.73	74.00	-26.27	Peak
5	12492.00	29.10	19.59	17.79	39.50	47.78	74.00	-26.22	Peak
6	14379.00	29.46	13.17	19.61	41.30	44.62	74.00	-29.38	Peak

Test mode: 802.11b 2462MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4924.00	27.56	30.04	12.28	33.23	47.99	74.00	-26.01	Peak
2	7386.00	27.98	22.62	16.62	37.36	48.62	74.00	-25.38	Peak
3	8905.00	28.37	20.05	16.86	37.28	45.82	74.00	-28.18	Peak
4	11659.00	28.97	16.94	17.30	39.74	45.01	74.00	-28.99	Peak
5	13223.00	29.24	16.40	18.46	41.73	47.35	74.00	-26.65	Peak
6	15178.00	29.58	17.87	20.11	38.47	46.87	74.00	-27.13	Peak

Test mode: 802.11b 2462MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4924.00	27.56	31.27	12.28	33.23	49.22	74.00	-24.78	Peak
2	7386.00	27.98	23.31	16.62	37.36	49.31	74.00	-24.69	Peak
3	8497.00	28.25	18.63	16.76	36.80	43.94	74.00	-30.06	Peak
4	10486.00	28.85	15.66	17.06	39.17	43.04	74.00	-30.96	Peak
5	13053.00	29.21	13.00	18.28	40.94	43.01	74.00	-30.99	Peak
6	15212.00	29.58	16.37	20.13	38.46	45.38	74.00	-28.62	Peak

Test mode: 802.11g 2412MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4824.00	27.50	30.72	12.01	32.99	48.22	74.00	-25.78	Peak
2	7236.00	27.95	22.70	16.61	37.30	48.66	74.00	-25.34	Peak
3	8344.00	28.20	19.78	16.73	36.68	44.99	74.00	-29.01	Peak
4	10554.00	28.86	19.51	17.08	39.23	46.96	74.00	-27.04	Peak
5	12611.00	29.12	16.21	17.88	39.78	44.75	74.00	-29.25	Peak
6	14260.00	29.44	13.54	19.53	42.00	45.63	74.00	-28.37	Peak

Test mode: 802.11g 2412MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4824.00	27.50	31.81	12.01	32.99	49.31	74.00	-24.69	Peak
2	7236.00	27.95	22.82	16.61	37.30	48.78	74.00	-25.22	Peak
3	9534.00	28.61	19.48	16.92	38.03	45.82	74.00	-28.18	Peak
4	10945.00	28.89	16.78	17.16	39.47	44.52	74.00	-29.48	Peak
5	13461.00	29.29	15.35	18.75	42.84	47.65	74.00	-26.35	Peak
6	14889.00	29.53	18.79	19.93	38.99	48.18	74.00	-25.82	Peak

Test mode: 802.11g 2437MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4874.00	27.53	31.26	12.14	33.11	48.98	74.00	-25.02	Peak
2	7311.00	27.96	22.94	16.62	37.32	48.92	74.00	-25.08	Peak
3	9075.00	28.43	19.61	16.88	37.48	45.54	74.00	-28.46	Peak
4	11540.00	28.95	18.27	17.27	39.87	46.46	74.00	-27.54	Peak
5	12951.00	29.19	17.87	18.17	40.58	47.43	74.00	-26.57	Peak
6	14838.00	29.53	16.57	19.89	39.20	46.13	74.00	-27.87	Peak

Test mode: 802.11g 2437MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4874.00	27.53	31.60	12.14	33.11	49.32	74.00	-24.68	Peak
2	7311.00	27.96	23.23	16.62	37.32	49.21	74.00	-24.79	Peak
3	9330.00	28.53	18.74	16.91	37.79	44.91	74.00	-29.09	Peak
4	10707.00	28.87	16.74	17.11	39.32	44.30	74.00	-29.70	Peak
5	12696.00	29.14	15.49	17.96	39.98	44.29	74.00	-29.71	Peak
6	14141.00	29.42	14.80	19.45	42.70	47.53	74.00	-26.47	Peak

Test mode: 802.11g 2462MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4924.00	27.56	31.26	12.28	33.23	49.21	74.00	-24.79	Peak
2	7386.00	27.98	23.35	16.62	37.36	49.35	74.00	-24.65	Peak
3	9041.00	28.41	21.42	16.88	37.44	47.33	74.00	-26.67	Peak
4	11166.00	28.92	19.90	17.20	39.63	47.81	74.00	-26.19	Peak
5	13733.00	29.35	13.11	19.06	43.23	46.05	74.00	-27.95	Peak
6	15365.00	29.61	17.07	20.23	38.43	46.12	74.00	-27.88	Peak

Test mode: 802.11g 2462MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4924.00	27.56	30.66	12.28	33.23	48.61	74.00	-25.39	Peak
2	7386.00	27.98	22.59	16.62	37.36	48.59	74.00	-25.41	Peak
3	8361.00	28.21	17.11	16.74	36.69	42.33	74.00	-31.67	Peak
4	10877.00	28.89	16.15	17.14	39.43	43.83	74.00	-30.17	Peak
5	13155.00	29.23	12.47	18.40	41.41	43.05	74.00	-30.95	Peak
6	14736.00	29.51	15.11	19.83	39.62	45.05	74.00	-28.95	Peak

Test mode: 802.11n(HT20) 2412MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4824.00	27.50	30.37	12.01	32.99	47.87	74.00	-26.13	Peak
2	7236.00	27.95	23.25	16.61	37.30	49.21	74.00	-24.79	Peak
3	8990.00	28.39	19.91	16.88	37.38	45.78	74.00	-28.22	Peak
4	10894.00	28.89	17.64	17.15	39.44	45.34	74.00	-28.66	Peak
5	13835.00	29.37	11.87	19.16	43.33	44.99	74.00	-29.01	Peak
6	14804.00	29.52	15.60	19.87	39.34	45.29	74.00	-28.71	Peak

Test mode: 802.11n(HT20) 2412MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4824.00	27.50	30.79	12.01	32.99	48.29	74.00	-25.71	Peak
2	7236.00	27.95	22.39	16.61	37.30	48.35	74.00	-25.65	Peak
3	8514.00	28.25	19.42	16.77	36.82	44.76	74.00	-29.24	Peak
4	10452.00	28.85	18.79	17.06	39.12	46.12	74.00	-27.88	Peak
5	12611.00	29.12	15.50	17.88	39.78	44.04	74.00	-29.96	Peak
6	13733.00	29.35	11.84	19.06	43.23	44.78	74.00	-29.22	Peak

Test mode: 802.11n(HT20) 2437MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4874.00	27.53	31.15	12.14	33.11	48.87	74.00	-25.13	Peak
2	7311.00	27.96	22.63	16.62	37.32	48.61	74.00	-25.39	Peak
3	8905.00	28.37	17.53	16.86	37.28	43.30	74.00	-30.70	Peak
4	11387.00	28.94	16.23	17.24	39.81	44.34	74.00	-29.66	Peak
5	13614.00	29.32	8.89	18.92	43.12	41.61	74.00	-32.39	Peak
6	14821.00	29.52	14.91	19.88	39.27	44.54	74.00	-29.46	Peak

Test mode: 802.11n(HT20) 2437MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4874.00	27.53	29.89	12.14	33.11	47.61	74.00	-26.39	Peak
2	7311.00	27.96	22.54	16.62	37.32	48.52	74.00	-25.48	Peak
3	8684.00	28.30	17.75	16.81	37.02	43.28	74.00	-30.72	Peak
4	11047.00	28.91	15.45	17.17	39.54	43.25	74.00	-30.75	Peak
5	12764.00	29.15	16.46	18.02	40.14	45.47	74.00	-28.53	Peak
6	15076.00	29.56	17.57	20.04	38.49	46.54	74.00	-27.46	Peak

Test mode: 802.11n(HT20) 2462MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4924.00	27.56	30.58	12.28	33.23	48.53	74.00	-25.47	Peak
2	7386.00	27.98	21.87	16.62	37.36	47.87	74.00	-26.13	Peak
3	8650.00	28.29	16.85	16.80	36.98	42.34	74.00	-31.66	Peak
4	10486.00	28.85	15.96	17.06	39.17	43.34	74.00	-30.66	Peak
5	12475.00	29.09	15.49	17.77	39.50	43.67	74.00	-30.33	Peak
6	13920.00	29.38	11.59	19.27	43.42	44.90	74.00	-29.10	Peak

Test mode: 802.11n(HT20) 2462MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4924.00	27.56	29.96	12.28	33.23	47.91	74.00	-26.09	Peak
2	7386.00	27.98	22.61	16.62	37.36	48.61	74.00	-25.39	Peak
3	9432.00	28.57	16.19	16.91	37.92	42.45	74.00	-31.55	Peak
4	10945.00	28.89	15.08	17.16	39.47	42.82	74.00	-31.18	Peak
5	12866.00	29.17	9.62	18.09	40.38	38.92	74.00	-35.08	Peak
6	14294.00	29.44	8.17	19.55	41.80	40.08	74.00	-33.92	Peak

Test mode: 802.11n(HT40) 2422MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4844.00	27.51	30.02	12.05	33.03	47.59	74.00	-26.41	Peak
2	7266.00	27.95	21.16	16.61	37.31	47.13	74.00	-26.87	Peak
3	9007.00	28.40	17.33	16.88	37.40	43.21	74.00	-30.79	Peak
4	10452.00	28.85	15.79	17.06	39.12	43.12	74.00	-30.88	Peak
5	12849.00	29.17	12.98	18.09	40.34	42.24	74.00	-31.76	Peak
6	15382.00	29.61	14.07	20.24	38.42	43.12	74.00	-30.88	Peak

Test mode: 802.11n(HT40) 2422MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4844.00	27.51	31.05	12.05	33.03	48.62	74.00	-25.38	Peak
2	7266.00	27.95	22.25	16.61	37.31	48.22	74.00	-25.78	Peak
3	8837.00	28.35	15.41	16.84	37.20	41.10	74.00	-32.90	Peak
4	10316.00	28.83	16.08	17.03	38.91	43.19	74.00	-30.81	Peak
5	11744.00	28.97	12.96	17.31	39.66	40.96	74.00	-33.04	Peak
6	13019.00	29.20	13.16	18.24	40.78	42.98	74.00	-31.02	Peak

Test mode: 802.11n(HT40) 2437MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4874.00	27.53	30.65	12.14	33.11	48.37	74.00	-25.63	Peak
2	7311.00	27.96	21.21	16.62	37.32	47.19	74.00	-26.81	Peak
3	8956.00	28.38	14.18	16.87	37.34	40.01	74.00	-33.99	Peak
4	11472.00	28.95	13.14	17.26	39.87	41.32	74.00	-32.68	Peak
5	13223.00	29.24	9.17	18.46	41.73	40.12	74.00	-33.88	Peak
6	14379.00	29.46	11.21	19.61	41.30	42.66	74.00	-31.34	Peak

Test mode: 802.11n(HT40) 2437MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4874.00	27.53	30.89	12.14	33.11	48.61	74.00	-25.39	Peak
2	7311.00	27.96	21.89	16.62	37.32	47.87	74.00	-26.13	Peak
3	8905.00	28.37	15.15	16.86	37.28	40.92	74.00	-33.08	Peak
4	11013.00	28.90	13.72	17.17	39.51	41.50	74.00	-32.50	Peak
5	13291.00	29.26	10.43	18.54	42.05	41.76	74.00	-32.24	Peak
6	14685.00	29.50	12.27	19.80	39.83	42.40	74.00	-31.60	Peak

Test mode: 802.11n(HT40) 2452MHz
Polarization: HORIZONTAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4904.00	27.55	30.89	12.23	33.19	48.76	74.00	-25.24	Peak
2	7356.00	27.97	21.15	16.62	37.34	47.14	74.00	-26.86	Peak
3	9517.00	28.61	13.79	16.92	38.01	40.11	74.00	-33.89	Peak
4	11336.00	28.93	13.23	17.23	39.77	41.30	74.00	-32.70	Peak
5	13138.00	29.23	12.24	18.38	41.33	42.72	74.00	-31.28	Peak
6	14838.00	29.53	14.34	19.89	39.20	43.90	74.00	-30.10	Peak

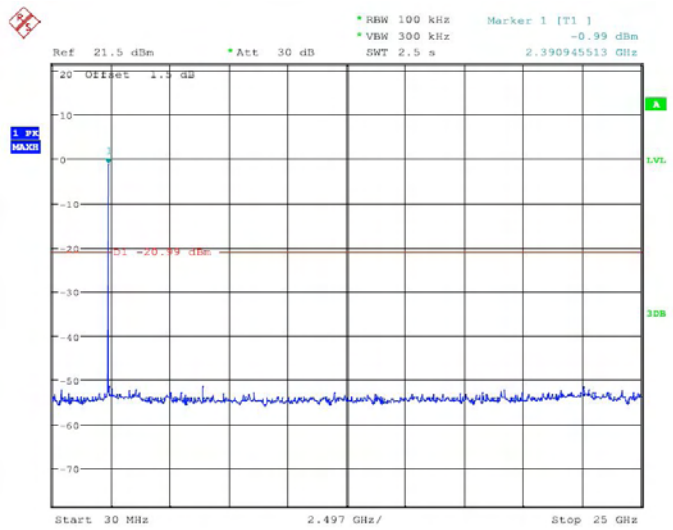
Test mode: 802.11n(HT40) 2452MHz
Polarization: VERTICAL

	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4904.00	27.55	30.74	12.23	33.19	48.61	74.00	-25.39	Peak
2	7356.00	27.97	21.92	16.62	37.34	47.91	74.00	-26.09	Peak
3	9636.00	28.66	14.88	16.93	38.11	41.26	74.00	-32.74	Peak
4	11081.00	28.91	15.85	17.18	39.57	43.69	74.00	-30.31	Peak
5	12798.00	29.16	14.80	18.05	40.22	43.91	74.00	-30.09	Peak
6	14413.00	29.46	10.03	19.63	41.10	41.30	74.00	-32.70	Peak

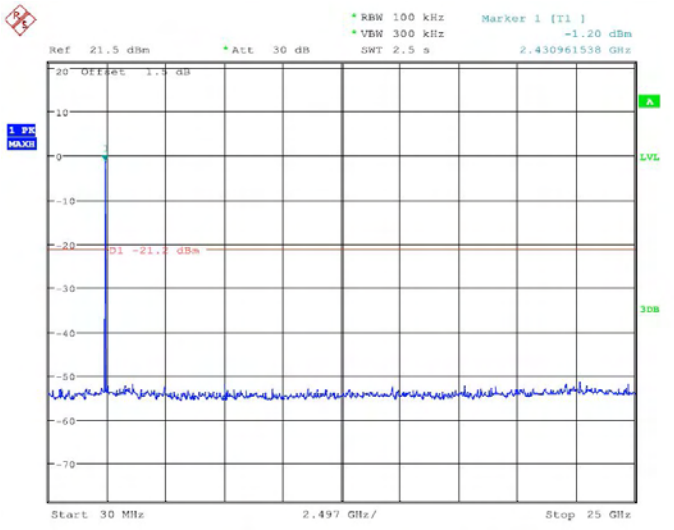
For conducted test

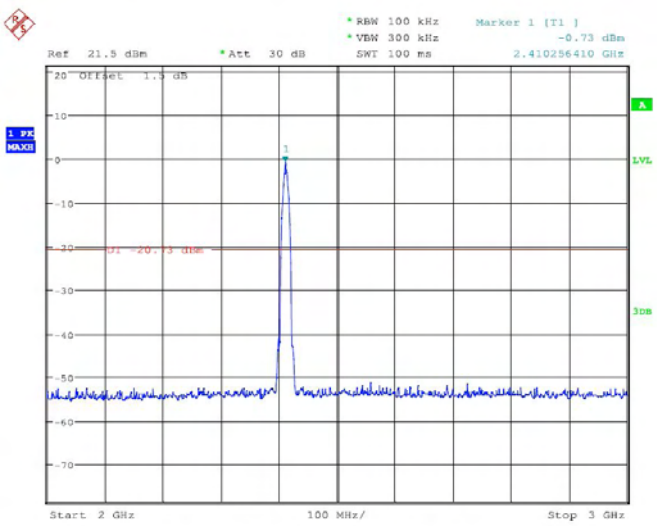
We pretest all antenna data, The worst mode was antenna 1 mode, the plot only show the worst data.

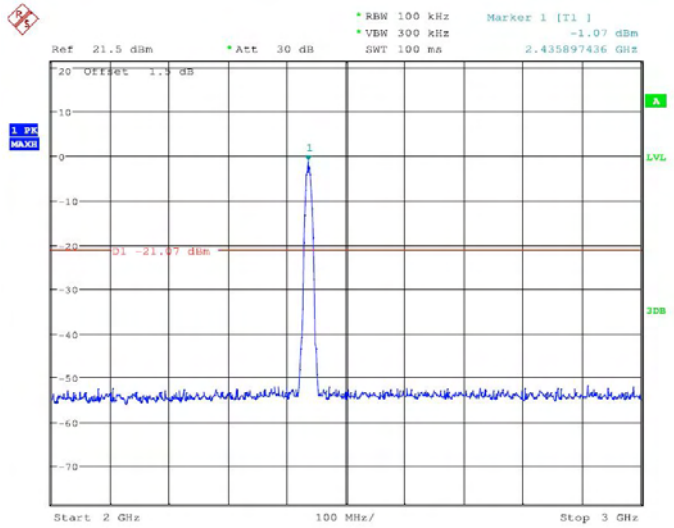
802.11b 2412MHz

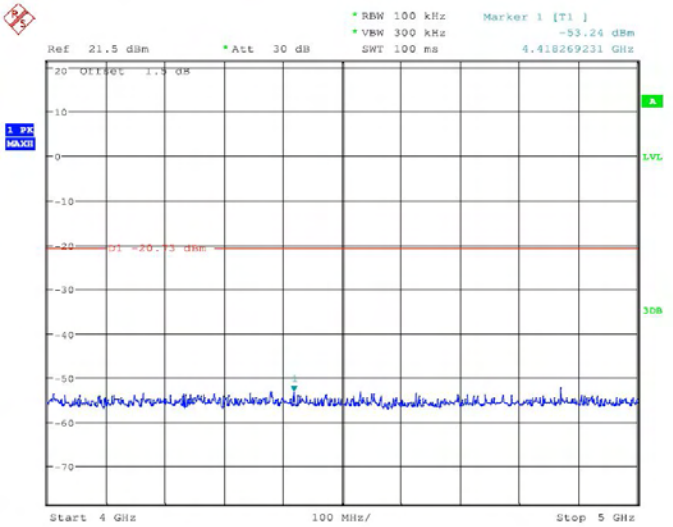


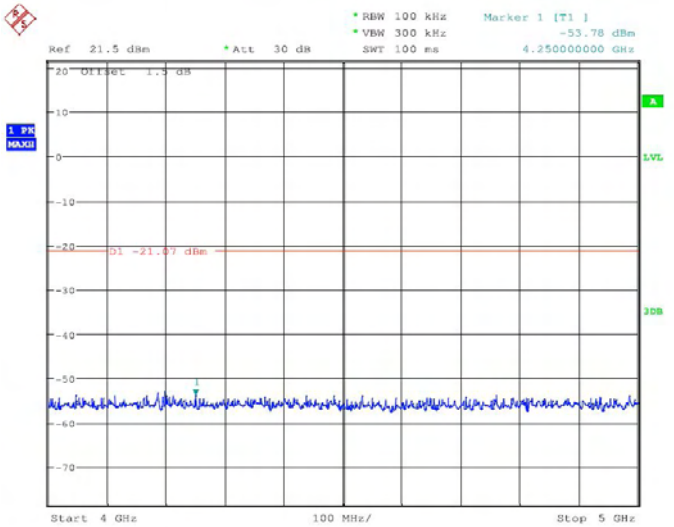
802.11b 2437MHz



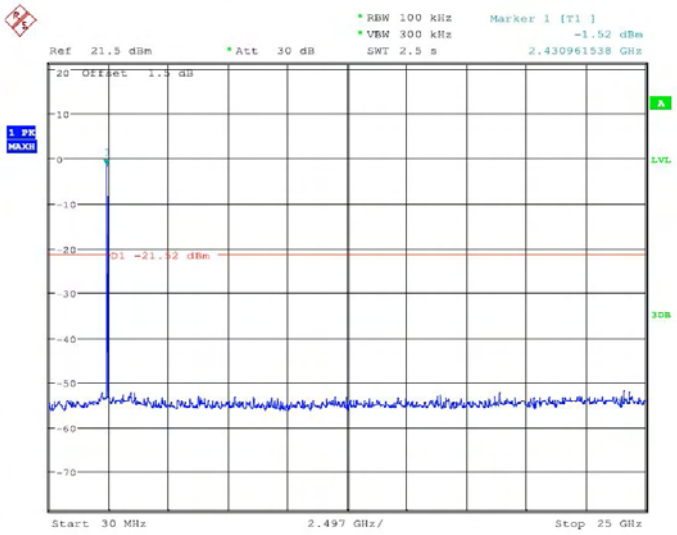


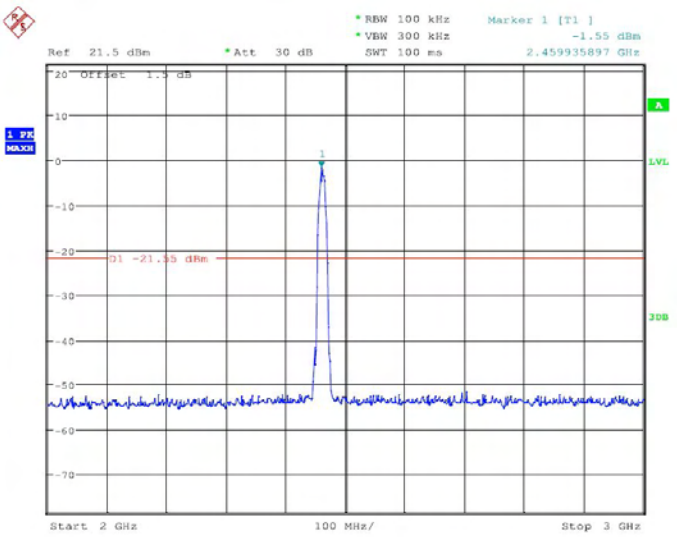


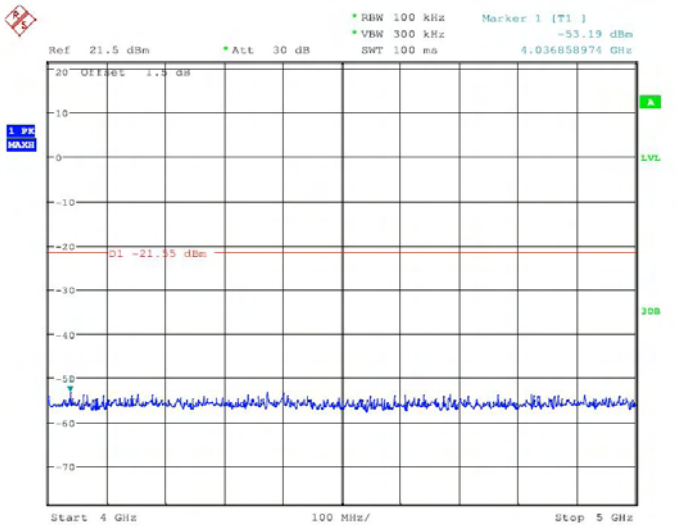




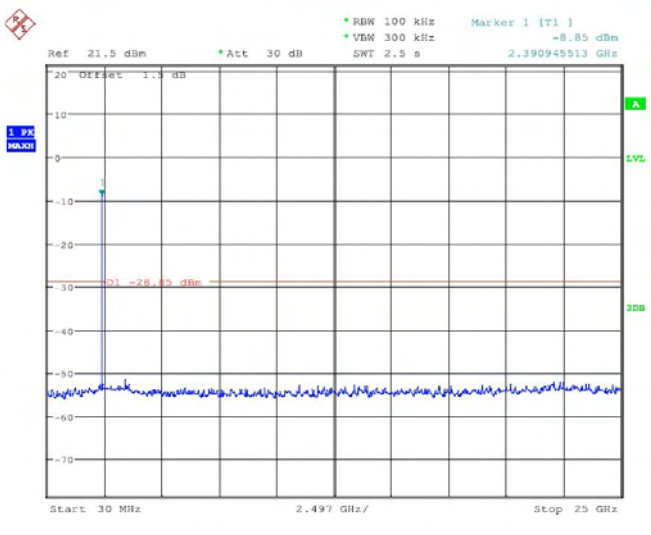
802.11b 2462MHz

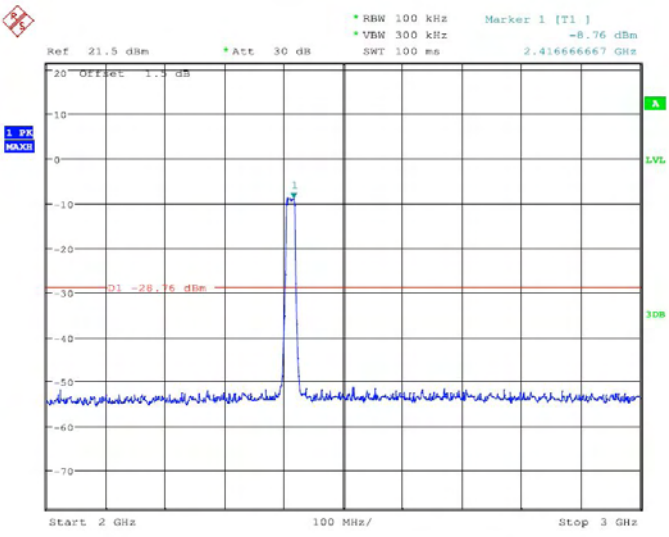


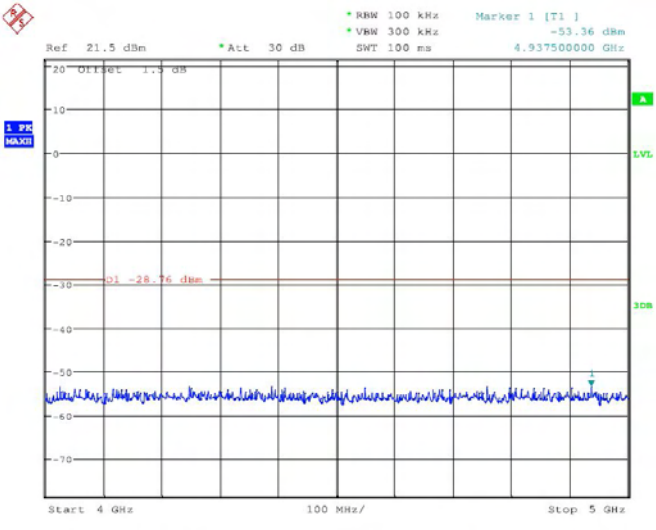




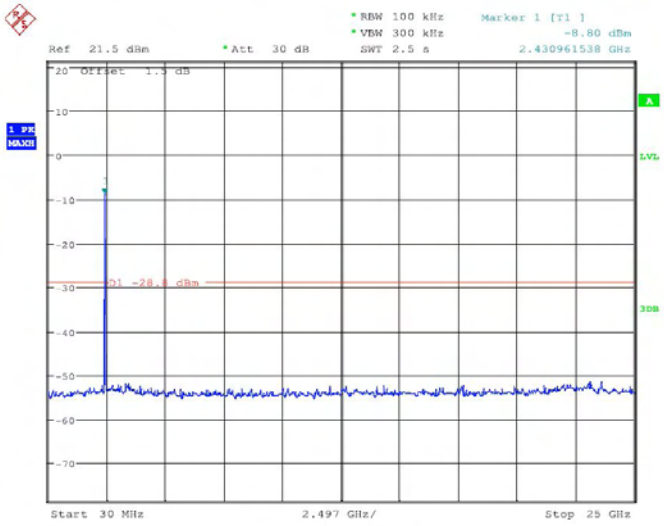
802.11g 2412MHz



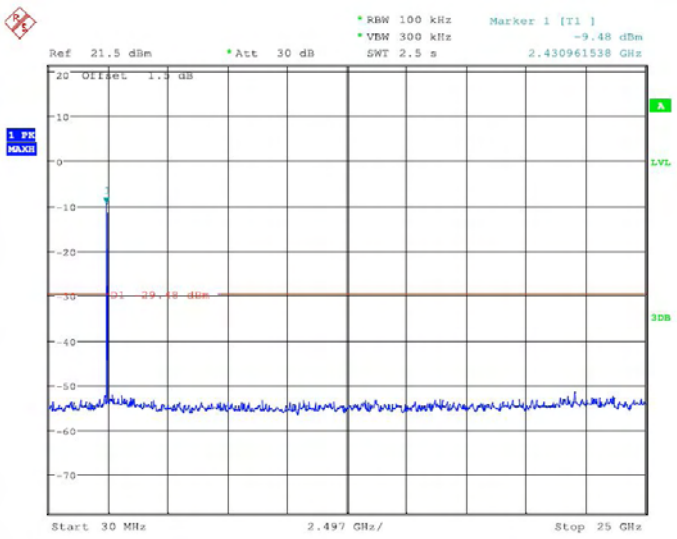


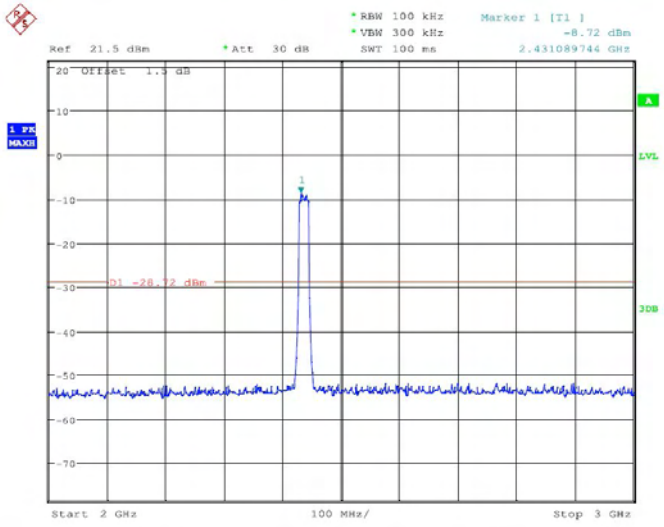


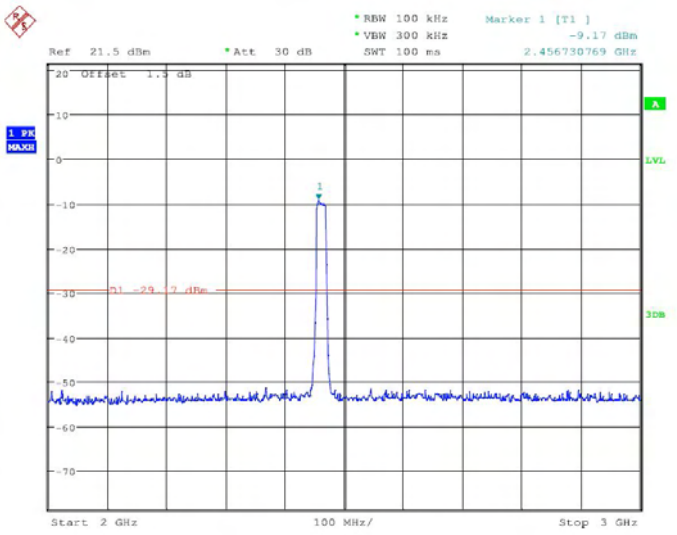
802.11g 2437MHz

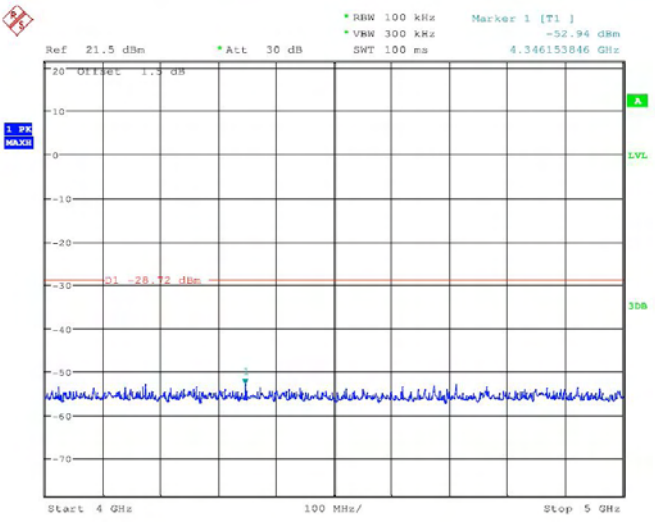


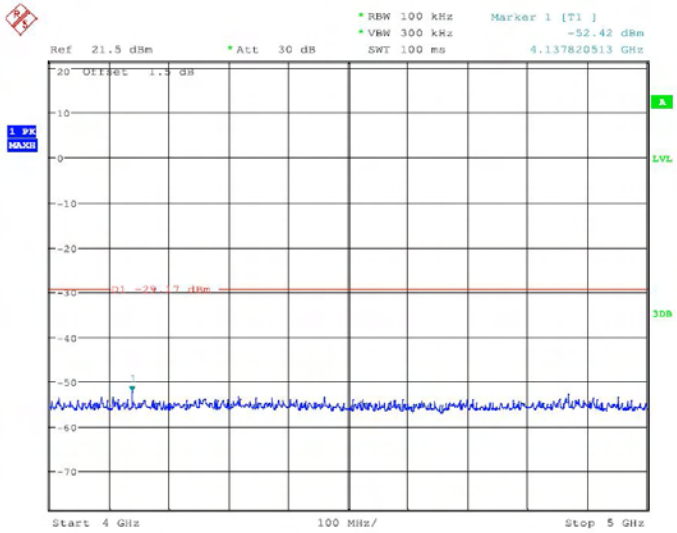
802.11g 2462MHz



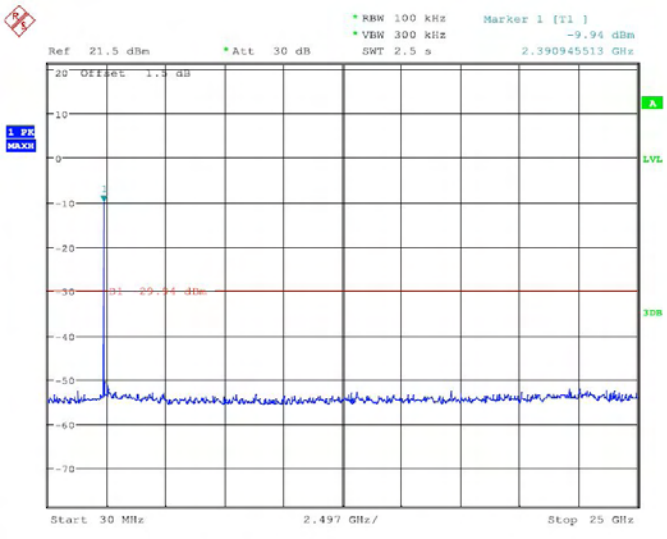


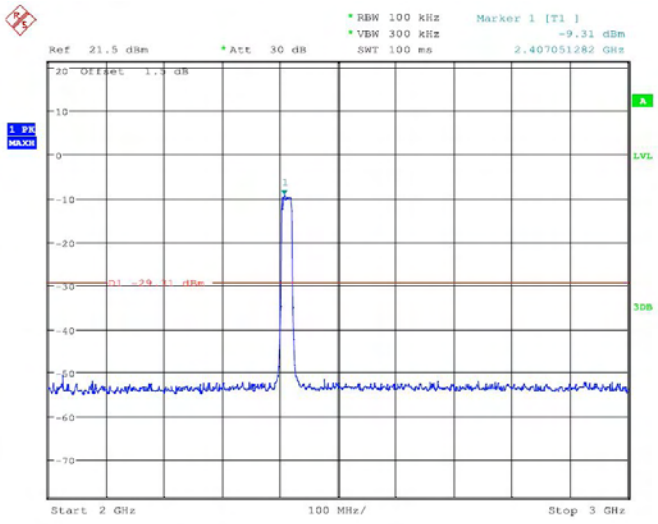


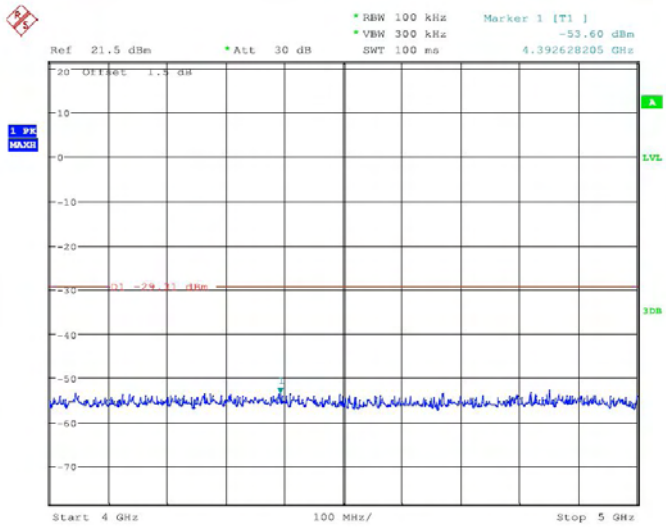




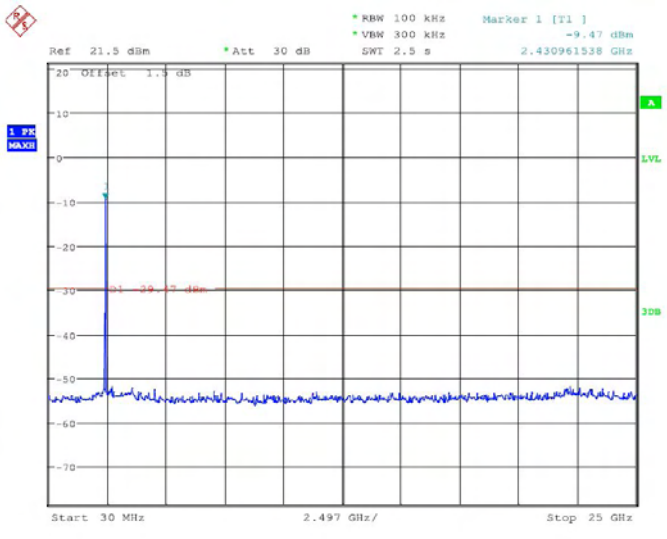
802.11n(HT20) 2412MHz

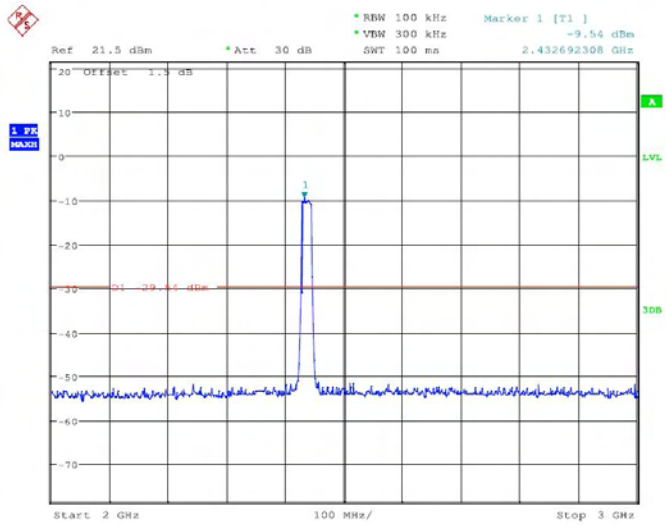


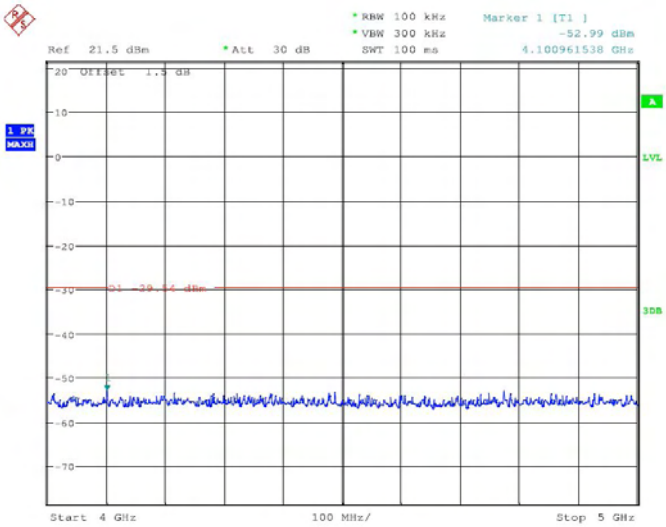




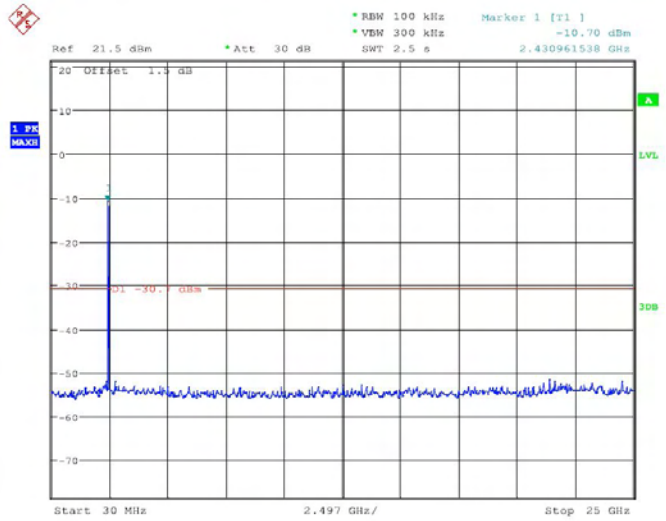
802.11n(HT20) 2437MHz



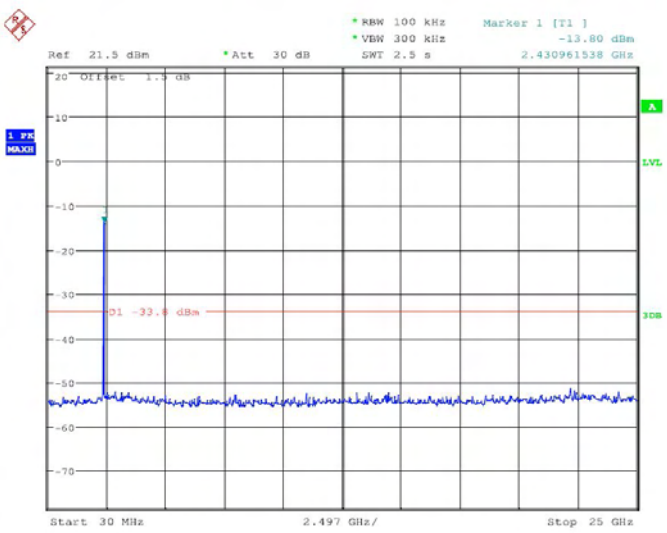


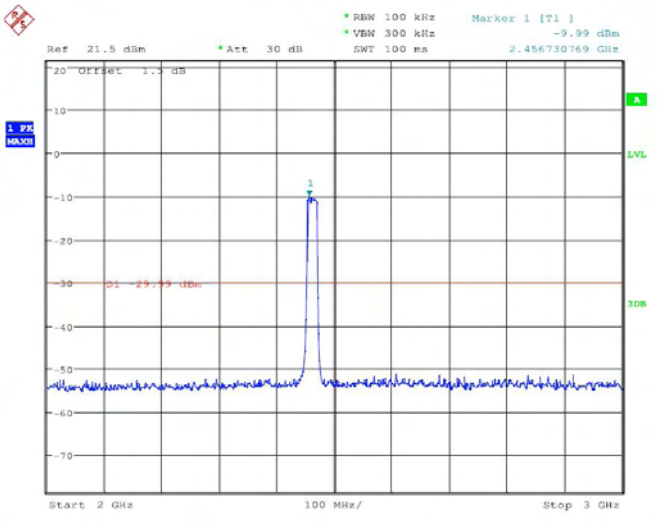


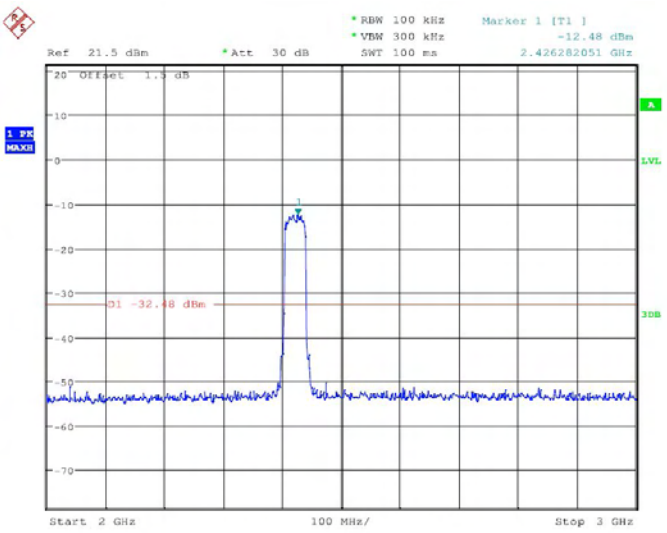
802.11n(HT20) 2462MHz

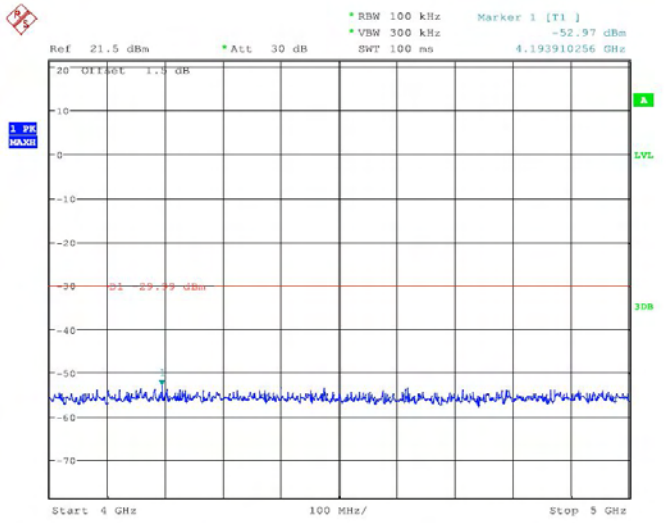


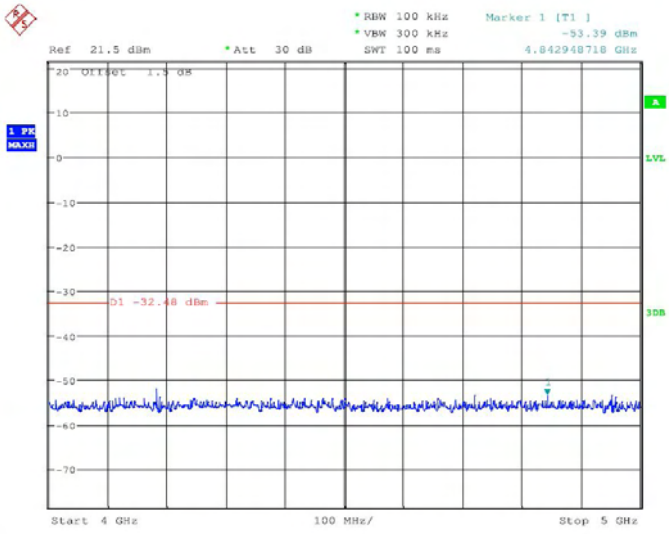
802.11n(HT40) 2422MHz



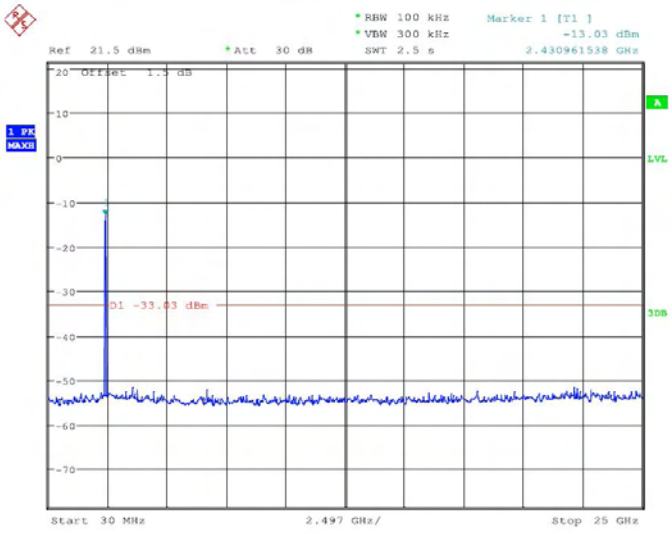


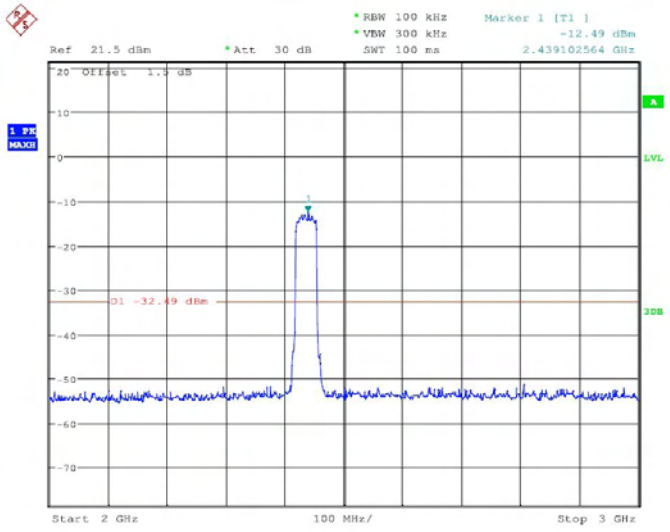


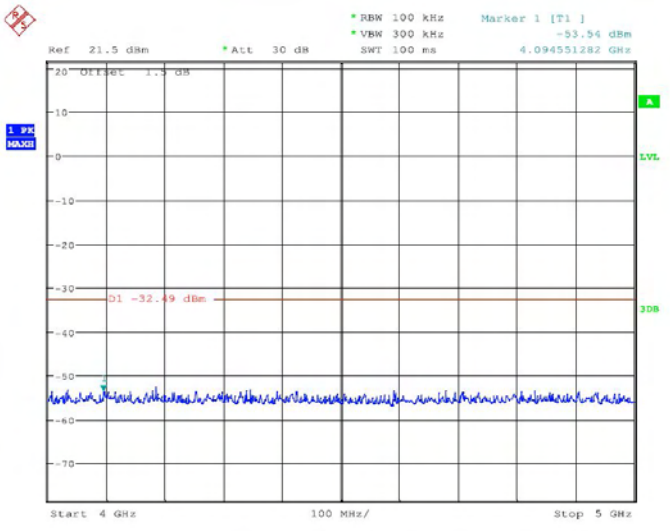




802.11n(HT40) 2437MHz







802.11n(HT40) 2452MHz