FCC TEST REPORT

for

IntelliTouch

IntelliTouch Dual Zone Media Player

Model Number: OHP-9000-IP

FCC ID: XMQEOSOHP

Prepared for	:	IntelliTouch
Address	:	6370 Nancy Ridge Dr, Stc.105, San Diego, California, 92121, United States
Prepared by	:	Keyway Testing Technology Co., Ltd.
Address	:	Building 1, Baishun Industrial Zone, Zhangmutou Town, Dongguan, Guangdong, China

Report No.	:	14KWE11199902F
Date of Test	:	Nov. 28~Dec. 3, 2014
Date of Report	:	Dec. 5, 2014

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Keyway Testing Technology Co., Ltd.

Applicant: **Address:**	IntelliTouch 6370 Nancy Ridge Dr, Stc.105, San Diego, California, 92121, United States		
Manufacturer: **Address:**	IntelliTouch 6370 Nancy Ridge Dr, Stc.105, San Diego, California, 92121, United States		
E.U.T:	IntelliTouch Dual Zone Media Player		
Model Number:	OHP-9000-IP		
Trade Name:	------	**Serial No.:**	------
Date of Receipt:	Sep. 4, 2014	**Date of Test:**	Nov. 28~Dec. 3, 2014
Test Specification:	FCC Part 15, Subpart C: 2014 ANSI C63.4:2009 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: Dec. 5, 2014**		

Tested by:	Reviewed by:	Approved by:
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

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:	IntelliTouch Dual Zone Media Player
Model No.:	OHP-9000-IP
Operation Frequency:	WIFI:2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40))
Channel numbers:	WIFI: 11 for 802.11b/802.11g/802.11n(H20) , 7 for 802.11n(H40)
Channel separation:	WIFI : 5MHz
Modulation technology:	WIFI: 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 150Mbps
Antenna Type:	Integral Antenna
Antenna gain:	WIFI:1dBi (declare by Applicant)
Power supply:	DC 5V from adapter
Adapter	Manufacturer: Shenzhen Juke Electronics Co., Ltd I/P:AC 100~240V 50/60Hz 0.5A O/P: DC 5V 3A DC Line: Unshielded, Undetachable 1.6m

2.3. Difference between Model Numbers

None.

2.4. Independent Operation Modes

The basic operation modes are:

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” 11MHz for 802.11b,6MHz for 802.11g,13Mbps for 802.11n(H20), 54Mbps for 802.11n(H40).

2.5. Test Supporting System

None.

3 TEST SITES

3.1 Test Facilities

Lab Qualifications : 944 Shielded Room built by ETS-Lindgren, USA
Date of completion: March 28, 2011

966 Chamber built by ETS-Lindgren, USA
Date of completion: March 28, 2011

Certificated by TUV Rheinland, Germany.
Registration No.: UA 50207153
Date of registration: July 13, 2011

Certificated by UL, USA
Registration No.: 100567-237
Date of registration: September 1, 2011

Certificated by Intertek
Registration No.: 2011-RTL-L1-31
Date of registration: October 11, 2011

Certificated by Industry Canada
Registration No.: 9868A
Date of registration: December 8, 2011

Certificated by FCC, USA
Registration No.: 370994
Date of registration: February 21, 2012

Certificated by CNAS China
Registration No.: CNAS L5783
Date of registration: August 8, 2012

Name of Firm : Keyway Testing Technology Co., Ltd.

Site Location : Building 1, Baishun Industrial Zone, Zhangmutou Town, Dongguan, Guangdong, China

3.2 List of Test and Measurement Instruments

3.2.1 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. 27,14	Apr. 27,15
Artificial Mains Network	Rohde&Schwarz	ENV216	101315	Apr. 27,14	Apr. 27,15
Artificial Mains Network (AUX)	Rohde&Schwarz	ENV216	101314	Apr. 27,14	Apr. 27,15
RF Cable	FUJIKURA	3D-2W	944 Cable	Apr. 27,14	Apr. 27,15

3.2.2 For radiated emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr. 27,14	Apr. 27,15
System Simulator	Agilent	E5515C	GB43130245	Apr. 30,14	Apr. 30,15
Power Splitter	Weinschel	1506A	NW425	Apr. 30,14	Apr. 30,15
Bilog Antenna	ETS-LINDGREEN	3142D	135452	Apr. 27,14	Apr. 27,15
Spectrum Analyzer	Agilent	E4411B	MY4511304	Apr. 27,14	Apr. 27,15
3m Semi-anechoic Chamber	ETS-LINDGREEN	966	KW01	Apr. 27,14	Apr. 27,15
Signal Amplifier	SONOMA	310	187016	Apr. 27,14	Apr. 27,15
Signal Amplifier	Agilent	8449B	3008A00251	Apr. 27,14	Apr. 27,15
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. 27,14	Apr. 27,15
Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	Apr. 27,14	Apr. 27,15
Spectrum Analyzer	Agilent	8593E	3911A04271	Apr. 27,14	Apr. 27,15
Spectrum Analyzer	Agilent	E4408B	MY44211125	Apr. 30,14	Apr. 30,15
Signal Amplifier	DAZE	ZN3380C	11001	Apr. 27,14	Apr. 27,15
High Pass filter	Micro	HPM50111	324216	Apr. 30,14	Apr. 30,15
Filter	COM-MW	ZBSF-C836.5-25-X	KW032	Apr. 30,14	Apr. 30,15
Filter	COM-MW	ZBSF-C1747.5-75-X2	KW035	Apr. 30,14	Apr. 30,15
Filter	COM-MW	ZBSF-C1880-60-X2	KW037	Apr. 30,14	Apr. 30,15
DC Power Supply	LongWei	PS-305D	010964729	Apr. 27,14	Apr. 27,15
Constant temperature and humidity box	GF	GTH-800-40-1P	MAA9906-005	Apr. 27,14	Apr. 27,15
Universal radio communication tester	Rohde&Schwarz	CMU200	3215420	Apr. 27,14	Apr. 27,15
Splitter	Agilent	11636B	0025164	Apr. 27,14	Apr. 27,15

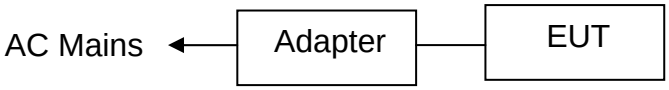
4 TEST SET-UP AND OPERATION MODES

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

System Diagram of Connections between EUT and Simulators



*(*EUT: IntelliTouch Dual Zone Media Player*)*

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

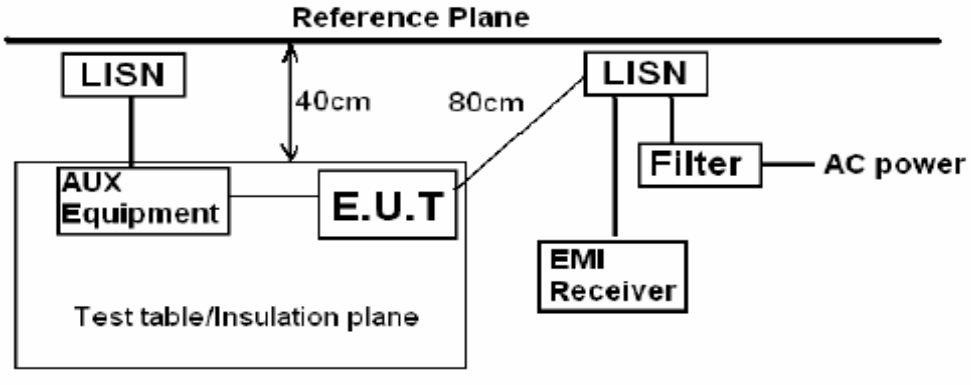
The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network (AMN). Where the mains cable supplied by the manufacture was longer than 0.8 m, the excess was folded back and forth parallel to the cable at the centre so as to 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.



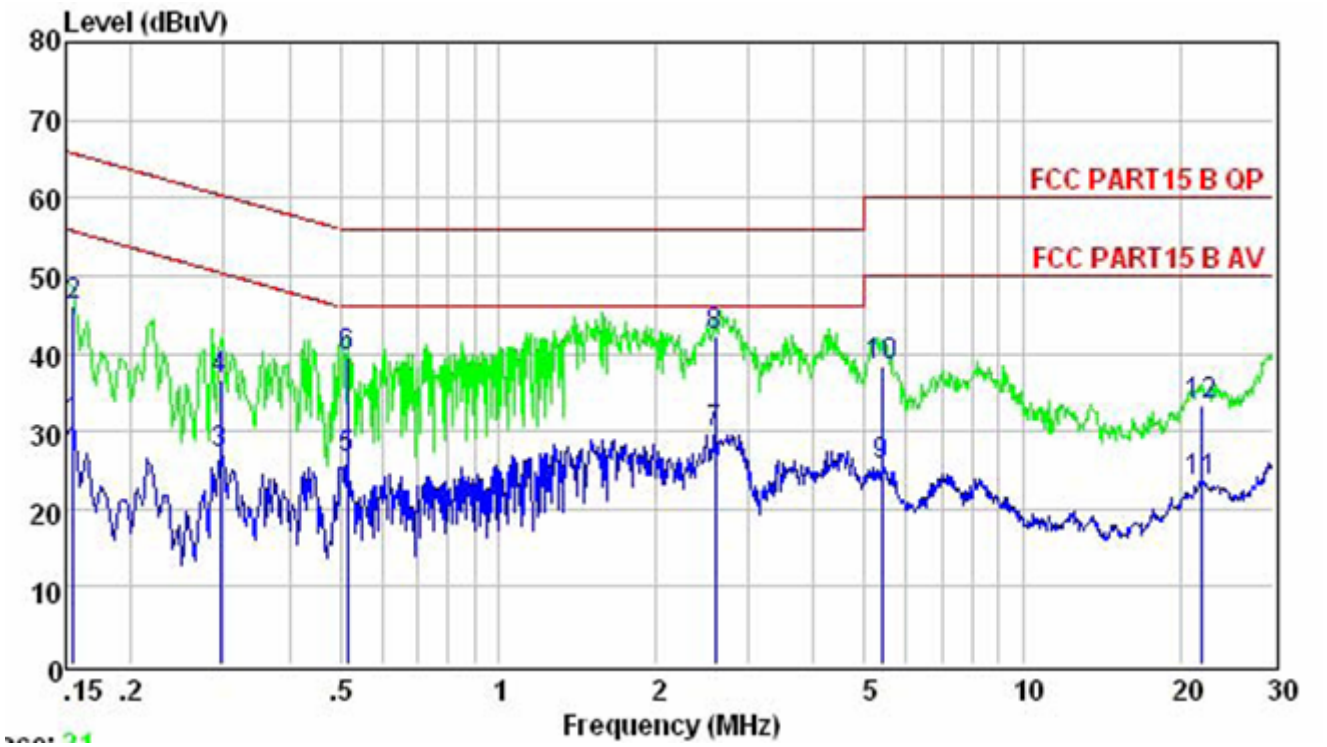
Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

5.1.3. Test Mode

Set EUT in TX mode.

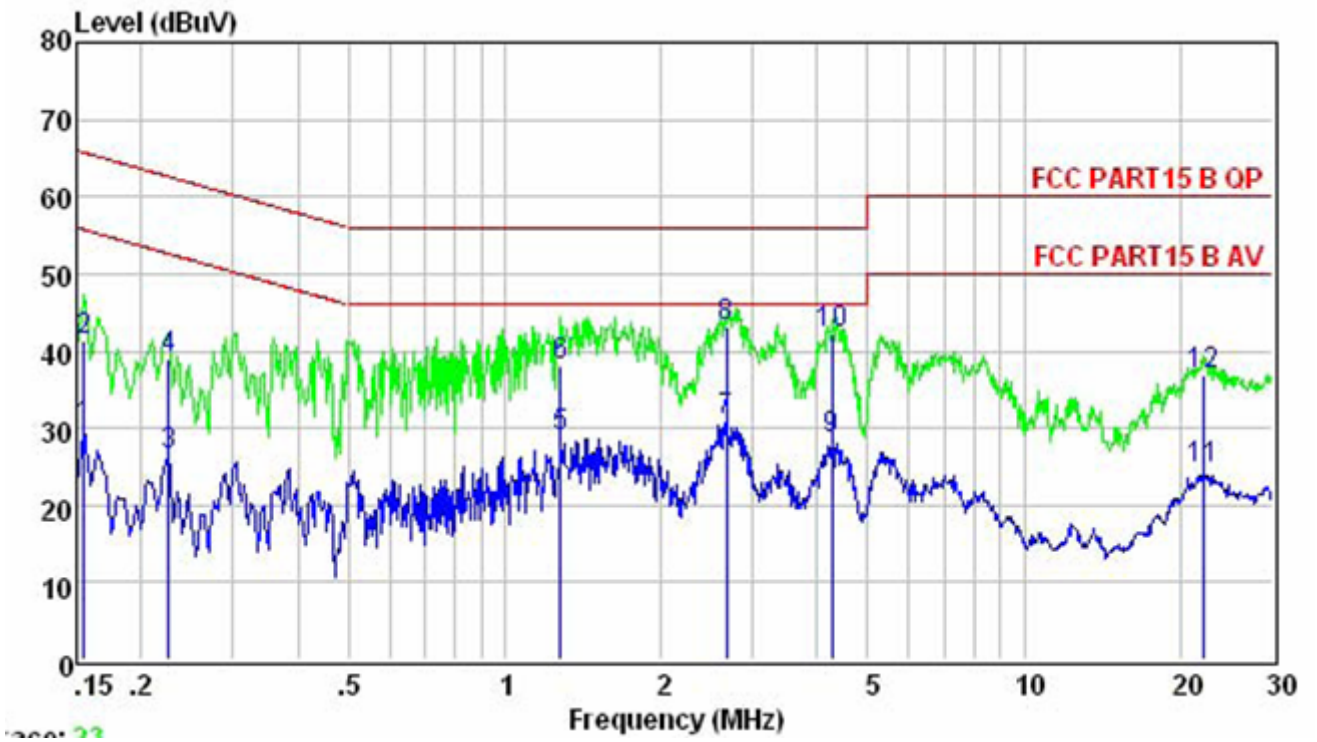
Test Data

Line



	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.155	30.94	55.74	-24.80	Average
2	0.155	46.20	65.74	-19.54	QP
3	0.296	27.01	50.37	-23.36	Average
4	0.296	36.58	60.37	-23.79	QP
5	0.516	26.58	46.00	-19.42	Average
6	0.516	39.64	56.00	-16.36	QP
7	2.594	29.77	46.00	-16.23	Average
8	2.594	42.20	56.00	-13.80	Peak
9	5.390	25.49	50.00	-24.51	Average
10	5.390	38.24	60.00	-21.76	QP
11	21.946	23.53	50.00	-26.47	Average
12	21.946	33.33	60.00	-26.67	QP

Neutral



	Freq	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	
1	0.155	29.92	55.74	-25.82	Average
2	0.155	41.23	65.74	-24.51	QP
3	0.226	26.53	52.61	-26.08	Average
4	0.226	38.88	62.61	-23.73	QP
5	1.282	28.77	46.00	-17.23	Average
6	1.282	37.98	56.00	-18.02	QP
7	2.678	30.92	46.00	-15.08	Average
8	2.678	43.20	56.00	-12.80	QP
9	4.269	28.54	46.00	-17.46	Average
10	4.269	42.13	56.00	-13.87	QP
11	22.063	24.60	50.00	-25.40	Average
12	22.063	36.77	60.00	-23.23	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.

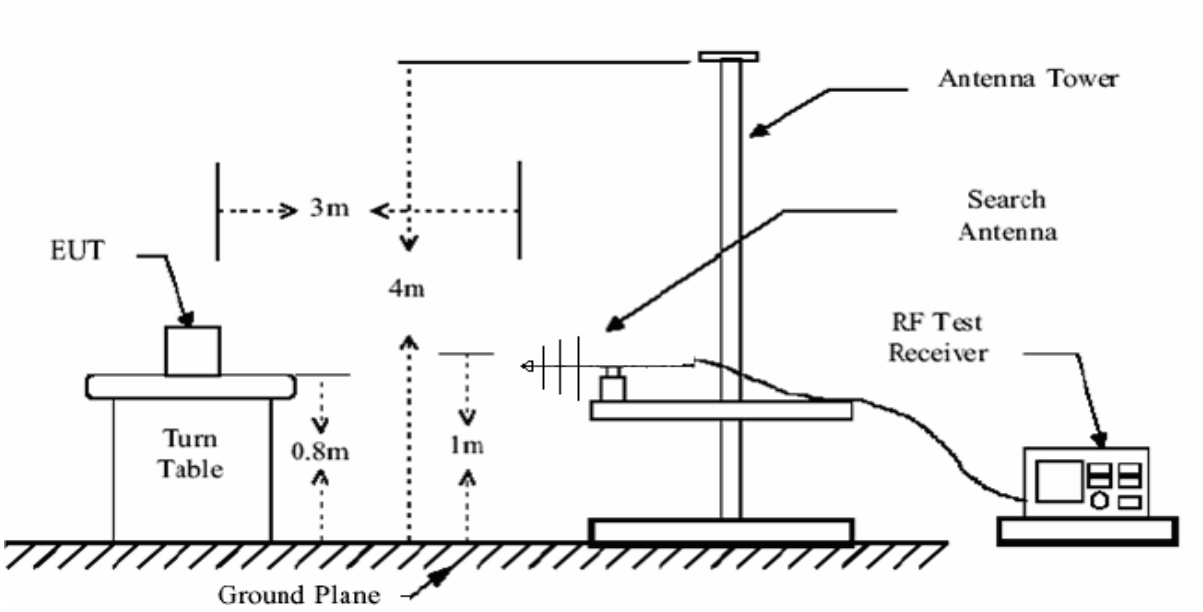
The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

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%.

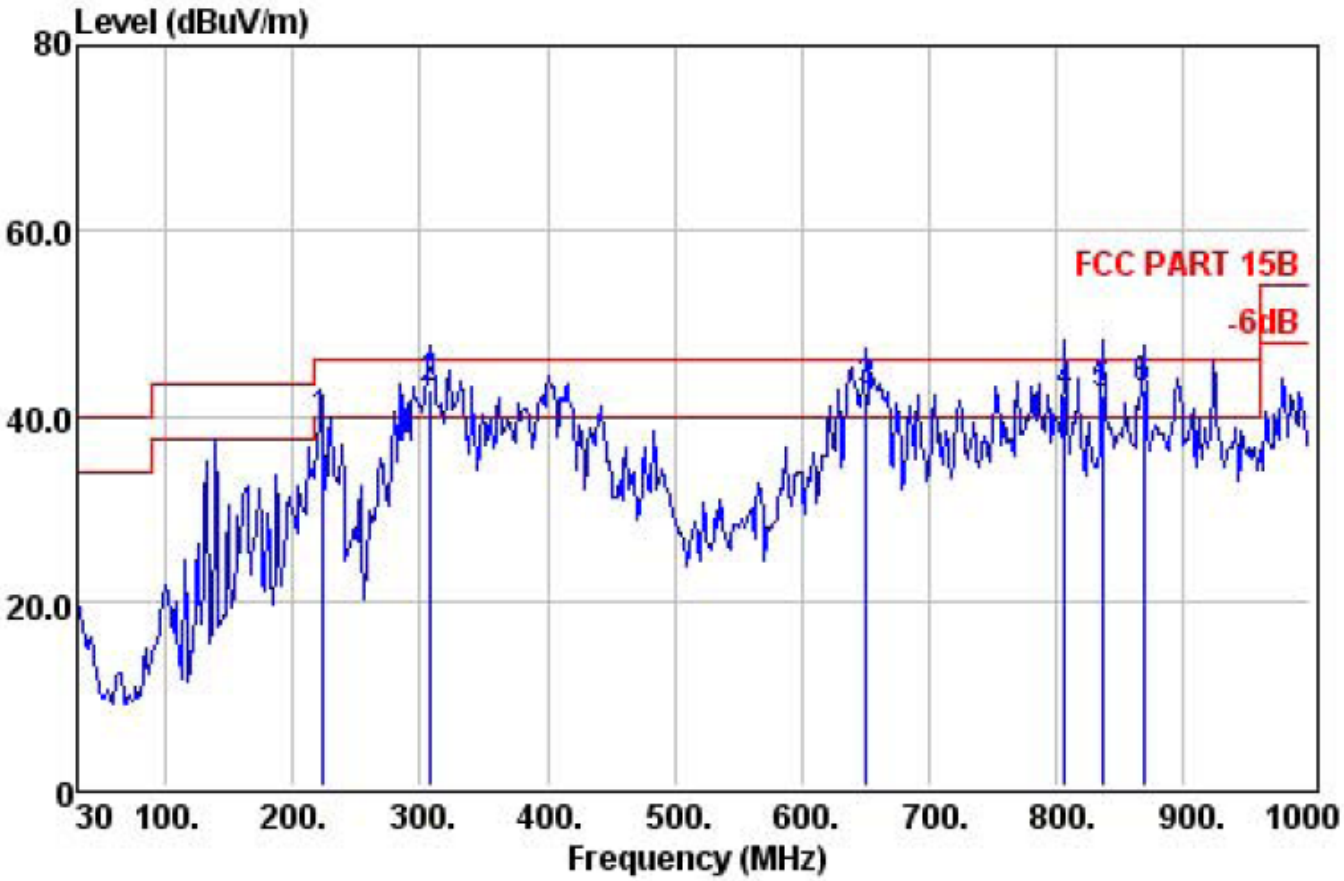
3. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

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



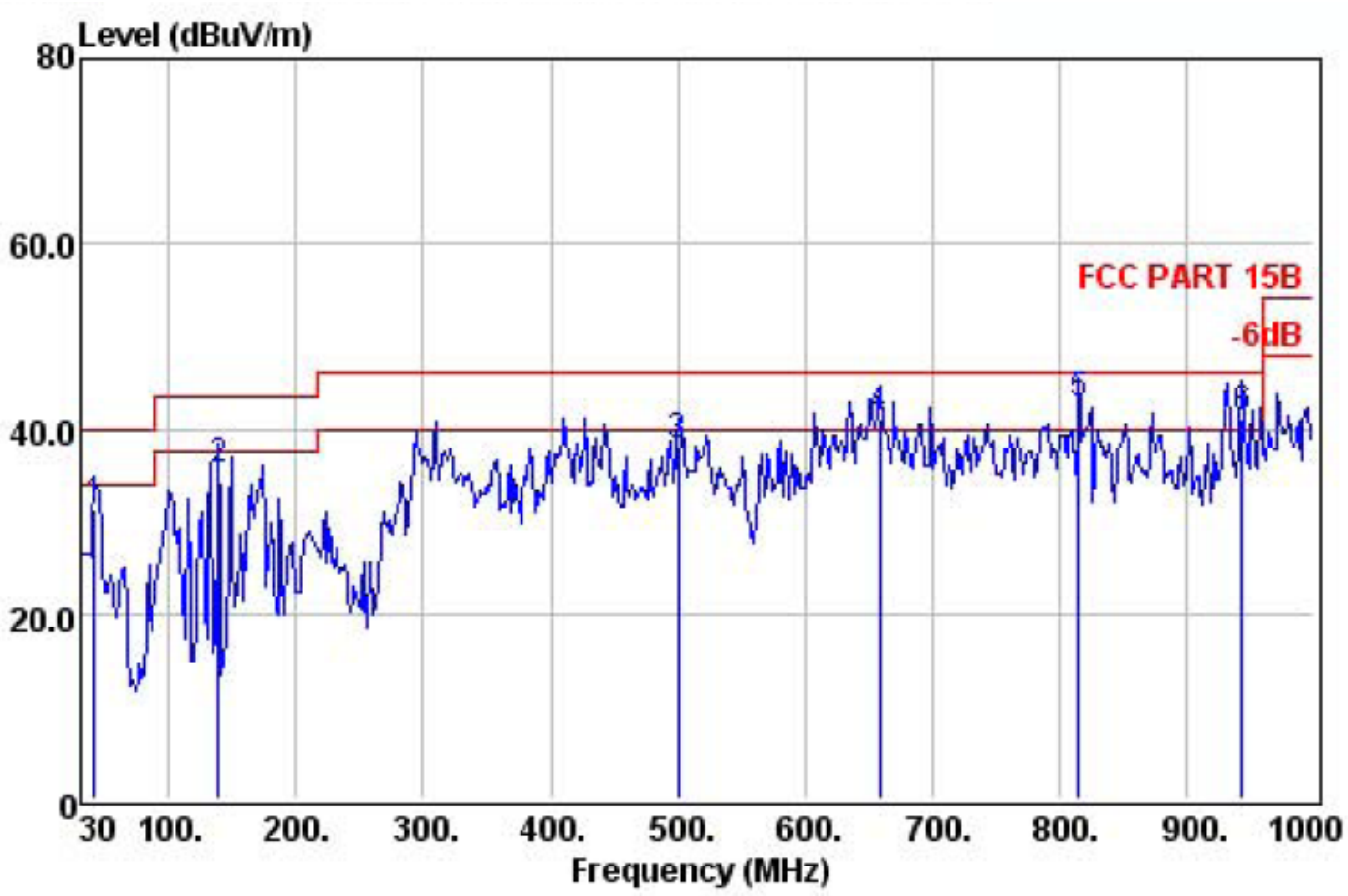
Test Data
Below 1GHz

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		222.06	30.96	56.69	1.53	12.06	39.32	46.00	-6.68	QP
2	!	307.42	30.92	57.69	1.94	14.01	42.72	46.00	-3.28	QP
3	!	650.80	30.81	48.24	3.58	21.42	42.43	46.00	-3.57	QP
4	!	807.94	30.54	45.25	4.39	23.03	42.13	46.00	-3.87	QP
5	!	837.04	30.42	45.07	4.49	23.10	42.24	46.00	-3.76	QP
6	!	869.05	30.26	44.89	4.67	23.40	42.70	46.00	-3.30	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		41.64	31.38	49.93	0.56	12.23	31.34	40.00	-8.66	QP
2		138.64	31.21	56.96	1.22	8.39	35.36	43.50	-8.14	QP
3		500.45	30.60	47.20	2.85	18.71	38.16	46.00	-7.84	QP
4	!	658.56	30.83	46.68	3.69	21.61	41.15	46.00	-4.85	QP
5	!	815.70	30.51	45.58	4.39	23.06	42.52	46.00	-3.48	QP
6	!	943.74	29.67	41.33	4.89	24.63	41.18	46.00	-4.82	QP

Above 1GHz

802.11b 2412MHz 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	4824.00	27.50	30.82	12.01	32.99	48.32	74.00	-25.68	Peak
2	7236.00	27.95	21.19	16.61	37.30	47.15	74.00	-26.85	Peak
3	10333.00	28.83	15.49	17.03	38.93	42.62	74.00	-31.38	Peak
4	13121.00	29.22	13.75	18.36	41.26	44.15	74.00	-29.85	Peak
5	13648.00	29.33	12.36	18.96	43.15	45.14	74.00	-28.86	Peak
6	16980.00	30.09	12.55	21.30	44.56	48.32	74.00	-25.68	Peak

802.11b 2412MHz 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	4824.00	27.50	32.39	12.01	32.99	49.89	74.00	-24.11	Peak
2	7236.00	27.95	23.01	16.61	37.30	48.97	74.00	-25.03	Peak
3	10282.00	28.83	18.49	17.02	38.85	45.53	74.00	-28.47	Peak
4	11353.00	28.94	17.45	17.24	39.78	45.53	74.00	-28.47	Peak
5	12951.00	29.19	16.43	18.17	40.58	45.99	74.00	-28.01	Peak
6	13818.00	29.36	12.35	19.14	43.32	45.45	74.00	-28.55	Peak

802.11b 2437MHz 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	4874.00	27.53	30.56	12.14	33.11	48.28	74.00	-25.72	Peak
2	7311.00	27.96	21.20	16.62	37.32	47.18	74.00	-26.82	Peak
3	10333.00	28.83	14.49	17.03	38.93	41.62	74.00	-32.38	Peak
4	13121.00	29.22	11.75	18.36	41.26	42.15	74.00	-31.85	Peak
5	13648.00	29.33	10.36	18.96	43.15	43.14	74.00	-30.86	Peak
6	15535.00	29.63	14.37	20.34	38.53	43.61	74.00	-30.39	Peak

802.11b 2437MHz 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	4874.00	27.53	30.95	12.14	33.11	48.67	74.00	-25.33	Peak
2	7311.00	27.96	22.34	16.62	37.32	48.32	74.00	-25.68	Peak
3	8786.00	28.33	18.50	16.83	37.14	44.14	74.00	-29.86	Peak
4	10282.00	28.83	18.49	17.02	38.85	45.53	74.00	-28.47	Peak
5	12951.00	29.19	17.43	18.17	40.58	46.99	74.00	-27.01	Peak
6	13818.00	29.36	13.35	19.14	43.32	46.45	74.00	-27.55	Peak

802.11b 2462MHz 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	4924.00	27.56	30.64	12.28	33.23	48.59	74.00	-25.41	Peak
2	7386.00	27.98	22.33	16.62	37.36	48.33	74.00	-25.67	Peak
3	10452.00	28.85	15.78	17.06	39.12	43.11	74.00	-30.89	Peak
4	11115.00	28.91	14.32	17.19	39.59	42.19	74.00	-31.81	Peak
5	13648.00	29.33	11.36	18.96	43.15	44.14	74.00	-29.86	Peak
6	15739.00	29.66	14.53	20.47	39.32	44.66	74.00	-29.34	Peak

802.11b 2462MHz 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	4924.00	27.56	30.16	12.28	33.23	48.11	74.00	-25.89	Peak
2	7386.00	27.98	21.61	16.62	37.36	47.61	74.00	-26.39	Peak
3	10282.00	28.83	19.49	17.02	38.85	46.53	74.00	-27.47	Peak
4	11353.00	28.94	17.45	17.24	39.78	45.53	74.00	-28.47	Peak
5	12951.00	29.19	18.43	18.17	40.58	47.99	74.00	-26.01	Peak
6	13818.00	29.36	12.35	19.14	43.32	45.45	74.00	-28.55	Peak

802.11g 2412MHz 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	4824.00	27.50	31.62	12.01	32.99	49.12	74.00	-24.88	Peak
2	7236.00	27.95	22.14	16.61	37.30	48.10	74.00	-25.90	Peak
3	8446.00	28.23	17.26	16.76	36.76	42.55	74.00	-31.45	Peak
4	10333.00	28.83	17.49	17.03	38.93	44.62	74.00	-29.38	Peak
5	11115.00	28.91	16.32	17.19	39.59	44.19	74.00	-29.81	Peak
6	13648.00	29.33	13.36	18.96	43.15	46.14	74.00	-27.86	Peak

802.11g 2412MHz 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	4824.00	27.50	31.17	12.01	32.99	48.67	74.00	-25.33	Peak
2	7236.00	27.95	21.79	16.61	37.30	47.75	74.00	-26.25	Peak
3	8786.00	28.33	18.50	16.83	37.14	44.14	74.00	-29.86	Peak
4	10282.00	28.83	18.49	17.02	38.85	45.53	74.00	-28.47	Peak
5	11914.00	28.99	18.01	17.35	39.49	45.86	74.00	-28.14	Peak
6	12951.00	29.19	15.43	18.17	40.58	44.99	74.00	-29.01	Peak

802.11g 2437MHz 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	4874.00	27.53	31.39	12.14	33.11	49.11	74.00	-24.89	Peak
2	7311.00	27.96	22.08	16.62	37.32	48.06	74.00	-25.94	Peak
3	8752.00	28.32	19.01	16.83	37.10	44.62	74.00	-29.38	Peak
4	9823.00	28.73	19.31	16.95	38.26	45.79	74.00	-28.21	Peak
5	12917.00	29.18	16.87	18.14	40.50	46.33	74.00	-27.67	Peak
6	13223.00	29.24	15.80	18.46	41.73	46.75	74.00	-27.25	Peak

802.11g 2437MHz 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	4874.00	27.53	30.47	12.14	33.11	48.19	74.00	-25.81	Peak
2	7311.00	27.96	21.63	16.62	37.32	47.61	74.00	-26.39	Peak
3	10282.00	28.83	17.49	17.02	38.85	44.53	74.00	-29.47	Peak
4	12917.00	29.18	15.61	18.14	40.50	45.07	74.00	-28.93	Peak
5	13818.00	29.36	12.35	19.14	43.32	45.45	74.00	-28.55	Peak
6	16011.00	29.71	15.63	20.64	40.40	46.96	74.00	-27.04	Peak

802.11g 2462MHz 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	4924.00	27.56	31.72	12.28	33.23	49.67	74.00	-24.33	Peak
2	7386.00	27.98	21.53	16.62	37.36	47.53	74.00	-26.47	Peak
3	10656.00	28.87	17.90	17.10	39.29	45.42	74.00	-28.58	Peak
4	12917.00	29.18	16.87	18.14	40.50	46.33	74.00	-27.67	Peak
5	13648.00	29.33	12.36	18.96	43.15	45.14	74.00	-28.86	Peak
6	15535.00	29.63	17.37	20.34	38.53	46.61	74.00	-27.39	Peak

802.11g 2462MHz 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	4924.00	27.56	31.42	12.28	33.23	49.37	74.00	-24.63	Peak
2	7386.00	27.98	21.67	16.62	37.36	47.67	74.00	-26.33	Peak
3	8786.00	28.33	17.50	16.83	37.14	43.14	74.00	-30.86	Peak
4	11353.00	28.94	17.45	17.24	39.78	45.53	74.00	-28.47	Peak
5	12951.00	29.19	14.43	18.17	40.58	43.99	74.00	-30.01	Peak
6	15331.00	29.60	15.67	20.21	38.43	44.71	74.00	-29.29	Peak

802.11n(HT20) 2412MHz 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	4824.00	27.50	31.28	12.01	32.99	48.78	74.00	-25.22	Peak
2	7236.00	27.95	21.80	16.61	37.30	47.76	74.00	-26.24	Peak
3	9517.00	28.61	16.02	16.92	38.01	42.34	74.00	-31.66	Peak
4	10333.00	28.83	16.49	17.03	38.93	43.62	74.00	-30.38	Peak
5	13104.00	29.22	14.24	18.34	41.18	44.54	74.00	-29.46	Peak
6	14107.00	29.42	10.04	19.43	42.90	42.95	74.00	-31.05	Peak

802.11n(HT20) 2412MHz 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	4824.00	27.50	32.35	12.01	32.99	49.85	74.00	-24.15	Peak
2	7236.00	27.95	22.77	16.61	37.30	48.73	74.00	-25.27	Peak
3	8786.00	28.33	17.50	16.83	37.14	43.14	74.00	-30.86	Peak
4	10282.00	28.83	18.49	17.02	38.85	45.53	74.00	-28.47	Peak
5	11914.00	28.99	18.01	17.35	39.49	45.86	74.00	-28.14	Peak
6	12951.00	29.19	17.43	18.17	40.58	46.99	74.00	-27.01	Peak

802.11n(HT20) 2437MHz 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	4874.00	27.53	30.87	12.14	33.11	48.59	74.00	-25.41	Peak
2	7311.00	27.96	21.69	16.62	37.32	47.67	74.00	-26.33	Peak
3	9517.00	28.61	15.02	16.92	38.01	41.34	74.00	-32.66	Peak
4	10690.00	28.87	14.41	17.10	39.31	41.95	74.00	-32.05	Peak
5	12917.00	29.18	12.87	18.14	40.50	42.33	74.00	-31.67	Peak
6	15739.00	29.66	12.53	20.47	39.32	42.66	74.00	-31.34	Peak

802.11n(HT20) 2437MHz 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	4874.00	27.53	30.95	12.14	33.11	48.67	74.00	-25.33	Peak
2	7311.00	27.96	22.07	16.62	37.32	48.05	74.00	-25.95	Peak
3	10282.00	28.83	19.49	17.02	38.85	46.53	74.00	-27.47	Peak
4	11353.00	28.94	18.45	17.24	39.78	46.53	74.00	-27.47	Peak
5	12951.00	29.19	18.43	18.17	40.58	47.99	74.00	-26.01	Peak
6	13818.00	29.36	15.35	19.14	43.32	48.45	74.00	-25.55	Peak

802.11n(HT20) 2462MHz 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	4924.00	27.56	31.21	12.28	33.23	49.16	74.00	-24.84	Peak
2	7386.00	27.98	21.94	16.62	37.36	47.94	74.00	-26.06	Peak
3	8055.00	28.12	18.43	16.67	36.44	43.42	74.00	-30.58	Peak
4	10350.00	28.84	16.42	17.04	38.96	43.58	74.00	-30.42	Peak
5	10639.00	28.86	16.01	17.09	39.28	43.52	74.00	-30.48	Peak
6	13648.00	29.33	11.36	18.96	43.15	44.14	74.00	-29.86	Peak

802.11n(HT20) 2462MHz 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	4924.00	27.56	30.29	12.28	33.23	48.24	74.00	-25.76	Peak
2	7386.00	27.98	21.19	16.62	37.36	47.19	74.00	-26.81	Peak
3	8786.00	28.33	16.50	16.83	37.14	42.14	74.00	-31.86	Peak
4	10282.00	28.83	18.49	17.02	38.85	45.53	74.00	-28.47	Peak
5	11353.00	28.94	18.45	17.24	39.78	46.53	74.00	-27.47	Peak
6	12951.00	29.19	17.43	18.17	40.58	46.99	74.00	-27.01	Peak

802.11n(HT40) 2422MHz 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	4844.00	27.51	32.11	12.05	33.03	49.68	74.00	-24.32	Peak
2	7266.00	27.95	22.70	16.61	37.31	48.67	74.00	-25.33	Peak
3	9517.00	28.61	19.02	16.92	38.01	45.34	74.00	-28.66	Peak
4	10333.00	28.83	18.49	17.03	38.93	45.62	74.00	-28.38	Peak
5	12917.00	29.18	15.87	18.14	40.50	45.33	74.00	-28.67	Peak
6	13648.00	29.33	13.36	18.96	43.15	46.14	74.00	-27.86	Peak

802.11n(HT40) 2422MHz 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	4844.00	27.51	31.79	12.05	33.03	49.36	74.00	-24.64	Peak
2	7266.00	27.95	21.61	16.61	37.31	47.58	74.00	-26.42	Peak
3	8786.00	28.33	19.50	16.83	37.14	45.14	74.00	-28.86	Peak
4	10282.00	28.83	18.49	17.02	38.85	45.53	74.00	-28.47	Peak
5	11353.00	28.94	17.45	17.24	39.78	45.53	74.00	-28.47	Peak
6	12951.00	29.19	17.43	18.17	40.58	46.99	74.00	-27.01	Peak

802.11n(HT40) 2437MHz 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	4874.00	27.53	31.46	12.14	33.11	49.18	74.00	-24.82	Peak
2	7311.00	27.96	22.23	16.62	37.32	48.21	74.00	-25.79	Peak
3	9517.00	28.61	18.02	16.92	38.01	44.34	74.00	-29.66	Peak
4	10333.00	28.83	18.49	17.03	38.93	45.62	74.00	-28.38	Peak
5	12305.00	29.06	16.86	17.62	39.46	44.88	74.00	-29.12	Peak
6	12917.00	29.18	16.87	18.14	40.50	46.33	74.00	-27.67	Peak

802.11n(HT40) 2437MHz 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	4874.00	27.53	30.89	12.14	33.11	48.61	74.00	-25.39	Peak
2	7311.00	27.96	21.14	16.62	37.32	47.12	74.00	-26.88	Peak
3	8497.00	28.25	19.15	16.76	36.80	44.46	74.00	-29.54	Peak
4	10282.00	28.83	19.49	17.02	38.85	46.53	74.00	-27.47	Peak
5	11914.00	28.99	19.01	17.35	39.49	46.86	74.00	-27.14	Peak
6	13818.00	29.36	13.35	19.14	43.32	46.45	74.00	-27.55	Peak

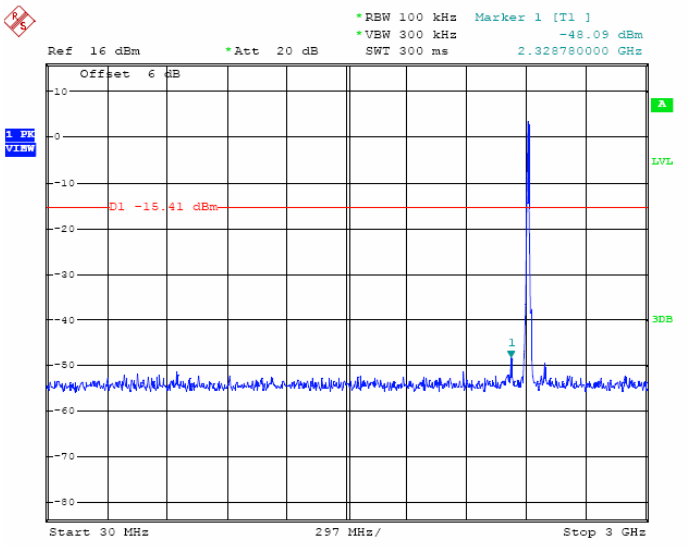
802.11n(HT40) 2452MHz Horizontal polarizations

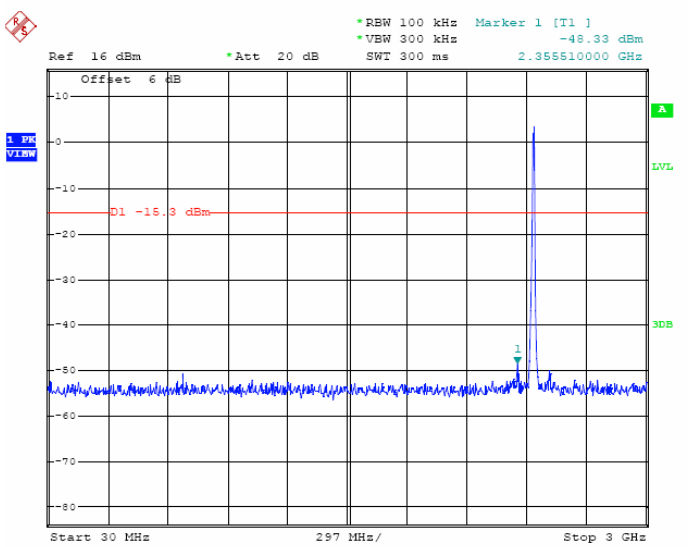
	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4904.00	27.55	31.26	12.23	33.19	49.13	74.00	-24.87	Peak
2	7356.00	27.97	22.29	16.62	37.34	48.28	74.00	-25.72	Peak
3	9517.00	28.61	17.02	16.92	38.01	43.34	74.00	-30.66	Peak
4	10656.00	28.87	17.90	17.10	39.29	45.42	74.00	-28.58	Peak
5	13104.00	29.22	14.24	18.34	41.18	44.54	74.00	-29.46	Peak
6	13648.00	29.33	12.36	18.96	43.15	45.14	74.00	-28.86	Peak

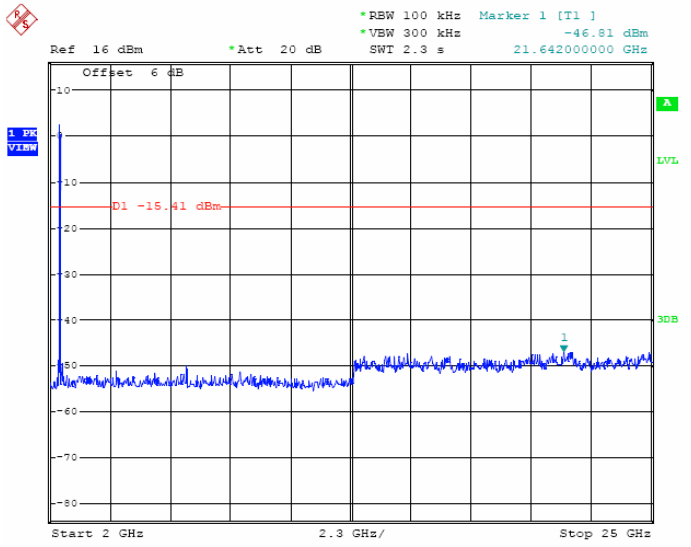
802.11n(HT40) 2452MHz Vertical polarizations

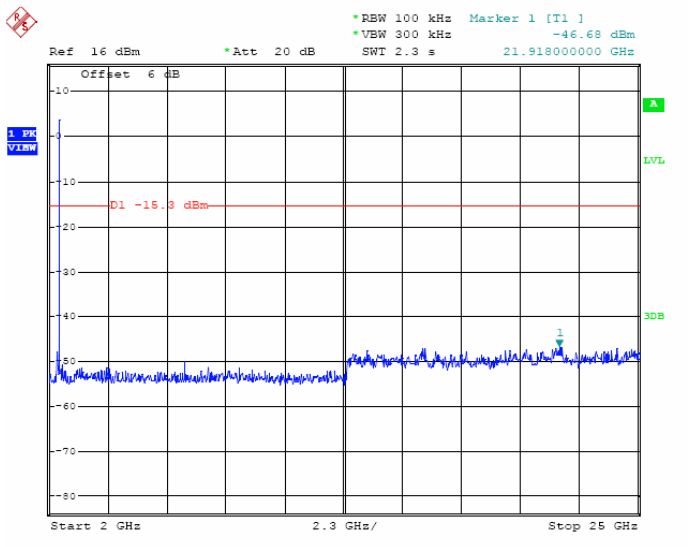
	Freq	Preamp Factor	Read Level	Cable Loss	Antenna Factor	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	4904.00	27.55	30.42	12.23	33.19	48.29	74.00	-25.71	Peak
2	7356.00	27.97	21.70	16.62	37.34	47.69	74.00	-26.31	Peak
3	10282.00	28.83	19.49	17.02	38.85	46.53	74.00	-27.47	Peak
4	11914.00	28.99	19.01	17.35	39.49	46.86	74.00	-27.14	Peak
5	12951.00	29.19	17.43	18.17	40.58	46.99	74.00	-27.01	Peak
6	13818.00	29.36	14.35	19.14	43.32	47.45	74.00	-26.55	Peak

For conducted test
802.11b 2412MHz

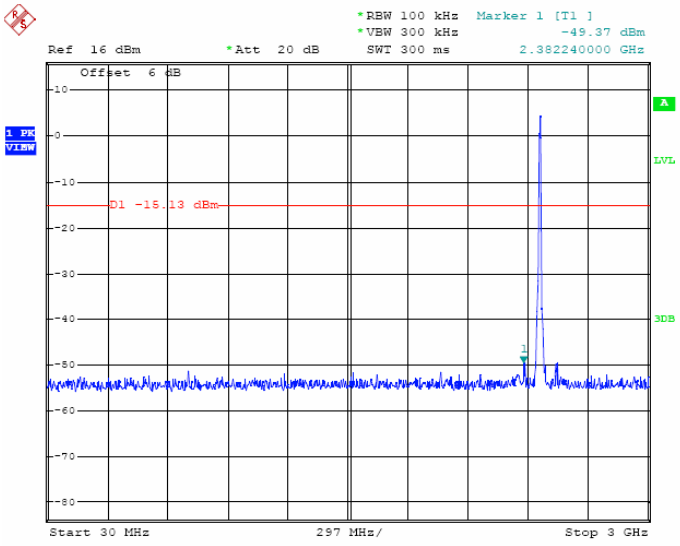


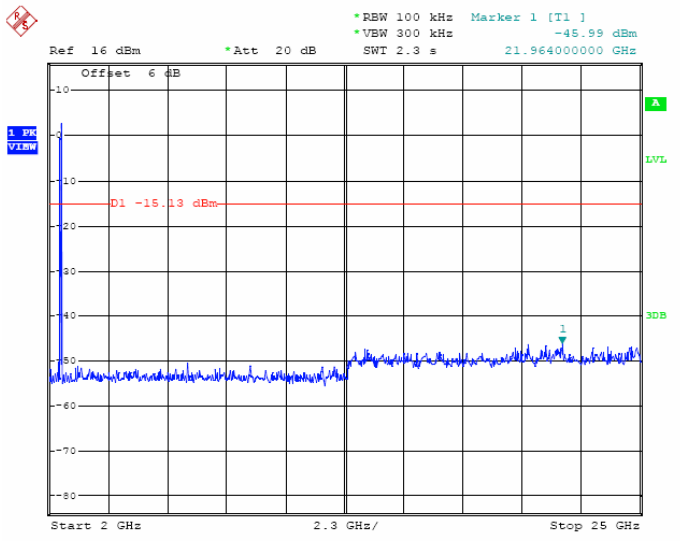




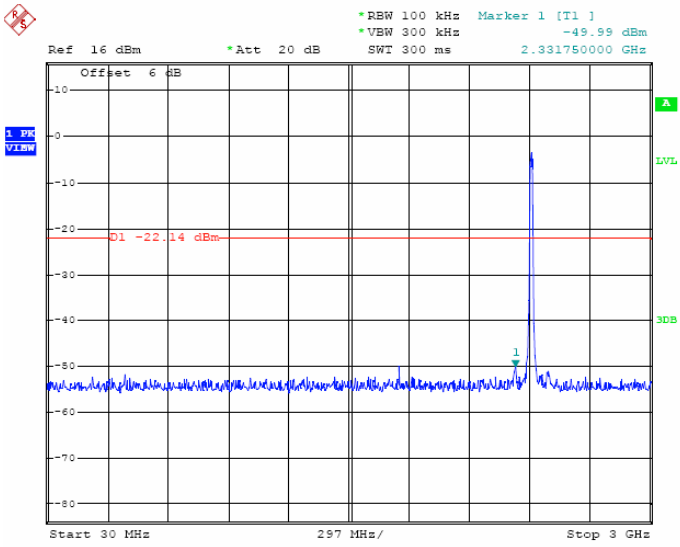


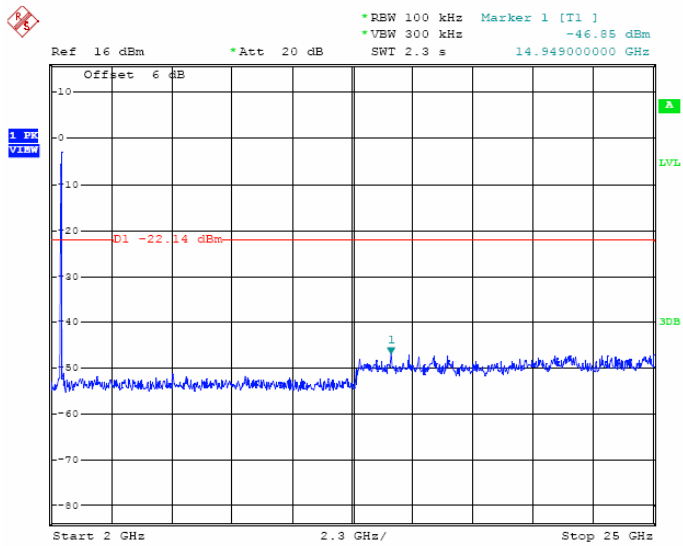
802.11b 2462MHz



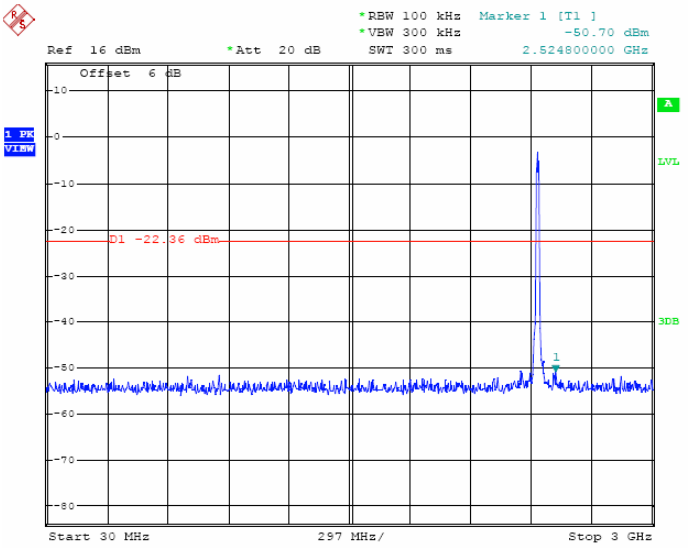


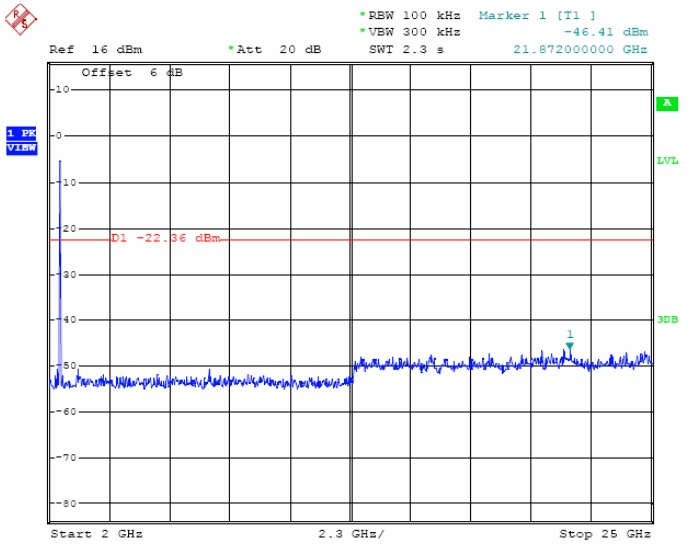
802.11g 2412MHz



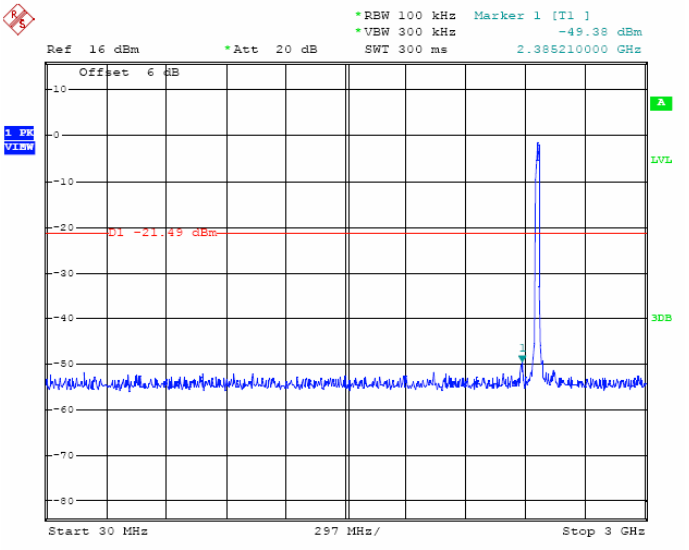


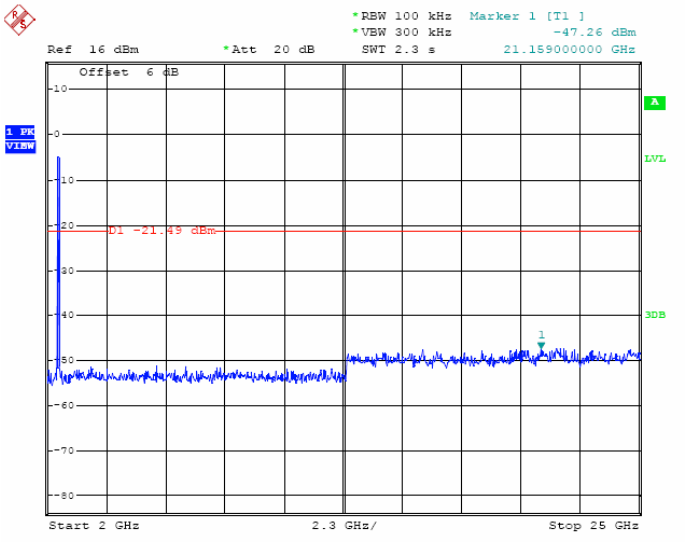
802.11g 2437MHz



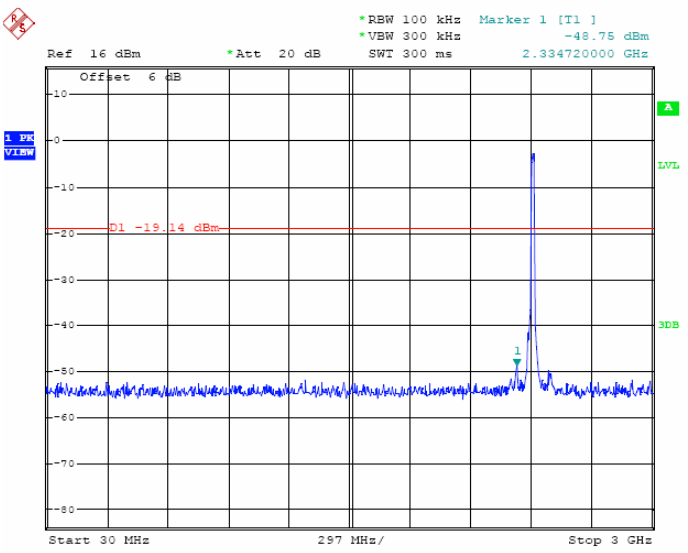


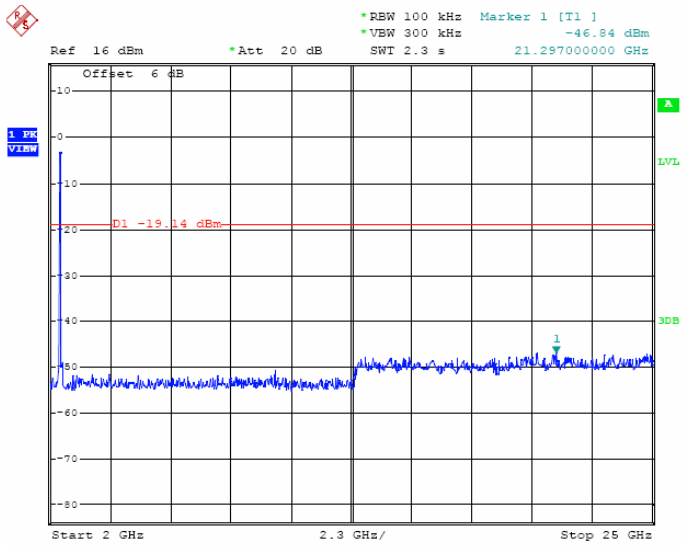
802.11g 2462MHz



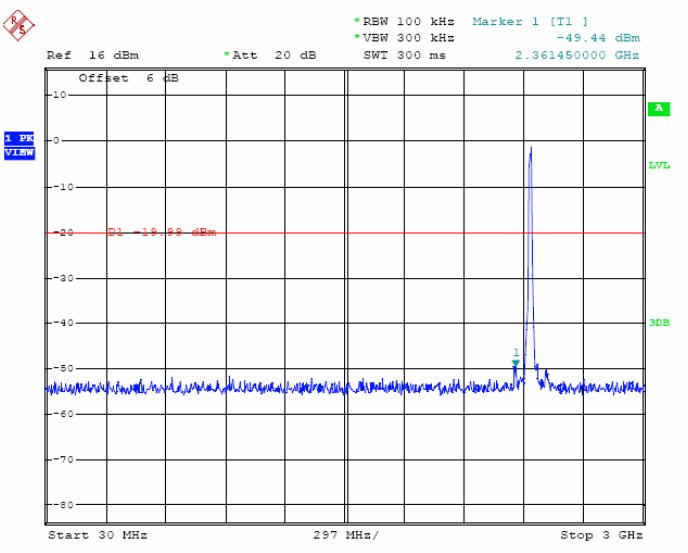


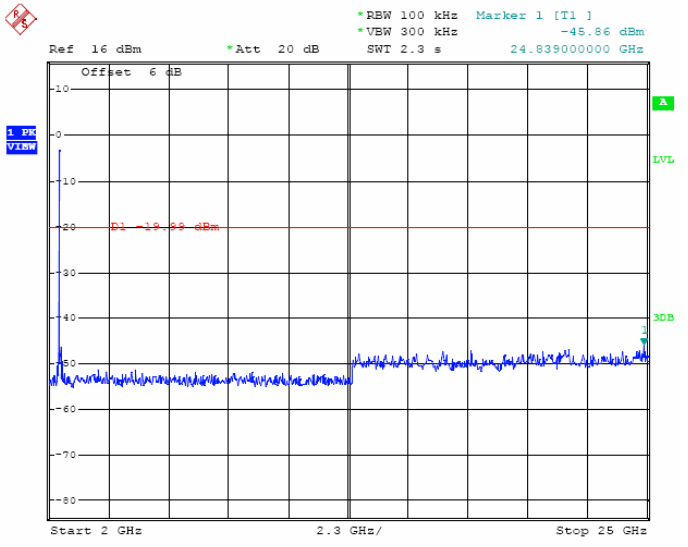
802.11n(HT20) 2412MHz



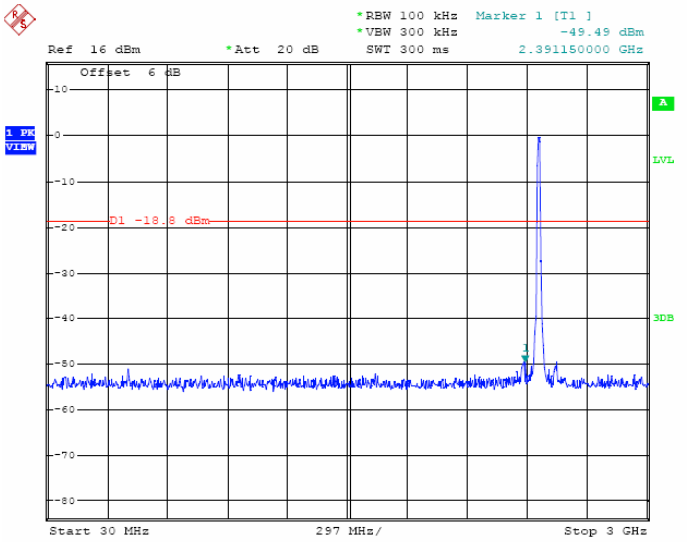


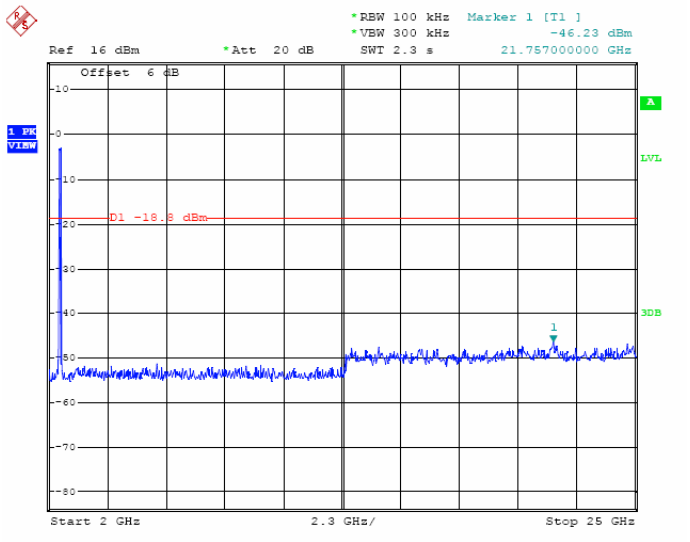
802.11n(HT20) 2437MHz



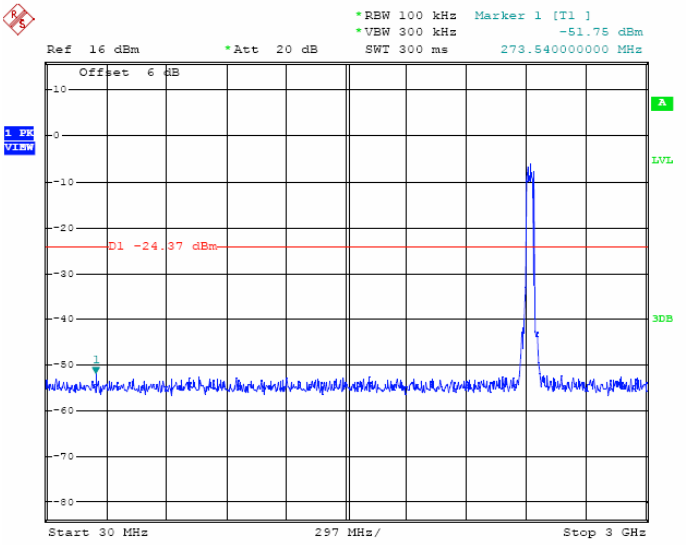


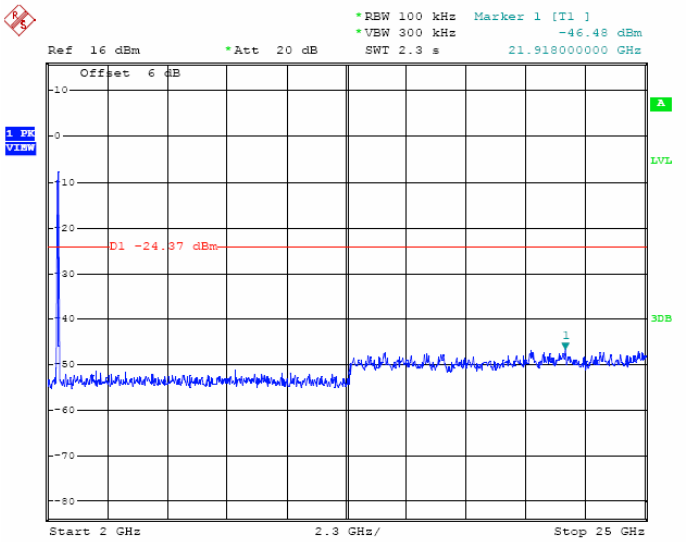
802.11n(HT20) 2462MHz



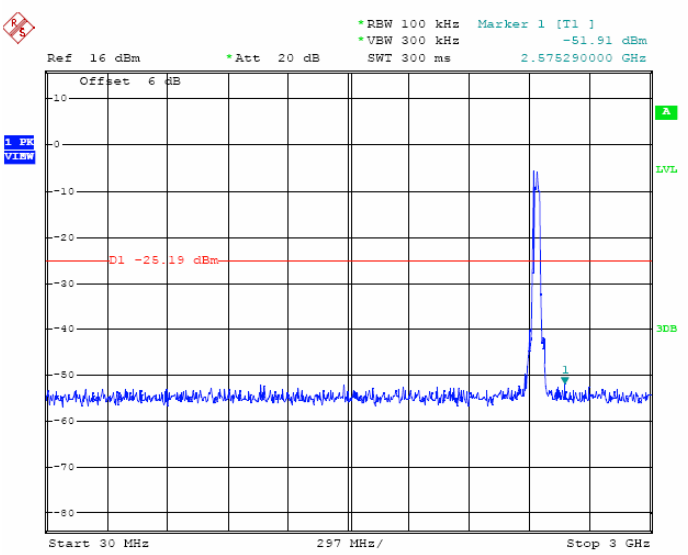


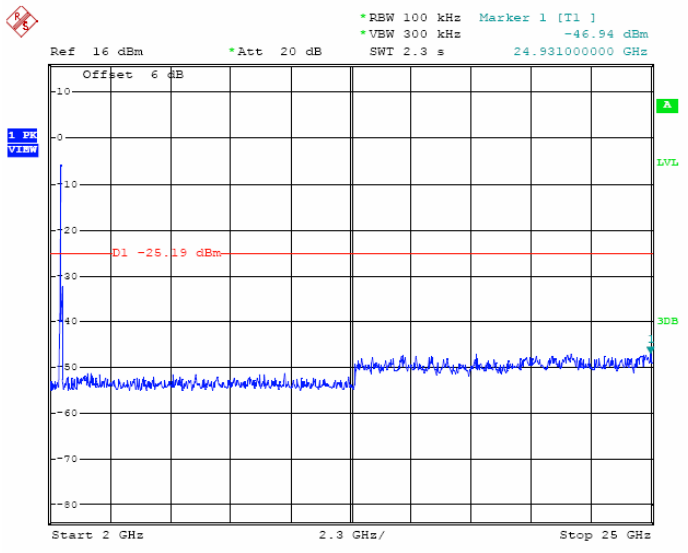
802.11n(HT40) 2422MHz



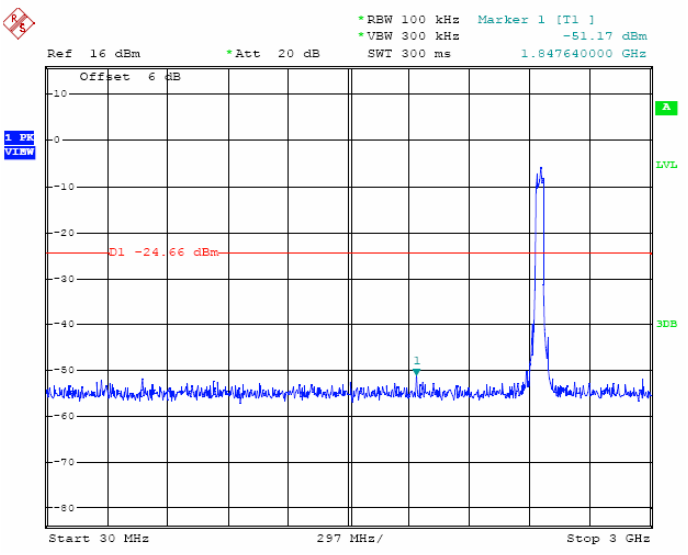


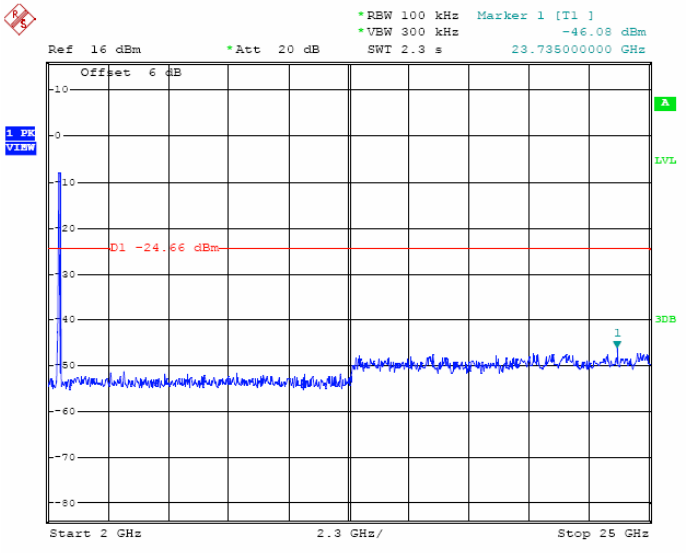
802.11n(HT20) 2437MHz





802.11n(HT40) 2452MHz





6. 6DB OCCUPY BANDWIDTH

6.1. Limits

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz Test data:

6.2. Test setup

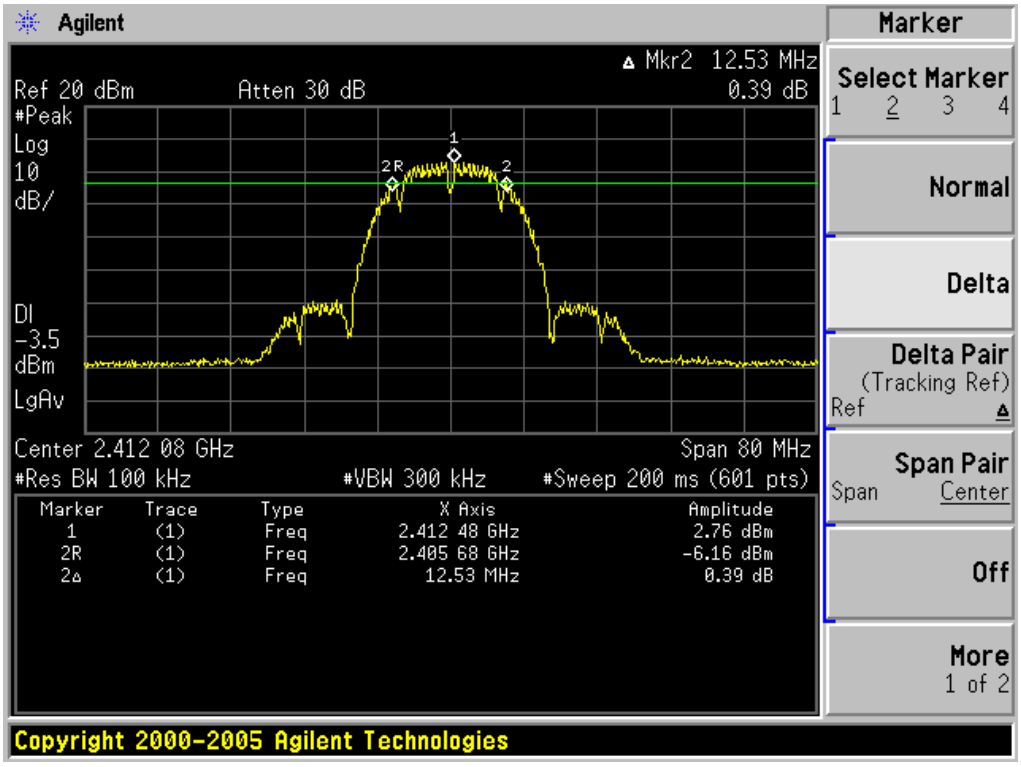
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the RBW =100kHz.
3. Set the VBW = 300kHz
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Measure and record the result in the test report.

6.3. Test result

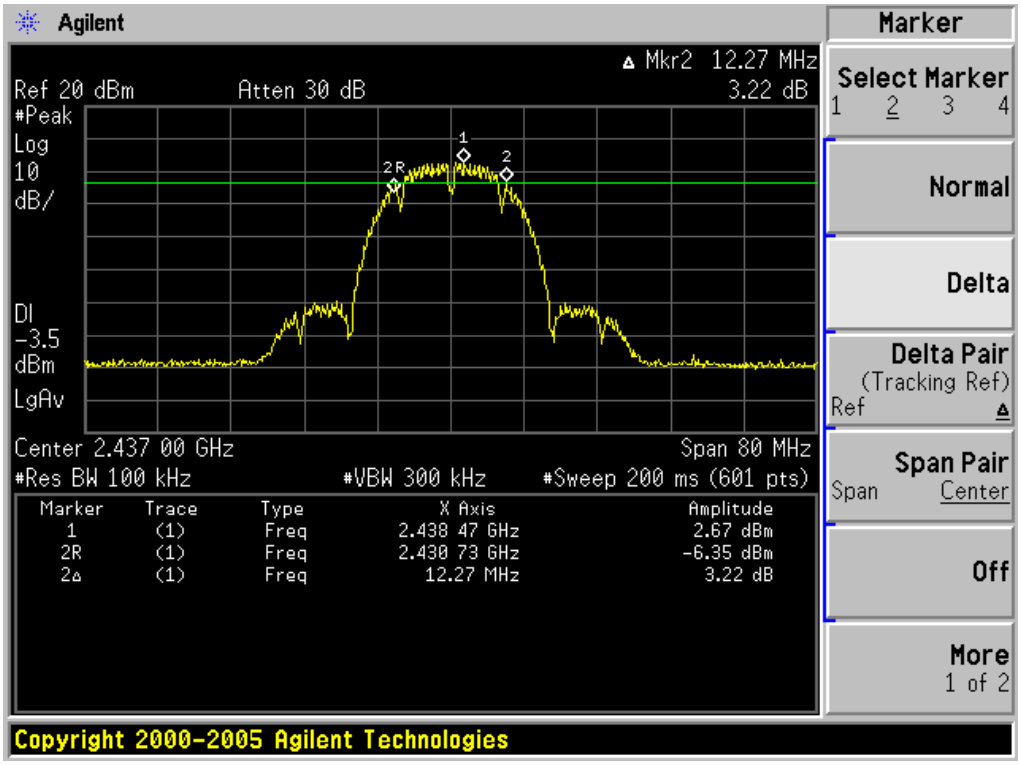
	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11b	2412	12.53	>0.5	Pass
	2437	12.27	>0.5	Pass
	2462	12.00	>0.5	Pass
802.11g	2412	16.53	>0.5	Pass
	2437	16.53	>0.5	Pass
	2462	16.53	>0.5	Pass
802.11n(HT20)	2412	17.87	>0.5	Pass
	2437	18.00	>0.5	Pass
	2462	17.87	>0.5	Pass
802.11n(HT40)	2422	36.53	>0.5	Pass
	2437	36.53	>0.5	Pass
	2452	36.53	>0.5	Pass

Test plot as follows:

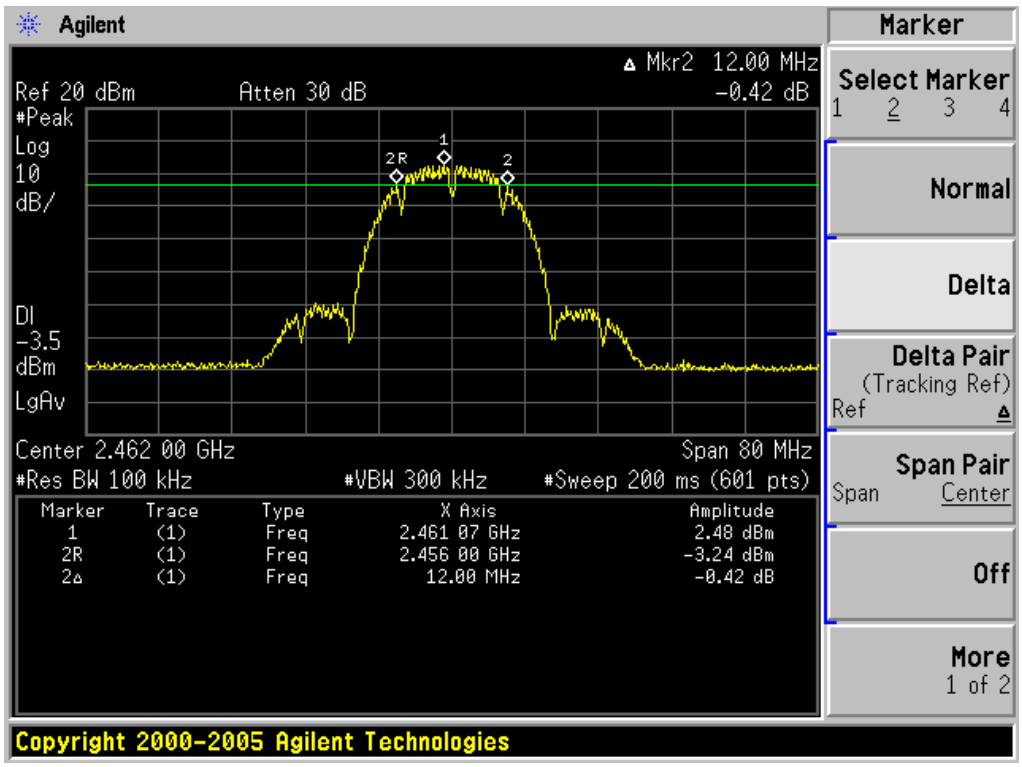
802.11b 2412MHz



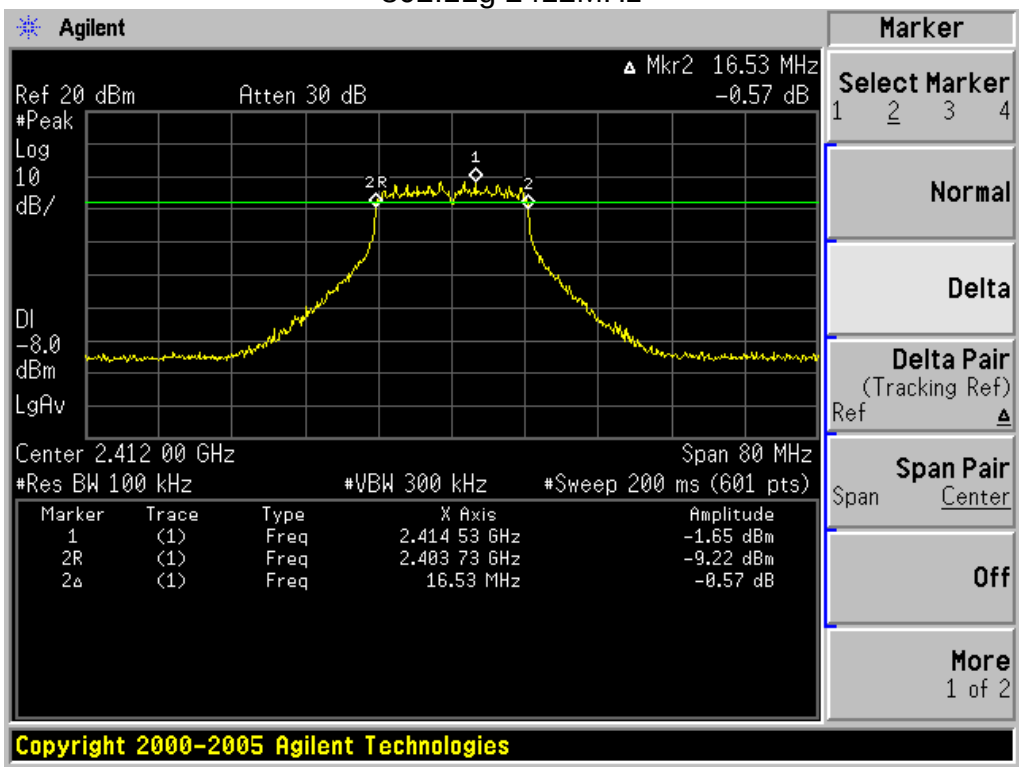
802.11b 2437MHz



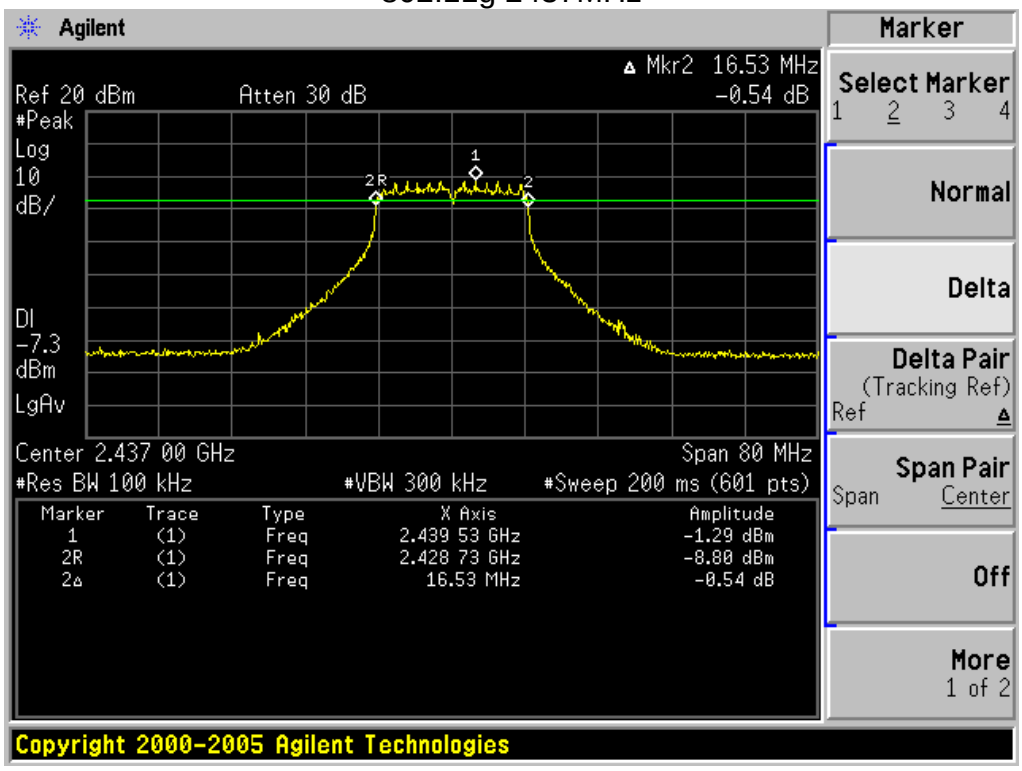
802.11b 2462MHz



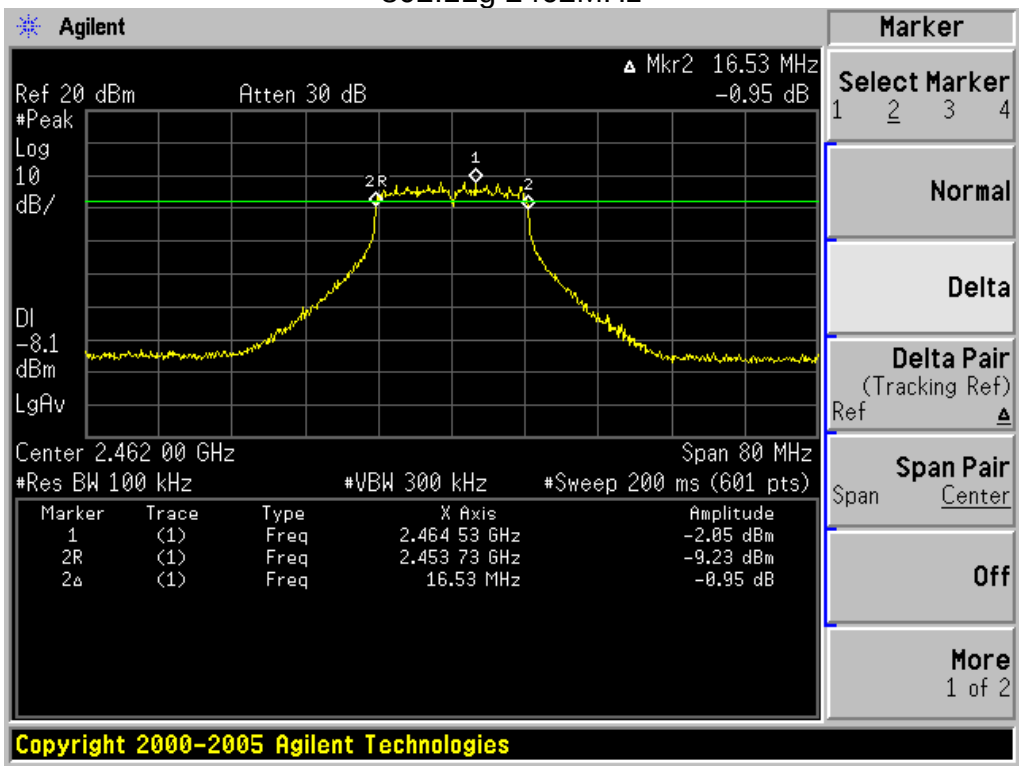
802.11g 2412MHz



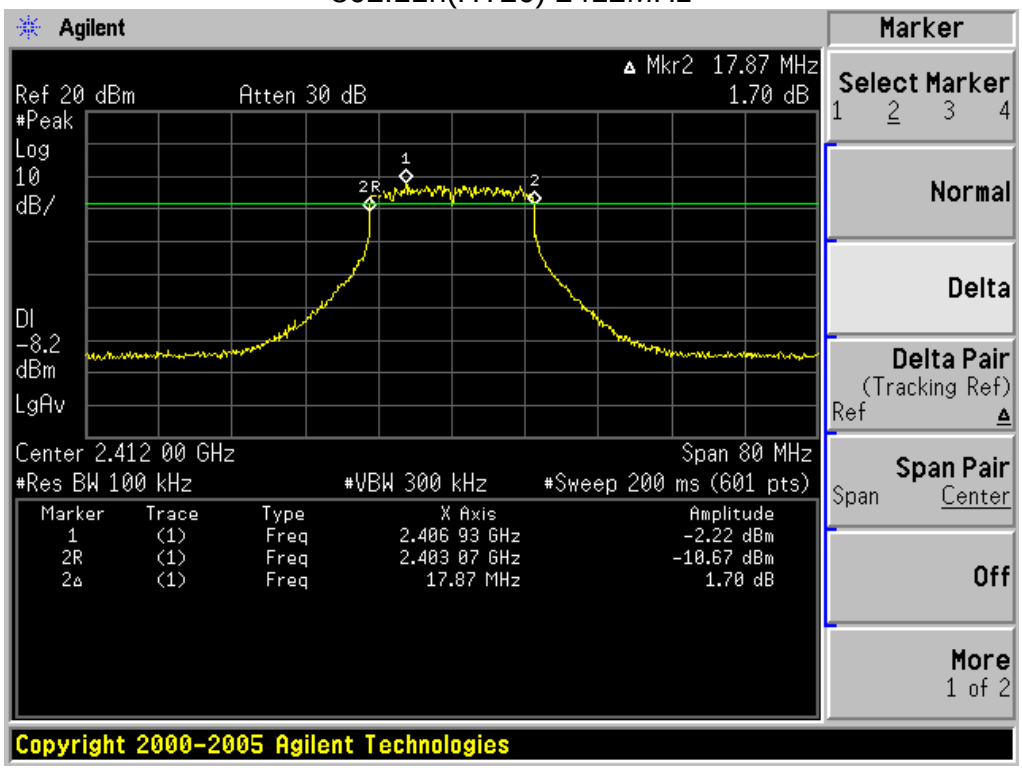
802.11g 2437MHz



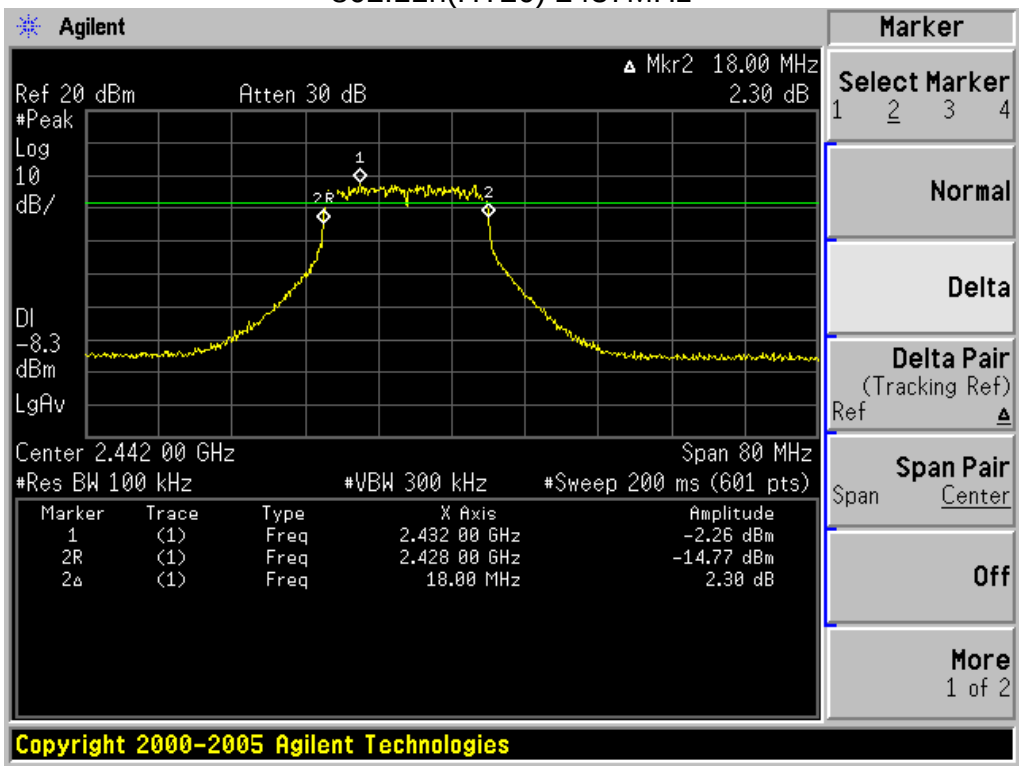
802.11g 2462MHz



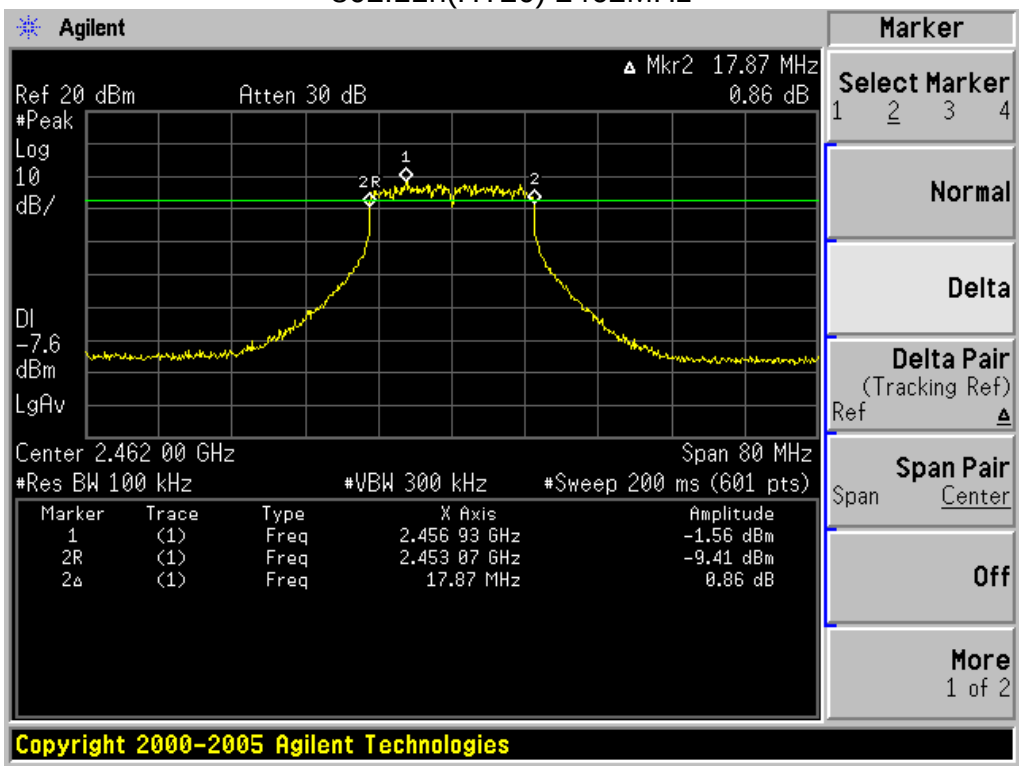
802.11n(HT20) 2412MHz



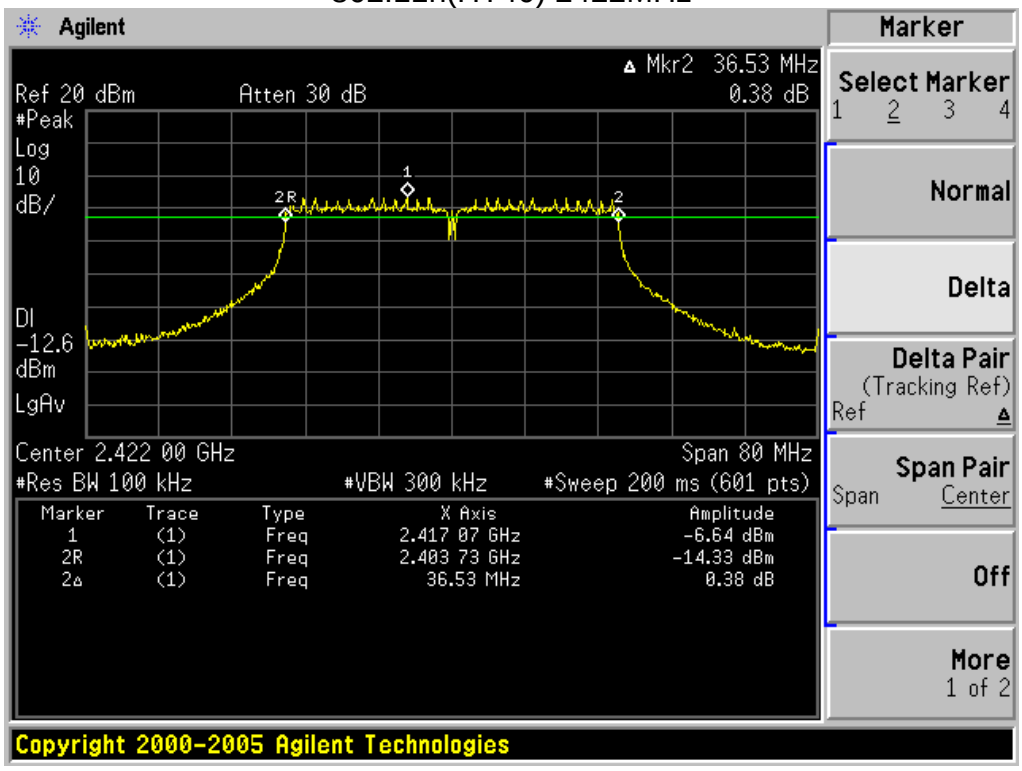
802.11n(HT20) 2437MHz



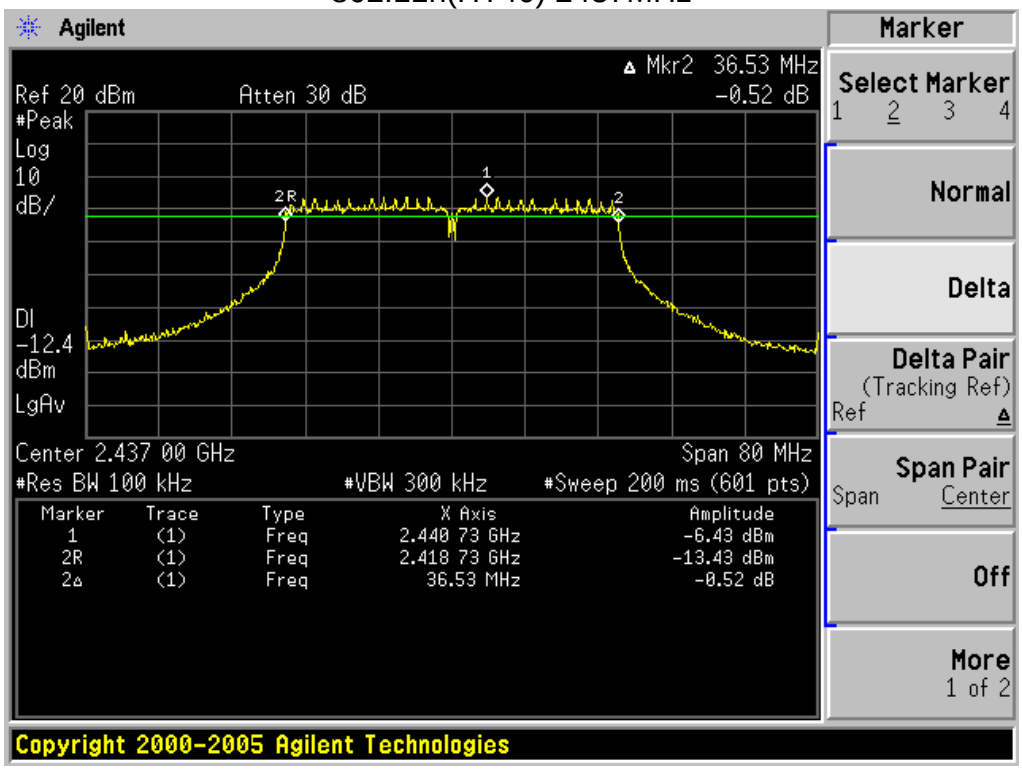
802.11n(HT20) 2462MHz



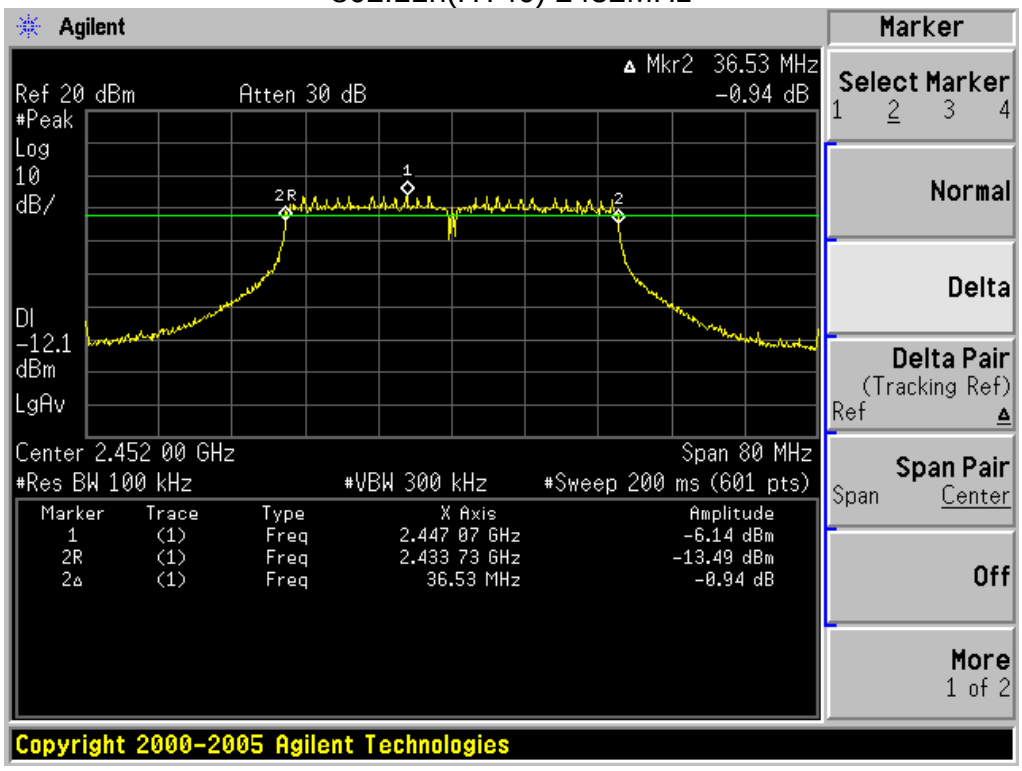
802.11n(HT40) 2422MHz



802.11n(HT40) 2437MHz



802.11n(HT40) 2452MHz



7. BAND EDGE COMPLIANCE TEST

7.1. Limits

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

7.2. 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 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.

For conduct test,

a)Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).

b) Set span to 2 MHz ,c) RBW = 100 kHz, d) VBW ≥ 3 x RBW. e) Detector = RMS

f) Averaging type = power, g) Sweep time = auto,

The emission was below the15.209 limit.

For radiated test as follows:

	Frequency (MHz)	Antenna polarization (H/V)	Band edge Limit (dBuV/m)		
			PK	PK	AV
802.11b	<2400	H	50.27	74.00	54.00
	<2400	V	50.79	74.00	54.00
	>2483.5	H	51.24	74.00	54.00
	>2483.5	V	50.89	74.00	54.00
802.11g	<2400	H	50.41	74.00	54.00
	<2400	V	49.87	74.00	54.00
	>2483.5	H	50.85	74.00	54.00
	>2483.5	V	50.32	74.00	54.00
802.11n(HT20)	<2400	H	50.86	74.00	54.00
	<2400	V	49.87	74.00	54.00
	>2483.5	H	50.85	74.00	54.00
	>2483.5	V	50.43	74.00	54.00
802.11n(HT40)	<2400	H	50.71	74.00	54.00
	<2400	V	50.87	74.00	54.00
	>2483.5	H	51.50	74.00	54.00
	>2483.5	V	50.43	74.00	54.00

8. OUTPUT POWER TEST

8.1. Limits

For systems using digital modulation in the 2400~2483.5MHz, The Peak out put Power shall not exceed 1W(30dBm)

8.2. Test setup

1. The Transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the peak power value.
3. Repeat above procedures on all channels needed to be tested.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

8.3. Test result

	Channel Frequency (MHz)	Peak output Power(dBm)	Limit (dBm)	Result	Target power W/ tolerance (dBm)
802.11b	2412	16.80	30	Pass	16 ±1.0
	2437	16.70	30	Pass	
	2462	16.74	30	Pass	
802.11g	2412	13.56	30	Pass	13 ±1.0
	2437	13.51	30	Pass	
	2462	13.55	30	Pass	
802.11n (HT20)	2412	12.93	30	Pass	12 ±1.0
	2437	12.88	30	Pass	
	2462	12.95	30	Pass	
802.11n (HT40)	2422	11.72	30	Pass	11 ±1.0
	2437	11.77	30	Pass	
	2452	11.91	30	Pass	

9. POWER SPECTRAL DENSITY TEST

9.1. Limits

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

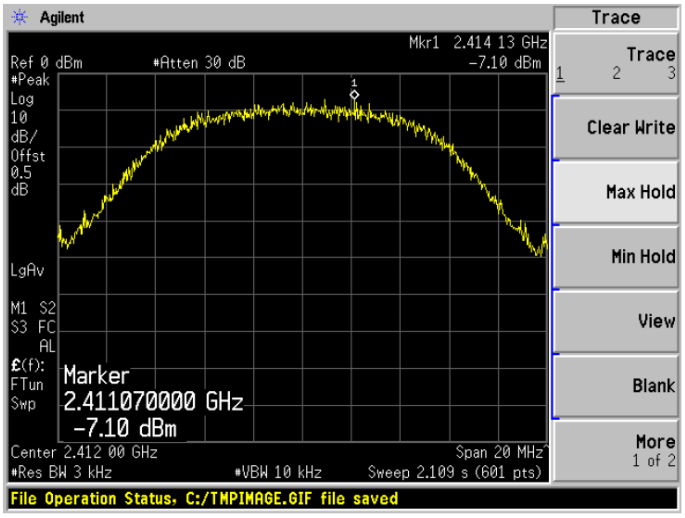
9.2. Test setup

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW =3kHz.
4. Set the VBW = 3 times RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.

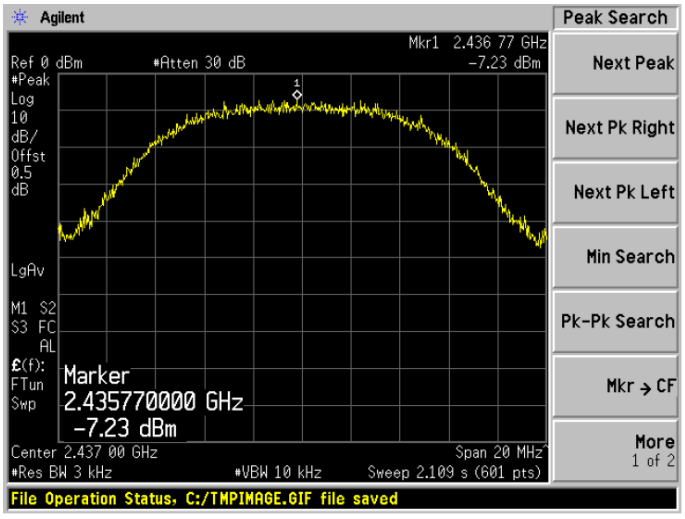
9.3. Test result

	Channel Frequency (MHz)	Power density (dBm/3KHz)	Limit (dBm/3KHz)	Result
802.11b	2412	-7.10	<8	Pass
	2437	-7.23	<8	Pass
	2462	-6.99	<8	Pass
802.11g	2412	-11.90	<8	Pass
	2437	-12.32	<8	Pass
	2462	-11.98	<8	Pass
802.11n (HT20)	2412	-13.16	<8	Pass
	2437	-10.82	<8	Pass
	2462	-12.44	<8	Pass
802.11n (HT40)	2422	-15.93	<8	Pass
	2437	-13.69	<8	Pass
	2452	-16.58	<8	Pass

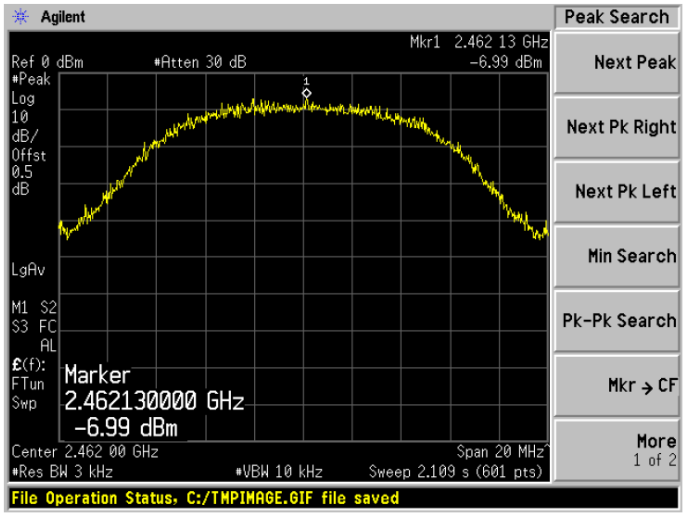
802.11b 2412MHz



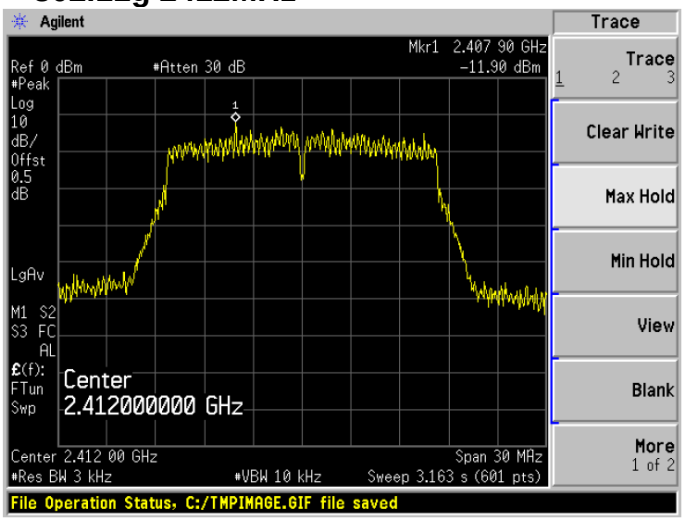
802.11b 2437MHz



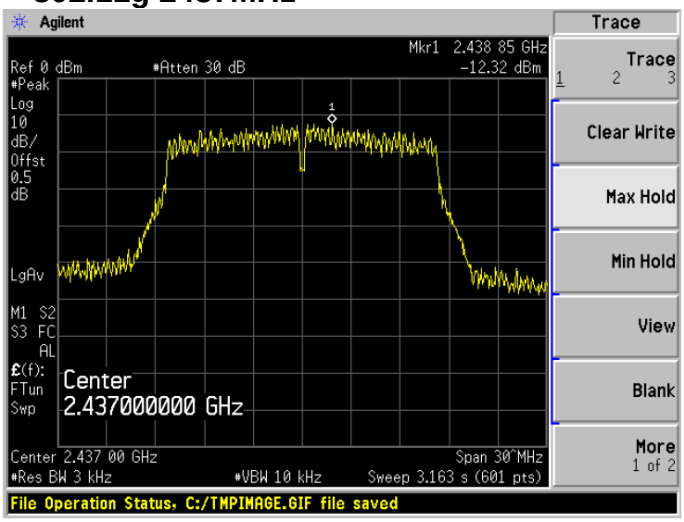
802.11b 2462MHz



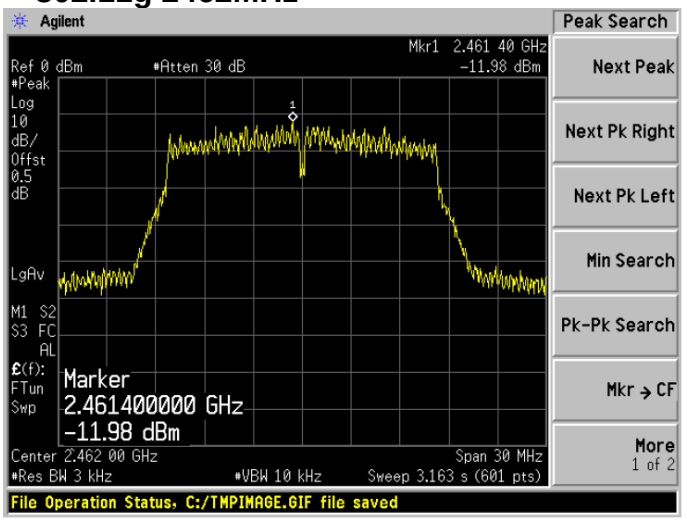
802.11g 2412MHz



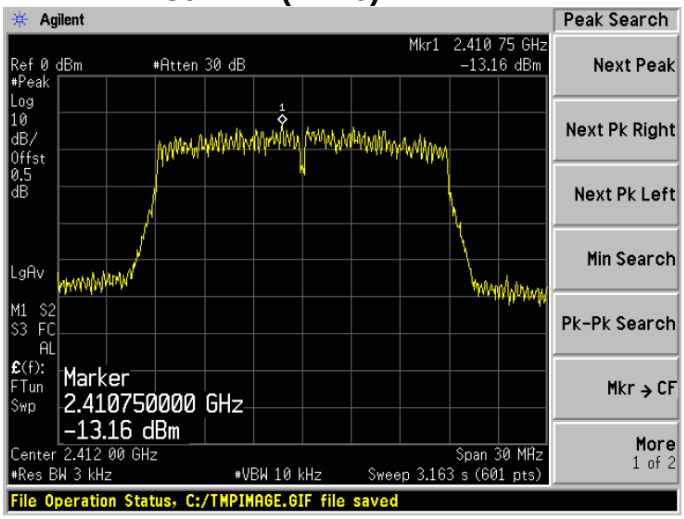
802.11g 2437MHz



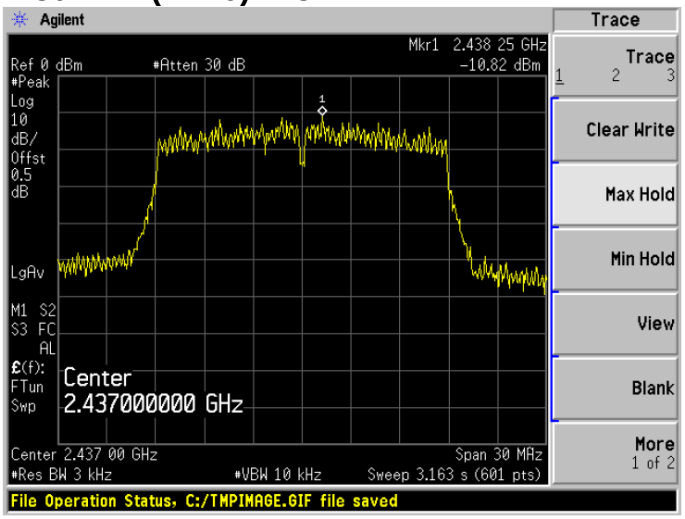
802.11g 2462MHz



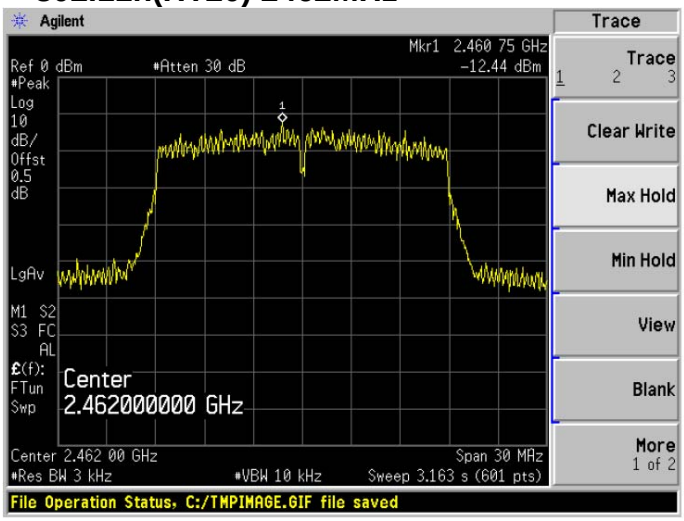
802.11n(HT20) 2412MHz



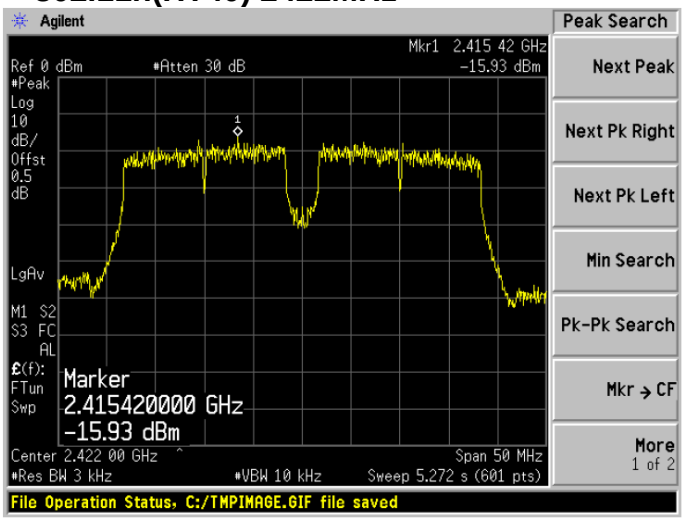
802.11n(HT20) 2437MHz



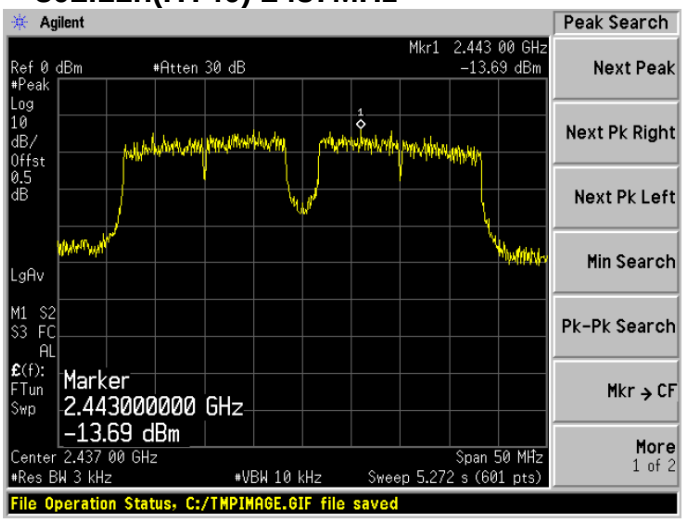
802.11n(HT20) 2462MHz



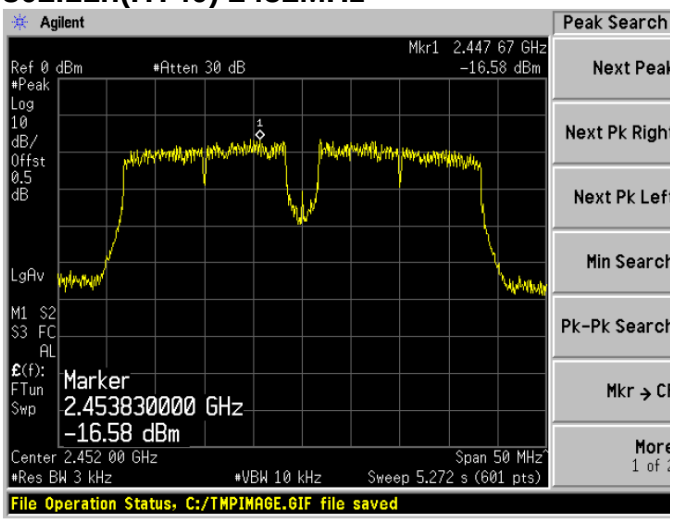
802.11n(HT40) 2422MHz



802.11n(HT40) 2437MHz



802.11n(HT40) 2452MHz



10. ANTENNA REQUIREMENTS

10.1. Limits

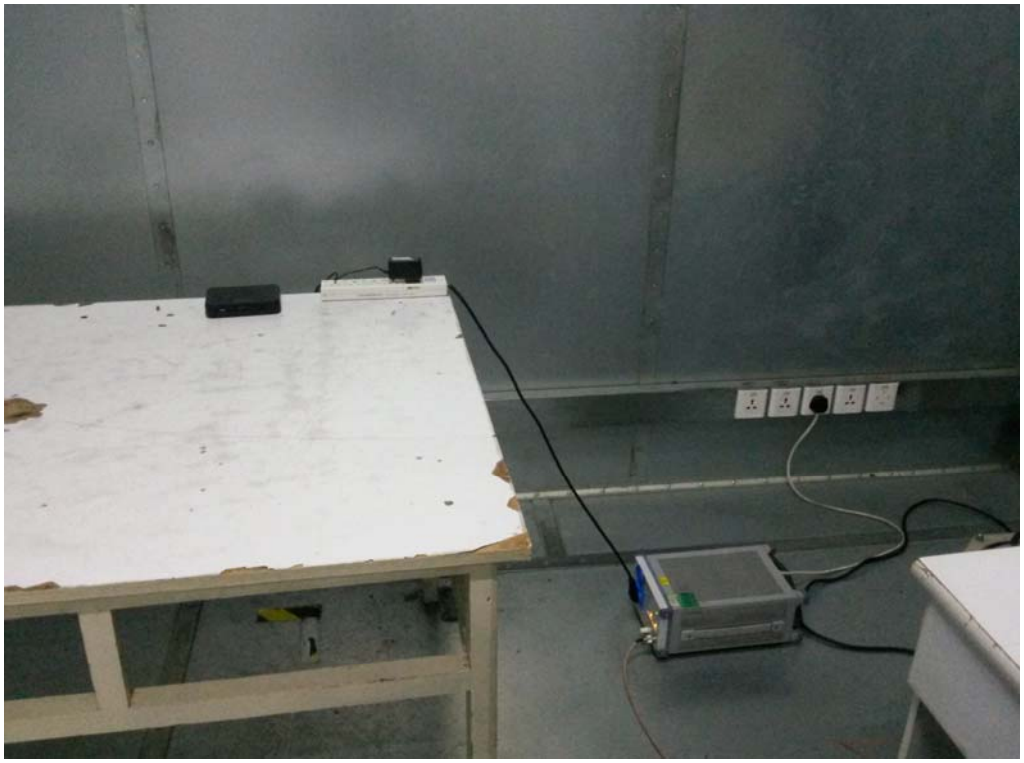
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2. Result

The antennas used for this product are PCB antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 1.0 dBi.

11. PHOTOGRAPHS OF TEST SET-UP

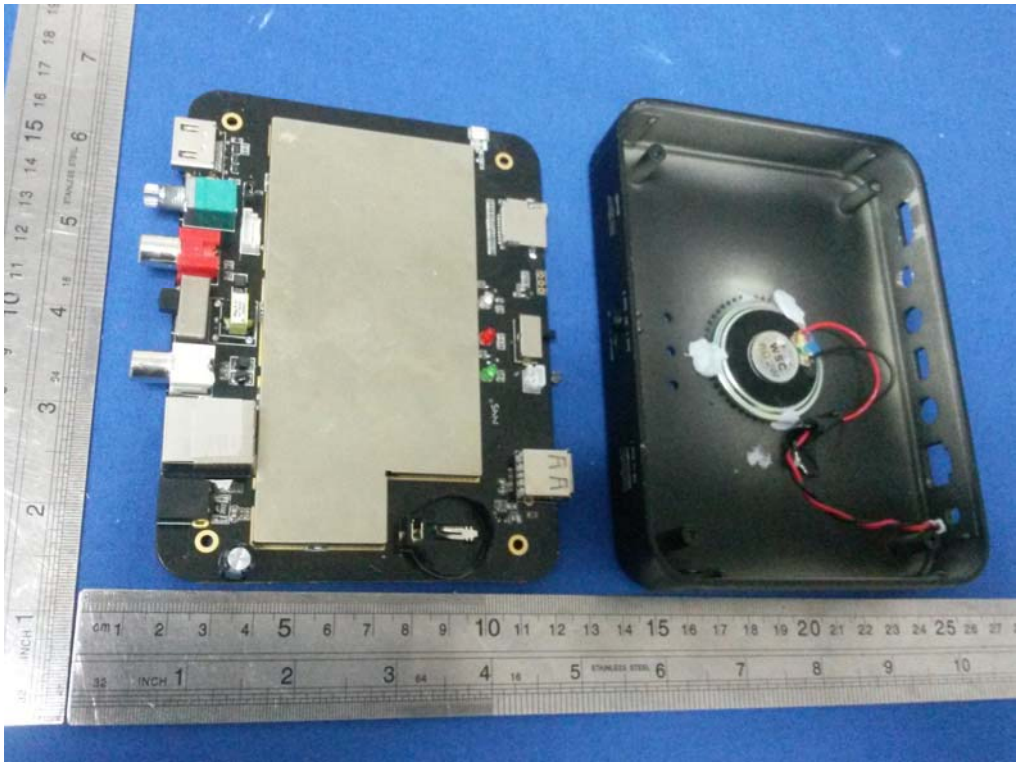
Conducted Emission



Radiated Emission

12. PHOTOGRAPHS OF THE EUT


dual zone digital media player



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