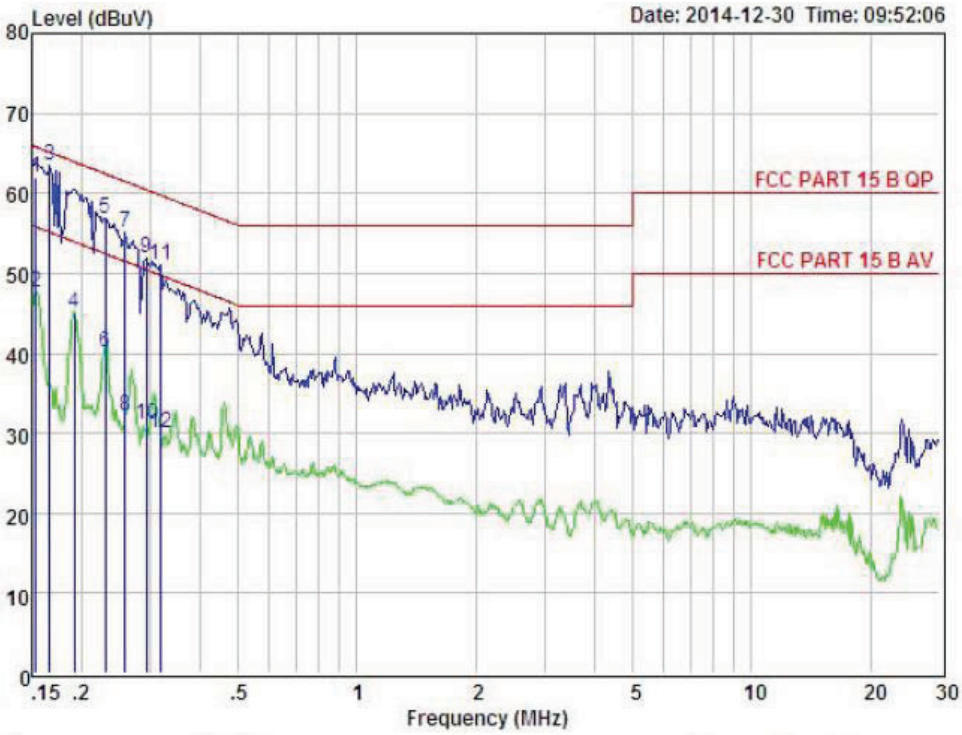


Condition : FCC PART 15 B QP POL: NEUTRAL Temp:20.1 ℃ Hum:45 %
EUT :
Model No : ATR-X1
Test Mode : keeping TX mode
Power : DC 5V From Adapte With AC 120V/60Hz
Test Engineer:
Remark :

Item	Freq MHz	Read dBuV	LISN Factor dB	Preamp Factor dB	Cable Lose dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	0.153	52.20	0.03	-9.72	0.10	62.05	65.82	-3.77	QP
2	0.153	37.70	0.03	-9.72	0.10	47.55	55.82	-8.27	Average
3	0.166	53.58	0.03	-9.72	0.10	63.43	65.16	-1.73	Peak
4	0.192	35.27	0.03	-9.72	0.10	45.12	53.93	-8.81	Average
5	0.230	47.06	0.03	-9.72	0.10	56.91	62.44	-5.53	Peak
6	0.230	30.32	0.03	-9.72	0.10	40.17	52.44	-12.27	Average
7	0.259	45.30	0.03	-9.72	0.10	55.15	61.47	-6.32	Peak
8	0.259	22.27	0.03	-9.72	0.10	32.12	51.47	-19.35	Average
9	0.292	42.04	0.03	-9.72	0.10	51.89	60.46	-8.57	Peak
10	0.292	21.32	0.03	-9.72	0.10	31.17	50.46	-19.29	Average
11	0.317	41.17	0.03	-9.72	0.10	51.02	59.80	-8.78	Peak
12	0.317	20.27	0.03	-9.72	0.10	30.12	49.80	-19.68	Average

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

7 Conducted Maximum Output Power

7.1 Test limit

Please refer section15.247.

Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1W(30dBm)

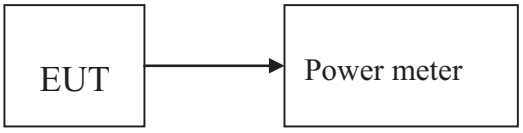
7.2 Test Procedure

7.2.1 Connected the EUT's antenna port to peak power meter by 20dB attenuator.

7.2.2 Measure out each mode and each bands peak output power of EUT.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset. Details see the KDB558074 D01 DTS Meas Guidance v03r02.

7.3 Test Setup



7.4 Test Results

PASS
Detailed information please see the Below.

EUT: Personal Computer				
Test date: 2015-01-12	Test site: RF site		Tested by: Simple Guan	
Mode	Frequency (MHz)	PK Output power (dBm)	Limit (dBm)	Margin (dB)
IEEE 802.11 b	CH1: 2412	17.62	30	12.38
	CH6: 2437	18.73	30	11.27
	CH11: 2462	17.54	30	12.46
IEEE 802.11 g	CH1: 2412	17.69	30	12.31
	CH6: 2437	18.71	30	11.29
	CH11: 2462	17.73	30	12.27
IEEE 802.11 n/HT20 with 2.4G	CH1: 2412	17.53	30	12.47
	CH6: 2437	18.37	30	11.63
	CH11: 2462	17.57	30	12.43
IEEE 802.11 n/HT40 with 2.4G	CH3: 2422	17.63	30	12.37
	CH6: 2437	18.26	30	11.74
	CH9: 2452	17.18	30	12.82
Conclusion: PASS				

8 PEAK POWER SPECTRAL DENSITY

8.1 Test limit

8.1.1 Please refer section15.247.

8.1.2 For direct sequence systems, the peak 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.

8.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

8.2 Method of measurement

Details see the KDB558074 D01 DTS Meas Guidance v03r02.

8.2.1 Place the EUT on the table and set it in transmitting mode.

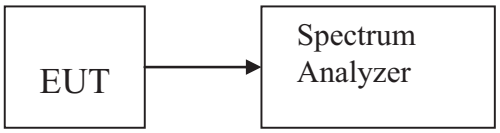
8.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

8.2.3 Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, span=1.5OBW, detail see the test plot.

8.2.4 Record the max reading.

8.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

8.3 Test Setup



8.4 Test Results

PASS.
Detailed information please see the following page.

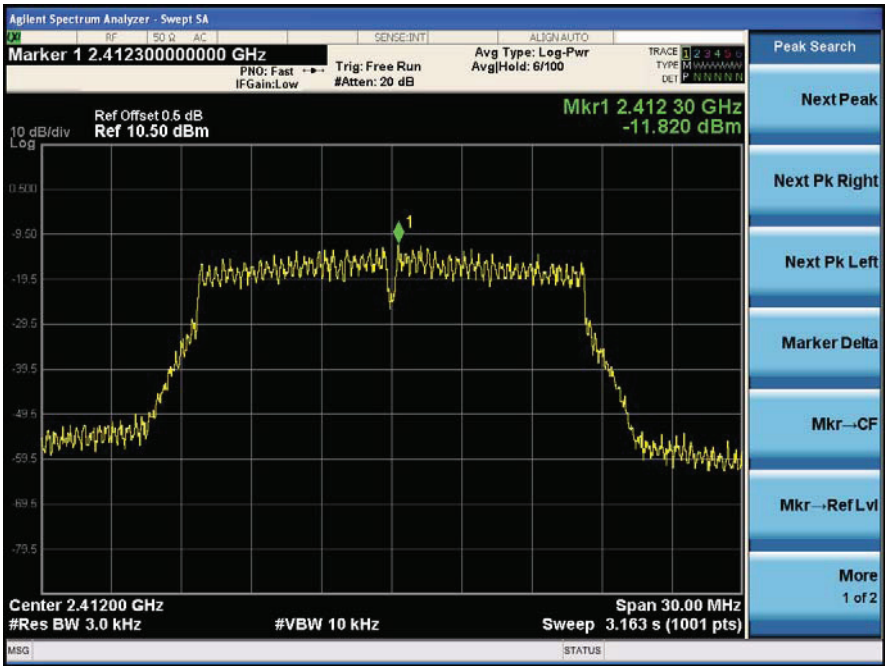
Channel	Frequency (MHz)	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
IEEE 802.11b:				
Low	2412	-6.668	8	PASS
Mid	2437	-6.688	8	PASS
High	2462	-4.604	8	PASS
IEEE 802.11g:				
Low	2412	-11.820	8	PASS
Mid	2437	-10.277	8	PASS
High	2462	-11.838	8	PASS
IEEE 802.11n/HT20 with 2.4G:				
Low	2412	-10.635	8	PASS
Mid	2437	-9.094	8	PASS
High	2462	-12.602	8	PASS
IEEE 802.11n/HT40 with 2.4G:				
Low	2422	-17.954	8	PASS
Mid	2437	-16.105	8	PASS
High	2452	-16.624	8	PASS

IEEE 802.11b:
CH Low :

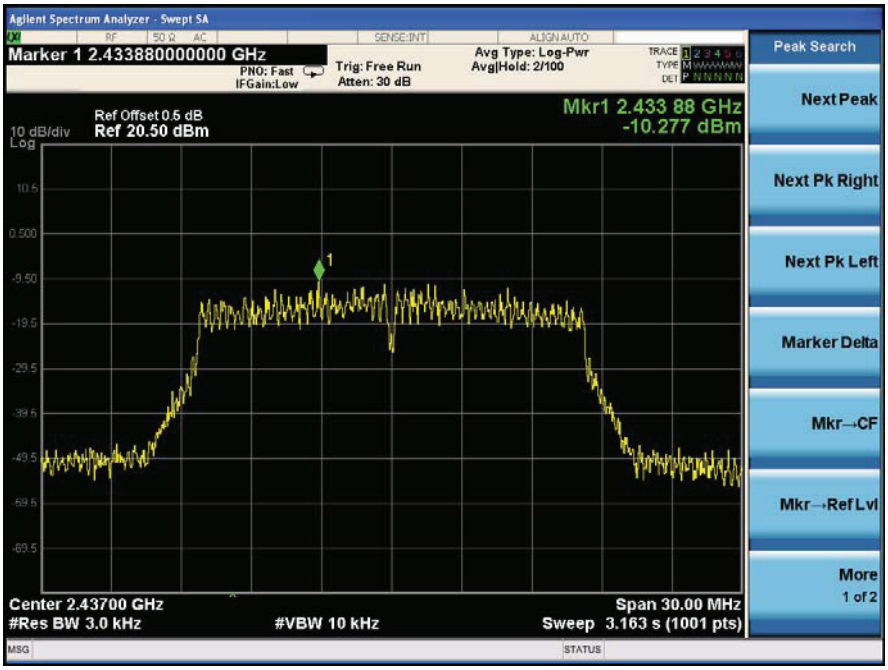
CH Mid :

CH High :

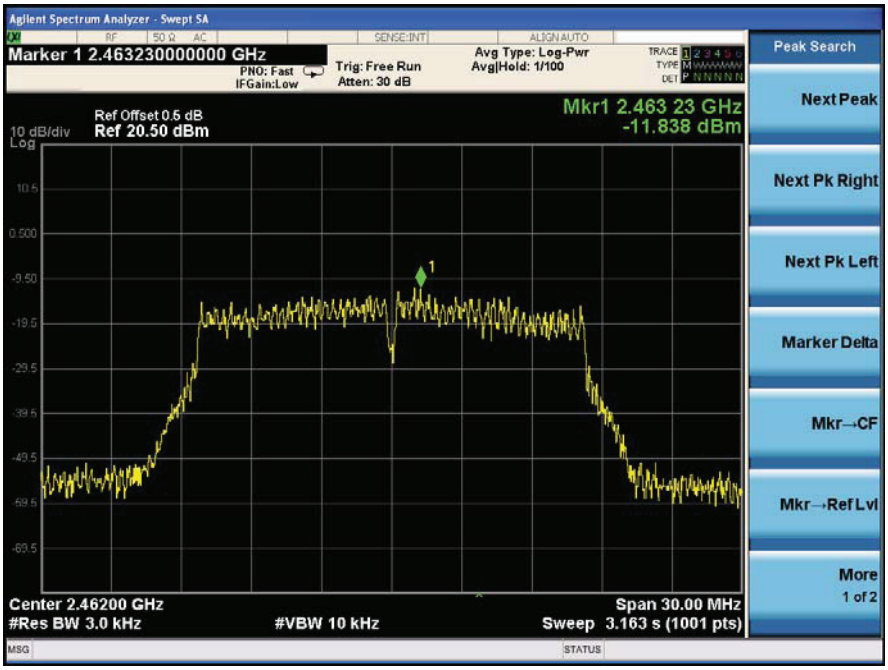
IEEE 802.11g:
CH Low :



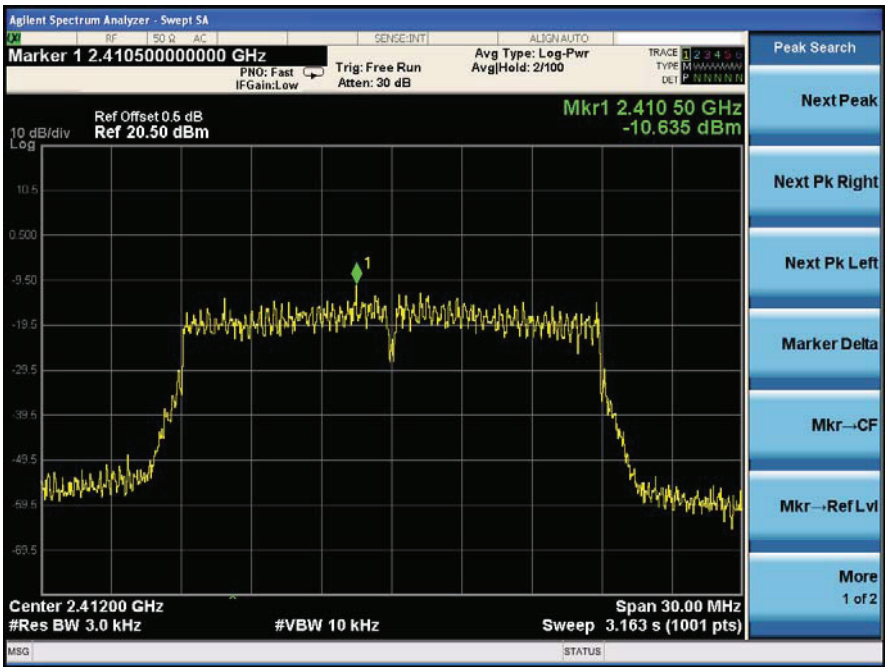
CH Mid :



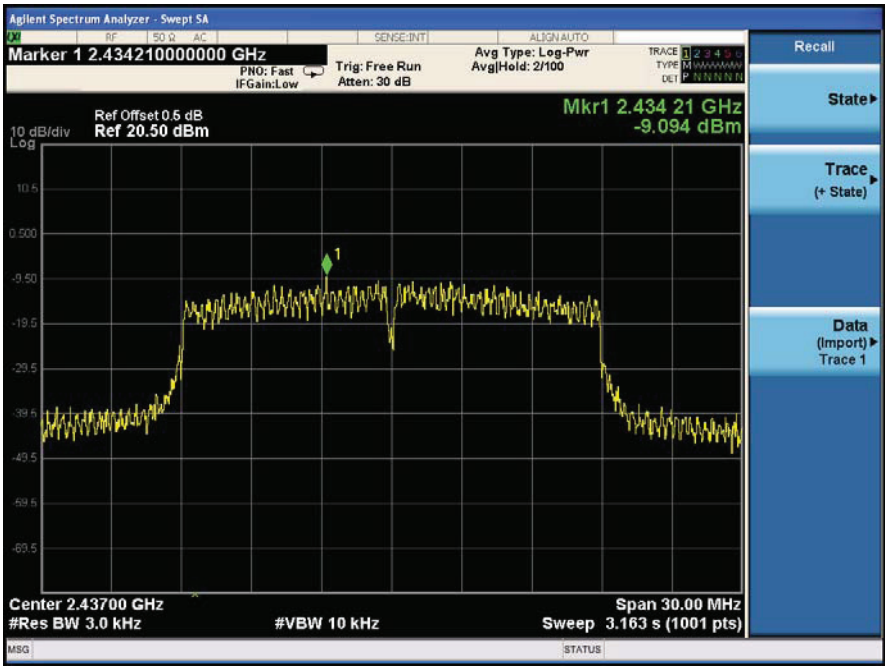
CH High :



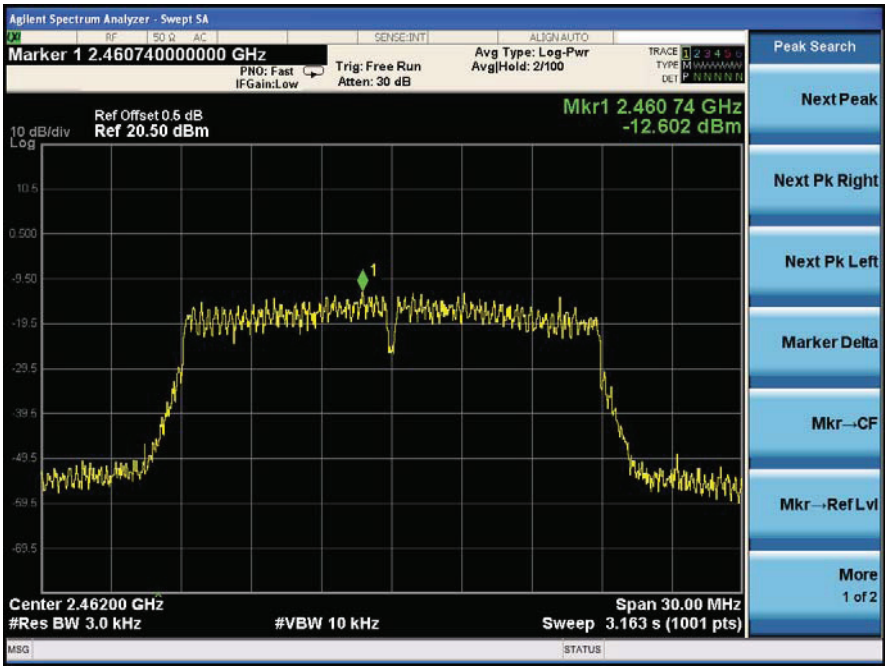
IEEE 802.11n/HT20:
CH Low :



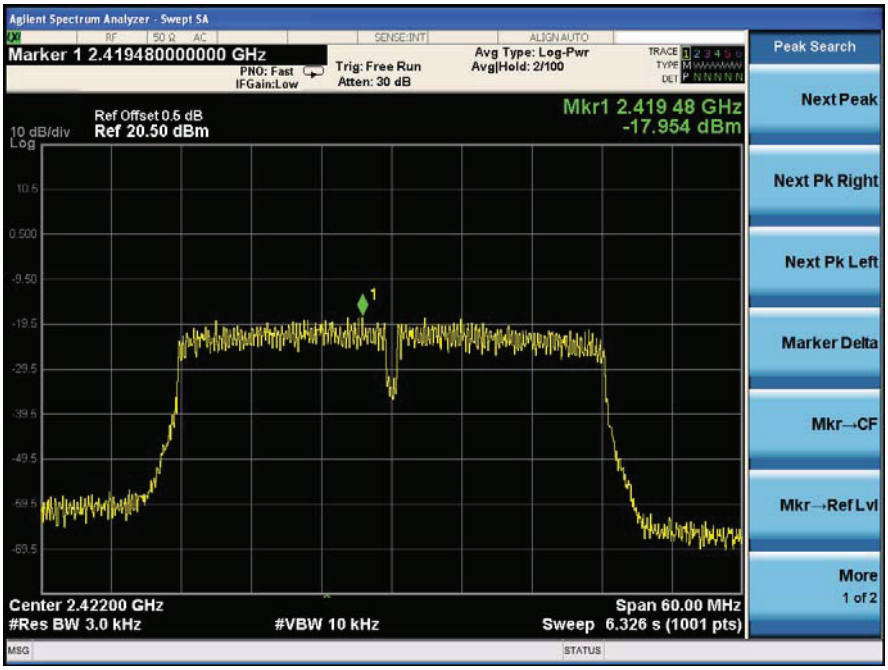
CH Mid :



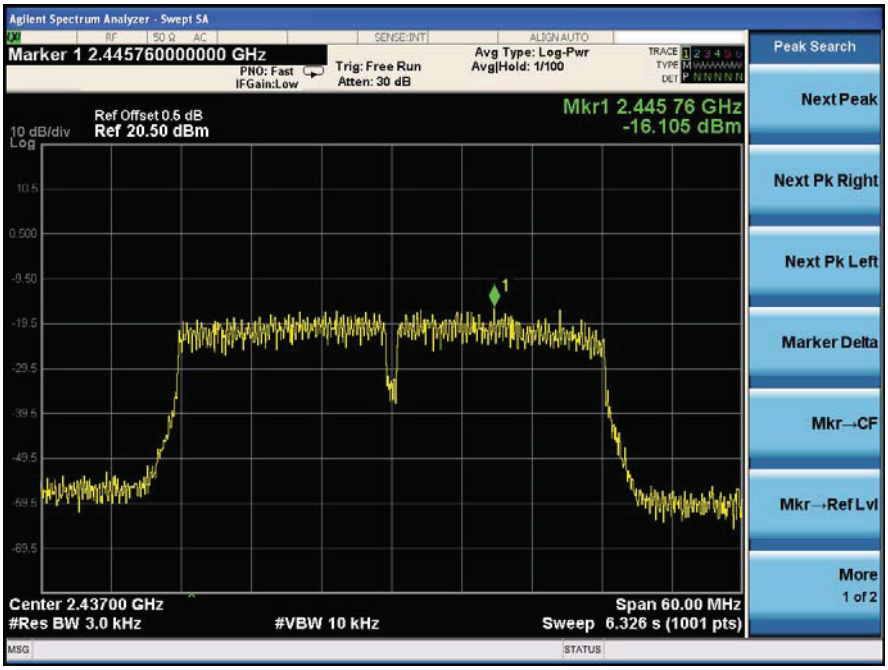
CH High :



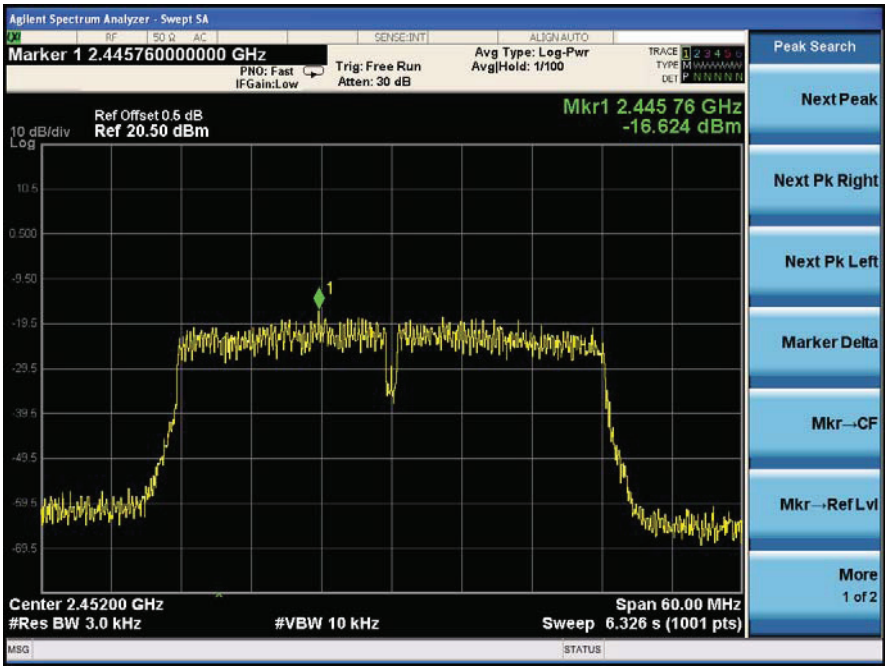
IEEE 802.11n/HT40:
CH Low :



CH Mid :



CH High :



9 Bandwidth

9.1 Test limit

Please refer section15.247

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

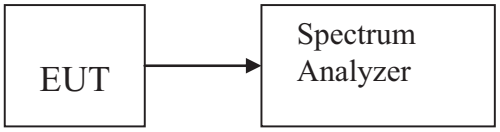
9.2 Method of measurement

Details see the KDB558074 D01 DTS Meas Guidance v03r02.

a)The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

b) The test receiver set RBW =100KHz, VBW≥3RBW, Sweep time set auto, detail see the test plot.

9.3 Test Setup



9.4 Test Results

PASS.

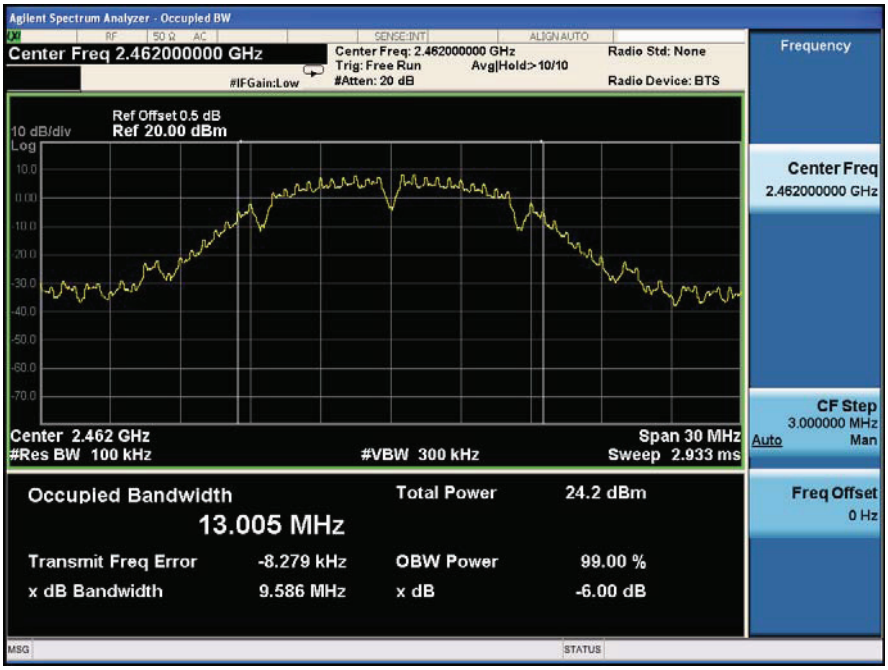
Detailed information please see the following page.

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
IEEE 802.11b:				
Low	2412	9.604	0.5	PASS
Mid	2437	10.05	0.5	PASS
High	2462	9.586	0.5	PASS
IEEE 802.11g:				
Low	2412	15.14	0.5	PASS
Mid	2437	15.71	0.5	PASS
High	2462	15.15	0.5	PASS
IEEE 802.11n/HT20 with 2.4G:				
Low	2412	15.16	0.5	PASS
Mid	2437	15.13	0.5	PASS
High	2462	15.33	0.5	PASS
IEEE 802.11n/HT40 with 2.4G:				
Low	2422	35.24	0.5	PASS
Mid	2437	35.25	0.5	PASS
High	2452	35.25	0.5	PASS

IEEE 802.11b:
CH Low :

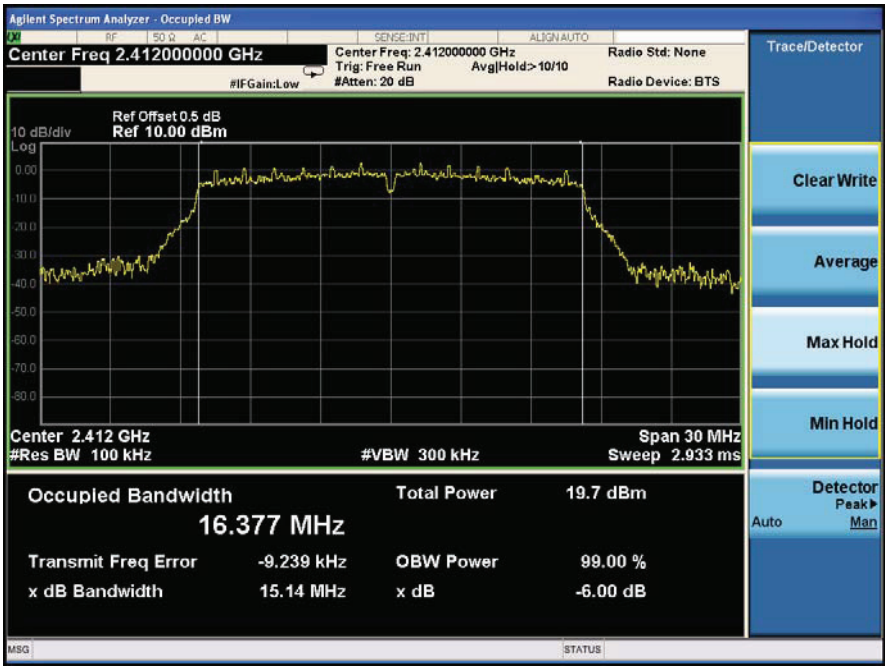
CH Mid :

CH High :

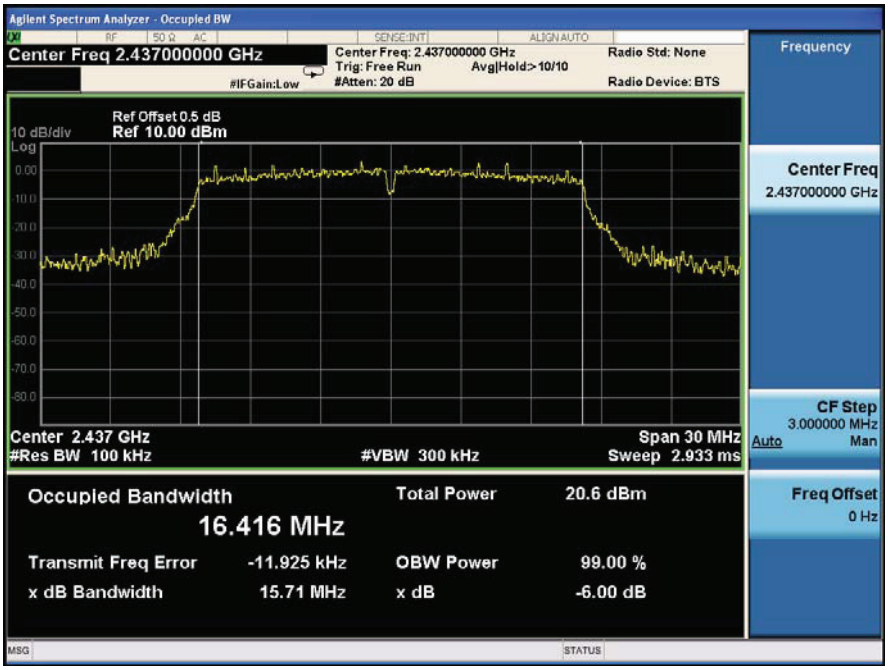


IEEE 802.11g:

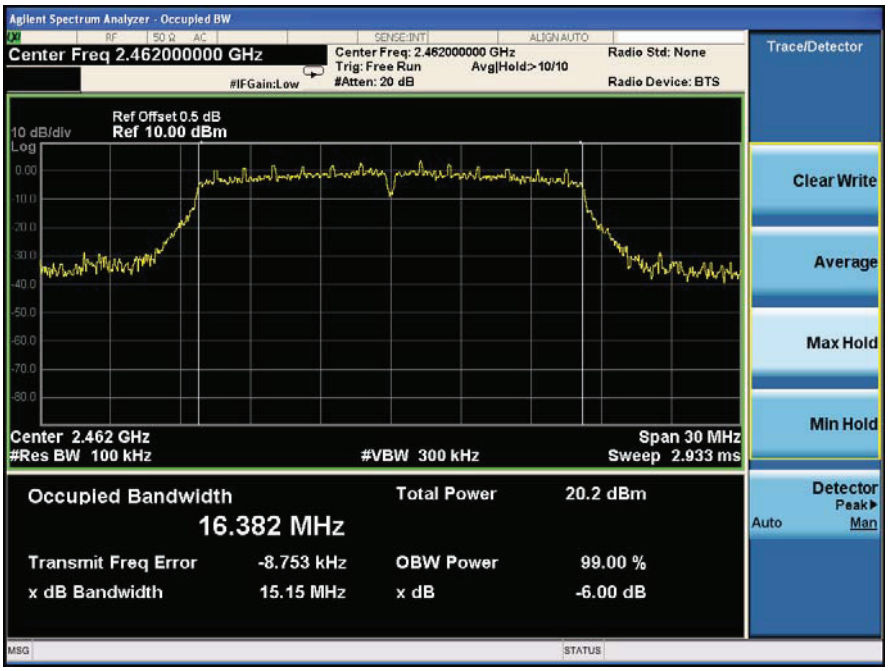
CH Low :



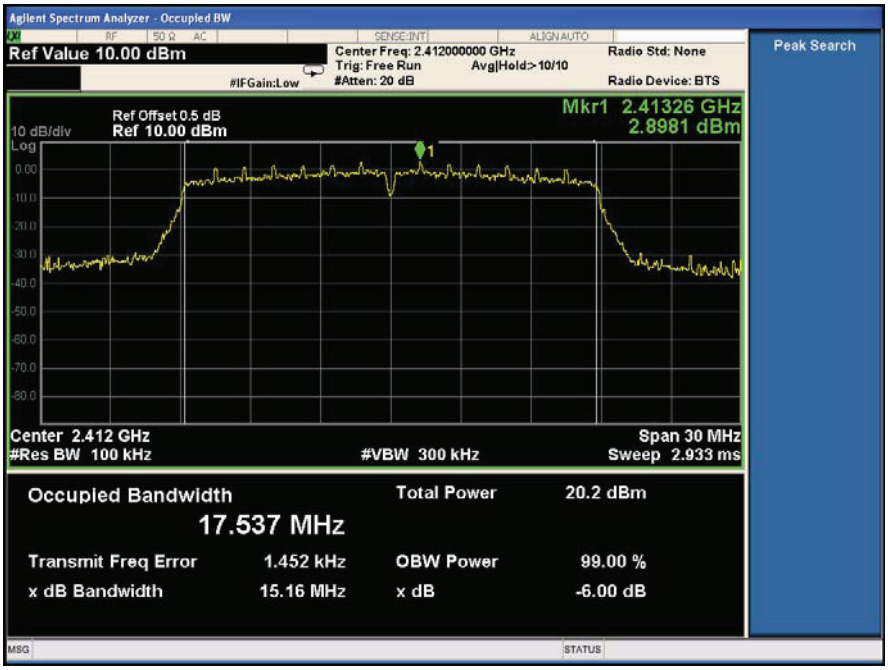
CH Mid :



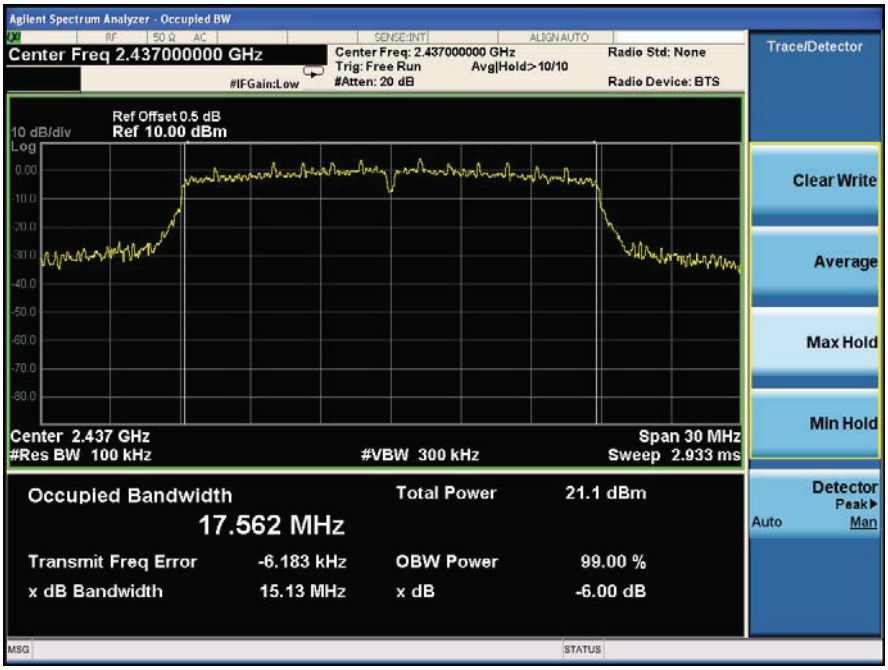
CH High :



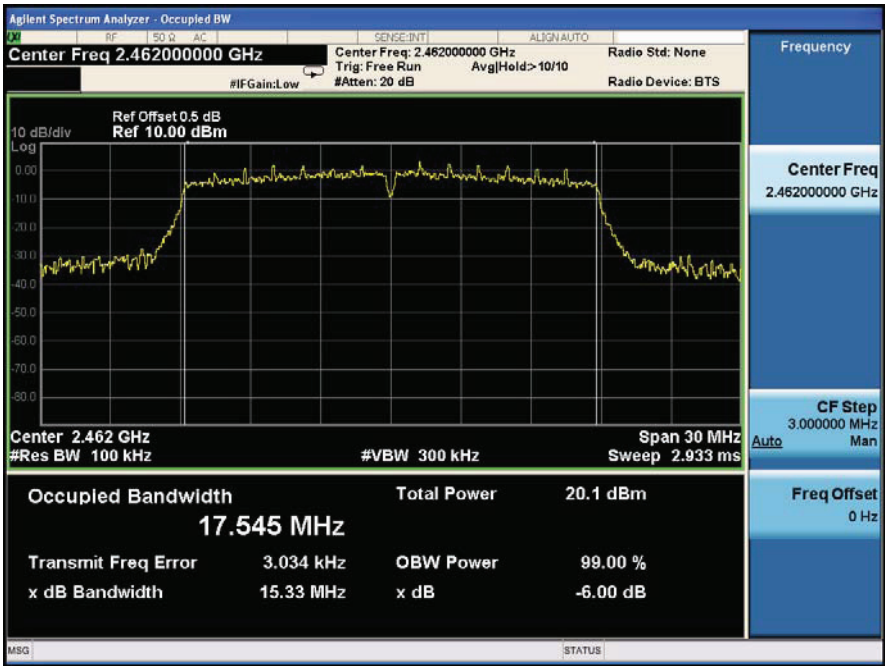
IEEE 802.11n/HT20 with 2.4G:
CH Low :



CH Mid :

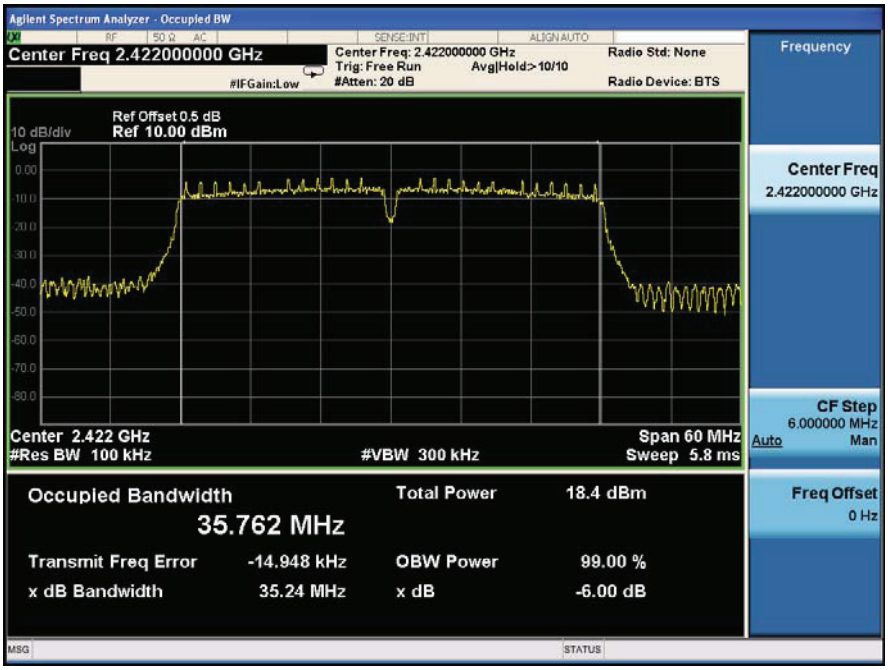


CH High :

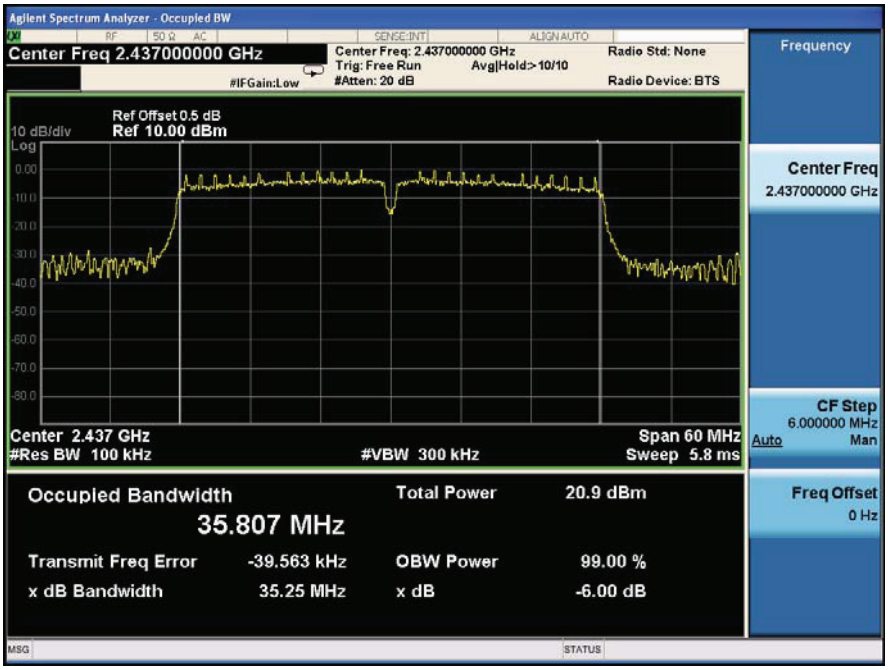


IEEE 802.11n/HT40 with 2.4G:

CH Low :



CH Mid :



CH High :

10 Band Edge Check

10.1 Test limit

Please refer section15.247

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

10.2 Test Procedure

12.2.1 Put the EUT on a 0.8m high table, power on the EUT. Emissions were scanned and measured rotating the EUT to 360 degrees, Find the maximum Emission

12.2.2 Check the spurious emissions out of band.

12.2.3 RBW, VBW Setting, please see the following.

1: Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK

2:Spectrum Set for AV measure: RBW=1MHz, VBW=3MHz, Sweep time=Auto, Detector: RMS

10.3 Test Setup

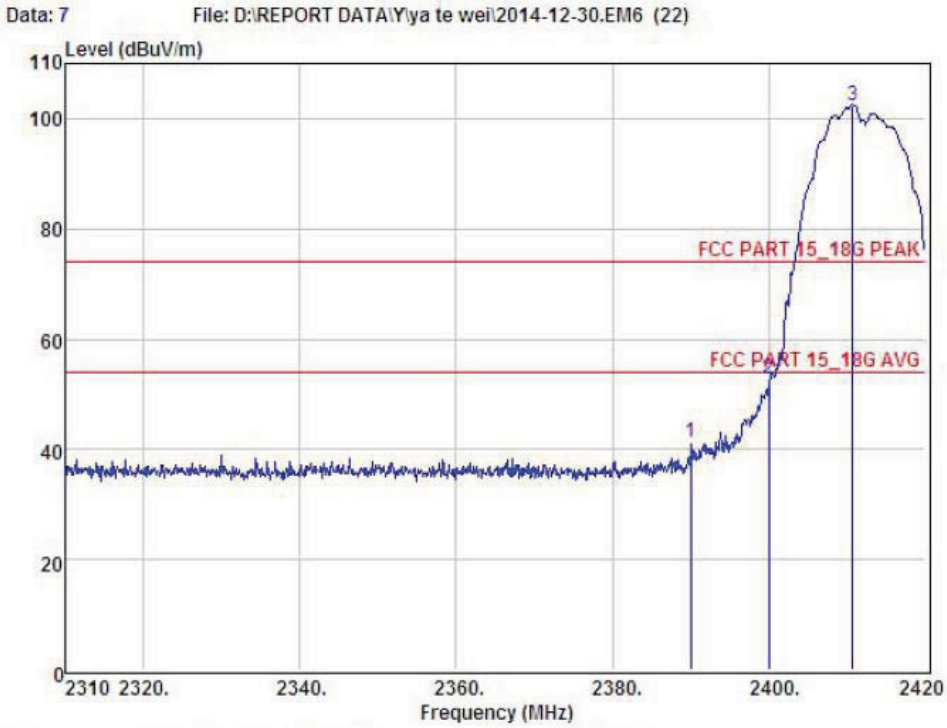
Same as 5.2.2.

10.4 Test Result

PASS.

Detailed information please see the following page.

Radiated Emission Method.
IEEE 802.11b:
CH LOW :



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT :
Model No : ATRX1
Test Mode : 802.11b 2412MHz
Power : DC 5V from adapter with AC120V/60Hz
Test Engineer :
Remark :
Temp :
Hum :

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	2390.00	44.66	27.62	34.97	3.92	41.23	74.00	-32.77	Peak
2	2400.00	56.16	27.62	34.97	3.94	52.75	74.00	-21.25	Peak
3	2410.65	105.85	27.61	34.97	3.94	102.43	74.00	28.43	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss