

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

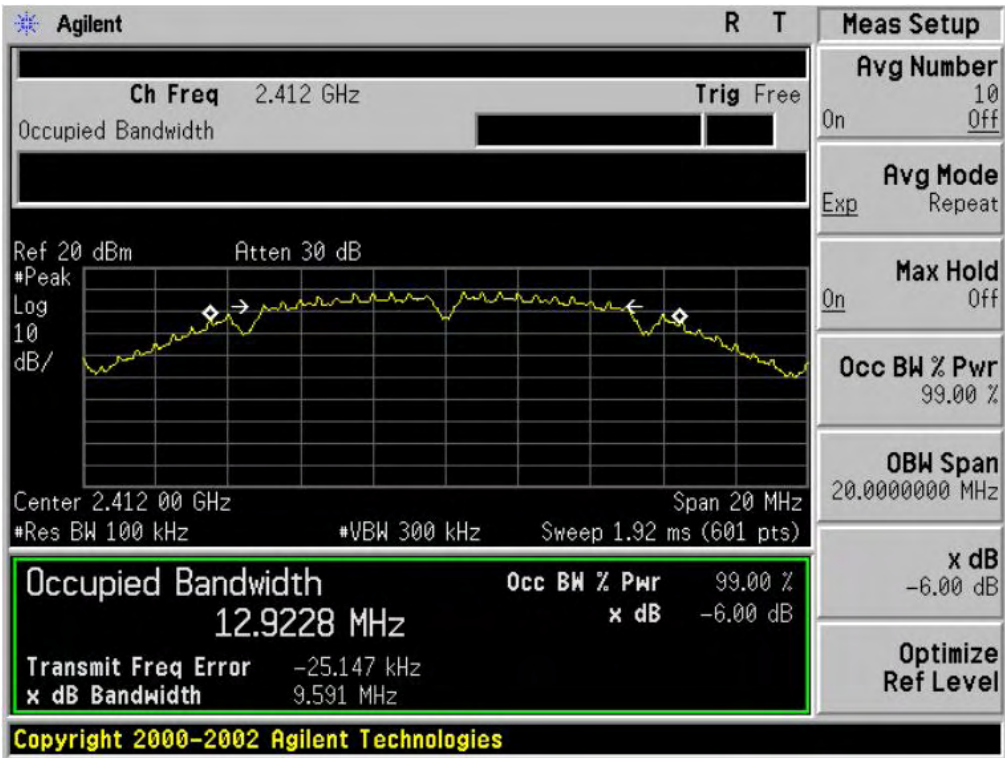
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the RBW =100kHz.
3. Set the VBW = 300kHz
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Measure and record the result in the test report.

6.3. Test result

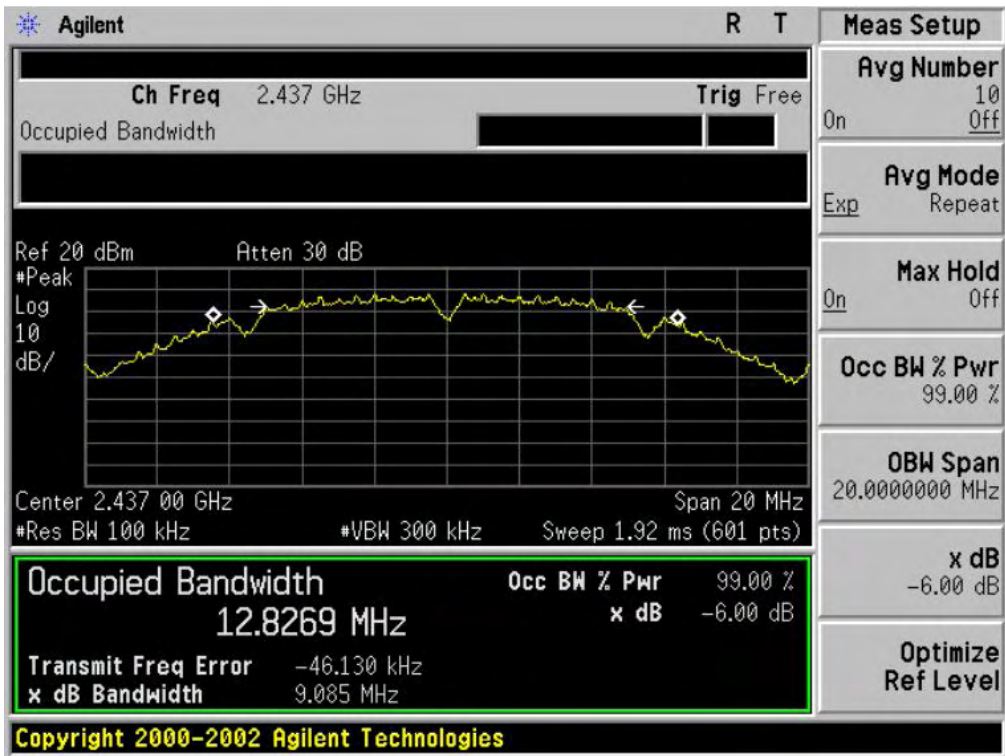
	Channel Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)	Result
		ANT1	ANT2		
802.11b	2412	9.59	9.42	>0.5	Pass
	2437	9.09	9.36	>0.5	Pass
	2462	8.62	9.26	>0.5	Pass
802.11g	2412	15.03	15.03	>0.5	Pass
	2437	14.46	15.11	>0.5	Pass
	2462	15.69	15.24	>0.5	Pass
802.11n (HT20)	2412	15.16	16.24	>0.5	Pass
	2437	15.91	16.23	>0.5	Pass
	2462	17.04	16.24	>0.5	Pass
802.11n (HT40)	2422	35.22	35.18	>0.5	Pass
	2437	35.23	35.19	>0.5	Pass
	2452	35.21	35.20	>0.5	Pass

Test plot as follows:

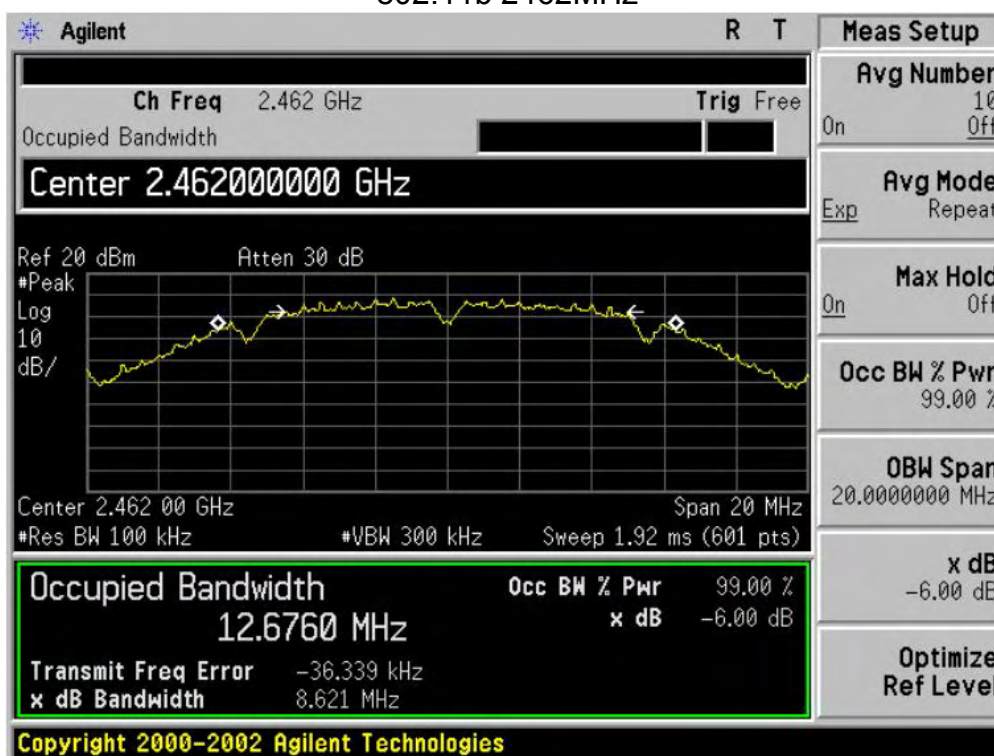
802.11b 2412MHz



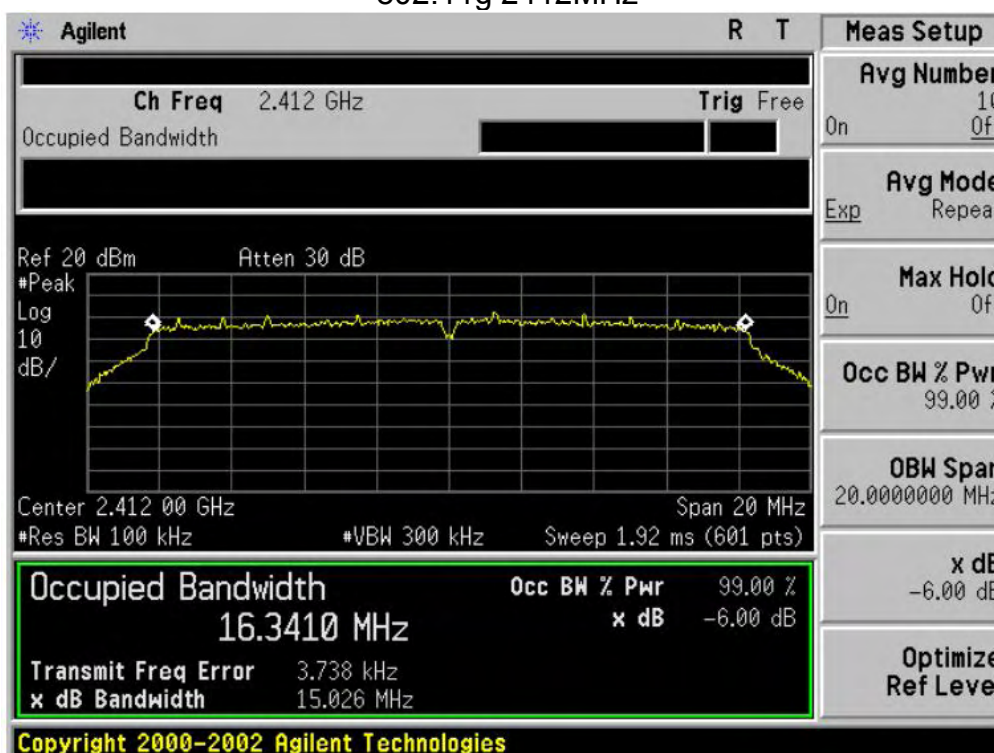
802.11b 2437MHz



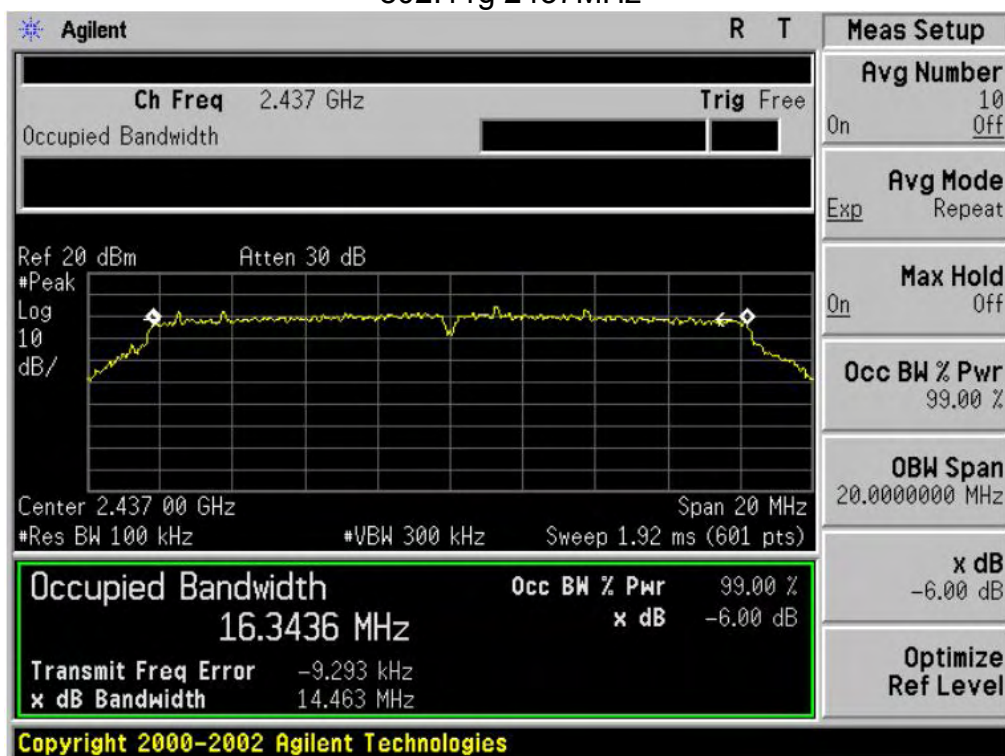
802.11b 2462MHz



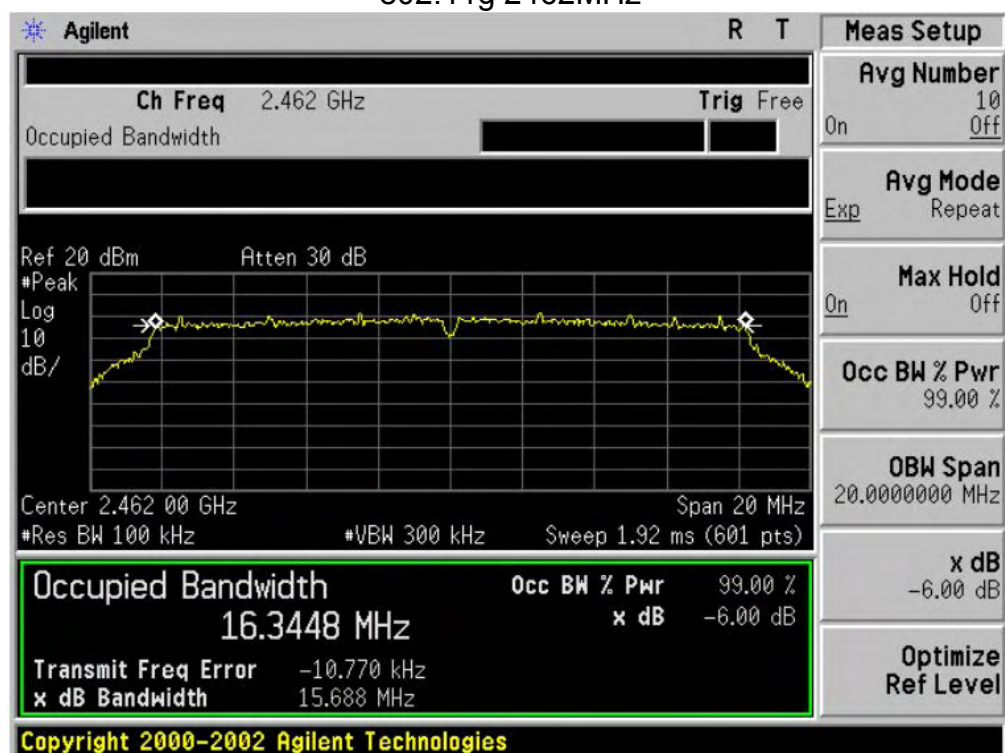
802.11g 2412MHz



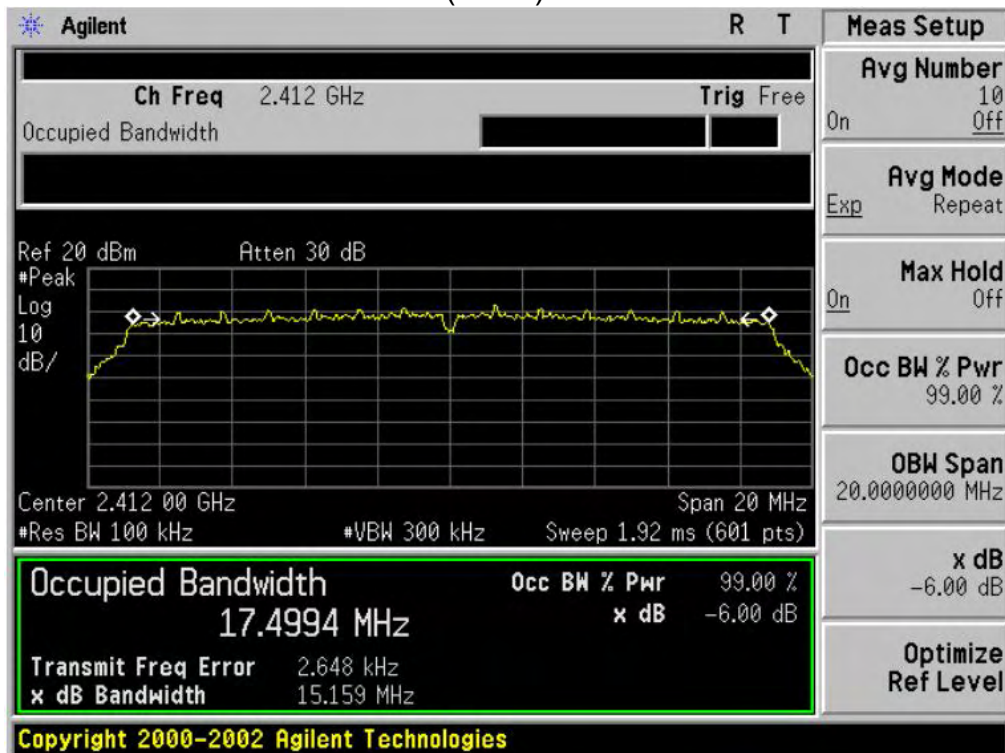
802.11g 2437MHz



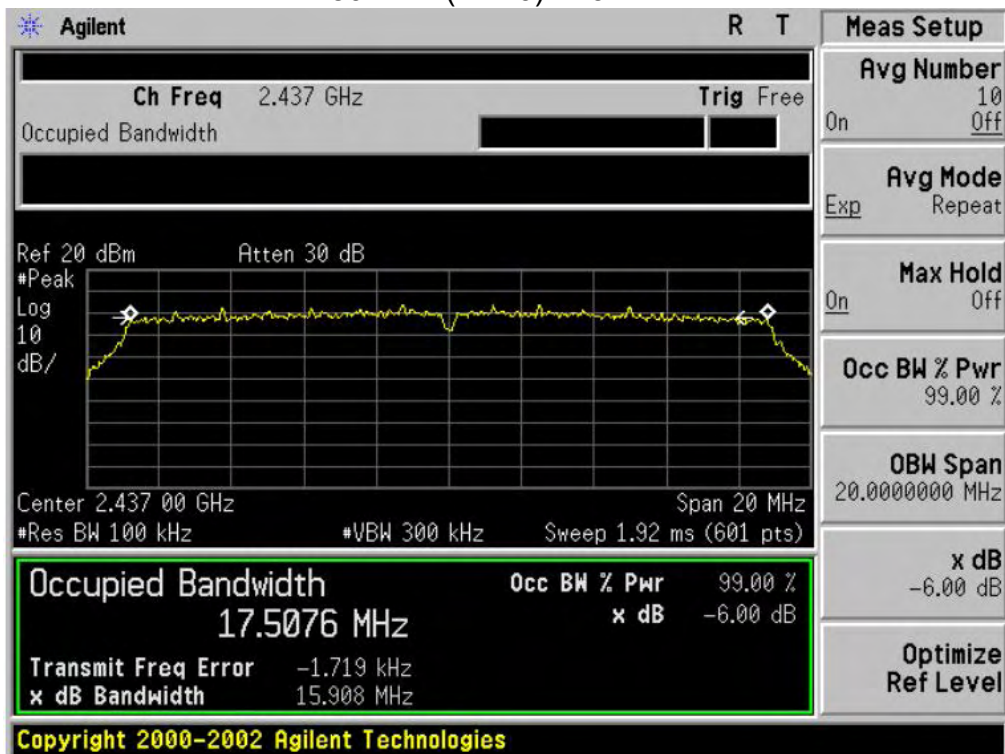
802.11g 2462MHz



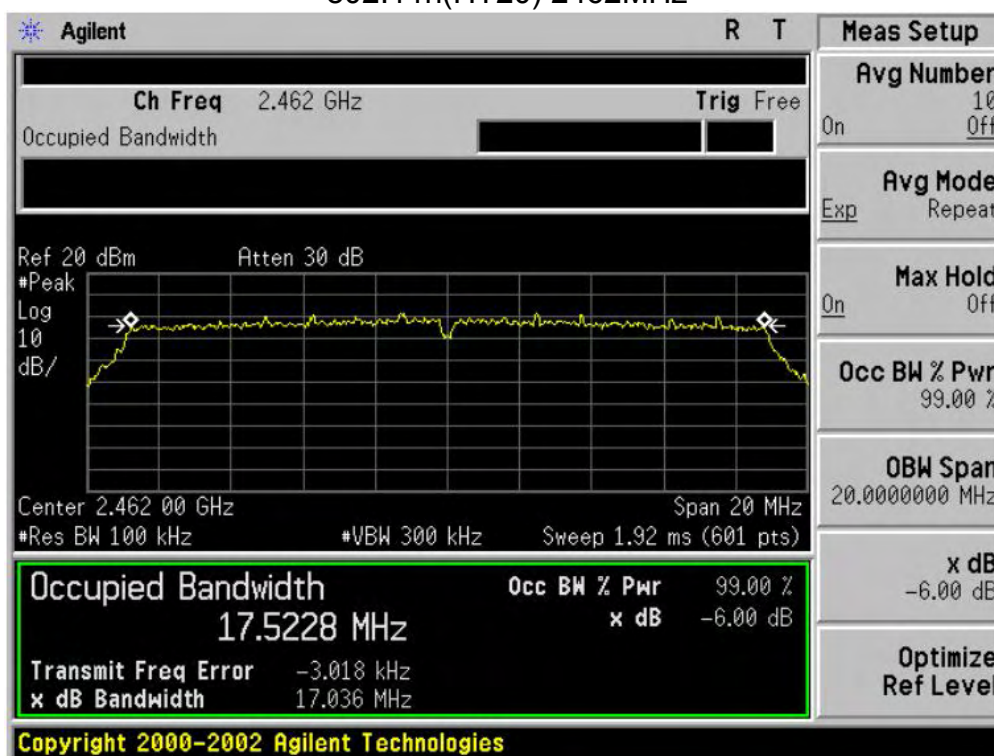
802.11n(HT20) 2412MHz



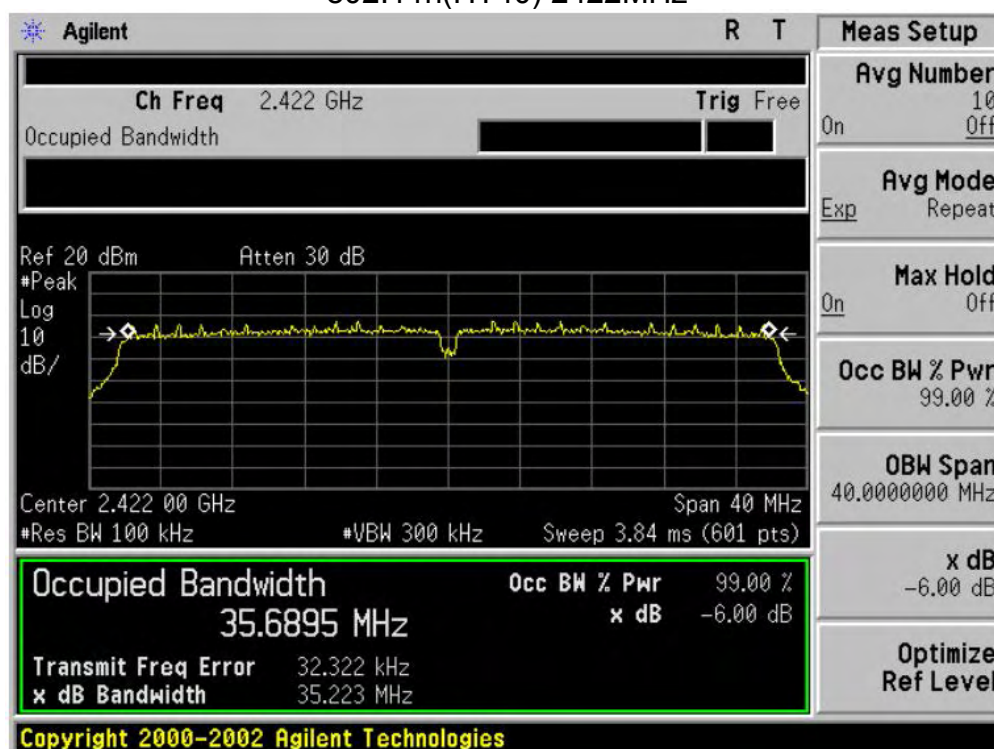
802.11n(HT20) 2437MHz



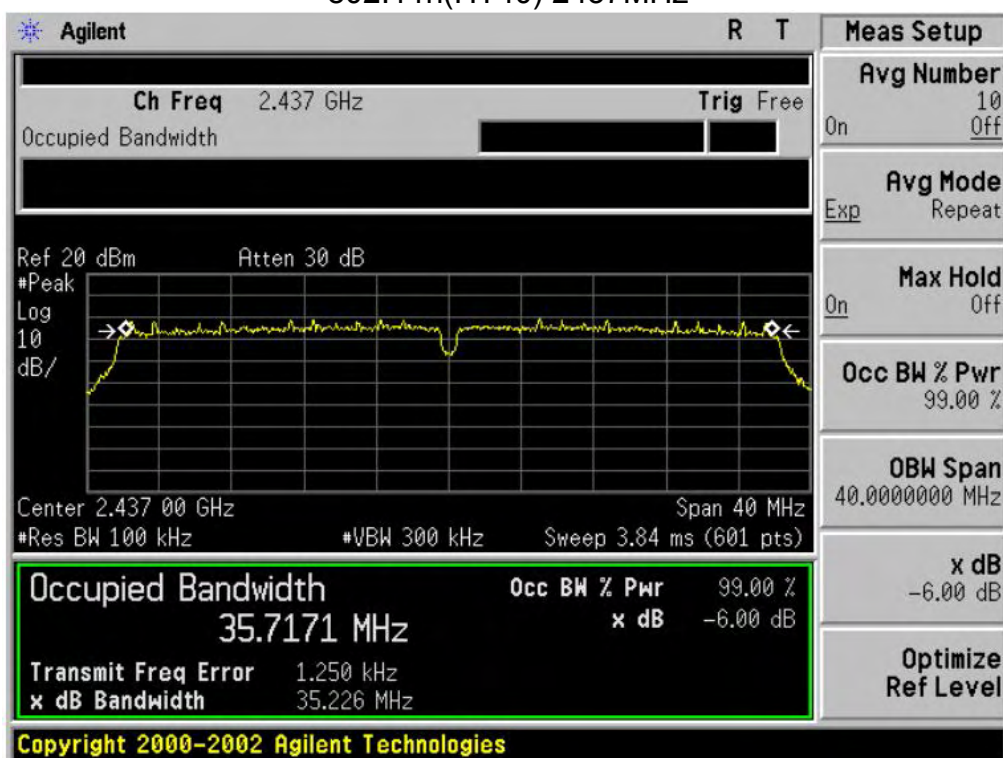
802.11n(HT20) 2462MHz



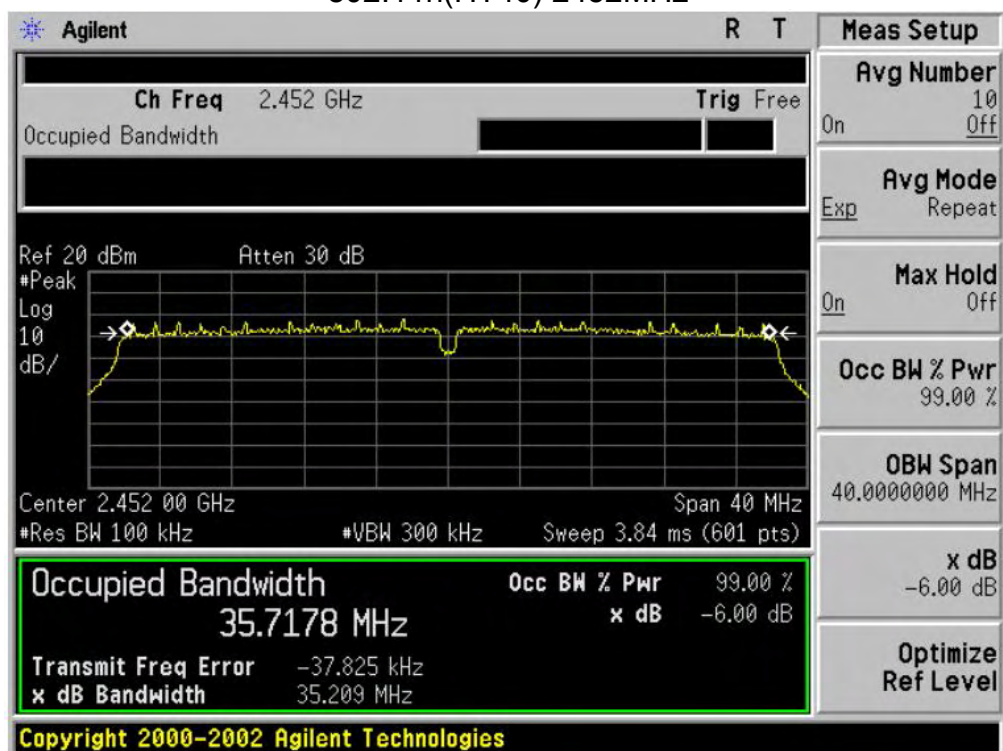
802.11n(HT40) 2422MHz



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,

Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.

Set RBW to 100 kHz and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.

Measure the highest amplitude appearing on spectral display and set it as a reference level.

Plot the graph with marking the highest point and edge frequency.

Repeat above procedures until all measured frequencies were complete.

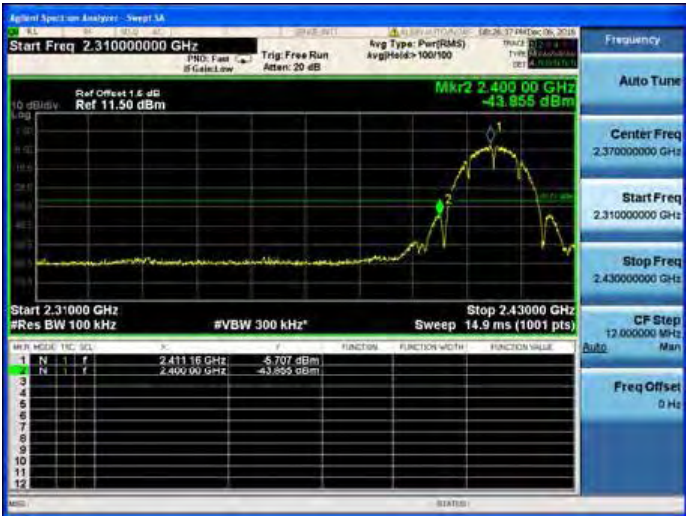
The conducted plot only show the antenna 1's data.

For radiated test as follows:

	Frequency (MHz)	Antenna polarization (H/V)	Band edge Limit (dBuV/m)		
			PK	PK	AV
802.11b	<2400	H	50.24	74.00	54.00
	<2400	V	51.52	74.00	54.00
	>2483.5	H	52.42	74.00	54.00
	>2483.5	V	51.14	74.00	54.00
802.11g	<2400	H	52.78	74.00	54.00
	<2400	V	51.25	74.00	54.00
	>2483.5	H	52.62	74.00	54.00
	>2483.5	V	51.18	74.00	54.00
802.11n(HT20)	<2400	H	52.41	74.00	54.00
	<2400	V	51.27	74.00	54.00
	>2483.5	H	52.62	74.00	54.00
	>2483.5	V	51.52	74.00	54.00
802.11n(HT40)	<2400	H	52.73	74.00	54.00
	<2400	V	52.16	74.00	54.00
	>2483.5	H	51.58	74.00	54.00
	>2483.5	V	52.27	74.00	54.00

For conducted test plot as follows:

802.11b 2412MHz



802.11b 2462MHz



802.11g 2412MHz



802.11g 2462MHz



802.11n(HT20) 2412MHz



802.11n(HT20) 2462MHz



802.11n(HT40) 2422MHz



802.11n(HT40) 2452MHz



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.

The Directional Gain=5dBi+10log(2)=8.01dBi, the limit = standard limit-(8.01-6.00)

8.3. Test result

	Channel Frequency (MHz)	Peak output Power(dBm)		Total Power (dBm)	Limit (dBm)	Result
		ANT1	ANT2			
802.11b	2412	15.37	15.24	18.32	27.99	Pass
	2437	15.33	15.22	18.29	27.99	Pass
	2462	15.31	15.18	18.26	27.99	Pass
802.11g	2412	12.45	12.14	15.31	27.99	Pass
	2437	12.47	12.21	15.35	27.99	Pass
	2462	12.26	12.18	15.23	27.99	Pass
802.11n(H T20)	2412	11.54	11.37	14.47	27.99	Pass
	2437	11.48	11.28	14.39	27.99	Pass
	2462	11.49	11.43	14.47	27.99	Pass
802.11n(H T40)	2422	11.12	11.06	14.10	27.99	Pass
	2437	11.13	11.15	14.15	27.99	Pass
	2452	11.17	11.13	14.16	27.99	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

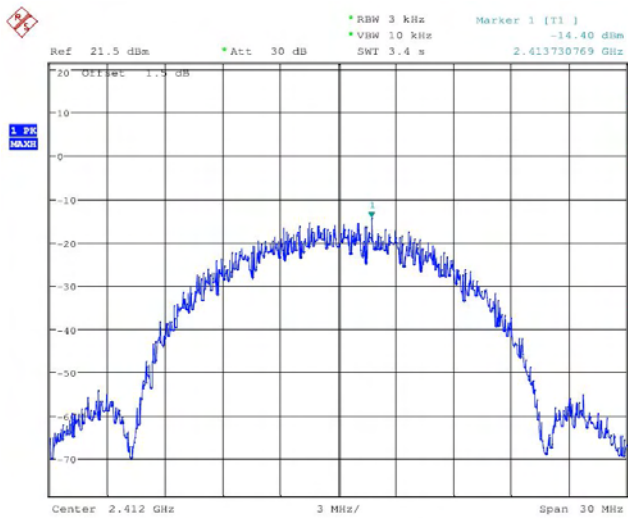
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW = 3kHz.
4. Set the VBW = 3 times RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak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

9.3. Test result

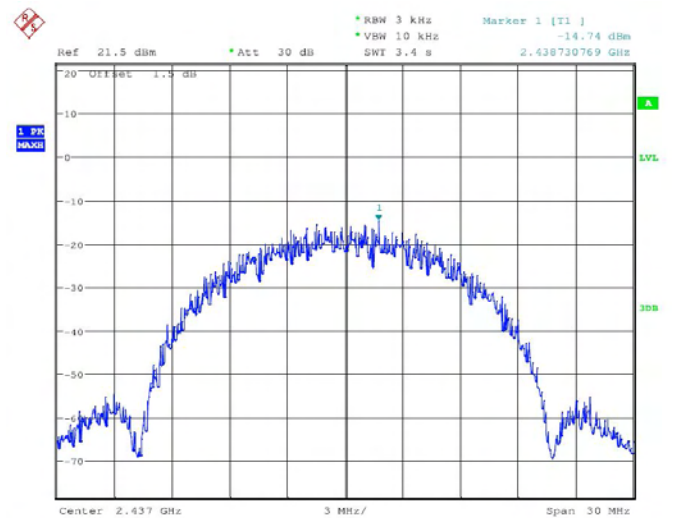
	Channel Frequency (MHz)	Power density (dBm/3KHz)		Total Power density (dBm)	Limit (dBm/3KHz)	Result
		ANT1	ANT2			
802.11b	2412	-14.40	-14.68	-11.53	<5.99	Pass
	2437	-14.74	-14.82	-11.77	<5.99	Pass
	2462	-15.33	-14.78	-12.04	<5.99	Pass
802.11g	2412	-22.45	-23.02	-19.72	<5.99	Pass
	2437	-23.07	-23.24	-20.14	<5.99	Pass
	2462	-23.47	-23.28	-20.36	<5.99	Pass
802.11n (HT20)	2412	-22.84	-23.62	-20.20	<5.99	Pass
	2437	-23.18	-23.42	-20.29	<5.99	Pass
	2462	-23.67	-23.51	-20.58	<5.99	Pass
802.11n (HT40)	2422	-24.85	-25.35	-22.08	<5.99	Pass
	2437	-25.13	-25.43	-22.27	<5.99	Pass
	2452	-25.25	-25.76	-22.49	<5.99	Pass

Note: the plot only show the antenna 1's data.

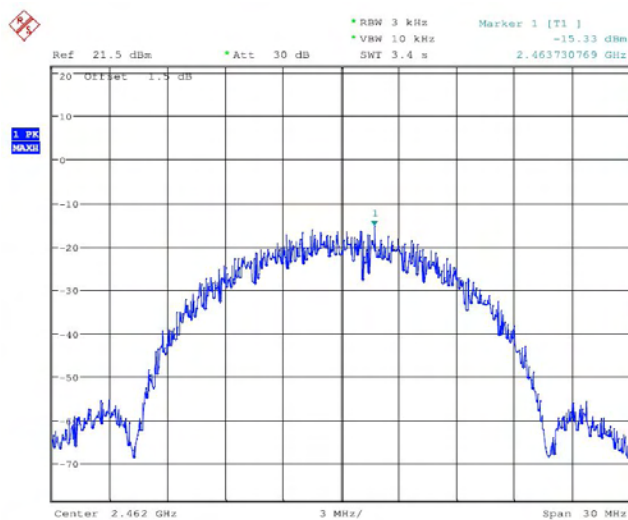
802.11b 2412MHz



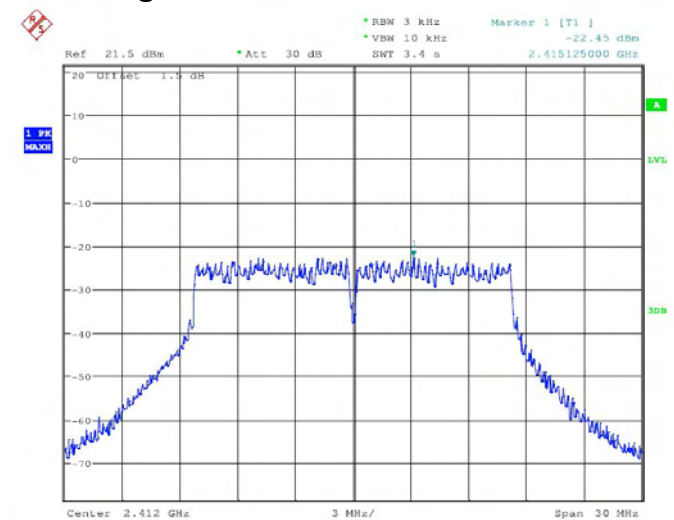
802.11b 2437MHz



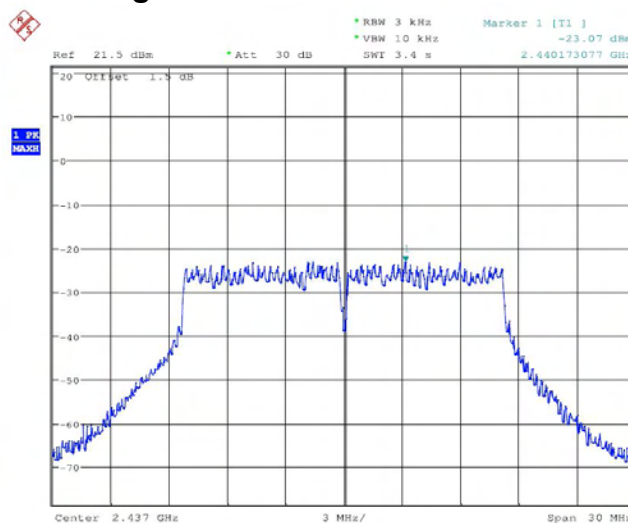
802.11b 2462MHz



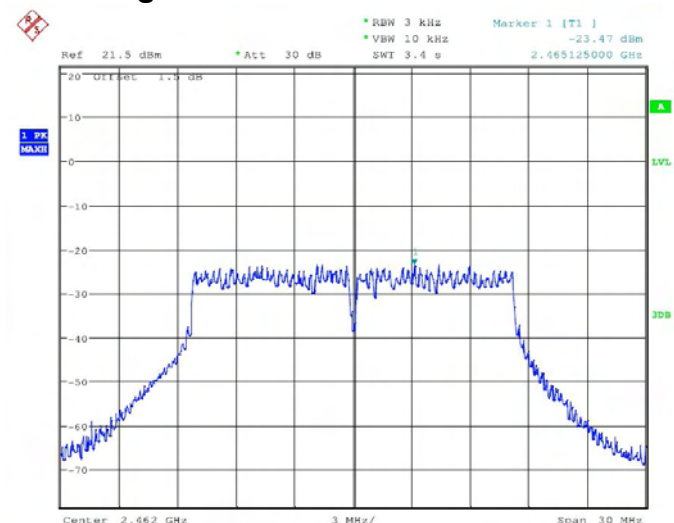
802.11g 2412MHz



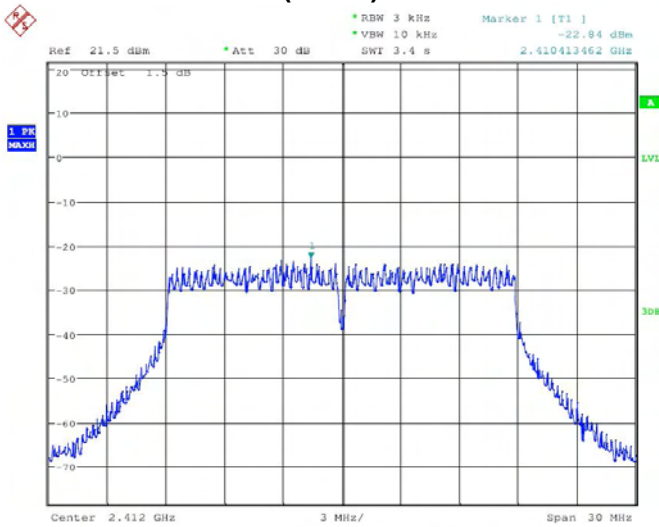
802.11g 2437MHz



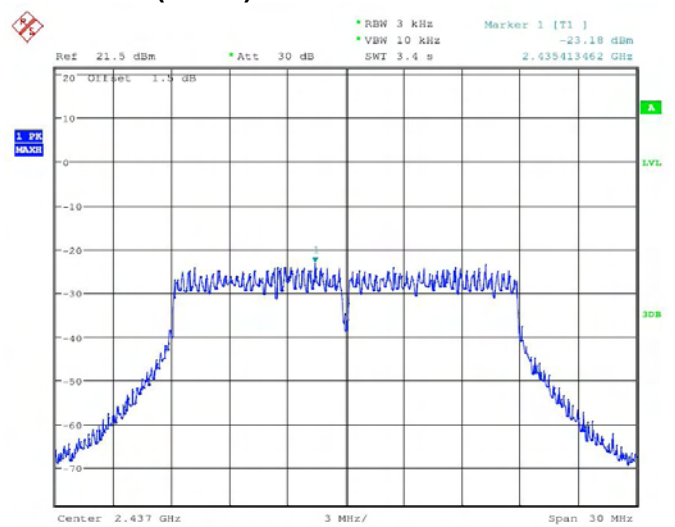
802.11g 2462MHz



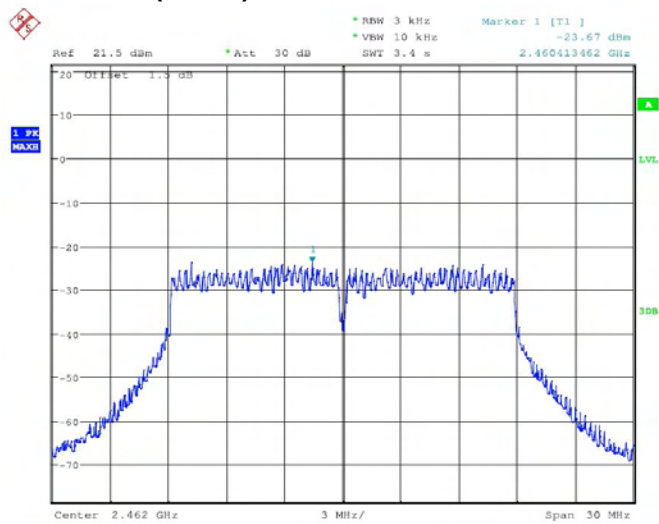
802.11n(HT20) 2412MHz



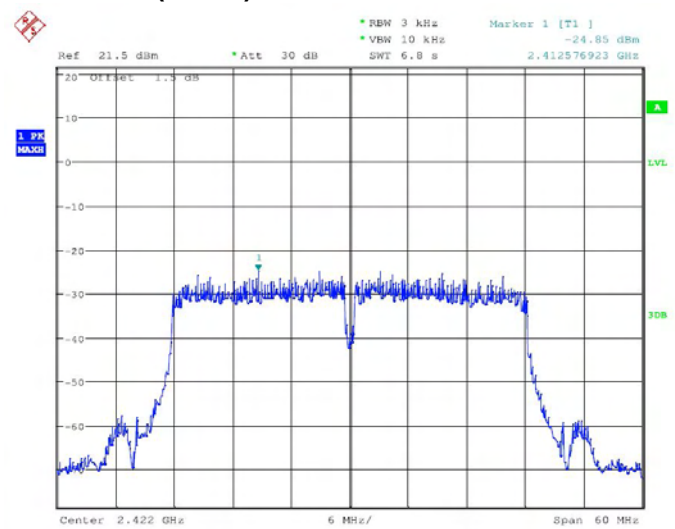
802.11n(HT20) 2437MHz



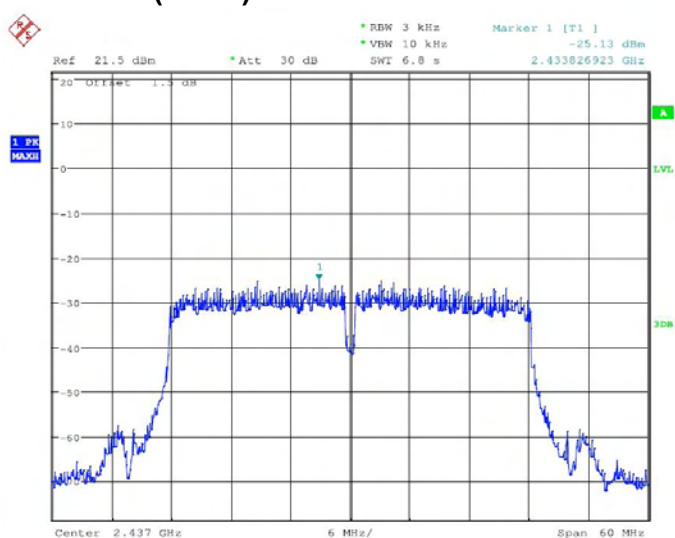
802.11n(HT20) 2462MHz



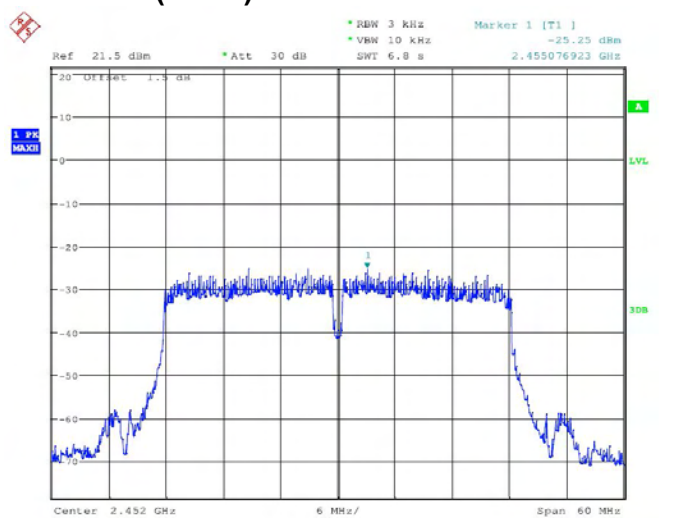
802.11n(HT40) 2422MHz



802.11n(HT40) 2437MHz



802.11n(HT40) 2452MHz



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

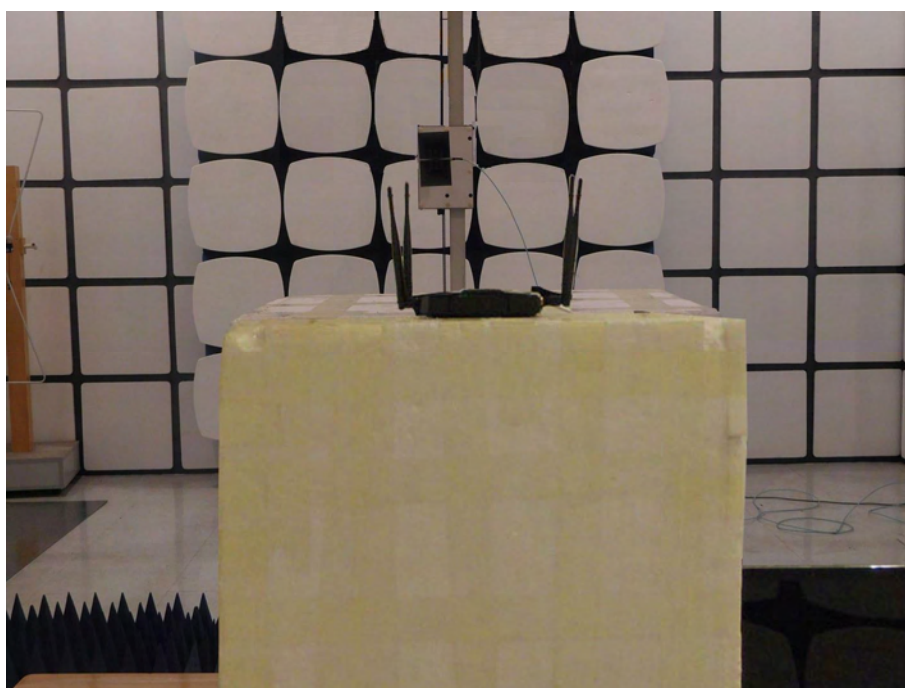
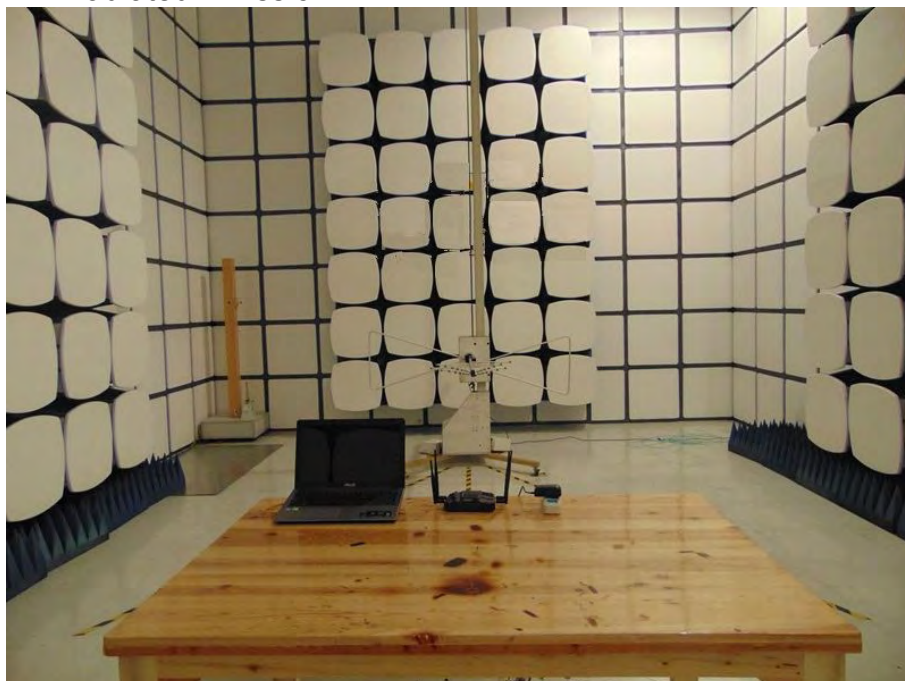
The antennas used for this product are external antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 5.0dBi.

11. PHOTOGRAPHS OF TEST SET-UP

Conducted Emission



Radiated Emission



12. PHOTOGRAPHS OF THE EUT







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