

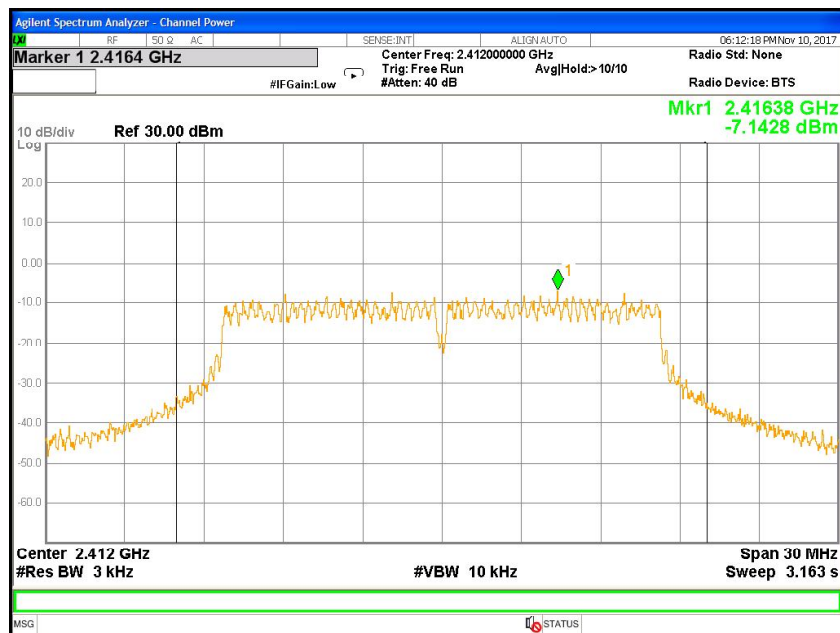


Figure 41: PSD 2412MHz 802.11g OFDM ch0

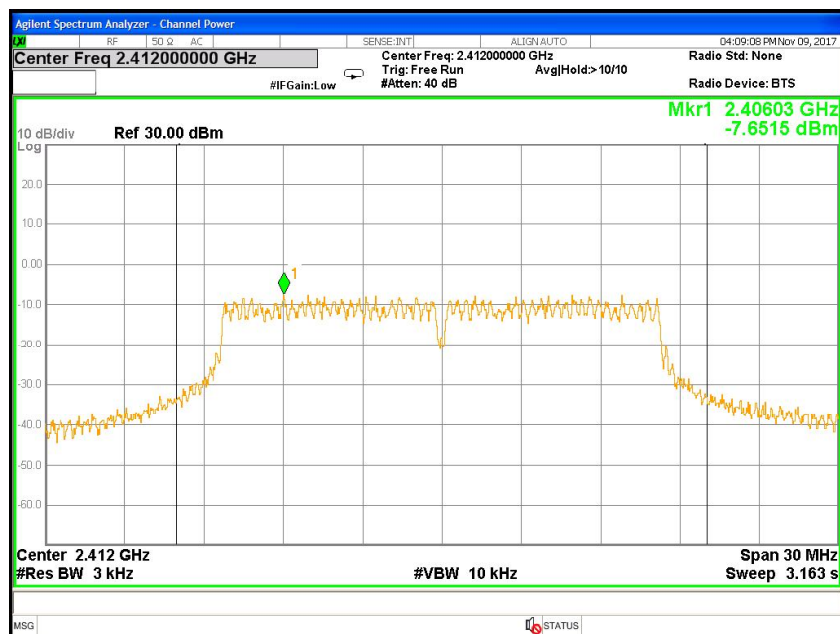


Figure 42: PSD 2412MHz 802.11g OFDM ch1

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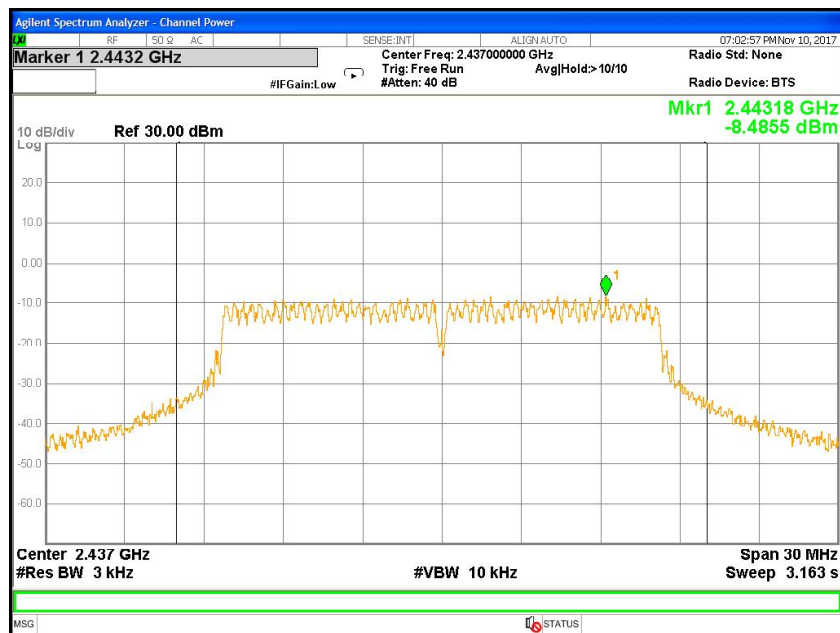


Figure 43: PSD 2437MHz 802.11g OFDM ch0

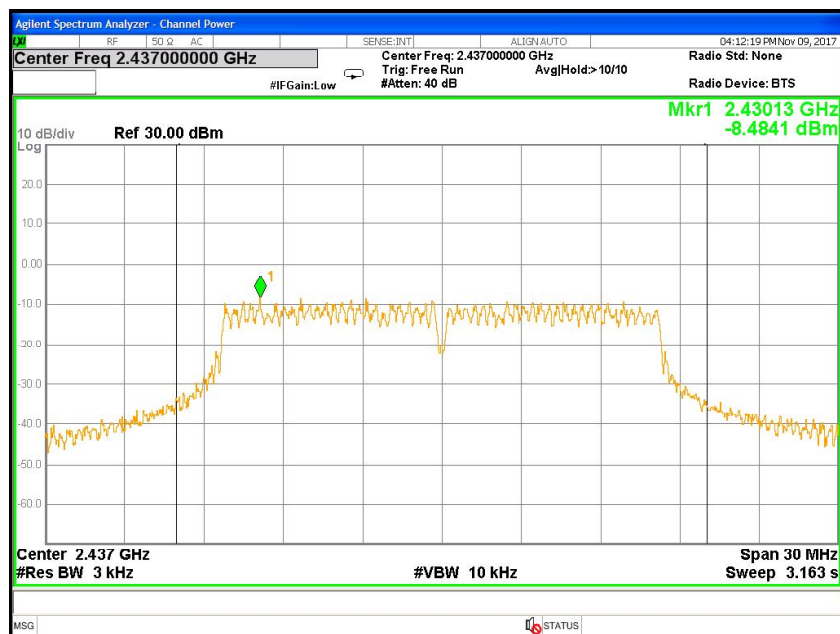


Figure 44: PSD 2437MHz 802.11g OFDM ch1

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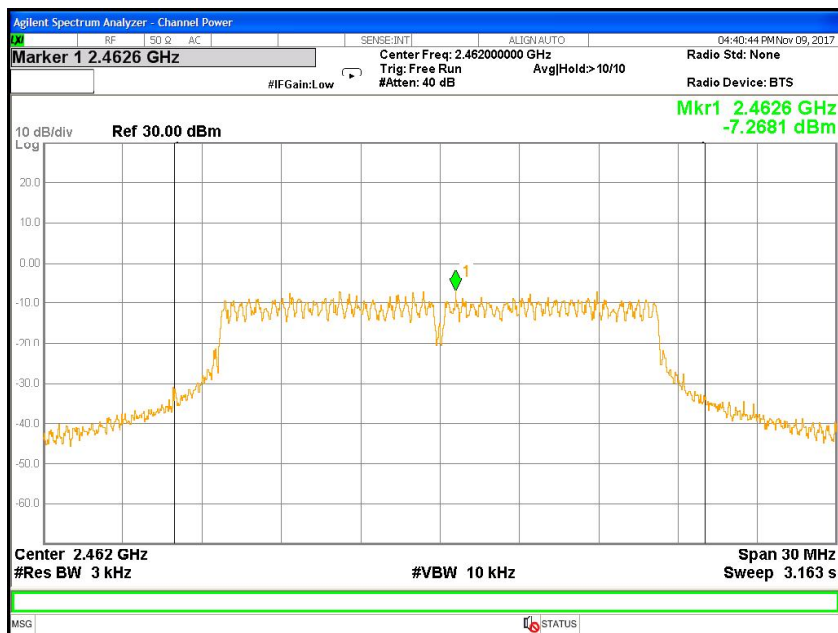


Figure 45: PSD 2462MHz 802.11g OFDM ch0



Figure 46: PSD 2462MHz 802.11g OFDM ch1

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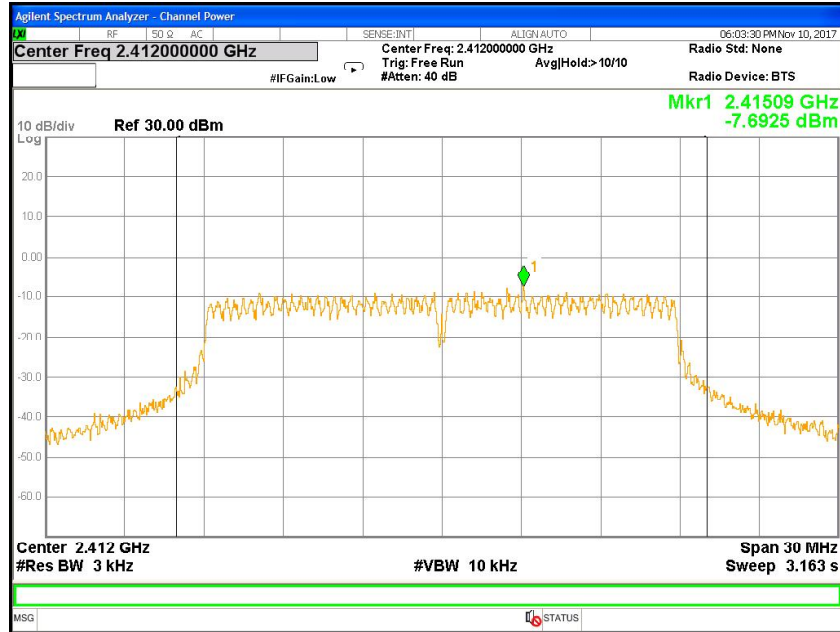


Figure 47: PSD 2412MHz 802.11n MCS0 HT20 ch0

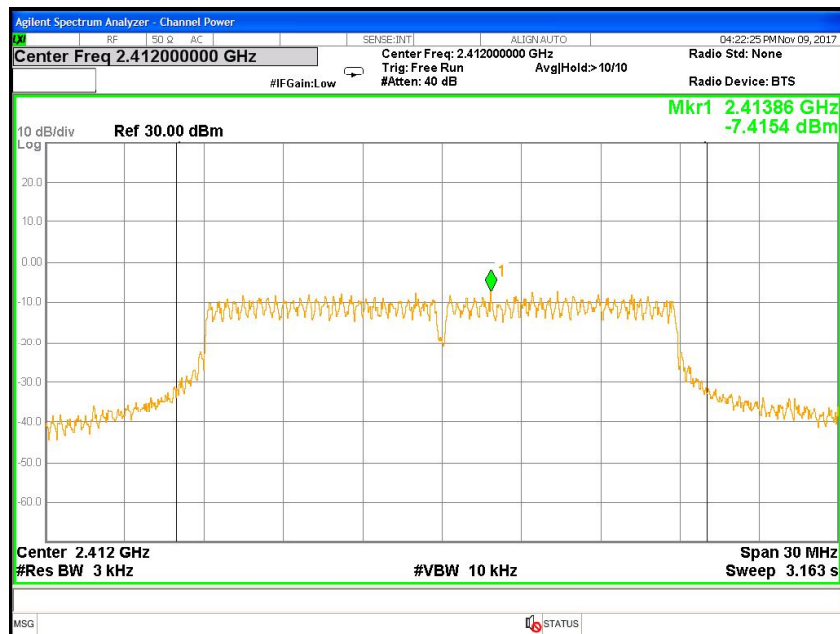


Figure 48: PSD 2412MHz 802.11n MCS0 HT20 ch1

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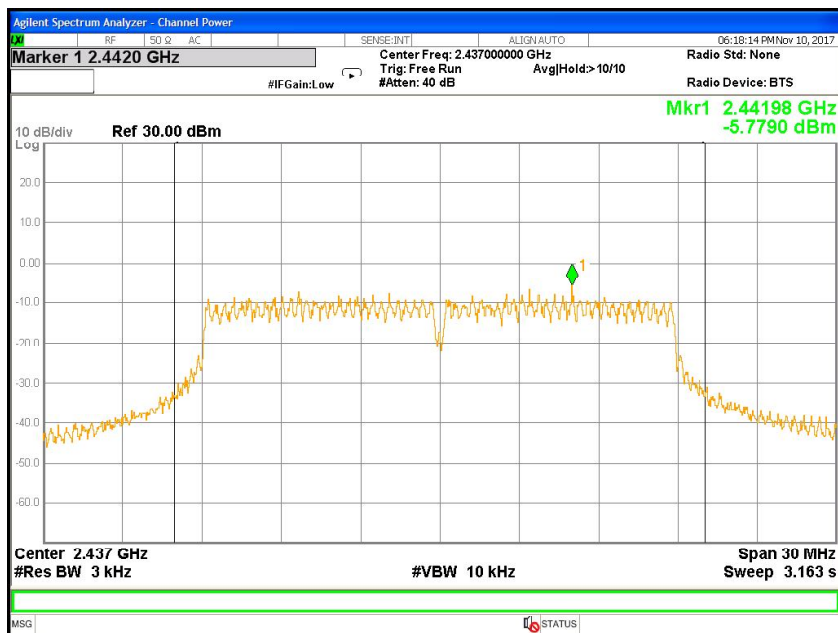


Figure 49: PSD 2437MHz 802.11n MCS0 HT20 ch0



Figure 50: PSD 2437MHz 802.11n MCS0 HT20 ch1

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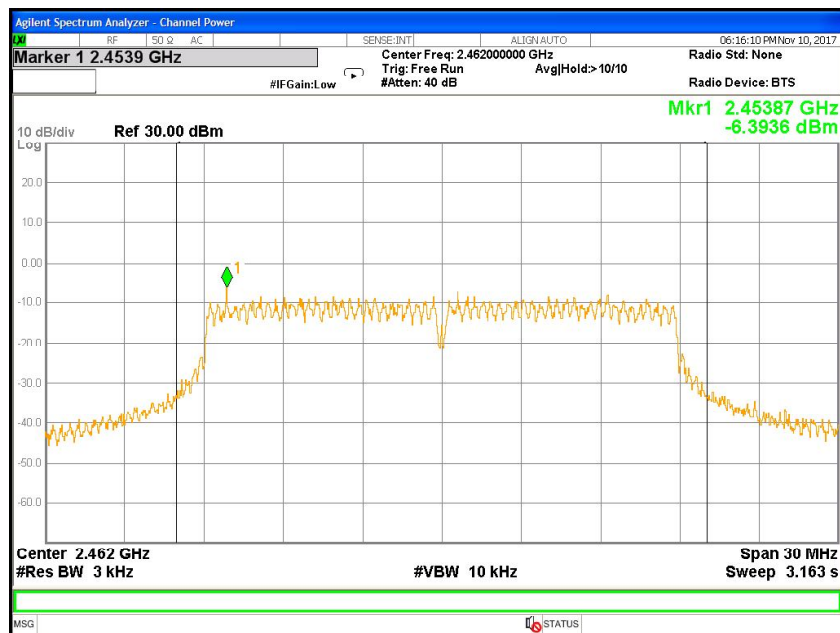


Figure 51: PSD 2462MHz 802.11n MCS0 HT20 ch0

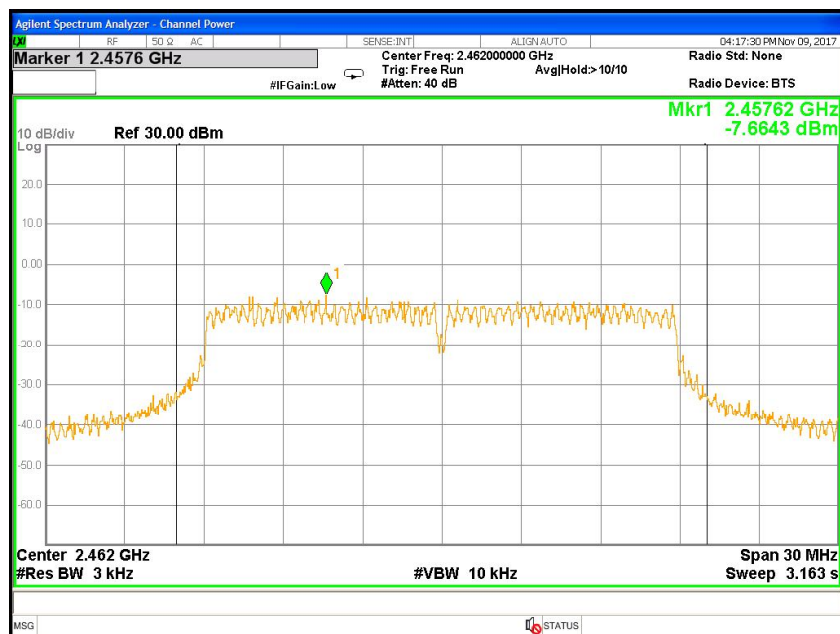


Figure 52: PSD 2462MHz 802.11n MCS0 HT20 ch1

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4.6 Occupied Bandwidth

For systems using digital modulation techniques shall have a minimum 6 dB bandwidth of at least 500 kHz.

4.6.1 Test Over View

Results	Complies (as tested per this report)					Date	11/18/2017	
Standard	LP0002, 3.10.1.6 (2) (A)							
Product Model	DRX PLUS DETECTOR RADIO				Serial#	13A32S1011361		
Test Set-up	Per LP0002, APPENDIX I:							
EUT Powered By	DC	Temp	74° F	Humidity	32%	Pressure	1010mbar	
Perf. Criteria	(Below Limit)			Perf. Verification		Readings Under Limit		
Mod. to EUT	None			Test Performed By		Richard Decker		

4.6.2 Test Procedure

The EUT was using test software to allow the transmitter to transmit continuously. (Duty Cycle > 98%).
The test methods of LP0002, APPENDIX I. 6 dB Occupied Bandwidth measurements were made.

4.6.3 Deviations

No deviations

4.6.4 Final Test

All 6 dB bandwidth measurements are greater than 500 kHz. The EUT is compliant to the standard(s).

Frequency MHz	Wireless Specification	Modulation	Meas ch 0 MHz	Meas ch 1 MHz
2412	802.11b	CCK	10.07	10.07
2437	802.11b	CCK	10.08	10.08
2462	802.11b	CCK	10.05	10.06
2412	802.11g	OFDM	16.56	16.54
2437	802.11g	OFDM	16.57	16.57
2462	802.11g	OFDM	16.57	16.58
2412	802.11n	MCS0	17.70	17.80
2437	802.11n	MCS0	17.78	17.79
2462	802.11n	MCS0	17.78	17.79
Occupied Bandwidth				

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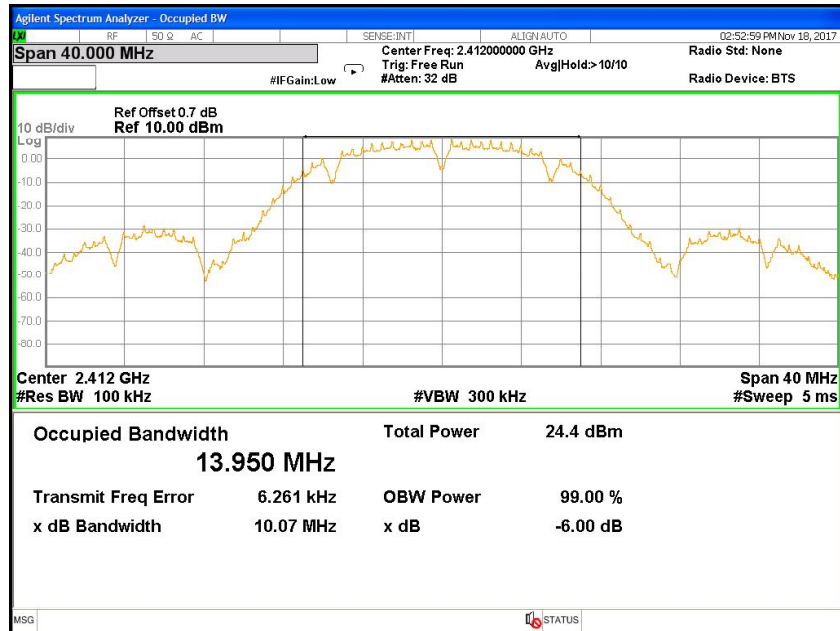


Figure 53: OBW 2412MHz 802.11b CCK ch0

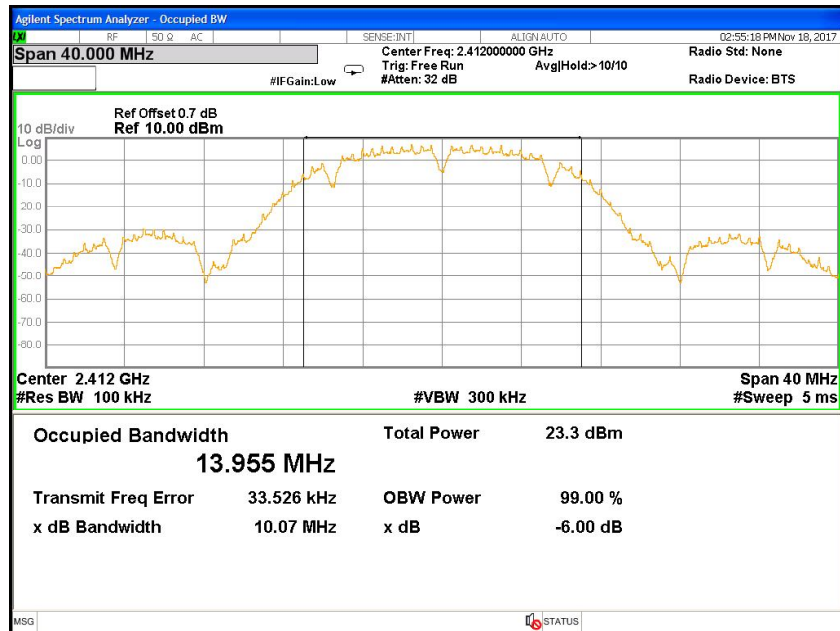


Figure 54: OBW 2412MHz 802.11b CCK ch1

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TUV Rheinland test mark. The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of the Federal Government.

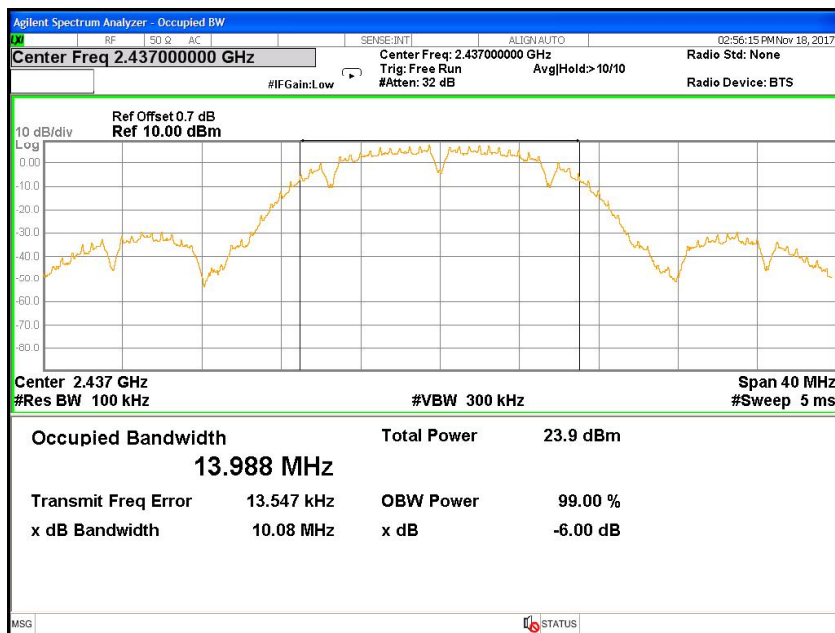


Figure 55: OBW 2437MHz 802.11b CCK ch0

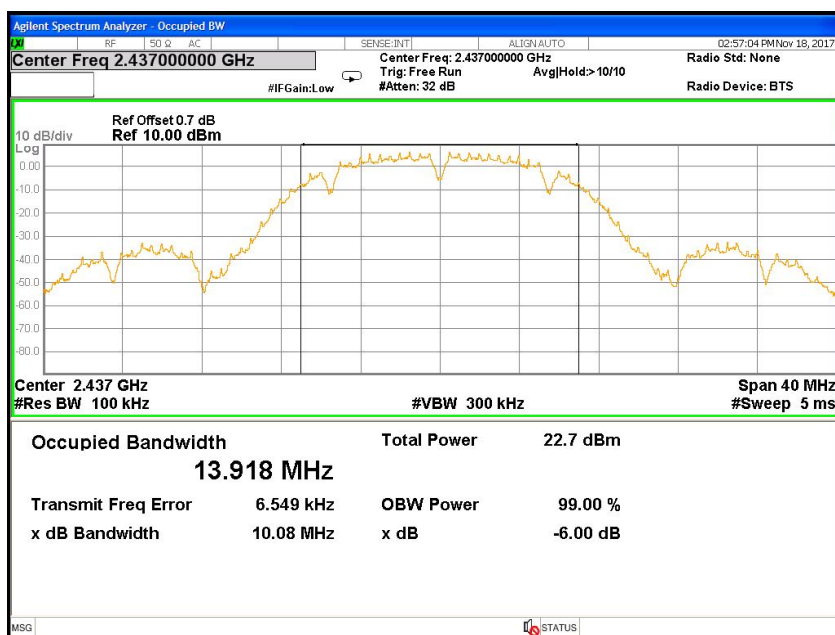


Figure 56: OBW 2437MHz 802.11b CCK ch1

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TUV Rheinland test mark. The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of the Federal Government.

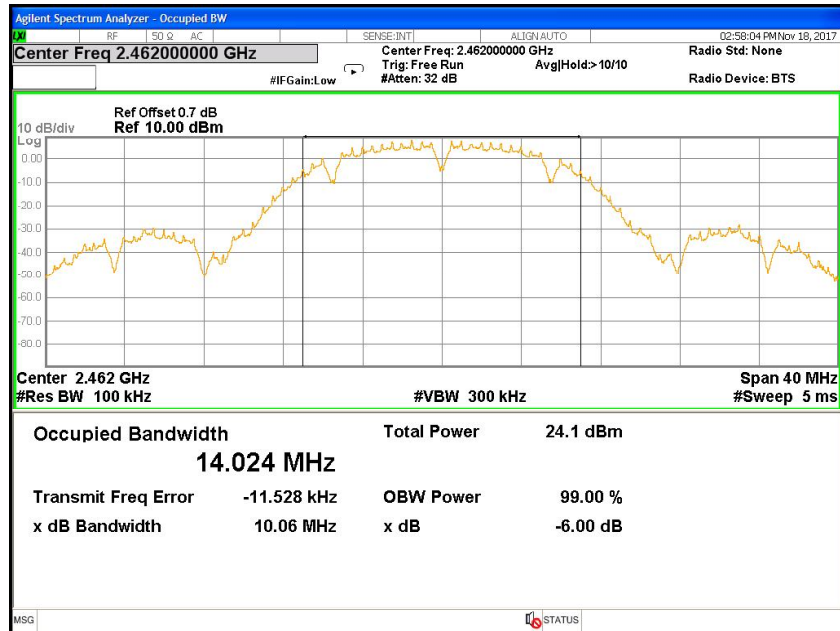


Figure 57: OBW 2462MHz 802.11b CCK ch0

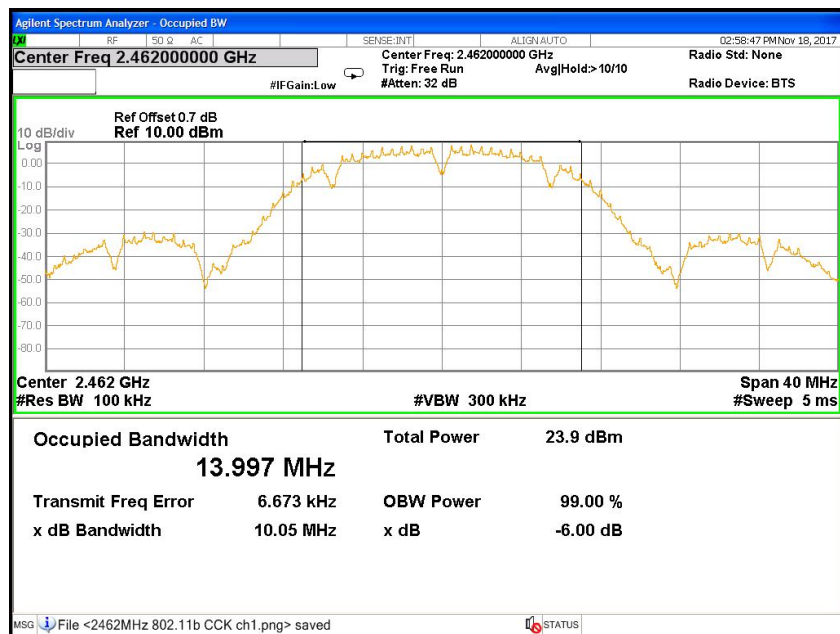


Figure 58: OBW 2462MHz 802.11b CCK ch1

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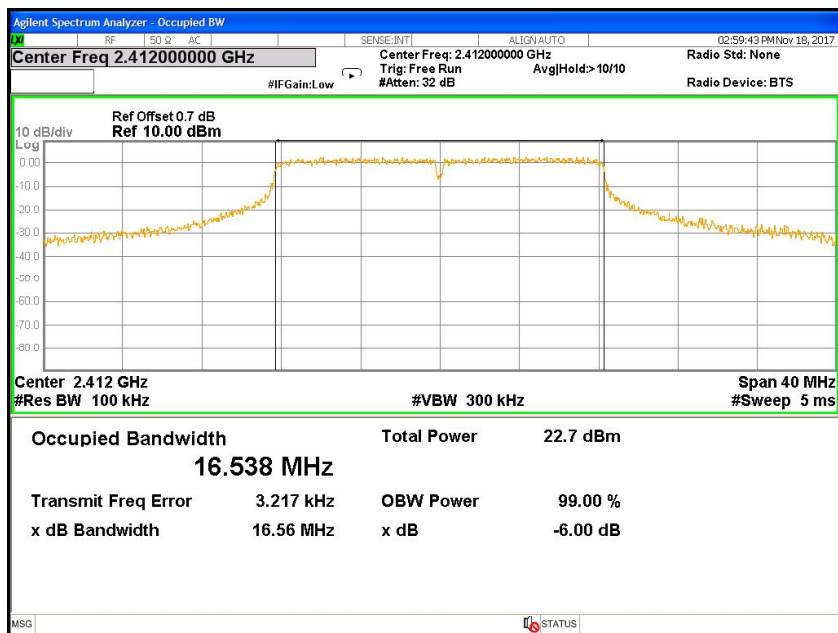


Figure 59: OBW 2412MHz 802.11g OFDM ch0

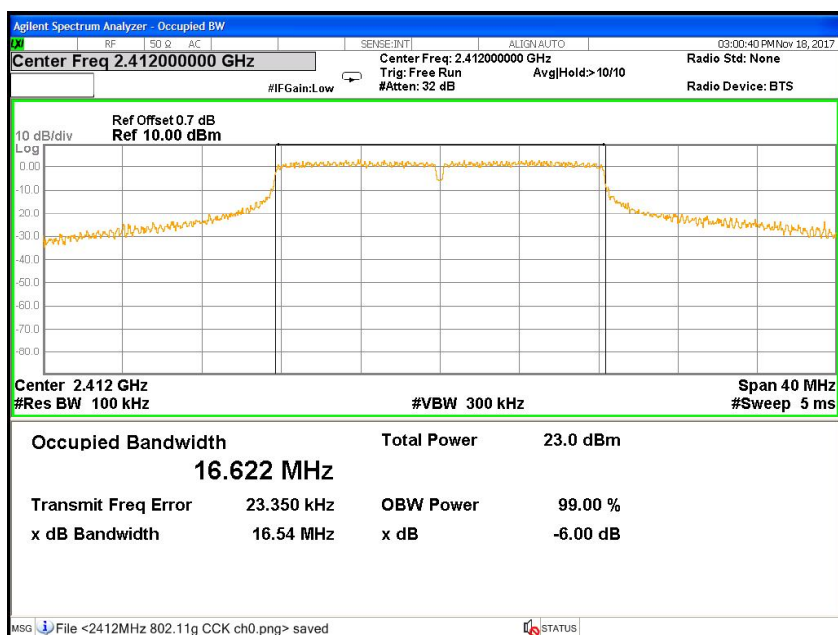


Figure 60: OBW 2412MHz 802.11g OFDM ch1

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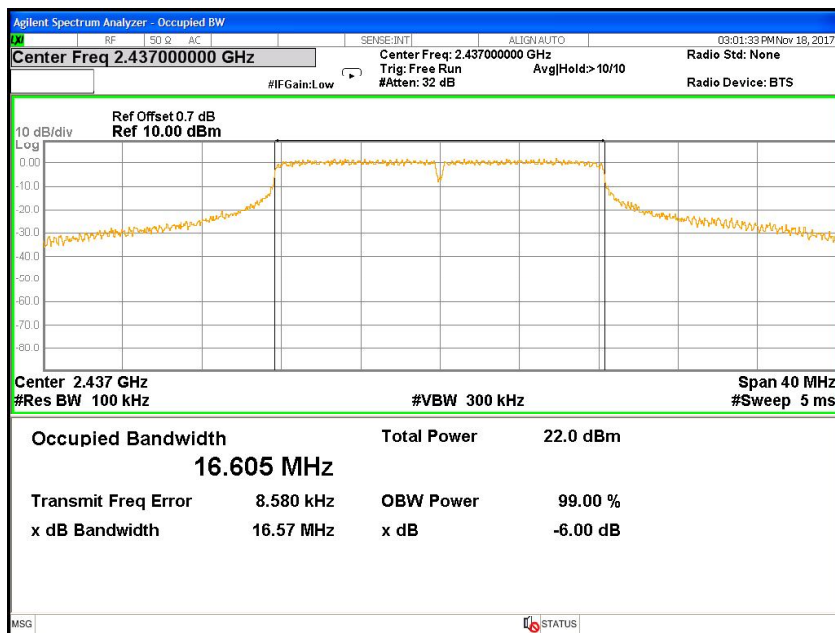


Figure 61: OBW 2437MHz 802.11g OFDM ch0

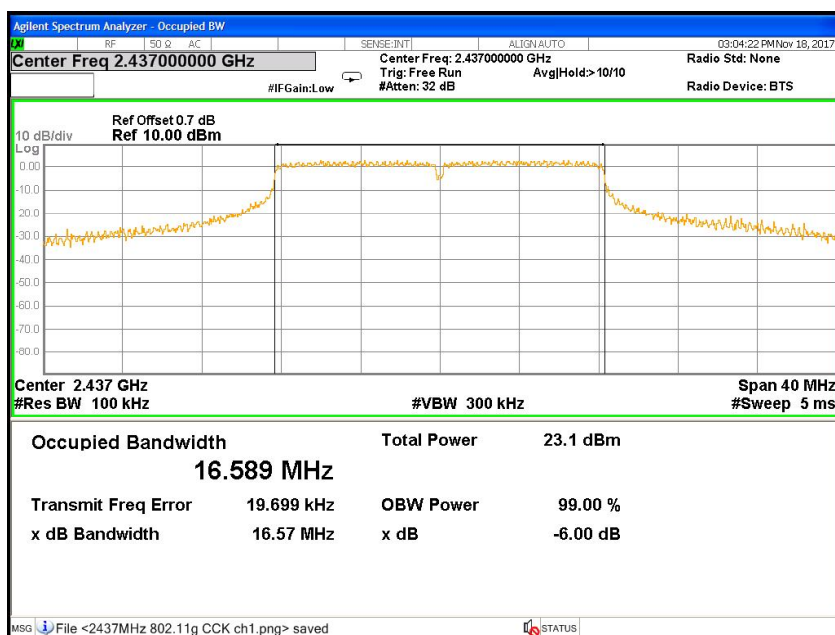


Figure 62: OBW 2437MHz 802.11g OFDM ch1

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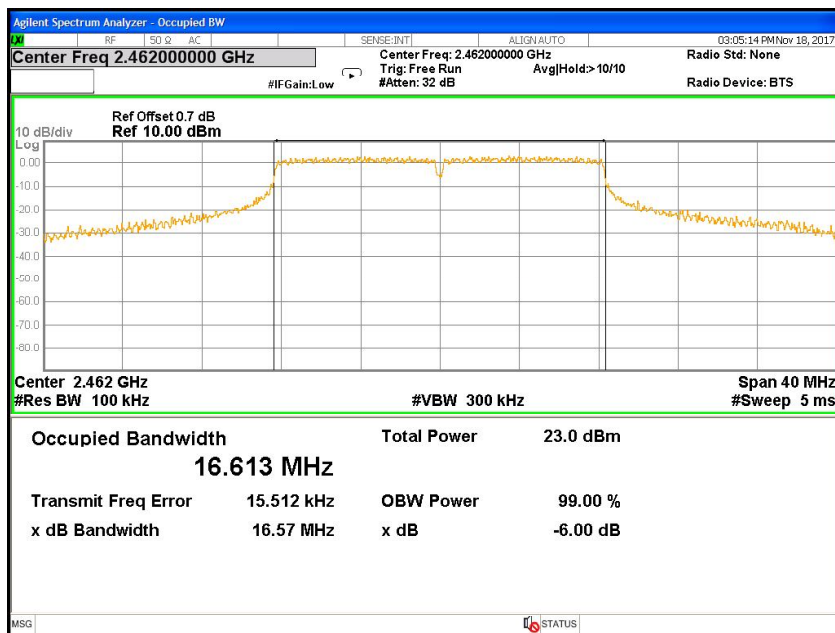


Figure 63: OBW 2462MHz 802.11g OFDM ch0

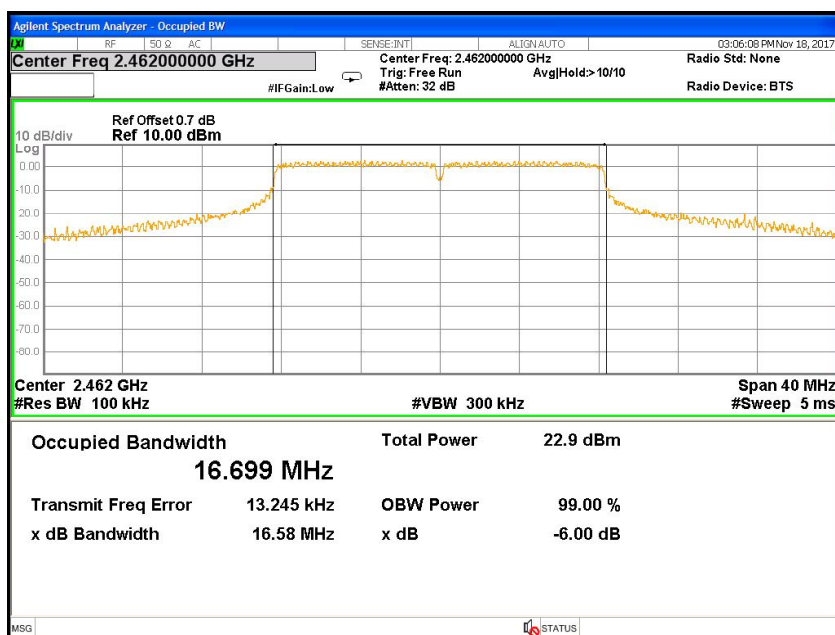


Figure 64: OBW 2462MHz 802.11g OFDM ch1

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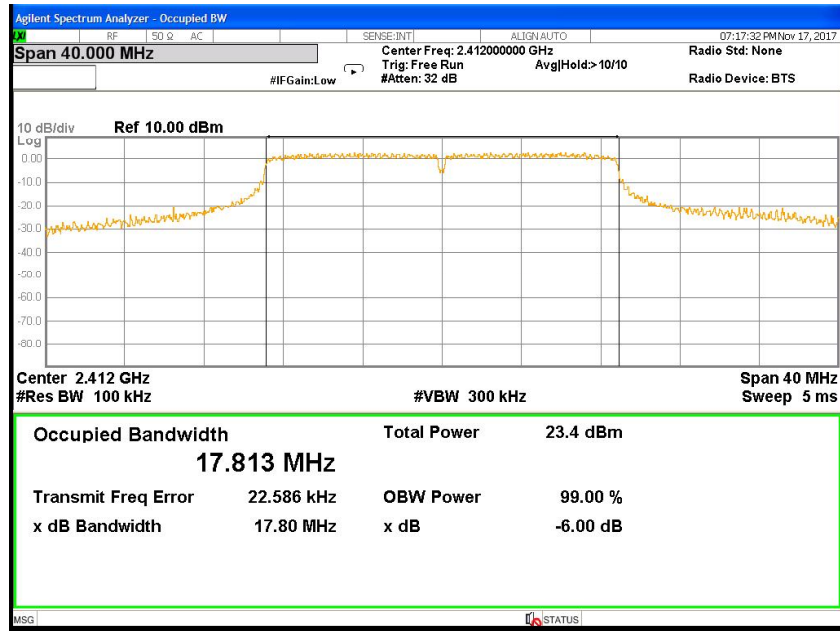


Figure 65: OBW 2412MHz 802.11n MCS0 ch0

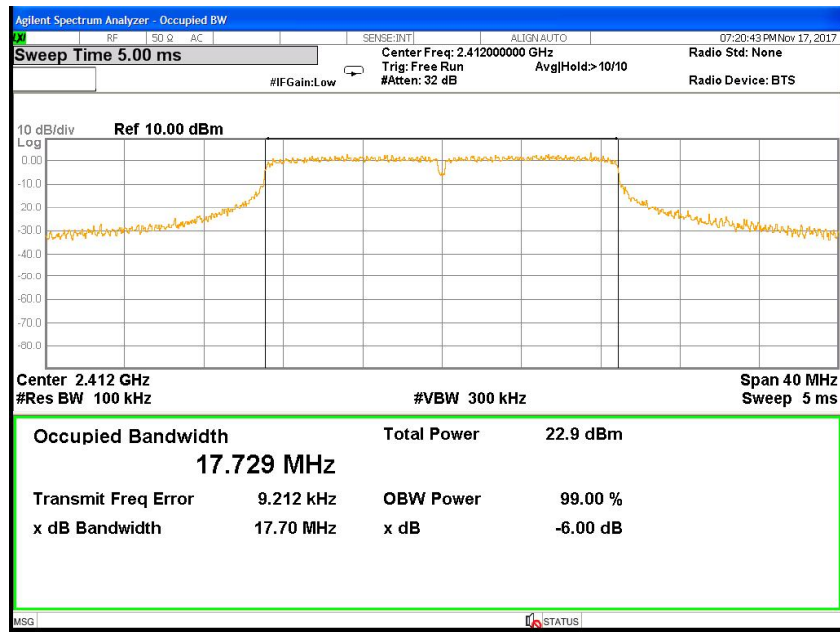


Figure 66: OBW 2412MHz 802.11n MCS0 ch1

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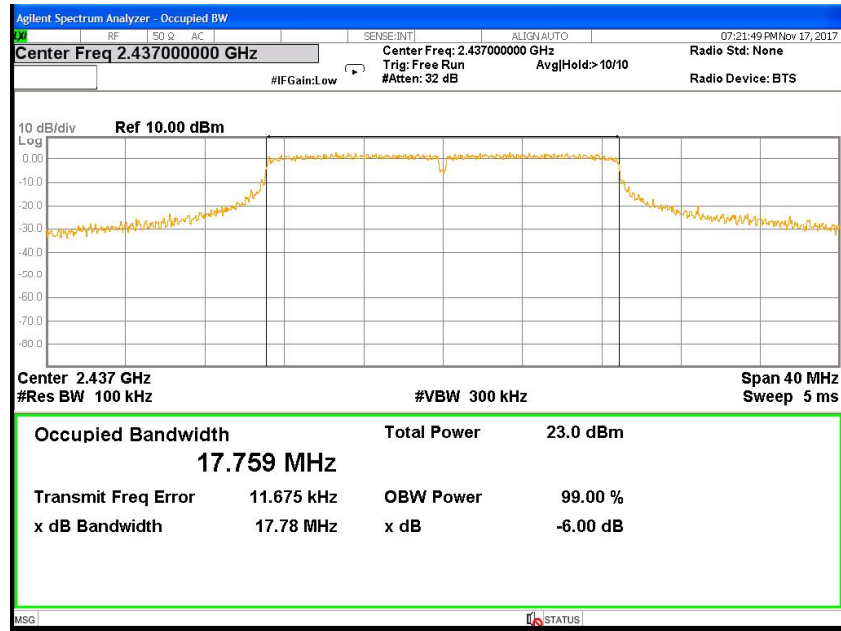


Figure 67: OBW 2437MHz 802.11n MCS0 ch0

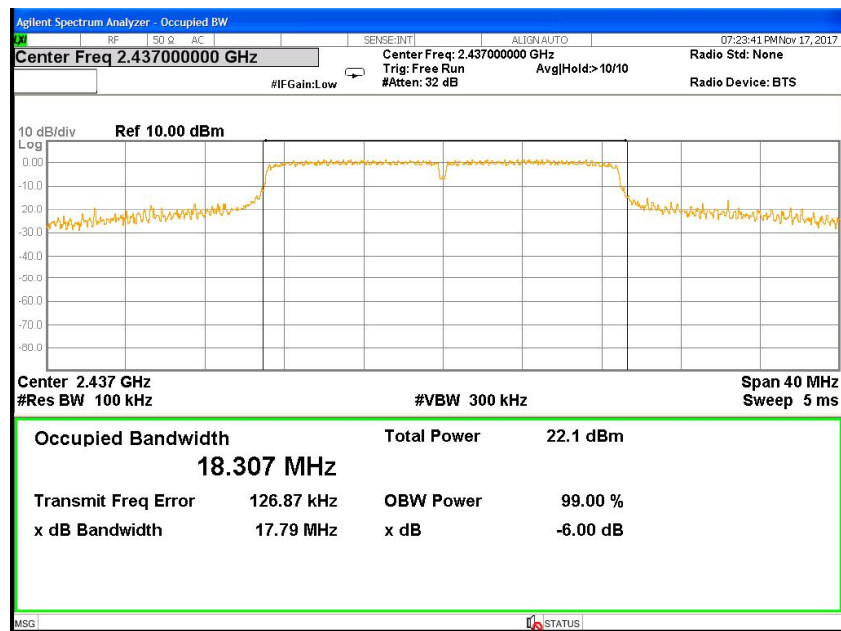


Figure 68: OBW 2437MHz 802.11n MCS0 ch1

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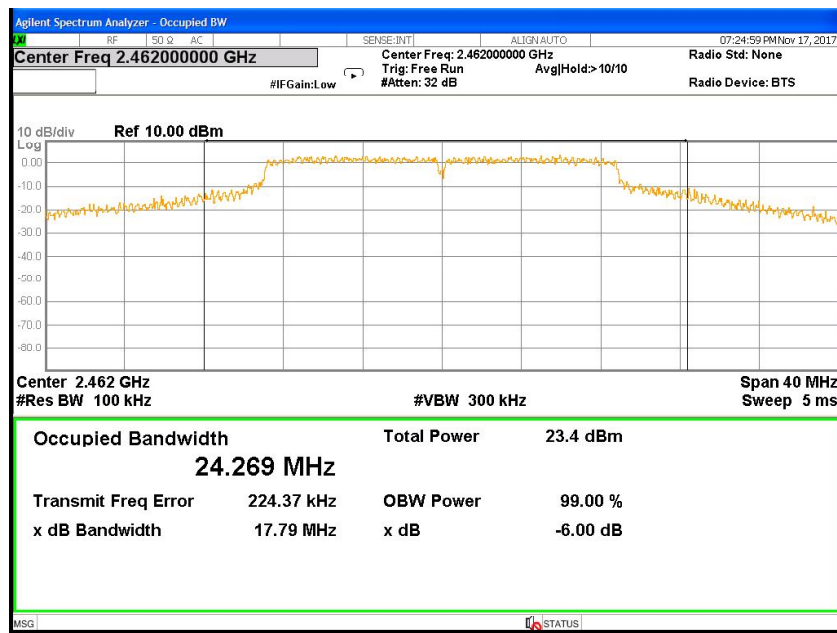


Figure 69: OBW 2462MHz 802.11n MCS0 ch0

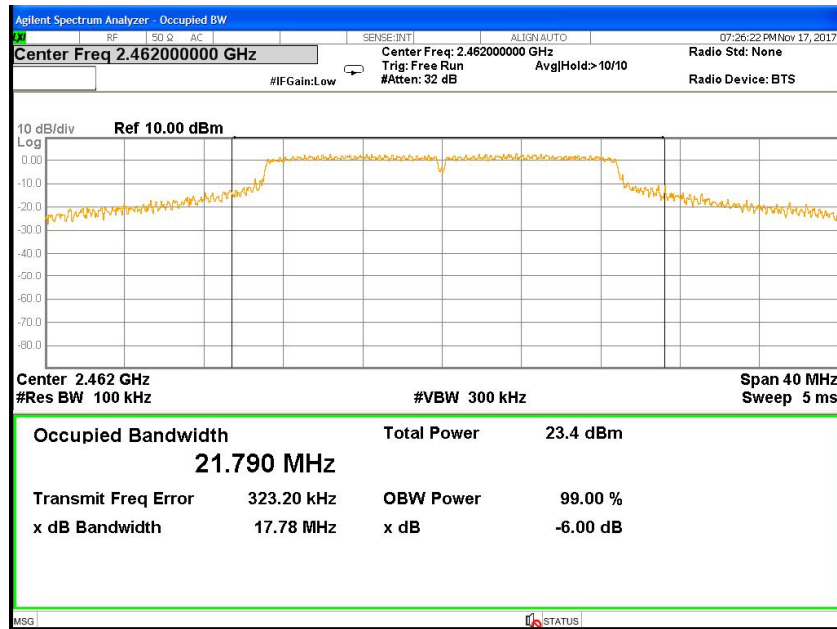


Figure 70: OBW 2462MHz 802.11n MCS0 ch1

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4.7 Voltage Requirements

LP0002, section 5.4, for intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be undertaken with the supply voltage varied between $\pm 15\%$ of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be undertaken using a new battery.

4.7.1 Over View of Test

Results	Complies (as tested per this report)		Date	11/4/2014
Standard	LP0002, 5.4			
Product Model	DRX PLUS DETECTOR RADIO	Serial#	13A32S1011361	
Test Set-up	Per LP0002, APPENDIX I			
Perf. Criteria	(Below Limit)	Perf. Verification	Readings Under Limit	
Mod. to EUT	None	Test Performed By	Randy Masline	

4.7.2 Test Procedure

The EUT is a battery-only operated device. A fresh battery was installed in the EUT for testing.

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4.8 Antenna Requirements

4.8.1 Over View of Test

Results	Complies (as tested per this report)	Date	11/4/2014
Standard	LP0002, 3.10.1.3		
Product Model	DRX PLUS DETECTOR RADIO	Serial#	13A32S1011361

4.8.2 Test Procedure

The EUT was operates using only an internal printed circuit “Inverted – F” antenna.

The antennae are placed inside a Detector and are professionally installed and uses security screws.

4.8.3 Antenna Gain

The antenna used on the product is a PC Board “Inverted-F” antenna that has a measured maximum gain.

Frequency [Ghz]	2.4	2.44	2.48	5.15	5.25	5.35	5.5	5.725	5.825
Gain [dbi]	-7.2	-5.5	-8.4	-1.2	-0.8	-1.8	-2.3	-3.3	-3.5
Polarization	V	V	V	V	V	S45	S45	S45	S45
3db beamwidth Elev 1 [deg.]	140	150	150	120	120	110	110	110	110
3db beamwidth Elev 2 [deg.]	120	120	150	60	60	150	180	180	180
Impedance [ohms]	50								
VSWR	2.6:1 max								

Results

As tested, the EUT was found to be compliant to the requirements of the test standard.

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5 5725MHz – 5850 MHz Band

5.1 Spurious Emissions Outside the band

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power, based on radiated measurements. Radiated measurements are provided below to show that the EUT meets these requirements at the band edges.

5.1.1 Over View of Test

Results	Complies (as tested per this report)					Date	10/02/2017	
Standard	LP0002, 3.10.1.5							
Product Model	DRX PLUS DETECTOR RADIO				Serial#	13A32S1011361		
Test Set-up	Per LP0002, APPENDIX I							
EUT Powered By	DC	Temp	74 °F	Humidity	36%	Pressure	1000 mbar	
Perf. Criteria	(Below Limit)			Perf. Verification		Readings Under Limit		
Mod. to EUT	None			Test Performed By		Richard Decker		

5.1.2 Test Procedure

Testing was performed in accordance with LP0002, (23 - Aug - 2016). These test methods are listed under the laboratory's A2LA Scope of Accreditation. This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices.

5.1.3 Deviations

The EUT is compliant to the standard(s).

5.1.4 Final Test

The frequency range from 9 kHz to 26.5GHz was investigated for radiated emissions.

There were no measurable emissions from 9 kHz to 30MHz.

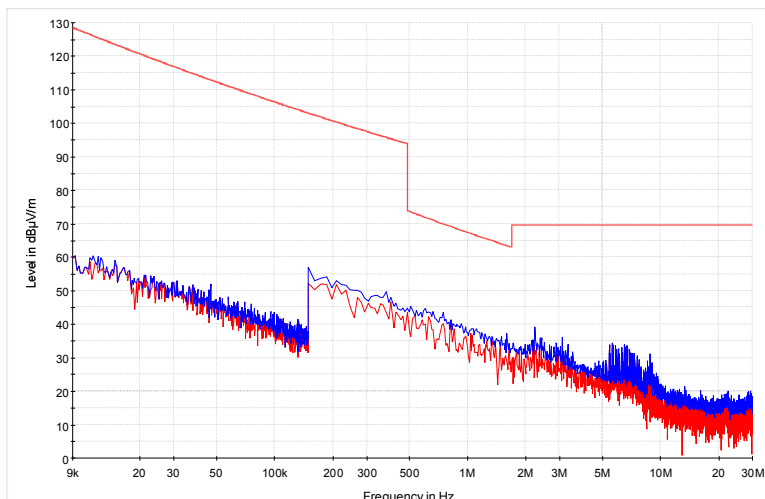
All final radiated spurious emissions measurements were below (in compliance) the limits.

*The worst radiated spurious emissions case in the 5725MHz – 5850MHz band is 802.11n.

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802.11n HT20 Radiated Emissions 9 kHz - 30MHz

*802.11n is the Spurious Emissions worst case



There were no measurable emissions from 9 kHz to 30MHz.

*802.11n is the Spurious Emissions worst case

Frequency MHz	QuasiPeak dBµV/m	Height cm	Polarization	Azimuth deg	Corr. dB	Limit dBµV/m	Margin dB
75.0	23.7	400.0	H	26.0	-11.8	40	-16.3
99.9	37.2	400.0	H	-3.0	-9.0	43.5	-6.3
264.9	25.3	223.0	H	0.0	-2.8	46.0	-20.7
299.9	32.2	223.0	H	172.0	-1.7	46.0	-13.8
398.4	37.3	223.0	H	105.0	1.0	46.0	-8.7
497.9	39.5	223.0	H	59.0	3.5	46.0	-6.5
498.0	44.1	223.0	H	39.0	3.5	46.0	-1.9
30.4	25.1	110.0	V	0.0	0.4	40	-14.9
99.9	27.6	120.0	V	350.0	-9.0	43.5	-15.9
166.0	28.0	140.0	V	345.0	-5.7	43.5	-15.5
398.4	31.8	120.0	V	150.0	1.0	46.0	-14.2
499.9	39.9	130.0	V	150.0	3.4	46.0	-6.1
899.9	39.6	200.0	V	39	12.8	46.0	-6.4

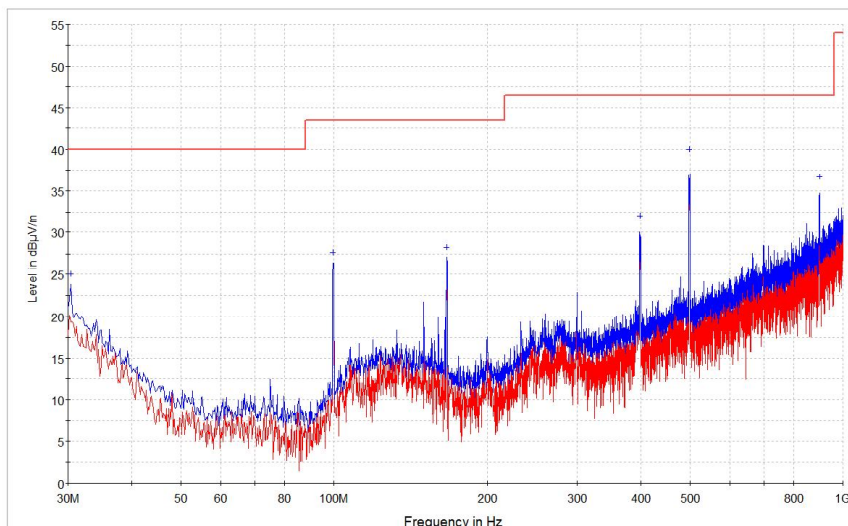
802.11n Radiated Emissions 30MHz - 1GHz

Red is maximum emission for 802.11n

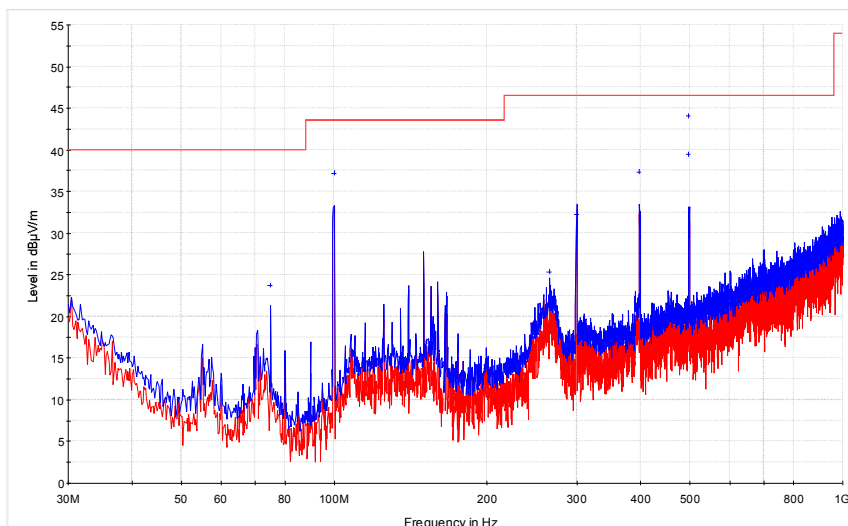
The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TUV Rheinland test mark. The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of the Federal Government.

802.11n HT20 Radiated Emissions 30MHz – 1GHz

*802.11n is the Spurious Emissions worst case



Vertical



Horizontal

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*802.11n is the Spurious Emissions worst case							
Frequency MHz	CAverage dBμV/m	Height cm	Polarization	Azimuth deg	Corr. dB	Limit dBμV/m	Margin dB
1307.8	41.9	150.0	V	41.0	-5.9	54.0	-12.1
2489.3	30.6	200.0	V	2.0	-1.1	54.0	-23.4
11484.0	42.4	160.0	V	-2.0	9.8	54.0	-11.6
17233.3	48.6	170.0	V	70.0	15.6	54.0	-5.4
17998.3	35.1	150.0	V	2.0	16.2	54.0	-18.9
1095.3	36.4	300.0	H	348.0	-7.4	54.0	-17.6
2492.5	29.1	310.0	H	243.0	-1.1	54.0	-24.9
11650.5	39.8	280.0	H	285.0	10.1	54.0	-14.2
17478.0	47.4	270.0	H	2.0	15.3	54.0	-6.6
17998.3	35.3	190.0	H	-3.0	16.2	54.0	-18.7
802.11n Radiated Emissions 1GHz - 18GHz							

*802.11n is the Spurious Emissions worst case							
Frequency MHz	CAverage dBμV/m	Height cm	Polarization	Azimuth deg	Corr. dB	Limit dBμV/m	Margin dB
20034.0	35.8	180.0	V	2.0	19.8	54.0	-18.2
20455.6	35.8	180.0	V	340.0	19.6	54.0	-18.2
23388.2	38.3	150.0	V	358.0	21.4	54.0	-15.7
25325.3	36.7	170.0	V	347.0	20.1	54.0	-17.3
20002.6	35.8	310.0	H	2.0	20.1	54.0	-18.2
22939.4	36.4	300.0	H	70.0	21.0	54.0	-17.6
23604.0	35.8	300.0	H	320.0	20.0	54.0	-18.2
25087.3	36.2	280.0	H	80.0	20.4	54.0	-17.8
25321.0	34.7	270.0	H	2.0	20.2	54.0	-19.3
802.11n Radiated Emissions 18GHz - 26.5GHz							

*802.11n is the Spurious Emissions worst case							
Frequency MHz	CAverage dBμV/m	Height cm	Polarization	Azimuth deg	Corr. dB	Limit dBμV/m	Margin dB
28155.0	46.0	190.0	V	2.0	0.2	54.0	-8.0
27418.0	46.4	200.0	H	2.0	1.2	54.0	-7.6
802.11n Radiated Emissions 26.5GHz - 40GHz							

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