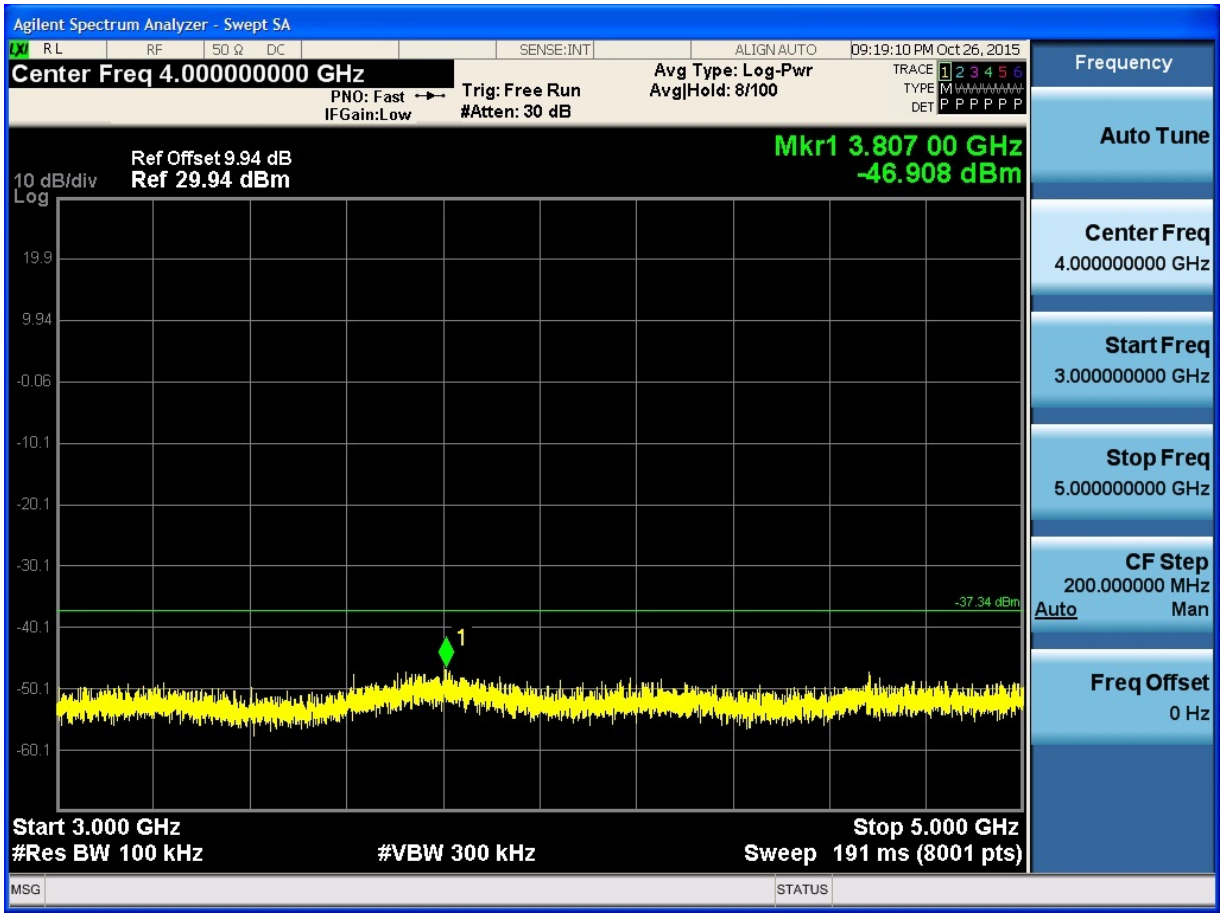
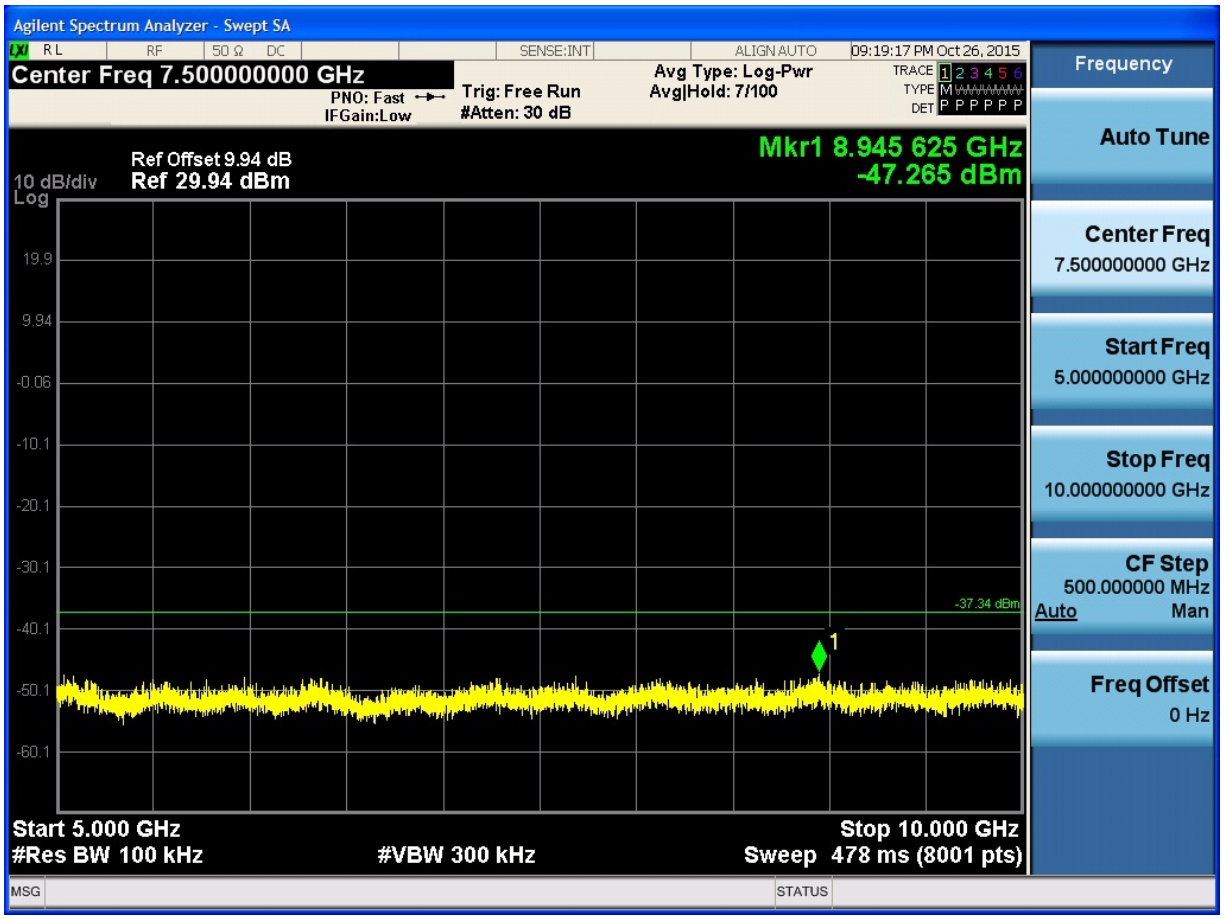
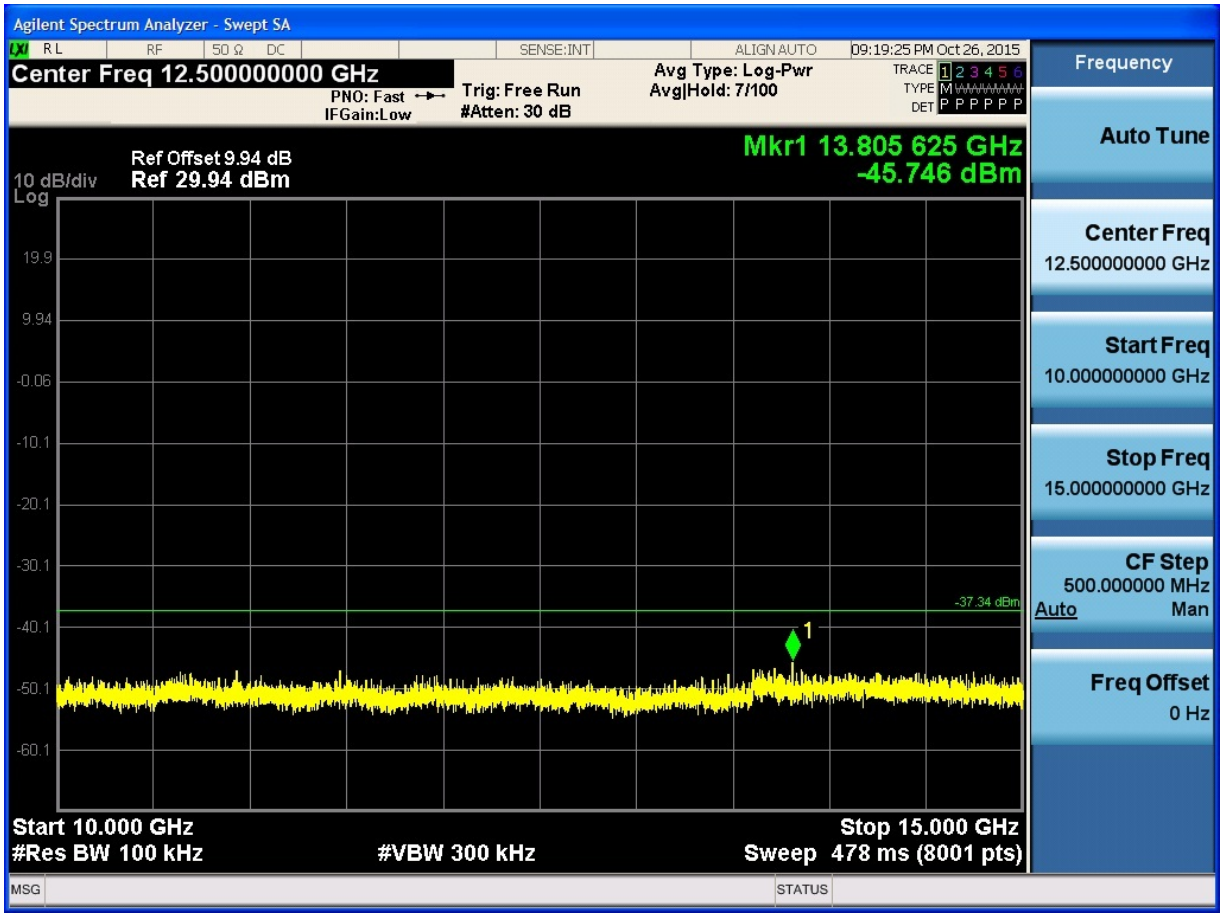


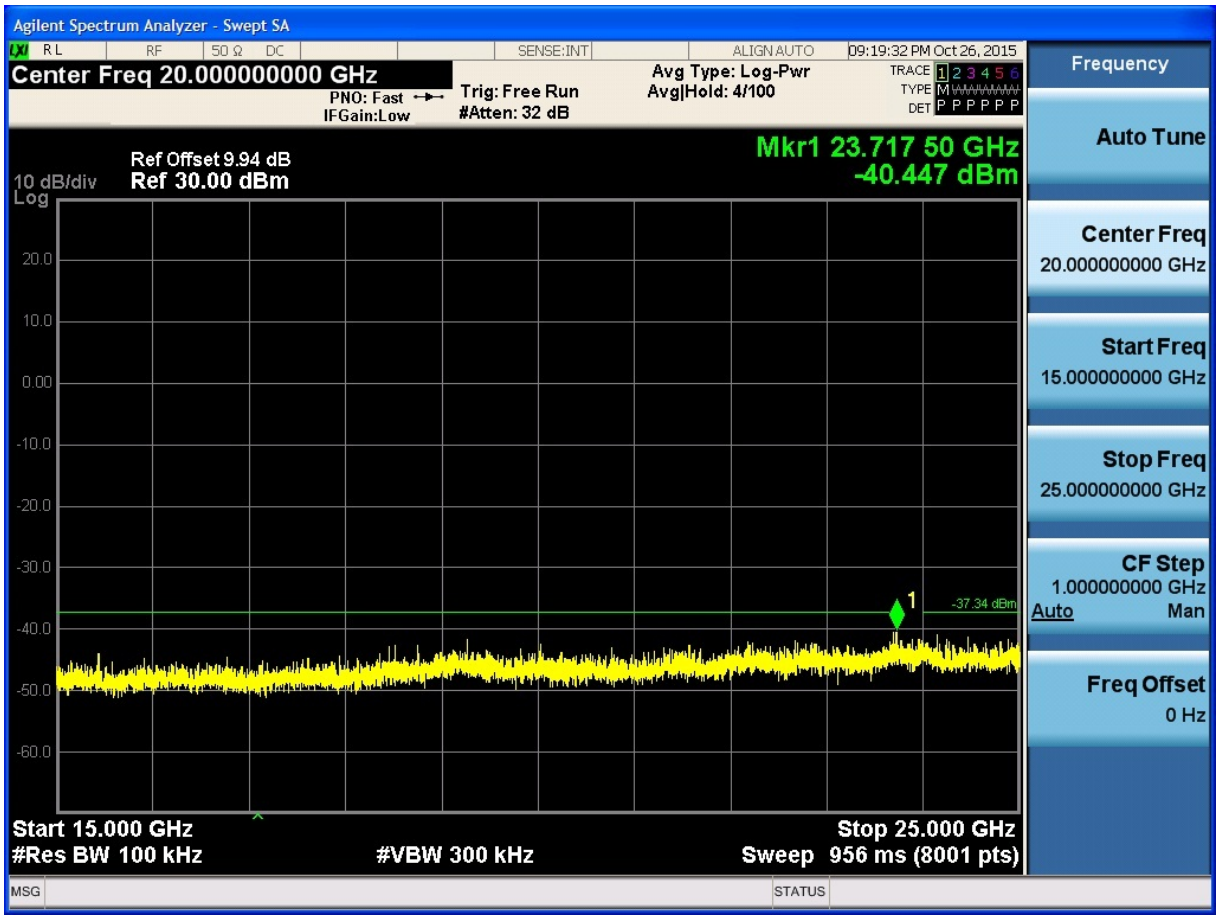
(Plot 4.6.4 C3: Channel 9: 2452MHz @ 802.11n HT40)



(Plot 4.6.4 C4: Channel 9: 2452MHz @ 802.11n HT40)



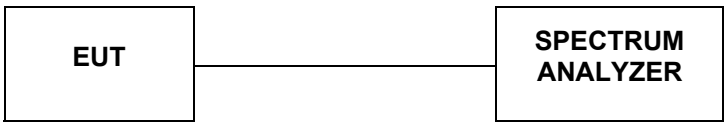
(Plot 4.6.4 C5: Channel 9: 2452MHz @ 802.11n HT40)



(Plot 4.6.4 C6: Channel 9: 2452MHz @ 802.11n HT40)

4.7 6dB Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=100 KHz and VBW=300KHz.
The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.
According to KDB558074 D01 V03 for one of the following procedures may be used to determine the modulated DTS device signal bandwidth.
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

LIMIT

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST RESULTS

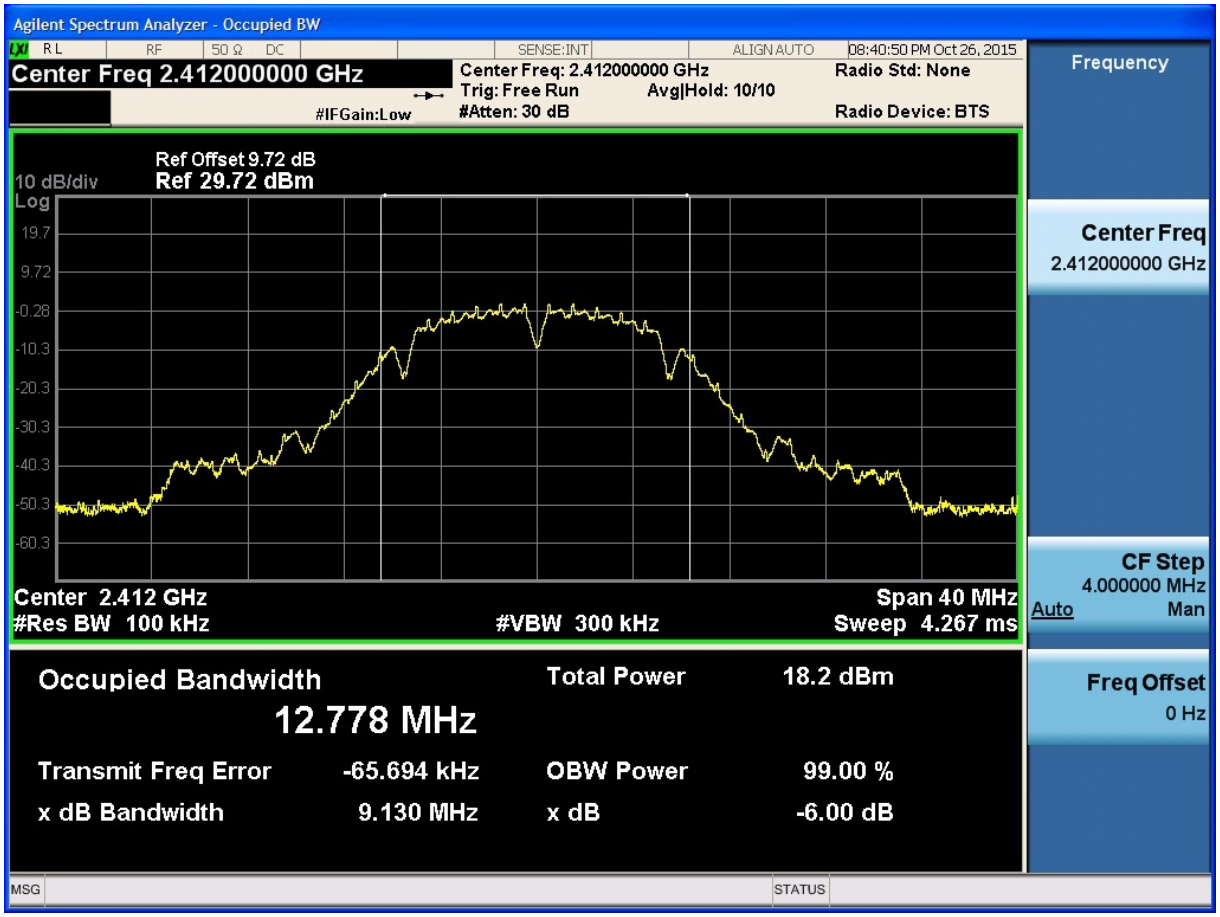
4.7.1 801.11b Test Mode

A. Test Verdict

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Verdict
1	2412	9.130	Plot 4.7.1 A	≥500	PASS
6	2437	9.135	Plot 4.7.1 B	≥500	PASS
11	2462	9.134	Plot 4.7.1 C	≥500	PASS

Note:
1. For 802.11b mode at finial test to get the worst-case emission at 1Mbps.
2.The test results including the cable lose.

B. Test Plots



(Plot 4.7.1 A: Channel 1: 2412MHz @ 802.11b)

(Plot 4.7.1 B: Channel 6: 2437MHz @ 802.11b)

(Plot 4.7.1 C: Channel 11: 2462MHz @ 802.11b)

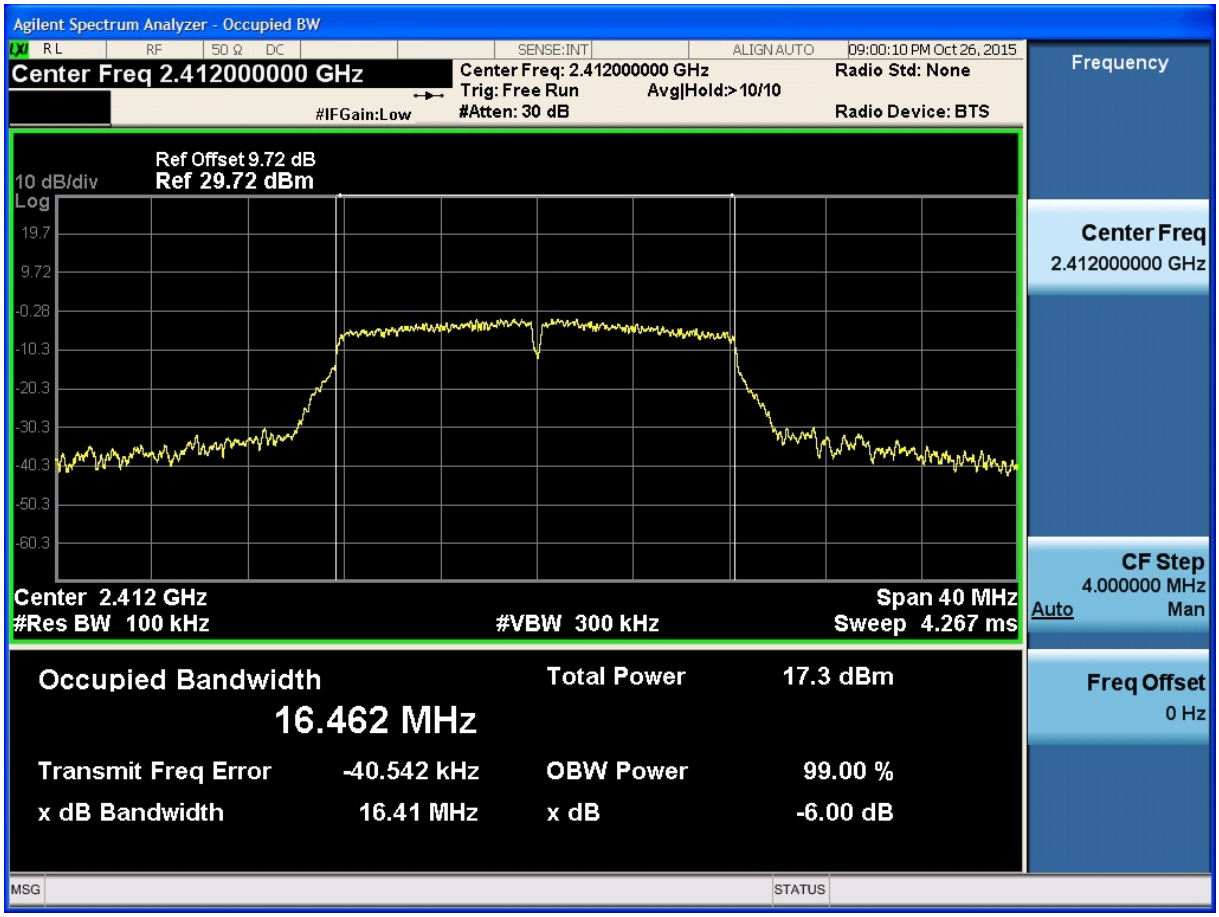
4.7.2 801.11g Test Mode

A. Test Verdict

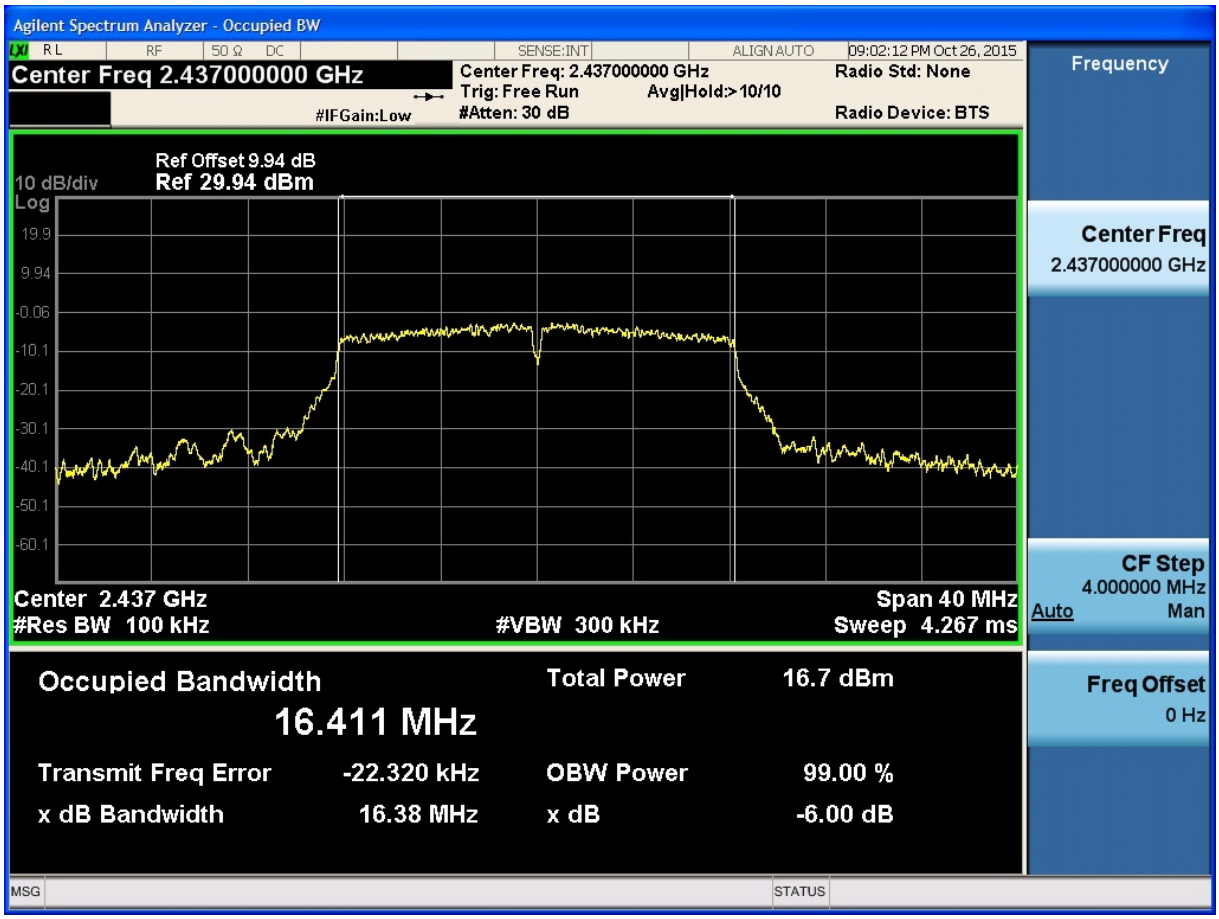
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Verdict
1	2412	16.41	Plot 4.7.2 A	≥500	PASS
6	2437	16.38	Plot 4.7.2 B	≥500	PASS
11	2462	16.38	Plot 4.7.2 C	≥500	PASS

Note:
1. For 802.11g mode at finial test to get the worst-case emission at 6Mbps.
2.The test results including the cable lose.

B. Test Plots



(Plot 4.7.2 A: Channel 1: 2412MHz @ 802.11g)



(Plot 4.7.2 B: Channel 6: 2437MHz @ 802.11g)

(Plot 4.7.2 C: Channel 11: 2462MHz @ 802.11g)

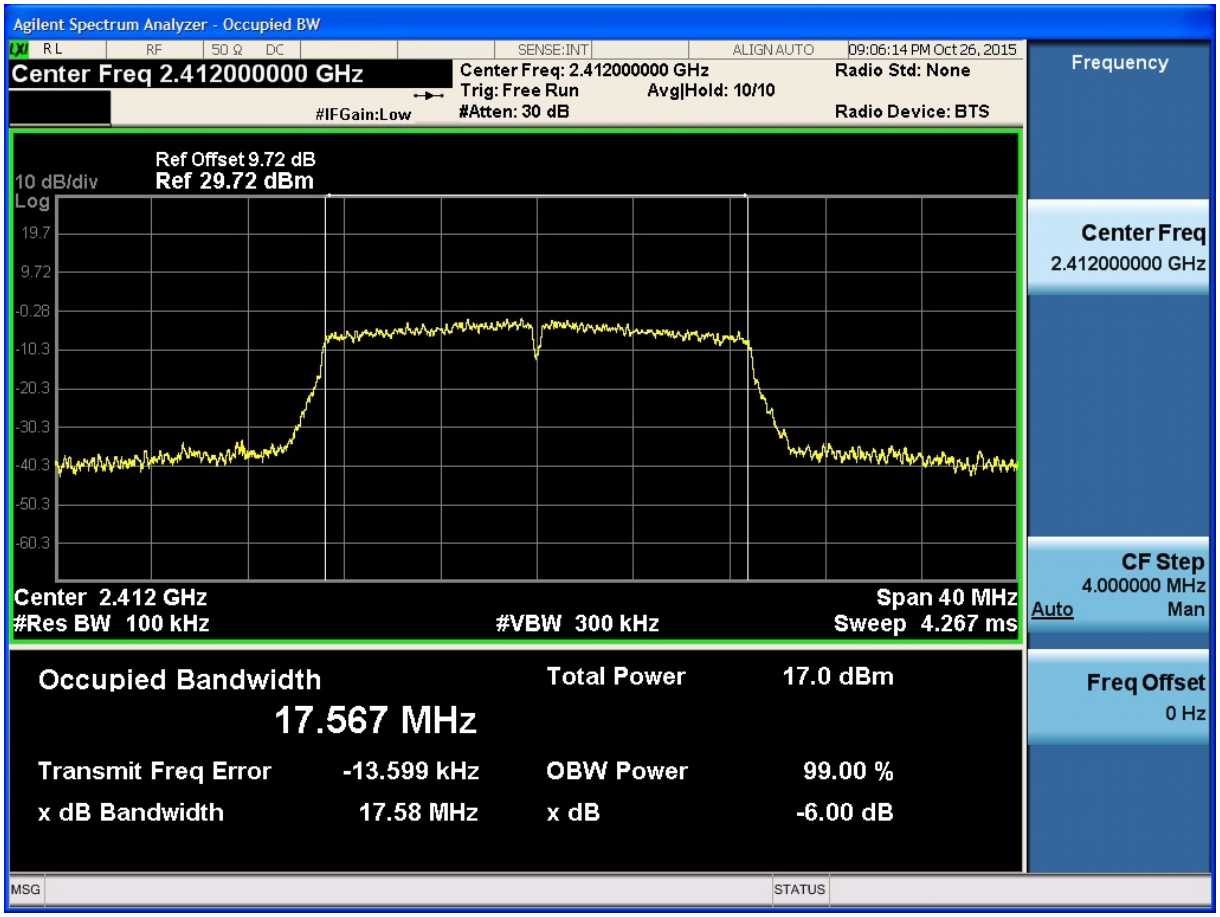
4.7.3 801.11n HT20 Test Mode

A. Test Verdict

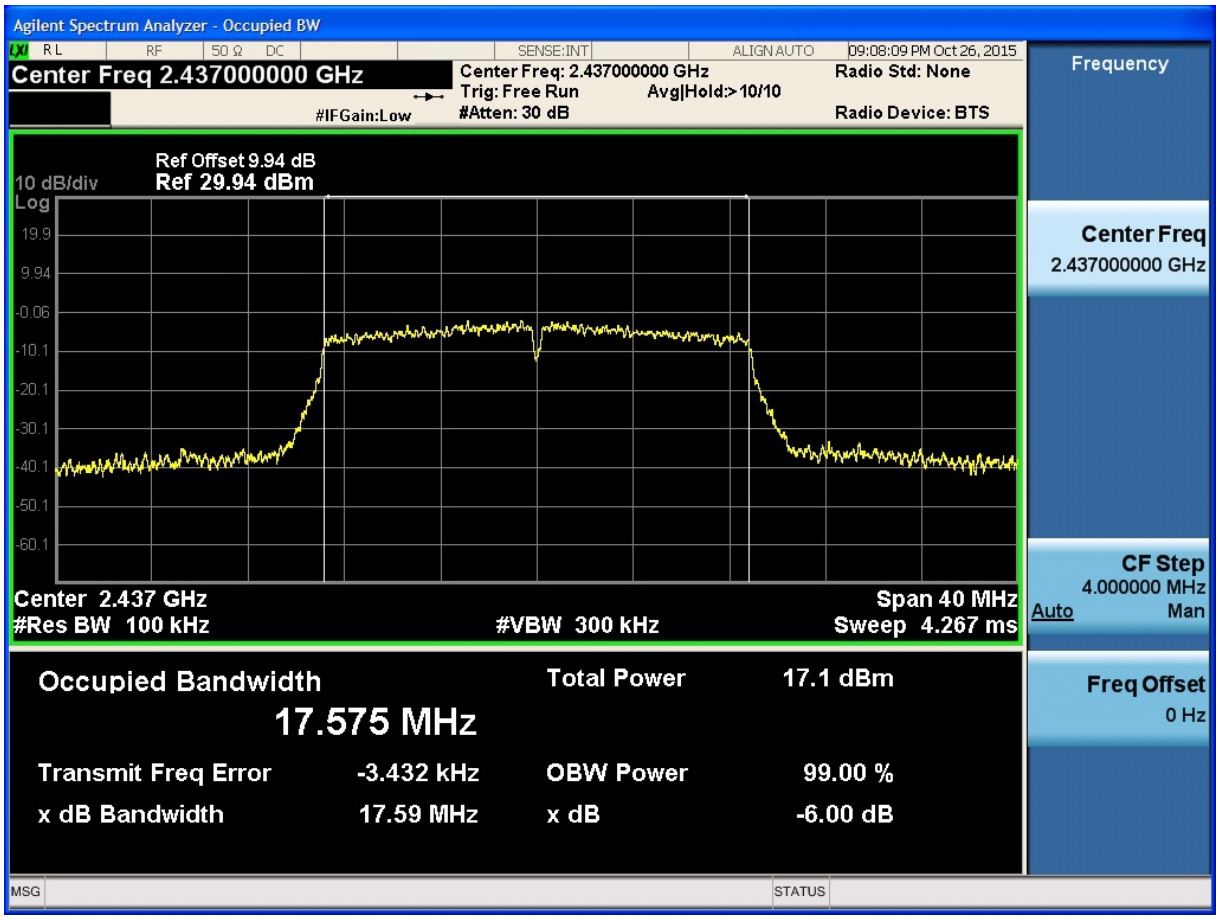
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Verdict
1	2412	17.58	Plot 4.7.3 A	≥500	PASS
6	2437	17.59	Plot 4.7.3 B	≥500	PASS
11	2462	17.60	Plot 4.7.3 C	≥500	PASS

Note:
1. For 802.11n HT20 mode at finial test to get the worst-case emission at 6.5Mbps.
2.The test results including the cable lose.

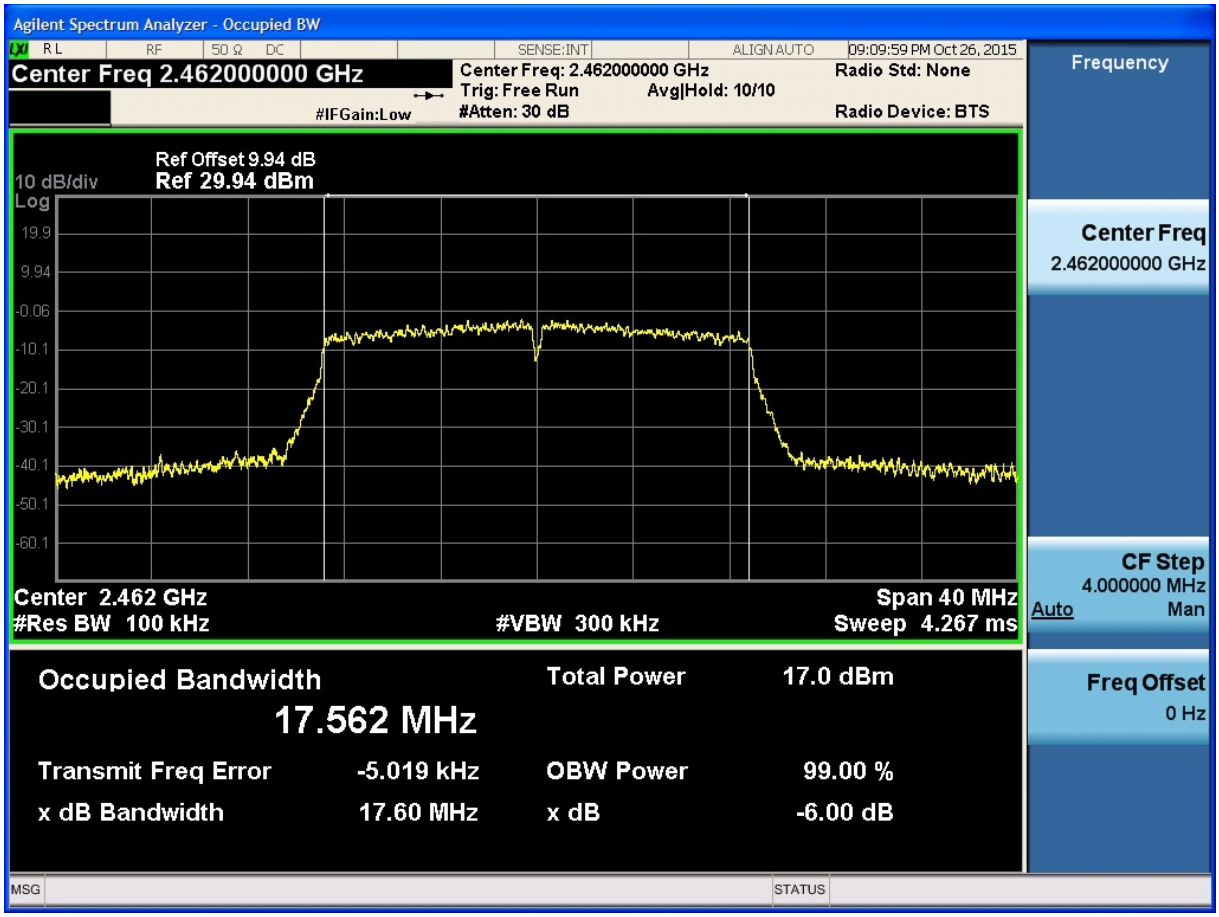
B. Test Plots



(Plot 4.7.3 A: Channel 1: 2412MHz @ 802.11n HT20)



(Plot 4.7.3 B: Channel 6: 2437MHz @ 802.11n HT20)



(Plot 4.7.3 C: Channel 11: 2462MHz @ 802.11n HT20)

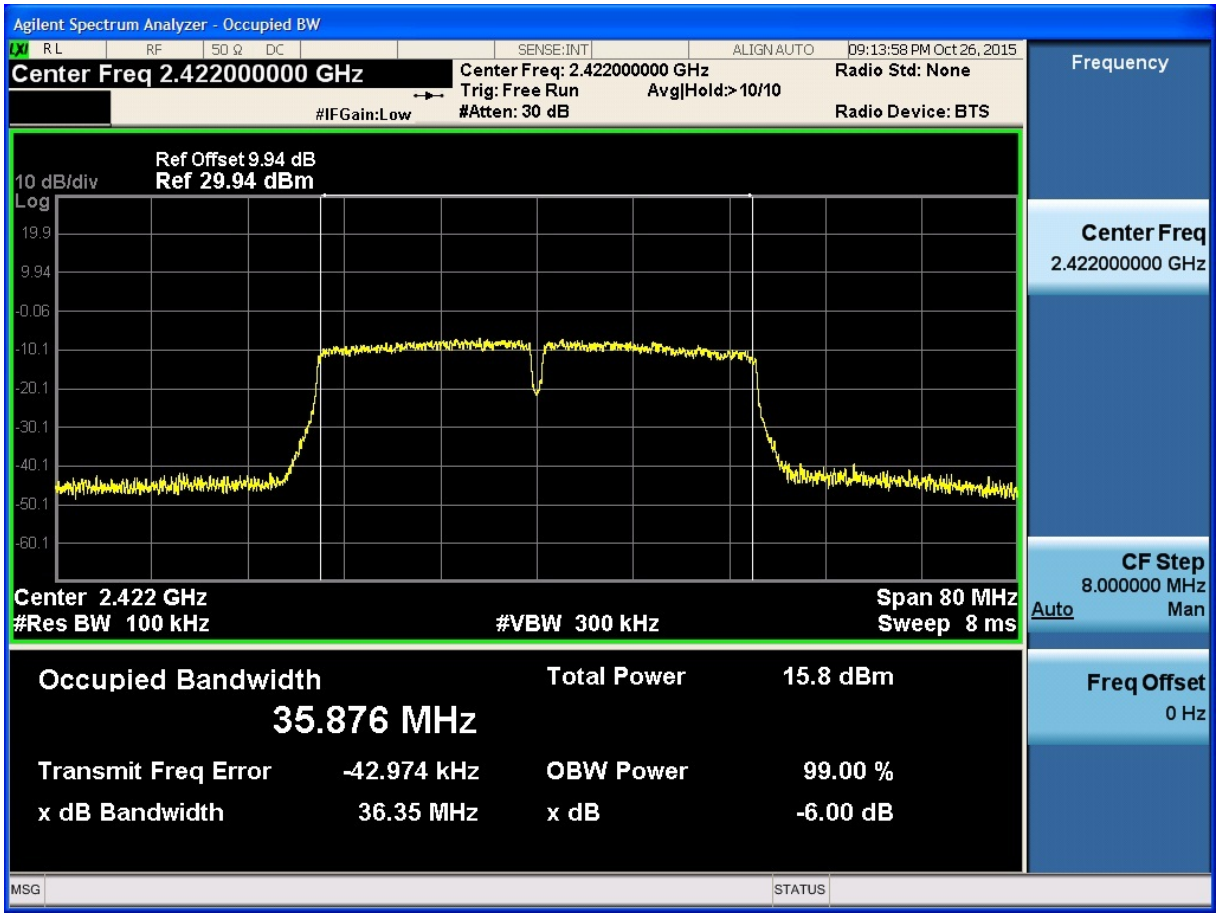
4.7.4 801.11n HT40 Test Mode

A. Test Verdict

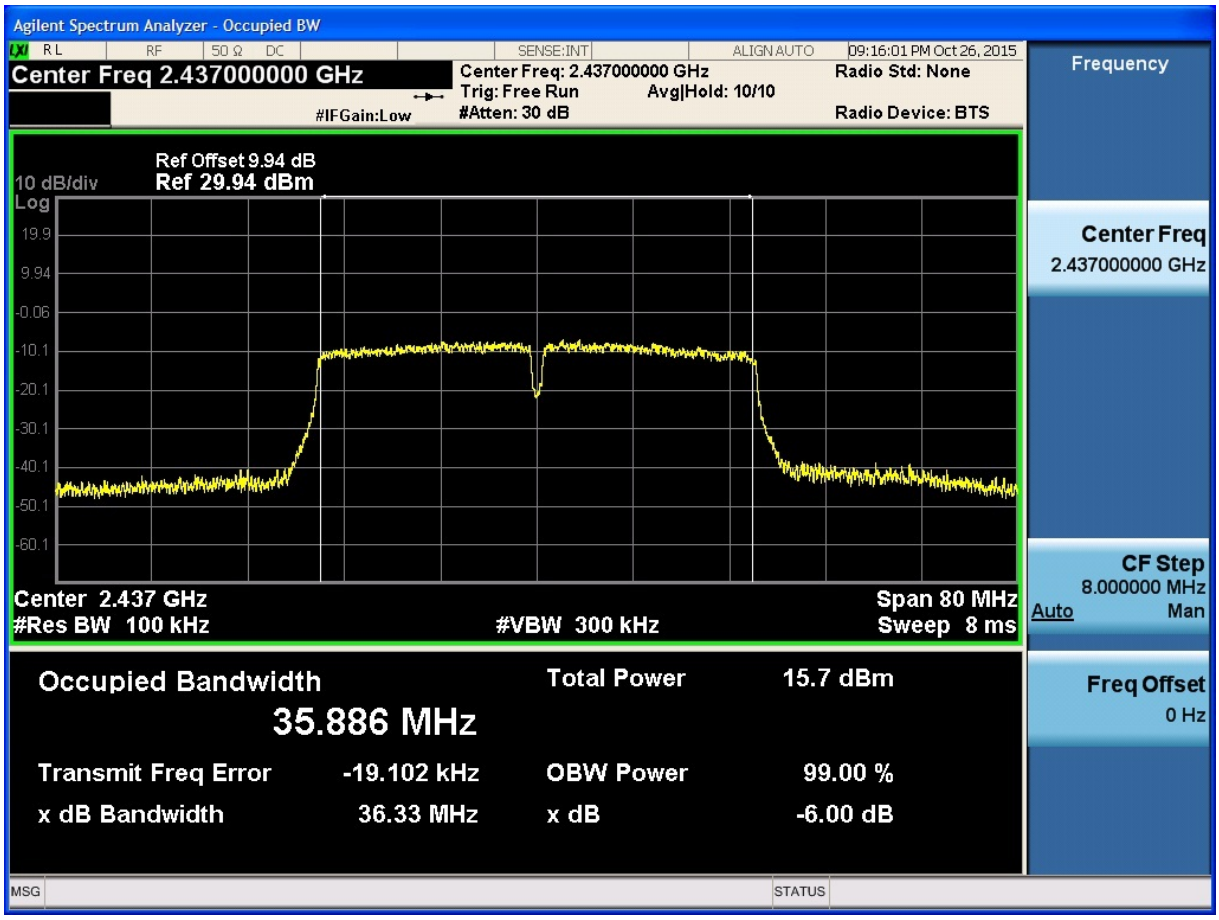
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Verdict
3	2422	36.35	Plot 4.7.4 A	≥500	PASS
6	2437	36.33	Plot 4.7.4 B	≥500	PASS
9	2452	36.33	Plot 4.7.4 C	≥500	PASS

Note:
1. For 802.11n HT40 mode at finial test to get the worst-case emission at 13.5Mbps.
2. The test results including the cable lose.

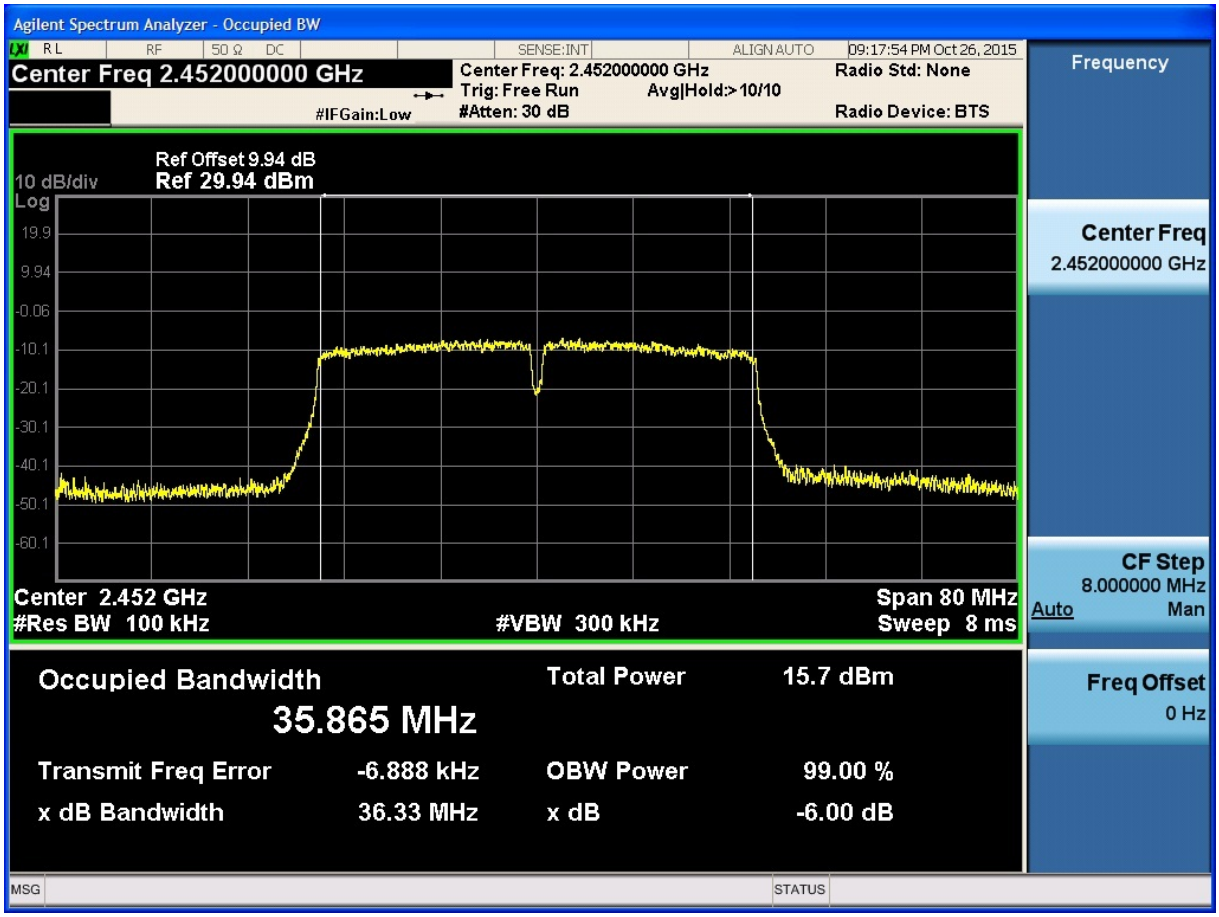
B. Test Plots



(Plot 4.7.4 A: Channel 3: 2422MHz @ 802.11n HT40)



(Plot 4.7.3 B: Channel 6: 2437MHz @ 802.11n HT40



(Plot 4.7.4 C: Channel 9: 2452MHz @ 802.11n HT40)

4.8 Antenna Requirement

Standard Applicable

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 (c), 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.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Measurement

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module.For normal WLAN devices, the DSSS mode is used.

Conducted power refer ANSI C63.10 :2009 Section 11.9 Output power test procedure for DTS devices
Radiated power refer to ANSI C63.10 :2009 Section 6.6.4 Radiated emissions tests.

Measurement parameters

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1MHz
Video bandwidth:	3MHz
Trace-Mode:	Max hold

Limits

FCC	IC
Antenna Gain	
6 dBi	

Results

T_{nom}	V_{nom}	Lowest Channel 2412 MHz	Middle Channel 2437 MHz	Highest Channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		9.44	10.09	9.41
Conducted power [dBm] Measured with DSSS modulation		10.66	11.90	10.85
Gain [dBi] Calculated		1.22	1.81	1.44
Measurement uncertainty		± 0.6 dB (cond.) / ± 2.56 dB (rad.)		

5 Test Setup Photos of the EUT

Please refer to separated files for Test Setup Photos of the EUT.

6 External Photos of the EUT

Please refer to separated files for External Photos of the EUT.

7 Internal Photos of the EUT

Please refer to separated files for Internal Photos of the EUT.

.....End of Report.....