

CONTENTS

Description	Page
Revision History	4
§2.1033 General Information	5
1. INTRODUCTION	6
1.1. Scope	6
1.2. MRT Test Location	6
2. PRODUCT INFORMATION	7
2.1. Equipment Description	7
2.2. Description of Available Antennas.....	7
2.3. Frequency / Channel Opreation	7
2.4. Device Capabilities.....	8
2.5. Test Configuration	8
2.6. Test Software	9
2.7. EMI Suppression Device(s)/Modifications.....	9
2.8. Labeling Requirements	9
3. DESCRIPTION OF TEST	10
3.1. Evaluation Procedure	10
3.2. AC Line Conducted Emissions.....	10
3.3. Radiated Emissions.....	11
4. ANTENNA REQUIREMENTS	12
5. TEST EQUIPMENT CALIBRATION DATA	13
6. MEASUREMENT UNCERTAINTY	14
7. TEST RESULT	15
7.1. Summary	15
7.2. 6dB Bandwidth Measurement	16
7.2.1. Test Limit	16
7.2.2. Test Procedure used	16
7.2.3. Test Setting.....	16
7.2.4. Test Setup	16
7.2.5. Test Result.....	17
7.3. Output Power Measurement	51
7.3.1. Test Limit	51
7.3.2. Test Procedure Used.....	51
7.3.3. Test Setting.....	51

7.3.4.	Test Setup	51
7.3.5.	Test Result of Peak Output Power	52
7.3.6.	Test Result of Average Output Power (Reporting Only)	57
7.4.	Power Spectral Density Measurement	60
7.4.1.	Test Limit	60
7.4.2.	Test Procedure Used	60
7.4.3.	Test Setting	60
7.4.4.	Test Setup	60
7.4.5.	Test Result	61
7.5.	Conducted Band Edge and Out-of-Band Emissions	89
7.5.1.	Test Limit	89
7.5.2.	Test Procedure Used	89
7.5.3.	Test Setting	89
7.5.4.	Test Setup	89
7.5.5.	Test Result	90
7.6.	Radiated Band Edge and Spurious Emission Measurement	205
7.6.1.	Test Limit	205
7.6.2.	Test Procedure Used	205
7.6.3.	Test Setting	205
7.6.4.	Test Setup	206
7.6.5.	Test Result of Radiated Spurious Emission	208
7.6.6.	Test Result of Radiated Band Edge	293
7.7.	AC Conducted Emissions Measurement	421
7.7.1.	Test Limit	421
7.7.2.	Test Procedure	421
7.7.3.	Test Setup	422
7.7.4.	Test Result	423
8.	CONCLUSION	425

Revision History

Report No.	Version	Description	Issue Date
1311RSU00101	Rev. 01	Initial report	11-29-2013

§2.1033 General Information

Applicant:	CIG Shanghai Co., Ltd
Applicant Address:	F/23, No.889 yishan Road, Xuhui District, Shanghai
Manufacturer:	CIG Shanghai Co., Ltd
Manufacturer Address:	F/23, No.889 yishan Road, Xuhui District, Shanghai
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
MRT Registration No.:	809388
FCC Rule Part(s):	Part 15.247
Model Name:	WF-0613A
FCC ID:	SFK-WF0613A
Test Device Serial No.:	N/A <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering
FCC Classification:	Digital Transmission System (DTS)
Date(s) of Test:	October 19 ~November 28, 2013
Test Report S/N:	1311RSU00101

1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.



2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	2.4GHz&5GHz 3x3 Outdoor AP
Model No.	WF-0613A
Frequency Range	802.11b/g/n: 2412 ~ 2462 MHz 802.11a/n: 5745 ~ 5825MHz
Maximum Output Power	802.11b/g/n: 802.11b: 19.96dBm 802.11g: 24.29dBm 802.11n-HT20: 24.65dBm 802.11n-HT40: 23.47dBm 802.11a/n: 802.11a: 29.69dBm 802.11n-HT20: 29.88dBm 802.11n-HT40: 29.90dBm
Type of Modulation	802.11b: DSSS 802.11a/g/n: OFDM

2.2. Description of Available Antennas

Frequency Band (GHz)	Antenna Gain (dBi)			Uncorrelated Gain (dBi)
	Chain A	Chain B	Chain C	
2.4	13	13	13	13
5.2	15	15	15	15
5.8	15	15	15	15

2.3. Frequency / Channel Operation

Channel for 802.11b/g/n-HT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz
04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz
10	2457 MHz	11	2462 MHz	N/A	N/A

Channel for 802.11n-HT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz
06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	N/A	N/A	N/A	N/A

Channel for 802.11a/n-HT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745 MHz	153	5765 MHz	157	5785 MHz
161	5805 MHz	165	5825 MHz	N/A	N/A

Channel for 802.11n-HT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz	N/A	N/A

2.4. Device Capabilities

This device contains the following capabilities:

802.11a/b/g/n WLAN (DTS/NII)

Note: 2.4GHz/5GHz WLAN (DTS/NII) operation is possible in 20MHz, and 40MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section 6.0 b) of KDB 558074 D01v03r01. The RBW and VBW were both greater than $50/T$, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

- 802.11b - 100%
- 802.11a/g/n 20MHz Bandwidth - 100%
- 802.11n 40MHz Bandwidth - 100%

2.5. Test Configuration

The 2.4GHz&5GHz 3x3 Outdoor AP FCC ID: SFK-WF0613A was tested per the guidance of KDB 558074 D01v03r01. ANSI C63.10-2009 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

2.6. Test Software

The test utility software used during testing was ART2 Version 2.28.6.

Power Parameter Value of the test software setting:

Test Mode	Test Channel	Chain A	Chain B	Chain C	Chain A+B	Chain A+B+C
802.11b	2412	15	16	16	--	--
	2437	13	17	17	--	--
	2462	14	18	18	--	--
802.11g	2412	15	15	15	--	--
	2437	15	15	15	--	--
	2462	14	14	13	--	--
802.11n-HT20	2412	15	13	14	13	13
	2437	15	13	14	13	13
	2462	14	13	14	13	12
802.11n-HT40	2422	13	12	12	11	7
	2437	13	12	12	11	9
	2452	11	12	12	11	9
802.11a	5745	20	20	20	--	--
	5785	19	20	20	--	--
	5825	19	20	20	--	--
802.11n-HT20	5745	20	20	20	18	18
	5785	20	20	20	18	17
	5825	20	20	20	18	17
802.11n-HT40	5755	20	20	20	18	18
	5795	20	20	20	18	17

2.7. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.8. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(a)(5).

Please see attachment for FCC ID label and label location.

3. DESCRIPTION OF TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2009), and the guidance provided in KDB 558074 D01v03r01 were used in the measurement of the **2.4GHz&5GHz 3x3 Outdoor AP FCC ID: SFK-WF0613A**.

Deviation from measurement procedure.....None

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. The shielding effectiveness of the shielded room is in accordance with MIL-Std-285. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or resolution, clock or data exchange speed, scrolling H pattern to the EUT and/or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. Line conducted emissions test results are shown in Section 7.7.

3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 0.8 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. According to 3dB Beamwidth of horn antenna, the horn antenna should be always directed to the EUT when rising height.

4. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antenna of the 2.4GHz&5GHz 3x3 Outdoor AP is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The **2.4GHz&5GHz 3x3 Outdoor AP FCC ID: SFK-WF0613A** unit complies with the requirement of §15.203.

5. TEST EQUIPMENT CALIBRATION DATA

AC Conducted Emissions Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESR7	101209	2014/07/16
Two-Line V-Network	R&S	ENV216	101683	2014/07/21
Two-Line V-Network	R&S	ENV216	101684	2014/07/21
Temperature/ Meter Humidity	Anymetre	TH101B	SR2-01	2014/08/15

Radiated Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4447A	MY45300136	2014/08/15
Preamplifier	MRT	AP01G18	1310002	2014/10/08
Preamplifier	MRT	AP18G40	1310003	2014/10/08
Loop Antenna	Schwarzbeck	FMZB1519	1519-041	2014/09/12
TRILOG Antenna	Schwarzbeck	VULB9162	9162-047	2014/09/12
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1167	2014/09/12
Broadband Horn Antenna	Schwarzbeck	BBHA9170	9170-549	2014/09/12
Temperature/Humidity Meter	Anymetre	TH101B	AC1-01	2014/08/15

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9010A	MY51440164	2014/08/15
Power Meter	Anritsu	ML2495A	0905006	2014/11/01
Power Sensor	Anritsu	MA2411B	0846014	2014/11/01
Temperature/Humidity Meter	Anymetre	TH101B	TR3-01	2014/08/15

6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 150kHz~30MHz: $\pm 2.04\text{dB}$
Radiated Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 9kHz ~ 1GHz: $\pm 3.5\text{dB}$ 1GHz ~ 40GHz: $\pm 3.7\text{dB}$

7. TEST RESULT

7.1. Summary

Company Name: CIG Shanghai Co., Ltd
FCC ID: SFK-WF0613A
FCC Classification: Digital Transmission System (DTS)
Data Rate(s) Tested: 1Mbps ~ 11Mbps (b)
6Mbps ~ 54Mbps (a/g)
6.5/7.2Mbps ~ 195/216.7Mbps (n - 20MHz)
13.5/15Mbps ~ 405/450Mbps (n - 40MHz)

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	6dB Bandwidth	$\geq 500\text{kHz}$	Conducted	Pass	Section 7.2
15.247(b)(3)	Output Power	$\leq 1\text{Watt}$		Pass	Section 7.3
15.247(e)	Power Spectral Density	$\leq 8\text{dBm} / 3\text{kHz Band}$		Pass	Section 7.4
15.247(d)	Band Edge / Out-of-Band Emissions	$\geq 20\text{dBc(Peak)}$		Pass	Section 7.5
15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 7.6
15.207	AC Conducted Emissions 150kHz - 30MHz	$< \text{FCC 15.207 limits}$	Line Conducted	Pass	Section 7.7

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.

7.2. 6dB Bandwidth Measurement

7.2.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

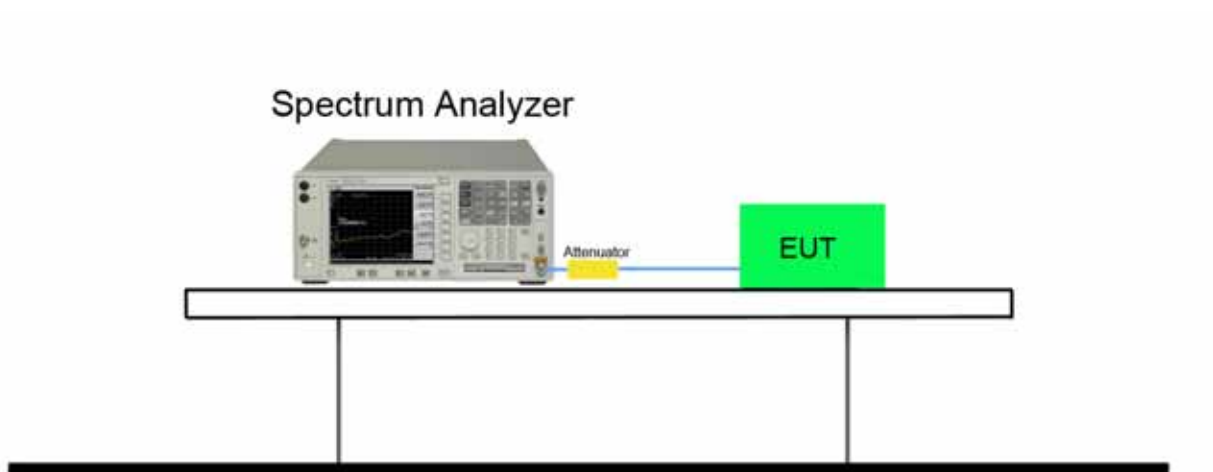
7.2.2. Test Procedure used

KDB 558074 D01v03r01 – Section 8.2 Option 2

7.2.3. Test Setting

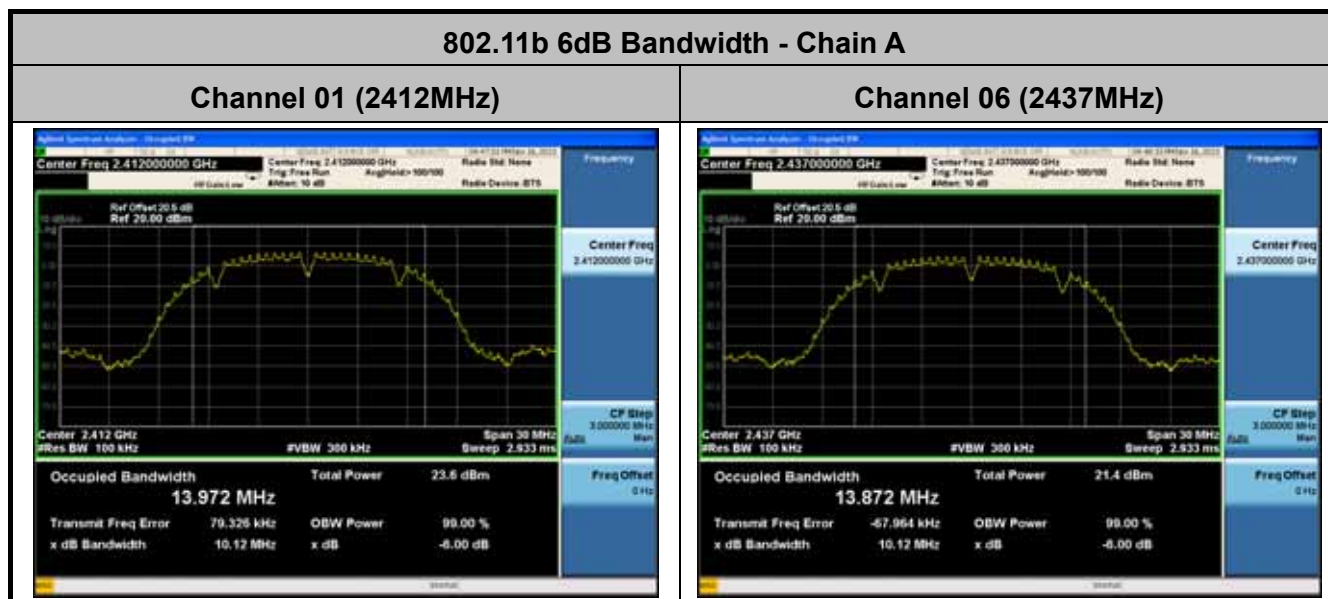
1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 6$. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace was allowed to stabilize

7.2.4. Test Setup

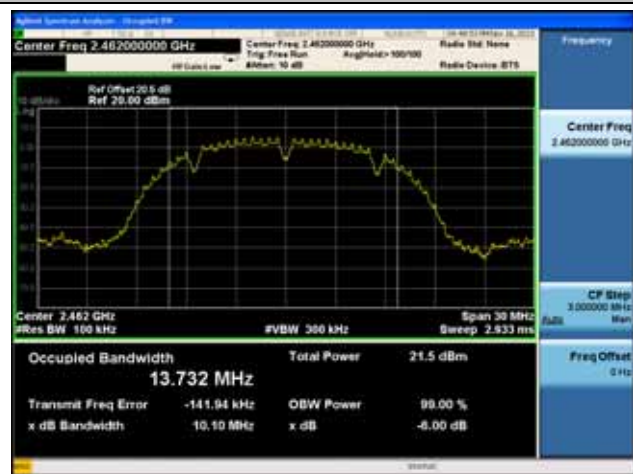


7.2.5. Test Result

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Chain A						
802.11b	1	01	2412	10.12	≥0.5	Pass
802.11b	1	06	2437	10.12	≥0.5	Pass
802.11b	1	11	2462	10.10	≥0.5	Pass
Chain B						
802.11b	1	01	2412	10.11	≥0.5	Pass
802.11b	1	06	2437	10.11	≥0.5	Pass
802.11b	1	11	2462	10.12	≥0.5	Pass
Chain C						
802.11b	1	01	2412	10.12	≥0.5	Pass
802.11b	1	06	2437	10.09	≥0.5	Pass
802.11b	1	11	2462	10.10	≥0.5	Pass

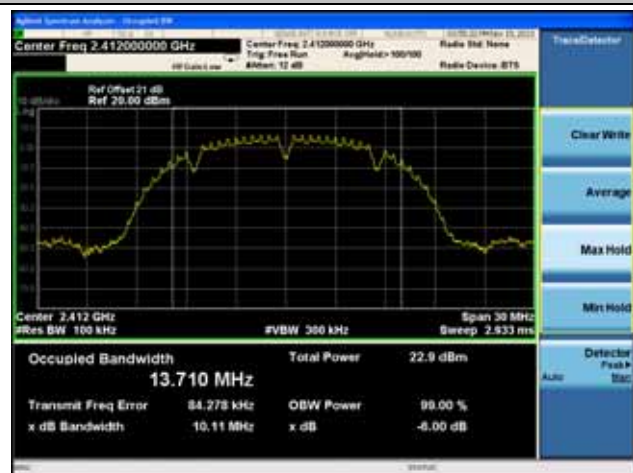


Channel 11 (2462MHz)

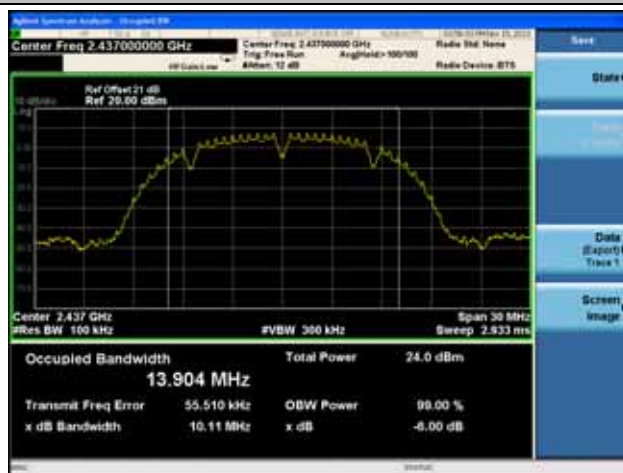


802.11b 6dB Bandwidth - Chain B

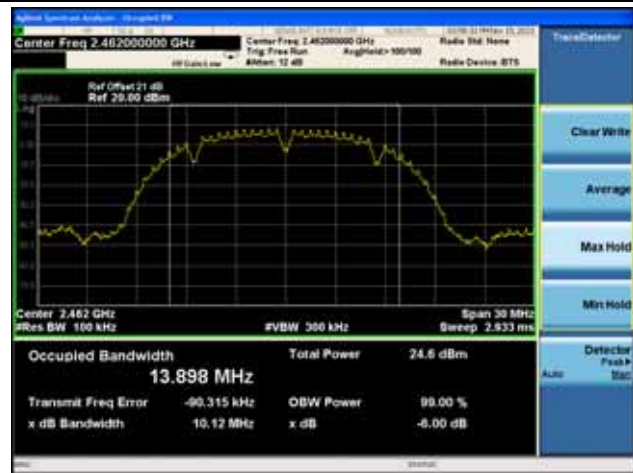
Channel 01 (2412MHz)



Channel 06 (2437MHz)

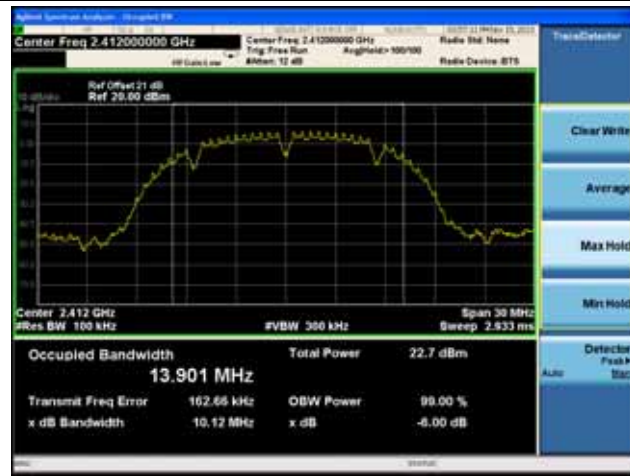


Channel 11 (2462MHz)



802.11b 6dB Bandwidth - Chain C

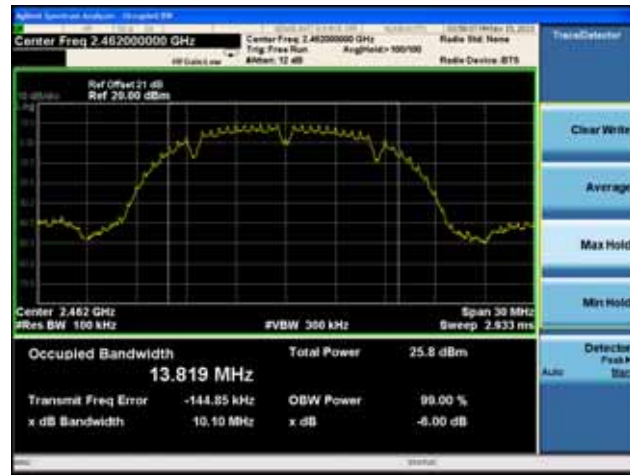
Channel 01 (2412MHz)



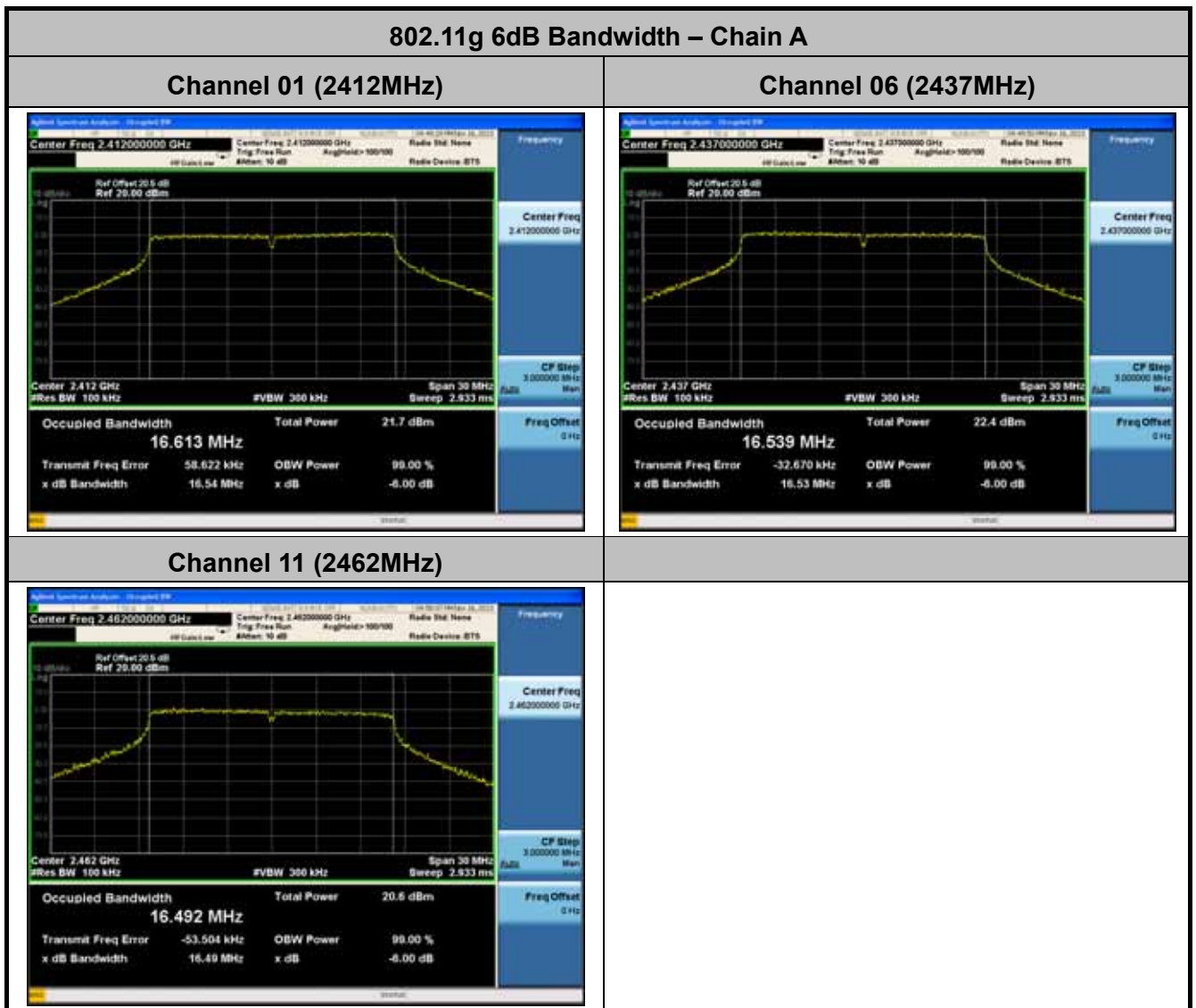
Channel 06 (2437MHz)



Channel 11 (2462MHz)

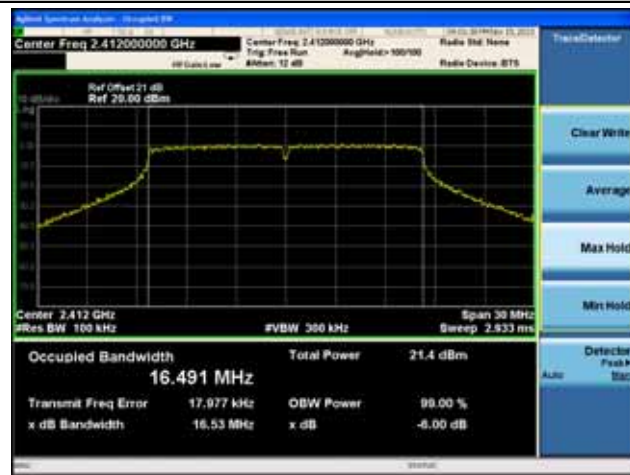


Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Chain A						
802.11g	6	01	2412	16.54	≥0.5	Pass
802.11g	6	06	2437	16.53	≥0.5	Pass
802.11g	6	11	2462	16.49	≥0.5	Pass
Chain B						
802.11g	6	01	2412	16.53	≥0.5	Pass
802.11g	6	06	2437	16.55	≥0.5	Pass
802.11g	6	11	2462	16.57	≥0.5	Pass
Chain C						
802.11g	6	01	2412	16.52	≥0.5	Pass
802.11g	6	06	2437	16.60	≥0.5	Pass
802.11g	6	11	2462	16.55	≥0.5	Pass



802.11g 6dB Bandwidth – Chain B

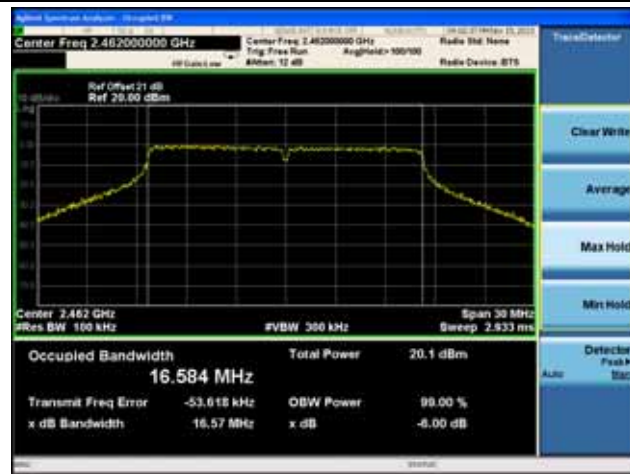
Channel 01 (2412MHz)



Channel 06 (2437MHz)

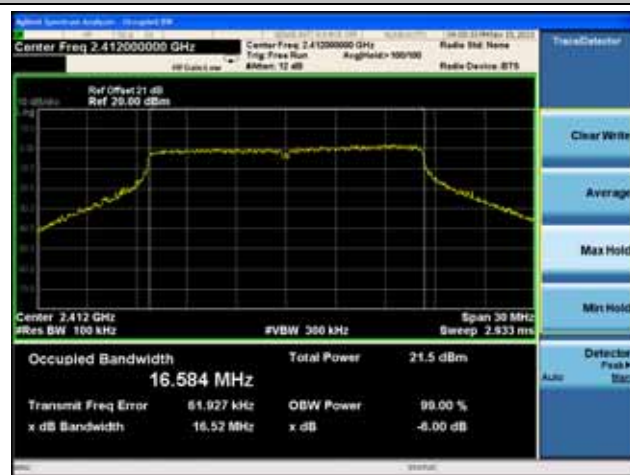


Channel 11 (2462MHz)



802.11g 6dB Bandwidth – Chain C

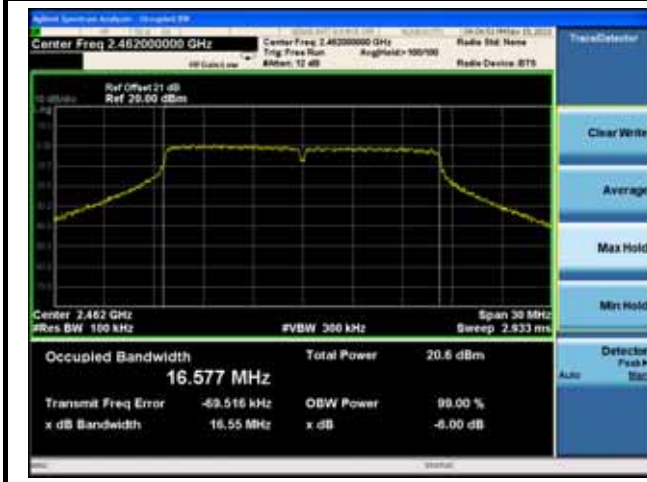
Channel 01 (2412MHz)



Channel 06 (2437MHz)



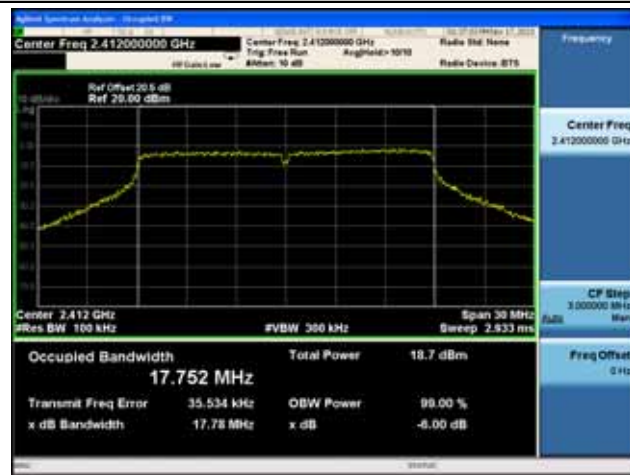
Channel 11 (2462MHz)



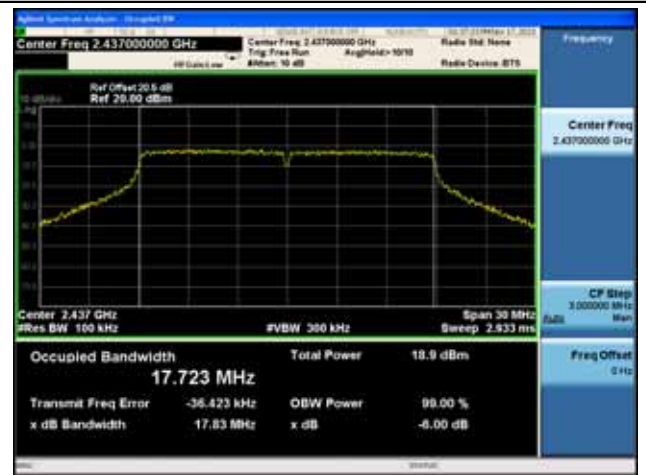
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Chain A						
802.11n-HT20	6.5/7.2	01	2412	17.78	≥0.5	Pass
802.11n-HT20	6.5/7.2	06	2437	17.83	≥0.5	Pass
802.11n-HT20	6.5/7.2	11	2462	17.72	≥0.5	Pass
Chain B						
802.11n-HT20	6.5/7.2	01	2412	17.75	≥0.5	Pass
802.11n-HT20	6.5/7.2	06	2437	17.80	≥0.5	Pass
802.11n-HT20	6.5/7.2	11	2462	17.75	≥0.5	Pass
Chain C						
802.11n-HT20	6.5/7.2	01	2412	17.73	≥0.5	Pass
802.11n-HT20	6.5/7.2	06	2437	17.83	≥0.5	Pass
802.11n-HT20	6.5/7.2	11	2462	17.76	≥0.5	Pass
Chain A / Chain A + B						
802.11n-HT20	13/14.4	01	2412	17.76	≥0.5	Pass
802.11n-HT20	13/14.4	06	2437	17.79	≥0.5	Pass
802.11n-HT20	13/14.4	11	2462	17.73	≥0.5	Pass
Chain B / Chain A + B						
802.11n-HT20	13/14.4	01	2412	17.76	≥0.5	Pass
802.11n-HT20	13/14.4	06	2437	17.80	≥0.5	Pass
802.11n-HT20	13/14.4	11	2462	17.82	≥0.5	Pass
Chain A / Chain A + B + C						
802.11n-HT20	19.5/21.7	01	2412	17.80	≥0.5	Pass
802.11n-HT20	19.5/21.7	06	2437	17.74	≥0.5	Pass
802.11n-HT20	19.5/21.7	11	2462	17.69	≥0.5	Pass
Chain B / Chain A + B + C						
802.11n-HT20	19.5/21.7	01	2412	17.71	≥0.5	Pass
802.11n-HT20	19.5/21.7	06	2437	17.73	≥0.5	Pass
802.11n-HT20	19.5/21.7	11	2462	17.73	≥0.5	Pass
Chain C / Chain A + B + C						
802.11n-HT20	19.5/21.7	01	2412	17.73	≥0.5	Pass
802.11n-HT20	19.5/21.7	06	2437	17.80	≥0.5	Pass
802.11n-HT20	19.5/21.7	11	2462	17.74	≥0.5	Pass

802.11n-HT20 6dB Bandwidth – Chain A

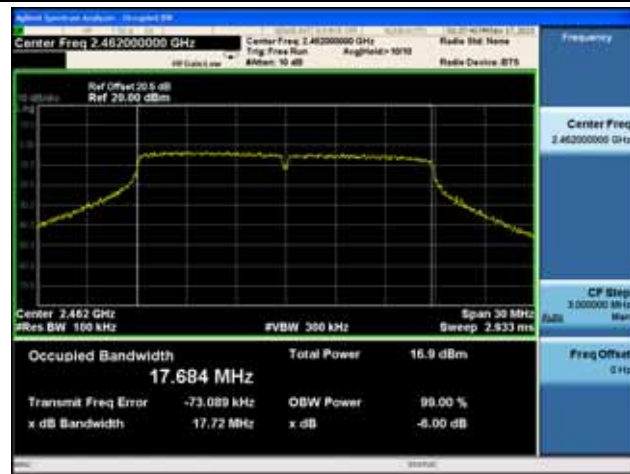
Channel 01 (2412MHz)



Channel 06 (2437MHz)

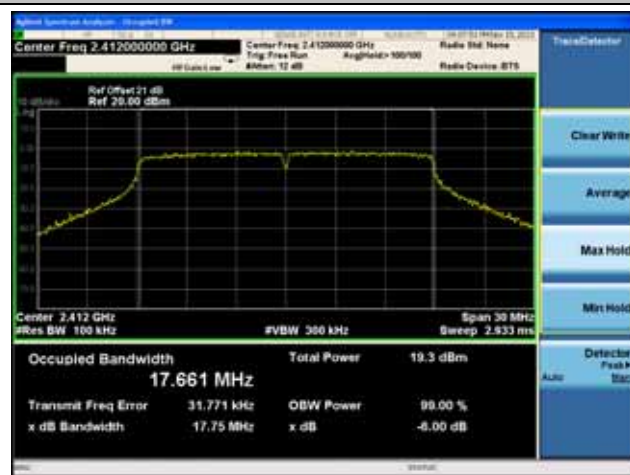


Channel 11 (2462MHz)

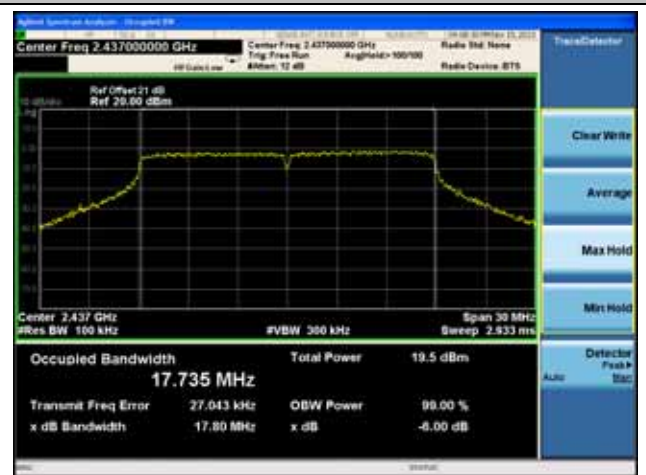


802.11n-HT20 6dB Bandwidth – Chain B

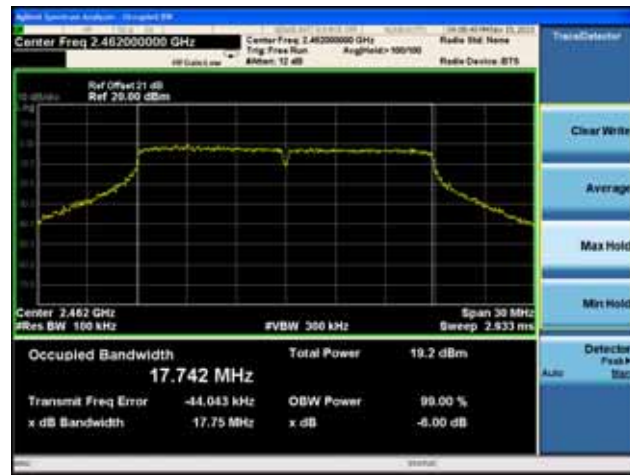
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



802.11n-HT20 6dB Bandwidth – Chain C

Channel 01 (2412MHz)



Channel 06 (2437MHz)

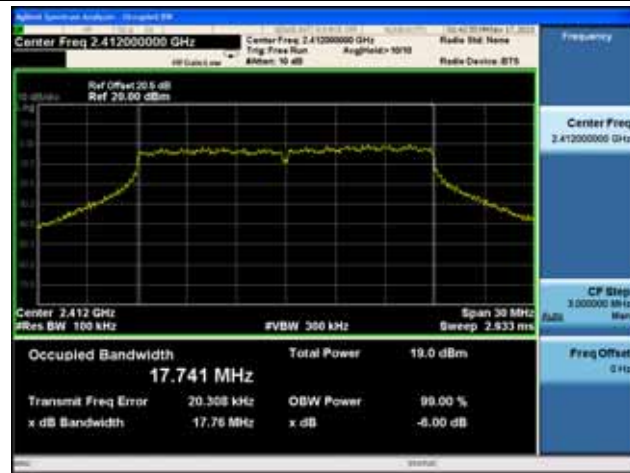


Channel 11 (2462MHz)

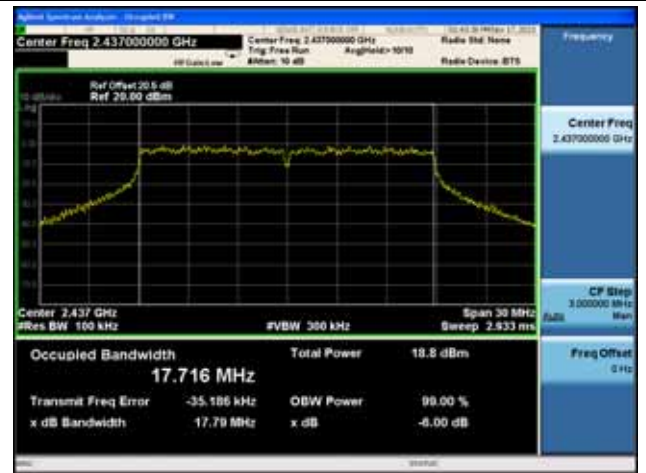


802.11n-HT20 6dB Bandwidth – Chain A / Chain A + B

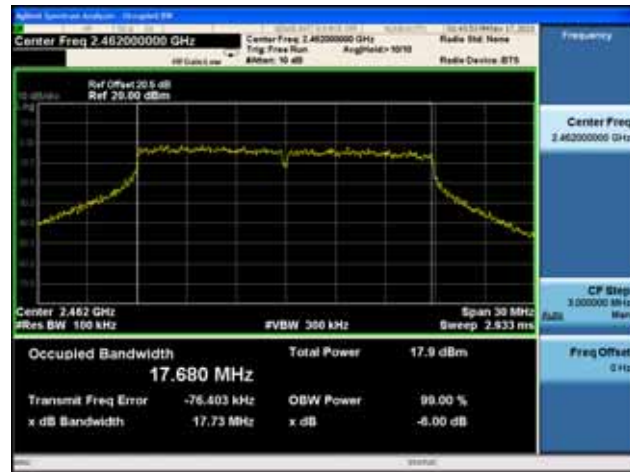
Channel 01 (2412MHz)



Channel 06 (2437MHz)

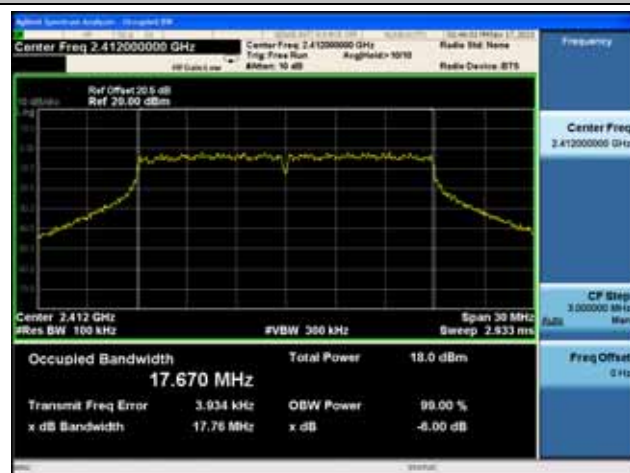


Channel 11 (2462MHz)

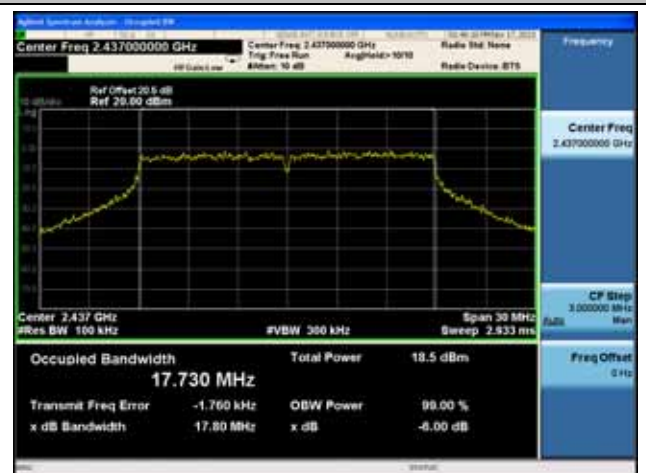


802.11n-HT20 6dB Bandwidth – Chain B / Chain A + B

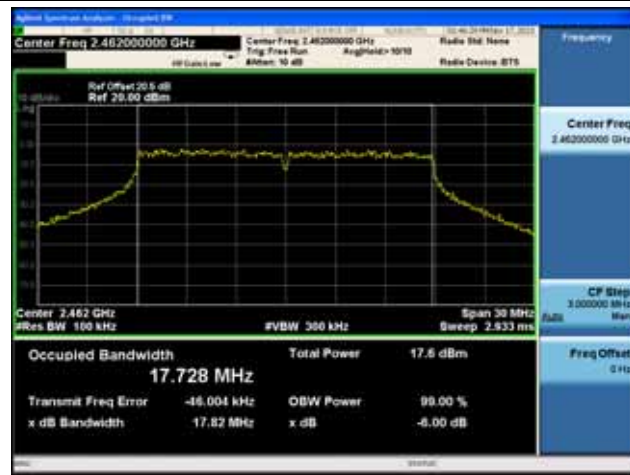
Channel 01 (2412MHz)



Channel 06 (2437MHz)

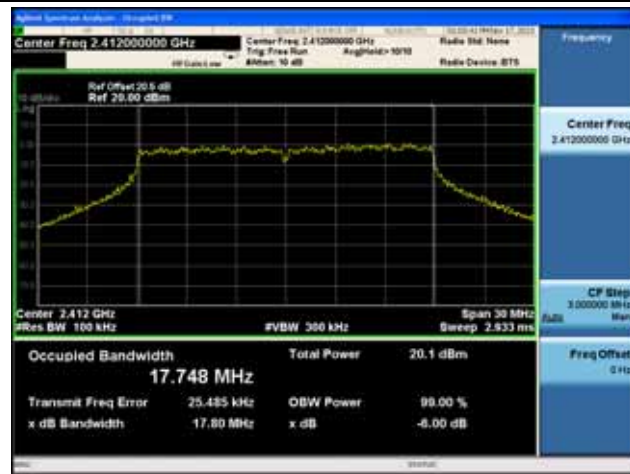


Channel 11 (2462MHz)

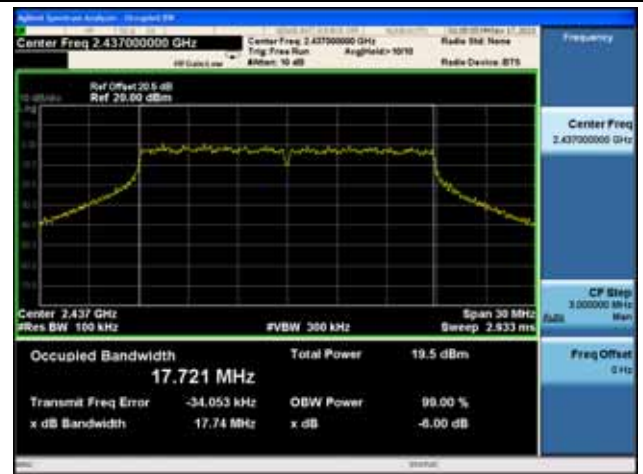


802.11n-HT20 6dB Bandwidth – Chain A / Chain A + B + C

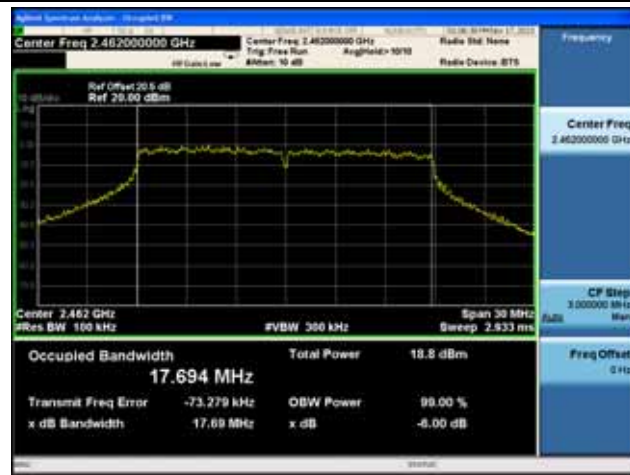
Channel 01 (2412MHz)



Channel 06 (2437MHz)

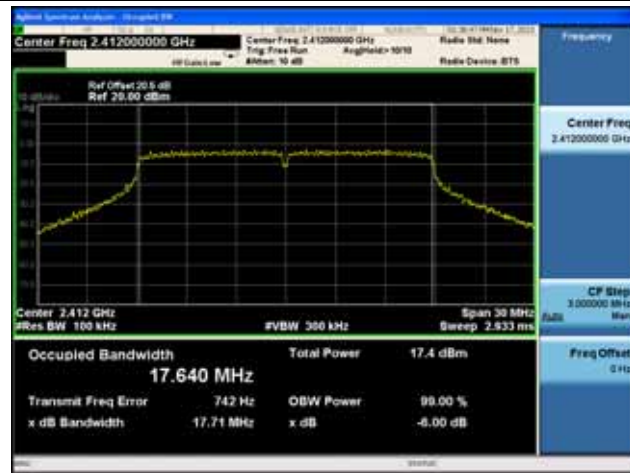


Channel 11 (2462MHz)



802.11n-HT20 6dB Bandwidth – Chain B / Chain A + B + C

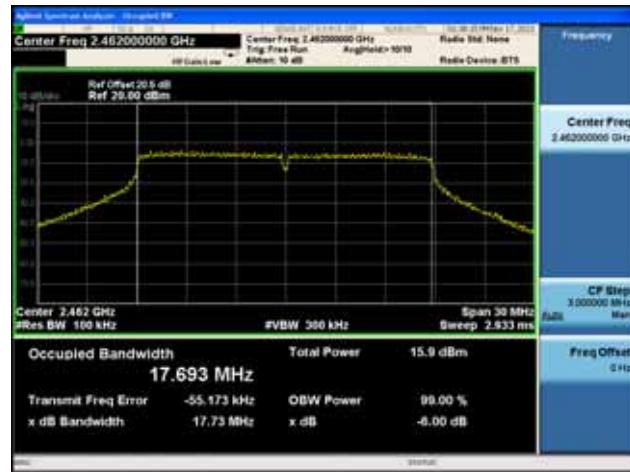
Channel 01 (2412MHz)



Channel 06 (2437MHz)

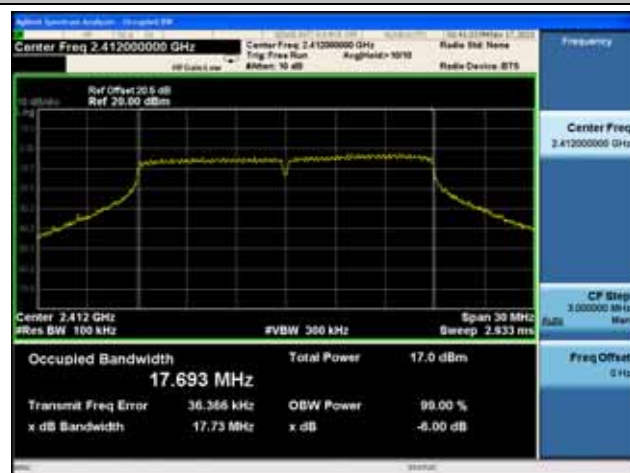


Channel 11 (2462MHz)



802.11n-HT20 6dB Bandwidth – Chain C / Chain A + B + C

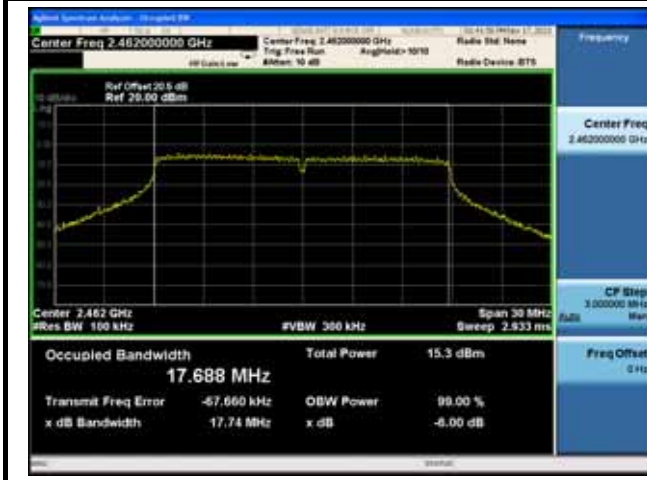
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



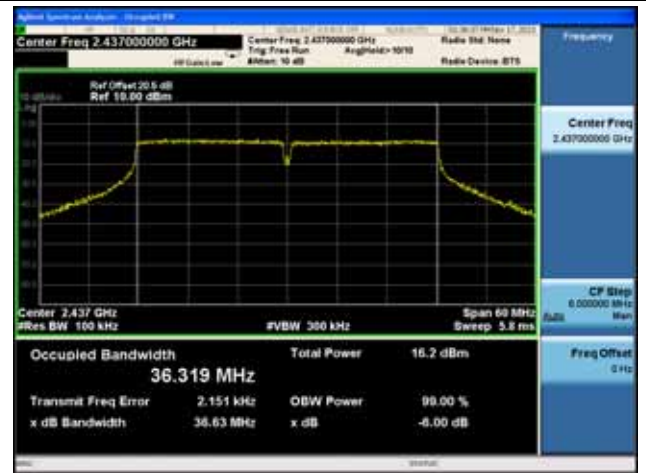
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Chain A						
802.11n-HT40	13.5/15	03	2422	36.53	≥0.5	Pass
802.11n-HT40	13.5/15	06	2437	36.63	≥0.5	Pass
802.11n-HT40	13.5/15	09	2452	36.54	≥0.5	Pass
Chain B						
802.11n-HT40	13.5/15	03	2422	36.60	≥0.5	Pass
802.11n-HT40	13.5/15	06	2437	36.62	≥0.5	Pass
802.11n-HT40	13.5/15	09	2452	36.54	≥0.5	Pass
Chain C						
802.11n-HT40	13.5/15	03	2422	36.52	≥0.5	Pass
802.11n-HT40	13.5/15	06	2437	36.63	≥0.5	Pass
802.11n-HT40	13.5/15	09	2452	36.61	≥0.5	Pass
Chain A / Chain A + B						
802.11n-HT40	27/30	03	2422	36.47	≥0.5	Pass
802.11n-HT40	27/30	06	2437	36.53	≥0.5	Pass
802.11n-HT40	27/30	09	2452	36.45	≥0.5	Pass
Chain B / Chain A + B						
802.11n-HT40	27/30	03	2422	36.51	≥0.5	Pass
802.11n-HT40	27/30	06	2437	36.48	≥0.5	Pass
802.11n-HT40	27/30	09	2452	36.51	≥0.5	Pass
Chain A / Chain A + B + C						
802.11n-HT40	40.5/45	03	2422	36.53	≥0.5	Pass
802.11n-HT40	40.5/45	06	2437	36.61	≥0.5	Pass
802.11n-HT40	40.5/45	09	2452	36.55	≥0.5	Pass
Chain B / Chain A + B + C						
802.11n-HT40	40.5/45	03	2422	36.57	≥0.5	Pass
802.11n-HT40	40.5/45	06	2437	36.56	≥0.5	Pass
802.11n-HT40	40.5/45	09	2452	36.55	≥0.5	Pass
Chain C / Chain A + B + C						
802.11n-HT40	40.5/45	03	2422	36.52	≥0.5	Pass
802.11n-HT40	40.5/45	06	2437	36.58	≥0.5	Pass
802.11n-HT40	40.5/45	09	2452	36.53	≥0.5	Pass

802.11n-HT40 6dB Bandwidth – Chain A

Channel 03 (2422MHz)



Channel 06 (2437MHz)

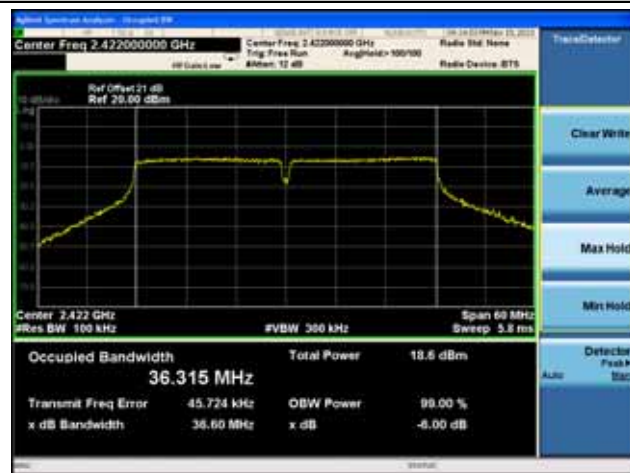


Channel 09 (2452MHz)

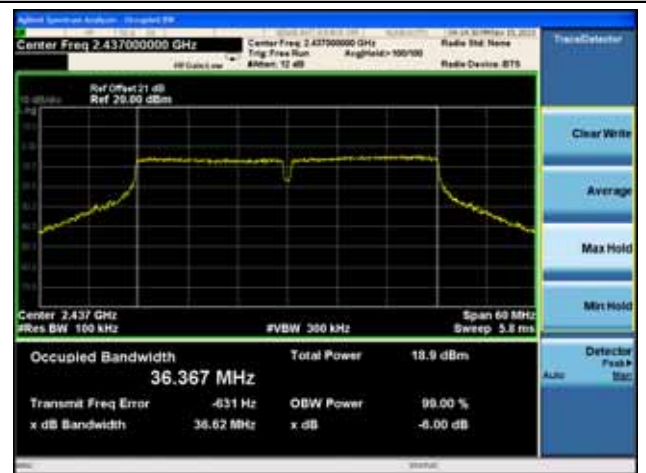


802.11n-HT40 6dB Bandwidth – Chain B

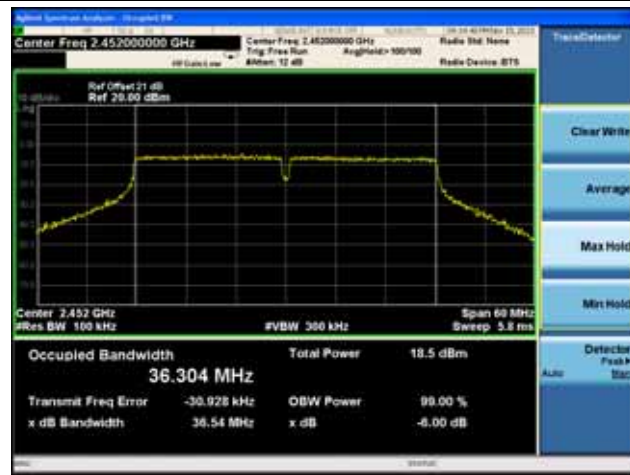
Channel 03 (2422MHz)



Channel 06 (2437MHz)

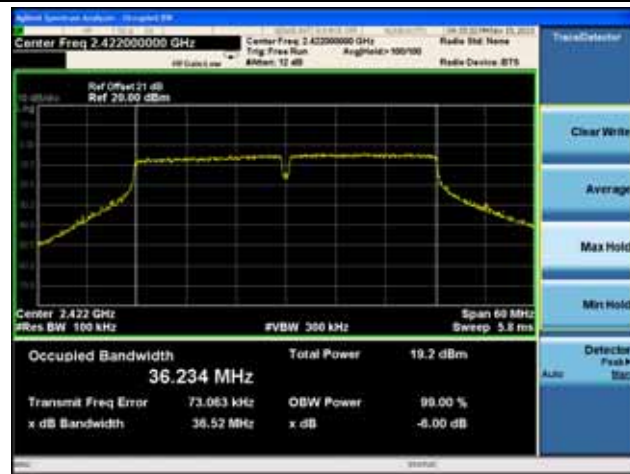


Channel 09 (2452MHz)

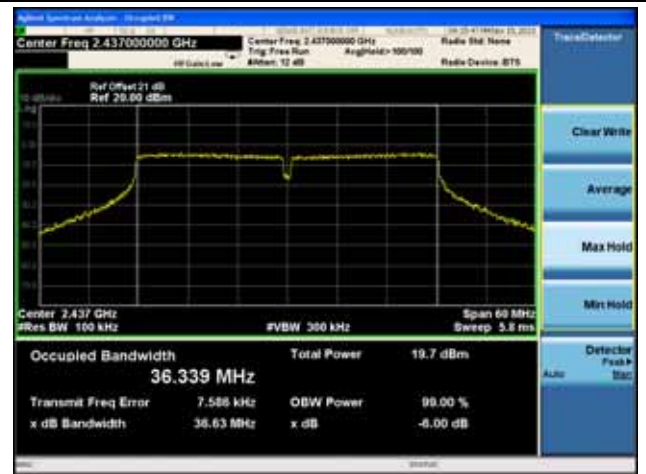


802.11n-HT40 6dB Bandwidth – Chain C

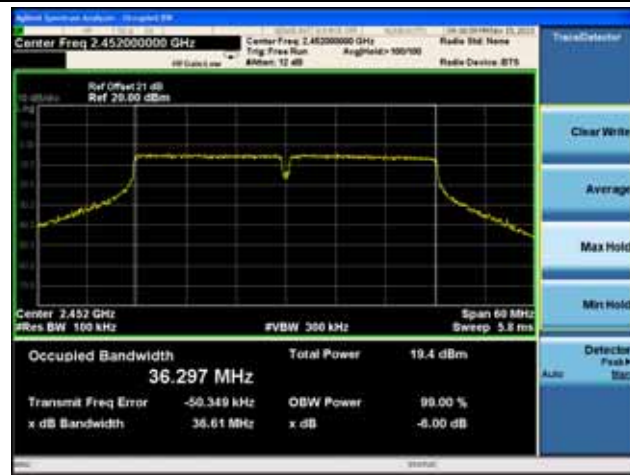
Channel 03 (2422MHz)



Channel 06 (2437MHz)

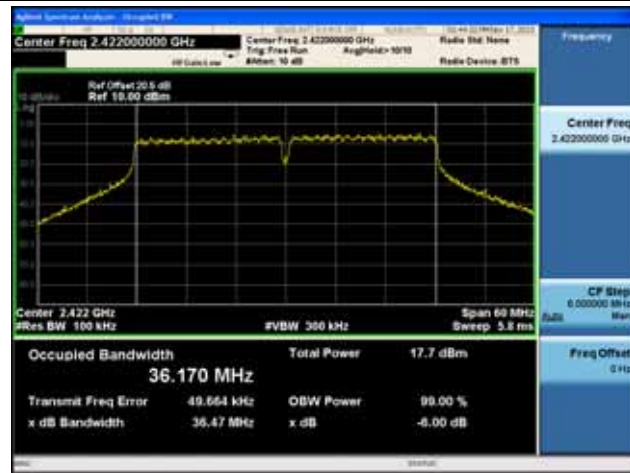


Channel 09 (2452MHz)



802.11n-HT40 6dB Bandwidth – Chain A / Chain A + B

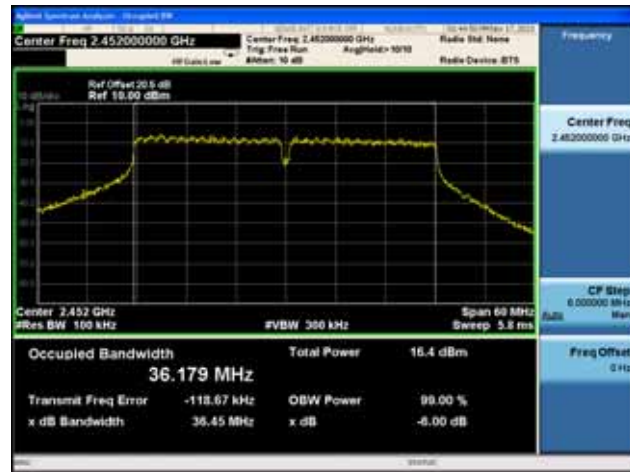
Channel 03 (2422MHz)



Channel 06 (2437MHz)

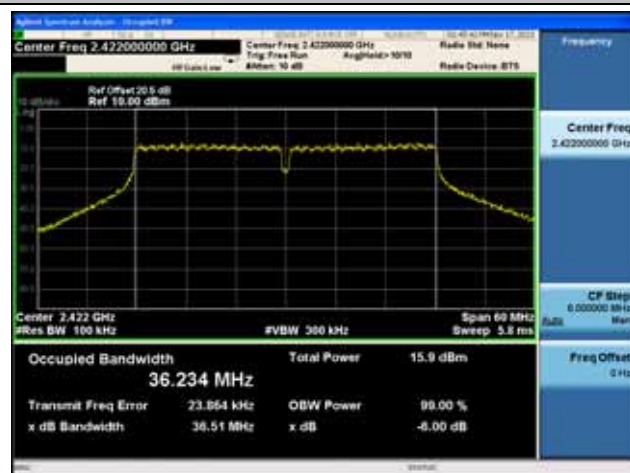


Channel 09 (2452MHz)

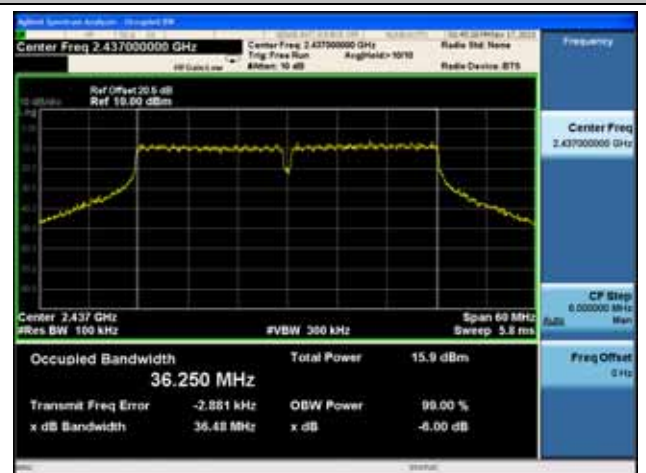


802.11n-HT40 6dB Bandwidth – Chain B / Chain A + B

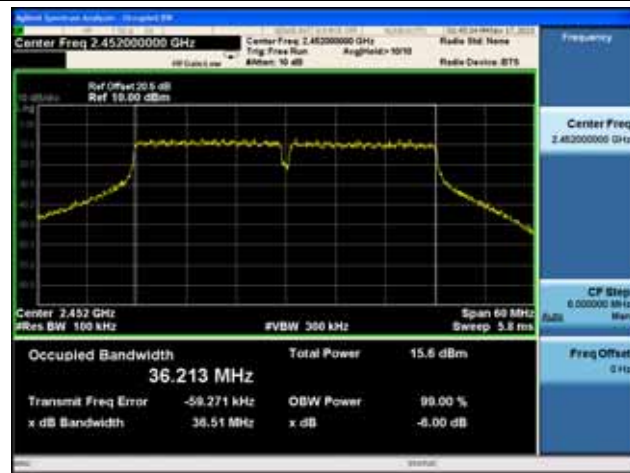
Channel 03 (2422MHz)



Channel 06 (2437MHz)

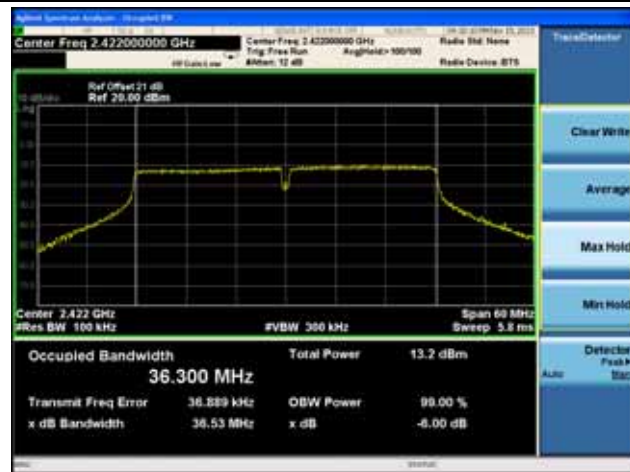


Channel 09 (2452MHz)

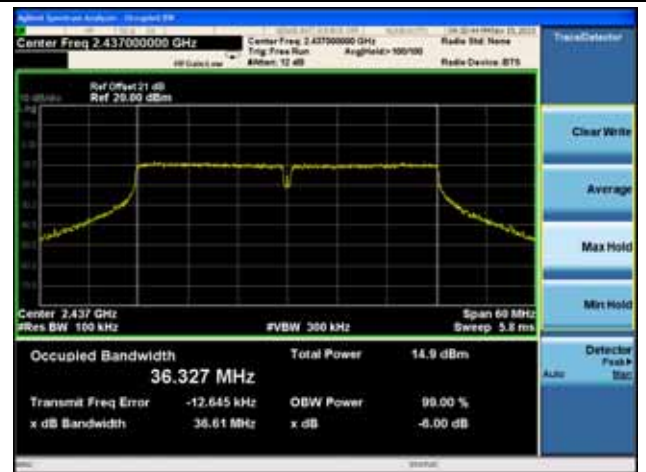


802.11n-HT40 6dB Bandwidth – Chain A / Chain A + B + C

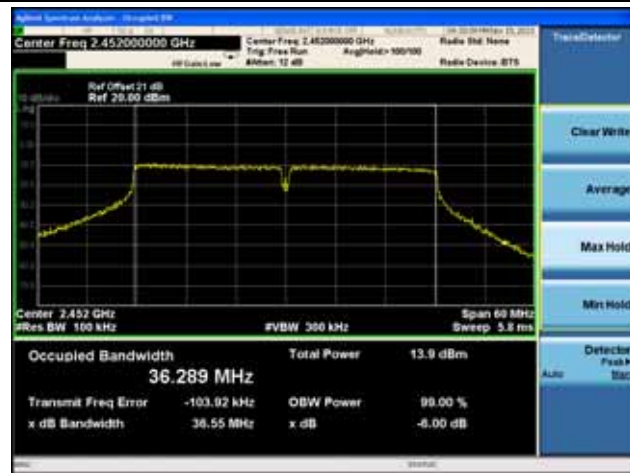
Channel 03 (2422MHz)



Channel 06 (2437MHz)

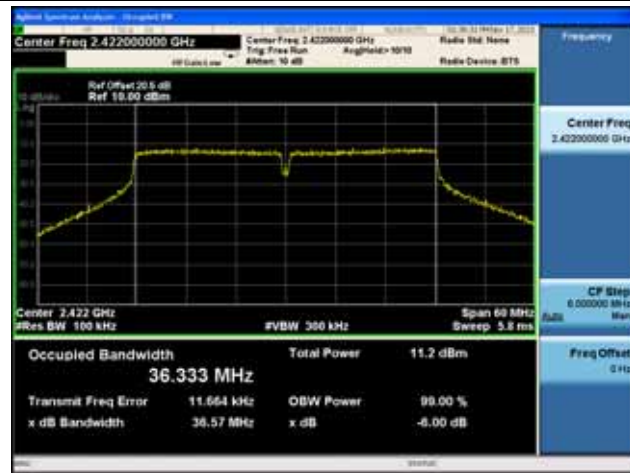


Channel 09 (2452MHz)



802.11n-HT40 6dB Bandwidth – Chain B / Chain A + B + C

Channel 03 (2422MHz)



Channel 06 (2437MHz)



Channel 09 (2452MHz)

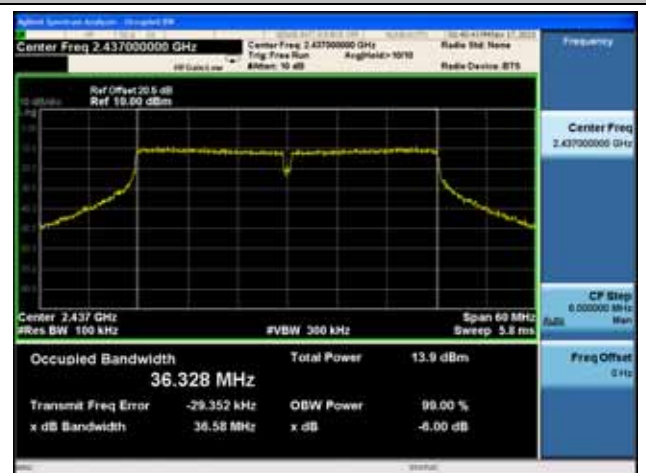


802.11n-HT40 6dB Bandwidth – Chain C / Chain A + B + C

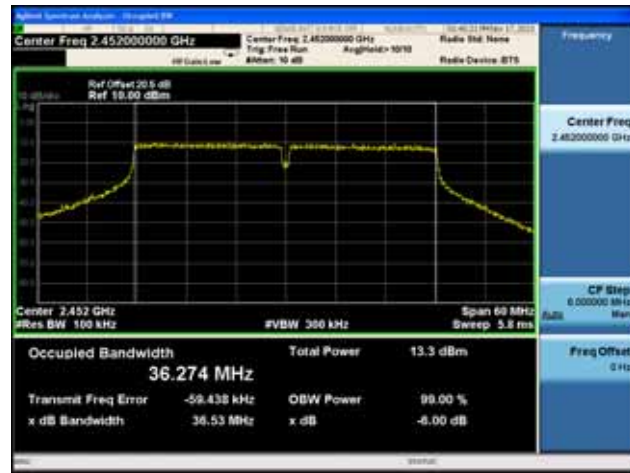
Channel 03 (2422MHz)



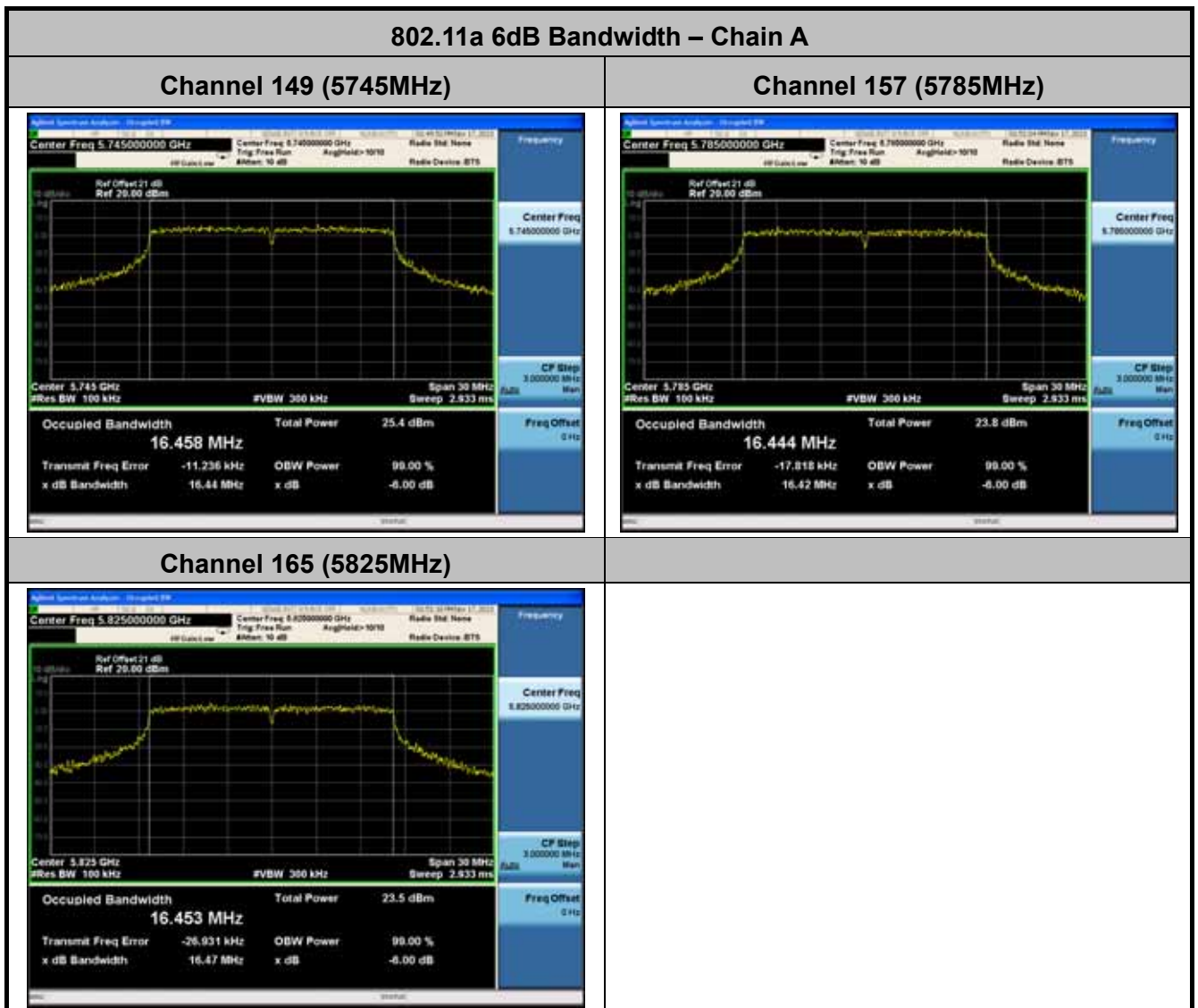
Channel 06 (2437MHz)



Channel 09 (2452MHz)



Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Chain A						
802.11a	6	149	5745	16.44	≥0.5	Pass
802.11a	6	157	5785	16.42	≥0.5	Pass
802.11a	6	165	5825	16.47	≥0.5	Pass
Chain B						
802.11a	6	149	5745	16.49	≥0.5	Pass
802.11a	6	157	5785	16.47	≥0.5	Pass
802.11a	6	165	5825	16.51	≥0.5	Pass
Chain C						
802.11a	6	149	5745	16.49	≥0.5	Pass
802.11a	6	157	5785	16.50	≥0.5	Pass
802.11a	6	165	5825	16.48	≥0.5	Pass



802.11a 6dB Bandwidth – Chain B

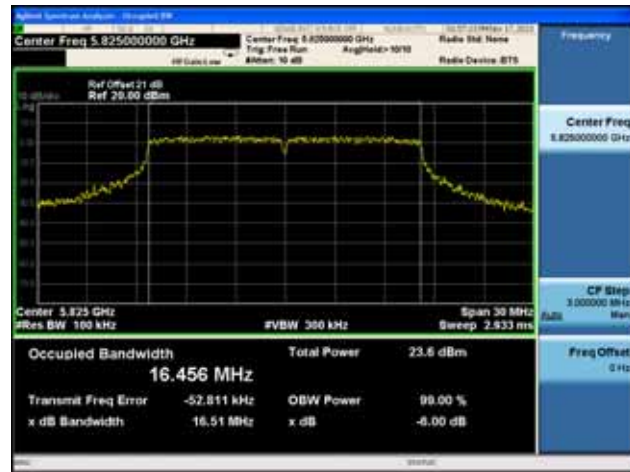
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

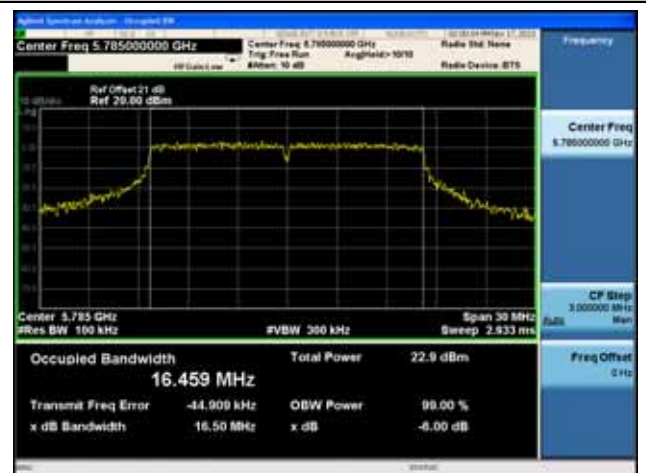


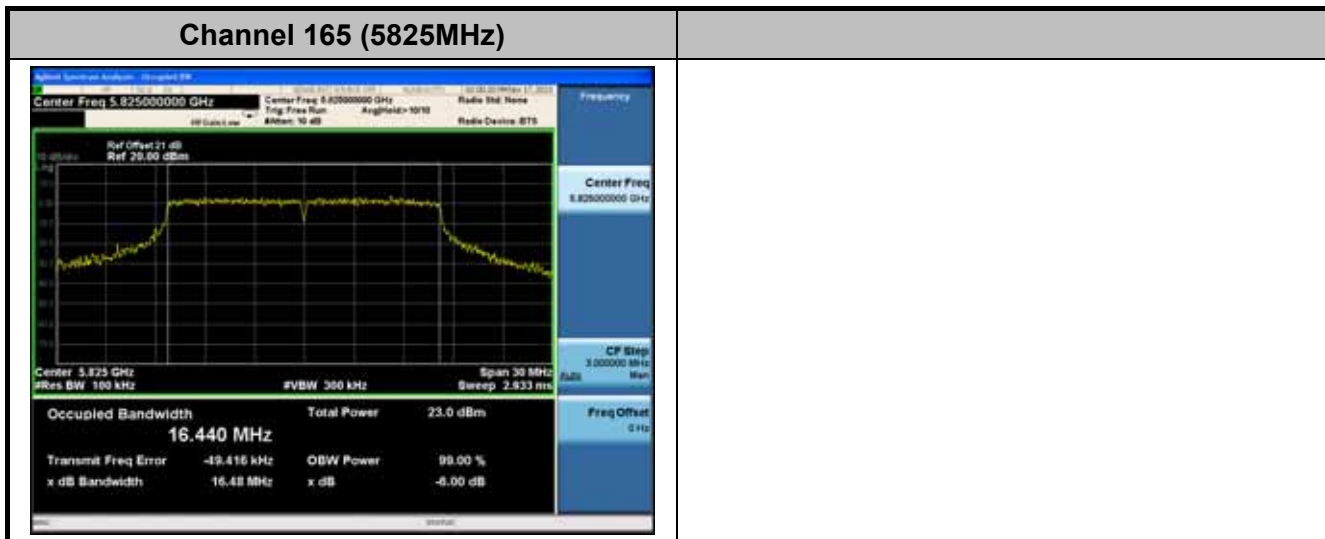
802.11a 6dB Bandwidth – Chain C

Channel 149 (5745MHz)

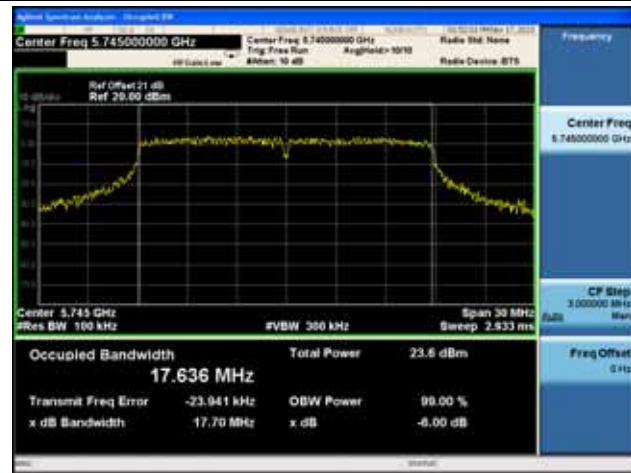
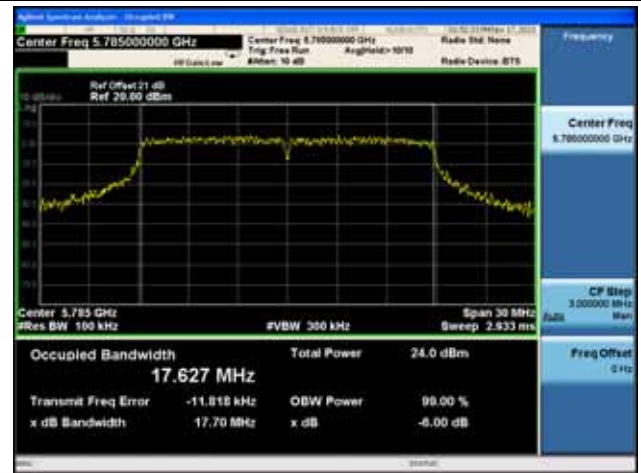


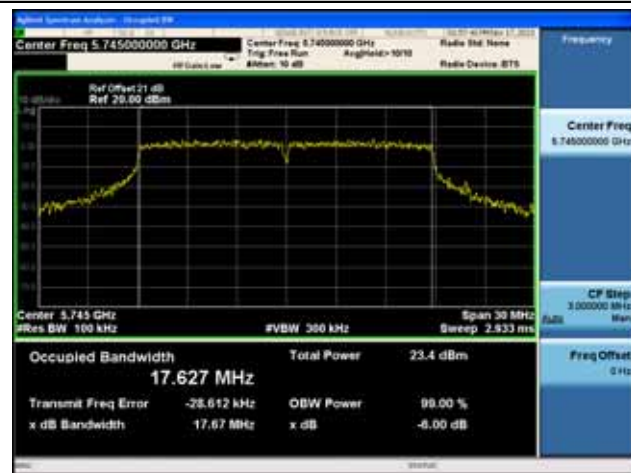
Channel 157 (5785MHz)





Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Chain A						
802.11n-HT20	6.5/7.2	149	5745	17.70	≥0.5	Pass
802.11n-HT20	6.5/7.2	157	5785	17.70	≥0.5	Pass
802.11n-HT20	6.5/7.2	165	5825	17.79	≥0.5	Pass
Chain B						
802.11n-HT20	6.5/7.2	149	5745	17.67	≥0.5	Pass
802.11n-HT20	6.5/7.2	157	5785	17.73	≥0.5	Pass
802.11n-HT20	6.5/7.2	165	5825	17.69	≥0.5	Pass
Chain C						
802.11n-HT20	6.5/7.2	149	5745	17.66	≥0.5	Pass
802.11n-HT20	6.5/7.2	157	5785	17.71	≥0.5	Pass
802.11n-HT20	6.5/7.2	165	5825	17.69	≥0.5	Pass
Chain A / Chain A + B						
802.11n-HT20	13/14.4	149	5745	17.65	≥0.5	Pass
802.11n-HT20	13/14.4	157	5785	17.68	≥0.5	Pass
802.11n-HT20	13/14.4	165	5825	17.71	≥0.5	Pass
Chain B / Chain A + B						
802.11n-HT20	13/14.4	149	5745	17.78	≥0.5	Pass
802.11n-HT20	13/14.4	157	5785	17.75	≥0.5	Pass
802.11n-HT20	13/14.4	165	5825	17.67	≥0.5	Pass
Chain A / Chain A + B + C						
802.11n-HT20	19.5/21.7	149	5745	17.73	≥0.5	Pass
802.11n-HT20	19.5/21.7	157	5785	17.74	≥0.5	Pass
802.11n-HT20	19.5/21.7	165	5825	17.68	≥0.5	Pass
Chain B / Chain A + B + C						
802.11n-HT20	19.5/21.7	149	5745	17.62	≥0.5	Pass
802.11n-HT20	19.5/21.7	157	5785	17.71	≥0.5	Pass
802.11n-HT20	19.5/21.7	165	5825	17.65	≥0.5	Pass
Chain C / Chain A + B + C						
802.11n-HT20	19.5/21.7	149	5745	17.64	≥0.5	Pass
802.11n-HT20	19.5/21.7	157	5785	17.68	≥0.5	Pass
802.11n-HT20	19.5/21.7	165	5825	17.68	≥0.5	Pass

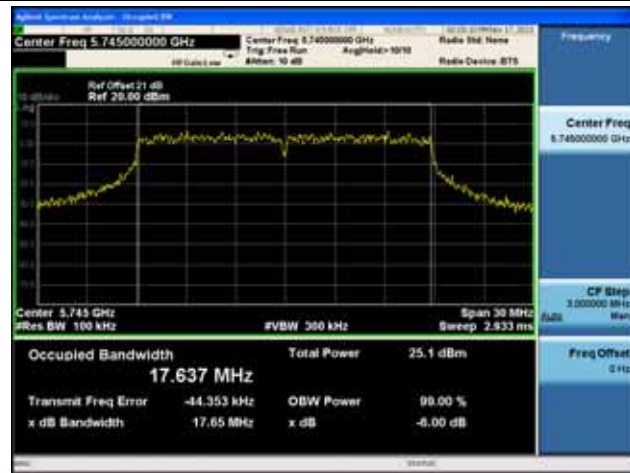
802.11n-HT20 6dB Bandwidth – Chain A
Channel 149 (5745MHz)

Channel 157 (5785MHz)

Channel 165 (5825MHz)

802.11n-HT20 6dB Bandwidth – Chain B
Channel 149 (5745MHz)

Channel 157 (5785MHz)


Channel 165 (5825MHz)	
<p>Center Freq 5.82500000 GHz</p> <p>Center Freq 5.82500000 GHz</p> <p>Occupied Bandwidth: 17.641 MHz</p> <p>Total Power: 23.3 dBm</p> <p>Transmit Freq Error: -55.670 kHz</p> <p>x dB Bandwidth: 17.69 MHz</p> <p>OBW Power: 99.00 %</p> <p>x dB: -6.00 dB</p>	
802.11n-HT20 6dB Bandwidth – Chain C	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
<p>Center Freq 5.74500000 GHz</p> <p>Center Freq 5.74500000 GHz</p> <p>Occupied Bandwidth: 17.615 MHz</p> <p>Total Power: 22.9 dBm</p> <p>Transmit Freq Error: -28.253 kHz</p> <p>x dB Bandwidth: 17.66 MHz</p> <p>OBW Power: 99.00 %</p> <p>x dB: -6.00 dB</p>	<p>Center Freq 5.78500000 GHz</p> <p>Center Freq 5.78500000 GHz</p> <p>Occupied Bandwidth: 17.642 MHz</p> <p>Total Power: 24.0 dBm</p> <p>Transmit Freq Error: -43.686 kHz</p> <p>x dB Bandwidth: 17.71 MHz</p> <p>OBW Power: 99.00 %</p> <p>x dB: -6.00 dB</p>
Channel 165 (5825MHz)	
<p>Center Freq 5.82500000 GHz</p> <p>Center Freq 5.82500000 GHz</p> <p>Occupied Bandwidth: 17.649 MHz</p> <p>Total Power: 23.1 dBm</p> <p>Transmit Freq Error: -41.003 kHz</p> <p>x dB Bandwidth: 17.69 MHz</p> <p>OBW Power: 99.00 %</p> <p>x dB: -6.00 dB</p>	

802.11n-HT20 6dB Bandwidth – Chain A / Chain A + B

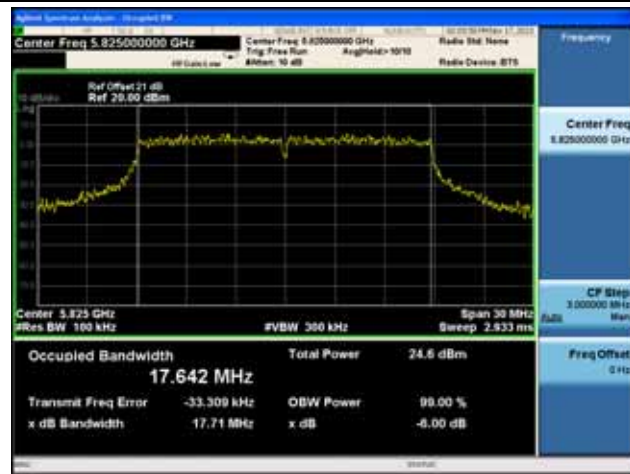
Channel 149 (5745MHz)



Channel 157 (5785MHz)

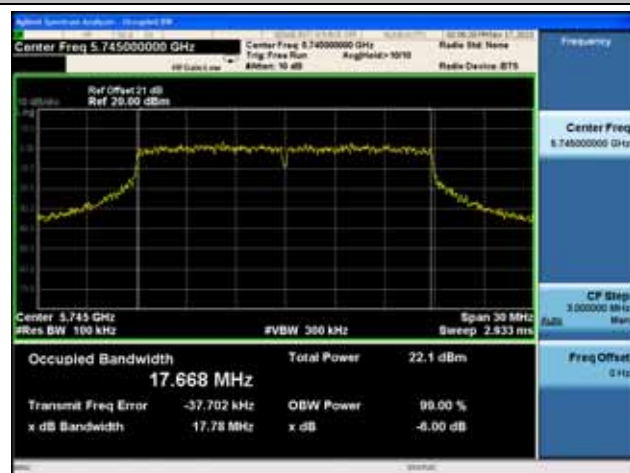


Channel 165 (5825MHz)



802.11n-HT20 6dB Bandwidth – Chain B / Chain A + B

Channel 149 (5745MHz)

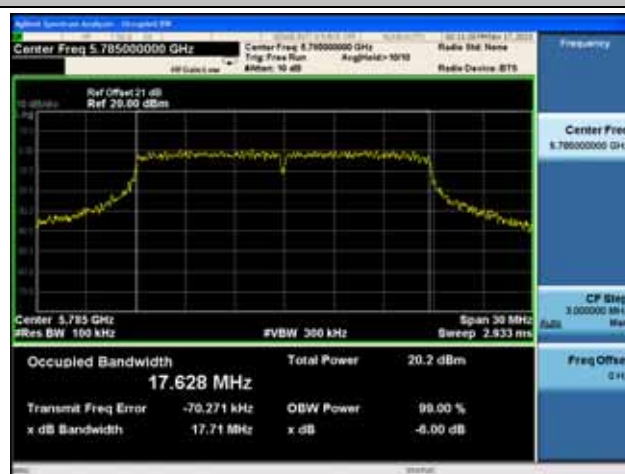
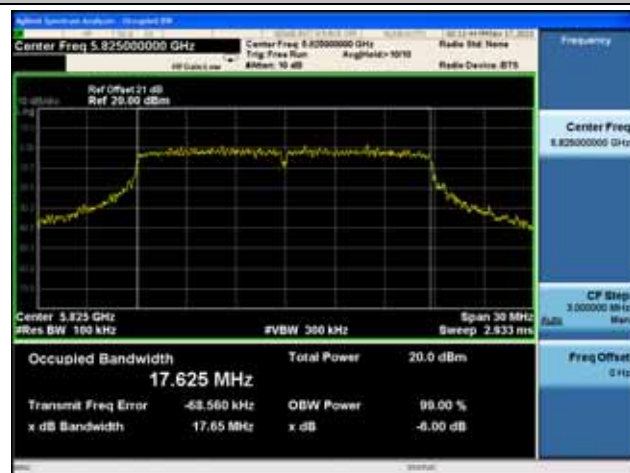
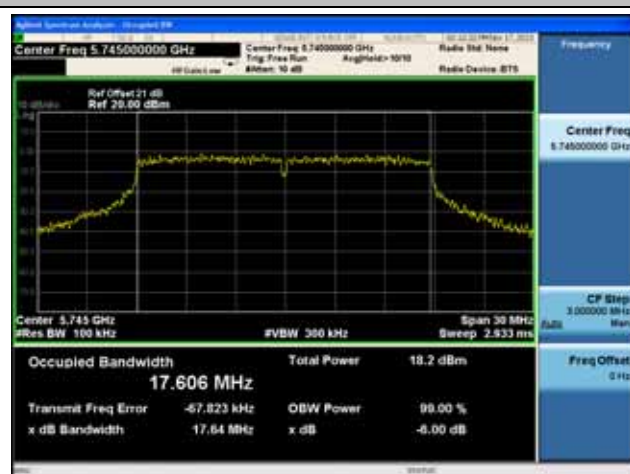
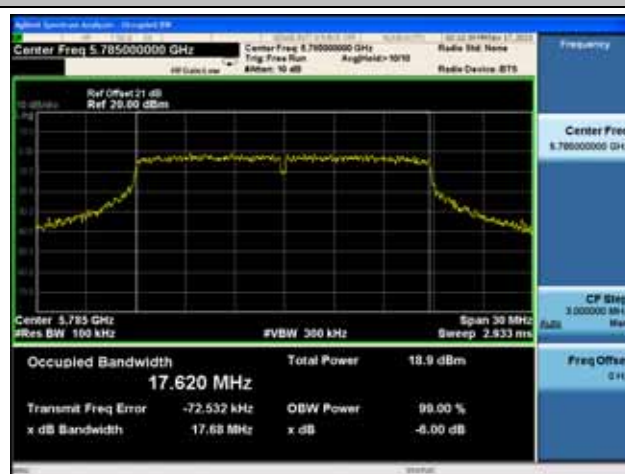


Channel 157 (5785MHz)



Channel 165 (5825MHz)	
<p>Channel 165 (5825MHz)</p> <p>Center Freq 5.82500000 GHz</p> <p>Occupied Bandwidth: 17.646 MHz</p> <p>Total Power: 23.2 dBm</p> <p>Transmit Freq Error: -53.809 kHz</p> <p>OBW Power: 99.00 %</p>	
802.11n-HT20 6dB Bandwidth – Chain A / Chain A + B + C	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
<p>Channel 149 (5745MHz)</p> <p>Center Freq 5.74500000 GHz</p> <p>Occupied Bandwidth: 17.642 MHz</p> <p>Total Power: 21.8 dBm</p> <p>Transmit Freq Error: -60.930 kHz</p> <p>OBW Power: 99.00 %</p>	<p>Channel 157 (5785MHz)</p> <p>Center Freq 5.78500000 GHz</p> <p>Occupied Bandwidth: 17.646 MHz</p> <p>Total Power: 21.8 dBm</p> <p>Transmit Freq Error: -53.035 kHz</p> <p>OBW Power: 99.00 %</p>
Channel 165 (5825MHz)	
<p>Channel 165 (5825MHz)</p> <p>Center Freq 5.82500000 GHz</p> <p>Occupied Bandwidth: 17.622 MHz</p> <p>Total Power: 21.8 dBm</p> <p>Transmit Freq Error: -52.471 kHz</p> <p>OBW Power: 99.00 %</p>	

802.11n-HT20 6dB Bandwidth – Chain B / Chain A + B + C
Channel 149 (5745MHz)

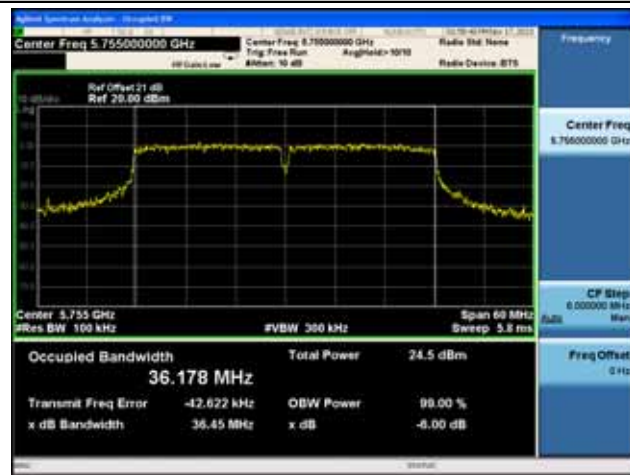
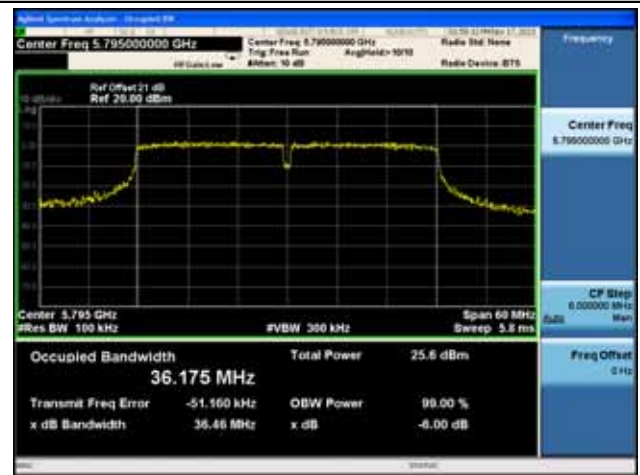
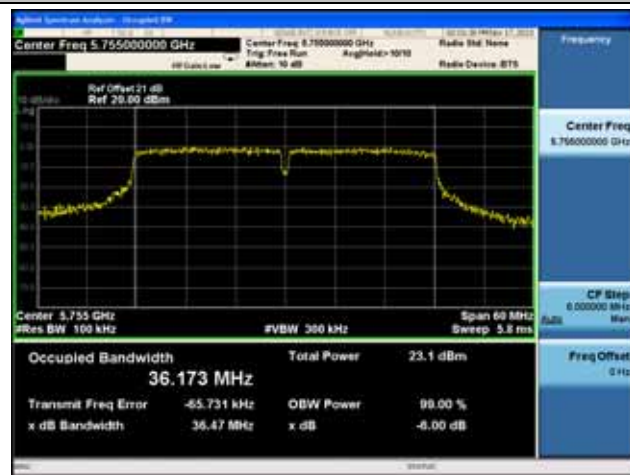
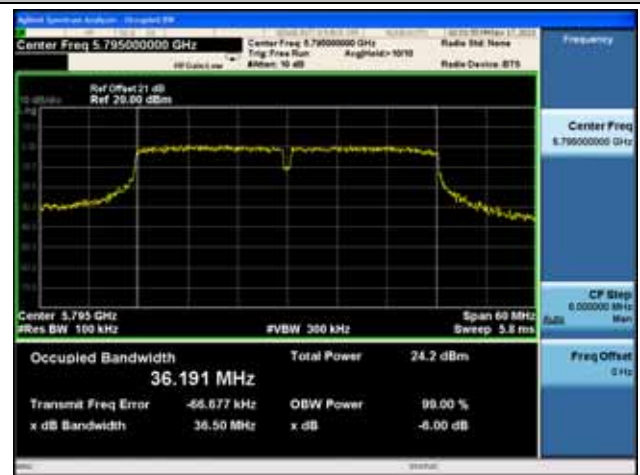
Channel 157 (5785MHz)

Channel 165 (5825MHz)

802.11n-HT20 6dB Bandwidth – Chain C / Chain A + B + C
Channel 149 (5745MHz)

Channel 157 (5785MHz)




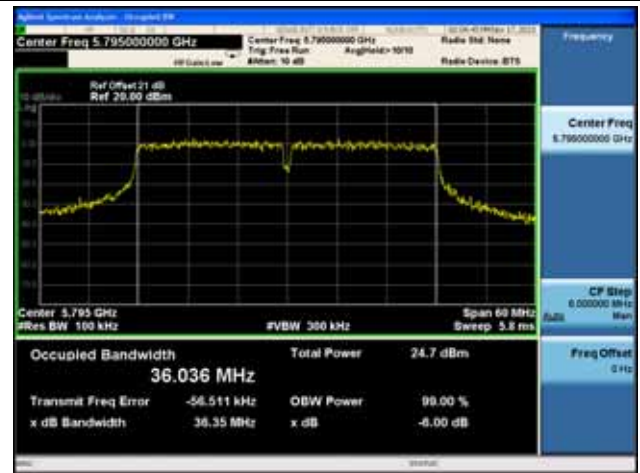
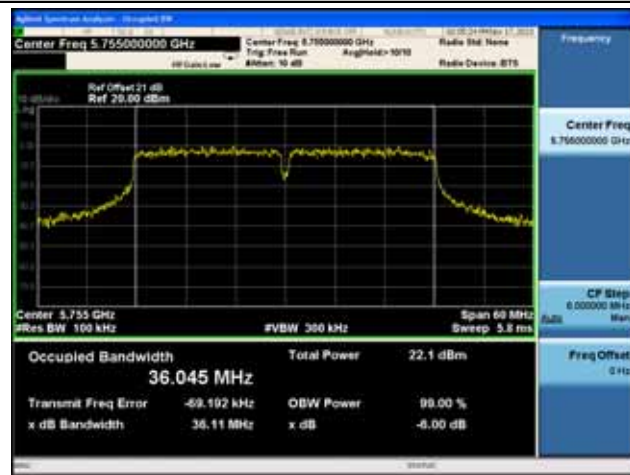
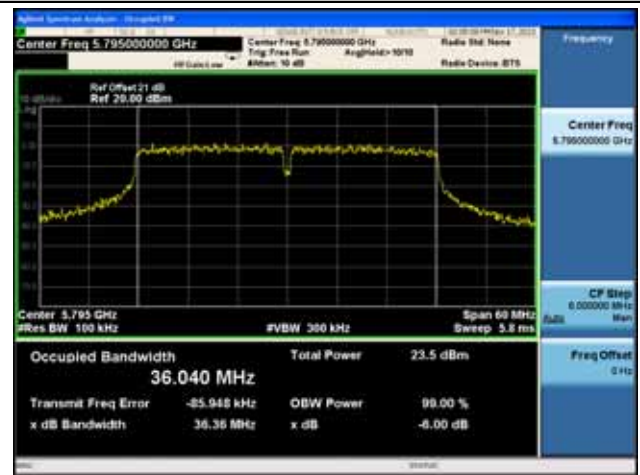
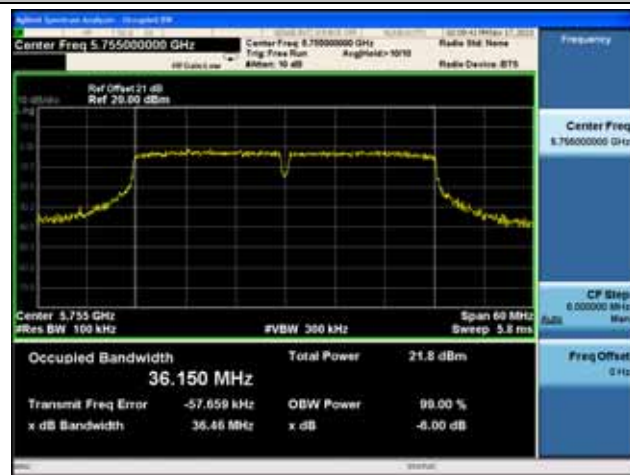
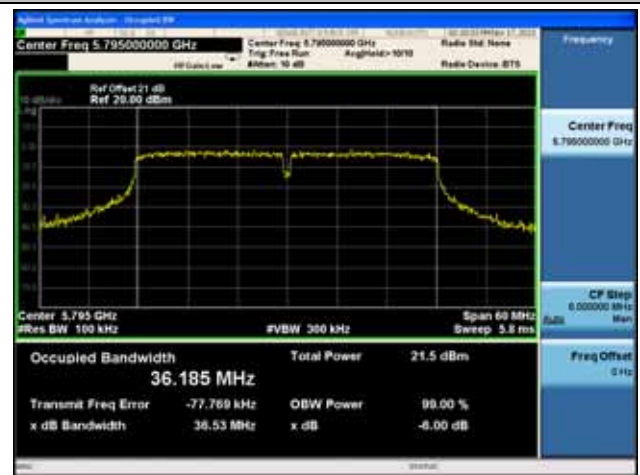
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Chain A						
802.11n-HT40	13.5/15	151	5755	36.46	≥0.5	Pass
802.11n-HT40	13.5/15	159	5795	36.53	≥0.5	Pass
Chain B						
802.11n-HT40	13.5/15	151	5755	36.45	≥0.5	Pass
802.11n-HT40	13.5/15	159	5795	36.46	≥0.5	Pass
Chain C						
802.11n-HT40	13.5/15	151	5755	36.47	≥0.5	Pass
802.11n-HT40	13.5/15	159	5795	36.50	≥0.5	Pass
Chain A / Chain A + B						
802.11n-HT40	27/30	151	5755	36.36	≥0.5	Pass
802.11n-HT40	27/30	159	5795	36.35	≥0.5	Pass
Chain B / Chain A + B						
802.11n-HT40	27/30	151	5755	36.11	≥0.5	Pass
802.11n-HT40	27/30	159	5795	36.36	≥0.5	Pass
Chain A / Chain A + B + C						
802.11n-HT40	40.5/45	151	5755	36.46	≥0.5	Pass
802.11n-HT40	40.5/45	159	5795	36.53	≥0.5	Pass
Chain B / Chain A + B + C						
802.11n-HT40	40.5/45	151	5755	36.45	≥0.5	Pass
802.11n-HT40	40.5/45	159	5795	36.41	≥0.5	Pass
Chain C / Chain A + B + C						
802.11n-HT40	40.5/45	151	5755	36.45	≥0.5	Pass
802.11n-HT40	40.5/45	159	5795	36.46	≥0.5	Pass

802.11n-HT40 6dB Bandwidth – Chain A
Channel 151 (5755MHz)

Channel 159 (5795MHz)

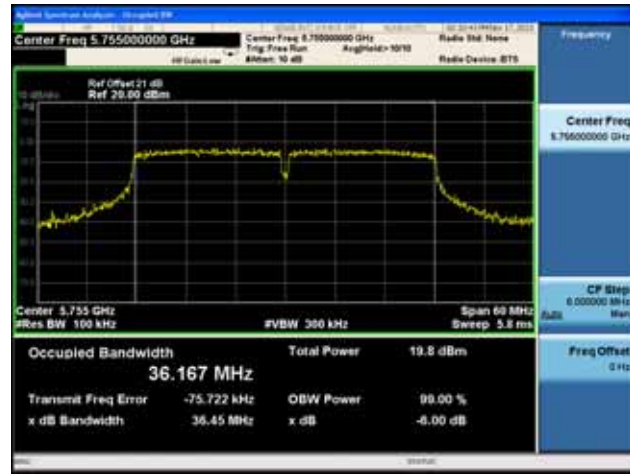
802.11n-HT40 6dB Bandwidth – Chain B
Channel 151 (5755MHz)

Channel 159 (5795MHz)

802.11n-HT40 6dB Bandwidth – Chain C
Channel 151 (5755MHz)

Channel 159 (5795MHz)


802.11n-HT40 6dB Bandwidth – Chain A / Chain A + B
Channel 151 (5755MHz)

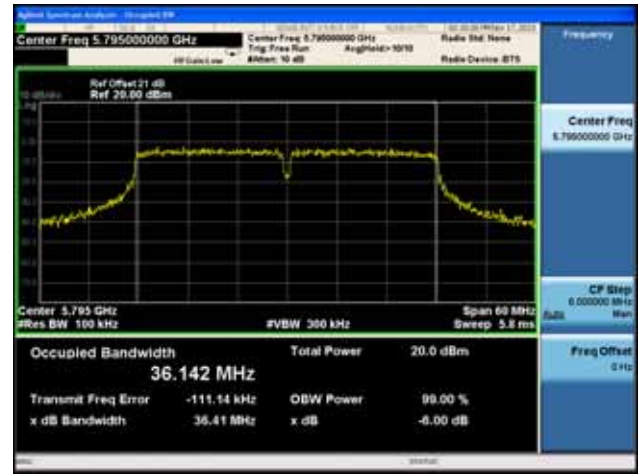
Channel 159 (5795MHz)

802.11n-HT40 6dB Bandwidth – Chain B / Chain A + B
Channel 151 (5755MHz)

Channel 159 (5795MHz)

802.11n-HT40 6dB Bandwidth – Chain A / Chain A + B + C
Channel 151 (5755MHz)

Channel 159 (5795MHz)


802.11n-HT40 6dB Bandwidth – Chain B / Chain A + B + C

Channel 151 (5755MHz)

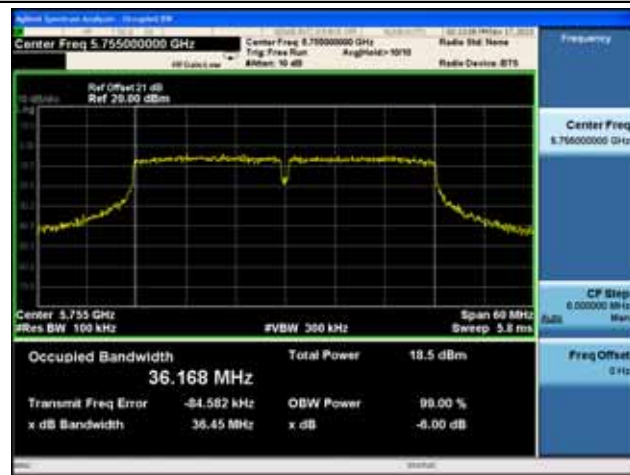


Channel 159 (5795MHz)

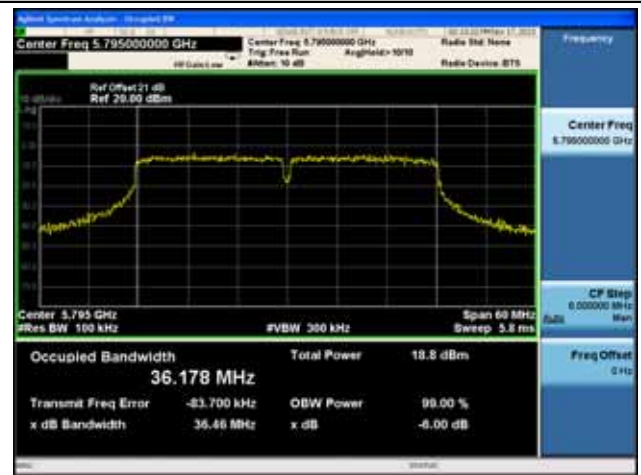


802.11n-HT40 6dB Bandwidth – Chain C / Chain A + B + C

Channel 151 (5755MHz)



Channel 159 (5795MHz)



7.3. Output Power Measurement

7.3.1. Test Limit

The maximum out power shall be less 1 Watt (30dBm).

Systems operating in the 2400-2483.5MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

$$\text{Limit (dBm)} = 30 - (13 - 6) / 3 = 27.7 \text{ dBm}$$

Systems operating in the 5725-5850MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter peak output power.

7.3.2. Test Procedure Used

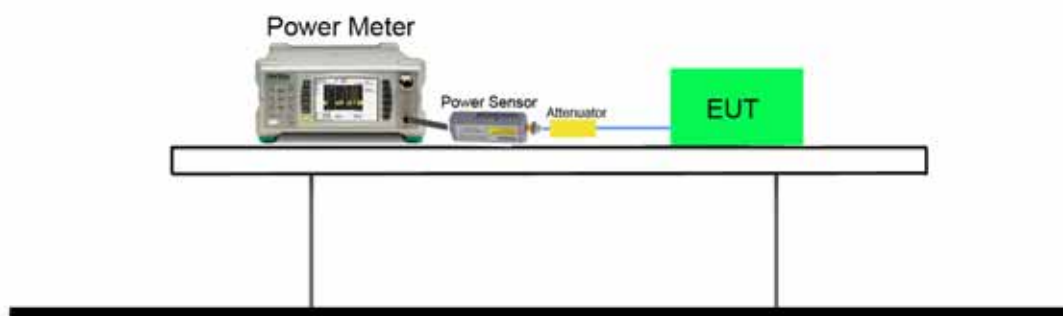
KDB 558074 D01v03r01 - Section 9.1.3 PKPM1 Peak Power Method (for signals with BW \leq 50MHz)

7.3.3. Test Setting

Method PKPM1 (Peak Power Measurement of Signals with DTS BW \leq 50MHz)

Peak power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The pulse sensor employs a VBW = 50MHz so this method was only used for signals whose DTS bandwidth was less than or equal to 50MHz.

7.3.4. Test Setup



7.3.5. Test Result of Peak Output Power

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (yellow marker) for final test of each channel.

MCS Index for 802.11n	N _{Tx}	Data Rate (Mbps)						
		802.11b	802.11g	802.11a	20MHz Bandwidth		40MHz Bandwidth	
					800ns GI	400ns GI	800ns GI	400ns GI
0	1	1	6	6	6.5	7.2	13.5	15.0
1	1	2	9	9	13.0	14.4	27.0	30.0
2	1	5.5	12	12	19.5	21.7	40.5	45.0
3	1	11	18	18	26.0	28.9	54.0	60.0
4	1	---	24	24	39.0	43.3	81.0	90.0
5	1	---	36	36	52.0	57.8	108.0	120.0
6	1	---	48	48	58.5	65.0	121.5	135.0
7	1	---	54	54	65.0	72.2	135.0	150.0
8	2	---	---	---	13.0	14.4	27.0	30.0
9	2	---	---	---	26.0	28.9	54.0	60.0
10	2	---	---	---	39.0	43.3	81.0	90.0
11	2	---	---	---	52.0	57.8	108.0	120.0
12	2	---	---	---	78.0	86.7	162.0	180.0
13	2	---	---	---	104.0	115.6	216.0	240.0
14	2	---	---	---	117.0	130.0	243.0	270.0
15	2	---	---	---	130.0	144.0	270.0	300.0
16	3	---	---	---	19.5	21.7	40.5	45.0
17	3	---	---	---	39.0	43.3	81.0	90.0
18	3	---	---	---	58.5	65.0	121.5	135.0
19	3	---	---	---	78.0	86.7	162.0	180.0
20	3	---	---	---	117.0	130.0	243.0	270.0
21	3	---	---	---	156.0	173.3	324.0	360.0
22	3	---	---	---	175.5	195.0	364.5	405.0
23	3	---	---	---	195.0	216.7	405.0	450.0

Output power at various data rates for Chain A:

Test Mode	Bandwidth	Frequency (MHz)	Channel	Data Rate (Mbps)	Peak Power (dBm)
802.11b	20	2437	6	1	15.40
				5.5	15.37
				11	15.35
802.11g	20	2437	6	6	24.29
				24	24.20
				54	24.13
802.11n	20	2437	6	6.5/7.2(MCS0)	24.65
				39/43.3(MCS4)	24.48
				65/72.2(MCS7)	24.47
802.11n	40	2437	6	13.5/15(MCS0)	23.28
				81/90(MCS4)	23.24
				135/150(MCS7)	23.22
802.11a	20	5785	157	6	29.69
				24	29.56
				54	29.55
802.11n	20	5785	157	6.5/7.2(MCS0)	29.88
				39/43.3(MCS4)	29.84
				65/72.2(MCS7)	29.80
802.11n	40	5795	159	13.5/15(MCS0)	29.32
				81/90(MCS4)	29.10
				135/150(MCS7)	29.06

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A Peak Power (dBm)	Chain B Peak Power (dBm)	Chain C Peak Power (dBm)	Total Peak Power (dBm)	Limit (dBm)	Result
11b	1	1	1	2412	17.05	--	--	17.05	≤27.7	Pass
11b	1	1	6	2437	15.40	--	--	15.40	≤27.7	Pass
11b	1	1	11	2462	15.65	--	--	15.65	≤27.7	Pass
11b	1	1	1	2412	--	17.40	--	17.40	≤27.7	Pass
11b	1	1	6	2437	--	18.67	--	18.67	≤27.7	Pass
11b	1	1	11	2462	--	18.99	--	18.99	≤27.7	Pass
11b	1	1	1	2412	--	--	17.42	17.42	≤27.7	Pass
11b	1	1	6	2437	--	--	19.57	19.57	≤27.7	Pass
11b	1	1	11	2462	--	--	19.96	19.96	≤27.7	Pass
11g	1	6	1	2412	23.87	--	--	23.87	≤27.7	Pass
11g	1	6	6	2437	24.29	--	--	24.29	≤27.7	Pass
11g	1	6	11	2462	23.22	--	--	23.22	≤27.7	Pass
11g	1	6	1	2412	--	22.75	--	22.75	≤27.7	Pass
11g	1	6	6	2437	--	22.07	--	22.07	≤27.7	Pass
11g	1	6	11	2462	--	20.68	--	20.68	≤27.7	Pass
11g	1	6	1	2412	--	--	22.02	22.02	≤27.7	Pass
11g	1	6	6	2437	--	--	23.29	23.29	≤27.7	Pass
11g	1	6	11	2462	--	--	20.54	20.54	≤27.7	Pass
11n-HT20	1	6.5/7.2	1	2412	24.42	--	--	24.42	≤27.7	Pass
11n-HT20	1	6.5/7.2	6	2437	24.65	--	--	24.65	≤27.7	Pass
11n-HT20	1	6.5/7.2	11	2462	23.26	--	--	23.26	≤27.7	Pass
11n-HT20	1	6.5/7.2	1	2412	--	19.67	--	19.67	≤27.7	Pass
11n-HT20	1	6.5/7.2	6	2437	--	20.20	--	20.20	≤27.7	Pass
11n-HT20	1	6.5/7.2	11	2462	--	19.62	--	19.62	≤27.7	Pass
11n-HT20	1	6.5/7.2	1	2412	--	--	21.09	21.09	≤27.7	Pass
11n-HT20	1	6.5/7.2	6	2437	--	--	22.20	22.20	≤27.7	Pass
11n-HT20	1	6.5/7.2	11	2462	--	--	21.63	21.63	≤27.7	Pass
11n-HT20	2	13/14.4	1	2412	21.43	20.39	--	23.95	≤27.7	Pass
11n-HT20	2	13/14.4	6	2437	21.02	20.47	--	23.76	≤27.7	Pass
11n-HT20	2	13/14.4	11	2462	20.12	19.68	--	22.92	≤27.7	Pass
11n-HT20	3	19.5/21.7	1	2412	19.97	18.59	19.10	24.03	≤27.7	Pass
11n-HT20	3	19.5/21.7	6	2437	19.20	18.70	19.71	23.99	≤27.7	Pass
11n-HT20	3	19.5/21.7	11	2462	17.25	16.57	17.05	21.74	≤27.7	Pass

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A Peak Power (dBm)	Chain B Peak Power (dBm)	Chain C Peak Power (dBm)	Total Peak Power (dBm)	Limit (dBm)	Result
11n-HT40	1	13.5/15	3	2422	23.47	--	--	23.47	≤27.7	Pass
11n-HT40	1	13.5/15	6	2437	23.28	--	--	23.28	≤27.7	Pass
11n-HT40	1	13.5/15	9	2452	19.87	--	--	19.87	≤27.7	Pass
11n-HT40	1	13.5/15	3	2422	--	19.01	--	19.01	≤27.7	Pass
11n-HT40	1	13.5/15	6	2437	--	19.56	--	19.56	≤27.7	Pass
11n-HT40	1	13.5/15	9	2452	--	19.29	--	19.29	≤27.7	Pass
11n-HT40	1	13.5/15	3	2422	--	--	19.73	19.73	≤27.7	Pass
11n-HT40	1	13.5/15	6	2437	--	--	20.41	20.41	≤27.7	Pass
11n-HT40	1	13.5/15	9	2452	--	--	19.95	19.95	≤27.7	Pass
11n-HT40	2	27/30	3	2422	19.52	17.54	--	21.65	≤27.7	Pass
11n-HT40	2	27/30	6	2437	18.95	17.83	--	21.44	≤27.7	Pass
11n-HT40	2	27/30	9	2452	17.84	17.61	--	20.74	≤27.7	Pass
11n-HT40	3	40.5/45	3	2422	13.73	11.42	13.01	17.59	≤27.7	Pass
11n-HT40	3	40.5/45	6	2437	14.63	14.12	14.96	19.35	≤27.7	Pass
11n-HT40	3	40.5/45	9	2452	15.37	14.24	14.38	19.46	≤27.7	Pass

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A Peak Power (dBm)	Chain B Peak Power (dBm)	Chain C Peak Power (dBm)	Total Peak Power (dBm)	Limit (dBm)	Result
11a	1	6	149	5745	29.60	--	--	29.60	≤30	Pass
11a	1	6	157	5785	29.69	--	--	29.69	≤30	Pass
11a	1	6	165	5825	29.23	--	--	29.23	≤30	Pass
11a	1	6	149	5745	--	28.05	--	28.05	≤30	Pass
11a	1	6	157	5785	--	29.28	--	29.28	≤30	Pass
11a	1	6	165	5825	--	28.11	--	28.11	≤30	Pass
11a	1	6	149	5745	--	--	26.95	26.95	≤30	Pass
11a	1	6	157	5785	--	--	27.75	27.75	≤30	Pass
11a	1	6	165	5825	--	--	27.02	27.02	≤30	Pass
11n-HT20	1	6.5/7.2	149	5745	29.16	--	--	29.16	≤30	Pass
11n-HT20	1	6.5/7.2	157	5785	29.88	--	--	29.88	≤30	Pass
11n-HT20	1	6.5/7.2	165	5825	29.82	--	--	29.82	≤30	Pass

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A Peak Power (dBm)	Chain B Peak Power (dBm)	Chain C Peak Power (dBm)	Total Peak Power (dBm)	Limit (dBm)	Result
11n-HT20	1	6.5/7.2	149	5745	--	27.82	--	27.82	≤30	Pass
11n-HT20	1	6.5/7.2	157	5785	--	29.16	--	29.16	≤30	Pass
11n-HT20	1	6.5/7.2	165	5825	--	27.98	--	27.98	≤30	Pass
11n-HT20	1	6.5/7.2	149	5745	--	--	26.99	26.99	≤30	Pass
11n-HT20	1	6.5/7.2	157	5785	--	--	27.67	27.67	≤30	Pass
11n-HT20	1	6.5/7.2	165	5825	--	--	26.92	26.92	≤30	Pass
11n-HT20	2	13/14.4	149	5745	26.58	25.24	--	28.97	≤30	Pass
11n-HT20	2	13/14.4	157	5785	26.13	25.41	--	28.80	≤30	Pass
11n-HT20	2	13/14.4	165	5825	26.16	25.61	--	28.90	≤30	Pass
11n-HT20	3	19.5/21.7	149	5745	24.65	23.60	22.12	28.35	≤30	Pass
11n-HT20	3	19.5/21.7	157	5785	24.70	24.07	22.30	28.57	≤30	Pass
11n-HT20	3	19.5/21.7	165	5825	24.92	23.54	22.07	28.44	≤30	Pass
11n-HT40	1	13.5/15	151	5755	29.32	--	--	29.32	≤30	Pass
11n-HT40	1	13.5/15	159	5795	29.90	--	--	29.90	≤30	Pass
11n-HT40	1	13.5/15	151	5755	--	28.42	--	28.42	≤30	Pass
11n-HT40	1	13.5/15	159	5795	--	29.85	--	29.85	≤30	Pass
11n-HT40	1	13.5/15	151	5755	--	--	26.42	26.42	≤30	Pass
11n-HT40	1	13.5/15	159	5795	--	--	27.39	27.39	≤30	Pass
11n-HT40	2	27/30	151	5755	25.42	24.34	--	27.92	≤30	Pass
11n-HT40	2	27/30	159	5795	26.02	25.67	--	28.86	≤30	Pass
11n-HT40	3	40.5/45	151	5755	24.90	23.71	22.69	28.63	≤30	Pass
11n-HT40	3	40.5/45	159	5795	25.15	24.17	22.63	28.87	≤30	Pass

7.3.6. Test Result of Average Output Power (Reporting Only)

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A Average Power (dBm)	Chain B Average Power (dBm)	Chain C Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)	Result
11b	1	1	1	2412	14.60	--	--	14.60	≤27.7	Pass
11b	1	1	6	2437	12.85	--	--	12.85	≤27.7	Pass
11b	1	1	11	2462	13.09	--	--	13.09	≤27.7	Pass
11b	1	1	1	2412	--	15.14	--	15.14	≤27.7	Pass
11b	1	1	6	2437	--	16.11	--	16.11	≤27.7	Pass
11b	1	1	11	2462	--	16.67	--	16.67	≤27.7	Pass
11b	1	1	1	2412	--	--	15.01	15.01	≤27.7	Pass
11b	1	1	6	2437	--	--	17.24	17.24	≤27.7	Pass
11b	1	1	11	2462	--	--	17.64	17.64	≤27.7	Pass
11g	1	6	1	2412	14.53	--	--	14.53	≤27.7	Pass
11g	1	6	6	2437	14.97	--	--	14.97	≤27.7	Pass
11g	1	6	11	2462	13.80	--	--	13.80	≤27.7	Pass
11g	1	6	1	2412	--	13.85	--	13.85	≤27.7	Pass
11g	1	6	6	2437	--	14.26	--	14.26	≤27.7	Pass
11g	1	6	11	2462	--	12.84	--	12.84	≤27.7	Pass
11g	1	6	1	2412	--	--	14.42	14.42	≤27.7	Pass
11g	1	6	6	2437	--	--	15.58	15.58	≤27.7	Pass
11g	1	6	11	2462	--	--	12.93	12.93	≤27.7	Pass
11n-HT20	1	6.5/7.2	1	2412	15.04	--	--	15.04	≤27.7	Pass
11n-HT20	1	6.5/7.2	6	2437	15.18	--	--	15.18	≤27.7	Pass
11n-HT20	1	6.5/7.2	11	2462	13.93	--	--	13.93	≤27.7	Pass
11n-HT20	1	6.5/7.2	1	2412	--	11.84	--	11.84	≤27.7	Pass
11n-HT20	1	6.5/7.2	6	2437	--	12.20	--	12.20	≤27.7	Pass
11n-HT20	1	6.5/7.2	11	2462	--	11.73	--	11.73	≤27.7	Pass
11n-HT20	1	6.5/7.2	1	2412	--	--	13.32	13.32	≤27.7	Pass
11n-HT20	1	6.5/7.2	6	2437	--	--	14.49	14.49	≤27.7	Pass
11n-HT20	1	6.5/7.2	11	2462	--	--	13.91	13.91	≤27.7	Pass
11n-HT20	2	13/14.4	1	2412	11.92	10.68	--	14.35	≤27.7	Pass
11n-HT20	2	13/14.4	6	2437	11.52	10.85	--	14.21	≤27.7	Pass
11n-HT20	2	13/14.4	11	2462	10.65	9.98	--	13.34	≤27.7	Pass
11n-HT20	3	19.5/21.7	1	2412	10.63	9.28	9.75	14.69	≤27.7	Pass

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A Average Power (dBm)	Chain B Average Power (dBm)	Chain C Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)	Result
11n-HT20	3	19.5/21.7	6	2437	9.98	9.38	10.46	14.73	≤27.7	Pass
11n-HT20	3	19.5/21.7	11	2462	7.95	7.16	7.68	12.38	≤27.7	Pass
11n-HT40	1	13.5/15	3	2422	14.09	--	--	14.09	≤27.7	Pass
11n-HT40	1	13.5/15	6	2437	13.92	--	--	13.92	≤27.7	Pass
11n-HT40	1	13.5/15	9	2452	10.56	--	--	10.56	≤27.7	Pass
11n-HT40	1	13.5/15	3	2422	--	11.08	--	11.08	≤27.7	Pass
11n-HT40	1	13.5/15	6	2437	--	11.59	--	11.59	≤27.7	Pass
11n-HT40	1	13.5/15	9	2452	--	11.32	--	11.32	≤27.7	Pass
11n-HT40	1	13.5/15	3	2422	--	--	11.84	11.84	≤27.7	Pass
11n-HT40	1	13.5/15	6	2437	--	--	12.48	12.48	≤27.7	Pass
11n-HT40	1	13.5/15	9	2452	--	--	12.05	12.05	≤27.7	Pass
11n-HT40	2	27/30	3	2422	10.18	8.09	--	12.27	≤27.7	Pass
11n-HT40	2	27/30	6	2437	9.60	8.35	--	12.03	≤27.7	Pass
11n-HT40	2	27/30	9	2452	8.43	8.17	--	11.31	≤27.7	Pass
11n-HT40	3	40.5/45	3	2422	4.37	2.83	3.71	8.45	≤27.7	Pass
11n-HT40	3	40.5/45	6	2437	5.18	4.73	5.73	10.00	≤27.7	Pass
11n-HT40	3	40.5/45	9	2452	5.94	4.85	4.99	10.06	≤27.7	Pass

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A Average Power (dBm)	Chain B Average Power (dBm)	Chain C Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)	Result
11a	1	6	149	5745	19.98	--	--	19.98	≤30	Pass
11a	1	6	157	5785	19.85	--	--	19.85	≤30	Pass
11a	1	6	165	5825	19.04	--	--	19.04	≤30	Pass
11a	1	6	149	5745	--	18.44	--	18.44	≤30	Pass
11a	1	6	157	5785	--	19.76	--	19.76	≤30	Pass
11a	1	6	165	5825	--	18.54	--	18.54	≤30	Pass
11a	1	6	149	5745	--	--	17.14	17.14	≤30	Pass
11a	1	6	157	5785	--	--	18.19	18.19	≤30	Pass
11a	1	6	165	5825	--	--	17.25	17.25	≤30	Pass
11n-HT20	1	6.5/7.2	149	5745	19.44	--	--	19.44	≤30	Pass

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A Average Power (dBm)	Chain B Average Power (dBm)	Chain C Average Power (dBm)	Total Average Power (dBm)	Limit (dBm)	Result
11n-HT20	1	6.5/7.2	157	5785	19.84	--	--	19.84	≤30	Pass
11n-HT20	1	6.5/7.2	165	5825	19.80	--	--	19.80	≤30	Pass
11n-HT20	1	6.5/7.2	149	5745	--	18.12	--	18.12	≤30	Pass
11n-HT20	1	6.5/7.2	157	5785	--	19.37	--	19.37	≤30	Pass
11n-HT20	1	6.5/7.2	165	5825	--	18.32	--	18.32	≤30	Pass
11n-HT20	1	6.5/7.2	149	5745	--	--	17.06	17.06	≤30	Pass
11n-HT20	1	6.5/7.2	157	5785	--	--	18.10	18.10	≤30	Pass
11n-HT20	1	6.5/7.2	165	5825	--	--	17.17	17.17	≤30	Pass
11n-HT20	2	13/14.4	149	5745	16.22	15.4	--	18.84	≤30	Pass
11n-HT20	2	13/14.4	157	5785	16.10	15.49	--	18.82	≤30	Pass
11n-HT20	2	13/14.4	165	5825	16.08	15.21	--	18.68	≤30	Pass
11n-HT20	3	19.5/21.7	149	5745	14.90	13.56	12.10	18.44	≤30	Pass
11n-HT20	3	19.5/21.7	157	5785	14.86	14.63	12.32	18.85	≤30	Pass
11n-HT20	3	19.5/21.7	165	5825	14.54	13.41	12.32	18.29	≤30	Pass
11n-HT40	1	13.5/15	151	5755	19.67	--	--	19.67	≤30	Pass
11n-HT40	1	13.5/15	159	5795	19.77	--	--	19.77	≤30	Pass
11n-HT40	1	13.5/15	151	5755	--	18.64	--	18.64	≤30	Pass
11n-HT40	1	13.5/15	159	5795	--	19.88	--	19.88	≤30	Pass
11n-HT40	1	13.5/15	151	5755	--	--	16.96	16.96	≤30	Pass
11n-HT40	1	13.5/15	159	5795	--	--	18.40	18.40	≤30	Pass
11n-HT40	2	27/30	151	5755	15.46	14.56	--	18.04	≤30	Pass
11n-HT40	2	27/30	159	5795	16.19	15.89	--	19.05	≤30	Pass
11n-HT40	3	40.5/45	151	5755	15.03	13.60	12.50	18.61	≤30	Pass
11n-HT40	3	40.5/45	159	5795	15.06	14.15	12.71	18.85	≤30	Pass

7.4. Power Spectral Density Measurement

7.4.1. Test Limit

The maximum permissible power spectral density is 8 dBm in any 3 kHz band.

Systems operating in the 2400-2483.5MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

$$\text{Limit (dBm/3kHz)} = 8 - (13 - 6) / 3 = 5.7 \text{ dBm/3kHz}$$

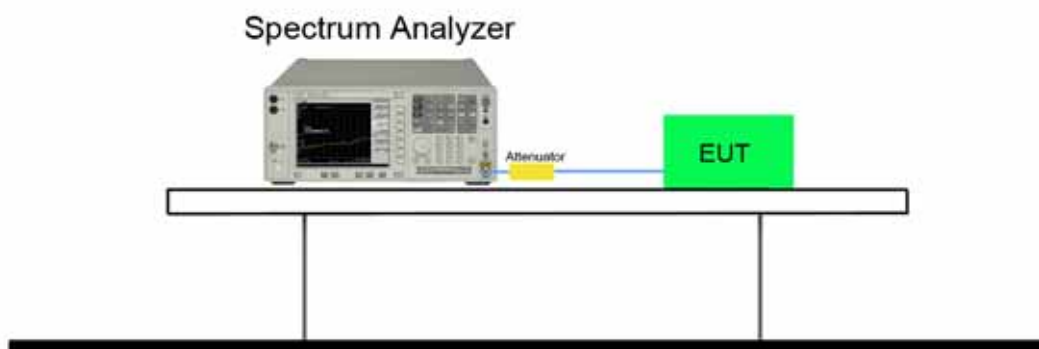
7.4.2. Test Procedure Used

KDB 558074 D01v03r01 - Section 10.2 Method PKPSD

7.4.3. Test Setting

1. Analyzer was set to the center frequency of the DTS channel under investigation
2. Span = 1.5 times the DTS channel bandwidth
3. RBW = 100kHz
4. VBW = 300kHz
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

7.4.4. Test Setup



7.4.5. Test Result

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A PSD (dBm)	Chain B PSD (dBm)	Chain C PSD (dBm)	Total PSD (dBm)	Limit (dBm / 3kHz)	Result
11b	1	1	1	2412	-8.257	--	--	-8.257	≤5.7	Pass
11b	1	1	6	2437	-10.705	--	--	-10.705	≤5.7	Pass
11b	1	1	11	2462	-9.377	--	--	-9.377	≤5.7	Pass
11b	1	1	1	2412	--	-7.272	--	-7.272	≤5.7	Pass
11b	1	1	6	2437	--	-6.041	--	-6.041	≤5.7	Pass
11b	1	1	11	2462	--	-5.881	--	-5.881	≤5.7	Pass
11b	1	1	1	2412	--	--	-7.997	-7.997	≤5.7	Pass
11b	1	1	6	2437	--	--	-6.555	-6.555	≤5.7	Pass
11b	1	1	11	2462	--	--	-4.461	-4.461	≤5.7	Pass
11g	1	6	1	2412	-10.914	--	--	-10.914	≤5.7	Pass
11g	1	6	6	2437	-10.258	--	--	-10.258	≤5.7	Pass
11g	1	6	11	2462	-10.612	--	--	-10.612	≤5.7	Pass
11g	1	6	1	2412	--	-10.440	--	-10.440	≤5.7	Pass
11g	1	6	6	2437	--	-19.433	--	-19.433	≤5.7	Pass
11g	1	6	11	2462	--	-11.426	--	-11.426	≤5.7	Pass
11g	1	6	1	2412	--	--	-6.164	-6.164	≤5.7	Pass
11g	1	6	6	2437	--	--	-4.661	-4.661	≤5.7	Pass
11g	1	6	11	2462	--	--	-12.181	-12.181	≤5.7	Pass
11n-HT20	1	6.5/7.2	1	2412	-10.442	--	--	-10.442	≤5.7	Pass
11n-HT20	1	6.5/7.2	6	2437	-10.453	--	--	-10.453	≤5.7	Pass
11n-HT20	1	6.5/7.2	11	2462	-10.347	--	--	-10.347	≤5.7	Pass
11n-HT20	1	6.5/7.2	1	2412	--	-12.571	--	-12.571	≤5.7	Pass
11n-HT20	1	6.5/7.2	6	2437	--	-12.585	--	-12.585	≤5.7	Pass
11n-HT20	1	6.5/7.2	11	2462	--	-13.409	--	-13.409	≤5.7	Pass
11n-HT20	1	6.5/7.2	1	2412	--	--	-10.868	-10.868	≤5.7	Pass
11n-HT20	1	6.5/7.2	6	2437	--	--	-9.815	-9.815	≤5.7	Pass
11n-HT20	1	6.5/7.2	11	2462	--	--	-10.737	-10.737	≤5.7	Pass
11n-HT20	2	13/14.4	1	2412	-12.589	-14.577	--	-10.460	≤5.7	Pass
11n-HT20	2	13/14.4	6	2437	-10.780	-13.948	--	-9.071	≤5.7	Pass
11n-HT20	2	13/14.4	11	2462	-12.969	-15.182	--	-10.926	≤5.7	Pass
11n-HT20	3	19.5/21.7	1	2412	-14.188	-16.185	-13.671	-9.782	≤5.7	Pass
11n-HT20	3	19.5/21.7	6	2437	-14.579	-15.686	-15.208	-10.363	≤5.7	Pass

Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A PSD (dBm)	Chain B PSD (dBm)	Chain C PSD (dBm)	Total PSD (dBm)	Limit (dBm/3 kHz)	Result
11n-HT20	3	19.5/21.7	11	2462	-14.008	-16.838	-16.960	-10.937	≤5.7	Pass
11n-HT40	1	13.5/15	3	2422	-14.252	--	--	-14.252	≤5.7	Pass
11n-HT40	1	13.5/15	6	2437	-14.056	--	--	-14.056	≤5.7	Pass
11n-HT40	1	13.5/15	9	2452	-16.825	--	--	-16.825	≤5.7	Pass
11n-HT40	1	13.5/15	3	2422	--	-16.924	--	-16.924	≤5.7	Pass
11n-HT40	1	13.5/15	6	2437	--	-17.111	--	-17.111	≤5.7	Pass
11n-HT40	1	13.5/15	9	2452	--	-16.189	--	-16.189	≤5.7	Pass
11n-HT40	1	13.5/15	3	2422	--	--	-16.000	-16.000	≤5.7	Pass
11n-HT40	1	13.5/15	6	2437	--	--	-15.588	-15.588	≤5.7	Pass
11n-HT40	1	13.5/15	9	2452	--	--	-16.205	-16.205	≤5.7	Pass
11n-HT40	2	27/30	3	2422	-17.731	-20.315	--	-15.823	≤5.7	Pass
11n-HT40	2	27/30	6	2437	-18.037	-18.408	--	-15.208	≤5.7	Pass
11n-HT40	2	27/30	9	2452	-19.061	-19.784	--	-16.397	≤5.7	Pass
11n-HT40	3	40.5/45	3	2422	-22.323	-24.347	-23.206	-18.443	≤5.7	Pass
11n-HT40	3	40.5/45	6	2437	-21.093	-22.454	-21.184	-16.763	≤5.7	Pass
11n-HT40	3	40.5/45	9	2452	-22.461	-22.847	-20.948	-17.234	≤5.7	Pass

802.11b PSD – Chain A

Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



802.11b PSD – Chain B

Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



802.11b PSD – Chain C

Channel 01 (2412MHz)



Channel 06 (2437MHz)

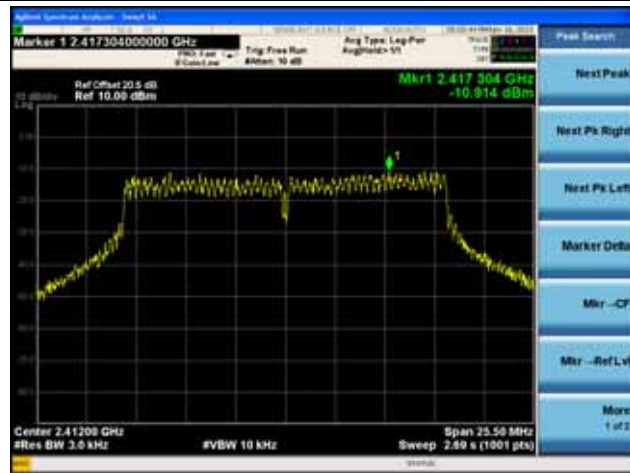


Channel 11 (2462MHz)

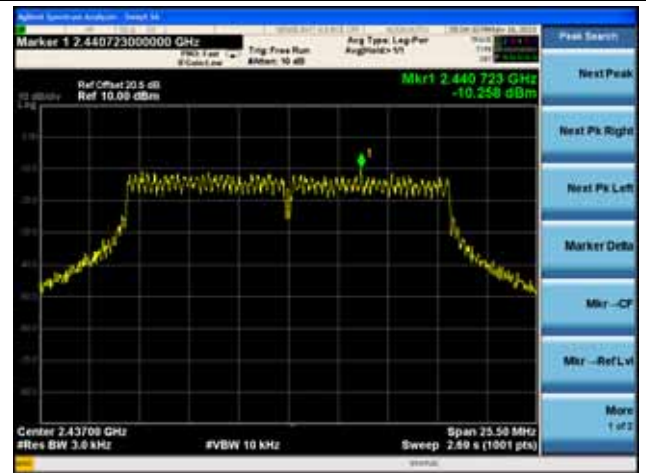


802.11g PSD – Chain A

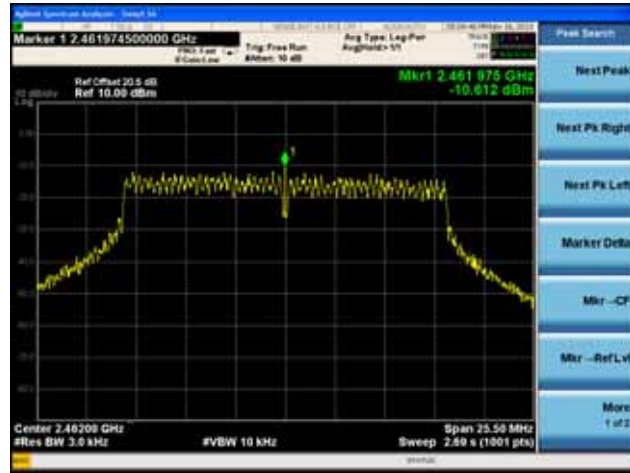
Channel 01 (2412MHz)



Channel 06 (2437MHz)

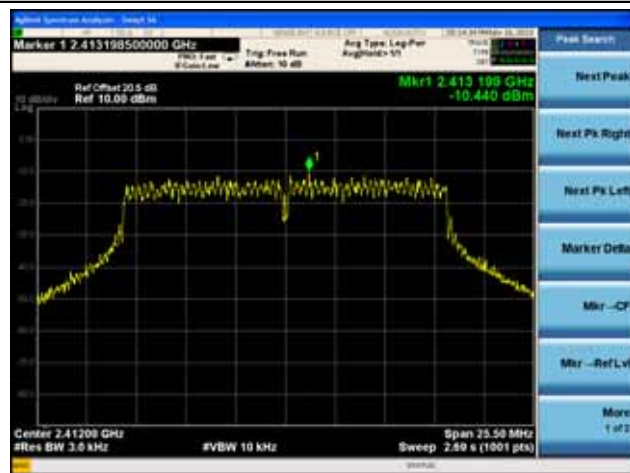


Channel 11 (2462MHz)

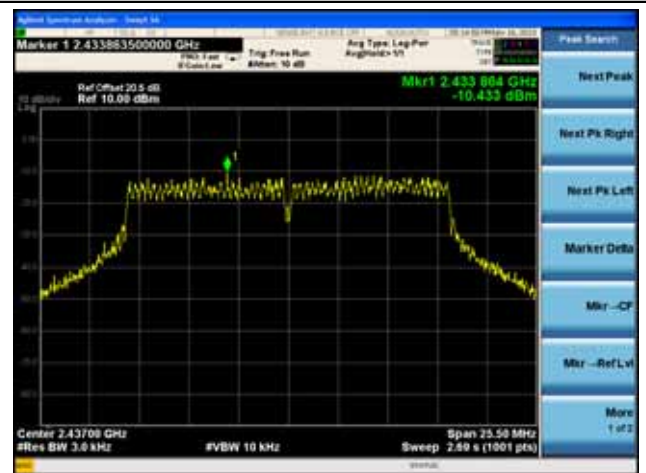


802.11g PSD – Chain B

Channel 01 (2412MHz)



Channel 06 (2437MHz)

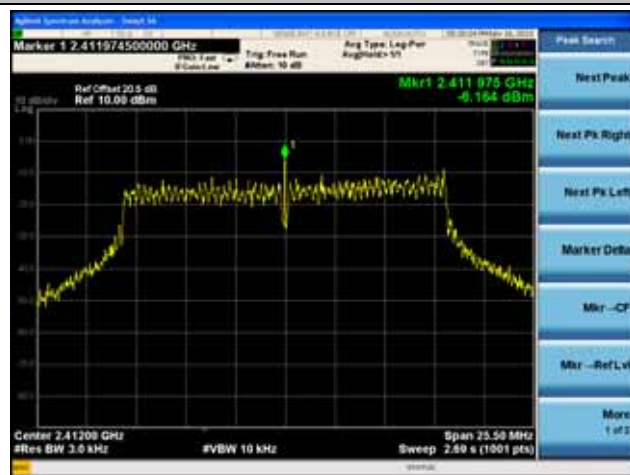


Channel 11 (2462MHz)

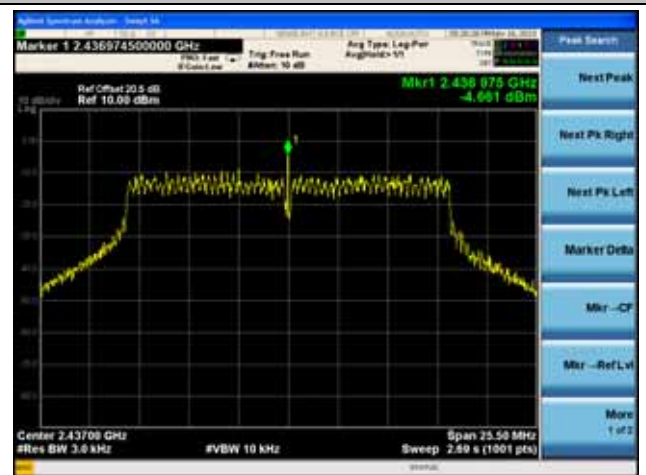


802.11g PSD – Chain C

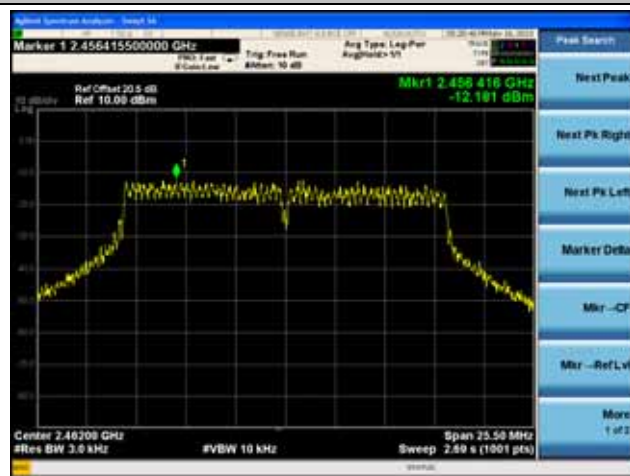
Channel 01 (2412MHz)



Channel 06 (2437MHz)

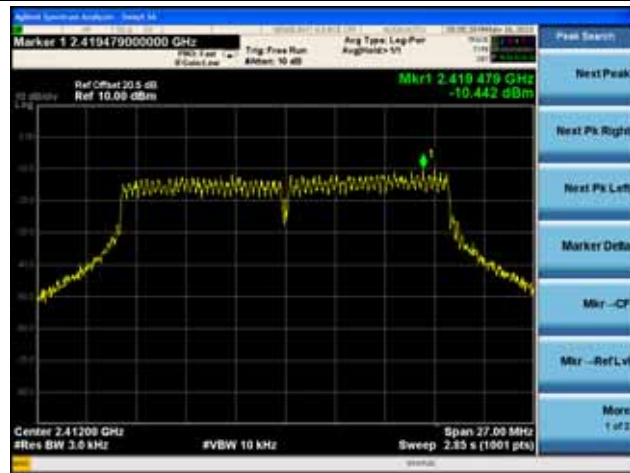


Channel 11 (2462MHz)

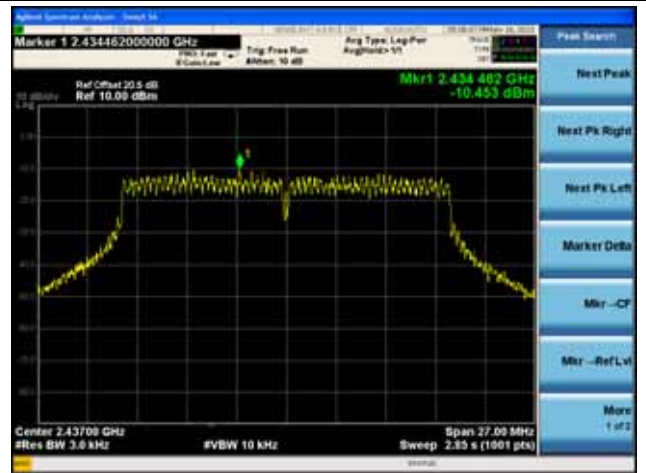


802.11n-HT20 PSD – Chain A

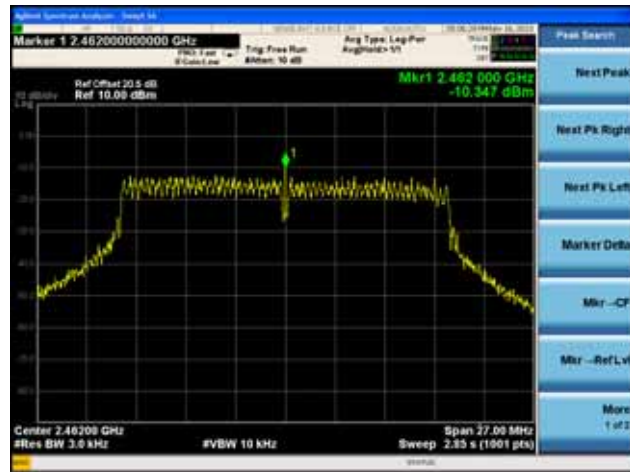
Channel 01 (2412MHz)



Channel 06 (2437MHz)

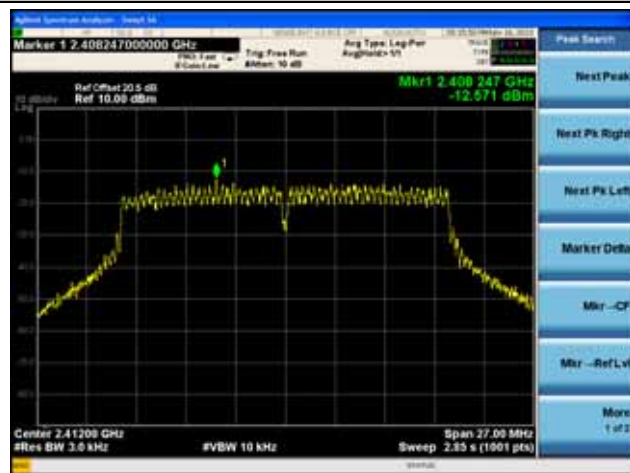


Channel 11 (2462MHz)

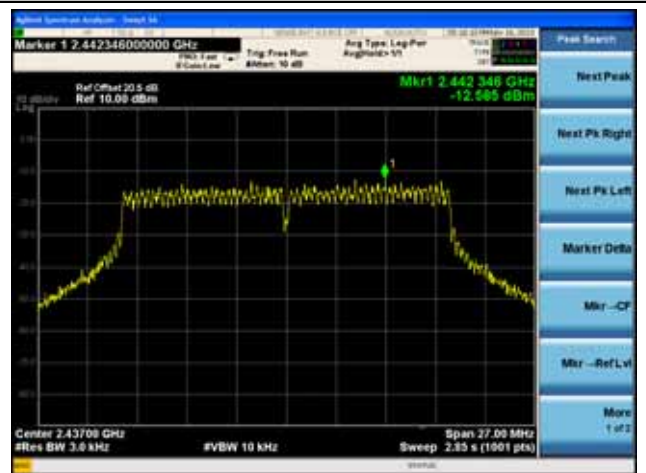


802.11n-HT20 PSD – Chain B

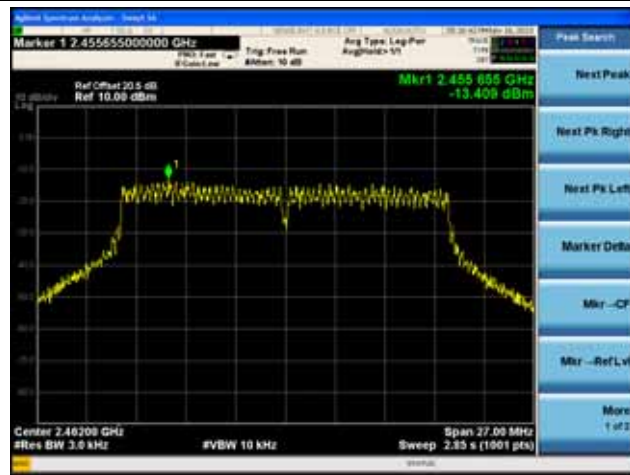
Channel 01 (2412MHz)



Channel 06 (2437MHz)

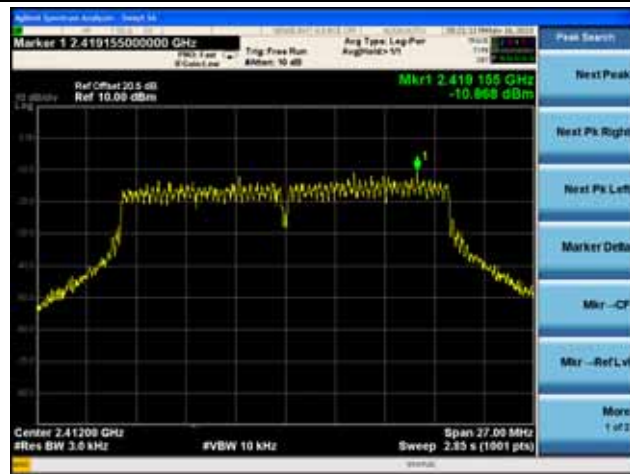


Channel 11 (2462MHz)



802.11n-HT20 PSD – Chain C

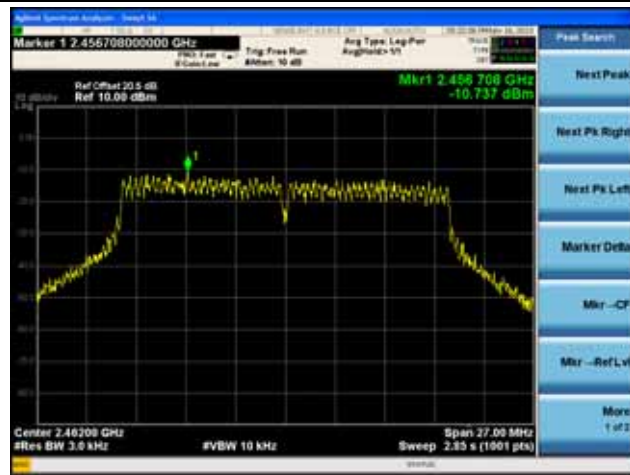
Channel 01 (2412MHz)



Channel 06 (2437MHz)

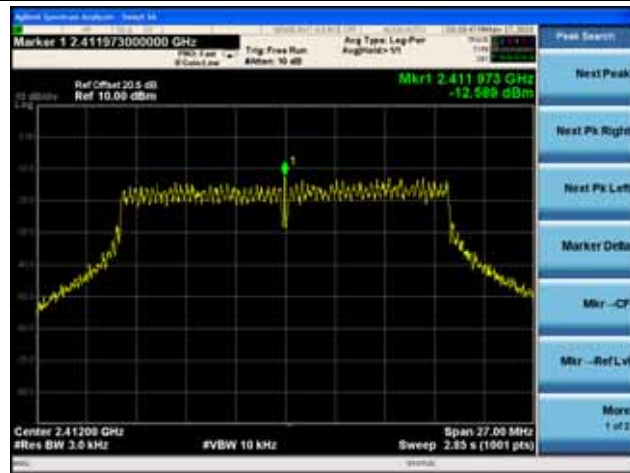


Channel 11 (2462MHz)

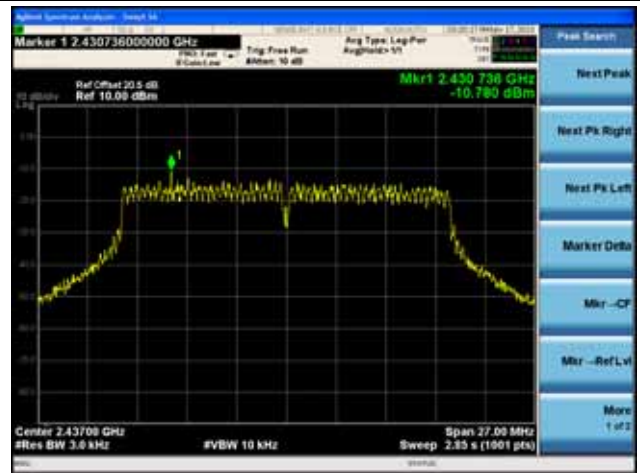


802.11n-HT20 PSD – Chain A / Chain A + B

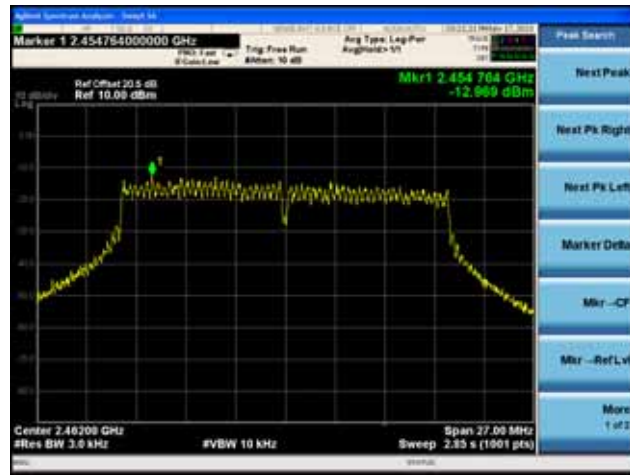
Channel 01 (2412MHz)



Channel 06 (2437MHz)

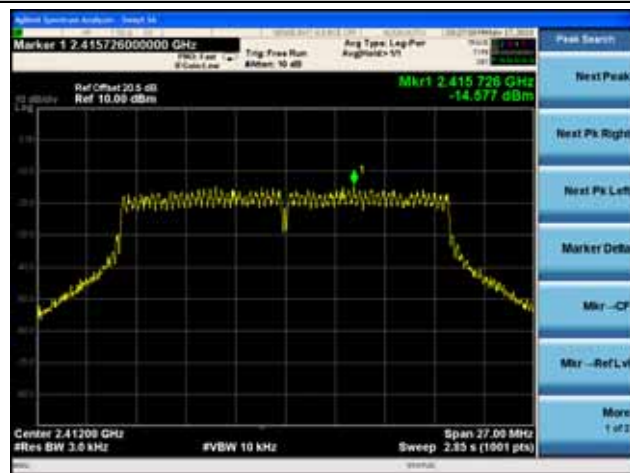


Channel 11 (2462MHz)

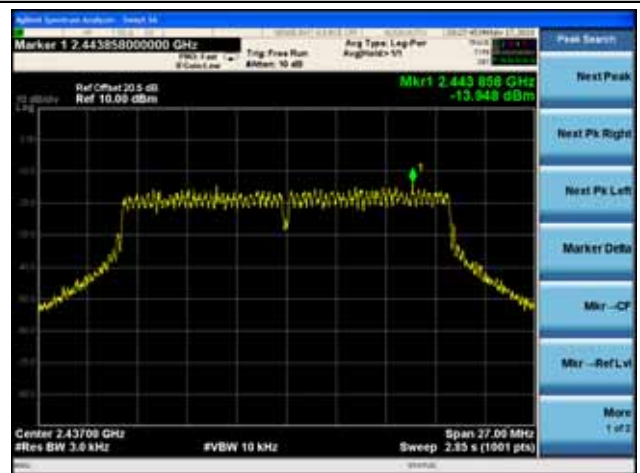


802.11n-HT20 PSD – Chain B / Chain A + B

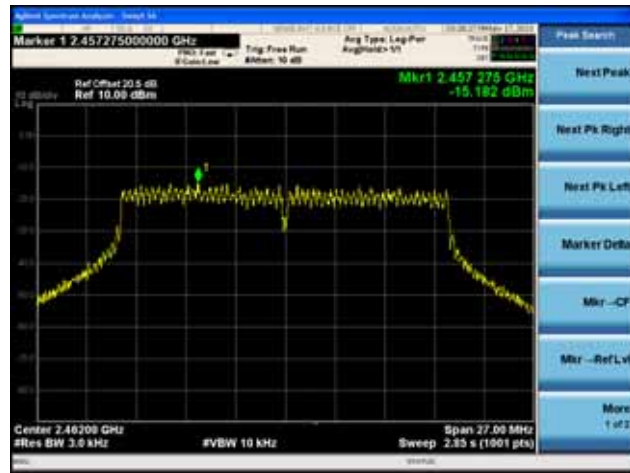
Channel 01 (2412MHz)



Channel 06 (2437MHz)

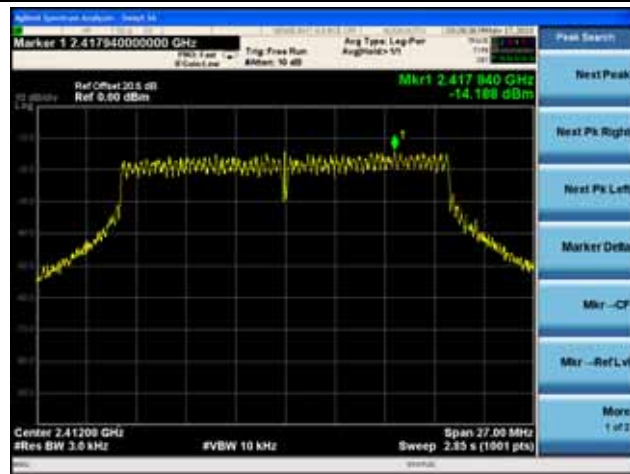


Channel 11 (2462MHz)

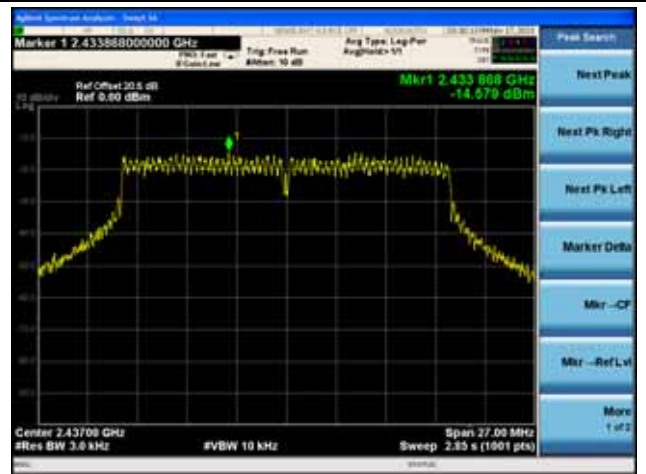


802.11n-HT20 PSD – Chain A / Chain A + B + C

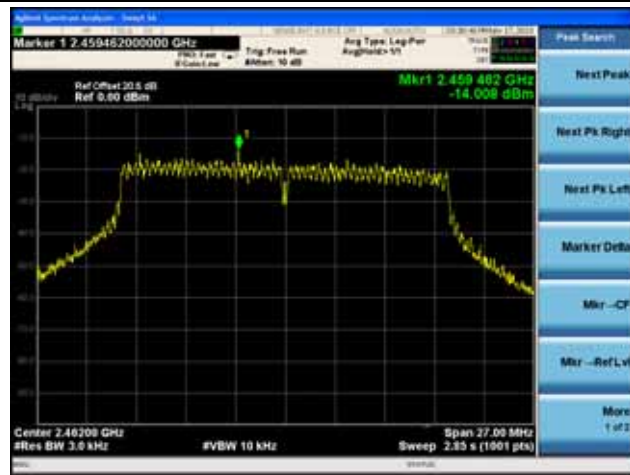
Channel 01 (2412MHz)



Channel 06 (2437MHz)

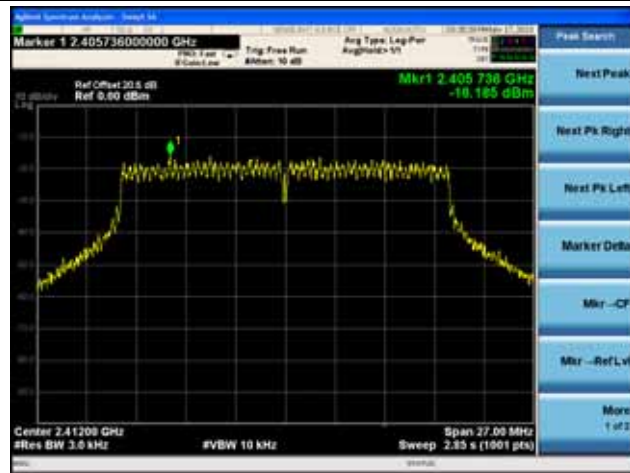


Channel 11 (2462MHz)

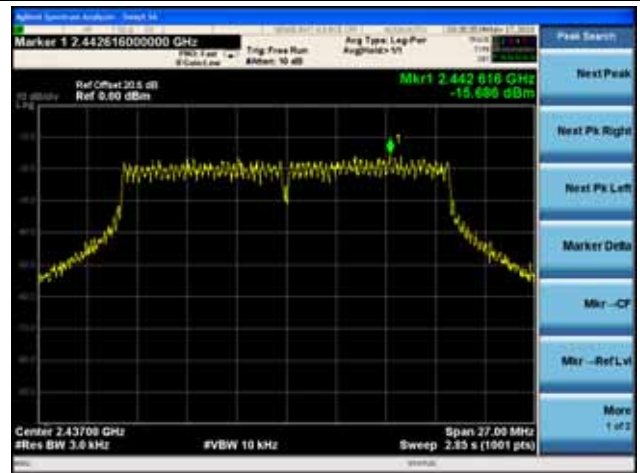


802.11n-HT20 PSD – Chain B / Chain A + B + C

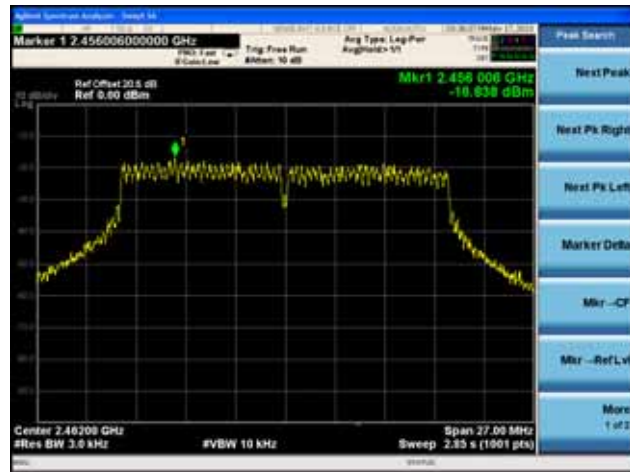
Channel 01 (2412MHz)



Channel 06 (2437MHz)

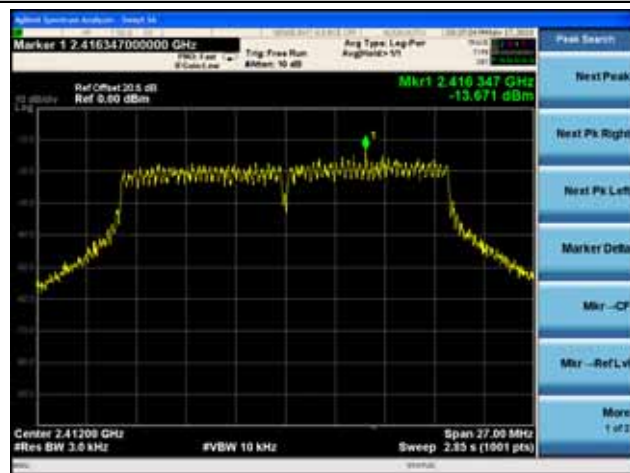


Channel 11 (2462MHz)

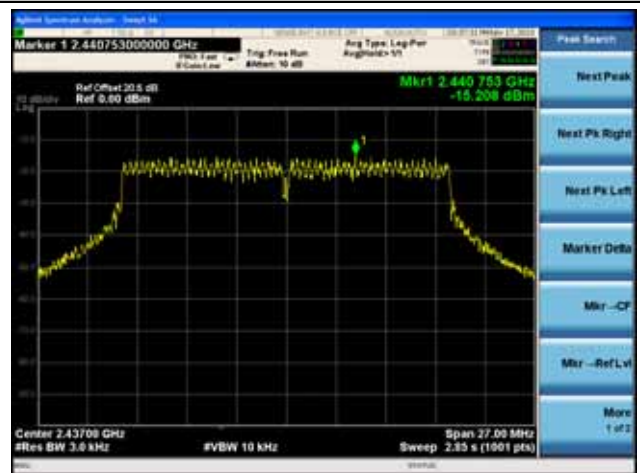


802.11n-HT20 PSD – Chain C / Chain A + B + C

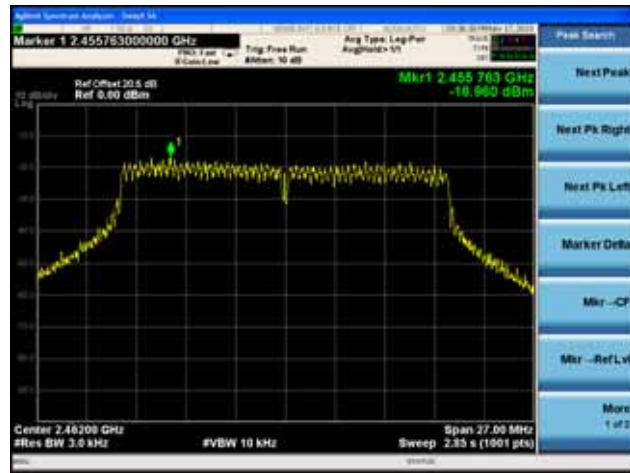
Channel 01 (2412MHz)



Channel 06 (2437MHz)

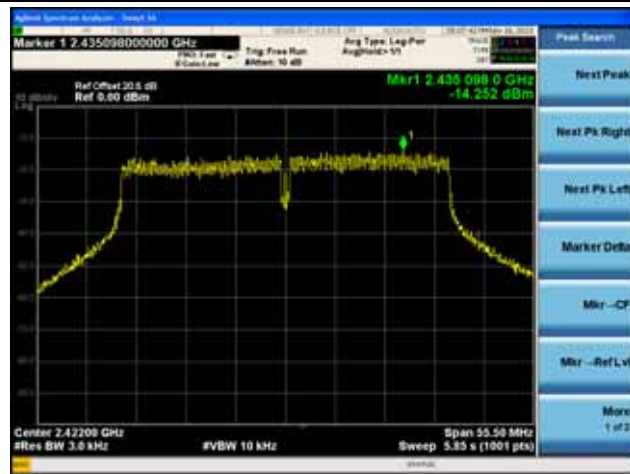


Channel 11 (2462MHz)

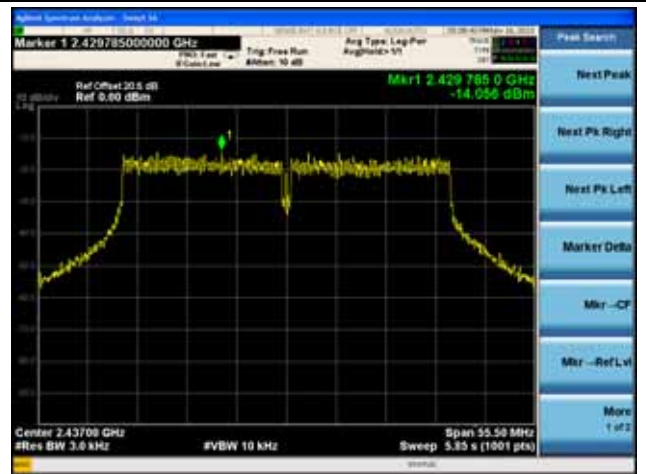


802.11n-HT40 PSD – Chain A

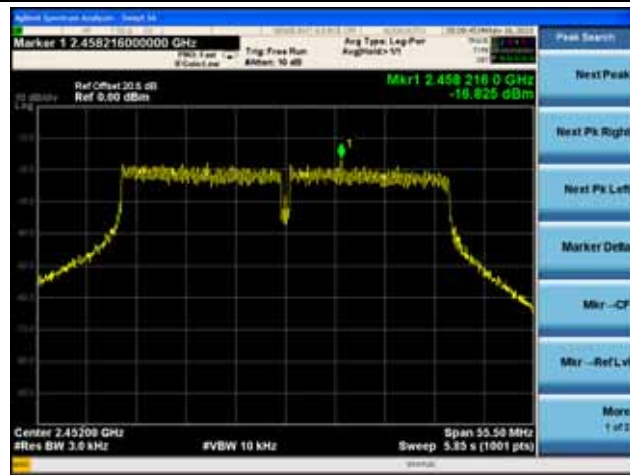
Channel 03 (2422MHz)



Channel 06 (2437MHz)

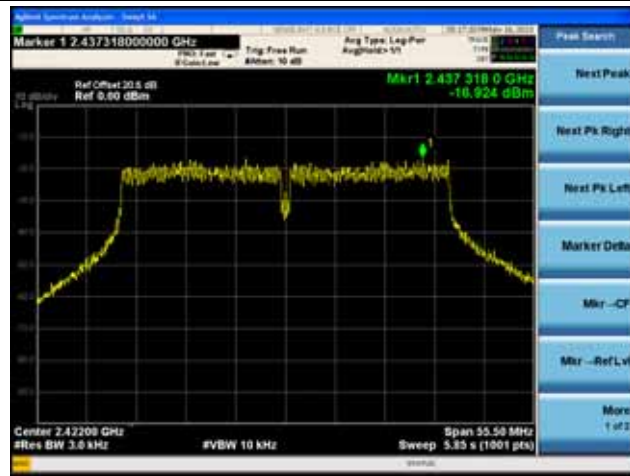


Channel 09 (2452MHz)

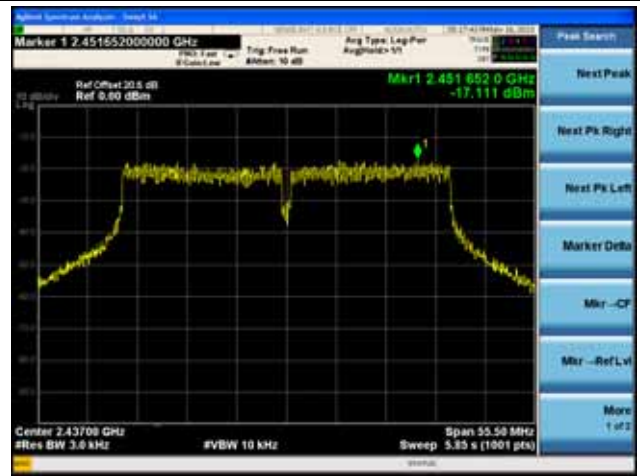


802.11n-HT40 PSD – Chain B

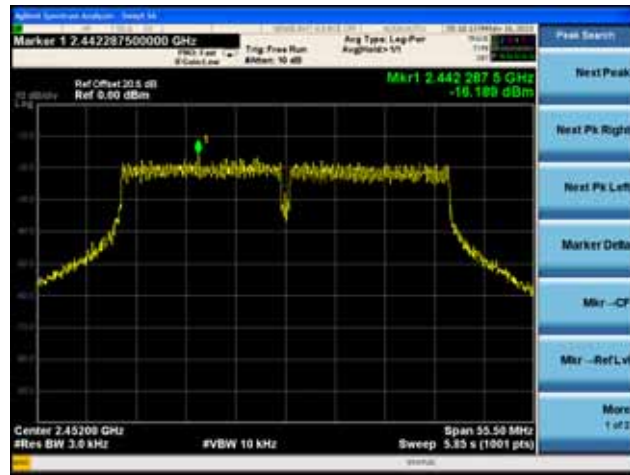
Channel 03 (2422MHz)



Channel 06 (2437MHz)

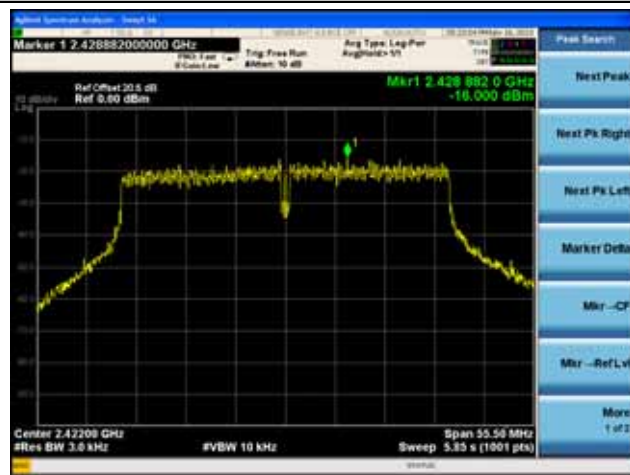


Channel 09 (2452MHz)

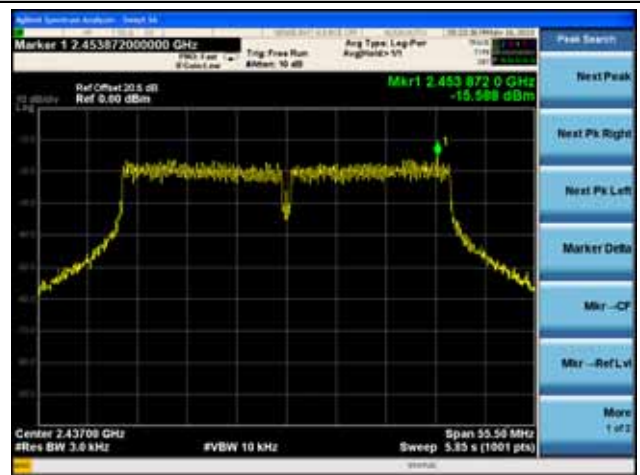


802.11n-HT40 PSD – Chain C

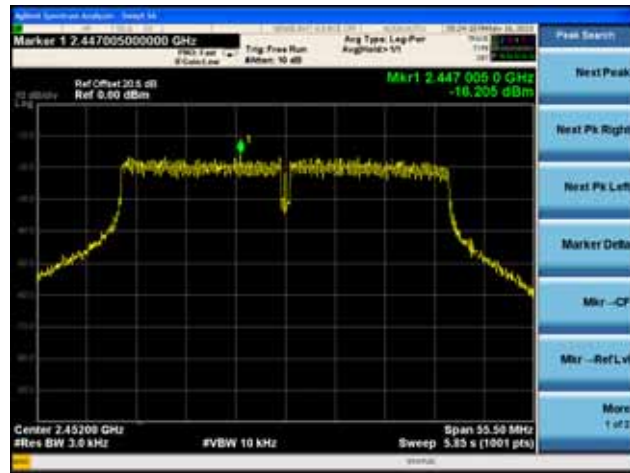
Channel 03 (2422MHz)



Channel 06 (2437MHz)

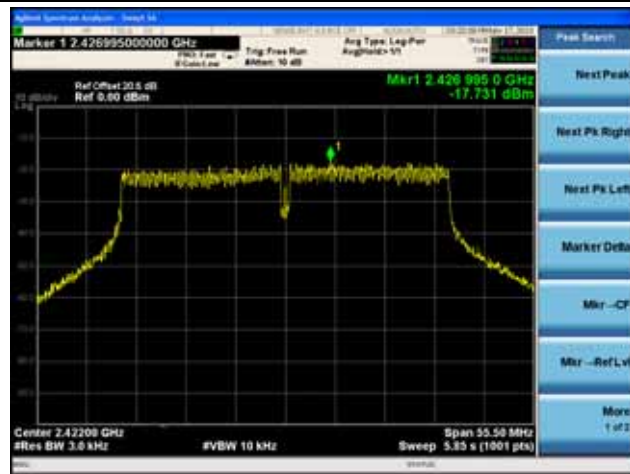


Channel 09 (2452MHz)

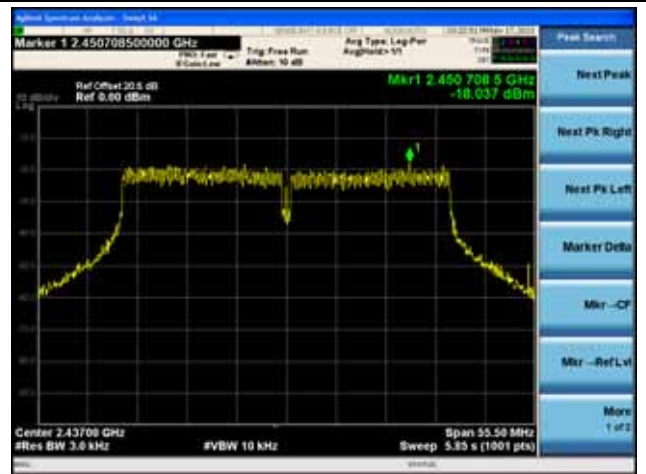


802.11n-HT40 PSD – Chain A / Chain A + B

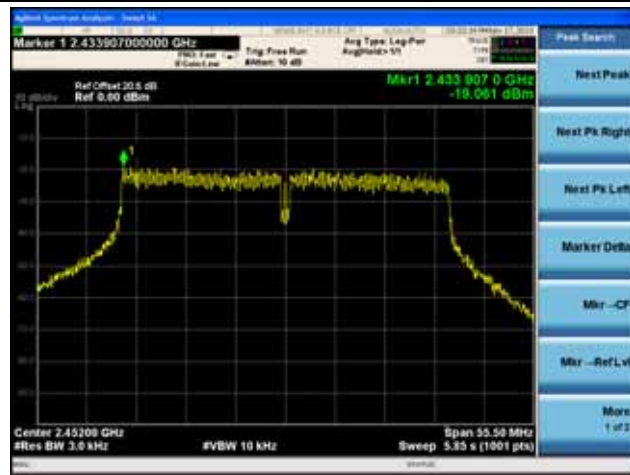
Channel 03 (2422MHz)



Channel 06 (2437MHz)

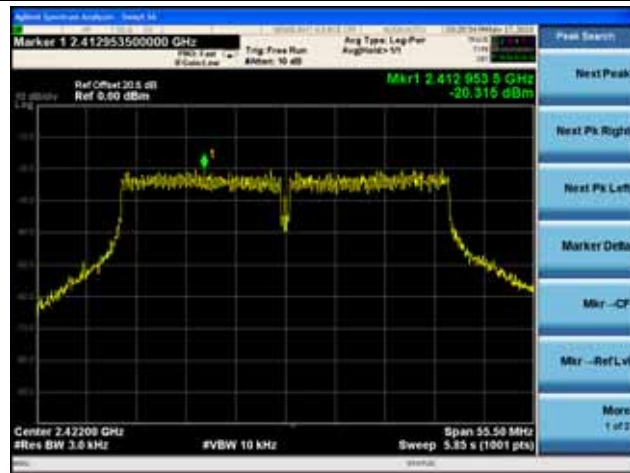


Channel 09 (2452MHz)



802.11n-HT40 PSD – Chain B / Chain A + B

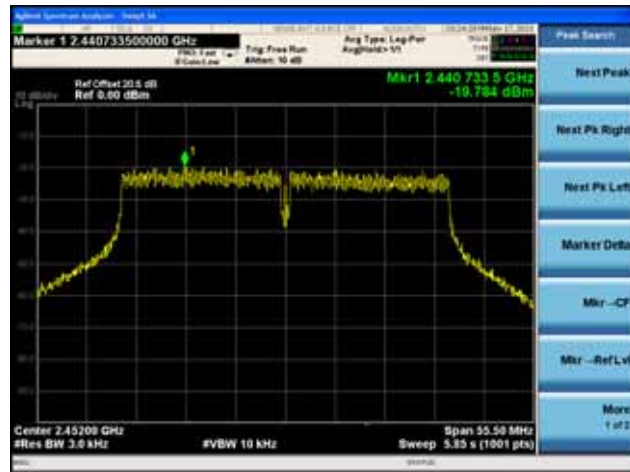
Channel 03 (2422MHz)



Channel 06 (2437MHz)

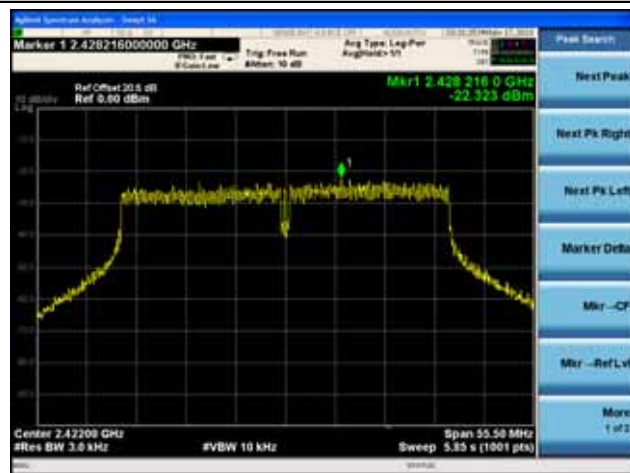


Channel 09 (2452MHz)

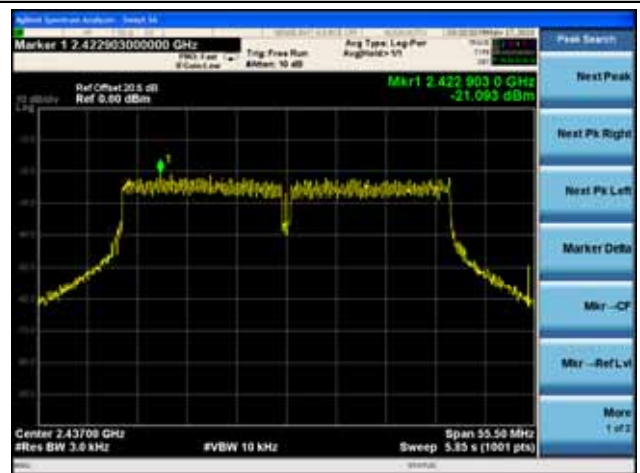


802.11n-HT40 PSD – Chain A / Chain A + B + C

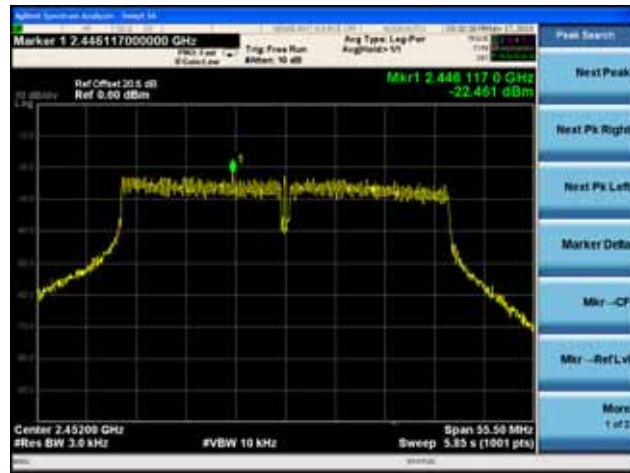
Channel 03 (2422MHz)



Channel 06 (2437MHz)

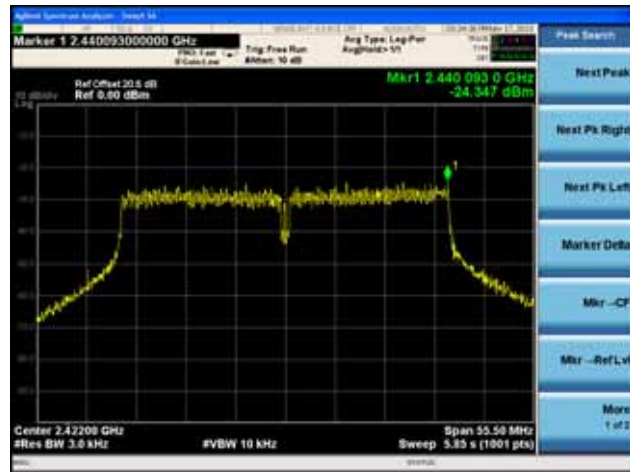


Channel 09 (2452MHz)

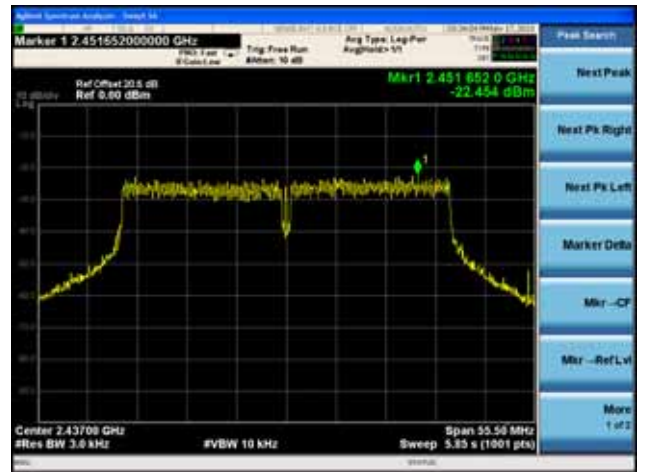


802.11n-HT40 PSD – Chain B / Chain A + B + C

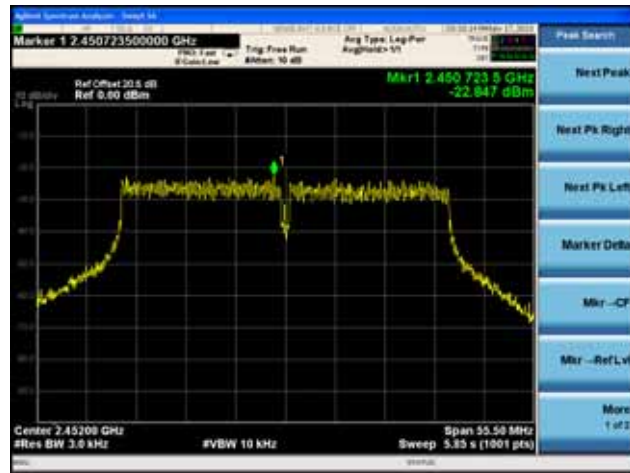
Channel 03 (2422MHz)



Channel 06 (2437MHz)

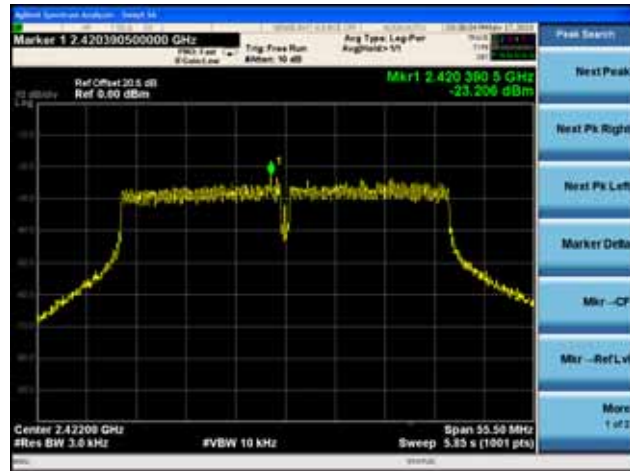


Channel 09 (2452MHz)

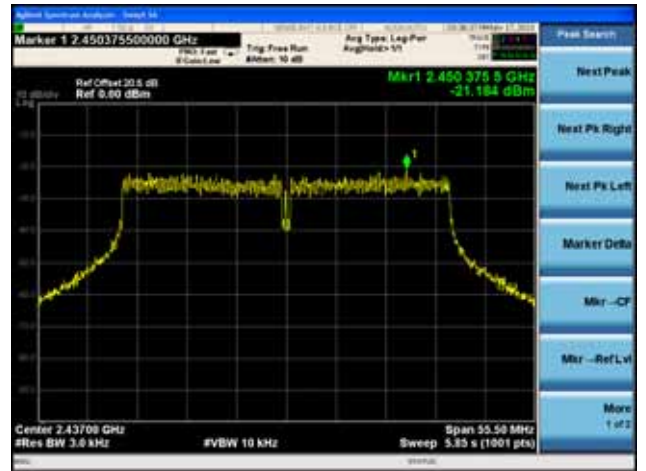


802.11n-HT40 PSD – Chain C / Chain A + B + C

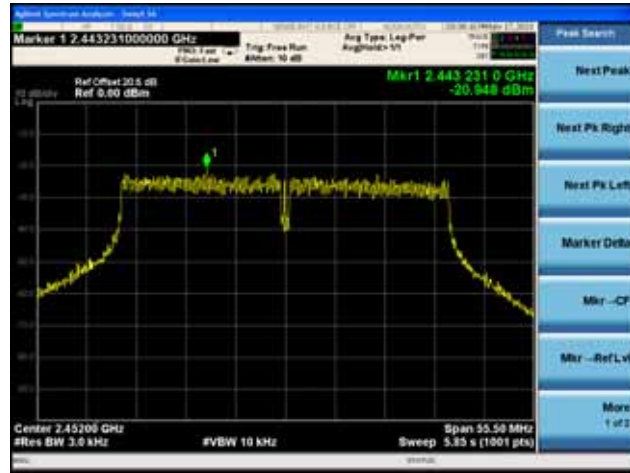
Channel 03 (2422MHz)



Channel 06 (2437MHz)



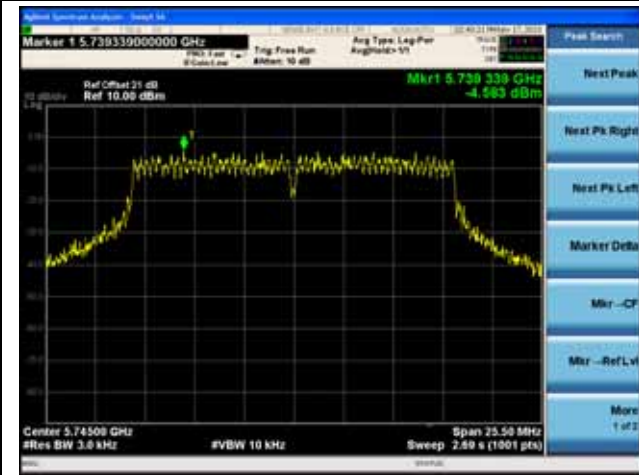
Channel 09 (2452MHz)



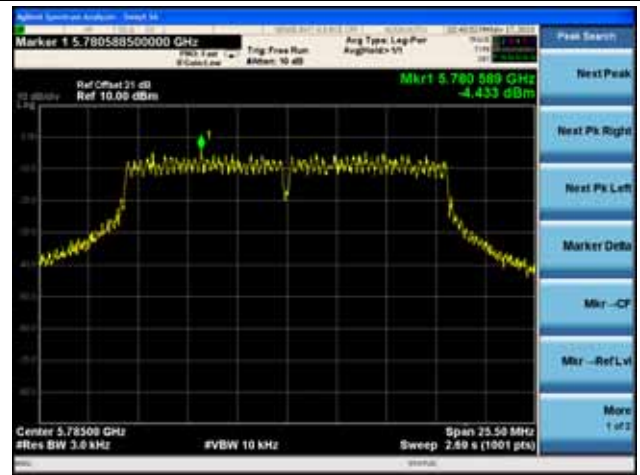
Test Mode	N _{Tx}	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Chain A PSD (dBm)	Chain B PSD (dBm)	Chain C PSD (dBm)	Total PSD (dBm)	Limit (dBm/3 kHz)	Result
11a	1	6	149	5745	-4.583	--	--	-4.583	≤8	Pass
11a	1	6	157	5785	-4.433	--	--	-4.433	≤8	Pass
11a	1	6	165	5825	-5.060	--	--	-5.060	≤8	Pass
11a	1	6	149	5745	--	-6.218	--	-6.218	≤8	Pass
11a	1	6	157	5785	--	-5.469	--	-5.469	≤8	Pass
11a	1	6	165	5825	--	-6.602	--	-6.602	≤8	Pass
11a	1	6	149	5745	--	--	-7.944	-7.944	≤8	Pass
11a	1	6	157	5785	--	--	-6.717	-6.717	≤8	Pass
11a	1	6	165	5825	--	--	-7.717	-7.717	≤8	Pass
11n-HT20	1	6.5/7.2	149	5745	-4.649	--	--	-4.649	≤8	Pass
11n-HT20	1	6.5/7.2	157	5785	-4.458	--	--	-4.458	≤8	Pass
11n-HT20	1	6.5/7.2	165	5825	-5.324	--	--	-5.324	≤8	Pass
11n-HT20	1	6.5/7.2	149	5745	--	-7.002	--	-7.002	≤8	Pass
11n-HT20	1	6.5/7.2	157	5785	--	-4.748	--	-4.748	≤8	Pass
11n-HT20	1	6.5/7.2	165	5825	--	-6.200	--	-6.200	≤8	Pass
11n-HT20	1	6.5/7.2	149	5745	--	--	-7.573	-7.573	≤8	Pass
11n-HT20	1	6.5/7.2	157	5785	--	--	-6.671	-6.671	≤8	Pass
11n-HT20	1	6.5/7.2	165	5825	--	--	-8.320	-8.320	≤8	Pass
11n-HT20	2	13/14.4	149	5745	-6.936	-9.313	--	-4.954	≤8	Pass
11n-HT20	2	13/14.4	157	5785	-7.095	-8.257	--	-4.627	≤8	Pass
11n-HT20	2	13/14.4	165	5825	-7.597	-7.990	--	-4.779	≤8	Pass
11n-HT20	3	19.5/21.7	149	5745	-9.573	-12.300	-13.213	-6.637	≤8	Pass
11n-HT20	3	19.5/21.7	157	5785	-9.668	-11.826	-13.674	-6.645	≤8	Pass
11n-HT20	3	19.5/21.7	165	5825	-10.621	-12.007	-13.415	-7.095	≤8	Pass
11n-HT40	1	13.5/15	151	5755	-9.340	--	--	-9.340	≤8	Pass
11n-HT40	1	13.5/15	159	5795	-9.157	--	--	-9.157	≤8	Pass
11n-HT40	1	13.5/15	151	5755	--	-10.175	--	-10.175	≤8	Pass
11n-HT40	1	13.5/15	159	5795	--	-8.798	--	-8.798	≤8	Pass
11n-HT40	1	13.5/15	151	5755	--	--	-11.445	-11.445	≤8	Pass
11n-HT40	1	13.5/15	159	5795	--	--	-7.868	-7.868	≤8	Pass
11n-HT40	2	27/30	151	5755	-11.615	-13.623	--	-9.494	≤8	Pass
11n-HT40	2	27/30	159	5795	-10.220	-11.495	--	-7.801	≤8	Pass
11n-HT40	3	40.5/45	151	5755	-13.354	-14.465	-17.110	-9.939	≤8	Pass
11n-HT40	3	40.5/45	151	5755	-12.817	-14.491	-15.340	-9.315	≤8	Pass

802.11a PSD – Chain A

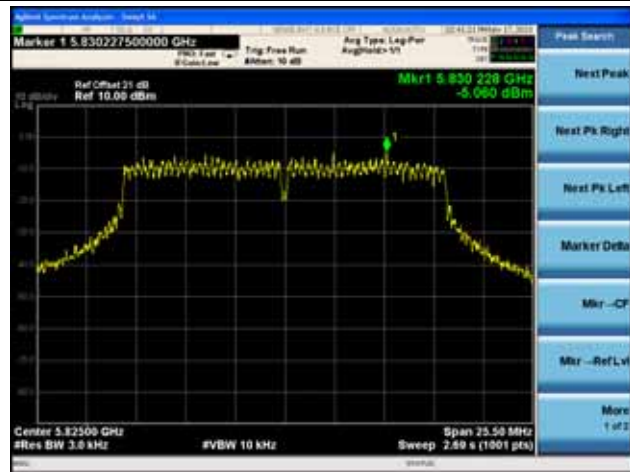
Channel 149 (5745MHz)



Channel 157 (5785MHz)

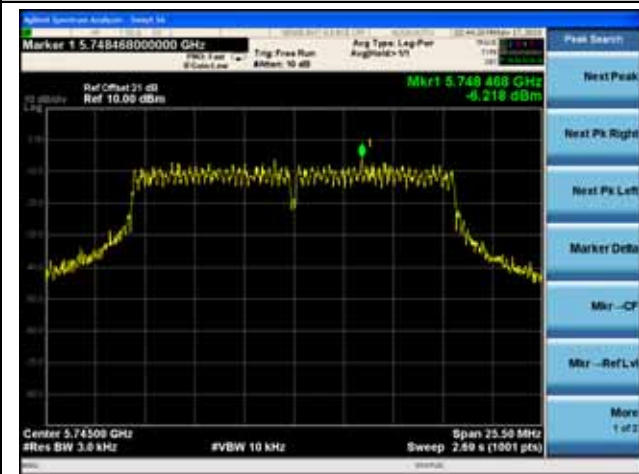


Channel 165 (5825MHz)

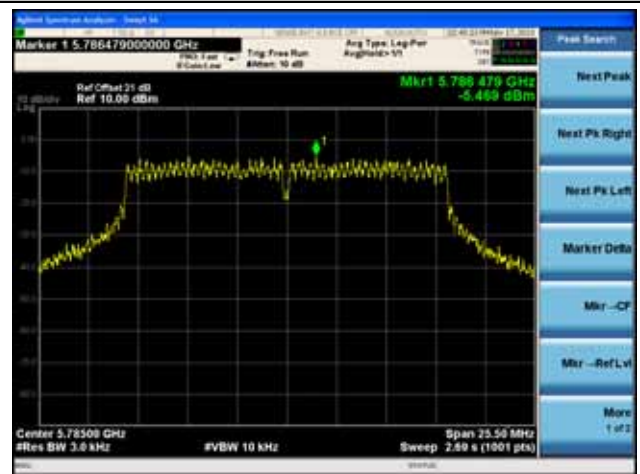


802.11a PSD – Chain B

Channel 149 (5745MHz)



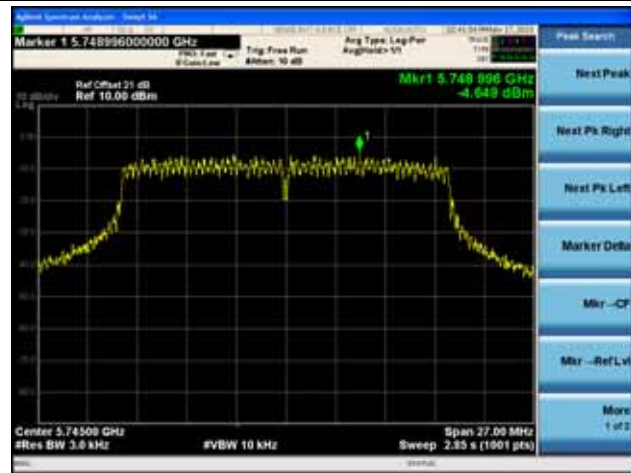
Channel 157 (5785MHz)



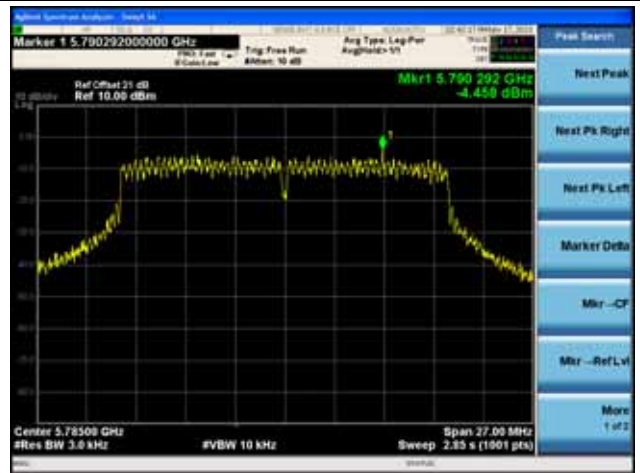
Channel 165 (5825MHz)	
802.11a PSD – Chain C	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
Channel 165 (5825MHz)	

802.11n-HT20 PSD – Chain A

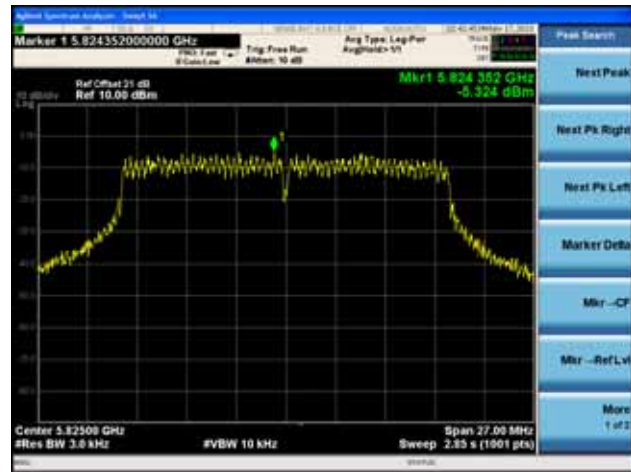
Channel 149 (5745MHz)



Channel 157 (5785MHz)

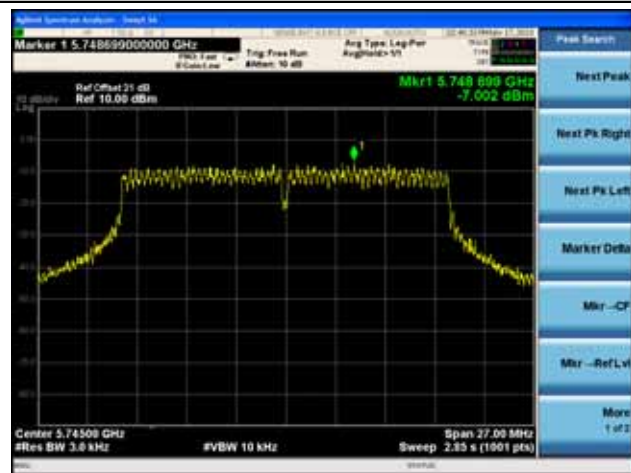


Channel 165 (5825MHz)

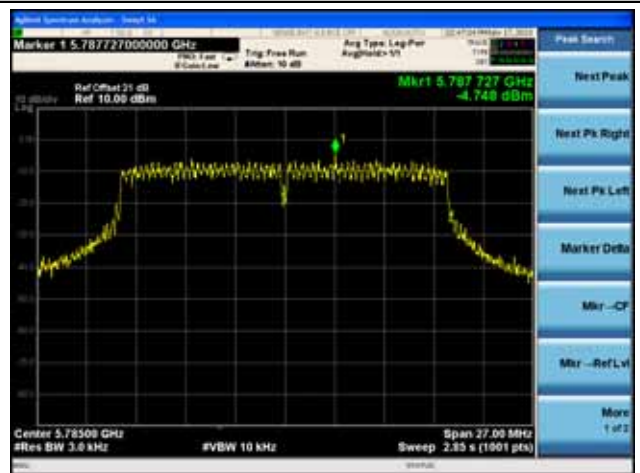


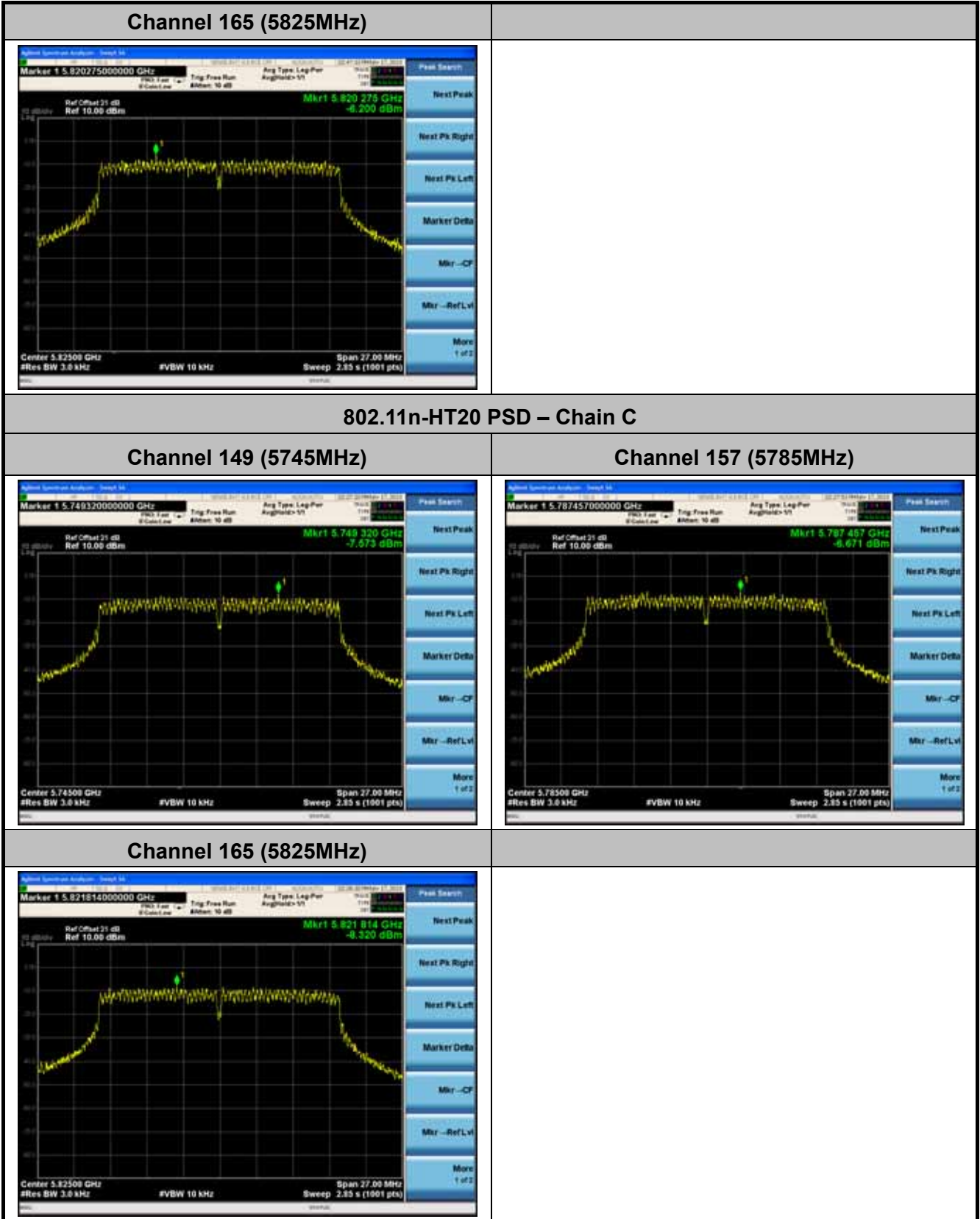
802.11n-HT20 PSD – Chain B

Channel 149 (5745MHz)



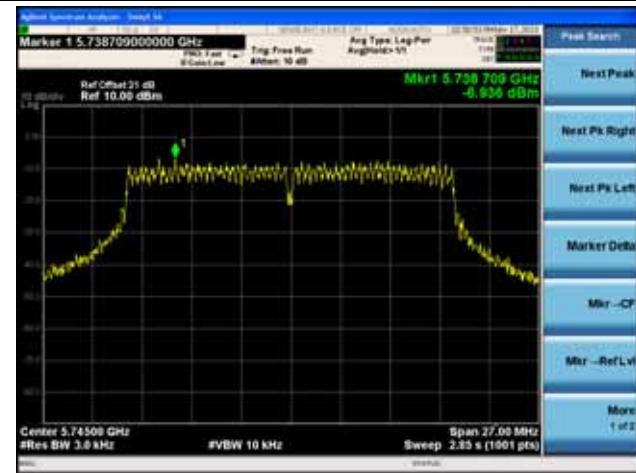
Channel 157 (5785MHz)



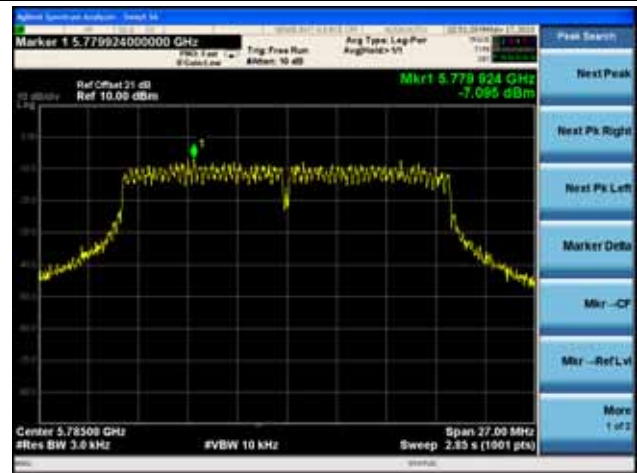


802.11n-HT20 PSD – Chain A / Chain A + B

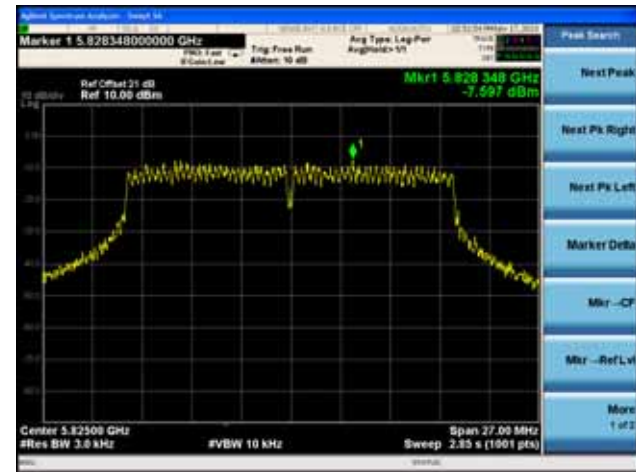
Channel 149 (5745MHz)



Channel 157 (5785MHz)

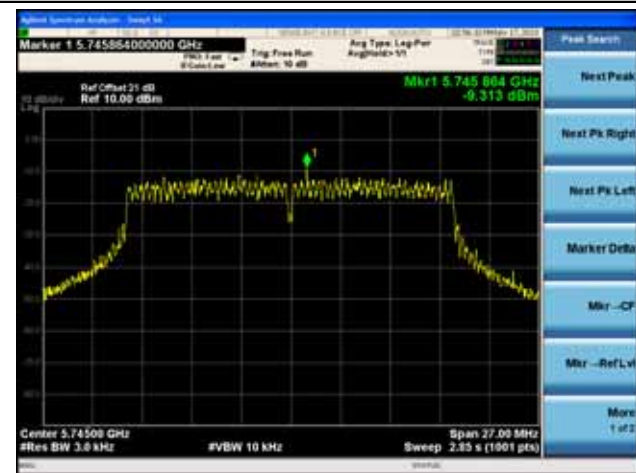


Channel 165 (5825MHz)

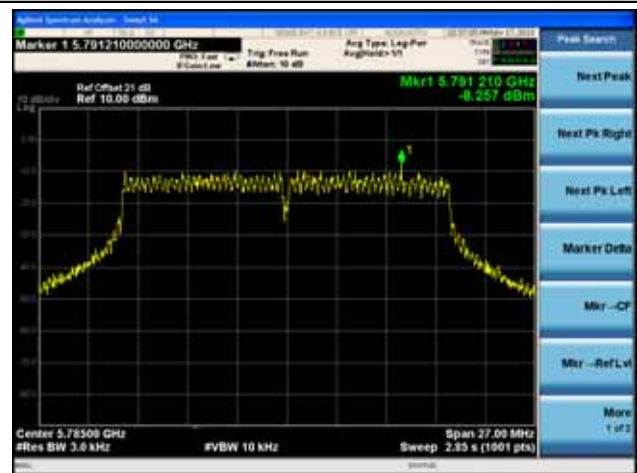


802.11n-HT20 PSD – Chain B / Chain A + B

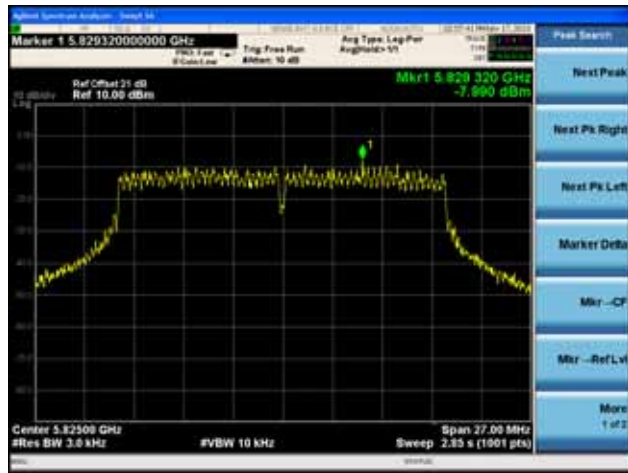
Channel 149 (5745MHz)



Channel 157 (5785MHz)

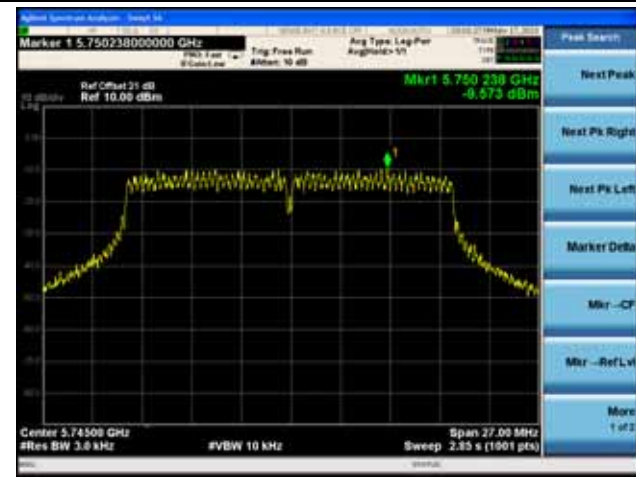


Channel 165 (5825MHz)

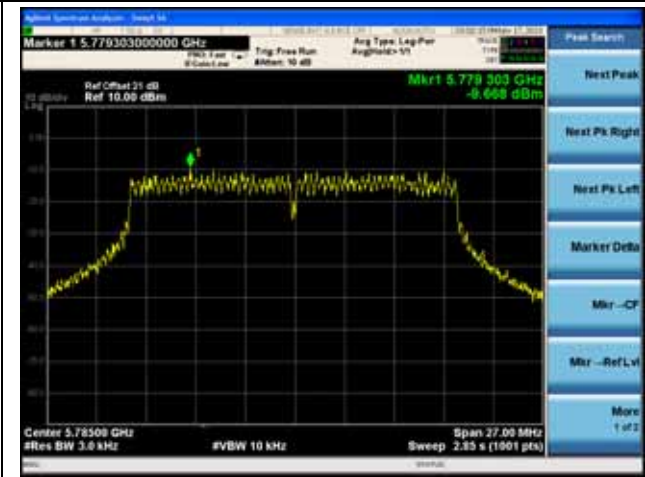


802.11n-HT20 PSD – Chain A / Chain A + B + C

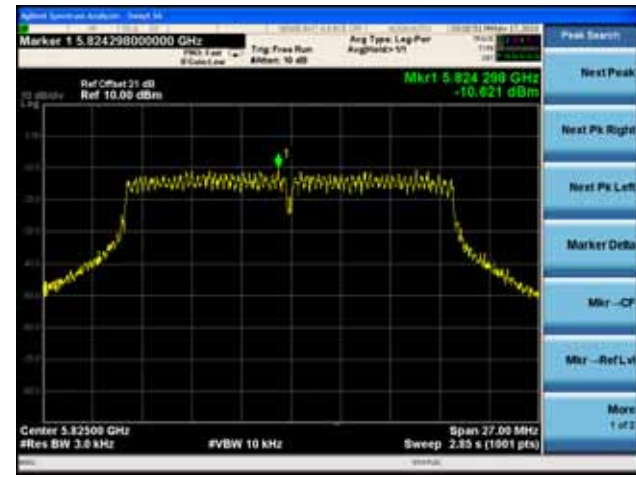
Channel 149 (5745MHz)



Channel 157 (5785MHz)

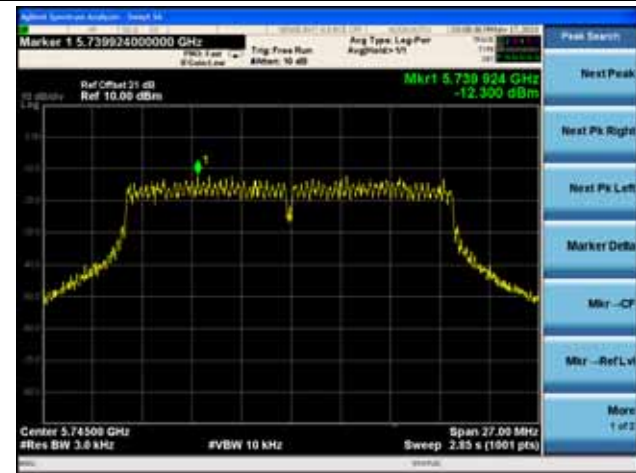


Channel 165 (5825MHz)

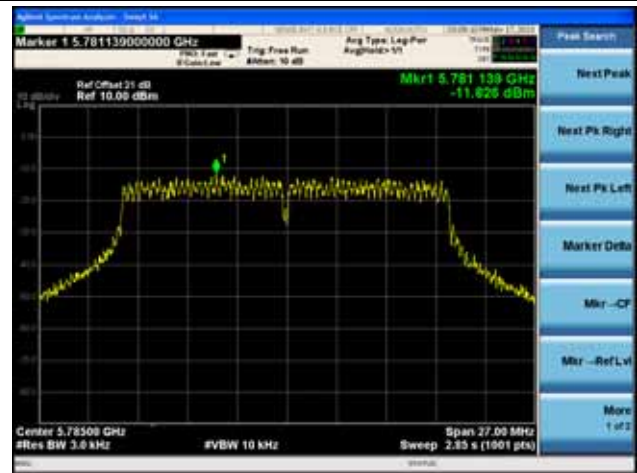


802.11n-HT20 PSD – Chain B / Chain A + B + C

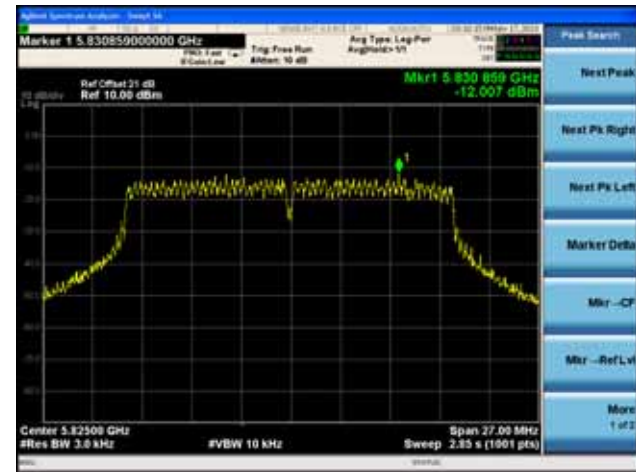
Channel 149 (5745MHz)



Channel 157 (5785MHz)

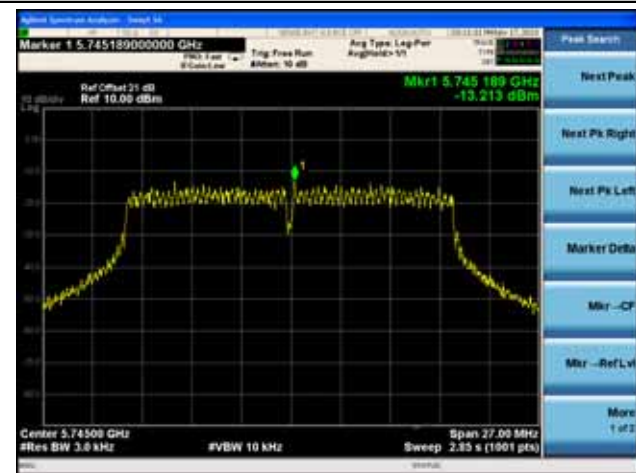


Channel 165 (5825MHz)

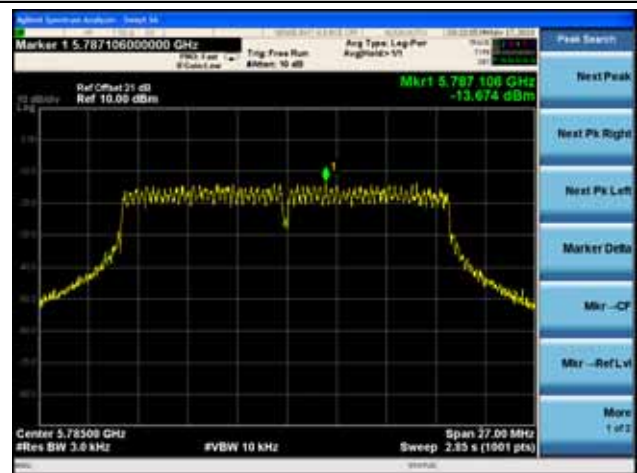


802.11n-HT20 PSD – Chain C / Chain A + B + C

Channel 149 (5745MHz)



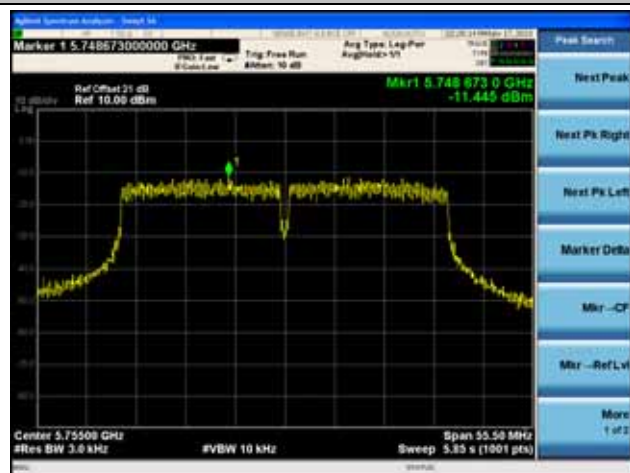
Channel 157 (5785MHz)



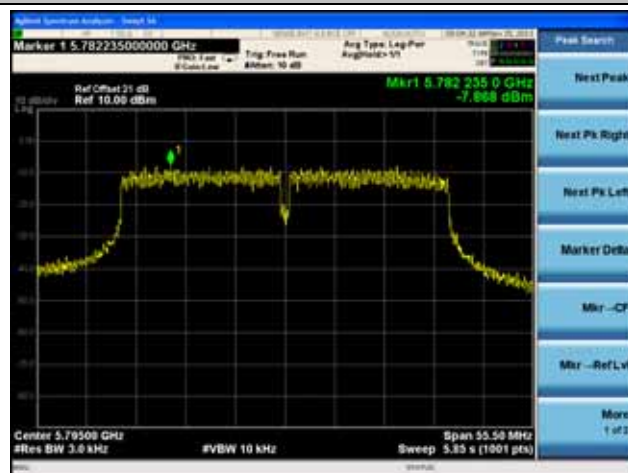
Channel 165 (5825MHz)	
802.11n-HT40 PSD – Chain A	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
802.11n-HT40 PSD – Chain B	
Channel 151 (5755MHz)	Channel 159 (5795MHz)

802.11n-HT40 PSD – Chain C

Channel 151 (5755MHz)

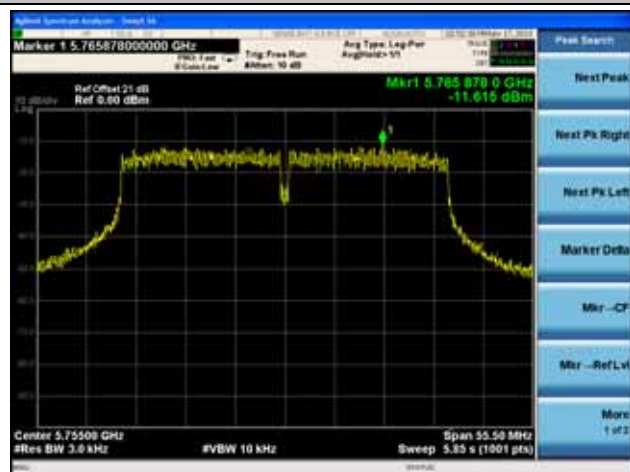


Channel 159 (5795MHz)

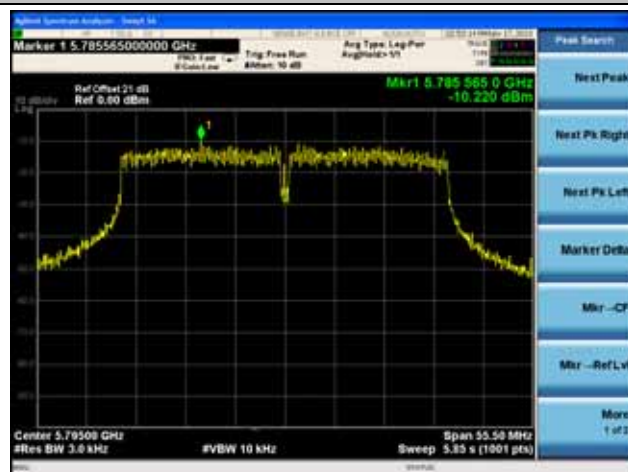


802.11n-HT40 PSD – Chain A / Chain A + B

Channel 151 (5755MHz)

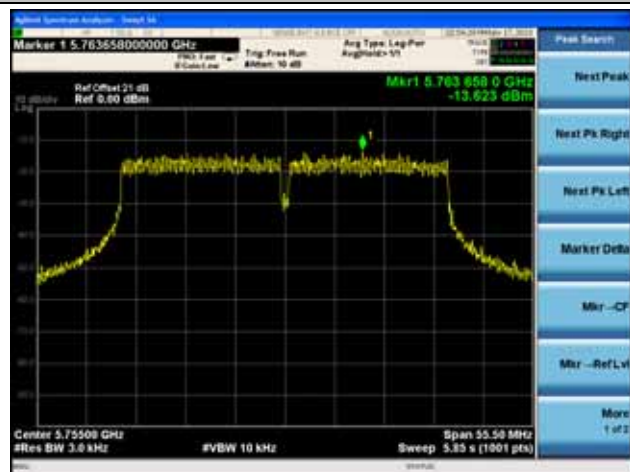


Channel 159 (5795MHz)

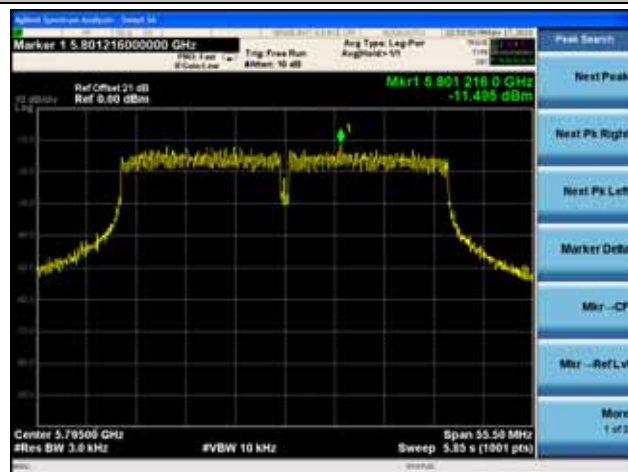


802.11n-HT40 PSD – Chain B / Chain A + B

Channel 151 (5755MHz)

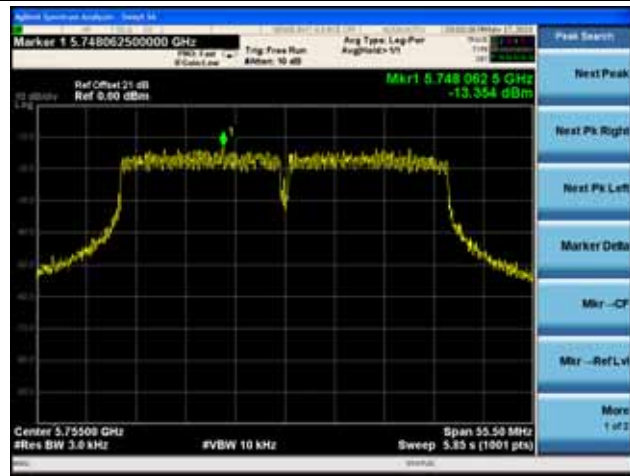


Channel 159 (5795MHz)

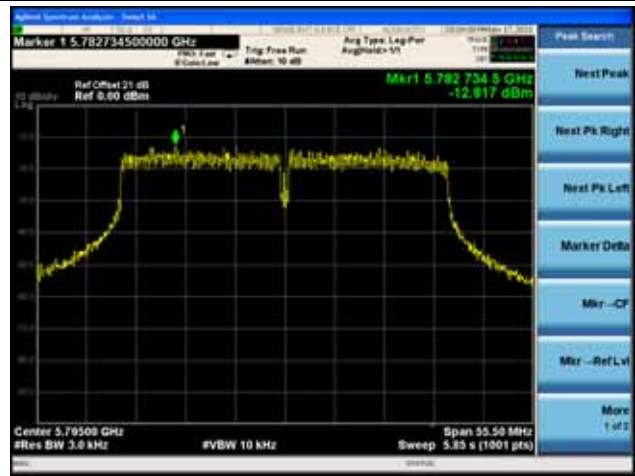


802.11n-HT40 PSD – Chain A / Chain A + B + C

Channel 151 (5755MHz)

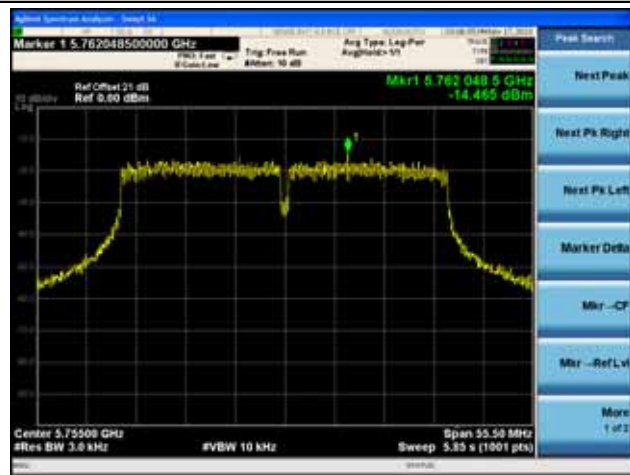


Channel 159 (5795MHz)

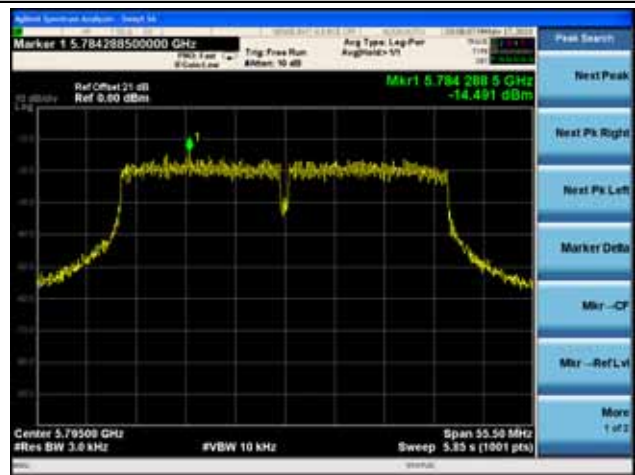


802.11n-HT40 PSD – Chain B / Chain A + B + C

Channel 151 (5755MHz)

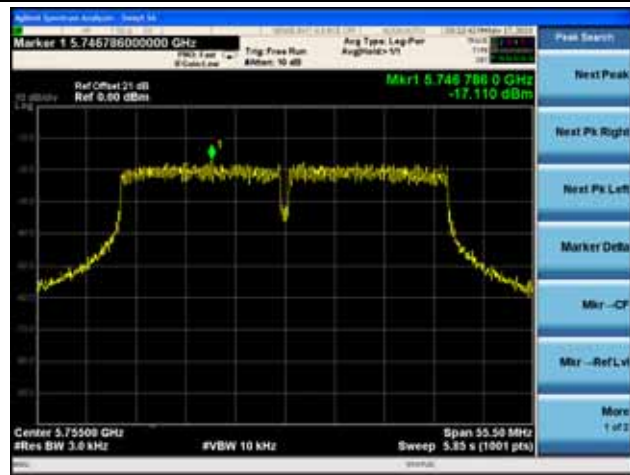


Channel 159 (5795MHz)

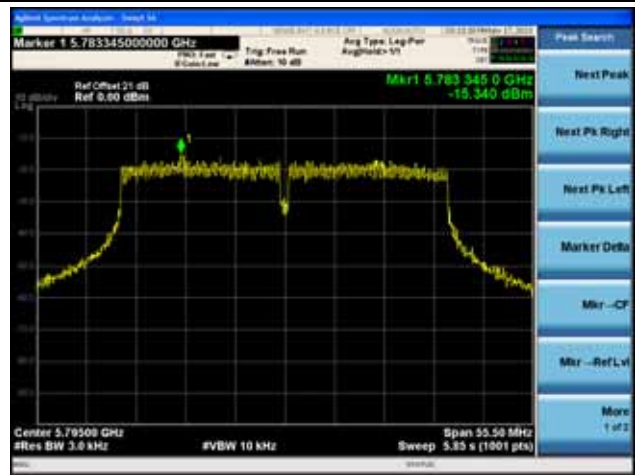


802.11n-HT40 PSD – Chain C / Chain A + B + C

Channel 151 (5755MHz)



Channel 159 (5795MHz)



7.5. Conducted Band Edge and Out-of-Band Emissions

7.5.1. Test Limit

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the PSD procedure.

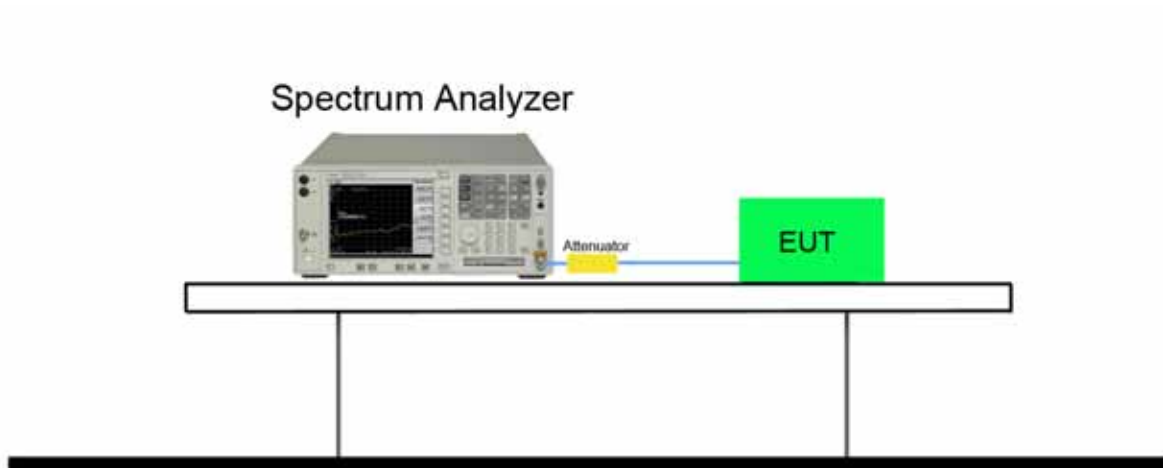
7.5.2. Test Procedure Used

KDB 558074 D01v03r01 – Section 11.3

7.5.3. Test Settintg

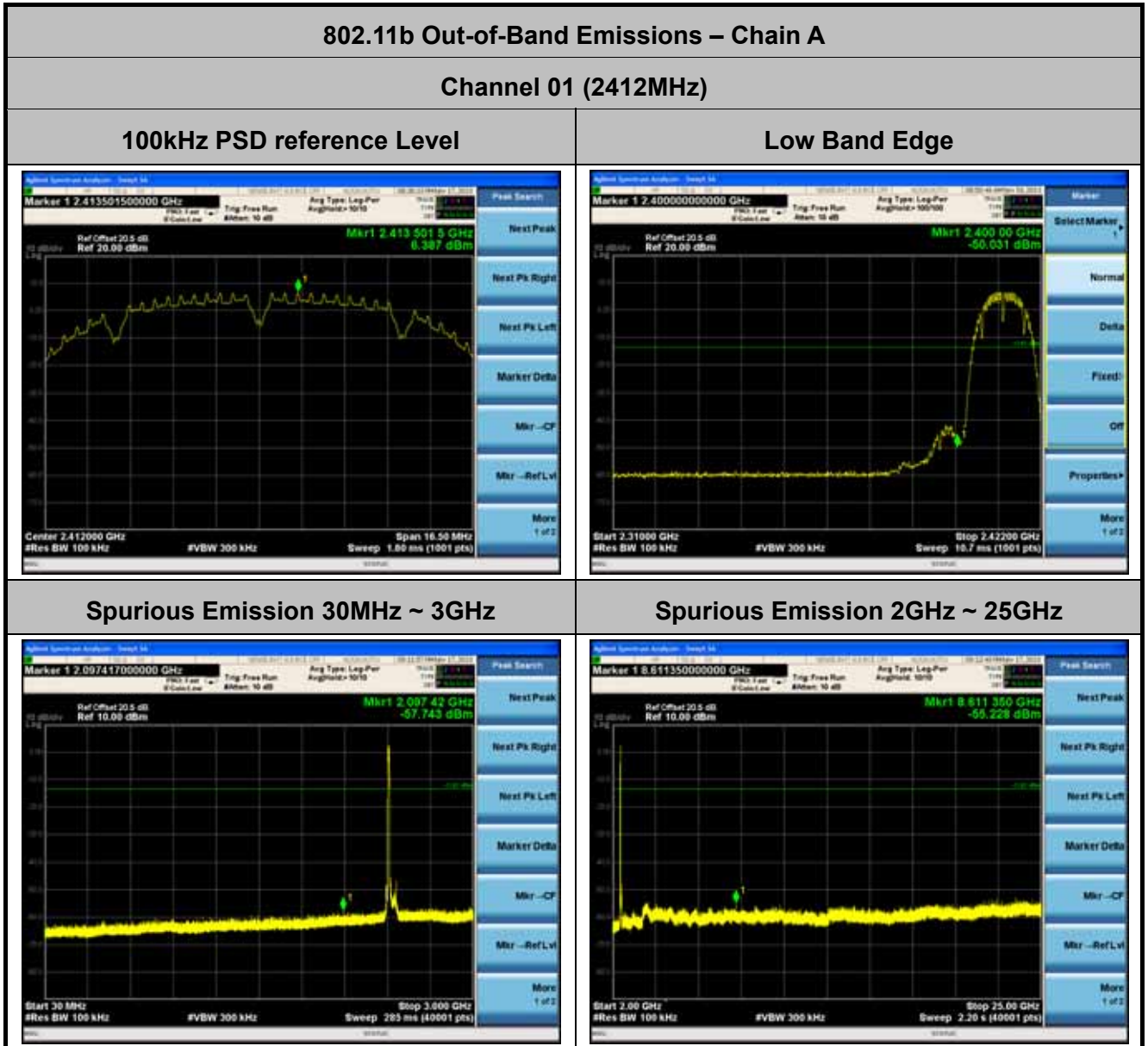
1. RBW = 100kHz
2. VBW = 300kHz
3. Detector = Peak
4. Trace mode = max hold
5. Sweep time = auto couple
6. The trace was allowed to stabilize

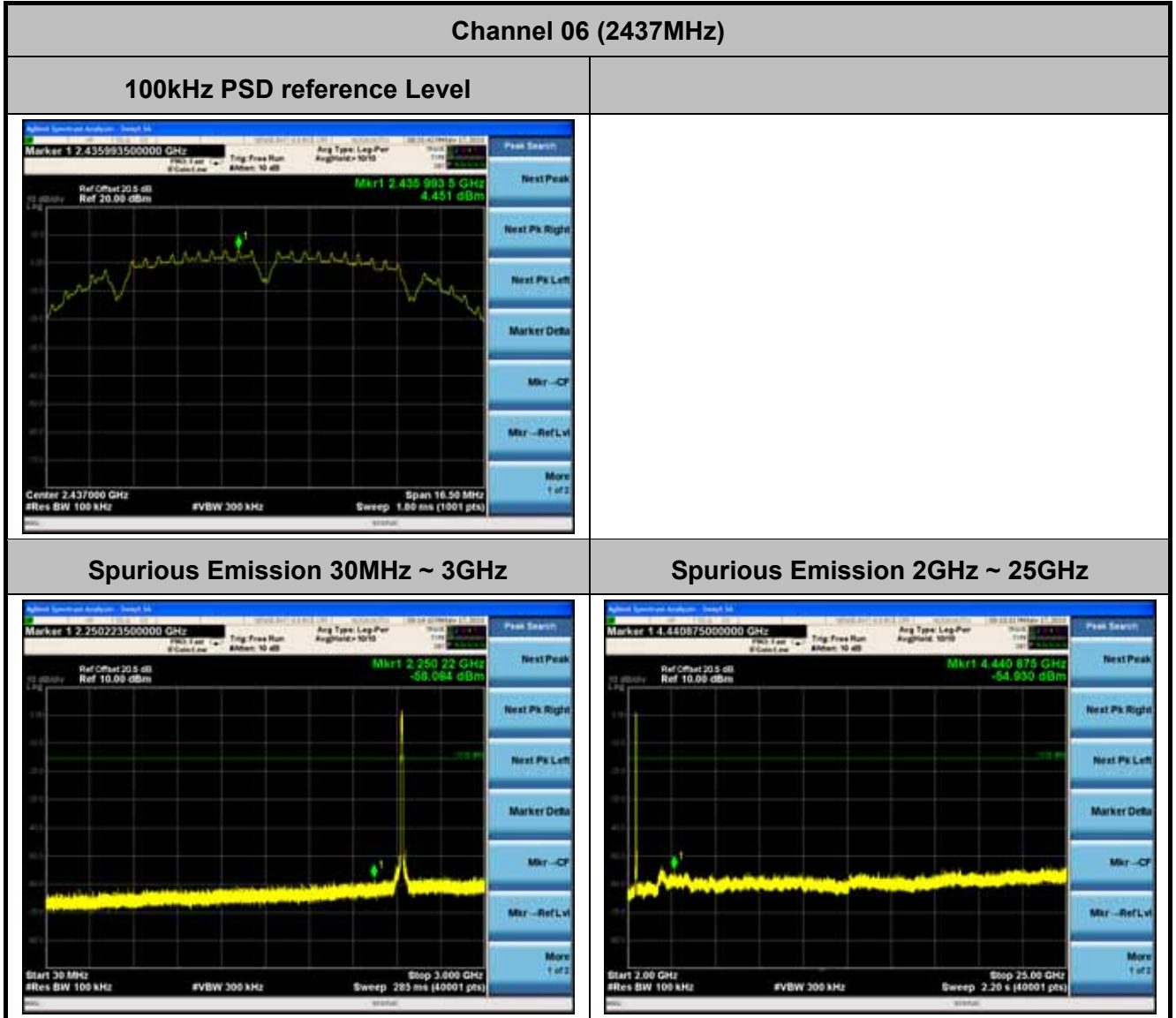
7.5.4. Test Setup

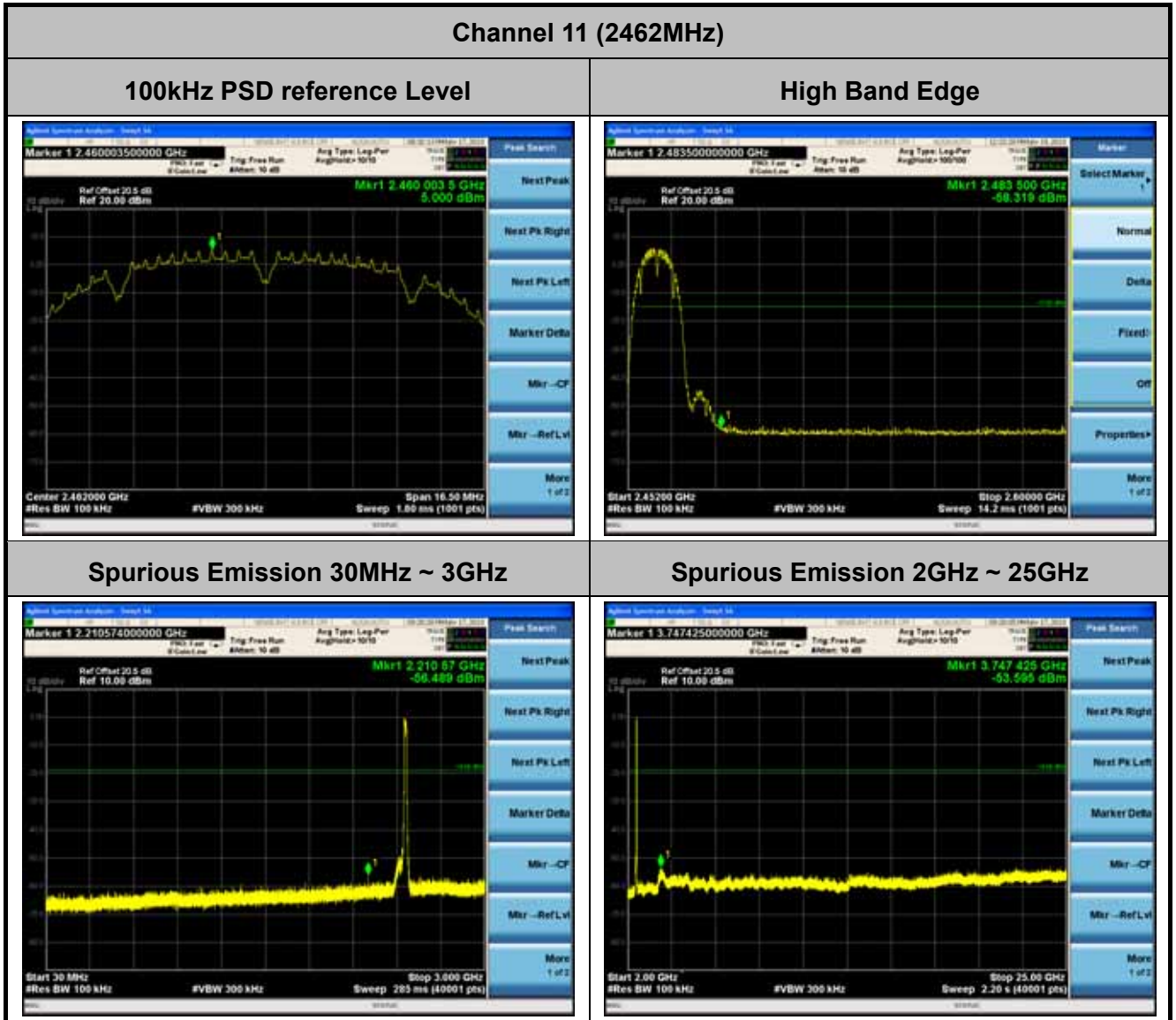


7.5.5. Test Result

Test Mode	N _{Tx}	Data Rate	Channel No.	Frequency (MHz)	Limit	Result
802.11b	1	1Mbps	01	2412	20dBc	Pass
802.11b	1	1Mbps	06	2437	20dBc	Pass
802.11b	1	1Mbps	11	2462	20dBc	Pass



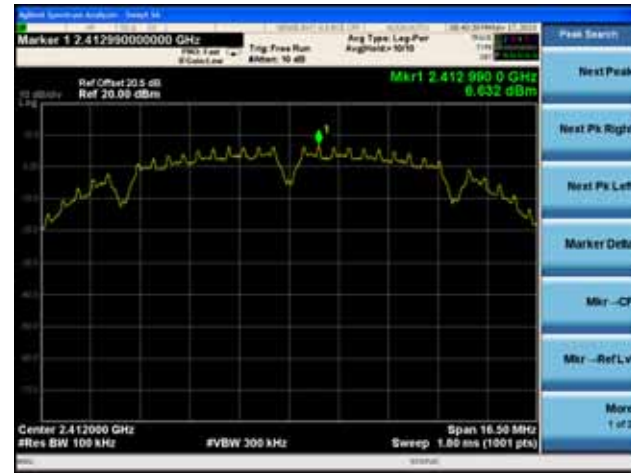




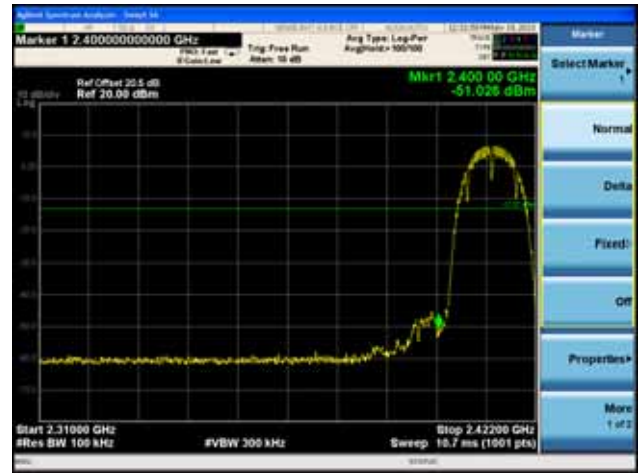
802.11b Out-of-Band Emissions – Chain B

Channel 01 (2412MHz)

100kHz PSD reference Level



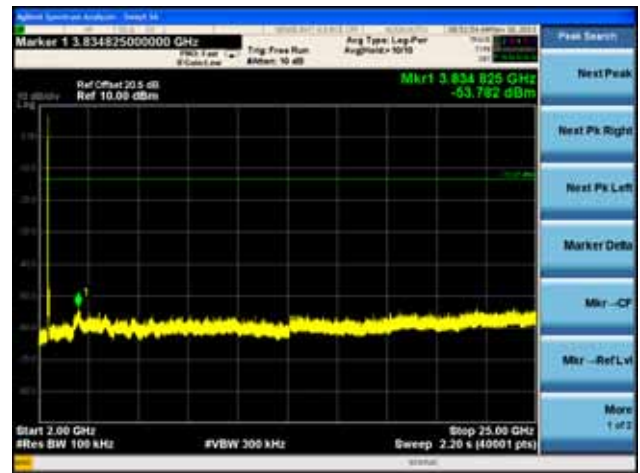
Low Band Edge

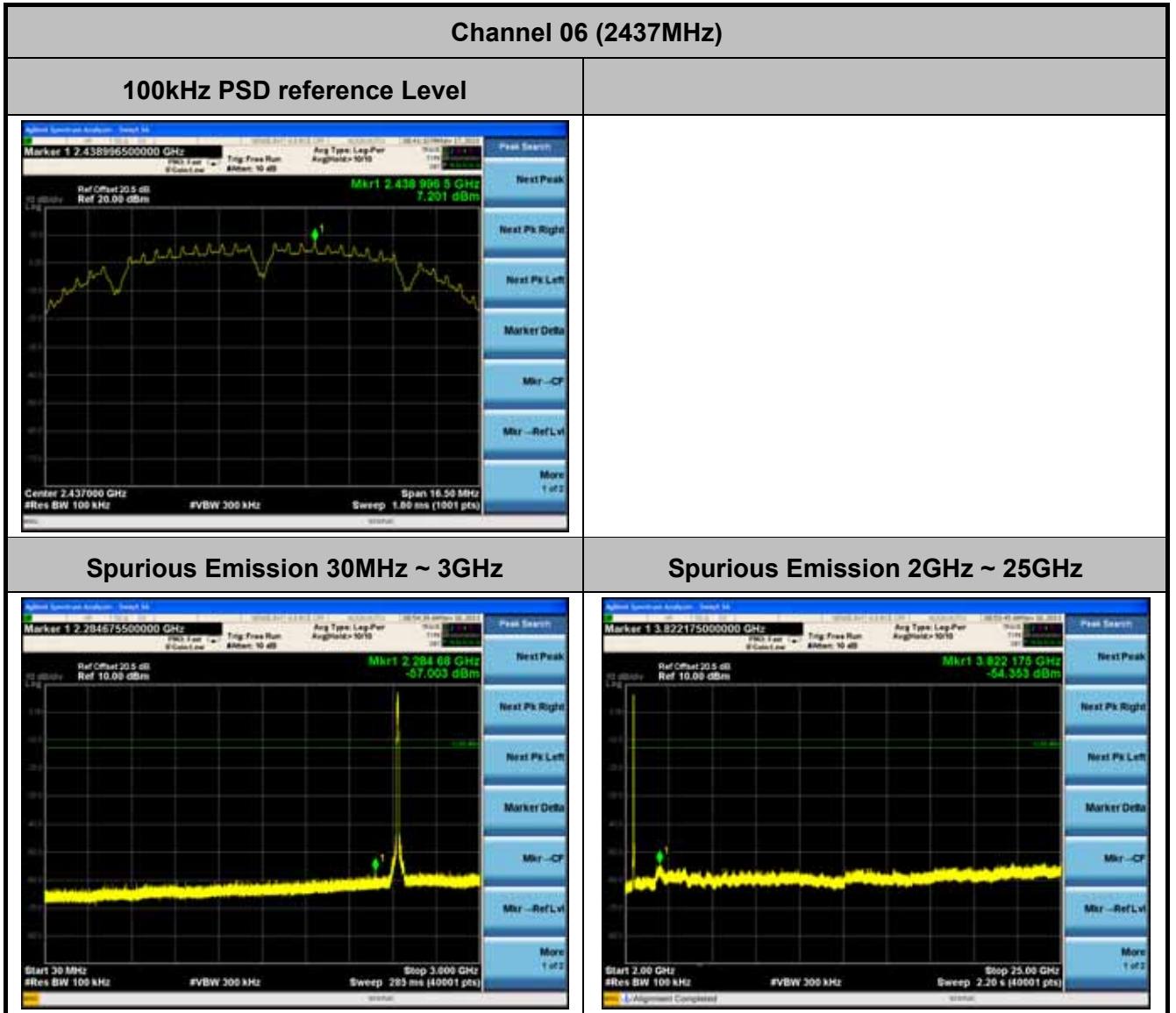


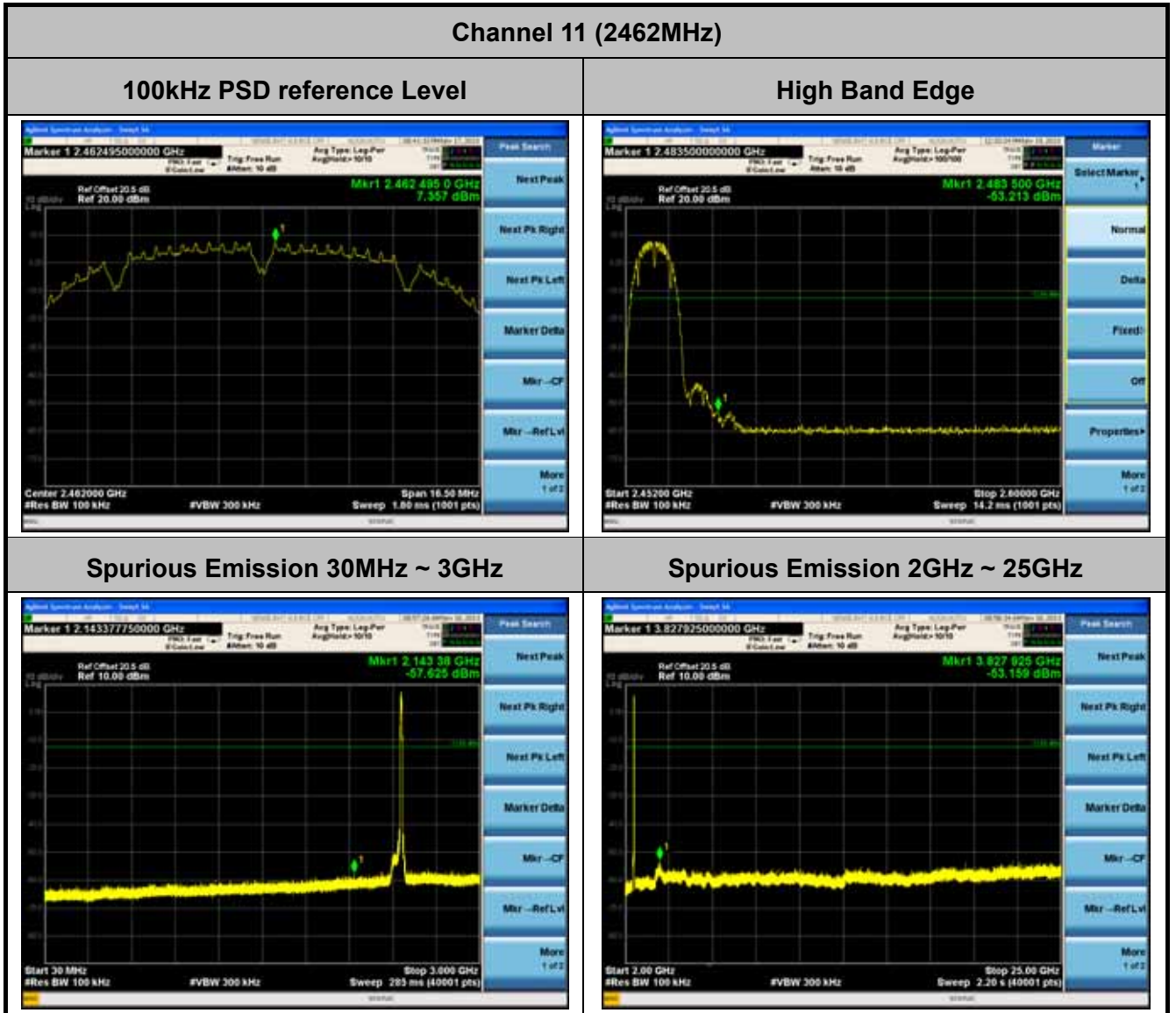
Spurious Emission 30MHz ~ 3GHz



Spurious Emission 2GHz ~ 25GHz







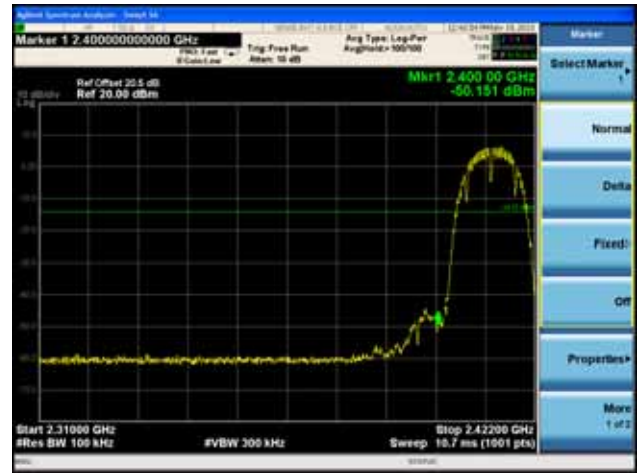
802.11b Out-of-Band Emissions – Chain C

Channel 01 (2412MHz)

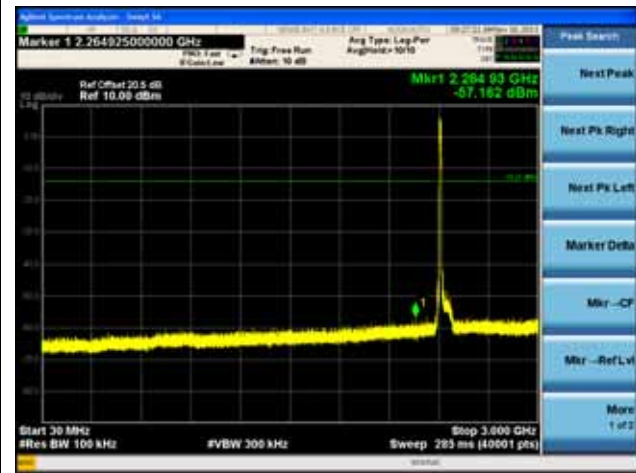
100kHz PSD reference Level



Low Band Edge

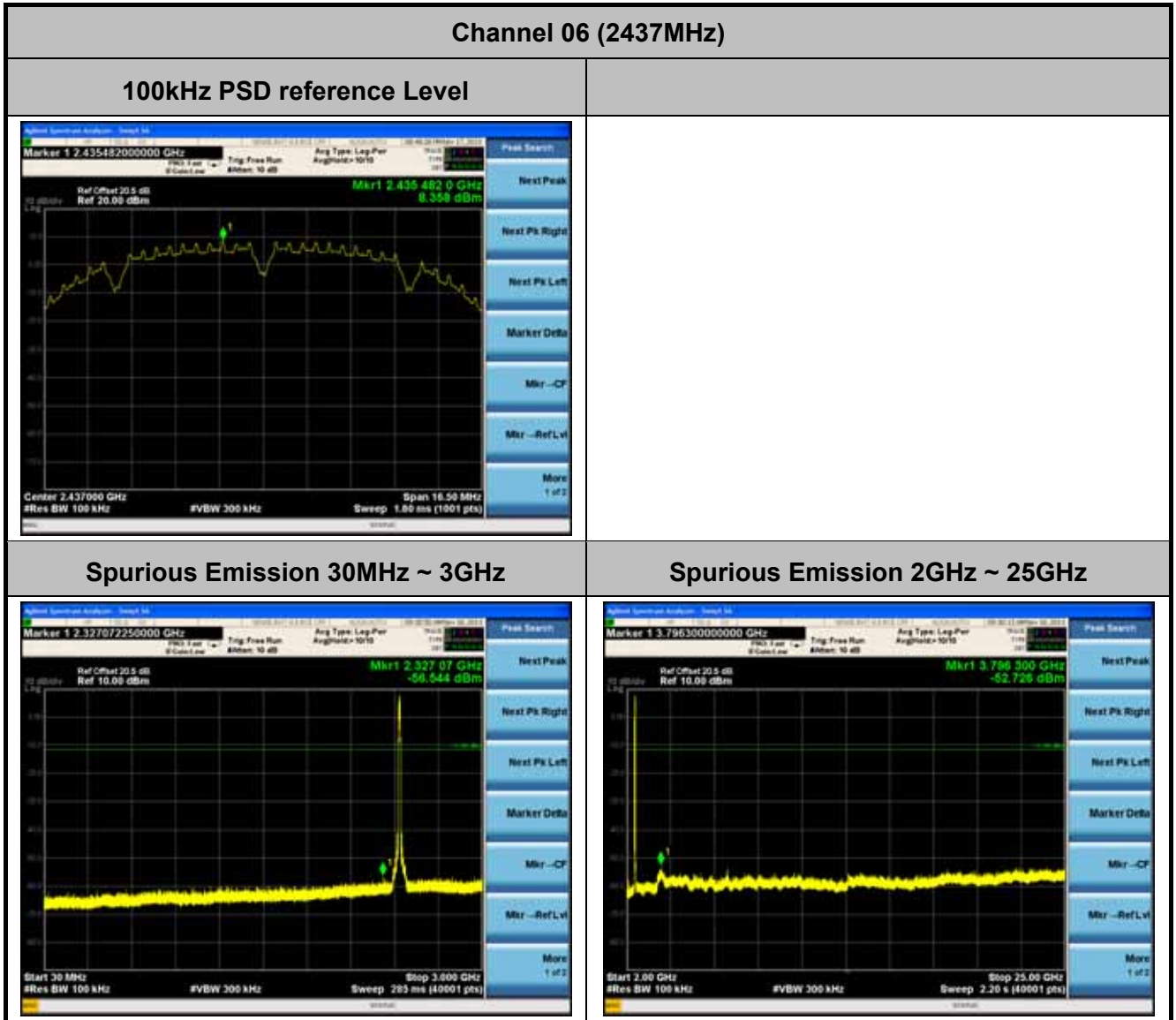


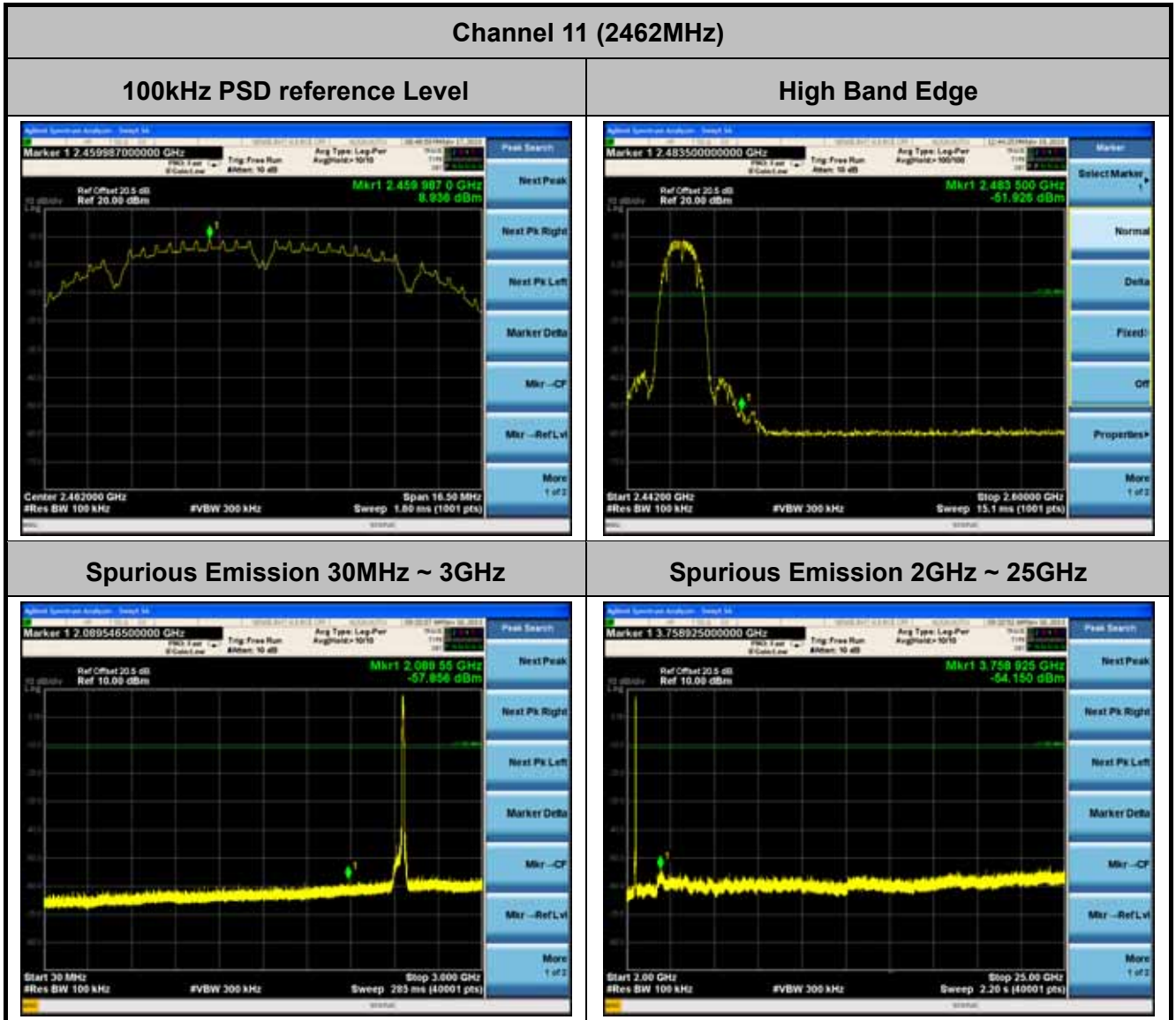
Spurious Emission 30MHz ~ 3GHz



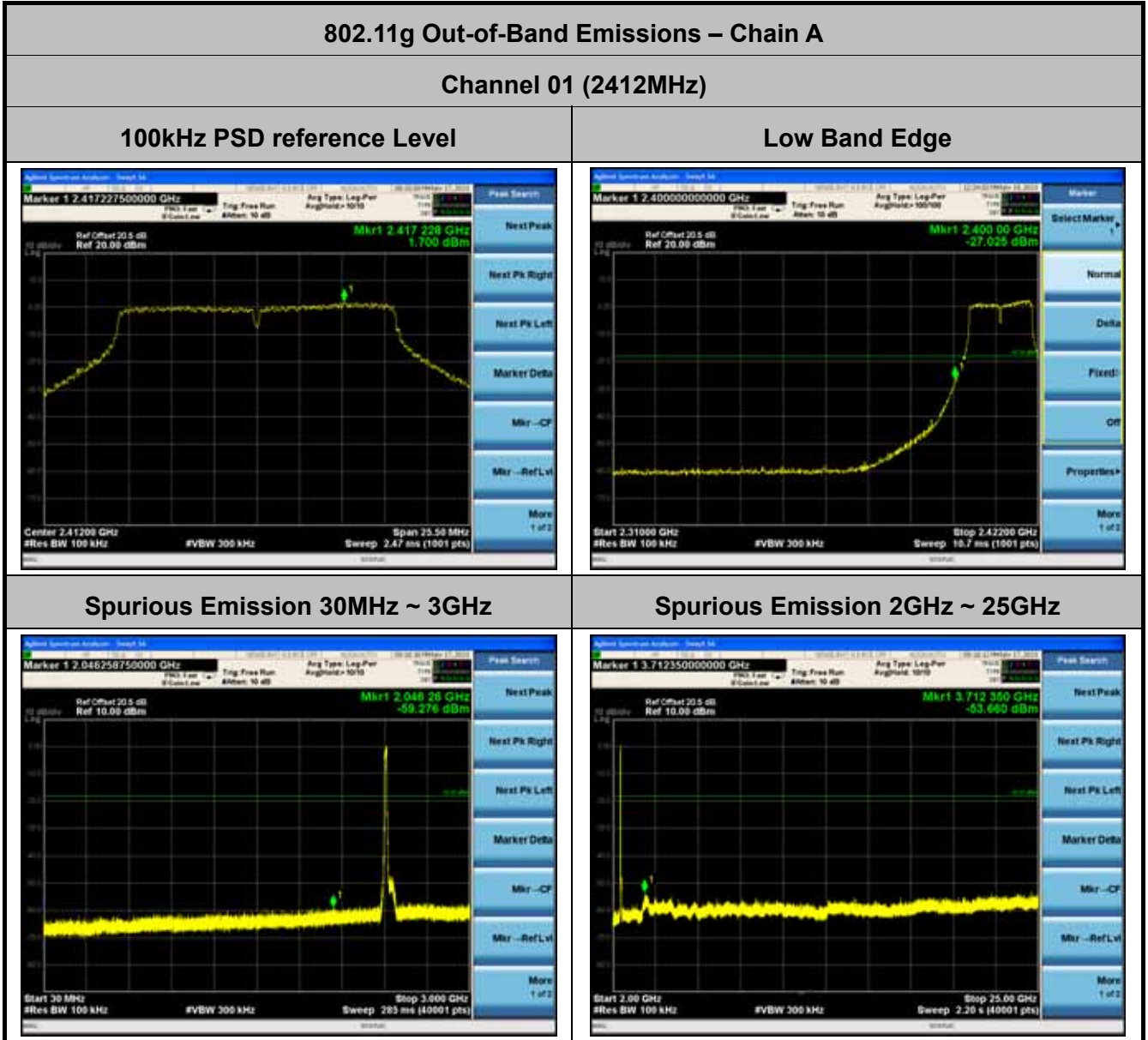
Spurious Emission 2GHz ~ 25GHz







Test Mode	N _{Tx}	Data Rate	Channel No.	Frequency (MHz)	Limit	Result
802.11g	1	6Mbps	01	2412	20dBc	Pass
802.11g	1	6Mbps	06	2437	20dBc	Pass
802.11g	1	6Mbps	11	2462	20dBc	Pass

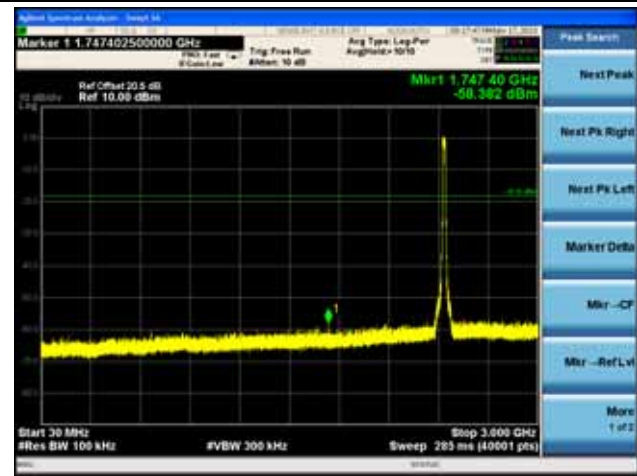


Channel 06 (2437MHz)

100kHz PSD reference Level

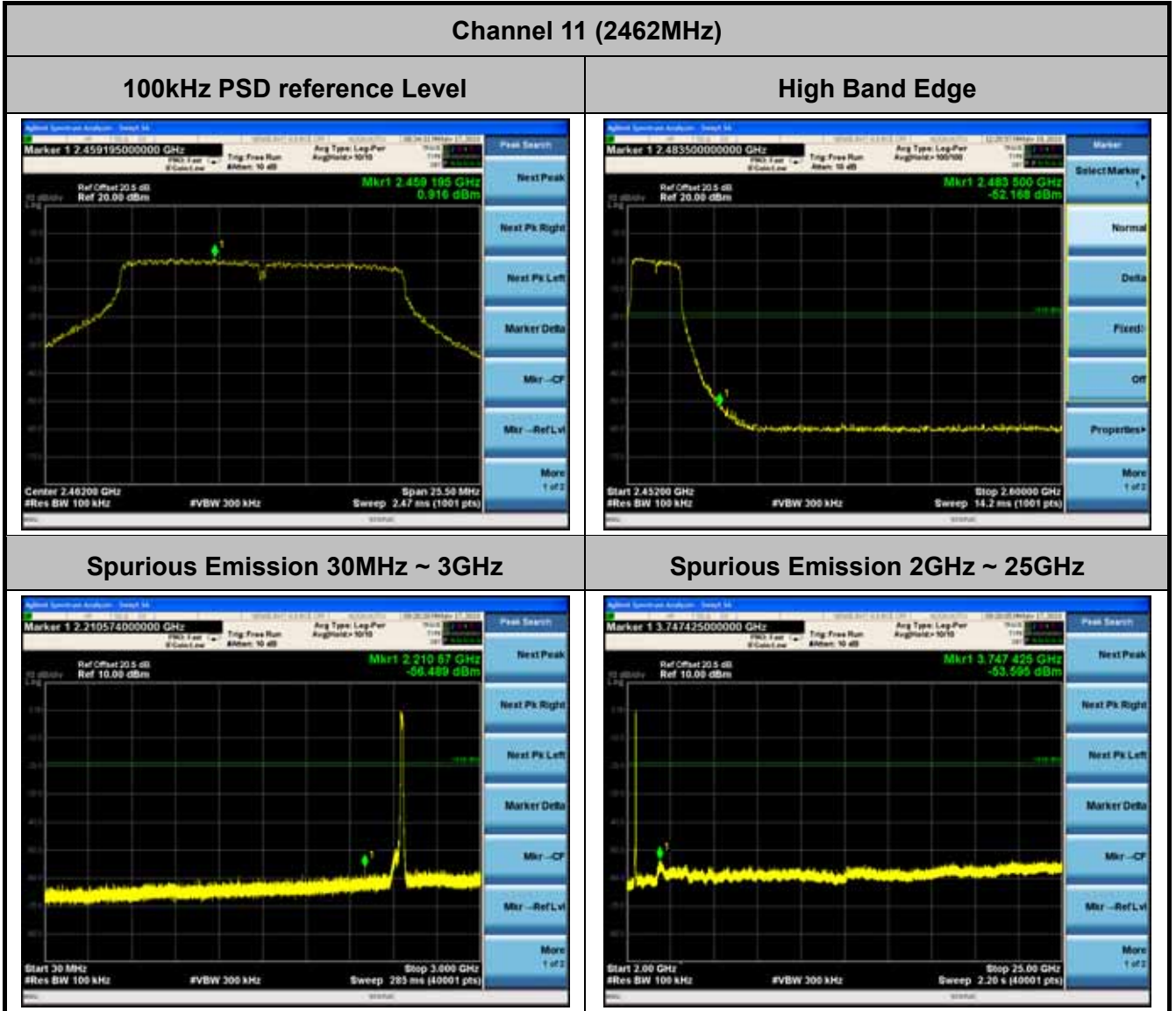


Spurious Emission 30MHz ~ 3GHz



Spurious Emission 2GHz ~ 25GHz

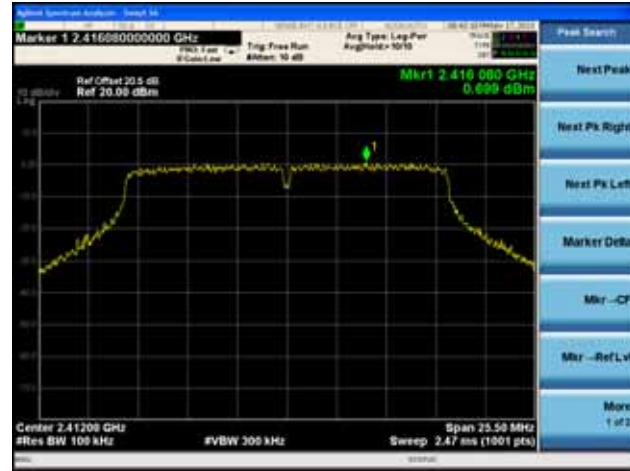




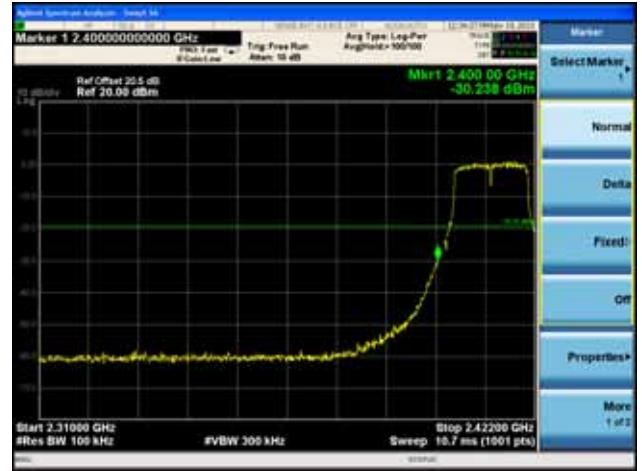
802.11g Out-of-Band Emissions – Chain B

Channel 01 (2412MHz)

100kHz PSD reference Level



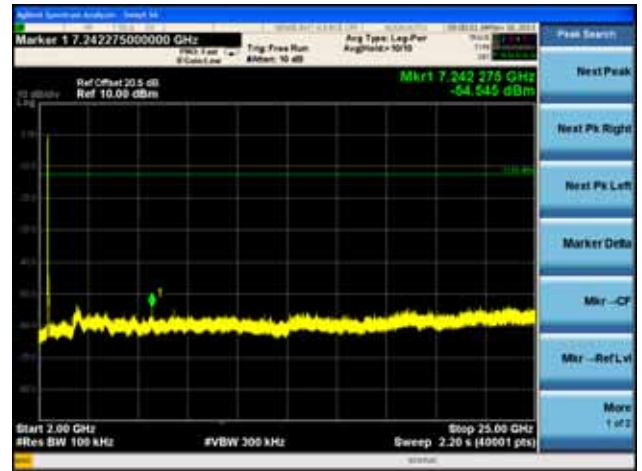
Low Band Edge

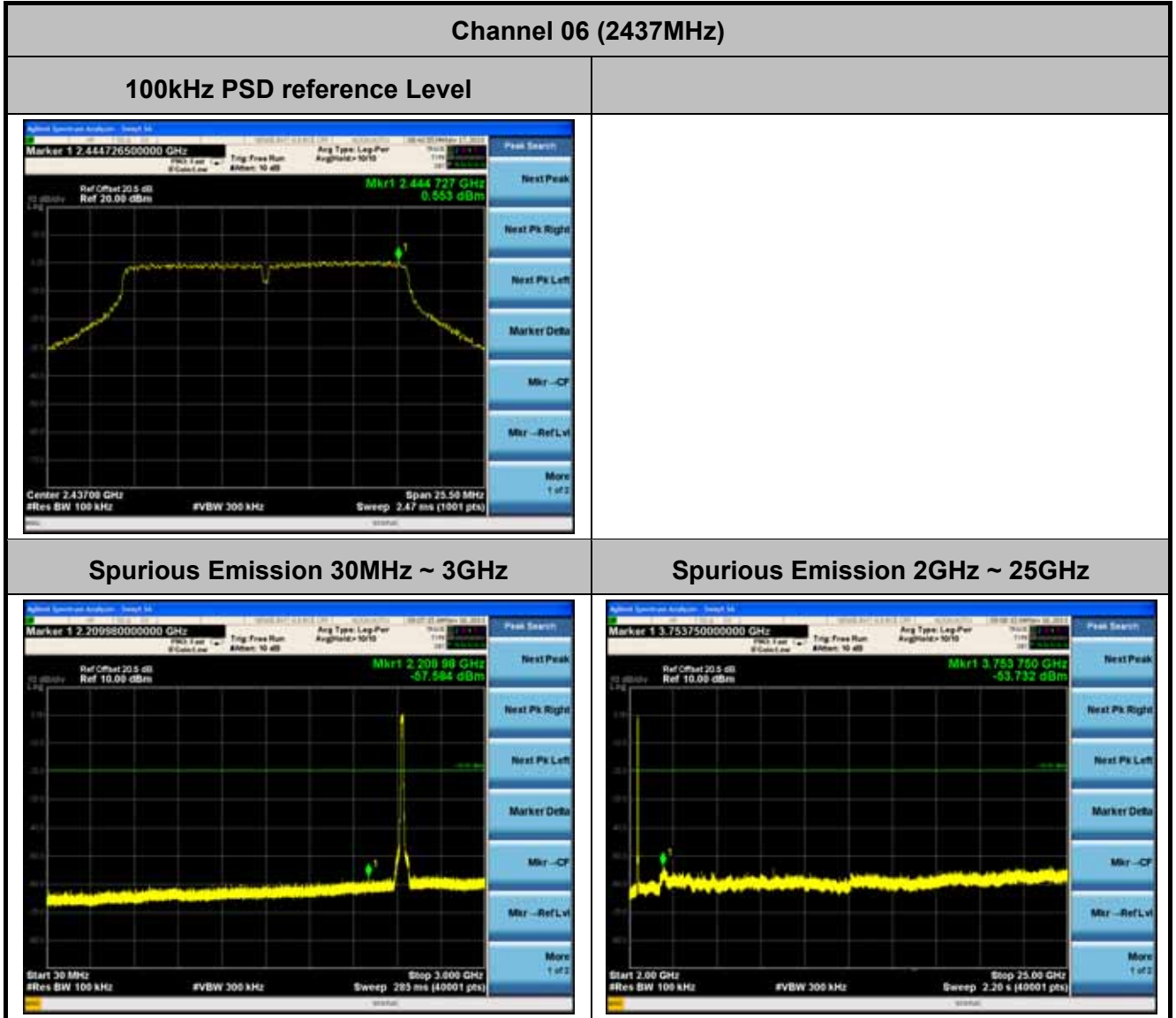


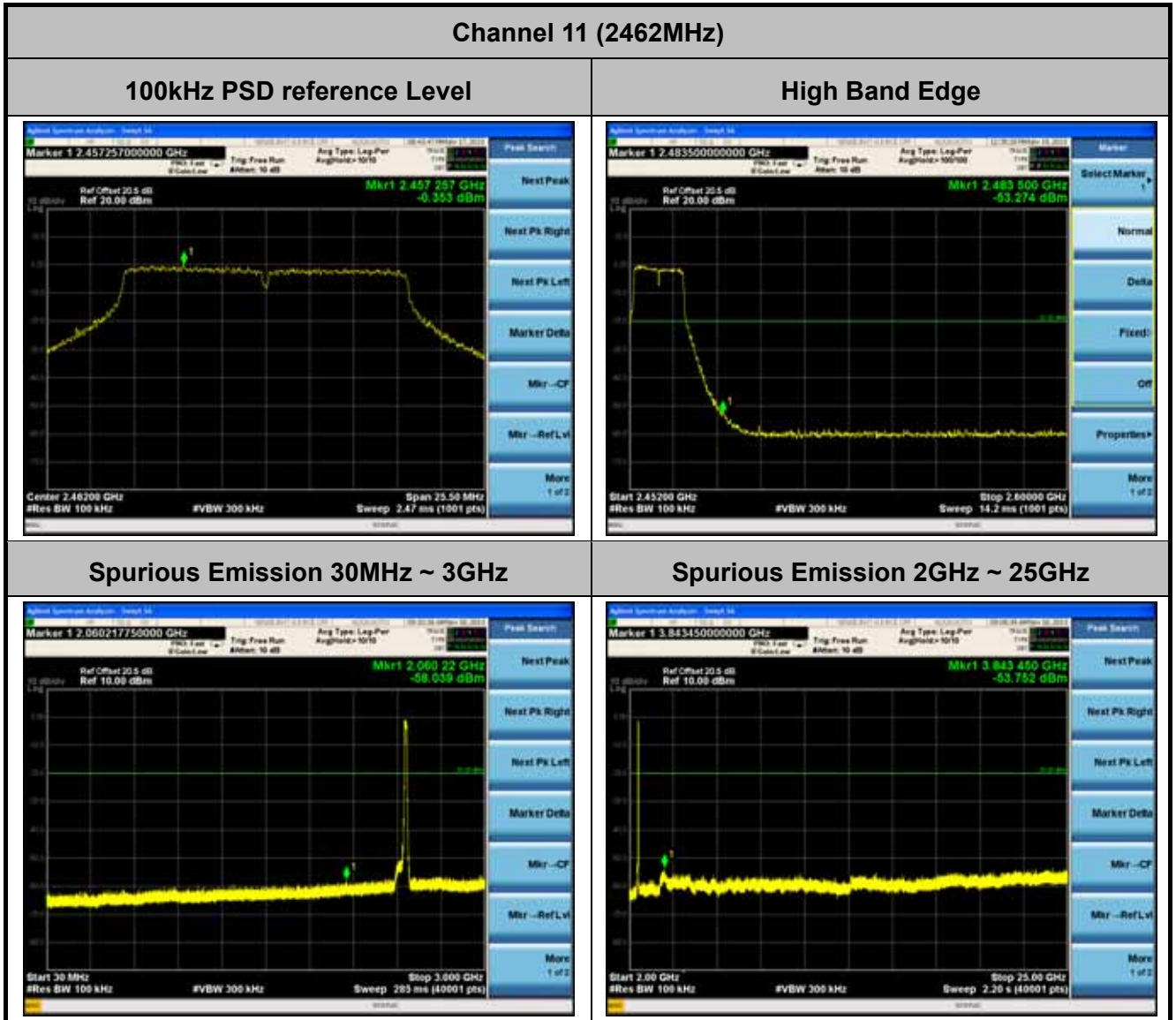
Spurious Emission 30MHz ~ 3GHz



Spurious Emission 2GHz ~ 25GHz



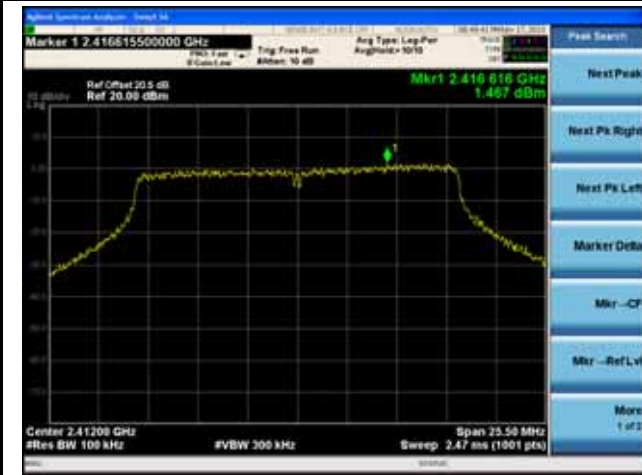




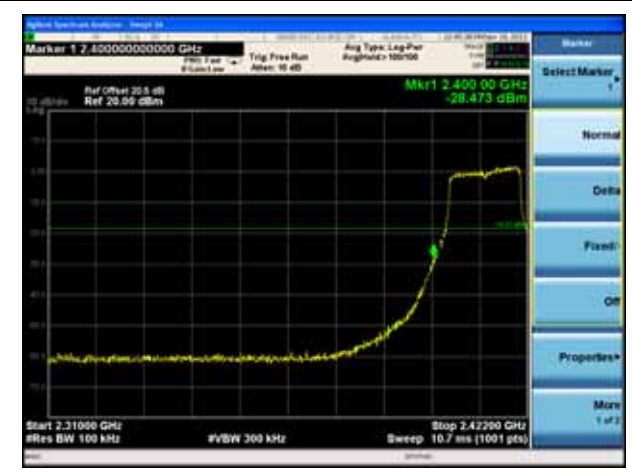
802.11g Out-of-Band Emissions – Chain C

Channel 01 (2412MHz)

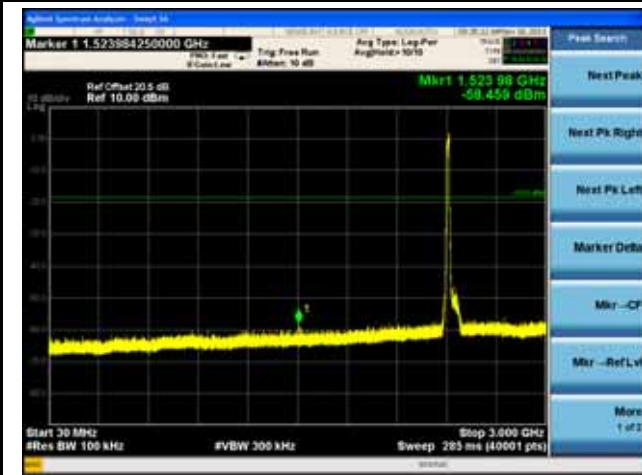
100kHz PSD reference Level



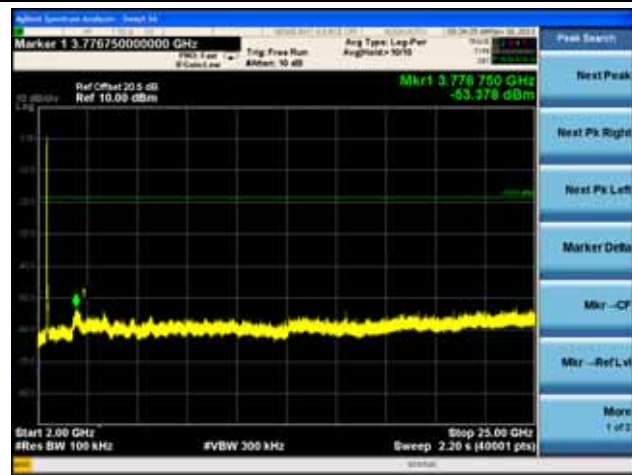
Low Band Edge

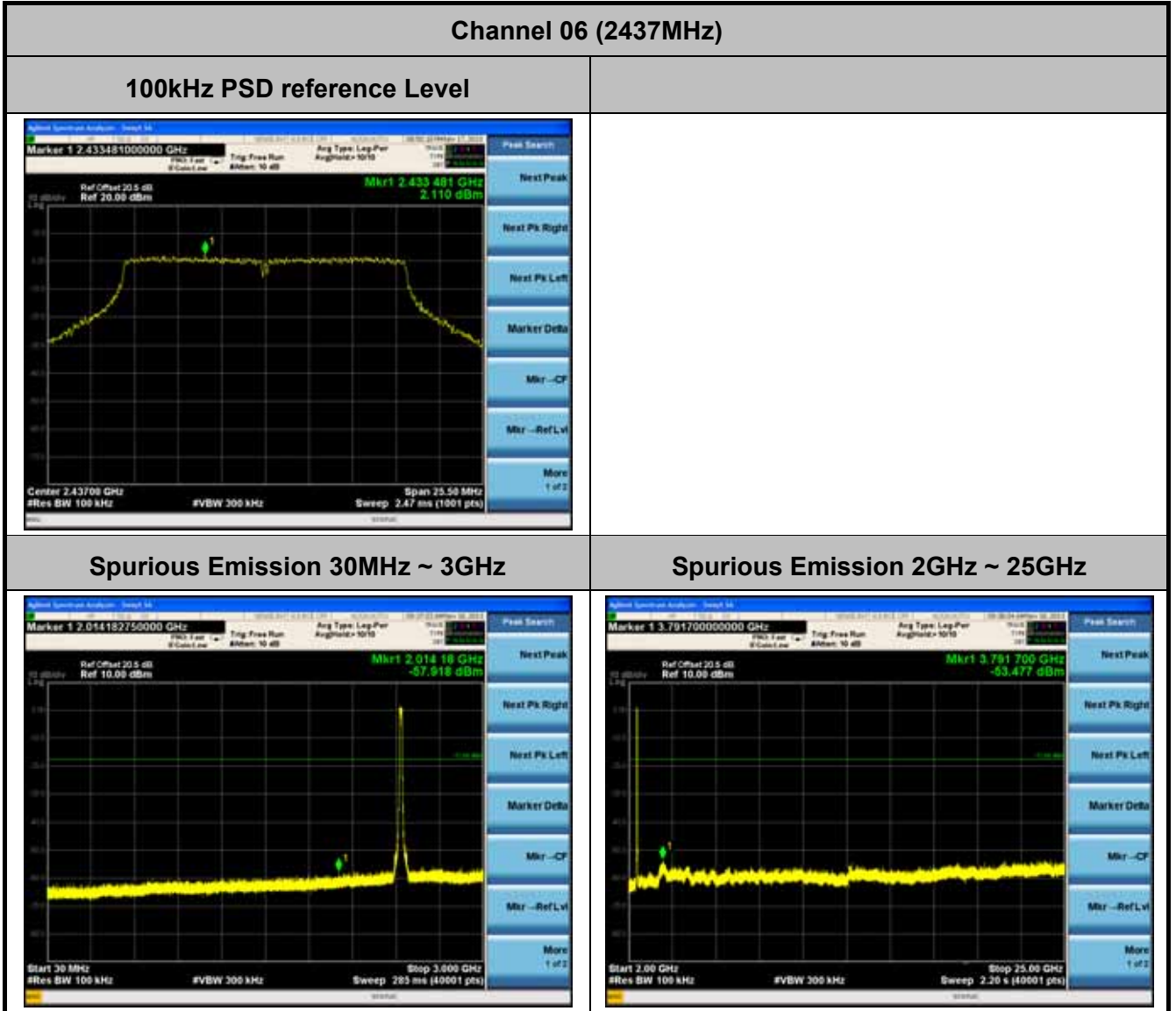


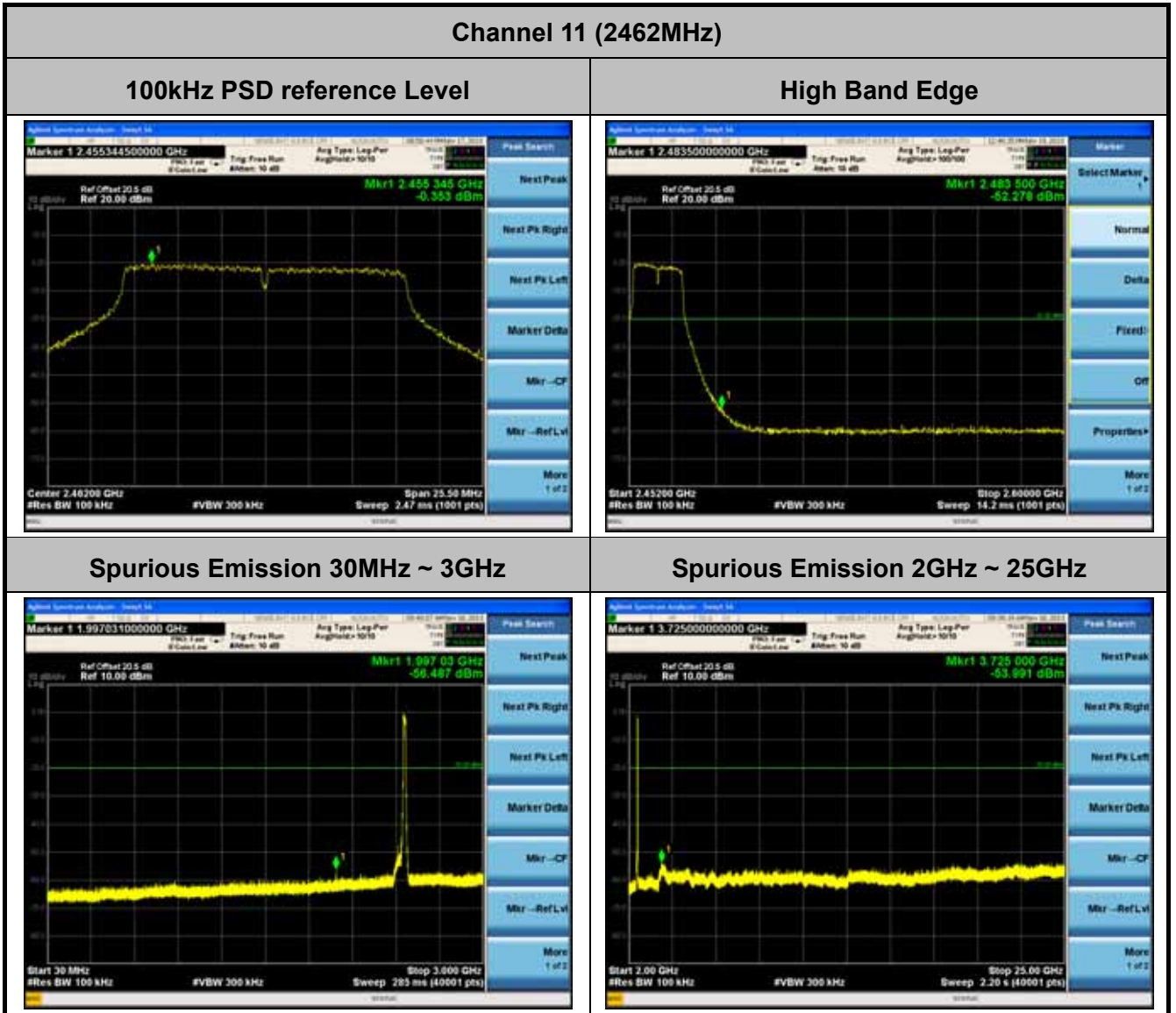
Spurious Emission 30MHz ~ 3GHz



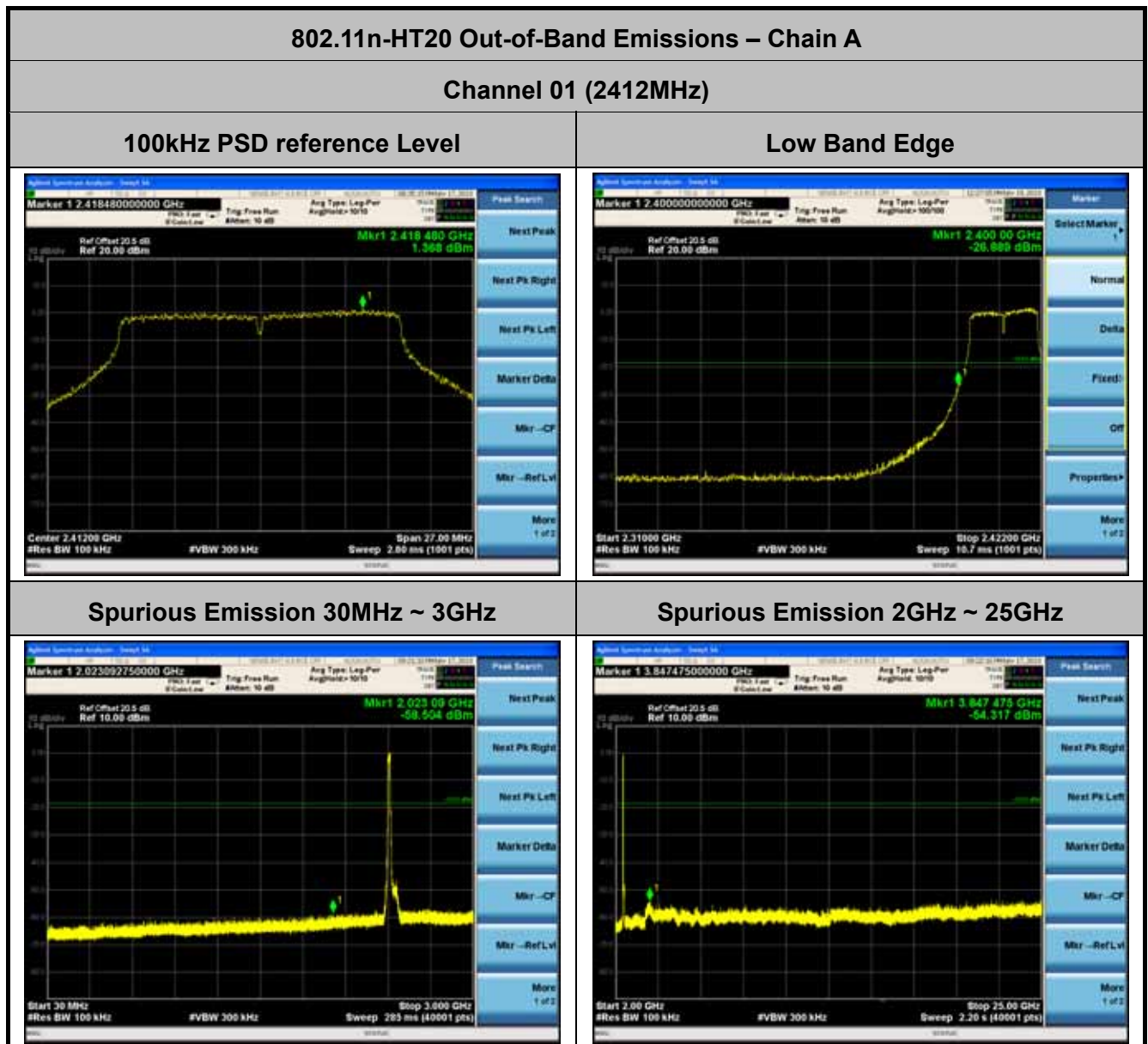
Spurious Emission 2GHz ~ 25GHz





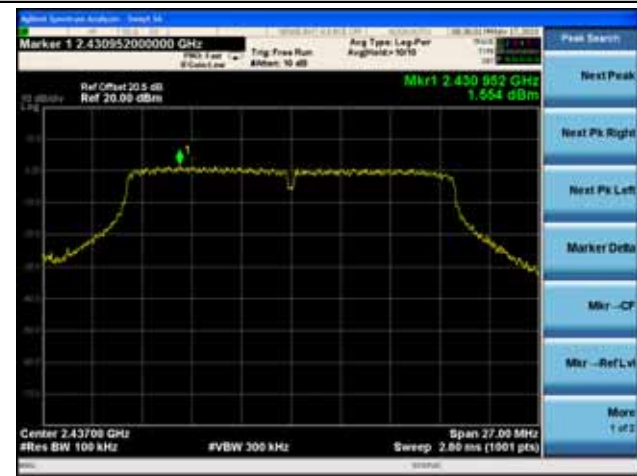


Test Mode	N _{Tx}	Data Rate	Channel No.	Frequency (MHz)	Limit	Result
802.11n-HT20	1	6.5/7.2Mbps	01	2412	20dBc	Pass
802.11n-HT20	1	6.5/7.2Mbps	06	2437	20dBc	Pass
802.11n-HT20	1	6.5/7.2Mbps	11	2462	20dBc	Pass
802.11n-HT20	2	13/14.4Mbps	01	2412	20dBc	Pass
802.11n-HT20	2	13/14.4Mbps	06	2437	20dBc	Pass
802.11n-HT20	2	13/14.4Mbps	11	2462	20dBc	Pass
802.11n-HT20	3	19.5/21.7Mbps	01	2412	20dBc	Pass
802.11n-HT20	3	19.5/21.7Mbps	06	2437	20dBc	Pass
802.11n-HT20	3	19.5/21.7Mbps	11	2462	20dBc	Pass

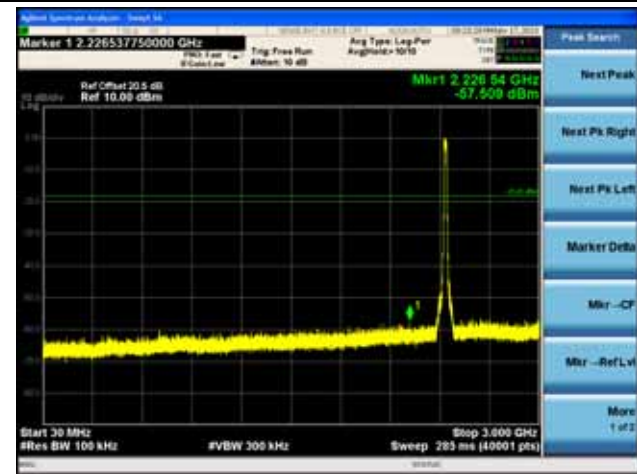


Channel 06 (2437MHz)

100kHz PSD reference Level



Spurious Emission 30MHz ~ 3GHz



Spurious Emission 2GHz ~ 25GHz

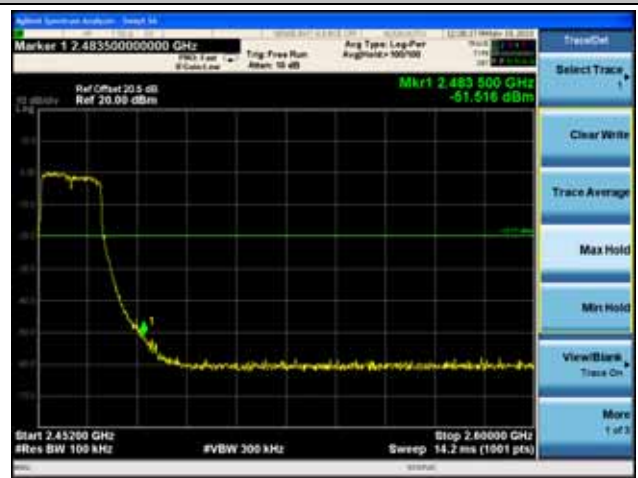


Channel 11 (2462MHz)

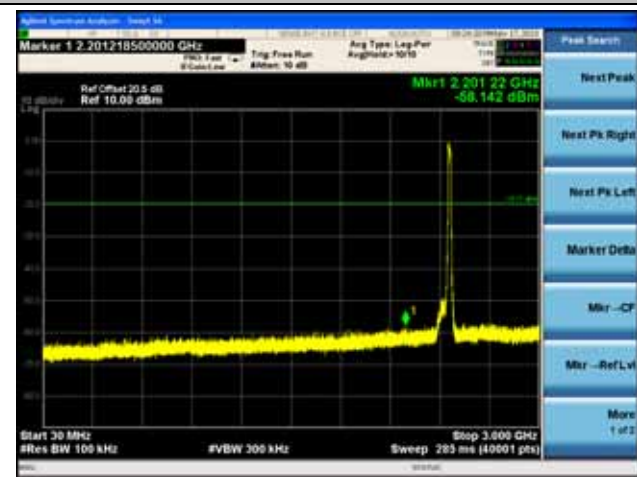
100kHz PSD reference Level



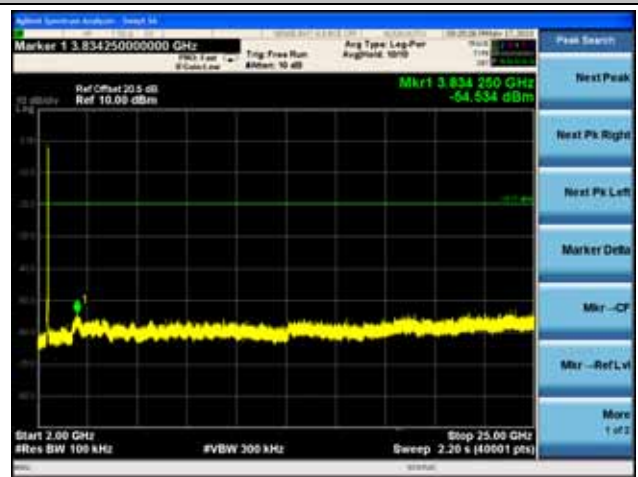
High Band Edge



Spurious Emission 30MHz ~ 3GHz



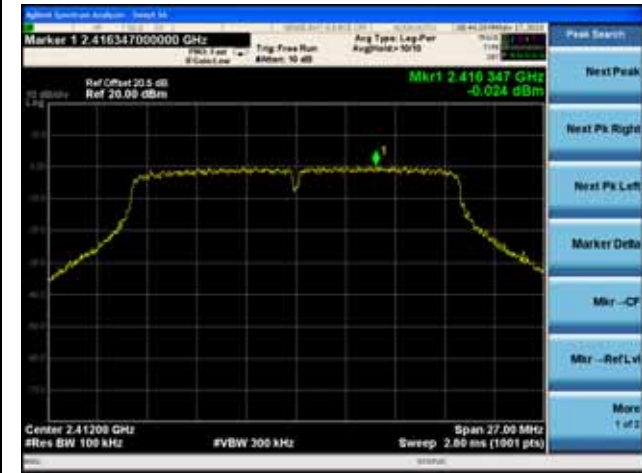
Spurious Emission 2GHz ~ 25GHz



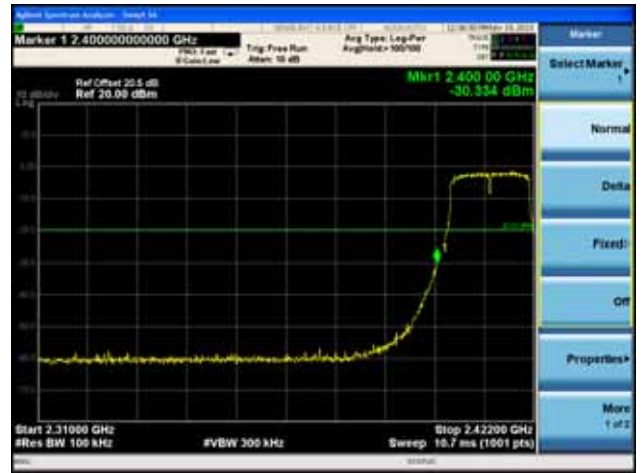
802.11n-HT20 Out-of-Band Emissions – Chain B

Channel 01 (2412MHz)

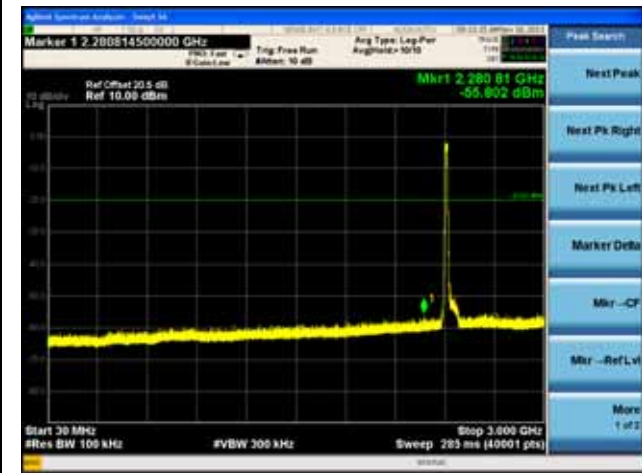
100kHz PSD reference Level



Low Band Edge



Spurious Emission 30MHz ~ 3GHz

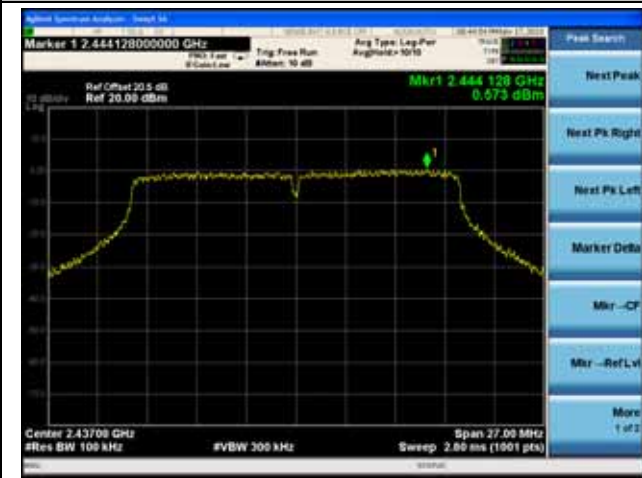


Spurious Emission 2GHz ~ 25GHz

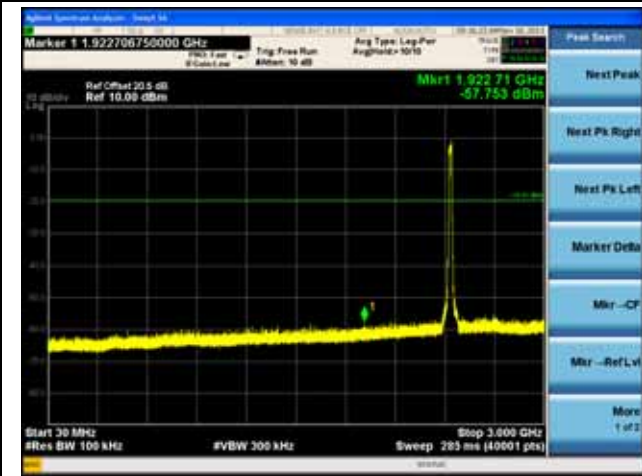


Channel 06 (2437MHz)

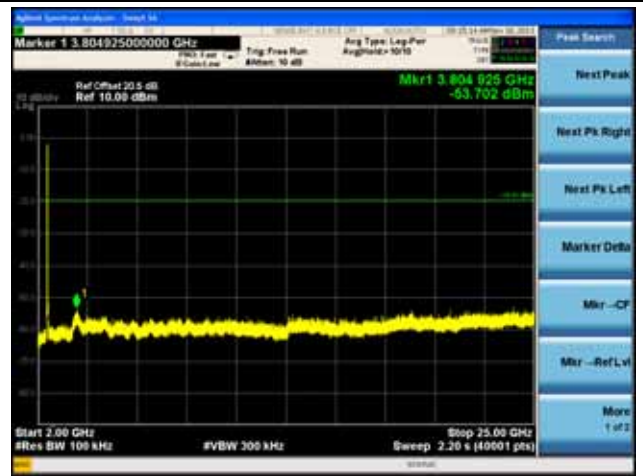
100kHz PSD reference Level



Spurious Emission 30MHz ~ 3GHz



Spurious Emission 2GHz ~ 25GHz

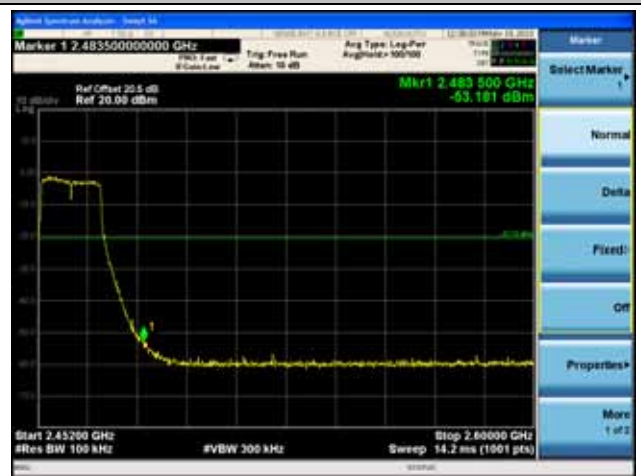


Channel 11 (2462MHz)

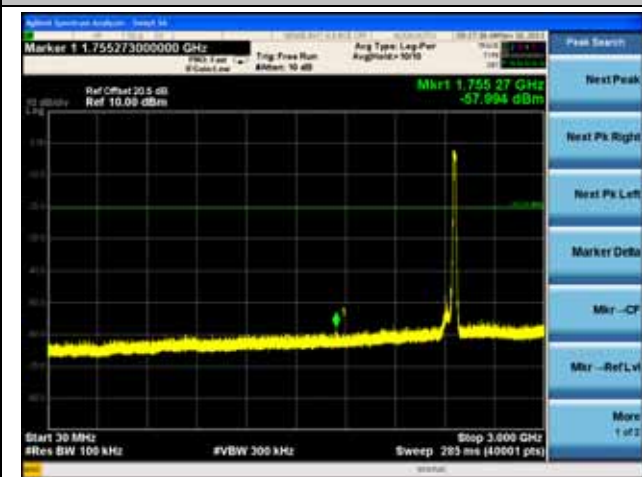
100kHz PSD reference Level



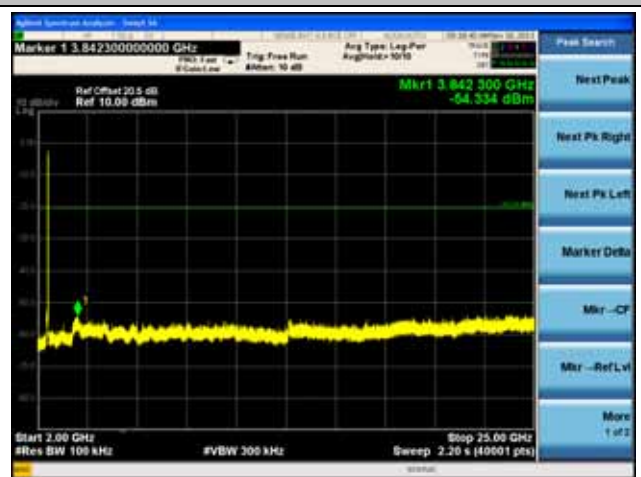
High Band Edge

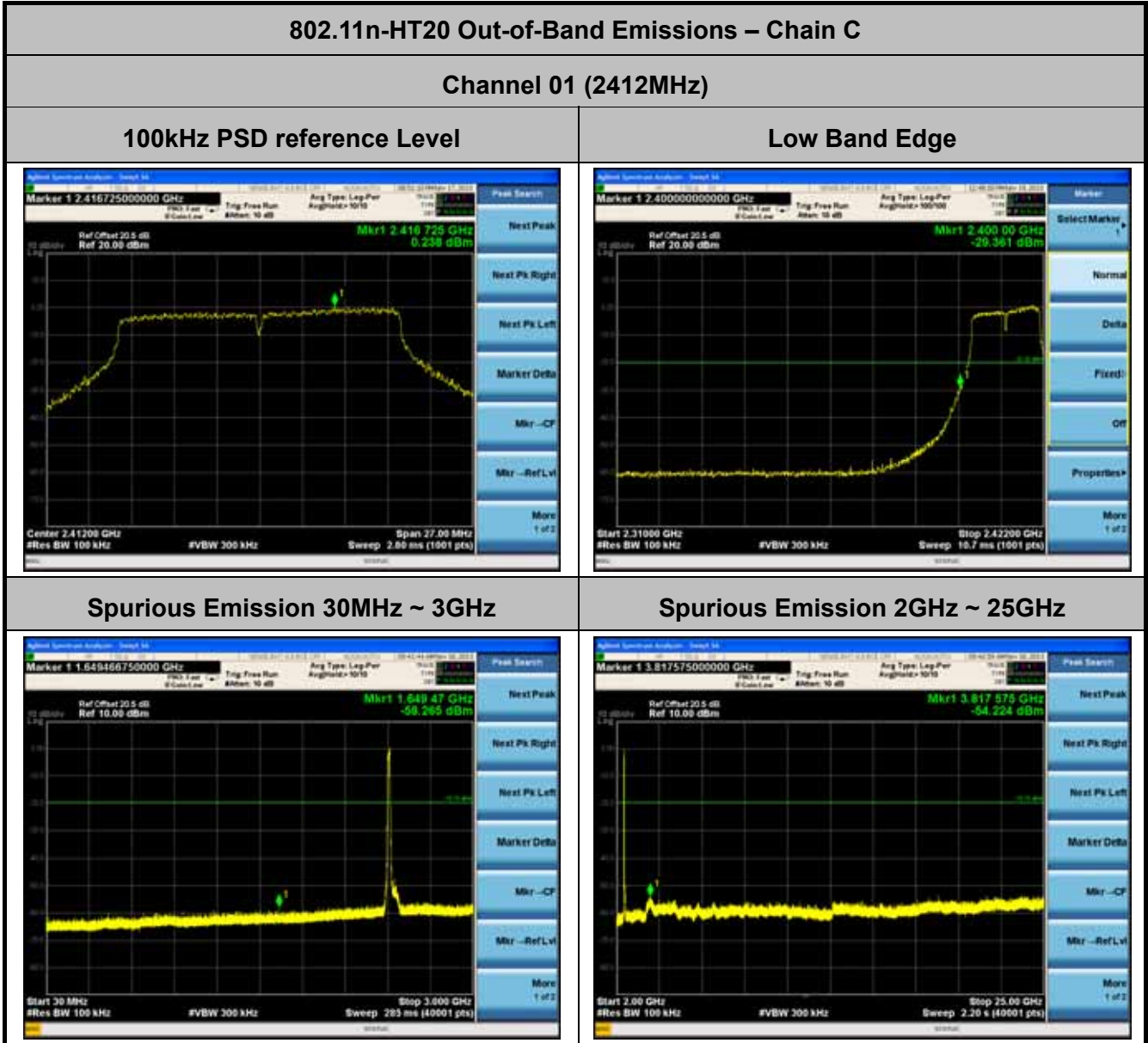


Spurious Emission 30MHz ~ 3GHz

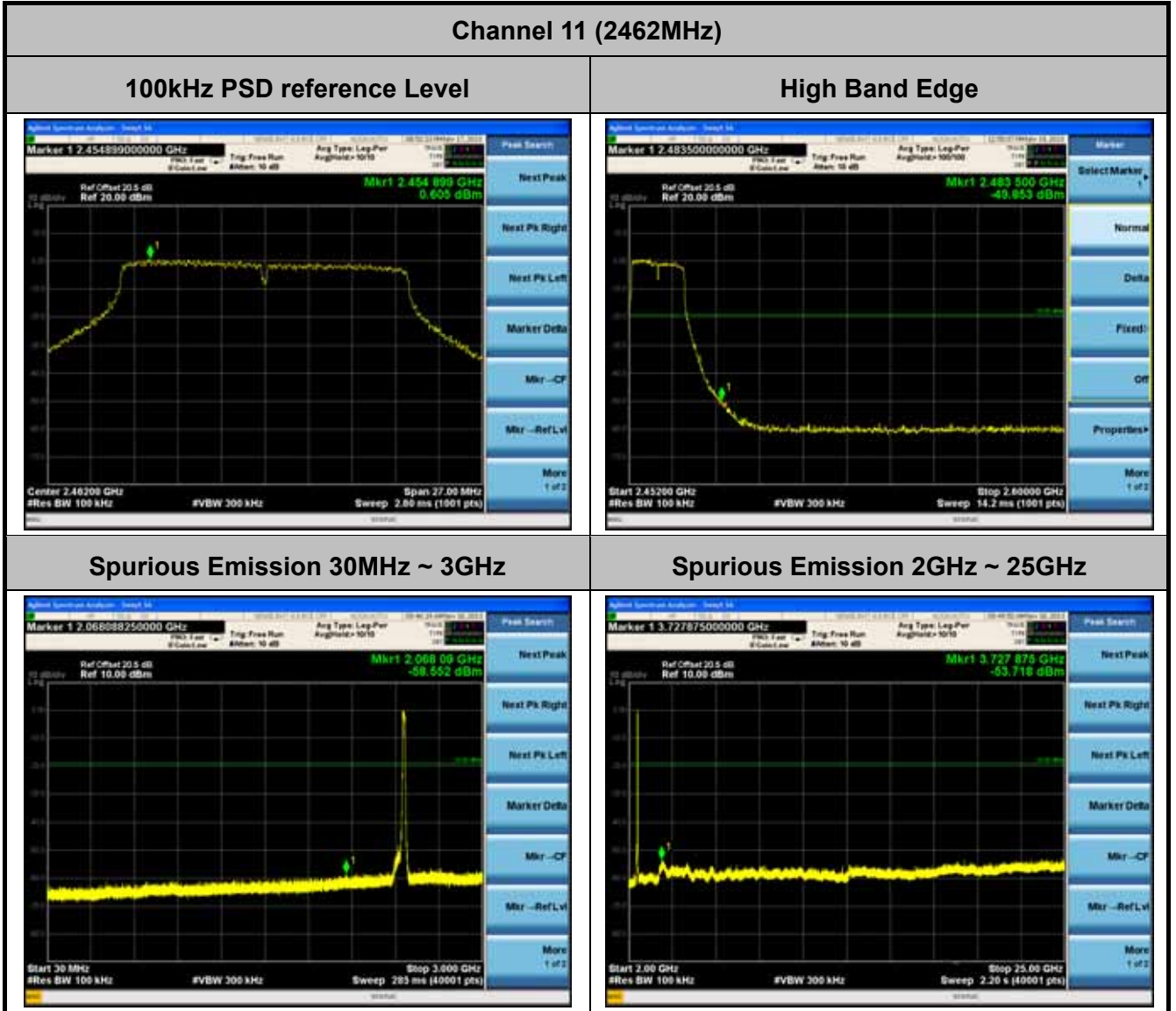


Spurious Emission 2GHz ~ 25GHz





Channel 06 (2437MHz)	
100kHz PSD reference Level	
<p>Marker 1 2.430979000000 GHz Ref Offset 20.5 dB Ref 20.00 dBm Mkr1 2.430 979 GHz 1.087 dBm</p> <p>Center 2.43700 GHz #Res BW 100 kHz #VBW 300 kHz Span 27.00 MHz Sweep 2.00 ms (1001 pts)</p>	
Spurious Emission 30MHz ~ 3GHz	Spurious Emission 2GHz ~ 25GHz
<p>Marker 1 2.073211500000 GHz Ref Offset 20.5 dB Ref 10.00 dBm Mkr1 2.075 21 GHz -58.181 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 3.000 GHz Sweep 283 ms (40001 pts)</p>	<p>Marker 1 3.725575000000 GHz Ref Offset 20.5 dB Ref 10.00 dBm Mkr1 3.725 575 GHz -54.022 dBm</p> <p>Start 2.00 GHz #Res BW 100 kHz #VBW 300 kHz Stop 25.00 GHz Sweep 2.20 s (40001 pts)</p>

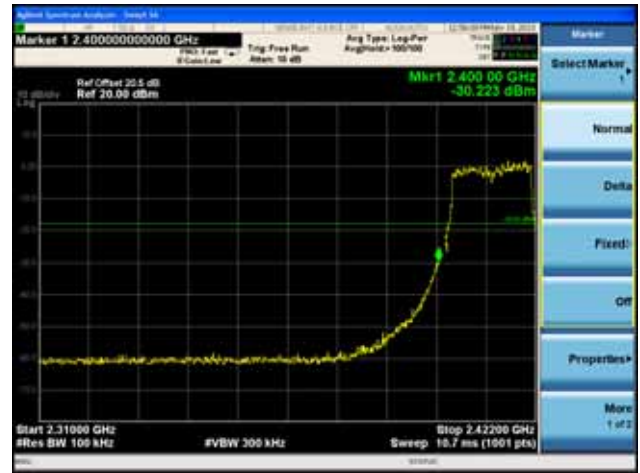
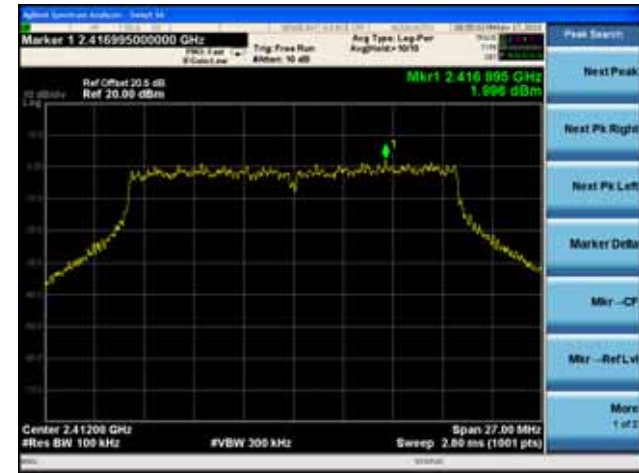


802.11n-HT20 Out-of-Band Emissions – Chain A / Chain A + B

Channel 01 (2412MHz)

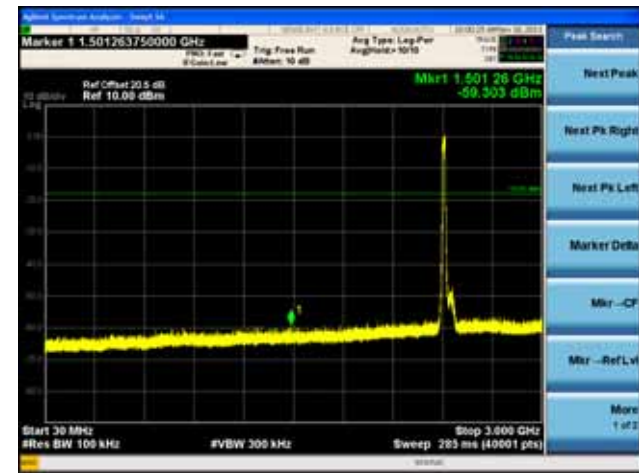
100kHz PSD reference Level

Low Band Edge

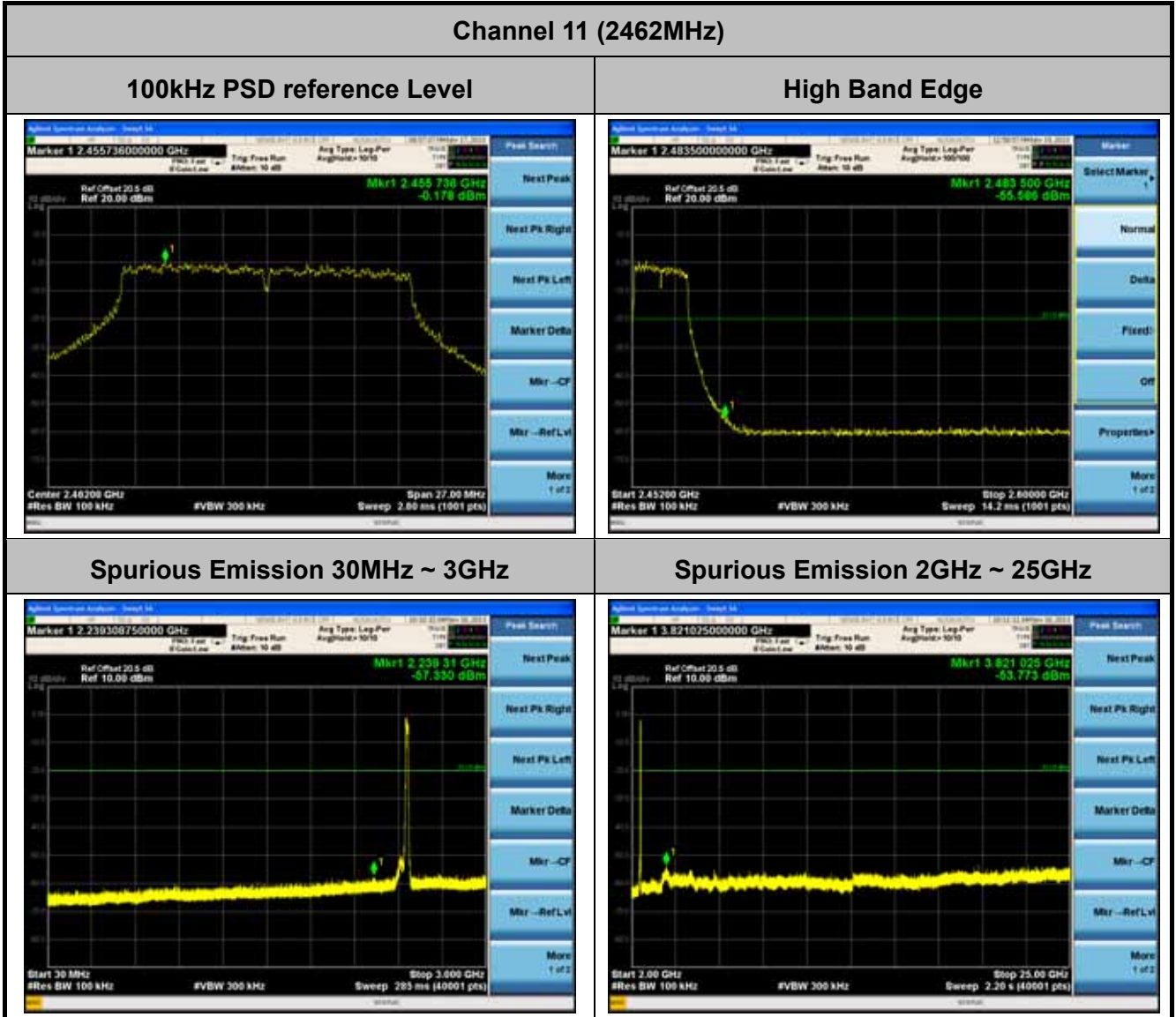


Spurious Emission 30MHz ~ 3GHz

Spurious Emission 2GHz ~ 25GHz



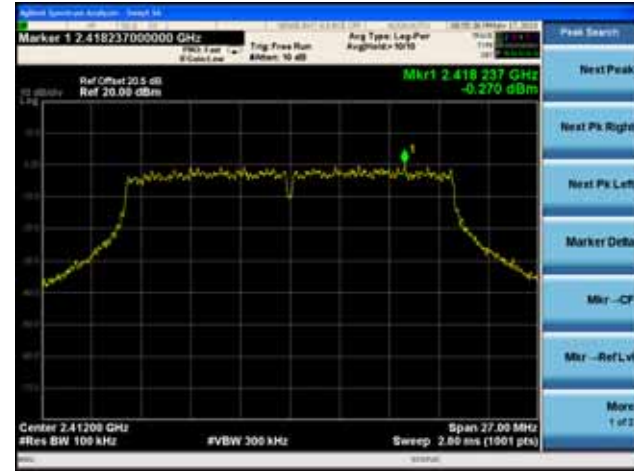
Channel 06 (2437MHz)	
100kHz PSD reference Level	
<p>Marker 1 2.437005000000 GHz Ref Offset 20.5 dB Ref 20.00 dBm Mkr1 2.437 005 GHz 0.164 dBm Center 2.43700 GHz #VBW 300 kHz Span 27.00 MHz #Res BW 100 kHz Sweep 2.00 ms (1001 pts)</p>	
Spurious Emission 30MHz ~ 3GHz	Spurious Emission 2GHz ~ 25GHz
<p>Marker 1 2.144840000000 GHz Ref Offset 20.5 dB Ref 10.00 dBm Mkr1 2.148 64 GHz -57.326 dBm Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 3.000 GHz Sweep 283 ms (40001 pts)</p>	<p>Marker 1 3.770425000000 GHz Ref Offset 20.5 dB Ref 10.00 dBm Mkr1 3.770 425 GHz -53.907 dBm Start 2.00 GHz #Res BW 100 kHz #VBW 300 kHz Stop 25.00 GHz Sweep 2.20 s (40001 pts)</p>



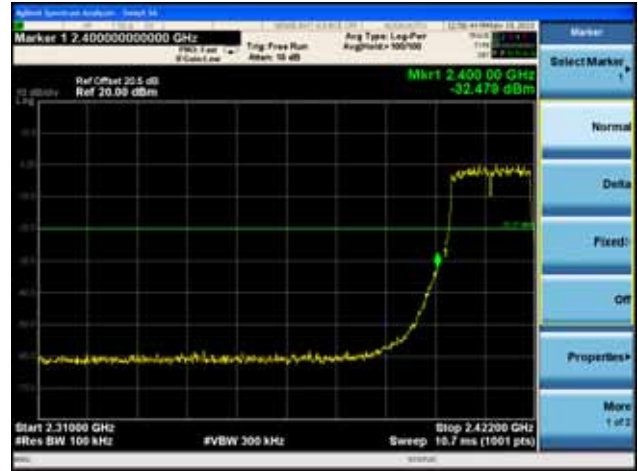
802.11n-HT20 Out-of-Band Emissions – Chain B / Chain A + B

Channel 01 (2412MHz)

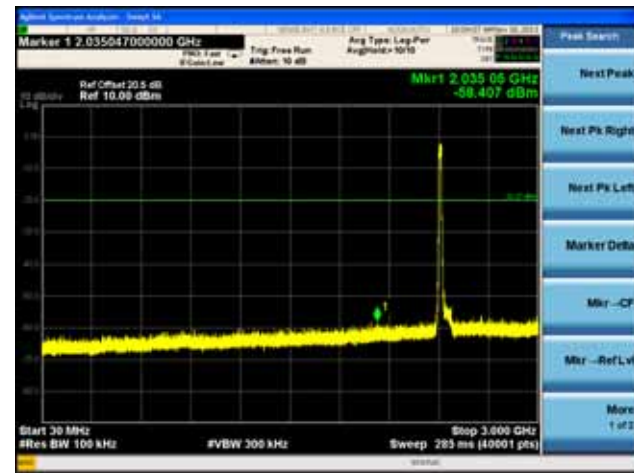
100kHz PSD reference Level



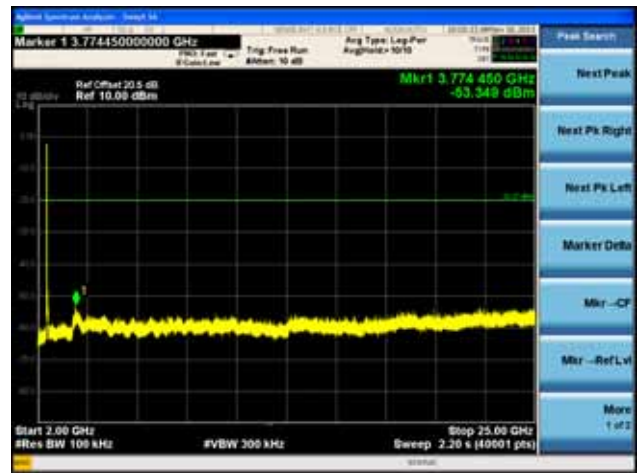
Low Band Edge



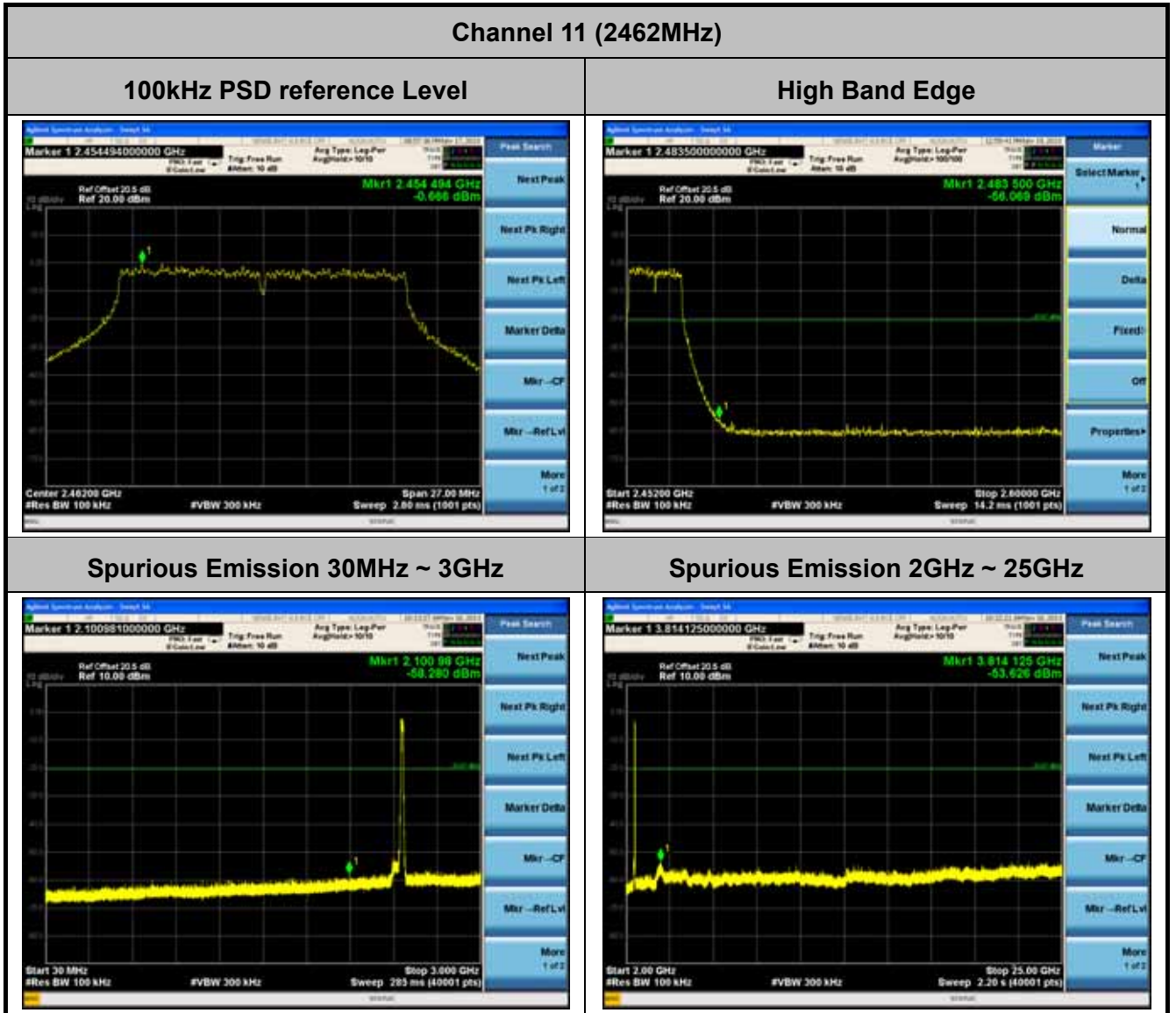
Spurious Emission 30MHz ~ 3GHz



Spurious Emission 2GHz ~ 25GHz



Channel 06 (2437MHz)	
100kHz PSD reference Level	
Spurious Emission 30MHz ~ 3GHz	Spurious Emission 2GHz ~ 25GHz

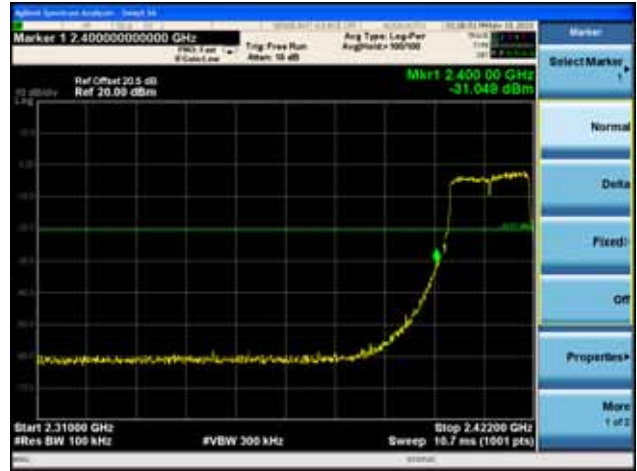
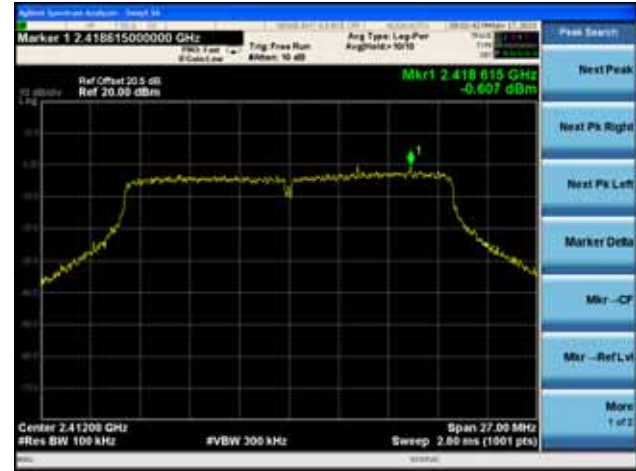


802.11n-HT20 Out-of-Band Emissions – Chain A / Chain A + B + C

Channel 01 (2412MHz)

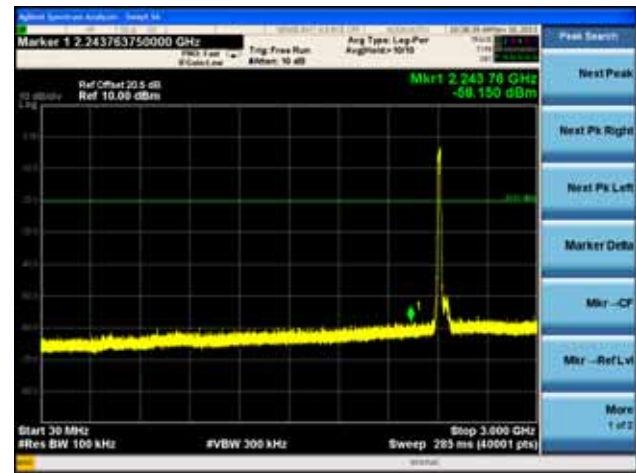
100kHz PSD reference Level

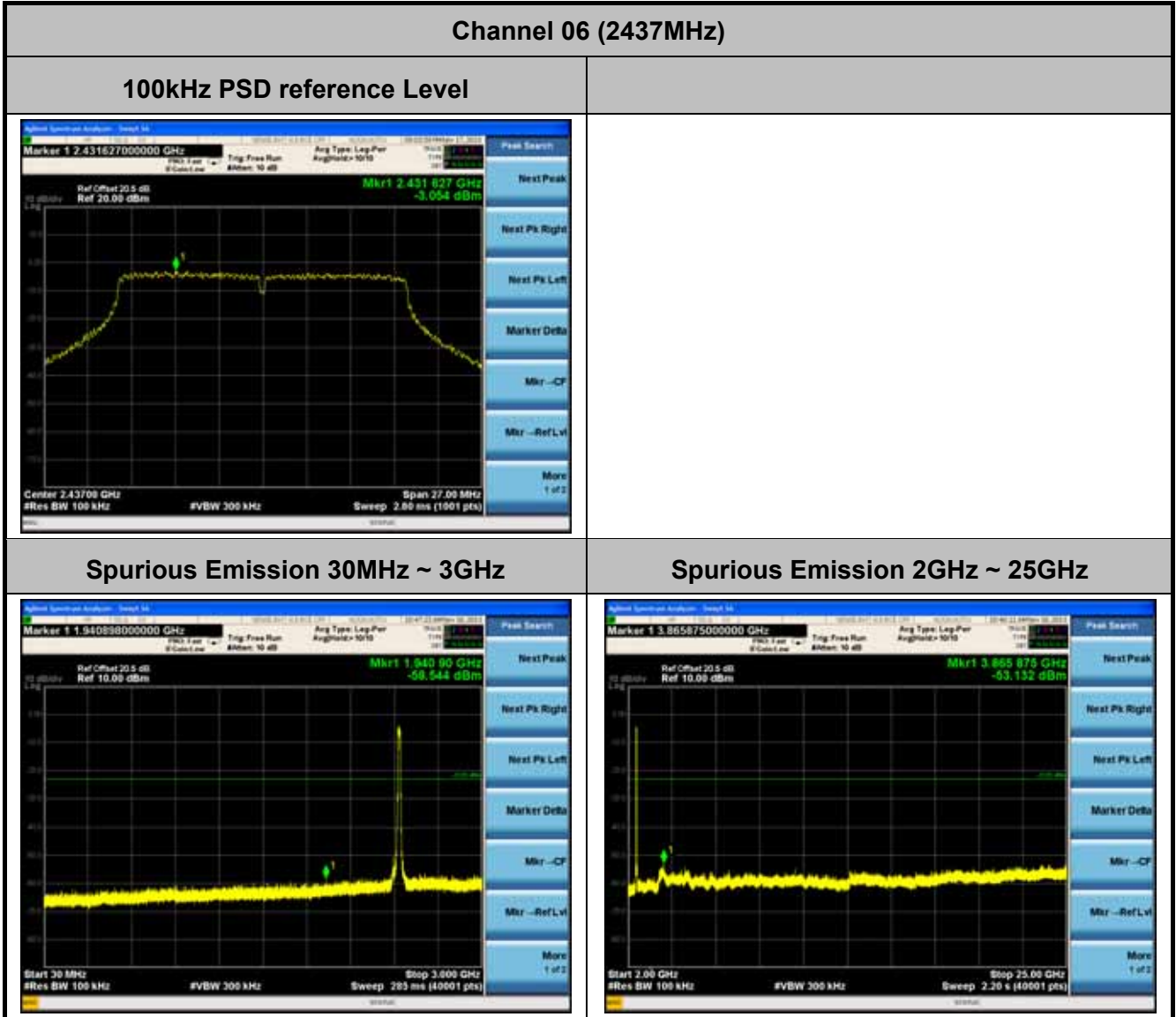
Low Band Edge

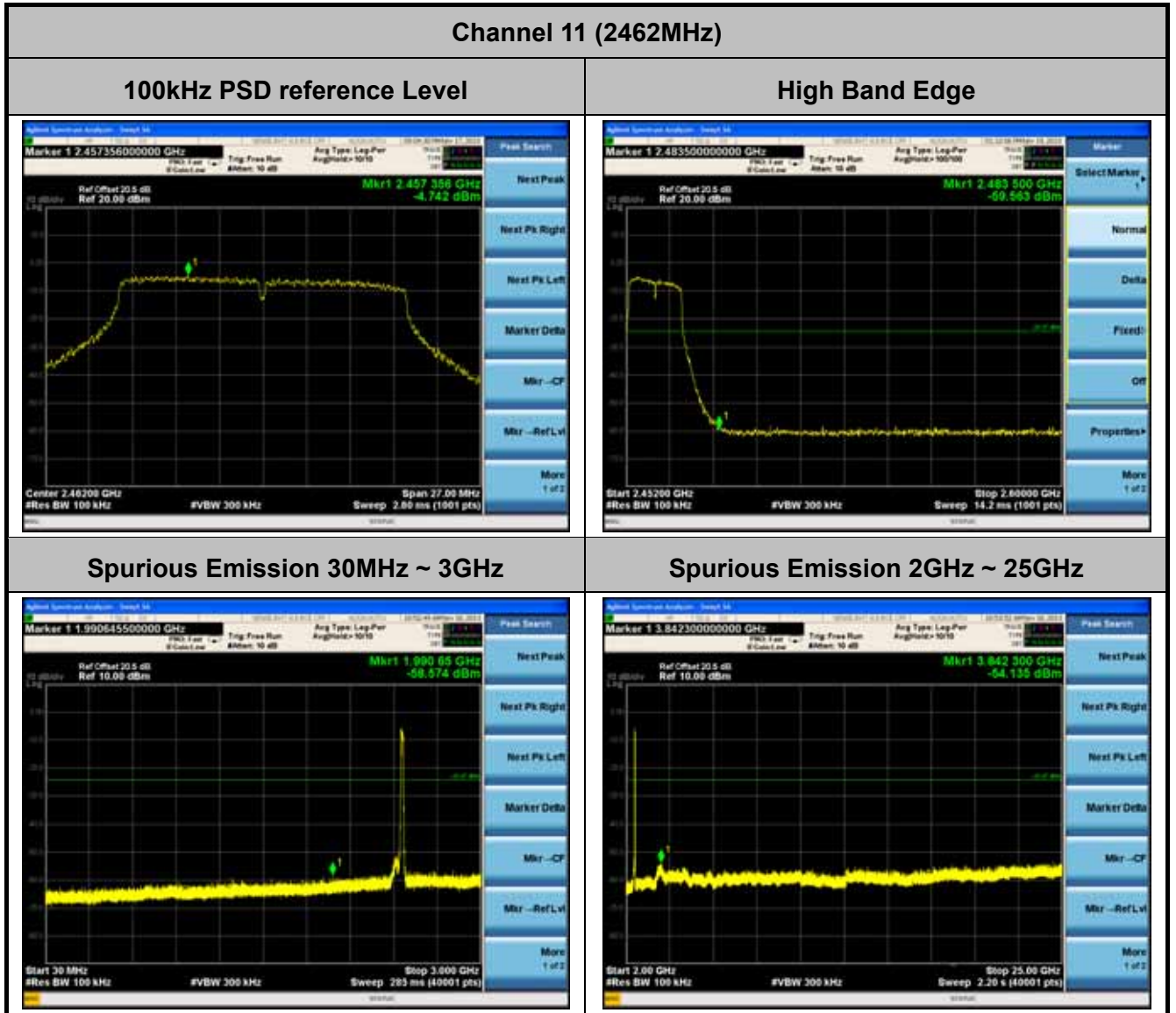


Spurious Emission 30MHz ~ 3GHz

Spurious Emission 2GHz ~ 25GHz



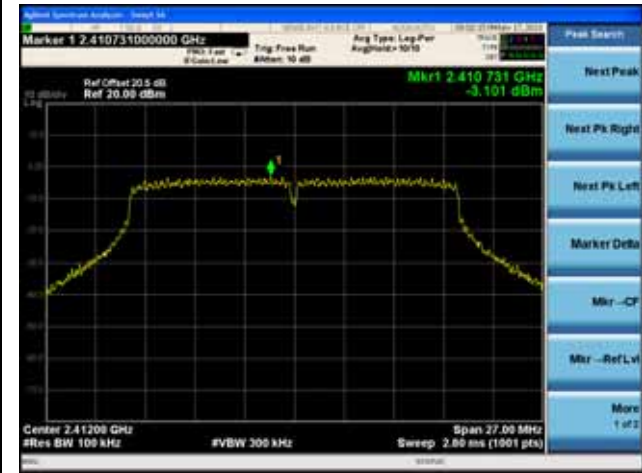




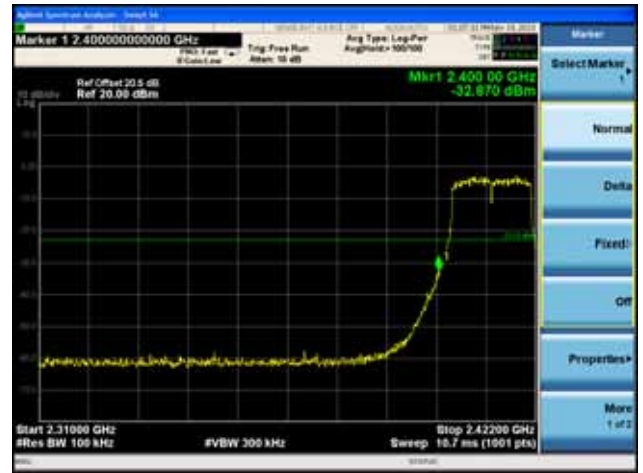
802.11n-HT20 Out-of-Band Emissions – Chain B / Chain A + B + C

Channel 01 (2412MHz)

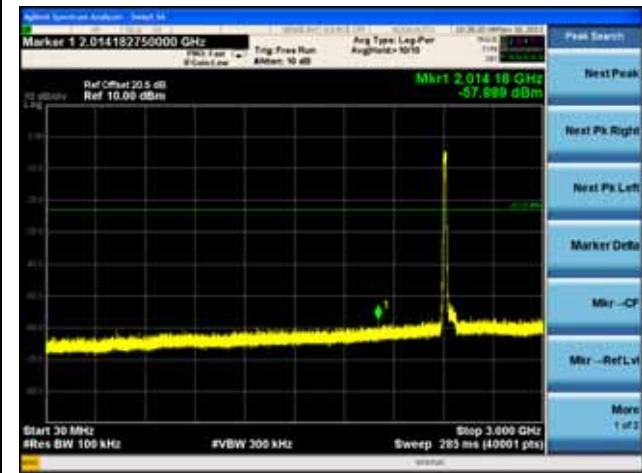
100kHz PSD reference Level



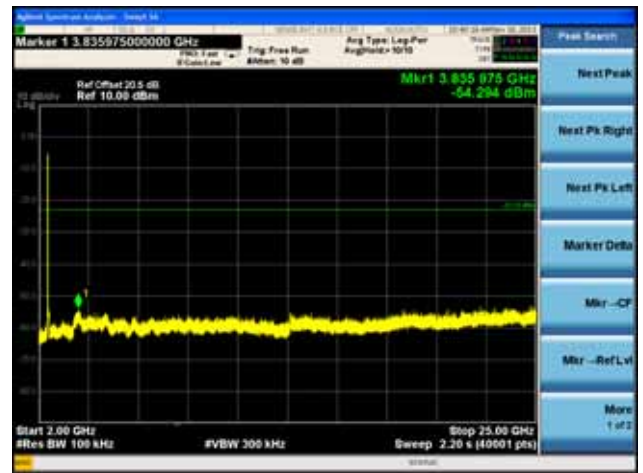
Low Band Edge



Spurious Emission 30MHz ~ 3GHz

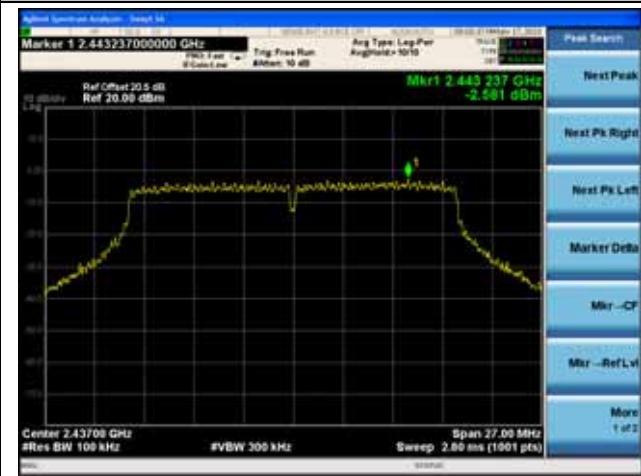


Spurious Emission 2GHz ~ 25GHz

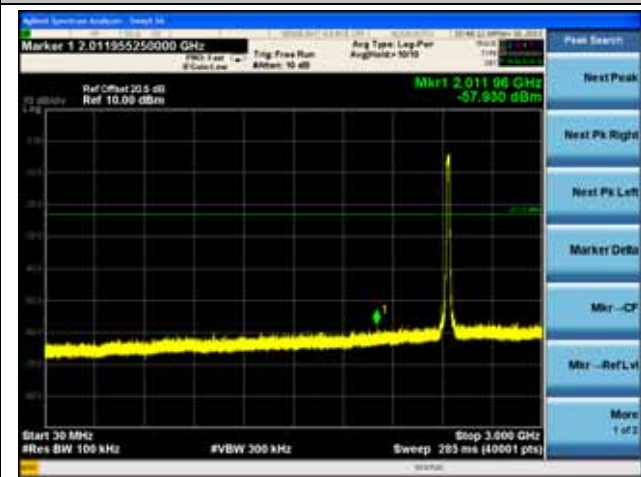


Channel 06 (2437MHz)

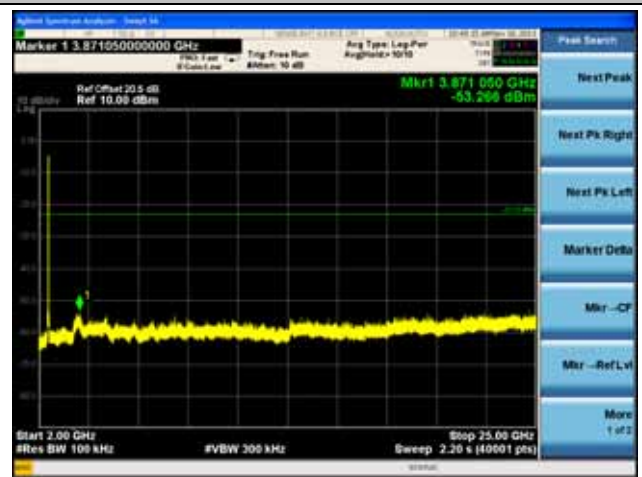
100kHz PSD reference Level

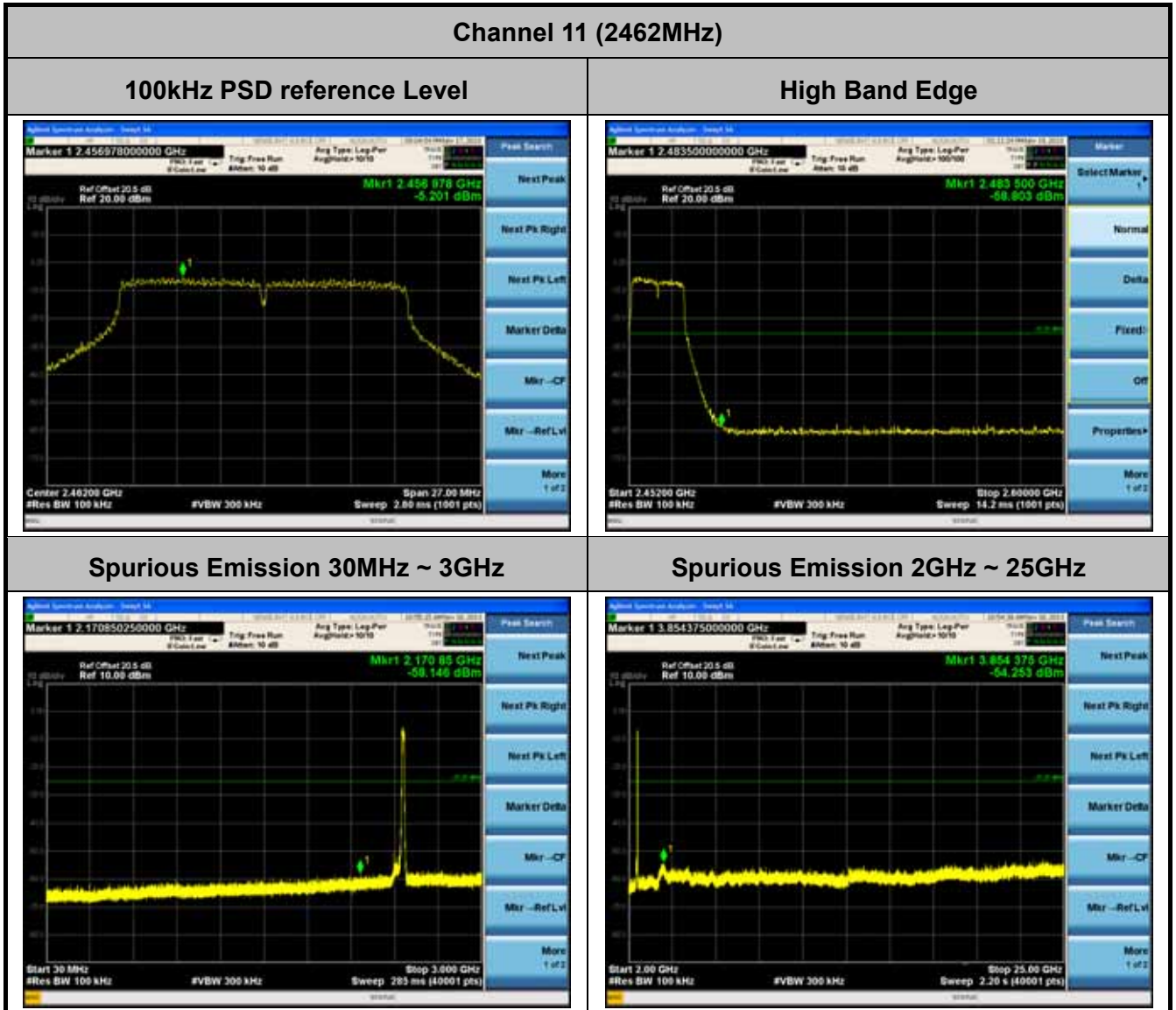


Spurious Emission 30MHz ~ 3GHz



Spurious Emission 2GHz ~ 25GHz

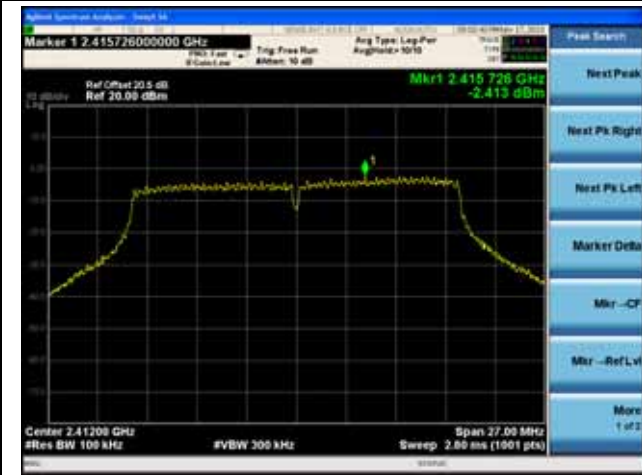




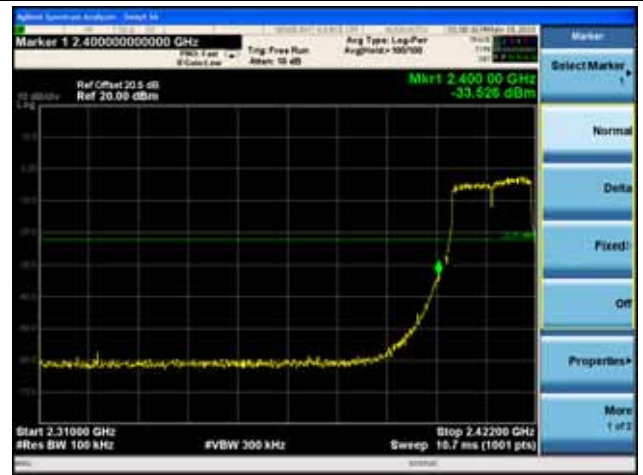
802.11n-HT20 Out-of-Band Emissions – Chain C / Chain A + B + C

Channel 01 (2412MHz)

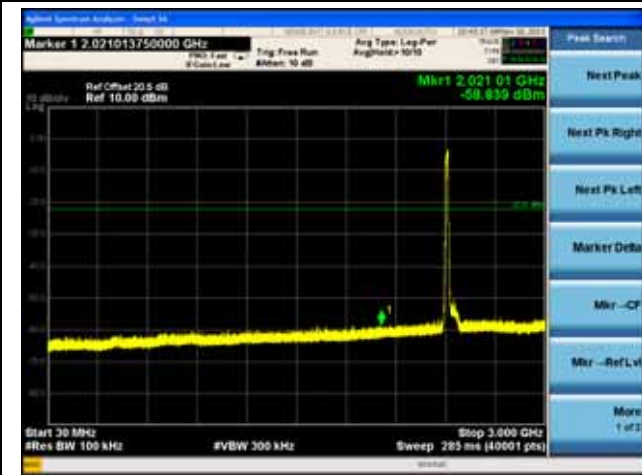
100kHz PSD reference Level



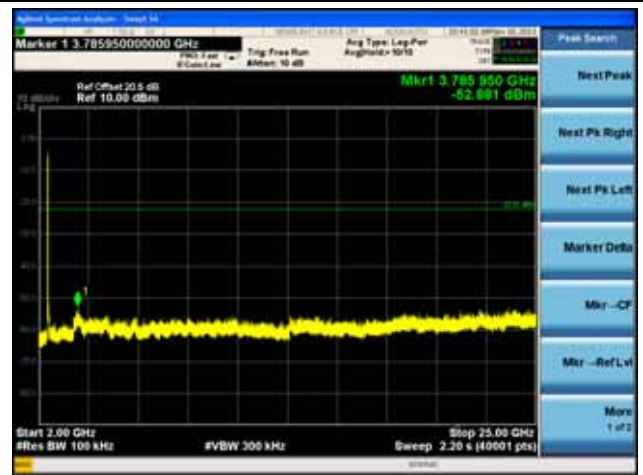
Low Band Edge



Spurious Emission 30MHz ~ 3GHz

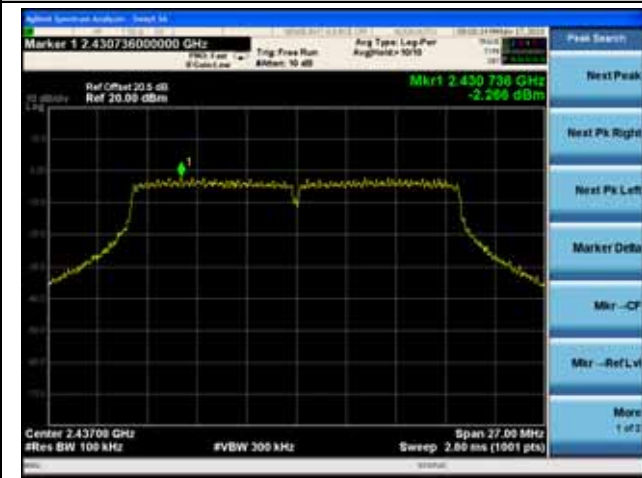


Spurious Emission 2GHz ~ 25GHz

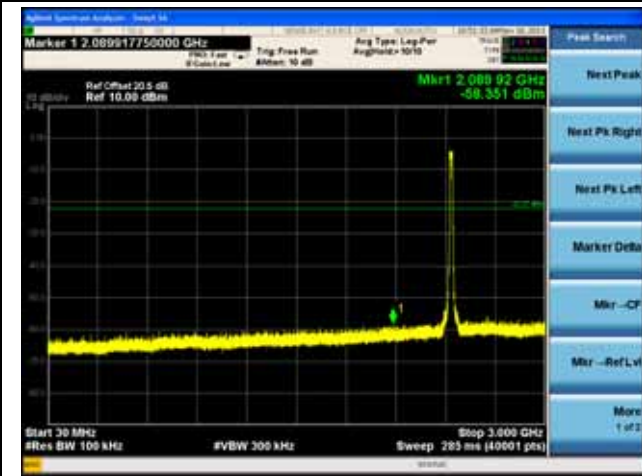


Channel 06 (2437MHz)

100kHz PSD reference Level



Spurious Emission 30MHz ~ 3GHz



Spurious Emission 2GHz ~ 25GHz

