RF TEST REPORT

Report No.: 18070574-FCC-R

Supersede Report No.: N/A

Applicant	YICHEN (SHENZHEN) TECHNOLOGY CO., LTD
Product Name	Wireless Router
Model No.	JIR-N676R
Serial No.	U700 (Note: All the models are the same circuit and RF module, except the model names.)
Test Standard	FCC Part 15.247, ANSI C63.10: 2013
Test Date	June 05 to 14, 2018
Issue Date	June 15, 2018
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Aaron Liang	David Huang	
Aaron Liang Test Engineer	David Huang Checked By	

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Test result presented in this test report is applicable to the tested sample only

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

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Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
18070574-FCC-R	NONE	Original	June 15, 2018

2. Customer information

Applicant Name	YICHEN (SHENZHEN) TECHNOLOGY CO., LTD
Applicant Add	23/F, Block C1, Nanshan I Park, No. 1001,Xueyuan Road, Taoyuan Street, Nanshan District, Shenzhen, China
Manufacturer	YICHEN (SHENZHEN) TECHNOLOGY CO., LTD
Manufacturer Add	23/F, Block C1, Nanshan I Park, No. 1001,Xueyuan Road, Taoyuan Street, Nanshan District, Shenzhen, China

3. Test site information

Test Lab A:

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	535293
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

Test Lab B:

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China
FCC Test Site No.	694825
IC Test Site No.	4842B-1
Test Software	EZ_EMC(ver.Icp-03A1)

Note: We just perform Radiated Spurious Emission above 18GHz in the test Lab. B.

4. Equipment under Test (EUT) Information

Description of EUT:	Wireless Router
Main Model:	JIR-N676R
Serial Model:	U700 (Note: All the models are the same circuit and RF module, except the model names.)
Date EUT received:	June 04, 2018
Test Date(s):	June 05 to 14, 2018
Equipment Category：	DTS
Antenna Gain:	Ant.1: 5dBi Ant.2: 5dBi
Antenna Type:	Cable antenna
Type of Modulation:	802.11b/g/n: DSSS, OFDM
RF Operating Frequency (ies):	WIFI: 802.11b/g/n(20M): 2412-2462 MHz WIFI: 802.11n(40M): 2422-2452 MHz
Max. Output Power:	802.11b: 3.81 dBm 802.11g: 3.81 dBm 802.11n(20M): 6.03 dBm 802.11n(40M): 6.27 dBm
Number of Channels:	WIFI :802.11b/g/n(20M): 11CH WIFI :802.11n(40M): 7CH
Port:	Please refer to the user’ s manual

Input Power:	Adapter: Model: S06A12-050A100-C4 I/P: 100-240ac, 300mA; O/P: 5Vdc, 1000mA
Trade Name :	JCG
FCC ID:	2AJSTJIR-N676R

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.247 (a)(2)	DTS (6 dB&20 dB) CHANNEL BANDWIDTH	Compliance
§15.247(b)(3)	Conducted Maximum Output Power	Compliance
§15.247(e)	Power Spectral Density	Compliance
§15.247(d)	Band-Edge & Unwanted Emissions into Restricted Frequency Bands	Compliance
§15.207 (a),	AC Power Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Radiated Emissions & Unwanted Emissions into Restricted Frequency Bands	Compliance

Measurement Uncertainty

Emissions		
Test Item	**Description**	**Uncertainty**
Band-Edge & Unwanted Emissions into Restricted Frequency Bands and Radiated Emissions & Unwanted Emissions into Restricted Frequency Bands	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

6. Measurements, Examination And Derived Results

6.1 Antenna Requirement

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited.
The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.

b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.
And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

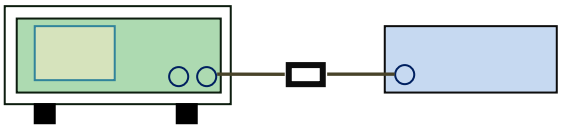
The EUT has 2 antennas:
A permanently attached cable antenna for WIF, the gain is 5dBi for WIFI Ant.1, the gain is 5dBi for WIFI Ant.2.

The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.

6.2 DTS (6 dB&20 dB) Channel Bandwidth

Temperature	26℃
Relative Humidity	55%
Atmospheric Pressure	1020mbar
Test date :	June 11, 2018
Tested By :	Aaron Liang

Spec	Item	Requirement	Applicable
§ 15.247(a)(2)	a)	6dB BW≥ 500kHz;	☑
RSS Gen(4.6.1)	b)	99% BW: For FCC reference only; required by IC.	☑
Test Setup			
Test Procedure	558074 D01 DTS MEAS Guidance v03r03, 8.1 DTS bandwidth 6dB bandwidth a) Set RBW = 100 kHz. b) Set the video bandwidth (VBW) ≥ 3 × RBW. c) Detector = Peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize. g) Measure the maximum width of the emission that is constrained by the freq uencies associated with the two outermost amplitude points (upper and lower fr equencies) that are attenuated by 6 dB relative to the maximum level measure d in the fundamental emission. 20dB bandwidth C63.10 Occupied Bandwidth (OBW=20dB bandwidth) 1. Set RBW = 1%-5% OBW. 2. Set the video bandwidth (VBW) ≥ 3 x RBW. 3. Set the span range between 2 times and 5 times of the OBW. 4. Sweep time=Auto, Detector=PK, Trace=Max hold. 5. Once the reference level is established, the equipment is conditioned with t ypical modulating signals to produce the worst-		

	case (i.e., the widest) bandwidth. Unless otherwise specified for an unlicensed wireless device, measure the bandwidth at the 20 dB levels with respect to the reference level.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Measurement result

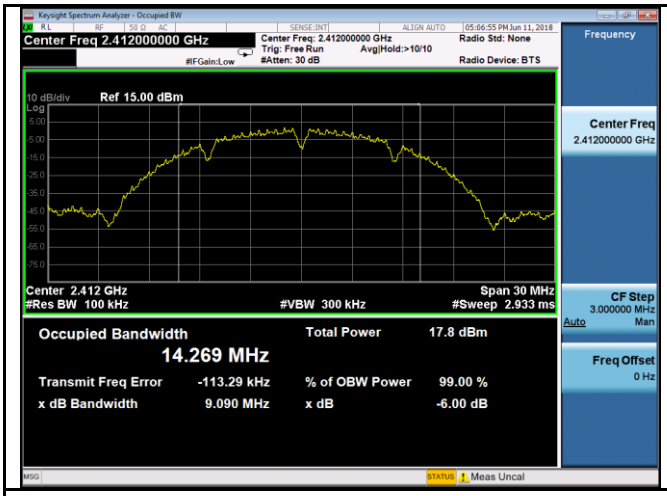
Test mode	CH	Freq (MHz)	6dB Bandwidth Ant.1(MHz)	6dB Bandwidth Ant.2(MHz)	Limit (MHz)
802.11b	Low	2412	9.09	9.56	≥ 0.5
	Mid	2437	9.58	9.58	≥ 0.5
	High	2462	9.60	9.09	≥ 0.5
802.11g	Low	2412	15.11	15.11	≥ 0.5
	Mid	2437	15.11	15.11	≥ 0.5
	High	2462	15.11	15.11	≥ 0.5
802.11n (20M)	Low	2412	15.11	15.11	≥ 0.5
	Mid	2437	15.11	15.11	≥ 0.5
	High	2462	15.11	15.11	≥ 0.5
802.11n (40M)	Low	2422	33.84	33.83	≥ 0.5
	Mid	2437	33.85	33.84	≥ 0.5
	High	2452	35.07	33.85	≥ 0.5

Test mode	CH	Freq (MHz)	20dB Bandwidth Ant.1 (MHz)	20dB Bandwidth Ant.2 (MHz)
802.11b	Low	2412	16.57	16.10
	Mid	2437	16.15	16.31
	High	2462	16.12	16.20
802.11g	Low	2412	17.24	17.26
	Mid	2437	17.24	17.32
	High	2462	17.24	17.28
802.11n (20M)	Low	2412	18.30	18.37
	Mid	2437	18.23	18.36
	High	2462	18.34	18.30
802.11n (40M)	Low	2422	37.14	37.20
	Mid	2437	37.09	37.18
	High	2452	37.15	37.17

Ant. 1:

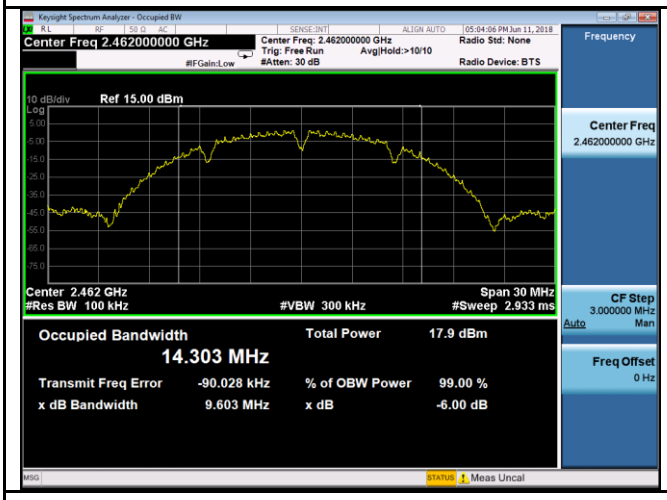
Test Plots

6dB Bandwidth measurement result



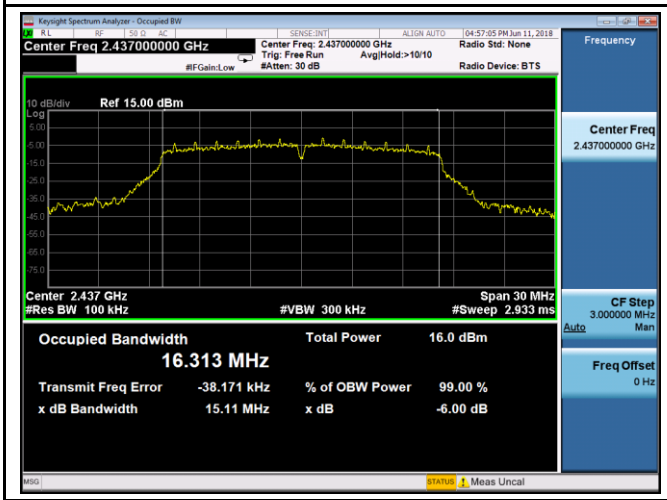
802.11b 6dB Bandwidth - Low CH 2412

802.11b 6dB Bandwidth - Mid CH 2437

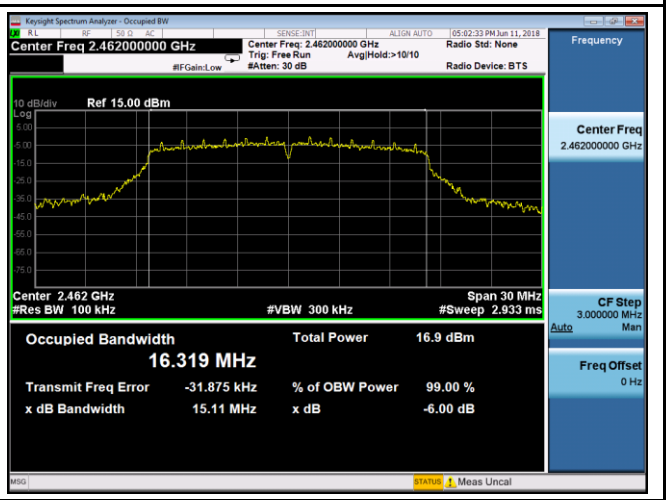


802.11b 6dB Bandwidth - High CH 2462

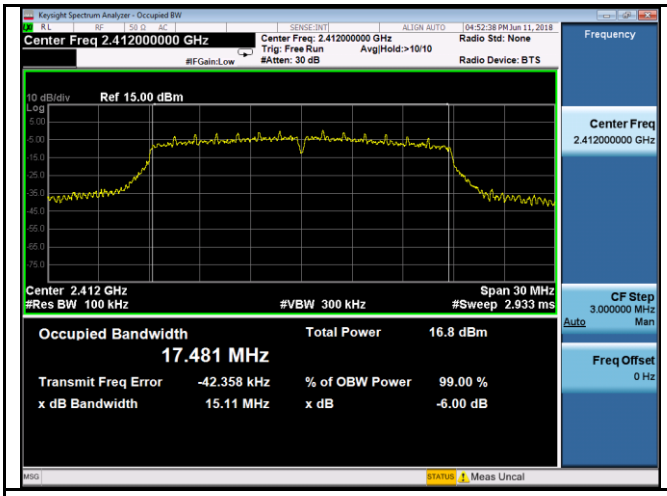
802.11g 6dB Bandwidth - Low CH 2412



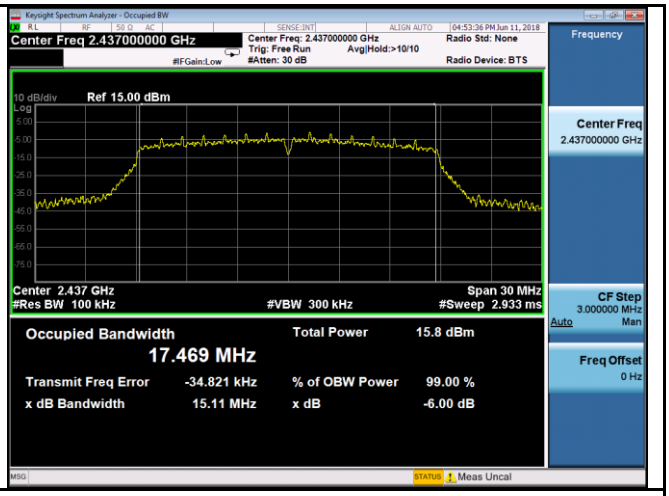
802.11g 6dB Bandwidth - Mid CH 2437



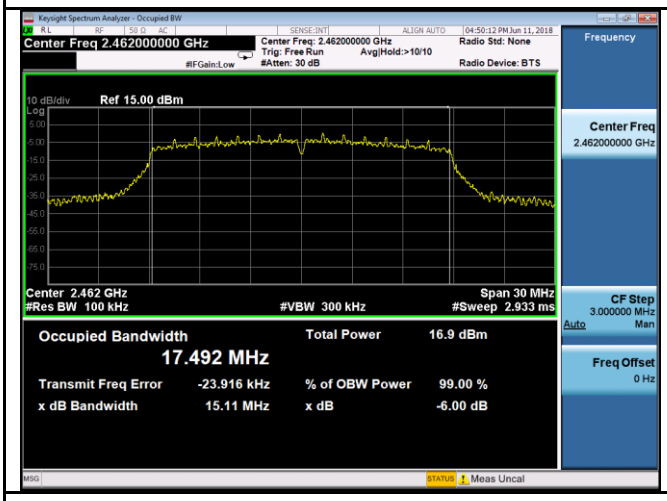
802.11g 6dB Bandwidth - High CH 2462



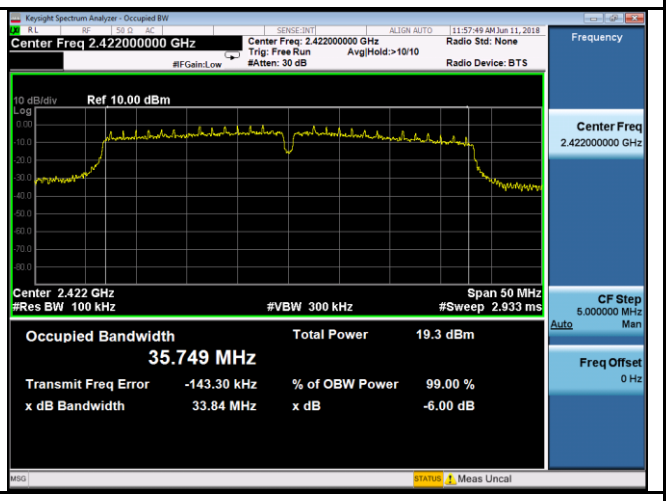
802.11n20 6dB Bandwidth - Low CH 2412



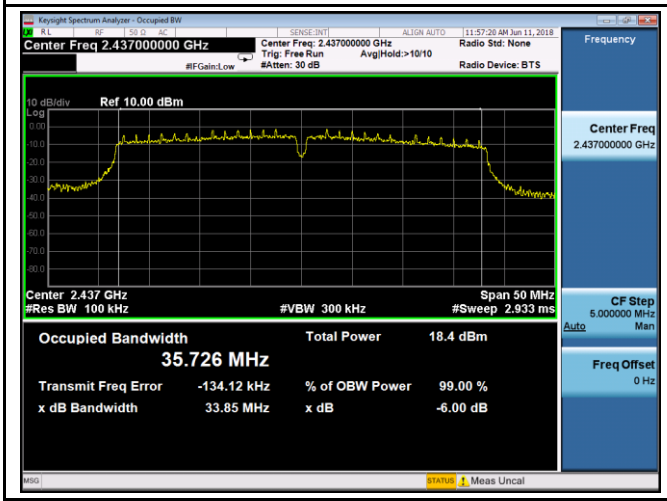
802.11n20 6dB Bandwidth - Mid CH 2437



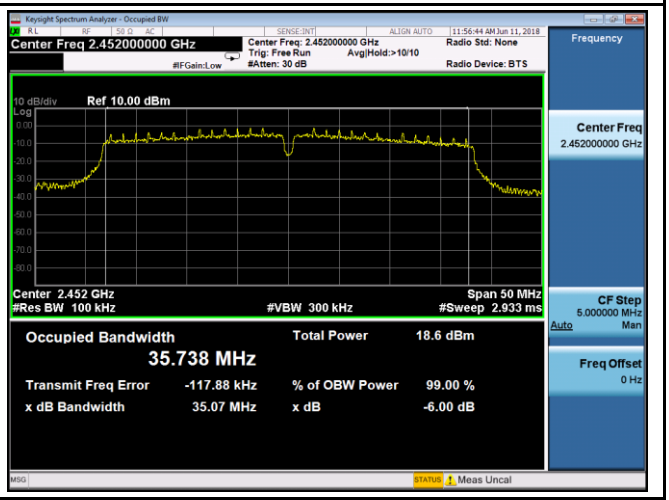
802.11n20 6dB Bandwidth - High CH 2462



802.11n40 6dB Bandwidth - Low CH 2422



802.11n40 6dB Bandwidth - Mid CH 2437

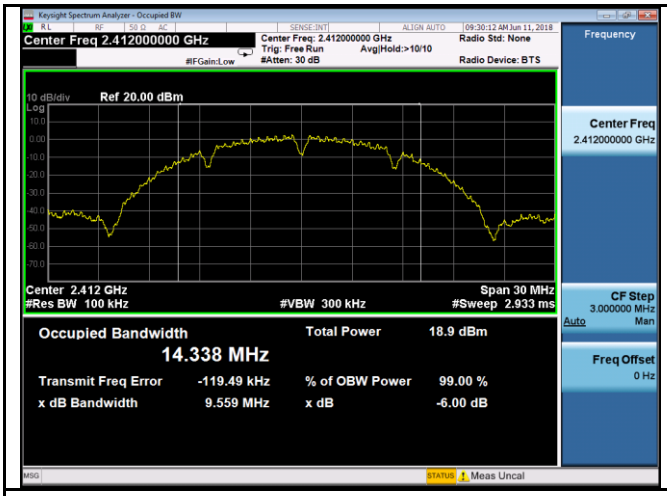


802.11n40 6dB Bandwidth - High CH 2452

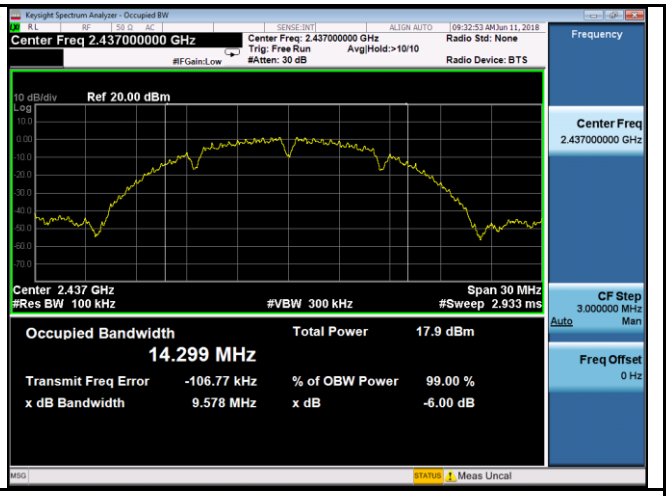
Ant. 2:

Test Plots

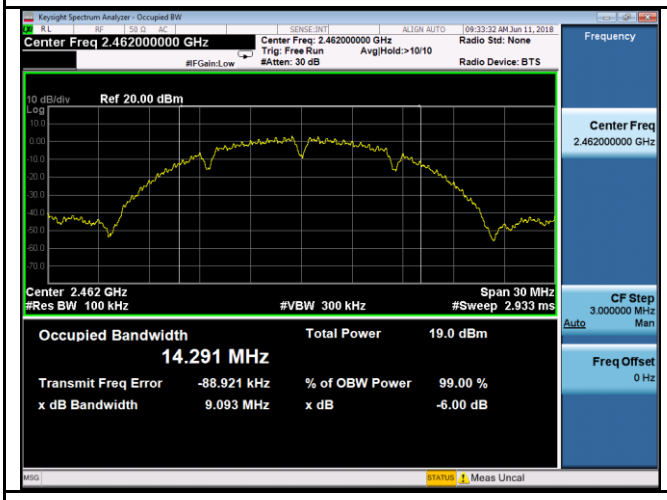
6dB Bandwidth measurement result



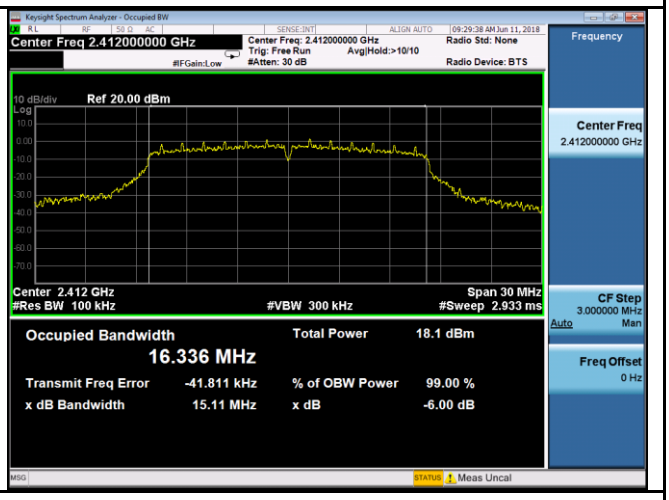
802.11b 6dB Bandwidth - Low CH 2412



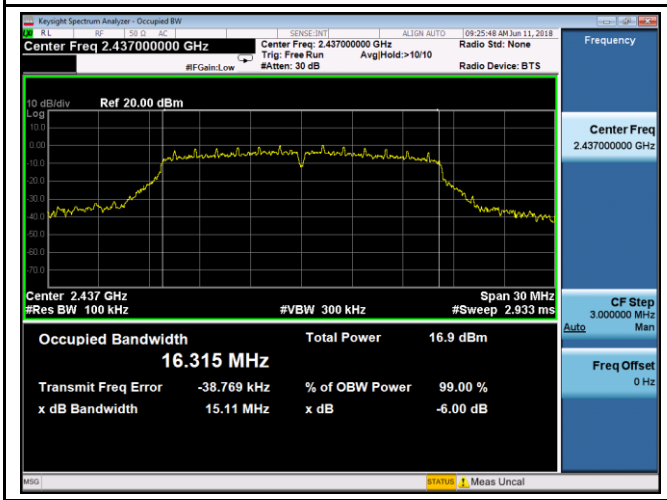
802.11b 6dB Bandwidth - Mid CH 2437



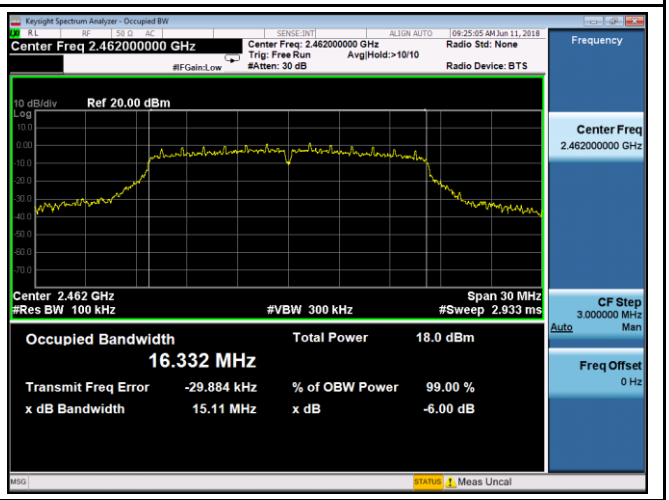
802.11b 6dB Bandwidth - High CH 2462



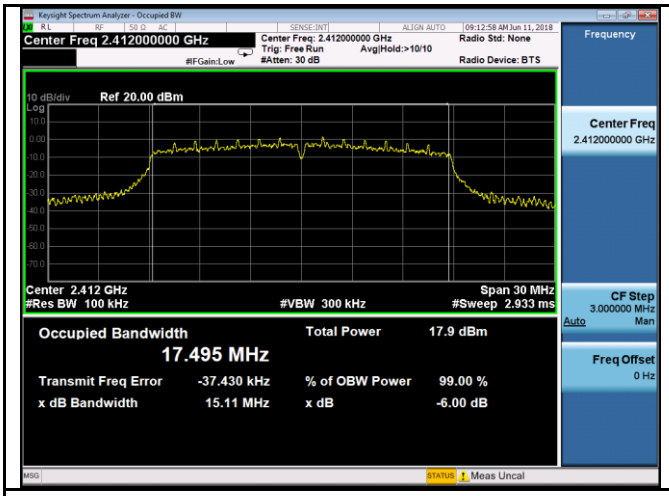
802.11g 6dB Bandwidth - Low CH 2412



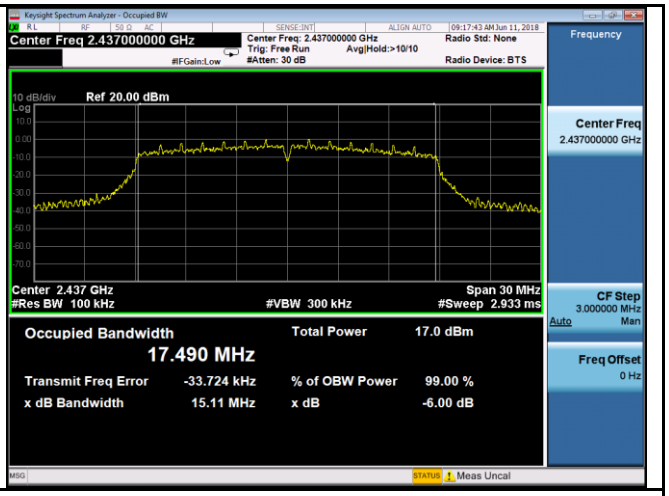
802.11g 6dB Bandwidth - Mid CH 2437



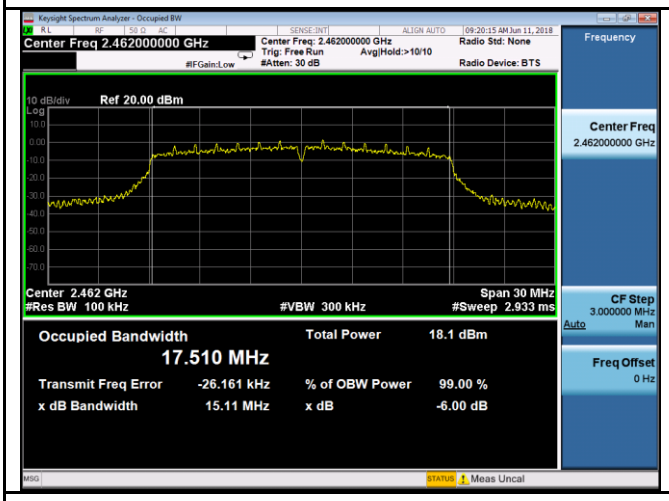
802.11g 6dB Bandwidth - High CH 2462



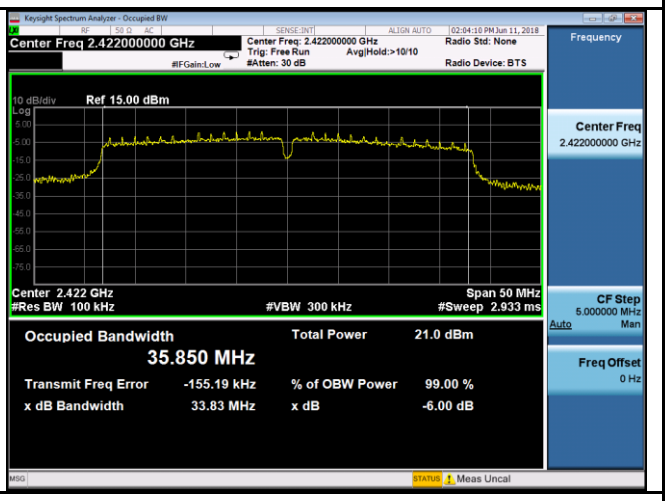
802.11n20 6dB Bandwidth - Low CH 2412



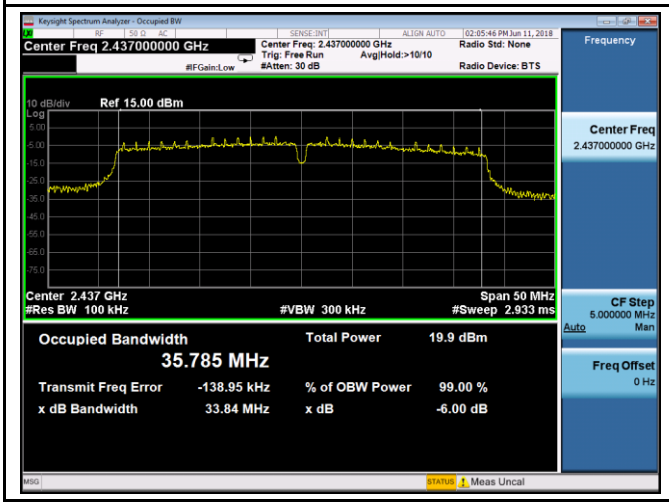
802.11n20 6dB Bandwidth - Mid CH 2437



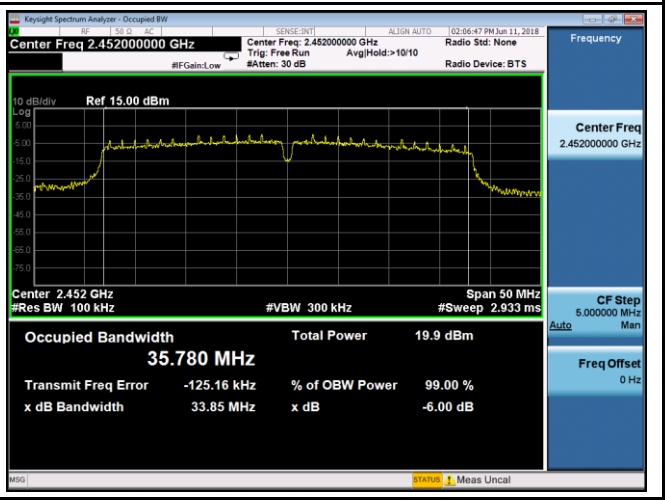
802.11n20 6dB Bandwidth - High CH 2462



802.11n40 6dB Bandwidth - Low CH 2422



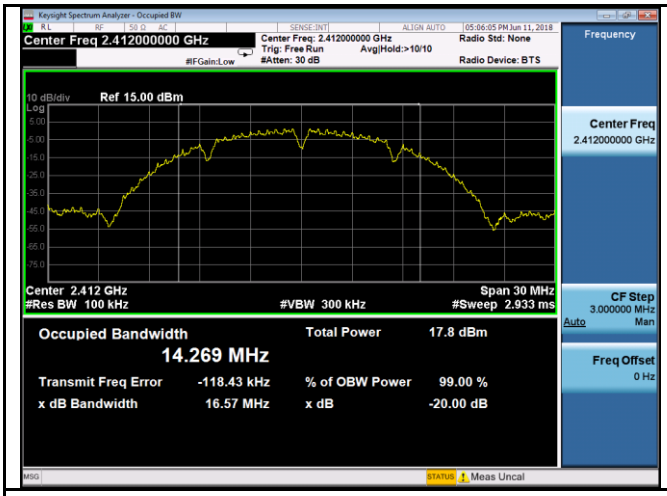
802.11n40 6dB Bandwidth - Mid CH 2437



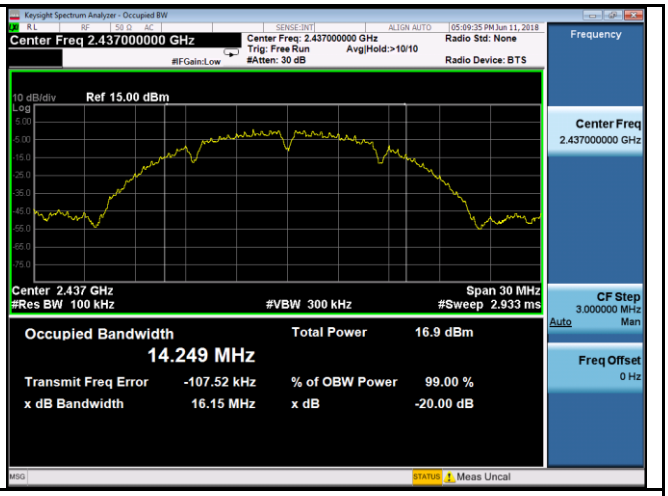
802.11n40 6dB Bandwidth - High CH 2452

Ant. 1:

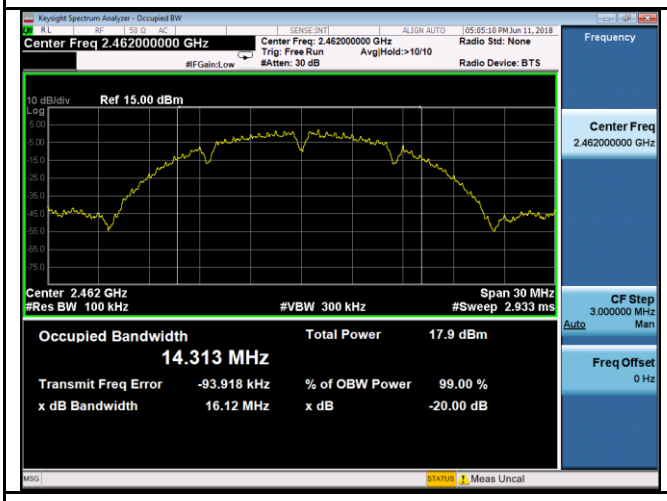
20 dB Bandwidth measurement result



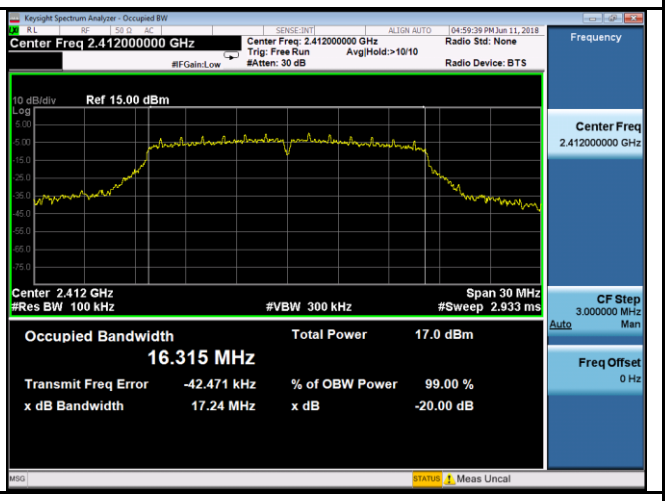
802.11b 20dB Bandwidth - Low CH 2412



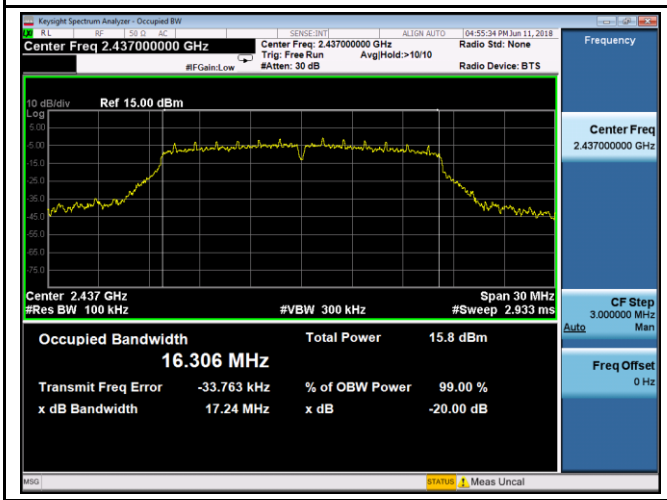
802.11b 20dB Bandwidth - Mid CH 2437



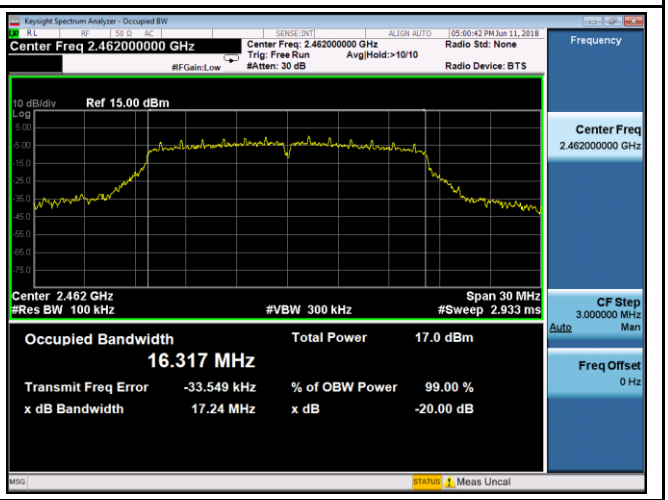
802.11b 20dB Bandwidth - High CH 2462



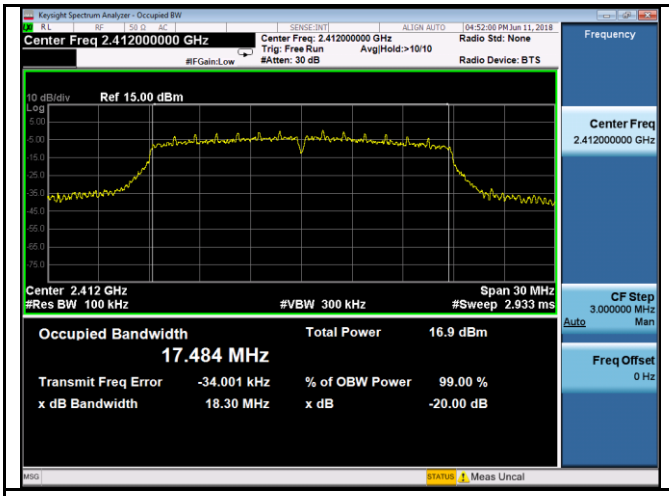
802.11g 20dB Bandwidth - Low CH 2412



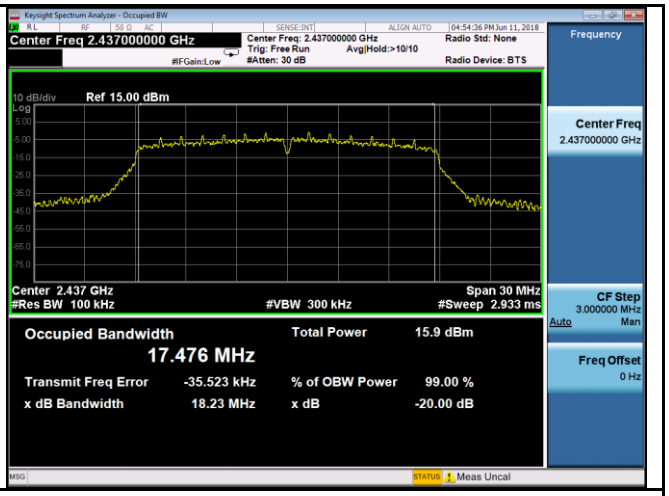
802.11g 20dB Bandwidth - Mid CH 2437



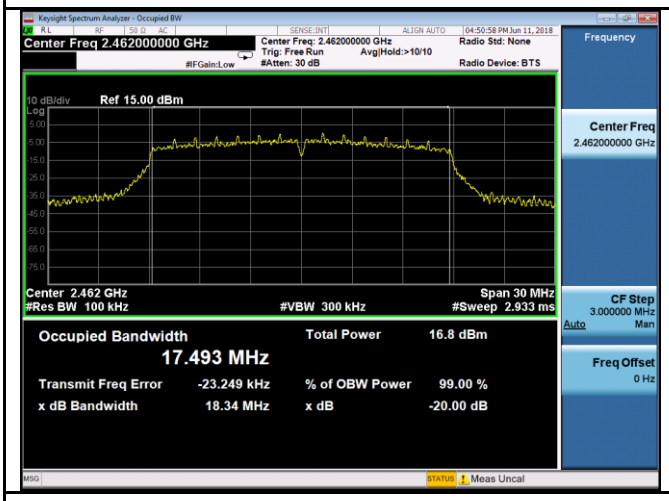
802.11g 20dB Bandwidth - High CH 2462



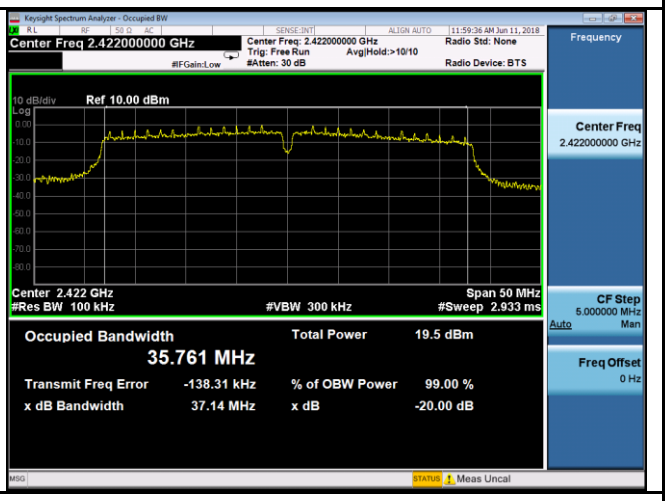
802.11n20 20dB Bandwidth - Low CH 2412



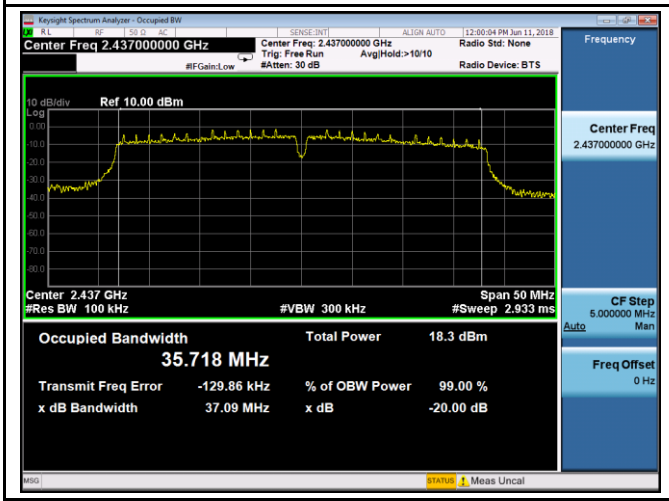
802.11n20 20dB Bandwidth - Mid CH 2437



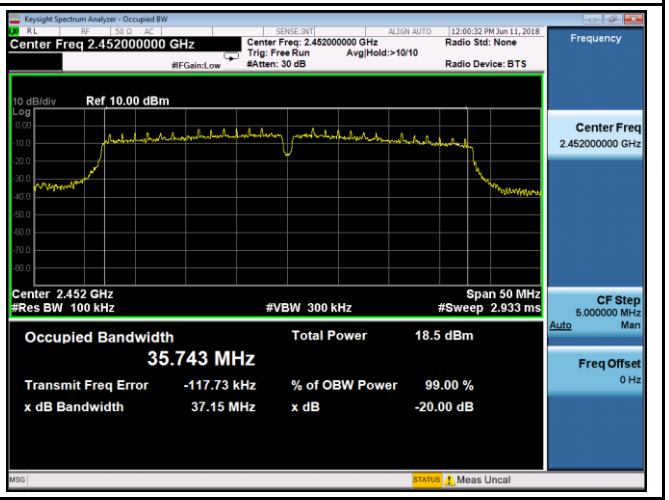
802.11n20 20dB Bandwidth - High CH 2462



802.11n40 20dB Bandwidth - Low CH 2422



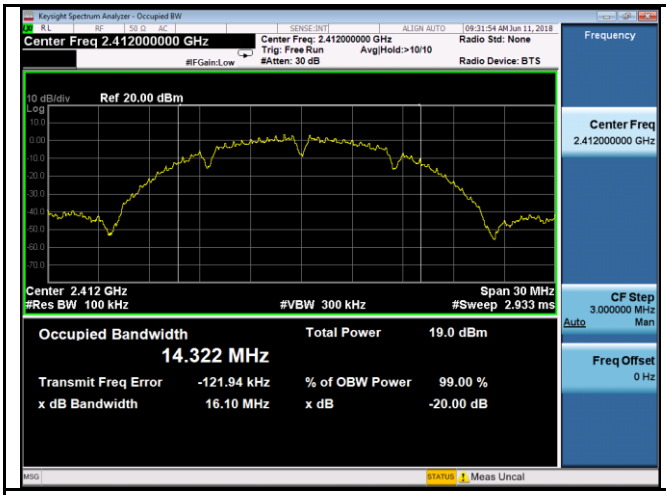
802.11n40 20dB Bandwidth - Mid CH 2437



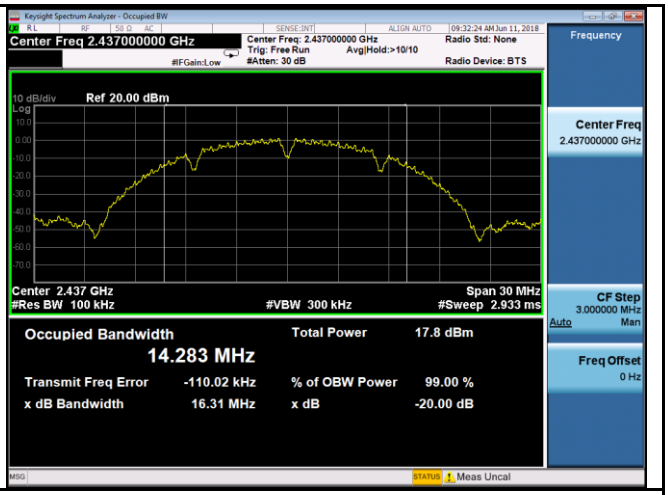
802.11n40 20dB Bandwidth - High CH 2452

Ant. 2:

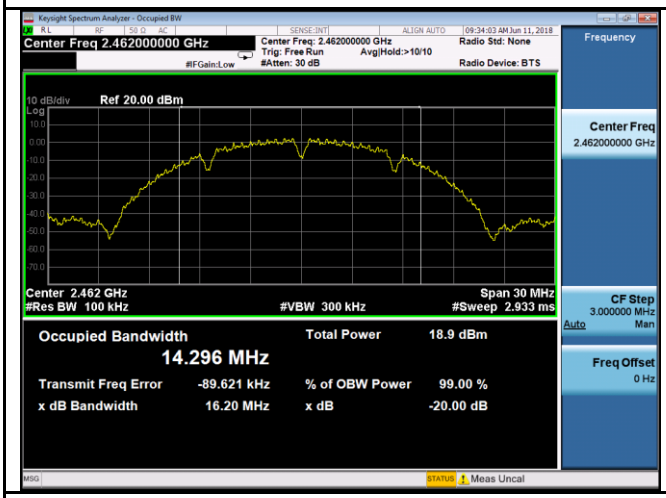
20 dB Bandwidth measurement result



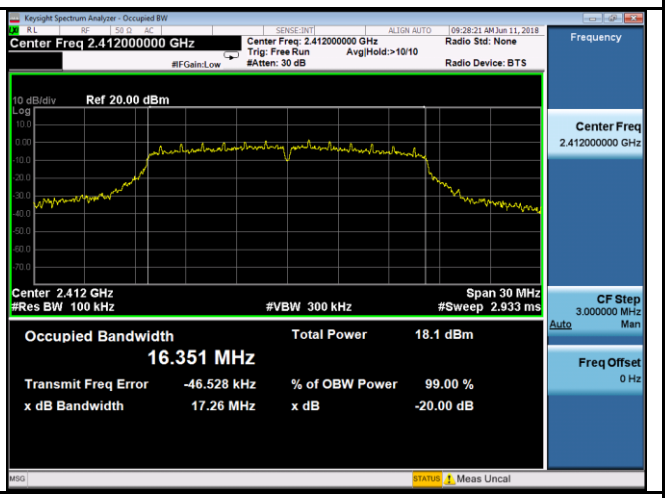
802.11b 20dB Bandwidth - Low CH 2412



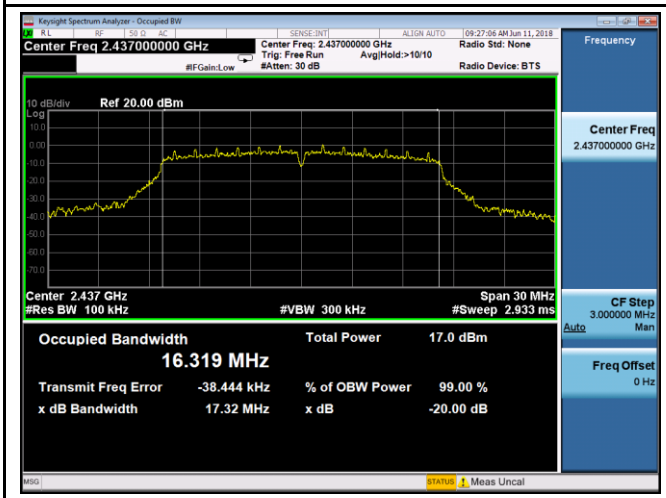
802.11b 20dB Bandwidth - Mid CH 2437



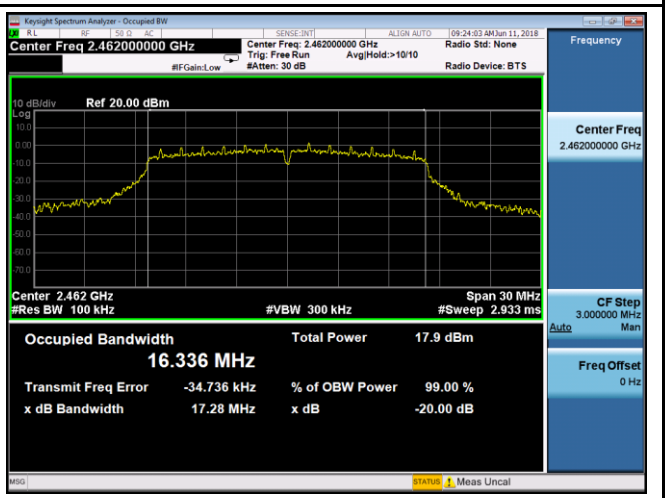
802.11b 20dB Bandwidth - High CH 2462



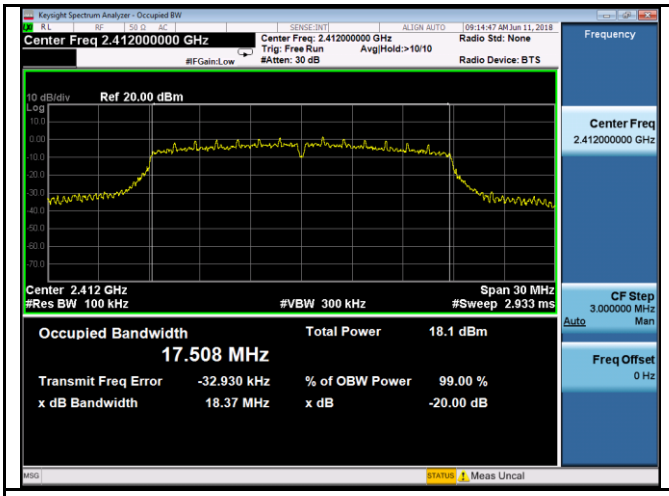
802.11g 20dB Bandwidth - Low CH 2412



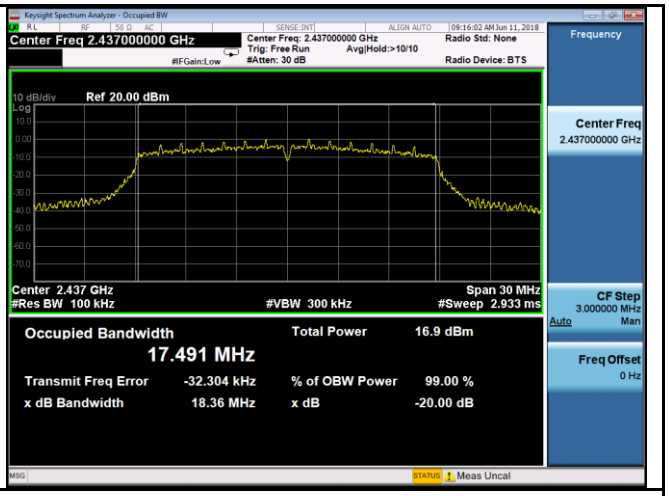
802.11g 20dB Bandwidth - Mid CH 2437



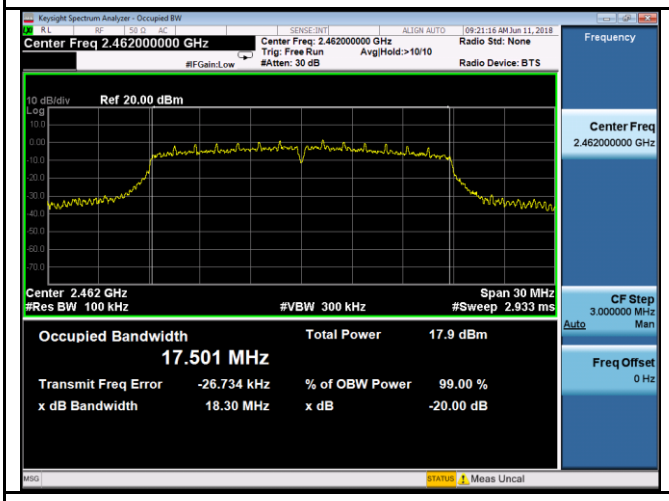
802.11g 20dB Bandwidth - High CH 2462



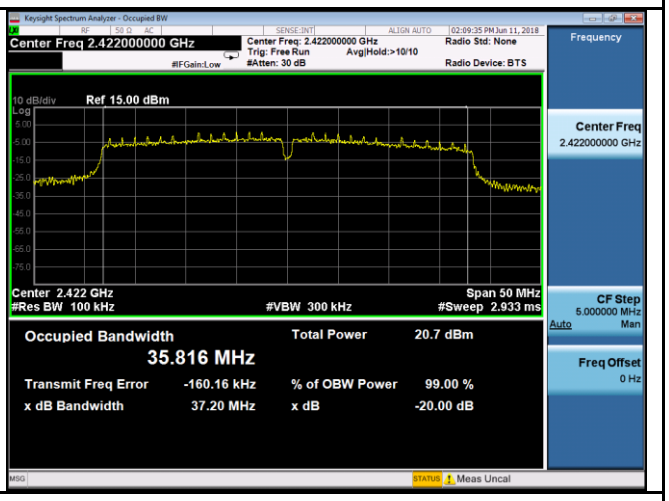
802.11n20 20dB Bandwidth - Low CH 2412



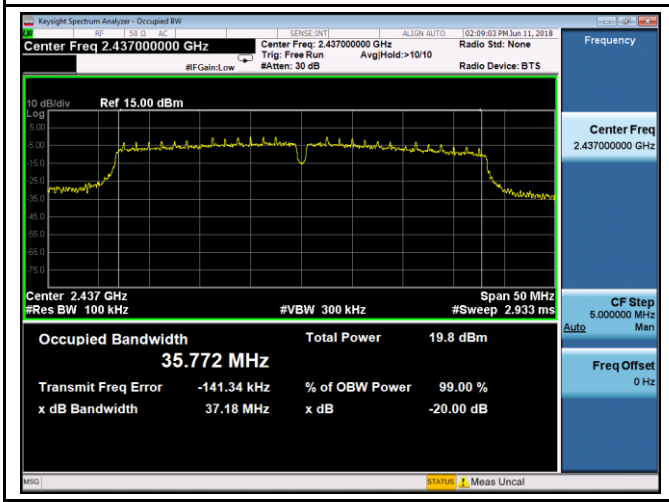
802.11n20 20dB Bandwidth - Mid CH 2437



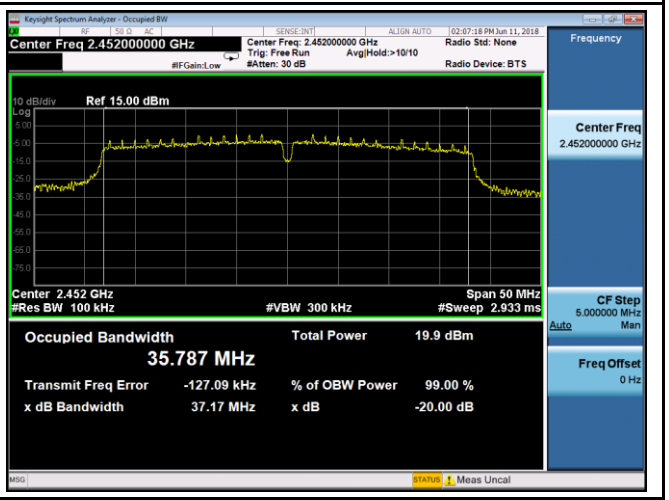
802.11n20 20dB Bandwidth - High CH 2462



802.11n40 20dB Bandwidth - Low CH 2422



802.11n40 20dB Bandwidth - Mid CH 2437

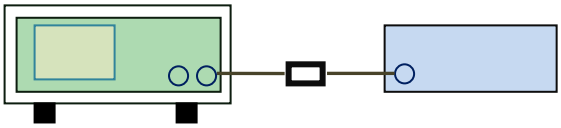


802.11n40 20dB Bandwidth - High CH 2452

6.3 Maximum Output Power

Temperature	26℃
Relative Humidity	55%
Atmospheric Pressure	1020mbar
Test date :	June 11, 2018
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(b)(3),RSS210(A8.4)	a)	FHSS in 2400-2483.5MHz with ≥ 75 channels: ≤ 1 Watt	☐
	b)	FHSS in 5725-5850MHz: ≤ 1 Watt	☐
	c)	For all other FHSS in the 2400-2483.5MHz band: ≤ 0.125 Watt.	☐
	d)	FHSS in 902-928MHz with ≥ 50 channels: ≤ 1 Watt	☐
	e)	FHSS in 902-928MHz with ≥ 25 & <50 channels: ≤ 0.25 Watt	☐
	f)	DTS in 902-928MHz, 2400-2483.5MHz: ≤ 1 Watt	☑
Test Setup	 Spectrum Analyzer EUT		
Test Procedure	558074 D01 DTS MEAS Guidance v03r03, 9.1.2 Integrated band power method Maximum output power measurement procedure - a) Set span to at least 1.5 times the OBW. - b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz. - c) Set VBW ≥ 3 x RBW. - d) Number of points in sweep ≥ 2 × span / RBW. (This gives bin-to-bin spacing ≤ RBW/2, so that narrowband signals are not lost between frequency bins.) - e) Sweep time = auto. - f) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode. - g) If transmit duty cycle < 98 %, use a sweep trigger with the level set to enable triggering only on full power pulses. The transmitter shall operate at maximum		

	power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 %, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to " free run" . - h) Trace average at least 100 traces in power averaging (i.e., RMS) mode. - i) Compute power by integrating the spectrum across the OBW of the signal using the instrument' s band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Output Power measurement result

Type	Modulation	CH	Frequency(MHz)	An.1	An.2	Total	Limit(dBm)	Result
				Conducted Power (dBm)	Conducted Power (dBm)	Conducted Power (dBm)		
Output Power	802.11b	Low	2412	2.24	3.81	/	30	Pass
		Mid	2437	1.77	3.25	/	30	Pass
		High	2462	2.63	3.40	/	30	Pass
	802.11g	Low	2412	2.32	3.69	/	30	Pass
		Mid	2437	1.81	3.72	/	30	Pass
		High	2462	2.38	3.81	/	30	Pass
	802.11n(20M)	Low	2412	2.39	3.56	6.03	28	Pass
		Mid	2437	1.77	3.98	6.02	28	Pass
		High	2462	2.43	3.52	6.02	28	Pass
	802.11n(40M)	Low	2422	1.75	3.49	5.72	28	Pass
		Mid	2437	1.99	3.91	6.06	28	Pass
		High	2452	2.30	4.04	6.27	28	Pass

Note:1. 802.11b ,802.11g mode the ANT 1 and ANT 2 can not TX and RX at the same time;

2. 802.11n(20),802.11n(40) mode the ANT 1 and ANT 2 can TX and RX at the same time;

3. Directional gain=GANT +10log(N)dbi =5.0+10log2=8.0dbi;

4. For power test the duty cycle is 100% in continous transmitting mode.

5.TX means Transmitter; RX means Receive.