MRT Technology (Suzhou) Co., Ltd
Phone: +86-512-66308358
Fax: +86-512-66308368
Web: www.mrt-cert.com

Report No.: 1606RSU00302
Report Version: V03
Issue Date: 07-01-2016

MEASUREMENT REPORT

FCC PART 15.407 / RSS-247 WLAN 802.11a/n/ac

FCC ID:	2AC23-WC0DR2611
IC:	12290A-WC0DR2611
APPLICANT:	Hui Zhou Gaoshengda Technology Co., LTD
Application Type:	Certification
Product:	WIFI Module
Model No.:	WC0DR2611
Brand Name:	GSD
FCC Classification:	Unlicensed National Information Infrastructure (UNII)
FCC Rule Part(s):	Part 15.407
IC Rule(s):	RSS-247 Issue 1
Test Procedure(s):	ANSI C63.10-2013, KDB 789033 D02v01r02, KDB 662911 D01v02r01, KDB 644545 D03v01
Test Date:	June 14 ~ July 01, 2016

Reviewed By : Robin Wu
(Robin Wu)

Approved By : Marlin Chen
(Marlin Chen)

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 789033 D02v01r02. Test results reported herein relate only to the item(s) tested.
The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date
1606RSU00302	Rev. 01	Initial report	06-23-2016
1606RSU00302	Rev. 02	Added standard	06-30-2016
1606RSU00302	Rev. 03	Revised the Band Edge Limit	07-01-2016

CONTENTS

§2.1033 General Information

Applicant:	Hui Zhou Gaoshengda Technology Co., LTD
Applicant Address:	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China
Manufacturer:	Hui Zhou Gaoshengda Technology Co., LTD
Manufacturer Address:	NO.75 Zhongkai Development Area, Huizhou, Guangdong, China
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
FCC Registration No.:	809388
IC Registration No.:	11384A
FCC Rule Part(s):	Part 15.407
IC Rule(s):	RSS-247
Model No.:	WC0DR2611
Test Device Serial No.:	N/A ☐ Production ☒ Pre-Production ☐ Engineering
FCC Classification:	Unlicensed National Information Infrastructure (UNII)

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- **MRT facility is a FCC registered (MRT Reg. No. 809388) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.**
- **MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.**
- **MRT facility is a VCCI registered (R-4179, G-814, C-4664, T-2206) test laboratory with the site description on file at VCCI Council.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.**

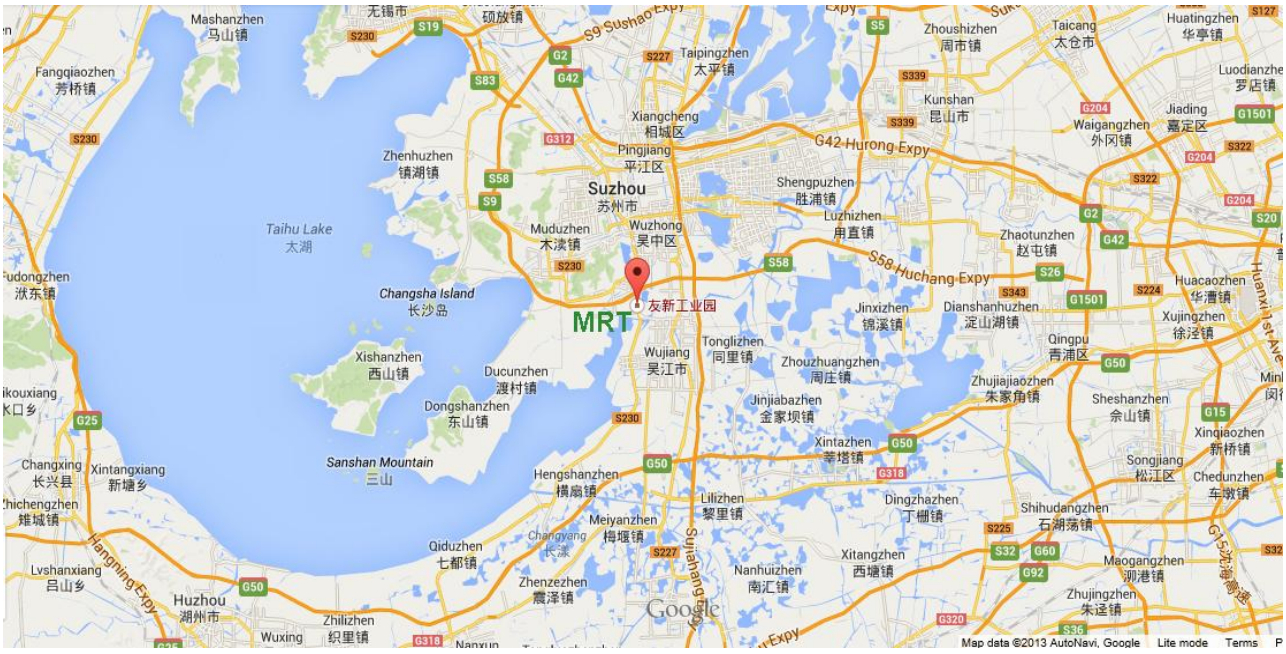
1. INTRODUCTION

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	WIFI Module
Model No.	WC0DR2611
Frequency Range	**2.4GHz:** For 802.11b/g/n-HT20: 2412 ~ 2462 MHz For 802.11n-HT40: 2422 ~ 2452 MHz **5GHz:** For 802.11a/n-HT20: 5180~5240MHz, 5745~5825MHz For 802.11n-HT40: 5190~5230MHz, 5755~5795MHz For 802.11ac-VHT80: 5210MHz, 5775MHz
Maximum Conducted Output Power	802.11a: 19.05dBm 802.11n-HT20: 18.35dBm 802.11n-HT40: 17.29dBm 802.11ac-VHT80: 15.97dBm
Type of Modulation	802.11a/n/ac: OFDM
Antenna Gain	For 2.4GHz: 2.8 dBi For 5GHz: 3dBi

Note: The WIFI Module supports 802.11a/b/g/n/ac-VHT80 mode only.

2.2. Operation Frequency / Channel list

802.11a/n-HT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	44	5220 MHz
48	5240 MHz	149	5745 MHz	153	5765 MHz
157	5785 MHz	161	5805 MHz	165	5825 MHz

802.11n-HT40

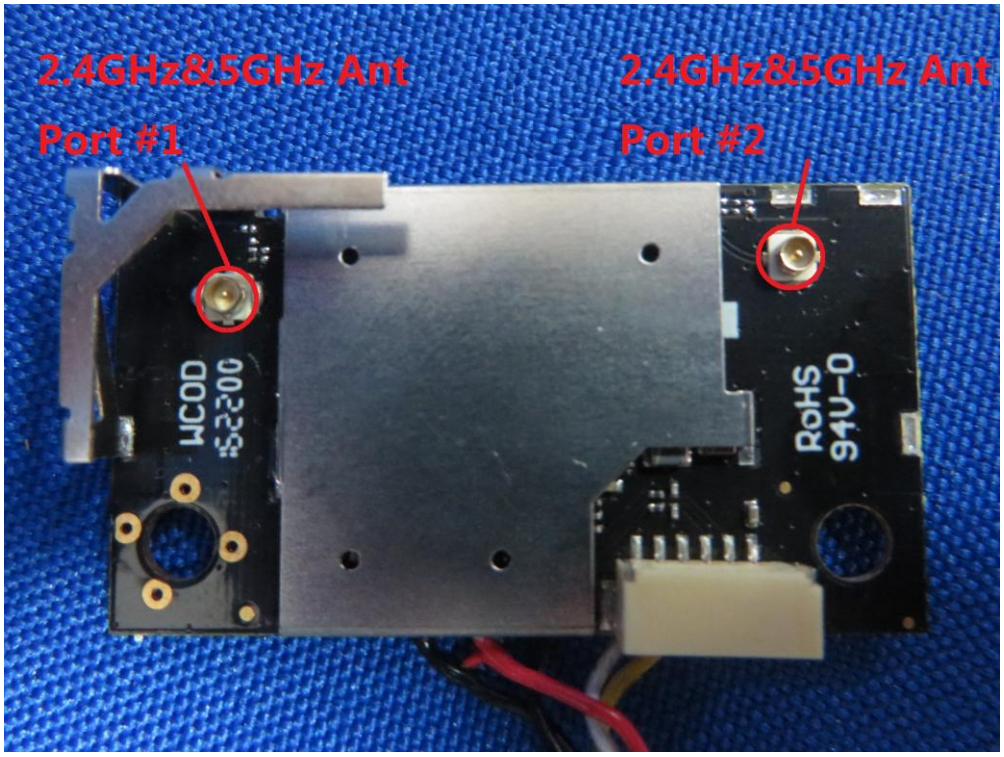
Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	151	5755 MHz
159	5795 MHz	--	--	--	--

802.11ac-VHT80

Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	155	5775 MHz	--	--

2.3. Description of Antenna RF Port

Antenna RF Port				
--	2.4GHz RF Port		5GHz RF Port	
	2.4GHz-1	2.4GHz-2	5GHz-1	5GHz-2
Software Control Port	Ant 1	Ant 2	Ant 1	Ant 2



2.4. Test Mode

Test Mode	Mode 1: Transmit by 802.11a
	Mode 2: Transmit by 802.11n-HT20
	Mode 3: Transmit by 802.11n-HT40
	Mode 4: Transmit by 802.11ac-VHT80

Note: For 802.11a mode, the WIFI Module supports SISO mode. For 802.11 n-HT20 mode, n-HT40 mode and 802.11ac-VHT80 mode the WIFI Module just supports MIMO mode.

2.5. Test Software

The test utility software used during testing was “MPTool”.

2.6. Device Capabilities

This device contains the following capabilities:
2.4GHz WLAN (DTS) and 5GHz WLAN (NII).
Note: 5GHz (NII) operation is possible in 20MHz, 40MHz and 80MHz 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 = average per the guidance of Section B)2)b) of KDB 789033 D02v01r02. 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:

Test Mode	Duty Cycle
802.11a	100 %
802.11n-HT20	100 %
802.11n-HT40	100 %
802.11ac-VHT80	100 %

2.7. Test Configuration

The **WIFI Module FCC ID: 2AC23-WC0DR2611** was tested per the guidance of KDB 789033 D02v01r02. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

2.8. EMI Suppression Device(s)/Modifications

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

2.9. 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, 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 C63.10-2013), and the guidance provided in KDB 789033 D02v01r02 were used in the measurement of the **WIFI Module FCC ID: 2AC23-WC0DR2611.**

Deviation from measurement procedure…….....None

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. 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. 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 data exchange speed, 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 are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

Line conducted emissions test results are shown in Section 7.10.

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. A 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 for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 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 Beam-Width 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 WIFI Module uses a unique connector – IPEX connector.

Conclusion:

The **WIFI Module FCC ID: 2AC23-WC0DR2611** unit complies with the requirement of §15.203.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions - SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2016/11/03
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2016/11/03
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2016/11/03
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06182	1 year	2016/12/20

Radiated Emission - AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Agilent	N9010A	MRTSUE06124	1 year	2017/06/23
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2016/11/03
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2017/04/15
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2016/12/11
Loop Antenna	Schwarzbeck	FMZB1519	MRTSUE06025	1 year	2016/12/14
TRILOG Antenna	Schwarzbeck	VULB9168	MRTSUE06172	1 year	2016/12/10
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06023	1 year	2016/11/07
Broadband Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06024	1 year	2017/01/04
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06182	1 year	2016/12/20

Conducted Test Equipment - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Agilent	N9010A	MRTSUE06124	1 year	2017/06/23
USB Wideband Power Sensor	Boonton	55006	MRTSUE06109	1 year	2017/05/08
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06180	1 year	2016/12/20

Software	Version	Function
e3	V8.3.5	EMI Test Software

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 - SR2
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 150kHz~30MHz: 3.46dB
Radiated Emission Measurement - AC1
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz ~ 1GHz: 4.18dB 1GHz ~ 40GHz: 4.76dB

7. TEST RESULT

7.1. Summary

Company Name: **HUI ZHOU GAOSHENGDA TECHNOLOGY CO., LTD US LLC**

FCC ID: **2AC23-WC0DR2611**

IC: **12290A-WC0DR2611**

Data Rate(s) Tested: **6Mbps ~ 54Mbps (a);**
13/14.4Mbps ~ 130/144.4Mbps (n-HT20MHz BW);
27/30Mbps ~ 270/300Mbps (n-HT40MHz BW);
58.6/65Mbps ~ 780/866.6Mbps (ac-VHT80MHz BW)

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.407(a)	26dB Bandwidth	N/A	Conducted	Pass	Section 7.2
15.407(e)	6dB Bandwidth	≥ 500kHz		Pass	Section 7.3
15.407(a)(1)(ii) 5150-5250	Maximum Conducted Output Power	≤ 30 dBm U-NII-1 ≤ 30 dBm U-NII-3		Pass	Section 7.5
15.407(h)(1)	Transmit Power Control	≤ 24 dBm		N/A	Section 7.6
15.407(a)(1)(ii), (5)	Peak Power Spectral Density	≤ 17 dBm/MHz U-NII-1 ≤ 30 dBm/500kHz U-NII-3		Pass	Section 7.7
15.407(g)	Frequency Stability	N/A		Pass	Section 7.8
15.407(b)(1), (4)	Undesirable Emissions	≤ -27dBm/MHz EIRP ≤ -17dBm/MHz EIRP	Radiated	Pass	Section 7.9 & 7.10
15.205, 15.209 15.407(b)(5), (6), (7)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		Pass	
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.11

RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
RSS-247 §6.2	99% Bandwidth	N/A	Conducted	Pass	Section 7.2
RSS-247 §6.2.4	6dB Bandwidth	>500kHz		Pass	Section 7.3
RSS-247 §6.2.1	Operation Frequency Range of 26dB BW	26dBc frequency range above 5250MHz		Pass	Section 7.4
RSS-247 §6.2.1, §6.2.4	Max Conducted Output Power	5150~5250, 5725~5850MHz, ≤ 30 dBm		Pass	Section 7.5
	Maximum E.I.R.P	5150~5250MHz ≤ 23 dBm or 10 + 10 log10(99% B)			
RSS-247 §6.2.2, §6.2.3	Transmit Power Control	≤ 24 dBm		N/A	Section 7.6
RSS-247 §6.2.1, §6.2.4	Peak Power Spectral Density	5150~5250MHz ≤ 10 dBm/MHz 5725~5850MHz ≤ 30 dBm/500kHz		Pass	Section 7.7
RSS-Gen [8.11]	Frequency Stability	N/A		Pass	Section 7.8
RSS-247 §6.2.1, §6.2.4	Out-of-Band Emissions	≤ -27dBm/MHz EIRP ≤ -17dBm/MHz EIRP	Radiated	Pass	Section 7.9 & 7.10
RSS-247 §6.2.1, §6.2.4	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in RSS-Gen [8.9]		Pass	
RSS-Gen [8.8]	AC Conducted Emissions 150kHz - 30MHz	< RSS-Gen [8.8] limits	Line Conducted	Pass	Section 7.11

Notes:

1) All channels, modes, and modulations/data rates were investigated among all UNII bands. For radiated emission test, every axis (X, Y, Z) was also verified. 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. 26dB Bandwidth Measurement

7.2.1. Test Limit

N/A

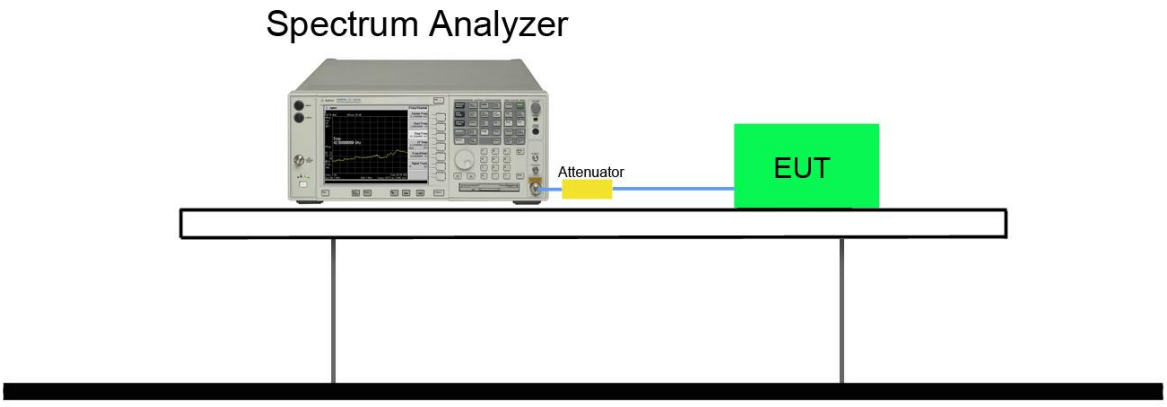
7.2.2. Test Procedure used

KDB 789033 D02v01r02 - Section C.1

7.2.3. Test Setting

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediated power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth.
3. VBW ≥ 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.

7.2.4. Test Setup



7.2.5. Test Result

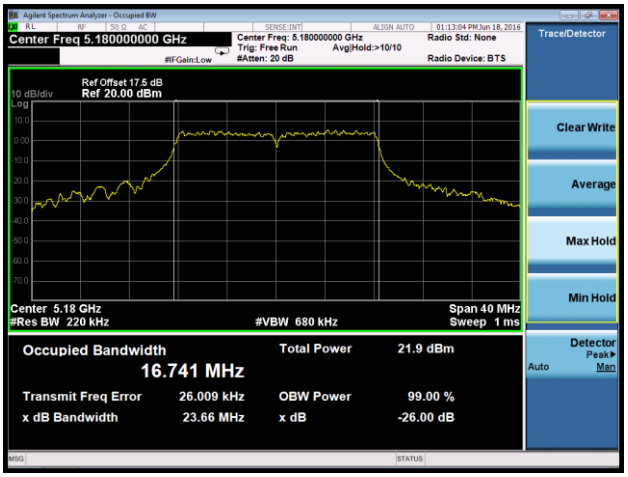
Product	WIFI Module	Temperature	25°C
Test Engineer	Roy Cheng	Relative Humidity	54%
Test Site	TR3	Test Date	2016/06/18

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Result
Ant 1						
802.11a	6	36	5180	23.66	16.74	Pass
802.11a	6	44	5220	23.61	16.74	Pass
802.11a	6	48	5240	25.21	16.76	Pass
802.11a	6	149	5745	25.22	16.80	Pass
802.11a	6	157	5785	25.40	16.86	Pass
802.11a	6	165	5825	25.30	16.81	Pass
Ant 2						
802.11a	6	36	5180	25.12	16.88	Pass
802.11a	6	44	5220	26.50	16.94	Pass
802.11a	6	48	5240	26.61	16.98	Pass
802.11a	6	149	5745	26.62	16.98	Pass
802.11a	6	157	5785	28.30	16.97	Pass
802.11a	6	165	5825	26.58	17.02	Pass
Ant 1 / Ant 1 + 2						
802.11n-HT20	13	36	5180	21.37	17.77	Pass
802.11n-HT20	13	44	5220	21.30	17.79	Pass
802.11n-HT20	13	48	5240	21.39	17.78	Pass
802.11n-HT20	13	149	5745	21.52	17.75	Pass
802.11n-HT20	13	157	5785	21.36	17.75	Pass
802.11n-HT20	13	165	5825	21.34	17.77	Pass
802.11n-HT40	27	38	5190	43.53	36.55	Pass
802.11n-HT40	27	46	5230	43.04	36.56	Pass
802.11n-HT40	27	151	5755	43.89	36.59	Pass
802.11n-HT40	27	159	5795	43.63	36.65	Pass
802.11ac-VHT80	58.6	42	5210	84.25	75.97	Pass
802.11ac-VHT80	58.6	155	5775	84.15	75.87	Pass

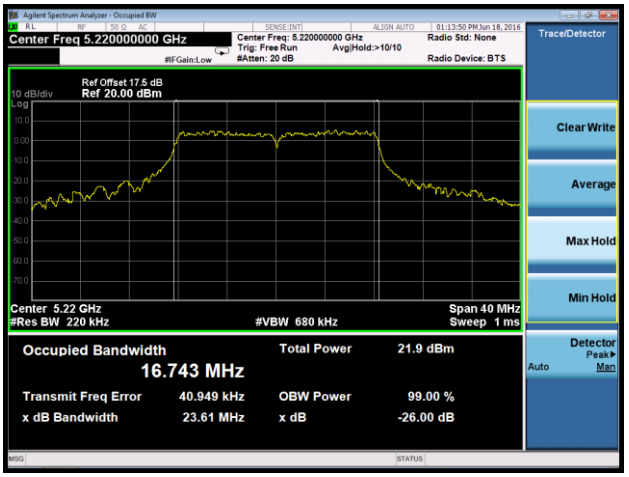
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Result
Ant 2 / Ant 1 + 2						
802.11n-HT20	13	36	5180	21.40	17.74	Pass
802.11n-HT20	13	44	5220	21.41	17.75	Pass
802.11n-HT20	13	48	5240	21.42	17.75	Pass
802.11n-HT20	13	149	5745	21.41	17.74	Pass
802.11n-HT20	13	157	5785	21.56	17.72	Pass
802.11n-HT20	13	165	5825	21.44	17.74	Pass
802.11n-HT40	27	38	5190	42.18	36.30	Pass
802.11n-HT40	27	46	5230	41.68	36.30	Pass
802.11n-HT40	27	151	5755	41.73	36.27	Pass
802.11n-HT40	27	159	5795	42.09	36.29	Pass
802.11ac-VHT80	58.6	42	5210	84.23	75.89	Pass
802.11ac-VHT80	58.6	155	5775	84.03	75.86	Pass

802.11a 26dB Bandwidth & 99% Bandwidth - Ant 1

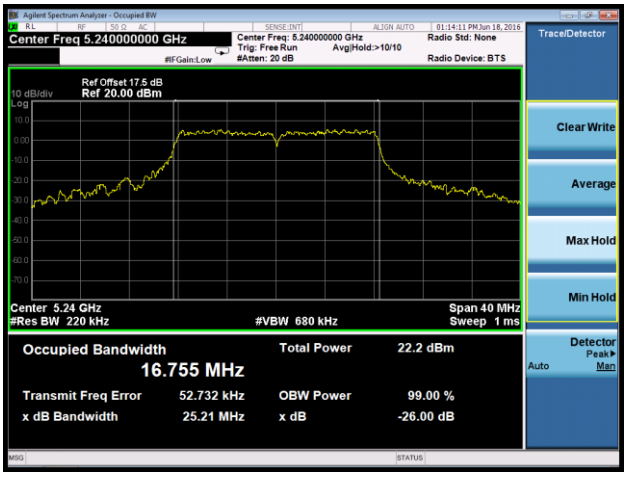
Channel 36 (5180MHz)



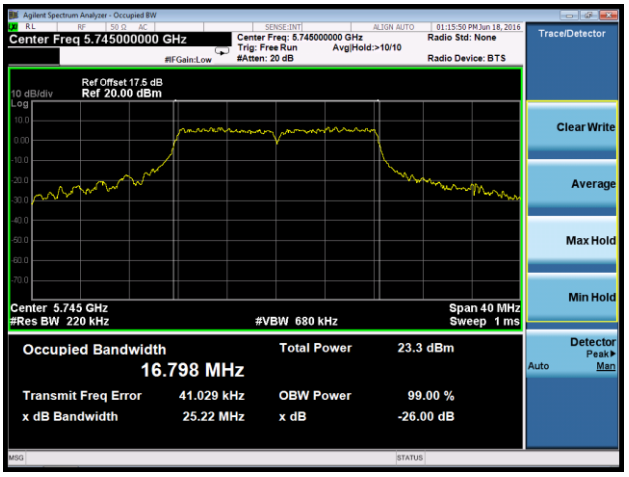
Channel 44 (5220MHz)



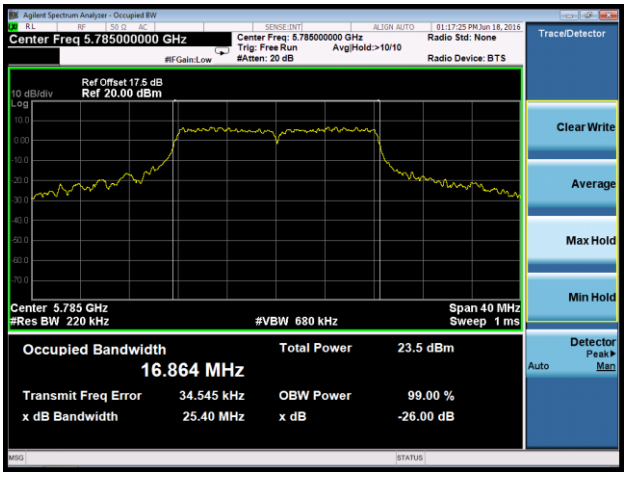
Channel 48 (5240MHz)



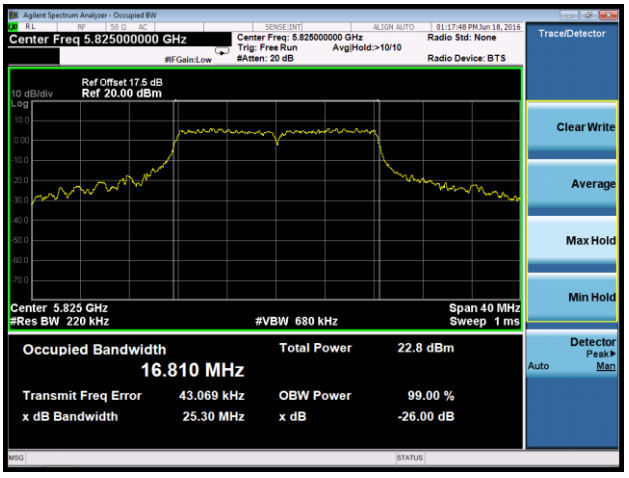
Channel 149 (5745MHz)



Channel 157 (5785MHz)

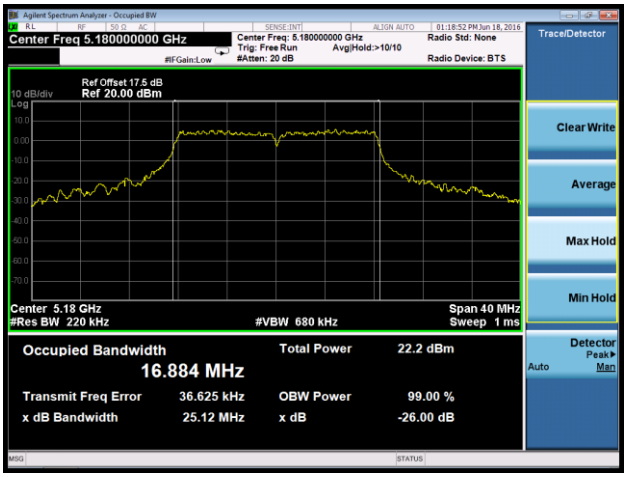


Channel 165 (5825MHz)

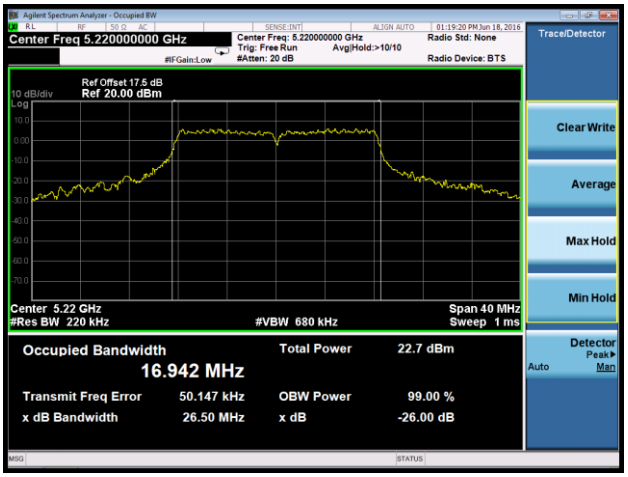


802.11a 26dB Bandwidth & 99% Bandwidth - Ant 2

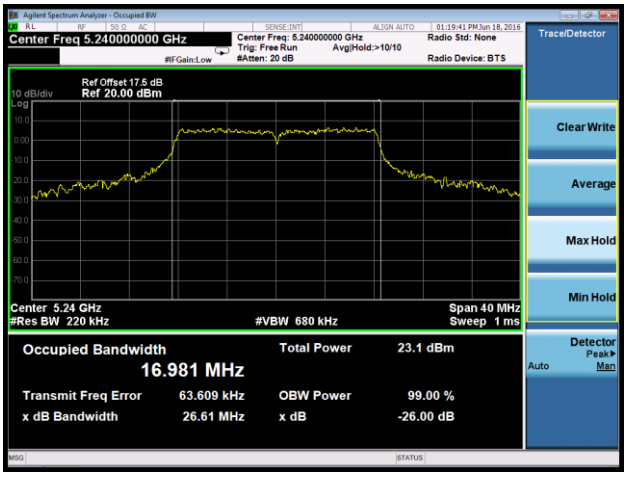
Channel 36 (5180MHz)



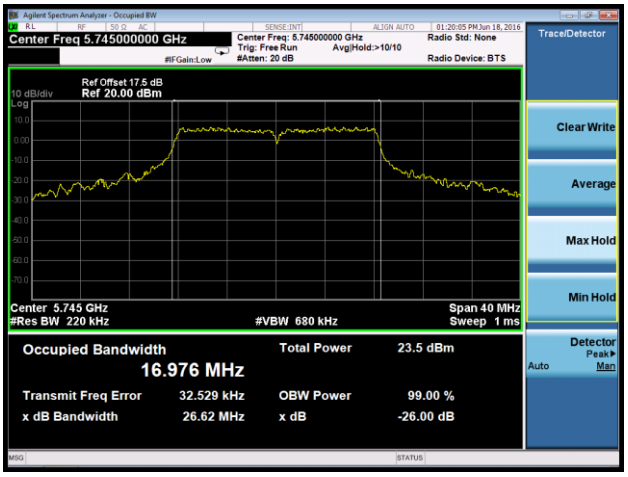
Channel 44 (5220MHz)



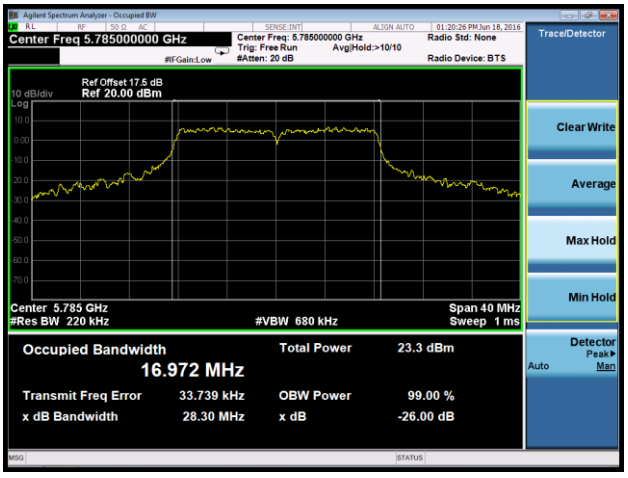
Channel 48 (5240MHz)



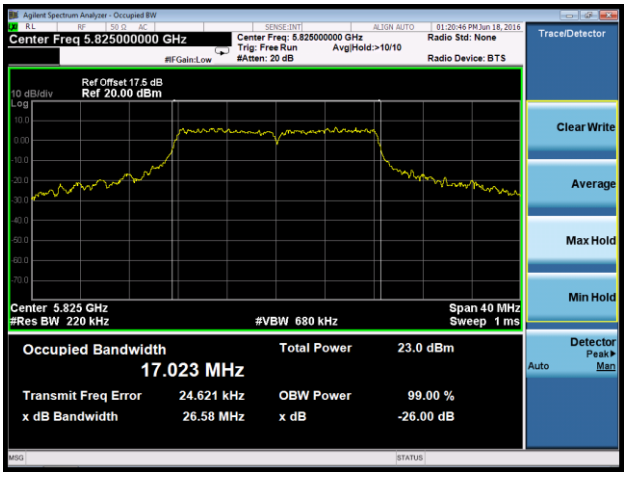
Channel 149 (5745MHz)



Channel 157 (5785MHz)

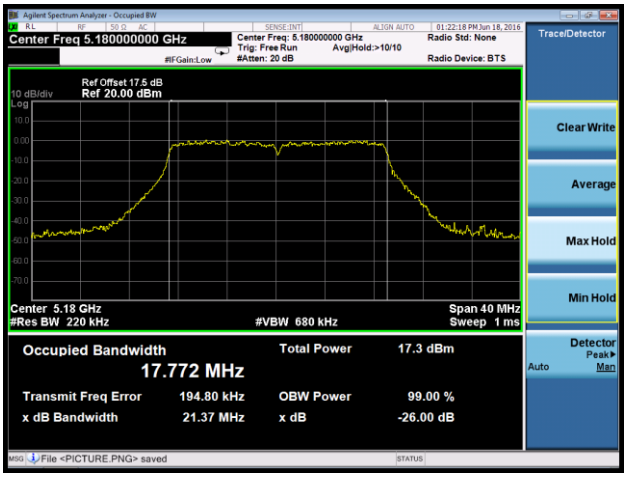


Channel 165 (5825MHz)

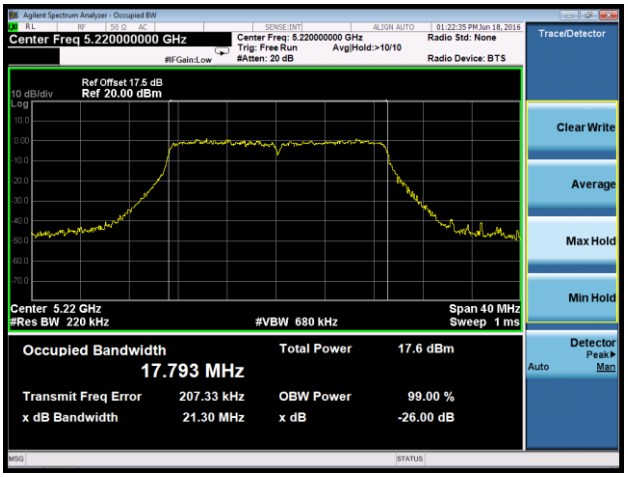


802.11n-HT20 26dB Bandwidth & 99% Bandwidth - Ant 1 / Ant 1 + 2

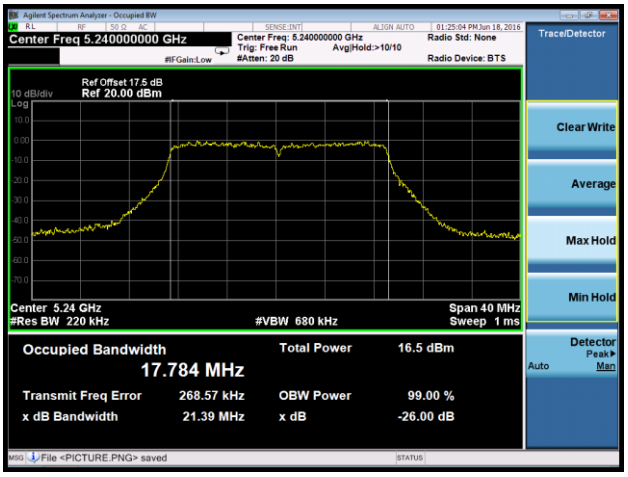
Channel 36 (5180MHz)



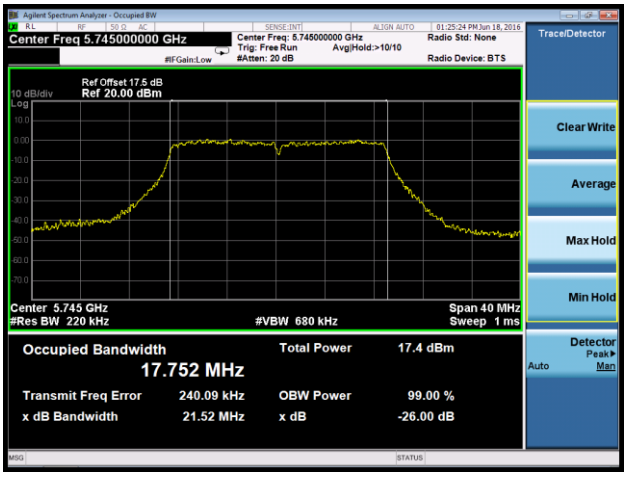
Channel 44 (5220MHz)



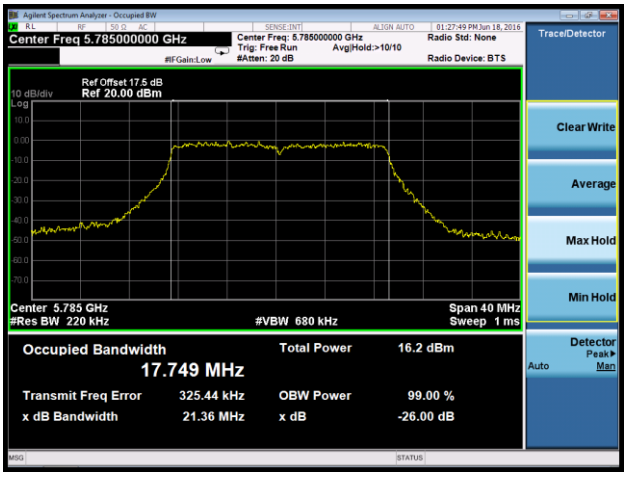
Channel 48 (5240MHz)



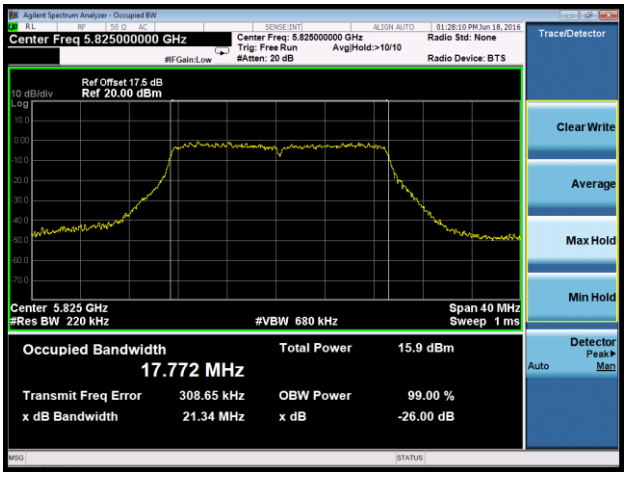
Channel 149 (5745MHz)

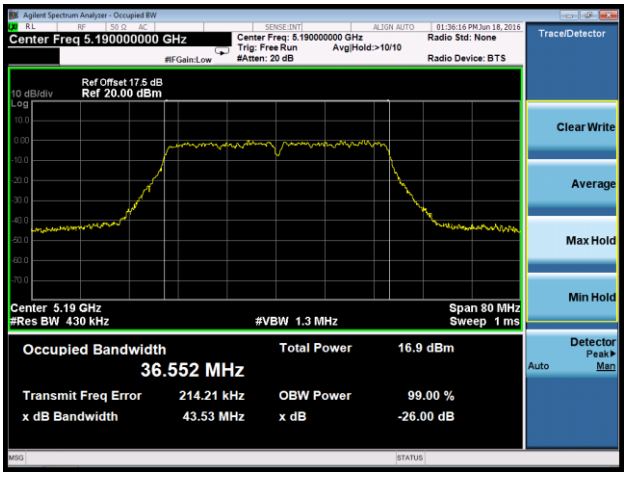
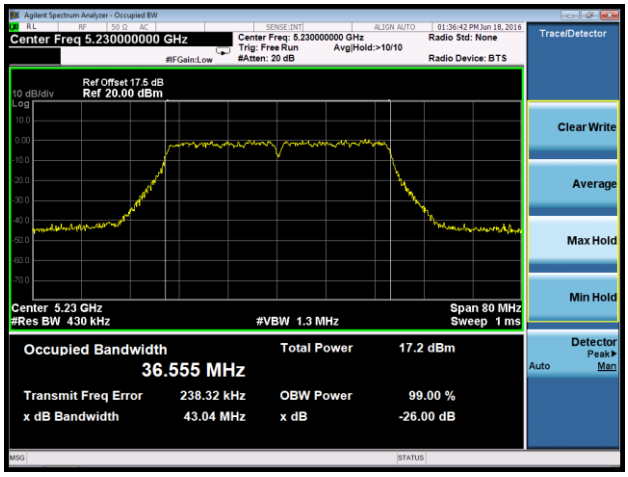
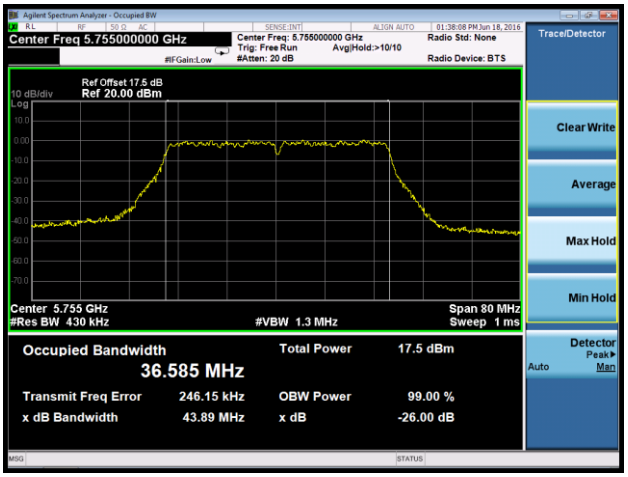
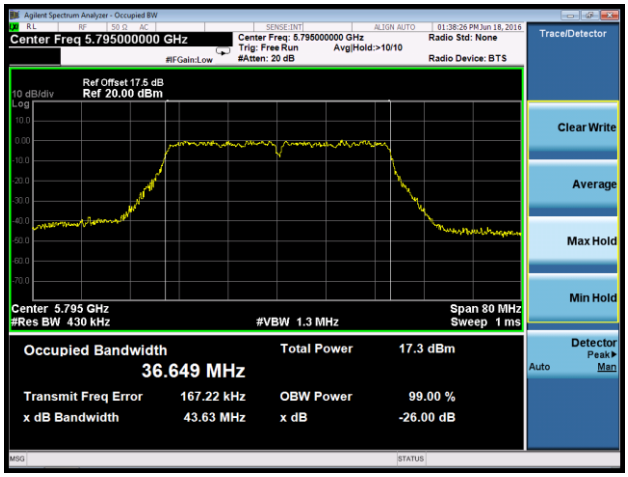
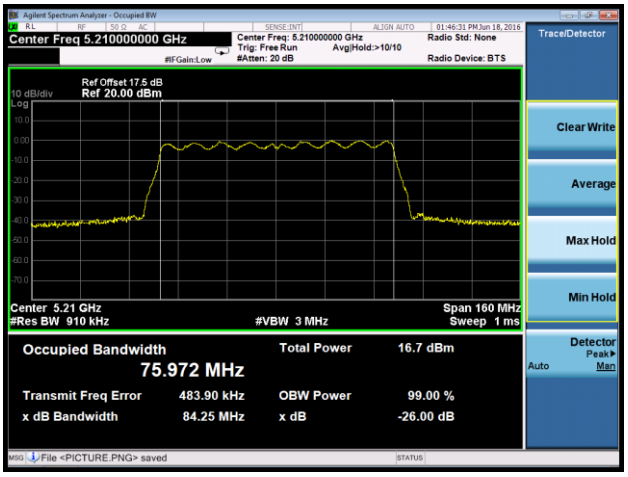
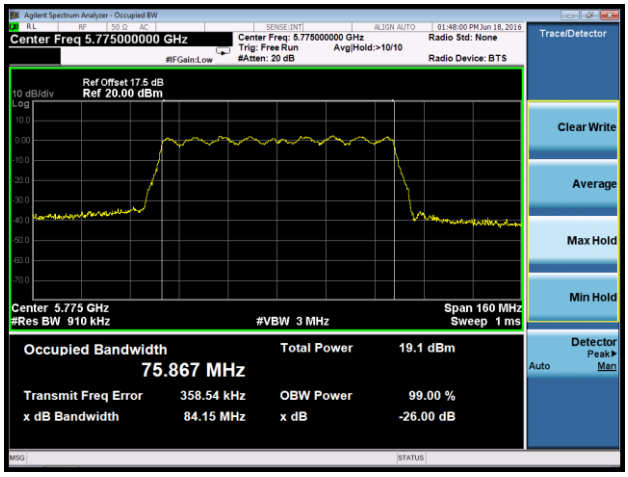


Channel 157 (5785MHz)



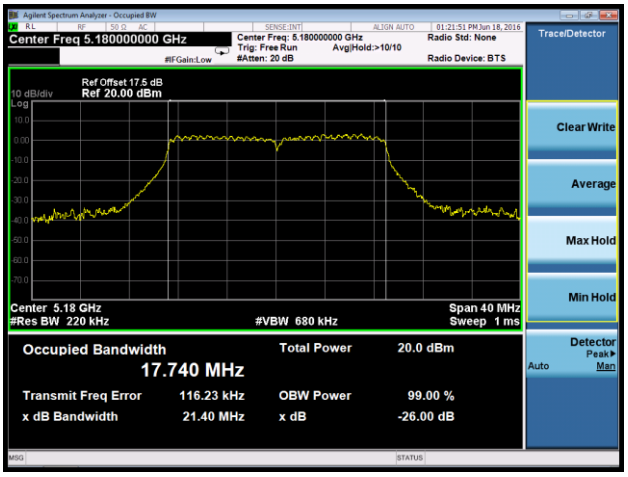
Channel 165 (5825MHz)



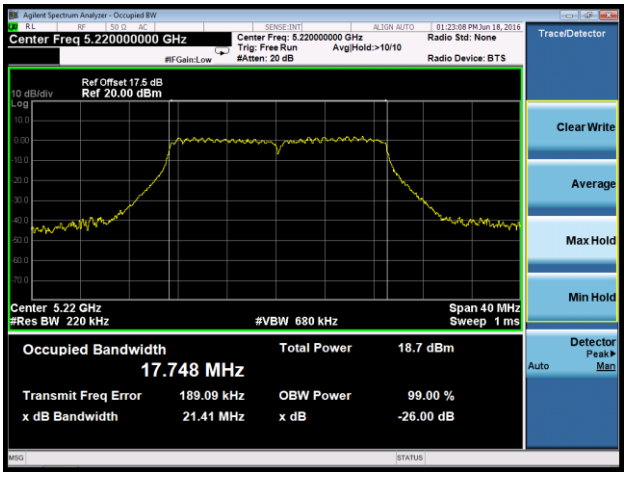
802.11n-HT40 26dB Bandwidth & 99% Bandwidth - Ant 1 / Ant 1 + 2	
Channel 38 (5190MHz)	**Channel 46 (5230MHz)**
	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	
802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth - Ant 1 / Ant 1 + 2	
Channel 42 (5210MHz)	**Channel 155 (5775MHz)**
	

802.11n-HT20 26dB Bandwidth & 99% Bandwidth - Ant 2 / Ant 1 + 2

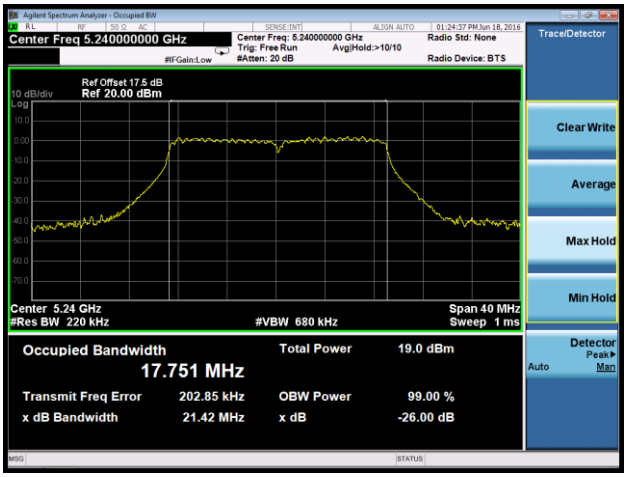
Channel 36 (5180MHz)



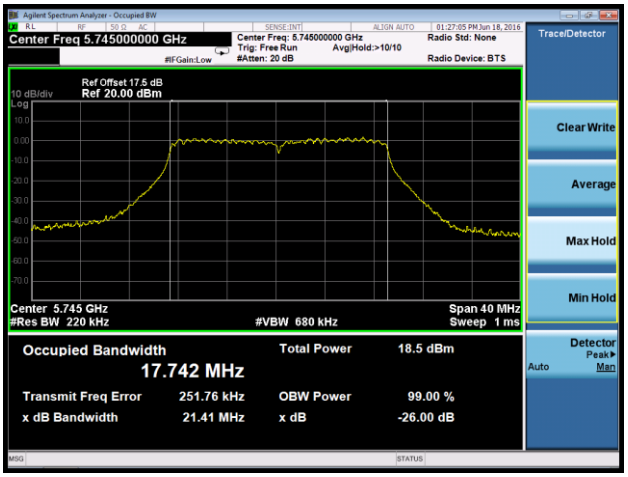
Channel 44 (5220MHz)



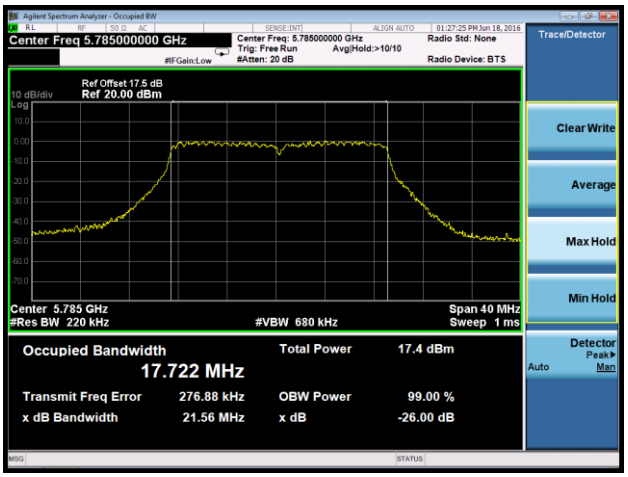
Channel 48 (5240MHz)



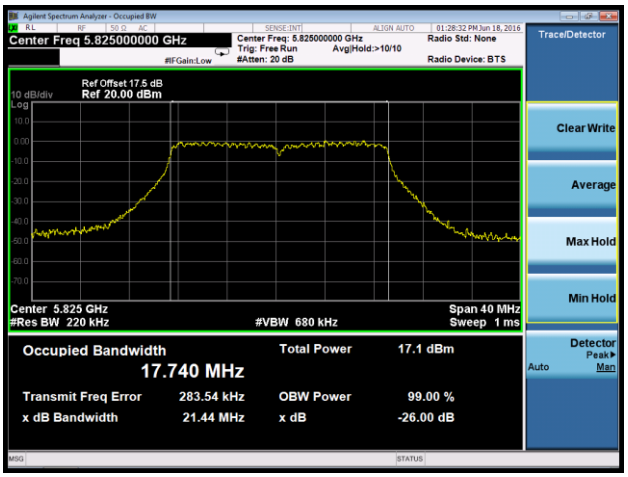
Channel 149 (5745MHz)

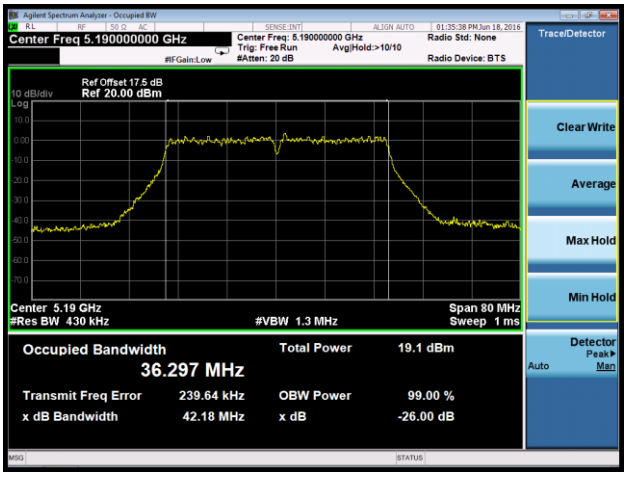
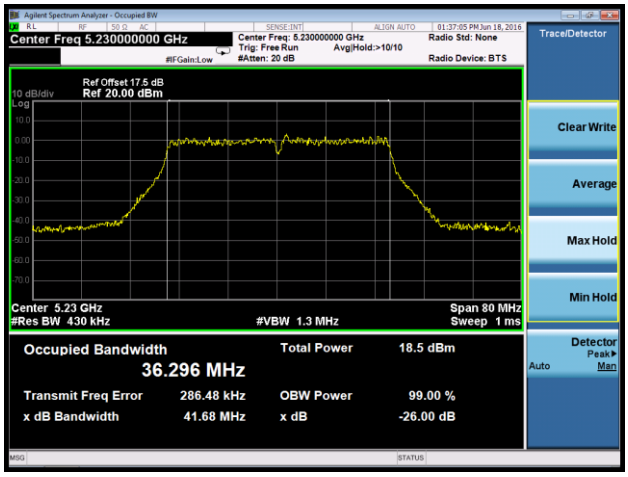
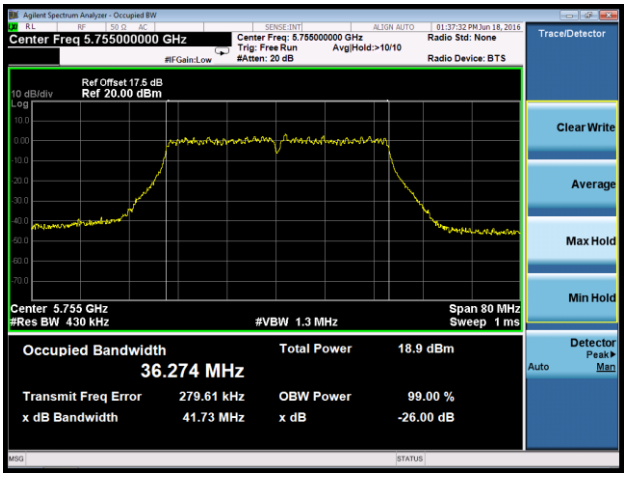
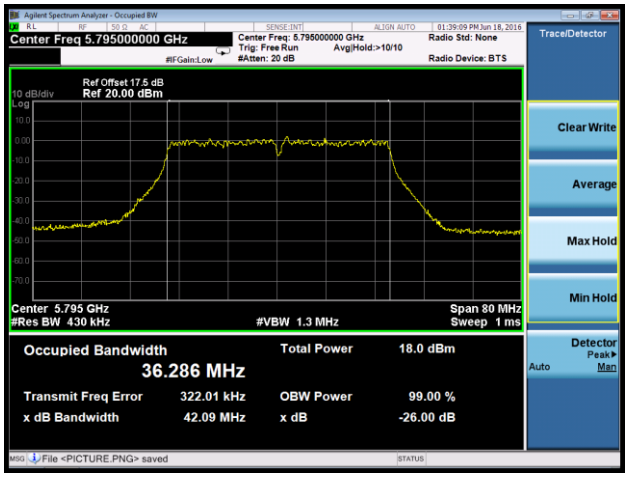
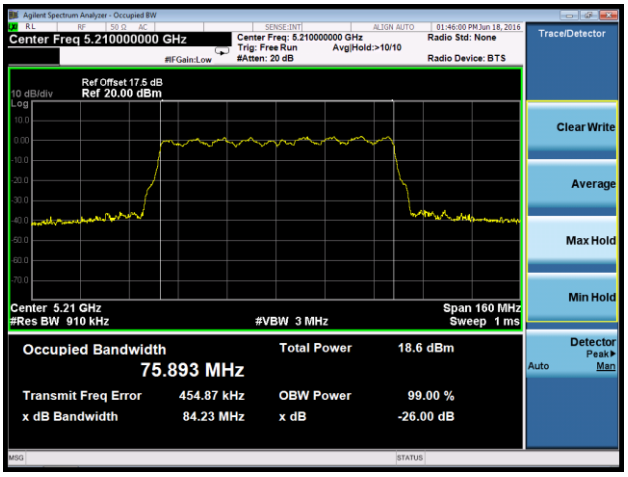
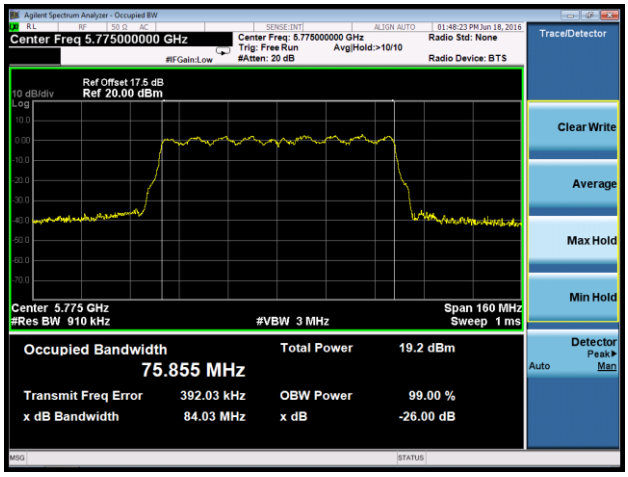


Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11n-HT40 26dB Bandwidth & 99% Bandwidth - Ant 2 / Ant 1 + 2	
Channel 38 (5190MHz)	**Channel 46 (5230MHz)**
	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	
802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth - Ant 2 / Ant 1 + 2	
Channel 42 (5210MHz)	**Channel 155 (5775MHz)**
	

7.3. 6dB Bandwidth Measurement

7.3.1. Test Limit

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

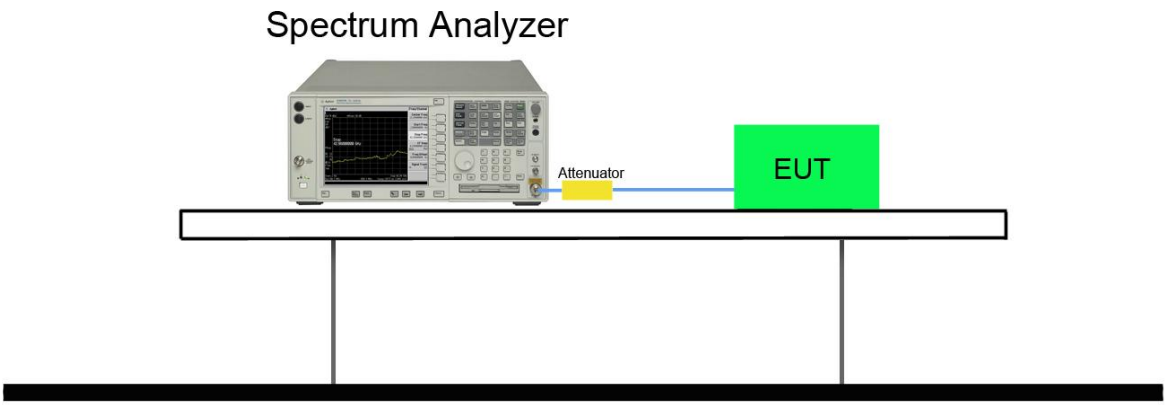
7.3.2. Test Procedure used

KDB 789033 D02v01r02 - Section C.2

7.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW ≧ 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

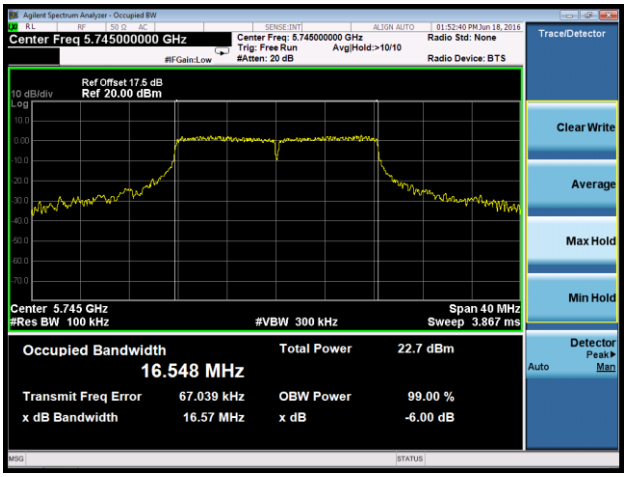
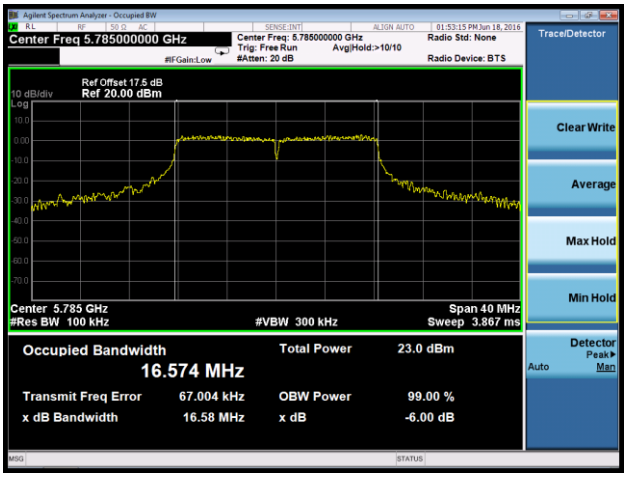
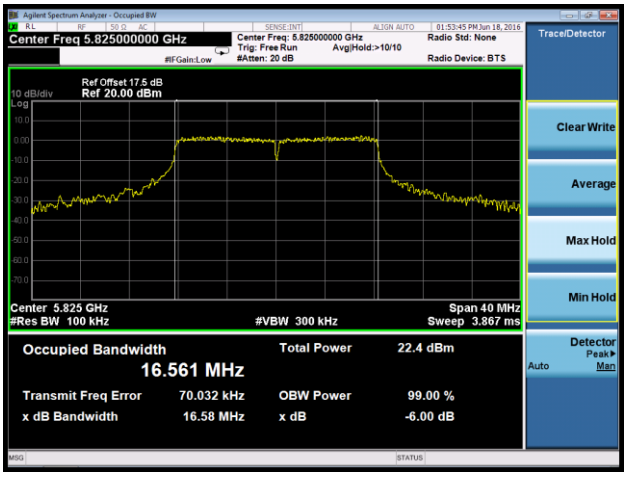
7.3.4. Test Setup

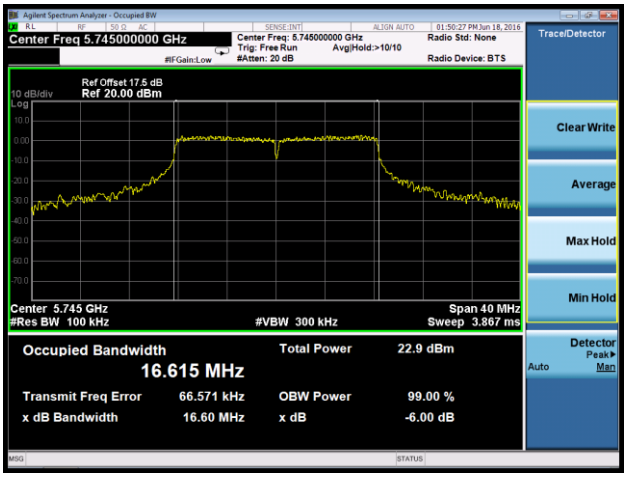
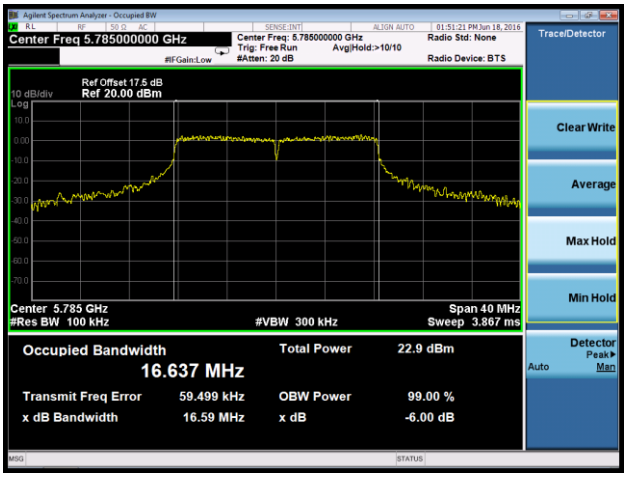
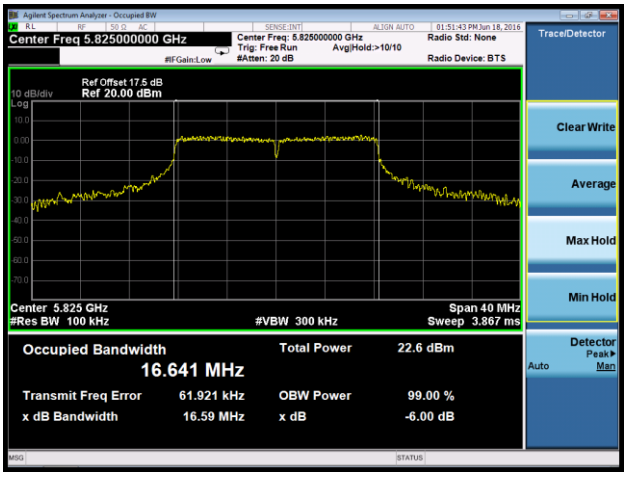


7.3.5. Test Result

Product	WIFI Module	Temperature	25°C
Test Engineer	Roy Cheng	Relative Humidity	54%
Test Site	TR3	Test Date	2016/06/18

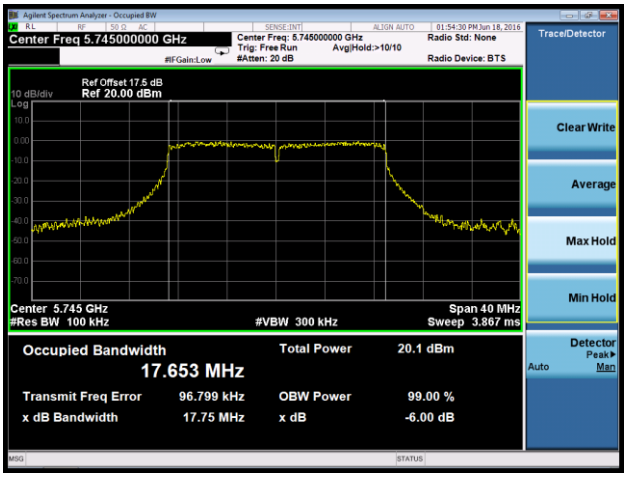
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 1						
802.11a	6	149	5745	16.57	≥ 0.5	Pass
802.11a	6	157	5785	16.58	≥ 0.5	Pass
802.11a	6	165	5825	16.58	≥ 0.5	Pass
Ant 2						
802.11a	6	149	5745	16.60	≥ 0.5	Pass
802.11a	6	157	5785	16.59	≥ 0.5	Pass
802.11a	6	165	5825	16.59	≥ 0.5	Pass
Ant 1 / Ant 1 + 2						
802.11n-HT20	13	149	5745	17.75	≥ 0.5	Pass
802.11n-HT20	13	157	5785	17.81	≥ 0.5	Pass
802.11n-HT20	13	165	5825	17.76	≥ 0.5	Pass
802.11n-HT40	27	151	5755	36.56	≥ 0.5	Pass
802.11n-HT40	27	159	5795	36.58	≥ 0.5	Pass
802.11ac-VHT80	58.6	155	5775	76.57	≥ 0.5	Pass
Ant 2 / Ant 1 + 2						
802.11n-HT20	13	149	5745	17.68	≥ 0.5	Pass
802.11n-HT20	13	157	5785	17.69	≥ 0.5	Pass
802.11n-HT20	13	165	5825	17.67	≥ 0.5	Pass
802.11n-HT40	27	151	5755	36.42	≥ 0.5	Pass
802.11n-HT40	27	159	5795	36.44	≥ 0.5	Pass
802.11ac-VHT80	58.6	155	5775	76.56	≥ 0.5	Pass

802.11a 6dB Bandwidth - Ant 1	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

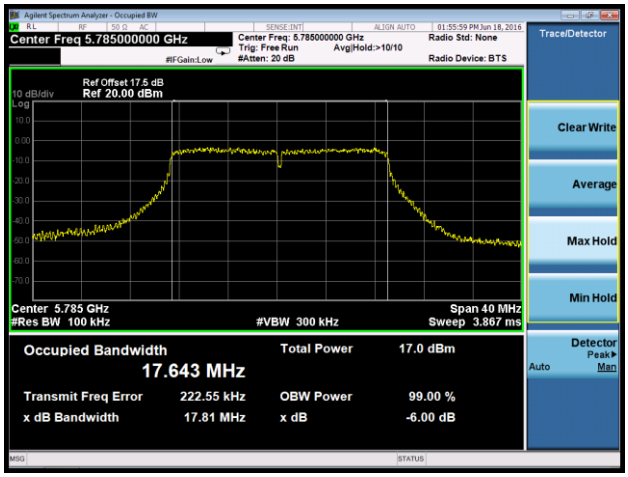
802.11a 6dB Bandwidth - Ant 2	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

802.11n-HT20 6dB Bandwidth - Ant 1 / Ant 1 + 2

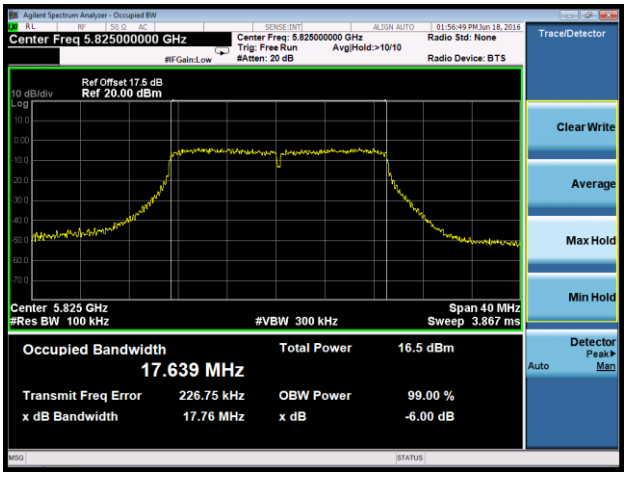
Channel 149 (5745MHz)



Channel 157 (5785MHz)

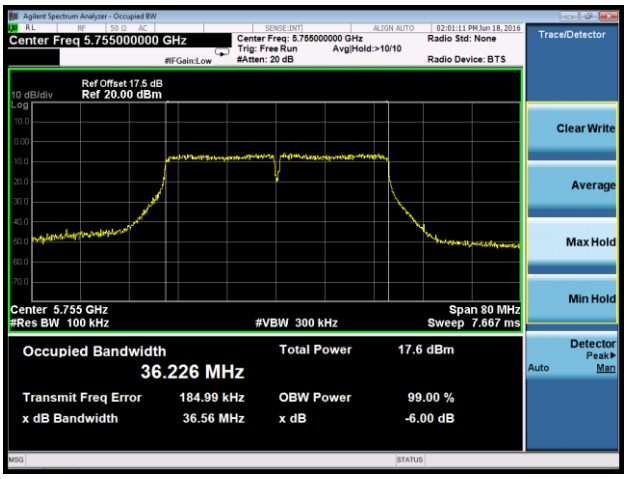


Channel 165 (5825MHz)



802.11n-HT40 6dB Bandwidth - Ant 1 / Ant 1 + 2

Channel 151 (5755MHz)



Channel 159 (5795MHz)