FCC Test Report

Product Name ： Dual-band Wireless-AC1300 USB Adapter

Trade Name ： ASUS

Model No. ： USB-AC55

FCC ID. ： MSQ-USBACRU00

Applicant ： ASUSTeK COMPUTER INC.

Address ： 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt ： Sep. 07, 2017

Issued Date ： Apr. 12, 2018

Report No. ： 1790099R-RFUSP57V00

Report Version ： V1.0

Testing Laboratory

3024

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Test Report Certification

Issued Date : Apr. 12, 2018
Report No. : 1790099R-RFUSP57V00

Product Name	:	Dual-band Wireless-AC1300 USB Adapter
Applicant	:	ASUSTeK COMPUTER INC.
Address	:	4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan
Manufacturer	:	ASUSTeK COMPUTER INC.
Model No.	:	USB-AC55
FCC ID.	:	MSQ-USBACRU00
EUT Voltage	:	DC 5V
Testing Voltage	:	DC 5V
Trade Name	:	ASUS
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart E Section 15.407: 2017 ANSI C63.10: 2013 KDB 789033 V02r01 KDB 662911 D01 V02r01
Laboratory Name	:	Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C. TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result	:	Complied

Documented By : Lyla Yang

(Lyla Yang / Engineering Adm. Assistant)

Tested By : clemens fang

(Clemens Fang / Engineer)

Approved By : Roy Wang

(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
1790099R-RFUSP57V00	V1.0	Initial issue of report	Apr. 12, 2018

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1. General Information

1.1. EUT Description

Product Name	Dual-band Wireless-AC1300 USB Adapter	
Trade Name	ASUS	
Model No.	USB-AC55	
Frequency Range/ Channel Number	IEEE 802.11a/ IEEE 802.11n (20MHz) / IEEE 802.11ac (20MHz)	5180~5240MHz / 4 Channels 5745~5825MHz / 5 Channels
	IEEE 802.11n (40MHz) / IEEE 802.11ac (40MHz)	5190~5230MHz / 2 Channels 5755~5795MHz / 2 Channels
	IEEE 802.11ac (80MHz)	5210~5210MHz / 1 Channel 5775~5775MHz / 1 Channel
Type of Modulation	IEEE 802.11a/n/ac	Orthogonal Frequency Division Multiplexing (OFDM)
Data Speed	IEEE 802.11a	6, 12, 18, 24, 36, 48, 54Mbps
	IEEE 802.11n	Support a subset of the combination of GI, MCS 0~MCS15 and bandwidth defined in 802.11n
	IEEE 802.11ac	Support a subset of the combination of GI, MCS 0~MCS 9 and bandwidth defined in 802.11ac

Antenna Information			
	MFR. /Model No.	Antenna Type	Peak Gain
ANT 0	LYNwave / ALX17M-222XX1	PIFA Antenna	2.28 dBi
ANT 1	LYNwave / LYNPNT-05002	PIFA Antenna	2.87 dBi

ANT-TX / RX & Bandwidth

ANT-TX / RX	TX			RX		
Mode/ Channel Bandwidth	20MHz	40MHz	80MHz	20MHz	40MHz	80MHz
IEEE802.11a	✓			✓		
IEEE802.11n	✓	✓		✓	✓	
IEEE802.11ac	✓	✓	✓	✓	✓	✓

IEEE 802.11n

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}		N_{DBPS}		Data Rate(Mb/s)			
								800ns GI		400ns GI	
				20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.2	15.0
1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.4	30.0
2	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.7	45.0
3	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.9	60.0
4	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.3	90.0
5	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.8	120.0
6	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.0	135.0
7	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.2	150.0
Note 1: Support of 400ns GI is optional on transmit and receive.											

Table 1 – MCS parameters for TX Antenna number = 1

MCS Index	Modulation	R	N_{BPSCS}	N_{CBPS}		N_{DBPS}		Data Rate(Mb/s)			
								800ns GI		400ns GI	
				20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
8	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.4	30.0
9	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.9	60.0
10	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.3	90.0
11	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.8	120.0
12	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.7	180.0
13	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.6	240.0
14	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.0	270.0
15	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.4	300.0
Note 1: Support of 400ns GI is optional on transmit and receive.											

Table 2 – MCS parameters for TX Antenna number = 2

Symbol	Explanation
R	Code rate
N_{BPSC}	Number of coded bits per single carrier
N_{CBPS}	Number of coded bits per symbol
N_{DBPS}	Number of data bits per symbol
GI	guard interval

IEEE 802.11ac Data Rate

Spatial Streams (Note1)	MCS Index	Modulation type	Coding rate	Data Rate(Mb/s)					
				20 MHz		40 MHz		80 MHz	
				Guard Interval		Guard Interval		Guard Interval	
				800ns	400ns	800ns	400ns	800ns	400ns
1	0	BPSK	1/2	6.5	7.2	13.5	15	29.3	32.5
	1	QPSK	1/2	13	14.4	27	30	58.5	65
	2	QPSK	3/4	19.5	21.7	40.5	45	87.8	97.5
	3	16-QAM	1/2	26	28.9	54	60	117	130
	4	16-QAM	3/4	39	43.3	81	90	175.5	195
	5	64-QAM	2/3	52	57.8	108	120	234	260
	6	64-QAM	3/4	58.5	65	121.5	135	263.3	292.5
	7	64-QAM	5/6	65	72.2	135	150	292.5	325
	8	256-QAM	3/4	78	86.7	162	180	351	390
	9	256-QAM	5/6	N/A	N/A	180	200	390	433.3
2	0	BPSK	1/2	13	14.4	27	30	58.6	65
	1	QPSK	1/2	26	28.8	54	60	117	130
	2	QPSK	3/4	39	43.4	81	90	175.6	195
	3	16-QAM	1/2	52	57.8	108	120	234	260
	4	16-QAM	3/4	78	86.6	162	180	351	390
	5	64-QAM	2/3	104	115.6	216	240	468	520
	6	64-QAM	3/4	117	130	243	270	526.6	585
	7	64-QAM	5/6	130	144.4	270	300	585	650
	8	256-QAM	3/4	156	173.4	324	360	702	780
	9	256-QAM	5/6	N/A	N/A	360	400	780	866.6

IEEE 802.11a & IEEE 802.11n (20MHz) & IEEE 802.11ac (20MHz)

Working Frequency of Each Channel							
Channel	Frequency	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						

IEEE 802.11n (40MHz) & IEEE 802.11ac (40MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	151	5755 MHz	159	5795 MHz

IEEE 802.11ac (80MHz)

Working Frequency of Each Channel	
Channel	Frequency
42	5210 MHz
155	5775 MHz

Note:

1. This device is a Dual-band Wireless-AC1300 USB Adapter including 2.4GHz b/g/n (2x2) and 5GHz a/n/ac (2x2) transmitting and receiving function.
2. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

TX	Mode 1: Transmit Mode

Test Items	Modulation	Channel	Antenna	Result
Conducted Emission	11ac (80MHz)	42/155	0+1	Complies
99% & 26dB & DTS Bandwidth	a	36/44/48/149/157/165	0/1	Complies
	11n/ac (20MHz)	36/44/48/149/157/165	0/1	Complies
	11n/ac (40MHz)	38/46/151/159	0/1	Complies
	11ac (80MHz)	42/155	0/1	Complies
Peak Transmit Output	a	36/44/48/149/157/165	0+1	Complies
	11n/ac (20MHz)	36/44/48/149/157/165	0+1	Complies
	11n/ac (40MHz)	38/46/151/159	0+1	Complies
	11ac (80MHz)	42/155	0+1	Complies
Peak Power Spectrum Density	a	36/44/48/149/157/165	0+1	Complies
	11n/ac (20MHz)	36/44/48/149/157/165	0+1	Complies
	11n/ac (40MHz)	38/46/151/159	0+1	Complies
	11ac (80MHz)	42/155	0+1	Complies
Radiated Emission	a	36/44/48/149/157/165	0+1	Complies
	11n/ac (20MHz)	36/44/48/149/157/165	0+1	Complies
	11n/ac (40MHz)	38/46/151/159	0+1	Complies
	11ac (80MHz)	42/155	0+1	Complies
Band Edge	a	36/44/48/149/157/165	0+1	Complies
	11n/ac (20MHz)	36/44/48/149/157/165	0+1	Complies
	11n/ac (40MHz)	38/46/151/159	0+1	Complies
	11ac (80MHz)	42/155	0+1	Complies

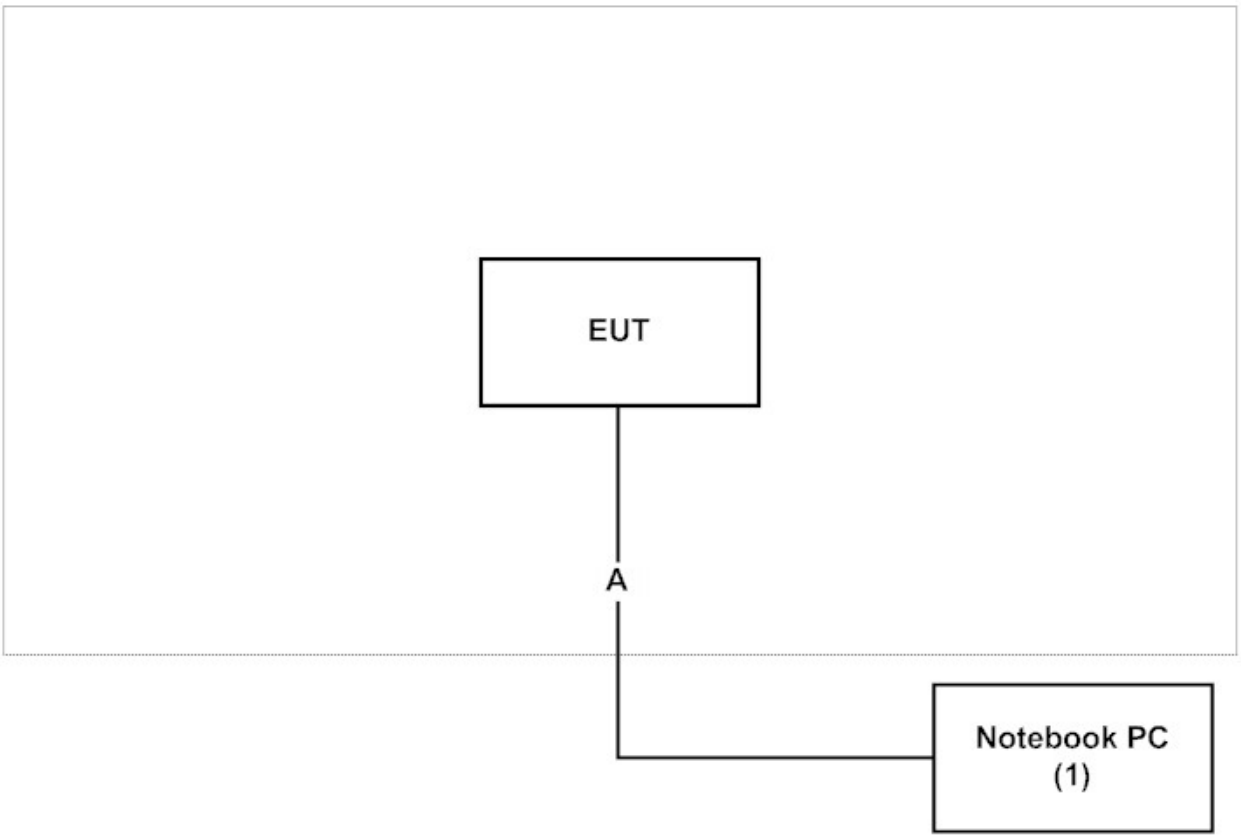
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	DELL	Latitude 600	N/A	DoC	Non-Shielded, 1.7m, one ferrite core bonded

1.4. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	USB Cable	Non-Shielded, 3m

1.5. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4.
2	Execute the Control program “MTool” on the Notebook PC.
3	Configure the test mode, the test channel, and the data rate.
4	Make the EUT to start the continuous transmitting.
5	Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual	Test Site
Temperature (°C)	FCC PART 15 E 15.407 Conducted Emission	15 - 35	20°C	3
Humidity (%RH)		25 - 75	50%RH	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 E 15.407 99% & 26dB & DTS Bandwidth	15 - 35	25°C	3
Humidity (%RH)		25 - 75	45%RH	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 E 15.407 Peak Transmit Power	15 - 35	25°C	3
Humidity (%RH)		25 - 75	65%RH	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 E 15.407 Peak Power Spectrum Density	15 - 35	25°C	3
Humidity (%RH)		25 - 75	45%RH	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 E 15.407 Radiated Emission	15 - 35	25°C	2
Humidity (%RH)		25 - 75	45%RH	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 E 15.407 Band Edge	15 - 35	25°C	2
Humidity (%RH)		25 - 75	45%RH	
Barometric pressure (mbar)		860 - 1060	950-1000	

Note: Test Site information refers to Laboratory Information.

Laboratory Information

USA : FCC, Registration Number: TW3024

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site :

http://www.dekra.com.tw/english/about/certificates.aspx?bval=5

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our test sites as below:

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1.7. Duty Cycle

Modulation	Duty cycle	Radiated offset
802.11a	≒98%	--
802.11n20	≒98%	--
802.11n40	≒98%	--
802.11ac80	≒98%	--

Note:

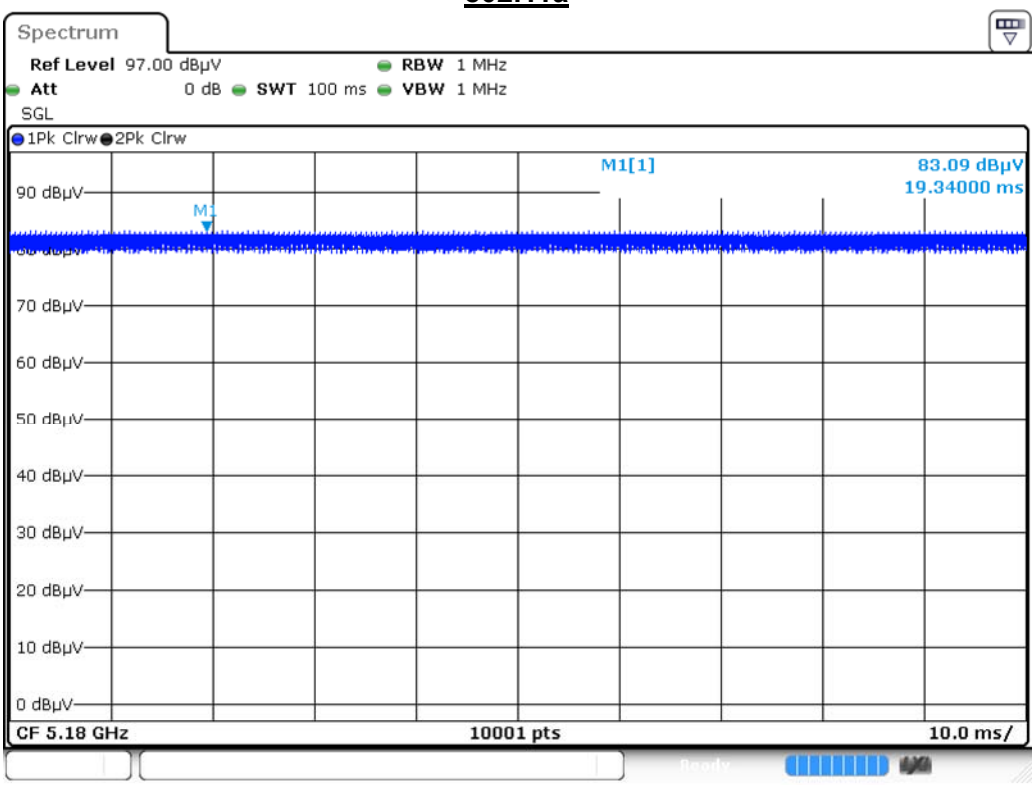
Offset = 20 log(1/duty cycle)

Accotding to KDB 789033

If power averaging (rms) mode was used in step (iv) above, the correction factor is 10 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB must be added to the measured emission levels.

If linear voltage averaging mode was used in step (iv) above, the correction factor is 20 log (1/x), where x is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB must be added to the measured emission levels.

802.11a



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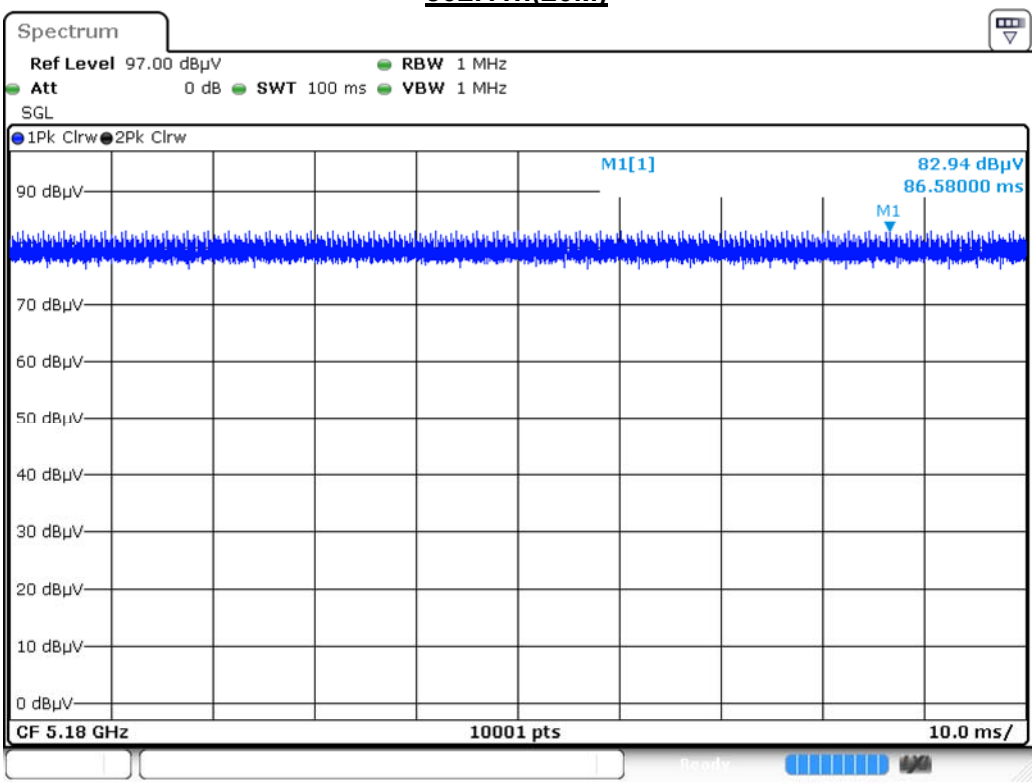
802.11n(20M)



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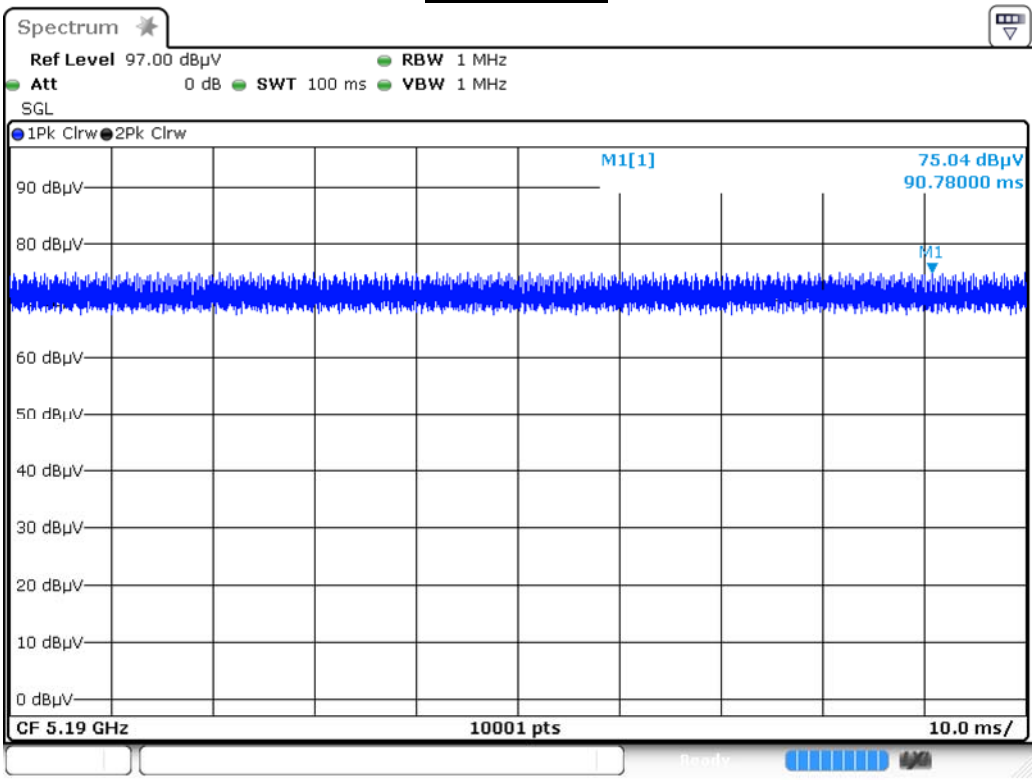
802.11n(40M)



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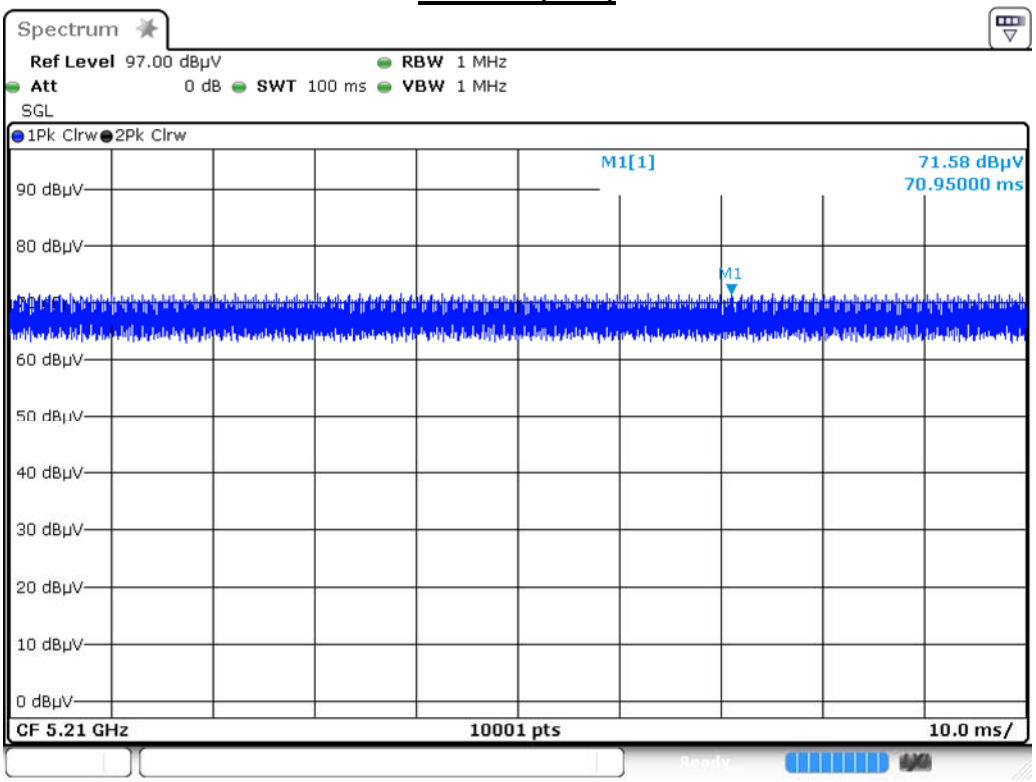
802.11ac(80M)



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2. Conducted Emission

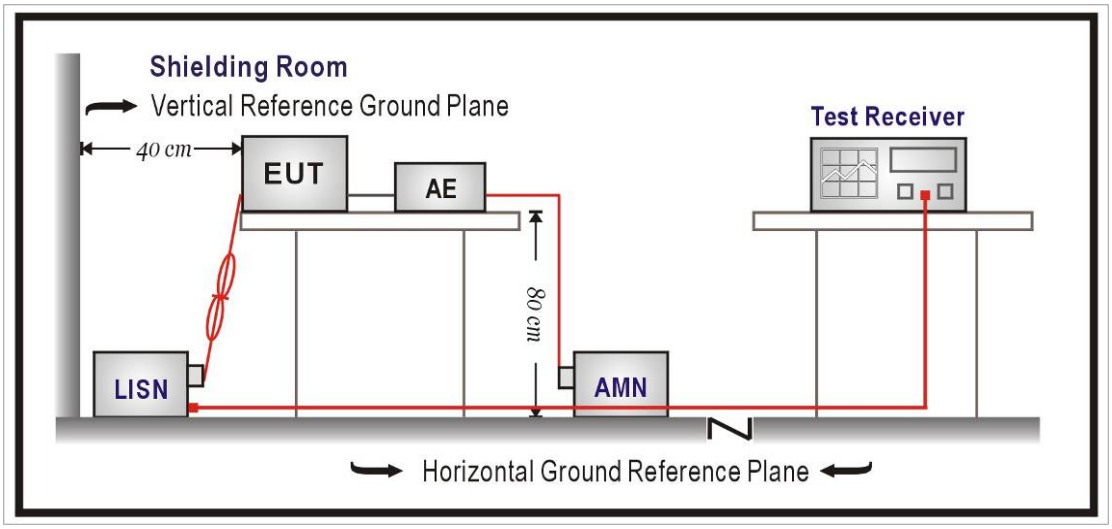
2.1. Test Equipment

The following test equipments are used during the test:

Conducted Emission /SR2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2018/01/22	2019/01/21
Test Receiver	R&S	ESCS 30	836858/022	2017/04/12	2018/04/11
LISN	R&S	ENV216	100092	2017/07/31	2018/07/30

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remark: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2013. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.5. Test Specification

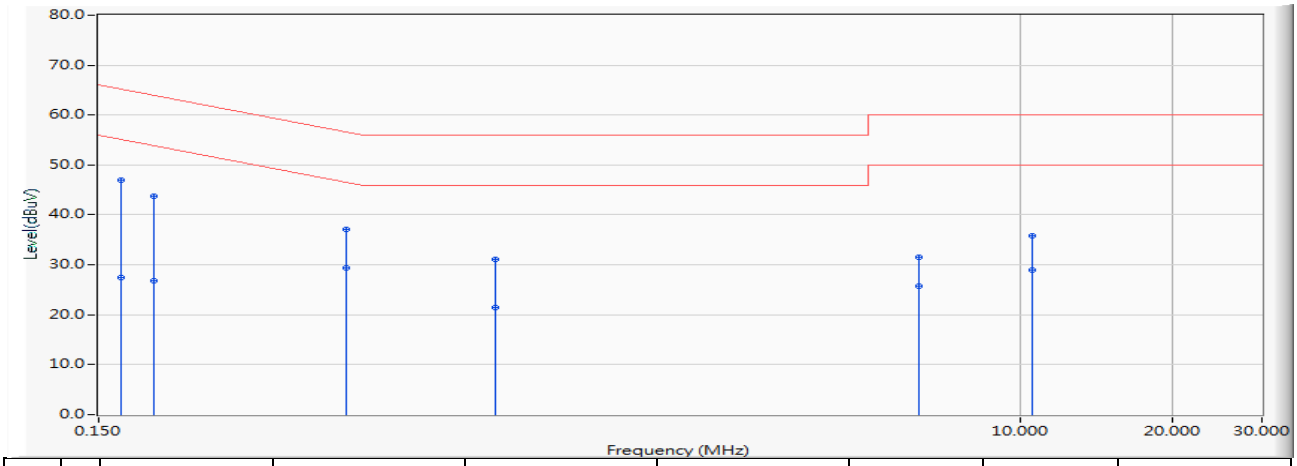
According to FCC Part 15 Subpart C Paragraph 15.407: 2016

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR2-H	Time : 2018/04/03
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2_LISN(16A)-6_0712 - Line1	Power : DC 5V
EUT : Dual-band Wireless-AC1300 USB Adapter	Note : 802.11ac(80M)_5210MHz

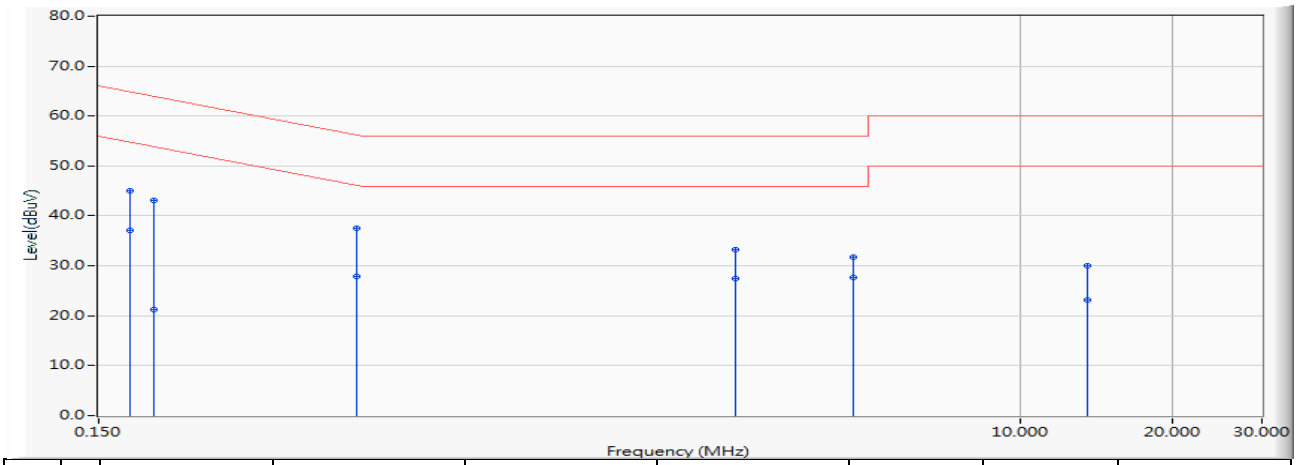


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.166	9.753	37.230	46.983	-18.194	65.177	QUASIPEAK
2		0.166	9.753	17.760	27.513	-27.664	55.177	AVERAGE
3		0.193	9.751	33.990	43.741	-20.167	63.908	QUASIPEAK
4		0.193	9.751	17.130	26.881	-27.027	53.908	AVERAGE
5		0.463	9.729	27.470	37.199	-19.449	56.648	QUASIPEAK
6	*	0.463	9.729	19.700	29.429	-17.219	46.648	AVERAGE
7		0.912	9.803	21.300	31.104	-24.896	56.000	QUASIPEAK
8		0.912	9.803	11.750	21.554	-24.446	46.000	AVERAGE
9		6.279	9.975	21.630	31.605	-28.395	60.000	QUASIPEAK
10		6.279	9.975	15.690	25.665	-24.335	50.000	AVERAGE
11		10.545	10.140	25.650	35.790	-24.210	60.000	QUASIPEAK
12		10.545	10.140	18.850	28.990	-21.010	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2-H	**Time : 2018/04/03**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR2_LISN(16A)-6_0712 - Line2	**Power : DC 5V**
EUT : Dual-band Wireless-AC1300 USB Adapter	**Note : 802.11ac(80M)_5210MHz**

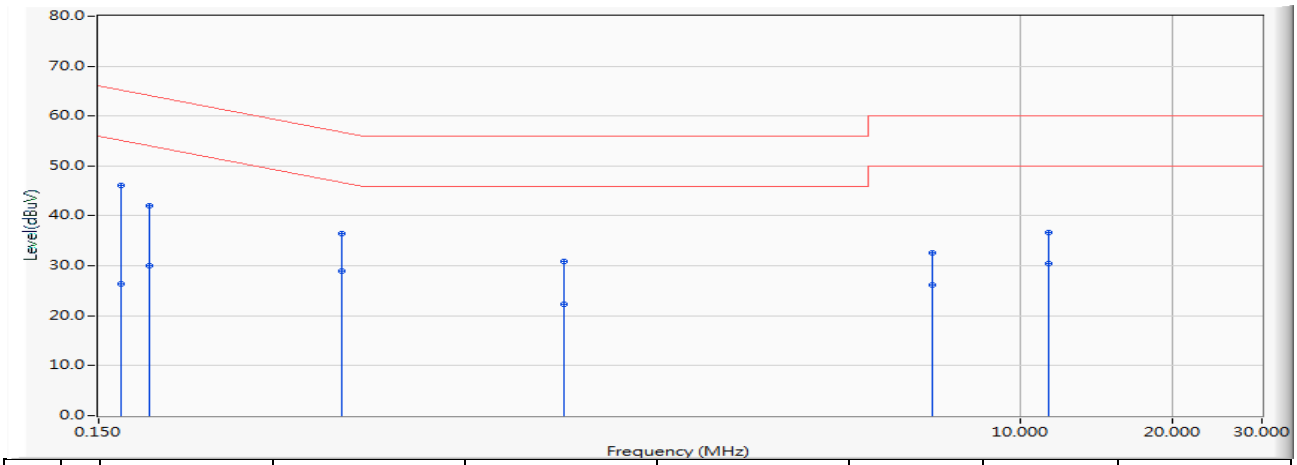


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	9.753	35.240	44.993	-19.801	64.794	QUASIPEAK
2	*	0.173	9.753	27.270	37.023	-17.771	54.794	AVERAGE
3		0.193	9.751	33.360	43.111	-20.797	63.908	QUASIPEAK
4		0.193	9.751	11.420	21.171	-32.737	53.908	AVERAGE
5		0.486	9.746	27.740	37.486	-18.751	56.237	QUASIPEAK
6		0.486	9.746	18.210	27.956	-18.281	46.237	AVERAGE
7		2.736	9.846	23.460	33.306	-22.694	56.000	QUASIPEAK
8		2.736	9.846	17.550	27.396	-18.604	46.000	AVERAGE
9		4.673	9.852	21.860	31.712	-24.288	56.000	QUASIPEAK
10		4.673	9.852	17.750	27.602	-18.398	46.000	AVERAGE
11		13.533	10.263	19.810	30.073	-29.927	60.000	QUASIPEAK
12		13.533	10.263	12.910	23.173	-26.827	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2-H	**Time : 2018/04/03**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR2_LISN(16A)-6_0712 - Line1	**Power : DC 5V**
EUT : Dual-band Wireless-AC1300 USB Adapter	**Note : 802.11ac(80M)_5775MHz**

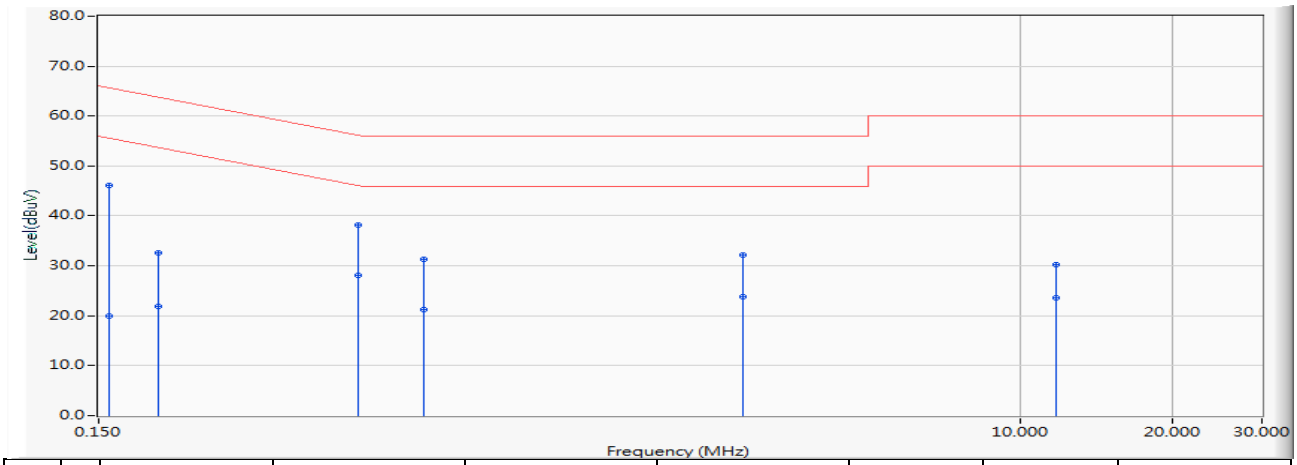


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.166	9.753	36.360	46.113	-19.064	65.177	QUASIPEAK
2		0.166	9.753	16.560	26.313	-28.864	55.177	AVERAGE
3		0.189	9.751	32.180	41.931	-22.147	64.078	QUASIPEAK
4		0.189	9.751	20.220	29.971	-24.107	54.078	AVERAGE
5		0.455	9.729	26.820	36.549	-20.240	56.789	QUASIPEAK
6	*	0.455	9.729	19.240	28.969	-17.820	46.789	AVERAGE
7		1.252	9.830	21.000	30.830	-25.170	56.000	QUASIPEAK
8		1.252	9.830	12.470	22.300	-23.700	46.000	AVERAGE
9		6.701	9.992	22.550	32.543	-27.457	60.000	QUASIPEAK
10		6.701	9.992	16.230	26.223	-23.777	50.000	AVERAGE
11		11.388	10.155	26.620	36.775	-23.225	60.000	QUASIPEAK
12		11.388	10.155	20.220	30.375	-19.625	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2-H	**Time : 2018/04/03**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR2_LISN(16A)-6_0712 - Line2	**Power : DC 5V**
EUT : Dual-band Wireless-AC1300 USB Adapter	**Note : 802.11ac(80M)_5775MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.158	9.751	36.320	46.071	-19.507	65.578	QUASIPEAK
2		0.158	9.751	10.140	19.891	-35.687	55.578	AVERAGE
3		0.197	9.751	22.880	32.631	-31.111	63.741	QUASIPEAK
4		0.197	9.751	12.150	21.901	-31.841	53.741	AVERAGE
5		0.490	9.745	28.430	38.176	-17.995	56.170	QUASIPEAK
6	*	0.490	9.745	18.440	28.186	-17.985	46.170	AVERAGE
7		0.662	9.769	21.510	31.279	-24.721	56.000	QUASIPEAK
8		0.662	9.769	11.420	21.189	-24.811	46.000	AVERAGE
9		2.826	9.846	22.380	32.226	-23.774	56.000	QUASIPEAK
10		2.826	9.846	14.010	23.856	-22.144	46.000	AVERAGE
11		11.720	10.205	20.070	30.275	-29.725	60.000	QUASIPEAK
12		11.720	10.205	13.410	23.615	-26.385	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

3. 99% & 20dB & DTS Bandwidth

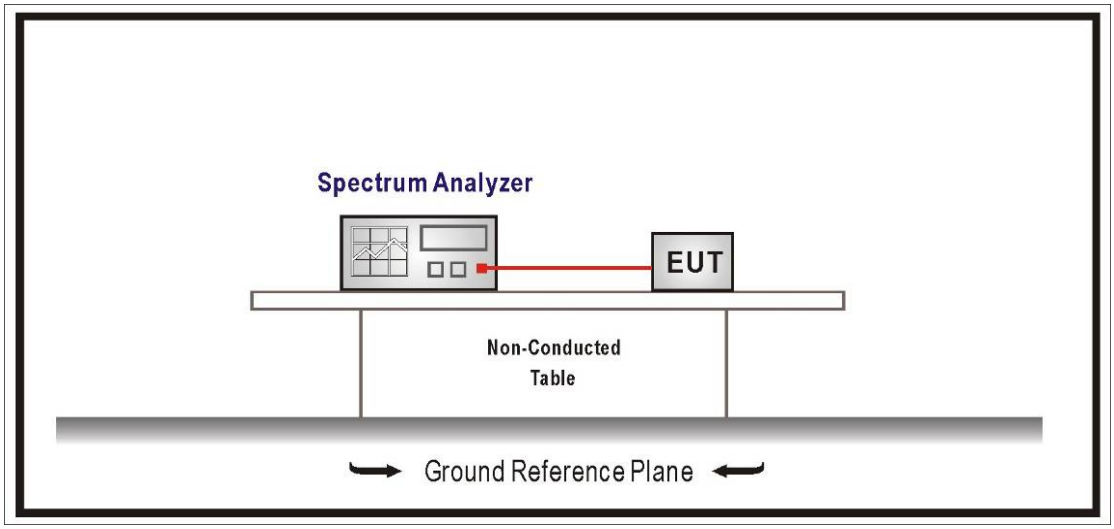
3.1. Test Equipment

The following test equipments are used during the radiated emission tests:

99% & DTS Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2017/06/13	2018/06/12
Spectrum Analyzer	Keysight	N9010B	MY57110159	2017/06/05	2018/06/04
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/07/26	2018/07/25
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09

3.2. Test Setup



3.3. Limits

99% & 26dB Bandwidth : No Required

6dB Bandwidth ≧ 500KHz

3.4. Test Procedure

99% & 26dB Bandwidth :

The EUT was tested according to U-NII test procedure of KDB 789033.v01r02

Set RBW 1% of the emission bandwidth, VBW equal to 3 times the RBW.

DTS Bandwidth :

Set RBW = 100KHz, VBW≧3xRBW, Sweep time=Auto, Set Peak detector.

3.5. Uncertainty

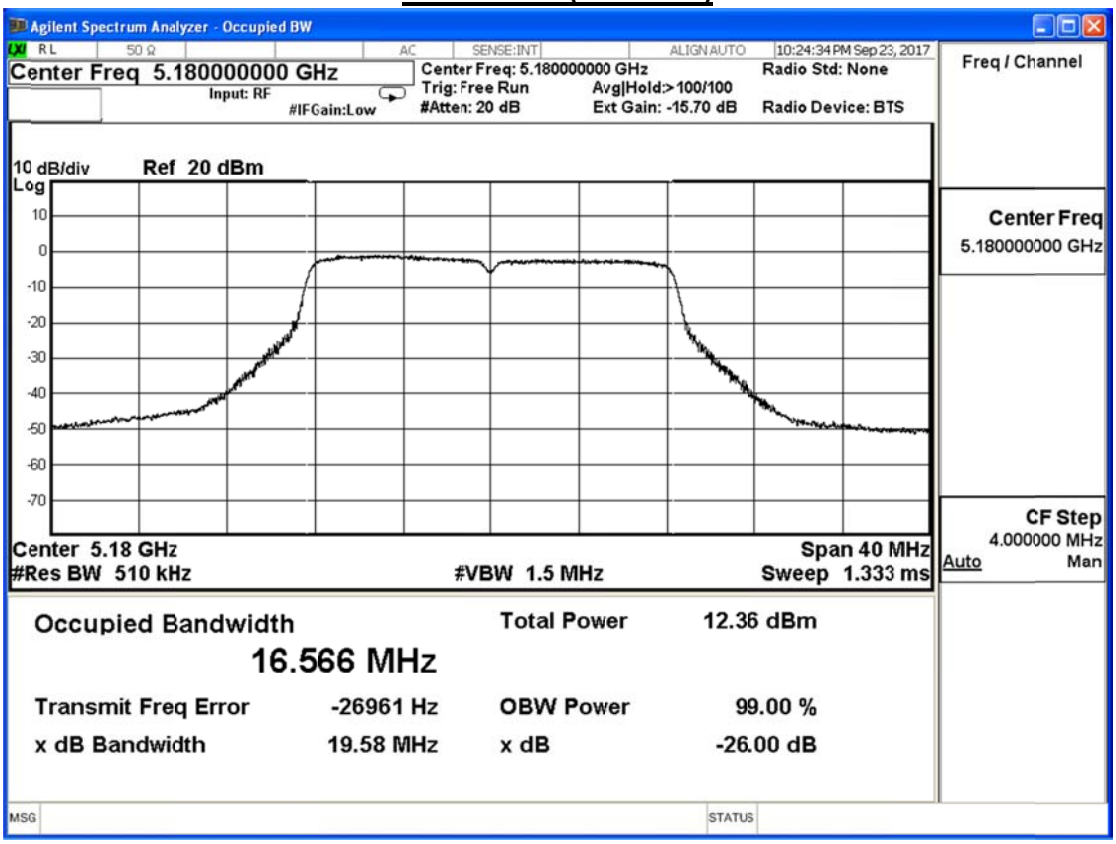
The measurement uncertainty is defined as ± 150kHz.

3.6. Test Result

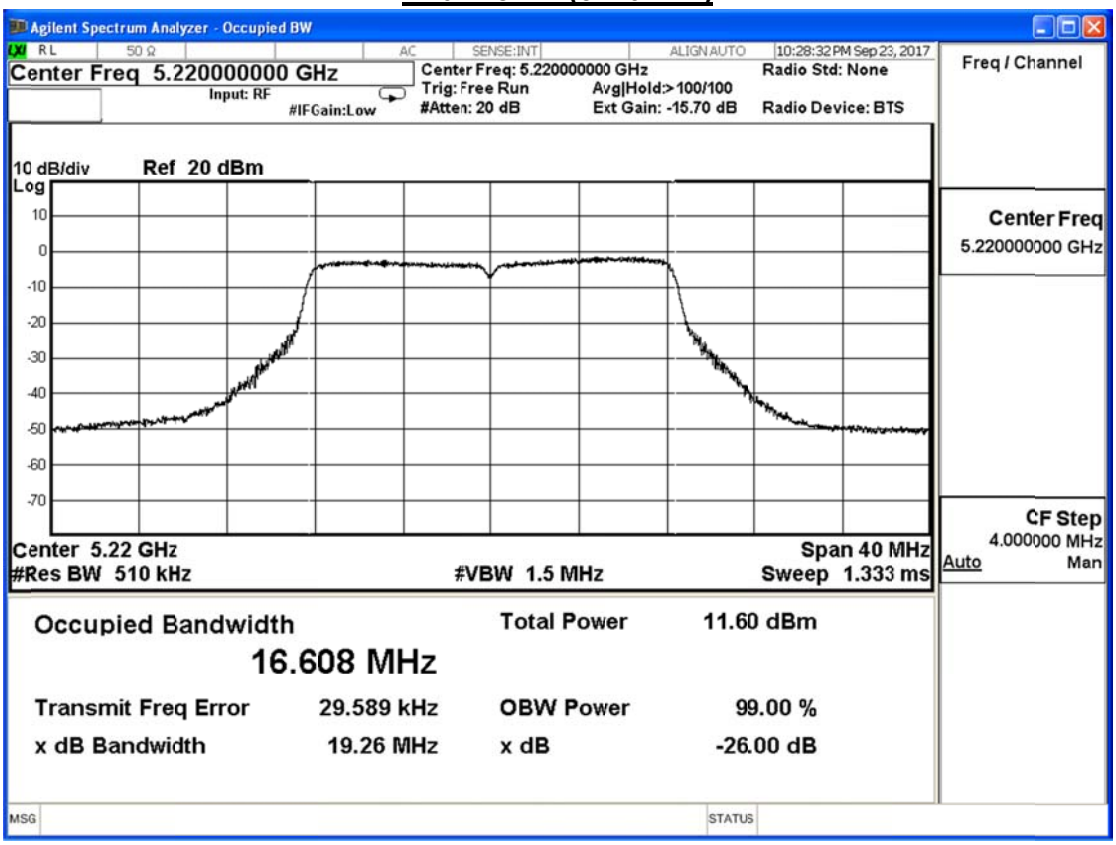
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/09/23	Test Site	SR10-H

802.11a (ANT 0)					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
36	5180	19.58	16.566	--	Pass
44	5220	19.26	16.608	--	Pass
48	5240	19.57	16.626	--	Pass

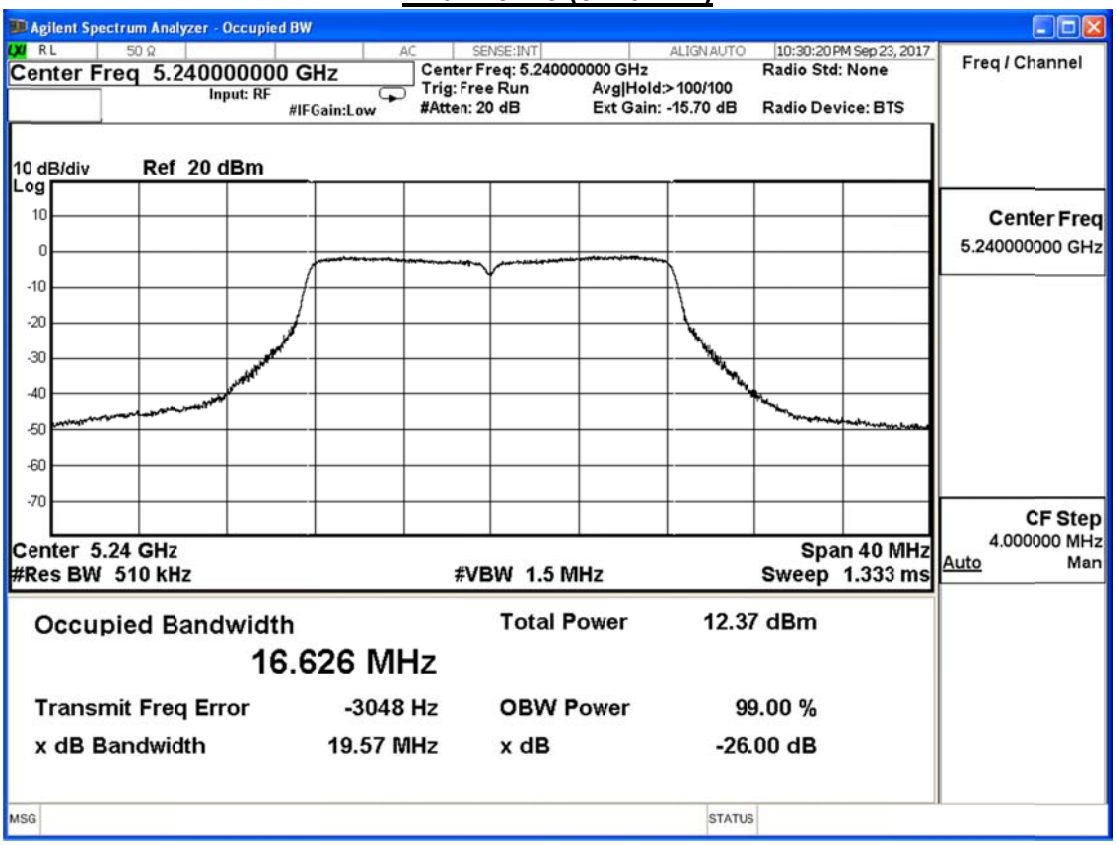
Channel 36 (5180MHz)



Channel 44 (5220MHz)



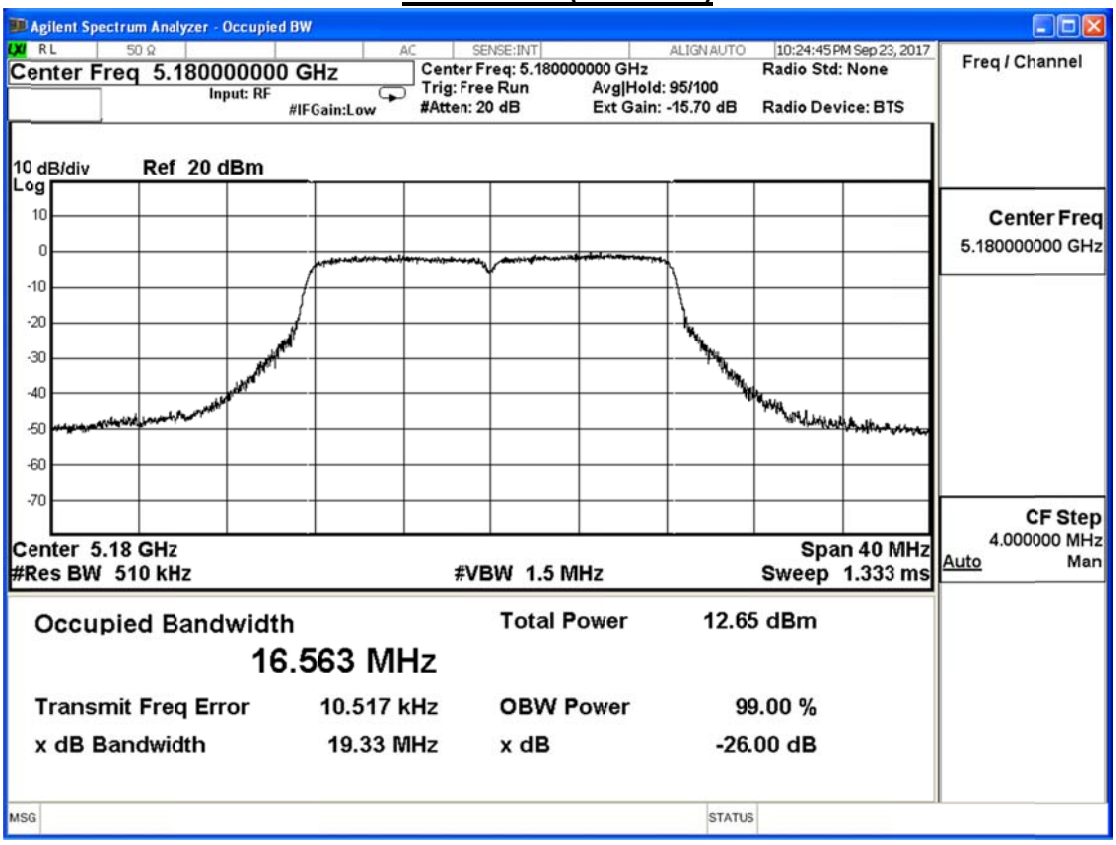
Channel 48 (5240MHz)



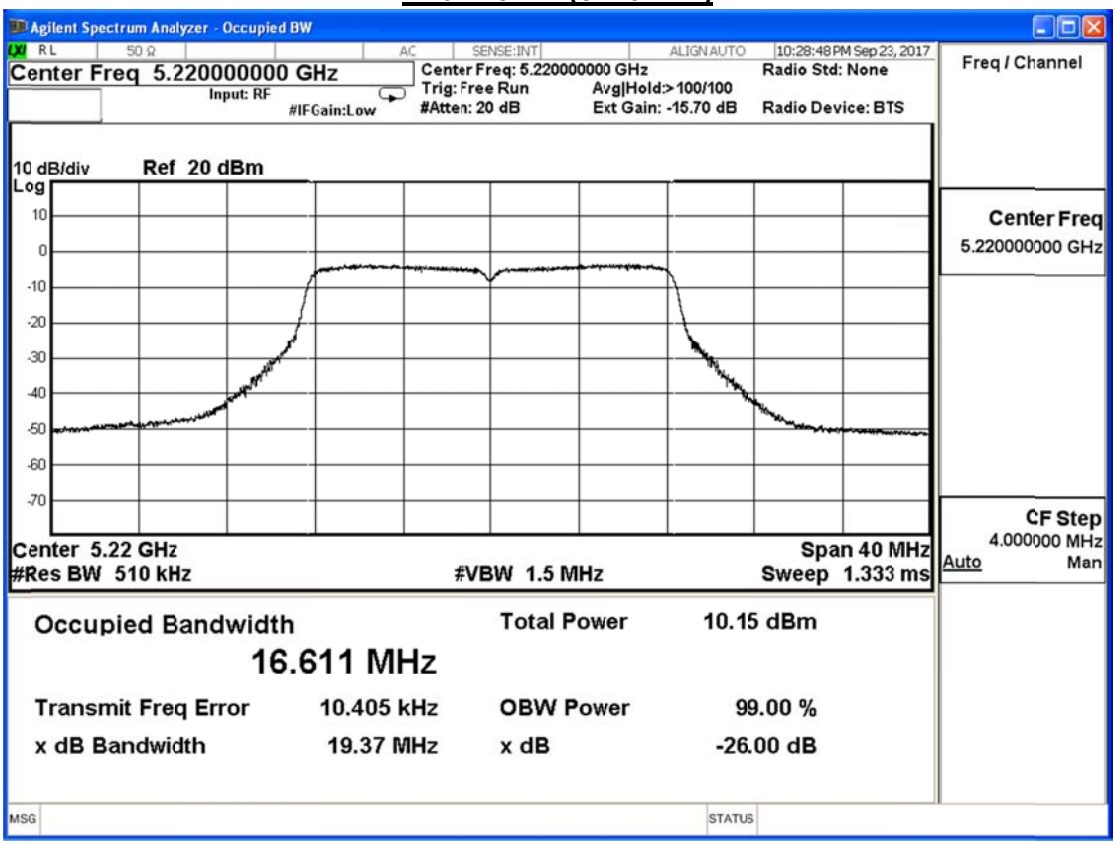
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/09/23	Test Site	SR10-H

802.11a (ANT 1)					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
36	5180	19.33	16.563	--	Pass
44	5220	19.37	16.611	--	Pass
48	5240	19.63	16.591	--	Pass

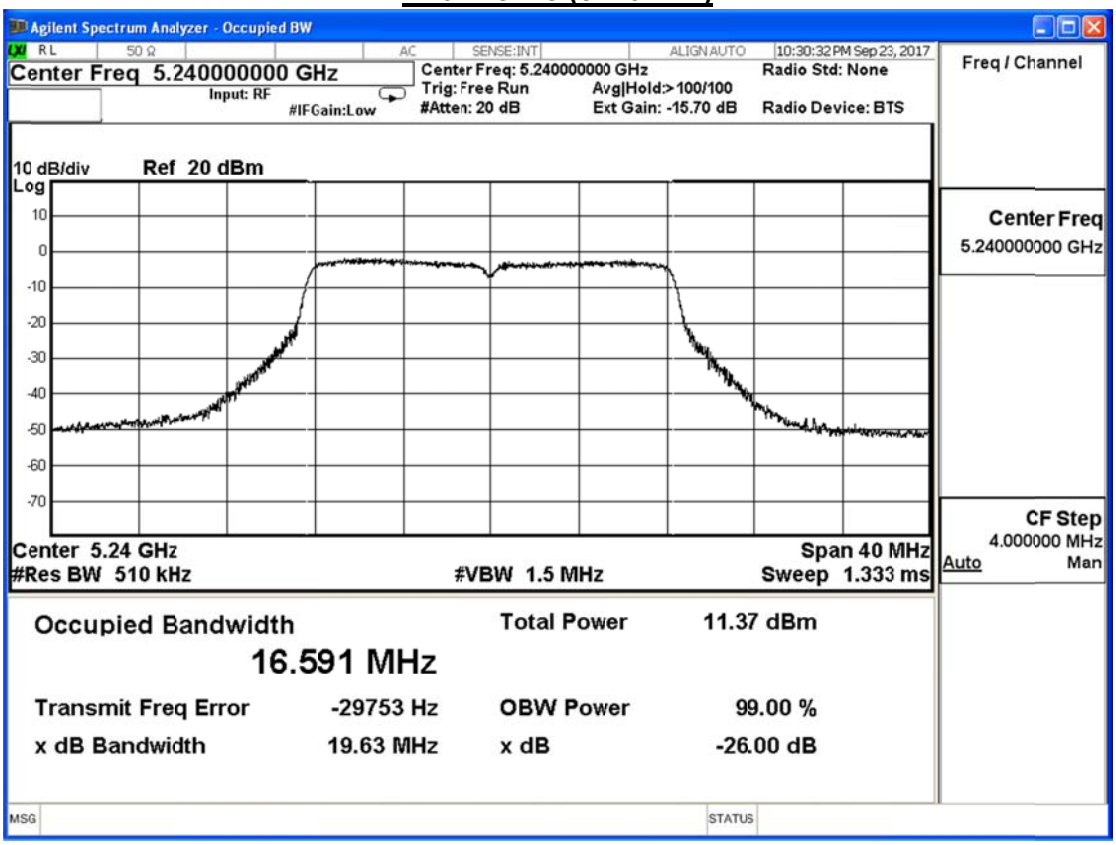
Channel 36 (5180MHz)



Channel 44 (5220MHz)



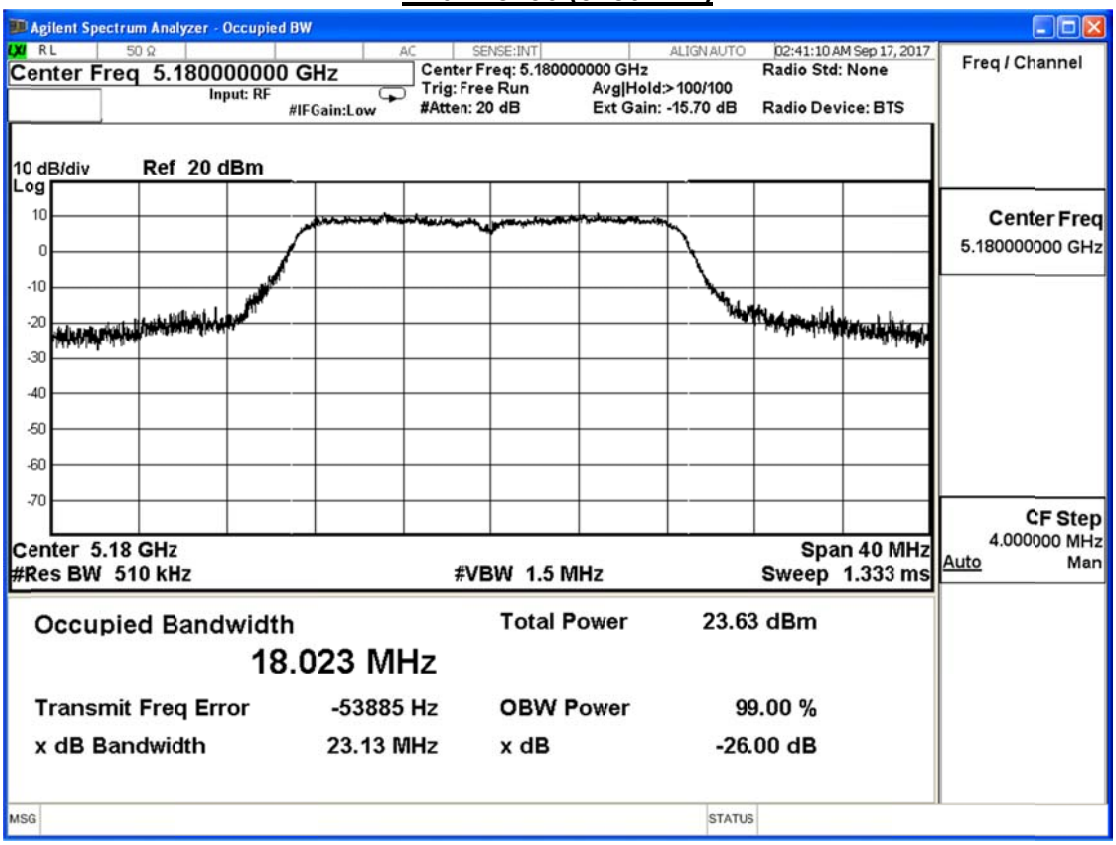
Channel 48 (5240MHz)



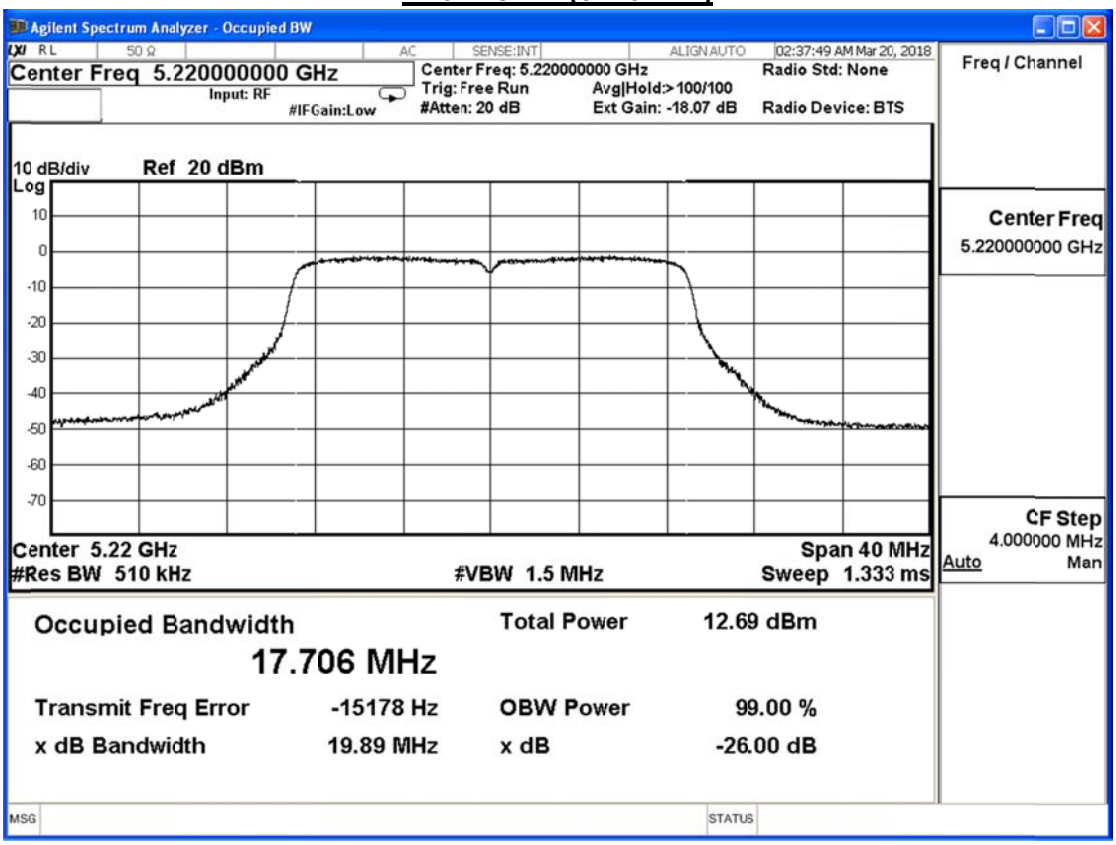
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/09/17	Test Site	SR10-H

802.11n_20M(ANT 0)					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
36	5180	23.13	18.023	--	Pass
44	5220	19.89	17.706	--	Pass
48	5240	21.87	17.953	--	Pass

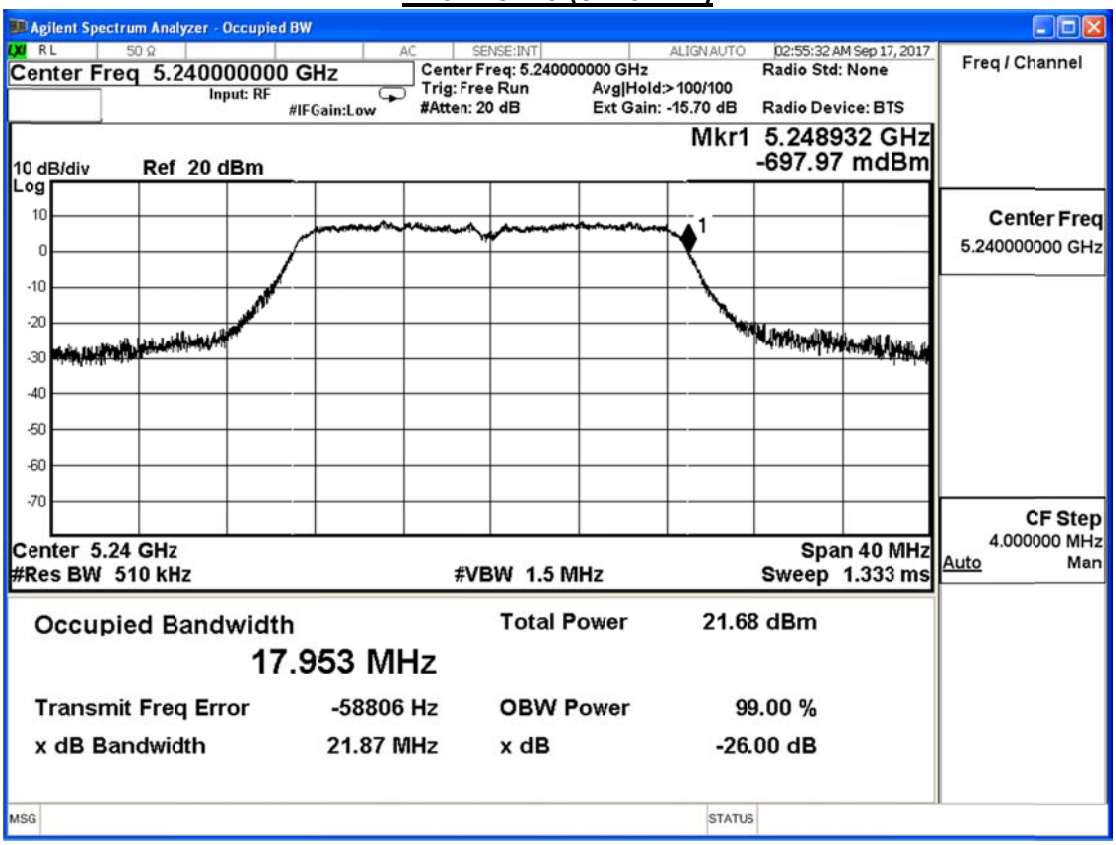
Channel 36 (5180MHz)



Channel 44 (5220MHz)



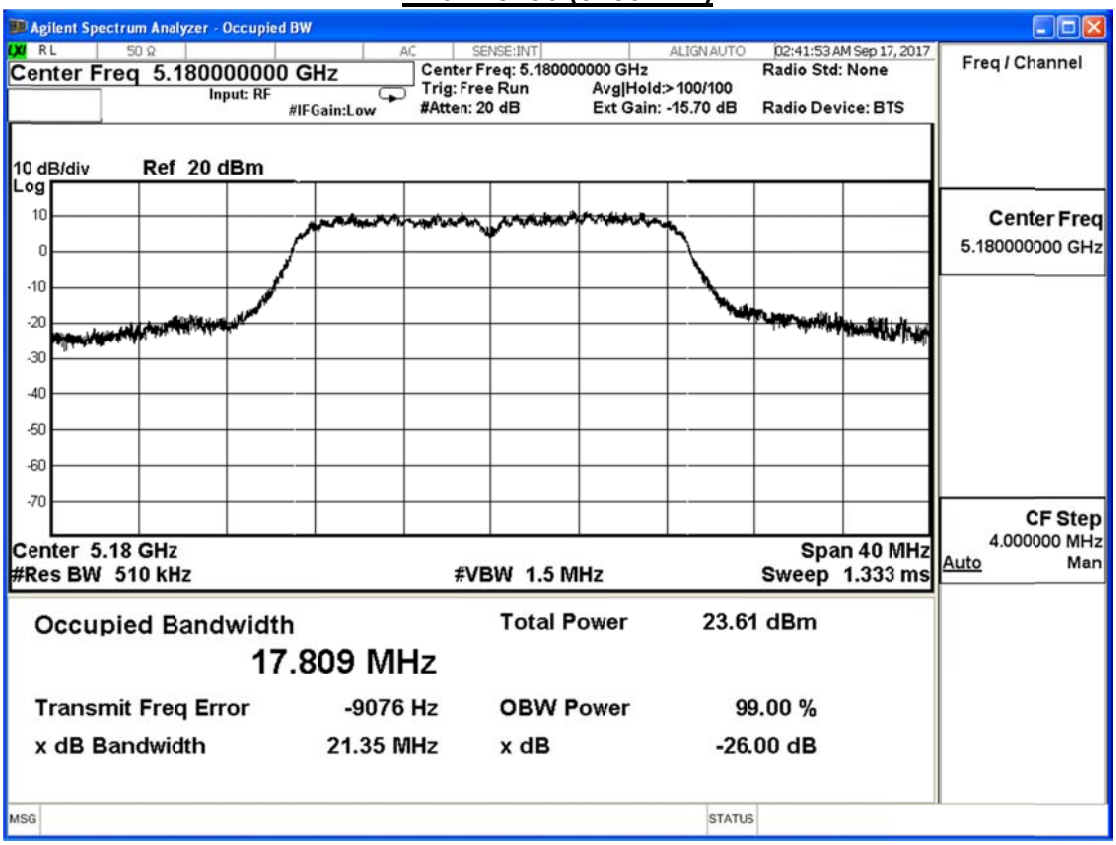
Channel 48 (5240MHz)



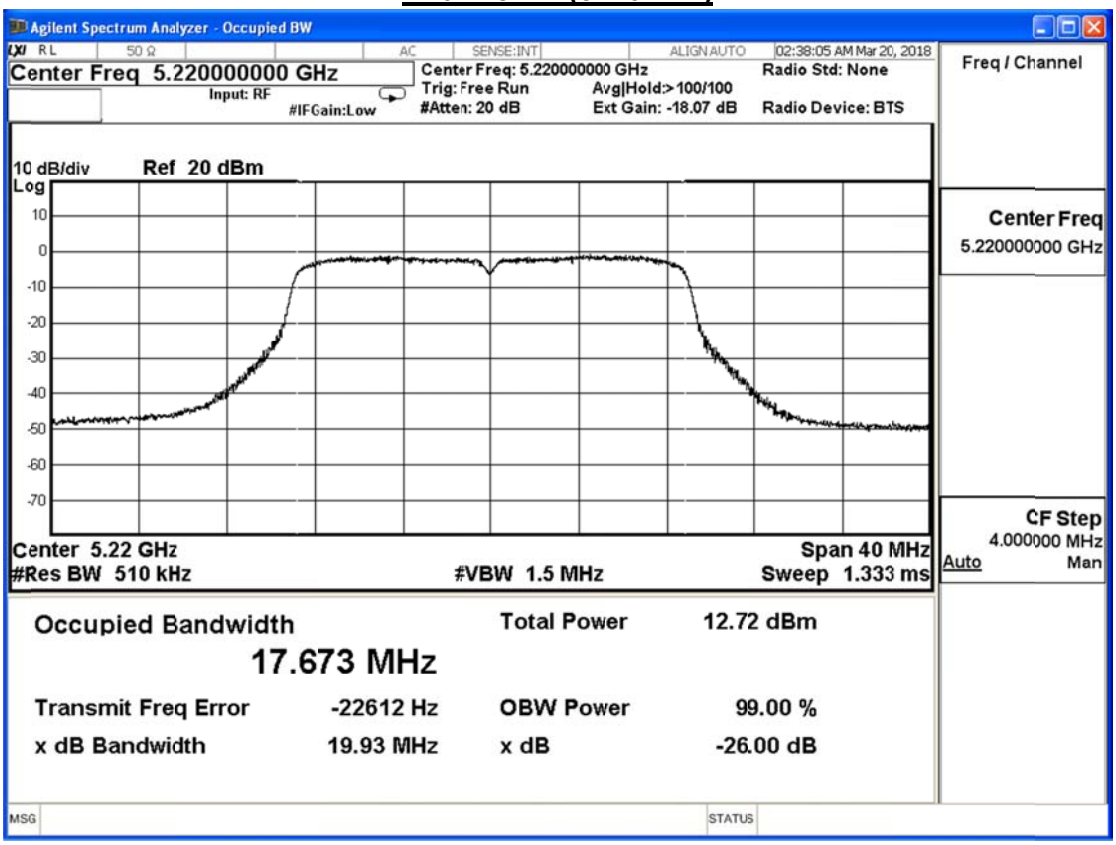
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/09/17	Test Site	SR10-H

802.11n_20M(ANT 1)					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
36	5180	21.35	17.809	--	Pass
44	5220	19.93	17.673	--	Pass
48	5240	21.52	17.805	--	Pass

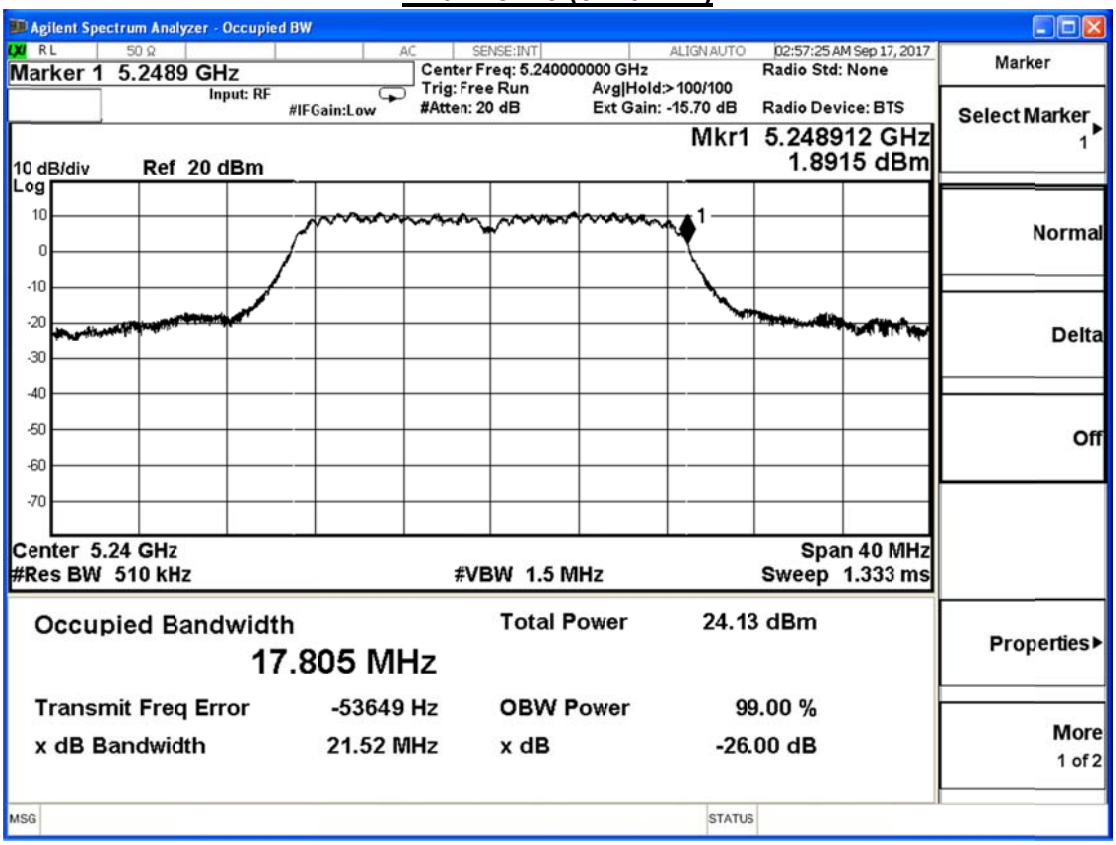
Channel 36 (5180MHz)



Channel 44 (5220MHz)



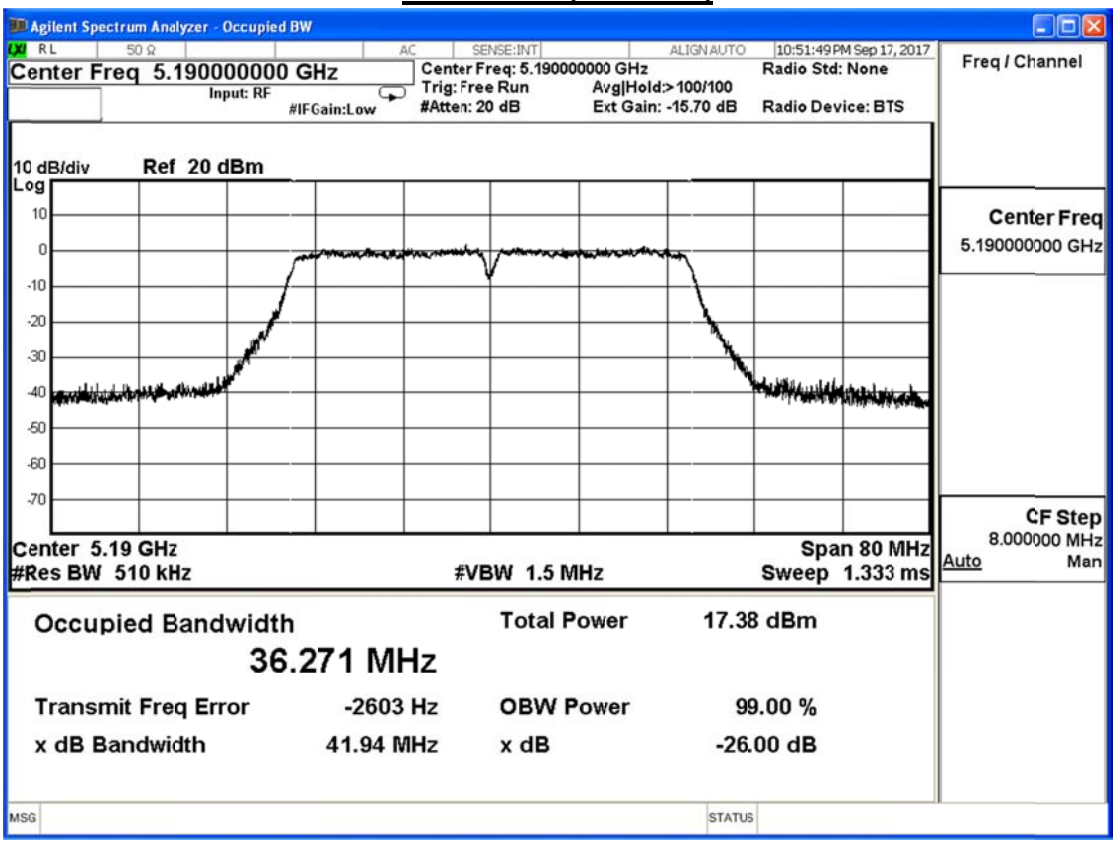
Channel 48 (5240MHz)



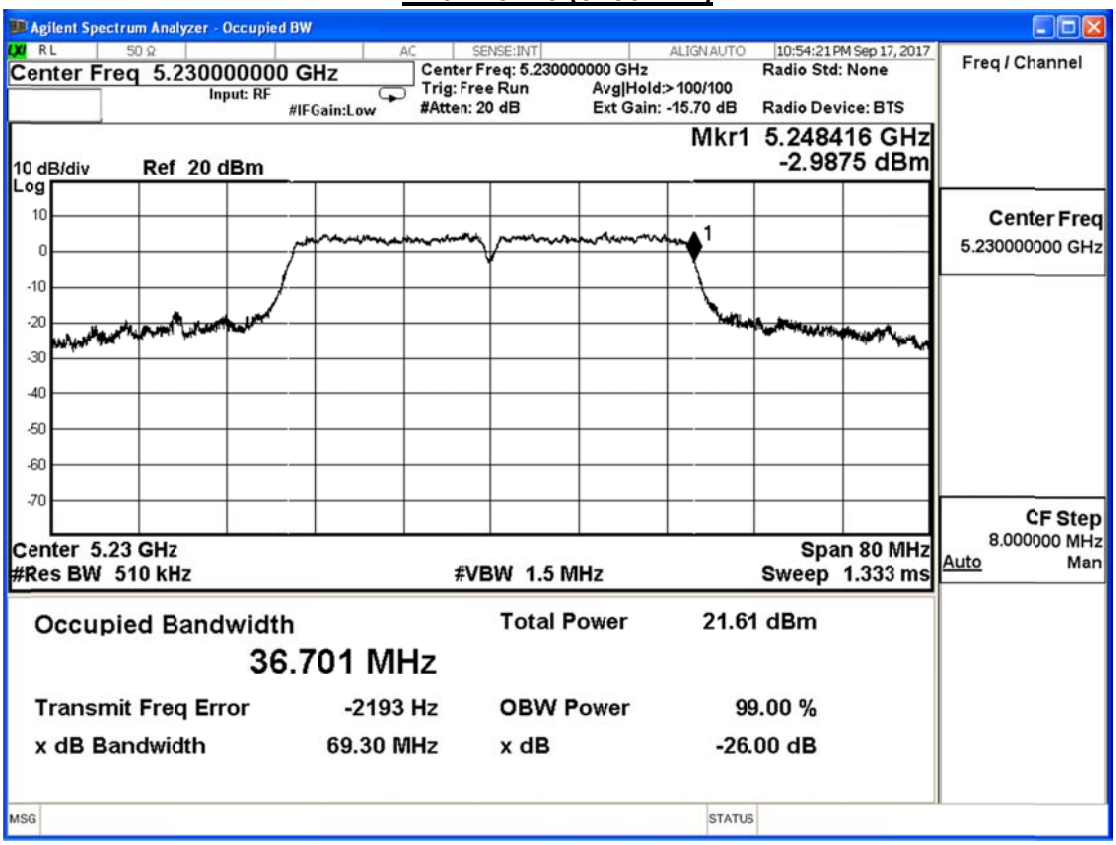
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/09/17	Test Site	SR10-H

802.11n_40M(ANT 0)					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
38	5190	41.94	36.271	--	Pass
46	5230	69.30	36.701	--	Pass

Channel 38 (5190MHz)



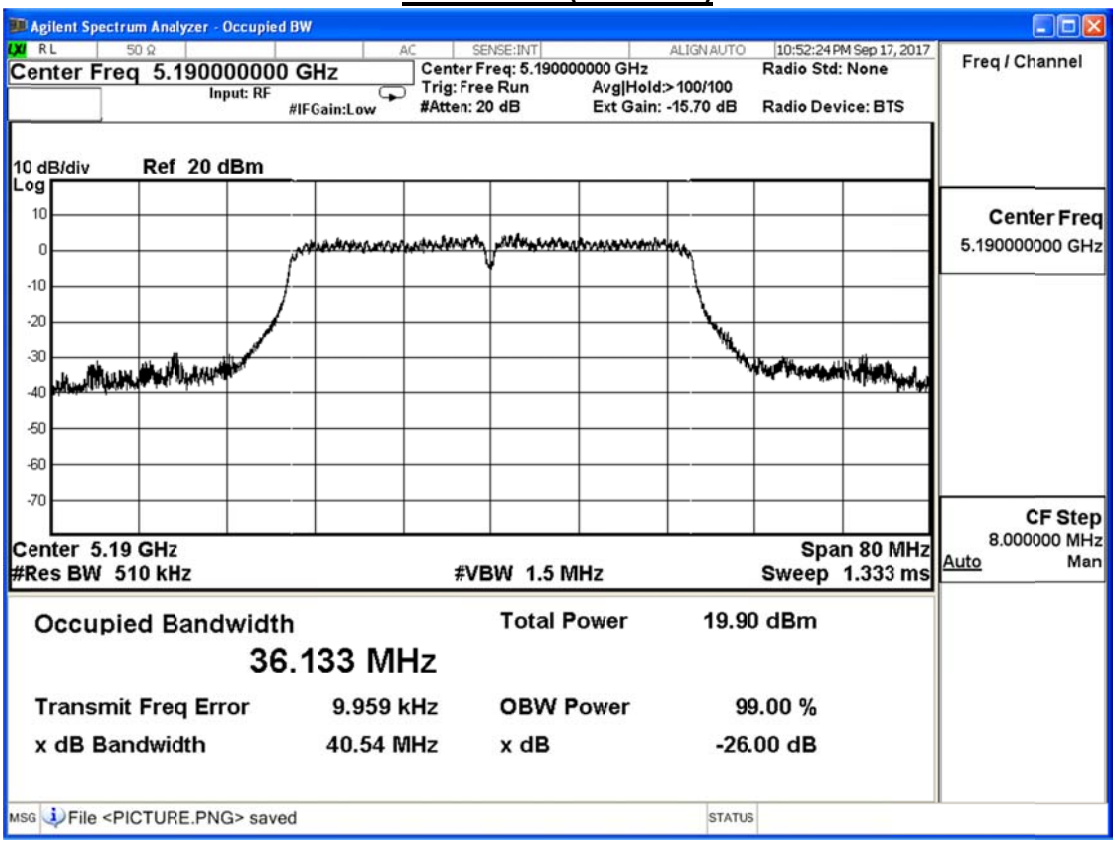
Channel 46 (5230MHz)



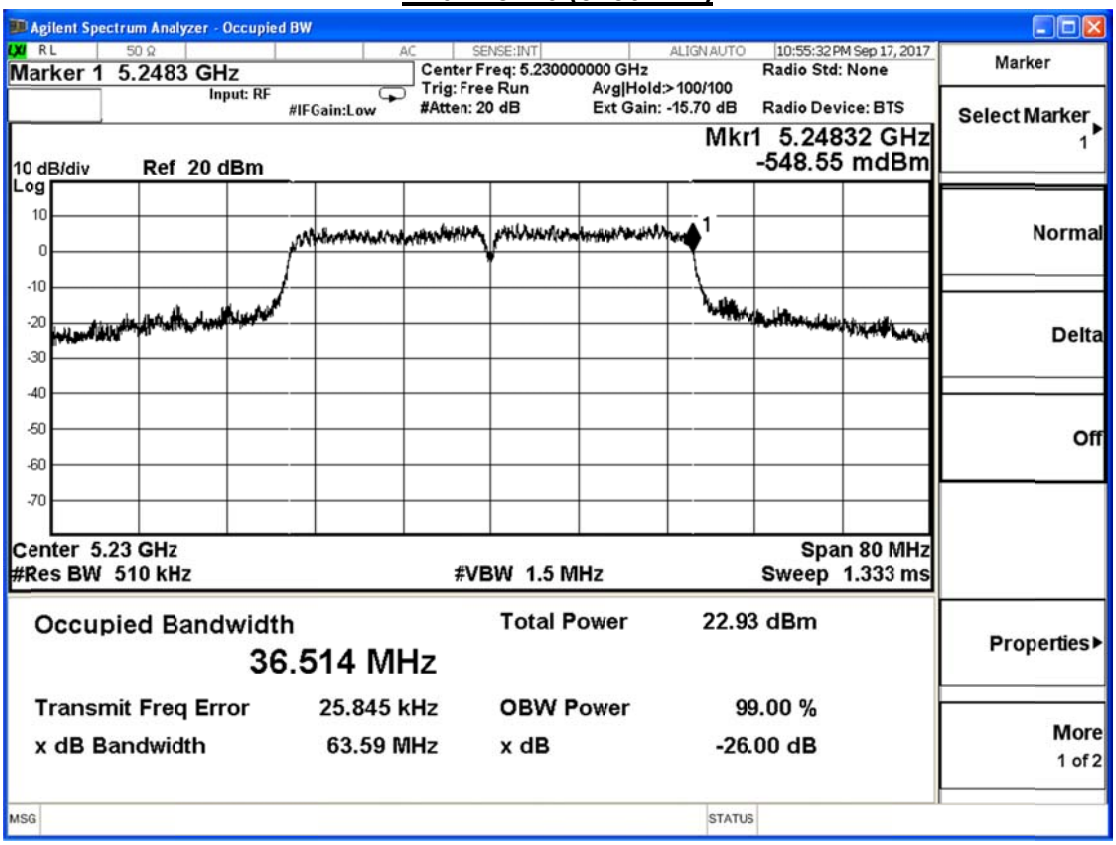
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/09/17	Test Site	SR10-H

802.11n_40M(ANT 1)					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
38	5190	40.54	36.133	--	Pass
46	5230	63.59	36.514	--	Pass

Channel 38 (5190MHz)



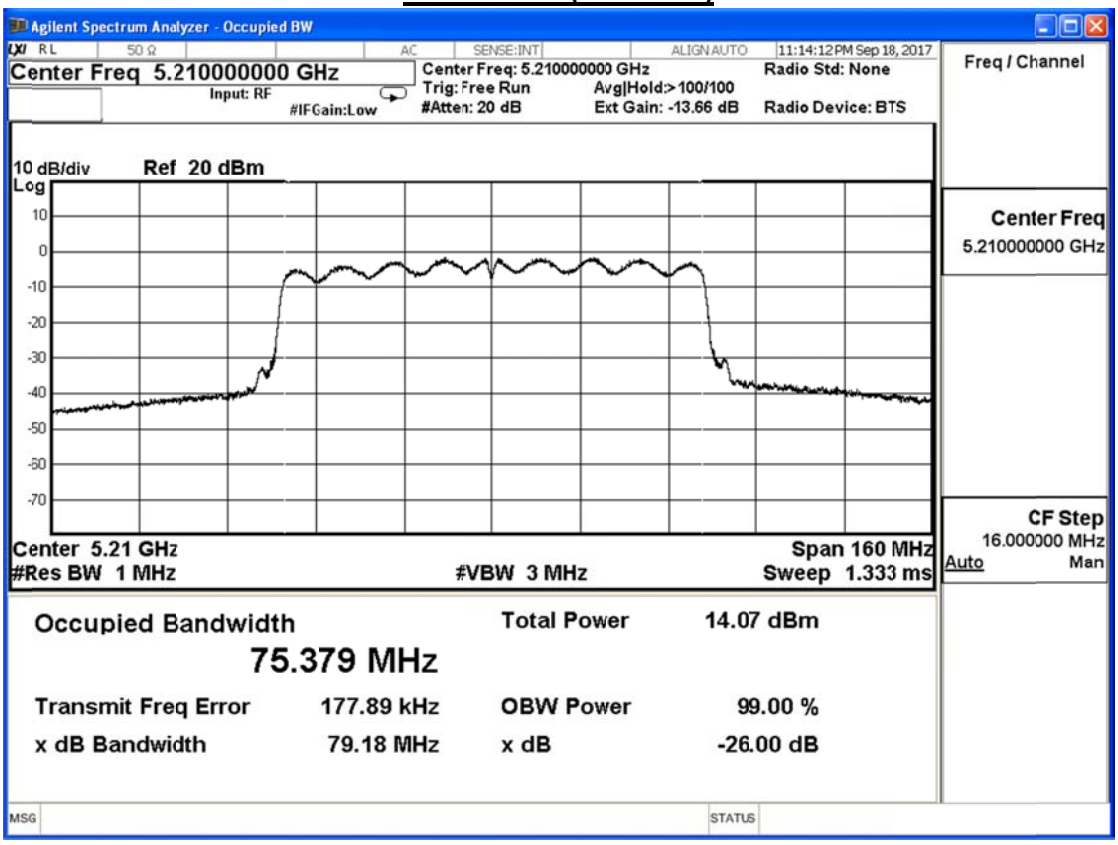
Channel 46 (5230MHz)



Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/09/17	Test Site	SR10-H

802.11ac_80M(ANT 0)					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
42	5210	79.18	75.379	--	Pass

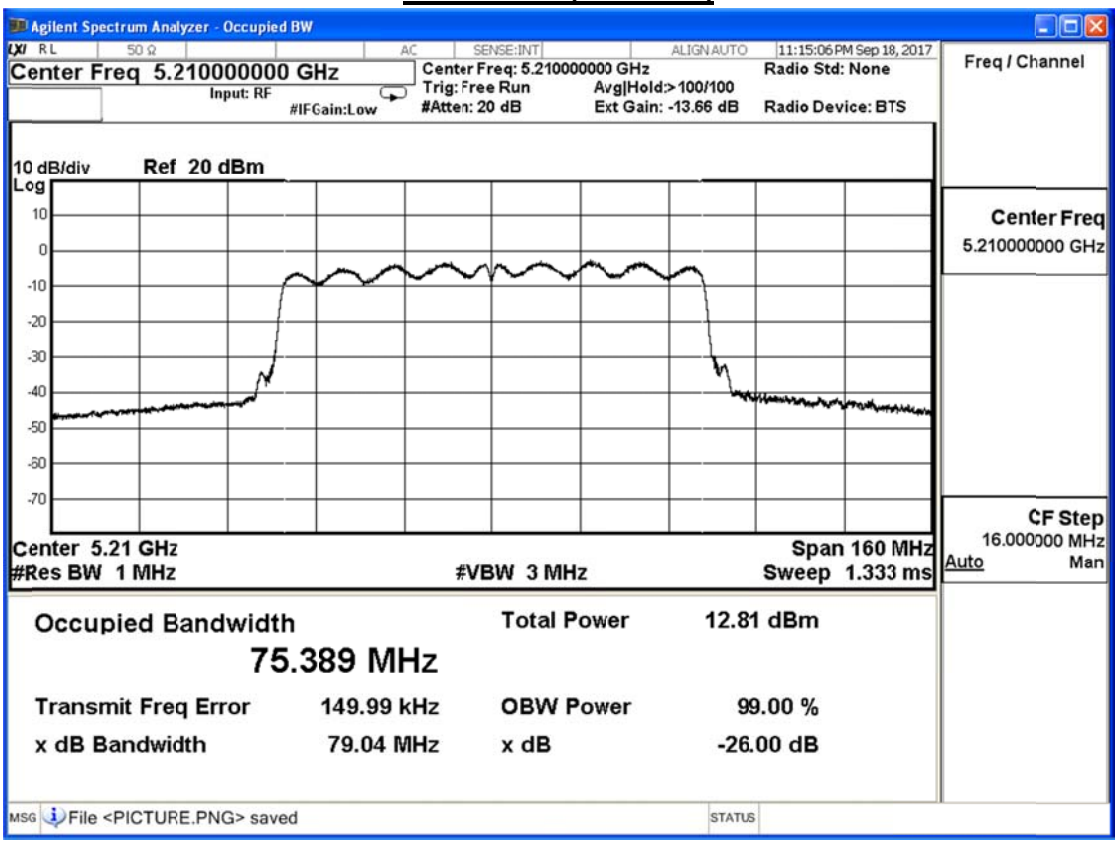
Channel 42 (5210MHz)



Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% & 26dB Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/09/17	Test Site	SR10-H

802.11ac_80M(ANT 1)					
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
42	5210	79.04	75.389	--	Pass

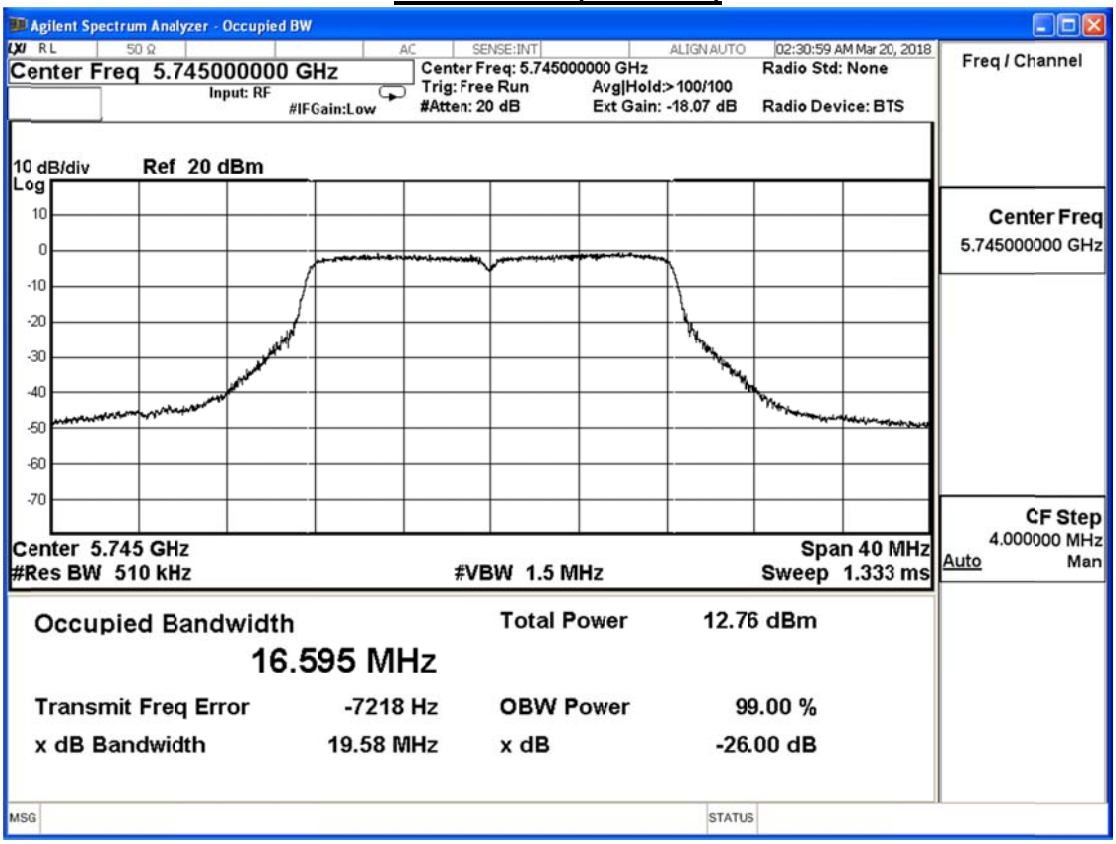
Channel 42 (5210MHz)



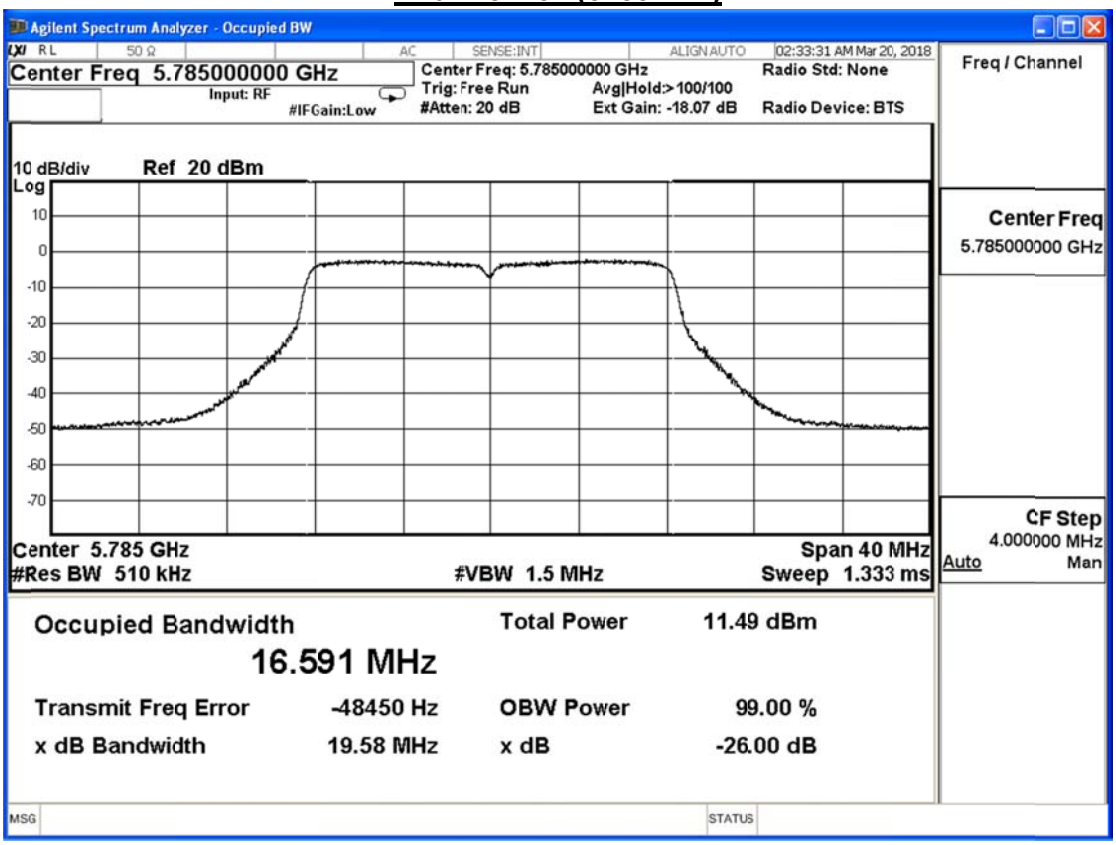
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

IEEE 802.11a (ANT0)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
149	5745	16.595	--
157	5785	16.591	--
165	5825	16.599	--

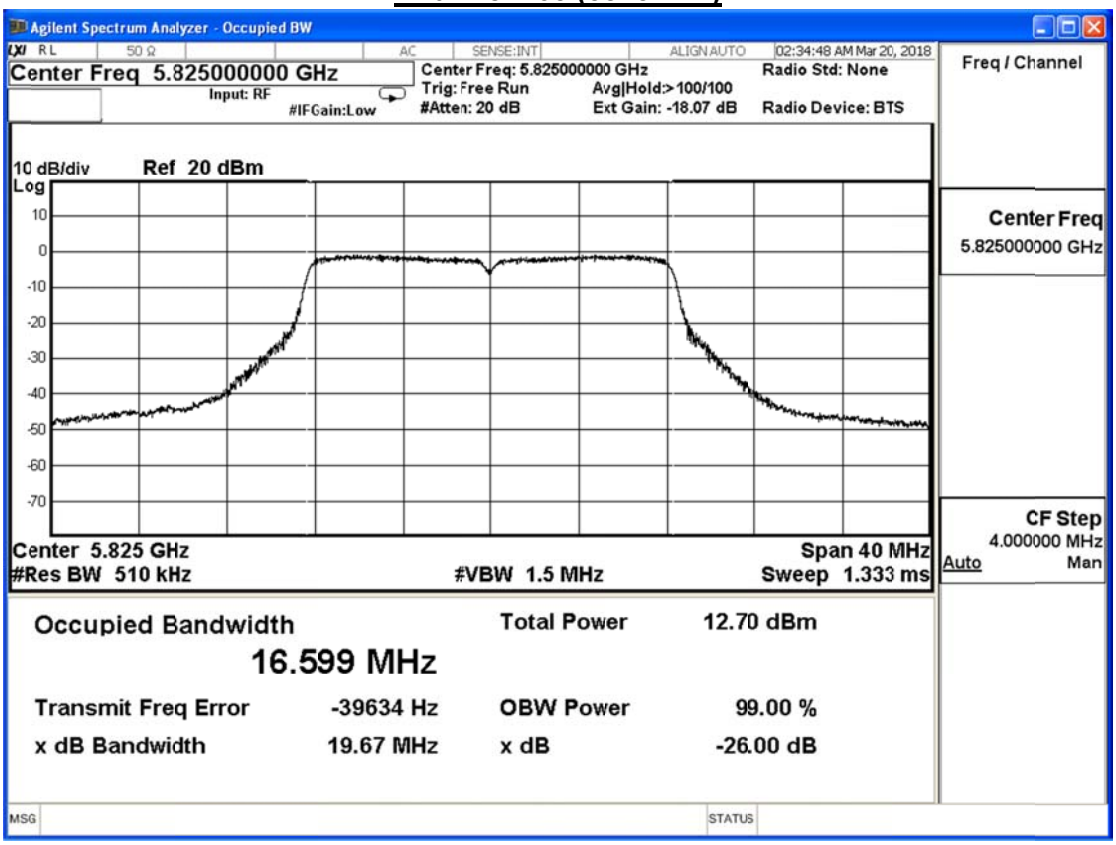
Channel 149 (5745MHz)



Channel 157 (5785MHz)



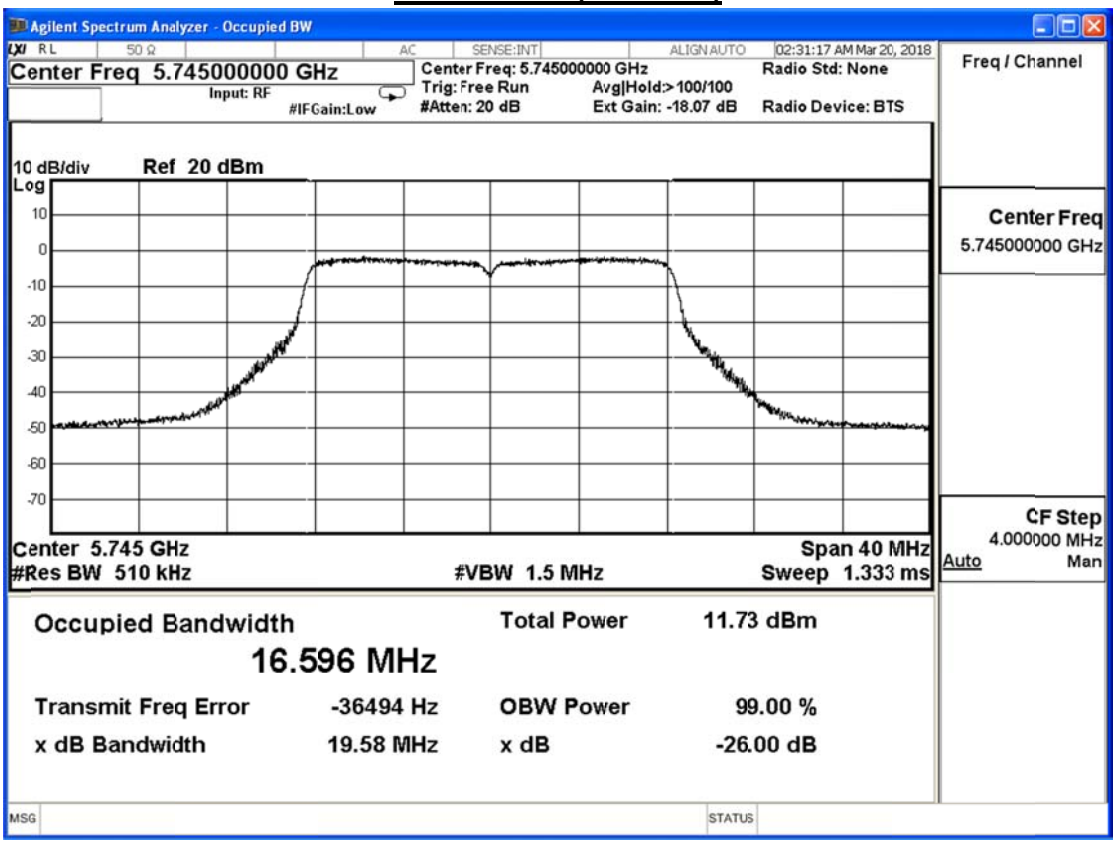
Channel 165 (5825MHz)



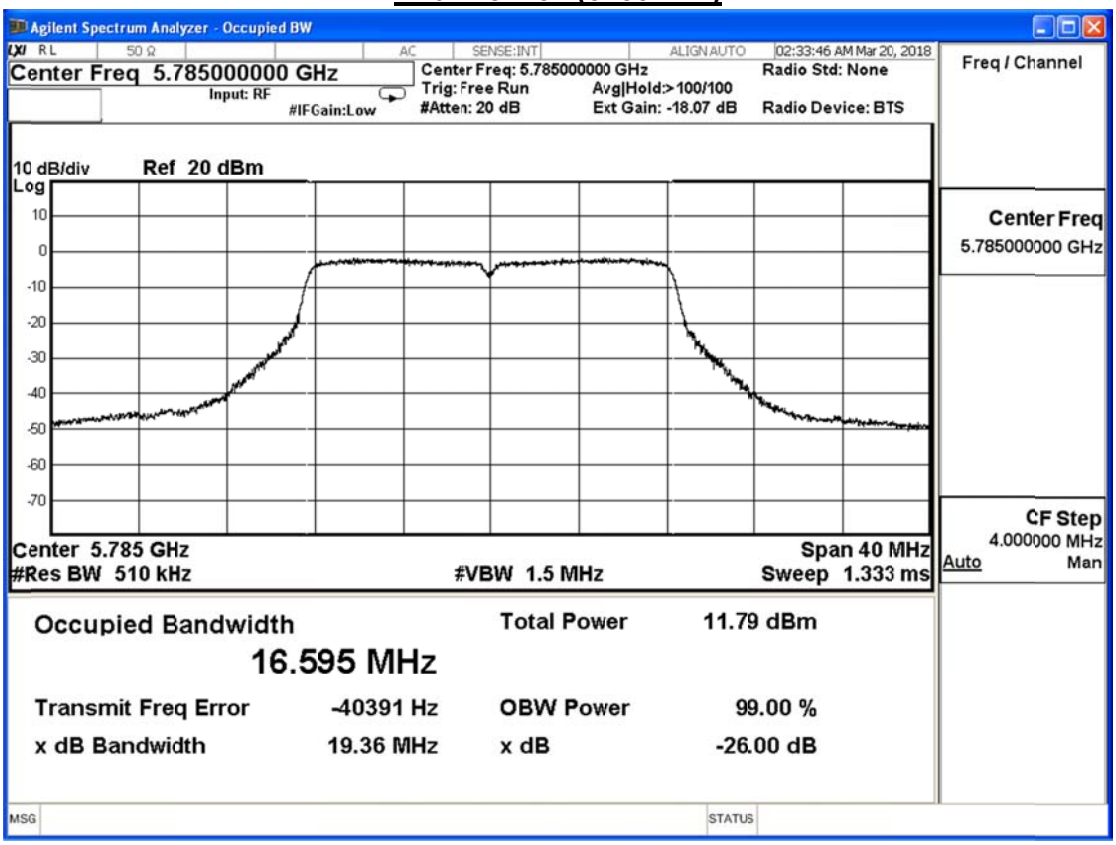
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

IEEE 802.11a (ANT1)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
149	5745	16.596	--
157	5785	16.595	--
165	5825	16.605	--

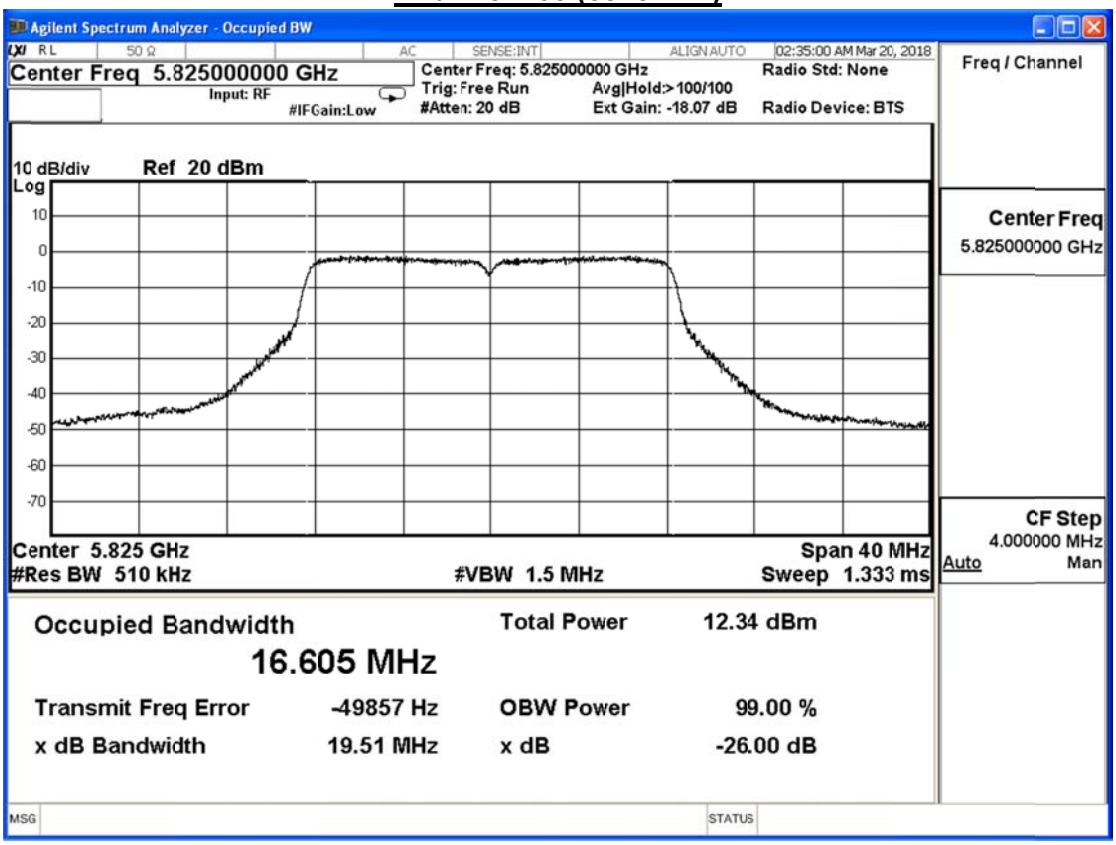
Channel 149 (5745MHz)



Channel 157 (5785MHz)



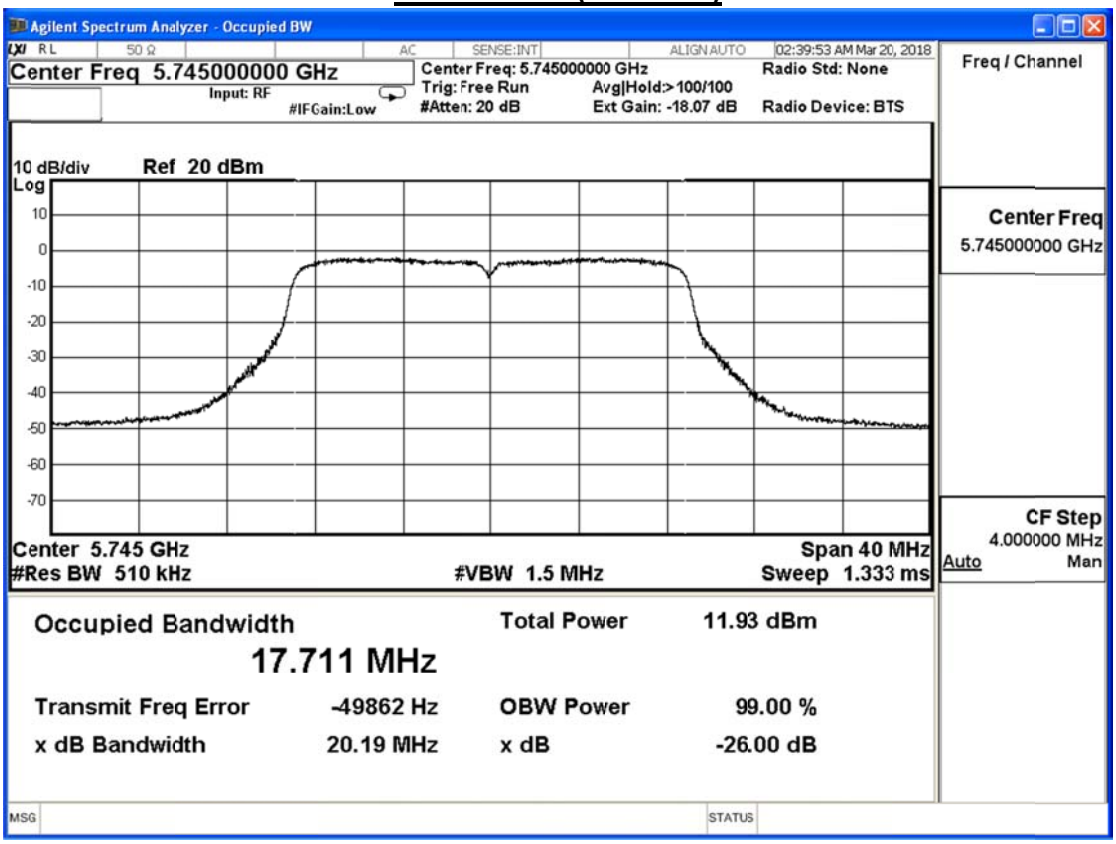
Channel 165 (5825MHz)



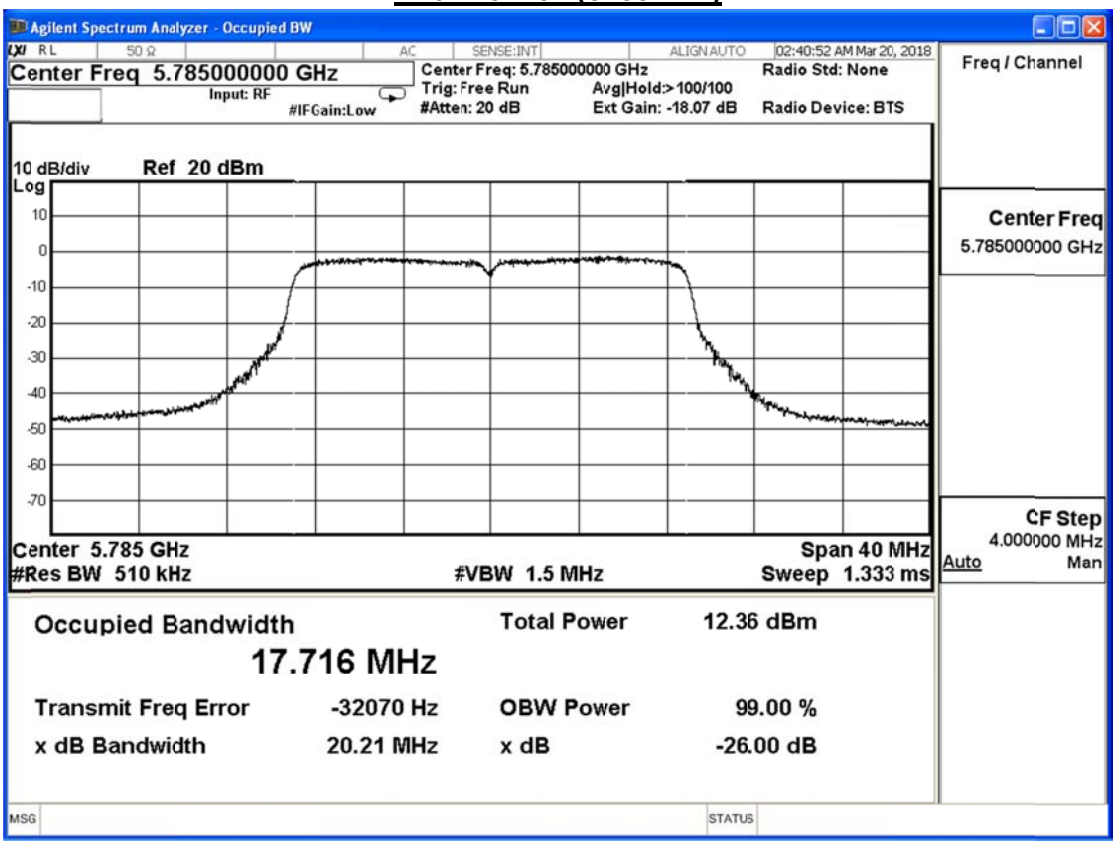
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

IEEE 802.11n_20M (ANT0)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
149	5745	17.711	--
157	5785	17.716	--
165	5825	17.687	--

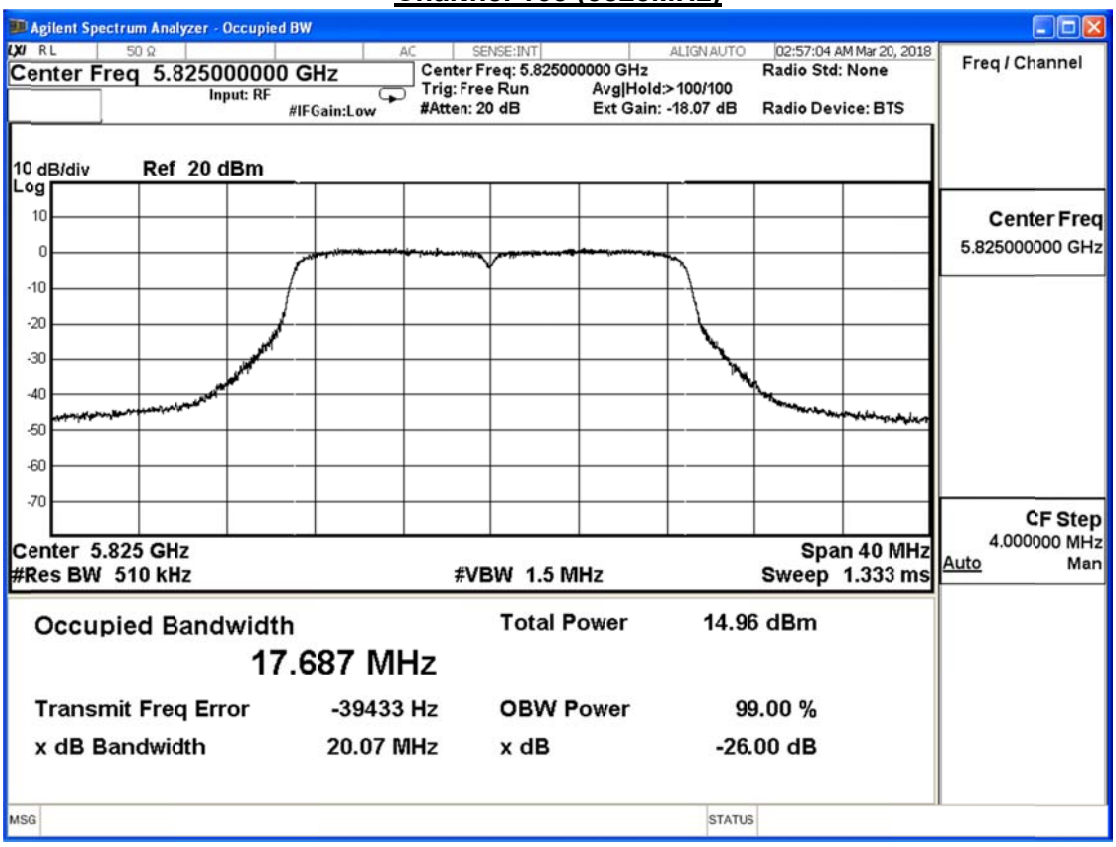
Channel 149 (5745MHz)



Channel 157 (5785MHz)



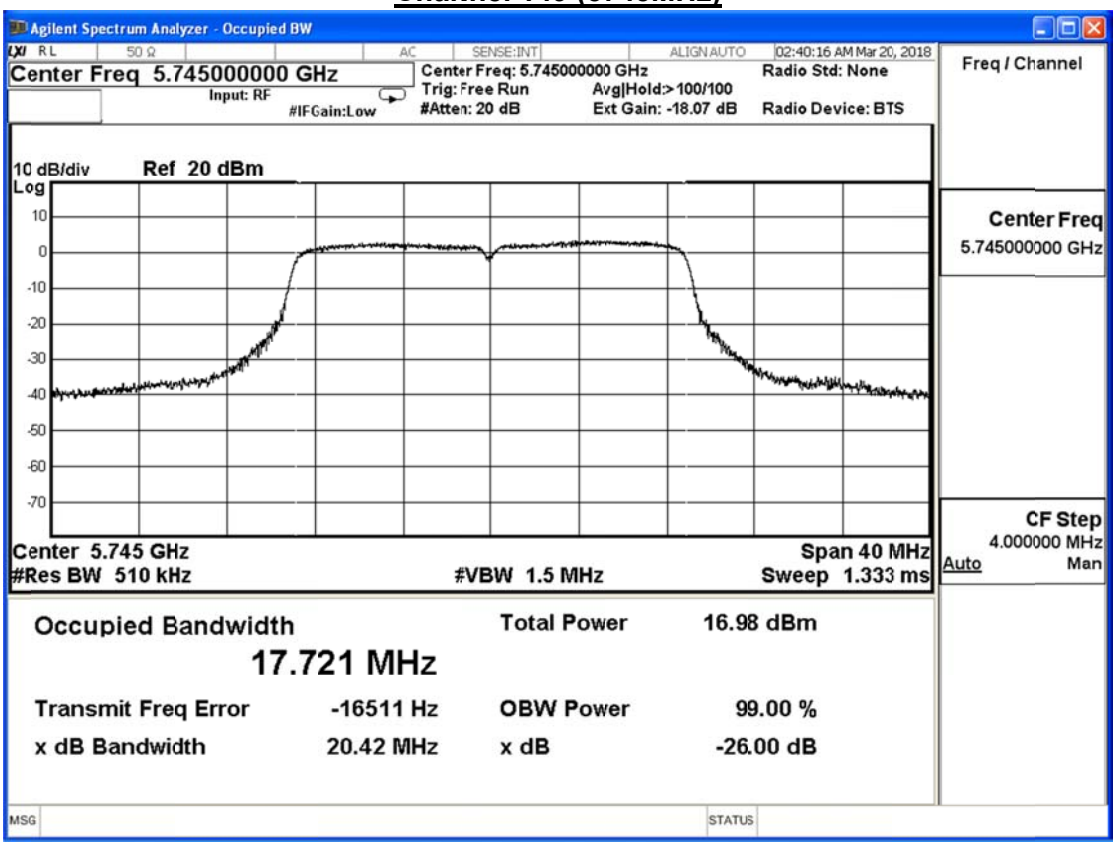
Channel 165 (5825MHz)



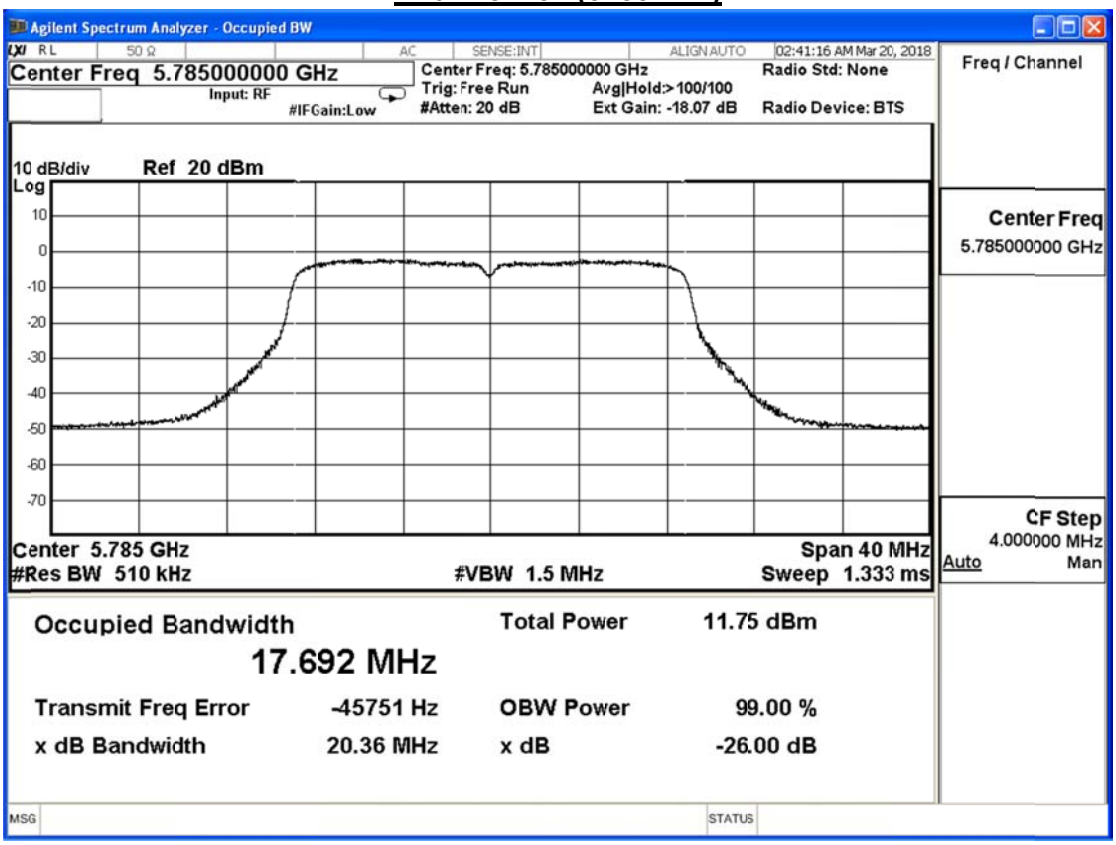
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

IEEE 802.11n_20M (ANT1)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
149	5745	17.721	--
157	5785	17.692	--
165	5825	17.701	--

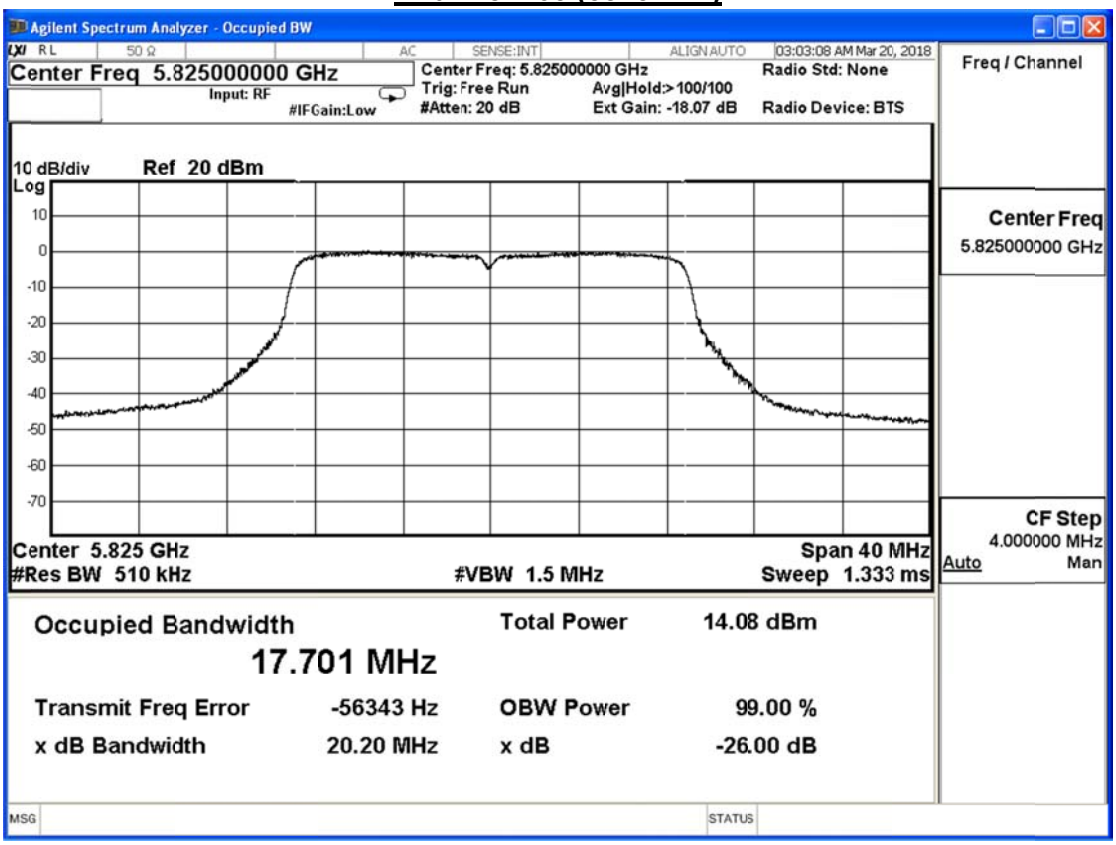
Channel 149 (5745MHz)



Channel 157 (5785MHz)



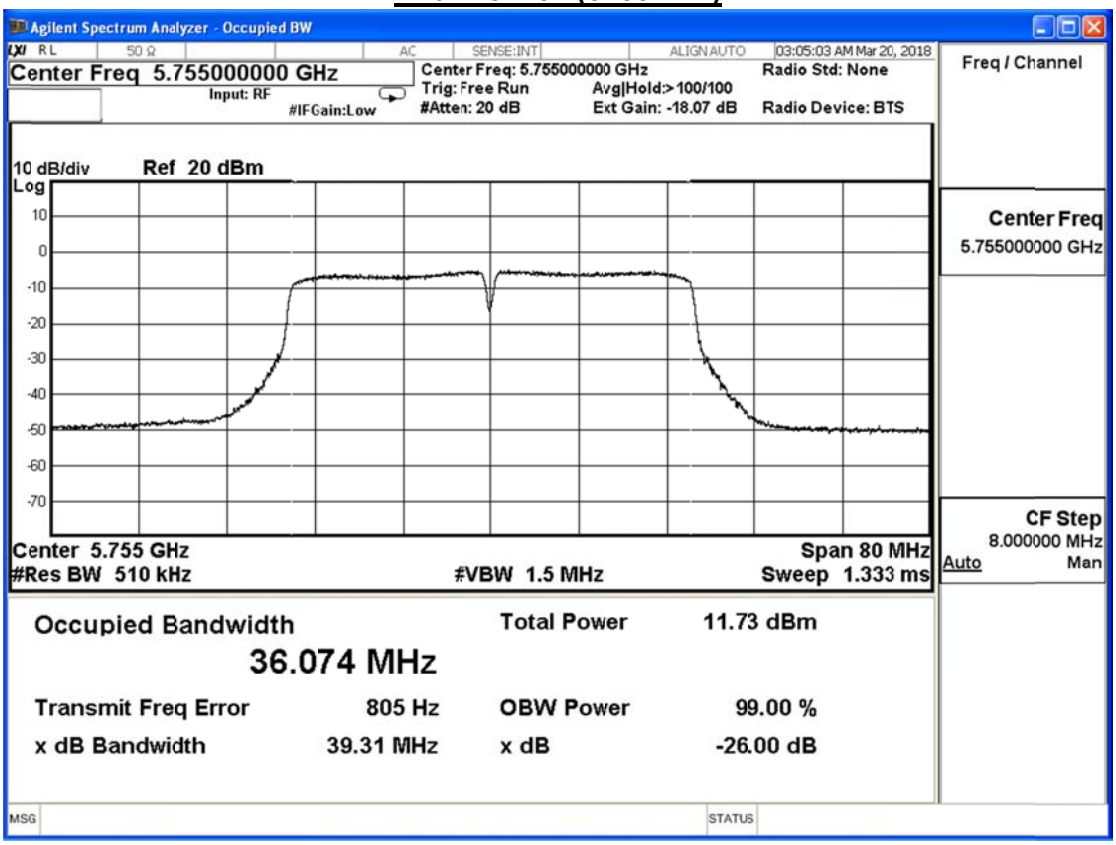
Channel 165 (5825MHz)



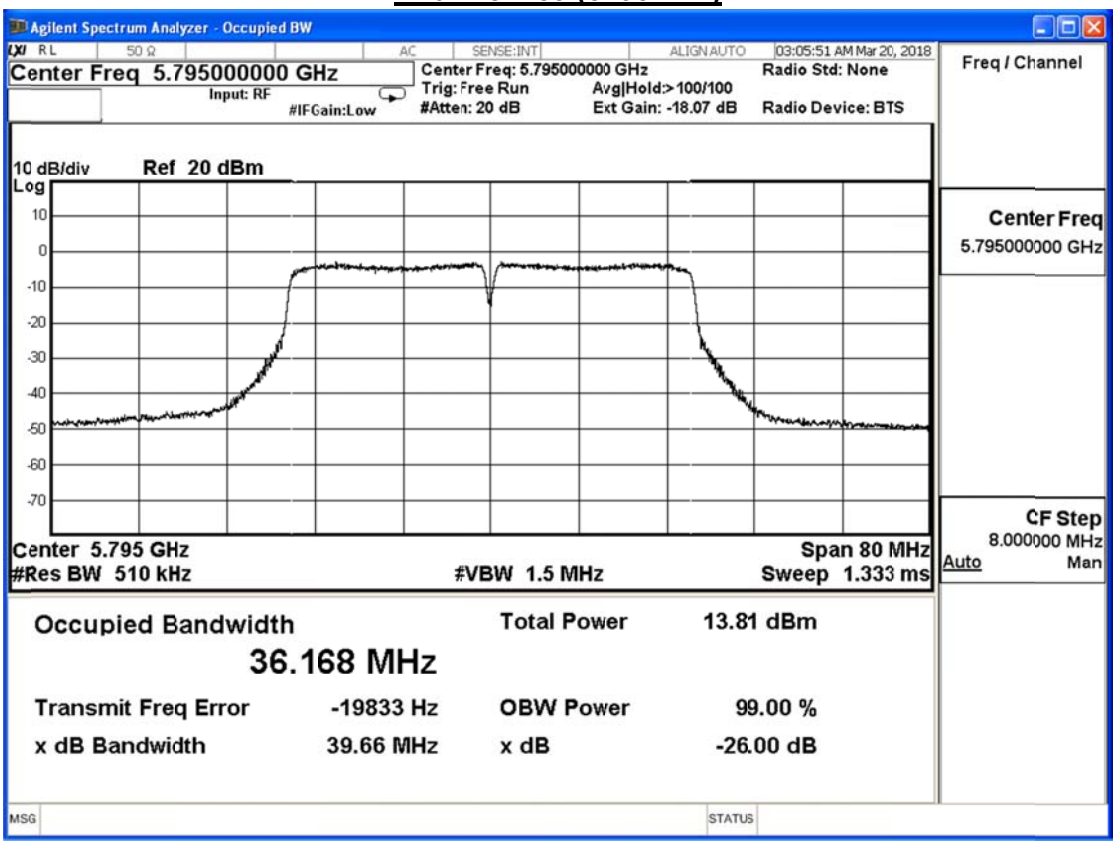
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

IEEE 802.11n_40M (ANT0)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
151	5755	36.074	--
159	5795	36.168	--

Channel 151 (5755MHz)



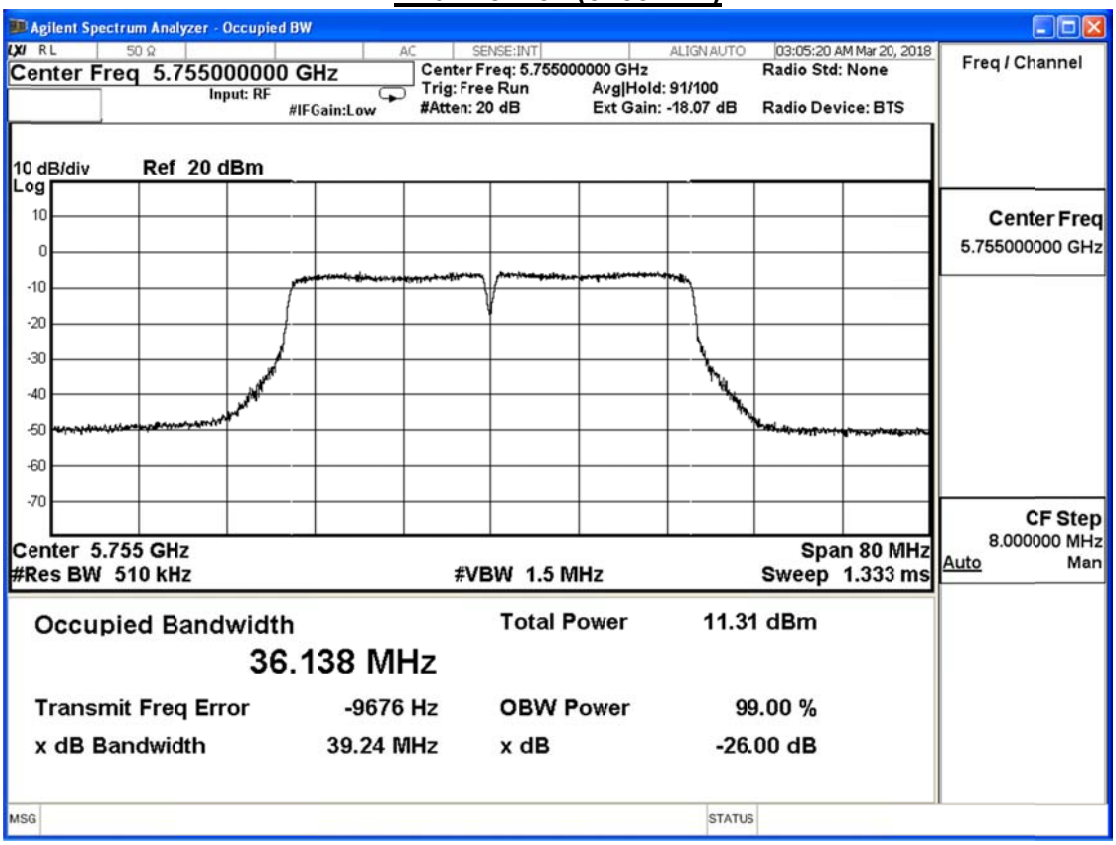
Channel 159 (5795MHz)



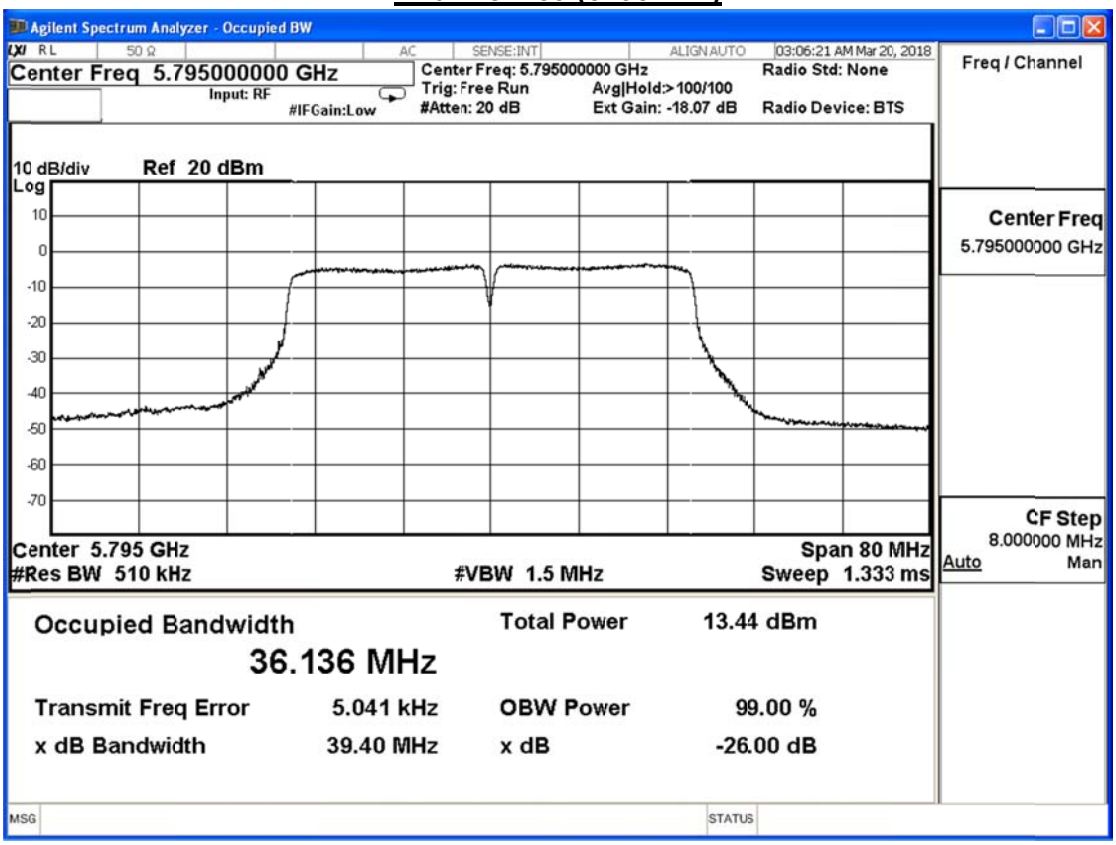
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

IEEE 802.11n_40M (ANT1)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
151	5755	36.138	--
159	5795	36.136	--

Channel 151 (5755MHz)



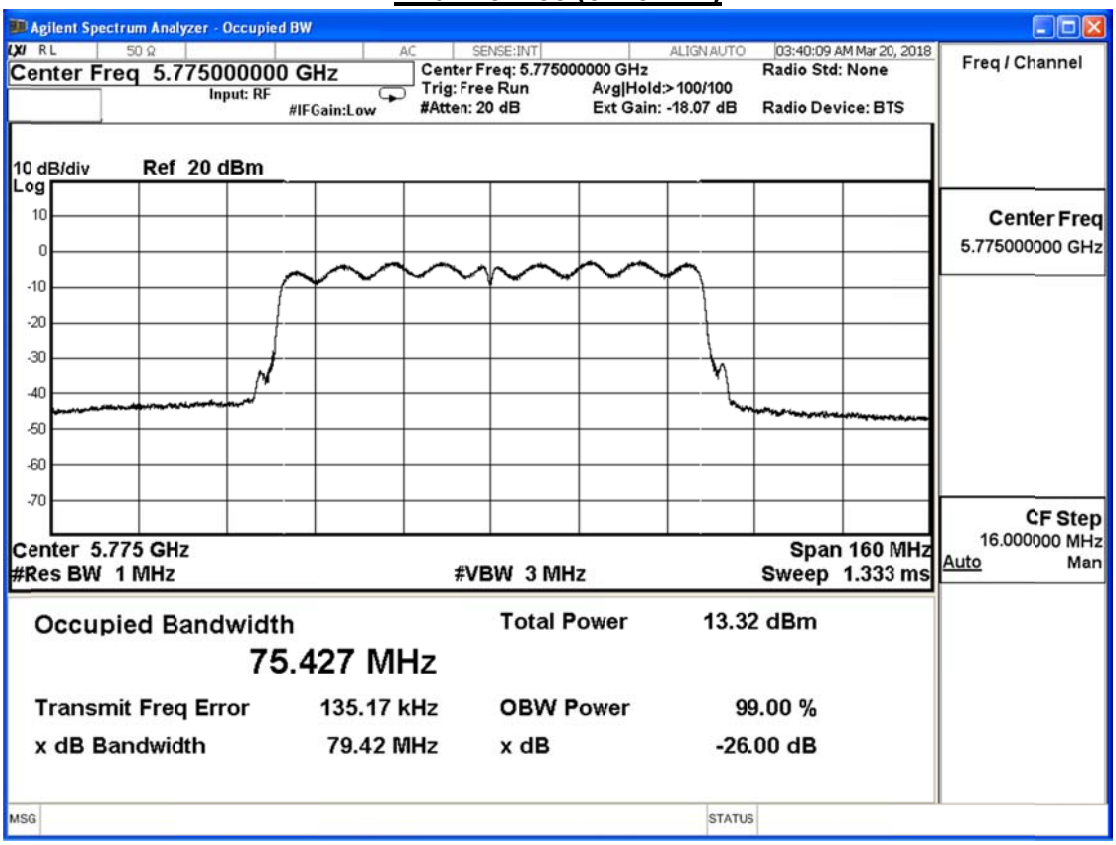
Channel 159 (5795MHz)



Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

IEEE 802.11ac_80M (ANT0)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
155	5775	75.427	--

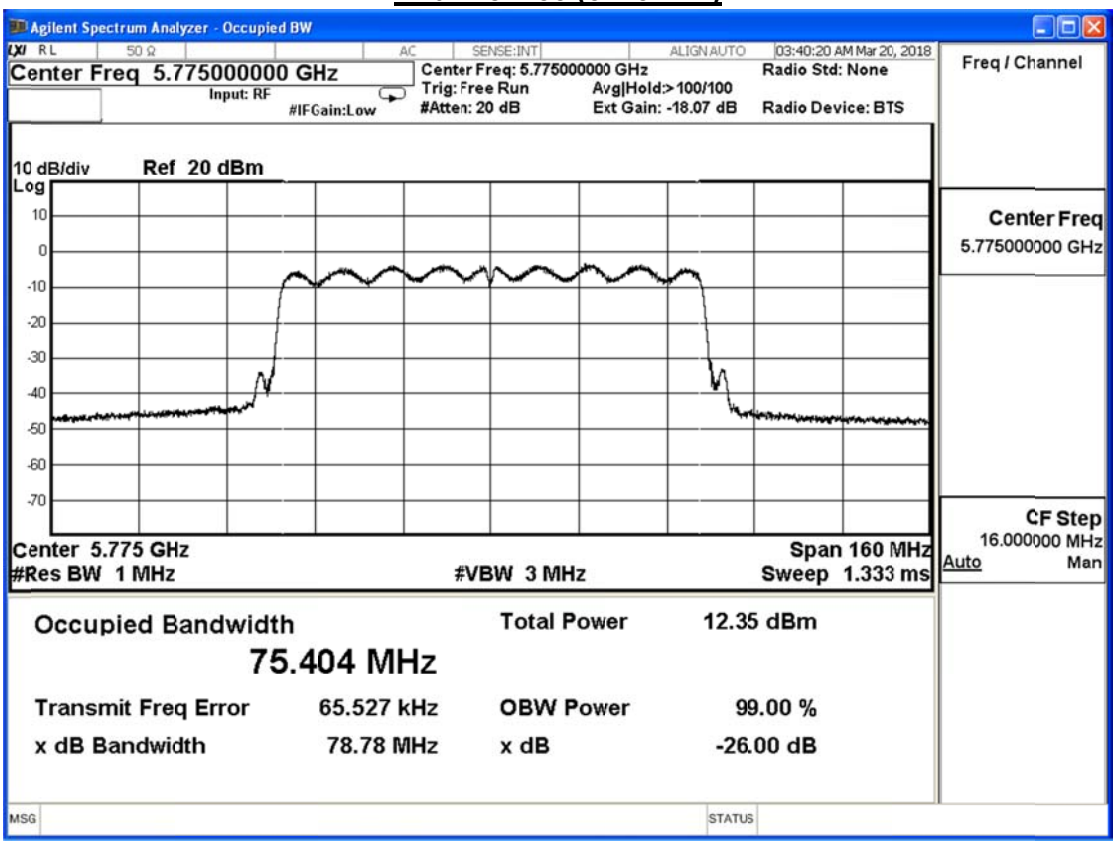
Channel 155 (5775MHz)



Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	99% Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

IEEE 802.11ac_80M (ANT1)			
Channel No.	Frequency (MHz)	Measure Value (MHz)	Limit (MHz)
155	5775	75.404	--

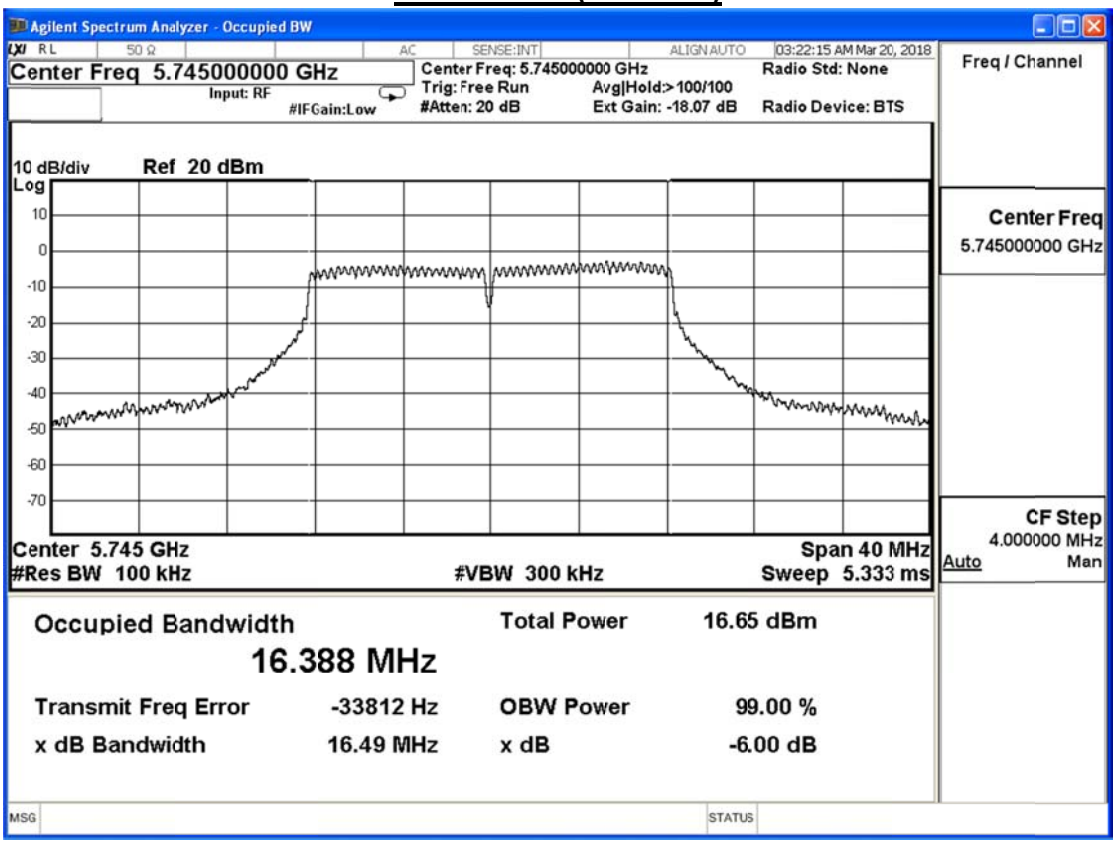
Channel 155 (5775MHz)



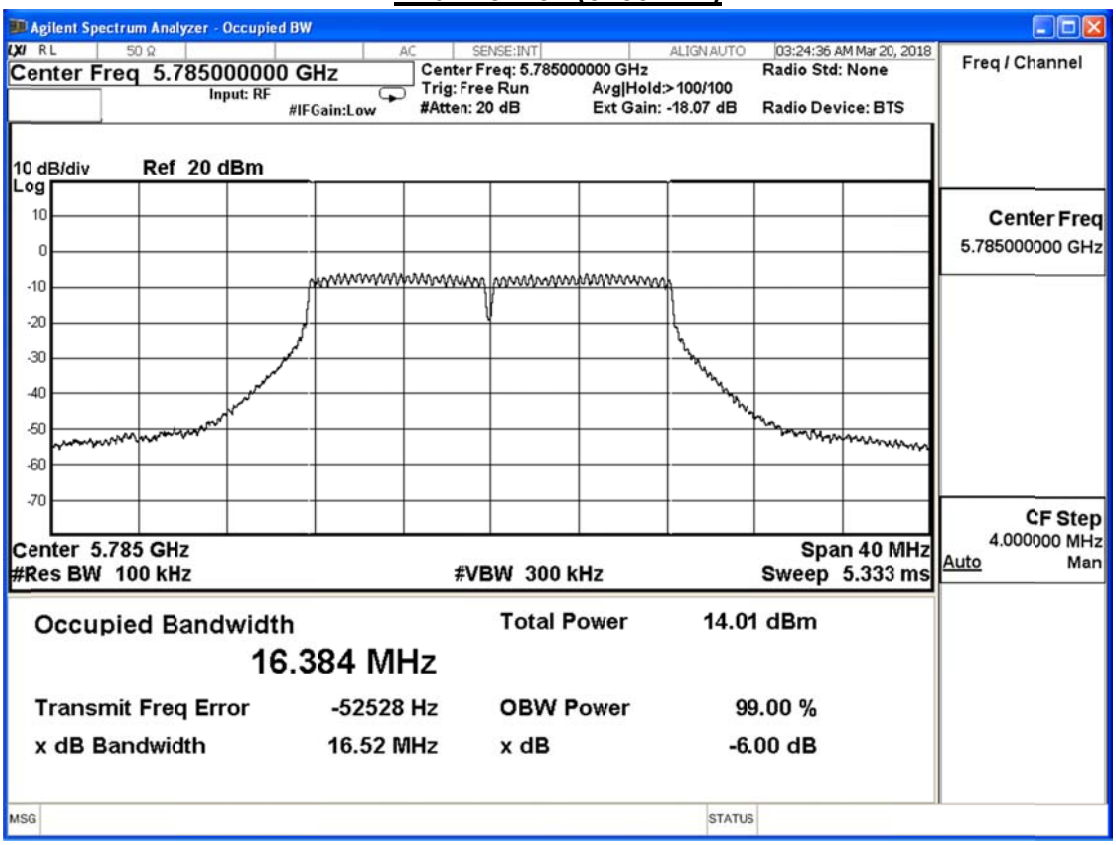
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

802.11a(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
149	5745	16.49	≧0.5	Pass
157	5785	16.52	≧0.5	Pass
165	5825	16.50	≧0.5	Pass

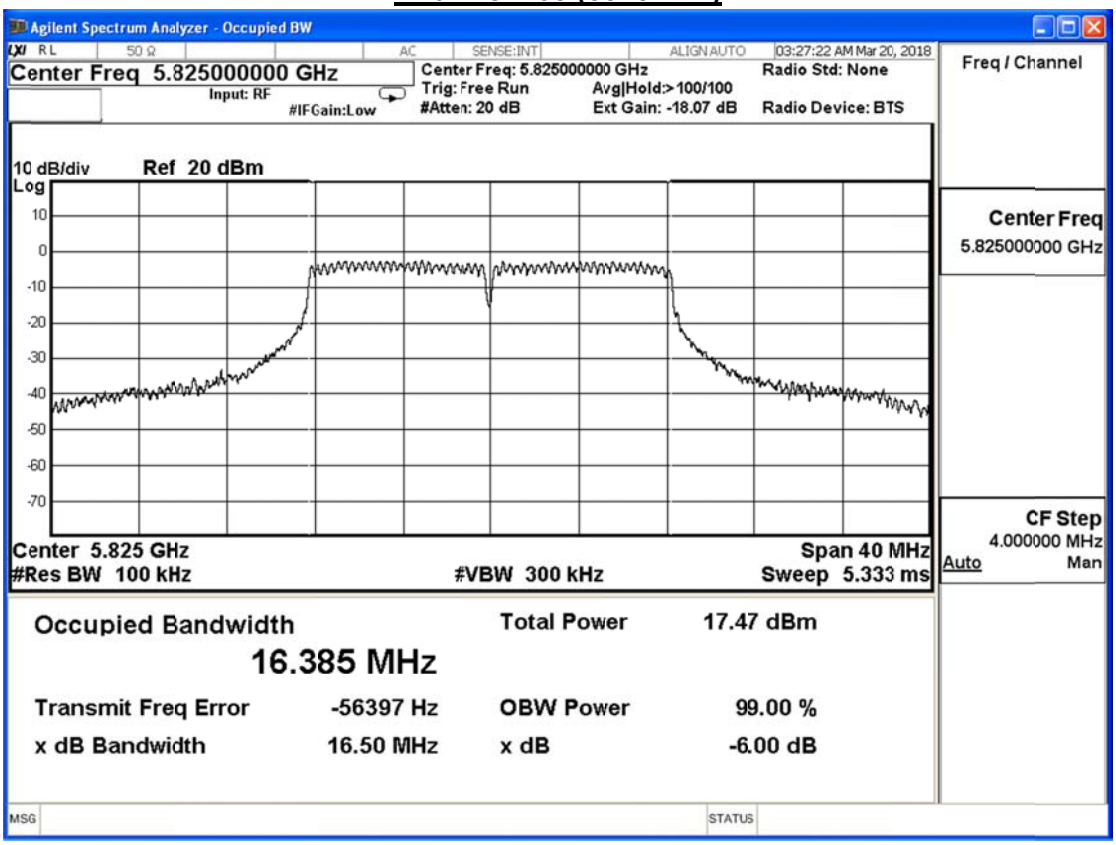
Channel 149 (5745MHz)



Channel 157 (5785MHz)



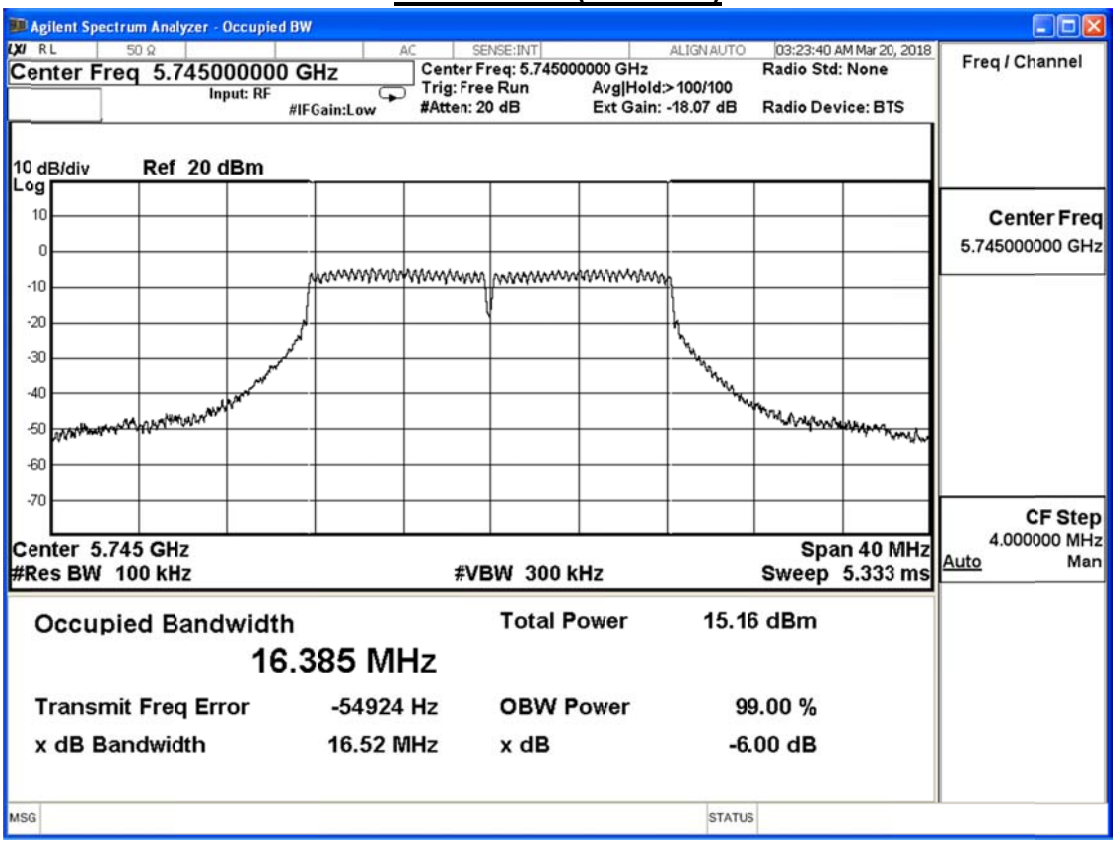
Channel 165 (5825MHz)



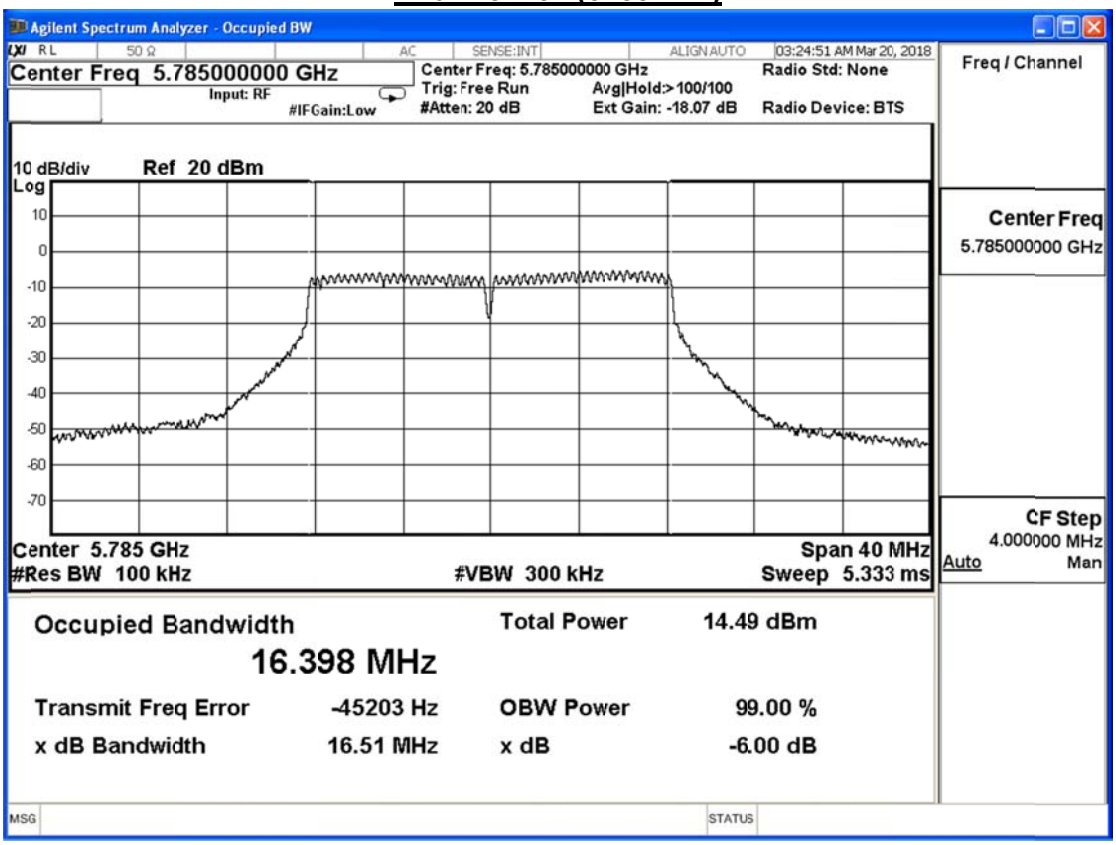
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

802.11a(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
149	5745	16.52	≧0.5	Pass
157	5785	16.51	≧0.5	Pass
165	5825	16.52	≧0.5	Pass

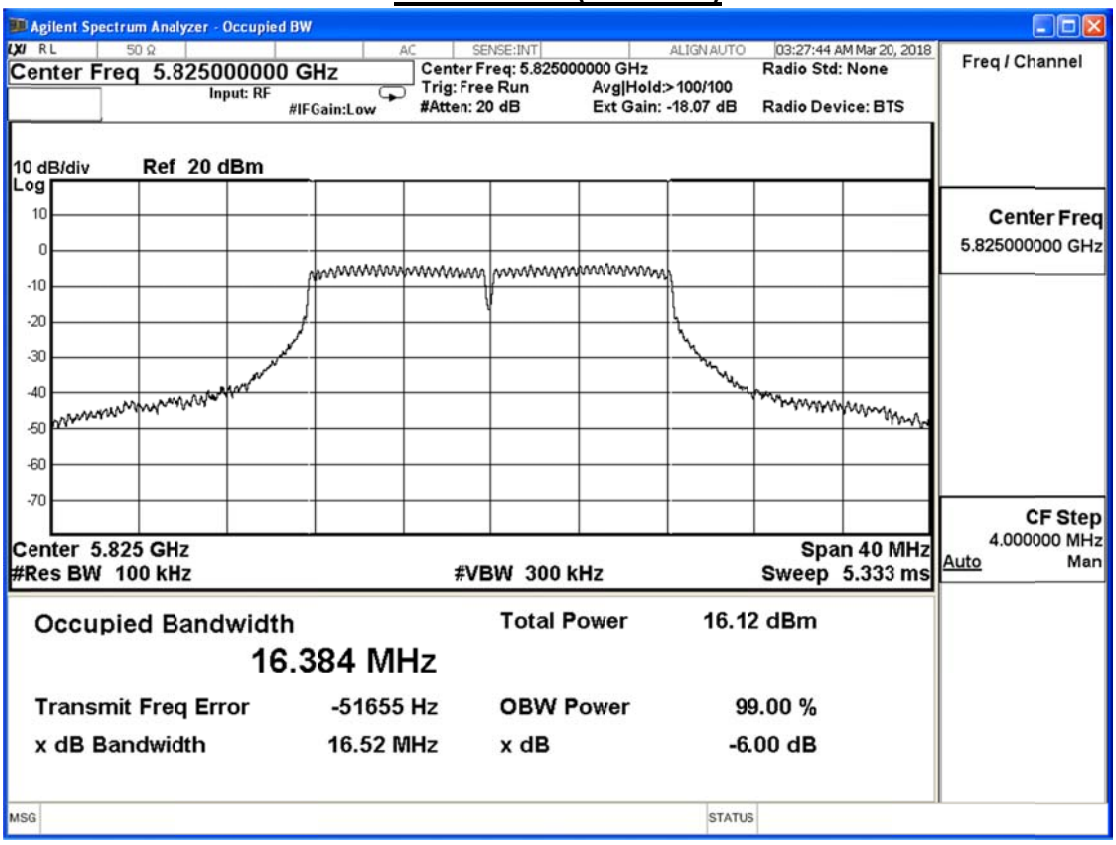
Channel 149 (5745MHz)



Channel 157 (5785MHz)



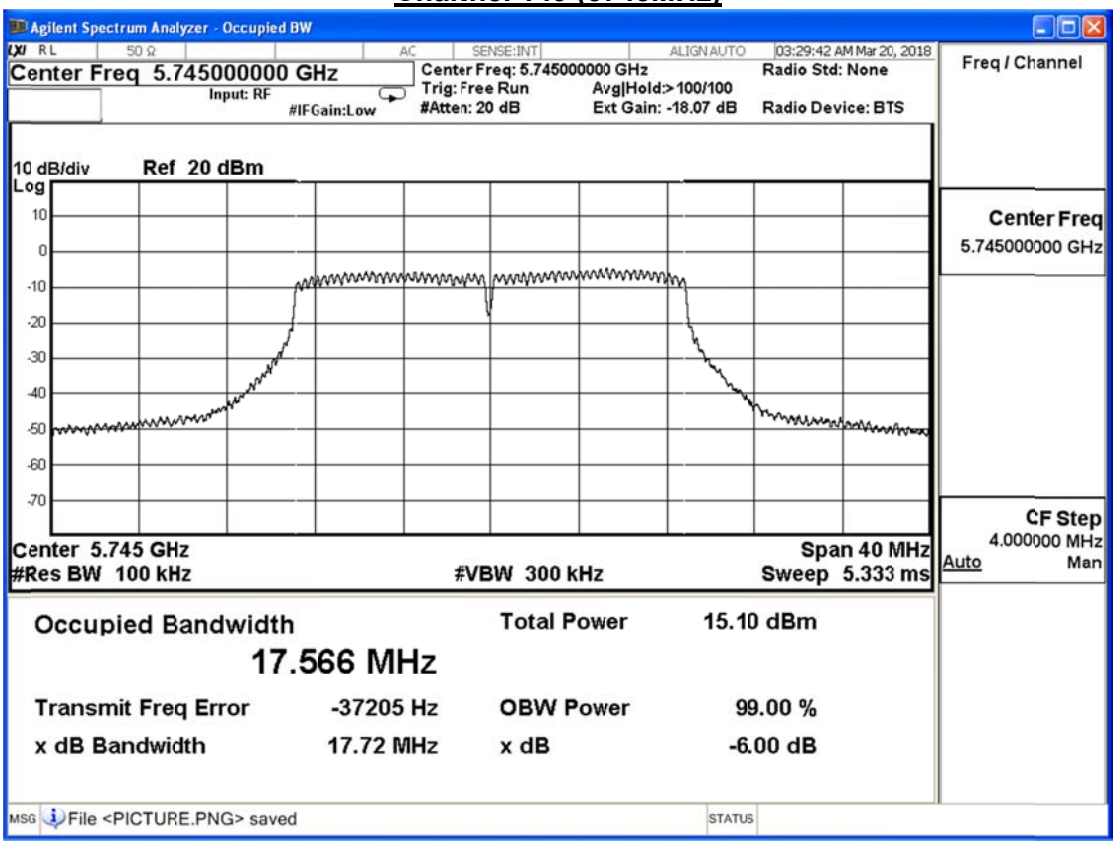
Channel 165 (5825MHz)



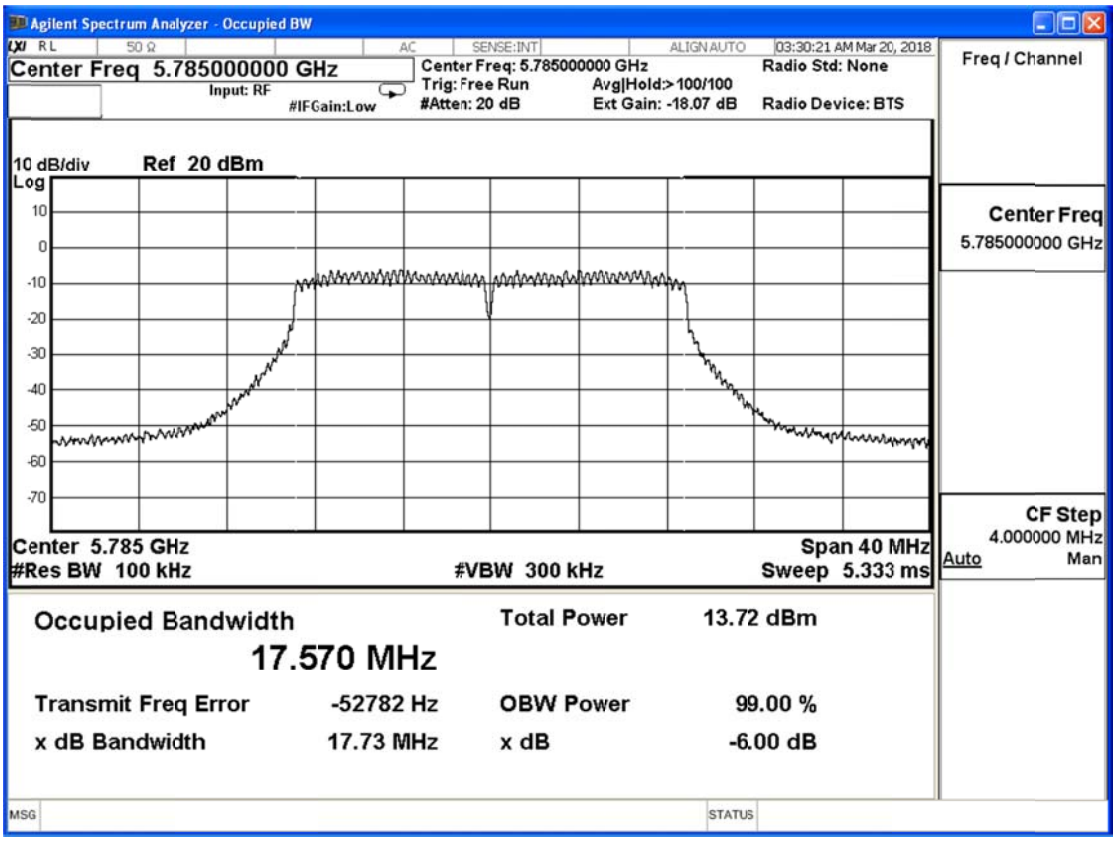
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

802.11n_20M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
149	5745	17.72	≧0.5	Pass
157	5785	17.73	≧0.5	Pass
165	5825	17.72	≧0.5	Pass

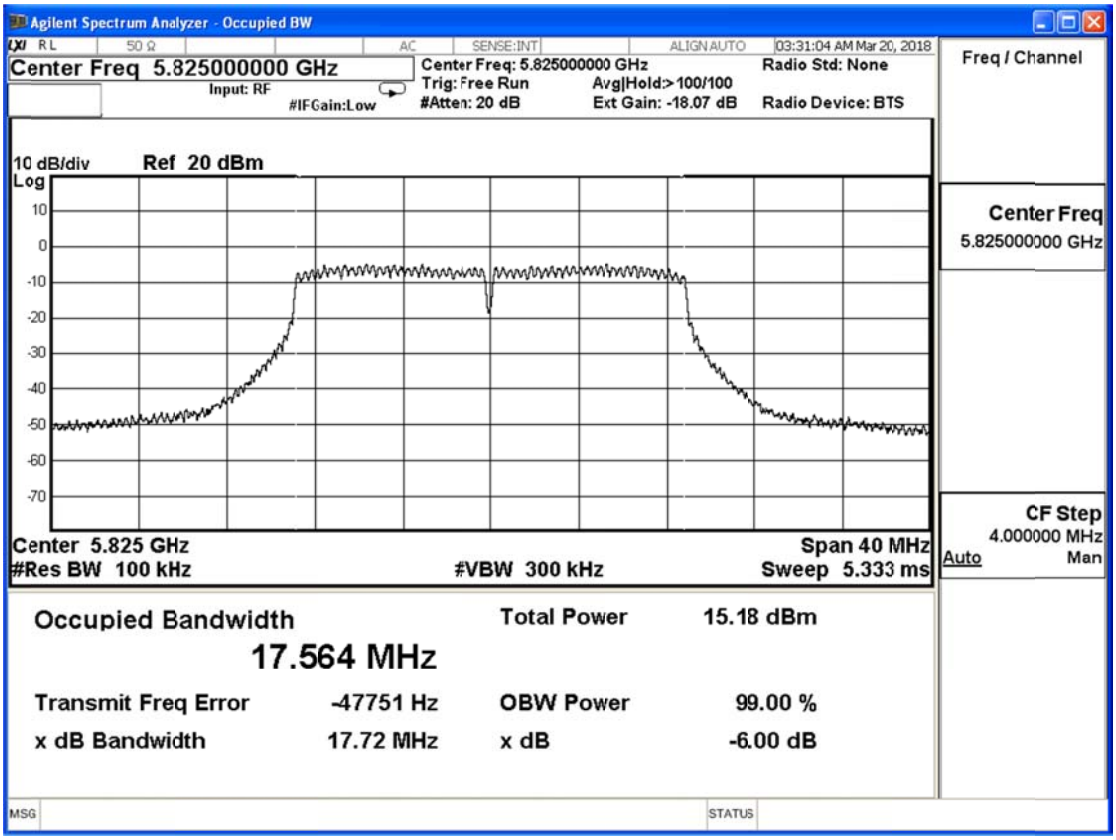
Channel 149 (5745MHz)



Channel 157 (5785MHz)



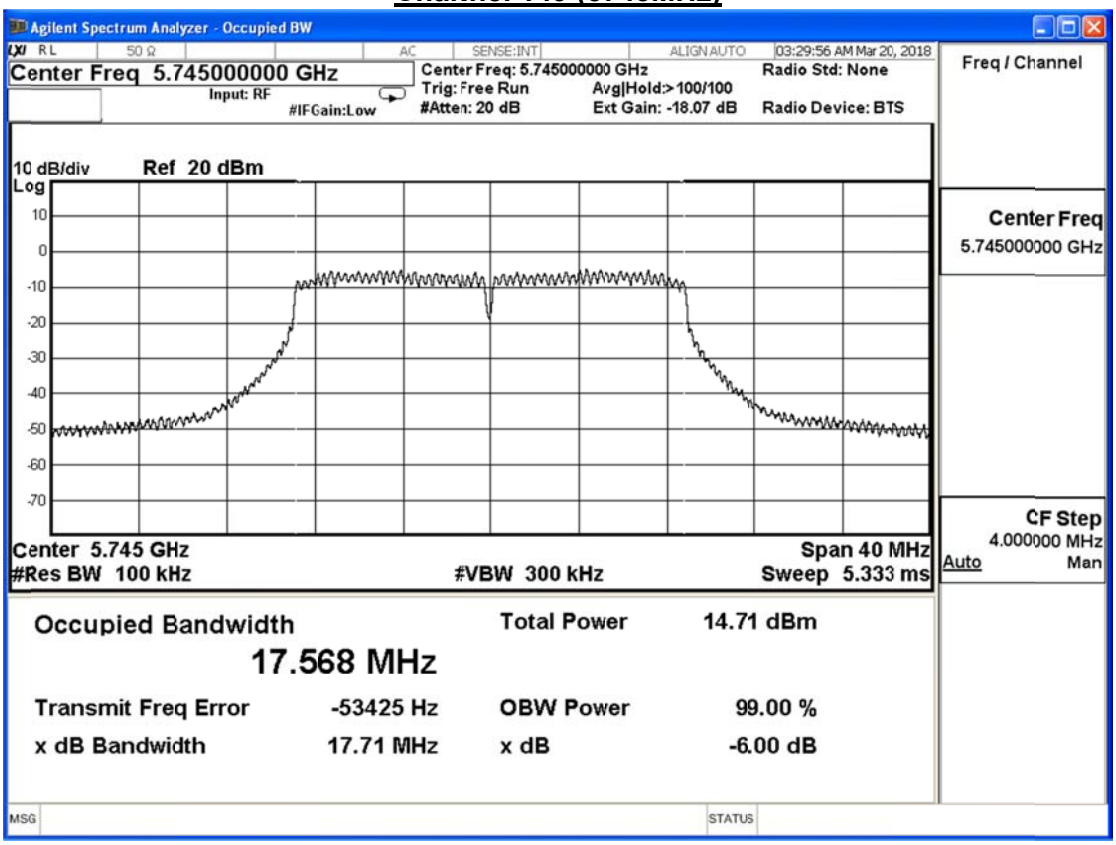
Channel 165 (5825MHz)



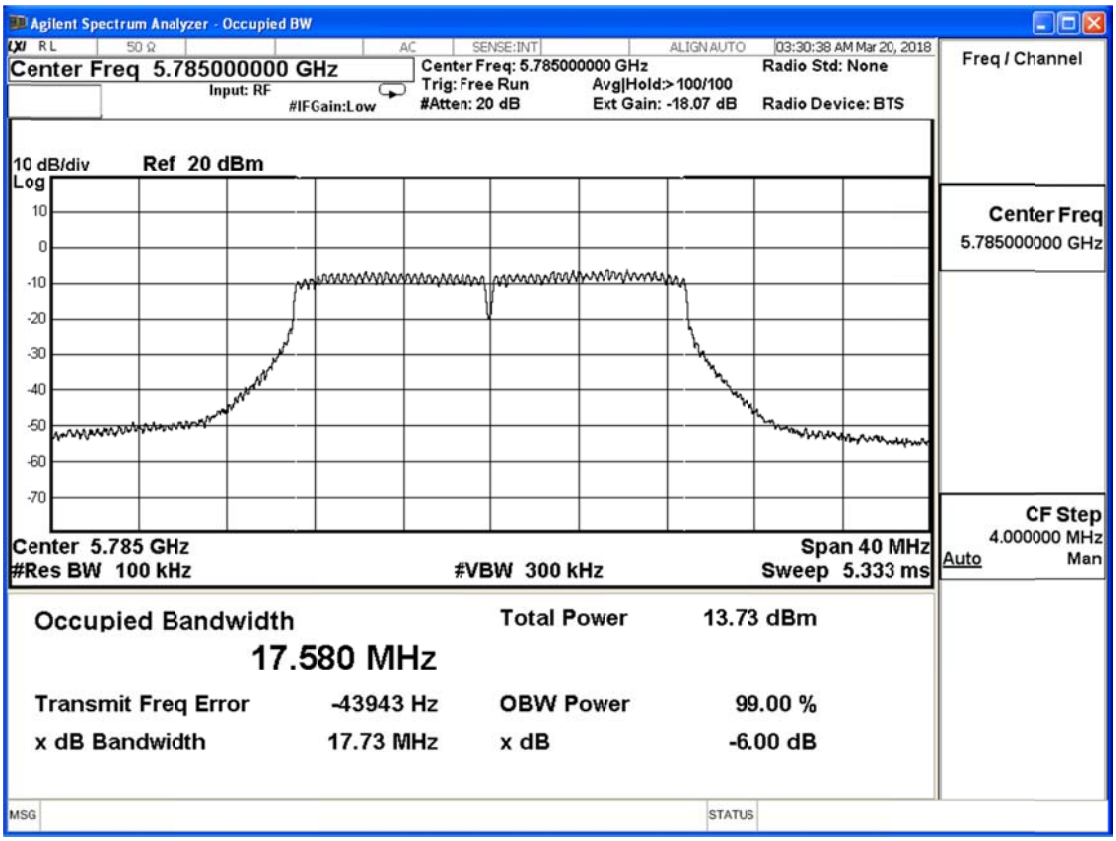
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

802.11n_20M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
149	5745	17.71	≧0.5	Pass
157	5785	17.73	≧0.5	Pass
165	5825	17.70	≧0.5	Pass

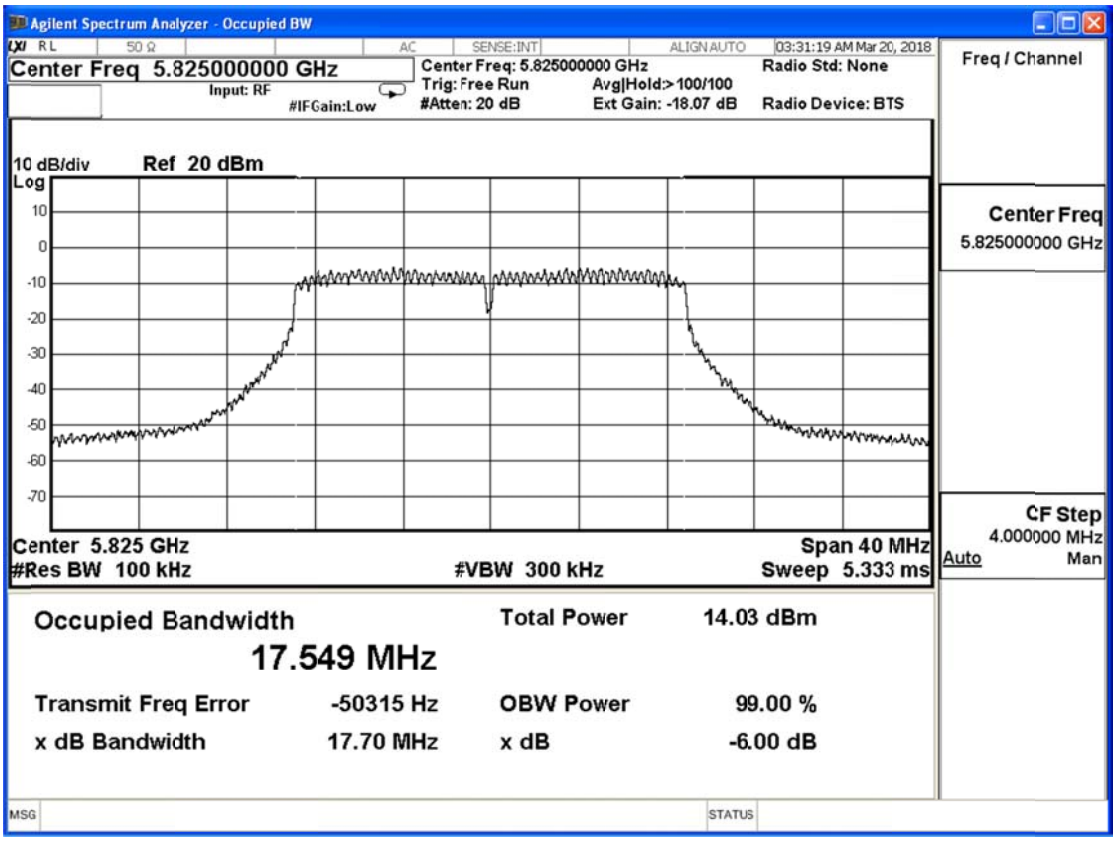
Channel 149 (5745MHz)



Channel 157 (5785MHz)



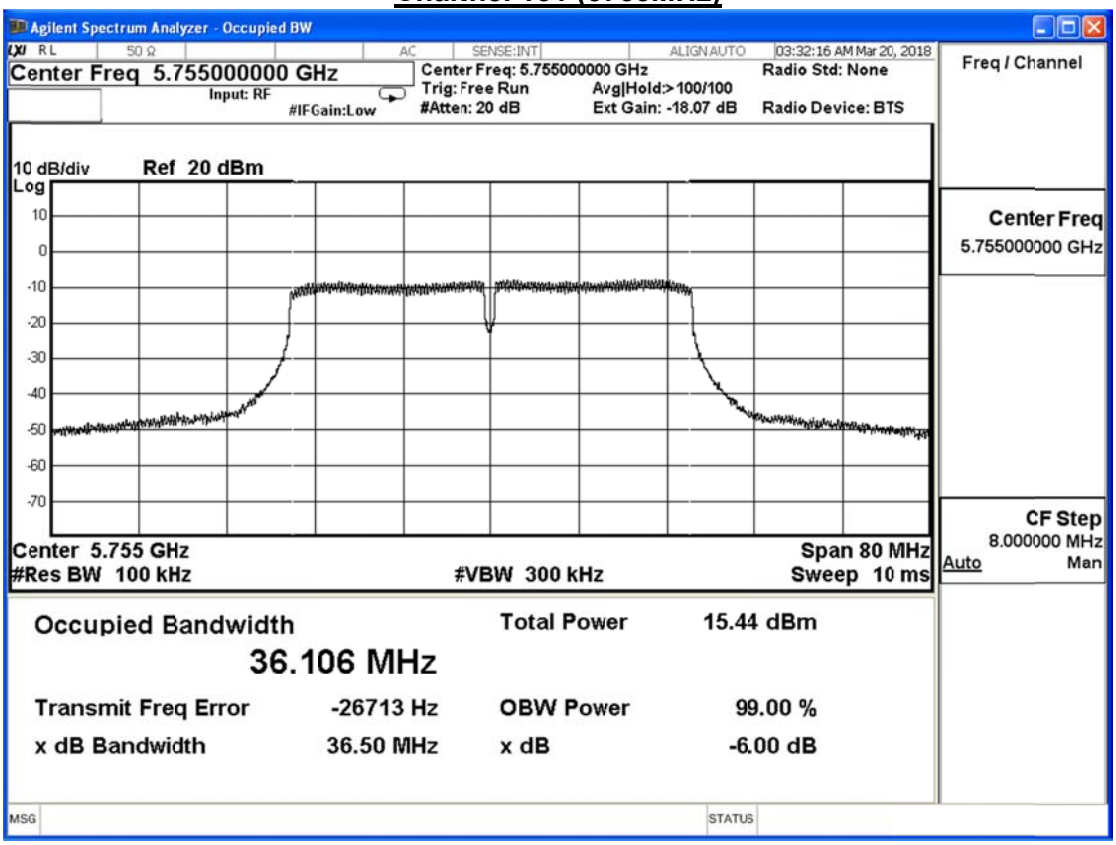
Channel 165 (5825MHz)



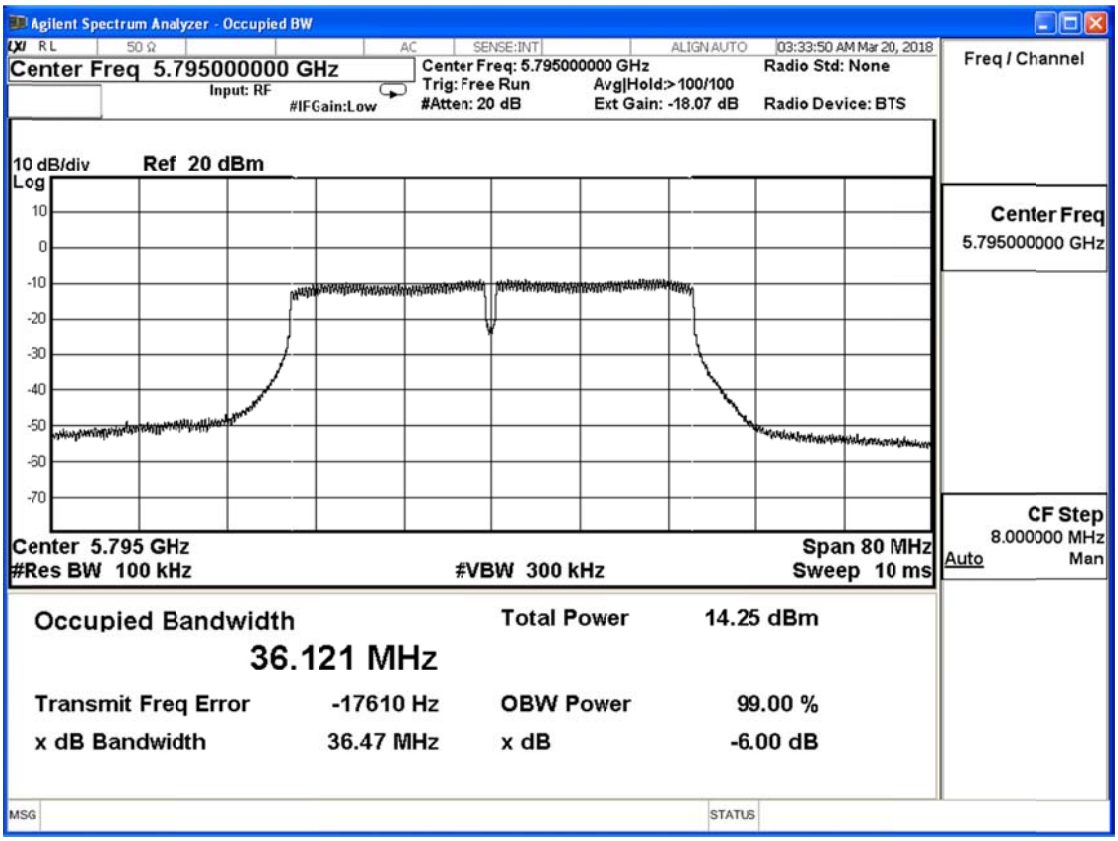
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

802.11n_40M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
151	5755	36.50	≧0.5	Pass
159	5795	36.47	≧0.5	Pass

Channel 151 (5755MHz)



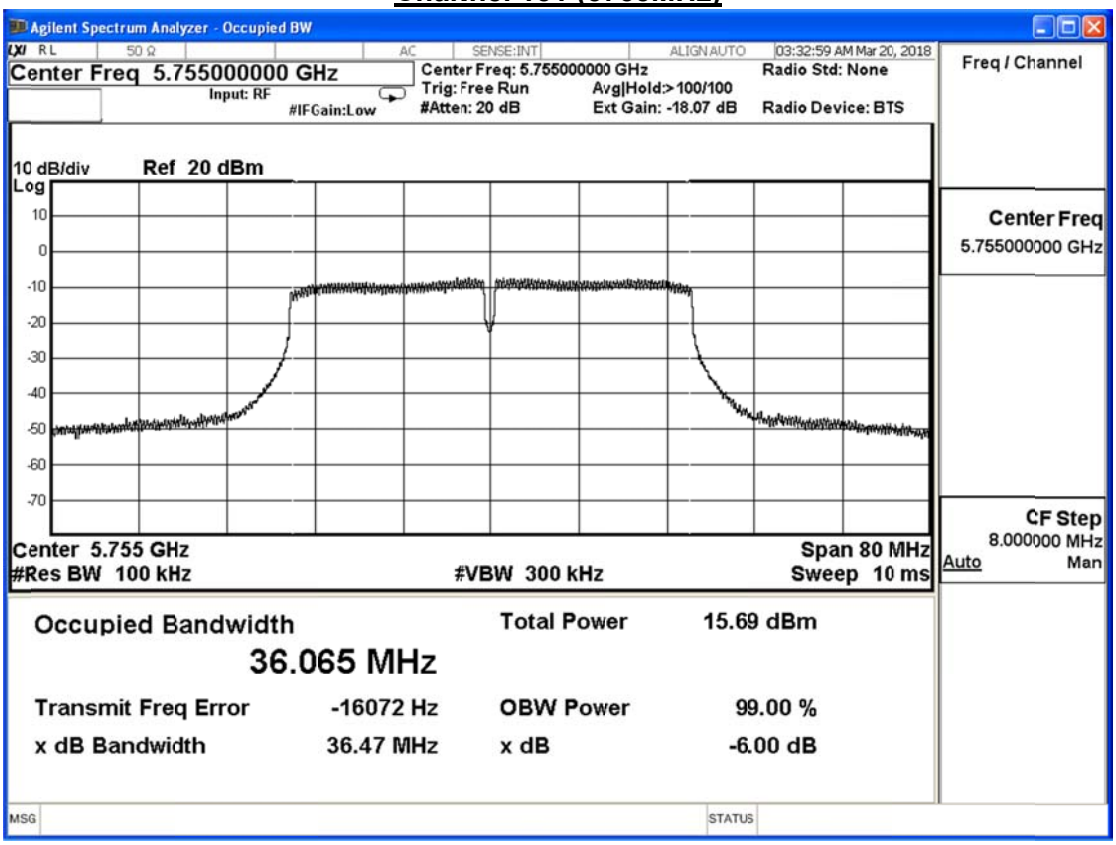
Channel 159 (5795MHz)



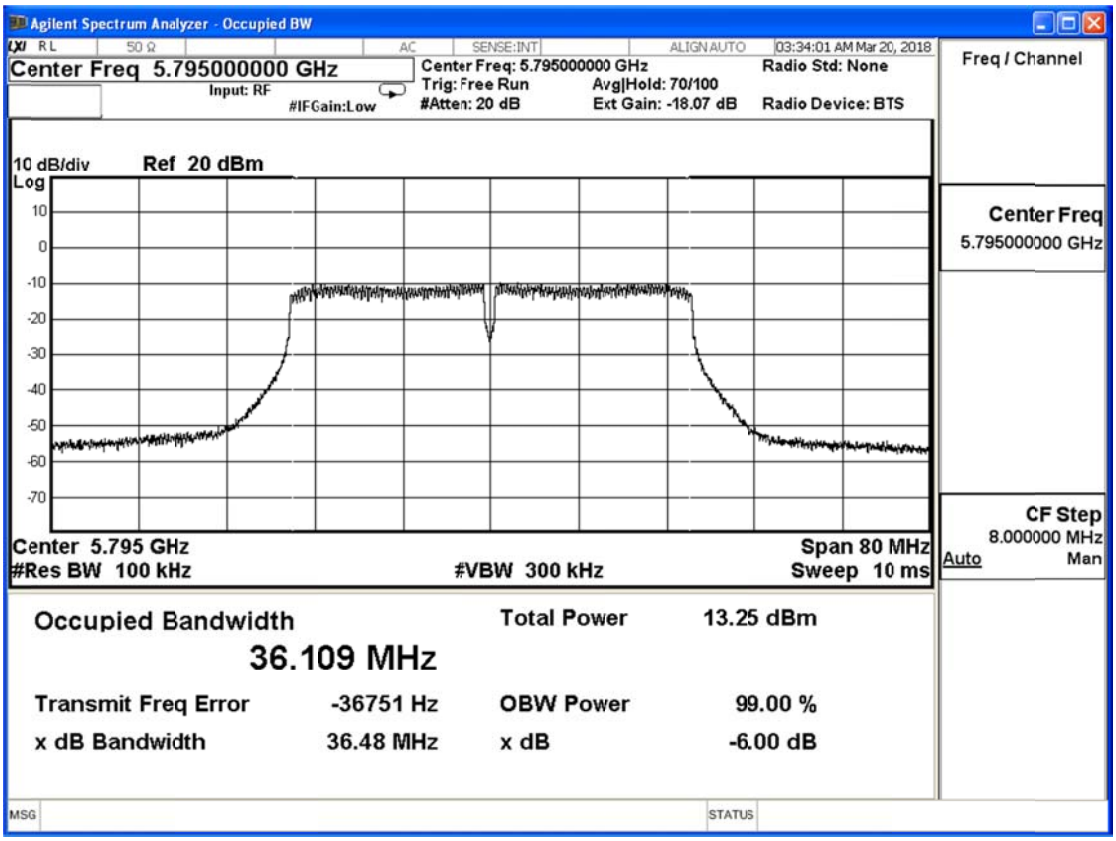
Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

802.11n_40M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
151	5755	36.47	≧0.5	Pass
159	5795	36.48	≧0.5	Pass

Channel 151 (5755MHz)



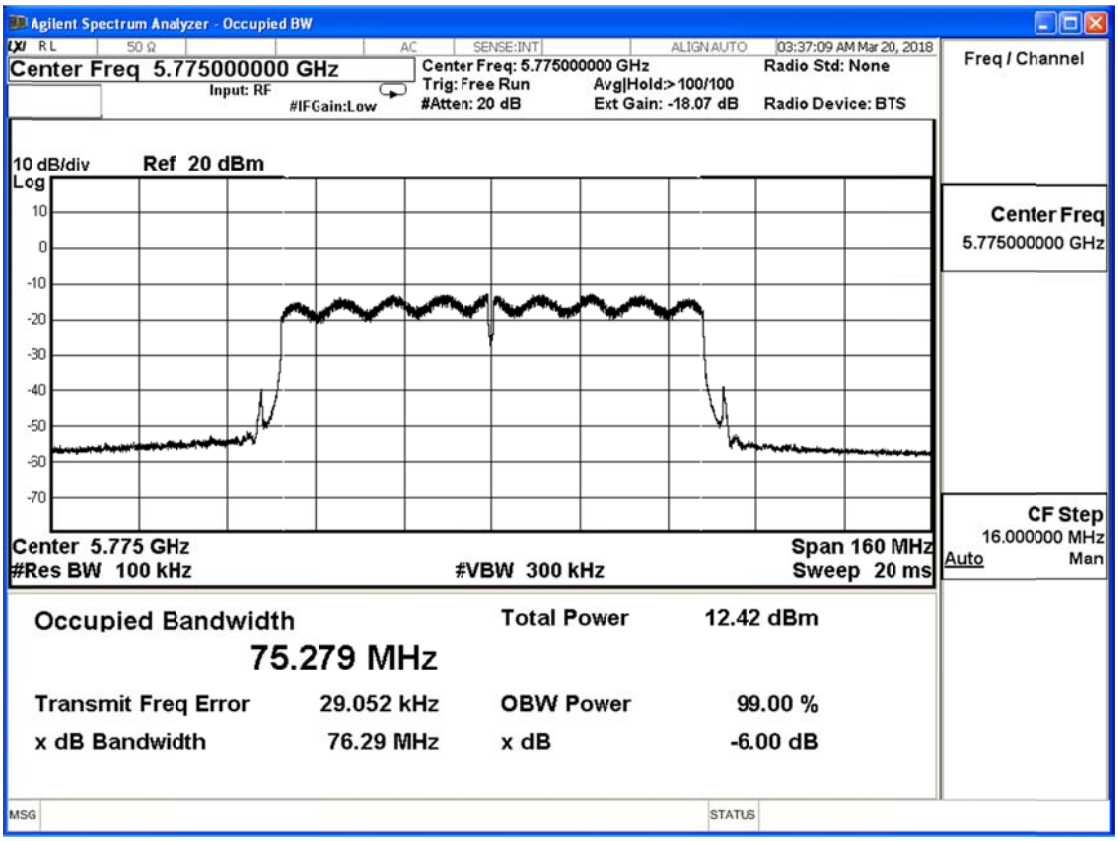
Channel 159 (5795MHz)



Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

802.11ac_80M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
155	5775	76.29	≧0.5	Pass

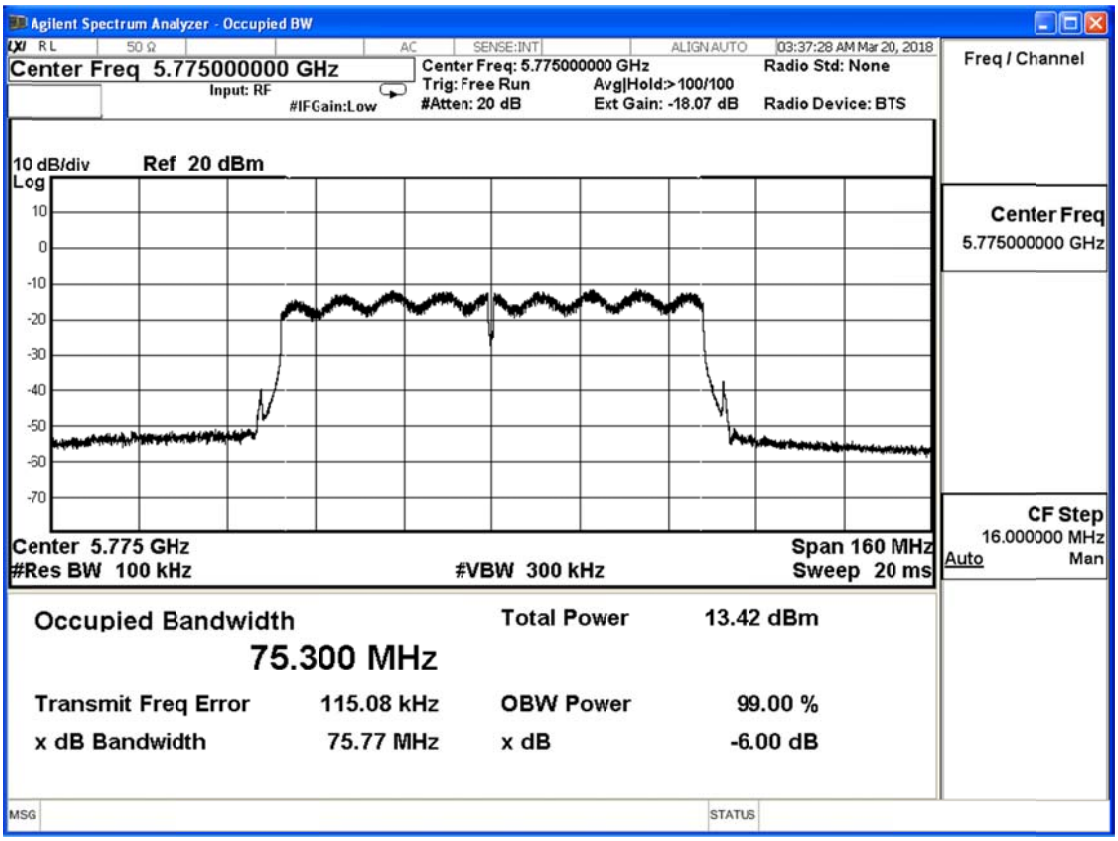
Channel 155 (5775MHz)



Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

802.11ac_80M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
155	5775	75.77	≧0.5	Pass

Channel 155 (5775MHz)



4. Peak Transmit Output

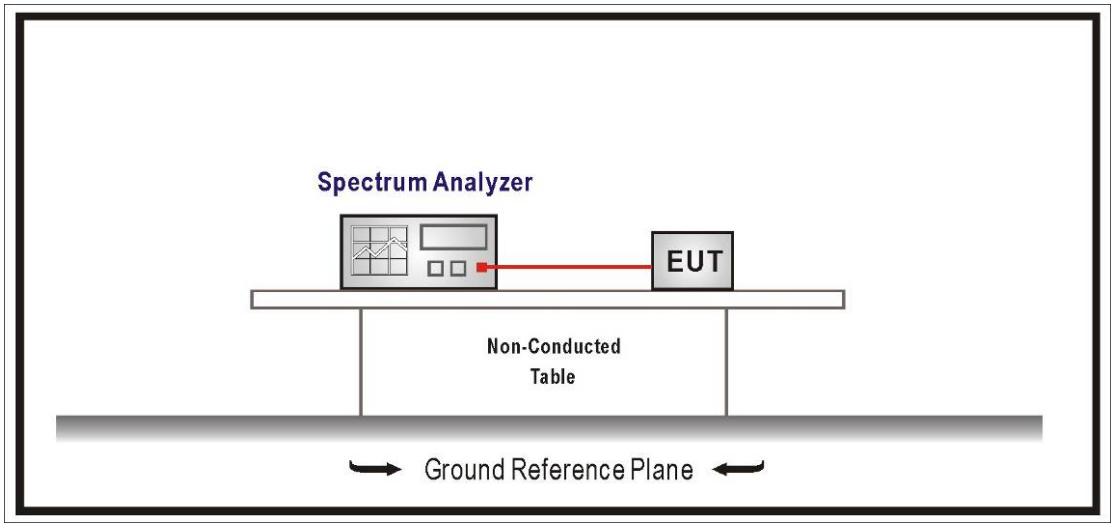
4.1. Test Equipment

The following test equipments are used during the radiated emission tests:

Peak Transmit Output / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2017/06/13	2018/06/12
Spectrum Analyzer	Keysight	N9010B	MY57110159	2017/06/05	2018/06/04
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/07/26	2018/07/25
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09

4.2. Test Setup



4.3. Limits

1. For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

2. For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. The maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

4. For the band 5.725-5.850 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

4.4. Test Procedure

The EUT was setup to ANSI C63.10: 2013; tested to U-NII test procedure of 789033 D01 V01R02 for compliance to FCC 47CFR Subpart E requirements. The Method SA-1 of the Maximum conducted output power was used.
Set RBW=1MHz, VBW=3MHz with RMS detector and trace average 100 traces in power averaging mode. Set span to encompass the entire emission bandwidth (EBW) of the signal. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

4.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

4.6. Test Result

Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

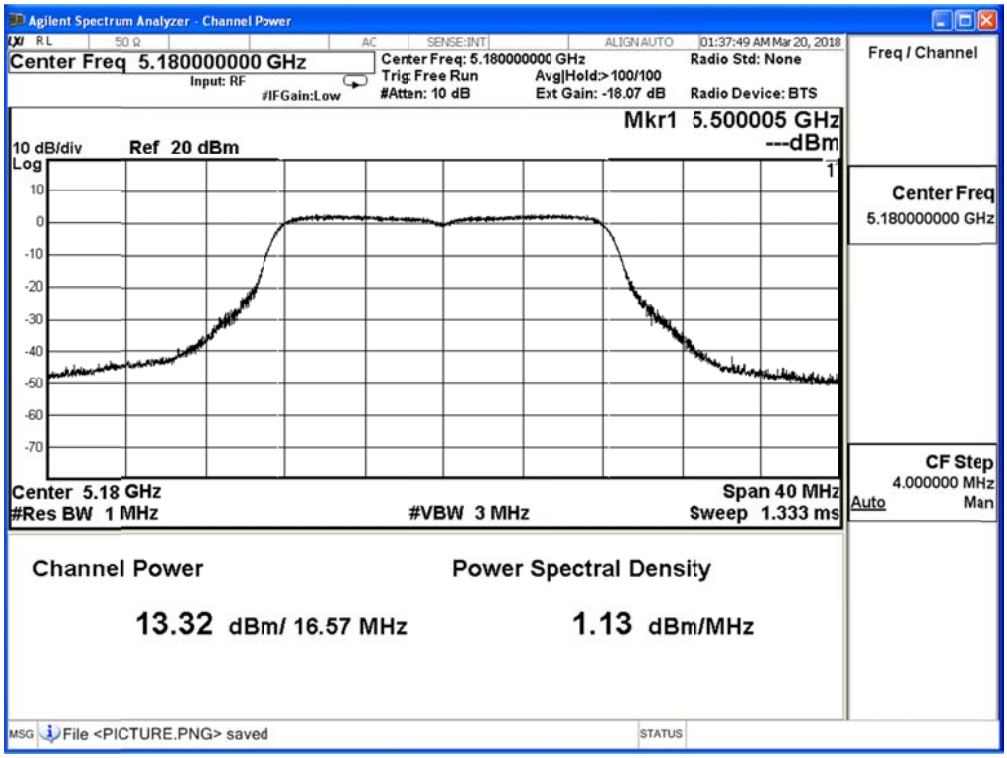
802.11a (ANT 0)

Channel No.	Frequency (MHz)	Output Power (dBm)	Required Limit (dBm)
36	5180	13.32	≤23.979
44	5220	13.33	≤23.979
48	5240	13.26	≤23.979

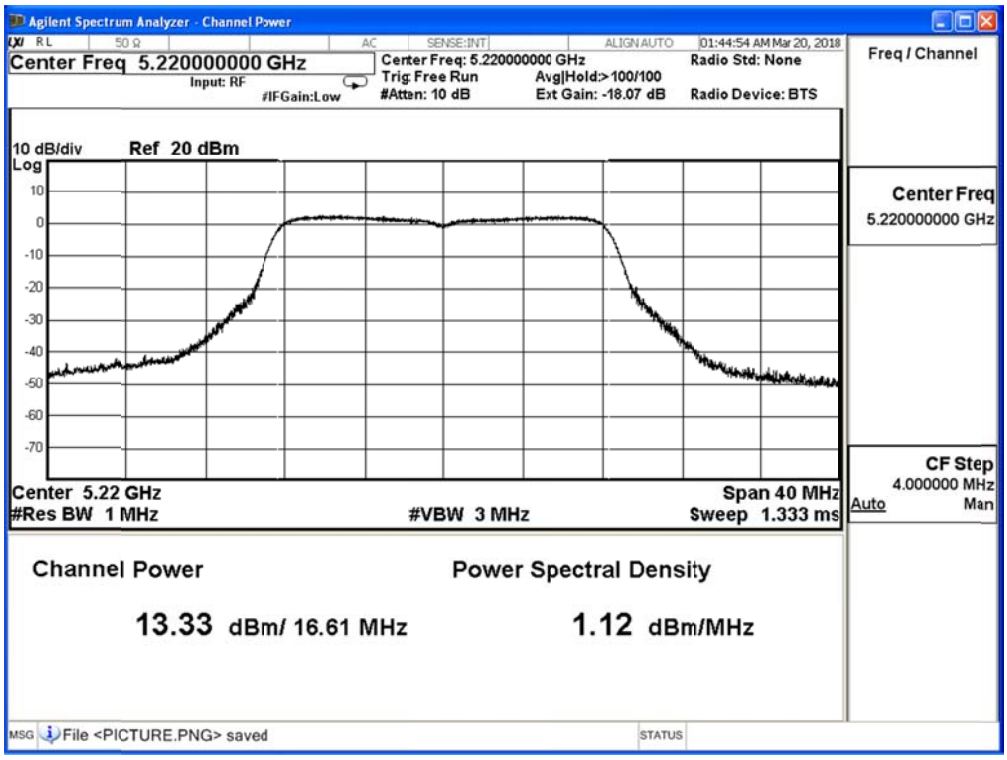
The worst emission of data rate is 6 Mbps.

Peak Power Output (dBm)									
Channel No	Frequency (MHz)	Data Rate							Required Limit
		6	12	18	24	36	48	54	
36	5180	13.320	--	--	--	--	--	--	≤23.979dBm
44	5220	13.330	13.190	13.040	12.900	12.760	12.610	12.470	
48	5240	13.260	--	--	--	--	--	--	

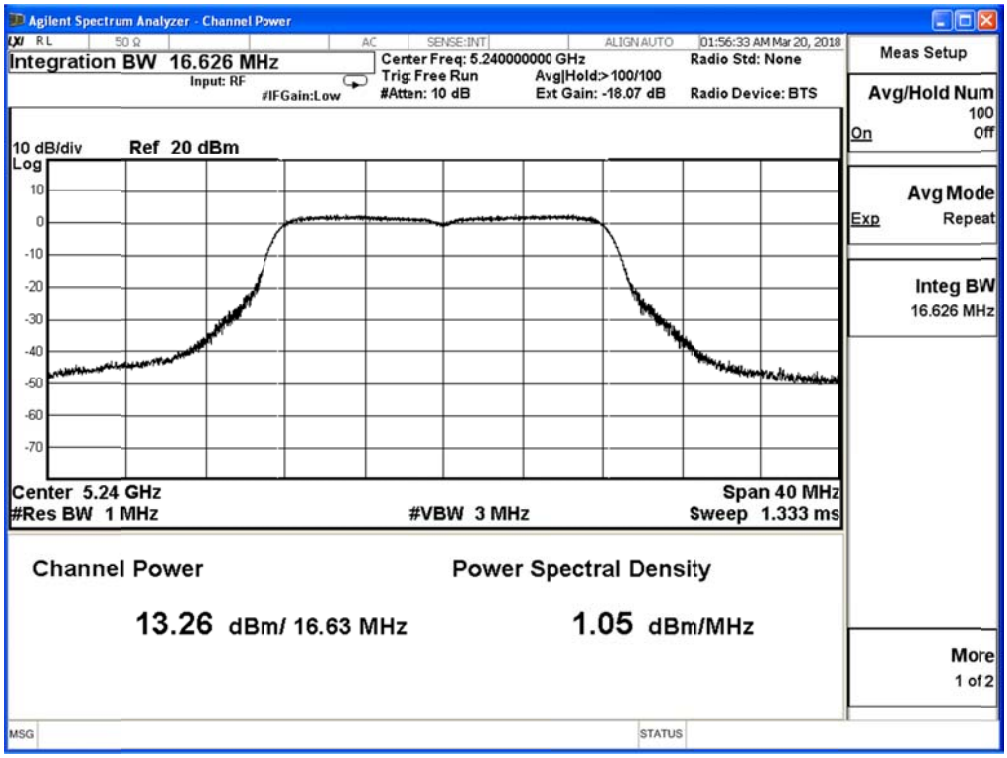
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

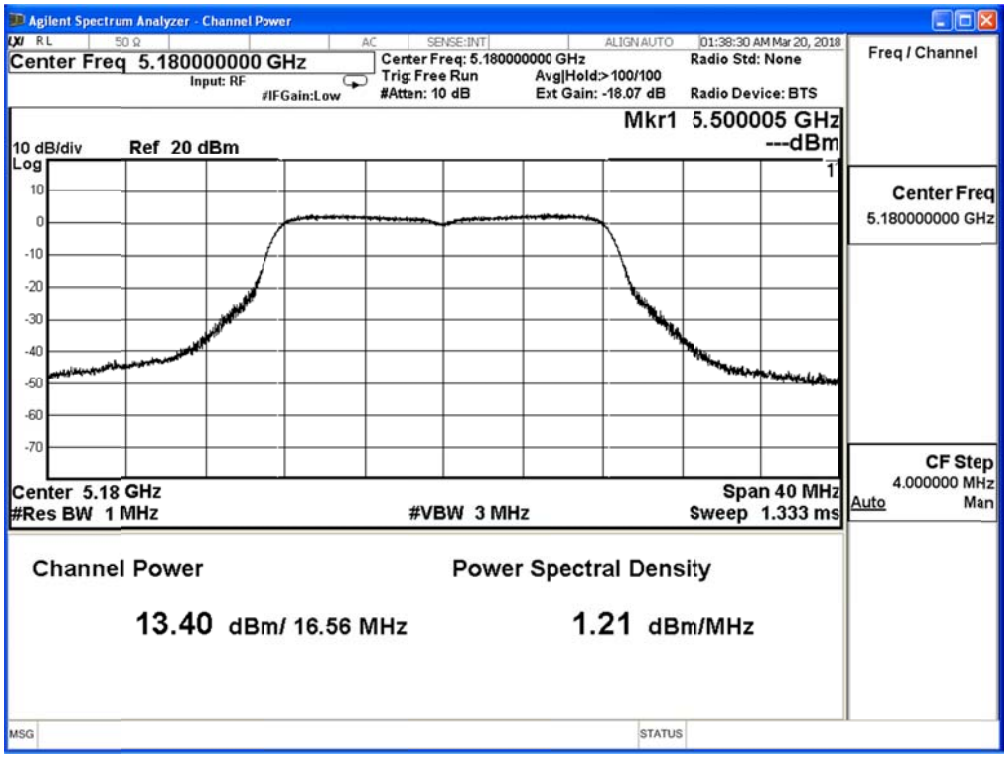
802.11a (ANT 1)

Channel No.	Frequency (MHz)	Output Power (dBm)	Required Limit (dBm)
36	5180	13.40	≤23.979
44	5220	13.27	≤23.979
48	5240	13.34	≤23.979

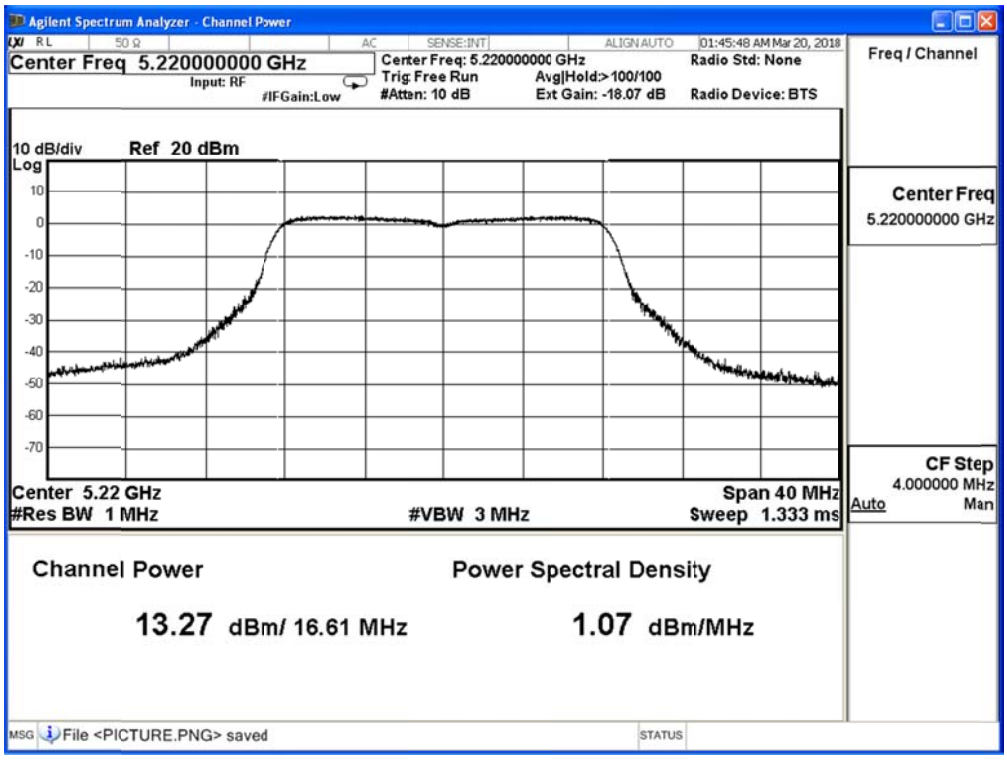
The worst emission of data rate is 6 Mbps.

Peak Power Output (dBm)									
Channel No	Frequency (MHz)	Data Rate							Required Limit
		6	12	18	24	36	48	54	
36	5180	13.400	--	--	--	--	--	--	≤23.979dBm
44	5220	13.270	13.120	12.990	12.860	12.720	12.590	12.460	
48	5240	13.340	--	--	--	--	--	--	

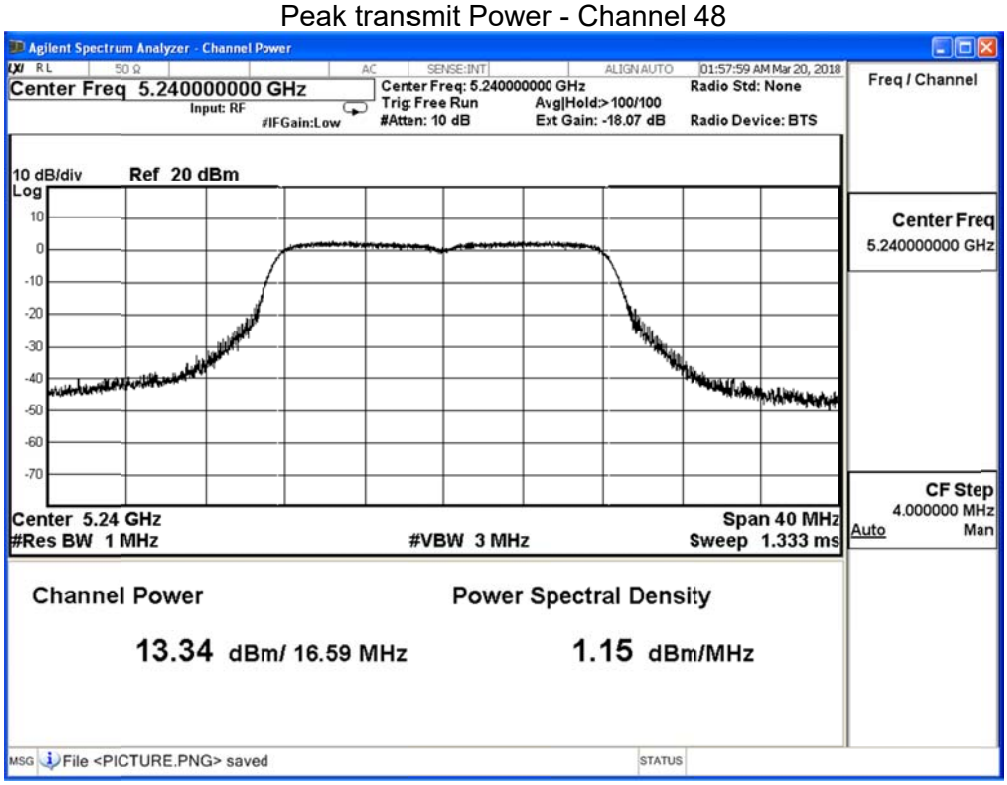
Peak transmit Power - Channel 36



Peak transmit Power - Channel 44



Peak transmit Power - Channel 48



Product	Dual-band Wireless-AC1300 USB Adapter		
Test Item	Peak Transmit Output		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2018/03/20	Test Site	SR10-H

802.11a (ANT 0+1)

Channel No.	Frequency (MHz)	Output Power (dBm)	Required Limit (dBm)
36	5180	16.370	≤23.979
44	5220	16.310	≤23.979
48	5240	16.310	≤23.979