Test Report

FCC Part15 Subpart E

Product Name	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Model No.	:	VMG8924-B10A
FCC ID	:	I88VMG8924B10A

Applicant	:	ZyXEL Communications Corporation
Address	:	No. 2, Gongye E. 9th Road Hsinchu Science Park, Hsinchu, Taiwan

Date of Receipt	:	06/09/2013
Test Date	:	09/09/2013~21/09/2013
Issued Date	:	12/10/2013
Report No.	:	139S026R-RF-US-P09V01
Report Version	:	V1.0

Test Report Certification

Issued Date : 12/10/2013
Report No. : 139S026R-RF-US-P09V01

QuieTek

Product Name	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Applicant	:	ZyXEL Communications Corporation
Address	:	No. 2, Gongye E. 9th Road Hsinchu Science Park, Hsinchu, Taiwan
Manufacturer	:	WuXi MitraStar Technology Co. Ltd.
Address	:	60#-E, Minshan Road, New district WuXi, Jiangsu, P.R.China
Model No.	:	VMG8924-B10A
FCC ID	:	I88VMG8924B10A
EUT Voltage	:	DC: 12V
Brand Name	:	ZyXEL
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart E: 2012 ANSI C63.4: 2009; KDB 789033
Test Result	:	Complied
Performed Location	:	Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392

Documented By	:	Alice Ni
Reviewed By	:	Jack zhang
Approved By	:	Jane yuan

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC**
Japan	**:**	**VCCI**
China	**:**	**CNAS**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Brand Name	ZyXEL
Model No.	VMG8924-B10A
EUT Voltage	DC 12V
Frequency Range	**For 2.4GHz Band** 802.11b/g/n(20MHz): 2412~2462MHz 802.11n(40MHz): 2422~2452MHz **For 5.0GHz Band** 802.11a/n(20MHz)/ac(20MHz): 5180~5240MHz, 5745~5825MHz 802.11n(40MHz)/ac(40MHz): 5190~5230MHz,, 5755~5795MHz 802.11ac(80MHz): 5210MHz, 5775MHz
Channel Number	For 2.4GHz Band 802.11b/g/n(20MHz): 11 802.11n(40MHz): 7 For 5.0GHz Band 802.11a /n(20MHz) /ac(20MHz): 9 802.11n(40MHz)/ac(40MHz): 4 802.11ac(80MHz): 2
Type of Modulation	802.11b: DSSS
	802.11a/g/n/ac: OFDM
Data Rate	802.11a/g: 6/9/12/18/24/36/48/54 Mbps
	802.11b: 1/2/5.5/11 Mbps
	802.11n: up to 450 Mbps
	802.11ac: up to 1299.9 Mbps
Channel Control	Auto
Antenna Delivery	2*Tx + 2*Rx for 2.4GHz 3*Tx + 3*Rx for 5GHz
Antenna Type	Printed Antenna
Peak Antenna Gain	3.7dBi for 2.4GHz, 3.0dBi for 5GHz

For 2.4GHz Band

802.11b/g/n(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz	04	2427 MHz
05	2432 MHz	06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz	N/A	N/A
802.11n(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz	N/A	N/A

For 5.0GHz Band

802.11a/n(20MHz)/ac(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	N/A	N/A	N/A	N/A	N/A	N/A
802.11n(20MHz)/ac(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
802.11ac(80MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	155	5775 MHz	N/A	N/A	N/A	N/A

Power Parameter Value of the test software

Test Mode	Test Channel	Ant 0	Ant 1	Ant 2	Ant 0+1	Ant 1+2	Ant 0+2	Ant 0+1+2
802.11a	5180	54	54	54	×	×	×	×
	5200	54	54	54	×	×	×	×
	5240	54	54	54	×	×	×	×
802.11n (20MHz)	5180	55	56	56	40	40	40	37
	5200	55	56	56	40	40	40	37
	5240	55	56	56	40	40	40	37
802.11ac (20MHz)	5180	62	58	60	42	50	50	40
	5200	58	65	60	42	50	48	42
	5240	58	65	60	42	50	48	42
802.11n (40MHz)	5190	62	62	62	48	48	48	46
	5230	62	62	62	48	48	48	46
802.11ac (40MHz)	5190	60	54	54	49	50	50	40
	5230	66	62	62	54	50	50	42
802.11ac (80MHz)	5210	60	48	48	48	50	52	42

The test mode of the test software can support.

Test Mode	Ant 0	Ant 1	Ant 2	Ant 0+1	Ant 1+2	Ant 0+2	Ant 0+1+2
802.11a	√	√	√	×	×	×	×
802.11n(20MHz)	√	√	√	√	√	√	√
802.11ac(20MHz)	√	√	√	√	√	√	√
802.11n(40MHz	√	√	√	√	√	√	√
802.11ac(40MHz)	√	√	√	√	√	√	√
802.11ac(80MHz)	√	√	√	√	√	√	√

Duty Cycle

Test Mode	Duty Cycle
802.11a	95%
802.11n(20MHz)	93%
802.11ac(20MHz)	98%
802.11n(40MHz)	94%
802.11ac(40MHz)	97%
802.11ac(80MHz)	94%

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit by 802.11 a
Mode 2: Transmit by 802.11n(20MHz)
Mode 3: Transmit by 802.11ac(20MHz)
Mode 4: Transmit by 802.11n(40MHz)
Mode 5: Transmit by 802.11ac(40MHz)
Mode 6: Transmit by 802.11ac(80MHz)

Note:

1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

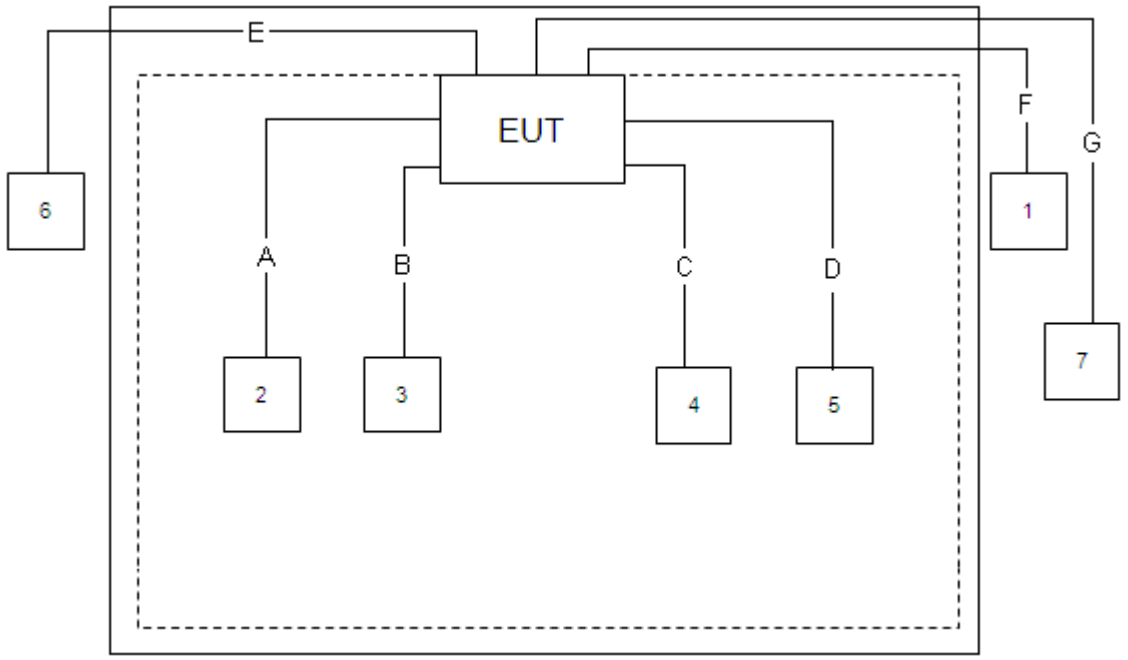
1.3. Tested System Details

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.	Power Cord
1	Notebook	Dell	PP19L	JH097A01	Non-Shielded, 1.8m
2	USB 3.0 Hard Disc Drive	Lenovo	F360	OA0503512400231	Power by EUT
3	USB 3.0 Hard Disc Drive	Lenovo	F360	OA0503512400230	Power by EUT
4	Phone	PHILIPS	HCD1888(20)TSD	3072420	Power by Battery
5	Phone	PHILIPS	HCD1888(20)TSD	1102205	Power by Battery
6	Switchboard	ZyXEL	VES-1624FT-55A	S0302510094S1	Non-Shielded, 0.8m
7	Router	D-Link	DLR-605	PK11496006143	Non-Shielded, 1.8m

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 0.5m
B	USB Cable	Shielded, 0.5m
C	Telecom Cable	Non-shielded, 1.0m
D	Telecom Cable	Non-shielded, 1.0m
E	Telecom Cable	Non-shielded, >10m
F	LAN Cable	Non-shielded, >10m
G	LAN Cable	Non-shielded, >10m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Run the RF test software “MTool”, and set the test mode and channel, then press OK to start continue Transmit or receive.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart E: 2012 Section 15.207	Yes	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart E: 2012 Section 15.209	Yes	No
Operation Frequency Range of 20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart E: 2012 15.215(c)	Yes	No
26dB Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart E: 2012 Section 15.407(a)	Yes	No
Power Output	FCC CFR Title 47 Part 15 Subpart E: 2012 Section 15.407(a)	Yes	No
Peak Power Spectral Density	FCC CFR Title 47 Part 15 Subpart E: 2012 Section 15.407(a)	Yes	No
Peak Excursion	FCC CFR Title 47 Part 15 Subpart E: 2012 Section 15.407(a)(6)	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart E: 2012 Section 15.205, 15.407(b)	Yes	No
Frequency Stability	FCC CFR Title 47 Part 15 Subpart E: 2012 Section 15.407(g)	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission

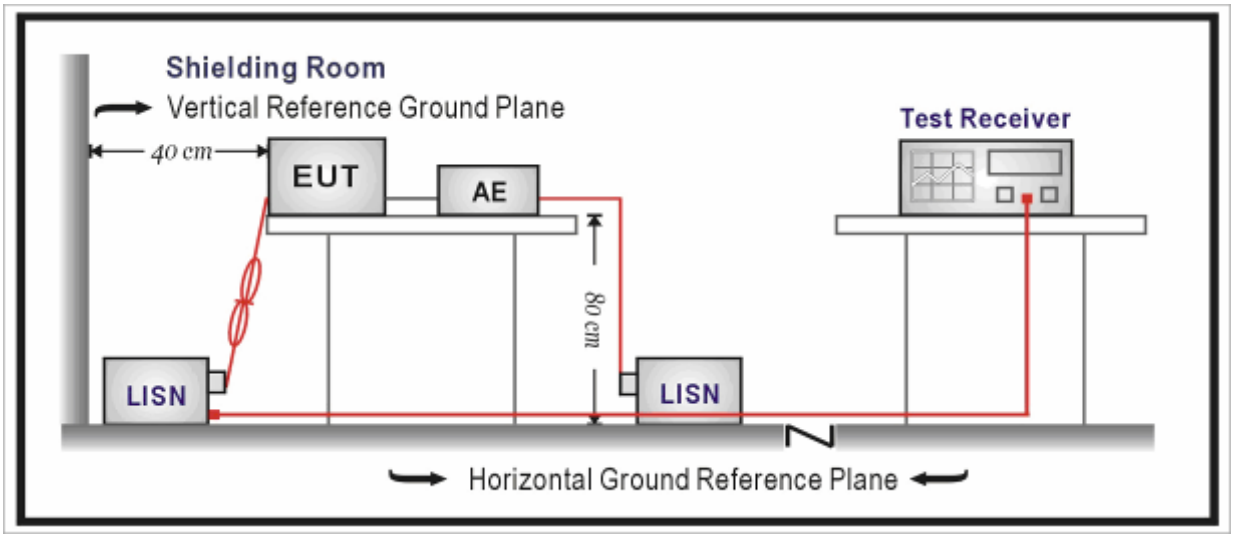
3.1. Test Equipment

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
EMI Test Receiver	R&S	ESCI	100726	2014.01.07
Two-Line V-Network	R&S	ENV216	100043	2014.03.30
Two-Line V-Network	R&S	ENV216	100044	2014.09.16
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2014.03.01
50ohm Termination	SHX	TF2	07081401	2014.09.16
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2014.01.10

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

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

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009.

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.

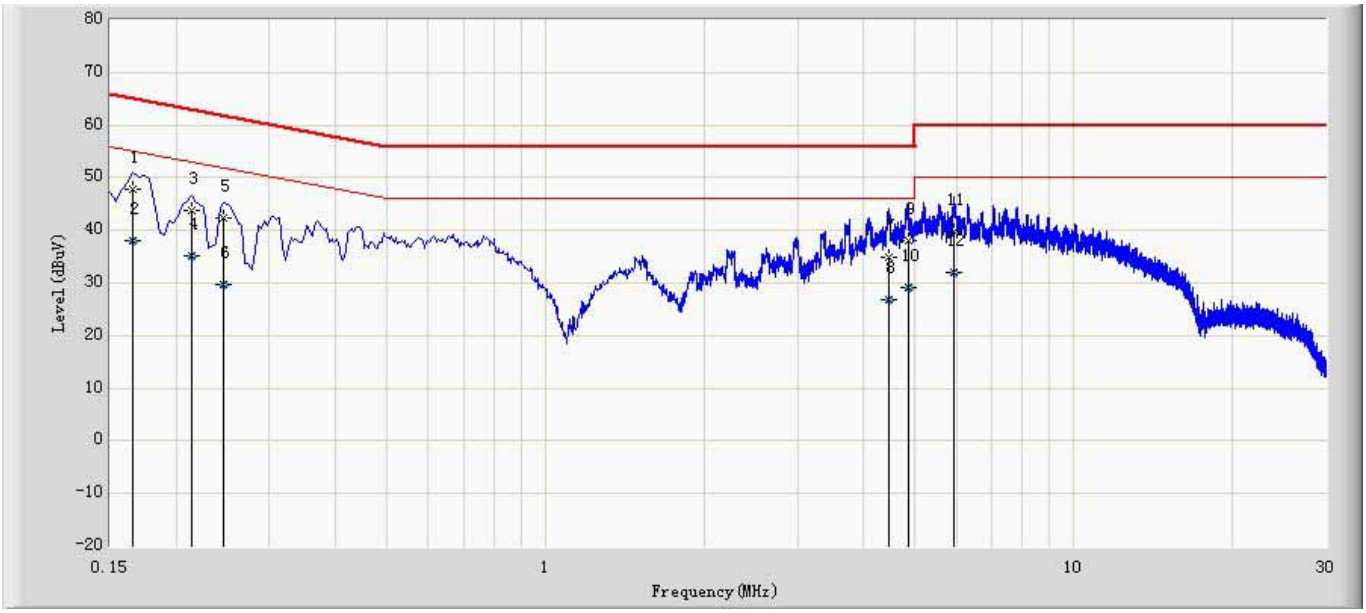
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

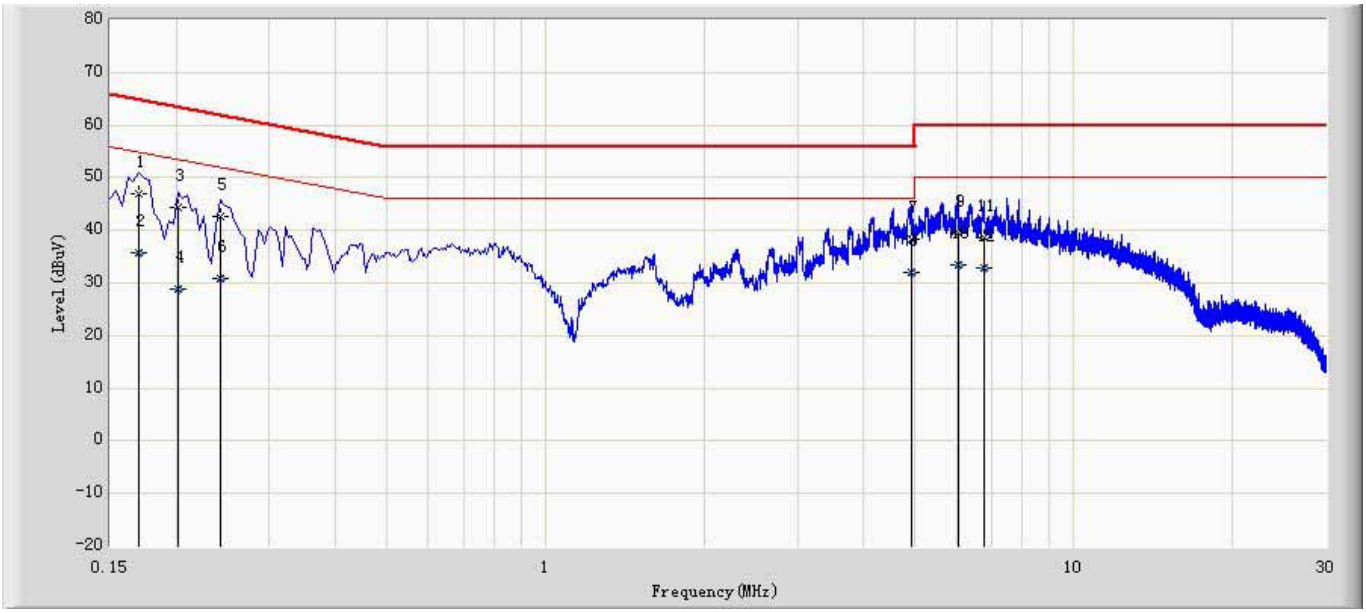
3.6. Test Result

Engineer: Milo	
Site: TR1	Time: 2013/09/11 - 19:09
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-N	Polarity: Neutral
EUT: Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD	Power: AC 120V/60Hz
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.166	47.716	37.867	-17.442	65.158	9.848	QP
2		0.166	38.116	28.267	-17.043	55.158	9.848	AV
3		0.214	43.779	33.917	-19.269	63.049	9.862	QP
4		0.214	35.045	25.183	-18.004	53.049	9.862	AV
5		0.246	42.329	32.462	-19.562	61.891	9.867	QP
6		0.246	29.810	19.943	-22.081	51.891	9.867	AV
7		4.462	34.799	24.951	-21.201	56.000	9.848	QP
8		4.462	26.766	16.918	-19.234	46.000	9.848	AV
9		4.862	38.023	28.163	-17.977	56.000	9.860	QP
10	*	4.862	29.150	19.290	-16.850	46.000	9.860	AV
11		5.930	39.881	29.987	-20.119	60.000	9.894	QP
12		5.930	31.873	21.979	-18.127	50.000	9.894	AV

Engineer: Milo	
Site: TR1	Time: 2013/09/11 - 19:16
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-L1	Polarity: Line
EUT: Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD	Power: AC 120V/60Hz
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.170	46.816	36.965	-18.145	64.960	9.851	QP
2		0.170	35.752	25.901	-19.208	54.960	9.851	AV
3		0.202	44.306	34.445	-19.222	63.528	9.860	QP
4		0.202	28.917	19.057	-24.611	53.528	9.860	AV
5		0.242	42.547	32.681	-19.480	62.027	9.866	QP
6		0.242	30.990	21.124	-21.038	52.027	9.866	AV
7		4.918	38.245	28.385	-17.755	56.000	9.860	QP
8	*	4.918	32.142	22.282	-13.858	46.000	9.860	AV
9		6.038	39.386	29.490	-20.614	60.000	9.896	QP
10		6.038	33.446	23.550	-16.554	50.000	9.896	AV
11		6.770	38.533	28.607	-21.467	60.000	9.926	QP
12		6.770	32.767	22.841	-17.233	50.000	9.926	AV

4. Radiated Emission

4.1. Test Equipment

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
EMI Test Receiver	R&S	ESCI	100573	2014.03.30
Loop Antenna	R&S	HFH2-Z2	833799/003	2013.11.17
Bilog Chainenna	Teseq GmbH	CBL6112D	27611	2013.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2014.01.09

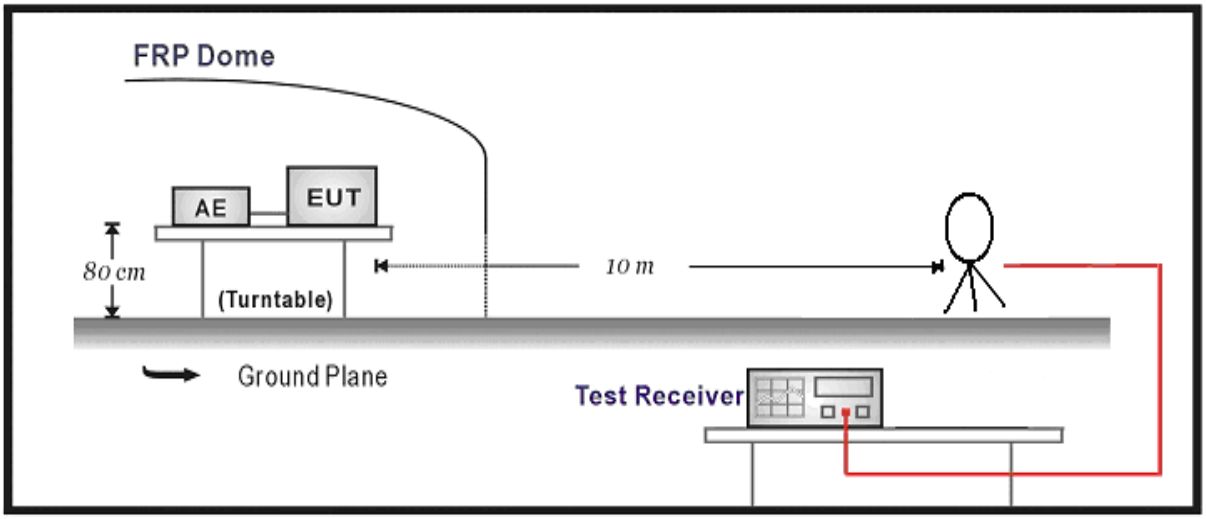
Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2014.03.30
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014.01.21
Preamplifier	Miteq	NSP1800-25	1364185	2014.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2014.05.04
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2014.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2014.01.11

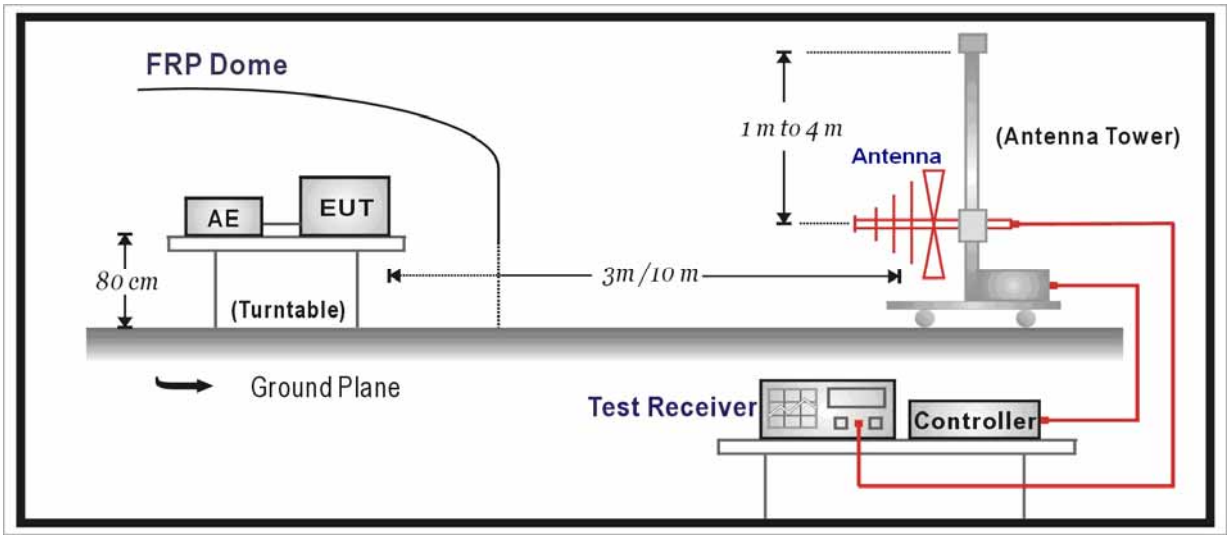
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

4.2. Test Setup

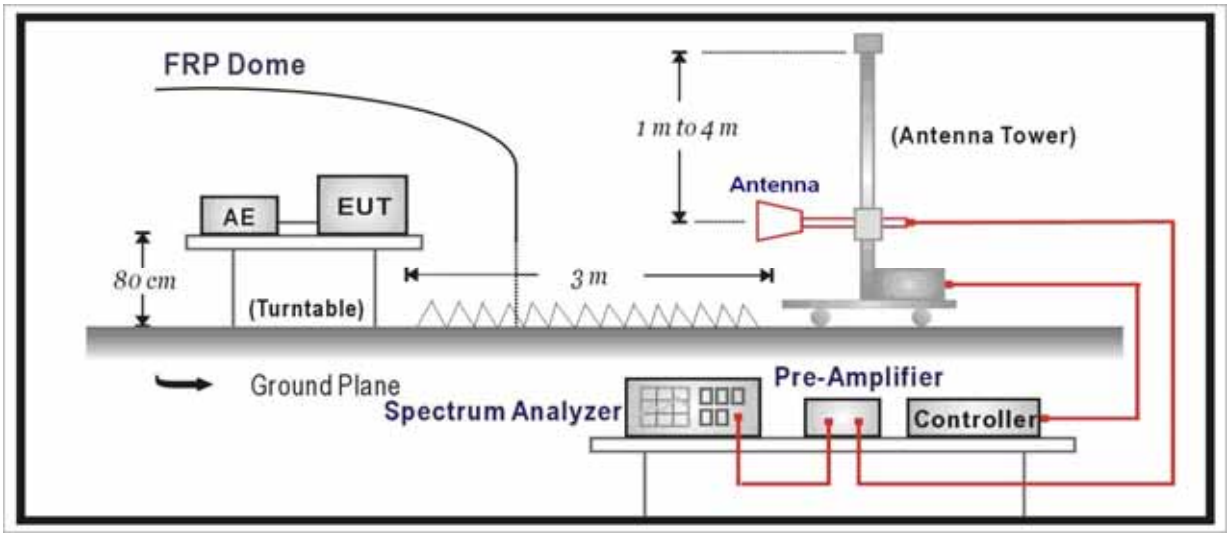
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument Chainenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4 2009 & KDB 789033.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from Chainenna to the EUT was 3 meters.

The Chainenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the Chainenna. In order to find

the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn Chainenna will be bended down a little (as horn Chainenna has the narrow beamwidth) in order to keeping the Chainenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60~10 degrees for H-plane and 90~10 degrees for E-plane.

4.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB

below 1G is defined as ± 3.8 dB

4.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Mode1: Transmit by 802.11a

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0	36	H	10357.5	37.9	6.2	44.1	54	-9.9	AV
		H	10358.5	49.2	6.2	55.4	74	-18.6	PK
		H	15543.5	39.9	9.8	49.7	54(Note3)	-4.3	PK
		V	10358.5	52.5	6.2	58.7	74	-15.3	PK
		V	10359.0	41.4	6.2	47.6	54	-6.4	AV
		V	15535.0	39.5	9.5	49.0	54(Note3)	-5.0	PK
	44	H	10435.0	45.8	6.3	52.1	54(Note3)	-1.9	PK
		H	15654.0	39.8	9.9	49.7	54(Note3)	-4.3	PK
		V	10439.3	39.2	6.3	45.5	54	-8.5	AV
		V	10443.5	50.0	6.3	56.3	74	-17.7	PK
		V	15654.0	40.0	9.8	49.8	54(Note3)	-4.2	PK
	48	H	10477.5	46.1	6.4	52.5	54(Note3)	-1.5	PK
		H	15713.5	38.3	10.0	48.3	54(Note3)	-5.7	PK
		V	10486.0	50.2	6.4	56.6	74	-17.4	PK
		V	10488.5	39.0	6.4	45.4	54	-8.6	AV
		V	15713.5	39.9	9.9	49.8	54(Note3)	-4.2	PK
Ant 1	36	H	10358.5	45.4	6.2	51.6	54(Note3)	-2.4	PK
		H	15543.5	37.6	9.8	47.4	54(Note3)	-6.6	PK
		V	10357.0	41.0	6.2	47.2	54	-6.8	AV
		V	10358.5	51.8	6.2	58.0	74	-16.0	PK
		V	15540.0	36.2	9.5	45.7	54(Note3)	-8.3	PK
	44	H	10435.0	44.1	6.3	50.4	54(Note3)	-3.6	PK
		H	15662.5	36.4	9.9	46.3	54(Note3)	-7.7	PK
		V	10442.5	39.5	6.3	45.8	54	-8.2	AV
		V	10443.5	49.0	6.3	55.3	74	-18.7	PK
		V	15654.0	37.6	9.8	47.4	54(Note3)	-6.6	PK
	48	H	10477.5	43.0	6.4	49.4	54(Note3)	-4.6	PK

		H	15720.0	35.4	10.0	45.4	54(Note3)	-8.6	PK
		V	10477.5	49.3	6.4	55.7	74	-18.3	PK
		V	10478.0	38.2	6.4	44.6	54	-9.4	AV
		V	15720.0	37.0	9.9	46.9	54(Note3)	-7.1	PK
Ant 2	36	H	10358.5	46.5	6.2	52.7	54(Note3)	-1.3	PK
		H	15535.0	37.1	9.7	46.8	54(Note3)	-7.2	PK
		V	10358.5	52.7	6.2	58.9	54(Note3)	4.9	PK
		V	15540.0	37.2	9.5	46.7	54(Note3)	-7.3	PK
	44	H	10443.5	44.4	6.3	50.7	54(Note3)	-3.3	PK
		H	15662.5	38.0	9.9	47.9	54(Note3)	-6.1	PK
		V	10435.0	49.7	6.3	56.0	74	-18.0	PK
		V	10437.5	38.4	6.3	44.7	54	-9.3	AV
		V	15671.0	39.1	9.8	48.9	54(Note3)	-5.1	PK
	48	H	10477.5	44.7	6.4	51.1	54(Note3)	-2.9	PK
		H	15720.0	35.9	10.0	45.9	54(Note3)	-8.1	PK
		V	10477.5	49.4	6.4	55.8	74	-18.2	PK
		V	10479.5	38.2	6.4	44.6	54	-9.4	AV
		V	15720.0	37.5	9.9	47.4	54(Note3)	-6.6	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode2: Transmit by 802.11n(20MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0	36	H	10358.5	50.1	6.2	56.3	74	-17.7	PK
		H	10361.0	38.3	6.2	44.5	54	-9.5	AV
		H	15543.5	39.7	9.8	49.5	54(Note3)	-4.5	PK
		V	10358.5	51.7	6.2	57.9	74	-16.1	PK
		V	10361.0	39.7	6.2	45.9	54	-8.1	AV
		V	15543.5	40.4	9.5	49.9	54(Note3)	-4.1	PK
	44	H	10435.0	46.1	6.3	52.4	54(Note3)	-1.6	PK
		H	15654.0	39.2	9.9	49.1	54(Note3)	-4.9	PK

		V	10443.5	48.5	6.3	54.8	74	-19.2	PK
		V	10445.0	36.6	6.3	42.9	54	-11.1	AV
		V	15654.0	39.6	9.8	49.4	54(Note3)	-4.6	PK
	48	H	10477.5	45.5	6.4	51.9	54(Note3)	-2.1	PK
		H	15713.5	36.7	10.0	46.7	54(Note3)	-7.3	PK
		V	10477.5	48.8	6.4	55.2	74	-18.8	PK
		V	10479.7	37.2	6.4	43.6	54	-10.4	AV
		V	15713.5	40.1	9.9	50.0	54(Note3)	-4.0	PK
Ant 1	36	H	10358.5	46.4	6.2	52.6	54(Note3)	-1.4	PK
		H	15535.0	37.8	9.7	47.5	54(Note3)	-6.5	PK
		V	10357.0	39.2	6.2	45.4	54	-8.6	AV
		V	10358.5	51.6	6.2	57.8	74	-16.2	PK
		V	15540.0	36.8	9.5	46.3	54(Note3)	-7.7	PK
	44	H	10435.0	43.1	6.3	49.4	54(Note3)	-4.6	PK
		H	15662.5	37.4	9.9	47.3	54(Note3)	-6.7	PK
		V	10442.8	37.0	6.3	43.3	54	-10.7	AV
		V	10443.5	48.7	6.3	55.0	74	-19.0	PK
		V	15654.0	37.6	9.8	47.4	54(Note3)	-6.6	PK
	48	H	10477.5	43.4	6.4	49.8	54(Note3)	-4.2	PK
		H	15720.0	35.6	10.0	45.6	54(Note3)	-8.4	PK
		V	10477.5	47.1	6.4	53.5	54(Note3)	-0.5	PK
		V	15720.0	35.5	9.9	45.4	54(Note3)	-8.6	PK
Ant 2	36	H	10358.5	46.9	6.2	53.1	54(Note3)	-0.9	PK
		H	15543.5	37.5	9.8	47.3	54(Note3)	-6.7	PK
		V	10358.5	51.2	6.2	57.4	74	-16.6	PK
		V	10360.5	38.9	6.2	45.1	54	-8.9	AV
		V	15543.5	38.6	9.5	48.1	54(Note3)	-5.9	PK
	44	H	10443.5	43.7	6.3	50.0	54(Note3)	-4.0	PK
		H	15671.0	38.0	9.9	47.9	54(Note3)	-6.1	PK
		V	10442.5	38.4	6.3	44.7	54	-9.3	AV
		V	10443.5	48.8	6.3	55.1	74	-18.9	PK
		V	15560.0	35.2	9.5	44.7	54(Note3)	-9.3	PK
	48	H	10477.5	43.7	6.4	50.1	54(Note3)	-3.9	PK
		H	15720.0	36.4	10.0	46.4	54(Note3)	-7.6	PK
		V	10477.5	49.2	6.4	55.6	74	-18.4	PK
		V	10479.5	39.0	6.4	45.4	54	-8.6	AV
		V	15720.0	37.1	9.9	47.0	54(Note3)	-7.0	PK

Ant 0+1	36	H	10367.0	46.6	6.2	52.8	54(Note3)	-1.2	PK
		H	15526.5	38.7	9.7	48.4	54(Note3)	-5.6	PK
		V	10358.5	52.5	6.2	58.7	74	-15.3	PK
		V	10358.9	37.9	6.2	44.1	54	-9.9	AV
		V	15540.0	35.5	9.5	45.0	54(Note3)	-9.0	PK
	44	H	10435.0	44.6	6.3	50.9	54(Note3)	-3.1	PK
		H	15560.0	34.7	9.8	44.5	54(Note3)	-9.5	PK
		V	10442.5	36.2	6.3	42.5	54	-11.5	AV
		V	10443.5	48.7	6.3	55.0	74	-19.0	PK
		V	15560.0	35.1	9.5	44.6	54(Note3)	-9.4	PK
	48	H	10477.5	44.9	6.4	51.3	54(Note3)	-2.7	PK
		H	15720.0	34.7	10.0	44.7	54(Note3)	-9.3	PK
		V	10477.5	48.7	6.4	55.1	74	-18.9	PK
		V	10479.5	36.4	6.4	42.8	54	-11.2	AV
		V	15720.0	36.4	9.9	46.3	54(Note3)	-7.7	PK
Ant 1+2	36	H	10360.0	37.3	6.2	43.5	54(Note3)	-10.5	PK
		H	15540.0	34.4	9.8	44.2	54(Note3)	-9.8	PK
		V	10341.5	48.6	6.2	54.8	74	-19.2	PK
		V	10360.2	41.4	6.2	47.6	54	-6.4	AV
		V	15540.0	34.6	9.5	44.1	54(Note3)	-9.9	PK
	44	H	10443.5	42.5	6.3	48.8	54(Note3)	-5.2	PK
		H	15660.0	35.8	9.9	45.7	54(Note3)	-8.3	PK
		V	10435.0	50.0	6.3	56.3	74	-17.7	PK
		V	10440.3	40.3	6.3	46.6	54	-7.4	AV
		V	15660.0	35.2	9.8	45.0	54(Note3)	-9.0	PK
	48	H	10469.0	43.0	6.4	49.4	54(Note3)	-4.6	PK
		H	15720.0	34.3	10.0	44.3	54(Note3)	-9.7	PK
		V	10477.5	48.8	6.4	55.2	74	-18.8	PK
		V	10480.4	40.2	6.4	46.6	54	-7.4	AV
		V	15720.0	34.6	9.9	44.5	54(Note3)	-9.5	PK
Ant 0+2	36	H	10358.5	47.8	6.2	54.0	74	-20.0	PK
		H	10360.1	38.1	6.2	44.3	54	-9.7	AV
		H	15540.0	36.3	9.8	46.1	54(Note3)	-7.9	PK
		V	10367.0	52.8	6.2	59.0	74	-15.0	PK
		V	10380.3	41.4	6.2	47.6	54	-6.4	AV
		V	15540.0	37.5	9.5	47.0	54(Note3)	-7.0	PK
	44	H	10435.0	46.0	6.3	52.3	54(Note3)	-1.7	PK

		H	15660.0	36.7	9.9	46.6	54(Note3)	-7.4	PK
		V	10435.0	50.1	6.3	56.4	74	-17.6	PK
		V	10440.3	40.3	6.3	46.6	54	-7.4	AV
		V	15660.0	37.2	9.8	47.0	54(Note3)	-7.0	PK
	48	H	10477.5	45.8	6.4	52.2	54(Note3)	-1.8	PK
		H	15720.0	35.6	10.0	45.6	54(Note3)	-8.4	PK
		V	10477.5	49.4	6.4	55.8	74	-18.2	PK
		V	10480.1	40.3	6.4	46.7	54	-7.3	AV
		V	15720.0	36.5	9.9	46.4	54(Note3)	-7.6	PK
Ant 0+1+2	36	H	10358.5	49.8	6.2	56.0	74	-18.0	PK
		H	10360.0	40.2	6.2	46.4	54	-7.6	AV
		H	15540.0	38.1	9.8	47.9	54(Note3)	-6.1	PK
		V	10358.5	54.1	6.2	60.3	74	-13.7	PK
		V	10360.1	41.3	6.2	47.5	54	-6.5	AV
		V	15540.0	36.8	9.5	46.3	54(Note3)	-7.7	PK
	44	H	10443.5	46.6	6.3	52.9	54(Note3)	-1.1	PK
		H	15660.0	36.8	9.9	46.7	54(Note3)	-7.3	PK
		V	10435.0	51.8	6.3	58.1	74	-15.9	PK
		V	10440.0	41.3	6.3	47.6	54	-6.4	AV
		V	15660.0	37.5	9.8	47.3	54(Note3)	-6.7	PK
	48	H	10480.0	40.2	6.4	46.6	54	-7.4	AV
		H	10486.0	48.6	6.4	55.0	74	-19.0	PK
		H	15720.0	36.0	10.0	46.0	54(Note3)	-8.0	PK
		V	10481.2	50.3	6.4	56.7	74	-17.3	PK
		V	10480.1	41.3	6.4	47.7	54	-6.3	AV
		V	15720.0	36.0	9.9	45.9	54(Note3)	-8.1	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode3: Transmit by 802.11ac(20MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector

Ant 0	36	H	10360.0	39.8	6.2	46.0	54	-8.0	AV
		H	10367.0	51.2	6.2	57.4	74	-16.6	PK
		H	15543.5	43.9	9.8	53.7	54(Note4)	-0.3	PK
		V	10358.5	53.6	6.2	59.8	74	-14.2	PK
		V	10360.1	42.1	6.2	48.3	54	-5.7	AV
		V	15543.5	39.8	9.5	49.3	54(Note3)	-4.7	PK
	44	H	10435.0	49.8	6.3	56.1	74	-17.9	PK
		H	10440.1	39.1	6.3	45.4	54	-8.6	AV
		H	15645.5	42.4	9.8	52.2	54(Note3)	-1.8	PK
		V	10435.0	49.4	6.3	55.7	74	-18.3	PK
		V	10440.0	38.7	6.3	45.0	54	-9.0	AV
		V	15662.5	39.9	9.8	49.7	54(Note3)	-4.3	PK
	48	H	10477.5	47.3	6.4	53.7	54(Note3)	-0.3	PK
		H	15713.5	38.6	10.0	48.6	54(Note3)	-5.4	PK
		V	10477.5	48.6	6.4	55.0	74	-19.0	PK
		V	10480.0	37.9	6.4	44.3	54	-9.7	AV
		V	15722.0	41.0	9.9	50.9	54(Note3)	-3.1	PK
Ant 1	36	H	10358.5	49.0	6.2	55.2	74	-18.8	PK
		H	10360.2	39.8	6.2	46.0	54	-8.0	AV
		H	15543.5	39.2	9.8	49.0	54(Note3)	-5.0	PK
		V	10360.6	42.6	6.2	48.8	54	-5.2	AV
		V	10367.0	52.7	6.2	58.9	74	-15.1	PK
		V	15535.0	37.6	9.5	47.1	54(Note3)	-6.9	PK
	44	H	10435.0	44.4	6.3	50.7	54(Note3)	-3.3	PK
		H	15645.5	38.2	9.8	48.0	54(Note3)	-6.0	PK
		V	10435.0	50.3	6.3	56.6	74	-17.4	PK
		V	10440.1	40.4	6.3	46.7	54	-7.3	AV
		V	15660.0	34.8	9.8	44.6	54(Note3)	-9.4	PK
	48	H	10477.5	44.1	6.4	50.5	54(Note3)	-3.5	PK
		H	15713.5	37.1	10.0	47.1	54(Note3)	-6.9	PK
		V	10477.5	48.8	6.4	55.2	74	-18.8	PK
		V	10480.3	39.7	6.4	46.1	54	-7.9	AV
		V	15720.0	35.4	9.9	45.3	54(Note3)	-8.7	PK
Ant 2	36	H	10358.5	50.5	6.2	56.7	74	-17.3	PK
		H	10359.9	42.6	6.2	48.8	54	-5.2	AV
		H	15543.5	40.1	9.8	49.9	54(Note3)	-4.1	PK
		V	10360.0	43.1	6.2	49.3	54	-4.7	AV

		V	10367.0	56.3	6.2	62.5	74	-11.5	PK
		V	15540.0	36.9	9.5	46.4	54(Note3)	-7.6	PK
	44	H	10440.2	41.6	6.3	47.9	54	-6.1	AV
		H	10443.5	49.1	6.3	55.4	74	-18.6	PK
		H	15671.0	41.1	9.9	51.0	54(Note3)	-3.0	PK
		V	10440.3	41.6	6.3	47.9	54	-6.1	AV
		V	10443.5	51.1	6.3	57.4	74	-16.6	PK
		V	15671.0	39.7	9.8	49.5	54(Note3)	-4.5	PK
	48	H	10486.0	47.5	6.4	53.9	54(Note3)	-0.1	PK
		H	15720.0	37.0	10.0	47.0	54(Note3)	-7.0	PK
		V	10477.5	50.8	6.4	57.2	74	-16.8	PK
		V	10480.3	41.5	6.4	47.9	54	-6.1	AV
		V	15720.0	37.7	9.9	47.6	54(Note3)	-6.4	PK
Ant 0+1	36	H	10358.5	49.2	6.2	55.4	74	-18.6	PK
		H	10360.1	40.1	6.2	46.3	54	-7.7	AV
		H	15543.5	41.1	9.8	50.9	54(Note3)	-3.1	PK
		V	10358.5	54.8	6.2	61.0	74	-13.0	PK
		V	10360.2	44.3	6.2	50.5	54	-3.5	AV
		V	15535.0	38.0	9.5	47.5	54(Note3)	-6.5	PK
	44	H	10443.5	46.6	6.3	52.9	54(Note3)	-1.1	PK
		H	15662.5	39.5	9.9	49.4	54(Note3)	-4.6	PK
		V	10435.0	50.6	6.3	56.9	74	-17.1	PK
		V	10440.1	41.3	6.3	47.6	54	-6.4	AV
		V	15671.0	38.2	9.8	48.0	54(Note3)	-6.0	PK
	48	H	10486.0	46.3	6.4	52.7	54(Note3)	-1.3	PK
		H	15720.0	36.5	10.0	46.5	54(Note3)	-7.5	PK
		V	10480.1	42.3	6.4	48.7	54	-5.3	AV
		V	10486.0	51.4	6.4	57.8	74	-16.2	PK
		V	15720.0	36.8	9.9	46.7	54(Note3)	-7.3	PK
Ant 1+2	36	H	10358.5	49.0	6.2	55.2	74	-18.8	PK
		H	10379.4	40.2	6.2	46.4	54	-7.6	AV
		H	15543.5	39.5	9.8	49.3	54(Note3)	-4.7	PK
		V	10358.5	53.2	6.2	59.4	74	-14.6	PK
		V	10380.1	44.7	6.2	50.9	54	-3.1	AV
		V	15540.0	36.1	9.5	45.6	54(Note3)	-8.4	PK
	44	H	10435.0	46.1	6.3	52.4	54(Note3)	-1.6	PK
		H	15662.5	39.6	9.9	49.5	54(Note3)	-4.5	PK

		V	10435.0	51.4	6.3	57.7	74	-16.3	PK
		V	10440.0	41.5	6.3	47.8	54	-6.2	AV
		V	15662.5	37.1	9.8	46.9	54(Note3)	-7.1	PK
	48	H	10477.5	45.5	6.4	51.9	54(Note3)	-2.1	PK
		H	15720.0	35.9	10.0	45.9	54(Note3)	-8.1	PK
		V	10480.2	41.7	6.4	48.1	54	-5.9	AV
		V	10486.0	49.5	6.4	55.9	74	-18.1	PK
		V	15720.0	36.7	9.9	46.6	54(Note3)	-7.4	PK
Ant 0+2	36	H	10358.5	50.9	6.2	57.1	74	-16.9	PK
		H	10360.3	41.3	6.2	47.5	54	-6.5	AV
		H	15543.5	38.9	9.8	48.7	54(Note3)	-5.3	PK
		V	10358.5	57.0	6.2	63.2	74	-10.8	PK
		V	10360.3	45.3	6.2	51.5	54	-2.5	AV
		V	15543.5	38.3	9.5	47.8	54(Note3)	-6.2	PK
	44	H	10440.3	39.6	6.3	45.9	54	-8.1	AV
		H	10443.5	49.5	6.3	55.8	74	-18.2	PK
		H	15660.0	36.8	9.9	46.7	54(Note3)	-7.3	PK
		V	10440.0	42.3	6.3	48.6	54	-5.4	AV
		V	10443.5	52.6	6.3	58.9	74	-15.1	PK
		V	15662.5	38.7	9.8	48.5	54(Note3)	-5.5	PK
	48	H	10486.0	47.5	6.4	53.9	54(Note3)	-0.1	PK
		H	15713.5	38.9	10.0	48.9	54(Note3)	-5.1	PK
		V	10477.5	51.1	6.4	57.5	74	-16.5	PK
		V	10480.6	41.3	6.4	47.7	54	-6.3	AV
		V	15720.0	38.4	9.9	48.3	54(Note3)	-5.7	PK
Ant 0+1+2	36	H	10360.3	41.3	6.2	47.5	54	-6.5	AV
		H	10367.0	50.4	6.2	56.6	74	-17.4	PK
		H	15540.0	39.1	9.8	48.9	54(Note3)	-5.1	PK
		V	10350.0	54.5	6.2	60.7	74	-13.3	PK
		V	10360.5	44.7	6.2	50.9	54	-3.1	AV
		V	15540.0	36.7	9.5	46.2	54(Note3)	-7.8	PK
	44	H	10443.5	45.9	6.3	52.2	54(Note3)	-1.8	PK
		H	15660.0	34.8	9.9	44.7	54(Note3)	-9.3	PK
		V	10440.3	39.9	6.3	46.2	54	-7.8	AV
		V	10443.5	49.2	6.3	55.5	74	-18.5	PK
		V	15560.0	34.0	9.5	43.5	54(Note3)	-10.5	PK
	48	H	10486.0	46.8	6.4	53.2	54(Note3)	-0.8	PK

		H	15720.0	35.8	10.0	45.8	54(Note3)	-8.2	PK
		V	10480.3	42.1	6.4	48.5	54	-5.5	AV
		V	10486.0	51.1	6.4	57.5	74	-16.5	PK
		V	15720.0	37.2	9.9	47.1	54(Note3)	-6.9	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode4: Transmit by 802.11n(40MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0	38	H	10375.5	47.3	6.2	53.5	54(Note3)	-0.5	PK
		H	15560.5	39.8	9.8	49.6	54(Note3)	-4.4	PK
		V	10375.5	49.2	6.2	55.4	74	-18.6	PK
		V	10378.8	37.3	6.2	43.5	54	-10.5	AV
		V	15560.5	39.8	9.5	49.3	54(Note3)	-4.7	PK
	46	H	10460.5	45.1	6.4	51.5	54(Note3)	-2.5	PK
		H	15690.0	36.8	10.0	46.8	54(Note3)	-7.2	PK
		V	10469.0	47.4	6.4	53.8	54(Note3)	-0.2	PK
		V	15679.5	38.1	9.9	48.0	54(Note3)	-6.0	PK
Ant 1	38	H	10375.5	44.1	6.2	50.3	54(Note3)	-3.7	PK
		H	15570.0	36.9	9.8	46.7	54(Note3)	-7.3	PK
		V	10384.0	50.2	6.2	56.4	74	-17.6	PK
		V	10386.5	37.9	6.2	44.1	54	-9.9	AV
		V	15570.0	36.0	9.6	45.6	54(Note3)	-8.4	PK
	46	H	10460.5	41.5	6.4	47.9	54(Note3)	-6.1	PK
		H	15690.0	35.3	10.0	45.3	54(Note3)	-8.7	PK
		V	10460.5	47.9	6.4	54.3	74	-19.7	PK
		V	10462.7	36.9	6.4	43.3	54	-10.7	AV
		V	15690.0	36.5	9.9	46.4	54(Note3)	-7.6	PK
Ant 2	38	H	10375.5	47.3	6.2	53.5	54(Note3)	-0.5	PK
		H	15586.0	38.4	9.8	48.2	54(Note3)	-5.8	PK
		V	10375.5	52.2	6.2	58.4	74	-15.6	PK

		V	10377.5	38.9	6.2	45.1	54	-8.9	AV
		V	15586.0	40.1	9.6	49.7	54(Note3)	-4.3	PK
	46	H	10469.0	44.7	6.4	51.1	54(Note3)	-2.9	PK
		H	15688.0	39.3	10.0	49.3	54(Note3)	-4.7	PK
		V	10467.7	37.6	6.4	44.0	54	-10.0	AV
		V	10469.0	49.9	6.4	56.3	74	-17.7	PK
		V	15690.0	38.1	9.9	48.0	54(Note3)	-6.0	PK
Ant 0+1	38	H	10375.5	47.7	6.2	53.9	54(Note3)	-0.1	PK
		H	15570.0	37.1	9.8	46.9	54(Note3)	-7.1	PK
		V	10375.5	52.2	6.2	58.4	74	-15.6	PK
		V	10379.5	37.6	6.2	43.8	54	-10.2	AV
		V	15570.0	35.9	9.6	45.5	54(Note3)	-8.5	PK
	46	H	10460.5	44.5	6.4	50.9	54(Note3)	-3.1	PK
		H	15960.0	34.6	11.0	45.6	54(Note3)	-8.4	PK
		V	10458.7	36.7	6.3	43.0	54	-11.0	AV
		V	10460.5	49.6	6.4	56.0	74	-18.0	PK
		V	15690.0	36.7	9.9	46.6	54(Note3)	-7.4	PK
Ant 1+2	38	H	10375.5	47.2	6.2	53.4	54(Note3)	-0.6	PK
		H	15570.0	36.6	9.8	46.4	54(Note3)	-7.6	PK
		V	10375.5	51.9	6.2	58.1	74	-15.9	PK
		V	10380.2	42.3	6.2	48.5	54	-5.5	AV
		V	15570.0	36.4	9.6	46.0	54(Note3)	-8.0	PK
	46	H	10452.0	41.1	6.3	47.4	54(Note3)	-6.6	PK
		H	15690.0	36.5	10.0	46.5	54(Note3)	-7.5	PK
		V	10460.3	41.2	6.4	47.6	54	-6.4	AV
		V	10460.5	49.8	6.4	56.2	74	-17.8	PK
		V	15690.0	35.5	9.9	45.4	54(Note3)	-8.6	PK
Ant 0+2	38	H	10375.5	50.9	6.2	57.1	74	-16.9	PK
		H	10380.2	42.3	6.2	48.5	54	-5.5	AV
		H	15570.0	37.9	9.8	47.7	54(Note3)	-6.3	PK
		V	10375.5	53.2	6.2	59.4	74	-14.6	PK
		V	10380.1	43.4	6.2	49.6	54	-4.4	AV
		V	15570.0	37.3	9.6	46.9	54(Note3)	-7.1	PK
	46	H	10460.5	47.2	6.4	53.6	54(Note3)	-0.4	PK
		H	15690.0	36.2	10.0	46.2	54(Note3)	-7.8	PK
		V	10460.1	40.1	6.3	46.4	54	-7.6	AV
		V	10469.0	49.7	6.4	56.1	74	-17.9	PK

		V	15690.0	38.2	9.9	48.1	54(Note3)	-5.9	PK
Ant 0+1+2	38	H	10375.5	49.0	6.2	55.2	74	-18.8	PK
		H	10373.5	42.0	6.2	48.2	54	-5.8	AV
		H	15560.5	41.1	9.8	50.9	54(Note3)	-3.1	PK
		V	10375.5	53.5	6.2	59.7	74	-14.3	PK
		V	10380.1	43.5	6.2	49.7	54	-4.3	AV
		V	15569.0	39.7	9.6	49.3	54(Note3)	-4.7	PK
	46	H	10460.5	46.4	6.4	52.8	54(Note3)	-1.2	PK
		H	15690.0	38.3	10.0	48.3	54(Note3)	-5.7	PK
		V	10460.1	43.6	6.3	49.9	54	-4.1	AV
		V	10469.0	53.2	6.4	59.6	74	-14.4	PK
		V	15690.0	39.5	9.9	49.4	54(Note3)	-4.6	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode5: Transmit by 802.11ac(40MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0	38	H	10384.0	47.2	6.2	53.4	54(Note3)	-0.6	PK
		H	15543.5	38.8	9.8	48.6	54(Note3)	-5.4	PK
		V	10375.5	50.1	6.2	56.3	74	-17.7	PK
		V	10380.1	40.3	6.2	46.5	54	-7.5	AV
		V	15570.0	36.4	9.6	46.0	54(Note3)	-8.0	PK
	46	H	10460.5	44.1	6.4	50.5	54(Note3)	-3.5	PK
		H	15671.0	38.6	9.9	48.5	54(Note3)	-5.5	PK
		V	10469.0	46.3	6.4	52.7	54(Note3)	-1.3	PK
		V	15696.5	39.4	9.9	49.3	54(Note3)	-4.7	PK
Ant 1	38	H	10375.5	43.2	6.2	49.4	54(Note3)	-4.6	PK
		H	15570.0	34.6	9.8	44.4	54(Note3)	-9.6	PK
		V	10380.3	39.7	6.2	45.9	54	-8.1	AV
		V	10384.0	48.9	6.2	55.1	74	-18.9	PK
		V	15570.0	34.7	9.6	44.3	54(Note3)	-9.7	PK

	46	H	10452.0	42.1	6.3	48.4	54(Note3)	-5.6	PK
		H	15690.0	36.1	10.0	46.1	54(Note3)	-7.9	PK
		V	10452.0	46.6	6.3	52.9	54(Note3)	-1.1	PK
		V	15690.0	34.7	9.9	44.6	54(Note3)	-9.4	PK
Ant 2	38	H	10380.1	39.0	6.2	45.2	54	-8.8	AV
		H	10384.0	48.5	6.2	54.7	74	-19.3	PK
		H	15570.0	36.1	9.8	45.9	54(Note3)	-8.1	PK
		V	10375.5	50.6	6.2	56.8	74	-17.2	PK
		V	10380.4	39.4	6.2	45.6	54	-8.4	AV
		V	15570.0	35.0	9.6	44.6	54(Note3)	-9.4	PK
	46	H	10452.0	46.2	6.3	52.5	54(Note3)	-1.5	PK
		H	15690.0	38.1	10.0	48.1	54(Note3)	-5.9	PK
		V	10443.5	48.6	6.3	54.9	74	-19.1	PK
		V	10459.6	38.9	6.3	45.2	54	-8.8	AV
		V	15690.0	37.8	9.9	47.7	54(Note3)	-6.3	PK
Ant 0+1	38	H	10384.0	46.3	6.2	52.5	54(Note3)	-1.5	PK
		H	15560.5	38.2	9.8	48.0	54(Note3)	-6.0	PK
		V	10380.3	40.6	6.2	46.8	54	-7.2	AV
		V	10384.0	51.9	6.2	58.1	74	-15.9	PK
		V	15570.0	34.1	9.6	43.7	54(Note3)	-10.3	PK
	46	H	10452.0	43.7	6.3	50.0	54(Note3)	-4.0	PK
		H	15688.0	37.4	10.0	47.4	54(Note3)	-6.6	PK
		V	10460.0	40.2	6.3	46.5	54	-7.5	AV
		V	10460.5	49.6	6.4	56.0	74	-18.0	PK
		V	15690.0	35.8	9.9	45.7	54(Note3)	-8.3	PK
Ant 1+2	38	H	10375.5	48.1	6.2	54.3	74	-19.7	PK
		H	10380.3	39.5	6.2	45.7	54	-8.3	AV
		H	15570.0	37.2	9.8	47.0	54(Note3)	-7.0	PK
		V	10375.5	51.4	6.2	57.6	74	-16.4	PK
		V	10380.3	41.6	6.2	47.8	54	-6.2	AV
		V	15570.0	34.5	9.6	44.1	54(Note3)	-9.9	PK
	46	H	10443.5	45.6	6.3	51.9	54(Note3)	-2.1	PK
		H	15696.5	37.9	10.0	47.9	54(Note3)	-6.1	PK
		V	10452.0	49.1	6.3	55.4	74	-18.6	PK
		V	10460.3	40.3	6.4	46.7	54	-7.3	AV
		V	15690.0	35.5	9.9	45.4	54(Note3)	-8.6	PK
Ant	38	H	10375.5	48.2	6.2	54.4	74	-19.6	PK

0+2		H	10380.5	39.6	6.2	45.8	54	-8.2	AV
		H	15570.0	36.2	9.8	46.0	54(Note3)	-8.0	PK
		V	10380.4	42.6	6.2	48.8	54	-5.2	AV
		V	10384.0	52.9	6.2	59.1	74	-14.9	PK
		V	15570.0	35.2	9.6	44.8	54(Note3)	-9.2	PK
	46	H	10460.5	47.0	6.4	53.4	54(Note3)	-0.6	PK
		H	15690.0	36.4	10.0	46.4	54(Note3)	-7.6	PK
		V	10460.0	40.6	6.3	46.9	54	-7.1	AV
		V	10460.5	50.7	6.4	57.1	74	-16.9	PK
		V	15690.0	35.3	9.9	45.2	54(Note3)	-8.8	PK
Ant 0+1+2	38	H	10380.2	40.5	6.2	46.7	54	-7.3	AV
		H	10384.0	50.2	6.2	56.4	74	-17.6	PK
		H	15570.0	37.2	9.8	47.0	54(Note3)	-7.0	PK
		V	10375.5	51.9	6.2	58.1	74	-15.9	PK
		V	10380.1	41.2	6.2	47.4	54	-6.6	AV
		V	15570.0	35.0	9.6	44.6	54(Note3)	-9.4	PK
	46	H	10460.5	46.5	6.4	52.9	54(Note3)	-1.1	PK
		H	15690.0	36.1	10.0	46.1	54(Note3)	-7.9	PK
		V	10460.0	43.6	6.3	49.9	54	-4.1	AV
		V	10460.5	52.6	6.4	59.0	74	-15.0	PK
		V	15690.0	35.1	9.9	45.0	54(Note3)	-9.0	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode6: Transmit by 802.11ac(80MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0	42	H	11550.0	33.4	8.9	42.3	54(Note3)	-11.7	PK
		H	17325.0	34.8	13.9	48.7	54(Note3)	-5.3	PK
		V	11550.0	33.5	8.8	42.3	54(Note3)	-11.7	PK
		V	17325.0	35.5	14.0	49.5	54(Note3)	-4.5	PK
Ant 1	42	H	11550.0	34.1	8.9	43.0	54(Note3)	-11.0	PK

		H	17325.0	35.4	13.9	49.3	54(Note3)	-4.7	PK
		V	11550.0	35.1	8.8	43.9	54(Note3)	-10.1	PK
		V	17325.0	35.2	14.0	49.2	54(Note3)	-4.8	PK
Ant 2	42	H	11550.0	33.9	8.9	42.8	54(Note3)	-11.2	PK
		H	17325.0	34.9	13.9	48.8	54(Note3)	-5.2	PK
		V	11550.0	33.8	8.8	42.6	54(Note3)	-11.4	PK
		V	17325.0	34.4	14.0	48.4	54(Note3)	-5.6	PK
Ant 0+1	42	H	11550.0	34.2	8.9	43.1	54(Note3)	-10.9	PK
		H	17325.0	34.2	13.9	48.1	54(Note3)	-5.9	PK
		V	11550.0	34.2	8.9	43.1	54(Note3)	-10.9	PK
		V	17325.0	34.2	13.9	48.1	54(Note3)	-5.9	PK
Ant 1+2	42	H	11550.0	34.3	8.9	43.2	54(Note3)	-10.8	PK
		H	17325.0	34.3	13.9	48.2	54(Note3)	-5.8	PK
		V	11550.0	34.3	8.8	43.1	54(Note3)	-10.9	PK
		V	17325.0	34.4	14.0	48.4	54(Note3)	-5.6	PK
Ant 0+2	42	H	11550.0	34.3	8.9	43.2	54(Note3)	-10.8	PK
		H	17325.0	35.3	13.9	49.2	54(Note3)	-4.8	PK
		V	11550.0	35.7	8.8	44.5	54(Note3)	-9.5	PK
		V	17325.0	35.2	14.0	49.2	54(Note3)	-4.8	PK
Ant 0+1+2	42	H	11550.0	33.9	8.9	42.8	54(Note3)	-11.2	PK
		H	17325.0	35.1	13.9	49.0	54(Note3)	-5.0	PK
		V	11550.0	34.7	8.8	43.5	54(Note3)	-10.5	PK
		V	17325.0	35.0	14.0	49.0	54(Note3)	-5.0	PK

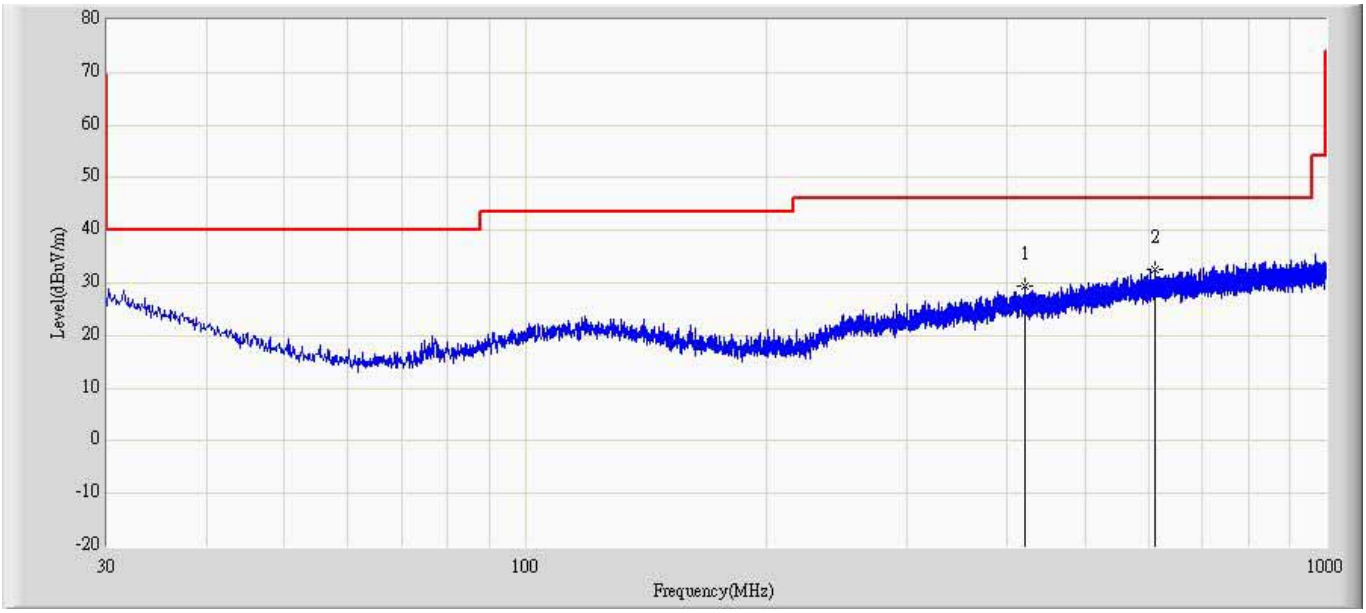
Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

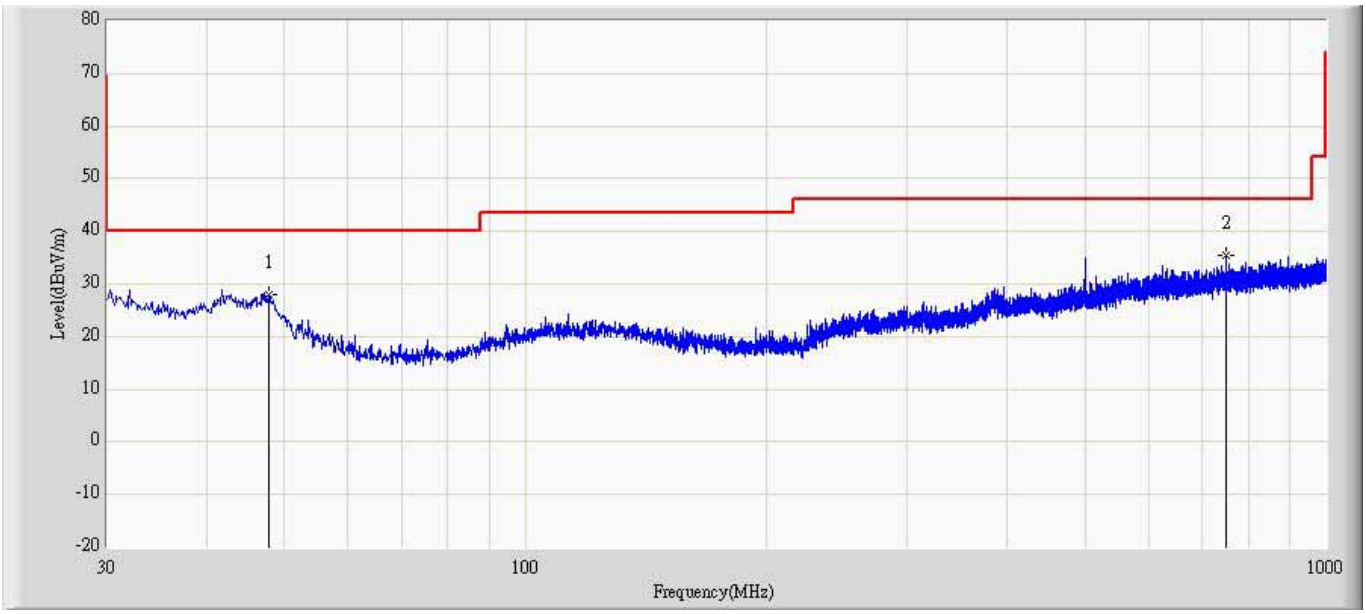
The worst case of Radiated Emission below 1GHz:

Site: AC2	Time: 2013/09/22 - 21:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Horizontal
EUT: Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD	Power: AC 120V/60Hz
Note: Mode3: Transmit by 802.11ac(20MHz)	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		421.152	29.464	4.989	-16.536	46.000	24.475	QP
2	*	611.151	32.651	5.470	-13.349	46.000	27.181	QP

Site: AC2	Time: 2013/09/22 - 21:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Vertical
EUT: Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD	Power: AC 120V/60Hz
Note: Mode3: Transmit by 802.11ac(20MHz)	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		47.702	28.085	12.957	-11.915	40.000	15.127	QP
2	*	749.982	35.415	6.767	-10.585	46.000	28.648	QP

5. Operation Frequency Range of 20dB Bandwidth

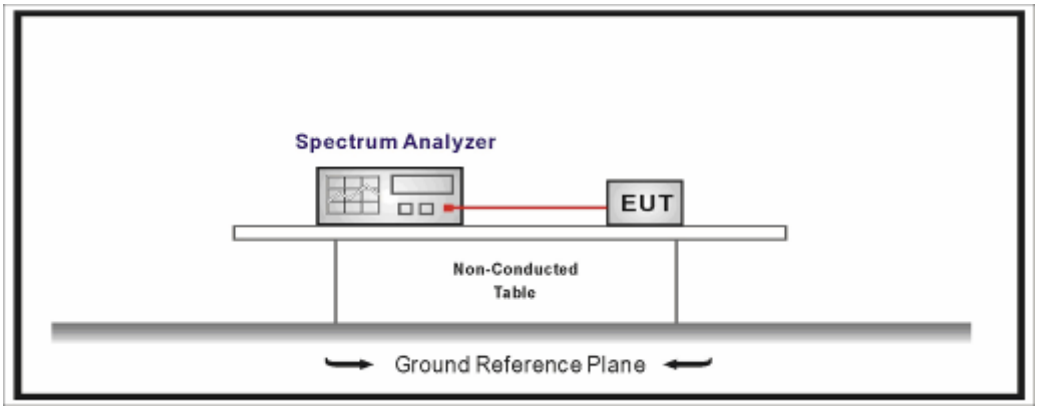
5.1. Test Equipment

Operation Frequency Range of 20dB Bandwidth /TR8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014.01.21
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2014.05.07

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2. Test Setup



5.3. Limit

20 dB bandwidth of the emission is contained within the operation frequency band. FCC Part15.215(c).

5.4. Test Procedure

The EUT was tested according to UNII test procedure of KDB 789033 for compliance to FCC 47CFR 15.407 requirements.
Set RBW = 100 kHz, Span greater than RBW.

5.5. Uncertainty

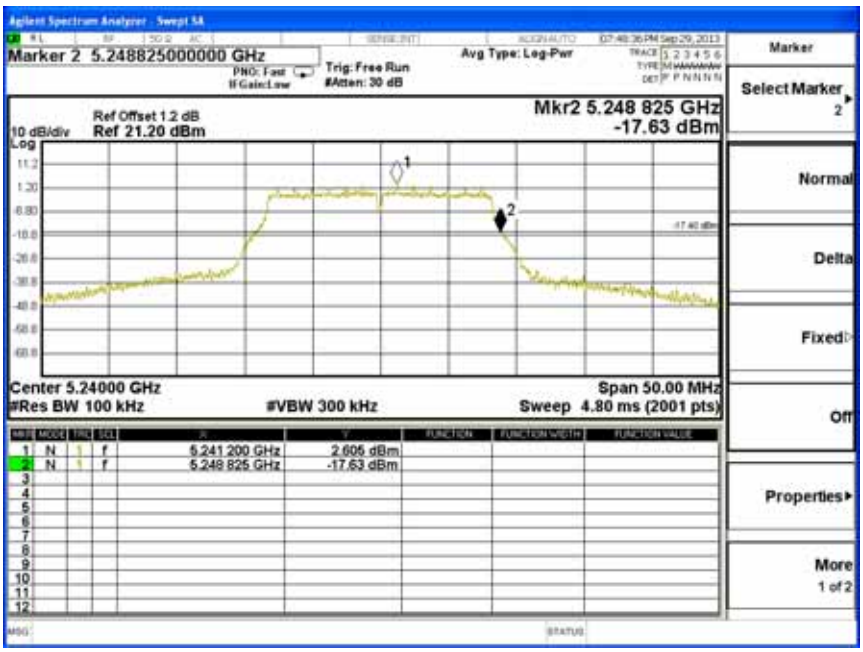
The measurement uncertainty is defined as ± 1 kHz

5.6. Test Result

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 0)

Channel 36 (5180MHz)

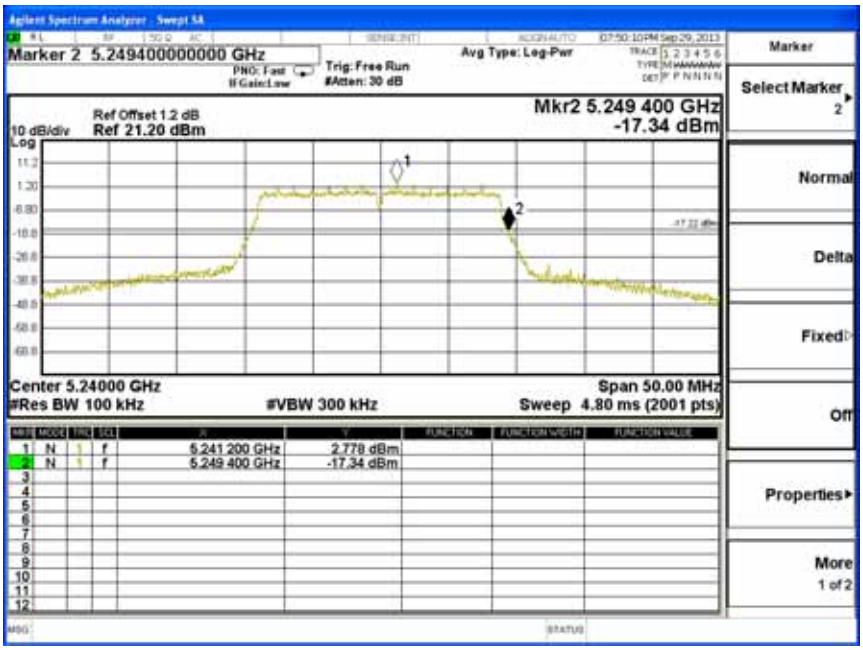
Channel 48 (5240MHz)



Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 0)

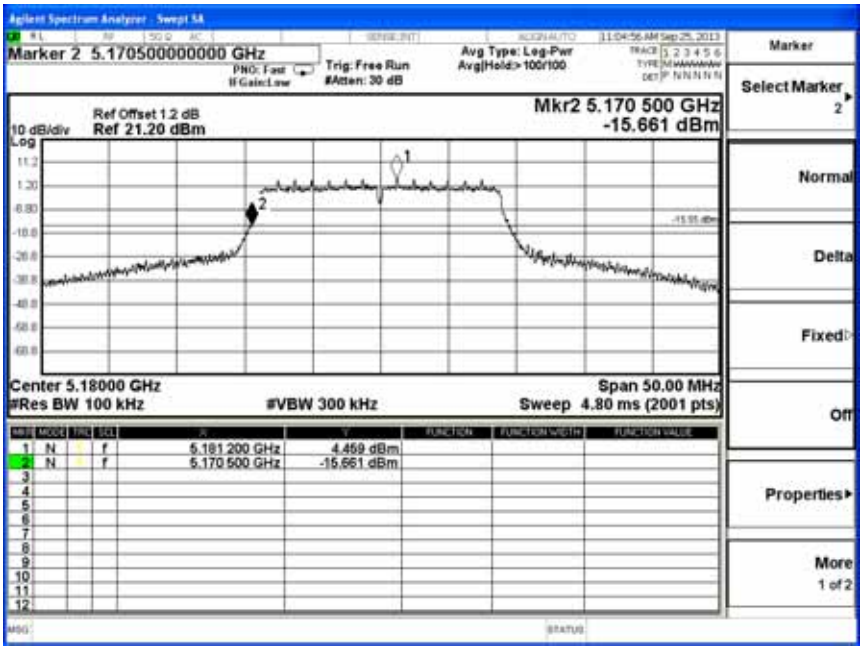
Channel 36 (5180MHz)

Channel 48 (5240MHz)

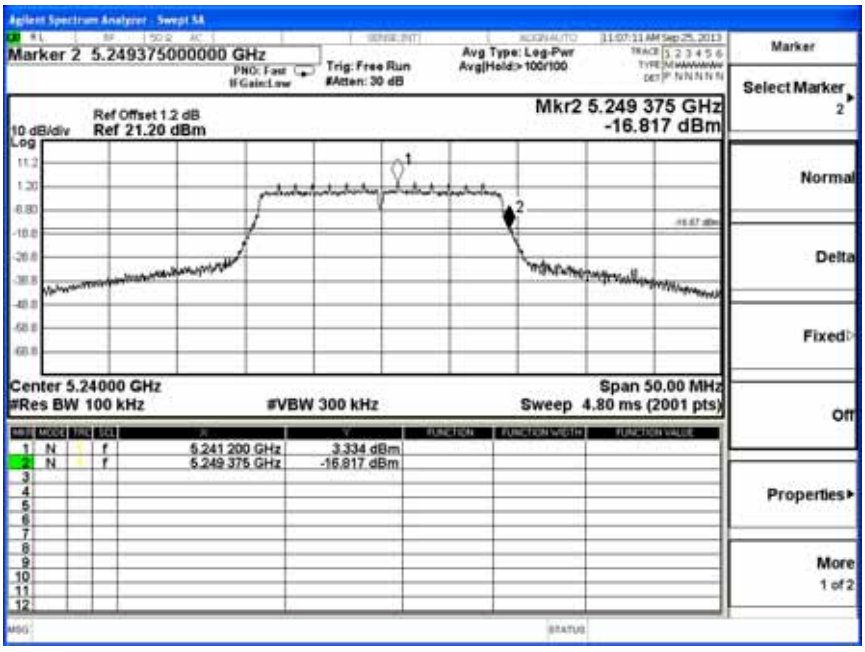


Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 0)

Channel 36 (5180MHz)

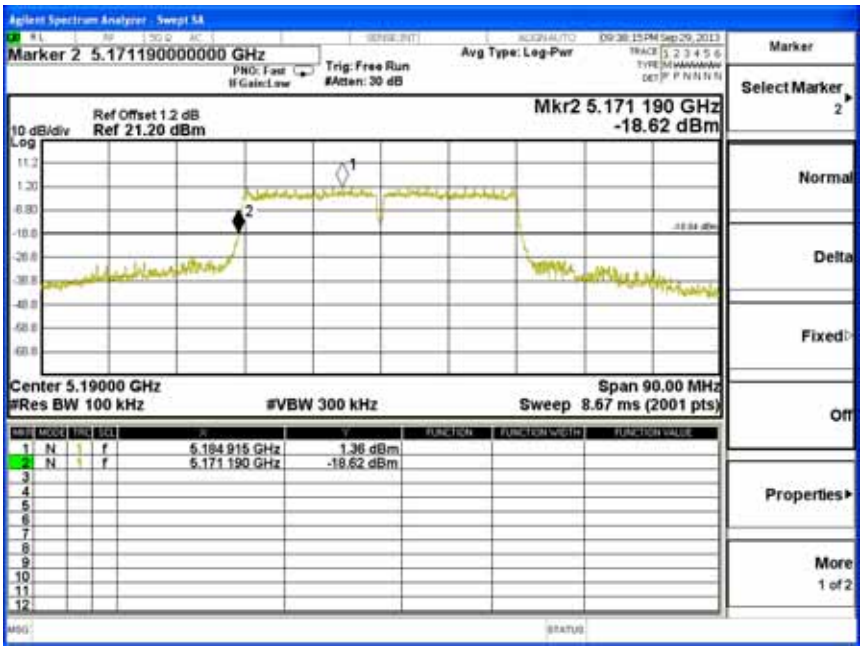


Channel 48 (5240MHz)

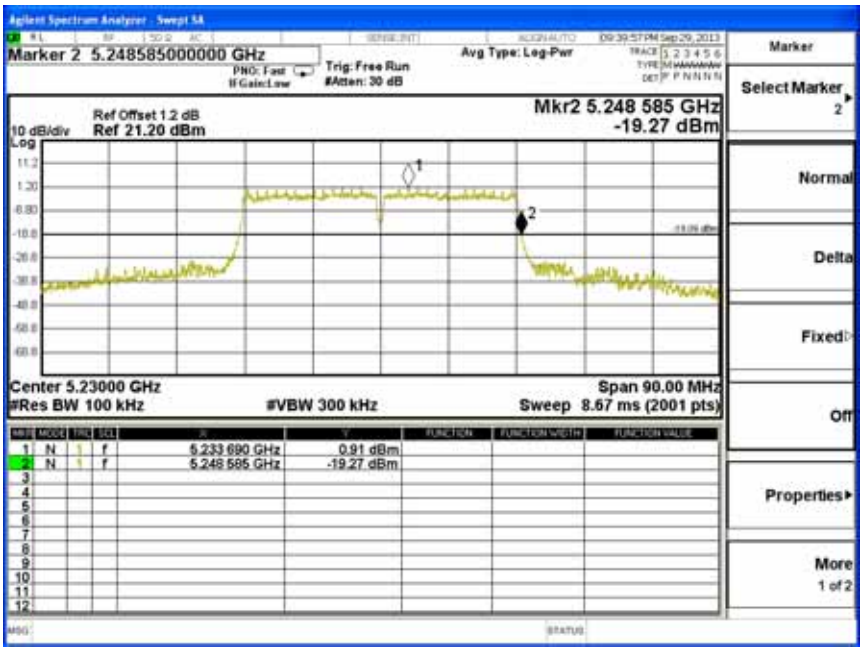


Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 0)

Channel 38 (5190MHz)

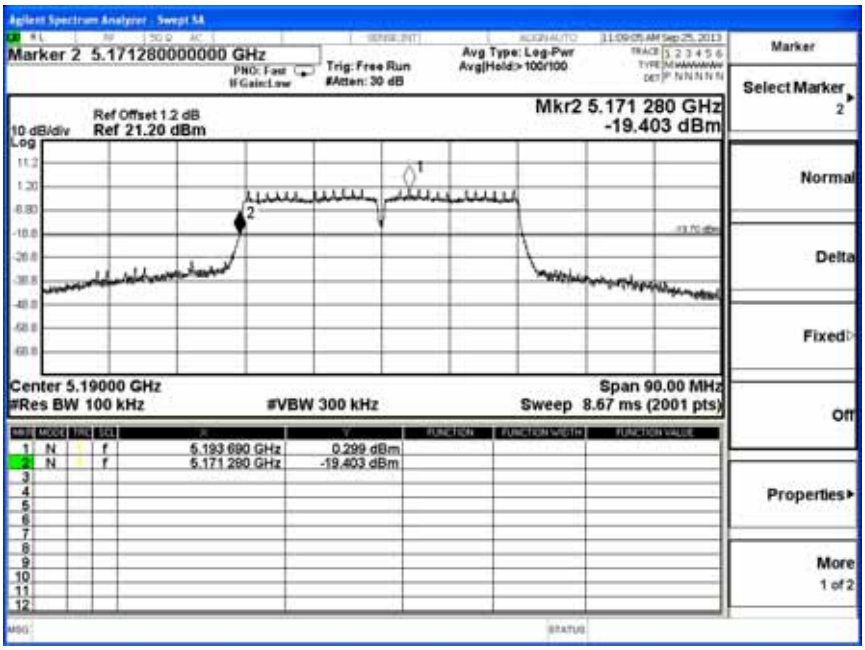


Channel 46 (5230MHz)

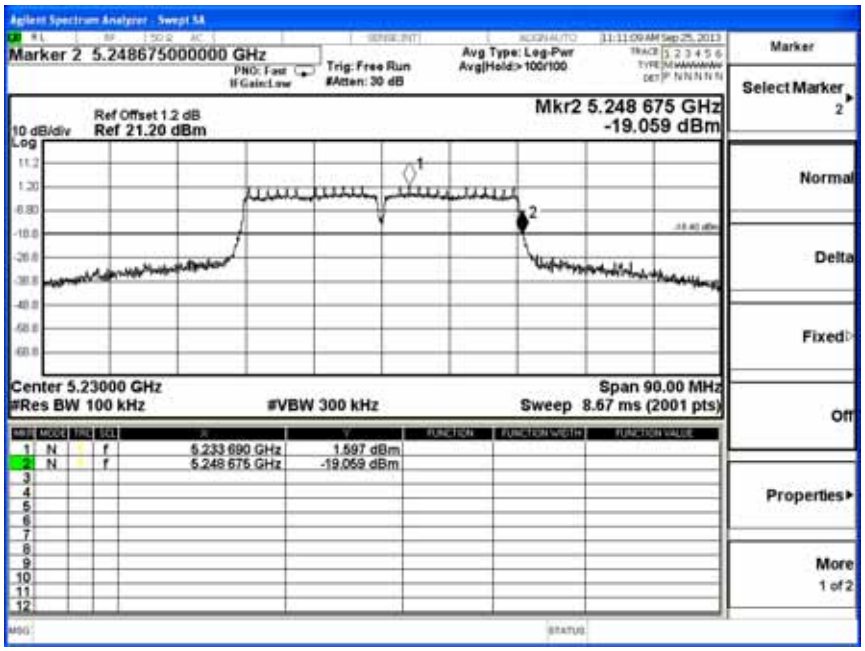


Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 0)

Channel 38 (5190MHz)

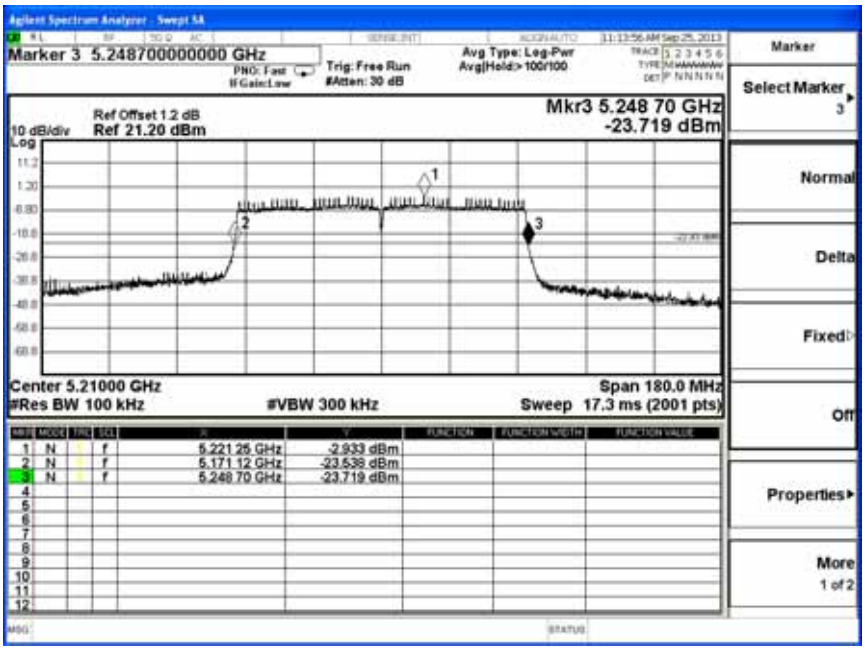


Channel 46 (5230MHz)



Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 0)

Channel 42 (5210MHz)



Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 1)

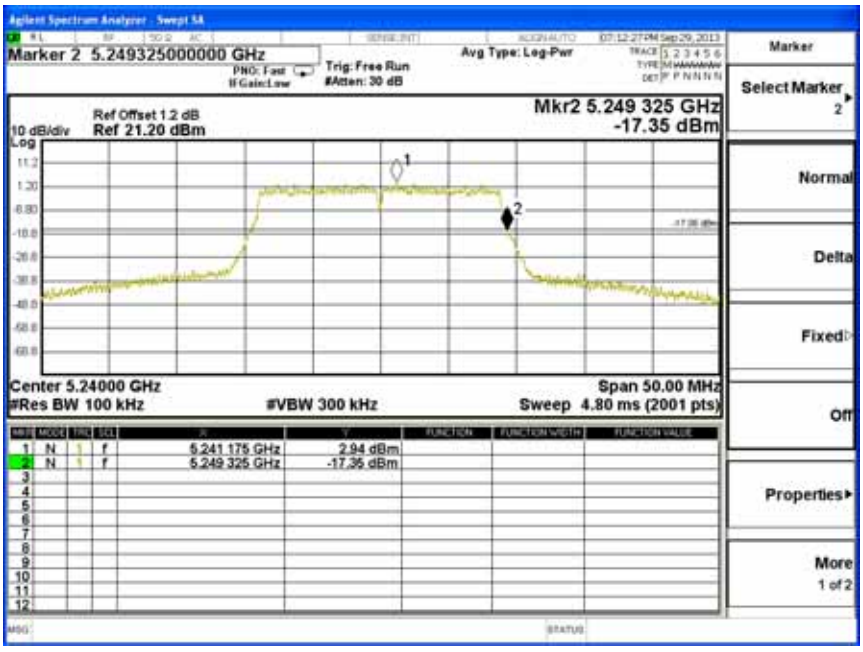
Channel 36 (5180MHz)

Channel 48 (5240MHz)

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 1)

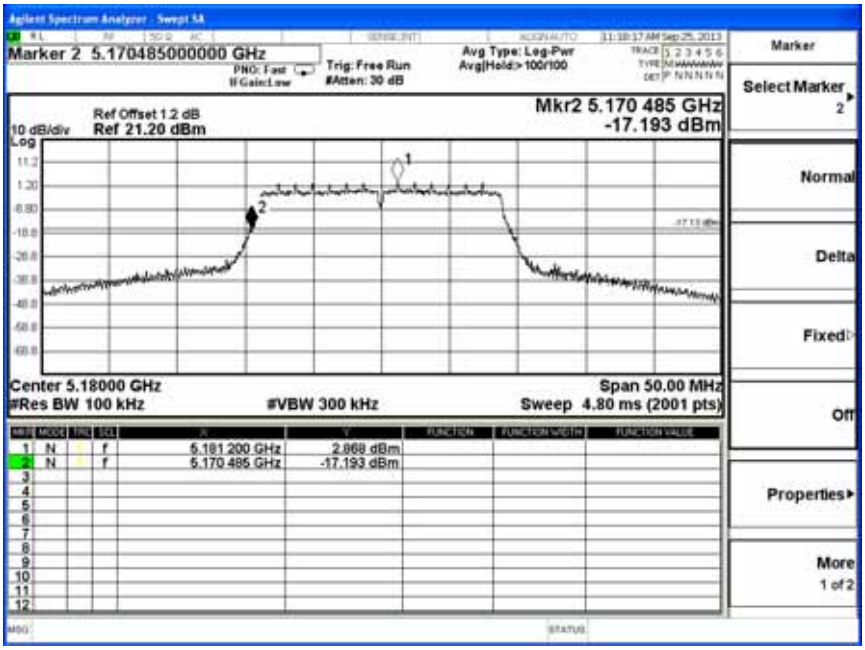
Channel 36 (5180MHz)

Channel 48 (5240MHz)

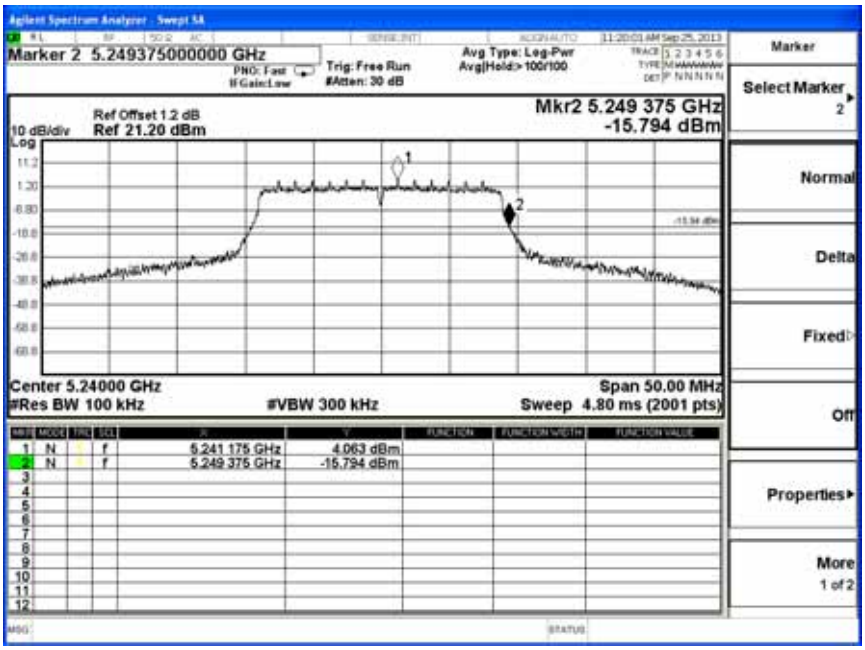


Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 1)

Channel 36 (5180MHz)



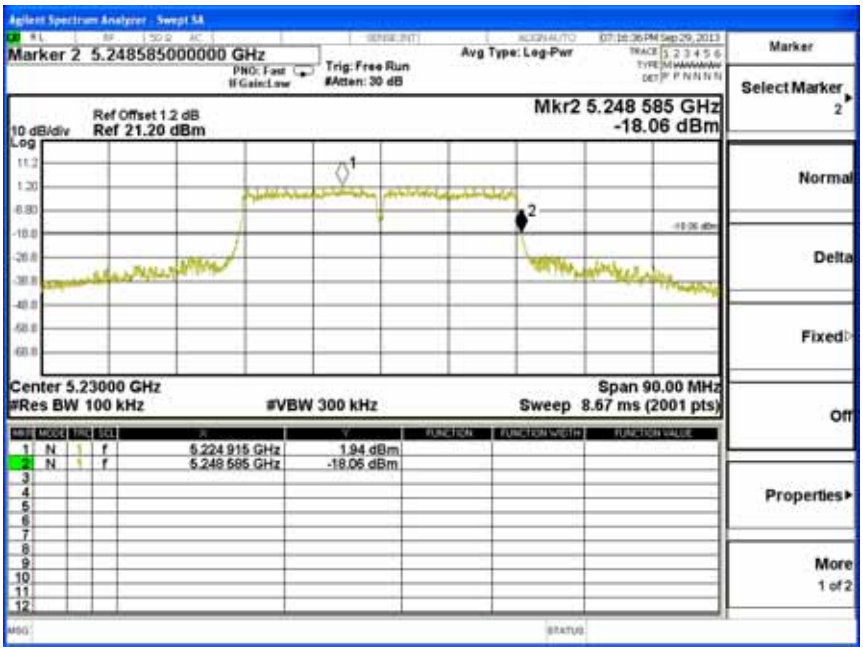
Channel 48 (5240MHz)



Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 1)

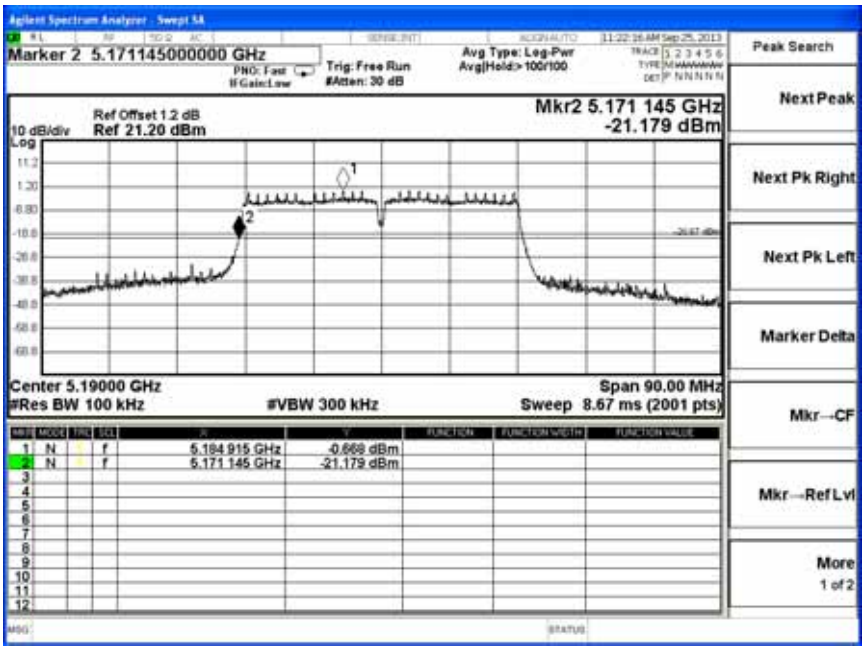
Channel 38 (5190MHz)

Channel 46 (5230MHz)

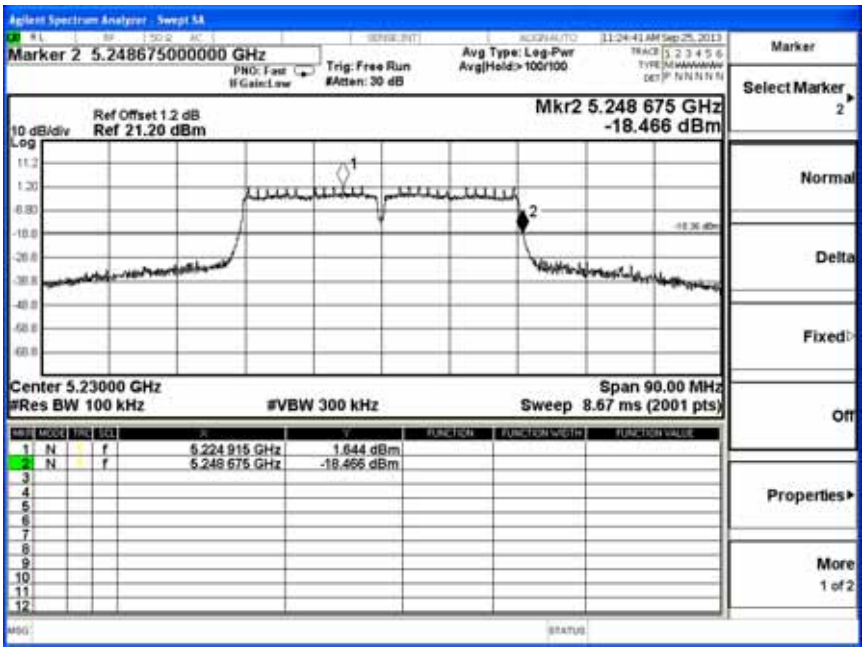


Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 1)

Channel 38 (5190MHz)

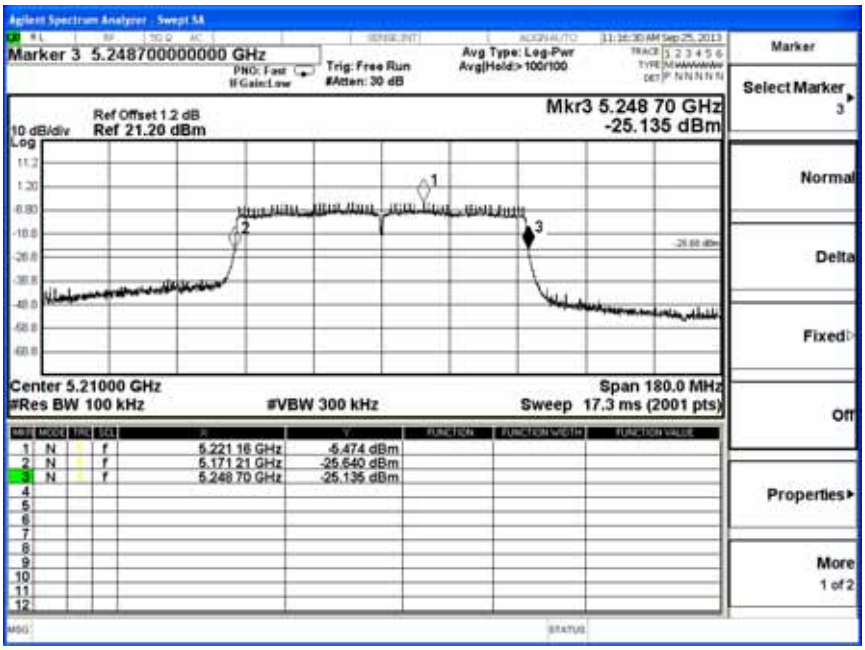


Channel 46 (5230MHz)



Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 1)

Channel 42 (5210MHz)



Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 2)

Channel 36 (5180MHz)

Channel 48 (5240MHz)

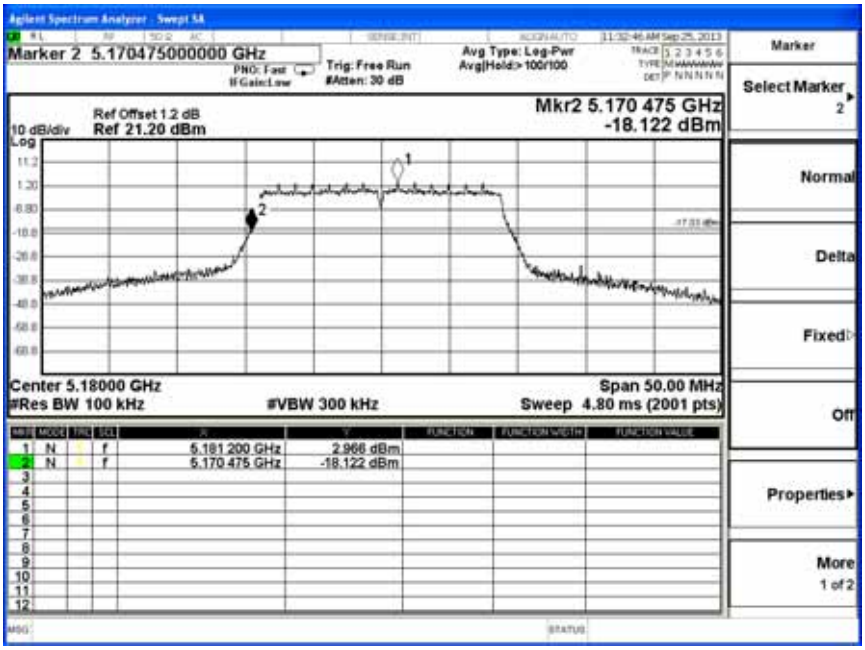
Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 2)

Channel 36 (5180MHz)

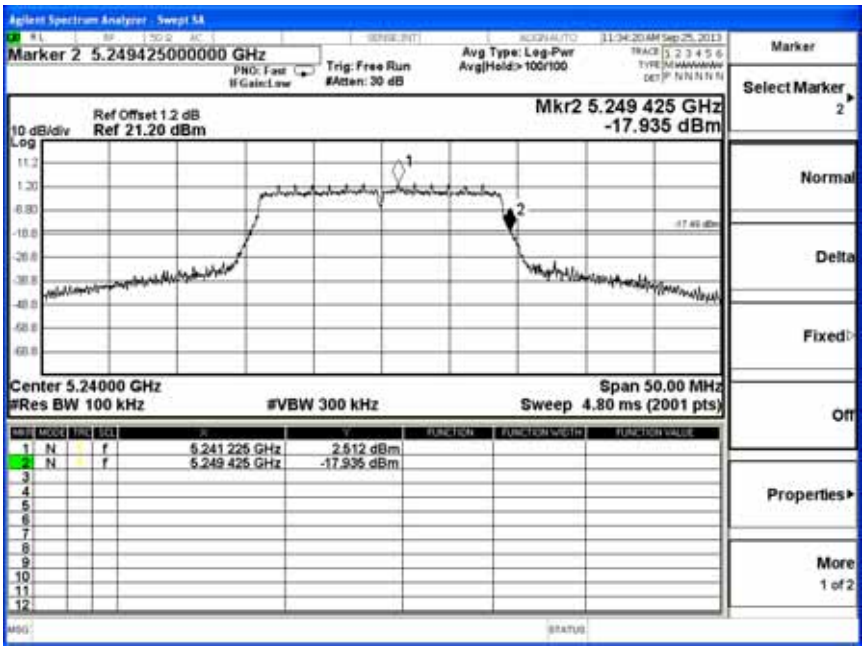
Channel 48 (5240MHz)

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 2)

Channel 36 (5180MHz)

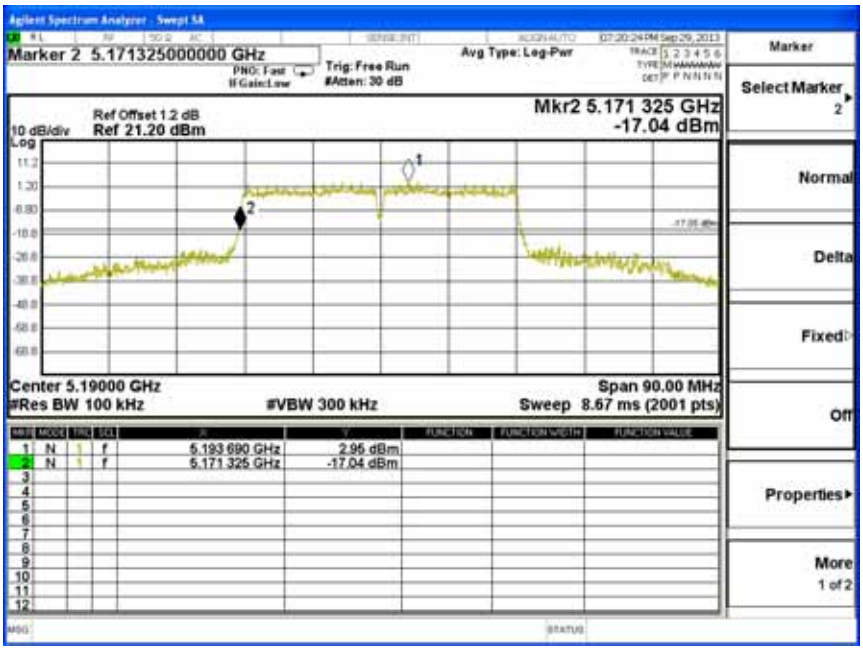


Channel 48 (5240MHz)

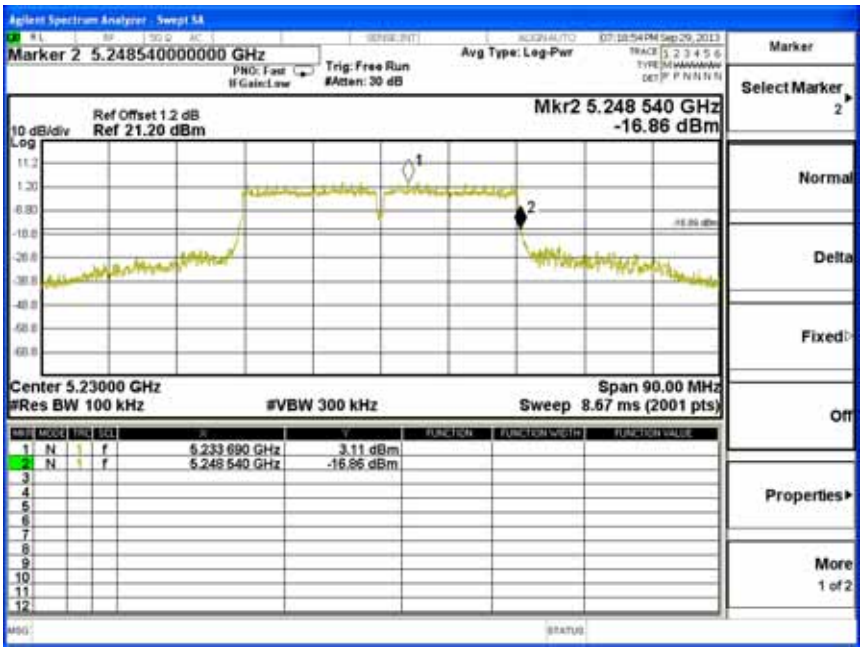


Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 2)

Channel 38 (5190MHz)

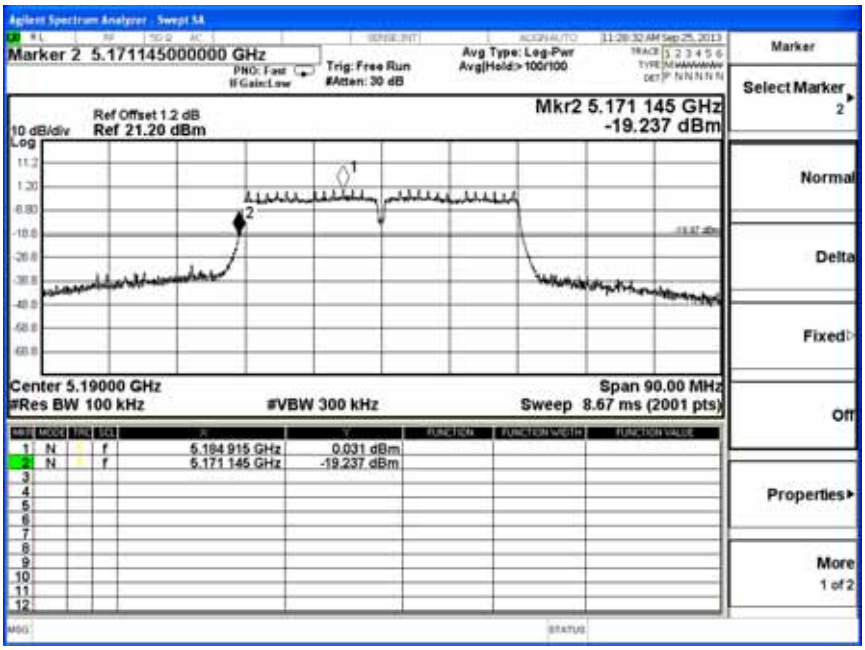


Channel 46 (5230MHz)

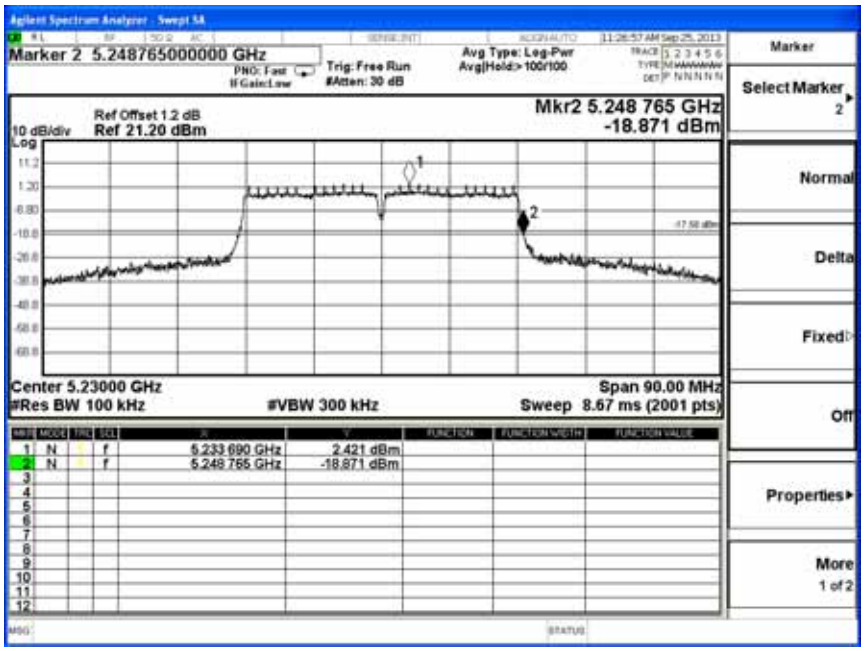


Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 2)

Channel 38 (5190MHz)

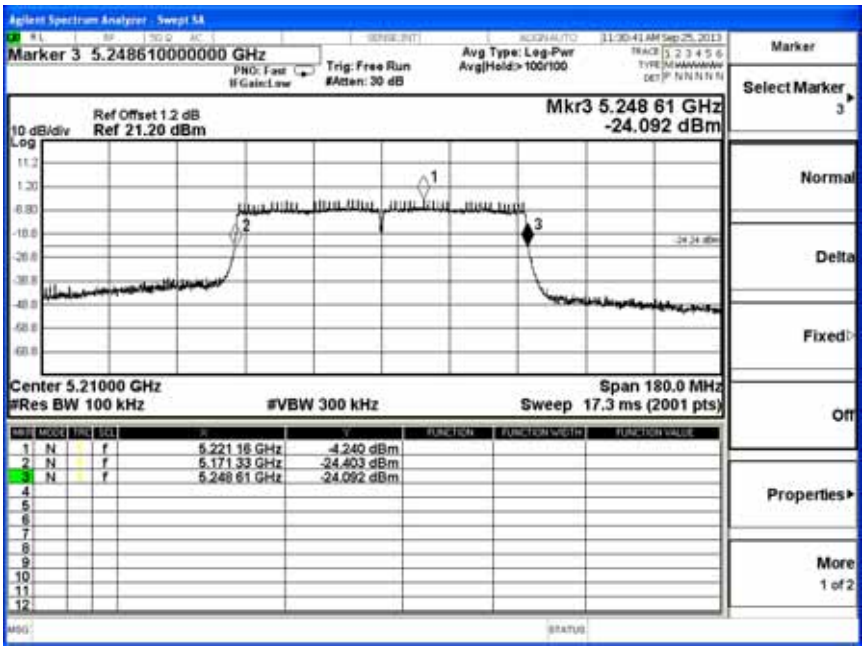


Channel 46 (5230MHz)



Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 2)

Channel 42 (5210MHz)



6. Occupied Bandwidth

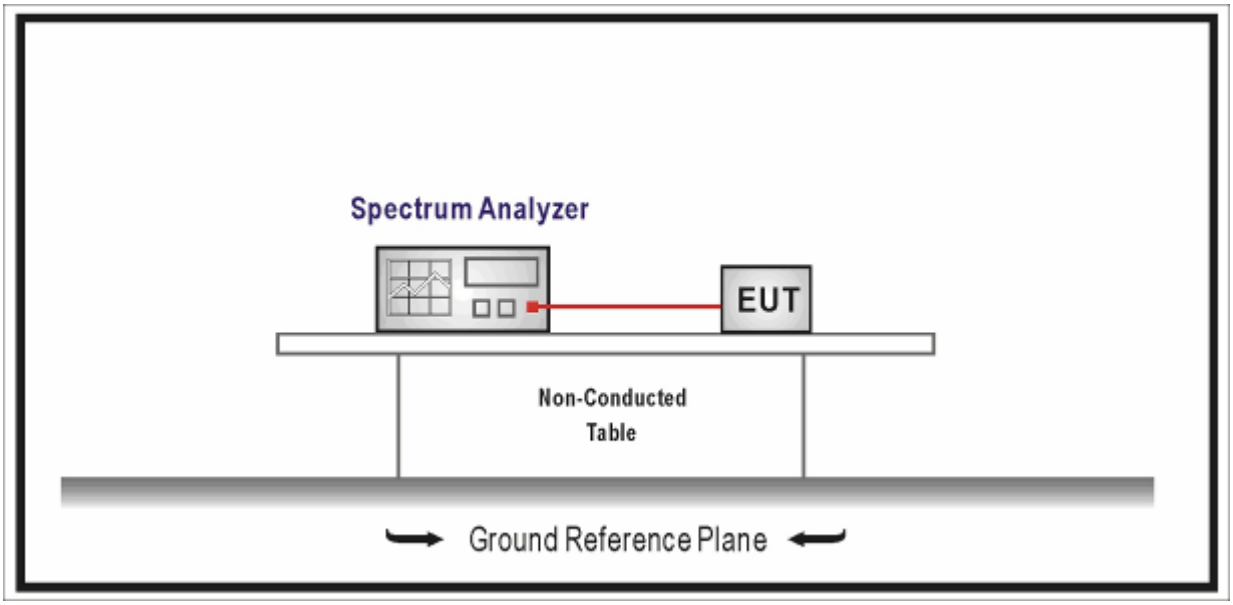
6.1. Test Equipment

Occupied Bandwidth / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014.01.21
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2014.05.07

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

6.2. Test Setup



6.3. Limit

N/A

6.4. Test Procedure

The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

Emission Bandwidth

- Use a RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

99% Occupied Bandwidth

- Set center frequency to the nominal EUT channel center frequency.
- Set span = 1.5 times to 5.0 times the OBW.
- Set RBW = 1 % to 5 % of the OBW.
- Set VBW ≥ 3 · RBW.
- Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- Use the 99 % power bandwidth function of the instrument (if available).
- If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

6.5. Uncertainty

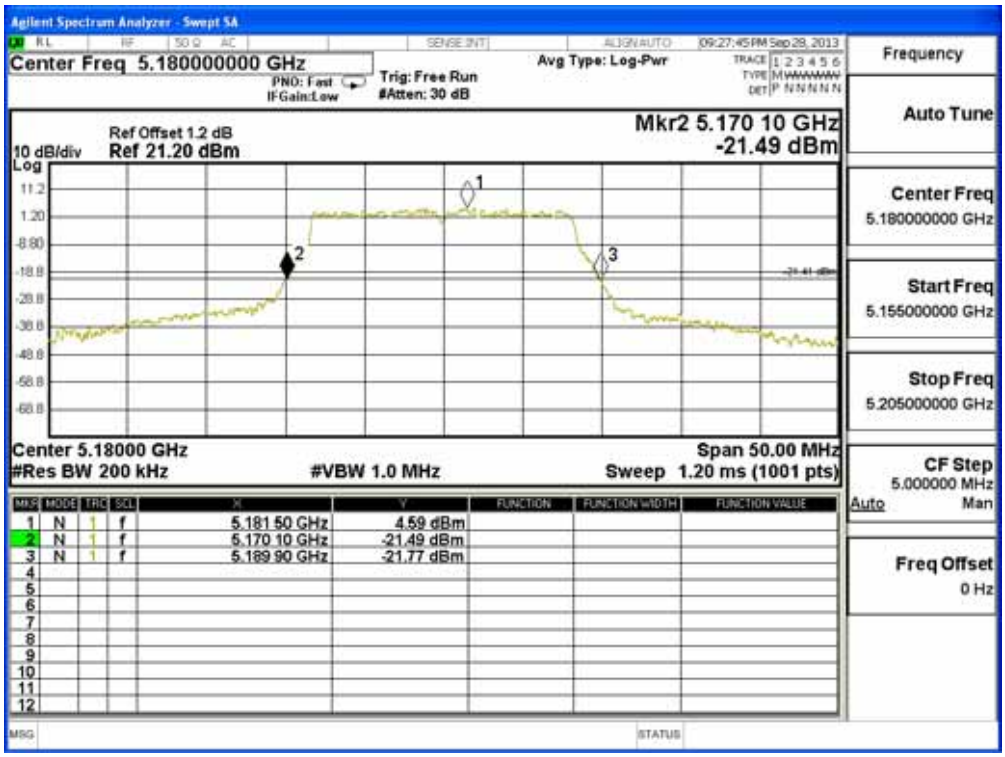
The measurement uncertainty is defined as ± 1 kHz

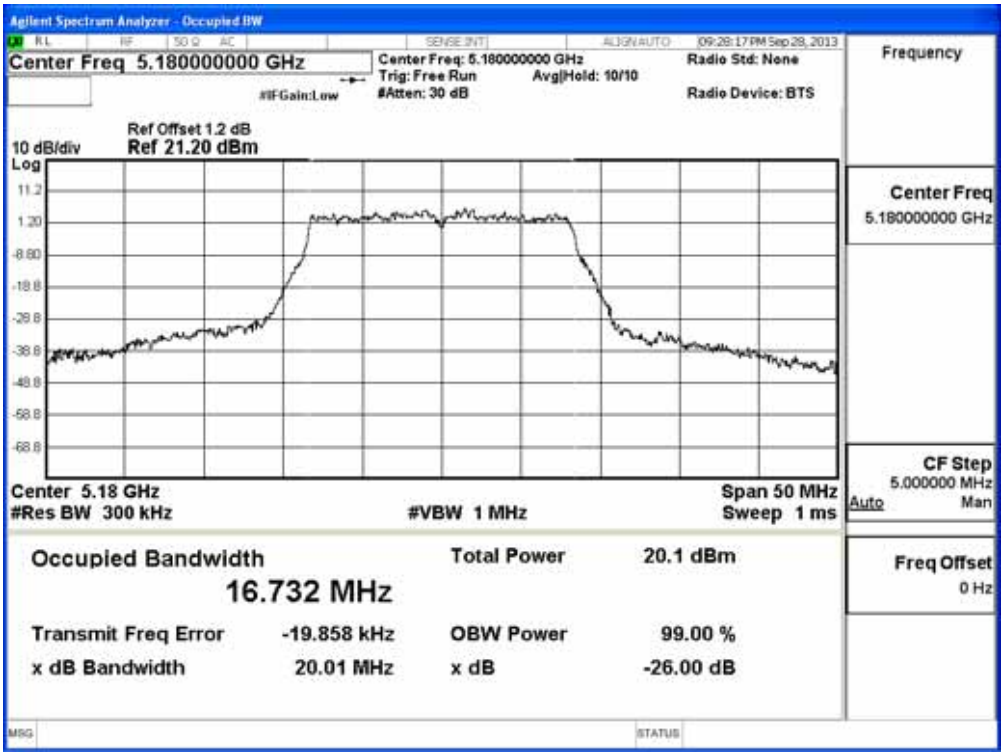
6.6. Test Result

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 0)

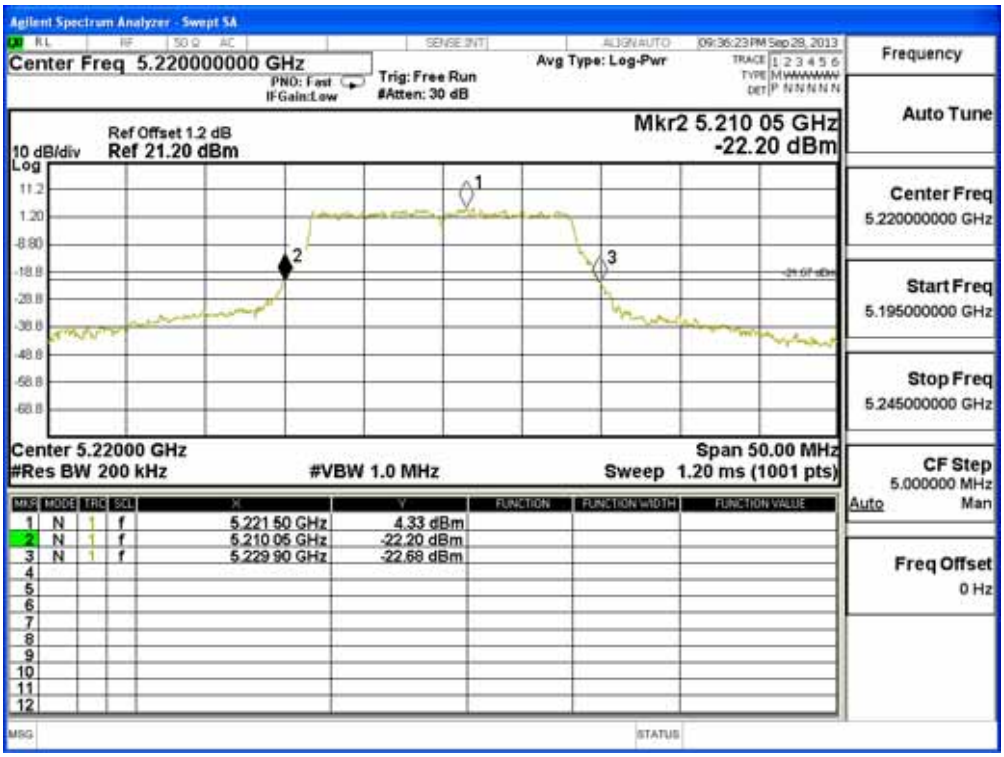
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180	19.80	16.73
44	5220	19.85	16.74
48	5240	19.85	16.73

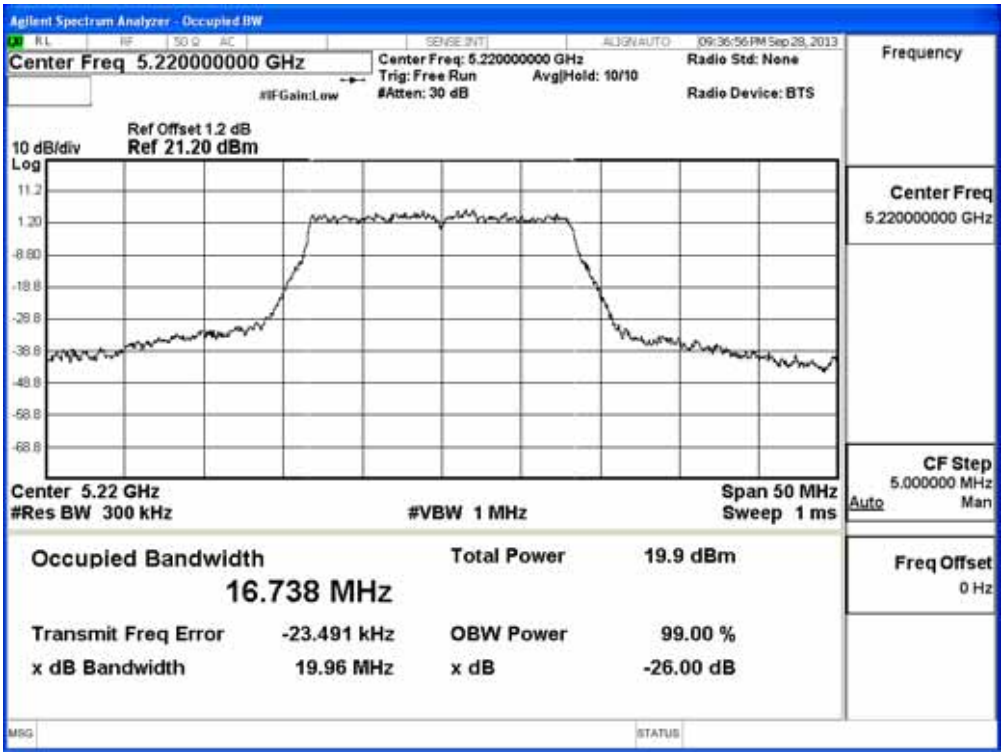
Channel 36 (5180MHz)



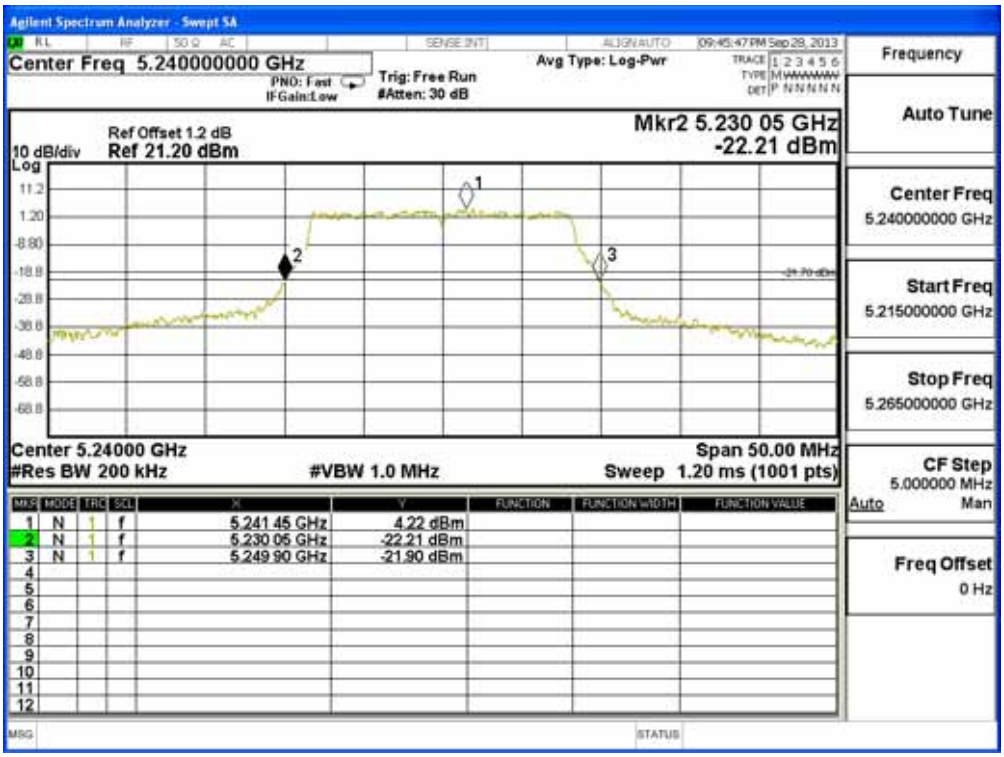


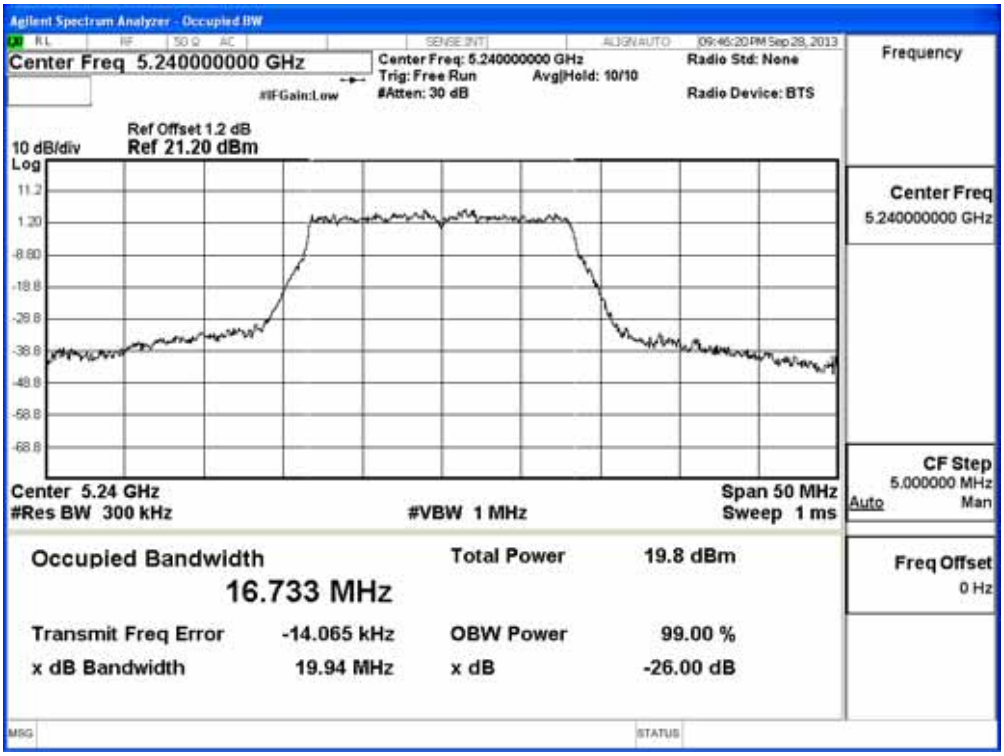
Channel 44 (5220MHz)





Channel 48 (5240MHz)

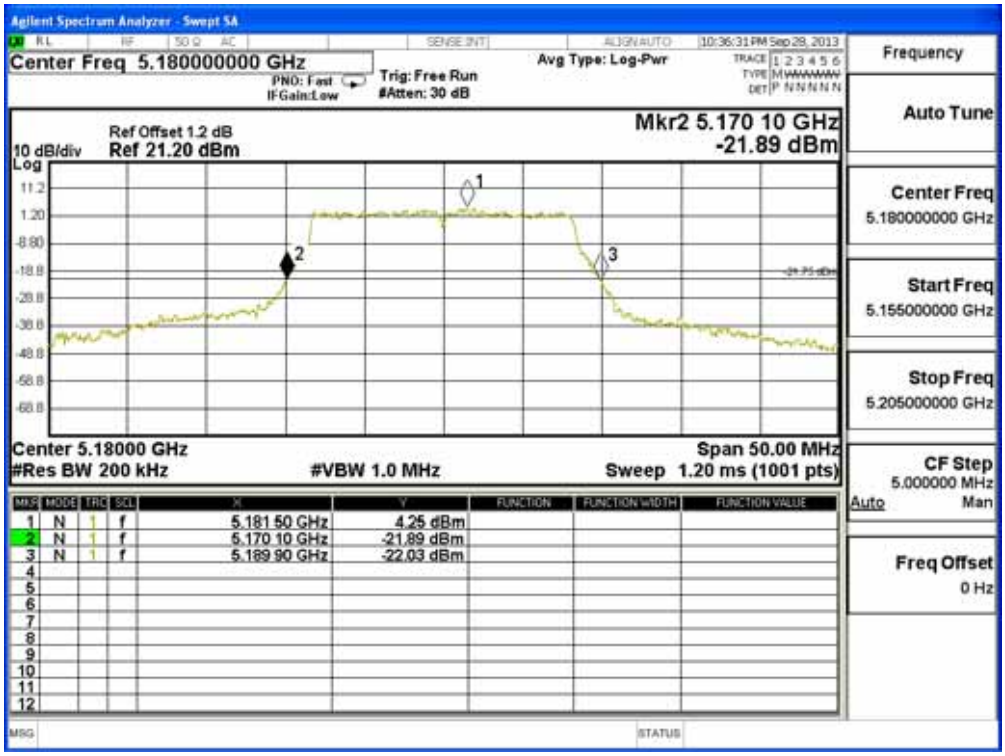


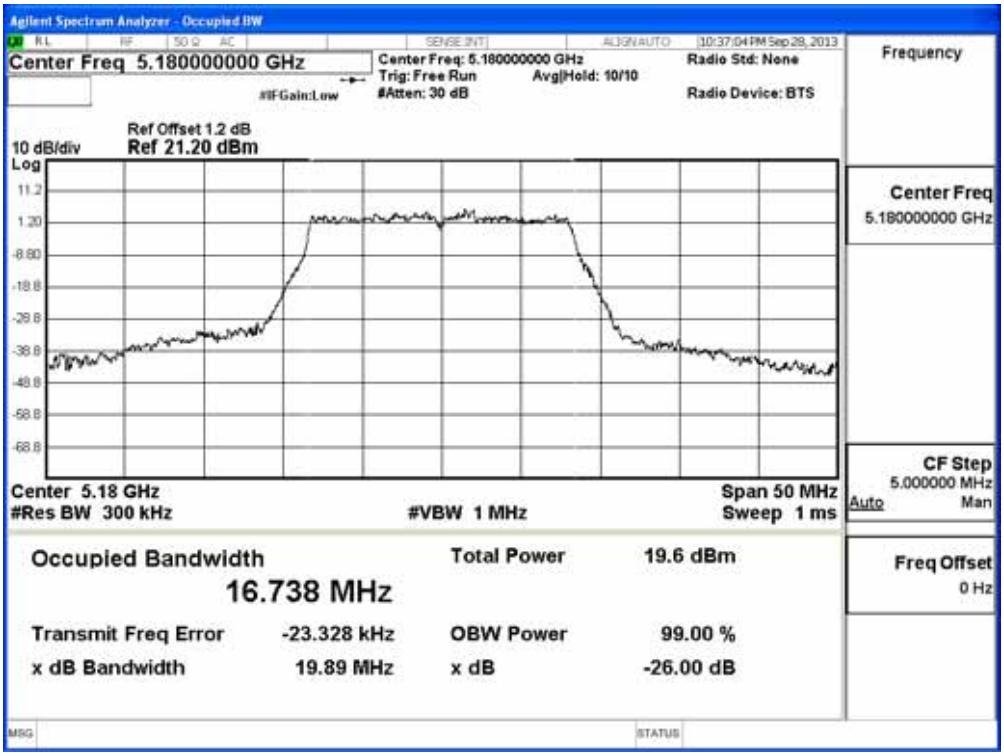

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center 5.24 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 50 MHz
Sweep 1 ms
Occupied Bandwidth
16.733 MHz
Total Power
19.8 dBm
Transmit Freq Error
-14.065 kHz
OBW Power
99.00 %
x dB Bandwidth
19.94 MHz
x dB
-26.00 dB
Frequency
Center Freq
5.240000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 1)

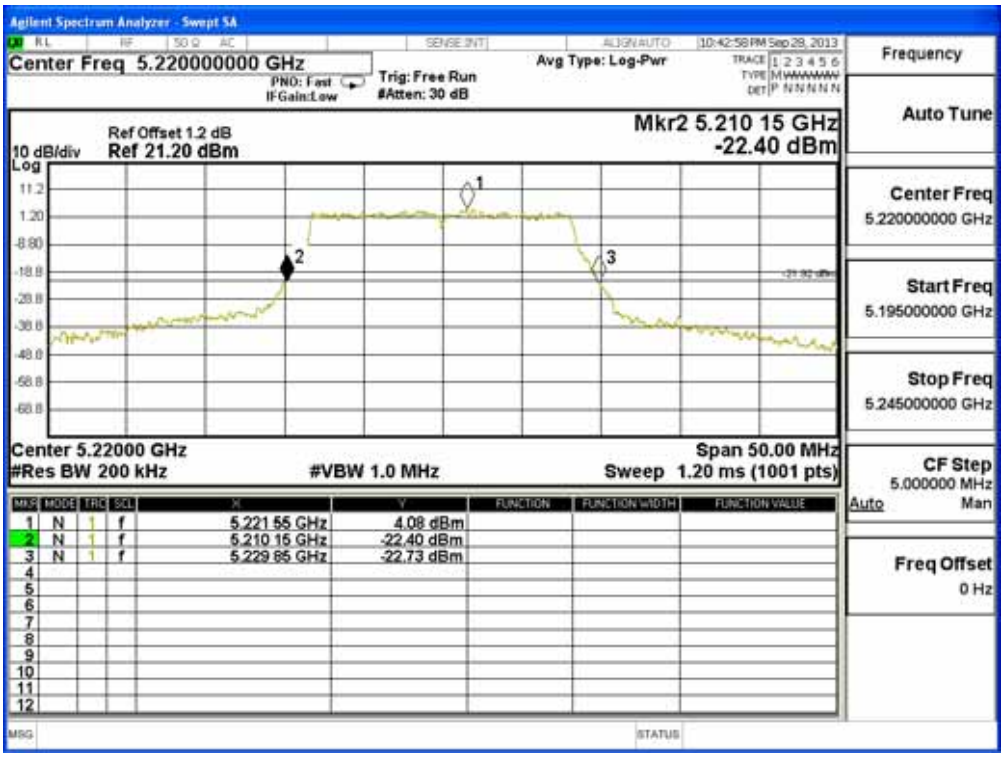
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180	19.80	16.74
44	5220	19.70	16.72
48	5240	19.80	16.74

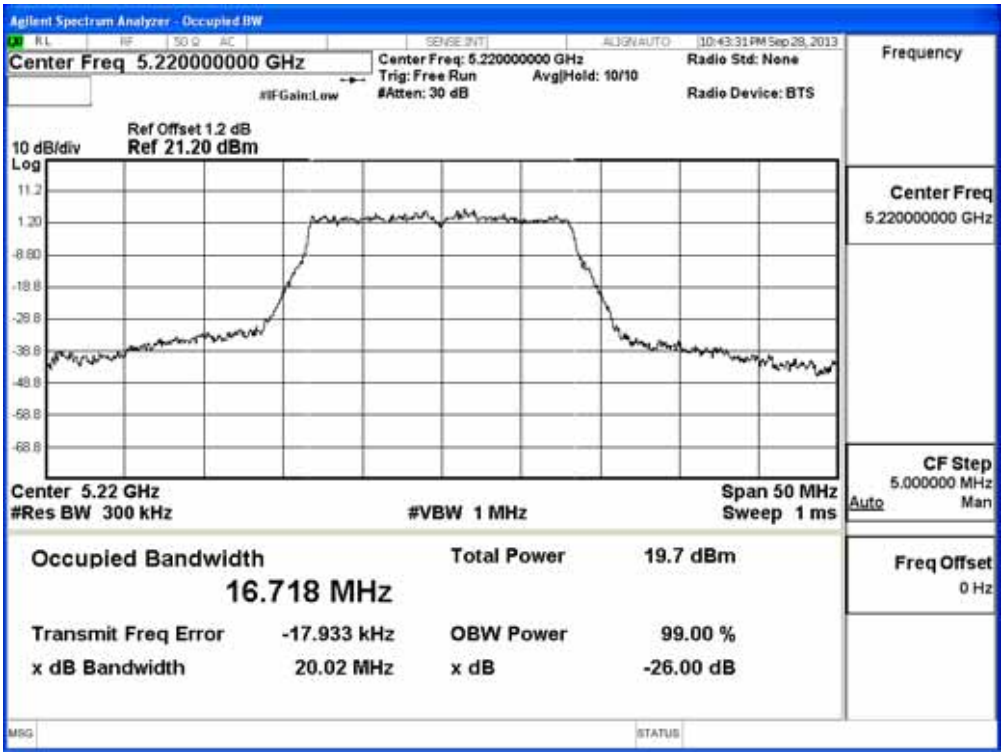
Channel 36 (5180MHz)



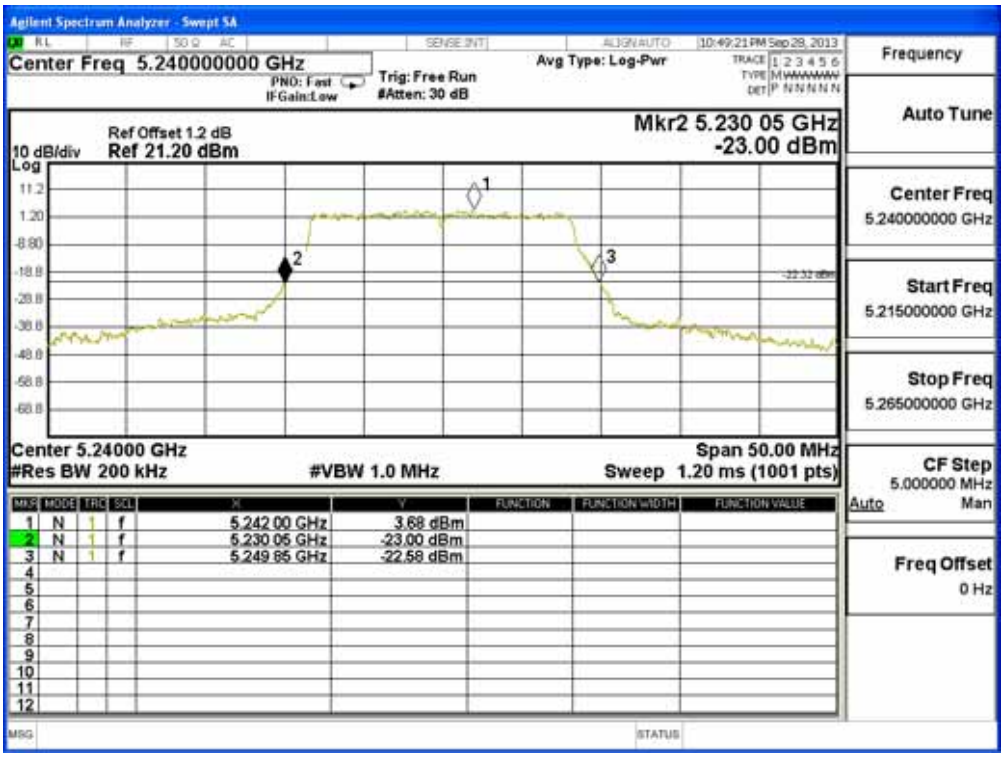


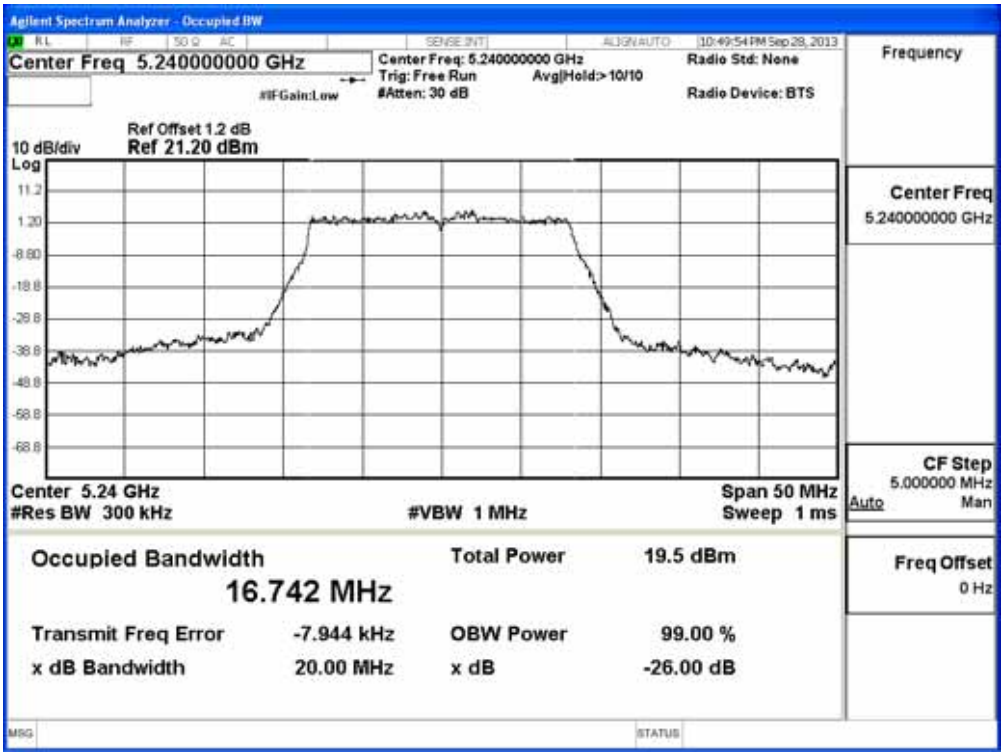
Channel 44 (5220MHz)





Channel 48 (5240MHz)

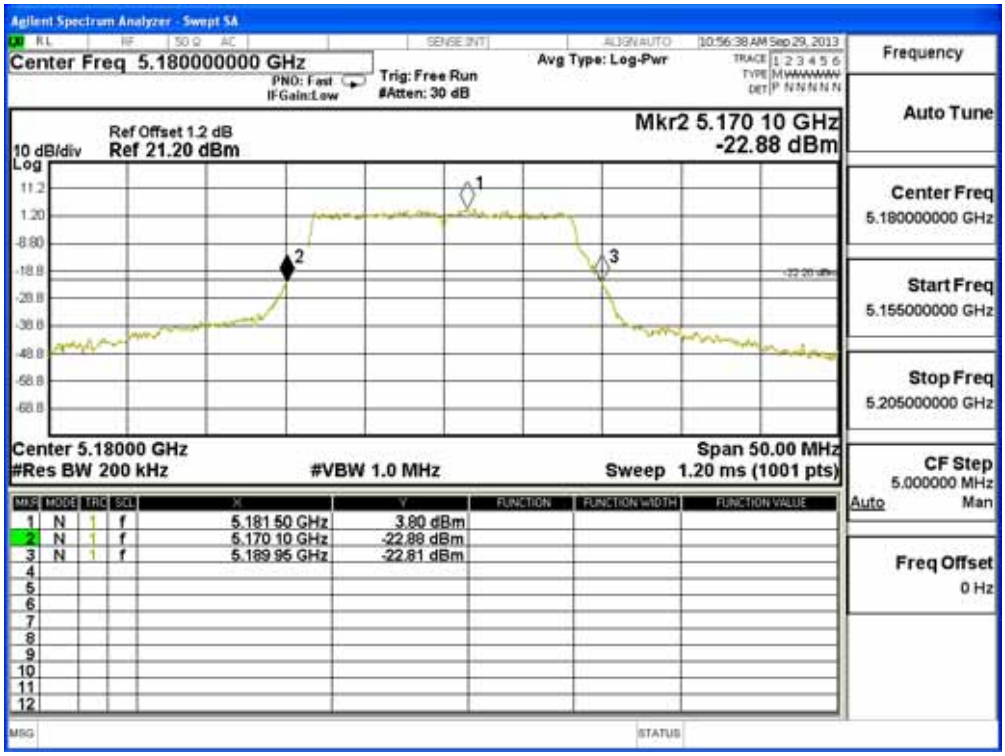


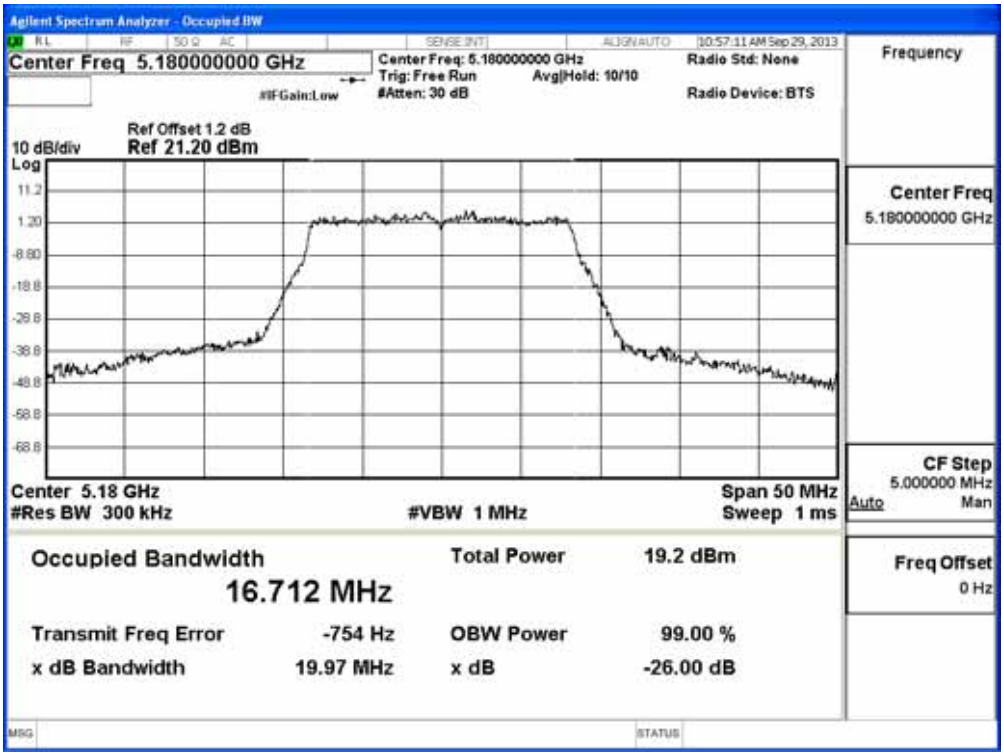

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center Freq
5.240000000 GHz
Center 5.24 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 50 MHz
Sweep 1 ms
CF Step
5.000000 MHz
Auto
Man
Occupied Bandwidth
16.742 MHz
Total Power
19.5 dBm
Transmit Freq Error
-7.944 kHz
OBW Power
99.00 %
x dB Bandwidth
20.00 MHz
x dB
-26.00 dB
Freq Offset
0 Hz
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 2)

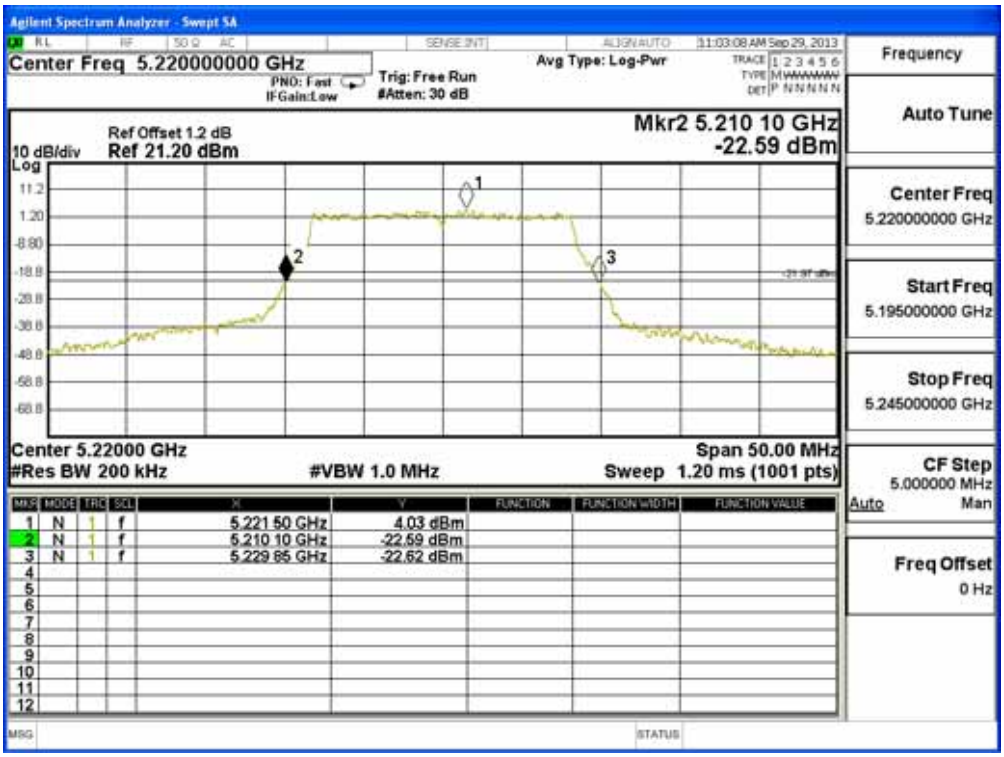
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180	19.85	16.71
44	5220	19.75	16.71
48	5240	19.95	16.73

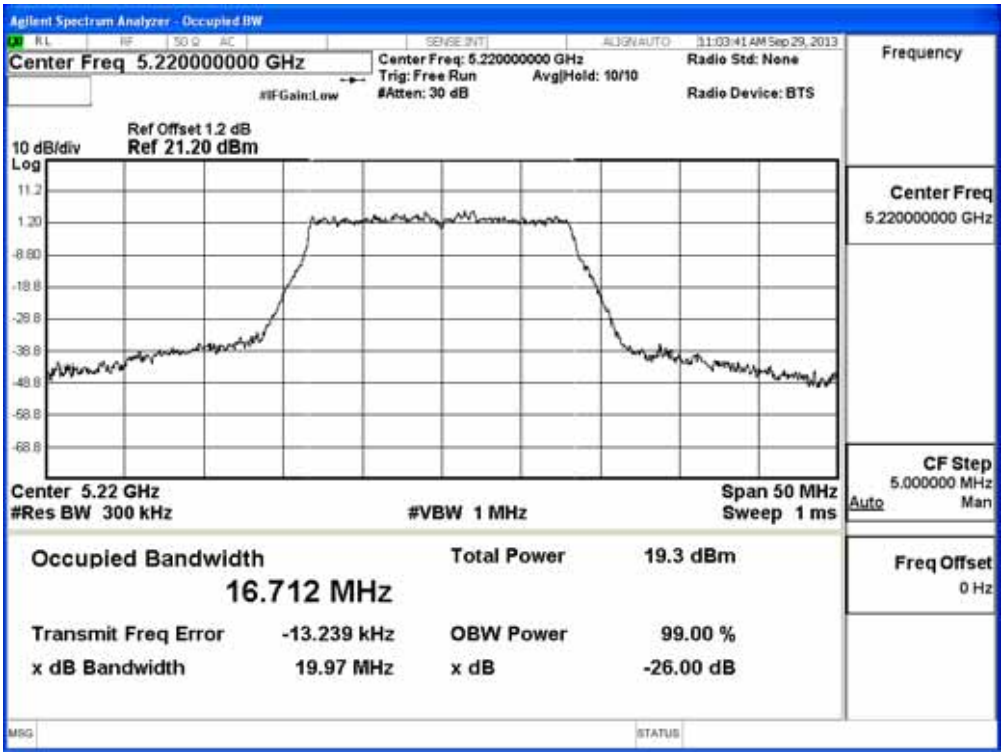
Channel 36 (5180MHz)



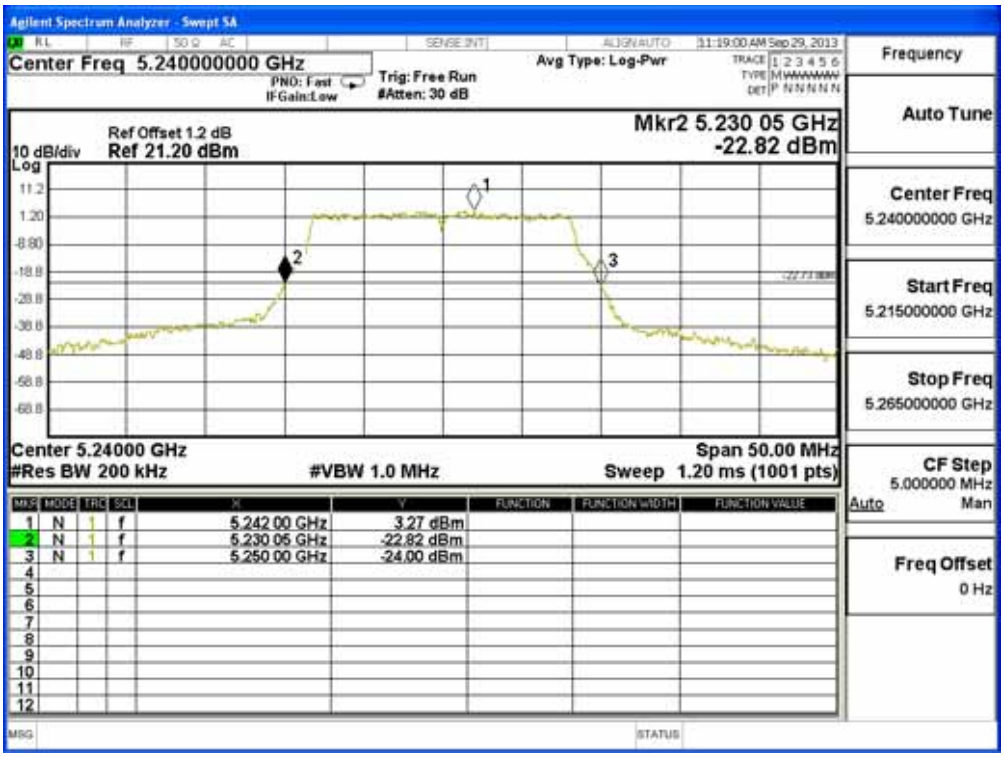


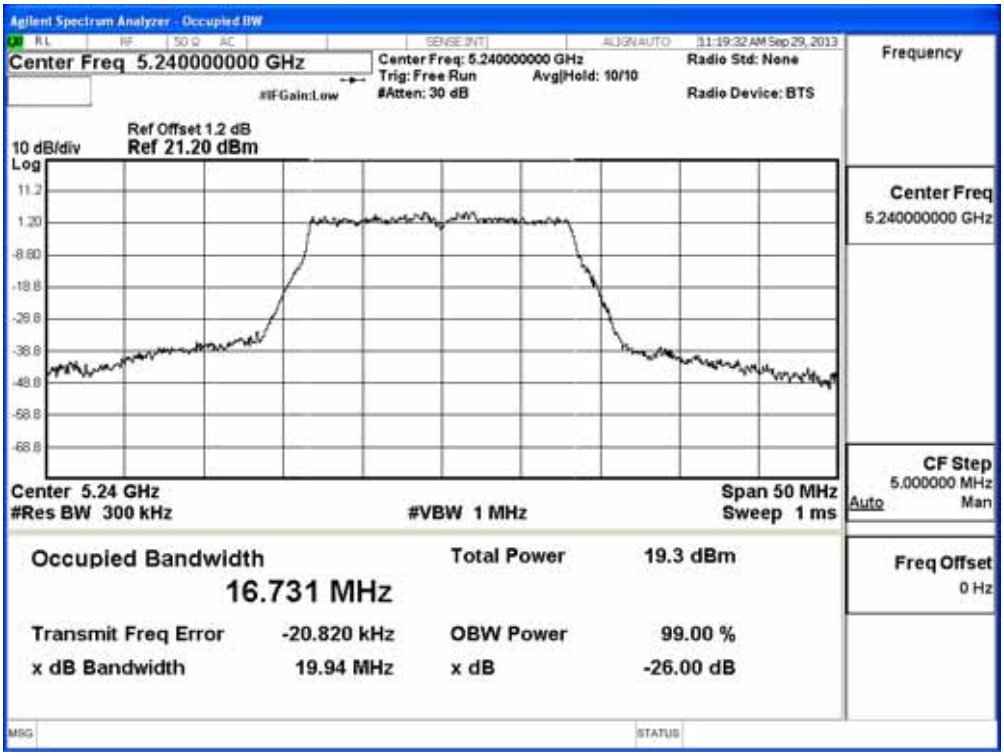
Channel 44 (5220MHz)





Channel 48 (5240MHz)

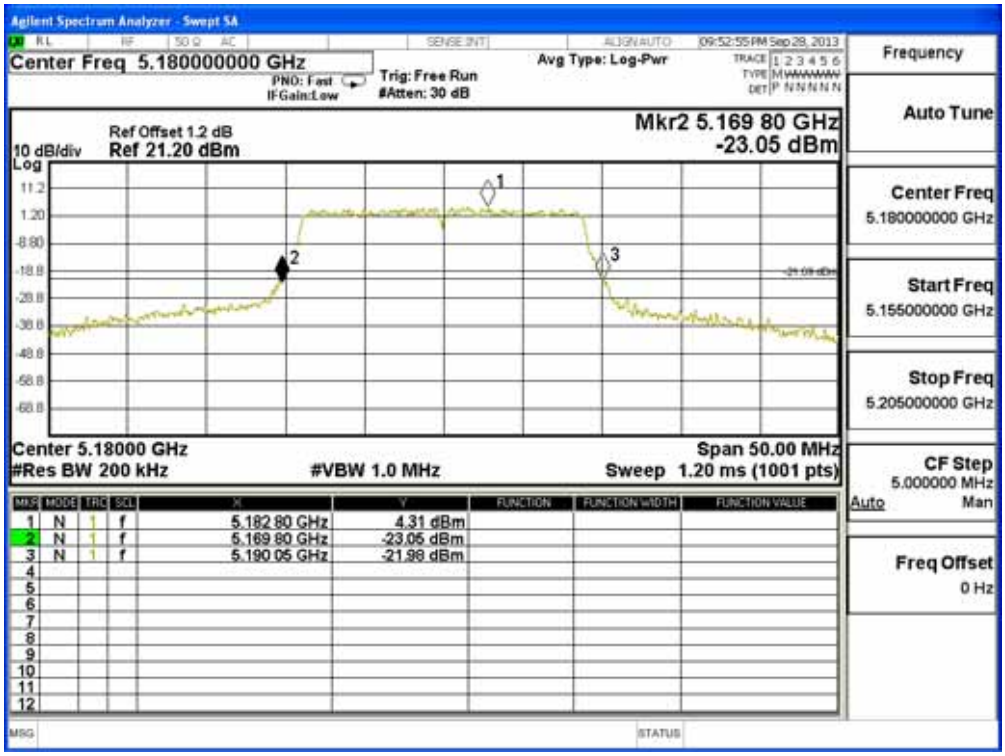


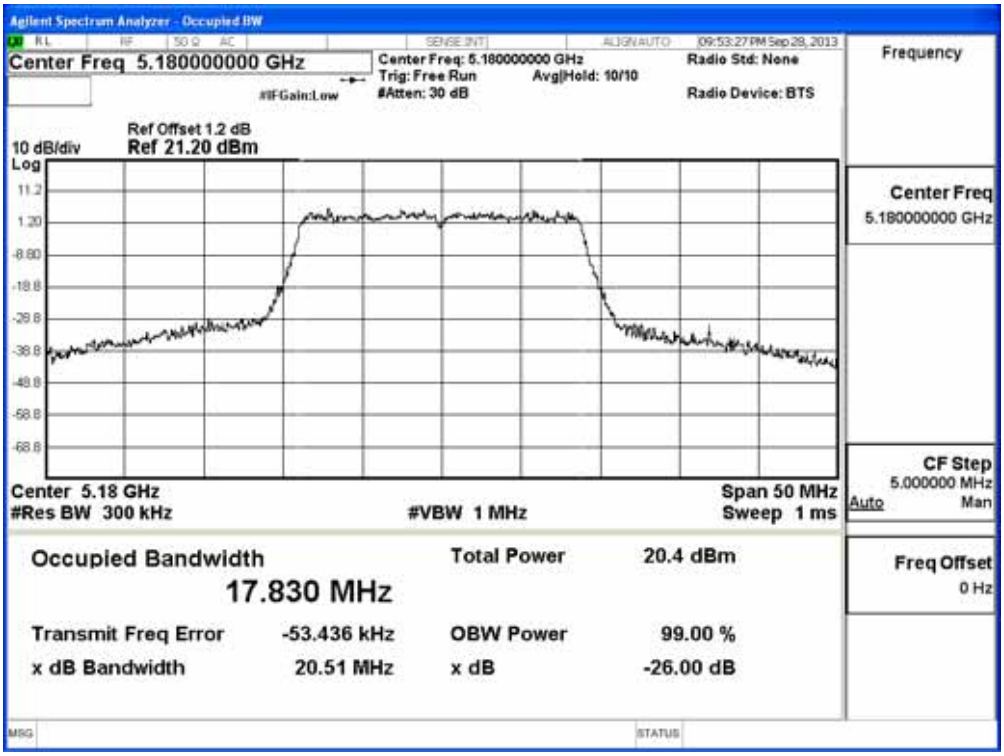

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center 5.24 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 50 MHz
Sweep 1 ms
Occupied Bandwidth
16.731 MHz
Total Power
19.3 dBm
Transmit Freq Error
-20.820 kHz
OBW Power
99.00 %
x dB Bandwidth
19.94 MHz
x dB
-26.00 dB
Frequency
Center Freq
5.240000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 0)

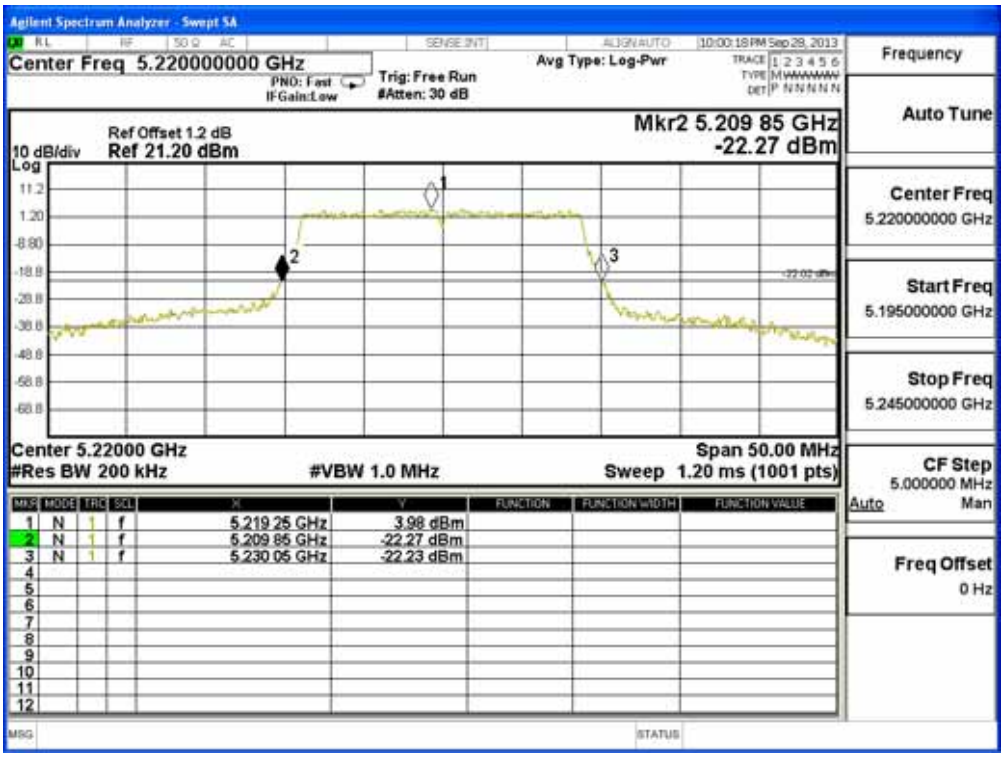
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180	20.25	17.83
44	5220	20.20	17.89
48	5240	20.30	17.82

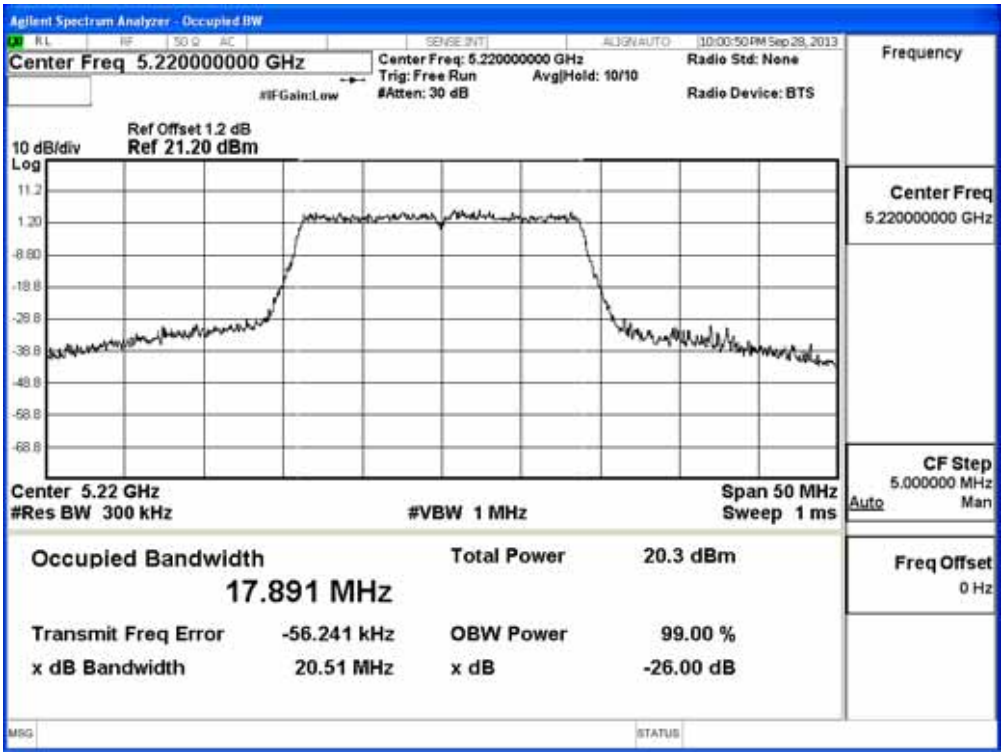
Channel 36 (5180MHz)



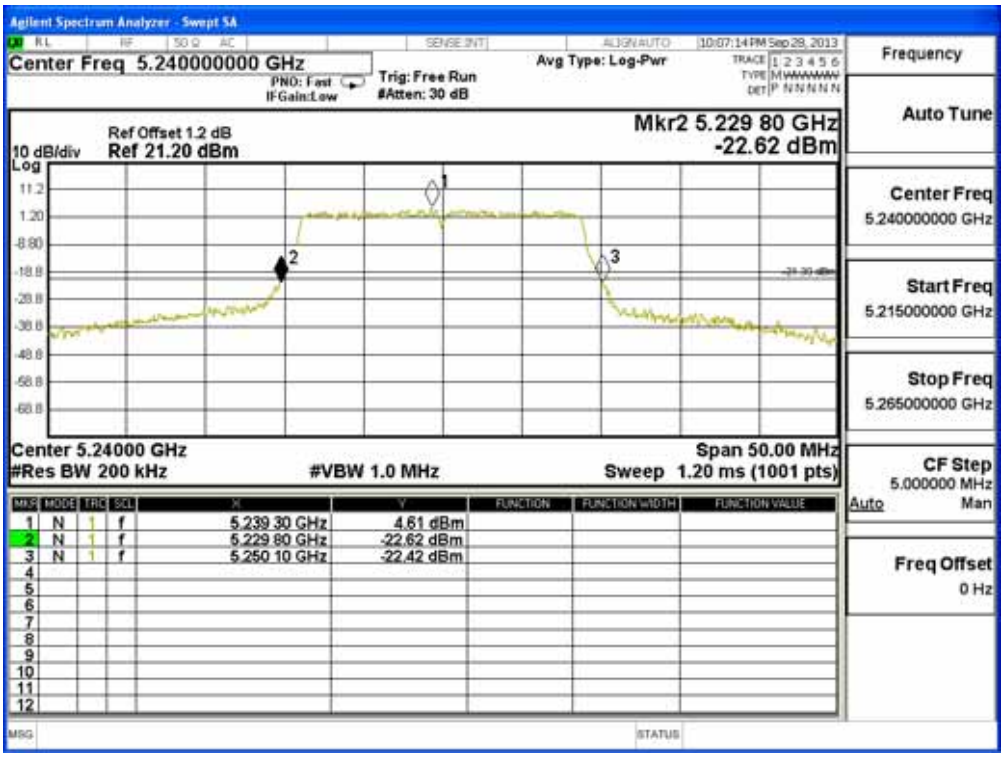


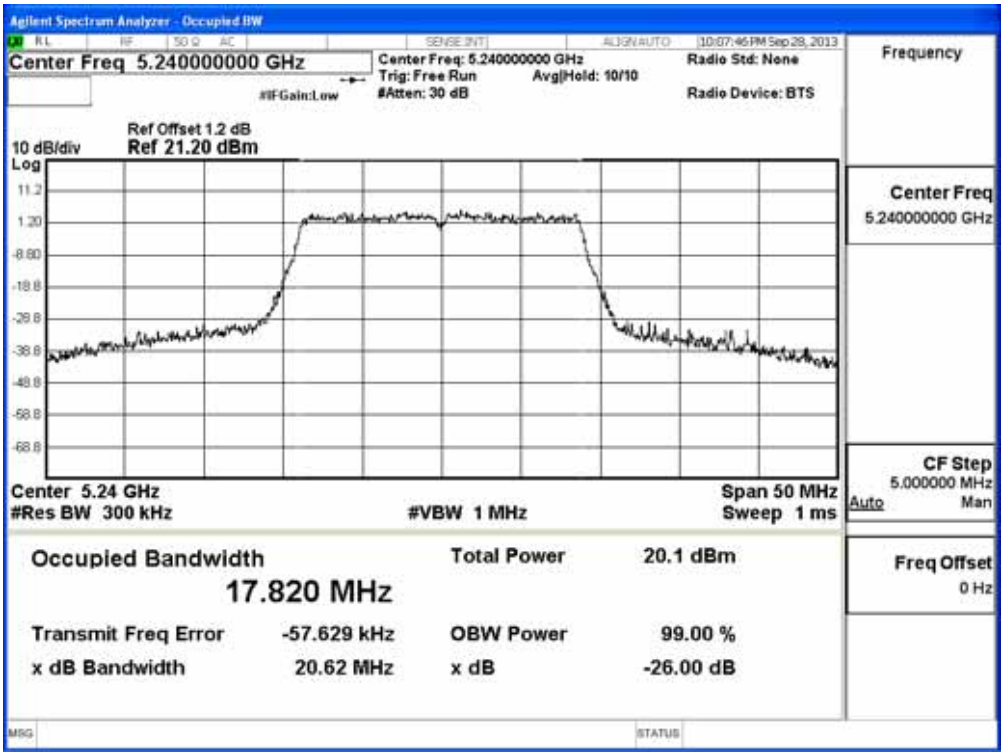
Channel 44 (5220MHz)





Channel 48 (5240MHz)

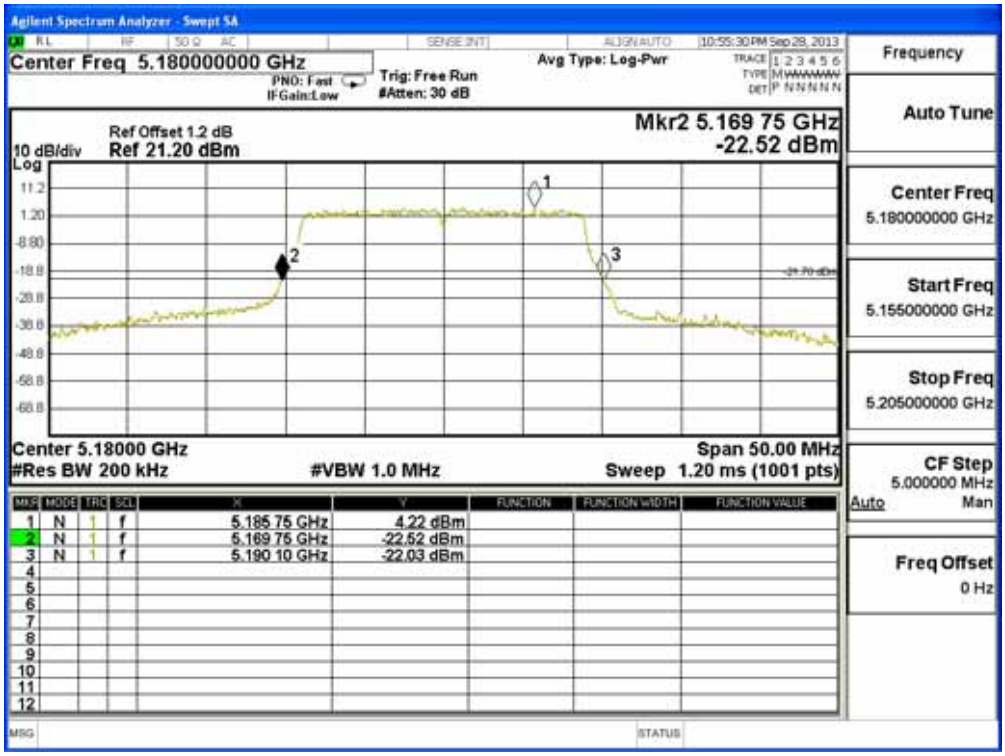


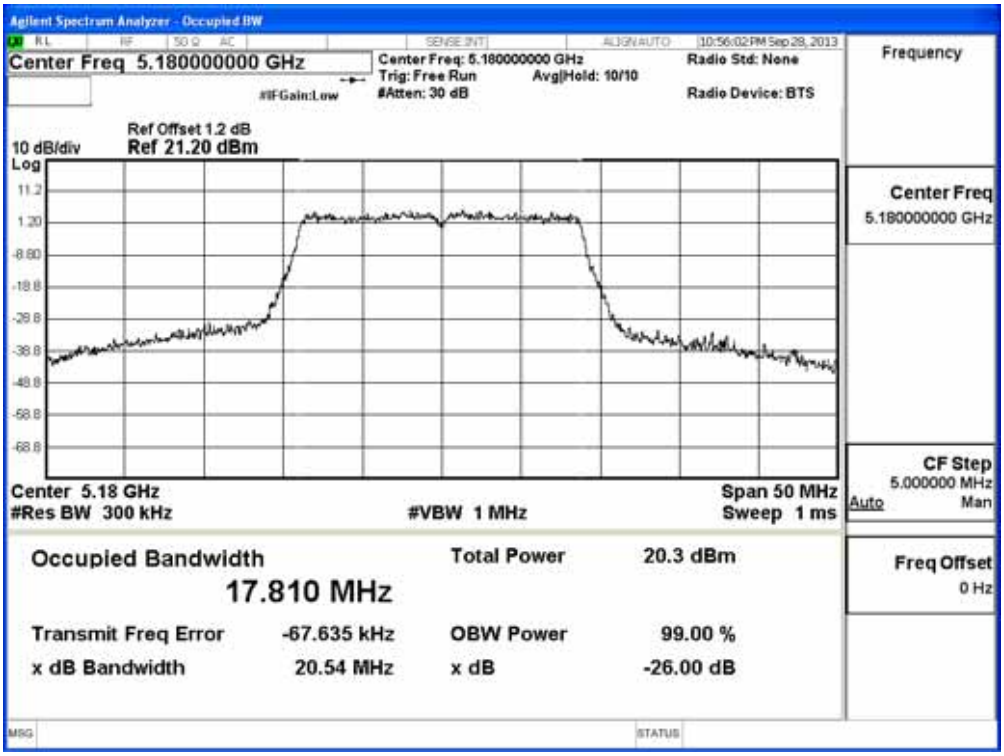

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
#IFGain:Low
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center 5.24 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 50 MHz
Sweep 1 ms
Occupied Bandwidth
17.820 MHz
Total Power
20.1 dBm
Transmit Freq Error
-57.629 kHz
OBW Power
99.00 %
x dB Bandwidth
20.62 MHz
x dB
-26.00 dB
Frequency
Center Freq
5.240000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 1)

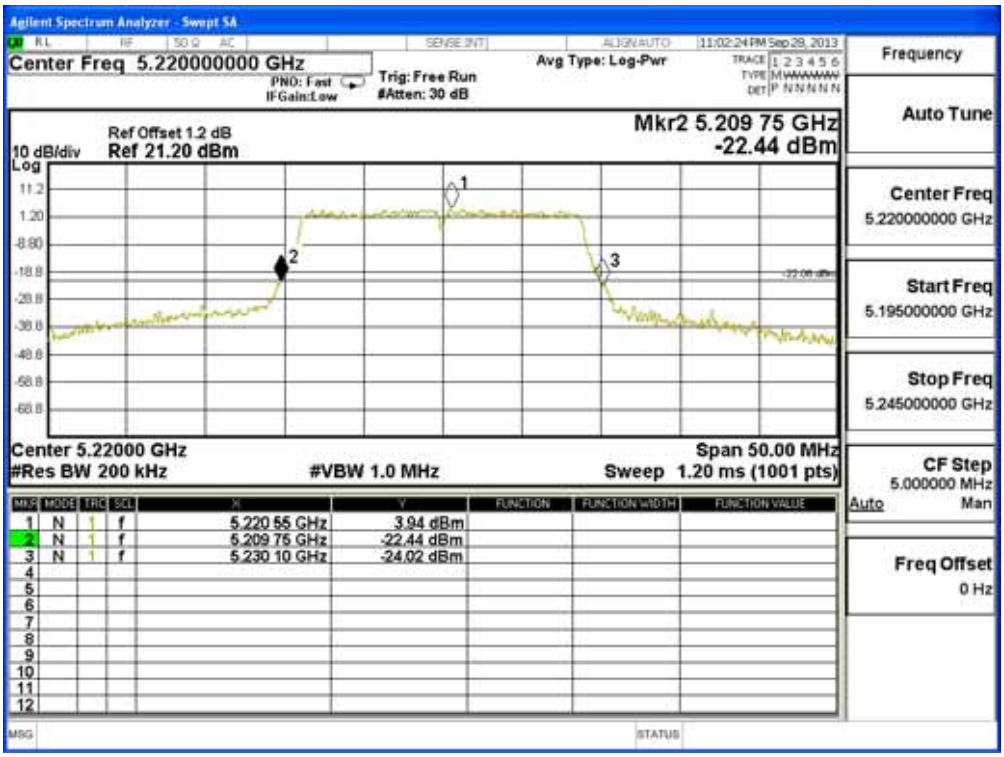
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180	20.35	17.81
44	5220	20.35	17.82
48	5240	20.25	17.85

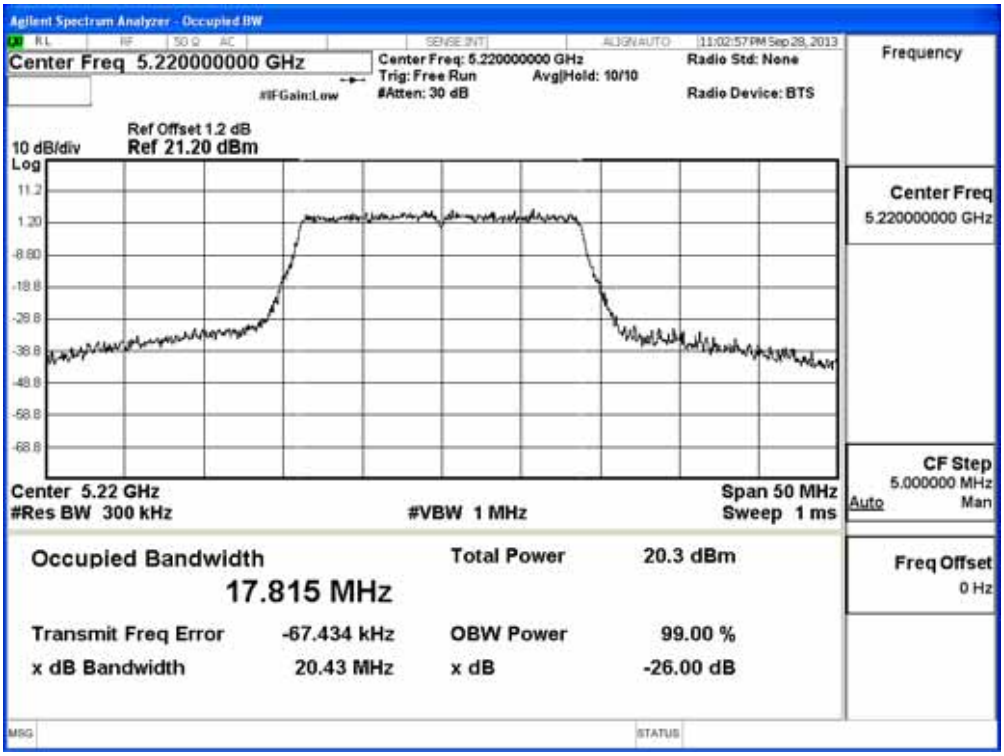
Channel 36 (5180MHz)



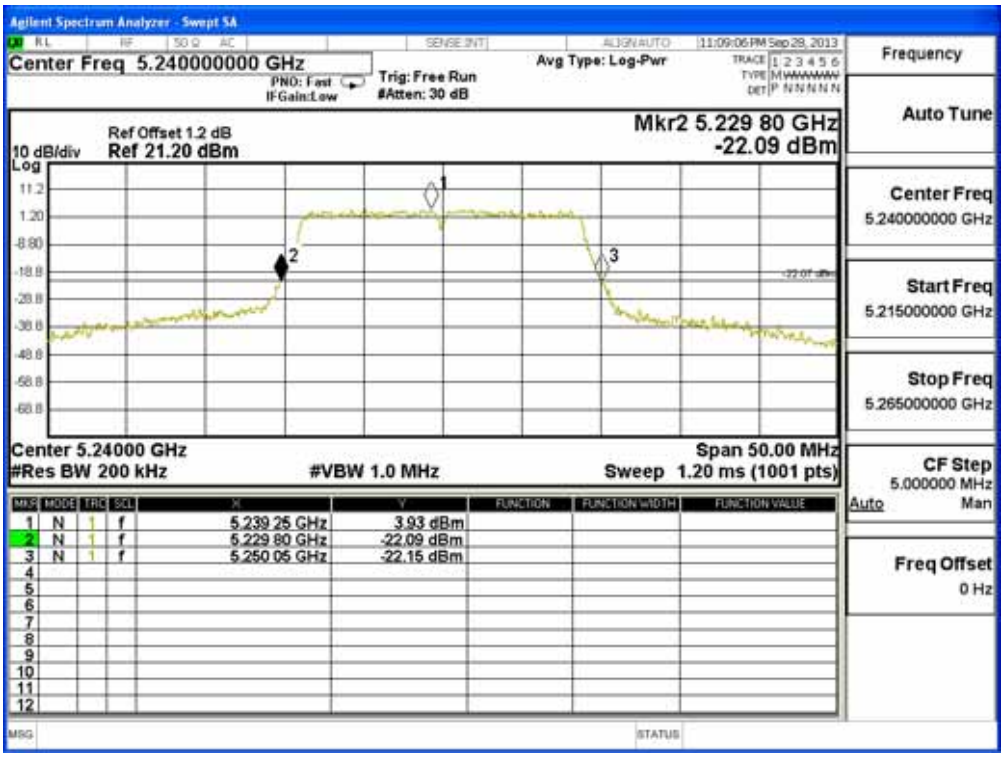


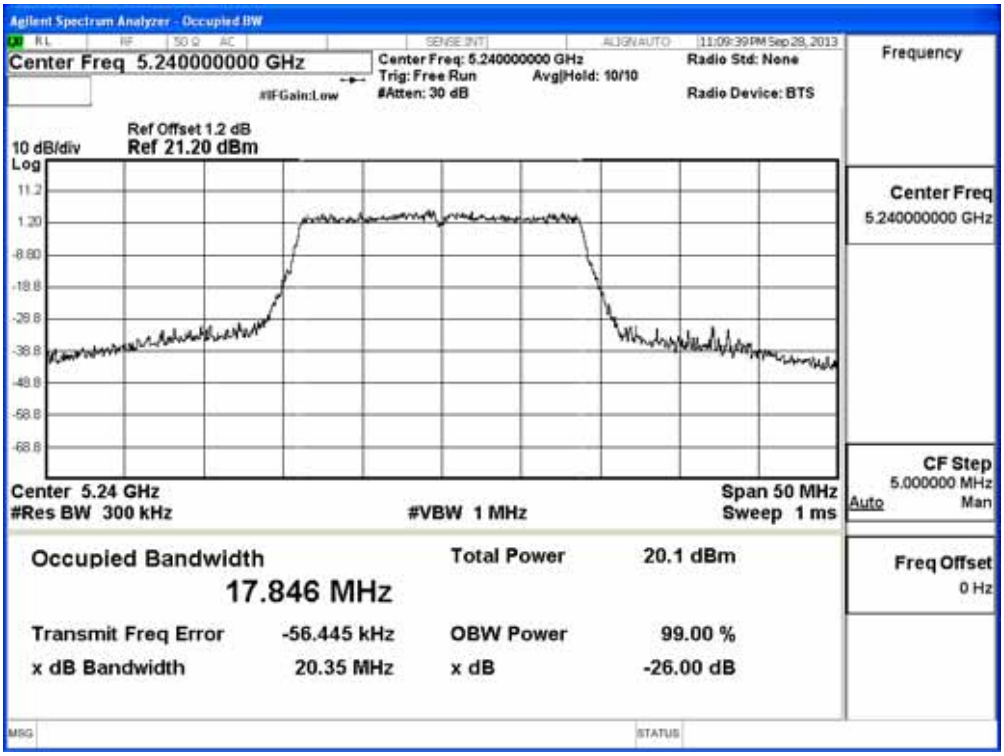
Channel 44 (5220MHz)





Channel 48 (5240MHz)

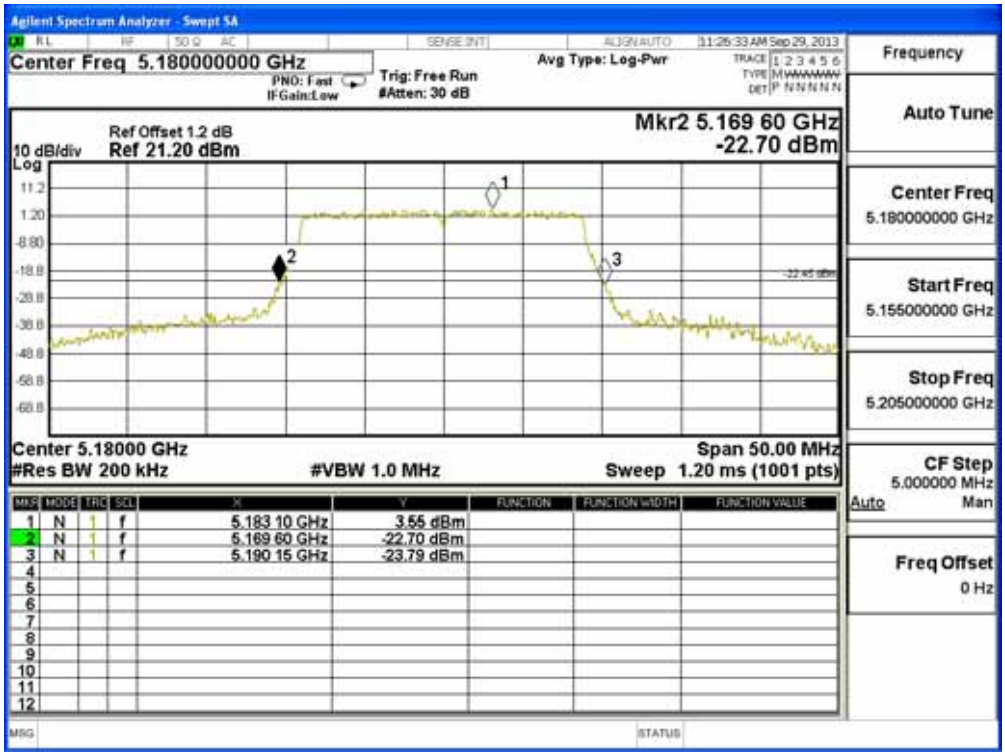


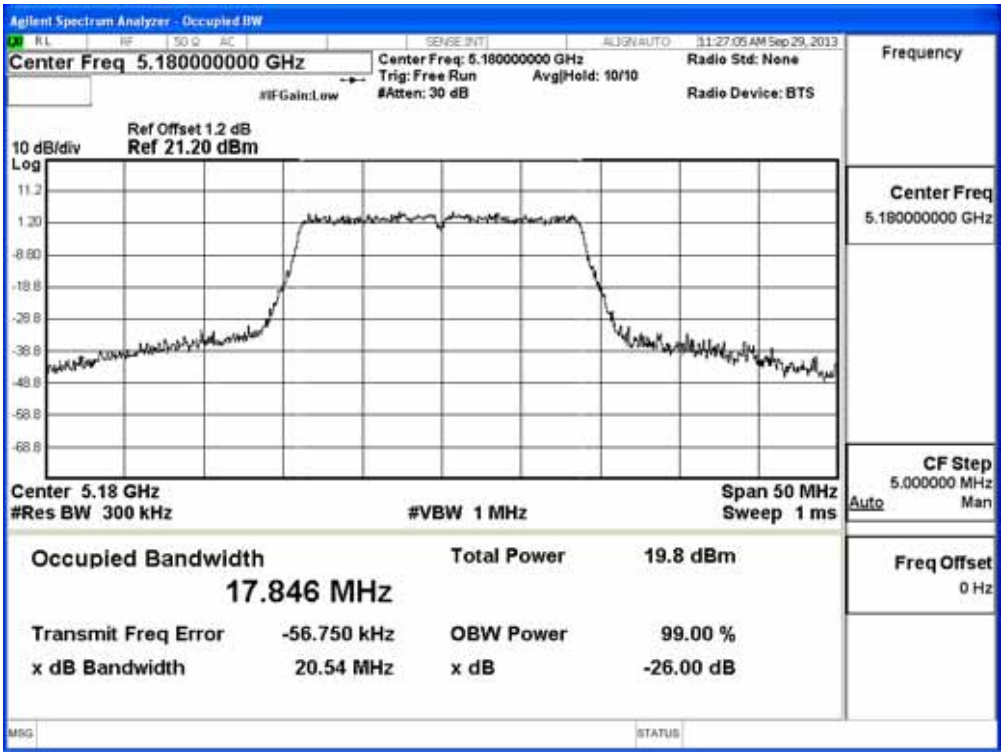

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
11:09:39 PM Sep 28, 2013
Frequency
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center Freq
5.240000000 GHz
Center 5.24 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 50 MHz
Sweep 1 ms
CF Step
5.000000 MHz
Auto
Man
Occupied Bandwidth
17.846 MHz
Total Power
20.1 dBm
Transmit Freq Error
-56.445 kHz
OBW Power
99.00 %
x dB Bandwidth
20.35 MHz
x dB
-26.00 dB
Freq Offset
0 Hz
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 2)

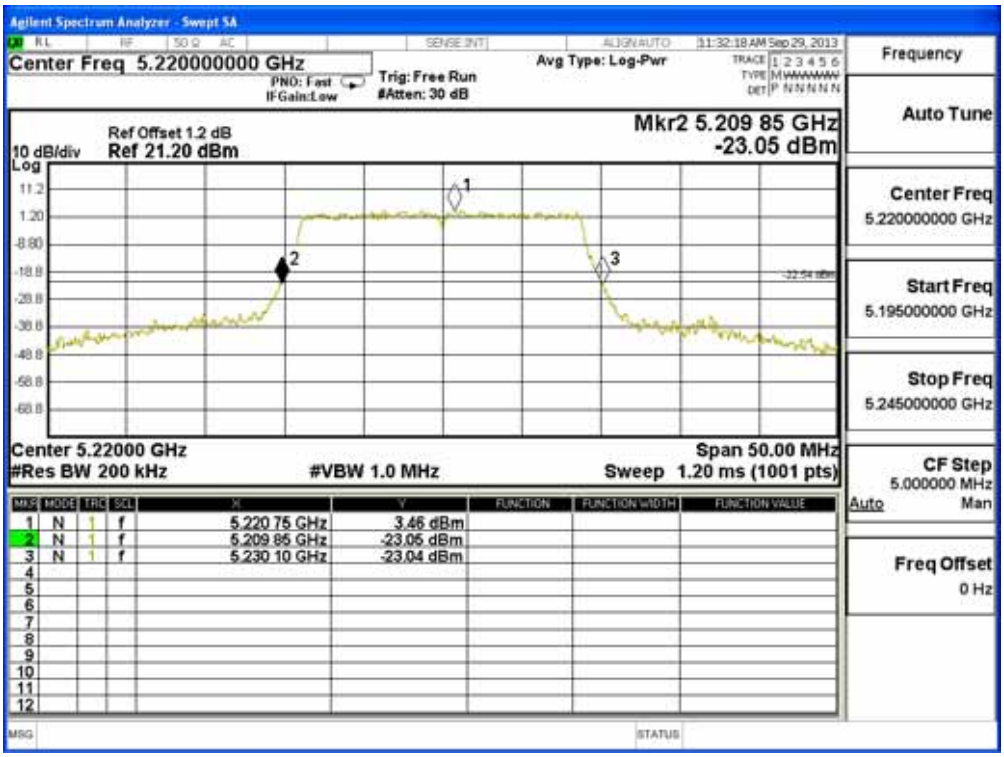
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180	20.55	17.85
44	5220	20.25	17.84
48	5240	20.35	17.81

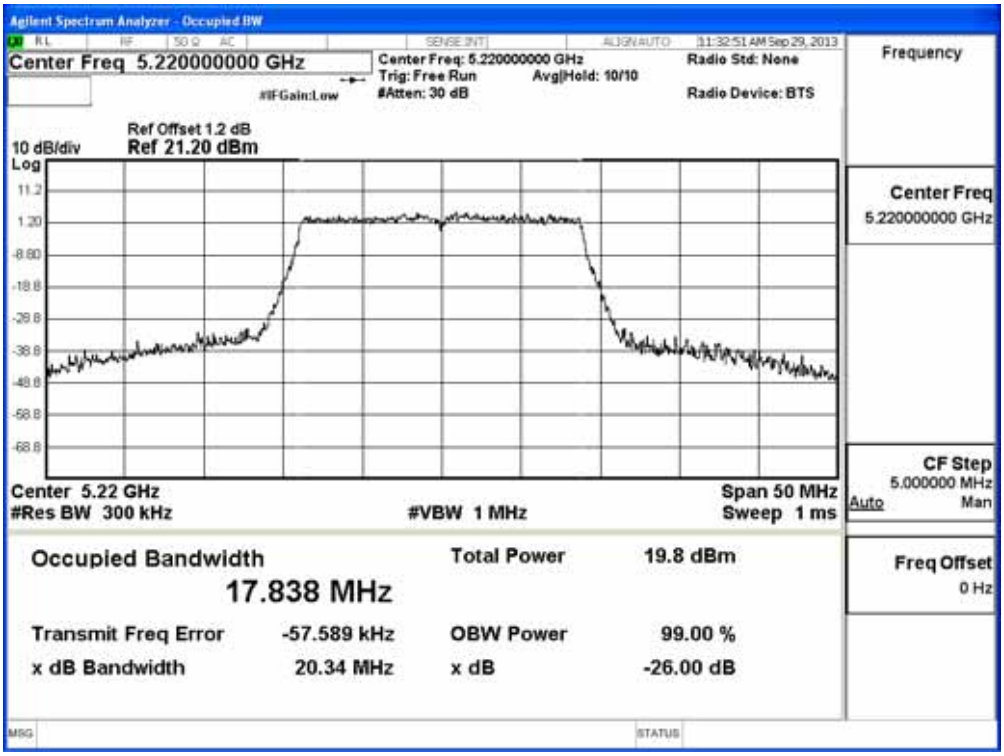
Channel 36 (5180MHz)



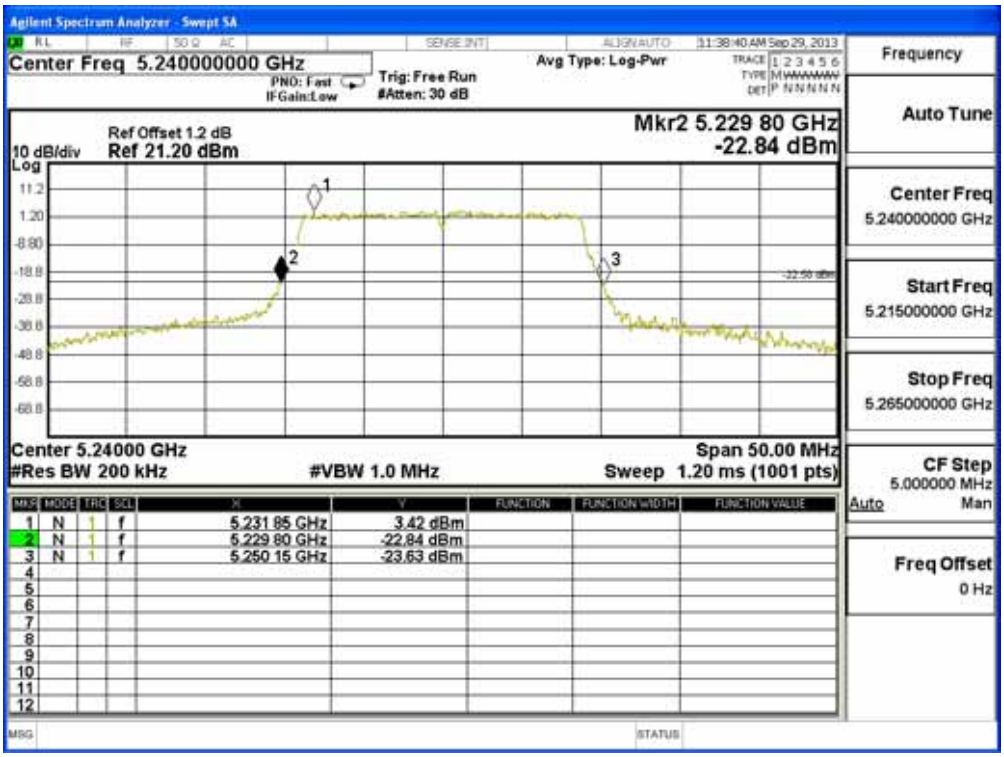


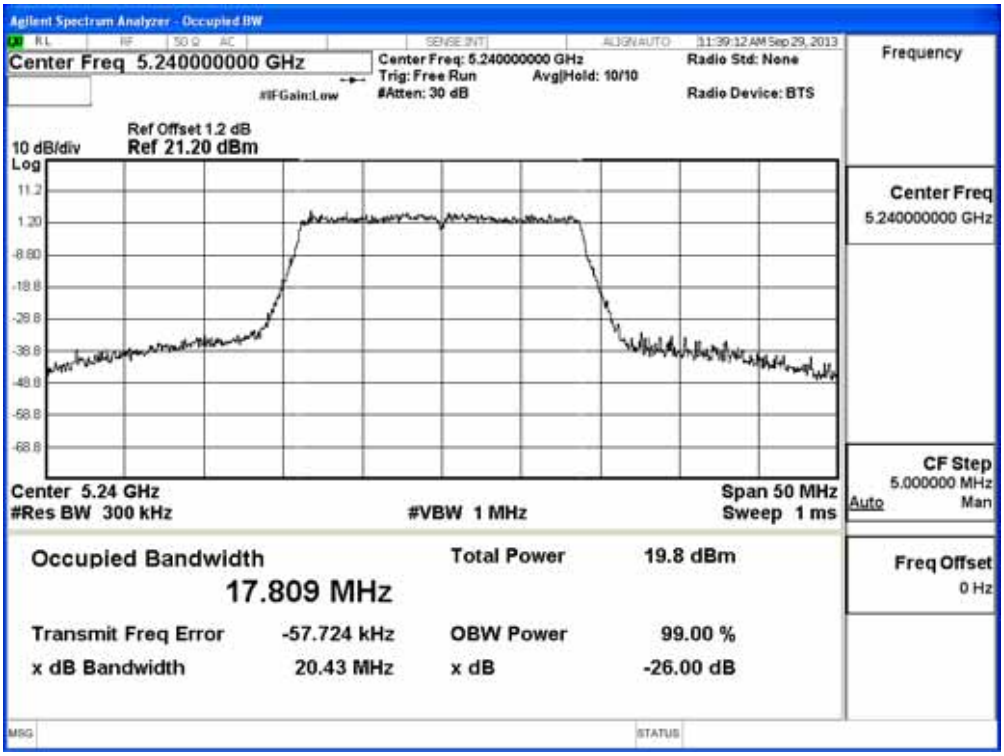
Channel 44 (5220MHz)





Channel 48 (5240MHz)

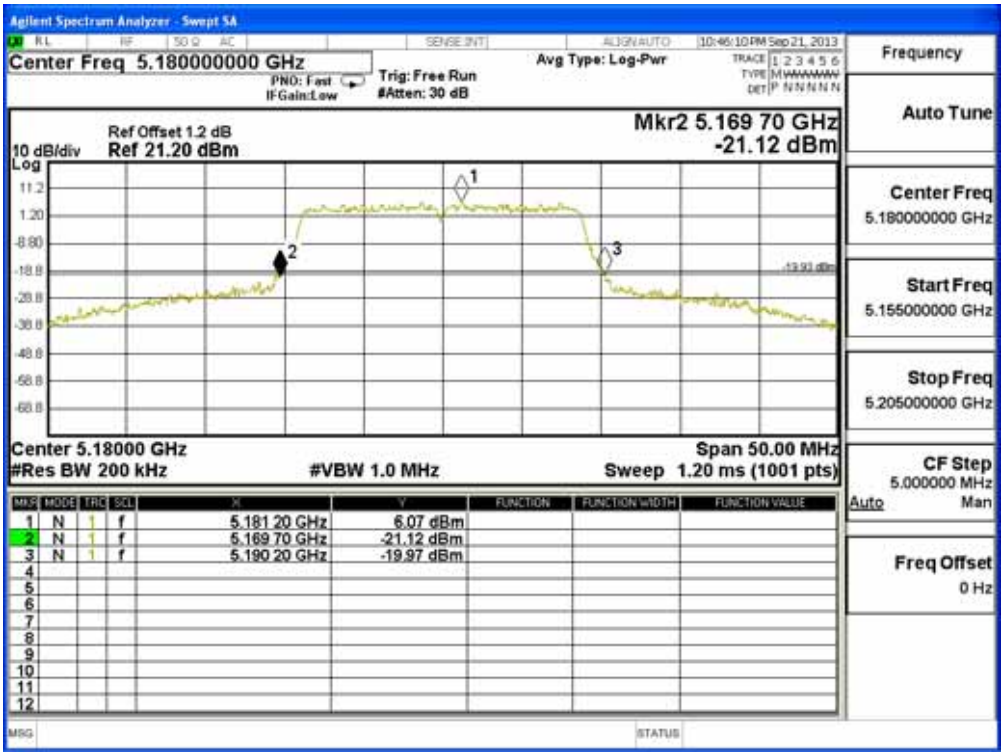


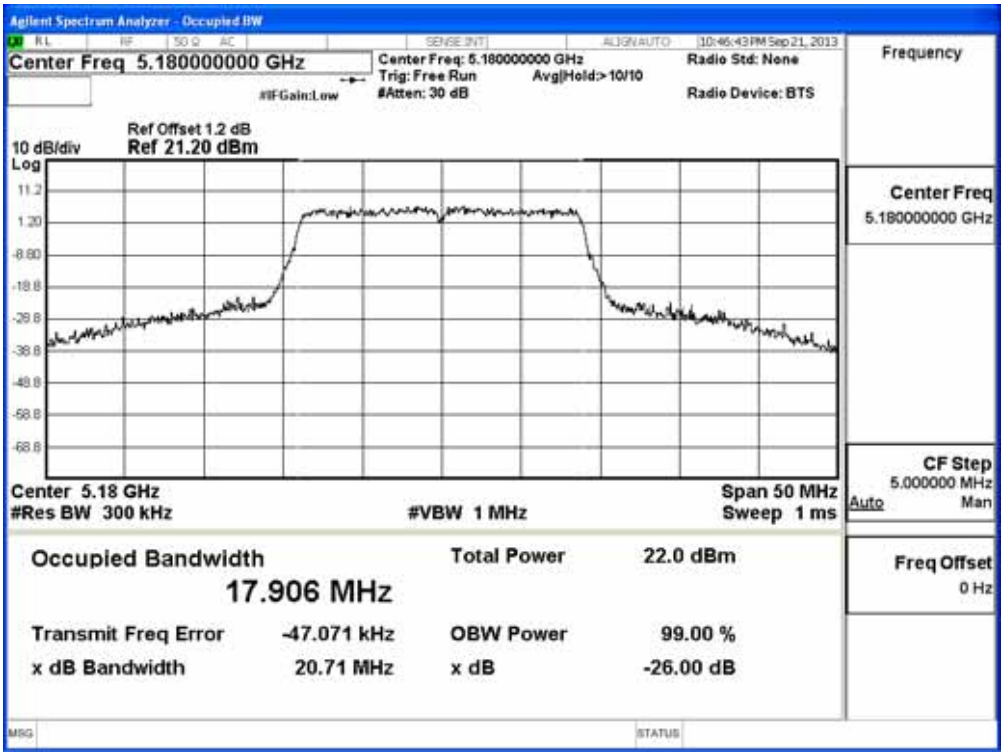

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
11:39:12 AM Sep 29, 2013
Frequency
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center Freq
5.240000000 GHz
Center 5.24 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 50 MHz
Sweep 1 ms
CF Step
5.000000 MHz
Auto
Man
Occupied Bandwidth
17.809 MHz
Total Power
19.8 dBm
Freq Offset
0 Hz
Transmit Freq Error
-57.724 kHz
OBW Power
99.00 %
x dB Bandwidth
20.43 MHz
x dB
-26.00 dB
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 0)

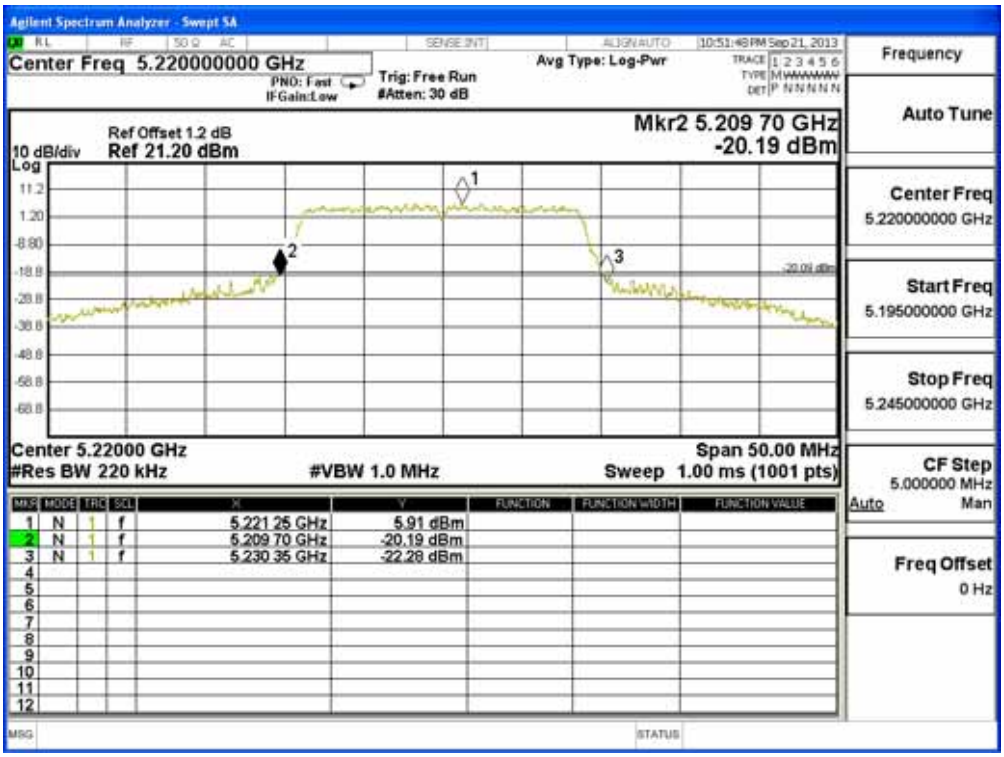
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180	20.50	17.91
44	5220	20.65	17.95
48	5240	20.85	17.89

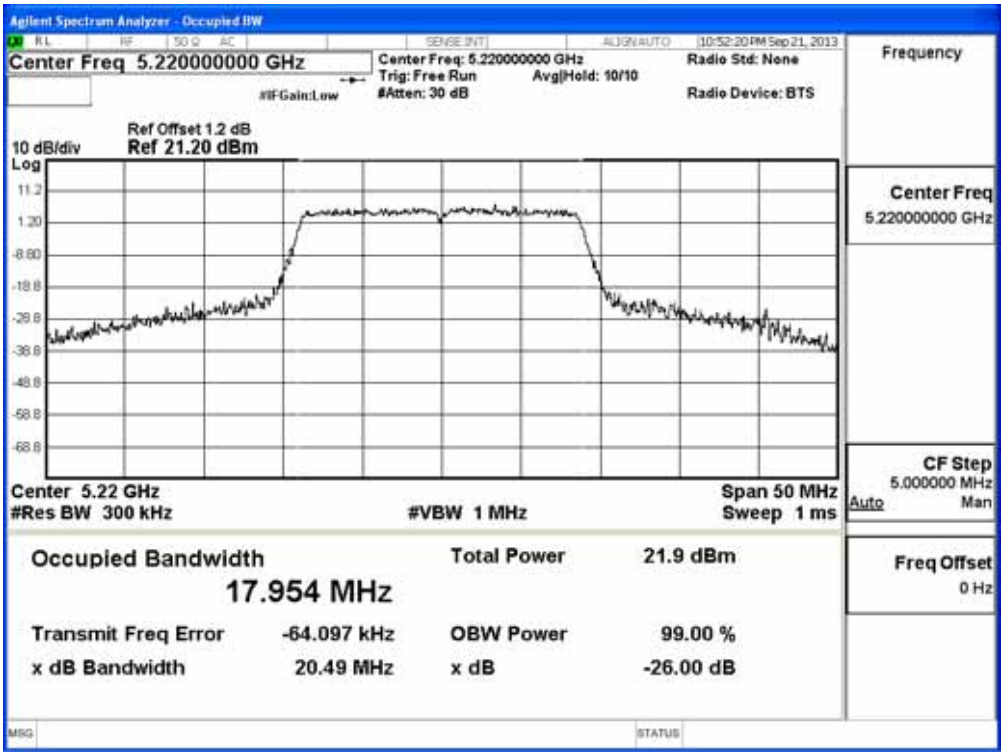
Channel 36 (5180MHz)



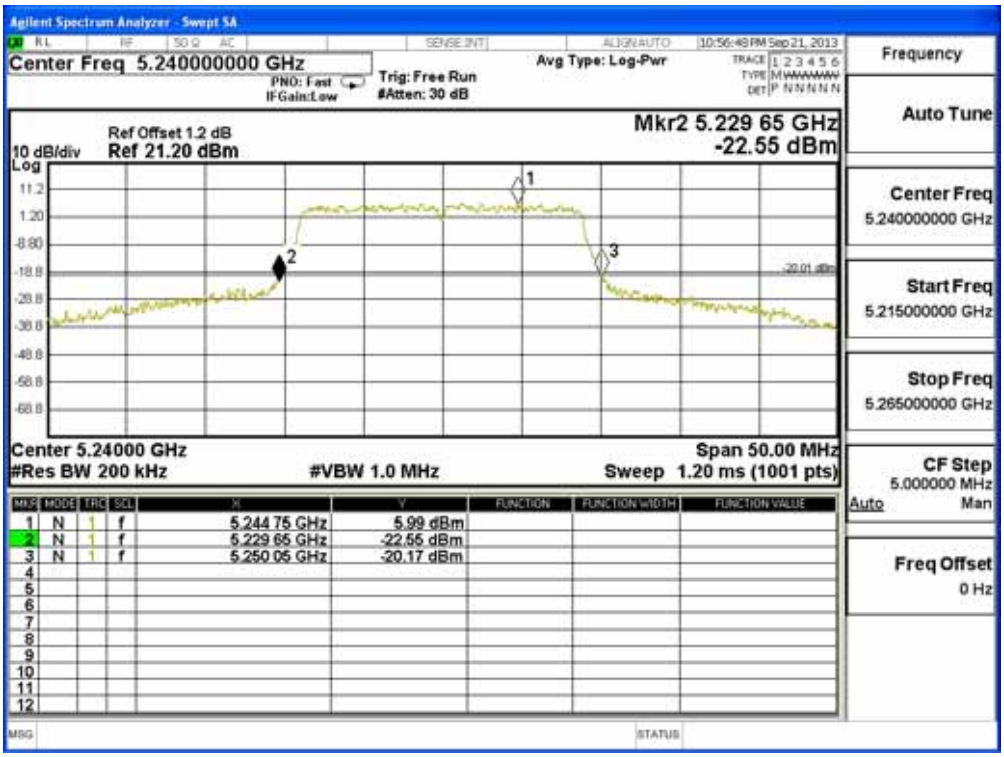


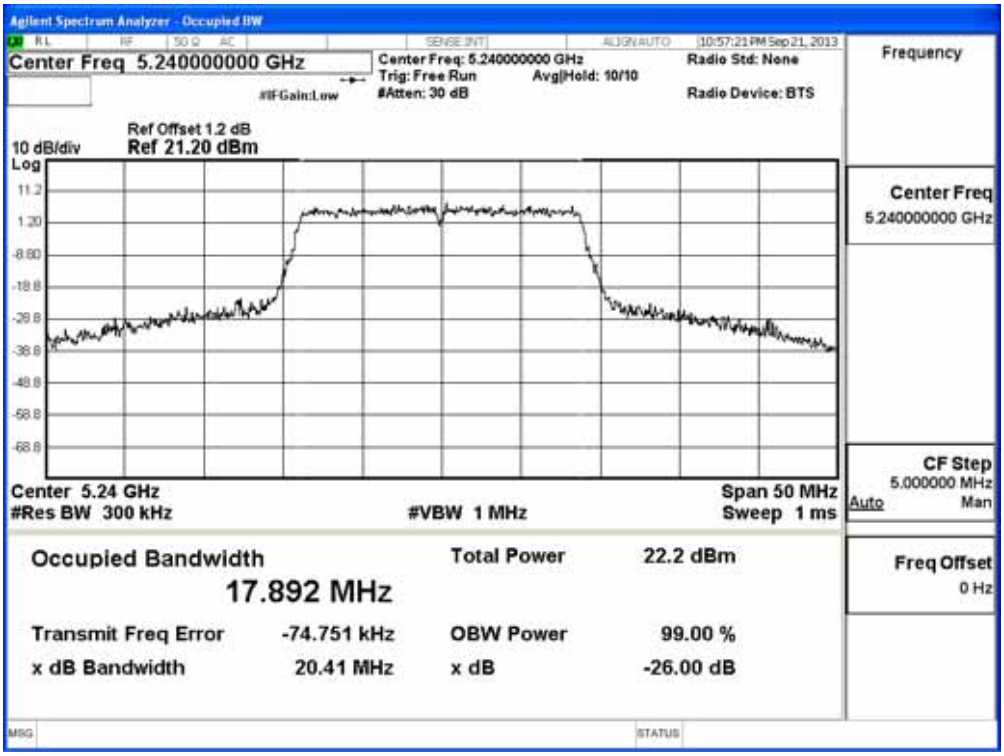
Channel 44 (5220MHz)





Channel 48 (5240MHz)

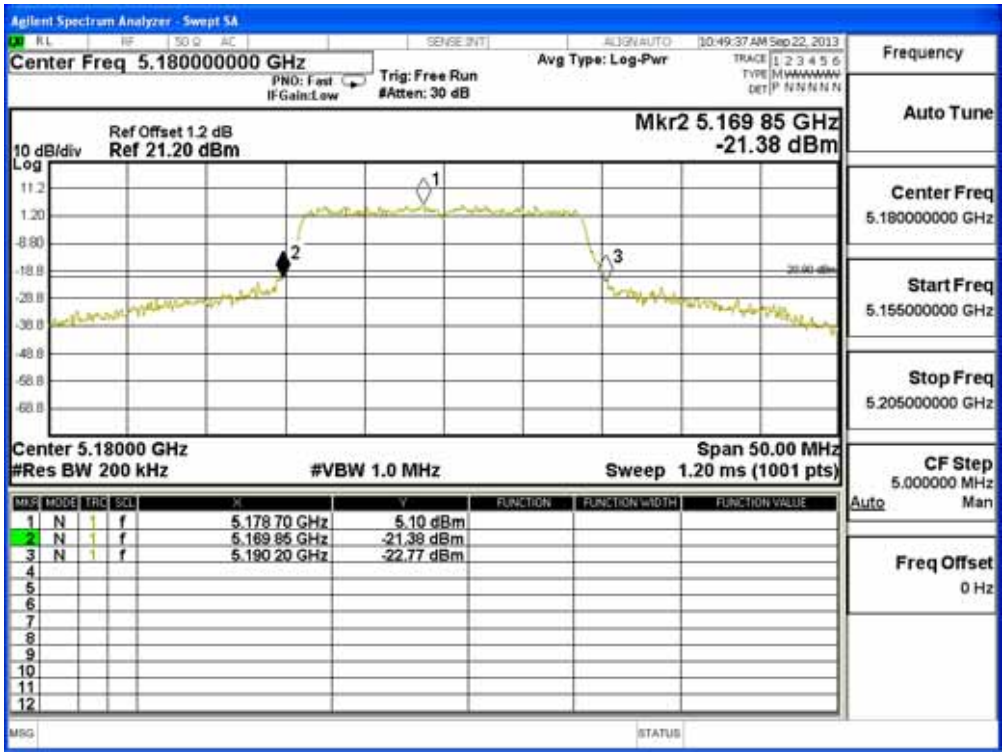


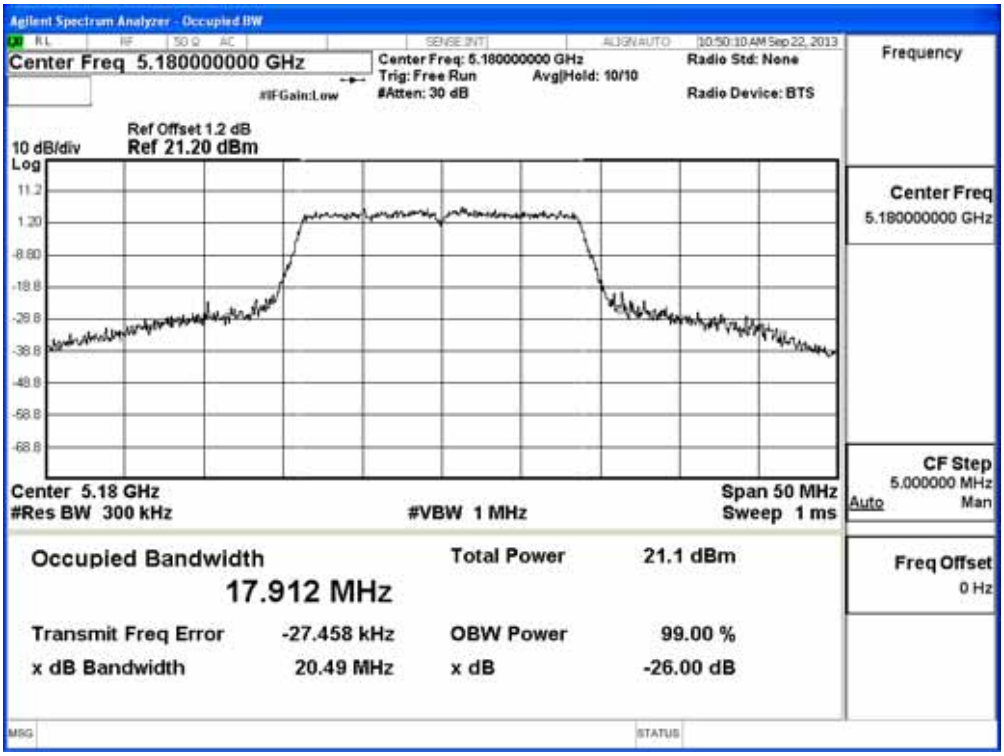

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
Center 5.24 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 50 MHz
Sweep 1 ms
Occupied Bandwidth
17.892 MHz
Total Power
22.2 dBm
Transmit Freq Error
-74.751 kHz
OBW Power
99.00 %
x dB Bandwidth
20.41 MHz
x dB
-26.00 dB
Frequency
Center Freq
5.240000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 1)

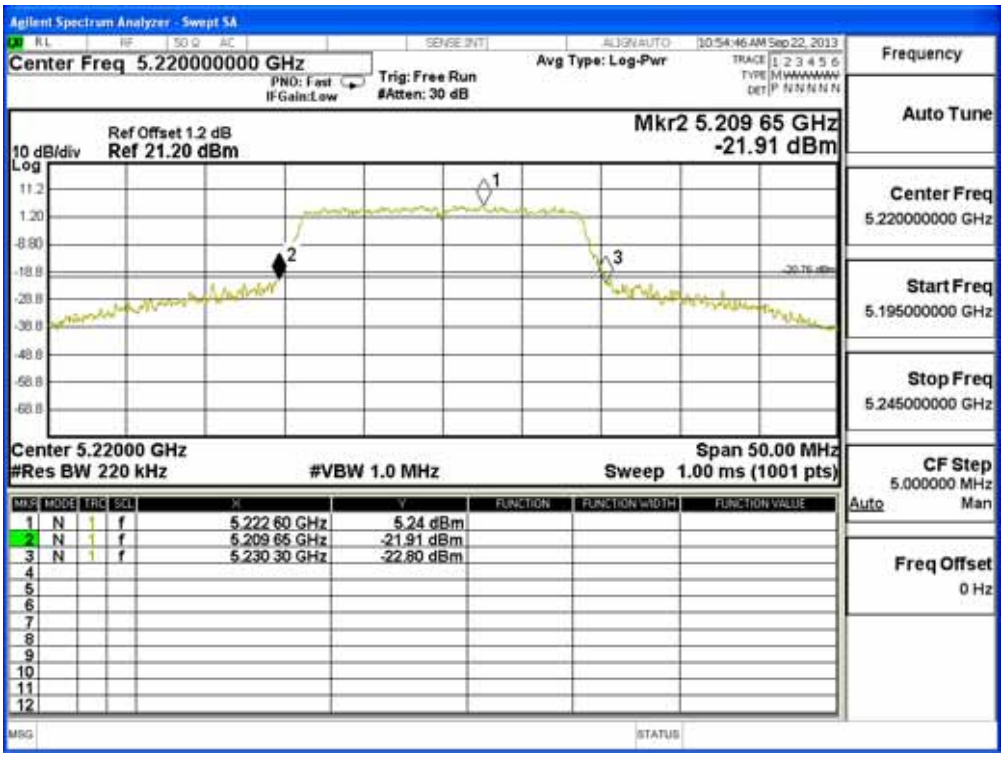
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180	20.35	17.91
44	5220	20.65	17.92
48	5240	20.40	17.90

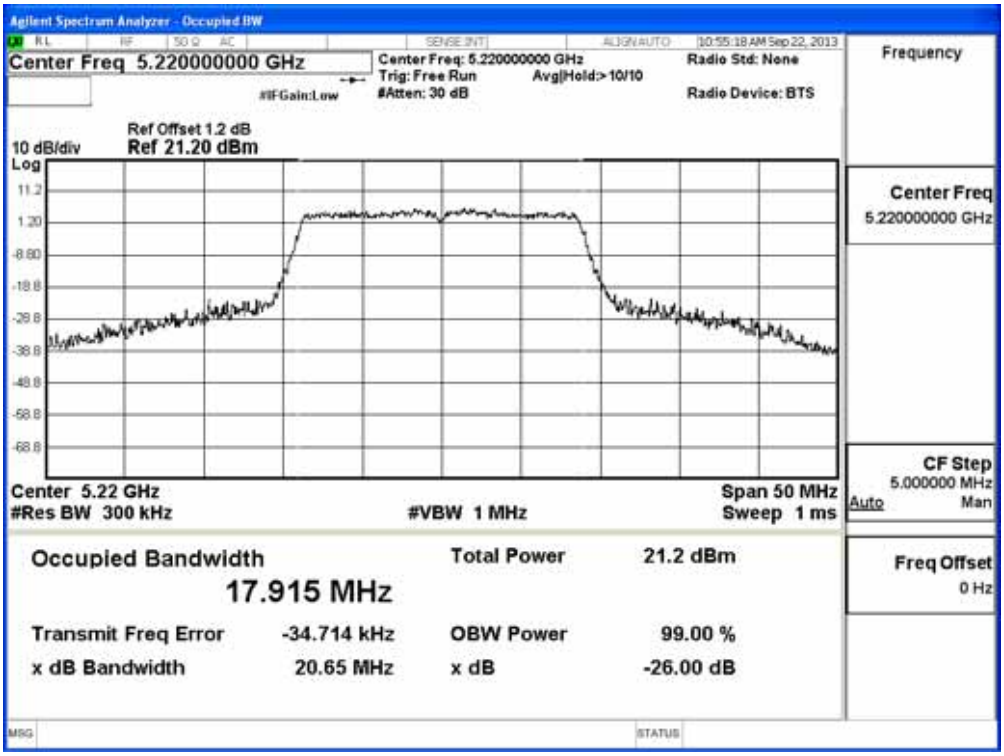
Channel 36 (5180MHz)



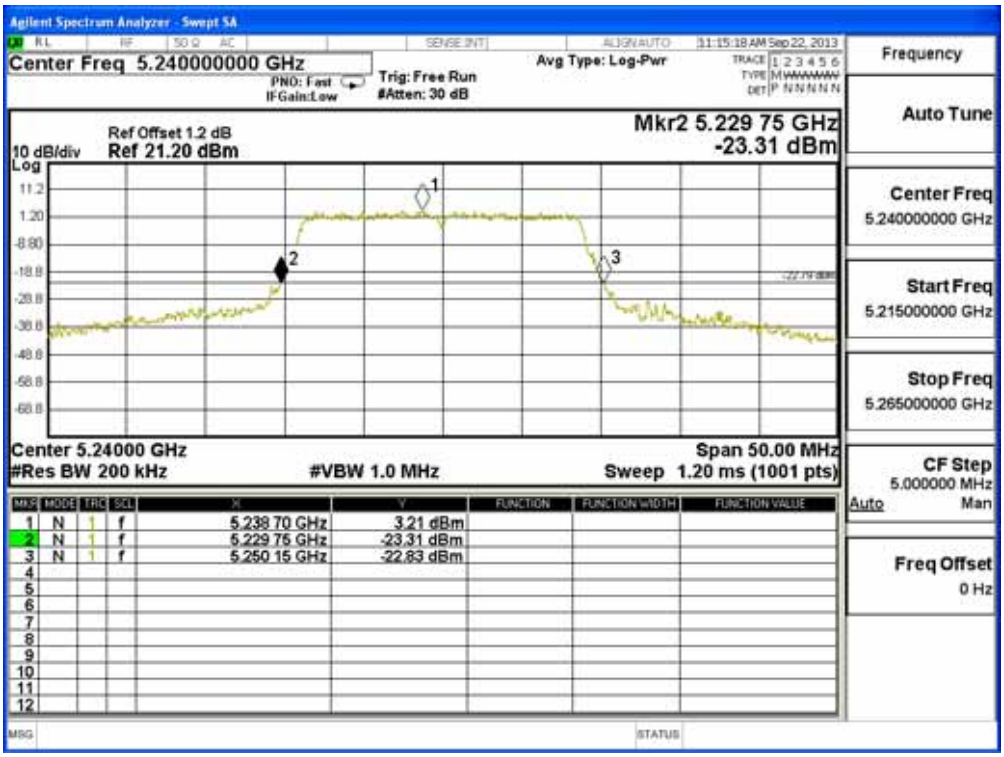


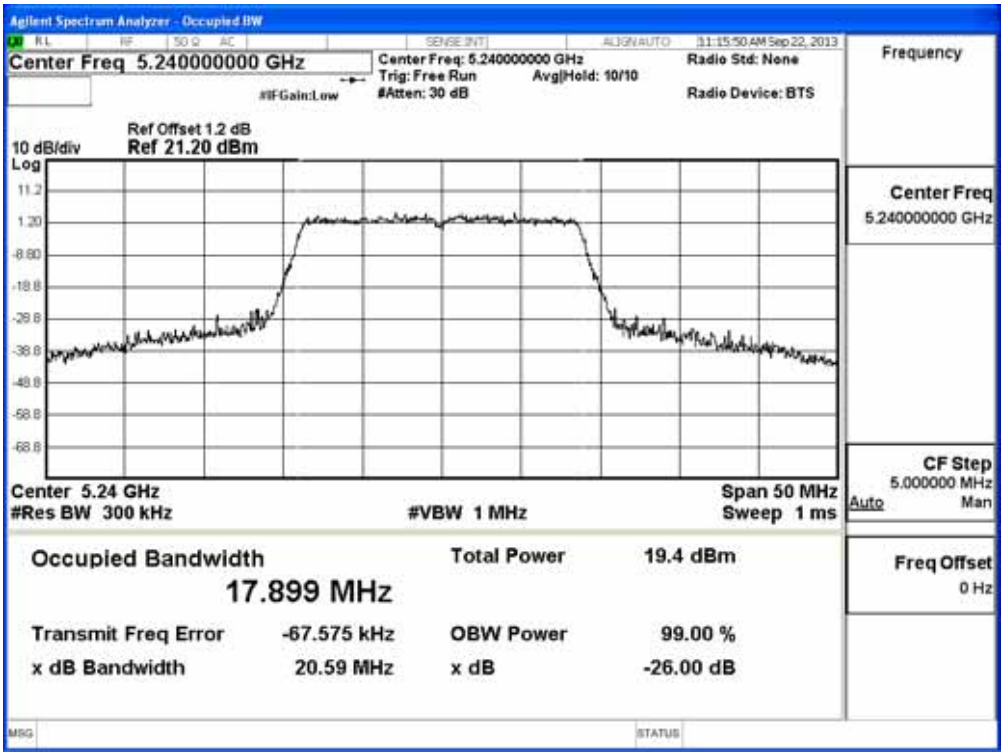
Channel 44 (5220MHz)





Channel 48 (5240MHz)

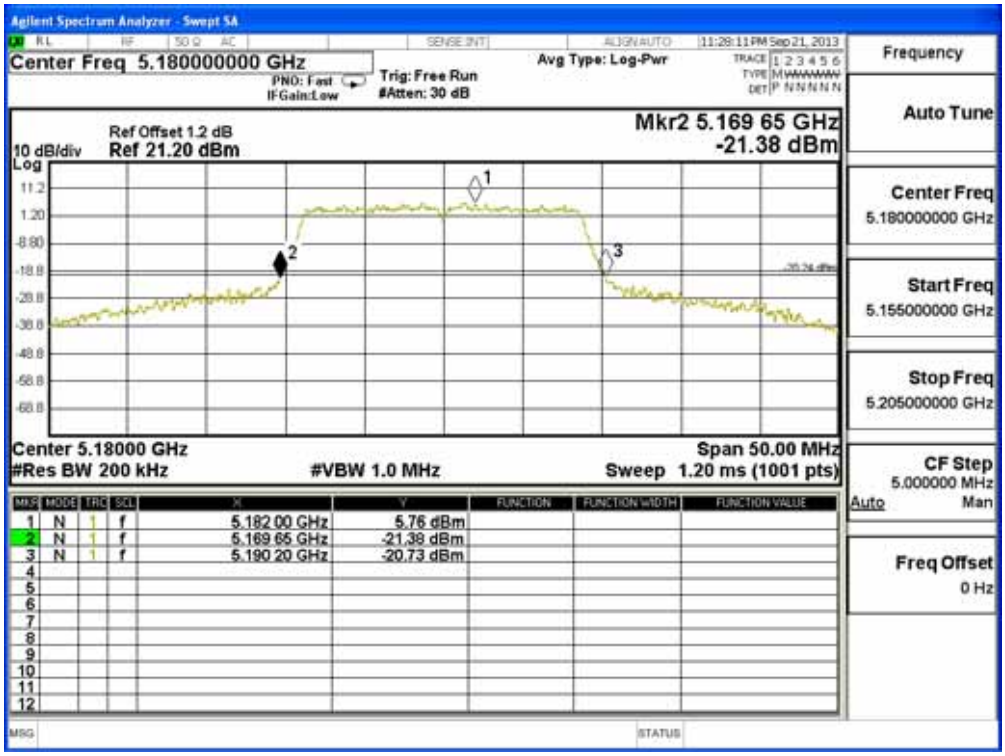


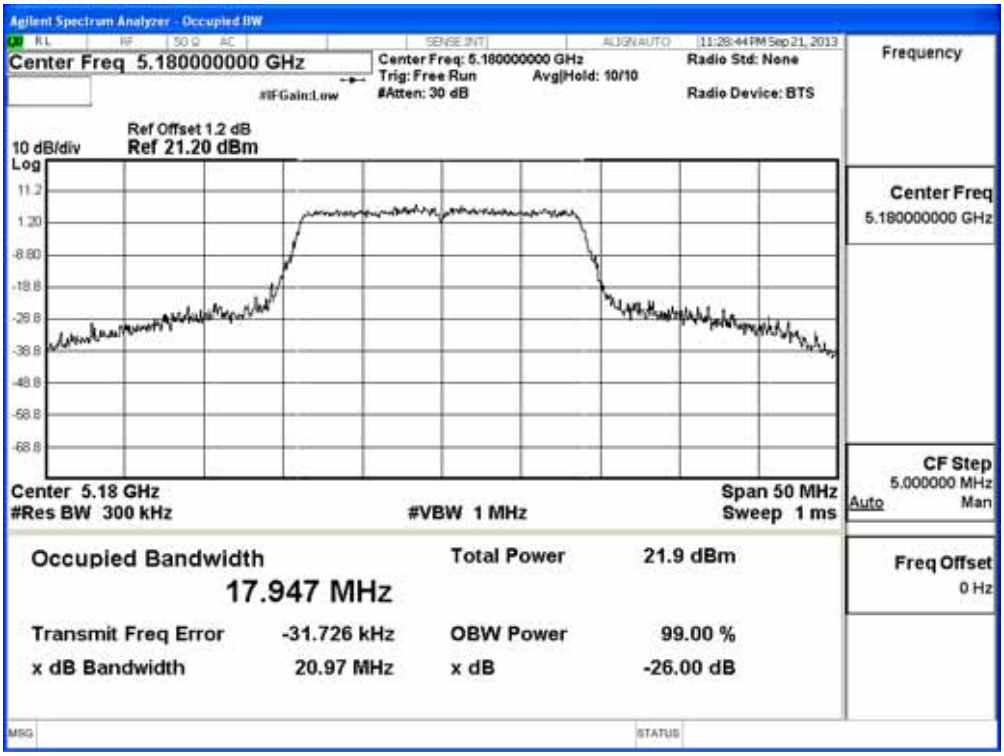

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
#IFGain:Low
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center 5.24 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 50 MHz
Sweep 1 ms
Occupied Bandwidth
17.899 MHz
Total Power
19.4 dBm
Transmit Freq Error
-67.575 kHz
OBW Power
99.00 %
x dB Bandwidth
20.59 MHz
x dB
-26.00 dB
Frequency
Center Freq
5.240000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 2)

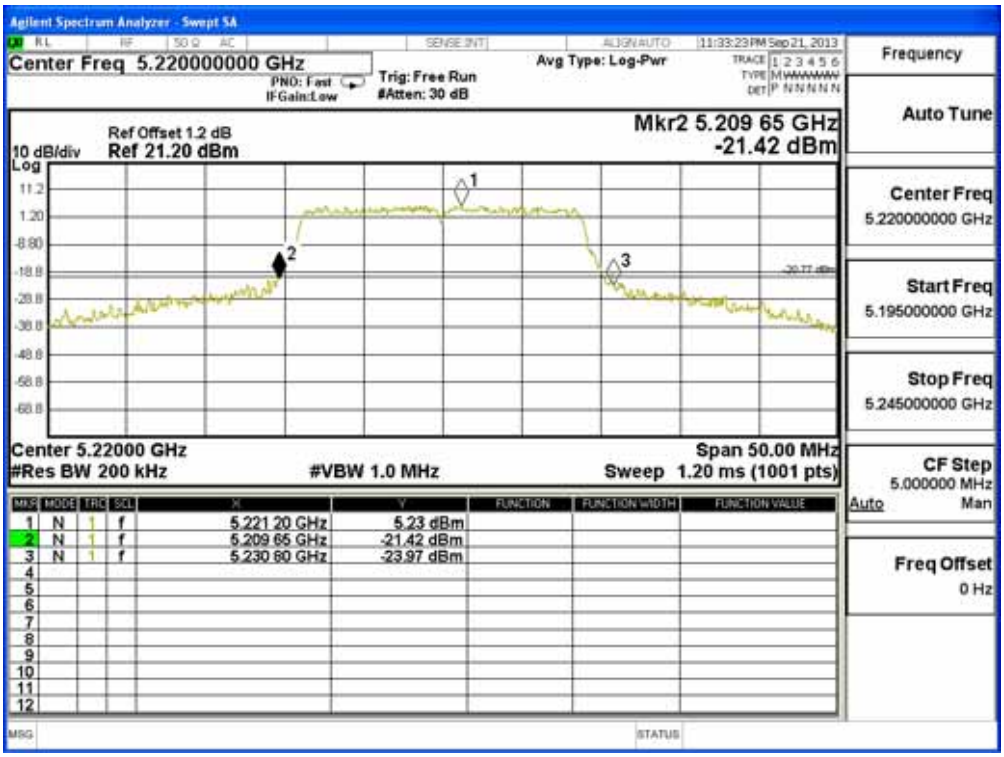
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180	20.55	17.95
44	5220	21.15	17.90
48	5240	20.60	17.92

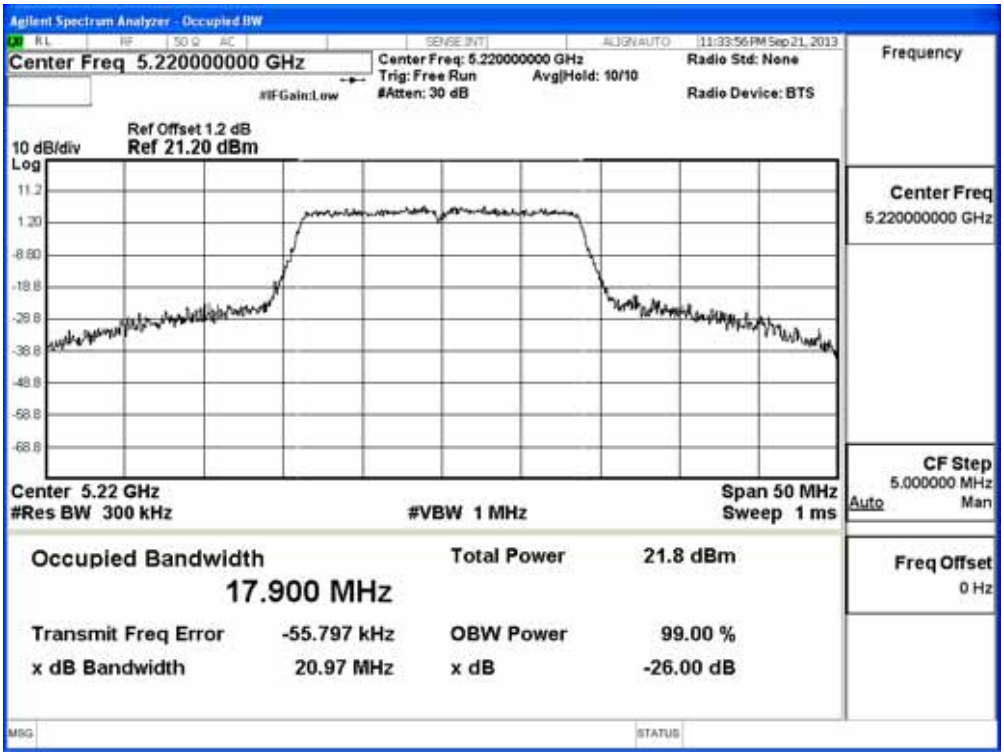
Channel 36 (5180MHz)



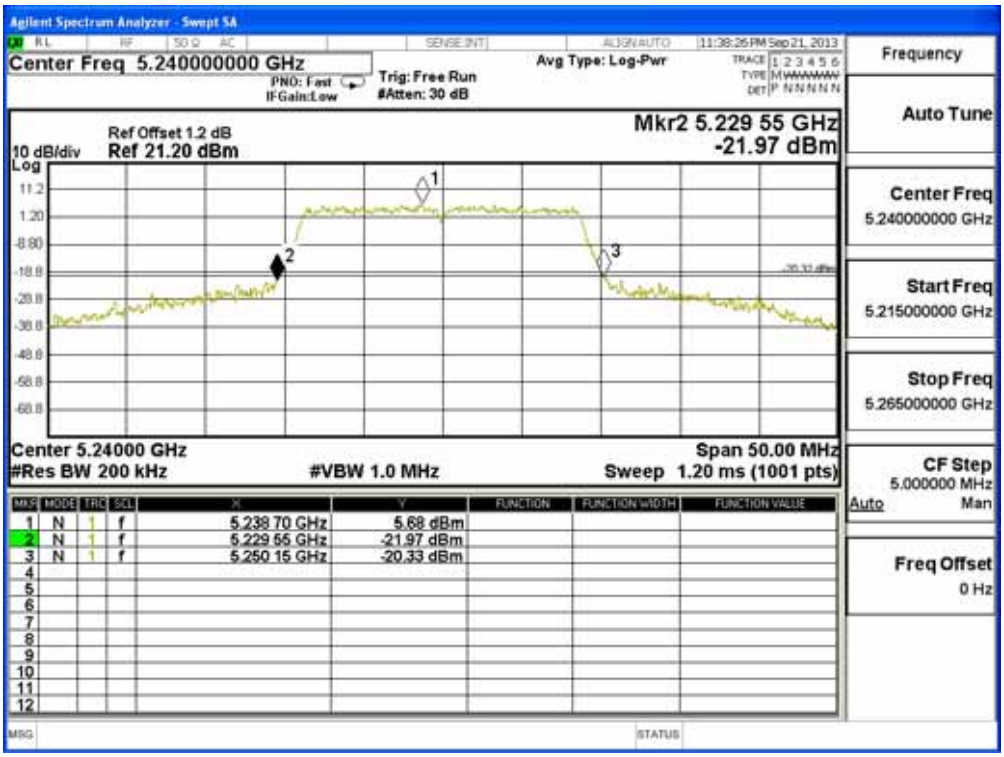


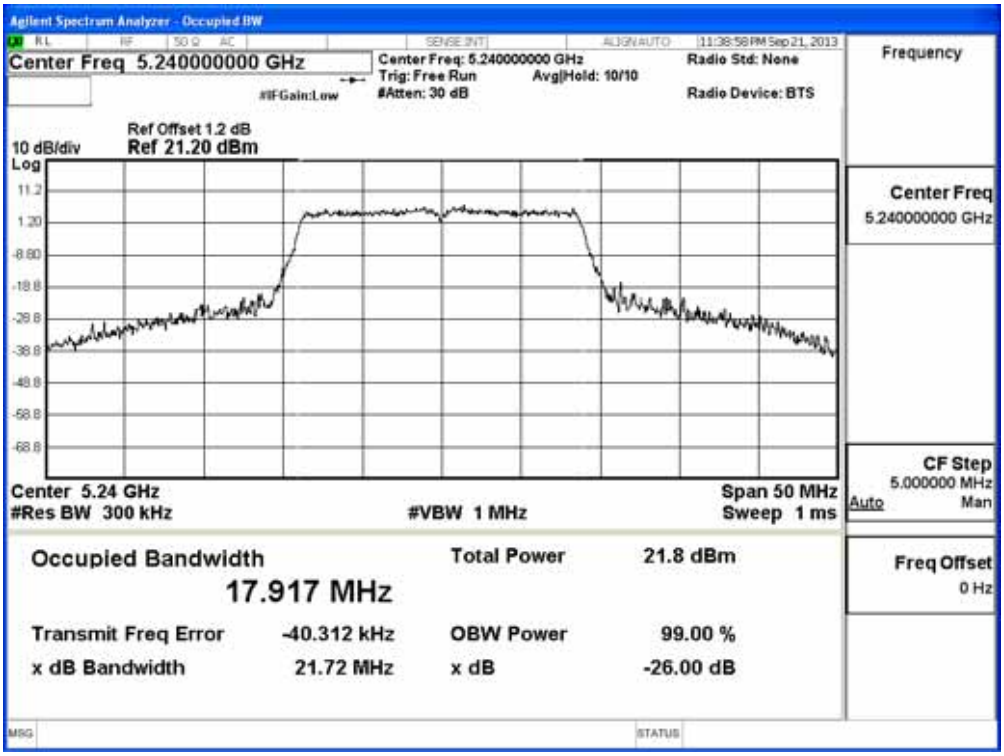
Channel 44 (5220MHz)





Channel 48 (5240MHz)

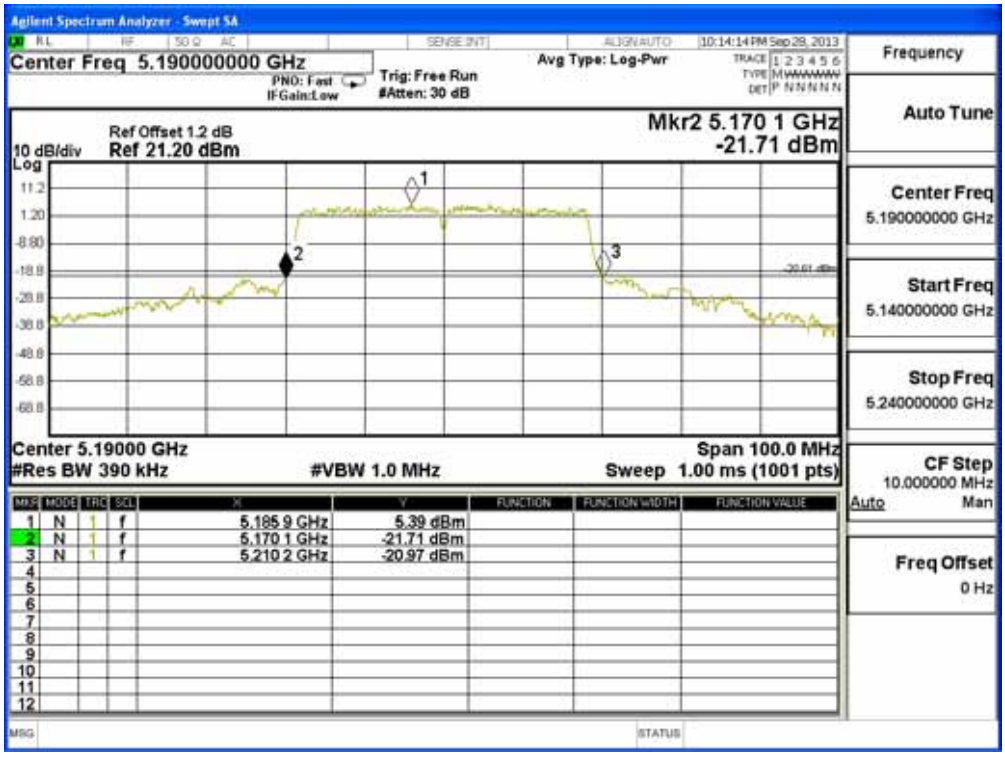


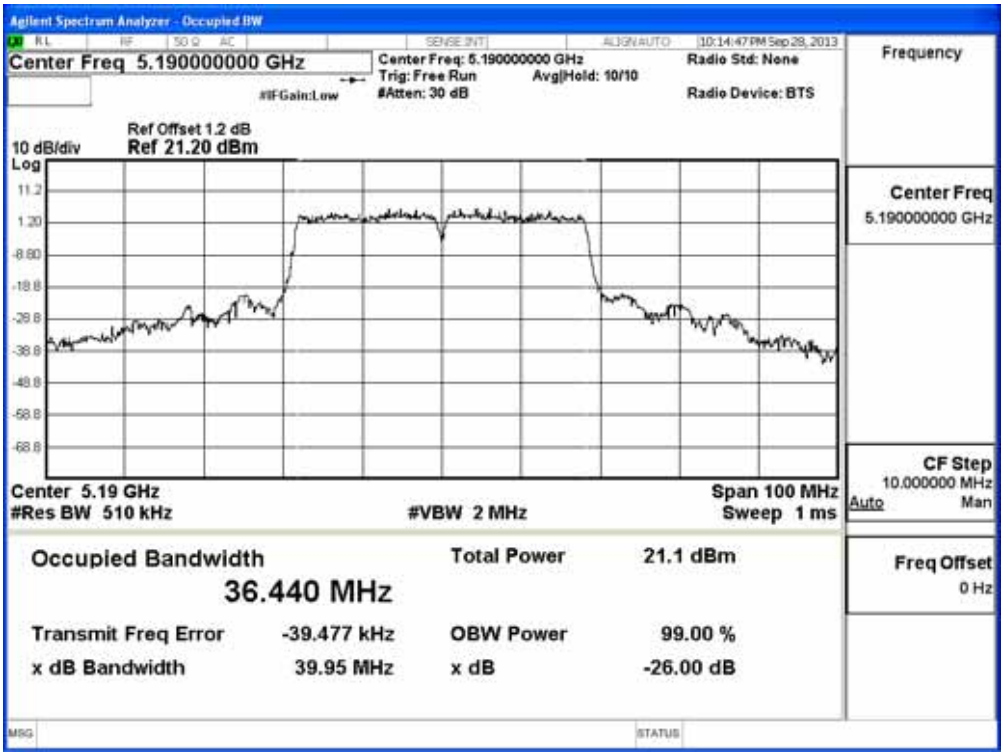

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.240000000 GHz
Center Freq: 5.240000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center 5.24 GHz
#Res BW 300 kHz
#VBW 1 MHz
Span 50 MHz
Sweep 1 ms
Occupied Bandwidth
17.917 MHz
Total Power
21.8 dBm
Transmit Freq Error
-40.312 kHz
OBW Power
99.00 %
x dB Bandwidth
21.72 MHz
x dB
-26.00 dB
Frequency
Center Freq
5.240000000 GHz
CF Step
5.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 0)

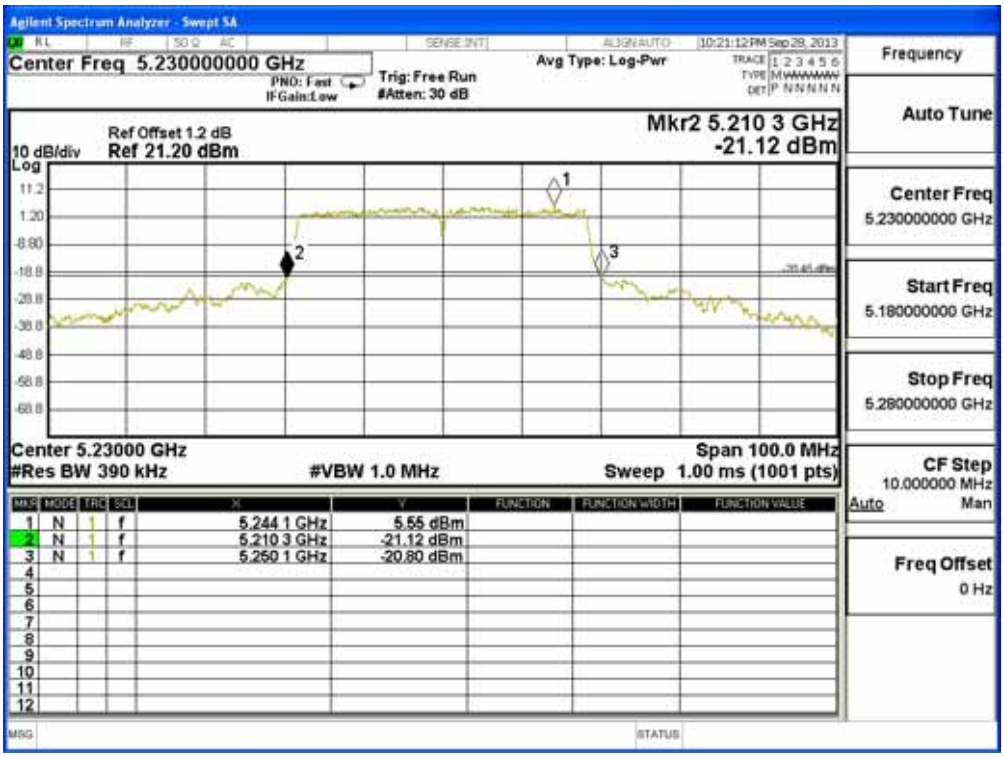
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190	40.10	36.44
46	5230	39.80	36.42

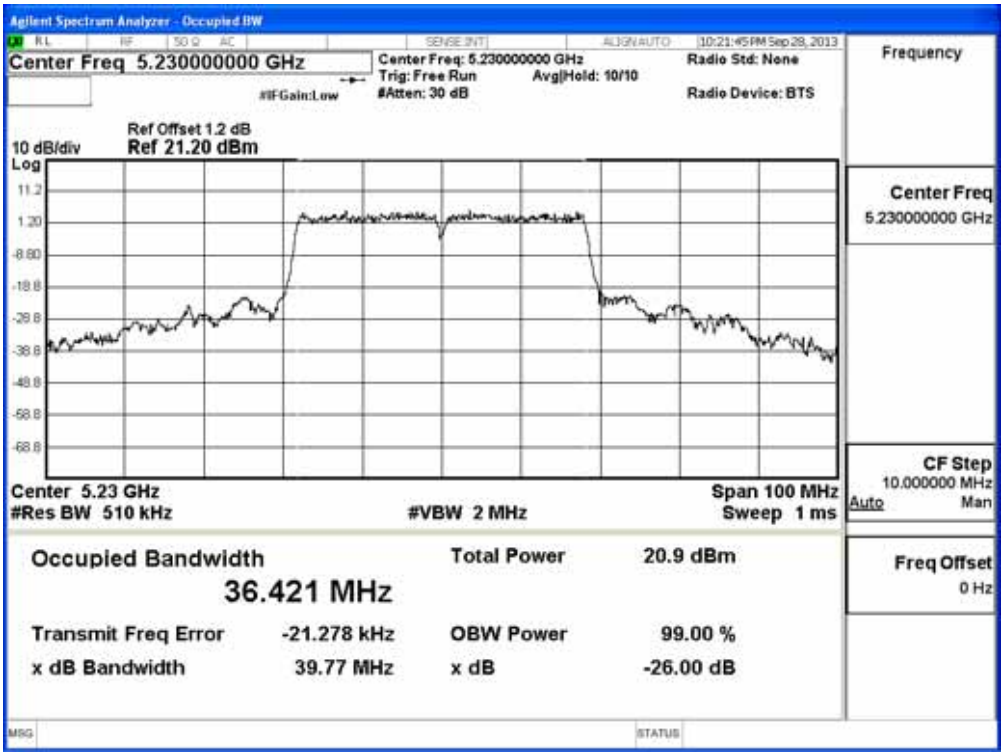
Channel 38 (5190MHz)





Channel 46 (5230MHz)

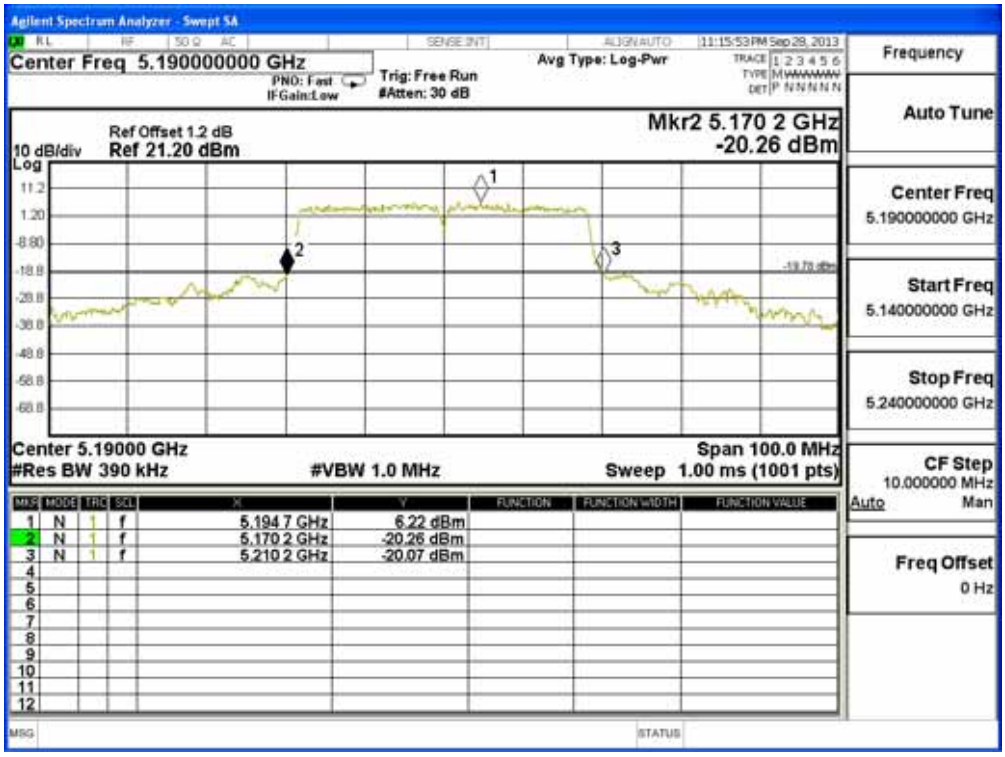


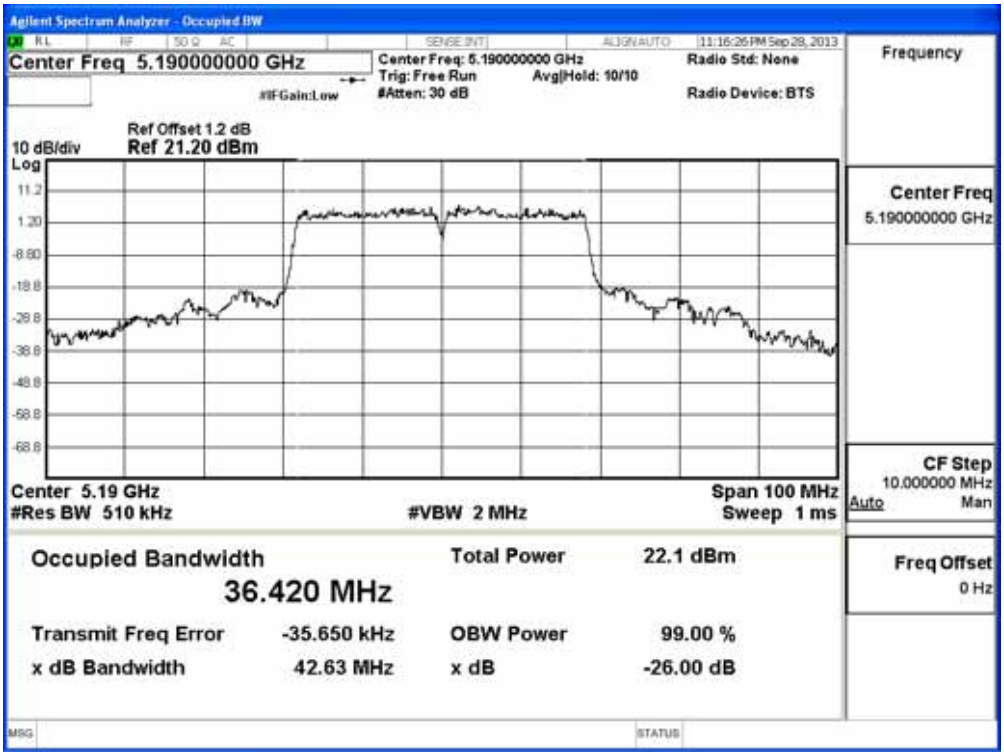

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center 5.23 GHz
#Res BW 510 kHz
#VBW 2 MHz
Span 100 MHz
Sweep 1 ms
Occupied Bandwidth
36.421 MHz
Total Power
20.9 dBm
Transmit Freq Error
-21.278 kHz
OBW Power
99.00 %
x dB Bandwidth
39.77 MHz
x dB
-26.00 dB
Frequency
Center Freq
5.230000000 GHz
CF Step
10.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 1)

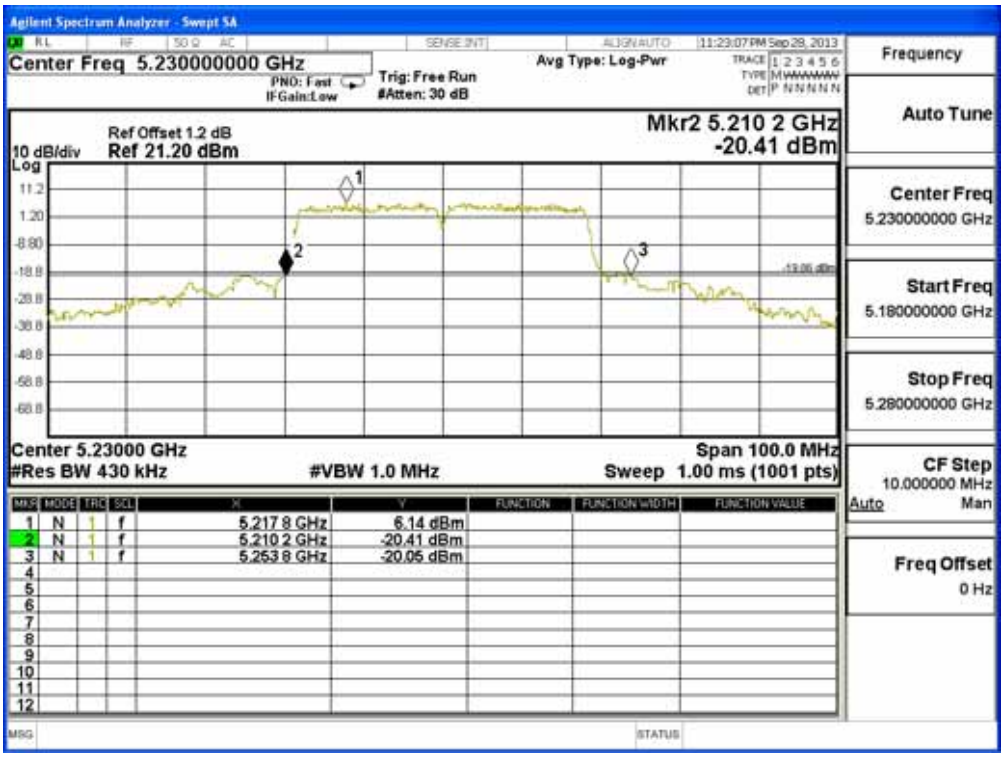
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190	40.00	36.42
46	5230	43.60	36.51

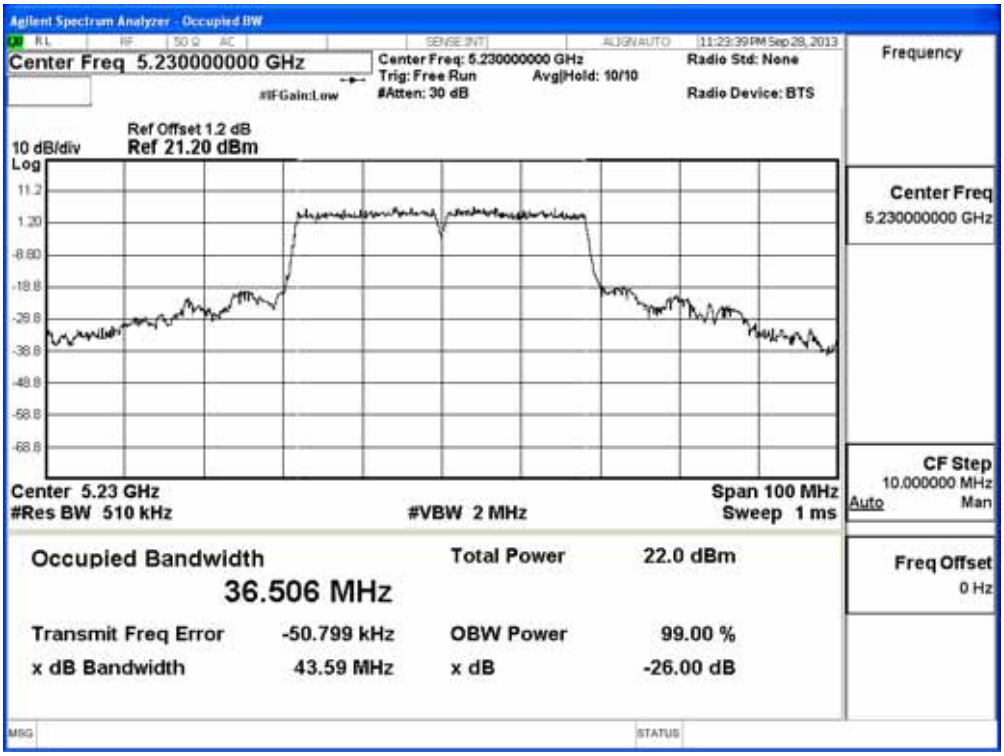
Channel 38 (5190MHz)





Channel 46 (5230MHz)

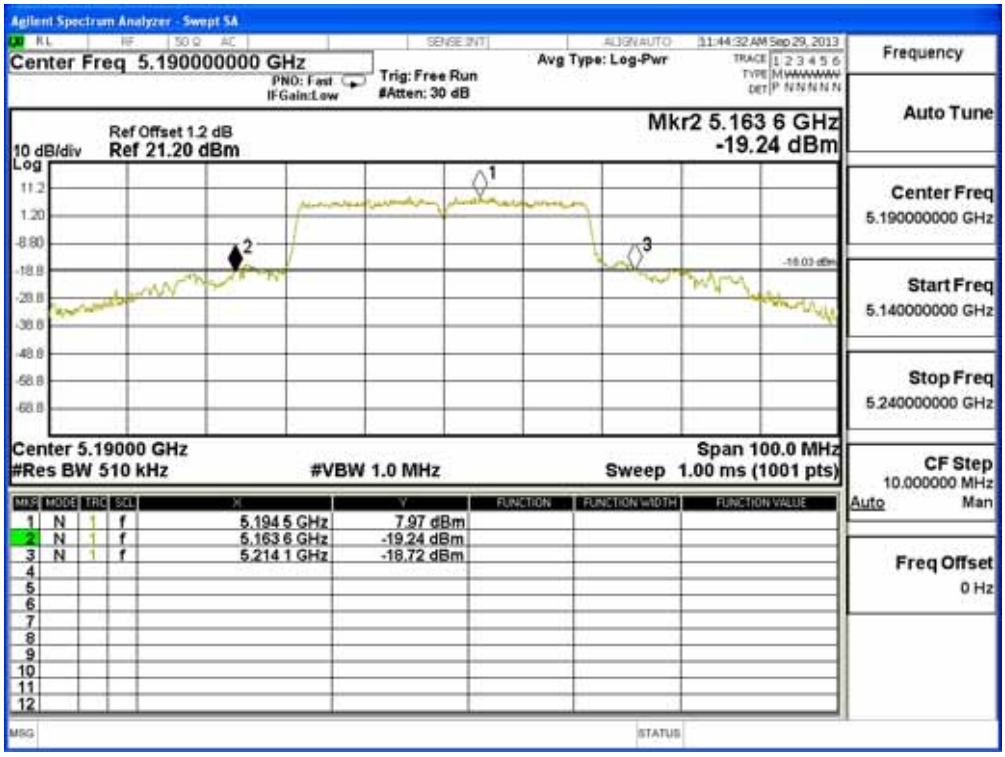


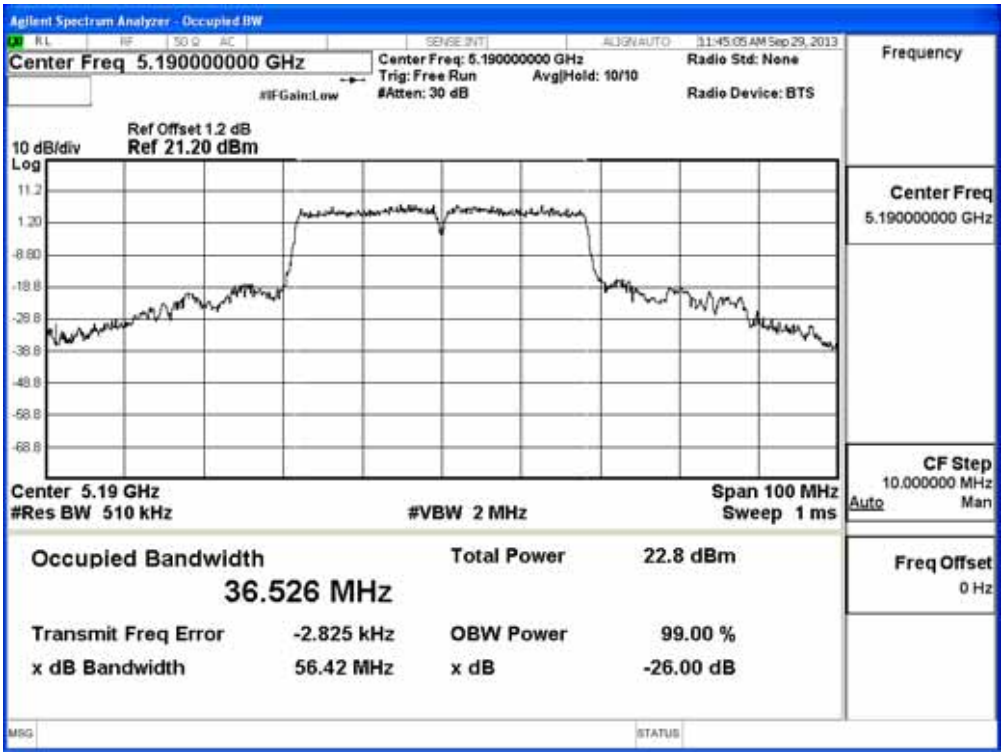

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center 5.23 GHz
#Res BW 510 kHz
#VBW 2 MHz
Span 100 MHz
Sweep 1 ms
Occupied Bandwidth
36.506 MHz
Total Power
22.0 dBm
Transmit Freq Error
-50.799 kHz
OBW Power
99.00 %
x dB Bandwidth
43.59 MHz
x dB
-26.00 dB
Frequency
Center Freq
5.230000000 GHz
CF Step
10.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 2)

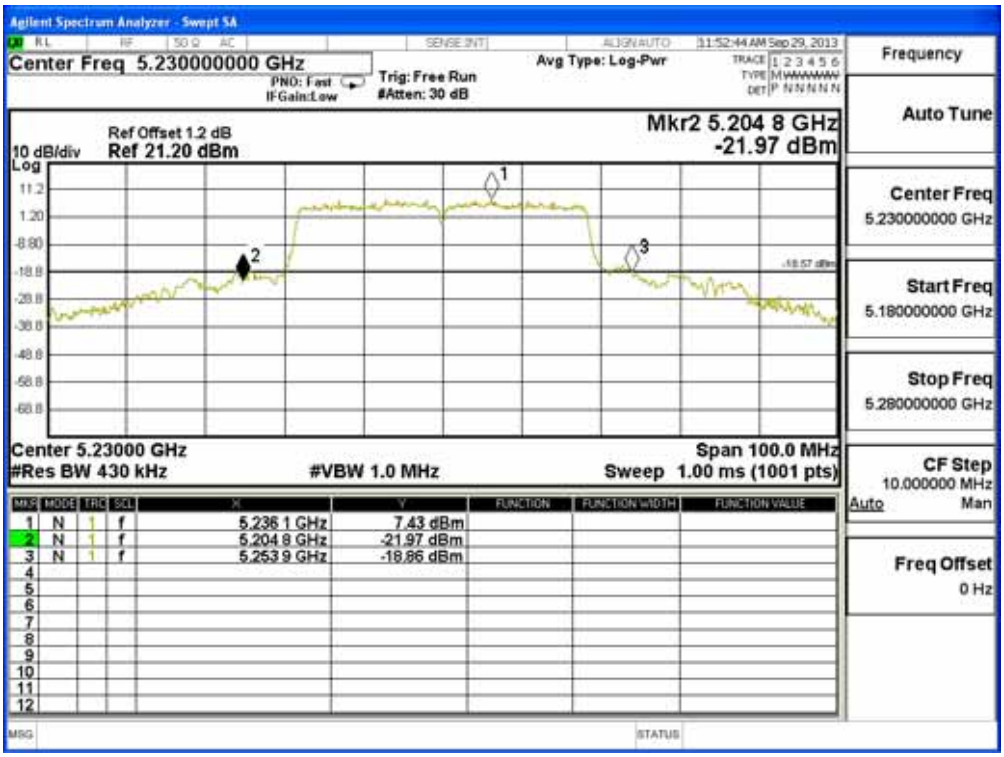
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190	50.50	36.53
46	5230	49.10	36.51

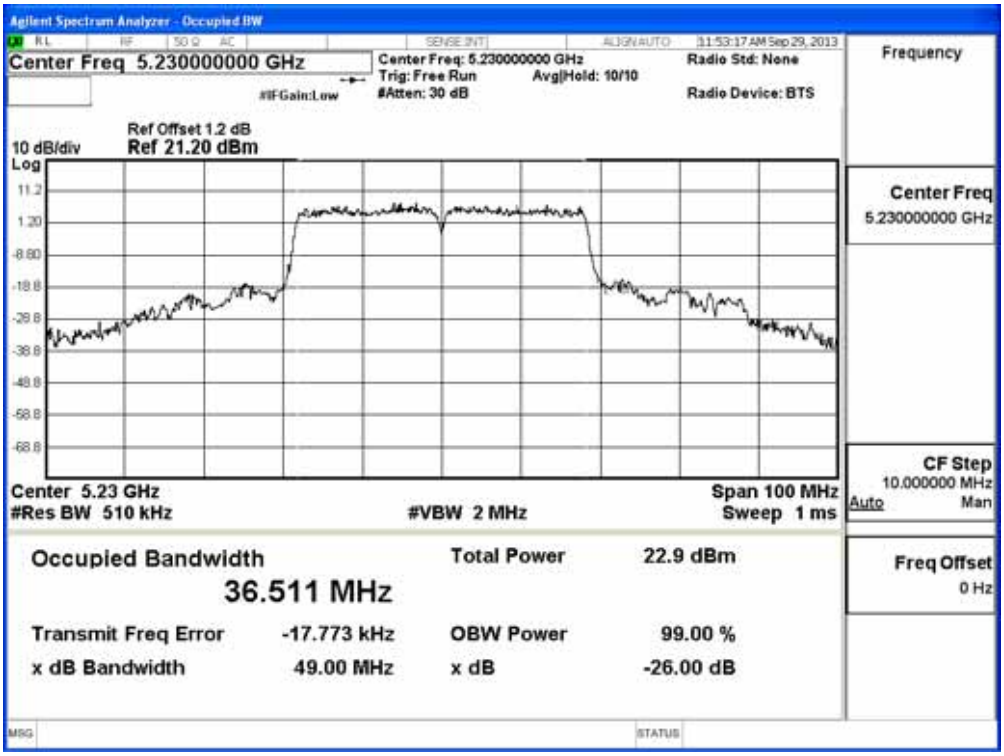
Channel 38 (5190MHz)





Channel 46 (5230MHz)

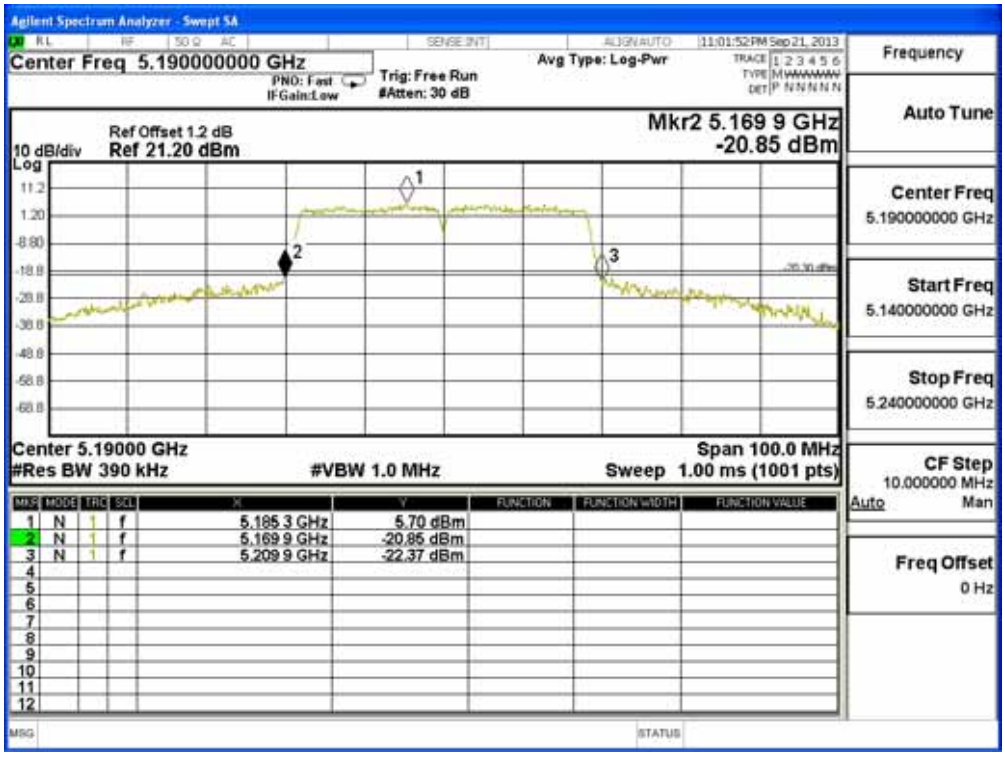


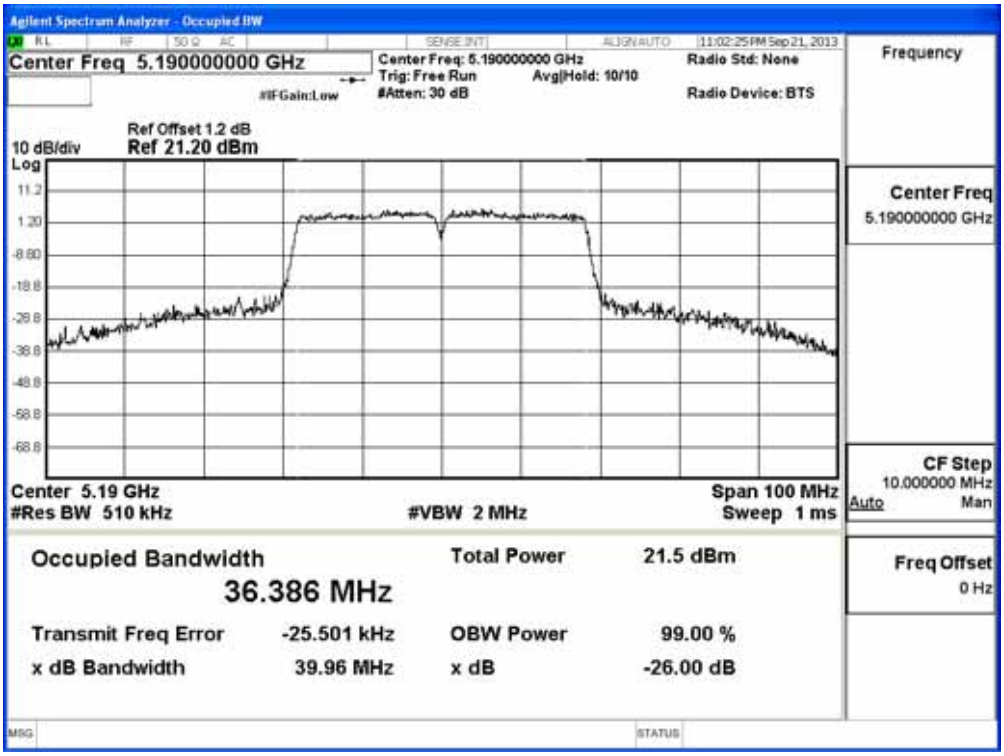

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
11:53:17 AM Sep 29, 2013
Frequency
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center Freq
5.230000000 GHz
Center 5.23 GHz
#Res BW 510 kHz
#VBW 2 MHz
Span 100 MHz
Sweep 1 ms
CF Step
10.000000 MHz
Auto
Man
Occupied Bandwidth
36.511 MHz
Total Power
22.9 dBm
Transmit Freq Error
-17.773 kHz
OBW Power
99.00 %
x dB Bandwidth
49.00 MHz
x dB
-26.00 dB
Freq Offset
0 Hz
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 0)

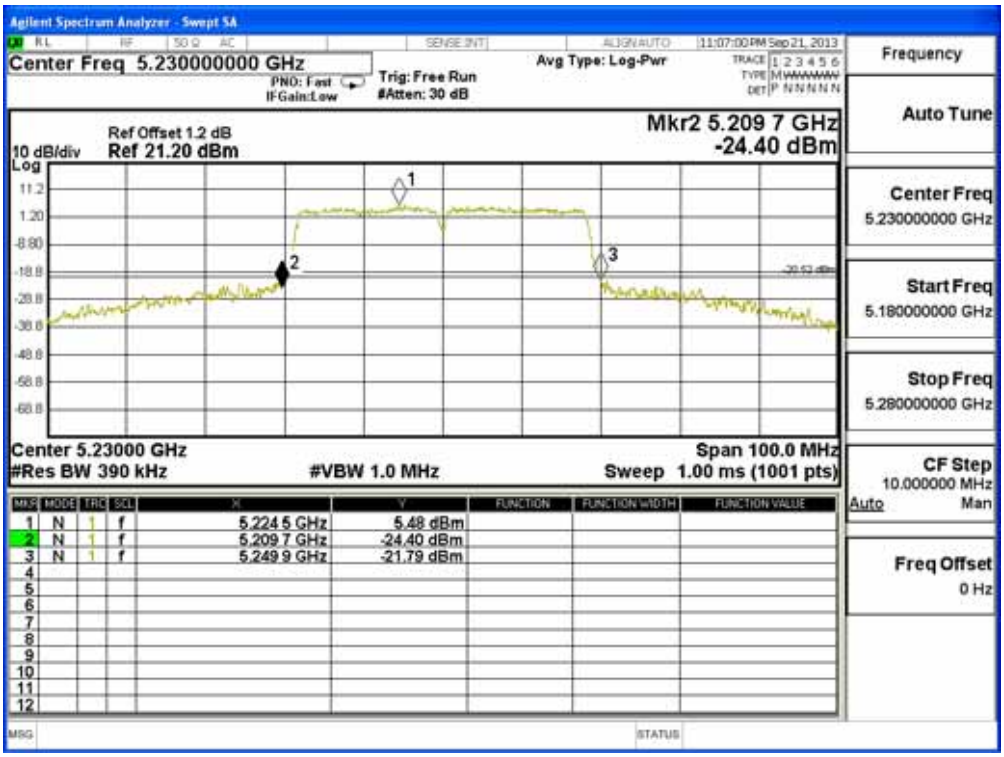
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190	40.00	36.39
46	5230	40.20	36.36

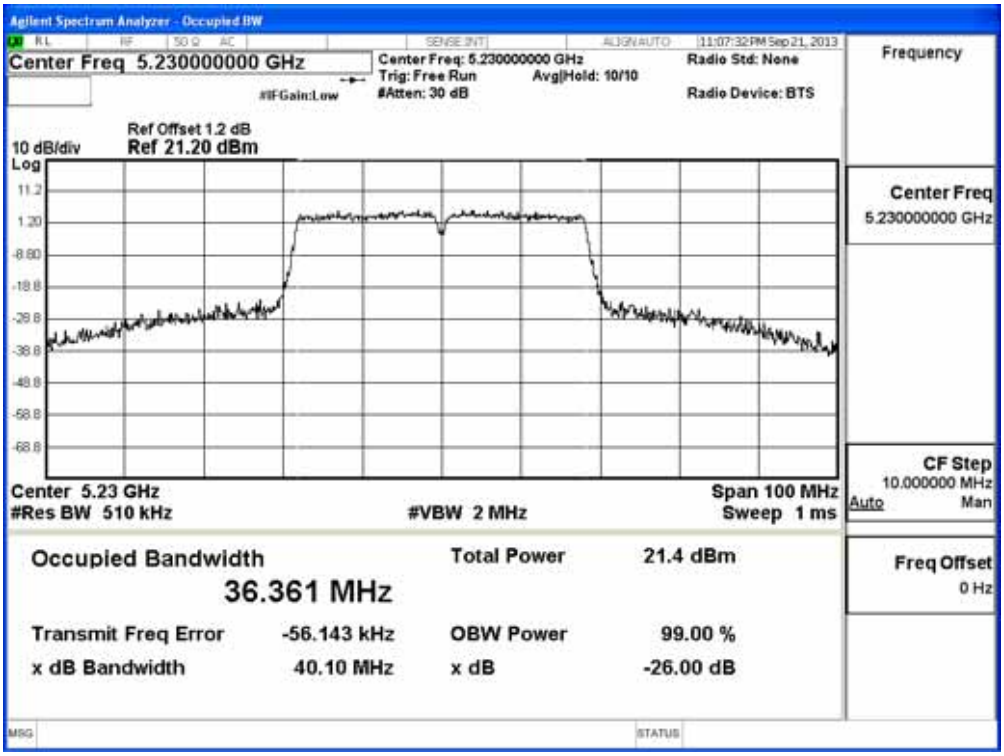
Channel 38 (5190MHz)





Channel 46 (5230MHz)

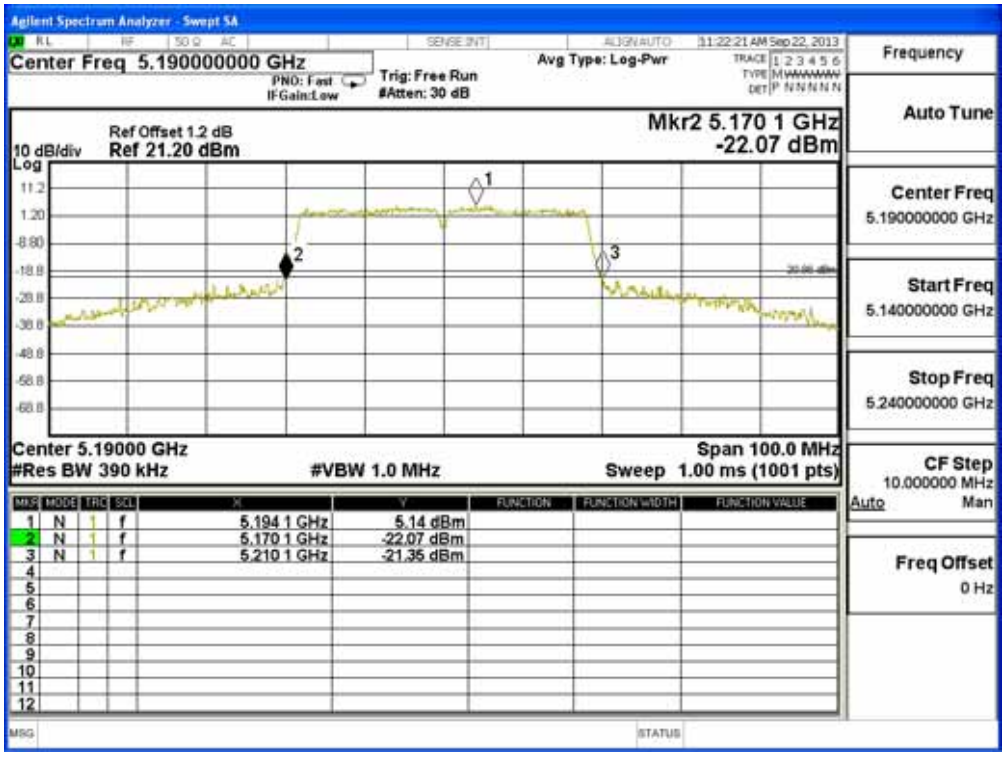


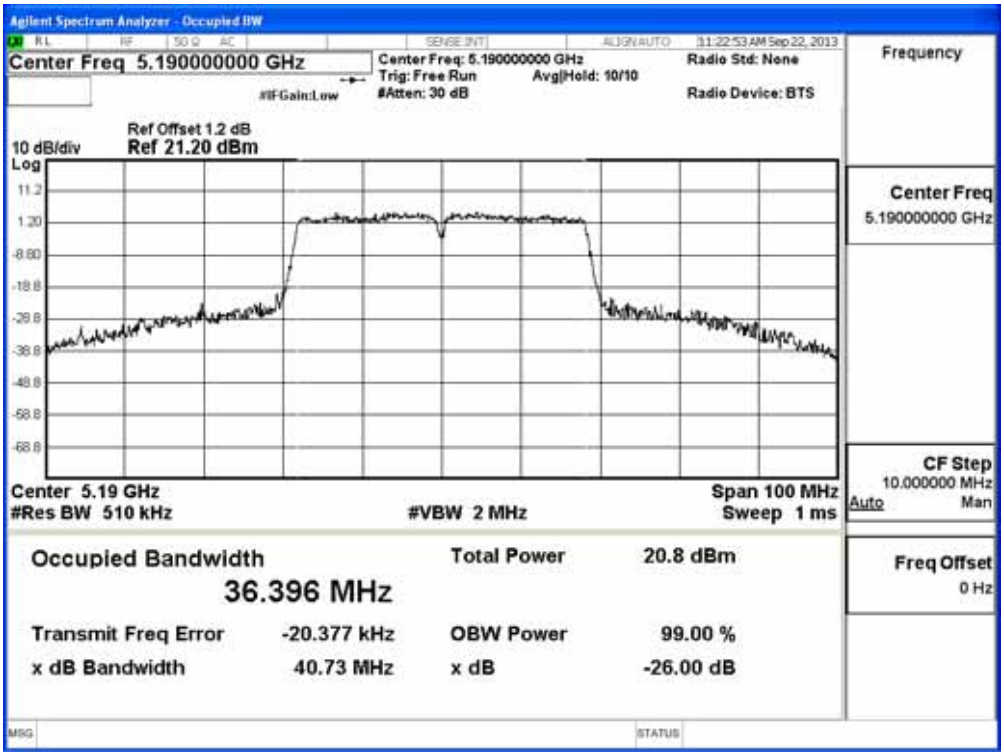

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
11:07:32 PM Sep 21, 2013
Frequency
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center Freq
5.230000000 GHz
Center 5.23 GHz
#Res BW 510 kHz
#VBW 2 MHz
Span 100 MHz
Sweep 1 ms
CF Step
10.000000 MHz
Auto
Man
Occupied Bandwidth
36.361 MHz
Total Power
21.4 dBm
Freq Offset
0 Hz
Transmit Freq Error
-56.143 kHz
OBW Power
99.00 %
x dB Bandwidth
40.10 MHz
x dB
-26.00 dB
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 1)

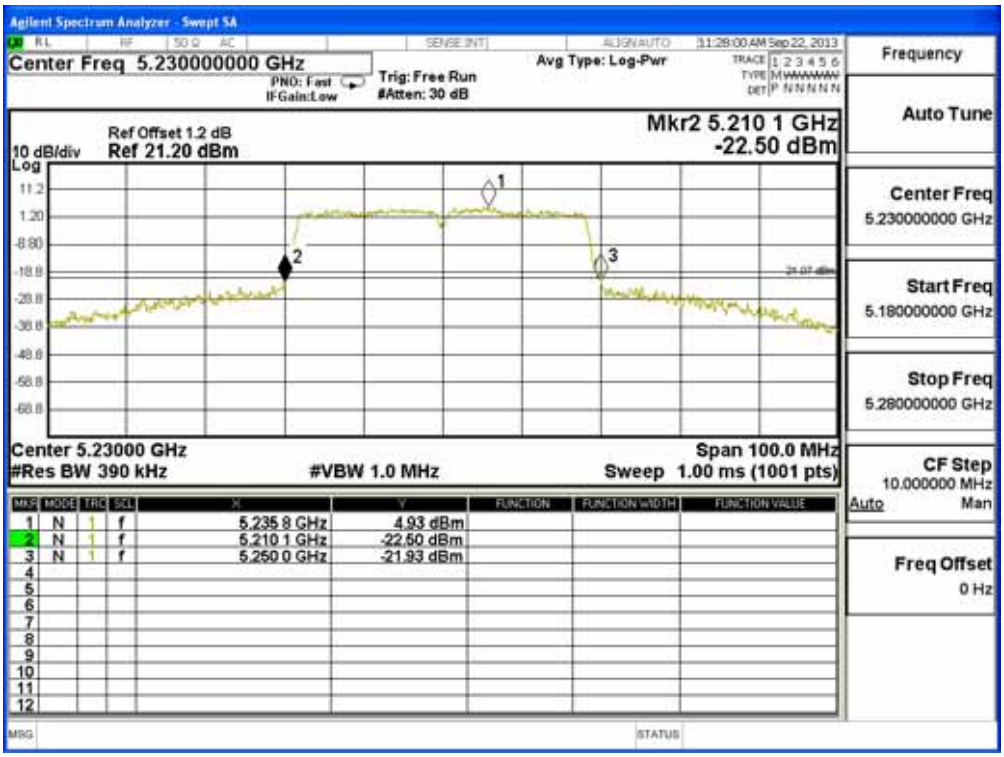
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190	40.00	36.40
46	5230	39.90	36.37

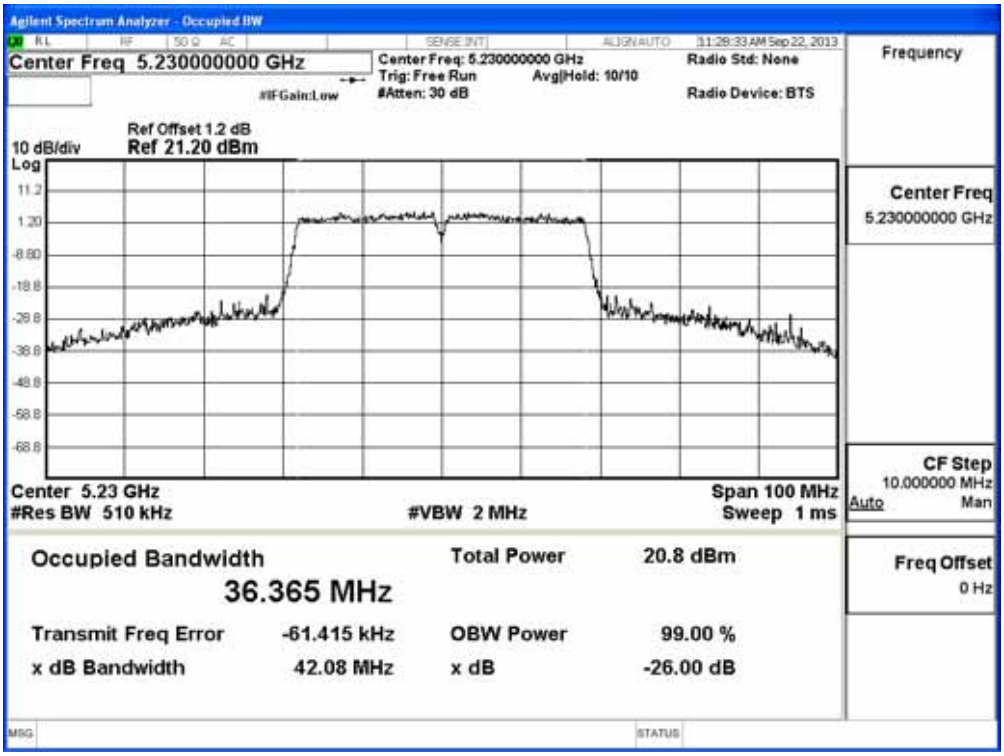
Channel 38 (5190MHz)





Channel 46 (5230MHz)

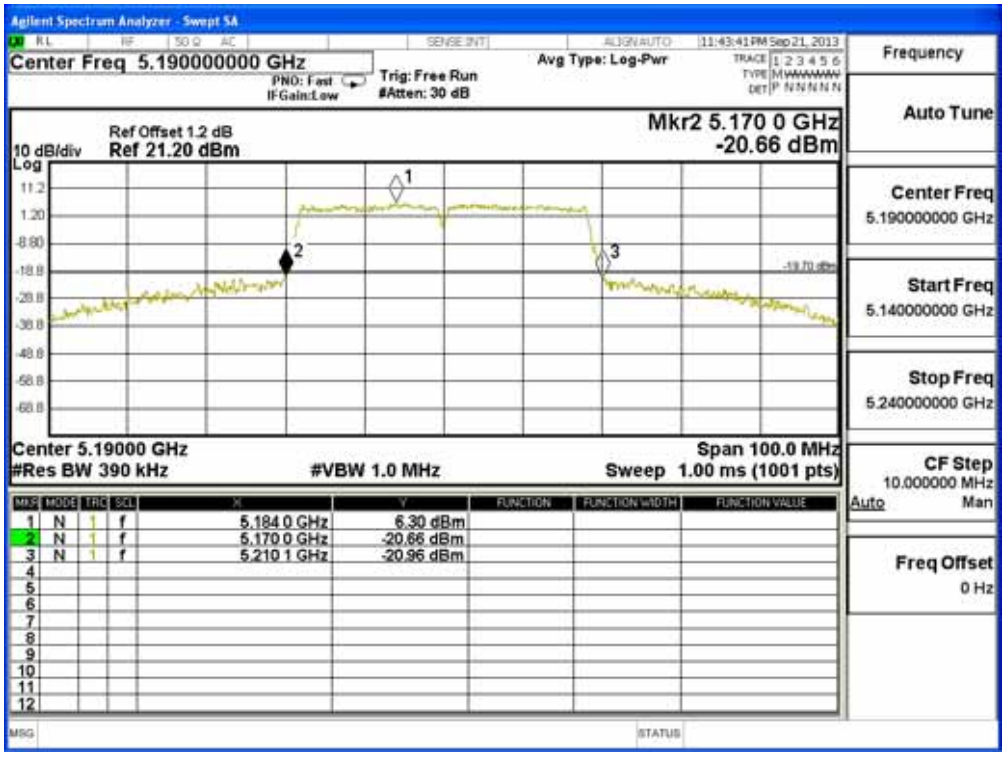


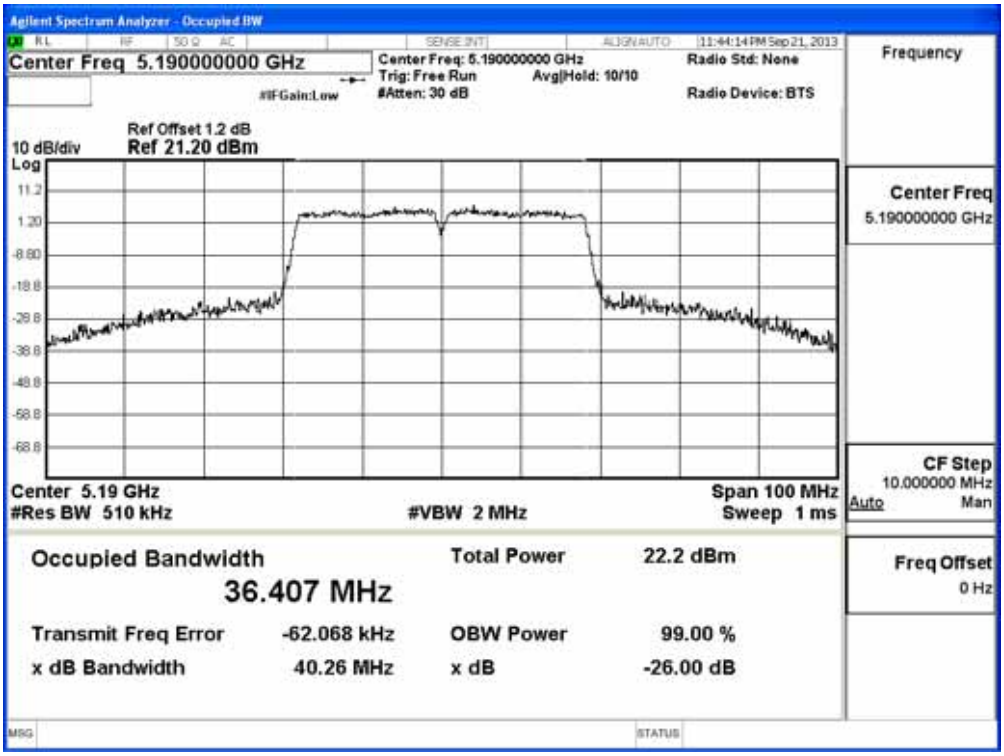

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
11:28:33 AM Sep 22, 2013
Frequency
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center Freq
5.230000000 GHz
Center 5.23 GHz
#Res BW 510 kHz
#VBW 2 MHz
Span 100 MHz
Sweep 1 ms
CF Step
10.000000 MHz
Auto
Man
Occupied Bandwidth
36.365 MHz
Total Power
20.8 dBm
Freq Offset
0 Hz
Transmit Freq Error
-61.415 kHz
OBW Power
99.00 %
x dB Bandwidth
42.08 MHz
x dB
-26.00 dB
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 2)

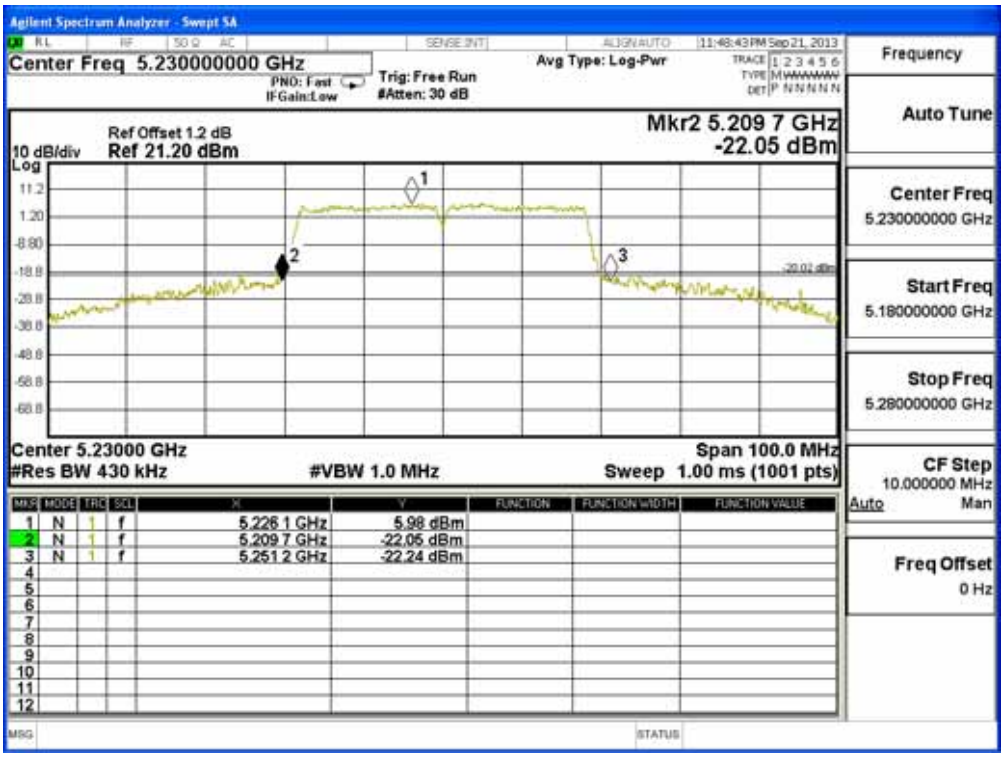
Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190	40.10	36.41
46	5230	41.50	36.41

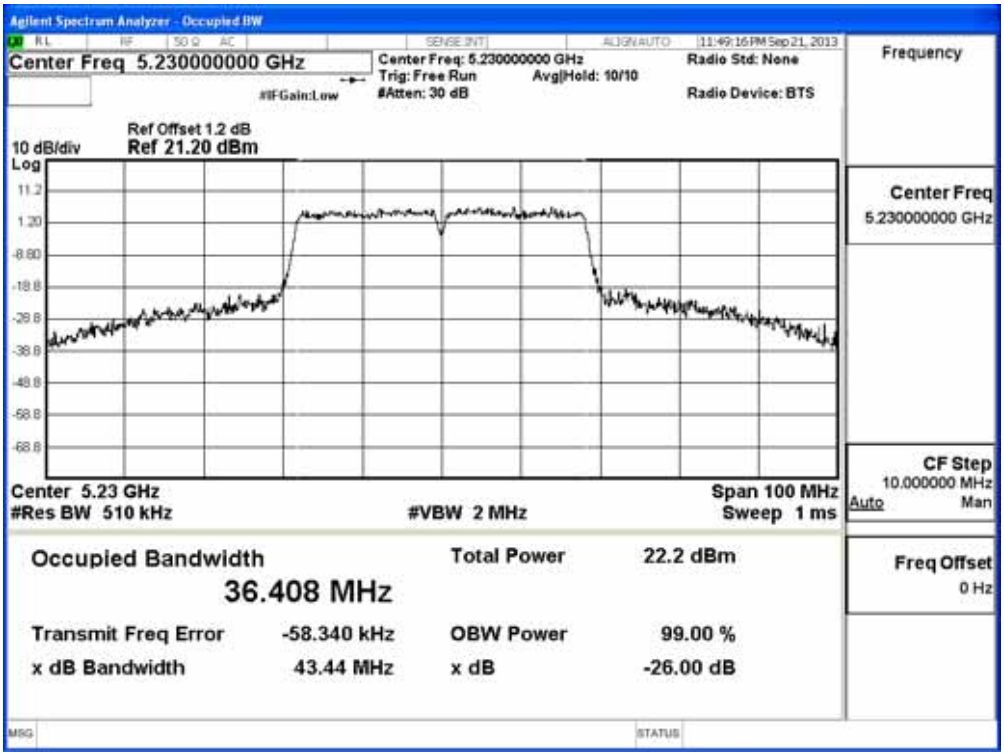
Channel 38 (5190MHz)





Channel 46 (5230MHz)

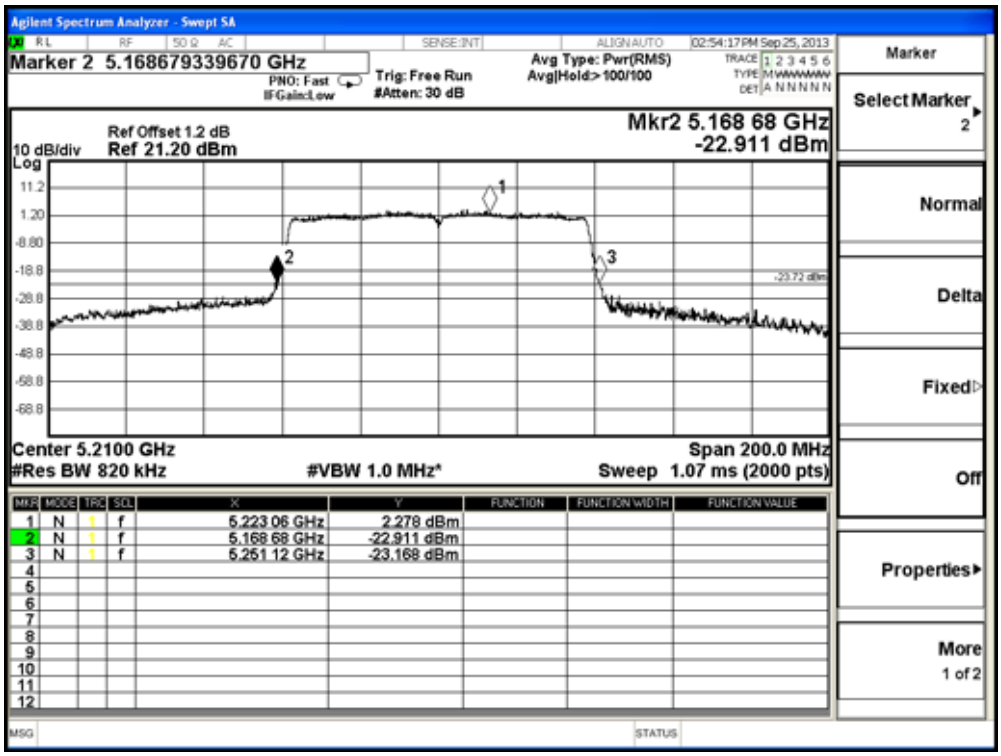


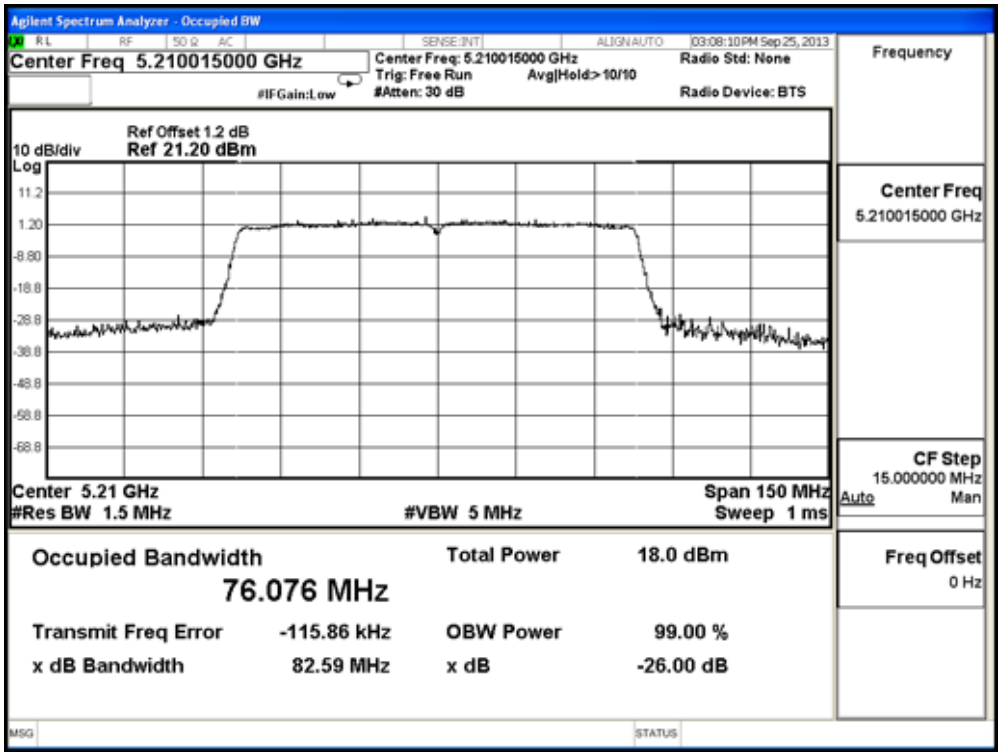

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.230000000 GHz
Center Freq: 5.230000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center 5.23 GHz
#Res BW 510 kHz
#VBW 2 MHz
Span 100 MHz
Sweep 1 ms
Occupied Bandwidth
36.408 MHz
Total Power
22.2 dBm
Transmit Freq Error
-58.340 kHz
OBW Power
99.00 %
x dB Bandwidth
43.44 MHz
x dB
-26.00 dB
Frequency
Center Freq
5.230000000 GHz
CF Step
10.000000 MHz
Auto
Man
Freq Offset
0 Hz

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 0)

Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
42	5210	82.440	76.076

Channel 42 (5210MHz)

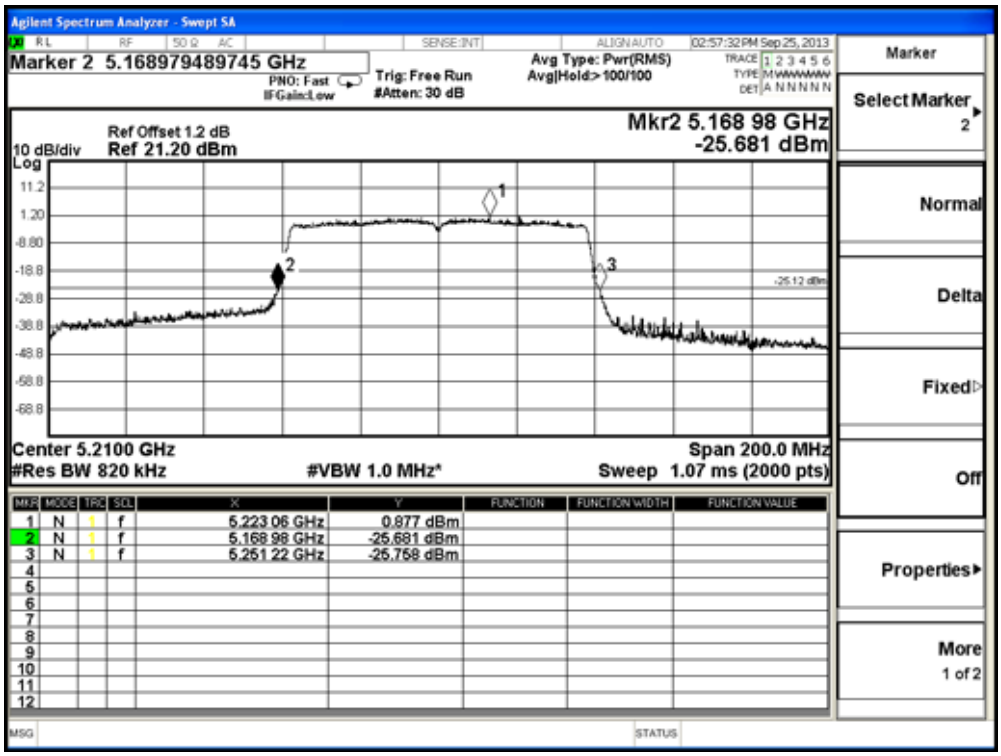


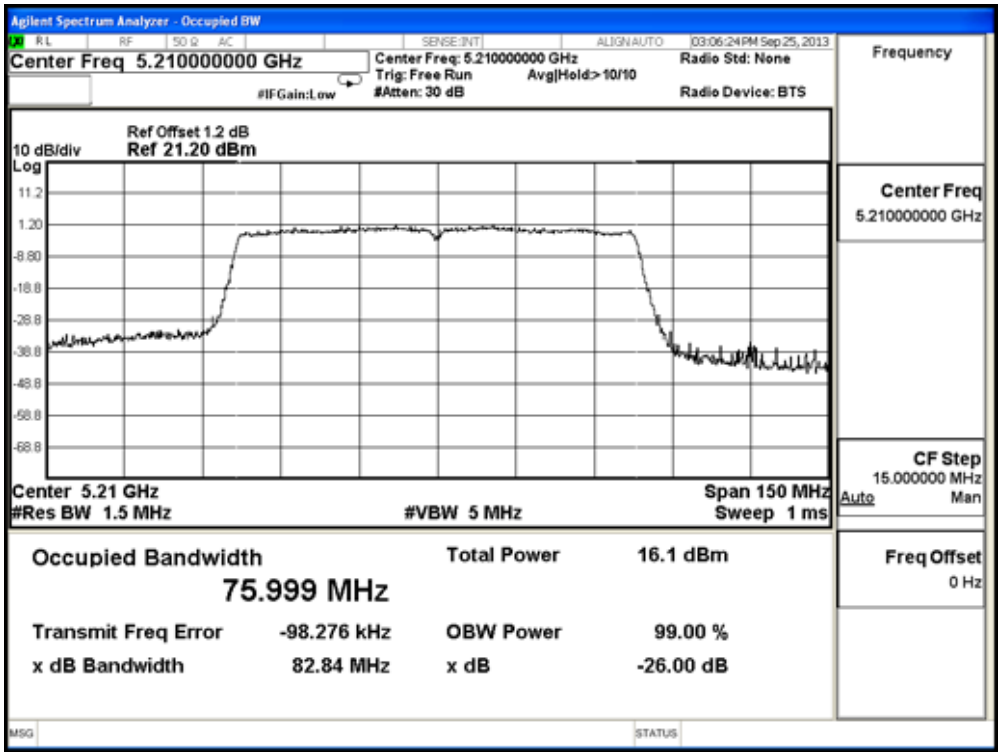

Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.210015000 GHz
Center Freq: 5.210015000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center Freq
5.210015000 GHz
Center 5.21 GHz
#Res BW 1.5 MHz
#VBW 5 MHz
Span 150 MHz
Sweep 1 ms
CF Step
15.000000 MHz
Auto
Man
Occupied Bandwidth
76.076 MHz
Total Power
18.0 dBm
Freq Offset
0 Hz
Transmit Freq Error
-115.86 kHz
OBW Power
99.00 %
x dB Bandwidth
82.59 MHz
x dB
-26.00 dB
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 1)

Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
42	5210	82.240	75.999

Channel 42 (5210MHz)

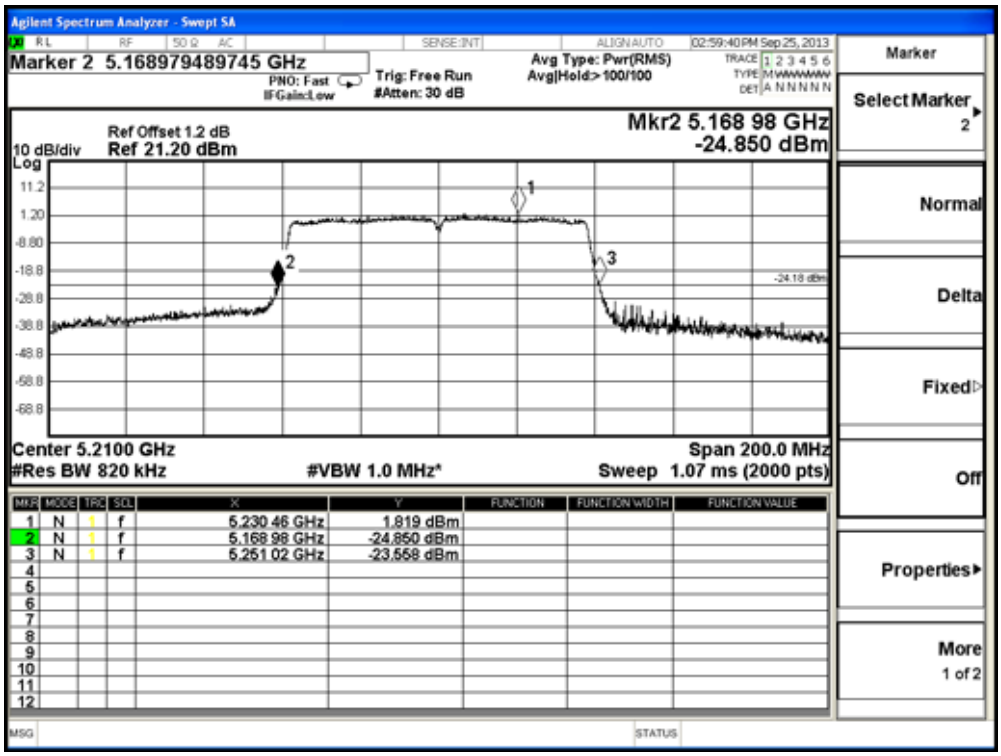


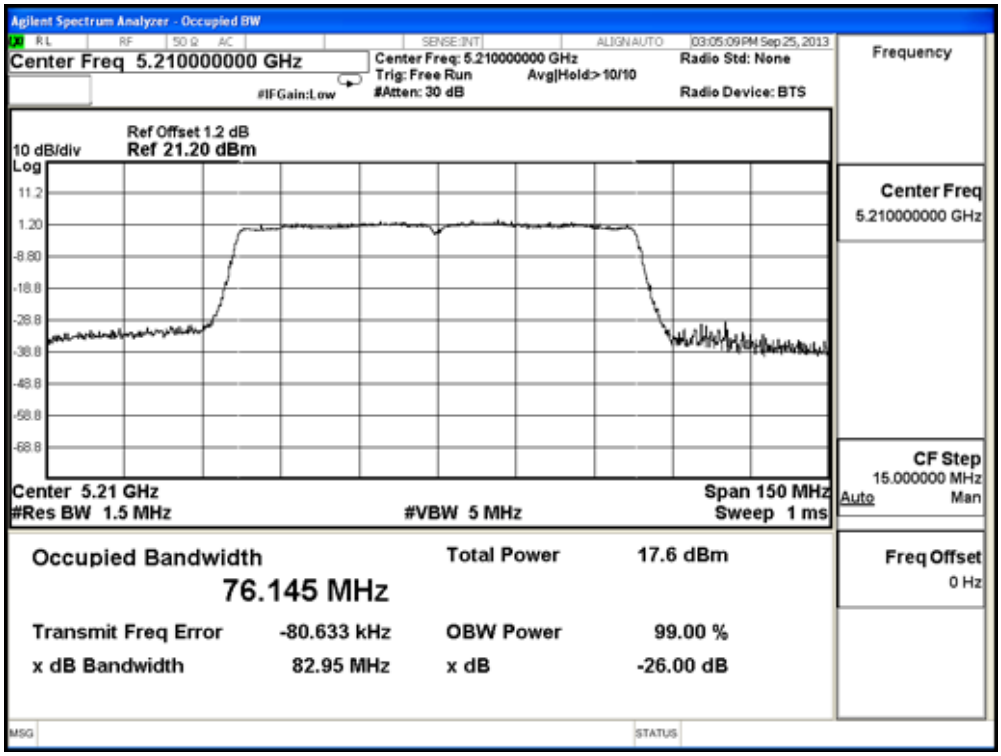

Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
03:06:24 PM Sep 25, 2013
Center Freq 5.210000000 GHz
Center Freq: 5.210000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center Freq
5.210000000 GHz
Center 5.21 GHz
#Res BW 1.5 MHz
#VBW 5 MHz
Span 150 MHz
Sweep 1 ms
CF Step
15.000000 MHz
Auto
Man
Occupied Bandwidth
75.999 MHz
Total Power
16.1 dBm
Transmit Freq Error
-98.276 kHz
OBW Power
99.00 %
x dB Bandwidth
82.84 MHz
x dB
-26.00 dB
Freq Offset
0 Hz
MSG
STATUS

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 2)

Channel No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
42	5210	82.040	76.145

Channel 42 (5210MHz)




Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
03:05:09 PM Sep 25, 2013
Center Freq 5.210000000 GHz
Center Freq: 5.210000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 1.2 dB
10 dB/div
Ref 21.20 dBm
Log
11.2
1.20
-8.80
-18.8
-28.8
-38.8
-48.8
-58.8
-68.8
Center Freq
5.210000000 GHz
Center 5.21 GHz
#Res BW 1.5 MHz
#VBW 5 MHz
Span 150 MHz
Sweep 1 ms
CF Step
15.000000 MHz
Auto
Man
Occupied Bandwidth
76.145 MHz
Total Power
17.6 dBm
Transmit Freq Error
-80.633 kHz
OBW Power
99.00 %
x dB Bandwidth
82.95 MHz
x dB
-26.00 dB
Freq Offset
0 Hz
MSG
STATUS

7. Power Output

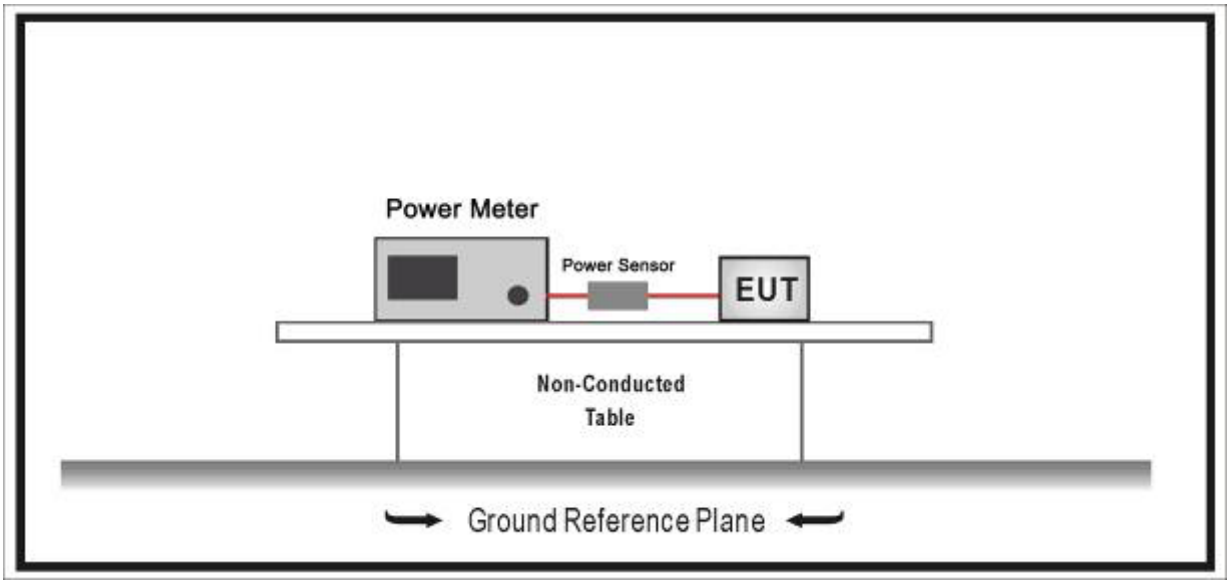
7.1. Test Equipment

Power Output / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014.01.21
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2014.05.07

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

7.2. Test Setup



7.3. Limit

- For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- For the band 5.25-5.35 GHz and 5.47-5725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antenna of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6

dBi.

- For the band 5.725-5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antenna with directional gain up to 23 dBi without any corresponding reduction in the transmitter peak output power. For fixed, point-to-point U-NII transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in peak transmitter power for each 1 dB of antenna gain in excess of 23 dBi would be required.

7.4. Test Procedure

The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

Use the wideband power meter to test RMS power and record the result.

7.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

7.6. Test Result

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

MCS Index for 802.11n	Spatial Streams	Data Rate (Mbps)				
		802.11a	20MHz Bandwidth		40MHz Bandwidth	
			800ns GI	400ns GI	800ns GI	400ns GI
0	1	6	6.5	7.2	13.5	15.0
1	1	9	13.0	14.4	27.0	30.0
2	1	12	19.5	21.7	40.5	45.0
3	1	18	26.0	28.9	54.0	60.0
4	1	24	39.0	43.3	81.0	90.0
5	1	36	52.0	57.8	108.0	120.0
6	1	48	58.5	65.0	121.5	135.0
7	1	54	65.0	72.2	135.0	150.0
8	2	---	13.0	14.4	27.0	30.0
9	2	---	26.0	28.9	54.0	60.0
10	2	---	39.0	43.3	81.0	90.0
11	2	---	52.0	57.8	108.0	120.0
12	2	---	78.0	86.7	162.0	180.0
13	2	---	104.0	115.6	216.0	240.0
14	2	---	117.0	130.0	243.0	270.0
15	2	---	130.0	144.0	270.0	300.0

Spatial Streams (Note1)	MCS Index	Modulation type	Coding rate	Data Rate(Mb/s)							
				20MHz		40MHz		80MHz		160MHz	
				Guard Interval		Guard Interval		Guard Interval		Guard Interval	
				800ns	400ns	800ns	400ns	800ns	400ns	800ns	400ns
1	0	BPSK	1/2	6.5	7.2	13.5	15	29.3	32.5	58.5	65
	1	QPSK	1/2	13	14.4	27	30	58.5	65	117	130
	2	QPSK	3/4	19.5	21.7	40.5	45	87.8	97.5	175.5	195
	3	16-QAM	1/2	26	28.9	54	60	117	130	234	260
	4	16-QAM	3/4	39	43.3	81	90	175.5	195	351	390
	5	64-QAM	2/3	52	57.8	108	120	234	260	468	520
	6	64-QAM	3/4	58.5	65	121.5	135	263.3	292.5	526.5	585
	7	64-QAM	5/6	65	72.2	135	150	292.5	325	585	650

	8	256-QAM	3/4	78	86.7	162	180	351	390	702	780
	9	256-QAM	5/6	N/A	N/A	180	200	390	433.3	780	866.7
2	0	BPSK	1/2	13	14.4	27	30	58.6	65	117	130
	1	QPSK	1/2	26	28.8	54	60	117	130	234	260
	2	QPSK	3/4	39	43.4	81	90	175.6	195	351	390
	3	16-QAM	1/2	52	57.8	108	120	234	260	468	520
	4	16-QAM	3/4	78	86.6	162	180	351	390	702	780
	5	64-QAM	2/3	104	115.6	216	240	468	520	936	1040
	6	64-QAM	3/4	117	130	243	270	526.6	585	1053	1170
	7	64-QAM	5/6	130	144.4	270	300	585	650	1170	1300
	8	256-QAM	3/4	156	173.4	324	360	702	780	1404	1560
	9	256-QAM	5/6	N/A	N/A	360	400	780	866.6	1560	1733.4
3	0	BPSK	1/2	19.5	21.6	40.5	45	87.9	97.5	175.5	195
	1	QPSK	1/2	39	43.2	81	90	175.5	195	351	390
	2	QPSK	3/4	58.5	65.1	121.5	135	263.4	292.5	526.5	585
	3	16-QAM	1/2	78	86.7	162	180	351	390	702	780
	4	16-QAM	3/4	117	129.9	243	270	526.5	585	1053	1170
	5	64-QAM	2/3	156	173.4	324	360	702	780	1404	1560
	6	64-QAM	3/4	175.5	195	364.5	405	789.9	877.5	1579.5	1755
	7	64-QAM	5/6	195	216.6	405	450	877.5	975	1755	1950
	8	256-QAM	3/4	234	260.1	486	540	1053	1170	2106	2340
	9	256-QAM	5/6	N/A	N/A	540	600	1170	1299.9	2340	2600.1

Power output at various data rates:

Test Mode	Bandwidth	Frequency (MHz)	Channel	Data Rate	Peak Power (dBm)
802.11a (Ant 0)	20	5220	44	6	14.05
				24	14.24
				54	14.13
802.11n20MHz)(Ant 0)	20	5220	44	MCS0	14.24
				MCS4	14.36
				MCS7	14.37
802.11ac(20MHz)(Ant 0)	20	5220	44	MCS0NSS1	14.72
				MCS5NSS1	14.68
				MCS8NSS1	14.60
802.11n(40MHz)(Ant 0)	40	5190	38	MCS0	15.06
				MCS4	15.36
				MCS7	15.16
802.11ac(40MHz)(Ant 0)	40	5190	38	MCS0NSS1	14.53
				MCS5NSS1	14.51
				MCS9NSS1	14.32
802.11ac(80MHz)(Ant 0)	80	5210	42	MCS0NSS1	13.86
				MCS5NSS1	13.54
				MCS9NSS1	13.75

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 0)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	14.02	N/A	N/A	14.02	17	Pass
44	5220	14.24	N/A	N/A	14.24	17	Pass
48	5240	14.08	N/A	N/A	14.08	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	13.84	N/A	13.84	17	Pass
44	5220	N/A	13.99	N/A	13.99	17	Pass
48	5240	N/A	13.95	N/A	13.95	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	N/A	13.13	13.13	17	Pass
44	5220	N/A	N/A	13.09	13.09	17	Pass
48	5240	N/A	N/A	13.11	13.11	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 0)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	14.29	N/A	N/A	14.29	17	Pass
44	5220	14.37	N/A	N/A	14.37	17	Pass
48	5240	14.28	N/A	N/A	14.28	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	14.24	N/A	14.24	17	Pass
44	5220	N/A	14.24	N/A	14.24	17	Pass
48	5240	N/A	14.15	N/A	14.15	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	N/A	13.29	13.29	17	Pass
44	5220	N/A	N/A	13.35	13.35	17	Pass
48	5240	N/A	N/A	13.36	13.36	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 0+1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	11.26	10.03	N/A	13.70	17	Pass
44	5220	11.23	10.22	N/A	13.76	17	Pass
48	5240	11.45	10.33	N/A	13.94	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	10.21	10.32	13.28	17	Pass
44	5220	N/A	10.19	10.36	13.29	17	Pass
48	5240	N/A	10.32	10.35	13.35	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 0+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	11.12	N/A	10.36	13.77	17	Pass
44	5220	11.24	N/A	10.36	13.83	17	Pass
48	5240	11.31	N/A	10.25	13.82	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 0+1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	10.74	9.55	9.91	14.87	17	Pass
44	5220	10.72	9.70	9.97	14.92	17	Pass
48	5240	10.85	9.75	9.70	14.90	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 0)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	15.82	N/A	N/A	15.82	17	Pass
44	5220	14.72	N/A	N/A	14.72	17	Pass
48	5240	14.72	N/A	N/A	14.72	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	16.01	N/A	16.01	17	Pass
44	5220	N/A	16.5	N/A	16.5	17	Pass
48	5240	N/A	16.4	N/A	16.4	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	N/A	14.36	14.36	17	Pass
44	5220	N/A	N/A	14.29	14.29	17	Pass
48	5240	N/A	N/A	14.26	14.26	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 0+1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	11.47	11.03	N/A	14.27	17	Pass
44	5220	11.43	9.73	N/A	13.67	17	Pass
48	5240	9.93	9.62	N/A	12.79	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	13.03	12.23	15.66	17	Pass
44	5220	N/A	12.97	12.15	15.59	17	Pass
48	5240	N/A	13.05	12.19	15.65	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 0+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	13.37	N/A	12.37	15.91	17	Pass
44	5220	11.41	N/A	11.81	14.62	17	Pass
48	5240	12.12	N/A	11.71	14.93	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11ac(20MHz) (Ant 0+1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	9.57	8.74	10.33	14.37	17	Pass
44	5220	11.25	10.74	10.66	15.66	17	Pass
48	5240	11.11	10.15	10.65	15.43	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 0)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	15.36	N/A	N/A	15.36	17	Pass
46	5230	15.28	N/A	N/A	15.28	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	N/A	16.18	N/A	16.18	17	Pass
46	5230	N/A	16.25	N/A	16.25	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	N/A	N/A	16.78	16.78	17	Pass
46	5230	N/A	N/A	16.67	16.67	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 0+1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	12.20	12.38	N/A	15.30	17	Pass
46	5230	12.30	12.56	N/A	15.44	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	N/A	12.47	13.33	15.93	17	Pass
46	5230	N/A	12.54	13.23	15.91	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 0+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	12.32	N/A	13.27	15.83	17	Pass
46	5230	12.41	N/A	13.12	15.79	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) (Ant 0+1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	11.84	12.24	12.16	16.85	17	Pass
46	5230	11.92	12.48	12.24	16.99	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 0)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	14.53	N/A	N/A	14.53	17	Pass
46	5230	16.16	N/A	N/A	16.16	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	N/A	12.97	N/A	12.97	17	Pass
46	5230	N/A	16.12	N/A	16.12	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	N/A	N/A	14.60	14.60	17	Pass
46	5230	N/A	N/A	16.74	16.74	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 0+1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	11.28	12.30	N/A	14.83	17	Pass
46	5230	13.45	13.03	N/A	16.26	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	N/A	12.71	13.68	16.23	17	Pass
46	5230	N/A	12.75	13.83	16.33	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 0+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	12.70	N/A	13.69	16.23	17	Pass
46	5230	12.60	N/A	13.67	16.18	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11ac(40MHz) (Ant 0+1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
38	5190	11.02	10.07	11.70	15.75	17	Pass
46	5230	11.38	11.08	12.04	16.29	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 0)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
42	5210	13.86	N/A	N/A	13.86	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
42	5210	N/A	11.52	N/A	11.52	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
42	5210	N/A	N/A	12.67	12.67	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 0+1)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
42	5210	11.16	11.42	N/A	14.30	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
42	5210	N/A	10.75	11.38	14.09	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 0+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
42	5210	12.79	N/A	13.63	16.24	17	Pass

Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Power Output
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11ac(80MHz) (Ant 0+1+2)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
42	5210	10.45	10.73	11.52	15.70	17	Pass

8. Peak Power Spectral Density

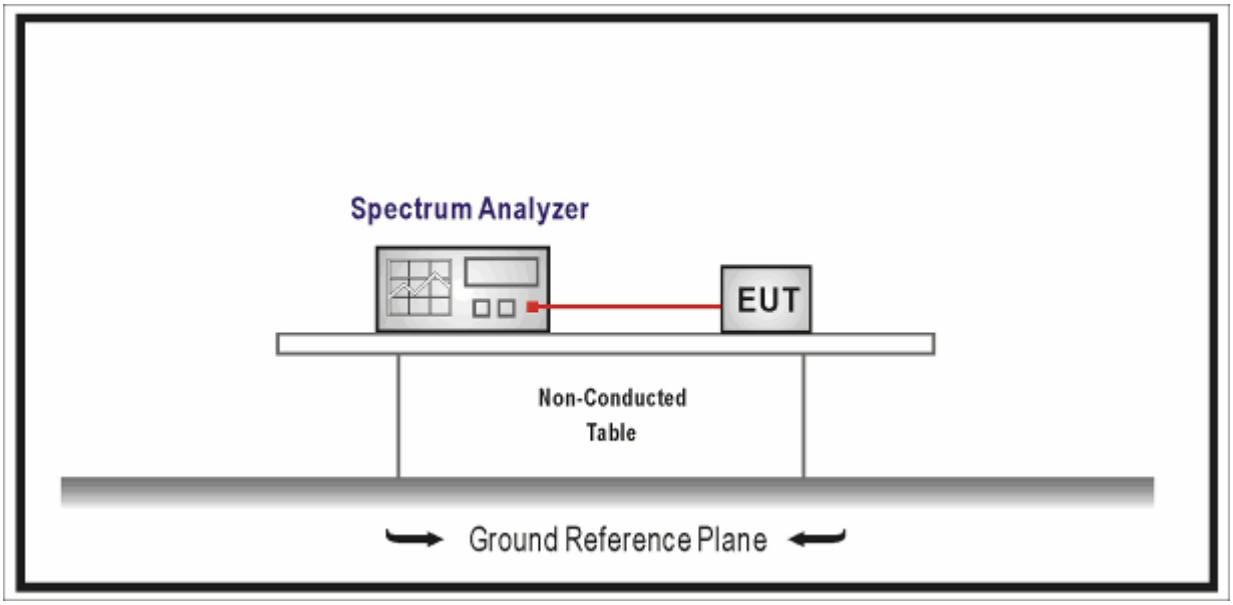
8.1. Test Equipment

Peak Power Spectral Density / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2014.01.21
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2014.05.07

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

8.2. Test Setup



8.3. Limit

- For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- For the band 5.25-5.35 GHz and 5.47-5725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- For the band 5.725-5.825 GHz, the peak power spectral density shall not exceed 17 dBm

in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain up to 23 dBi without any corresponding reduction in the peak power spectral density. For fixed, point-to-point U-NII transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in peak power spectral density for each 1 dB of antenna gain in excess of 23 dBi would be required.

8.4. Test Procedure

The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- The trigger shall be set to “free run”.
- Trace average at least 100 traces in power averaging (i.e., RMS) mode.

8.5. Uncertainty

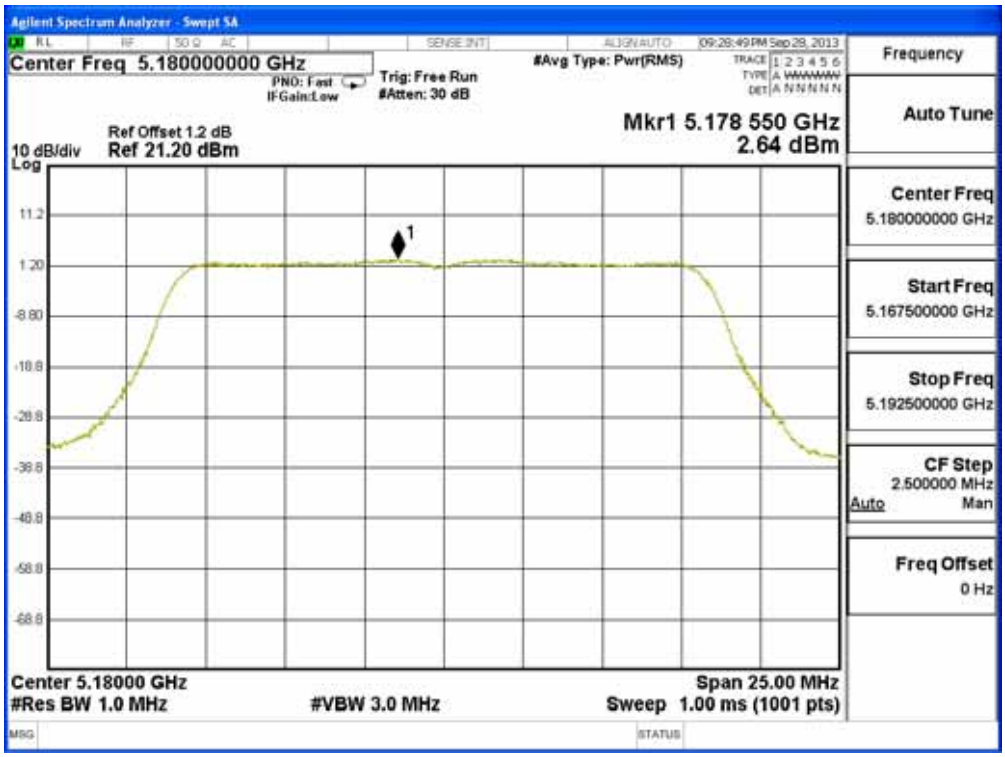
The measurement uncertainty is defined as ± 1.27 dB

8.6. Test Result

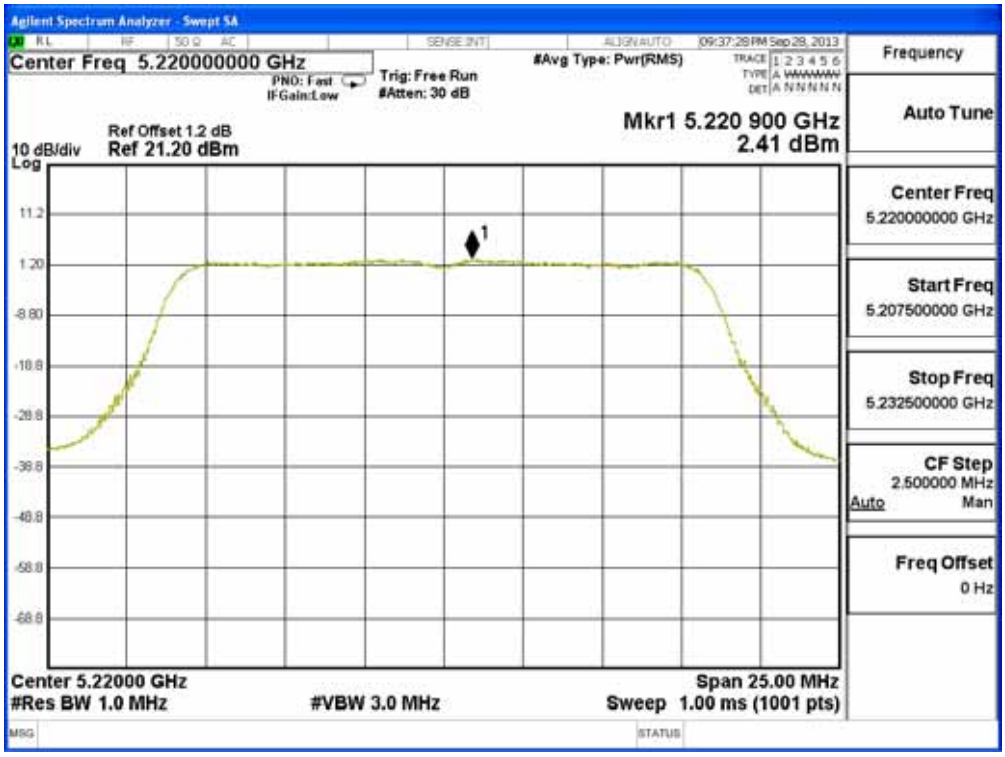
Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 0)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/MHz)			Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	2.640	N/A	N/A	2.640	3	Pass
44	5220	2.410	N/A	N/A	2.410	3	Pass
48	5240	2.390	N/A	N/A	2.390	3	Pass

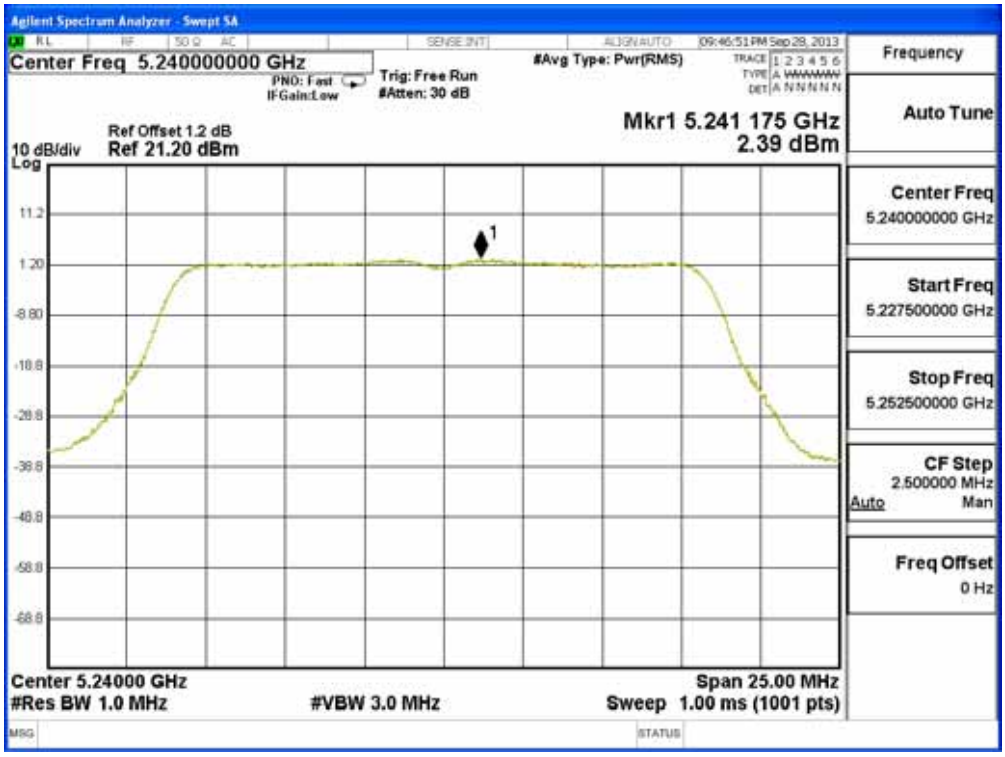
Channel 36 (5180MHz)



Channel 44 (5220MHz)



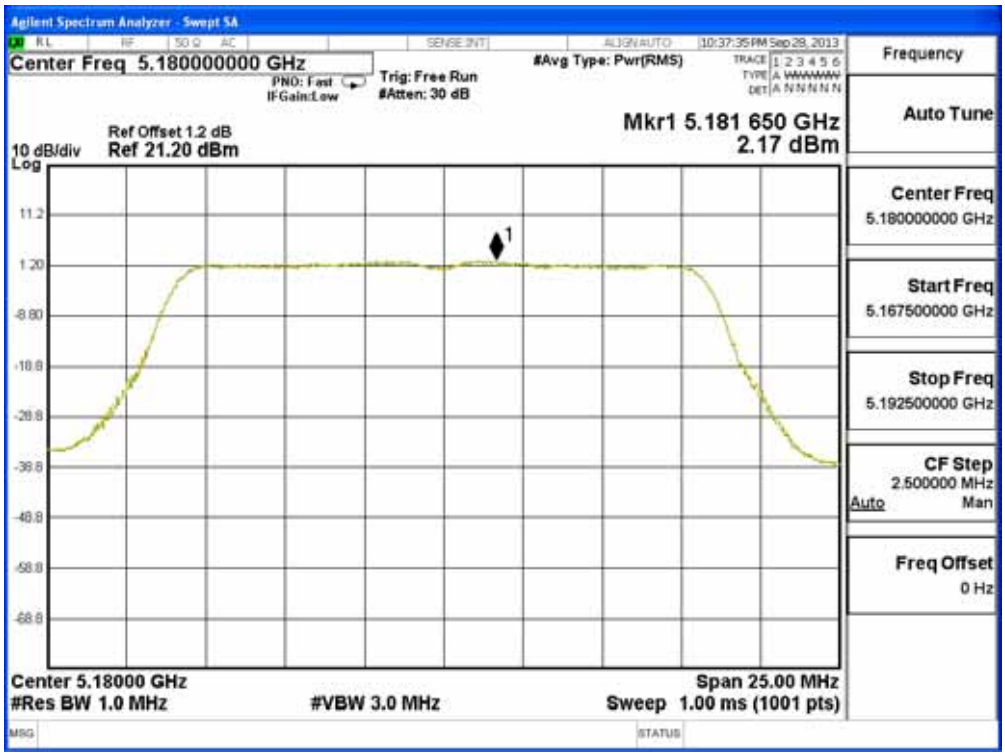
Channel 48 (5240MHz)



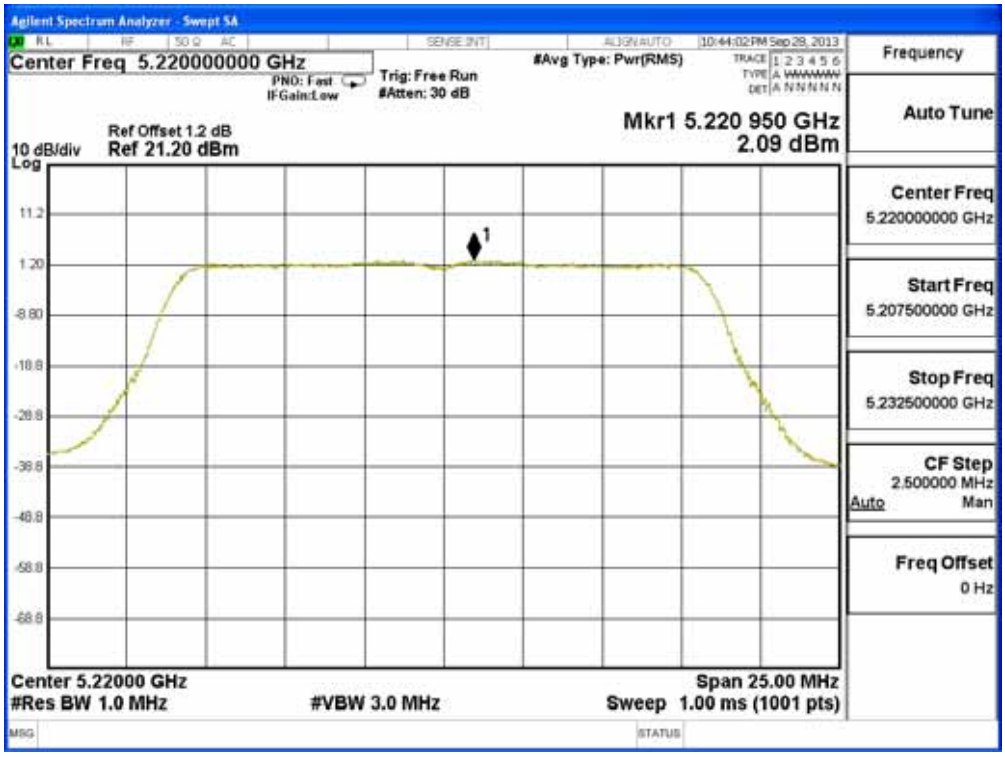
Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 1)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/MHz)			Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	2.170	N/A	2.170	3	Pass
44	5220	N/A	2.090	N/A	2.090	3	Pass
48	5240	N/A	2.590	N/A	2.590	3	Pass

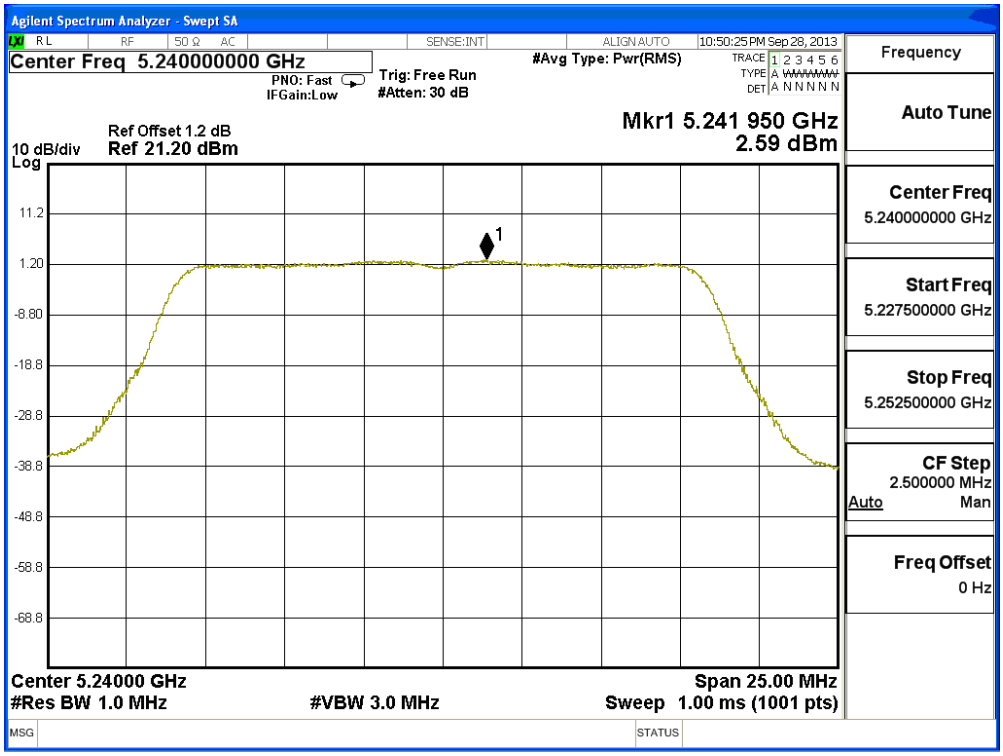
Channel 36 (5180MHz)



Channel 44 (5220MHz)



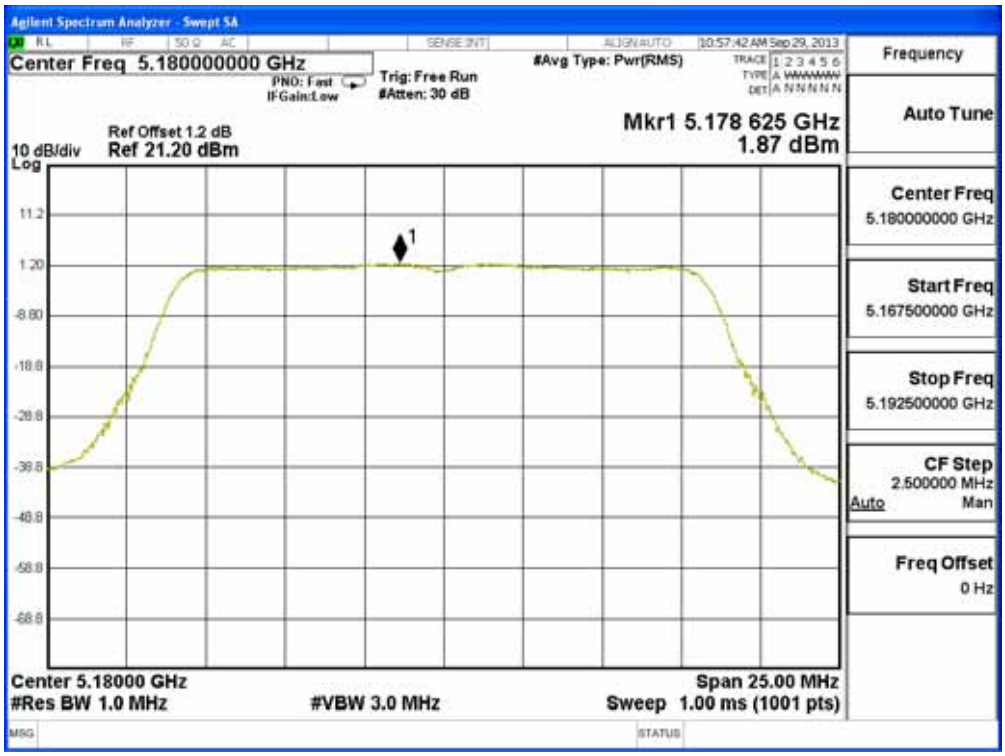
Channel 48 (5240MHz)



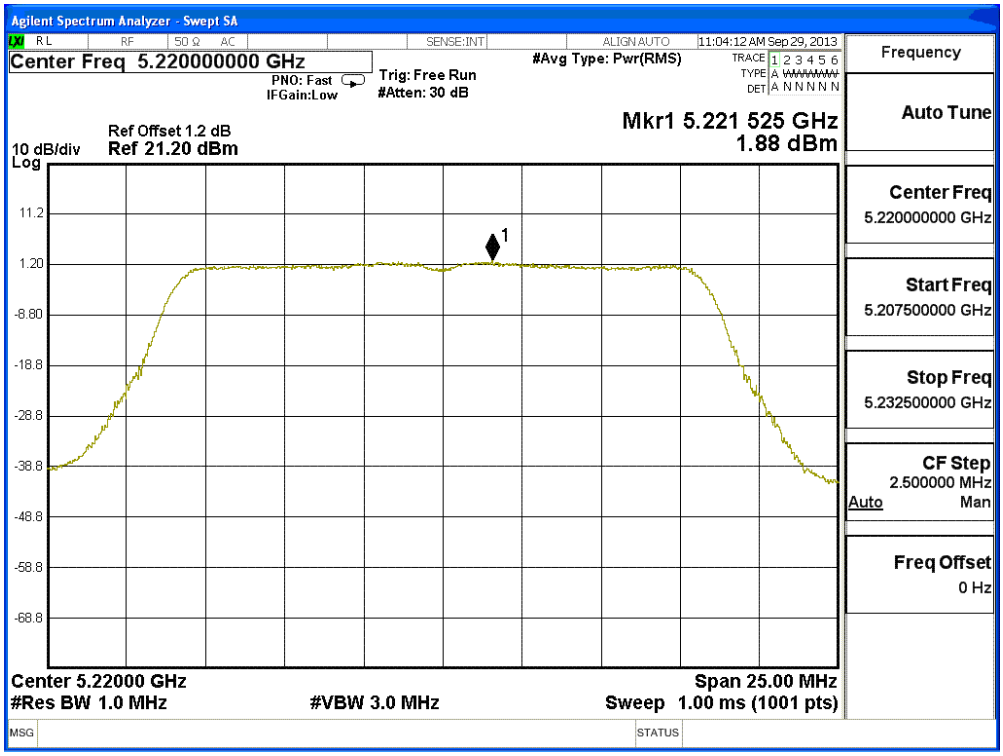
Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11a (Ant 2)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/MHz)			Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	N/A	1.870	1.870	3	Pass
44	5220	N/A	N/A	1.880	1.880	3	Pass
48	5240	N/A	N/A	1.910	1.910	3	Pass

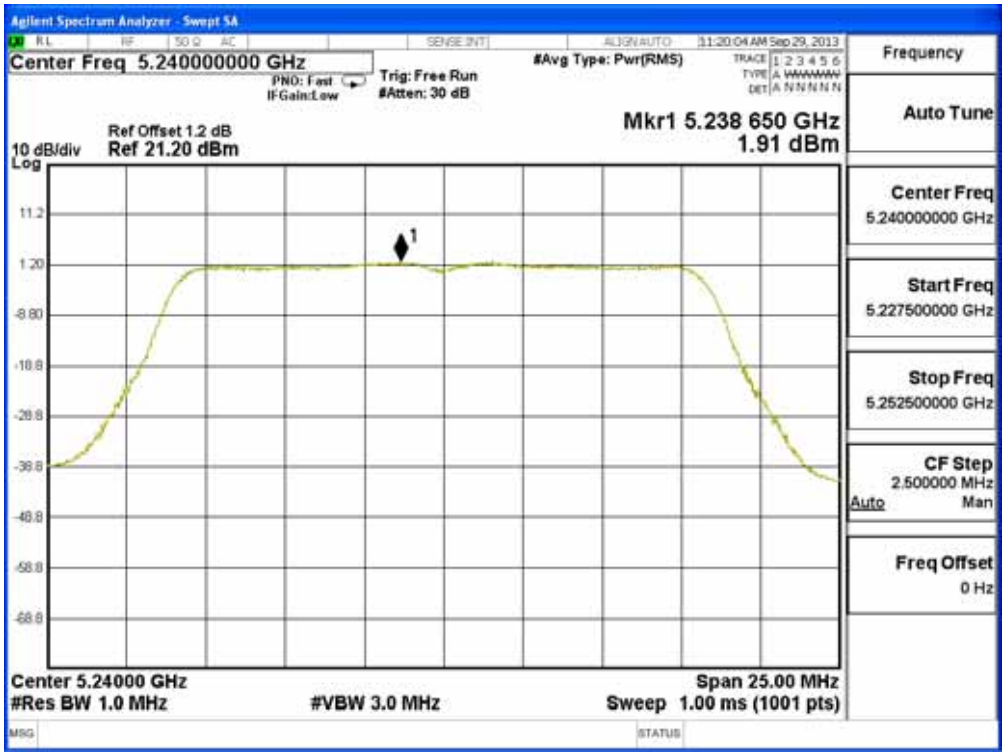
Channel 36 (5180MHz)



Channel 44 (5220MHz)



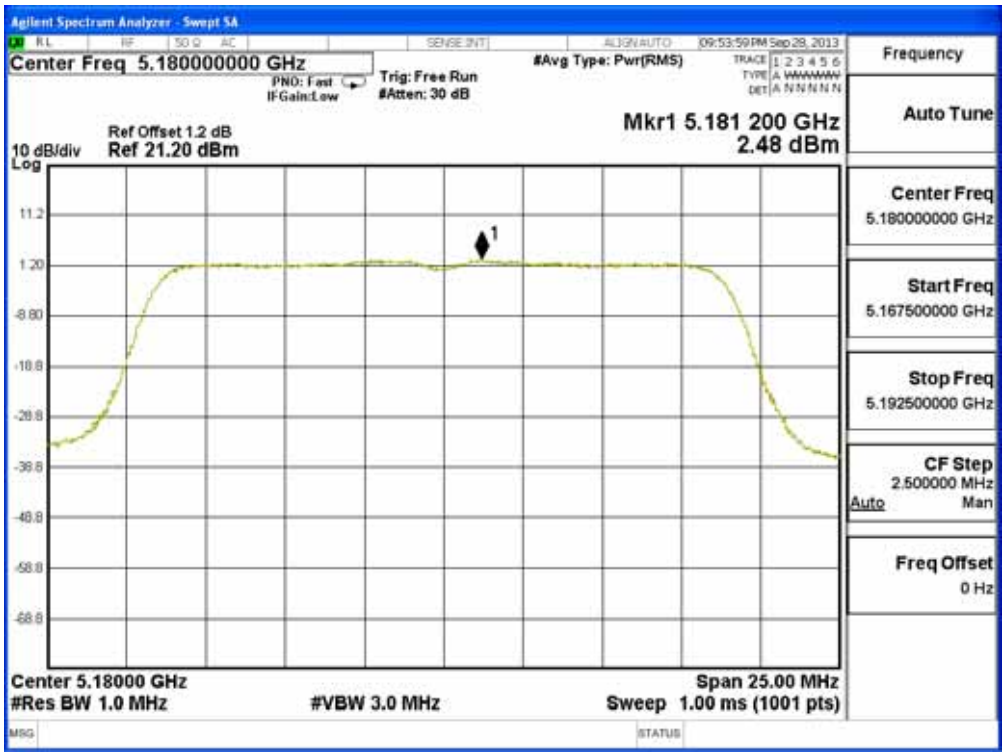
Channel 48 (5240MHz)



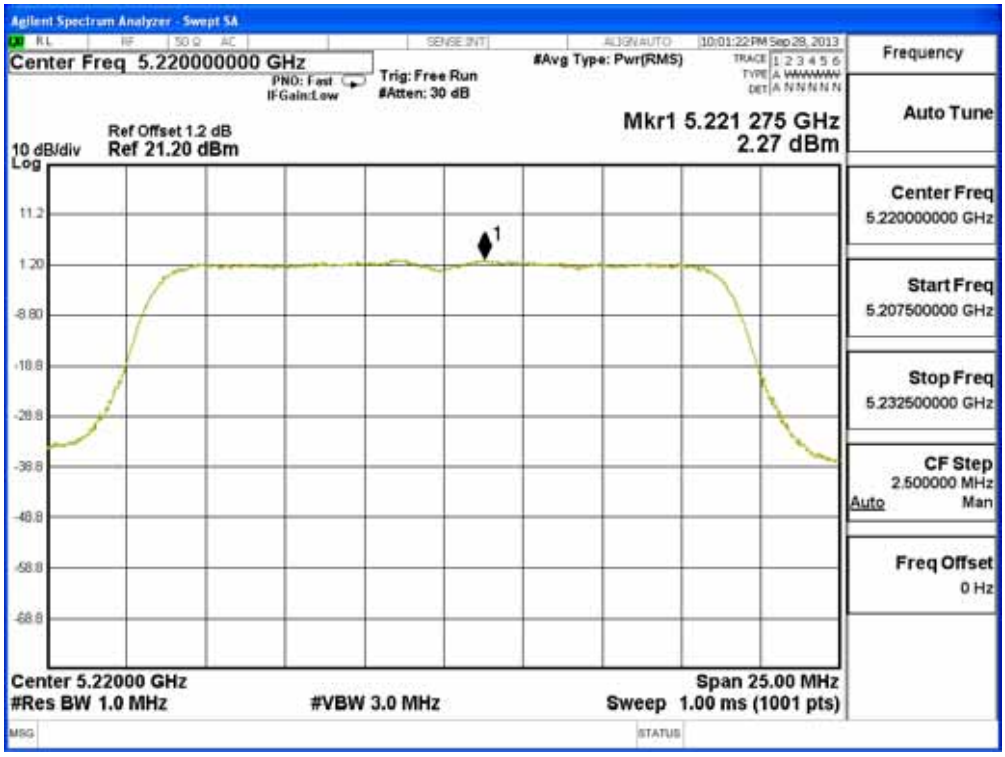
Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 0)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/MHz)			Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	2.480	N/A	N/A	2.480	3	Pass
44	5220	2.270	N/A	N/A	2.270	3	Pass
48	5240	1.950	N/A	N/A	1.950	3	Pass

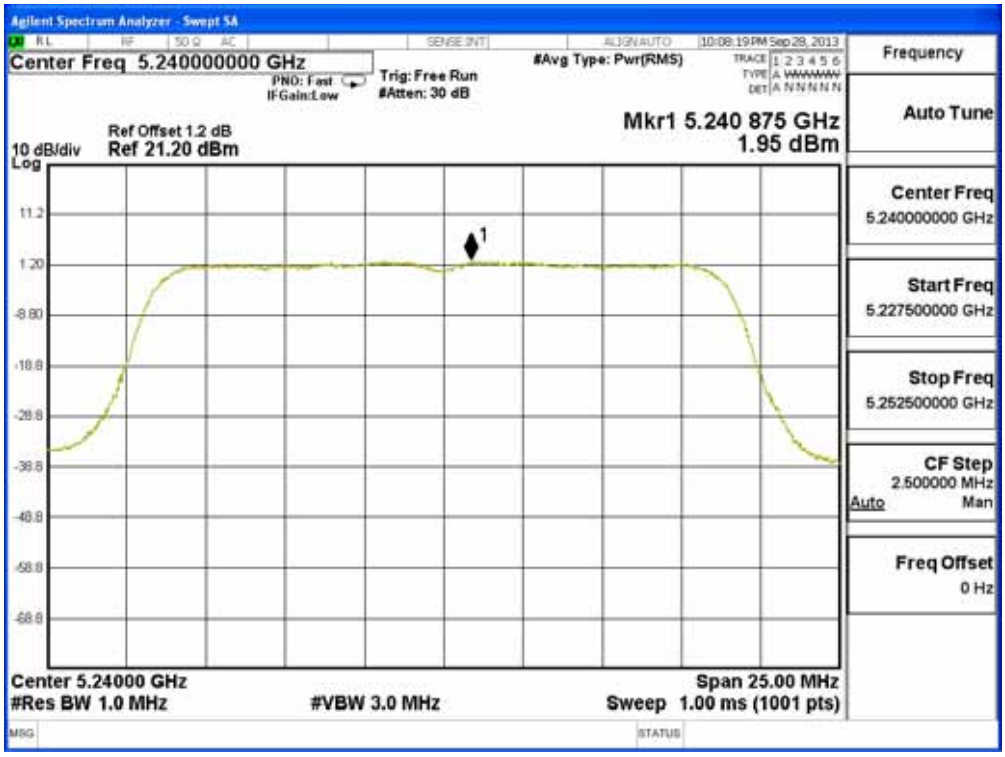
Channel 36 (5180MHz)



Channel 44 (5220MHz)



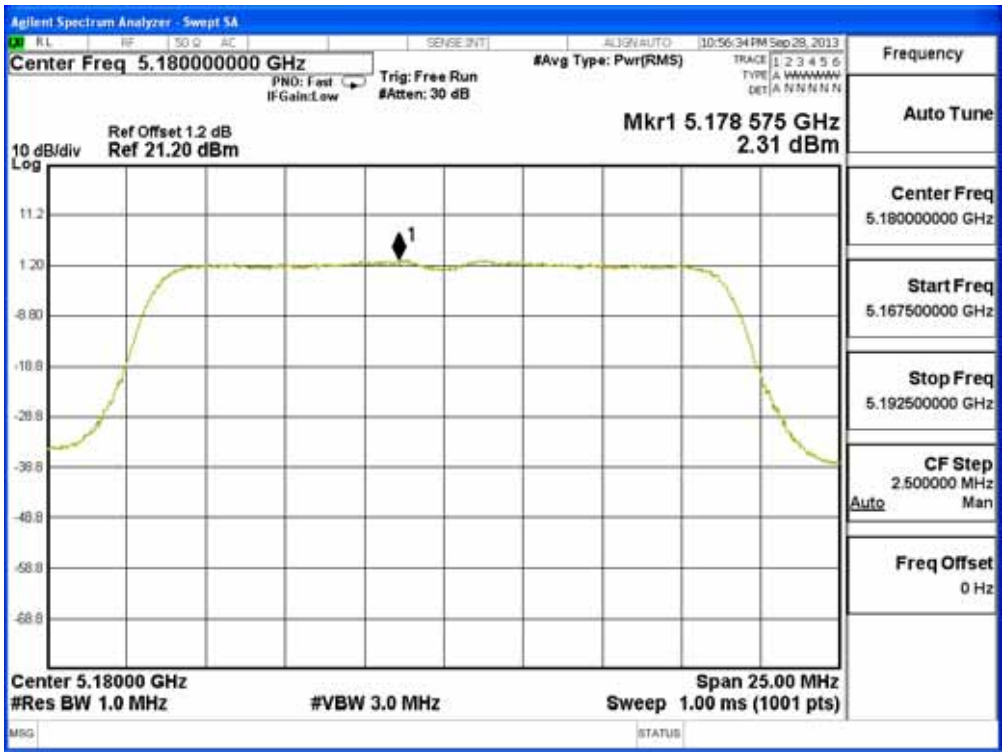
Channel 48 (5240MHz)



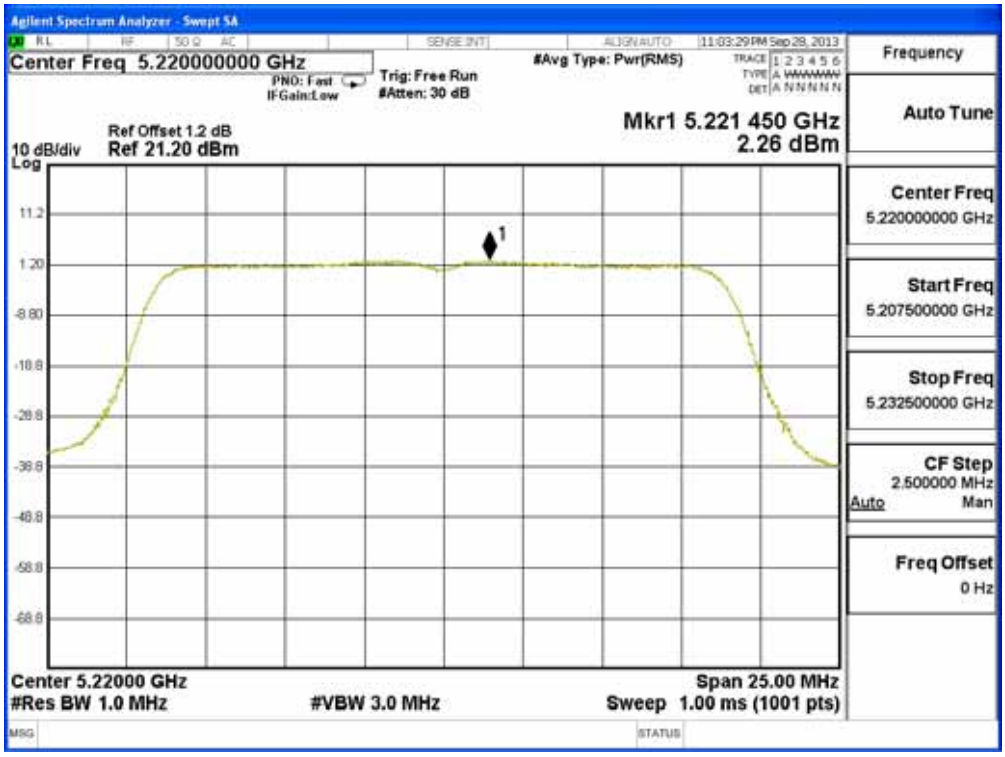
Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 1)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/MHz)			Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	2.310	N/A	2.310	3	Pass
44	5220	N/A	2.260	N/A	2.260	3	Pass
48	5240	N/A	2.100	N/A	2.100	3	Pass

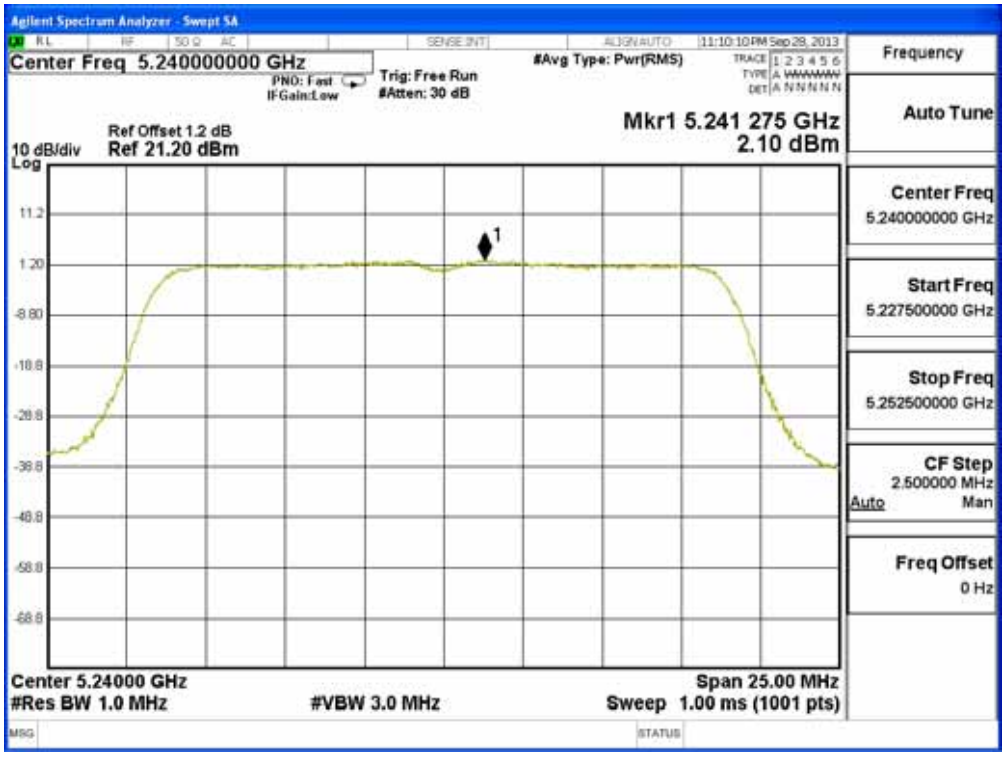
Channel 36 (5180MHz)



Channel 44 (5220MHz)



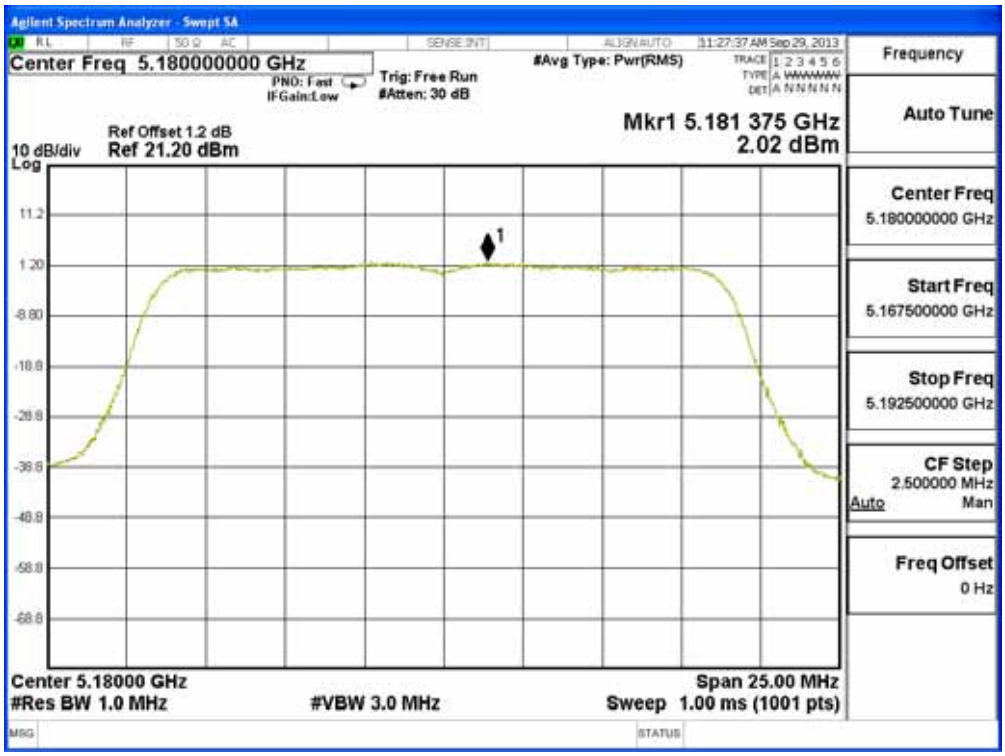
Channel 48 (5240MHz)



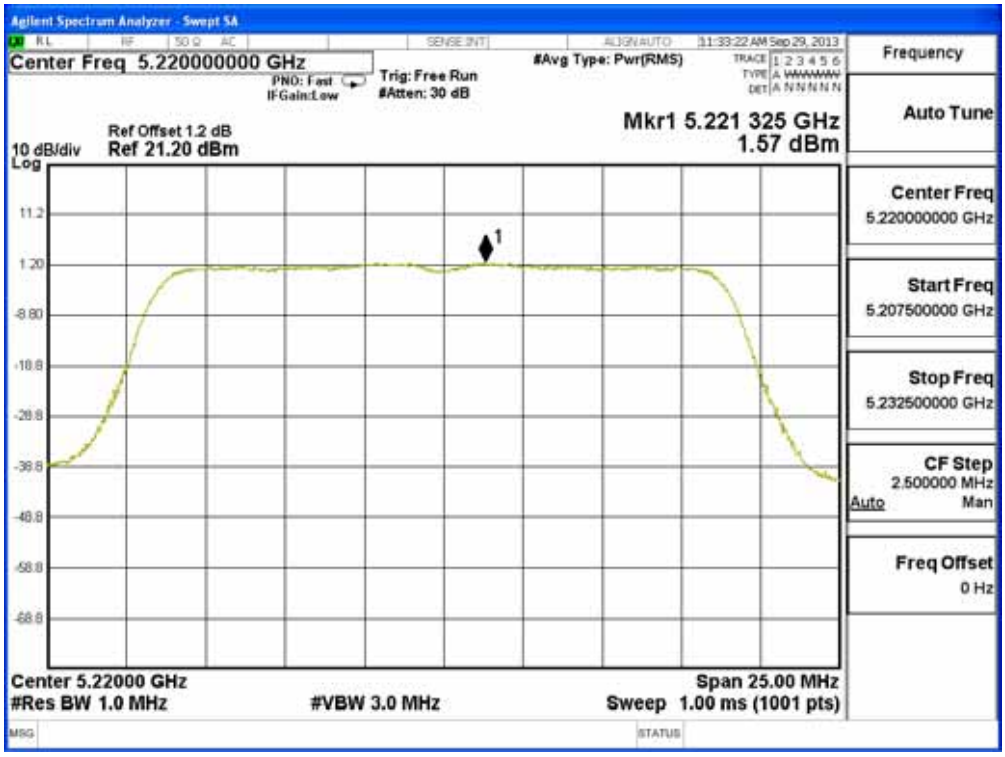
Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 2)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/MHz)			Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	N/A	N/A	2.020	2.020	3	Pass
44	5220	N/A	N/A	1.570	1.570	3	Pass
48	5240	N/A	N/A	1.720	1.720	3	Pass

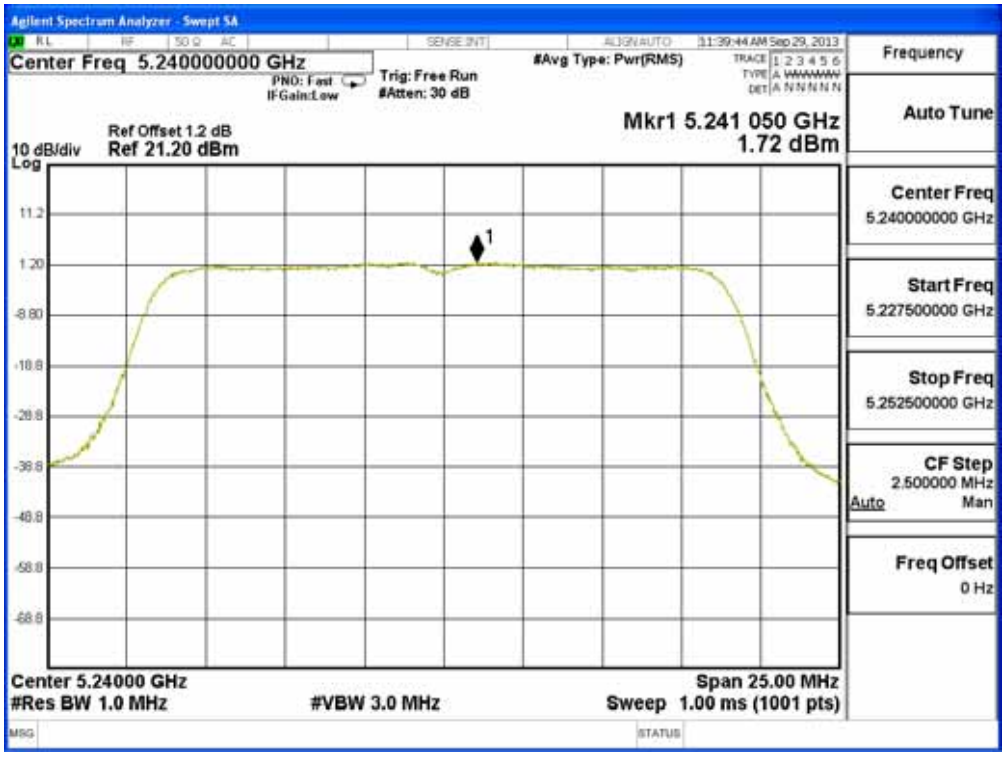
Channel 36 (5180MHz)



Channel 44 (5220MHz)



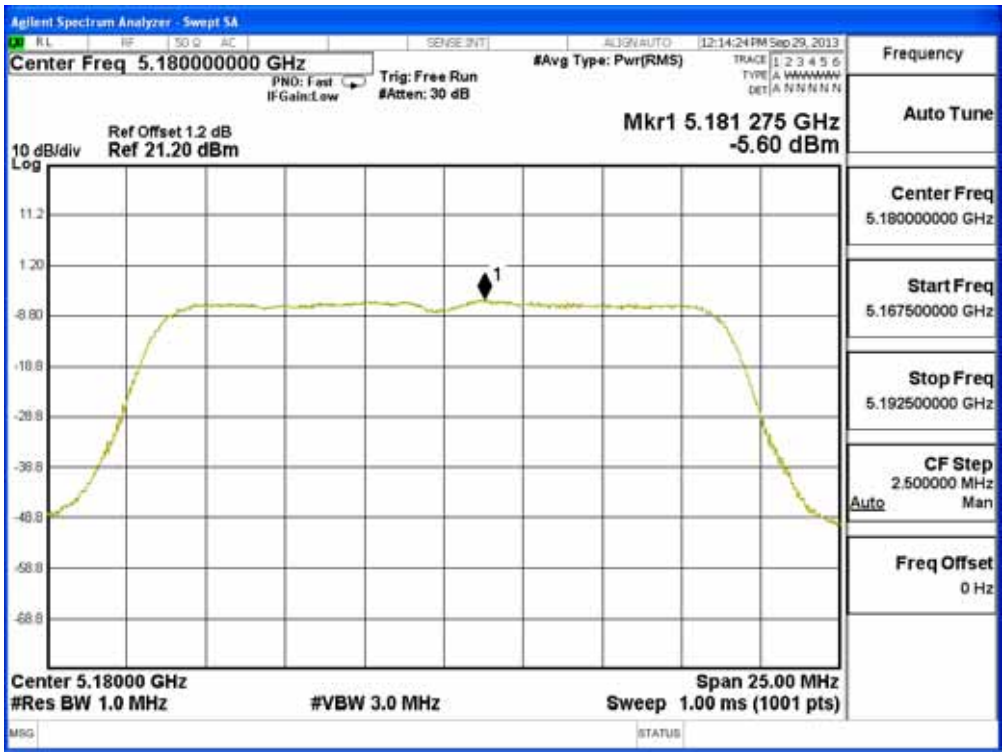
Channel 48 (5240MHz)



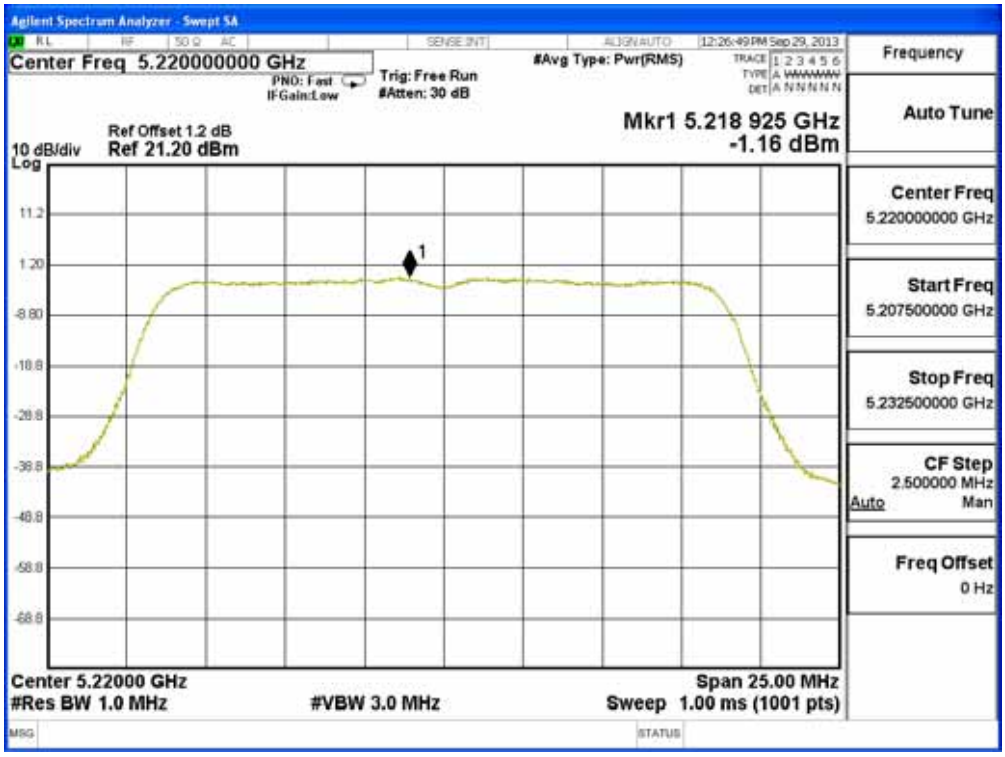
Product	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	Peak Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11n(20MHz) (Ant 0+1)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/MHz)			Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Result
		Ant 0	Ant 1	Ant 2			
36	5180	-5.600	-1.940	N/A	-0.385	3	Pass
44	5220	-1.160	-2.260	N/A	1.335	3	Pass
48	5240	-0.860	-2.120	N/A	1.566	3	Pass

Channel 36 (5180MHz)-Ant 0



Channel 44 (5220MHz) -Ant 0



Channel 48 (5240MHz) -Ant 0