



FCC PART 15.407
 ISED RSS-247, ISSUE 1, MAY 2015
 TEST AND MEASUREMENT REPORT

For

GoPro, Inc.

3000 Clearview Way,

San Mateo, CA 94402, USA

FCC ID: CNFHWMR1
IC: 10193A-HWMR1

Report Type: Original Report	Product Type: Wireless Video Camera
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Report Number: R1606032-407	
Report Date: 2016-08-18	
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 * This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk “*”

TABLE OF CONTENTS

1	GENERAL DESCRIPTION.....	5
1.1	PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	5
1.2	OBJECTIVE.....	5
1.3	RELATED SUBMITTAL(S)/GRANT(S).....	5
1.4	TEST METHODOLOGY.....	5
1.5	MEASUREMENT UNCERTAINTY.....	5
1.6	TEST FACILITY REGISTRATIONS.....	6
1.7	TEST FACILITY ACCREDITATIONS.....	6
2	EUT TEST CONFIGURATION.....	10
2.1	JUSTIFICATION.....	10
2.2	EUT EXERCISE SOFTWARE.....	10
2.3	DUTY CYCLE CORRECTION FACTOR.....	12
2.4	EQUIPMENT MODIFICATIONS.....	14
2.5	LOCAL SUPPORT EQUIPMENT.....	14
2.6	SUPPORT EQUIPMENT.....	14
2.7	INTERFACE PORTS AND CABLING.....	14
3	SUMMARY OF TEST RESULTS.....	15
4	FCC §2.1093, §15.407(F) & ISED RSS-102 - RF EXPOSURE.....	16
4.1	APPLICABLE STANDARD.....	16
4.2	TEST RESULTS.....	16
5	FCC §15.203 & ISED RSS-GEN §8.3 - ANTENNA REQUIREMENTS.....	17
5.1	APPLICABLE STANDARDS.....	17
5.2	ANTENNA LIST.....	17
6	FCC §15.207 & ISED RSS-GEN §8.8 - AC POWER LINE CONDUCTED EMISSIONS.....	18
6.1	APPLICABLE STANDARDS.....	18
6.2	TEST SETUP.....	18
6.3	TEST PROCEDURE.....	18
6.4	TEST SETUP BLOCK DIAGRAM.....	19
6.5	CORRECTED AMPLITUDE & MARGIN CALCULATION.....	19
6.6	TEST EQUIPMENT LIST AND DETAILS.....	20
6.7	TEST ENVIRONMENTAL CONDITIONS.....	20
6.8	SUMMARY OF TEST RESULTS.....	20
6.9	CONDUCTED EMISSIONS TEST PLOTS AND DATA.....	21
7	FCC §15.209, §15.407(B) & ISED RSS-247 §6.2 - SPURIOUS RADIATED EMISSIONS.....	23
7.1	APPLICABLE STANDARD.....	23
7.2	TEST SETUP.....	25
7.3	TEST PROCEDURE.....	25
7.4	CORRECTED AMPLITUDE & MARGIN CALCULATION.....	25
7.5	TEST EQUIPMENT LIST AND DETAILS.....	26
7.6	TEST ENVIRONMENTAL CONDITIONS.....	26
7.7	SUMMARY OF TEST RESULTS.....	27
7.8	RADIATED EMISSIONS TEST RESULT DATA.....	28
8	FCC §15.407(E) & ISED RSS-247 §6.2 - 6 DB, 26 DB & 99% OCCUPIED BANDWIDTH.....	42
8.1	APPLICABLE STANDARDS.....	42
8.2	MEASUREMENT PROCEDURE.....	42

8.3	TEST EQUIPMENT LIST AND DETAILS	42
8.4	TEST ENVIRONMENTAL CONDITIONS.....	42
8.5	TEST RESULTS	42
9	FCC §407(A) & ISED RSS-247 §6.2 - OUTPUT POWER	68
9.1	APPLICABLE STANDARDS	68
9.2	MEASUREMENT PROCEDURE	69
9.3	TEST EQUIPMENT LIST AND DETAILS	69
9.4	TEST ENVIRONMENTAL CONDITIONS.....	69
9.5	TEST RESULTS	70
10	FCC §15.407(A) & ISED RSS-247 §6.2 - POWER SPECTRAL DENSITY	75
10.1	APPLICABLE STANDARDS	75
10.2	MEASUREMENT PROCEDURE	76
10.3	TEST EQUIPMENT LIST AND DETAILS	76
10.4	TEST ENVIRONMENTAL CONDITIONS.....	77
10.5	TEST RESULTS	77
11	§15.407(B) & ISED RSS-247 §6.2 - OUT OF BAND EMISSIONS	103
11.1	APPLICABLE STANDARDS	103
11.2	MEASUREMENT PROCEDURE	104
11.3	TEST EQUIPMENT LIST AND DETAILS	104
11.4	TEST ENVIRONMENTAL CONDITIONS.....	104
11.5	TEST RESULTS	105
12	EXHIBIT A - FCC & ISED EQUIPMENT LABELING REQUIREMENTS	142
12.1	FCC ID LABEL REQUIREMENTS	142
12.2	ISED LABEL REQUIREMENTS	142
12.3	FCC ID & ISED LABEL CONTENTS AND LOCATION.....	143
13	EXHIBIT B - TEST SETUP PHOTOGRAPHS	144
13.1	RADIATED EMISSION BELOW 1 GHz FRONT VIEW.....	144
13.2	RADIATED EMISSION BELOW 1 GHz REAR VIEW	144
13.3	RADIATED EMISSION ABOVE 1 GHz FRONT VIEW	145
13.4	RADIATED EMISSION ABOVE 1 GHz REAR VIEW	145
13.5	AC CONDUCTED EMISSIONS FRONT VIEW	146
13.6	AC CONDUCTED EMISSIONS SIDE VIEW	146
14	EXHIBIT C - EUT PHOTOGRAPHS.....	147
14.1	EUT – FRONT VIEW	147
14.2	EUT – BACK VIEW	147
14.3	EUT – LEFT VIEW	148
14.4	EUT – RIGHT VIEW	148
14.5	EUT – TOP VIEW.....	149
14.6	EUT – BOTTOM VIEW	149
14.7	EUT – OPEN CASE VIEW	150
14.8	EUT – MAIN PCB BOARD – TOP VIEW	150
14.9	EUT – MAIN PCB BOARD – BOTTOM VIEW	151
14.10	EUT – ATTACHMENT 1 VIEW	151
14.11	EUT – ATTACHMENT 2 VIEW	152
14.12	EUT – BATTERY VIEW.....	152

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1606032-407	Original Report	2016-08-18

1 General Description

1.1 Product Description for Equipment under Test (EUT)

This test and measurement report was prepared on behalf of *GoPro, Inc.*, and their product model: *HWMR1*, FCC ID: CNFHWMR1, IC: 10193A-HWMR1 or the “EUT” as referred to in this report. It is a Wireless video camera

1.2 Objective

This report is prepared on behalf of *GoPro, Inc* in accordance with FCC CFR47 §15.407 and IC RSS-247 Issue 1, May 2015.

The objective is to determine compliance with FCC Part 15.407 and IC RSS-247 rules for Output Power, Antenna Requirements, AC Line Conducted Emissions, Emission Bandwidth, Power spectral density, Conducted and Radiated Spurious Emissions.

1.3 Related Submittal(s)/Grant(s)

FCC Part 15, Subpart C, Equipment DSS with FCC ID: CNFHWMR1

FCC Part 15, Subpart C, Equipment DTS with FCC ID: CNFHWMR1

1.4 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.10-2013, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz, and FCC KDB 789033 D02 General UNII Test Procedure New Rules v01r02.

1.5 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Parameter	Measurement uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.57 dB
Power Spectral Density, conducted	±1.48dB
Unwanted Emissions, conducted	±1.57dB
All emissions, radiated	±4.0 dB
AC power line Conducted Emission	±2.0 dB
Temperature	±2 ° C
Humidity	±5 %
DC and low frequency voltages	±1.0 %
Time	±2 %
Duty Cycle	±3 %

1.6 Test Facility Registrations

BACLs test facilities that are used to perform Radiated and Conducted Emissions tests are currently recognized by the Federal Communications Commission as Accredited with NIST Designation Number US1129.

BACL's test facilities that are used to perform Radiated and Conducted Emissions tests are currently registered with Industry Canada under Registration Numbers: 3062A-1, 3062A-2, and 3062A-3.

BACL is a Chinese Taipei Bureau of Standards Metrology and Inspection (BSMI) validated Conformity Assessment Body (CAB), under Appendix B, Phase I Procedures of the APEC Mutual Recognition Arrangement (MRA). BACL's BSMI Lab Code Number is: SL2-IN-E-1002R

BACL's test facilities that are used to perform AC Line Conducted Emissions, Telecommunications Line Conducted Emissions, Radiated Emissions from 30 MHz to 1 GHz, and Radiated Emissions from 1 GHz to 6 GHz are currently recognized as Accredited in accordance with the Voluntary Control Council for Interference [VCCI] Article 15 procedures under Registration Number A-0027.

1.7 Test Facility Accreditations

Bay Area Compliance Laboratories Corp. (BACL) is:

A- An independent, 3rd-Party, Commercial Test Laboratory accredited to ISO/IEC 17025:2005 by A2LA (Test Laboratory Accreditation Certificate Number 3279.02), in the fields of: Electromagnetic Compatibility and Telecommunications. Unless noted by an Asterisk (*) in the Compliance Matrix (See Section 3 of this Test Report), BACL's ISO/IEC 17025:2005 Scope of Accreditation includes all of the Test Method Standards and/or the Product Family Standards detailed in this Test Report..

BACL's ISO/IEC 17025:2005 Scope of Accreditation includes a comprehensive suite of EMC Emissions, EMC Immunity, Radio, RF Exposure, Safety and wireline Telecommunications test methods applicable to a wide range of product categories. These product categories include Central Office Telecommunications Equipment [including NEBS - Network Equipment Building Systems], Unlicensed and Licensed Wireless and RF devices, Information Technology Equipment (ITE); Telecommunications Terminal Equipment (TTE); Medical Electrical Equipment; Industrial, Scientific and Medical Test Equipment; Professional Audio and Video Equipment; Industrial and Scientific Instruments and Laboratory Apparatus; Cable Distribution Systems, and Energy Efficient Lighting.

B- A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3279.03) to certify

- For the USA (Federal Communications Commission):
 - 1- All Unlicensed radio frequency devices within FCC Scopes A1, A2, A3, and A4;
 - 2- All Licensed radio frequency devices within FCC Scopes B1, B2, B3, and B4;
 - 3- All Telephone Terminal Equipment within FCC Scope C.
- For the Canada (Industry Canada):
 - 1 All Scope 1-Licence-Exempt Radio Frequency Devices;
 - 2 All Scope 2-Licensed Personal Mobile Radio Services;
 - 3 All Scope 3-Licensed General Mobile & Fixed Radio Services;
 - 4 All Scope 4-Licensed Maritime & Aviation Radio Services;
 - 5 All Scope 5-Licensed Fixed Microwave Radio Services
 - 6 All Broadcasting Technical Standards (BETS) in the Category I Equipment Standards List.
- For Singapore (Info-Communications Development Authority (IDA)):
 - 1 All Line Terminal Equipment: All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2011, Annex 2
 - 2. All Radio-Communication Equipment: All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2011, Annex 2
- For the Hong Kong Special Administrative Region:
 - 1 All Radio Equipment, per KHCA 10XX-series Specifications;
 - 2 All GMDSS Marine Radio Equipment, per HKCA 12XX-series Specifications;
 - 3 All Fixed Network Equipment, per HKCA 20XX-series Specifications.
- For Japan:
 - 1 MIC Telecommunication Business Law (Terminal Equipment):
 - All Scope A1 - Terminal Equipment for the Purpose of Calls;
 - All Scope A2 - Other Terminal Equipment
 - 2 Radio Law (Radio Equipment):
 - All Scope B1 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 1 of the Radio Law
 - All Scope B2 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 2 of the Radio Law
 - All Scope B3 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 3 of the Radio Law

C- A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3279.01) to certify Products to USA's Environmental Protection Agency (EPA) ENERGY STAR Product Specifications for:

- 1 Electronics and Office Equipment:
 - for Telephony (ver. 3.0)
 - for Audio/Video (ver. 3.0)
 - for Battery Charging Systems (ver. 1.1)
 - for Set-top Boxes & Cable Boxes (ver. 4.1)
 - for Televisions (ver. 6.1)
 - for Computers (ver. 6.0)
 - for Displays (ver. 6.0)
 - for Imaging Equipment (ver. 2.0)
 - for Computer Servers (ver. 2.0)
- 2 Commercial Food Service Equipment
 - for Commercial Dishwashers (ver. 2.0)
 - for Commercial Ice Machines (ver. 2.0)
 - for Commercial Ovens (ver. 2.1)

- for Commercial Refrigerators and Freezers
- 3 Lighting Products
 - For Decorative Light Strings (ver. 1.5)
 - For Luminaires (including sub-components) and Lamps (ver. 1.2)
 - For Compact Fluorescent Lamps (CFLs) (ver. 4.3)
 - For Integral LED Lamps (ver. 1.4)
- 4 Heating, Ventilation, and AC Products
 - for Residential Ceiling Fans (ver. 3.0)
 - for Residential Ventilating Fans (ver. 3.2)
- 5 Other
 - For Water Coolers (ver. 3.0)

D- A NIST Designated Phase-I and Phase-II Conformity Assessment Body (CAB) for the following economies and regulatory authorities under the terms of the stated MRAs/Treaties:

- Australia: ACMA (Australian Communication and Media Authority) – APEC Tel MRA -Phase I;
- Canada: (Industry Canada - IC) Foreign Certification Body – FCB – APEC Tel MRA -Phase I & Phase II;
- Chinese Taipei (Republic of China – Taiwan):
 - o BSMI (Bureau of Standards, Metrology and Inspection) APEC Tel MRA -Phase I;
 - o NCC (National Communications Commission) APEC Tel MRA -Phase I;
- European Union:
 - o EMC Directive 2004/108/EC US-EU EMC & Telecom MRA CAB
 - o Radio & Teleterminal Equipment (R&TTE) Directive 1995/5/EC US -EU EMC & Telecom MRA CAB
- Hong Kong Special Administrative Region: (Office of the Telecommunications Authority – OFTA) APEC Tel MRA -Phase I & Phase II
- Israel – US-Israel MRA Phase I
- Republic of Korea (Ministry of Communications - Radio Research Laboratory) APEC Tel MRA -Phase I
- Singapore: (Infocomm Development Authority - IDA) APEC Tel MRA -Phase I & Phase II;
- Japan: VCCI - Voluntary Control Council for Interference US-Japan Telecom Treaty VCCI Side Letter-
- USA:
 - o ENERGY STAR Recognized Test Laboratory – US EPA
 - o Telecommunications Certification Body (TCB) – US FCC;
- Vietnam: APEC Tel MRA -Phase I;



American Association for Laboratory Accreditation

Accredited Product Certification Body

A2LA has accredited

BAY AREA COMPLIANCE LABORATORIES CORP.

Sunnyvale, CA

for technical competence as a

Product Certification Body

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC 17065:2012 *General requirements for bodies operating product certification systems*. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system.

Presented this 8th day of September 2014.

President & CEO
For the Accreditation Council
Certificate Number 3297.03
Valid to September 30, 2016



For the product certification schemes to which this accreditation applies, please refer to the organization's Product Certification Scope of Accreditation

2 EUT Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.10-2013 and FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.

The EUT was tested in a testing mode to represent worst-case results during the final qualification test.

The worst-case data rates are determined by measuring the average power, peak power and PPSD across all data rates bandwidths, and modulations.

2.2 EUT Exercise Software

The test firmware used was V00:04:02 provided by *GoPro, Inc.*, the software is comply with the standard requirements being tested against.

Please refer to the following power setting table.

Modulation	Channel	Frequency (MHz)	Power Setting
802.11a mode	36	5180	15
	40	5200	15
	48	5240	15
	52	5260	15
	56	5280	15
	64	5320	15
	100	5500	15
	116	5580	15
	140	5700	14
	144	5720	15
	149	5745	15
	157	5785	15
	165	5825	15

Modulation	Channel	Frequency (MHz)	Power Setting
802.11n20 mode	36	5180	15
	40	5200	15
	48	5240	15
	52	5260	15
	56	5280	15
	64	5320	15
	100	5500	15
	116	5580	15
	140	5700	14
	144	5720	15
	149	5745	15
	157	5785	15
	165	5825	15
802.11n40 mode	38	5190	14
	46	5230	15
	54	5270	15
	62	5310	13
	102	5510	12
	110	5550	15
	134	5670	15
	142	5710	15
	151	5755	13
159	5795	15	
802.11ac20 mode	36	5180	15
	40	5200	15
	48	5240	15
	52	5260	15
	56	5280	15
	64	5320	15
	100	5500	15
	116	5580	15
	140	5700	14
	144	5720	15
	149	5745	15
	157	5785	15
	165	5825	15

Modulation	Channel	Frequency (MHz)	Power Setting
802.11ac40 mode	38	5190	14
	46	5230	15
	54	5270	15
	62	5310	13
	102	5510	12
	110	5550	15
	134	5670	15
	142	5710	15
	151	5755	13
	159	5795	15
802.11ac80 mode	42	5210	13
	58	5290	13
	106	5530	11
	122*	5610	15
	138	5690	15
	155	5775	12

* Note: This is only an FCC channel.

2.3 Duty Cycle Correction Factor

According to KDB 789033 D02 General UNII Test Procedures New Rules v01r02 section B:

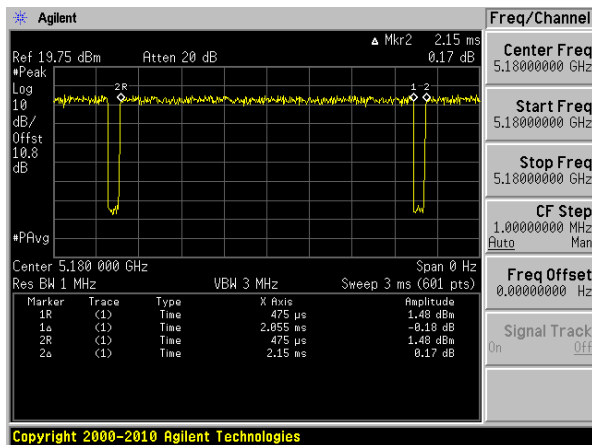
All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, T, are required for each tested mode of operation.

Radio Mode	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
802.11a	2.055	2.15	95.58	0.1963
802.11n20	1.915	2.015	95.04	0.2211
802.11n40	0.91	1.053	86.42	0.6339
802.11ac20	1.91	2.01	95.02	0.2216
802.11ac40	0.9167	1.047	87.55	0.5772
802.11ac80	0.43	0.5467	78.65	1.0428

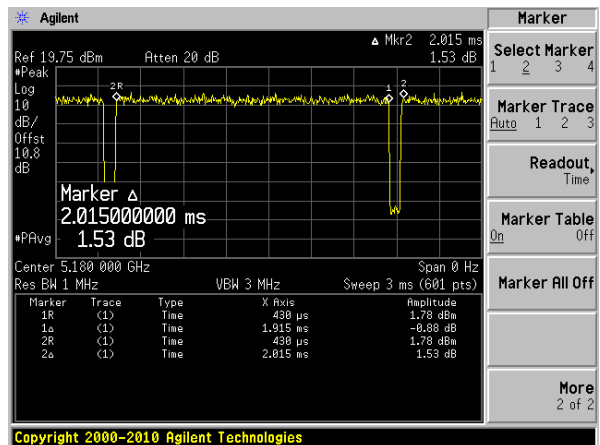
Note: Duty Cycle Correction Factor = $10 \cdot \log(1/\text{duty cycle})$

Please refer to the following plots.

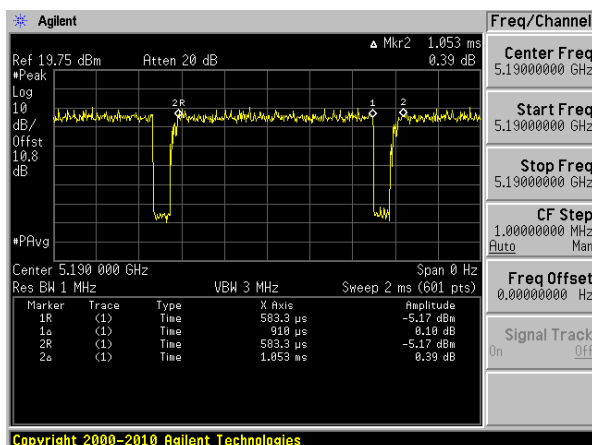
802.11a mode



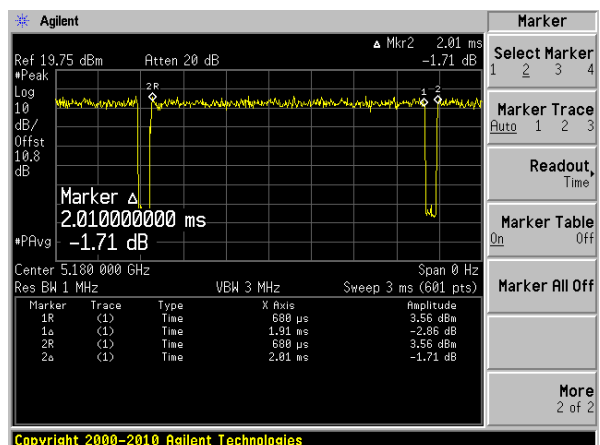
802.11n20 mode



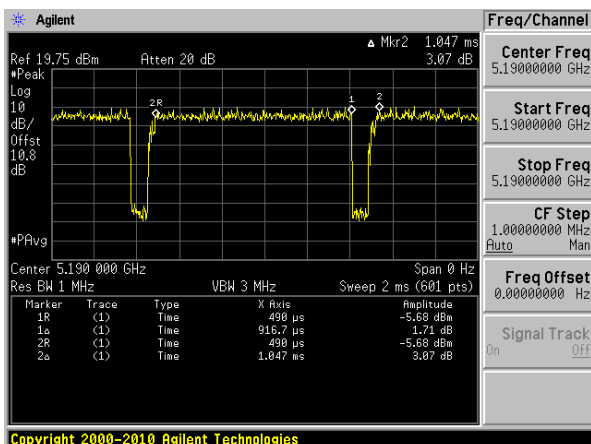
802.11n40 mode



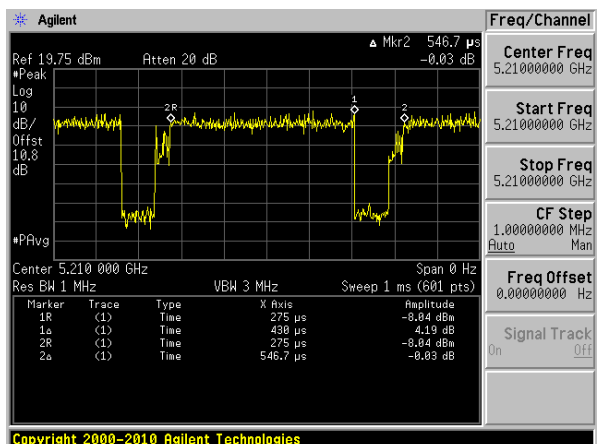
802.11ac20 mode



802.11ac40 mode



802.11ac80 mode



2.4 Equipment Modifications

A hole was cut in the side of the EUT to access the antenna ports.

2.5 Local Support Equipment

Manufacturer	Description	Model
Dell	Laptop	Latitude D630

2.6 Support Equipment

No support equipment came with the EUT.

2.7 Interface Ports and Cabling

Cable Description	Length (m)	To	From
USB Cable	< 1 m	Laptop	EUT
RF Cable	< 1 m	EUT	PSA

3 Summary of Test Results

Results reported relate only to the product tested.

FCC & IC Rules	Description of Test	Result
FCC §2.1093, §15.407(f), ISED RSS-102	RF Exposure	Compliant ¹
FCC §15.203 ISED RSS-Gen §8.3	Antenna Requirement	Compliant
FCC §15.207 ISED RSS-Gen §8.8	AC Power Line Conducted Emissions	Compliant
FCC §2.1053, §15.205, §15.209, 15.407(b) ISED RSS-247 §6.2	Spurious Radiated Emissions	Compliant
FCC §15.407(e) ISED RSS-Gen §6.2	Emission Bandwidth	Compliant
FCC §407(a) ISED RSS-247 §6.2	Output Power	Compliant
FCC §2.1051, §15.407(b) ISED RSS-247 §6.2	Band Edges	Compliant
FCC §15.407(a) ISED RSS-247 §6.2	Power Spectral Density	Compliant
FCC §2.1051, §15.407(b) ISED RSS-247 §6.2	Spurious Emissions at Antenna Terminals	Compliant
FCC §15.407(h) ISED RSS-247 §6.3	Dynamic Frequency Selection (DFS)	Compliant ²

Note¹: RF exposure analysis is recorded in a separate report.

Note²: DFS measurement is recorded in a separate report.

4 FCC §2.1093, §15.407(f) & ISED RSS-102 - RF Exposure

4.1 Applicable Standard

FCC §2.1093, §15.407(f) & IC RSS-102

4.2 Test Results

Please refer to the SAR Report: R1606032- SAR.

5 FCC §15.203 & ISED RSS-Gen §8.3 - Antenna Requirements

5.1 Applicable Standards

According to FCC §15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC §15.247 (b) (4), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to IC RSS-Gen §8.3: Transmitter Antenna

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level. 9 When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

User manuals for transmitters equipped with detachable antennas shall also contain the following notice in a conspicuous location:

This radio transmitter (identify the device by certification number) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi).

5.2 Antenna List

The antennas used by the EUT are permanent attached antennas.

Antenna usage	Frequency Range (MHz)	Maximum Antenna Gain (dBi)
Wi-Fi/Bluetooth	2400-2500	-0.98
Wi-Fi	5100-5600	1.41

6 FCC §15.207 & ISED RSS-Gen §8.8 - AC Power Line Conducted Emissions

6.1 Applicable Standards

As per FCC §15.207 & IC RSS GEN §8.8

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 ^{Note1}	56 to 46 ^{Note2}
0.5-5	56	46
5-30	60	50

Note1: Decreases with the logarithm of the frequency.

Note2: A linear average detector is required

6.2 Test Setup

The measurement was performed at shield room, using the setup per ANSI C63.10-2013 measurement procedure. The specification used was FCC §15.207 limits & IC RSS GEN §8.8.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The AC/DC power adapter of the EUT was connected with LISN-1 which provided 120 V / 60 Hz AC power.

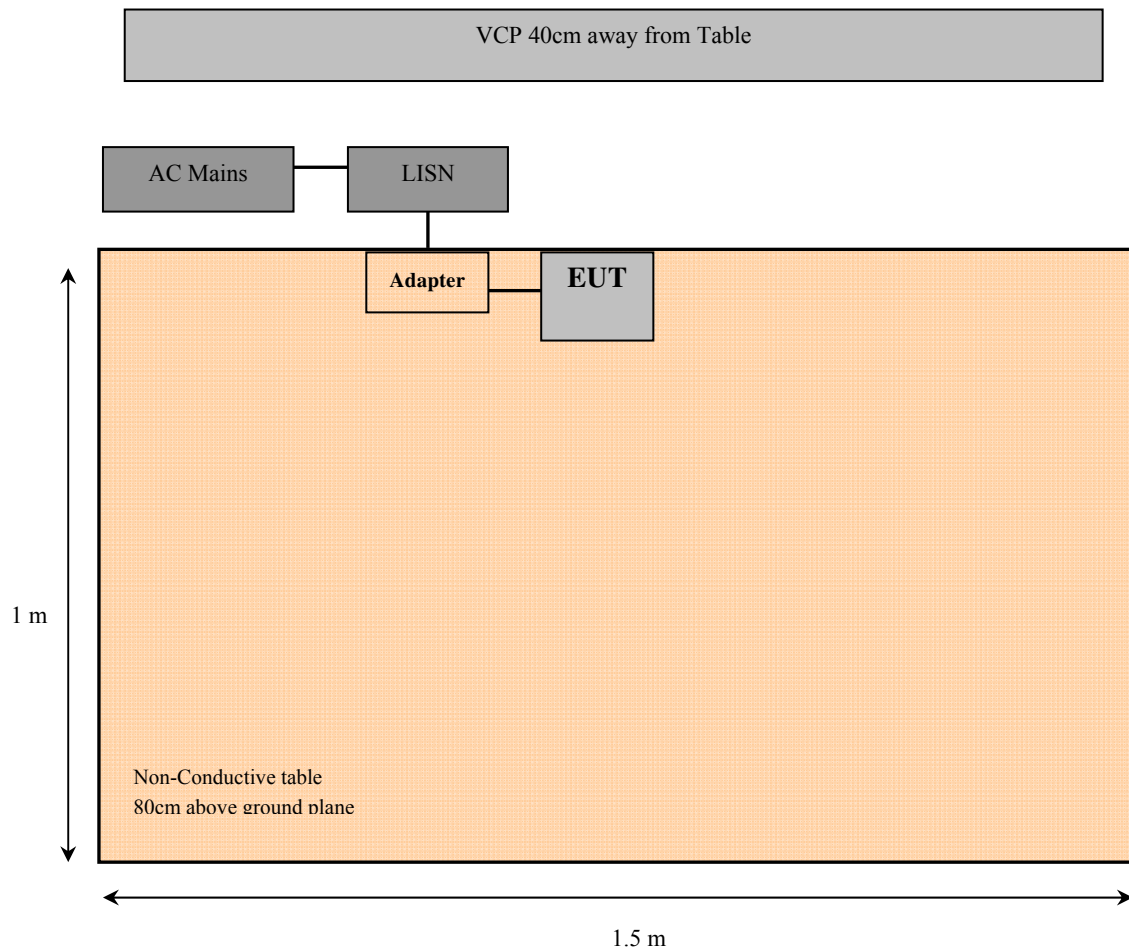
6.3 Test Procedure

During the conducted emissions test, the power cord of the EUT host system was connected to the mains outlet of the LISN-1 and the power cords of support equipment were connected to LISN-2.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the peak, quasi-peak, and average detection mode. Quasi-Peak readings are distinguished with a "QP." Average readings are distinguished with an "Ave".

6.4 Test Setup Block Diagram



6.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Cable Loss (CL), the Attenuator Factor (Atten) to indicated Amplitude (A_i) reading. The basic equation is as follows:

$$CA = A_i + CL + \text{Atten}$$

For example, a corrected amplitude of 46.2 dBuV = Indicated Reading (32.5 dBuV) + Cable Loss (3.7 dB) + Attenuator (10 dB)

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

6.6 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	Receiver, EMI Test	ESCI 1166.5950K03	100338	2016-02-04	2 year
Rohde & Schwarz	Impulse Limiter	ESH3-Z2	101964	2016-07-22	1 year
Keysight Technologies	RF Limiter	11867A	MY42242932	2015-12-15	1 year
Solar Electronics Company	High Pass Filter	Type 7930-100	7930150204	2016-03-09	1 Year
Suirong	30 ft conductive emission cable	LMR 400	-	2016-03-05	1 year
Vasona	Test software	V6.0 build 11	10400213	N/R	N/R

Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

6.7 Test Environmental Conditions

Temperature:	18° C
Relative Humidity:	42 %
ATM Pressure:	101.31 kPa

The testing was performed by Jose Martinez on 2016-07-25 at the outside emission test site.

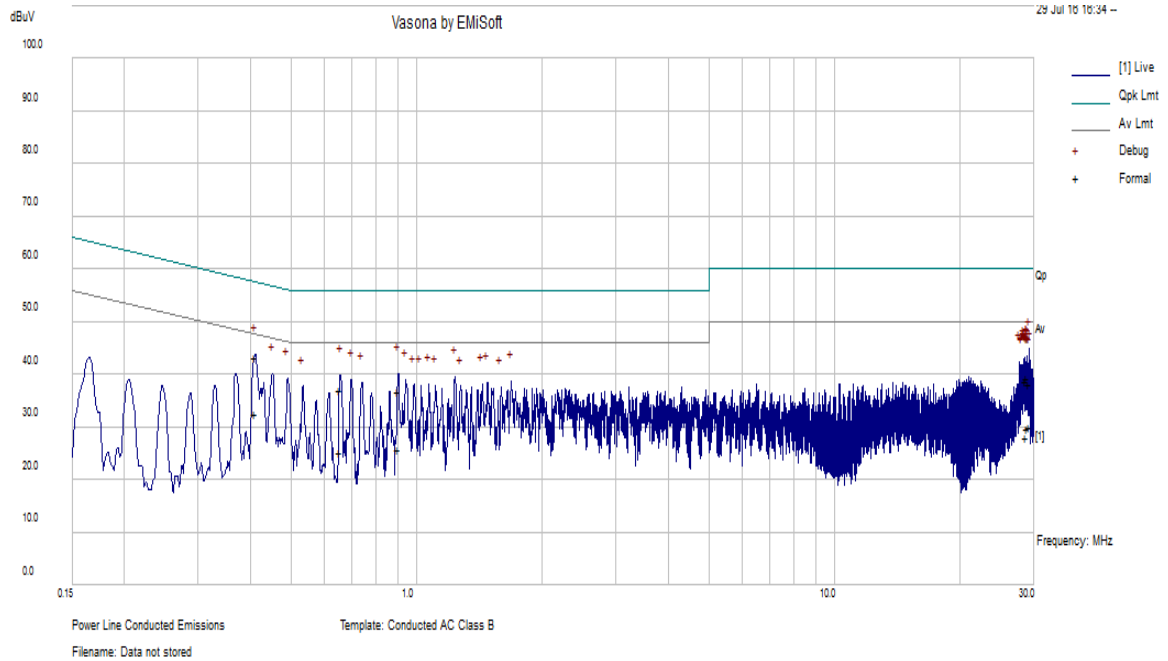
6.8 Summary of Test Results

According to the recorded data in following table, the EUT complied with the FCC Part 15 and RSS-Gen standards'conducted emissions limits, with the margin reading of:

Connection: AC/DC adapter connected to 120 V/60 Hz, AC			
Margin (dB)	Frequency (MHz)	Conductor Mode (Live/Neutral)	Range (MHz)
-14.3	0.411656	Llive	0.15-30

6.9 Conducted Emissions Test Plots and Data

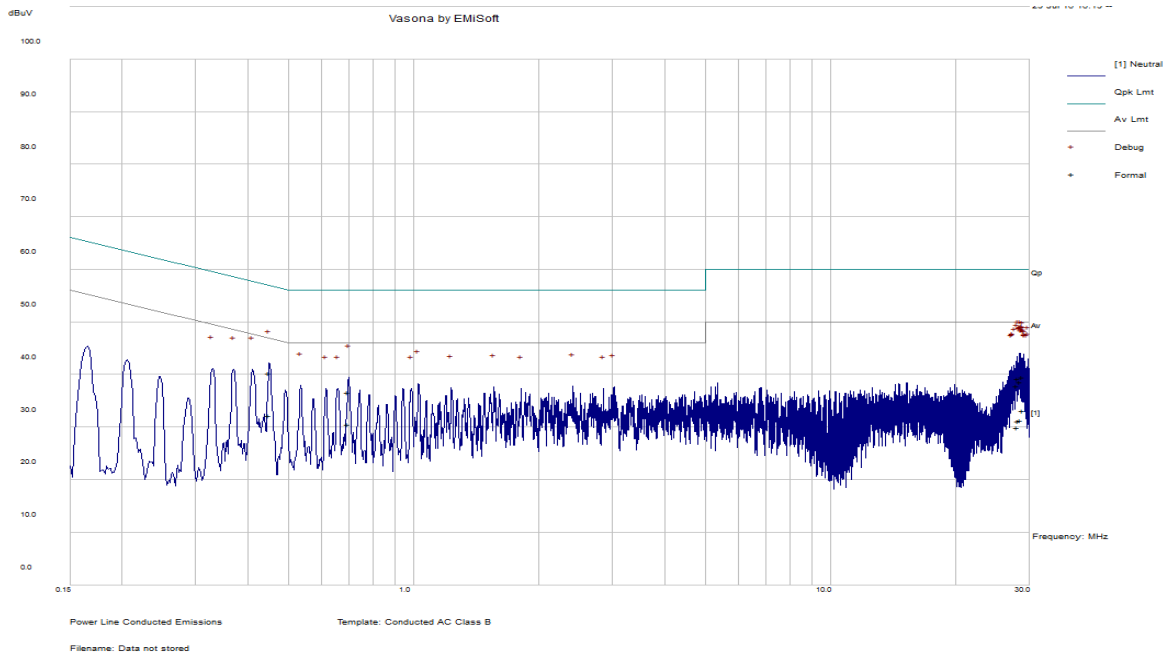
120 V, 60 Hz – Line



Frequency (MHz)	Corrected Amplitude (dB μ V)	Conductor (Live/Neutral)	Limit (dB μ V)	Margin (dB)	Detector (QP/Ave.)
0.411656	43.32	Live	57.61	-14.3	QP
29.19817	38.25	Live	60	-21.75	QP
0.904832	36.91	Live	56	-19.09	QP
0.654554	37.14	Live	56	-18.86	QP
28.88453	39.29	Live	60	-20.71	QP
28.83012	38.68	Live	60	-21.32	QP

Frequency (MHz)	Corrected Amplitude (dB μ V)	Conductor (Live/Neutral)	Limit (dB μ V)	Margin (dB)	Detector (QP/Ave.)
0.411656	32.55	Live	47.61	-15.07	Ave.
29.19817	30.09	Live	50	-19.91	Ave.
0.904832	25.78	Live	46	-20.22	Ave.
0.654554	25.23	Live	46	-20.77	Ave.
28.88453	29.63	Live	50	-20.37	Ave.
28.83012	28.15	Live	50	-21.85	Ave.

120 V, 60 Hz – Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.450922	40.26	Neutral	56.86	-16.6	QP
28.51072	38.65	Neutral	60	-21.35	QP
28.29601	39.24	Neutral	60	-20.76	QP
28.95557	39.47	Neutral	60	-20.53	QP
27.9914	37.89	Neutral	60	-22.11	QP
0.697233	36.61	Neutral	56	-19.39	QP

Frequency (MHz)	Corrected Amplitude (dBµV)	Conductor (Line/Neutral)	Limit (dBµV)	Margin (dB)	Detector (QP/Ave.)
0.450922	32.28	Neutral	46.86	-14.58	Ave.
28.51072	31.4	Neutral	50	-18.6	Ave.
28.29601	31.2	Neutral	50	-18.8	Ave.
28.95557	33.17	Neutral	50	-16.83	Ave.
27.9914	29.95	Neutral	50	-20.05	Ave.
0.697233	30.5	Neutral	46	-15.5	Ave.

Note: testing was prefomed at worst case.

7 FCC §15.209, §15.407(b) & ISED RSS-247 §6.2 - Spurious Radiated Emissions

7.1 Applicable Standard

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5.35 – 5.46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 – 167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3 3458 – 3 358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As per FCC §15.209: The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 Note 1	3
88 - 216	150 Note 1	3
216 - 960	200 Note 1	3
Above 960	500	3

Note 1: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per FCC Part 15.407 (b)

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47 -5.725 GHz band: All emissions outside of the 5.47-5725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
- (7) The provisions of §15.205 apply to intentional radiators operating under this section.

As per IC RSS-247 §6.2

For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, any unwanted emissions that fall into the band 5250- 5350 MHz must be 26 dBc, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth, above 5.25 GHz. Otherwise, the transmission is considered as intentional and the devices shall implement dynamic frequency selection (DFS) and transmitter power control (TPC) as per the requirements for the band 5250-5350 MHz

For devices with both operating frequencies and channel bandwidths contained within the band 5250-5350 MHz, the device shall comply with the following:

1. All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. if the equipment is intended for outdoor use; or
2. All emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. and any emissions within the band 5150-5250 MHz shall meet the power spectral density limits of Section 6.2.1. The device shall be labelled "for indoor use only."

For devices with operating frequencies in the band 5250-5350 MHz but having a channel bandwidth that overlaps the band 5150-5250 MHz, the devices' unwanted emission shall not exceed -27 dBm/MHz e.i.r.p. outside the band 5150-5350 MHz and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device shall be labelled "for indoor use only."

For transmitters operating in the band 5470-5725 MHz, emissions outside the band shall not exceed -27 dBm/MHz e.i.r.p.

For the band 5725-5850 MHz, emissions at frequencies from the band edges to 10 MHz above or below the band edges shall not exceed -17 dBm/MHz e.i.r.p. For emissions at frequencies more than 10 MHz above or below the band edges, the emissions power shall not exceed -27 dBm/MHz.

7.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.10-2013. The specification used was the FCC 15.407 and IC RSS-247 limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

7.3 Test Procedure

For the radiated emissions test, the EUT host, and all support equipment power cords were connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter or 1.5 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

$$\text{RBW} = 100 \text{ kHz} / \text{VBW} = 300 \text{ kHz} / \text{Sweep} = \text{Auto}$$

Above 1000 MHz:

- (1) Peak: RBW = 1MHz / VBW = 3MHz / Sweep = 100ms
- (2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

7.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to indicated Amplitude (Ai) reading. The basic equation is as follows:

$$\text{CA} = \text{Ai} + \text{AF} + \text{CL} + \text{Atten} - \text{Ga}$$

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (29.4 dB)

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit for Class A. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

7.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	Receiver, EMI Test	ESCI 1166.5950K03	100338	2016-02-04	2 year
Agilent	Analyzer, Spectrum	E4446A	US44300386	2015-10-22	1 year
Sunol Science Corp	System Controller	SC99V	011003-1	N/R	N/R
Sunol Sciences	Antenna, Biconi-Log	JB3	A020106-2	2015-07-11	2 Years
EMCO	Antenna, Horn	3115	9511-4627	2016-01-28	2 years
Agilent	Amplifier, Pre	8447D	2944A10187	2016-03-23	1 year
IW	AOBOR Hi frequency Co AX CabelCable	DC 1531	KPS- 1501A3960K PS	2015-08-10	1 Year
-	SMA cable	-	C0002	Each time ¹	N/A
-	N-Type Cable	-	C00013	2016-04-28	1 year
-	N-Type Cable	-	C00014	2016-05-28	1 year
Agilent	Pre-Amplifier	8449B	3008A01978	2015-09-02	1year
Wisewave	Antenna, Horn	ARH-4223-02	10555-02	2013-09-20	3 year
Wisewave	Antenna, Horn	ARH-2823-02	10555-02	2013-09-20	3 year
Wisewave	Amplifier, Low Noise	ALN-33144030-01	11424-01	2016-04-28	1 year
Wisewave	Amplifier, Low Noise	ALN-22093530-01	12263-01	2016-05-16	1 year
Vasona	Test software	V6.0 build 11	10400213	N/R	N/R

Note¹: cables and attenuators included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL attests that all calibrations have been performed per the A2LA requirements, traceable to NIST.*

7.6 Test Environmental Conditions

Temperature:	22-24 °C
Relative Humidity:	40-41 %
ATM Pressure:	103.1-104.1 kPa

The testing was performed by Jimmy Xiao from 2016-08-11 at 5 meter 3.

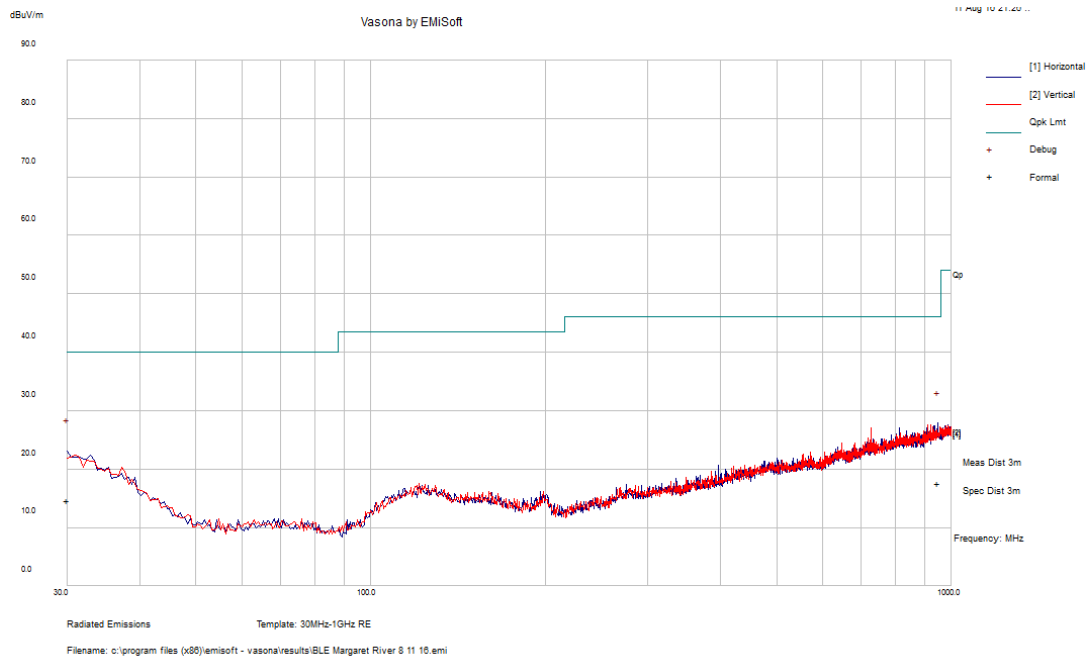
7.7 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Part 15.407 and RSS-247 standards' radiated emissions limits, and had the worst margin of:

Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-0.13	5350	Vertical	802.11ac80 mode, 5290 MHz

7.8 Radiated Emissions Test Result Data

1) 30 MHz – 1 GHz



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comments (PK/QP/Ave.)
30	14.59	227	H	235	40	-25.41	QP
948.4543	17.62	248	H	330	46	-28.38	QP

Note: other emissions were noise floor.

2) 1-40 GHz

5150 - 5250 MHz

802.11a mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 5180 MHz											
5180	64.09	230	113	H	33.55	8.11	0.00	105.75	-	-	PK
5180	55.32	230	113	H	33.55	8.11	0.00	96.98	-	-	AV
5180	67.86	228	100	V	33.55	8.11	0.00	109.52	-	-	PK
5180	59.96	228	100	V	33.55	8.11	0.00	101.62	-	-	AV
5150	58.48	278	236	V	33.46	8.78	38.51	62.21	74.00	-11.79	PK
5150	43.52	278	236	V	33.46	8.78	38.51	47.25	54.00	-6.75	AV
10360	48.51	250	150	V	38.20	12.70	38.26	61.15	68.26	-7.11	Peak
10360	48.78	147	169	H	38.20	12.70	38.26	61.42	68.26	-6.84	Peak
15540	44.68	132	214	V	39.30	15.63	36.98	62.63	74.00	-11.37	Peak
15540	44.57	156	158	H	39.30	15.63	36.98	62.52	74.00	-11.48	Peak
15540	33.79	132	214	V	39.30	15.63	36.98	51.74	54.00	-2.26	Ave
15540	33.92	156	158	H	39.30	15.63	36.98	51.87	54.00	-2.13	Ave
Middle Channel 5200 MHz											
5200	64.54	208.00	110	H	33.61	8.11	0.00	249.72	-	-	PK
5200	56.38	208.00	110	H	33.61	8.11	0.00	249.72	-	-	AV
5200	67.49	228	100	V	33.61	8.11	0.00	109.21	-	-	PK
5200	59.59	228	100	V	33.61	8.11	0.00	101.31	-	-	AV
10400	48.44	250	100	V	38.25	12.82	38.25	61.26	68.26	-7.00	Peak
10400	48.31	160	210	H	38.25	12.82	38.25	61.13	68.26	-7.13	Peak
15600	44.03	147	110	V	39.18	15.63	36.99	61.85	74.00	-12.15	Peak
15600	44.49	156	180	H	39.18	15.63	36.99	62.31	74.00	-11.69	Peak
15600	33.13	147	110	V	39.18	15.63	36.99	50.95	54.00	-3.05	Ave
15600	33.17	156	180	H	39.18	15.63	36.99	50.99	54.00	-3.01	Ave
High Channel 5240 MHz											
5240	64.42	206	100	H	33.52	8.11	0.00	106.05	-	-	PK
5240	56.30	206	100	H	33.52	8.11	0.00	97.93	-	-	AV
5240	68.00	230	141	V	33.52	8.11	0.00	109.63	-	-	PK
5240	58.95	230	141	V	33.52	8.11	0.00	100.58	-	-	AV
10480	48.25	250	140	V	38.30	12.81	38.24	61.12	68.26	-7.14	Peak
10480	48.29	270	100	H	38.30	12.81	38.24	61.16	68.26	-7.10	Peak
15720	45.04	230	150	V	38.88	15.69	37.04	62.57	74.00	-11.43	Peak
15720	45.72	216	100	H	38.88	15.69	37.04	63.25	74.00	-10.75	Peak
15720	34.61	230	150	V	38.88	15.69	37.04	52.14	54.00	-1.86	Ave
15720	34.63	216	100	H	38.88	15.69	37.04	52.16	54.00	-1.84	Ave

802.11n40 mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 5190 MHz											
5190	60.16	206	100	H	33.58	8.11	0.00	101.85	-	-	PK
5190	51.80	206	100	H	33.58	8.11	0.00	93.49	-	-	AV
5190	63.71	229	113	V	33.58	8.11	0.00	105.40	-	-	PK
5190	55.44	229	113	V	33.58	8.11	0.00	97.13	-	-	AV
5150	64.16	246	200	V	33.46	8.78	38.51	67.89	74.00	-6.11	PK
5150	49.50	246	200	V	33.46	8.78	38.51	53.23	54.00	-0.77	AV
10380	48.31	240	158	V	38.25	12.82	38.25	61.13	68.26	-7.13	Peak
10380	48.54	150	240	H	38.25	12.82	38.25	61.36	68.26	-6.90	Peak
15570	43.89	180	162	V	39.18	15.63	36.99	61.71	74.00	-12.29	Peak
15570	44.21	130	157	H	39.18	15.63	36.99	62.03	74.00	-11.97	Peak
15570	33.75	180	162	V	39.18	15.63	36.99	51.57	54.00	-2.43	Ave
15570	34.12	130	157	H	39.18	15.63	36.99	51.94	54.00	-2.06	Ave
High Channel 5230 MHz											
5230	61.20	206	100	H	33.50	8.11	0.00	102.81	-	-	PK
5230	52.88	206	100	H	33.50	8.11	0.00	94.49	-	-	AV
5230	65.01	232	128	V	33.50	8.11	0.00	106.62	-	-	PK
5230	56.70	232	128	V	33.50	8.11	0.00	98.31	-	-	AV
10460	48.22	150	260	V	38.30	12.81	38.24	61.09	68.26	-7.17	Peak
10460	48.34	147	214	H	38.30	12.81	38.24	61.21	68.26	-7.05	Peak
15690	44.65	208	180	V	38.88	15.69	37.04	62.18	74.00	-11.82	Peak
15690	43.98	310	145	H	38.88	15.69	37.04	61.51	74.00	-12.49	Peak
15690	34.59	208	180	V	38.88	15.69	37.04	52.12	54.00	-1.88	Ave
15690	33.57	310	145	H	38.88	15.69	37.04	51.10	54.00	-2.90	Ave

802.11ac80 mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
5210 MHz											
5210	58.30	206	100	H	33.59	8.11	0.00	100.00	-	-	PK
5210	47.19	206	100	H	33.59	8.11	0.00	88.89	-	-	AV
5210	60.99	226	127	V	33.59	8.11	0.00	102.69	-	-	PK
5210	50.64	226	127	V	33.59	8.11	0.00	92.34	-	-	AV
5150	60.91	140	250	V	33.46	8.78	38.51	64.64	74.00	-9.36	PK
5150	48.83	140	250	V	33.46	8.78	38.51	52.56	54.00	-1.44	AV
10420	47.83	150	140	V	38.25	12.82	38.25	60.65	68.26	-7.61	Peak
10420	48.11	160	250	H	38.25	12.82	38.25	60.93	68.26	-7.33	Peak
15630	45.23	180	250	V	39.10	15.63	36.99	62.97	74.00	-11.03	Peak
15630	44.38	250	214	H	39.10	15.63	36.99	62.12	74.00	-11.88	Peak

5250 - 5350 MHz

802.11a mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 5260 MHz											
5260	62.98	285	100	H	33.52	8.20	0.00	104.70	-	-	PK
5260	54.17	285	100	H	33.52	8.20	0.00	95.89	-	-	AV
5260	65.65	141	242	V	33.52	8.20	0.00	107.37	-	-	PK
5260	56.87	141	242	V	33.52	8.20	0.00	98.59	-	-	AV
10520	48.44	158	280	V	38.31	12.74	38.16	61.33	68.26	-6.93	Peak
10520	48.23	169	215	H	38.31	12.74	38.16	61.12	68.26	-7.14	Peak
15780	43.56	140	100	V	38.73	15.76	37.07	60.98	74.00	-13.02	Peak
15780	43.74	300	240	H	38.73	15.76	37.07	61.16	74.00	-12.84	Peak
15780	33.87	140	100	V	38.73	15.76	37.07	51.29	54.00	-2.71	Ave
15780	33.94	300	240	H	38.73	15.76	37.07	51.36	54.00	-2.64	Ave
Middle Channel 5280 MHz											
5280	64.05	291	108	H	33.50	8.20	0.00	105.75	-	-	PK
5280	55.22	291	108	H	33.50	8.20	0.00	96.92	-	-	AV
5280	66.27	137	209	V	33.50	8.20	0.00	107.97	-	-	PK
5280	58.13	137	209	V	33.50	8.20	0.00	99.83	-	-	AV
10560	47.99	140	100	V	38.30	12.68	38.15	60.82	74.00	-13.18	Peak
10560	46.86	300	200	H	38.30	12.68	38.15	59.69	74.00	-14.31	Peak
10560	35.65	140	100	V	38.30	12.68	38.15	48.48	54.00	-5.52	Ave
10560	35.67	300	200	H	38.30	12.68	38.15	48.50	54.00	-5.50	Ave
15840	45.18	169	300	V	38.60	15.86	37.11	62.53	74.00	-11.47	Peak
15840	44.14	250	105	H	38.60	15.86	37.11	61.49	74.00	-12.51	Peak
15840	34.45	169	300	V	38.60	15.86	37.11	51.80	54.00	-2.20	Ave
15840	34.41	250	105	H	38.60	15.86	37.11	51.76	54.00	-2.24	Ave
High Channel 5320 MHz											
5320	63.32	290	111	H	33.58	8.20	0.00	105.10	-	-	PK
5320	54.49	290	111	H	33.58	8.20	0.00	96.27	-	-	AV
5320	66.27	137	119	V	33.58	8.20	0.00	108.05	-	-	PK
5320	57.70	137	119	V	33.58	8.20	0.00	99.48	-	-	AV
5350	63.99	262	258	V	33.52	8.23	38.42	67.32	74.00	-6.68	PK
5350	41.91	262	258	V	33.52	8.23	38.42	45.24	54.00	-8.76	AV
10640	47.54	130	120	V	38.22	12.49	38.14	60.11	74	-13.89	Peak
10640	47.82	290	110	H	38.22	12.49	38.14	60.39	74	-13.61	Peak
10640	35.42	130	120	V	38.22	12.49	38.14	47.99	54	-6.01	Ave
10640	35.53	290	110	H	38.22	12.49	38.14	48.10	54	-5.90	Ave
15960	47.63	130	120	V	38.47	16.04	37.2	64.94	74	-9.06	Peak
15960	48.32	290	110	H	38.47	16.04	37.2	65.63	74	-8.37	Peak
15960	35.23	130	120	V	38.47	16.04	37.2	52.54	54	-1.46	Ave
15960	35.20	290	110	H	38.47	16.04	37.2	52.51	54	-1.49	Ave

802.11n40 mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 5270 MHz											
5270	61.27	287	100	H	33.50	8.20	0.00	102.97	-	-	PK
5270	50.10	287	100	H	33.50	8.20	0.00	91.80	-	-	AV
5270	63.59	150	163	V	33.50	8.20	0.00	105.29	-	-	PK
5270	55.10	150	163	V	33.50	8.20	0.00	96.80	-	-	AV
10540	47.4	230	226	V	38.30	12.72	38.22	60.20	68.26	-8.06	Peak
10540	46.39	156	280	H	38.30	12.72	38.22	59.19	68.26	-9.07	Peak
15810	45.21	300	215	V	38.69	15.80	37.11	62.59	74.00	-11.41	Peak
15810	45.34	100	156	H	38.69	15.80	37.11	62.72	74.00	-11.28	Peak
15810	34.48	300	215	V	38.69	15.80	37.11	51.86	54.00	-2.14	Ave
15810	34.45	100	156	H	38.69	15.80	37.11	51.83	54.00	-2.17	Ave
High Channel 5310 MHz											
5310	58.16	278	108	H	33.58	8.20	0.00	99.94	-	-	PK
5310	47.72	278	108	H	33.58	8.20	0.00	89.50	-	-	AV
5310	61.88	145	132	V	33.58	8.20	0.00	103.66	-	-	PK
5310	53.60	145	132	V	33.58	8.20	0.00	95.38	-	-	AV
5350	62.75	263	117	V	33.52	8.23	38.42	66.08	74.00	-7.92	PK
5350	49.63	263	117	V	33.52	8.23	38.42	52.96	54.00	-1.04	AV
10620	47.97	150	135	V	38.25	12.56	38.20	60.58	74.00	-13.42	Peak
10620	47.13	290	110	H	38.25	12.56	38.20	59.74	74.00	-14.26	Peak
10620	39.11	150	135	V	38.25	12.56	38.20	51.72	54.00	-2.28	Ave
10620	36.27	290	110	H	38.25	12.56	38.20	48.88	54.00	-5.12	Ave
15930	48.2	150	135	V	38.48	15.98	37.21	65.45	74.00	-8.55	Peak
15930	47.95	290	110	H	38.48	15.98	37.21	65.20	74.00	-8.80	Peak
15930	36.38	150	135	V	38.48	15.98	37.21	53.63	54.00	-0.37	Ave
15930	36.39	290	110	H	38.48	15.98	37.21	53.64	54.00	-0.36	Ave

802.11ac80 mode

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)	
5290 MHz											
5290	56.25	290	126	H	33.50	8.20	0.00	97.95	-	-	PK
5290	43.28	290	126	H	33.50	8.20	0.00	84.98	-	-	AV
5290	59.25	134	201	V	33.50	8.20	0.00	100.95	-	-	PK
5290	48.42	134	201	V	33.50	8.20	0.00	90.12	-	-	AV
5350	62.89	240	104	V	33.52	8.23	38.42	66.22	74.00	-7.78	PK
5350	50.54	240	104	V	33.52	8.23	38.42	53.87	54.00	-0.13	AV
10580	46.99	130	200	V	38.28	13.29	38.21	60.35	68.26	-7.91	Peak
10580	47.18	300	130	H	38.28	13.29	38.21	60.54	68.26	-7.72	Peak
15870	46.59	130	200	V	38.56	15.90	37.15	63.90	74.00	-10.10	Peak
15870	47.38	300	130	H	38.56	15.90	37.15	64.69	74.00	-9.31	Peak
15870	36.28	130	200	V	38.56	15.90	37.15	53.59	54.00	-0.41	Ave
15870	36.31	300	130	H	38.56	15.90	37.15	53.62	54.00	-0.38	Ave

5470 - 5725 MHz

802.11a mode

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)	
Low Channel 5500 MHz											
5500	62.56	297	122	H	33.85	8.46	0.00	104.87	-	-	PK
5500	53.44	297	122	H	33.85	8.46	0.00	95.75	-	-	AV
5500	65.98	139	100	V	33.85	8.46	0.00	108.29	-	-	PK
5500	57.79	139	100	V	33.85	8.46	0.00	100.10	-	-	AV
5470	66.40	259	153	V	33.85	8.29	37.98	70.55	74.00	-3.45	PK
5470	49.49	259	153	V	33.85	8.29	37.98	53.64	54.00	-0.36	AV
11000	47.92	217	187	V	38.28	13.02	38.06	61.16	74.00	-12.84	Peak
11000	47.83	300	120	H	38.28	13.02	38.06	61.07	74.00	-12.93	Peak
11000	35.66	217	187	V	38.28	13.02	38.06	48.90	54.00	-5.10	Ave
11000	35.70	300	120	H	38.28	13.02	38.06	48.94	54.00	-5.06	Ave
16500	47.67	217	187	V	38.51	16.15	37.32	65.01	68.26	-3.25	Peak
16500	48.51	300	120	H	38.51	16.15	37.32	65.85	68.26	-2.41	Peak
Middle Channel 5580 MHz											
5580	61.67	310	108	H	33.88	8.41	0.00	103.96	-	-	PK
5580	53.05	310	108	H	33.88	8.41	0.00	95.34	-	-	AV
5580	64.54	148	136	V	33.88	8.41	0.00	106.83	-	-	PK
5580	56.25	148	136	V	33.88	8.41	0.00	98.54	-	-	AV
11160	48.02	150	140	V	38.45	13.46	38.04	61.89	74.00	-12.11	Peak
11160	47.56	300	110	H	38.45	13.46	38.04	61.43	74.00	-12.57	Peak
11160	35.71	150	140	V	38.45	13.46	38.04	49.58	54.00	-4.42	Ave
11160	35.46	300	110	H	38.45	13.46	38.04	49.33	54.00	-4.67	Ave
16740	48.15	150	140	V	38.81	16.38	37.28	66.06	68.26	-2.20	Peak
16740	48.36	300	110	H	38.81	16.38	37.28	66.27	68.26	-1.99	Peak
High Channel, 5700 MHz											
5700	61.13	277	100	H	33.87	8.62	0.00	103.62	-	-	PK
5700	52.42	277	100	H	33.87	8.62	0.00	94.91	-	-	AV
5700	64.55	149	100	V	33.87	8.62	0.00	107.04	-	-	PK
5700	56.71	149	100	V	33.87	8.62	0.00	99.20	-	-	AV
5725	66.72	236	100	V	33.87	8.62	37.90	71.31	74.00	-2.69	PK
5725	45.88	236	100	V	33.87	8.62	37.90	50.47	54.00	-3.53	AV
11400	48.65	150	102	V	38.50	13.44	37.91	62.68	74.00	-11.32	Peak
11400	47.98	280	105	H	38.50	13.44	37.91	62.01	74.00	-11.99	Peak
11400	36.02	150	102	V	38.50	13.44	37.91	50.05	54.00	-3.95	Ave
11400	35.87	280	105	H	38.50	13.44	37.91	49.90	54.00	-4.10	Ave
17100	47.15	150	102	V	41.03	16.43	37.12	67.49	68.26	-0.77	Peak
17100	46.87	280	105	H	41.03	16.43	37.12	67.21	68.26	-1.05	Peak

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)	
High Channel 5720 MHz											
5720	66.02	312	218	H	33.87	8.62	0.00	108.51	-	-	PK
5720	57.82	312	218	H	33.87	8.62	0.00	100.31	-	-	AV
5720	65.53	148	117	V	33.87	8.62	0.00	108.02	-	-	PK
5720	57.32	148	117	V	33.87	8.62	0.00	99.81	-	-	AV
11440	47.65	150	120	V	38.46	13.33	37.90	61.54	74.00	-12.46	Peak
11440	48.02	300	210	H	38.46	13.33	37.90	61.91	74.00	-12.09	Peak
11440	35.47	150	120	V	38.46	13.33	37.90	49.36	54.00	-4.64	Ave
11440	36.17	300	210	H	38.46	13.33	37.90	50.06	54.00	-3.94	Ave

802.11n40 mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBμV/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 5510 MHz											
5510	56.56	311	191	H	33.85	8.46	0.00	98.87	-	-	PK
5510	48.05	311	191	H	33.85	8.46	0.00	90.36	-	-	AV
5510	59.95	151	149	V	33.85	8.46	0.00	102.26	-	-	PK
5510	51.85	151	149	V	33.85	8.46	0.00	94.16	-	-	AV
5470	64.15	260	117	V	33.85	8.29	37.98	68.30	74.00	-5.70	PK
5470	48.73	260	117	V	33.85	8.29	37.98	52.88	54.00	-1.12	AV
11020	48.2	150	150	V	38.29	12.92	38.08	61.33	74.00	-12.67	Peak
11020	47.9	310	200	H	38.29	12.92	38.08	61.03	74.00	-12.97	Peak
11020	36.40	150	150	V	38.29	12.92	38.08	49.53	54.00	-4.47	Ave
11020	36.39	310	200	H	38.29	12.92	38.08	49.52	54.00	-4.48	Ave
16530	47.84	150	150	V	38.52	16.17	37.32	65.21	68.26	-3.05	Peak
16530	48.73	310	200	H	38.52	16.17	37.32	66.10	68.26	-2.16	Peak
Middle Channel 5550 MHz											
5550	62.64	310	214	H	33.88	8.48	0.00	105.00	-	-	PK
5550	54.20	310	214	H	33.88	8.48	0.00	96.56	-	-	AV
5550	62.80	152	100	V	33.88	8.48	0.00	105.16	-	-	PK
5550	54.44	152	100	V	33.88	8.48	0.00	96.80	-	-	AV
11100	48.35	150	105	V	38.37	13.29	38.07	61.94	74.00	-12.06	Peak
11100	47.65	300	210	H	38.37	13.29	38.07	61.24	74.00	-12.76	Peak
11100	36.74	150	105	V	38.37	13.29	38.07	50.33	54.00	-3.67	Ave
11100	36.08	300	210	H	38.37	13.29	38.07	49.67	54.00	-4.33	Ave
16650	48.12	150	105	V	38.61	16.29	37.30	65.72	68.26	-2.54	Peak
16650	48.26	300	210	H	38.61	16.29	37.30	65.86	68.26	-2.40	Peak
5670 MHz											
5670	63.20	312	234	H	33.87	8.46	0.00	105.53	-	-	PK
5670	54.71	312	234	H	33.87	8.46	0.00	97.04	-	-	AV
5670	62.43	158	100	V	33.87	8.46	0.00	104.76	-	-	PK
5670	53.46	158	100	V	33.87	8.46	0.00	95.79	-	-	AV
5725	60.12	234	100	V	33.87	8.62	37.90	64.71	74.00	-9.29	PK
5725	48.72	234	100	V	33.87	8.62	37.90	53.31	54.00	-0.69	AV
11340	48.65	150	105	V	38.55	13.53	37.93	62.80	74.00	-11.20	Peak
11340	48.36	300	230	H	38.55	13.53	37.93	62.51	74.00	-11.49	Peak
11340	36.74	150	105	V	38.55	13.53	37.93	50.89	54.00	-3.11	Ave
11340	36.48	300	230	H	38.55	13.53	37.93	50.63	54.00	-3.37	Ave

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)	
High Channel 5710 MHz											
5710	64.29	312	228	H	33.87	8.46	0.00	106.62	-	-	PK
5710	55.54	312	228	H	33.87	8.46	0.00	97.87	-	-	AV
5710	62.50	148	105	V	33.87	8.46	0.00	104.83	-	-	PK
5710	53.94	148	105	V	33.87	8.46	0.00	96.27	-	-	AV
11420	47.65	150	100	V	38.48	13.37	37.91	61.59	74.00	-12.41	Peak
11420	47.26	300	220	H	38.48	13.37	37.91	61.20	74.00	-12.80	Peak
11420	36.24	150	100	V	38.48	13.37	37.91	50.18	54.00	-3.82	Ave
11420	36.08	300	220	H	38.48	13.37	37.91	50.02	54.00	-3.98	Ave

802.11ac80 mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel: 5530 MHz											
5530	55.31	310	238	H	33.85	8.46	0.00	97.62	-	-	PK
5530	46.29	310	238	H	33.85	8.46	0.00	88.60	-	-	AV
5530	57.66	145	139	V	33.85	8.46	0.00	99.97	-	-	PK
5530	47.82	145	139	V	33.85	8.46	0.00	90.13	-	-	AV
5470	63.09	259	141	V	33.85	8.29	37.98	67.24	74.00	-6.76	PK
5470	48.51	259	141	V	33.85	8.29	37.98	52.66	54.00	-1.34	AV
11060	47.32	140	140	V	38.33	13.12	38.08	60.69	74.00	-13.31	Peak
11060	47.2	300	230	H	38.33	13.12	38.08	60.57	74.00	-13.43	Peak
11060	36.44	140	140	V	38.33	13.12	38.08	49.81	54.00	-4.19	Ave
11060	36.45	300	230	H	38.33	13.12	38.08	49.82	54.00	-4.18	Ave
16590	48.24	140	140	V	38.55	16.23	37.32	65.70	68.26	-2.56	Peak
16590	48.64	300	230	H	38.55	16.23	37.32	66.10	68.26	-2.16	Peak
Middle Channel: 5610 MHz											
5610	62.80	310	224	H	33.92	8.46	0.00	105.18	-	-	PK
5610	52.37	310	224	H	33.92	8.46	0.00	94.75	-	-	AV
5610	60.69	142	130	V	33.92	8.46	0.00	103.07	-	-	PK
5610	50.81	142	130	V	33.92	8.46	0.00	93.19	-	-	AV
5725	57.75	235	100	V	33.87	8.62	37.90	62.34	74.00	-11.66	PK
5725	46.20	235	100	V	33.87	8.62	37.90	50.79	54.00	-3.21	AV
11220	48.21	140	100	V	38.53	13.61	38.01	62.34	74.00	-11.66	Peak
11220	47.98	300	210	H	38.53	13.61	38.01	62.11	74.00	-11.89	Peak
11220	36.75	140	100	V	38.53	13.61	38.01	50.88	54.00	-3.12	Ave
11220	36.45	300	210	H	38.53	13.61	38.01	50.58	54.00	-3.42	Ave
16830	48.56	140	100	V	39.08	16.46	37.23	66.87	68.26	-1.39	Peak
16830	48.75	300	210	H	39.08	16.46	37.23	67.06	68.26	-1.20	Peak
High Channel: 5690 MHz											
5690	61.46	311	223	H	33.92	8.46	0.00	103.84	-	-	PK
5690	51.89	311	223	H	33.92	8.46	0.00	94.27	-	-	AV
5690	61.62	147	105	V	33.92	8.46	0.00	104.00	-	-	PK
5690	50.80	147	105	V	33.92	8.46	0.00	93.18	-	-	AV
11380	48.21	150	106	V	38.51	13.49	37.96	62.25	74.00	-11.75	Peak
11380	47.68	310	220	H	38.51	13.49	37.96	61.72	74.00	-12.28	Peak
11380	36.71	150	106	V	38.51	13.49	37.96	50.75	54.00	-3.25	Ave
11380	36.24	310	220	H	38.51	13.49	37.96	50.28	54.00	-3.72	Ave
17070	47.65	150	106	V	40.70	16.43	37.12	67.66	68.26	-0.60	Peak
17070	47.59	310	220	H	40.70	16.43	37.12	67.60	68.26	-0.66	Peak

5725 - 5850 MHz

802.11a mode

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)	
Low Channel 5745 MHz											
5745	66.16	313	232	H	33.55	8.11	0.00	107.82	-	-	PK
5745	58.38	313	232	H	33.55	8.11	0.00	100.04	-	-	AV
5745	65.64	146	100	V	33.55	8.11	0.00	107.30	-	-	PK
5745	57.78	146	100	V	33.55	8.11	0.00	99.44	-	-	AV
5725	71.13	253	100	V	33.89	9.25	38.29	75.98	78.26	-2.28	PK
5715	67.05	230	100	V	33.89	9.25	38.29	71.90	74.00	-2.10	PK
5715	45.27	230	100	V	33.89	9.25	38.29	50.12	54.00	-3.88	AV
11490	47.61	150	100	V	38.42	13.19	37.77	61.45	74.00	-12.55	Peak
11490	47.36	310	220	H	38.42	13.19	37.77	61.20	74.00	-12.80	Peak
11490	37.03	150	100	V	38.42	13.19	37.77	50.87	54.00	-3.13	Ave
11490	37.12	310	220	H	38.42	13.19	37.77	50.96	54.00	-3.04	Ave
Middle Channel 5785 MHz											
5785	66.61	314	234	H	33.55	8.11	0.00	108.27	-	-	PK
5785	58.03	314	234	H	33.55	8.11	0.00	99.69	-	-	AV
5785	64.49	153	100	V	33.55	8.11	0.00	106.15	-	-	PK
5785	56.30	153	100	V	33.55	8.11	0.00	97.96	-	-	AV
11570	47.85	150	100	V	38.31	13.00	37.80	61.36	74.00	-12.64	Peak
11570	47.23	310	230	H	38.31	13.00	37.80	60.74	74.00	-13.26	Peak
11570	36.89	150	100	V	38.31	13.00	37.80	50.40	54.00	-3.60	Ave
11570	37.02	310	230	H	38.31	13.00	37.80	50.53	54.00	-3.47	Ave
High Channel 5825 MHz											
5825	65.91	315	218	H	33.55	8.11	0.00	107.57	-	-	PK
5825	57.77	315	218	H	33.55	8.11	0.00	99.43	-	-	AV
5825	63.21	138	100	V	33.55	8.11	0.00	104.87	-	-	PK
5825	54.58	138	100	V	33.55	8.11	0.00	96.24	-	-	AV
5850	65.41	251	100	V	34.08	9.28	38.28	70.49	78.26	-7.77	PK
5860	61.43	231	100	V	34.08	9.28	38.28	66.51	74.00	-7.49	PK
5860	43.24	231	100	V	34.08	9.28	38.28	48.32	54.00	-5.68	AV
11650	38.02	200	100	V	38.31	12.94	37.71	51.56	74.00	-22.44	Peak
11650	37.85	300	210	H	38.31	12.94	37.71	51.39	74.00	-22.61	Peak
11650	36.75	200	100	V	38.31	12.94	37.71	50.29	54.00	-3.71	Ave
11650	36.24	300	210	H	38.31	12.94	37.71	49.78	54	-4.22	Ave

802.11n40 mode

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)	
Low Channel 5755 MHz											
5755	61.87	313	226	H	33.55	8.11	0.00	103.53	-	-	PK
5755	53.94	313	226	H	33.55	8.11	0.00	95.60	-	-	AV
5755	60.41	147	100	V	33.55	8.11	0.00	102.07	-	-	PK
5755	52.10	141	100	V	33.55	8.11	0.00	93.76	-	-	AV
5725	69.01	245	100	V	33.89	9.25	38.29	73.86	78.26	-4.40	PK
5715	65.50	241	100	V	33.89	9.25	38.29	70.35	74.00	-3.65	PK
5715	48.30	241	100	V	33.89	9.25	38.29	53.15	54.00	-0.85	AV
11510	48.23	250	100	V	38.40	13.21	37.83	62.01	74.00	-11.99	Peak
11510	47.72	300	220	H	38.40	13.21	37.83	61.50	74.00	-12.50	Peak
11510	35.94	250	100	V	38.40	13.21	37.83	49.72	54.00	-4.28	Ave
11510	35.93	300	220	H	38.40	13.21	37.83	49.71	54.00	-4.29	Ave
High Channel 5795 MHz											
5795	63.33	315	225	H	33.55	8.11	0.00	104.99	-	-	PK
5795	54.60	315	225	H	33.55	8.11	0.00	96.26	-	-	AV
5795	61.12	154	100	V	33.55	8.11	0.00	102.78	-	-	PK
5795	52.33	154	100	V	33.55	8.11	0.00	93.99	-	-	AV
5850	60.31	232	100	V	34.08	9.28	38.28	65.39	78.26	-12.87	PK
5860	58.57	217	108	V	34.08	9.28	38.28	63.65	74.00	-10.35	PK
5860	41.48	217	108	V	34.08	9.28	38.28	46.56	54.00	-7.44	AV
11590	47.98	150	100	V	38.30	12.95	37.80	61.43	74.00	-12.57	Peak
11590	48.35	310	220	H	38.30	12.95	37.80	61.80	74.00	-12.20	Peak
11590	35.64	150	100	V	38.30	12.95	37.80	49.09	54.00	-4.91	Ave
11590	35.87	310	220	H	38.30	12.95	37.80	49.32	54.00	-4.68	Ave

802.11ac80 mode

Frequency (MHz)	S.A. Reading (dB μ V)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dB μ V/m)	FCC/IC		Comments (PK/Ave.)
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)	
5775 MHz											
5775	57.83	314	240	H	33.55	8.11	0.00	99.49	-	-	PK
5775	48.43	314	240	H	33.55	8.11	0.00	90.09	-	-	AV
5775	57.81	150	100	V	33.55	8.11	0.00	99.47	-	-	PK
5775	47.49	150	100	V	33.55	8.11	0.00	89.15	-	-	AV
5725	66.24	226	102	V	33.89	9.25	38.29	71.09	78.26	-7.17	PK
5715	61.84	230	100	V	33.89	9.25	38.29	66.69	74.00	-7.31	PK
5715	47.11	230	100	V	33.89	9.25	38.29	51.96	54.00	-2.04	AV
5850	57.86	232	100	V	34.08	9.28	38.28	62.94	78.26	-15.32	PK
5860	55.67	230	100	V	34.08	9.28	38.28	60.75	74.00	-13.25	PK
5860	44.53	230	100	V	34.08	9.28	38.28	49.61	54.00	-4.39	AV
11550	47.41	150	100	V	38.35	13.04	37.82	60.98	74.00	-13.02	Peak
11550	46.22	310	240	H	38.35	13.04	37.82	59.79	74.00	-14.21	Peak
11550	36.24	150	100	V	38.35	13.04	37.82	49.81	54.00	-4.19	Ave
11550	35.91	310	240	H	38.35	13.04	37.82	49.48	54	-4.52	Ave

Note 1: Any emissions above 12 GHz are emissions from the noise floor.

Note 2: Duty Cycle Correction Factor has been added to the measurements.

Note 3: The worst-case modulations were used to show compliance.

8 FCC §15.407(e) & ISED RSS-247 §6.2 - 6 dB, 26 dB & 99% Occupied Bandwidth

8.1 Applicable Standards

As per FCC §15.407(e) and IC RSS-247 6.2.4(1): for equipment operating in the band 5725 – 5850 MHz, the minimum 6 dB bandwidth of U-NII devices shall be 500 kHz.

8.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 or 26 dB from the reference level. Record the frequency difference as the minimum emission or emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

8.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Analyzer, Spectrum	E4446A	US44300386	2015-10-22	1 year
-	10dB attenuator	-	-	Each time ¹	N/A

Note¹: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.*

8.4 Test Environmental Conditions

Temperature:	22-24 °C
Relative Humidity:	40-41 %
ATM Pressure:	103.1-104.1 kPa

The testing was performed by Frank Wang on 2016- 08-09 at RF site.

8.5 Test Results

Please refer to the following tables and plots.

5150 - 5250 MHz

Channel	Frequency (MHz)	99% OBW (kHz)	26 dB OBW (kHz)
802.11 a mode			
36	5180	16264.1	18384
40	5200	16253.6	18170
48	5240	16268.4	18797
802.11n20 mode			
36	5180	17412.9	20043
40	5200	17440.3	20007
48	5240	17409.9	19270
802.11n40 mode			
38	5190	35713.9	39594
46	5230	35767.9	39320
802.11ac20 mode			
36	5180	17426.9	19941
40	5200	17436.5	19527
48	5240	17420.8	20198
802.11ac40 mode			
38	5190	35656.0	39735
46	5230	35726.4	39346
802.11ac80 mode			
42	5210	75009.1	81612

5250 - 5350 MHz

Channel	Frequency (MHz)	99% OBW (kHz)	26 dB OBW (kHz)
802.11 a mode			
52	5260	16286.4	18751
56	5280	16233.7	18535
64	5320	16258.7	19668
802.11n20 mode			
52	5260	17413.6	19501
56	5280	17397.7	19193
64	5320	17453.7	19141
802.11n40 mode			
54	5270	35711.2	39721
62	5310	35648.0	39431
802.11ac20 mode			
52	5260	17421.2	19123
56	5280	17416.7	19133
64	5320	17427.9	19387
802.11ac40 mode			
54	5270	35730.4	39435
62	5310	35723.1	4005.3
802.11ac80 mode			
58	5290	74770.5	81907

5470 - 5725 MHz

Channel	Frequency (MHz)	99% OBW (kHz)	26 dB OBW (kHz)
802.11 a mode			
100	5500	16298.0	18841
116	5580	16254.4	18808
140	5700	16256.6	19143
144	5720	16232.3	19833
802.11n20 mode			
100	5500	17432.6	19345
116	5580	17417.6	19408
140	5700	17410.1	20024
144	5720	17426.9	19487
802.11n40 mode			
102	5510	35677.0	39306
110	5550	35812.6	39269
134	5670	35693.0	39515
142	5710	35776.6	39376
802.11ac20 mode			
100	5500	17436.4	20016
116	5580	17420.0	19749
140	5700	17425.1	19424
144	5720	17441.6	20397
802.11ac40 mode			
102	5510	35698.6	39471
110	5550	35735.3	40481
134	5670	35685.5	41592
142	5710	35803.2	40110
802.11ac80 mode			
106	5530	74868.9	81823
122	5610	74879.1	80947
138	5690	75050.4	82535

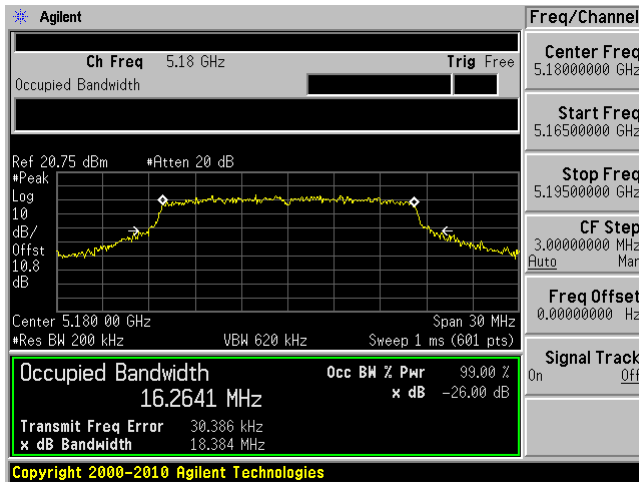
5725 - 5850 MHz

Channel	Frequency (MHz)	99% OBW (kHz)	6 dB OBW (kHz)
802.11 a mode			
149	5745	16239.9	14507
157	5785	16245.4	14742
165	5825	16241.4	15114
802.11n20 mode			
149	5745	17368.5	15162
157	5785	17365.5	14671
165	5825	17387.8	14688
802.11n40 mode			
151	5755	35721.9	31350
159	5795	35637.5	33950
802.11ac20 mode			
149	5745	17359.8	15108
157	5785	17379.8	14674
165	5825	17416.4	15136
802.11ac40 mode			
151	5755	35720	32708
159	5795	35662.1	33656
802.11ac80 mode			
155	5775	74960.4	72783

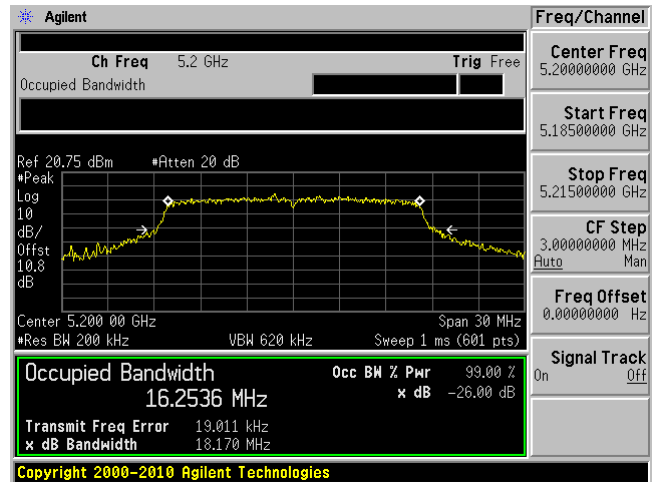
5150 – 5250 MHz

802.11a mode

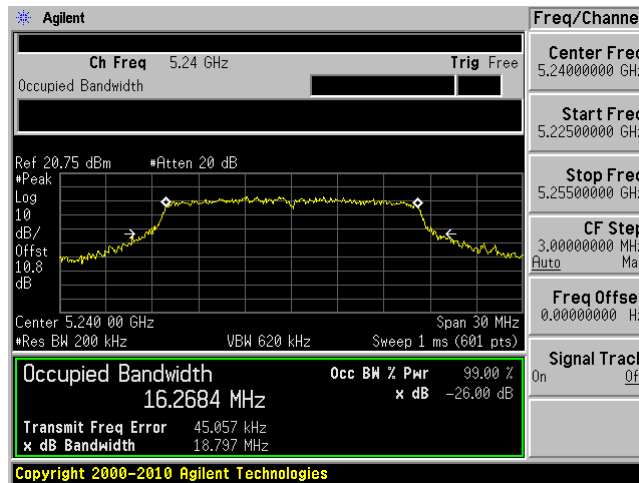
5180 MHz



5200 MHz

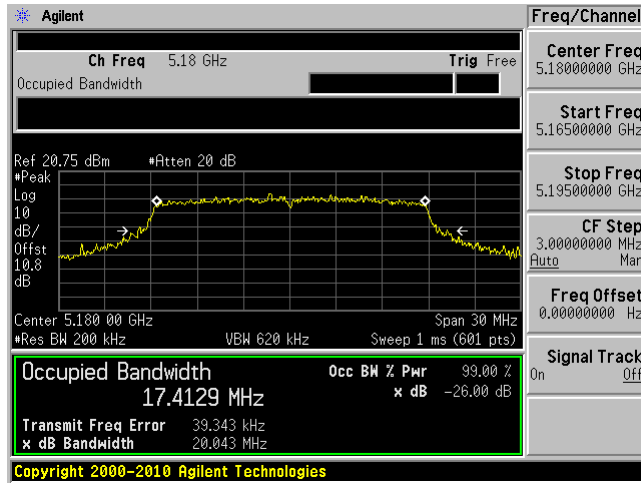


5240 MHz

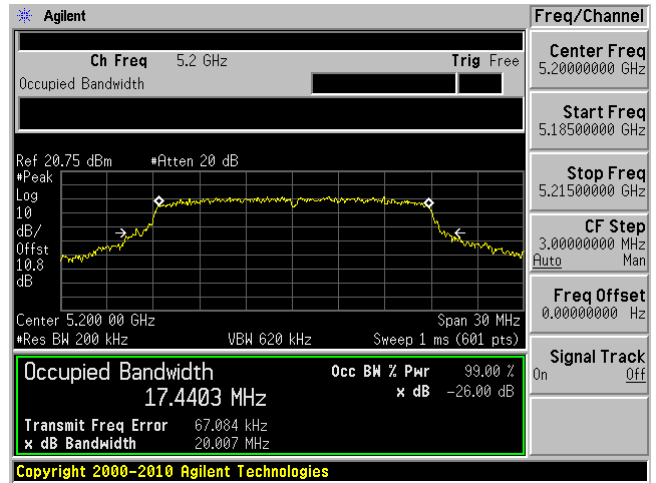


802.11n20 mode

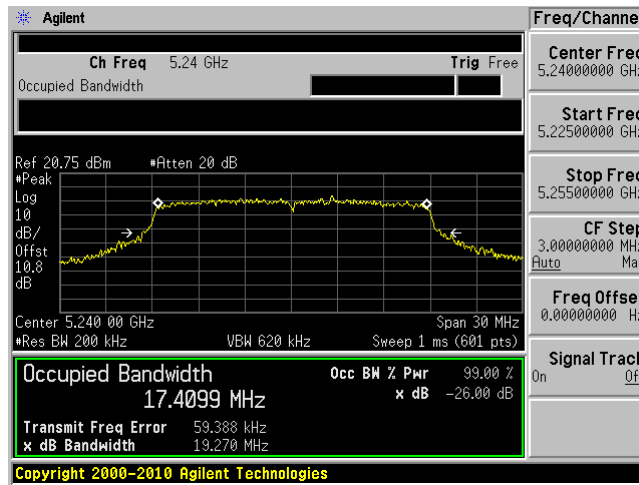
5180 MHz



5200 MHz



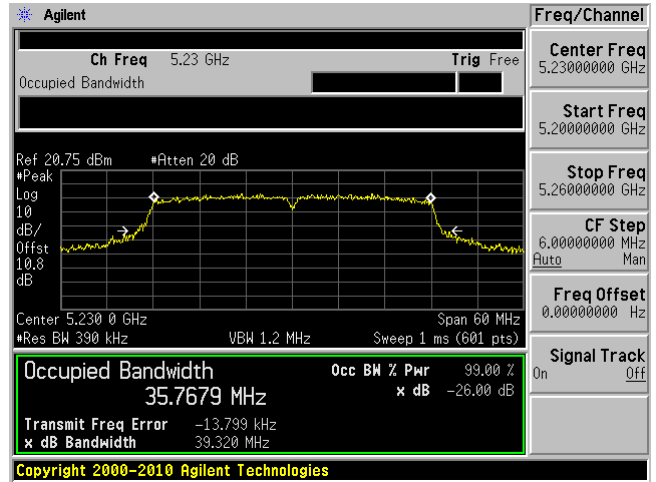
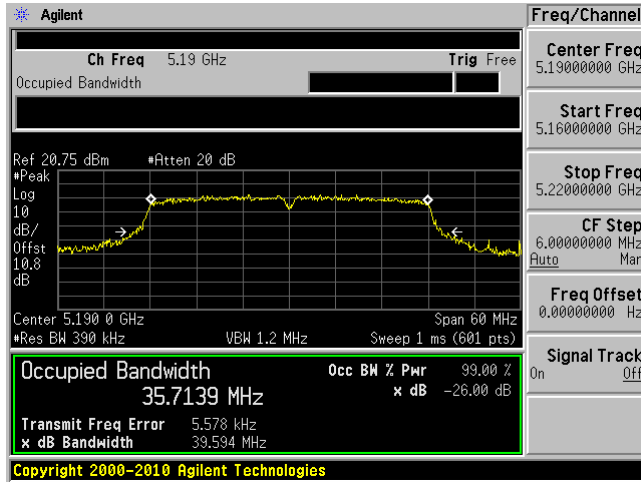
5240 MHz



802.11n40 mode

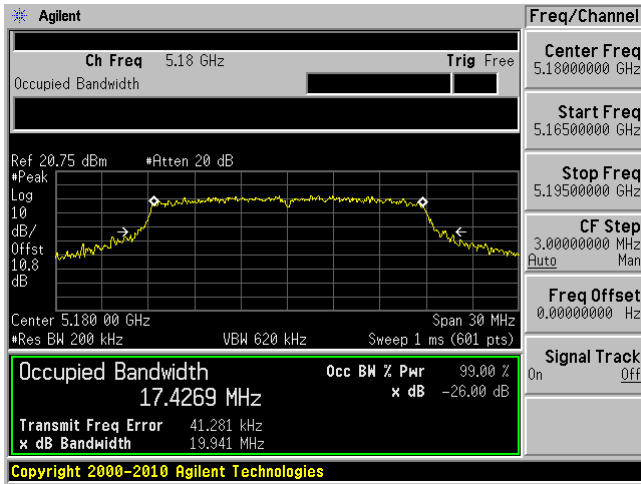
5190 MHz

5230 MHz

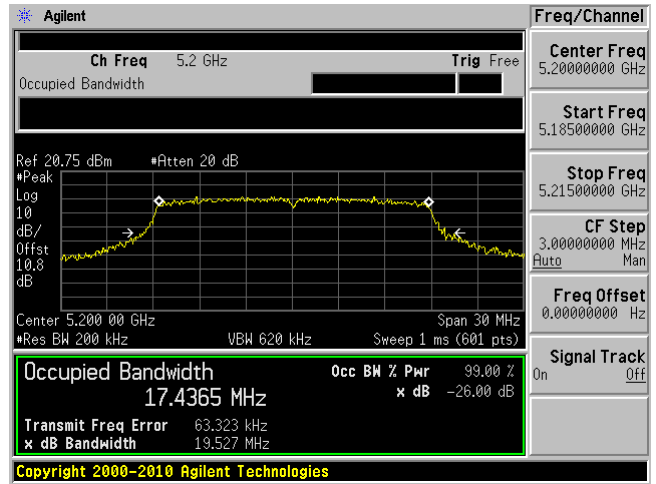


802.11ac20 mode

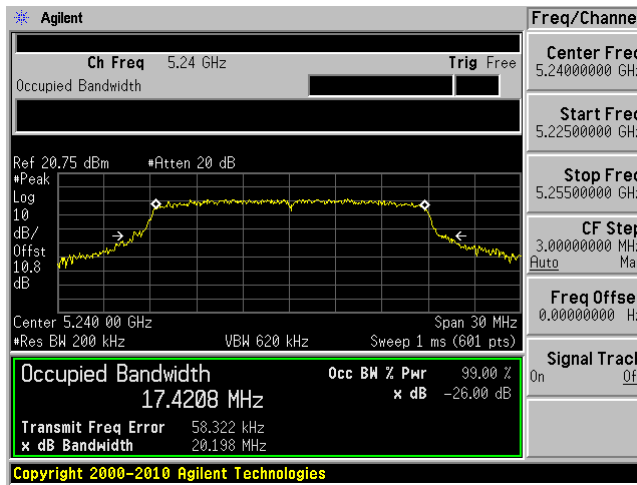
5180 MHz



5200 MHz

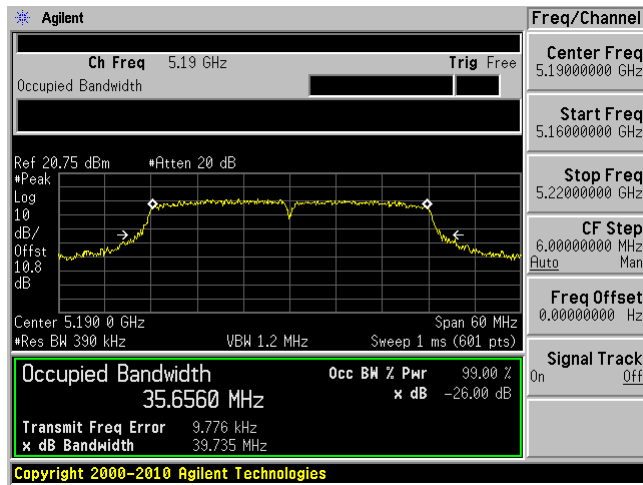


5240 MHz

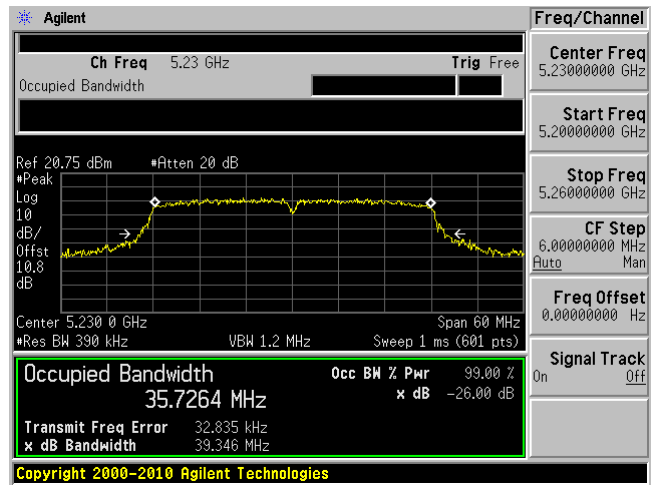


802.11ac40 mode

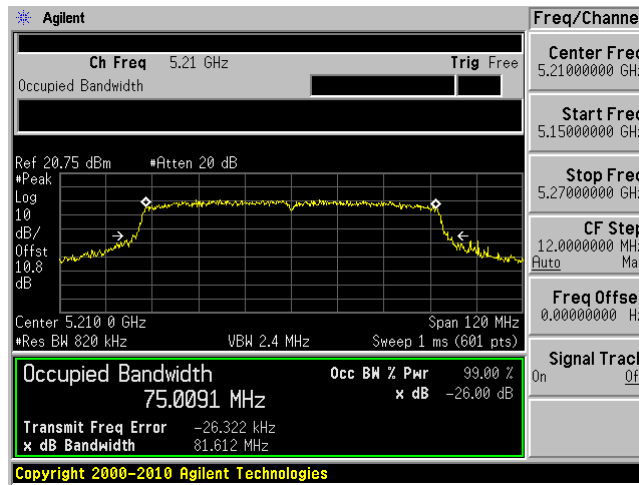
5190 MHz



5230 MHz



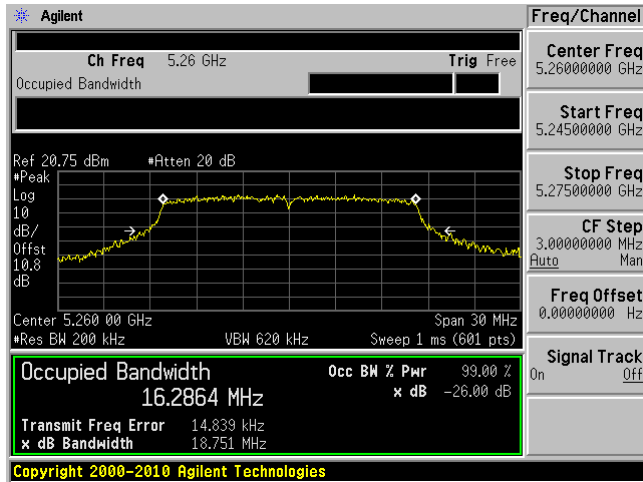
802.11ac80 mode, 5210 MHz



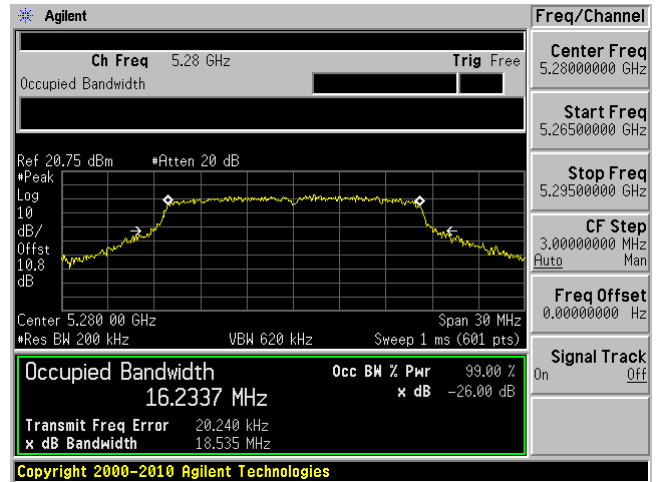
5250 – 5350 MHz

802.11a mode

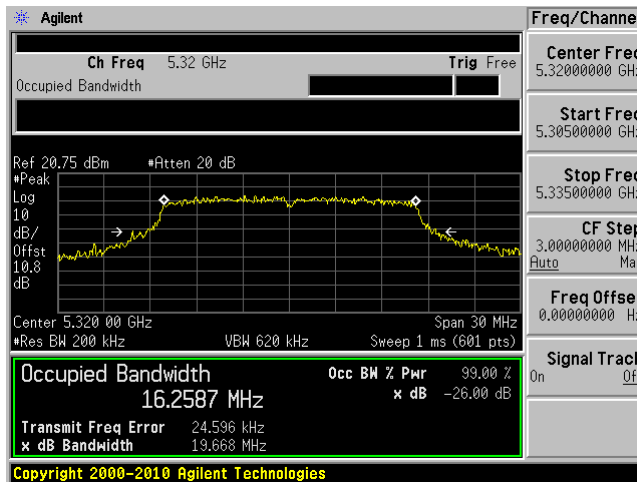
5260 MHz



5280 MHz



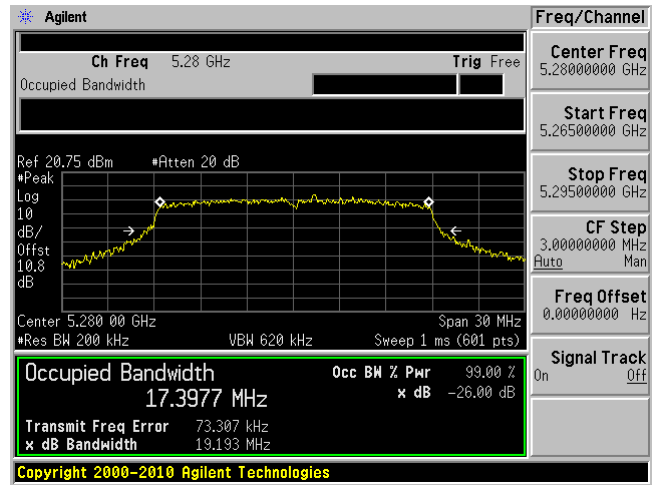
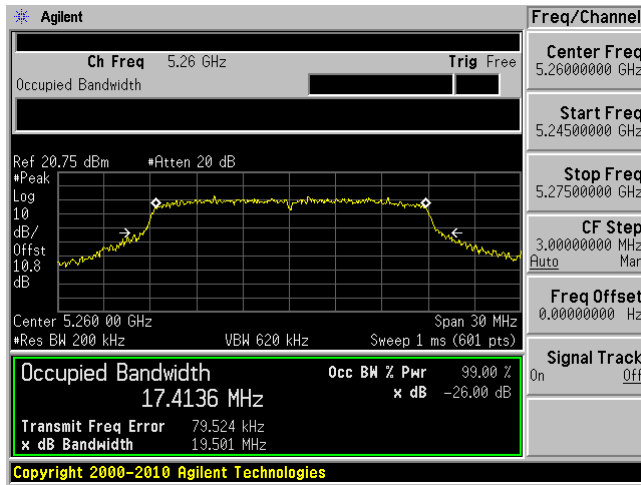
5320 MHz



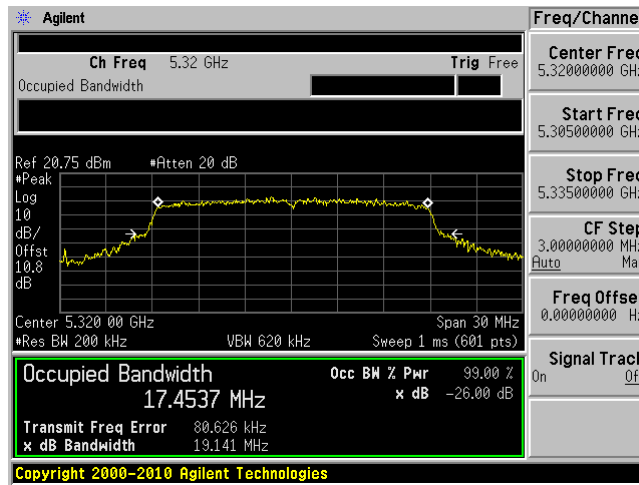
802.11n20 mode

5260 MHz

5280 MHz



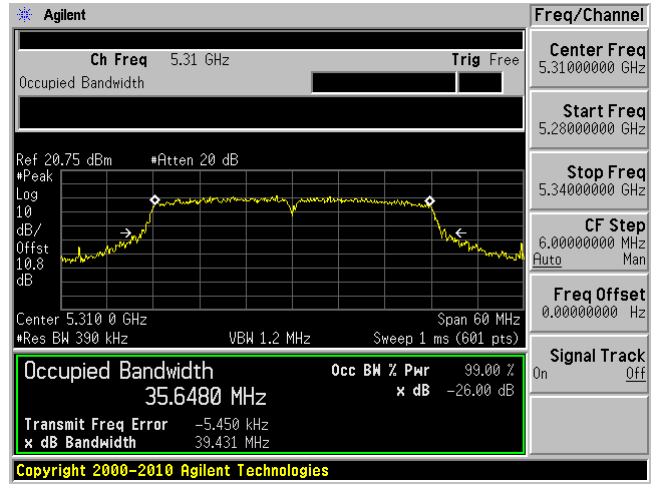
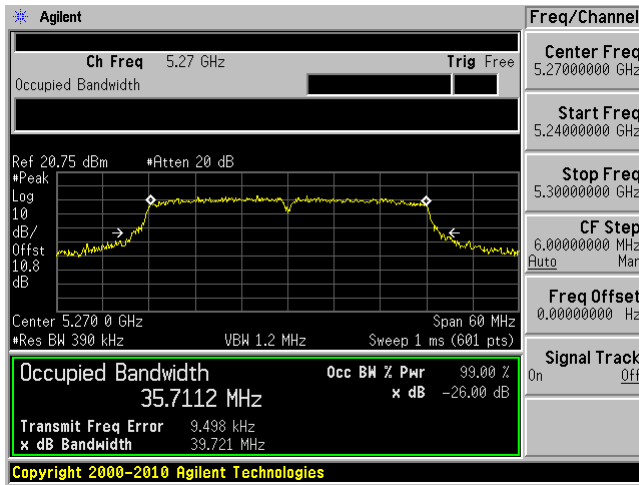
5320 MHz



802.11n40 mode

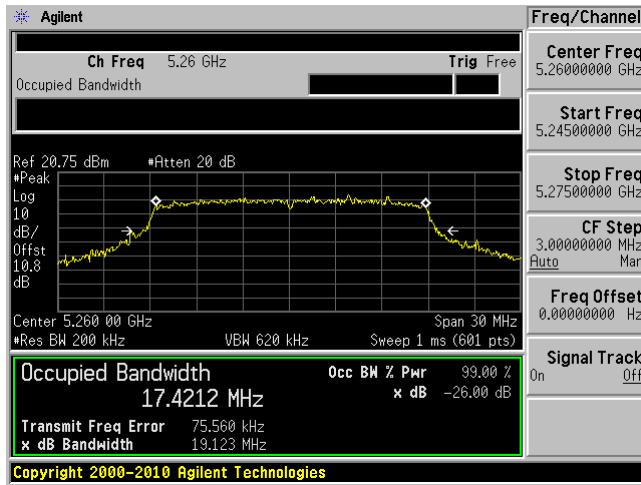
5270 MHz

5310 MHz

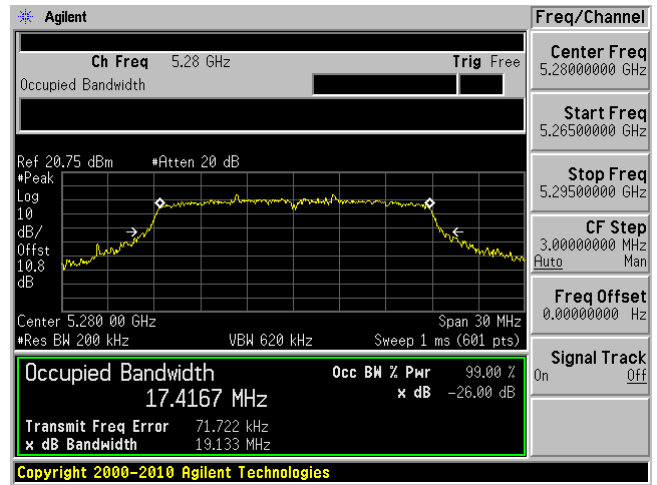


802.11ac20 mode

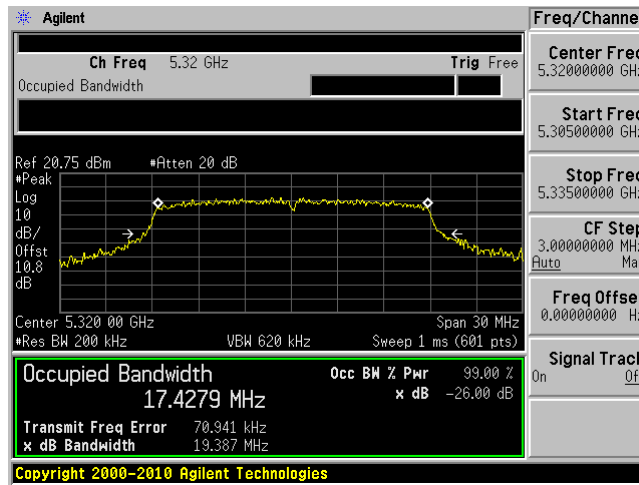
5260 MHz



5280 MHz

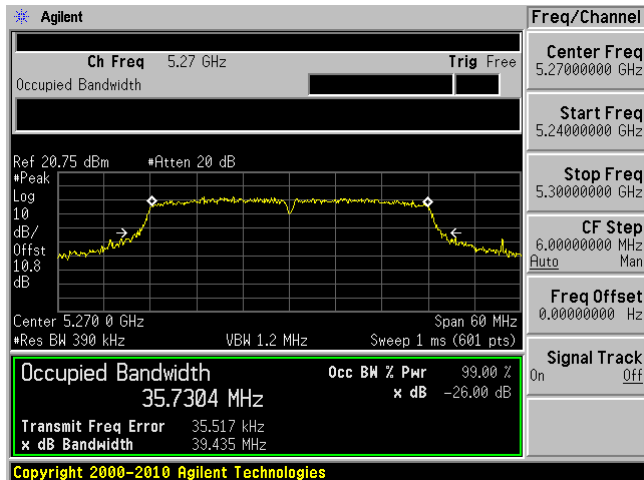


5320 MHz

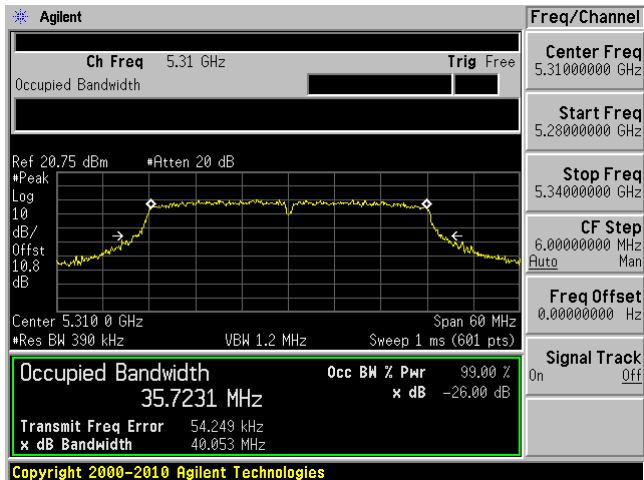


802.11ac40 mode

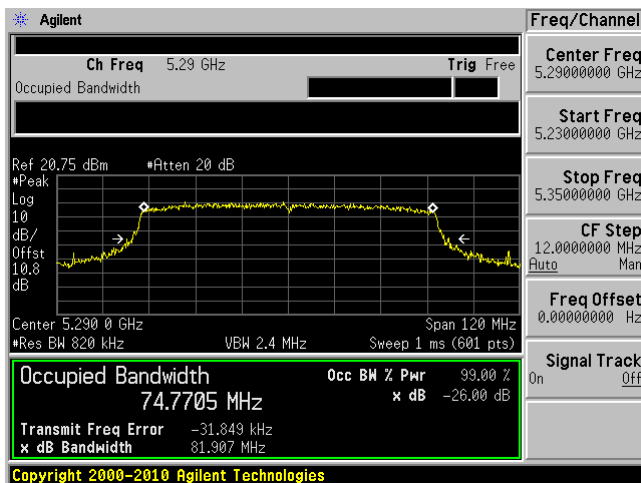
5270 MHz



5310 MHz



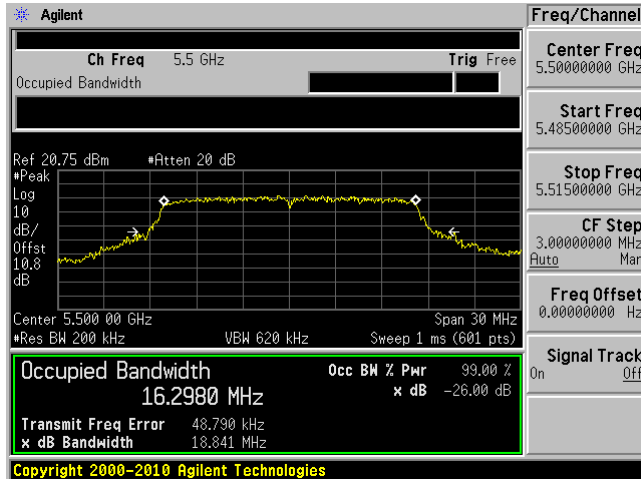
802.11ac80 mode, 5290 MHz



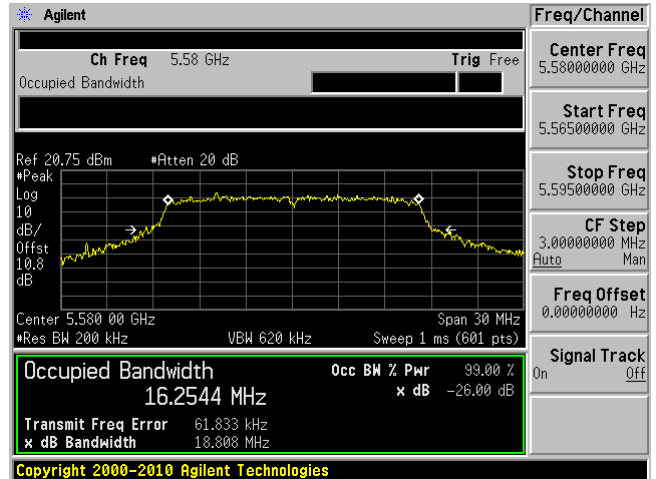
5470 – 5725 MHz

802.11a mode

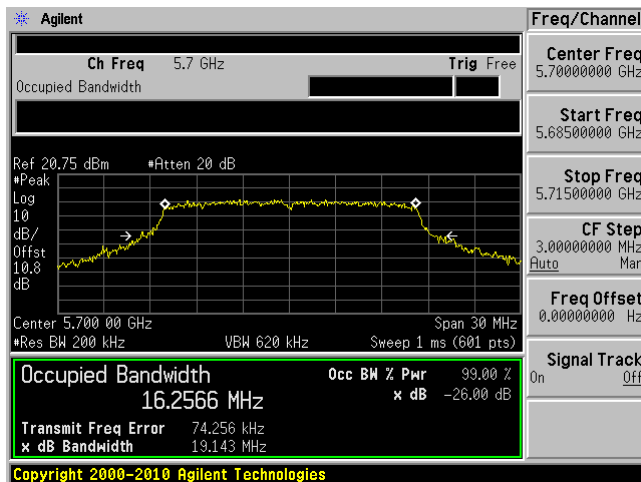
5500 MHz



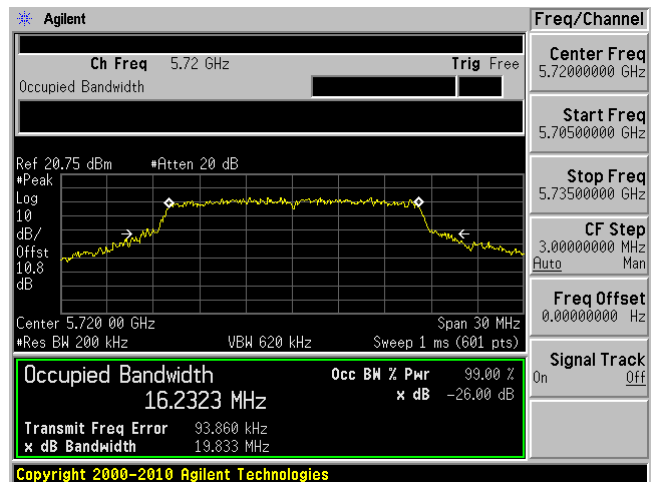
5580 MHz



5700 MHz

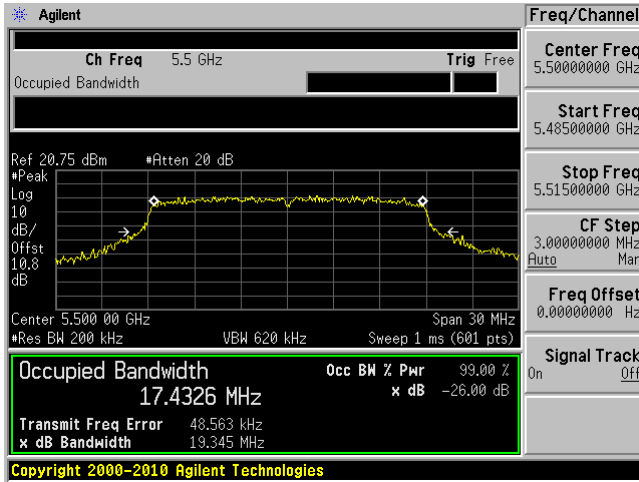


5720 MHz

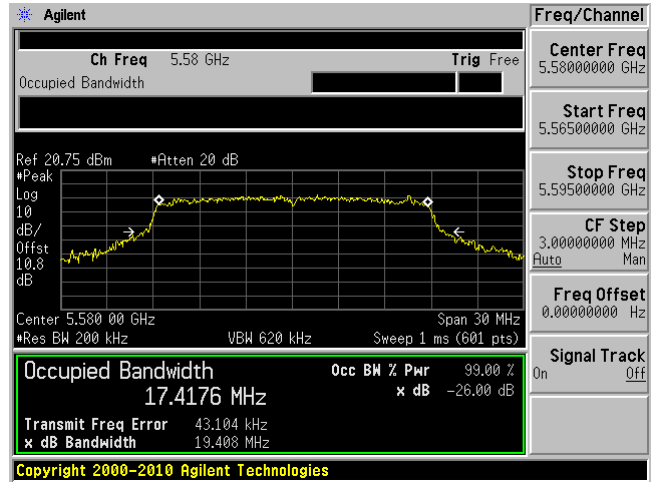


802.11n20 mode

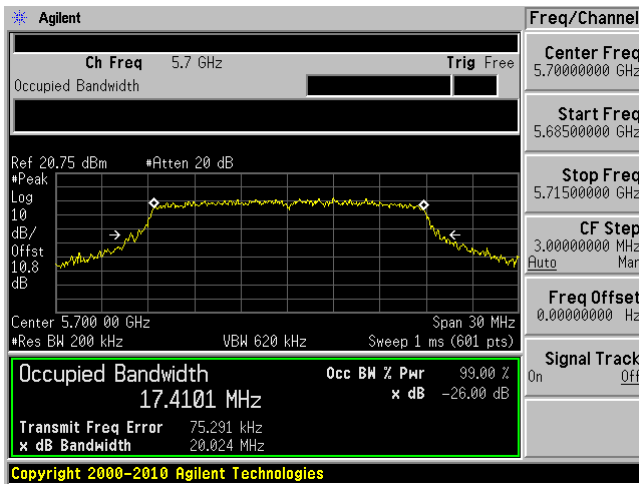
5500 MHz



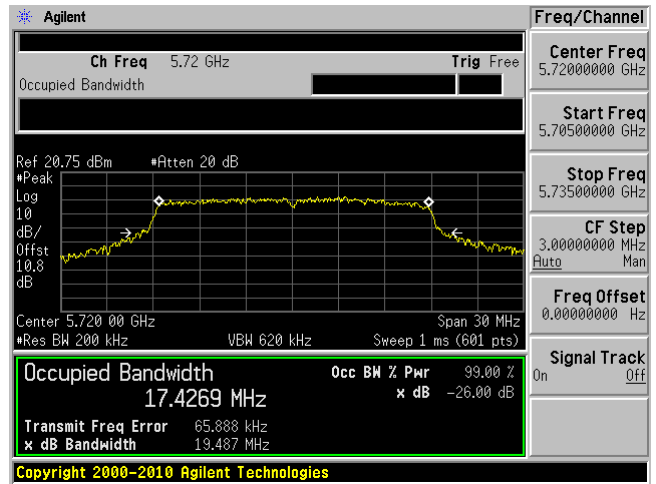
5580 MHz



5700 MHz

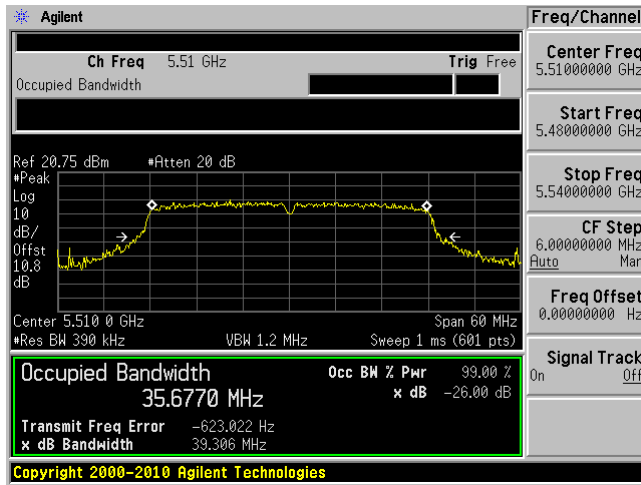


5720 MHz

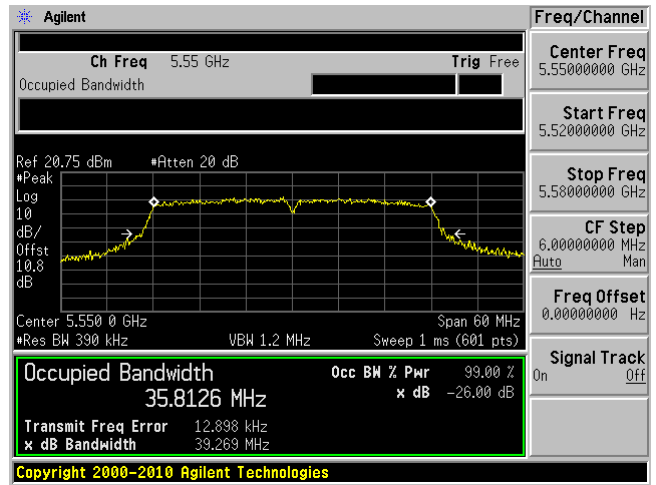


802.11n40 mode

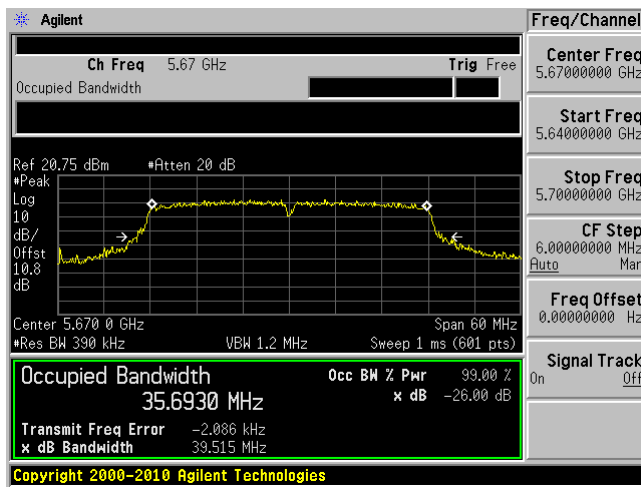
5510 MHz



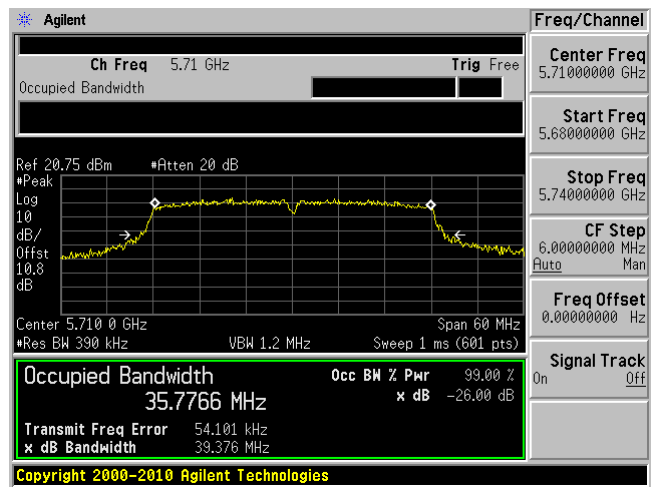
5550 MHz



5670 MHz

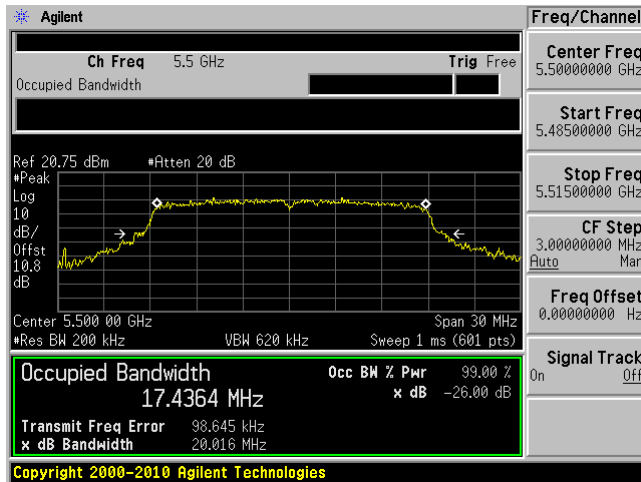


5710 MHz

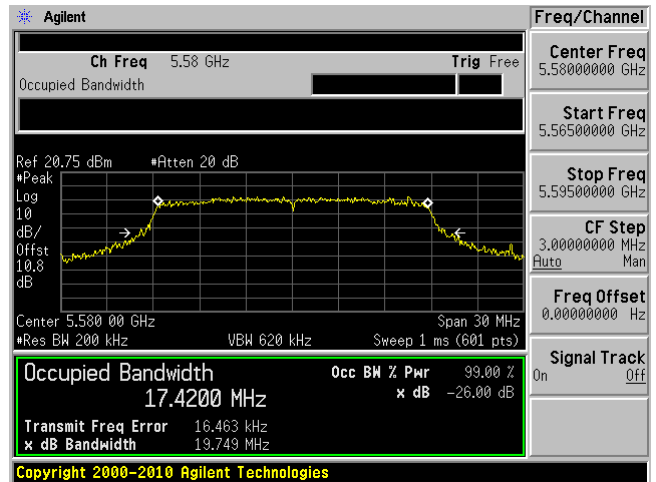


802.11ac20 mode

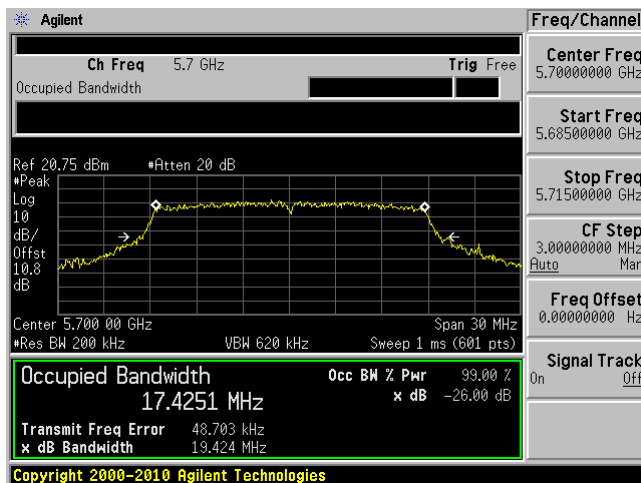
5500 MHz



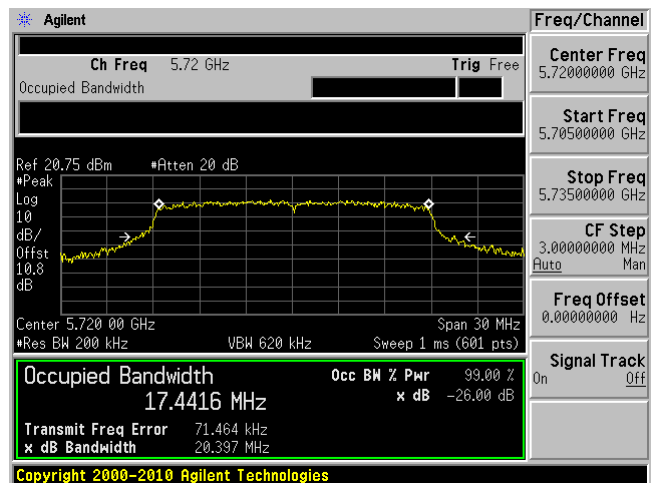
5580 MHz



5700 MHz

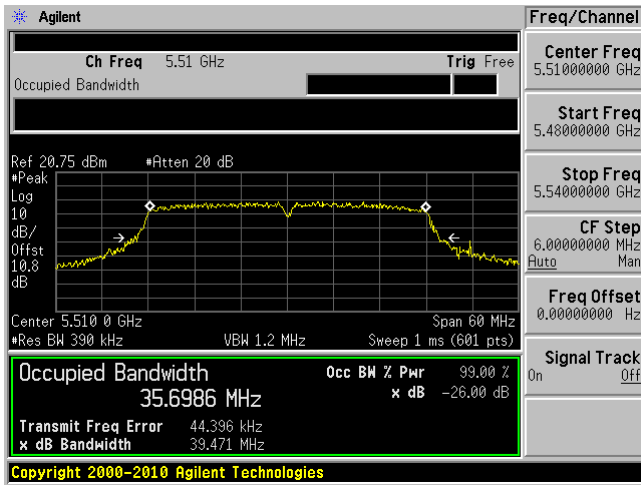


5720 MHz

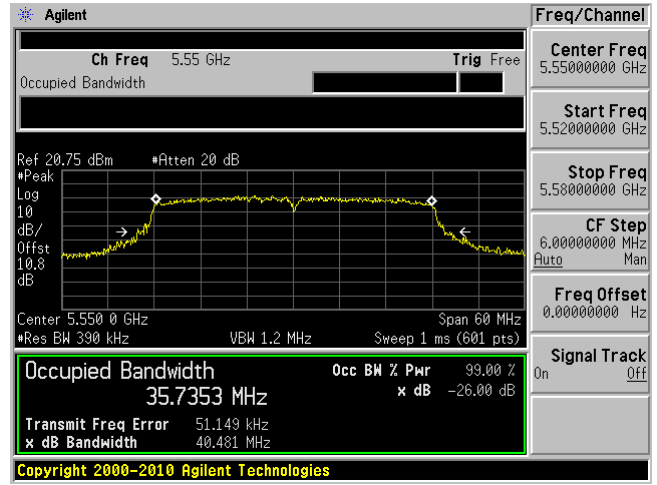


802.11ac40 mode

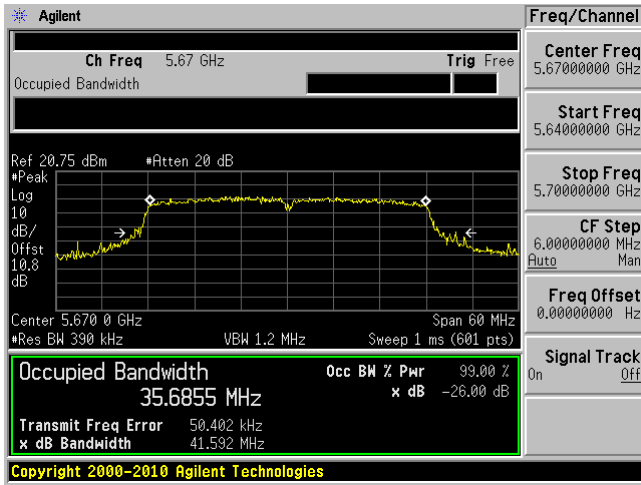
5510 MHz



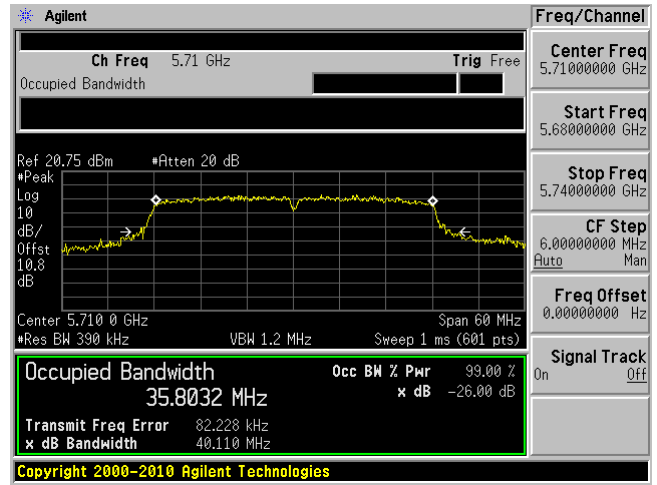
5550 MHz



5670 MHz

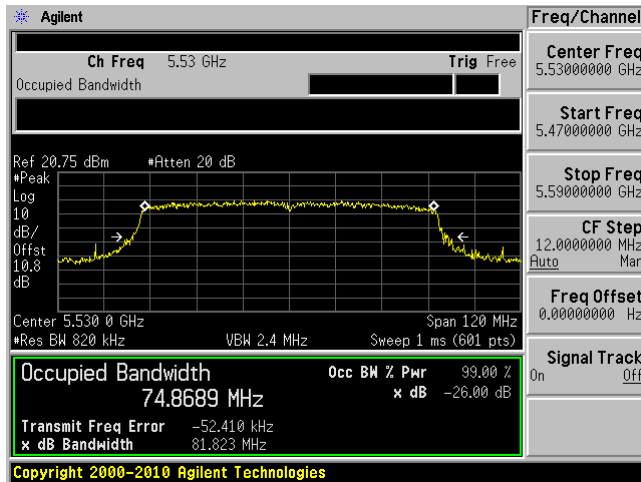


5710 MHz

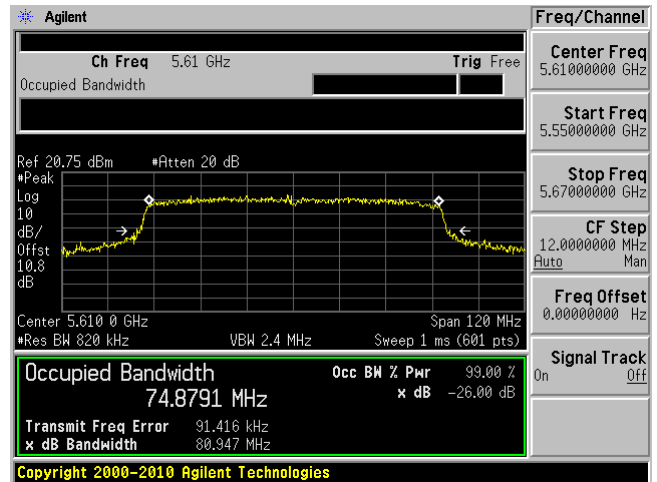


802.11ac80 mode

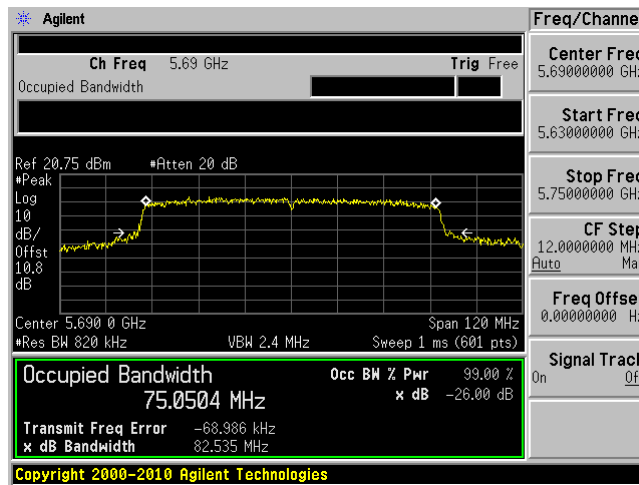
5530 MHz



5610 MHz



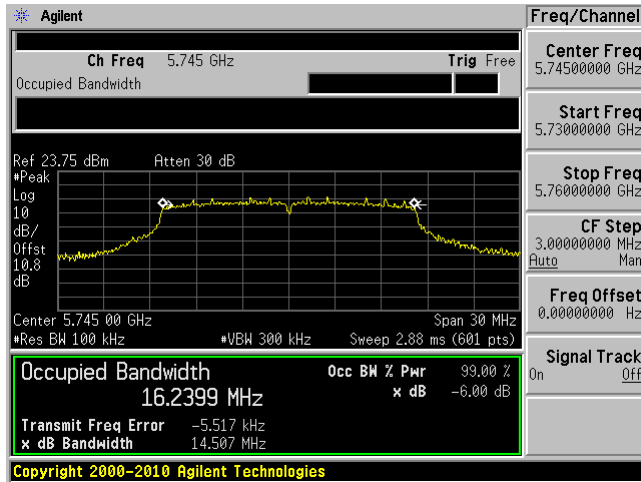
5690 MHz



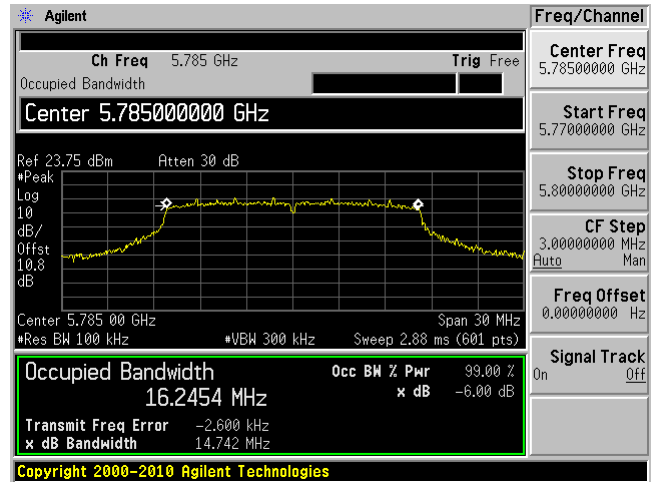
5725 – 5850 MHz

802.11a mode

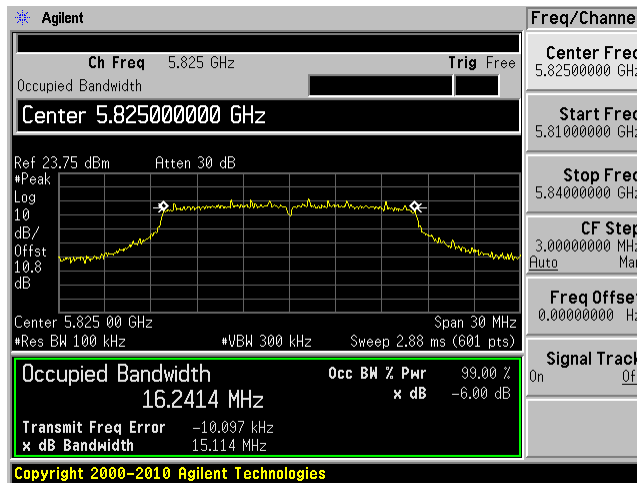
5745 MHz



5785 MHz



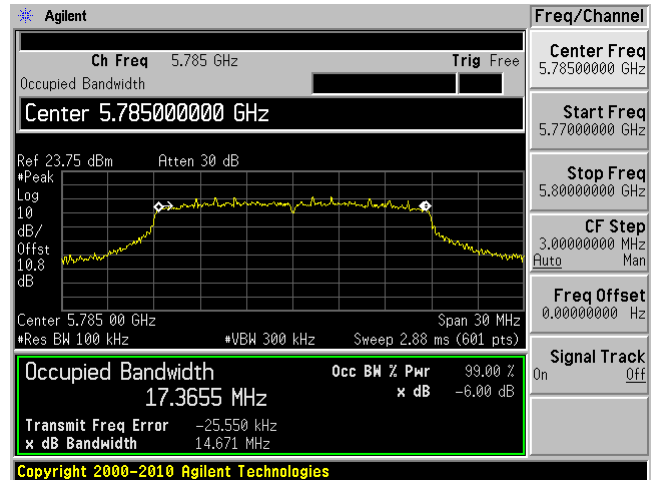
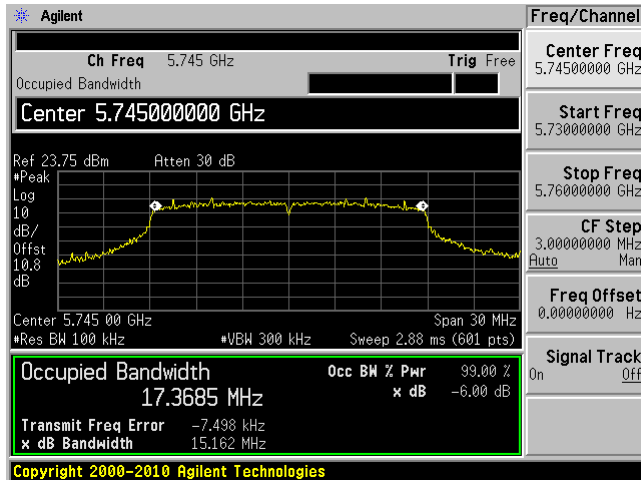
5825 MHz



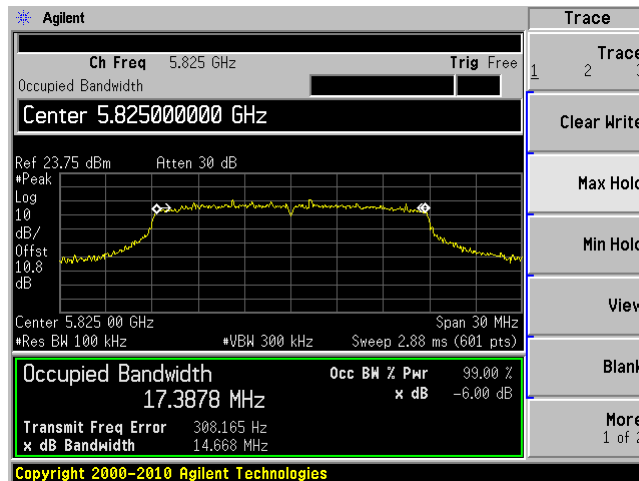
802.11n20 mode

5745 MHz

5785 MHz



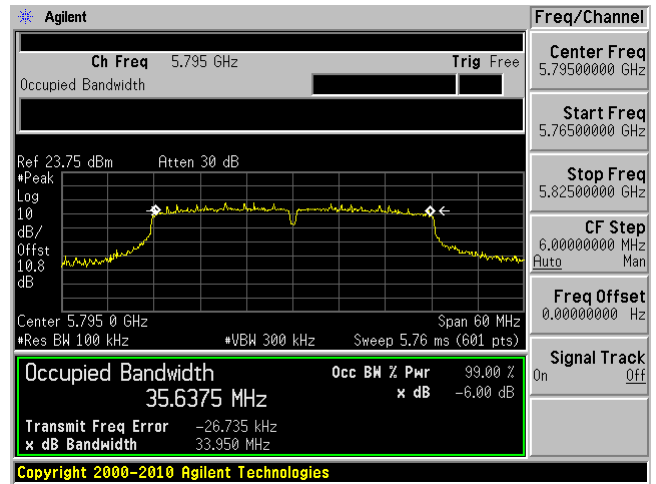
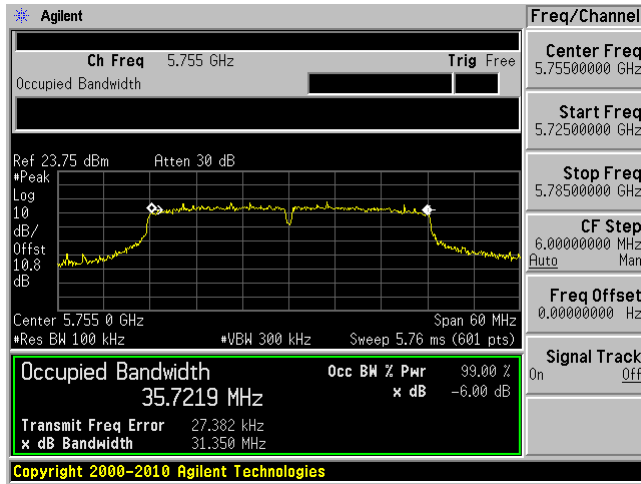
5825 MHz



802.11n40 mode

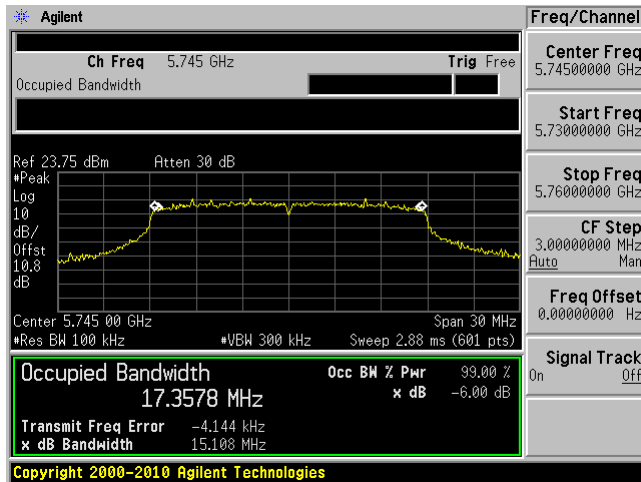
5755 MHz

5795 MHz

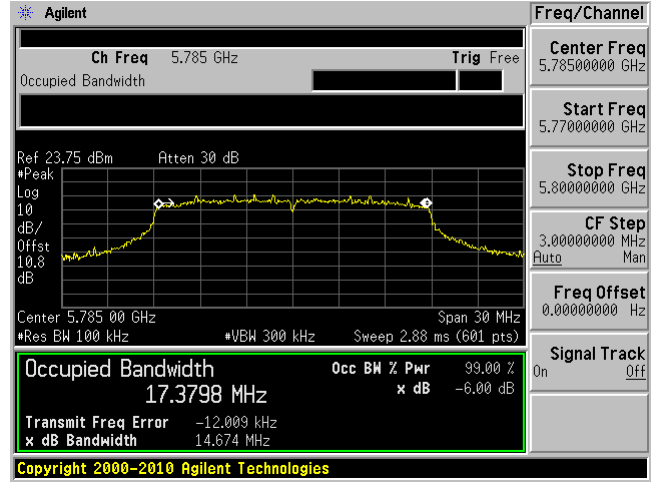


802.11ac20 mode

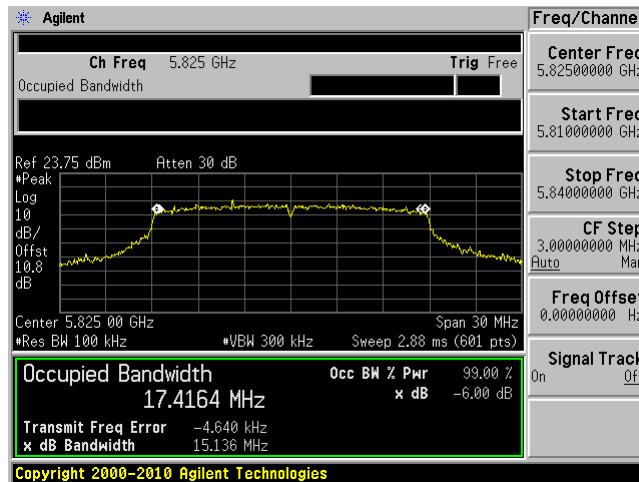
5745 MHz



5785 MHz

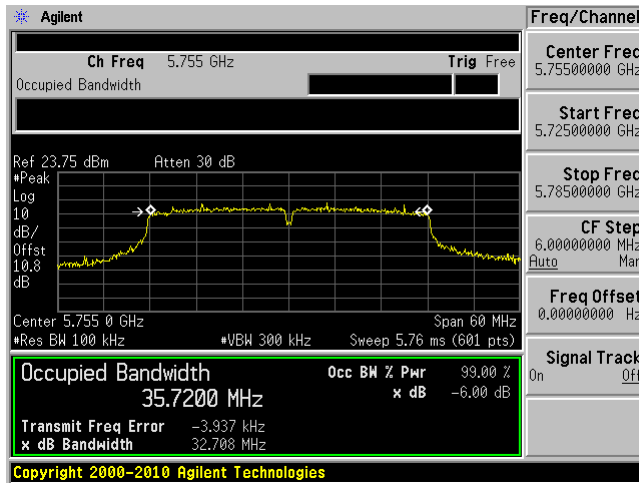


5825 MHz

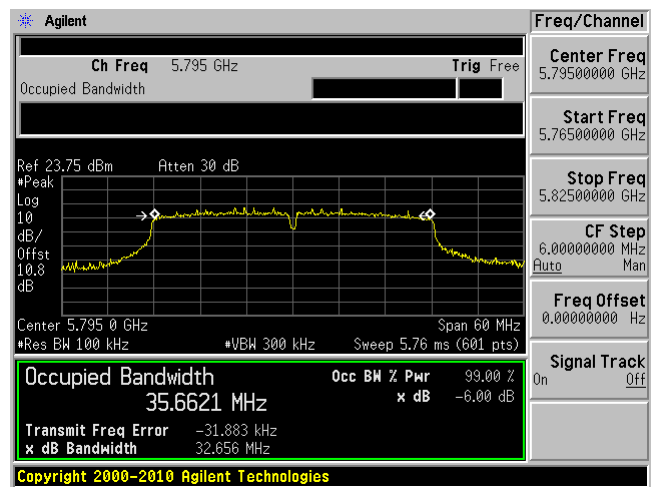


802.11ac40 mode

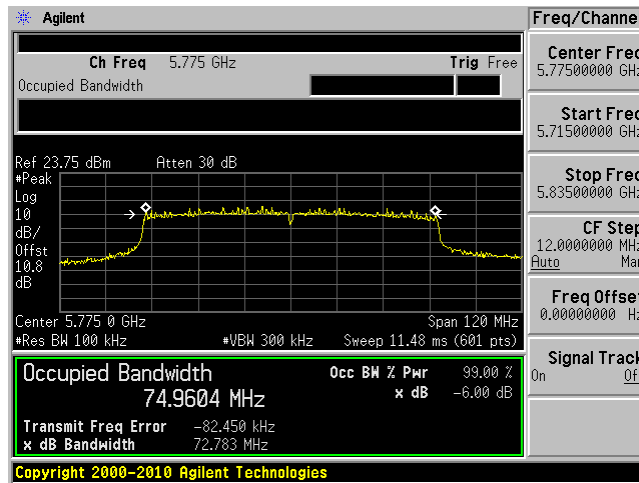
5755 MHz



5795 MHz



802.11ac80 mode, 5775 MHz



9 FCC §407(a) & ISED RSS-247 §6.2 - Output Power

9.1 Applicable Standards

According to FCC §15.407(a):

For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

According to IC RSS-247 §6.2.1 for frequency band 5150-5250 MHz:

The maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log 10B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

According to IC RSS-247 §6.2.2 for frequency band 5250-5350 MHz:

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log 10B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log 10B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

According to IC RSS-247 §6.2.3 for frequency band 5470-5600 MHz and 5650-5725 MHz:

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log 10B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log 10B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

According to IC RSS-247 §6.2.4 for frequency band 5725-5850 MHz:

The maximum conducted output power shall not exceed 1 W. The power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the 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 devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

9.2 Measurement Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a power meter.

9.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
ETS- Lingerin	Power Sensor	7002-006	160097	2014-10-21	2 years
-	10dB attenuator	-	-	Each time ¹	N/A

Note¹: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.*

9.4 Test Environmental Conditions

Temperature:	22° C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

The testing was performed by Todd Moy on 2016-08-09 in RF site.

9.5 Test Results

5150 - 5250 MHz

FCC Results

Frequency (MHz)	Conducted Average Power (dBm)	FCC Limit (dBm)
802.11a mode		
5180	14.89	24
5200	14.78	24
5240	14.87	24
802.11n20 mode		
5180	14.56	24
5200	14.72	24
5240	14.64	24
802.11n40 mode		
5190	13.55	24
5230	14.24	24
802.11ac20 mode		
5180	14.41	24
5200	14.31	24
5240	14.43	24
802.11ac40 mode		
5190	13.15	24
5230	14.22	24
802.11ac80 mode		
5210	12.20	24

ISED Results

Modulation	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	EIRP Output Power (dBm)	ISED Limit (dBm)
802.11a	5180	14.89	1.41	16.3	23
	5200	14.78	1.41	16.19	23
	5240	14.87	1.41	16.28	23
802.11n20	5180	14.56	1.41	15.97	23
	5200	14.72	1.41	16.13	23
	5240	14.64	1.41	16.05	23
802.11n40	5190	13.55	1.41	14.96	23
	5230	14.24	1.41	15.65	23
802.11ac20	5180	14.41	1.41	15.82	23
	5200	14.31	1.41	15.72	23
	5240	14.43	1.41	15.84	23
802.11ac40	5190	13.15	1.41	14.56	23
	5230	14.22	1.41	15.63	23
802.11ac80	5210	12.20	1.41	13.61	23

5250 - 5350 MHz

Frequency (MHz)	Conducted Average Power (dBm)	FCC Limit (dBm)	ISED Limit (dBm)
802.11a mode			
5260	14.64	24	23
5280	14.42	24	23
5320	14.96	24	23
802.11n20 mode			
5260	14.7	24	23
5280	14.33	24	23
5320	14.89	24	23
802.11n40 mode			
5270	14.09	24	23
5310	11.93	24	23
802.11ac20 mode			
5260	14.21	24	23
5280	14.36	24	23
5320	14.76	24	23
802.11ac40 mode			
5270	14.09	24	23
5310	11.81	24	23
802.11ac80 mode			
5290	12.18	24	23

5470 - 5725 MHz

Frequency (MHz)	Conducted Average Power (dBm)	FCC/ISED Limit (dBm)
802.11a mode		
5500	14.87	24
5580	15.25	24
5700	14.2	24
5720	14.64	24
802.11n20 mode		
5500	14.21	24
5580	14.68	24
5700	13.98	24
5720	14.54	24
802.11n40 mode		
5510	11.25	24
5550	14.15	24
5670	14.28	24
5710	14.09	24
802.11ac20 mode		
5500	14.05	24
5580	14.53	24
5700	13.91	24
5720	14.62	24
802.11ac40 mode		
5510	11.15	24
5550	14.15	24
5670	14.45	24
5710	14.12	24
802.11ac80 mode		
5530	10.94	24
5610	14.32	24
5690	15.04	24

5725 - 5850 MHz

Frequency (MHz)	Conducted Average Power (dBm)	FCC/ISED Limit (dBm)
802.11a mode		
5745	15.21	30
5785	14.37	30
5825	14.49	30
802.11n20 mode		
5745	15.34	30
5785	14.94	30
5825	14.27	30
802.11n40 mode		
5755	11.86	30
5795	13.91	30
802.11ac20 mode		
5745	15.26	30
5785	14.23	30
5825	14.5	30
802.11ac40 mode		
5755	13.18	30
5795	13.85	30
802.11ac80 mode		
5775	12.05	30

Note: Duty cycle correction factor has already been added to the measurements.

10 FCC §15.407(a) & ISED RSS-247 §6.2 - Power Spectral Density

10.1 Applicable Standards

According to FCC §15.407(a):

For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

According to IC RSS-247 §6.2.1 for frequency band 5150-5250 MHz:

The maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

According to IC RSS-247 §6.2.2 for frequency band 5250-5350 MHz:

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

According to IC RSS-247 §6.2.3 for frequency band 5470-5600 MHz and 5650-5725 MHz:

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

According to IC RSS-247 §6.2.4 for frequency band 5725-5850 MHz:

The maximum conducted output power shall not exceed 1 W. The power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the 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 devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

10.2 Measurement Procedure

- (i) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- (ii) Set RBW = 1 MHz.
- (iii) Set VBW \geq 3 MHz.
- (iv) Number of points in sweep \geq 2 Span / RBW. (This ensures that bin-to-bin spacing is \leq RBW/2, so that narrowband signals are not lost between frequency bins.)
- (v) Sweep time = auto.
- (vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- (vii) If transmit duty cycle $<$ 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle \geq 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.
- (viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- (ix) Compute power by integrating the spectrum across the 26 dB EBW of the signal using the spectrum analyzer’s band power measurement function with band limits set equal to the EBW band edges. If the spectrum analyzer does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW of the spectrum.

10.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Analyzer, Spectrum	E4446A	US44300386	2015-10-22	1 year
-	10dB attenuator	-	-	Each time ¹	N/A

Note¹: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

10.4 Test Environmental Conditions

Temperature:	22-24 °C
Relative Humidity:	40-41 %
ATM Pressure:	103.1-104.1 kPa

The testing was performed by Frank Wang on 2016-08-09 at RF site.

10.5 Test Results

5150 – 5250 MHz

FCC Results:

Frequency (MHz)	Measured PSD (dBm/MHz)	Corrected PSD (dBm/MHz)	FCC Limit (dBm/MHz)
802.11a mode			
5180	3.733	3.929	11
5200	3.599	3.795	11
5240	3.588	3.784	11
802.11n20 mode			
5180	3.149	3.370	11
5200	2.516	2.737	11
5240	2.656	2.877	11
802.11n40 mode			
5190	-0.220	0.414	11
5230	0.174	0.808	11
802.11ac20 mode			
5180	3.041	3.263	11
5200	2.620	2.842	11
5240	2.807	3.029	11
802.11ac40 mode			
5190	-1.151	-0.574	11
5230	-0.567	0.010	11
802.11ac80 mode			
5210	-6.232	-5.189	11

ISED Results:

Frequency (MHz)	PSD (dBm/MHz)	Corrected PSD (dBm/MHz)	EIRP PSD (dBm/MHz)	ISED Limit (dBm/MHz)
802.11a mode				
5180	3.733	3.929	4.029	10
5200	3.599	3.795	3.895	10
5240	3.588	3.784	3.884	10
802.11n20 mode				
5180	3.149	3.370	3.470	10
5200	2.516	2.737	2.837	10
5240	2.656	2.877	2.977	10
802.11n40 mode				
5190	-0.220	0.414	0.514	10
5230	0.174	0.808	0.908	10
802.11ac20 mode				
5180	3.041	3.263	3.363	10
5200	2.620	2.842	2.942	10
5240	2.807	3.029	3.129	10
802.11ac40 mode				
5190	-1.151	-0.574	-0.474	10
5230	-0.567	0.010	0.110	10
802.11ac80 mode				
5210	-6.232	-5.189	-5.089	10

5250 – 5350 MHz

Frequency (MHz)	Measured PSD (dBm/MHz)	Corrected PSD (dBm/MHz)	FCC/ ISED Limit (dBm/MHz)
802.11a mode			
5260	3.706	3.902	11
5280	3.466	3.662	11
5320	4.155	4.351	11
802.11n20 mode			
5260	2.470	2.691	11
5280	2.452	2.673	11
5320	2.571	2.792	11
802.11n40 mode			
5270	-0.231	0.403	11
5310	-1.573	-0.939	11
802.11ac20 mode			
5260	2.490	2.712	11
5280	2.207	2.429	11
5320	2.726	2.948	11
802.11ac40 mode			
5270	-0.737	-0.160	11
5310	-2.226	-1.649	11
802.11ac80 mode			
5290	-6.825	-5.782	11

5470 – 5725 MHz

Frequency (MHz)	Measured PSD (dBm/MHz)	Corrected PSD (dBm/MHz)	FCC/ISED Limit (dBm/MHz)
802.11a mode			
5500	2.659	2.855	11
5580	3.018	3.214	11
5700	2.588	2.784	11
5720	3.428	3.624	11
802.11n20 mode			
5500	2.498	2.719	11
5580	2.639	2.860	11
5700	2.107	2.328	11
5720	2.993	3.214	11
802.11n40 mode			
5510	-3.471	-2.837	11
5550	-0.814	-0.206	11
5670	-0.418	0.216	
5710	0.070	0.704	11
802.11ac20 mode			
5500	1.875	2.097	11
5580	3.134	3.356	11
5700	2.268	2.490	11
5720	3.068	3.290	11
802.11ac40 mode			
5510	-3.748	-3.171	11
5550	-1.028	-0.451	11
5670	-0.685	-0.108	11
5710	0.109	0.686	11
802.11ac80 mode			
5530	-7.491	-6.448	11
5610*	-4.481	-3.438	11
5690	-3.702	-2.659	11

5725 - 5850 MHz

Frequency (MHz)	Measured PSD (dBm/100 kHz)	Correct PSD (dBm/500 kHz)	FCC/ISED Limit (dBm/500 kHz)
802.11a mode			
5745	-5.252	1.944	30
5785	-6.238	0.958	30
5825	-6.249	0.947	30
802.11n20 mode			
5745	-5.765	1.456	30
5785	-6.281	0.940	30
5825	-6.589	0.632	30
802.11n40 mode			
5755	-11.402	-3.768	30
5795	-10.158	-2.524	30
802.11ac20 mode			
5745	-6.041	1.181	30
5785	-6.714	0.508	30
5825	-6.481	0.741	30
802.11ac40 mode			
5755	-11.395	-3.818	30
5795	-10.244	-2.667	30
802.11ac80 mode			
5775	-16.093	-8.0502	30

Corrected PSD (dBm/MHz) = PSD (dBm/MHz) + Duty Cycle Correction (dB)

Note: For the 5725-5850 MHz band, the Corrected PSD (dBm/500 kHz) is equal to:

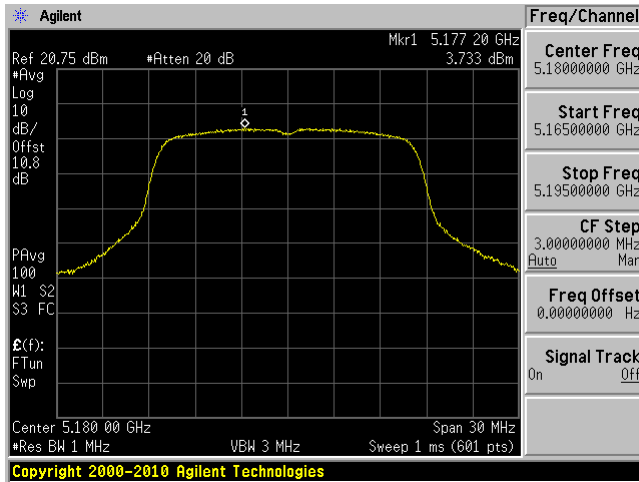
Correct PSD (dBm/500 kHz) = PSD (dBm/100 kHz) + Duty Cycle Correction (dB) + $10 \cdot \log(500 \text{ kHz}/100 \text{ kHz})$

Please refer to the following plots.

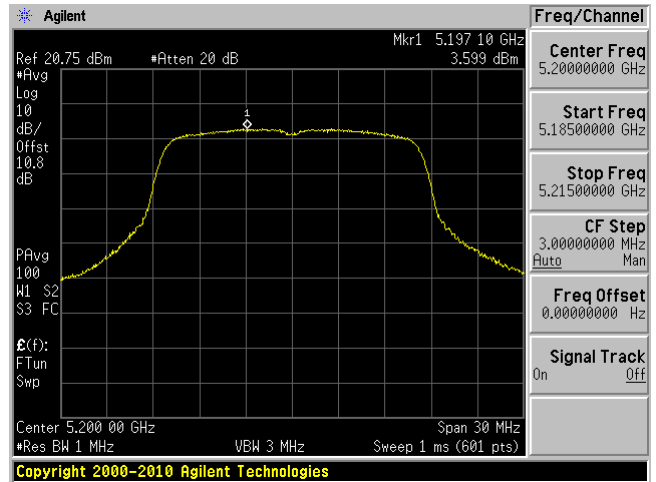
5150 – 5250 MHz

802.11a mode

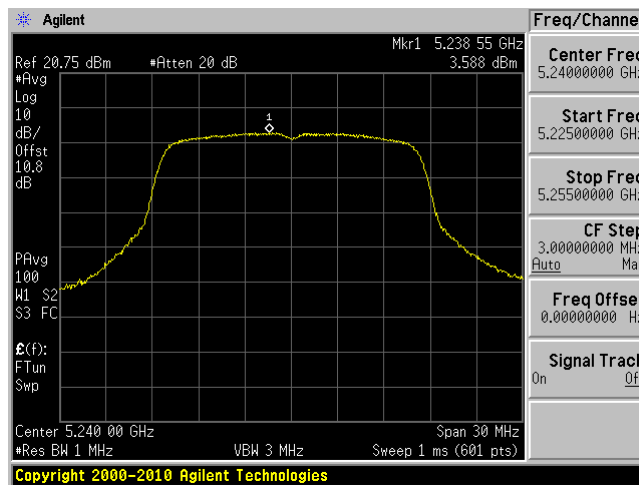
5180 MHz



5200 MHz

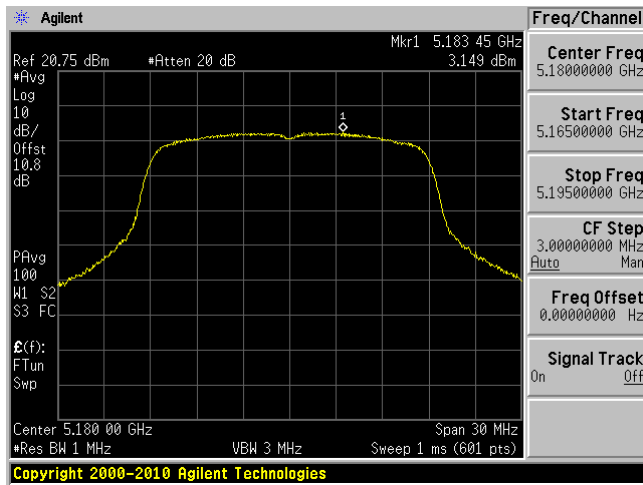


5240 MHz

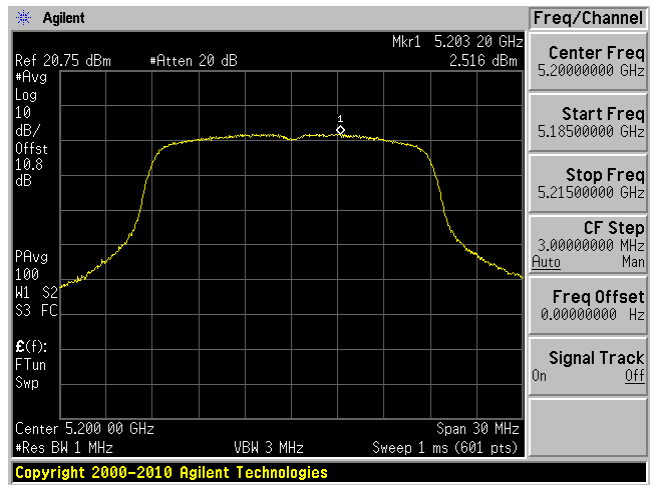


802.11n20 mode

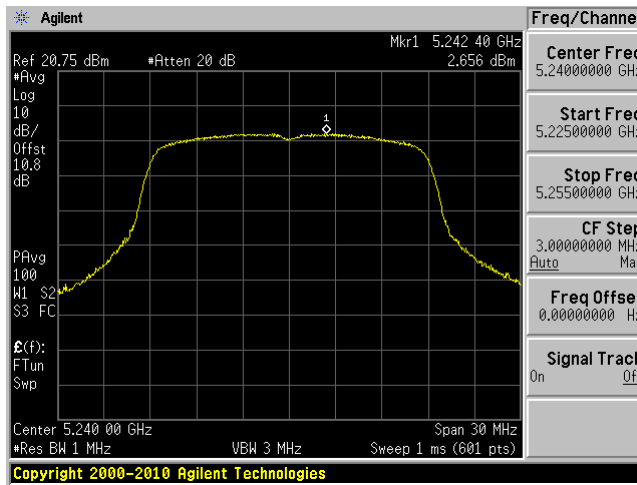
5180 MHz



5200 MHz

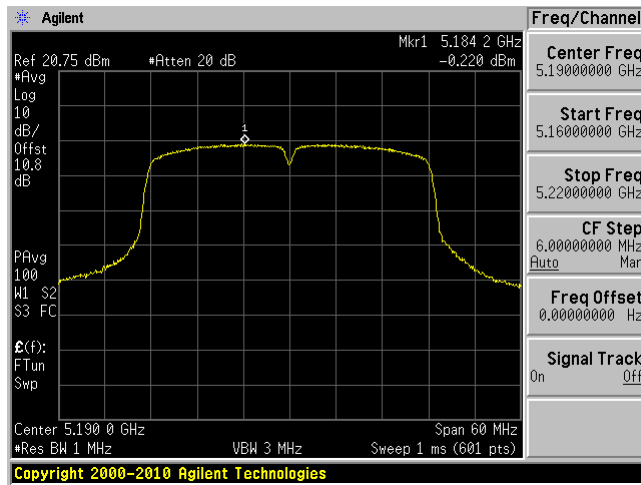


5240 MHz

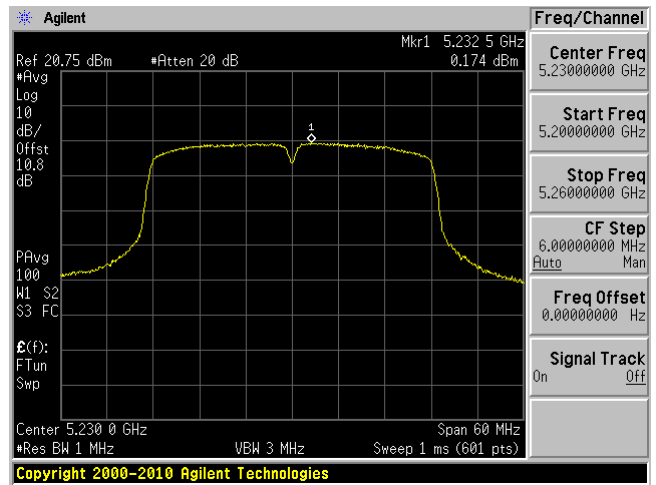


802.11n40 mode

5190 MHz

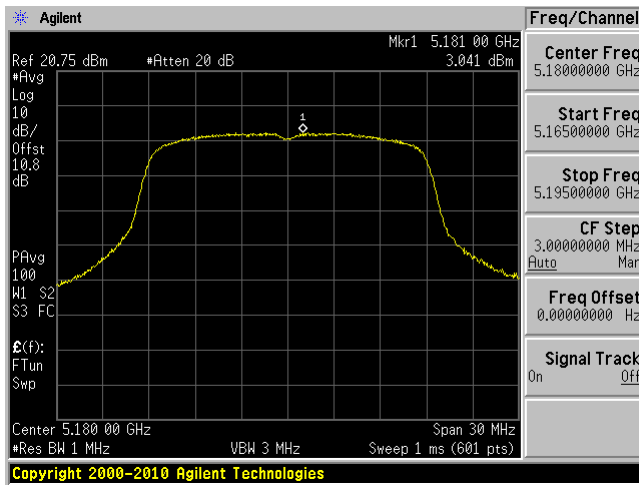


5230 MHz

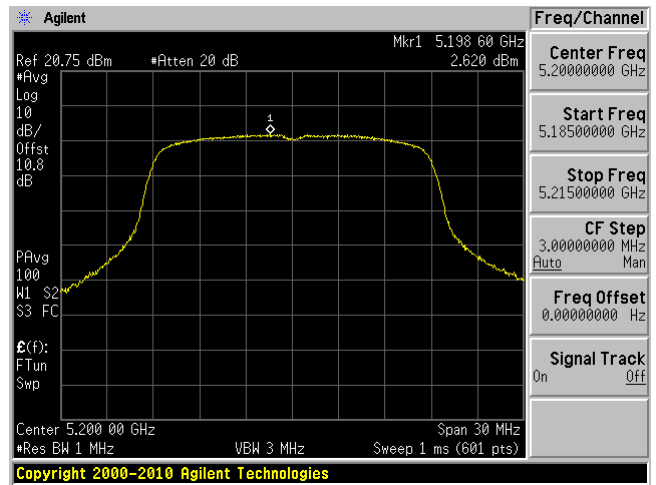


802.11ac20 mode

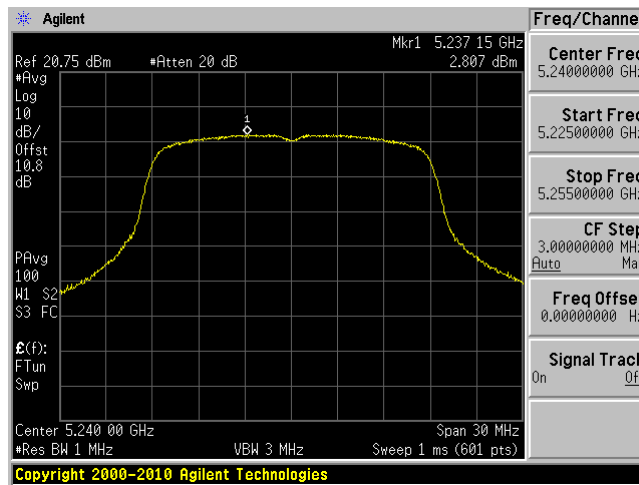
5180 MHz



5200 MHz

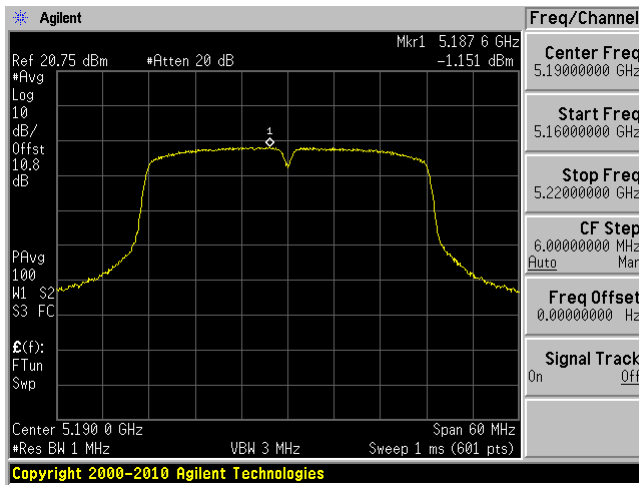


5240 MHz

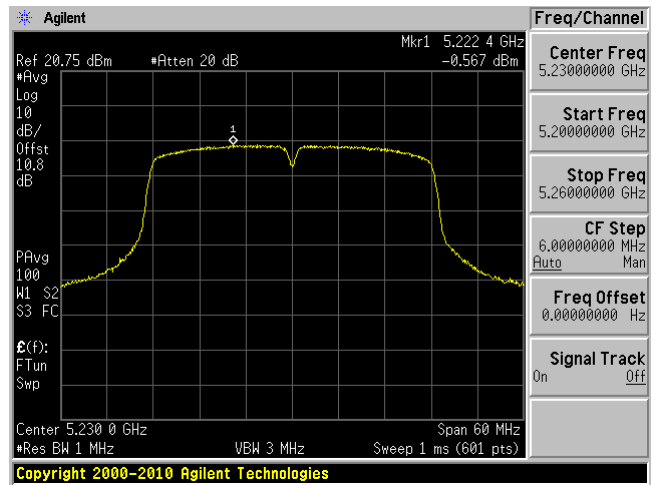


802.11ac40 mode

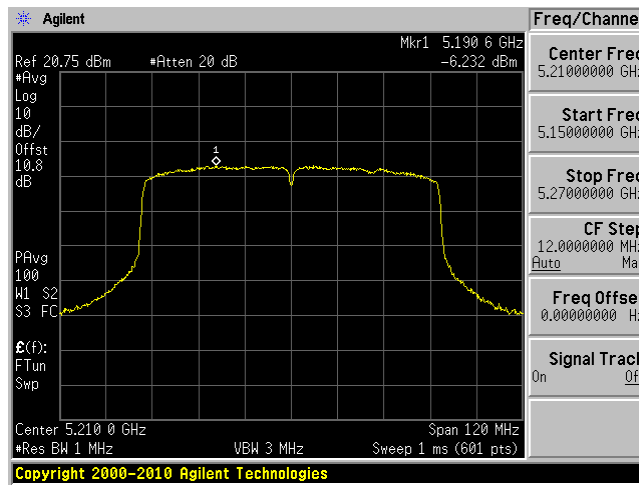
5190 MHz



5230 MHz



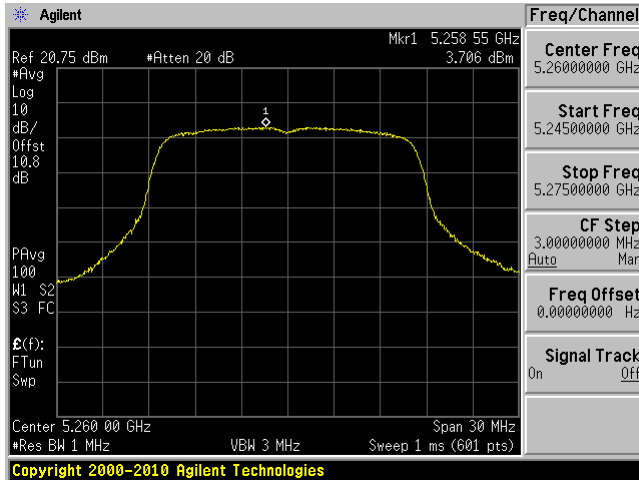
802.11ac80 mode, 5210 MHz



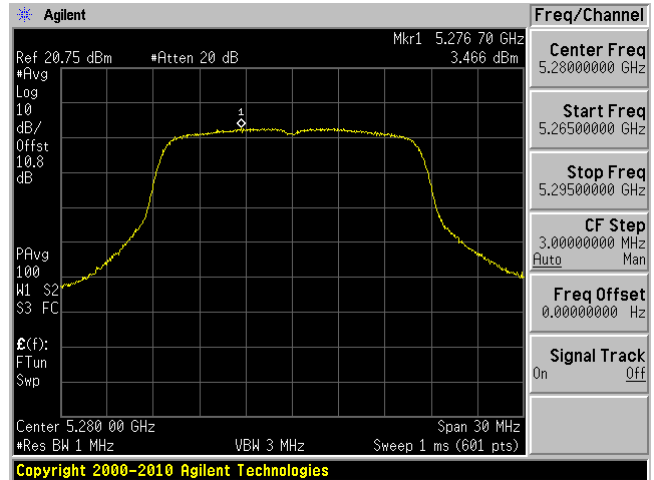
5250 – 5350 MHz

802.11a mode

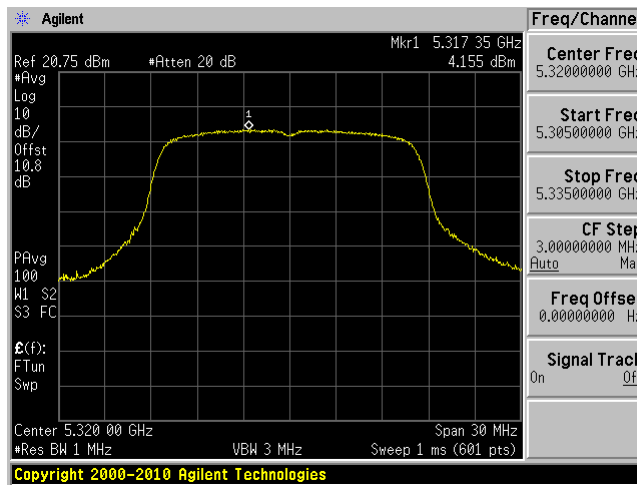
5260 MHz



5280 MHz

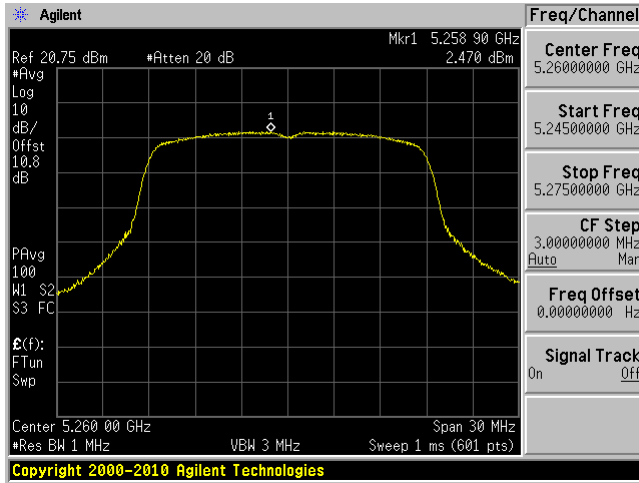


5320 MHz

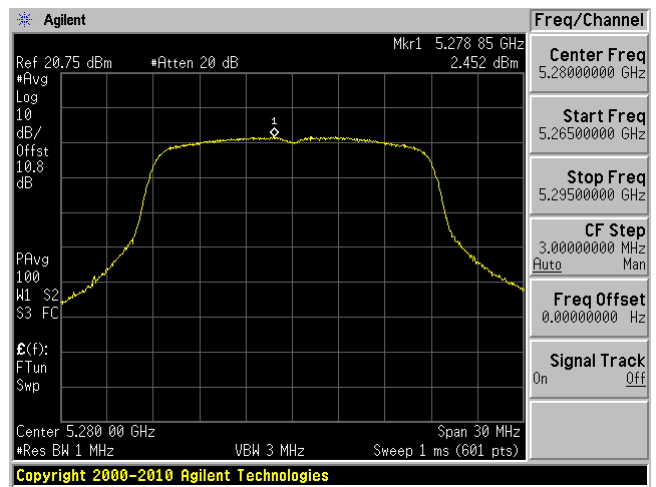


802.11n20 mode

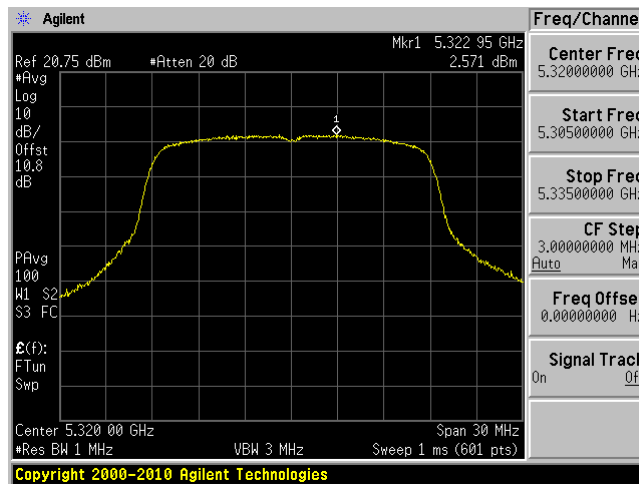
5260 MHz



5280 MHz

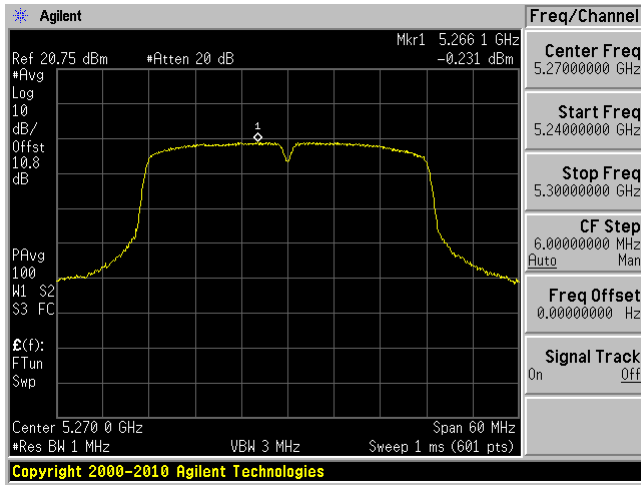


5320 MHz

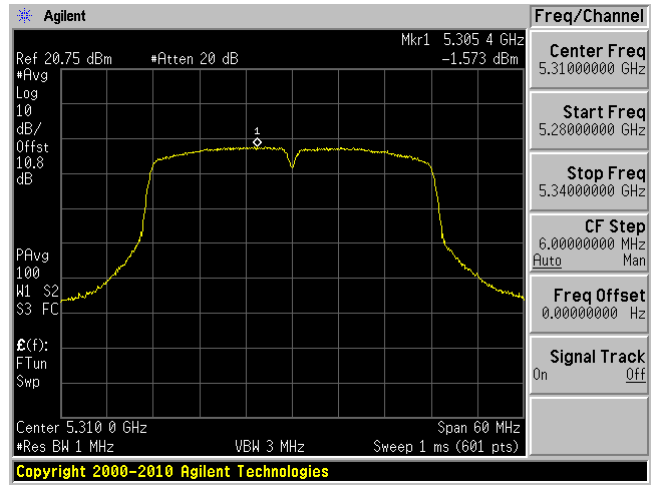


802.11n40 mode

5270 MHz

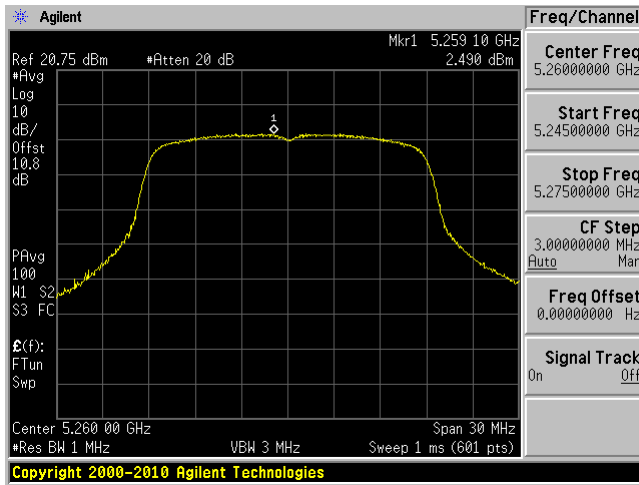


5310 MHz

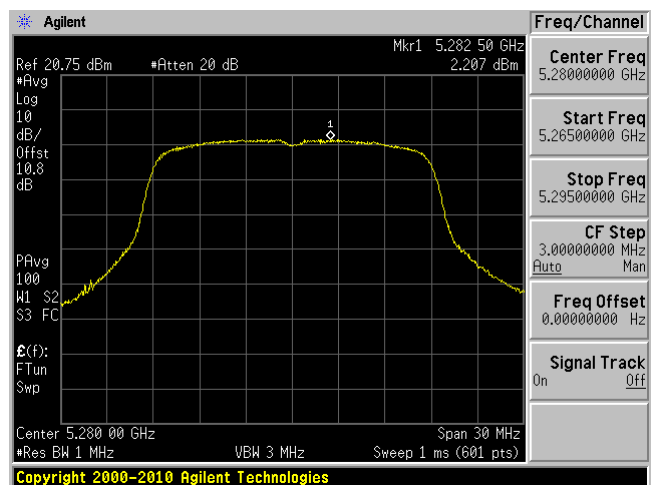


802.11ac20 mode

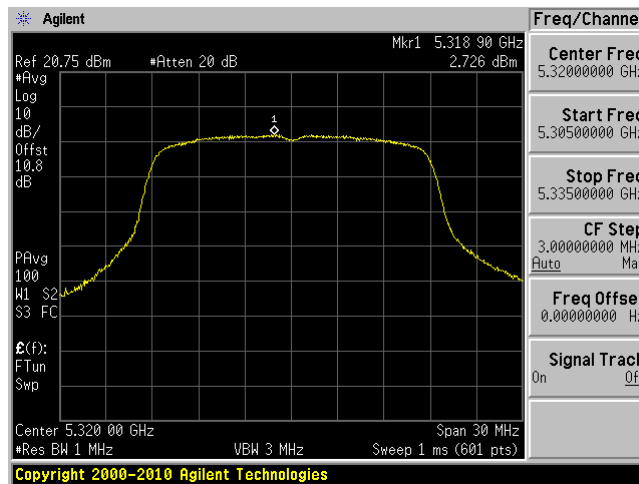
5260 MHz



5280 MHz

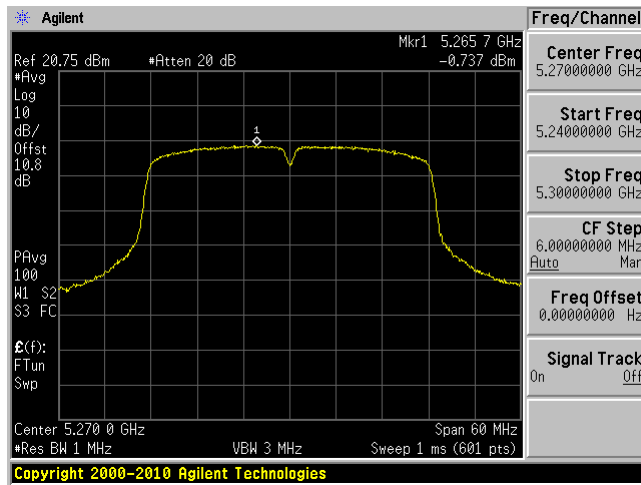


5320 MHz

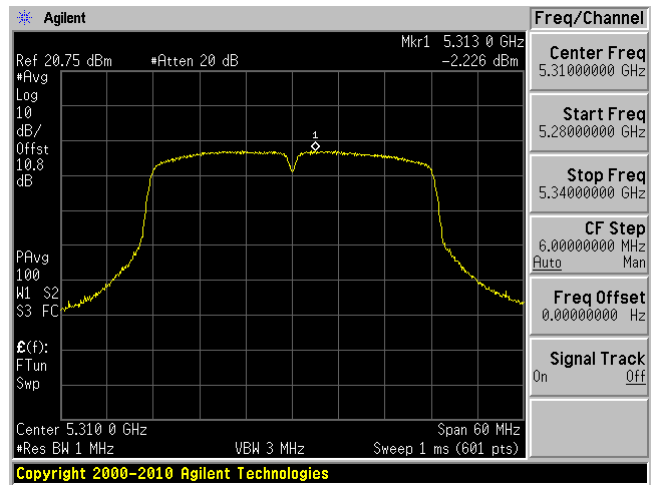


802.11ac40 mode

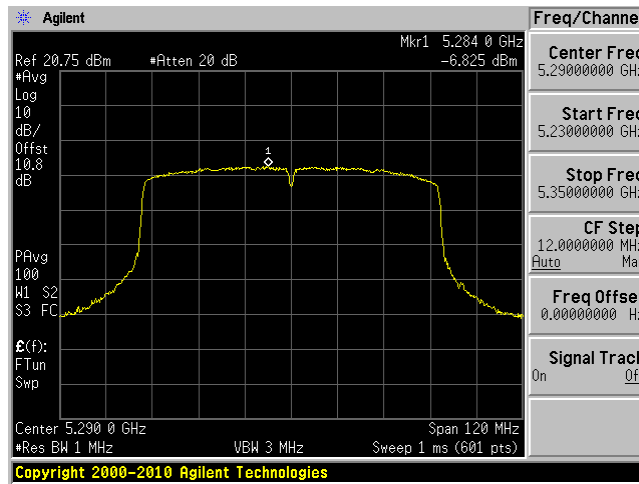
5270 MHz



5310 MHz



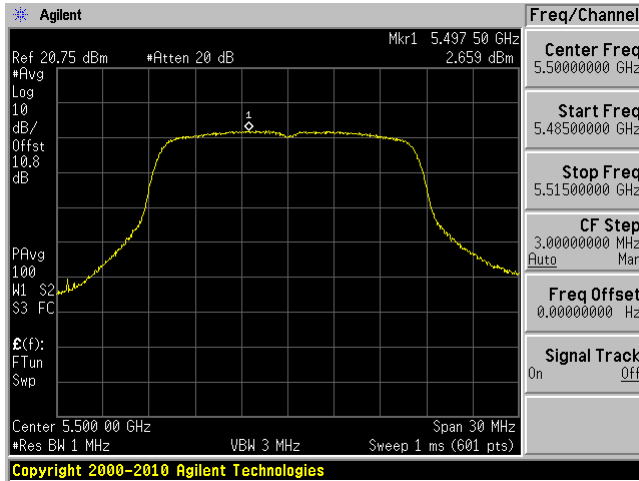
802.11ac80 mode, 5290 MHz



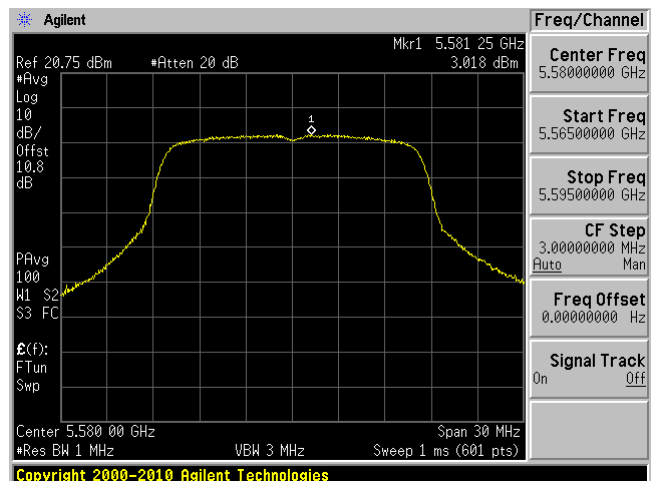
5470 – 5725 MHz

802.11a mode

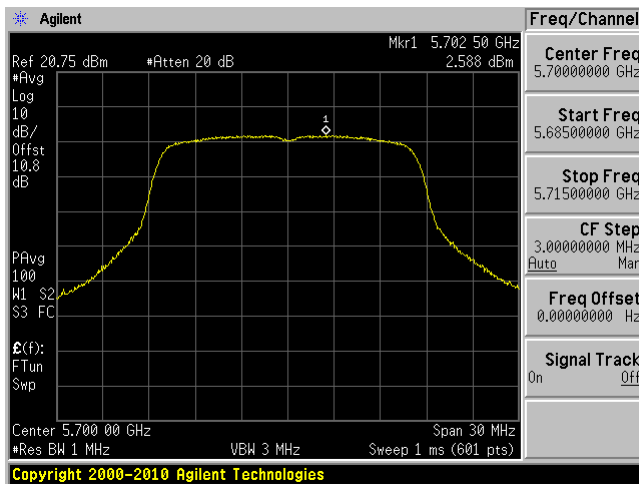
5500 MHz



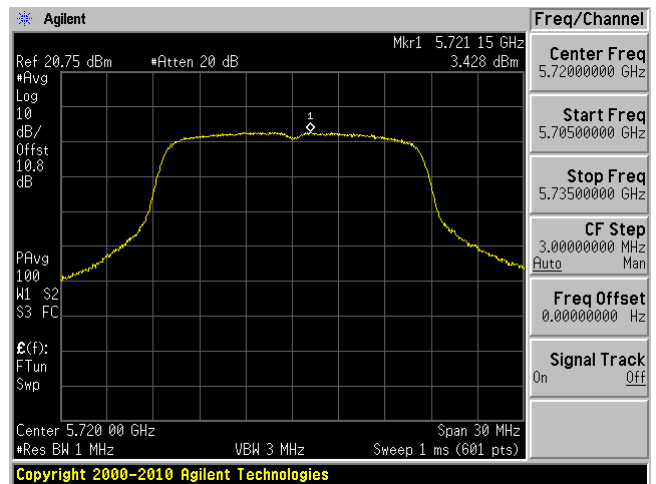
5580 MHz



5700 MHz

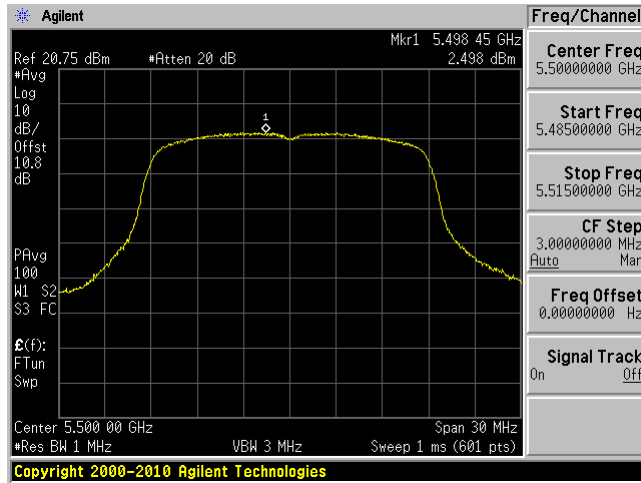


5720 MHz

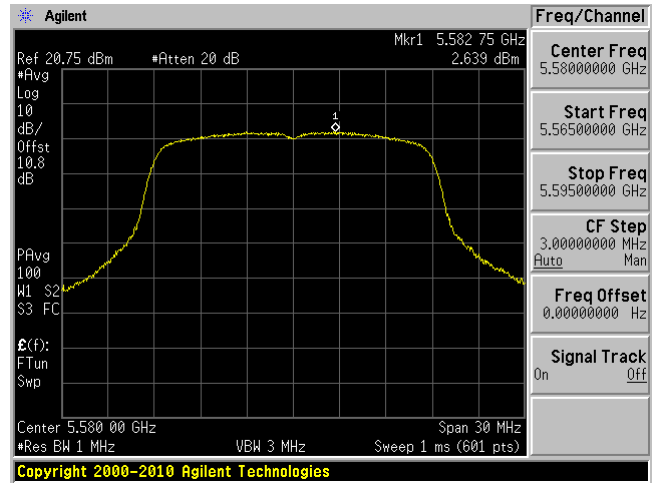


802.11n20 mode

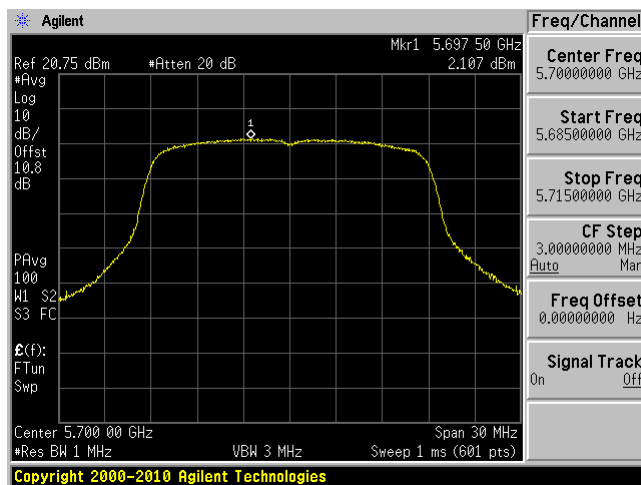
5500 MHz



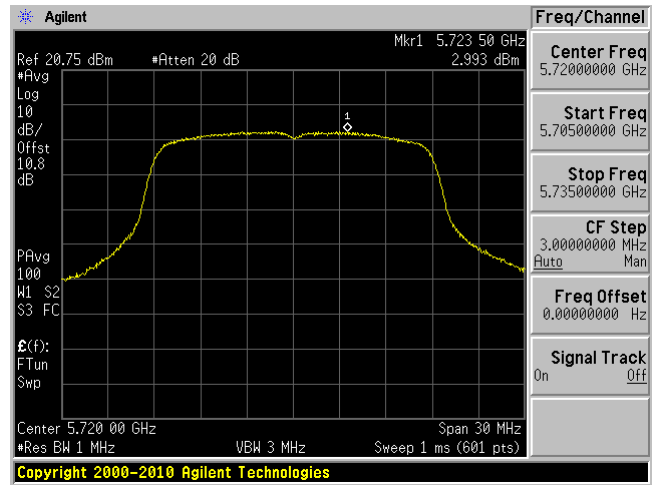
5580 MHz



5700 MHz

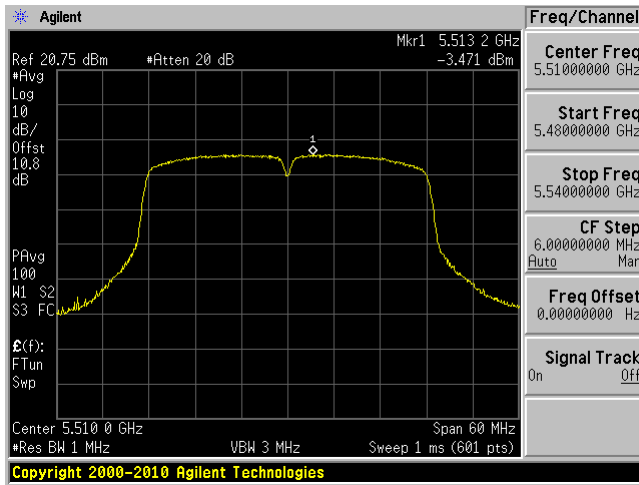


5720 MHz

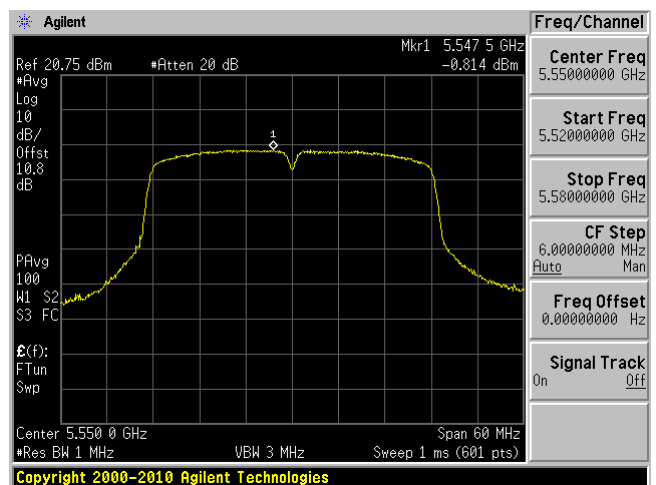


802.11n40 mode

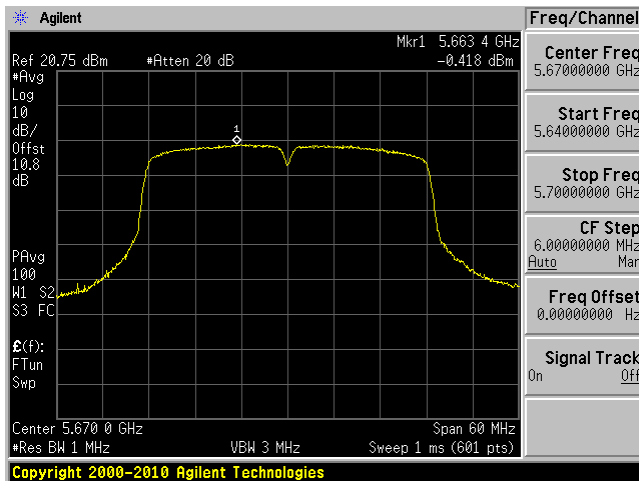
5510 MHz



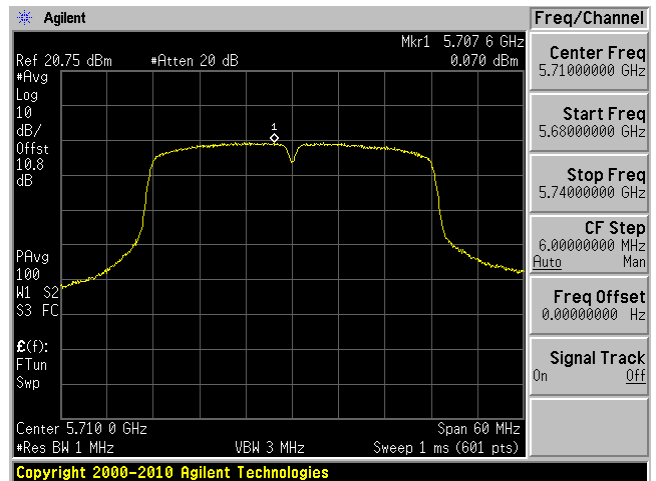
5550 MHz



5670 MHz

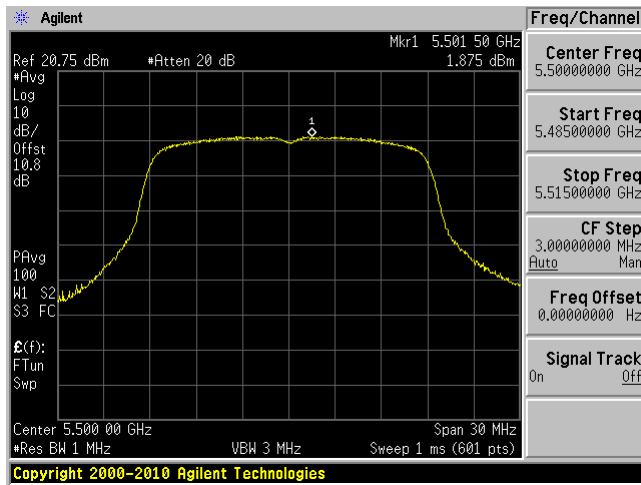


5710 MHz

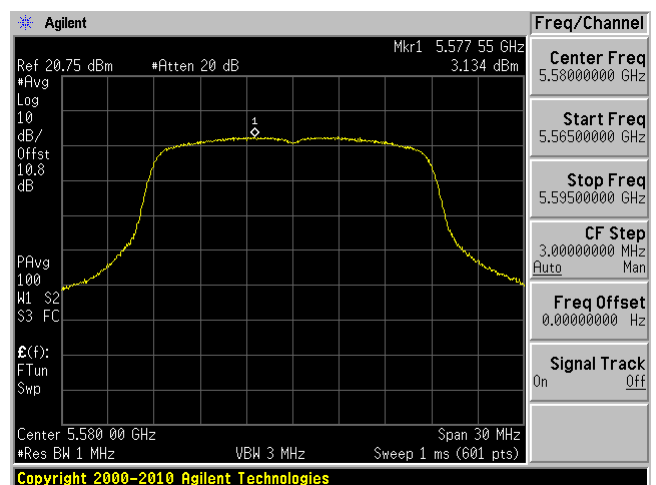


802.11ac20 mode

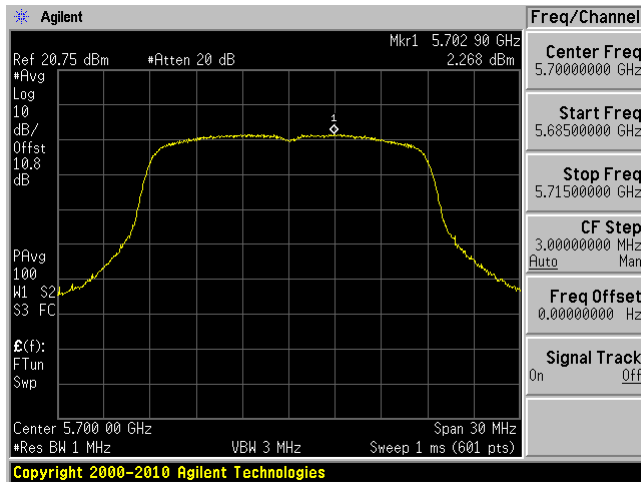
5500 MHz



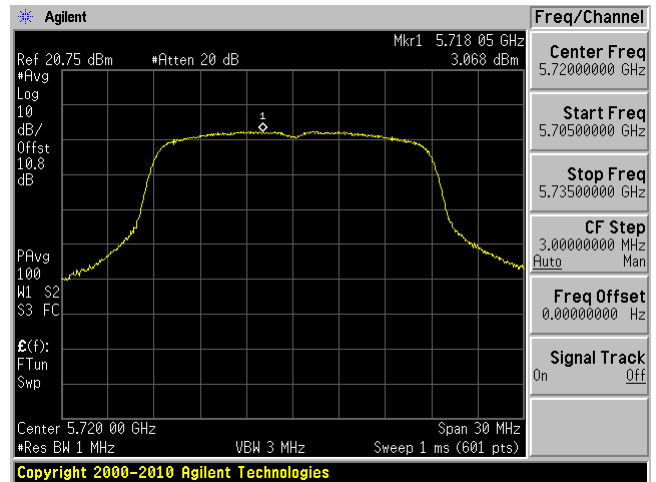
5580 MHz



5700 MHz

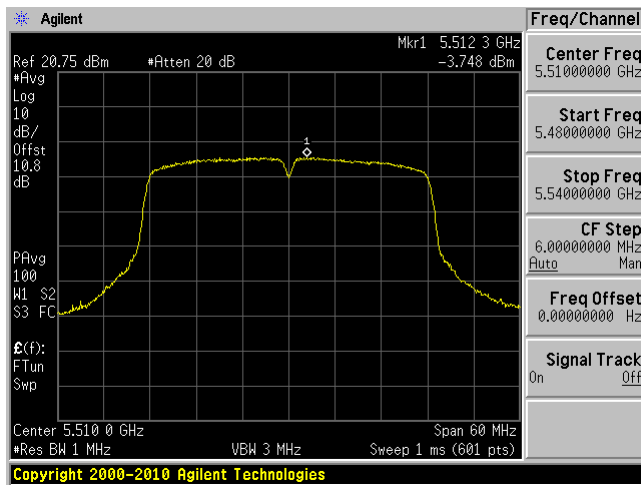


5720 MHz

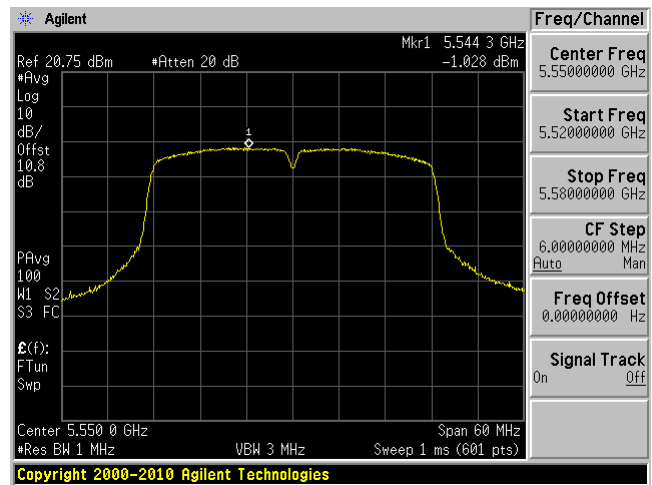


802.11ac40 mode

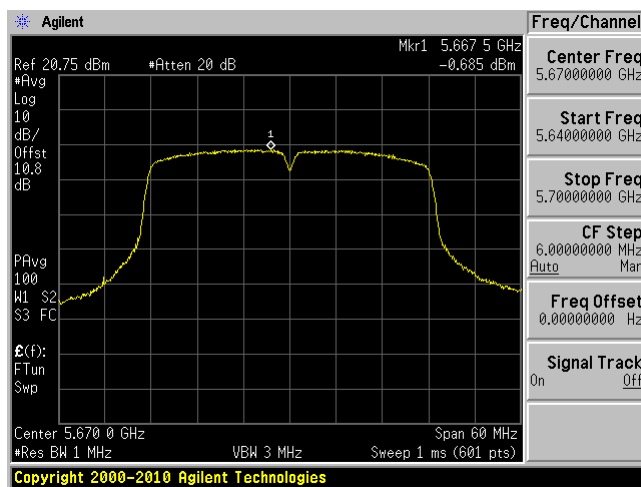
5510 MHz



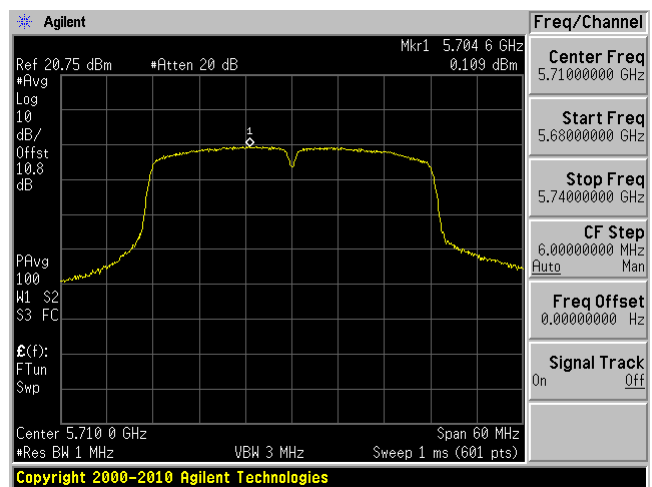
5550 MHz



5670 MHz

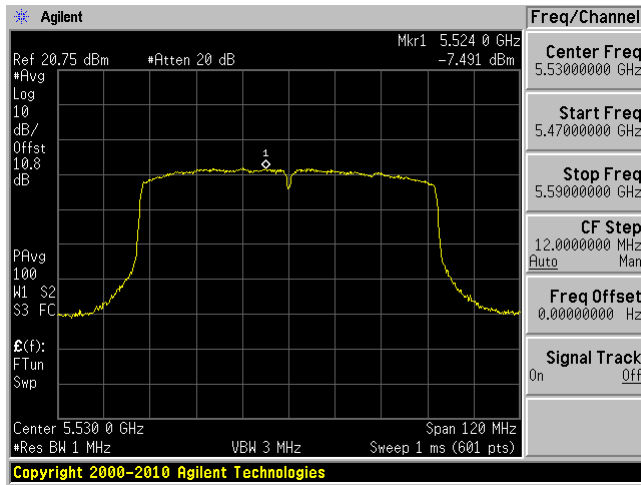


5710 MHz

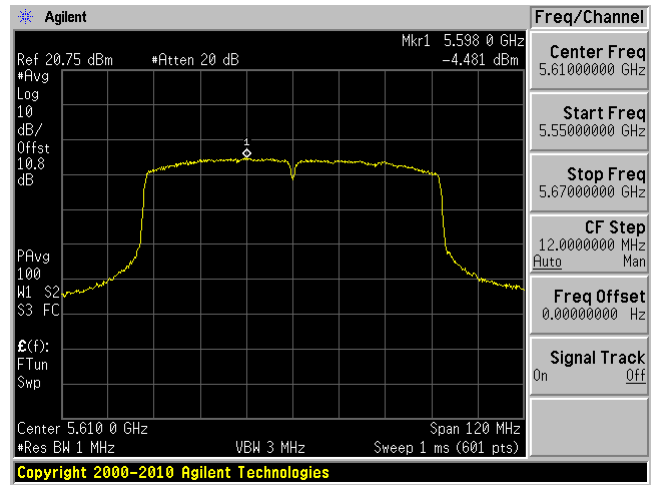


802.11ac80 mode

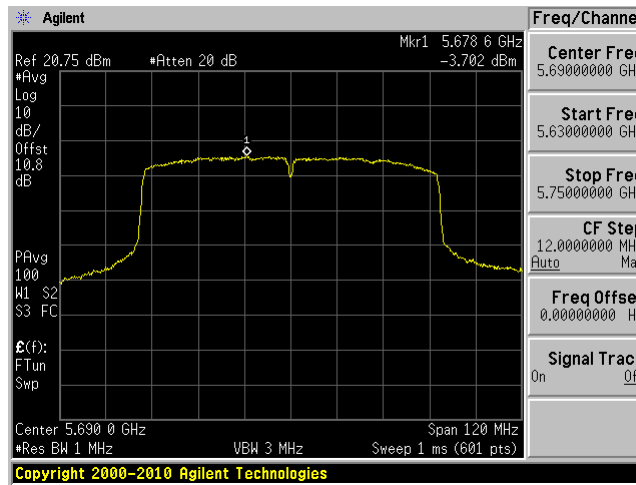
5530 MHz



5610 MHz



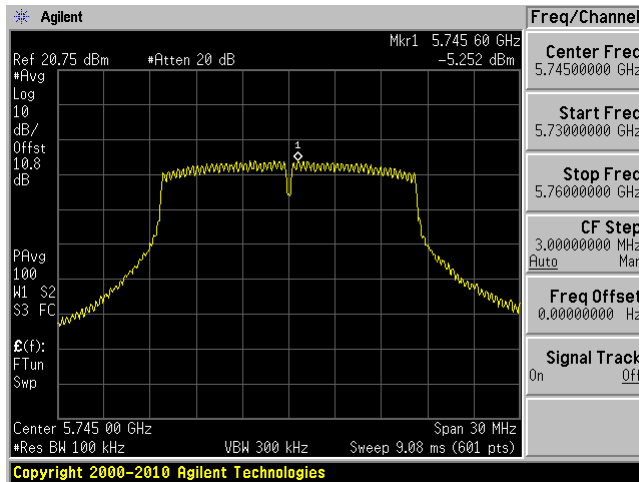
5690 MHz



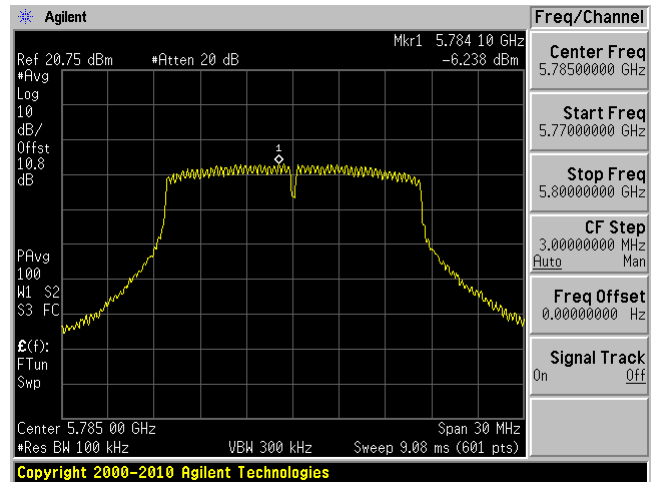
5725 – 5850 MHz

802.11a mode

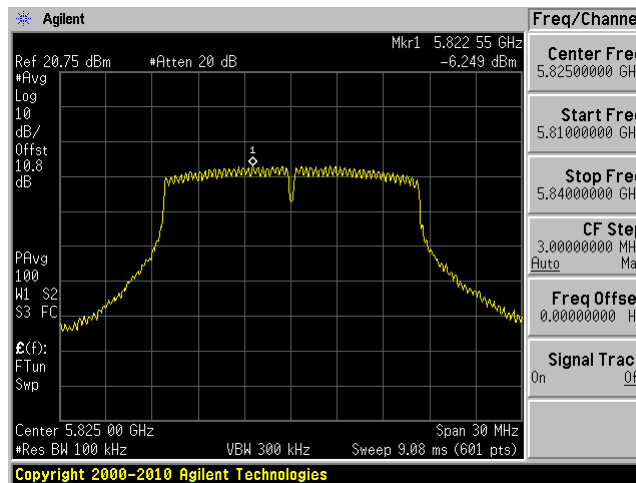
5745 MHz



5785 MHz

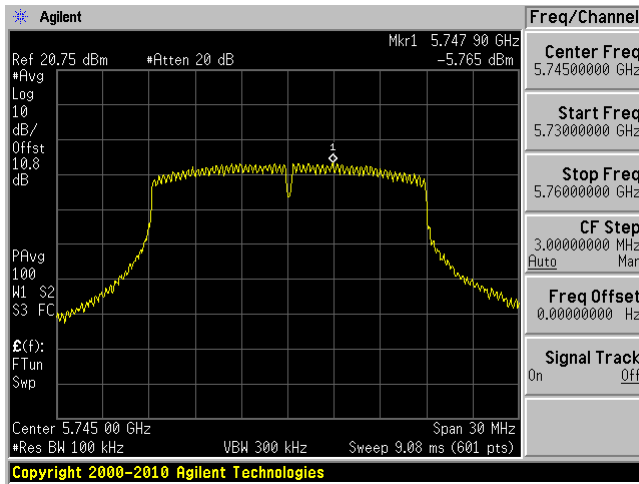


5825 MHz

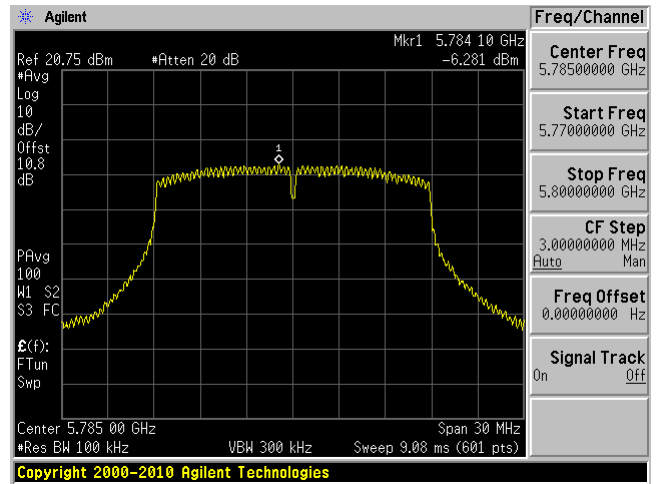


802.11n20 mode

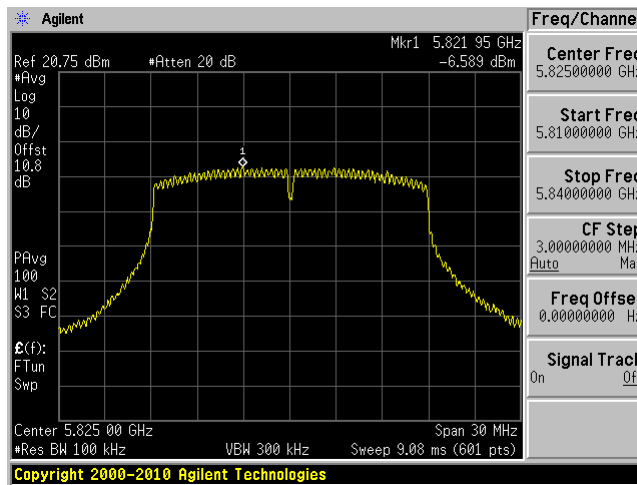
5745 MHz



5785 MHz

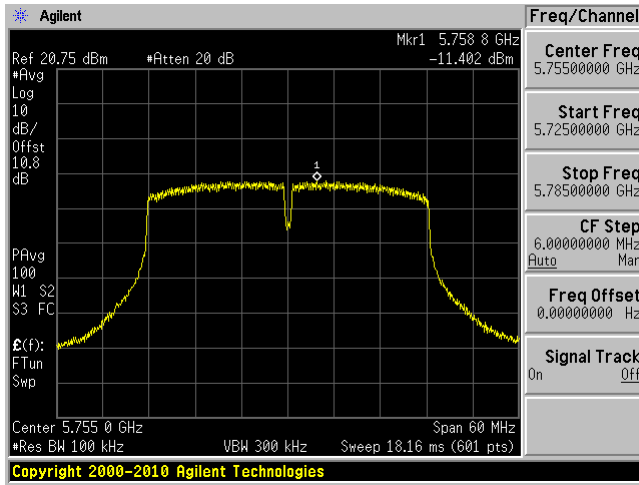


5825 MHz

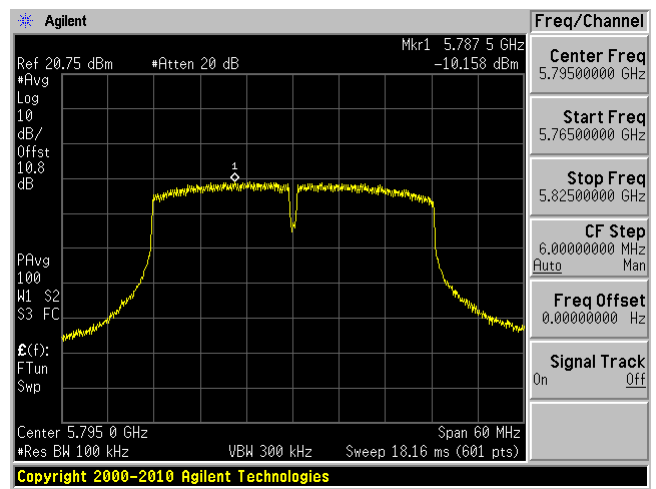


802.11n40 mode

5755 MHz

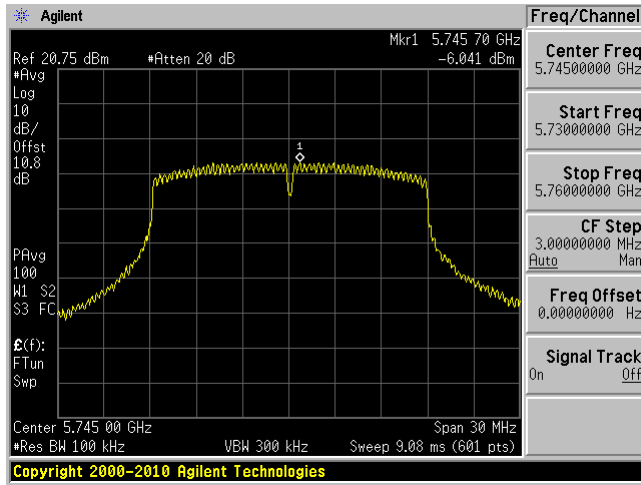


5795 MHz

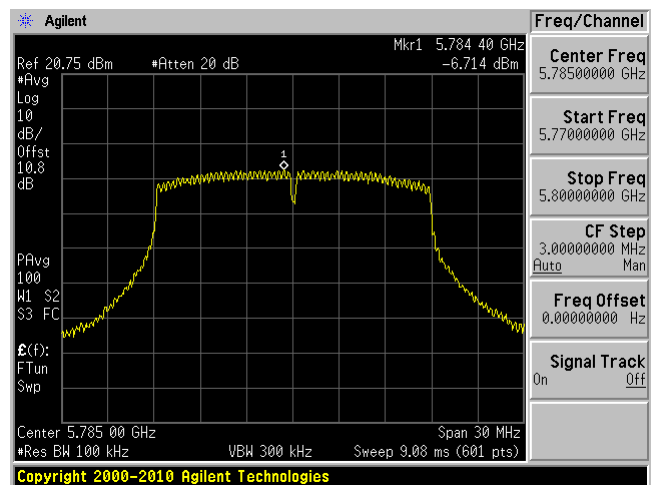


802.11ac20 mode

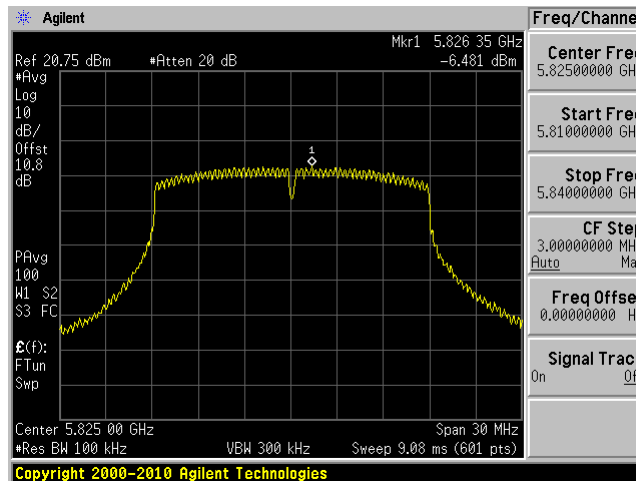
5745 MHz



5785 MHz

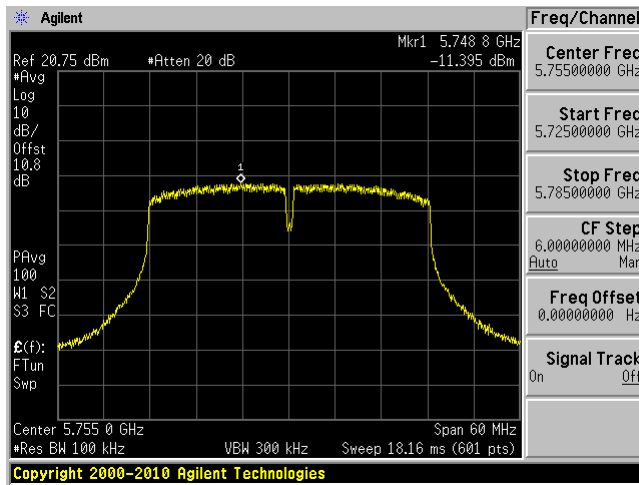


5825 MHz

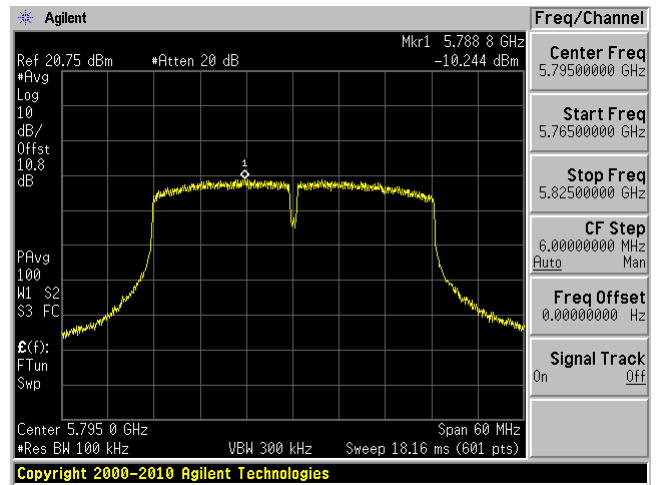


802.11ac40 mode

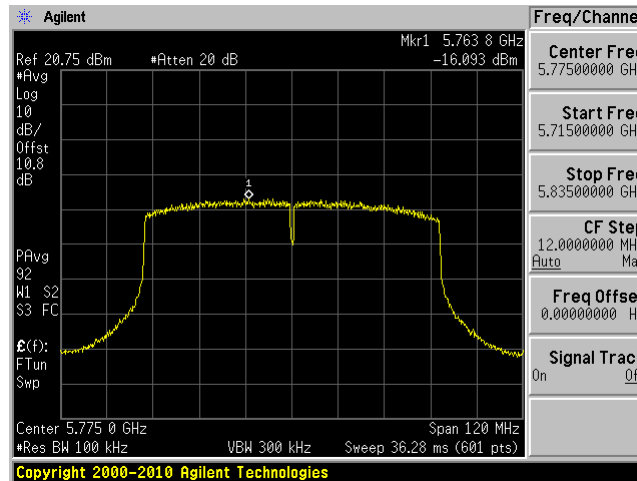
5755 MHz



5795 MHz



802.11ac80 mode, 5775 MHz



11 §15.407(b) & ISED RSS-247 §6.2 - Out of Band Emissions

11.1 Applicable Standards

According to FCC §15.407(b):

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

The provisions of §15.205 apply to intentional radiators operating under this section.

According to IC RSS-247 §6.2.1 for devices operating in the frequency band 5150-5250 MHz:

For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, any unwanted emissions that fall into the band 5250-5350 MHz must be 26 dBc, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth, above 5.25 GHz. Otherwise, the transmission is considered as intentional and the devices shall implement dynamic frequency selection (DFS) and transmitter power control (TPC) as per the requirements for the band 5250-5350 MHz.

According to IC RSS-247 §6.2.2 for devices operating in the frequency band 5250-5350 MHz:

For devices with both operating frequencies and channel bandwidths contained within the band 5250-5350 MHz, the device shall comply with the following:

1. All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. if the equipment is intended for outdoor use; or
2. All emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. and any emissions within the band 5150-5250 MHz shall meet the power spectral density limits of Section 6.2.1. The device shall be labelled "for indoor use only."

For devices with operating frequencies in the band 5250-5350 MHz but having a channel bandwidth that overlaps the band 5150-5250 MHz, the devices' unwanted emission shall not exceed -27 dBm/MHz e.i.r.p. outside the band 5150-5350 MHz and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device shall be labelled "for indoor use only."

According to IC RSS-247 §6.2.3 for devices operating in the frequency band 5470-5600 MHz and 5650-5725 MHz. Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p.

According to IC RSS-247 §6.2.4 for devices operating in the frequency band 5725-5850 MHz:

For the band 5725-5850 MHz, emissions at frequencies from the band edges to 10 MHz above or below the band edges shall not exceed -17 dBm/MHz e.i.r.p.

For emissions at frequencies more than 10 MHz above or below the band edges, the emissions power shall not exceed -27 dBm/MHz.

11.2 Measurement Procedure

Add a correction factor (antenna gain+ Attenuator loss+cable loss) to the offset of the spectrum analyzer.

Integration Method

1. For peak emissions measurements, follow the procedures described in section H)5), “Procedures for Peak Unwanted Emissions Measurements above 1000 MHz”, except for the following changes:
 - Set RBW = 100 kHz
 - Set VBW = 3RBW
 - Perform a band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured. CAUTION: You must ensure that the spectrum analyzer or EMI receiver is set for peak-detection and max-hold for this measurement.
2. For average emissions measurements, follow the procedures described in section H)6), “Procedures for Average Unwanted Emissions Measurements above 1000 MHz”, except for the following changes:
 - Set RBW = 100 kHz
 - Set VBW = 3RBW
 - Perform a band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.

11.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Analyzer, Spectrum	E4446A	US44300386	2015-10-22	1 year
Rohde & Schwarz	Signal Analyzer	FSQ26	200749	2016-03-24	1 year
-	10dB attenuator	-	-	Each time ¹	N/A

Note¹: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

11.4 Test Environmental Conditions

Temperature:	22-24° C
Relative Humidity:	40-41 %
ATM Pressure:	103.1-104.1 kPa

The testing was performed by Frank Wang 2016-08-09 at RF site.

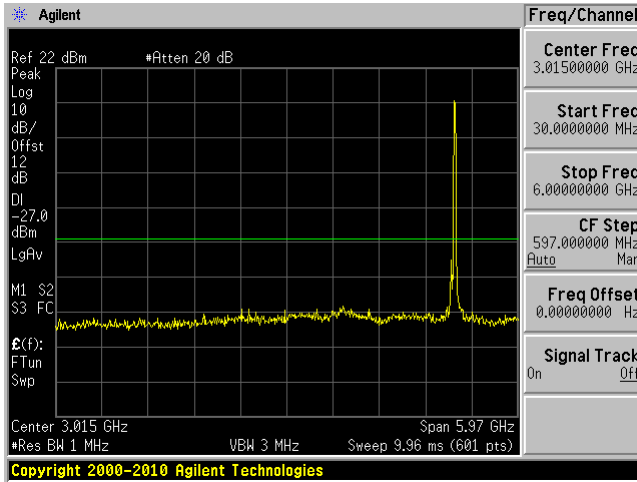
11.5 Test Results

Please refer to the following plots

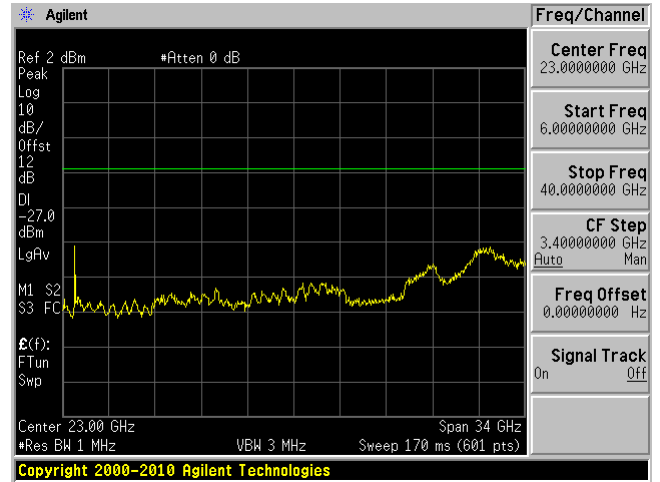
5150 - 5250 MHz

802.11a mode

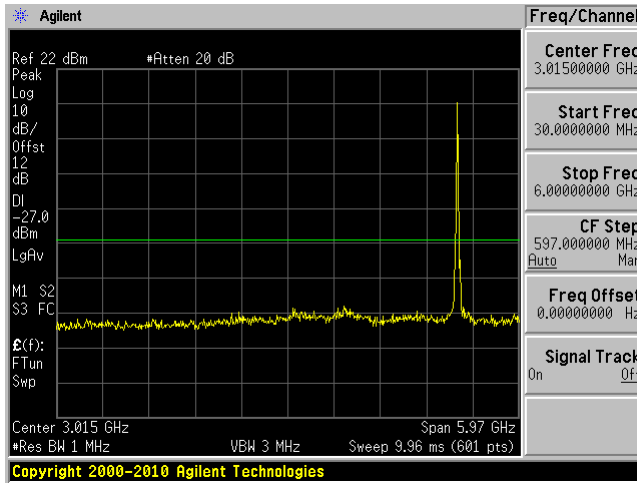
Low Channel 5180MHz (30MHz-6GHz)



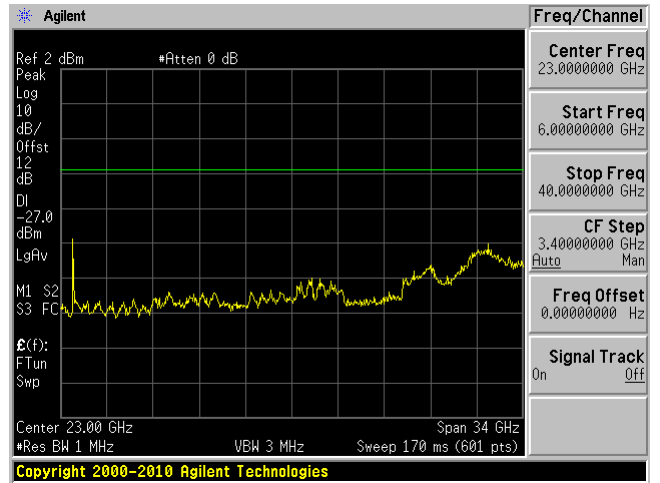
Low Channel 5180 MHz (6-40GHz)



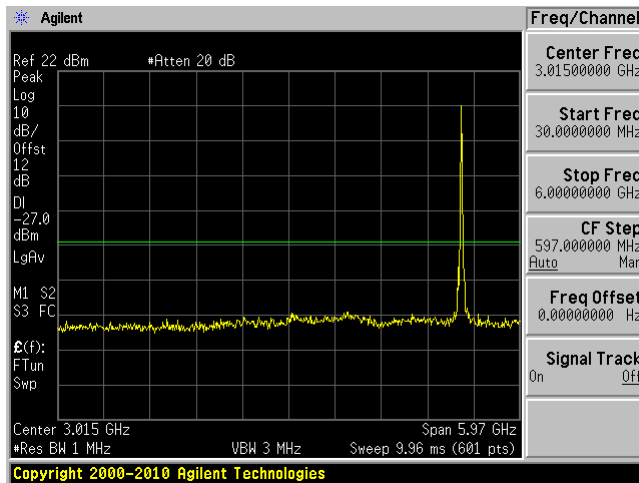
Middle Channel 5200MHz (30MHz-6GHz)



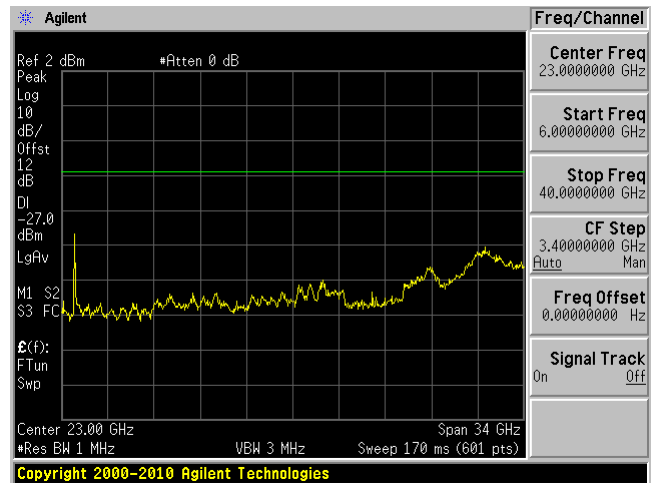
Middle Channel 5200 MHz (6-40GHz)



High Channel 5240MHz (30MHz-6GHz)

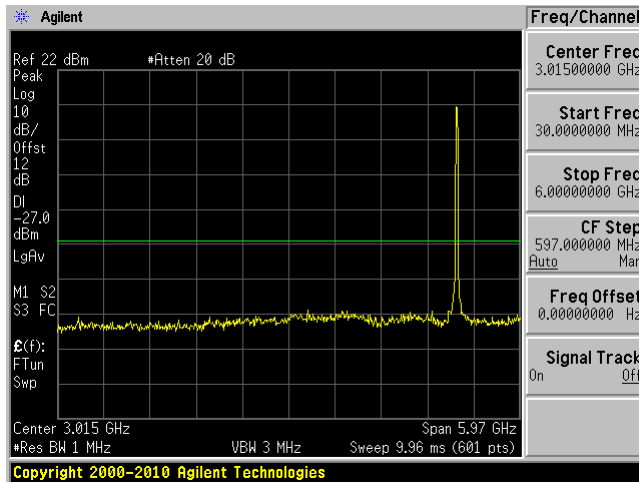


High Channel 5240 MHz (6-40GHz)

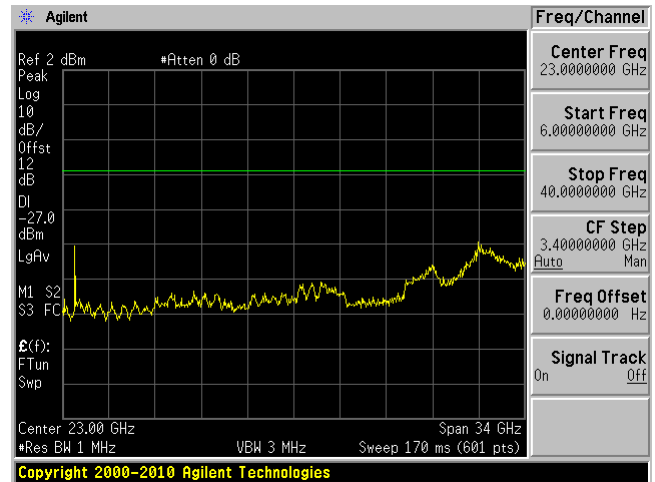


802.11n20 mode

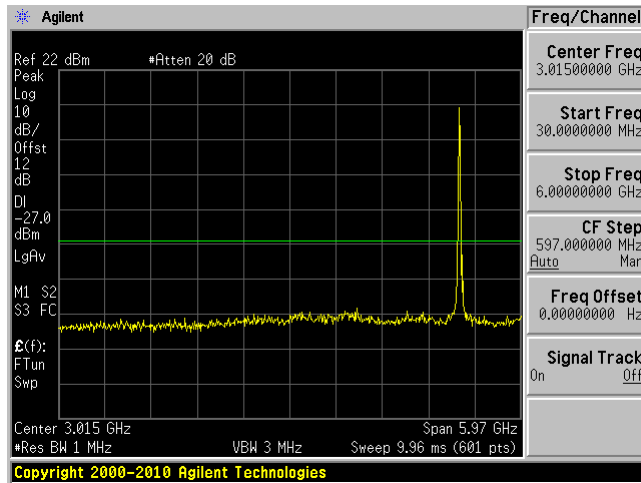
Low Channel 5180MHz (30MHz-6GHz)



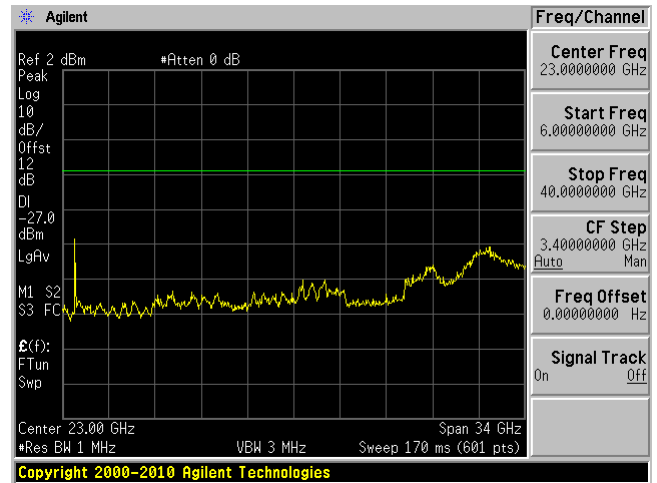
Low Channel 5180 MHz (6-40GHz)



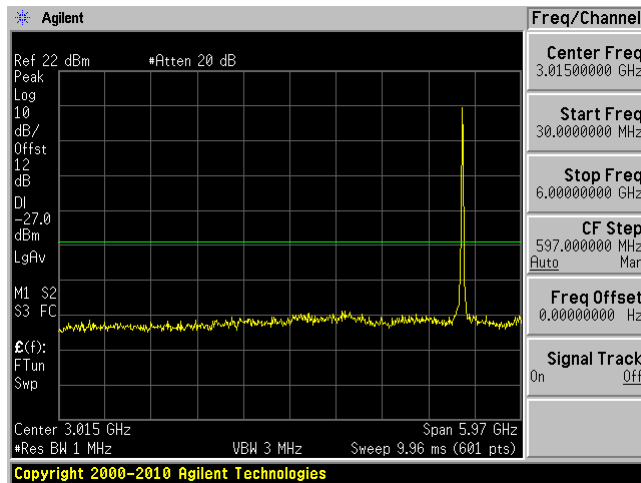
Middle Channel 5200MHz (30MHz-7GHz)



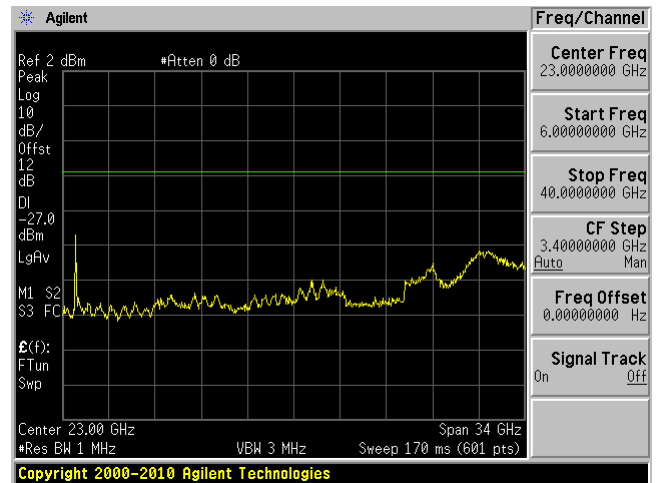
Middle Channel 5200 MHz (6-40GHz)



High Channel 5240MHz (30MHz-6GHz)

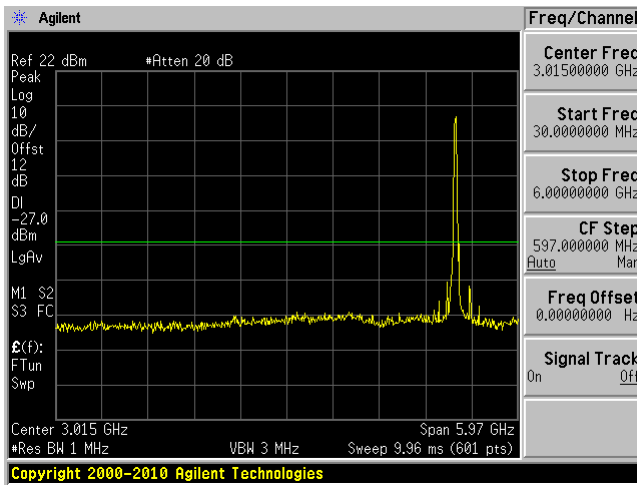


High Channel 5240 MHz (6-40GHz)

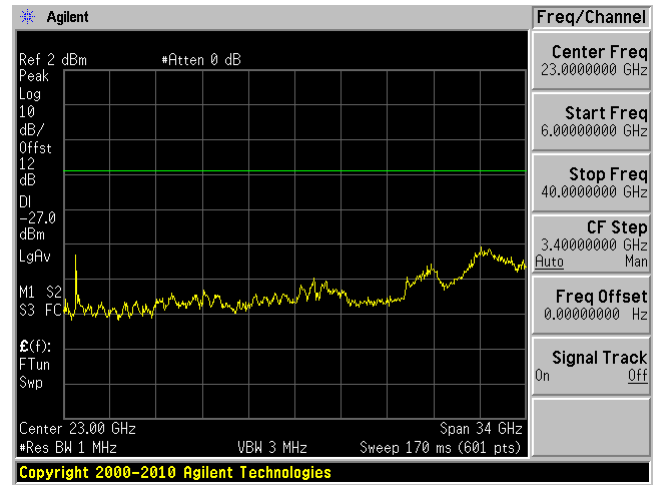


802.11n40 mode

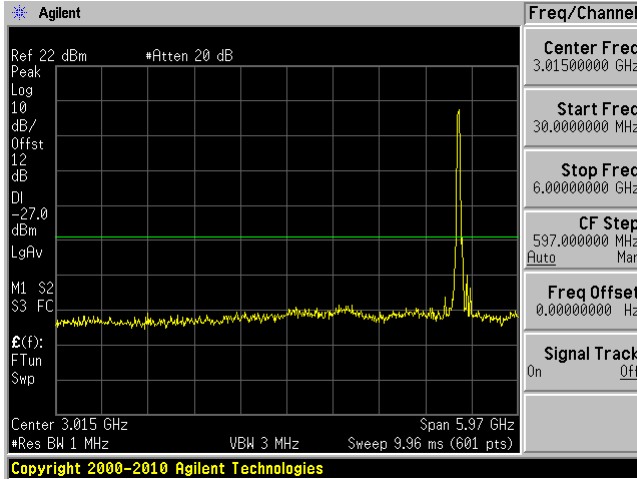
Low Channel 5190MHz (30MHz-6GHz)



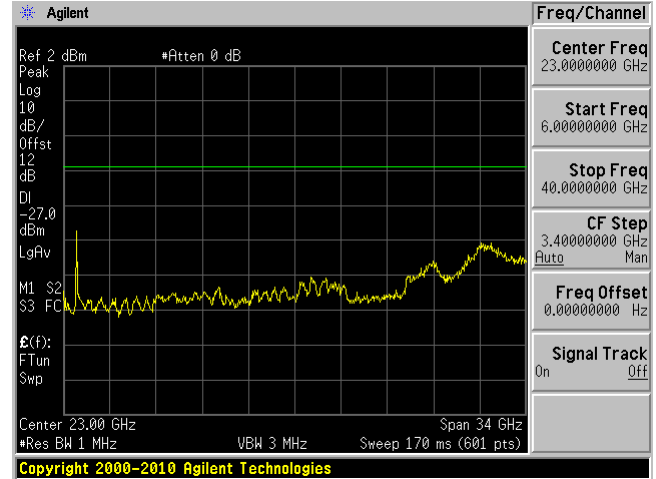
Low Channel 5190 MHz (6-40GHz)



High Channel 5230MHz (30MHz-6GHz)

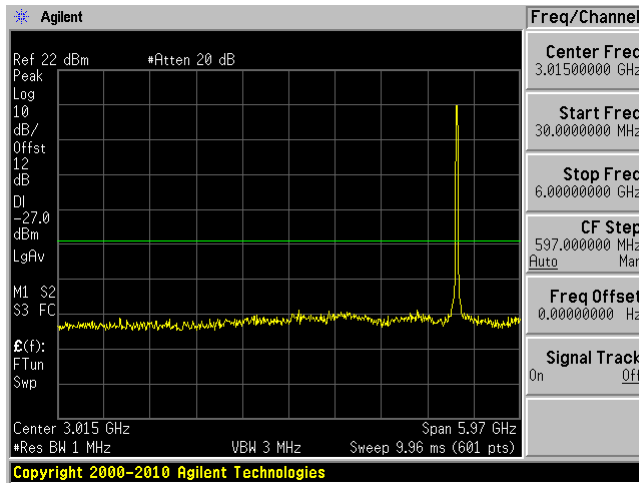


High Channel 5230 MHz (6-40GHz)

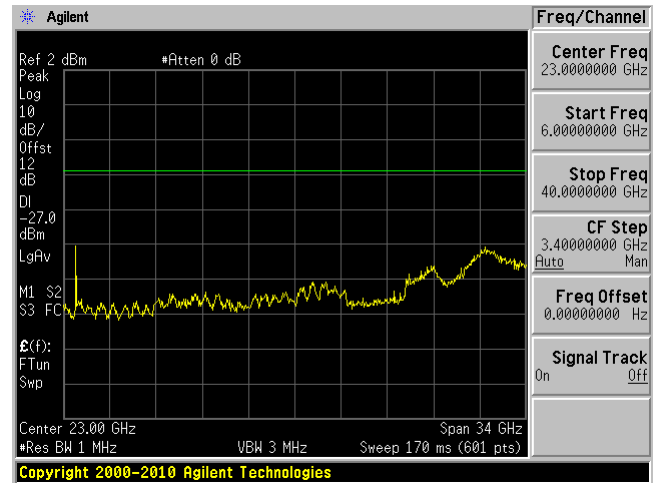


802.11ac20 mode

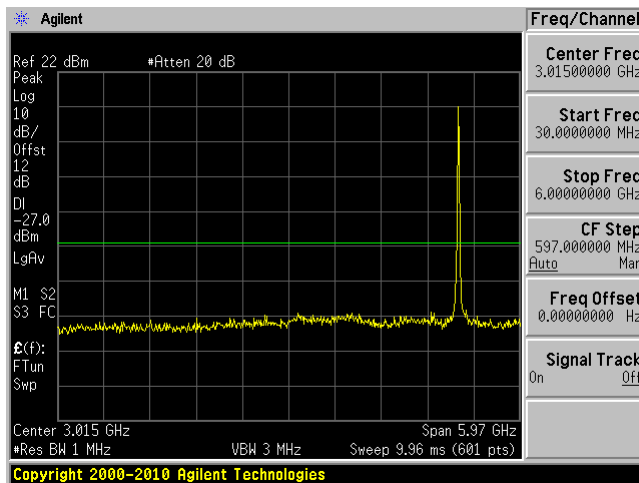
Low Channel 5180MHz (30MHz-6GHz)



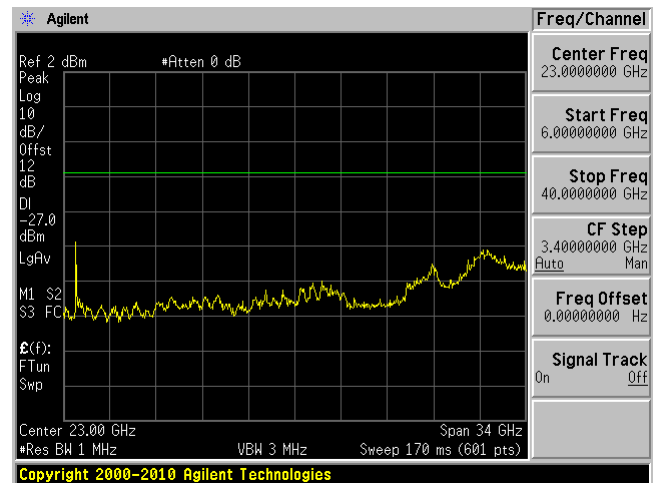
Low Channel 5180 MHz (6-40GHz)



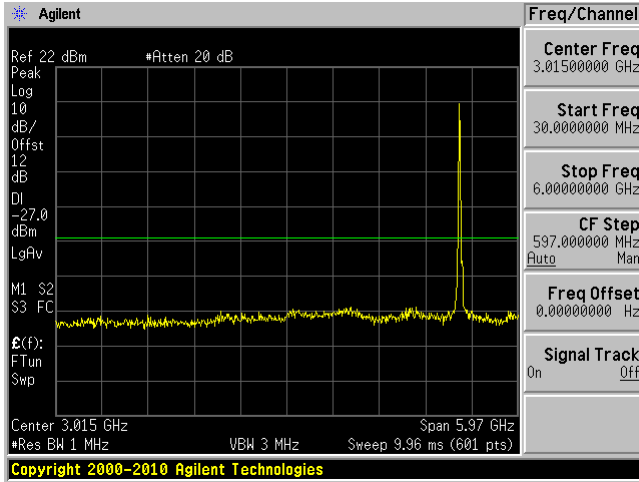
Middle Channel 5200MHz (30MHz-6GHz)



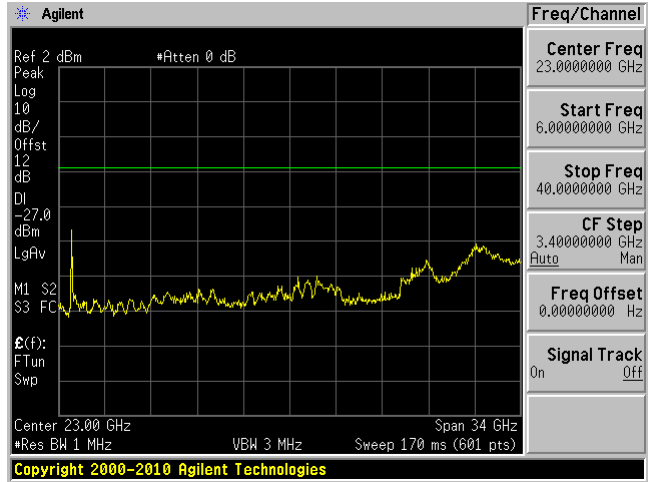
Middle Channel 5200 MHz (6GHz – 40GHz)



High Channel 5240MHz (30MHz-6GHz)

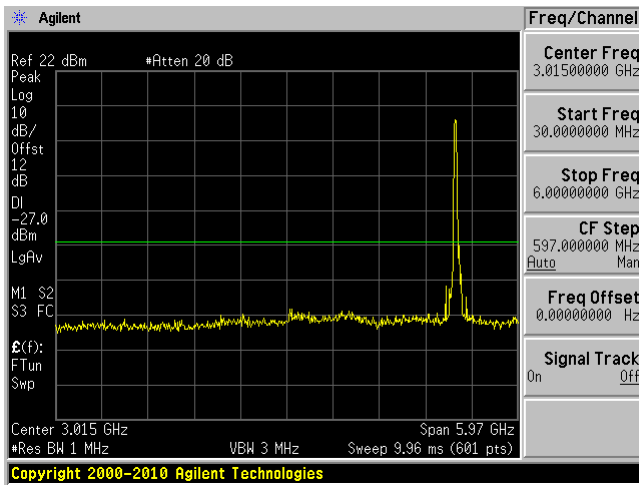


High Channel 5240 MHz (6GHz – 40GHz)

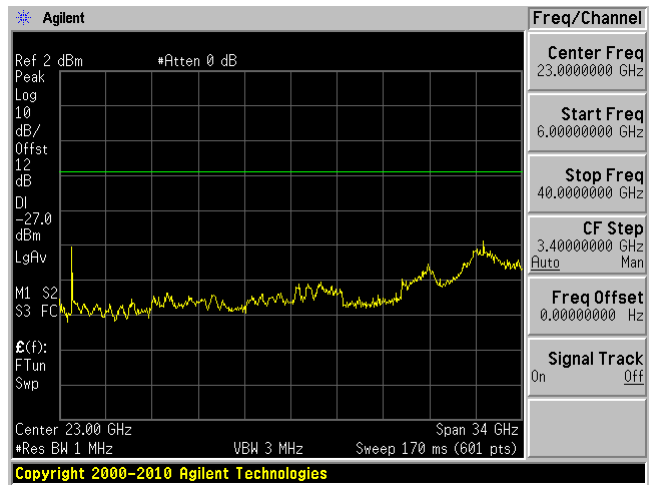


802.11ac40 mode

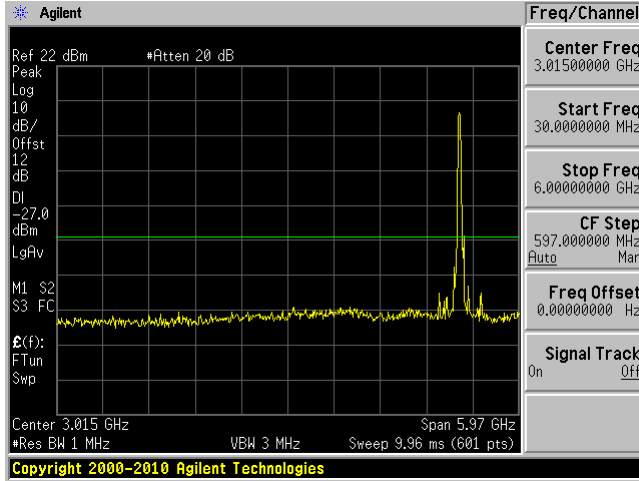
Low Channel 5190MHz (30MHz-6GHz)



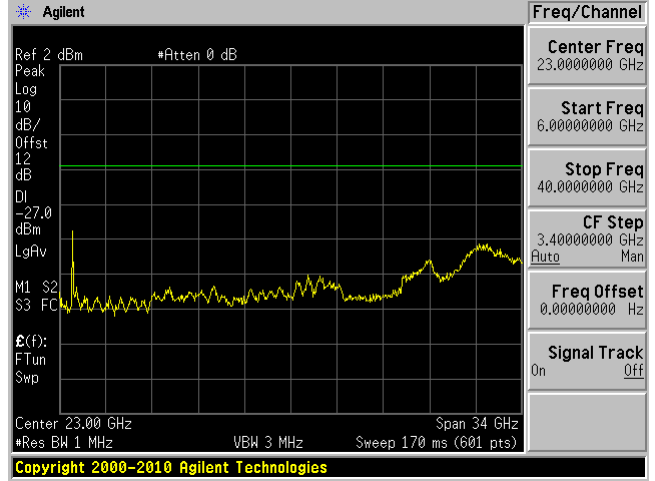
Low Channel 5190 MHz (6-40GHz)



High Channel 5230MHz (30MHz-6GHz)

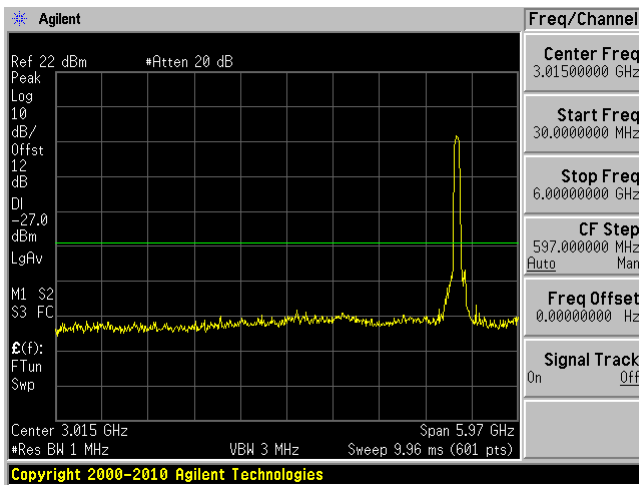


High Channel 5230 MHz (6GHz – 40GHz)

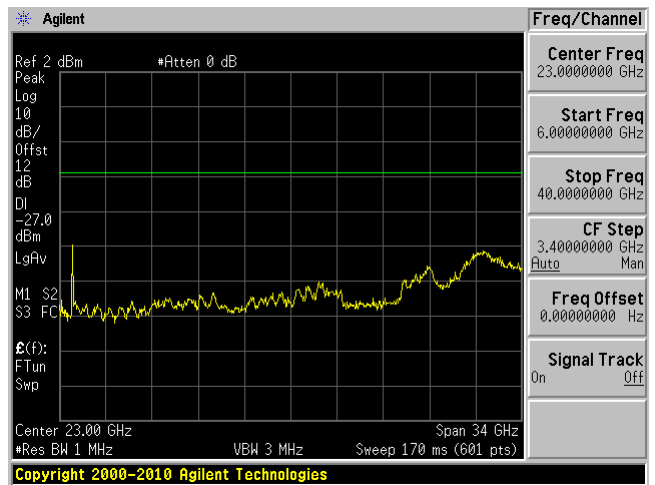


802.11ac80 mode

5210 MHz (30MHz-6GHz)



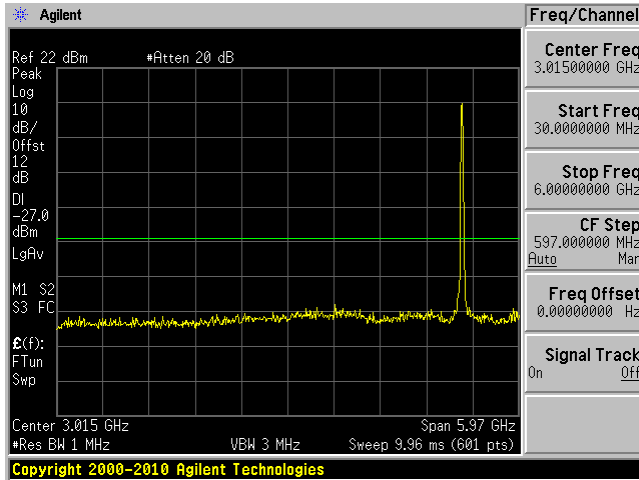
5210 MHz (6GHz – 40GHz)



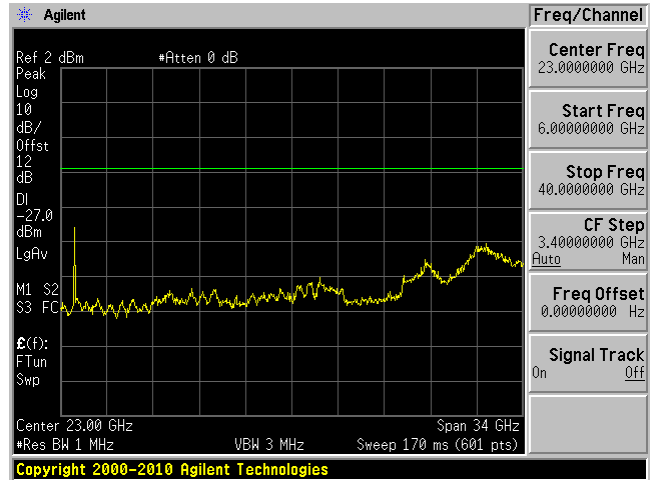
5250 – 5350 MHz

802.11a mode

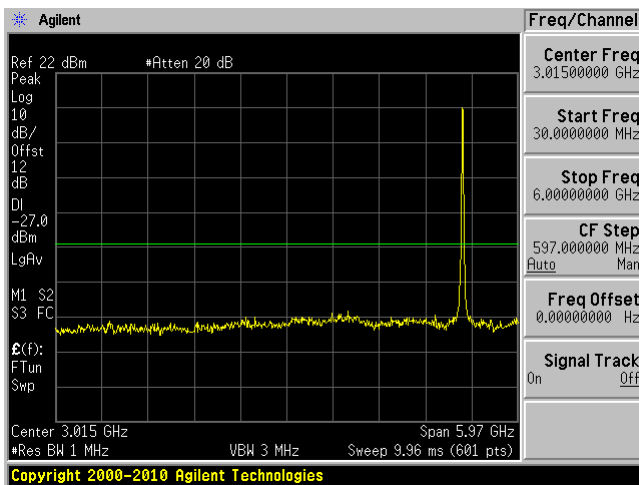
Low Channel 5260 MHz (30MHz-6GHz)



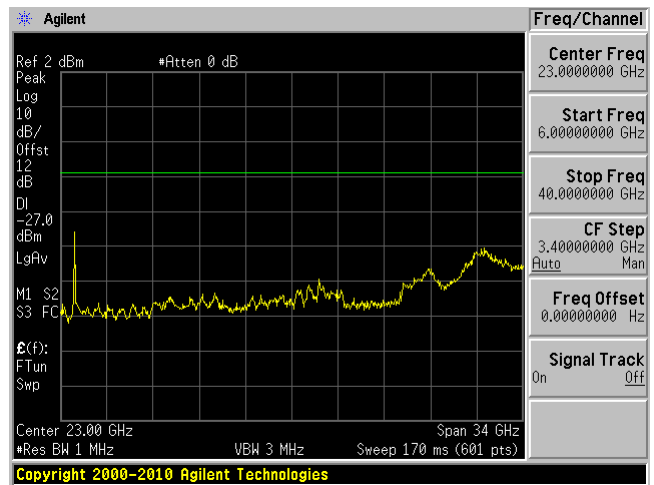
Low Channel 5260 MHz (6-40GHz)



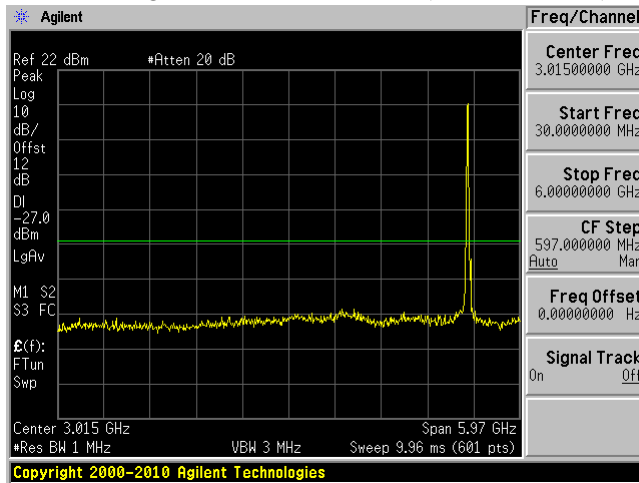
Middle Channel 5280 MHz (30MHz-6GHz)



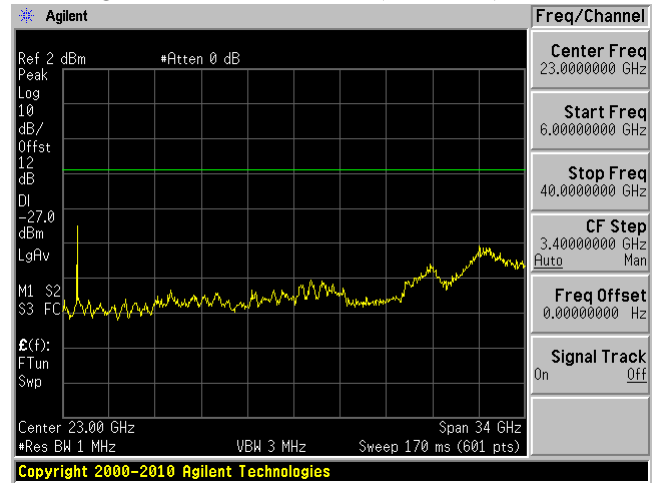
Middle Channel 5280 MHz (6-40GHz)



High Channel 5320 MHz (30MHz-6GHz)

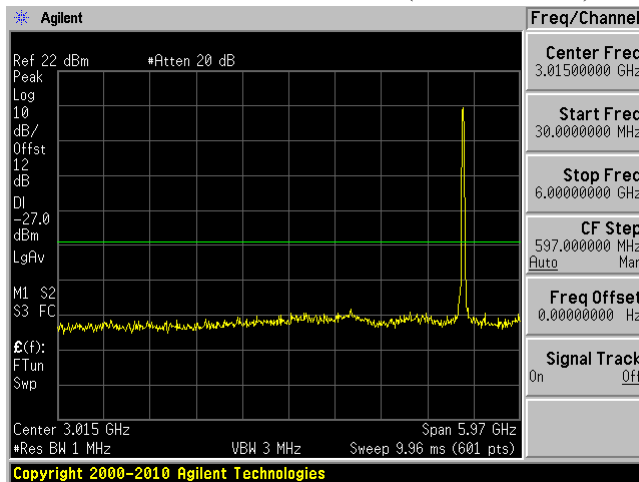


High Channel 5320 MHz (7-40GHz)

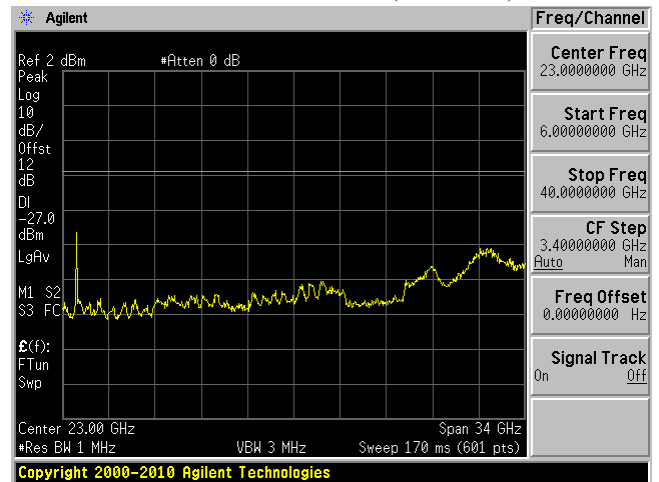


802.11n20 mode

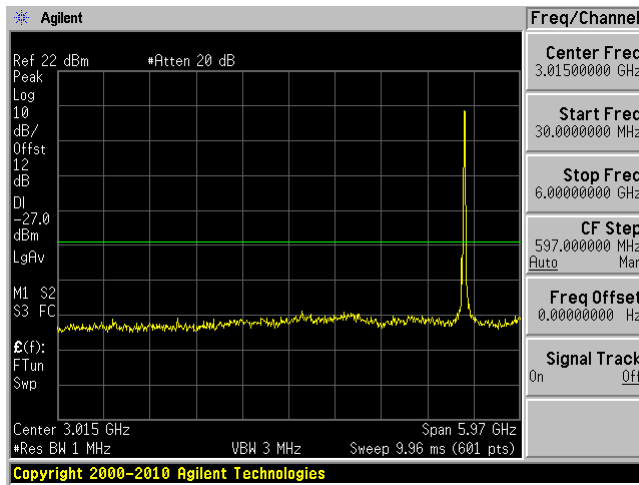
Low Channel 5260 MHz (30MHz-6GHz)



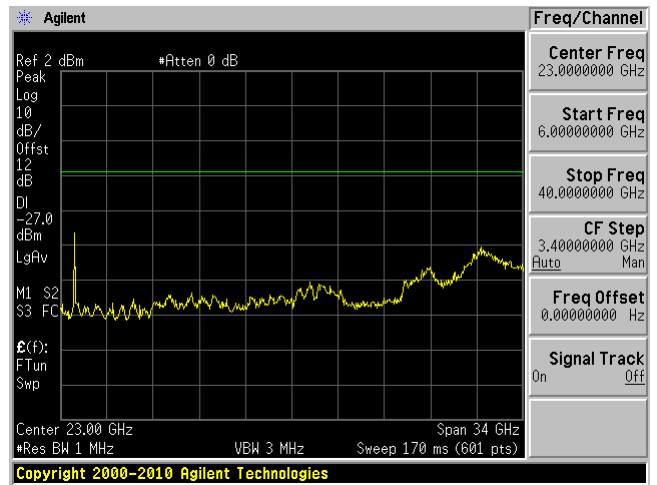
Low Channel 5260 MHz (6-40GHz)



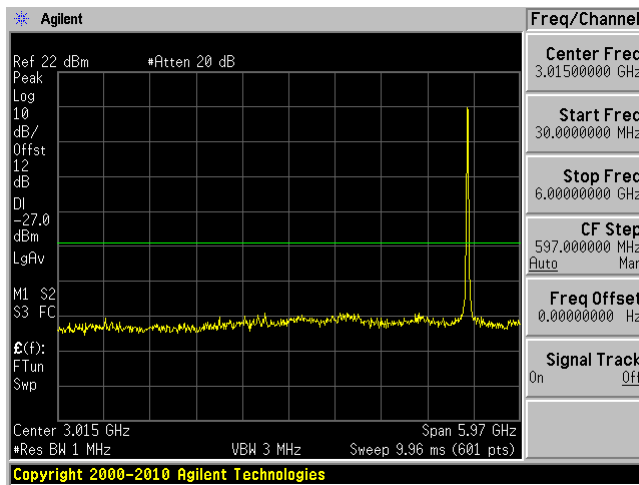
Middle Channel 5280MHz (30MHz-6GHz)



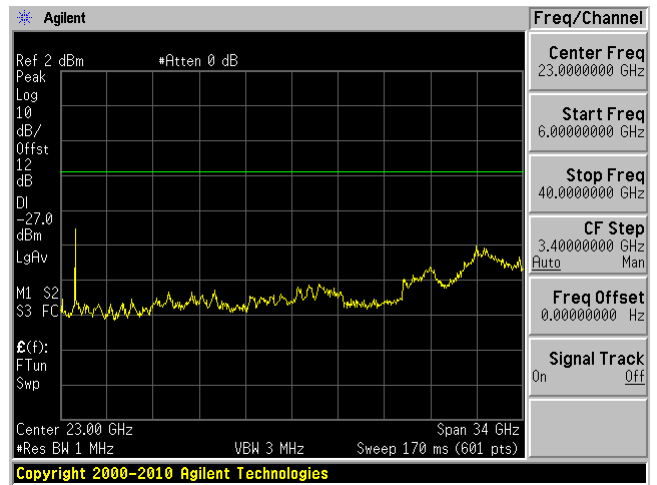
Middle Channel 5280 MHz (6-40GHz)



High Channel 5320 MHz (30MHz-6GHz)

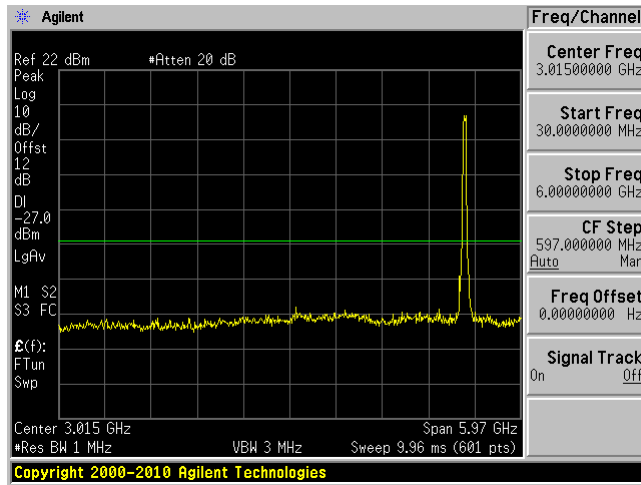


High Channel 5320 MHz (6-40GHz)

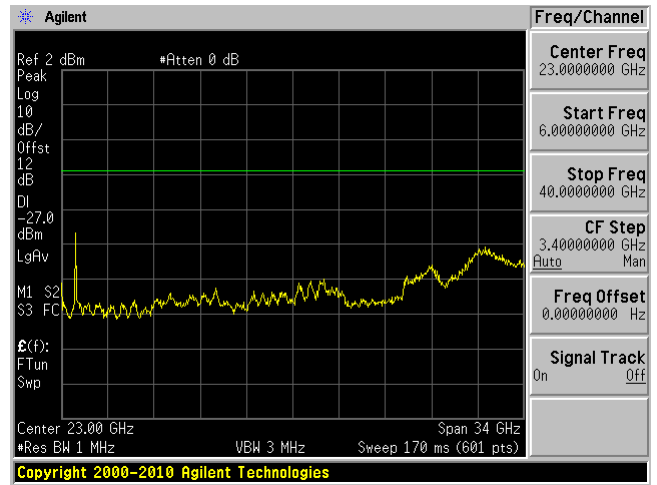


802.11n40 mode

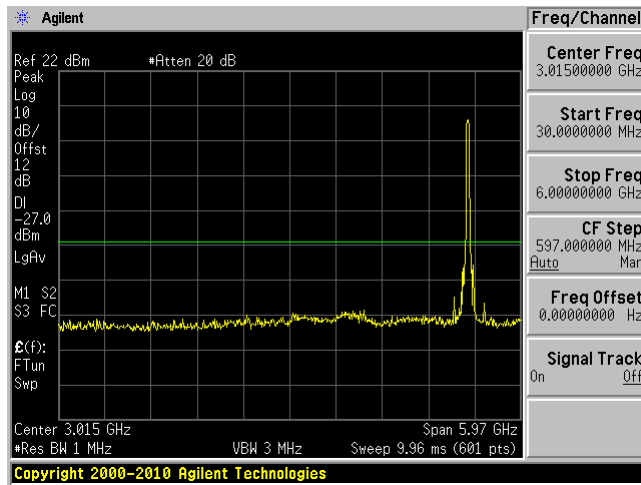
Low Channel 5270 MHz (30MHz-6GHz)



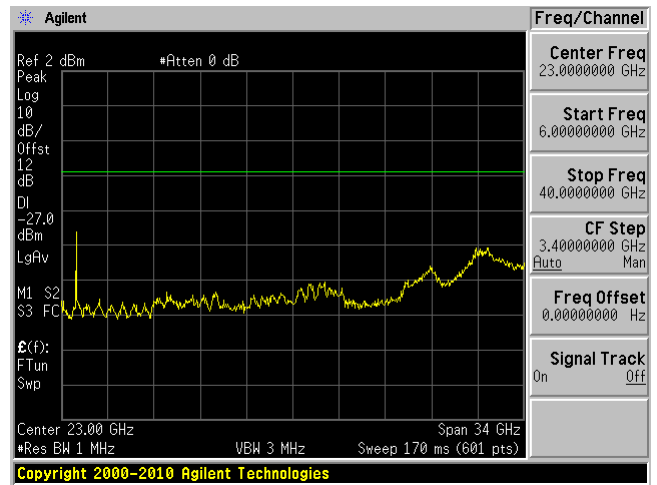
Low Channel 5270 MHz (6-40GHz)



High Channel 5310 MHz (30MHz-6GHz)

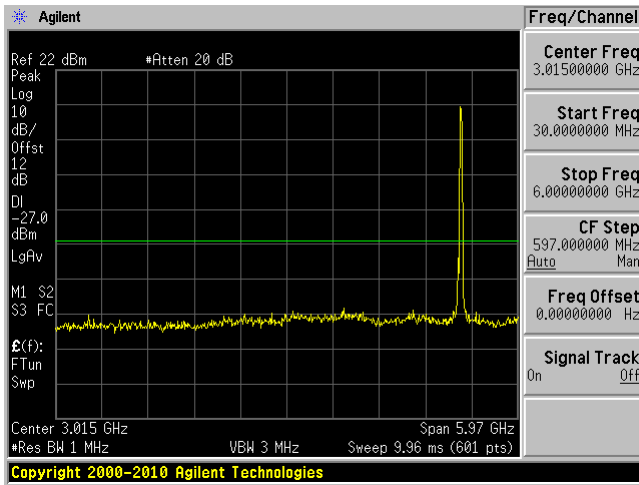


High Channel 5310 MHz (6-40GHz)

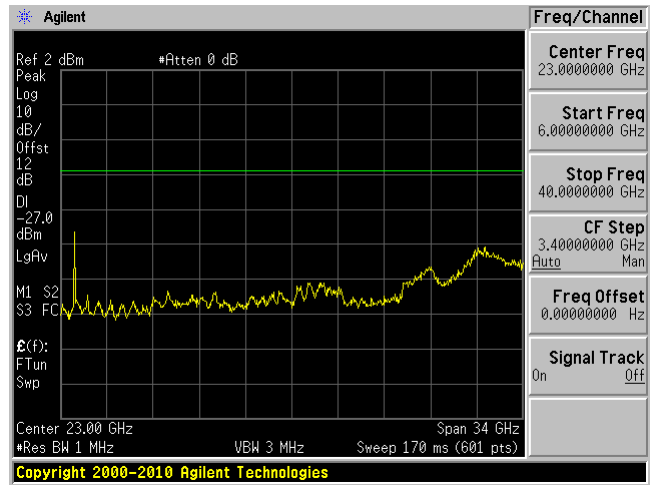


802.11ac20 mode

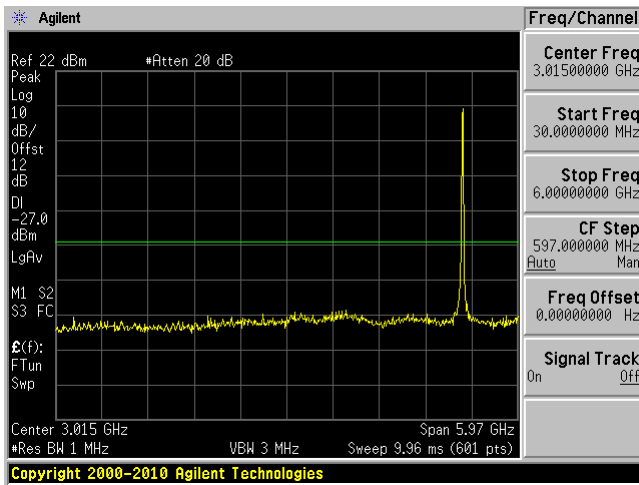
Low Channel 5260MHz (30MHz-6GHz)



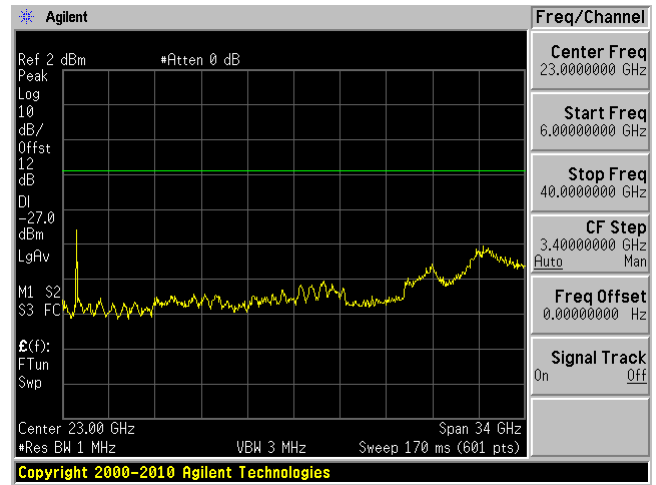
Low Channel 5260 MHz (6-40GHz)



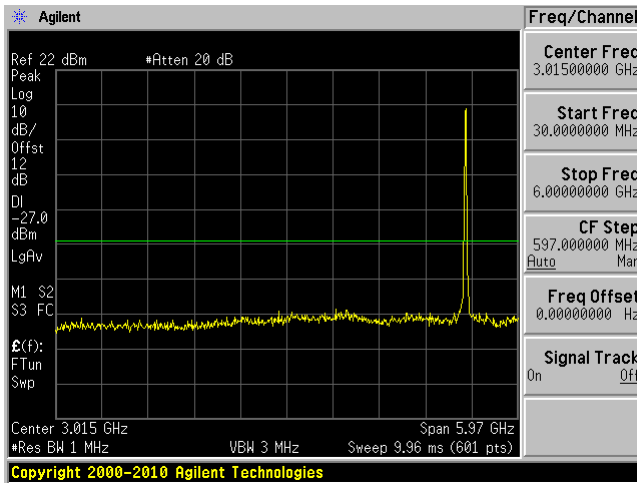
Middle Channel 5280 MHz (30MHz-6GHz)



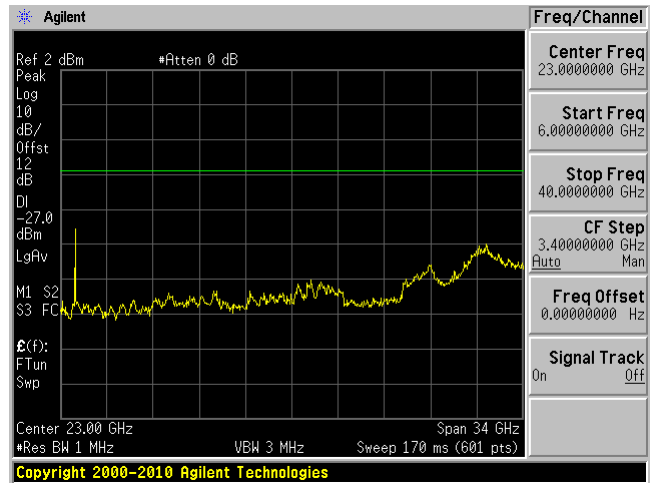
Middle Channel 5280 MHz (6GHz – 40GHz)



High Channel 5320 MHz (30MHz-6GHz)

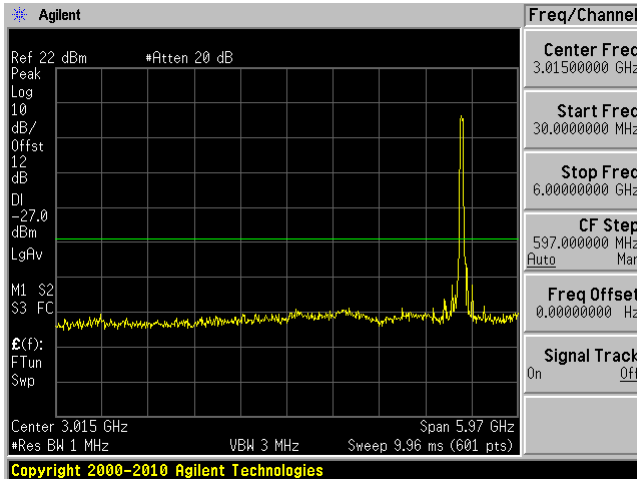


High Channel 5320 MHz (6GHz – 40GHz)

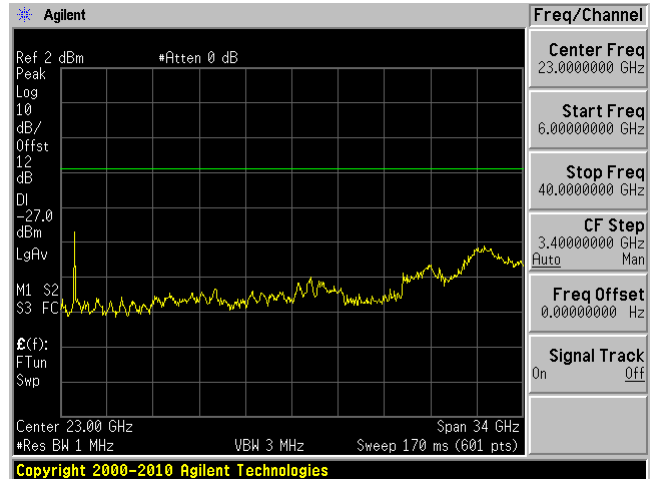


802.11ac40 mode

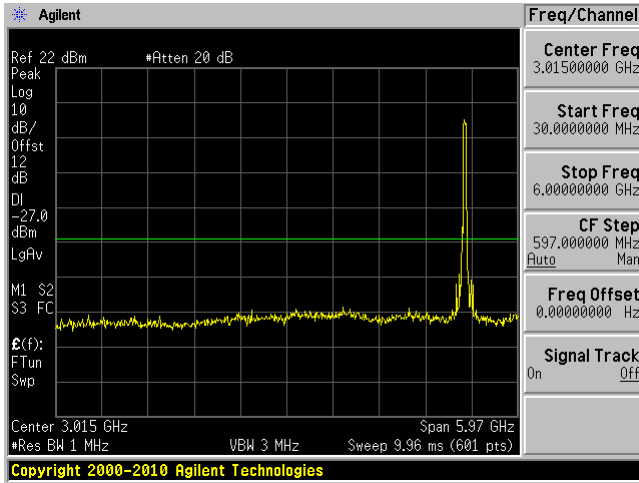
Low Channel 5270 MHz (30MHz-6GHz)



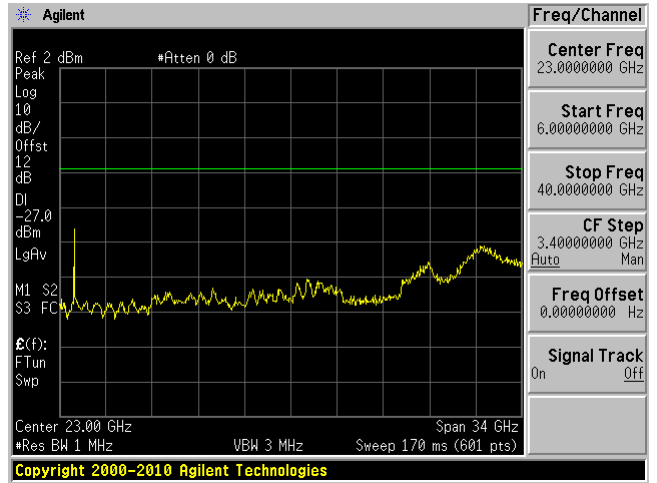
Low Channel 5270 MHz (6-40GHz)



High Channel 5310 MHz (30MHz-6GHz)

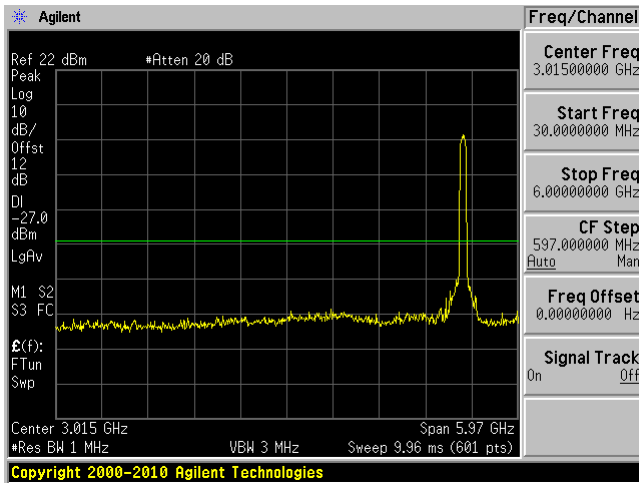


High Channel 5310 MHz (6GHz - 40GHz)

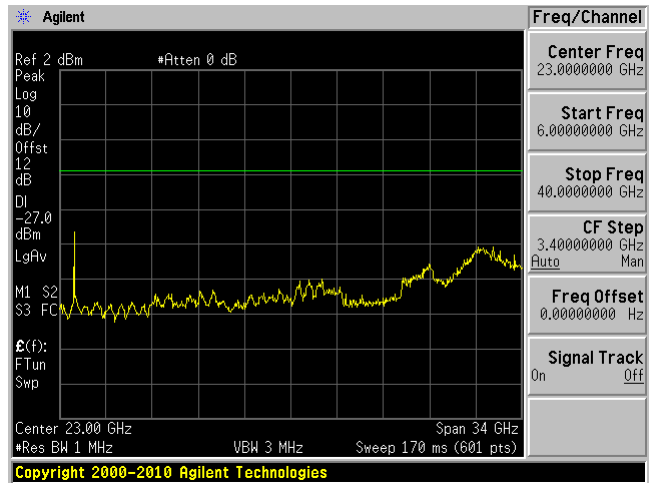


802.11ac80 mode

5290 MHz (30MHz-6GHz)



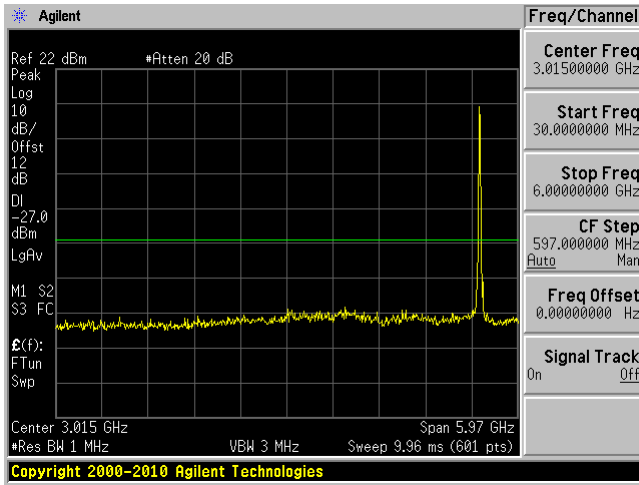
5290 MHz (6GHz - 40GHz)



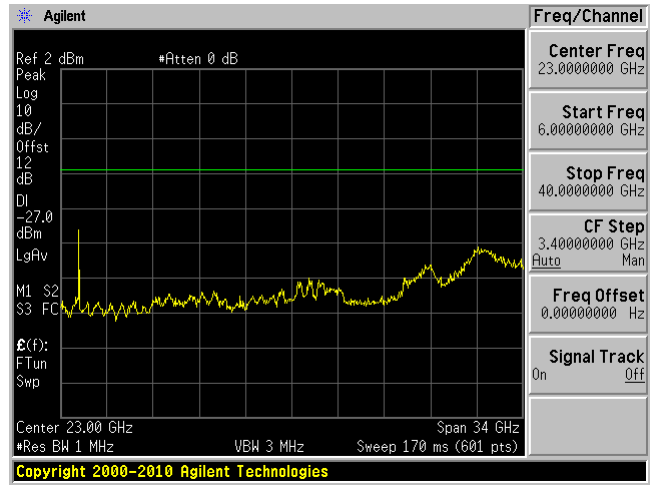
5470 – 5725 MHz

802.11a mode

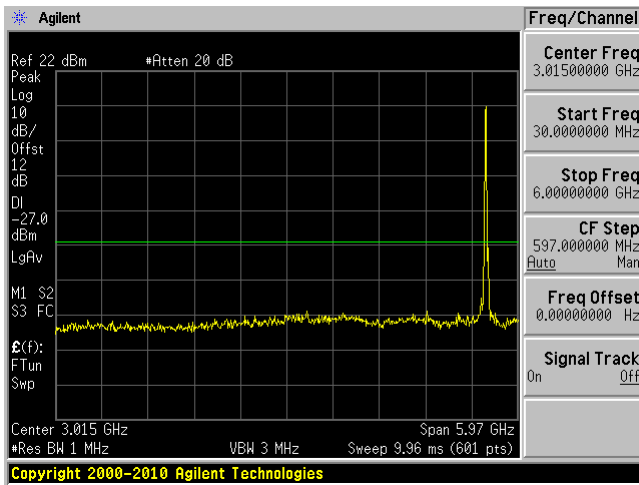
Low Channel 5500 MHz (30MHz-6GHz)



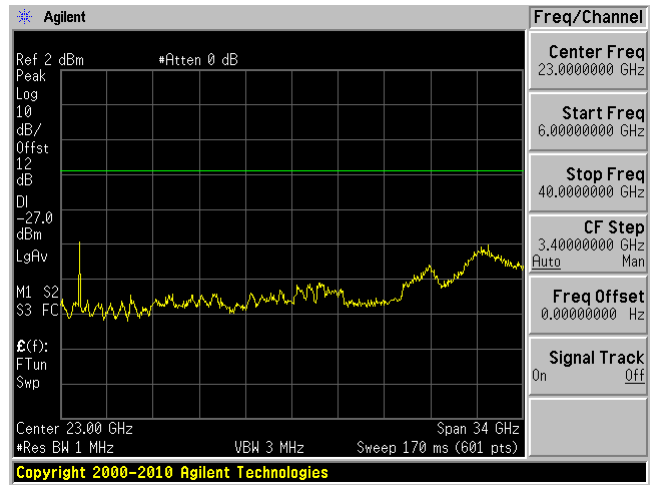
Low Channel 5500 MHz (6-40GHz)



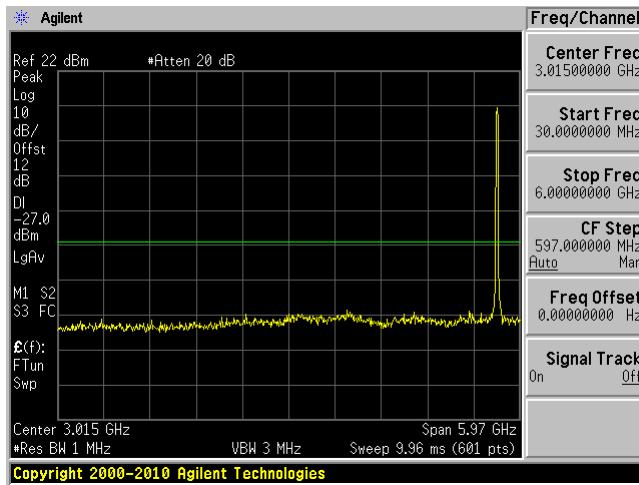
Middle Channel 5580 MHz (30MHz-6GHz)



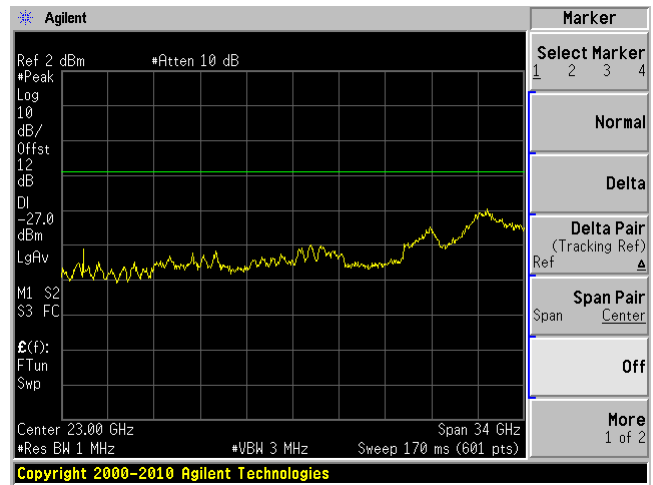
Middle Channel 5580 MHz (6-40GHz)



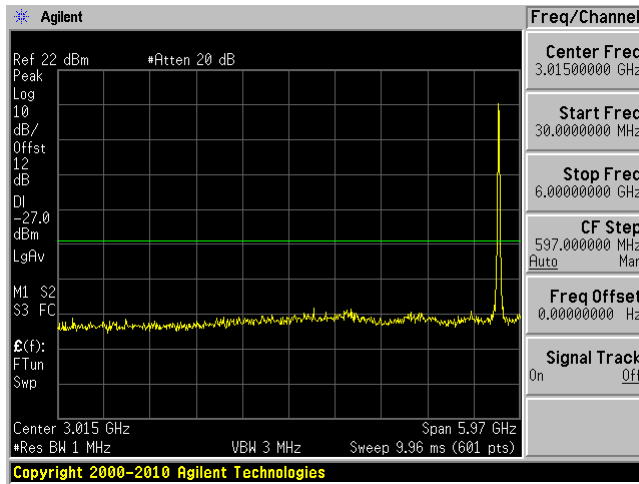
Middle Channel 5700 MHz (30MHz-6GHz)



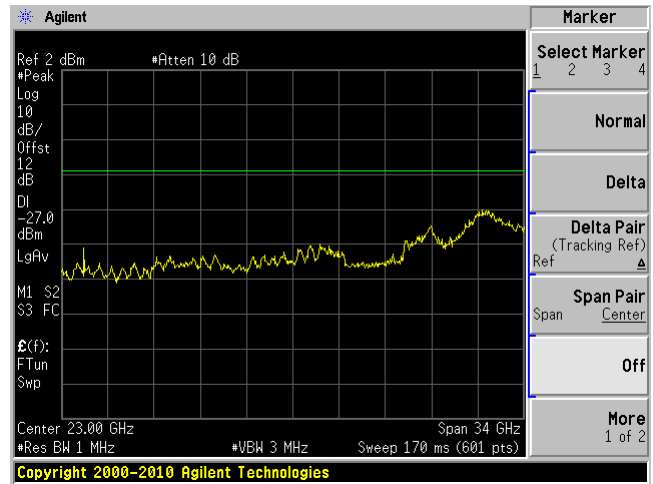
Middle Channel 5700 MHz (6-40GHz)



High Channel 5720 MHz (30MHz-6GHz)

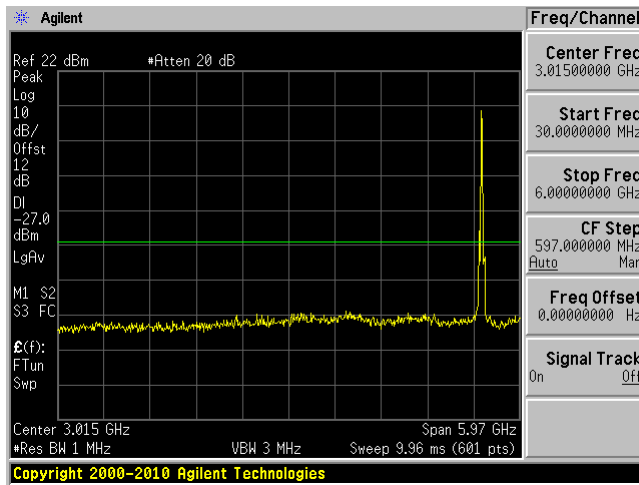


High Channel 5720 MHz (6-40GHz)

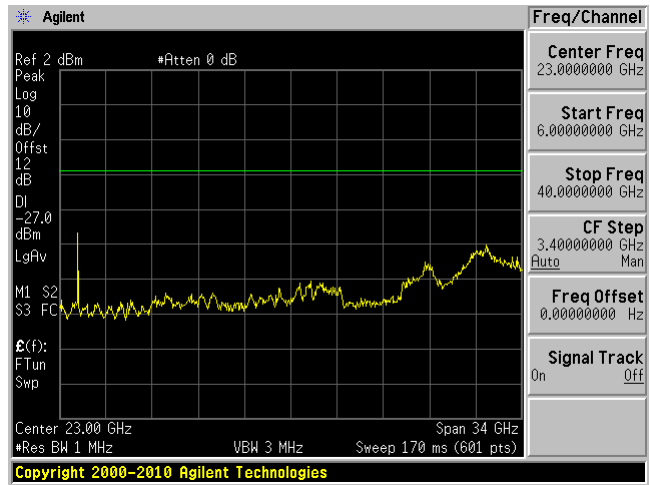


802.11n20 mode

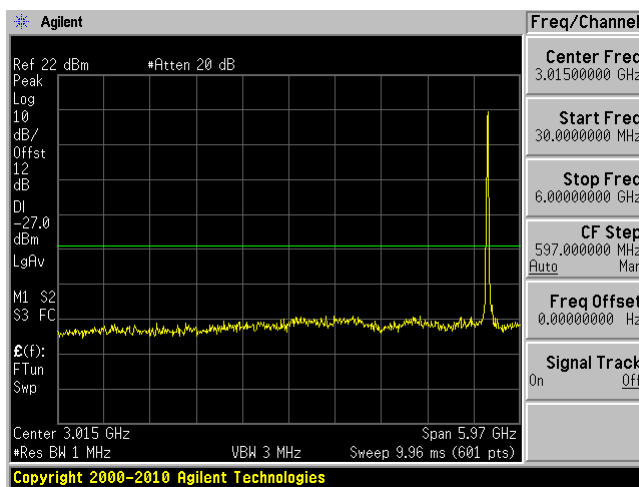
Low Channel 5500 MHz (30MHz-6GHz)



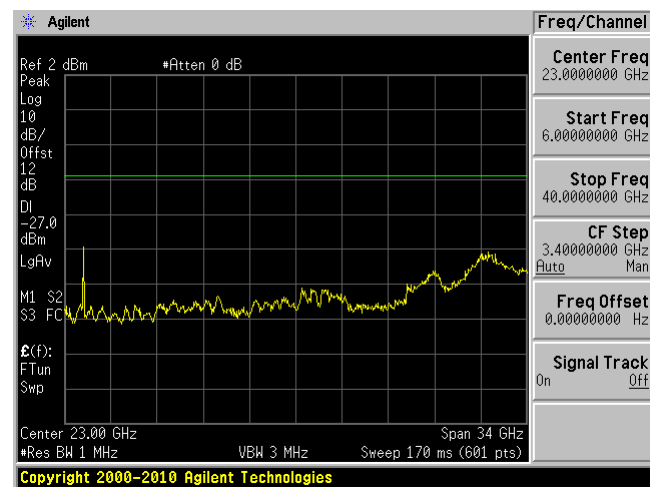
Low Channel 5500 MHz (6-40GHz)



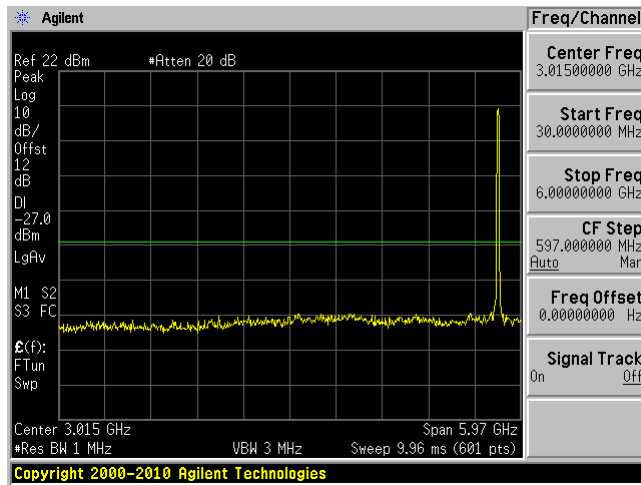
Middle Channel 5580 MHz (30MHz-6GHz)



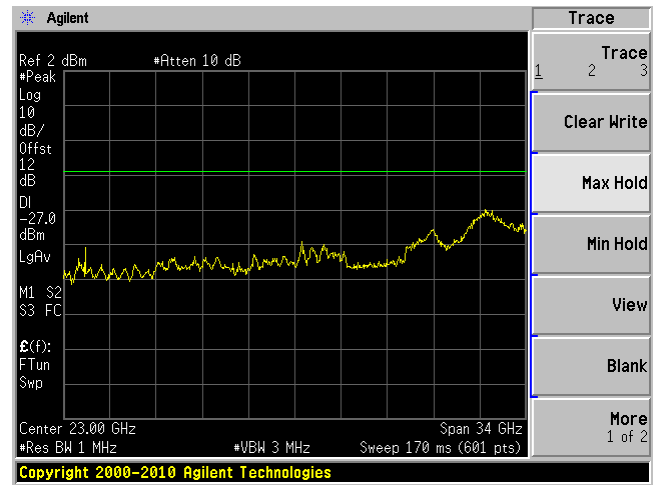
Middle Channel 5580 MHz (6-40GHz)



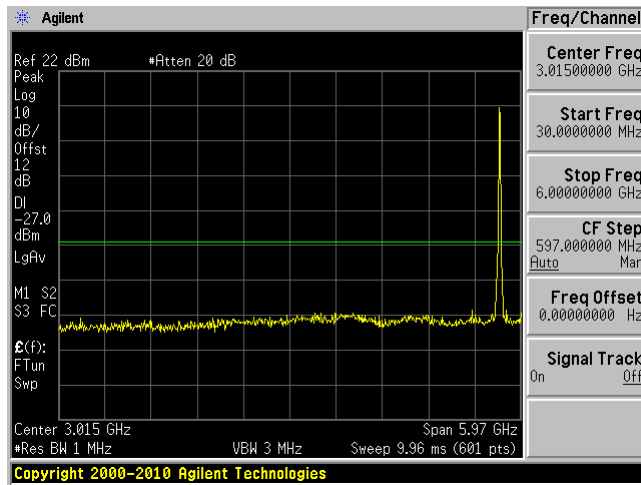
Middle Channel 5700 MHz (30MHz-6GHz)



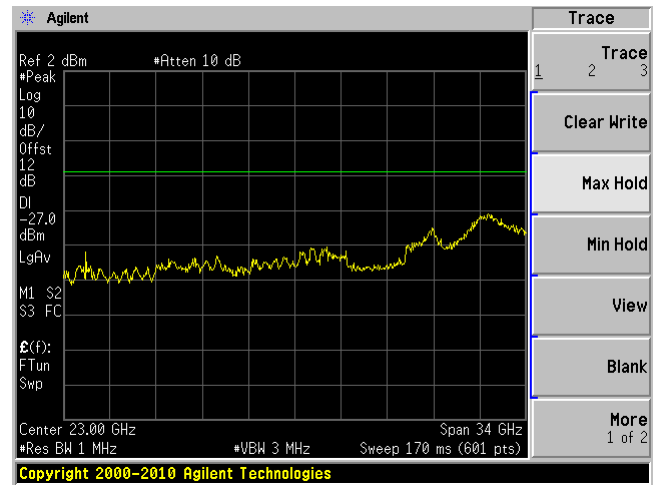
Middle Channel 5700 MHz (6-40GHz)



High Channel 5720 MHz (30MHz-6GHz)

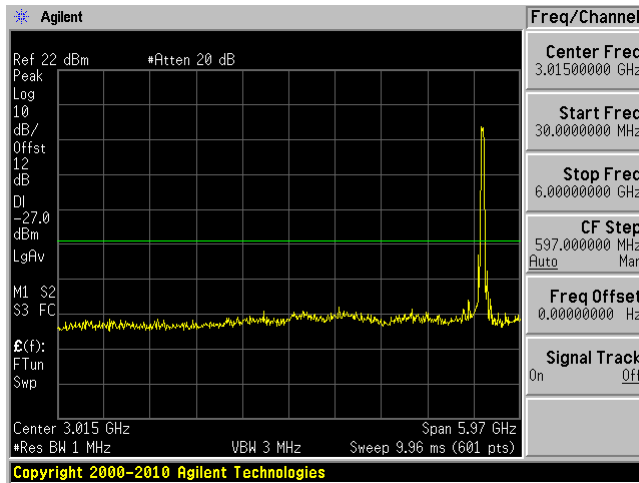


High Channel 5720 MHz (6-40GHz)

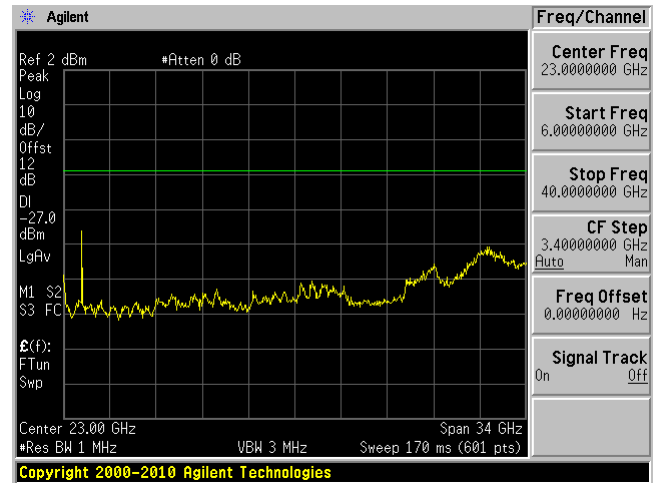


802.11n40 mode

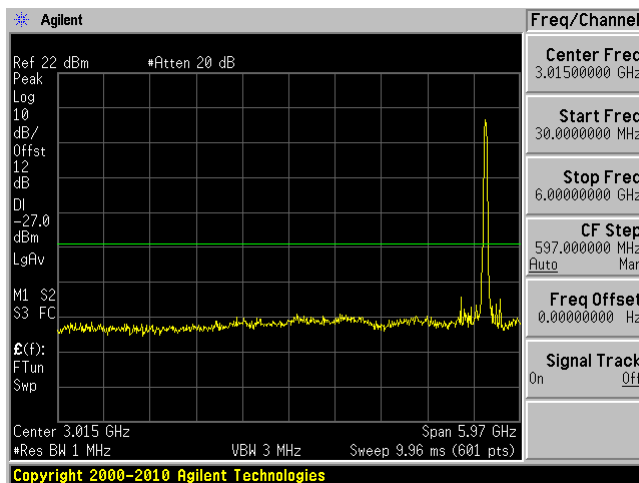
Low Channel 5510 MHz (30MHz-6GHz)



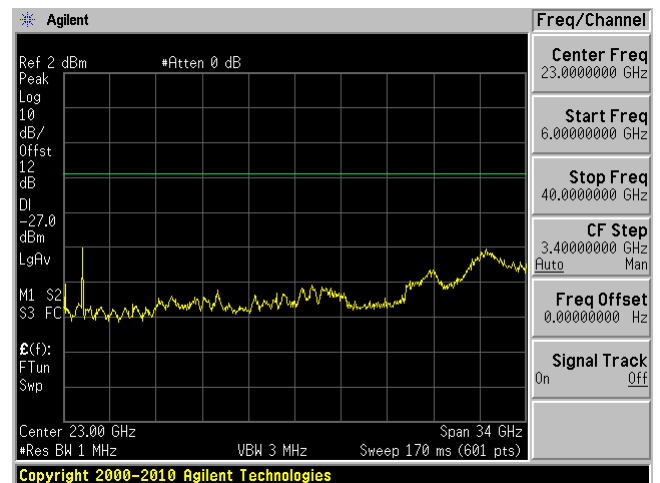
Low Channel 5510 MHz (6-40GHz)



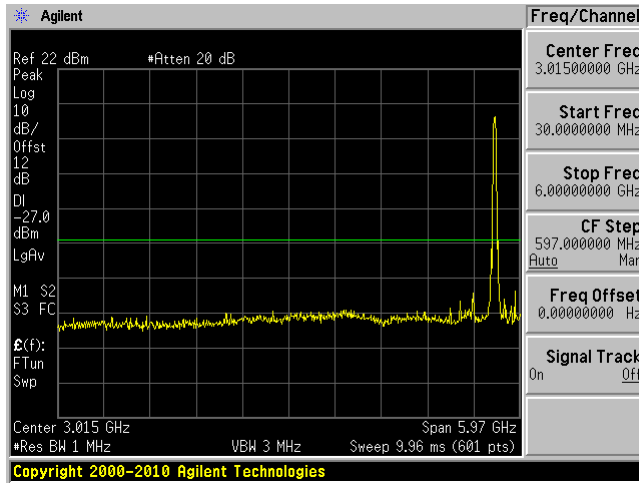
Middle Channel 5550 MHz (30MHz-6GHz)



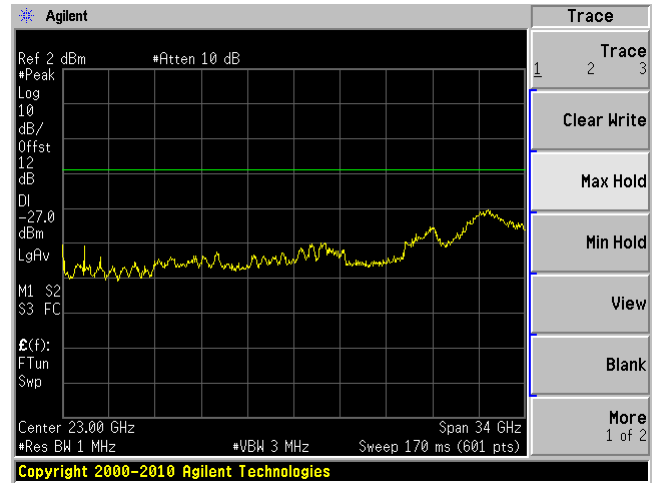
Middle Channel 5550 MHz (6-40GHz)



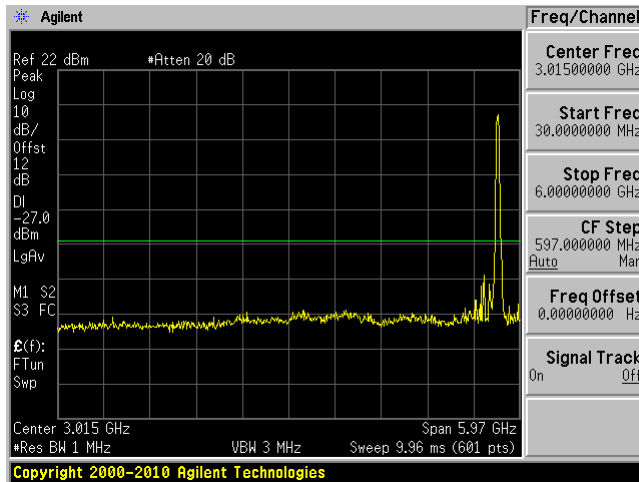
Middle Channel 5670 MHz (30MHz-6GHz)



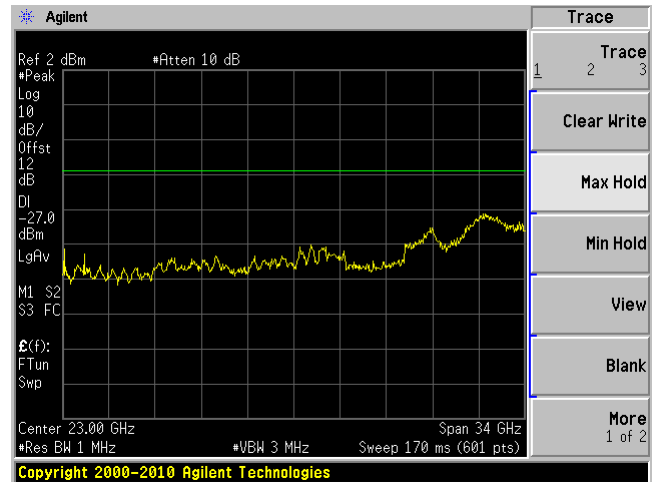
Middle Channel 5670 MHz (6-40GHz)



High Channel 5710 MHz (30MHz-6GHz)

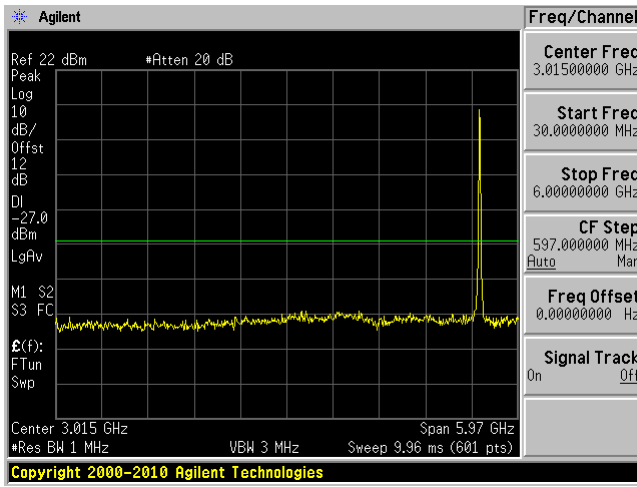


High Channel 5710 MHz (6-40GHz)

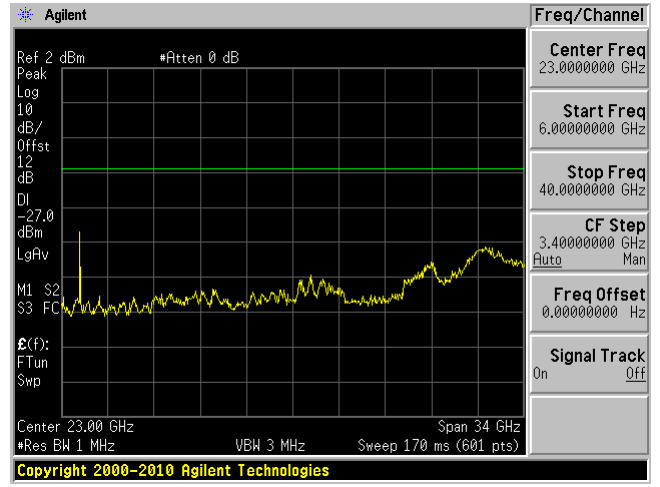


802.11ac20 mode

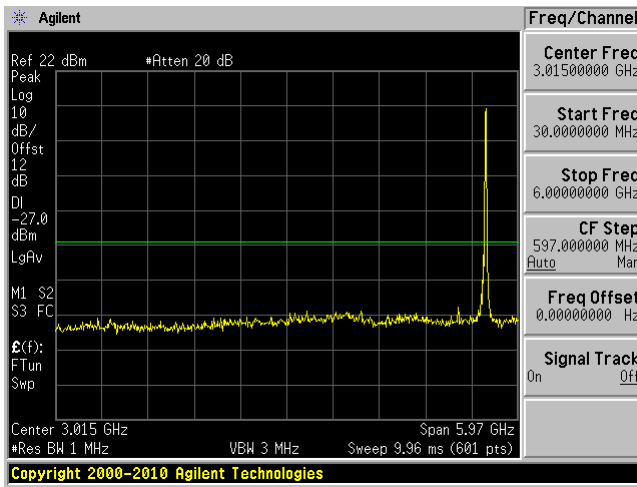
Low Channel 5500MHz (30MHz-6GHz)



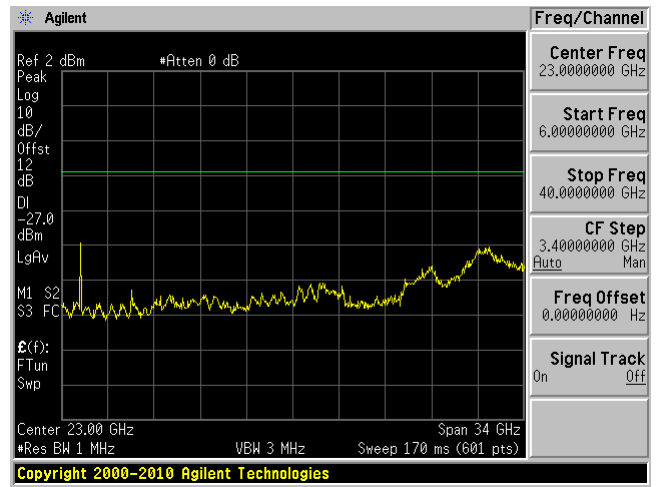
Low Channel 5500 MHz (6-40GHz)



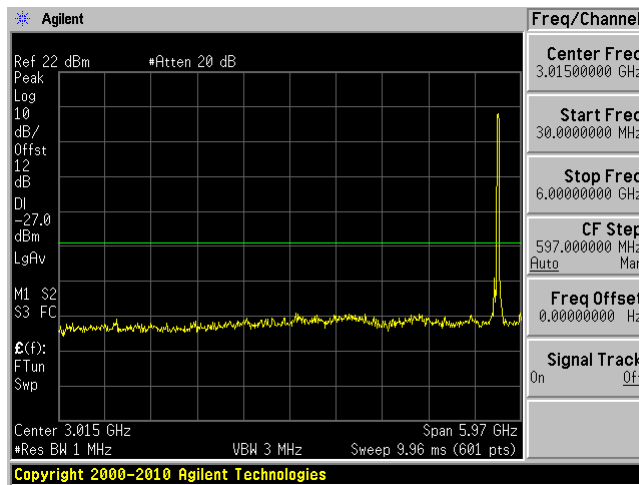
Middle Channel 5580 MHz (30MHz-6GHz)



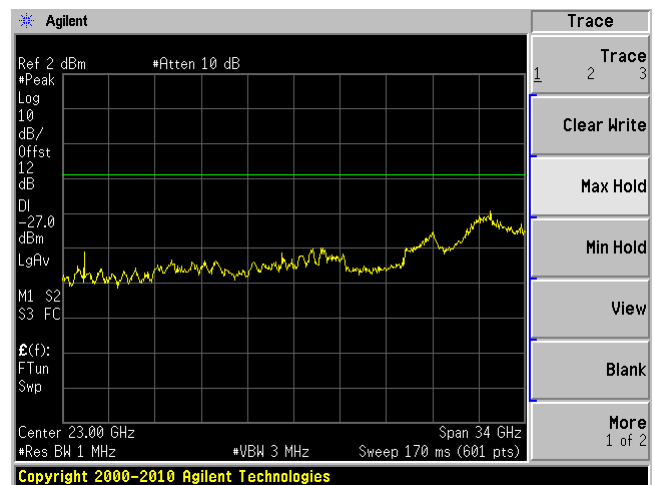
Middle Channel 5580 MHz (6GHz - 40GHz)



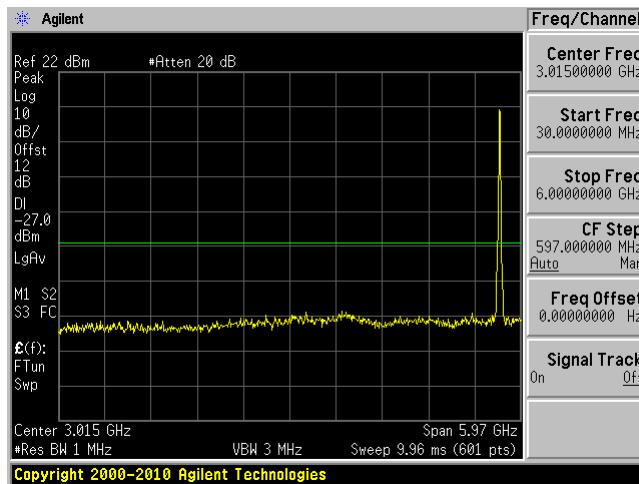
Middle Channel 5700 MHz (30MHz-6GHz)



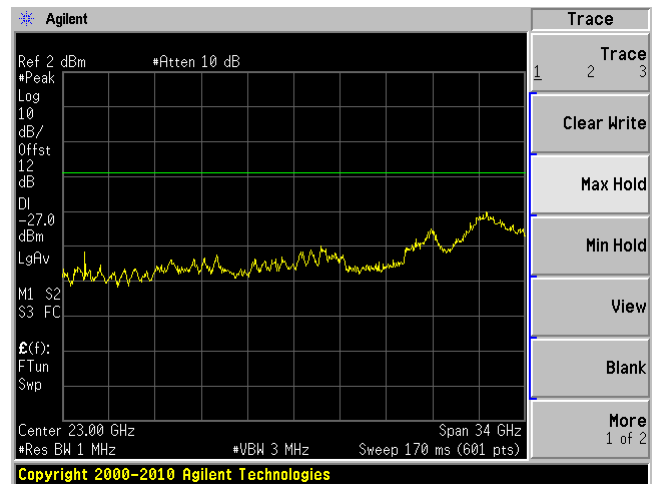
Middle Channel 5700 MHz (6GHz – 40GHz)



High Channel 5720MHz (30MHz-6GHz)

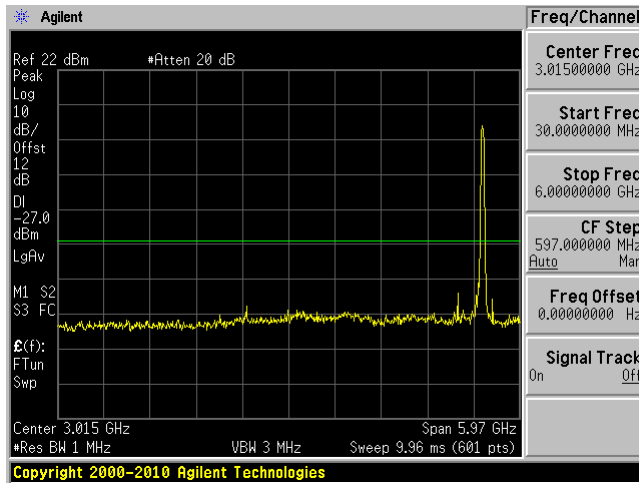


High Channel 5720 MHz (6-40GHz)

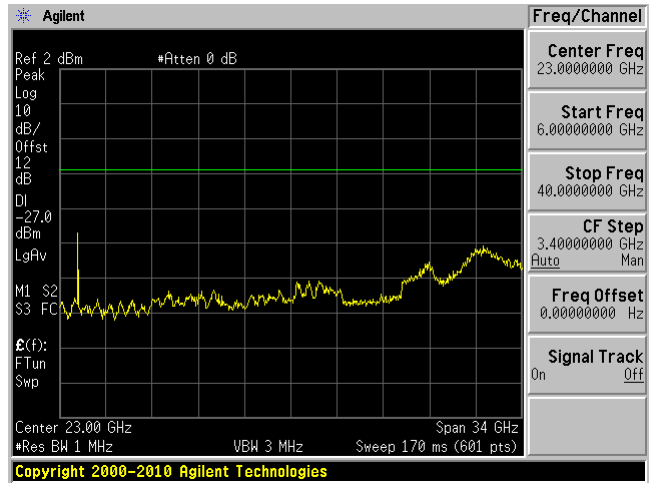


802.11ac40 mode

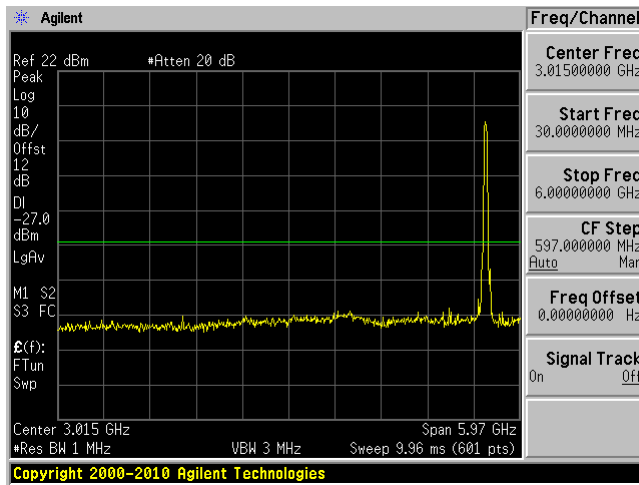
Low Channel 5510 MHz (30MHz-6GHz)



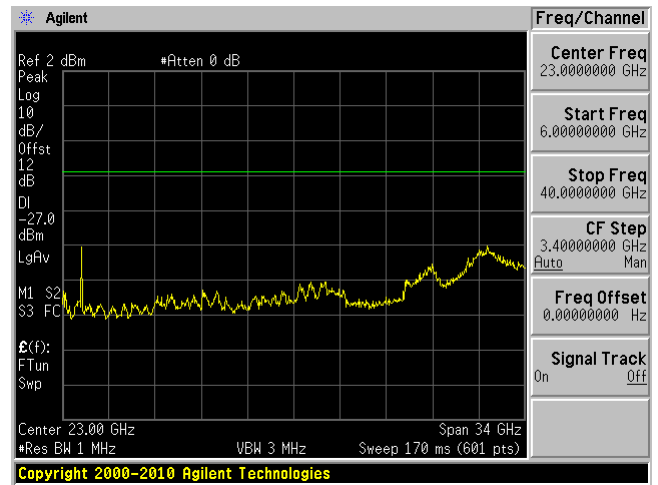
Low Channel 5510 MHz (6-40GHz)



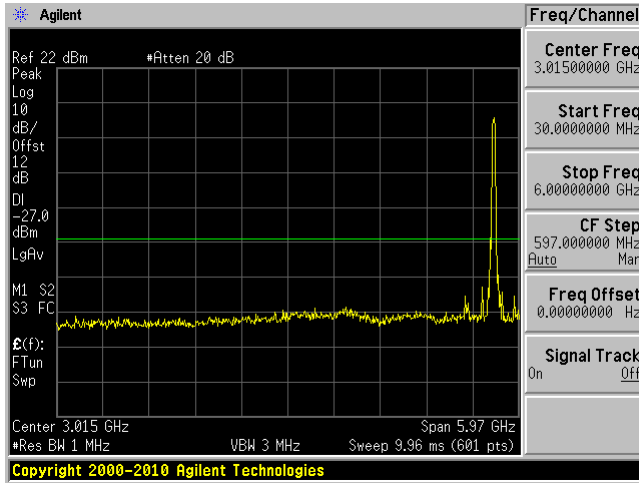
Middle Channel 5550 MHz (30MHz-6GHz)



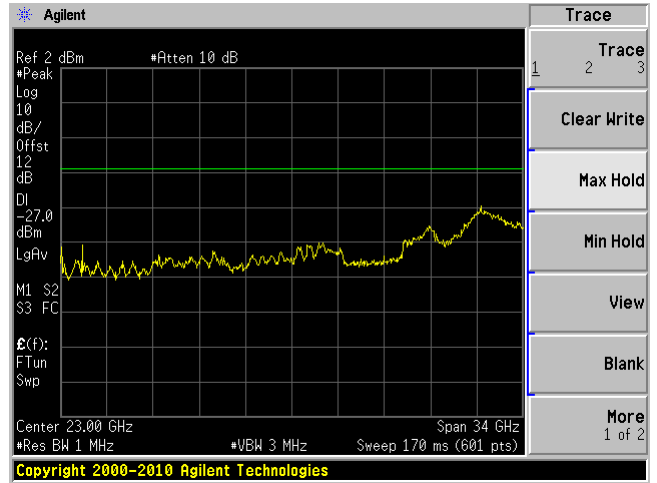
Middle Channel 5550 MHz (6-40GHz)



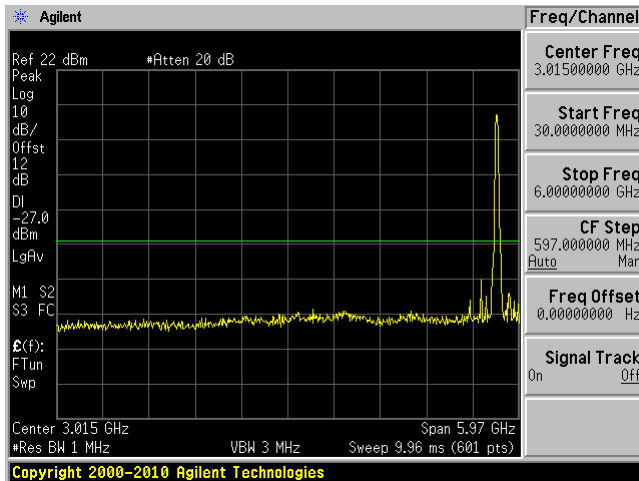
Middle Channel 5670 MHz (30MHz-6GHz)



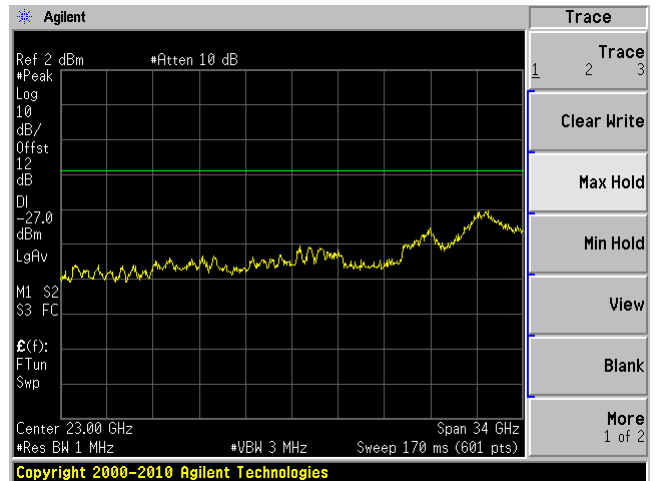
Middle Channel 5670 MHz (6-40GHz)



High Channel 5710 MHz (30MHz-6GHz)

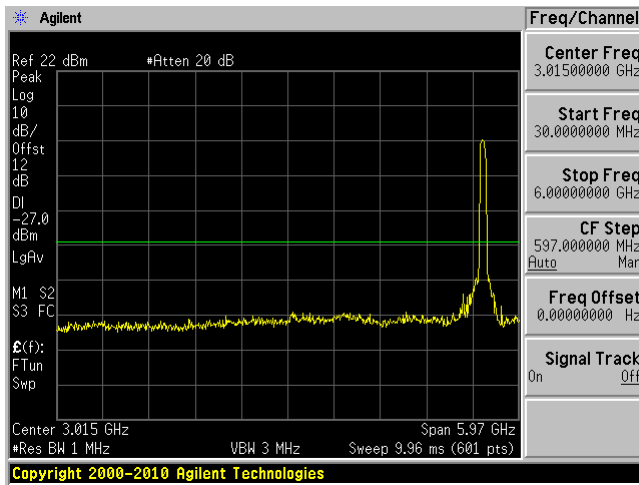


High Channel 5710 MHz (6-40GHz)

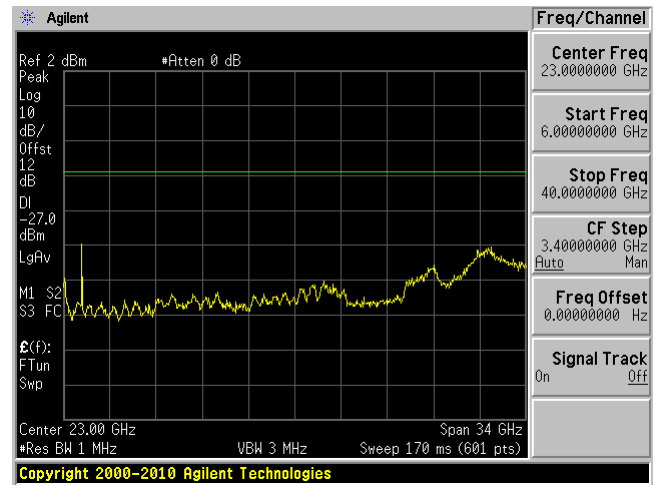


802.11ac80 mode

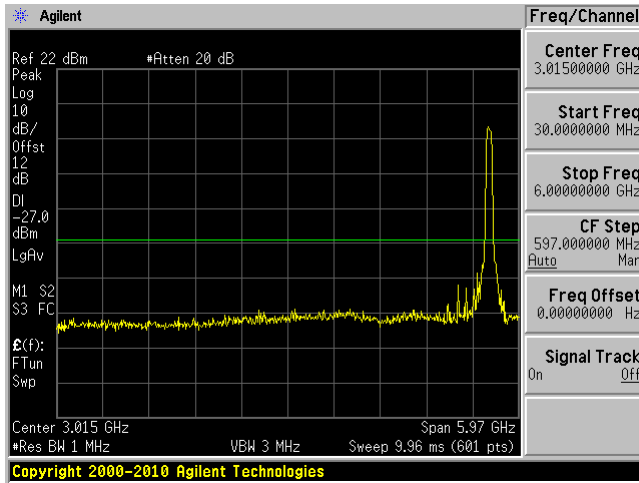
Low Channel 5530 MHz (30MHz-6GHz)



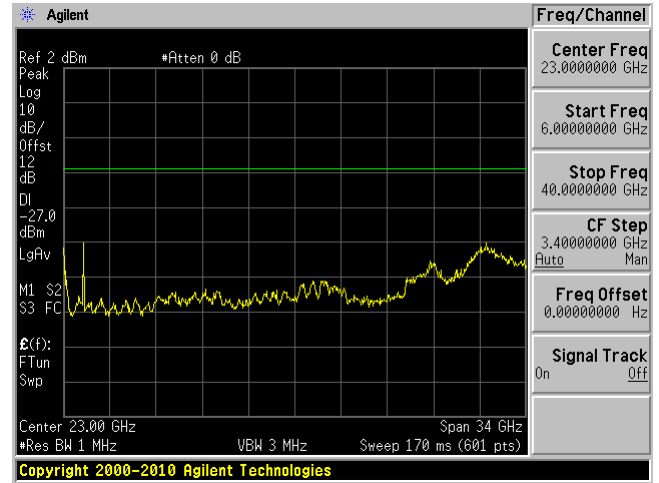
Low Channel 5530 MHz (6GHz – 40GHz)



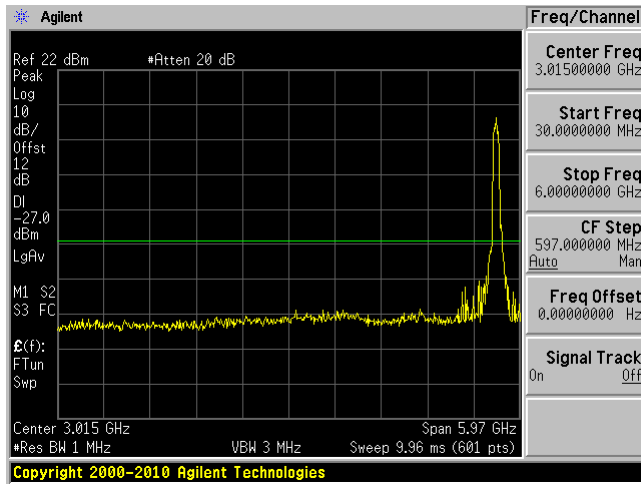
Middle Channel 5610 MHz (30MHz-6GHz)



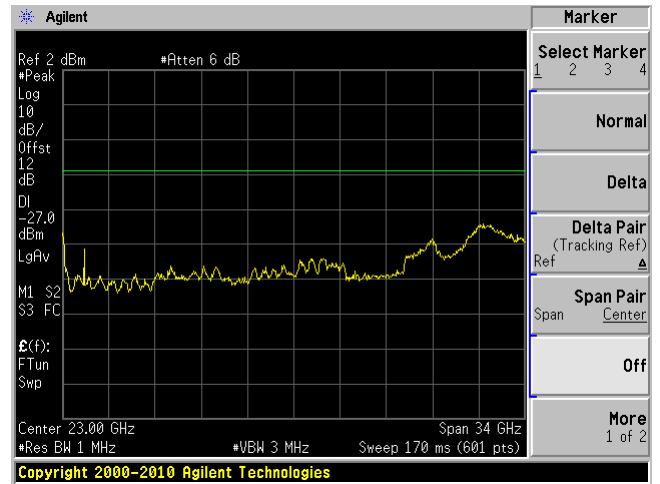
Middle Channel 5610 MHz (6GHz – 40GHz)



High Channel 5690 MHz (30MHz-6GHz)



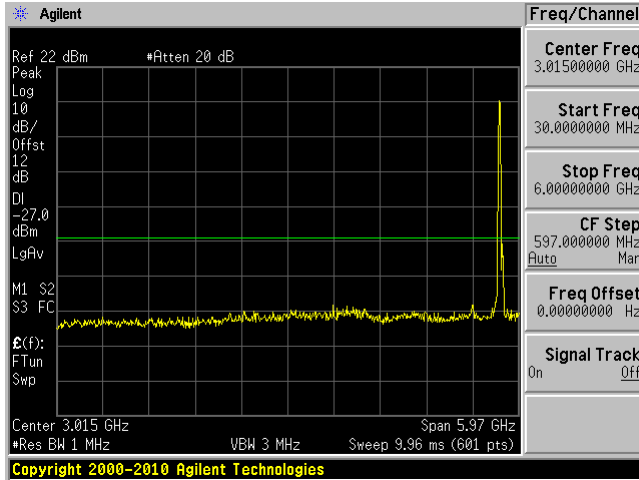
High Channel 5690 MHz (6GHz – 40GHz)



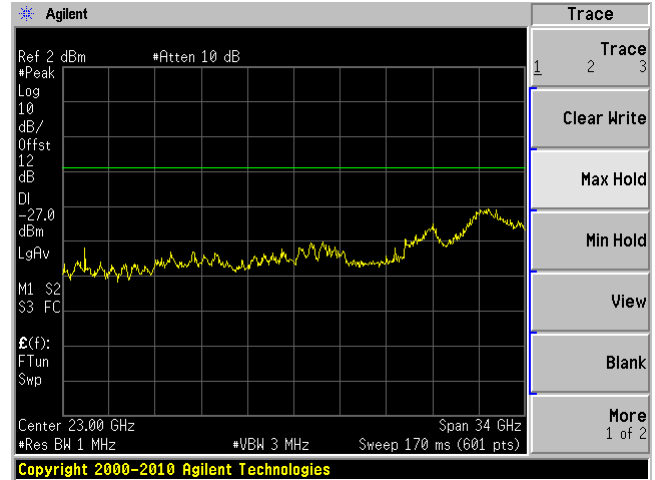
5725 – 5850 MHz

802.11a

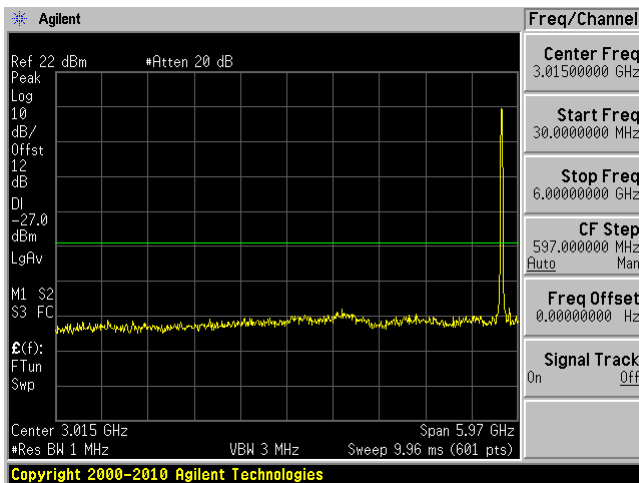
Low Channel 5745 MHz (30MHz-6GHz)



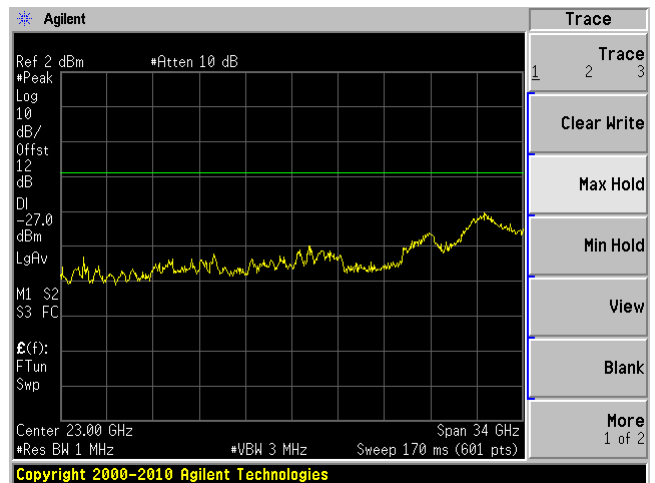
Low Channel 5745 MHz (6-40GHz)



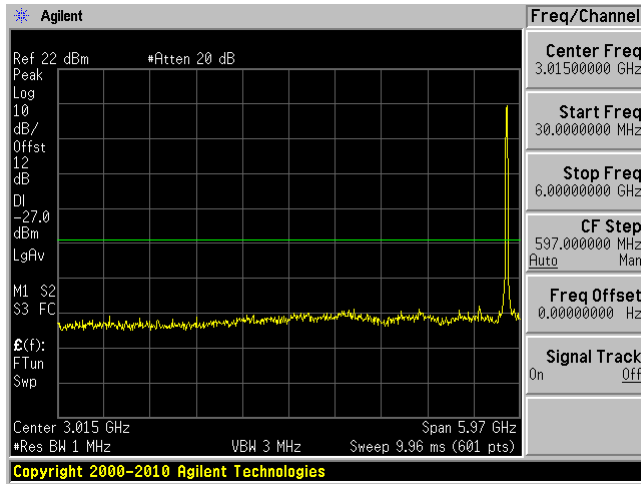
Middle Channel 5785 MHz (30MHz-6GHz)



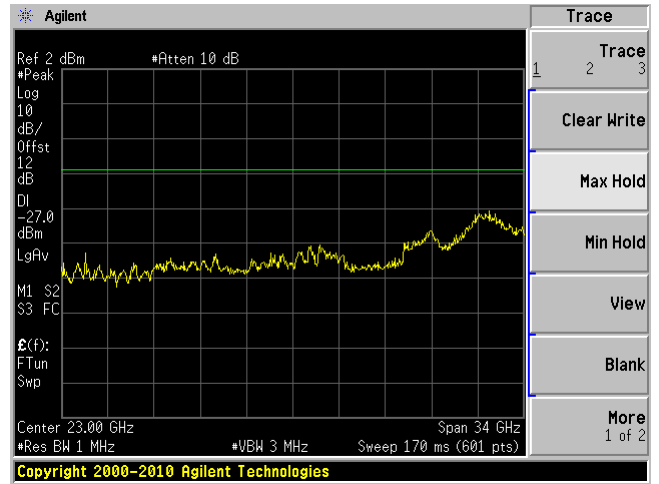
Middle Channel 5785 MHz (6-40GHz)



High Channel 5825 MHz (30MHz-6GHz)

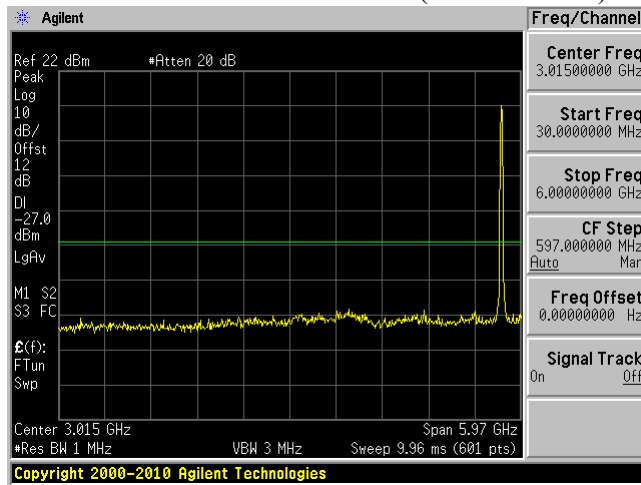


High Channel 5825 MHz (6-40GHz)

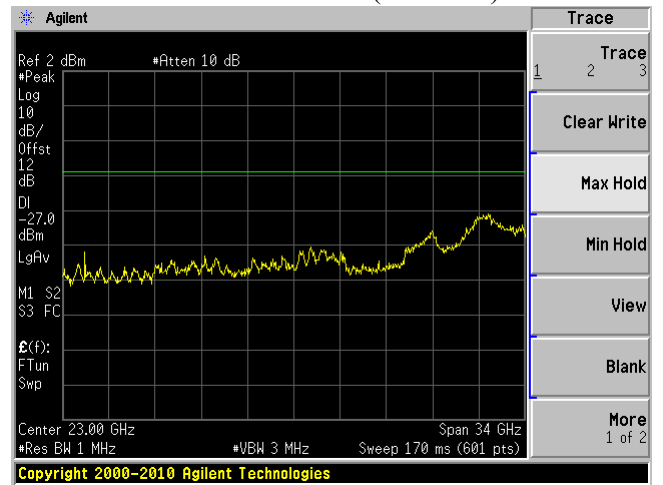


802.11n20 mode

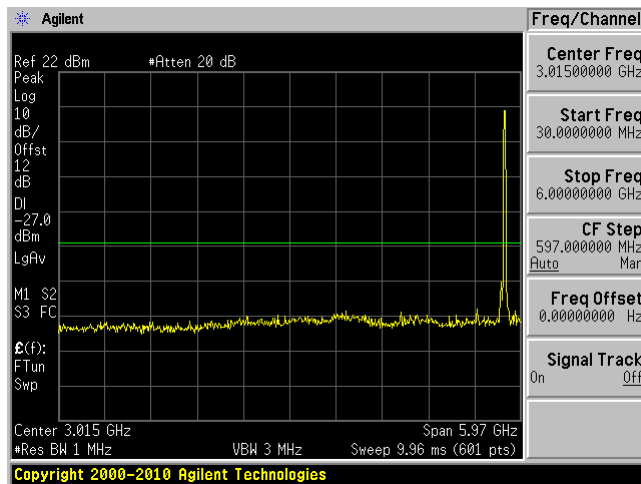
Low Channel 5745 MHz (30MHz-6GHz)



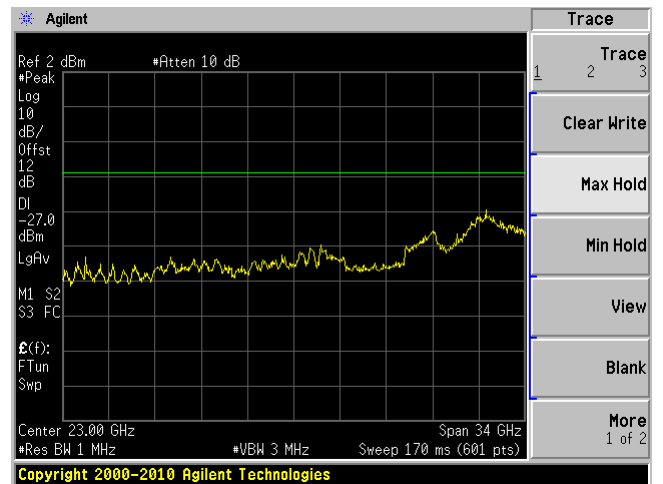
Low Channel 5745 MHz (6-40GHz)



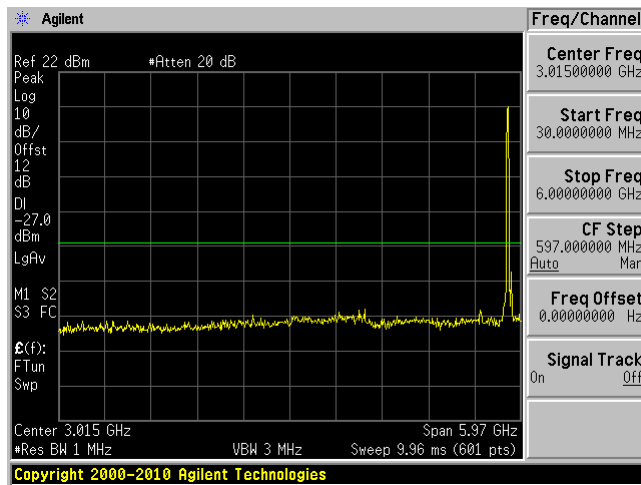
Middle Channel 5785 MHz (30MHz-6GHz)



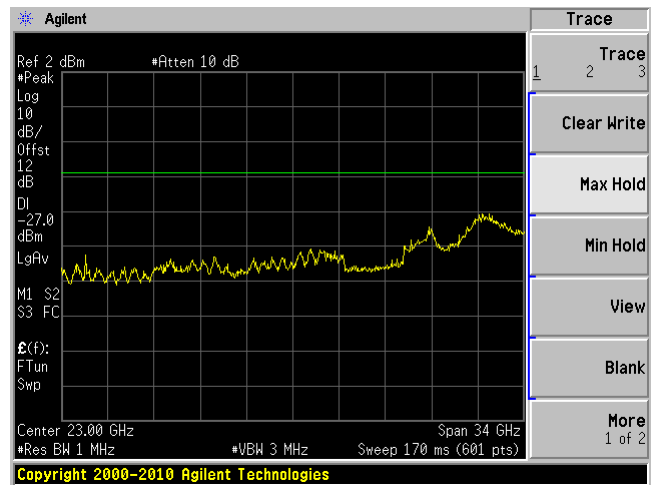
Middle Channel 5785 MHz (6-40GHz)



High Channel 5825 MHz (30MHz-6GHz)

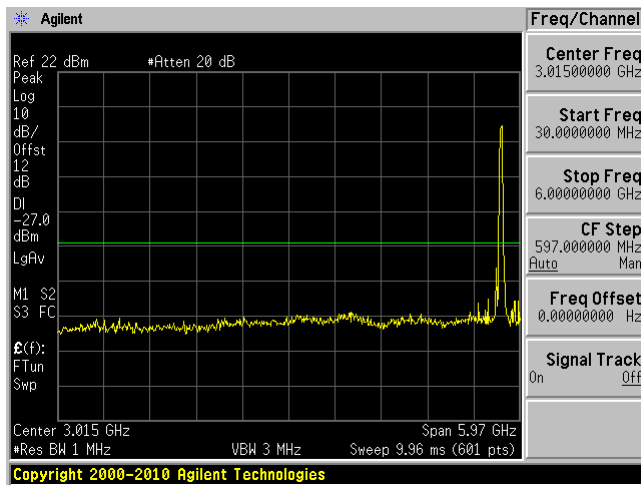


High Channel 5825 MHz (6-40GHz)

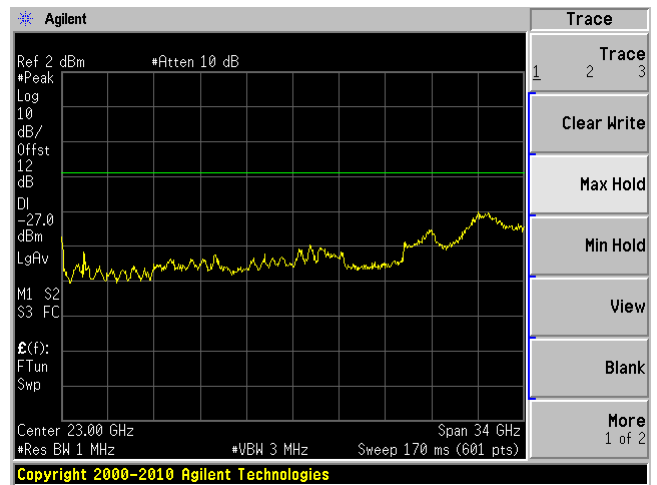


802.11n40 mode

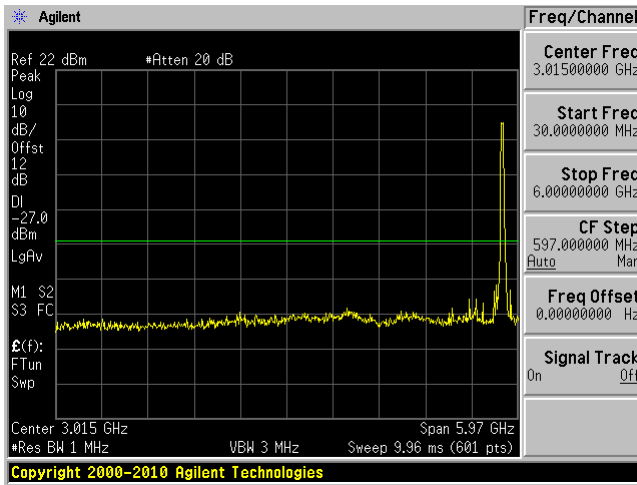
Low Channel 5755 MHz (30MHz-6GHz)



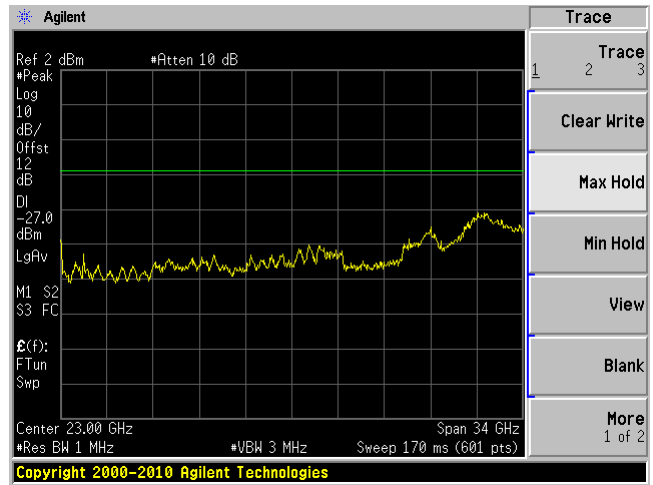
Low Channel 5755 MHz (6-40GHz)



High Channel 5795 MHz (30MHz-6GHz)

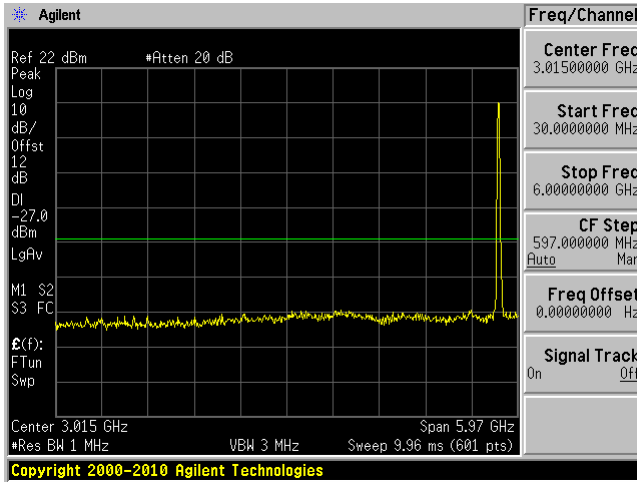


High Channel 5795 MHz (6-40GHz)

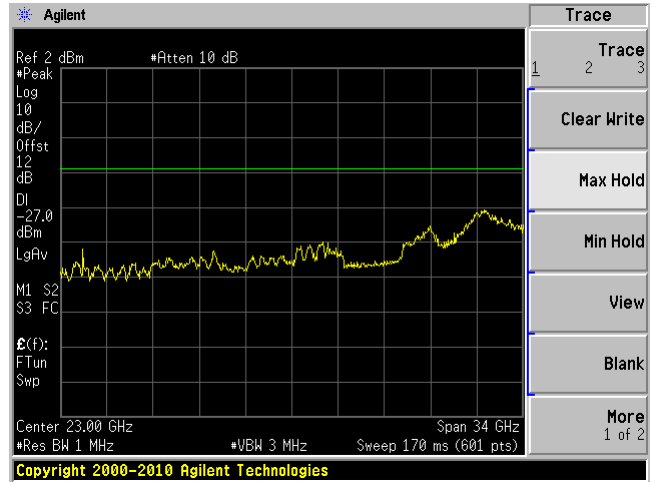


802.11ac20 mode

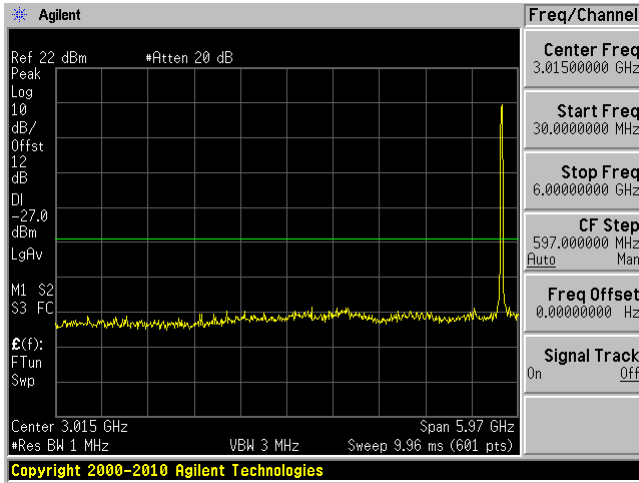
Low Channel 5745 MHz (30MHz-6GHz)



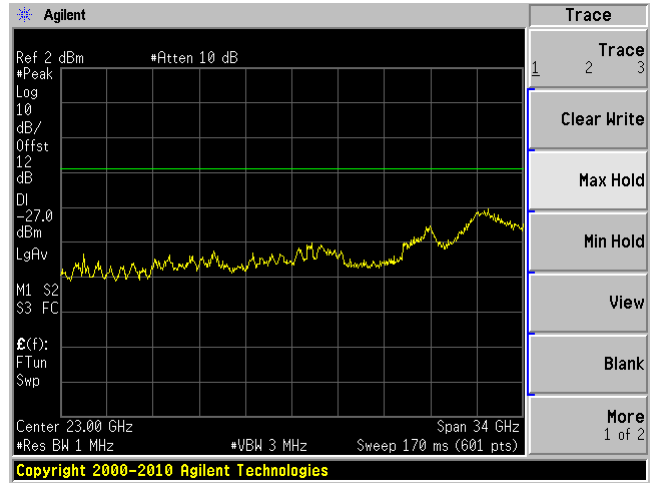
Low Channel 5745 MHz (6-40GHz)



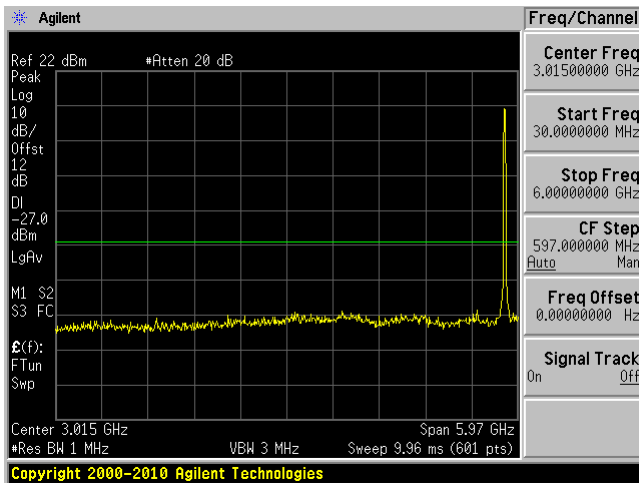
Middle Channel 5785 MHz (30MHz-6GHz)



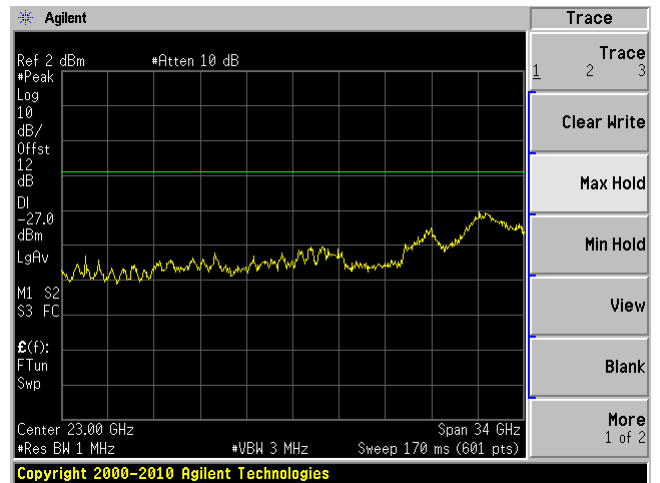
Middle Channel 5785 MHz (6-40GHz)



High Channel 5825 MHz (30MHz-6GHz)

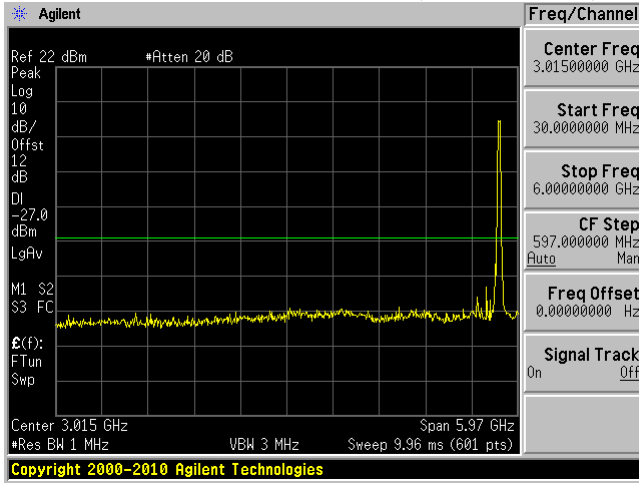


High Channel 5825 MHz (6-40GHz)

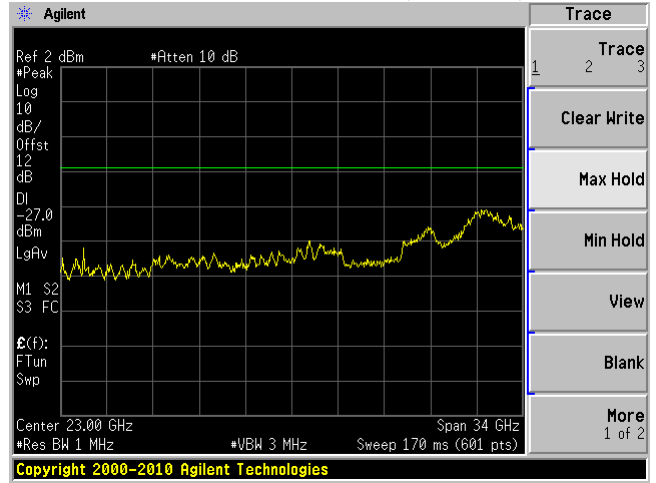


802.11ac40 mode

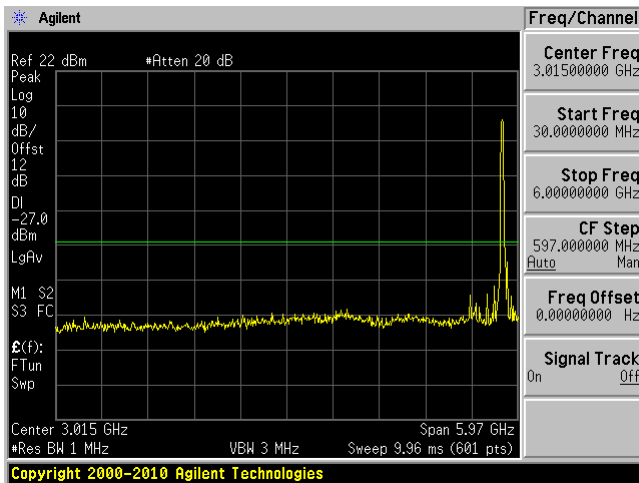
Low Channel 5755 MHz (30MHz-6GHz)



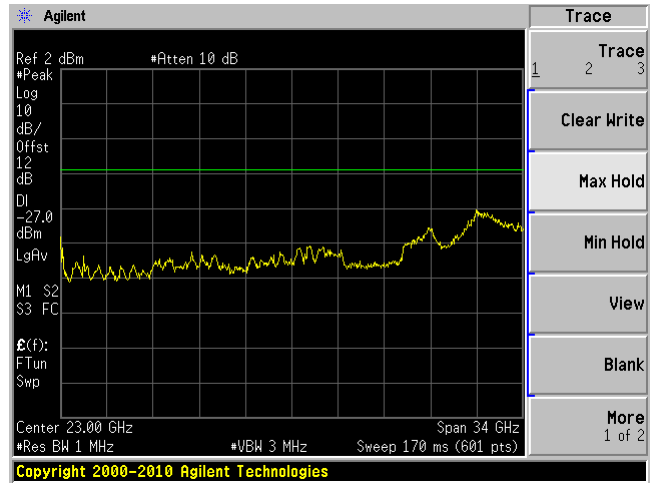
Low Channel 5755 MHz (6-40GHz)



High Channel 5795 MHz (30MHz-6GHz)

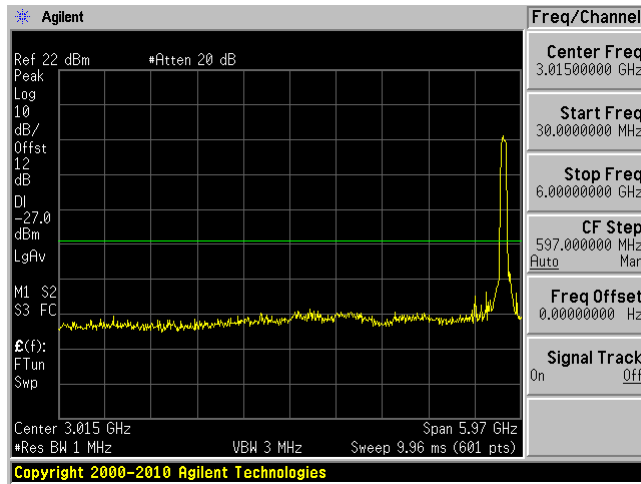


High Channel 5795 MHz (6-40GHz)

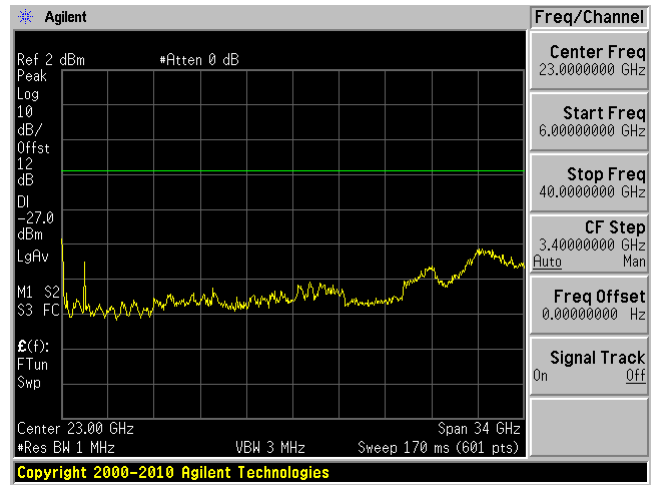


802.11ac80 mode

5755 MHz (30MHz-6GHz)



5755 MHz (6GHz – 40GHz)



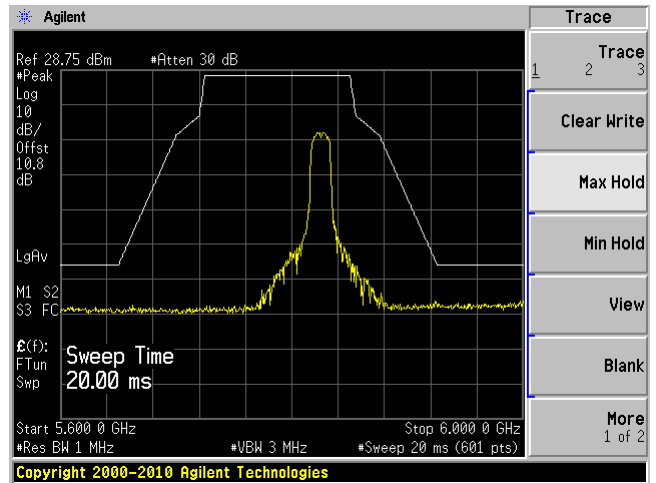
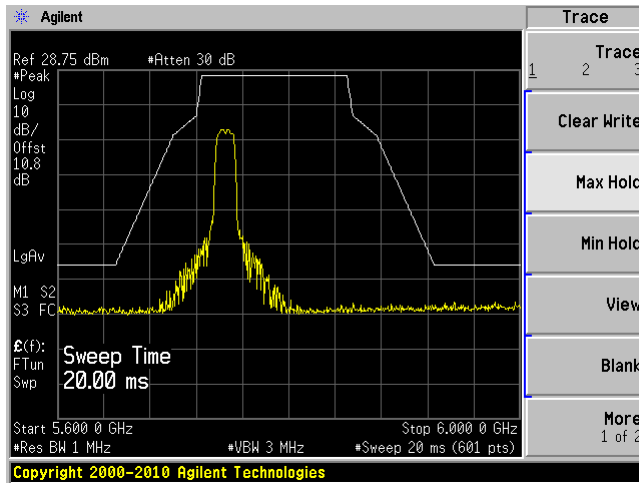
5725 – 5850 MHz

FCC Emission Mask

802.11a mode

5745 MHz

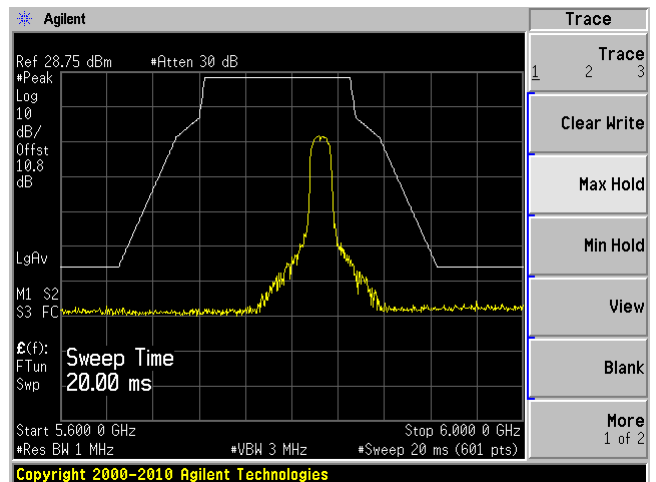
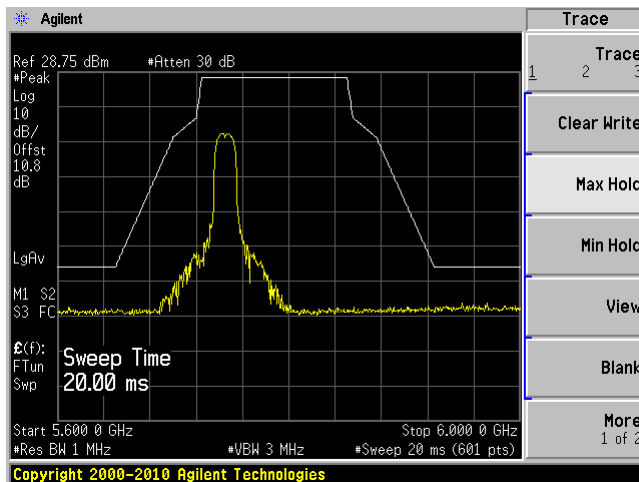
5825 MHz



802.11n20 mode

5745 MHz

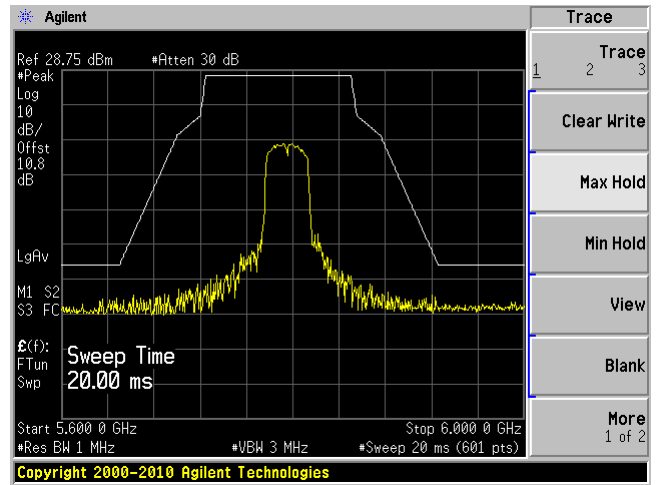
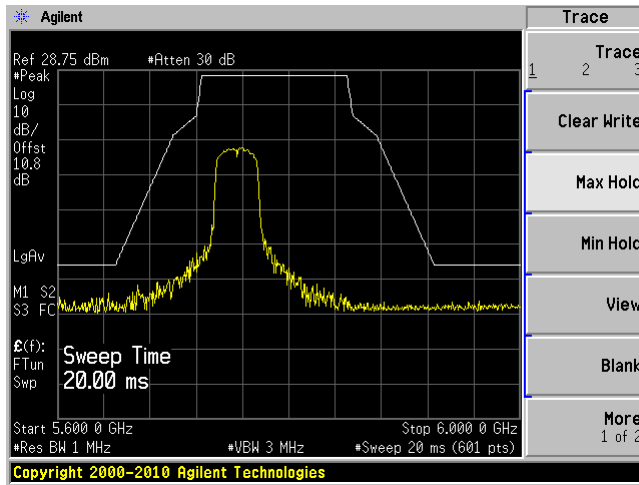
5825 MHz



802.11n40 mode

5755 MHz

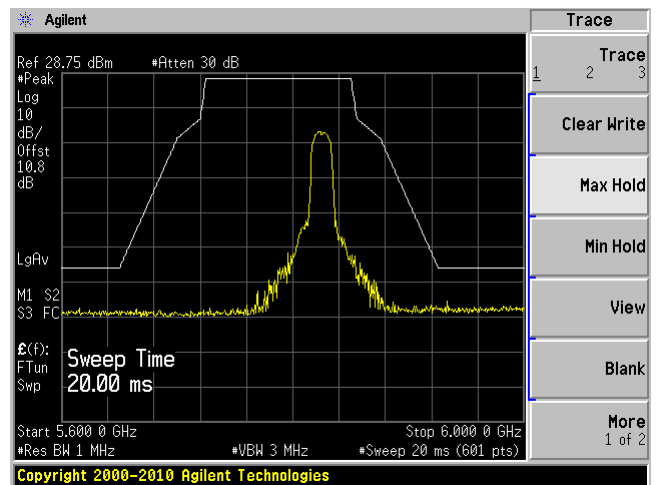
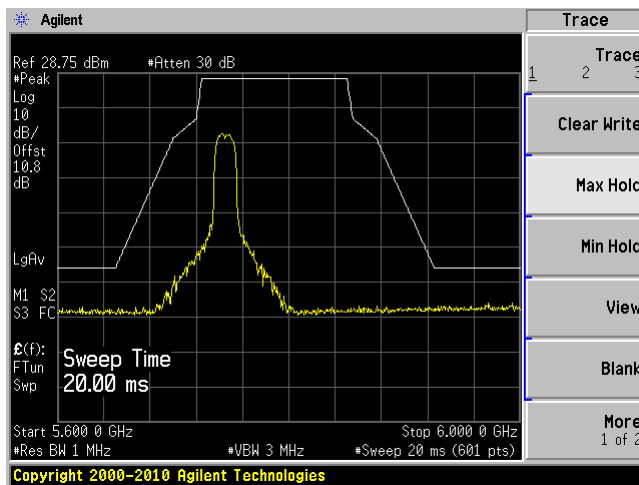
5795 MHz



802.11ac20 mode

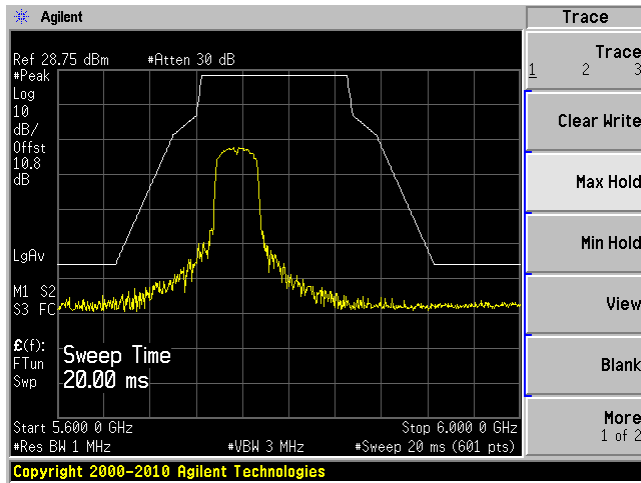
5745 MHz

5825 MHz

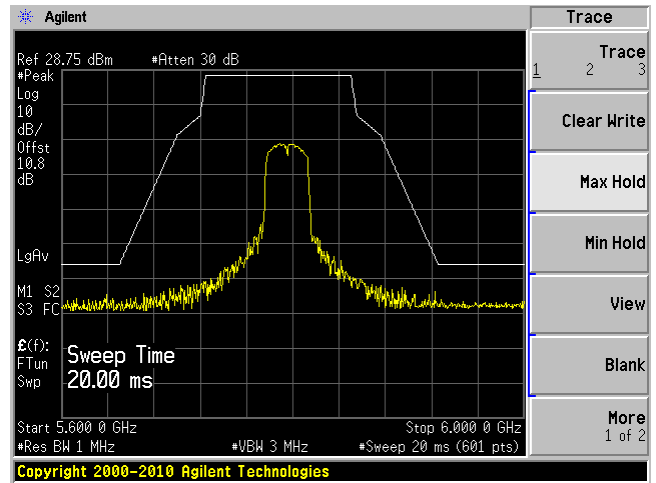


802.11ac40 mode

5755 MHz



5795 MHz



802.11ac80 mode, 5775 MHz

