FCC PART 15, SUBPART C
ISEDC RSS-247, ISSUE 2, FEBRUARY 2017

TEST REPORT

For

Code & Modules Inc.

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Santa Clara, CA 95054, USA

FCC ID: 2APEM-PXBD
IC: 23802-PXBD

Report Type: Original Report		**Product Type:** Edge Platform
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Report Number:	R1803143-247 DTS	
Report Date:	2018-05-10	
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1803143-247 DTS	Original Report	2018-05-10

1 General Description

1.1 Product Description for Equipment Under Test (EUT)

This test and measurement report was prepared on behalf of *Code & Modules Inc.,* and their product models: *SO-0G-3GG, DO-1G-3GG, PO-2G-LTA and PP-4G-LTA,* FCC ID: 2APEM-PXBD IC: 23802-PXBD or the "EUT" as referred to in this report. The EUT is an Edge Platform.

Please refer to Declaration of Similarity letter provided by the manufacturer in Annex A of this report for the difference between *SO-0G-3GG, DO-1G-3GG, PO-2G-LTA and PP-4G-LTA*. The result in this report was gathered from typical production sample PP-4G-LTA and DO-1G-3GG, serial number: MPA751489001302 and MP8772903000431 assigned by Code & Modules.

1.2 Objective

This report is prepared on behalf of *Code & Modules Inc.,* in accordance with Part 2, Subpart J, and Part 15, Subparts B and C of the Federal Communication Commission's rules and ISEDC RSS-247 Issue 2, February 2017.

The objective is to determine compliance with FCC Part 15.247 and ISEDC RSS-247 rules for Output Power, Antenna Requirements, 6 dB Bandwidth, Power Spectral Density, 100 kHz Bandwidth of Band Edges Measurement, Conducted and Radiated Spurious Emissions.

1.3 Related Submittal(s)/Grant(s)

FCC 15.247 Report: R1803143-247 DSS
FCC 15.407 Report: R1803143-407

1.4 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and FCC KDB 558074 D01 DTS Meas Guidance v04: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247.

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 º 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: (Innovation, Science and Economic development Canada - ISEDC) Foreign Certification Body – FCB – APEC Tel MRA -Phase I & Phase II;
- Chinese Taipei (Republic of China – Taiwan):
  - BSMI (Bureau of Standards, Metrology and Inspection) APEC Tel MRA -Phase I;
  - NCC (National Communications Commission) APEC Tel MRA -Phase I;
- European Union:
  - EMC Directive 2014/30/EU US-EU EMC & Telecom MRA CAB (NB)
  - Radio & Teleterminal Equipment (R&TTE) Directive 1995/5/EC US -EU EMC & Telecom MRA CAB (NB)
  - Radio Equipment (RE) Directive 2014/53/EU US-EU EMC & Telecom MRA CAB (NB)
  - Low Voltage Directive (LVD) 2014/35/EU
- 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 Media Development Authority - IMDA) APEC Tel MRA -Phase I & Phase II;
- Japan: VCCI - Voluntary Control Council for Interference US-Japan Telecom Treaty VCCI Side Letter-
- USA:
  - ENERGY STAR Recognized Test Laboratory – US EPA
  - Telecommunications Certification Body (TCB) – US FCC;
  - Nationally Recognized Test Laboratory (NRTL) – US OSHA
- Vietnam: APEC Tel MRA -Phase I;

2 System Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.10-2013 and FCC KDB 558074 D01 DTS Meas Guidance v04.

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 to be as follows for each mode based upon investigation 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 Putty and Lab tool, provided by *Code & Modules Inc.*, the software is compliant with the standard requirements being tested against.

Modulation	Frequency (MHz)	Power Setting
802.11b	2412	10
	2437	10
	2462	10
8002.11g	2412	7
	2437	7
	2462	7
802.11n20	2412	7
	2437	7
	2462	7
802.11n40	2422	6
	2437	6
	2452	6
BLE	2402	1
	2440	1
	2480	1

Data Rates Tested:
802.11b mode: 1Mbps
802.11g mode: 6Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0
BLE

2.3 Duty Cycle Correction Factor

According to KDB 558074 D01 DTS Meas Guidance v04 section 6.0:

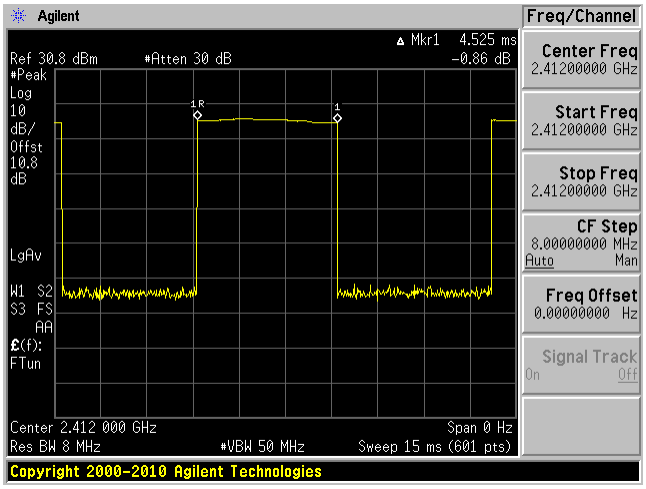
Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%). When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be utilized to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration (T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data is being acquired (i.e., no transmitter off-time is to be considered).

Radio Mode	Total On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
802.11b	49.775	100	49.775	3.0299
802.11g	42.000	100	42.000	3.7675
802.11n20	39.340	100	39.340	4.0517
802.11n40	19.000	100	19.000	7.2125
BLE	0.0897	0.6282	14.288	8.4503

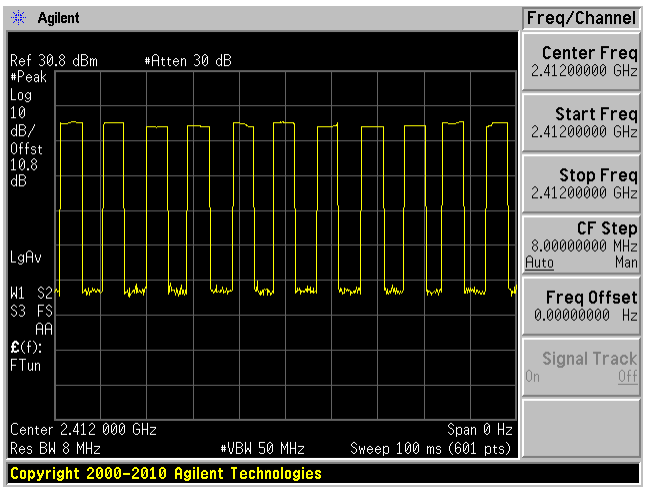
Duty Cycle = On Time (ms)/ Period (ms)
Duty Cycle Correction Factor (dB) = 10*log(1/Duty Cycle)

Please refer to the following plots.

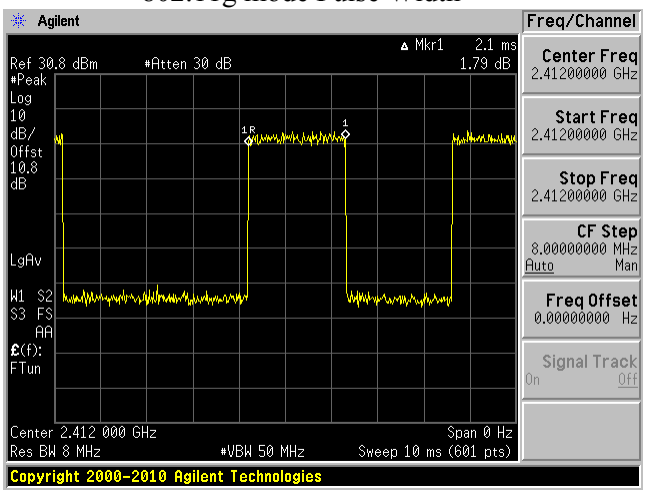
802.11b mode Pulse Width



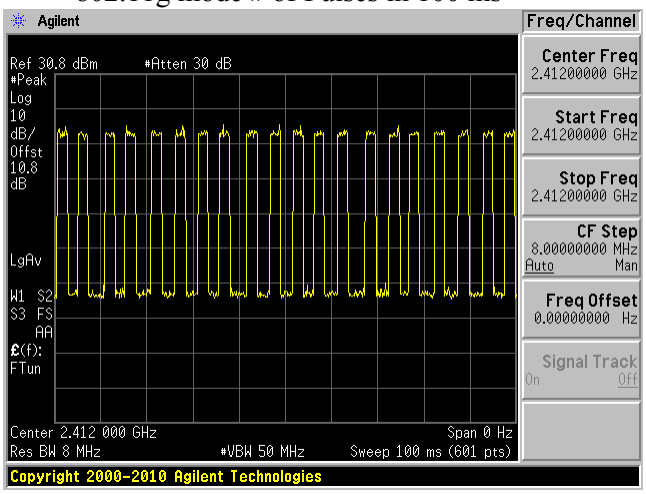
802.11b mode # of Pulses in 100 ms



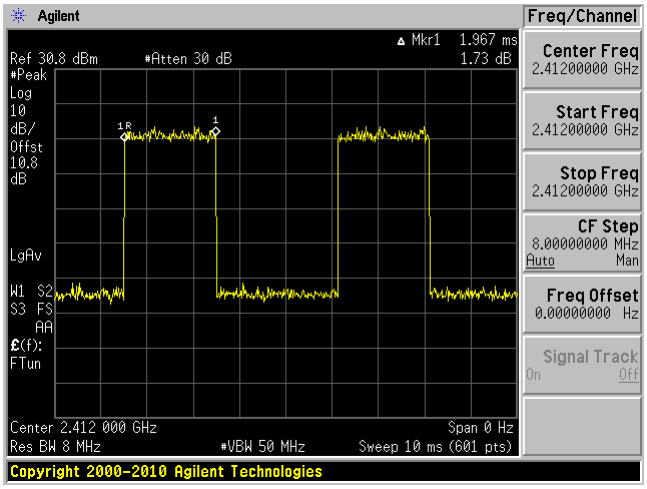
802.11g mode Pulse Width



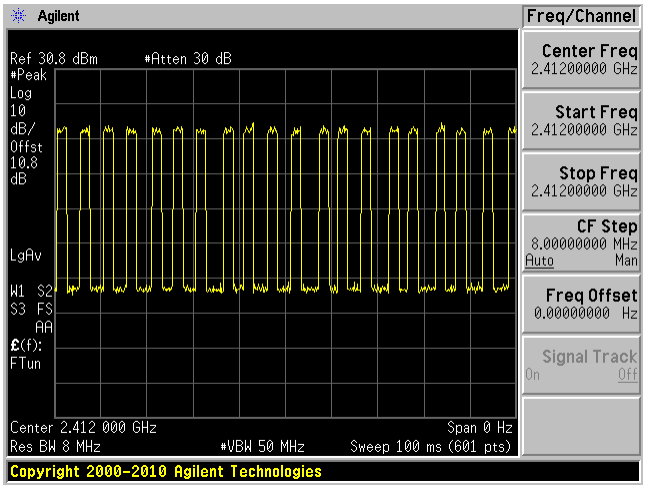
802.11g mode # of Pulses in 100 ms



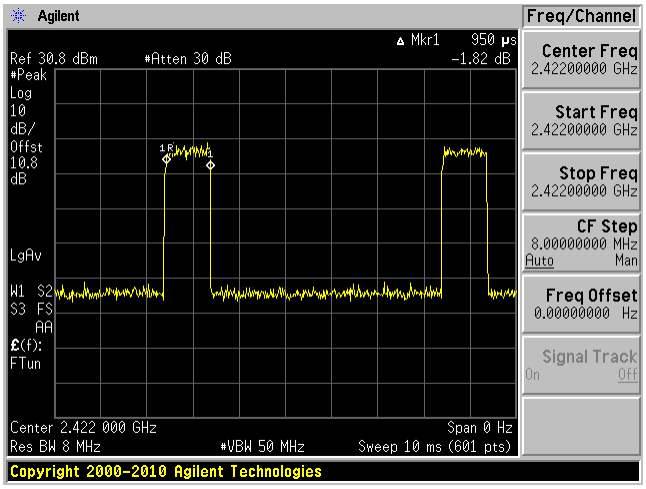
802.11n20 mode Pulse Width



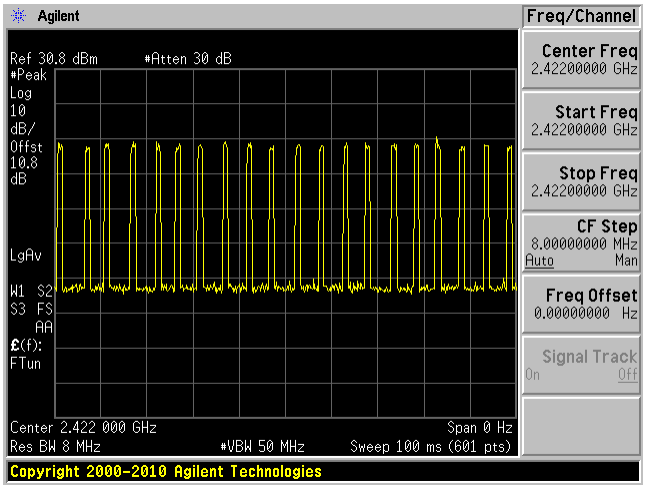
802.11n20 mode # of Pulses in 100 ms



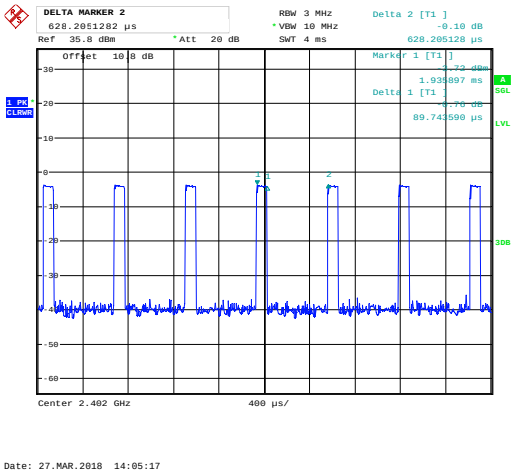
802.11n40 mode Pulse Width



802.11n40 mode # of Pulses in 100 ms



BLE


DELTA MARKER 2
628.2051282 µs
RBW 3 MHz
*VBW 10 MHz
SWT 4 ms
Delta 2 [T1]
-0.10 dB
628.205128 µs
Ref 35.8 dBm
*Att 20 dB
Offset 10.8 dB
Marker 1 [T1]
-1.73 dBm
1.938897 ms
Delta 1 [T1]
-0.76 dB
89.743590 µs
1 PK
CLRWR
A
SGL
LVL
3DB
Center 2.402 GHz
400 µs/
Date: 27.MAR.2018 14:05:17

2.4 Equipment Modifications

N/A

2.5 Local Support Equipment

Manufacturer	Description	Model	Serial Number
Dell	Laptop	Latitude E6410	3CKRAQ1

2.6 Support Equipment

There was no support equipment included, or intended for use with EUT during these tests.

2.7 Power Supply/Adapter

Manufacturer	Description	Model
TRIAD	AC adapter	WS2U050-2000

2.8 Interface Ports and Cabling

Description	Length (m)	To	From
U.F.L to SMA	< 1 m	PSA	EUT
USB to Ethernet adapter	< 1 m	Laptop	Ethernet cable
Ethernet Cable	< 1 m	Ethernet adapter	Ethernet adapter
Ethernet adapter to USB	< 1 m	EUT	Ethernet cable

3 Summary of Test Results

Results reported relate only to the product tested.

FCC and ISEDC Rules	Description of Test	Results
FCC §15.203 ISEDC RSS-Gen §6.8	Antenna Requirement	Compliant
FCC §15.207 ISEDC RSS-Gen §8.8	AC Line Conducted Emissions	Compliant
FCC §2.1093, §15.247(i) ISEDC RSS-102	RF Exposure	Compliant[1]
FCC §2.1051, §15.247 (d) ISEDC RSS-247 §5.5	Spurious Emissions at Antenna Port	Compliant
FCC §2.1053, §15.205, §15.209, §15.247 (d) ISEDC RSS-247 §5.5 ISEDC RSS-Gen §8.9 and §8.10	Radiated Spurious Emissions	Compliant
FCC §15.247(a)(2) ISEDC RSS-247 §5.2 (1)	6 dB and 99% Emission Bandwidth	Compliant
FCC §15.247(b)(3) ISEDC RSS-247 §5.4 (4)	Output Power	Compliant
FCC §15.247(d) ISEDC RSS-247 §5.5	100 kHz Bandwidth of Frequency Band Edge	Compliant
FCC §15.247(e) ISEDC RSS-247 §5.2 (2)	Power Spectral Density	Compliant

4 FCC §15.203 & ISEDC RSS-Gen §6.8 - Antenna Requirements

4.1 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 ISEDC RSS-Gen §6.8: Transmitter Antenna

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

4.2 Antenna Description

The antennas used by the EUT have nonstandard U.FL Connectors.

Antenna usage	Band of Operation (MHz)	Maximum Antenna Gain (dBi)
Wi-Fi/Bluetooth	2400-2500	2.0
Wi-Fi	4900-6000	2.5
3G/4G	850/900/1800/1900/2110	5.1

5 FCC §2.1091, §15.247(i) & ISEDC RSS-102 – RF Exposure

5.1 Applicable Standards

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	* (100)	30
1.34-30	824/f	2.19/f	* ($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

According to ISED RSS-102 Issue 5:

2.5.2 Exemption Limits for Routine Evaluation – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz[6] and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

5.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

5.3 MPE Results

2.4 GHz Wi-Fi

Maximum output power at antenna input terminal (dBm):	11.68
Maximum output power at antenna input terminal (mW):	14.723
Prediction distance (cm):	20
Prediction frequency (MHz):	2412
Maximum Antenna Gain, typical (dBi):	2.0
Maximum Antenna Gain (numeric):	1.585
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.004642
FCC MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.004642 mW/cm^2. Limit is 1.0 mW/cm^2.

2.4 GHz BLE

Maximum peak output power at antenna input terminal (dBm):	-3.04
Maximum peak output power at antenna input terminal (mW):	0.497
Prediction distance (cm):	20
Prediction frequency (MHz):	2480
Maximum Antenna Gain, typical (dBi):	2.0
Maximum Antenna Gain (numeric):	1.585
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.000157
FCC MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.000157 mW/cm^2. Limit is 1.0 mW/cm^2.

3G/4G

Pixieboard Version	Mode	Mobile Module	FCC ID	IC ID
PixieBoard Core	*SO-0G-3GG*	UMTS/HSPA+3G Module	XMR201510UC20	1022A-201510UC20
PixieBoard DUO	*DO-1G-3GG,*	UMTS/HSPA+3G Module	XMR201510UC20	1022A-201510UC20
PixieBoard PRO	*PO-2G-LTA*	LTE Module	XMR201605EC25A	10224A-201611EC25A
PixieBoard PRO+	*PP-4G-LTA*	LTE Module	XMR201605EC25A	10224A-201611EC25A

Mode	Frequency (MHz)	Target Power (dBm)	Target Power (mW)	Maximum Antenna Gain (dBi)	Numeric Antenna Gain	Evaluation Distance (cm)	Power density @20cm (mW/cm^2)	FCC MPE Limit (mW/cm^2)
WCDMA (Band V)	826.4-846.6	23.5	223.87	5.1	3.236	20	0.144122	0.551
WCDMA (Band II)	1852.4-1907.6	23.5	223.87	5.1	3.236	20	0.144122	1.0
WCDMA (Band IV)	1712.4-1752.6	23.5	223.87	5.1	3.236	20	0.144122	1.0
LTE (Band II)	1850.7-1909.3	24	251.19	5.1	3.236	20	0.161708	1.0
LTE (Band IV)	1710.7-1754.3	24	251.19	5.1	3.236	20	0.161708	1.0
LTE (Band XII)	699.7-715.3	24	251.19	5.1	3.236	20	0.161708	0.466

Note: Worst Case module was evaluated for 3G/4G.

2.4 GHz Classic Bluetooth

Maximum peak output power at antenna input terminal (dBm):	1.47
Maximum peak output power at antenna input terminal (mW):	1.403
Prediction distance (cm):	20
Prediction frequency (MHz):	2480
Maximum Antenna Gain, typical (dBi):	2.0
Maximum Antenna Gain (numeric):	1.585
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.000442
FCC MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	1.0

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.000442 mW/cm^2. Limit is 1.0 mW/cm^2.

Worst case colocation 2.4 GHz Wi-Fi, 3G/4G and 2.4 GHz Classic Bluetooth.

Frequency Band	Max Conducted Power(dBm)	Evaluated Distance (cm)	Worst-Case MPE (mW/cm^2)	MPE Limit (mW/cm^2)	Worst-Case MPE Ratios	Sum of MPE Ratios	Limit
Worst Case							
2.4 GHz WiFi	11.68	20	0.004642	1.0	0.464 %	35.21%	100%
2.4 GHz Classic Bluetooth	1.47	20	0.000442	1.0	0.044 %		
LTE (Band XII)	24	20	0.161708	0.466	34.701 %		

Note: Worst Case module was evaluated for 3G/4G.

5.4 RF exposure evaluation exemption for IC

2.4 GHz Wi-Fi

11.68 + 2.0 dBi = 13.68 dBm < $1.31\times10^{-2}f^{0.6834}$ = 2.684 W = 34.288 dBm

2.4 GHz BLE

-3.04 + 2.0 dBi = -1.04 dBm < $1.31\times10^{-2}f^{0.6834}$ = 2.736 W = 34.370 dBm

Therefore the RF exposure is not required.

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

6.1 Applicable Standards

As per FCC §15.207 and ISEDC RSS-Gen §8.8 Conducted limits:

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 μH/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 were FCC §15.207 and ISEDC RSS-Gen §8.8 limits.

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 were 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 Corrected Amplitude and Margin Calculation

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

CA = Ai + CL + 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:

Margin = Corrected Amplitude – Limit

6.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde and Schwarz	Receiver, EMI Test	ESCI 1166.5950K03	100338	2016-06-23	2 years
Rohde and Schwarz	Impulse Limiter	ESH3-Z2	101963	2018-02-07	1 year
Keysight Technologies	RF Limiter	11867A	MY42242932	2018-01-15	1 year
Solar Electronics Company	High Pass Filter	Type 7930-100	7930150202	2018-02-27	1 year
Suirong	30 ft conductive emission cable	LMR 400	-	N/R	N/A
FCC	LISN	FCC-LISN-50-25-2-10-CISPR16	160129	2017-04-24	1 year
Vasona	Test software	V6.0 build 11	10400213	N/R	N/R

Statement of Traceability: BACL Corp. *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with A2LA Policy P102 (dated 09 June 2016) "A2LA Policy on Metrological Traceability".*

6.6 Test Environmental Conditions

Temperature:	23º C
Relative Humidity:	42 %
ATM Pressure:	101.31 kPa

The testing was performed by Vincent Licata on 2018-04-12 in 5 chamber 3.

6.7 Summary of Test Results

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

2.4 GHz Wi-Fi

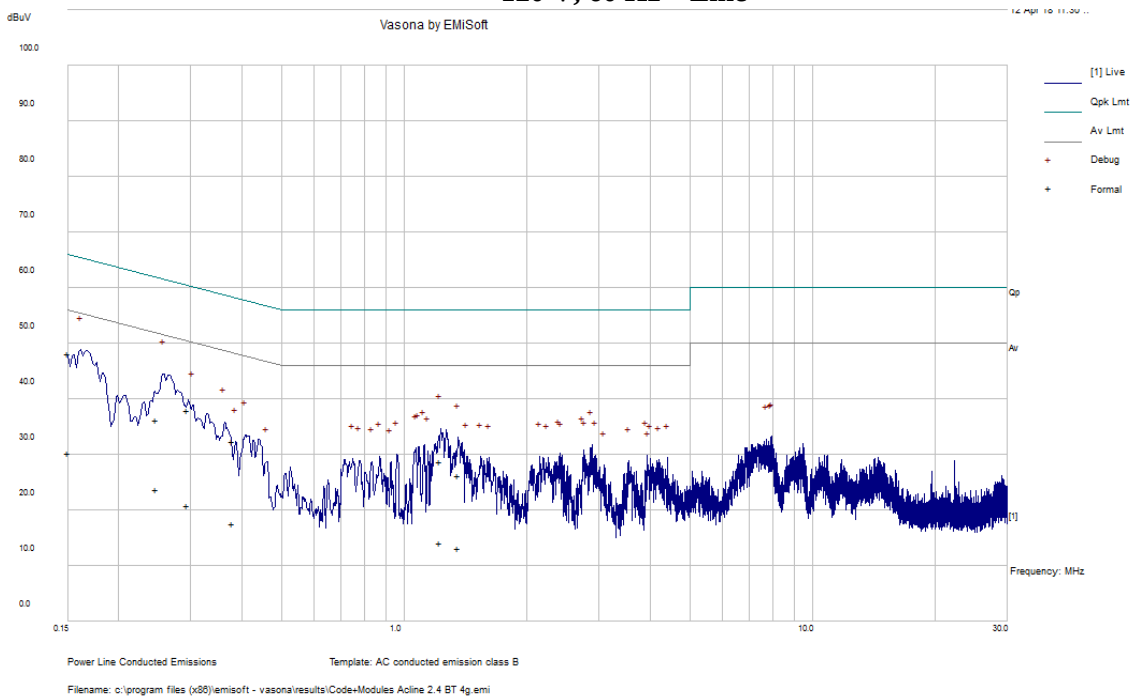
Connection: AC/DC adapter connected to 120 V/60 Hz, AC			
Margin (dB)	**Frequency (MHz)**	**Conductor Mode (Line/Neutral)**	**Range (MHz)**
-17.84	0.150141	Line	0.15-30

6.8 Conducted Emissions Test Plots and Data

PP-4G-LTA

2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)

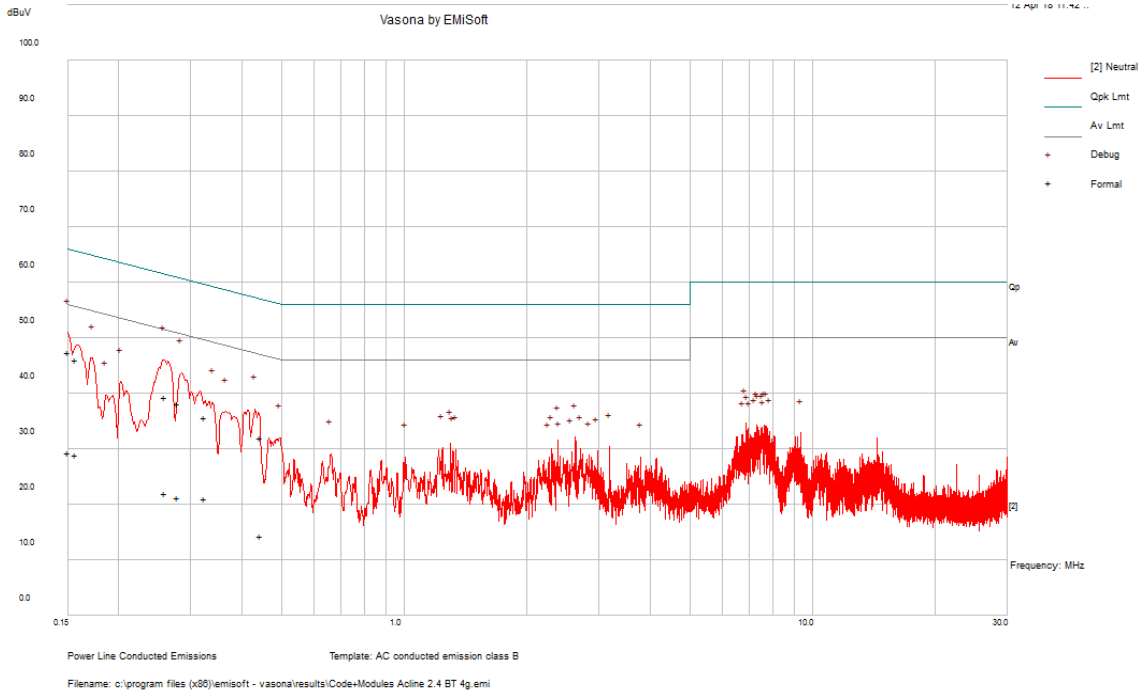
120 V, 60 Hz – Line



Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (QP/Ave.)
0.150141	48.15	Line	65.99	-17.84	QP
0.247417	36.21	Line	61.84	-25.63	QP
1.225458	28.85	Line	56	-27.15	QP
0.294205	37.99	Line	60.4	-22.41	QP
0.378831	32.38	Line	58.31	-25.93	QP
1.35755	26.21	Line	56	-29.79	QP

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (QP/Ave.)
0.150141	30.37	Line	55.99	-25.62	Ave.
0.247417	23.71	Line	51.84	-28.14	Ave.
1.225458	14.26	Line	46	-31.74	Ave.
0.294205	20.95	Line	50.4	-29.45	Ave.
0.378831	17.7	Line	48.31	-30.6	Ave.
1.35755	13.15	Line	46	-32.85	Ave.

120 V, 60 Hz – Neutral



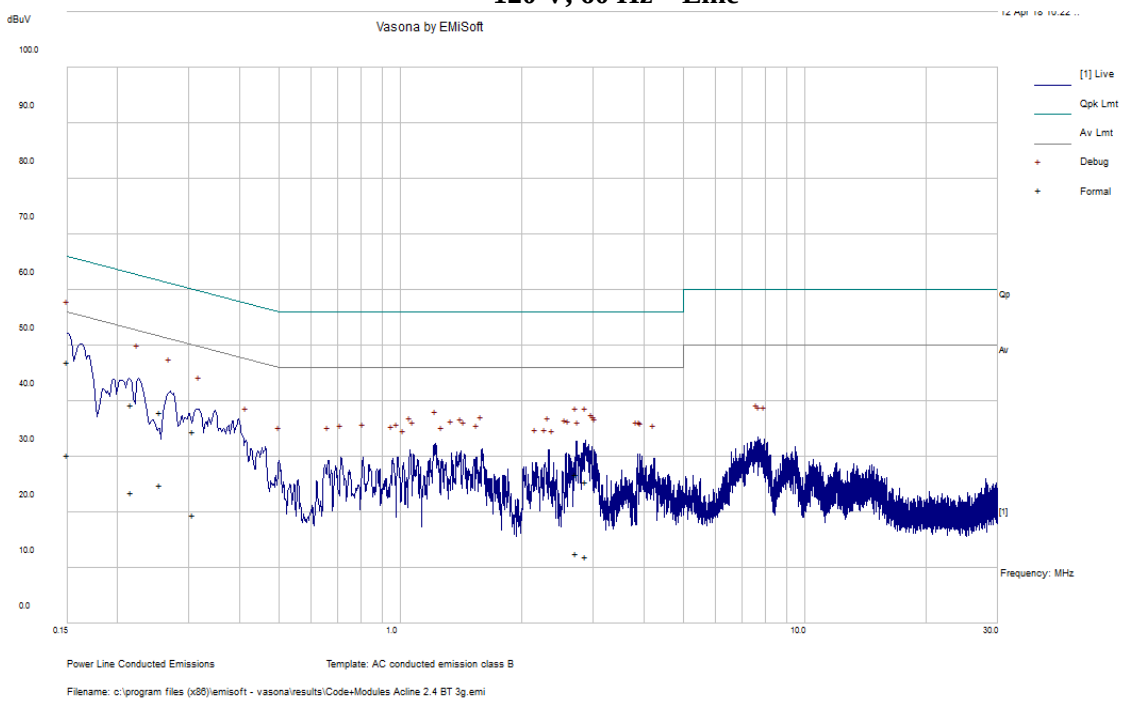
Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (QP/Ave.)
0.150318	47.5	Neutral	65.98	-18.49	QP
0.258685	39.27	Neutral	61.47	-22.2	QP
0.27951	38.17	Neutral	60.83	-22.66	QP
0.15696	46.14	Neutral	65.62	-19.48	QP
0.443985	32.11	Neutral	56.99	-24.88	QP
0.325323	35.76	Neutral	59.57	-23.81	QP

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (QP/Ave.)
0.150318	29.36	Neutral	55.98	-26.62	Ave.
0.258685	22.13	Neutral	51.47	-29.35	Ave.
0.27951	21.33	Neutral	50.83	-29.5	Ave.
0.15696	28.96	Neutral	55.62	-26.66	Ave.
0.443985	14.45	Neutral	46.99	-32.53	Ave.
0.325323	21.19	Neutral	49.57	-28.38	Ave.

DO-1G-3GG

2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)

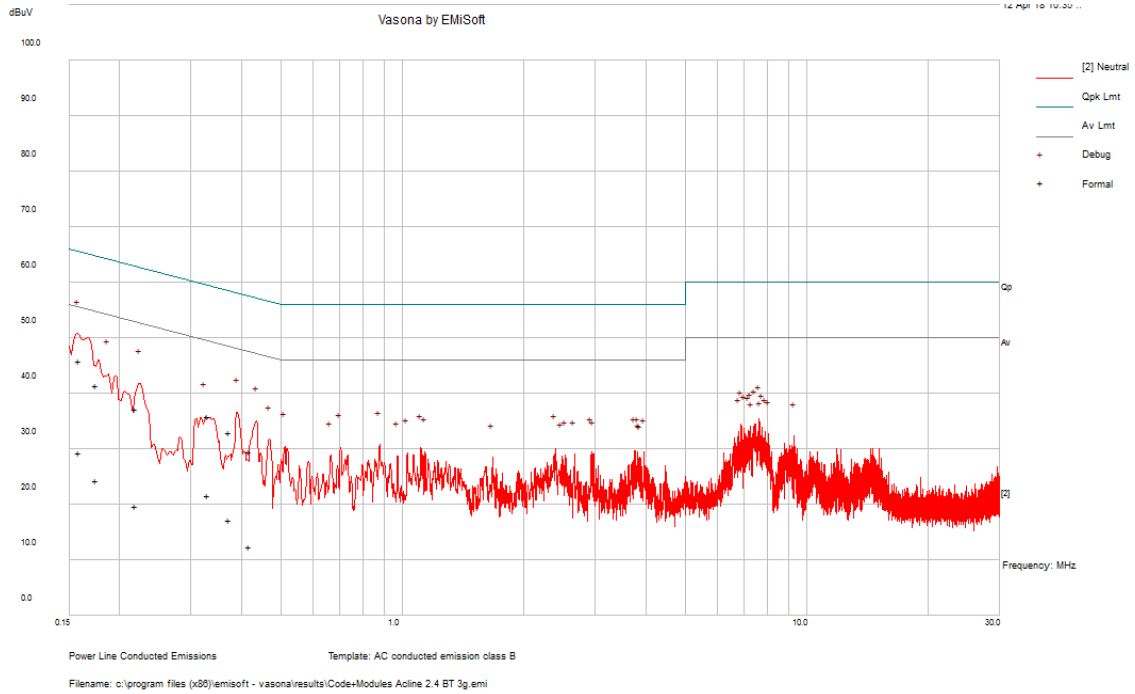
120 V, 60 Hz – Line



Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (QP/Ave.)
0.150196	47.13	Line	65.99	-18.86	QP
0.215674	39.3	Line	62.98	-23.68	QP
0.25474	38.1	Line	61.6	-23.51	QP
0.306663	34.47	Line	60.06	-25.6	QP
2.874609	25.48	Line	56	-30.52	QP
2.729167	26.83	Line	56	-29.17	QP

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (QP/Ave.)
0.150196	30.37	Line	55.99	-25.62	Ave.
0.215674	23.59	Line	52.98	-29.39	Ave.
0.25474	25.03	Line	51.6	-26.57	Ave.
0.306663	19.56	Line	50.06	-30.5	Ave.
2.874609	11.98	Line	46	-34.02	Ave.
2.729167	12.73	Line	46	-33.27	Ave.

120 V, 60 Hz – Neutral



Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (QP/Ave.)
0.158272	45.98	Neutral	65.55	-19.58	QP
0.174584	41.54	Neutral	64.74	-23.2	QP
0.219166	37.17	Neutral	62.85	-25.68	QP
0.372704	32.92	Neutral	58.44	-25.52	QP
0.419114	29.52	Neutral	57.47	-27.95	QP
0.329875	35.96	Neutral	59.45	-23.5	QP

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (QP/Ave.)
0.158272	29.42	Neutral	55.55	-26.13	Ave.
0.174584	24.37	Neutral	54.74	-30.37	Ave.
0.219166	19.75	Neutral	52.85	-33.1	Ave.
0.372704	17.25	Neutral	48.44	-31.19	Ave.
0.419114	12.44	Neutral	47.47	-35.03	Ave.
0.329875	21.61	Neutral	49.45	-27.84	Ave.

7 FCC §15.209, §15.247(d) & ISEDC RSS-247 §5.5, RSS-Gen §8.9, §8.10 - Spurious Radiated Emissions

7.1 Applicable Standards

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As Per FCC §15.205(a) and RSS-Gen 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 0.495 – 0.505 2.1735 – 2.1905 4.125 – 4.128 4.17725 – 4.17775 4.20725 – 4.20775 6.215 – 6.218 6.26775 – 6.26825 6.31175 – 6.31225 8.291 – 8.294 8.362 – 8.366 8.37625 – 8.38675 8.41425 – 8.41475 12.29 – 12.293 12.51975 – 12.52025 12.57675 – 12.57725 13.36 – 13.41	16.42 – 16.423 16.69475 – 16.69525 25.5 – 25.67 37.5 – 38.25 73 – 74.6 74.8 – 75.2 108 – 121.94 123 – 138 149.9 – 150.05 156.52475 – 156.52525 156.7 – 156.9 162.0125 –167.17 167.72 – 173.2 240 – 285 322 – 335.4 399.9 – 410 608 – 614	960 – 1240 1300 – 1427 1435 – 1626.5 1645.5 – 1646.5 1660 – 1710 1718.8 – 1722.2 2200 – 2300 2310 – 2390 2483.5 – 2500 2690 – 2900 3260 – 3267 3.332 – 3.339 3 3458 – 3 358 3.600 – 4.400	4. 5 – 5. 15 5. 35 – 5. 46 7.25 – 7.75 8.025 – 8.5 9.0 – 9.2 9.3 – 9.5 10.6 – 12.7 13.25 – 13.4 14.47 – 14.5 15.35 – 16.2 17.7 – 21.4 22.01 – 23.12 23.6 – 24.0 31.2 – 31.8 36.43 – 36.5 Above 38.6

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, 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**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

** 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 §15.247 (d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

As per ISEDC RSS-Gen 8.9,

> Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table 4 or Table 5 below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

Table 4 – General Field Strength Limits for Licence-Exempt Transmitters at Frequencies Above 30 MHz

Frequency (MHz)	Field Strength (µv/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960*	500

* Unless otherwise specified, for all frequencies greater than 1 GHz, the radiated emission limits for license-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 dB above the average limit.

Note: Transmitting devices are not permitted in restricted frequency bands unless stated otherwise in the specific RSS.

As per ISEDC RSS-247 §5.5, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

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 Subpart C and ISEDC 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 was set 3 meter away from the testing antenna, which was varied from 1-4 meter, and the EUT was placed on a turntable, which was 0.8 meter and 1.5 meter above the ground plane for below and above 1000 MHz measurements, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna's polarity should be changed between horizontal and vertical.

The spectrum analyzer or receiver was set as:

Below 1000 MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000 MHz:

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

7.4 Corrected Amplitude and 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:

$$CA = Ai + AF + CL + Atten - Ga$$

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. The equation for margin calculation is as follows:

Margin = Corrected Amplitude - Limit

7.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde and Schwarz	Receiver, EMI Test	ESCI 1166.5950K03	100044	2017-09-19	2 years
Agilent	Analyzer, Spectrum	E4446A	US44300386	2017-04-20	1 year
Rohde & Schwarz	Analyzer, Spectrum	FSQ26	200749	2017-06-08	2 years
Sunol Sciences	System Controller	SC99V	011003-1	N/R	N/A
Sunol Sciences	Antenna, Biconi-Log	JB1	A013105-3	2018-02-26	2 years
Wisewave	Antenna, Horn	ARH-4223-02	10555-02	2017-12-15	2 years
Agilent	Amplifier, Pre	8447D	2944A10187	2018-04-02	1 year
IW	AOBOR Hi frequency Co AX Cable	DC 1531	KPS-1501A3960KPS	2017-08-05	1 year
-	SMA cable	-	C00011	Each time[1]	N/A
-	N-Type Cable	-	C00012	Each time[1]	N/A
-	N-Type Cable	-	C00014	Each time[1]	N/A
HP	Pre-Amplifier	8449B	3147A00400	2018-02-02	1 year
Sunol Sciences	Antenna, Horn	DRH-118	A052704	2017-03-27	2 years
Vasona	Test software	V6.0 build 11	10400213	N/R	N/R

Note[1]: cables included in the test set-up will be checked each time before testing.

Statement of Traceability: BACL Corp. *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with A2LA Policy P102 (dated 09 June 2016) "A2LA Policy on Metrological Traceability".*

7.6 Test Environmental Conditions

Temperature:	20-22 ºC
Relative Humidity:	42-50 %
ATM Pressure:	102.7 kPa

The testing was performed by Vincent Licata 2018-04-03 to 2018-04-12 in 5m chamber 3.

7.7 Summary of Test Results

According to the data hereinafter, the EUT complied with FCC Title 47, Part 15C and ISEDC RSS-247 standard's radiated emissions limits, and had the worst margin of:

2.4 GHz Wi-Fi

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Mode**
-0.93	198.6223	Horizontal	DO-1G-3GG Colocation

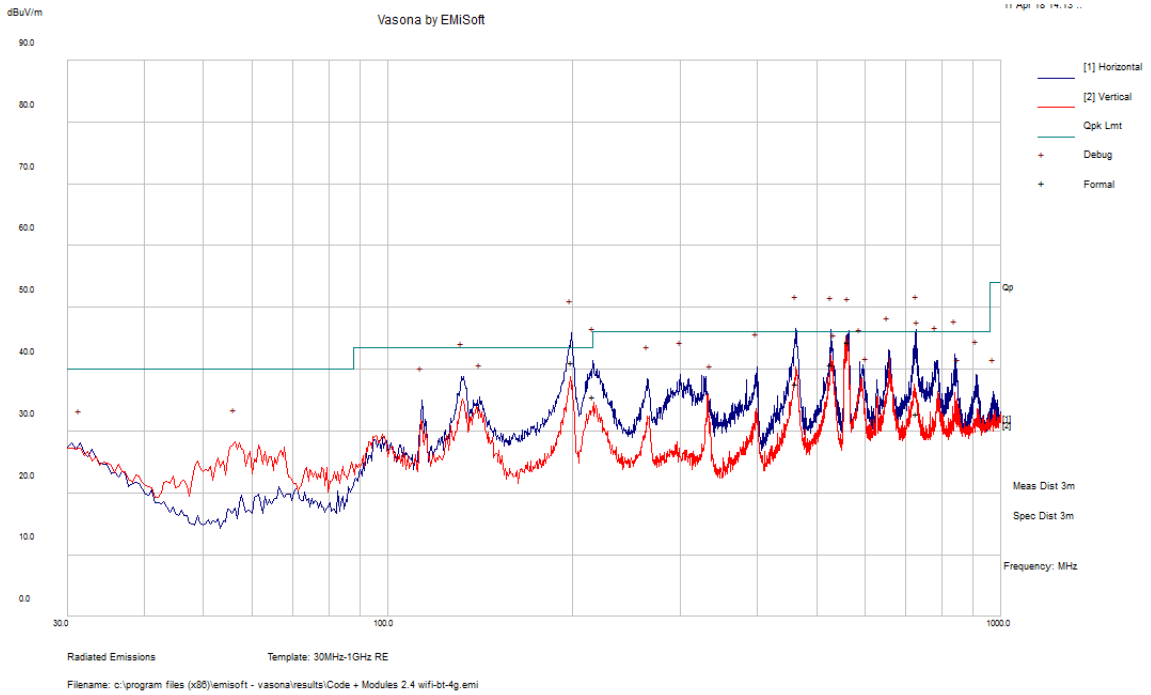
Please refer to the following table and plots for specific test result details

7.8 Radiated Emissions Test Results

1) 30 MHz – 1 GHz Worst Case, Measured at 3 meters

PP-4G-LTA

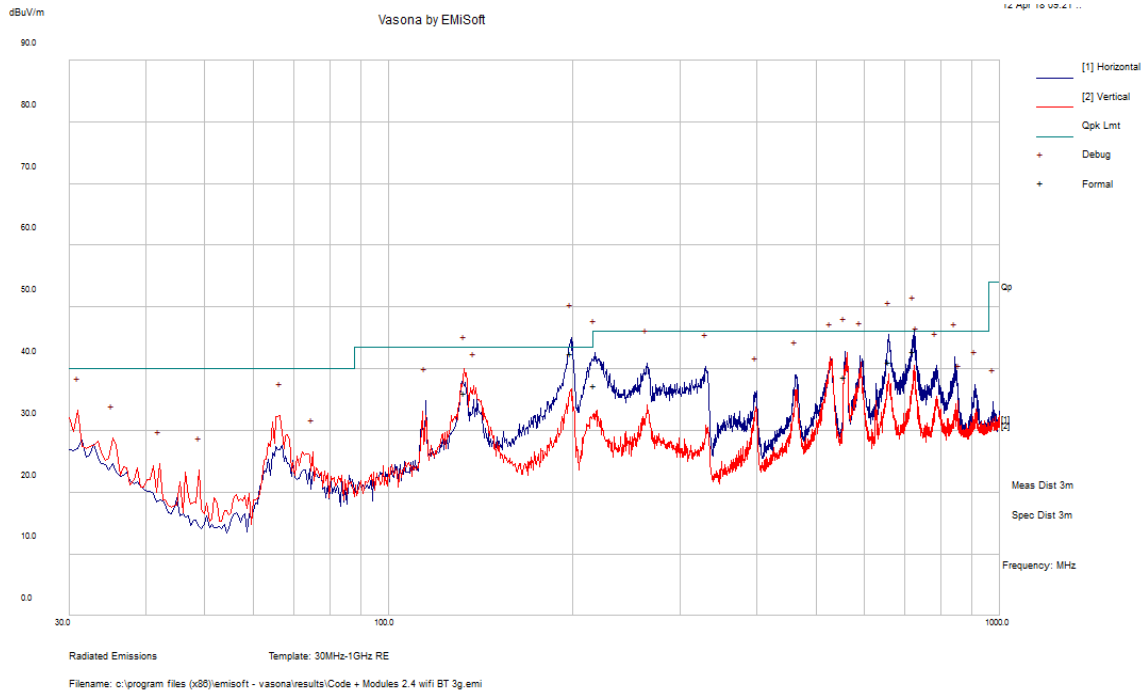
2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
199.1575	41.19	160	H	48	43.5	-2.31	QP
463.2548	37.64	220	H	83	46	-8.36	QP
728.4983	32.9	204	H	207	46	-13.1	QP
527.9353	40.71	167	H	206	46	-5.29	QP
564.2698	44.36	123	H	50	46	-1.64	QP
215.9758	35.58	164	H	188	43.5	-7.92	QP

DO-1G-3GG

2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Comment
198.6223	42.57	177	H	239	43.5	-0.93	QP
723.3018	42.79	100	H	14	46	-3.21	QP
658.029	41.06	125	H	41	46	-4.94	QP
557.418	38.64	171	H	60	46	-7.36	QP
217.0763	37.25	134	H	213	46	-8.75	QP
132.7823	36.08	100	V	140	43.5	-7.42	QP

2) 1–25 GHz Measured at 3 meters

802.11b mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/ISEDC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	71.24	213	193	H	28.93	5.76	0	105.93	-	-	PK
2412	68.31	213	193	H	28.93	5.76	0	103.00	-	-	AV
2412	66.51	205	300	V	28.93	5.76	0	101.20	-	-	PK
2412	63.42	205	300	V	28.93	5.76	0	98.11	-	-	AV
2390	56.85	213	193	H	28.93	6.524	32.207	60.10	74.00	-13.90	PK
2390	49.04	213	193	H	28.93	6.524	32.207	52.29	54.00	-1.71	AV
2390	55.27	205	300	V	28.93	6.524	32.207	58.52	74.00	-15.48	PK
2390	47.47	205	300	V	28.93	6.524	32.207	50.72	54.00	-3.28	AV
4824	46.23	37	300	H	32.56	9.36	32.993	55.16	74.00	-18.84	PK
4824	35.90	37	300	H	32.56	9.36	32.993	44.83	54.00	-9.17	AV
4824	45.75	318	293	V	32.56	9.36	32.993	54.68	74.00	-19.32	PK
4824	32.01	318	293	V	32.56	9.36	32.993	40.94	54.00	-13.06	AV
Middle Channel 2437 MHz											
2437	71.87	35	195	H	28.93	5.76	0	106.56	-	-	PK
2437	68.82	35	195	H	28.93	5.76	0	103.51	-	-	AV
2437	65.93	94	288	V	28.93	5.76	0	100.62	-	-	PK
2437	63.04	94	288	V	28.93	5.76	0	97.73	-	-	AV
4874	45.31	39	230	H	32.53	9.46	32.993	54.30	74.00	-19.70	PK
4874	34.79	39	230	H	32.53	9.46	32.993	43.78	54.00	-10.22	AV
4874	44.58	318	300	V	32.53	9.46	32.993	53.57	74.00	-20.43	PK
4874	31.71	318	300	V	32.53	9.46	32.993	40.70	54.00	-13.30	AV
High Channel 2462 MHz											
2462	72.37	47	234	H	29.19	5.86	0	107.42	-	-	PK
2462	69.36	47	234	H	29.19	5.86	0	104.41	-	-	AV
2462	66.08	171	284	V	29.19	5.86	0	101.13	-	-	PK
2462	63.10	171	284	V	29.19	5.86	0	98.15	-	-	AV
2483.5	55.41	47	234	H	29.18	6.62	32.413	58.79	74.00	-15.21	PK
2483.5	47.46	47	234	H	29.18	6.62	32.413	50.84	54.00	-3.16	AV
2483.5	53.35	171	284	V	29.18	6.62	32.413	56.73	74.00	-17.27	PK
2483.5	44.07	171	284	V	29.18	6.62	32.413	47.45	54.00	-6.55	AV
4924	45.50	41	197	H	32.70	9.42	32.993	54.62	74.00	-19.38	PK
4924	34.84	41	197	H	32.70	9.42	32.993	43.96	54.00	-10.04	AV
4924	44.68	319	291	V	32.70	9.42	32.993	53.80	74.00	-20.20	PK
4924	31.99	319	291	V	32.70	9.42	32.993	41.11	54.00	-12.89	AV

802.11g mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/ISEDC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	68.15	53	242	H	28.93	5.76	0	102.84	-	-	PK
2412	60.25	53	242	H	28.93	5.76	0	94.94	-	-	AV
2412	60.63	89	261	V	28.93	5.76	0	95.32	-	-	PK
2412	52.45	89	261	V	28.93	5.76	0	87.14	-	-	AV
2390	53.67	53	242	H	28.93	6.524	32.207	56.92	74.00	-17.08	PK
2390	40.62	53	242	H	28.93	6.524	32.207	43.87	54.00	-10.13	AV
2390	50.22	89	261	V	28.93	6.524	32.207	53.47	74.00	-20.53	PK
2390	38.60	89	261	V	28.93	6.524	32.207	41.85	54.00	-12.15	AV
4824	44.93	0	100	H	32.56	9.36	32.993	53.86	74.00	-20.14	PK
4824	31.19	0	100	H	32.56	9.36	32.993	40.12	54.00	-13.88	AV
4824	45.13	0	100	V	32.56	9.36	32.993	54.06	74.00	-19.94	PK
4824	30.84	0	100	V	32.56	9.36	32.993	39.77	54.00	-14.23	AV
Middle Channel 2437 MHz											
2437	67.29	45	240	H	28.93	5.76	0	101.98	-	-	PK
2437	59.84	45	240	H	28.93	5.76	0	94.53	-	-	AV
2437	60.64	96	135	V	28.93	5.76	0	95.33	-	-	PK
2437	52.51	96	135	V	28.93	5.76	0	87.20	-	-	AV
4874	44.09	0	100	H	32.53	9.46	32.993	53.08	74.00	-20.92	PK
4874	30.38	0	100	H	32.53	9.46	32.993	39.37	54.00	-14.63	AV
4874	44.01	0	100	V	32.53	9.46	32.993	53.00	74.00	-21.00	PK
4874	30.16	0	100	V	32.53	9.46	32.993	39.15	54.00	-14.85	AV
High Channel 2462 MHz											
2462	67.99	48	230	H	29.19	5.86	0	103.04	-	-	PK
2462	60.19	48	230	H	29.19	5.86	0	95.24	-	-	AV
2462	66.35	173	281	V	29.19	5.86	0	101.40	-	-	PK
2462	59.13	173	281	V	29.19	5.86	0	94.18	-	-	AV
2483.5	64.09	48	230	H	29.18	6.62	32.413	67.47	74.00	-6.53	PK
2483.5	47.69	48	230	H	29.18	6.62	32.413	51.07	54.00	-2.93	AV
2483.5	63.19	173	281	V	29.18	6.62	32.413	66.57	74.00	-7.43	PK
2483.5	46.34	173	281	V	29.18	6.62	32.413	49.72	54.00	-4.28	AV
4924	45.71	0	100	H	32.70	9.42	32.993	54.83	74.00	-19.17	PK
4924	34.57	0	100	H	32.70	9.42	32.993	43.69	54.00	-10.31	AV
4924	45.80	0	100	V	32.70	9.42	32.993	54.92	74.00	-19.08	PK
4924	34.53	0	100	V	32.70	9.42	32.993	43.65	54.00	-10.35	AV

802.11n20 mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/ISEDC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	68.01	212	188	H	28.93	5.76	0	102.70	-	-	PK
2412	59.17	212	188	H	28.93	5.76	0	93.86	-	-	AV
2412	61.75	101	287	V	28.93	5.76	0	96.44	-	-	PK
2412	52.81	101	287	V	28.93	5.76	0	87.50	-	-	AV
2390	61.63	212	188	H	28.93	6.524	32.207	64.88	74.00	-9.12	PK
2390	43.08	212	188	H	28.93	6.524	32.207	46.33	54.00	-7.67	AV
2390	54.59	101	287	V	28.93	6.524	32.207	57.84	74.00	-16.16	PK
2390	38.80	101	287	V	28.93	6.524	32.207	42.05	54.00	-11.95	AV
4824	45.47	0	100	H	32.56	9.36	32.993	54.40	74.00	-19.60	PK
4824	31.07	0	100	H	32.56	9.36	32.993	40.00	54.00	-14.00	AV
4824	44.79	0	100	V	32.56	9.36	32.993	53.72	74.00	-20.28	PK
4824	31.22	0	100	V	32.56	9.36	32.993	40.15	54.00	-13.85	AV
Middle Channel 2437 MHz											
2437	69.50	37	232	H	28.93	5.76	0	104.19	-	-	PK
2437	62.04	37	232	H	28.93	5.76	0	96.73	-	-	AV
2437	61.30	94	290	V	28.93	5.76	0	95.99	-	-	PK
2437	52.73	94	290	V	28.93	5.76	0	87.42	-	-	AV
4874	44.19	0	100	H	32.53	9.46	32.993	53.18	74.00	-20.82	PK
4874	30.42	0	100	H	32.53	9.46	32.993	39.41	54.00	-14.59	AV
4874	44.05	0	100	V	32.53	9.46	32.993	53.04	74.00	-20.96	PK
4874	30.12	0	100	V	32.53	9.46	32.993	39.11	54.00	-14.89	AV
High Channel 2462 MHz											
2462	70.18	214	183	H	29.19	5.86	0	105.23	-	-	PK
2462	62.20	214	183	H	29.19	5.86	0	97.25	-	-	AV
2462	66.40	170	282	V	29.19	5.86	0	101.45	-	-	PK
2462	58.15	170	282	V	29.19	5.86	0	93.20	-	-	AV
2483.5	64.64	214	183	H	29.18	6.62	32.413	68.02	74.00	-5.98	PK
2483.5	46.78	214	183	H	29.18	6.62	32.413	50.16	54.00	-3.84	AV
2483.5	63.21	170	282	V	29.18	6.62	32.413	66.59	74.00	-7.41	PK
2483.5	44.25	170	282	V	29.18	6.62	32.413	47.63	54.00	-6.37	AV
4924	45.91	0	100	H	32.70	9.42	32.993	55.03	74.00	-18.97	PK
4924	34.43	0	100	H	32.70	9.42	32.993	43.55	54.00	-10.45	AV
4924	46.40	0	100	V	32.70	9.42	32.993	55.52	74.00	-18.48	PK
4924	34.62	0	100	V	32.70	9.42	32.993	43.74	54.00	-10.26	AV

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/ISEDC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2422 MHz											
2422	65.00	214	186	H	28.93	5.76	0	99.69	-	-	PK
2422	56.01	214	186	H	28.93	5.76	0	90.70	-	-	AV
2422	62.09	172	280	V	28.93	5.76	0	96.78	-	-	PK
2422	54.11	172	280	V	28.93	5.76	0	88.80	-	-	AV
2390	56.90	214	186	H	28.93	6.524	32.207	60.15	74.00	-13.85	PK
2390	44.64	214	186	H	28.93	6.524	32.207	47.89	54.00	-6.11	AV
2390	55.41	172	280	V	28.93	6.524	32.207	58.66	74.00	-15.34	PK
2390	42.66	172	280	V	28.93	6.524	32.207	45.91	54.00	-8.09	AV
4844	46.07	0	100	H	32.56	9.36	32.993	55.00	74.00	-19.00	PK
4844	35.25	0	100	H	32.56	9.36	32.993	44.18	54.00	-9.82	AV
4844	45.61	0	100	V	32.56	9.36	32.993	54.54	74.00	-19.46	PK
4844	35.09	0	100	V	32.56	9.36	32.993	44.02	54.00	-9.98	AV
Middle Channel 2437 MHz											
2437	65.48	212	190	H	28.93	5.76	0	100.17	-	-	PK
2437	56.59	212	190	H	28.93	5.76	0	91.28	-	-	AV
2437	62.33	172	300	V	28.93	5.76	0	97.02	-	-	PK
2437	54.20	172	300	V	28.93	5.76	0	88.89	-	-	AV
4874	44.70	0	100	H	32.53	9.46	32.993	53.69	74.00	-20.31	PK
4874	30.55	0	100	H	32.53	9.46	32.993	39.54	54.00	-14.46	AV
4874	44.32	0	100	V	32.53	9.46	32.993	53.31	74.00	-20.69	PK
4874	30.25	0	100	V	32.53	9.46	32.993	39.24	54.00	-14.76	AV
High Channel 2452 MHz											
2452	65.98	210	184	H	29.19	5.86	0	101.03	-	-	PK
2452	57.45	210	184	H	29.19	5.86	0	92.50	-	-	AV
2452	62.46	172	282	V	29.19	5.86	0	97.51	-	-	PK
2452	54.31	172	282	V	29.19	5.86	0	89.36	-	-	AV
2483.5	66.15	210	184	H	29.18	6.62	32.413	69.53	74.00	-4.47	PK
2483.5	49.47	210	184	H	29.18	6.62	32.413	52.85	54.00	-1.15	AV
2483.5	62.53	172	282	V	29.18	6.62	32.413	65.91	74.00	-8.09	PK
2483.5	45.74	172	282	V	29.18	6.62	32.413	49.12	54.00	-4.88	AV
4904	45.97	0	100	H	32.70	9.42	32.993	55.09	74.00	-18.91	PK
4904	35.22	0	100	H	32.70	9.42	32.993	44.34	54.00	-9.66	AV
4904	45.63	0	100	V	32.70	9.42	32.993	54.75	74.00	-19.25	PK
4904	35.12	0	100	V	32.70	9.42	32.993	44.24	54.00	-9.76	AV

BLE

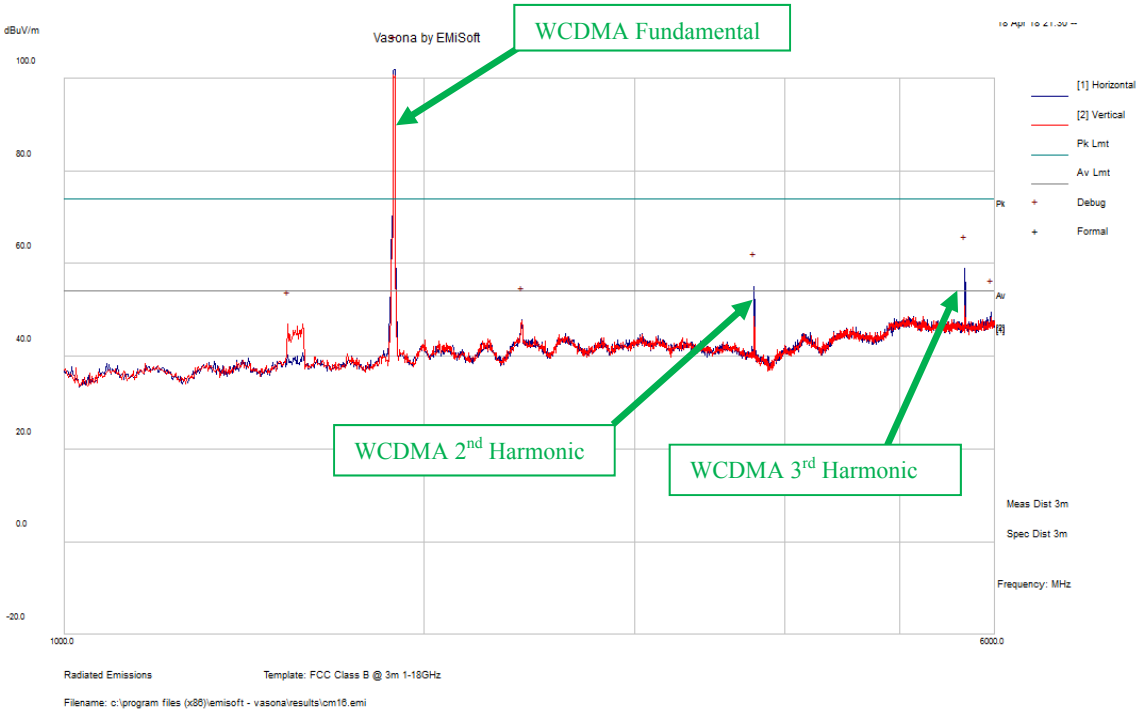
Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC/ISEDC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
Low Channel 2402 MHz											
2402	56.24	200	152	H	28.93	5.76	0	90.93	-	-	PK
2402	54.80	200	152	H	28.93	5.76	0	89.49	-	-	AV
2402	54.89	202	286	V	28.93	5.76	0	89.58	-	-	PK
2402	53.98	202	286	V	28.93	5.76	0	88.67	-	-	AV
2390	59.01	200	152	H	28.93	6.524	32.207	62.26	74.00	-11.74	PK
2390	36.64	200	152	H	28.93	6.524	32.207	39.89	54.00	-14.11	AV
2390	51.08	202	286	V	28.93	6.524	32.207	54.33	74.00	-19.67	PK
2390	36.60	202	286	V	28.93	6.524	32.207	39.85	54.00	-14.15	AV
4804	45.46	0	100	H	32.56	9.36	32.993	54.39	74.00	-19.61	PK
4804	34.45	0	100	H	32.56	9.36	32.993	43.38	54.00	-10.62	AV
4804	45.27	0	100	V	32.56	9.36	32.993	54.20	74.00	-19.80	PK
4804	34.42	0	100	V	32.56	9.36	32.993	43.35	54.00	-10.65	AV
Middle Channel 2440 MHz											
2440	57.22	202	200	H	28.93	5.76	0	91.91	-	-	PK
2440	56.13	202	200	H	28.93	5.76	0	90.82	-	-	AV
2440	55.73	201	276	V	28.93	5.76	0	90.42	-	-	PK
2440	54.86	201	276	V	28.93	5.76	0	89.55	-	-	AV
4880	44.19	0	100	H	32.53	9.46	32.993	53.18	74.00	-20.82	PK
4880	33.61	0	100	H	32.53	9.46	32.993	42.60	54.00	-11.40	AV
4880	44.01	0	100	V	32.53	9.46	32.993	53.00	74.00	-21.00	PK
4880	33.66	0	100	V	32.53	9.46	32.993	42.65	54.00	-11.35	AV
High Channel 2480 MHz											
2480	58.45	204	192	H	29.19	5.86	0	93.50	-	-	PK
2480	57.72	204	192	H	29.19	5.86	0	92.77	-	-	AV
2480	58.18	202	300	V	29.19	5.86	0	93.23	-	-	PK
2480	57.22	202	300	V	29.19	5.86	0	92.27	-	-	AV
2483.5	62.54	204	192	H	29.18	6.62	32.413	65.92	74.00	-8.08	PK
2483.5	46.38	204	192	H	29.18	6.62	32.413	49.76	54.00	-4.24	AV
2483.5	61.47	202	300	V	29.18	6.62	32.413	64.85	74.00	-9.15	PK
2483.5	45.70	202	300	V	29.18	6.62	32.413	49.08	54.00	-4.92	AV
4960	42.60	0	100	H	32.70	9.42	32.993	51.72	74.00	-22.28	PK
4960	31.76	0	100	H	32.70	9.42	32.993	40.88	54.00	-13.12	AV
4960	42.24	0	100	V	32.70	9.42	32.993	51.36	74.00	-22.64	PK
4960	32.15	0	100	V	32.70	9.42	32.993	41.27	54.00	-12.73	AV

Note: Any Emission above the second harmonic is due to noise floor.

1-6 GHz

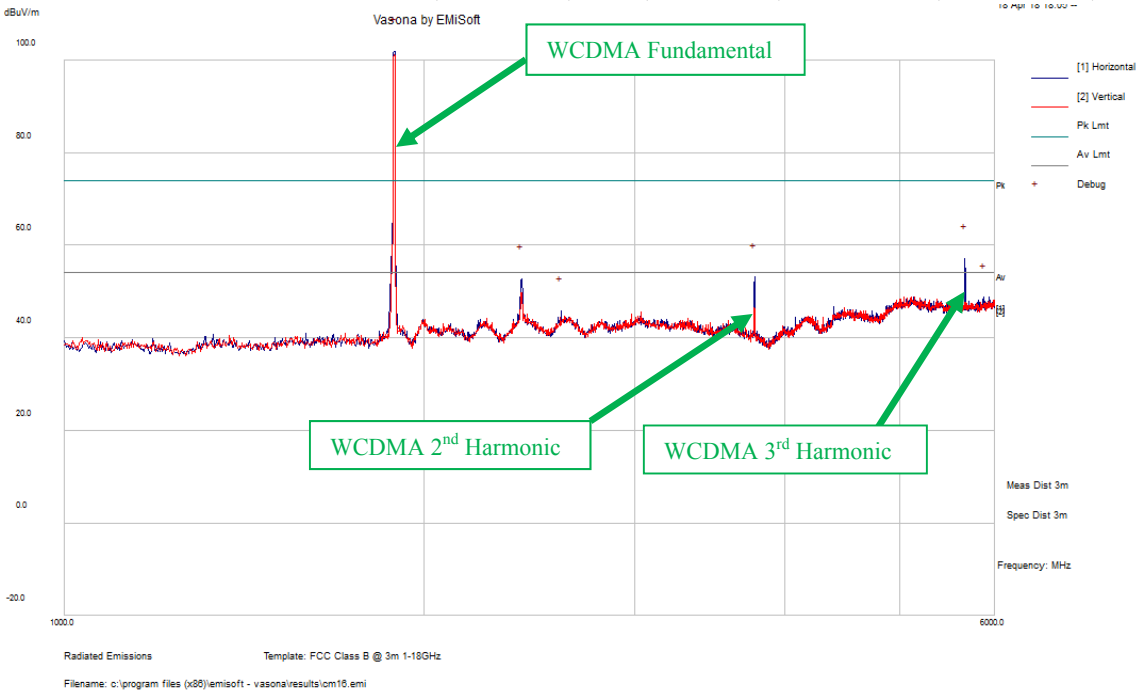
PP-4G-LTA

2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)



DO-1G-3GG

2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)

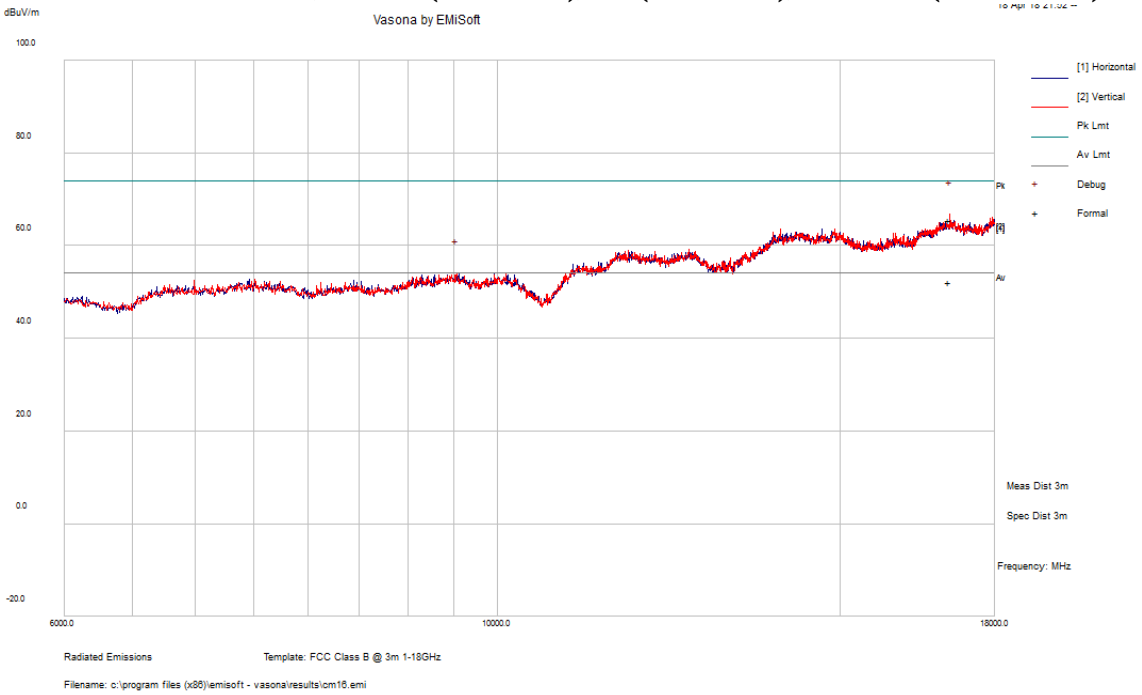


Note: After verification, the 2nd and 3rd Harmonics from the WCDMA signal was not due to colocation so therefore were not evaluated.

6-18 GHz

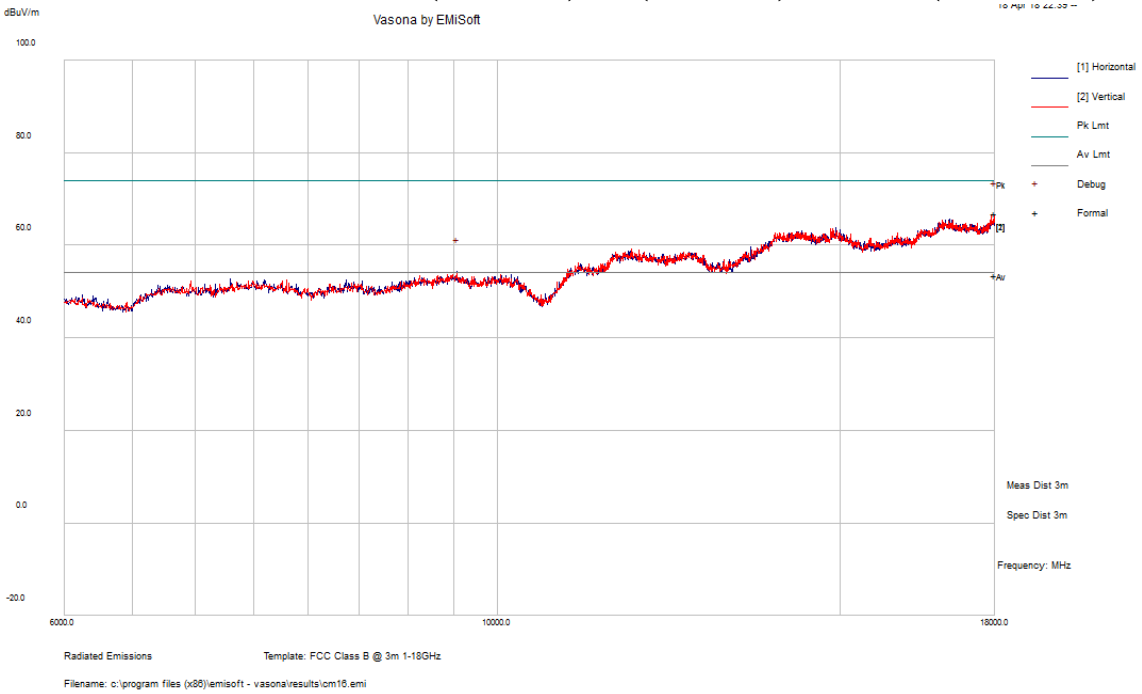
PP-4G-LTA

2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)



DO-1G-3GG

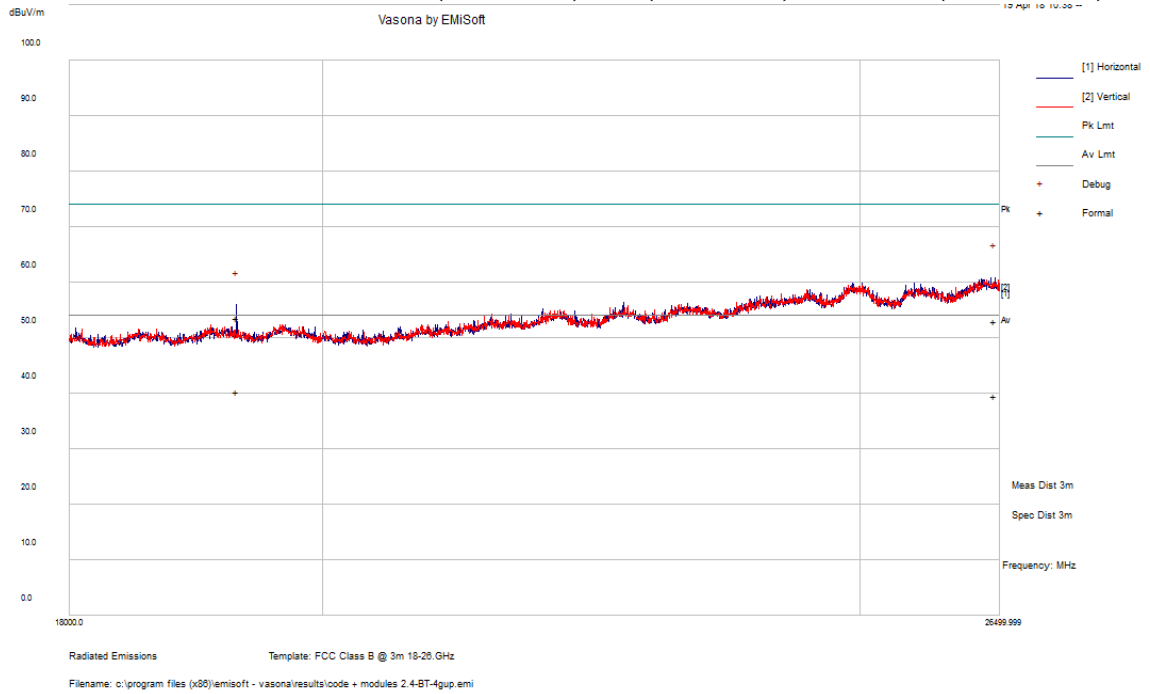
2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)



18-26.5 GHz

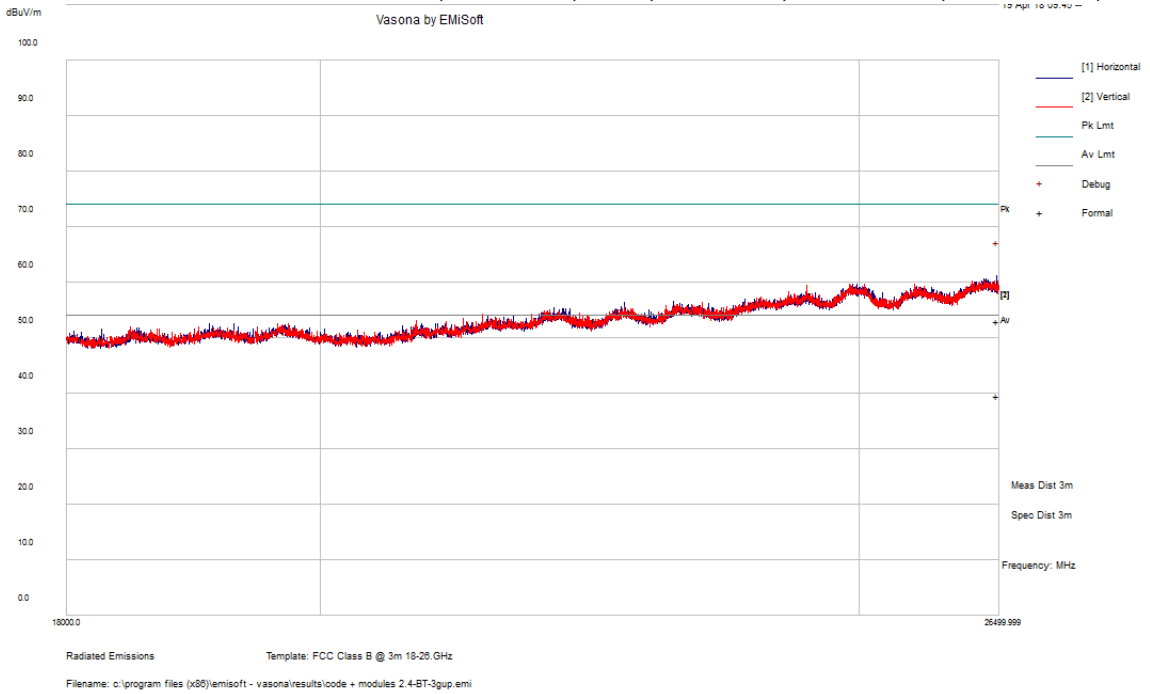
PP-4G-LTA

2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)



DO-1G-3GG

2.4 GHz Wi-Fi, b mode (2412 MHz), BT (2480 MHz), WCDMA (1888.4 MHz)



8 FCC §15.247(a) (2) & ISEDC RSS-247 §5.2 -Emission Bandwidth

8.1 Applicable Standards

According to ECFR §15.247(a) (2) and ISEDC RSS-247 §5.2, systems using digital modulation techniques may operate in the 902~928 MHz, 2400~2483.5 MHz, and 5725~5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz

8.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v04: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 8: DTS bandwidth

8.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Analyzer, Spectrum	E4446A	US44300386	2017-04-20	1 year
Rohde & Schwarz	Analyzer, Spectrum	FSQ26	200749	2017-06-08	2 years
-	RF cable	-	-	Each time[1]	N/A
-	10dB attenuator	-	-	Each time[1]	N/A

Note[1]: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: BACL Corp. *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with A2LA Policy P102 (dated 09 June 2016) "A2LA Policy on Metrological Traceability".*

8.4 Test Environmental Conditions

Temperature:	23º C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

The testing was performed by Vincent Licata on 2018-03-23 and 2018-03-27 in RF site.

8.5 Test Results

99% and 6 dB Bandwidth

Antenna Port A

Channel	Frequency (MHz)	99% OBW (kHz)	6 dB BW (kHz)	6 dB OBW limit (kHz)
802.11b mode				
Low	2412	13183.5	10093	500
Middle	2437	13119.6	10107	500
High	2462	13152.7	10107	500
802.11g mode				
Low	2412	16528.3	16404	500
Middle	2437	16531.3	16395	500
High	2462	16530.5	16347	500
802.11n20 mode				
Low	2412	17560.1	17462	500
Middle	2437	17559.8	17372	500
High	2462	17559.9	17589	500
802.11n40 mode				
Low	2422	36006.3	35712	500
Middle	2437	36028.5	35730	500
High	2452	36035.7	35722	500

Antenna Port B

Channel	Frequency (MHz)	99% OBW (kHz)	6 dB BW (kHz)	6 dB OBW limit (kHz)
802.11b mode				
Low	2412	13279.5	10111	500
Middle	2437	13266.6	10126	500
High	2462	13176.1	10130	500
802.11g mode				
Low	2412	16508.7	16395	500
Middle	2437	16497.9	16379	500
High	2462	16499.7	16377	500
802.11n20 mode				
Low	2412	17570.4	17587	500
Middle	2437	17569.9	17575	500
High	2462	17569.2	17133	500
802.11n40 mode				
Low	2422	35992.7	36303	500
Middle	2437	35994.6	35693	500
High	2452	36039.0	35214	500

BLE

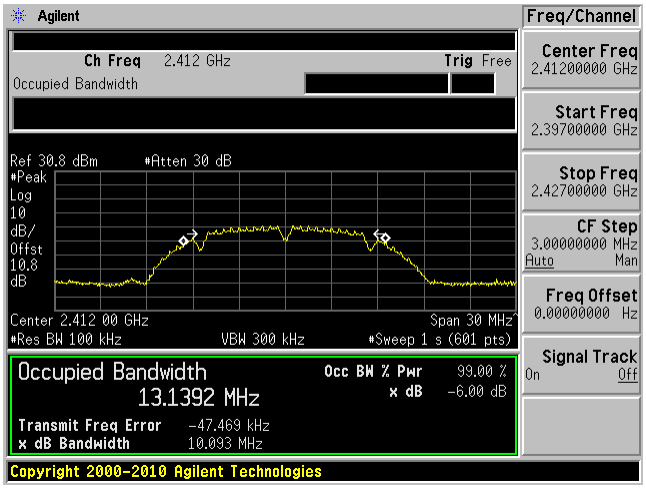
Channel	Frequency (MHz)	99% OBW (kHz)	6 dB BW (kHz)	6 dB OBW limit (kHz)
BLE				
Low	2402	1024.04	663.46	500
Middle	2440	1024.04	663.46	500
High	2480	1028.85	663.46	500

Please refer to the following plots for detailed test results.

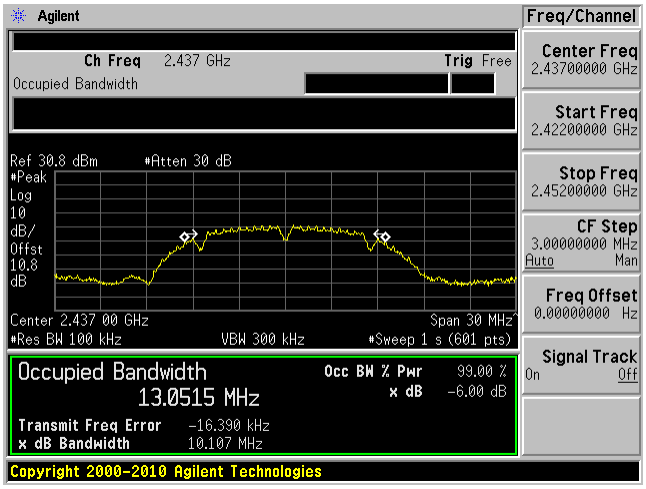
6 dB Emission Bandwidth

802.11b mode ANT A

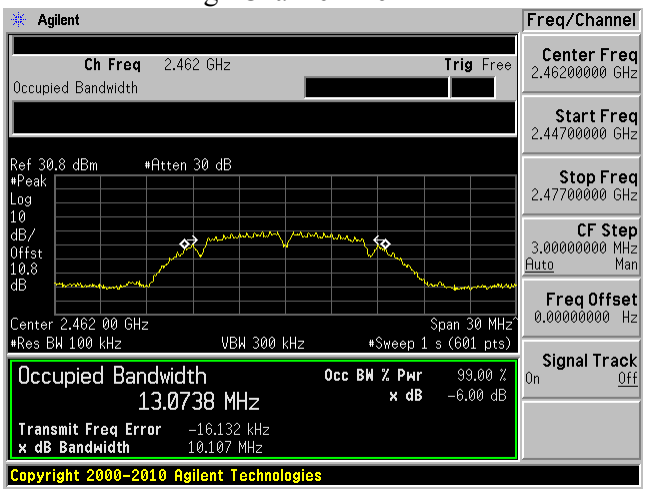
Low Channel 2412 MHz



Middle Channel 2437 MHz

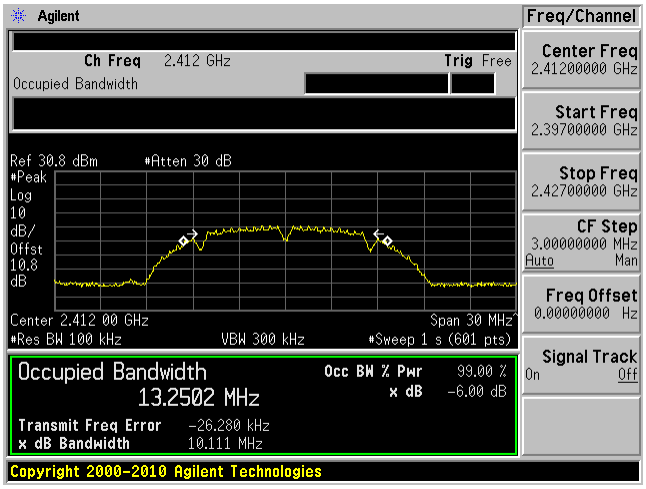


High Channel 2462 MHz

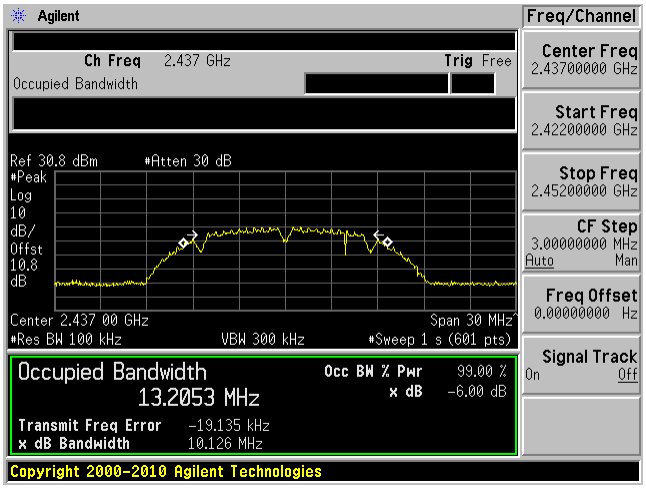


802.11b mode ANT B

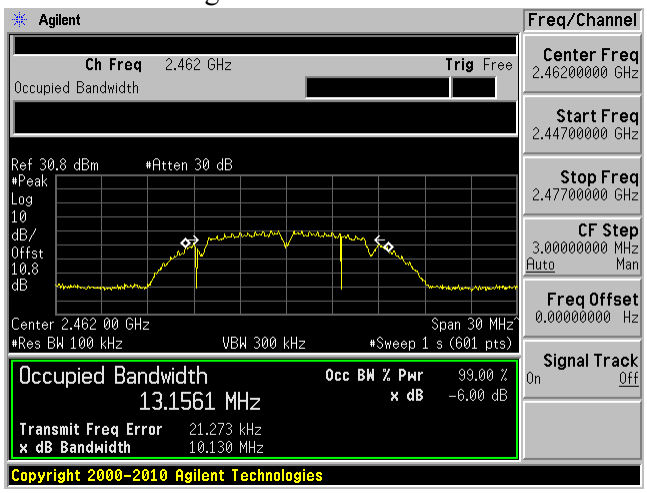
Low Channel 2412 MHz



Middle Channel 2437 MHz

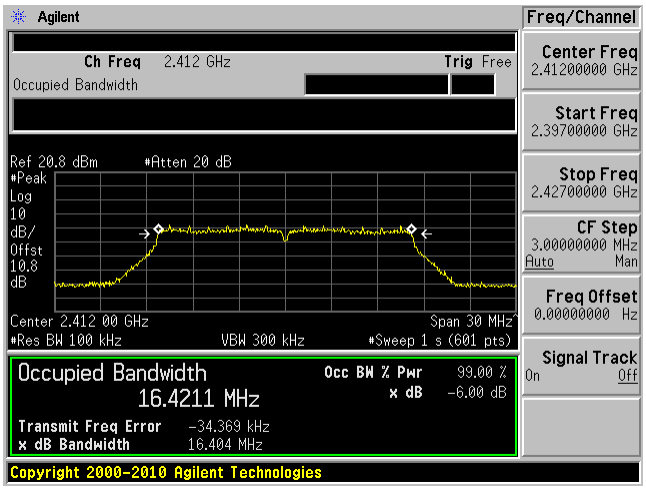


High Channel 2462 MHz

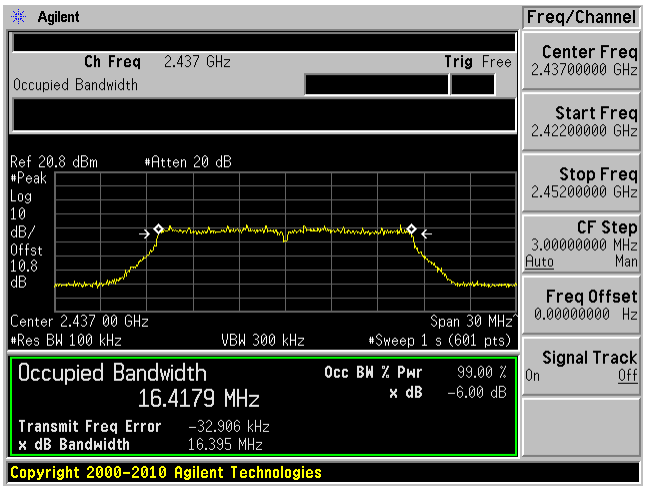


802.11g mode ANT A

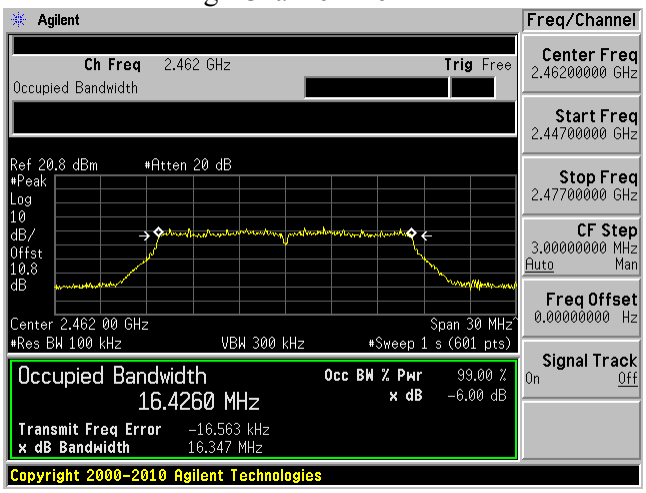
Low Channel 2412 MHz



Middle Channel 2437 MHz

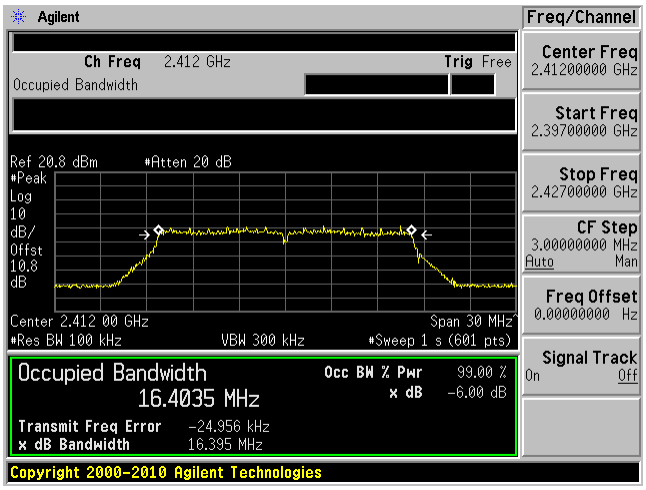


High Channel 2462 MHz

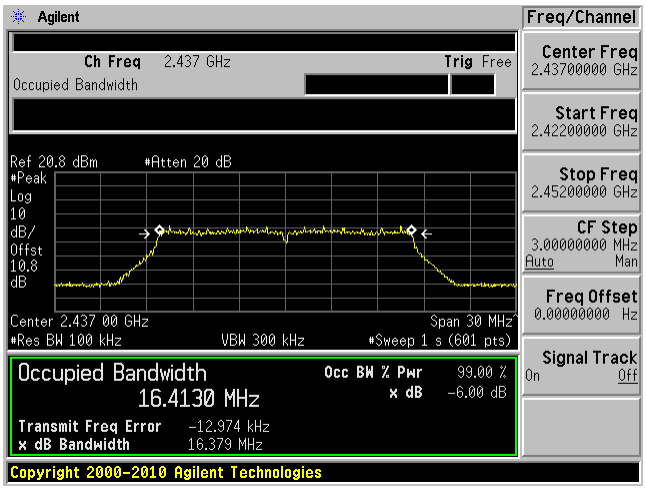


802.11g mode ANT B

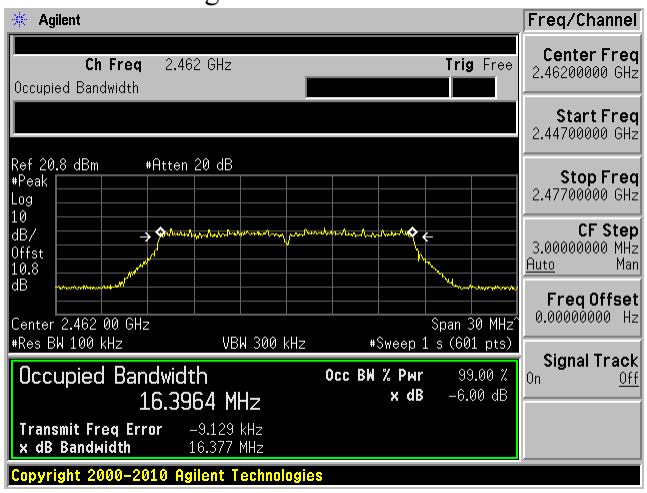
Low Channel 2412 MHz



Middle Channel 2437 MHz

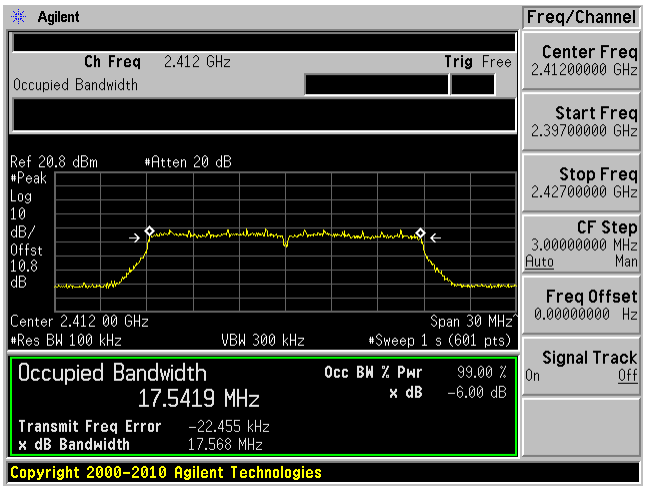


High Channel 2462 MHz

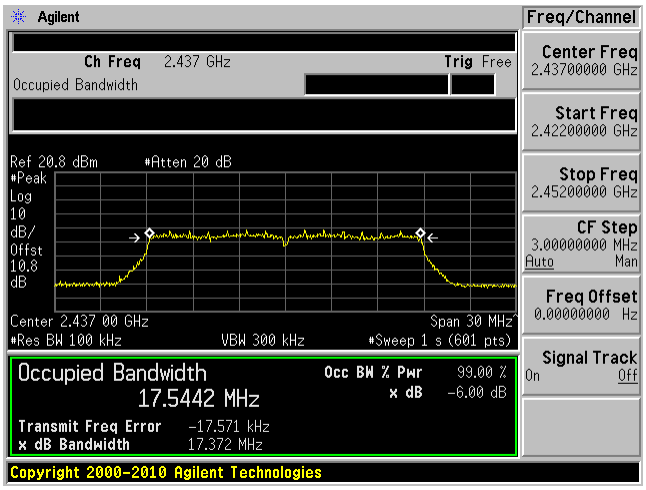


802.11n20 mode ANT A

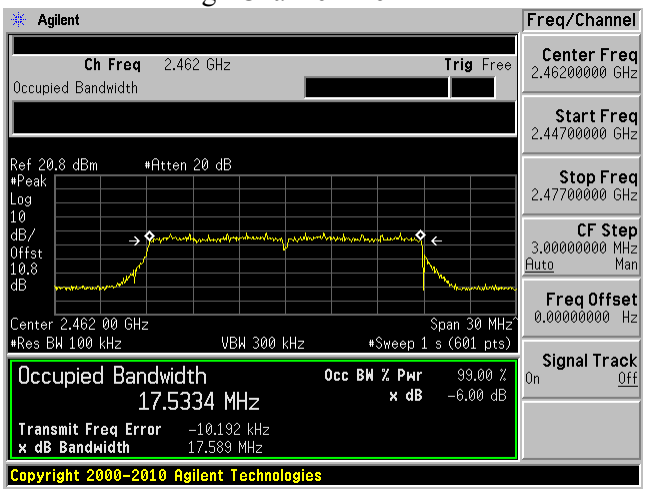
Low Channel 2412 MHz



Middle Channel 2437 MHz

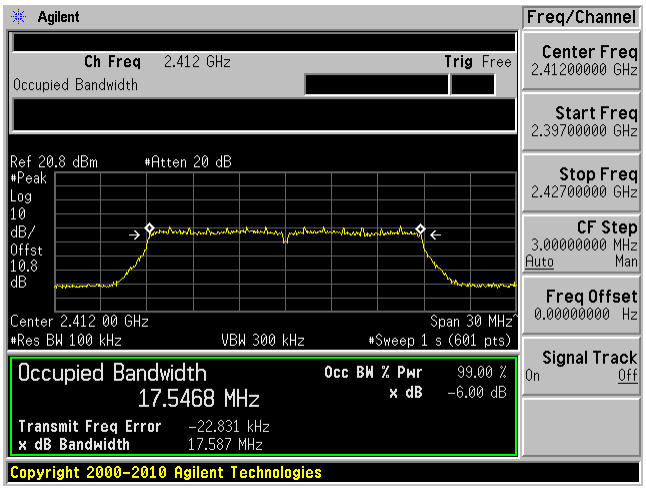


High Channel 2462 MHz

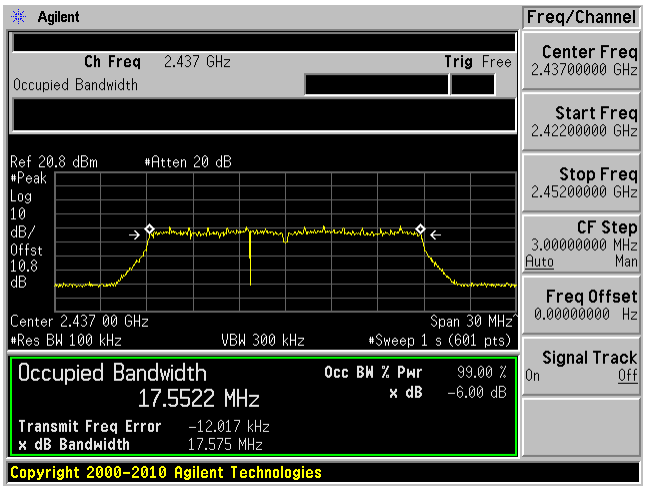


802.11n20 mode ANT B

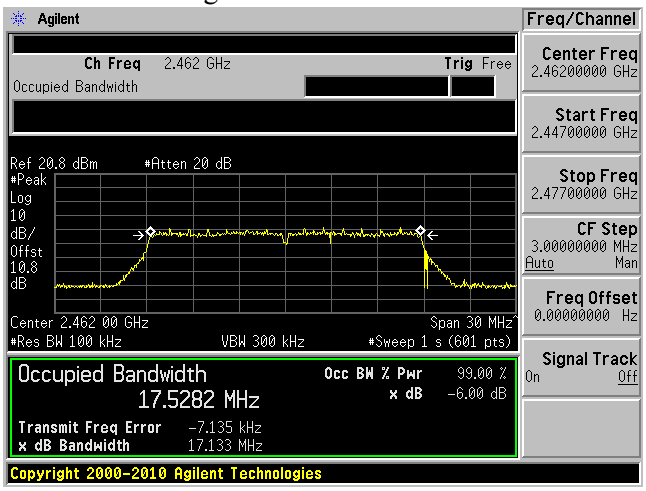
Low Channel 2412 MHz



Middle Channel 2437 MHz

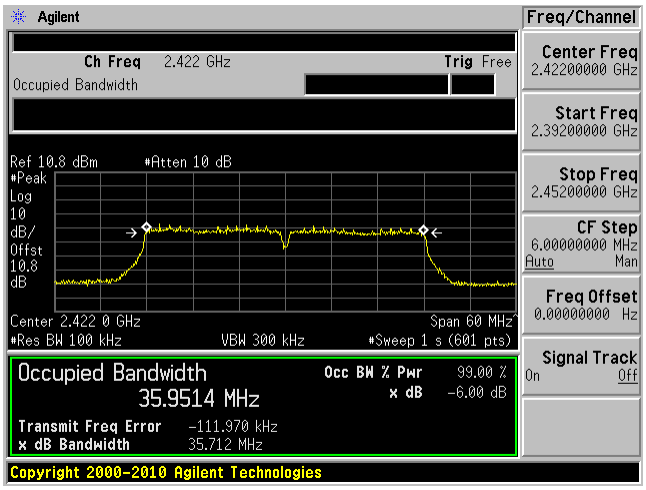


High Channel 2462 MHz

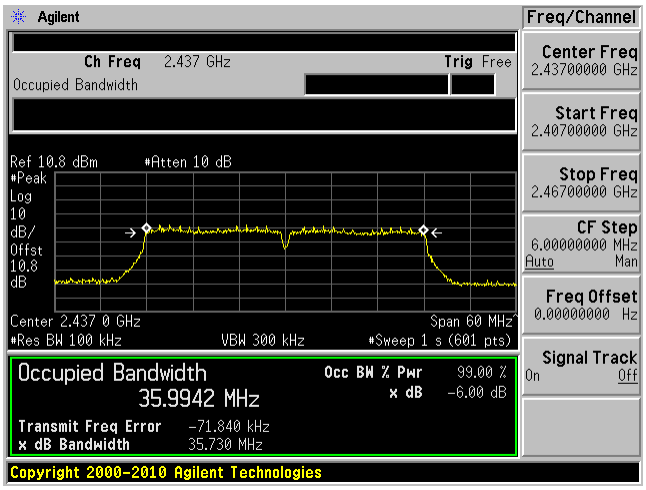


802.11n40 mode ANT A

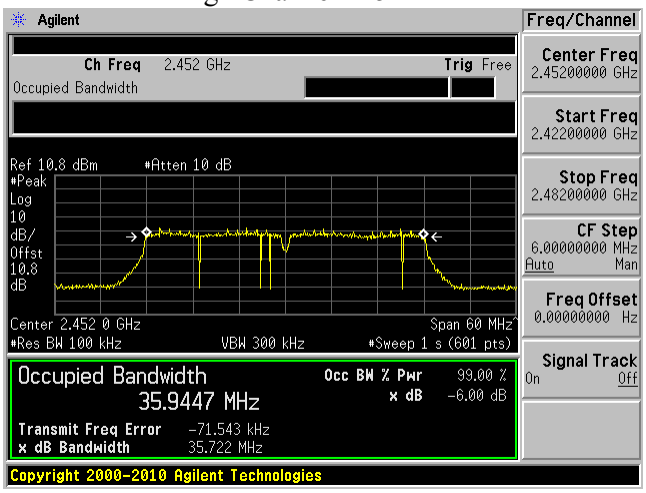
Low Channel 2422 MHz



Middle Channel 2437 MHz

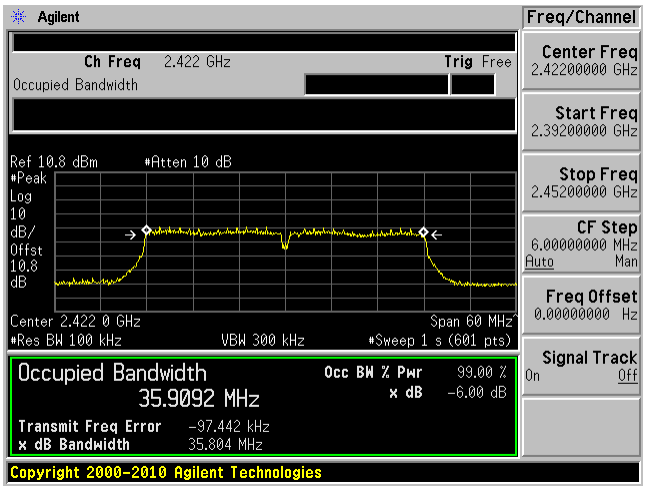


High Channel 2452 MHz

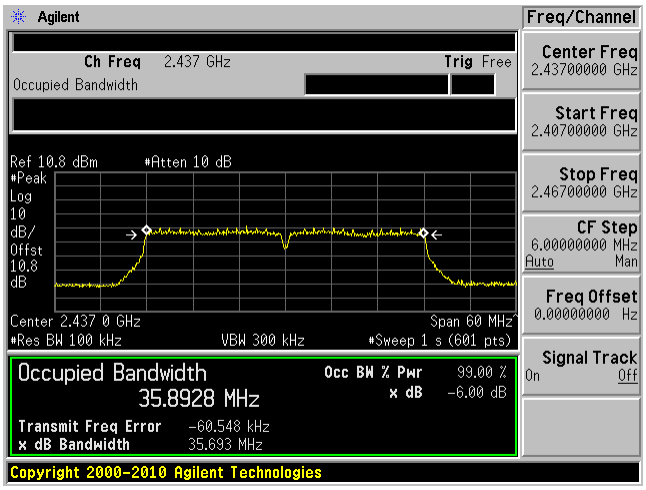


802.11n40 mode ANT B

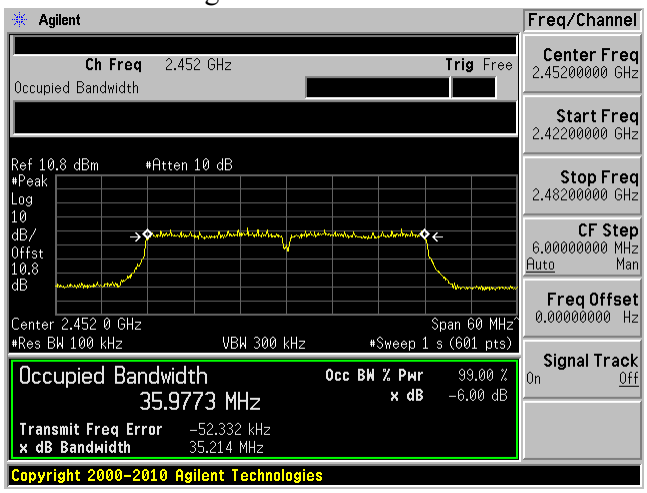
Low Channel 2422 MHz



Middle Channel 2437 MHz

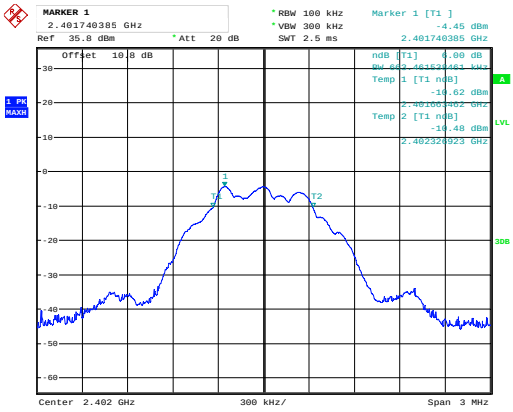


High Channel 2452 MHz



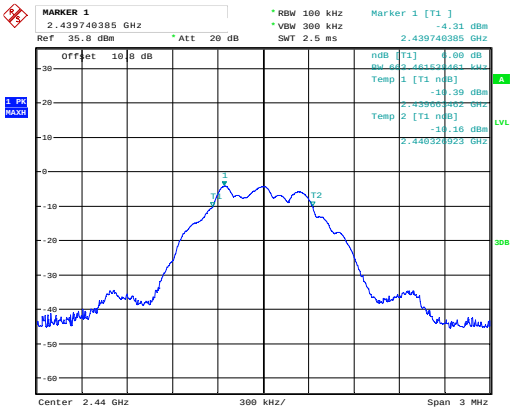
BLE

Low Channel 2402 MHz



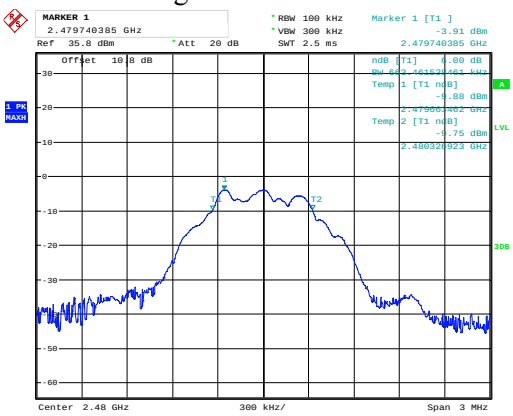
Date: 27.MAR.2018 14:28:59

Middle Channel 2440 MHz



Date: 27.MAR.2018 14:51:55

High Channel 2480 MHz

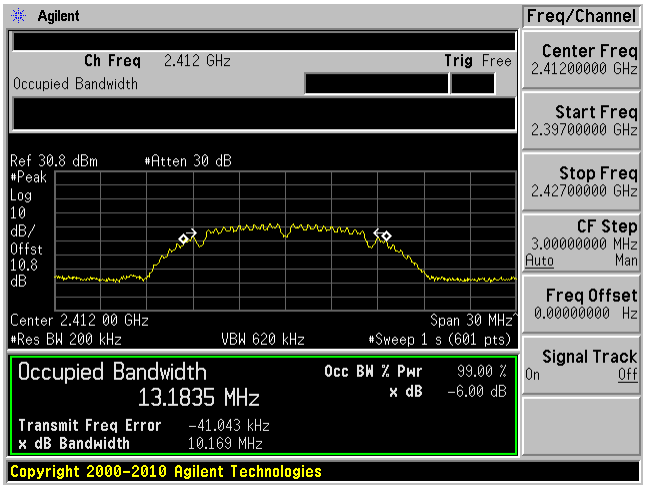


Date: 27.MAR.2018 14:43:55

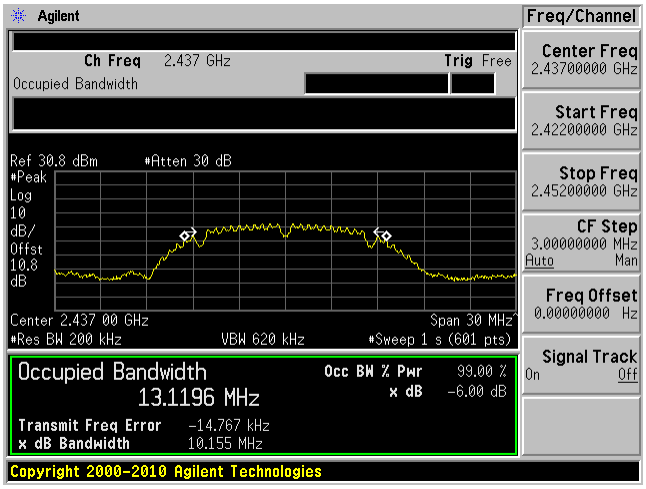
99% Emission Bandwidth

802.11b mode ANT A

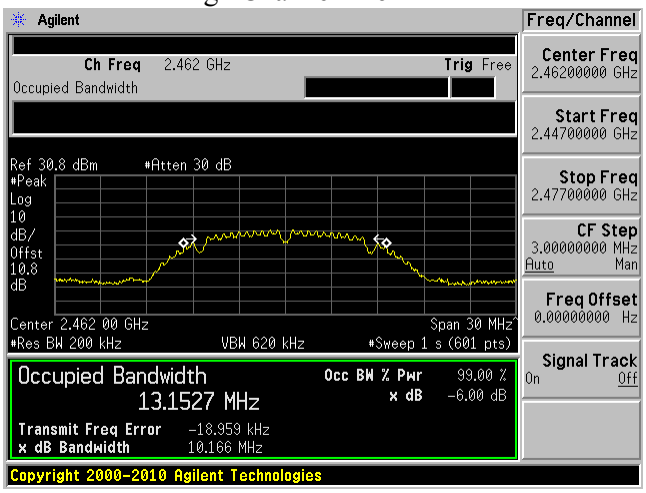
Low Channel 2412 MHz



Middle Channel 2437 MHz

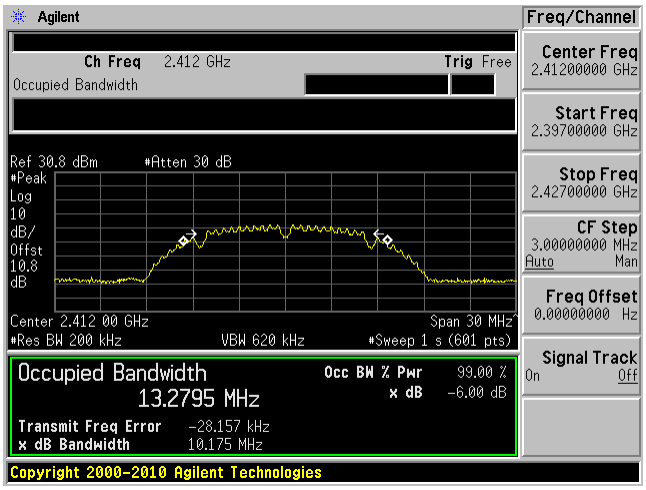


High Channel 2462 MHz

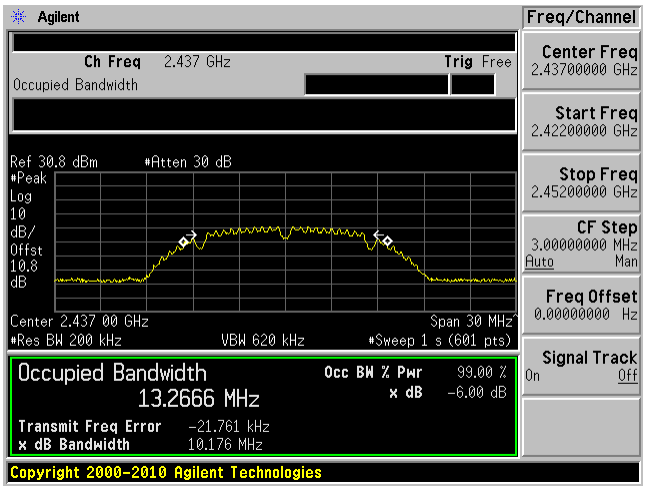


802.11b mode ANT B

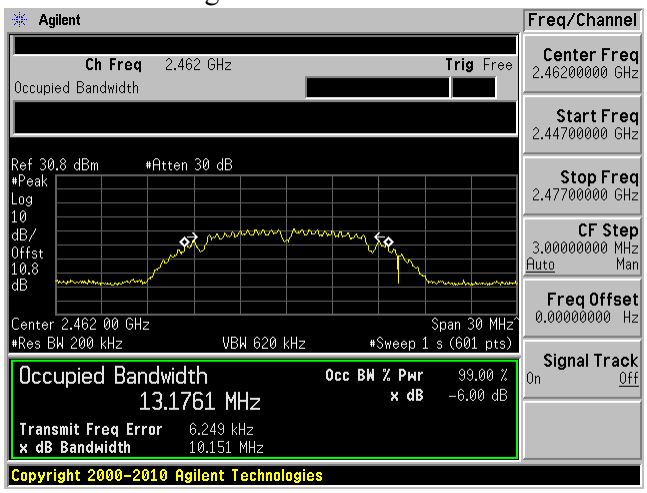
Low Channel 2412 MHz



Middle Channel 2437 MHz

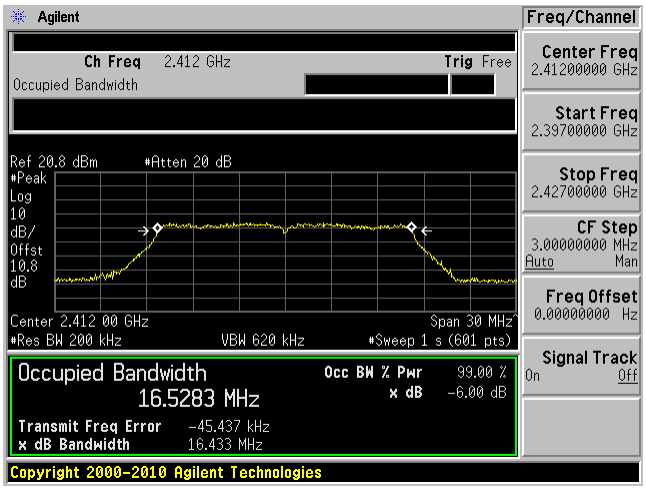


High Channel 2462 MHz

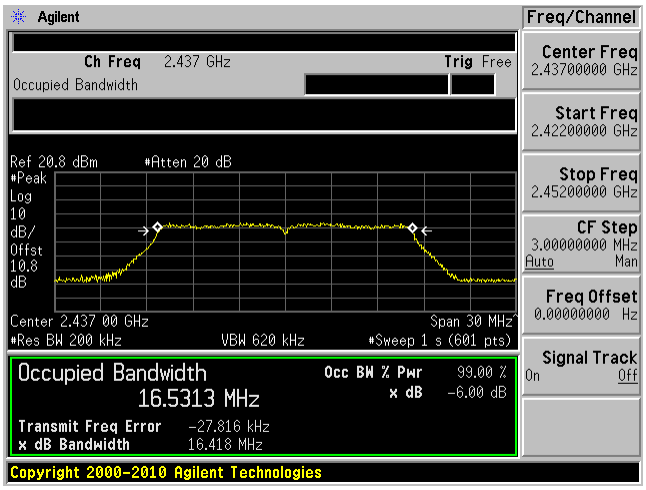


802.11g mode ANT A

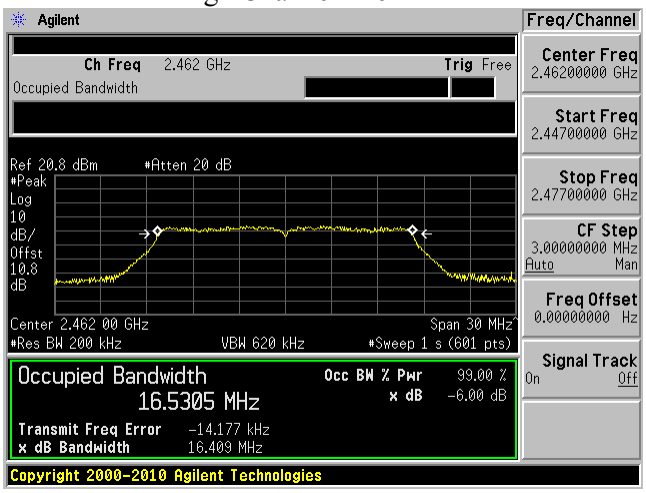
Low Channel 2412 MHz



Middle Channel 2437 MHz

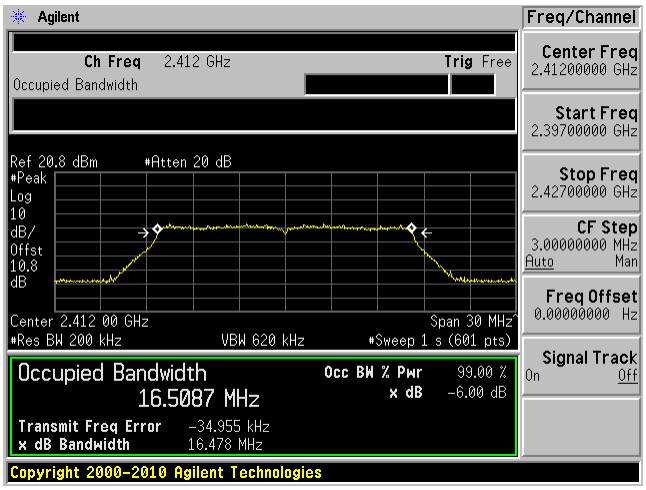


High Channel 2462 MHz

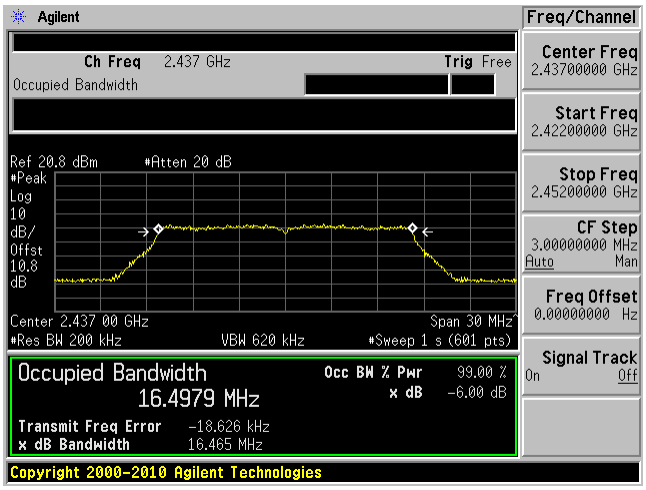


802.11g mode ANT B

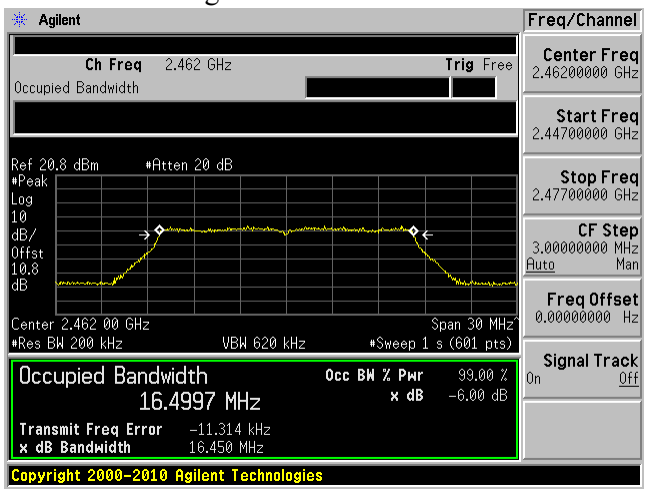
Low Channel 2412 MHz



Middle Channel 2437 MHz

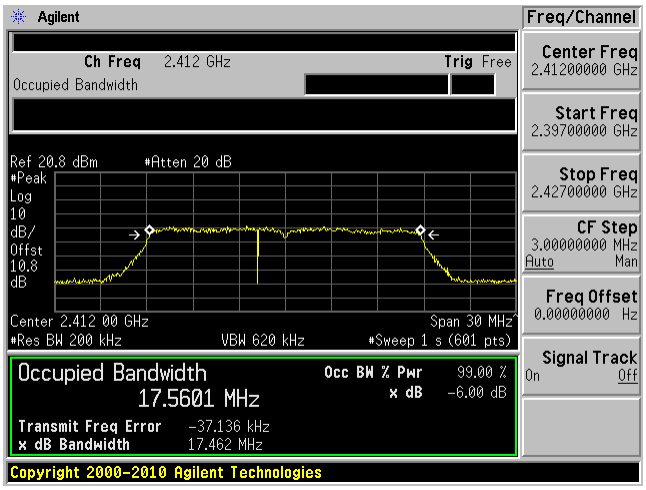


High Channel 2462 MHz

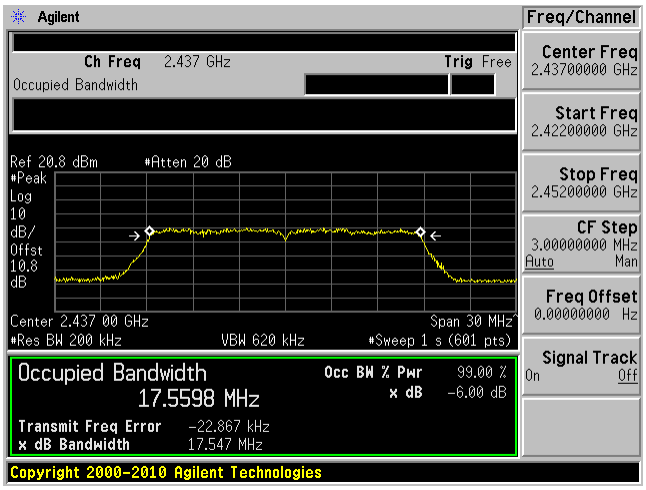


802.11n20 mode ANT A

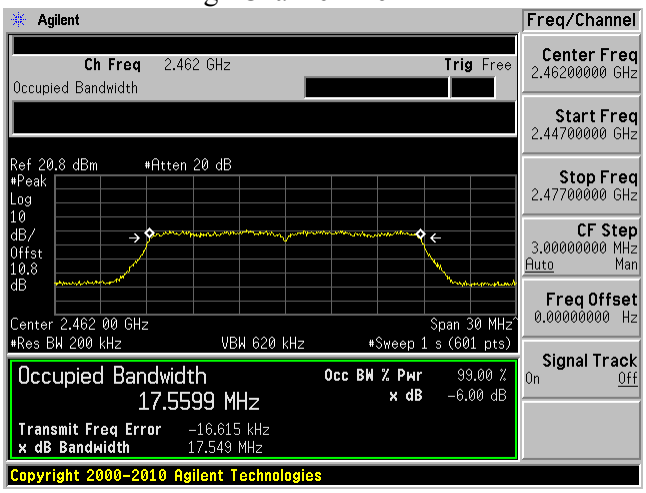
Low Channel 2412 MHz



Middle Channel 2437 MHz

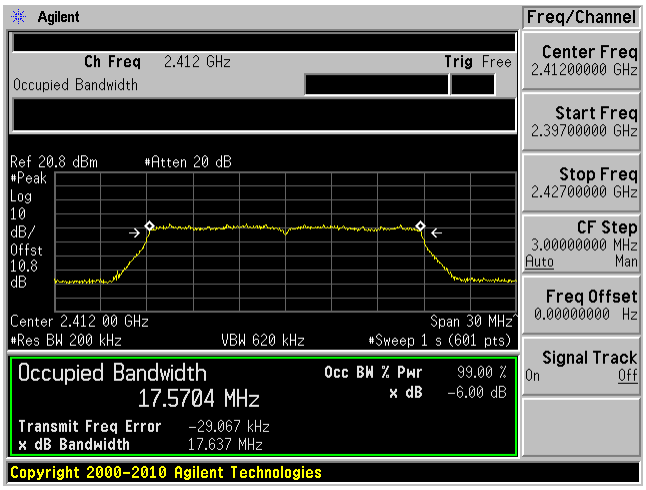


High Channel 2462 MHz

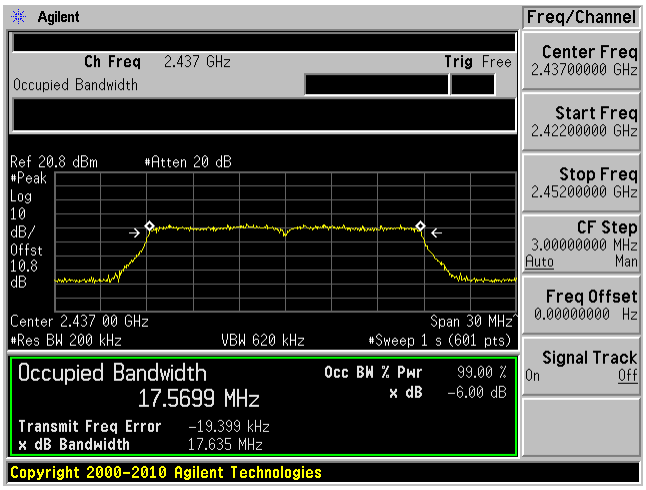


802.11n20 mode ANT B

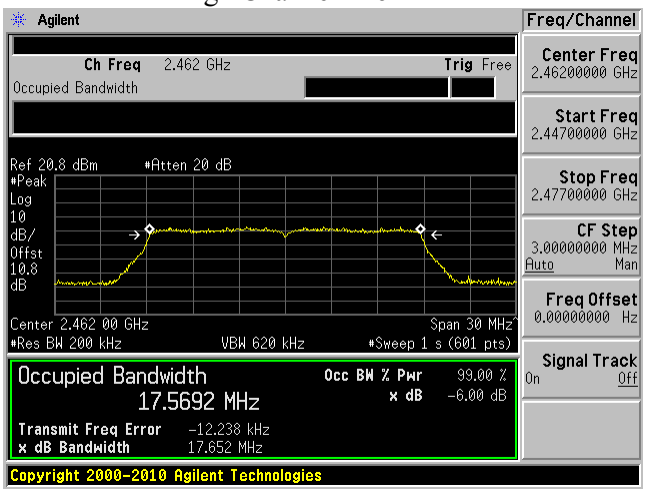
Low Channel 2412 MHz



Middle Channel 2437 MHz

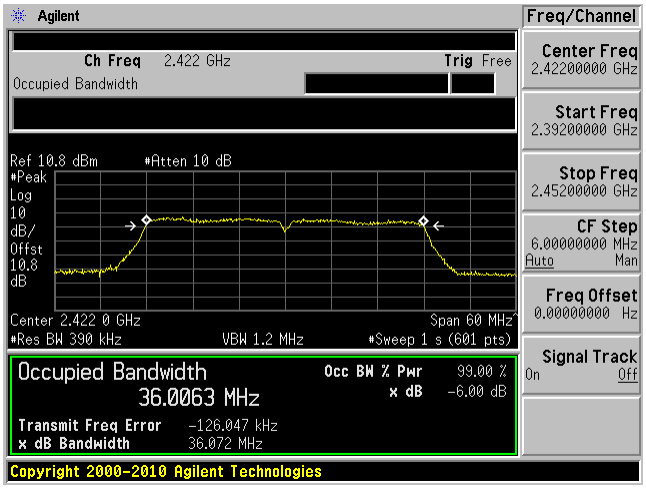


High Channel 2462 MHz

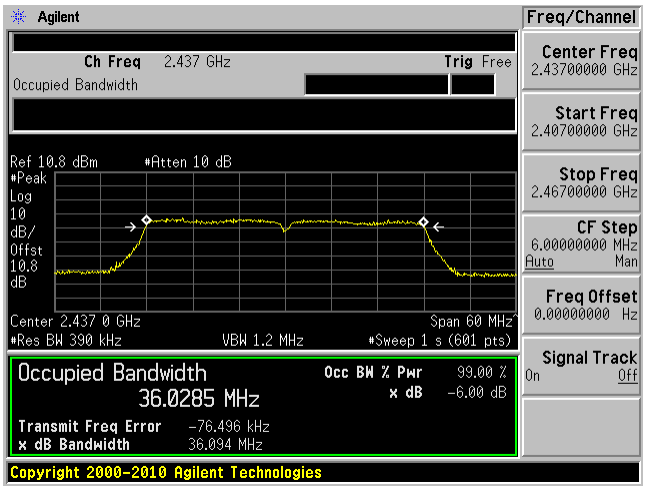


802.11n40 mode ANT A

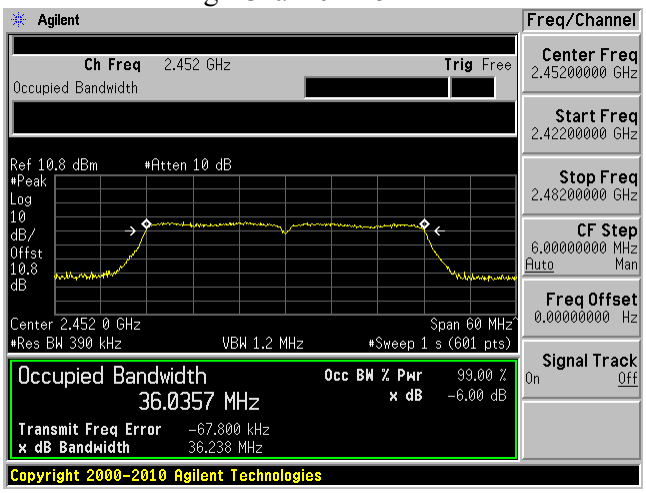
Low Channel 2422 MHz



Middle Channel 2437 MHz

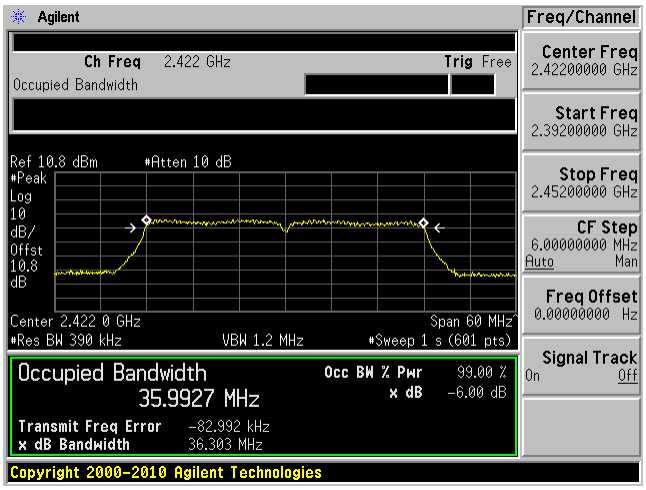


High Channel 2452 MHz

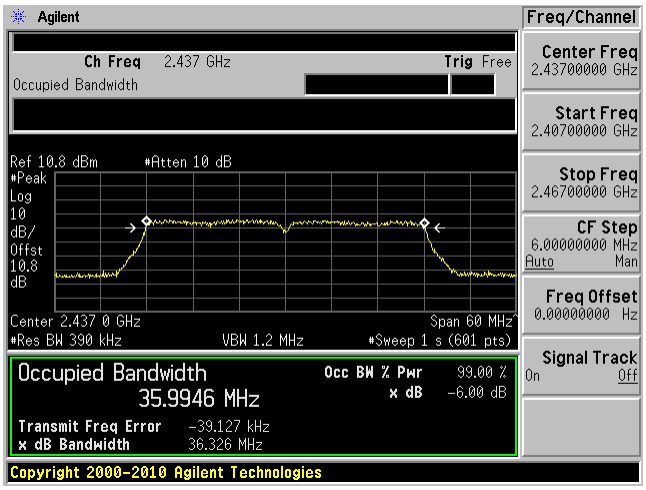


802.11n40 mode ANT B

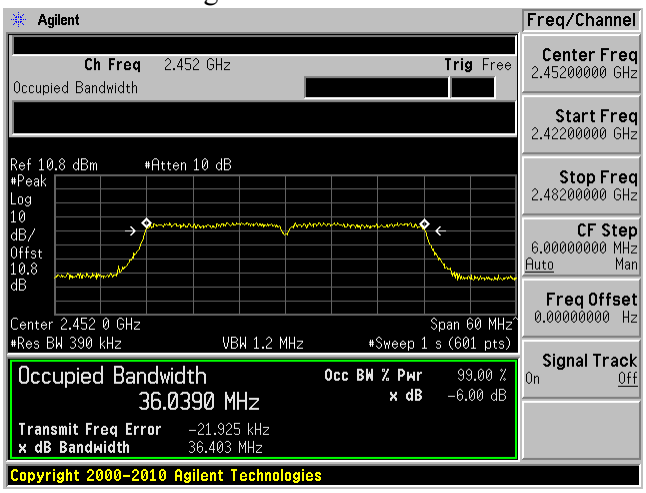
Low Channel 2422 MHz



Middle Channel 2437 MHz

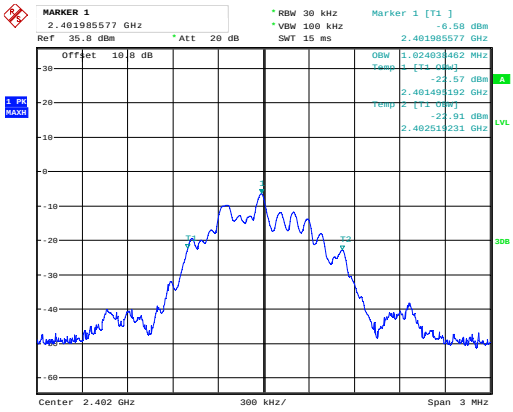


High Channel 2452 MHz



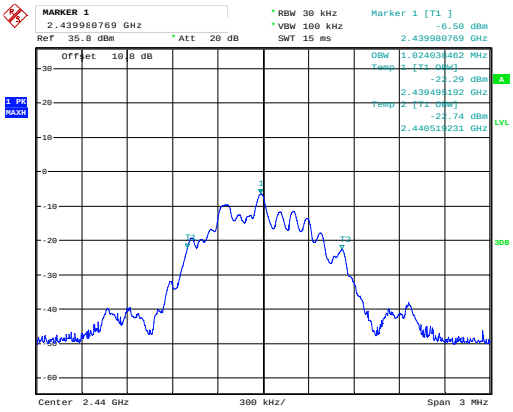
BLE

Low Channel 2402 MHz



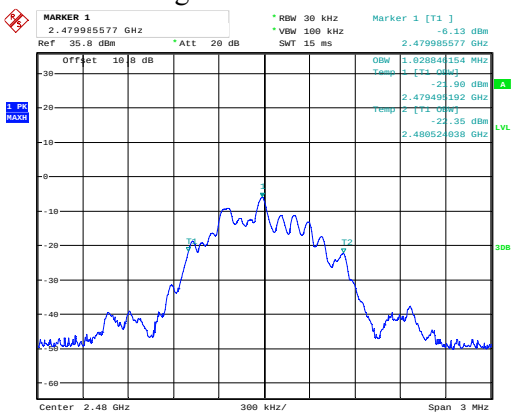
Date: 27.MAR.2018 14:27:16

Middle Channel 2440 MHz



Date: 27.MAR.2018 14:51:32

High Channel 2480 MHz



Date: 27.MAR.2018 14:43:11

9 FCC §15.247(b) (3) & ISEDC RSS-247 §5.4 (4) - Output Power Measurement

9.1 Applicable Standards

According to ECFR §15.247(b) (3) and ISEDC RSS-247 §5.4 (4) for systems using digital modulation in the 902~928 MHz, 2400~2483.5 MHz, and 5725~5850 MHz bands: 1 Watt.

9.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v04: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 9: Fundamental emission output power.

9.2.2.6 Method AVGSA-3 (RMS detection across on- and off-times of the EUT with max hold)

a) Set span to at least 1.5 × OBW.
b) Set sweep trigger to "free run".
c) Set RBW = 1 % to 5 % of the OBW, not to exceed 1 MHz.
d) Set VBW ≥ 3 × RBW
e) Number of points in sweep ≥ 2 × span / RBW. (This gives bin-to-bin spacing ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
f) Sweep time ≤ (number of points in sweep) × T, where T is defined in Section 6.0. If this gives a sweep time less than the auto sweep time of the instrument, Method AVGSA-3 shall not be used (use AVGSA-3 Alternative). The purpose of this step is so that averaging time in each bin is less than or equal to the minimum time of a transmission.
g) Detector = RMS.
h) Trace mode = max hold.
i) Allow max hold to run for at least 60 s, or longer as needed to allow the trace to stabilize.
j) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW.

9.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	Analyzer, Spectrum	FSQ26	200749	2017-06-08	2 years
-	RF cable	-	-	Each time[1]	N/A
-	10dB attenuator	-	-	Each time[1]	N/A

Note[1]: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: BACL Corp. *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with A2LA Policy P102 (dated 09 June 2016) "A2LA Policy on Metrological Traceability".*

9.4 Test Environmental Conditions

Temperature:	23º C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

The testing was performed by Vincent Licata on 2018-03-29 in RF site.

9.5 Test Results

Output Power 2.4 GHz Wi-Fi

Frequency (MHz)	ANT-A (dBm)	ANT-B (dBm)	Total (dBm)	Limit (dBm)
802.11b mode				
2412	8.22	9.08	11.68	30
2437	8.35	8.02	11.20	30
2462	8.34	8.21	11.29	30
802.11g mode				
2412	4.46	3.76	7.13	30
2437	4.49	4.04	7.28	30
2462	4.58	4.33	7.47	30
802.11n20 mode				
2412	4.35	3.66	7.03	30
2437	4.43	3.93	7.20	30
2462	4.60	4.34	7.48	30
802.11n40 mode				
2422	2.88	2.86	5.88	30
2437	2.92	2.82	5.88	30
2452	3.11	3.33	6.23	30

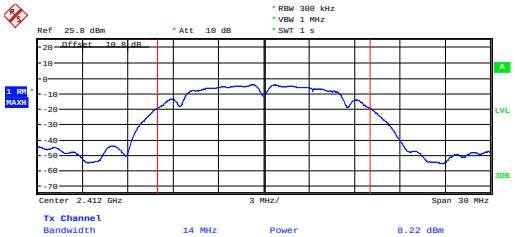
Note 1: For A+B MIMO, Average Power = 10*log(10^(A MIMO/10)+10^(B MIMO/10)) dBm

BLE

Channel	Frequency (MHz)	Total (dBm)	Limit (dBm)
BLE			
Low	2402	-3.64	30
Middle	2440	-3.48	30
High	2480	-3.04	30

802.11b mode ANT A

Low Channel 2412 MHz



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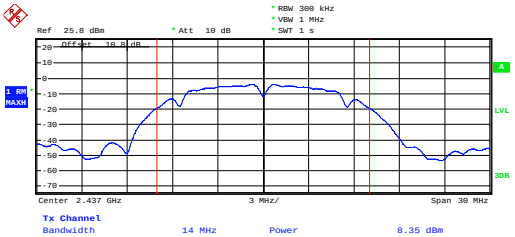
Middle Channel 2437 MHz



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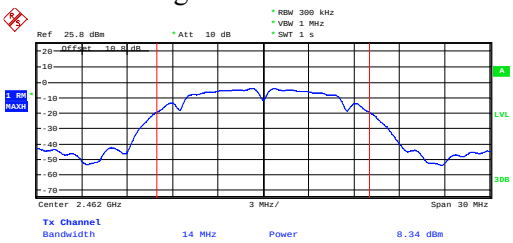
High Channel 2462 MHz



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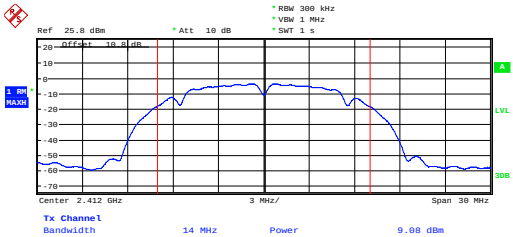
802.11b mode ANT B

Low Channel 2412 MHz



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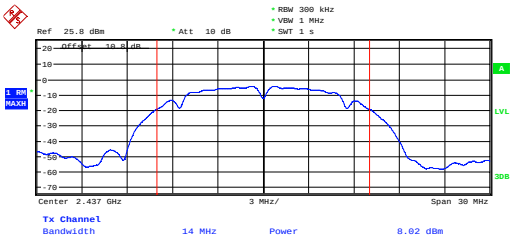
Middle Channel 2437 MHz



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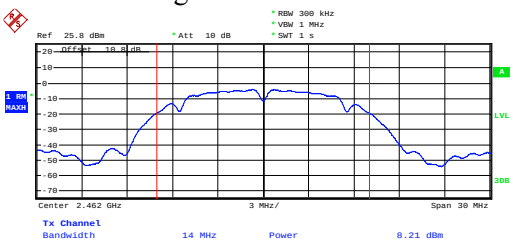
High Channel 2462 MHz



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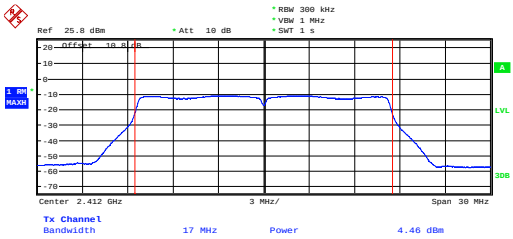
802.11g mode ANT A

Low Channel 2412 MHz



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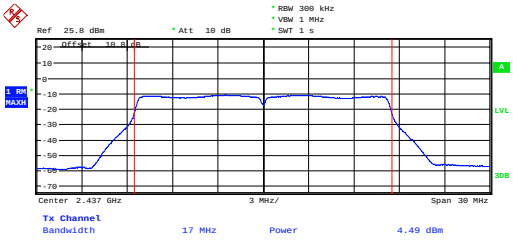
Middle Channel 2437 MHz



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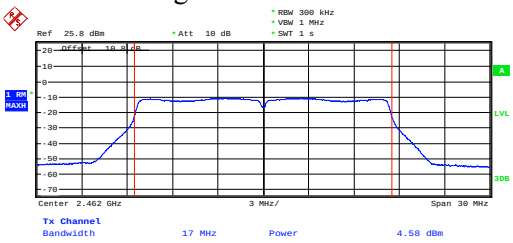
High Channel 2462 MHz



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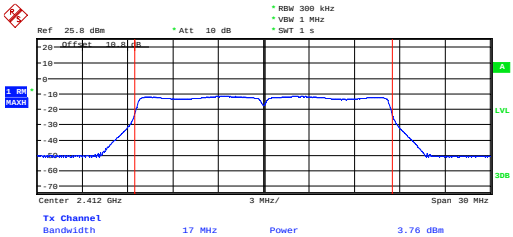
802.11g mode ANT B

Low Channel 2412 MHz



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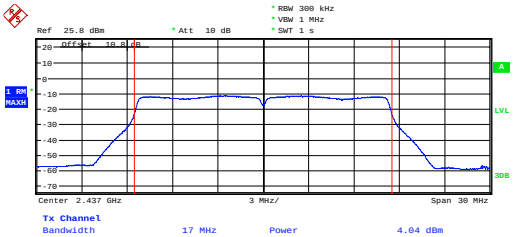

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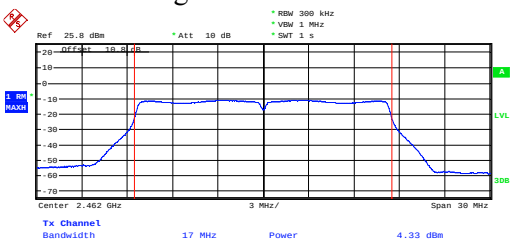
High Channel 2462 MHz



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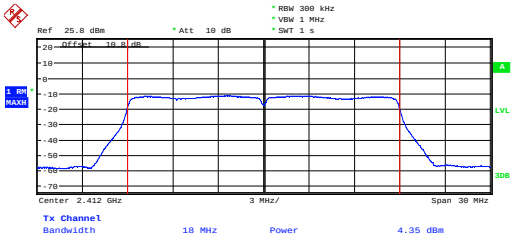
802.11n20 mode ANT A

Low Channel 2412 MHz



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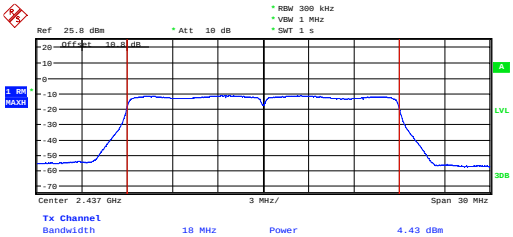
Middle Channel 2437 MHz



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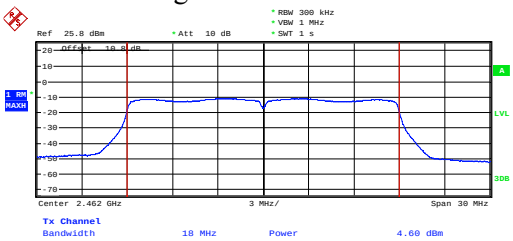
High Channel 2462 MHz



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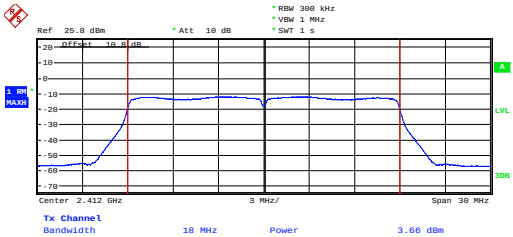
802.11n20 mode ANT B

Low Channel 2412 MHz



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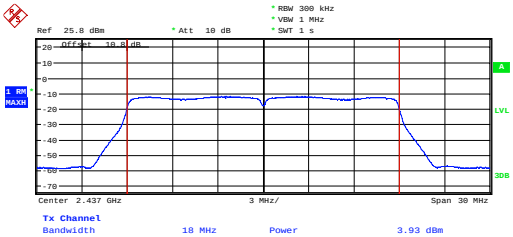

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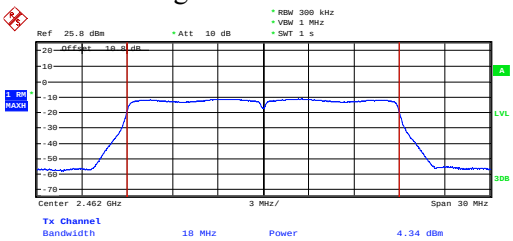
High Channel 2462 MHz



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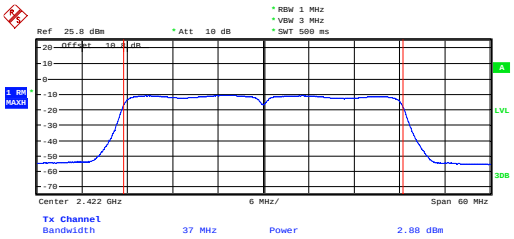
802.11n40 mode ANT A

Low Channel 2422 MHz



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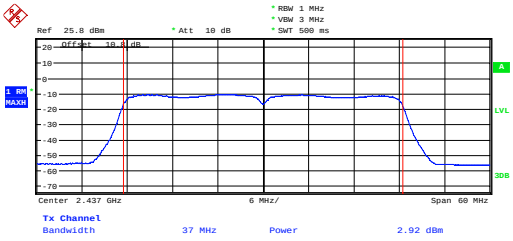

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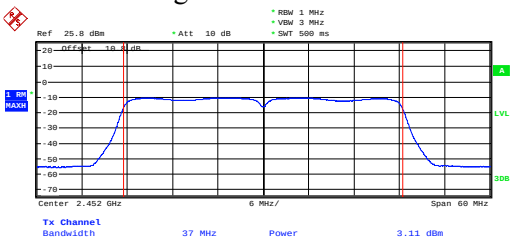
High Channel 2452 MHz



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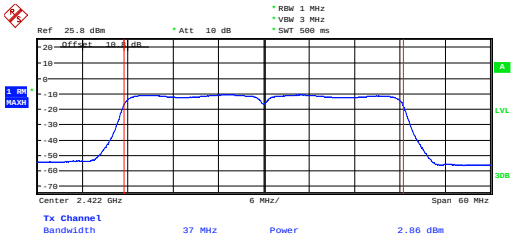
802.11n40 mode ANT B

Low Channel 2422 MHz



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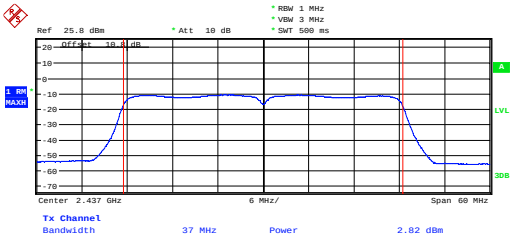
Middle Channel 2437 MHz



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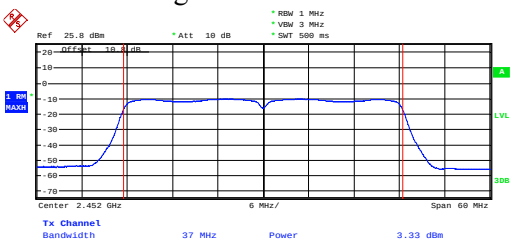
High Channel 2452 MHz



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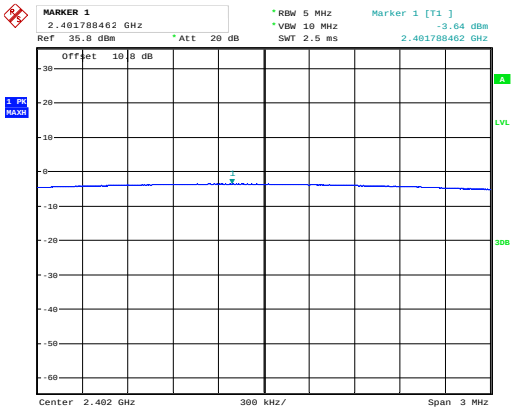
BLE

Low Channel 2402 MHz



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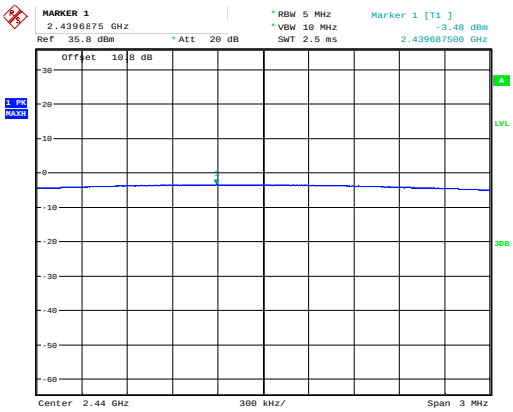
Middle Channel 2440 MHz



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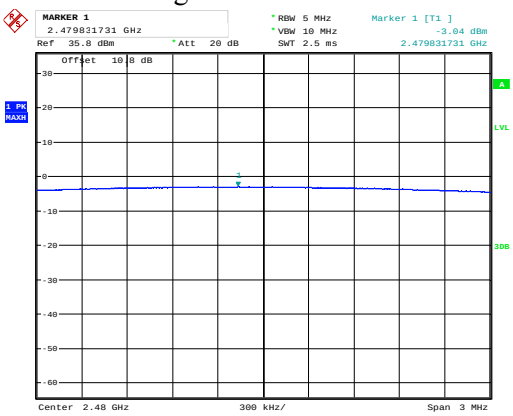
High Channel 2480 MHz



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10 FCC §15.247(d) and ISEDC RSS-247 §5.5 – 100 kHz Bandwidth of Band Edges

10.1 Applicable Standards

According to FCC §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emissions limits specified in §15.209(a) see §15.205(c).

According to ISEDC RSS-247 §5.5.In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

10.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v04: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 13: Band-edge measurements

10.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Analyzer, Spectrum	E4446A	US44300386	2017-04-20	1 year
Rohde & Schwarz	Analyzer, Spectrum	FSQ26	200749	2017-06-08	2 years
-	RF cable	-	-	Each time[1]	N/A
-	10dB attenuator	-	-	Each time[1]	N/A

Note[1]: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: BACL Corp. *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with A2LA Policy P102 (dated 09 June 2016) "A2LA Policy on Metrological Traceability".*

10.4 Test Environmental Conditions

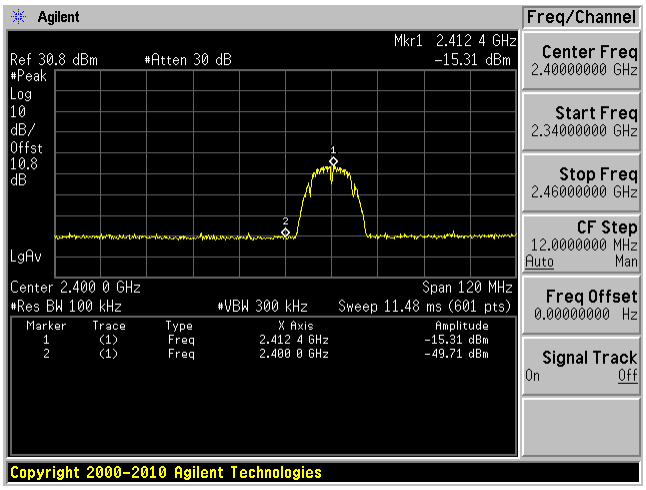
Temperature:	23º C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

The testing was performed by Vincent Licata on 2018-03-26 and 2018-03-27 in RF site.

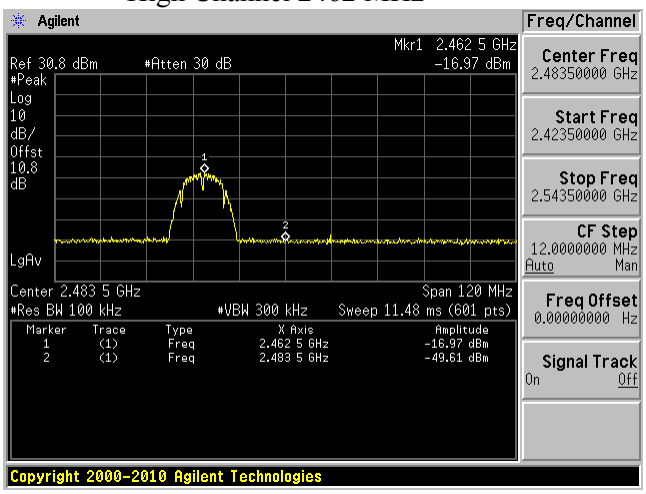
10.5 Test Results

802.11b mode ANT A

Low Channel 2412 MHz

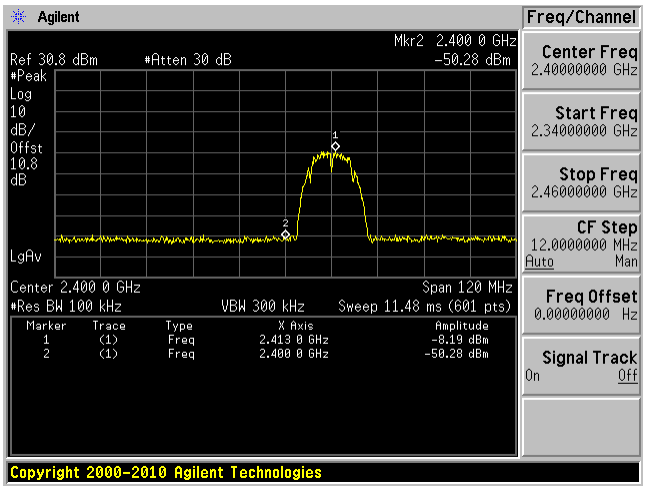


High Channel 2462 MHz

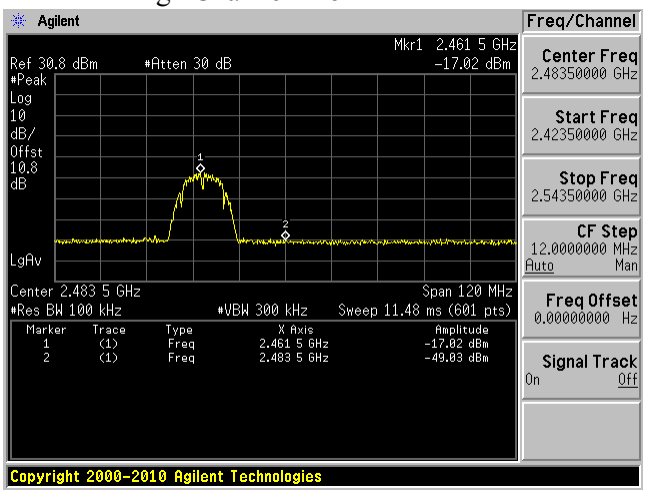


802.11b mode ANT B

Low Channel 2412 MHz

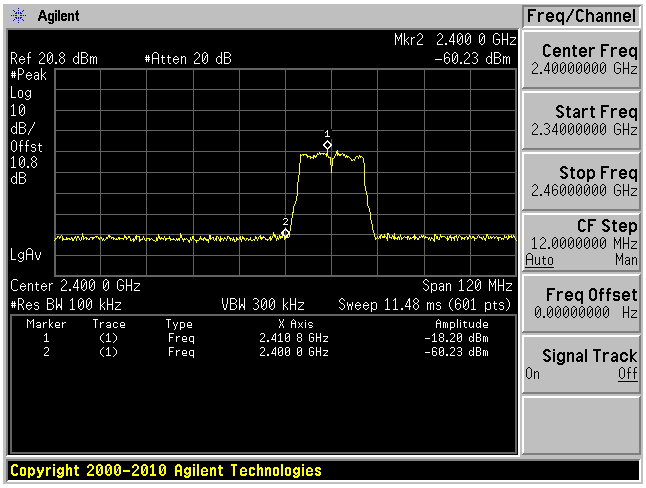


High Channel 2462 MHz

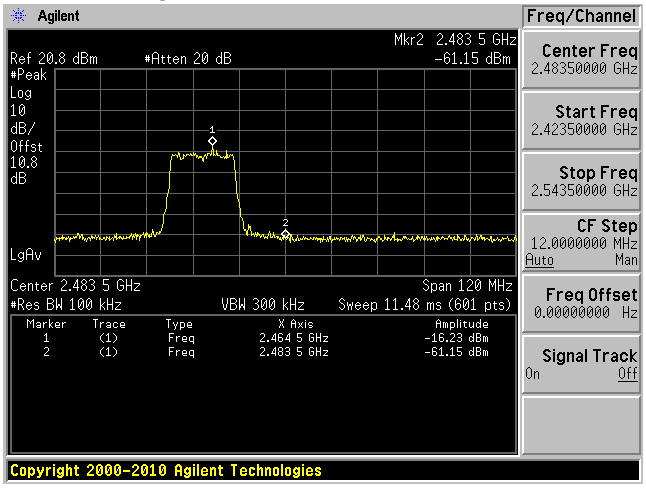


802.11g mode ANT A

Low Channel 2412 MHz

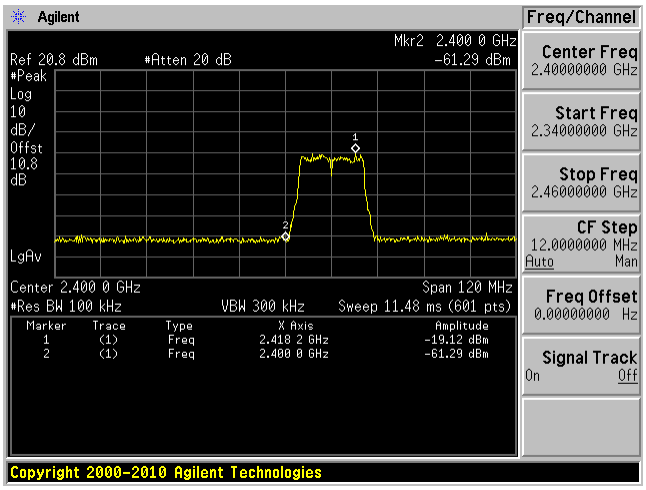


High Channel 2462 MHz

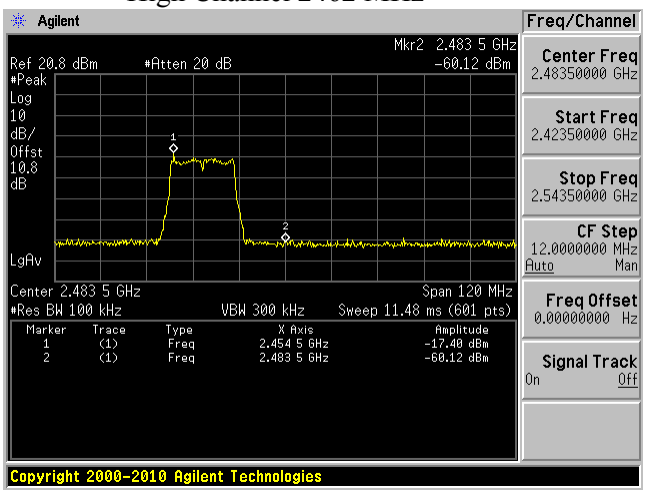


802.11g mode ANT B

Low Channel 2412 MHz

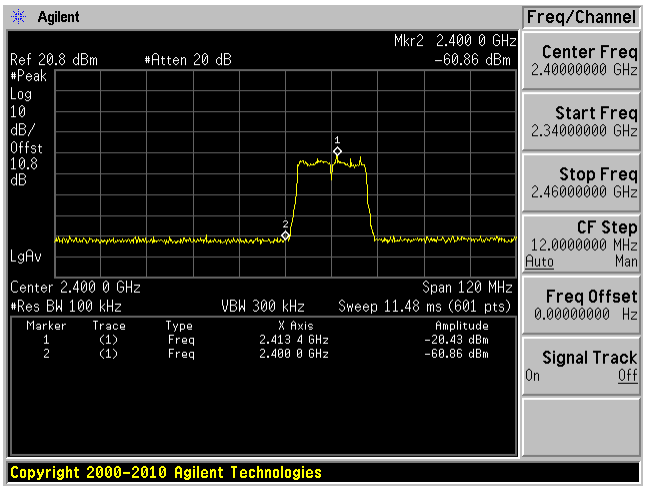


High Channel 2462 MHz

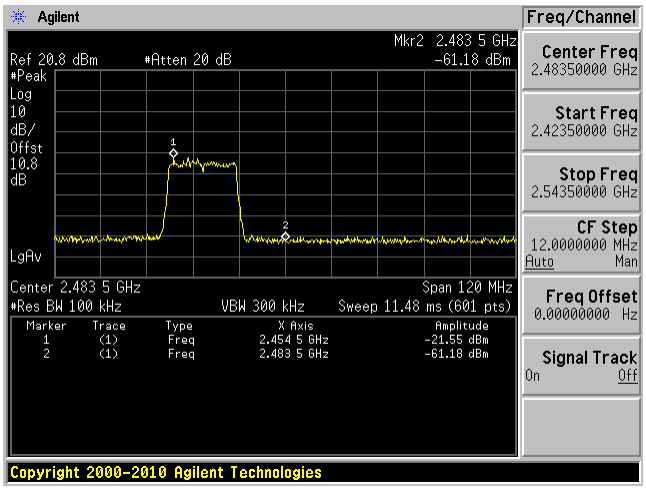


802.11n20 mode ANT A

Low Channel 2412 MHz

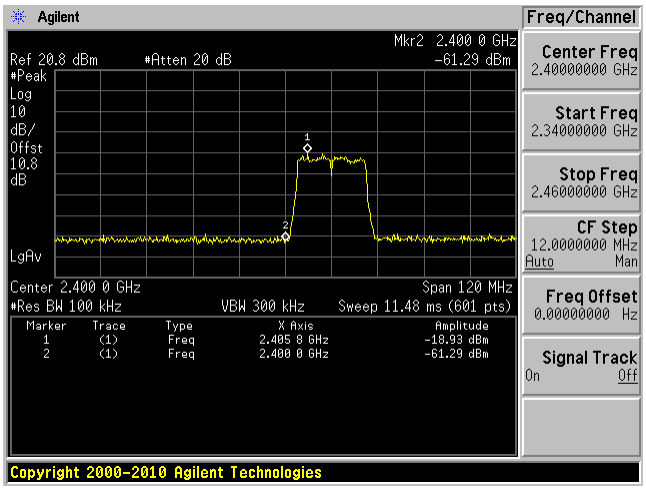


High Channel 2462 MHz

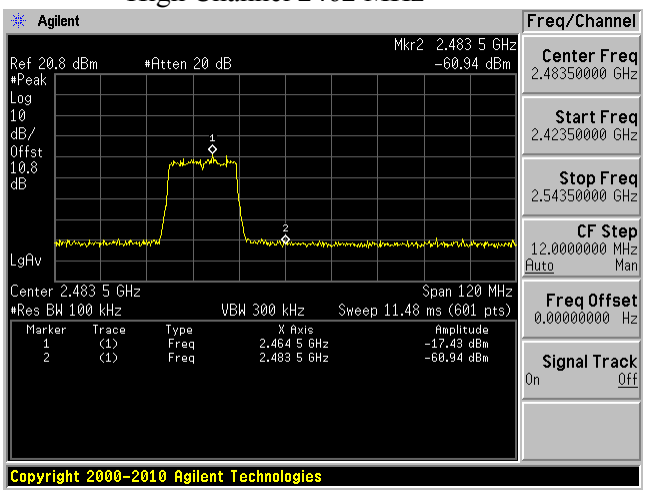


802.11n20 mode ANT B

Low Channel 2412 MHz

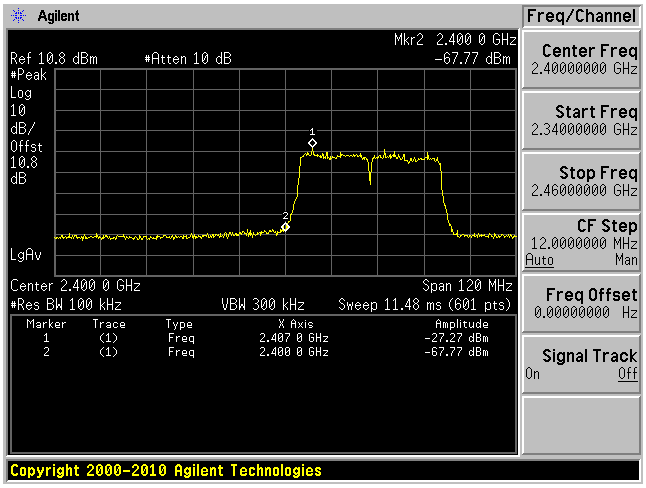


High Channel 2462 MHz

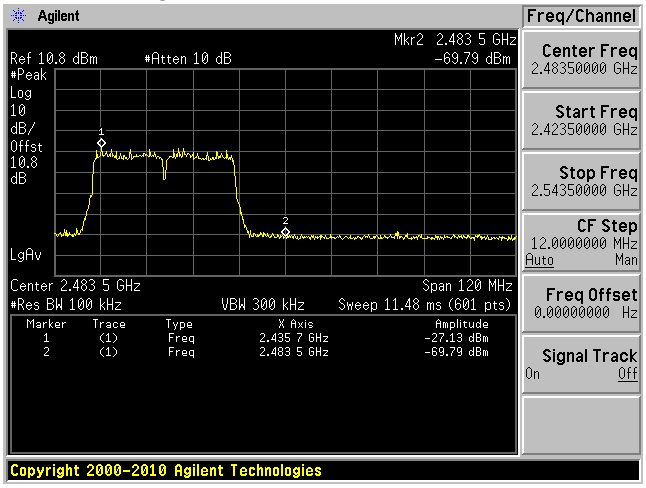


802.11n40 mode ANT A

Low Channel 2422 MHz

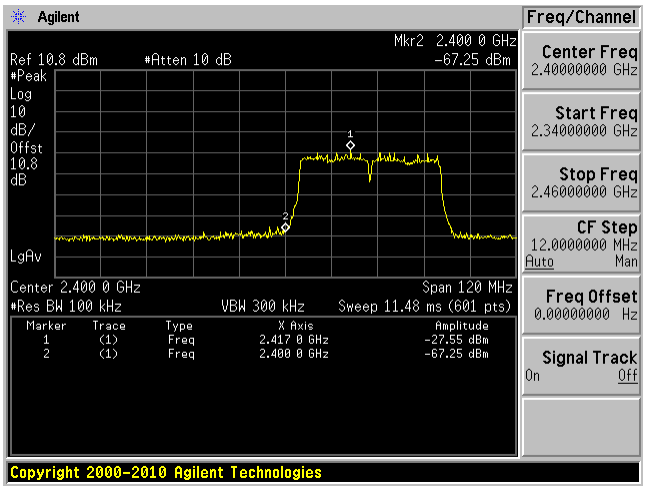


High Channel 2452 MHz

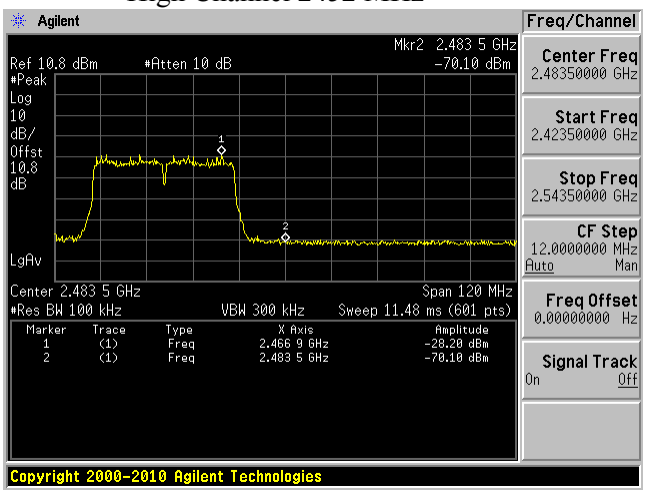


802.11n40 mode ANT B

Low Channel 2422 MHz

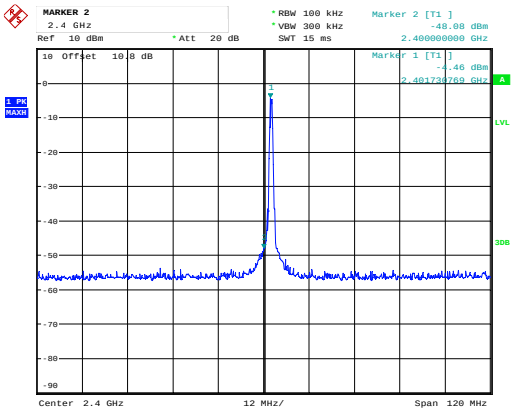


High Channel 2452 MHz



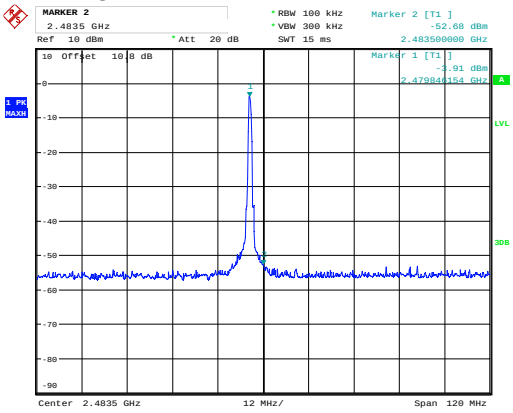
BLE

Low Channel 2402 MHz



Date: 27.MAR.2018 14:34:53

High Channel 2480 MHz



Date: 27.MAR.2018 14:48:42

11 FCC §15.247(e) & ISEDC RSS-247 §5.2(2) – Power Spectral Density

11.1 Applicable Standards

According to ECFR §15.247(e) and RSS-247 §5.2 (2) , for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

11.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v04: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 10: Maximum power spectral density level in the fundamental emission.

11.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Analyzer, Spectrum	E4446A	US44300386	2017-04-20	1 year
Rohde & Schwarz	Analyzer, Spectrum	FSQ26	200749	2017-06-08	2 years
-	RF cable	-	-	Each time[1]	N/A
-	10dB attenuator	-	-	Each time[1]	N/A

Note[1]: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: BACL Corp. *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with A2LA Policy P102 (dated 09 June 2016) "A2LA Policy on Metrological Traceability".*

11.4 Test Environmental Conditions

Temperature:	23º C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

The testing was performed by Vincent Licata on 2018-03-26 and 2018-03-27 in RF site.

11.5 Test Results

PSD 2.4 GHz Wi-Fi

Frequency (MHz)	ANT-A (dBm)	ANT-B (dBm)	Total (dBm)	Limit (dBm)
802.11b mode				
2412	-21.81	-21.64	-18.71	8
2437	-22.79	-23.45	-20.10	8
2462	-23.81	-22.35	-20.01	8
802.11g mode				
2412	-31.72	-32.53	-29.10	8
2437	-32.60	-32.83	-29.70	8
2462	-32.66	-31.51	-29.04	8
802.11n20 mode				
2412	-35.02	-31.78	-30.09	8
2437	-34.77	-31.92	-30.10	8
2462	-34.88	-32.08	-30.25	8
802.11n40 mode				
2422	-41.47	-43.72	-39.44	8
2437	-42.73	-43.28	-39.99	8
2452	-43.29	-42.75	-40.00	8

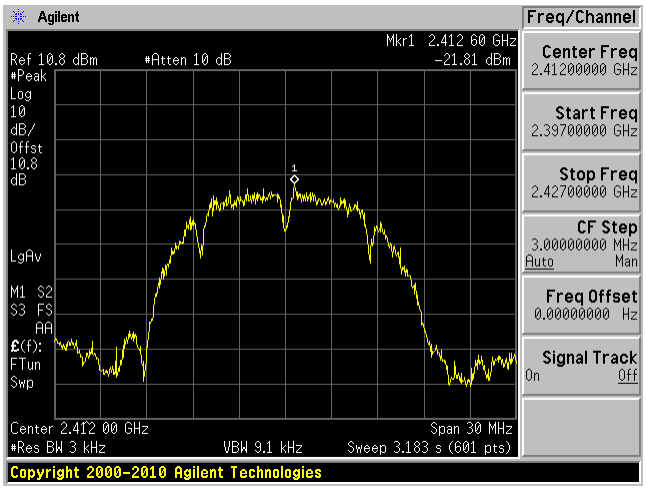
Note 1: For A+B MIMO, PSD = 10*log(10^(A MIMO/10)+10^(B MIMO/10)) dBm

BLE

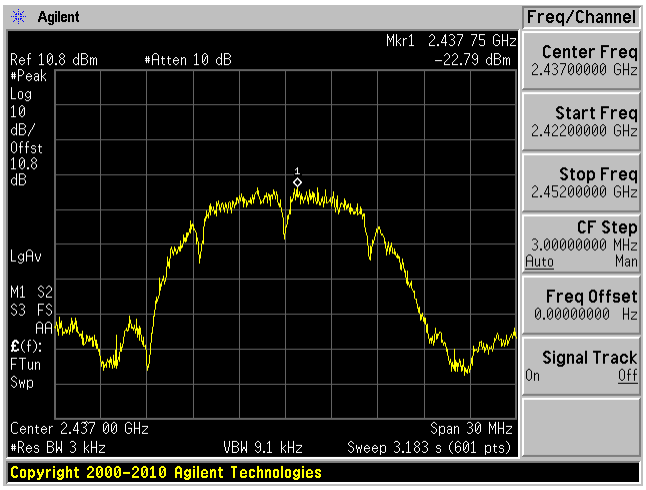
Channel	Frequency (MHz)	Total (dBm)	Limit (dBm)
BLE			
Low	2402	-21.73	8
Middle	2440	-21.78	8
High	2480	-21.46	8

802.11b mode ANT A

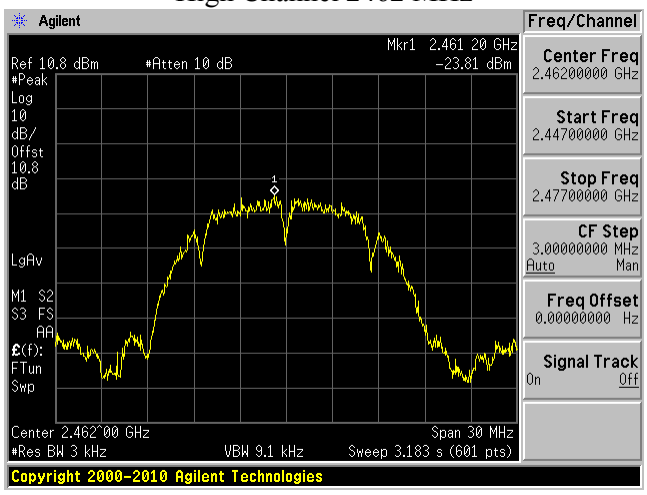
Low Channel 2412 MHz



Middle Channel 2437 MHz

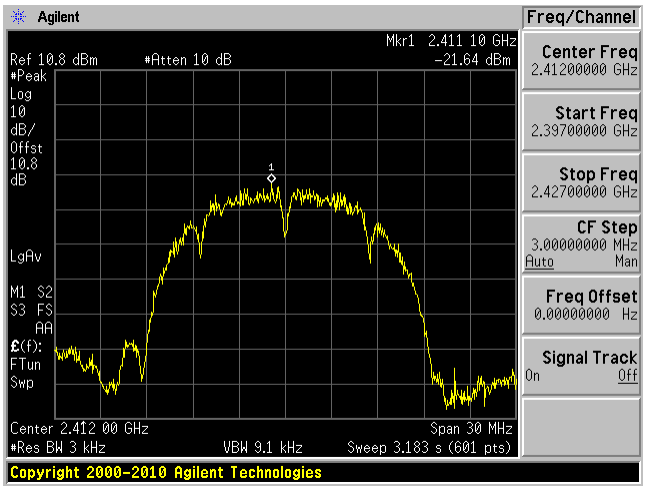


High Channel 2462 MHz

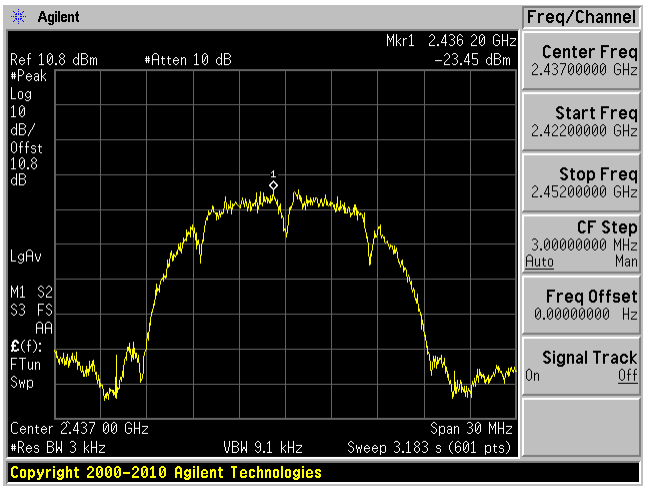


802.11b mode ANT B

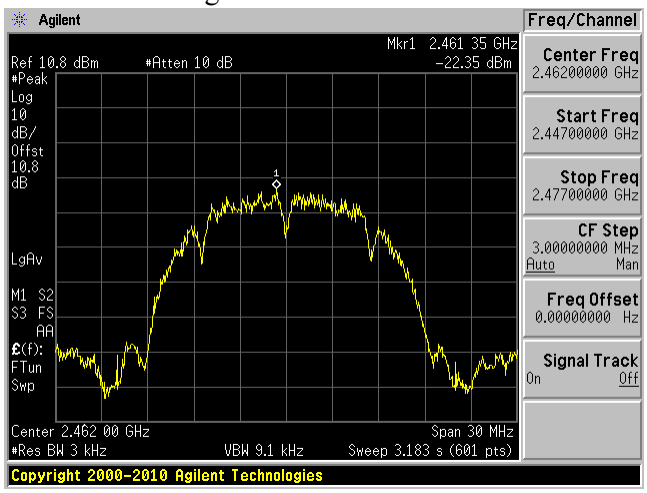
Low Channel 2412 MHz



Middle Channel 2437 MHz

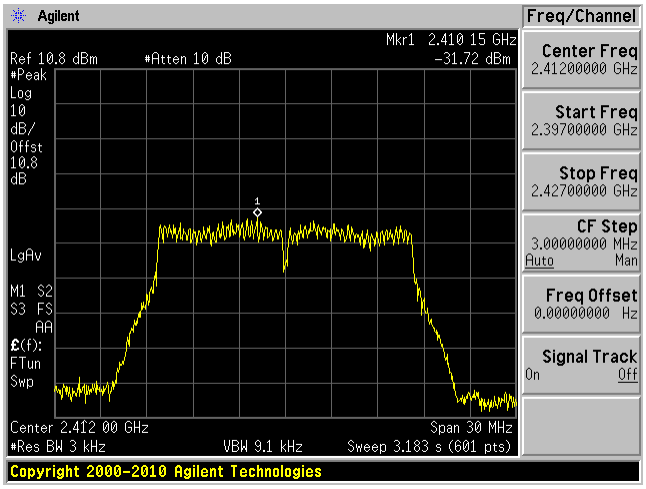


High Channel 2462 MHz

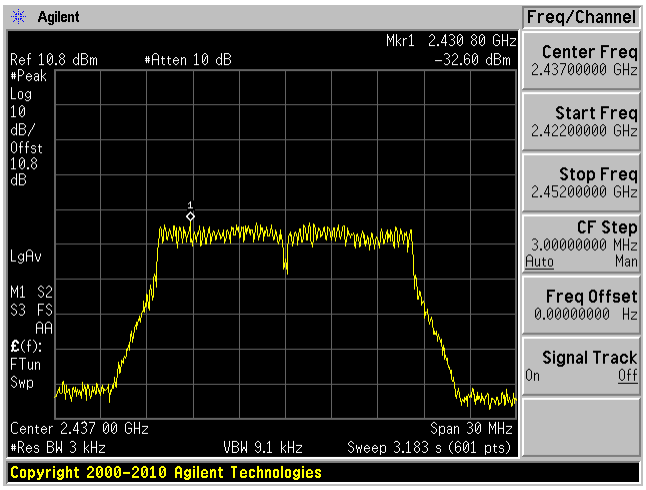


802.11g mode ANT A

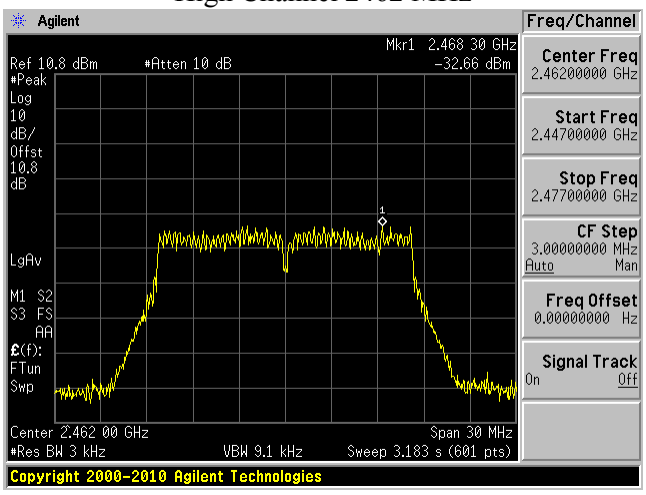
Low Channel 2412 MHz



Middle Channel 2437 MHz

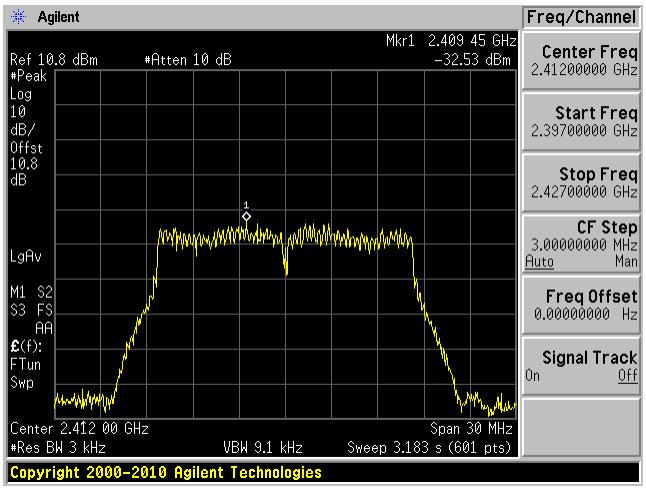


High Channel 2462 MHz

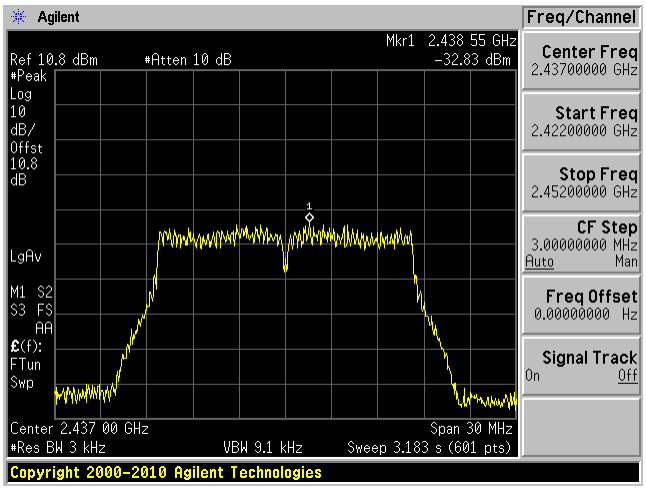


802.11g mode ANT B

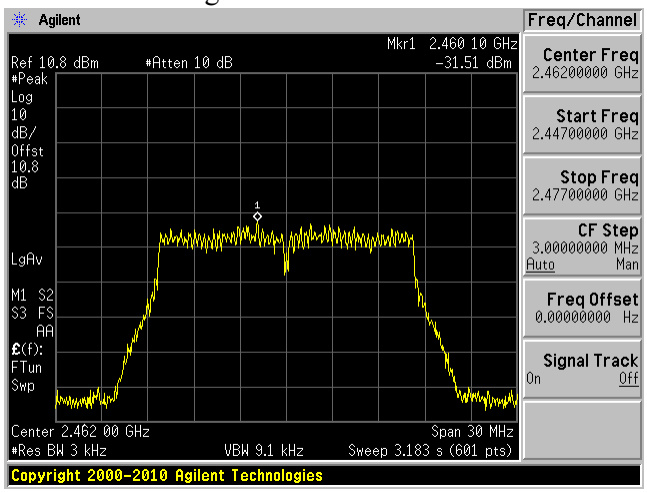
Low Channel 2412 MHz



Middle Channel 2437 MHz

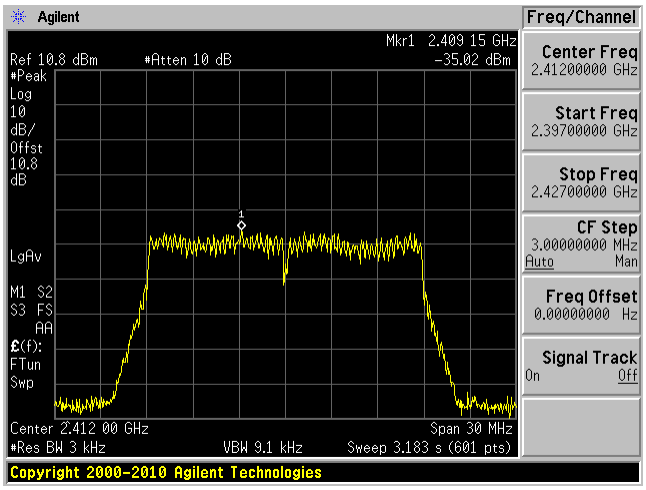


High Channel 2462 MHz

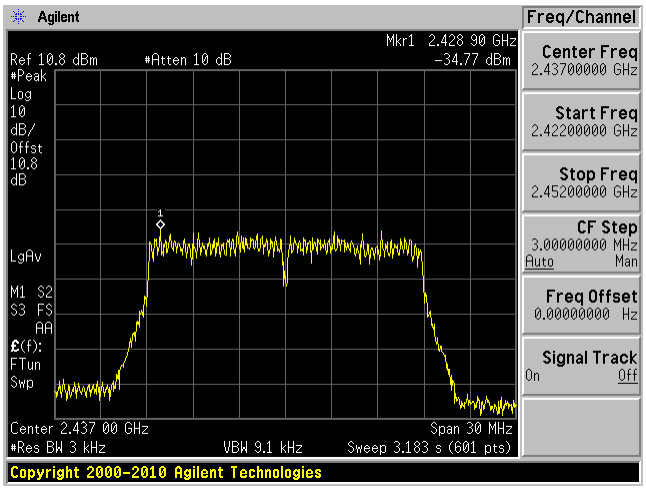


802.11n20 mode ANT A

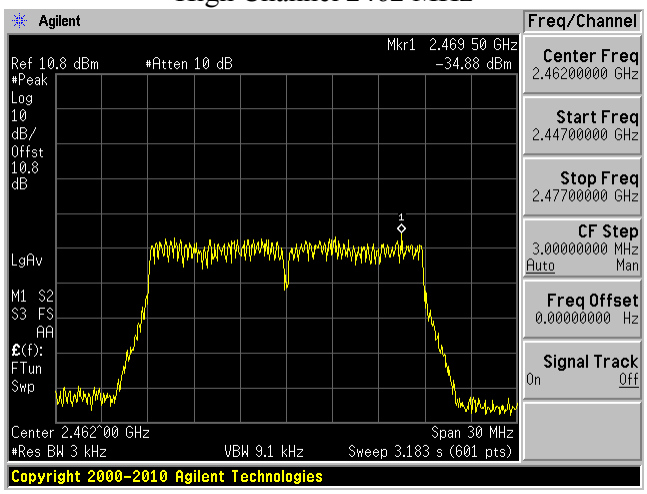
Low Channel 2412 MHz



Middle Channel 2437 MHz

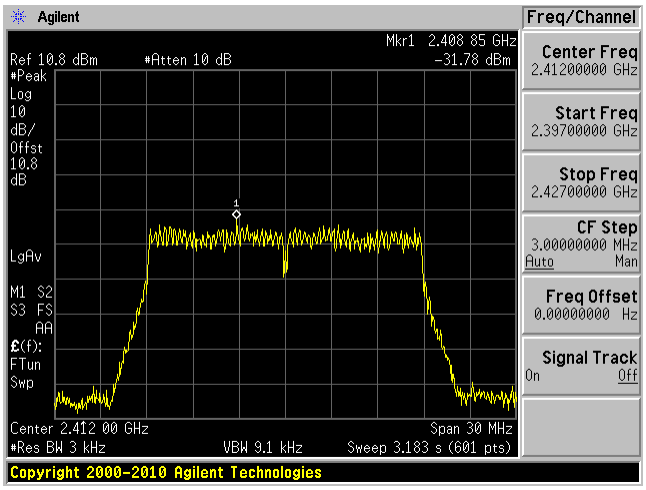


High Channel 2462 MHz

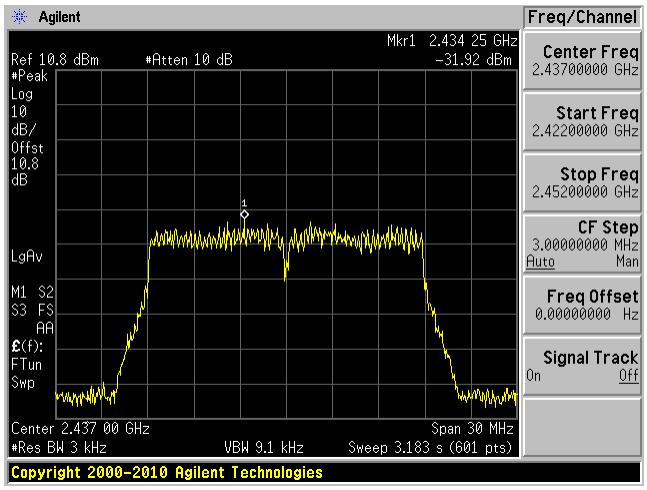


802.11n20 mode ANT B

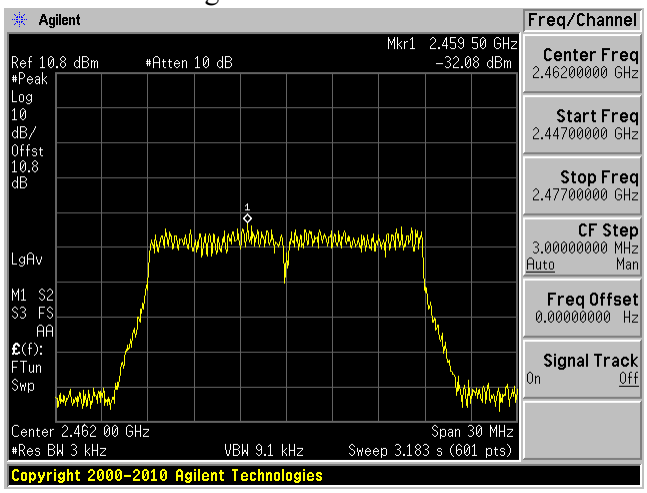
Low Channel 2412 MHz



Middle Channel 2437 MHz

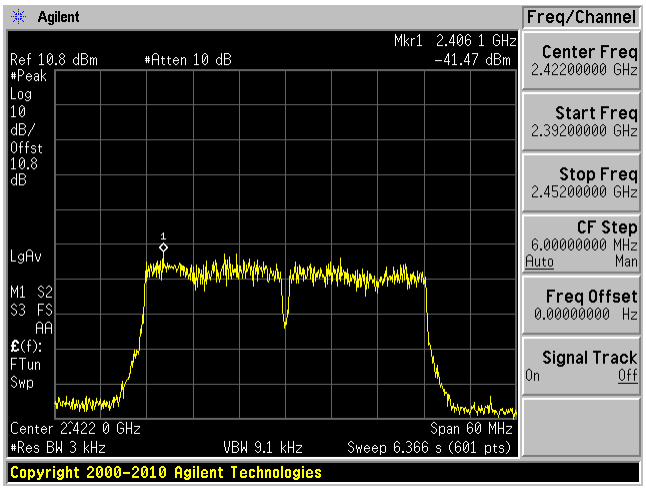


High Channel 2462 MHz

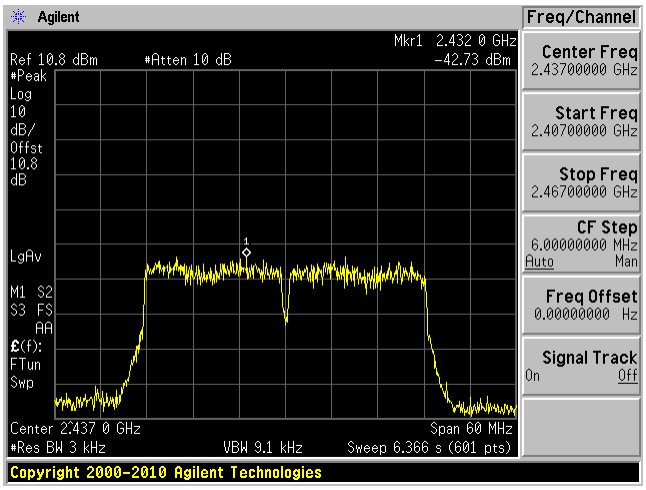


802.11n40 mode ANT A

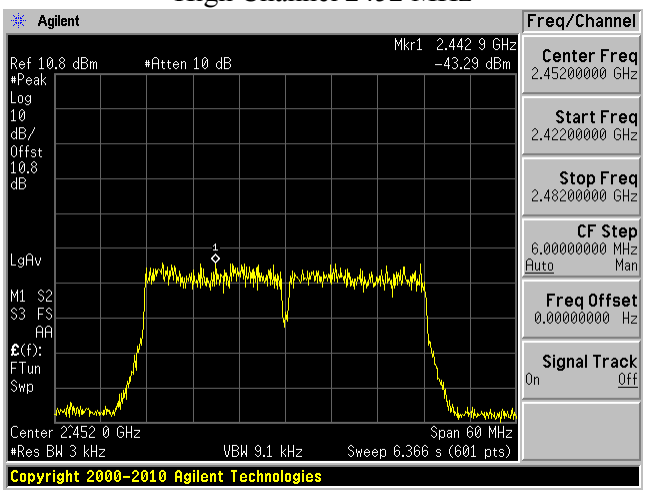
Low Channel 2422 MHz



Middle Channel 2437 MHz

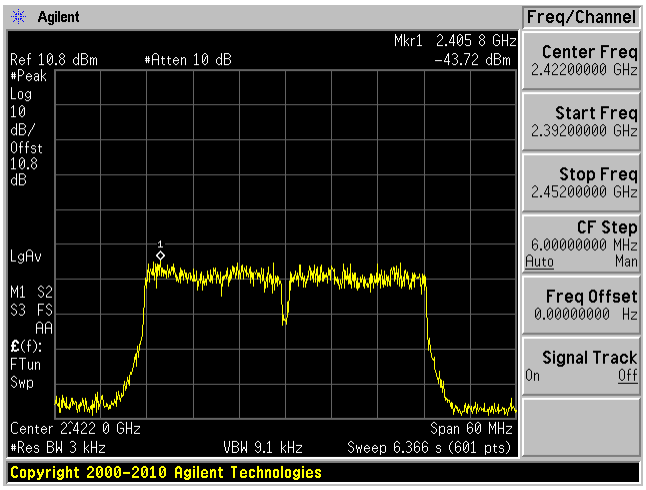


High Channel 2452 MHz

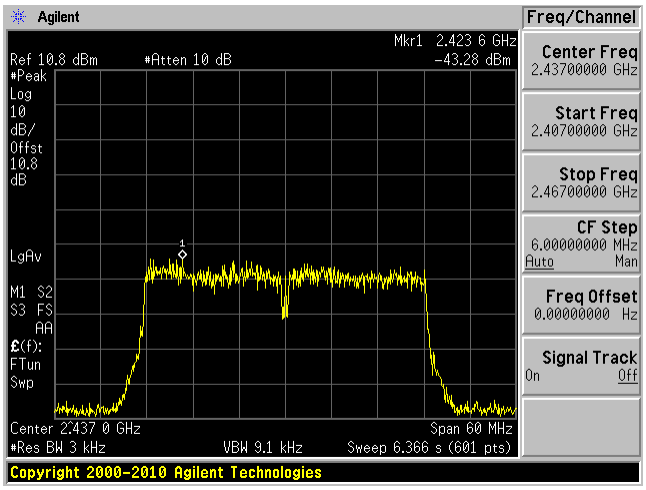


802.11n40 mode ANT B

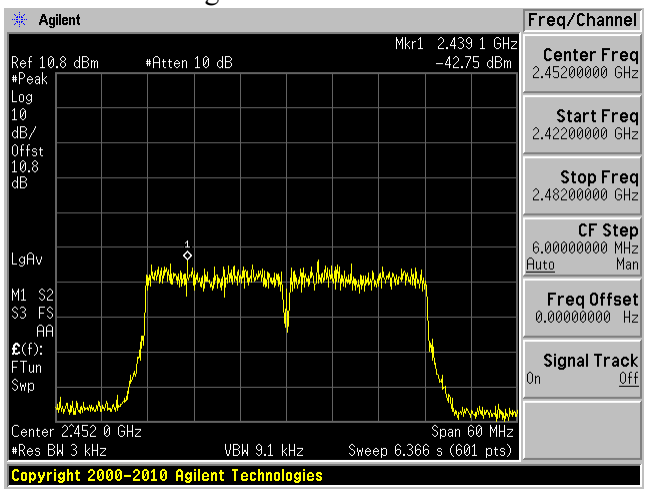
Low Channel 2422 MHz



Middle Channel 2437 MHz

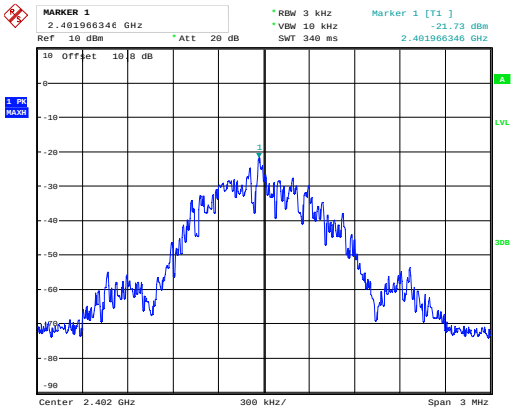


High Channel 2452 MHz



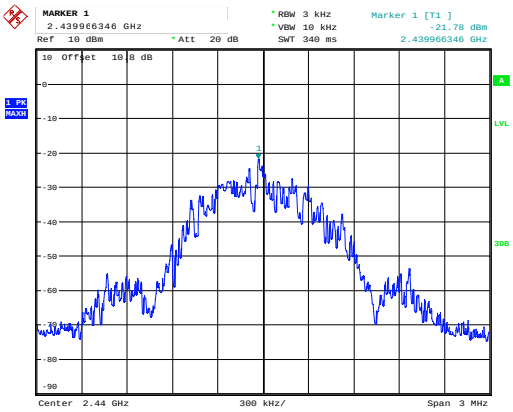
BLE

Low Channel 2402 MHz



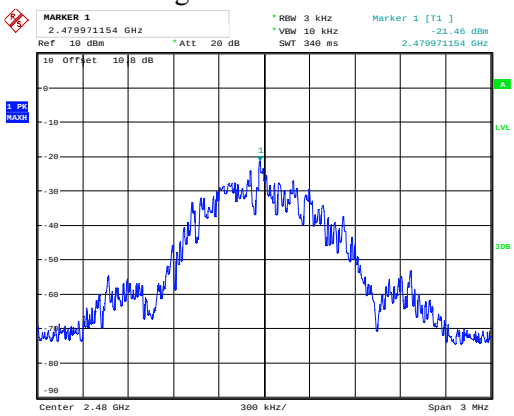
Date: 27.MAR.2018 14:32:43

Middle Channel 2437 MHz



Date: 27.MAR.2018 14:53:50

High Channel 2480 MHz



Date: 27.MAR.2018 14:45:33

12 FCC §15.247(d) & ISEDC RSS-247 §5.5, RSS-GEN §8.9 – Spurious Emissions at Antenna Terminals

12.1Applicable Standards

For ECFR §15.247(d) in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

As per ISEDC RSS-247 §5.5, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

12.2Test Procedure

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

12.3Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Analyzer, Spectrum	E4446A	US44300386	2017-04-20	1 year
Rohde & Schwarz	Analyzer, Spectrum	FSQ26	200749	2017-06-08	2 years
-	RF cable	-	-	Each time[1]	N/A
-	10dB attenuator	-	-	Each time[1]	N/A

Note[1]: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: BACL Corp. *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with A2LA Policy P102 (dated 09 June 2016) "A2LA Policy on Metrological Traceability".*

12.4Test Environmental Conditions

Temperature:	23º C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

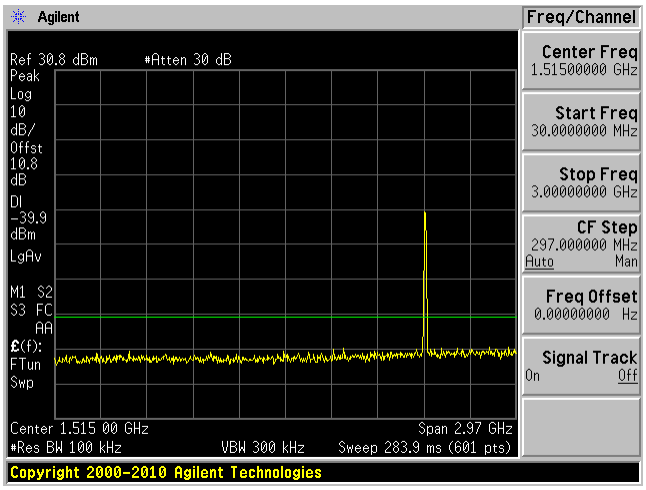
The testing was performed by Vincent Licata on 2018-03-26 and 2018-03-27 in RF site.

12.5Test Results

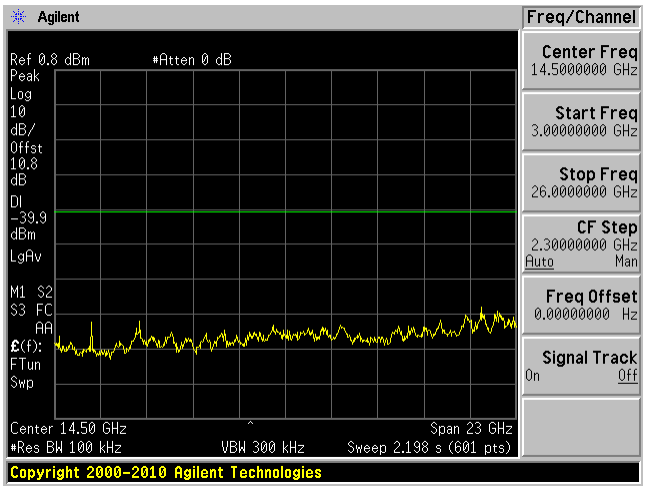
Please refer to following plots.

802.11b mode ANT A

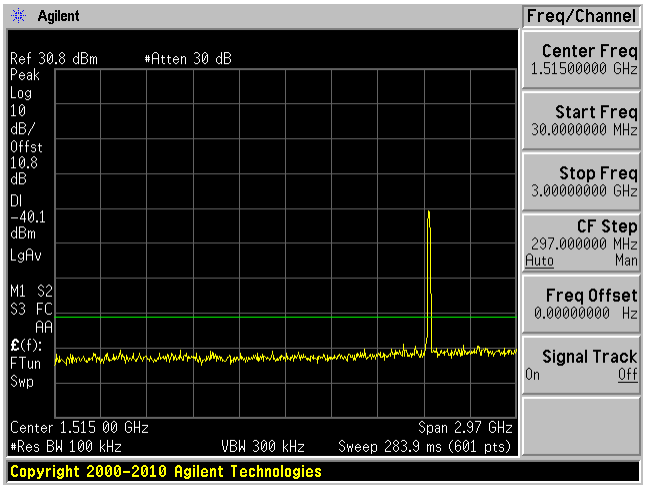
Low Channel 30MHz – 3 GHz



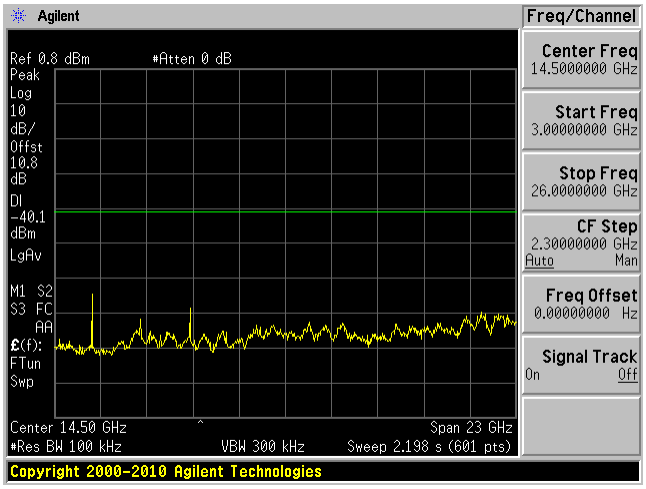
Low Channel 3 GHz – 26 GHz



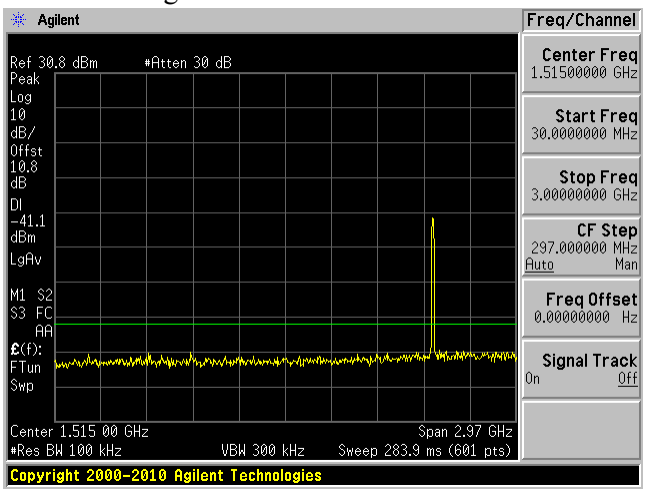
Middle Channel 30 MHz – 3 GHz



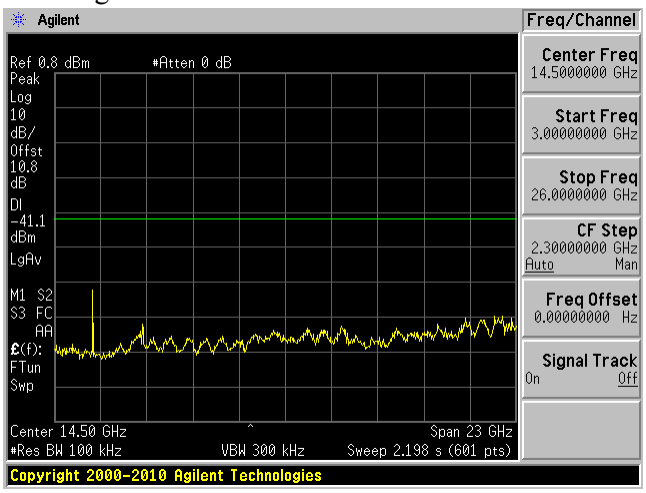
Middle Channel 3 GHz – 26 GHz



High Channel 30 MHz – 3 GHz

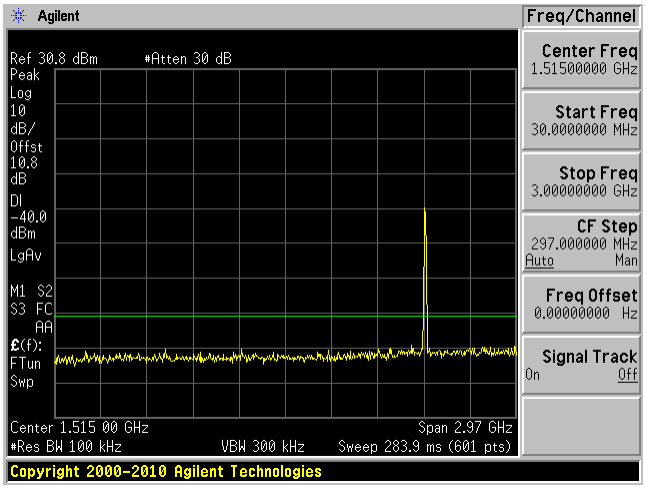


High Channel 3 GHz – 26 GHz

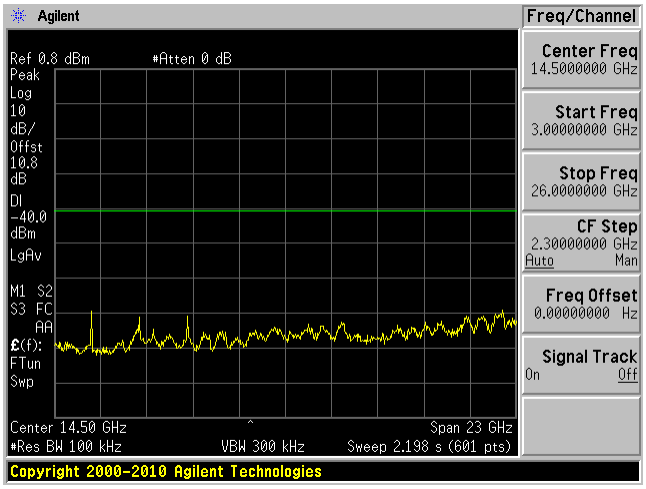


802.11b mode ANT B

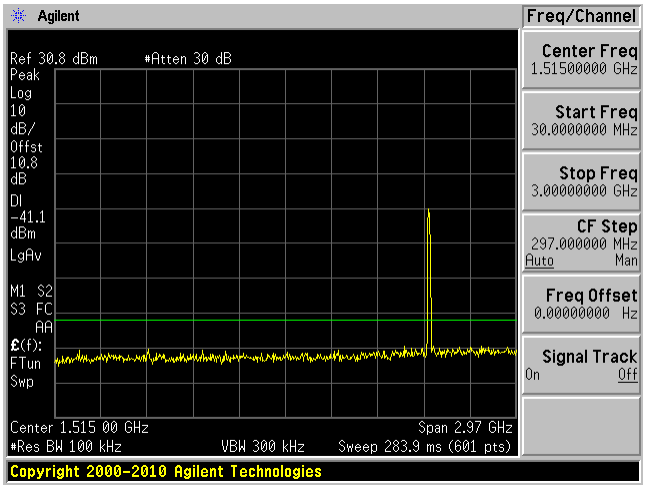
Low Channel 30MHz – 3 GHz



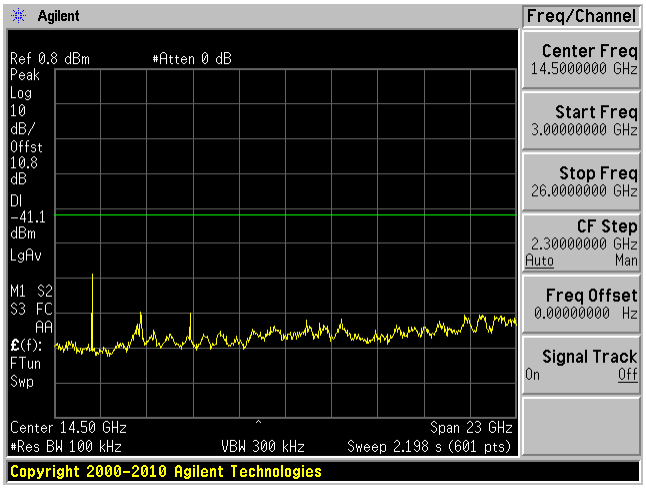
Low Channel 3 GHz – 26 GHz



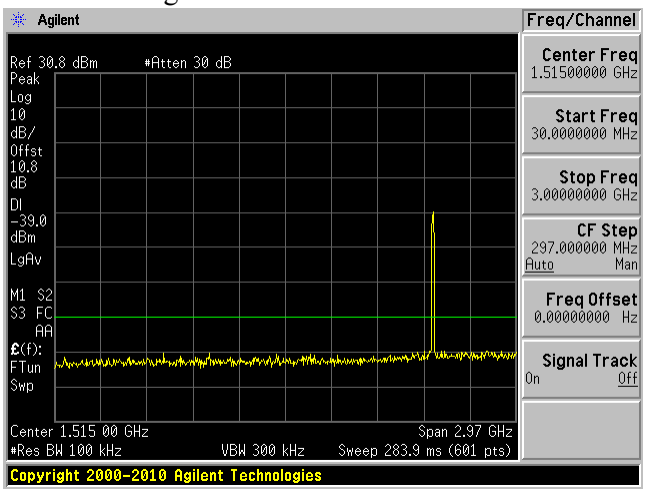
Middle Channel 30 MHz – 3 GHz



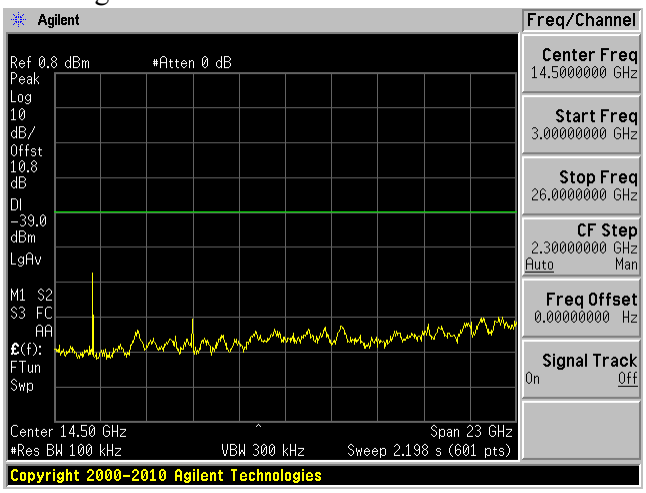
Middle Channel 3 GHz – 26 GHz



High Channel 30 MHz – 3 GHz

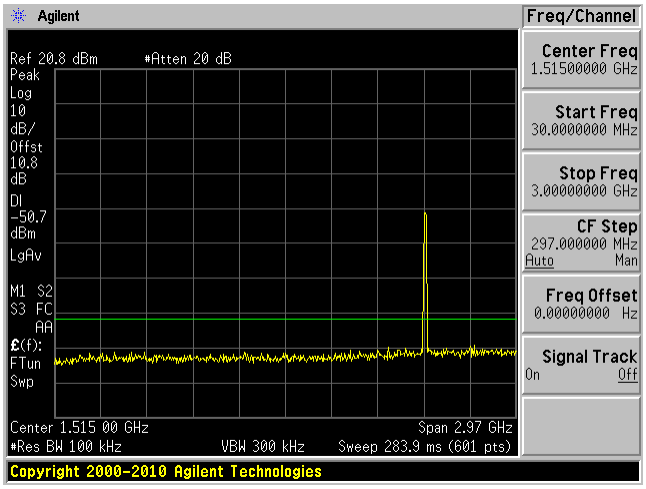


High Channel 3 GHz – 26 GHz

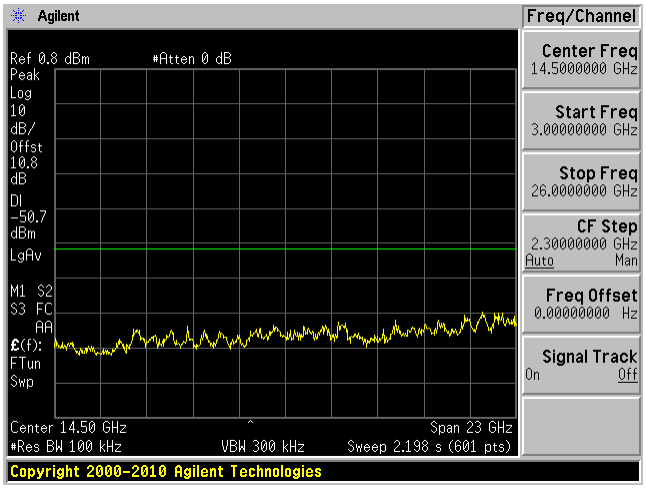


802.11g mode ANT A

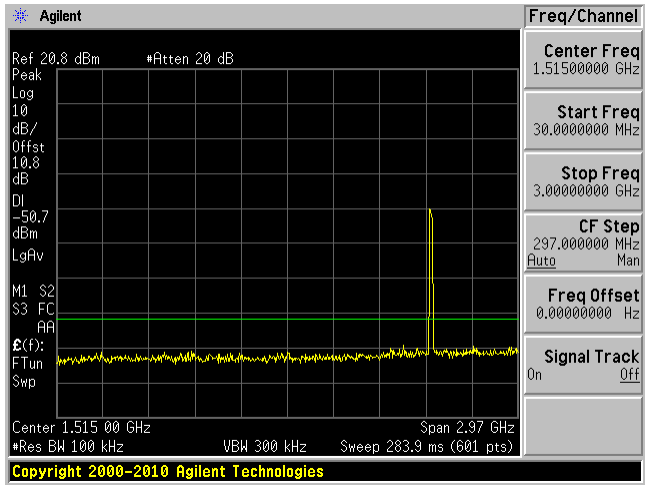
Low Channel 30MHz – 3 GHz



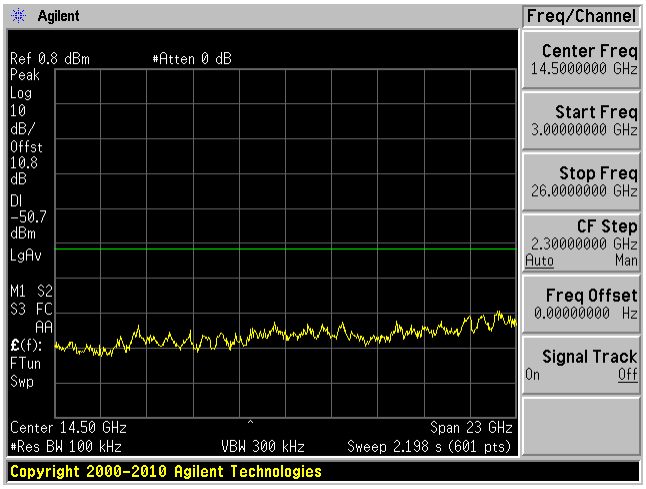
Low Channel 3 GHz – 26 GHz



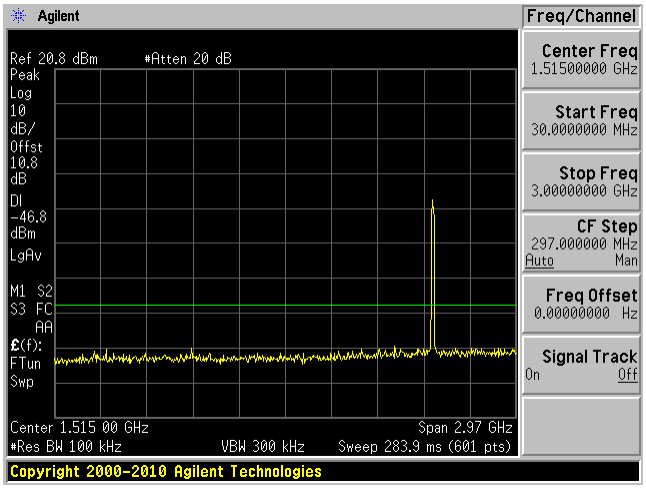
Middle Channel 30 MHz – 3 GHz



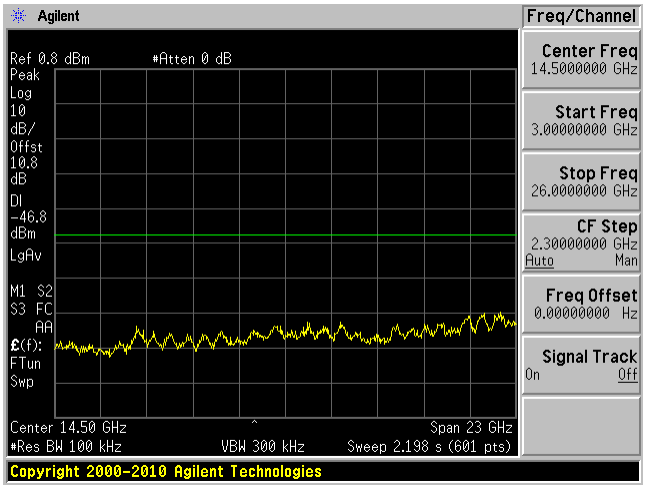
Middle Channel 3 GHz – 26 GHz



High Channel 30 MHz – 3 GHz

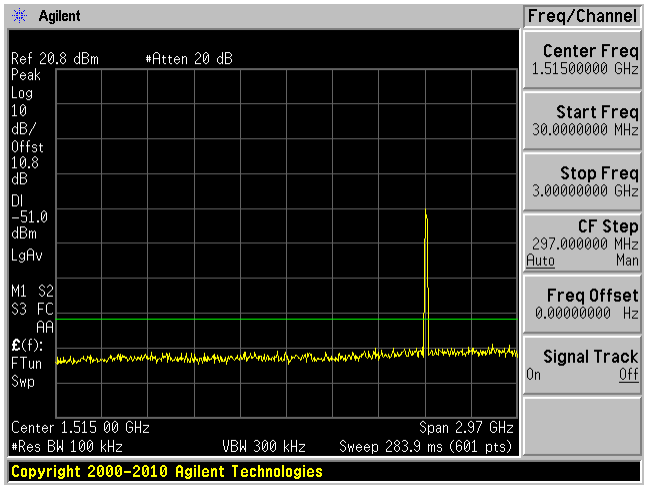


High Channel 3 GHz – 26 GHz

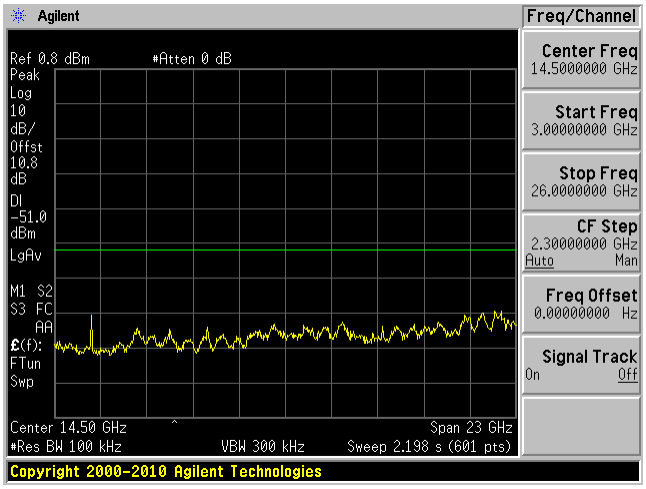


802.11g mode ANT B

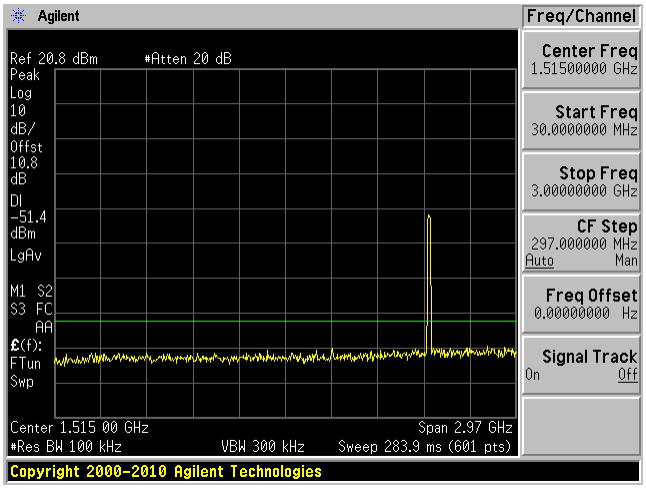
Low Channel 30 MHz – 3 GHz



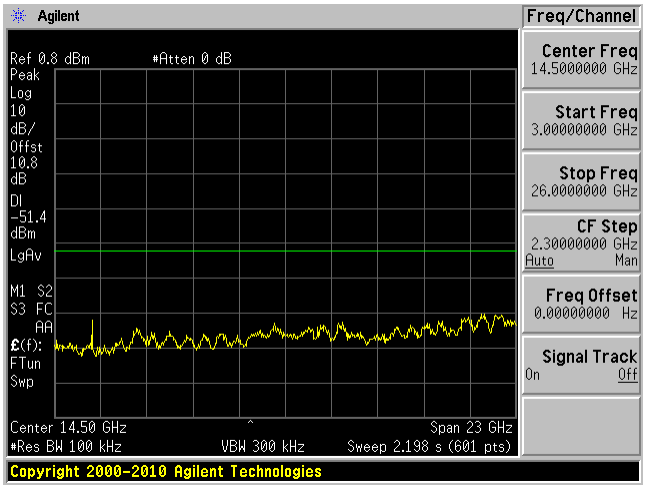
Low Channel 3 GHz – 26 GHz



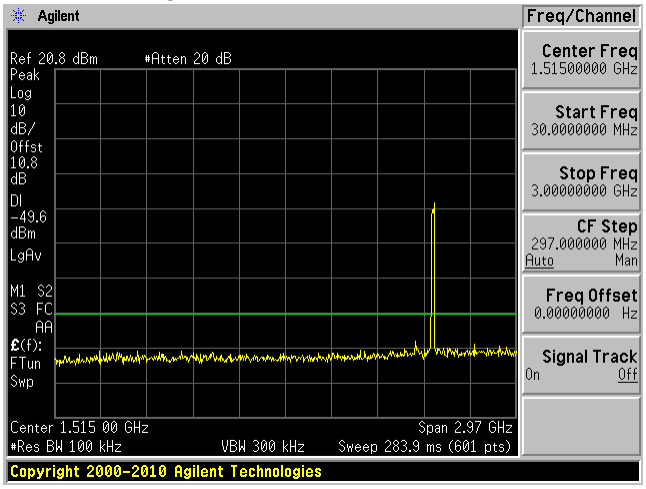
Middle Channel 30 MHz – 3 GHz



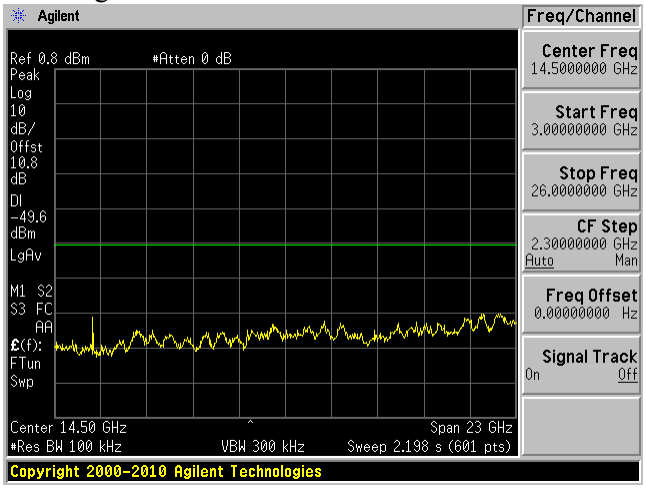
Middle Channel 3 GHz – 26 GHz



High Channel 30 MHz – 3 GHz

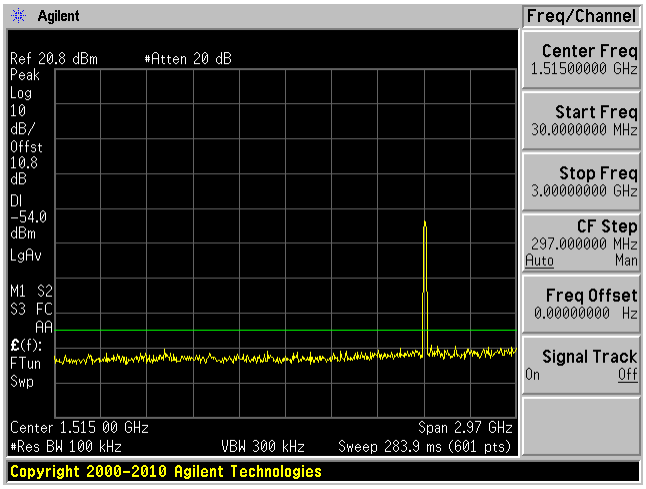


High Channel 3 GHz – 26 GHz

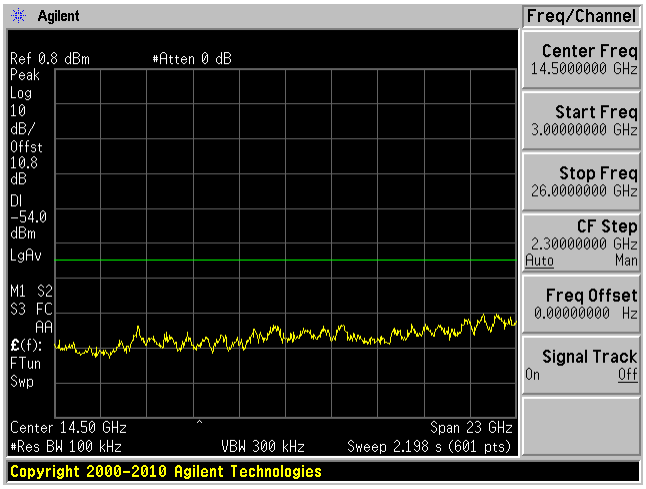


802.11n20 mode ANT A

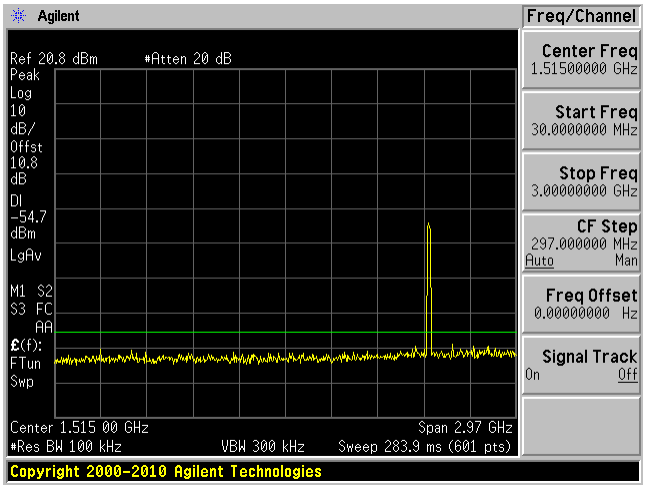
Low Channel 30 MHz – 3 GHz



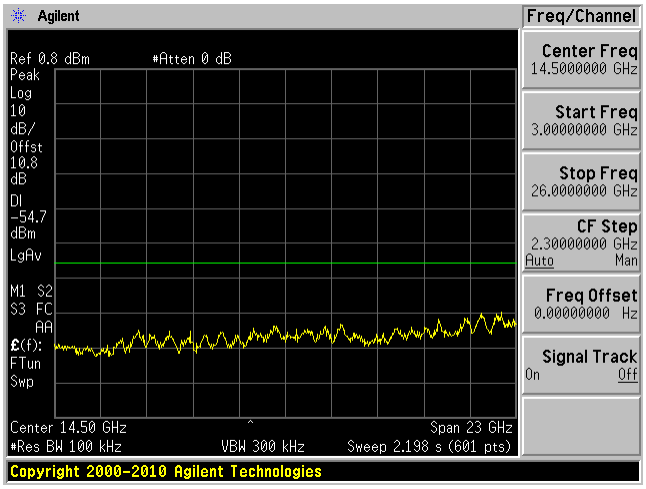
Low Channel 3 GHz – 26 GHz



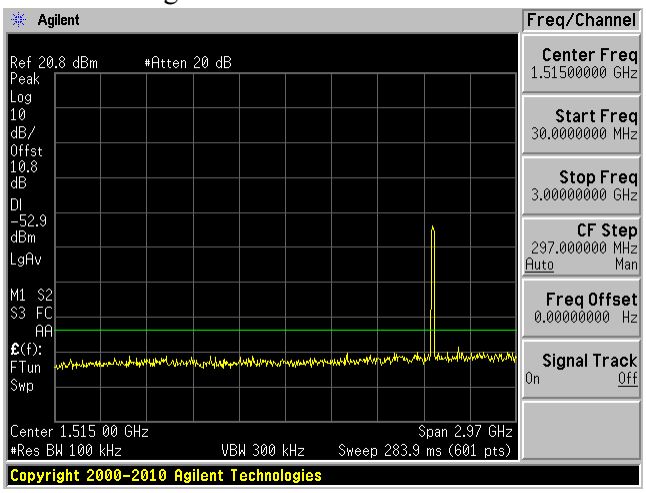
Middle Channel 30 MHz – 3 GHz



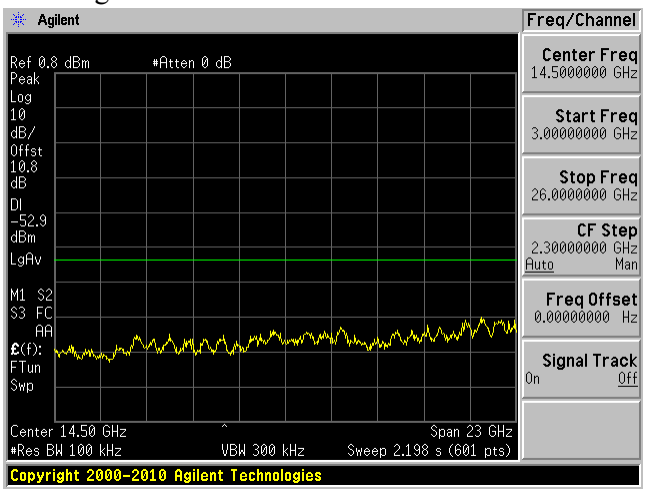
Middle Channel 3 GHz – 26 GHz



High Channel 30 MHz – 3 GHz

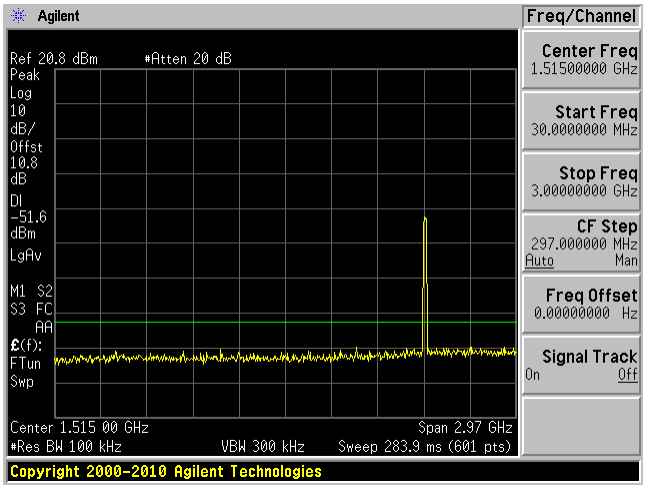


High Channel 3 GHz – 26 GHz

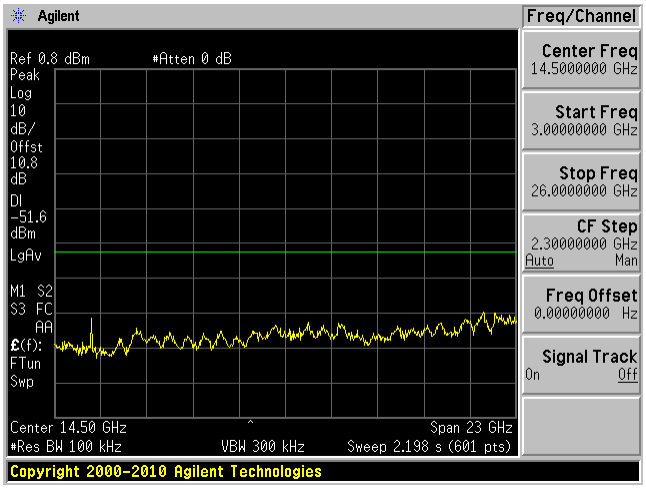


802.11n20 mode ANT B

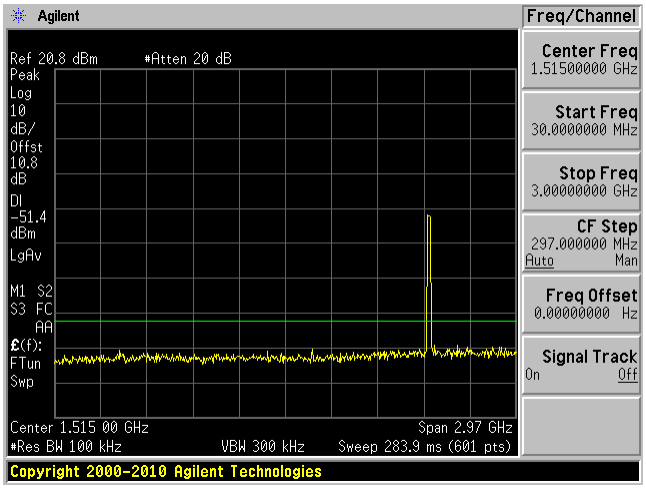
Low Channel 30 MHz – 3 GHz



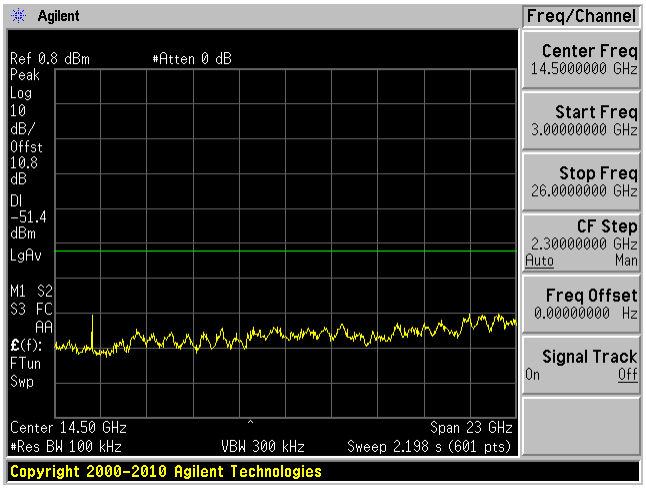
Low Channel 3 GHz – 26 GHz



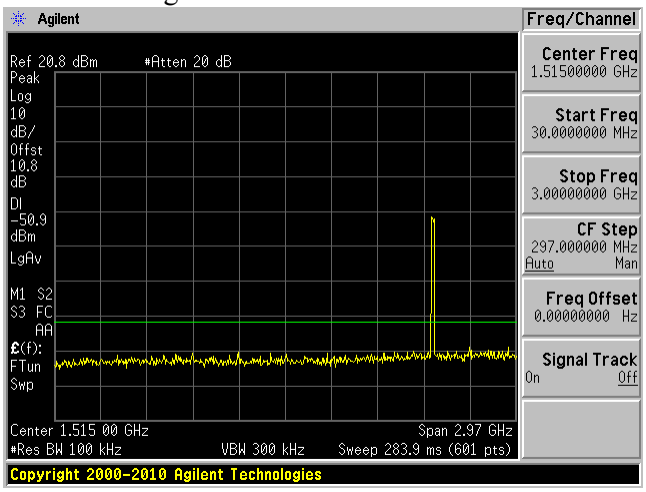
Middle Channel 30 MHz – 3 GHz



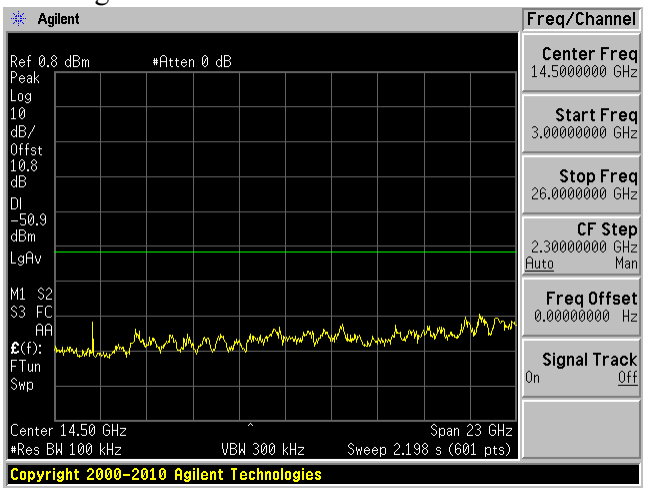
Middle Channel 3 GHz – 26 GHz



High Channel 30 MHz – 3 GHz

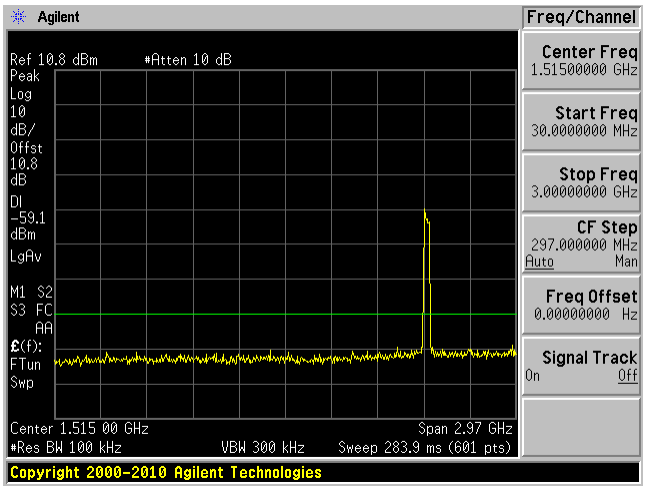


High Channel 3 GHz – 26 GHz

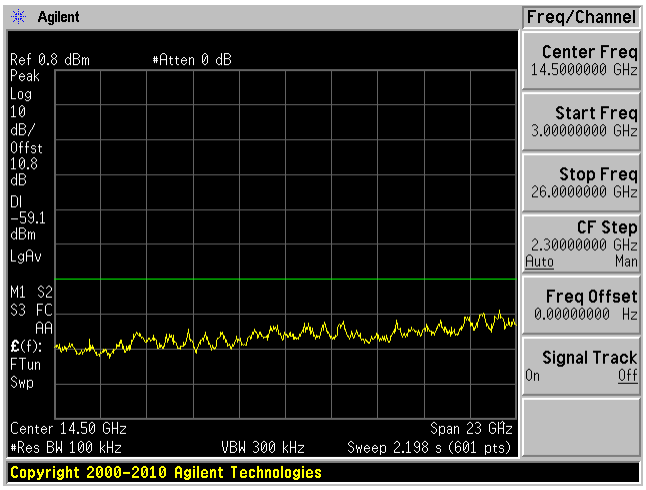


802.11n40 mode ANT A

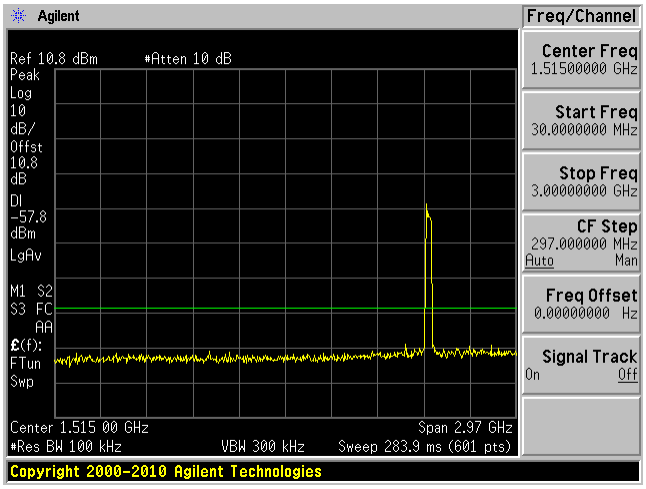
Low Channel 30 MHz – 3 GHz



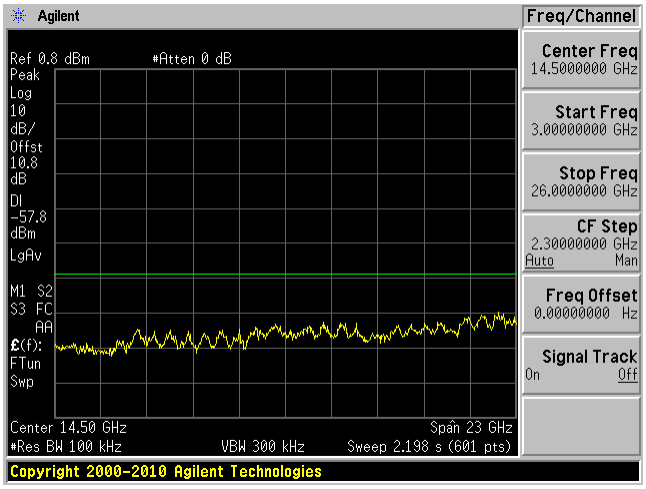
Low Channel 3 GHz – 26 GHz



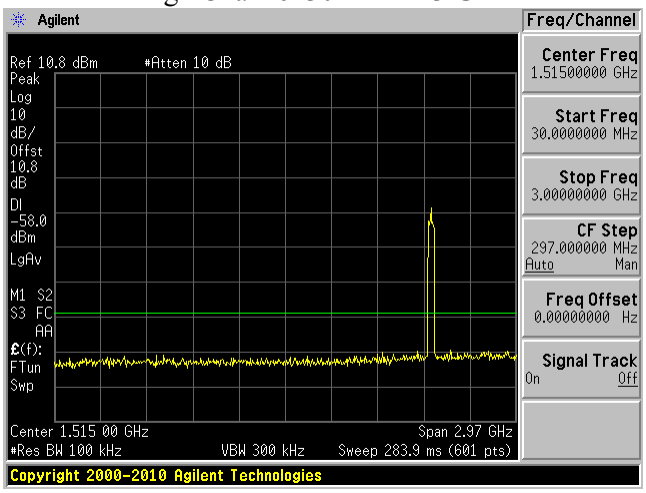
Middle Channel 30 MHz – 3 GHz



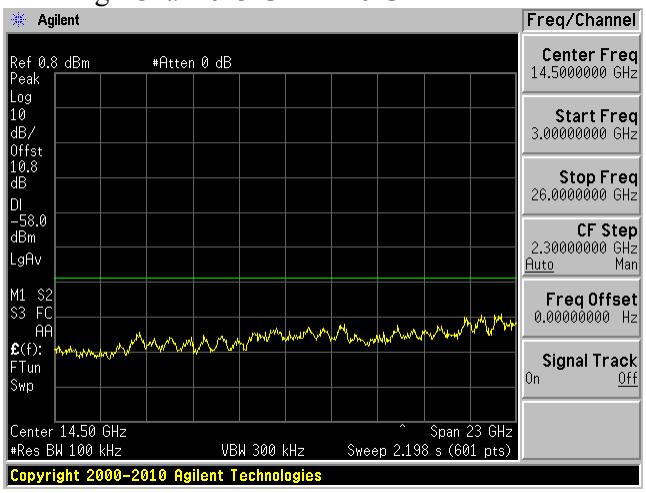
Middle Channel 3 GHz – 26 GHz



High Channel 30 MHz – 3 GHz

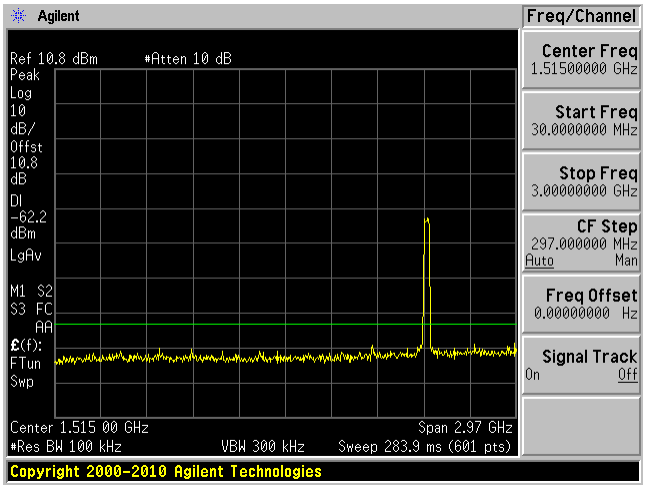


High Channel 3 GHz – 26 GHz

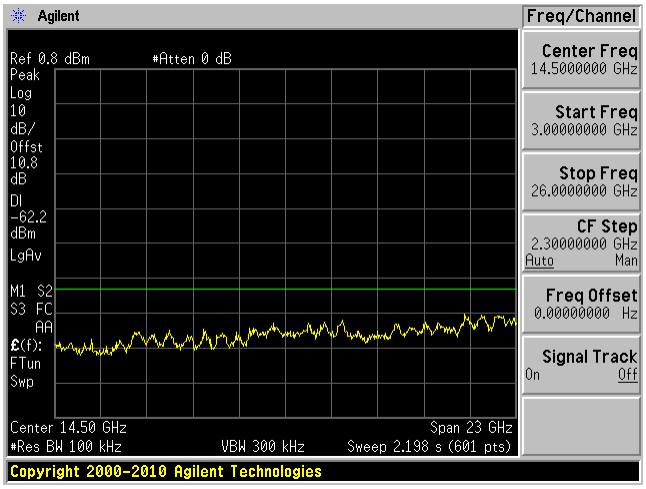


802.11n40 mode ANT B

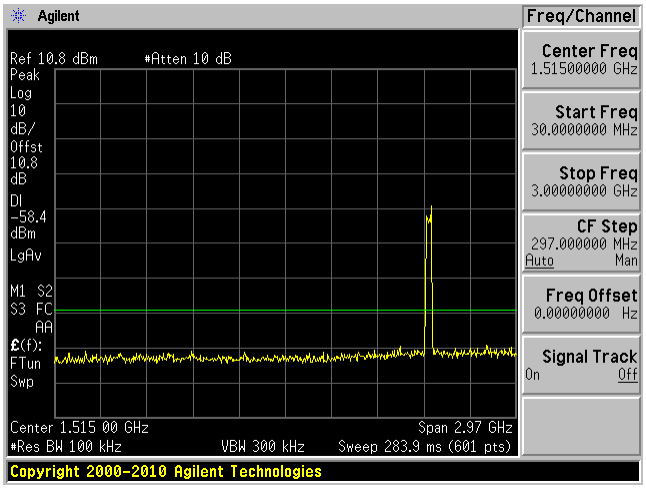
Low Channel 30 MHz – 3 GHz



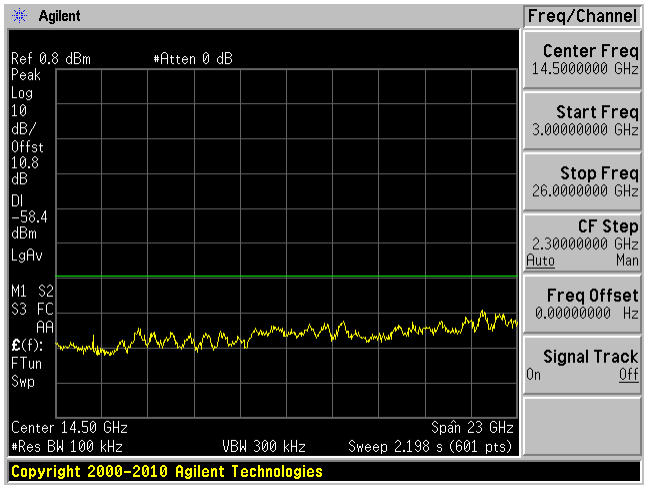
Low Channel 3 GHz – 26 GHz



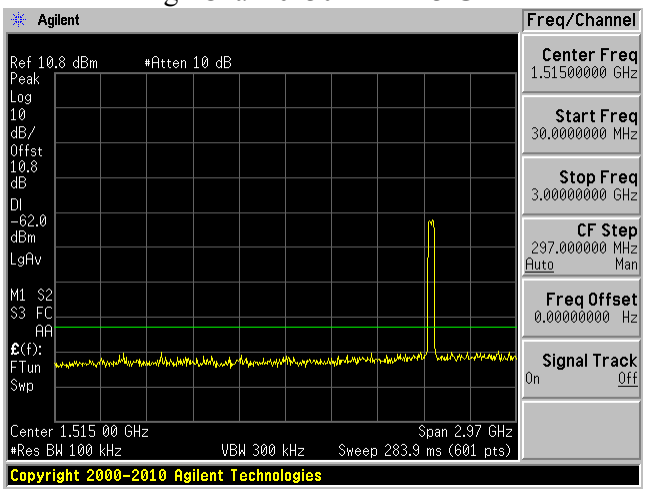
Middle Channel 30 MHz – 3 GHz



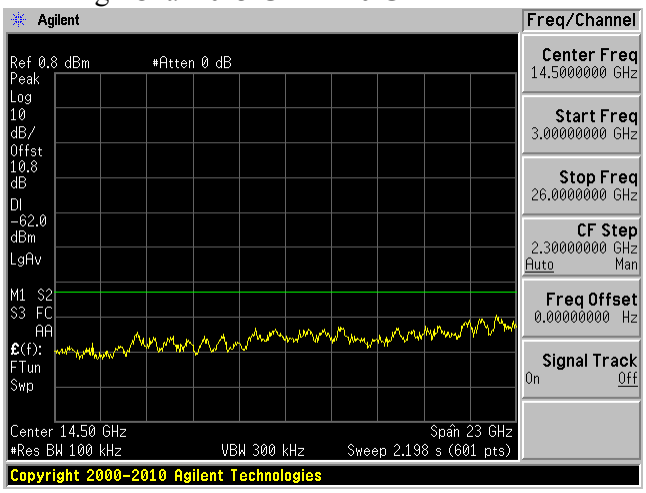
Middle Channel 3 GHz – 26 GHz



High Channel 30 MHz – 3 GHz

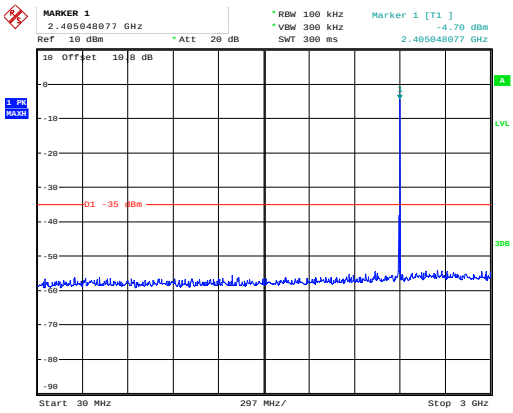


High Channel 3 GHz – 26 GHz



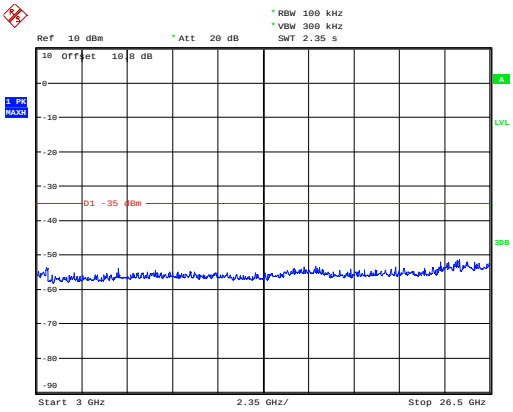
BLE

Low Channel 30 MHz – 3 GHz



Date: 27.MAR.2018 14:37:49

Low Channel 3 GHz – 26 GHz



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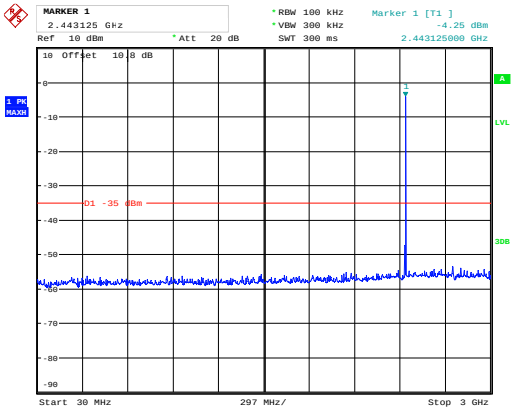
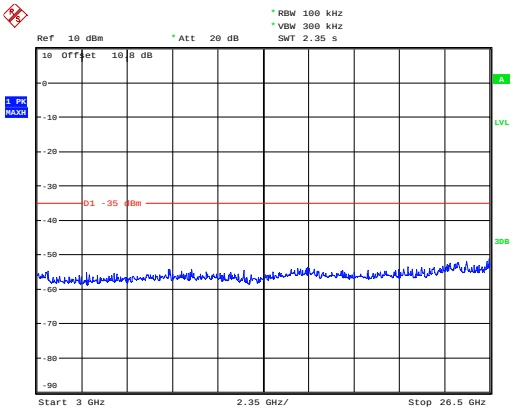
Middle Channel 30 MHz – 3 GHz



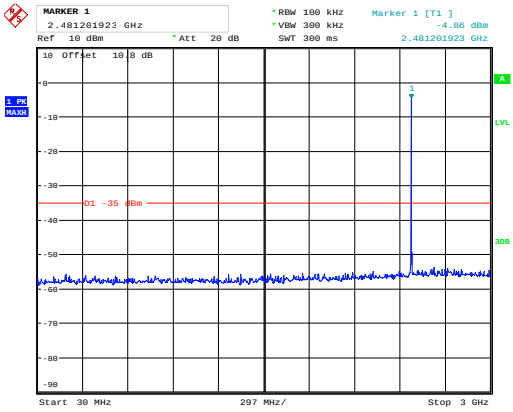
Date: 27.MAR.2018 14:54:35

Middle Channel 3 GHz – 26 GHz



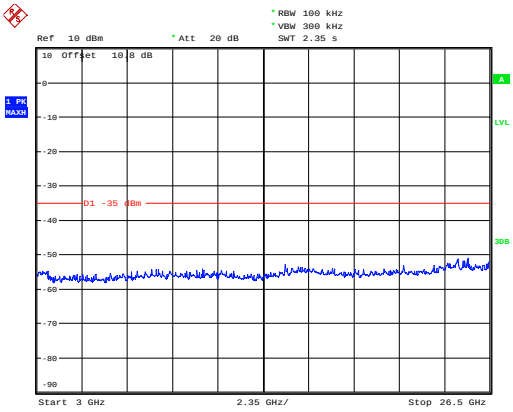
Date: 27.MAR.2018 14:54:51

High Channel 30 MHz – 3 GHz



Date: 27.MAR.2018 14:46:36

High Channel 3 GHz – 26 GHz



Date: 27.MAR.2018 14:47:23

13 Exhibit A - FCC & ISED Equipment Labeling Requirements

13.1 FCC ID Label Requirements

As per FCC §2.925,

(a) Each equipment covered in an application for equipment authorization shall bear a nameplate or label listing the following:

(1) FCC Identifier consisting of the two elements in the exact order specified in §2.926. The FCC Identifier shall be preceded by the term FCC ID in capital letters on a single line, and shall be of a type size large enough to be legible without the aid of magnification.

Example: FCC ID: XXX123

Where: XXX—Grantee Code, 123—Equipment Product Code

As per FCC §15.19,

(a) In addition to the requirements in part 2 of this chapter, a device subject to certification, or verification shall be labeled as follows:

(3) All other devices shall bear the following statement in a conspicuous location on the device:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

(4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified above is required to be affixed only to the main control unit. If the EUT is integrated within another device then a label affixed to the host shall also state, "Contains FCC ID: XXXXXX"

(5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

13.2 IC Label Requirements

As per IC RSP-100 Section 3.1, the certification number shall appear as follows:

IC: XXXXXX-YYYYYYYY

Where:

- The letters "IC:" indicate that this is an Innovation, Science and Economic Development Canada's certification number, but they are not part of the certification number. XXXXXXYYYYYYYYYY is the ISED certification number.
- XXXXXX is the CN assigned by Innovation, Science and Economic Development Canada. Newly assigned CNs will be made up of five numeric characters (e.g. "20001") whereas existing CNs may consist of up to five numeric characters followed by an alphabetic character (e.g. "21A" or "15589J").
- YYYYYYYYYY is the Unique Product Number (UPN) assigned by the applicant, made up of a maximum of 11 alphanumeric characters.
- The CN and UPN are limited to capital alphabetic characters (A-Z) and numerals (0-9) only. The use of punctuation marks or other symbols, including "wildcard" characters, is not permitted.

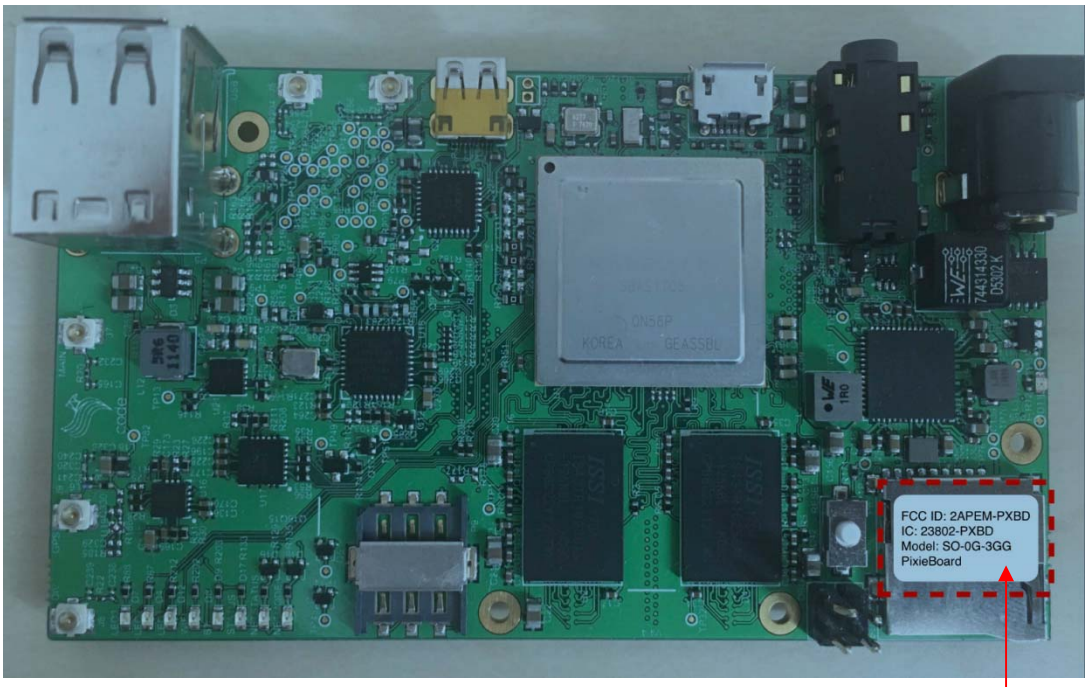
- The HVIN may contain punctuation marks or symbols but they shall not represent any indeterminate (“wildcard”) characters.

As per RSS-Gen §2.1 Equipment Labeling:

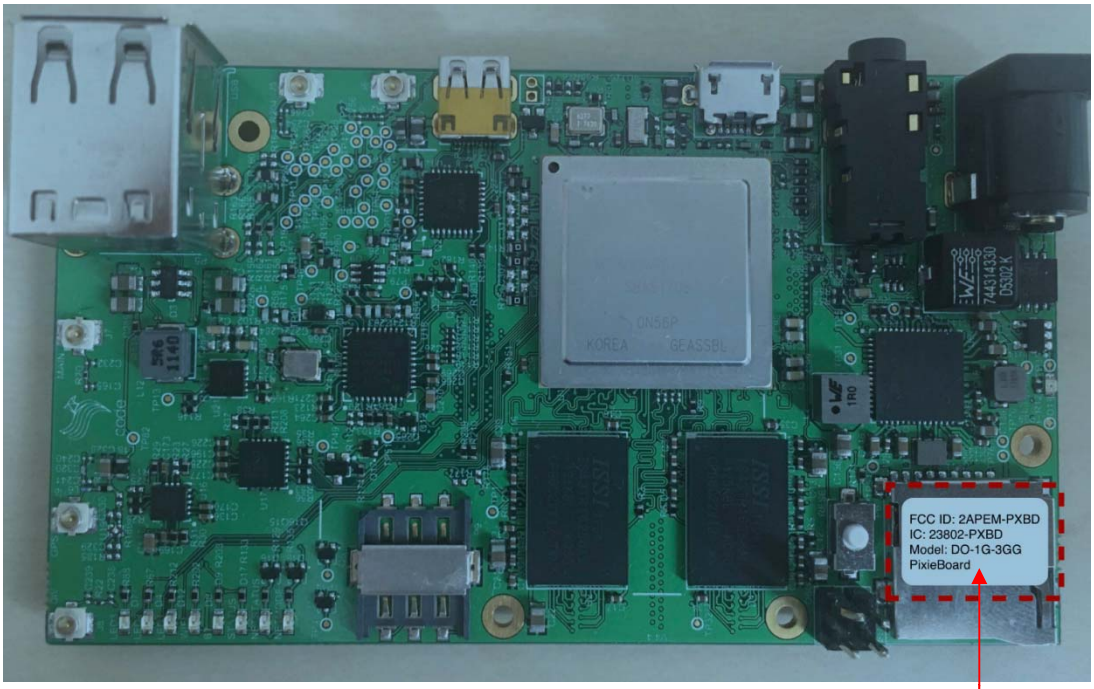
The application for equipment certification shall be submitted in accordance with Industry Canada’s Radio Standards Procedure RSP-100, Radio Equipment Certification Procedure which sets out the requirements for certification and labelling of radio apparatus. RSP-100 shall be used in conjunction with RSS-Gen and other Radio Standards Specifications (RSSs) specifically applicable to the type of radio apparatus for which certification is sought.

12.3 Recommended Label Contents and Location

SO-0G-3GG

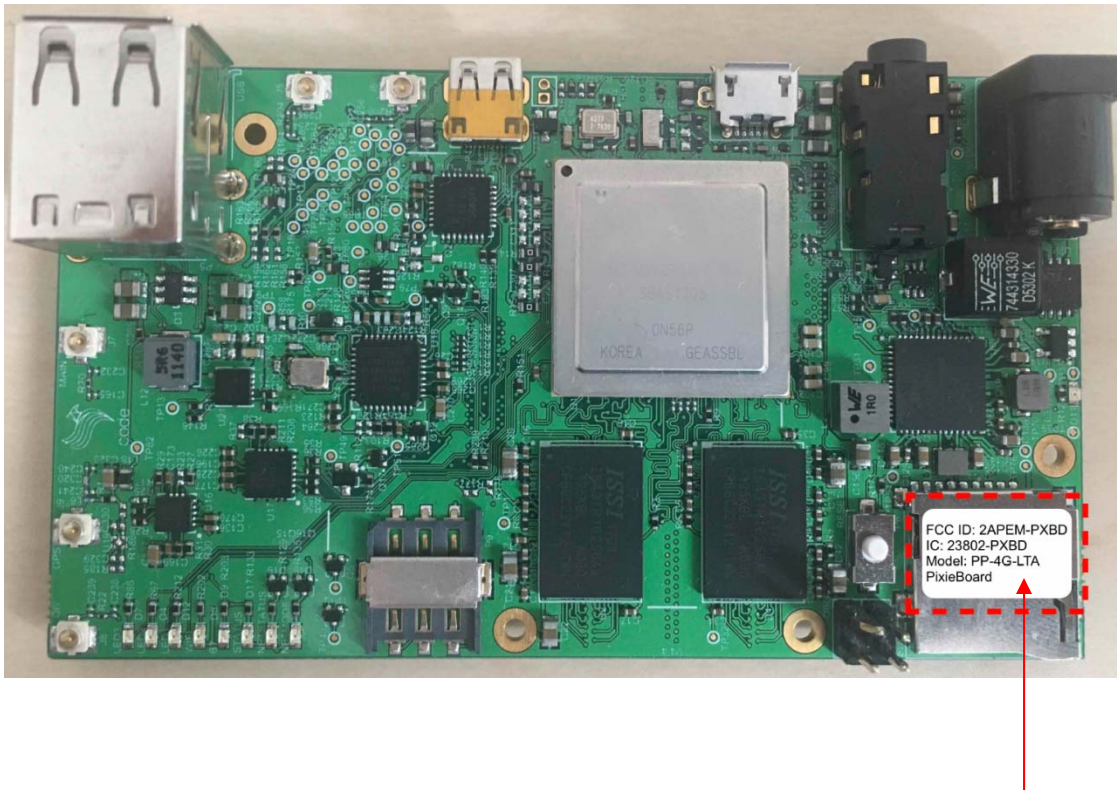


DO-1G-3GG



PO-2G-LTA

PP-4G-LTA



14 Annex A (Informative) – Declaration of Similarity Letter

CODE & MODULES

DECLARATION OF SIMILARITY

May 10, 2018

To:
FEDERAL COMMUNICATIONS COMMISSIONS
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

Dear Sir or Madam:

We *Code & Modules* hereby declare that product: *PixieBoard,* model(s): *SO-0G-3GG and PO-2G-LTA* is/are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as model: *PP-4G-LTA and DO-1G-3GG* tested by BACL, the results of which are featured in BACL project: R1803143.

A description of the differences between the tested model and those that are declared similar are as follows:

SO-0G-3GG: i.MX6 Solo processor, 516 MB of RAM and 3G module
DO-1G-3GG: i.MX6 Dual lite processor, 1 GB of RAM and 3G module
PO-2G-LTA: i.MX6 Quad processor, 2 GB of RAM and 4G/3G module
PP-4G-LTA: i.MX6 QuadPlus processor, 4 GB of RAM and 4G/3G module

Please contact me should there be need for any additional clarification or information.

Best Regards,

Roberto Himmelbauer, Director of Consulting Solutions
4701 Patrick Henry Drive, Bldg 22, Suite 107 Santa Clara, CA 95054

QA-FR-227-A 11/05/2013

DECLARATION OF SIMILARITY

May 10, 2018

To:
Innovation, Science and Economic Development Canada
Certification and Engineering Bureau
P.O. Box 11490, Station 'H'
3701 Carling Ave., Building 94
Ottawa, Ontario K2H 8S2

Dear Sir or Madam:

We *Code & Modules* hereby declare that product: *PixieBoard,* model(s): *SO-0G-3GG and PO-2G-LTA* is/are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as model: *PP-4G-LTA and DO-1G-3GG* tested by BACL, the results of which are featured in BACL project: *R1803143.*

A description of the differences between the tested model and those that are declared similar are as follows:

SO-0G-3GG: i.MX6 Solo processor, 516 MB of RAM and 3G module
DO-1G-3GG: i.MX6 Dual lite processor, 1 GB of RAM and 3G module
PO-2G-LTA: i.MX6 Quad processor, 2 GB of RAM and 4G/3G module
PP-4G-LTA: i.MX6 QuadPlus processor, 4 GB of RAM and 4G/3G module

Please contact me should there be need for any additional clarification or information.

Best Regards,

Roberto Himmelbauer, Director of Consulting Solutions
4701 Patrick Henry Drive, Bldg 22, Suite 107 Santa Clara, CA 95054

QA-FR-227-A 11/05/2013

15 Appendix

Please see attachments:

Annex B – EUT Test Setup Photographs
Annex C – EUT Photographs

16 Annex D (Informative) - A2LA Electrical Testing Certificate

Accredited Laboratory

A2LA has accredited

BAY AREA COMPLIANCE LABORATORIES CORP.

Sunnyvale, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of A2LA *R222 - Specific Requirements - EPA ENERGY STAR Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 30th day of August 2016.

Senior Director of Quality & Communications
For the Accreditation Council
Certificate Number 3297.02
Valid to September 30, 2018

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

----- END OF REPORT -----