TESTING LABORATORY
CERTIFICATE #4820.01

FCC PART 15.247

TEST REPORT

For

INGENICO

9 Avenue de la gare - Rolvatain TGV, Valence Cedex 9, 26958, France

FCC ID: XKB-APOSA8AMLEWF

Report Type:	**Product Name:**
Original Report	Smart POS Terminal

Report Number:	RXM191226052-00B
Report Date:	2020-04-09
Reviewed By:	Ivan Cao Assistant Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Smart POS Terminal
EUT Model:		APOS A8
Operation Frequency:		2412-2462 MHz(802.11b/g/n ht20), 2422-2452 MHz(802.11n ht40) 2402-2480MHz(BLE)
Maximum Peak Output Power (Conducted):		21.92 dBm(802.11b/g/n) 3.58 dBm(BLE)
Modulation Type:		DSSS, OFDM(802.11b/g/n) GFSK(BLE)
Rated Input Voltage:		DC 7.2V from battery or DC 5V from USB port
Adapter#1 Information:	**Manufacturer:**	Something High Electric(Xiamen) Company Inc.
	Model:	P12GUSB050200
	Input:	AC 100-240V, 50/60Hz, 0.3A
	Output:	DC 5.0V, 2.0A
Adapter#2 Information:	**Manufacturer:**	Jiangxi Jian Aohai Technology Co.,Ltd
	Model:	A8-050200U-US3
	Input:	AC 100-240V, 50/60Hz, 0.35A
	Output:	DC 5V, 2A
Serial Number:		RXM191226052-RF-S4
EUT Received Date:		2019.12.31
EUT Received Status:		Good

Note: Per pre-test of FCC Part 15B test, the adapter#1 and EUT configuration #1 was the worst, and was selected to perform the test items in this report. The EUT configuration information as below, and more please refer to the Product similarify declaration.

EUT Configuration	Screen Model	Manufacturer	Serial Number
#1	MDT0550B	SKYWORTH LCD MODULES(SHENZHEN) CO., LTD	RXM191226052-RF-S4
#2	MDT0550B	TIANMA MICRO-ELECTRONICS Corporation	RXM191226052-RF-S25

Objective

This report is prepared on behalf of *INGENICO* in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communications Commission's rules.

The tests were performed in order to determine the Bluetooth BDR and EDR mode of EUT compliance with FCC Rules Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 15C DSS, DXX, 15B JAB, Part 22H, 24E,27,90 PCB submissions with
FCC ID: XKB-APOSA8AMLEWF.

Test Methodology

All measurements detailed in this test report were performed in accordance with ANSI C63.10-2013 "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices" and KDB 558074 D01 15.247 Meas Guidance v05r02.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.55 dB,200M~1GHz: 5.92 dB, 1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB, 18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier : CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "△ ". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

This report cannot be reproduced except in full, without prior written approval of the Company.

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA, or any agency of the U.S. Government.

This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk "★".

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in Engineering Mode, which was provided by the manufacturer.

For 2.4GHz band, total 11 channels are provided:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

For 802.11b, 802.11g, and 802.11n ht20 modes were test with channel 1,6,11. For 802.11n ht40 mode was tested with channel 3, 6, 9.

For Bluetooth LE mode, 40 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	…	…
…	…	…	…
…	…	…	…
..	…	38	2478
19	2440	39	2480

EUT was tested with channel 0, 19 and 39.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

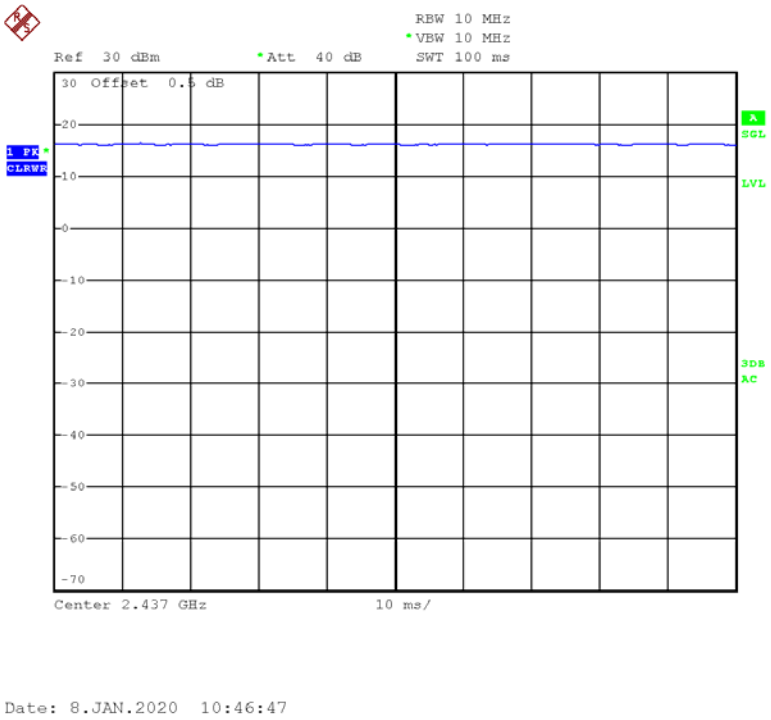
The software "QRCT"was used for testing and the maximum power was configured as below:

Mode	Channel	Frequency (MHz)	Data rate	Power level Setting
802.11 b	Low	2412	1 Mbps	21
	Middle	2437	1 Mbps	20
	High	2462	1 Mbps	20
802.11 g	Low	2412	6 Mbps	15
	Middle	2437	6 Mbps	15
	High	2462	6 Mbps	15
802.11n ht20	Low	2412	6.5 Mbps	14
	Middle	2437	6.5Mbps	14
	High	2462	6.5 Mbps	14
802.11n ht40	Low	2422	13 Mbps	12
	Middle	2437	13 Mbps	12
	High	2452	13 Mbps	12
BLE	Low	2402	1 Mbps	Default
	Middle	2440	1 Mbps	Default
	High	2480	1 Mbps	Default

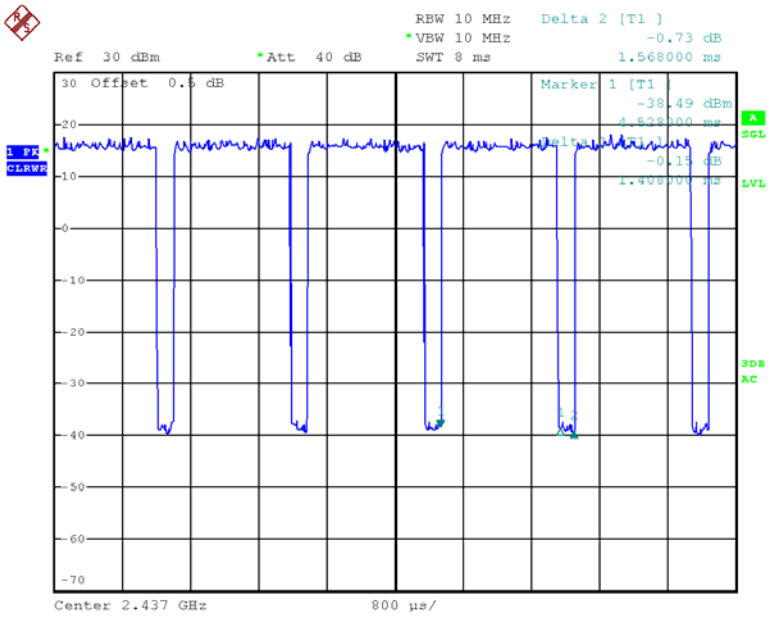
The duty cycle as below:

Test mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11b	100	100	100
802.11g	1.408	1.568	89.80
802.11n ht20	1.312	1.472	89.13
802.11n ht40	0.656	0.840	78.10
BLE	0.426	0.632	67.41

802.11b

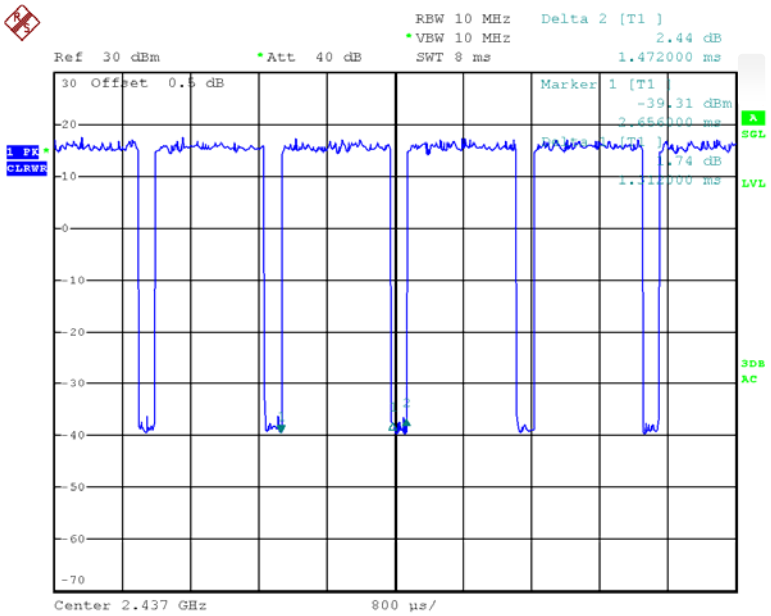


802.11g



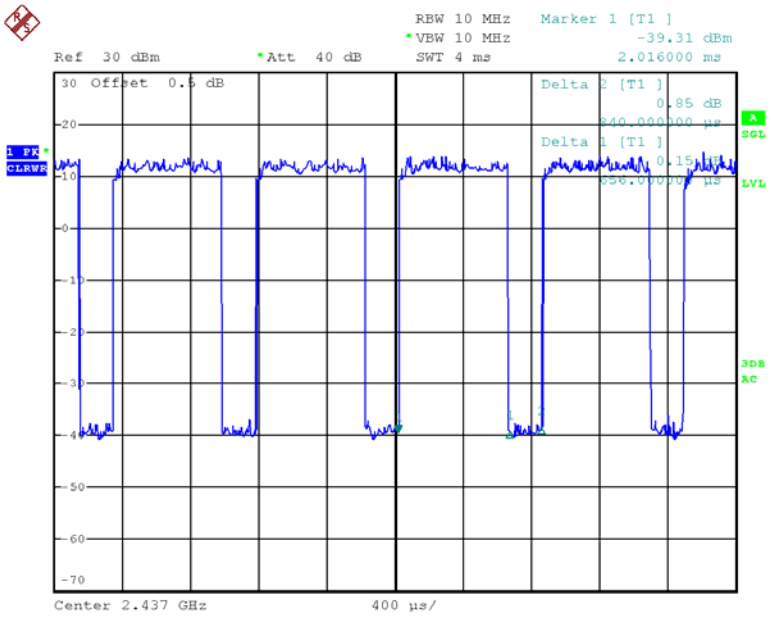
Date: 8.JAN.2020 10:47:55

802.11n ht20



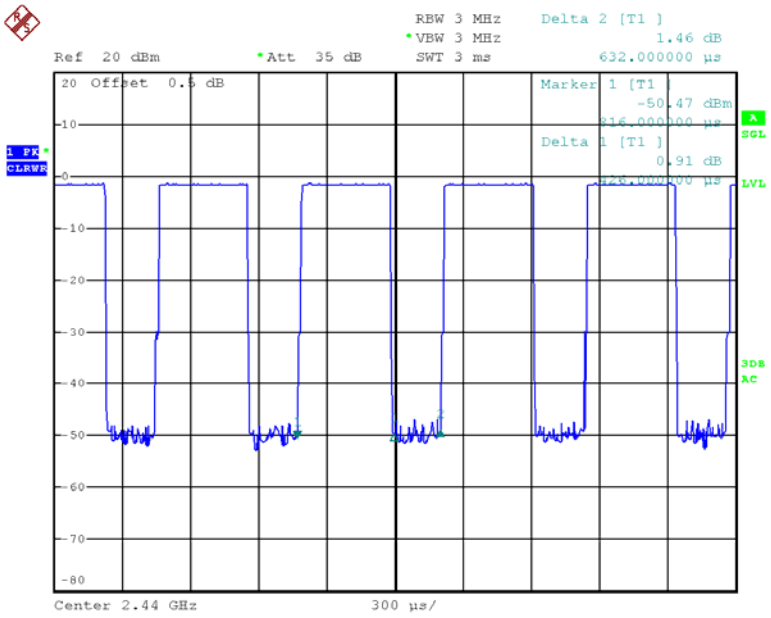
Date: 8.JAN.2020 10:44:01

802.11n ht40



Date: 8.JAN.2020 10:45:04

BLE



Date: 8.JAN.2020 13:57:30

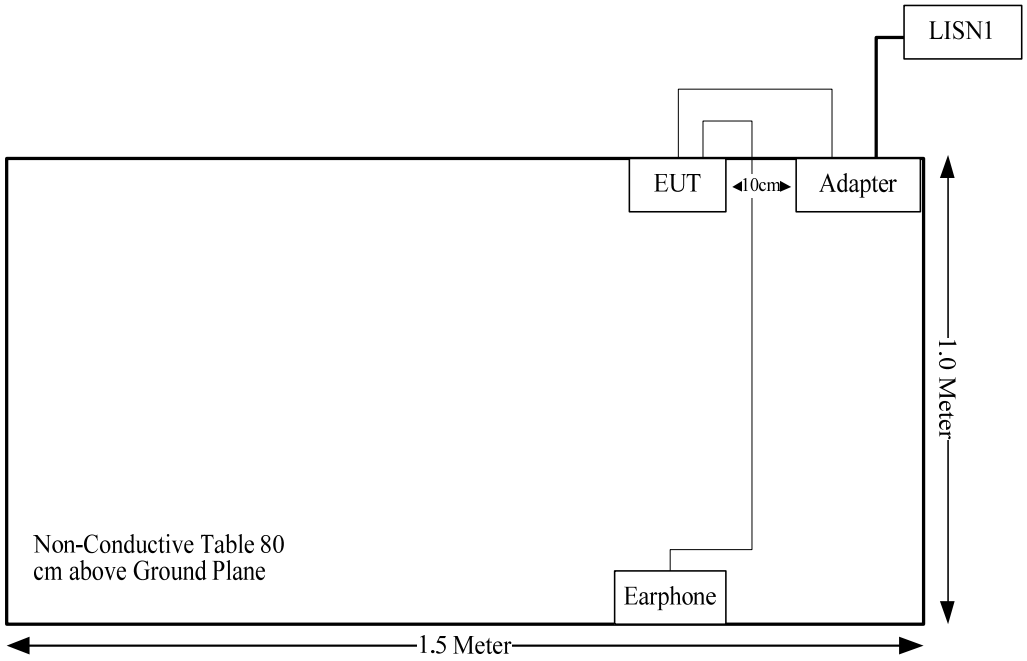
Equipment Modifications

No modification was made to the EUT.

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Earphone Cable	No	No	1.2	EUT	Earphone
USB Cable	No	No	1.0	Adapter	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093	RF Exposure	Compliance
FCC§15.203	Antenna Requirement	Compliance
FCC§15.207 (a)	AC Line Conducted Emissions	Compliance
FCC§15.205, §15.209, FCC §15.247(d)	Spurious Emissions	Compliance
FCC§15.247 (a)(2)	6 dB Bandwidth	Compliance
FCC§15.247(b)(3)	Maximum Conducted Output Power	Compliance
FCC§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
FCC§15.247(e)	Power Spectral Density	Compliance

FCC §15.247 (i) & §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

According to§15.247(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

This device is a extremity use device

For BLE:
The max conducted power including tune-up tolerance is 3.7 dBm (2.34 mW).
[(max. power of channel, mW)/(min. test separation distance, mm)][√f(GHz)]
=2.34/5*(√2.480) = 0.7<7.5

So the stand-alone SAR evaluation is not necessary.

For WiFi:
Please refer to the SAR report: RXM191226052-20A.

FCC §15.203- ANTENNA REQUIREMENT

Applicable Standard

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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.
c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Antenna Information And Connector Construction

The EUT has one internal antenna arrangement, fulfill the requirement of this section. Please refer to below information and the EUT photos:

Antenna Type	input impedance (Ohm)	Antenna Gain /Frequency Range
FPC	50	0.8 dBi/2.4~2.5GHz

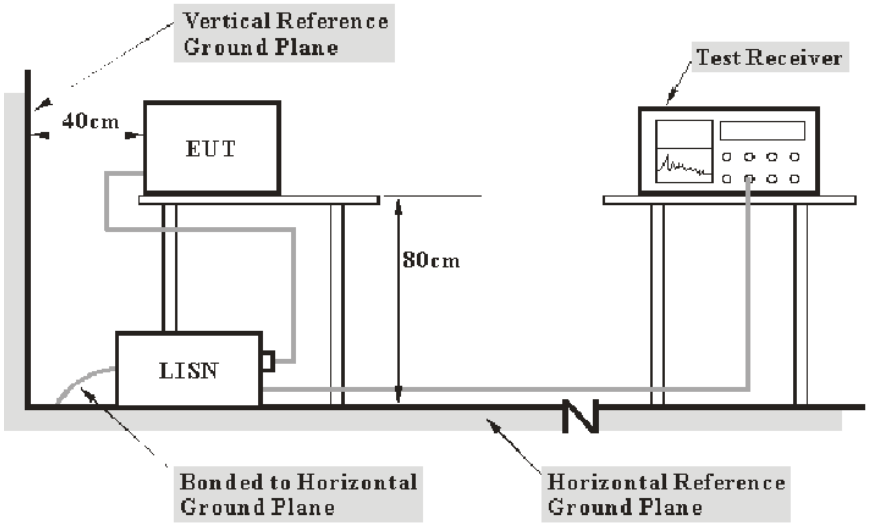
Result: Compliance.

FCC §15.207 (a)– AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207(a).

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to the main lisn with a 120 V/60 Hz AC power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the first LISN.

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

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$
$C_f = A_C + VDF$

Herein,
V_C (cord. Reading): corrected voltage amplitude
V_R: reading voltage amplitude
A_c: attenuation caused by cable loss
VDF: voltage division factor of AMN
C_f: Correction Factor

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-01	2018-09-05	2019-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
R&S	Two-line V-network	ENV 216	101614	2018-12-10	2019-12-10
R&S	EMI Test Receiver	ESPI	100120	2019-05-09	2020-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

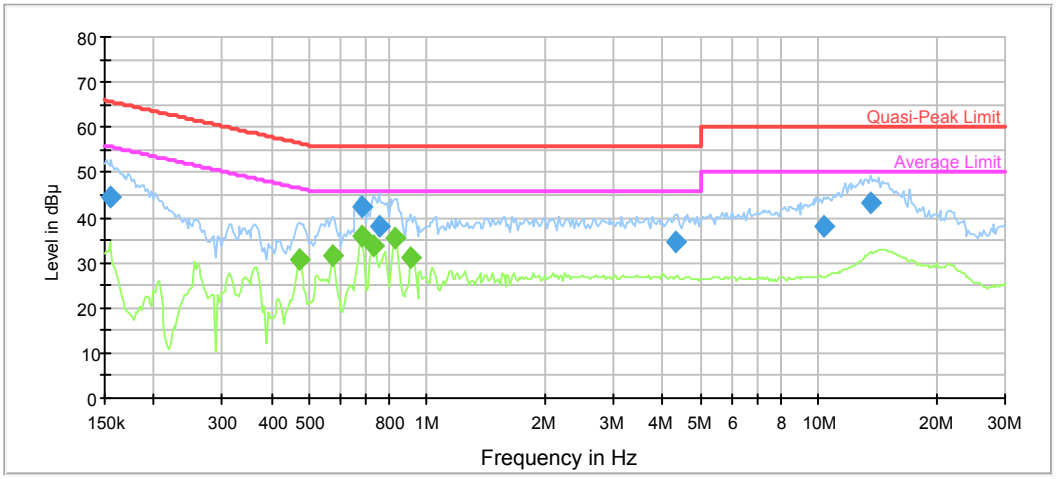
Test Data

Environmental Conditions

Temperature:	22℃
Relative Humidity:	61%
ATM Pressure:	102.1kPa
Test by:	Sem Xiang
Test Date:	2020-01-10

Test Mode: Transmitting

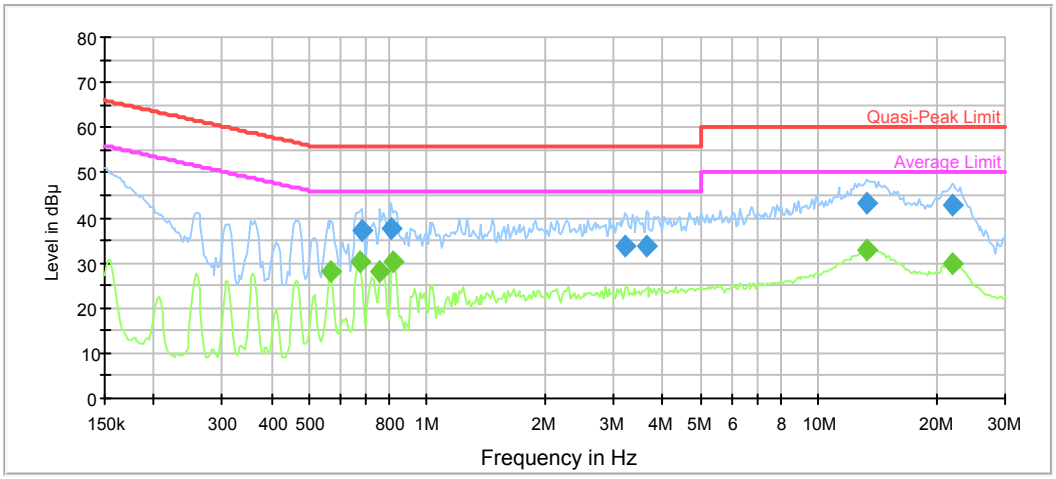
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.156091	44.3	9.000	L1	9.7	21.4	65.7
0.680676	42.6	9.000	L1	9.7	13.4	56.0
0.751890	38.0	9.000	L1	9.7	18.0	56.0
4.332274	34.4	9.000	L1	9.8	21.6	56.0
10.296163	38.3	9.000	L1	10.0	21.7	60.0
13.604227	43.3	9.000	L1	10.2	16.7	60.0

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.471031	30.8	9.000	L1	9.7	15.7	46.5
0.574747	31.6	9.000	L1	9.7	14.4	46.0
0.680676	36.1	9.000	L1	9.7	9.9	46.0
0.729777	33.7	9.000	L1	9.7	12.3	46.0
0.830554	35.6	9.000	L1	9.7	10.4	46.0
0.908365	31.1	9.000	L1	9.7	14.9	46.0

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.680676	37.0	9.000	N	9.6	19.0	56.0
0.806127	37.5	9.000	N	9.6	18.5	56.0
3.214213	33.6	9.000	N	9.6	22.4	56.0
3.621856	33.9	9.000	N	9.6	22.1	56.0
13.336170	43.1	9.000	N	9.9	16.9	60.0
21.933090	42.8	9.000	N	10.1	17.2	60.0

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.569057	28.0	9.000	N	9.6	18.0	46.0
0.673937	30.2	9.000	N	9.6	15.8	46.0
0.759409	28.0	9.000	N	9.6	18.0	46.0
0.822331	30.1	9.000	N	9.6	15.9	46.0
13.336170	32.7	9.000	N	9.9	17.3	50.0
21.933090	30.1	9.000	N	10.1	19.9	50.0

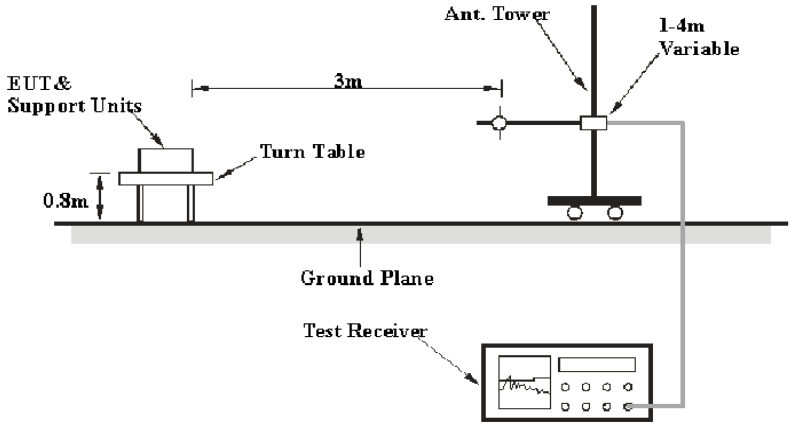
FCC §15.209, §15.205, §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

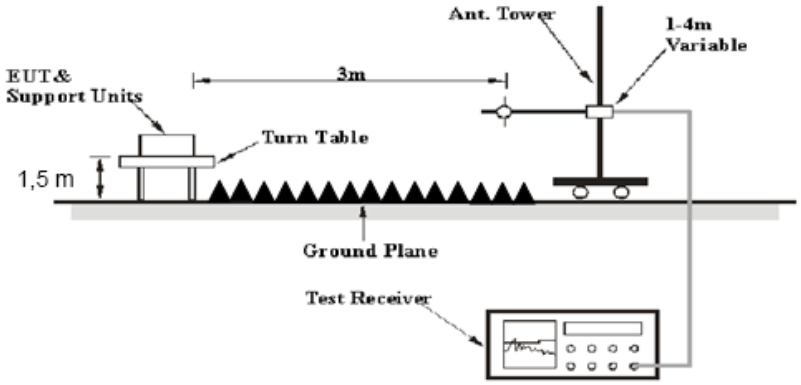
FCC §15.247 (d); §15.209; §15.205.

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site A for the range 30MHz to 1GHz and the 3 meters chamber B test site for above 1GHz, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits..

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

30MHz-1000MHz:

Measurement	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 26.5GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

Test Procedure

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

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

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

Margin = Limit –Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiation Below 1GHz					
R&S	EMI Test Receiver	ESR3	102453	2019-09-12	2020-09-12
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2019-05-06	2020-05-06
HP	Amplifier	8447D	2727A05902	2019-09-05	2020-09-05
Radiation Above 1GHz					
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-05-09	2020-05-09
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2019-11-18	2022-11-18
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2019-06-27	2020-06-27
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2019-09-05	2020-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2019-06-27	2020-06-27
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2019-06-16	2020-06-16
Micro-tronics	High Pass Filter	HPM50111	S/N-G217	2019-06-16	2020-06-16

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

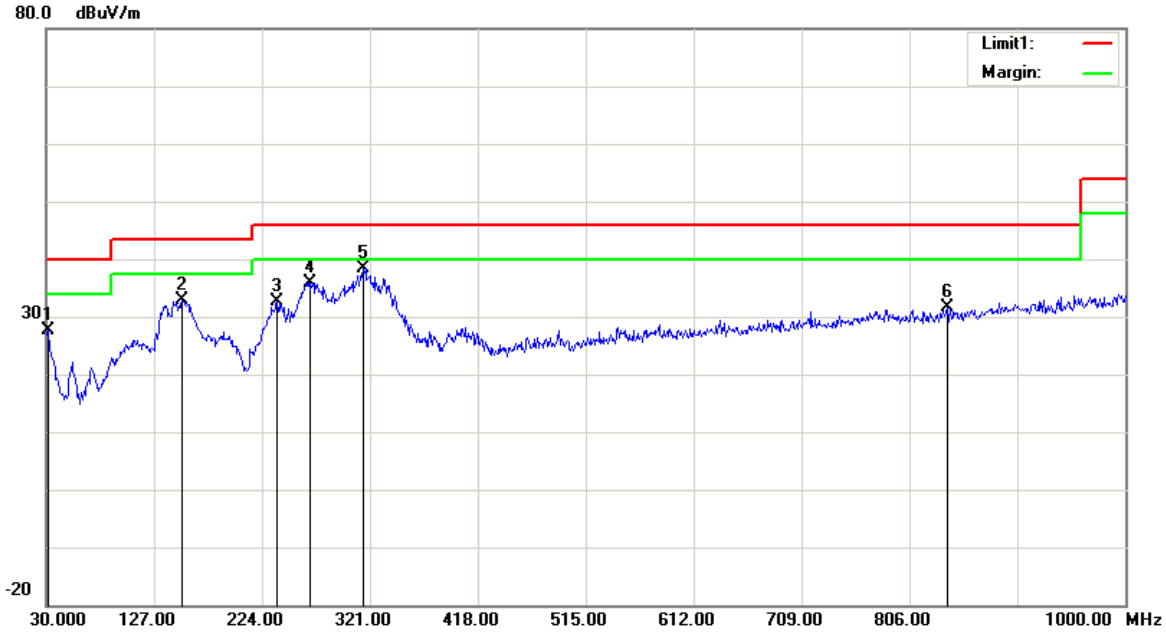
Test Items	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	23.1°C	23°C
Relative Humidity:	41%	45%
ATM Pressure:	101.9 kPa	101.5 kPa
Tester:	Tyler Pan	Vern Shen
Test Date:	2020-01-16	2020-01-13

Test Mode: Transmitting

Test Result: Compliance. Please refer to the following table and plots.

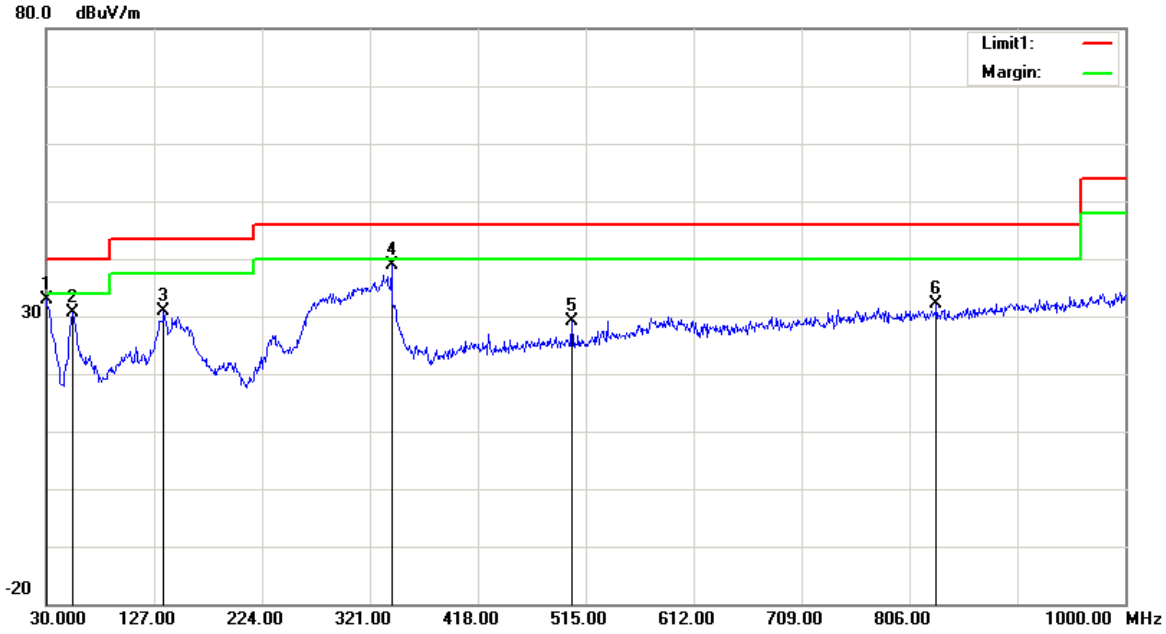
1) 30MHz-1GHz(802.11b High channel was the worst)

Horizontal:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
31.9400	27.42	peak	0.19	27.61	40.00	12.39
152.2200	38.82	peak	-5.97	32.85	43.50	10.65
237.5800	38.72	peak	-6.14	32.58	46.00	13.42
267.6500	40.40	peak	-4.44	35.96	46.00	10.04
315.1800	41.94	peak	-3.45	38.49	46.00	7.51
839.9500	26.52	peak	5.07	31.59	46.00	14.41

Vertical:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.0000	31.07	peak	1.72	32.79	40.00	7.21
54.2500	42.70	peak	-12.06	30.64	40.00	9.36
135.7300	35.98	peak	-5.15	30.83	43.50	12.67
340.4000	42.22	peak	-3.43	38.79	46.00	7.21
502.3900	29.44	peak	-0.30	29.14	46.00	16.86
830.2500	27.10	peak	5.06	32.16	46.00	13.84

2) 1-25GHz:

802.11b Mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	77.51	PK	H	28.12	1.81	0.00	107.44	N/A	N/A
2412.00	73.28	AV	H	28.12	1.81	0.00	103.21	N/A	N/A
2412.00	74.90	PK	V	28.12	1.81	0.00	104.83	N/A	N/A
2412.00	71.75	AV	V	28.12	1.81	0.00	101.68	N/A	N/A
2390.00	28.11	PK	H	28.08	1.80	0.00	57.99	74.00	16.01
2390.00	18.70	AV	H	28.08	1.80	0.00	48.58	54.00	5.42
4824.00	39.23	PK	H	32.95	3.19	25.62	49.75	74.00	24.25
4824.00	32.69	AV	H	32.95	3.19	25.62	43.21	54.00	10.79
7236.00	36.43	PK	H	35.81	4.77	25.64	51.37	74.00	22.63
7236.00	22.40	AV	H	35.81	4.77	25.64	37.34	54.00	16.66
Middle Channel: 2437 MHz									
2437.00	77.67	PK	H	28.17	1.82	0.00	107.66	N/A	N/A
2437.00	73.45	AV	H	28.17	1.82	0.00	103.44	N/A	N/A
2437.00	75.00	PK	V	28.17	1.82	0.00	104.99	N/A	N/A
2437.00	71.98	AV	V	28.17	1.82	0.00	101.97	N/A	N/A
4874.00	42.50	PK	H	33.05	3.26	25.65	53.16	74.00	20.84
4874.00	37.47	AV	H	33.05	3.26	25.65	48.13	54.00	5.87
7311.00	37.37	PK	H	36.01	4.64	25.71	52.31	74.00	21.69
7311.00	22.48	AV	H	36.01	4.64	25.71	37.42	54.00	16.58
High Channel: 2462 MHz									
2462.00	76.92	PK	H	28.22	1.83	0.00	106.97	N/A	N/A
2462.00	73.76	AV	H	28.22	1.83	0.00	103.81	N/A	N/A
2462.00	74.64	PK	V	28.22	1.83	0.00	104.69	N/A	N/A
2462.00	71.44	AV	V	28.22	1.83	0.00	101.49	N/A	N/A
2483.50	27.30	PK	H	28.27	1.84	0.00	57.41	74.00	16.59
2483.50	15.30	AV	H	28.27	1.84	0.00	45.41	54.00	8.59
4924.00	43.03	PK	H	33.15	3.27	25.65	53.80	74.00	20.20
4924.00	38.83	AV	H	33.15	3.27	25.65	49.60	54.00	4.40
7386.00	37.50	PK	H	36.20	4.51	25.79	52.42	74.00	21.58
7386.00	23.17	AV	H	36.20	4.51	25.79	38.09	54.00	15.91

802.11g Mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	74.86	PK	H	28.12	1.81	0.00	104.79	N/A	N/A
2412.00	65.65	AV	H	28.12	1.81	0.00	95.58	N/A	N/A
2412.00	71.70	PK	V	28.12	1.81	0.00	101.63	N/A	N/A
2412.00	61.57	AV	V	28.12	1.81	0.00	91.50	N/A	N/A
2390.00	41.30	PK	H	28.08	1.80	0.00	71.18	74.00	2.82
2390.00	20.56	AV	H	28.08	1.80	0.00	50.44	54.00	3.56
4824.00	35.87	PK	H	32.95	3.19	25.62	46.39	74.00	27.61
4824.00	22.01	AV	H	32.95	3.19	25.62	32.53	54.00	21.47
7236.00	36.87	PK	H	35.81	4.77	25.64	51.81	74.00	22.19
7236.00	22.01	AV	H	35.81	4.77	25.64	36.95	54.00	17.05
Middle Channel: 2437 MHz									
2437.00	77.20	PK	H	28.17	1.82	0.00	107.19	N/A	N/A
2437.00	67.87	AV	H	28.17	1.82	0.00	97.86	N/A	N/A
2437.00	73.59	PK	V	28.17	1.82	0.00	103.58	N/A	N/A
2437.00	63.41	AV	V	28.17	1.82	0.00	93.40	N/A	N/A
4874.00	36.87	PK	H	33.05	3.26	25.65	47.53	74.00	26.47
4874.00	22.20	AV	H	33.05	3.26	25.65	32.86	54.00	21.14
7311.00	36.74	PK	H	36.01	4.64	25.71	51.68	74.00	22.32
7311.00	22.10	AV	H	36.01	4.64	25.71	37.04	54.00	16.96
High Channel: 2462 MHz									
2462.00	76.30	PK	H	28.22	1.83	0.00	106.35	N/A	N/A
2462.00	65.81	AV	H	28.22	1.83	0.00	95.86	N/A	N/A
2462.00	73.07	PK	V	28.22	1.83	0.00	103.12	N/A	N/A
2462.00	63.59	AV	V	28.22	1.83	0.00	93.64	N/A	N/A
2483.50	39.80	PK	H	28.27	1.84	0.00	69.91	74.00	4.09
2483.50	20.10	AV	H	28.27	1.84	0.00	50.21	54.00	3.79
4924.00	36.97	PK	H	33.15	3.27	25.65	47.74	74.00	26.26
4924.00	22.37	AV	H	33.15	3.27	25.65	33.14	54.00	20.86
7386.00	36.90	PK	H	36.20	4.51	25.79	51.82	74.00	22.18
7386.00	22.41	AV	H	36.20	4.51	25.79	37.33	54.00	16.67

802.11n ht20 Mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	72.50	PK	H	28.12	1.81	0.00	102.43	N/A	N/A
2412.00	62.34	AV	H	28.12	1.81	0.00	92.27	N/A	N/A
2412.00	71.64	PK	V	28.12	1.81	0.00	101.57	N/A	N/A
2412.00	61.21	AV	V	28.12	1.81	0.00	91.14	N/A	N/A
2390.00	31.32	PK	H	28.08	1.80	0.00	61.20	74.00	12.80
2390.00	20.78	AV	H	28.08	1.80	0.00	50.66	54.00	3.34
4824.00	36.74	PK	H	32.95	3.19	25.62	47.26	74.00	26.74
4824.00	22.41	AV	H	32.95	3.19	25.62	32.93	54.00	21.07
7236.00	37.67	PK	H	35.81	4.77	25.64	52.61	74.00	21.39
7236.00	22.71	AV	H	35.81	4.77	25.64	37.65	54.00	16.35
Middle Channel: 2437 MHz									
2437.00	75.80	PK	H	28.17	1.82	0.00	105.79	N/A	N/A
2437.00	64.57	AV	H	28.17	1.82	0.00	94.56	N/A	N/A
2437.00	74.24	PK	V	28.17	1.82	0.00	104.23	N/A	N/A
2437.00	73.21	AV	V	28.17	1.82	0.00	103.20	N/A	N/A
4874.00	37.87	PK	H	33.05	3.26	25.65	48.53	74.00	25.47
4874.00	23.17	AV	H	33.05	3.26	25.65	33.83	54.00	20.17
7311.00	37.97	PK	H	36.01	4.64	25.71	52.91	74.00	21.09
7311.00	22.78	AV	H	36.01	4.64	25.71	37.72	54.00	16.28
High Channel: 2462 MHz									
2462.00	74.54	PK	H	28.22	1.83	0.00	104.59	N/A	N/A
2462.00	65.12	AV	H	28.22	1.83	0.00	95.17	N/A	N/A
2462.00	73.44	PK	V	28.22	1.83	0.00	103.49	N/A	N/A
2462.00	72.87	AV	V	28.22	1.83	0.00	102.92	N/A	N/A
2483.50	40.26	PK	H	28.27	1.84	0.00	70.37	74.00	3.63
2483.50	18.44	AV	H	28.27	1.84	0.00	48.55	54.00	5.45
4924.00	37.60	PK	H	33.15	3.27	25.65	48.37	74.00	25.63
4924.00	22.67	AV	H	33.15	3.27	25.65	33.44	54.00	20.56
7386.00	37.89	PK	H	36.20	4.51	25.79	52.81	74.00	21.19
7386.00	22.17	AV	H	36.20	4.51	25.79	37.09	54.00	16.91

802.11n ht40 Mode:

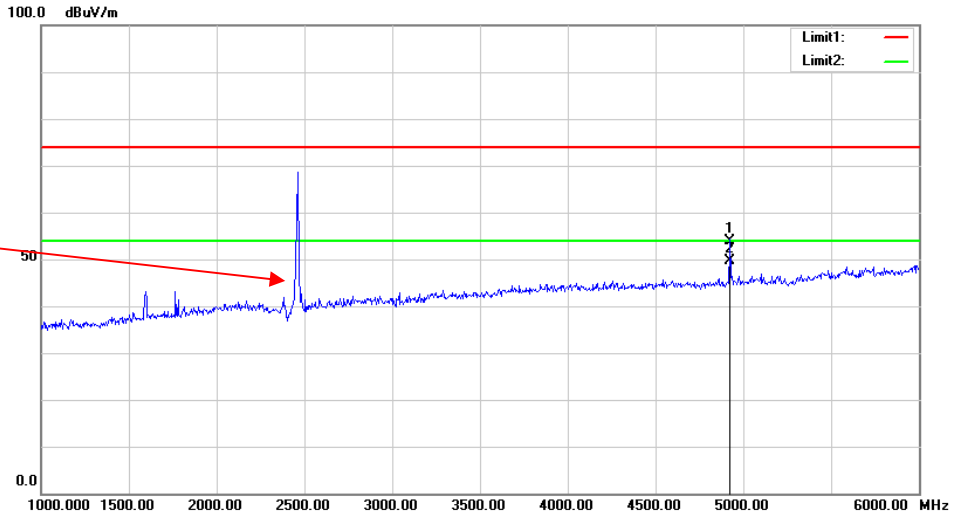
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2422 MHz									
2422.00	70.47	PK	H	28.14	1.81	0.00	100.42	N/A	N/A
2422.00	61.41	AV	H	28.14	1.81	0.00	91.36	N/A	N/A
2422.00	68.00	PK	V	28.14	1.81	0.00	97.95	N/A	N/A
2422.00	58.50	AV	V	28.14	1.81	0.00	88.45	N/A	N/A
2390.00	37.63	PK	H	28.08	1.80	0.00	67.51	74.00	6.49
2390.00	22.51	AV	H	28.08	1.80	0.00	52.39	54.00	1.61
4844.00	36.78	PK	H	32.99	3.22	25.63	47.36	74.00	26.64
4844.00	22.10	AV	H	32.99	3.22	25.63	32.68	54.00	21.32
7266.00	36.87	PK	H	35.89	4.72	25.67	51.81	74.00	22.19
7266.00	22.10	AV	H	35.89	4.72	25.67	37.04	54.00	16.96
Middle Channel: 2437 MHz									
2437.00	71.74	PK	H	28.17	1.82	0.00	101.73	N/A	N/A
2437.00	60.87	AV	H	28.17	1.82	0.00	90.86	N/A	N/A
2437.00	70.28	PK	V	28.17	1.82	0.00	100.27	N/A	N/A
2437.00	60.37	AV	V	28.17	1.82	0.00	90.36	N/A	N/A
4874.00	37.58	PK	H	33.05	3.26	25.65	48.24	74.00	25.76
4874.00	23.63	AV	H	33.05	3.26	25.65	34.29	54.00	19.71
7311.00	37.30	PK	H	36.01	4.64	25.71	52.24	74.00	21.76
7311.00	22.74	AV	H	36.01	4.64	25.71	37.68	54.00	16.32
High Channel: 2452 MHz									
2452.00	71.30	PK	H	28.20	1.83	0.00	101.33	N/A	N/A
2452.00	60.43	AV	H	28.20	1.83	0.00	90.46	N/A	N/A
2452.00	69.24	PK	V	28.20	1.83	0.00	99.27	N/A	N/A
2452.00	59.21	AV	V	28.20	1.83	0.00	89.24	N/A	N/A
2483.50	36.41	PK	H	28.27	1.84	0.00	66.52	74.00	7.48
2483.50	20.03	AV	H	28.27	1.84	0.00	50.14	54.00	3.86
4904.00	36.97	PK	H	33.11	3.30	25.67	47.71	74.00	26.29
4904.00	22.47	AV	H	33.11	3.30	25.67	33.21	54.00	20.79
7356.00	37.14	PK	H	36.13	4.56	25.76	52.07	74.00	21.93
7356.00	22.14	AV	H	36.13	4.56	25.76	37.07	54.00	16.93

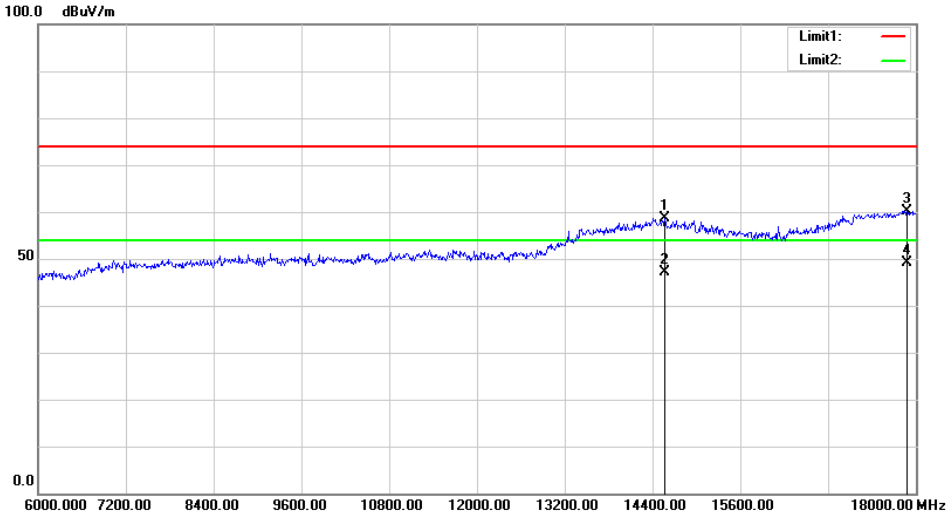
BLE:

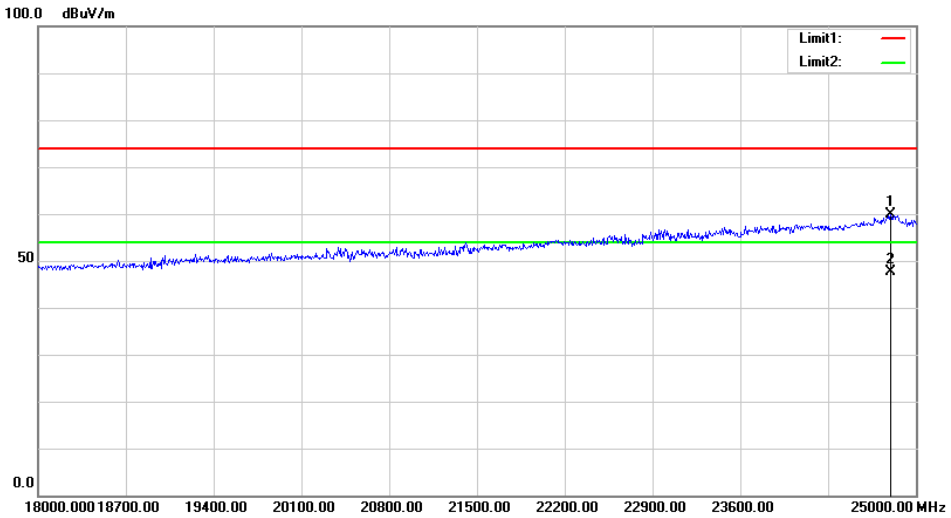
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2402 MHz									
2402.00	62.47	PK	H	28.10	1.80	0.00	92.37	N/A	N/A
2402.00	61.72	AV	H	28.10	1.80	0.00	91.62	N/A	N/A
2402.00	61.30	PK	V	28.10	1.80	0.00	91.20	N/A	N/A
2402.00	60.33	AV	V	28.10	1.80	0.00	90.23	N/A	N/A
2390.00	24.38	PK	H	28.08	1.80	0.00	54.26	74.00	19.74
2390.00	14.20	AV	H	28.08	1.80	0.00	44.08	54.00	9.92
4804.00	36.86	PK	H	32.91	3.17	25.60	47.34	74.00	26.66
4804.00	24.41	AV	H	32.91	3.17	25.60	34.89	54.00	19.11
7206.00	36.87	PK	H	35.74	4.82	25.60	51.83	74.00	22.17
7206.00	24.20	AV	H	35.74	4.82	25.60	39.16	54.00	14.84
Middle Channel: 2440 MHz									
2440.00	64.20	PK	H	28.18	1.82	0.00	94.20	N/A	N/A
2440.00	63.17	AV	H	28.18	1.82	0.00	93.17	N/A	N/A
2440.00	63.24	PK	V	28.18	1.82	0.00	93.24	N/A	N/A
2440.00	62.10	AV	V	28.18	1.82	0.00	92.10	N/A	N/A
4880.00	37.63	PK	H	33.06	3.27	25.66	48.30	74.00	25.70
4880.00	24.97	AV	H	33.06	3.27	25.66	35.64	54.00	18.36
7320.00	36.57	PK	H	36.03	4.62	25.72	51.50	74.00	22.50
7320.00	24.37	AV	H	36.03	4.62	25.72	39.30	54.00	14.70
High Channel: 2480 MHz									
2480.00	63.42	PK	H	28.26	1.84	0.00	93.52	N/A	N/A
2480.00	62.58	AV	H	28.26	1.84	0.00	92.68	N/A	N/A
2480.00	62.45	PK	V	28.26	1.84	0.00	92.55	N/A	N/A
2480.00	61.35	AV	V	28.26	1.84	0.00	91.45	N/A	N/A
2483.50	25.91	PK	H	28.27	1.84	0.00	56.02	74.00	17.98
2483.50	14.93	AV	H	28.27	1.84	0.00	45.04	54.00	8.96
4960.00	37.43	PK	H	33.22	3.23	25.63	48.25	74.00	25.75
4960.00	24.83	AV	H	33.22	3.23	25.63	35.65	54.00	18.35
7440.00	36.66	PK	H	36.34	4.41	25.85	51.56	74.00	22.44
7440.00	24.06	AV	H	36.34	4.41	25.85	38.96	54.00	15.04

Worst Test plots(802.11b high channel)
Horizontal:

Fundamental Test with Band Rejection Filter

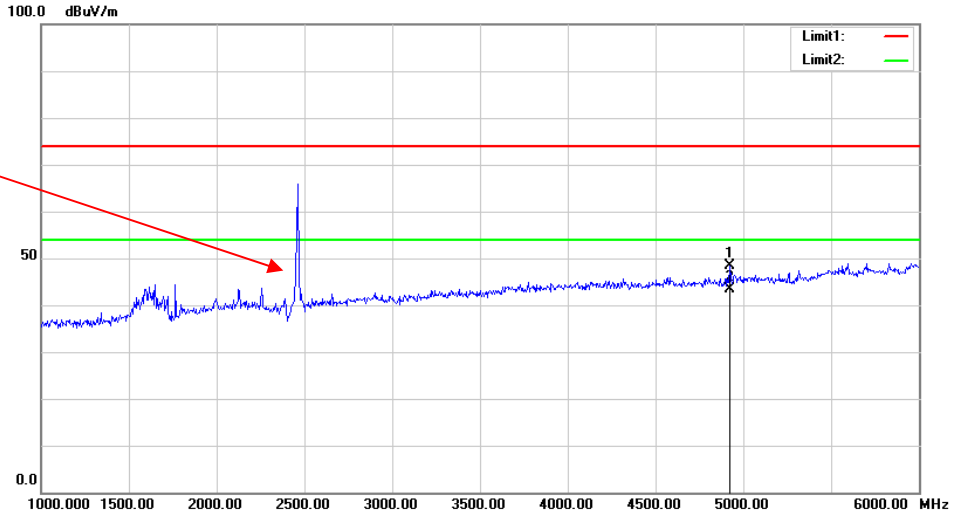


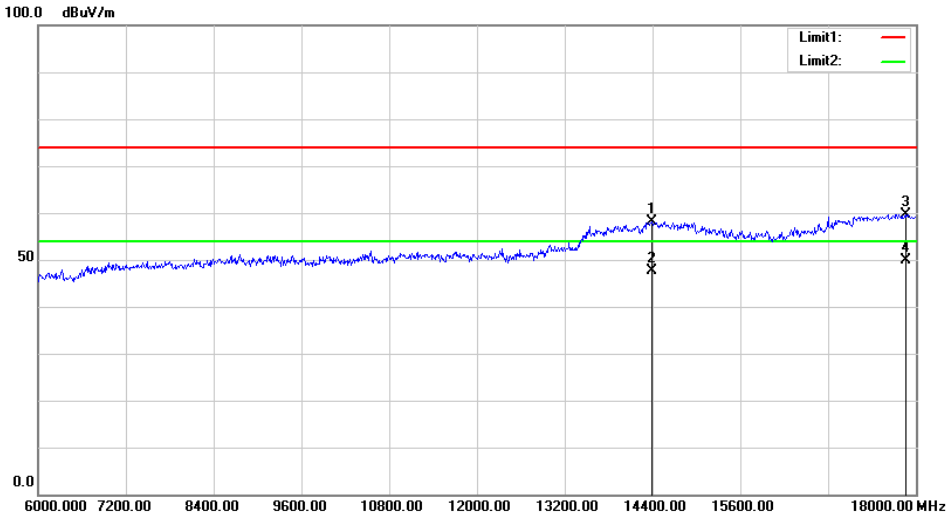


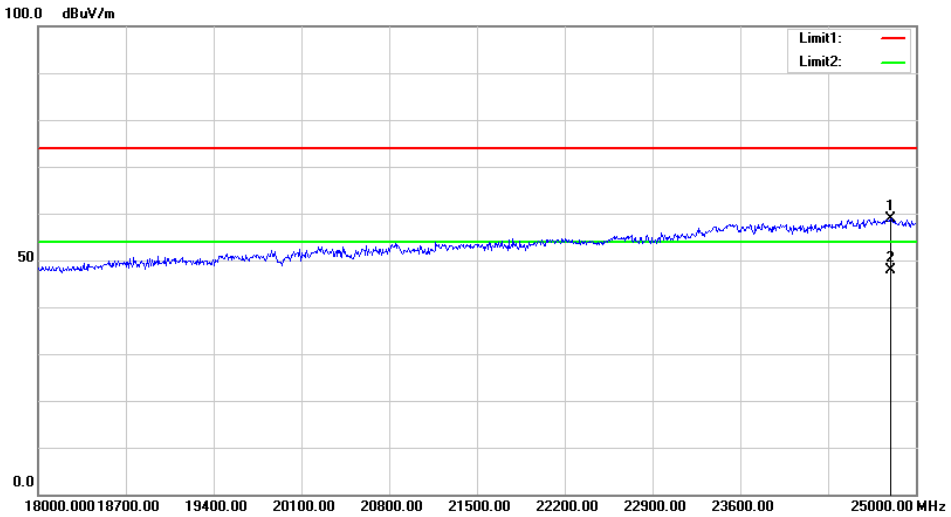


Vertical:

Fundamental Test with Band Rejection Filter







FCC §15.247(a) (2)–6 dB EMISSION BANDWIDTH AND 99% OCCUPIED BANDWIDTH

Applicable Standard

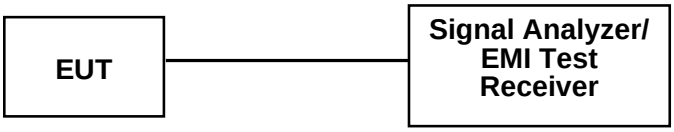
According to FCC §15.247(a) (2)

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.

Test Procedure

6dB bandwidth test:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3×RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

99% Occupied bandwidth test:
Use Occupied bandwidth test function, measure the 99% Occupied bandwidth.
Repeat above procedures until all frequencies measured were complete.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2019-05-09	2020-05-09
R&S	Spectrum Analyzer	FSU 26	200256	2020-01-04	2021-01-04
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	/

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26°C
Relative Humidity:	56%
ATM Pressure:	101.7 Pa
Tester:	Lily Xie
Test Date:	2020-01-08

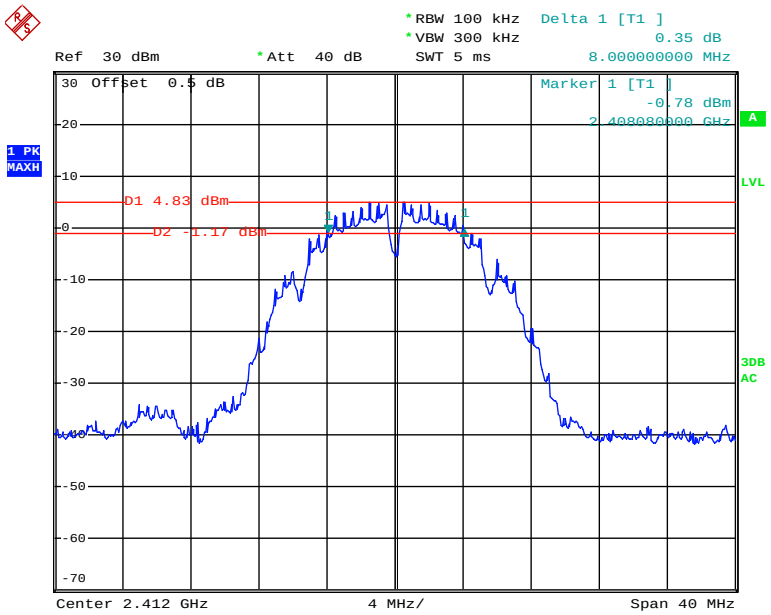
Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table and plots.

Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit (MHz)
802.11b	Low	2412	8.000	12.880	≥0.5
	Middle	2437	8.160	13.120	≥0.5
	High	2462	8.480	12.640	≥0.5
802.11g	Low	2412	16.080	17.200	≥0.5
	Middle	2437	15.600	16.960	≥0.5
	High	2462	15.600	16.800	≥0.5
802.11n ht20	Low	2412	16.320	18.080	≥0.5
	Middle	2437	16.080	17.920	≥0.5
	High	2462	16.080	17.760	≥0.5
802.11n ht40	Low	2422	35.040	37.120	≥0.5
	Middle	2437	32.640	36.800	≥0.5
	High	2452	35.840	37.760	≥0.5
BLE	Low	2402	0.708	1.022	≥0.5
	Middle	2440	0.7	1.068	≥0.5
	High	2480	0.704	1.072	≥0.5

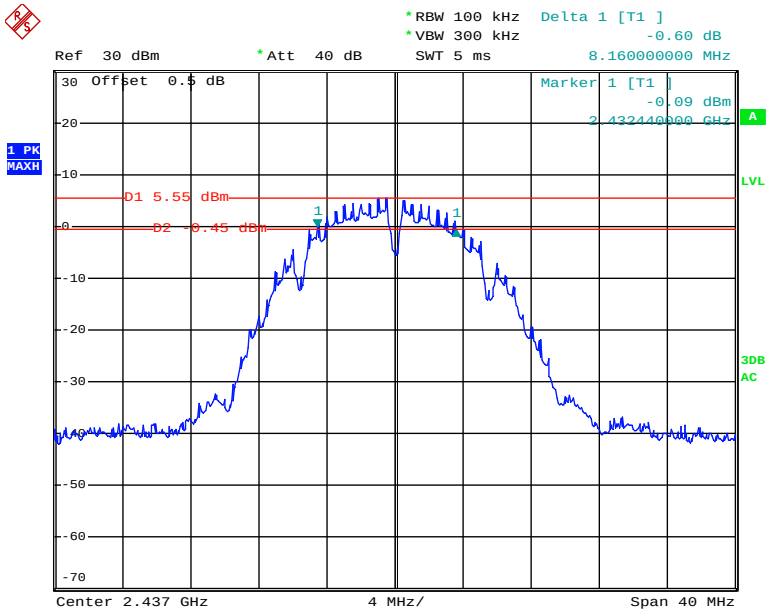
6dB bandwidth:

802.11b Low Channel



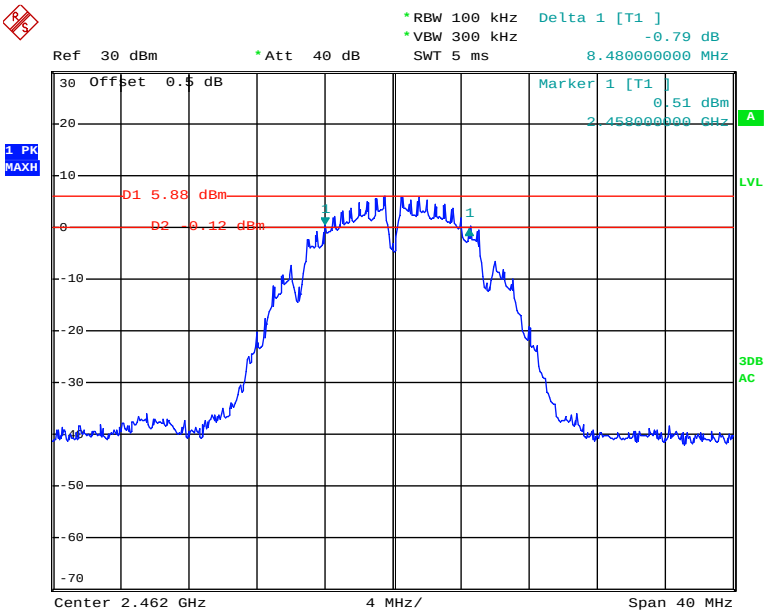
Date: 8.JAN.2020 10:02:48

802.11b Middle Channel



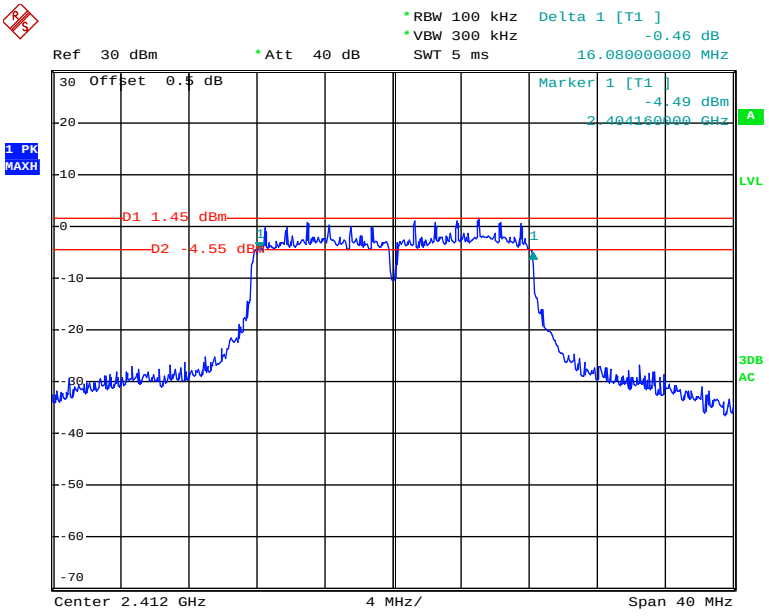
Date: 8.JAN.2020 10:04:50

802.11b High Channel



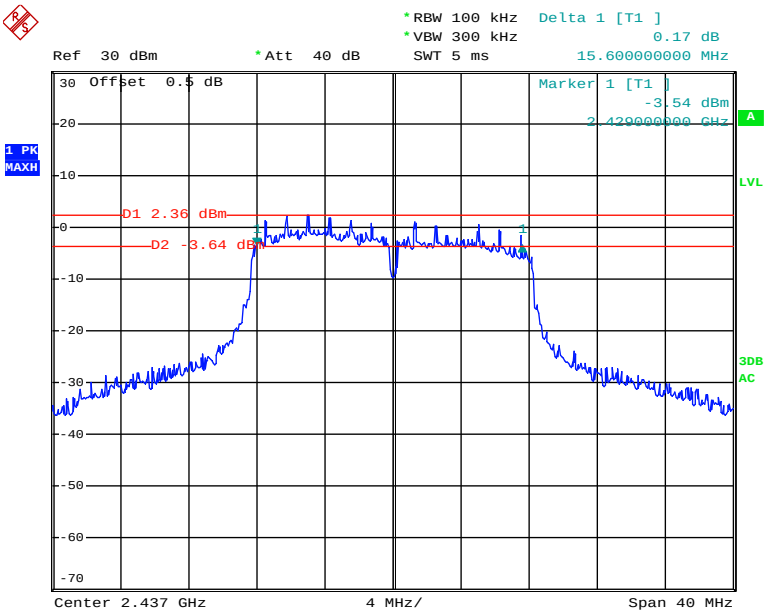
Date: 8.JAN.2020 10:07:42

802.11g Low Channel



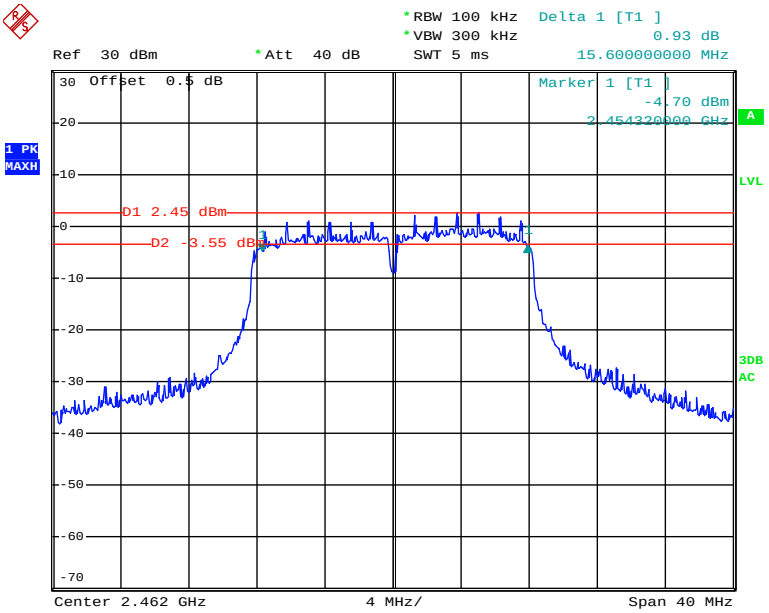
Date: 8.JAN.2020 10:11:46

802.11g Middle Channel



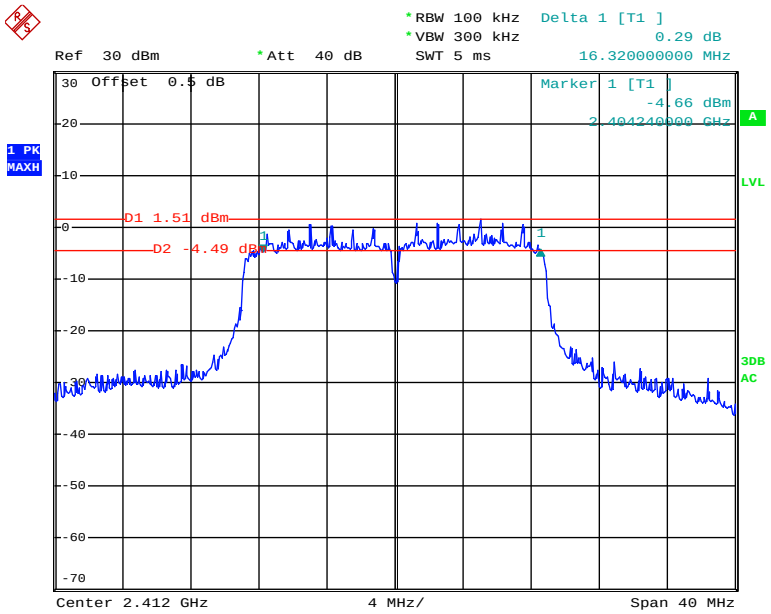
Date: 8.JAN.2020 10:13:57

802.11g High Channel



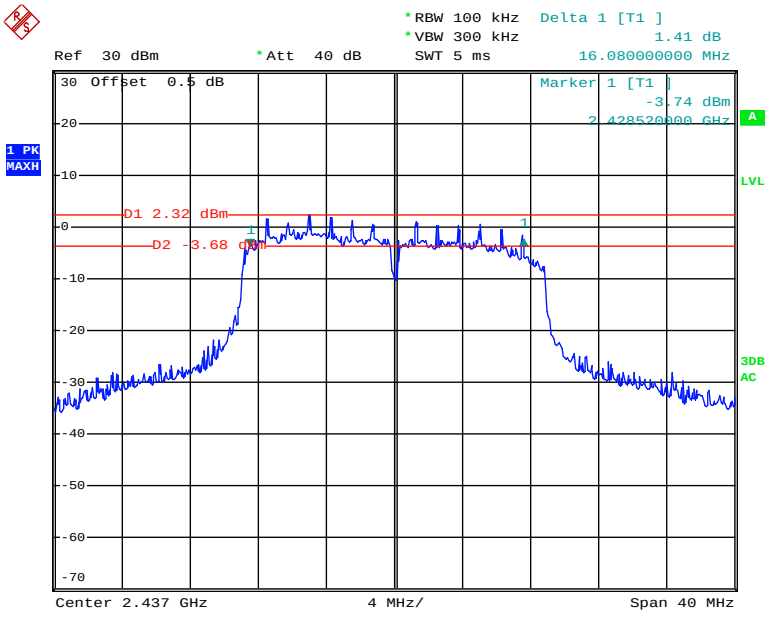
Date: 8.JAN.2020 10:17:35

802.11n ht20 Low Channel



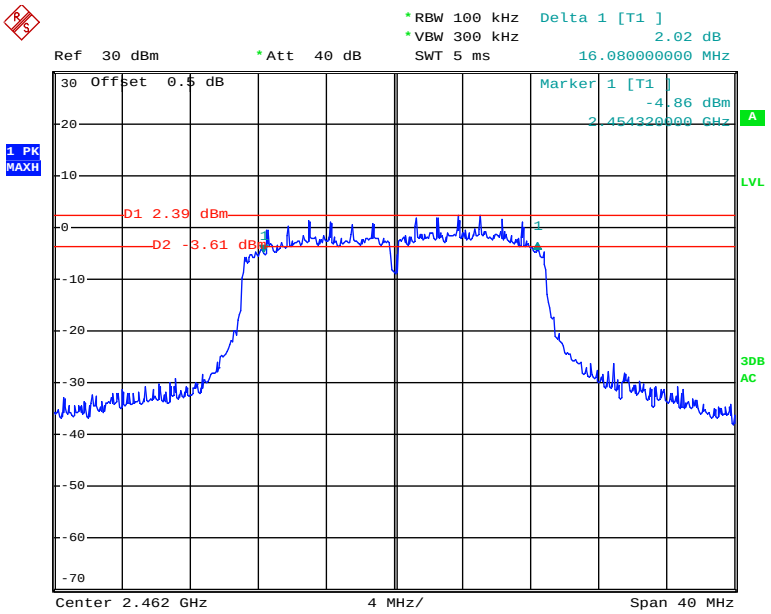
Date: 8.JAN.2020 10:31:12

802.11n ht20 Middle Channel



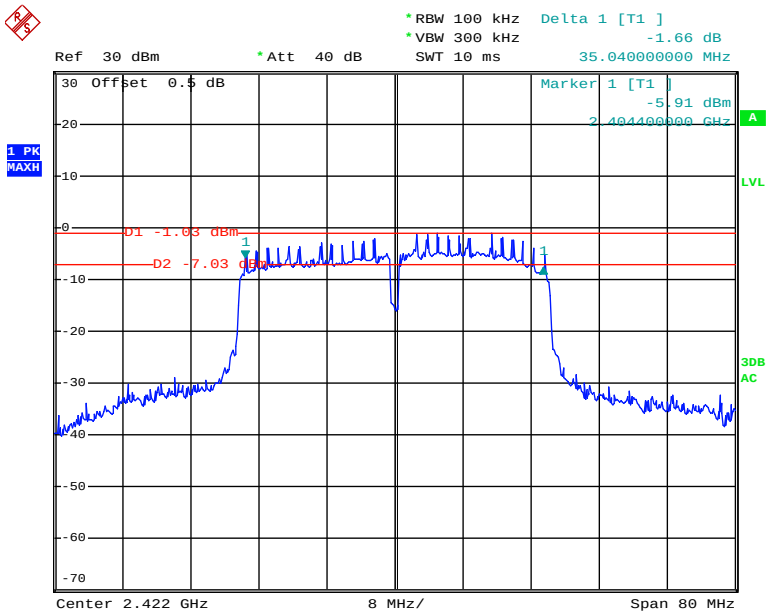
Date: 8.JAN.2020 10:33:46

802.11n ht20 High Channel



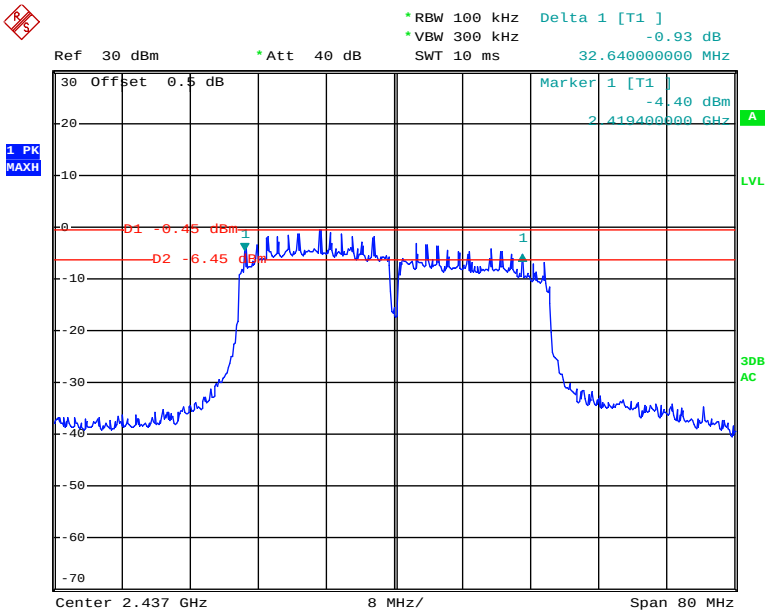
Date: 8.JAN.2020 10:37:32

802.11n ht40 Low Channel



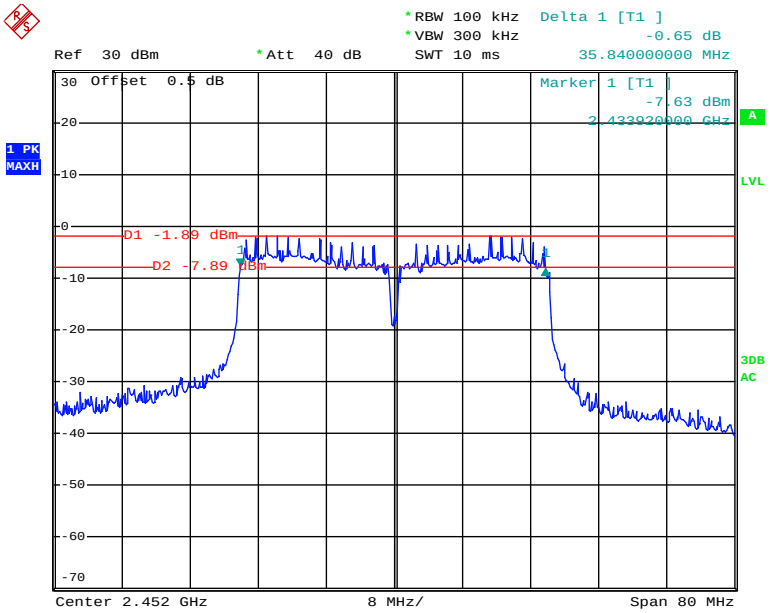
Date: 8.JAN.2020 10:20:20

802.11n ht40 Middle Channel



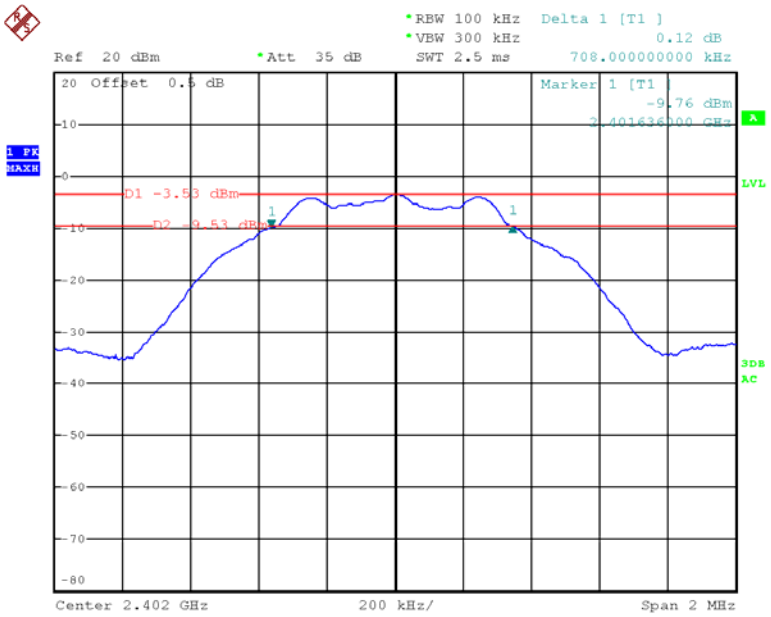
Date: 8.JAN.2020 10:23:10

802.11n ht40 High Channel



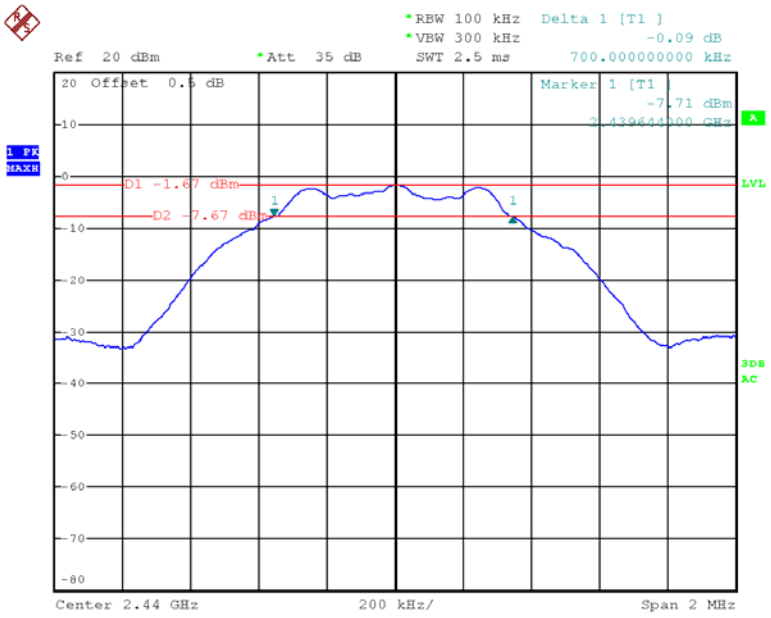
Date: 8.JAN.2020 10:26:03

BLE Low Channel



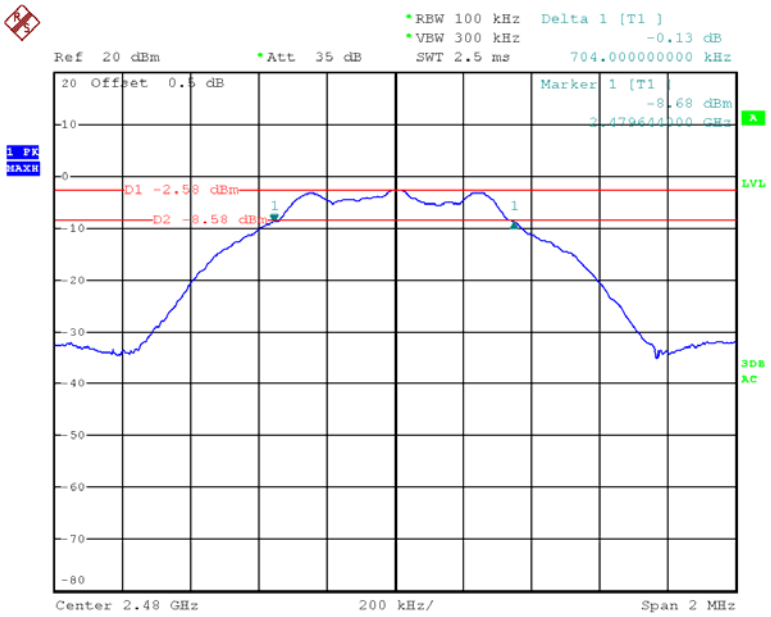
Date: 8.JAN.2020 13:44:08

BLE Middle Channel



Date: 8.JAN.2020 13:49:57

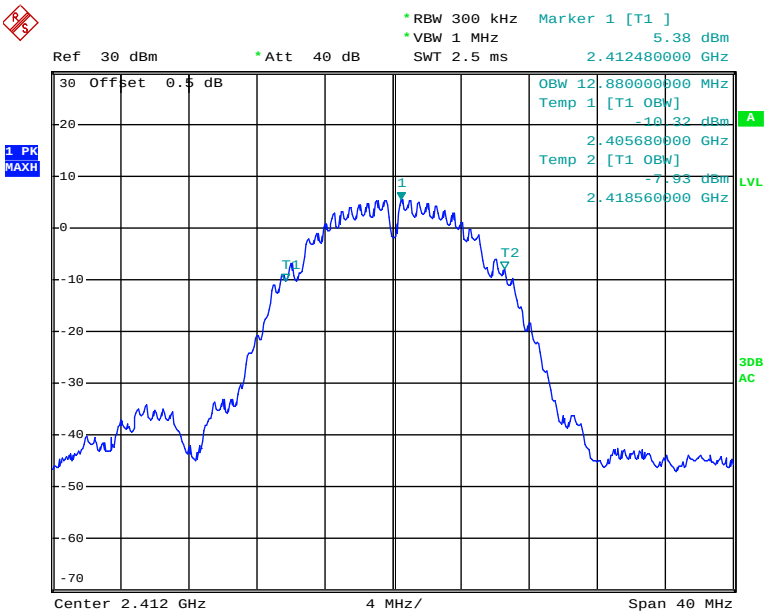
BLE High Channel



Date: 8.JAN.2020 13:51:47

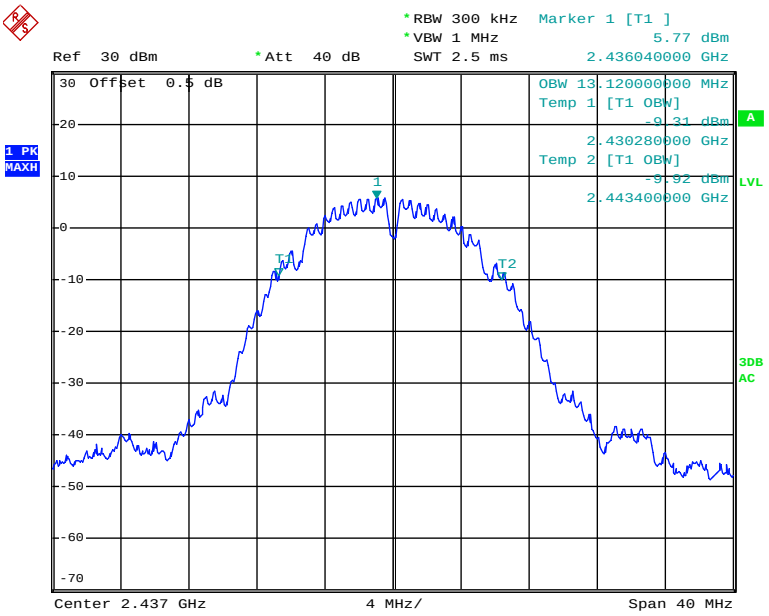
99% Occupied bandwidth:

802.11b Low Channel



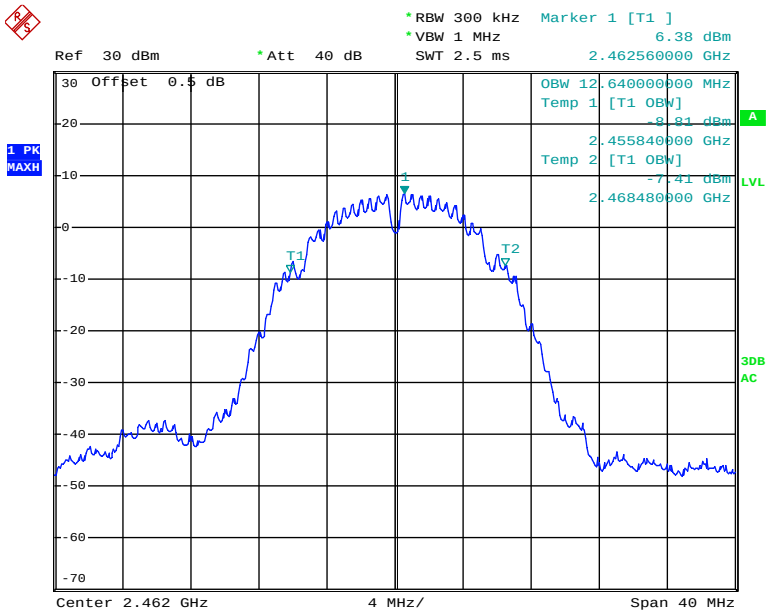
Date: 8.JAN.2020 10:03:02

802.11b Middle Channel



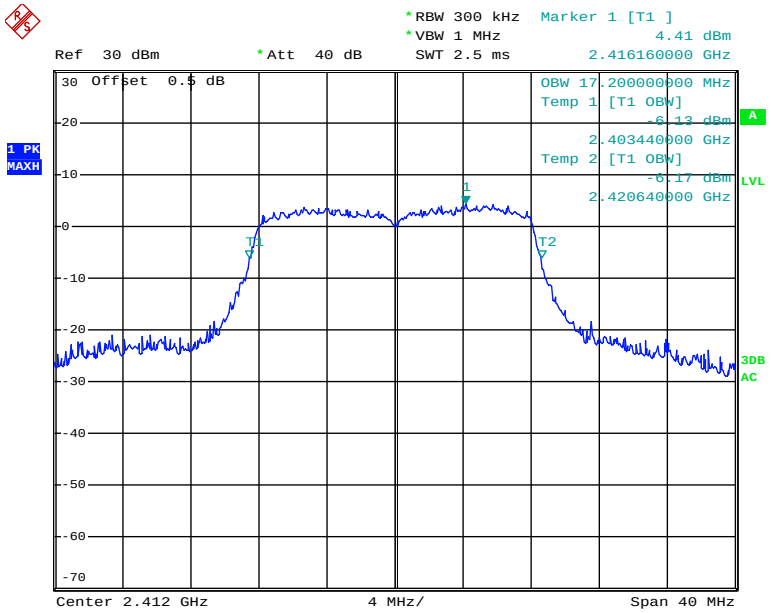
Date: 8.JAN.2020 10:05:04

802.11b High Channel



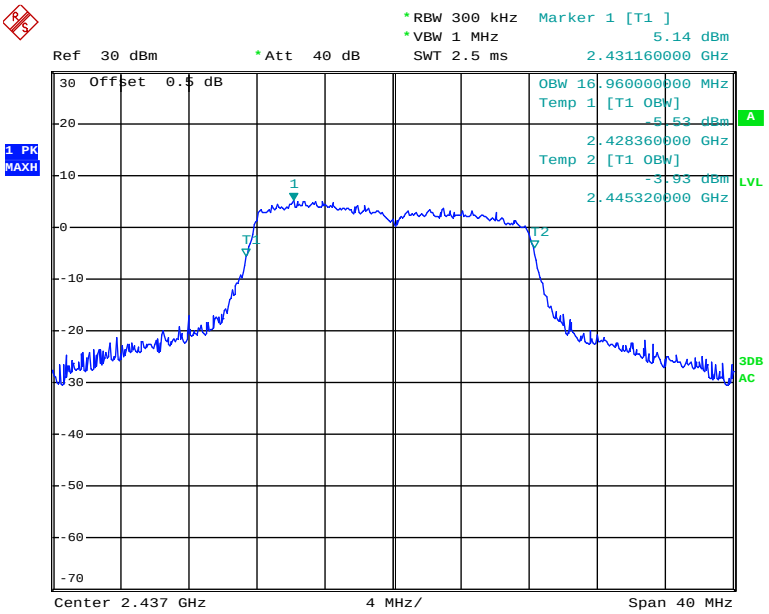
Date: 8.JAN.2020 10:07:57

802.11g Low Channel



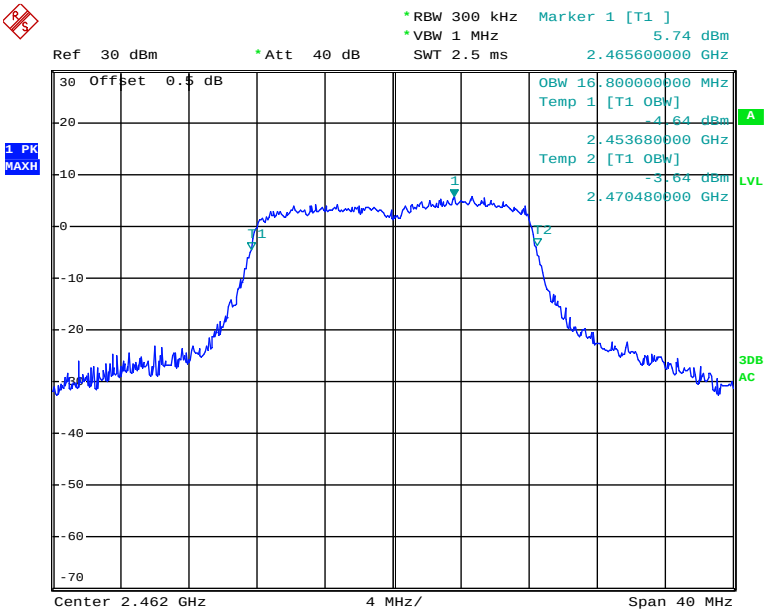
Date: 8.JAN.2020 10:12:04

802.11g Middle Channel



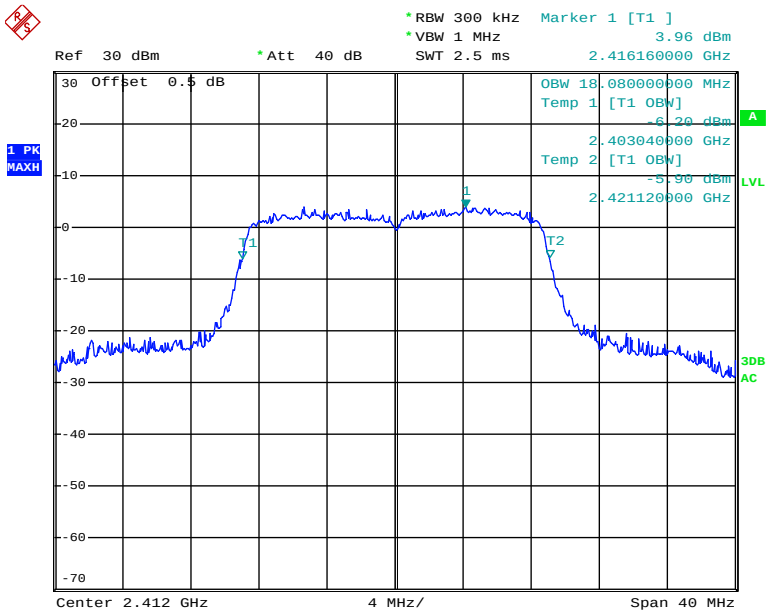
Date: 8.JAN.2020 10:14:15

802.11g High Channel



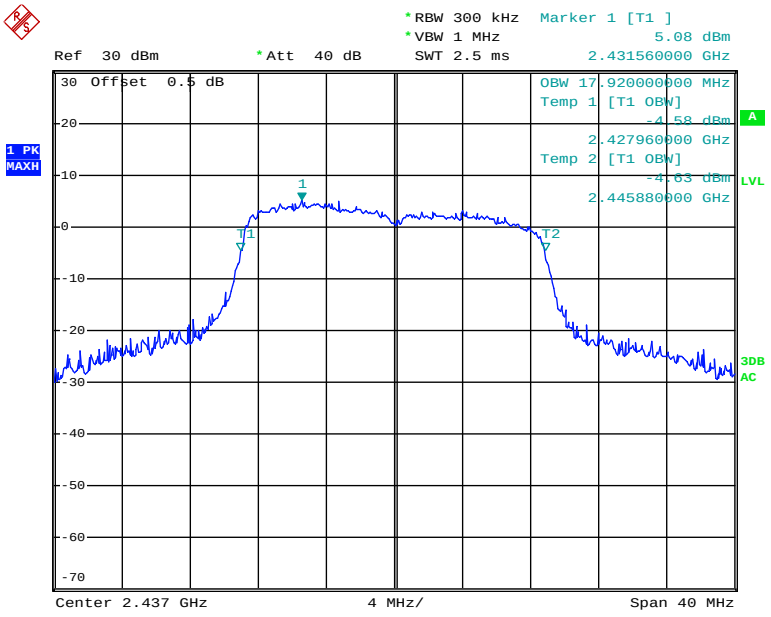
Date: 8.JAN.2020 10:17:53

802.11n ht20 Low Channel



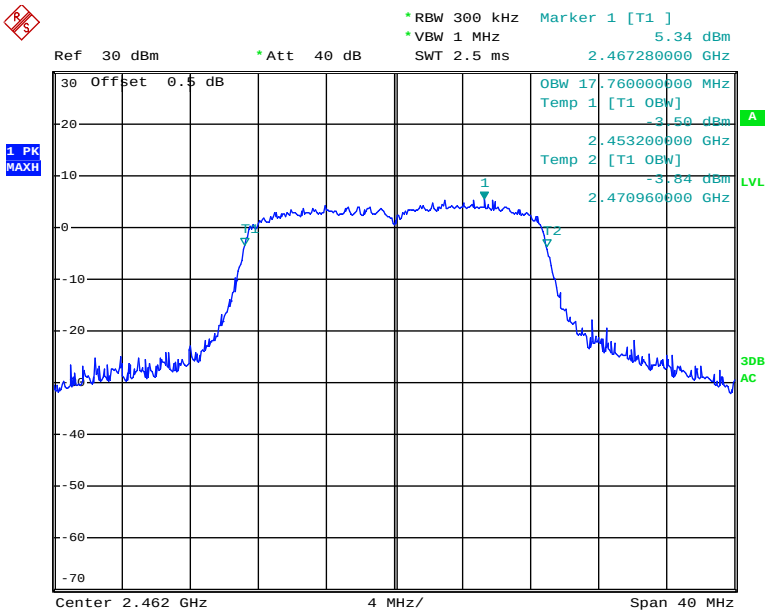
Date: 8.JAN.2020 10:31:30

802.11n ht20 Middle Channel



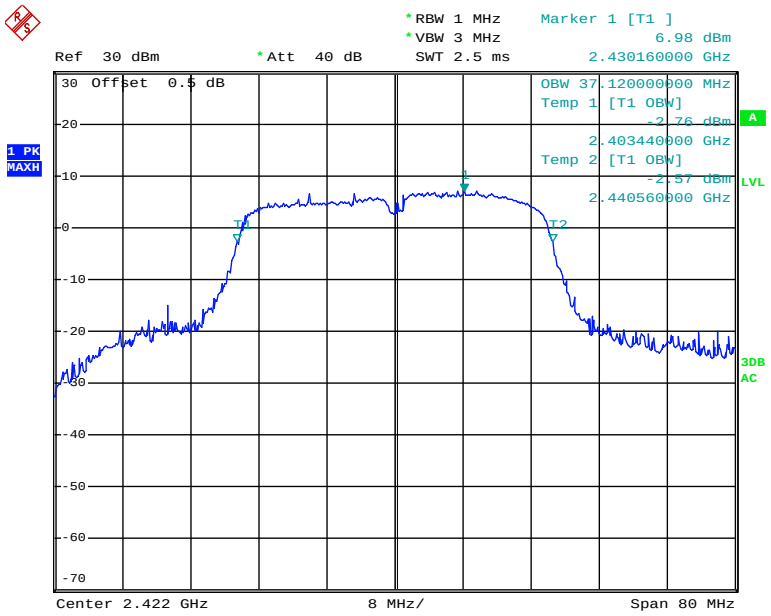
Date: 8.JAN.2020 10:34:04

802.11n ht20 High Channel



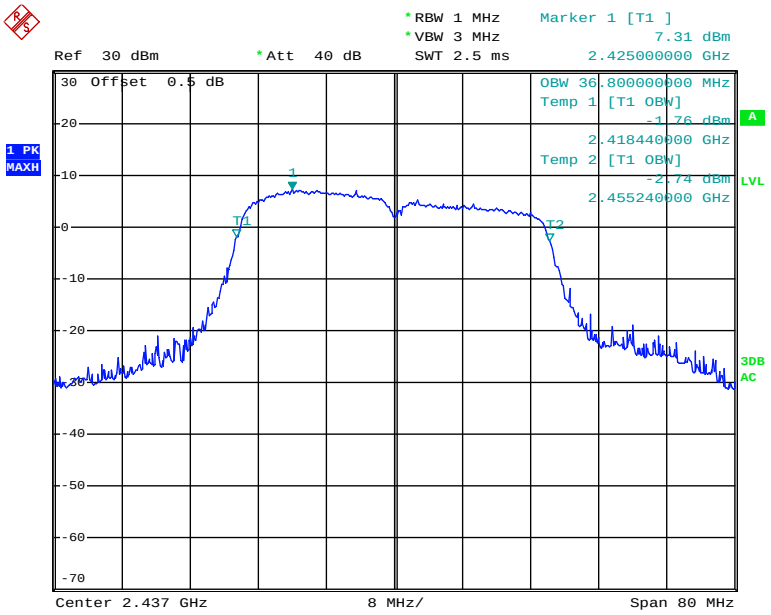
Date: 8.JAN.2020 10:37:50

802.11n ht40 Low Channel



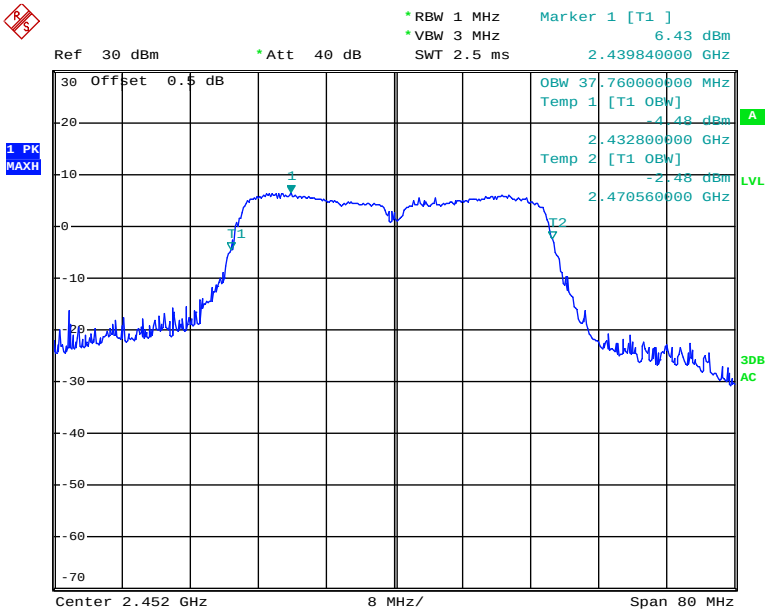
Date: 8.JAN.2020 10:20:37

802.11n ht40 Middle Channel



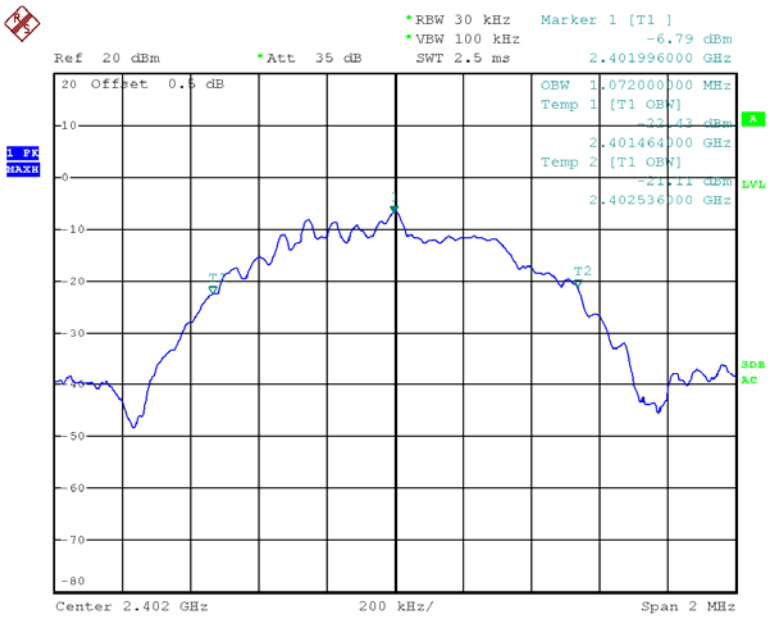
Date: 8.JAN.2020 10:23:28

802.11n ht40 High Channel



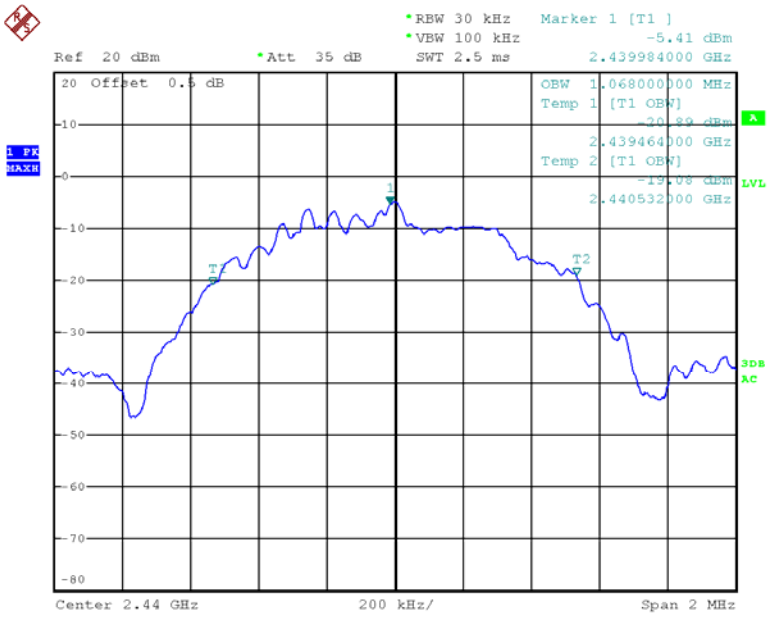
Date: 8.JAN.2020 10:26:21

BLE Low Channel



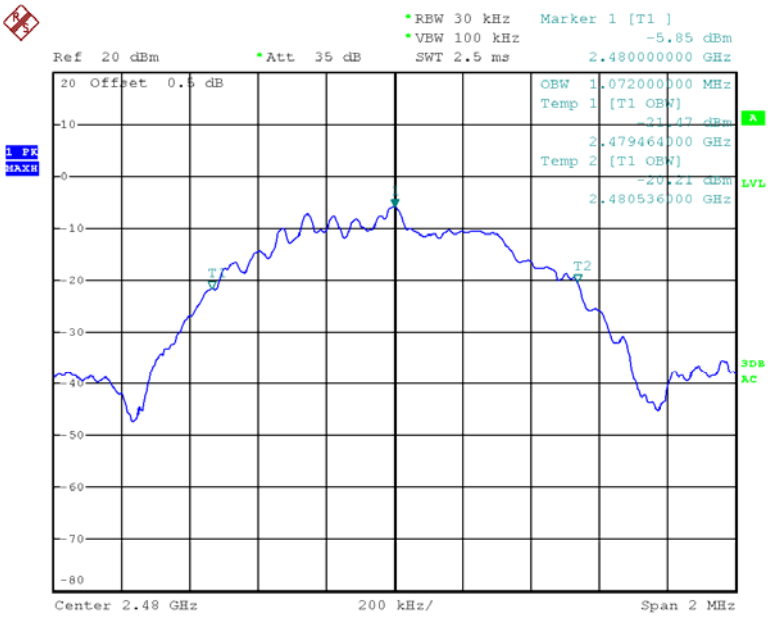
Date: 8.JAN.2020 13:44:47

BLE Middle Channel



Date: 8.JAN.2020 13:45:26

BLE High Channel



Date: 8.JAN.2020 13:45:59

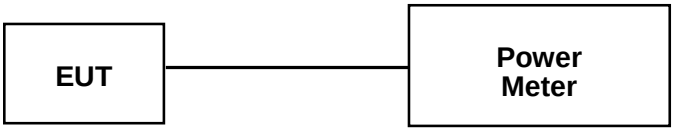
FCC §15.247(b) (3) - MAXIMUM PEAK CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to test equipment.
3. Add a correction factor to the display.
4. Set the power Meter to test Peak output power, record the result as peak power.
5. Set the power meter to test average output power, record the result as average power.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	USB Wideband Power Sensor	U2021XA	MY5425009	2019-05-09	2020-05-09
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each Time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each Time	/

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26°C
Relative Humidity:	56%
ATM Pressure:	101.7 Pa
Tester:	Lily Xie
Test Date:	2020-01-08

Test Mode: Transmitting

Test Result: Compliance. Please refer to the following table.

Test mode	Frequency (MHz)	Max Conducted Output Power (dBm)		
		Peak	Average	Limit
802.11b	2412	18.62	15.13	30
	2437	18.37	15.51	30
	2462	18.66	15.37	30
802.11g	2412	21.53	14.41	30
	2437	21.21	14.53	30
	2462	21.92	14.69	30
802.11n ht20	2412	21.52	14.32	30
	2437	21.25	14.58	30
	2462	21.48	14.48	30
802.11n ht40	2422	21.21	13.52	30
	2437	21.26	13.88	30
	2452	21.43	13.65	30
BLE	2402	2.71	/	30
	2440	3.58	/	30
	2480	3.32	/	30

Note: The data above was tested in conducted mode, the antenna gain is 0.8 dBi.

FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

Applicable Standard

According to 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)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2019-05-09	2020-05-09
R&S	Spectrum Analyzer	FSU 26	200256	2020-01-04	2021-01-04
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	/

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

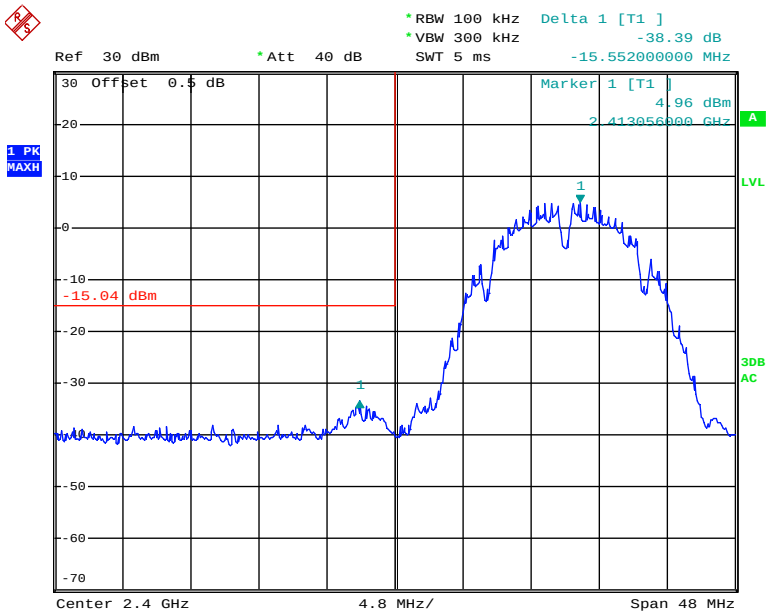
Environmental Conditions

Temperature:	26°C
Relative Humidity:	56%
ATM Pressure:	101.7 Pa
Tester:	Lily Xie
Test Date:	2020-01-08

Test mode: Transmitting

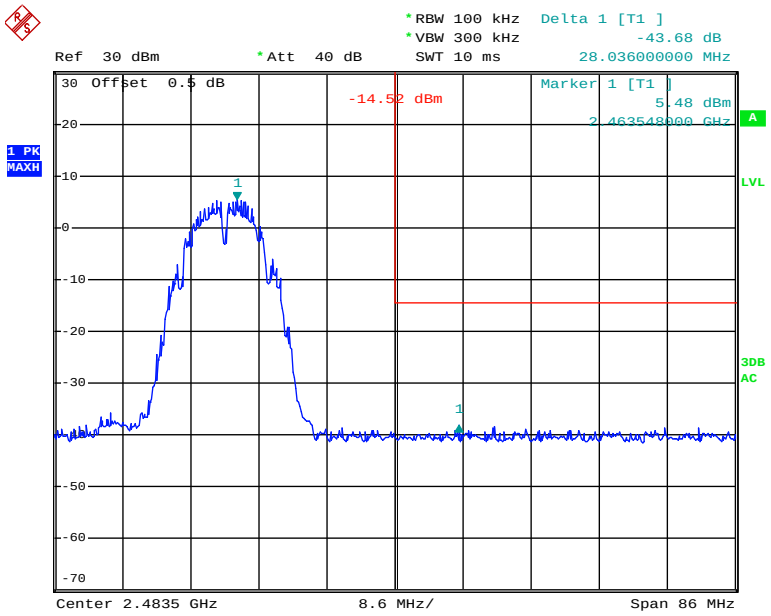
Test Result: Compliant. Please refer to following plots.

802.11b: Band Edge, Left Side



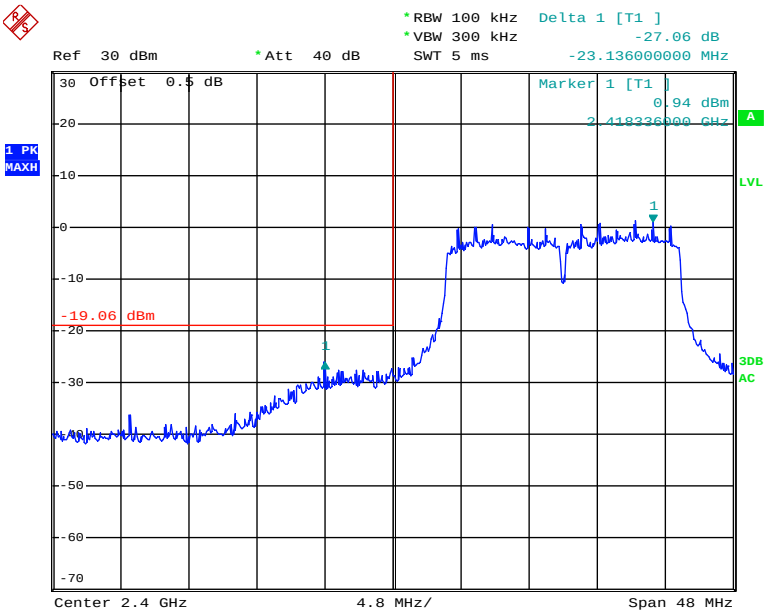
Date: 8.JAN.2020 10:03:41

802.11b: Band Edge, Right Side



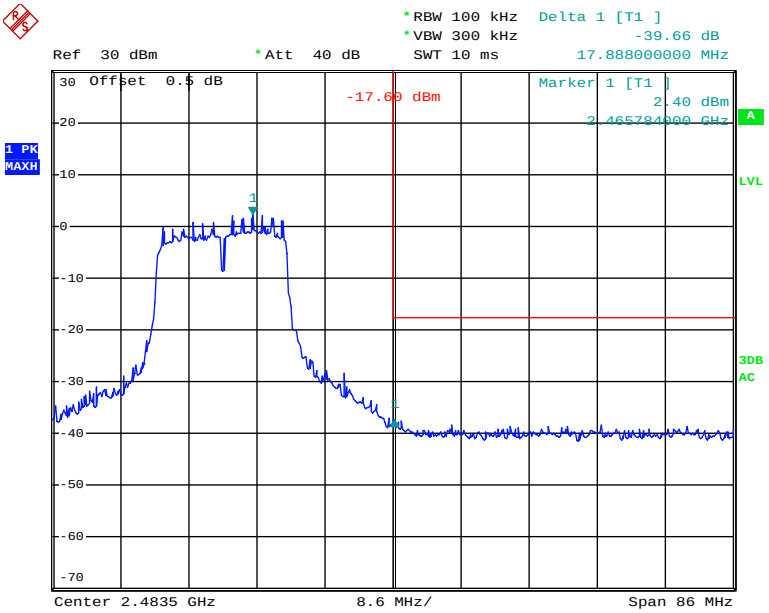
Date: 8.JAN.2020 10:08:34

802.11g: Band Edge, Left Side



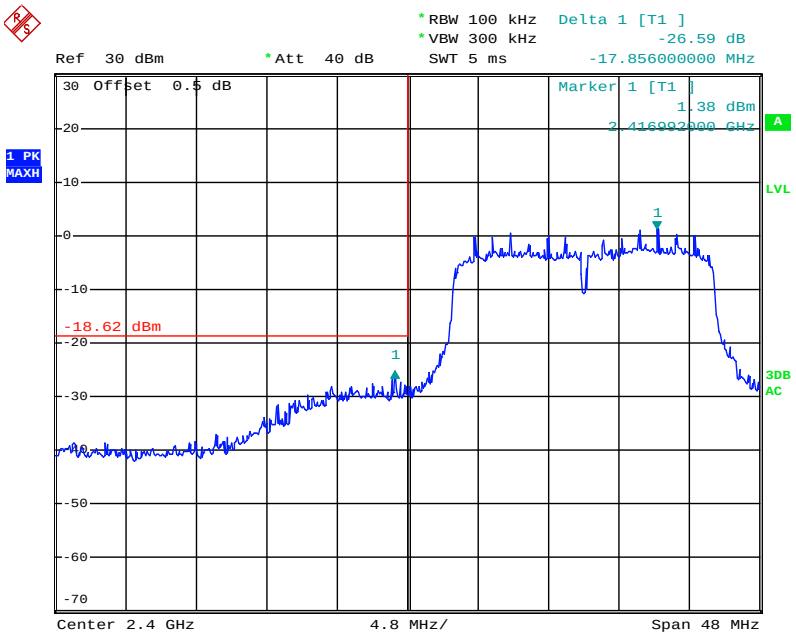
Date: 8.JAN.2020 10:13:06

802.11g: Band Edge, Right Side



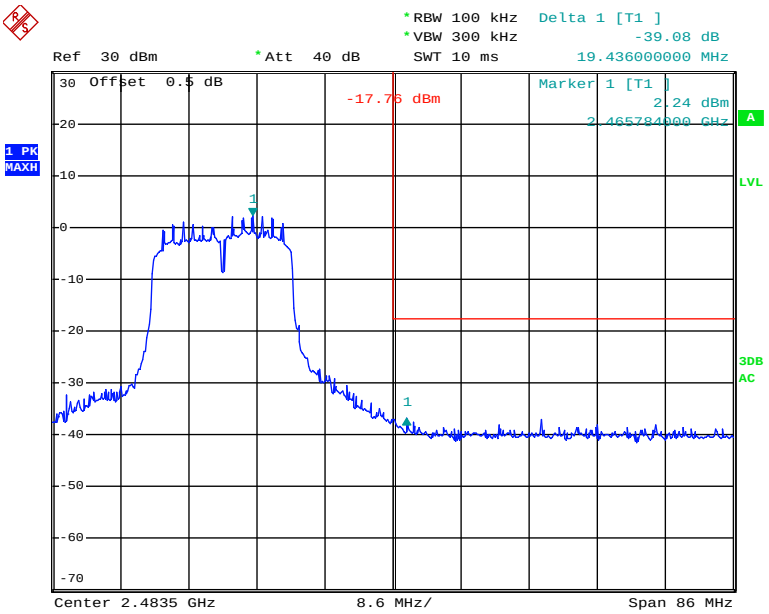
Date: 8.JAN.2020 10:18:54

802.11n ht20 Band Edge, Left Side



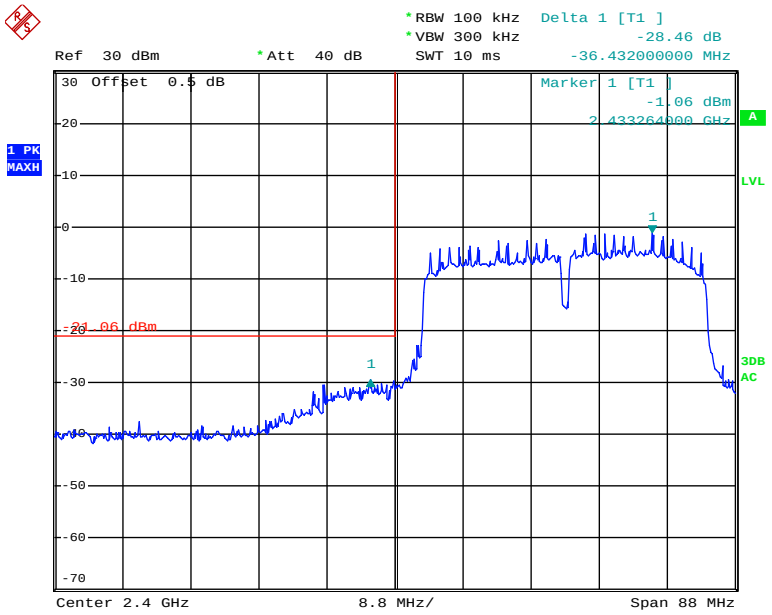
Date: 8.JAN.2020 10:32:30

802.11n ht20 Band Edge, Right Side



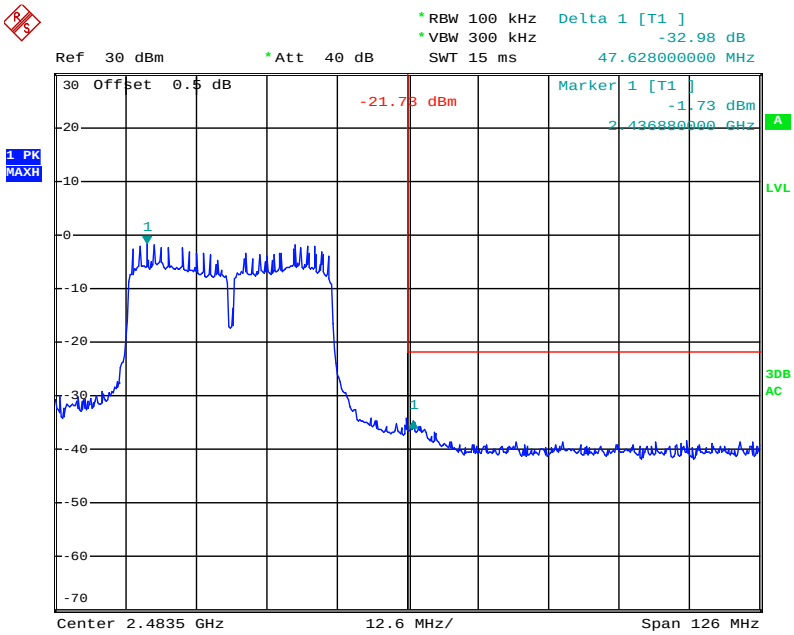
Date: 8.JAN.2020 10:38:53

802.11n ht40: Band Edge, Left Side



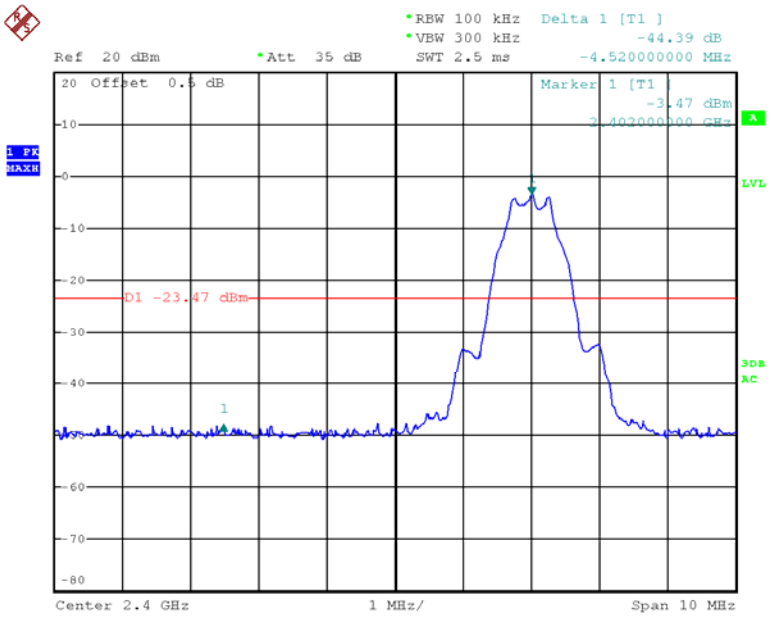
Date: 8.JAN.2020 10:22:20

802.11n ht40 Band Edge, Right Side



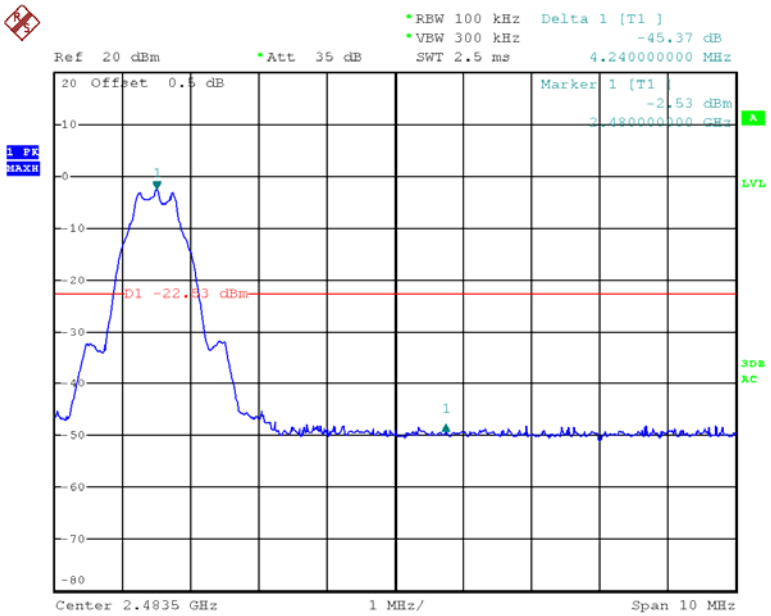
Date: 8.JAN.2020 10:27:43

BLE Band Edge, Left Side



Date: 8.JAN.2020 13:55:43

BLE Band Edge, Right Side



Date: 8.JAN.2020 13:53:43

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

According to FCC§15.247(e):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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS bandwidth.
4. Use the peak marker function to determine the maximum amplitude level.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2019-05-09	2020-05-09
R&S	Spectrum Analyzer	FSU 26	200256	2020-01-04	2021-01-04
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	/

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

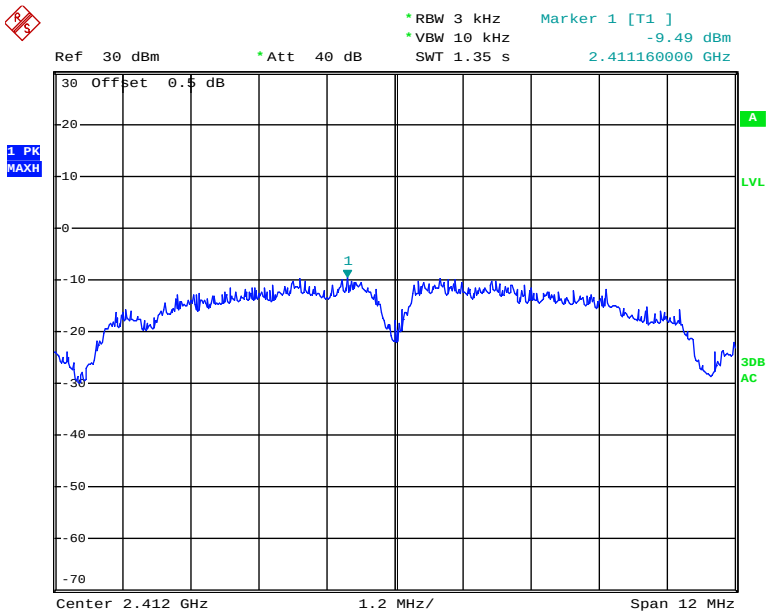
Temperature:	26 °C
Relative Humidity:	56%
ATM Pressure:	101.7Pa
Tester:	Lily Xie
Test Date:	2020-01-08

Test Mode: Transmitting

Test Result: Compliance. Please refer to the following table and plots

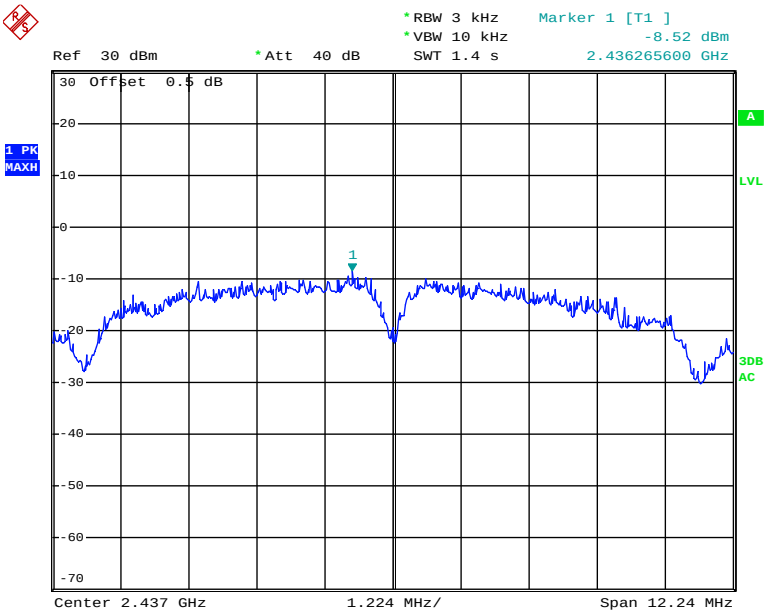
Test mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	Low	2412	-9.49	≤8
	Middle	2437	-8.52	≤8
	High	2462	-8.58	≤8
802.11g	Low	2412	-12.72	≤8
	Middle	2437	-12.39	≤8
	High	2462	-11.32	≤8
802.11n ht20	Low	2412	-12.58	≤8
	Middle	2437	-11.86	≤8
	High	2462	-12.30	≤8
802.11n ht40	Low	2422	-16.12	≤8
	Middle	2437	-15.42	≤8
	High	2452	-15.55	≤8
BLE	Low	2402	-18.68	≤8
	Middle	2440	-16.82	≤8
	High	2480	-17.69	≤8

Power Spectral Density, 802.11b Low Channel



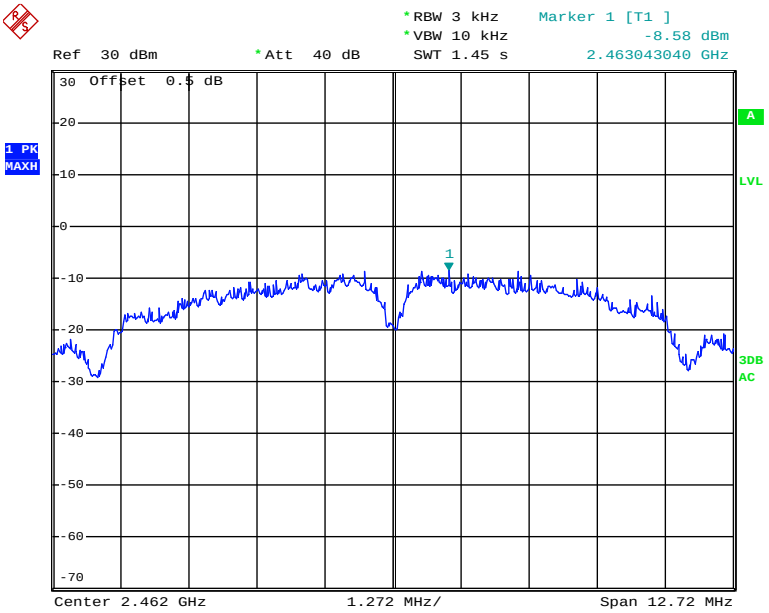
Date: 8.JAN.2020 10:03:25

Power Spectral Density, 802.11b Middle Channel



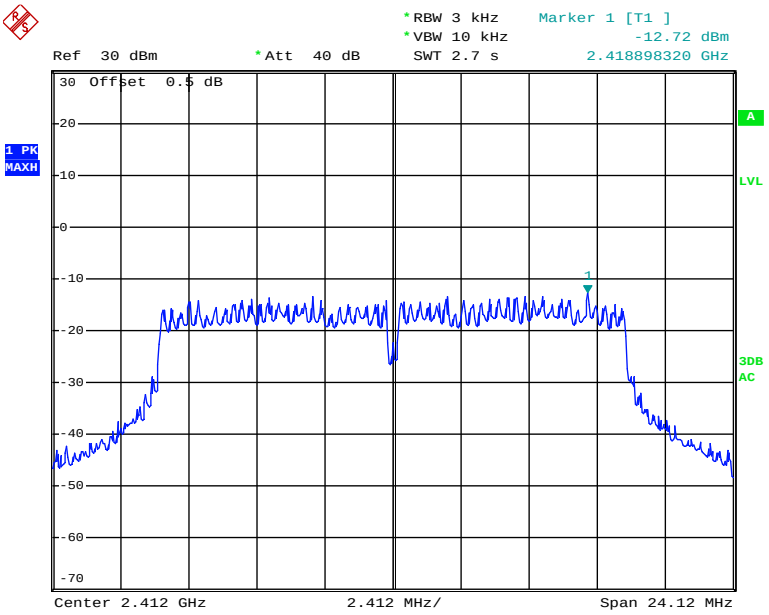
Date: 8.JAN.2020 10:05:27

Power Spectral Density, 802.11b High Channel



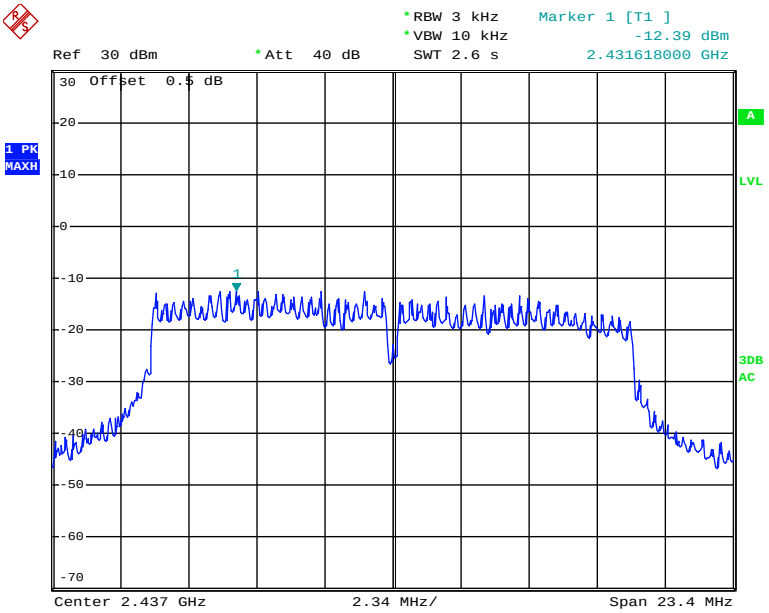
Date: 8.JAN.2020 10:08:19

Power Spectral Density, 802.11g Low Channel



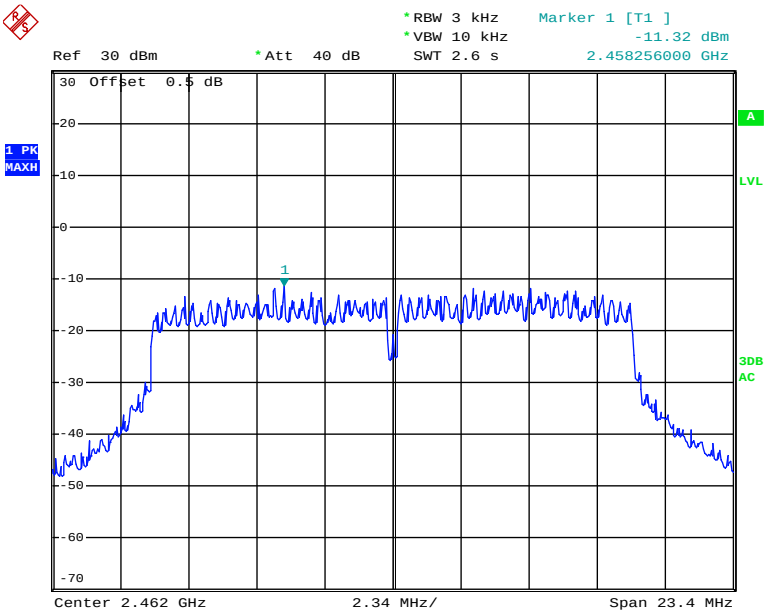
Date: 8.JAN.2020 10:12:48

Power Spectral Density, 802.11g Middle Channel



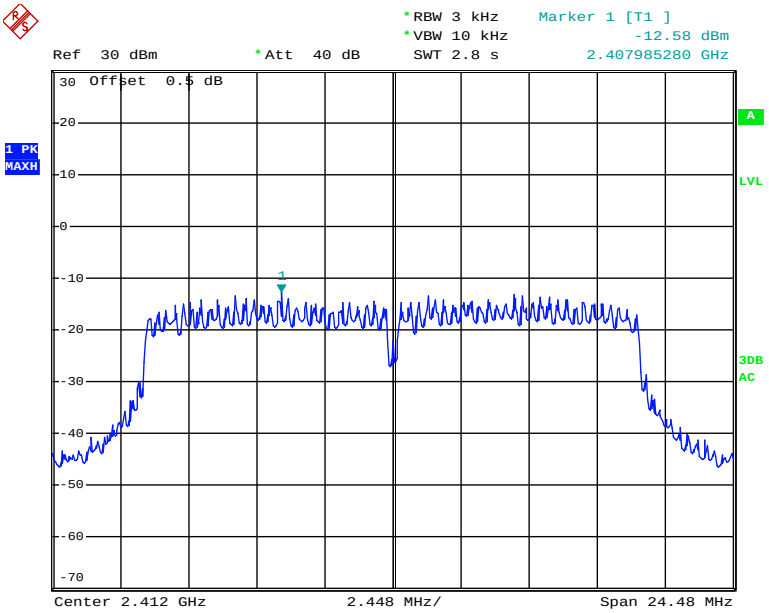
Date: 8.JAN.2020 10:14:49

Power Spectral Density, 802.11g High Channel



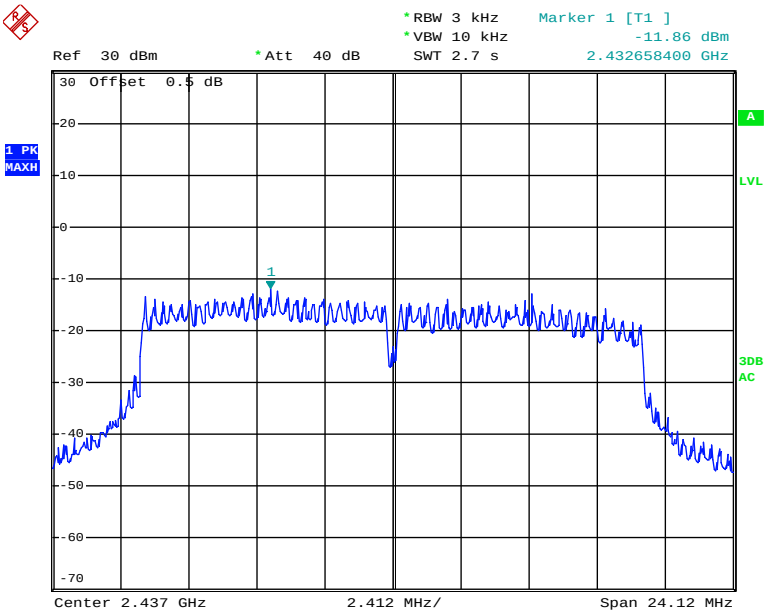
Date: 8.JAN.2020 10:18:36

Power Spectral Density, 802.11n ht20 Low Channel



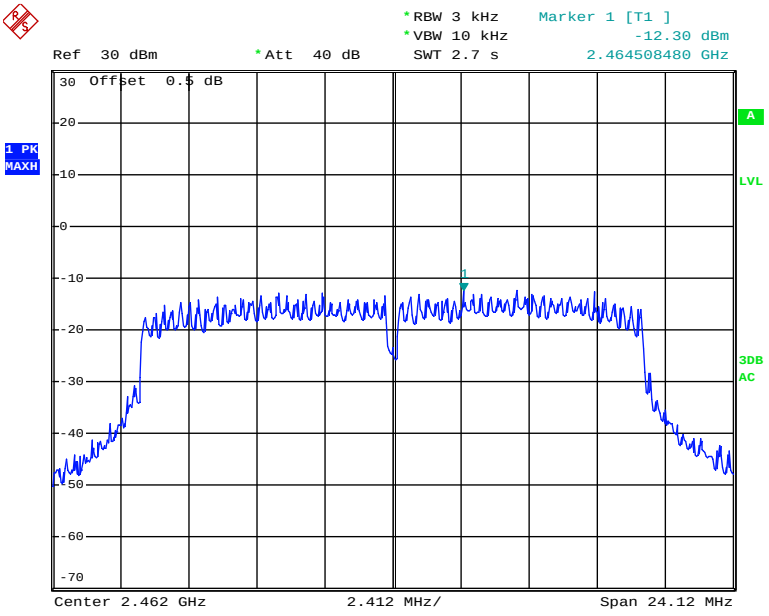
Date: 8.JAN.2020 10:32:16

Power Spectral Density, 802.11n ht20 Middle Channel



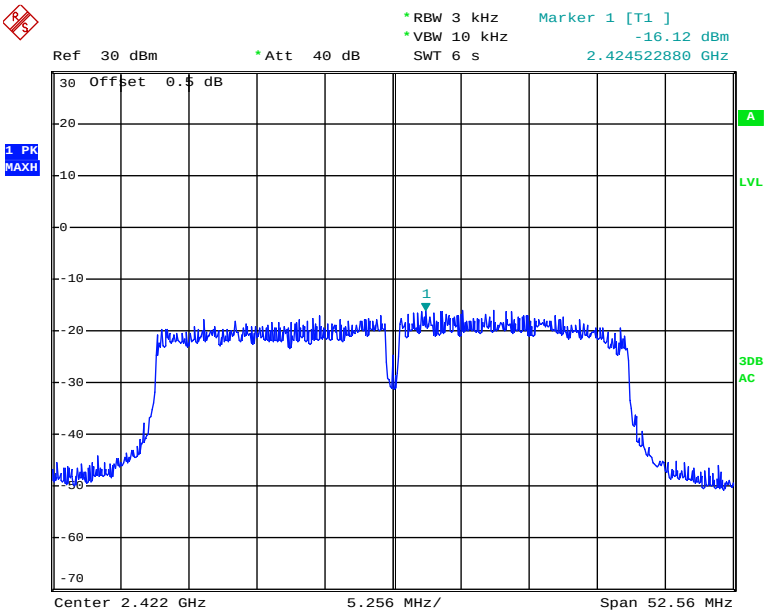
Date: 8.JAN.2020 10:34:39

Power Spectral Density, 802.11n ht20 High Channel



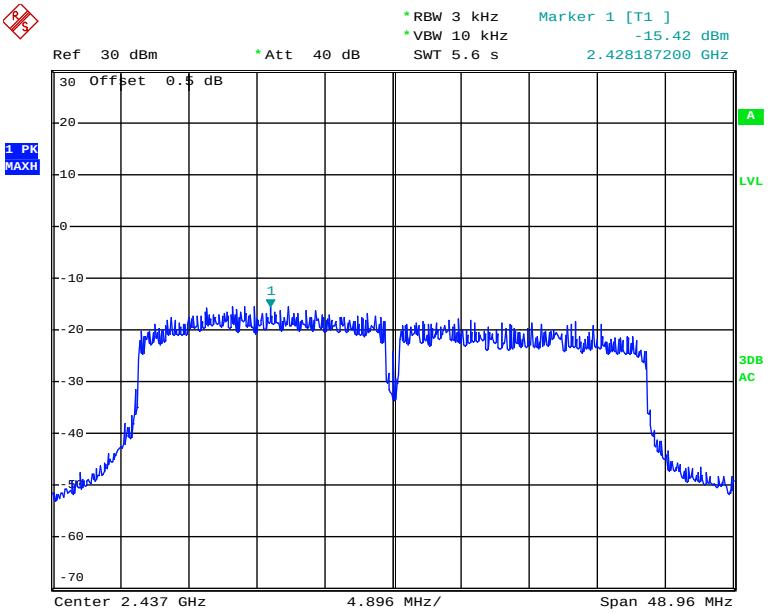
Date: 8.JAN.2020 10:38:35

Power Spectral Density, 802.11n ht40 Low Channel



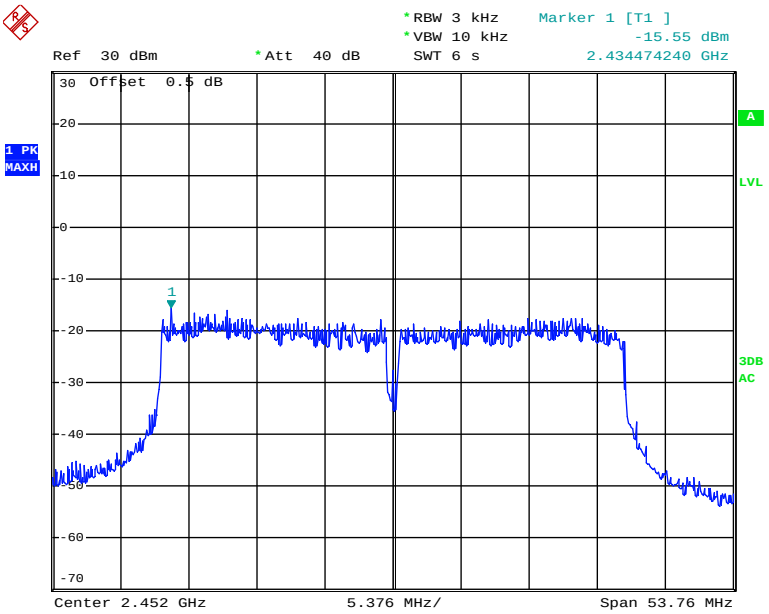
Date: 8.JAN.2020 10:22:06

Power Spectral Density, 802.11n ht40 Middle Channel



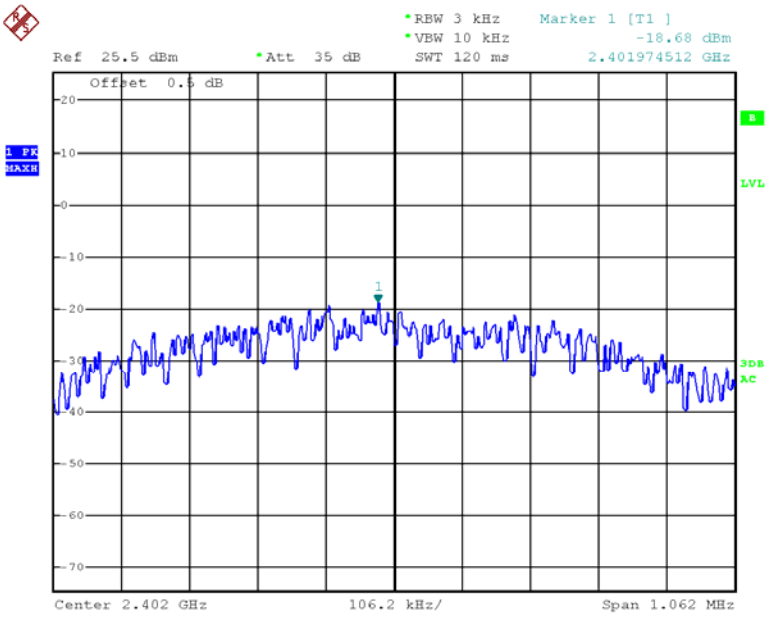
Date: 8.JAN.2020 10:24:51

Power Spectral Density, 802.11n ht40 High Channel



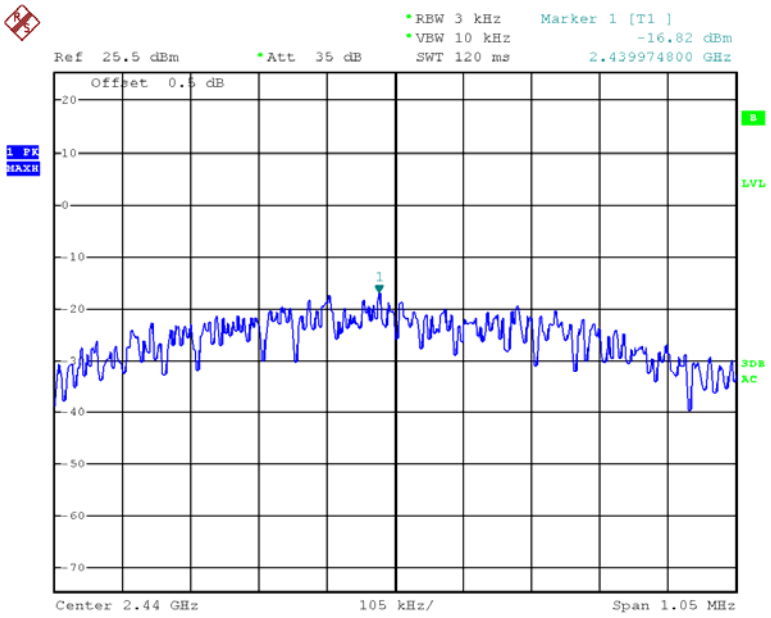
Date: 8.JAN.2020 10:27:29

Power Spectral Density, BLE Low Channel



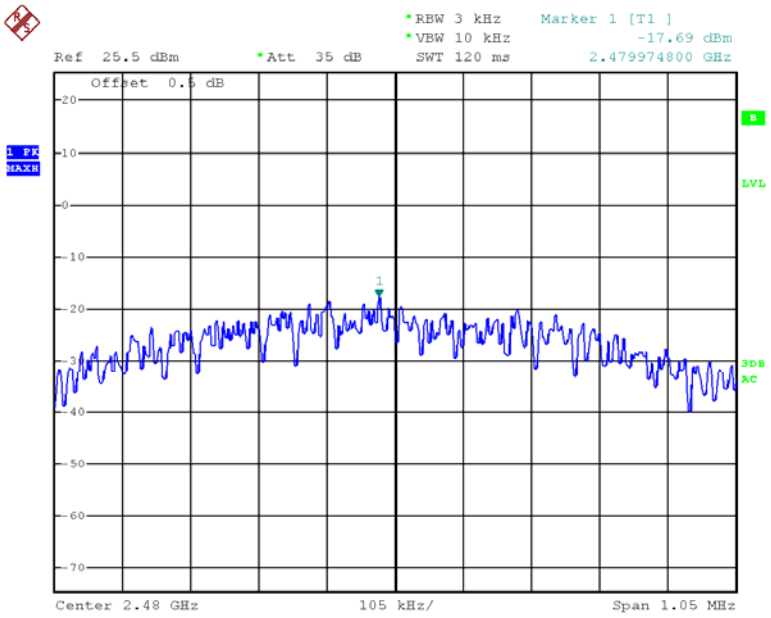
Date: 8.JAN.2020 13:47:21

Power Spectral Density, BLE Middle Channel



Date: 8.JAN.2020 13:50:27

Power Spectral Density, BLE High Channel



Date: 8.JAN.2020 13:52:05

******* END OF REPORT *******