FCC PART 15 SUBPART C TEST REPORT

for

Dual band 4X4:4 lndoor Access Point (AP) with integrated antenna

Model No.: ion8i

FCC ID: 2AUISION8I

of

Applicant: HFCL Limited
Address: 8, Commercial Complex, Masjid Moth, Greater Kailash - 2, New Delhi-110048, India

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: TW1477, TW0020, TW1072

Industry Canada filed test laboratory Reg. No. 20037

A2LA Accredited No.: 2732.01

Report No.: W6M21903-18923-C-1

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.
TEL: 886-2-66068877 FAX: 886-2-66068879 E-mail: wts@wts-lab.com

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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.
The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.
Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.
Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.
The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that is performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.
The test report may only be reproduced or published in full.
Reproduction or publication of extracts from the report requires the prior written approval of the Worldwide Testing Services(Taiwan) Co., Ltd.

Specific Conditions:
Usage of the hereunder tested device in combination with other integrated or external antennas requires at least additional output power measurements, spurious emission measurements, conducted emission measurements (AC supply lines) and radio frequency exposure evaluations for each individual configuration performed, for certification by FCC.
The test sample is able to work according IEEE 802.11 b/g/n.
This report is related to FCC Part 15 C (DSSS and OFDM device).

Tester:

December 24, 2019		Rick Chen	Rick Chen.
Date	WTS-Lab.	Name	Signature

Technical responsibility for area of testing:

December 24, 2019		Kevin Wang	Kevin Wang
Date	WTS	Name	Signature

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

1.2 Testing laboratory

1.2.1 Location

OATS
No.5-1, Lishui, Shuang Sing Village,
Wanli Dist., New Taipei City 207,
Taiwan (R.O.C.)
3 meter semi-anechoic chamber
No.35, Aly. 21, Ln. 228, Ankang Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)
TEL:886-2-6613-0228
FAX:886-2-2791-5046

Company
Worldwide Testing Services(Taiwan) Co., Ltd.
6F, NO. 58, LANE 188, RUEY-KUANG RD.
NEIHU, TAIPEI 114, TAIWAN R.O.C.
Tel : 886-2-66068877
Fax : 886-2-66068879

1.2.2 Details of accreditation status

Accredited testing laboratory
A2LA accredited number: 2732.01
FCC filed test laboratory Reg. No. TW1477, TW0020, TW1072
Industry Canada filed test laboratory Reg. No. 20037

Test location, where different from Worldwide Testing Services (Taiwan) Co., Ltd. :

Name:	./.
Accredited number:	./.
Street:	./.
Town:	./.
Country:	./.
Telephone:	./.
Fax:	./.

1.3 Details of approval holder

Name:	HFCL Limited
Street:	8, Commercial Complex, Masjid Moth, Greater Kailash - 2,
Town:	New Delhi-110048,
Country:	India
Telephone:	+91-9811096312
Fax:	./.

1.4 Application details

Date of receipt of test item:	August 23, 2019
Date of test:	from August 23, 2019 to December 24, 2019

1.5 General information of Test item

Type of test item:	Dual band 4X4:4 lndoor Access Point (AP) with integrated antenna
Model Number:	ion8i
Brand Name:	io
Multi-listing model number:	./.
Photos:	see Appendix

Technical data

Frequency band: 2.4 GHz – 2.4835 GHz

802.11b, g, n 20MHz

Frequency (ch 1):	2.412 GHz
Frequency (ch 6):	2.437 GHz
Frequency (ch 11):	2.462 GHz

802.11n 40MHz

Frequency (ch 1):	2.422 GHz
Frequency (ch 4):	2.437 GHz
Frequency (ch 7):	2.452 GHz

Bluetooth Low Energy

Frequency (ch 0):	2.402 GHz
Frequency (ch 19):	2.440 GHz
Frequency (ch 39):	2.480 GHz

Number of Channels:	802.11b, g, n 20MHz: 11 channels, 11n 40MHz: 7 channels BLE 40 channels
Operation modes:	duplex
Modulation Type:	DSSS / OFDM, GFSK
Fixed point-to-point operation:	☐ Yes / ☒ No

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

Type of Antenna:	PIFA antenna
Antenna gain:	WLAN ANT 1: 4 dBi ANT 2: 3.5 dBi ANT 3: 3.3 dBi ANT 4: 4 dBi Bluetooth Low Energy: 4 dBi
Directional gain:	9.73 dBi

According to KDB 662911, Unequal antenna gains, with equal transmit powers. For antenna gains given by G_1, G_2, …, G_N dBi. If transmit signals are correlated, then Directional gain $=10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N]$ dBi [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

Power supply:	Power supply: Adaptor: (I/P:100-240V~1.0A MAX, 50-60Hz, O/P: 12V dc, 2.0 A) for test PoE: (I/P: 100-240V~2A, 50-60Hz, O/P: 48V dc) for test
Emission designator:	802.11b: DSSS: 13M4G1D 802.11g: OFDM: 16M7D1D 802.11n 20MHz: OFDM: 17M8D1D 802.11n 40MHz: OFDM: 36M5D1D BLE: 1M06G1D
Host device:	none

Classification:

Fixed Device	☒
Mobile Device (Human Body distance ＞ 20cm)	☐
Portable Device (Human Body distance ＜ 20cm)	☐
Modular Radio Device	☐

Transmitter	**Unom**
Antenna 1	
Mode A (802.11b)	
Power (ch 1 or A):	Conducted: 11.40 dBm
Power (ch 6 or B):	Conducted: 12.45 dBm
Power (ch 11 or C):	Conducted: 12.32 dBm
Mode B (802.11g)	
Power (ch 1 or A):	Conducted: 10.40 dBm
Power (ch 6 or B):	Conducted: 11.47 dBm
Power (ch 11 or C):	Conducted: 11.32 dBm

Mode C (802.11n 20 MHz)

Power (ch 1 or A):	Conducted: 11.85 dBm
Power (ch 6 or B):	Conducted: 13.05 dBm
Power (ch 11 or C):	Conducted: 12.93 dBm

Mode D (802.11n 40 MHz)

Power (ch 1 or A):	Conducted: 14.53 dBm
Power (ch 4 or B):	Conducted: 15.47 dBm
Power (ch 7 or C):	Conducted: 15.44 dBm

Antenna 2

Mode E (802.11b)

Power (ch 1 or A):	Conducted: 11.29 dBm
Power (ch 6 or B):	Conducted: 11.88 dBm
Power (ch 11 or C):	Conducted: 11.93 dBm

Mode F (802.11g)

Power (ch 1 or A):	Conducted: 10.46 dBm
Power (ch 6 or B):	Conducted: 11.08 dBm
Power (ch 11 or C):	Conducted: 11.02 dBm

Mode G (802.11n 20 MHz)

Power (ch 1 or A):	Conducted: 11.27 dBm
Power (ch 6 or B):	Conducted: 12.18 dBm
Power (ch 11 or C):	Conducted: 11.91 dBm

Mode H (802.11n 40 MHz)

Power (ch 1 or A):	Conducted: 14.00 dBm
Power (ch 4 or B):	Conducted: 14.71 dBm
Power (ch 7 or C):	Conducted: 14.72 dBm

Antenna 3

Mode I (802.11b)

Power (ch 1 or A):	Conducted: 10.68 dBm
Power (ch 6 or B):	Conducted: 11.59 dBm
Power (ch 11 or C):	Conducted: 11.65 dBm

Mode J (802.11g)

Power (ch 1 or A):	Conducted: 9.80 dBm
Power (ch 6 or B):	Conducted: 10.72 dBm
Power (ch 11 or C):	Conducted: 10.82 dBm

Mode K (802.11n 20 MHz)

Power (ch 1 or A):	Conducted: 10.72 dBm
Power (ch 6 or B):	Conducted: 11.40 dBm
Power (ch 11 or C):	Conducted: 11.50 dBm

Mode L (802.11n 40 MHz)

Power (ch 1 or A):	Conducted: 13.32 dBm
Power (ch 4 or B):	Conducted: 13.95 dBm
Power (ch 7 or C):	Conducted: 14.16 dBm

Antenna 4
Mode M (802.11b)
Power (ch 1 or A): Conducted: 11.26 dBm
Power (ch 6 or B): Conducted: 12.18 dBm
Power (ch 11 or C): Conducted: 12.09 dBm

Mode N (802.11g)
Power (ch 1 or A): Conducted: 10.79 dBm
Power (ch 6 or B): Conducted: 11.64 dBm
Power (ch 11 or C): Conducted: 11.37 dBm

Mode O (802.11n 20 MHz)
Power (ch 1 or A): Conducted: 11.69 dBm
Power (ch 6 or B): Conducted: 12.88 dBm
Power (ch 11 or C): Conducted: 12.73 dBm

Mode P (802.11n 40 MHz)
Power (ch 1 or A): Conducted: 14.57 dBm
Power (ch 4 or B): Conducted: 15.62 dBm
Power (ch 7 or C): Conducted: 15.66 dBm

Combine	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	55.27	69.91	68.03	17.42	18.45	18.33
802.11n 40MHz	103.62	126.13	127.51	20.15	21.01	21.06

Mode Q (Bluetooth Low energy)
Power (ch 0 or A): Conducted: 2.31 dBm
Power (ch 19 or B): Conducted: 2.44 dBm
Power (ch 39 or C): Conducted: 1.54 dBm

Manufacturer: (if applicable)
Name: HFCL Limited
Street: Electronic Complex, Chambaghat,
Town: Solan (H.P.)-173213, Himachal Pradesh,
Country: lndia

1.6 Test standards

Technical standard : FCC RULES PART 15 SUBPART C § 15.247 (2018-10)

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed. ☒

or

The deviations were ascertained in the course of the tests performed. ☐

2.2 Test environment

Relative humidity content: 20 ... 75 %

Air pressure: 86 ... 103 kPa

Power supply: Power supply: Adaptor: (I/P:100-240V~1.0A MAX, 50-60Hz, O/P: 12V dc, 2.0 A) for test
PoE: (I/P: 100-240V~2A, 50-60Hz, O/P: 48V dc) for test

Extreme conditions parameters: ./.

Test item Name	Uncertainty
Estimation Result of Uncertainty of Conducted Emission	Expanded Uncertainty: AMN: 1.30 dB Voltage probe: 1.36 dB
Estimation Result of Uncertainty of Radiated Emission(3M)	Expanded Uncertainty: 0.009-30 MHz: 2.02 dB 30-1000 MHz: 3.49 dB 1-18 GHz: 3.01 dB 18-40 GHz: 2.43 dB
Estimation Result of Uncertainty of Bandwidth Measurement 20 dB Bandwidth, Occupied bandwidth, Channel bandwidth, Necessary Bandwidth	Expanded Uncertainty: 0.45 kHz
Estimation Result of Uncertainty of Conducted Output Power Measurement Output power	Expanded Uncertainty: 1.72 dB
Estimation Result of Uncertainty of Power Density Measurement Power density	Expanded Uncertainty: 1.73 dB
Estimation Result of Uncertainty of Band Edge Measurement	Expanded Uncertainty: 0.98 dBc
Estimation Result of Uncertainty of Frequency Separation Measurement Hopping channel separation	Expanded Uncertainty: 554.14 Hz
Estimation Result of Uncertainty of Duty Cycle Measurement Dwell time	Expanded Uncertainty: 0.1 ms

The decision rule is: Measurement uncertainty is not taken into account.

2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2019/6/4	2020/6/3
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2019/11/1	2020/10/31
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2019/9/24	2020/9/23
ETSTW-CE 008	HF-EICHLEITUNG RF STEP ATTENUATOR 139dB DPSP	334.6010.02	844581/024	R&S	Function Test	
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2019/7/23	2020/7/22
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2019/10/3	2020/10/2
ETSTW-CE 028	MXE EMI Receiver	N9038A	MY53220110	Agilent	2019/7/18	2020/7/17
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2019/6/4	2020/6/3
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2019/5/29	2020/5/28
ETSTW-RE 012	TUNABLE BANDREJECT FILTER	D.C 0309	146	K&L	Function Test	
ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0336	397	K&L	Function Test	
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2019/7/25	2020/7/24
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2019/7/22	2020/7/21
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	ETS-Lindgren	2019/4/2	2020/4/1
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2019/1/29	2020/1/28
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2019/4/23	2020/4/22
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2019/5/13	2020/5/12
ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2019/2/27	2020/2/26
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2019/2/27	2020/2/26
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2019/2/27	2020/2/26
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2019/3/5	2020/3/4
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2019/2/27	2020/2/26
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2019/5/16	2020/5/15
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 069	Double-Ridged Guide Horn Antenna	3117	00069377	ETS-Lindgren	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2019/9/23	2020/9/22
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2019/9/18	2020/9/17
ETSTW-RE 091	Match Pad	MDCS1500	None	WOKEN	2019/5/9	2020/5/8
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2019/2/22	2020/2/21
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	T-0A023536	T-Power	Function test	
ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE CIRCUITS	2019/1/14	2020/1/13

ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	
ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2019/6/3	2020/6/2
ETSTW-RE 125	5GHz Notch filter	5NSL11-5200/E221.3-O/O	1	K&L Microwave	2019/8/8	2020/8/7
ETSTW-RE 126	5GHz Notch filter	5NSL12-5800/E221.3-O/O	1	K&L Microwave	2019/8/8	2020/8/7
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2019/2/26	2020/2/25
ETSTW-RE 128	5.3GHz Notch filter	N0153001	SN487233	Microwave Circuits	2019/8/8	2020/8/7
ETSTW-RE 129	5.5GHz Notch filter	N0555984	SN487234	Microwave Circuits	2019/8/8	2020/8/7
ETSTW-RE 130	Handheld RF Spectrum Analyzer	N9340A	CN0147000204	Agilent	Pre-test Use	
ETSTW-RE 142	Amplifier	8447D	2805A03378	Agilent	2019/5/16	2020/5/15
ETSTW-RE 147	Bi-log Hybrid Antenna	MCTD 2786B	BLB16M04005	ETC	2019/4/2	2020/4/1
ETSTW-RF 002	Electromagnetic field probe	LF-30	K-0007	STT	2019/5/27	2020/5/26
ETSTW-EMI 011	USB Compact Modulator	SFC-U	101689	R&S	2019/5/16	2020/5/15
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2019/3/5	2020/3/4
ETSTW-GSM 003	Radio Communication Analyzer	MT8820C	6201342073	Anritsu	2019/3/26	2020/3/25
ETSTW-GSM 004	Wideband Radio Communication Tester	CMW500	128092	R&S	2019/10/25	2020/10/24
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40 /12+9SS	3	WI	2019/1/14	2020/1/13
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2019/1/14	2020/1/13
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2019/1/14	2020/1/13
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2019/1/14	2020/1/13
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2019/9/12	2020/9/11
ETSTW-GSM 024	Radio Communication Analyzer	MT8821C	None	Anritsu	2019/3/5	2020/3/4
ETSTW-GSM 025	Band Reject Filter	BRM19835	001	Micro-Tronics	2019/8/9	2020/8/8
ETSTW-Cable 011	SMA to N type Cable	RGU-400	None	THERMAX	Pre-test Use NCR	
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2019/2/21	2020/2/20
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2019/2/21	2020/2/20
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2019/2/21	2020/2/20
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2019/2/21	2020/2/20
ETSTW-Cable 020	N TYPE Cable	OATS Cable 1	N30N30-L335-15M	JYE BAO CO.,LTD.	2019/7/2	2020/7/1
ETSTW-Cable 026	Microwave Cable	SUCOFLEX 104	279075	HUBER+SUHNER	2019/2/25	2020/2/24
ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2019/5/14	2020/5/13
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2019/9/18	2020/9/17
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2019/9/18	2020/9/17
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104（S_Cable 9）	279067	HUBER+SUHNER	2019/2/25	2020/2/24
ETSTW-Cable 043	Microwave Cable	SUCOFLEX 104	317576	HUBER+SUHNER	2019/5/16	2020/5/15
ETSTW-Cable 058	Microwave Cable	SUCOFLEX 104	none	HUBER+SUHNER	2019/6/6	2020/6/5
ETSTW-Cable 064	Microwave Cable	SUCOFLEX 104	MY28891	HUBER+SUHNER	2019/5/16	2020/5/15
ETSTW-Cable 066	SMA type cable	32022	None	ASTROLAB	2019/9/24	2020/9/23

ETSTW-Cable 071	N TYPE CABLE	EMCCFD400-NM-NM-25000	170239	EMCI	2019/6/6	2020/6/5
ETSTW-Cable 072	SMA type cable (8m)	SUCOFLEX 104	805800/4	HUBER+SUHNER	2019/5/16	2020/5/15
ETSTW-Cable 074	SMA type cable (2m)	SUCOFLEX 104	802563/4	HUBER+SUHNER	2019/5/16	2020/5/15
WTSTW-SW 002	EMI TEST SOFTWARE	EZ_EMC	None	Farad	Version ETS-03A1	
WTSTW-SW 006	EMI TEST SOFTWARE	e3	None	AUDIX	Version 9.161014	
WTSTW-SW 008	Signal studio	Agilent	None	AUDIX	Version 2.0.0.1	
ETSTW-TH 001	Thermohygrometer	608-H1	45204316	Testo	2019/9/9	2020/9/8
ETSTW-TH 002	Thermohygrometer	608-H1	45204317	Testo	2019/9/9	2020/9/8

2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.10-2013 6.2 using a 50µH LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was according to ANSI STANDARD C63.10-2013 6.3 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBµV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

Freq (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBµV + 10.36 dB + 6 dB = 36.36 dBµV/m @3m

The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.10-2013 6.2.2. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

(1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
(2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
(3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.
(4) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a)(1)-(a)(3) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this Section, whichever is the higher frequency range of investigation.

For hand-held devices, a exploratory test was performed with three (3) orthogonal planes to determine the highest emissions.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

The formula is as follows:
Average = Peak + Duty Factor
Duty Factor = 20 log (dwell time/T)
T = 100ms when the pulse train period is over 100 ms or the period of the pulse train.

Modified Limits for peak according to 15.35 (b) = Max Permitted average Limits + 20dB

ANSI STANDARD C63.10-2013 B.2.7: Any measurements that utilize special test software shall be indicated and referenced in the test report. During testing, test software ’EZ EMC’ was used for setting up different operation modes.

3 Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.247(b)(3)	☒	☒	☐
Equivalent isotropically radiated Power	15.247(b)(3)	☒	☒	☐
Spurious Emissions radiated – Transmitter operating	15.247(d): 15.209	☒	☒	☐
Band Edge Measurement	15.247(d)	☒	☒	☐
Minimum 6 dB Bandwidth	15.247(a)	☒	☒	☐
Peak Power Spectral Density	15.247(e)	☒	☒	☐
Radiated Emission from Digital Part	15.109	☐	☐	☐
Power Line Conducted Emission	15.207	☒	☒	☐

Note:

1. This EUT incorporates a MIMO function with IEEE 802.11b, 802.11g, and 802.11n. Physically, this EUT includes two transmitters and two receivers with two incoherent streams. This device uses multiplexing and also employ cyclic delay diversity to improve range and throughput, and this device simultaneously operates on two adjacent channels.
2. This EUT is 2*2 spatial MIMO (2Tx&2Rx) without beam forming function. That operates dual chain configuration. The Pre-test was performed to determine the worst case mode from all possible combinations between all available modulations, data rates, bandwidths, and spatial stream modes.
3. The detail of chosen mode for full testing are as below:

Mode	Available channel	Chosen Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1,6,11	DSSS	DBPSK, DQPSK, CCK	1
802.11g	1 to 11	1,6,11	OFDM	BPSK, QPSK, 16QAM, 64QAM	6
802.11n (20MHz)	1 to 11	1,6,11	OFDM	BPSK, QPSK, 16QAM, 64QAM	6.5
802.11n (40MHz)	1 to 7	1,4,7	OFDM	BPSK, QPSK, 16QAM, 64QAM	13.5

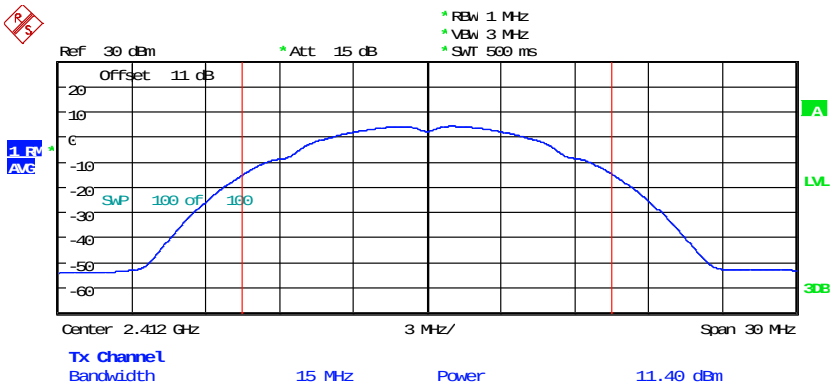
3.1 Peak Output Power (transmitter)

FCC Rule: 15.247(b)(3)

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

The power was measured with modulation (declared by the applicant).

WLAN
ANT 1



MAX OUTPUT POWER 802.11B CH01
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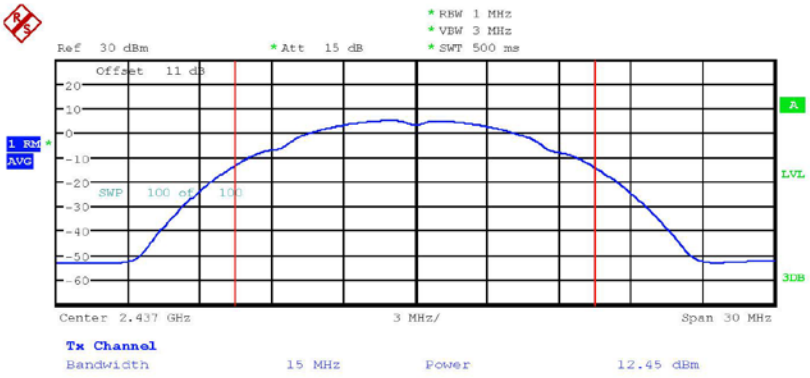
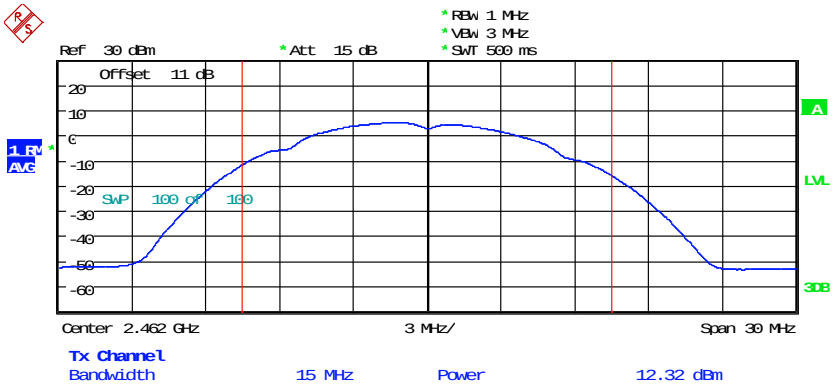
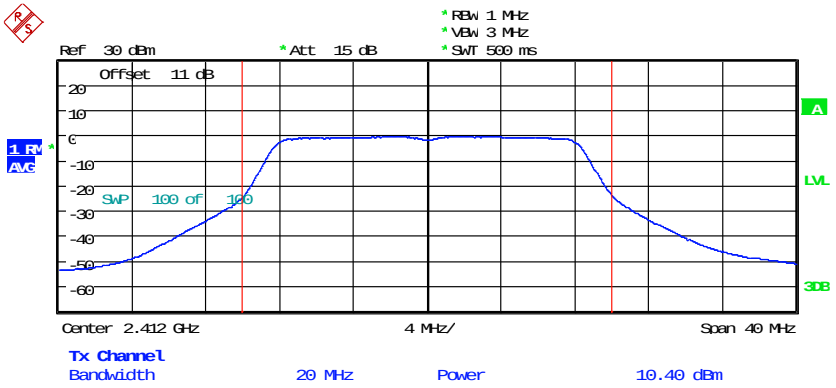


MAX OUTPUT POWER 802.11B CH06
Date: 13.NOV.2019 21:15:39

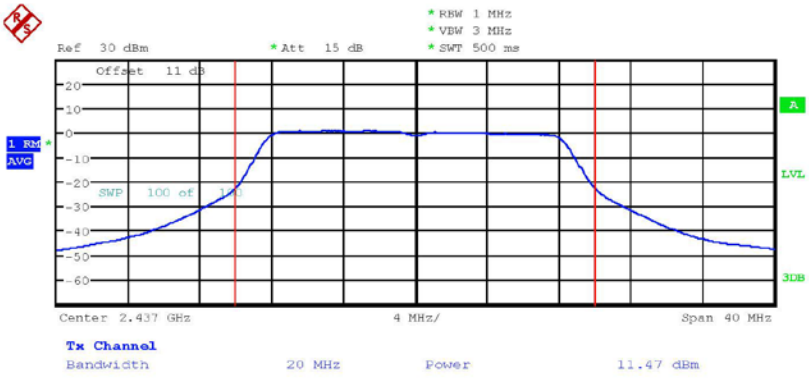


MAX OUTPUT POWER 802.11B CH011
Date: 13.NOV.2019 21:18:54

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

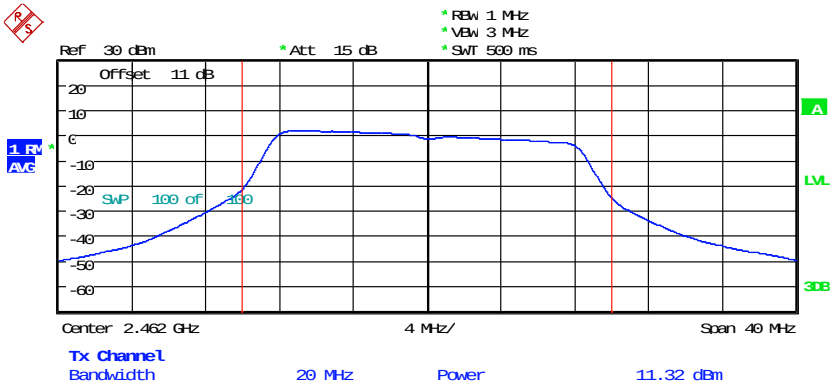


MAX OUTPUT POWER 802.11G CH01
Date: 13.NOV.2019 21:08:08



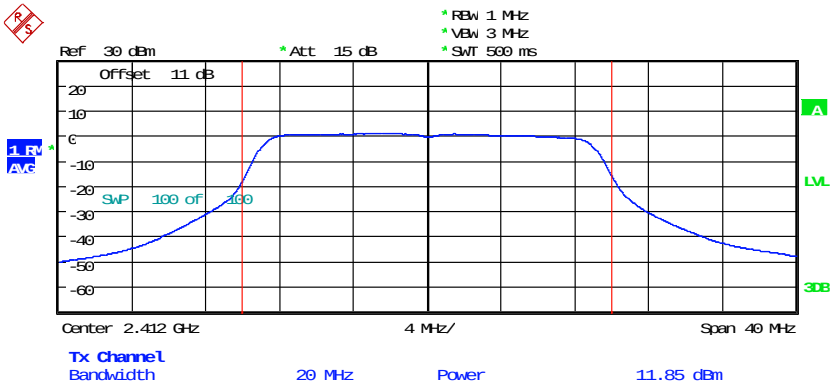
MAX OUTPUT POWER 802.11G CH06
Date: 13.NOV.2019 21:09:45

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



MAX OUTPUT POWER 802.11G CH11

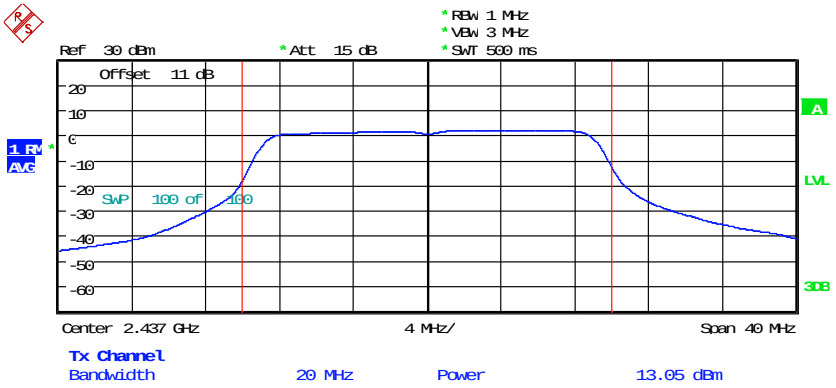
Date: 13.NOV.2019 21:11:14



MAX OUTPUT POWER 802.11N 20MHZ CH1

Date: 14.NOV.2019 20:46:52

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



MAX OUTPUT POWER 802.11N 20MHZ CH6
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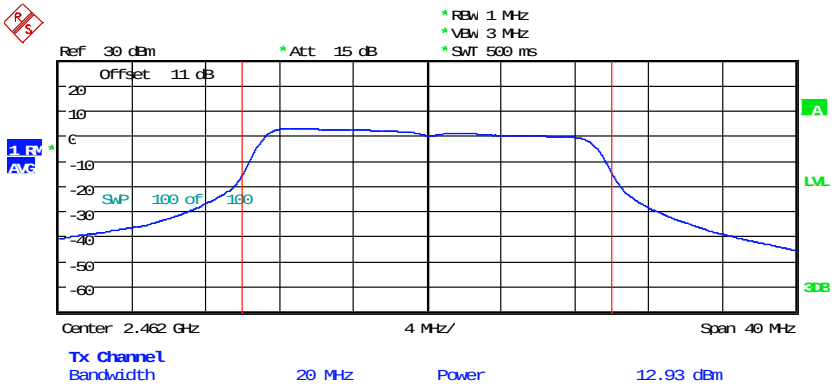

MAX OUTPUT POWER 802.11N 20MHZ CH11
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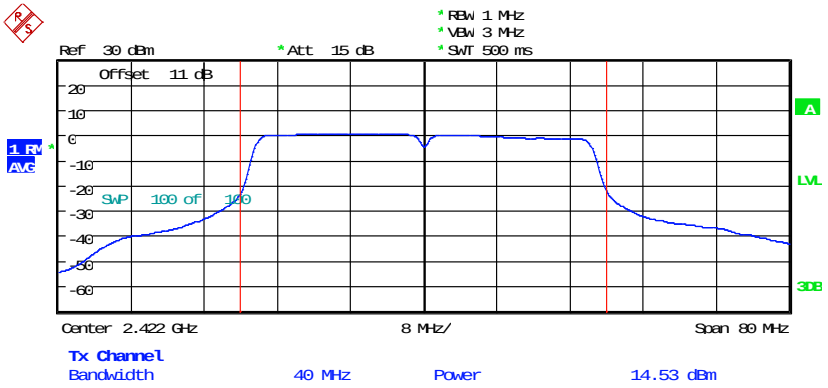
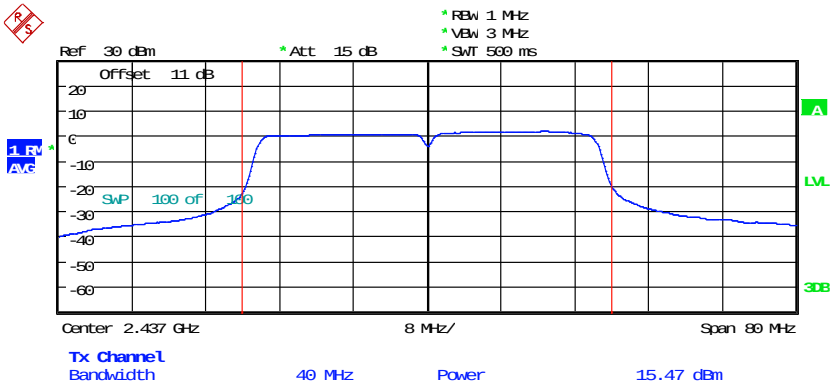


MAX OUTPUT POWER 802.11N 40MHZ CH1

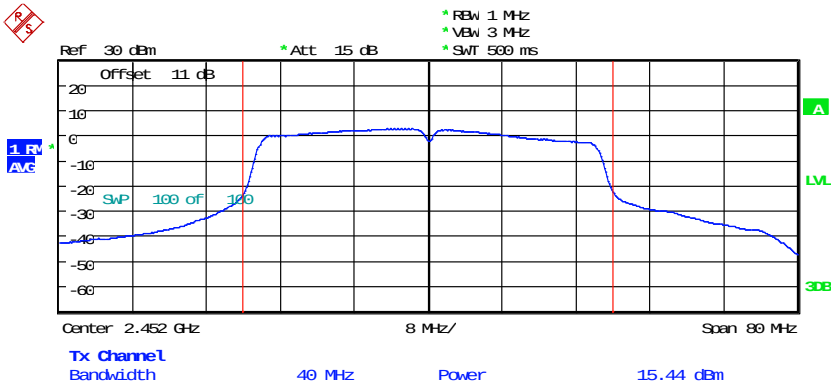
Date: 14.NOV.2019 20:41:32



MAX OUTPUT POWER 802.11N 40MHZ CH4

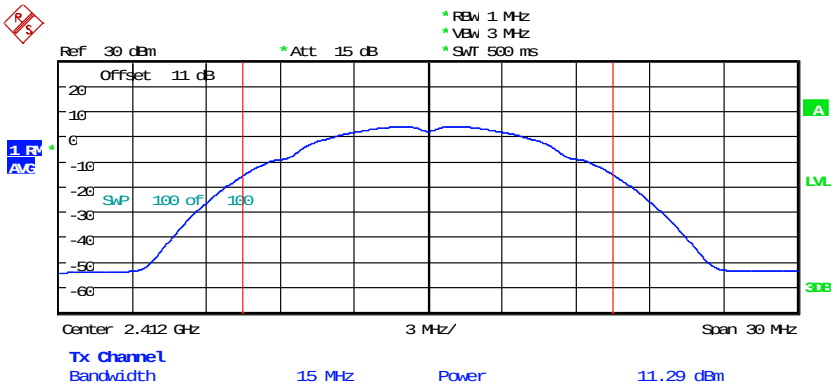
Date: 14.NOV.2019 20:43:19

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

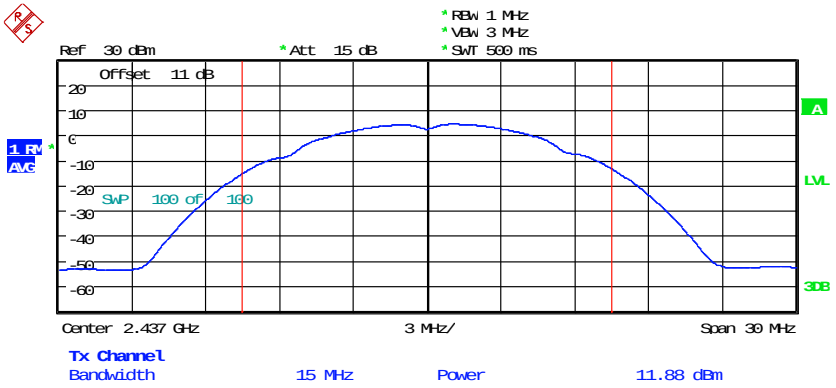


MAX OUTPUT POWER 802.11N 40MHZ CH7
Date: 14.NOV.2019 20:44:40

ANT 2

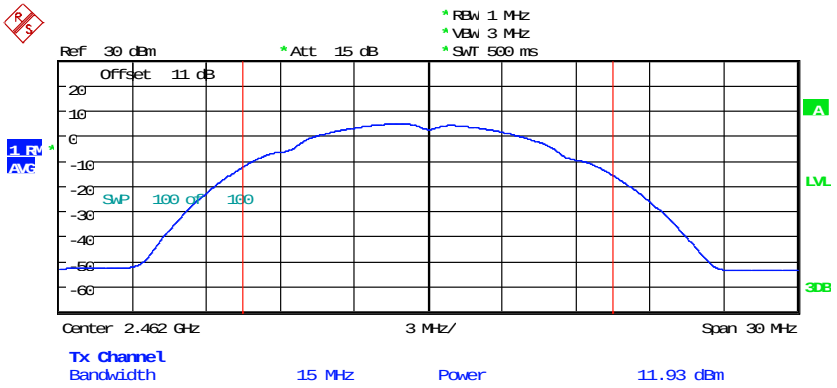


MAX OUTPUT POWER 802.11B CH01
Date: 14.NOV.2019 15:40:44



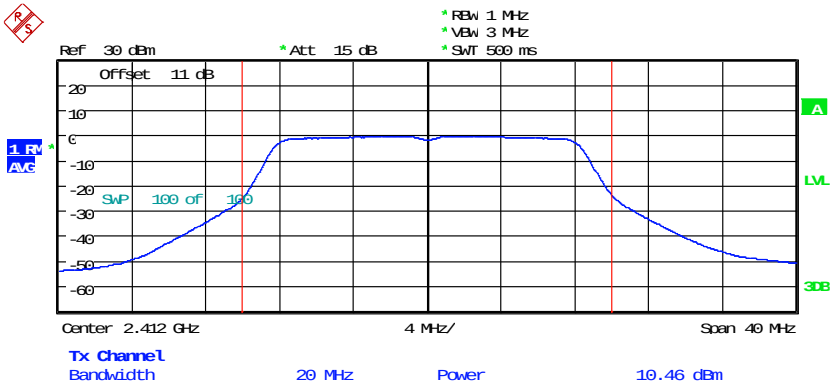
MAX OUTPUT POWER 802.11B CH06

Date: 14.NOV.2019 15:42:12



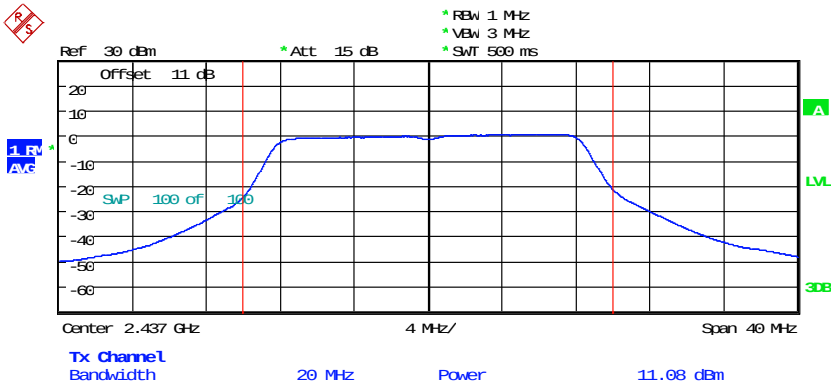
MAX OUTPUT POWER 802.11B CH11

Date: 14.NOV.2019 15:43:48



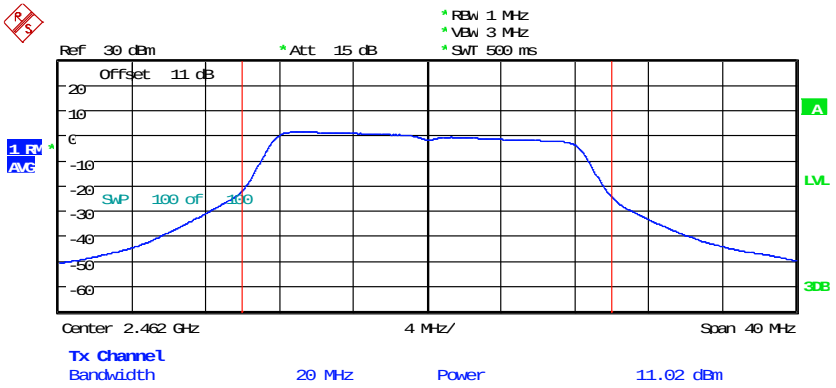
MAX OUTPUT POWER 802.11G CH01

Date: 14.NOV.2019 14:56:18



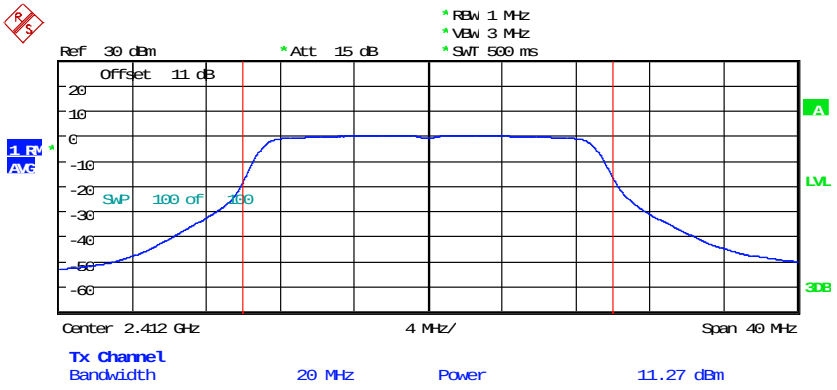
MAX OUTPUT POWER 802.11G CH06

Date: 14.NOV.2019 15:00:20



MAX OUTPUT POWER 802.11G CH11

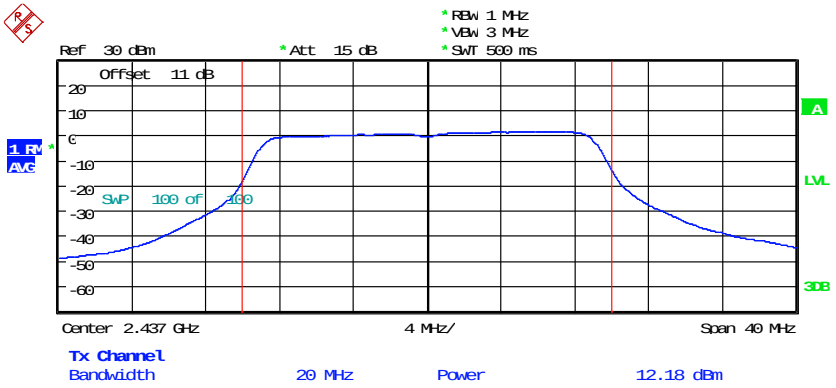
Date: 14.NOV.2019 15:01:54



MAX OUTPUT POWER 802.11N 20M CH01

Date: 14.NOV.2019 15:04:33

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



MAX OUTPUT POWER 802.11N 20M CH06
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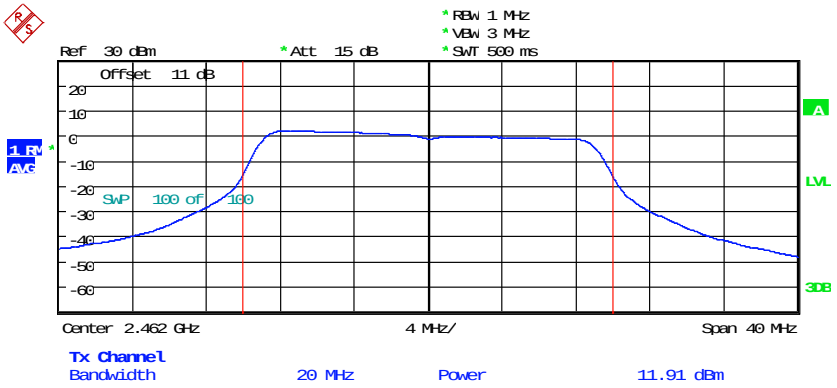
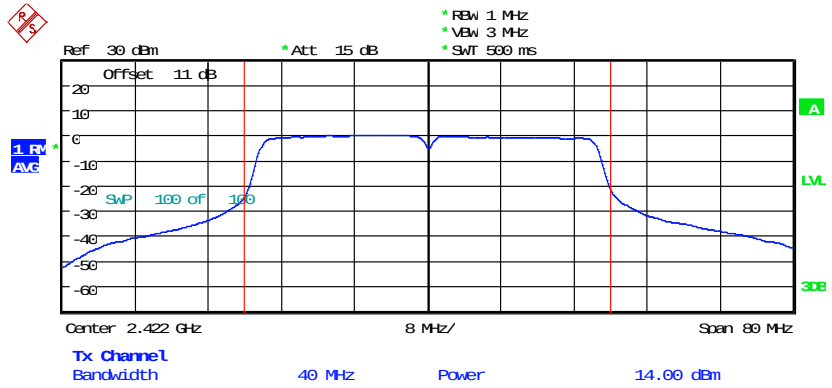
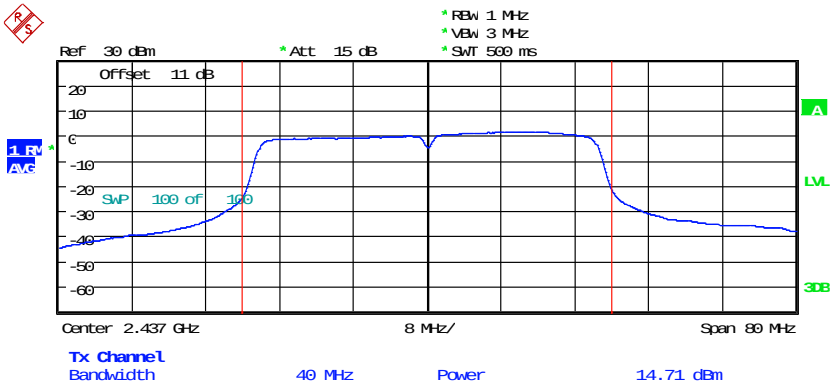


MAX OUTPUT POWER 802.11N 20M CH11
Date: 14.NOV.2019 15:07:33



MAX OUTPUT POWER 802.11N 40MHZ CH1

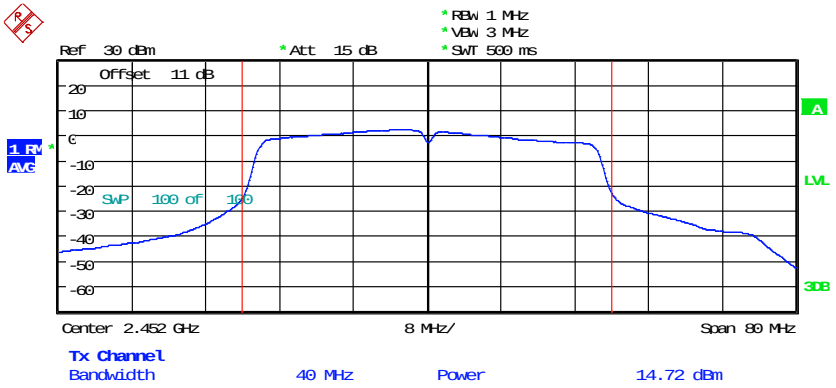
Date: 14.NOV.2019 15:15:33



MAX OUTPUT POWER 802.11N 40MHZ CH4

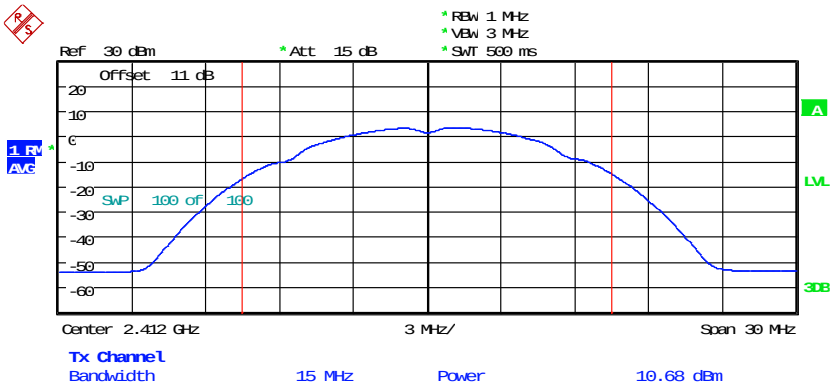
Date: 14.NOV.2019 15:17:09

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

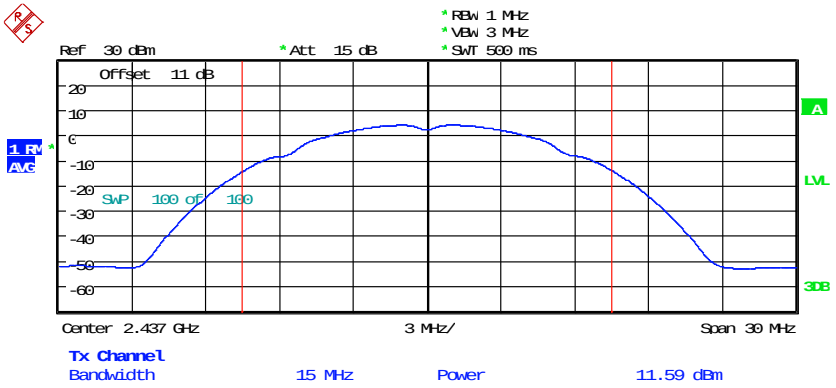


MAX OUTPUT POWER 802.11N 40MHZ CH7
Date: 14.NOV.2019 15:36:01

ANT 3

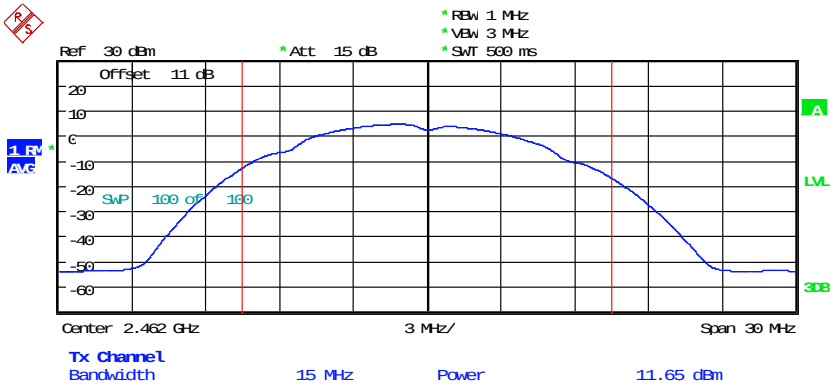


MAX OUTPUT POWER 802.11B CH01
Date: 14.NOV.2019 16:32:43



MAX OUTPUT POWER 802.11B CH06

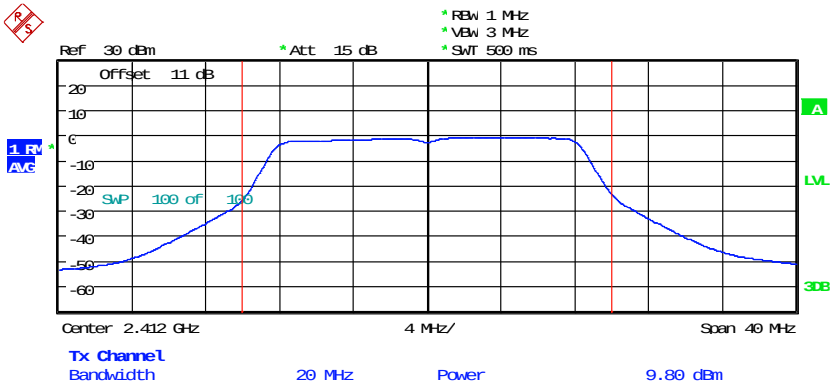
Date: 14.NOV.2019 16:37:43



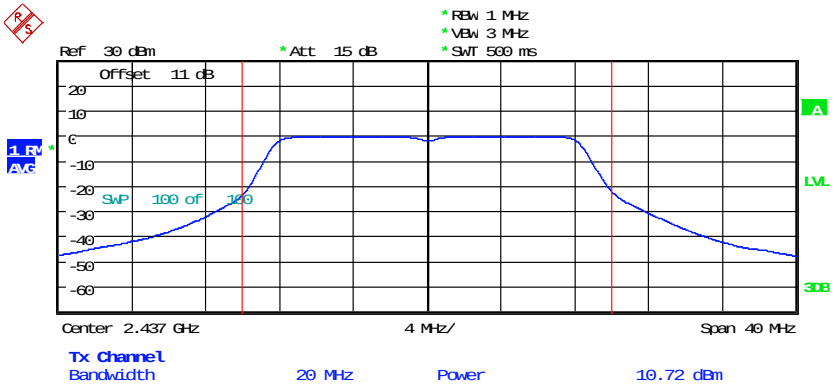
MAX OUTPUT POWER 802.11B CH11

Date: 14.NOV.2019 16:40:24

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

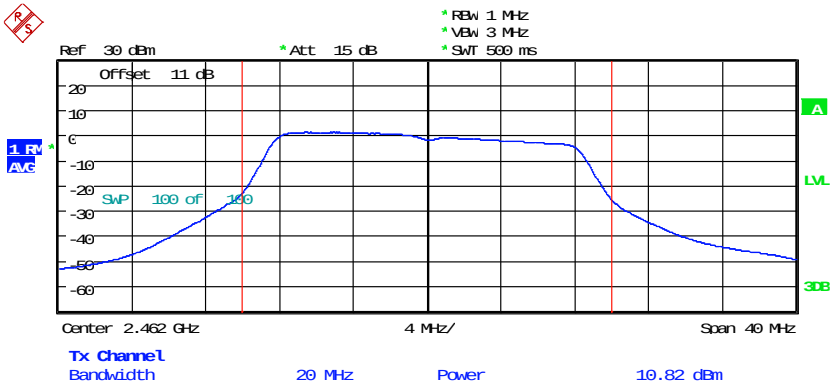


MAX OUTPUT POWER 802.11G CH01
Date: 14.NOV.2019 16:47:06



MAX OUTPUT POWER 802.11G CH06
Date: 14.NOV.2019 16:48:39

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



MAX OUTPUT POWER 802.11G CH11
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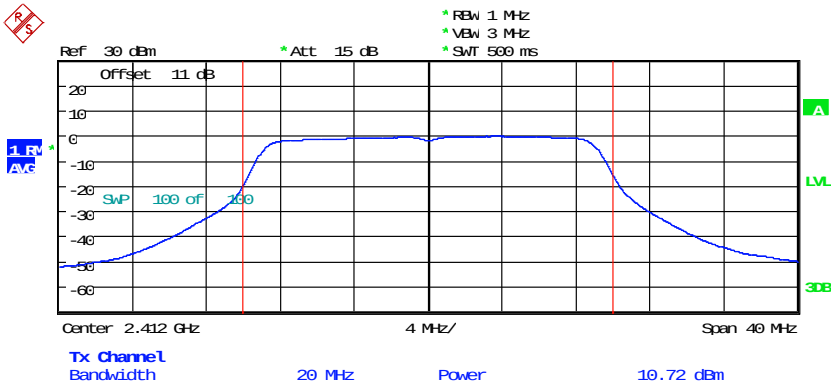
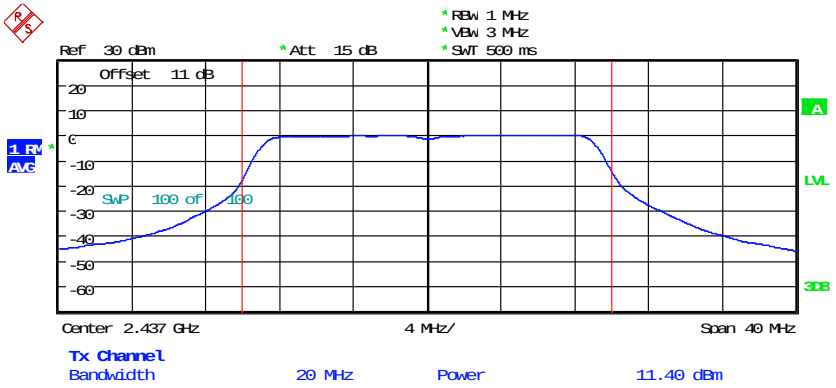
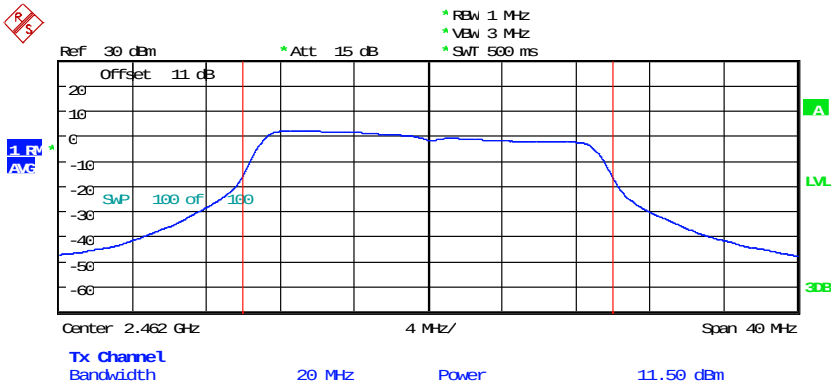


MAX OUTPUT POWER 802.11N 20MHZ CH1
Date: 14.NOV.2019 16:59:59

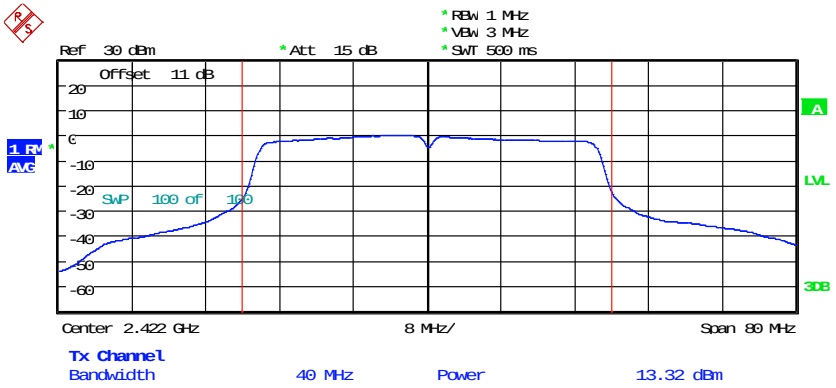
Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



MAX OUTPUT POWER 802.11N 20MHZ CH6
Date: 14.NOV.2019 16:55:59

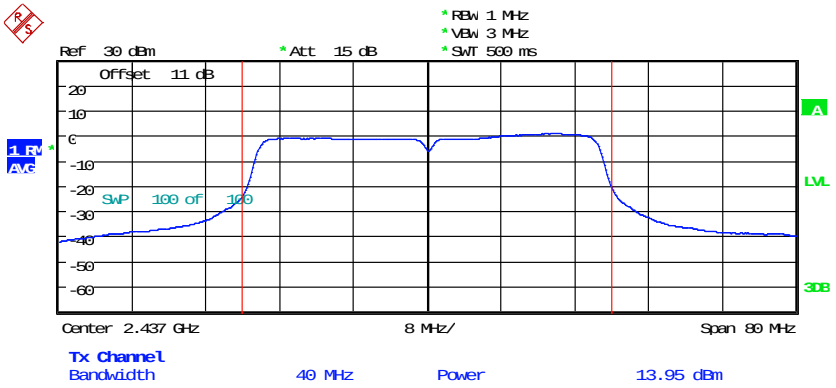


MAX OUTPUT POWER 802.11N 20MHZ CH11
Date: 14.NOV.2019 17:04:38



MAX OUTPUT POWER 802.11N 40MHZ CH1

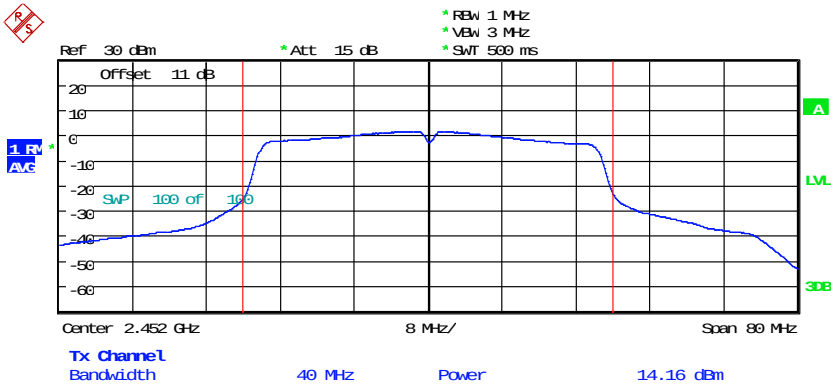
Date: 14.NOV.2019 21:23:37



MAX OUTPUT POWER 802.11N 40MHZ CH4

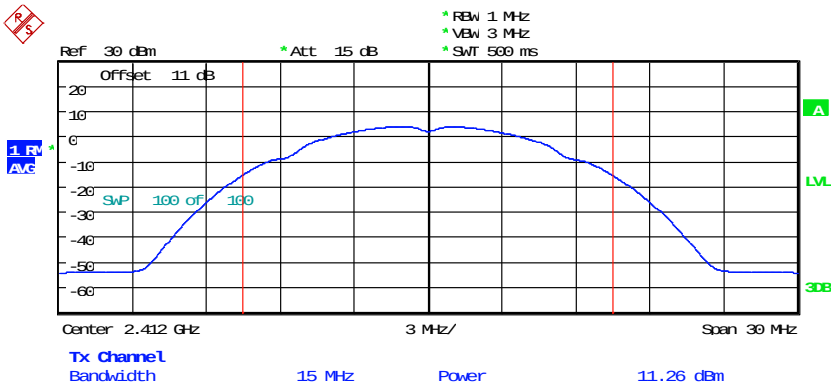
Date: 14.NOV.2019 21:27:00

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

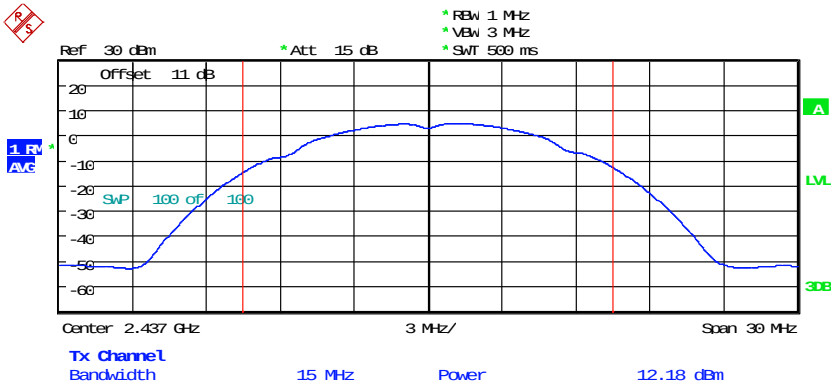


MAX OUTPUT POWER 802.11N 40MHZ CH7
Date: 14.NOV.2019 21:28:54

ANT 4

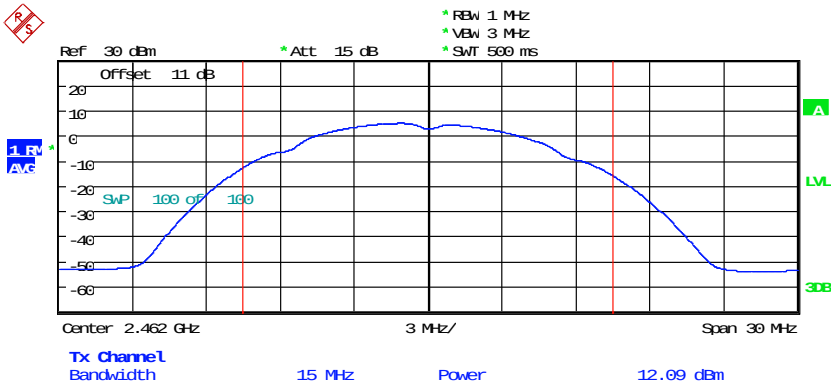


MAX OUTPUT POWER 802.11B CH1
Date: 14.NOV.2019 20:23:30



MAX OUTPUT POWER 802.11B CH6

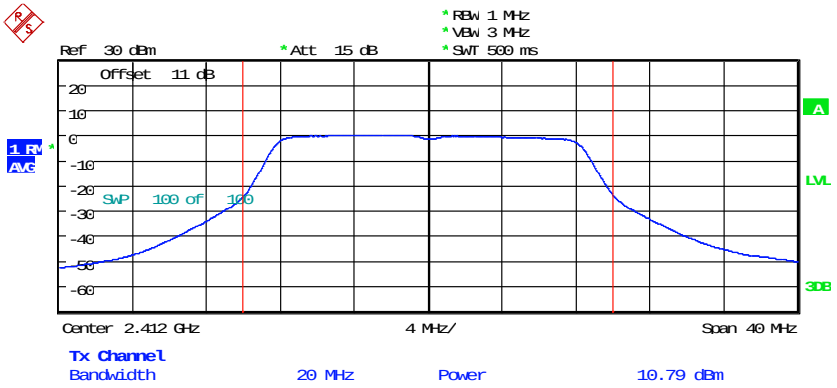
Date: 14.NOV.2019 20:25:33



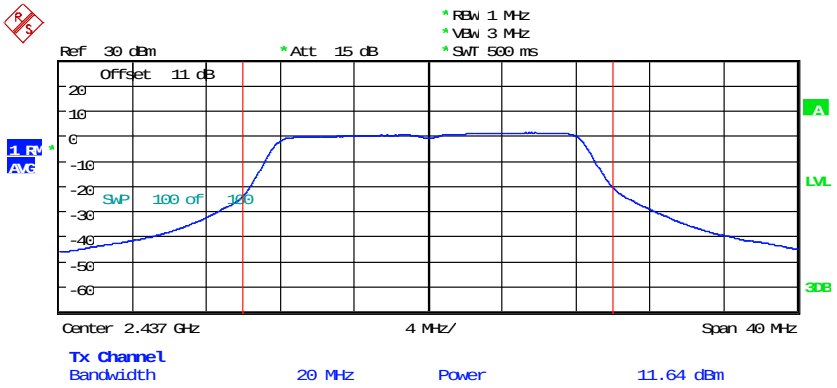
MAX OUTPUT POWER 802.11B CH11

Date: 14.NOV.2019 20:27:27

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

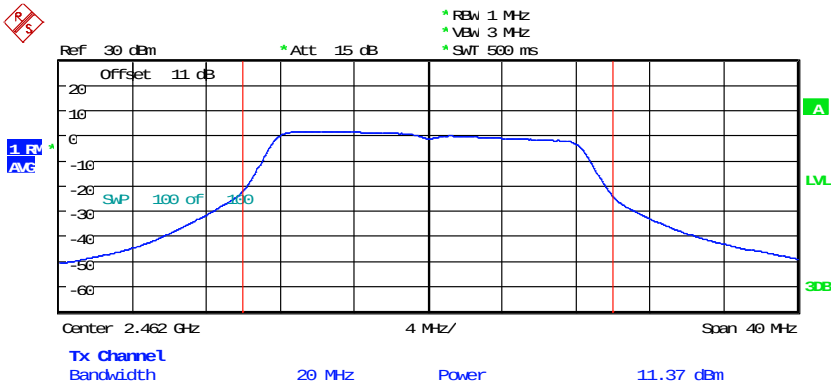


MAX OUTPUT POWER 802.11G CH1
Date: 14.NOV.2019 20:18:09

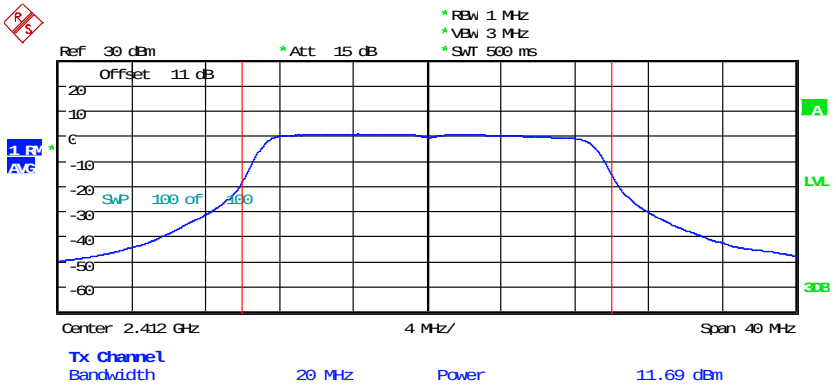


MAX OUTPUT POWER 802.11G CH6
Date: 14.NOV.2019 20:19:36

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

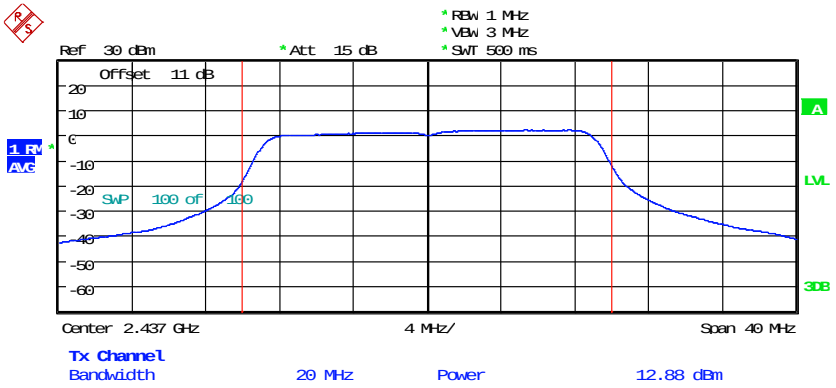


MAX OUTPUT POWER 802.11G CH11
Date: 14.NOV.2019 20:21:31



MAX OUTPUT POWER 802.11N 20MHZ CH1
Date: 14.NOV.2019 19:52:49

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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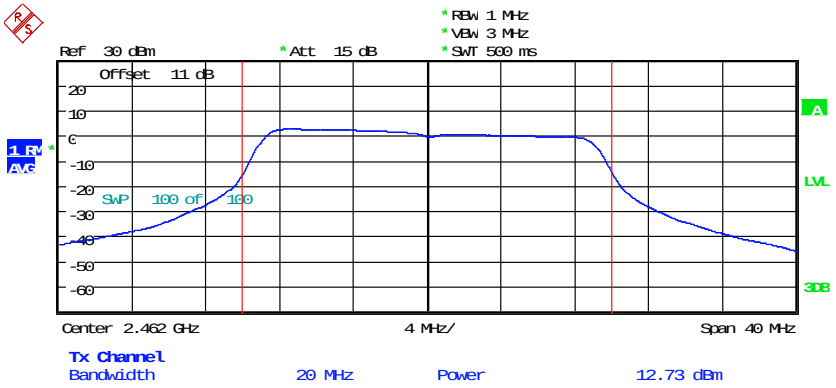
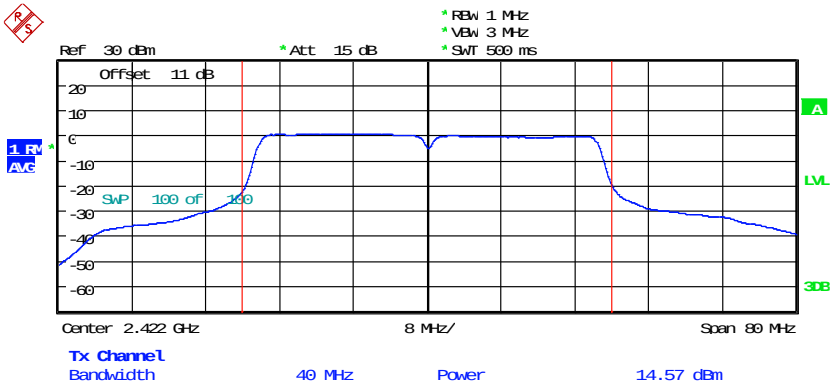
Date: 14.NOV.2019 19:54:35



MAX OUTPUT POWER 802.11N 20MHZ CH11
Date: 14.NOV.2019 20:16:00

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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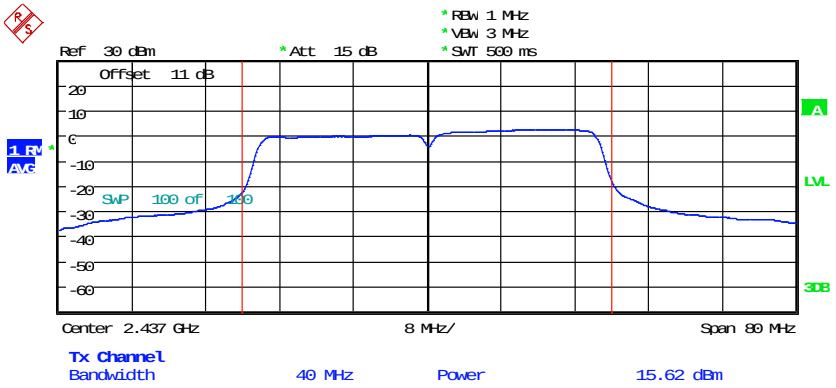

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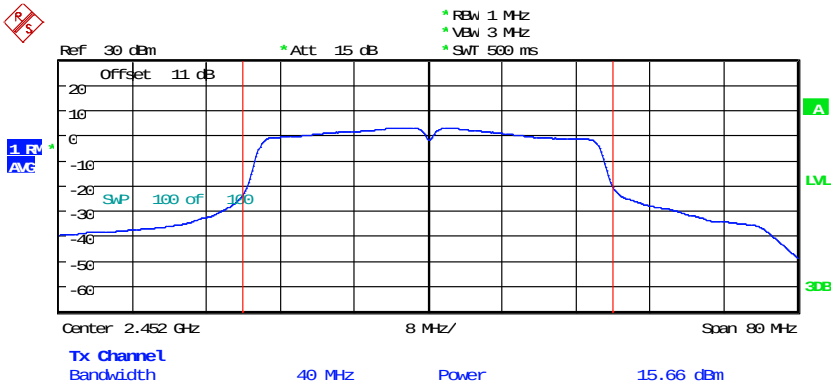
Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

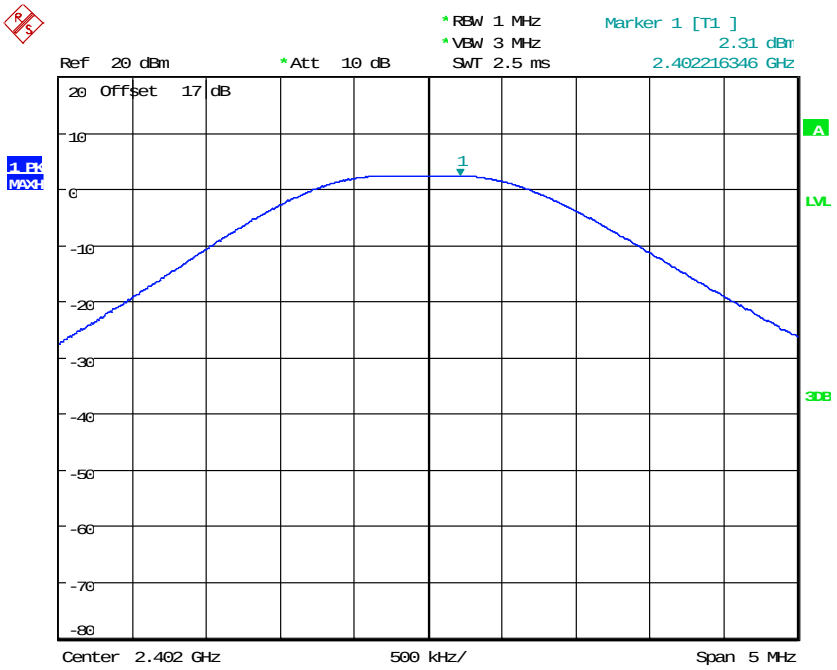


MAX OUTPUT POWER 802.11N 40MHZ CH7
Date: 14.NOV.2019 19:50:22

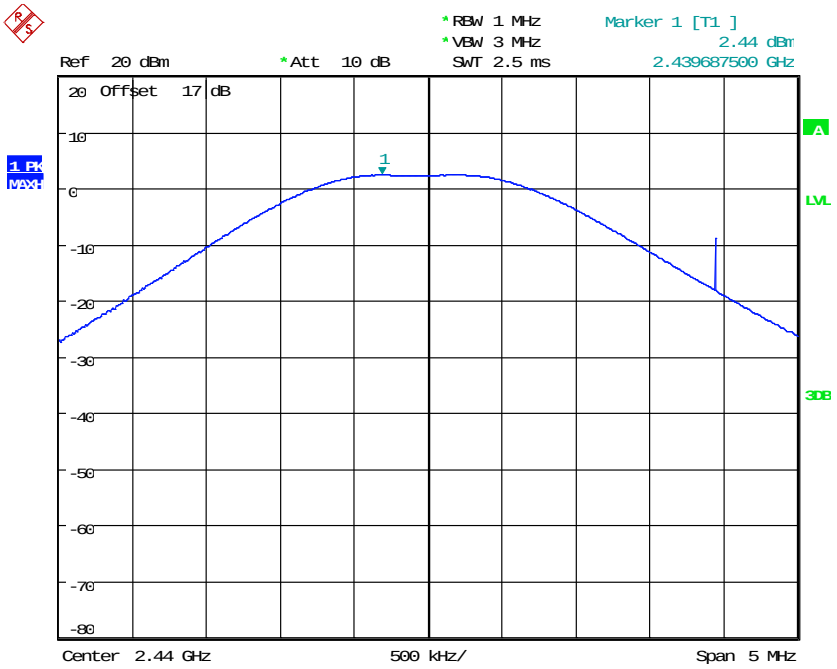
ANT 1	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	15.31	20.18	19.63	11.85	13.05	12.93
802.11n 40MHz	28.38	35.24	34.99	14.53	15.47	15.44
ANT 2	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	13.4	16.52	15.52	11.27	12.18	11.91
802.11n 40MHz	25.12	29.58	29.65	14.00	14.71	14.72
ANT 3	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	11.80	13.80	14.13	10.72	11.40	11.50
802.11n 40MHz	21.48	24.83	26.06	13.32	13.95	14.16
ANT 4	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	14.76	19.41	18.75	11.69	12.88	12.73
802.11n 40MHz	28.64	36.48	36.81	14.57	15.62	15.66
Combine	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	55.27	69.91	68.03	17.42	18.45	18.33
802.11n 40MHz	103.62	126.13	127.51	20.15	21.01	21.06

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

BLE



MAX OUTPUT POWER BT4.0 CH00
Date: 16.NOV.2019 22:09:16



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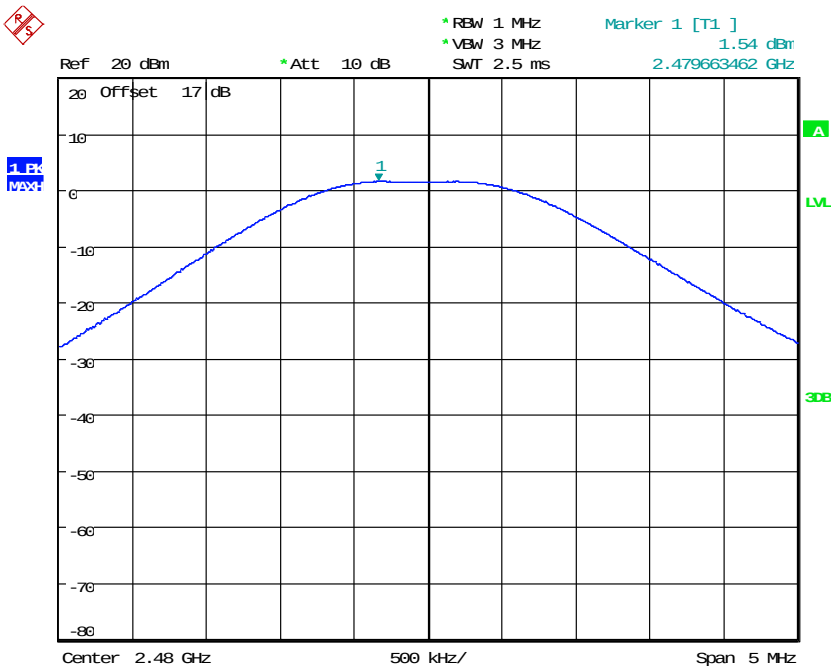
Date: 16.NOV.2019 22:19:18

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



MAX OUTPUT POWER BT4.0 CH39
Date: 16.NOV.2019 22:22:58

Limits:

Frequency MHz	Power dBm
902 - 928	30
2400 – 2483.5	30
5725 – 5850	30

In case of employing transmitter antennas having antenna gain ＞ 6 dBi and using fixed point-to point operation consider §15.247 (b)(4)

Test equipment used: ETSTW-RE 055, ETSTW-RE 050, ETSTW-RE 064

3.2 Equivalent Isotropic Radiated Power (EIRP)

FCC Rule: 15.247(b)(3)

WLAN
EIRP = max. conducted output power + antenna gain
EIRP = 21.06 dBm + (9.73 dBi [antenna gain claimed by manufacturer] = 30.79 dBm = 1199.4993 mW

BLE
EIRP = max. conducted output power + antenna gain
EIRP = 2.44 dBm + (4 dBi [antenna gain claimed by manufacturer] = 6.44 dBm = 4.4055 mW

3.3 Exemption Limits for Routine Evaluation according to 47 CFR FCC Part 2 Subpart J, section 2.1091

FCC OET Bulletin 65 Edition 97.01 determines the equations for predicting RF fields and applicable limits.
The prediction for power density in the far-field but will over-predict power density in the near field, where it could be used for walking a “worst case” or conservative prediction.

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 levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20 cm normally can be maintained between the user and the device.

MPE Calculation Method

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
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

E = Electric field (V/m) P = output power (W) G = EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)
The formula can be changed to mW/cm^2.

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

WLAN
Established separation distance is 20 cm.

Operating frequency band: 802.11b, g, n 20MHz: 2412-2462 MHz, 802.11n 40MHz: 2422-2452 MHz,

The product meets RF exposure requirement.
Because the power density of 0.2385 mW/cm^2 at 2452 MHz is below the power density limit of 1 mW/cm^2.

BLE
Established separation distance is 20 cm.

Operating frequency band: 2402-2480 MHz

The product meets RF exposure requirement.
Because the power density of 0.0009 mW/cm^2 at 2440 MHz is below the power density limit of 1 mW/cm^2.

Limits:

Limit for General Population / Uncontrolled Exposure	
Frequency (MHz)	Power Density (mW/cm^2)
1500 – 100.000	1.0

3.4 Transmitter Radiated Emissions in Restricted Bands

FCC Rules: 15.247 (d), 15.205, 15.209, 15.35
Radiated emission measurements were performed from 30 MHz to 26500 MHz.
For radiated emission tests, the analyzer setting was as followings:

Frequency ≦ 1 GHz, RBW:100 kHz, VBW: 100 kHz (Peak measurements)
Frequency ＞1 GHz, RBW: 1 MHz, VBW: 1 MHz (Peak measurements)
Frequency ＞1 GHz , RBW:1 MHz , VBW: 10 Hz (Average measurements)

Limits.

For frequencies below 1GHz:

Frequency of Emission (MHz)	Field strength (microvolts/meter)	Field Strength (dB microvolts/meter)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above	500	54.0

For frequencies above 1GHz (Average measurements).

Guidance on Measurement of Digit Transmission Systems:
“If the emission is pulsed, modify the unit for continuous operation, use the setting shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.”

The correction factor, based on the total channel dwell time in a 100 ms period, may be mathematically applied to a measurement made with an average detector, to further reduce the value.

Duty cycle correction = 20 log (dwell time/ 100ms)

Note: No duty cycle correction was added to the reading of this EUT.

Explanation: See attached diagrams in Appendix.

3.5 Spurious Emissions (tx)

Spurious emission was measured with modulation (declared by manufacturer).

In any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB 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. 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))

FCC Rule: 15.247(c), 15.35
For out of band emissions that are close to or that exceed the 20 dB attenuation requirement described in the specification, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the general radiated emission requirement.

Limits:

For frequencies above 1GHz (Peak measurements).
Modified Limit for peak according to 15.35 (b) = Max Permitted average Limits + 20dB

For frequencies above 1GHz (Average measurements).
Max. reading – 20dB

Max. reading – 20 dB
Guidance on Measurement of Digit Transmission Systems:
“If the emission is pulsed, modify the unit for continuous operation, use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.”

The correction factor, based on the total channel dwell time in a 100 ms period, may be mathematically applied to a measurement made with an average detector, to further reduce the value.

Duty Cycle correction = 20 log (dwell time/100ms)

Note: No duty cycle correction was added to the reading of EUT.

SAMPLE CALCULATION OF LIMIT. All results will be updated by an automatic measuring system in accordance with point 2.3.

Calculation of test results:
Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.

The peak and average spurious emission plots was measured with the average limits.
In the Table being listed the critical peak and average value and exhibit the compliance with the above calculated Limits.

If in the column's correction factor states a value then the max. Field strength in the same row is corrected by a value gained from the "Correction Factor".

Summary table with radiated data of the test plots

Model: ion8i Date: --
Mode: -- Temperature: -- °C Engineer: --
Polarization: -- Humidity: -- %

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Result (dBuV/m) Ave.	Limit (dBuV/m) Peak	Limit (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--

Note

1. **Correction Factor = Antenna factor + Cable loss - Preamplifier**
2. **The formula of measured value as: Test Result = Reading + Correction Factor**
3. **Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average**
4. **All not in the table noted test results are more than 20 dB below the relevant limits.**
5. **After evaluated, the test result in this report adopt the worst case to measure, please see attached diagrams in appendix.**

TEST RESULT (Transmitter): The unit DOES meet the FCC requirements.

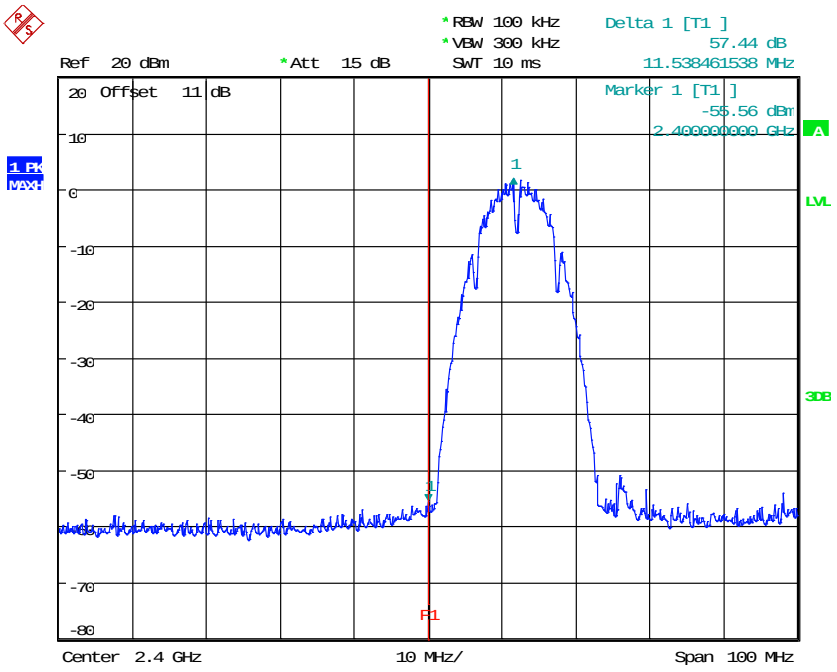
Test equipment used: ETSTW-RE 030, ETSTW-RE 111, ETSTW-RE 088, ETSTW-RE 018, ETSTW-RE 064

3.6 Radiated Emission on the band edge

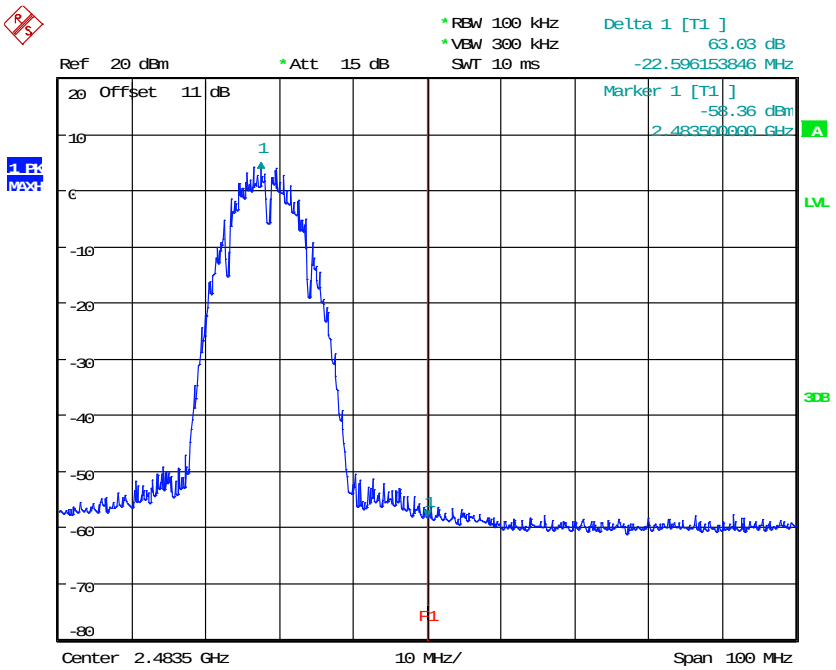
According to FCC rules part 15 subpart C §15.247(d) in any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required.

In addition radiated emission which fall in the restricted bands, as defined in section 15.205(a), must also with the radiated emission limits.

WLAN
ANT 1



BANDEDGE 802.11B CH01
Date: 13.NOV.2019 17:27:13



BANDEDGE 802.11B CH11

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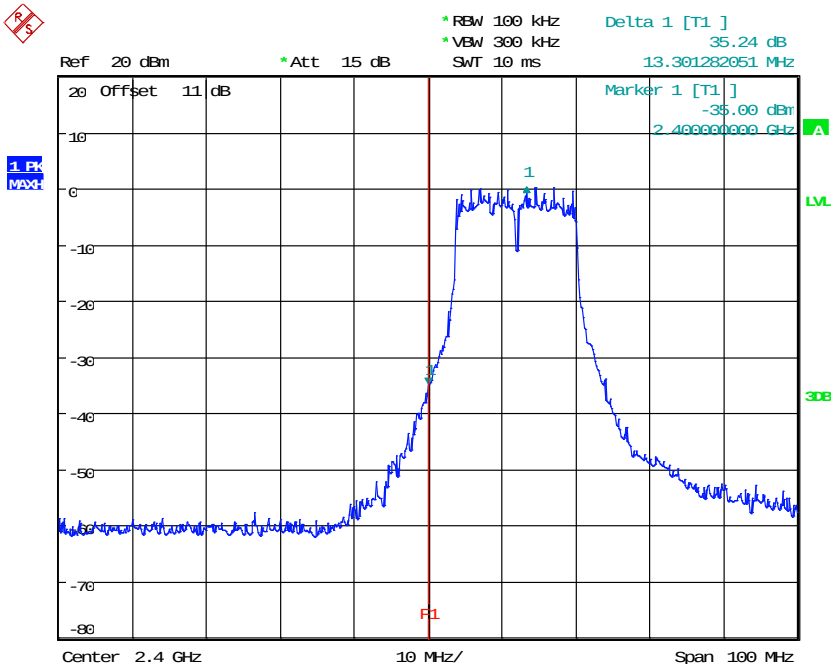

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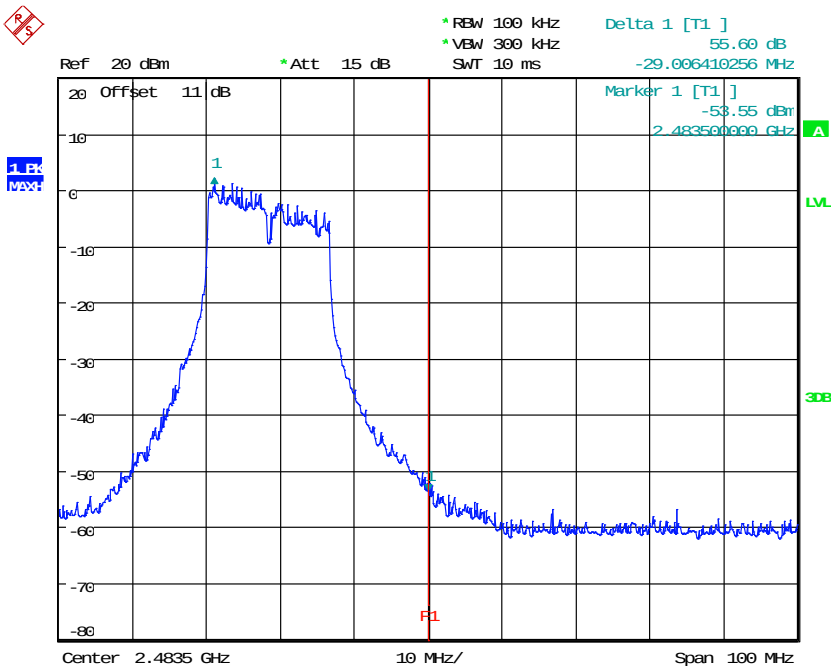

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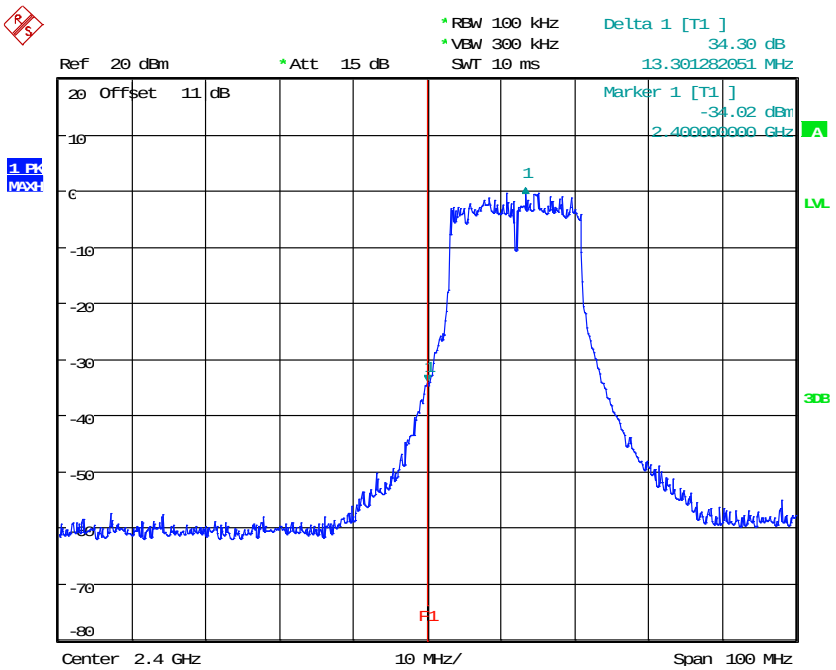

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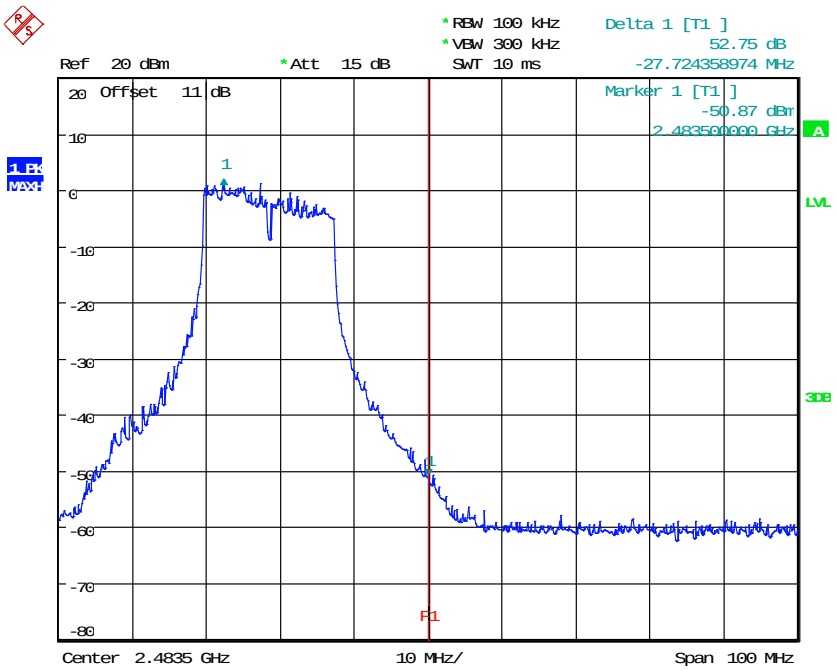
Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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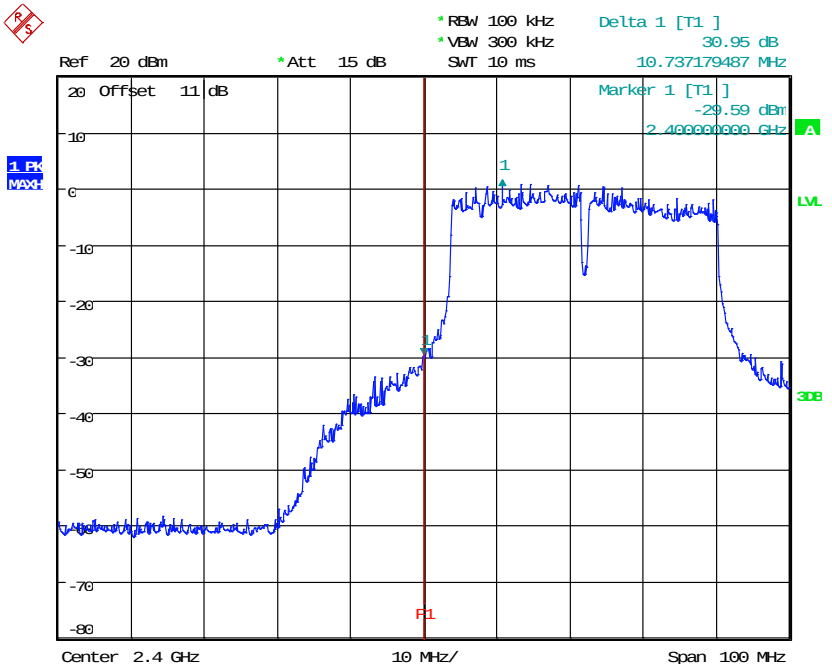

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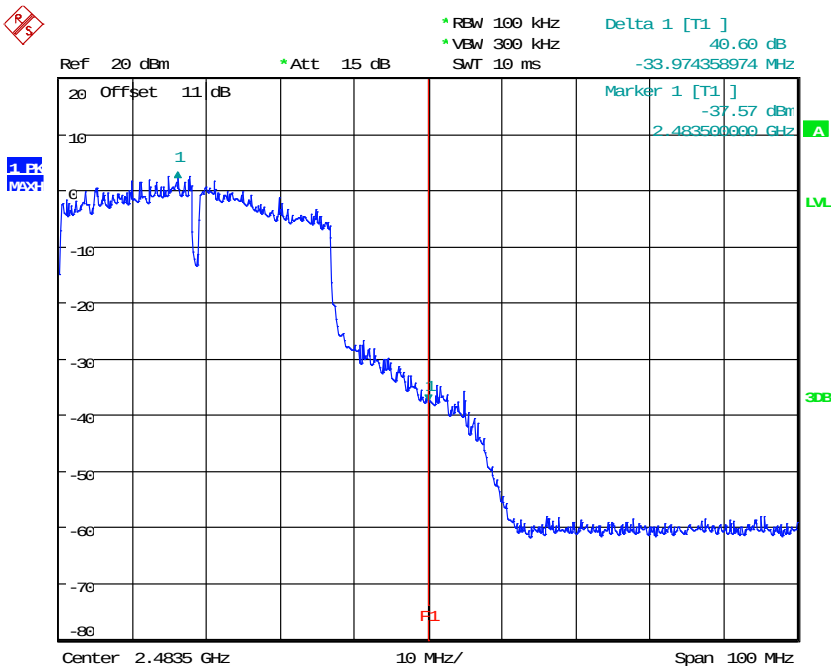

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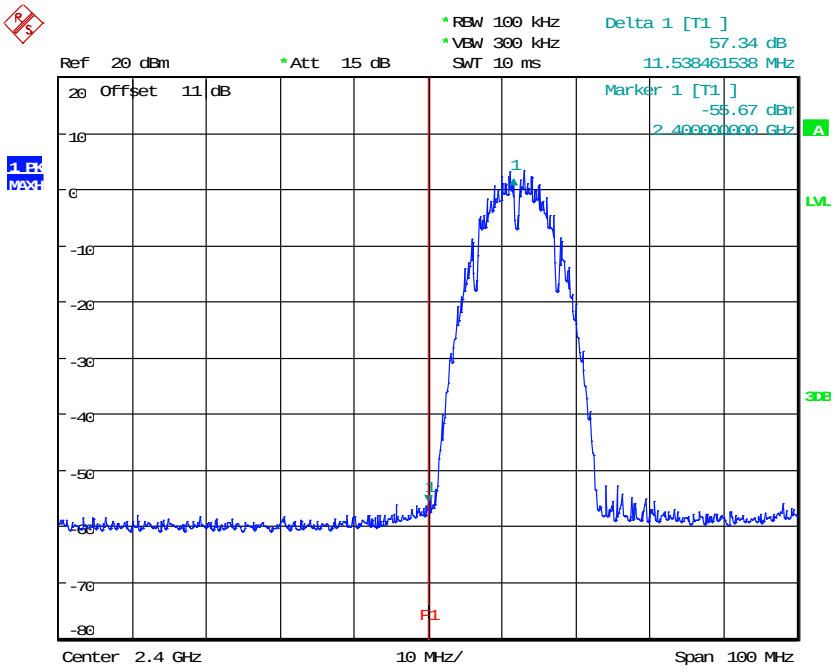
ANT 2



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Date: 14.NOV.2019 14:04:58

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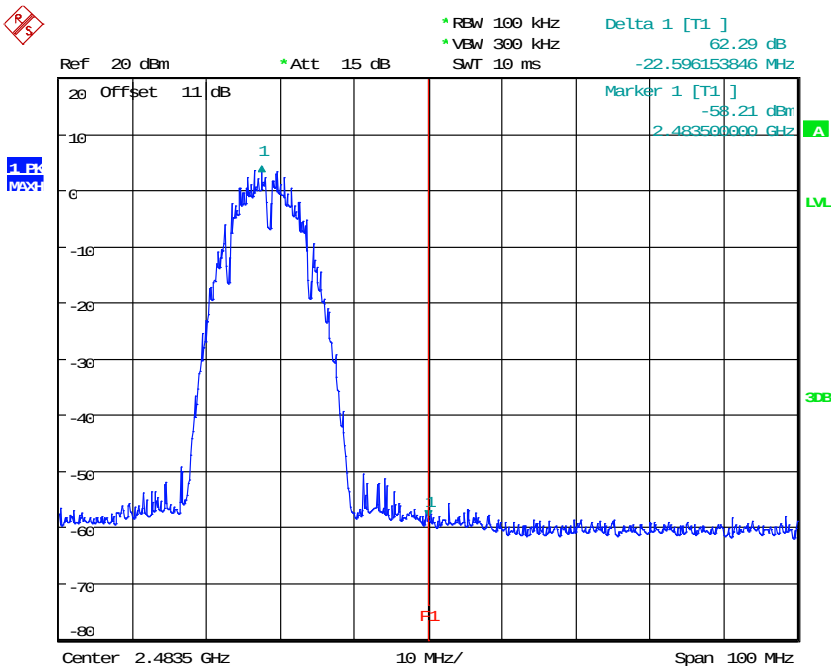

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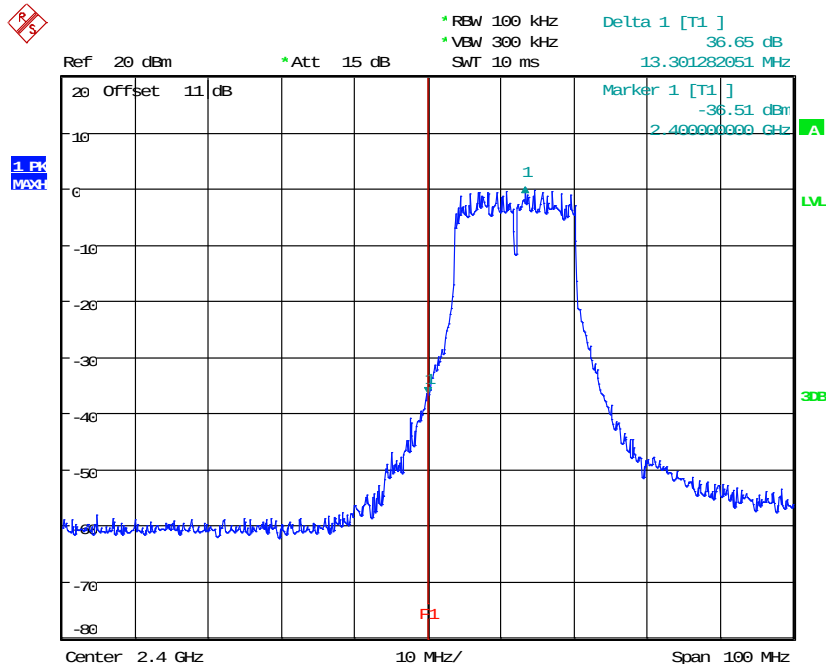
Date: 14.NOV.2019 14:09:02



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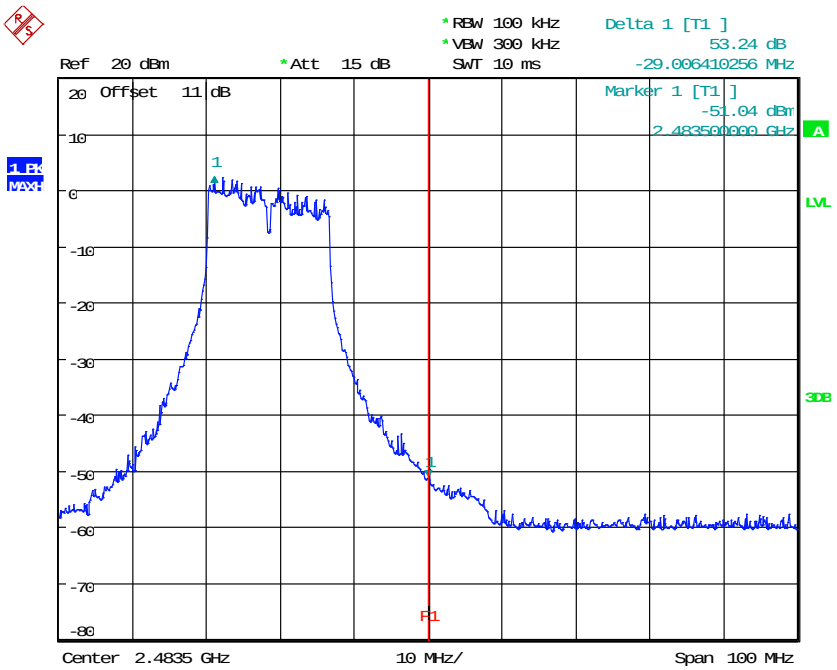

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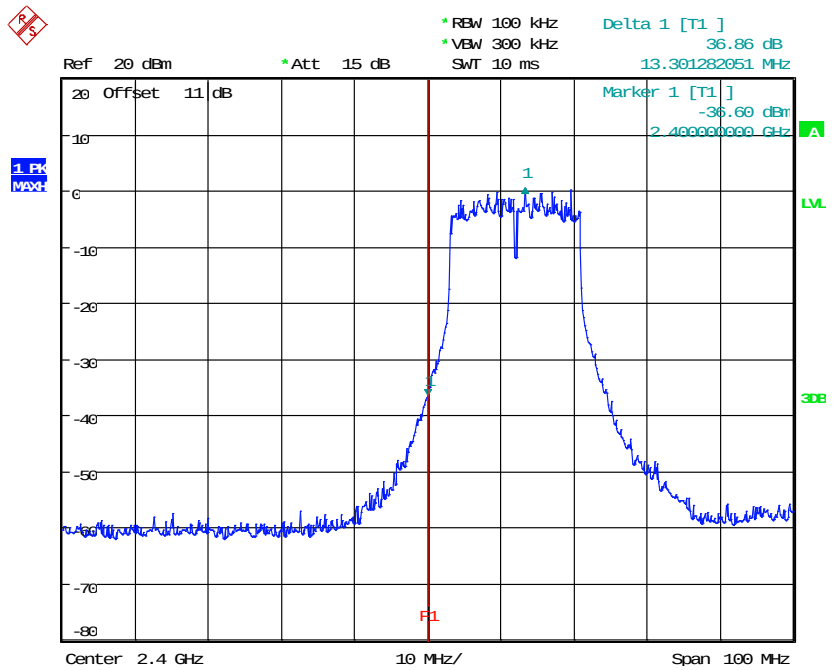

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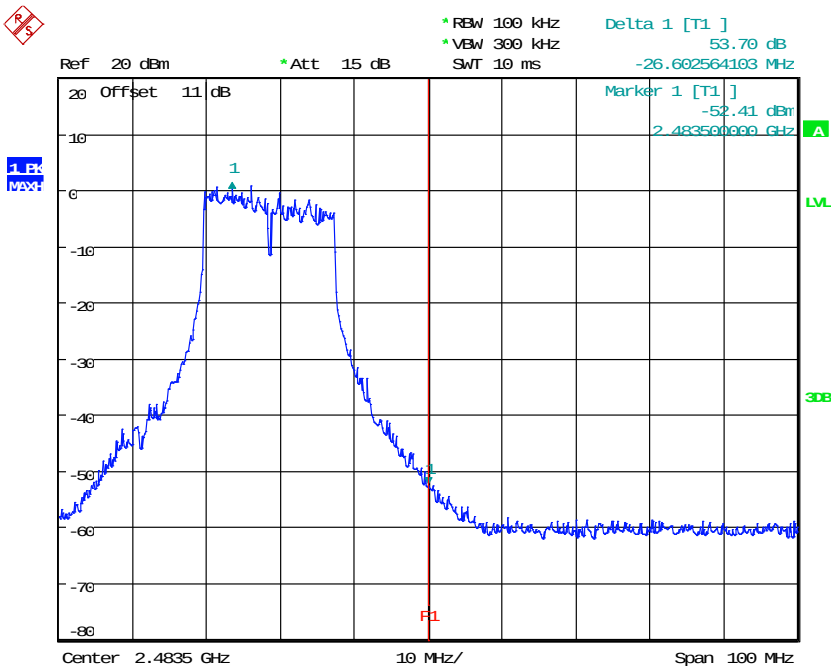
Date: 14.NOV.2019 14:20:35

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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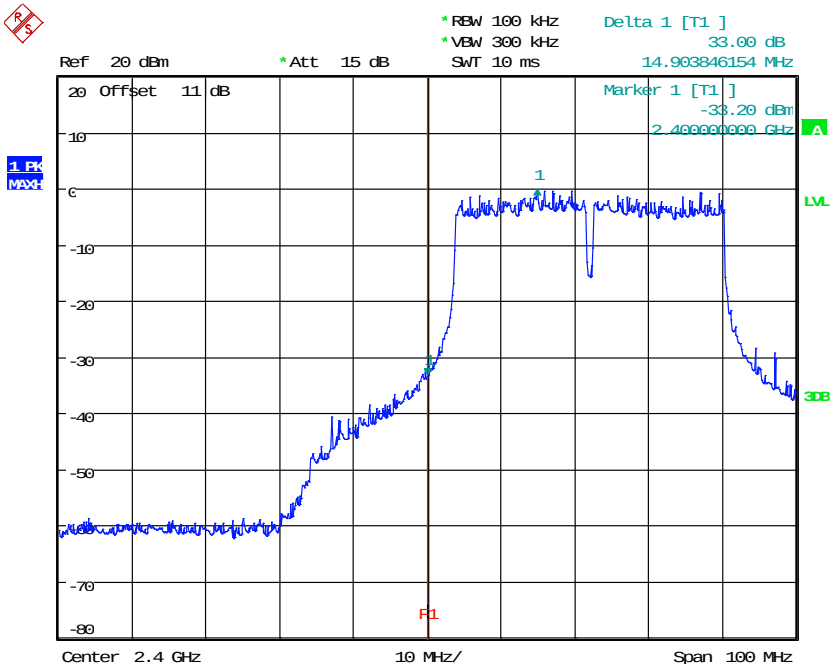

BANDEDGE 802.11N 40MHZ CH01
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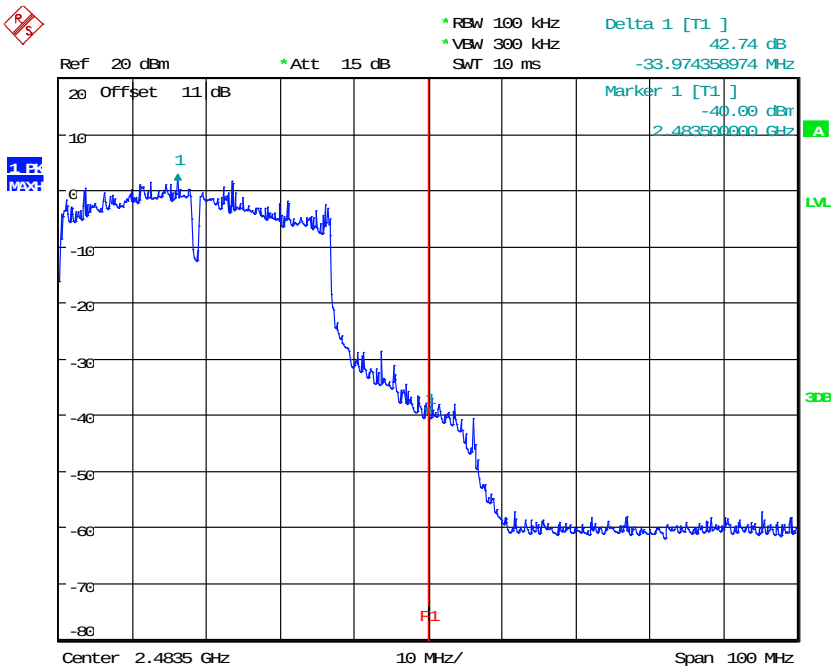

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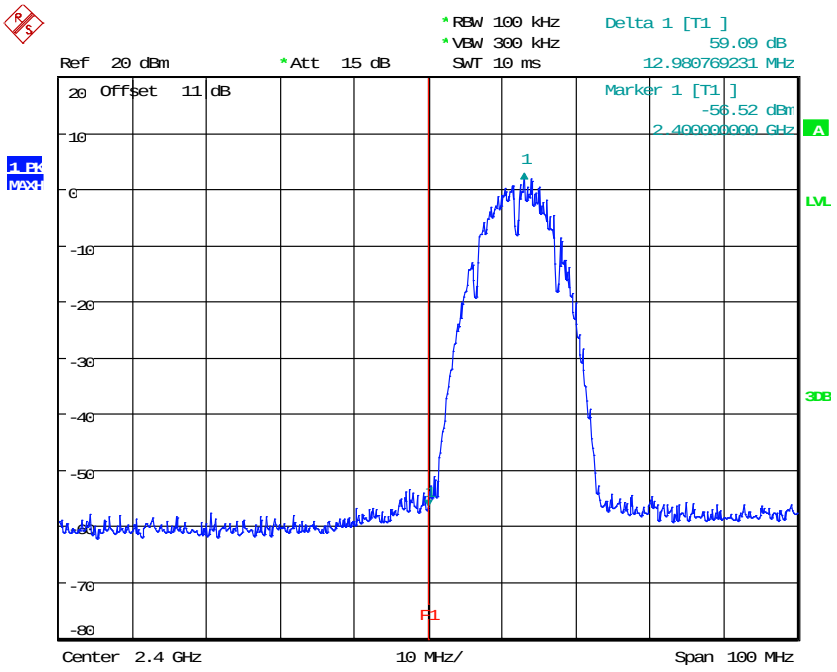
ANT 3



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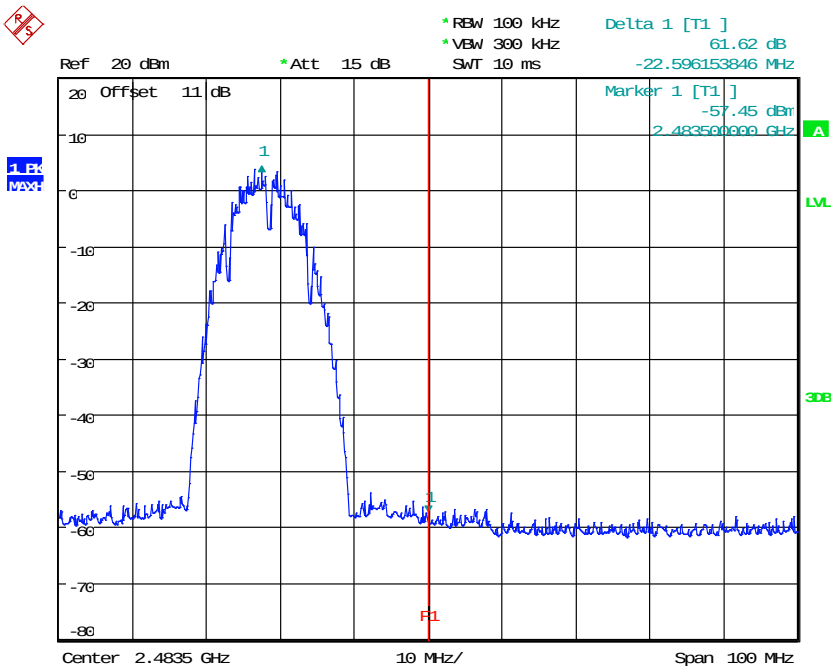
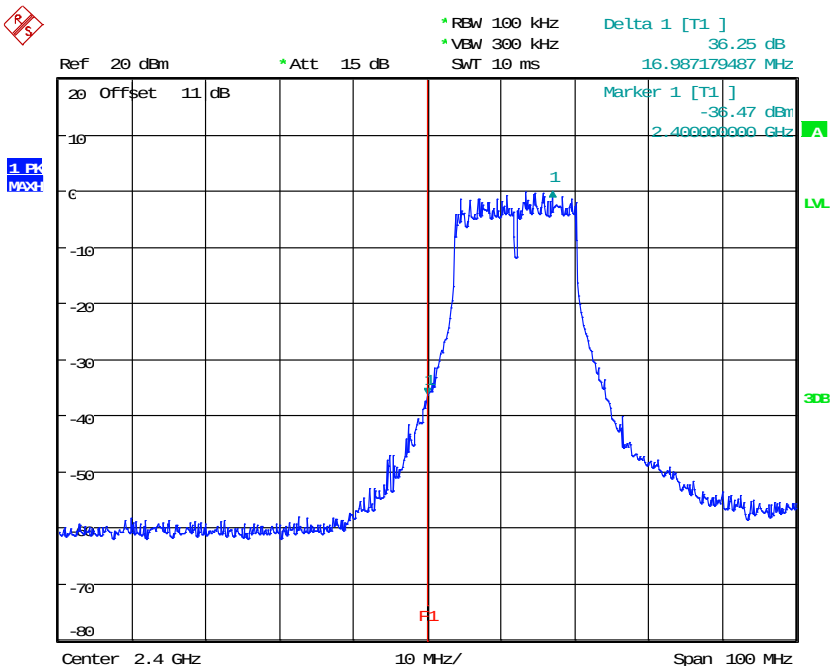


BANDEDGE 802.11B CH11

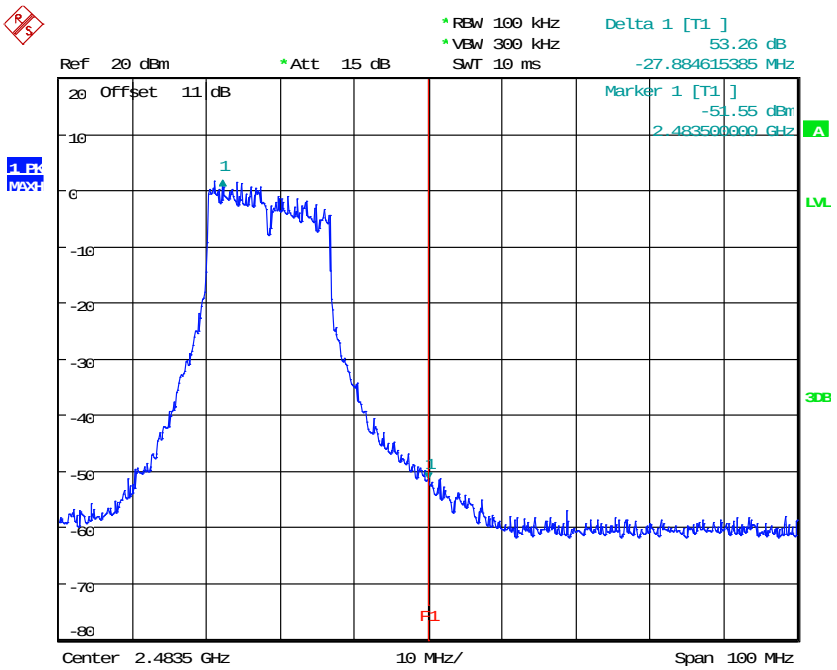
Date: 14.NOV.2019 16:00:24



BANDEDGE 802.11G CH01

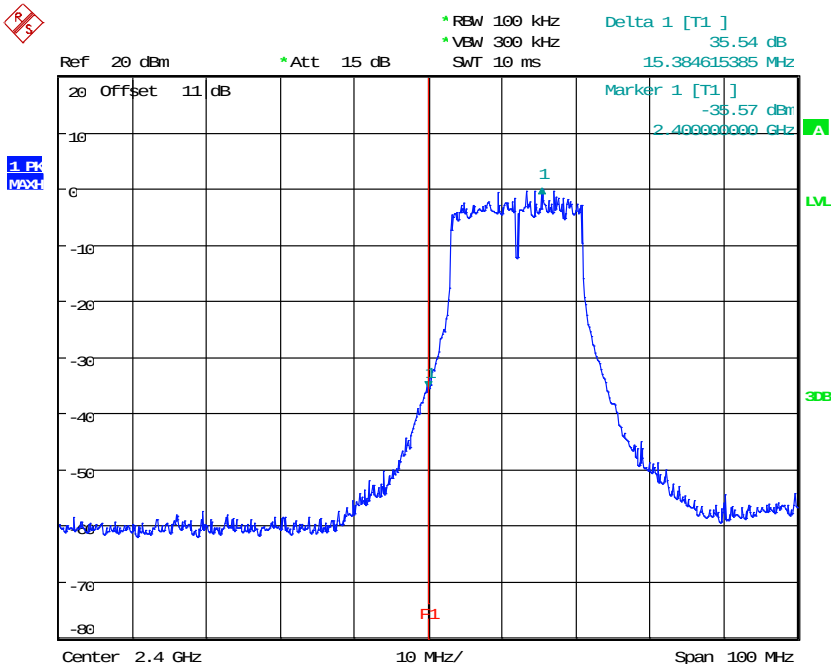
Date: 14.NOV.2019 16:02:00

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



BANDEDGE 802.11G CH11

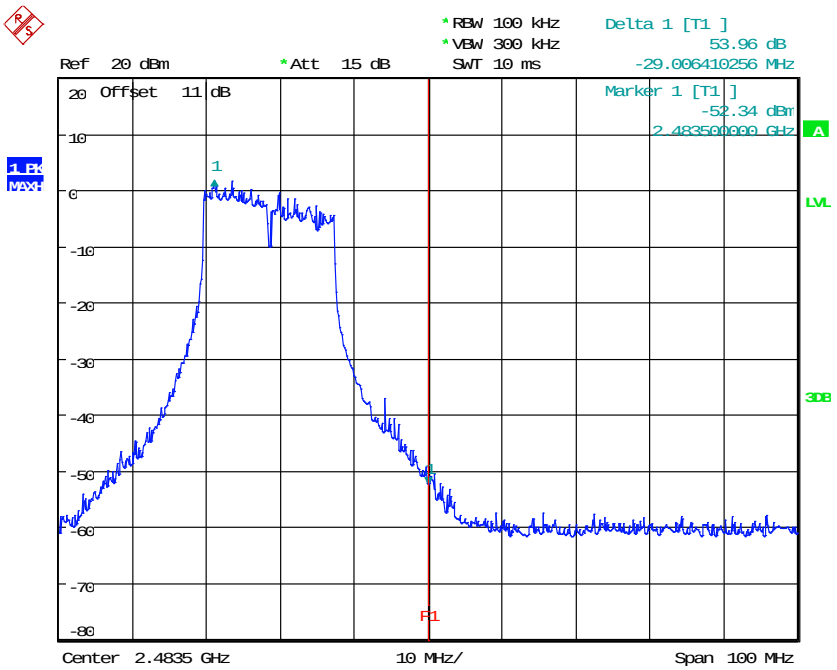
Date: 14.NOV.2019 16:20:00



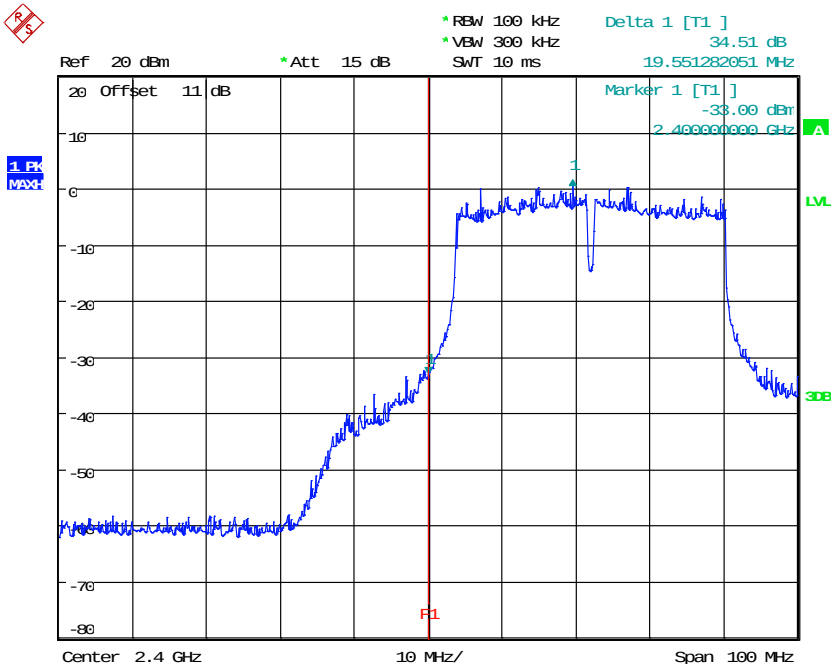
BANDEDGE 802.11N 20MHZ CH01

Date: 14.NOV.2019 16:21:03

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

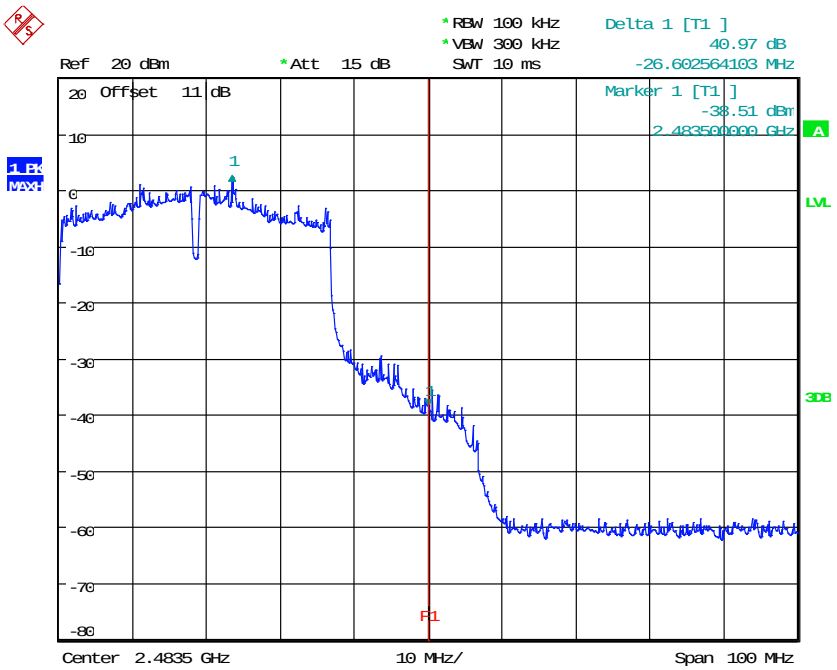


BANDEDGE 802.11N 20MHZ CH11
Date: 14.NOV.2019 16:23:18



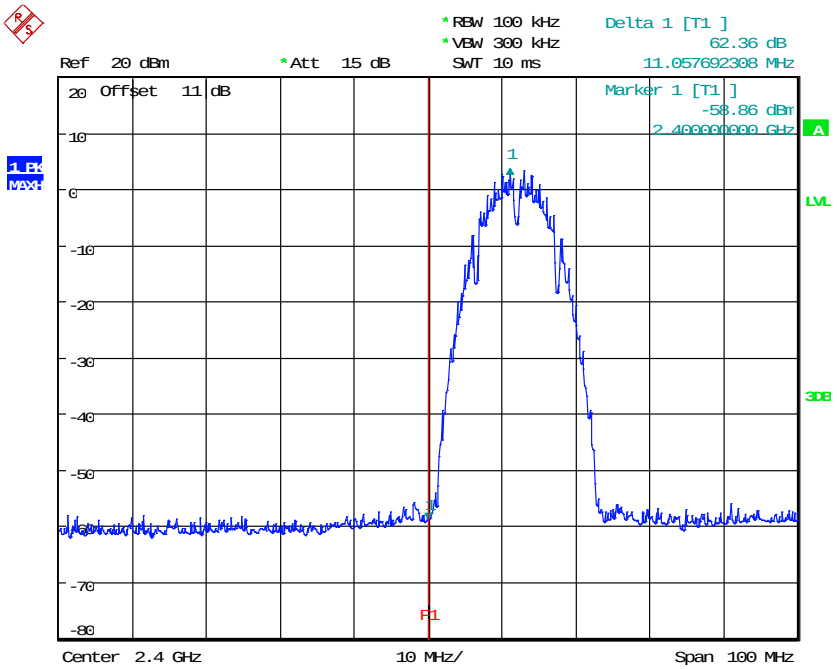
BANDEDGE 802.11N 40MHZ CH01
Date: 14.NOV.2019 16:24:33

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



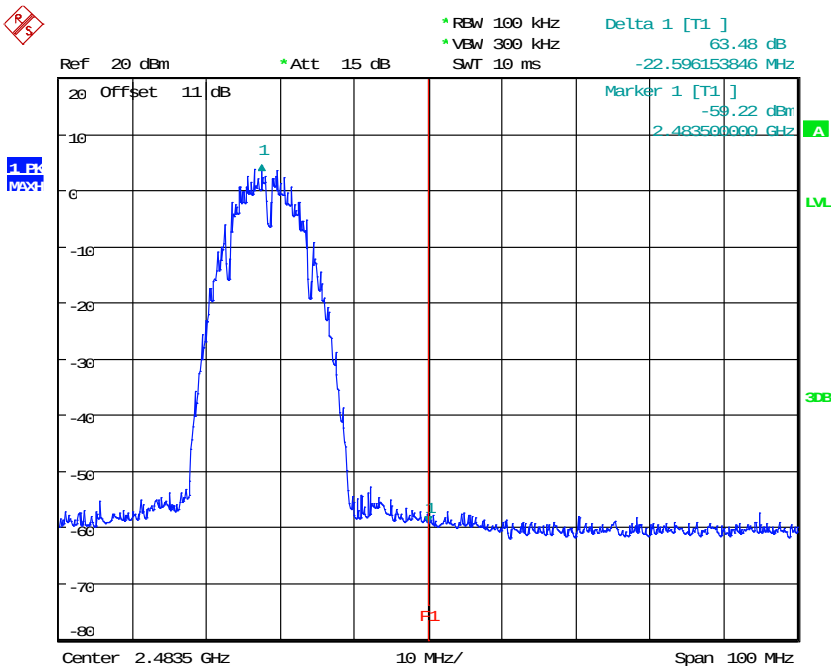
BANDEDGE 802.11N 40MHZ CH07
Date: 14.NOV.2019 16:30:20

ANT 4



BANDEDGE 802.11B CH01
Date: 14.NOV.2019 17:33:43

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



BANDEDGE 802.11B CH11

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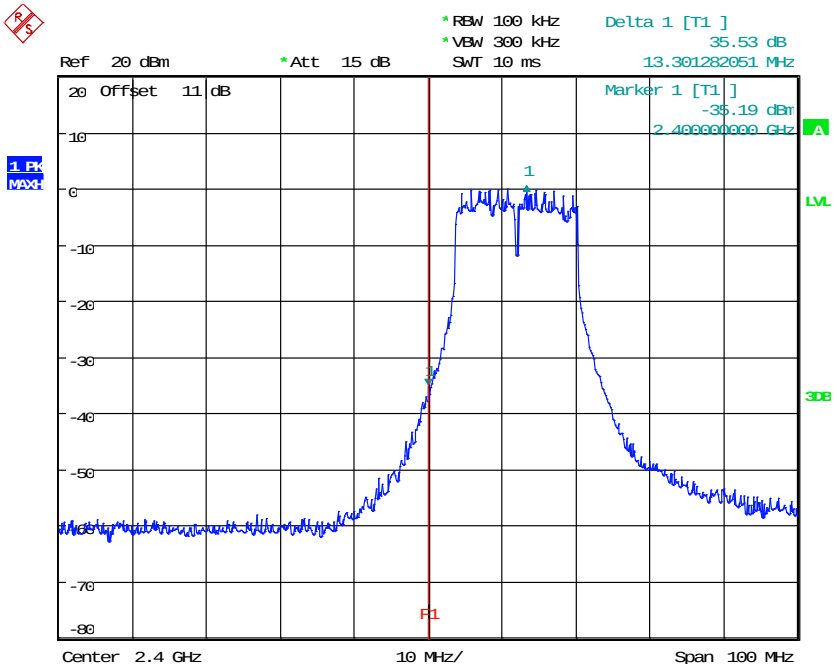

BANDEDGE 802.11G CH01

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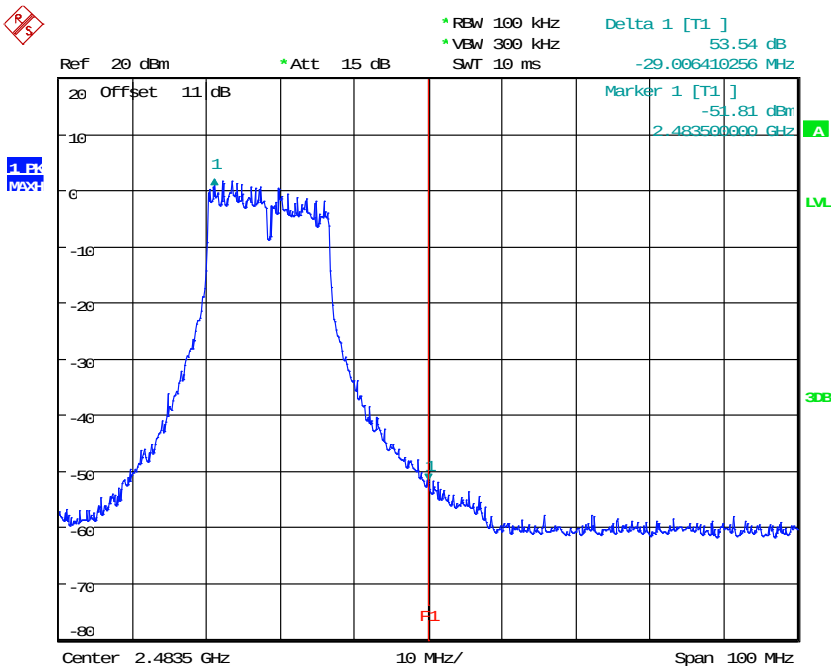
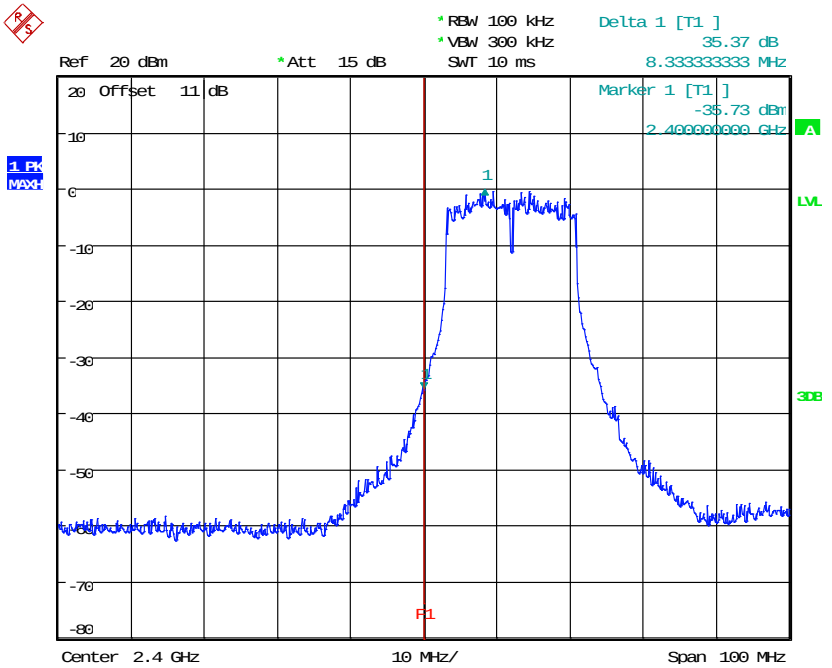


BANDEDGE 802.11G CH11

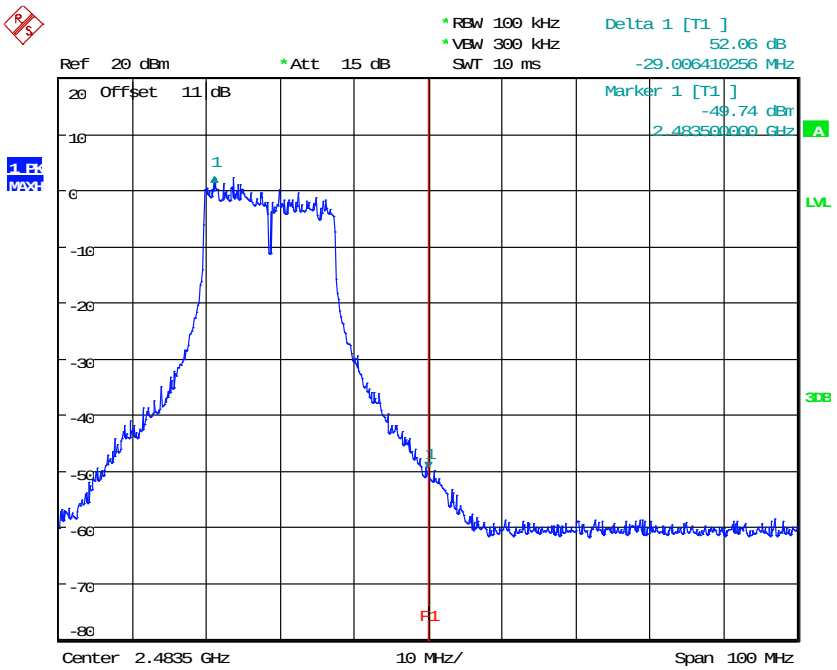
Date: 14.NOV.2019 17:37:45



BANDEDGE 802.11N 20MHZ CH01

Date: 14.NOV.2019 17:40:27

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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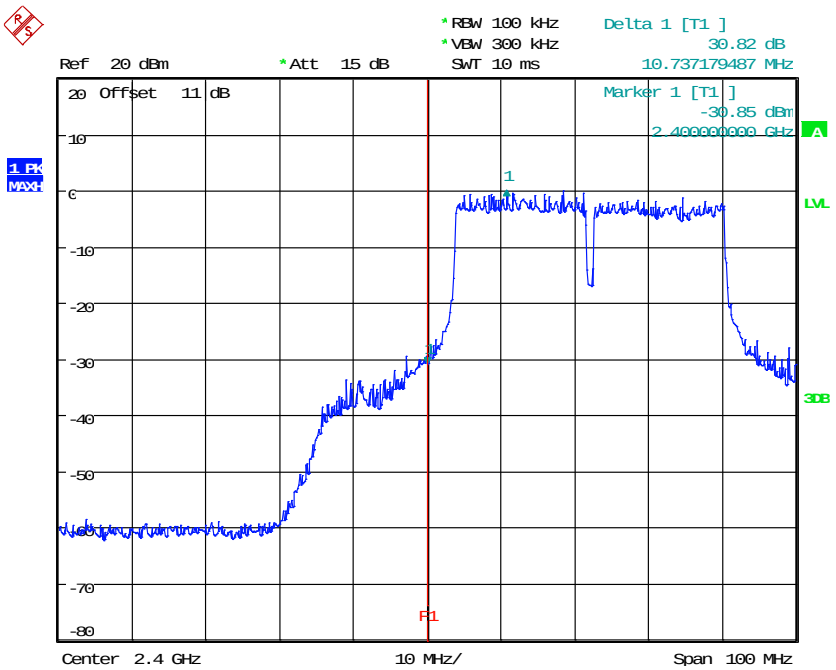

BANDEDGE 802.11N 40MHZ CH01
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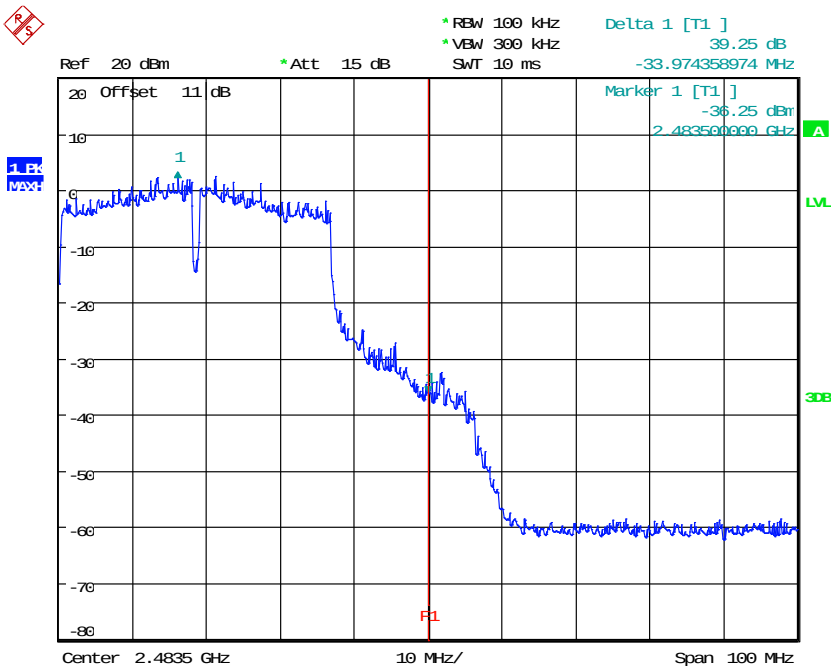
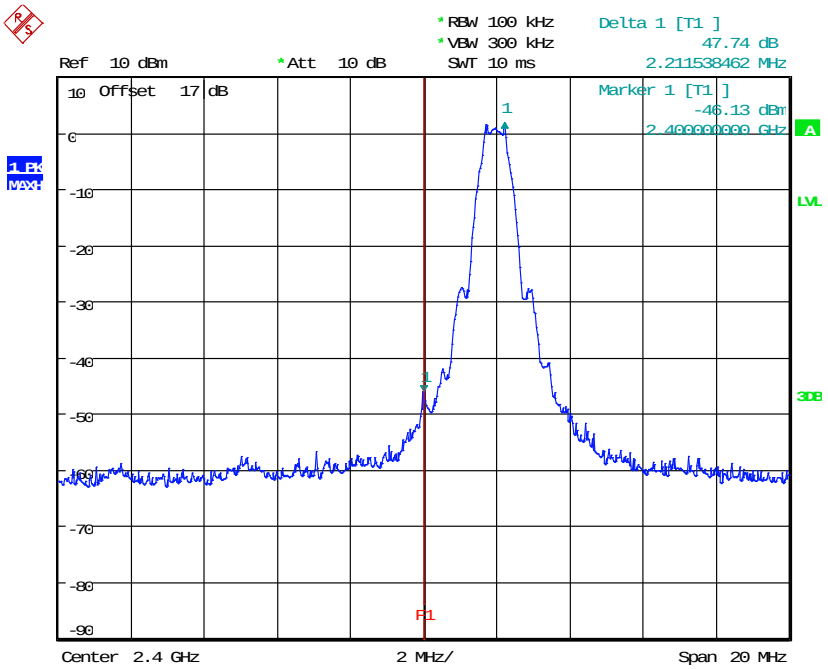
Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



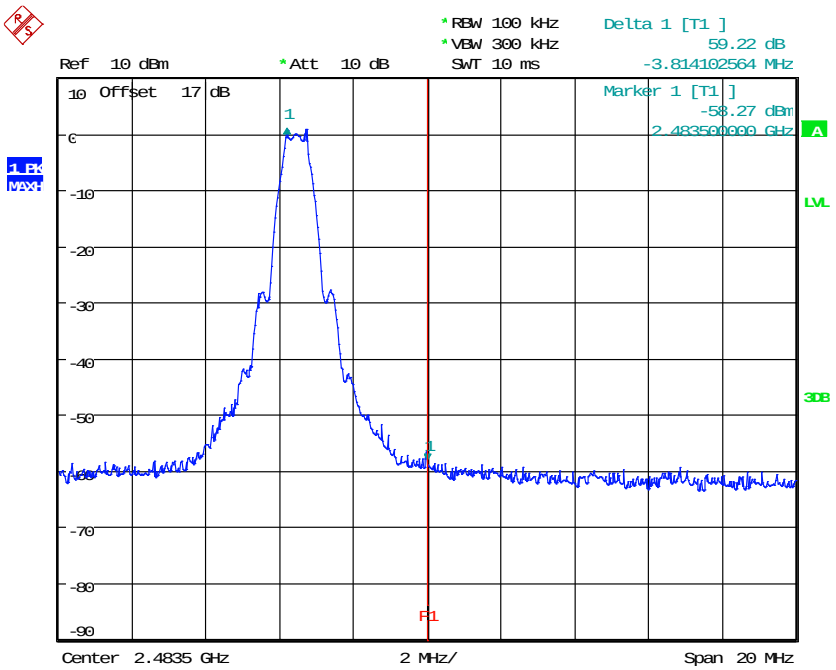
BANDEDGE 802.11N 40MHZ CH07
Date: 14.NOV.2019 19:43:55

BLE



BANDEDGE BT4.0 CH00
Date: 16.NOV.2019 22:09:44

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



BANDEDGE BT4.0 CH39
Date: 16.NOV.2019 22:23:26

Limit:

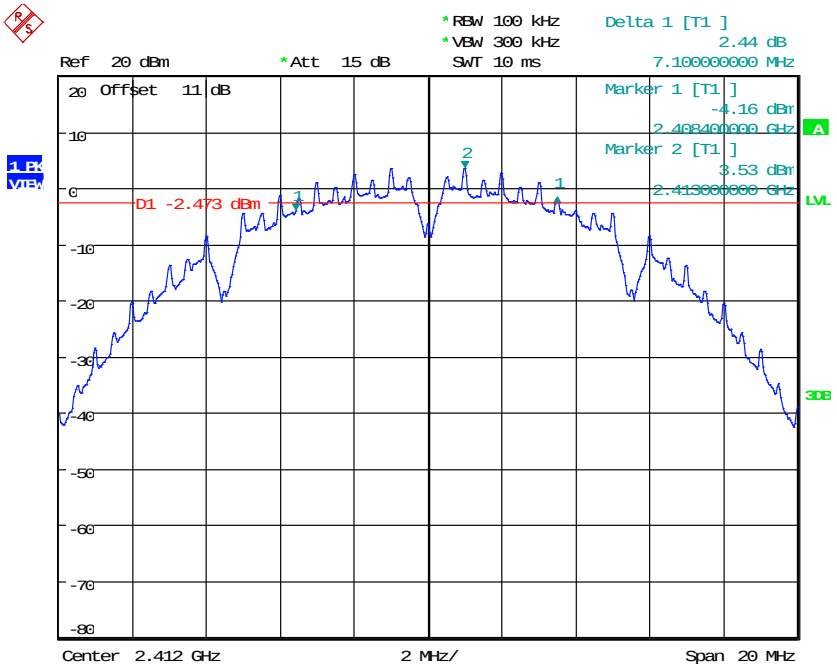
Frequency Range / MHz	Limit
902 –928 2400 – 2483.5 5725 - 5850	- 20 dB

Test equipment used: ETSTW-RE 055, ETSTW-RE 050

3.7 Minimum 6 dB Bandwidth

The analyzer ResBW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK reading was taken, two markers were set 6 dB below the maximum level on the right and the left side of the emission.
The 6 dB bandwidth is the frequency difference between the two markers.

WLAN
ANT 1



6DB BANDWIDTH 802.11B CH01
Date: 13.NOV.2019 17:27:01

Registration number: W6M21903-18923-C-1
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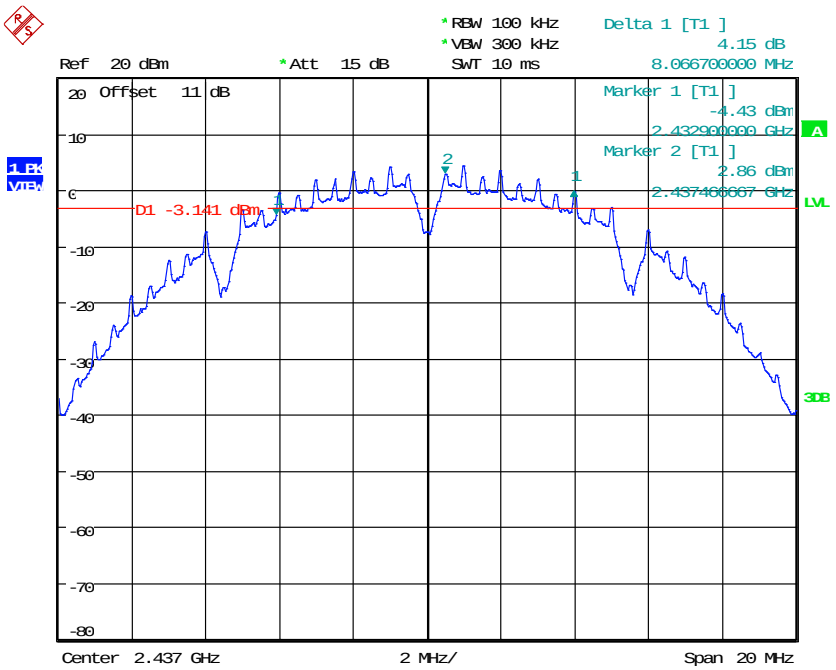

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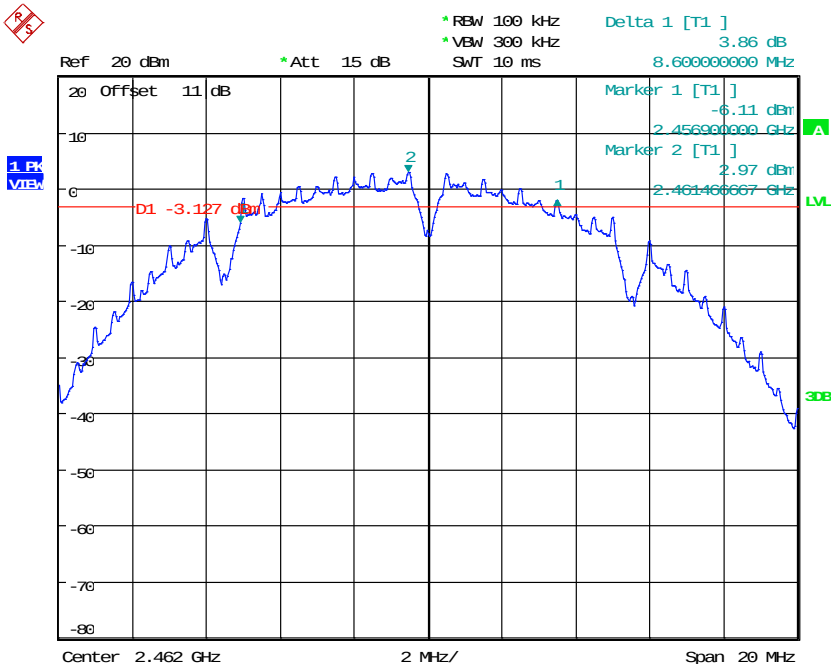

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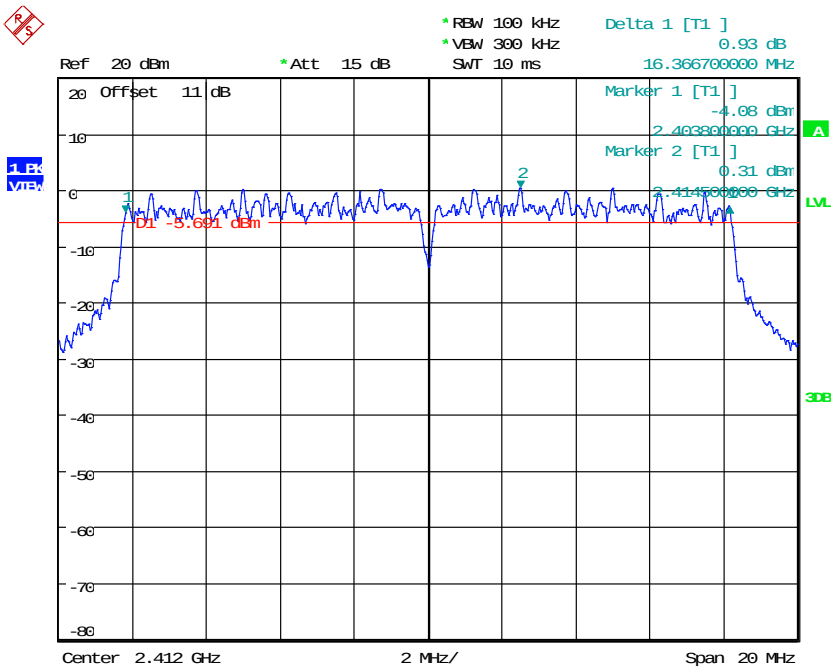

6DB BANDWIDTH 802.11G CH01

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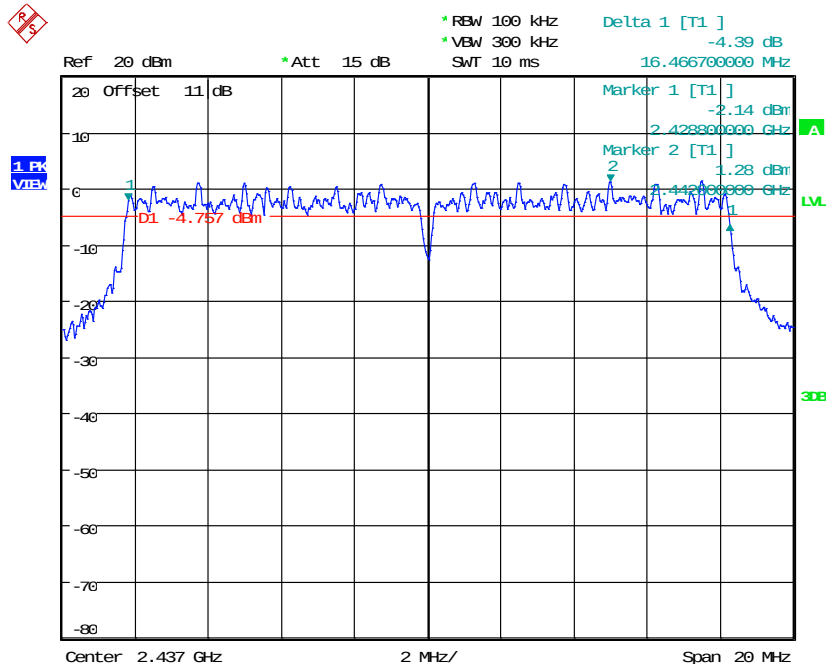

6DB BANDWIDTH 802.11G CH06

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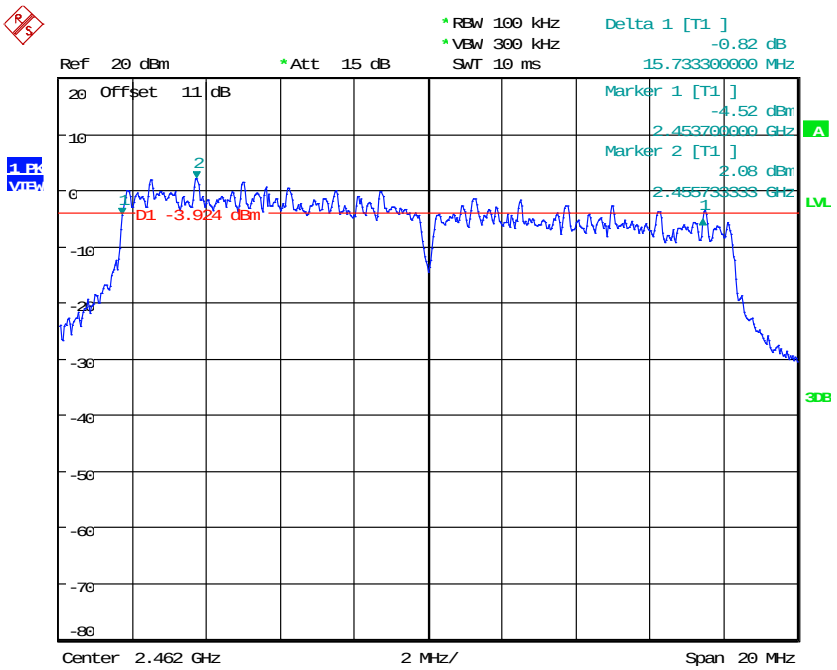

6DB BANDWIDTH 802.11G CH11

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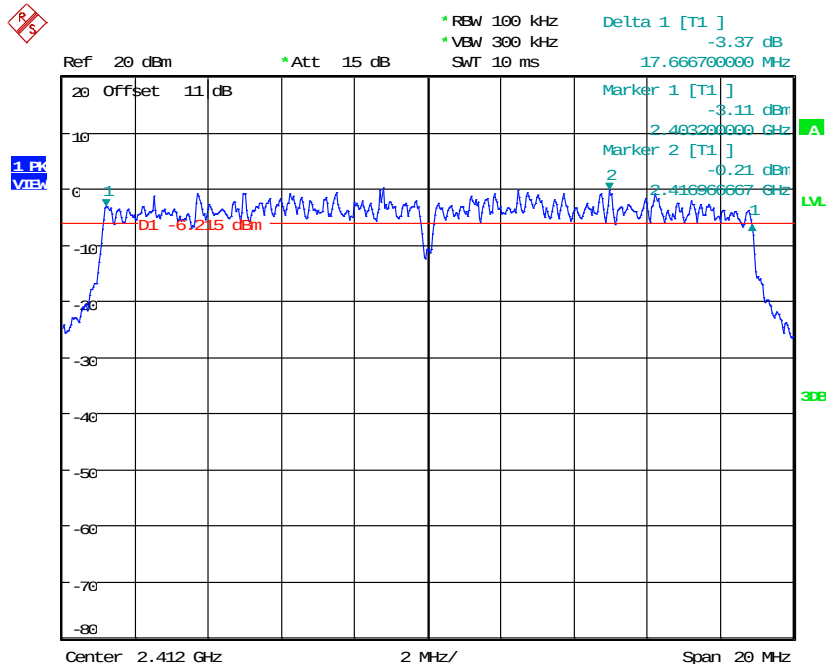
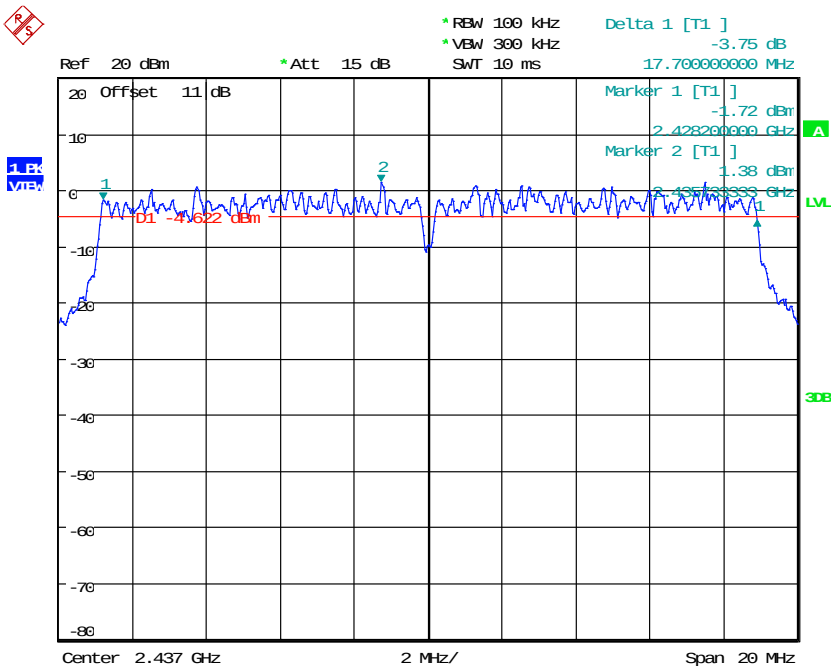


6DB BANDWIDTH 802.11N 20MHZ CH1

Date: 13.NOV.2019 17:38:50



6DB BANDWIDTH 802.11N 20MHZ CH6

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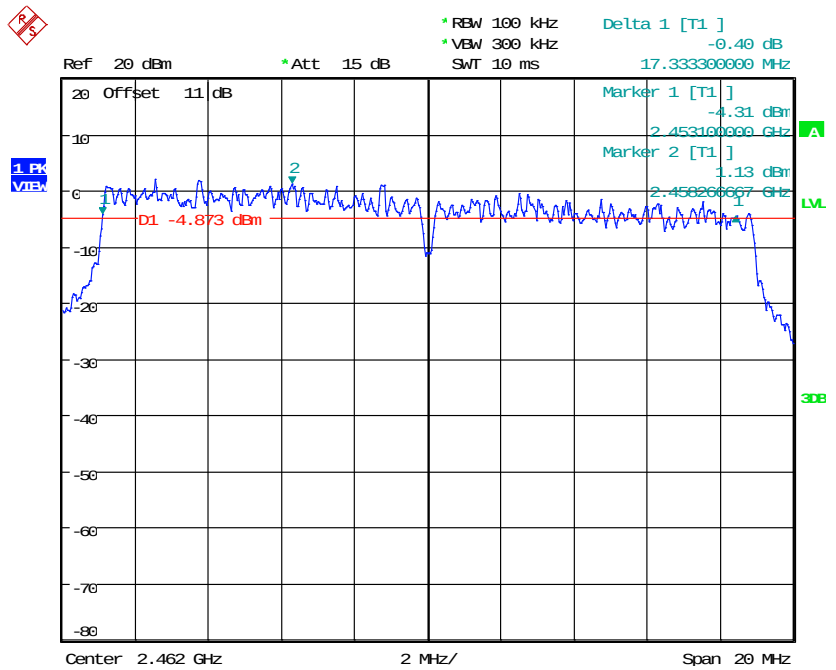
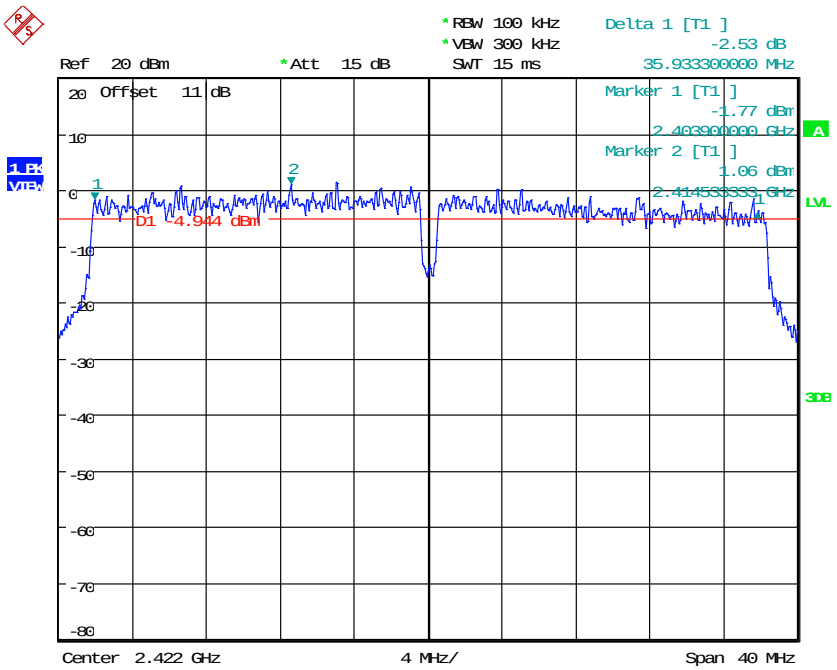


6DB BANDWIDTH 802.11N 20MHZ CH11

Date: 13.NOV.2019 17:40:47

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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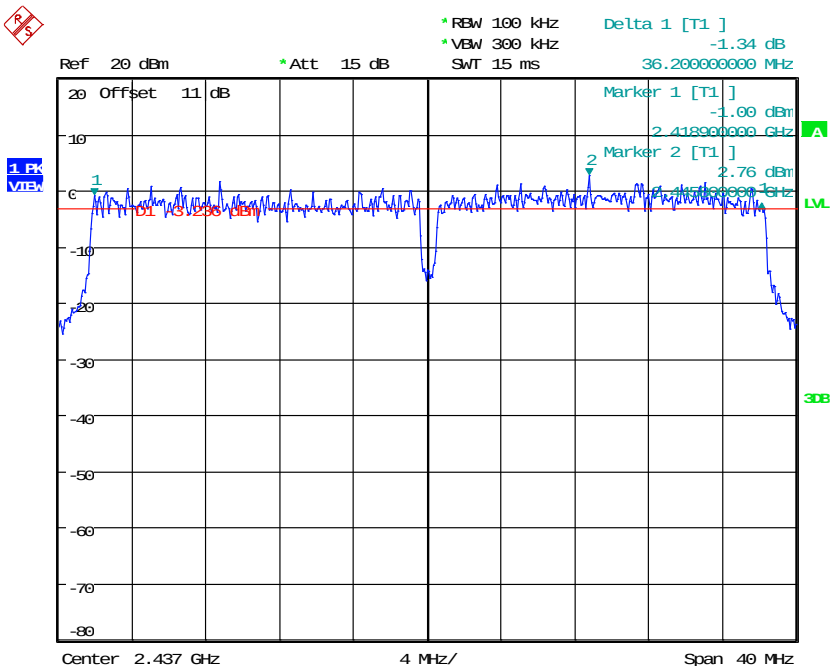
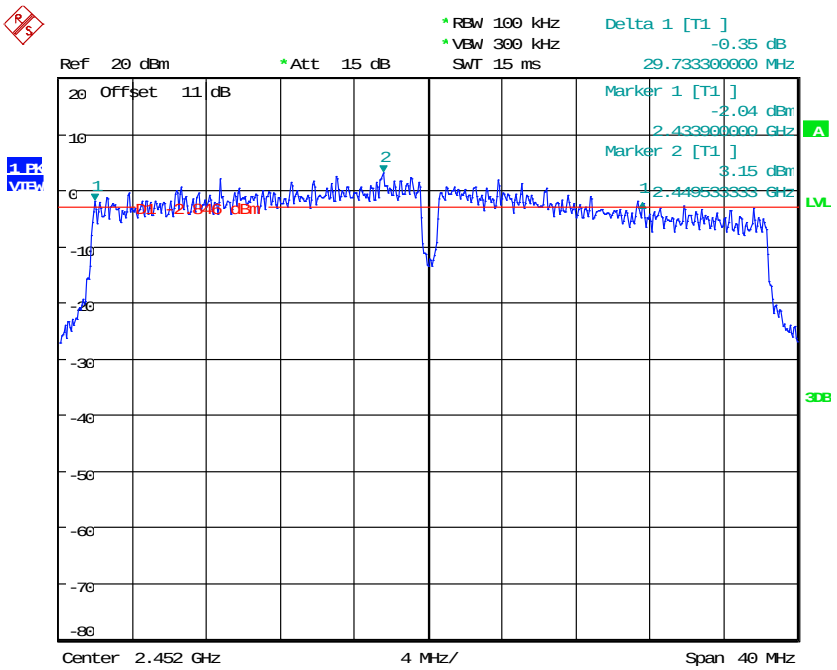


6DB BANDWIDTH 802.11N 40MHZ CH4

Date: 13.NOV.2019 17:44:55

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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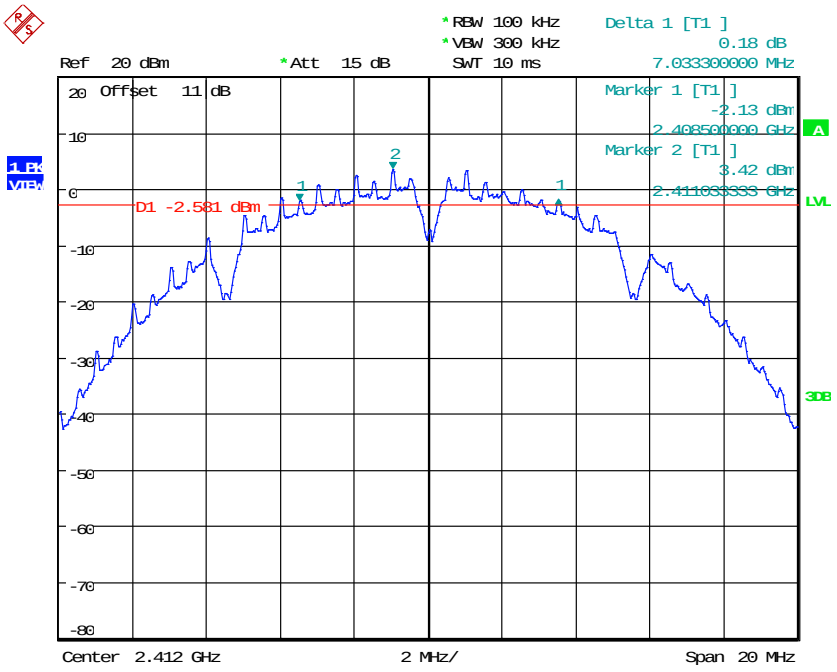
Date: 13.NOV.2019 17:46:56

ANT 2



6DB BANDWIDTH 802.11B CH01
Date: 14.NOV.2019 15:37:40

Registration number: W6M21903-18923-C-1
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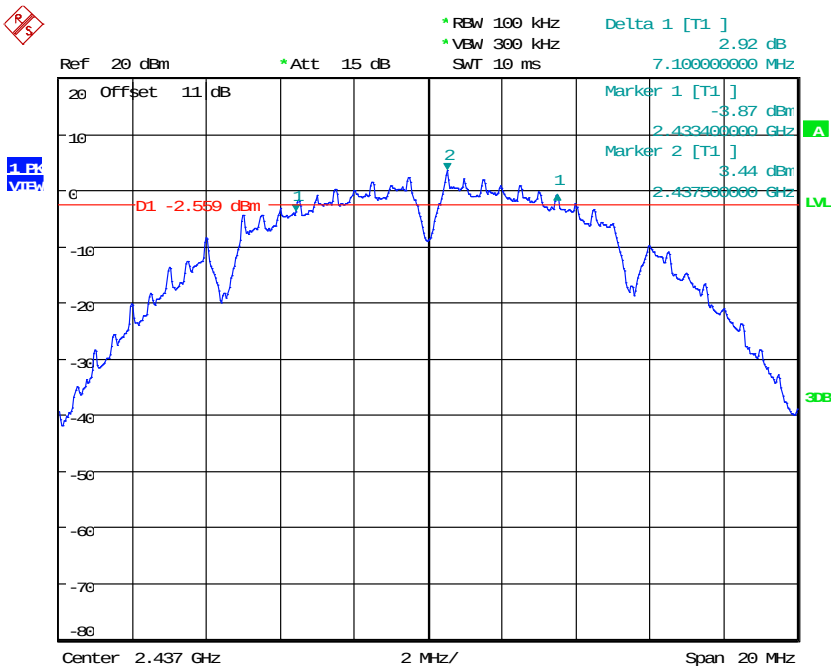

6DB BANDWIDTH 802.11B CH06

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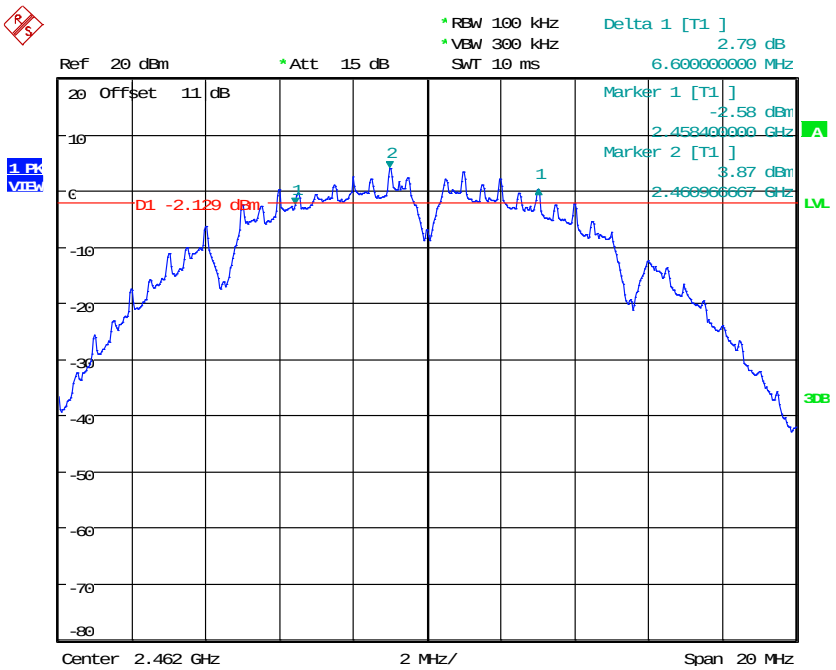

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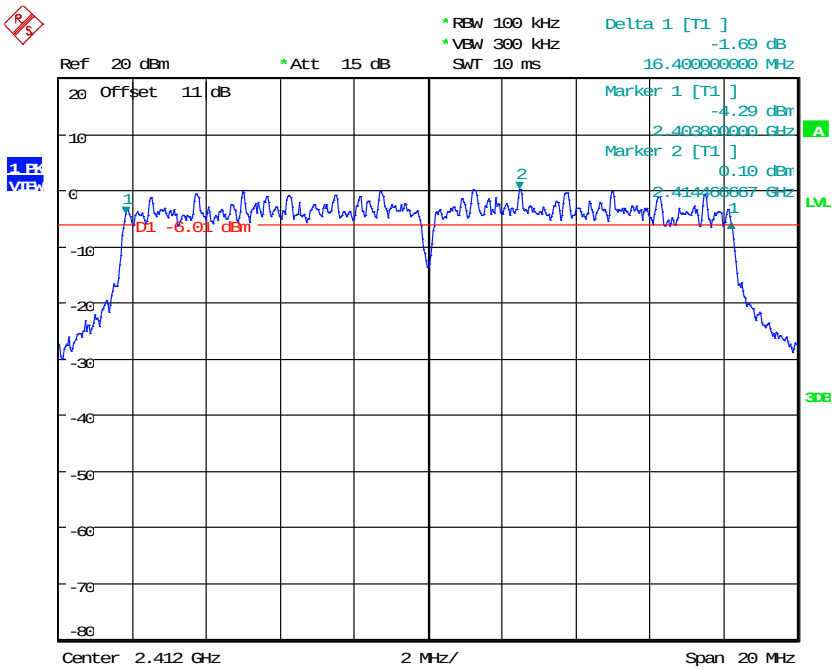

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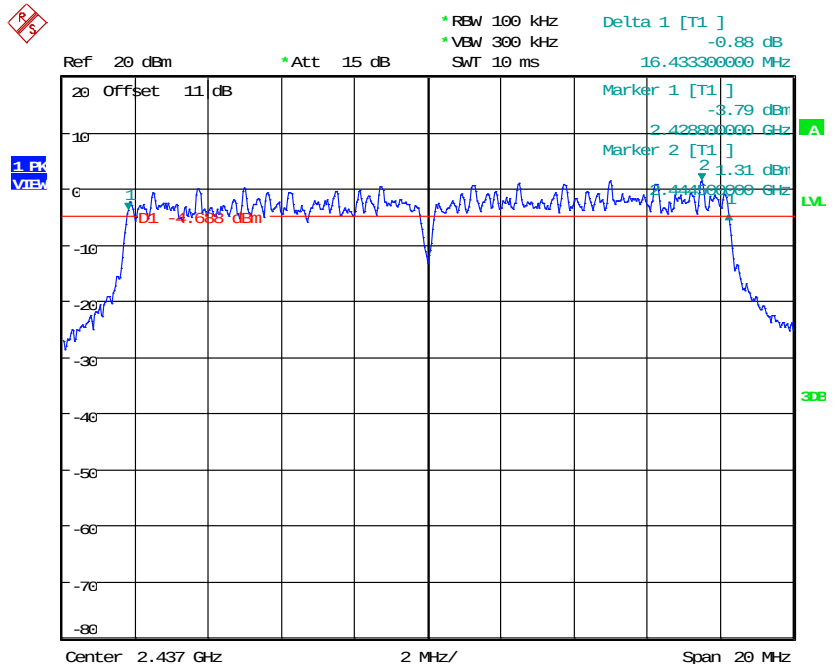
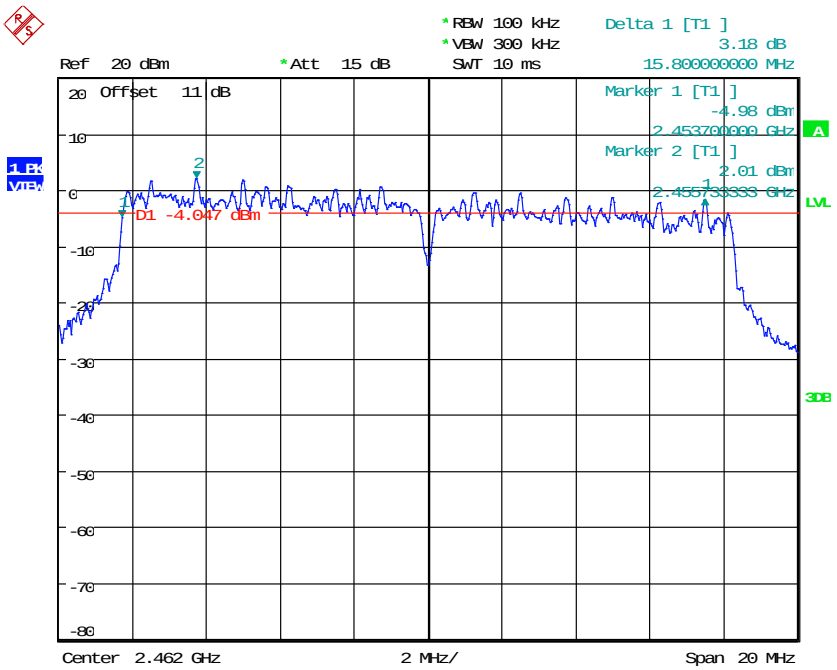


6DB BANDWIDTH 802.11G CH06

Date: 14.NOV.2019 14:11:28



6DB BANDWIDTH 802.11G CH11

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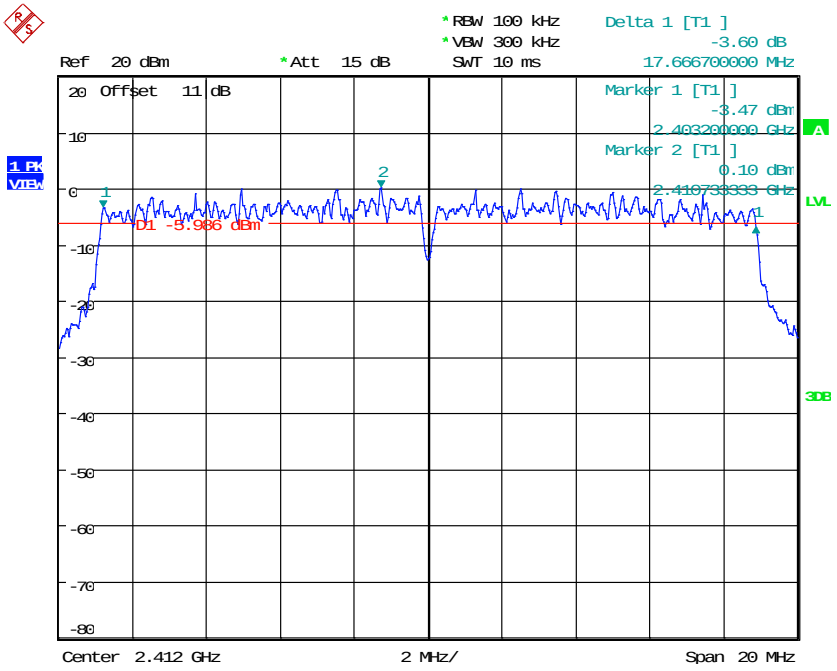
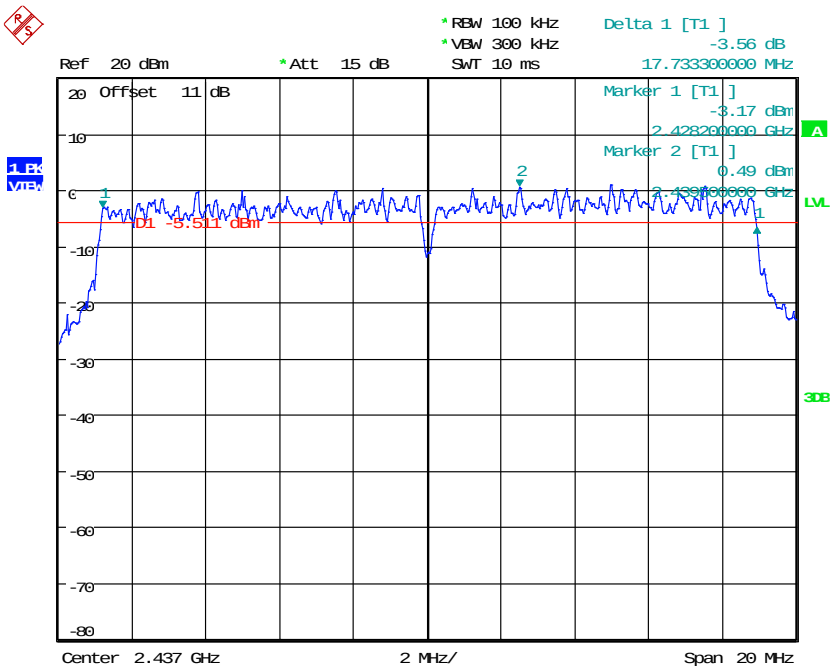


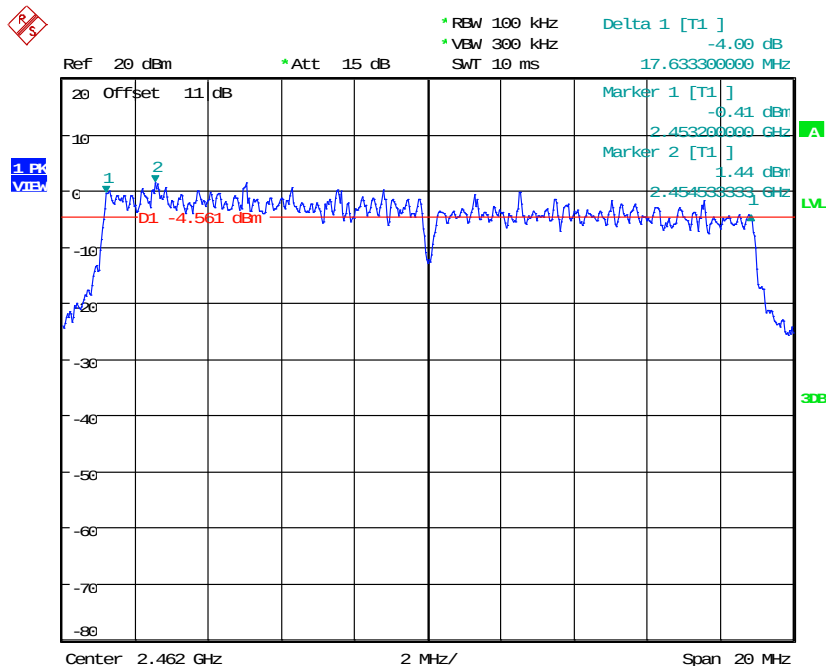
6DB BANDWIDTH 802.11N 20MHZ CH1

Date: 14.NOV.2019 14:20:23



6DB BANDWIDTH 802.11N 20MHZ CH6

Date: 14.NOV.2019 14:21:35



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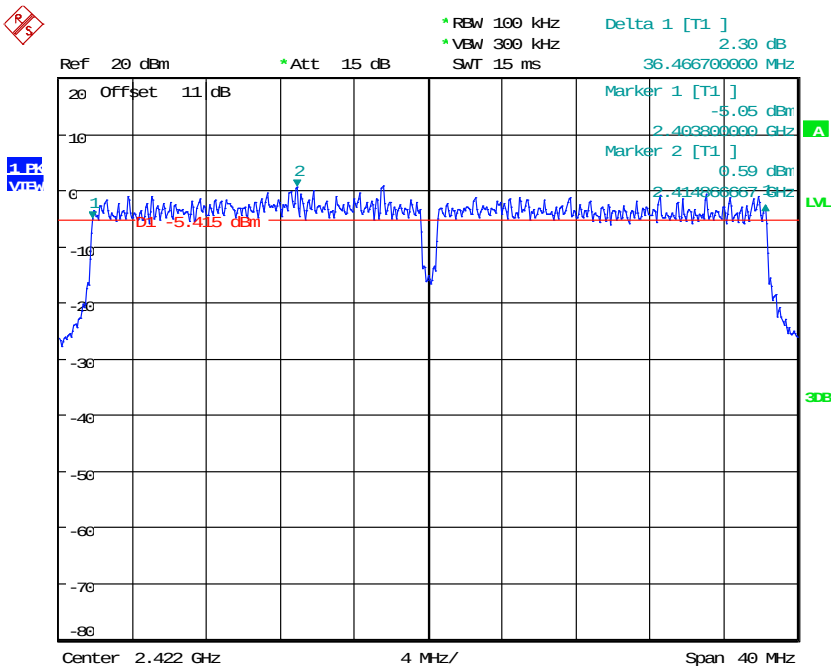

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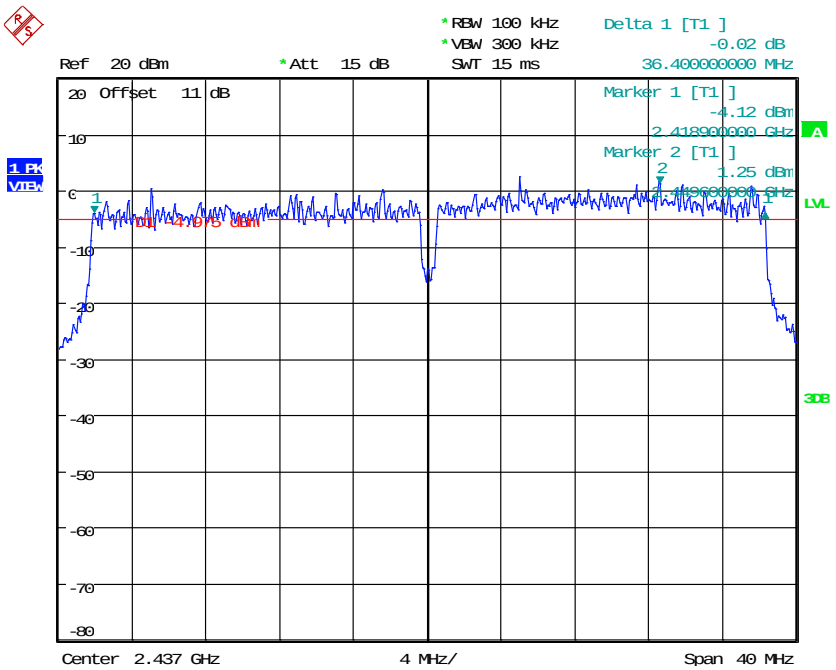

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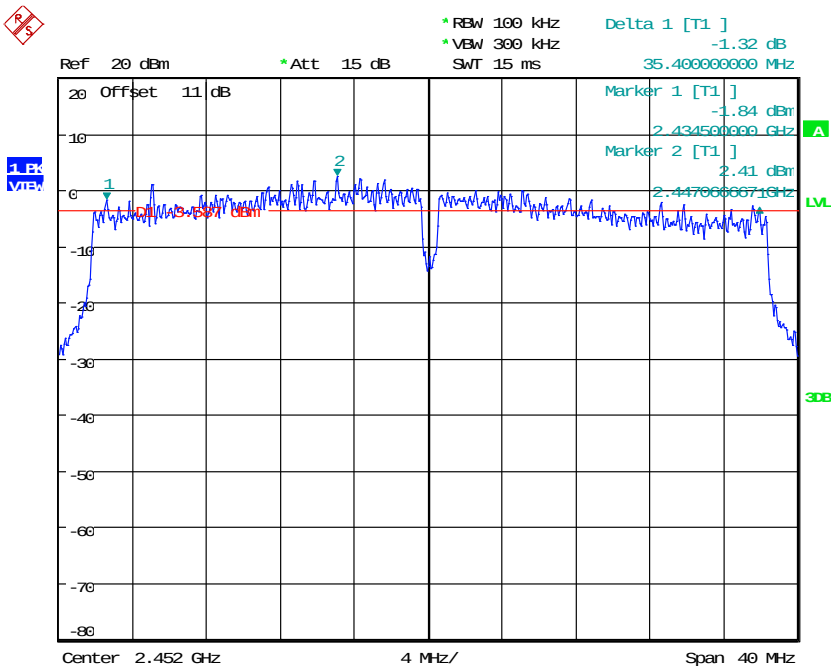
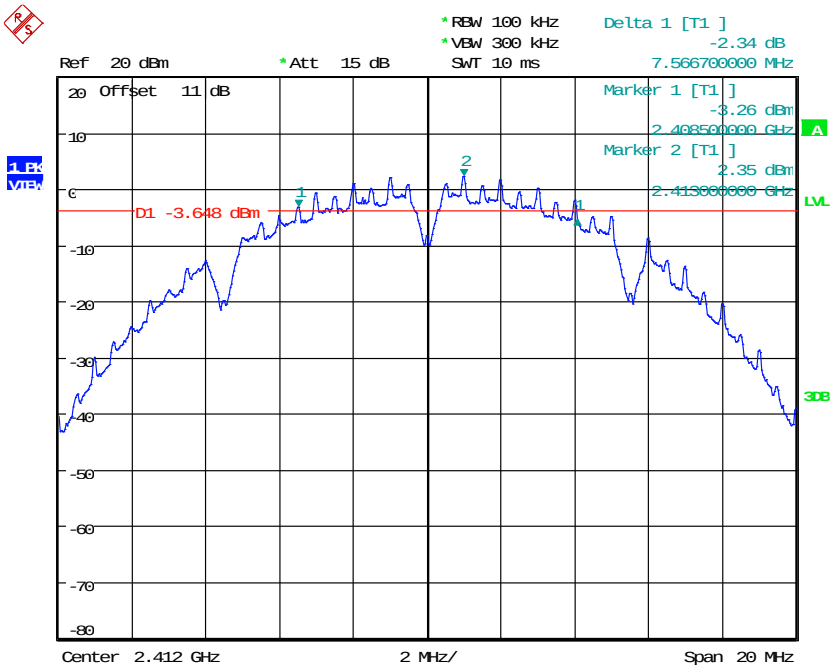
Date: 14.NOV.2019 14:24:45

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



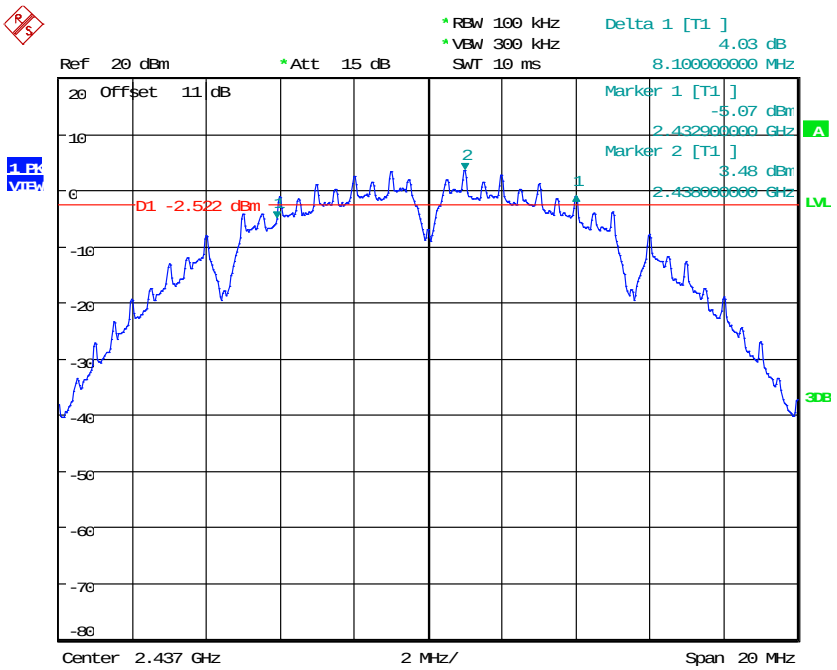
6DB BANDWIDTH 802.11N 40MHZ CH7
Date: 14.NOV.2019 14:26:52

ANT 3



6DB BANDWIDTH 802.11B CH01
Date: 14.NOV.2019 15:55:57

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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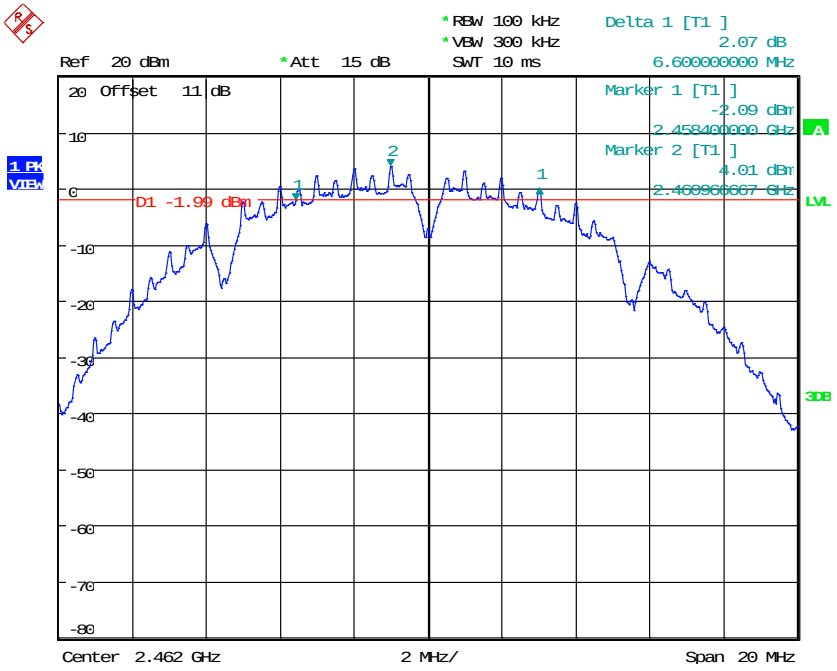
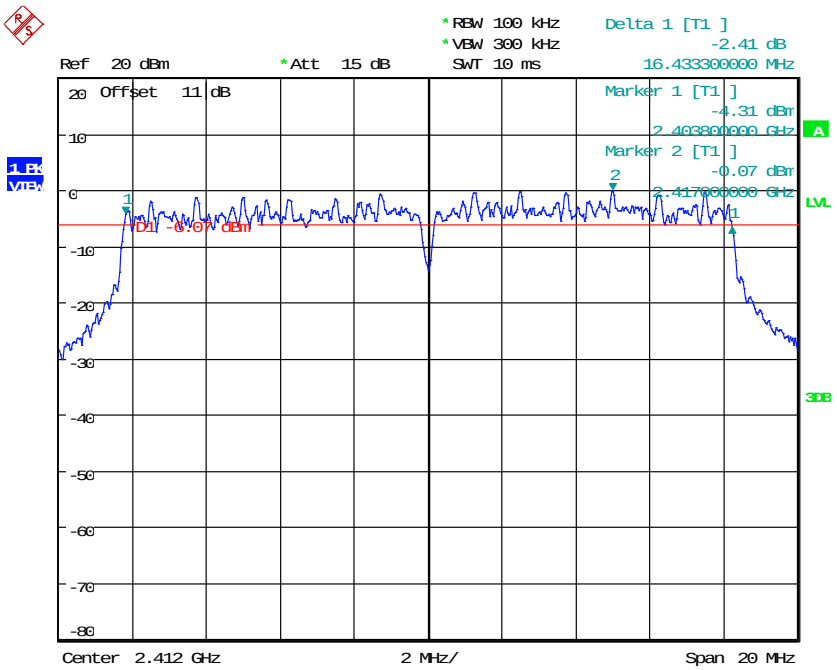


6DB BANDWIDTH 802.11B CH11
Date: 14.NOV.2019 16:00:12

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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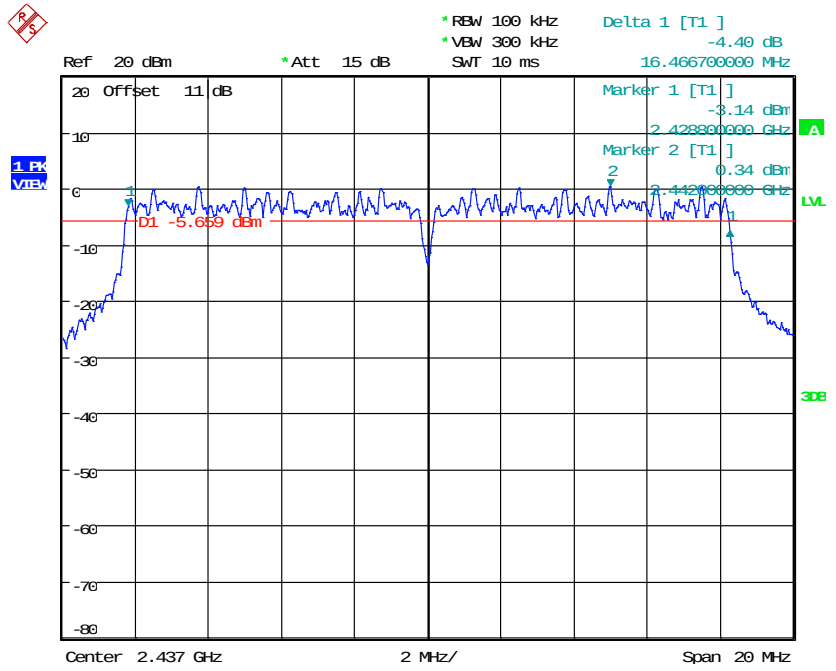
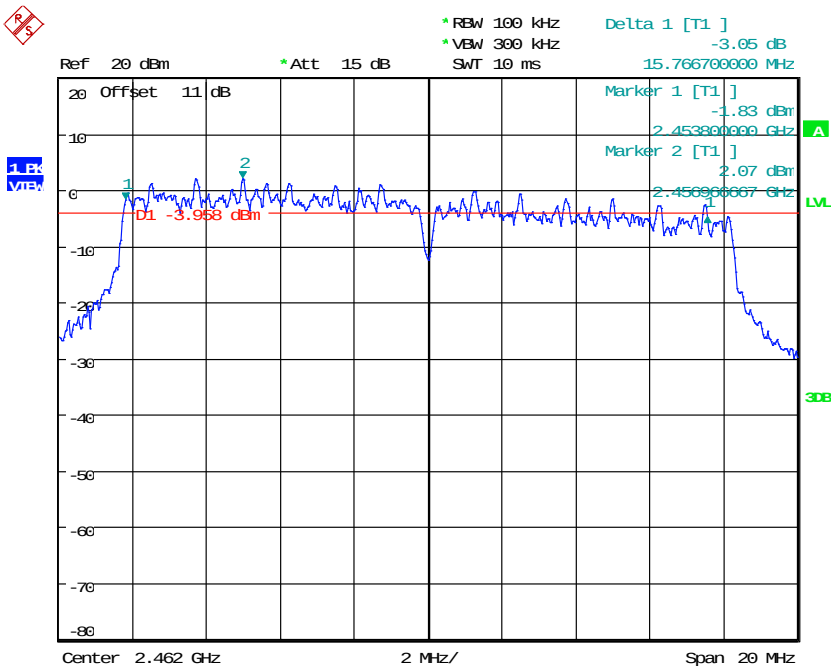
Date: 14.NOV.2019 16:01:48

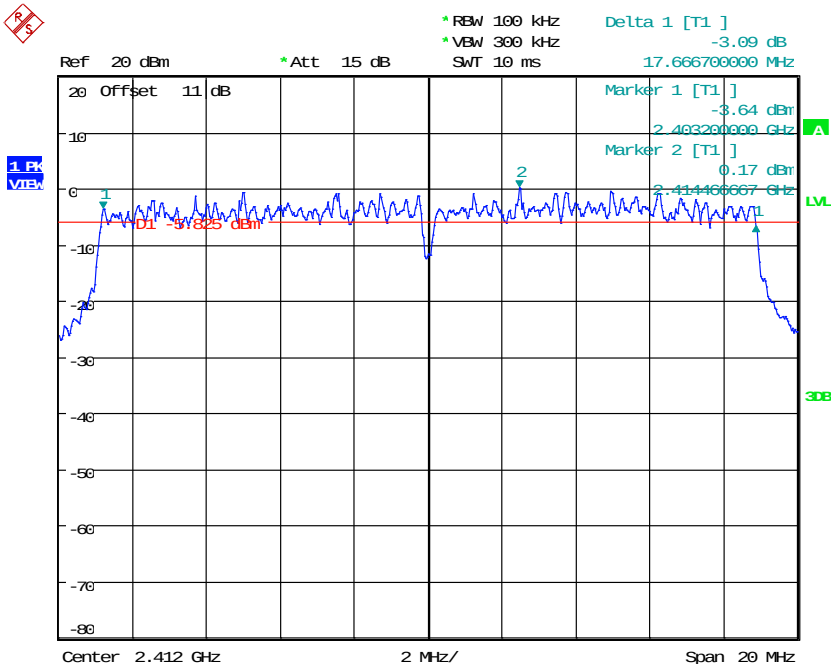


6DB BANDWIDTH 802.11G CH06
Date: 14.NOV.2019 16:03:06

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



6DB BANDWIDTH 802.11G CH11
Date: 14.NOV.2019 16:19:48



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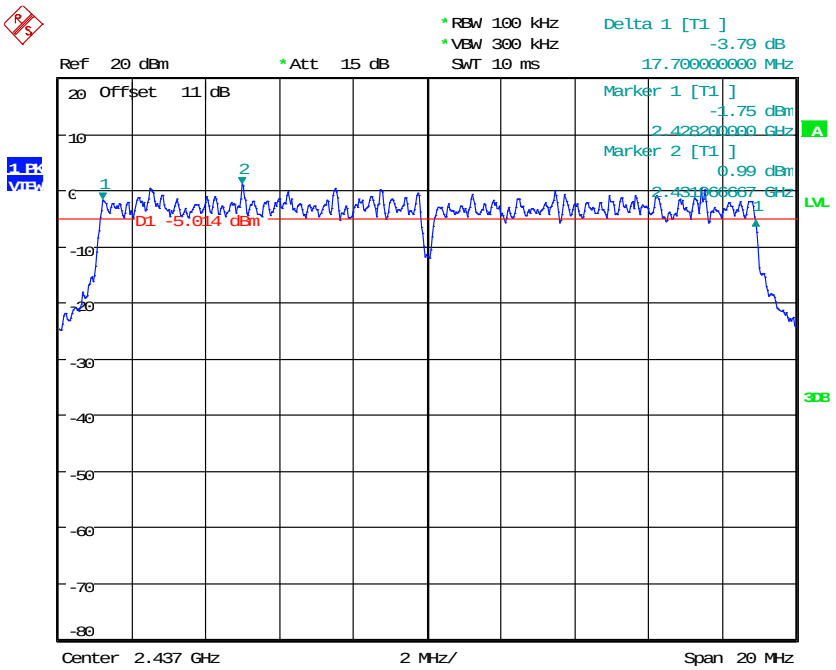
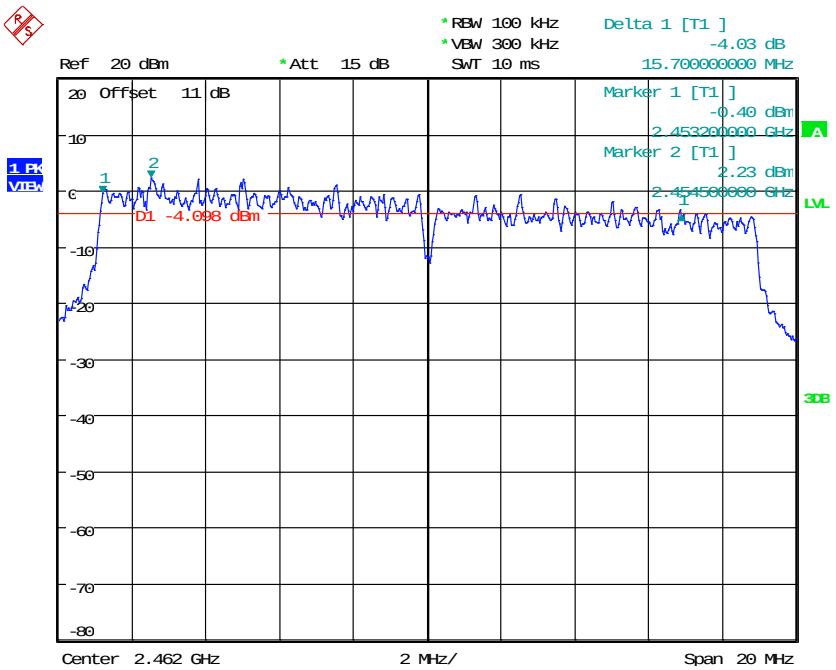
Date: 14.NOV.2019 16:20:51



6DB BANDWIDTH 802.11N 20MHZ CH6

Date: 14.NOV.2019 16:22:07



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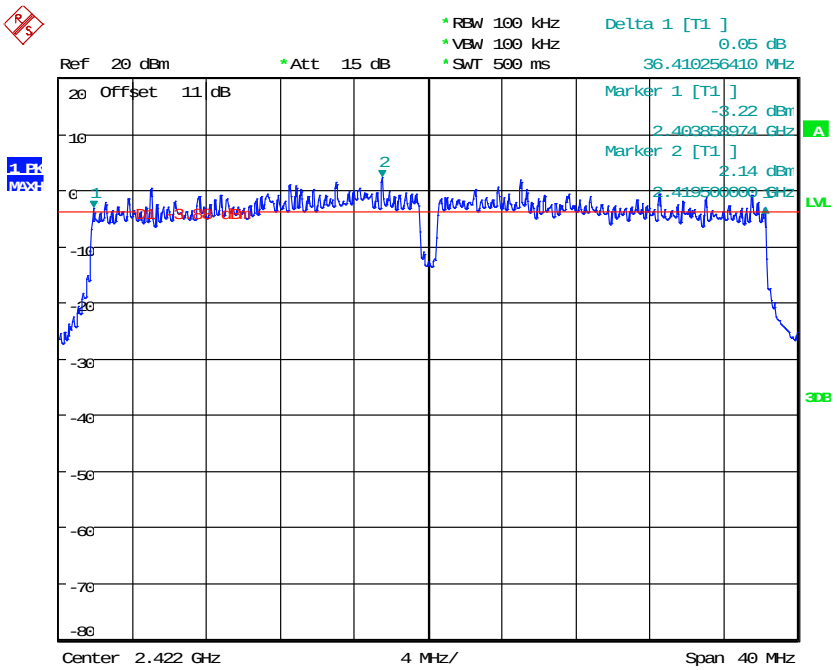
Date: 14.NOV.2019 16:23:06

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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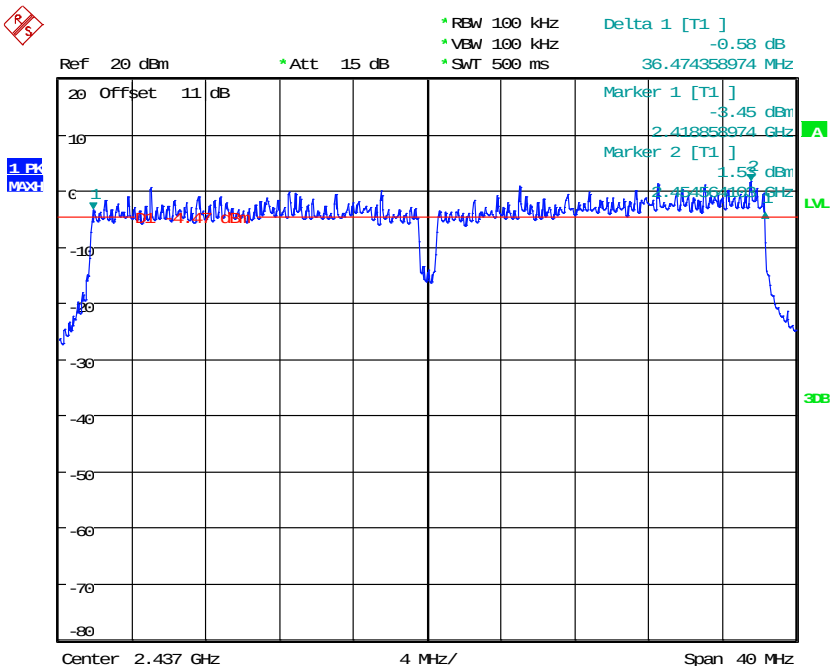
Date: 24.DEC.2019 20:14:43



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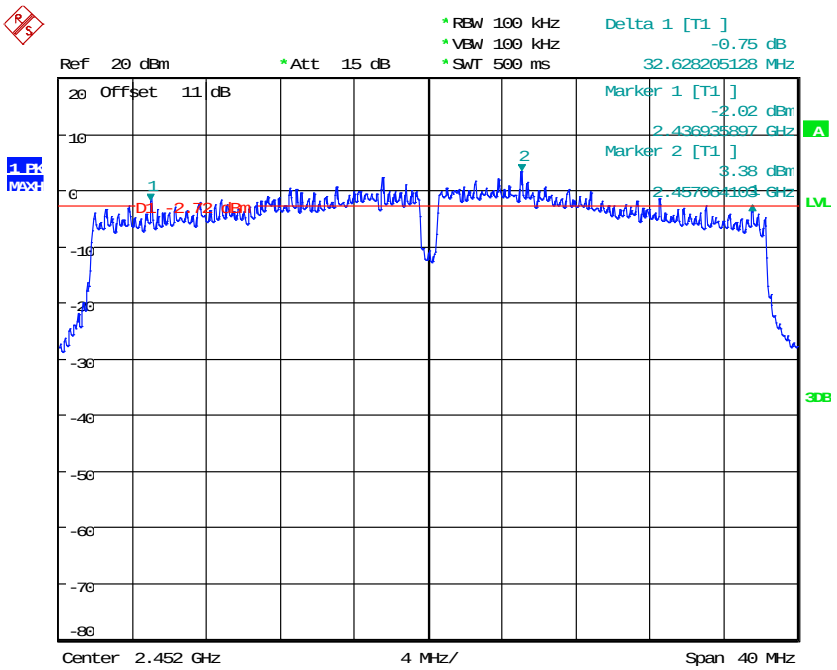
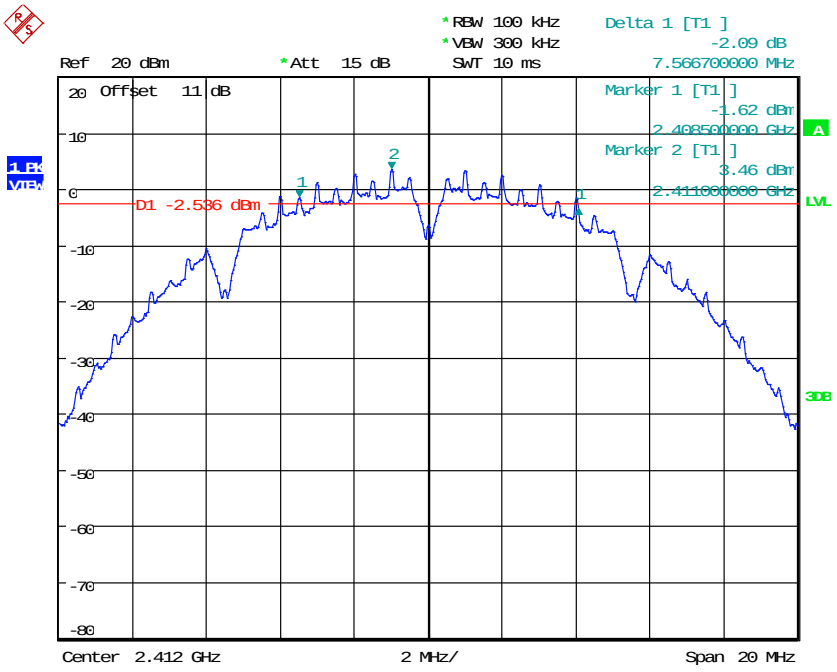
Date: 24.DEC.2019 20:16:13

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



6DB BANDWIDTH 802.11N 40MHz CH7
Date: 24.DEC.2019 20:23:36

ANT 4



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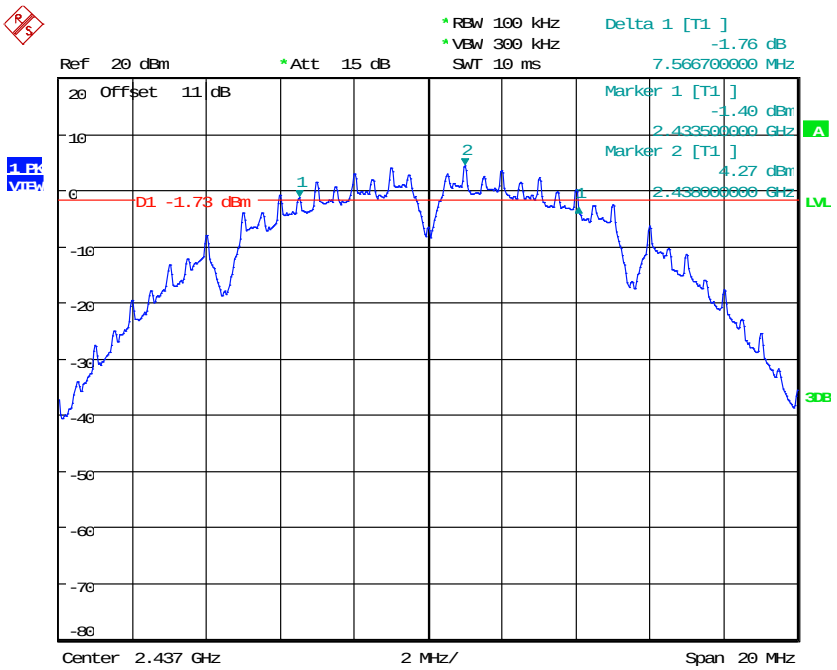
Date: 14.NOV.2019 17:33:31

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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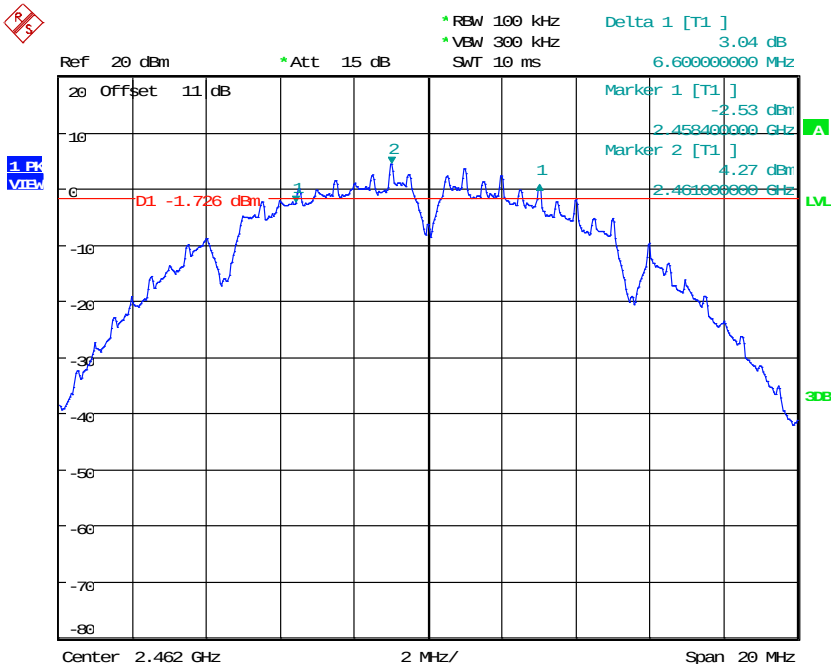
Date: 14.NOV.2019 17:34:26



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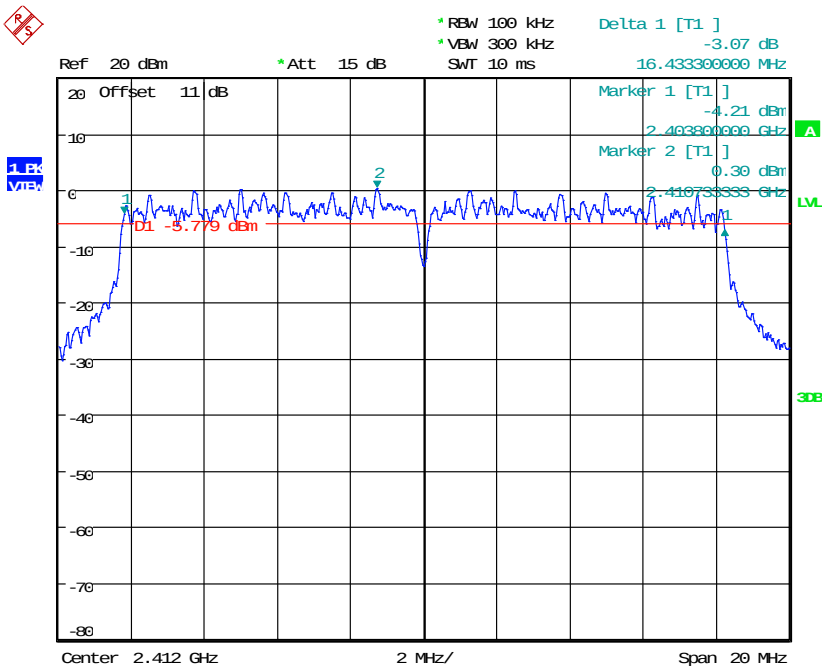
Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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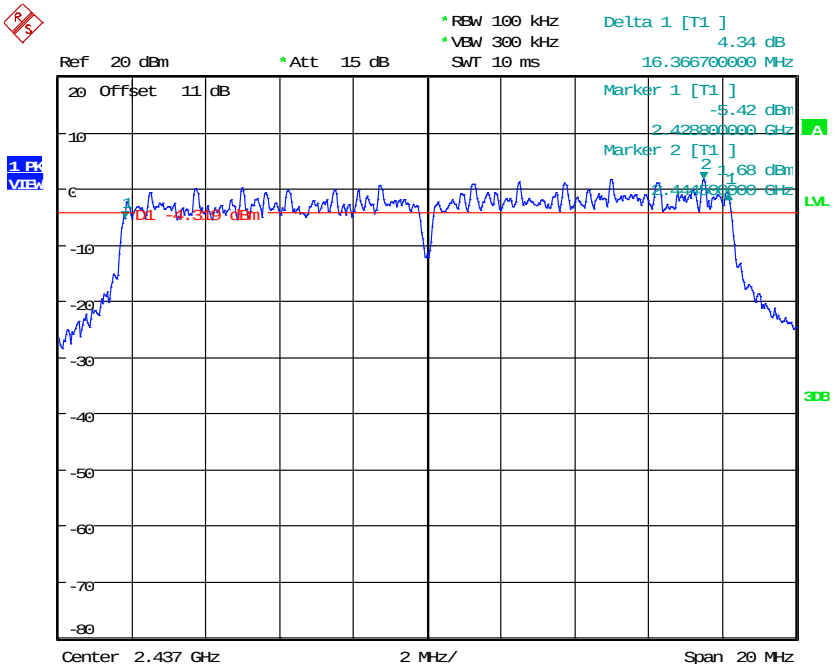

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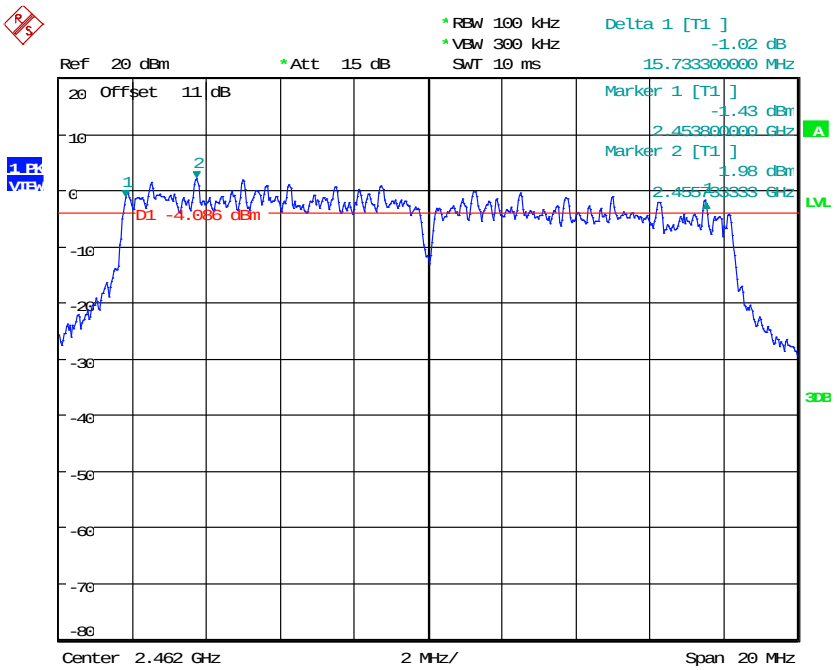
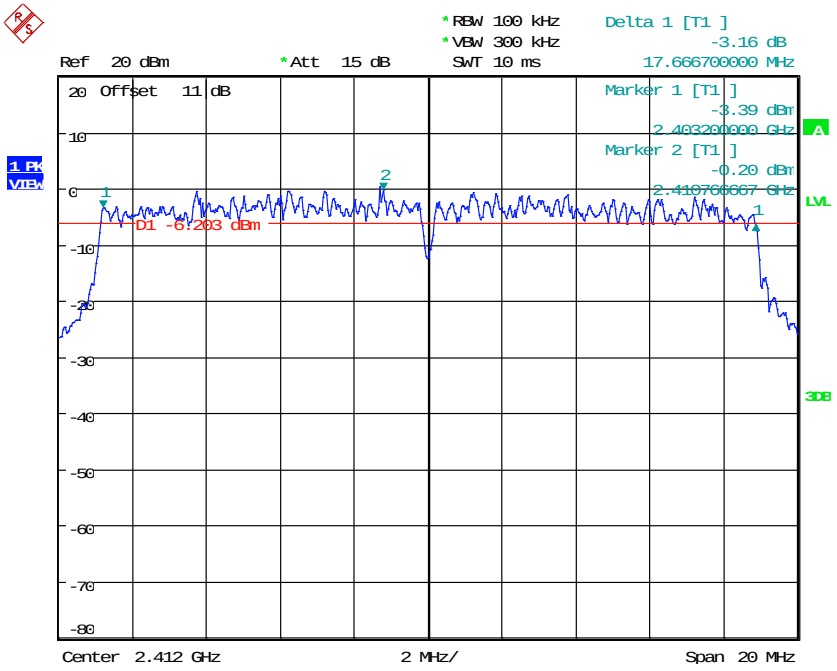


6DB BANDWIDTH 802.11G CH11

Date: 14.NOV.2019 17:37:33



6DB BANDWIDTH 802.11N 20MHZ CH1

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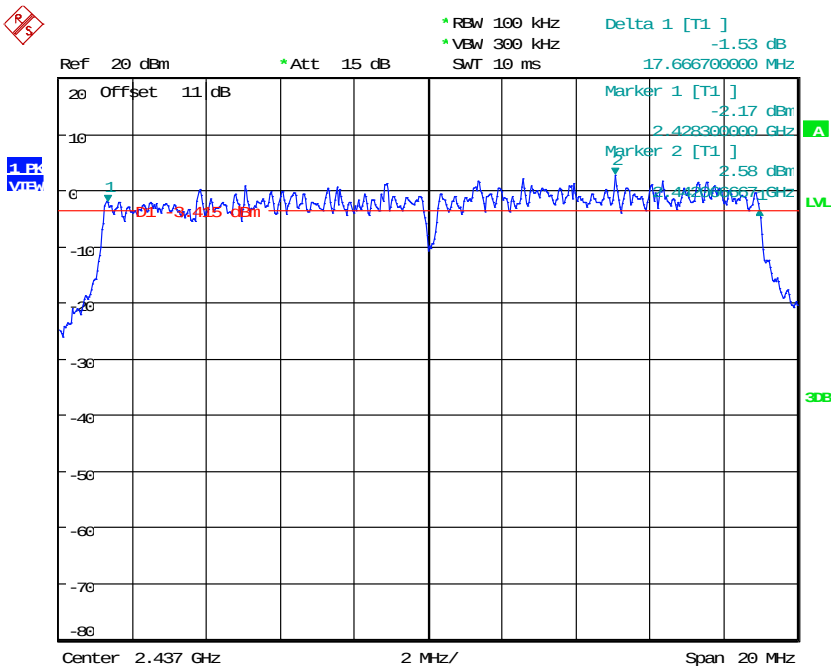
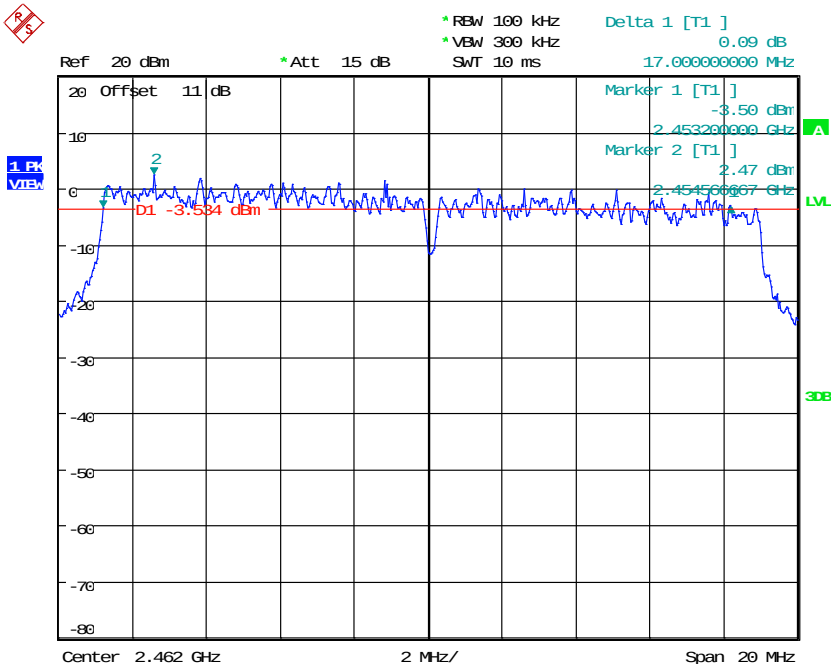


6DB BANDWIDTH 802.11N 20MHZ CH6

Date: 14.NOV.2019 19:37:55



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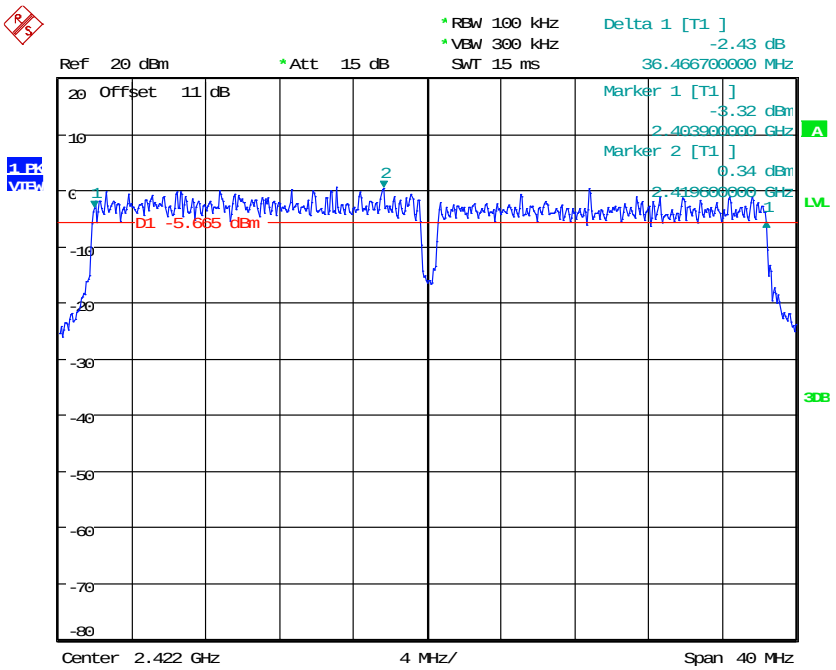
Date: 14.NOV.2019 19:38:55

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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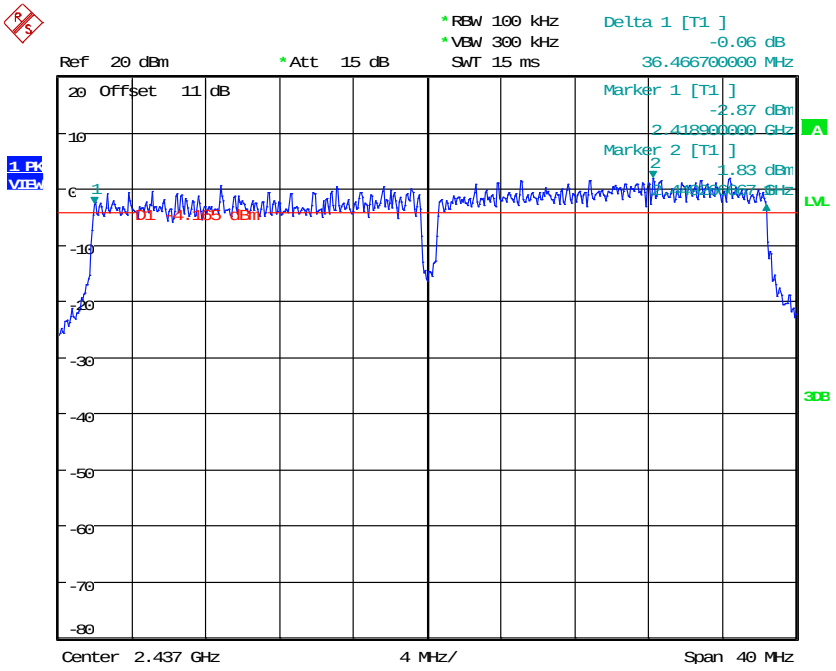

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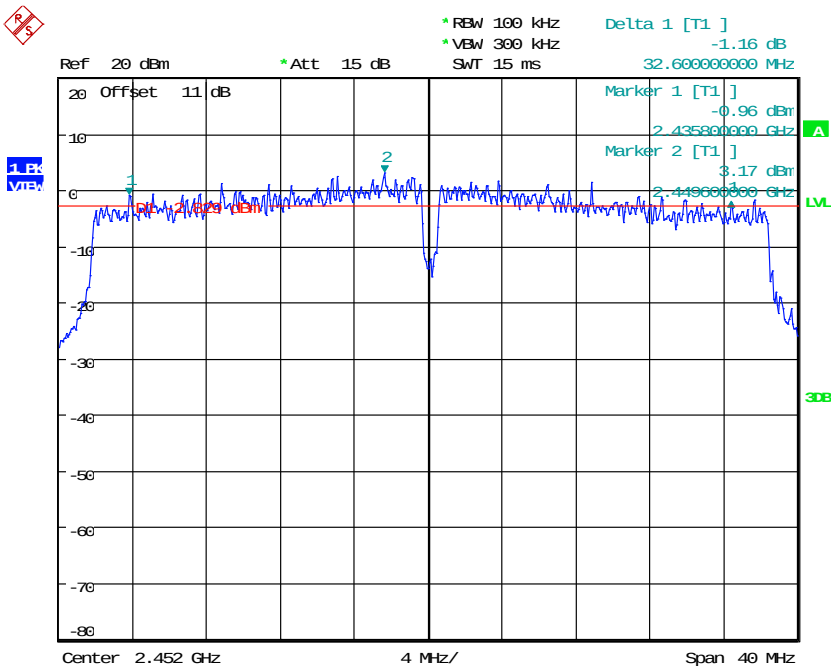
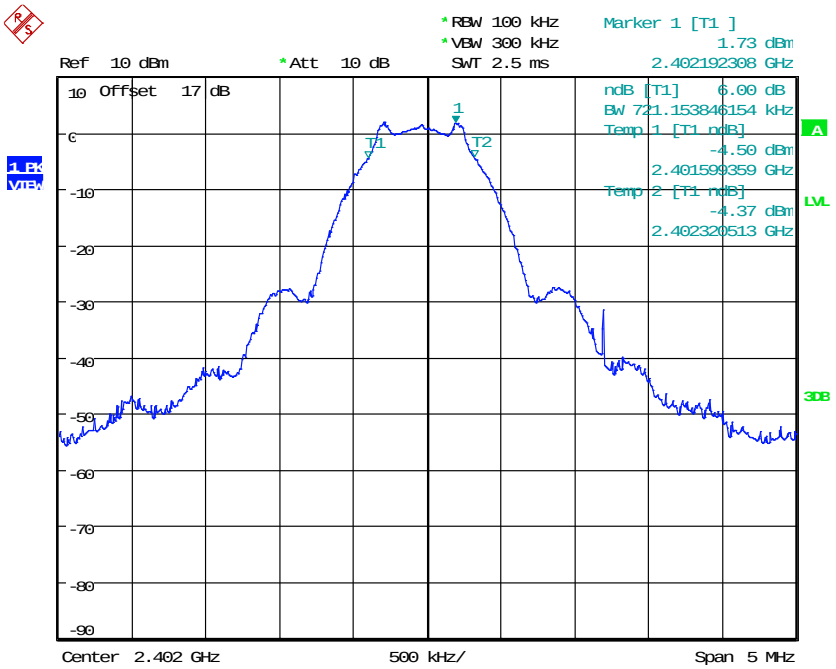
Date: 14.NOV.2019 19:42:06

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

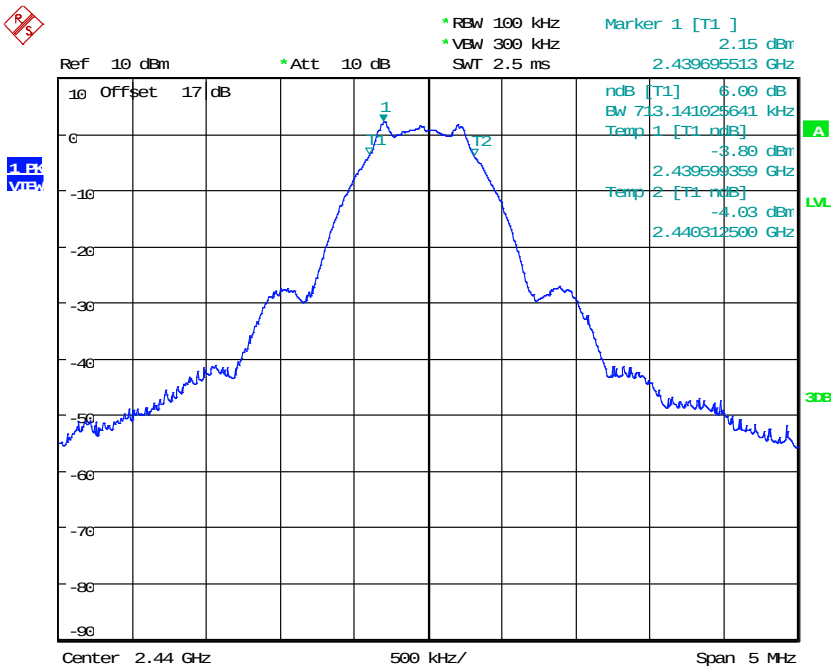


6DB BANDWIDTH 802.11N 40MHZ CH7
Date: 14.NOV.2019 19:43:36

BLE



6DB BANDWIDTH BT4.0 CH00
Date: 16.NOV.2019 22:09:26



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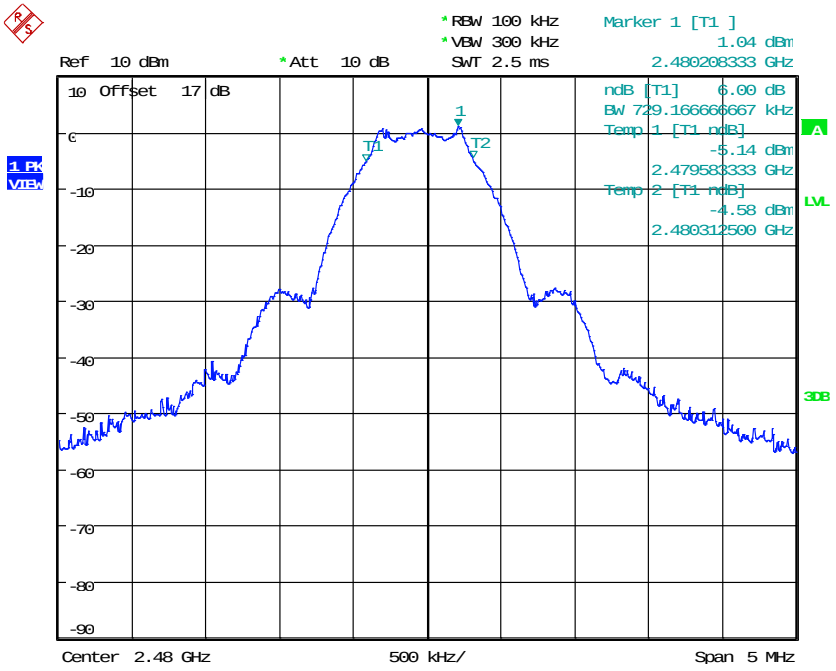
Date: 16.NOV.2019 22:19:28



6DB BANDWIDTH BT4.0 CH39

Date: 16.NOV.2019 22:23:08

Limits:

Frequency Range MHz	**Limits**
902-928	min 500 kHz
2400-2483.5	min 500 kHz
5725-5850	min 500 kHz

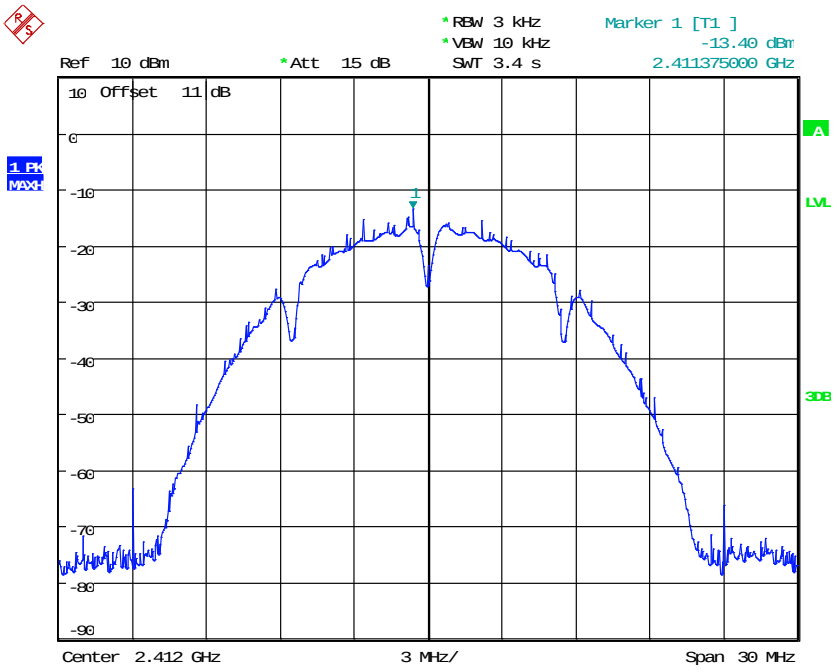
Test equipment used: ETSTW-RE 055, ETSTW-RE 050.

3.8 Peak Power Spectral Density

Peak Power Spectral density is a measured at low, middle and high channel.

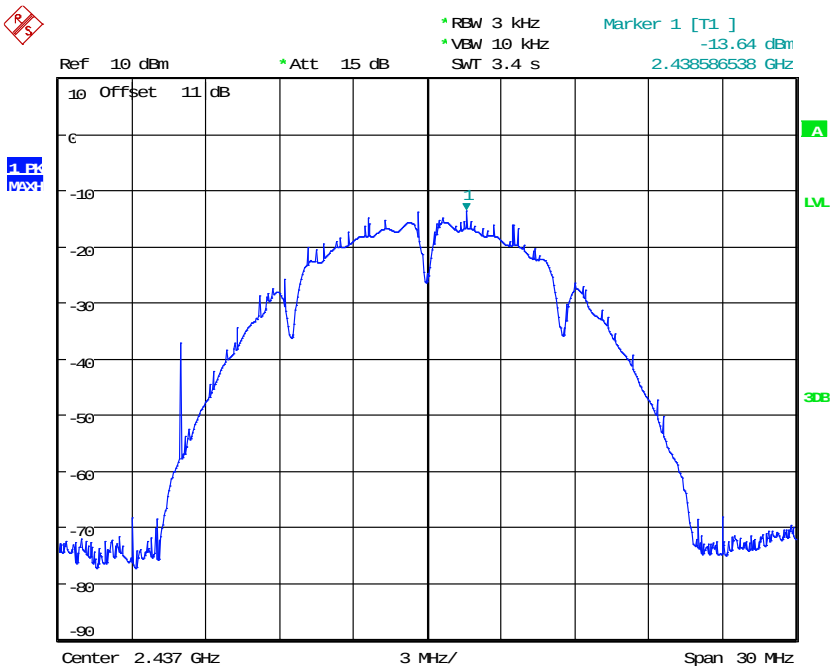
The peak output power is measured with a measurement bandwidth of 10 MHz and displayed on diagram together with Peak Power Spectral Density result which was measured with a bandwidth of 3 kHz, appreciate frequency span and sweep time.

WLAN
ANT 1



POWER DENSITY 802.11B CH01
Date: 13.NOV.2019 17:27:09

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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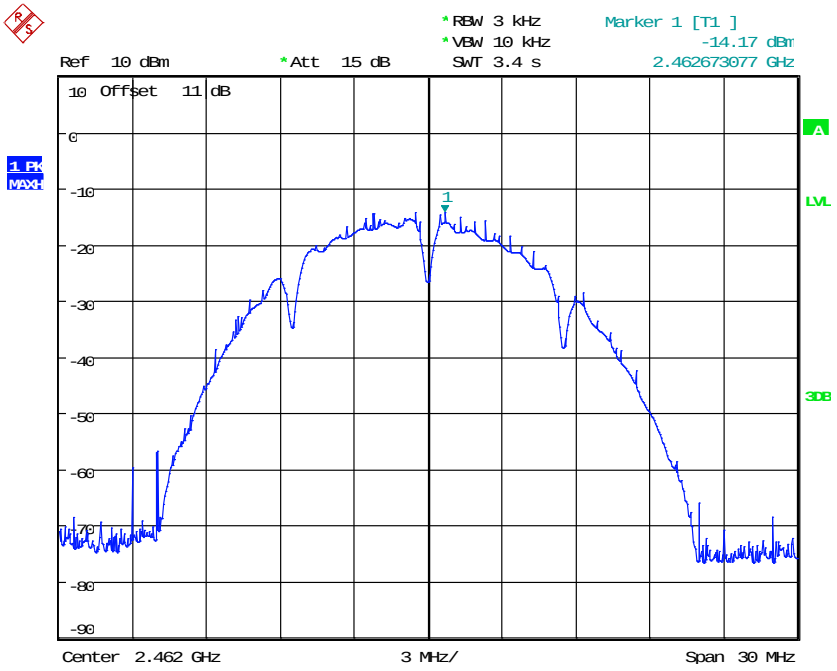

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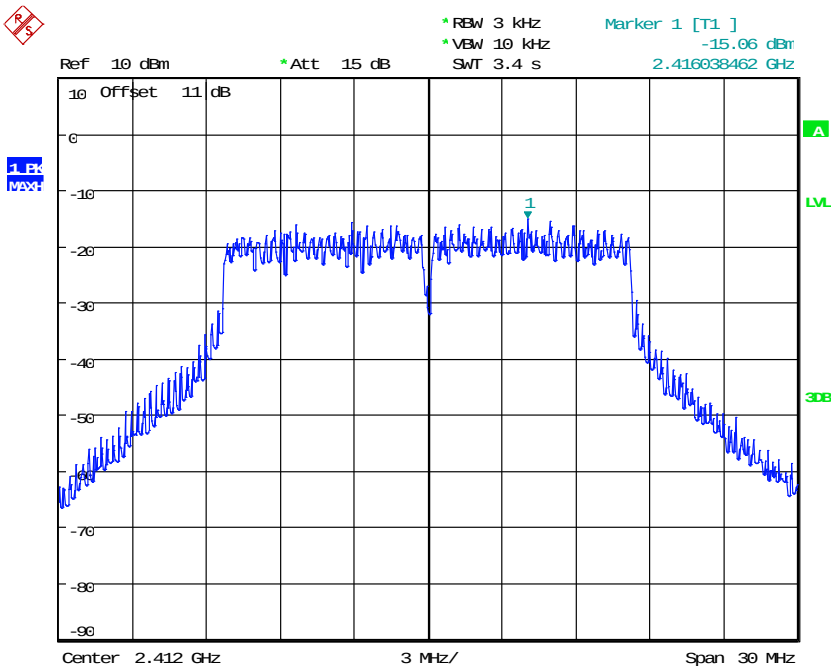

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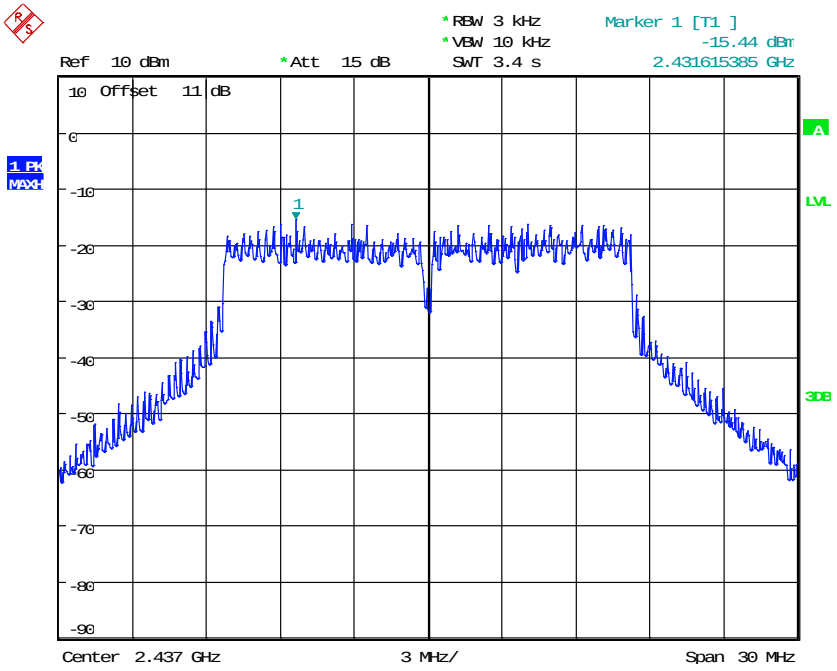

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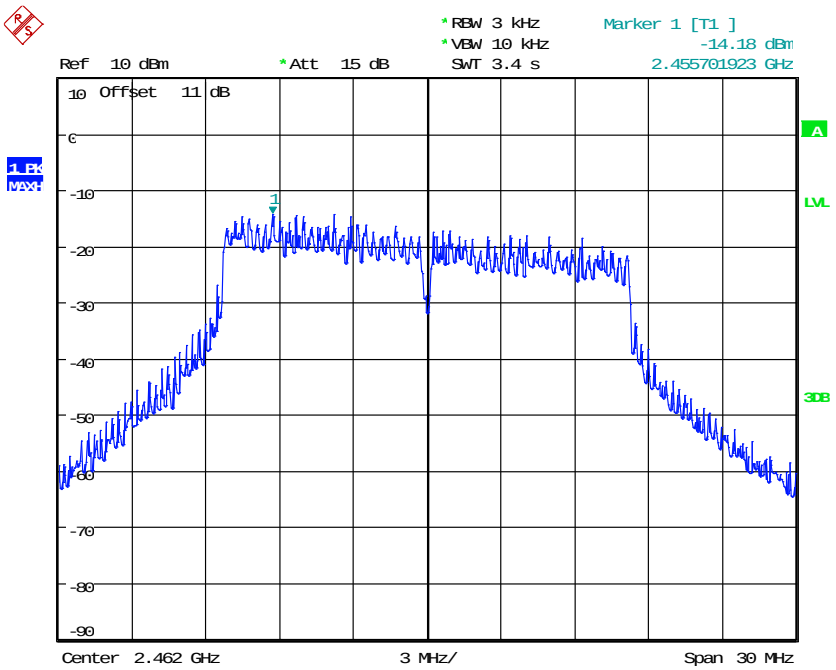
Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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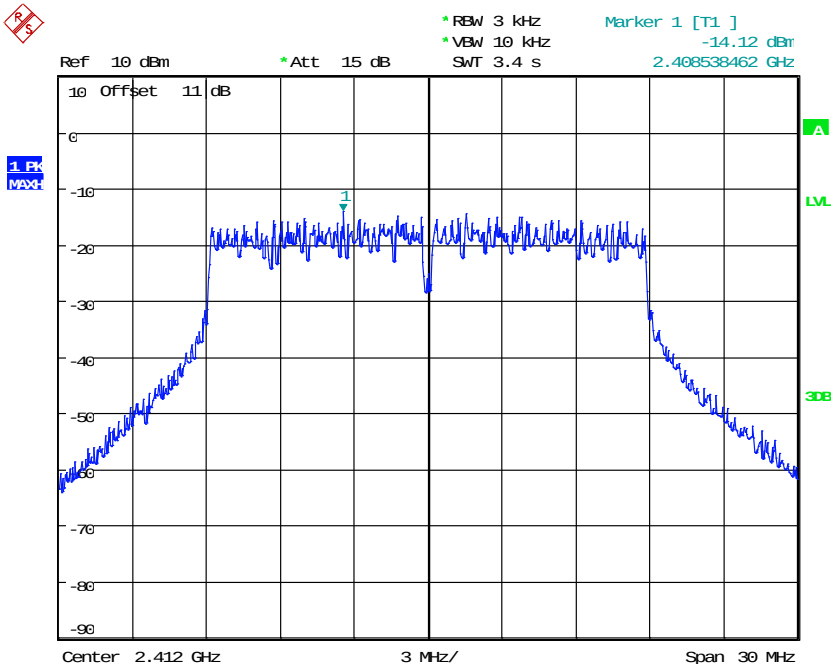
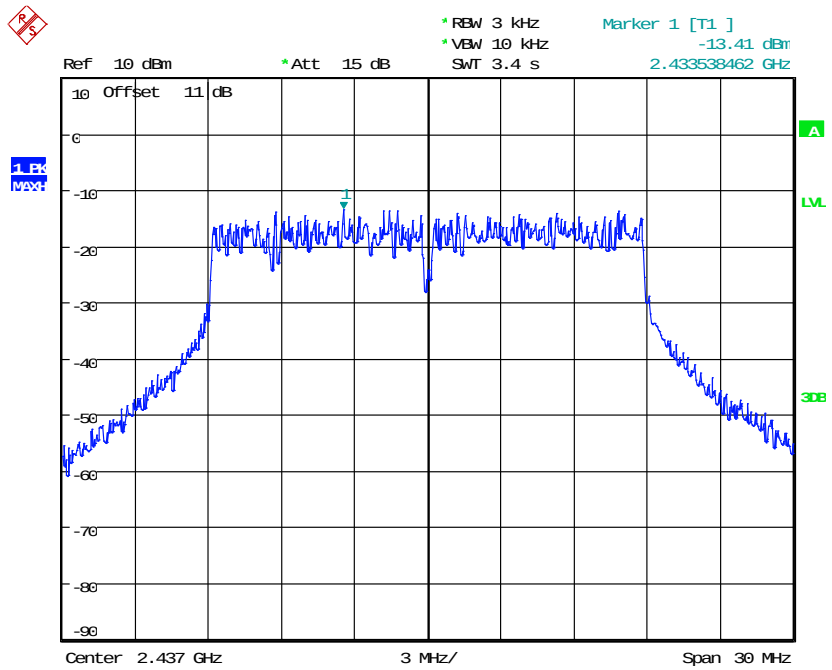
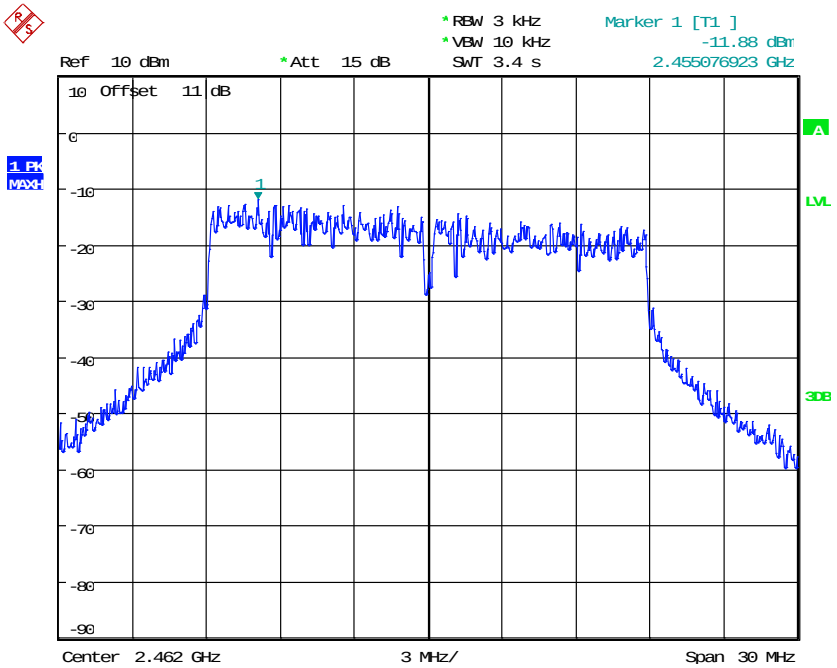


POWER DENSITY 802.11N 20MHZ CH1
Date: 13.NOV.2019 17:38:58



POWER DENSITY 802.11N 20MHZ CH6

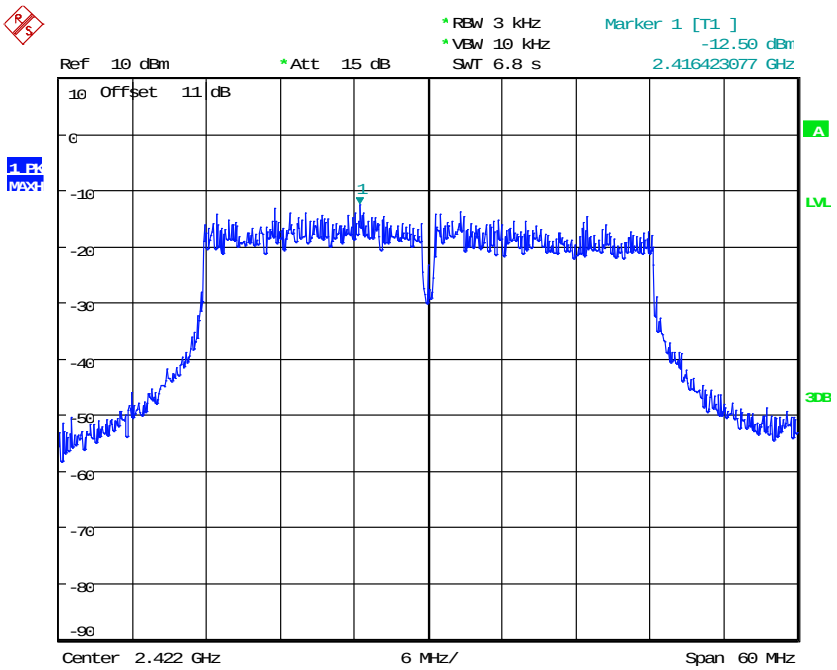
Date: 13.NOV.2019 17:39:54



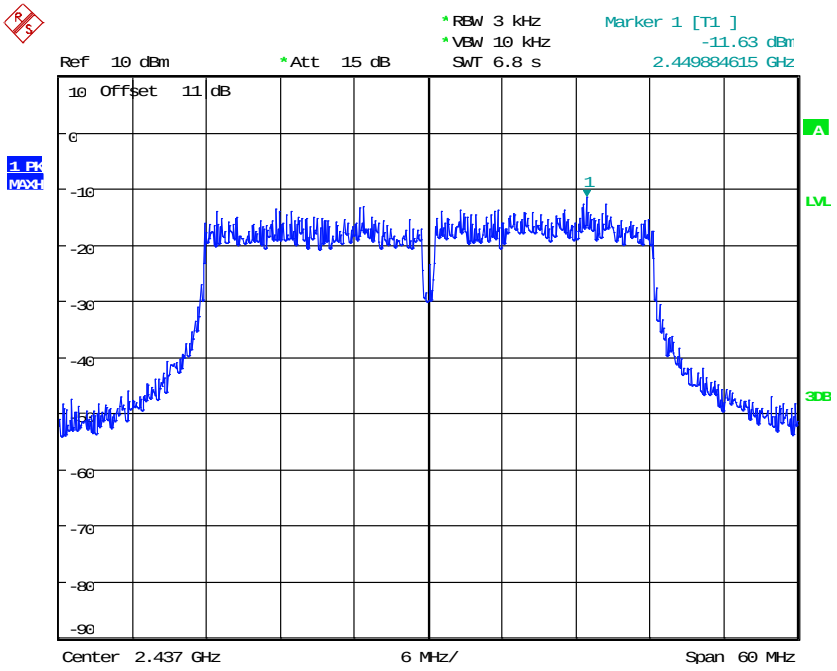
POWER DENSITY 802.11N 20MHZ CH11

Date: 13.NOV.2019 17:40:55

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

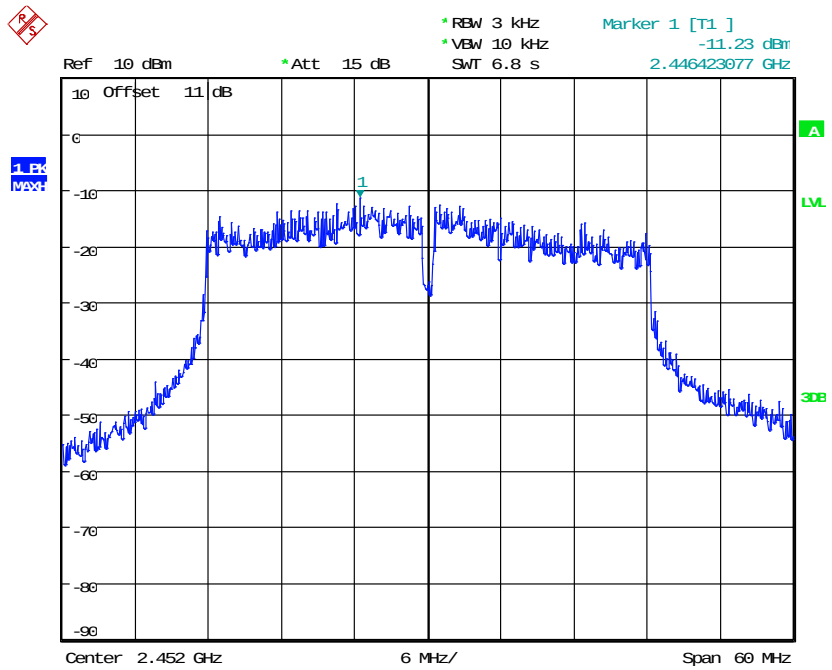


POWER DENSITY 802.11N 40MHZ CH1
Date: 13.NOV.2019 17:43:11



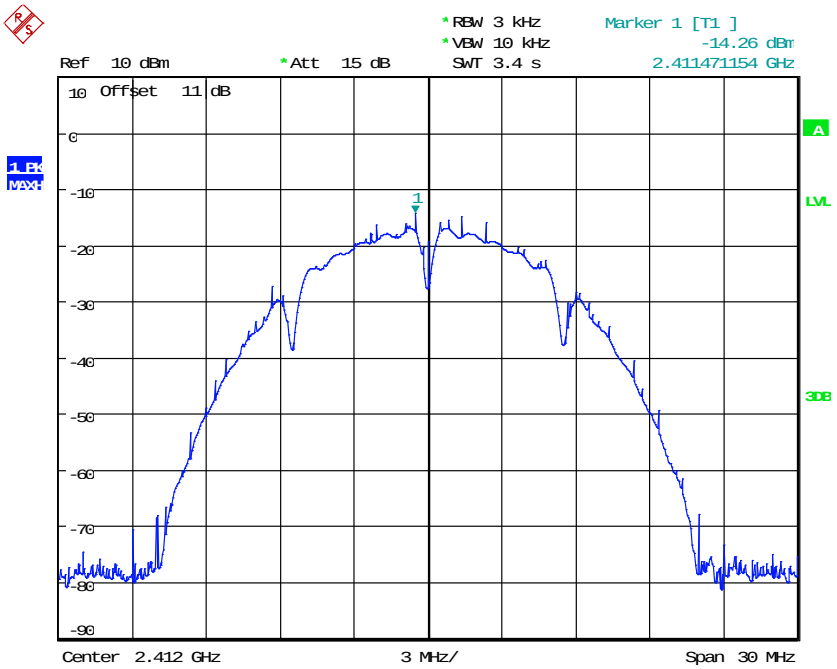
POWER DENSITY 802.11N 40MHZ CH4
Date: 13.NOV.2019 17:45:10

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



POWER DENSITY 802.11N 40MHZ CH7
Date: 13.NOV.2019 17:47:11

ANT 2



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Date: 14.NOV.2019 14:02:49

Registration number: W6M21903-18923-C-1
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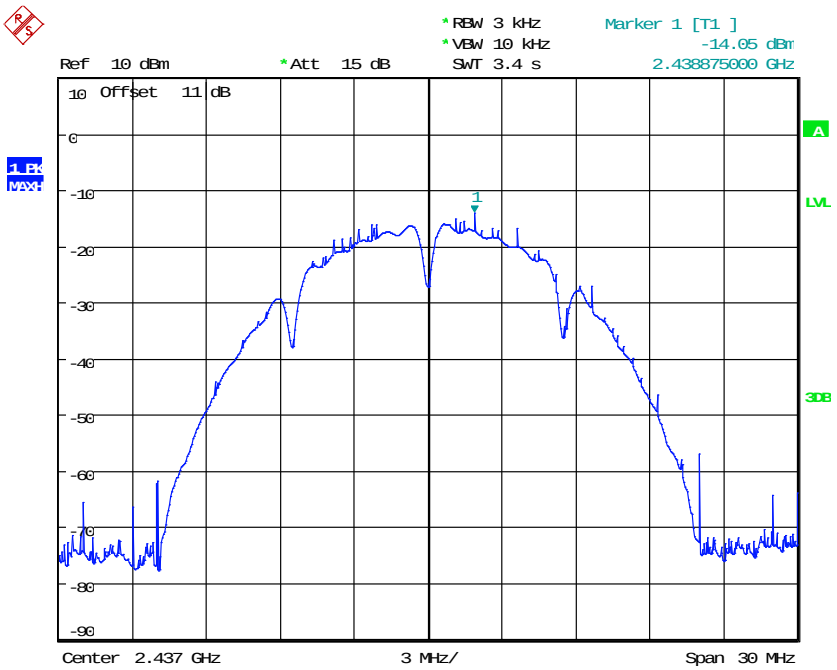

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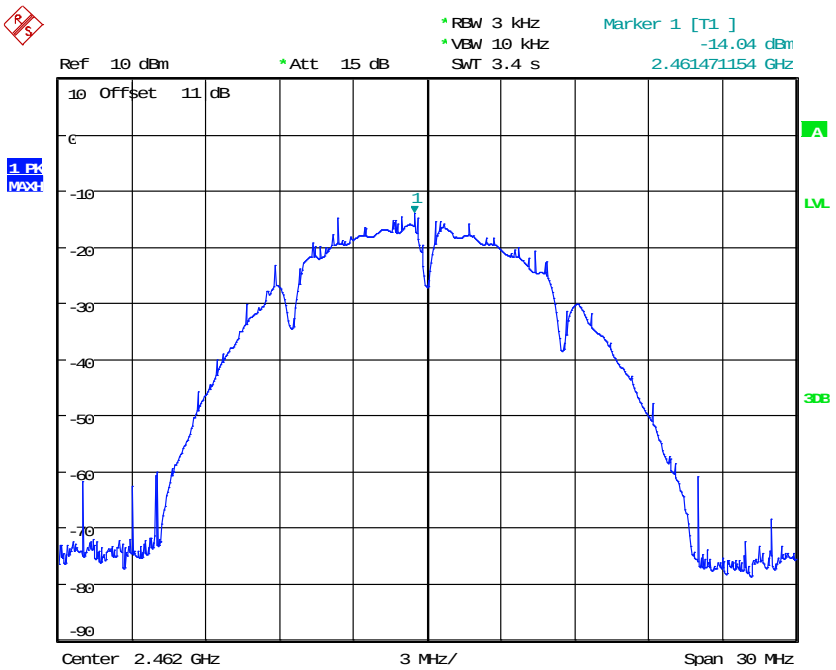

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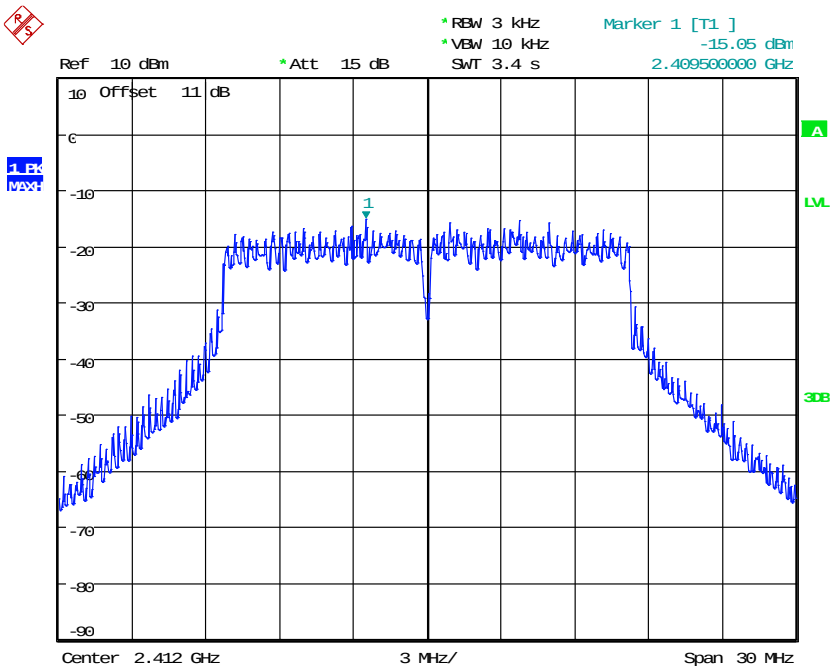
Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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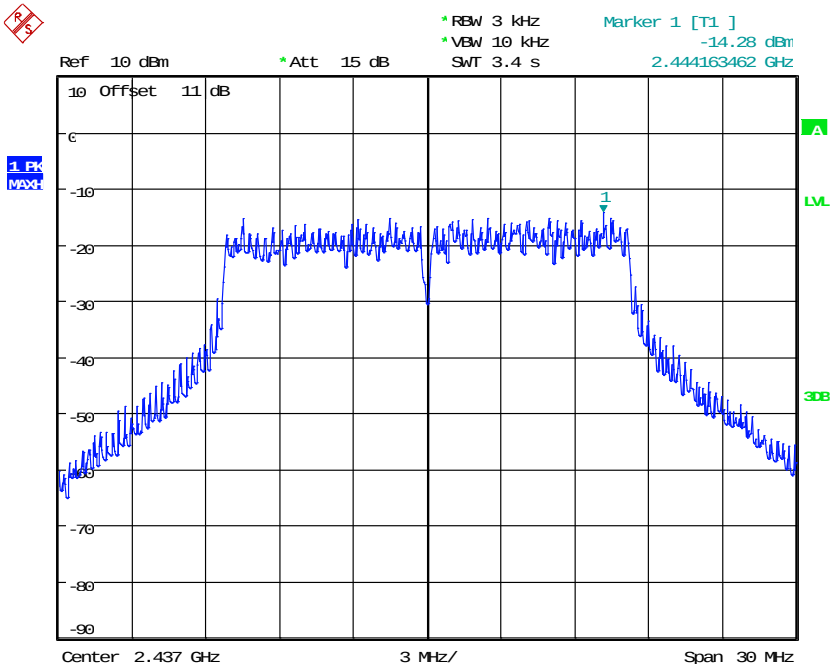

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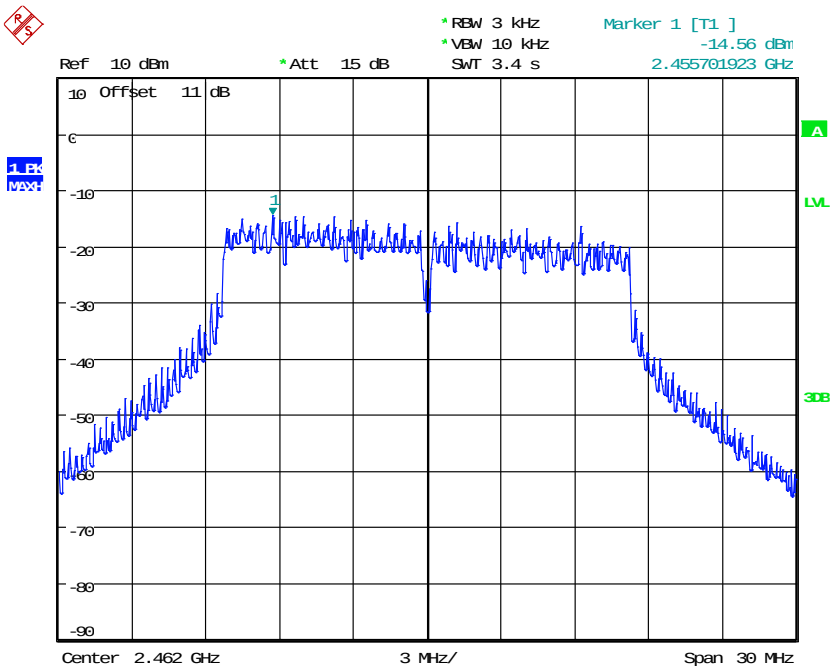
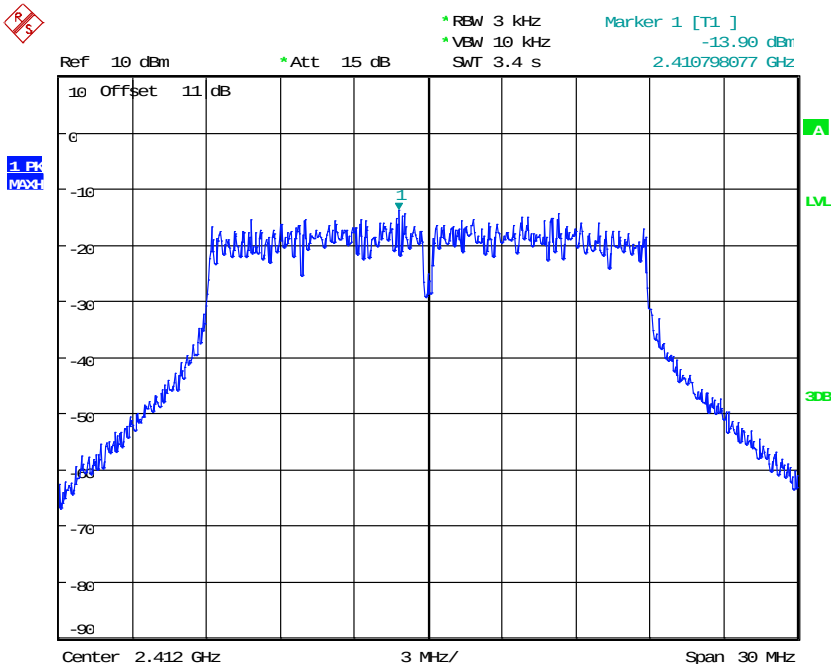
Date: 14.NOV.2019 14:11:36

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I

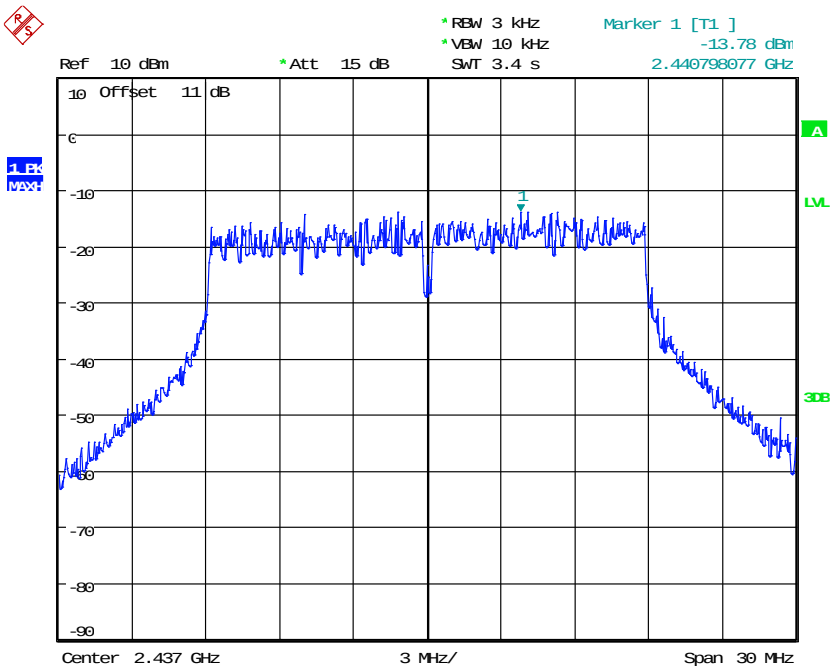


POWER DENSITY 802.11G CH11
Date: 14.NOV.2019 14:12:24

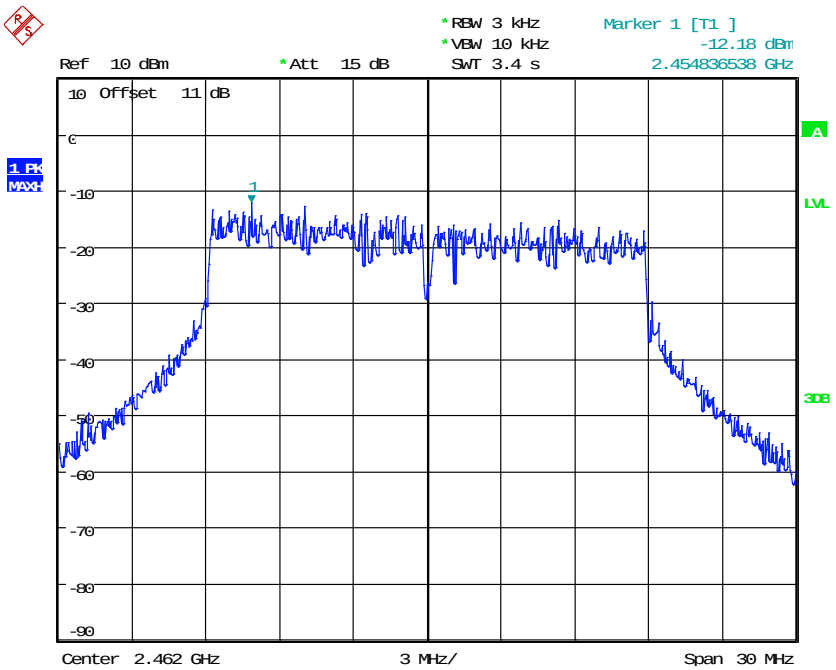


POWER DENSITY 802.11N 20MHZ CH1
Date: 14.NOV.2019 14:20:31

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



POWER DENSITY 802.11N 20MHZ CH6
Date: 14.NOV.2019 14:21:45



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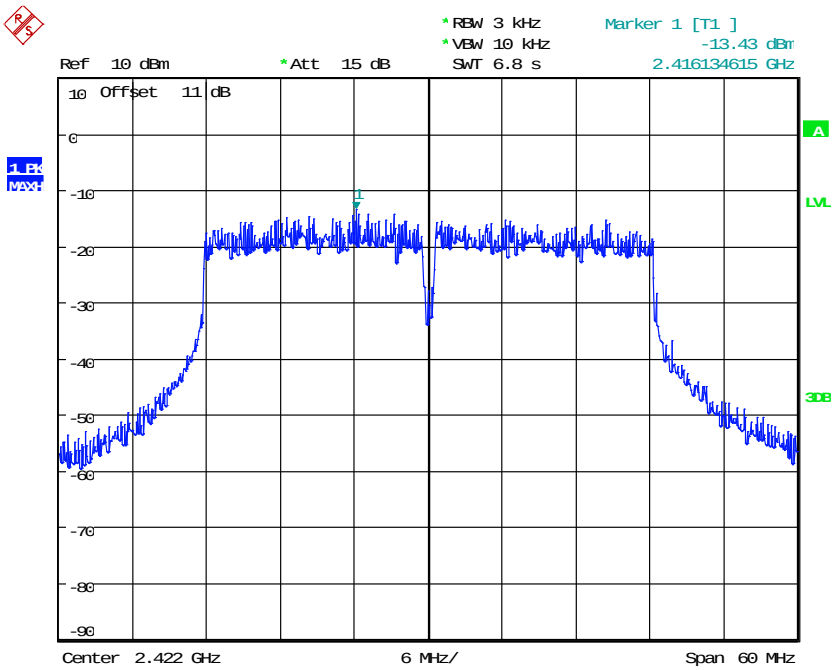
Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



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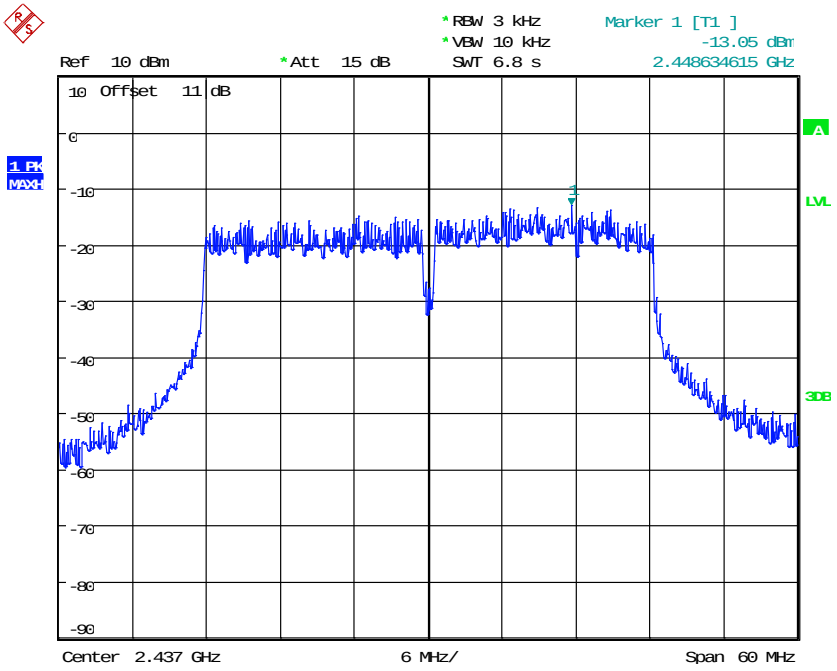
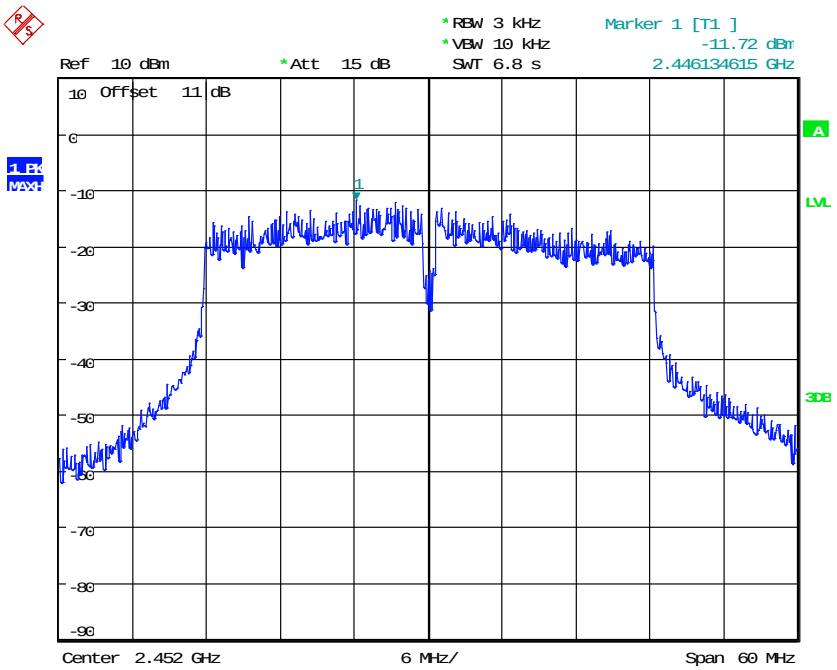
Date: 14.NOV.2019 14:24:02



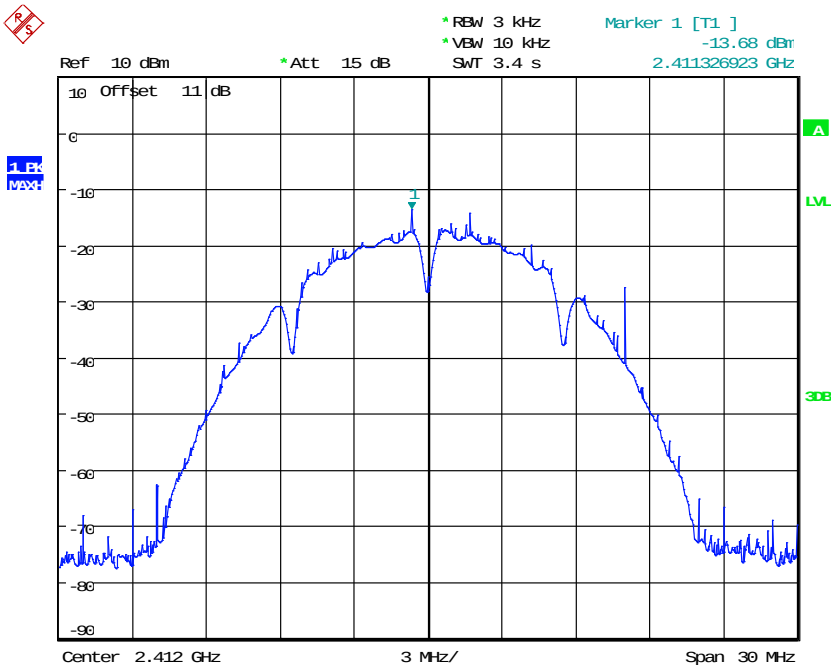
POWER DENSITY 802.11N 40MHZ CH4
Date: 14.NOV.2019 14:25:00

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



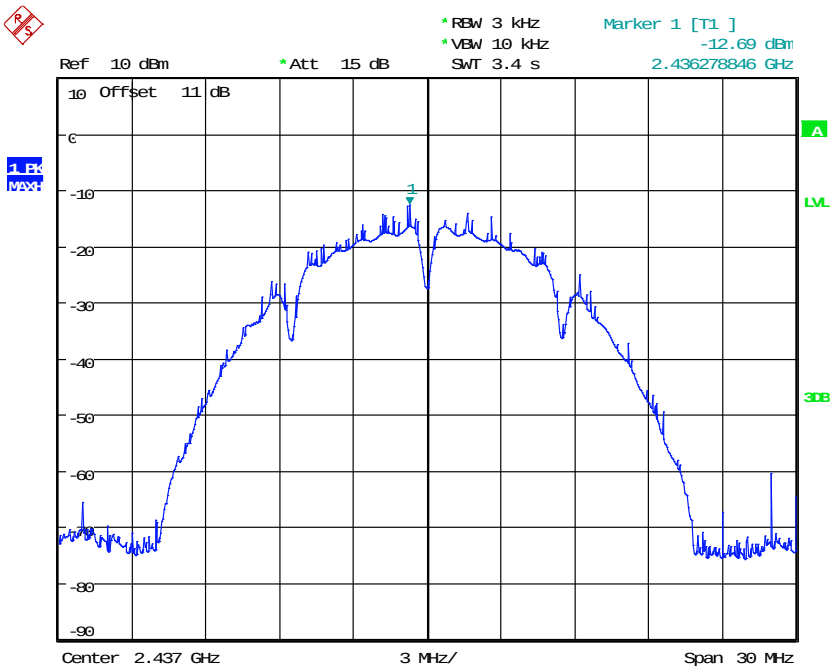
POWER DENSITY 802.11N 40MHZ CH7
Date: 14.NOV.2019 14:27:07

ANT 3

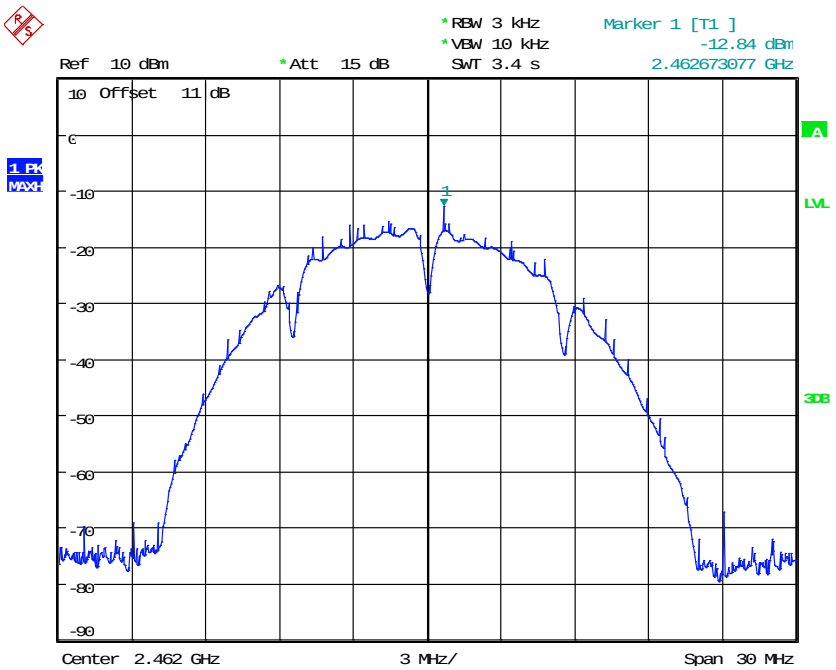


POWER DENSITY 802.11B CH01
Date: 14.NOV.2019 15:56:06

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



POWER DENSITY 802.11B CH06
Date: 14.NOV.2019 15:59:11



POWER DENSITY 802.11B CH11
Date: 14.NOV.2019 21:30:45

Registration number: W6M21903-18923-C-1
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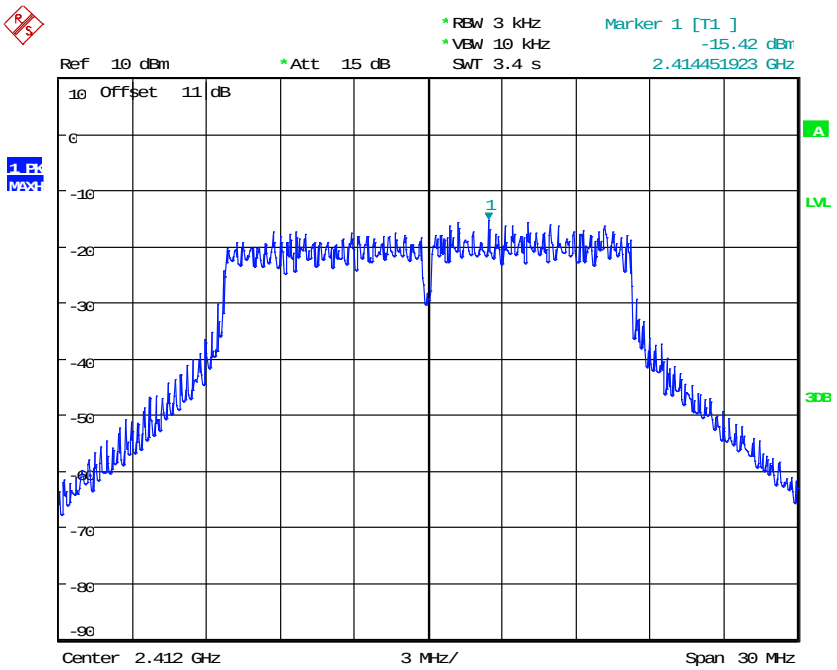
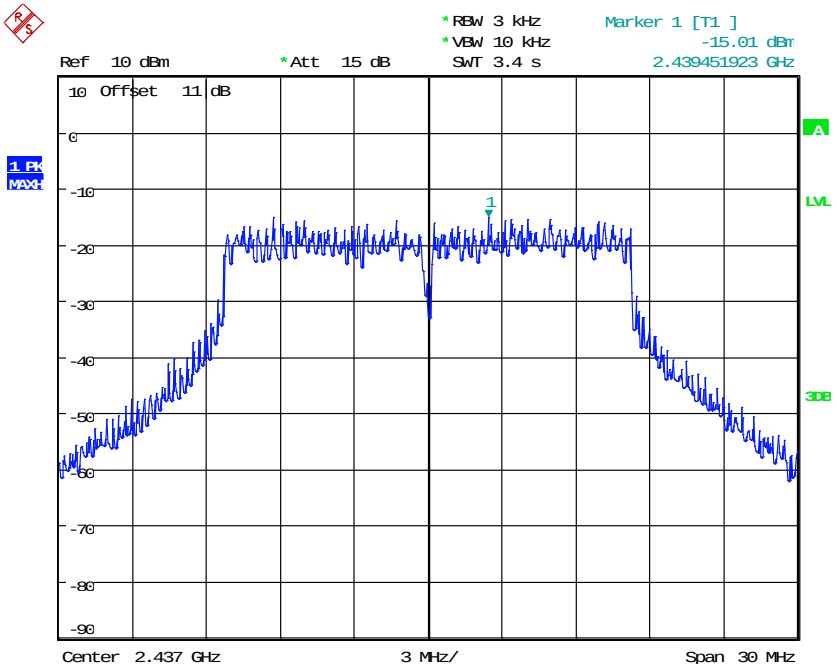


POWER DENSITY 802.11G CH01
Date: 14.NOV.2019 16:01:56



POWER DENSITY 802.11G CH06
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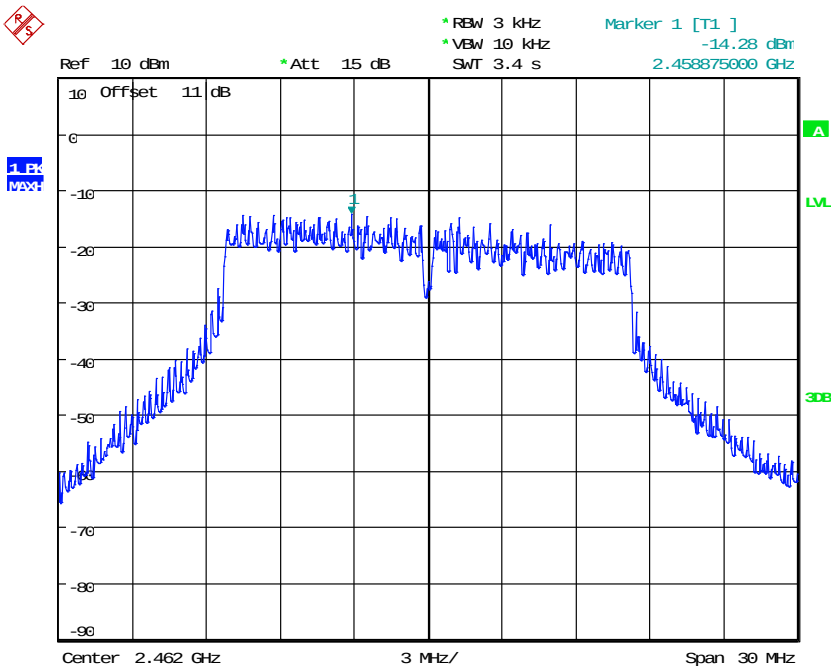

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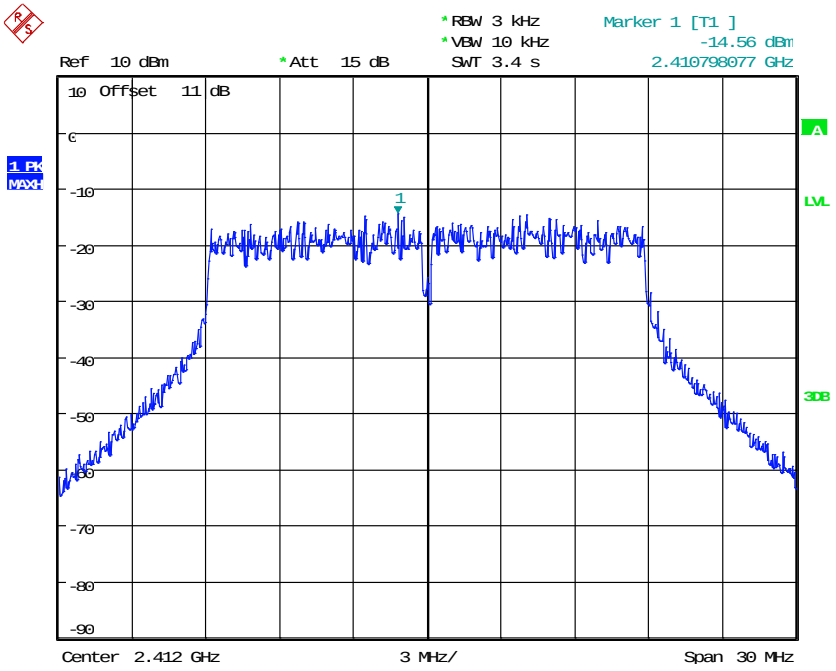

POWER DENSITY 802.11N 20MHZ CH1
Date: 14.NOV.2019 16:20:59

Registration number: W6M21903-18923-C-1
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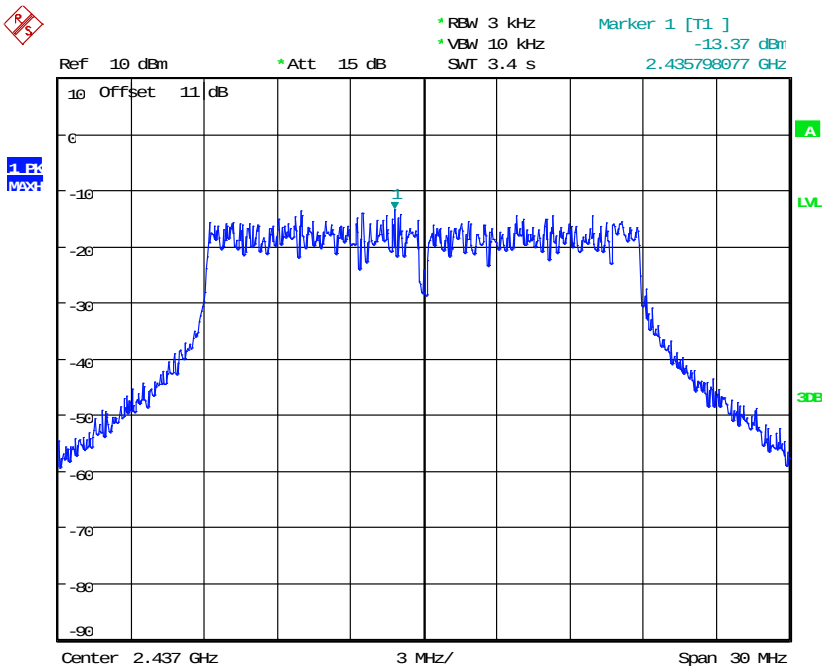
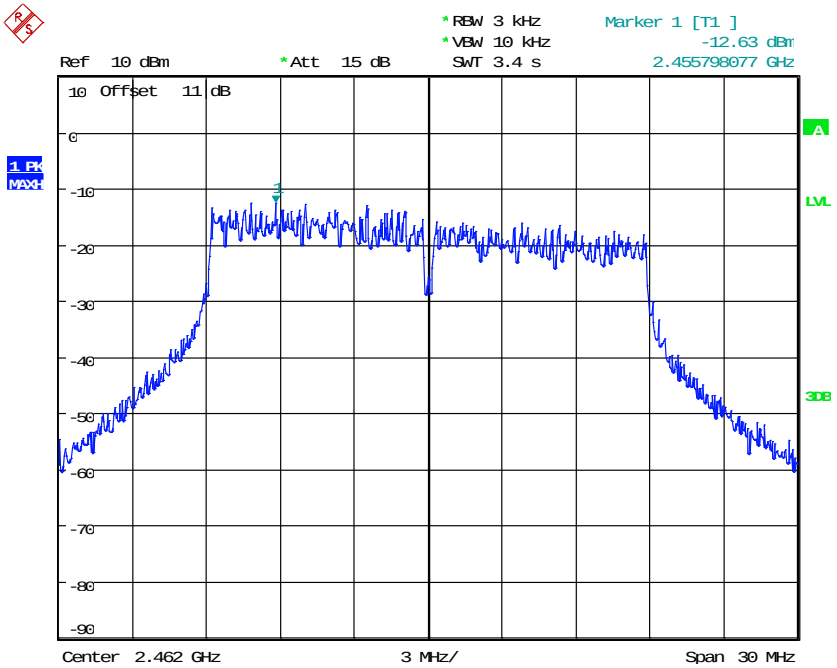


POWER DENSITY 802.11N 20MHZ CH6
Date: 14.NOV.2019 16:22:15



POWER DENSITY 802.11N 20MHZ CH11
Date: 14.NOV.2019 16:23:14

Registration number: W6M21903-18923-C-1
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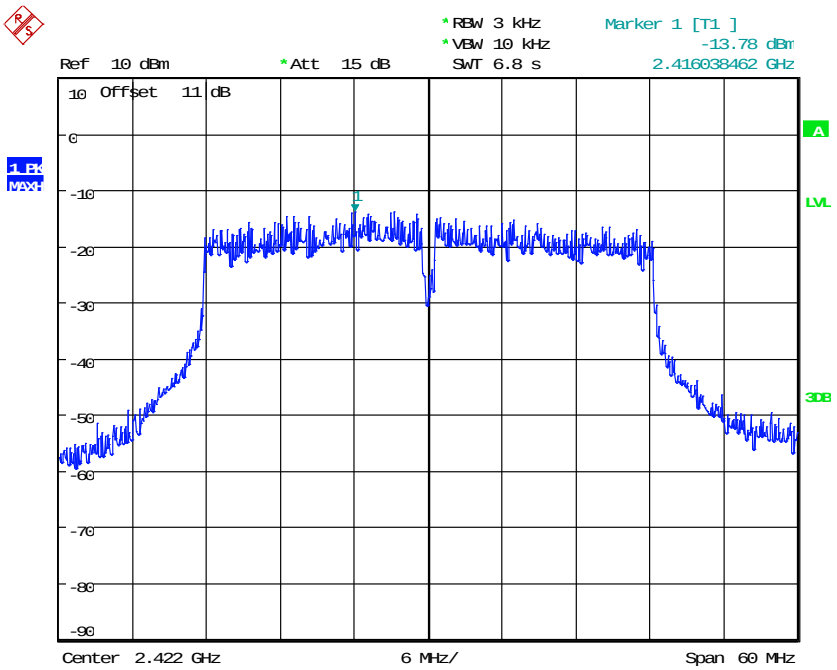

POWER DENSITY 802.11N 40MHZ CH1
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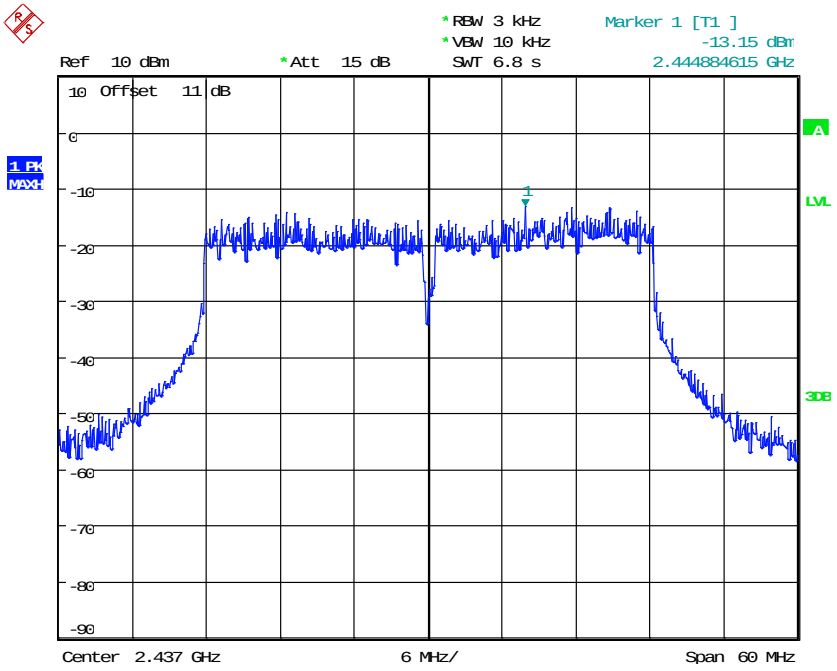
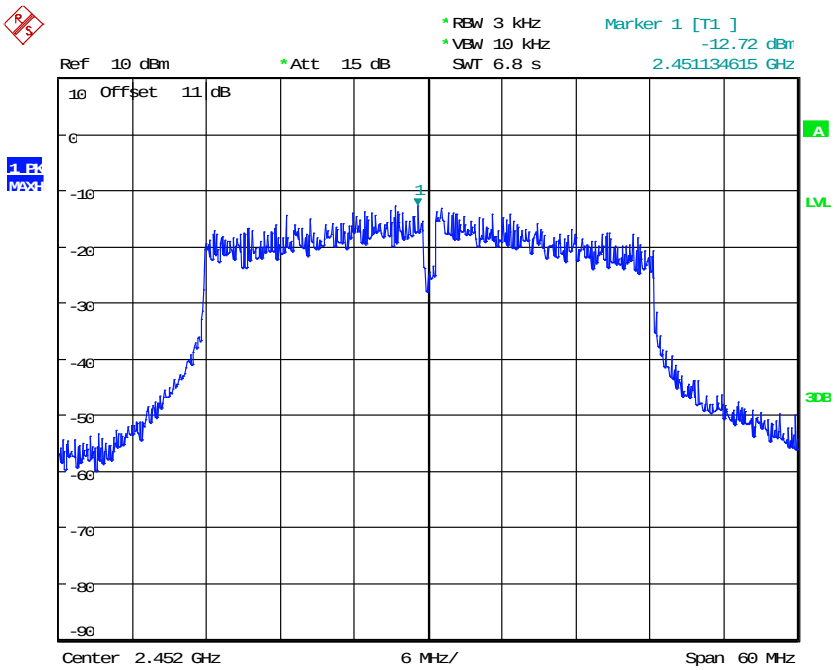


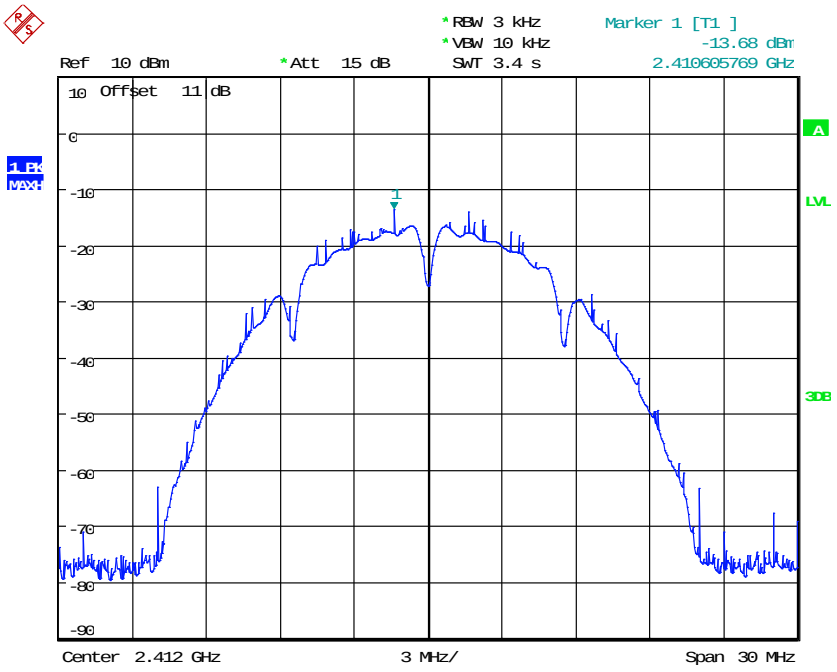
POWER DENSITY 802.11N 40MHZ CH4
Date: 14.NOV.2019 16:27:11

Registration number: W6M21903-18923-C-1
FCC ID: 2AUISION8I



POWER DENSITY 802.11N 40MHZ CH7
Date: 14.NOV.2019 16:30:16

ANT 4



POWER DENSITY 802.11B CH01
Date: 14.NOV.2019 17:33:39

Registration number: W6M21903-18923-C-1
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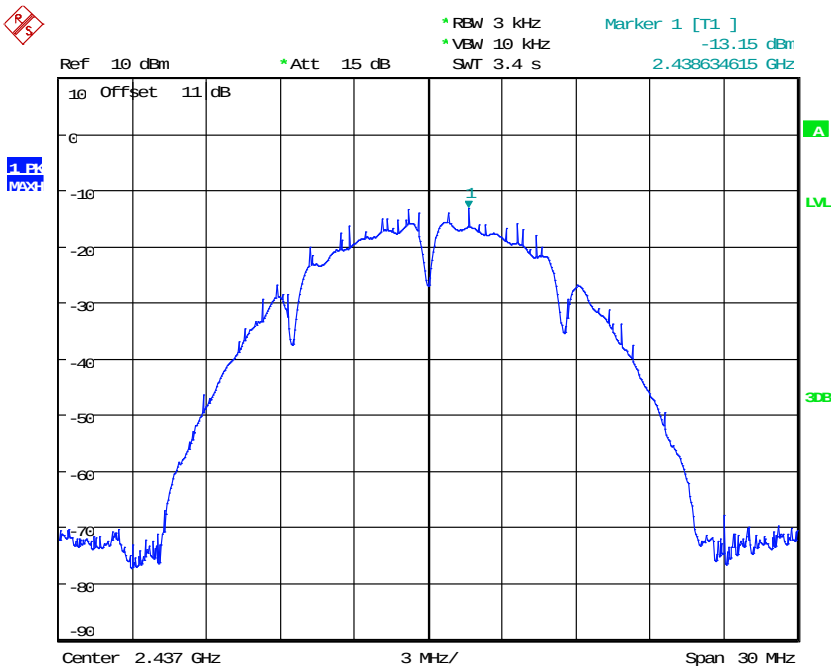
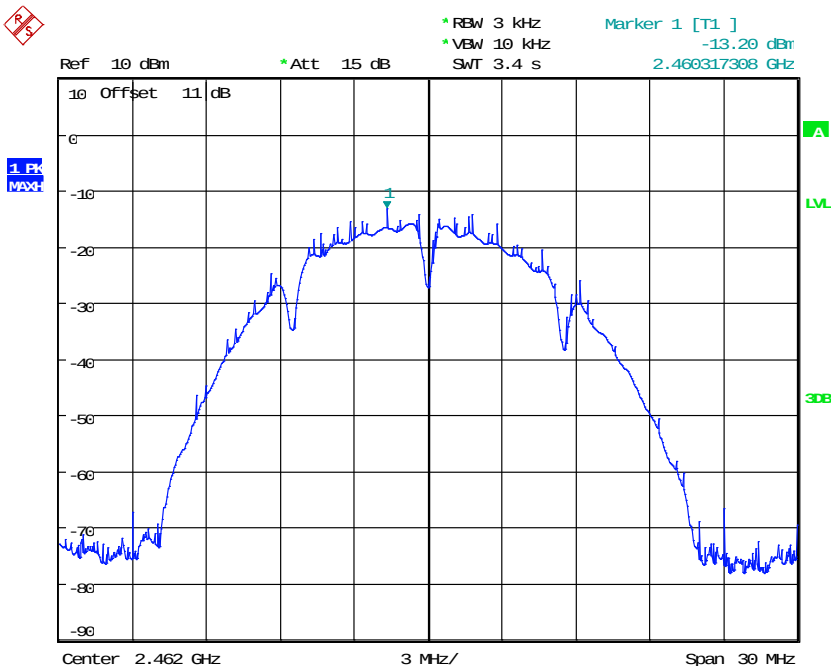


POWER DENSITY 802.11B CH06
Date: 14.NOV.2019 17:34:34



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Date: 14.NOV.2019 17:35:18

Registration number: W6M21903-18923-C-1
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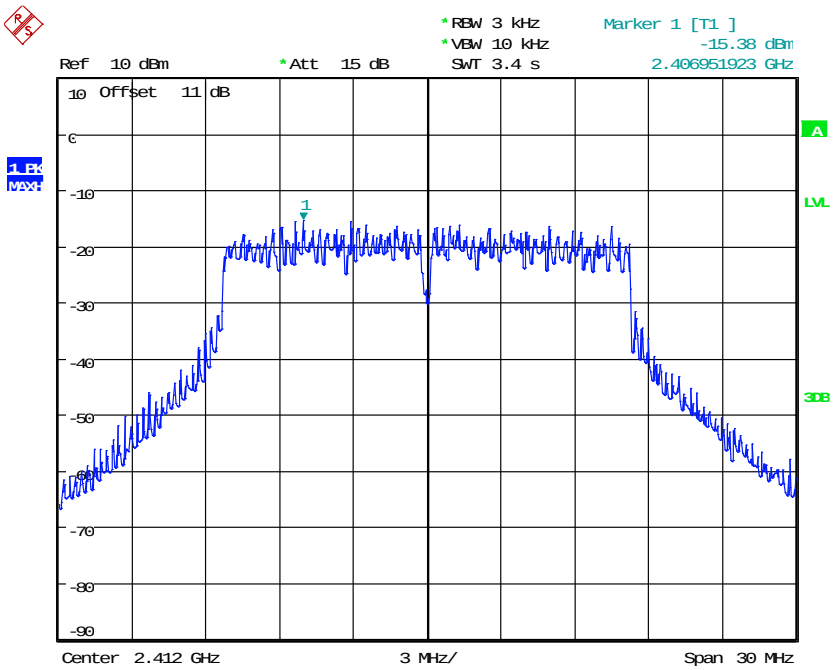
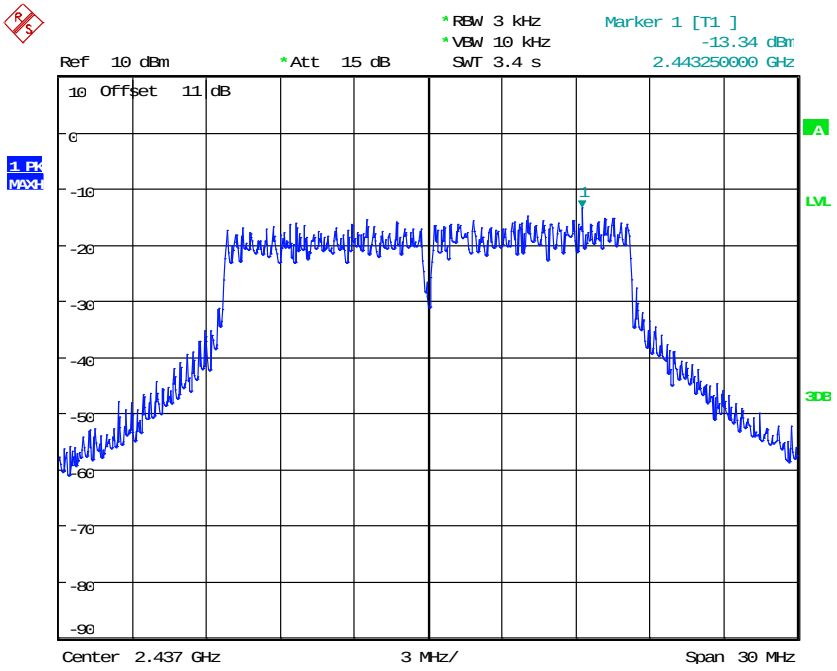


POWER DENSITY 802.11G CH01
Date: 14.NOV.2019 17:36:08



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Date: 14.NOV.2019 17:36:53

Registration number: W6M21903-18923-C-1
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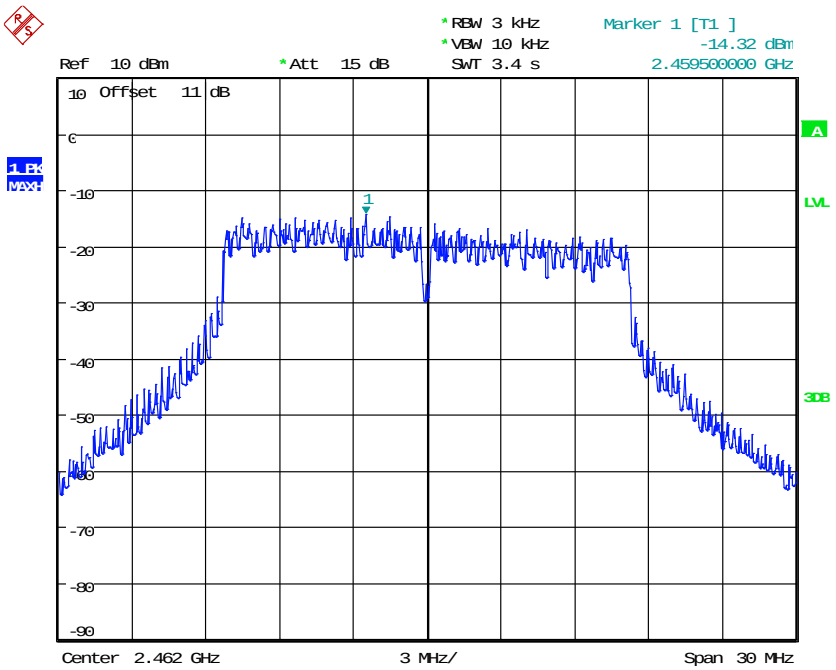

POWER DENSITY 802.11G CH11
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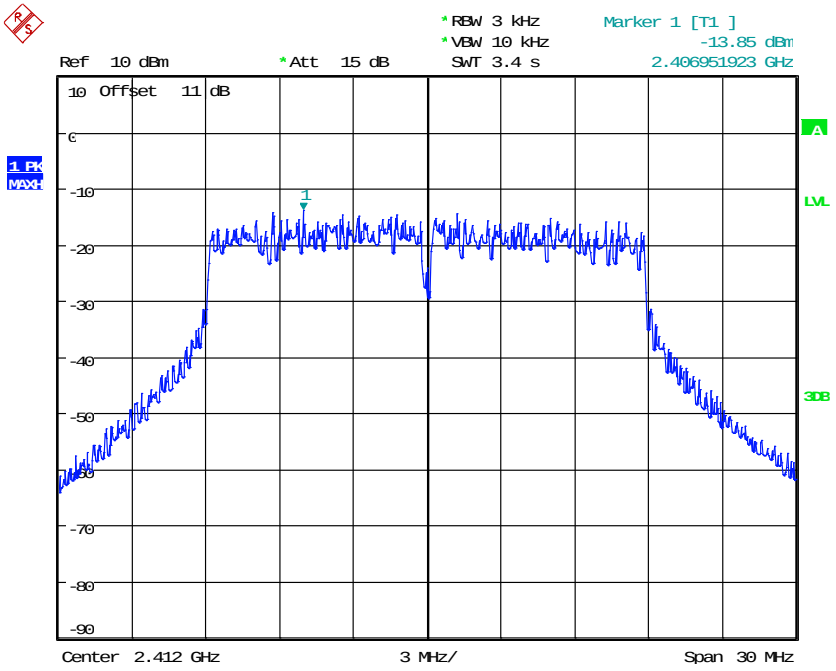

POWER DENSITY 802.11N 20MHZ CH1
Date: 14.NOV.2019 17:40:23

Registration number: W6M21903-18923-C-1
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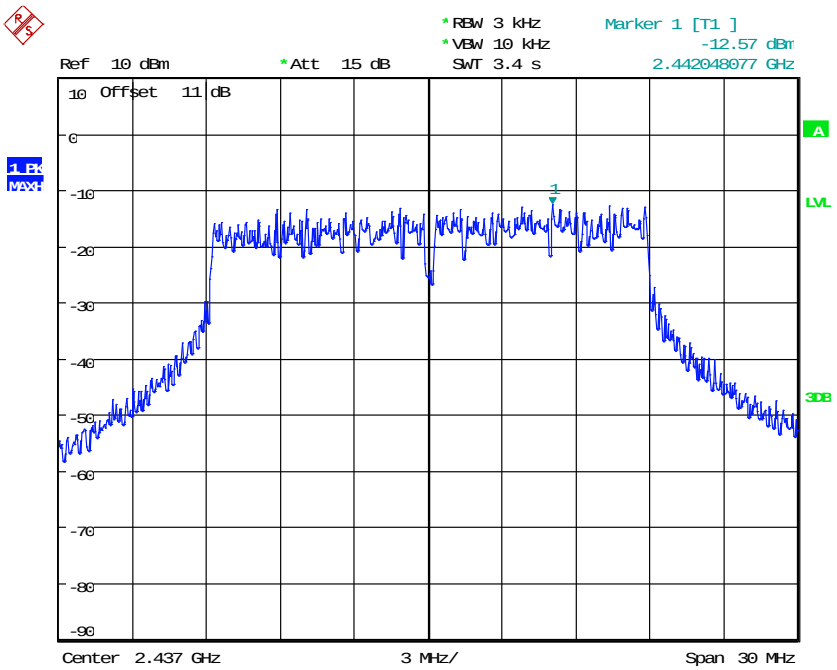

POWER DENSITY 802.11N 20MHZ CH6
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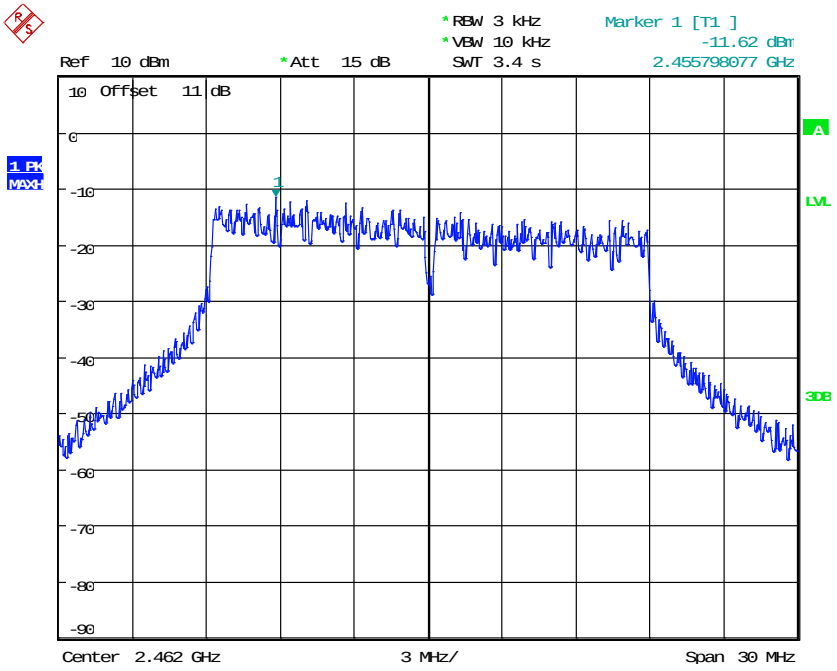

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Date: 14.NOV.2019 19:39:03

Registration number: W6M21903-18923-C-1
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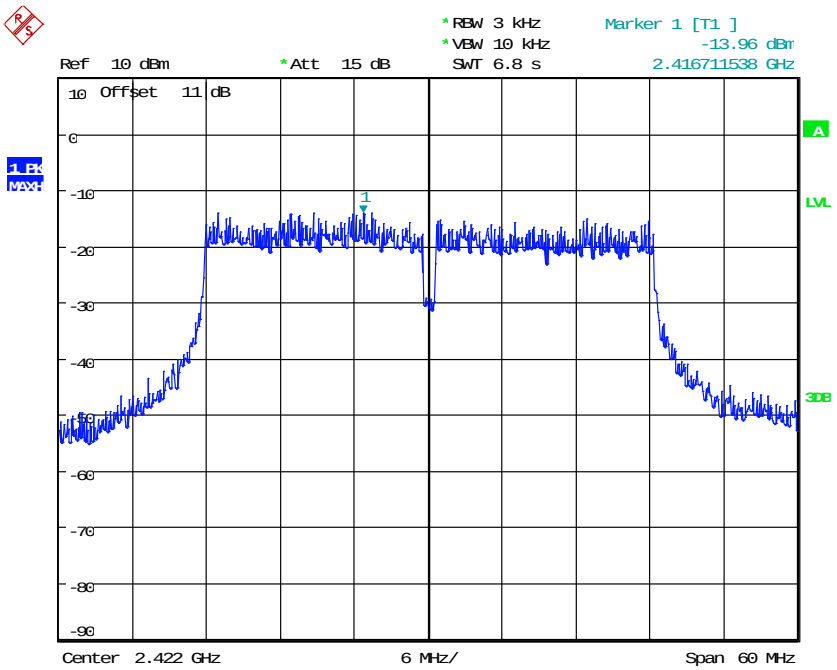

POWER DENSITY 802.11N 40MHZ CH1
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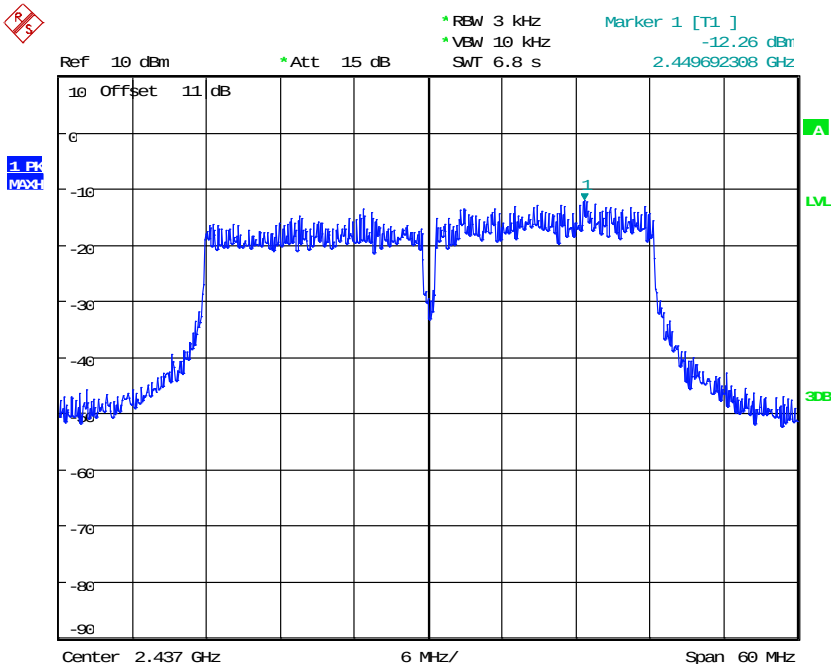

POWER DENSITY 802.11N 40MHZ CH4
Date: 14.NOV.2019 19:42:21