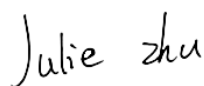


TEST REPORT

Applicant: Shanghai Lebai Robot Co., Ltd
Address: No.700 Yishan Rd. Xuhui District, Shanghai, China
Equipment Type: Control CabinetUseful
Model Name: LM3 (refer section 2.4)
Brand Name: N/A
FCC ID: 2A962-LM3
Test Standard: 47 CFR Part 15 Subpart C
(refer section 3.1)
Sample Arrival Date: Dec. 21, 2022
Test Date: Jan. 10, 2023 - Jan. 16, 2023
Date of Issue: Mar. 03, 2023

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Julie Zhu**Checked by:** Ye Hongji**Approved by:** Liao Jianming
(Technical Director)

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Feb. 16, 2023</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>Feb. 20, 2023</u>	<u>Change the address of applicant and manufacturer</u>
<u>Rev. 03</u>	<u>Mar. 03, 2023</u>	<u>Update product name, antenna gain and normal voltage;</u> <u>Delete the related description of the MIMO;</u> <u>Added antenna interface description in section 5.1.2</u>

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☒ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Shanghai Lebai Robot Co., Ltd
Address	No.700 Yishan Rd. Xuhui District, Shanghai, China

2.2 Manufacturer Information

Manufacturer	Shanghai Lebai Robot Co., Ltd
Address	No.700 Yishan Rd. Xuhui District, Shanghai, China

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	Control CabinetUseful
Model Name Under Test	LM3
Series Model Name	LM3-L1
Description of Model name differentiation	Robots vary in length, size and weight (this information provided by the customer).
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Technical Information

Network and Wireless connectivity	WIFI 802.11b, 802.11g, 802.11n
-----------------------------------	--------------------------------

The requirement for the following technical information of the EUT was tested in this report:

Frequency Range		802.11b/g/n(20 MHz): 2.412 GHz - 2.462 GHz f _c = 2412 MHz + (N-1)*5 MHz, where - f _c = "Operating Frequency" in MHz, - N = "Channel Number" with the range from 1 to 11. 802.11n(40 MHz): 2.422 GHz - 2.452 GHz f _c = 2412 MHz + (N-1)*5 MHz, where - f _c = "Operating Frequency" in MHz, - N = "Channel Number" with the range from 3 to 9.
Modulation Type		DSSS, OFDM
Product Type		☒ Mobile ☐ Portable ☐ Fix Location
Antenna System (eg., MIMO, Smart Antenna)		N/A
Categorization as Correlated or Completely Uncorrelated		N/A
Antenn a Type	Main Antenna	Folding rod antenna
	Aux. Antenna	
Antenn a Gain	Main Antenna	1.54 dBi
	Aux. Antenna	
About the Product		Only the WIFI 802.11b, 802.11g and 802.11n (HT20/40) was tested in this report.

Mode	Antenna	
	Main Antenna	Aux. Antenna
802.11b	√	√
802.11g	√	√
802.11n20	√	√
802.11n40	√	√
Note: All the configurations were tested, but only the worst data was shown in this report.		

Modulation technology	Modulation Type	Transfer Rate (Mbps)(Single RF path)
DSSS (802.11b)	DBPSK	1
	DQPSK	2
	CCK	5.5/11
OFDM (802.11g)	BPSK	6/9
	QPSK	12/18
	16QAM	24/36
	64QAM	48/54
OFDM (802.11n-20 MHz)	BPSK	6.5/7.2
	QPSK	13/19.5/14.4/21.7
	16QAM	26/39/28.9/43.3
	64QAM	52/58.5/65/57.8/65/72.2
OFDM (802.11n-40 MHz)	BPSK	13.5/15
	QPSK	27/40.5/30/45
	16QAM	54/81/60/90
	64QAM	108/121.5/135/120/150

Note: Preliminary tests were performed in different data rate in above table to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	
Output Power	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Occupied Bandwidth	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Radiated Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Band Edge	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Power spectral density (PSD)	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9

Note: The above EUT information in section 2.4 and 2.6 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C	Intentional radiators of radio frequency equipment
2	KDB Publication 662911 D01v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g., MIMO, Smart Antenna, etc)
3	ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
4	KDB Publication 558074 D01v05r02	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES

3.2 Test Verdict

No.	Description	FCC PART No.	Test Result	Verdict
1	Antenna Requirement	15.203	N/A	Pass ^{Note 1}
2	Output Power	15.247 (b)	ANNEX A.1	Pass
3	Occupied Bandwidth	15.247 (a)	ANNEX A.2	Pass
4	Conducted Spurious Emission	15.247 (d)	ANNEX A.3	Pass
5	Band Edge(Authorized-band band-edge)	15.247 (d)	ANNEX A.4	Pass
6	Conducted Emission	15.207	ANNEX A.5	Pass
7	Radiated Spurious Emission	15.209; 15.247 (d)	ANNEX A.6	Pass
8	Band Edge(Restricted-band band-edge)	15.209; 15.247 (d)	ANNEX A.7	Pass
9	Power spectral density (PSD)	15.247 (e)	ANNEX A.8	Pass
10	Receiver Spurious Emissions	N/A	N/A	N/A ^{Note 2}

Note ¹: Please refer to section 5.1.

Note ²: Only radio communication receivers operating in stand-alone mode within the band 30-960 MHz, as well as scanner receivers, are subject to Industry Canada requirements, so this test is not applicable.

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	47% to 67%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+15.4°C to +25.1°C
Working Voltage of the EUT	NV (Normal Voltage)	110 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-40	101544	2022.01.04	2023.01.03
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-40	101544	2023.12.28	2024.12.27
Power Sensor	ROHDE&SCHWARZ	NRP18S	102521	2022.03.09	2023.03.08
Spectrum Analyzer	KEYSIGHT	N9020A	MY50531259	2022.09.06	2023.09.05
Signaling Unit	ROHDE&SCHWARZ	CMW500	171150	2022.06.29	2023.06.28
Test Antenna-Horn (1-18 GHz)	SCHWARZBECK	BBHA 9120D	02460	2021.05.19	2024.05.08
Test Antenna-Horn (18-40 GHz)	A-INFO	LB- 180400KF	J211060273	2021.07.02	2024.07.01
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2021.08.16	2024.08.15
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2022.09.09	2023.09.08
Test Antenna-Loop (9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2021.04.16	2024.04.15
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60* 7.35m	N/A	2021.08.15	2024.08.14
EMI Receiver	Agilent	N9038A	MY55330120	2022.09.09	2023.09.08
Amplifier (30-1GHz)	COM-MV	ZT30- 1000M	B2017119081	2022.09.09	2023.09.08
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2021.10.10	2022.10.09
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9168	9168-00867	2022.04.12	2025.04.11
Test Antenna- Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2021.04.16	2024.04.15
Anechoic Chamber	YiHeng	9m*6m*6m	966#2	2022.02.19	2024.08.18
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2022.09.09	2023.09.08
LISN	SCHWARZBECK	NSLK 8127	8127-687	2022.06.01	2023.05.31
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.5m*3.1m* 2.8m	N/A	2022.02.19	2025.02.18
Amplifier (1-12GHz)	COM-MV	LSCX_LNA1 -12G-01	180602	2020.09.08	2023.09.07
Amplifier (7-18GHz)	COM-MV	XKu_LNA7- 18G-01	180601	2020.09.08	2023.09.07

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Amplifier (18-40GHz)	COM-MV	KA_LNA18- 40G-01	18050001	2020.09.08	2023.09.07

4.3 Test Software List

Description	Manufacturer	Software Version	Serial No.	Applicable test Setup
BL410R	BALUN	V2.1.1.488	N/A	The section 4.5.1
BL410E	BALUN	V19.8.28.435	N/A	The section 4.5.2&4.5.3&4.5.4&4.5.5

4.4 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Parameters	Uncertainty
Occupied Channel Bandwidth	2.8%
RF output power, conducted	1.28 dB
Power Spectral Density, conducted	1.30 dB
Unwanted Emissions, conducted	1.84 dB
All emissions, radiated	5.36 dB
Temperature	0.82°C
Humidity	4.1%

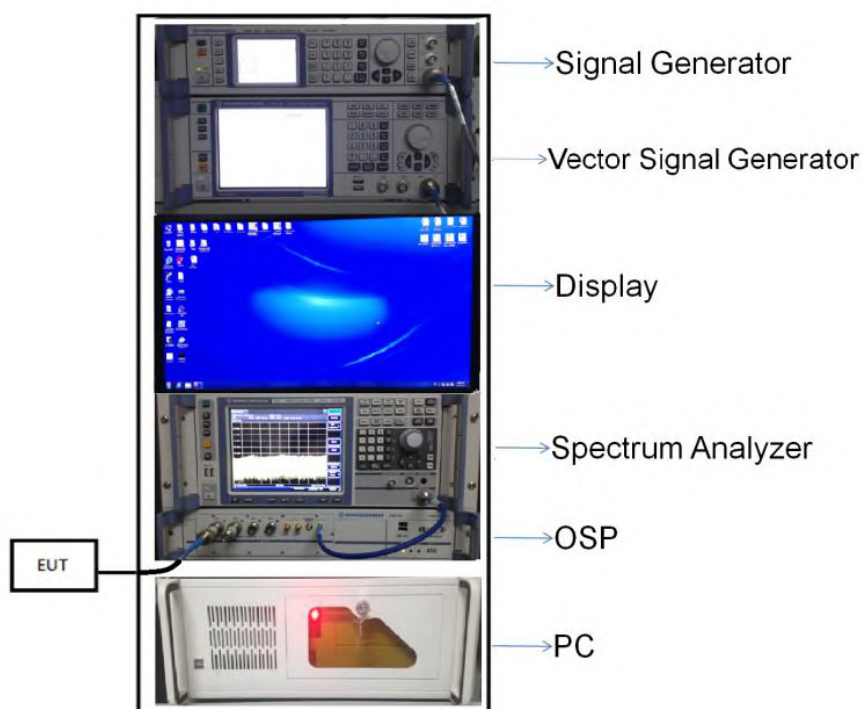
4.5 Description of Test Setup

4.5.1 For Antenna Port Test

Conducted value (dBm) = Measurement value (dBm) + cable loss (dB)

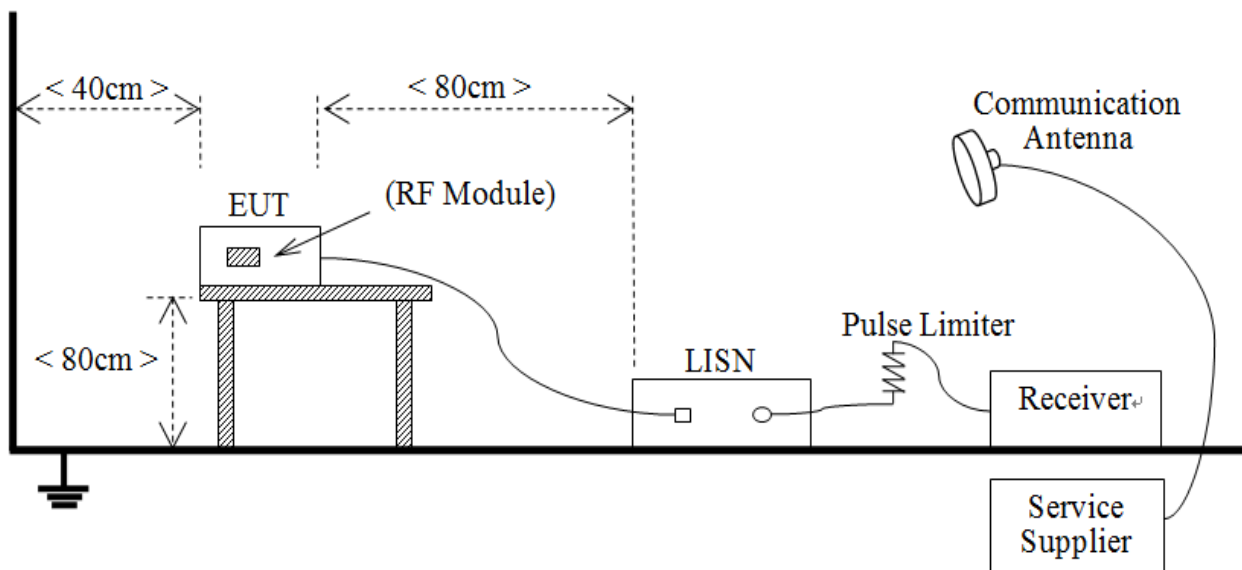
For example: the measurement value is 10 dBm and the cable 0.5dBm used, then the final result of EUT:

Conducted value (dBm) = 10 dBm + 0.5 dB = 10.5 dBm



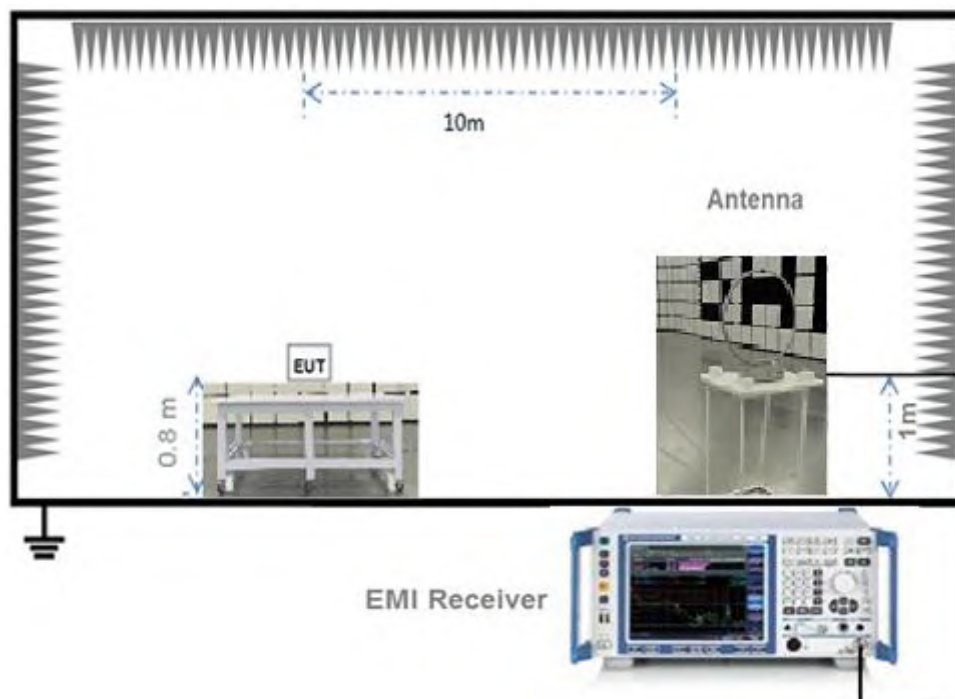
(Diagram 1)

4.5.2 For AC Power Supply Port Test



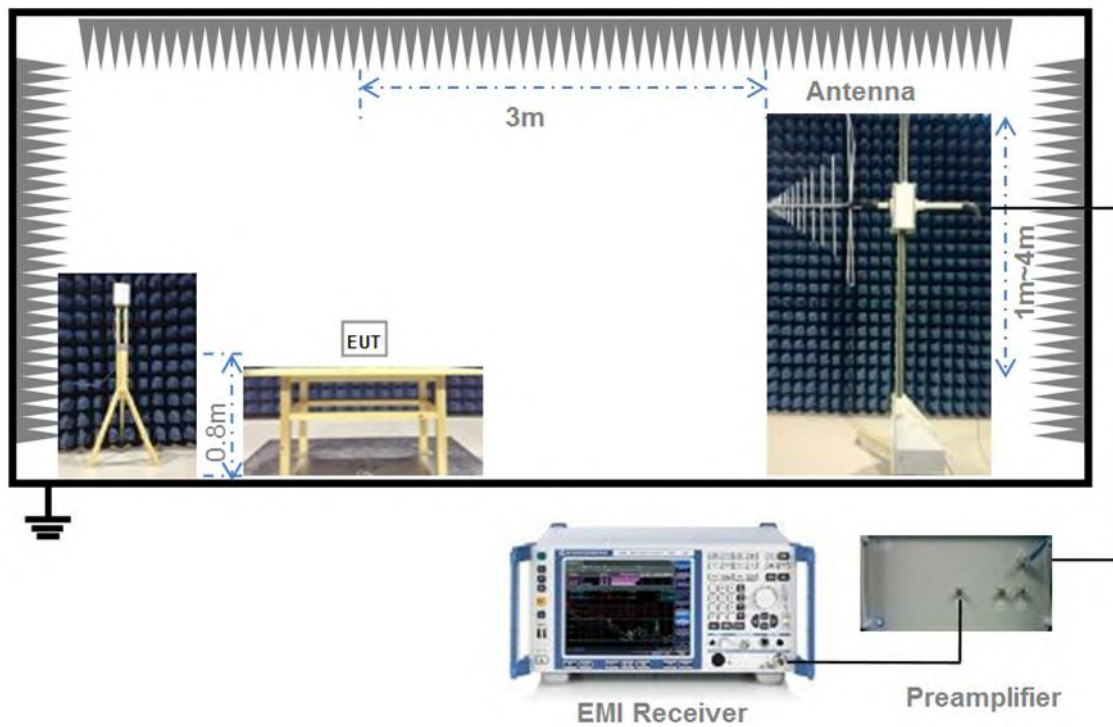
(Diagram 2)

4.5.3 For Radiated Test (Below 30 MHz)



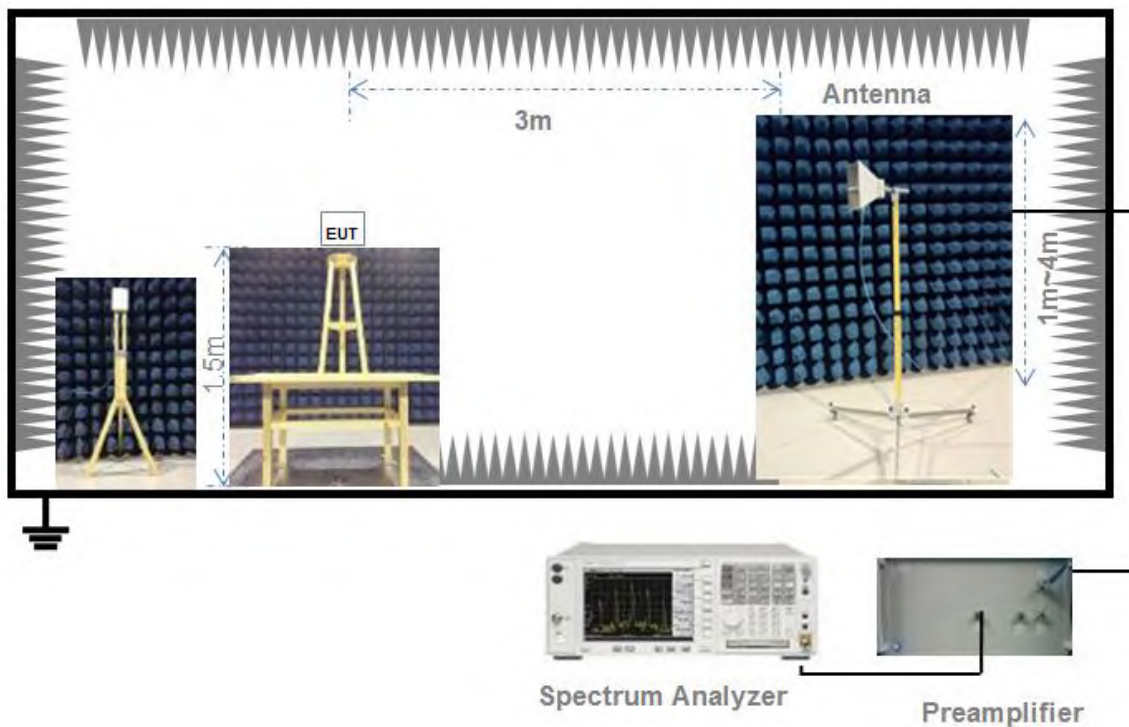
(Diagram 3)

4.5.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.5.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

4.6 Measurement Results Explanation Example

4.6.1 For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

4.6.2 For radiated band edges and spurious emission test:

$$E = \text{EIRP} - 20 \log D + 104.8$$

where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

EIRP = Measure Conducted output power Value (dBm) + Maximum transmit antenna gain (dBi) + the appropriate maximum ground reflection factor (dB)

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Relevant Standards

FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product.	An embedded-in antenna design is used. The external antenna is reverse polarity SMA.

Reference Documents	Item
Photo	Please refer to the EUT Photo documents.

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 Output Power

5.2.1 Test Limit

FCC § 15.247(b)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements.

5.2.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Maximum peak conducted output power

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

Maximum conducted (average) output power (Reporting Only)

a) As an alternative to spectrum analyzer or EMI receiver measurements, measurements may be performed

using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.

- 1) The EUT is configured to transmit continuously, or to transmit with a constant duty factor.
- 2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
- 3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

b) If the transmitter does not transmit continuously, measure the duty cycle (x) of the transmitter output signal as

described in Section 6.0.

c) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

d) Adjust the measurement in dBm by adding $10\log(1/x)$, where x is the duty cycle to the measurement result.

Measurements of duty cycle

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal.

Set the center frequency of the instrument to the center frequency of the transmission.

Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value.

Set $VBW \geq RBW$. Set detector = peak or average.

The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

5.2.4 Test Result

Please refer to ANNEX A.1.

5.3 Occupied Bandwidth

5.3.1 Limit

FCC §15.247(a)

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.

5.3.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

Use the following spectrum analyzer settings:

Set RBW = 100 kHz.

Set the video bandwidth (VBW) ≥ 3 RBW.

Detector = Peak.

Trace mode = max hold.

Sweep = auto couple.

Allow the trace to stabilize.

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.3.4 Test Result

Please refer to ANNEX A.2.

5.4 Conducted Spurious Emission

5.4.1 Limit

FCC §15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.4.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The DTS rules specify that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

- a) If the maximum peak conducted output power procedure was used to demonstrate compliance as described in 9.1, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).
- b) If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).
- c) In either case, attenuation to levels below the 15.209 general radiated emissions limits is not required.

The following procedures shall be used to demonstrate compliance to these limits. Note that these procedures can be used in either an antenna-port conducted or radiated test set-up. Radiated tests must conform to the test site requirements and utilize maximization procedures defined herein.

Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DTS channel center frequency.

Set the span to ≥ 1.5 times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW $\geq 3 \times$ RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum PSD level.

Emission level measurement

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

Set the RBW = 100 kHz.

Set the VBW $\geq 3 \times$ RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in 11.1 a) or 11.1 b). Report the three highest emissions relative to the limit.

5.4.4 Test Result

Please refer to ANNEX A.3.

5.5 Band Edge (Authorized-band band-edge)

5.5.1 Limit

FCC §15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.5.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The following procedures may be used to determine the peak or average field strength or power of an unwanted emission that is within 2 MHz of the authorized band edge. If a peak detector is utilized, use the procedure described in 13.2.1. Use the procedure described in 13.2.2 when using an average detector and the EUT can be configured to transmit continuously (i.e., duty cycle $\geq 98\%$). Use the procedure described in 13.2.3 when using an average detector and the EUT cannot be configured to transmit continuously but the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent). Use the procedure described in 13.2.4 when using an average detector for those cases where the EUT cannot be configured to transmit continuously and the duty cycle is not constant (duty cycle variations equal or exceed 2 percent).

When using a peak detector to measure unwanted emissions at or near the band edge (within 2 MHz of the authorized band), the following integration procedure can be used.

Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).

Set span to 2 MHz

RBW = 100 kHz.

VBW $\geq 3 \times$ RBW.

Detector = peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweep to continue until the trace stabilizes (required measurement time may increase for low duty cycle applications)

Compute the power by integrating the spectrum over 1 MHz using the analyzer's band power measurement function with band limits set equal to the emission frequency (femission) ± 0.5 MHz. If the instrument does not have a band power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by femission ± 0.5 MHz.

Standard method(The 99% OBW of the fundamental emission is without 2 MHz of the authorized band):

Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products that fall outside of the authorized band of operation.

Reference level: As required to keep the signal from exceeding the maximum instrument input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (\text{OBW/RBW})]$ below the reference level. Specific guidance is given in 4.1.5.2.

Attenuation: Auto (at least 10 dB preferred).

Sweep time: Coupled.

Resolution bandwidth: 100 kHz.

Video bandwidth: 300 kHz.

Detector: Peak.

Trace: Max hold.

5.5.4 Test Result

Please refer to ANNEX A.4.

5.6 Conducted Emission

5.6.1 Limit

FCC §15.207

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.6.2 Test Setup

See section 4.5.2 for test setup description for the AC power supply port. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.6.4 Test Result

Please refer to ANNEX A.5.

5.7 Radiated Spurious Emission

5.7.1 Limit

FCC §15.209&15.247(d)

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note:

1. For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
2. For above 1000 MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.7.2 Test Setup

See section 4.5.3 to 4.5.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

General Procedure for conducted measurements in restricted bands

- a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
- b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)
- c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
- d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
- e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20\log D + 104.8$$

where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

- f) Compare the resultant electric field strength level to the applicable limit.
- g) Perform radiated spurious emission test.

Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

Peak power measurement procedure

Peak emission levels are measured by setting the instrument as follows:

- a) RBW = as specified in Table 1.
- b) VBW $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Sweep time = auto.
- e) Trace mode = max hold.
- f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be

longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

- a) The EUT shall be configured to operate at the maximum achievable duty cycle.
- b) Measure the duty cycle, x , of the transmitter output signal as described in section 6.0.
- c) RBW = 1 MHz (unless otherwise specified).
- d) $VBW \geq 3 \times RBW$.
- e) Detector = RMS, if $\text{span}/(\# \text{ of points in sweep}) \leq (RBW/2)$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
- f) Averaging type = power (i.e., RMS).
 - 1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
 - 2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
- g) Sweep time = auto.
- h) Perform a trace average of at least 100 traces.
- i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
 - 1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is $10 \log(1/x)$, where x is the duty cycle.
 - 2) If linear voltage averaging mode was used in step f), then the applicable correction factor is $20 \log(1/x)$, where x is the duty cycle.
 - 3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

The measurement frequency range is from 30 MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.7.4 Test Result

Please refer to ANNEX A.6.

5.8 Band Edge (Restricted-band band-edge)

5.8.1 Limit

FCC §15.209&15.247(d)

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

5.8.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.8.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

For transmitters operating above 1 GHz repeat the measurement with an average detector.

5.8.4 Test Result

Please refer to ANNEX A.7.

5.9 Power Spectral density (PSD)

5.9.1 Limit

FCC §15.247(e)

The same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

5.9.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.9.3 Test Procedure

Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the DTS bandwidth.

Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.

Set the VBW $\geq 3 \text{ RBW}$.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level within the RBW.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.9.4 Test Result

Please refer to ANNEX A.8.

ANNEX A TEST RESULT

A.1 Output Power

Duty Cycle

Test Mode	On Time (ms)	On+Off time (ms)	Duty Cycle
802.11b	50	50	100.00%
802.11g	50	50	100.00%
802.11n-20 MHz	50	50	100.00%
802.11n-40 MHz	50	50	100.00%

Peak Power Test Data

Main Antenna

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.78	37.84	30	1000	Pass
Middle	15.67	36.90			Pass
High	15.77	37.76			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.17	65.61	30	1000	Pass
Middle	18.14	65.16			Pass
High	18.13	65.01			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.12	64.86	30	1000	Pass
Middle	18.34	68.23			Pass
High	18.55	71.61			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	17.95	62.37	30	1000	Pass
Middle	18.16	65.46			Pass
High	18.36	68.55			Pass

Aux. Antenna

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.96	39.45	30	1000	Pass
Middle	15.91	38.99			Pass
High	15.72	37.33			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	17.87	61.24	30	1000	Pass
Middle	17.93	62.09			Pass
High	18.28	67.30			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.19	65.92	30	1000	Pass
Middle	18.27	67.14			Pass
High	18.28	67.30			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.10	64.57	30	1000	Pass
Middle	18.18	65.77			Pass
High	18.07	64.12			Pass

Average Power Test DataMain Antenna

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	12.62	18.28	30	1000	Pass
Middle	12.48	17.70			Pass
High	12.75	18.84			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	12.63	18.32	30	1000	Pass
Middle	12.57	18.07			Pass
High	12.46	17.62			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	12.40	17.38	30	1000	Pass
Middle	12.59	18.16			Pass
High	12.79	19.01			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	12.27	16.87	30	1000	Pass
Middle	12.41	17.42			Pass
High	12.62	18.28			Pass

Aux. Antenna

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	12.72	18.71	30	1000	Pass
Middle	12.72	18.71			Pass
High	12.53	17.91			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	12.31	17.02	30	1000	Pass
Middle	12.32	17.06			Pass
High	12.71	18.66			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	12.48	17.70	30	1000	Pass
Middle	12.53	17.91			Pass
High	12.53	17.91			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	12.42	17.46	30	1000	Pass
Middle	12.47	17.66			Pass
High	12.36	17.22			Pass

A.2 Occupied Bandwidth

Test Data

Main Antenna

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	10.162600	15.224313	≥ 500
Middle	10.162600	15.166425	≥ 500
High	10.162600	15.166425	≥ 500

802.11g Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	16.670900	17.366136	≥ 500
Middle	16.670900	17.366136	≥ 500
High	16.670900	17.424023	≥ 500

802.11n-20MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	17.922600	18.176556	≥ 500
Middle	17.922600	18.234428	≥ 500
High	17.922600	18.234443	≥ 500

802.11n-40MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	36.422600	36.100000	≥ 500
Middle	36.422600	36.100000	≥ 500
High	36.422600	36.100000	≥ 500

Aux. Antenna

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	10.162600	15.224313	≥ 500
Middle	10.162600	15.166425	≥ 500
High	10.162600	15.224313	≥ 500

802.11g Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	16.670900	17.366136	≥ 500
Middle	16.670900	17.424023	≥ 500
High	16.670900	17.424023	≥ 500

802.11n-20MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	17.922600	18.292330	≥ 500
Middle	17.922600	18.234443	≥ 500
High	17.922600	18.292330	≥ 500

802.11n-40MHz Mode:

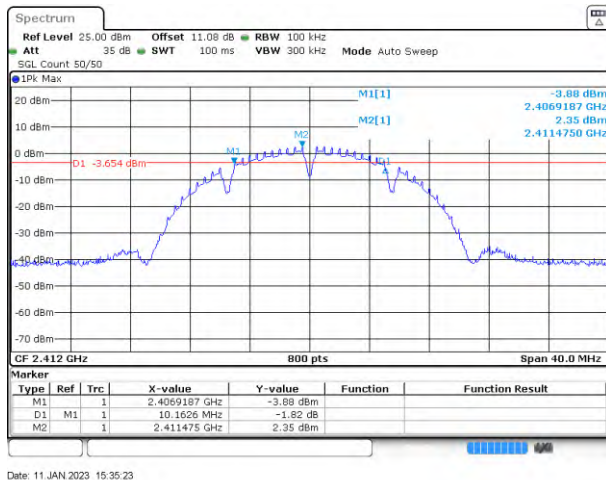
Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	36.422600	36.100000	≥ 500
Middle	36.422600	36.200000	≥ 500
High	36.422600	36.200000	≥ 500

Test Plots

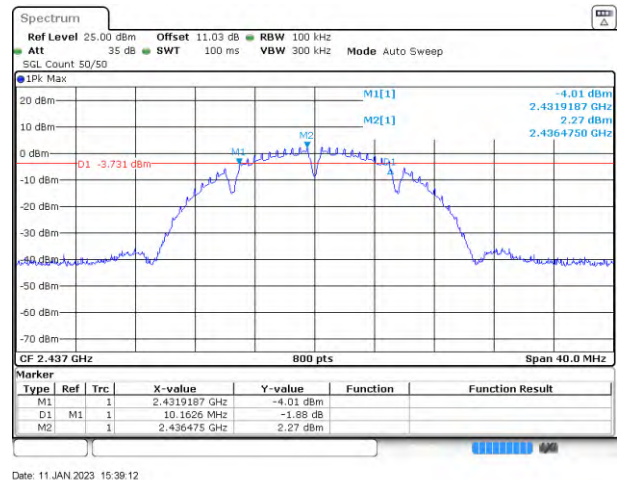
6 dB Bandwidth

Main Antenna

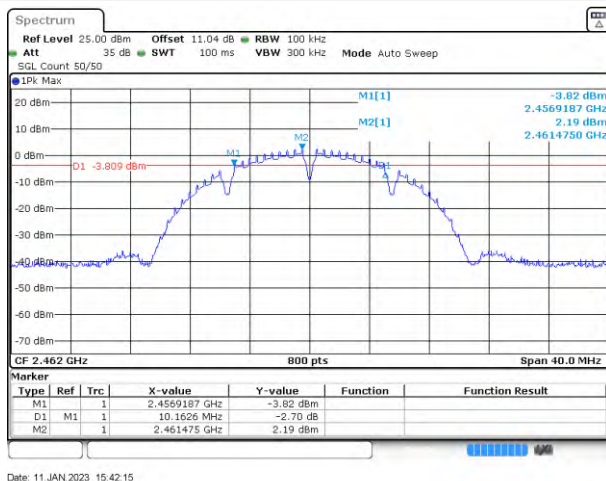
802.11b LOW CHANNEL



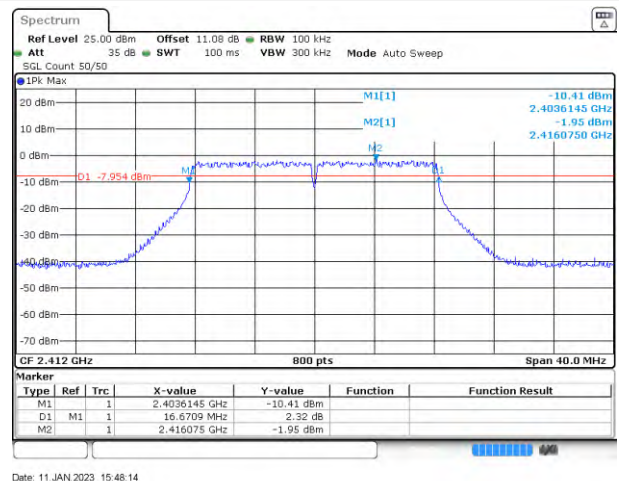
802.11b MIDDLE CHANNEL



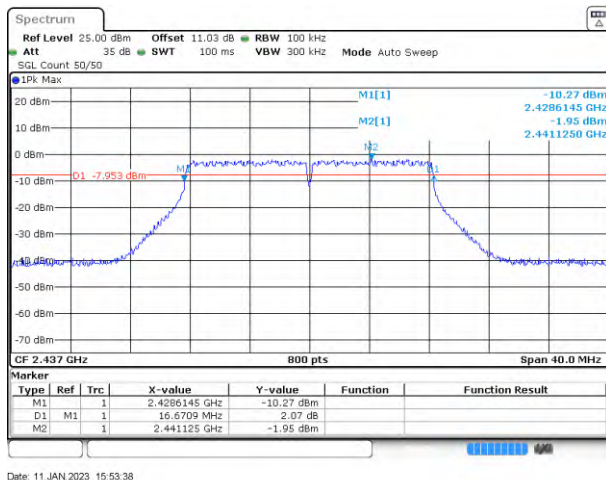
802.11b HIGH CHANNEL



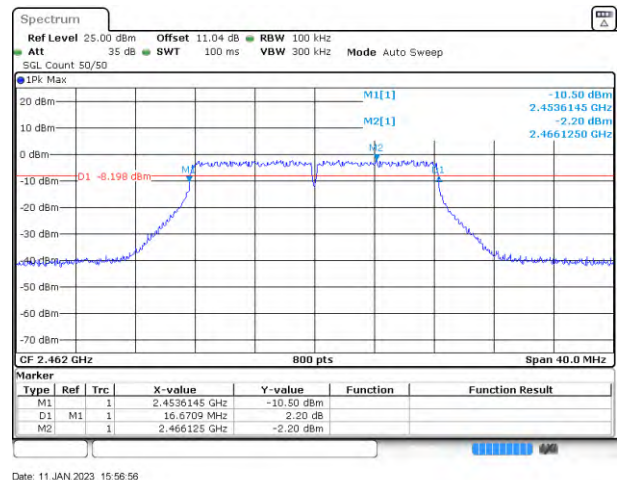
802.11g LOW CHANNEL



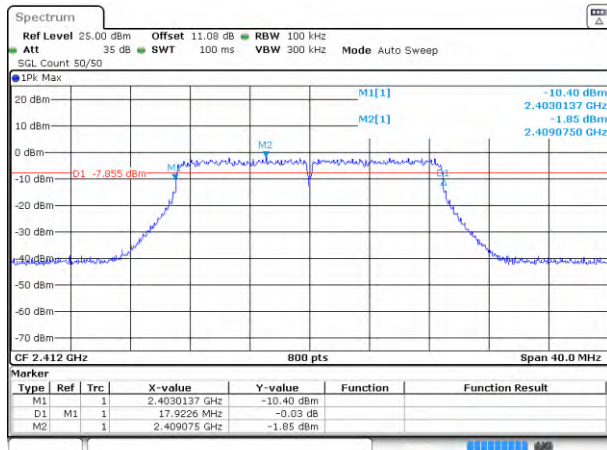
802.11g MIDDLE CHANNEL



802.11g HIGH CHANNEL

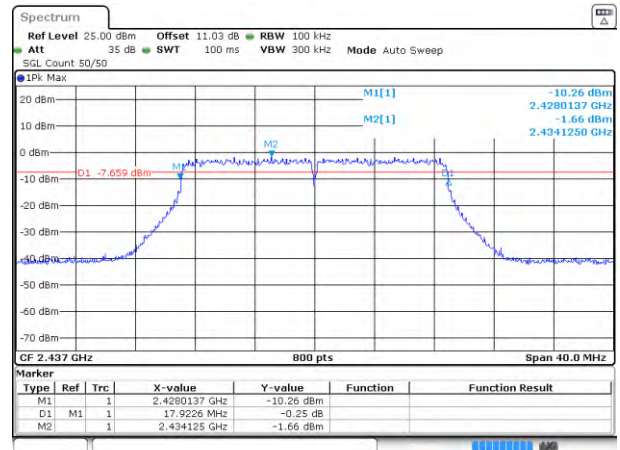


802.11n-20 MHz LOW CHANNEL



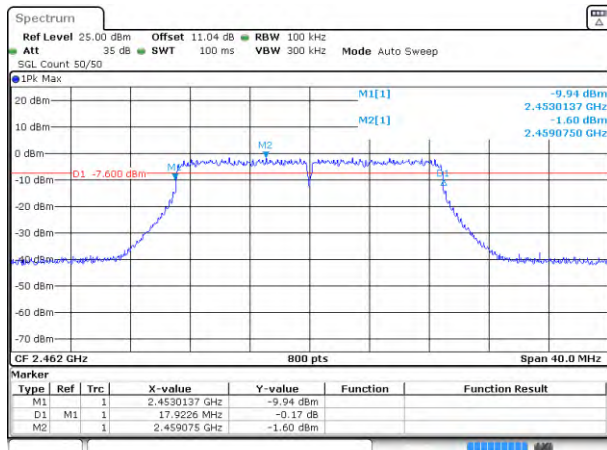
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802.11n-20 MHz MIDDLE CHANNEL



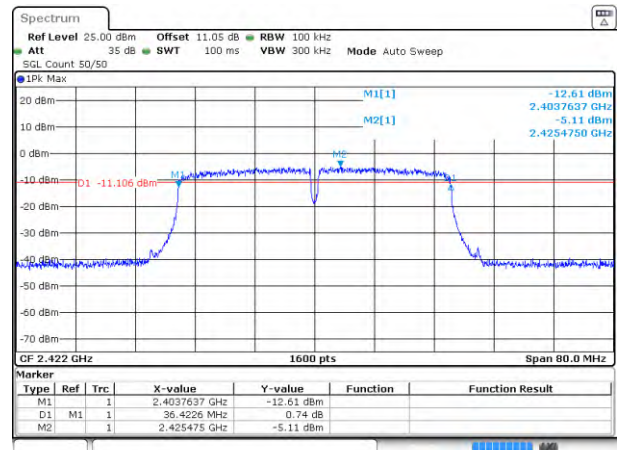
Date: 11 JAN 2023 16:05:02

802.11n-20 MHz HIGH CHANNEL



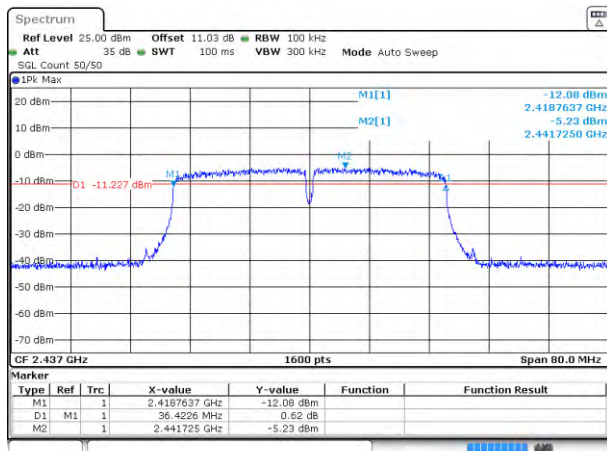
Date: 11 JAN 2023 16:08:01

802.11n-40 MHz LOW CHANNEL



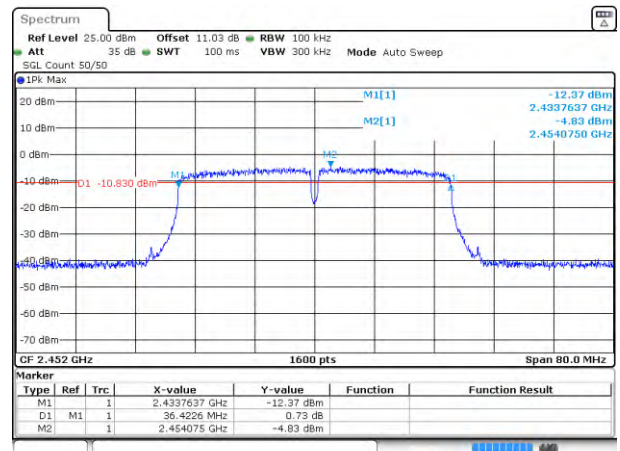
Date: 11 JAN 2023 16:11:44

802.11n-40 MHz MIDDLE CHANNEL



Date: 11 JAN 2023 16:16:16

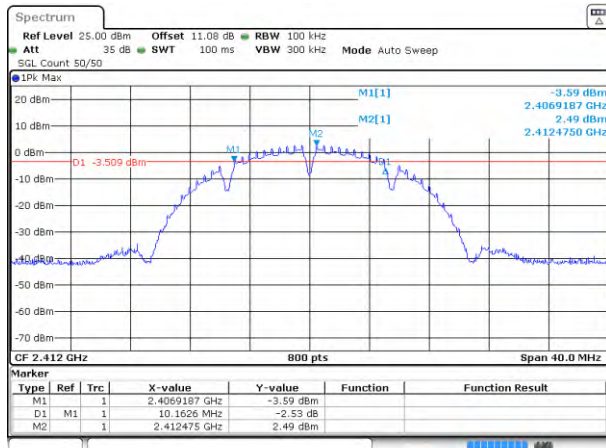
802.11n-40 MHz HIGH CHANNEL



Date: 11 JAN 2023 16:18:47

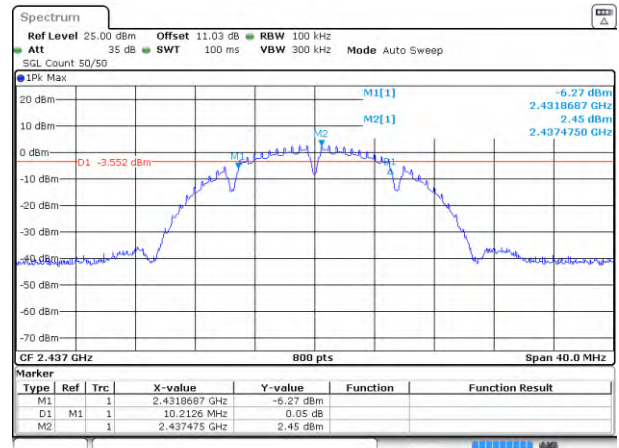
Aux. Antenna

802.11b LOW CHANNEL



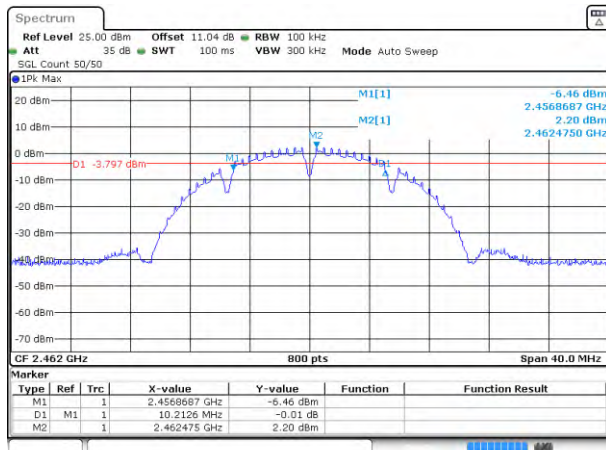
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802.11b MIDDLE CHANNEL



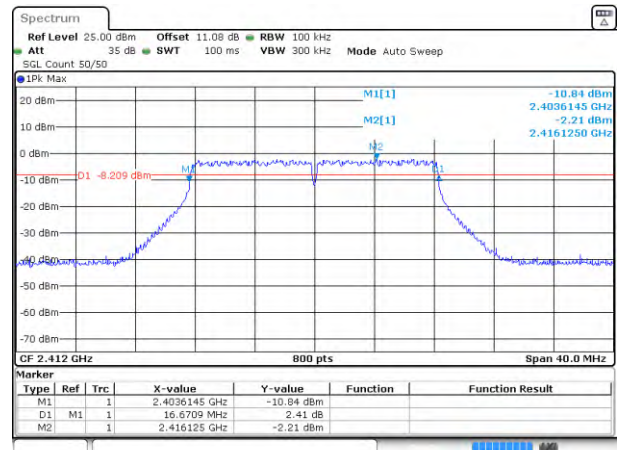
Date: 11 JAN 2023 17:21:19

802.11b HIGH CHANNEL



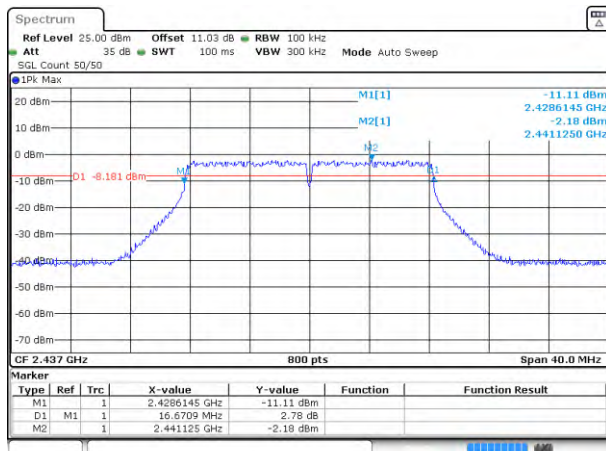
Date: 11 JAN 2023 17:28:20

802.11g LOW CHANNEL



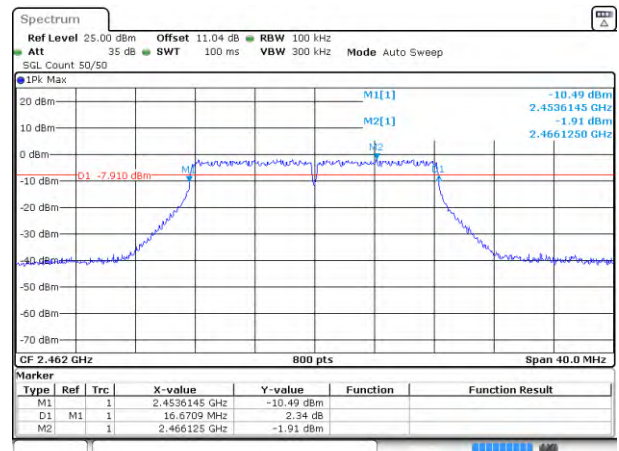
Date: 11 JAN 2023 17:32:11

802.11g MIDDLE CHANNEL



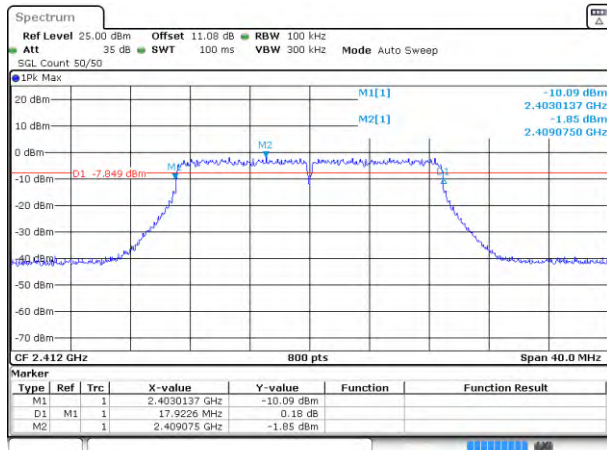
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802.11g HIGH CHANNEL

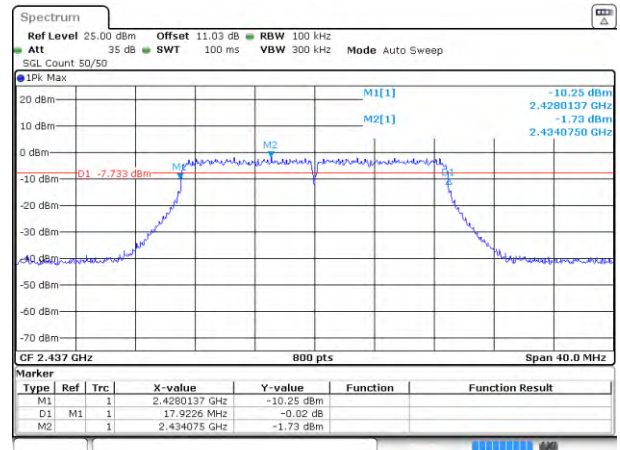


Date: 11 JAN 2023 17:41:15

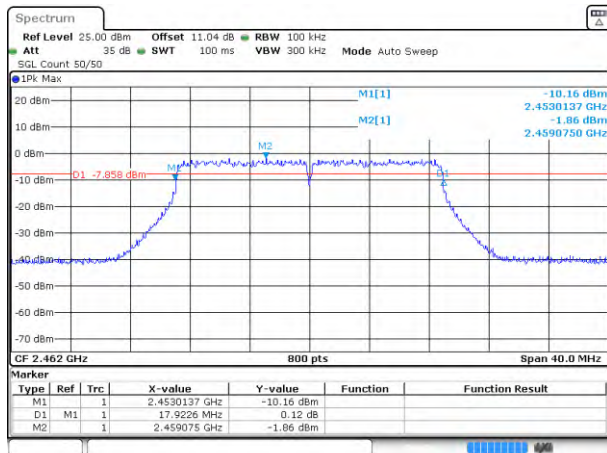
802.11n-20 MHz LOW CHANNEL



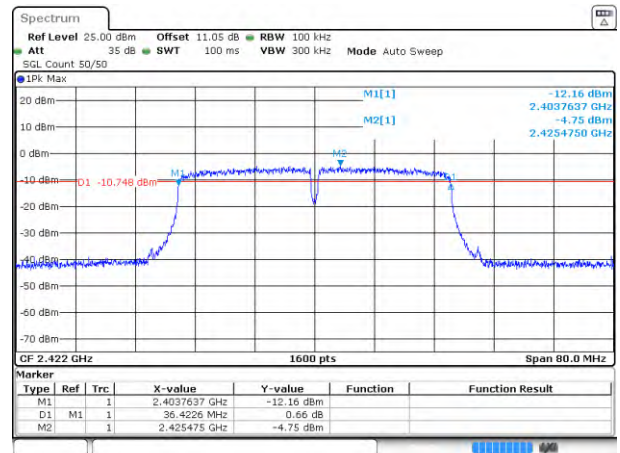
802.11n-20 MHz MIDDLE CHANNEL



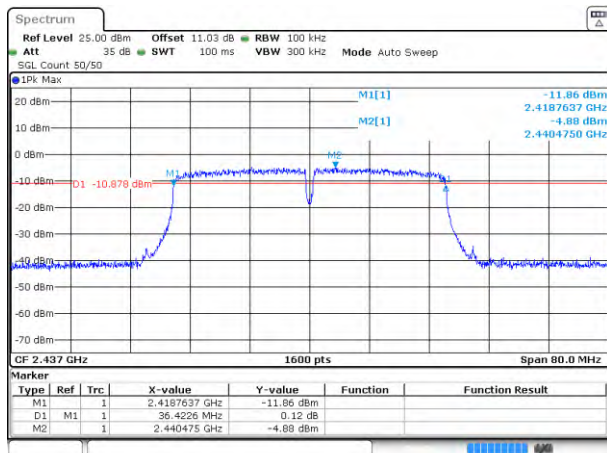
802.11n-20 MHz HIGH CHANNEL



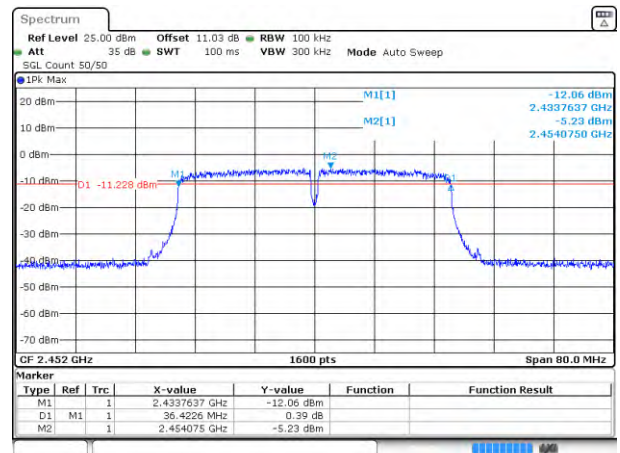
802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



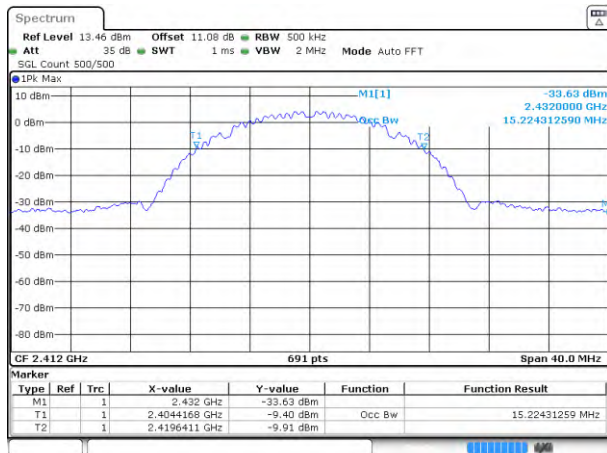
802.11n-40 MHz HIGH CHANNEL



99% Bandwidth

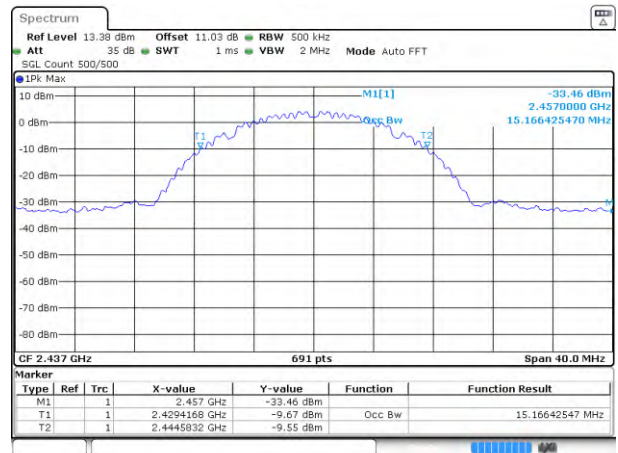
Main Antenna

802.11b LOW CHANNEL



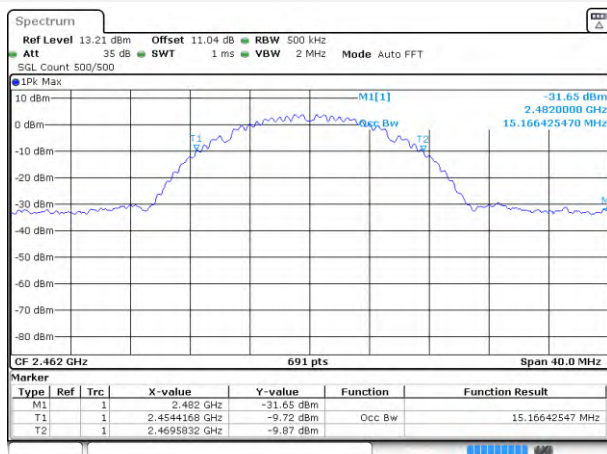
Date: 11 JAN 2023 15:35:32

802.11b MIDDLE CHANNEL



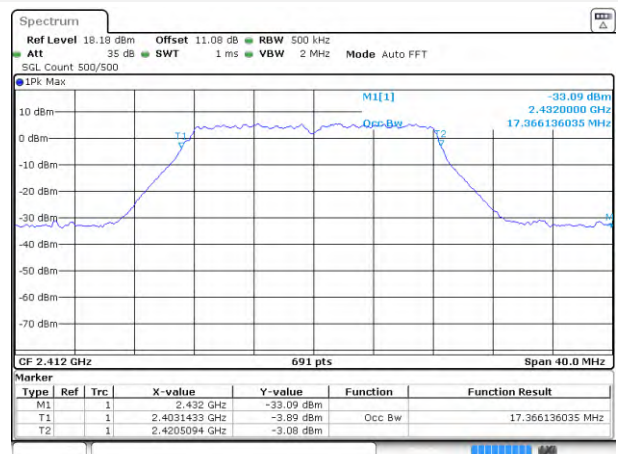
Date: 11 JAN 2023 15:39:21

802.11b HIGH CHANNEL



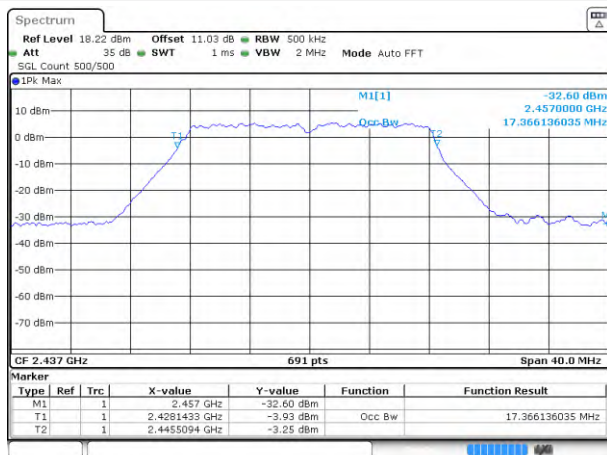
Date: 11 JAN 2023 15:42:24

802.11g LOW CHANNEL



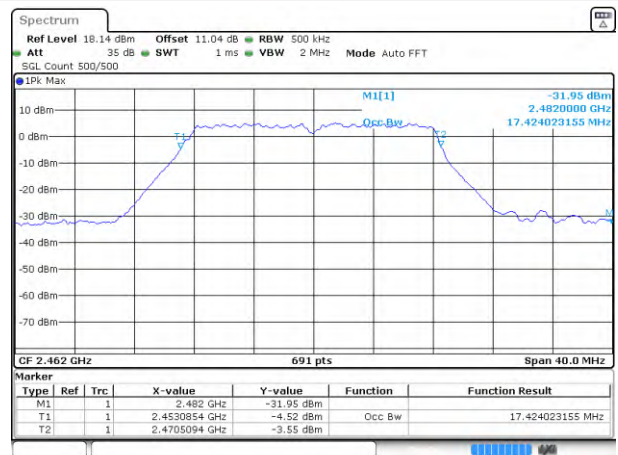
Date: 11 JAN 2023 15:48:22

802.11g MIDDLE CHANNEL



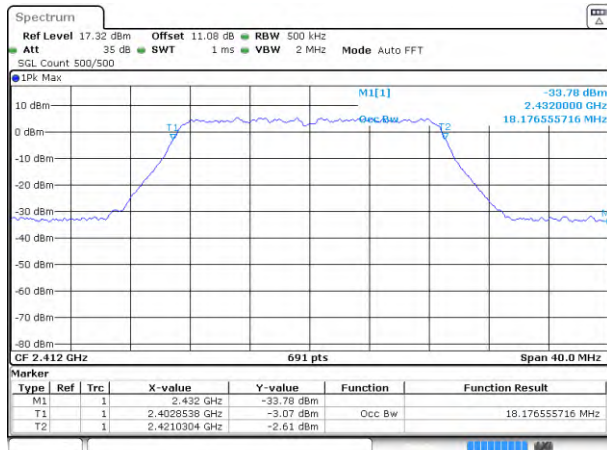
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802.11g HIGH CHANNEL



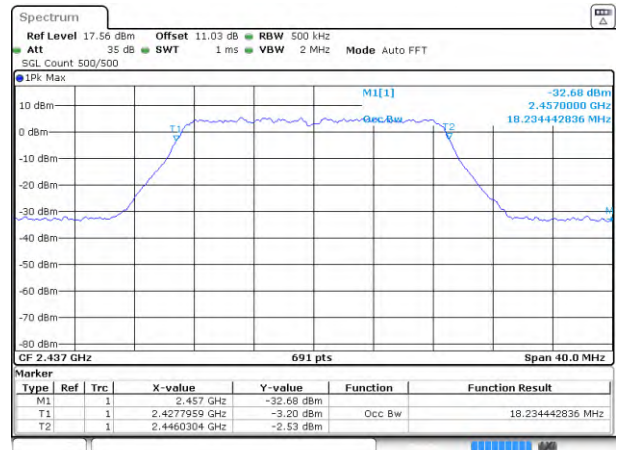
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802.11n-20 MHz LOW CHANNEL



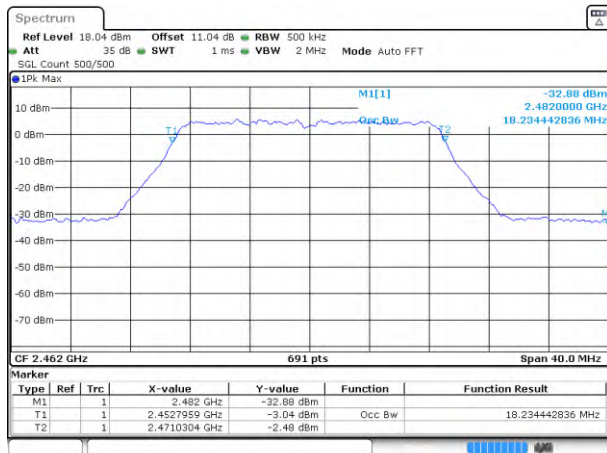
Date: 11 JAN 2023 16:02:04

802.11n-20 MHz MIDDLE CHANNEL



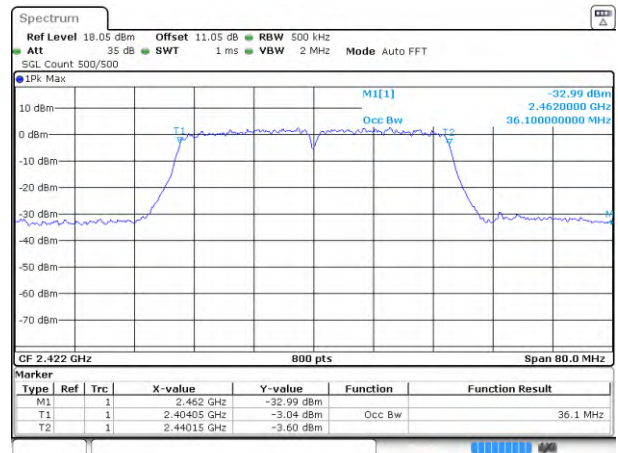
Date: 11 JAN 2023 16:05:10

802.11n-20 MHz HIGH CHANNEL



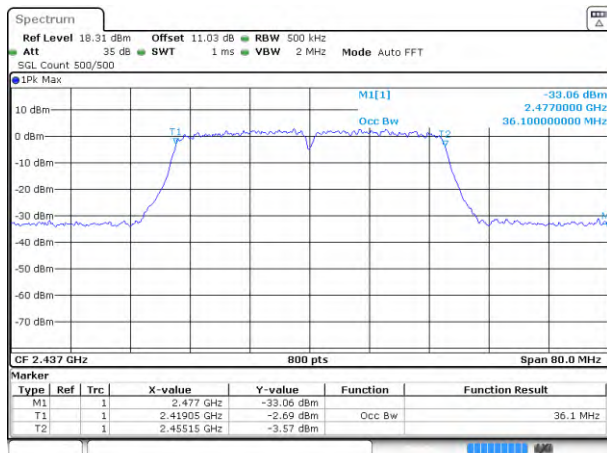
Date: 11 JAN 2023 16:08:09

802.11n-40 MHz LOW CHANNEL



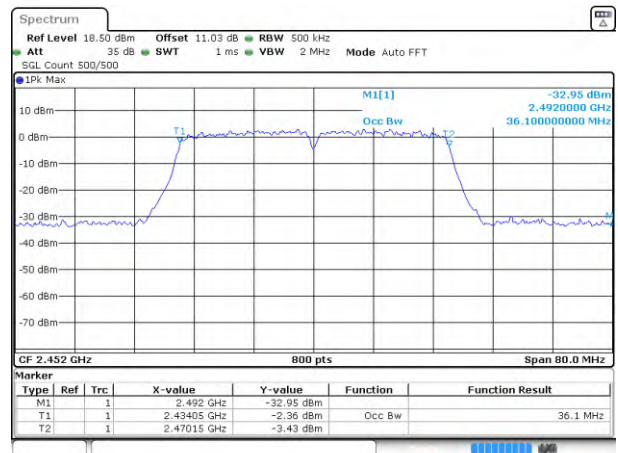
Date: 11 JAN 2023 16:11:55

802.11n-40 MHz MIDDLE CHANNEL



Date: 11 JAN 2023 16:16:26

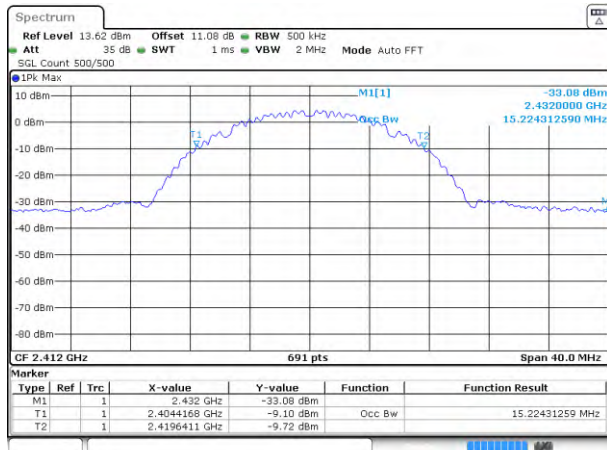
802.11n-40 MHz HIGH CHANNEL



Date: 11 JAN 2023 16:18:58

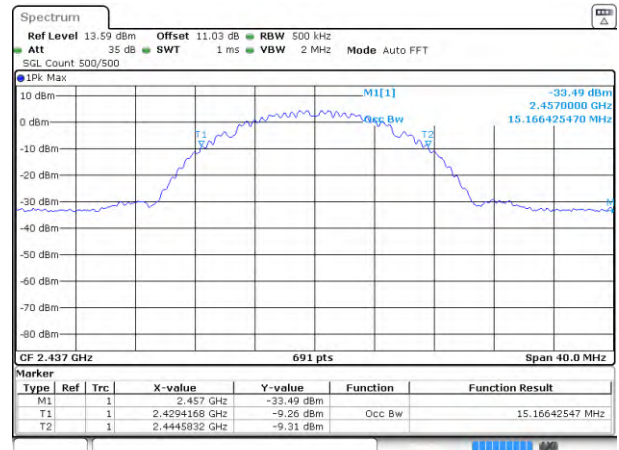
Aux. Antenna

802.11b LOW CHANNEL



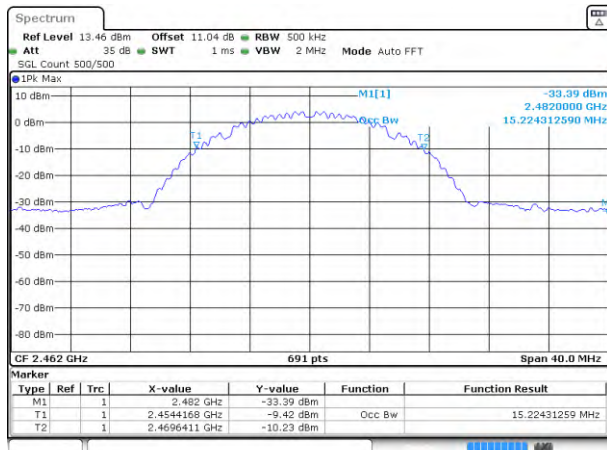
Date: 11 JAN 2023 17:14:05

802.11b MIDDLE CHANNEL



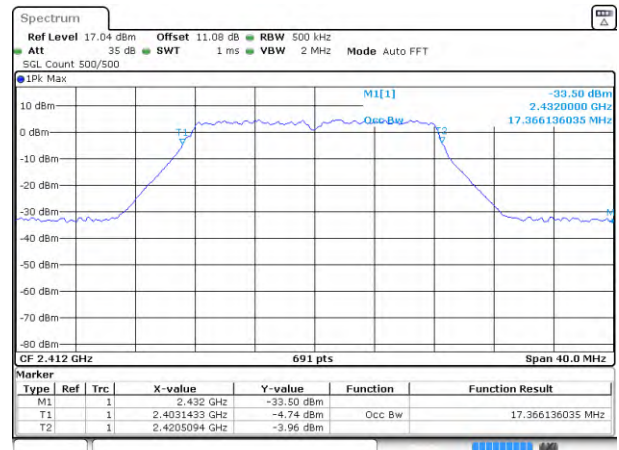
Date: 11 JAN 2023 17:21:28

802.11b HIGH CHANNEL



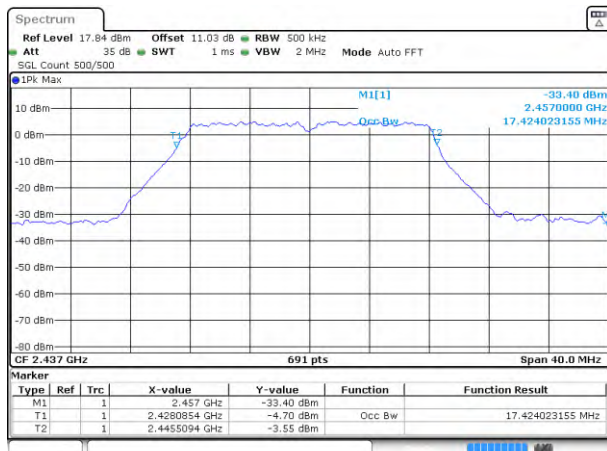
Date: 11 JAN 2023 17:28:29

802.11g LOW CHANNEL



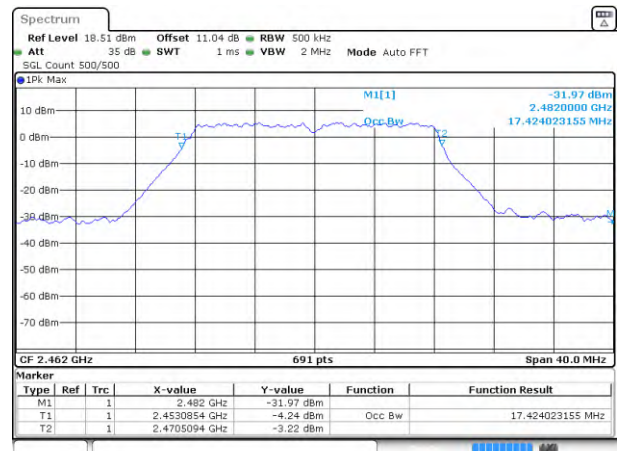
Date: 11 JAN 2023 17:32:20

802.11g MIDDLE CHANNEL



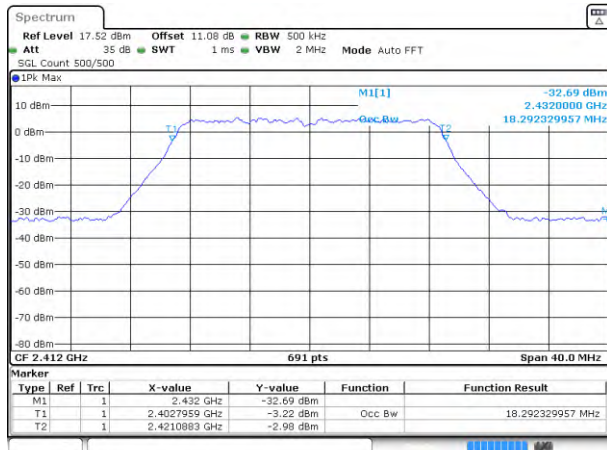
Date: 11 JAN 2023 17:35:46

802.11g HIGH CHANNEL



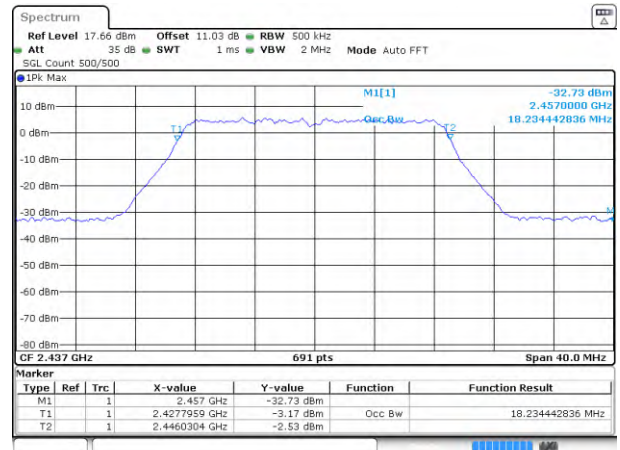
Date: 11 JAN 2023 17:41:24

802.11n-20 MHz LOW CHANNEL



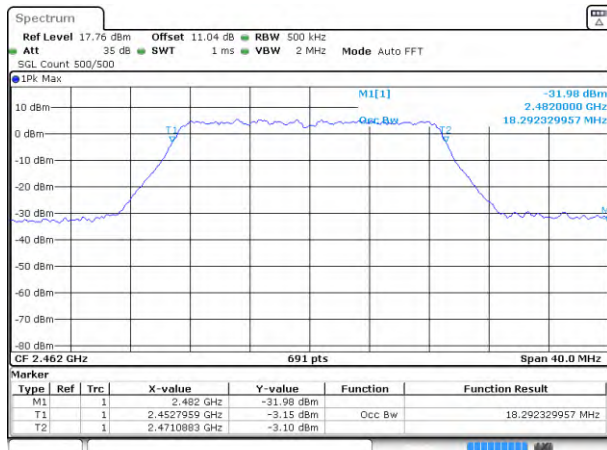
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802.11n-20 MHz MIDDLE CHANNEL



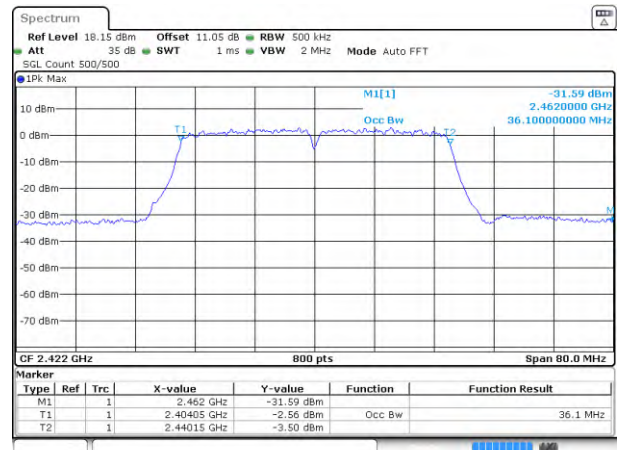
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802.11n-20 MHz HIGH CHANNEL



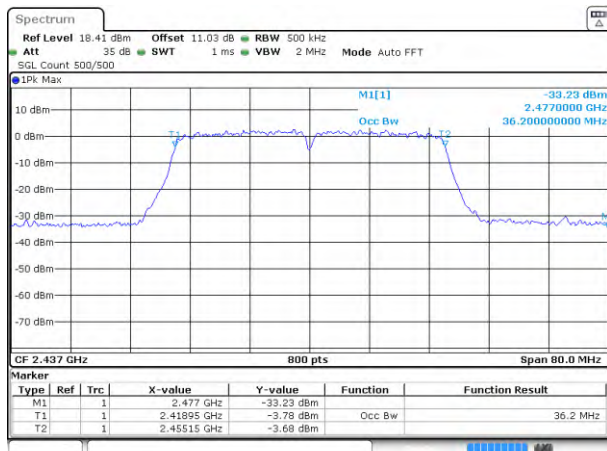
Date: 11 JAN 2023 17:59:18

802.11n-40 MHz LOW CHANNEL



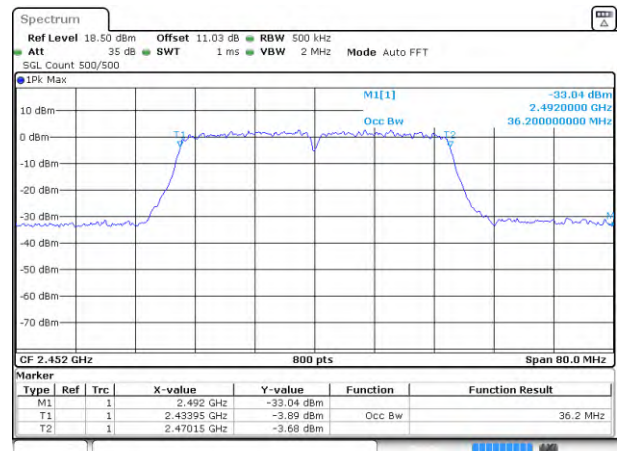
Date: 11 JAN 2023 18:02:38

802.11n-40 MHz MIDDLE CHANNEL



Date: 11 JAN 2023 18:06:50

802.11n-40 MHz HIGH CHANNEL



Date: 11 JAN 2023 18:08:51

A.3 Conducted Spurious Emissions

Test Data

Main Antenna

802.11b Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-42.68	2.42	-17.58	Pass
Middle	-42.46	2.27	-17.73	Pass
High	-42.43	1.63	-18.37	Pass

802.11g Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-42.89	-1.93	-21.93	Pass
Middle	-41.89	-1.87	-21.87	Pass
High	-43.13	-2.13	-22.13	Pass

802.11n-20MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-42.36	-1.89	-21.89	Pass
Middle	-42.32	-1.67	-21.67	Pass
High	-43.00	-1.66	-21.66	Pass

802.11n-40MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-41.15	-5.14	-25.14	Pass
Middle	-42.67	-4.97	-24.97	Pass
High	-41.64	-5.02	-25.02	Pass

Aux. Antenna

802.11b Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-43.01	2.46	-17.54	Pass
Middle	-43.52	2.41	-17.59	Pass
High	-42.69	2.15	-17.85	Pass

802.11g Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-41.63	-2.76	-22.76	Pass
Middle	-42.98	-2.54	-22.54	Pass
High	-42.75	-1.98	-21.98	Pass

802.11n-20MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-43.07	-2.64	-22.64	Pass
Middle	-43.01	-1.80	-21.80	Pass
High	-42.65	-1.81	-21.81	Pass

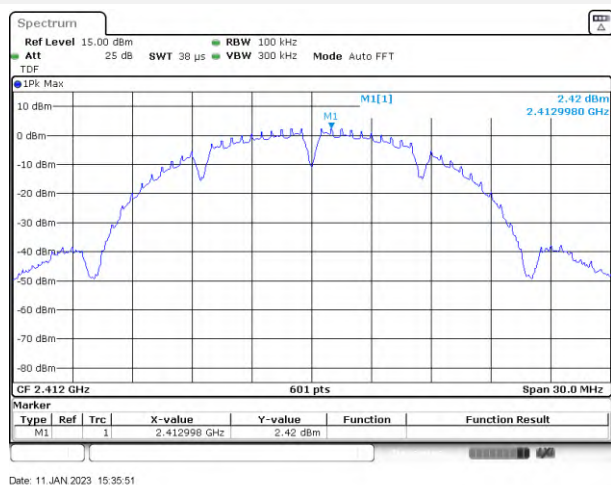
802.11n-40MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-42.07	-4.72	-24.72	Pass
Middle	-43.25	-5.06	-25.06	Pass
High	-41.05	-5.36	-25.36	Pass

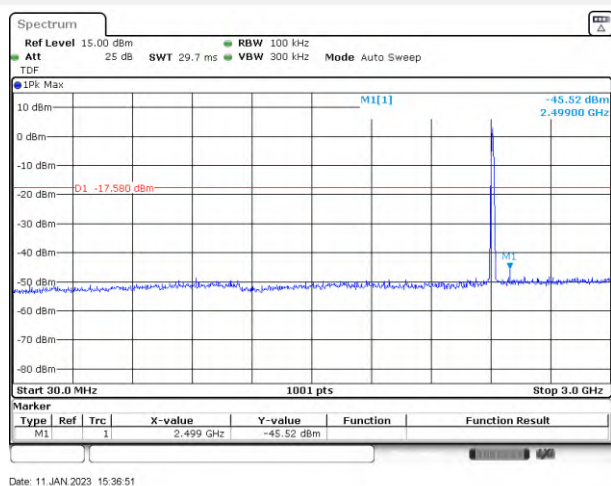
Test Plots

Main Antenna

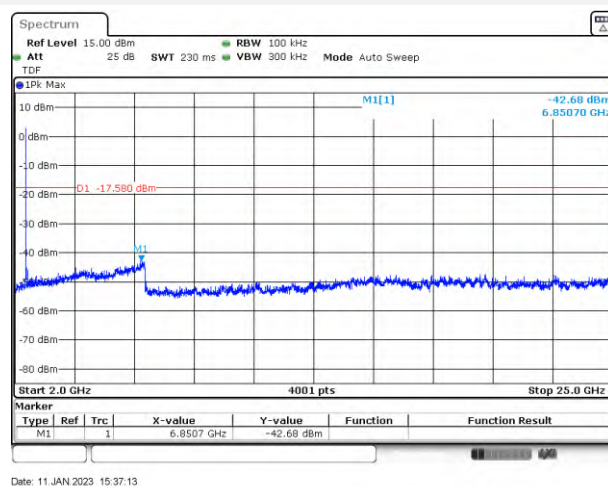
802.11b LOW CHANNEL CARRIER LEVEL



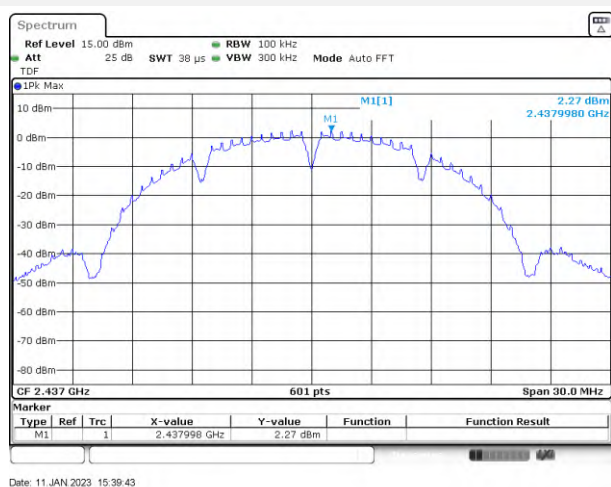
802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



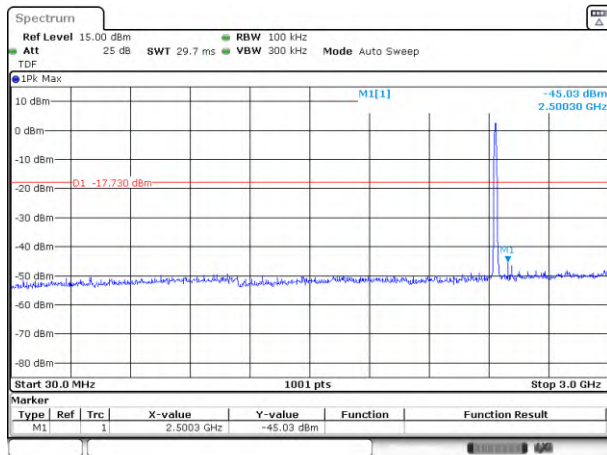
802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11b MIDDLE CHANNEL CARRIER LEVEL

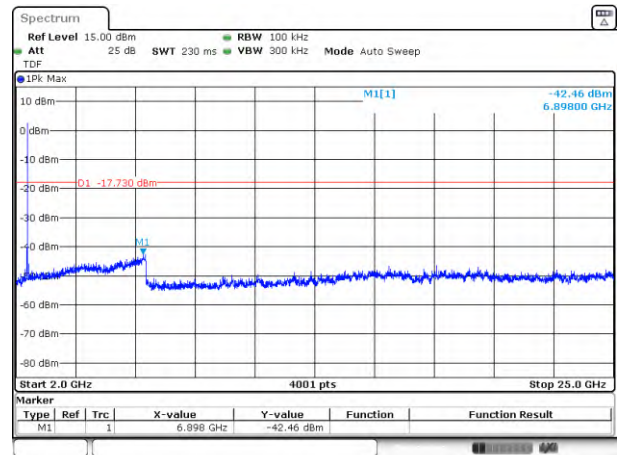


802.11b MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



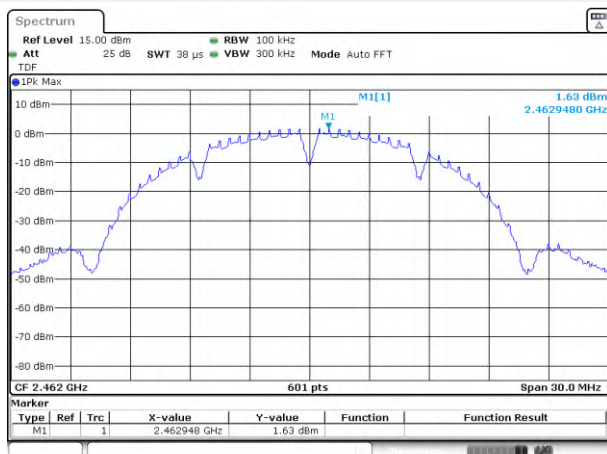
Date: 11 JAN 2023 15:40:18

802.11b MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



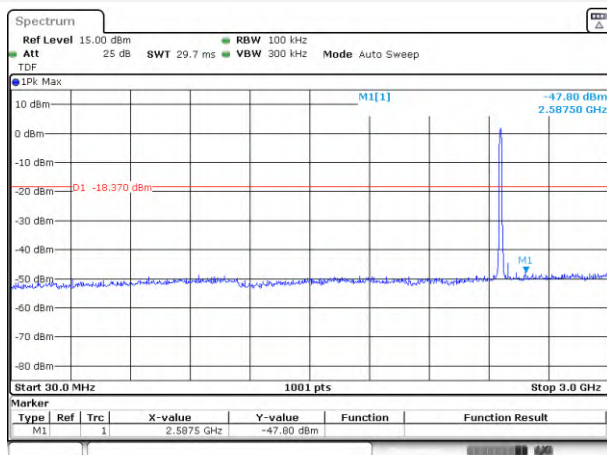
Date: 11 JAN 2023 15:40:46

802.11b HIGH CHANNEL CARRIER LEVEL



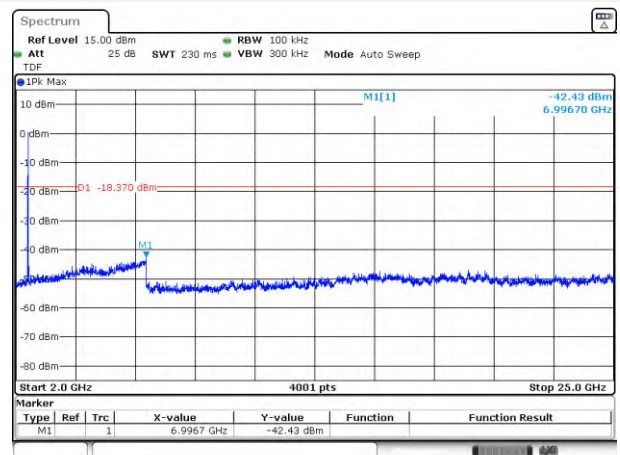
Date: 11 JAN 2023 15:43:27

802.11b HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



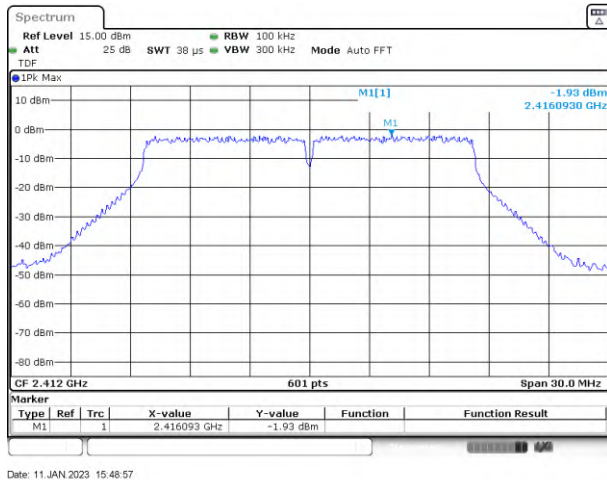
Date: 11 JAN 2023 15:45:05

802.11b HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

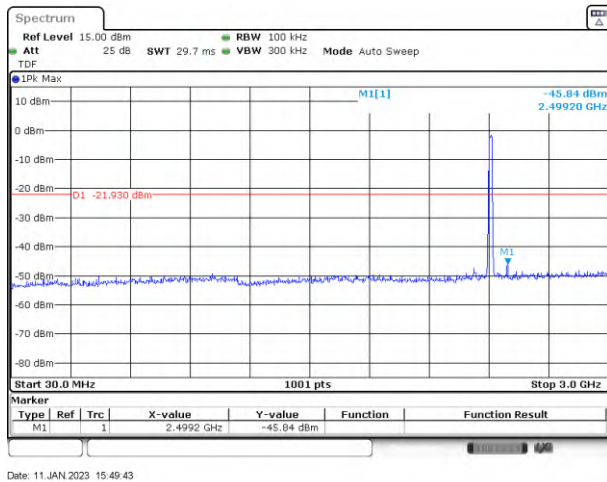


Date: 11 JAN 2023 15:45:48

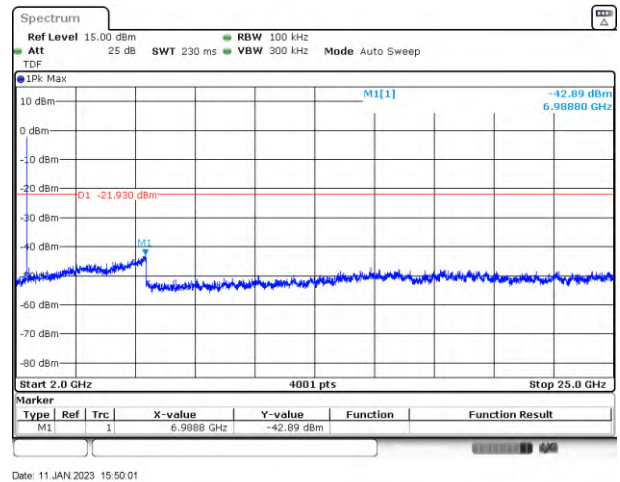
802.11g LOW CHANNEL CARRIER LEVEL



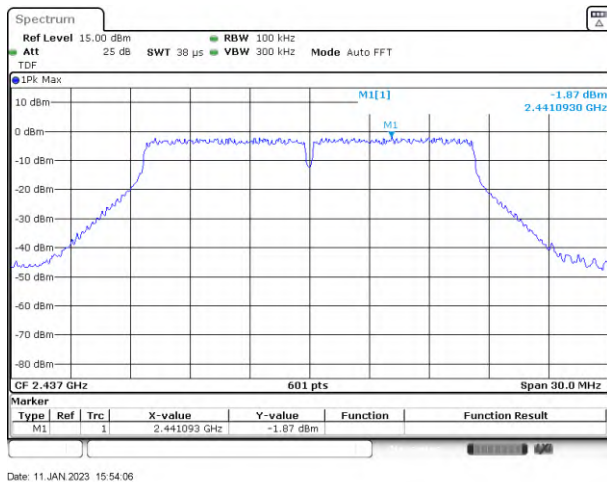
802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

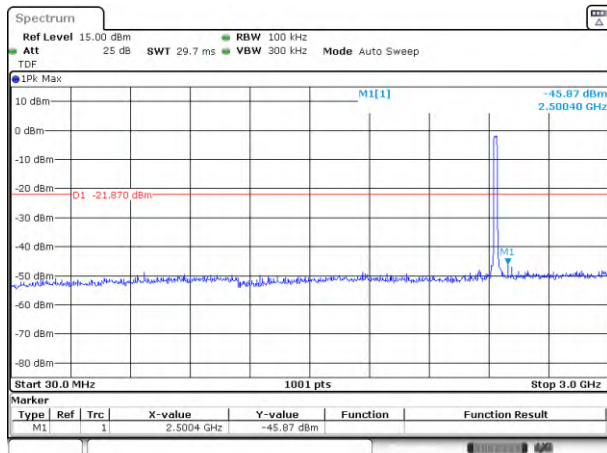


802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

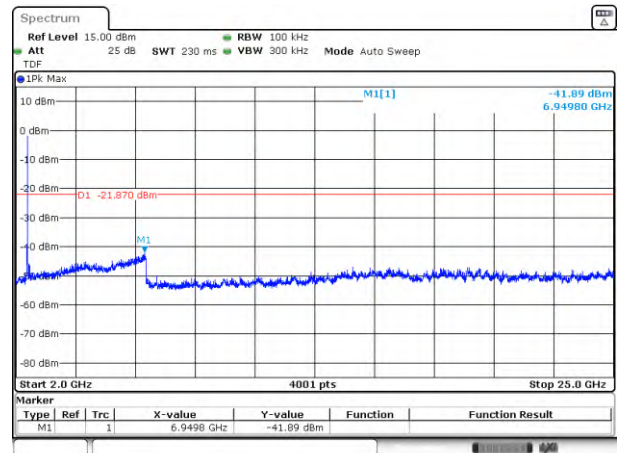


802.11g MIDDLE CHANNEL CARRIER LEVEL

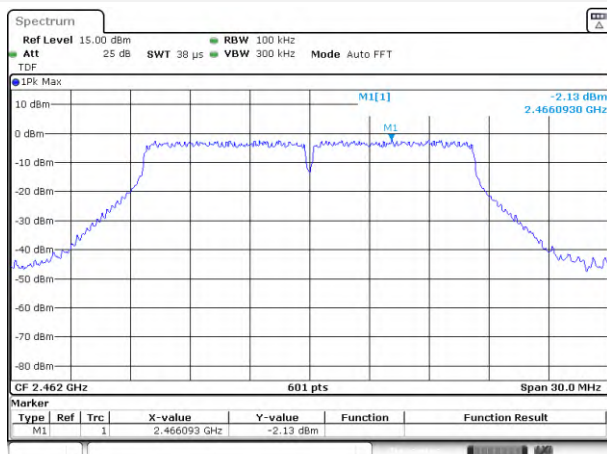


802.11g MIDDLE CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

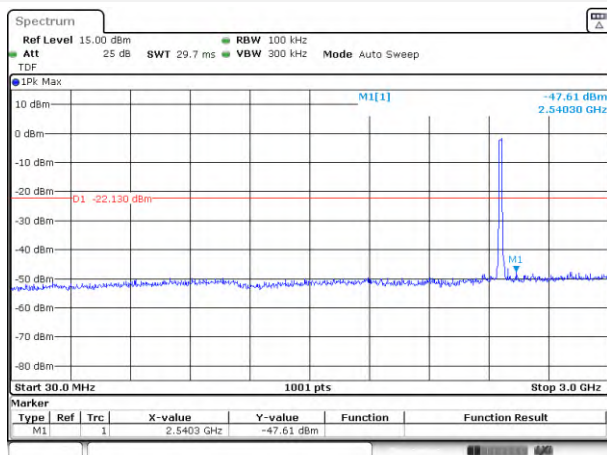
Date: 11 JAN 2023 15:54:38

802.11g MIDDLE CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

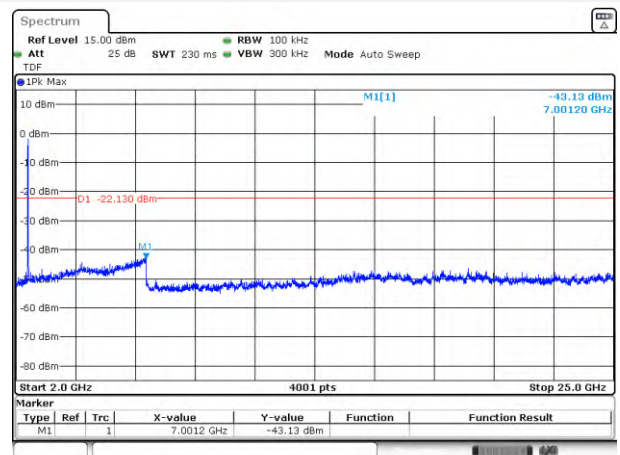
Date: 11 JAN 2023 15:55:19

802.11g HIGH CHANNEL CARRIER LEVEL

Date: 11 JAN 2023 15:58:22

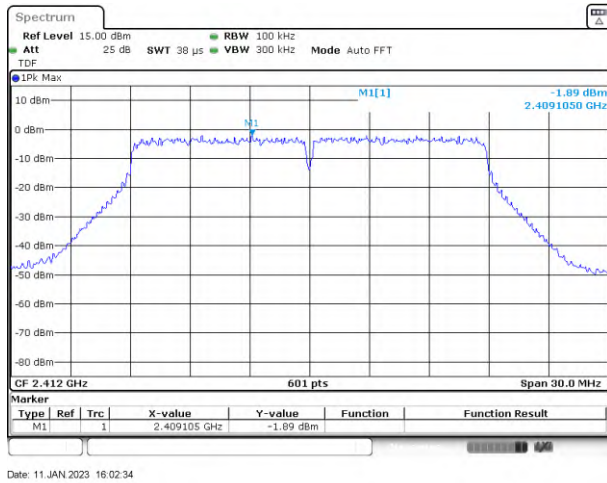
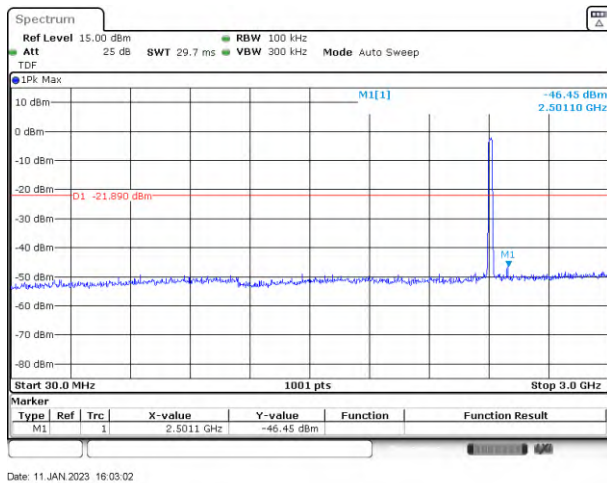
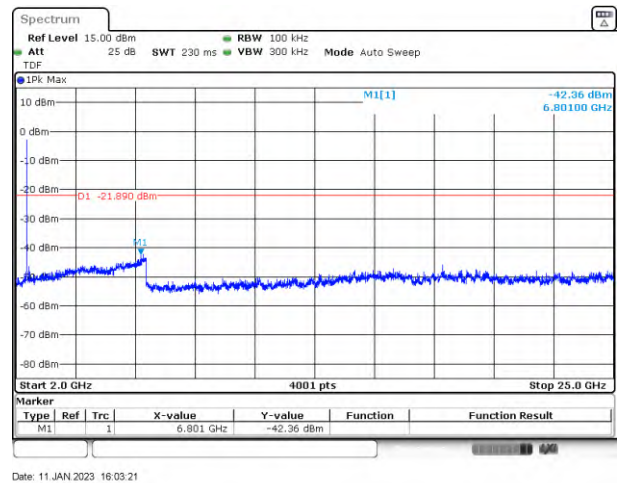
802.11g HIGH CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

Date: 11 JAN 2023 15:58:52

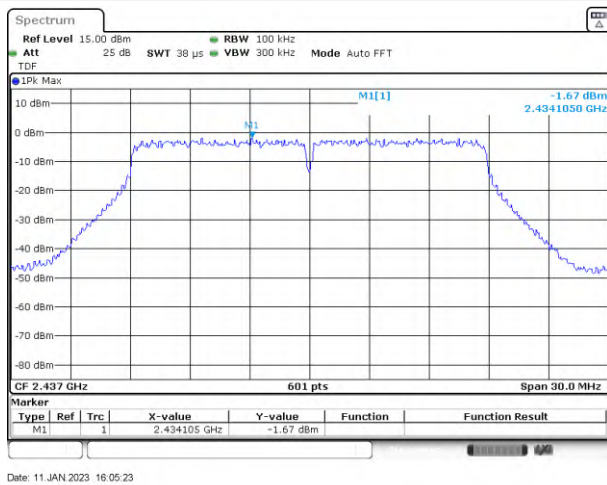
802.11g HIGH CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

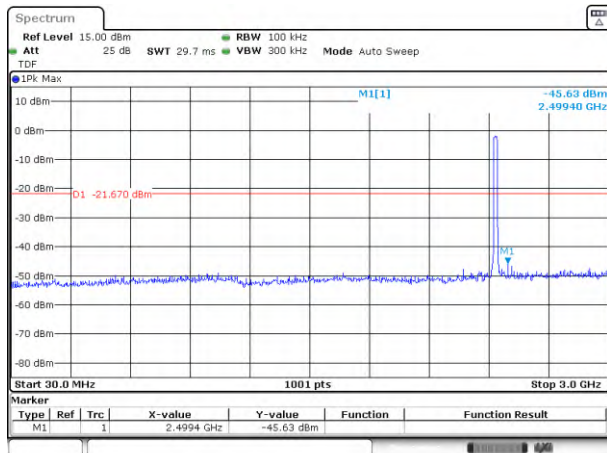
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802.11n-20 MHz LOW CHANNEL CARRIER LEVEL

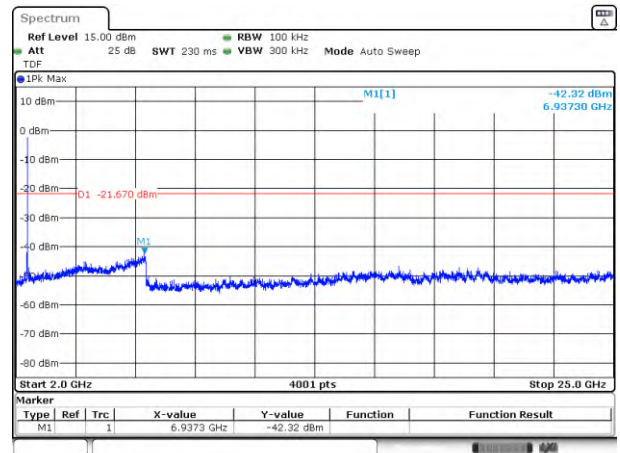
802.11n-20 MHz LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHz802.11n-20 MHz LOW CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL



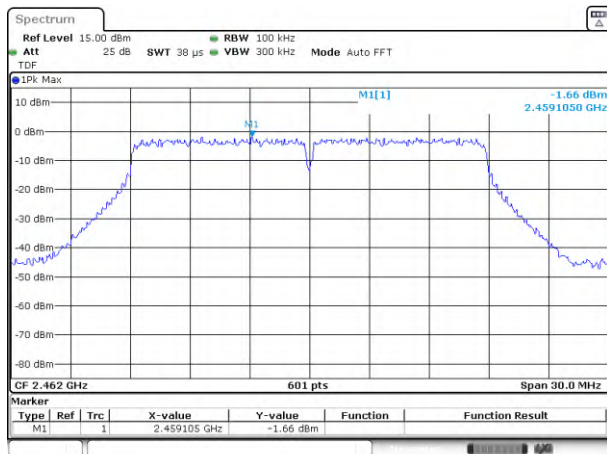
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

Date: 11 JAN 2023 16:06:07

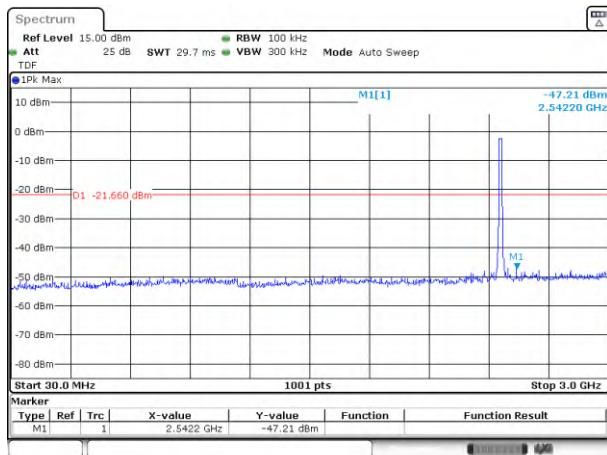
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

Date: 11 JAN 2023 16:06:24

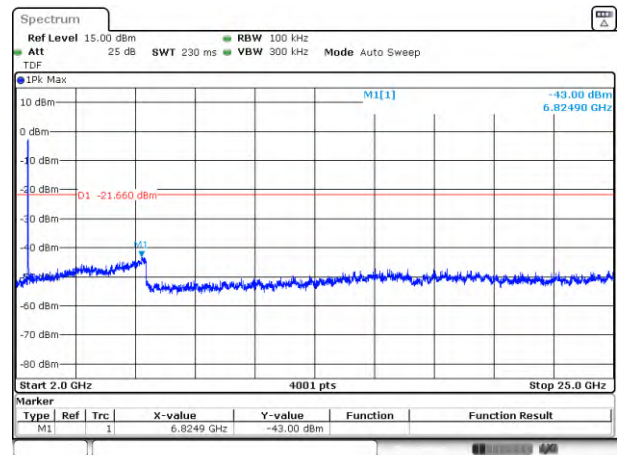
802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL



Date: 11 JAN 2023 16:08:56

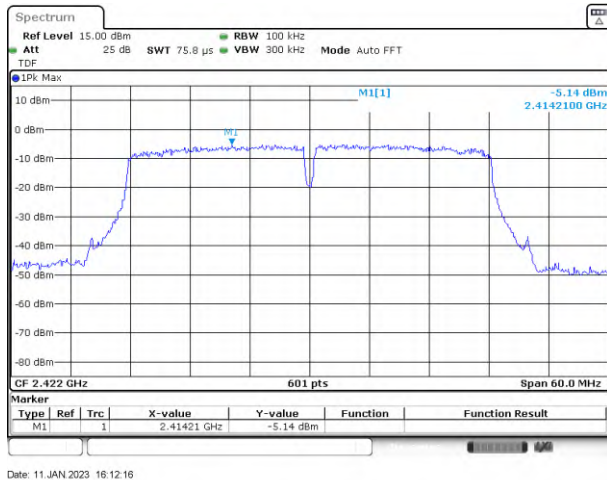
802.11n-20 MHz HIGH CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

Date: 11 JAN 2023 16:09:16

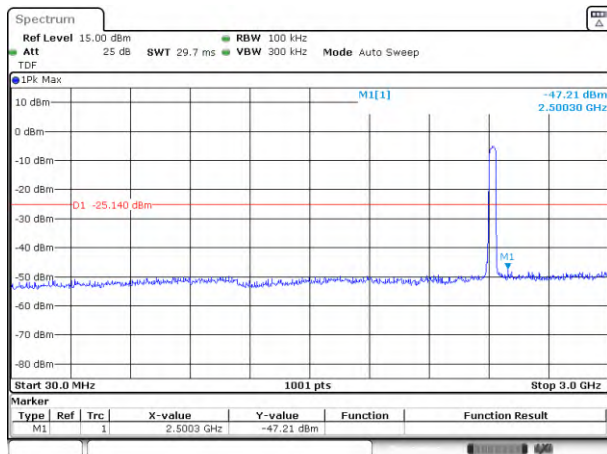
802.11n-20 MHz HIGH CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

Date: 11 JAN 2023 16:09:32

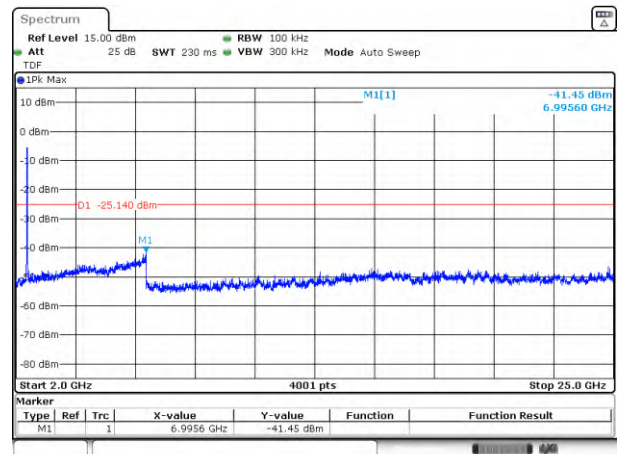
802.11n-40 MHz LOW CHANNEL CARRIER LEVEL



Date: 11 JAN 2023 16:12:16

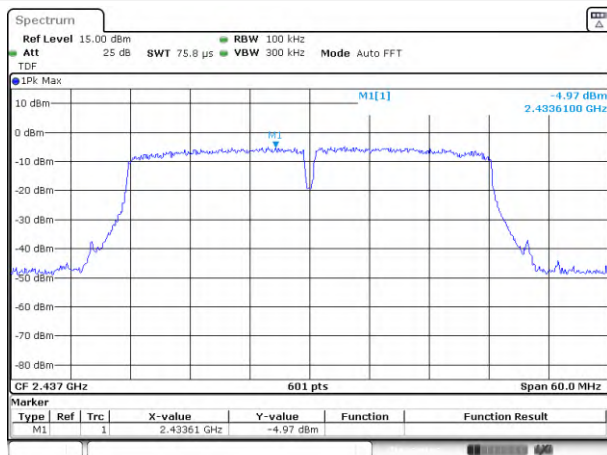
802.11n-40 MHz LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

Date: 11 JAN 2023 16:12:43

802.11n-40 MHz LOW CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

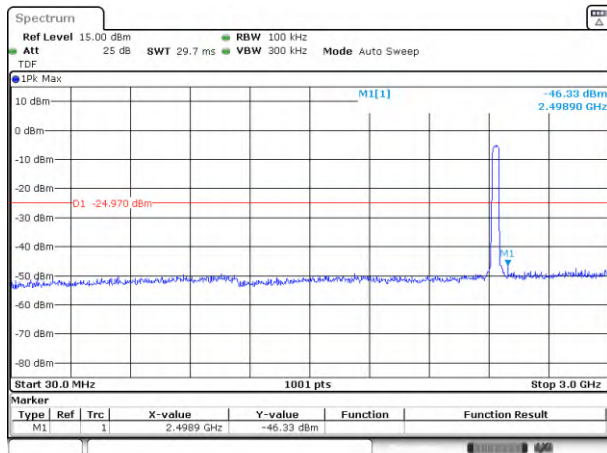
Date: 11 JAN 2023 16:13:07

802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL



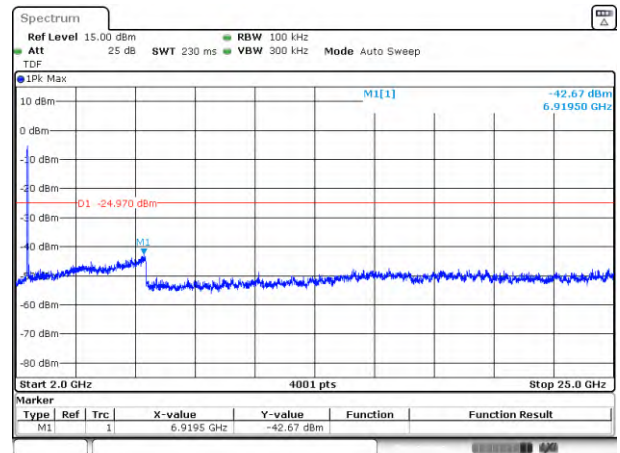
Date: 11 JAN 2023 16:16:45

802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



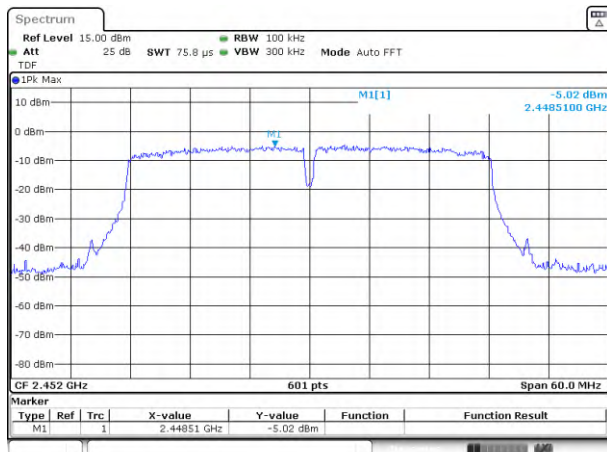
Date: 11 JAN 2023 16:17:13

802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



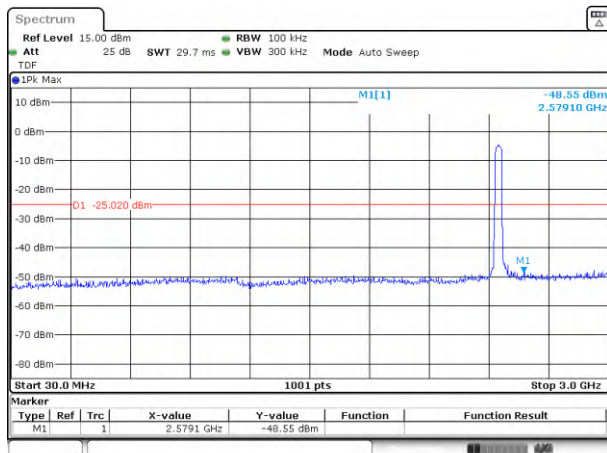
Date: 11 JAN 2023 16:17:34

802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL



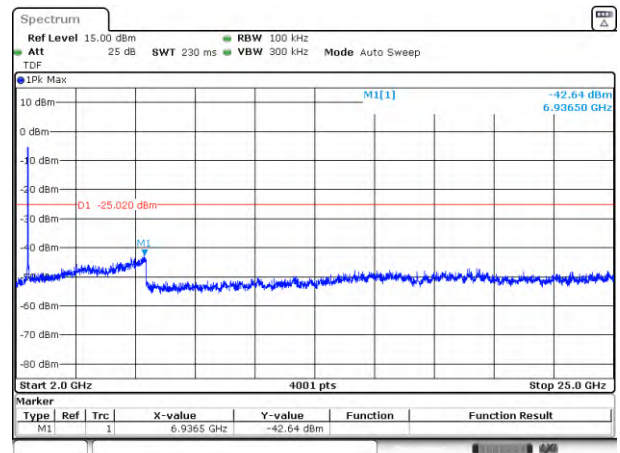
Date: 11 JAN 2023 16:19:28

802.11n-40 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



Date: 11 JAN 2023 16:19:55

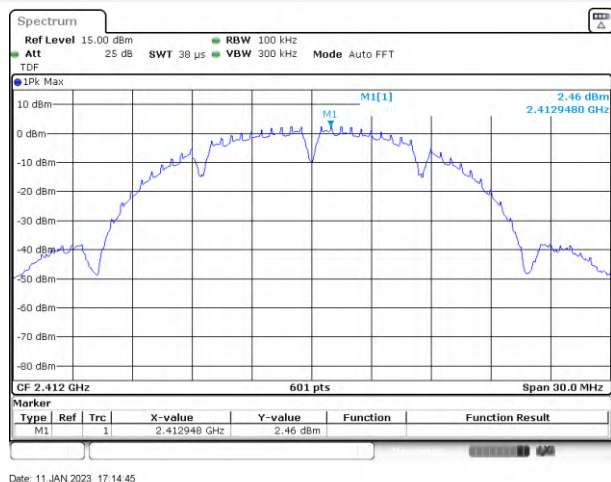
802.11n-40 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



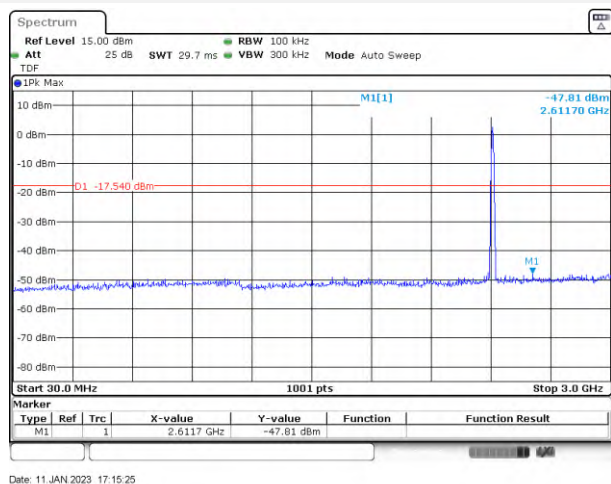
Date: 11 JAN 2023 16:20:13

Aux. Antenna

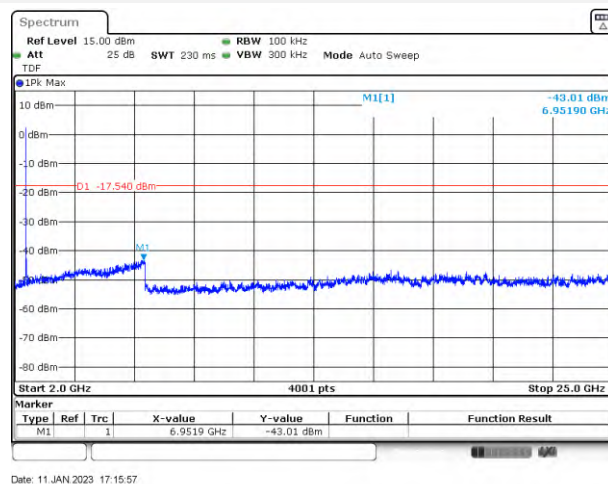
802.11b LOW CHANNEL CARRIER LEVEL



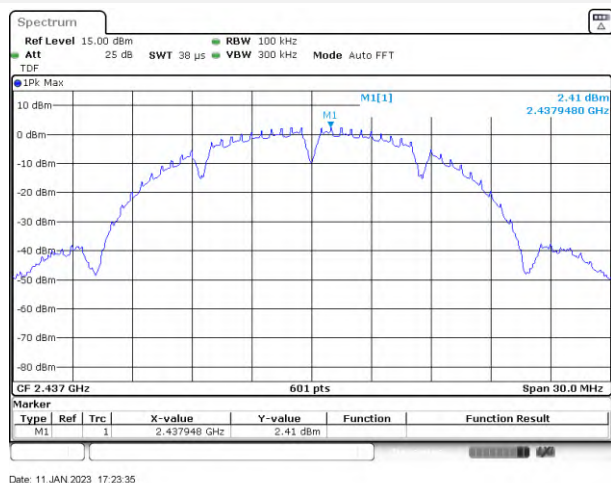
802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

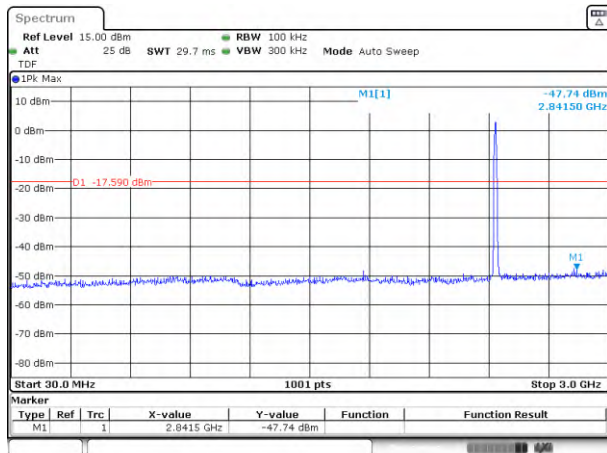


802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

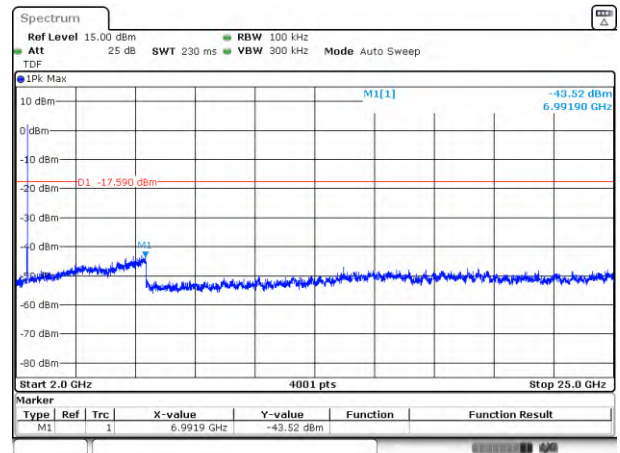


802.11b MIDDLE CHANNEL CARRIER LEVEL

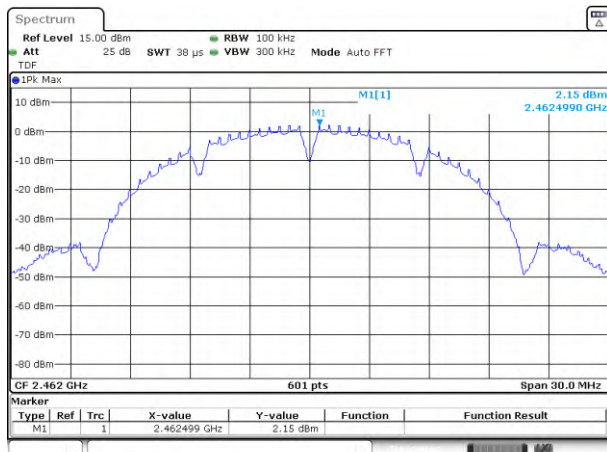


802.11b MIDDLE CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

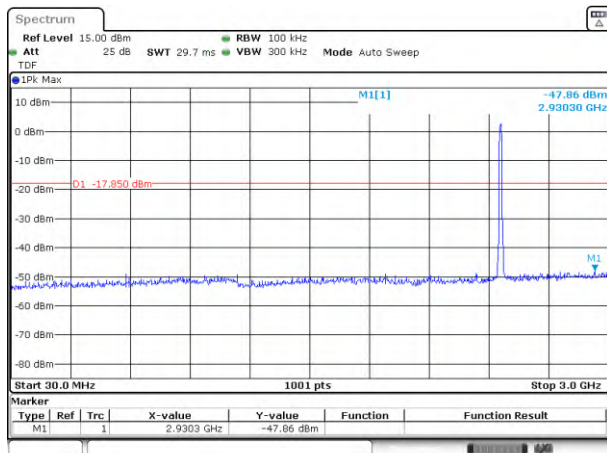
Date: 11 JAN 2023 17:25:17

802.11b MIDDLE CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

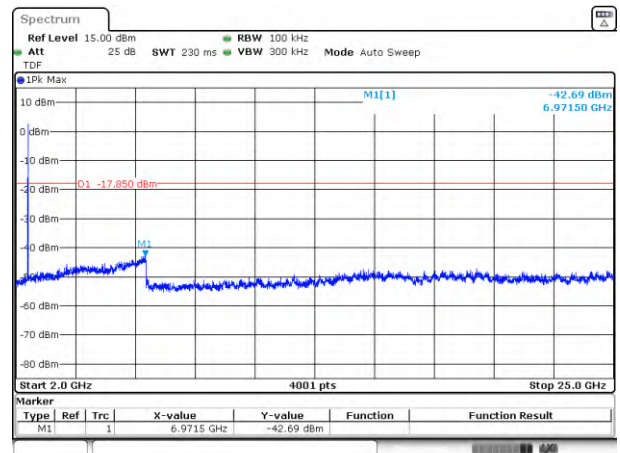
Date: 11 JAN 2023 17:25:41

802.11b HIGH CHANNEL CARRIER LEVEL

Date: 11 JAN 2023 17:28:43

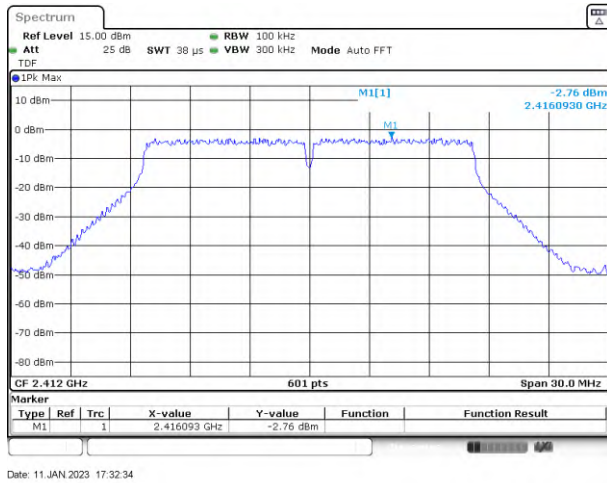
802.11b HIGH CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

Date: 11 JAN 2023 17:29:09

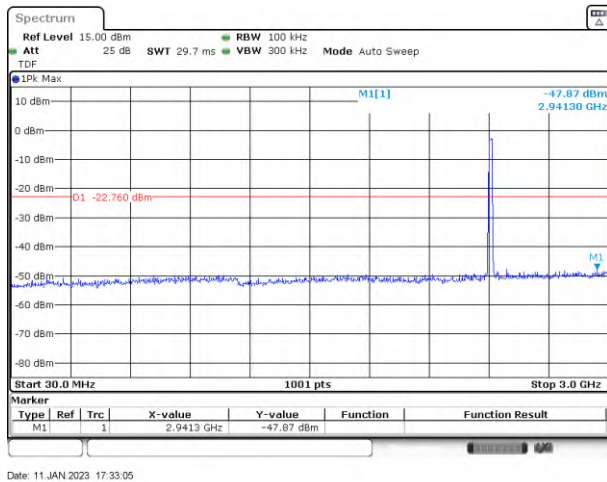
802.11b HIGH CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

Date: 11 JAN 2023 17:29:35

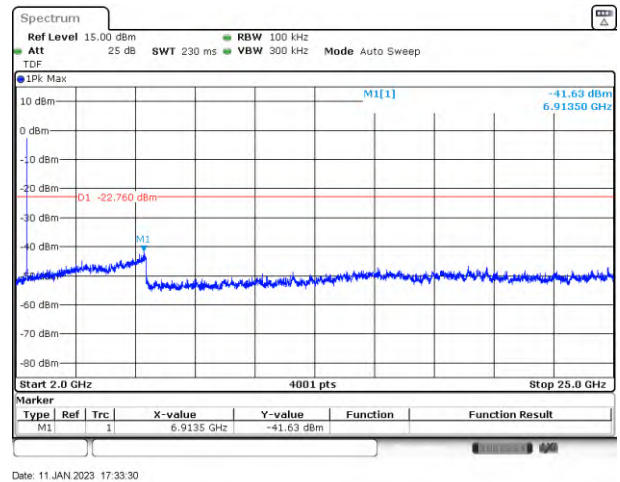
802.11g LOW CHANNEL CARRIER LEVEL



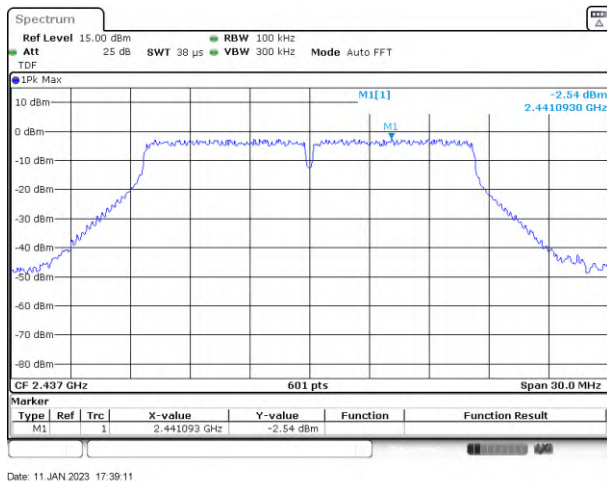
802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

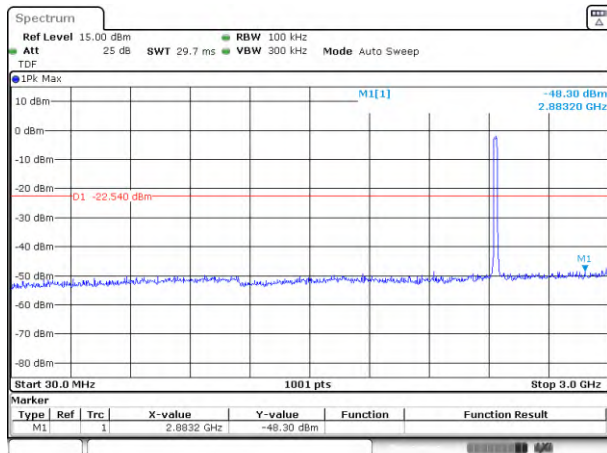


802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

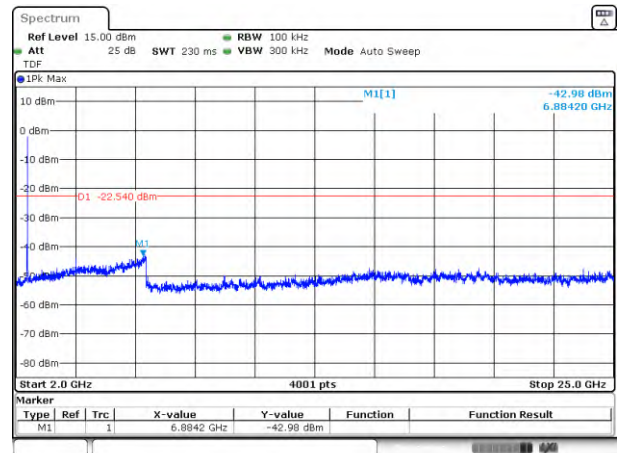


802.11g MIDDLE CHANNEL CARRIER LEVEL

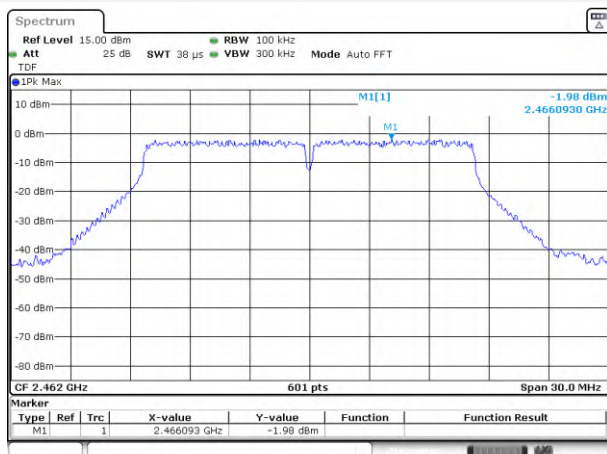


802.11g MIDDLE CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

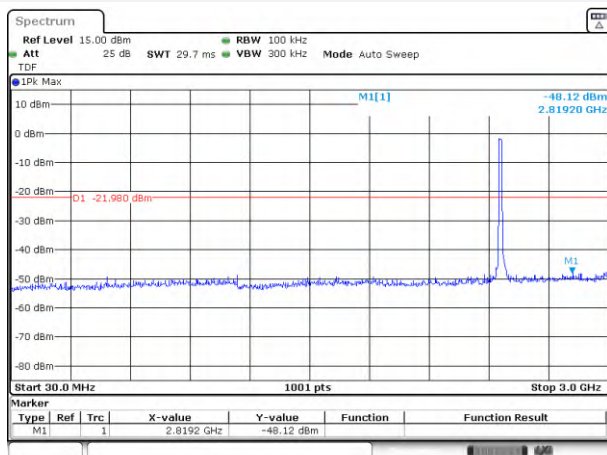
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802.11g MIDDLE CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

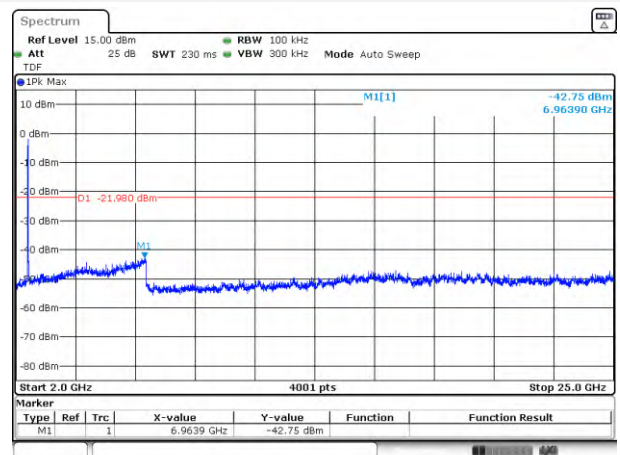
Date: 11 JAN 2023 17:39:57

802.11g HIGH CHANNEL CARRIER LEVEL

Date: 11 JAN 2023 17:42:24

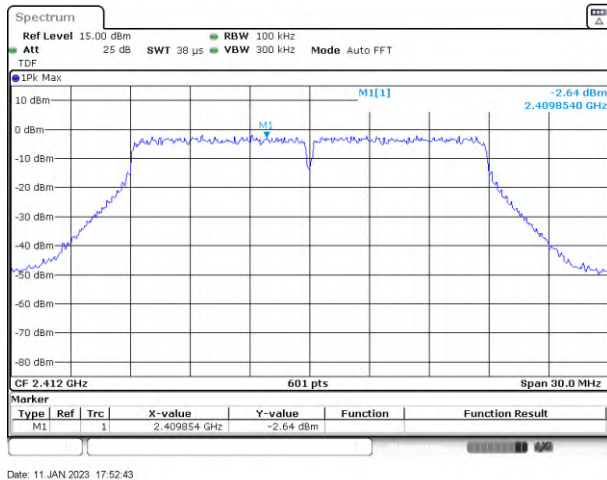
802.11g HIGH CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

Date: 11 JAN 2023 17:42:54

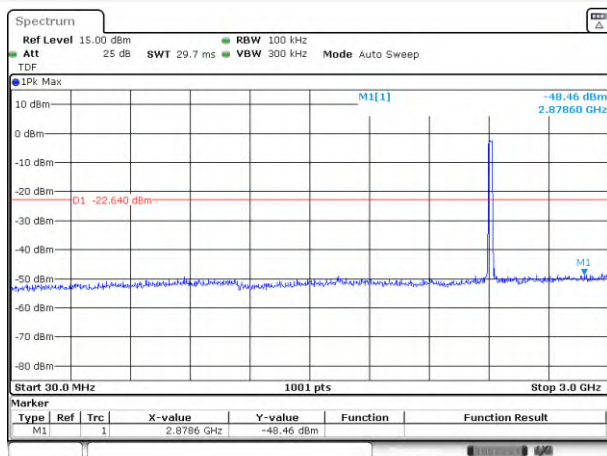
802.11g HIGH CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

Date: 11 JAN 2023 17:43:20

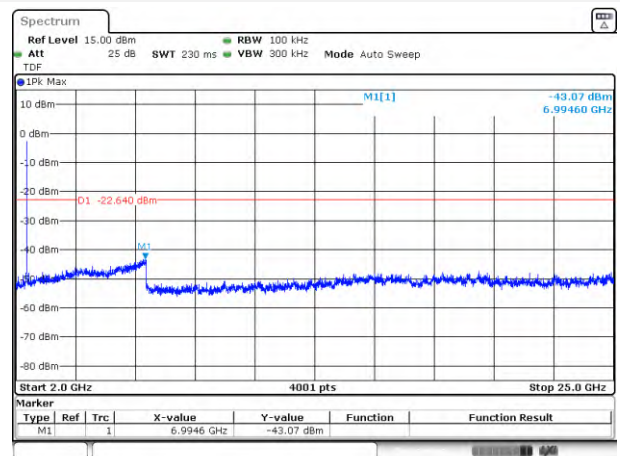
802.11n-20 MHz LOW CHANNEL CARRIER LEVEL



Date: 11 JAN 2023 17:52:43

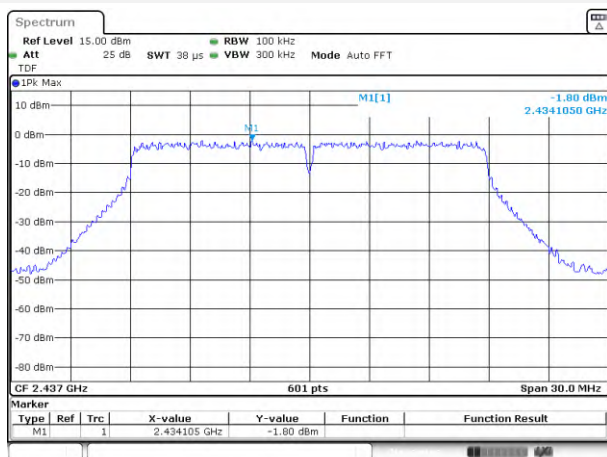
802.11n-20 MHz LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

Date: 11 JAN 2023 17:53:11

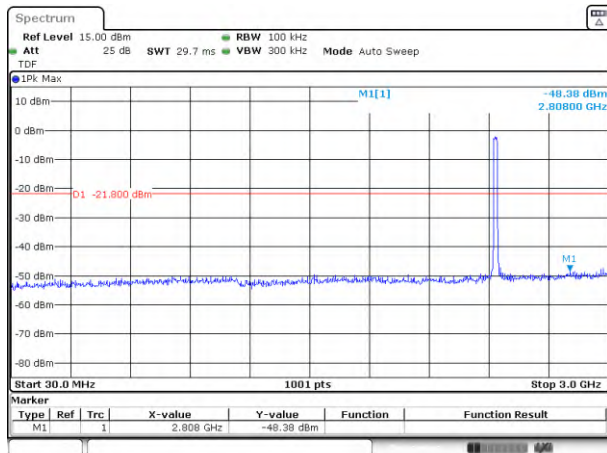
802.11n-20 MHz LOW CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

Date: 11 JAN 2023 17:53:27

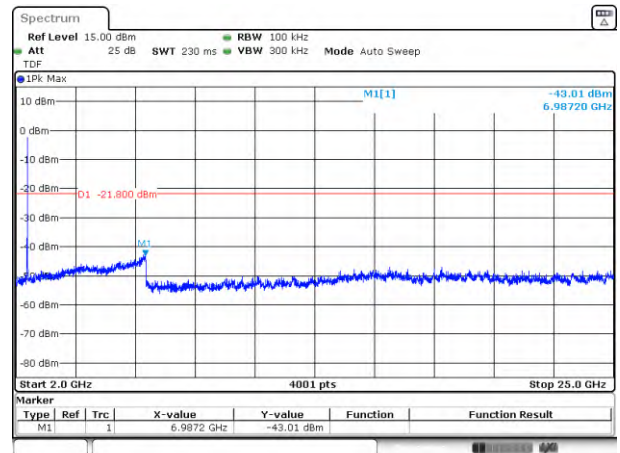
802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL



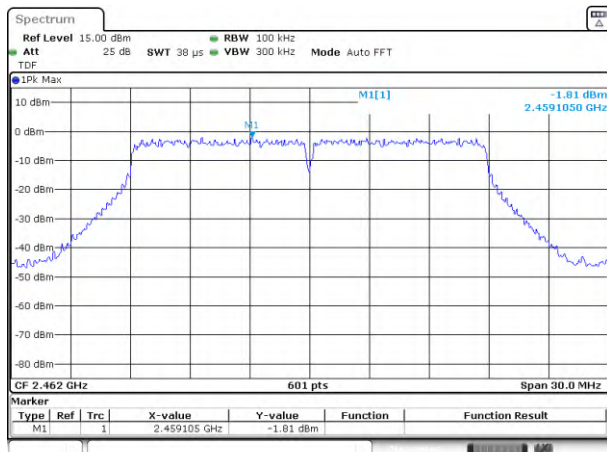
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802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

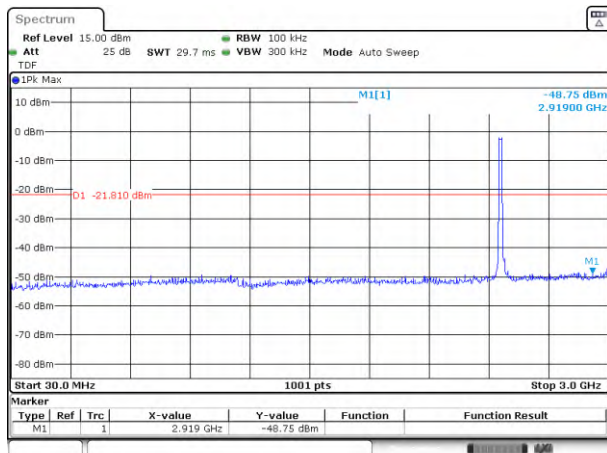
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802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

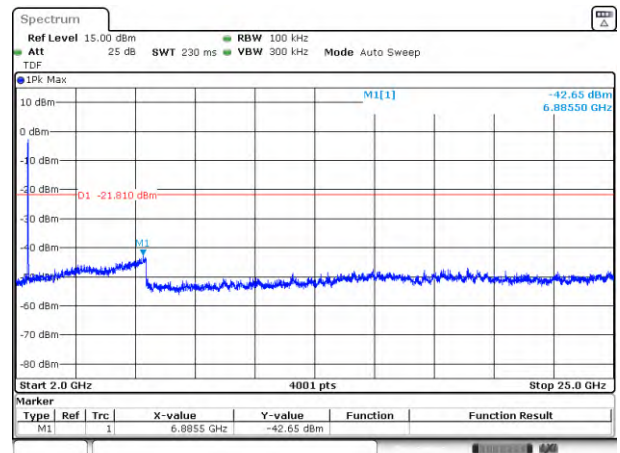
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802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL

Date: 11 JAN 2023 17:59:34

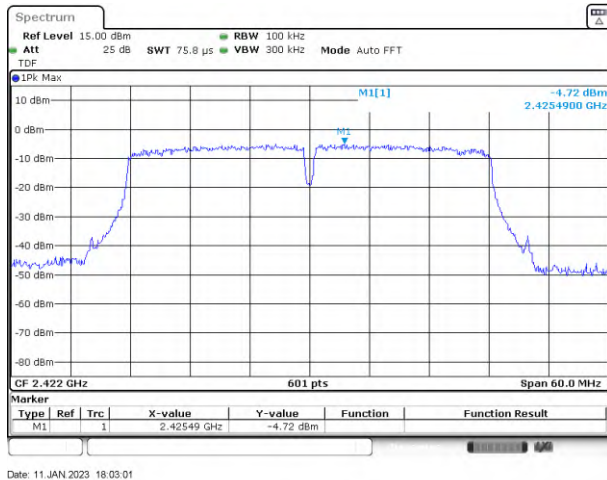
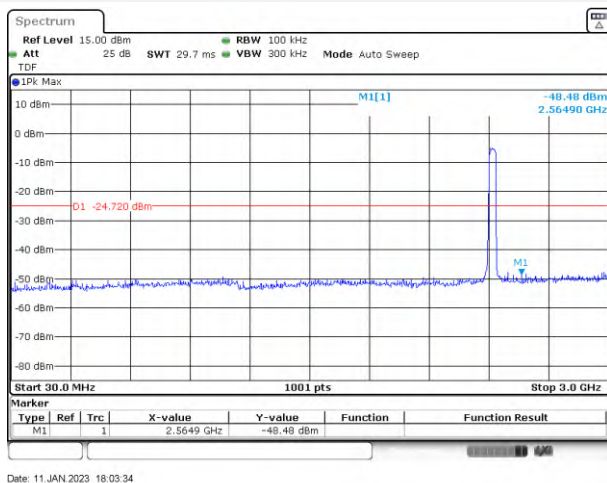
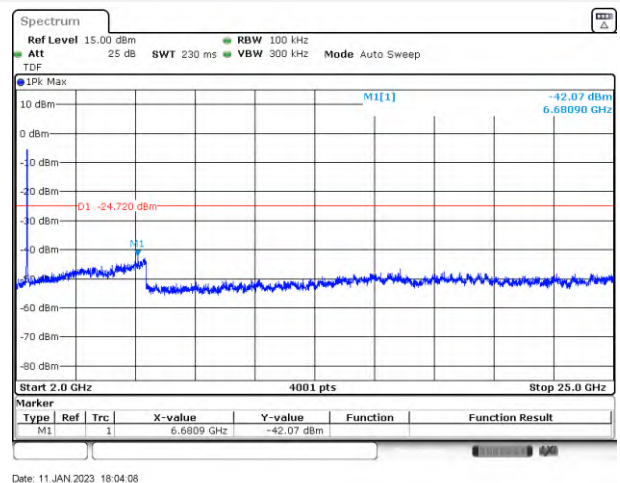
802.11n-20 MHz HIGH CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

Date: 11 JAN 2023 17:59:55

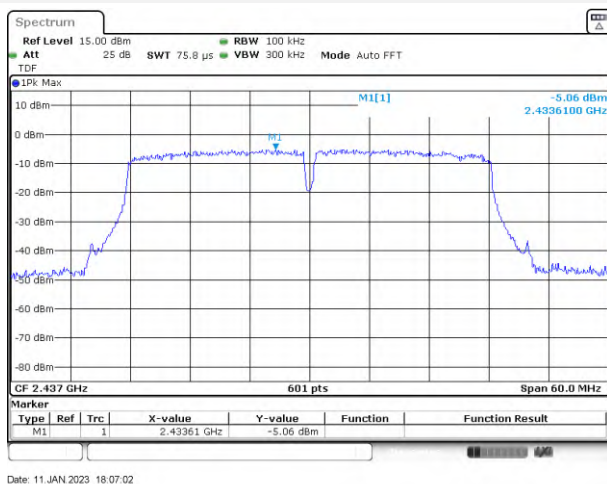
802.11n-20 MHz HIGH CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

Date: 11 JAN 2023 18:00:15

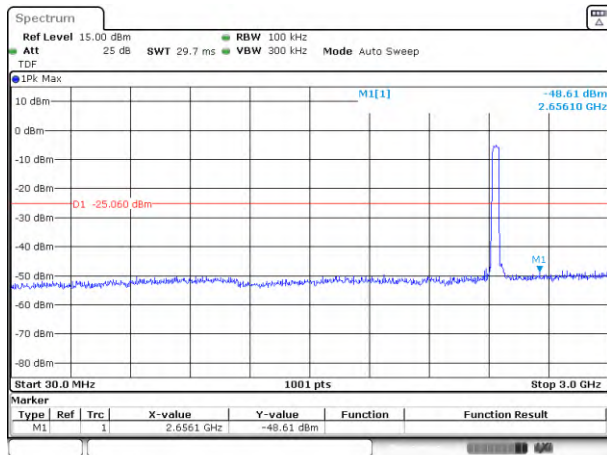
802.11n-40 MHz LOW CHANNEL CARRIER LEVEL

802.11n-40 MHz LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHz802.11n-40 MHz LOW CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL

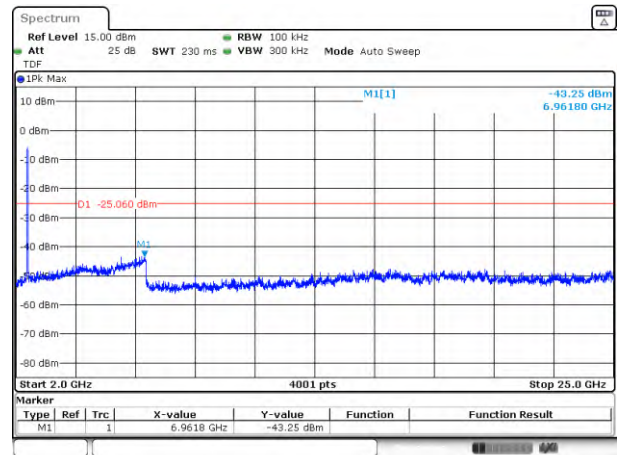


802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



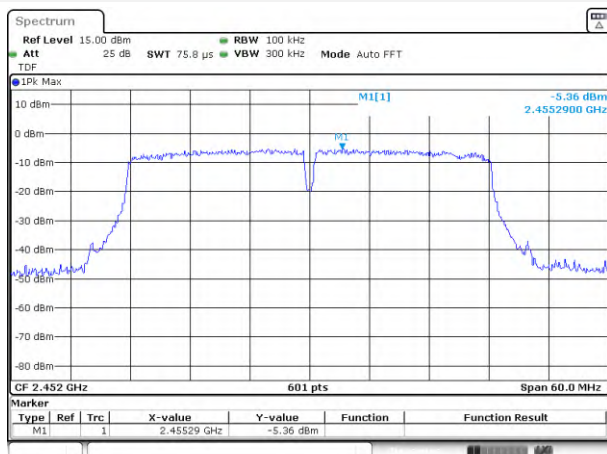
Date: 11 JAN 2023 18:07:21

802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



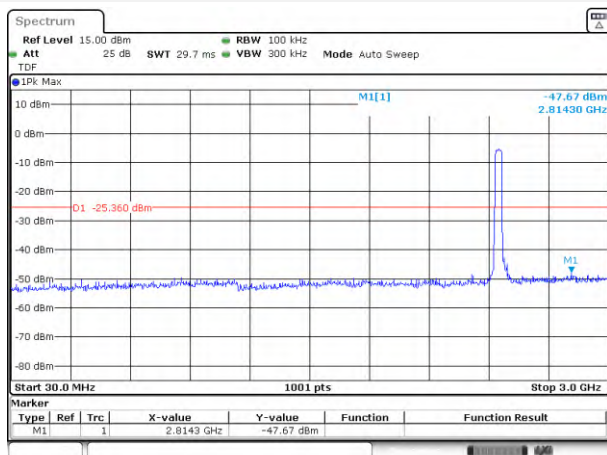
Date: 11 JAN 2023 18:07:37

802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL



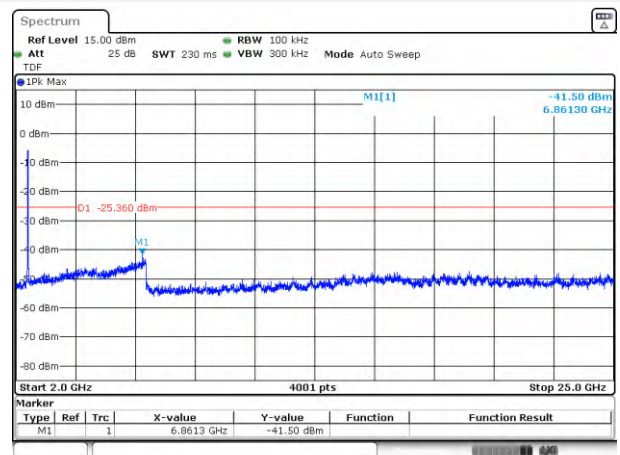
Date: 11 JAN 2023 18:09:10

802.11n-40 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



Date: 11 JAN 2023 18:09:30

802.11n-40 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



Date: 11 JAN 2023 18:09:46

A.4 Band Edge (Authorized-band band-edge)

Note: The 99% OBW of the fundamental emission is without 2 MHz of the authorized band.

Test Data

Main Antenna

802.11b Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-33.11	2.42	-17.58	Pass
High Channel	-34.97	1.63	-18.37	Pass

802.11g Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-33.39	-1.93	-21.93	Pass
High Channel	-34.34	-2.13	-22.13	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-34.27	-1.89	-21.89	Pass
High Channel	-34.98	-1.66	-21.66	Pass

802.11n-40 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-33.96	-5.14	-25.14	Pass
High Channel	-34.58	-5.02	-25.02	Pass

Aux. Antenna

802.11b Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-32.67	2.46	-17.54	Pass
High Channel	-34.31	2.15	-17.85	Pass

802.11g Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-34.19	-2.76	-22.76	Pass
High Channel	-34.18	-1.98	-21.98	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-33.87	-2.64	-22.64	Pass
High Channel	-34.98	-1.81	-21.81	Pass

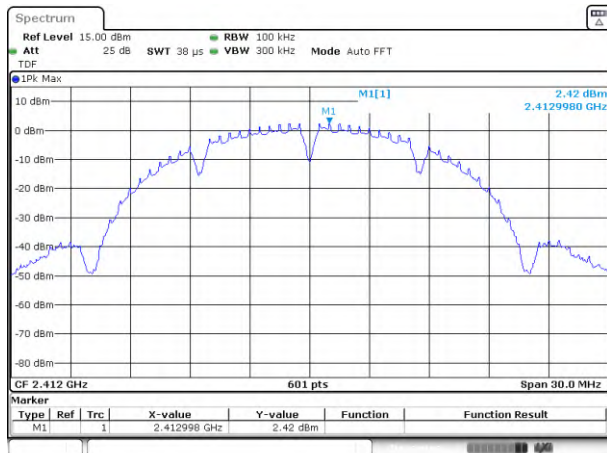
802.11n-40 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-33.90	-4.72	-24.72	Pass
High Channel	-34.58	-5.36	-25.36	Pass

Test Plots

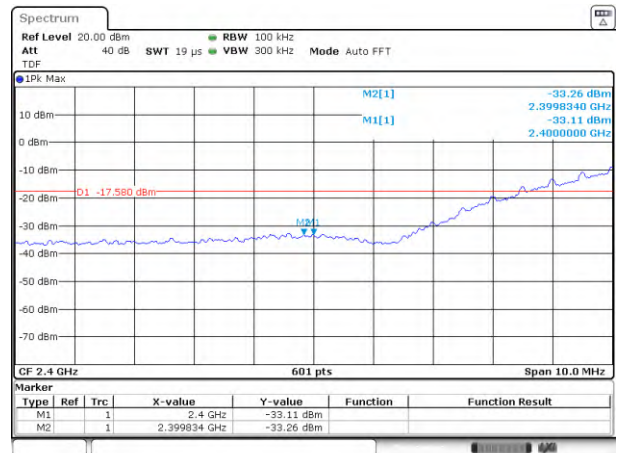
Main Antenna

802.11b LOW CHANNEL, CARRIER LEVEL



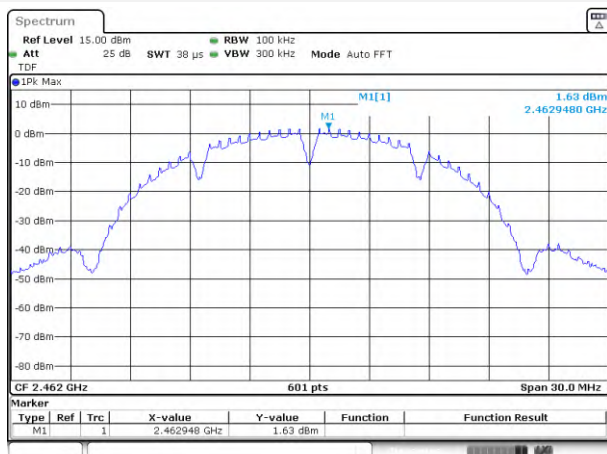
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802.11b LOW CHANNEL, BAND EDGE



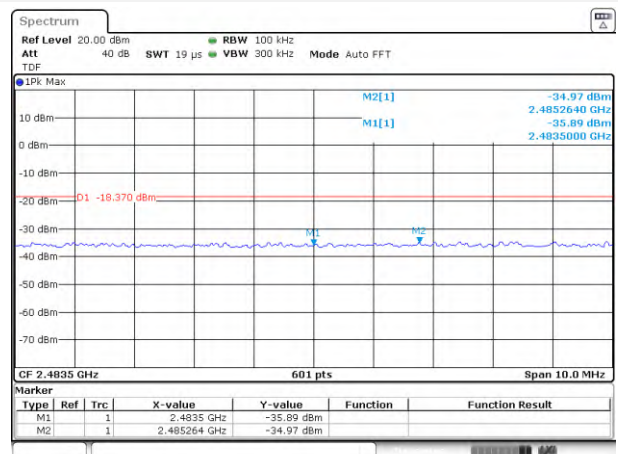
Date: 11 JAN 2023 15:37:54

802.11b HIGH CHANNEL, CARRIER LEVEL



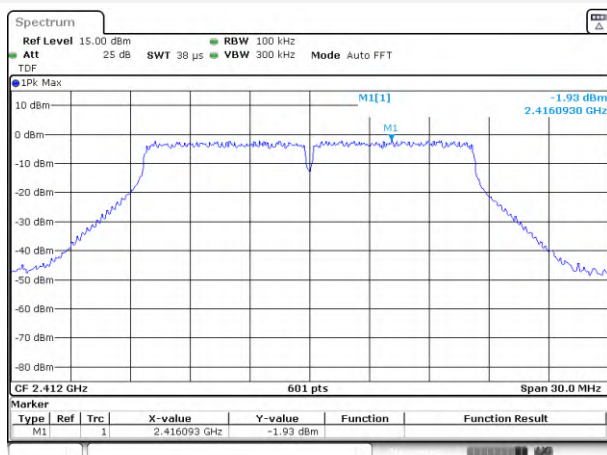
Date: 11 JAN 2023 15:43:27

802.11b HIGH CHANNEL, BAND EDGE



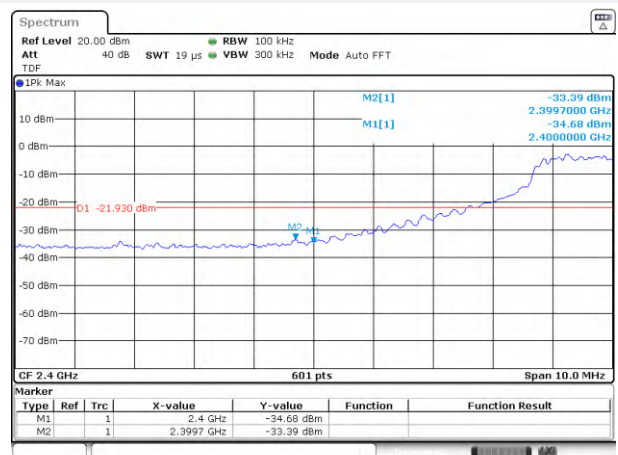
Date: 11 JAN 2023 16:27:29

802.11g LOW CHANNEL, CARRIER LEVEL



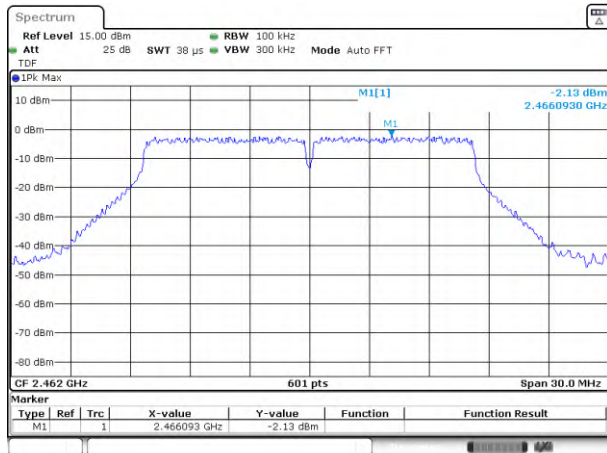
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802.11g LOW CHANNEL, BAND EDGE



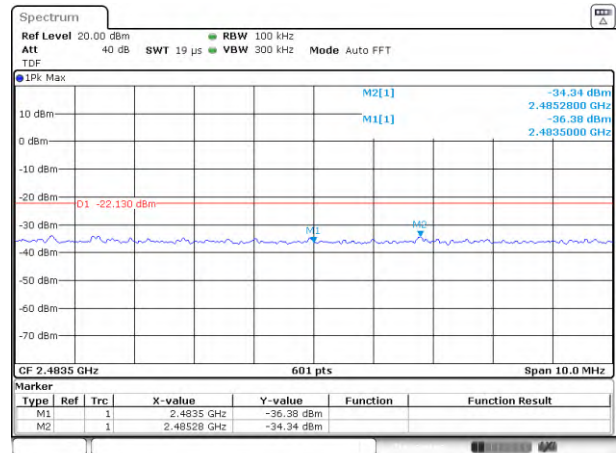
Date: 11 JAN 2023 16:24:17

802.11g HIGH CHANNEL, CARRIER LEVEL



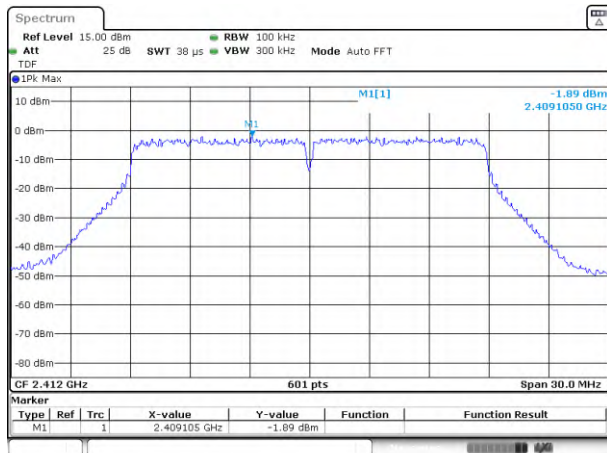
Date: 11 JAN 2023 15:58:22

802.11g HIGH CHANNEL, BAND EDGE



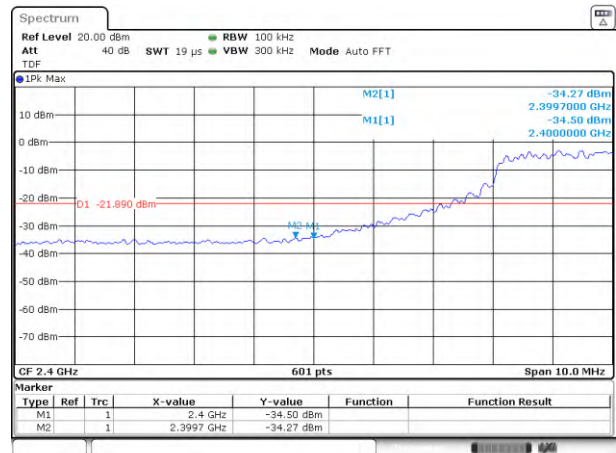
Date: 11 JAN 2023 16:00:03

802.11n-20 MHz LOW CHANNEL, CARRIER LEVEL



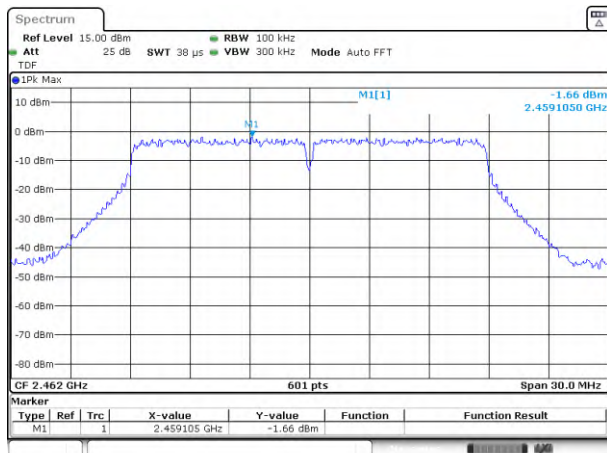
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802.11n-20 MHz LOW CHANNEL, BAND EDGE



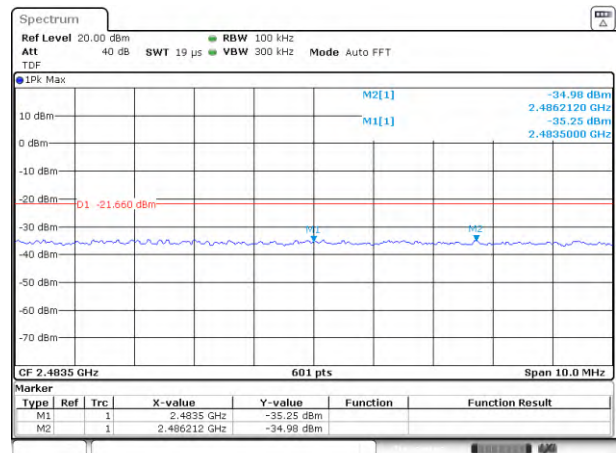
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802.11n-20 MHz HIGH CHANNEL, CARRIER LEVEL



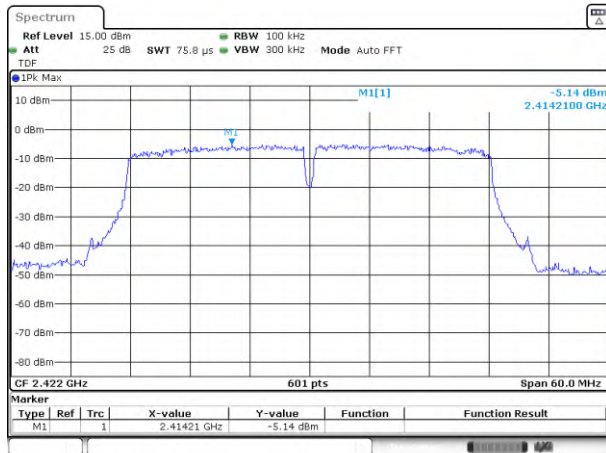
Date: 11 JAN 2023 16:08:56

802.11n-20 MHz HIGH CHANNEL, BAND EDGE



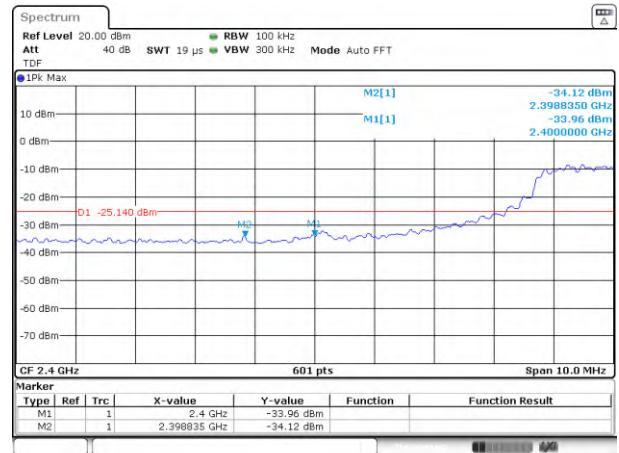
Date: 11 JAN 2023 16:28:47

802.11n-40 MHz LOW CHANNEL, CARRIER LEVEL



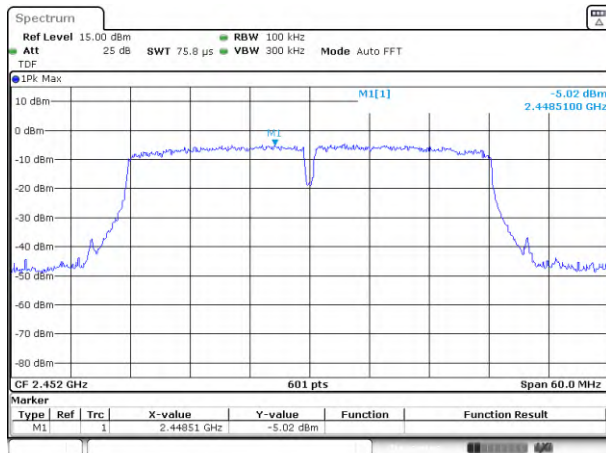
Date: 11. JAN 2023 16:12:16

802.11n-40 MHz LOW CHANNEL, BAND EDGE



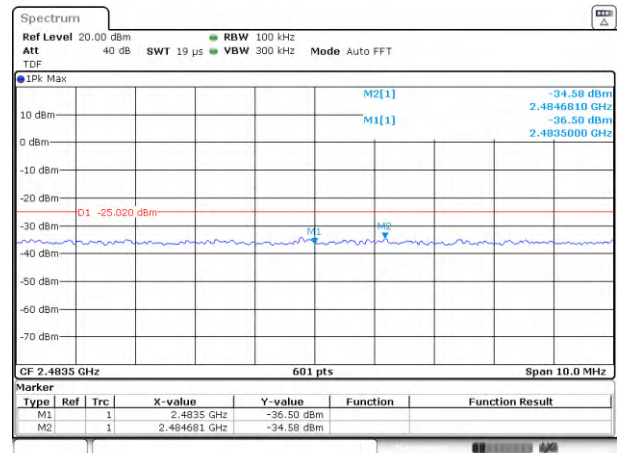
Date: 11. JAN 2023 16:15:12

802.11n-40 MHz HIGH CHANNEL, CARRIER LEVEL



Date: 11. JAN 2023 16:19:28

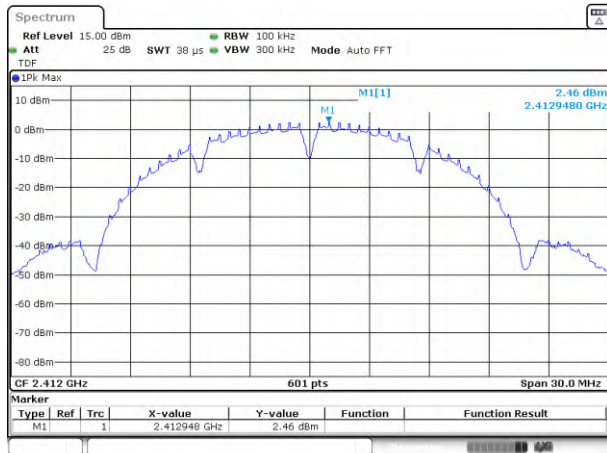
802.11n-40 MHz HIGH CHANNEL, BAND EDGE



Date: 11. JAN 2023 16:20:33

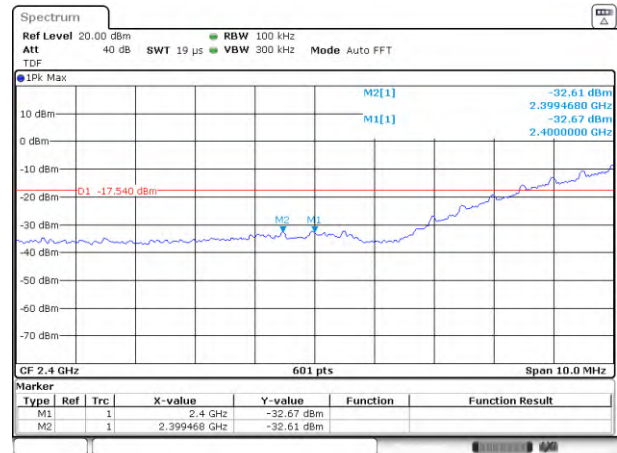
Aux. Antenna

802.11b LOW CHANNEL, CARRIER LEVEL



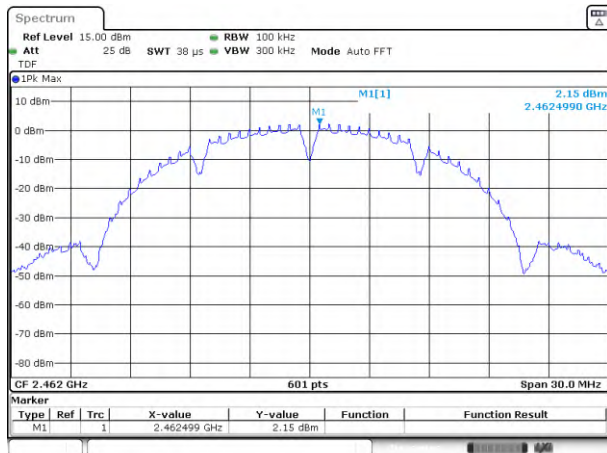
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802.11b LOW CHANNEL, BAND EDGE



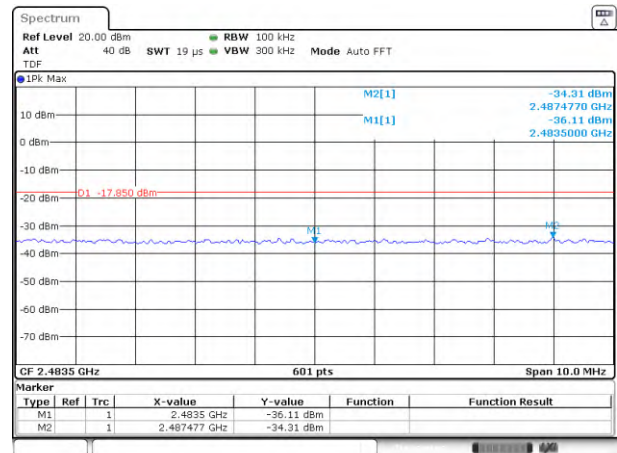
Date: 11 JAN 2023 17:16:41

802.11b HIGH CHANNEL, CARRIER LEVEL



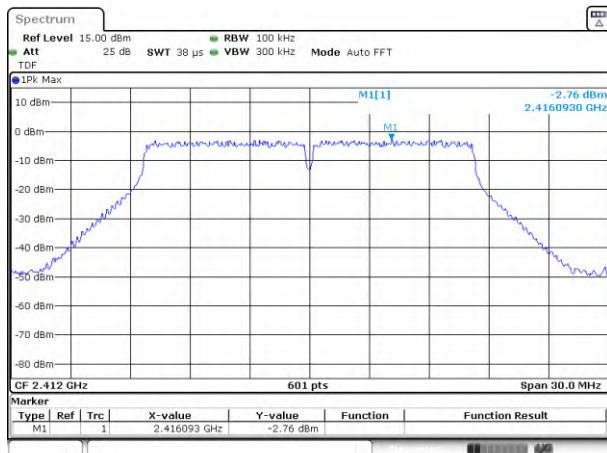
Date: 11 JAN 2023 17:28:43

802.11b HIGH CHANNEL, BAND EDGE



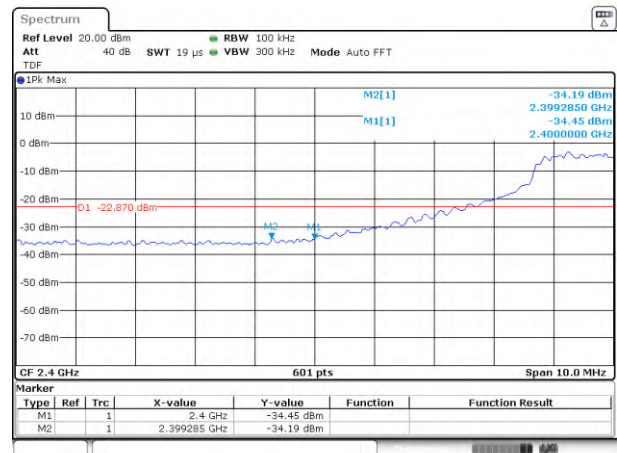
Date: 11 JAN 2023 17:30:47

802.11g LOW CHANNEL, CARRIER LEVEL



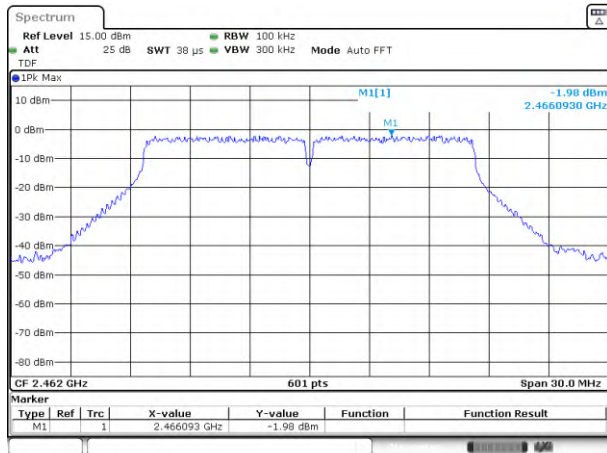
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802.11g LOW CHANNEL, BAND EDGE



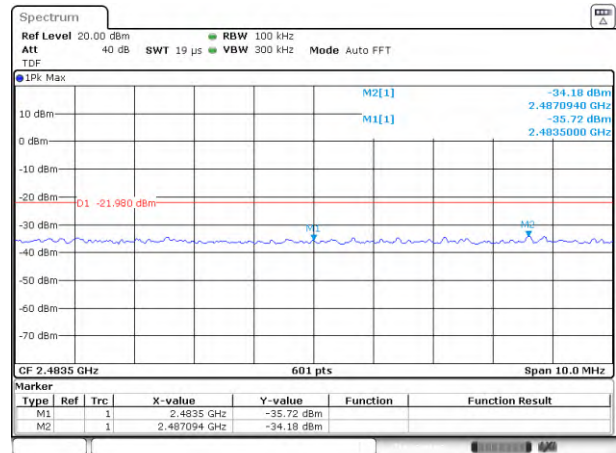
Date: 11 JAN 2023 17:34:05

802.11g HIGH CHANNEL, CARRIER LEVEL



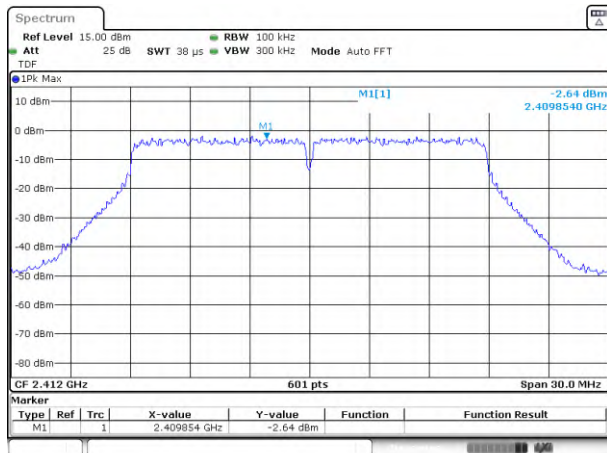
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802.11g HIGH CHANNEL, BAND EDGE



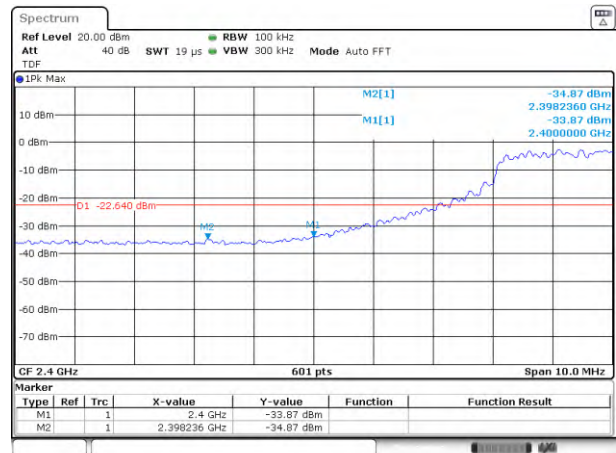
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802.11n-20 MHz LOW CHANNEL, CARRIER LEVEL



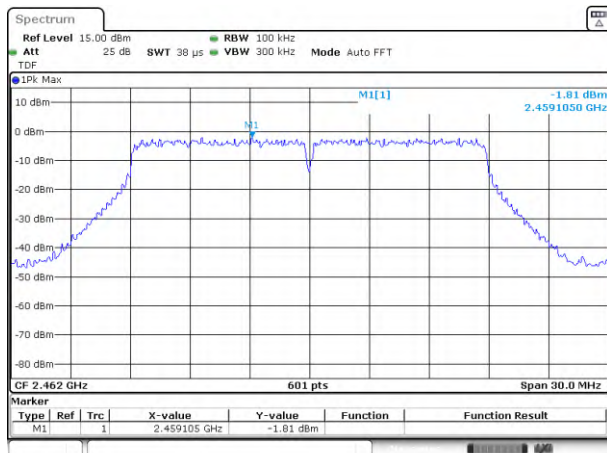
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802.11n-20 MHz LOW CHANNEL, BAND EDGE



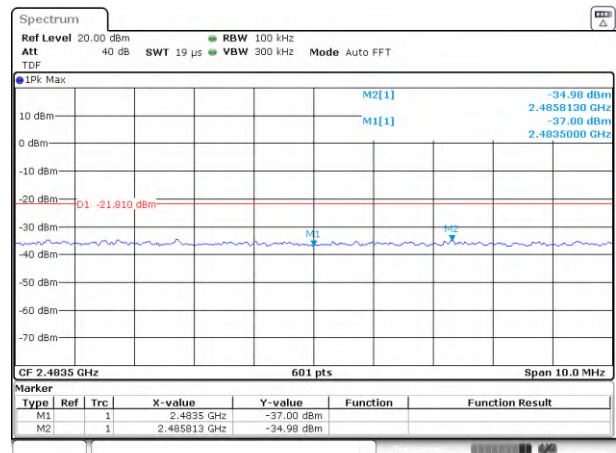
Date: 11 JAN 2023 17:53:49

802.11n-20 MHz HIGH CHANNEL, CARRIER LEVEL



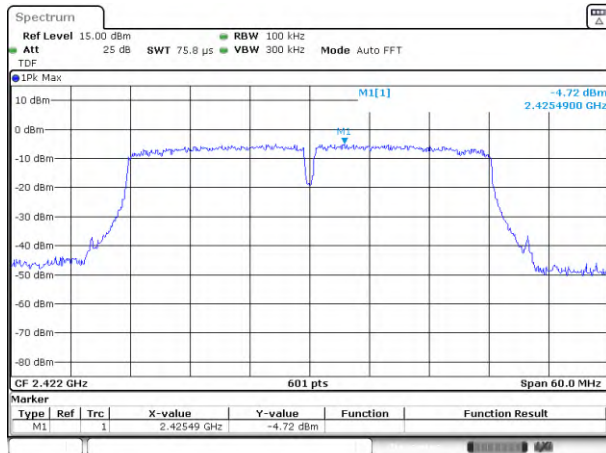
Date: 11 JAN 2023 17:59:34

802.11n-20 MHz HIGH CHANNEL, BAND EDGE



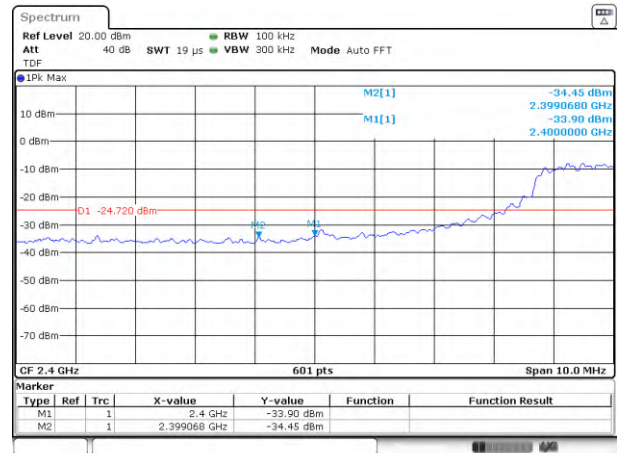
Date: 11 JAN 2023 18:01:03

802.11n-40 MHz LOW CHANNEL, CARRIER LEVEL



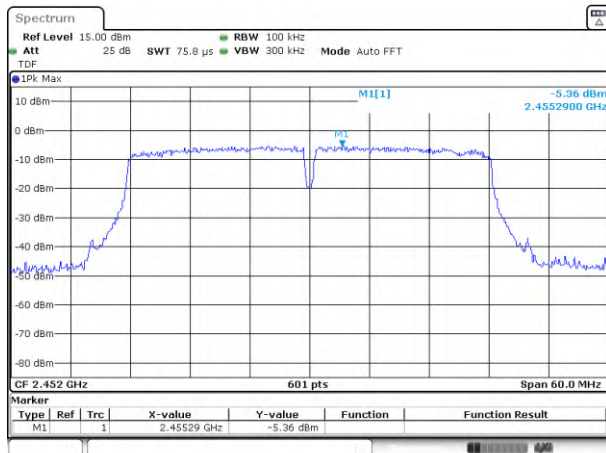
Date: 11 JAN 2023 18:03:01

802.11n-40 MHz LOW CHANNEL, BAND EDGE



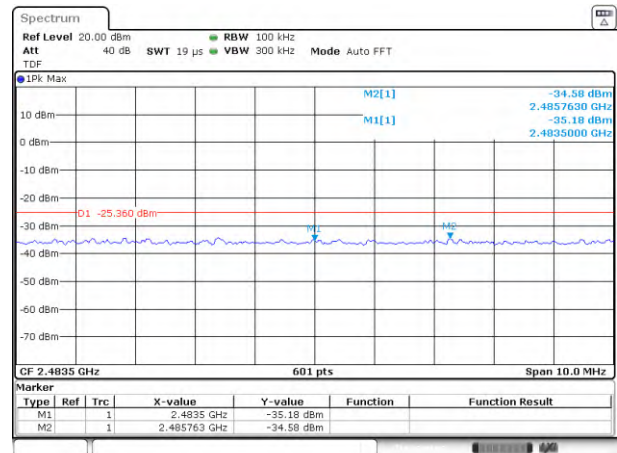
Date: 11 JAN 2023 18:05:05

802.11n-40 MHz HIGH CHANNEL, CARRIER LEVEL



Date: 11 JAN 2023 18:09:10

802.11n-40 MHz HIGH CHANNEL, BAND EDGE



Date: 11 JAN 2023 18:10:10

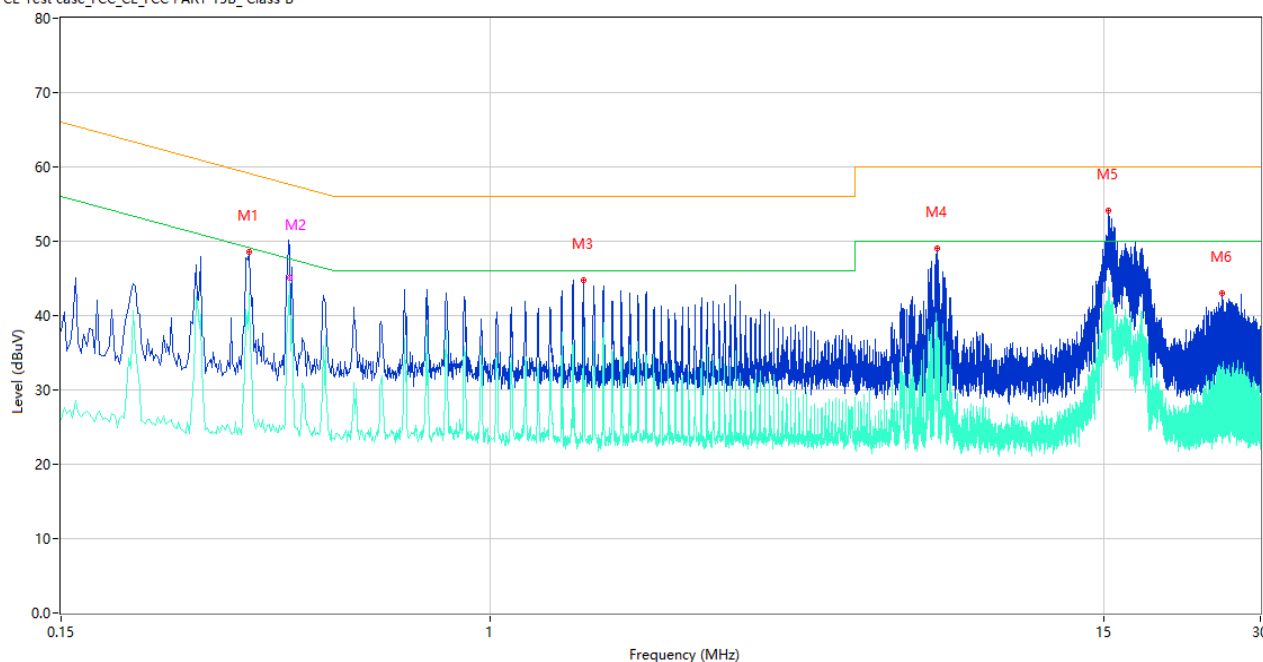
A.5 Conducted Emissions

Note: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

Test Data and Plots

PHASE L

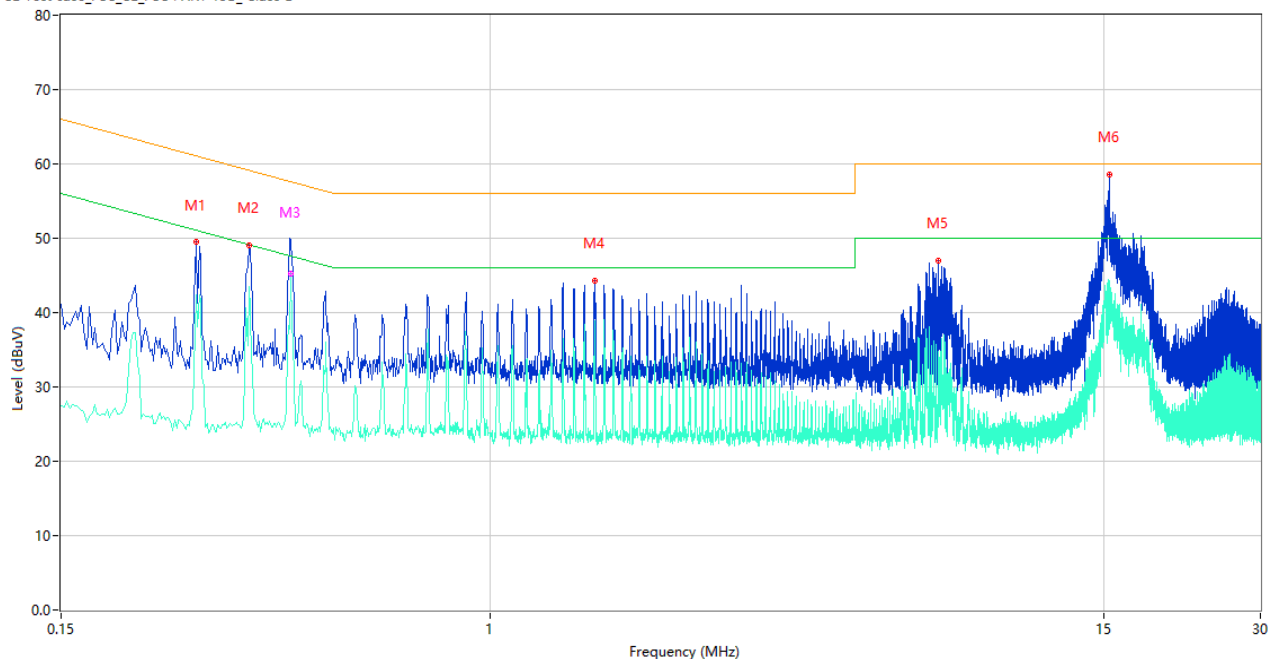
CE Test case_FCC_CE_FCC PART 15B_Class B



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.344	48.56	10.85	59.11	10.55	Peak	L	Pass
1**	0.344	43.09	10.85	49.11	6.02	AV	L	Pass
2	0.412	49.03	10.63	57.61	8.58	Peak	L	Pass
2**	0.412	45.09	10.63	47.61	2.52	AV	L	Pass
3	1.508	44.73	10.35	56.00	11.27	Peak	L	Pass
3**	1.508	38.39	10.35	46.00	7.61	AV	L	Pass
4	7.196	48.98	10.40	60.00	11.02	Peak	L	Pass
4**	7.196	39.28	10.40	50.00	10.72	AV	L	Pass
5	15.332	54.06	10.30	60.00	5.94	Peak	L	Pass
5**	15.332	40.81	10.30	50.00	9.19	AV	L	Pass
6	25.294	42.96	10.27	60.00	17.04	Peak	L	Pass
6**	25.294	31.98	10.27	50.00	18.02	AV	L	Pass

PHASE N

CE Test case_FCC_CE_FCC PART 15B_Class B



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.272	49.48	10.00	61.06	11.58	Peak	N	Pass
1**	0.272	42.37	10.00	51.06	8.69	AV	N	Pass
2	0.344	49.07	10.85	59.11	10.04	Peak	N	Pass
2**	0.344	43.48	10.85	49.11	5.63	AV	N	Pass
3	0.414	49.83	10.61	57.57	7.74	Peak	N	Pass
3**	0.414	45.20	10.61	47.57	2.37	AV	N	Pass
4	1.582	44.33	10.06	56.00	11.67	Peak	N	Pass
4**	1.582	36.83	10.06	46.00	9.17	AV	N	Pass
5	7.226	47.01	10.38	60.00	12.99	Peak	N	Pass
5**	7.226	33.04	10.38	50.00	16.96	AV	N	Pass
6	15.374	58.63	10.49	60.00	1.37	Peak	N	Pass
6**	15.374	43.96	10.49	50.00	6.04	AV	N	Pass

A.6 Radiated Emission

Note ¹: The symbol of "--" in the table which means not application.

Note ²: For the test data above 1 GHz, According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

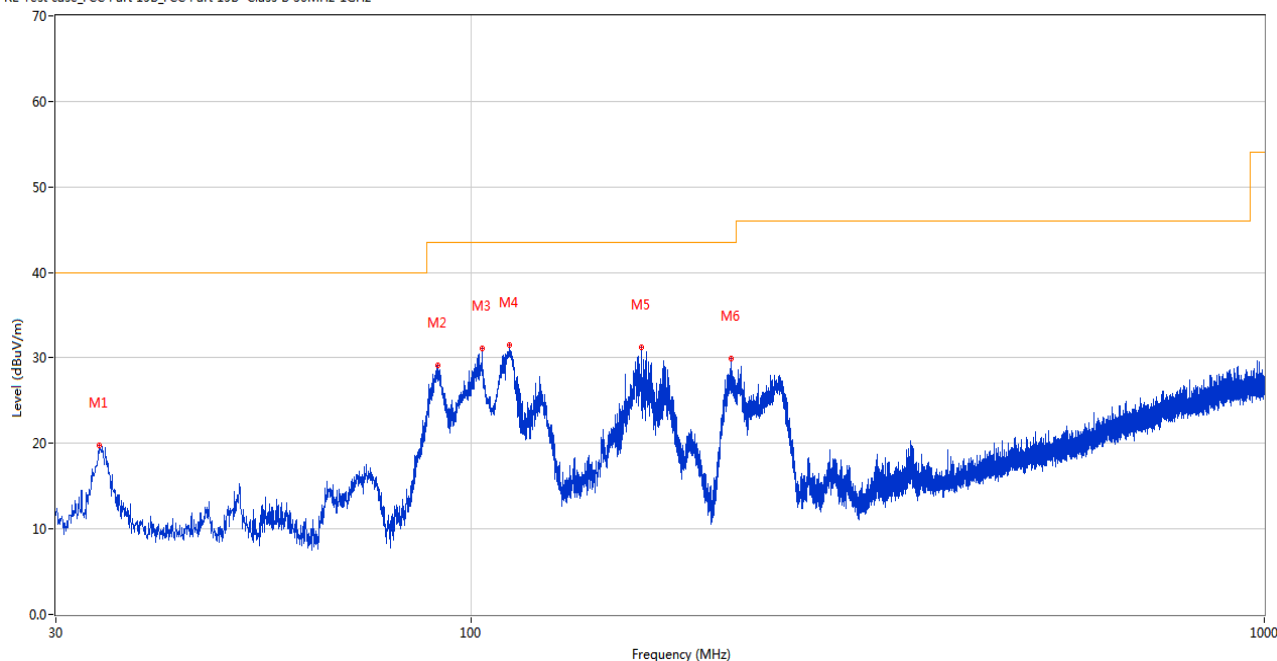
Note ³: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note ⁴: The EUT is working in the Normal link mode below 1 GHz. All modes have been tested and normal link mode is worst.

Test Data and Plots

30 MHz to 1 GHz, ANT H

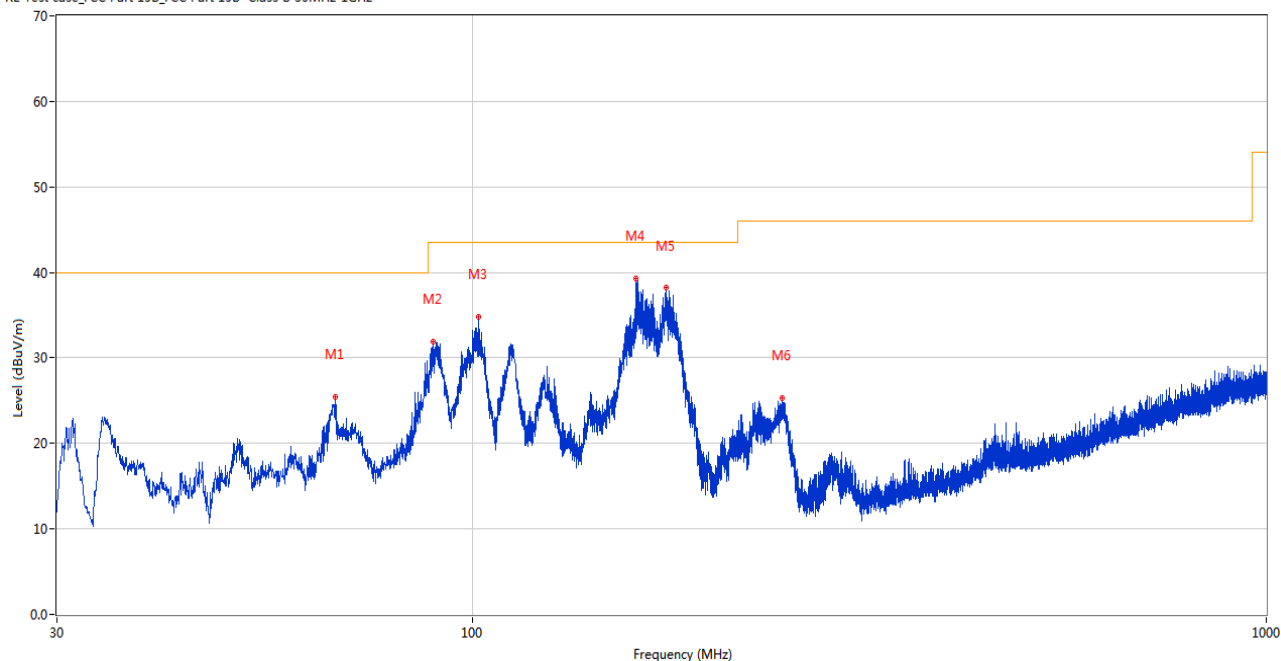
RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	33.977	19.75	-27.07	40.0	20.25	Peak	271.00	100	Horizontal	Pass
2	90.771	29.19	-30.39	43.5	14.31	Peak	183.00	200	Horizontal	Pass
3	103.429	31.10	-28.87	43.5	12.40	Peak	105.00	200	Horizontal	Pass
4	112.013	31.49	-27.94	43.5	12.01	Peak	102.00	200	Horizontal	Pass
5	164.151	31.30	-25.18	43.5	12.20	Peak	266.00	100	Horizontal	Pass
6	213.136	29.94	-27.99	43.5	13.56	Peak	360.00	200	Horizontal	Pass

30 MHz to 1 GHz, ANT V

RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	67.345	25.47	-28.66	40.0	14.53	Peak	222.00	100	Vertical	Pass
2	89.315	31.96	-30.37	43.5	11.54	Peak	183.00	100	Vertical	Pass
3	101.974	34.77	-29.10	43.5	8.73	Peak	190.00	100	Vertical	Pass
4	160.950	39.29	-24.66	43.5	4.21	Peak	0.00	100	Vertical	Pass
5	175.258	38.17	-26.30	43.5	5.33	Peak	284.00	100	Vertical	Pass
6	245.389	25.36	-26.18	46.0	20.64	Peak	39.00	100	Vertical	Pass

Note 1: The marked spikes near 2400 MHz with circle should be ignored because they are Fundamental signal.

Note 2: The spurious above 18G is noise only, do not show on the report.

Main Antenna

1 GHz to 18 GHz, ANT H 802.11b Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1698.500	57.24	-16.38	74.0	16.76	Peak	319.00	150	Horizontal	Pass
1**	1698.500	41.18	-16.38	54.0	12.82	AV	319.00	150	Horizontal	Pass
2	2411.900	92.79	-9.92	74.0	-18.79	Peak	217.00	200	Horizontal	N/A
2**	2411.900	88.10	-9.92	54.0	-34.10	AV	217.00	200	Horizontal	N/A
3	3560.500	50.73	-6.05	74.0	23.27	Peak	240.00	150	Horizontal	Pass
3**	3560.500	44.46	-6.05	54.0	9.54	AV	240.00	150	Horizontal	Pass
4	7928.250	53.81	2.40	74.0	20.19	Peak	143.00	300	Horizontal	Pass
4**	7928.250	44.99	2.40	54.0	9.01	AV	143.00	300	Horizontal	Pass
5	9854.875	51.71	-1.95	74.0	22.29	Peak	272.00	200	Horizontal	Pass
5**	9854.875	41.48	-1.95	54.0	12.52	AV	272.00	200	Horizontal	Pass
6	16351.237	53.85	0.82	74.0	20.15	Peak	21.00	300	Horizontal	Pass
6**	16351.237	43.65	0.82	54.0	10.35	AV	21.00	300	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11b Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1288.000	50.62	-16.52	74.0	23.38	Peak	222.00	300	Vertical	Pass
1**	1288.000	37.47	-16.52	54.0	16.53	AV	222.00	300	Vertical	Pass
2	2412.100	96.59	-9.93	74.0	-22.59	Peak	138.00	200	Vertical	N/A
2**	2412.100	91.59	-9.93	54.0	-37.59	AV	138.00	200	Vertical	N/A
3	3560.500	51.58	-6.05	74.0	22.42	Peak	293.00	150	Vertical	Pass
3**	3560.500	48.74	-6.05	54.0	5.26	AV	293.00	150	Vertical	Pass
4	7923.000	53.96	2.15	74.0	20.04	Peak	227.00	400	Vertical	Pass
4**	7923.000	44.79	2.15	54.0	9.21	AV	227.00	400	Vertical	Pass
5	11120.513	51.52	-0.98	74.0	22.48	Peak	38.00	400	Vertical	Pass
5**	11120.513	42.21	-0.98	54.0	11.79	AV	38.00	400	Vertical	Pass
6	16311.862	52.26	-0.24	74.0	21.74	Peak	347.00	200	Vertical	Pass
6**	16311.862	43.21	-0.24	54.0	10.79	AV	347.00	200	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11b Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1276.800	54.80	-16.66	74.0	19.20	Peak	352.00	400	Horizontal	Pass
1**	1276.800	41.83	-16.66	54.0	12.17	AV	352.00	400	Horizontal	Pass
2	2436.800	87.87	-9.13	74.0	-13.87	Peak	210.00	200	Horizontal	N/A
2**	2436.800	83.47	-9.13	54.0	-29.47	AV	210.00	200	Horizontal	N/A
3	3560.500	51.33	-6.05	74.0	22.67	Peak	244.00	150	Horizontal	Pass
3**	3560.500	43.77	-6.05	54.0	10.23	AV	244.00	150	Horizontal	Pass
4	7934.000	53.58	2.33	74.0	20.42	Peak	62.00	400	Horizontal	Pass
4**	7934.000	44.58	2.33	54.0	9.42	AV	62.00	400	Horizontal	Pass
5	11134.050	51.85	-0.97	74.0	22.15	Peak	284.00	300	Horizontal	Pass
5**	11134.050	42.94	-0.97	54.0	11.06	AV	284.00	300	Horizontal	Pass
6	16338.900	52.34	0.53	74.0	21.66	Peak	23.00	400	Horizontal	Pass
6**	16338.900	44.18	0.53	54.0	9.82	AV	23.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11b Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1291.700	50.26	-16.55	74.0	23.74	Peak	0.00	300	Vertical	Pass
1**	1291.700	35.69	-16.55	54.0	18.31	AV	0.00	300	Vertical	Pass
2	2437.000	94.67	-9.16	74.0	-20.67	Peak	69.00	150	Vertical	N/A
2**	2437.000	90.70	-9.16	54.0	-36.70	AV	69.00	150	Vertical	N/A
3	4874.250	51.71	-2.49	74.0	22.29	Peak	38.00	200	Vertical	Pass
3**	4874.250	47.43	-2.49	54.0	6.57	AV	38.00	200	Vertical	Pass
4	7934.000	53.63	2.33	74.0	20.37	Peak	307.00	100	Vertical	Pass
4**	7934.000	44.37	2.33	54.0	9.63	AV	307.00	100	Vertical	Pass
5	11156.612	51.59	-1.06	74.0	22.41	Peak	154.00	400	Vertical	Pass
5**	11156.612	42.03	-1.06	54.0	11.97	AV	154.00	400	Vertical	Pass
6	16300.049	52.21	-0.57	74.0	21.79	Peak	38.00	400	Vertical	Pass
6**	16300.049	43.44	-0.57	54.0	10.56	AV	38.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11b High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1289.300	54.74	-16.51	74.0	19.26	Peak	356.00	100	Horizontal	Pass
1**	1289.300	42.89	-16.51	54.0	11.11	AV	356.00	100	Horizontal	Pass
2	2463.200	91.56	-9.75	74.0	-17.56	Peak	351.00	100	Horizontal	N/A
2**	2463.200	88.67	-9.75	54.0	-34.67	AV	351.00	100	Horizontal	N/A
3	3560.750	51.15	-6.05	74.0	22.85	Peak	242.00	150	Horizontal	Pass
3**	3560.750	44.30	-6.05	54.0	9.70	AV	242.00	150	Horizontal	Pass
4	7821.000	53.81	2.87	74.0	20.19	Peak	0.00	100	Horizontal	Pass
4**	7821.000	44.83	2.87	54.0	9.17	AV	0.00	100	Horizontal	Pass
5	11187.963	51.84	-1.59	74.0	22.16	Peak	145.00	100	Horizontal	Pass
5**	11187.963	42.30	-1.59	54.0	11.70	AV	145.00	100	Horizontal	Pass
6	16314.488	52.47	-0.16	74.0	21.53	Peak	237.00	400	Horizontal	Pass
6**	16314.488	43.41	-0.16	54.0	10.59	AV	237.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11b High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1291.300	50.16	-16.54	74.0	23.84	Peak	231.00	300	Vertical	Pass
1**	1291.300	37.25	-16.54	54.0	16.75	AV	231.00	300	Vertical	Pass
2	2462.100	95.75	-9.74	74.0	-21.75	Peak	356.00	200	Vertical	N/A
2**	2462.100	91.43	-9.74	54.0	-37.43	AV	356.00	200	Vertical	N/A
3	3412.250	52.05	-7.11	74.0	21.95	Peak	293.00	150	Vertical	Pass
3**	3412.250	48.49	-7.11	54.0	5.51	AV	293.00	150	Vertical	Pass
4	7928.500	53.73	2.43	74.0	20.27	Peak	154.00	300	Vertical	Pass
4**	7928.500	45.32	2.43	54.0	8.68	AV	154.00	300	Vertical	Pass
5	10698.474	51.92	-2.45	74.0	22.08	Peak	269.00	400	Vertical	Pass
5**	10698.474	41.85	-2.45	54.0	12.15	AV	269.00	400	Vertical	Pass
6	16332.862	52.53	0.36	74.0	21.47	Peak	212.00	400	Vertical	Pass
6**	16332.862	43.17	0.36	54.0	10.83	AV	212.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11g Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1288.400	54.87	-16.51	74.0	19.13	Peak	360.00	200	Horizontal	Pass
1**	1288.400	42.68	-16.51	54.0	11.32	AV	360.00	200	Horizontal	Pass
2	2404.700	97.21	-9.91	74.0	-23.21	Peak	212.00	200	Horizontal	N/A
2**	2404.700	89.88	-9.91	54.0	-35.88	AV	212.00	200	Horizontal	N/A
3	3560.500	50.11	-6.05	74.0	23.89	Peak	253.00	100	Horizontal	Pass
3**	3560.500	42.93	-6.05	54.0	11.07	AV	253.00	100	Horizontal	Pass
4	7830.250	53.72	3.17	74.0	20.28	Peak	348.00	400	Horizontal	Pass
4**	7830.250	44.51	3.17	54.0	9.49	AV	348.00	400	Horizontal	Pass
5	11128.588	51.12	-0.97	74.0	22.88	Peak	205.00	300	Horizontal	Pass
5**	11128.588	42.83	-0.97	54.0	11.17	AV	205.00	300	Horizontal	Pass
6	16344.674	53.47	0.69	74.0	20.53	Peak	223.00	100	Horizontal	Pass
6**	16344.674	43.36	0.69	54.0	10.64	AV	223.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11g Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1267.300	49.48	-16.81	74.0	24.52	Peak	226.00	400	Vertical	Pass
1**	1267.300	35.62	-16.81	54.0	18.38	AV	226.00	400	Vertical	Pass
2	2405.200	99.58	-9.88	74.0	-25.58	Peak	170.00	150	Vertical	N/A
2**	2405.200	92.08	-9.88	54.0	-38.08	AV	170.00	150	Vertical	N/A
3	3560.250	50.33	-6.04	74.0	23.67	Peak	291.00	150	Vertical	Pass
3**	3560.250	41.27	-6.04	54.0	12.73	AV	291.00	150	Vertical	Pass
4	7842.500	53.83	3.02	74.0	20.17	Peak	360.00	200	Vertical	Pass
4**	7842.500	45.13	3.02	54.0	8.87	AV	360.00	200	Vertical	Pass
5	11137.849	51.99	-0.96	74.0	22.01	Peak	11.00	400	Vertical	Pass
5**	11137.849	42.75	-0.96	54.0	11.25	AV	11.00	400	Vertical	Pass
6	16520.025	52.22	0.22	74.0	21.78	Peak	98.00	300	Vertical	Pass
6**	16520.025	43.07	0.22	54.0	10.93	AV	98.00	300	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11g Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1284.100	54.82	-16.43	74.0	19.18	Peak	360.00	100	Horizontal	Pass
1**	1284.100	41.49	-16.43	54.0	12.51	AV	360.00	100	Horizontal	Pass
2	2430.800	91.75	-9.13	74.0	-17.75	Peak	210.00	100	Horizontal	N/A
2**	2430.800	84.41	-9.13	54.0	-30.41	AV	210.00	100	Horizontal	N/A
3	3560.500	52.30	-6.05	74.0	21.70	Peak	244.00	150	Horizontal	Pass
3**	3560.500	45.62	-6.05	54.0	8.38	AV	244.00	150	Horizontal	Pass
4	7474.250	54.06	1.90	74.0	19.94	Peak	53.00	300	Horizontal	Pass
4**	7474.250	44.17	1.90	54.0	9.83	AV	53.00	300	Horizontal	Pass
5	11132.387	51.97	-0.97	74.0	22.03	Peak	84.00	200	Horizontal	Pass
5**	11132.387	43.64	-0.97	54.0	10.36	AV	84.00	200	Horizontal	Pass
6	15752.738	52.44	0.30	74.0	21.56	Peak	351.00	200	Horizontal	Pass
6**	15752.738	43.47	0.30	54.0	10.53	AV	351.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11g Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1272.300	50.30	-16.80	74.0	23.70	Peak	222.00	400	Vertical	Pass
1**	1272.300	36.12	-16.80	54.0	17.88	AV	222.00	400	Vertical	Pass
2	2435.200	98.60	-8.92	74.0	-24.60	Peak	67.00	150	Vertical	N/A
2**	2435.200	91.11	-8.92	54.0	-37.11	AV	67.00	150	Vertical	N/A
3	4874.250	50.86	-2.49	74.0	23.14	Peak	37.00	150	Vertical	Pass
3**	4874.250	47.56	-2.49	54.0	6.44	AV	37.00	150	Vertical	Pass
4	7928.000	54.38	2.38	74.0	19.62	Peak	62.00	100	Vertical	Pass
4**	7928.000	44.42	2.38	54.0	9.58	AV	62.00	100	Vertical	Pass
5	11144.025	51.18	-0.96	74.0	22.82	Peak	46.00	100	Vertical	Pass
5**	11144.025	42.99	-0.96	54.0	11.01	AV	46.00	100	Vertical	Pass
6	16270.387	52.42	-0.86	74.0	21.58	Peak	236.00	100	Vertical	Pass
6**	16270.387	41.71	-0.86	54.0	12.29	AV	236.00	100	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11g High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1291.000	54.59	-16.53	74.0	19.41	Peak	302.00	200	Horizontal	Pass
1**	1291.000	41.68	-16.53	54.0	12.32	AV	302.00	200	Horizontal	Pass
2	2466.300	95.90	-9.91	74.0	-21.90	Peak	348.00	100	Horizontal	N/A
2**	2466.300	88.12	-9.91	54.0	-34.12	AV	348.00	100	Horizontal	N/A
3	3560.000	51.10	-6.04	74.0	22.90	Peak	247.00	150	Horizontal	Pass
3**	3560.000	40.59	-6.04	54.0	13.41	AV	247.00	150	Horizontal	Pass
4	7564.250	53.78	1.22	74.0	20.22	Peak	302.00	100	Horizontal	Pass
4**	7564.250	43.50	1.22	54.0	10.50	AV	302.00	100	Horizontal	Pass
5	11128.350	51.40	-0.97	74.0	22.60	Peak	163.00	100	Horizontal	Pass
5**	11128.350	42.26	-0.97	54.0	11.74	AV	163.00	100	Horizontal	Pass
6	15750.638	52.04	0.36	74.0	21.96	Peak	360.00	100	Horizontal	Pass
6**	15750.638	43.01	0.36	54.0	10.99	AV	360.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11g High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1247.900	51.04	-16.97	74.0	22.96	Peak	217.00	300	Vertical	Pass
1**	1247.900	34.25	-16.97	54.0	19.75	AV	217.00	300	Vertical	Pass
2	2466.500	99.17	-9.93	74.0	-25.17	Peak	360.00	200	Vertical	N/A
2**	2466.500	91.95	-9.93	54.0	-37.95	AV	360.00	200	Vertical	N/A
3	3412.250	50.90	-7.11	74.0	23.10	Peak	291.00	100	Vertical	Pass
3**	3412.250	48.66	-7.11	54.0	5.34	AV	291.00	100	Vertical	Pass
4	7896.750	53.70	2.11	74.0	20.30	Peak	85.00	100	Vertical	Pass
4**	7896.750	44.29	2.11	54.0	9.71	AV	85.00	100	Vertical	Pass
5	10714.625	51.77	-2.21	74.0	22.23	Peak	350.00	200	Vertical	Pass
5**	10714.625	41.79	-2.21	54.0	12.21	AV	350.00	200	Vertical	Pass
6	15753.525	52.27	0.28	74.0	21.73	Peak	106.00	400	Vertical	Pass
6**	15753.525	43.73	0.28	54.0	10.27	AV	106.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1305.900	54.65	-16.72	74.0	19.35	Peak	18.00	400	Horizontal	Pass
1**	1305.900	39.85	-16.72	54.0	14.15	AV	18.00	400	Horizontal	Pass
2	2406.000	96.82	-9.89	74.0	-22.82	Peak	210.00	100	Horizontal	N/A
2**	2406.000	89.86	-9.89	54.0	-35.86	AV	210.00	100	Horizontal	N/A
3	3560.500	50.44	-6.05	74.0	23.56	Peak	256.00	150	Horizontal	Pass
3**	3560.500	43.07	-6.05	54.0	10.93	AV	256.00	150	Horizontal	Pass
4	7752.750	54.08	1.58	74.0	19.92	Peak	19.00	300	Horizontal	Pass
4**	7752.750	44.32	1.58	54.0	9.68	AV	19.00	300	Horizontal	Pass
5	11133.100	51.41	-0.97	74.0	22.59	Peak	360.00	400	Horizontal	Pass
5**	11133.100	42.67	-0.97	54.0	11.33	AV	360.00	400	Horizontal	Pass
6	16494.562	52.62	0.37	74.0	21.38	Peak	269.00	200	Horizontal	Pass
6**	16494.562	42.66	0.37	54.0	11.34	AV	269.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1335.100	50.27	-16.64	74.0	23.73	Peak	225.00	300	Vertical	Pass
1**	1335.100	43.60	-16.64	54.0	10.40	AV	225.00	300	Vertical	Pass
2	2404.500	99.33	-9.92	74.0	-25.33	Peak	65.00	100	Vertical	N/A
2**	2404.500	91.90	-9.92	54.0	-37.90	AV	65.00	100	Vertical	N/A
3	3560.250	51.53	-6.04	74.0	22.47	Peak	300.00	200	Vertical	Pass
3**	3560.250	47.09	-6.04	54.0	6.91	AV	300.00	200	Vertical	Pass
4	7835.000	54.27	3.48	74.0	19.73	Peak	262.00	100	Vertical	Pass
4**	7835.000	44.34	3.48	54.0	9.66	AV	262.00	100	Vertical	Pass
5	11177.987	51.97	-1.42	74.0	22.03	Peak	298.00	300	Vertical	Pass
5**	11177.987	42.45	-1.42	54.0	11.55	AV	298.00	300	Vertical	Pass
6	15758.250	52.66	0.15	74.0	21.34	Peak	41.00	400	Vertical	Pass
6**	15758.250	42.49	0.15	54.0	11.51	AV	41.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n20 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1291.400	55.93	-16.54	74.0	18.07	Peak	353.00	400	Horizontal	Pass
1**	1291.400	42.00	-16.54	54.0	12.00	AV	353.00	400	Horizontal	Pass
2	2443.700	92.22	-9.74	74.0	-18.22	Peak	212.00	100	Horizontal	N/A
2**	2443.700	83.78	-9.74	54.0	-29.78	AV	212.00	100	Horizontal	N/A
3	3560.500	51.24	-6.05	74.0	22.76	Peak	251.00	200	Horizontal	Pass
3**	3560.500	44.37	-6.05	54.0	9.63	AV	251.00	200	Horizontal	Pass
4	7836.000	53.84	3.55	74.0	20.16	Peak	215.00	200	Horizontal	Pass
4**	7836.000	44.09	3.55	54.0	9.91	AV	215.00	200	Horizontal	Pass
5	10593.974	51.77	-1.51	74.0	22.23	Peak	220.00	400	Horizontal	Pass
5**	10593.974	41.39	-1.51	54.0	12.61	AV	220.00	400	Horizontal	Pass
6	16322.625	52.40	0.07	74.0	21.60	Peak	352.00	200	Horizontal	Pass
6**	16322.625	43.20	0.07	54.0	10.80	AV	352.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n20 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1334.800	50.99	-16.64	74.0	23.01	Peak	225.00	400	Vertical	Pass
1**	1334.800	41.44	-16.64	54.0	12.56	AV	225.00	400	Vertical	Pass
2	2435.400	98.51	-8.92	74.0	-24.51	Peak	89.00	150	Vertical	N/A
2**	2435.400	91.06	-8.92	54.0	-37.06	AV	89.00	150	Vertical	N/A
3	3560.500	51.92	-6.05	74.0	22.08	Peak	308.00	100	Vertical	Pass
3**	3560.500	47.27	-6.05	54.0	6.73	AV	308.00	100	Vertical	Pass
4	7486.500	54.09	1.44	74.0	19.91	Peak	172.00	300	Vertical	Pass
4**	7486.500	43.90	1.44	54.0	10.10	AV	172.00	300	Vertical	Pass
5	10695.388	52.03	-2.49	74.0	21.97	Peak	98.00	100	Vertical	Pass
5**	10695.388	41.78	-2.49	54.0	12.22	AV	98.00	100	Vertical	Pass
6	16293.224	51.82	-0.64	74.0	22.18	Peak	312.00	400	Vertical	Pass
6**	16293.224	42.48	-0.64	54.0	11.52	AV	312.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1286.000	54.33	-16.47	74.0	19.67	Peak	360.00	200	Horizontal	Pass
1**	1286.000	42.88	-16.47	54.0	11.12	AV	360.00	200	Horizontal	Pass
2	2469.300	96.07	-10.17	74.0	-22.07	Peak	349.00	150	Horizontal	N/A
2**	2469.300	88.37	-10.17	54.0	-34.37	AV	349.00	150	Horizontal	N/A
3	3351.000	51.54	-7.05	74.0	22.46	Peak	0.00	200	Horizontal	Pass
3**	3351.000	37.54	-7.05	54.0	16.46	AV	0.00	200	Horizontal	Pass
4	7824.500	53.84	3.17	74.0	20.16	Peak	242.00	100	Horizontal	Pass
4**	7824.500	45.03	3.17	54.0	8.97	AV	242.00	100	Horizontal	Pass
5	11136.900	51.70	-0.96	74.0	22.30	Peak	346.00	300	Horizontal	Pass
5**	11136.900	42.74	-0.96	54.0	11.26	AV	346.00	300	Horizontal	Pass
6	16349.400	52.76	0.83	74.0	21.24	Peak	244.00	400	Horizontal	Pass
6**	16349.400	42.56	0.83	54.0	11.44	AV	244.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1285.700	50.87	-16.46	74.0	23.13	Peak	358.00	300	Vertical	Pass
1**	1285.700	38.17	-16.46	54.0	15.83	AV	358.00	300	Vertical	Pass
2	2454.700	99.35	-10.07	74.0	-25.35	Peak	156.00	200	Vertical	N/A
2**	2454.700	91.65	-10.07	54.0	-37.65	AV	156.00	200	Vertical	N/A
3	4924.250	50.95	-2.70	74.0	23.05	Peak	320.00	200	Vertical	Pass
3**	4924.250	45.03	-2.70	54.0	8.97	AV	320.00	200	Vertical	Pass
4	7929.500	53.97	2.49	74.0	20.03	Peak	227.00	100	Vertical	Pass
4**	7929.500	45.11	2.49	54.0	8.89	AV	227.00	100	Vertical	Pass
5	10564.287	52.24	-1.96	74.0	21.76	Peak	353.00	100	Vertical	Pass
5**	10564.287	41.43	-1.96	54.0	12.57	AV	353.00	100	Vertical	Pass
6	16344.412	52.41	0.69	74.0	21.59	Peak	189.00	100	Vertical	Pass
6**	16344.412	43.29	0.69	54.0	10.71	AV	189.00	100	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1287.900	55.24	-16.52	74.0	18.76	Peak	21.00	300	Horizontal	Pass
1**	1287.900	41.12	-16.52	54.0	12.88	AV	21.00	300	Horizontal	Pass
2	2406.700	92.62	-9.96	74.0	-18.62	Peak	212.00	200	Horizontal	N/A
2**	2406.700	84.96	-9.96	54.0	-30.96	AV	212.00	200	Horizontal	N/A
3	3560.250	51.25	-6.04	74.0	22.75	Peak	254.00	100	Horizontal	Pass
3**	3560.250	46.39	-6.04	54.0	7.61	AV	254.00	100	Horizontal	Pass
4	7759.250	54.35	1.72	74.0	19.65	Peak	60.00	300	Horizontal	Pass
4**	7759.250	44.24	1.72	54.0	9.76	AV	60.00	300	Horizontal	Pass
5	11138.800	51.87	-0.96	74.0	22.13	Peak	217.00	300	Horizontal	Pass
5**	11138.800	43.54	-0.96	54.0	10.46	AV	217.00	300	Horizontal	Pass
6	16329.975	52.02	0.28	74.0	21.98	Peak	360.00	300	Horizontal	Pass
6**	16329.975	42.82	0.28	54.0	11.18	AV	360.00	300	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1335.100	50.40	-16.64	74.0	23.60	Peak	229.00	400	Vertical	Pass
1**	1335.100	43.09	-16.64	54.0	10.91	AV	229.00	400	Vertical	Pass
2	2408.800	95.39	-10.07	74.0	-21.39	Peak	140.00	200	Vertical	N/A
2**	2408.800	87.69	-10.07	54.0	-33.69	AV	140.00	200	Vertical	N/A
3	4843.750	50.92	-2.79	74.0	23.08	Peak	114.00	100	Vertical	Pass
3**	4843.750	44.07	-2.79	54.0	9.93	AV	114.00	100	Vertical	Pass
4	7829.750	53.88	3.17	74.0	20.12	Peak	22.00	400	Vertical	Pass
4**	7829.750	44.64	3.17	54.0	9.36	AV	22.00	400	Vertical	Pass
5	11113.625	51.17	-0.99	74.0	22.83	Peak	115.00	300	Vertical	Pass
5**	11113.625	42.60	-0.99	54.0	11.40	AV	115.00	300	Vertical	Pass
6	16792.761	52.32	0.90	74.0	21.68	Peak	134.00	100	Vertical	Pass
6**	16792.761	44.00	0.90	54.0	10.00	AV	134.00	100	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n40 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1302.400	55.61	-16.60	74.0	18.39	Peak	33.00	200	Horizontal	Pass
1**	1302.400	40.32	-16.60	54.0	13.68	AV	33.00	200	Horizontal	Pass
2	2433.000	99.18	-9.13	74.0	-25.18	Peak	213.00	100	Horizontal	N/A
2**	2433.000	91.67	-9.13	54.0	-37.67	AV	213.00	100	Horizontal	N/A
3	4880.500	51.34	-2.34	74.0	22.66	Peak	36.00	150	Horizontal	Pass
3**	4880.500	41.10	-2.34	54.0	12.90	AV	36.00	150	Horizontal	Pass
4	7844.000	54.69	2.90	74.0	19.31	Peak	344.00	200	Horizontal	Pass
4**	7844.000	45.72	2.90	54.0	8.28	AV	344.00	200	Horizontal	Pass
5	12669.250	53.05	-0.83	74.0	20.95	Peak	312.00	400	Horizontal	Pass
5**	12669.250	42.96	-0.83	54.0	11.04	AV	312.00	400	Horizontal	Pass
6	15762.713	54.22	0.03	74.0	19.78	Peak	249.00	300	Horizontal	Pass
6**	15762.713	45.34	0.03	54.0	8.66	AV	249.00	300	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n40 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1251.700	50.54	-16.88	74.0	23.46	Peak	218.00	300	Vertical	Pass
1**	1251.700	34.76	-16.88	54.0	19.24	AV	218.00	300	Vertical	Pass
2	2450.600	95.65	-9.94	74.0	-21.65	Peak	157.00	150	Vertical	N/A
2**	2450.600	87.87	-9.94	54.0	-33.87	AV	157.00	150	Vertical	N/A
3	3560.250	51.28	-6.04	74.0	22.72	Peak	302.00	150	Vertical	Pass
3**	3560.250	47.09	-6.04	54.0	6.91	AV	302.00	150	Vertical	Pass
4	7936.000	53.71	2.18	74.0	20.29	Peak	227.00	300	Vertical	Pass
4**	7936.000	44.67	2.18	54.0	9.33	AV	227.00	300	Vertical	Pass
5	9370.613	51.53	-2.59	74.0	22.47	Peak	113.00	100	Vertical	Pass
5**	9370.613	41.83	-2.59	54.0	12.17	AV	113.00	100	Vertical	Pass
6	15758.513	52.24	0.14	74.0	21.76	Peak	0.00	400	Vertical	Pass
6**	15758.513	43.23	0.14	54.0	10.77	AV	0.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1289.600	54.84	-16.50	74.0	19.16	Peak	33.00	200	Horizontal	Pass
1**	1289.600	41.66	-16.50	54.0	12.34	AV	33.00	200	Horizontal	Pass
2	2456.200	98.02	-9.78	74.0	-24.02	Peak	215.00	150	Horizontal	N/A
2**	2456.200	90.49	-9.78	54.0	-36.49	AV	215.00	150	Horizontal	N/A
3	4904.000	51.28	-2.50	74.0	22.72	Peak	31.00	200	Horizontal	Pass
3**	4904.000	46.53	-2.50	54.0	7.47	AV	31.00	200	Horizontal	Pass
4	7890.500	54.68	2.21	74.0	19.32	Peak	315.00	200	Horizontal	Pass
4**	7890.500	45.07	2.21	54.0	8.93	AV	315.00	200	Horizontal	Pass
5	12654.050	52.68	-0.85	74.0	21.32	Peak	60.00	200	Horizontal	Pass
5**	12654.050	42.95	-0.85	54.0	11.05	AV	60.00	200	Horizontal	Pass
6	16817.699	54.96	1.02	74.0	19.04	Peak	276.00	300	Horizontal	Pass
6**	16817.699	44.66	1.02	54.0	9.34	AV	276.00	300	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1265.900	49.72	-16.90	74.0	24.28	Peak	249.00	400	Vertical	Pass
1**	1265.900	33.76	-16.90	54.0	20.24	AV	249.00	400	Vertical	Pass
2	2453.400	97.74	-10.01	74.0	-23.74	Peak	244.00	150	Vertical	N/A
2**	2453.400	91.30	-10.01	54.0	-37.30	AV	244.00	150	Vertical	N/A
3	4903.750	53.10	-2.49	74.0	20.90	Peak	103.00	150	Vertical	Pass
3**	4903.750	47.94	-2.49	54.0	6.06	AV	103.00	150	Vertical	Pass
4	7850.750	54.95	2.43	74.0	19.05	Peak	111.00	400	Vertical	Pass
4**	7850.750	46.18	2.43	54.0	7.82	AV	111.00	400	Vertical	Pass
5	10708.450	53.15	-2.30	74.0	20.85	Peak	55.00	100	Vertical	Pass
5**	10708.450	43.50	-2.30	54.0	10.50	AV	55.00	100	Vertical	Pass
6	16533.937	55.29	0.13	74.0	18.71	Peak	334.00	100	Vertical	Pass
6**	16533.937	44.27	0.13	54.0	9.73	AV	334.00	100	Vertical	Pass

Aux. Antenna

1 GHz to 18 GHz, ANT H 802.11b Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1289.400	53.98	-16.50	74.0	20.02	Peak	0.00	100	Horizontal	Pass
1**	1289.400	41.79	-16.50	54.0	12.21	AV	0.00	100	Horizontal	Pass
2	2412.100	91.30	-9.93	74.0	-17.30	Peak	210.00	200	Horizontal	N/A
2**	2412.100	86.90	-9.93	54.0	-32.90	AV	210.00	200	Horizontal	N/A
3	3560.750	52.29	-6.05	74.0	21.71	Peak	246.00	200	Horizontal	Pass
3**	3560.750	49.67	-6.05	54.0	4.33	AV	246.00	200	Horizontal	Pass
4	7850.750	53.66	2.43	74.0	20.34	Peak	166.00	100	Horizontal	Pass
4**	7850.750	44.40	2.43	54.0	9.60	AV	166.00	100	Horizontal	Pass
5	10734.099	51.27	-1.90	74.0	22.73	Peak	337.00	100	Horizontal	Pass
5**	10734.099	41.81	-1.90	54.0	12.19	AV	337.00	100	Horizontal	Pass
6	16213.950	52.59	-0.00	74.0	21.41	Peak	42.00	150	Horizontal	Pass
6**	16213.950	42.46	-0.00	54.0	11.54	AV	42.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11b Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1289.400	50.77	-16.50	74.0	23.23	Peak	18.00	100	Vertical	Pass
1**	1289.400	36.54	-16.50	54.0	17.46	AV	18.00	100	Vertical	Pass
2	2412.100	98.14	-9.93	74.0	-24.14	Peak	339.00	150	Vertical	N/A
2**	2412.100	93.37	-9.93	54.0	-39.37	AV	339.00	150	Vertical	N/A
3	3560.750	51.06	-6.05	74.0	22.94	Peak	314.00	150	Vertical	Pass
3**	3560.750	42.69	-6.05	54.0	11.31	AV	314.00	150	Vertical	Pass
4	7879.750	53.84	2.90	74.0	20.16	Peak	258.00	400	Vertical	Pass
4**	7879.750	44.80	2.90	54.0	9.20	AV	258.00	400	Vertical	Pass
5	10730.776	52.10	-1.95	74.0	21.90	Peak	118.00	200	Vertical	Pass
5**	10730.776	42.42	-1.95	54.0	11.58	AV	118.00	200	Vertical	Pass
6	15764.025	52.95	-0.01	74.0	21.05	Peak	69.00	100	Vertical	Pass
6**	15764.025	42.94	-0.01	54.0	11.06	AV	69.00	100	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11b Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1687.200	57.27	-16.75	74.0	16.73	Peak	312.00	150	Horizontal	Pass
1**	1687.200	45.98	-16.75	54.0	8.02	AV	312.00	150	Horizontal	Pass
2	2437.100	87.65	-9.17	74.0	-13.65	Peak	186.00	100	Horizontal	N/A
2**	2437.100	82.58	-9.17	54.0	-28.58	AV	186.00	100	Horizontal	N/A
3	3560.500	50.12	-6.05	74.0	23.88	Peak	322.00	150	Horizontal	Pass
3**	3560.500	46.45	-6.05	54.0	7.55	AV	322.00	150	Horizontal	Pass
4	7885.250	53.47	2.30	74.0	20.53	Peak	244.00	200	Horizontal	Pass
4**	7885.250	44.20	2.30	54.0	9.80	AV	244.00	200	Horizontal	Pass
5	10717.712	51.44	-2.16	74.0	22.56	Peak	9.00	200	Horizontal	Pass
5**	10717.712	41.74	-2.16	54.0	12.26	AV	9.00	200	Horizontal	Pass
6	15756.412	52.35	0.20	74.0	21.65	Peak	0.00	200	Horizontal	Pass
6**	15756.412	43.20	0.20	54.0	10.80	AV	0.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11b Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1288.200	50.19	-16.52	74.0	23.81	Peak	217.00	400	Vertical	Pass
1**	1288.200	36.80	-16.52	54.0	17.20	AV	217.00	400	Vertical	Pass
2	2436.800	95.72	-9.13	74.0	-21.72	Peak	67.00	150	Vertical	N/A
2**	2436.800	91.61	-9.13	54.0	-37.61	AV	67.00	150	Vertical	N/A
3	3709.000	50.62	-5.13	74.0	23.38	Peak	310.00	200	Vertical	Pass
3**	3709.000	46.63	-5.13	54.0	7.37	AV	310.00	200	Vertical	Pass
4	7787.750	53.47	1.61	74.0	20.53	Peak	186.00	200	Vertical	Pass
4**	7787.750	43.89	1.61	54.0	10.11	AV	186.00	200	Vertical	Pass
5	11178.463	52.14	-1.43	74.0	21.86	Peak	255.00	200	Vertical	Pass
5**	11178.463	42.67	-1.43	54.0	11.33	AV	255.00	200	Vertical	Pass
6	16336.275	52.80	0.46	74.0	21.20	Peak	137.00	300	Vertical	Pass
6**	16336.275	43.16	0.46	54.0	10.84	AV	137.00	300	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11b High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1287.800	54.32	-16.52	74.0	19.68	Peak	5.00	100	Horizontal	Pass
1**	1287.800	42.12	-16.52	54.0	11.88	AV	5.00	100	Horizontal	Pass
2	2461.900	90.84	-9.74	74.0	-16.84	Peak	186.00	150	Horizontal	N/A
2**	2461.900	86.45	-9.74	54.0	-32.45	AV	186.00	150	Horizontal	N/A
3	3560.500	50.44	-6.05	74.0	23.56	Peak	2.00	150	Horizontal	Pass
3**	3560.500	43.27	-6.05	54.0	10.73	AV	2.00	150	Horizontal	Pass
4	7859.500	53.47	2.19	74.0	20.53	Peak	297.00	200	Horizontal	Pass
4**	7859.500	44.70	2.19	54.0	9.30	AV	297.00	200	Horizontal	Pass
5	11064.700	51.42	-1.67	74.0	22.58	Peak	81.00	400	Horizontal	Pass
5**	11064.700	42.73	-1.67	54.0	11.27	AV	81.00	400	Horizontal	Pass
6	16334.701	52.46	0.41	74.0	21.54	Peak	353.00	300	Horizontal	Pass
6**	16334.701	42.89	0.41	54.0	11.11	AV	353.00	300	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11b High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1291.500	51.36	-16.54	74.0	22.64	Peak	0.00	400	Vertical	Pass
1**	1291.500	38.96	-16.54	54.0	15.04	AV	0.00	400	Vertical	Pass
2	2461.900	97.11	-9.74	74.0	-23.11	Peak	159.00	200	Vertical	N/A
2**	2461.900	92.37	-9.74	54.0	-38.37	AV	159.00	200	Vertical	N/A
3	4924.250	51.21	-2.70	74.0	22.79	Peak	113.00	150	Vertical	Pass
3**	4924.250	48.67	-2.70	54.0	5.33	AV	113.00	150	Vertical	Pass
4	7904.750	53.36	2.37	74.0	20.64	Peak	295.00	100	Vertical	Pass
4**	7904.750	44.52	2.37	54.0	9.48	AV	295.00	100	Vertical	Pass
5	11118.375	51.56	-0.99	74.0	22.44	Peak	223.00	400	Vertical	Pass
5**	11118.375	41.44	-0.99	54.0	12.56	AV	223.00	400	Vertical	Pass
6	16700.887	52.47	0.85	74.0	21.53	Peak	247.00	200	Vertical	Pass
6**	16700.887	42.44	0.85	54.0	11.56	AV	247.00	200	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11g Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1668.600	56.81	-16.52	74.0	17.19	Peak	312.00	150	Horizontal	Pass
1**	1668.600	41.42	-16.52	54.0	12.58	AV	312.00	150	Horizontal	Pass
2	2404.900	94.34	-9.90	74.0	-20.34	Peak	210.00	150	Horizontal	N/A
2**	2404.900	86.45	-9.90	54.0	-32.45	AV	210.00	150	Horizontal	N/A
3	3351.000	51.37	-7.05	74.0	22.63	Peak	0.00	200	Horizontal	Pass
3**	3351.000	37.85	-7.05	54.0	16.15	AV	0.00	200	Horizontal	Pass
4	7200.250	53.72	0.66	74.0	20.28	Peak	18.00	200	Horizontal	Pass
4**	7200.250	43.42	0.66	54.0	10.58	AV	18.00	200	Horizontal	Pass
5	10719.138	51.95	-2.13	74.0	22.05	Peak	342.00	400	Horizontal	Pass
5**	10719.138	43.01	-2.13	54.0	10.99	AV	342.00	400	Horizontal	Pass
6	16275.112	52.13	-0.81	74.0	21.87	Peak	113.00	400	Horizontal	Pass
6**	16275.112	41.83	-0.81	54.0	12.17	AV	113.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11g Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1279.300	50.77	-16.59	74.0	23.23	Peak	224.00	400	Vertical	Pass
1**	1279.300	36.97	-16.59	54.0	17.03	AV	224.00	400	Vertical	Pass
2	2405.100	100.67	-9.89	74.0	-26.67	Peak	341.00	150	Vertical	N/A
2**	2405.100	92.86	-9.89	54.0	-38.86	AV	341.00	150	Vertical	N/A
3	3560.500	50.41	-6.05	74.0	23.59	Peak	312.00	100	Vertical	Pass
3**	3560.500	41.73	-6.05	54.0	12.27	AV	312.00	100	Vertical	Pass
4	7840.000	53.63	3.24	74.0	20.37	Peak	295.00	300	Vertical	Pass
4**	7840.000	44.13	3.24	54.0	9.87	AV	295.00	300	Vertical	Pass
5	10585.425	52.68	-1.64	74.0	21.32	Peak	217.00	100	Vertical	Pass
5**	10585.425	41.43	-1.64	54.0	12.57	AV	217.00	100	Vertical	Pass
6	16470.938	52.74	0.45	74.0	21.26	Peak	276.00	100	Vertical	Pass
6**	16470.938	41.71	0.45	54.0	12.29	AV	276.00	100	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11g Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1674.500	57.53	-16.74	74.0	16.47	Peak	324.00	150	Horizontal	Pass
1**	1674.500	40.16	-16.74	54.0	13.84	AV	324.00	150	Horizontal	Pass
2	2444.100	89.93	-9.78	74.0	-15.93	Peak	190.00	150	Horizontal	N/A
2**	2444.100	82.77	-9.78	54.0	-28.77	AV	190.00	150	Horizontal	N/A
3	4746.000	51.02	-2.82	74.0	22.98	Peak	26.00	200	Horizontal	Pass
3**	4746.000	40.97	-2.82	54.0	13.03	AV	26.00	200	Horizontal	Pass
4	7845.500	54.44	2.76	74.0	19.56	Peak	339.00	200	Horizontal	Pass
4**	7845.500	44.45	2.76	54.0	9.55	AV	339.00	200	Horizontal	Pass
5	11136.187	52.07	-0.96	74.0	21.93	Peak	119.00	100	Horizontal	Pass
5**	11136.187	43.01	-0.96	54.0	10.99	AV	119.00	100	Horizontal	Pass
6	16785.676	51.95	0.65	74.0	22.05	Peak	102.00	100	Horizontal	Pass
6**	16785.676	42.51	0.65	54.0	11.49	AV	102.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11g Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1334.900	50.18	-16.64	74.0	23.82	Peak	165.00	200	Vertical	Pass
1**	1334.900	42.13	-16.64	54.0	11.87	AV	165.00	200	Vertical	Pass
2	2435.200	98.21	-8.92	74.0	-24.21	Peak	69.00	200	Vertical	N/A
2**	2435.200	90.80	-8.92	54.0	-36.80	AV	69.00	200	Vertical	N/A
3	3560.500	50.41	-6.05	74.0	23.59	Peak	305.00	200	Vertical	Pass
3**	3560.500	47.24	-6.05	54.0	6.76	AV	305.00	200	Vertical	Pass
4	7863.000	53.77	2.18	74.0	20.23	Peak	312.00	100	Vertical	Pass
4**	7863.000	43.76	2.18	54.0	10.24	AV	312.00	100	Vertical	Pass
5	10728.162	51.67	-1.99	74.0	22.33	Peak	0.00	200	Vertical	Pass
5**	10728.162	42.67	-1.99	54.0	11.33	AV	0.00	200	Vertical	Pass
6	16324.200	52.12	0.11	74.0	21.88	Peak	352.00	300	Vertical	Pass
6**	16324.200	42.54	0.11	54.0	11.46	AV	352.00	300	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11g High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1678.100	56.60	-16.58	74.0	17.40	Peak	309.00	150	Horizontal	Pass
1**	1678.100	41.89	-16.58	54.0	12.11	AV	309.00	150	Horizontal	Pass
2	2466.600	95.57	-9.94	74.0	-21.57	Peak	341.00	150	Horizontal	N/A
2**	2466.600	87.40	-9.94	54.0	-33.40	AV	341.00	150	Horizontal	N/A
3	3708.750	51.28	-5.12	74.0	22.72	Peak	262.00	200	Horizontal	Pass
3**	3708.750	48.04	-5.12	54.0	5.96	AV	262.00	200	Horizontal	Pass
4	7930.250	54.36	2.54	74.0	19.64	Peak	252.00	300	Horizontal	Pass
4**	7930.250	45.53	2.54	54.0	8.47	AV	252.00	300	Horizontal	Pass
5	11134.050	51.55	-0.97	74.0	22.45	Peak	301.00	200	Horizontal	Pass
5**	11134.050	42.88	-0.97	54.0	11.12	AV	301.00	200	Horizontal	Pass
6	16315.537	52.73	-0.13	74.0	21.27	Peak	25.00	400	Horizontal	Pass
6**	16315.537	43.00	-0.13	54.0	11.00	AV	25.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11g High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1277.600	50.00	-16.65	74.0	24.00	Peak	217.00	200	Vertical	Pass
1**	1277.600	39.17	-16.65	54.0	14.83	AV	217.00	200	Vertical	Pass
2	2458.100	100.26	-9.73	74.0	-26.26	Peak	163.00	200	Vertical	N/A
2**	2458.100	93.06	-9.73	54.0	-39.06	AV	163.00	200	Vertical	N/A
3	4924.000	52.14	-2.69	74.0	21.86	Peak	113.00	150	Vertical	Pass
3**	4924.000	45.69	-2.69	54.0	8.31	AV	113.00	150	Vertical	Pass
4	7915.750	54.04	1.94	74.0	19.96	Peak	79.00	400	Vertical	Pass
4**	7915.750	45.02	1.94	54.0	8.98	AV	79.00	400	Vertical	Pass
5	10590.412	51.92	-1.56	74.0	22.08	Peak	19.00	300	Vertical	Pass
5**	10590.412	41.92	-1.56	54.0	12.08	AV	19.00	300	Vertical	Pass
6	15753.263	51.98	0.28	74.0	22.02	Peak	1.00	200	Vertical	Pass
6**	15753.263	43.17	0.28	54.0	10.83	AV	1.00	200	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1677.000	58.08	-16.65	74.0	15.92	Peak	314.00	150	Horizontal	Pass
1**	1677.000	39.84	-16.65	54.0	14.16	AV	314.00	150	Horizontal	Pass
2	2404.300	94.55	-9.94	74.0	-20.55	Peak	212.00	200	Horizontal	N/A
2**	2404.300	88.07	-9.94	54.0	-34.07	AV	212.00	200	Horizontal	N/A
3	3560.250	51.43	-6.04	74.0	22.57	Peak	252.00	150	Horizontal	Pass
3**	3560.250	47.93	-6.04	54.0	6.07	AV	252.00	150	Horizontal	Pass
4	7819.250	54.48	2.96	74.0	19.52	Peak	0.00	200	Horizontal	Pass
4**	7819.250	46.31	2.96	54.0	7.69	AV	0.00	200	Horizontal	Pass
5	11133.338	51.79	-0.97	74.0	22.21	Peak	154.00	100	Horizontal	Pass
5**	11133.338	42.86	-0.97	54.0	11.14	AV	154.00	100	Horizontal	Pass
6	15748.013	52.17	0.35	74.0	21.83	Peak	60.00	300	Horizontal	Pass
6**	15748.013	43.51	0.35	54.0	10.49	AV	60.00	300	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1282.500	50.89	-16.45	74.0	23.11	Peak	220.00	300	Vertical	Pass
1**	1282.500	34.94	-16.45	54.0	19.06	AV	220.00	300	Vertical	Pass
2	2404.600	101.48	-9.92	74.0	-27.48	Peak	342.00	150	Vertical	N/A
2**	2404.600	93.77	-9.92	54.0	-39.77	AV	342.00	150	Vertical	N/A
3	5044.000	51.41	-2.30	74.0	22.59	Peak	313.00	150	Vertical	Pass
3**	5044.000	43.00	-2.30	54.0	11.00	AV	313.00	150	Vertical	Pass
4	7926.500	54.05	2.23	74.0	19.95	Peak	7.00	400	Vertical	Pass
4**	7926.500	45.56	2.23	54.0	8.44	AV	7.00	400	Vertical	Pass
5	10959.250	51.52	-2.34	74.0	22.48	Peak	242.00	400	Vertical	Pass
5**	10959.250	42.28	-2.34	54.0	11.72	AV	242.00	400	Vertical	Pass
6	16327.612	53.27	0.21	74.0	20.73	Peak	0.00	400	Vertical	Pass
6**	16327.612	43.37	0.21	54.0	10.63	AV	0.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n20 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1686.200	57.52	-16.75	74.0	16.48	Peak	314.00	150	Horizontal	Pass
1**	1686.200	41.93	-16.75	54.0	12.07	AV	314.00	150	Horizontal	Pass
2	2443.300	90.02	-9.67	74.0	-16.02	Peak	188.00	200	Horizontal	N/A
2**	2443.300	82.48	-9.67	54.0	-28.48	AV	188.00	200	Horizontal	N/A
3	3560.250	50.39	-6.04	74.0	23.61	Peak	254.00	200	Horizontal	Pass
3**	3560.250	42.76	-6.04	54.0	11.24	AV	254.00	200	Horizontal	Pass
4	7826.500	54.33	2.95	74.0	19.67	Peak	19.00	100	Horizontal	Pass
4**	7826.500	44.64	2.95	54.0	9.36	AV	19.00	100	Horizontal	Pass
5	10823.875	51.53	-2.45	74.0	22.47	Peak	276.00	400	Horizontal	Pass
5**	10823.875	41.45	-2.45	54.0	12.55	AV	276.00	400	Horizontal	Pass
6	15757.987	52.32	0.16	74.0	21.68	Peak	302.00	100	Horizontal	Pass
6**	15757.987	42.58	0.16	54.0	11.42	AV	302.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n20 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1289.100	50.79	-16.51	74.0	23.21	Peak	0.00	200	Vertical	Pass
1**	1289.100	39.92	-16.51	54.0	14.08	AV	0.00	200	Vertical	Pass
2	2435.100	99.11	-8.93	74.0	-25.11	Peak	64.00	150	Vertical	N/A
2**	2435.100	91.74	-8.93	54.0	-37.74	AV	64.00	150	Vertical	N/A
3	3412.250	50.74	-7.11	74.0	23.26	Peak	312.00	100	Vertical	Pass
3**	3412.250	44.34	-7.11	54.0	9.66	AV	312.00	100	Vertical	Pass
4	7522.750	53.98	2.28	74.0	20.02	Peak	191.00	400	Vertical	Pass
4**	7522.750	44.92	2.28	54.0	9.08	AV	191.00	400	Vertical	Pass
5	9841.338	51.90	-2.19	74.0	22.10	Peak	69.00	200	Vertical	Pass
5**	9841.338	42.26	-2.19	54.0	11.74	AV	69.00	200	Vertical	Pass
6	15750.112	52.64	0.37	74.0	21.36	Peak	252.00	200	Vertical	Pass
6**	15750.112	43.50	0.37	54.0	10.50	AV	252.00	200	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1672.600	56.78	-16.62	74.0	17.22	Peak	321.00	150	Horizontal	Pass
1**	1672.600	42.78	-16.62	54.0	11.22	AV	321.00	150	Horizontal	Pass
2	2469.200	94.71	-10.17	74.0	-20.71	Peak	343.00	100	Horizontal	N/A
2**	2469.200	86.85	-10.17	54.0	-32.85	AV	343.00	100	Horizontal	N/A
3	3560.250	52.25	-6.04	74.0	21.75	Peak	254.00	200	Horizontal	Pass
3**	3560.250	47.73	-6.04	54.0	6.27	AV	254.00	200	Horizontal	Pass
4	7930.250	53.63	2.54	74.0	20.37	Peak	138.00	100	Horizontal	Pass
4**	7930.250	44.46	2.54	54.0	9.54	AV	138.00	100	Horizontal	Pass
5	11134.763	51.82	-0.97	74.0	22.18	Peak	0.00	100	Horizontal	Pass
5**	11134.763	42.84	-0.97	54.0	11.16	AV	0.00	100	Horizontal	Pass
6	16339.951	52.79	0.56	74.0	21.21	Peak	227.00	400	Horizontal	Pass
6**	16339.951	43.73	0.56	54.0	10.27	AV	227.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1335.200	50.49	-16.64	74.0	23.51	Peak	231.00	400	Vertical	Pass
1**	1335.200	44.12	-16.64	54.0	9.88	AV	231.00	400	Vertical	Pass
2	2460.600	99.92	-9.73	74.0	-25.92	Peak	156.00	200	Vertical	N/A
2**	2460.600	91.98	-9.73	54.0	-37.98	AV	156.00	200	Vertical	N/A
3	4924.000	52.56	-2.69	74.0	21.44	Peak	122.00	200	Vertical	Pass
3**	4924.000	45.74	-2.69	54.0	8.26	AV	122.00	200	Vertical	Pass
4	7849.250	53.92	2.48	74.0	20.08	Peak	331.00	100	Vertical	Pass
4**	7849.250	44.67	2.48	54.0	9.33	AV	331.00	100	Vertical	Pass
5	11123.599	51.31	-0.98	74.0	22.69	Peak	199.00	300	Vertical	Pass
5**	11123.599	43.09	-0.98	54.0	10.91	AV	199.00	300	Vertical	Pass
6	16322.625	52.30	0.07	74.0	21.70	Peak	109.00	300	Vertical	Pass
6**	16322.625	42.85	0.07	54.0	11.15	AV	109.00	300	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1664.400	57.88	-16.66	74.0	16.12	Peak	319.00	150	Horizontal	Pass
1**	1664.400	39.37	-16.66	54.0	14.63	AV	319.00	150	Horizontal	Pass
2	2405.100	90.07	-9.89	74.0	-16.07	Peak	212.00	100	Horizontal	N/A
2**	2405.100	82.90	-9.89	54.0	-28.90	AV	212.00	100	Horizontal	N/A
3	3709.000	51.17	-5.13	74.0	22.83	Peak	269.00	200	Horizontal	Pass
3**	3709.000	47.78	-5.13	54.0	6.22	AV	269.00	200	Horizontal	Pass
4	7829.000	54.39	3.16	74.0	19.61	Peak	278.00	300	Horizontal	Pass
4**	7829.000	46.32	3.16	54.0	7.68	AV	278.00	300	Horizontal	Pass
5	8746.225	51.74	-2.11	74.0	22.26	Peak	7.00	200	Horizontal	Pass
5**	8746.225	41.15	-2.11	54.0	12.85	AV	7.00	200	Horizontal	Pass
6	16463.849	52.35	0.48	74.0	21.65	Peak	212.00	400	Horizontal	Pass
6**	16463.849	42.72	0.48	54.0	11.28	AV	212.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1289.900	50.22	-16.50	74.0	23.78	Peak	353.00	300	Vertical	Pass
1**	1289.900	36.34	-16.50	54.0	17.66	AV	353.00	300	Vertical	Pass
2	2406.600	97.21	-9.95	74.0	-23.21	Peak	340.00	150	Vertical	N/A
2**	2406.600	89.37	-9.95	54.0	-35.37	AV	340.00	150	Vertical	N/A
3	3560.250	51.38	-6.04	74.0	22.62	Peak	303.00	100	Vertical	Pass
3**	3560.250	44.17	-6.04	54.0	9.83	AV	303.00	100	Vertical	Pass
4	7831.750	54.05	3.28	74.0	19.95	Peak	295.00	400	Vertical	Pass
4**	7831.750	45.12	3.28	54.0	8.88	AV	295.00	400	Vertical	Pass
5	11149.250	51.81	-0.95	74.0	22.19	Peak	130.00	200	Vertical	Pass
5**	11149.250	41.87	-0.95	54.0	12.13	AV	130.00	200	Vertical	Pass
6	16286.137	52.32	-0.71	74.0	21.68	Peak	239.00	200	Vertical	Pass
6**	16286.137	43.33	-0.71	54.0	10.67	AV	239.00	200	Vertical	Pass