

ISED CABid: ES1909

Test report No:
 NIE: 66837RRF.002A1

Test report

USA FCC Part 15.407, 15.209 CANADA RSS-247, RSS-Gen


Unlicensed National Information Infrastructure (U-NII) Devices. General technical requirements.

Radiated emission limits; general requirements.

Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

General Requirements and Information for the Certification of Radio Apparatus.

| | |
|-------------------------------------|---|
| (*) Identification of item tested | Nokia Industrial MulteFire Router 700H |
| (*) Trademark | Nokia |
| (*) Model and /or type reference | HWNDUSEB1006 |
| Other identification of the product | HW version: A101 SW version: 20210121_01_UESW_MF_DEV_00540_12b1d3b_3f985 03 IMEI TAC: 35999539 FCC ID: 2AVO2MFRTR700H1 ID: 661AF-MFRTR700H1 |
| (*) Features | MulteFire 1.0 |
| Applicant | Nokia Innovations US LLC 600-700 Mountain Ave Murray Hill, NJ, 07974 USA |
| Test method requested, standard | USA FCC Part 15.407 (10-1-20) Edition: Unlicensed National Information Infrastructure (U-NII) Devices. General technical requirements. USA FCC Part 15.209 (10-1-20) Edition: Radiated emission limits; general requirements. CANADA RSS-247 Issue 2 (February 2017). CANADA RSS-Gen Issue 5 Amendment 1 (March 2019). Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017. ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices. |
| Summary | IN COMPLIANCE |

| | | | |
|---|---|---|-----------------------------------|
| Approved by (name / position & signature) | Rafael López Martín EMC Consumer & RF Lab. Manager |  | 2021.08.12 11:41:13 +02'00' |
| Date of issue | 2021-08-12 | | |
| Report template No | FDT08_23 (*) "Data provided by the client" | | |

Index

| | |
|--|-----|
| Competences and guarantees | 4 |
| General conditions | 4 |
| Uncertainty | 4 |
| Data provided by the client..... | 4 |
| Usage of samples | 5 |
| Test sample description | 6 |
| Identification of the client..... | 7 |
| Testing period and place..... | 7 |
| Document history | 7 |
| Environmental conditions | 8 |
| Remarks and comments | 9 |
| Testing verdicts..... | 9 |
| Summary | 10 |
| Appendix A: Test Common requirements for all bands | 12 |
| Appendix B: Test result for 5.15GHz – 5.25GHz | 87 |
| Appendix C: Test result for 5.25GHz – 5.35GHz..... | 136 |
| Appendix D: Test result for 5.47GHz – 5.725GHz..... | 184 |
| Appendix E: Test result for 5.725GHz – 5.850GHz..... | 232 |

Competences and guarantees

DEKRA Testing and Certification is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification S.A.U. is an FCC-recognized accredited testing laboratory with the appropriate scope of accreditation that covers the performed test in this report.

DEKRA Testing and Certification S.A.U. is an ISED-recognized accredited testing laboratory, CABid: ES1909, with the appropriate scope of accreditation that covers the performed tests in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification at the time of performance of the test.

DEKRA Testing and Certification is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Testing and Certification.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Testing and Certification internal document PODT000.

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested")
2. The Nokia Industrial MulteFire Router 700H acts as a client device. When connected to an Access Point, it provides wireless data service.

Usage of samples

Samples undergoing test have been selected by: the client.

Sample S/01 is composed of the following elements:

| Control N° | Description | Model | Serial N° | Date of reception |
|------------|--|----------------|--------------------|-------------------|
| 66837/006 | Nokia Industrial MulteFire Router 700H | HWNDUSEB1006 | 12020003172CPB0001 | 2021-01-22 |
| 66837/007 | AC/DC adapter | G0957B-120-200 | -- | 2021-01-22 |
| 66837/008 | Flag Antenna | -- | -- | 2021-01-22 |
| 66837/009 | Flag Antenna | -- | -- | 2021-01-22 |
| 66837/010 | Power Cable | -- | -- | 2021-01-22 |

1. Sample S/01 has undergone the following test(s):
All radiated tests indicated in Appendixes A, B, C, D and E.

Sample S/02 is composed of the following elements:

| Control N° | Description | Model | Serial N° | Date of reception |
|------------|-----------------------|----------------|--------------------|-------------------|
| 66837/006 | MulteFire Router 700H | HWNDUSEB1006 | 12020003172CPB0001 | 2021-01-22 |
| 66837/007 | AC/DC adapter | G0957B-120-200 | -- | 2021-01-22 |
| 66837/010 | Power Cable | -- | -- | 2021-01-22 |

1. Sample S/02 has undergone the following test(s):
All conducted tests indicated in Appendixes A, B, C, D and E.

Test sample description

| | | | | | | | |
|---|---|---|-------------------------------------|-------------------------------------|-----------------------------------|--------------------------|--------------------------|
| Ports..... : | Port name and description | Cable | | | | | |
| | | Specified max length [m] | Attached during test | Shielded | Coupled to patient ⁽³⁾ | | |
| | RJ45 | 100 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| | USB2.0 | 4 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Supplementary information to the ports..... : | N/A | | | | | | |
| Rated power supply | Voltage and Frequency | | Reference poles | | | | |
| | | | L1 | L2 | L3 | N | PE |
| | <input type="checkbox"/> | AC: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | DC: 10-30 V | | | | | | |
| Rated Power | 12W max. | | | | | | |
| Clock frequencies..... : | XO 12MHz/25MHz/125MHz, SoC 1000MHz/750MHz, DDR 800MHz | | | | | | |
| Other parameters | | | | | | | |
| Software version | 20210121_01_UESW_MF_DEV_00540_12b1d3b_3f98503 | | | | | | |
| Hardware version | A101 | | | | | | |
| Dimensions in cm (W x H x D) : | 10.5 x 16.2 x 2.5 | | | | | | |
| Mounting position | <input checked="" type="checkbox"/> | Wall/Ceiling mounted equipment | | | | | |
| | <input checked="" type="checkbox"/> | Table top equipment | | | | | |
| | <input checked="" type="checkbox"/> | Floor standing equipment | | | | | |
| | <input type="checkbox"/> | Hand-held equipment | | | | | |
| | <input checked="" type="checkbox"/> | Other: Industrial machine mounted equipment; pole | | | | | |
| Modules/parts..... : | Module/parts of test item | | Type | Manufacturer | | | |
| | 5150-5925MHz 3dBi Antenna x 2 | | Antenna | Shenzhen DongLi | | | |

| | | | |
|---|---|--------------|------------------|
| | 12V DC Adapter | Power Supply | Shenzhen Gospell |
| Accessories (not part of the test item).....: | Description | Type | Manufacturer |
| | | | |
| | | | |
| | | | |
| | | | |
| Documents as provided by the applicant.....: | Description | File version | Issue date |
| | TestMac User Guide for Regulatory Certification | N/A | Nov 20, 2020 |

⁽³⁾ Only for Medical Equipment

Identification of the client

NOKIA INNOVATIONS US LLC
 600-700 Mountain Ave
 Murray Hill, NJ, 07974 USA

Testing period and place

| | |
|---------------|--|
| Test Location | DEKRA Testing and Certification S.A.U. |
| Date (start) | 2021-02-11 |
| Date (finish) | 2021-07-05 |

Document history

| Report number | Date | Description |
|----------------|------------|--|
| 66837RRF.002 | 2021-07-28 | First release |
| 66837RRF.002A1 | 2021-08-12 | Second release. First modification due to typos in antenna gain value. This modification test report cancels and replaces the test report 66837RRF.002 |

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

| | |
|-------------------|--------------|
| Temperature | Min. = 15 °C |
| | Max. = 35 °C |
| Relative humidity | Min. = 20 % |
| | Max. = 75 % |

In the semianechoic chamber, the following limits were not exceeded during the test.

| | |
|-------------------|--------------|
| Temperature | Min. = 15 °C |
| | Max. = 35 °C |
| Relative humidity | Min. = 20 % |
| | Max. = 75 % |

In the chamber for conducted measurements, the following limits were not exceeded during the test:

| | |
|-------------------|--------------|
| Temperature | Min. = 15 °C |
| | Max. = 35 °C |
| Relative humidity | Min. = 20 % |
| | Max. = 75 % |

Remarks and comments

The tests have been performed by the technical personnel: Nicolás Salguero, José Manuel Jiménez, Verónica García, Pablo Redondo, Cristina Calle and Miguel Manuel López.

Used instrumentation:

Radiated Measurements:

| | Last Calibration | Due Calibration |
|--|------------------|-----------------|
| 1. Semianechoic Absorber Lined Chamber ETS LINDGREN FACT 3 200 STP | N.A. | N.A. |
| 2. Shielded Room ETS LINDGREN S101 | N.A. | N.A. |
| 3. Biconical/Log Antenna 30 MHz - 6 GHz ETS LINDGREN 3142E | 2020/04 | 2023/04 |
| 4. EMI Test Receiver 7 GHz ROHDE AND SCHWARZ ESR7 | 2020/12 | 2022/12 |
| 5. Preamplifier G>40dB 10MHz-6GHz, BONN ELEKTRONIK, BLNA 0160-01N | 2021/03 | 2022/03 |
| 6. Spectrum Analyzer ROHDE AND SCHWARZ FSW50 | 2020/07 | 2022/07 |
| 7. RF Preamplifier, 40 dB ,1-18 GHz BONN ELEKTRONIK BLMA 0118-1M | 2021/06 | 2022/06 |
| 8. Horn Antenna 1-18 GHz SCHWARZBECK MESS-ELEKTRONIK BBHA 9120 D | 2019/11 | 2022/11 |
| 9. Horn Antenna 18-40 GHz SCHWARZBECK MESS-ELEKTRONIK BBHA 9170 | 2020/05 | 2023/05 |
| 10. EMI Test Receiver 20Hz-40GHz ROHDE AND SCHWARZ ESU40 | 2019/09 | 2021/09 |
| 11. RF Preamplifier, 30dB 500MHz-18GHz, NARDA AMF-3D-00501800-24-10P | 2021/01 | 2022/01 |

Conducted Measurements

| | Last Calibration | Due Calibration |
|--|------------------|-----------------|
| 1. Shielded Room ETS LINDGREN S101 | N.A. | N.A. |
| 2. Signal and Spectrum Analyzer 10 Hz - 40 GHz ROHDE AND SCHWARZ FSV40 | 2019/09 | 2021/09 |
| 3. DC Power Supply 40V/40A Rohde & Schwarz NGPE40 | N.A. | N.A. |
| 4. Digital Multimeter FLUKE 179 | 2020/10 | 2021/10 |
| 5. OPEN SWITCH UNIT OSP120 ROHDE AND SCHWARZ | 2019/10 | 2021/10 |
| 6. OPEN SWITCH UNIT UP TO 18 GHz OSP150 ROHDE AND SCHWARZ | 2019/09 | 2021/09 |

Testing verdicts

| | |
|------------------|-----|
| Not applicable : | N/A |
| Pass : | P |
| Fail : | F |
| Not measured : | N/M |

Summary

A. Common requirements for all bands

| FCC PART 15 PARAGRAPH / RSS-247 | | |
|--|---------|--------|
| Requirement – Test case | Verdict | Remark |
| Duty Cycle | P | |
| Transmitter 99% Occupied Bandwidth | P | |
| Transmitter 26 dB Emission Bandwidth (EBW) | P | |
| <u>Supplementary information and remarks:</u> None. | | |

B. 5.15 GHz – 5.25 GHz Band

| FCC PART 15 PARAGRAPH / RSS-247 | | | |
|--|--|--------|--|
| Requirement – Test case | Verdict | Remark | |
| FCC 15.407 (a)(1)(iv) | Transmitter Maximum conducted Output Power | P | |
| RSS-247 6.2.1.1 | Transmitter Maximum Equivalent Isotropically Radiated Power EIRP | P | |
| FCC 15.407 (a)(1)(iv) | Transmitter Maximum Power Spectral Density | P | |
| RSS-247 6.2.1.1 | Transmitter EIRP Spectral Density | P | |
| FCC 15.407 (b)(1)(6) / RSS-247 6.2.1.2 | Transmitter Out of Band Radiated Emissions | P | |
| FCC 15.407 (b)(1) / RSS-247 6.2.1.2 | Transmitter Band Edge Radiated Emissions | P | |
| <u>Supplementary information and remarks:</u> None. | | | |

C. 5.25 GHz – 5.35 GHz Band

| FCC PART 15 PARAGRAPH / RSS-247 | | | |
|--|--|--------|--|
| Requirement – Test case | Verdict | Remark | |
| FCC 15.407 (a) (2) / RSS-247 6.2.2.1 (a) | Transmitter Maximum conducted Output Power | P | |
| RSS-247 6.2.2.1 (b) | Transmitter Maximum Equivalent Isotropically Radiated Power EIRP | P | |
| FCC 15.407 (a) (2) / RSS-247 6.2.2.1 (a) | Transmitter Maximum Power Spectral Density | P | |
| FCC 15.407 (b) (2) / RSS-247 6.2.2.2 | Transmitter Band Edge Radiated Emissions | P | |
| FCC 15.407 (b) (2) (6) / RSS-247 6.2.2.2 | Transmitter Out of Band Radiated Emissions | P | |
| FCC 15.407 (h) (1) / RSS-247 6.2.2.1 | Transmitter Power Control | P | |
| <u>Supplementary information and remarks:</u> (1) None. | | | |

D. 5.47 GHz – 5.725 GHz Band

| FCC PART 15 PARAGRAPH / RSS-247 | | Verdict | Remark |
|---|---|---------|--------|
| Requirement – Test case | | | |
| FCC 15.407 (a) (2) / RSS-247 6.2.3.1 | Transmitter Maximum conducted Output Power | P | |
| RSS-247 6.2.3.1 | Transmitter Maximum Equivalent Isotropically Radiated Power | P | |
| FCC 15.407 (a) (2) / RSS-247 6.2.3.1 | Transmitter Maximum Power Spectral Density | P | |
| FCC 15.407 (b) (3) / RSS-247 6.2.3.2 | Transmitter Band Edge Radiated Emissions | P | |
| FCC 15.407 (b) (3) (6) / RSS-247 6.2.3.2 | Transmitter Out of Band Radiated Emissions | P | |
| FCC 15.407 (h) (1) / RSS-247 6.2.3.1 | Transmitter Power Control | P | |
| <u>Supplementary information and remarks:</u> | | | |
| (1) None. | | | |

E. 5.725 GHz – 5.85 GHz Band

| FCC PART 15 PARAGRAPH / RSS-247 | | Verdict | Remark |
|---|--|---------|--------|
| Requirement – Test case | | | |
| FCC 15.407 (e) / RSS-247 Clause 6.2.4.1 | 6 dB Bandwidth. | P | |
| FCC 15.407 (a)(3) / RSS-247 6.2.4.1 | Transmitter Maximum conducted Output Power | P | |
| FCC 15.407 (a)(3) / RSS-247 Clause 6.2.4.1 | Transmitter Maximum Power Spectral Density | P | |
| FCC 15.407 (b) (4) / RSS-247 6.2.4.2 | Transmitter Band Edge Radiated Emissions | P | |
| FCC 15.407 (b) (4) (6) / RSS-247 6.2.4.2 | Transmitter Out of Band Radiated Emissions | P | |
| <u>Supplementary information and remarks:</u> | | | |
| None. | | | |

Appendix A: Test Common requirements for all bands

INDEX

| | |
|---|----|
| Section 15.35 Subclause (c) / RSS-Gen 6.10. Transmitter Duty Cycle | 14 |
| RSS-Gen 6.6 / RSS-247 6.2. Transmitter 99% Occupied Bandwidth | 15 |
| Section 15.407 Subclause 15.403(i) Transmitter 26 dB Emission Bandwidth (EBW) | 55 |

Section 15.35 Subclause (c) / RSS-Gen 6.10. Transmitter Duty Cycle.

SPECIFICATION

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

RESULTS:

The results for all modes having a value > 98%.

RSS-Gen 6.6 / RSS-247 6.2. Transmitter 99% Occupied Bandwidth

The client supplied cables with the EUT in order to perform conducted measurements. The measured additional path loss was included in any path loss calculations.

Measurements were performed on all modes for testing.

SISO Antenna Port 1:

Mode: QPSK - 20MHz

| | Occ. BW (MHz) | Measurement uncertainty (KHz) |
|------------------------|---------------|-------------------------------|
| channel 36 (5180 MHz) | 17.900 | <±40.04 |
| channel 40 (5200 MHz) | 17.900 | |
| channel 48 (5240 MHz) | 17.900 | |
| channel 52 (5260 MHz) | 17.900 | |
| channel 56 (5280 MHz) | 17.900 | |
| channel 64 (5320 MHz) | 17.900 | |
| channel 100 (5500 MHz) | 17.900 | |
| channel 116 (5580 MHz) | 17.900 | |
| channel 140 (5700 MHz) | 18.000 | |
| channel 149 (5745 MHz) | 17.900 | |
| channel 157 (5785 MHz) | 17.900 | |
| channel 165 (5825 MHz) | 18.000 | |

Mode: 16QAM - 20MHz

| | Occ. BW (MHz) | Measurement uncertainty (KHz) |
|------------------------|---------------|-------------------------------|
| channel 36 (5180 MHz) | 18.000 | <±40.04 |
| channel 40 (5200 MHz) | 18.000 | |
| channel 48 (5240 MHz) | 17.900 | |
| channel 52 (5260 MHz) | 18.000 | |
| channel 56 (5280 MHz) | 17.900 | |
| channel 64 (5320 MHz) | 17.900 | |
| channel 100 (5500 MHz) | 17.900 | |
| channel 116 (5580 MHz) | 17.900 | |
| channel 140 (5700 MHz) | 18.000 | |
| channel 149 (5745 MHz) | 17.900 | |
| channel 157 (5785 MHz) | 17.900 | |
| channel 165 (5825 MHz) | 18.000 | |

Mode: 64QAM - 20MHz

| | Occ. BW (MHz) | Measurement uncertainty (KHz) |
|------------------------|---------------|-------------------------------|
| channel 36 (5180 MHz) | 17.900 | <±40.04 |
| channel 40 (5200 MHz) | 17.900 | |
| channel 48 (5240 MHz) | 17.900 | |
| channel 52 (5260 MHz) | 17.900 | |
| channel 56 (5280 MHz) | 17.900 | |
| channel 64 (5320 MHz) | 17.900 | |
| channel 100 (5500 MHz) | 17.900 | |
| channel 116 (5580 MHz) | 17.900 | |
| channel 140 (5700 MHz) | 17.900 | |
| channel 149 (5745 MHz) | 18.000 | |
| channel 157 (5785 MHz) | 17.900 | |
| channel 165 (5825 MHz) | 17.900 | |

SISO Antenna Port 2:

Mode: QPSK - 20MHz

| | Occ. BW (MHz) | Measurement uncertainty (KHz) |
|------------------------|---------------|-------------------------------|
| channel 36 (5180 MHz) | 17.900 | <±40.04 |
| channel 40 (5200 MHz) | 17.900 | |
| channel 48 (5240 MHz) | 17.900 | |
| channel 52 (5260 MHz) | 17.900 | |
| channel 56 (5280 MHz) | 17.900 | |
| channel 64 (5320 MHz) | 17.900 | |
| channel 100 (5500 MHz) | 17.900 | |
| channel 116 (5580 MHz) | 18.000 | |
| channel 140 (5700 MHz) | 17.900 | |
| channel 149 (5745 MHz) | 17.900 | |
| channel 157 (5785 MHz) | 17.900 | |
| channel 165 (5825 MHz) | 17.900 | |

Mode: 16QAM - 20MHz

| | Occ. BW (MHz) | Measurement uncertainty (KHz) |
|------------------------|---------------|-------------------------------|
| channel 36 (5180 MHz) | 17.900 | <±40.04 |
| channel 40 (5200 MHz) | 17.900 | |
| channel 48 (5240 MHz) | 17.900 | |
| channel 52 (5260 MHz) | 17.900 | |
| channel 56 (5280 MHz) | 17.900 | |
| channel 64 (5320 MHz) | 17.900 | |
| channel 100 (5500 MHz) | 17.900 | |
| channel 116 (5580 MHz) | 18.000 | |
| channel 140 (5700 MHz) | 17.900 | |
| channel 149 (5745 MHz) | 18.000 | |
| channel 157 (5785 MHz) | 18.000 | |
| channel 165 (5825 MHz) | 17.900 | |

Mode: 64QAM - 20MHz

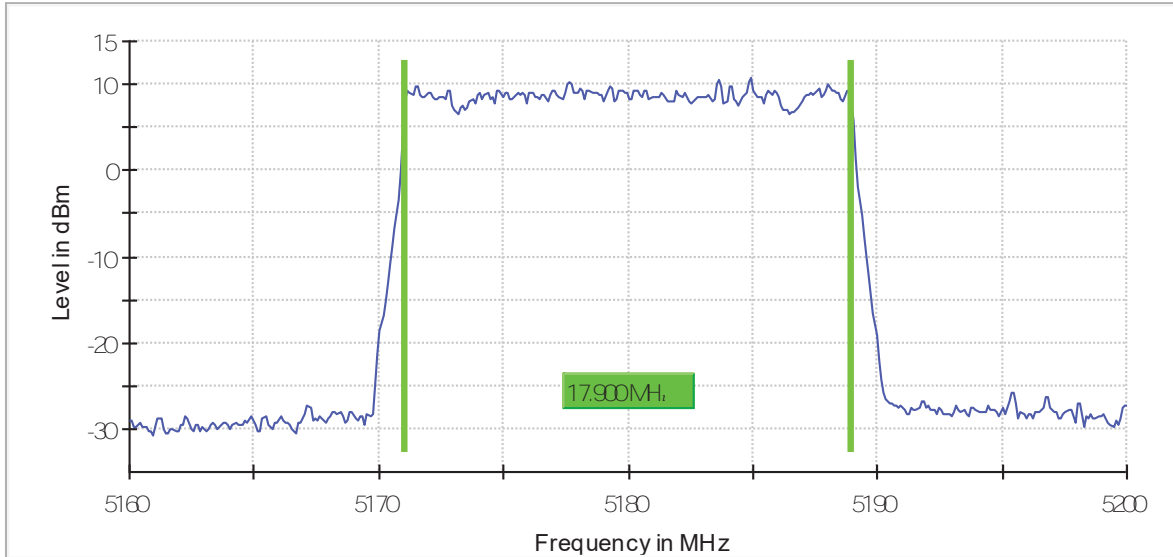
| | Occ. BW (MHz) | Measurement uncertainty (KHz) |
|------------------------|---------------|-------------------------------|
| channel 36 (5180 MHz) | 17.900 | <±40.04 |
| channel 40 (5200 MHz) | 17.900 | |
| channel 48 (5240 MHz) | 17.900 | |
| channel 52 (5260 MHz) | 17.900 | |
| channel 56 (5280 MHz) | 17.900 | |
| channel 64 (5320 MHz) | 17.900 | |
| channel 100 (5500 MHz) | 17.900 | |
| channel 116 (5580 MHz) | 17.900 | |
| channel 140 (5700 MHz) | 17.900 | |
| channel 149 (5745 MHz) | 18.000 | |
| channel 157 (5785 MHz) | 18.000 | |
| channel 165 (5825 MHz) | 17.900 | |

SISO Antenna Port 1:

Mode: QPSK - 20MHz

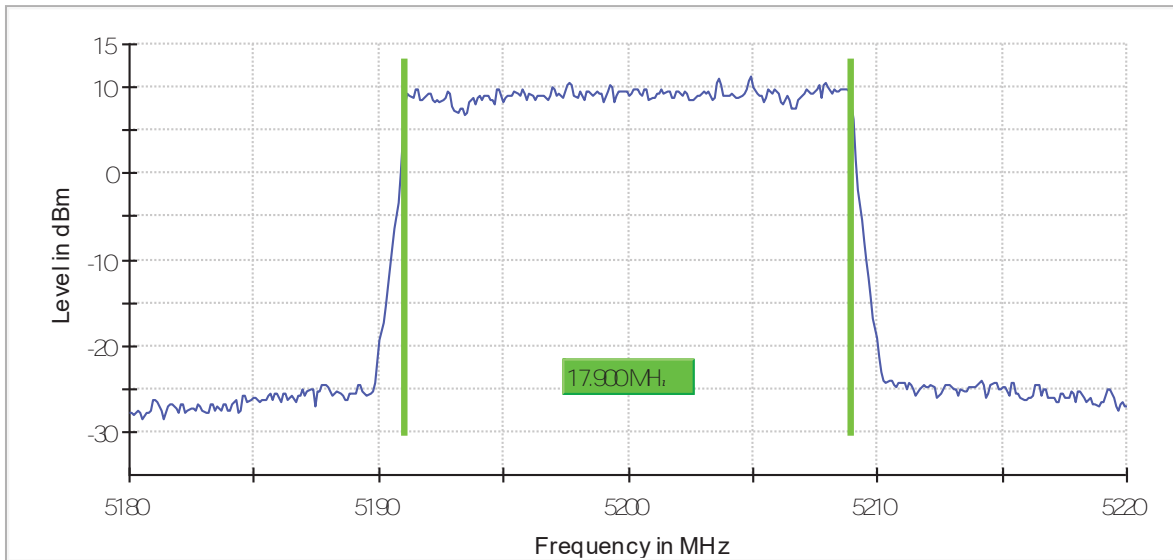
channel 36 (5180 MHz)

99% B₀



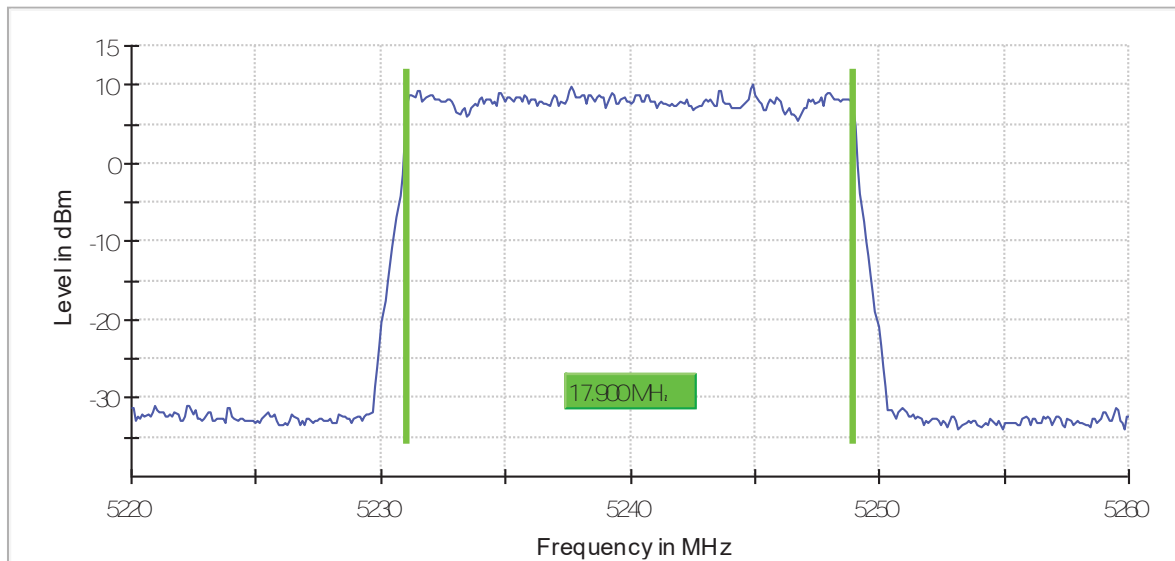
channel 40 (5200 MHz)

99% B₀



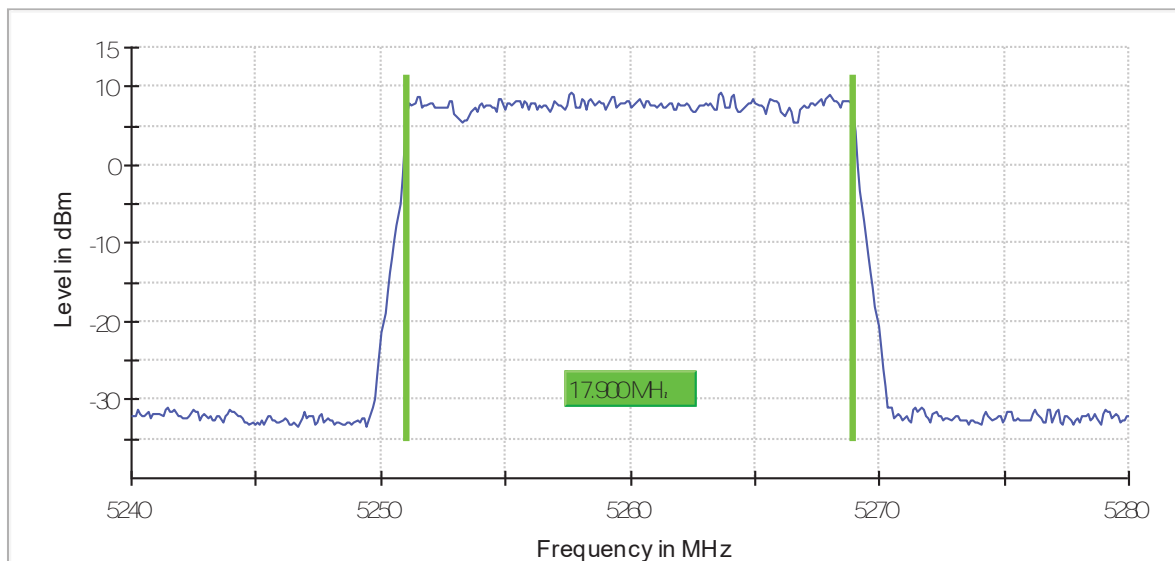
channel 48 (5240 MHz)

99% B₁



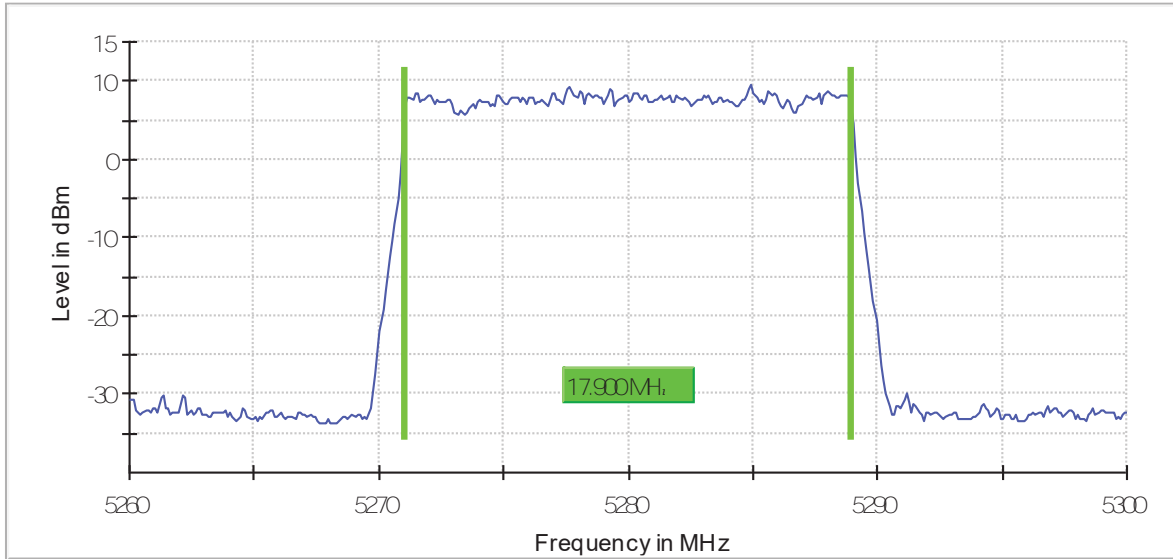
channel 52 (5260 MHz)

99% B₁



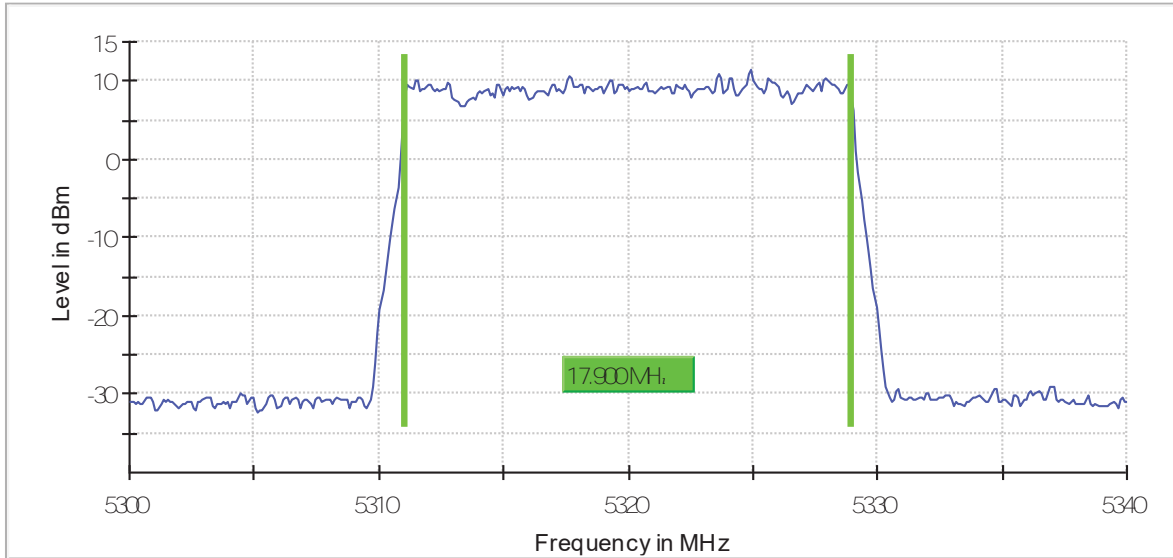
channel 56 (5280 MHz)

99% B₀



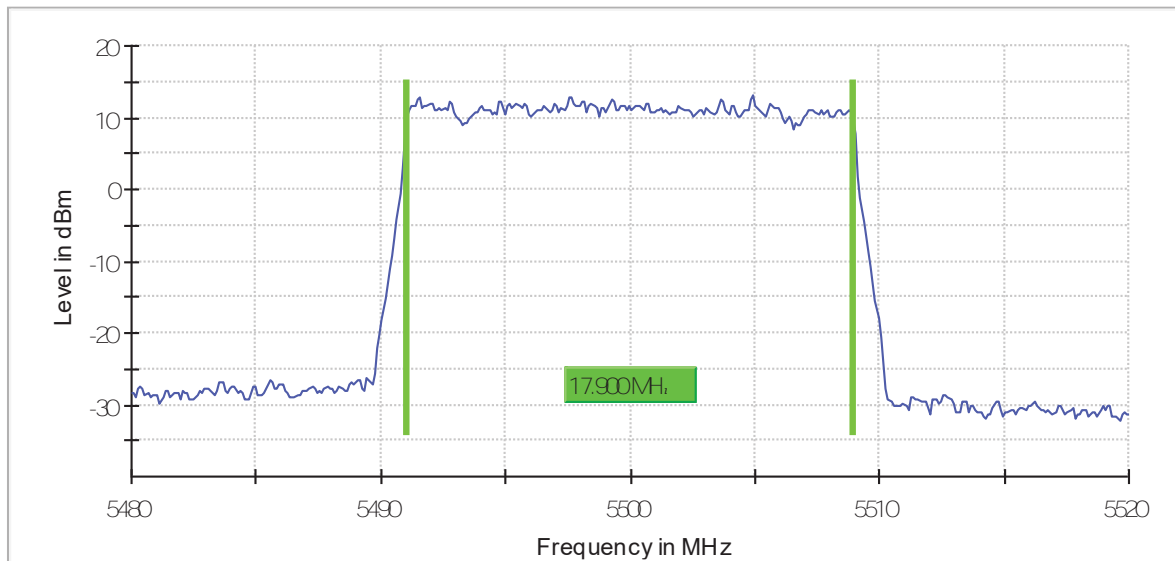
channel 64 (5320 MHz)

99% B₀



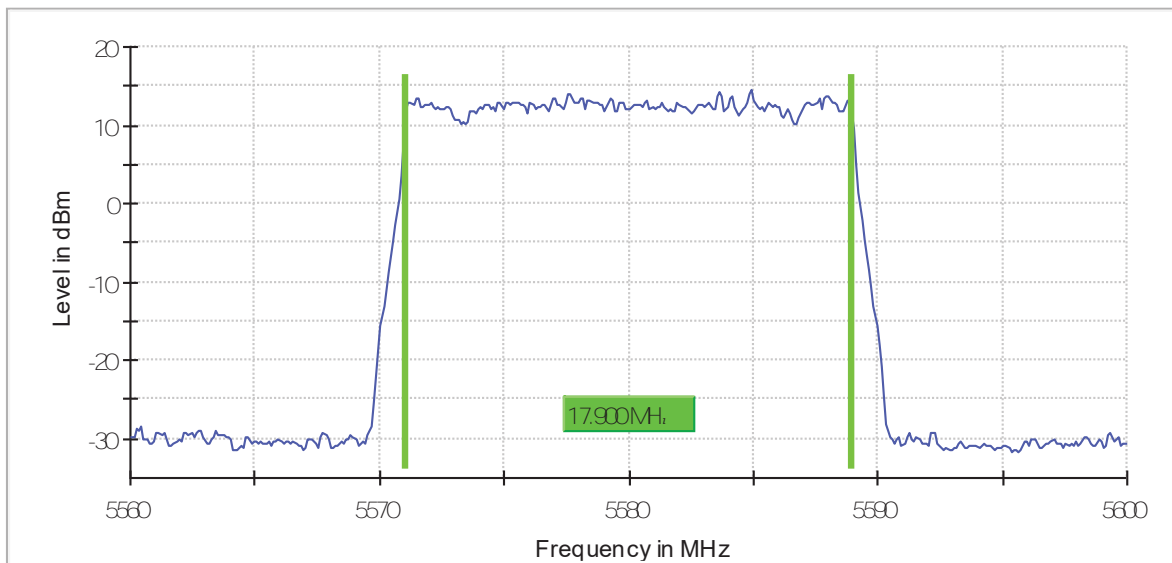
channel 100 (5500 MHz)

99% Bandwidth



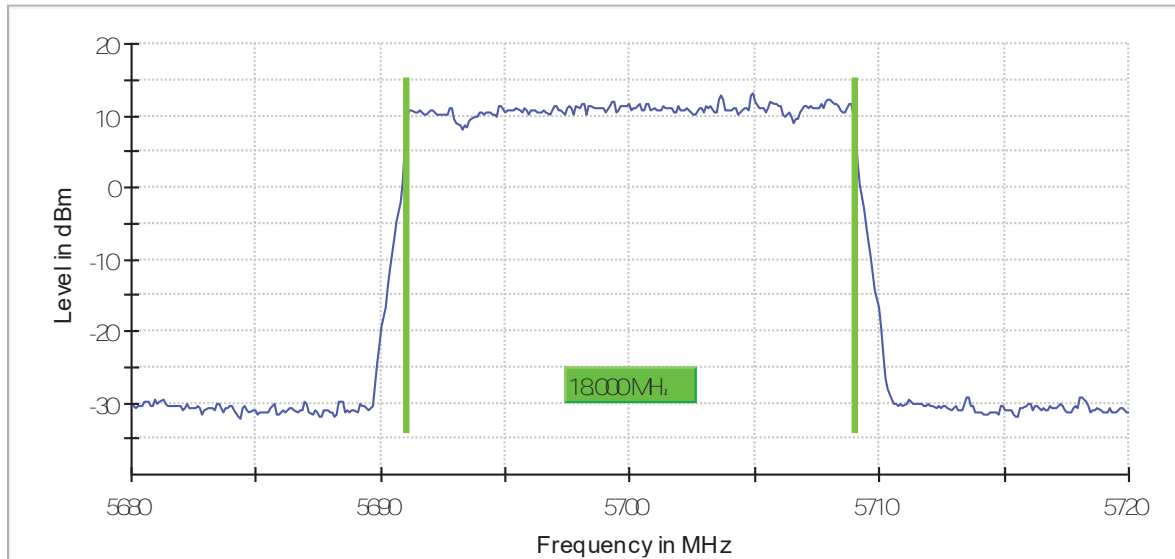
channel 116 (5580 MHz)

99% Bandwidth



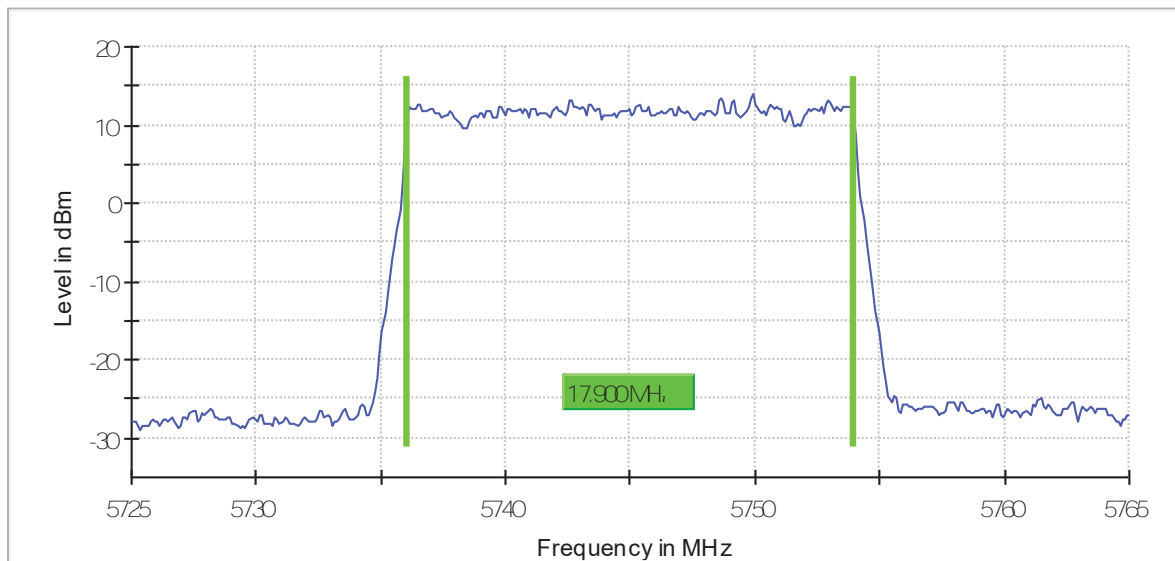
channel 140 (5700 MHz)

99% B₁



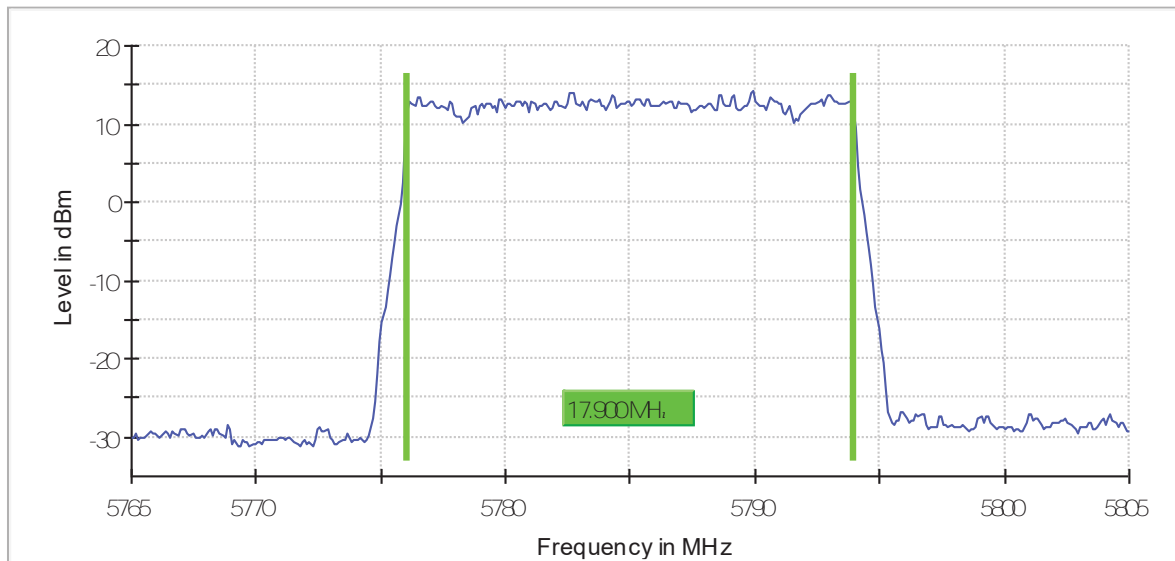
channel 149 (5745 MHz)

99% B₁



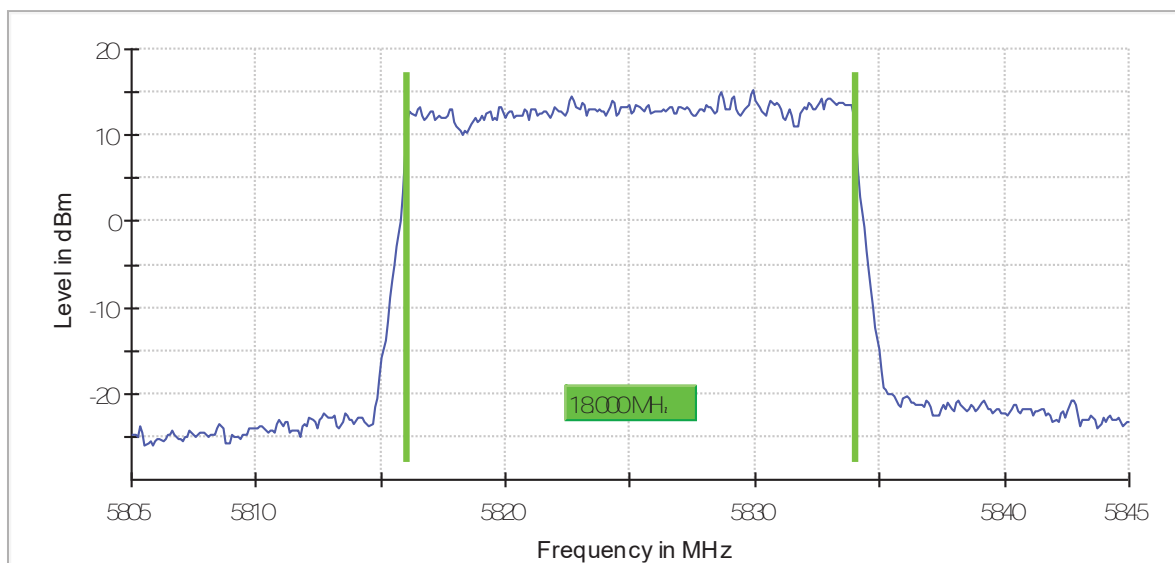
channel 157 (5785 MHz)

99% B₁



channel 165 (5825 MHz)

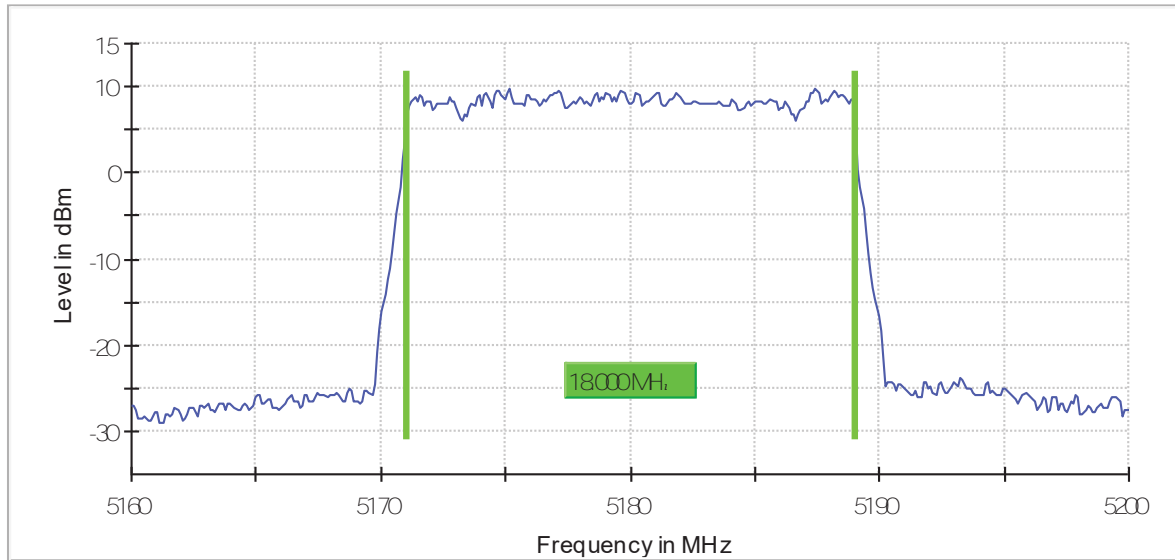
99% B₁



Mode: 16QAM- 20MHz

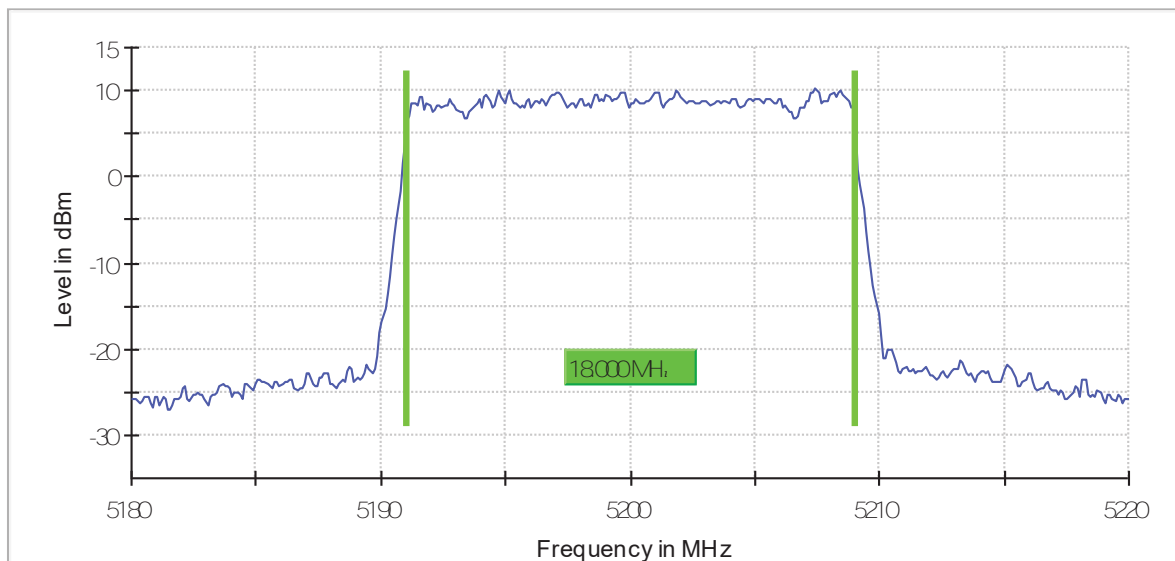
channel 36 (5180 MHz)

99% B,



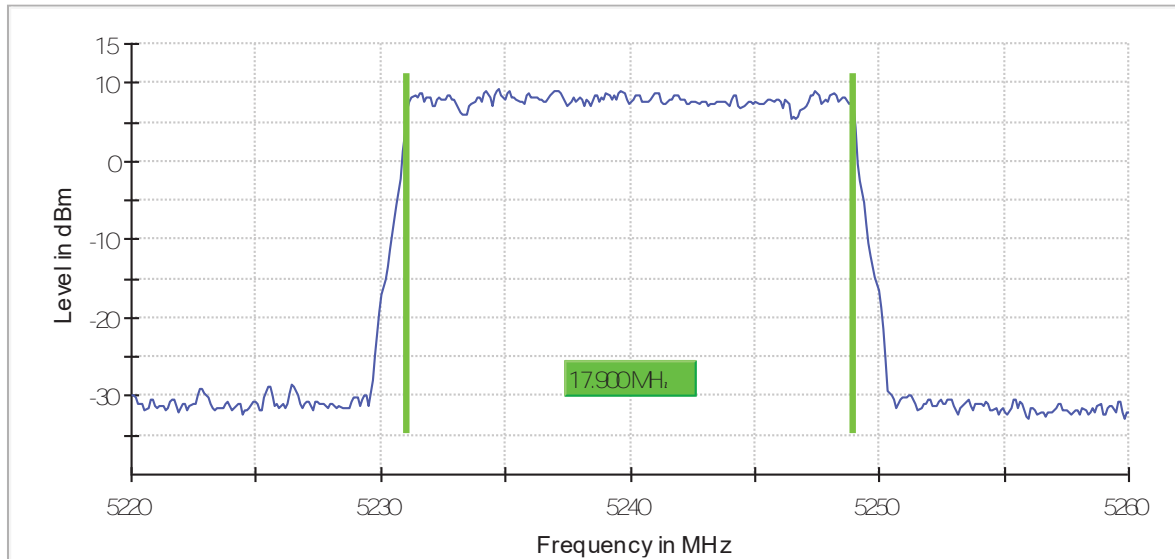
channel 40 (5200 MHz)

99% B,



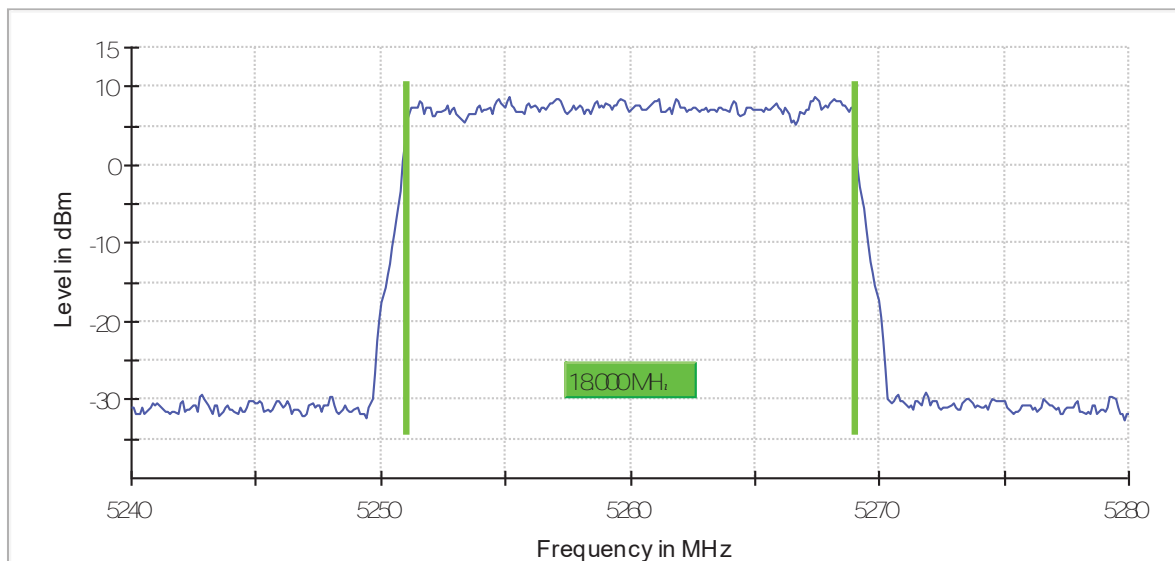
channel 48 (5240 MHz)

99% B₁



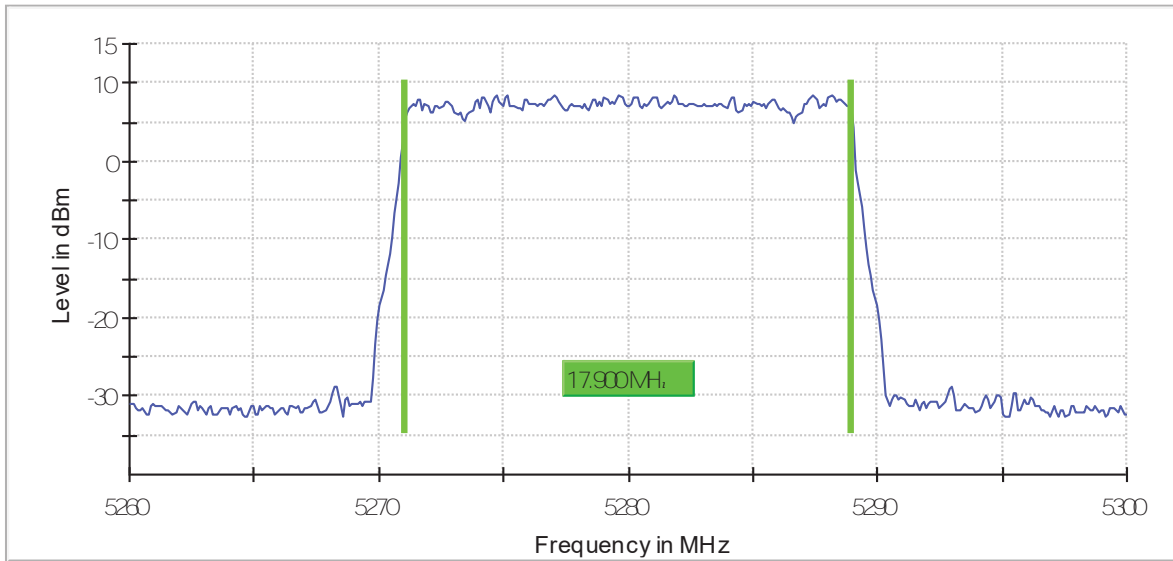
channel 52 (5260 MHz)

99% B₁



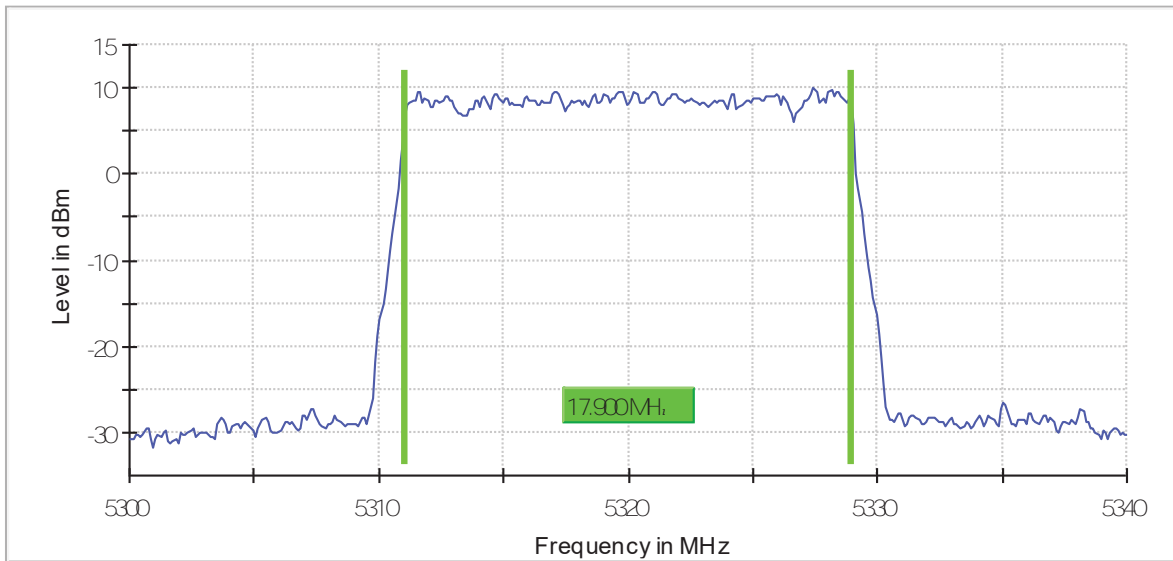
channel 56 (5280 MHz)

99% B₁

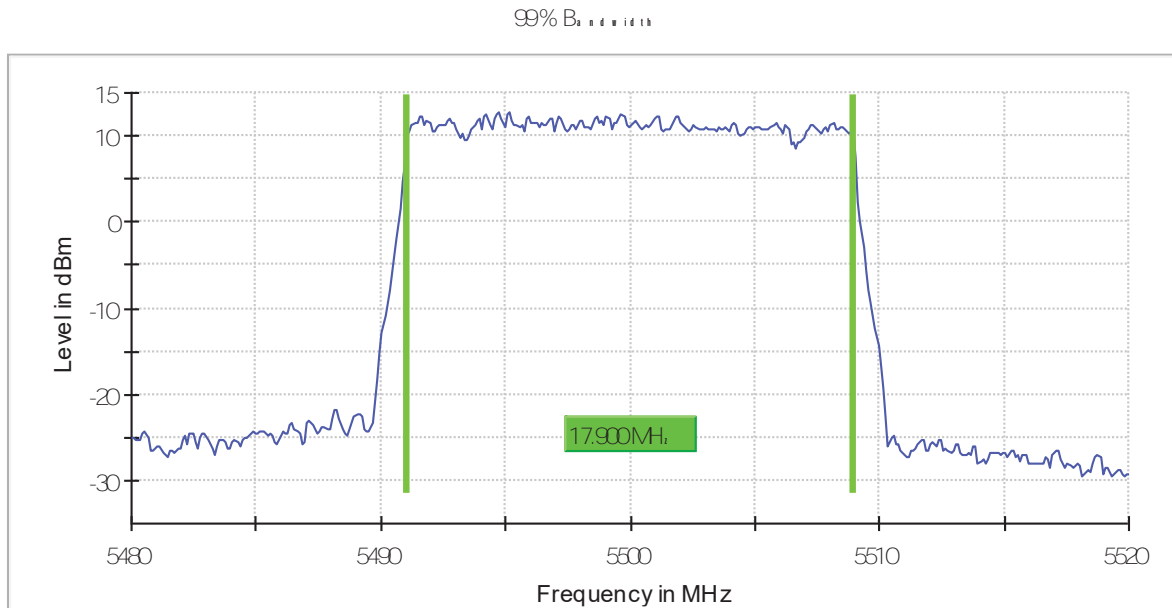


channel 64 (5320 MHz)

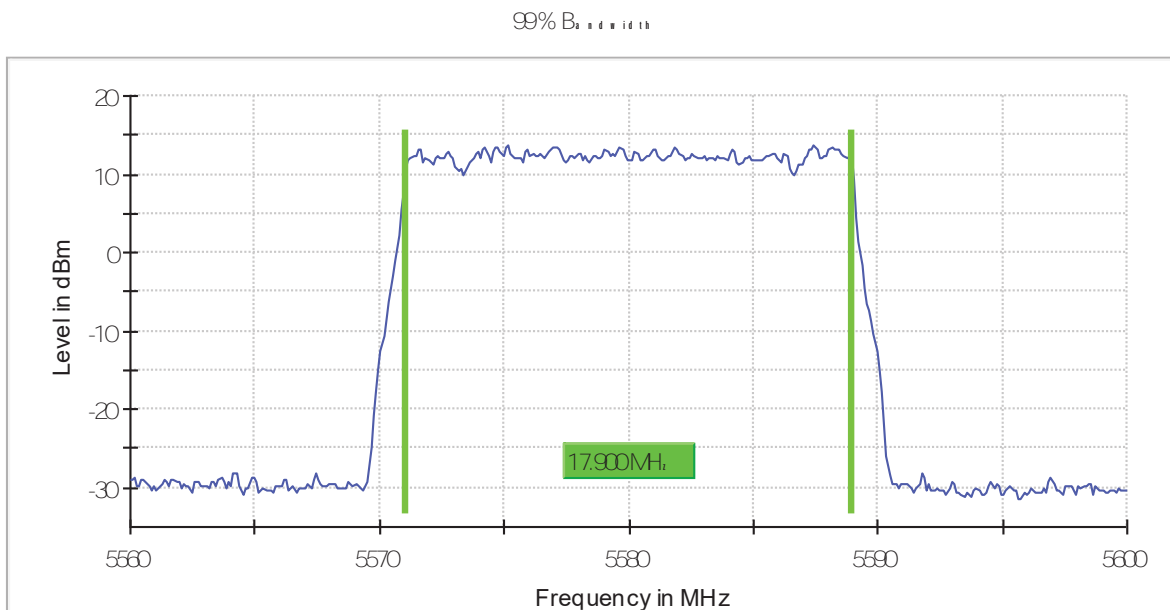
99% B₁



channel 100 (5500 MHz)

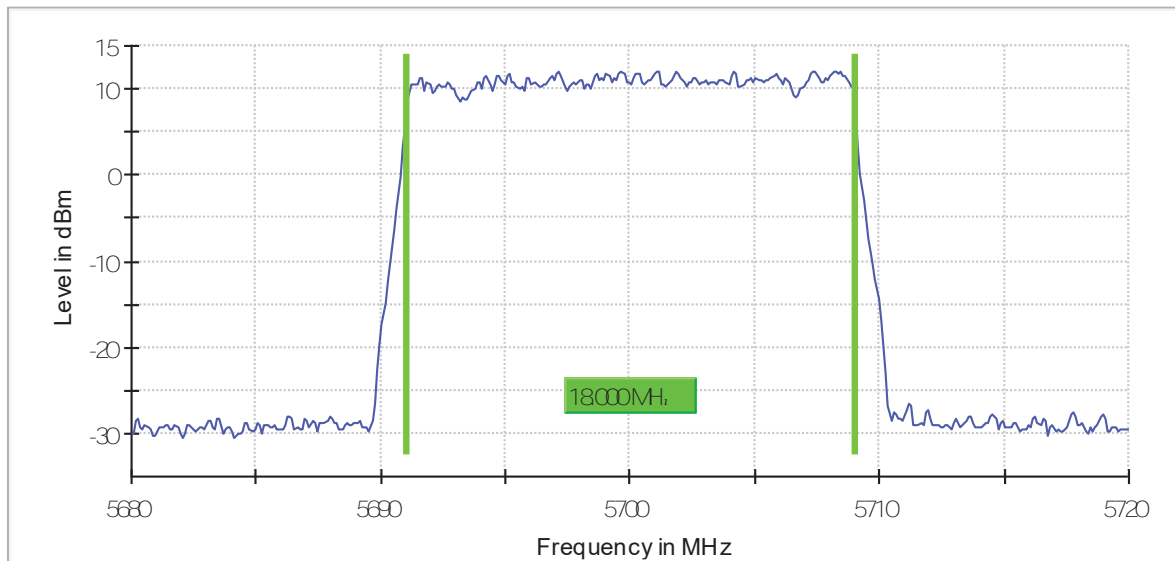


channel 116 (5580 MHz)



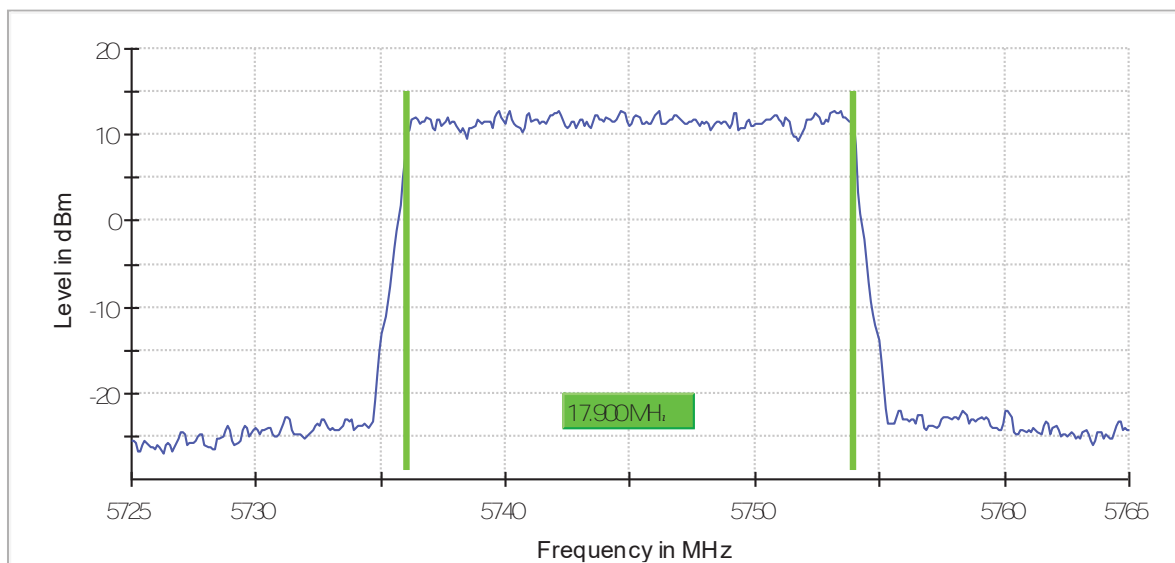
channel 140 (5700 MHz)

99% B₁



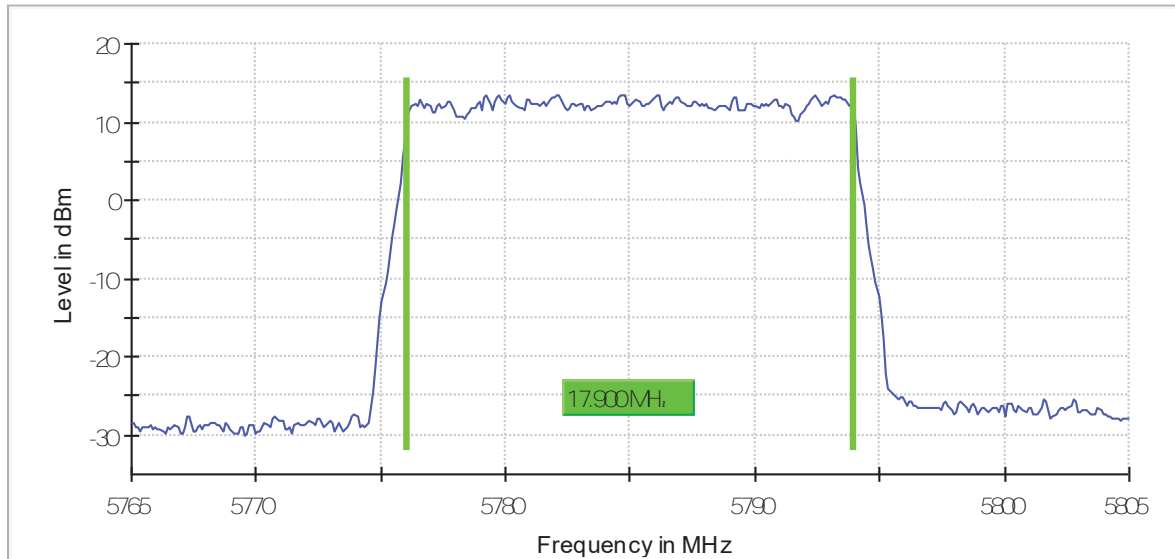
channel 149 (5745 MHz)

99% B₁



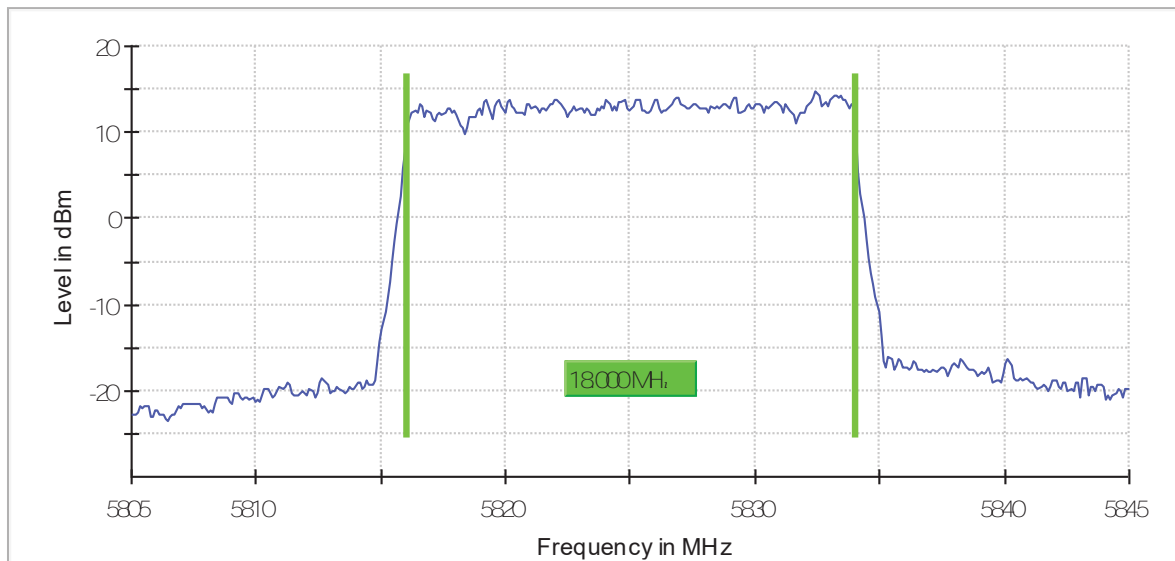
channel 157 (5785 MHz)

99% B₁



channel 165 (5825 MHz)

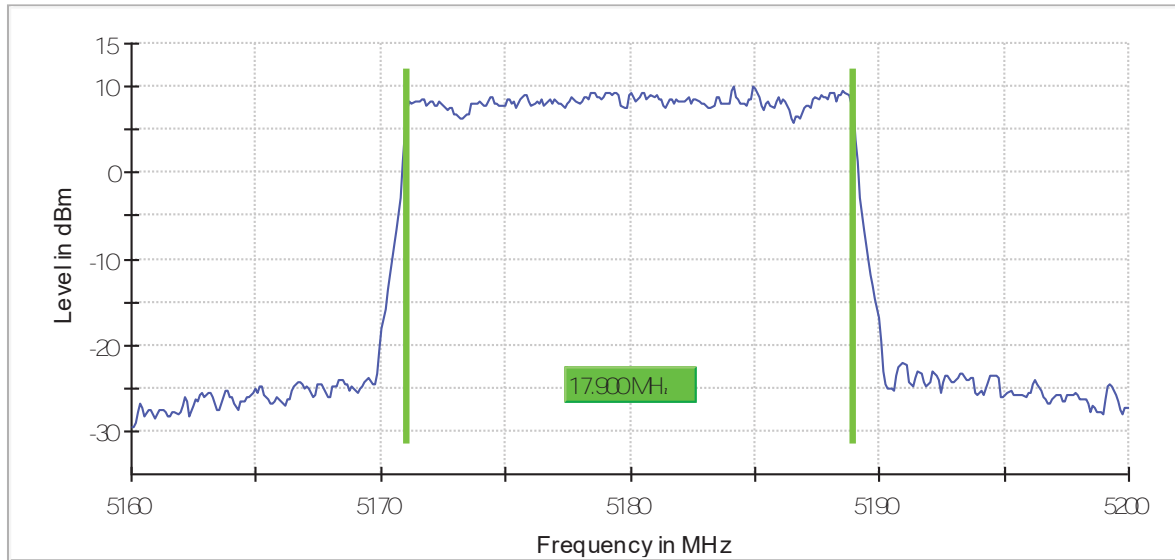
99% B₁



Mode: 64QAM - 20MHz

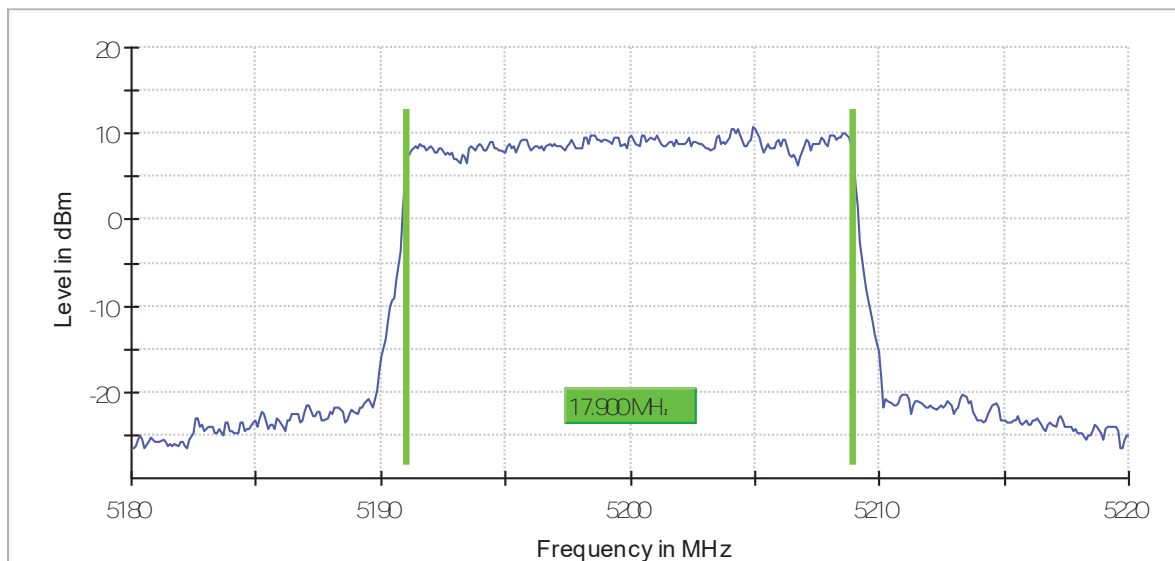
channel 36 (5180 MHz)

99% B,



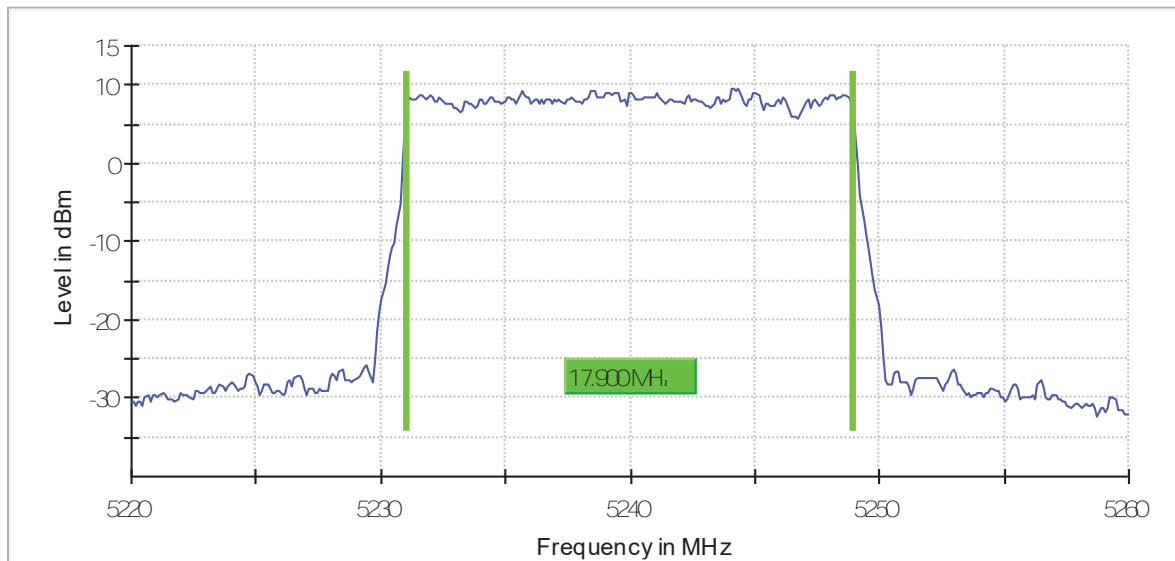
channel 40 (5200 MHz)

99% B,



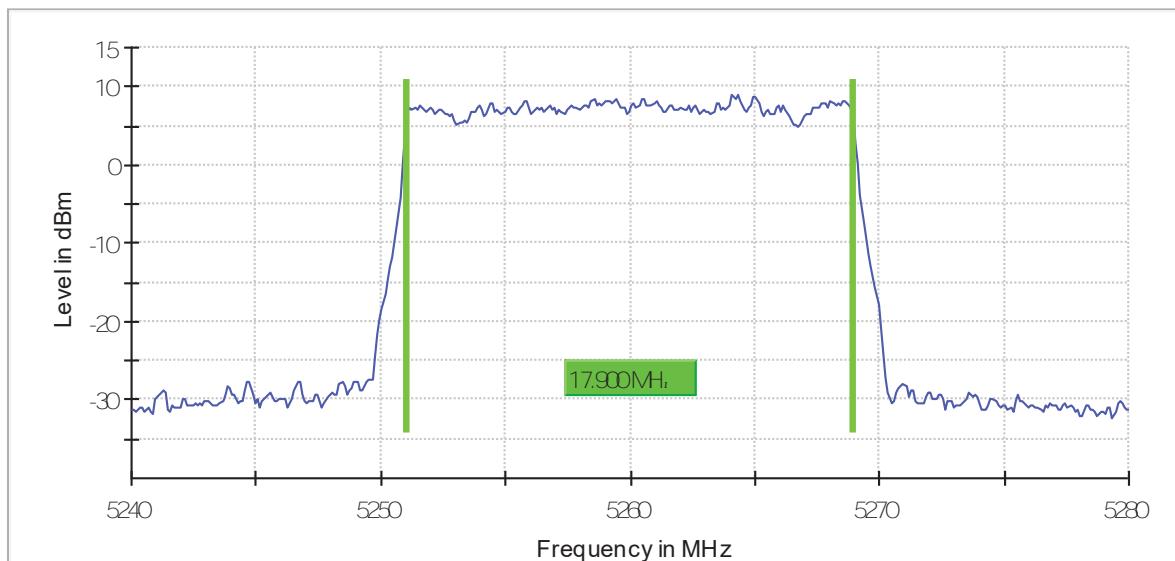
channel 48 (5240 MHz)

99% B₀



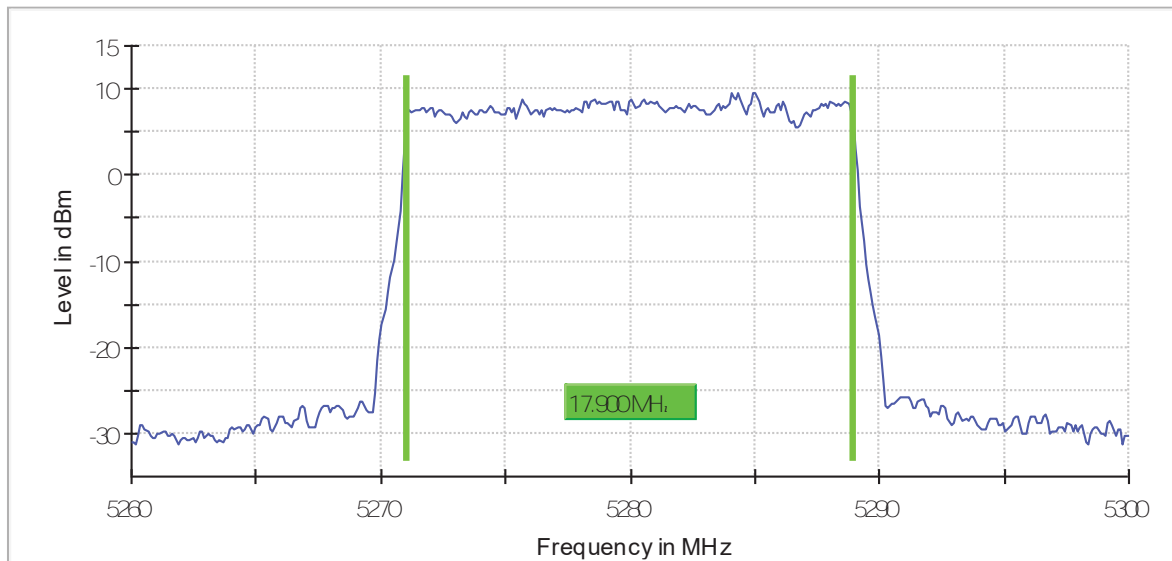
channel 52 (5260 MHz)

99% B₀



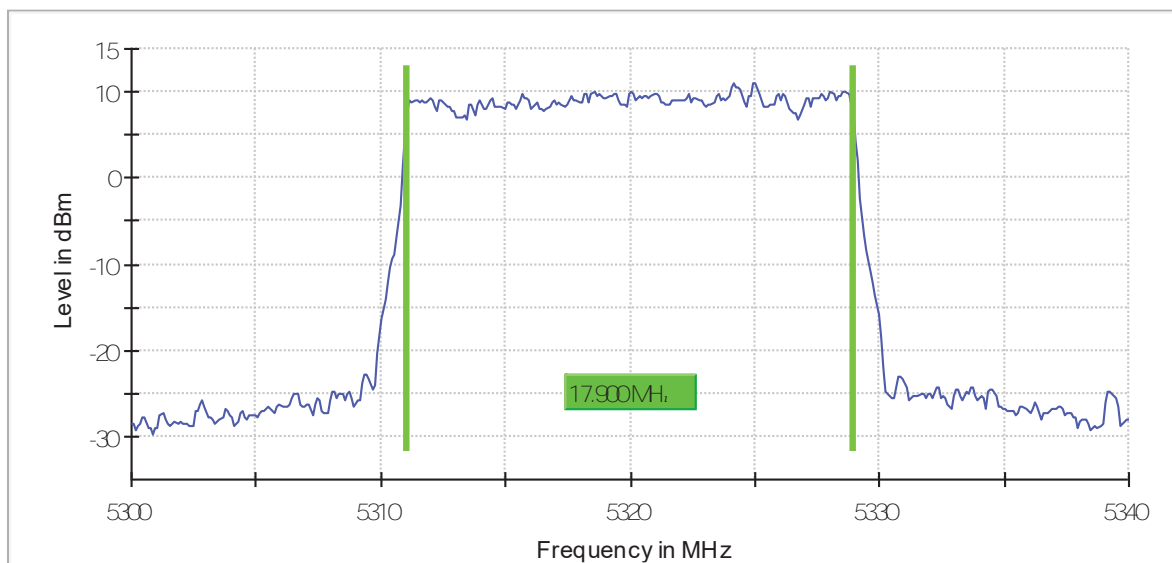
channel 56 (5280 MHz)

99% B₁

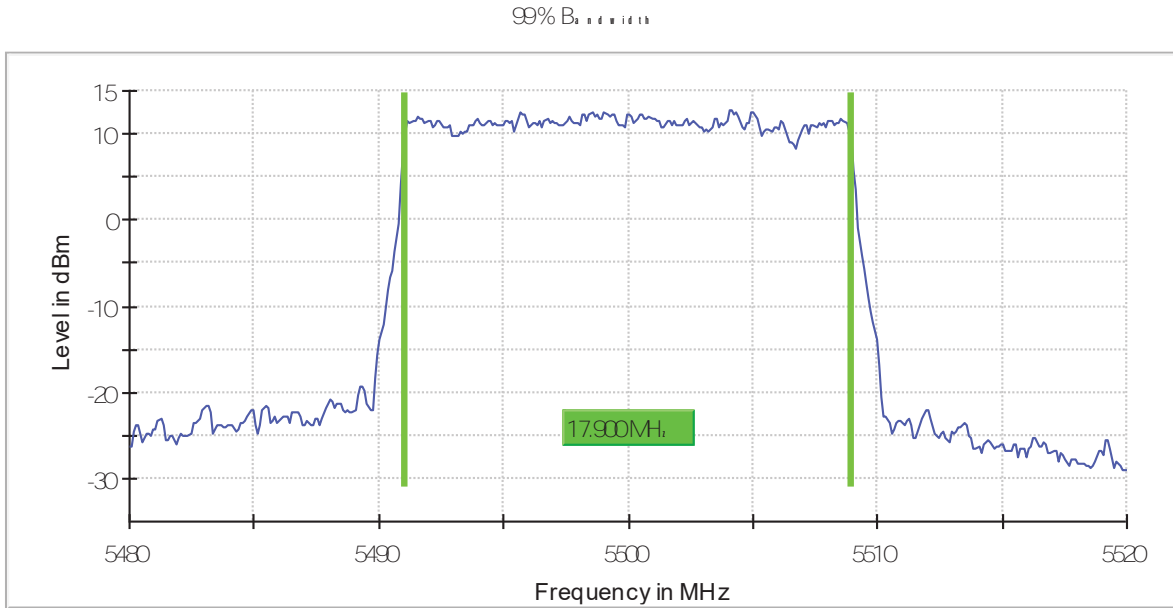


channel 64 (5320 MHz)

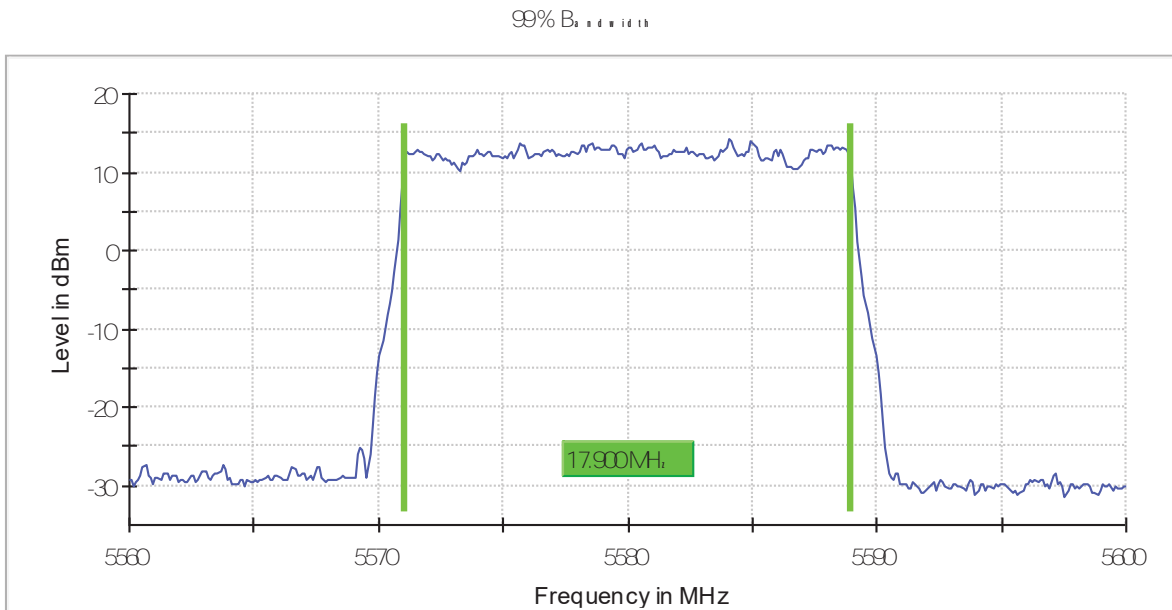
99% B₁



channel 100 (5500 MHz)

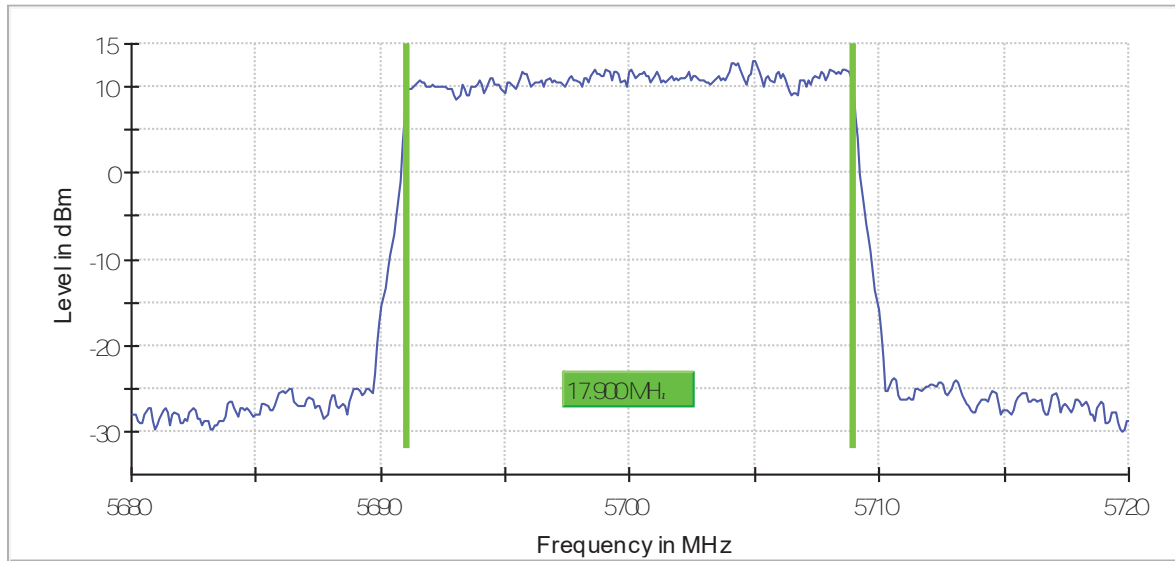


channel 116 (5580 MHz)



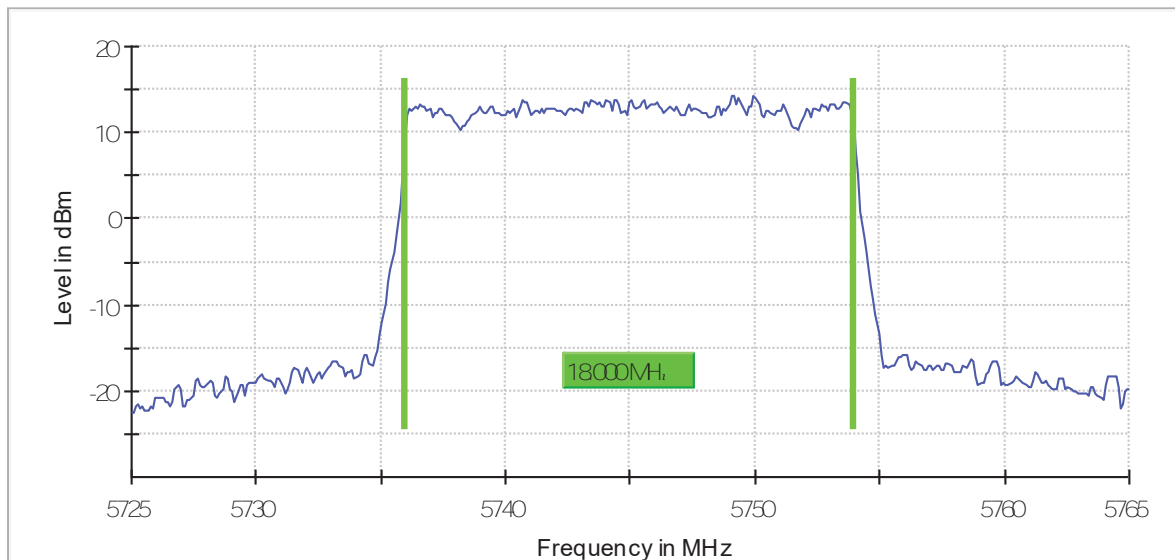
channel 140 (5700 MHz)

99% B₁



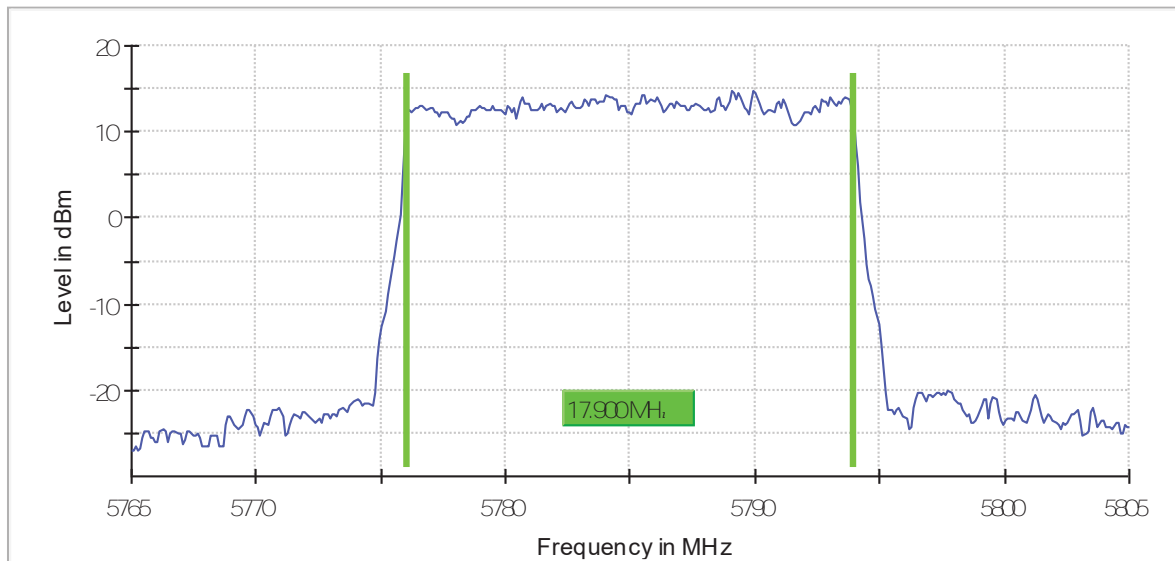
channel 149 (5745 MHz)

99% B₁



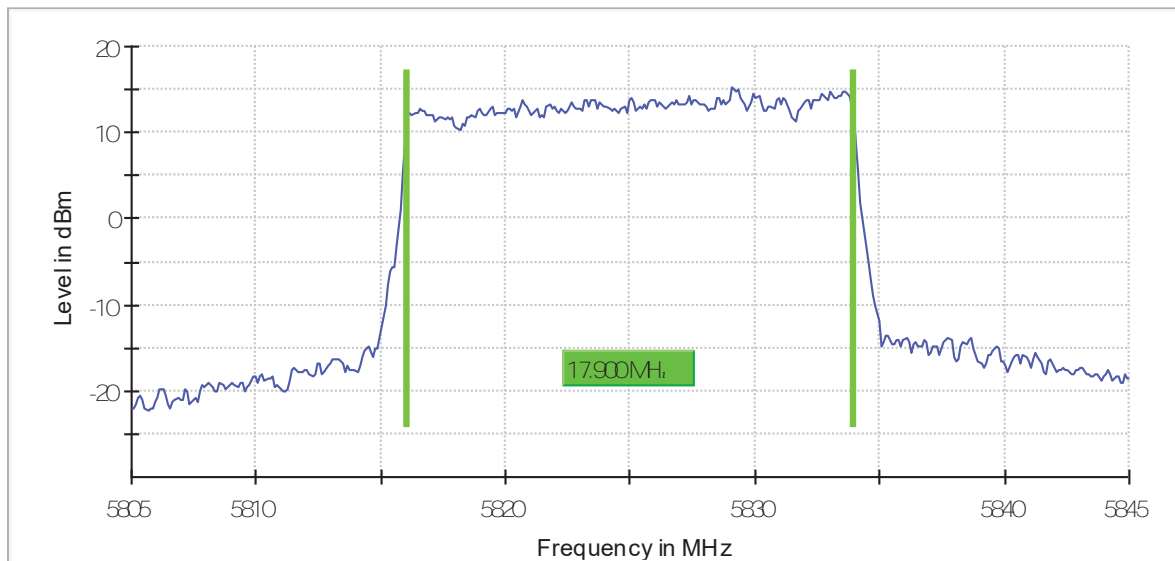
channel 157 (5785 MHz)

99% B₁



channel 165 (5825 MHz)

99% B₁

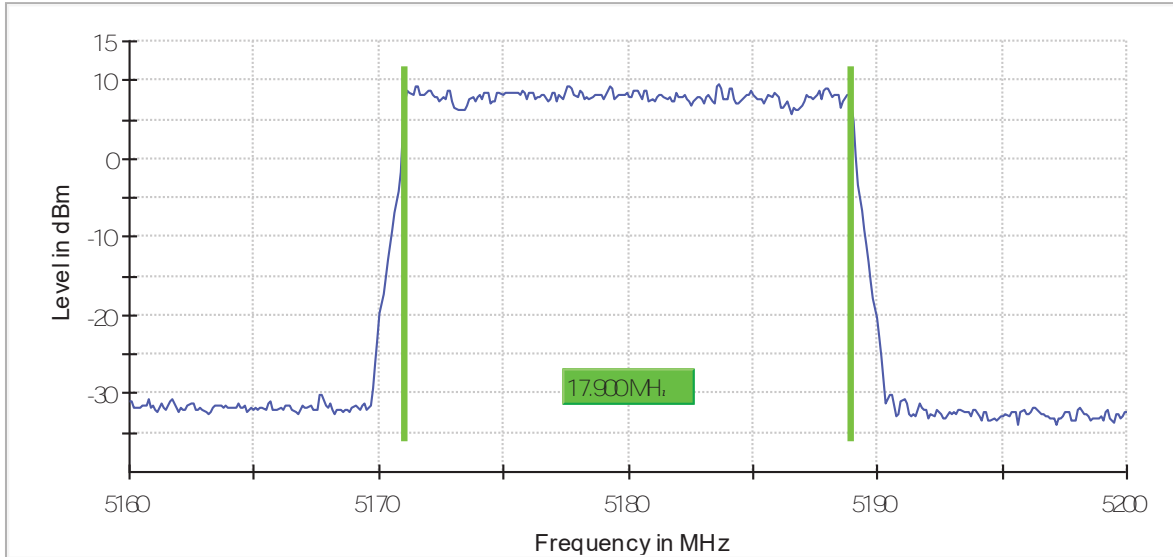


SISO Antenna Port 2:

Mode: QPSK - 20MHz

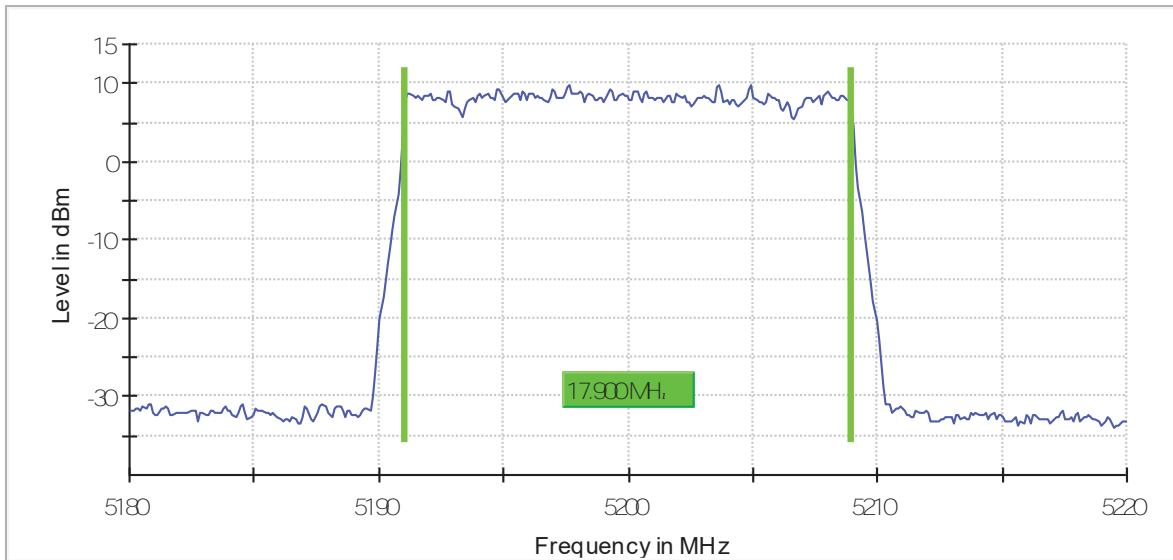
channel 36 (5180 MHz)

99% B₀



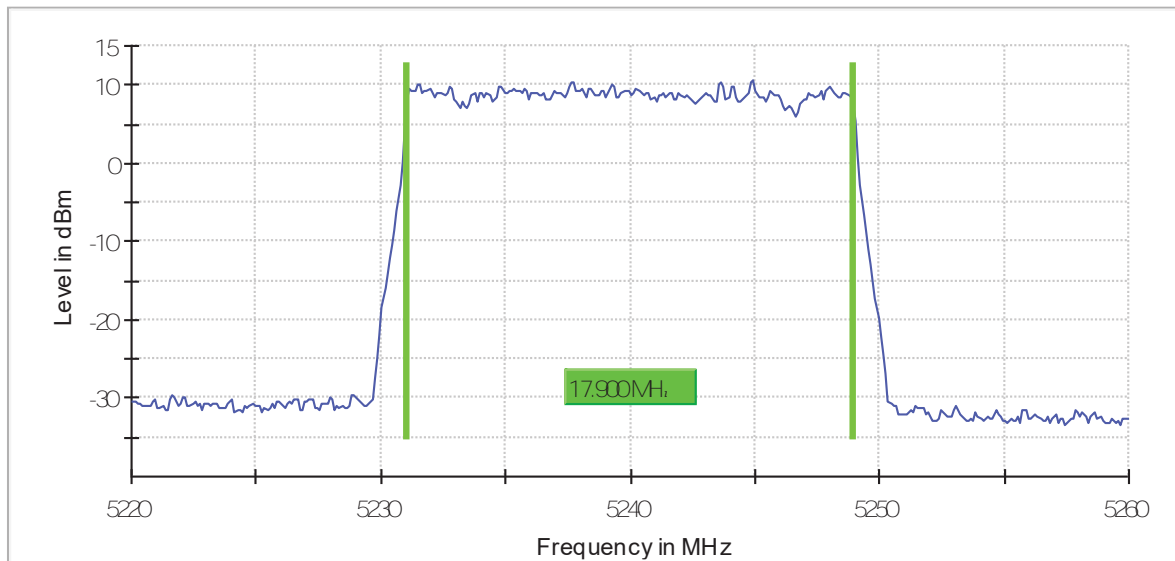
channel 40 (5200 MHz)

99% B₀



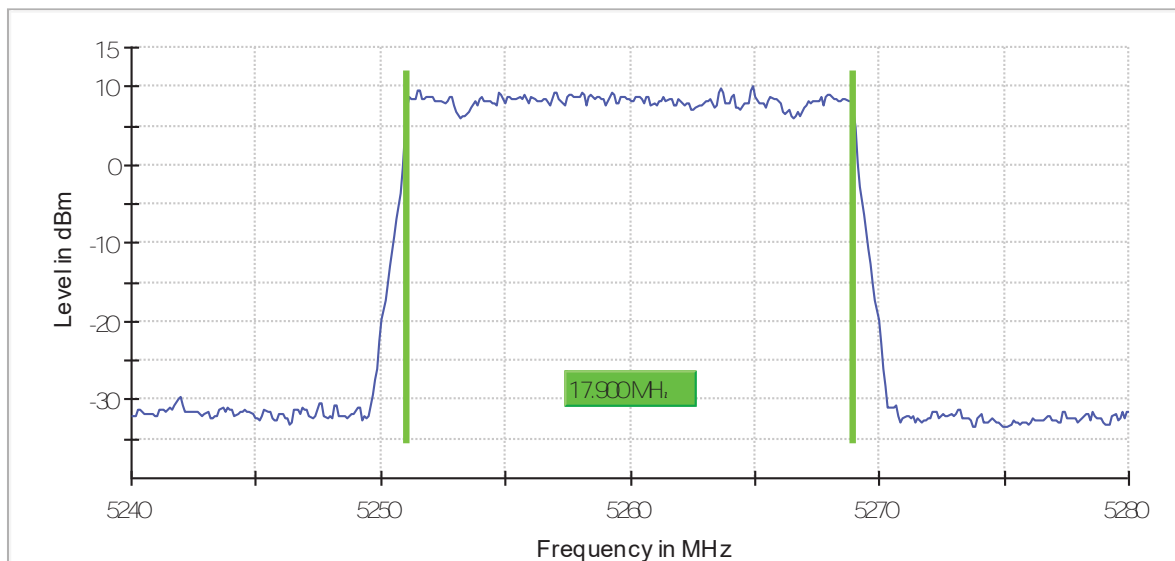
channel 48 (5240 MHz)

99% B_{0.01}



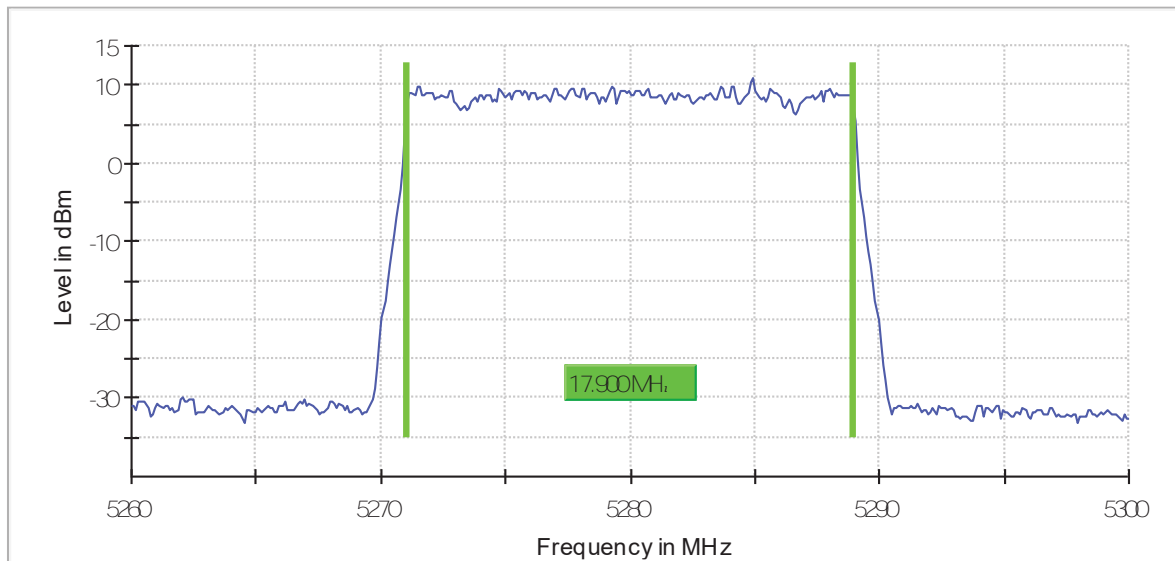
channel 52 (5260 MHz)

99% B_{0.01}



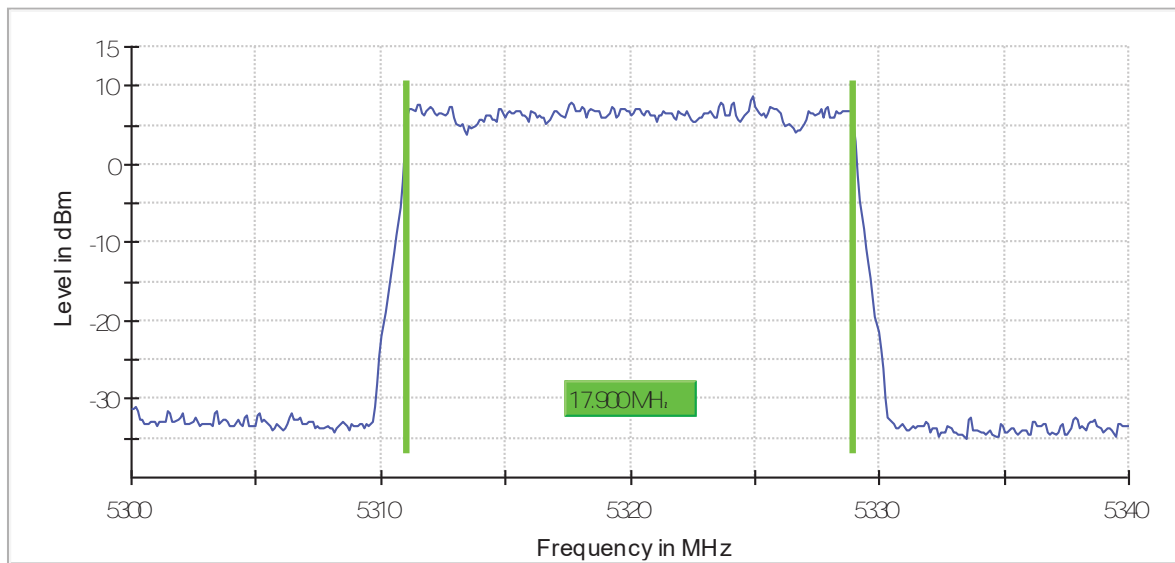
channel 56 (5280 MHz)

99% B₁



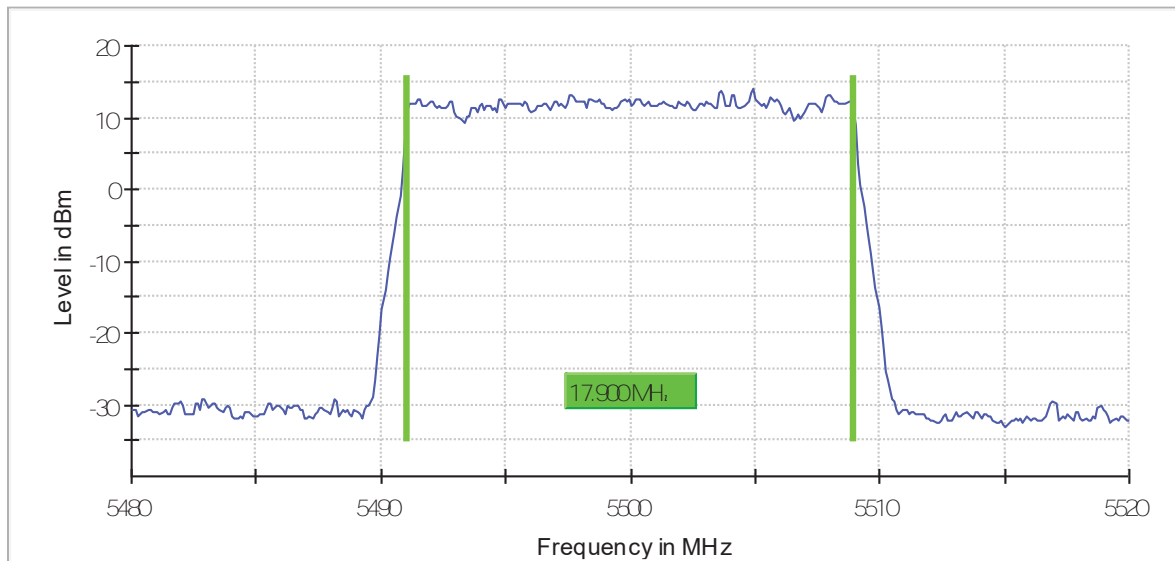
channel 64 (5320 MHz)

99% B₁



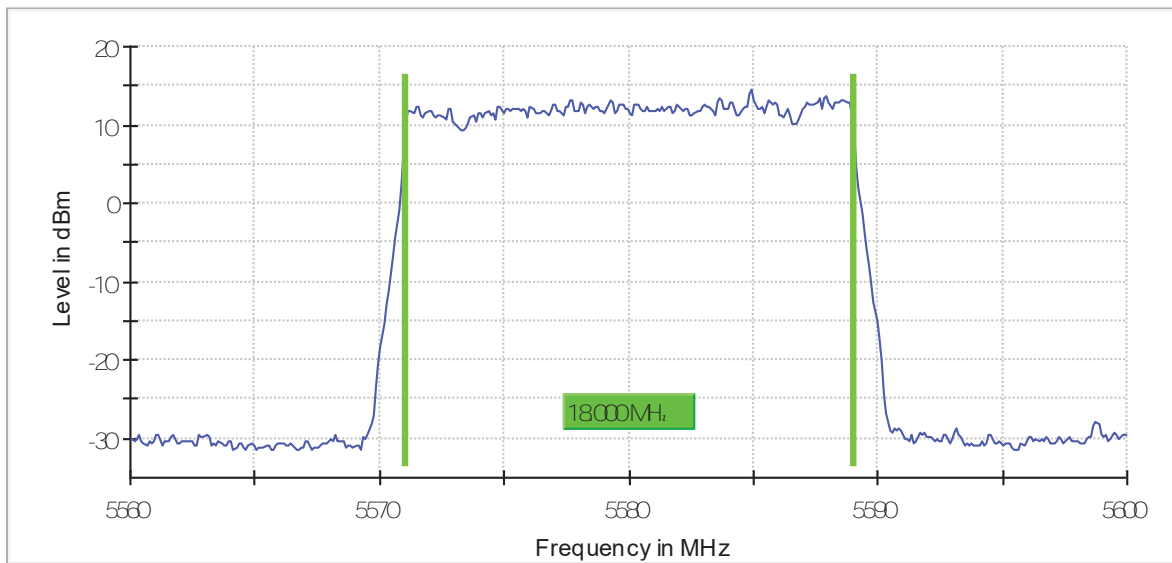
channel 100 (5500 MHz)

99% Bandwidth



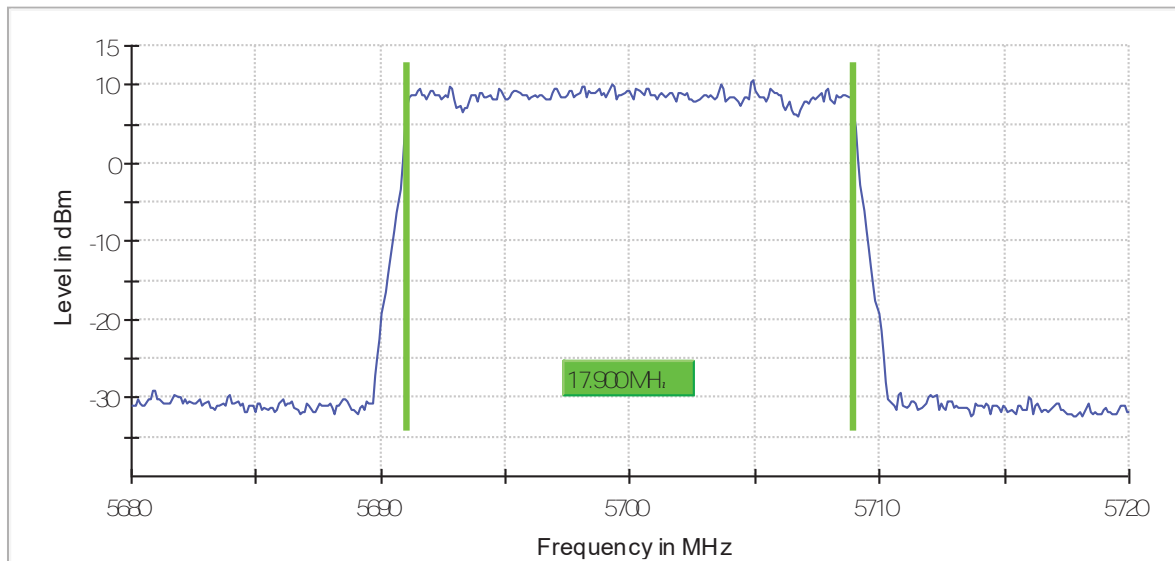
channel 116 (5580 MHz)

99% Bandwidth



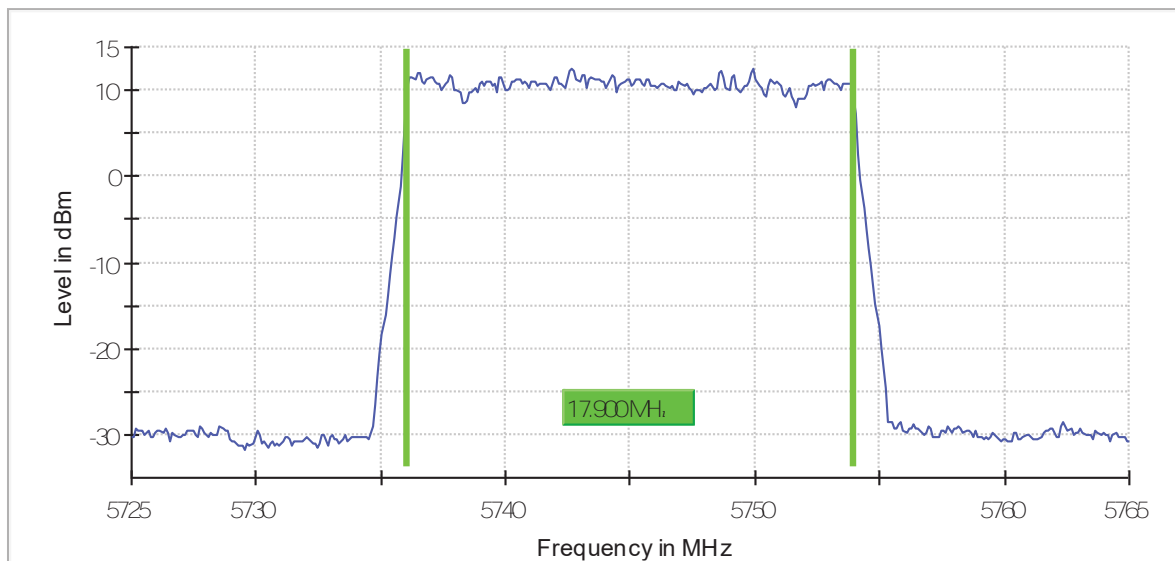
channel 140 (5700 MHz)

99% B₁



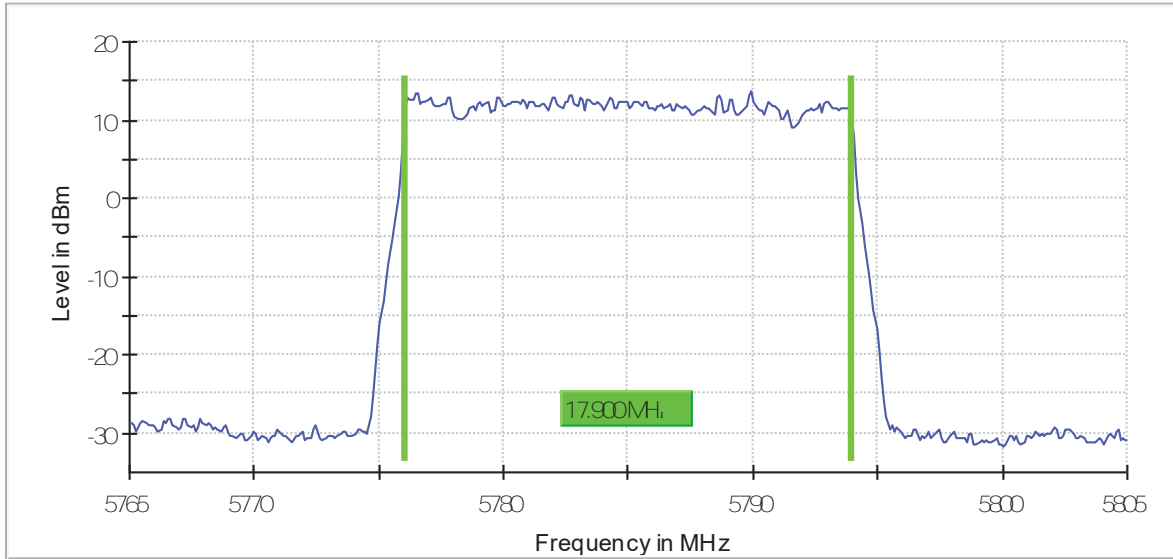
channel 149 (5745 MHz)

99% B₁



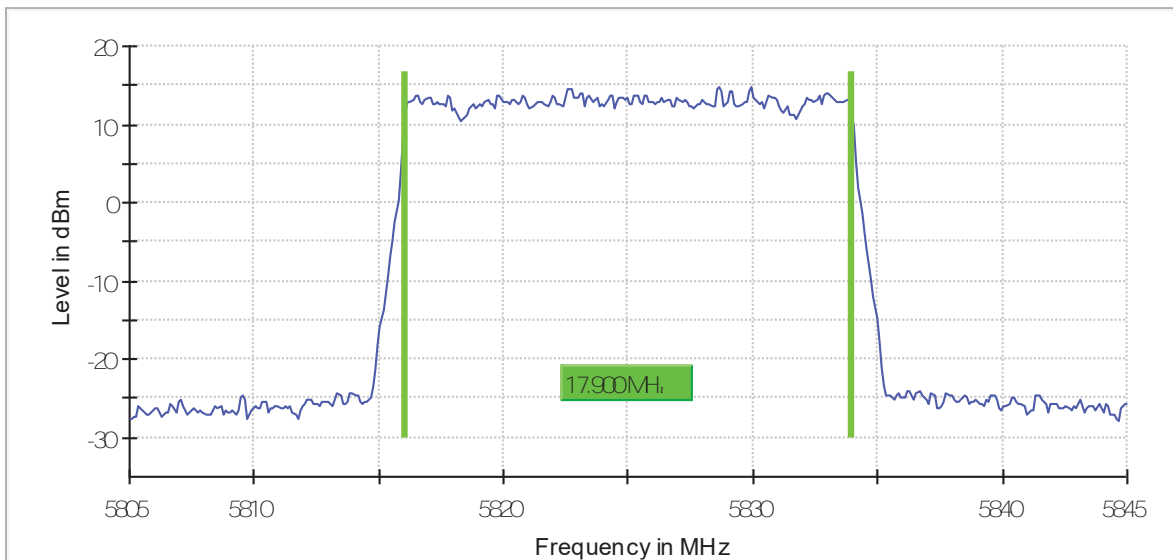
channel 157 (5785 MHz)

99% B₁



channel 165 (5825 MHz)

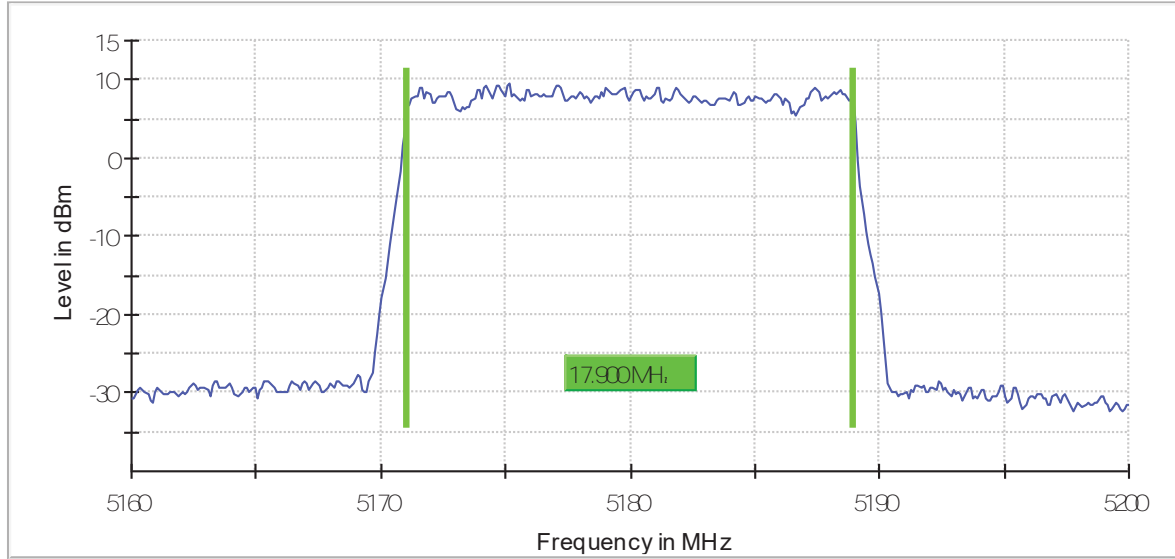
99% B₁



Mode: 16QAM- 20MHz

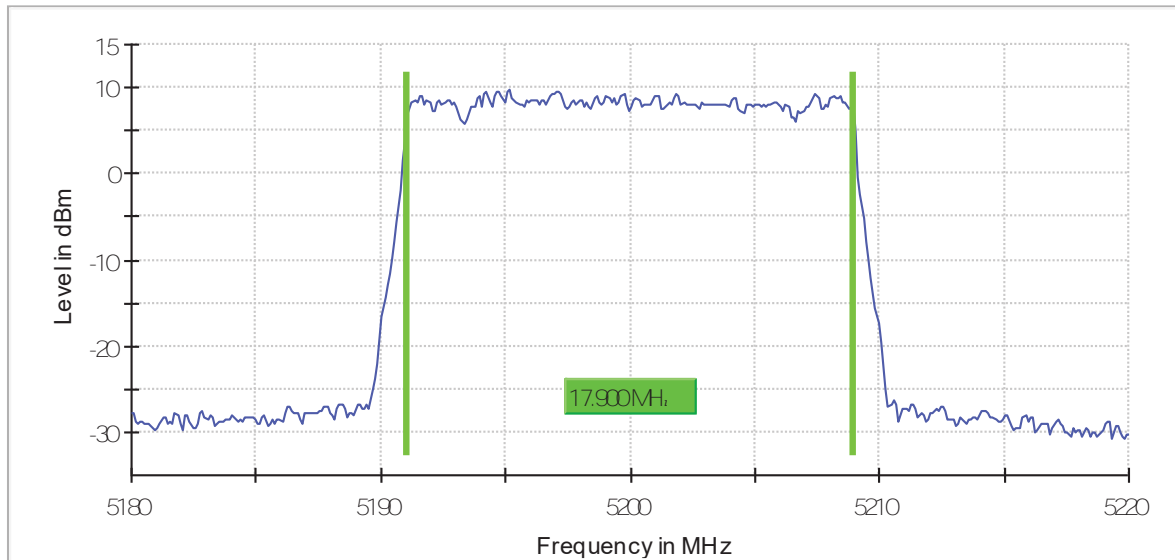
channel 36 (5180 MHz)

99% B₁



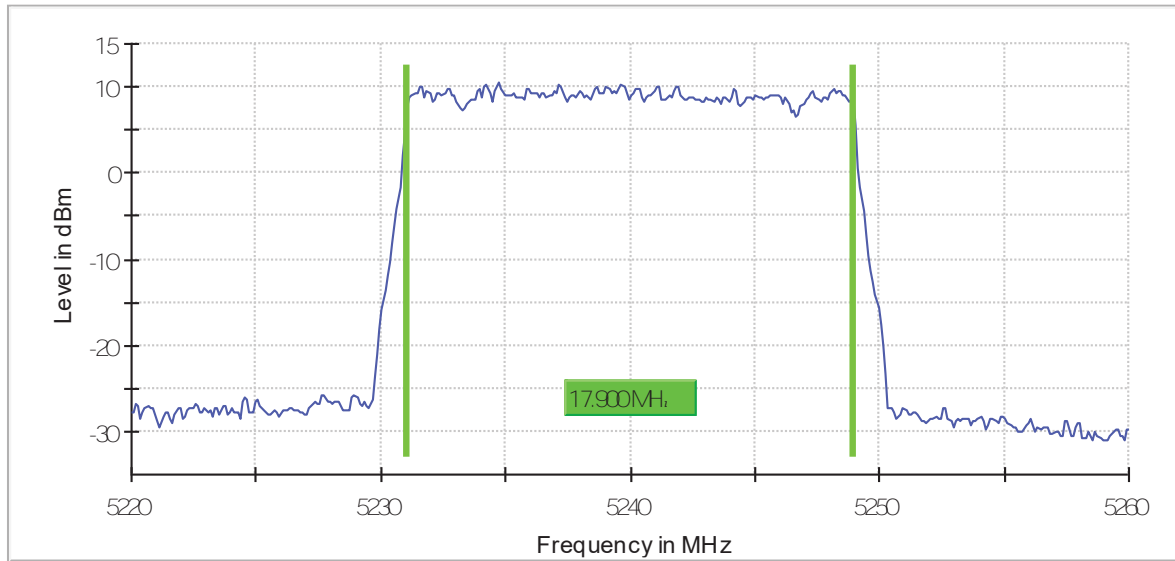
channel 40 (5200 MHz)

99% B₁



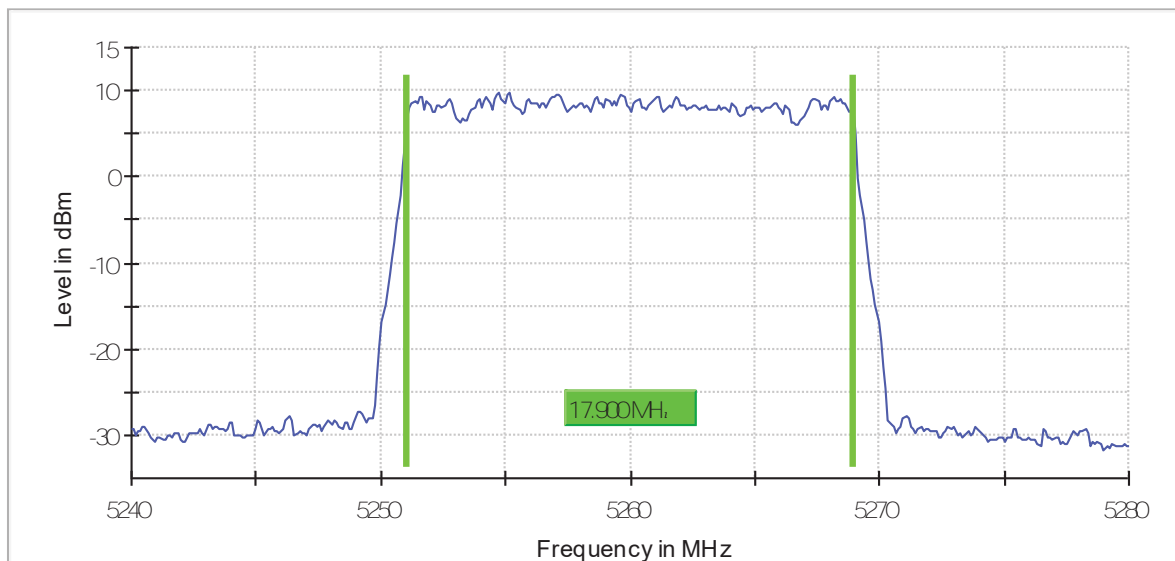
channel 48 (5240 MHz)

99% B₁

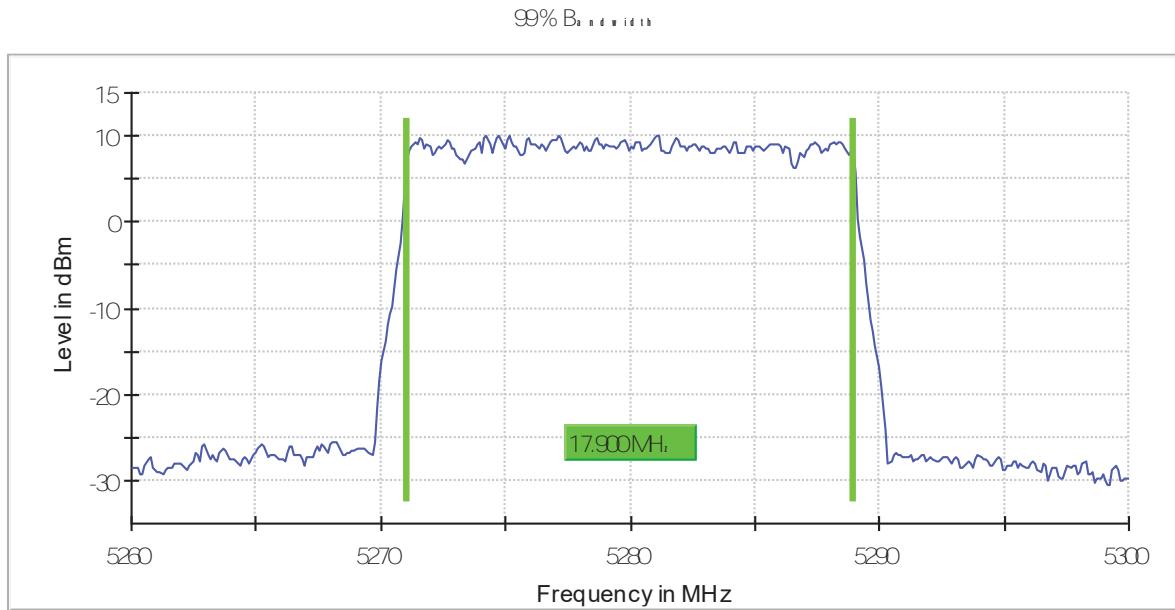


channel 52 (5260 MHz)

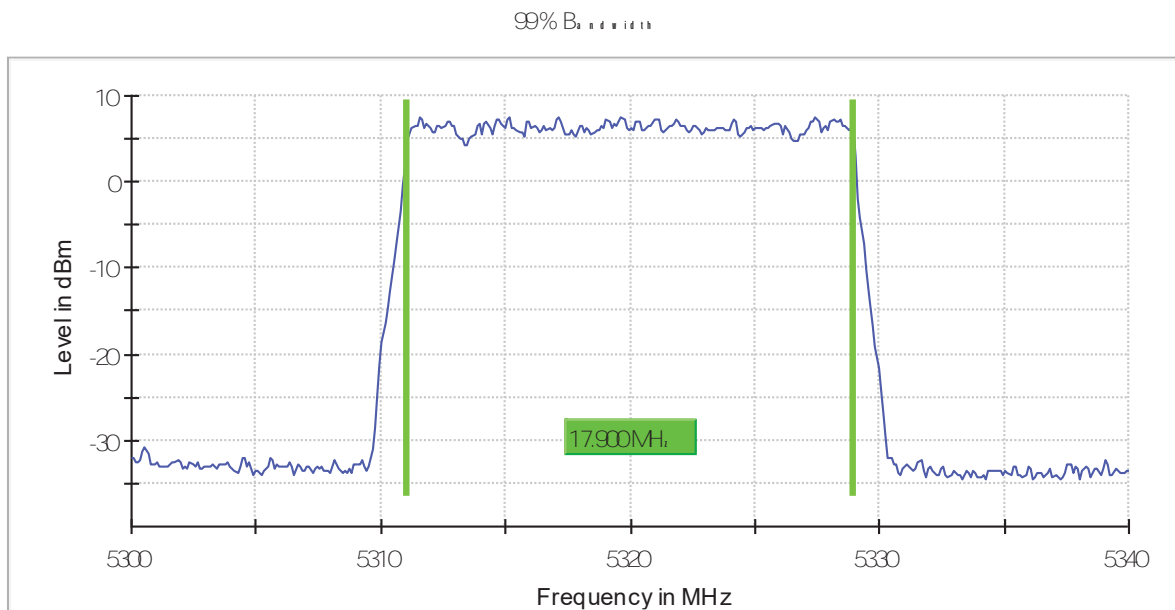
99% B₁



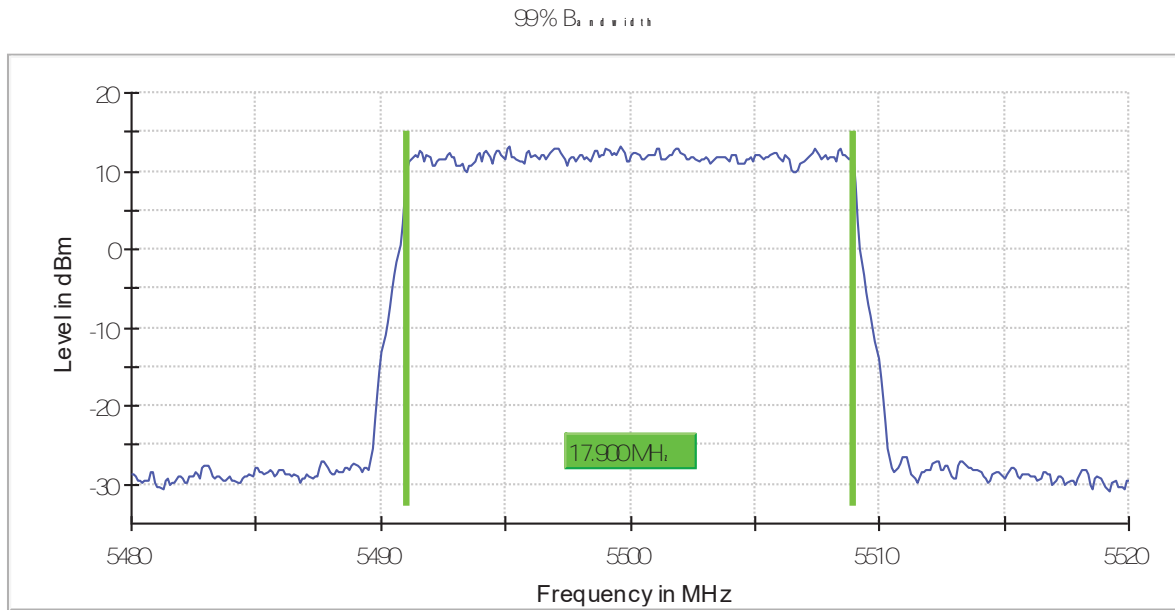
channel 56 (5280 MHz)



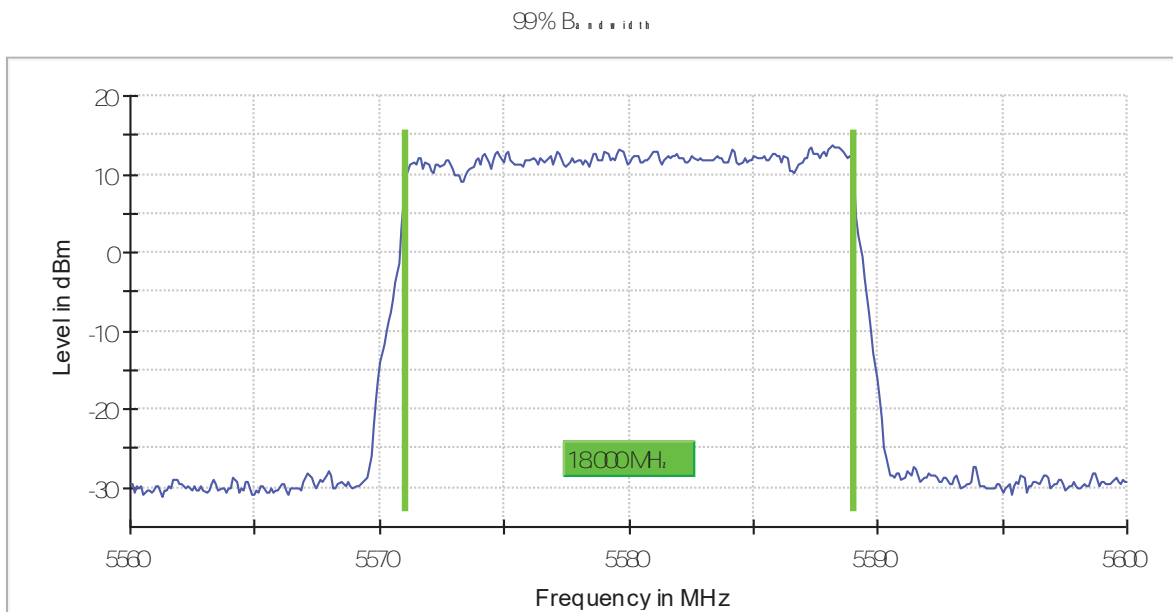
channel 64 (5320 MHz)



channel 100 (5500 MHz)

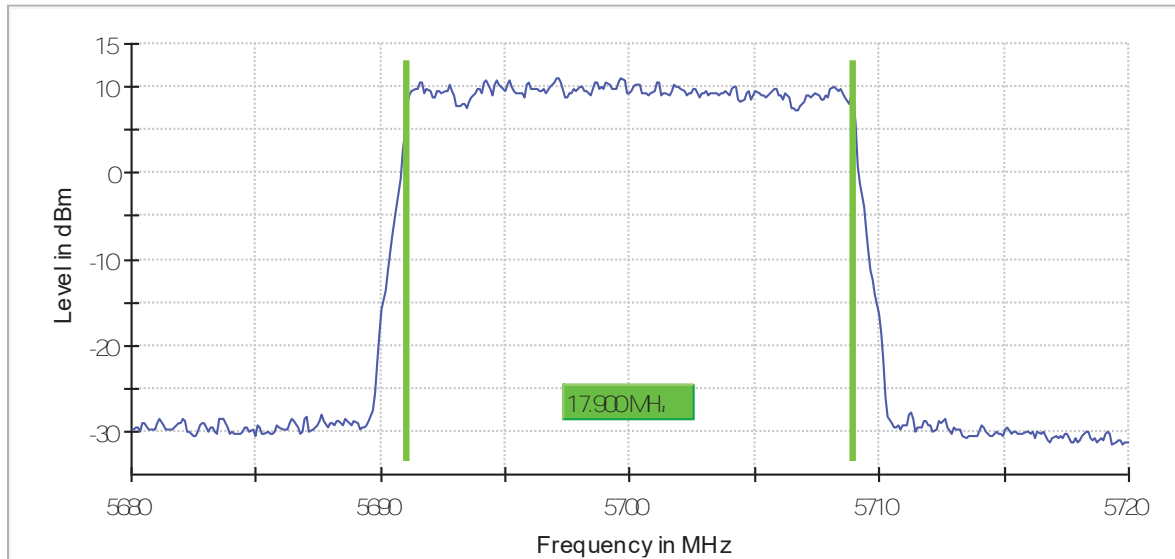


channel 116 (5580 MHz)



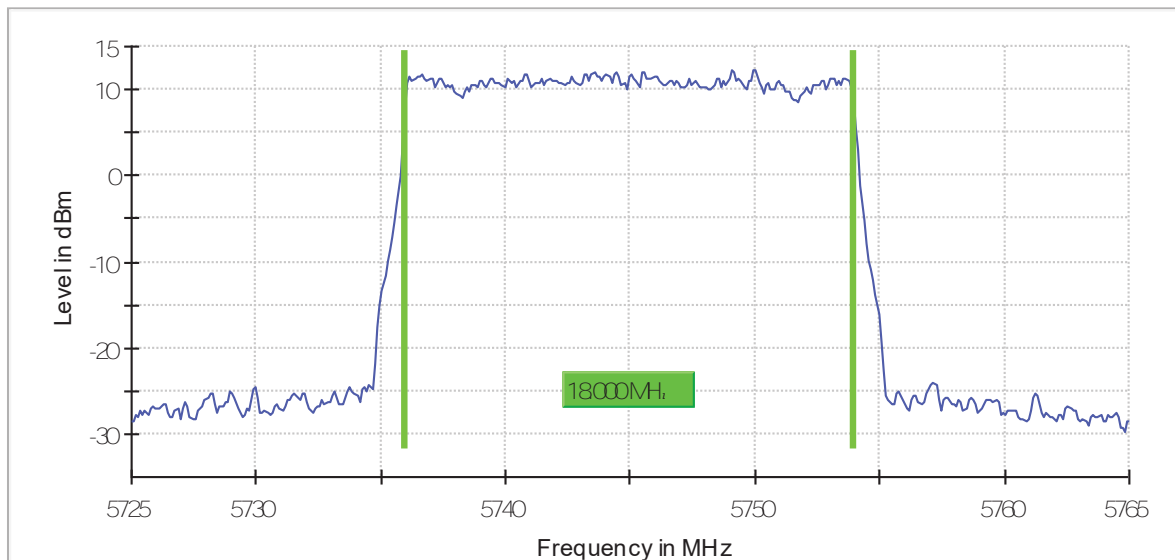
channel 140 (5700 MHz)

99% B₁



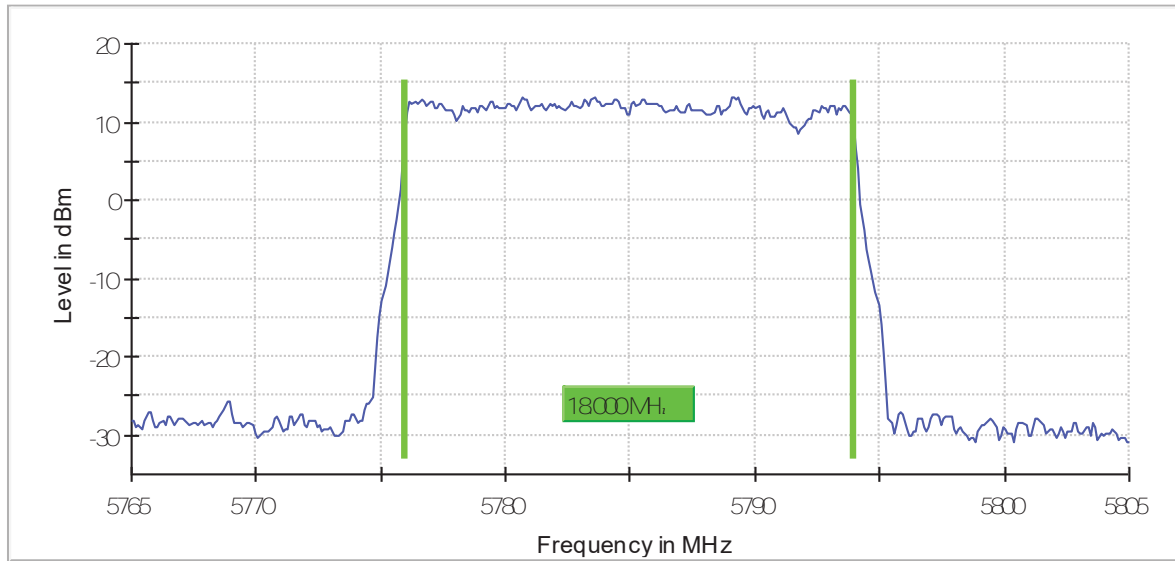
channel 149 (5745 MHz)

99% B₁



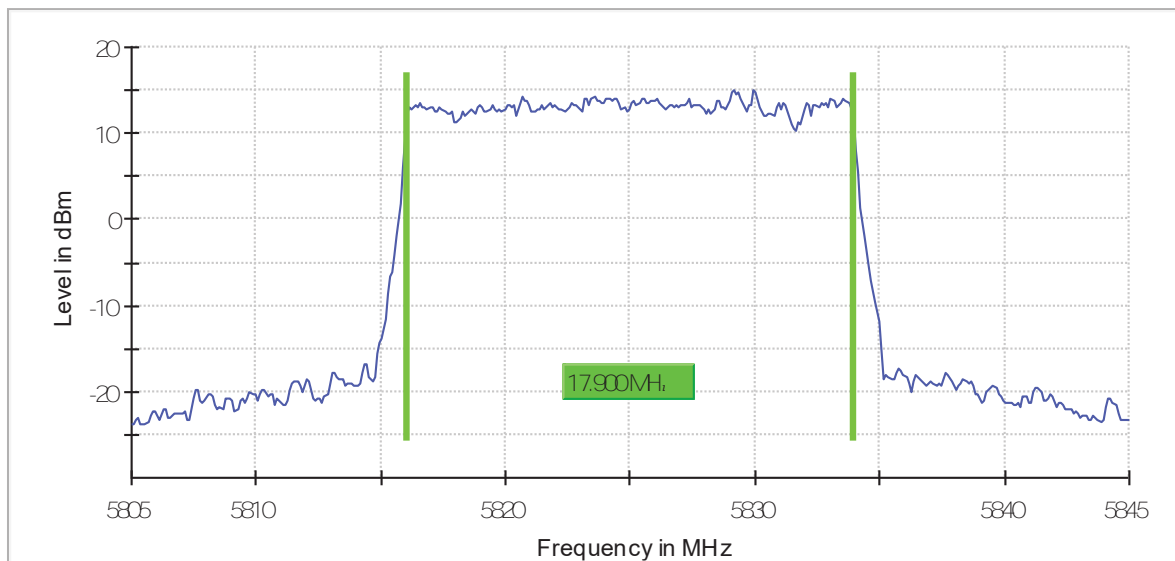
channel 157 (5785 MHz)

99% B₁



channel 165 (5825 MHz)

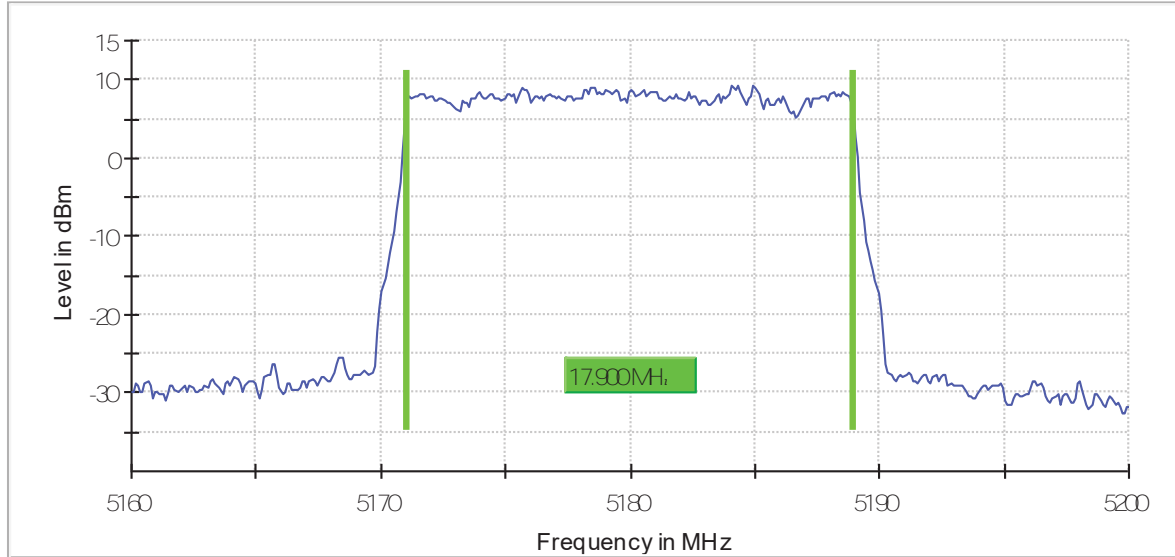
99% B₁



Mode: 64QAM - 20MHz

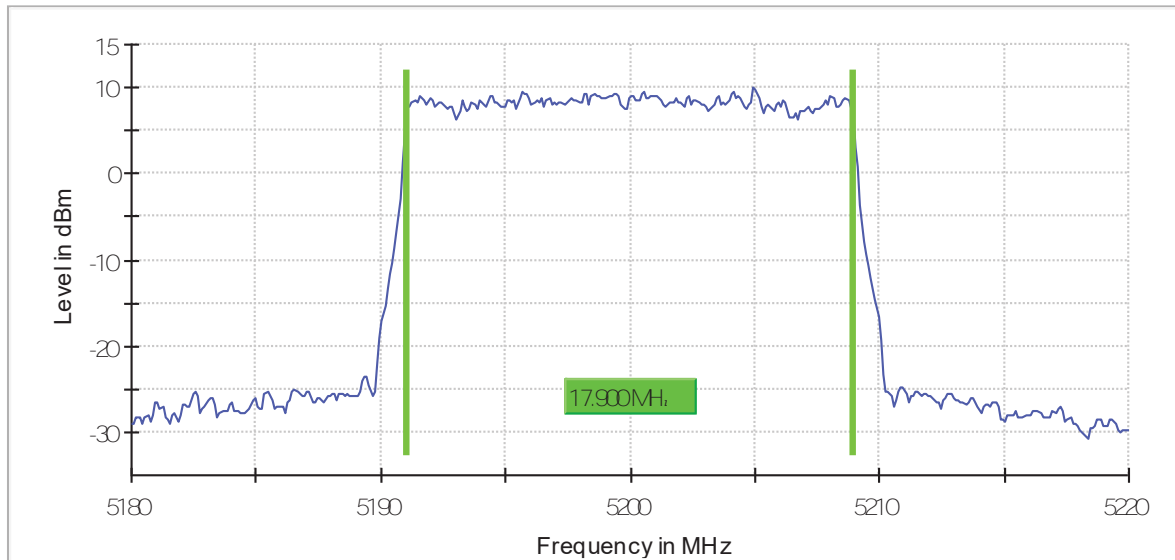
channel 36 (5180 MHz)

99% B₁



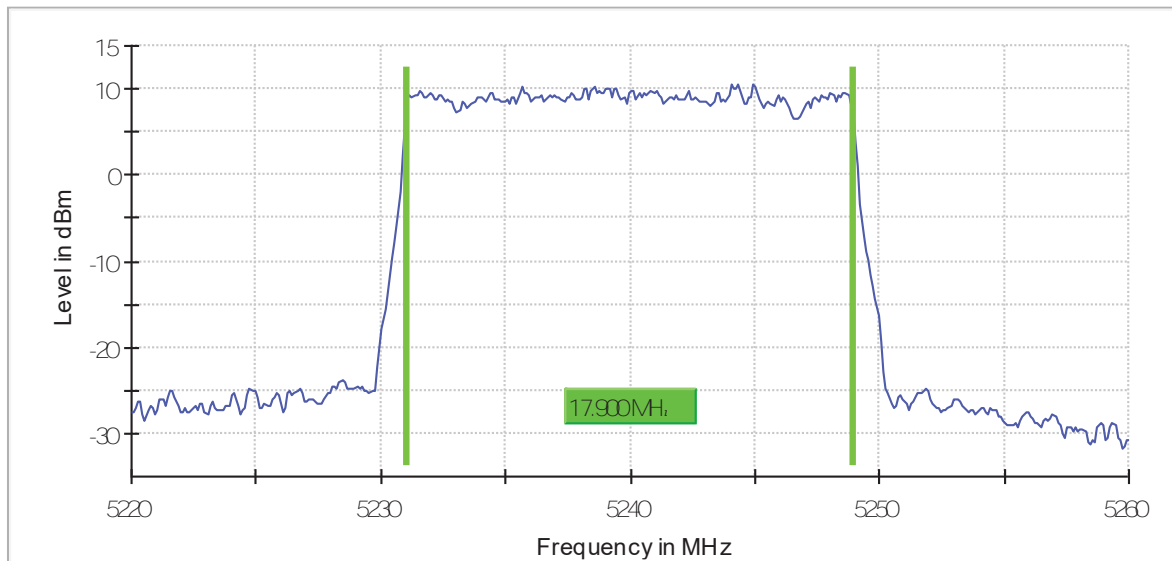
channel 40 (5200 MHz)

99% B₁



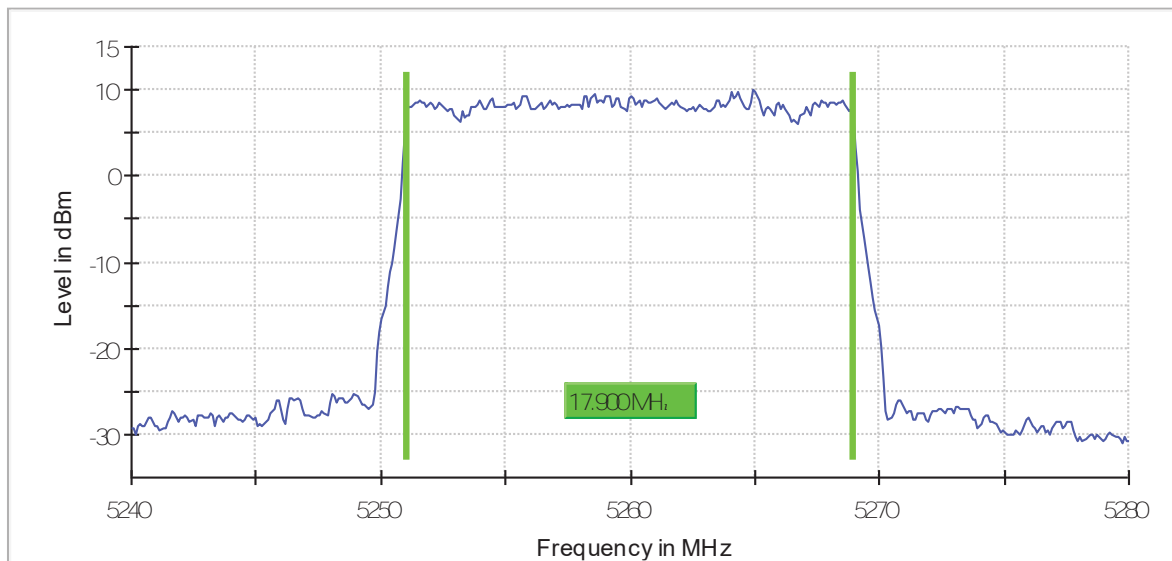
channel 48 (5240 MHz)

99% B₁



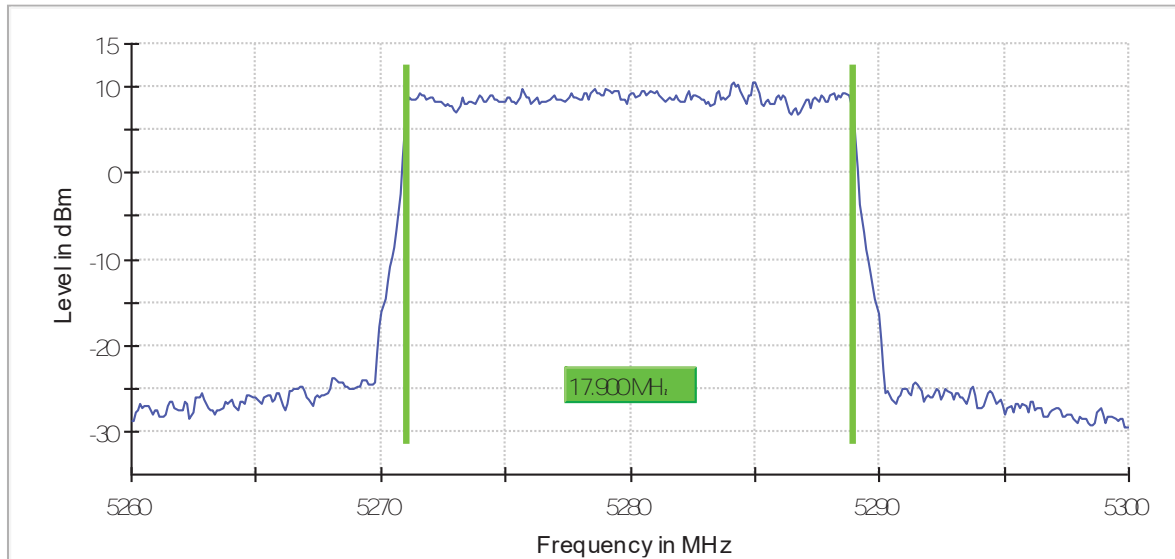
channel 52 (5260 MHz)

99% B₁



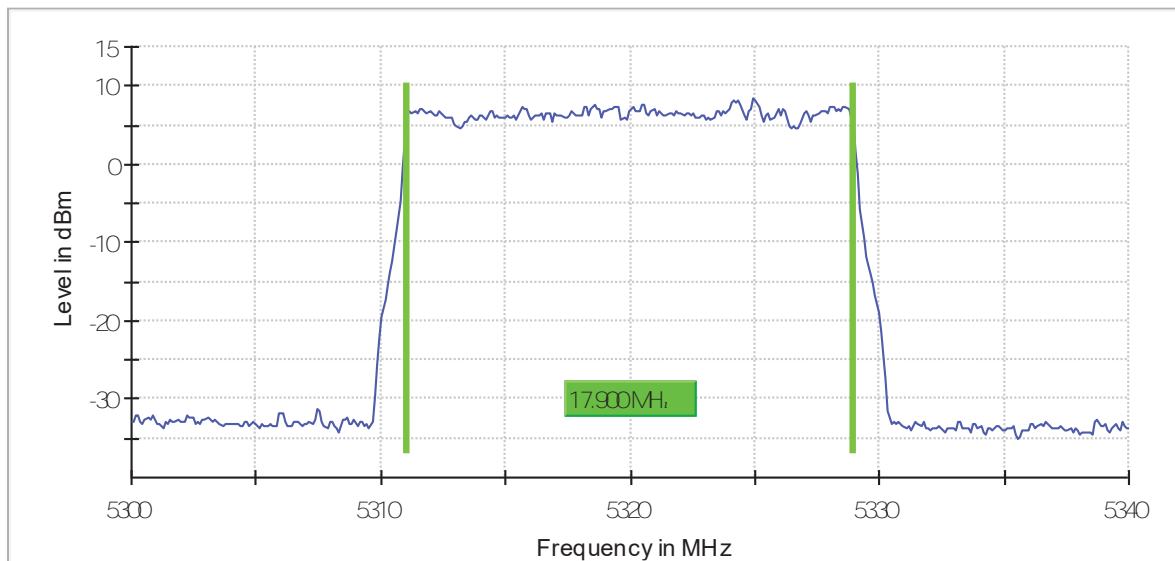
channel 56 (5280 MHz)

99% B₁

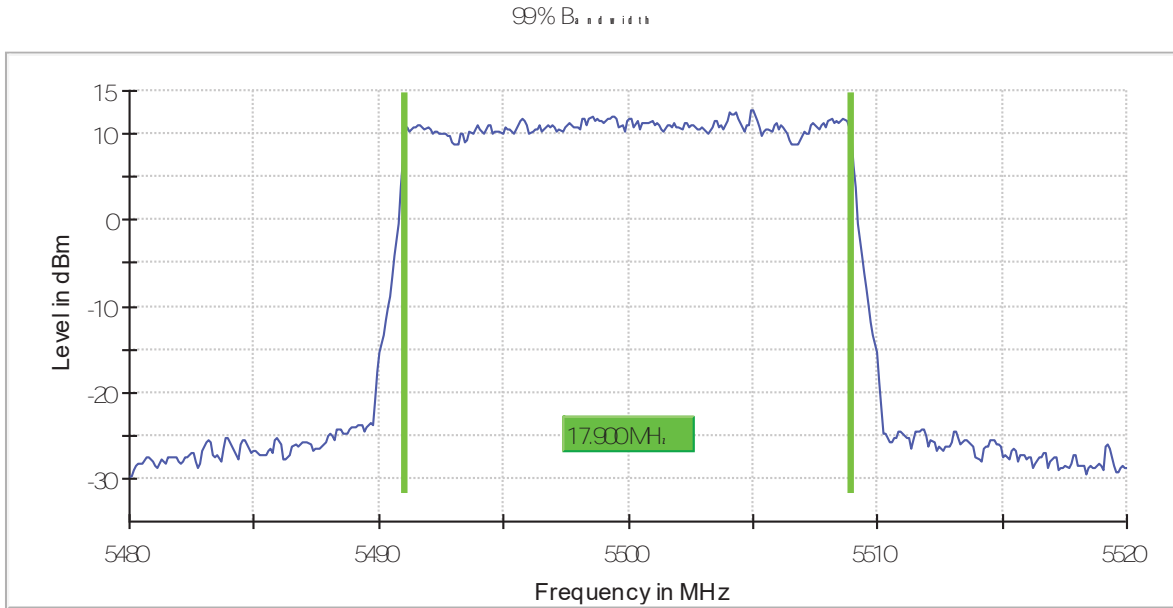


channel 64 (5320 MHz)

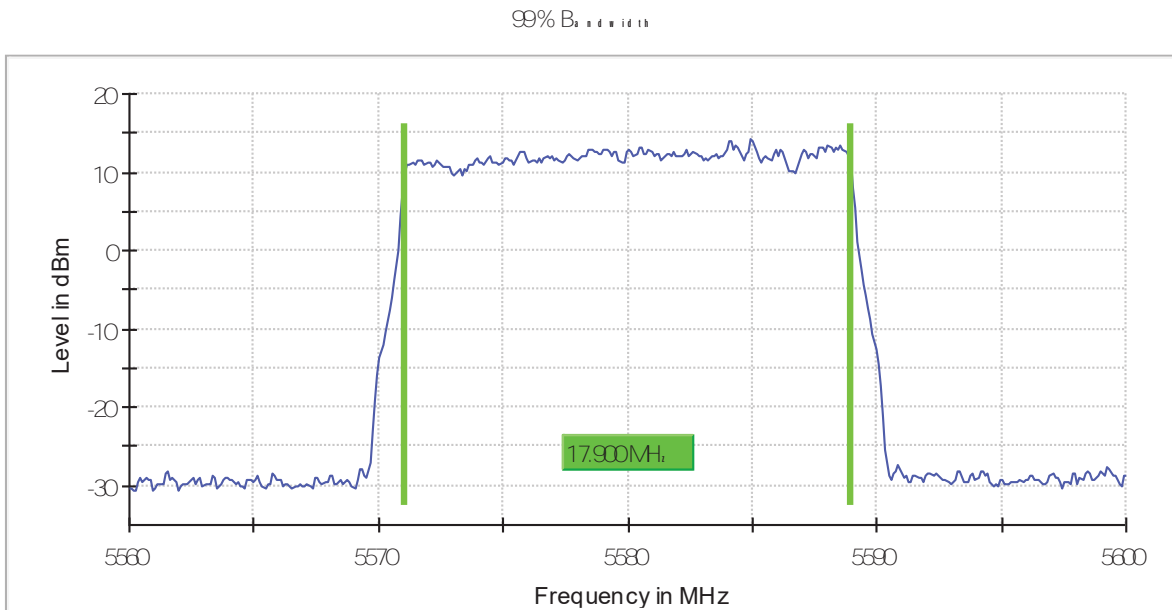
99% B₁



channel 100 (5500 MHz)

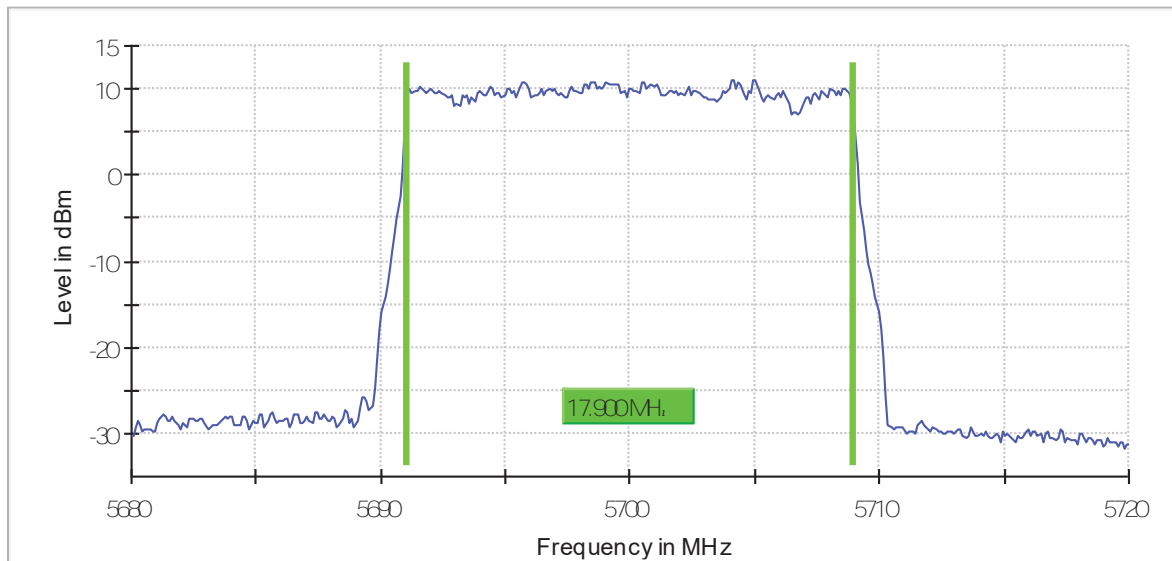


channel 116 (5580 MHz)



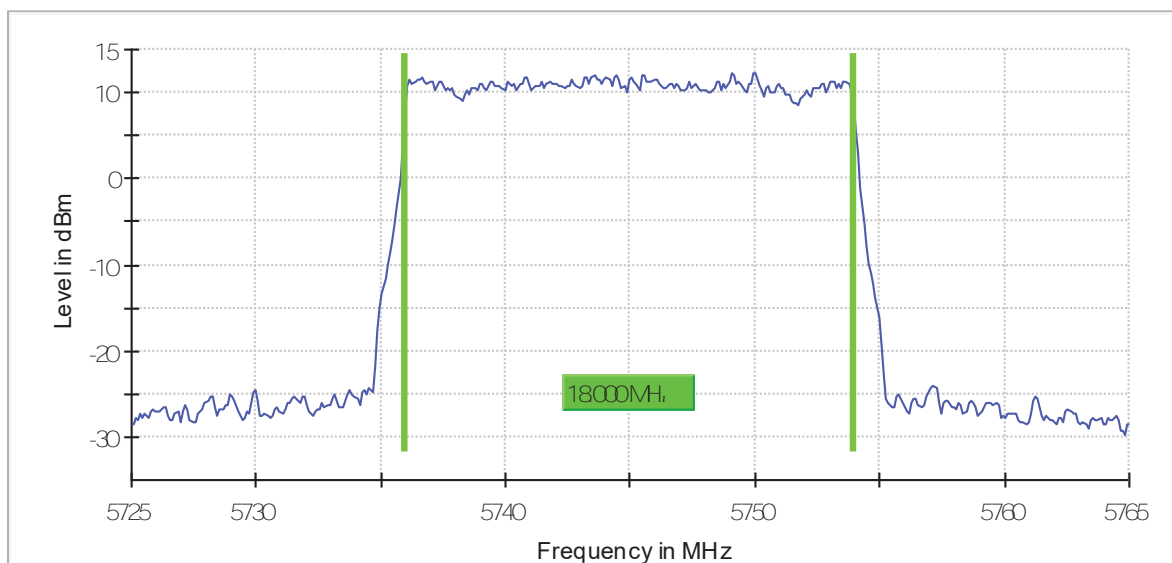
channel 140 (5700 MHz)

99% B₁



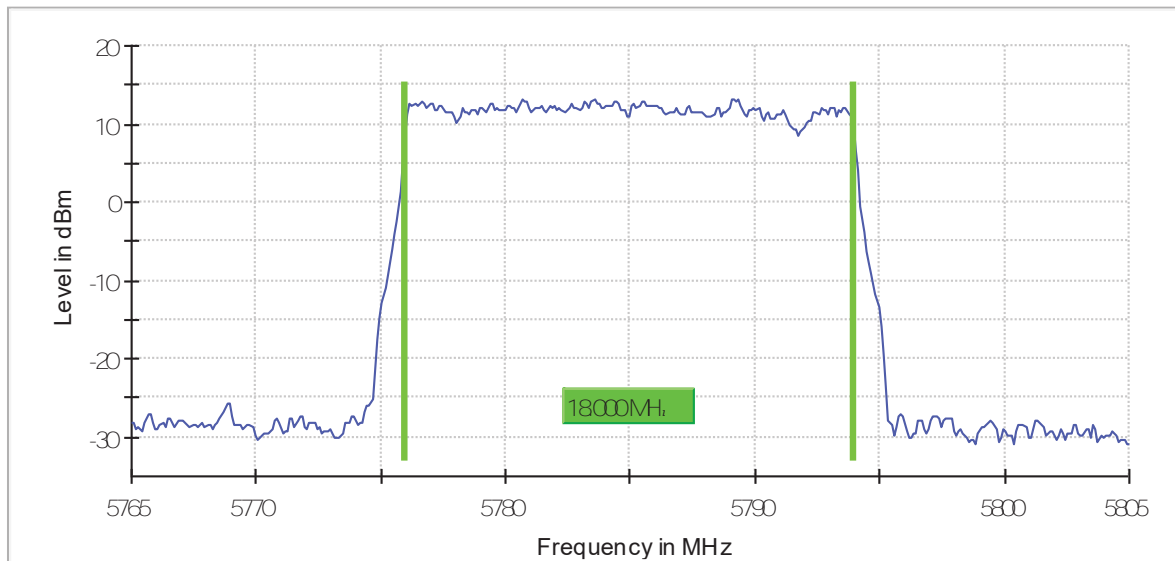
channel 149 (5745 MHz)

99% B₁



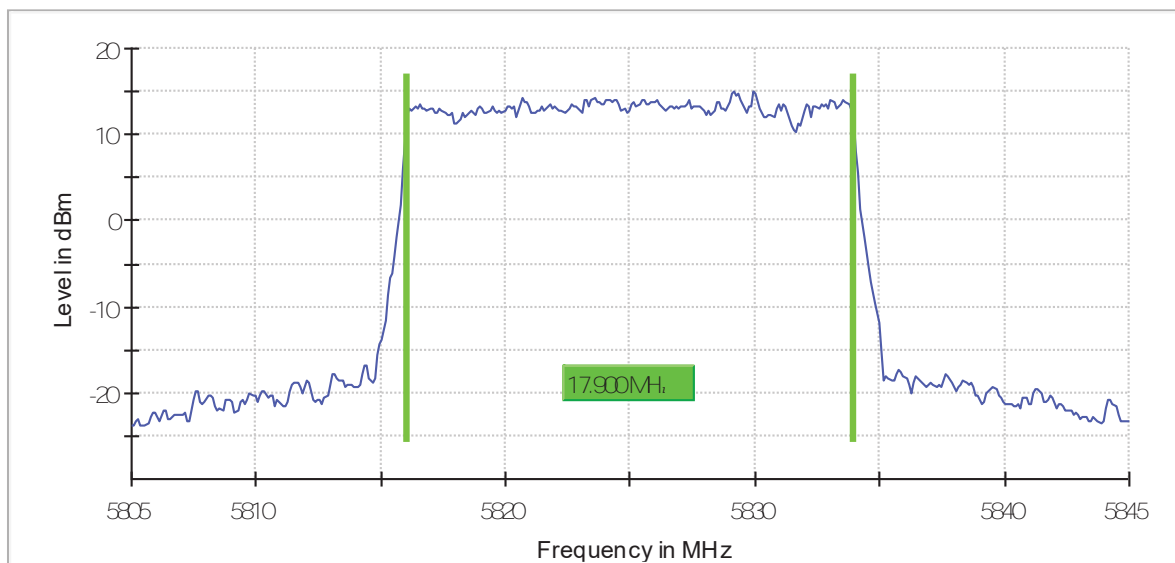
channel 157 (5785 MHz)

99% B₀



channel 165 (5825 MHz)

99% B₀



Section 15.407 Subclause 15.403(i) Transmitter 26 dB Emission Bandwidth (EBW)

RESULTS:

The 26 dB emission Bandwidth was measured using the method according to point C) 1) of 789033 D02 General UNII Test Procedures New Rules v02r01.

Measurements were performed on all modes for testing.

SISO Antenna Port 1:

Mode: QPSK – 20MHz

| | 26dB Emission Bandwidth (MHz) | Measurement uncertainty (KHz) |
|------------------------|-------------------------------|-------------------------------|
| channel 36 (5180 MHz) | 19.700 | <±40.04 |
| channel 40 (5200 MHz) | 19.600 | |
| channel 48 (5240 MHz) | 19.700 | |
| channel 52 (5260 MHz) | 19.700 | |
| channel 56 (5280 MHz) | 19.600 | |
| channel 64 (5320 MHz) | 19.600 | |
| channel 100 (5500 MHz) | 19.700 | |
| channel 116 (5580 MHz) | 19.700 | |
| channel 140 (5700 MHz) | 19.600 | |

Mode: 16QAM – 20MHz

| | 26dB Emission Bandwidth (MHz) | Measurement uncertainty (KHz) |
|------------------------|-------------------------------|-------------------------------|
| channel 36 (5180 MHz) | 19.900 | <±40.04 |
| channel 40 (5200 MHz) | 19.900 | |
| channel 48 (5240 MHz) | 20.000 | |
| channel 52 (5260 MHz) | 19.900 | |
| channel 56 (5280 MHz) | 20.000 | |
| channel 64 (5320 MHz) | 19.900 | |
| channel 100 (5500 MHz) | 19.800 | |
| channel 116 (5580 MHz) | 19.900 | |
| channel 140 (5700 MHz) | 19.900 | |

Mode: 64QAM – 20MHz

| | 26dB Emission Bandwidth (MHz) | Measurement uncertainty (KHz) |
|------------------------|-------------------------------|-------------------------------|
| channel 36 (5180 MHz) | 20.000 | <±40.04 |
| channel 40 (5200 MHz) | 19.900 | |
| channel 48 (5240 MHz) | 19.900 | |
| channel 52 (5260 MHz) | 19.900 | |
| channel 56 (5280 MHz) | 19.800 | |
| channel 64 (5320 MHz) | 19.800 | |
| channel 100 (5500 MHz) | 19.900 | |
| channel 116 (5580 MHz) | 19.900 | |
| channel 140 (5700 MHz) | 19.800 | |

SISO Antenna Port 2:

Mode: QPSK – 20MHz

| | 26dB Emission Bandwidth (MHz) | Measurement uncertainty (KHz) |
|------------------------|-------------------------------|-------------------------------|
| channel 36 (5180 MHz) | 19.700 | <±40.04 |
| channel 40 (5200 MHz) | 19.700 | |
| channel 48 (5240 MHz) | 19.700 | |
| channel 52 (5260 MHz) | 19.700 | |
| channel 56 (5280 MHz) | 19.700 | |
| channel 64 (5320 MHz) | 19.700 | |
| channel 100 (5500 MHz) | 19.700 | |
| channel 116 (5580 MHz) | 19.600 | |
| channel 140 (5700 MHz) | 19.700 | |

Mode: 16QAM – 20MHz

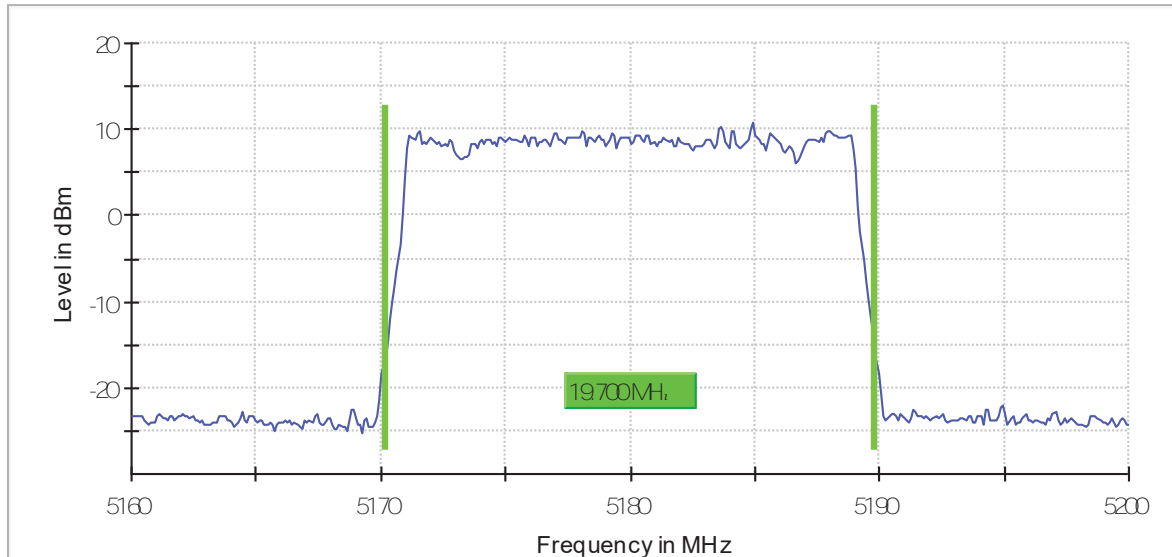
| | 26dB Emission Bandwidth (MHz) | Measurement uncertainty (KHz) |
|------------------------|-------------------------------|-------------------------------|
| channel 36 (5180 MHz) | 19.900 | <±40.04 |
| channel 40 (5200 MHz) | 19.800 | |
| channel 48 (5240 MHz) | 19.800 | |
| channel 52 (5260 MHz) | 20.000 | |
| channel 56 (5280 MHz) | 19.900 | |
| channel 64 (5320 MHz) | 19.900 | |
| channel 100 (5500 MHz) | 19.900 | |
| channel 116 (5580 MHz) | 19.900 | |
| channel 140 (5700 MHz) | 19.800 | |

Mode: 64QAM – 20MHz

| | 26dB Emission Bandwidth (MHz) | Measurement uncertainty (KHz) |
|------------------------|-------------------------------|-------------------------------|
| channel 36 (5180 MHz) | 19.900 | <±40.04 |
| channel 40 (5200 MHz) | 19.900 | |
| channel 48 (5240 MHz) | 19.900 | |
| channel 52 (5260 MHz) | 19.900 | |
| channel 56 (5280 MHz) | 19.900 | |
| channel 64 (5320 MHz) | 19.900 | |
| channel 100 (5500 MHz) | 19.900 | |
| channel 116 (5580 MHz) | 19.800 | |
| channel 140 (5700 MHz) | 19.900 | |

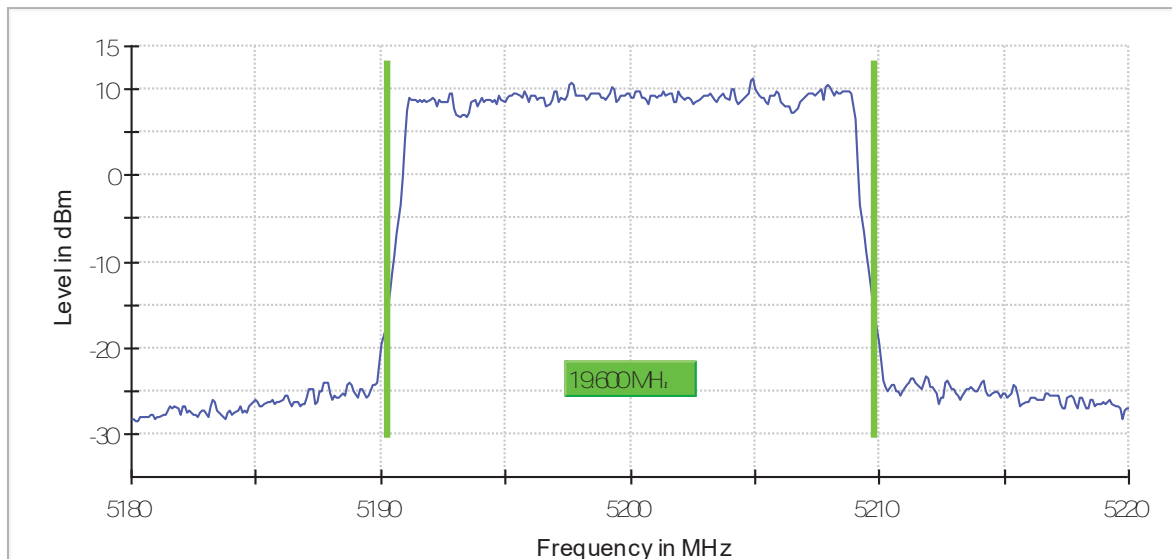
SISO Antenna Port 1:
Mode: QPSK – 20MHz
channel 36 (5180 MHz)

26 BB.



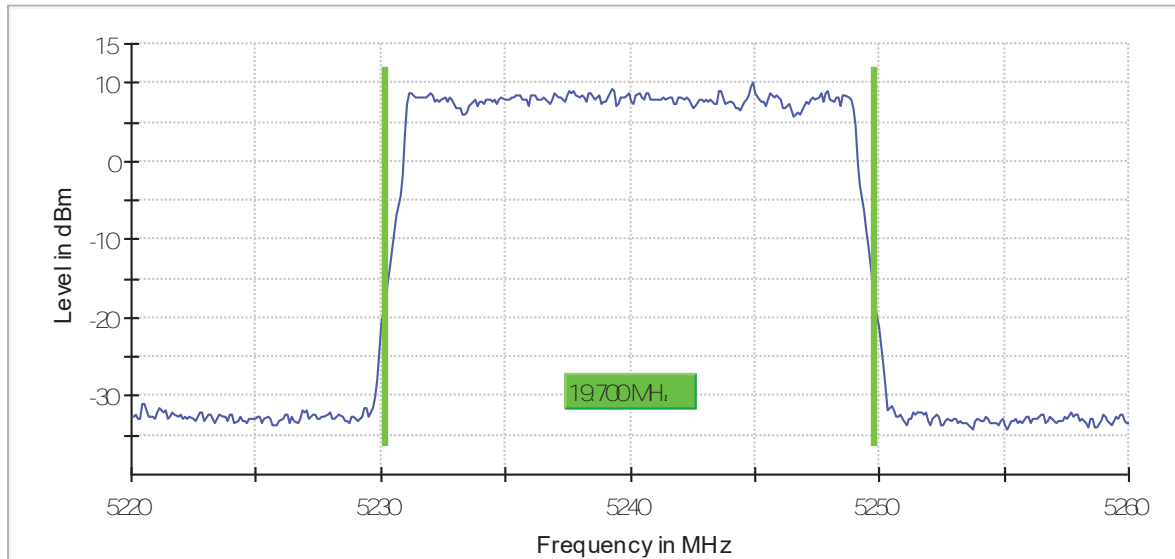
channel 40 (5200 MHz)

26 BB.



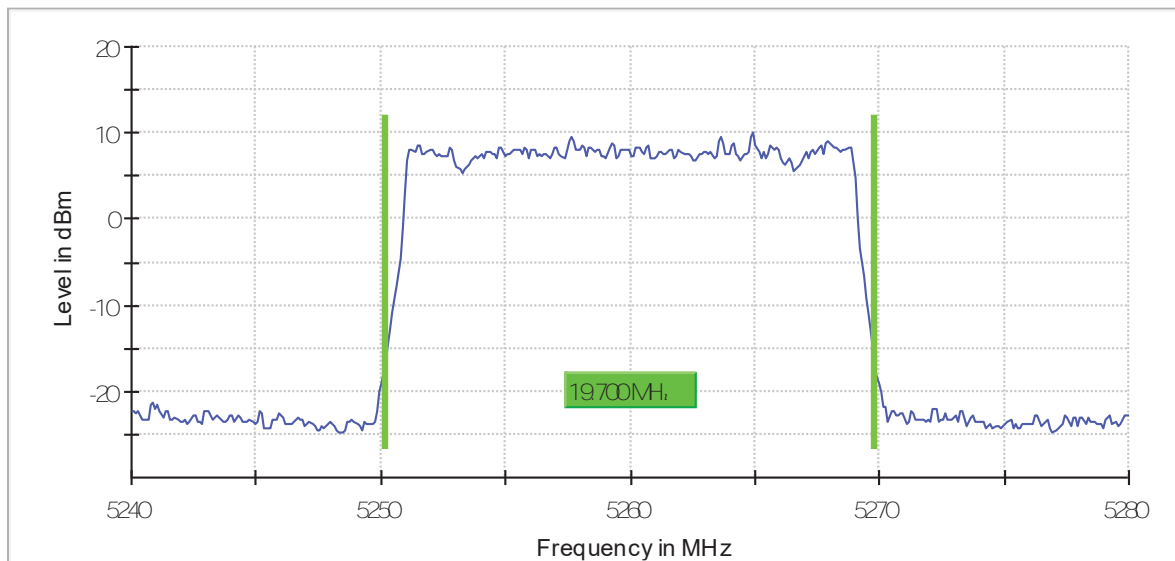
channel 48 (5240 MHz)

26. BB.



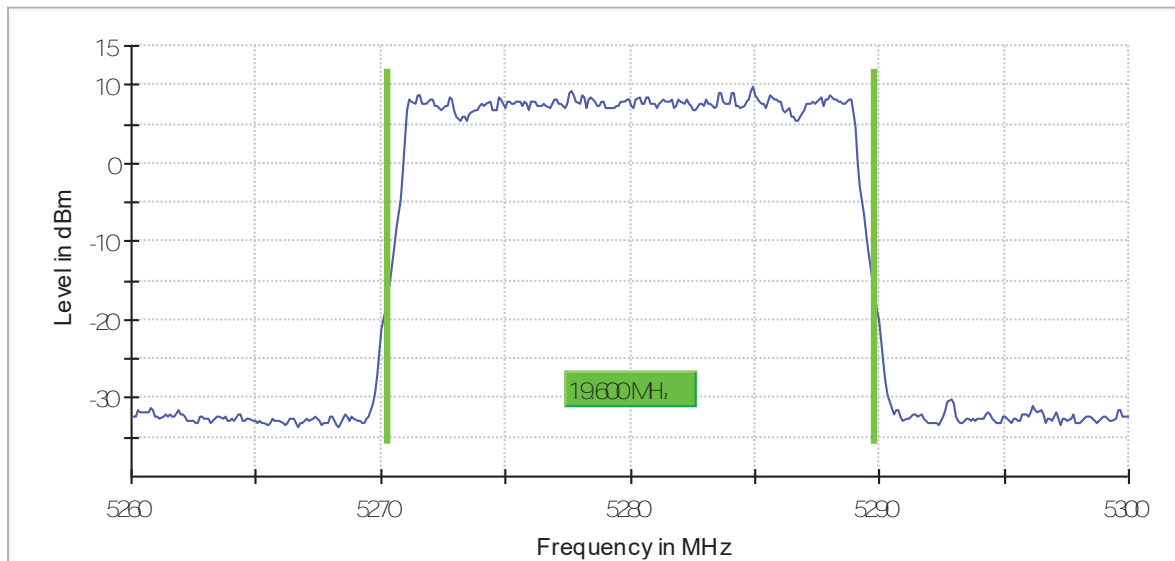
channel 52 (5260 MHz)

26. BB.



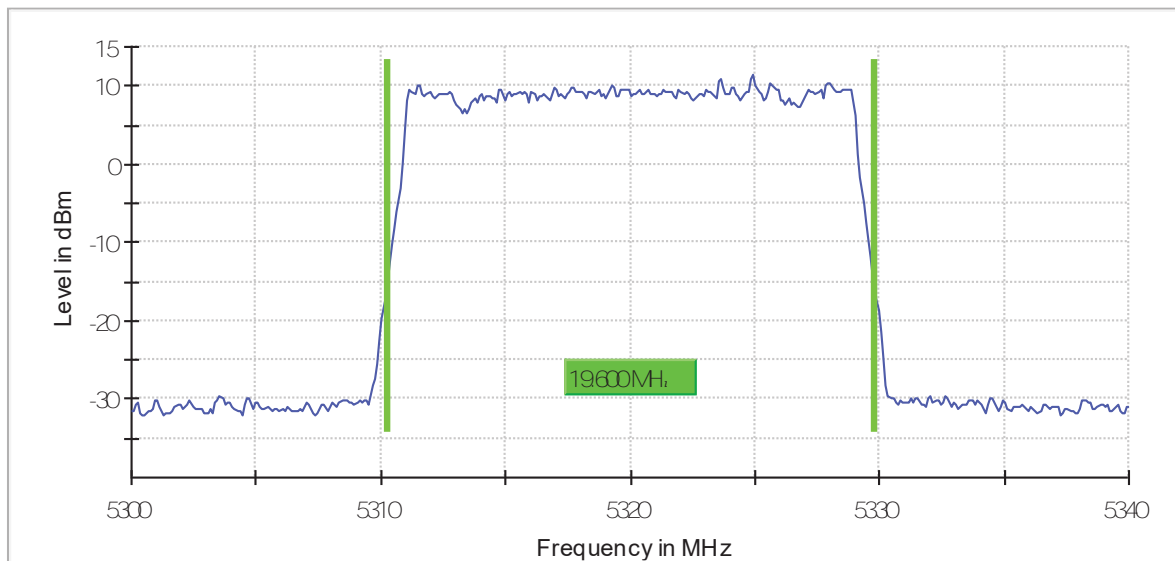
channel 56 (5280 MHz)

26. BB.



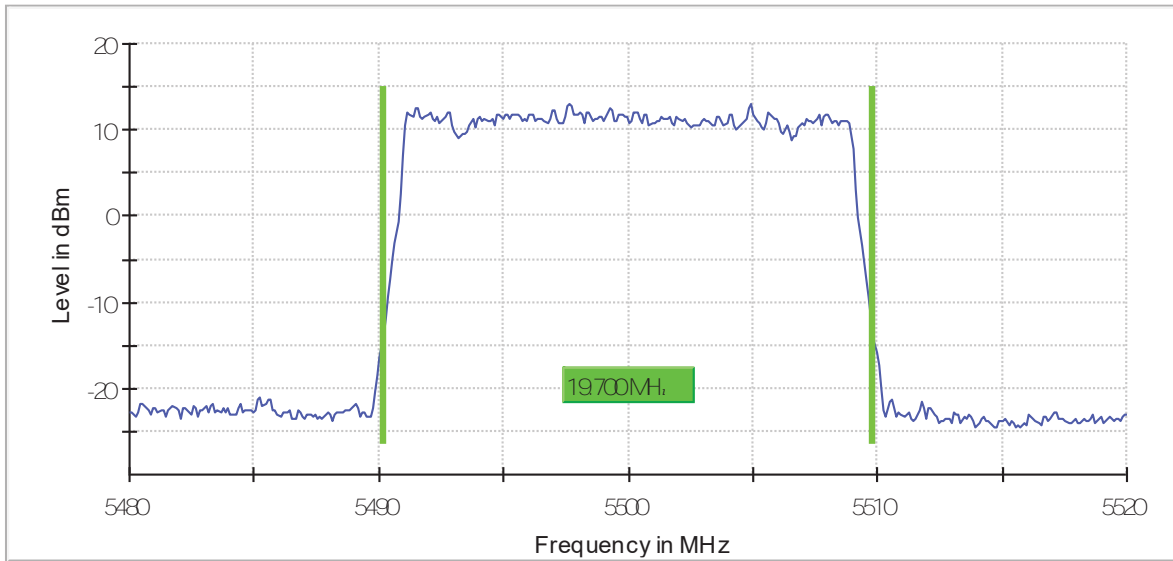
channel 64 (5320 MHz)

26. BB.



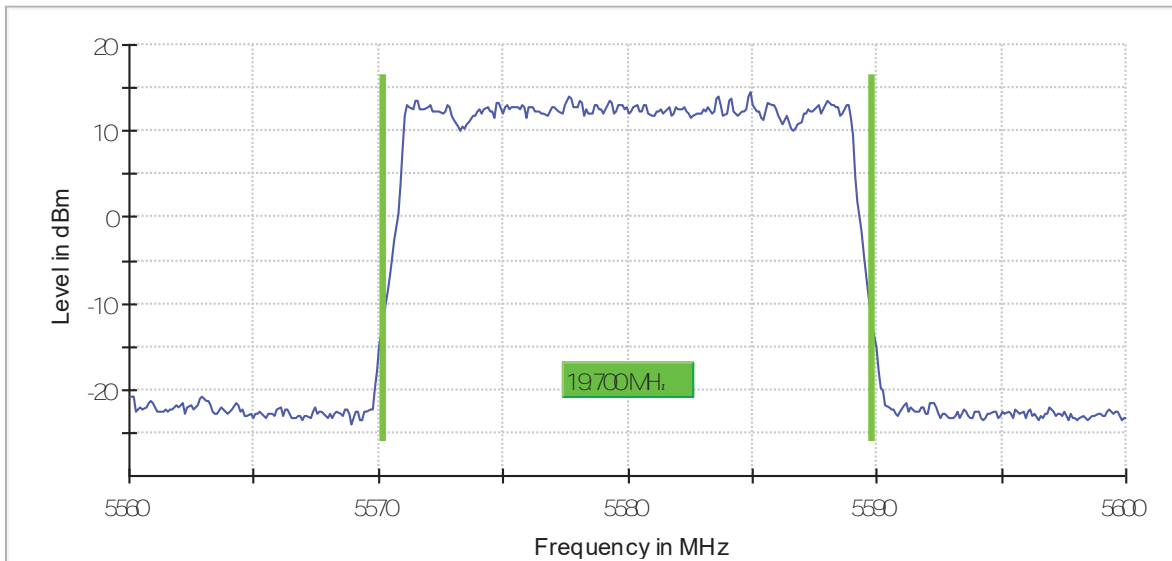
channel 100 (5500 MHz)

26. BB.



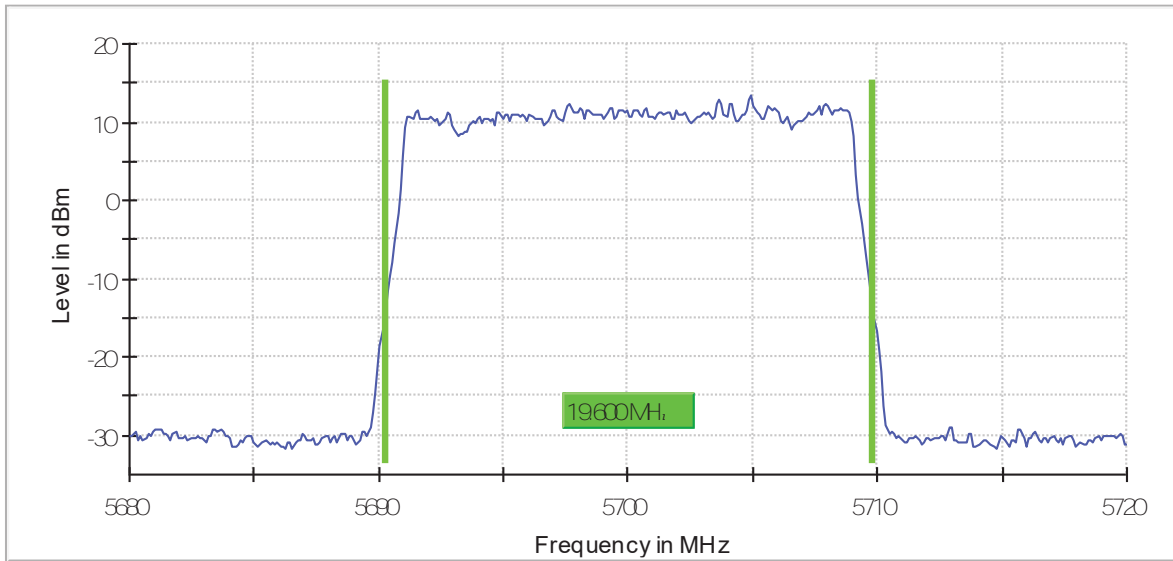
channel 116 (5580 MHz)

26. BB.



channel 140 (5700 MHz)

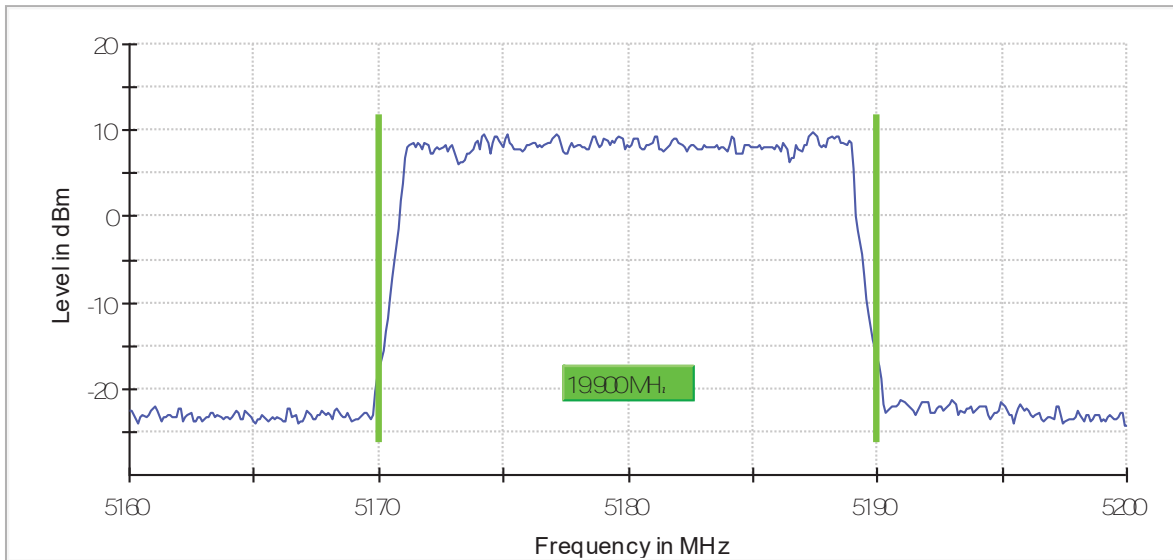
26 dBm



Mode: 16QAM – 20MHz

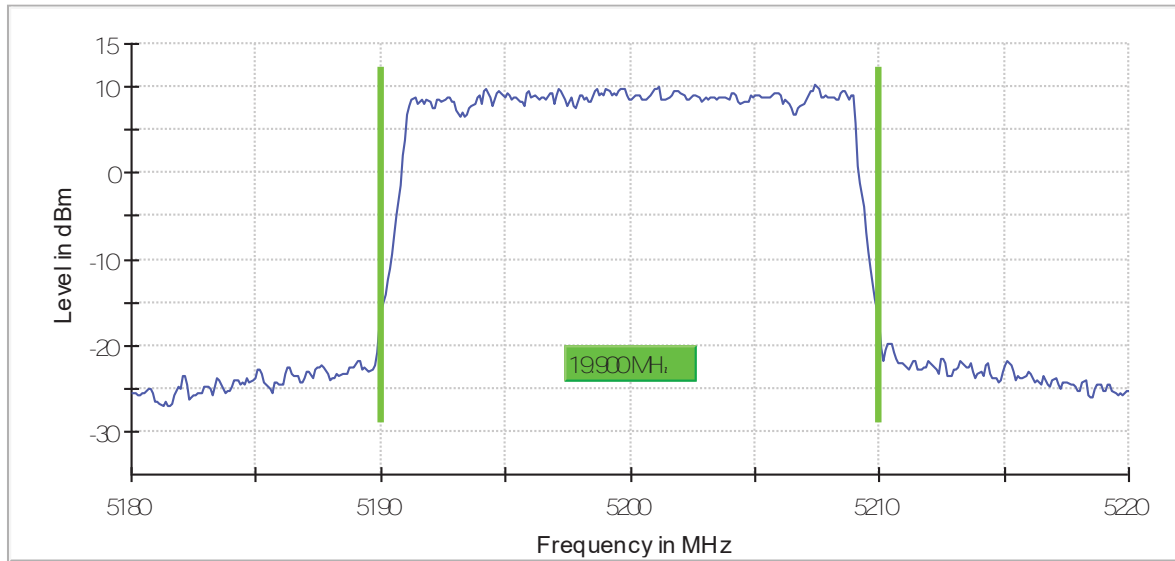
channel 36 (5180 MHz)

26 dBm



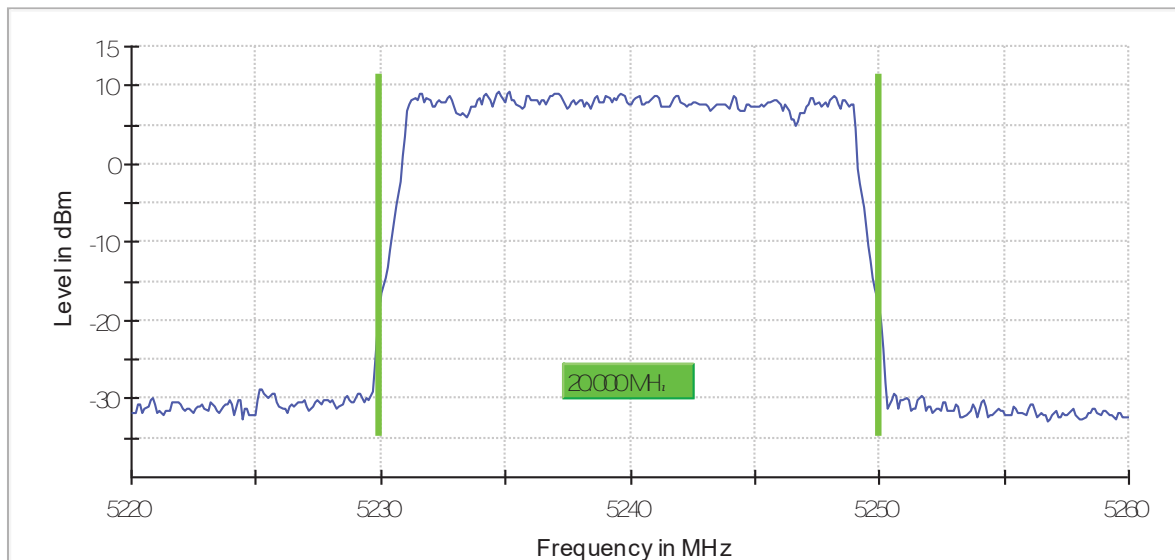
channel 40 (5200 MHz)

26 dBm



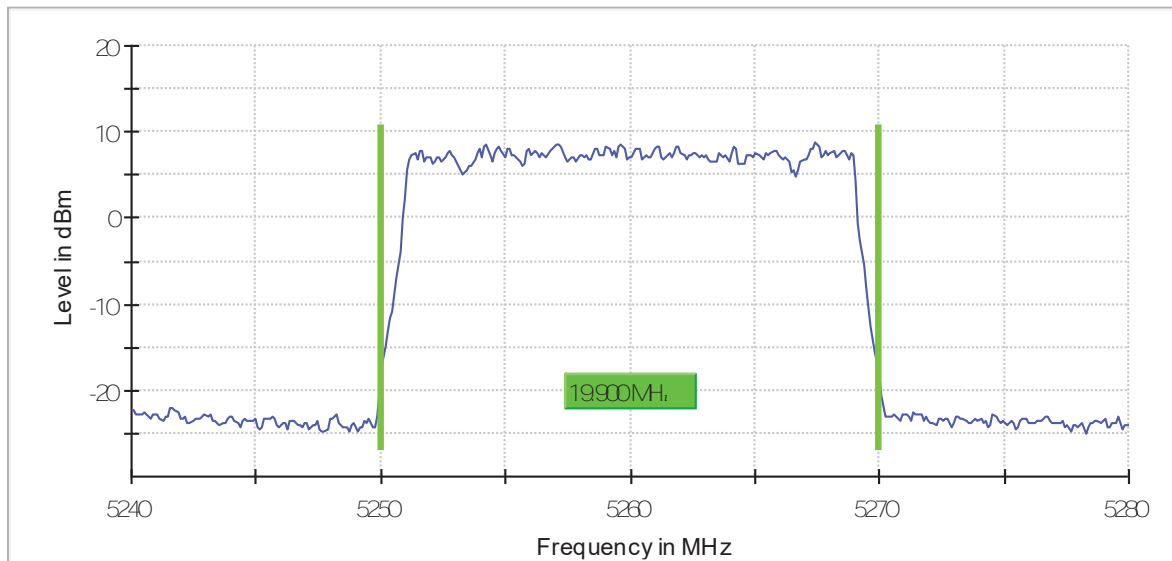
channel 48 (5240 MHz)

26 dBm



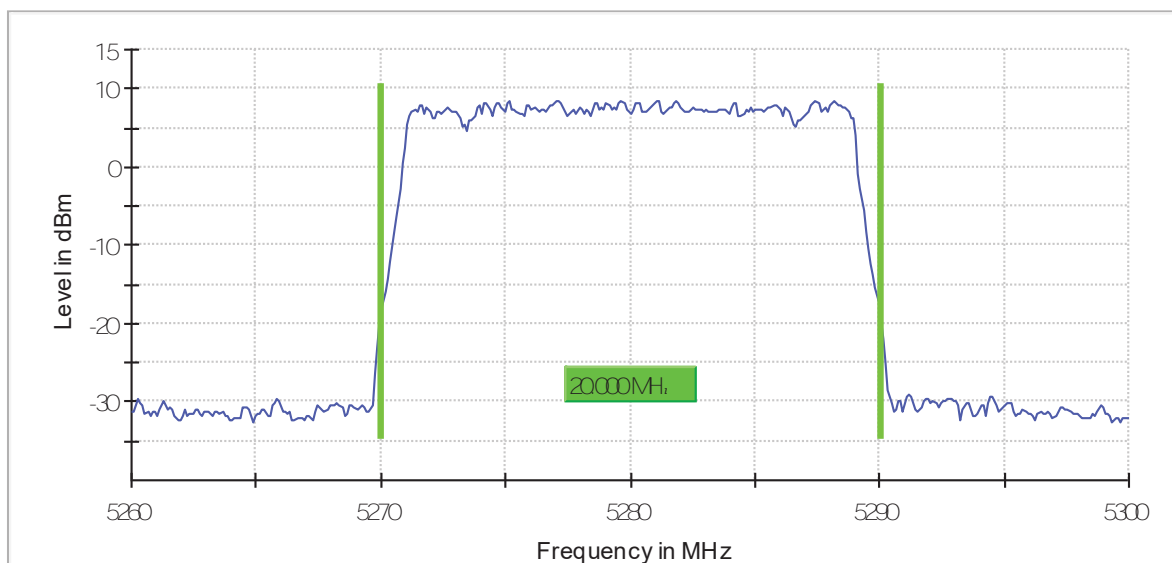
channel 52 (5260 MHz)

26 BB.



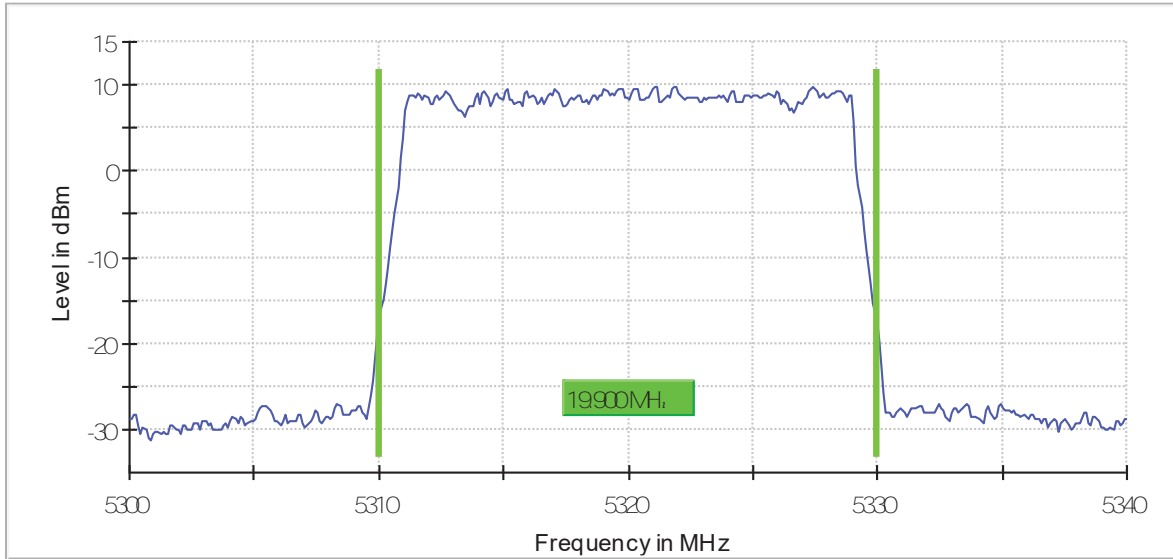
channel 56 (5280 MHz)

26 BB.



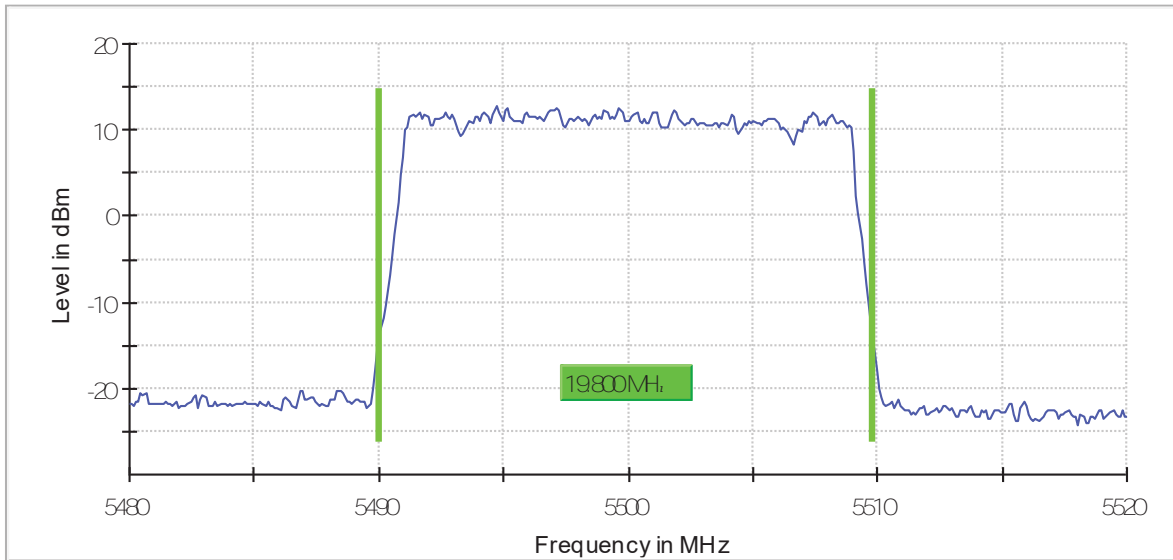
channel 64 (5320 MHz)

26. BB.



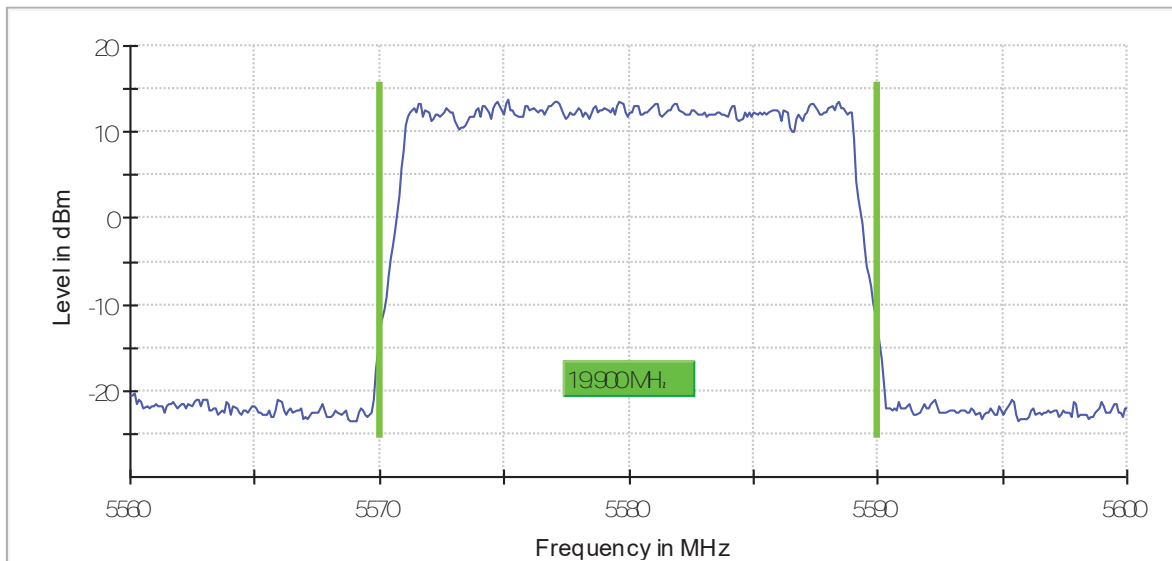
channel 100 (5500 MHz)

26. BB.



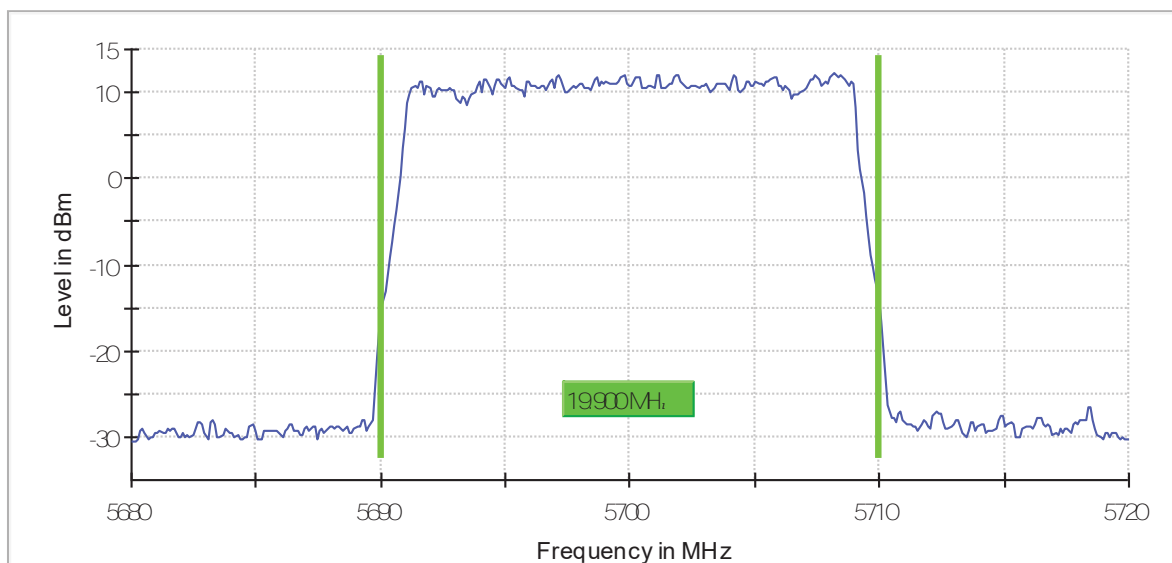
channel 116 (5580 MHz)

26. BB.



channel 140 (5700 MHz)

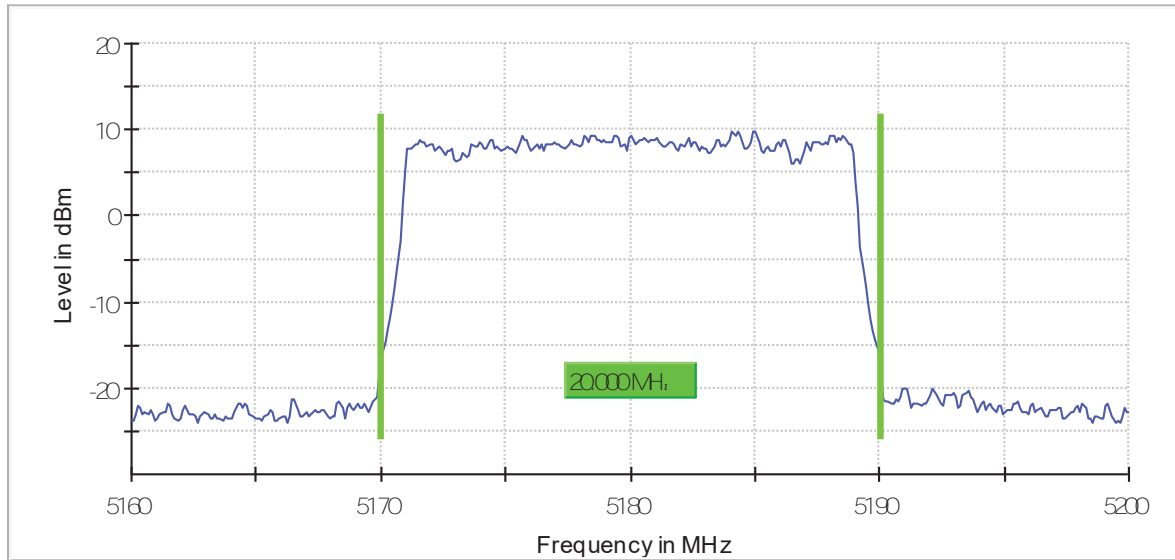
26. BB.



Mode: 64QAM – 20MHz

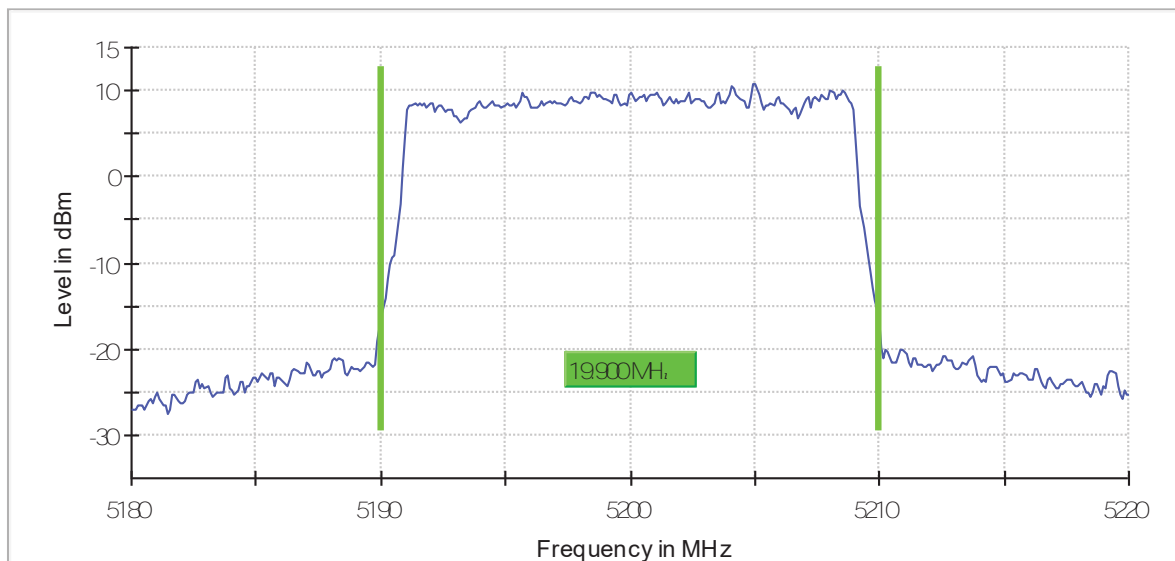
channel 36 (5180 MHz)

26 dBm



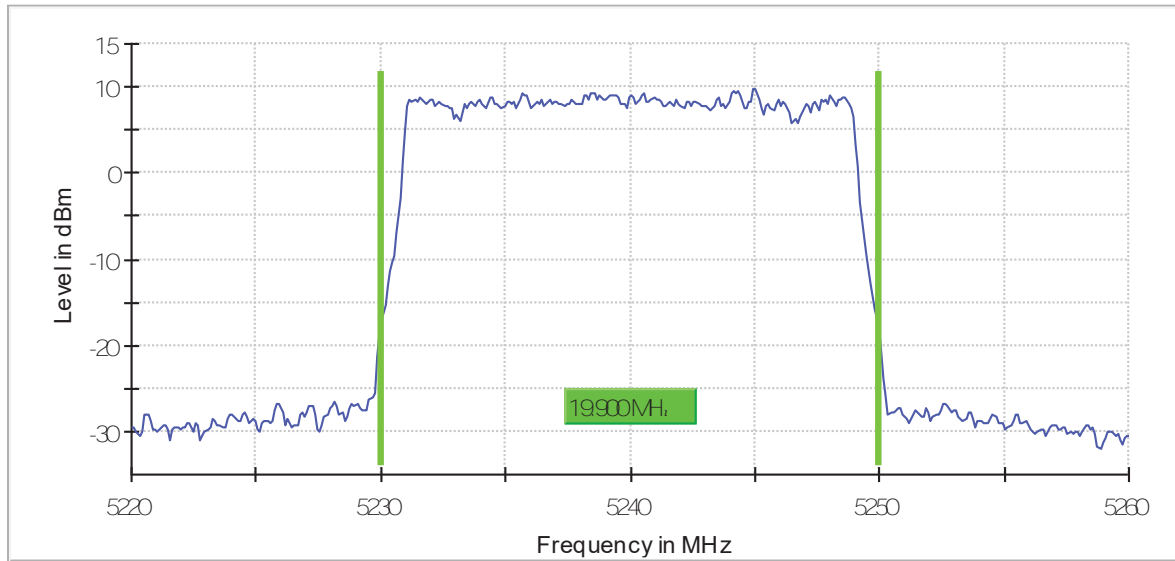
channel 40 (5200 MHz)

26 dBm



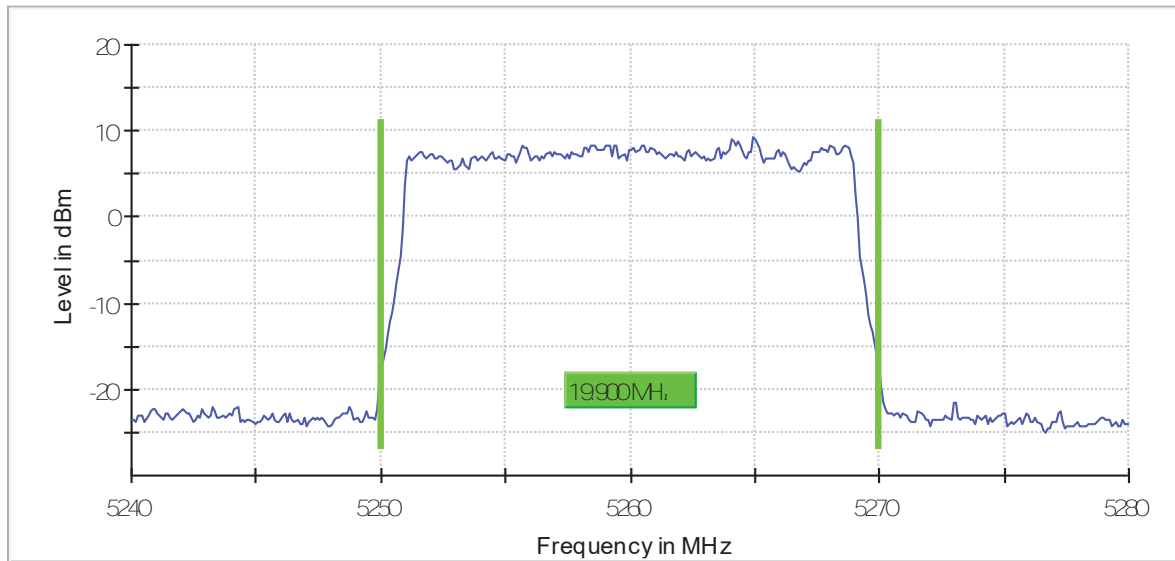
channel 48 (5240 MHz)

26. BB.



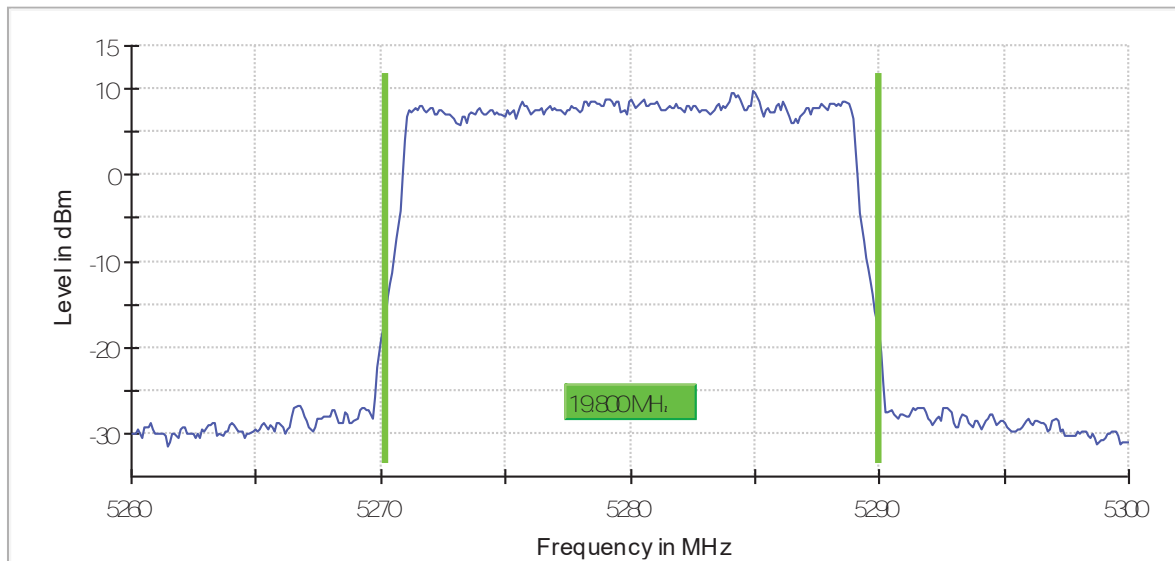
channel 52 (5260 MHz)

26. BB.



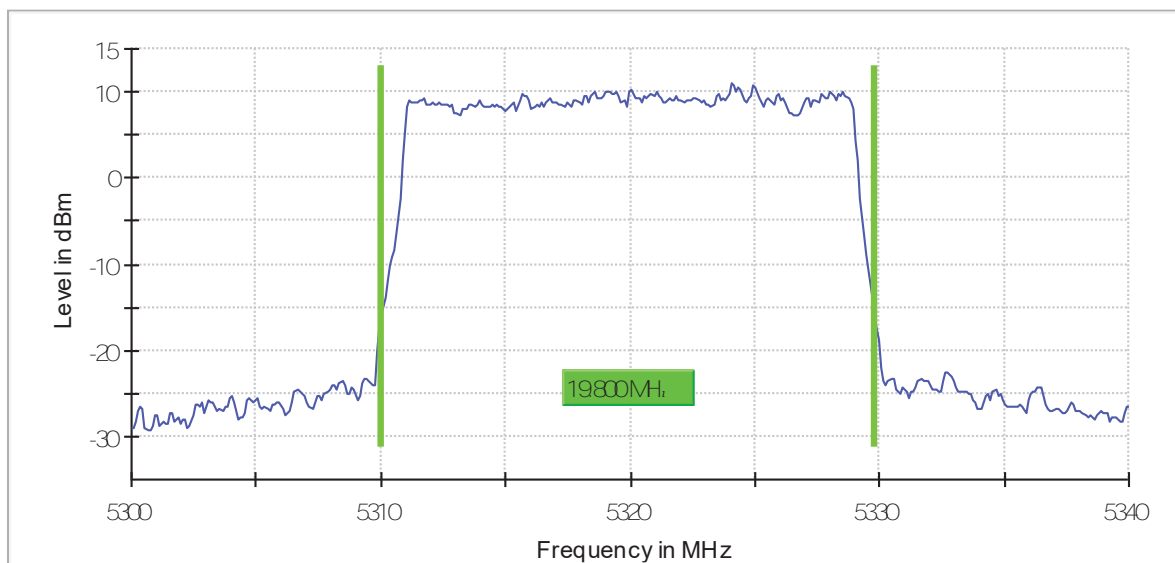
channel 56 (5280 MHz)

26. BB.



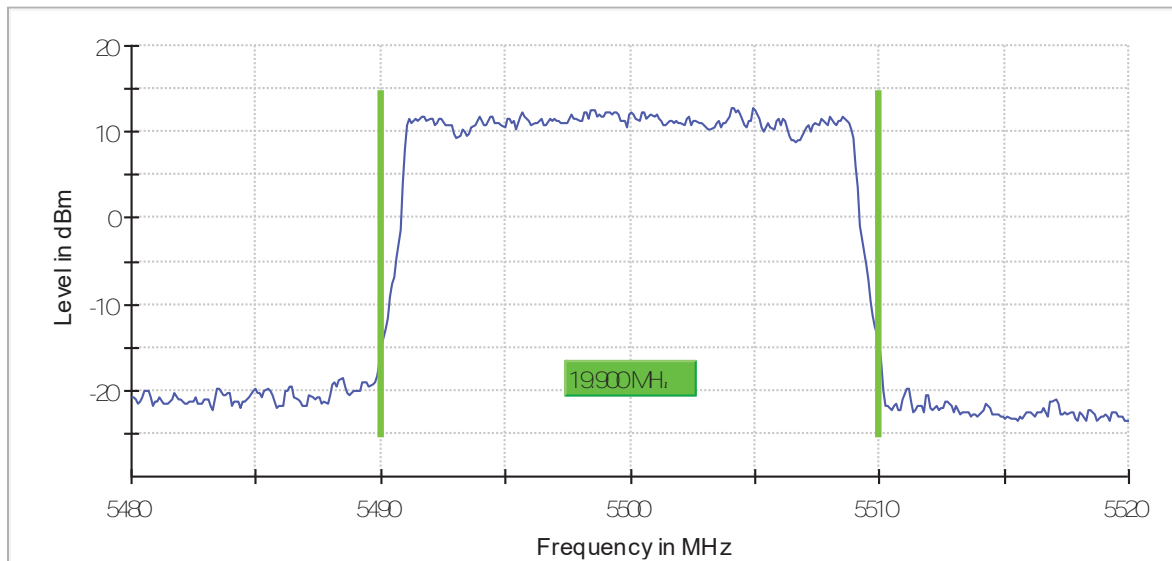
channel 64 (5320 MHz)

26. BB.



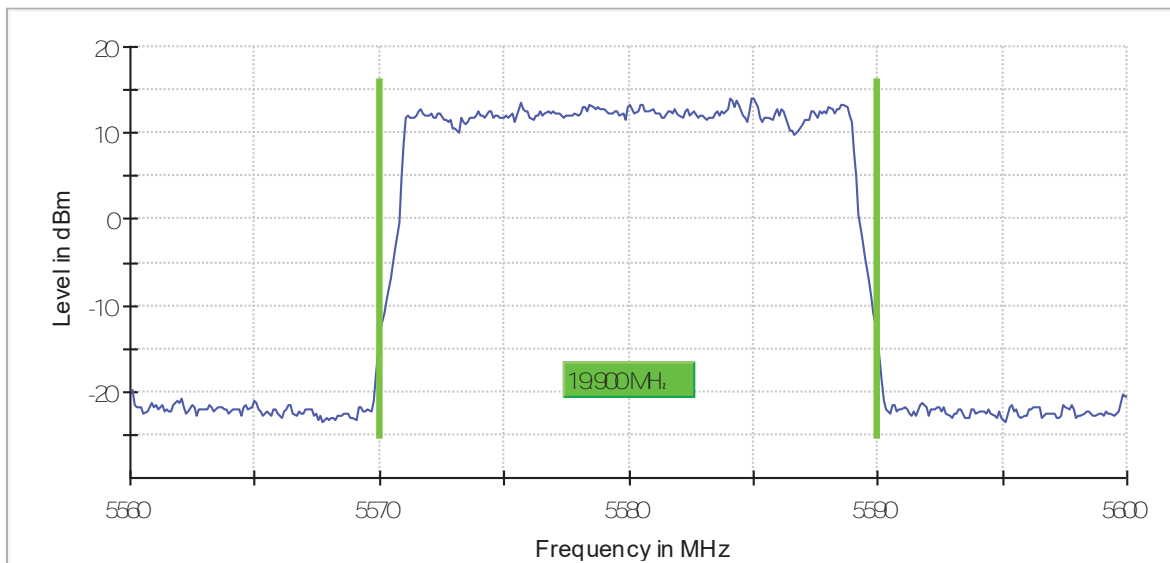
channel 100 (5500 MHz)

26. BB.



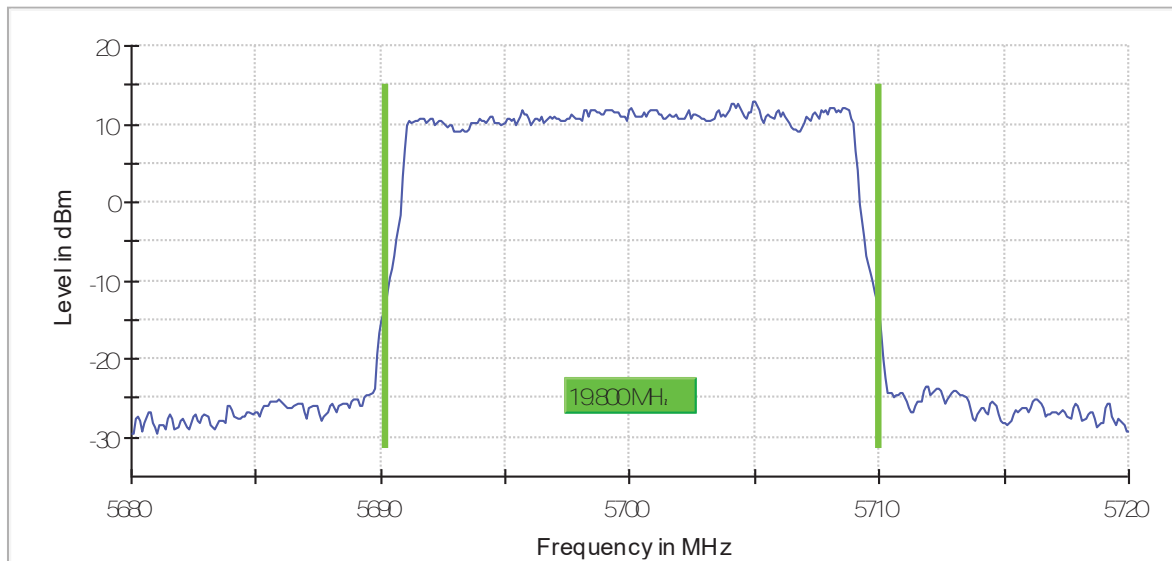
channel 116 (5580 MHz)

26. BB.



channel 140 (5700 MHz)

26 dBm

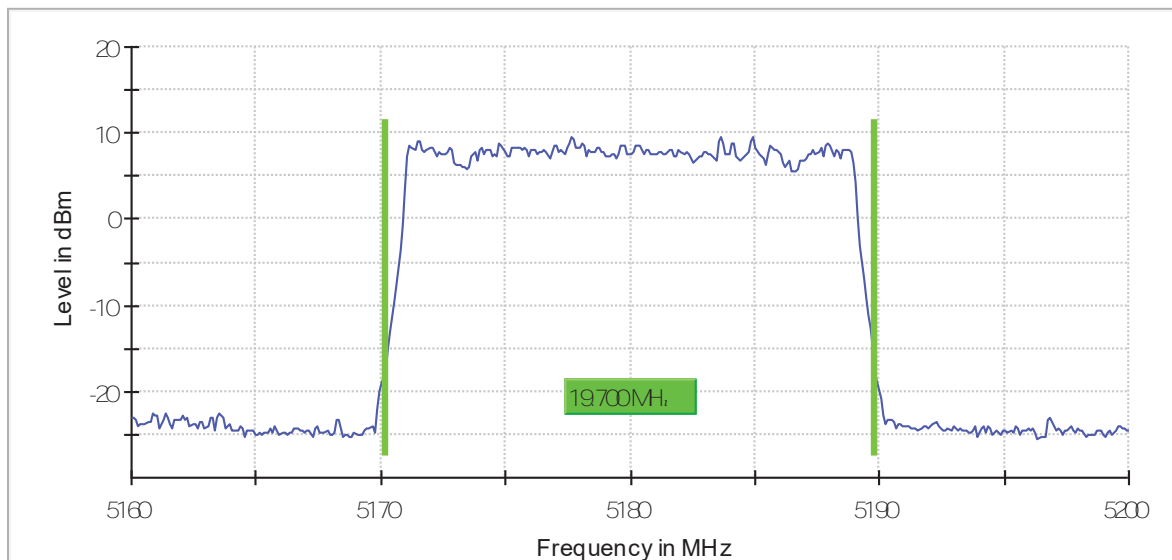


SISO Antenna Port 2:

Mode: QPSK – 20MHz

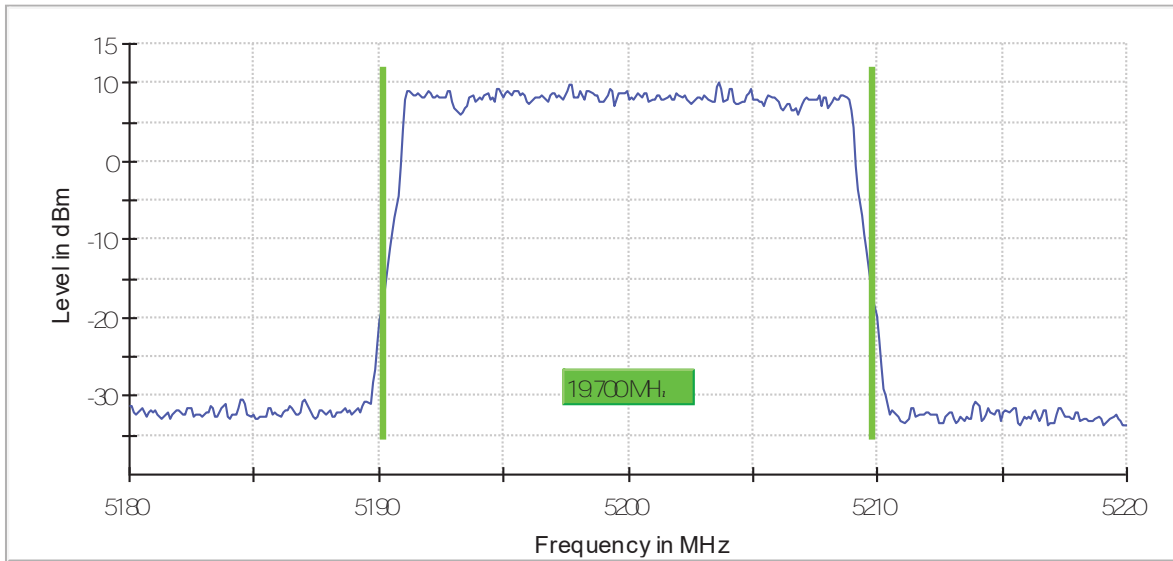
channel 36 (5180 MHz)

26 dBm



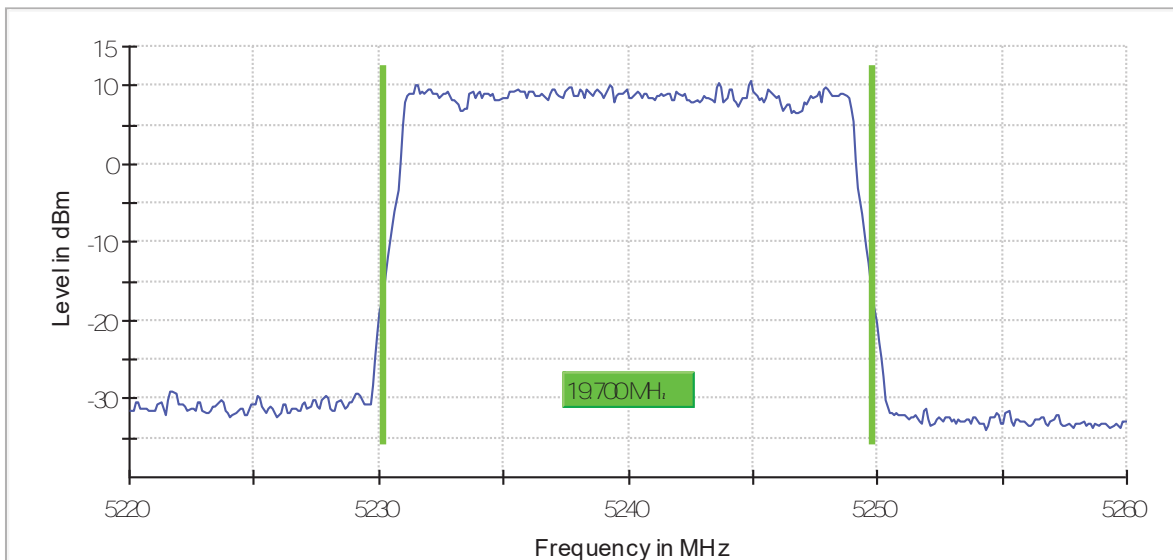
channel 40 (5200 MHz)

26 BB.



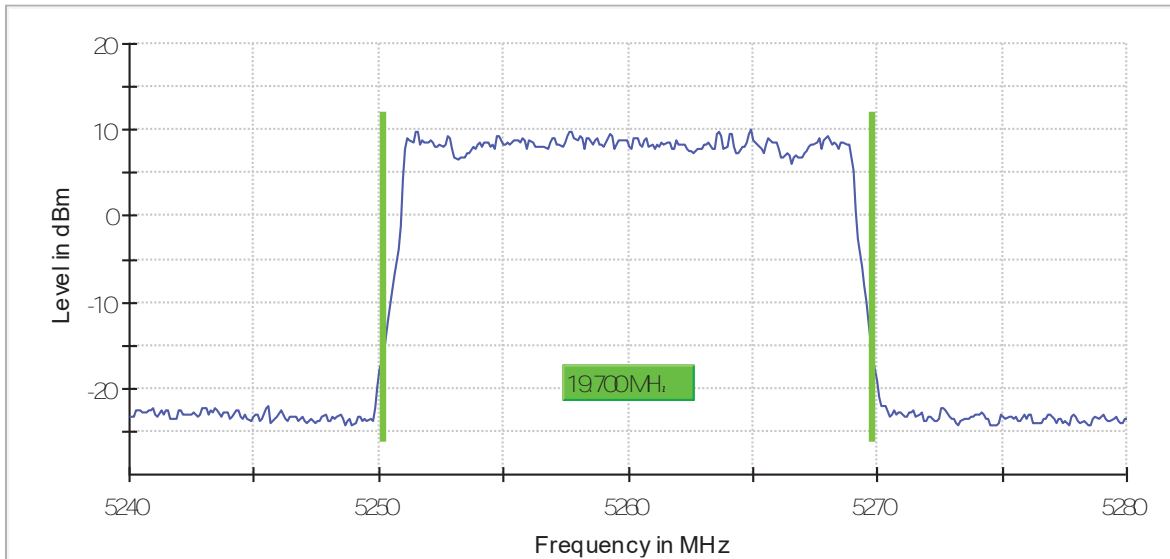
channel 48 (5240 MHz)

26 BB.



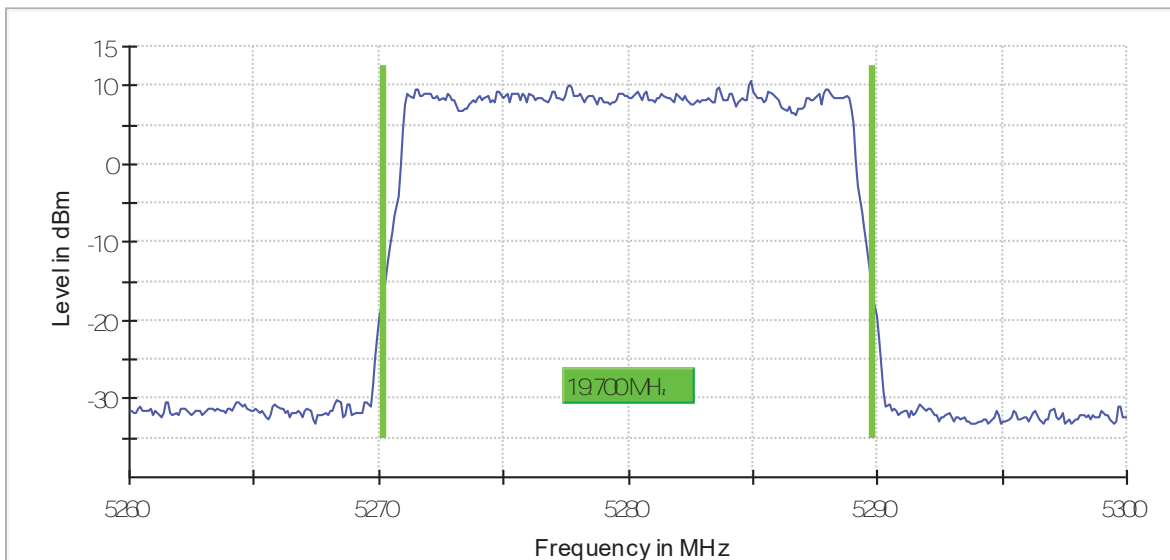
channel 52 (5260 MHz)

26 BB... ..



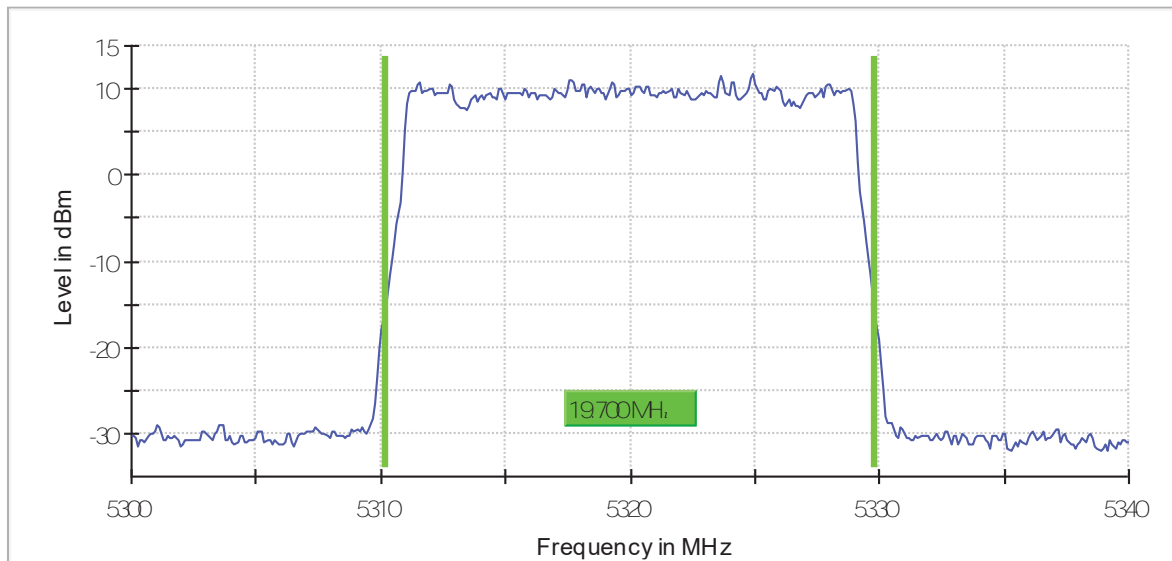
channel 56 (5280 MHz)

26 BB... ..



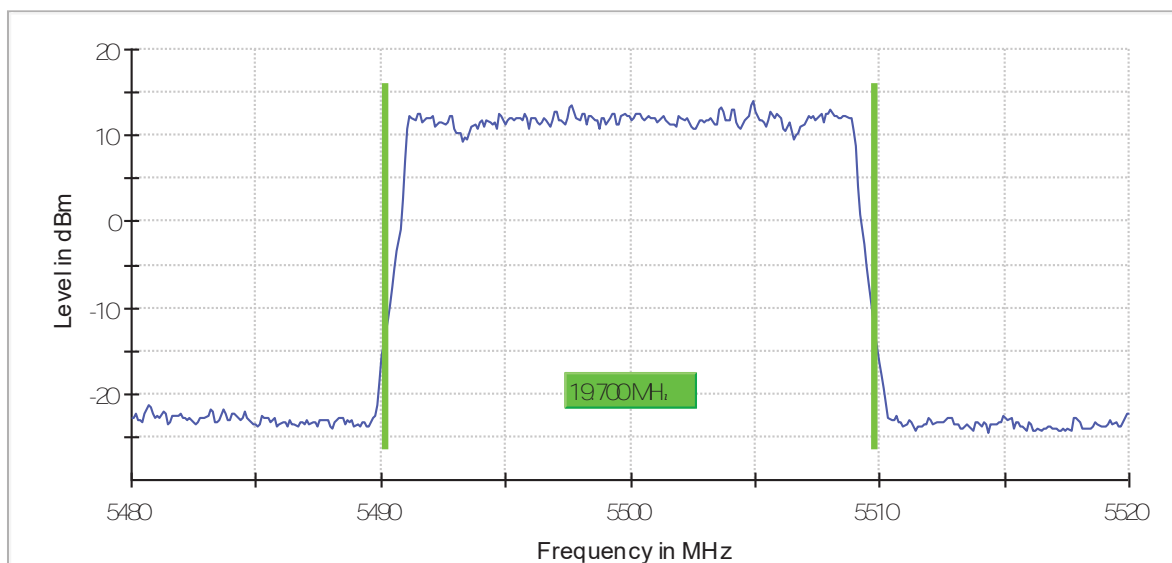
channel 64 (5320 MHz)

26 BB... ..



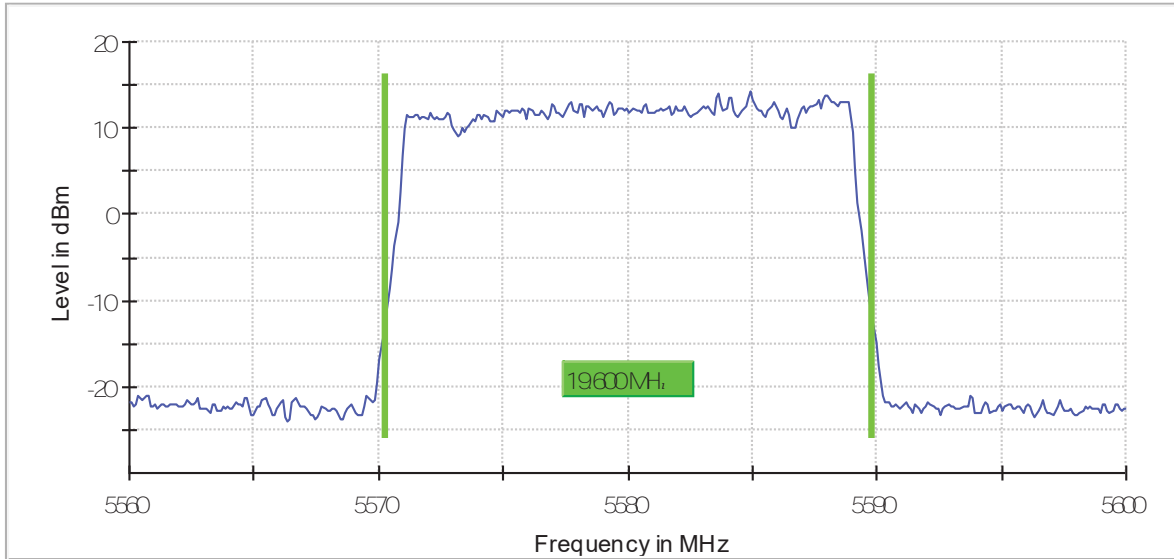
channel 100 (5500 MHz)

26 BB... ..



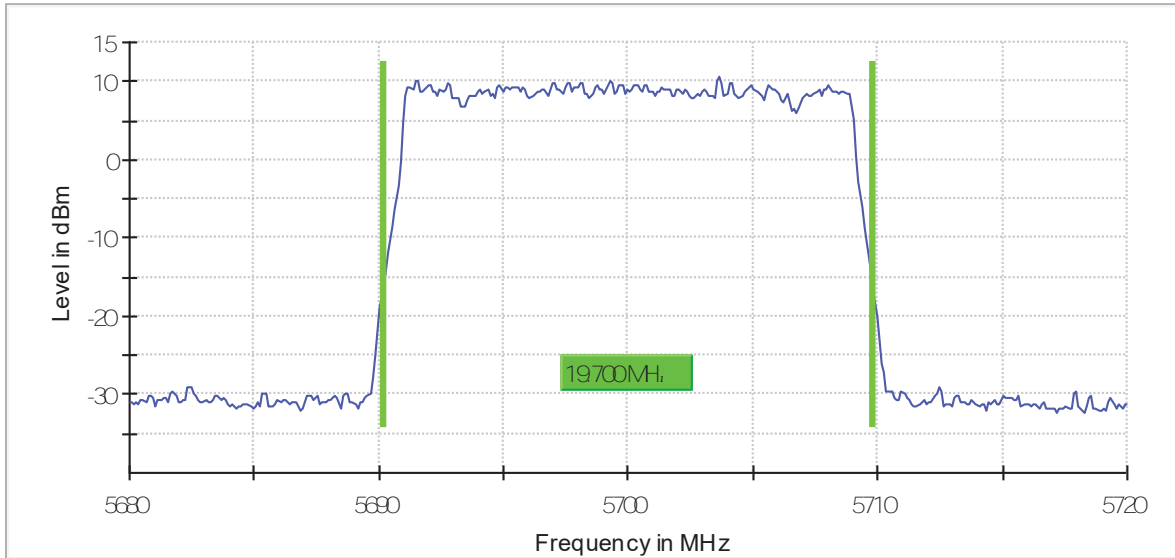
channel 116 (5580 MHz)

26. BB.



channel 140 (5700 MHz)

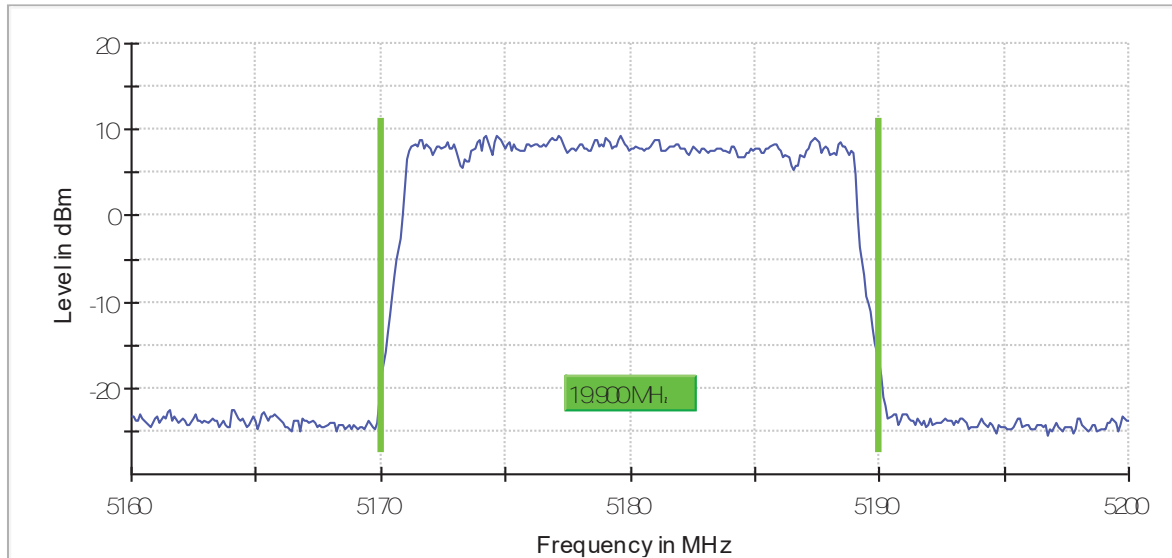
26. BB.



Mode: 16QAM – 20MHz

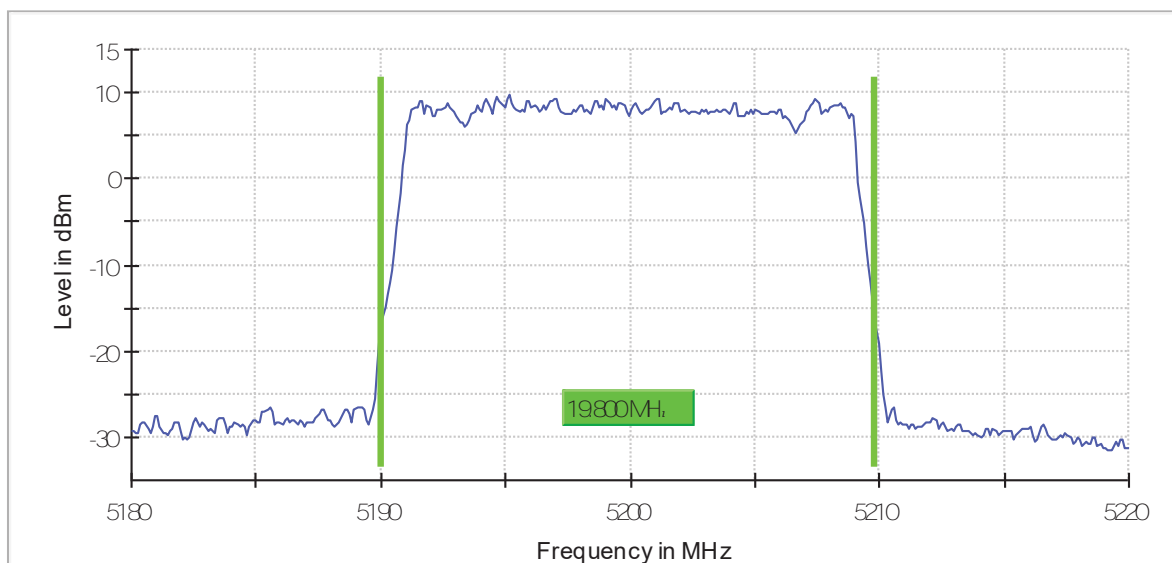
channel 36 (5180 MHz)

26 dB BB, 0.000000



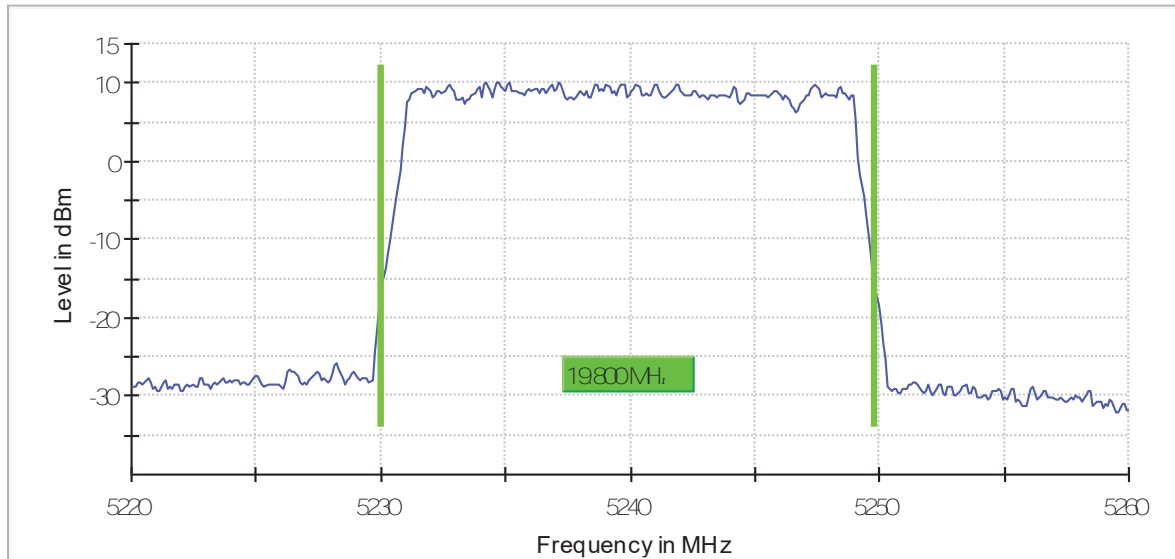
channel 40 (5200 MHz)

26 dB BB, 0.000000



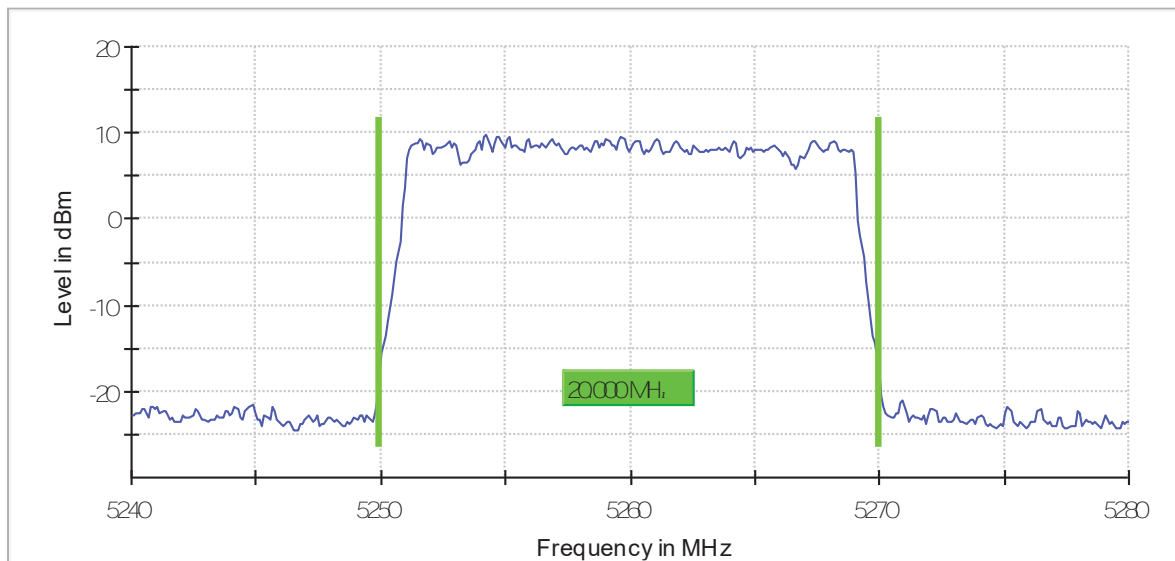
channel 48 (5240 MHz)

26. BB.



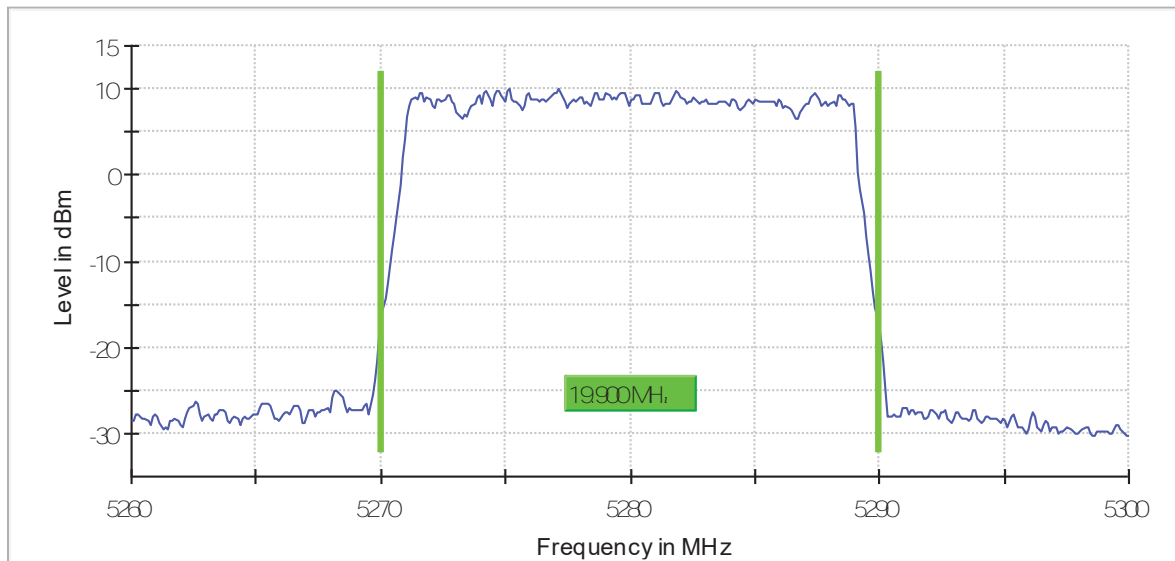
channel 52 (5260 MHz)

26. BB.



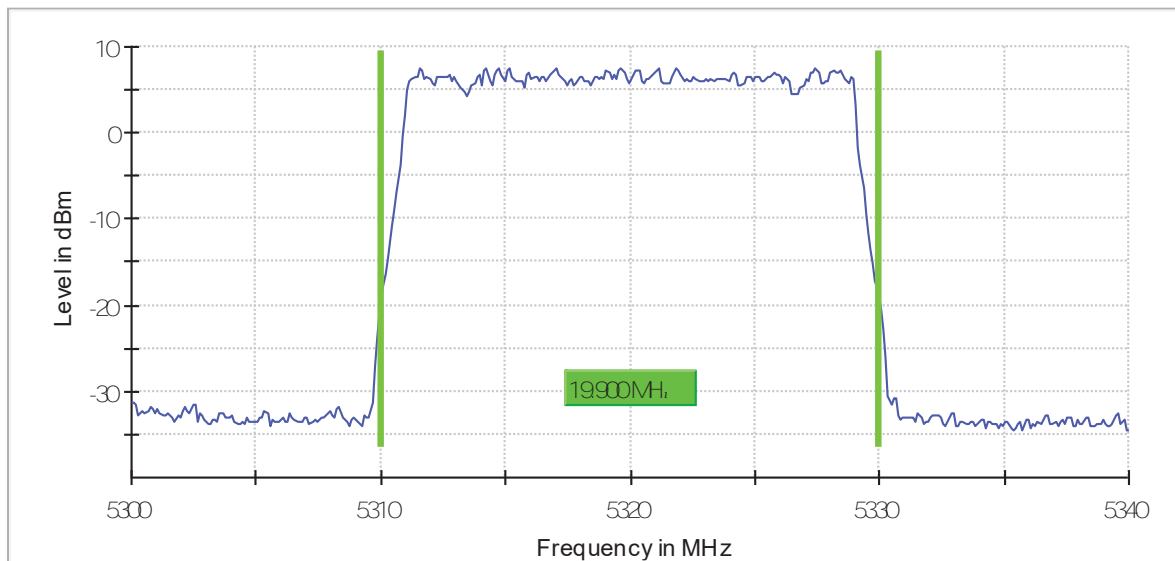
channel 56 (5280 MHz)

26. BB.



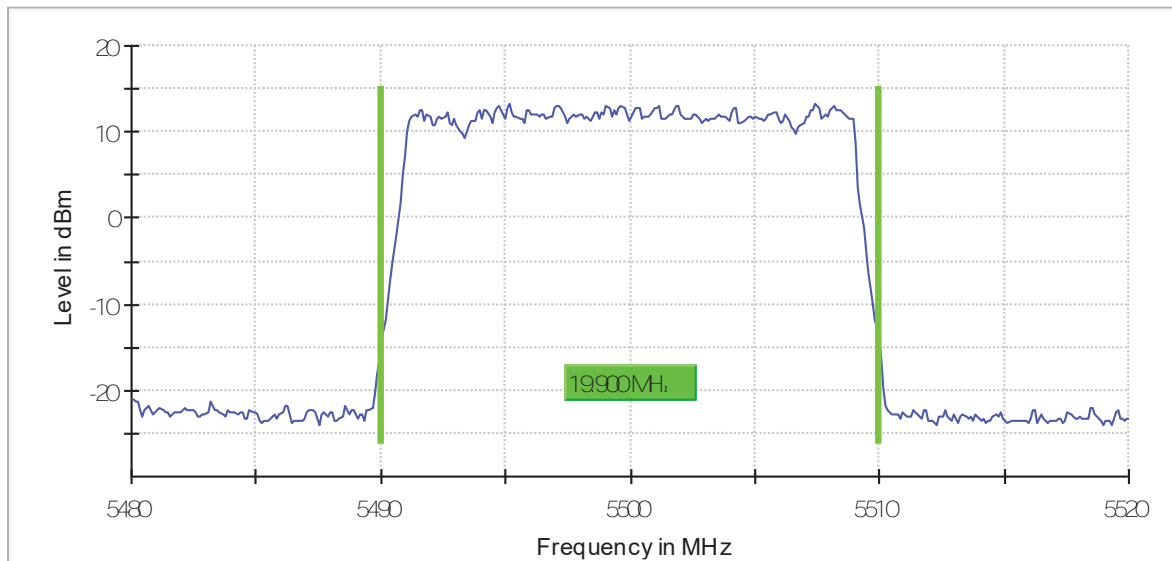
channel 64 (5320 MHz)

26. BB.



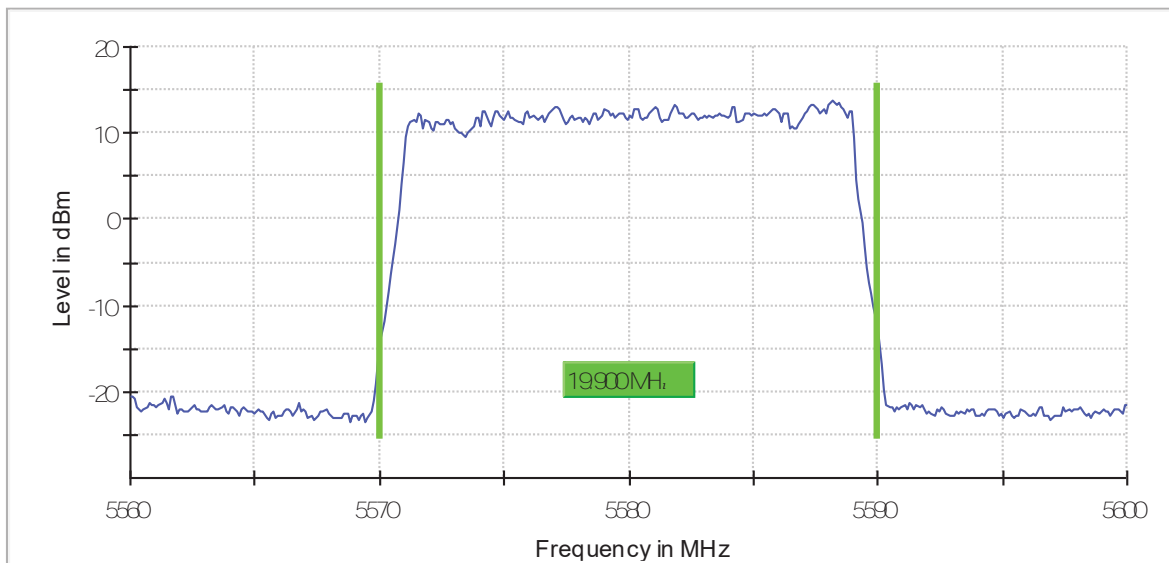
channel 100 (5500 MHz)

26. BB.



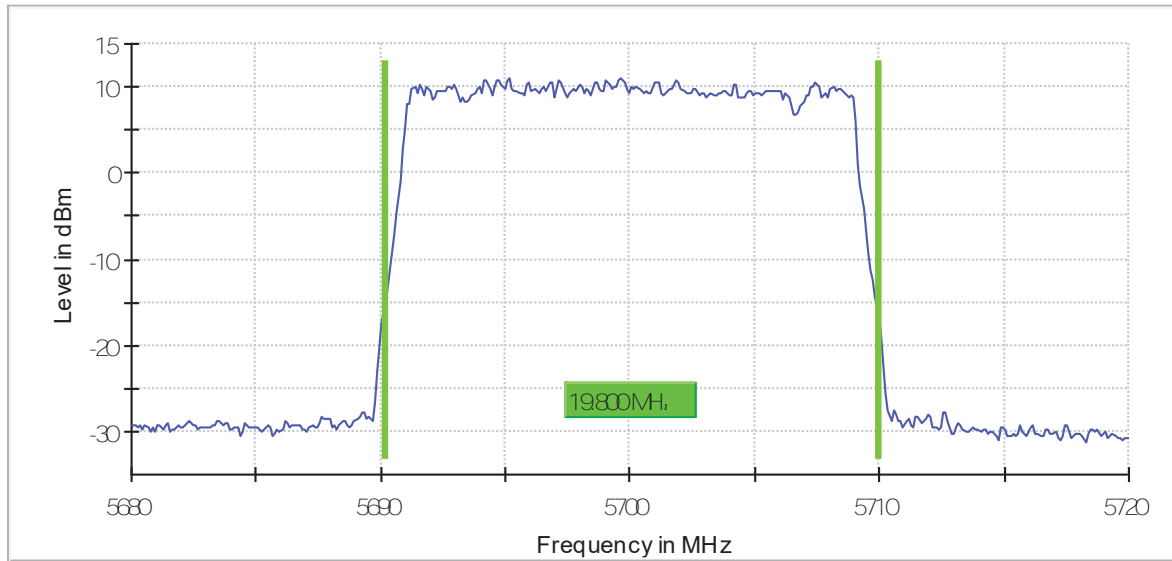
channel 116 (5580 MHz)

26. BB.



channel 140 (5700 MHz)

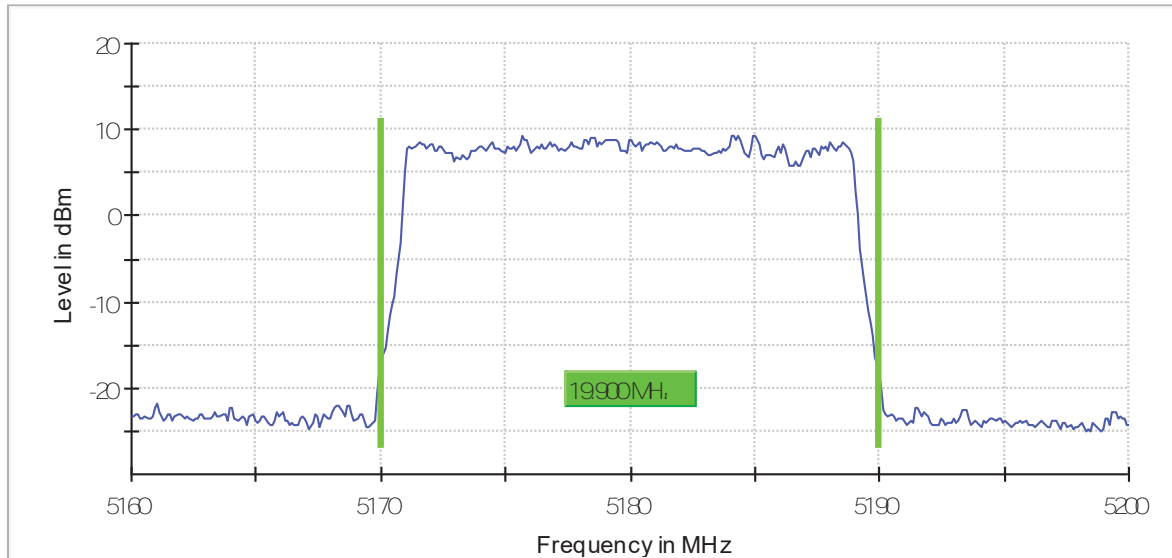
26 dBm



Mode: 64QAM – 20MHz

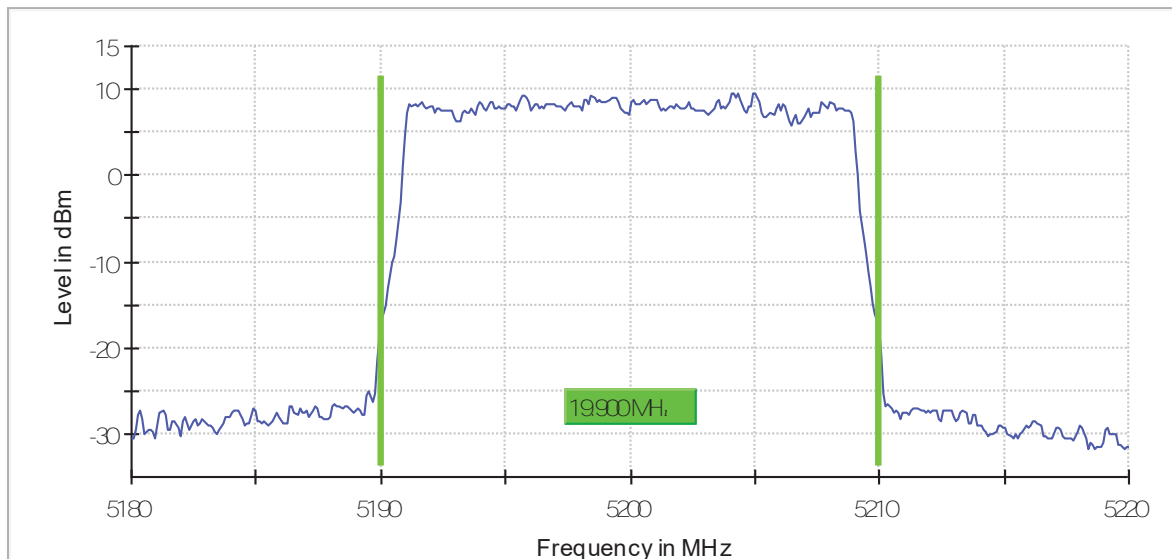
channel 36 (5180 MHz)

26. BB.



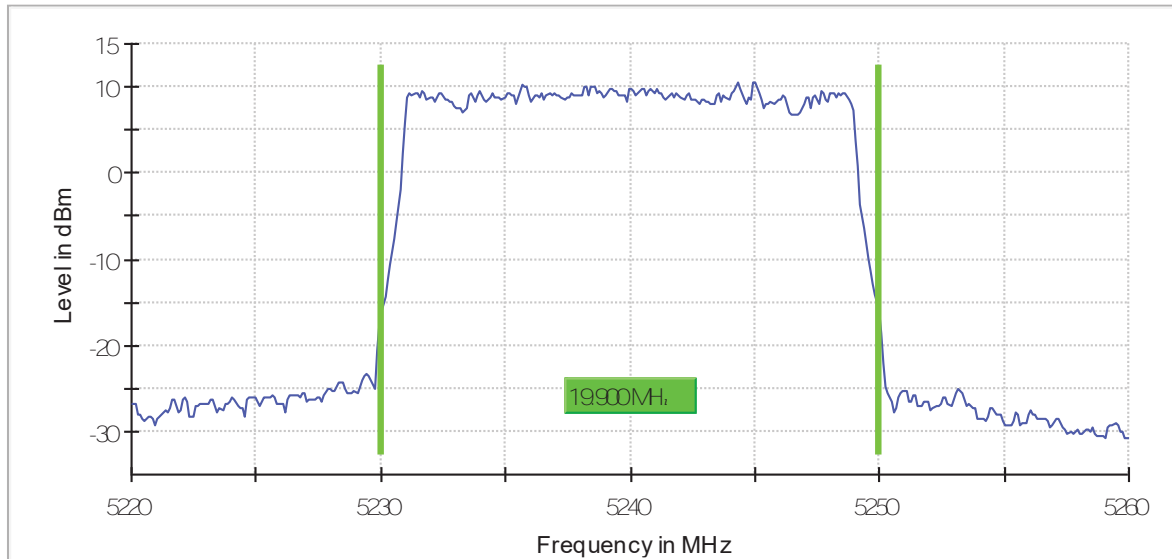
channel 40 (5200 MHz)

26. BB.



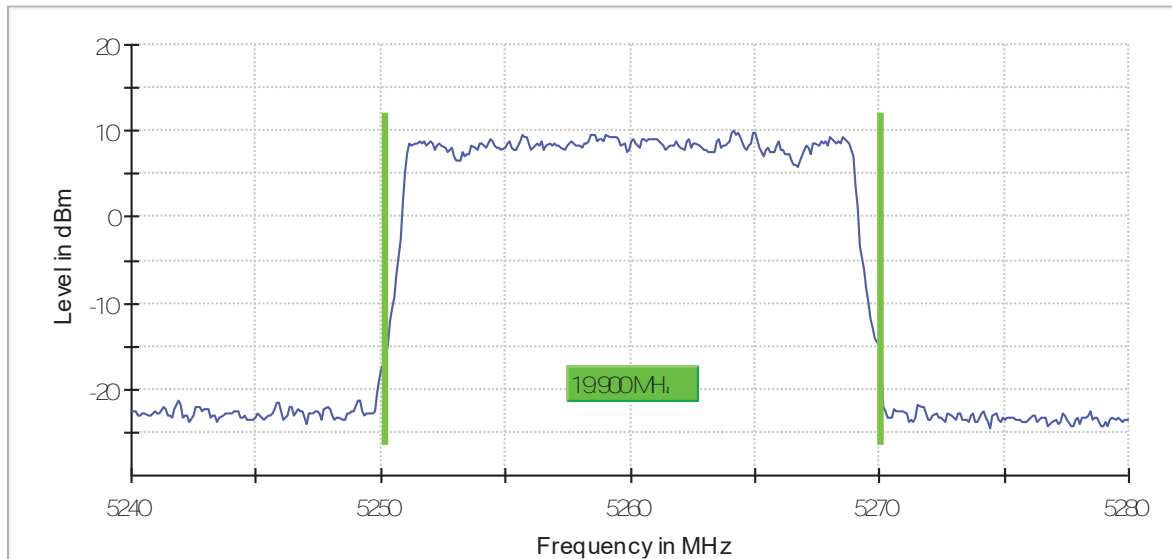
channel 48 (5240 MHz)

26. BB.



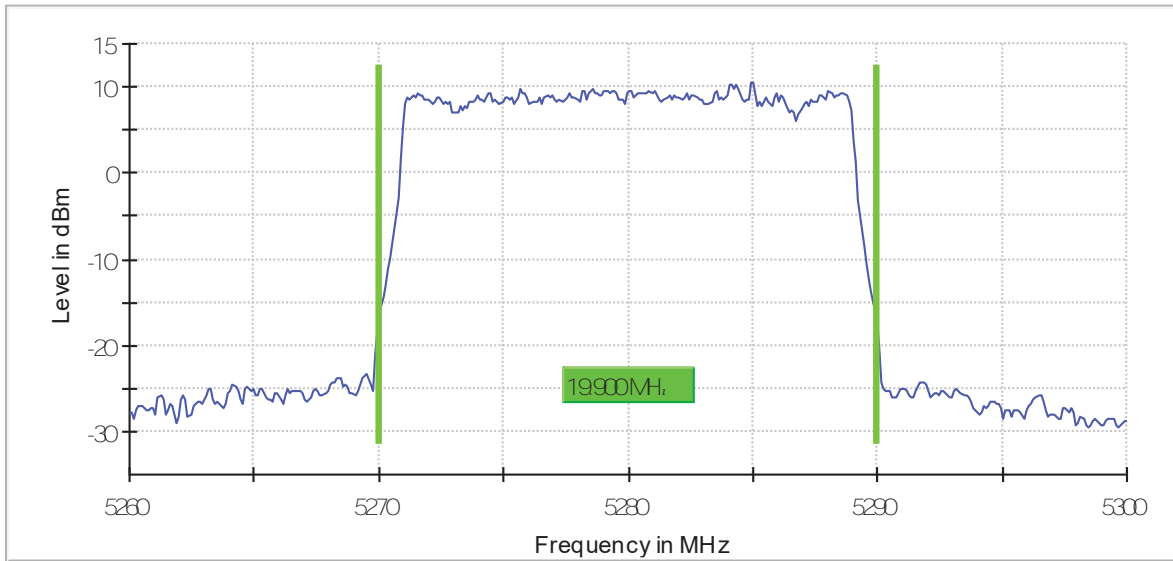
channel 52 (5260 MHz)

26. BB.



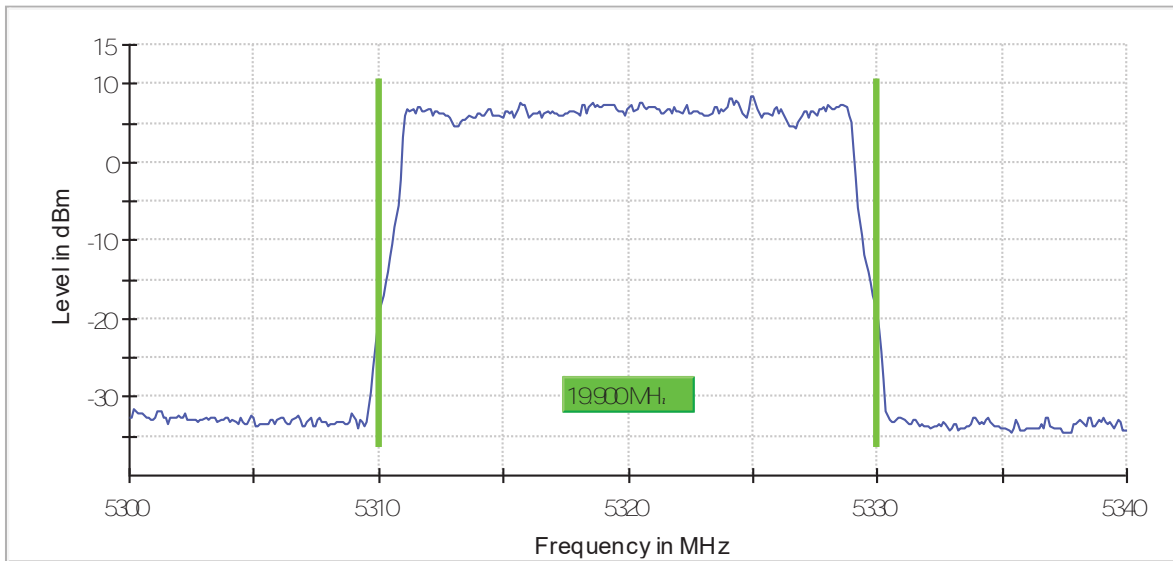
channel 56 (5280 MHz)

26. BB.



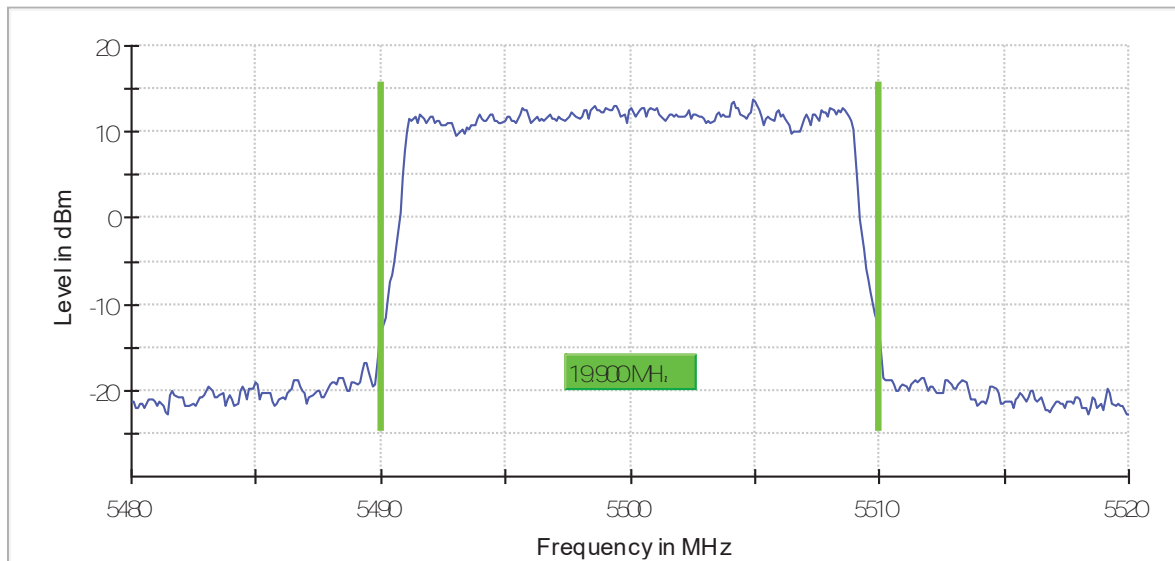
channel 64 (5320 MHz)

26. BB.



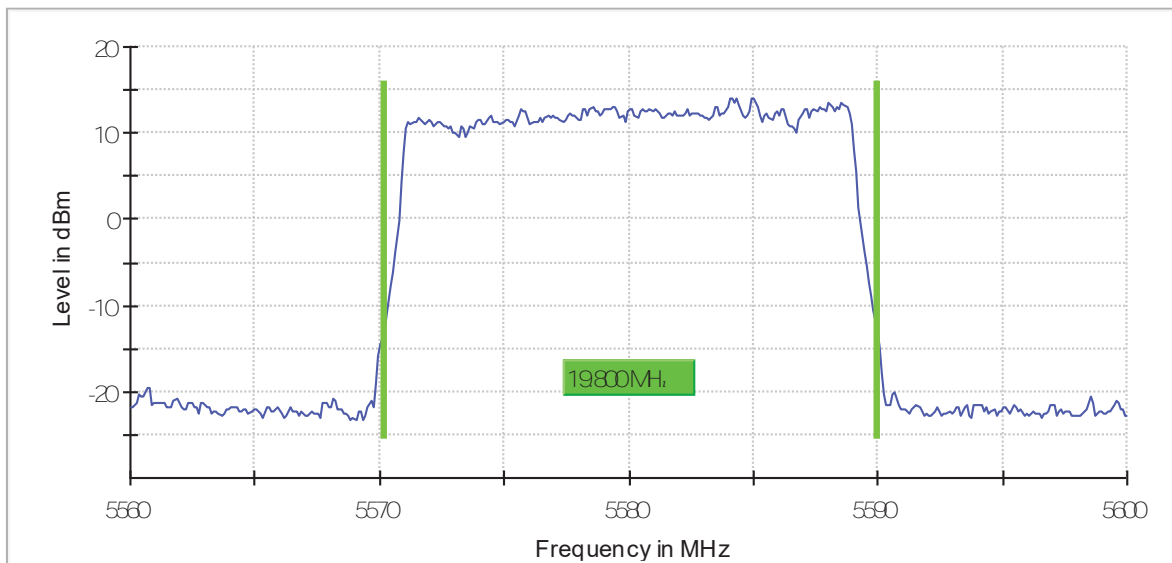
channel 100 (5500 MHz)

26. BB.



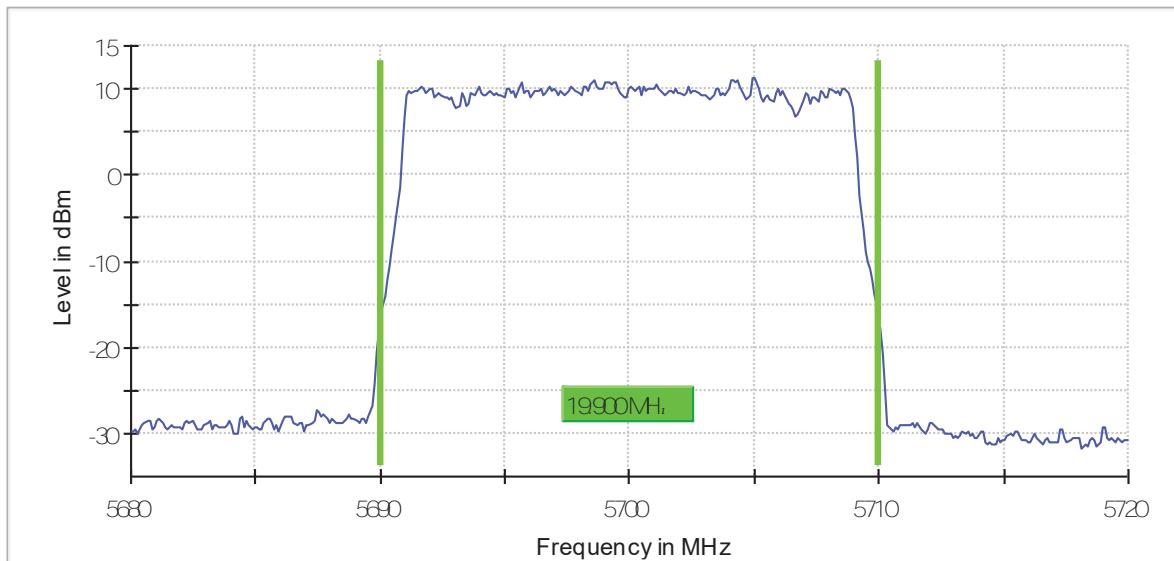
channel 116 (5580 MHz)

26. BB.



channel 140 (5700 MHz)

26. BB: 11



Appendix B: Test result for 5.15GHz – 5.25GHz.

INDEX

| | |
|--|-----|
| TEST CONDITIONS..... | 89 |
| FCC Section 15.407 Subclause (a)(1)(iv). Transmitter Maximum Conducted Output Power / RSS-247 Clause 6.2.1.1. Transmitter Maximum Equivalent Isotropically Radiated Power | 93 |
| FCC Section 15.407 Subclause (a) (1) (iv). Transmitter Maximum Power Spectral Density / RSS-247 Clause 6.2.1.1. Transmitter EIRP Spectral Density | 98 |
| FCC Section 15.407(b)(1)(6) /RSS-247 6.2.1.2. Transmitter Out of Band Radiated Emissions | 121 |
| FCC Section 15.407 Subclause (b) (1) / RSS-247 6.2.1.2. Transmitter Band Edge Radiated Emissions..... | 129 |

TEST CONDITIONS

Power supply (V):

Vnominal = 120 Vac

Type of power supply = AC/DC voltage main supply.

Type of antenna = External antenna.

Declared Gain for antenna (maximum):

$G_{\text{ANTENNA SISO1}} = 3 \text{ dBi}$

$G_{\text{ANTENNA SISO2}} = 3 \text{ dBi}$

| | | |
|--------------------|----------------------|-------------------------|
| Technology Tested: | MulleFire 1.0 | |
| Modes: | QPSK, 16QAM, 64QAM | |
| Antena ports: | 1, 2 | |
| Beamforming: | No | |
| Frequency Range: | 5150 MHz to 5250 MHz | |
| Channel Spacing: | 20 MHz | |
| Transmit Channels | Channel | Channel Frequency (MHz) |
| | Lowest: 36 | 5180 |
| | Middle: 40 | 5200 |
| | Highest: 48 | 5240 |

The test set-up was made in accordance to the general provisions of FCC Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017.

The EUT was tested in the following operating mode:

- Continuously transmitting with a modulated carrier at maximum power in all required channels using the supported data rates/modulations types.

The field strength at the band edges was evaluated for each mode for the channel under test.

During transmitter test the EUT was being controlled by the SW tool to operate in a continuous transmit mode on the test channel as required and in each of the different modulation modes. FCC and Canada power setting used during the test were different to be in compliance with both limits.

SISO Port 1:

| Channel | Channel Frequency (MHz) | FCC Attenuation Value | CANADA Attenuation value |
|-------------|-------------------------|-----------------------|--------------------------|
| Lowest: 36 | 5180 | 2 | 6 |
| Middle: 40 | 5200 | 2 | 6 |
| Highest: 48 | 5240 | 3 | 6 |

SISO Port 2:

| Channel | Channel Frequency (MHz) | FCC Attenuation Value | CANADA Attenuation value |
|-------------|-------------------------|-----------------------|--------------------------|
| Lowest: 36 | 5180 | 0 | 4 |
| Middle: 40 | 5200 | 0 | 4 |
| Highest: 48 | 5240 | 0 | 5 |

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



The AC supply voltage is applied using an external power supply.

RADIATED MEASUREMENTS

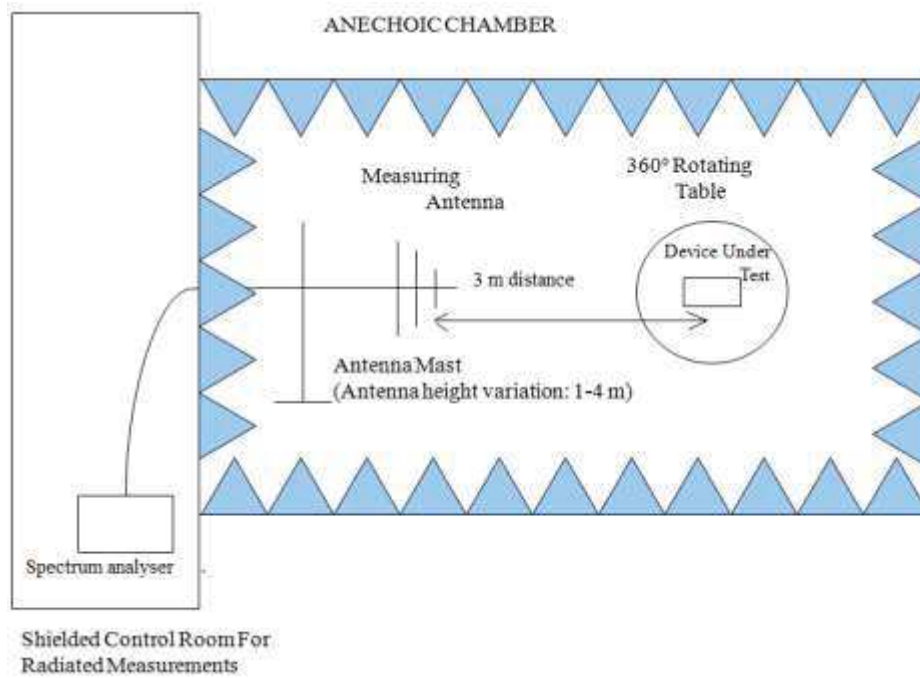
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m. The EUT was placed at a height of 80 cm above the reference ground plane in the center of the chamber turntable to perform the measurements below 1GHz and The EUT was placed at a height of 1.5 meters above the test chamber floor in the center of the chamber turntable to perform the measurements above 1GHz. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

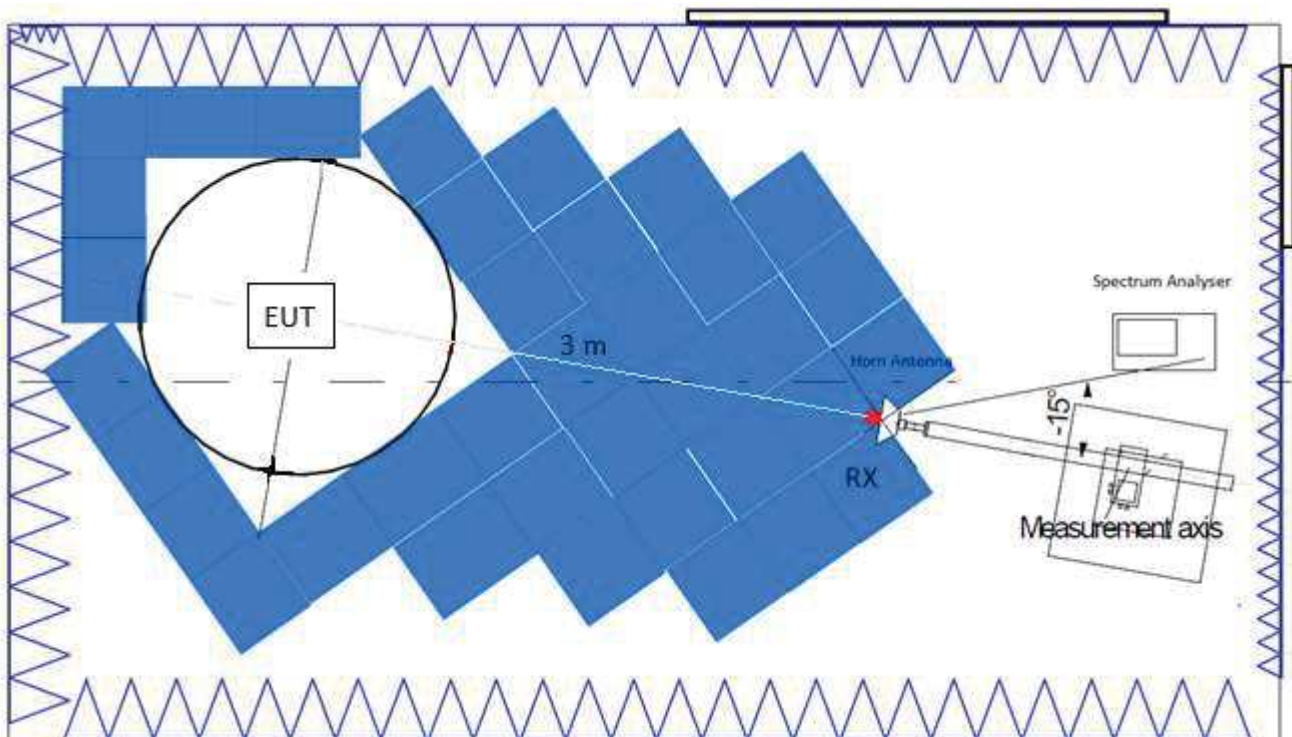
The final measured value, for the given emission, in the tables below incorporates the calibrated antenna factor and cable loss.

A resolution bandwidth/video bandwidth of 100 kHz/300 kHz was used for frequencies below 1 GHz and 1MHz/3MHz for frequencies above 1 GHz.

Radiated measurements setup $f < 1$ GHz



Radiated measurements setup $f > 1$ GHz



FCC Section 15.407 Subclause (a)(1)(iv). Transmitter Maximum Conducted Output Power / RSS-247 Clause 6.2.1.1. Transmitter Maximum Equivalent Isotropically Radiated Power

SPECIFICATION

FCC 15.407: For client devices in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24 dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RSS-247: The maximum e.i.r.p. shall not exceed 200 mW (23 dBm) or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

RESULTS:

The maximum conducted output power was measured using the channel power integration method according to point E) 3) b) (Method PM-G) of 789033 D02 General UNII Test Procedures New Rules v02r01.

The e.i.r.p. levels are calculated by adding the corresponding antenna gain (dBi).

SISO Antenna Port 1:

FCC Power setting:

Mode: QPSK - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 21.50 | 21.59 | 21.54 |
| Conducted Power Limit (dBm) | 24 | | |
| Margin (dB) | 2.50 | 2.41 | 2.46 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 16QAM - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 21.64 | 22.01 | 21.51 |
| Conducted Power Limit (dBm) | 24 | | |
| Margin (dB) | 2.36 | 1.99 | 2.49 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 64QAM - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 21.90 | 22.04 | 21.31 |
| Conducted Power Limit (dBm) | 24 | | |
| Margin (dB) | 2.10 | 1.96 | 2.69 |
| Measurement uncertainty (dB) | <±1.20 | | |

Canada power setting

Mode: QPSK - 20MHz

Antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 17.74 | 17.88 | 18.25 |
| Maximum EIRP power (dBm) | 20.74 | 20.88 | 21.25 |
| EIRP power Limit (dBm) | 22.528 | | |
| Margin (dB) | 1.78 | 1.64 | 1.27 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 16QAM - 20MHz

Antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 17.81 | 17.93 | 18.31 |
| Maximum EIRP power (dBm) | 20.81 | 20.93 | 21.31 |
| EIRP power Limit (dBm) | 22.528 | | |
| Margin (dB) | 1.71 | 1.59 | 1.21 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 64QAM - 20MHz

Antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 17.81 | 17.95 | 18.32 |
| Maximum EIRP power (dBm) | 20.81 | 20.95 | 21.32 |
| EIRP power Limit (dBm) | 22.528 | | |
| Margin (dB) | 1.71 | 1.57 | 1.21 |
| Measurement uncertainty (dB) | <±1.20 | | |

SISO Antenna Port 2:

FCC Power setting:

Mode: QPSK - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 21.09 | 20.86 | 21.95 |
| Conducted Power Limit (dBm) | 24 | | |
| Margin (dB) | 2.91 | 3.14 | 2.05 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 16QAM - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 20.79 | 21.10 | 22.18 |
| Conducted Power Limit (dBm) | 24 | | |
| Margin (dB) | 3.21 | 2.90 | 1.82 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 64QAM - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 20.76 | 20.81 | 21.92 |
| Conducted Power Limit (dBm) | 24 | | |
| Margin (dB) | 3.24 | 3.19 | 2.08 |
| Measurement uncertainty (dB) | <±1.20 | | |

Canada power setting

Mode: QPSK - 20MHz

Antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 18.15 | 17.56 | 17.62 |
| Maximum EIRP power (dBm) | 21.15 | 20.56 | 20.62 |
| EIRP power Limit (dBm) | 22.528 | | |
| Margin (dB) | 1.37 | 1.96 | 1.91 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 16QAM - 20MHz

Antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 17.46 | 17.78 | 17.86 |
| Maximum EIRP power (dBm) | 20.46 | 20.78 | 20.86 |
| EIRP power Limit (dBm) | 22.528 | | |
| Margin (dB) | 2.06 | 1.74 | 1.66 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 64QAM - 20MHz

Antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| Max. conducted power (dBm) | 17.46 | 17.76 | 17.85 |
| Maximum EIRP power (dBm) | 20.46 | 20.76 | 20.85 |
| EIRP power Limit (dBm) | 22.528 | | |
| Margin (dB) | 2.06 | 1.77 | 1.67 |
| Measurement uncertainty (dB) | <±1.20 | | |

FCC Section 15.407 Subclause (a) (1) (iv). Transmitter Maximum Power Spectral Density / RSS-247 Clause 6.2.1.1. Transmitter EIRP Spectral Density

FCC 15.407: The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RSS-247: The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

RESULTS

The maximum power spectral density (PSD) was measured using the method according to point F) referencing E.2.b) (Method SA-1) of Guidance 789033 D02 General UNII Test Procedures New Rules v02r01.

The PSD test uses the same setup than the transmitter maximum conducted output power test. The result of the Peak PSD was measured by setting a marker on the peak of the signal and the results are in the tables below.

SISO Antenna Port 1:

FCC power setting

Mode: QPSK - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 10.21 | 10.17 | 10.07 |
| PSD Limit (dBm/MHz) | 11 | | |
| Margin (dB) | 0.79 | 0.83 | 0.93 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 16QAM - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 10.29 | 10.47 | 10.05 |
| PSD Limit (dBm/MHz) | 11 | | |
| Margin (dB) | 0.71 | 0.53 | 0.95 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 64QAM - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 10.56 | 10.56 | 9.86 |
| PSD Limit (dBm/MHz) | 11 | | |
| Margin (dB) | 0.44 | 0.44 | 1.14 |
| Measurement uncertainty (dB) | <±1.20 | | |

Canada power setting

Mode: QPSK - 20MHz

Declared antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 6.54 | 6.39 | 6.94 |
| e.i.r.p PSD (dBm/MHz) | 9.54 | 9.39 | 9.94 |
| e.i.r.p PSD Limit (dBm/MHz) | 10 | | |
| Margin (dB) | 0.46 | 0.61 | 0.06 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 16QAM - 20MHz

Declared antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 6.52 | 6.39 | 6.94 |
| e.i.r.p PSD (dBm/MHz) | 9.52 | 9.39 | 9.94 |
| e.i.r.p PSD Limit (dBm/MHz) | 10 | | |
| Margin (dB) | 0.48 | 0.61 | 0.06 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 64QAM - 20MHz

Declared antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 6.49 | 6.44 | 6.87 |
| e.i.r.p PSD (dBm/MHz) | 9.49 | 9.44 | 9.87 |
| e.i.r.p PSD Limit (dBm/MHz) | 10 | | |
| Margin (dB) | 0.51 | 0.56 | 0.13 |
| Measurement uncertainty (dB) | <±1.20 | | |

SISO Antenna Port 2:

FCC power setting

Mode: QPSK - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 9.65 | 9.70 | 10.69 |
| PSD Limit (dBm/MHz) | 11 | | |
| Margin (dB) | 1.35 | 1.30 | 0.31 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 16QAM - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 9.59 | 9.85 | 10.86 |
| PSD Limit (dBm/MHz) | 11 | | |
| Margin (dB) | 1.41 | 1.15 | 0.14 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 64QAM - 20MHz

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 9.51 | 9.55 | 10.53 |
| PSD Limit (dBm/MHz) | 11 | | |
| Margin (dB) | 1.49 | 1.45 | 0.47 |
| Measurement uncertainty (dB) | <±1.20 | | |

Canada power setting

Mode: QPSK - 20MHz

Declared antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 6.87 | 6.29 | 6.23 |
| e.i.r.p PSD (dBm/MHz) | 9.87 | 9.29 | 9.23 |
| e.i.r.p PSD Limit (dBm/MHz) | 10 | | |
| Margin (dB) | 0.13 | 0.71 | 0.77 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 16QAM - 20MHz

Declared antenna gain: 3 dBi

| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 6.31 | 6.55 | 6.57 |
| e.i.r.p PSD (dBm/MHz) | 9.31 | 9.55 | 9.57 |
| e.i.r.p PSD Limit (dBm/MHz) | 10 | | |
| Margin (dB) | 0.69 | 0.45 | 0.43 |
| Measurement uncertainty (dB) | <±1.20 | | |

Mode: 64QAM - 20MHz

Declared antenna gain: 3 dBi

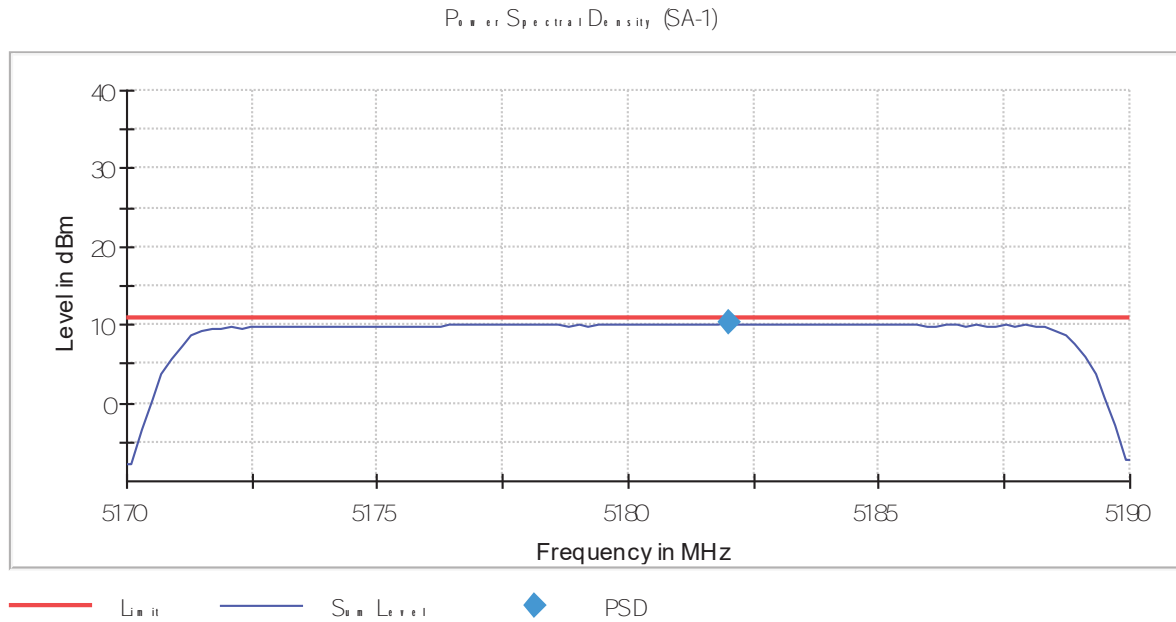
| | channel 36 5180 MHz | channel 40 5200 MHz | channel 48 5240 MHz |
|------------------------------|------------------------|------------------------|------------------------|
| PSD (dBm/MHz) | 6.28 | 6.51 | 6.48 |
| e.i.r.p PSD (dBm/MHz) | 9.28 | 9.51 | 9.48 |
| e.i.r.p PSD Limit (dBm/MHz) | 10 | | |
| Margin (dB) | 0.72 | 0.49 | 0.52 |
| Measurement uncertainty (dB) | <±1.20 | | |

SISO Antenna Port 1:

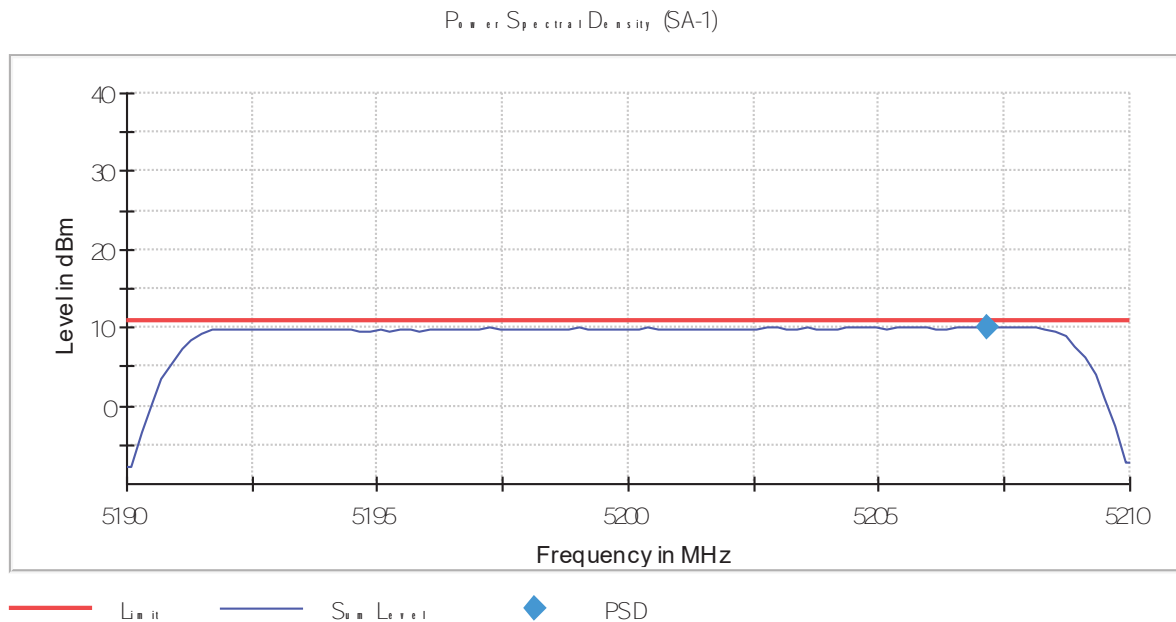
FCC power setting

QPSK- 20MHz:

- Low Channel 36:

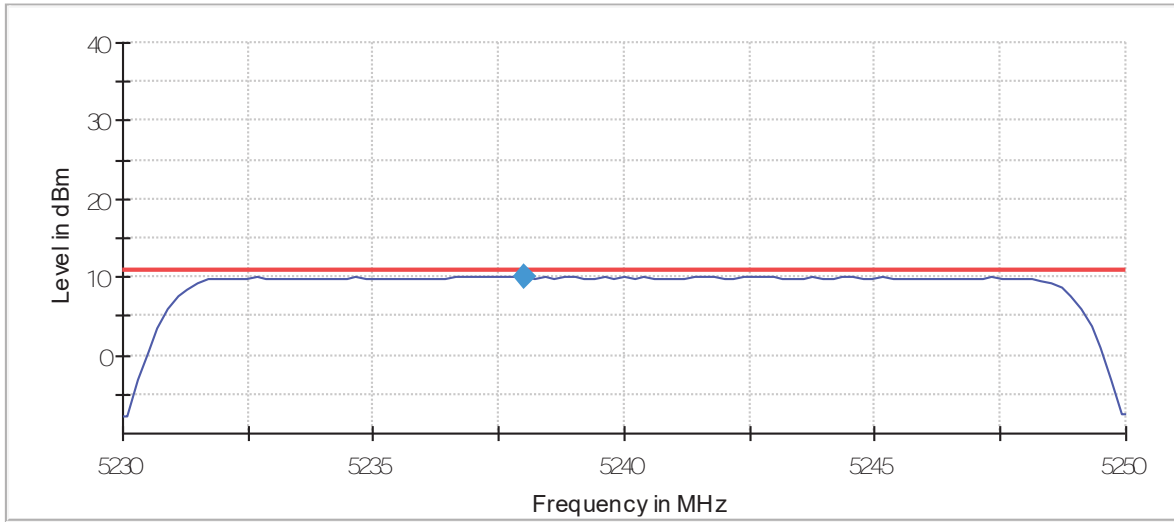


- Middle Channel 40:



- High Channel 48:

Power Spectral Density (SA-1)

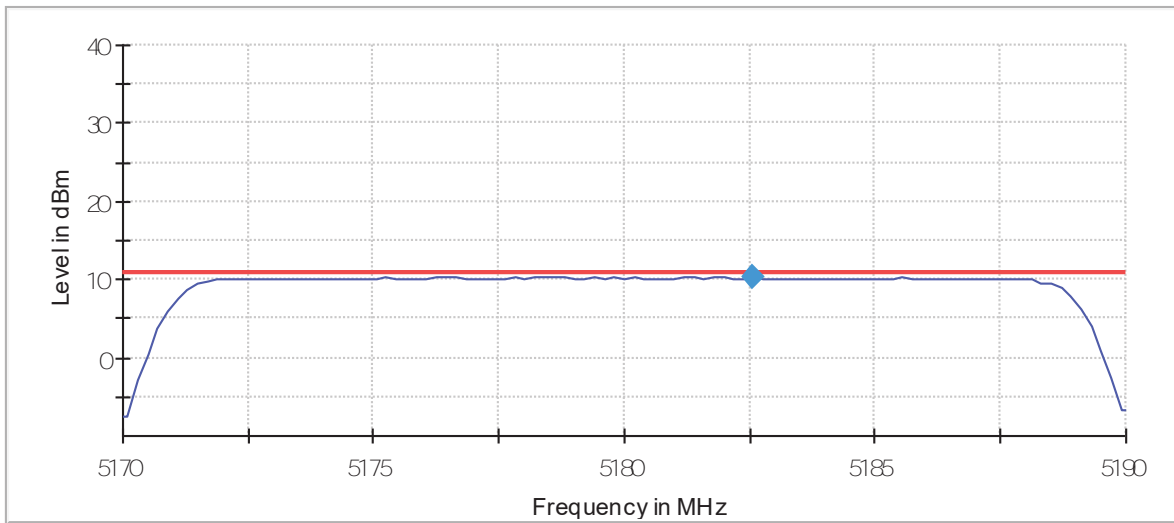


— Limit — Spectrum Level ◆ PSD

16QAM- 20MHz:

- Low Channel 36:

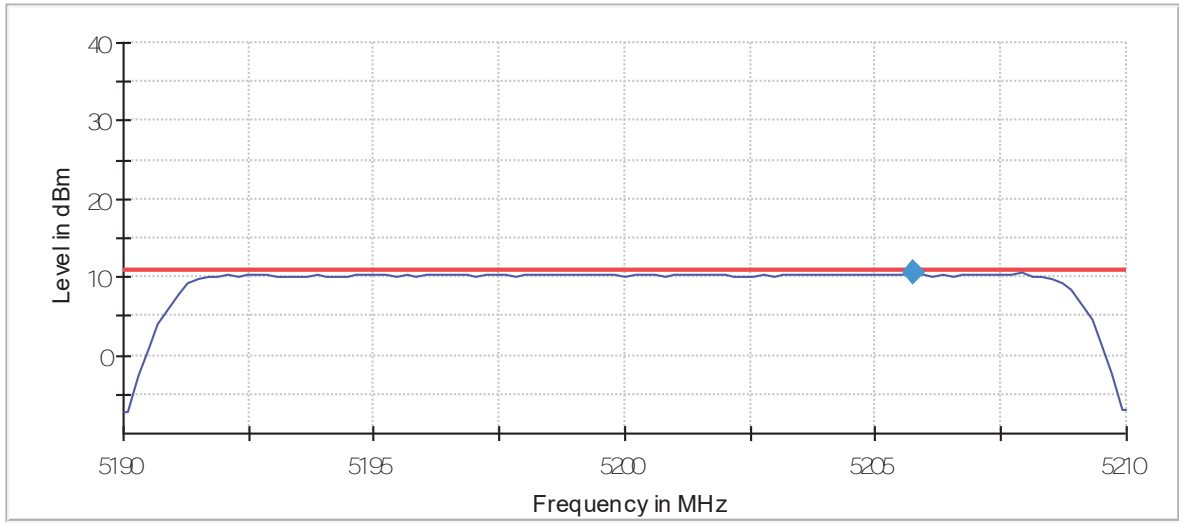
Power Spectral Density (SA-1)



— Limit — Spectrum Level ◆ PSD

- Middle Channel 40:

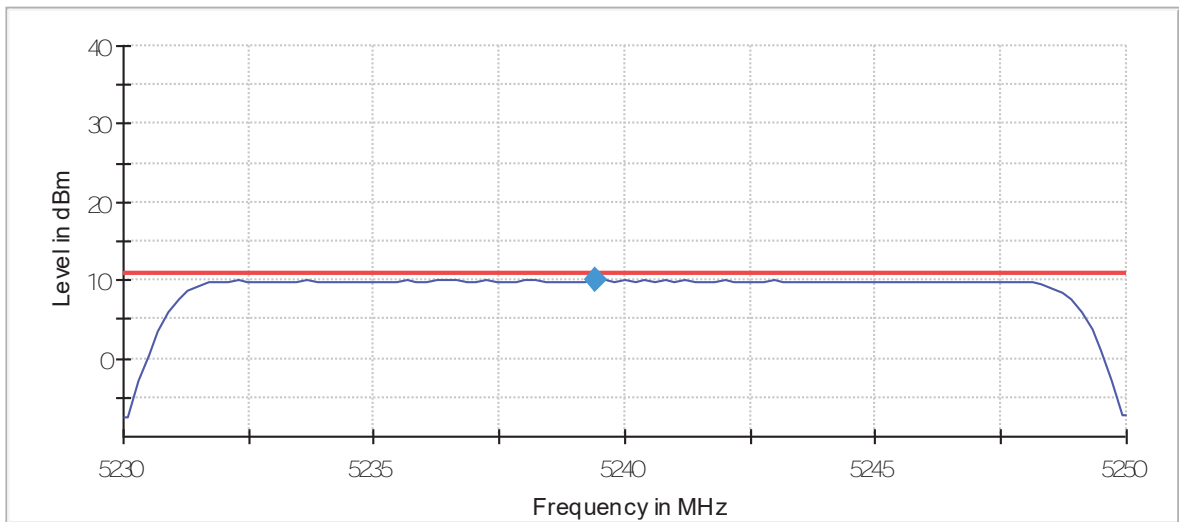
Power Spectral Density (SA-1)



— L_{mit} — S_{gn Level} ◆ PSD

- High Channel 48:

Power Spectral Density (SA-1)

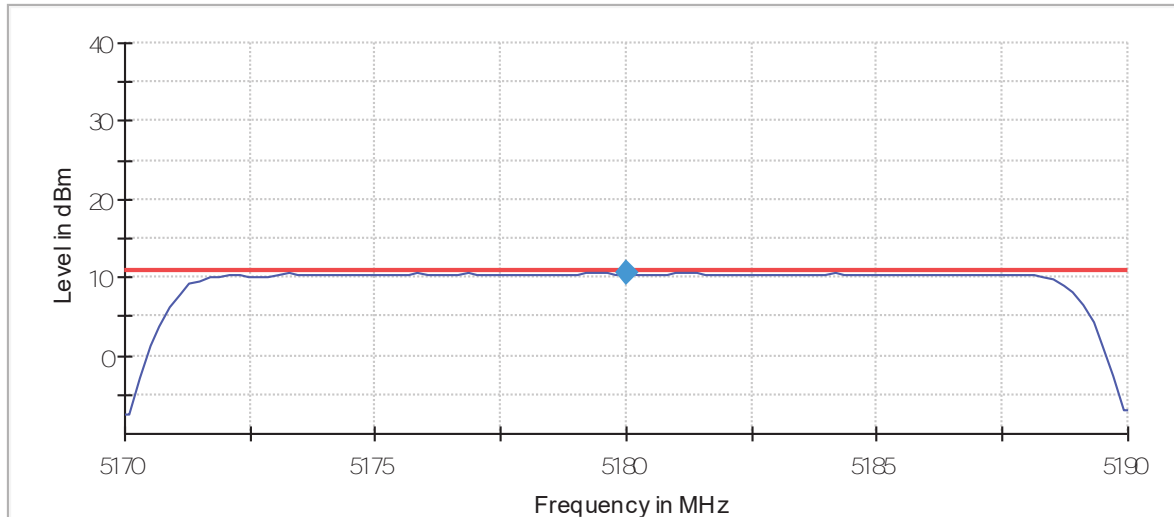


— L_{mit} — S_{gn Level} ◆ PSD

64QAM- 20MHz:

- Low Channel 36:

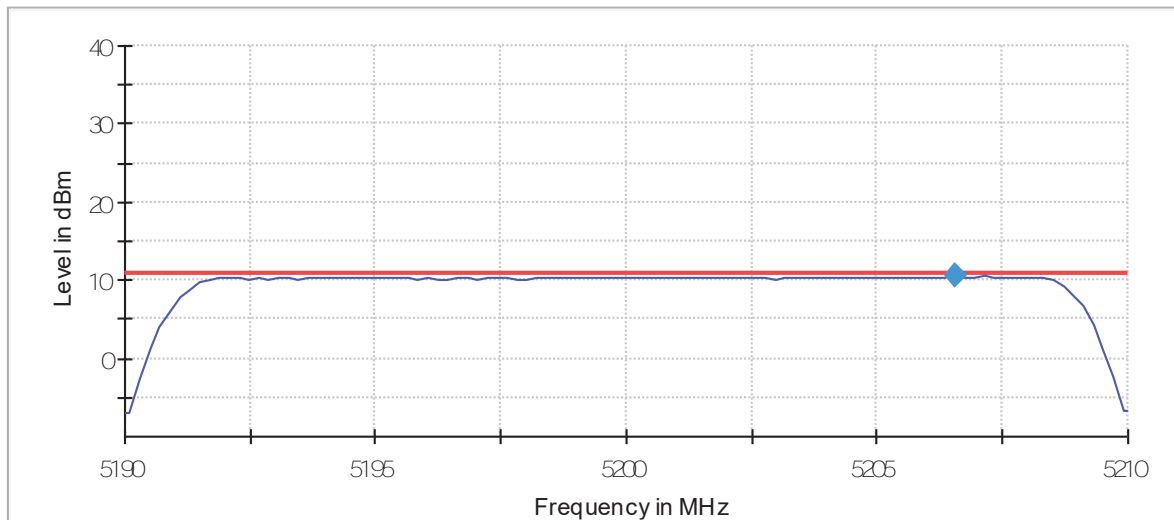
Power Spectral Density (SA-1)



— Limit — Spectrum Level ◆ PSD

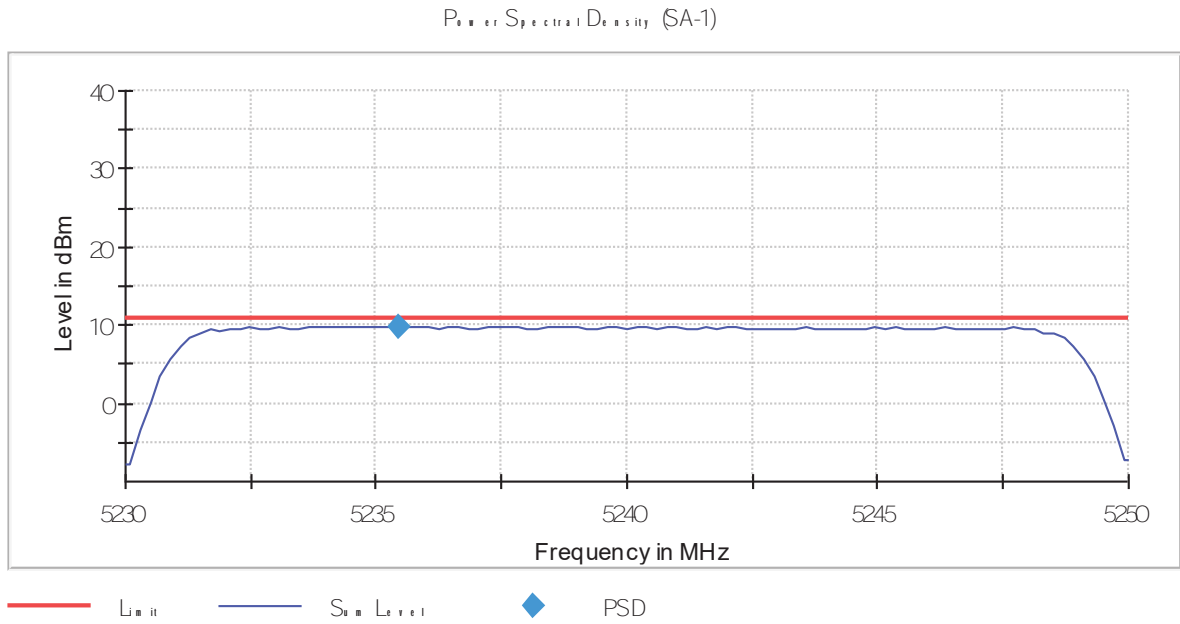
- Middle Channel 40:

Power Spectral Density (SA-1)



— Limit — Spectrum Level ◆ PSD

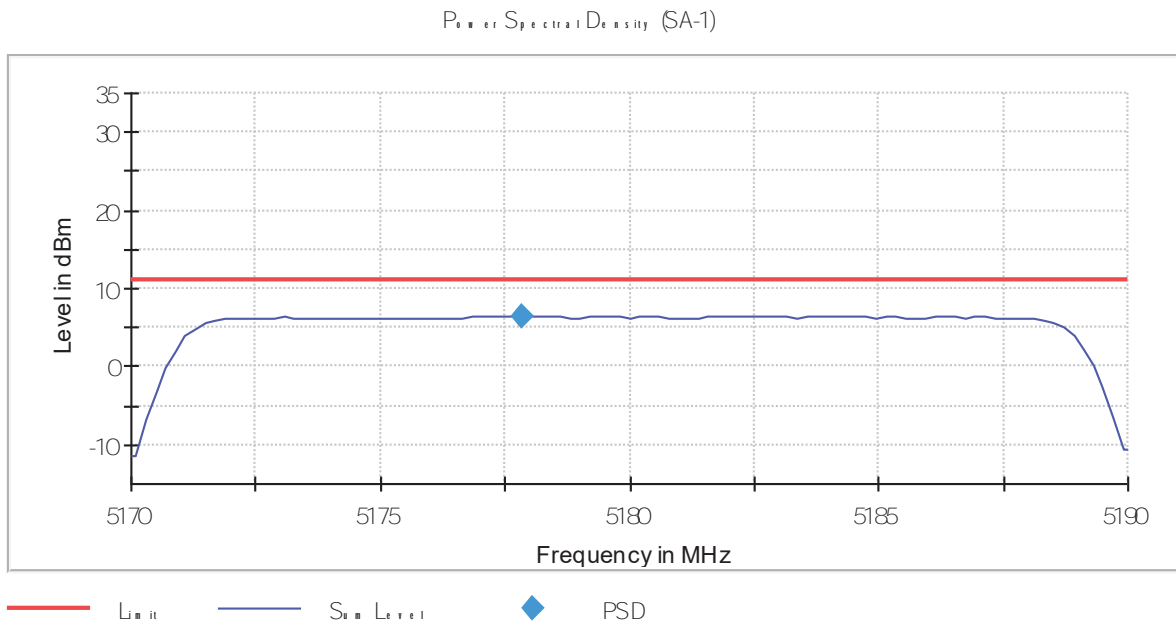
- High Channel 48:



CANADA power setting

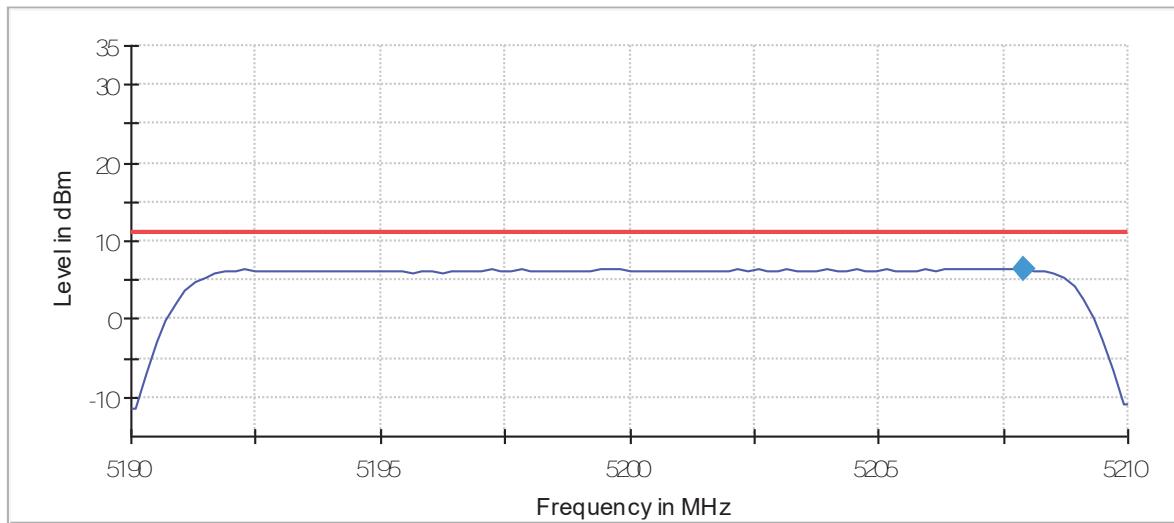
QPSK- 20MHz:

- Low Channel 36:



- Middle Channel 40:

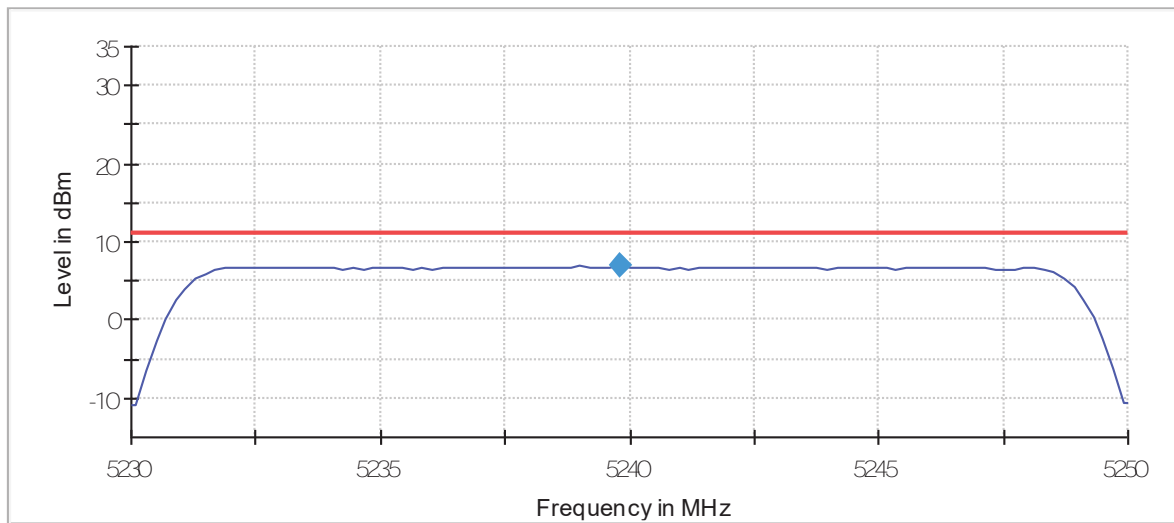
Power Spectral Density (SA-1)



— Limit — Signal Level ◆ PSD

- High Channel 48:

Power Spectral Density (SA-1)

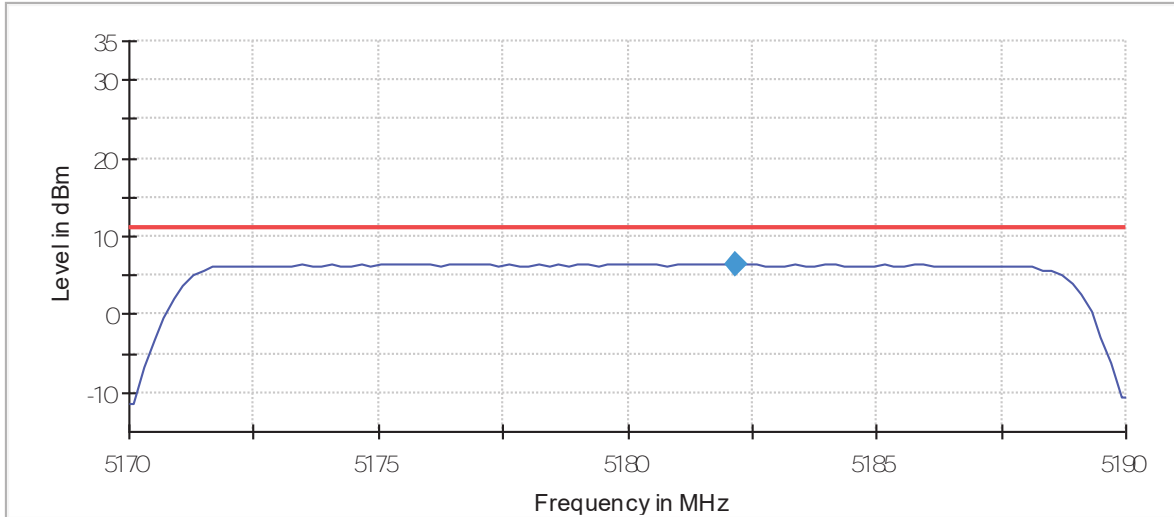


— Limit — Signal Level ◆ PSD

16QAM- 20MHz:

- Low Channel 36:

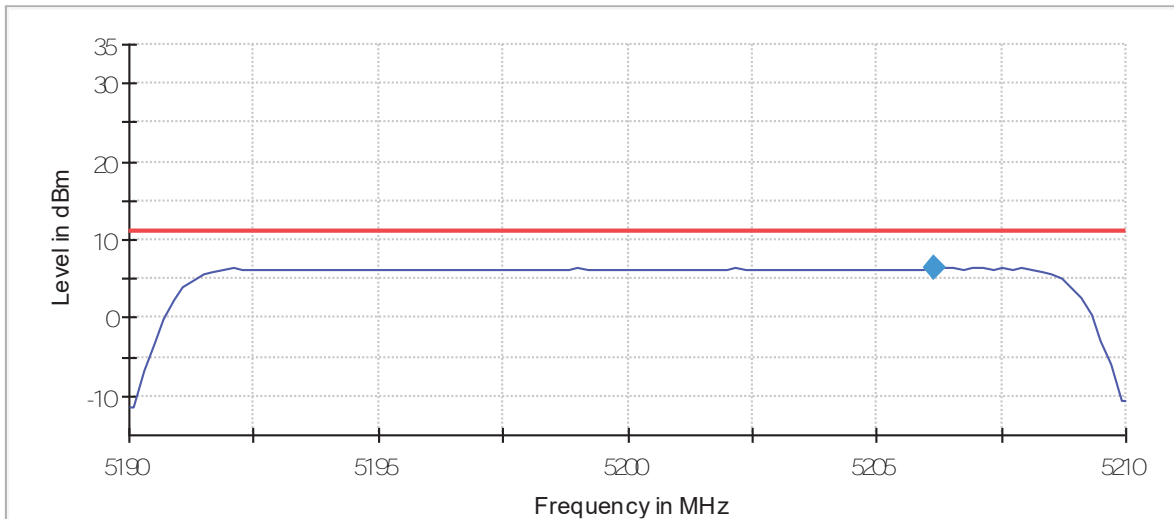
Power Spectral Density (SA-1)



— Limit — Spectrum ◆ PSD

- Middle Channel 40:

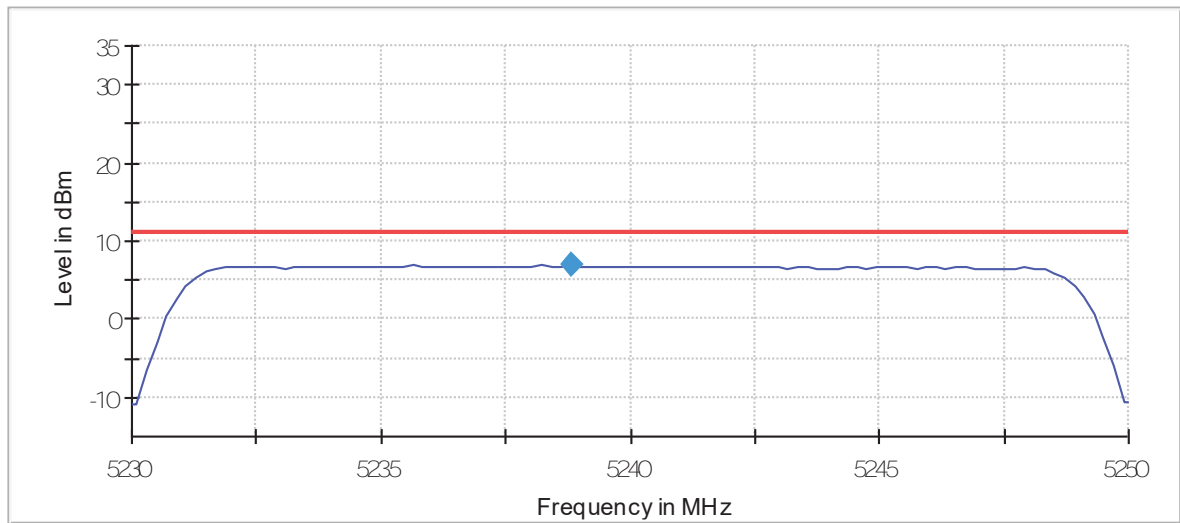
Power Spectral Density (SA-1)



— Limit — Spectrum ◆ PSD

- High Channel 48:

Power Spectral Density (SA-1)

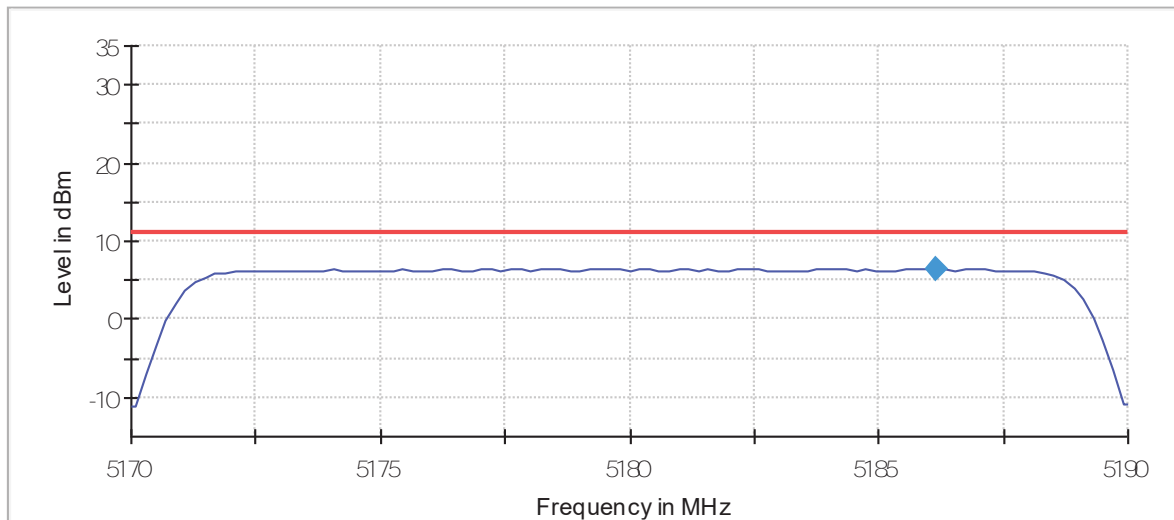


— Limit — Signal Level ◆ PSD

64QAM- 20MHz:

- Low Channel 36:

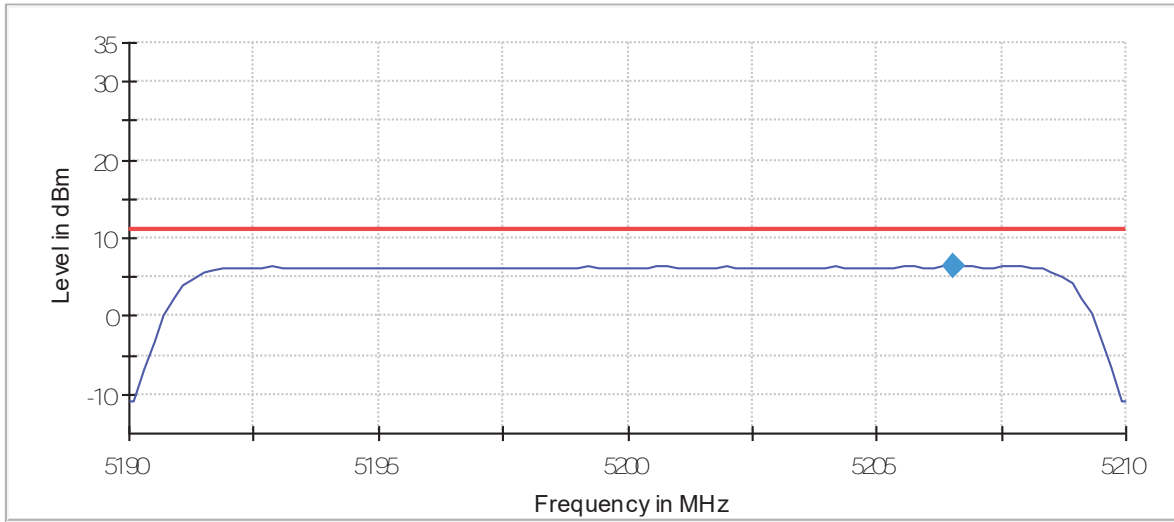
Power Spectral Density (SA-1)



— Limit — Signal Level ◆ PSD

- Middle Channel 40:

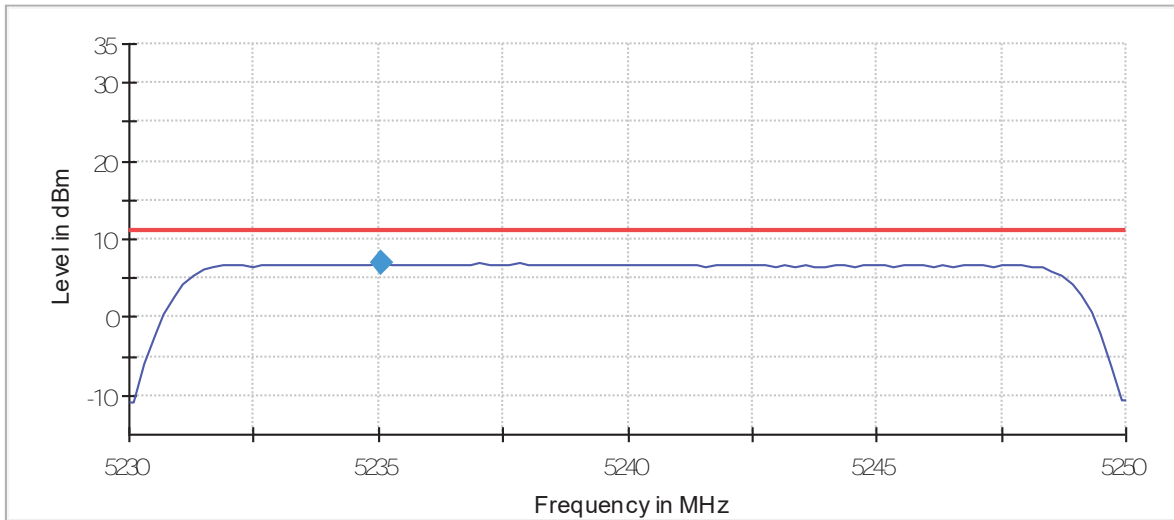
Power Spectral Density (SA-1)



— Limit — Signal Level ◆ PSD

- High Channel 48:

Power Spectral Density (SA-1)



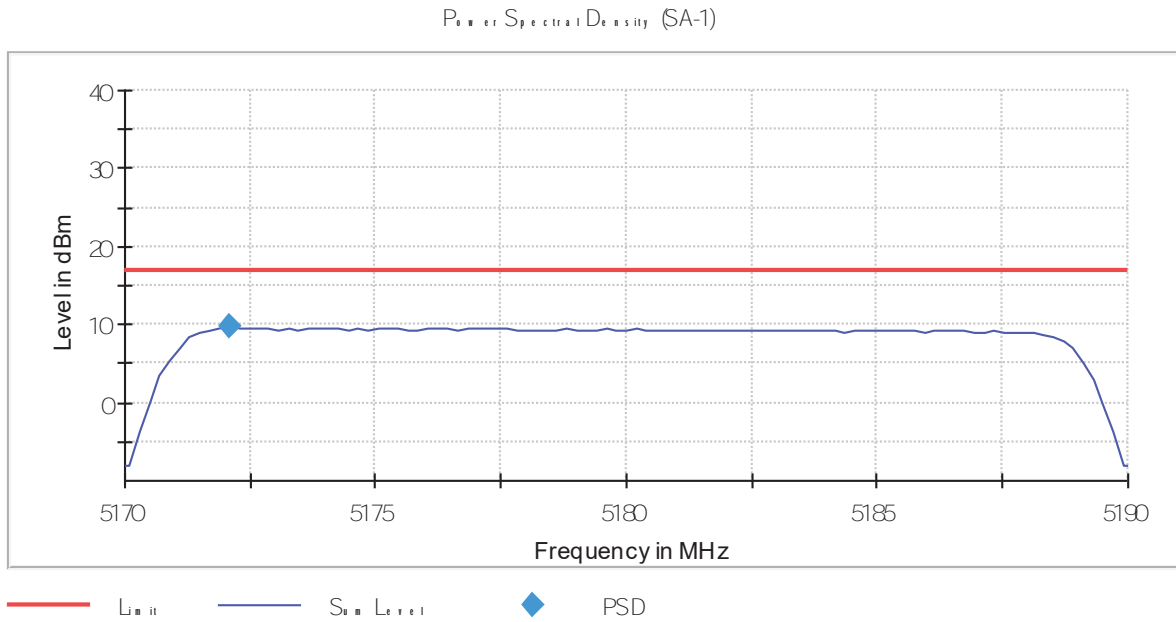
— Limit — Signal Level ◆ PSD

SISO Antenna Port 2:

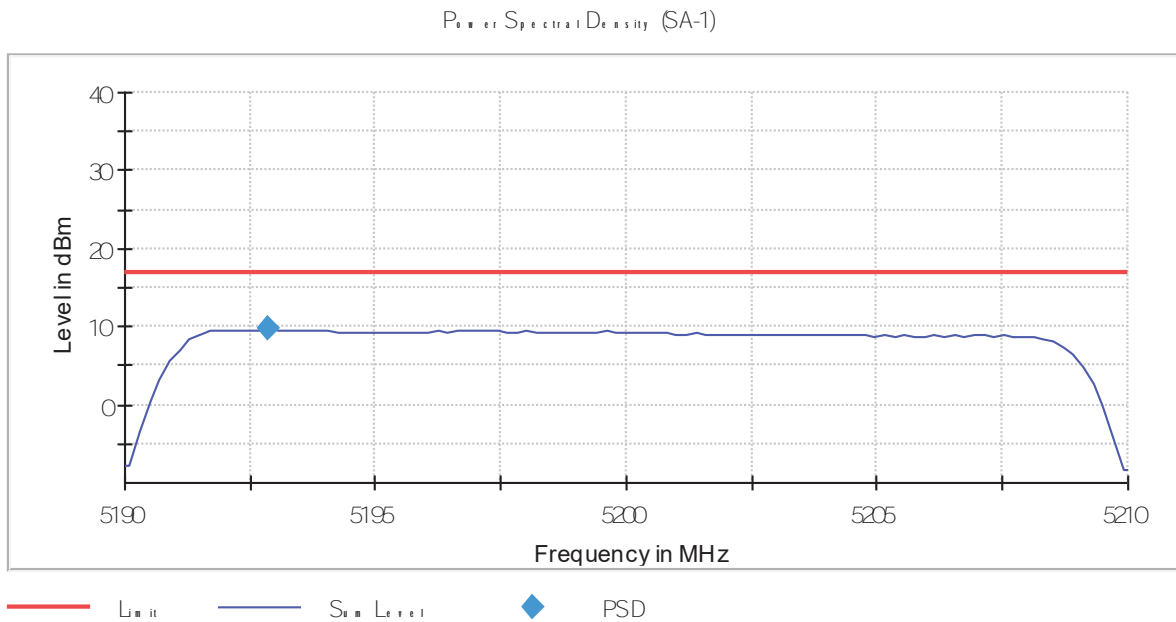
FCC power setting

QPSK- 20MHz:

- Low Channel 36:

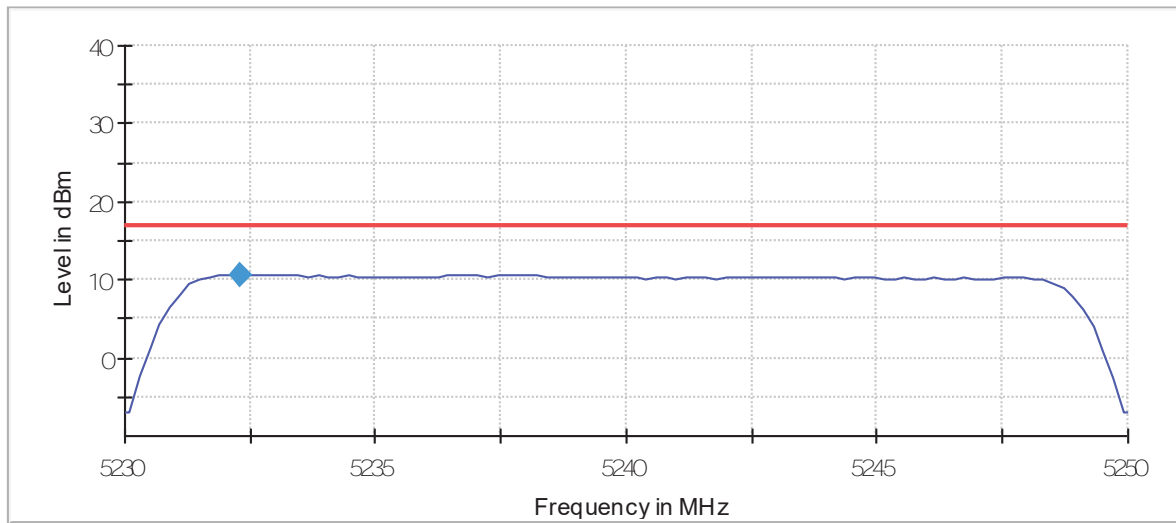


- Middle Channel 40:



- High Channel 48:

Power Spectral Density (SA-1)

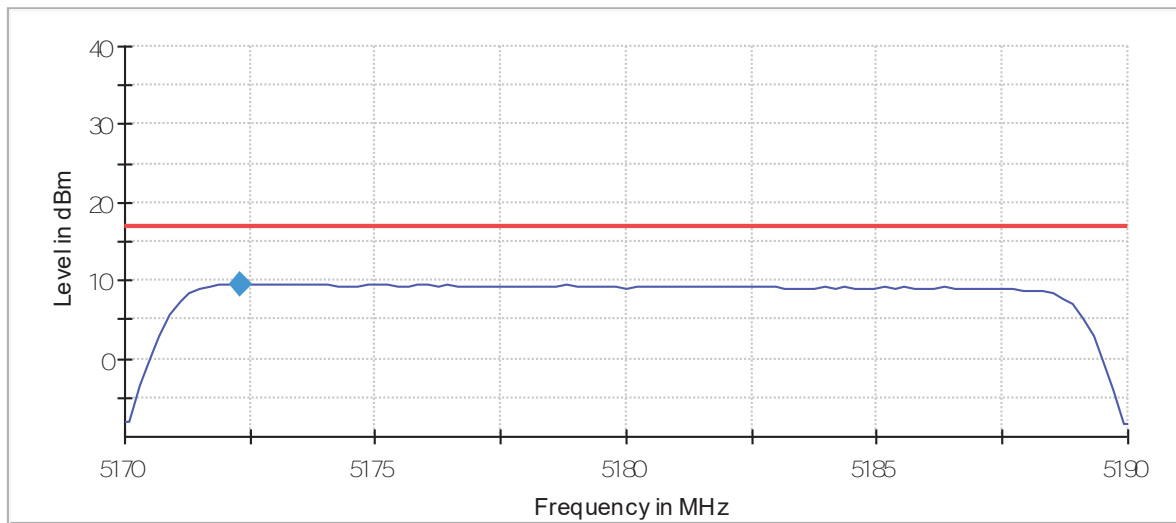


— Lim it — Sñal Level ◆ PSD

16QAM- 20MHz:

- Low Channel 36:

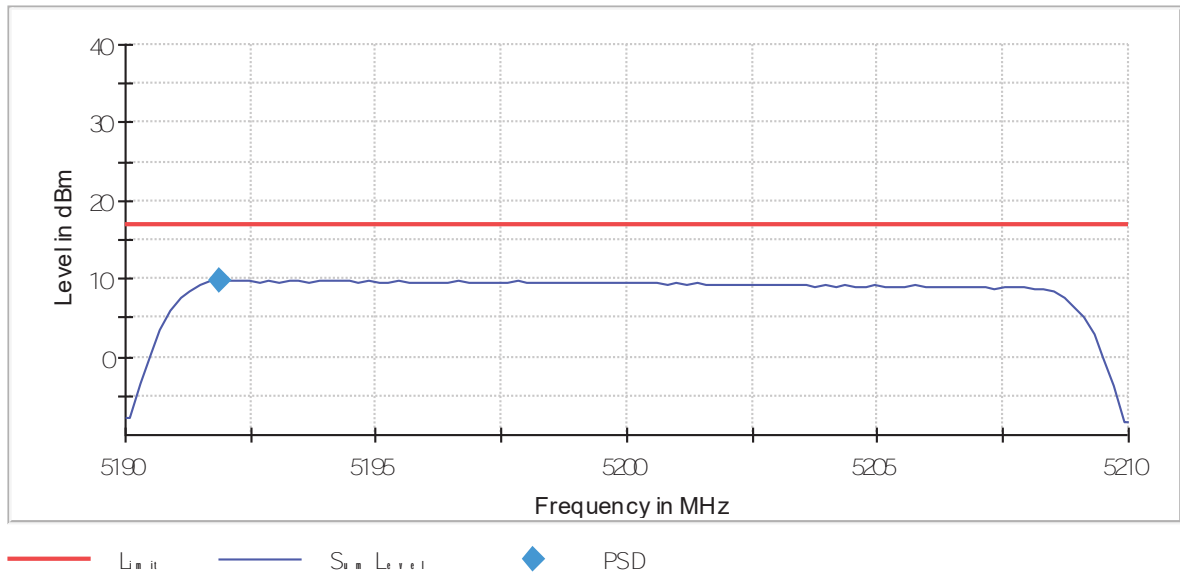
Power Spectral Density (SA-1)



— Lim it — Sñal Level ◆ PSD

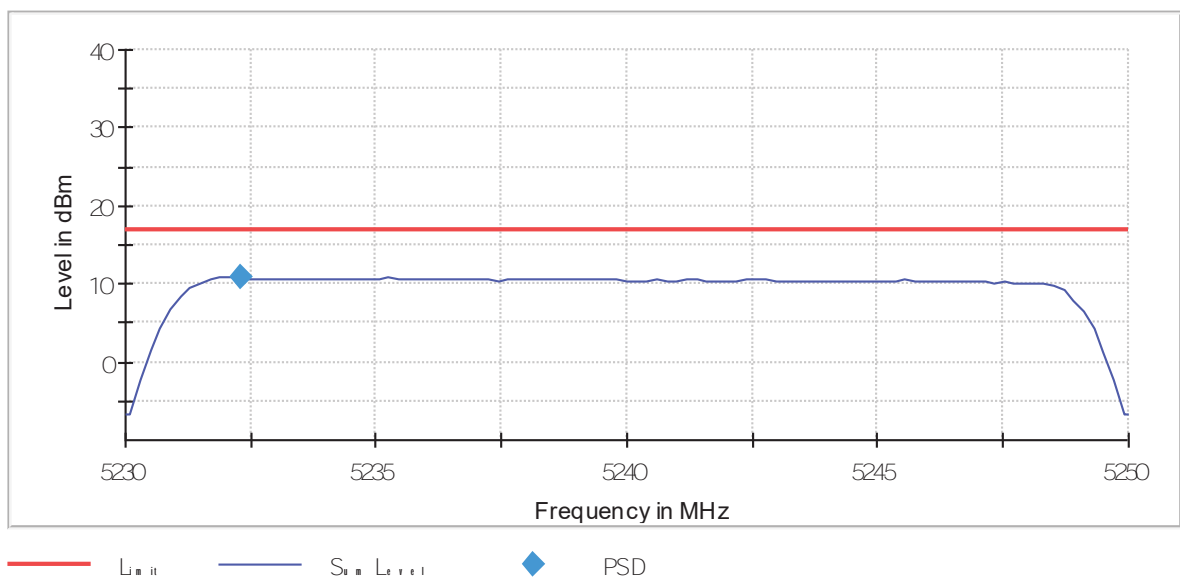
- Middle Channel 40:

Power Spectral Density (SA-1)



- High Channel 48:

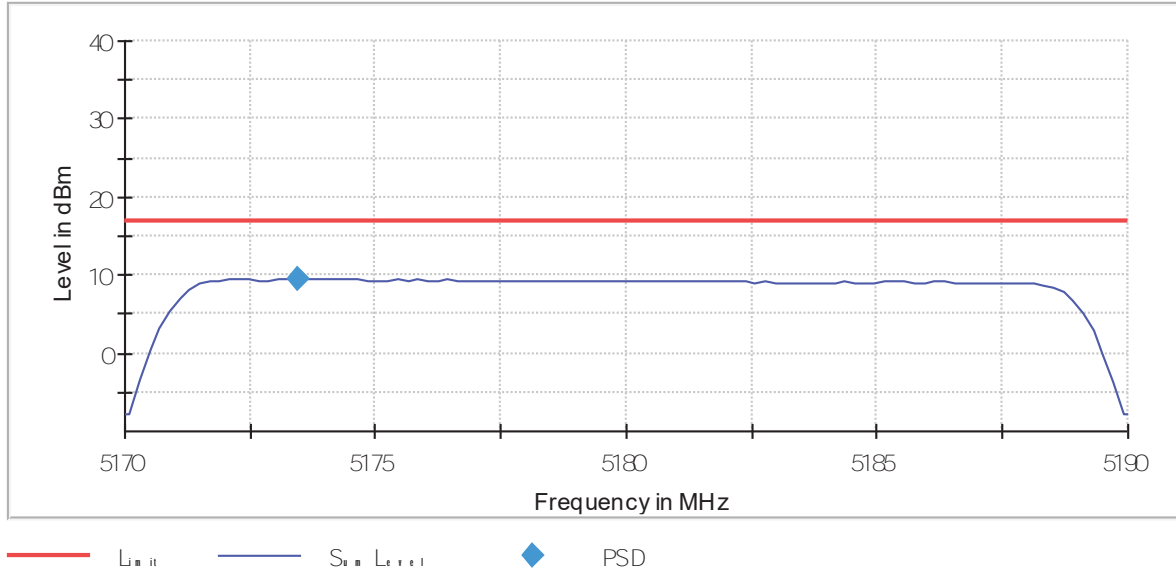
Power Spectral Density (SA-1)



64QAM- 20MHz:

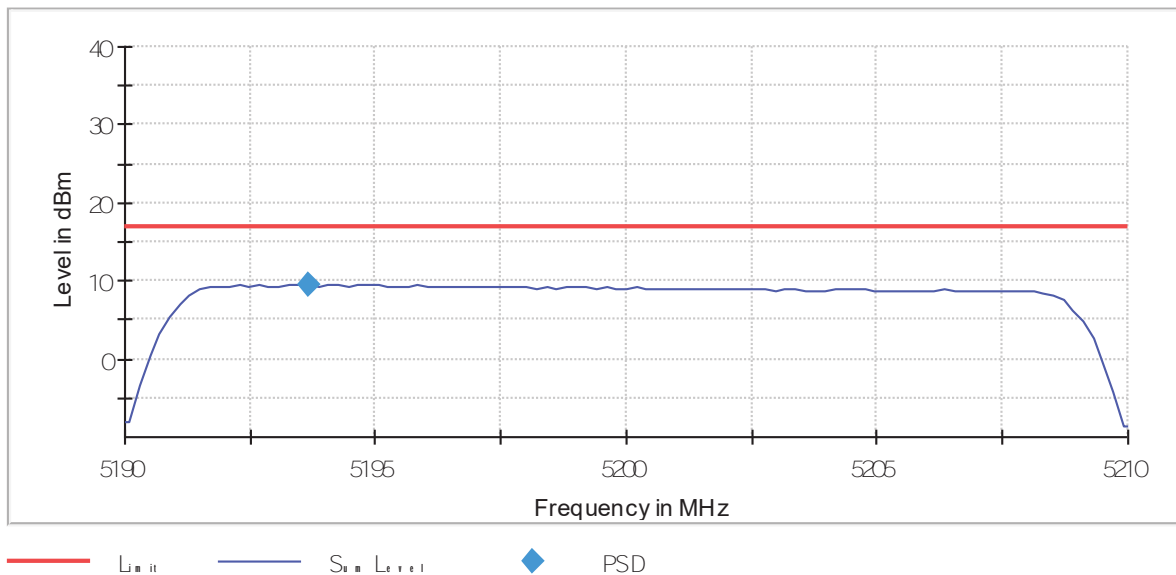
- Low Channel 36:

Power Spectral Density (SA-1)

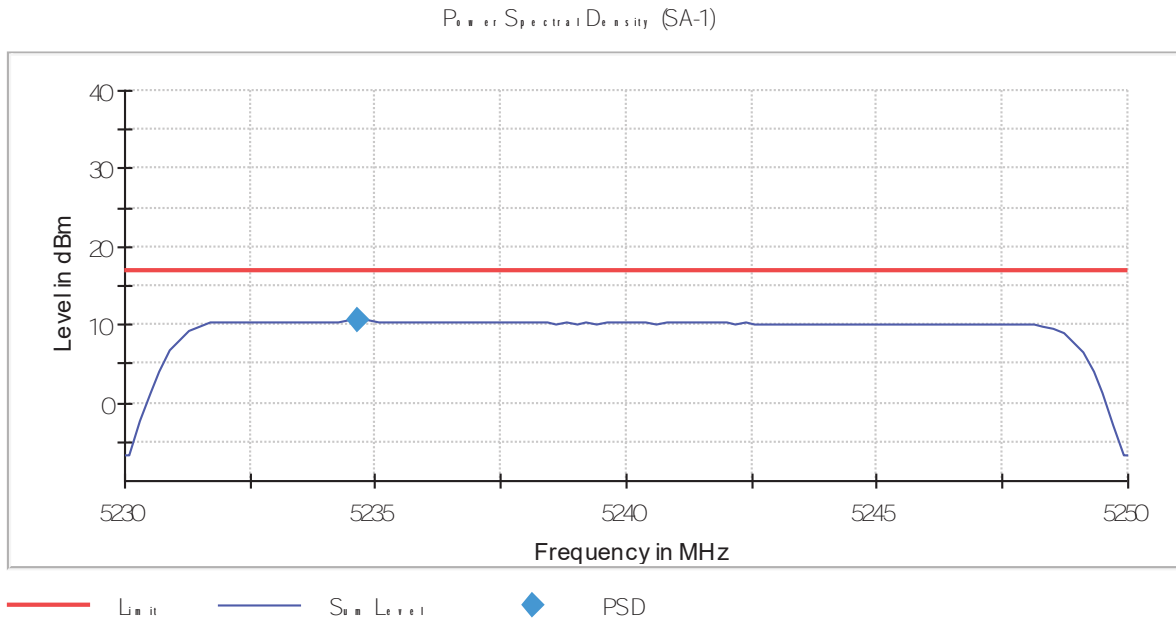


- Middle Channel 40:

Power Spectral Density (SA-1)



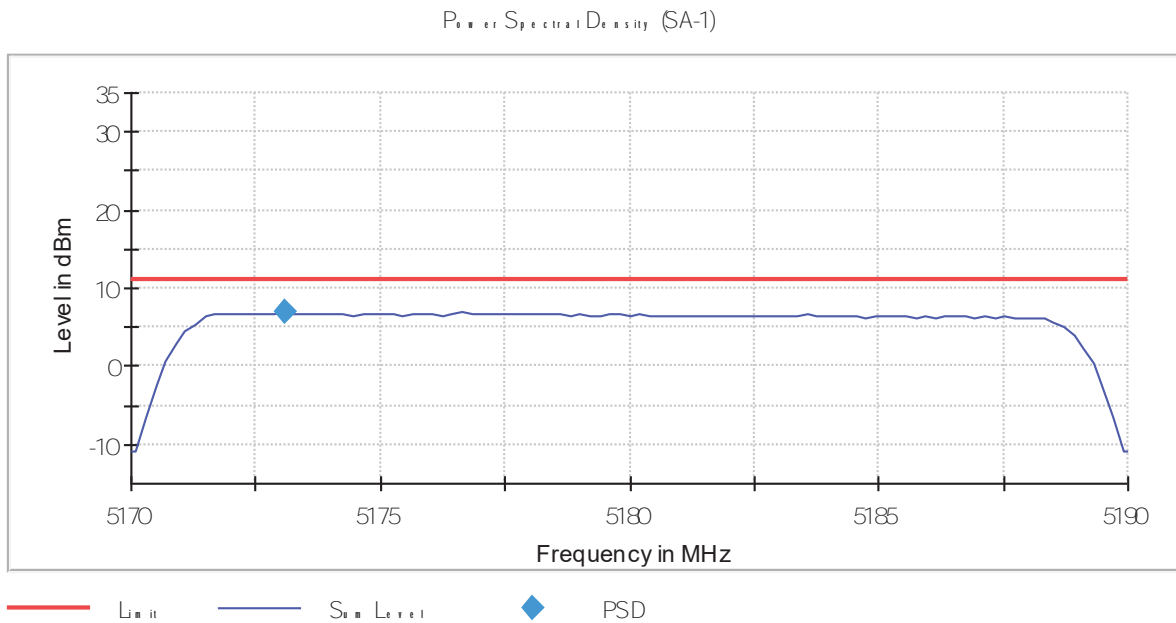
- High Channel 48:



CANADA power setting

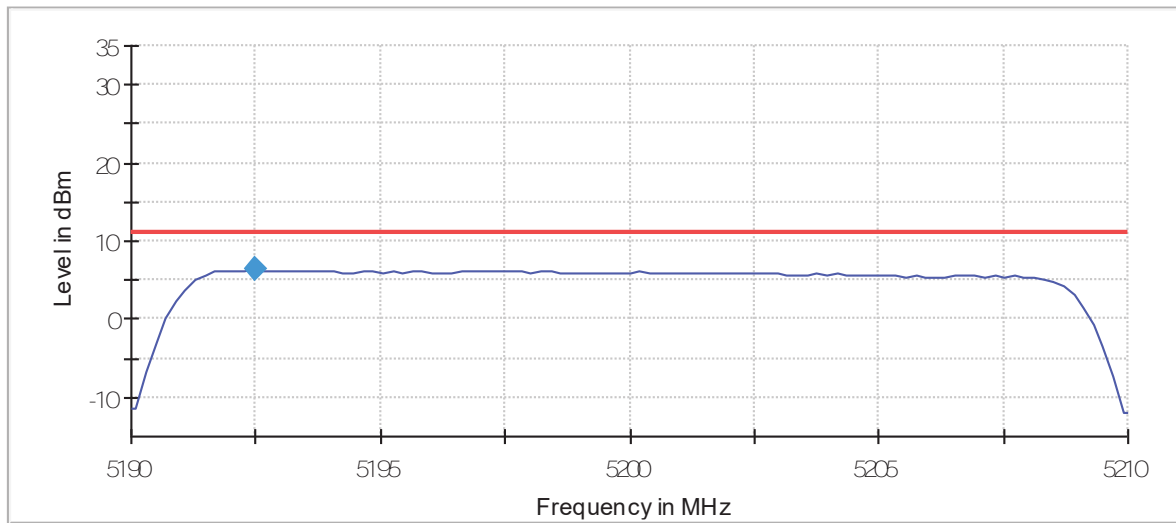
QPSK- 20MHz:

- Low Channel 36:



- Middle Channel 40:

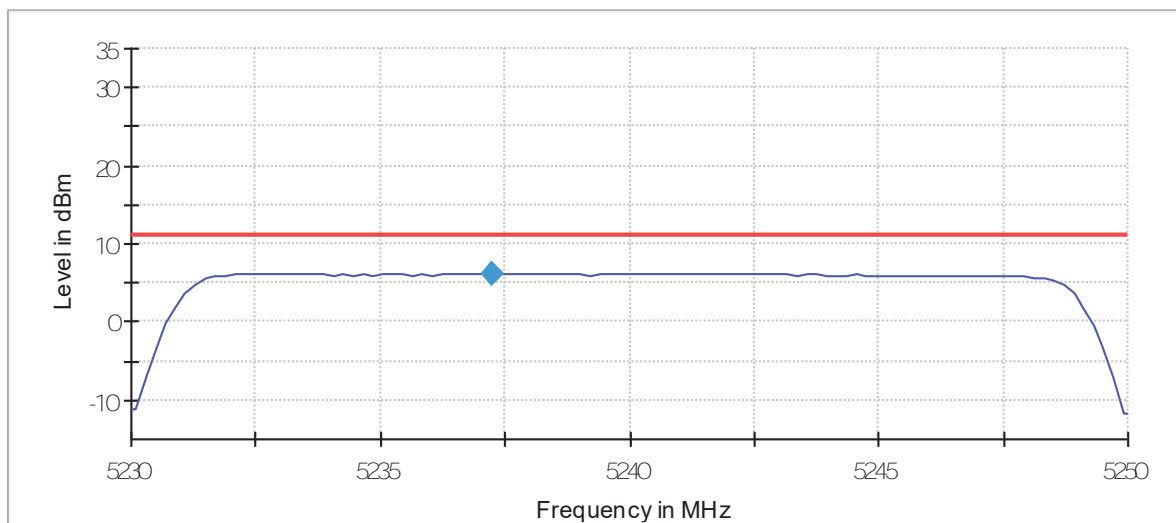
Power Spectral Density (SA-1)



— Limit — Signal Level ◆ PSD

- High Channel 48:

Power Spectral Density (SA-1)

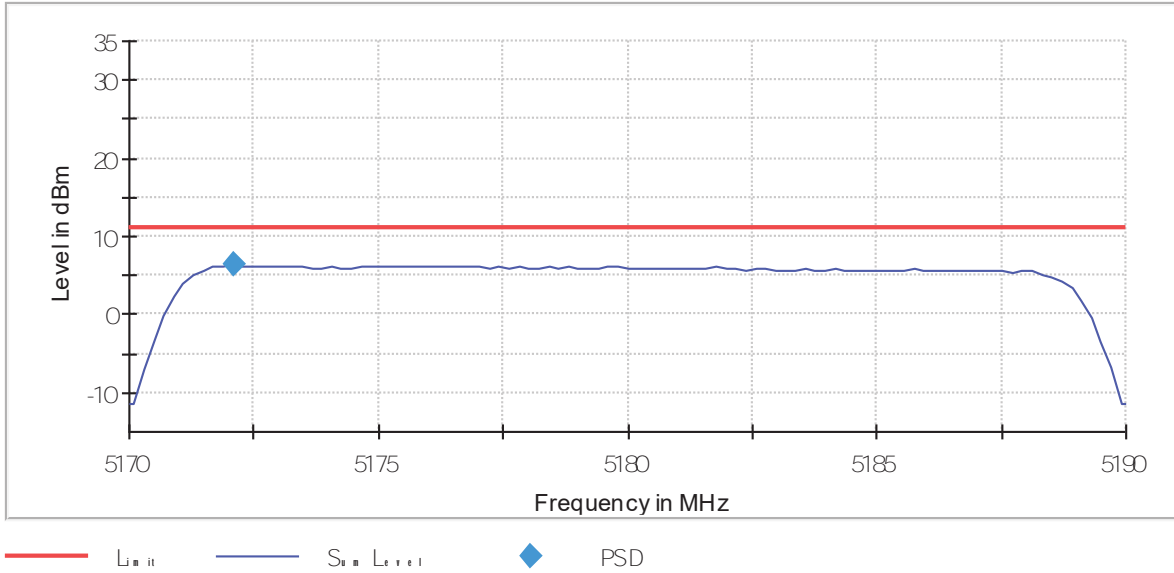


— Limit — Signal Level ◆ PSD

16QAM- 20MHz:

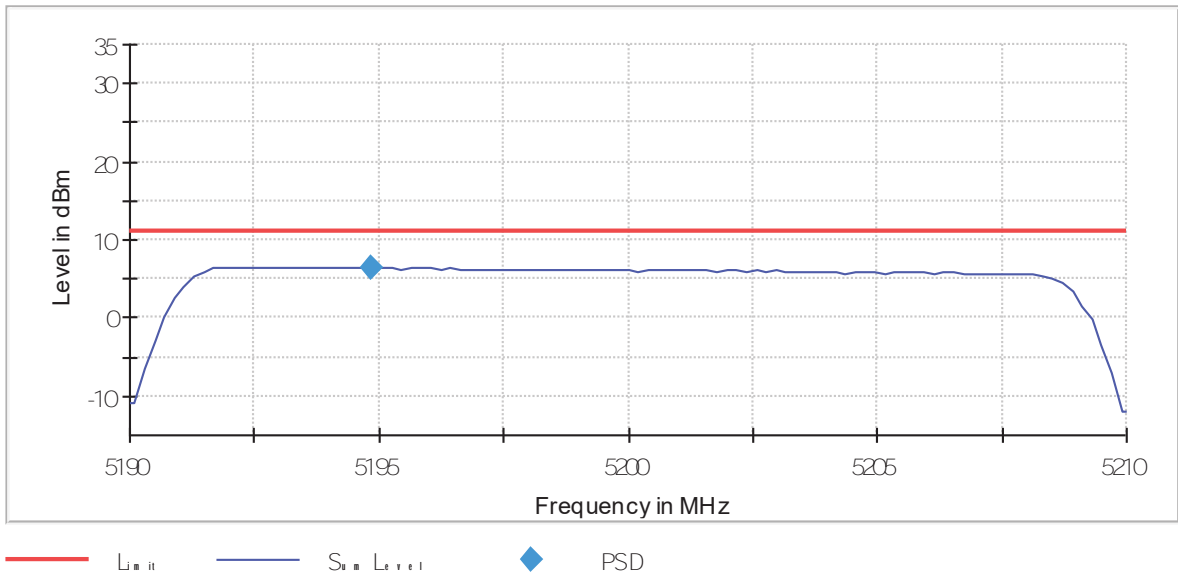
- Low Channel 36:

Power Spectral Density (SA-1)

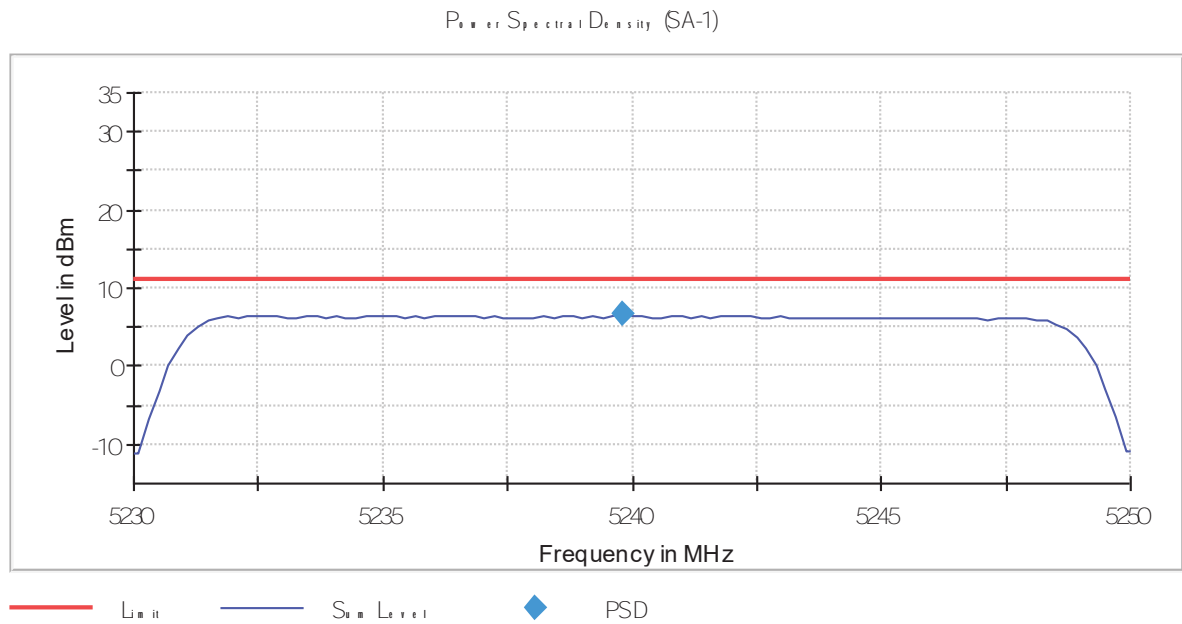


- Middle Channel 40:

Power Spectral Density (SA-1)

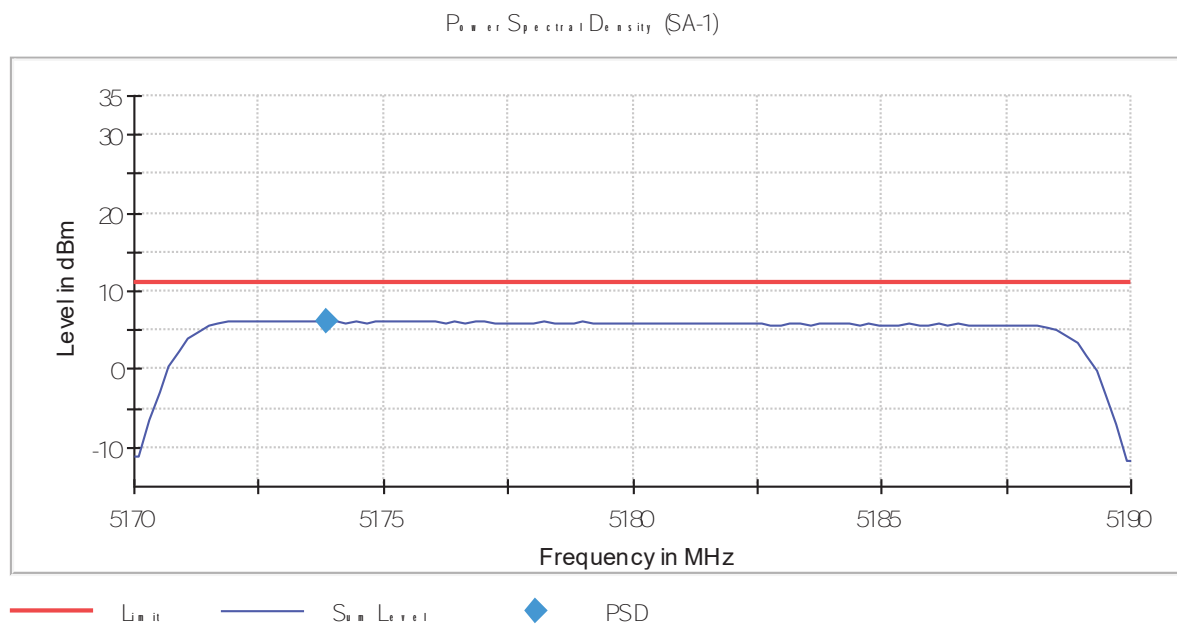


- High Channel 48:



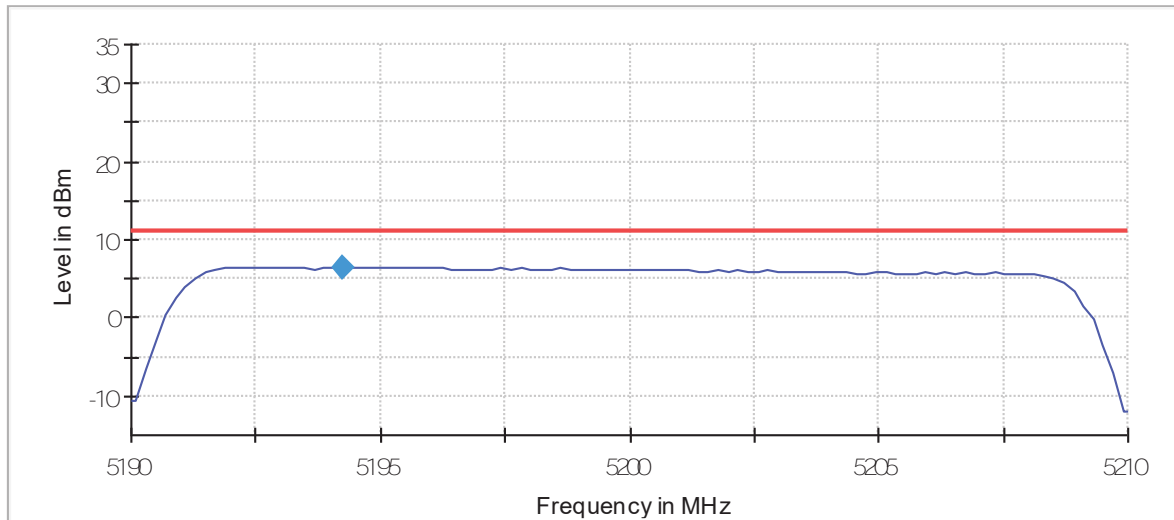
64QAM- 20MHz:

- Low Channel 36:



- Middle Channel 40:

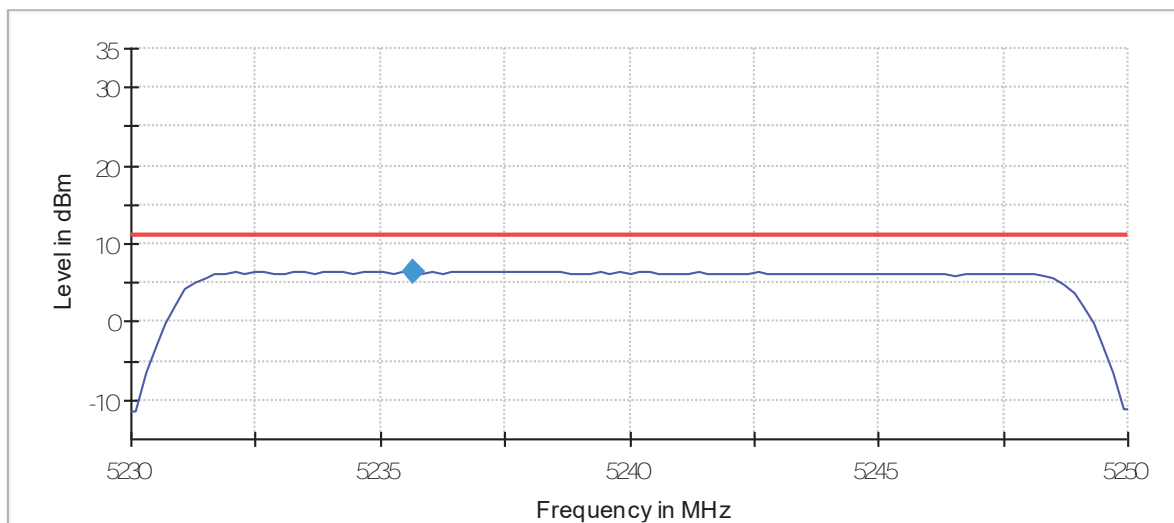
Power Spectral Density (SA-1)



— Limit — Signal Level ◆ PSD

- High Channel 48:

Power Spectral Density (SA-1)



— Limit — Signal Level ◆ PSD

FCC Section 15.407(b)(1)(6) /RSS-247 6.2.1.2. Transmitter Out of Band Radiated Emissions

SPECIFICATION

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz (68.23 dBμV/m at 3 m distance).

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):

| Frequency Range (MHz) | Field strength (μV/m) | Field strength (dBμV/m) | Measurement distance (m) |
|-----------------------|-----------------------|-------------------------|--------------------------|
| 0.009-0.490 | 2400/F(kHz) | - | 300 |
| 0.490-1.705 | 24000/F(kHz) | - | 300 |
| 1.705 - 30.0 | 30 | - | 30 |
| 30 - 88 | 100 | 40 | 3 |
| 88 - 216 | 150 | 43.5 | 3 |
| 216 - 960 | 200 | 46 | 3 |
| 960 - 40000 | 500 | 54 | 3 |

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-40 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

A preliminary scan determined the antenna port 2 and the 64QAM modulation as the worst case. The following tables and plots show the results for the worst case modulation.

SISO Antenna Port 2

Frequency range 30 MHz-1000 MHz.

Note: The spurious emissions below 1 GHz do not depend on either the operating channel or the modulation mode selected in the EUT.

Spurious levels operating (radiated) closest to limit.

| Spurious frequency (MHz) | Polarization | Detector | Emission Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Measurement Uncertainty (dB) |
|--------------------------|--------------|------------|-------------------------------|----------------------|-------------|------------------------------|
| 30.7760 | Vertical | Quasi-Peak | 22.57 | 40 | 17.43 | ± 4.99 |
| 39.9425 | Vertical | Quasi-Peak | 25.27 | 40 | 14.73 | ± 4.99 |
| 45.9080 | Vertical | Quasi-Peak | 31.86 | 40 | 8.14 | ± 4.99 |
| 60.4580 | Vertical | Quasi-Peak | 28.92 | 40 | 11.00 | ± 4.99 |
| 68.7515 | Vertical | Quasi-Peak | 31.25 | 40 | 8.75 | ± 4.99 |
| 875.0640 | Vertical | Quasi-Peak | 38.40 | 46.00 | 7.60 | ± 4.99 |

Frequency range 1 GHz-40 GHz

The results in the next tables show the maximum measured levels in the 1-40 GHz frequency range.

Mode 64QAM:

Channel 36

- Radiated spurious signals were detected at less than 20 dB respect to the limit.

| Spurious frequency (MHz) | Polarization | Detector | Emission Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Measurement Uncertainty (dB) |
|--------------------------|--------------|----------|-------------------------------|----------------------|-------------|------------------------------|
| 1849.6000 | Horizontal | Peak | 49.02 | 68.23 | 19.21 | ± 4.98 |
| 2178.8000 | Horizontal | Peak | 50.00 | 68.23 | 18.23 | ± 4.98 |
| 2586.0000 | Horizontal | Peak | 52.06 | 68.23 | 16.17 | ± 4.98 |

Channel 40

- Radiated spurious signals were detected at less than 20 dB respect to the limit.

| Spurious frequency (MHz) | Polarization | Detector | Emission Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Measurement Uncertainty (dB) |
|--------------------------|--------------|----------|-------------------------------|----------------------|-------------|------------------------------|
| 2085.6000 | Horizontal | Peak | 49.02 | 68.23 | 19.21 | ± 4.98 |
| 2600.8000 | Horizontal | Peak | 50.80 | 68.23 | 17.43 | ± 4.99 |

Channel 48

- Radiated spurious signals were detected at less than 20 dB respect to the limit.

| Spurious frequency (MHz) | Polarization | Detector | Emission Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Measurement Uncertainty (dB) |
|--------------------------|--------------|----------|-------------------------------|----------------------|-------------|------------------------------|
| 2142.2000 | Horizontal | Peak | 48.28 | 68.23 | 19.95 | ± 4.98 |
| 2586.8000 | Horizontal | Peak | 50.89 | 68.23 | 17.34 | ± 4.98 |

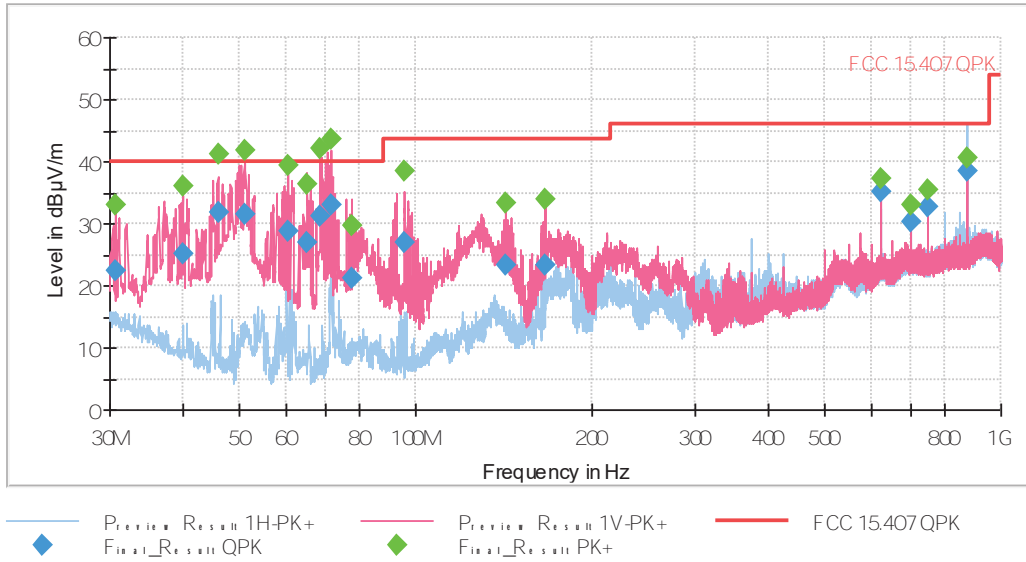
Measurement Uncertainty (dB): 1GHz to 17GHz $<\pm 4.98$

17GHz to 26.5GHz $<\pm 5.08$

26.5GHz to 40GHz $<\pm 5.33$

Verdict: PASS

SISO Antenna Port 2: FREQUENCY RANGE 30 MHz-1000 MHz.

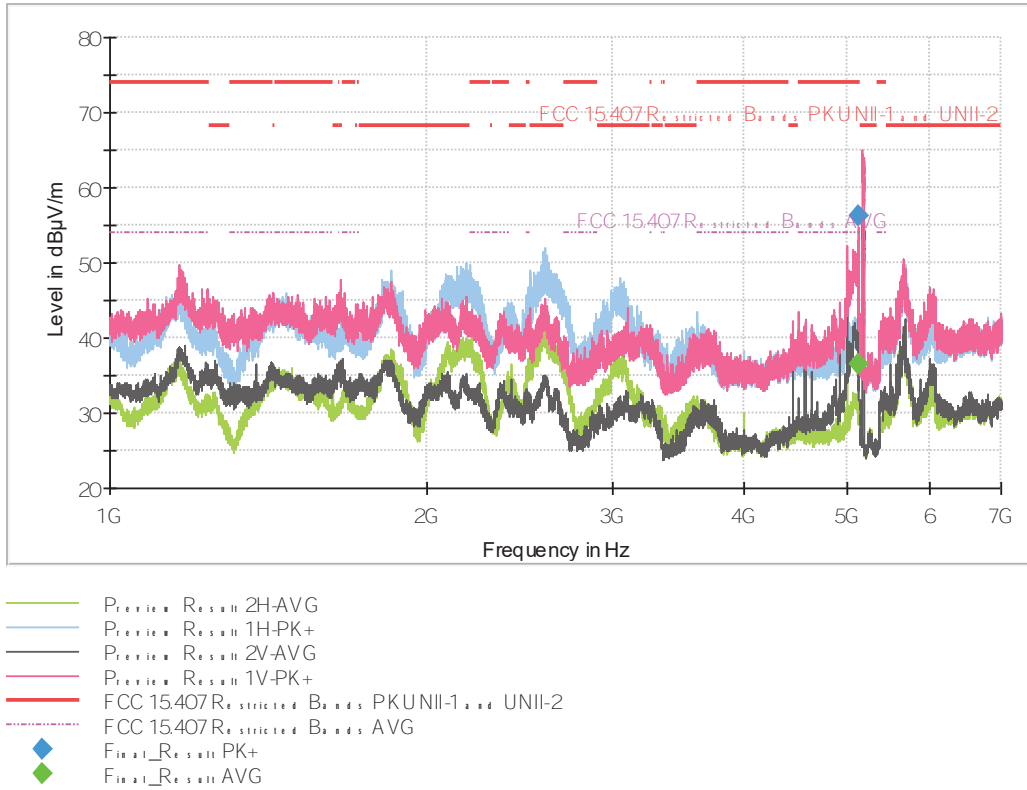


This plot is valid for all channels.

FREQUENCY RANGE 1 GHz to 7 GHz.

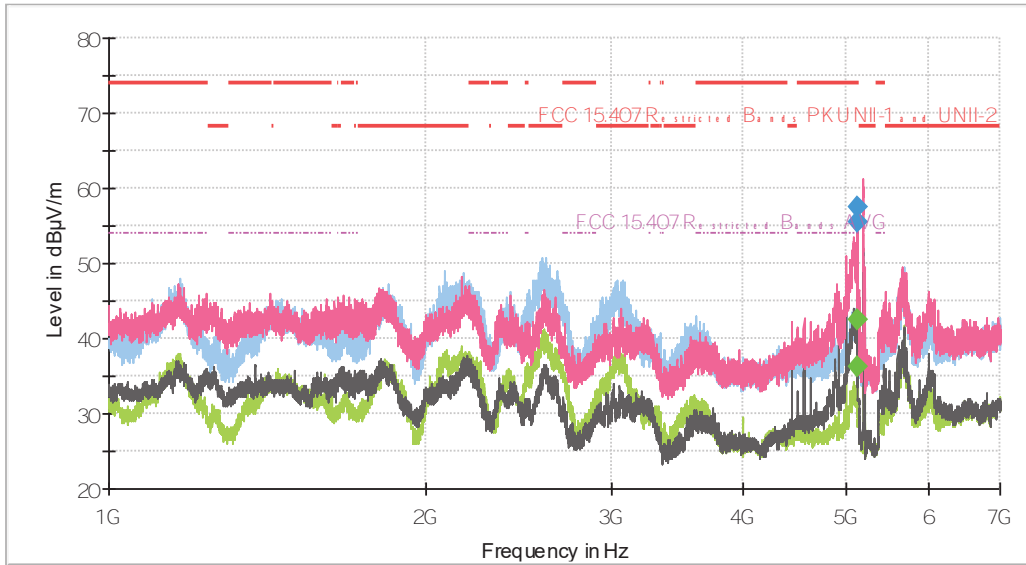
Mode 64QAM:

Channel 36



Note: The peak shown in the plot above the limit is the carrier frequency.

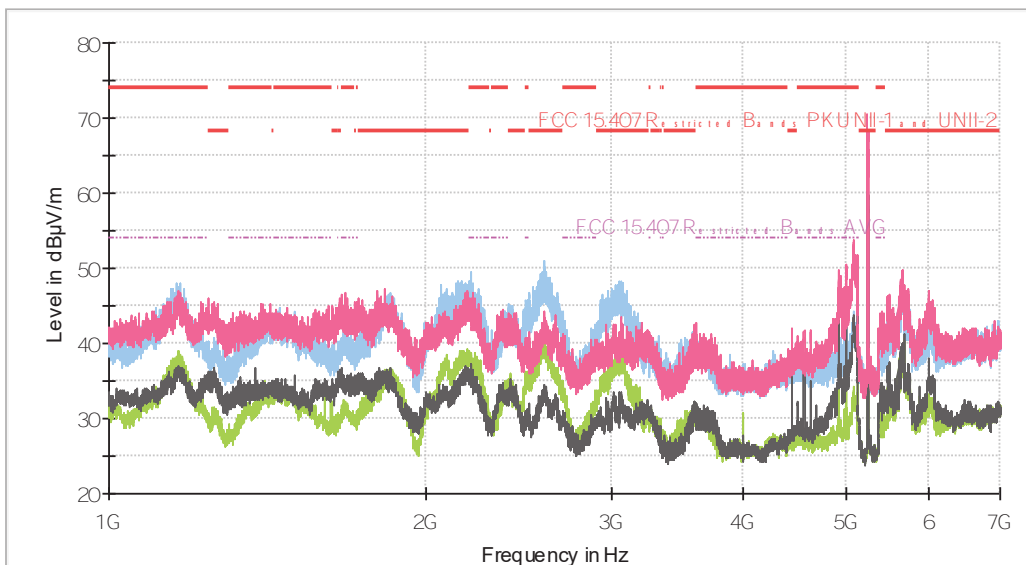
Channel 40



- 2H-AVG
- 1H-PK+
- 2V-AVG
- 1V-PK+
- FCC 15.407R, restricted Bands PKUNII-1, and UNII-2
- FCC 15.407R, restricted Bands AVG
- ◆ Final_Result PK+
- ◆ Final_Result AVG

Note: The peak shown in the plot above the limit is the carrier frequency

Channel 48



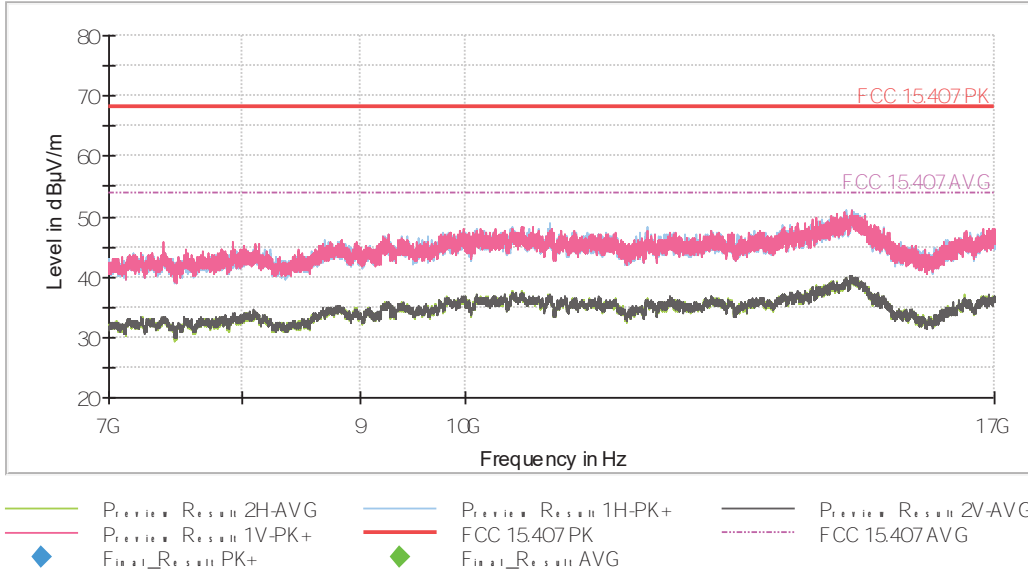
- 2H-AVG
- 1H-PK+
- 2V-AVG
- 1V-PK+
- FCC 15.407R, restricted Bands PKUNII-1, and UNII-2
- FCC 15.407R, restricted Bands AVG
- ◆ Final_Result PK+
- ◆ Final_Result AVG

Note: The peak shown in the plot above the limit is the carrier frequency

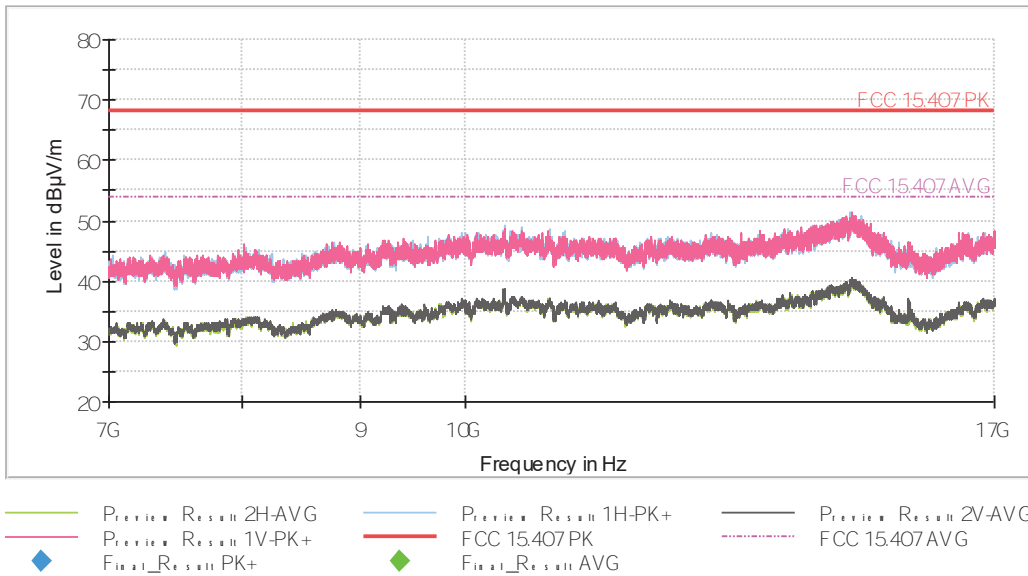
FREQUENCY RANGE 7 GHz to 17 GHz.

Mode 64QAM:

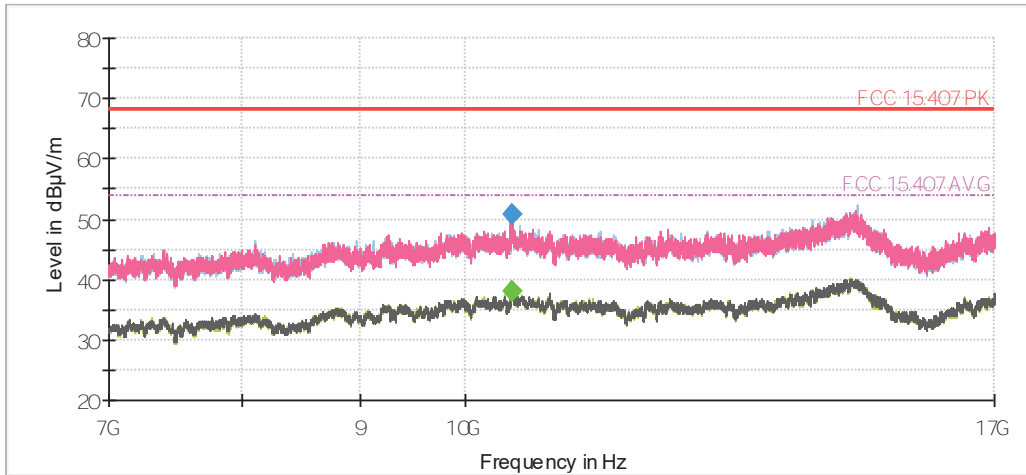
Channel 36



Channel 40



Channel 48

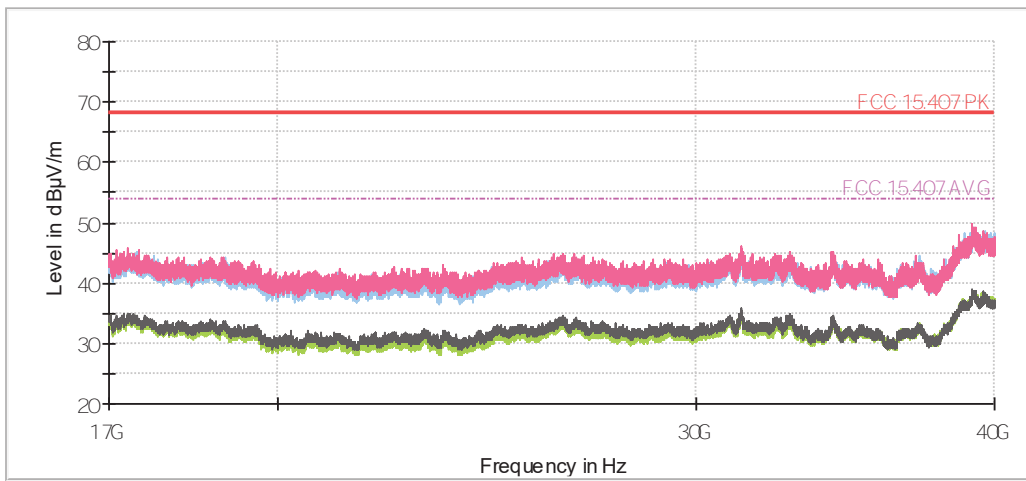


- | | | | | | |
|--|-----------------------|--|-----------------------|--|-----------------------|
| | Preview_Result 2H-AVG | | Preview_Result 1H-PK+ | | Preview_Result 2V-AVG |
| | Preview_Result 1V-PK+ | | FCC 15.407 PK | | FCC 15.407 AVG |
| | Final_Result PK+ | | Final_Result AVG | | |

FREQUENCY RANGE 17 GHz to 40 GHz.

Mode 64QAM:

This plot is valid for all channels.



- | | | | | | |
|--|-----------------------|--|-----------------------|--|-----------------------|
| | Preview_Result 2H-AVG | | Preview_Result 1H-PK+ | | Preview_Result 2V-AVG |
| | Preview_Result 1V-PK+ | | FCC 15.407 PK | | FCC 15.407 AVG |
| | Final_Result PK+ | | Final_Result AVG | | |

FCC Section 15.407 Subclause (b) (1) / RSS-247 6.2.1.2. Transmitter Band Edge Radiated Emissions.

SPECIFICATION

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz (68.20 dBµV/m at 3 m distance).

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):

| Frequency Range (MHz) | Field strength (µV/m) | Field strength (dBµV/m) | Measurement distance (m) |
|-----------------------|-----------------------|-------------------------|--------------------------|
| 0.009-0.490 | 2400/F(kHz) | - | 300 |
| 0.490-1.705 | 24000/F(kHz) | - | 300 |
| 1.705 - 30.0 | 30 | - | 30 |
| 30 - 88 | 100 | 40 | 3 |
| 88 - 216 | 150 | 43.5 | 3 |
| 216 - 960 | 200 | 46 | 3 |
| 960 - 40000 | 500 | 54 | 3 |

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RESULTS:

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

All emissions outside of the 5.15-5.35GHz band shall not exceed an EIRP of -27dBm/MHz. There are restricted bands of operation below band edge at 4.5-5.15 GHz also above the upper band edge at 5.35-5.46GHz therefore the provision of FCC Part 15.205 apply.

Field strength measurements using peak and average detector were performed in the restricted bands below 5.15GHz and above 5.35 GHz.

A preliminary scan determined the antenna port 2 as the worst case.

Test performed on the following worst cases modes in all relevant tests channels:

**SISO Antenna Port 2:
 Results for Mode: QPSK - 20 MHz**

Results: Peak / Channel 36

| Frequency (MHz) | Antenna Polarity | Peak Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement uncertainty (dB) | Verdict |
|-----------------|------------------|---------------------|----------------|-------------|------------------------------|---------|
| 5147.5000 | Vertical | 65.92 | 74 | 8.08 | <± 3.98 | PASS |

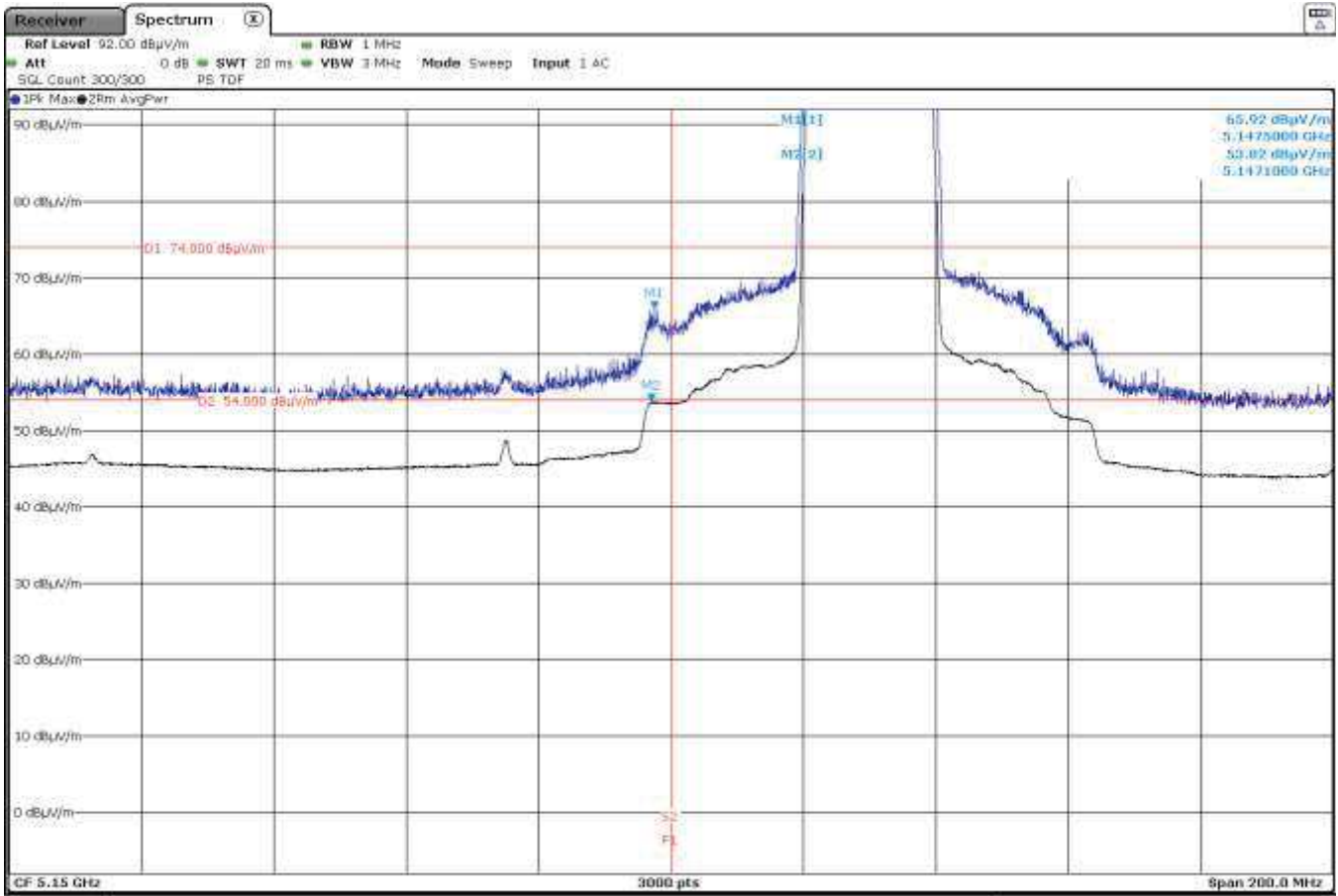
Results: Average / Channel 36

| Frequency (MHz) | Antenna Polarity | Average Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement uncertainty (dB) | Verdict |
|-----------------|------------------|------------------------|----------------|-------------|------------------------------|---------|
| 5147.1000 | Vertical | 53.82 | 54 | 0.18 | <± 3.98 | PASS |

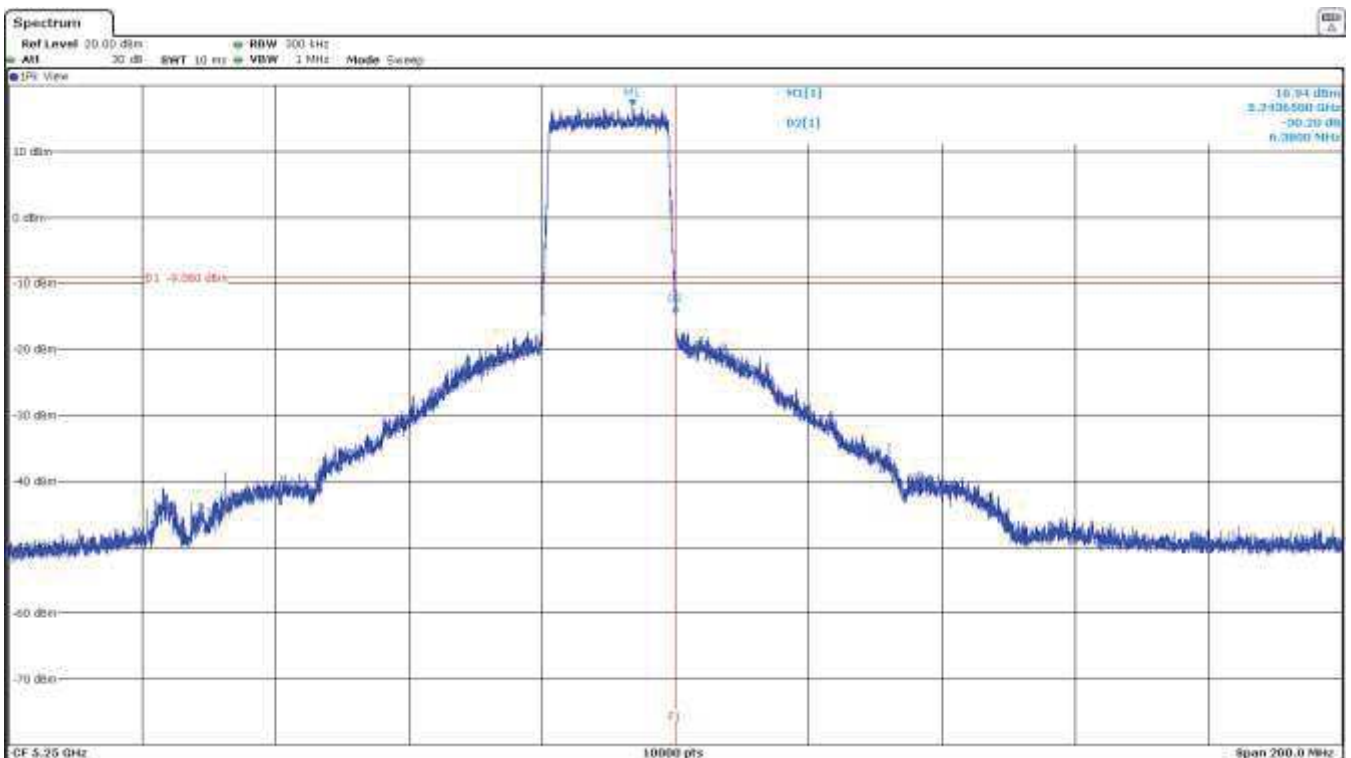
Results: Peak / Channel 48 RSS Band Edge

| Frequency (MHz) | Peak Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement uncertainty (dB) | Verdict |
|-----------------|---------------------|----------------|-------------|------------------------------|---------|
| 5250.03 | -30.20 | -26dBc | 4.20 | <± 3.98 | PASS |

4500 MHz to 5150 MHz Lower Band Edge Channel 36



5250 MHz to 5350 MHz RSS Band Edge Channel 48



Results: 16QAM - 20 MHz

Results: Peak / Channel 36

| Frequency (MHz) | Antenna Polarity | Peak Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement uncertainty (dB) | Verdict |
|-----------------|------------------|---------------------|----------------|-------------|------------------------------|---------|
| 5146.8670 | Vertical | 65.79 | 74 | 8.21 | <± 3.98 | PASS |

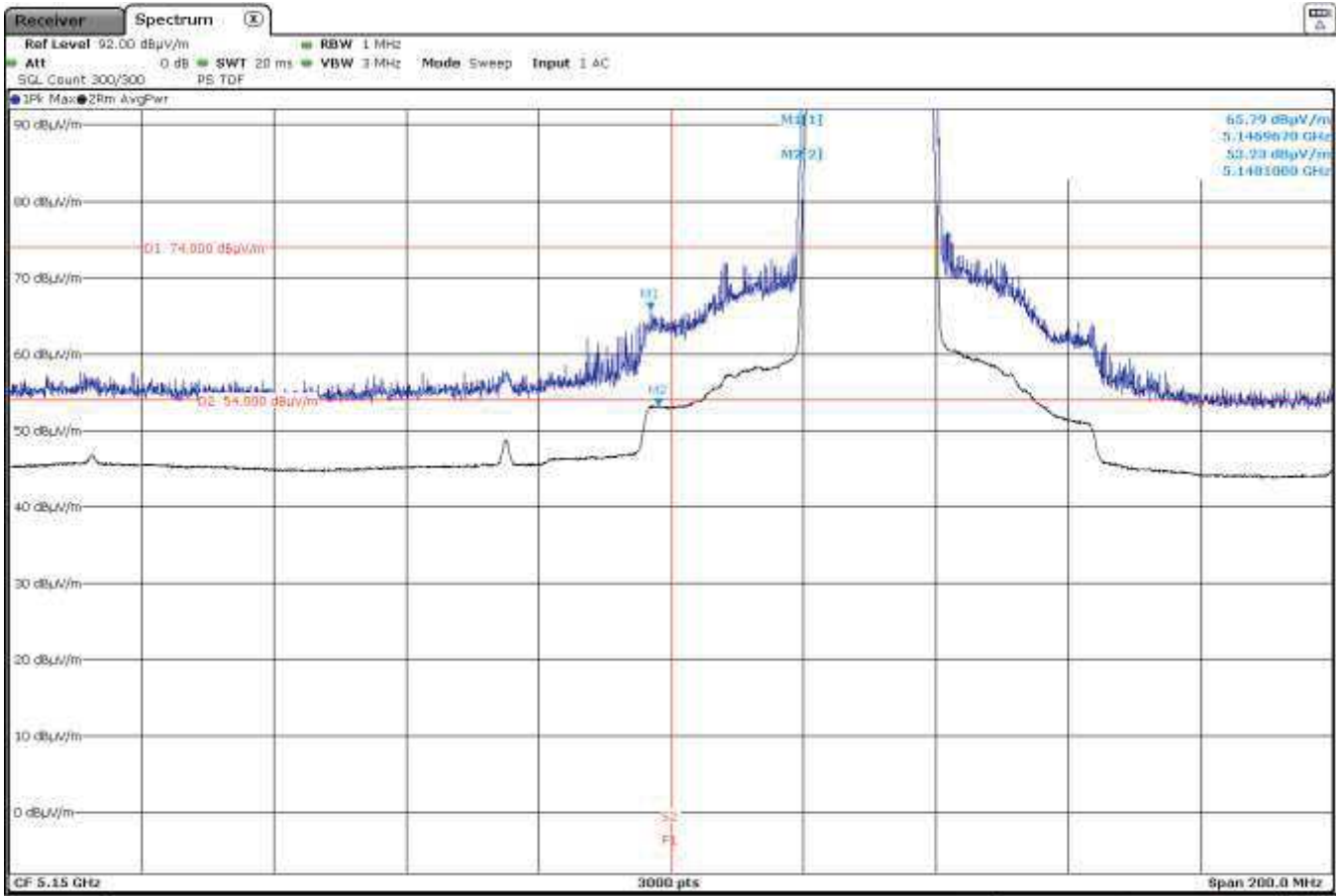
Results: Average / Channel 36

| Frequency (MHz) | Antenna Polarity | Average Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement uncertainty (dB) | Verdict |
|-----------------|------------------|------------------------|----------------|-------------|------------------------------|---------|
| 5148.1000 | Vertical | 53.23 | 54 | 0.77 | <± 3.98 | PASS |

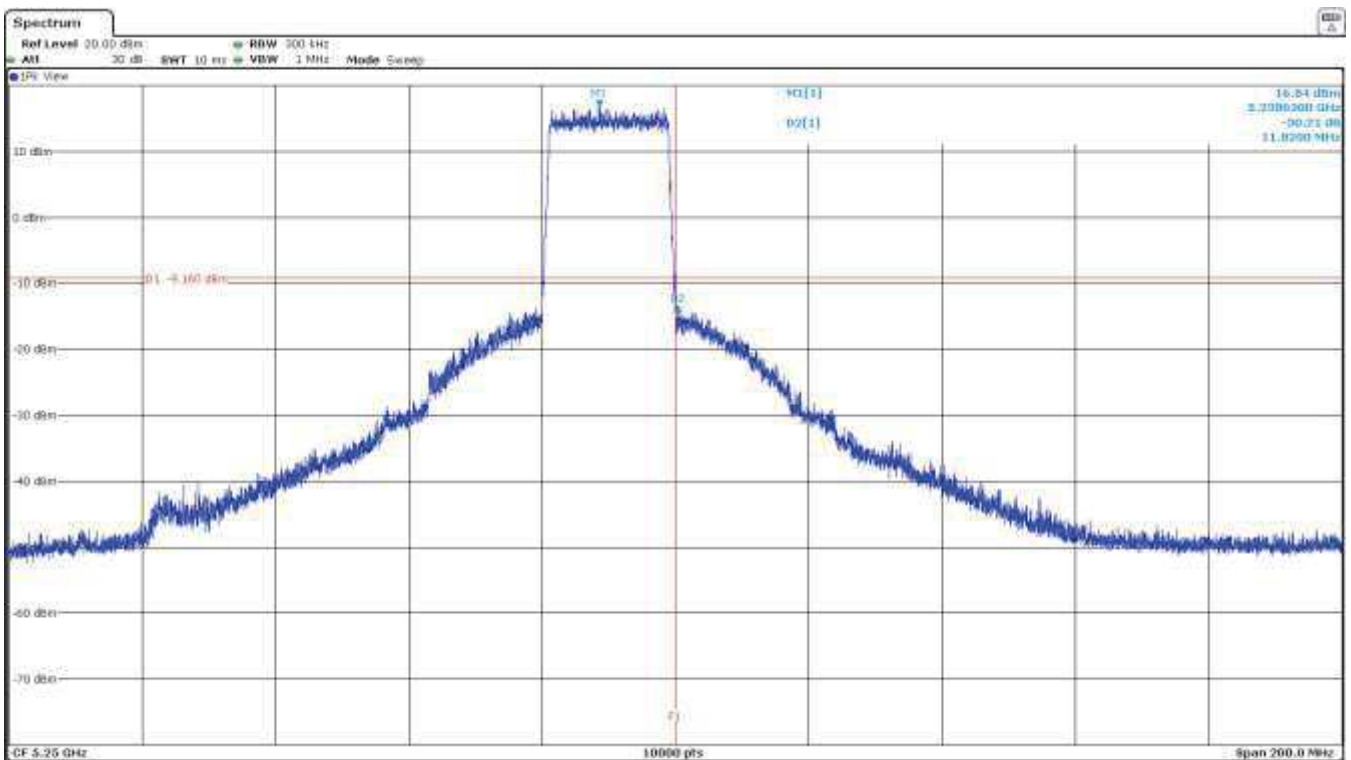
Results: Peak / Channel 48 RSS Band Edge

| Frequency (MHz) | Peak Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement uncertainty (dB) | Verdict |
|-----------------|---------------------|----------------|-------------|------------------------------|---------|
| 5250.45 | -30.21 | -26dBc | 4.21 | <± 3.98 | PASS |

4500 MHz to 5150 MHz Lower Band Edge Channel 36



5250 MHz to 5350 MHz RSS Band Edge Channel 48



Results: 64QAM - 20 MHz

Results: Peak / Channel 36

| Frequency (MHz) | Antenna Polarity | Peak Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement uncertainty (dB) | Verdict |
|-----------------|------------------|---------------------|----------------|-------------|------------------------------|---------|
| 5147.5670 | Vertical | 67.26 | 74 | 6.74 | <± 3.98 | PASS |

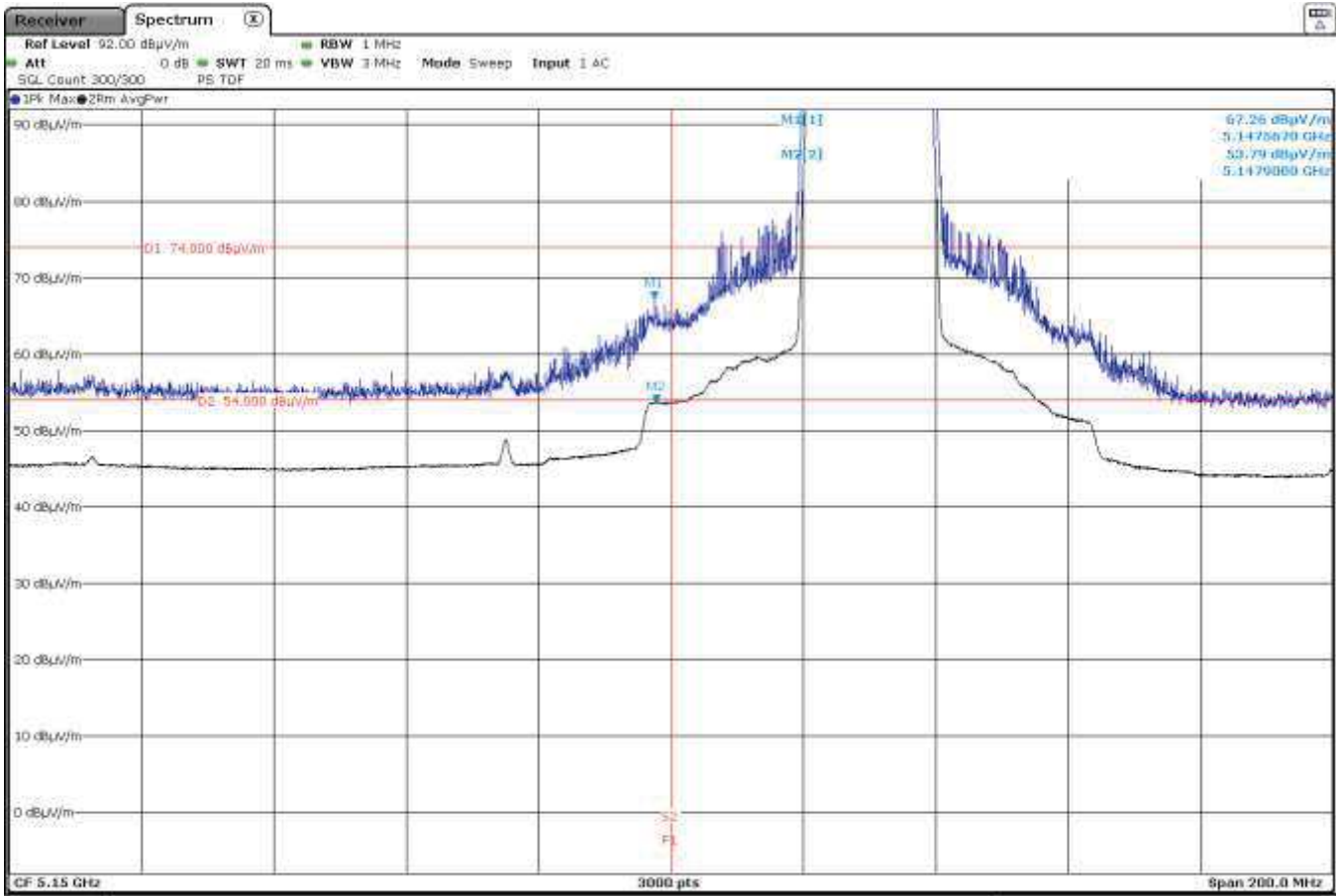
Results: Average / Channel 36

| Frequency (MHz) | Antenna Polarity | Average Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement uncertainty (dB) | Verdict |
|-----------------|------------------|------------------------|----------------|-------------|------------------------------|---------|
| 5147.9000 | Vertical | 53.79 | 54 | 0.21 | <± 3.98 | PASS |

Results: Peak / Channel 48 RSS Band Edge

| Frequency (MHz) | Peak Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Measurement uncertainty (dB) | Verdict |
|-----------------|---------------------|----------------|-------------|------------------------------|---------|
| 5250.83 | -28.38 | -26dBc | 2.38 | <± 3.98 | PASS |

4500 MHz to 5150 MHz Lower Band Edge Channel 36



5250 MHz to 5350 MHz RSS Band Edge Channel 48

