



## **REGULATORY COMPLIANCE TEST REPORT**

**FCC Part 25 Satellite Communications**

**Report No.: SAFR12-U4 Rev A**

**Company:** RAVE Aerospace, LLC

**Part Numbers:** 00-5529-01, 00-5530-01

## REGULATORY COMPLIANCE TEST REPORT

**Company:** RAVE Aerospace, LLC

**Part Numbers:** 00-5529-01, 00-5530-01

**To:** FCC Part 25 Satellite Communications

Test Report Serial No.: SAFR12-U4 Rev A

This report supersedes: NONE

**Applicant:** RAVE Aerospace LLC  
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Germany

**Issue Date:** 1<sup>st</sup> June 2026

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**MiCOM Labs is an ISO 17025 Accredited Testing Laboratory**

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## 1. ACCREDITATION, LISTINGS & RECOGNITION

### 1.1. Test Accreditation

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard ISO/IEC 17025:2017. The company is accredited by the American Association for Laboratory Accreditation (A2LA) [www.a2la.org](http://www.a2la.org) test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; <http://www.a2la.org/scopepdf/2381-01.pdf>



## 1.2. Recognition

MiCOM Labs, Inc. has widely recognized wireless testing and certification capabilities. In addition to being recognized for Testing and Certification under Phase 2 agreements with Canada, Europe, United Kingdom and Japan, our international recognition includes Conformity Assessment Body designation under Phase 1 agreements with APEC MRA countries. MiCOM Labs test reports are accepted globally.

| Country        | Recognition Body                                                                                   | Status                                  | MRA Phase    | Identification No.                          |
|----------------|----------------------------------------------------------------------------------------------------|-----------------------------------------|--------------|---------------------------------------------|
| USA            | Federal Communications Commission (FCC)                                                            | TCB                                     | -            | US0159<br>Test Firm<br>Designation#: US1084 |
| Canada         | Industry Canada (ISED)                                                                             | FCB                                     | APEC MRA 2   | US0159<br>ISED#: 4143A                      |
| Japan          | MIC (Ministry of Internal Affairs and Communication)                                               | CAB                                     | Japan MRA 2  | RCB 210                                     |
|                | Japan Approvals Institute for Telecommunication Equipment (JATE)                                   |                                         |              |                                             |
|                | VCCI                                                                                               | --                                      | --           | A-0012                                      |
| Europe         | European Commission                                                                                | NB                                      | EU MRA 2     | NB 2280                                     |
| United Kingdom | Department for Business, Energy & Industrial Strategy (BEIS)                                       | AB                                      | UK MRA 2     | AB 2280                                     |
| Indonesia      | Minister of Communication and Digital Education<br><i>Keputusan Menteri Komunikasi Dan Digital</i> | Number 13<br>List of Overseas Test Labs | --           | Lab n°50/2025 of Decree n°13                |
| Mexico         | Instituto Federal de Telecomunicaciones (IFT)                                                      | CAB                                     | Mexico MRA 1 | US0159                                      |
| Australia      | Australian Communications and Media Authority (ACMA)                                               | CAB                                     | APEC MRA 1   | US0159                                      |
| Hong Kong      | Office of the Telecommunication Authority (OFTA)                                                   |                                         |              |                                             |
| Korea          | Ministry of Information and Communication Radio Research Laboratory (RRL)                          |                                         |              |                                             |
| Singapore      | Infocomm Development Authority (IDA)                                                               |                                         |              |                                             |
| Taiwan         | National Communications Commission (NCC)<br>Bureau of Standards, Metrology and Inspection (BSMI)   |                                         |              |                                             |
| Vietnam        | Ministry of Communication (MIC)                                                                    |                                         |              |                                             |

TCB – Telecommunications Certification Bodies (TCB)

FCB – Foreign Certification Body

CAB – Conformity Assessment Body

NB – Notified Body

AB – Approved Body

MRA – Mutual Recognition Agreement

MRA Phase I - recognition for product testing

Phase II – recognition for both product testing and certification

### 1.3. Product Certification

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard ISO/IEC 17065:2012. The company is accredited by the American Association for Laboratory Accreditation (A2LA) [www.a2la.org](http://www.a2la.org) test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; <http://www.a2la.org/scopepdf/2381-02.pdf>



United States of America – Telecommunication Certification Body (TCB)  
Industry Canada – Certification Body, CAB Identifier – US0159  
Europe – Notified Body (NB), NB Identifier - 2280  
UK – Approved Body (AB), AB Identifier - 2280  
Japan – Recognized Certification Body (RCB), RCB Identifier - 210

## 2. DOCUMENT HISTORY

| Document History |                           |                             |
|------------------|---------------------------|-----------------------------|
| Revision         | Date                      | Comments                    |
| Draft            | 13 <sup>th</sup> May 2026 | Draft for client review.    |
| Draft #2         | 26 <sup>th</sup> May 2026 | Additional draft for review |
| Rev A            | 1 <sup>st</sup> June 2026 | Initial Release             |
|                  |                           |                             |
|                  |                           |                             |
|                  |                           |                             |
|                  |                           |                             |

In the above table the latest report revision will replace all earlier versions.

### 3. TEST RESULT CERTIFICATE

|                                                                                              |                                                                                               |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>Manufacturer:</b> RAVE Aerospace, LLC<br>3151 E Imperial Highway<br>Brea, CA 92821<br>USA | <b>Tested By:</b> MiCOM Labs, Inc.<br>575 Boulder Court<br>Pleasanton California 94566<br>USA |
| <b>Part Number Tested:</b> 00-5530-01                                                        | <b>Telephone:</b> +1 925 462 0304                                                             |
| <b>Equipment Type:</b> Ka-Band Radio Frequency Unit<br>(KRFU)                                | <b>Fax:</b> +1 925 462 0306                                                                   |
| <b>S/N's:</b> WBA-001366                                                                     |                                                                                               |
| <b>Test Date(s):</b> 14 <sup>th</sup> to 17 <sup>th</sup> April 2026                         | <b>Website:</b> www.micomlabs.com                                                             |

| STANDARD(S)                          | TEST RESULTS       |
|--------------------------------------|--------------------|
| FCC Part 25 Satellite Communications | EQUIPMENT COMPLIES |

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

#### Notes:

1. This document reports conditions under which testing was conducted and the results of testing performed.
2. Details of test methods used have been recorded and kept on file by the laboratory.
3. Test results apply only to the item(s) tested.

**Approved & Released for MiCOM Labs, Inc. by:**

Graeme Grieve  
Quality Manager MiCOM Labs, Inc.

Gordon Hurst  
President & CEO MiCOM Labs, Inc.



## 4. REFERENCES AND MEASUREMENT UNCERTAINTY

### 4.1. Normative References

| Ref.   | Publication           | Year                         | Title                                                                                                                                                                |
|--------|-----------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (i)    | FCC Part 25           | 28 <sup>th</sup> March, 2019 | Satellite Communications                                                                                                                                             |
| (ii)   | KDB 971168 DO1 V03r01 | 9 <sup>th</sup> April 2018   | Measurement Guidance for Certification of Licensed Digital Transmitters                                                                                              |
| (iii)  | KDB 412172            | 7 <sup>th</sup> August 2015  | EIRP Measurement Formulas                                                                                                                                            |
| (iv)   | ANSI 63.10            | 2013                         | American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices                                                                       |
| (v)    | ICES-003, Issue 7     | Oct 2020                     | Information Technology Equipment (Including Digital Apparatus) — Limits and Methods of Measurement                                                                   |
| (vi)   | ANSI C63.4            | 2014 + A1: 2017              | American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| (vii)  | M 3003                | Edition 6 March 2024         | Expression of Uncertainty and Confidence in Measurements                                                                                                             |
| (viii) | ETSI TR 100 028       | 2001-12                      | Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics             |
| (ix)   | A2LA                  | 24 <sup>th</sup> Feb 2025    | R105 - Requirement's When Making Reference to A2LA Accreditation Status                                                                                              |

## **4.2 Test and Uncertainty Procedures**

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.

## **5. PRODUCT DETAILS AND TEST CONFIGURATIONS**

### **5.1. Test Program Scope**

The scope of the test program was to test the RAVE Aerospace, LLC, 00-5530-01 configurations in the frequency band 27.5 - 30 GHz; for compliance with the following licensed specification:

#### **FCC Part 25 Satellite Communications**

The 18.3-18.8 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 28.35-28.6 GHz (Earth-to-space), and 29.25-30.0 GHz (Earth-to-space) frequency bands, which the Commission has designated as primary for GSO FSS operation.

The 17.3-18.3 GHz (space-to-Earth), 18.8-19.4 GHz (space-to-Earth), 19.6-19.7 GHz (space-to-Earth), 27.5-28.35 GHz (Earth-to-space), and 28.6-29.1 GHz (Earth-to-space) FSS frequency bands

Part Number 00-5530-01 was tested as worst case variant, report includes 00-5529-01 fanless variant. See Appendix A Declaration of Similarity for the differences.

## 5.2. Technical Details

| Detail                                      | Description                                                                                        |
|---------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Purpose:</b>                             | Test of the RAVE Aerospace, LLC, 00-5530-01 for compliance to FCC Part 25 Satellite Communications |
| <b>Applicant:</b>                           | RAVE Aerospace, LLC,<br>Friedrichshafener Str. 410,<br>Gilching 82205, Germany                     |
| <b>Manufacturer:</b>                        | RAVE Aerospace, LLC<br>3151 E Imperial Highway<br>Brea, California 92821, USA                      |
| <b>Test Laboratory:</b>                     | MiCOM Labs, Inc.<br>575 Boulder Court,<br>Pleasanton, California 94566, USA                        |
| <b>Test report reference number:</b>        | SAFR12-U4                                                                                          |
| <b>Date EUT received:</b>                   | 10 <sup>th</sup> December 2025                                                                     |
| <b>Dates of test (from - to):</b>           | 14 <sup>th</sup> to 17 <sup>th</sup> April 2026                                                    |
| <b>No of Units Tested:</b>                  | One                                                                                                |
| <b>Type of Equipment:</b>                   | Ka – Band Radio Frequency Unit (KRFU) (Fanned)                                                     |
| <b>Product Name:</b>                        | Line Replaceable Unit (LRU)                                                                        |
| <b>Model No.:</b>                           | 00-5530-01                                                                                         |
| <b>Equipment Secondary Function(s):</b>     | None                                                                                               |
| <b>Location for Use:</b>                    | Outdoors                                                                                           |
| <b>Declared Nominal Output Power (dBm):</b> | +47 dBm                                                                                            |
| <b>Transmit/Receive Operation:</b>          | Transmitter                                                                                        |
| <b>Declared Frequency Range(s):</b>         | Transmit: 27.5 – 30.0 GHz                                                                          |
| <b>Type of Modulation:</b>                  | BPSK, QPSK, 8PSK, 16PSK                                                                            |
| <b>Operating Temperature Range:</b>         | -15°C to +70°C                                                                                     |
| <b>ITU Emission Designator:</b>             | 36M0G7W                                                                                            |
| <b>EUT Modes of Operation:</b>              | 648 kHz & 7.05 MHz                                                                                 |
| <b>Software/Firmware Release:</b>           | V2.00                                                                                              |
| <b>Hardware Release:</b>                    | REV F                                                                                              |
| <b>Rated Input Voltage and Current:</b>     | 100-122 VAC, 360-800Hz                                                                             |
| <b>Equipment Dimensions (L x W x H):</b>    | Fanned 18.04" x 9" x 3.28" (458mm x 229mm x 83mm)                                                  |
| <b>Weight:</b>                              | Fanned 18.1lbs/ 8.21 kg MAX                                                                        |

### 5.3. External A.C/D.C. Power Adaptor

The RAVE Aerospace, LLC 00-5530-01 can be powered using 100 – 122 V<sub>AC</sub>, 1Ø, 50 – 60 Hz or 360 – 800 Hz.

### 5.4. Antenna Details

| # | Type     | Manufacturer  | Model   | Family | Gain* (dBi) | BF Gain | Dir BW | X-Pol | Frequency Band (MHz) |
|---|----------|---------------|---------|--------|-------------|---------|--------|-------|----------------------|
| 1 | External | Aerowave Inc. | 28-7020 | Horn   | 20.0        | -       | 360    | -     | 26500-40000          |

BF Gain - Beamforming Gain  
Dir BW - Directional BeamWidth  
X-Pol - Cross Polarization

### 5.5. Cabling and I/O Ports

The following is a description of the cable and input / output ports available on the EUT;

| Port Type                  | Max Cable Length | # of Ports | Screened | Conn Type                           | Data Type      | Environment |
|----------------------------|------------------|------------|----------|-------------------------------------|----------------|-------------|
| J1 AC Power                | 37750mm          | 1          | No       | 4-Pin Circular Power Receptacle     | Ac Power Input | Outdoors    |
| J2 Monitor & Control       | 6335mm           | 1          | Yes      | 22-Pin Circular Shielded Receptacle | Digital        | Indoors     |
| J3 Transmit RF Output      | 1526mm           | 1          | Yes      | K connector                         | RF             | Indoors     |
| J5 Transmit IF 50MHz Input | 29775mm          | 1          | Yes      | TNC Female                          | IF             | Indoors     |
| J9 Reference 50 MHz Input  | N/A              | 1          | Yes      | TNC Female                          | IF             | Indoors     |

## 5.6. Test Configurations

| Operational Mode(s)                 | Channel Frequency |          |           |
|-------------------------------------|-------------------|----------|-----------|
|                                     | Low               | Mid      | High      |
| <b>650 KHz BPSK/QPSK/8PSK/16PSK</b> |                   |          |           |
| Low Band                            | 27500.324         | 28000.00 | 28499.676 |
| Mid Band                            | 28500.324         | 28750.00 | 28999.676 |
| High Band                           | 29000.324         | 29500.00 | 29999.676 |
| <b>7 MHz BPSK/QPSK/8PSK/16PSK</b>   |                   |          |           |
| Low Band                            | 27503.525         | 28000.00 | 28496.475 |
| Mid Band                            | 28503.525         | 28750.00 | 28996.475 |
| High Band                           | 29003.525         | 29500.00 | 29996.475 |

## 5.7. Equipment Details

The following is a description of equipment/supporting equipment used during the test program.

| Type (EUT/Support) | Equipment Description (Including Brand Name) | Mfr.                | Model No.    | Serial No. |
|--------------------|----------------------------------------------|---------------------|--------------|------------|
| EUT                | Ka-Band Radio Frequency Unit (KRFU) Fanned   | RAVE Aerospace, LLC | 00-5530-01   | WBA-001366 |
| Support            | Directional Coupler                          | Pasternack          | PE2CP1122-20 | 2305       |
| Support            | Coaxial Termination                          | RF-Lambda           | RFST50G40KM  | 23092626   |
| Support            | 4 Way SMA Wilkinson Power Divider            | Pasternack          | PE2031       | --         |
| Support            | 8360Series Synthesized Sweeper               | HP                  | 83640A       | 3036AV0294 |
| Support            | Universal Software Radio Peripheral          | Ettus Research      | USRP B210    | --         |

## 5.8. Equipment Modifications

The following modifications were required to bring the equipment into compliance:

1. None

## 5.9. Deviations from the Test Standard

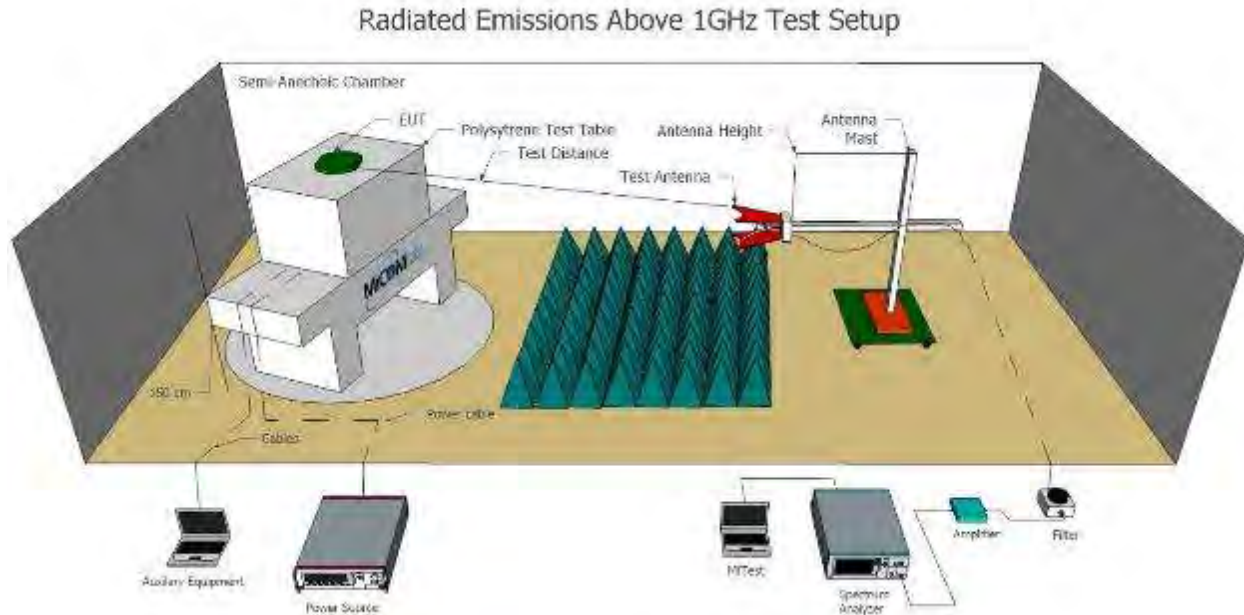
No deviations from the test standard were required in order to complete the test program:

1. None

## 6. TEST EQUIPMENT CONFIGURATION(S)

### 6.1. Radiated Spurious Emissions

The following tests were performed using the radiated test set-up shown in the diagram below.  
Radiated emissions above 40GHz.

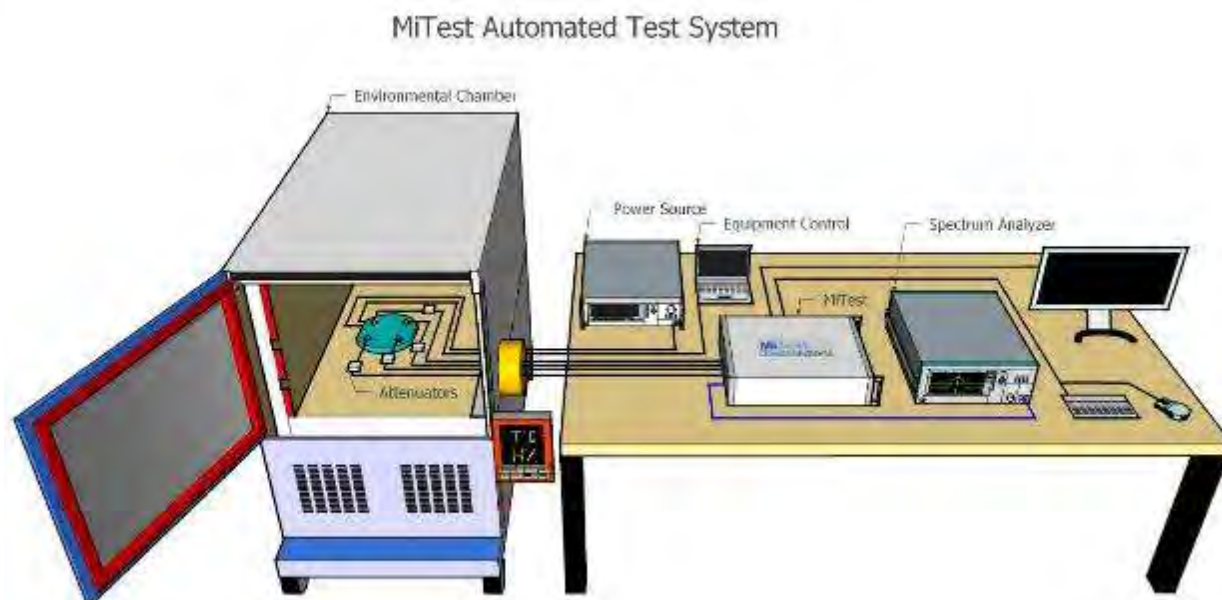


A full system calibration was performed on the test station and any resulting system losses (or gains) were considered in the production of all final measurement data.

| Asset# | Description                           | Manufacturer         | Model#          | Serial#    | Calibration Due Date |
|--------|---------------------------------------|----------------------|-----------------|------------|----------------------|
| 249    | Thermocouple; Resistance Thermometer  | Thermotronics        | GR2105-02       | 9340 #2    | 22 Mar 2027          |
| 265    | 50 - 80 GHz Waveguide Harmonic Mixer  | Keysight             | M1970V-002      | MY61370030 | 15 Jul 2026          |
| 266    | 10 Hz to 50GHz MXA Signal Analyzer    | Keysight             | N9020B          | MY60110791 | 25 Jul 2026          |
| 267    | 75 - 110 GHz Waveguide Harmonic Mixer | Keysight             | M1970W          | MY61370019 | 22 Sep 2026          |
| 408    | USB to GPIB interface                 | National Instruments | GPIB-USB HS     | 14C0DE9    | Not Required         |
| 451    | Precision SMA Male RG-402 coax        | Fairview Microwave   | SCA1814-0101-72 | 451        | Cal when used        |
| 452    | Precision SMA Male RG-402 coax        | Fairview Microwave   | SCA1814-0101-72 | 452        | Cal when used        |
| 497    | 50 - 75 GHz RF Detector               | Hughes               | 47324H-1100     | 497        | Cal when used        |
| 510    | Barometer/Thermometer                 | Digi Sense           | 68000-49        | 170871375  | 4 Jan 2027           |

|     |                                                              |                       |                 |        |             |
|-----|--------------------------------------------------------------|-----------------------|-----------------|--------|-------------|
| 555 | Rhode & Schwarz Receiver<br>(Firmware Version : 3.10<br>SP1) | Rhode &<br>Schwarz    | ESW 44          | 101893 | 14 Aug 2026 |
| 592 | Harmonic Mixer, 140 GHz<br>to 220 GHz                        | Radiometer<br>Physics | RPG FS-<br>Z220 | 101105 | 6 Jun 2027  |
| 593 | Harmonic Mixer, 90 GHz to<br>140 GHz                         | Radiometer<br>Physics | RPG FS-<br>Z140 | 101197 | 1 Aug 2027  |
| 595 | 50 - 75 GHz band detector.                                   | Mi-Wave               | 950V/385        | 30660  | 12 Nov 2026 |

## 6.2. Conducted Test Setup



A full system calibration was performed on the test station and any resulting system losses (or gains) were considered in the production of all final measurement data.

| Asset# | Description                                                     | Manufacturer       | Model#     | Serial#    | Calibration Due Date |
|--------|-----------------------------------------------------------------|--------------------|------------|------------|----------------------|
| 75     | Environmental Chamber                                           | Thermatron         | SE-300-2-2 | 27946      | 20 Jun 2026          |
| 249    | Thermocouple;<br>Resistance Thermometer                         | Thermotronics      | GR2105-02  | 9340 #2    | 22 Mar 2027          |
| 266    | 10 Hz to 50GHz MXA<br>Signal Analyzer                           | Keysight           | N9020B     | MY60110791 | 25 Jul 2026          |
| 596    | DC Power Supply                                                 | Keysight           | E36155A    | MY63001023 | 17 Jan 2027          |
| 555    | Rhode & Schwarz<br>Receiver<br>(Firmware Version : 3.10<br>SP1) | Rhode &<br>Schwarz | ESW 44     | 101893     | 14 Aug 2026          |

## 7. TEST SUMMARY

### List of Measurements

| Test Header                                   | FCC Reference  | Result                   |
|-----------------------------------------------|----------------|--------------------------|
| Transmitter Frequency Error                   | Part 25.202(d) | <a href="#">Complies</a> |
| Transmitter Occupied Bandwidth                | Part 2.1049    | <a href="#">Complies</a> |
| Transmitter Spectrum Emission Mask            | Part 25.202    | <a href="#">Complies</a> |
| Transmitter Output Power                      | Part 25.204    | <a href="#">Complies</a> |
| Transmitter Conducted Emissions (Out-of-Band) | Part 25.202    | <a href="#">Complies</a> |

## 8. TEST RESULTS

### 8.1. Frequency Error

| Conducted Test Conditions for Transmitter Frequency Error                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                          |                     |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|-------------|
| Standard:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FCC Part 25              | Ambient Temp. (°C): | 20.0 - 24.5 |
| Test Heading:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Frequency Error          | Rel. Humidity (%):  | 32 - 45     |
| Standard Section(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25.202                   | Pressure (mBars):   | 999 - 1001  |
| Reference Document(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | See Normative References |                     |             |
| <b>General Test setup and Operational Mode</b><br>The EUT was set to transmit a CW (Continuous Wave) during the frequency error testing<br>Frequency error was measured using a spectrum analyzer<br>A transformer was used to vary the voltage to the EUT between 85% and 115% of the nominal voltage<br>The EUT voltage was measured using a calibrated voltmeter<br><br>Testing was performed over environmental extremes of voltage and temperature and results reported are for a single antenna port.<br><br>Test setup configuration: see Section 6.2 'Conducted Test Setup' |                          |                     |             |

#### Equipment Configuration for Frequency Error

|                                |                     |                        |     |
|--------------------------------|---------------------|------------------------|-----|
| <b>Variant:</b>                | Continuous Tone     | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | N/A Continuous Tone | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |                     |                        |     |

#### Test Measurement Results

| Test frequency: | 28.75 GHz | Measured Frequency | Frequency Error |        | Limit | Margin |
|-----------------|-----------|--------------------|-----------------|--------|-------|--------|
| Temperature:    | Vdc       | GHz                | kHz             | ppm    | ppm   | ppm    |
| -15 °C          | 120       | 28.75001258        | 10.97           | 0.382  | ±10   | -9.62  |
| -5 °C           | 120       | 28.75001134        | 13.89           | 0.4831 | ±10   | -9.52  |
| 5 °C            | 120       | 28.75001284        | 13.860          | 0.482  | ±10   | -9.52  |
| 15 °C           | 120       | 28.75001174        | 12.58           | 0.438  | ±10   | -9.56  |
| 25 °C           | 120       | 28.75001097        | 11.34           | 0.3944 | ±10   | -9.61  |
| 25 °C           | 108       | 28.75001389        | 12.840          | 0.447  | ±10   | -9.55  |
| 25 °C           | 128       | 28.75001393        | 11.740          | 0.408  | ±10   | -9.59  |
| 35 °C           | 120       | 28.75001386        | 13.930          | 0.485  | ±10   | -9.52  |
| 45 °C           | 120       | 28.75001323        | 13.230          | 0.460  | ±10   | -9.54  |
| 55 °C           | 120       | 28.75001325        | 13.250          | 0.461  | ±10   | -9.54  |

#### Traceability to Industry Recognized Test Methodologies

|                          |                           |
|--------------------------|---------------------------|
| Work Instruction:        | WI-02 MEASURING FREQUENCY |
| Measurement Uncertainty: | ±0.86 ppm                 |

## 8.2. Transmitter Occupied Bandwidth

| Conducted Test Conditions for Transmitter Occupied Bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |                     |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|-------------|
| Standard:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | FCC Part 2               | Ambient Temp. (°C): | 20.0 - 24.5 |
| Test Heading:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Occupied Bandwidth       | Rel. Humidity (%):  | 32 - 45     |
| Standard Section(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2.1049                   | Pressure (mBars):   | 999 - 1001  |
| Reference Document(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | See Normative References |                     |             |
| <b>Definition</b><br>The Channel Bandwidth is the widest band of frequencies, inclusive of guard bands, assigned to a single channel. The Occupied Channel Bandwidth is the bandwidth containing 99% of the signal power.                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |                     |             |
| <b>General Test setup and Operational Mode(s)</b><br>Occupied Bandwidth testing was performed using a spectrum analyzer in accordance with FCC KDB 971168<br>The EUT was set to transmit a modulated signal for 650 KHz & 7 MHz operation<br><br>The spectrum analyzer resolution bandwidth was set to between 1% and 5% of the occupied bandwidth. Video bandwidth approximately 3x the resolution bandwidth. Frequency span 5x authorized bandwidth in order to capture all modulated products<br><br>Nominal voltage 115 Vac 60 Hz. The EUT voltage was measured using a calibrated voltmeter<br><br>Test setup configuration per Section 6.2 'Conducted Test Setup' |                          |                     |             |

### 8.2.1.1. BPSK 650KHz

#### Equipment Configuration for Occupied Bandwidth

|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

#### Test Measurement Results

##### BPSK Low Band

|                         |               |                          |
|-------------------------|---------------|--------------------------|
| Temperature: 20 °C      | Power Setting | Measured Bandwidth (KHz) |
| Voltage: 115 Vac, 60 Hz |               |                          |
| Test Frequency          |               |                          |
| Low                     | Maximum       | 626.83                   |
| Mid                     | Maximum       | 628.21                   |
| High                    | Maximum       | 631.97                   |

##### BPSK Mid Band

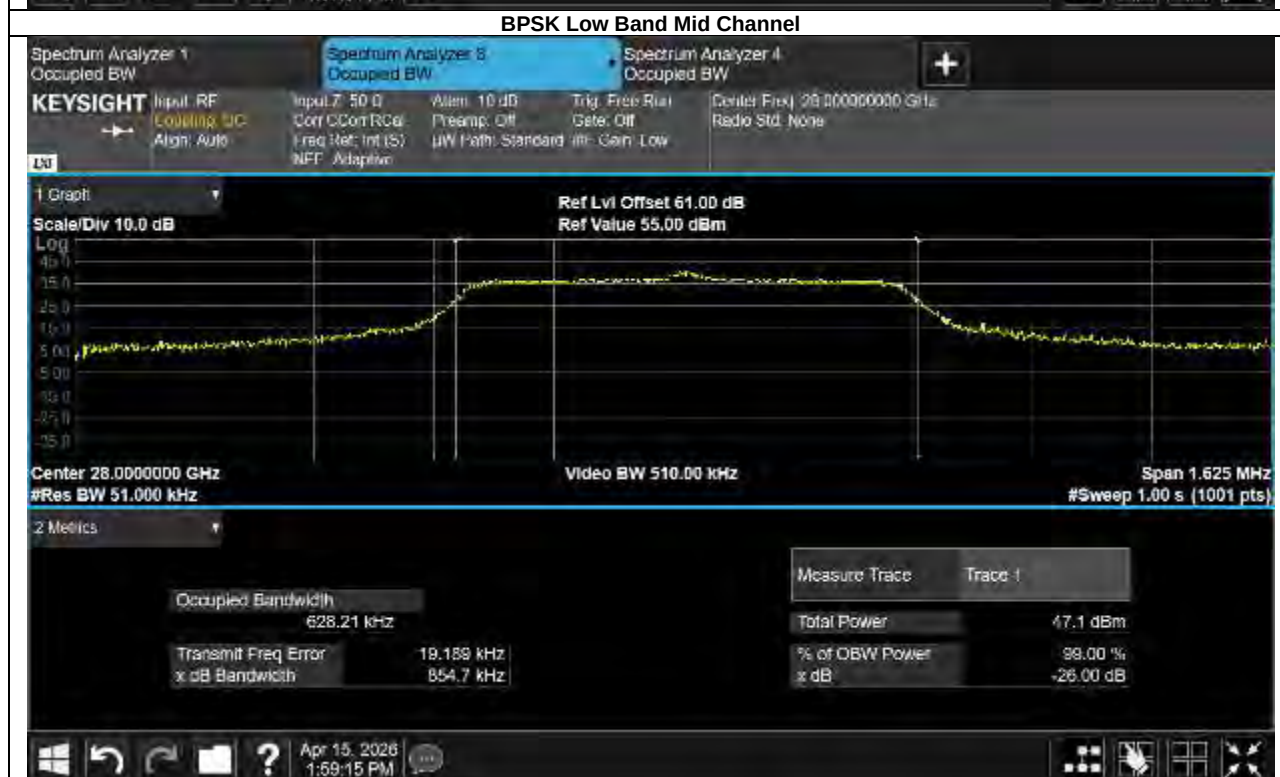
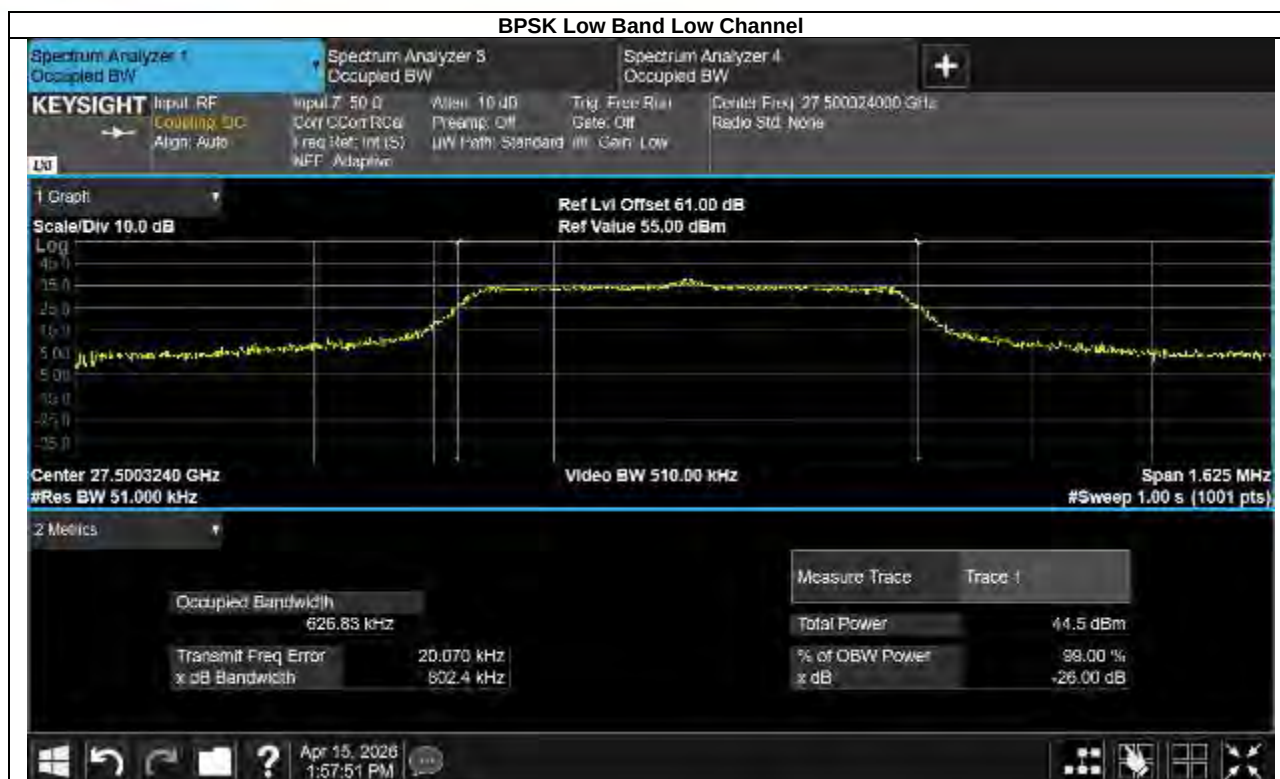
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 621.52 |
| <b>Mid</b>  | Maximum | 622.85 |
| <b>High</b> | Maximum | 624.46 |

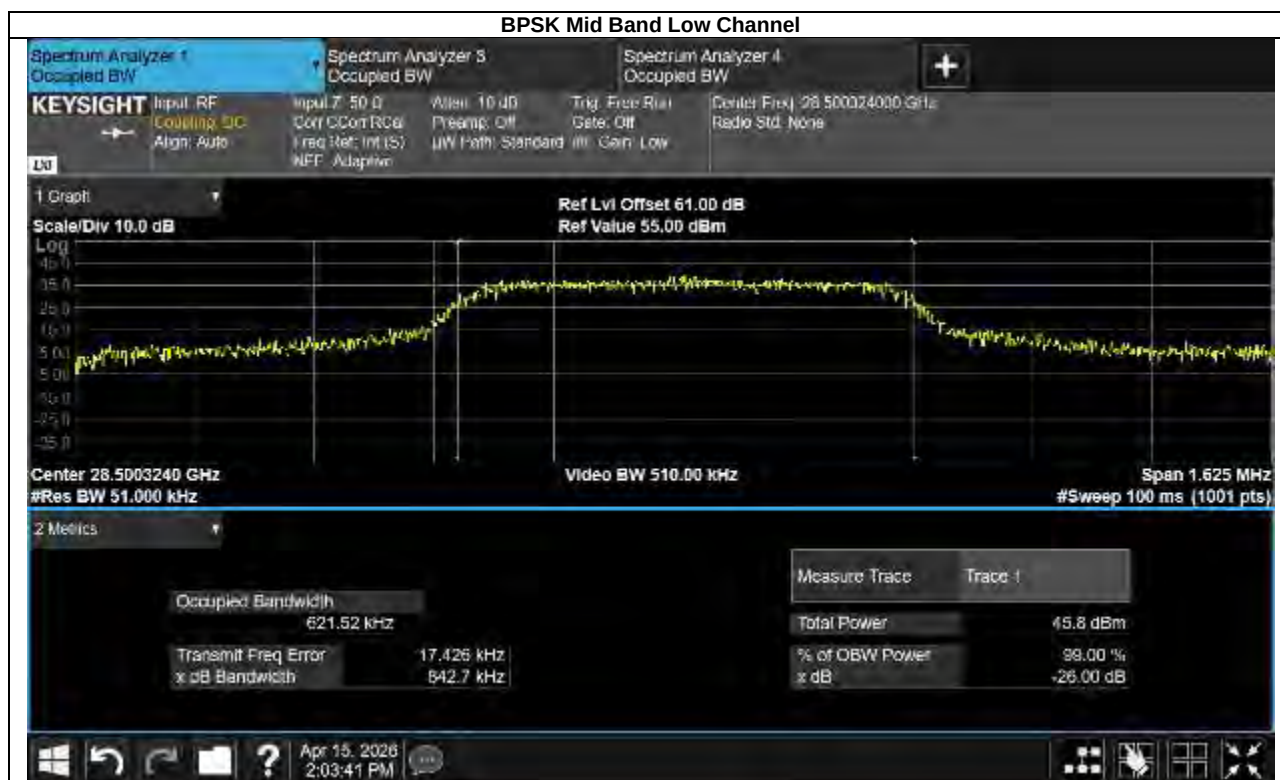
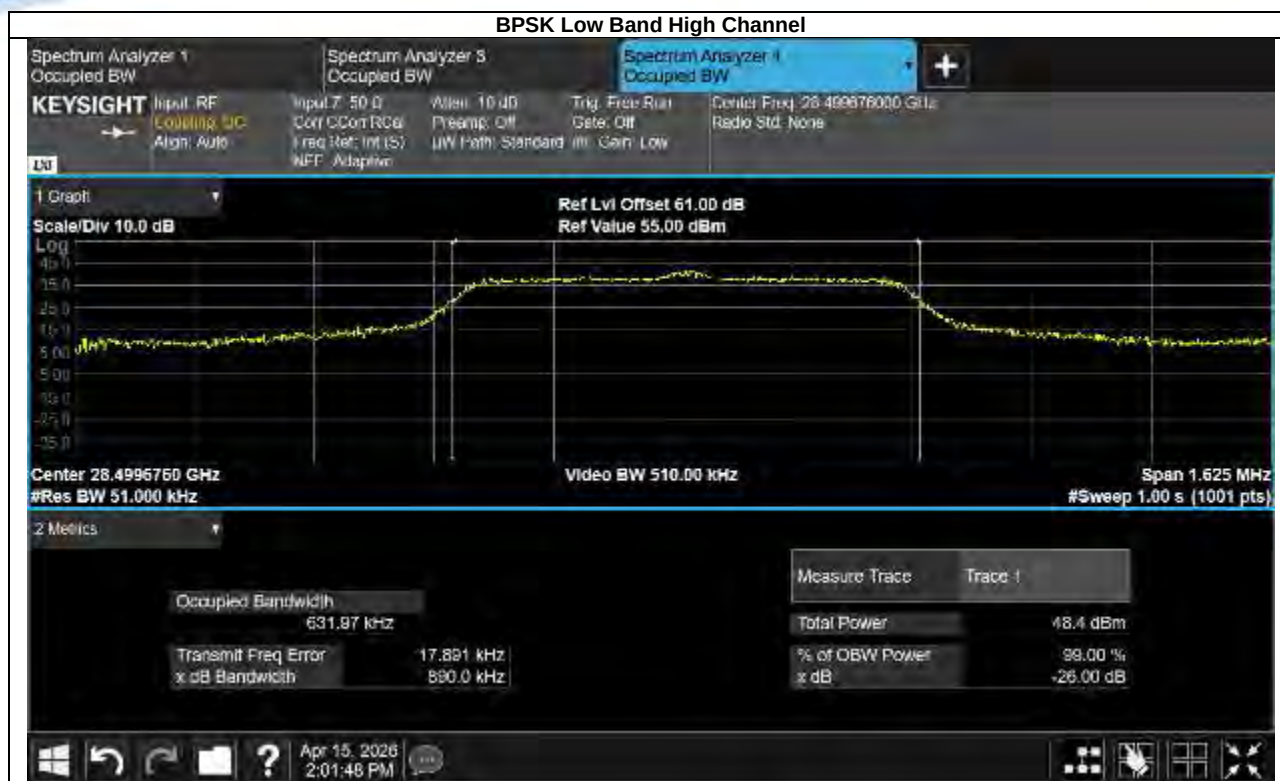
##### BPSK High Band

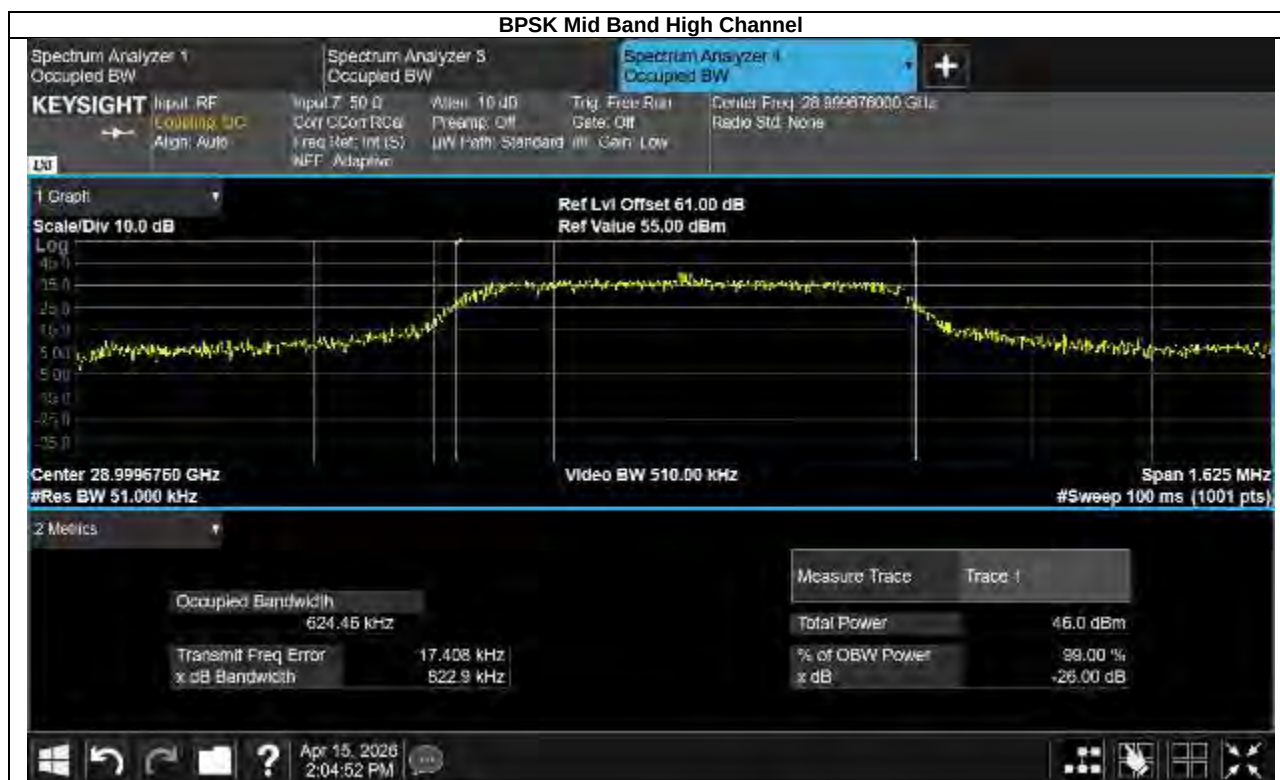
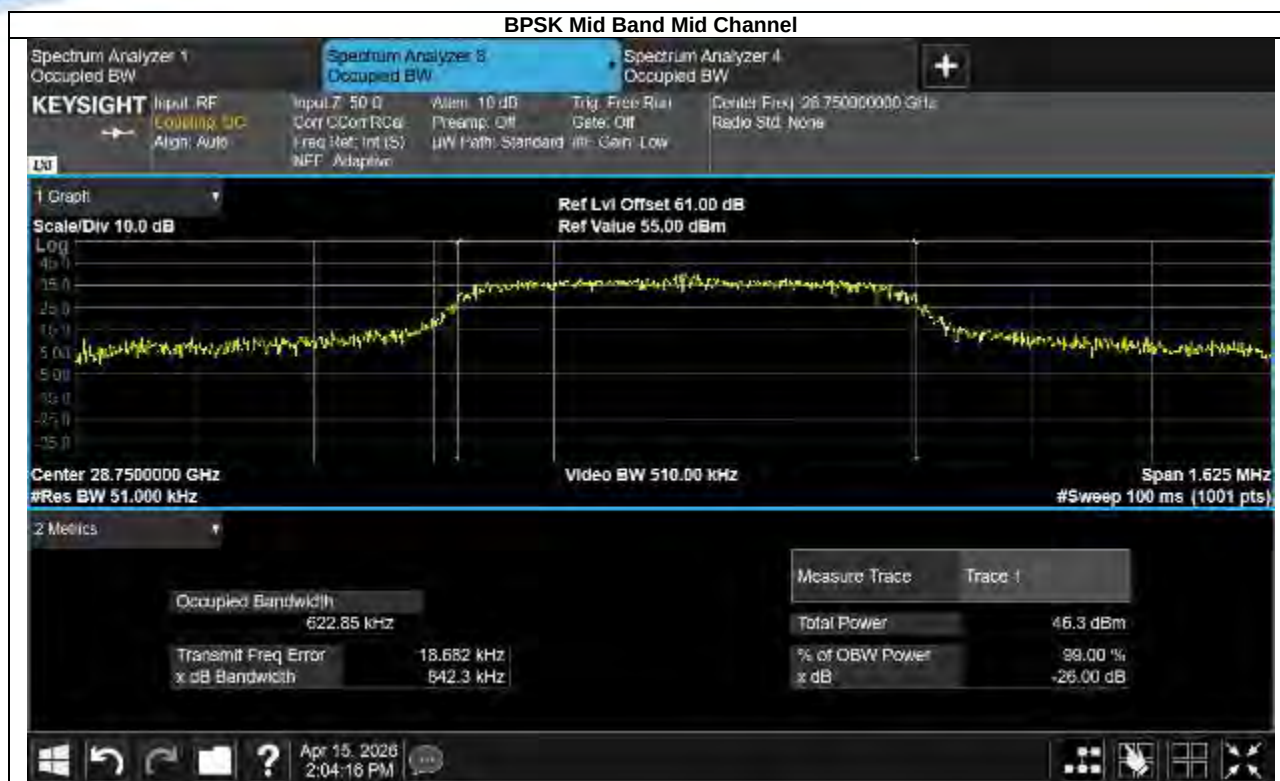
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 620.82 |
| <b>Mid</b>  | Maximum | 620.94 |
| <b>High</b> | Maximum | 621.18 |

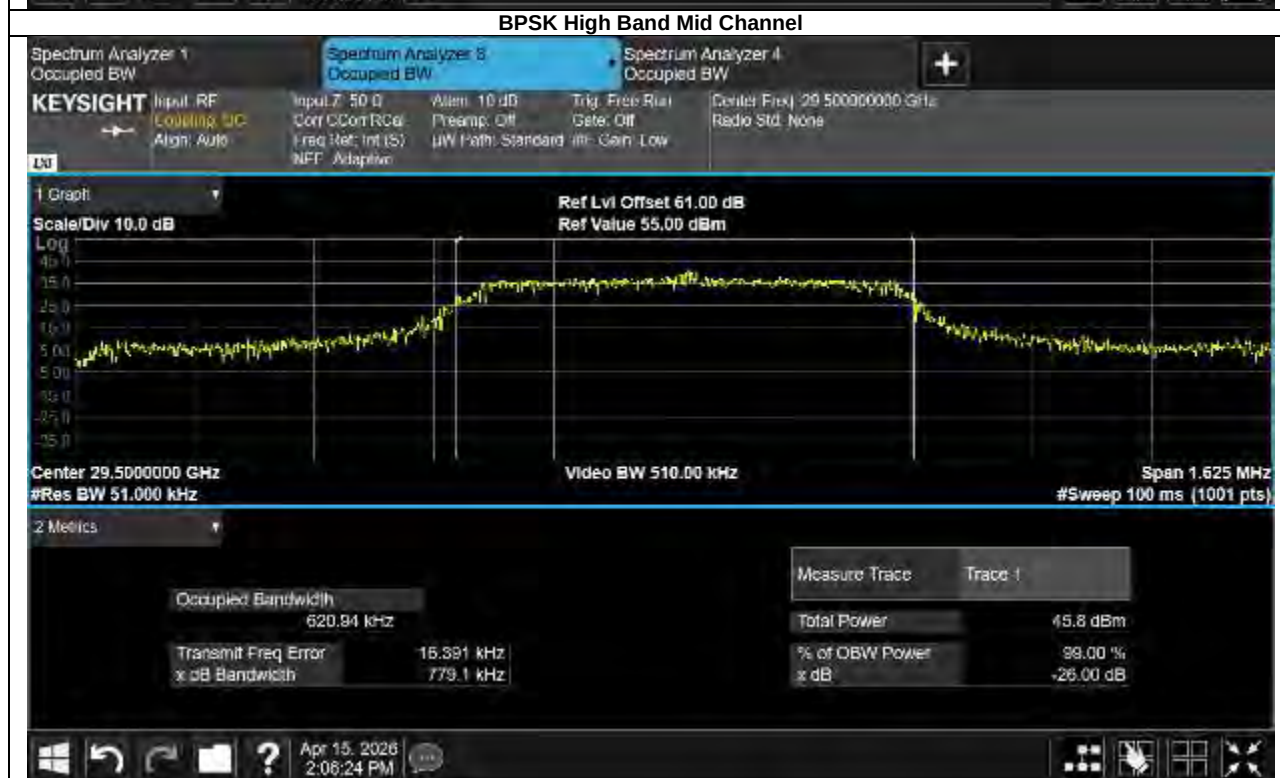
#### Traceability to Industry Recognized Test Methodologies

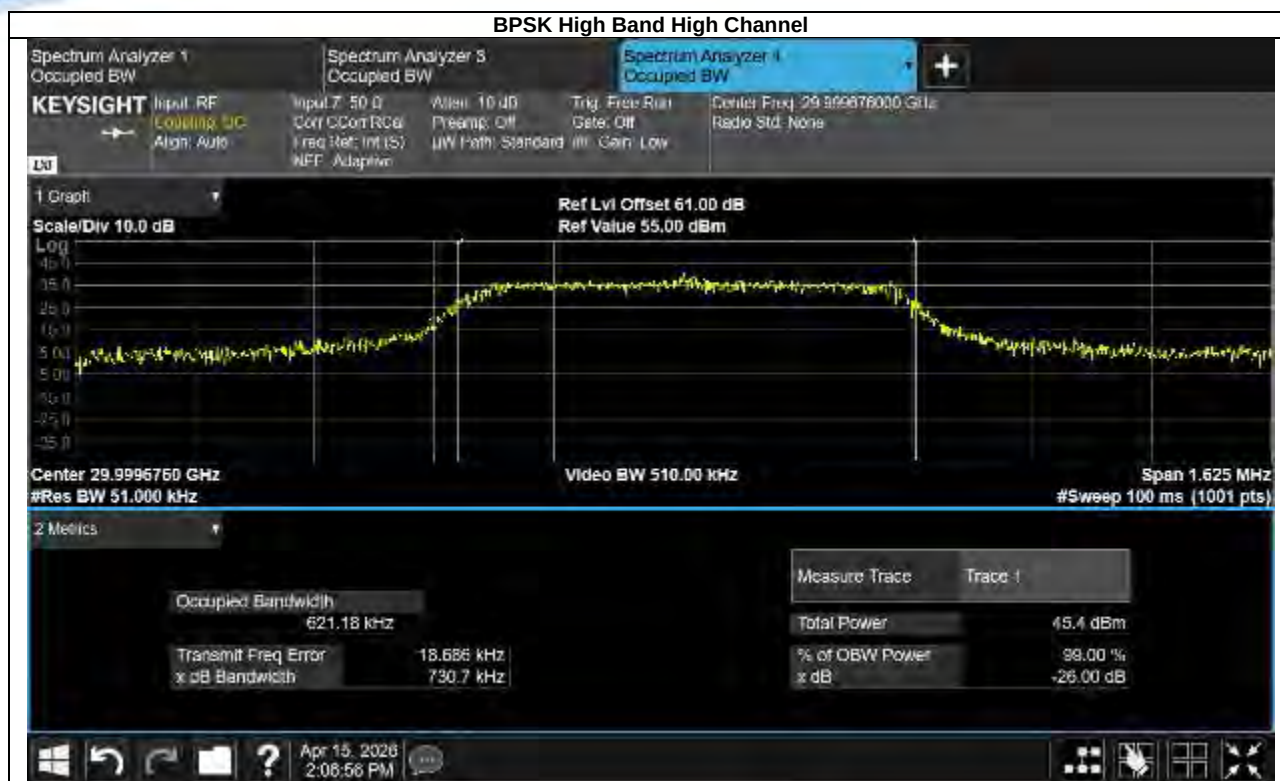
|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Work Instruction:</b>        | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b> | ±2.81 dB                         |











### 8.2.1.2. QPSK 650KHz

#### Equipment Configuration for Occupied Bandwidth

|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | QPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

#### Test Measurement Results

##### QPSK Low Band

|                         |               |                          |
|-------------------------|---------------|--------------------------|
| 7. OR Low Band          |               |                          |
| Temperature: 20 °C      | Power Setting | Measured Bandwidth (KHz) |
| Voltage: 115 Vac, 60 Hz |               |                          |
| Test Frequency          |               |                          |
| Low                     | Maximum       | 609.98                   |
| Mid                     | Maximum       | 611.31                   |
| High                    | Maximum       | 608.94                   |

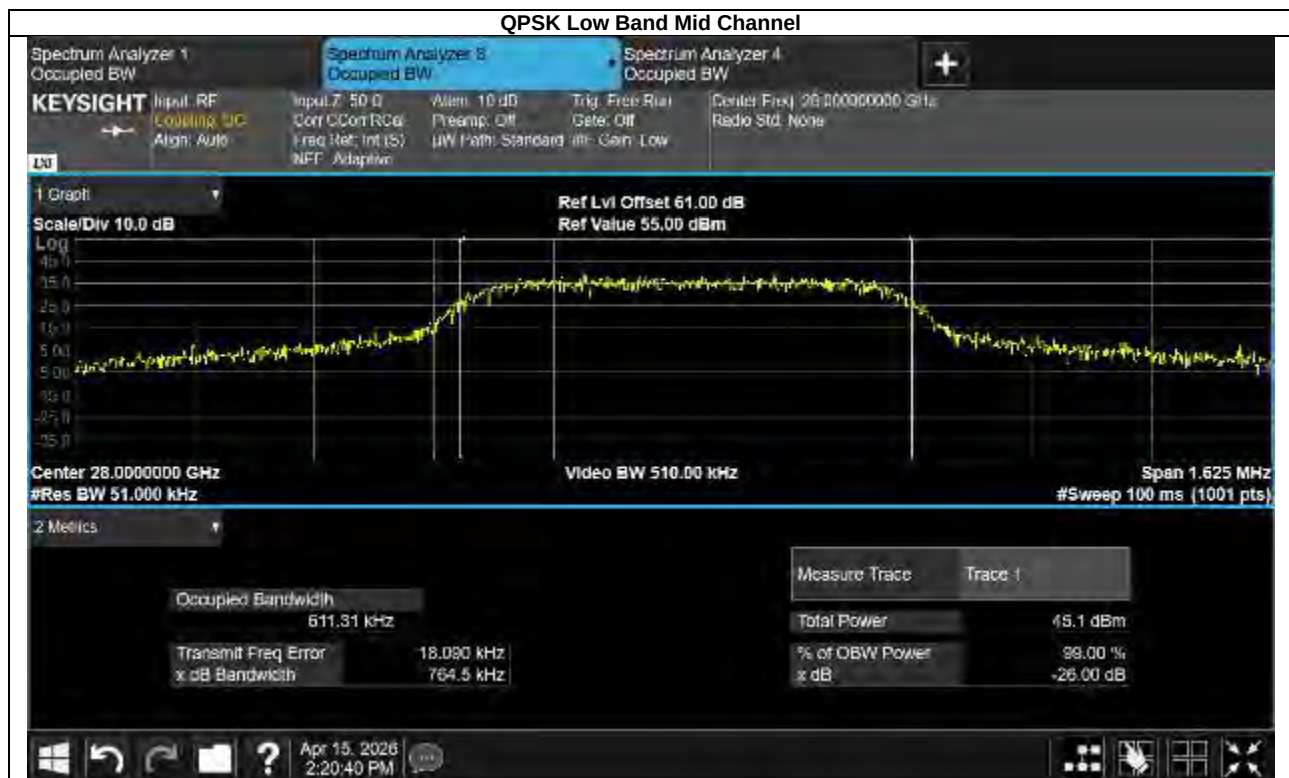
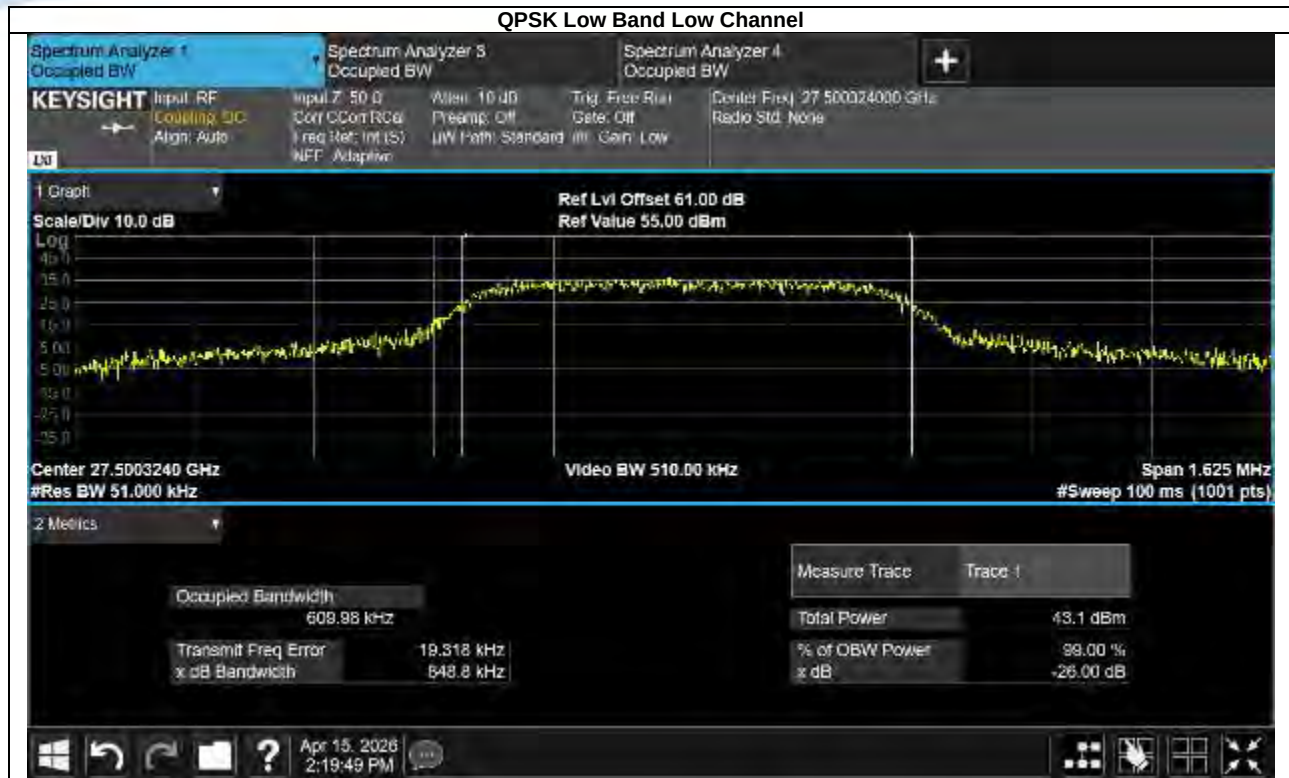
##### QPSK Mid Band

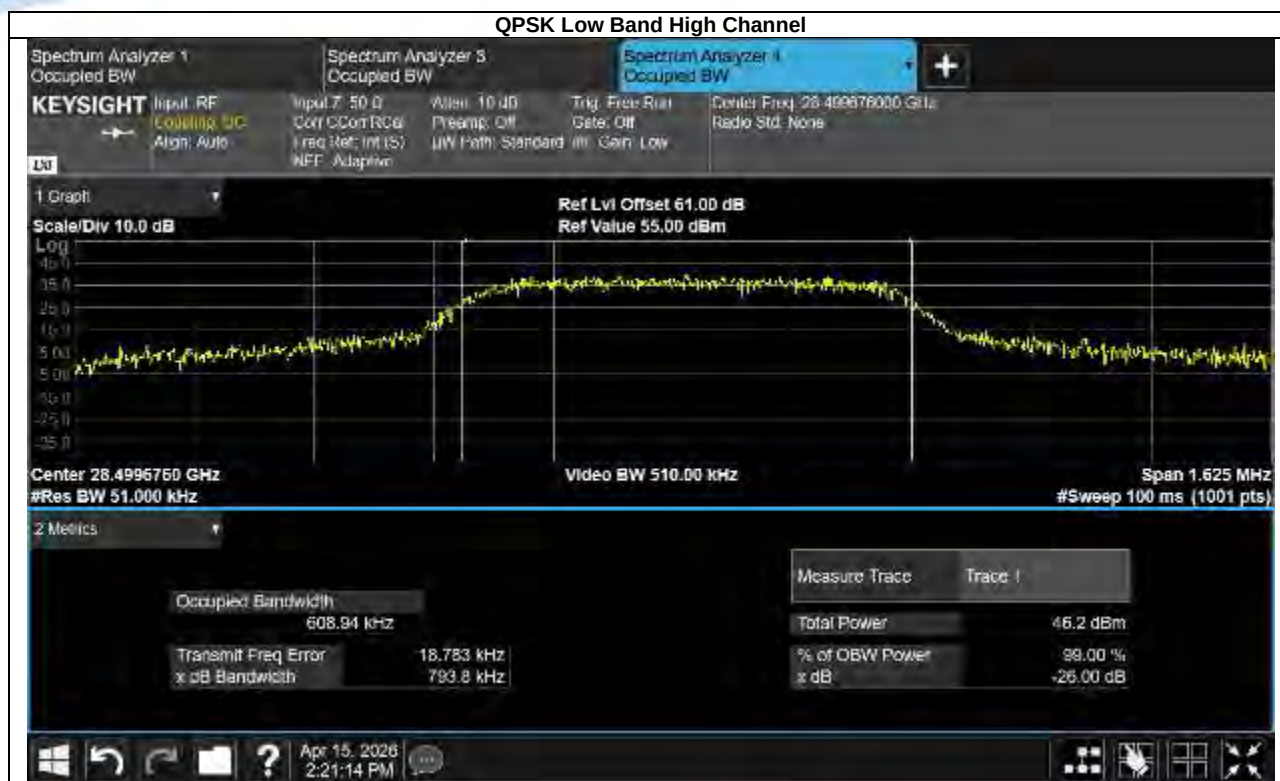
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 609.32 |
| <b>Mid</b>  | Maximum | 618.58 |
| <b>High</b> | Maximum | 612.44 |

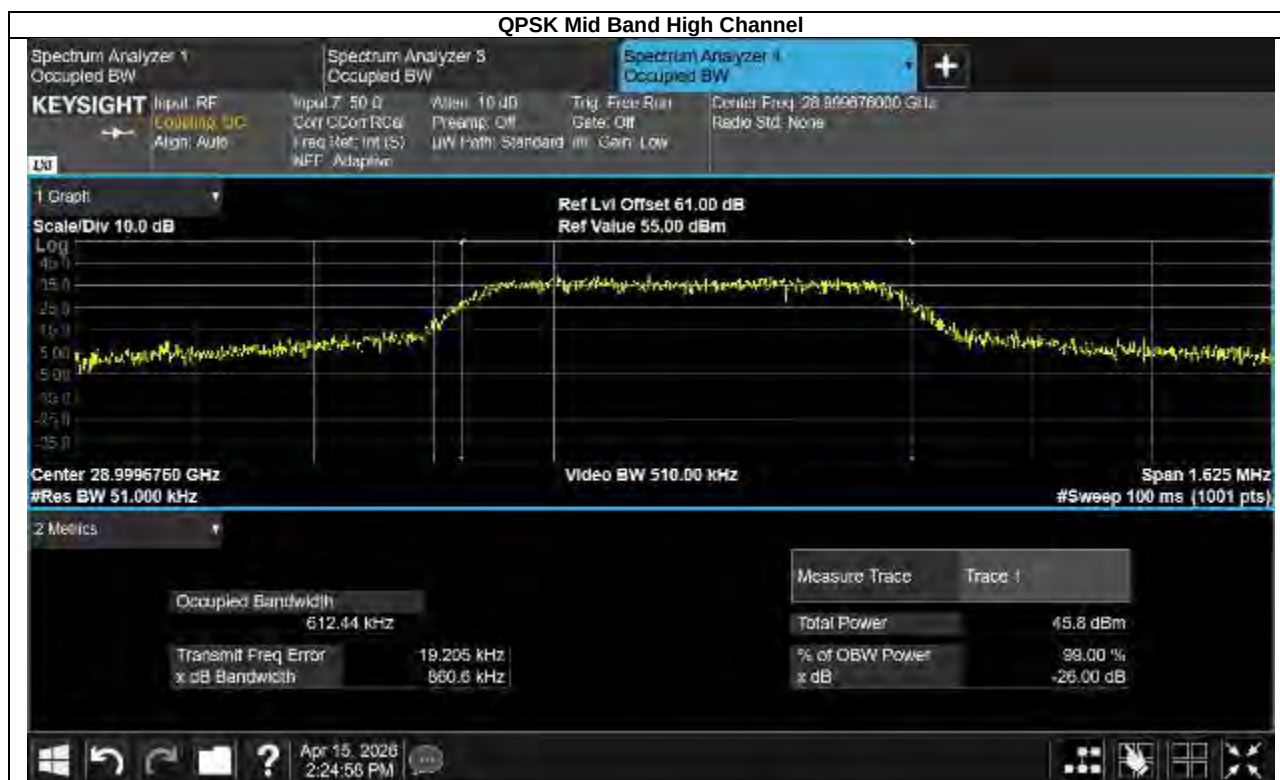
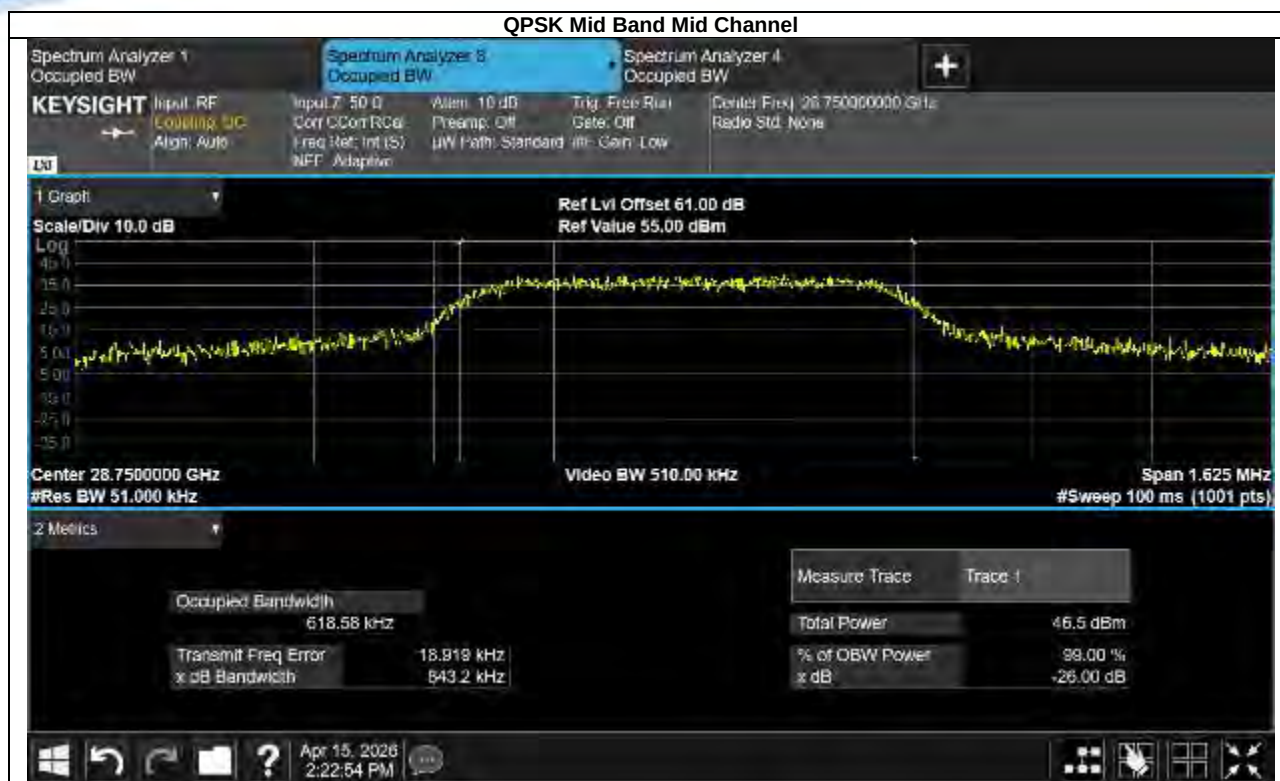
##### QPSK High Band

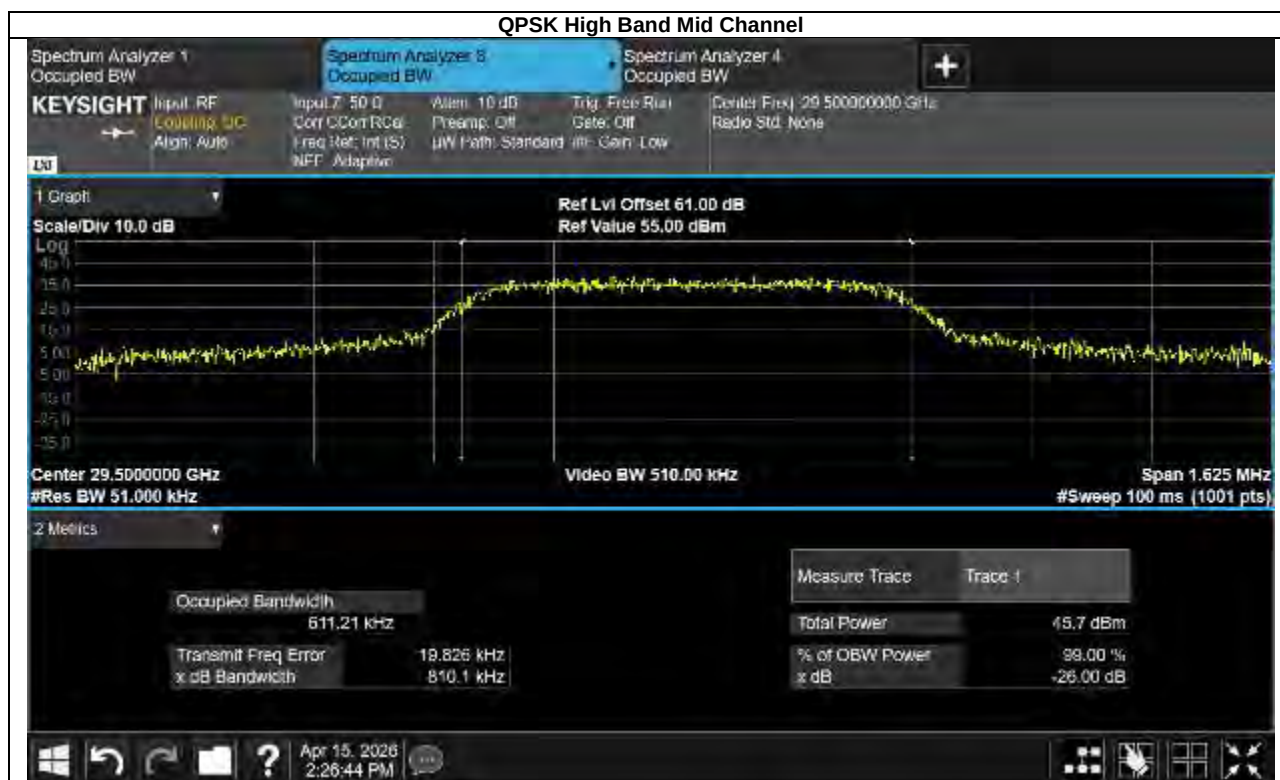
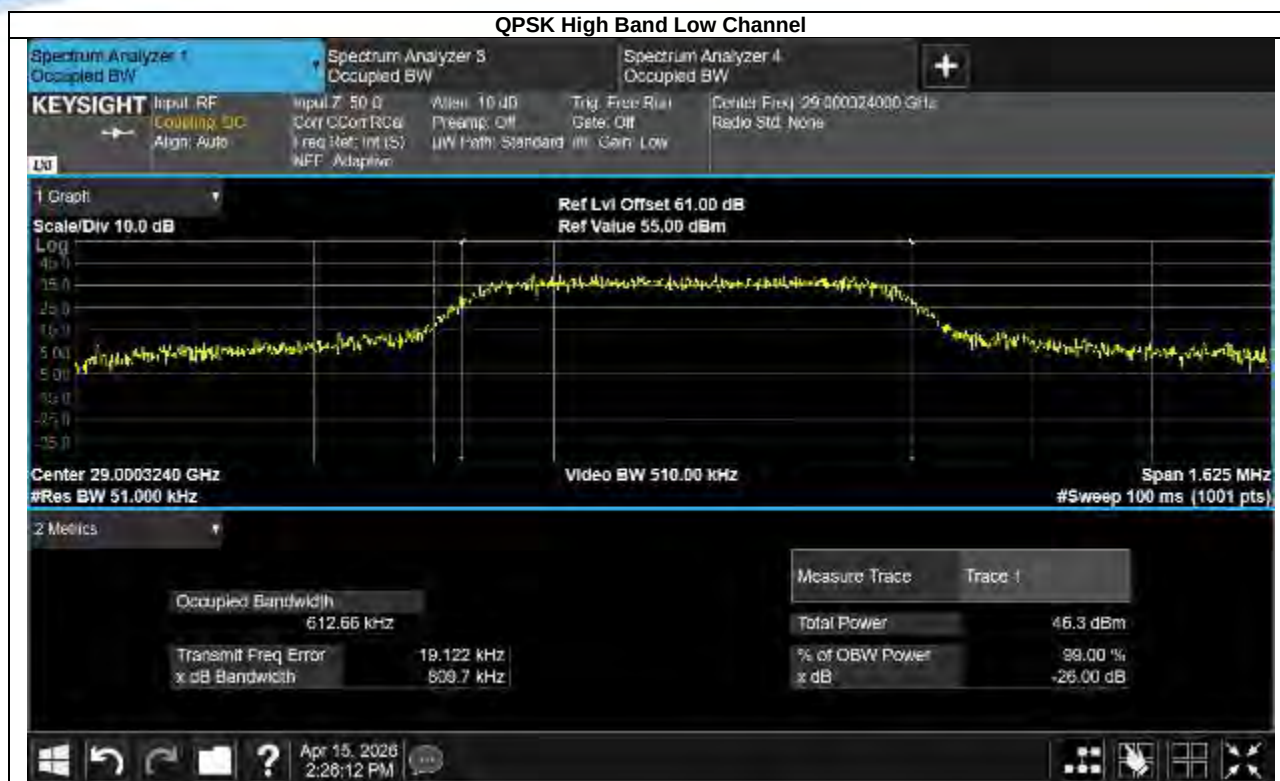
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 612.66 |
| <b>Mid</b>  | Maximum | 611.21 |
| <b>High</b> | Maximum | 615.37 |

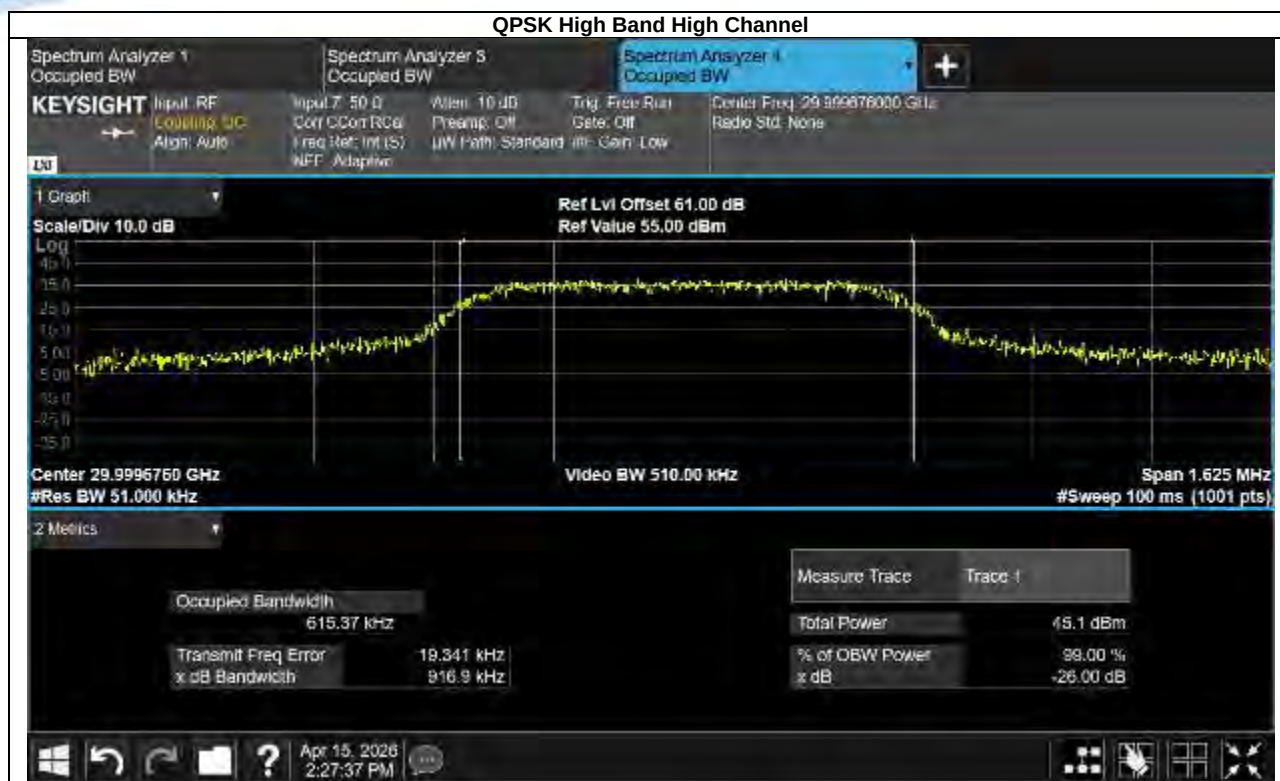
|                                                               |                                  |
|---------------------------------------------------------------|----------------------------------|
| <b>Traceability to Industry Recognized Test Methodologies</b> |                                  |
| <b>Work Instruction:</b>                                      | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b>                               | ±2.81 dB                         |











### 8.2.1.3. 8PSK 650KHz

#### Equipment Configuration for Occupied Bandwidth

|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | 8PSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

#### Test Measurement Results

##### 8PSK Low Band

|                         |               |                          |
|-------------------------|---------------|--------------------------|
| Temperature: 20 °C      | Power Setting | Measured Bandwidth (KHz) |
| Voltage: 115 Vac, 60 Hz |               |                          |
| Test Frequency          |               |                          |
| Low                     | Maximum       | 615.01                   |
| Mid                     | Maximum       | 612.99                   |
| High                    | Maximum       | 615.68                   |

##### 8PSK Mid Band

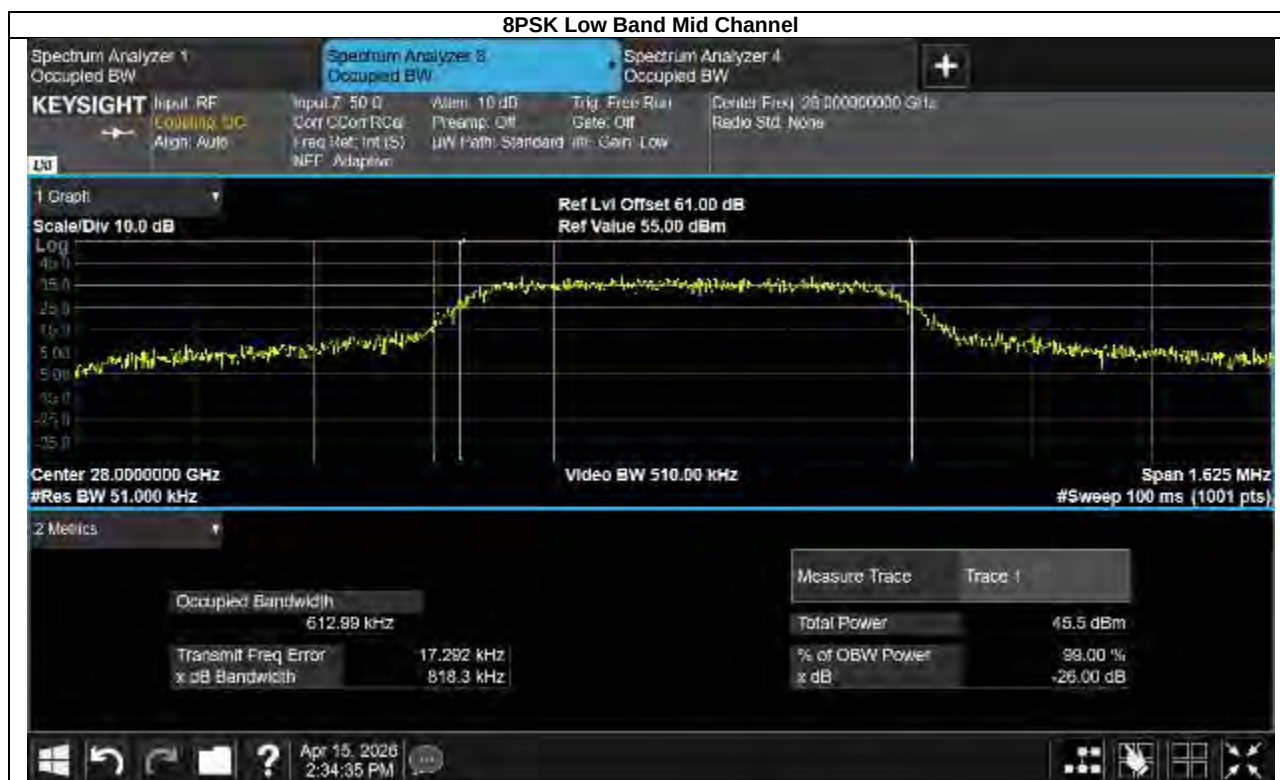
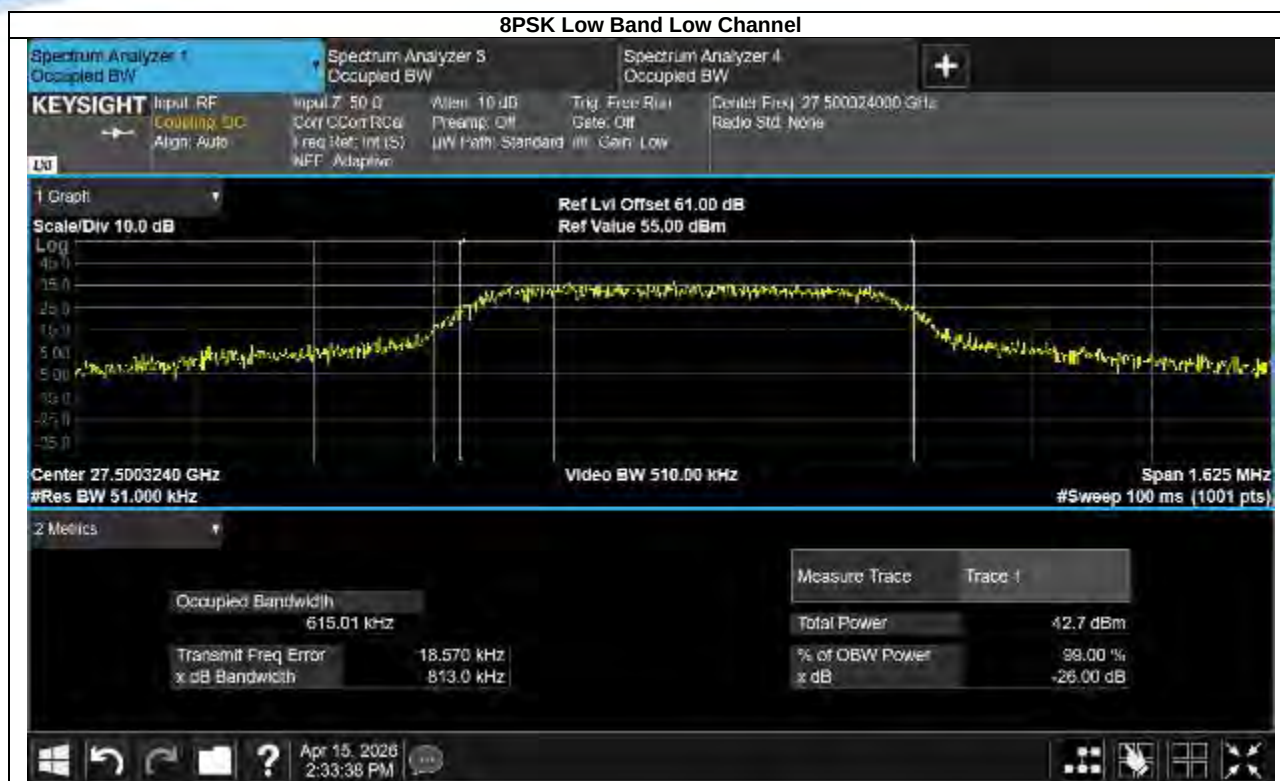
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 619.39 |
| <b>Mid</b>  | Maximum | 615.69 |
| <b>High</b> | Maximum | 619.05 |

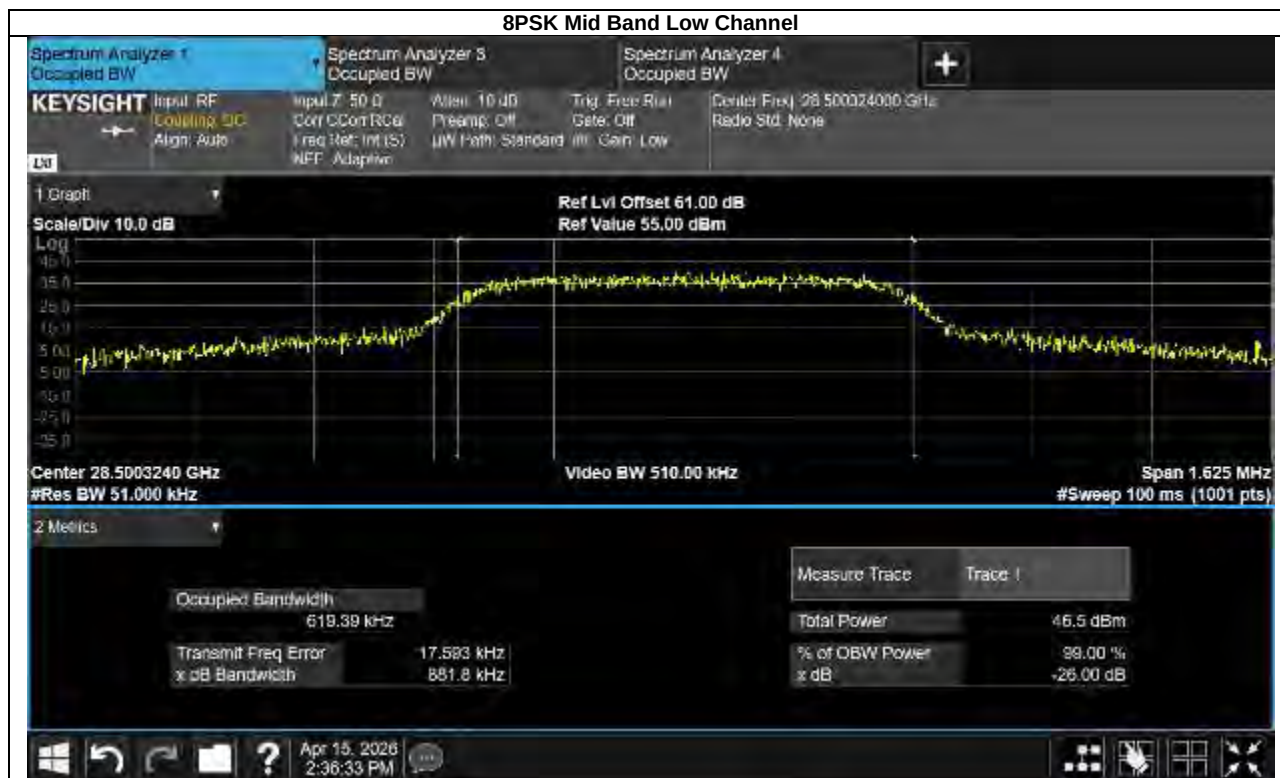
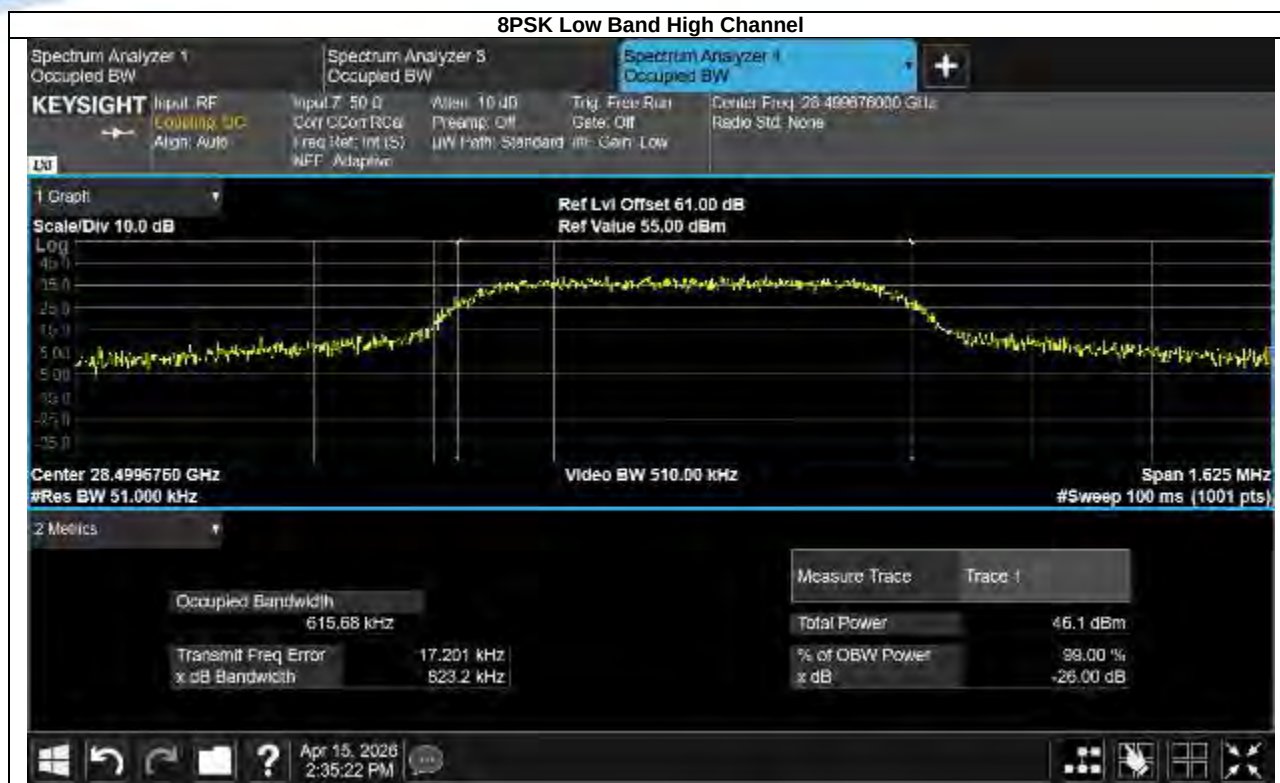
##### 8PSK High Band

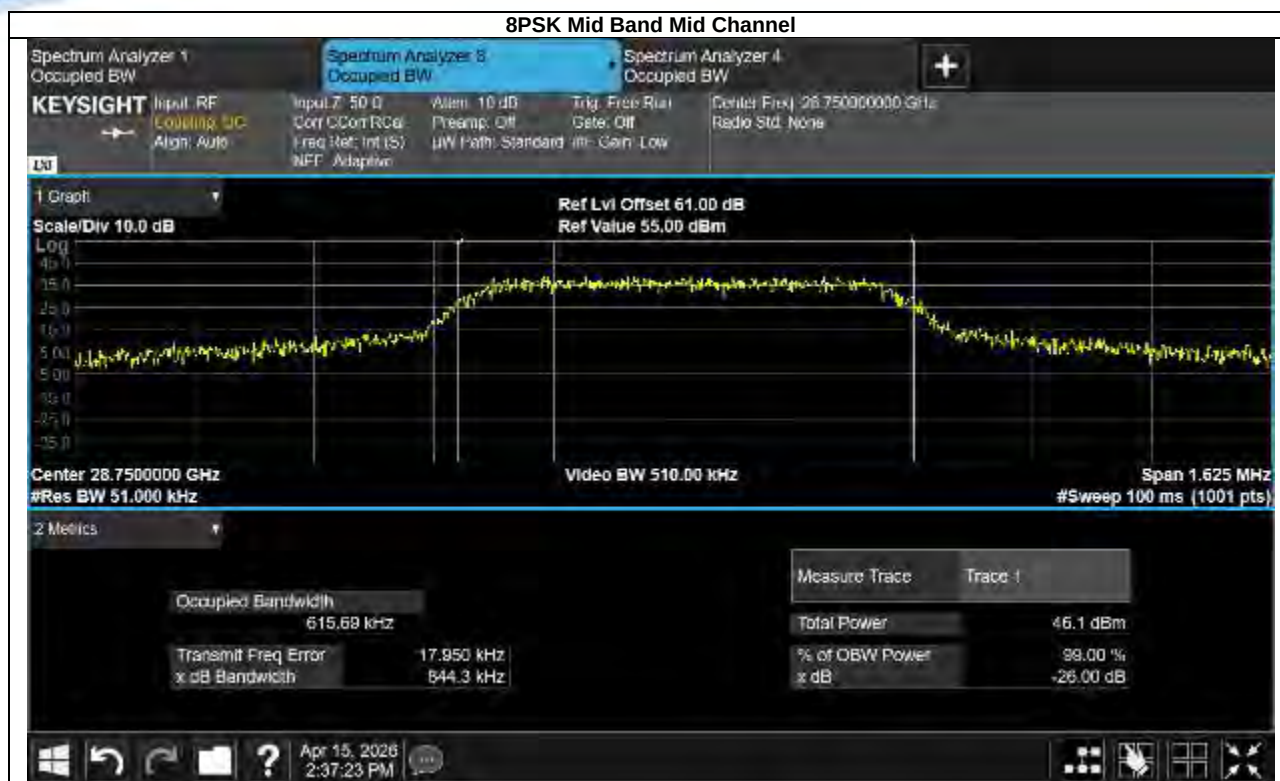
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 614.85 |
| <b>Mid</b>  | Maximum | 614.27 |
| <b>High</b> | Maximum | 610.64 |

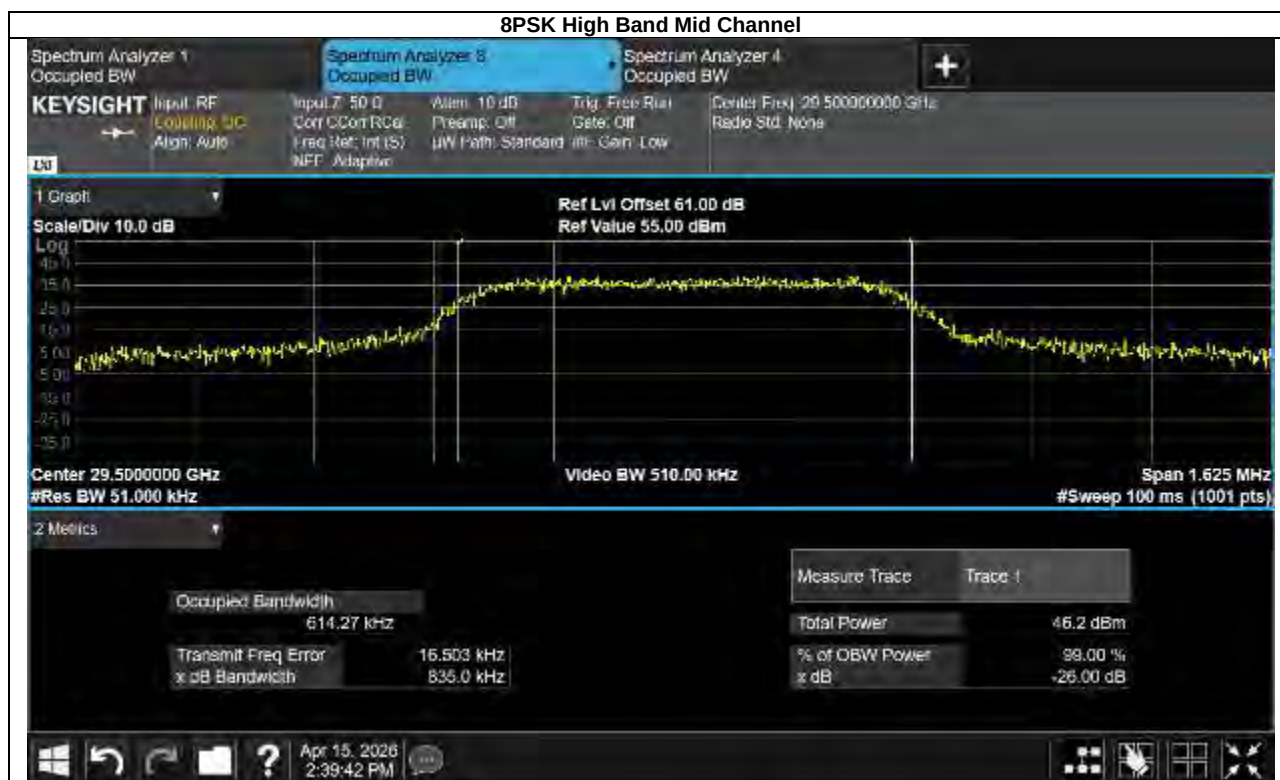
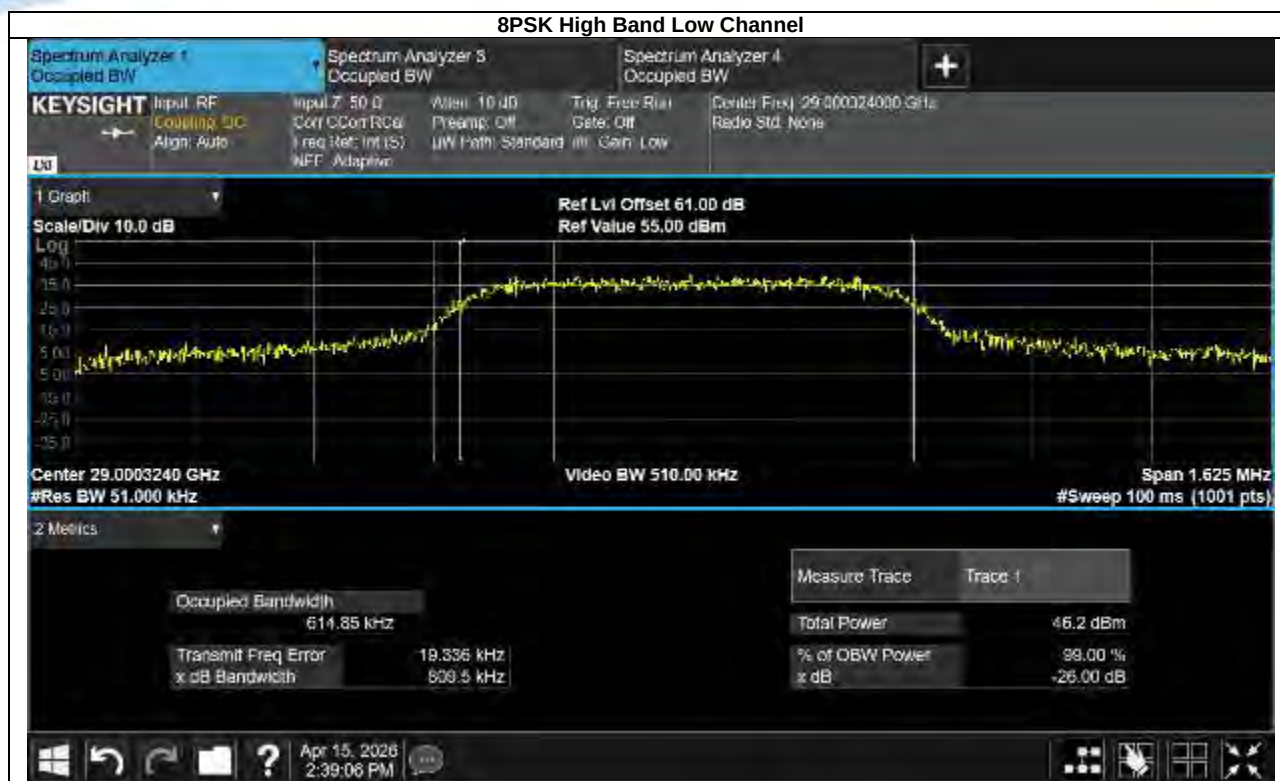
#### Traceability to Industry Recognized Test Methodologies

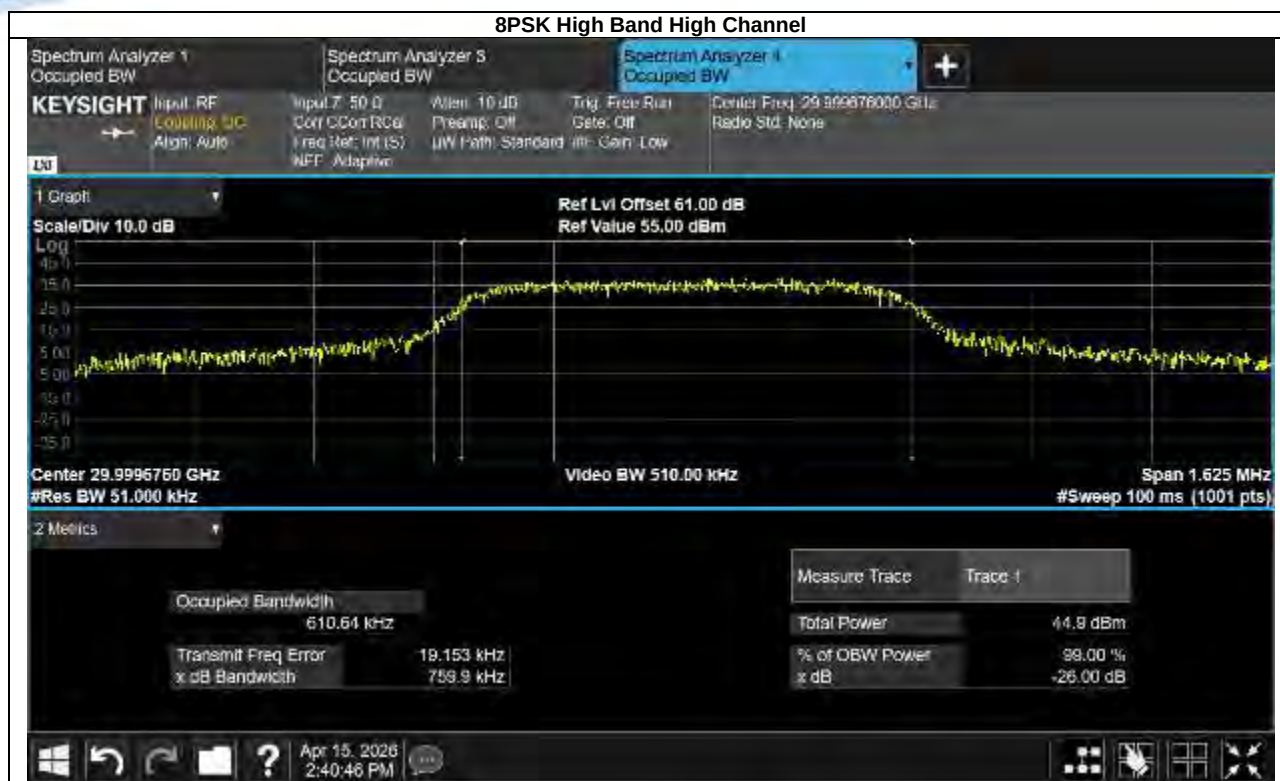
|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Work Instruction:</b>        | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b> | ±2.81 dB                         |











#### 8.2.1.4. BPSK 7MHz

##### Equipment Configuration for Occupied Bandwidth

|                                |       |                        |     |
|--------------------------------|-------|------------------------|-----|
| <b>Variant:</b>                | 7 MHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK  | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |       |                        |     |

##### Test Measurement Results

###### BPSK Low Band

|                         |               |                          |
|-------------------------|---------------|--------------------------|
| Temperature: 20 °C      | Power Setting | Measured Bandwidth (MHz) |
| Voltage: 115 Vac, 60 Hz |               |                          |
| Test Frequency          |               |                          |
| Low                     | Maximum       | 6.4173                   |
| Mid                     | Maximum       | 6..3490                  |
| High                    | Maximum       | 6.4051                   |

###### BPSK Mid Band

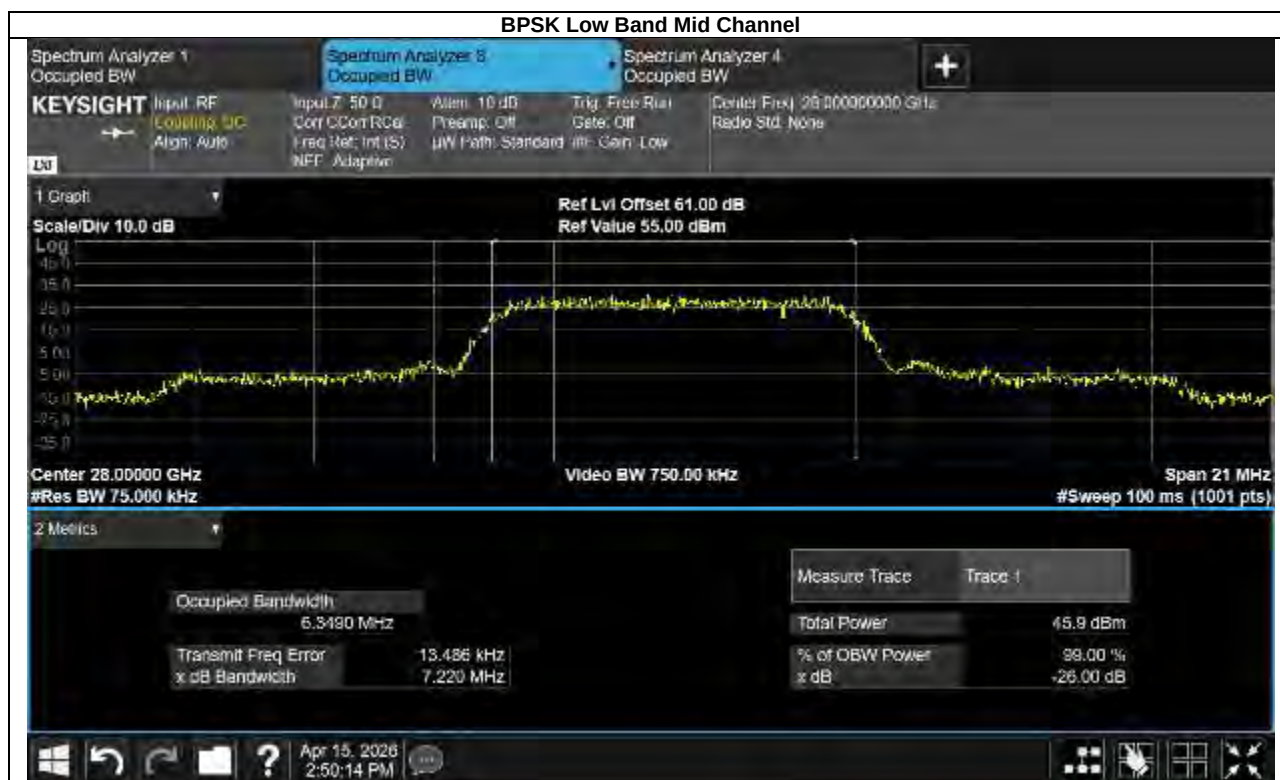
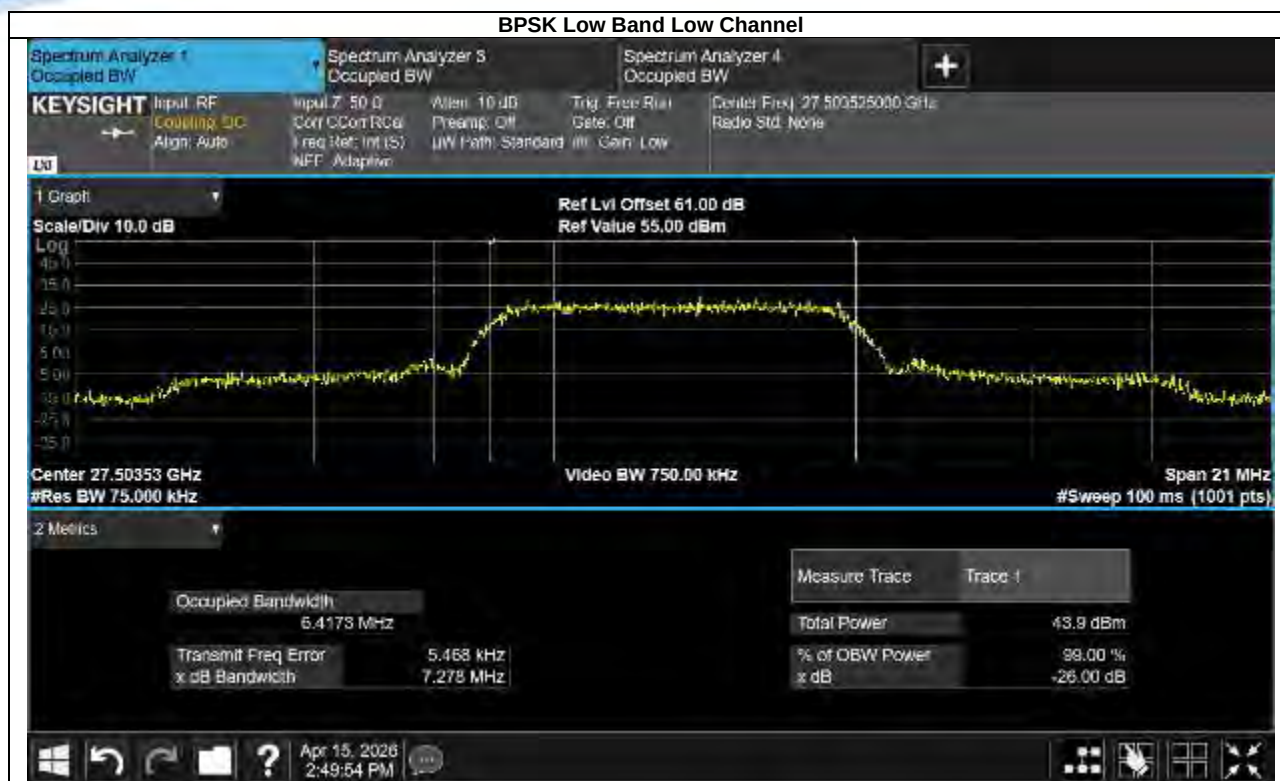
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 6.3793 |
| <b>Mid</b>  | Maximum | 6.4080 |
| <b>High</b> | Maximum | 6.4254 |

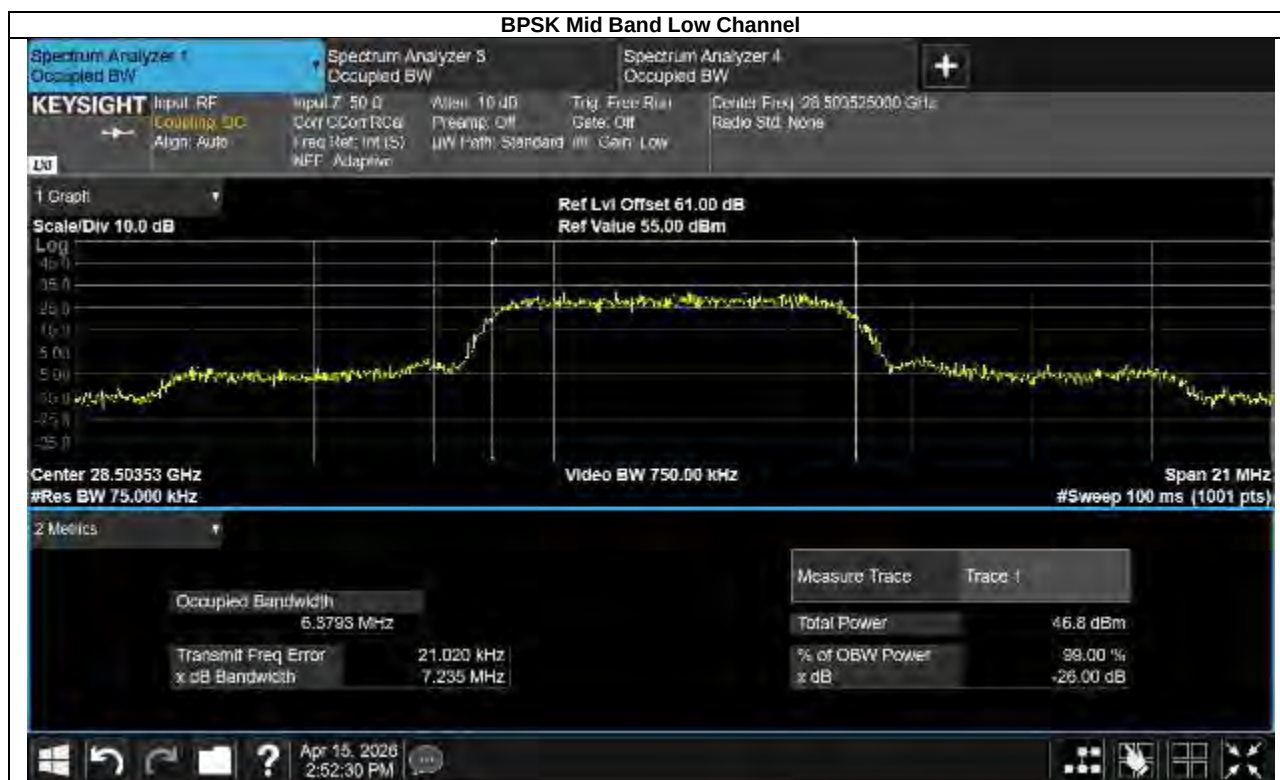
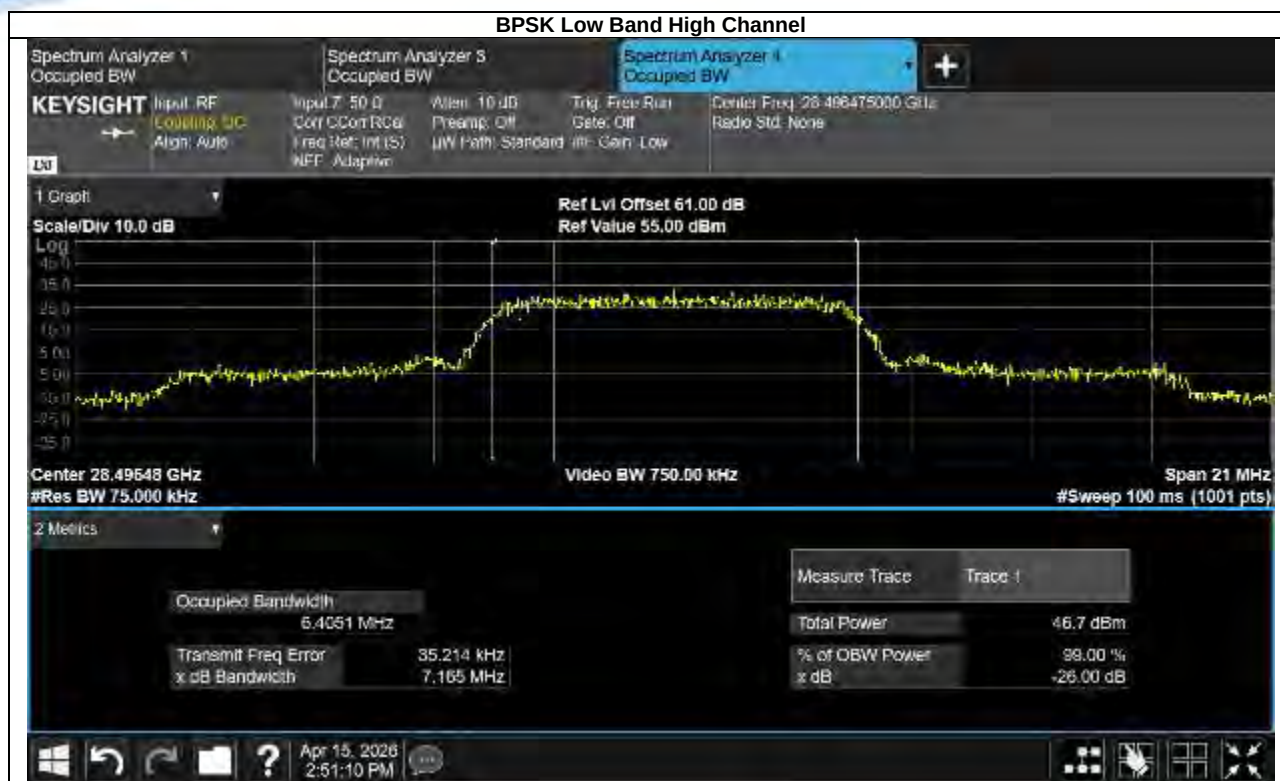
###### BPSK High Band

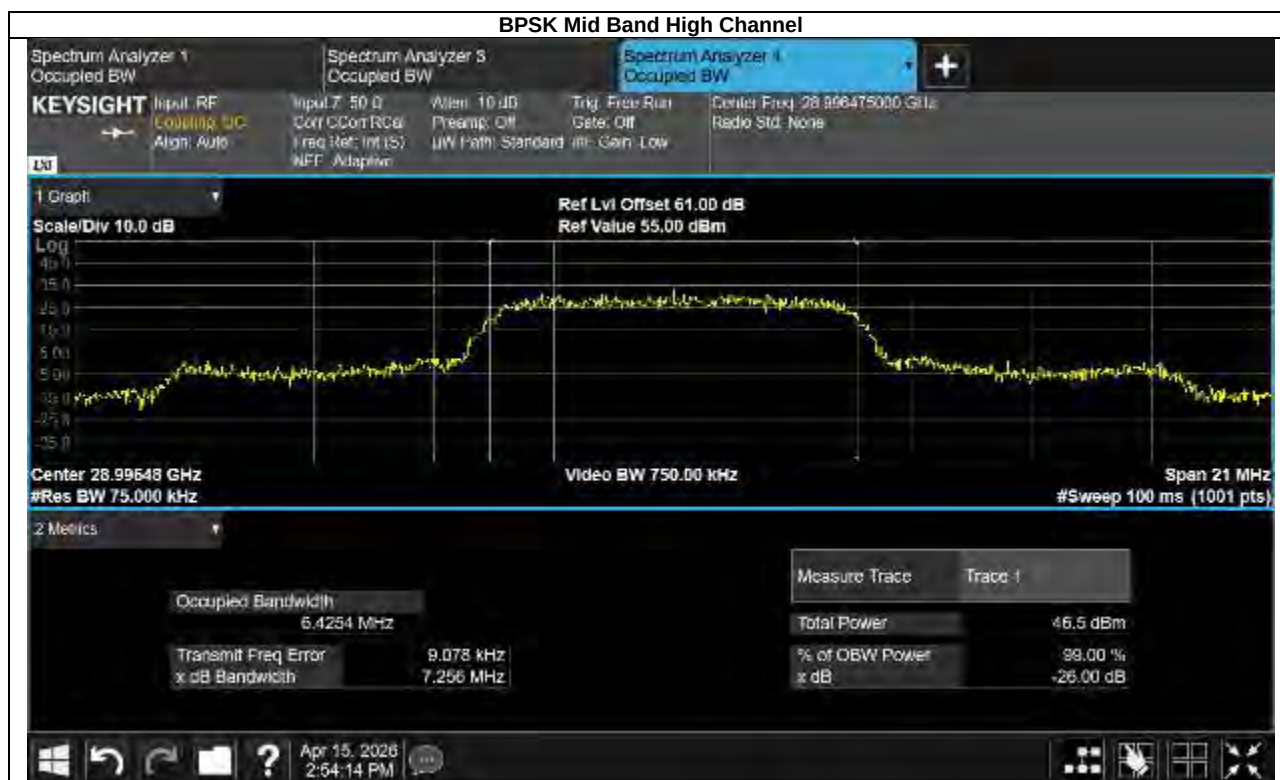
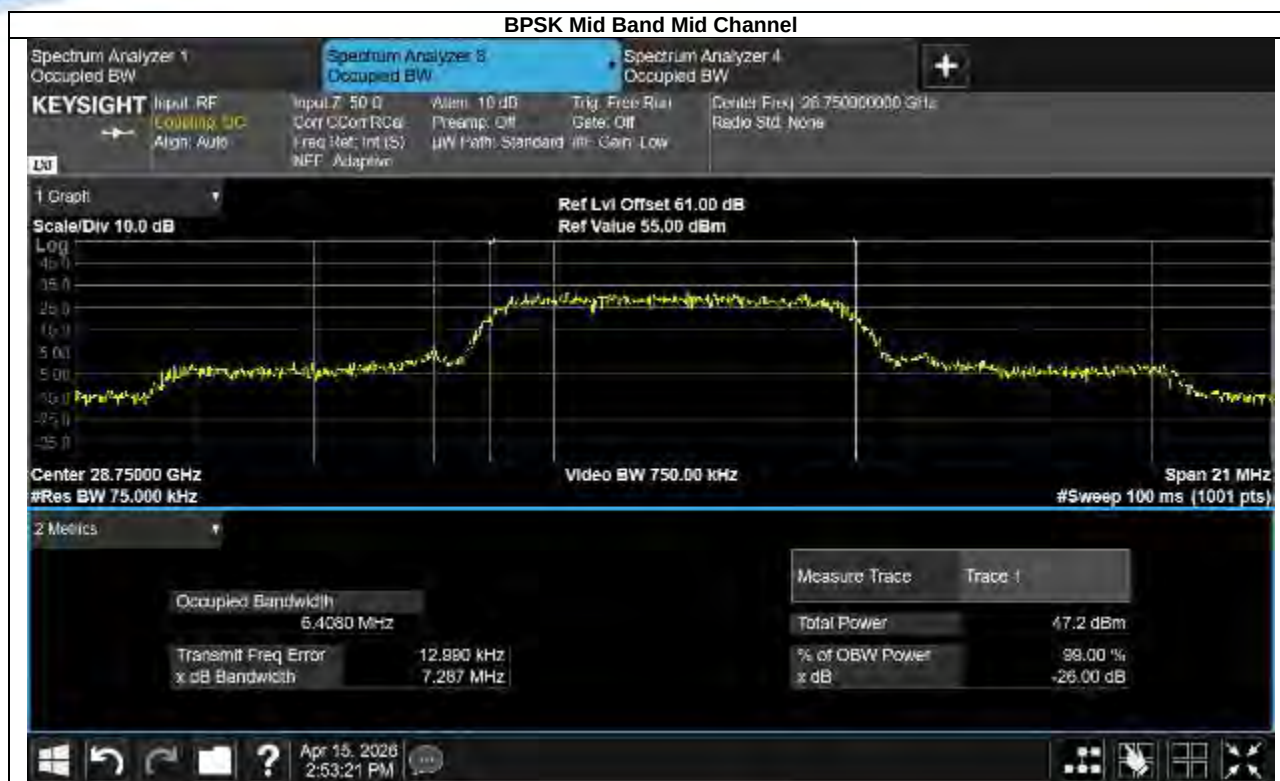
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 6.4112 |
| <b>Mid</b>  | Maximum | 6.4534 |
| <b>High</b> | Maximum | 6.4638 |

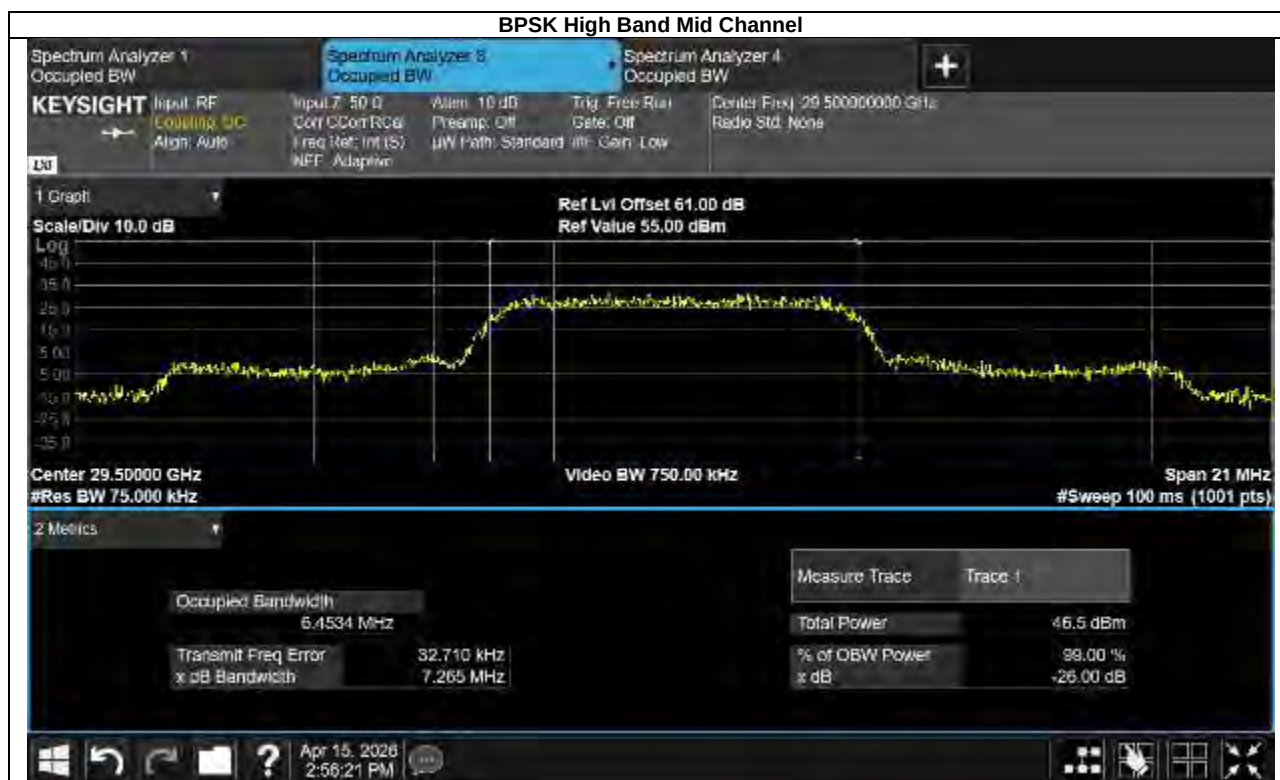
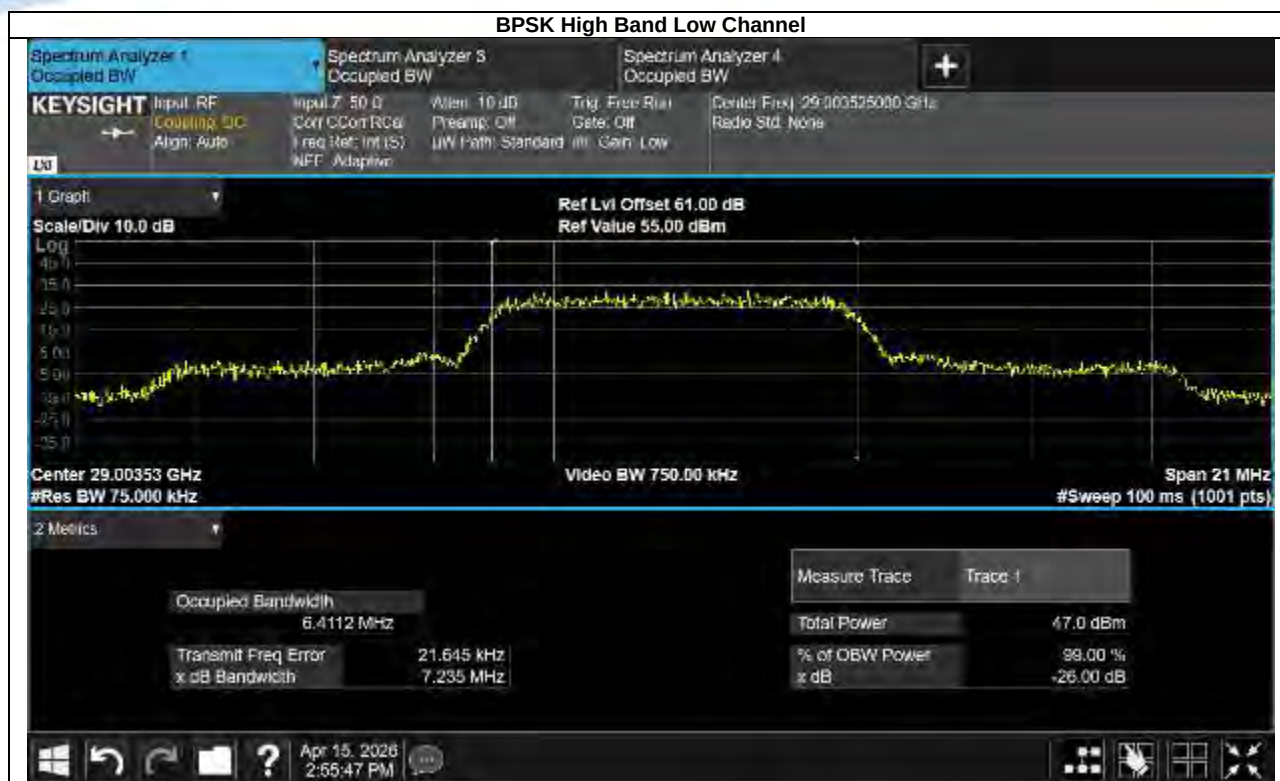
##### Traceability to Industry Recognized Test Methodologies

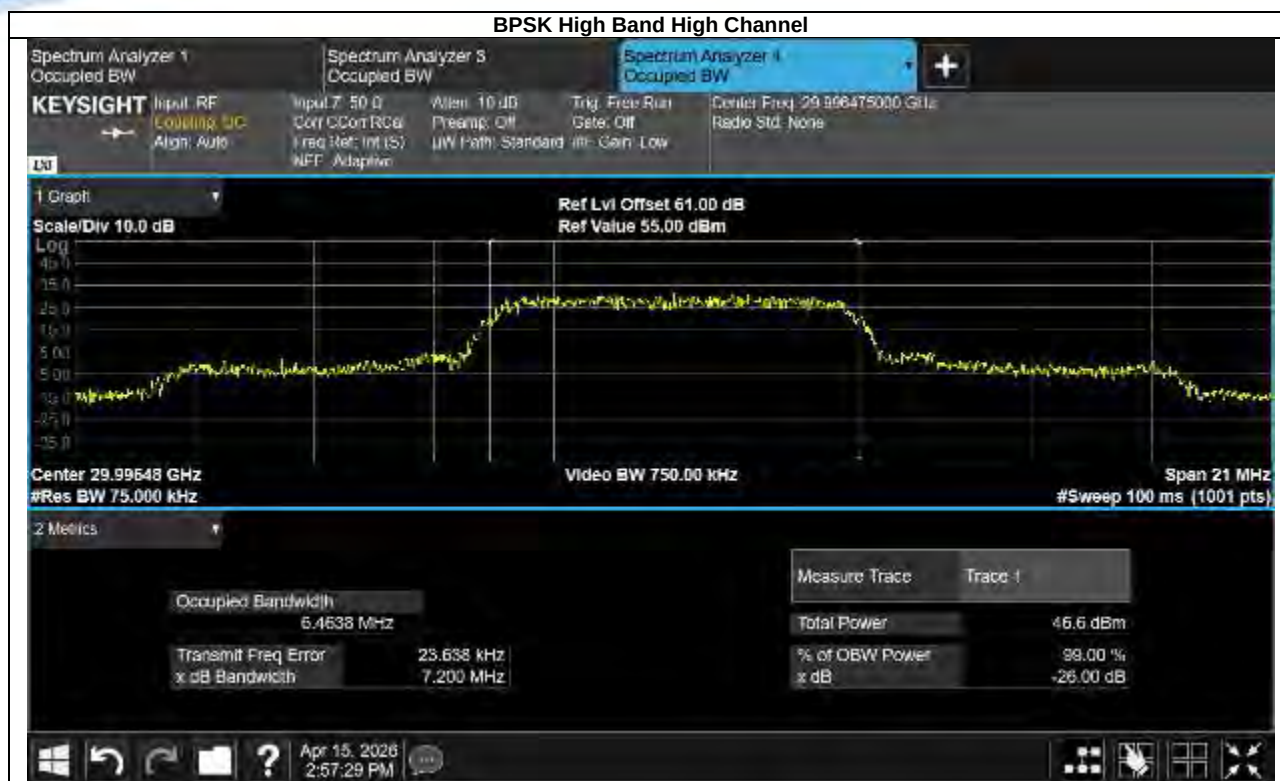
|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Work Instruction:</b>        | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b> | ±2.81 dB                         |











### 8.2.1.5. QPSK 7MHz

#### Equipment Configuration for Occupied Bandwidth

|                                |       |                        |     |
|--------------------------------|-------|------------------------|-----|
| <b>Variant:</b>                | 7 MHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | QPSK  | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |       |                        |     |

#### Test Measurement Results

##### QPSK Low Band

|                         |               |                          |
|-------------------------|---------------|--------------------------|
| 7. OR Low Band          |               |                          |
| Temperature: 20 °C      | Power Setting | Measured Bandwidth (MHz) |
| Voltage: 115 Vac, 60 Hz |               |                          |
| Test Frequency          |               |                          |
| Low                     | Maximum       | 6.3606                   |
| Mid                     | Maximum       | 6.3077                   |
| High                    | Maximum       | 6.3468                   |

##### QPSK Mid Band

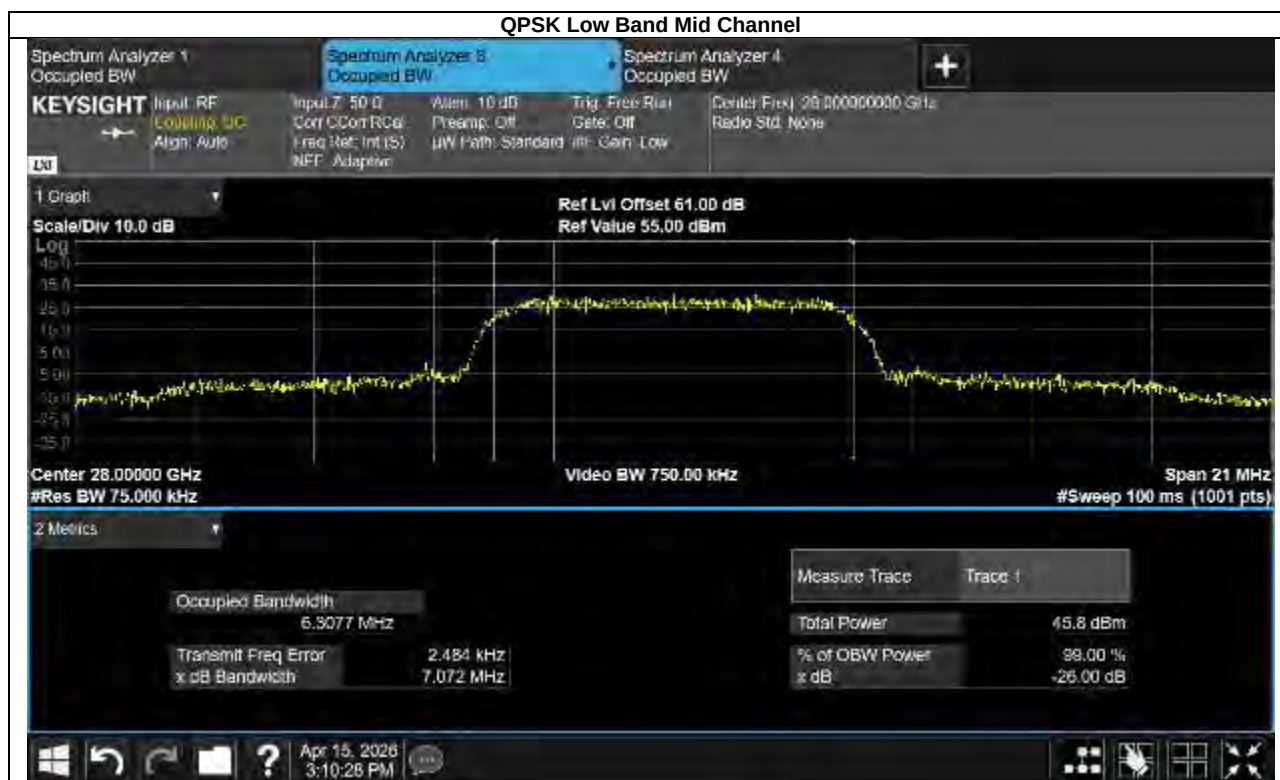
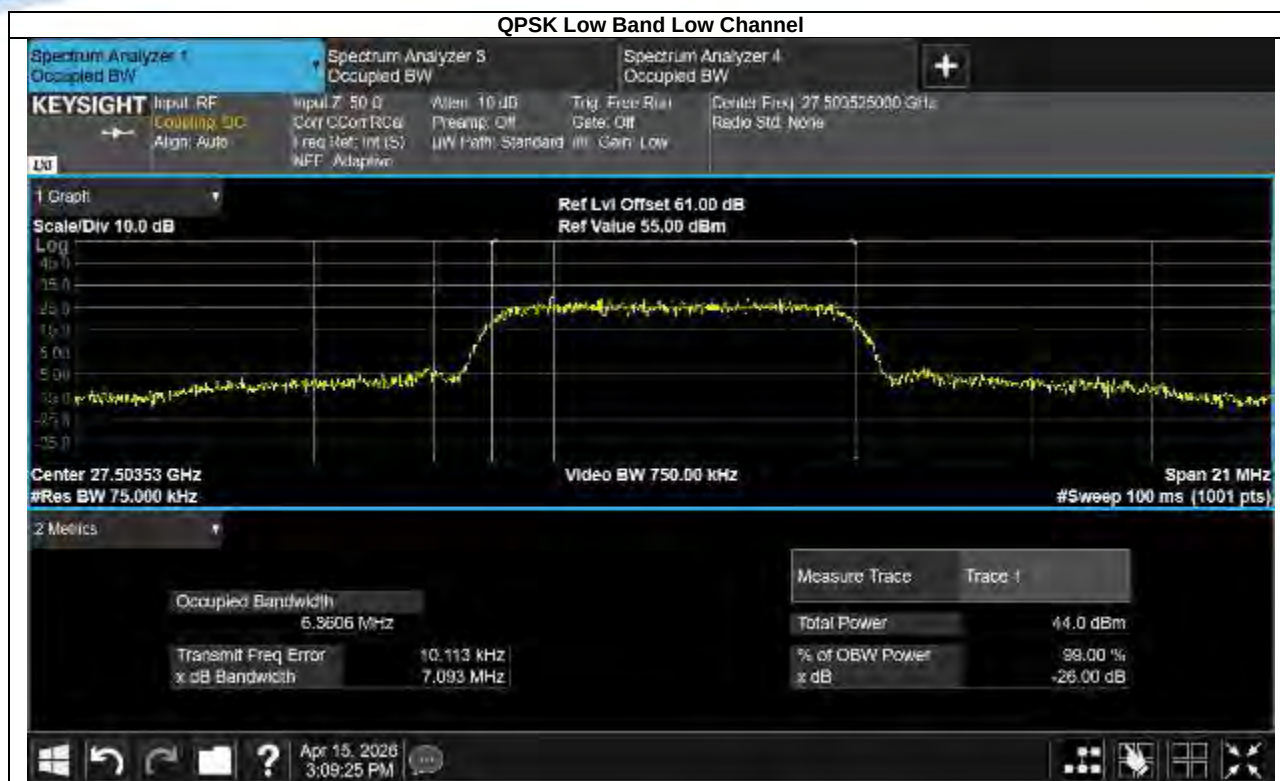
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 6.3210 |
| <b>Mid</b>  | Maximum | 6.3858 |
| <b>High</b> | Maximum | 6.3447 |

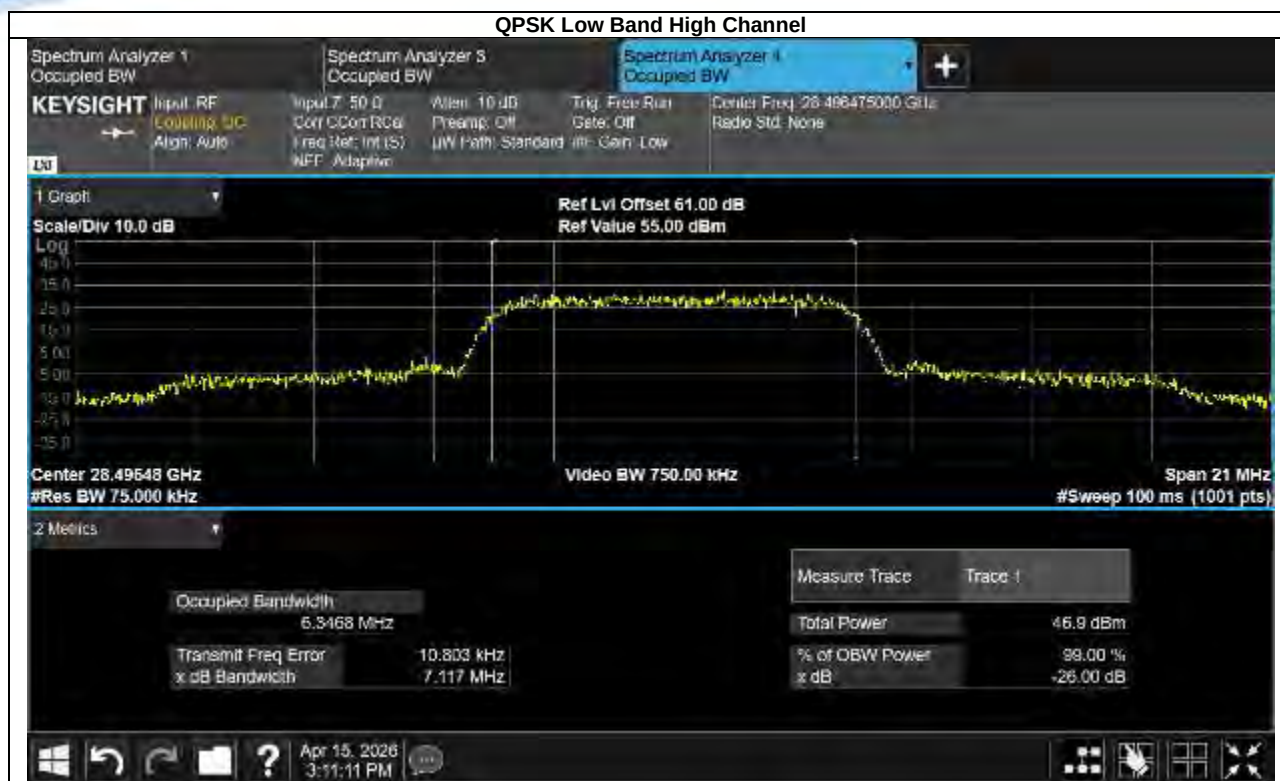
##### QPSK High Band

|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 6.3471 |
| <b>Mid</b>  | Maximum | 6.3539 |
| <b>High</b> | Maximum | 6.3512 |

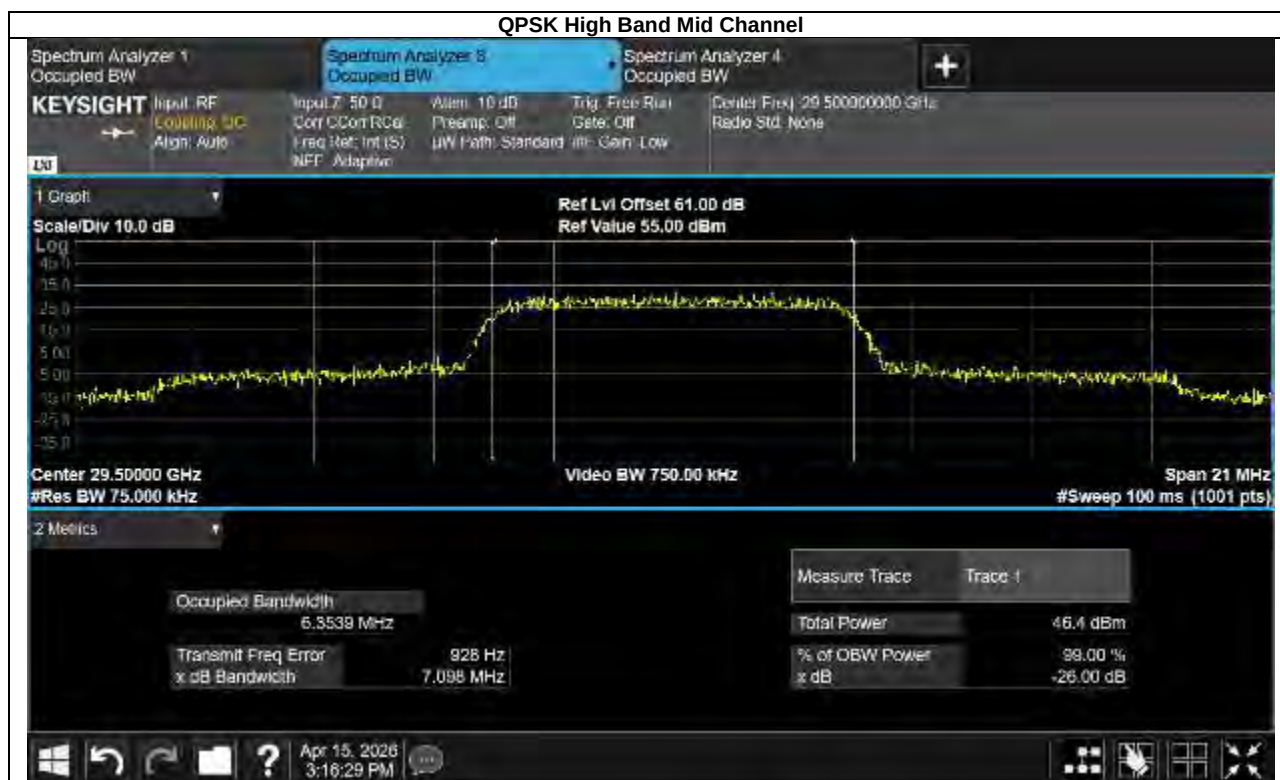
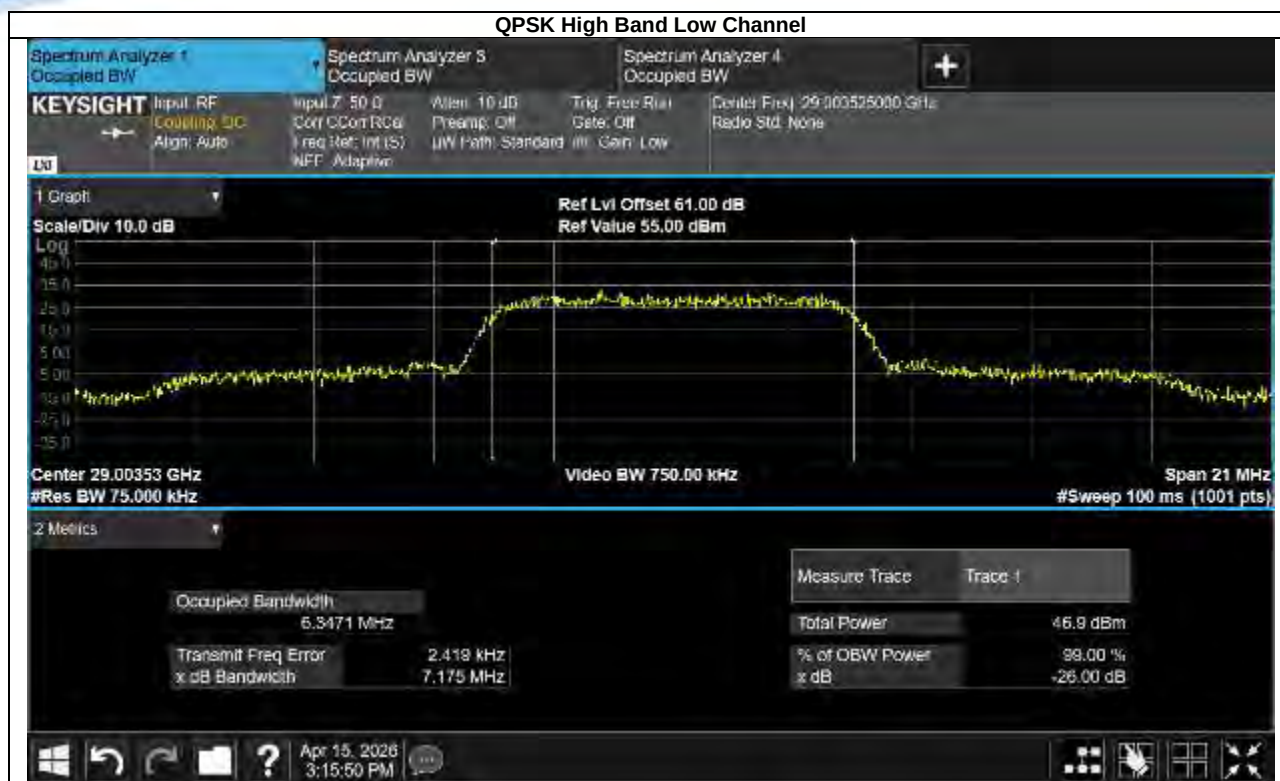
#### Traceability to Industry Recognized Test Methodologies

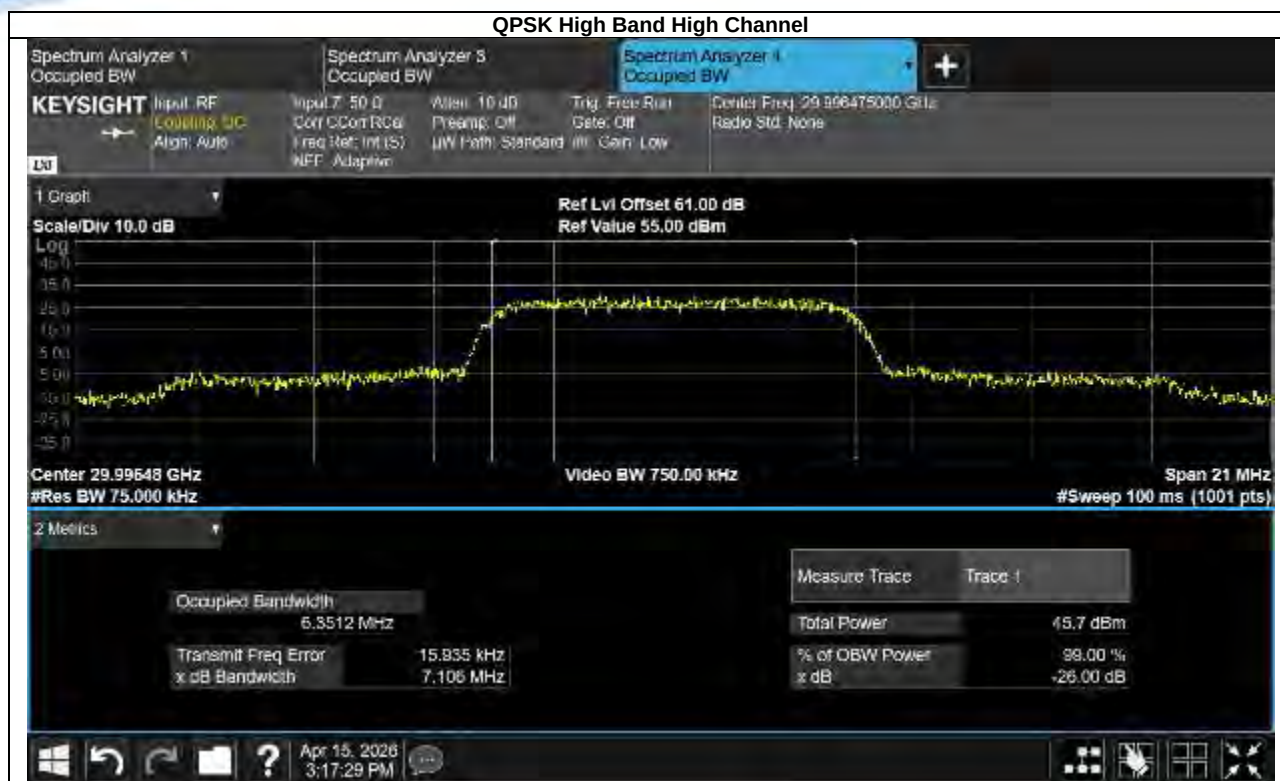
|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Work Instruction:</b>        | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b> | ±2.81 dB                         |











### 8.2.1.6. 8PSK 7MHz

#### Equipment Configuration for Occupied Bandwidth

|                                |       |                        |     |
|--------------------------------|-------|------------------------|-----|
| <b>Variant:</b>                | 7 MHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | 8PSK  | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |       |                        |     |

#### Test Measurement Results

##### 8PSK Low Band

| OF OR LOW Band          |               |                          |
|-------------------------|---------------|--------------------------|
| Temperature: 20 °C      | Power Setting | Measured Bandwidth (MHz) |
| Voltage: 115 Vac, 60 Hz |               |                          |
| Test Frequency          |               |                          |
| Low                     | Maximum       | 6.3534                   |
| Mid                     | Maximum       | 6.3087                   |
| High                    | Maximum       | 6.3391                   |

##### 8PSK Mid Band

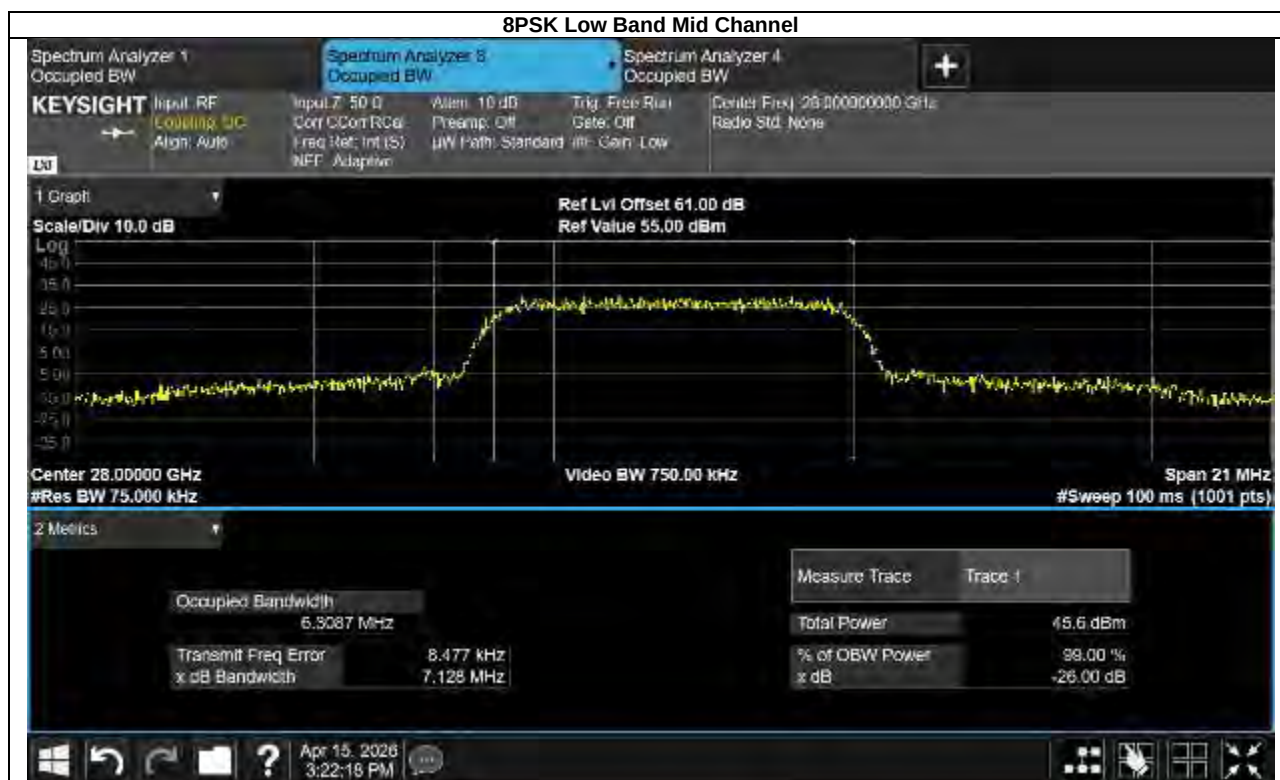
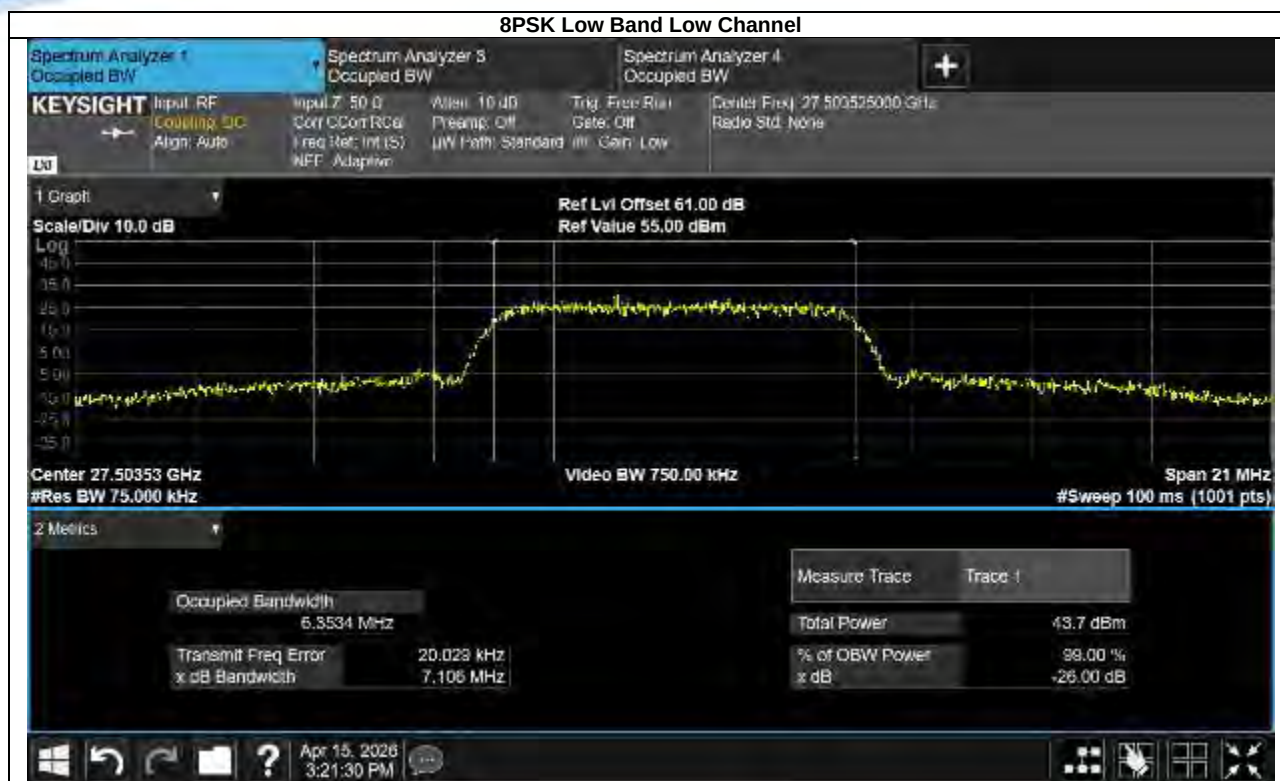
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 6.2913 |
| <b>Mid</b>  | Maximum | 6.3845 |
| <b>High</b> | Maximum | 6.3274 |

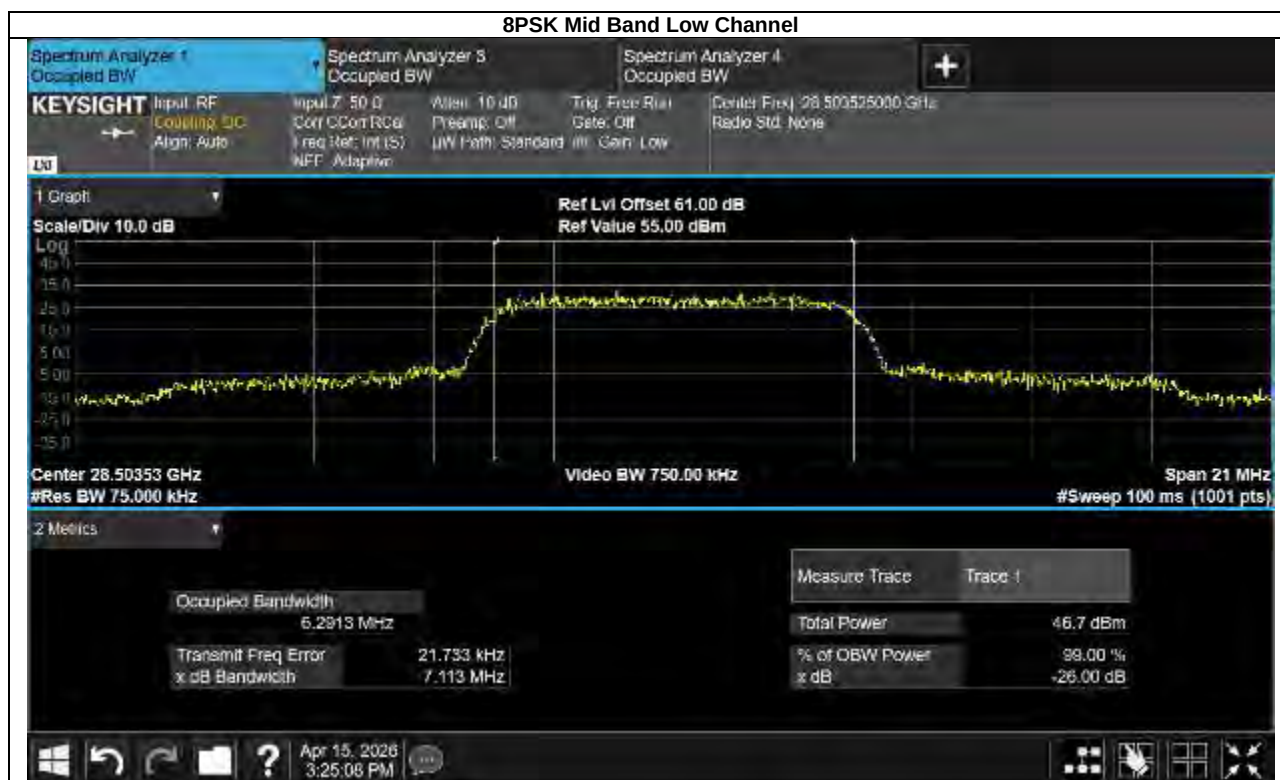
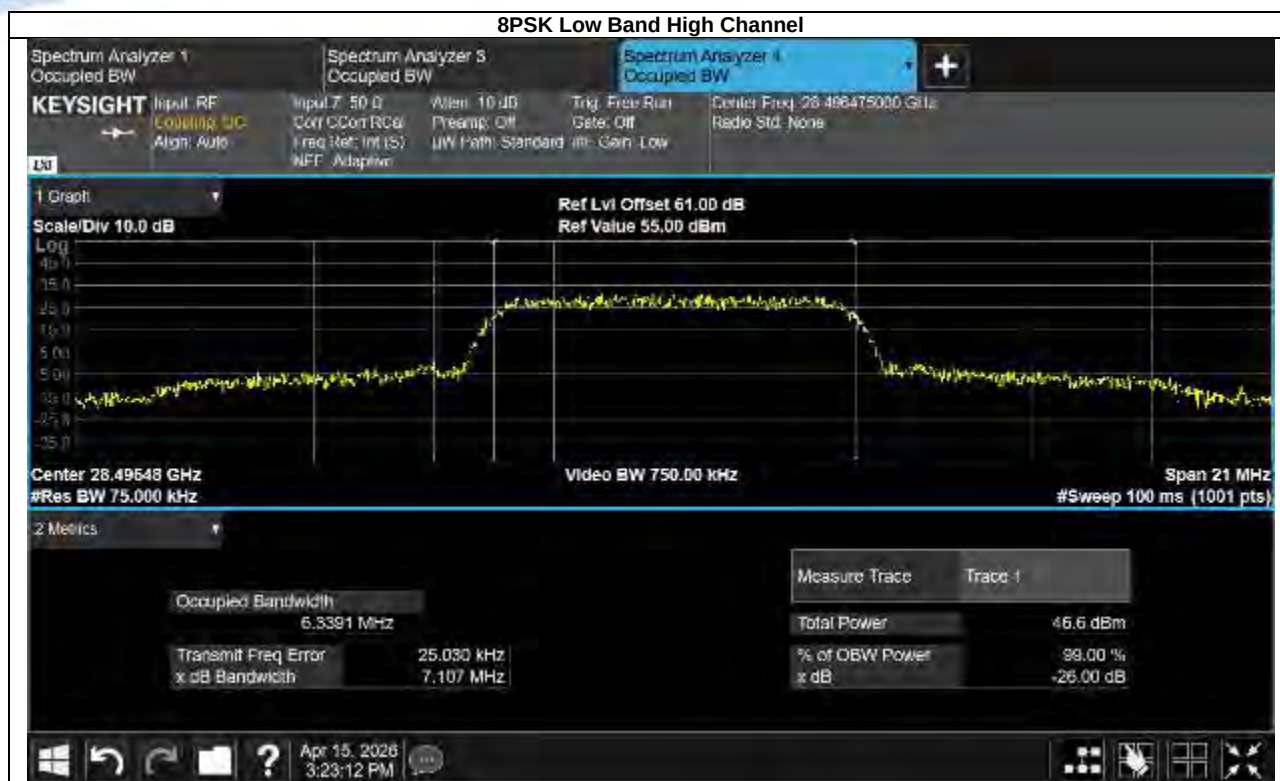
##### 8PSK High Band

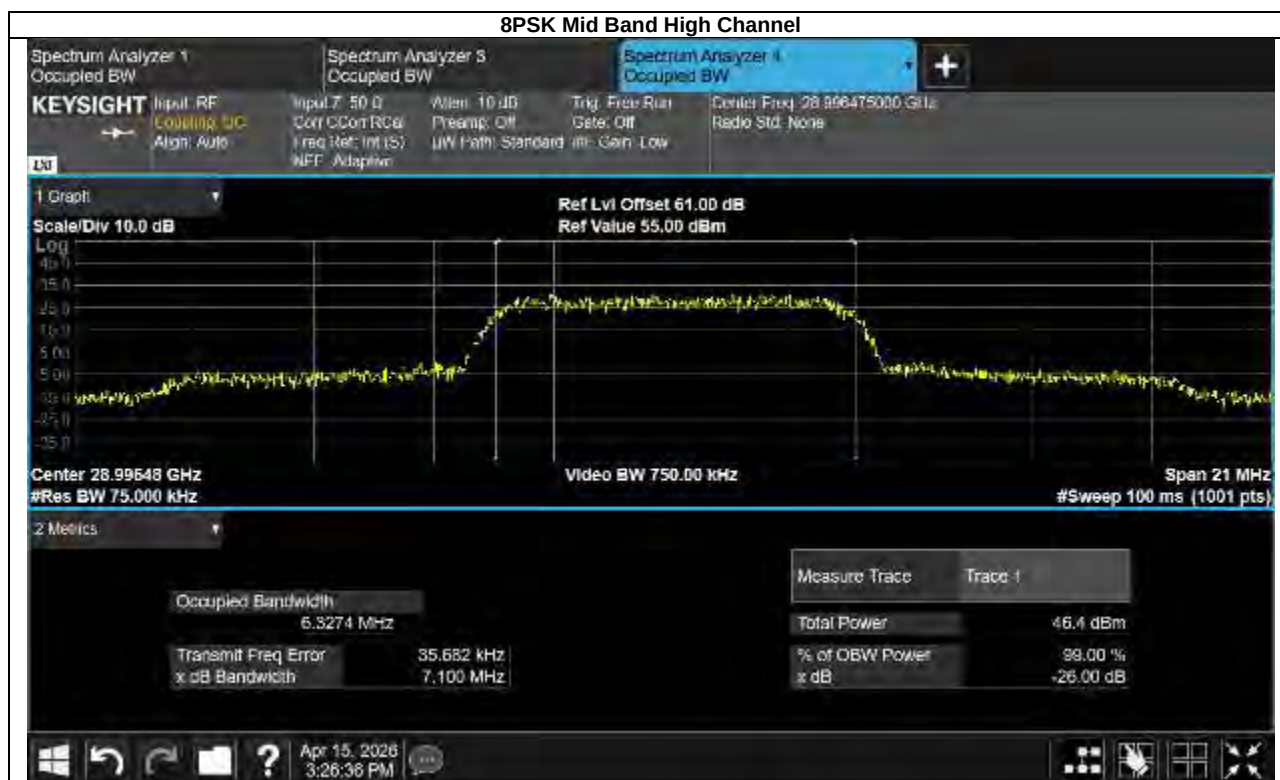
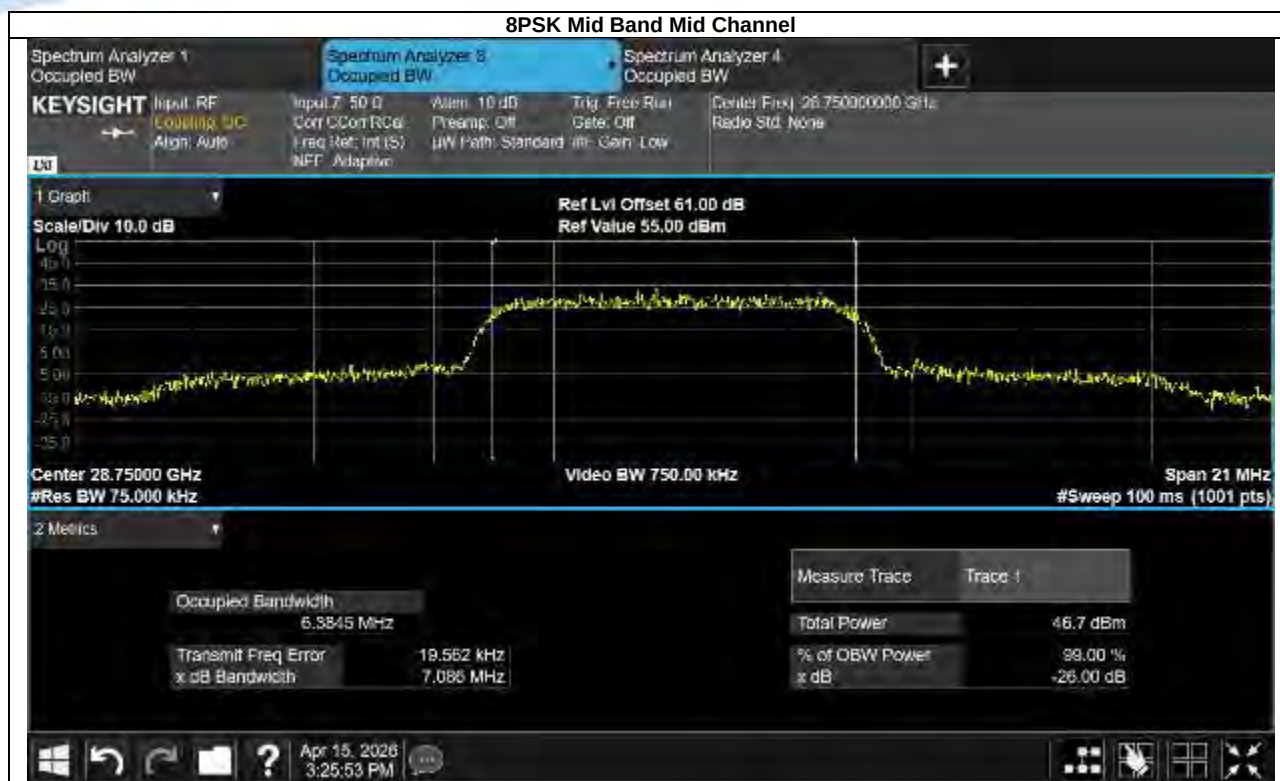
|             |         |        |
|-------------|---------|--------|
| <b>Low</b>  | Maximum | 6.3234 |
| <b>Mid</b>  | Maximum | 6.3366 |
| <b>High</b> | Maximum | 6.3254 |

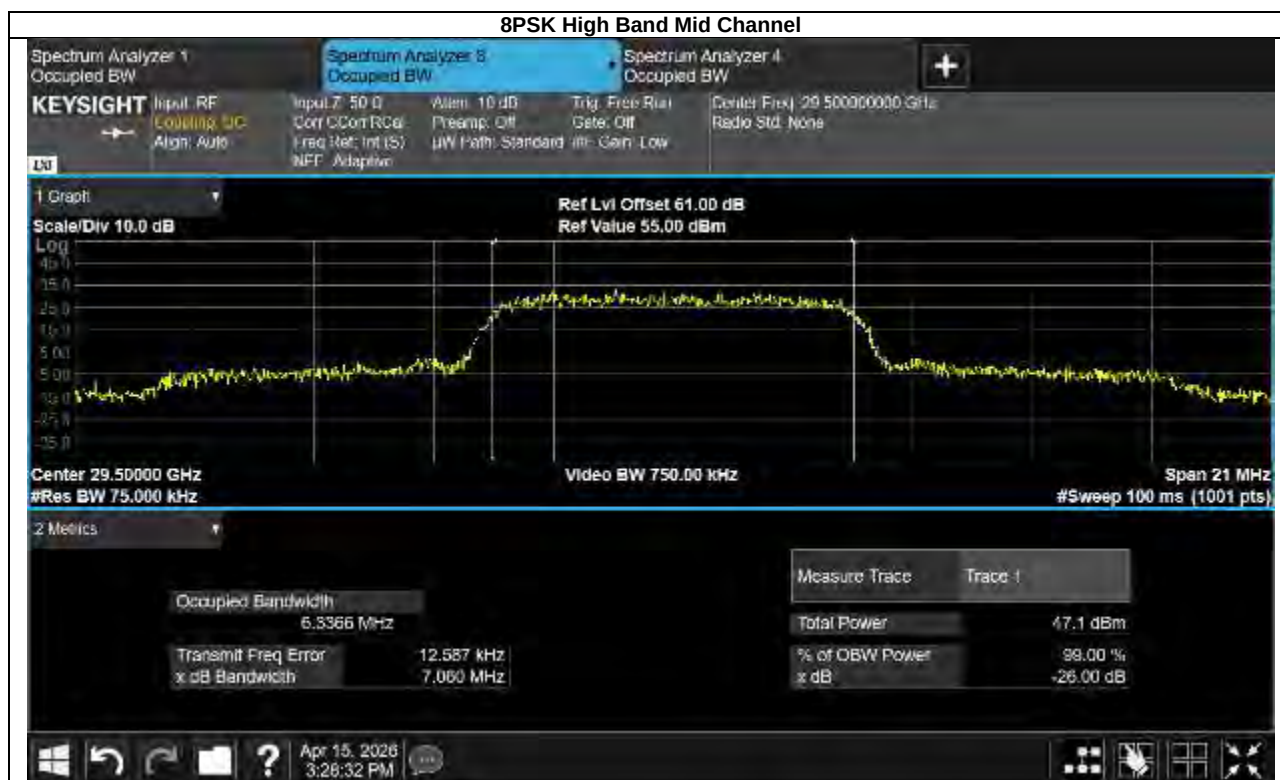
#### Traceability to Industry Recognized Test Methodologies

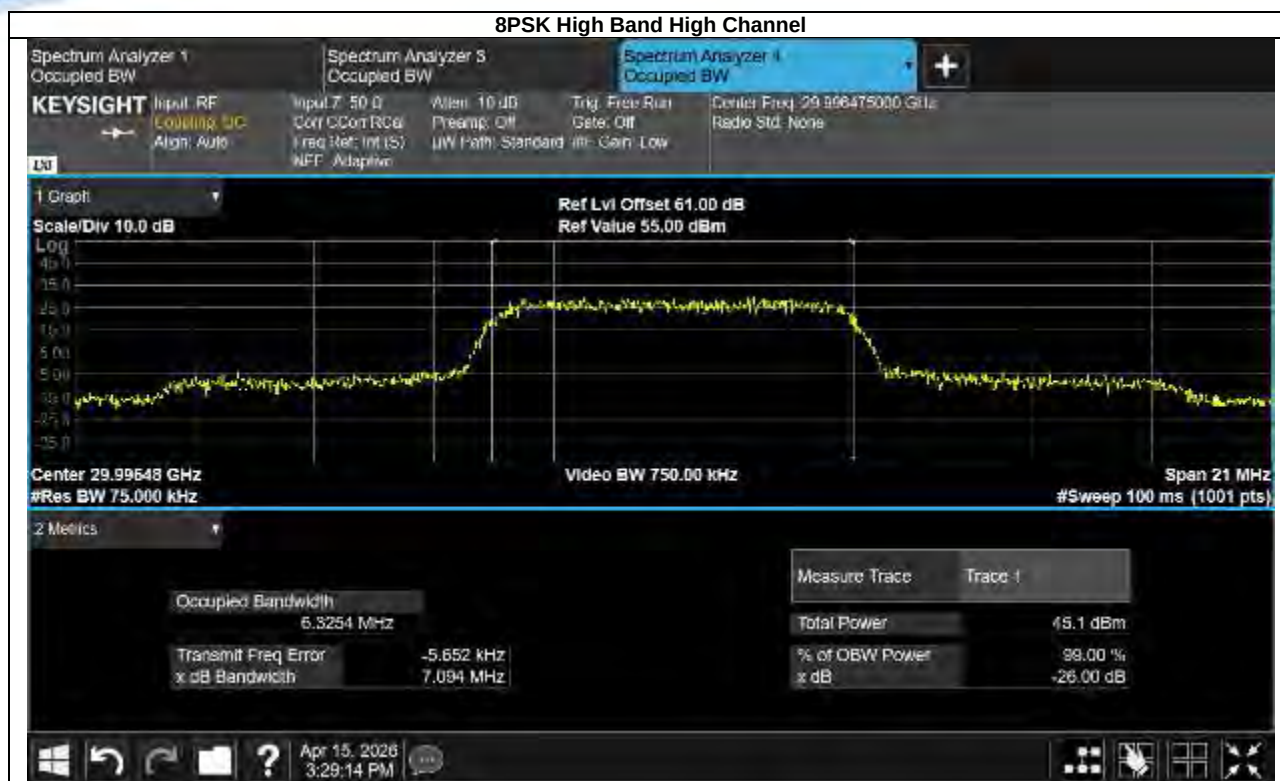
|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Work Instruction:</b>        | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b> | ±2.81 dB                         |











### 8.3. Transmitter Spectrum Mask

| Conducted Test Conditions for Transmitter Spectrum Emission Mask                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |                     |             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|-------------|
| Standard:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FCC Part 25              | Ambient Temp. (°C): | 20.0 - 24.5 |
| Test Heading:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Conducted Emission Masks | Rel. Humidity (%):  | 32 - 45     |
| Standard Section(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25.202(f) & 2.1051       | Pressure (mBars):   | 999 - 1001  |
| Reference Document(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | See Normative References |                     |             |
| <b>General Test setup and Operational Mode(s)</b><br>The top of the mask was referenced to the average conducted power measured using a power meter in accordance with KDB 971168<br><br>Part 25.202(f) specifies emission limitations in a 4 kHz bandwidth. The closest selectable resolution bandwidth of 5 kHz was set with video bandwidth 20 kHz. The number of measurement points was set to at least 2 x span / resolution bandwidth. An rms detector was used, sweep time auto and trace averaging over 100 traces.<br><br>The spectrum analyzer was connected to the antenna port on the EUT using suitable attenuation and a coaxial cable. A reference level offset was entered on the spectrum analyzer to compensate for the loss of the attenuator and coaxial cable. The second antenna port was also included and exercised.<br><br>Nominal voltage 115 Vac 60 Hz. The EUT voltage was measured using a calibrated voltmeter<br><br>Test setup configuration per Section 6.2 'Conducted Test Setup' |                          |                     |             |

### 8.3.1.7. BPSK 650KHz

#### Equipment Configuration for Transmitter Spectrum Emission Mask

|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

#### Test Measurement Results

##### BPSK Low Band

|                         |               |           |
|-------------------------|---------------|-----------|
| Temperature: 20 °C      | Power Setting | Compliant |
| Voltage: 115 Vac, 60 Hz |               |           |
| Test Frequency          |               |           |
| Low                     | Maximum       | Complies  |
| Mid                     | Maximum       | Complies  |
| High                    | Maximum       | Complies  |

##### BPSK Mid Band

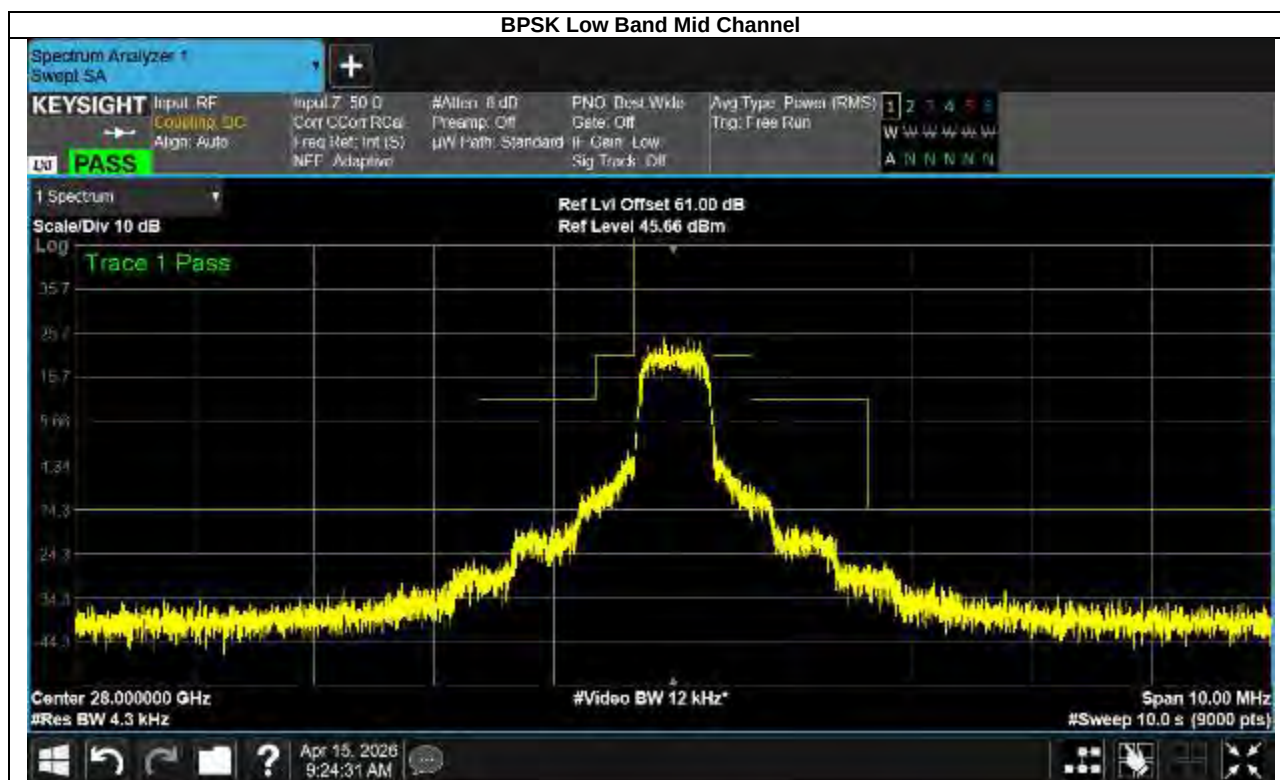
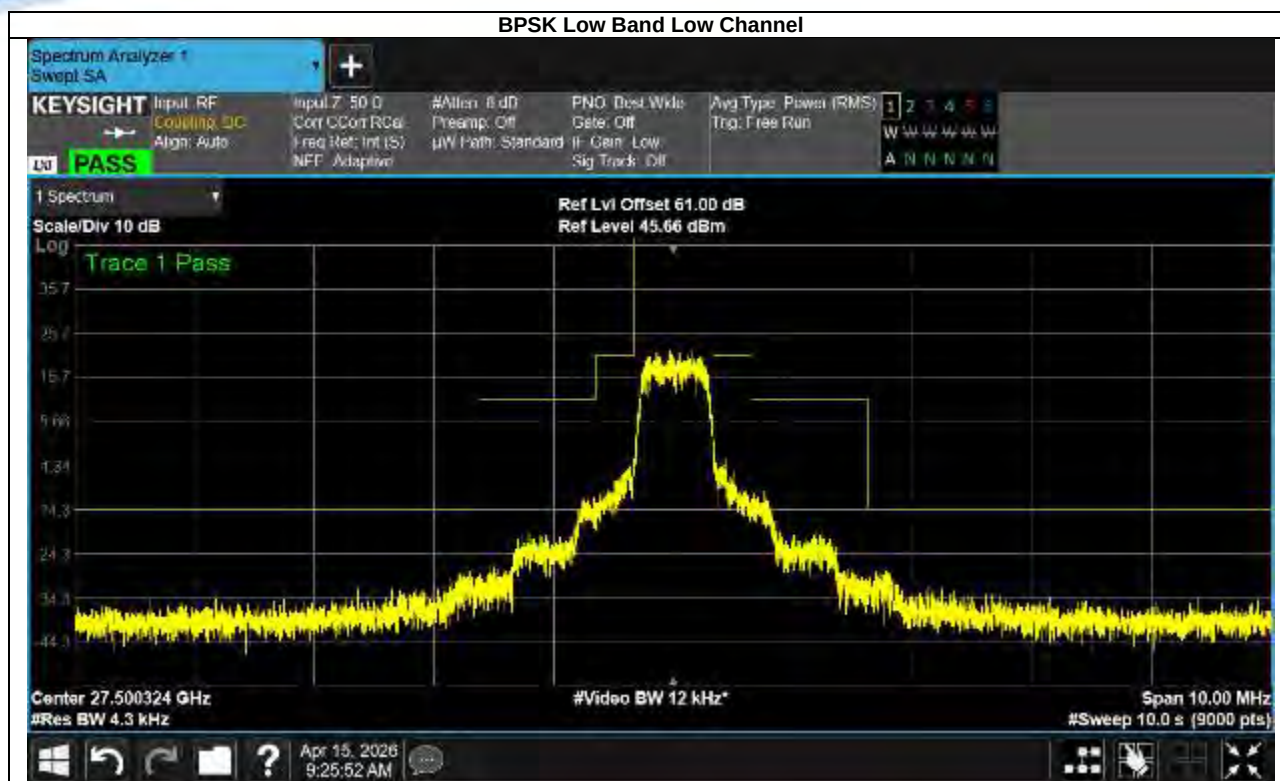
|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

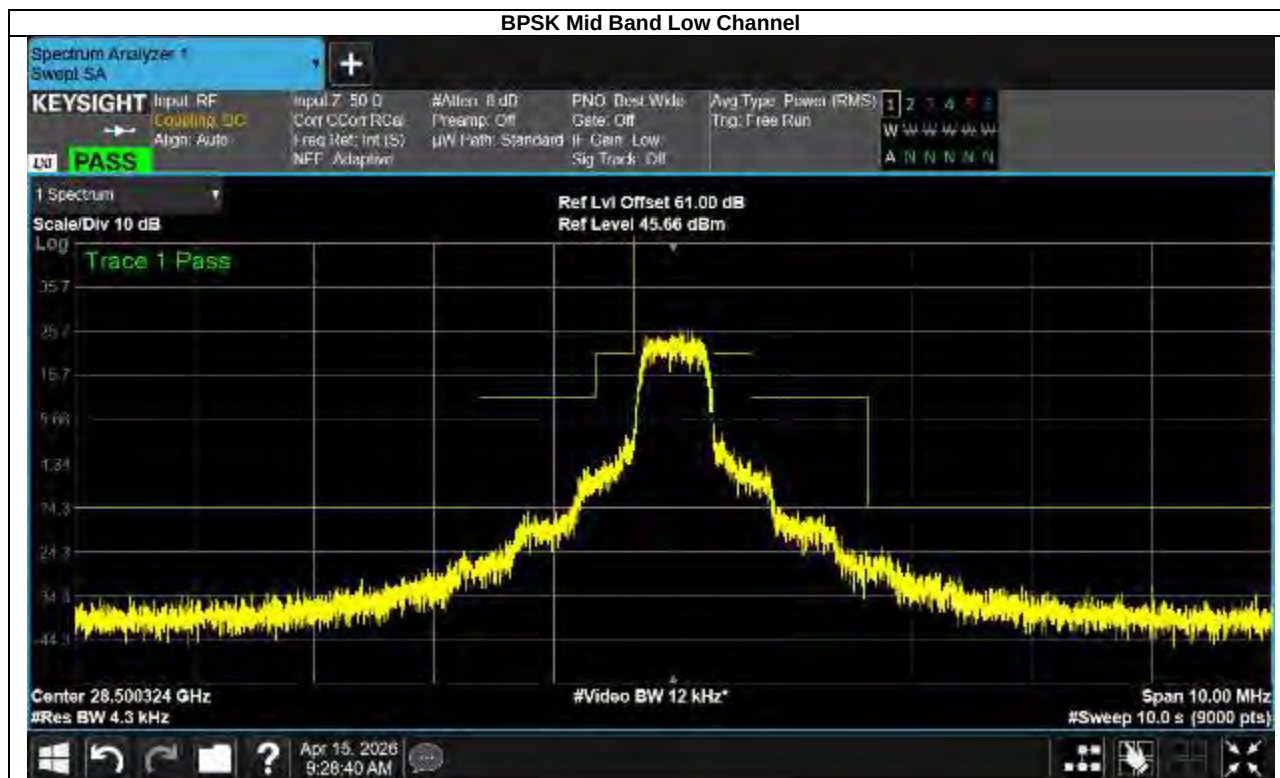
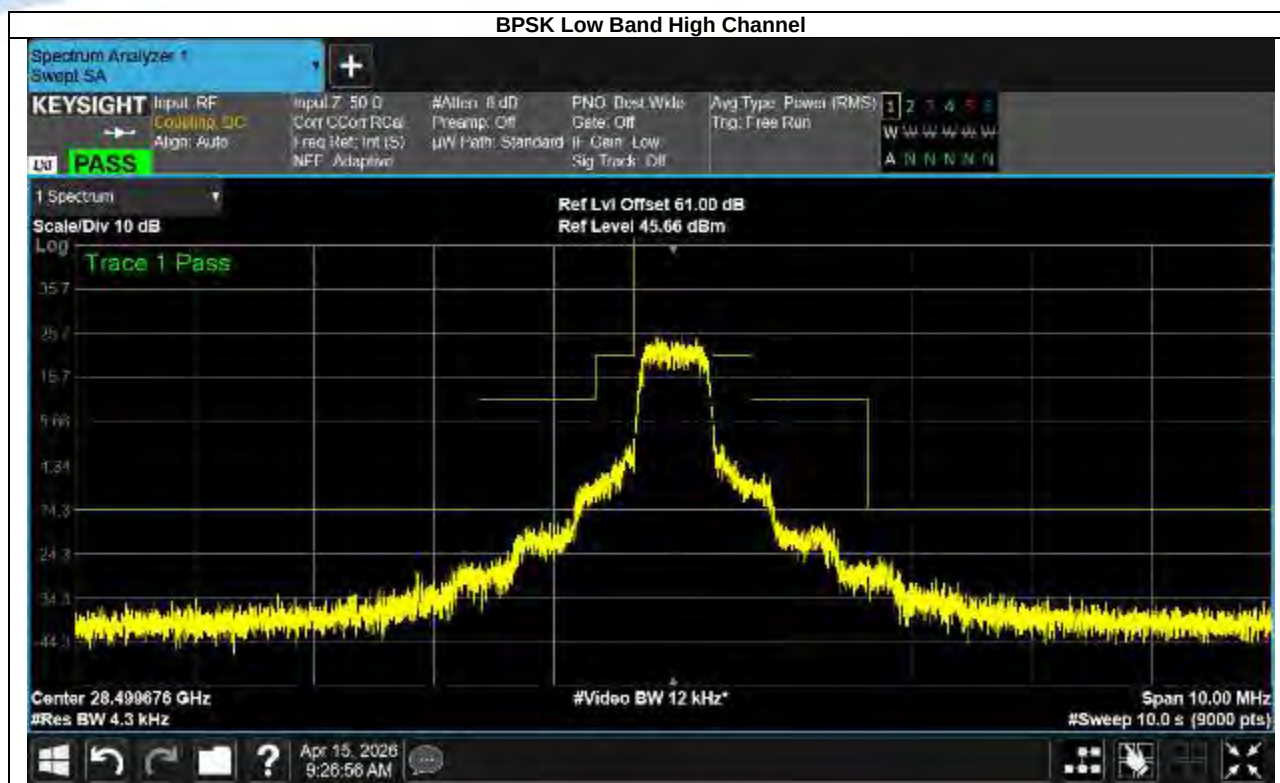
##### BPSK High Band

|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

#### Traceability to Industry Recognized Test Methodologies

|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Work Instruction:</b>        | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b> | ±2.81 dB                         |



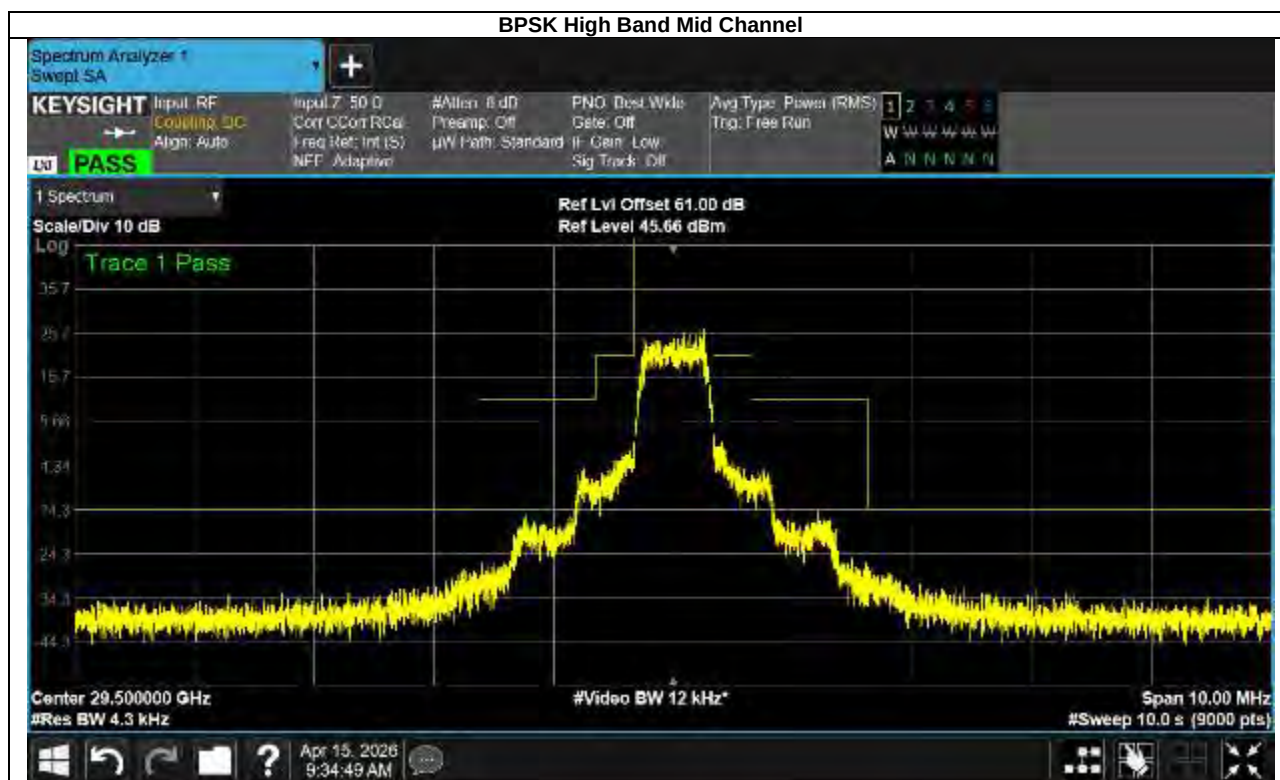
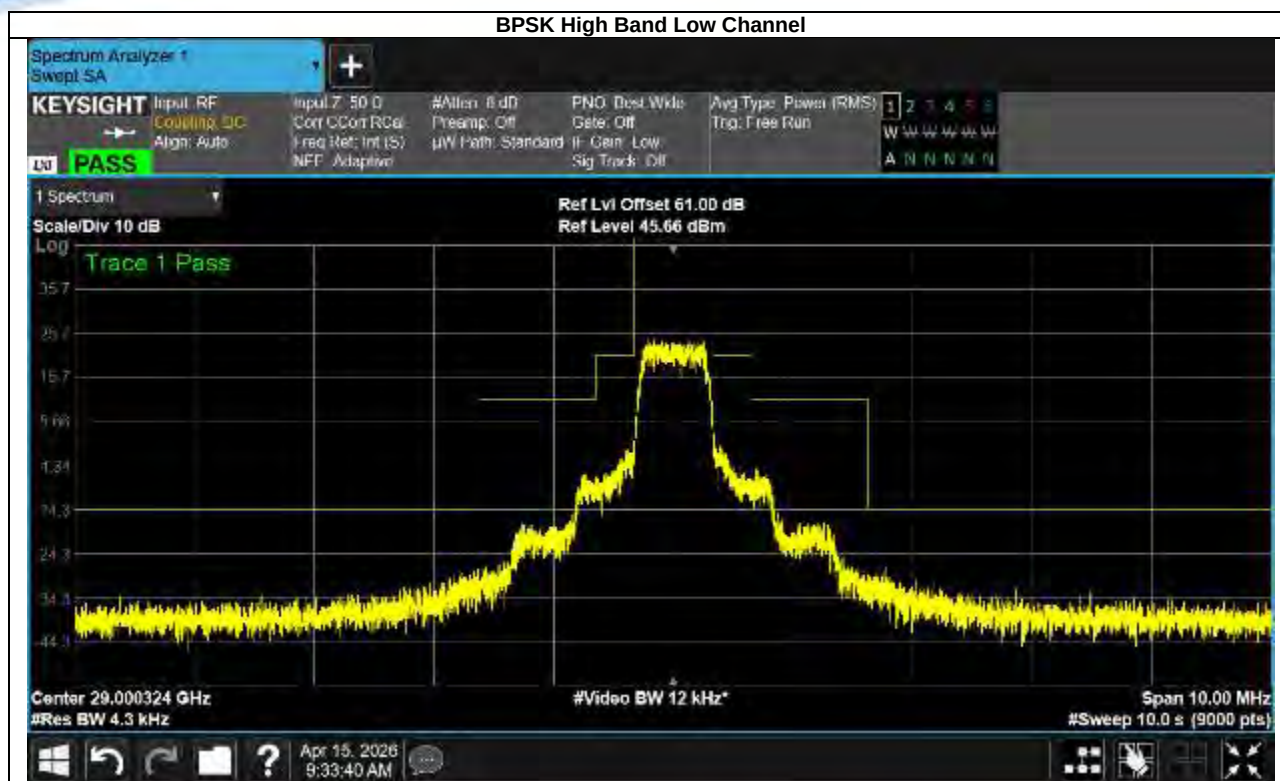


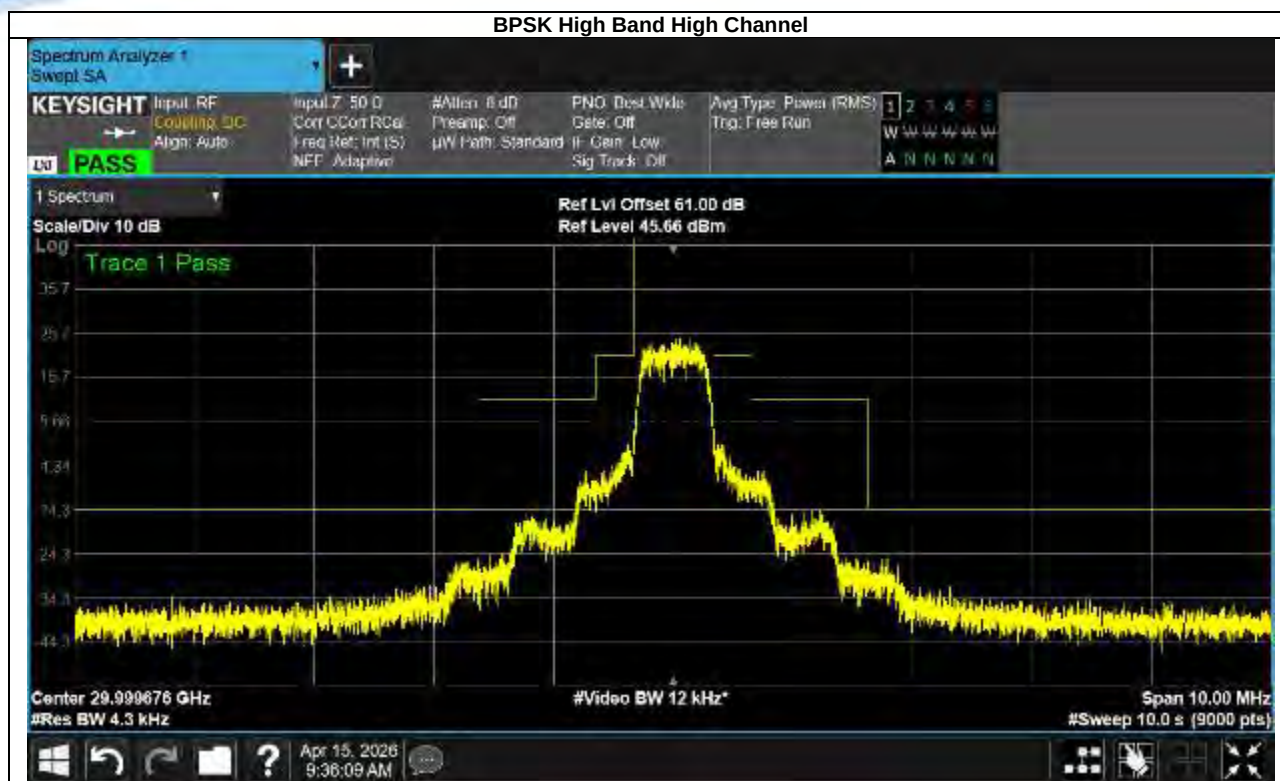
### BPSK Mid Band Mid Channel



### BPSK Mid Band High Channel







### 8.3.1.8. QPSK 650KHz

#### Equipment Configuration for Transmitter Spectrum Emission Mask

|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | QPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

#### Test Measurement Results

##### QPSK Low Band

|                         |               |           |
|-------------------------|---------------|-----------|
| 7. SR Low Band          |               |           |
| Temperature: 20 °C      | Power Setting | Compliant |
| Voltage: 115 Vac, 60 Hz |               |           |
| Test Frequency          |               |           |
| Low                     | Maximum       | Complies  |
| Mid                     | Maximum       | Complies  |
| High                    | Maximum       | Complies  |

##### QPSK Mid Band

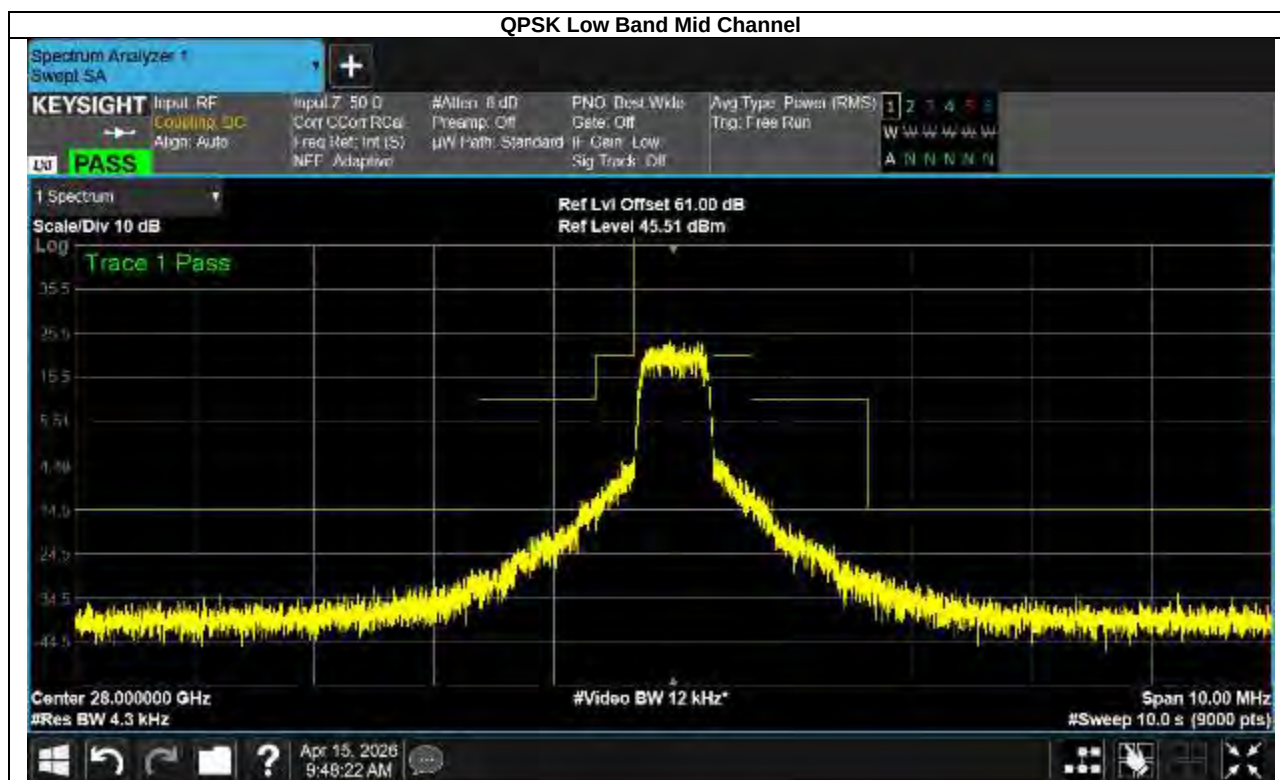
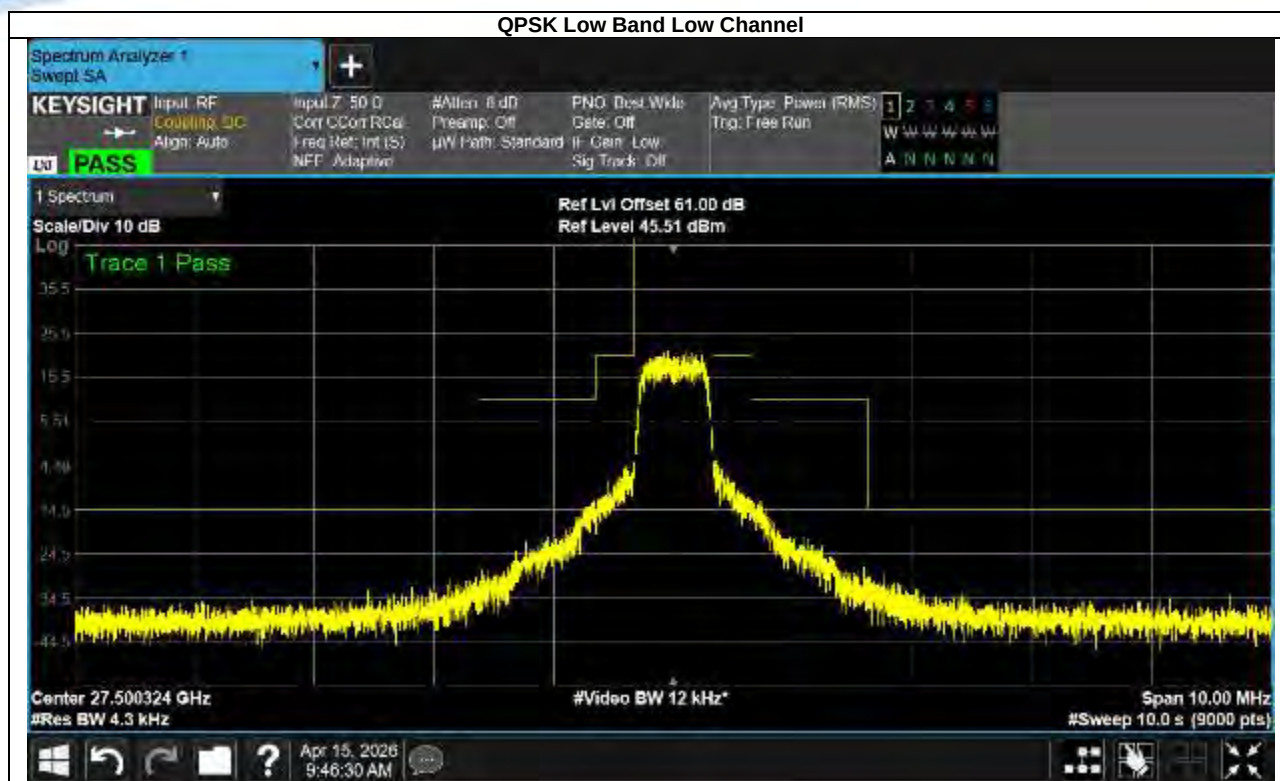
|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

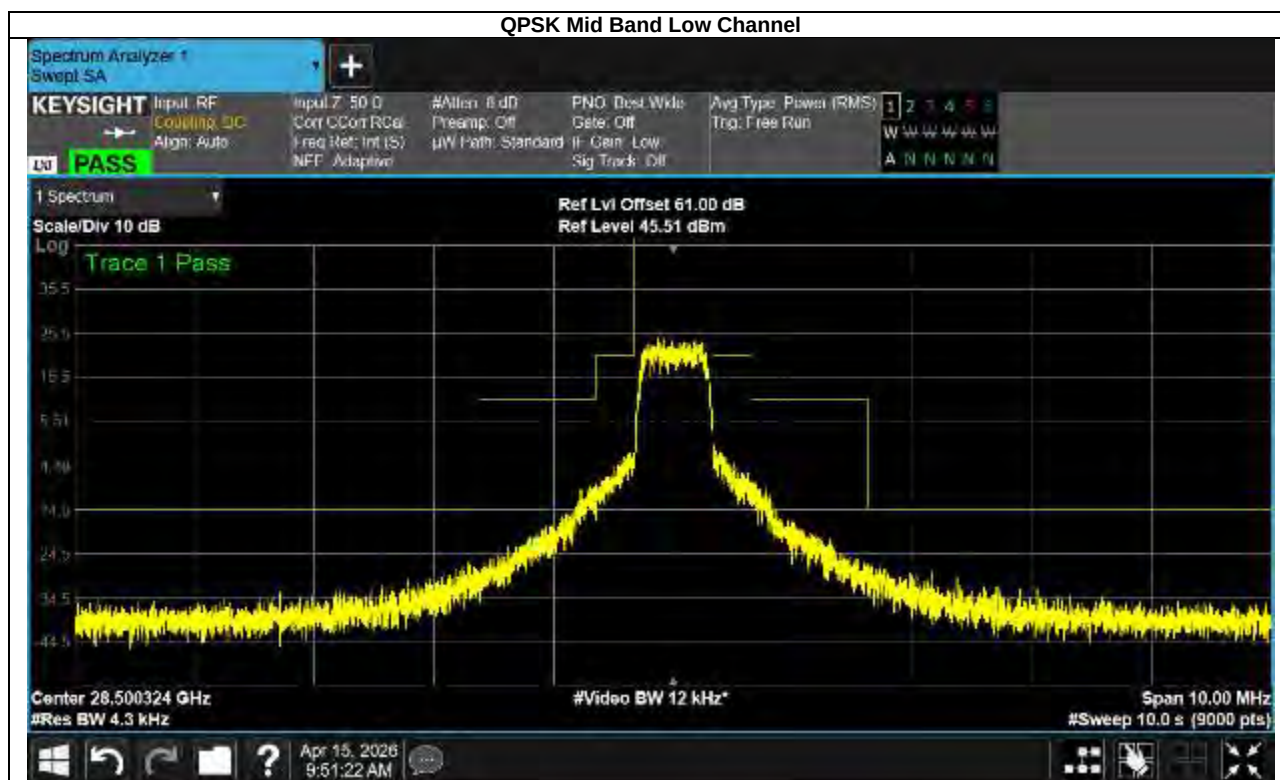
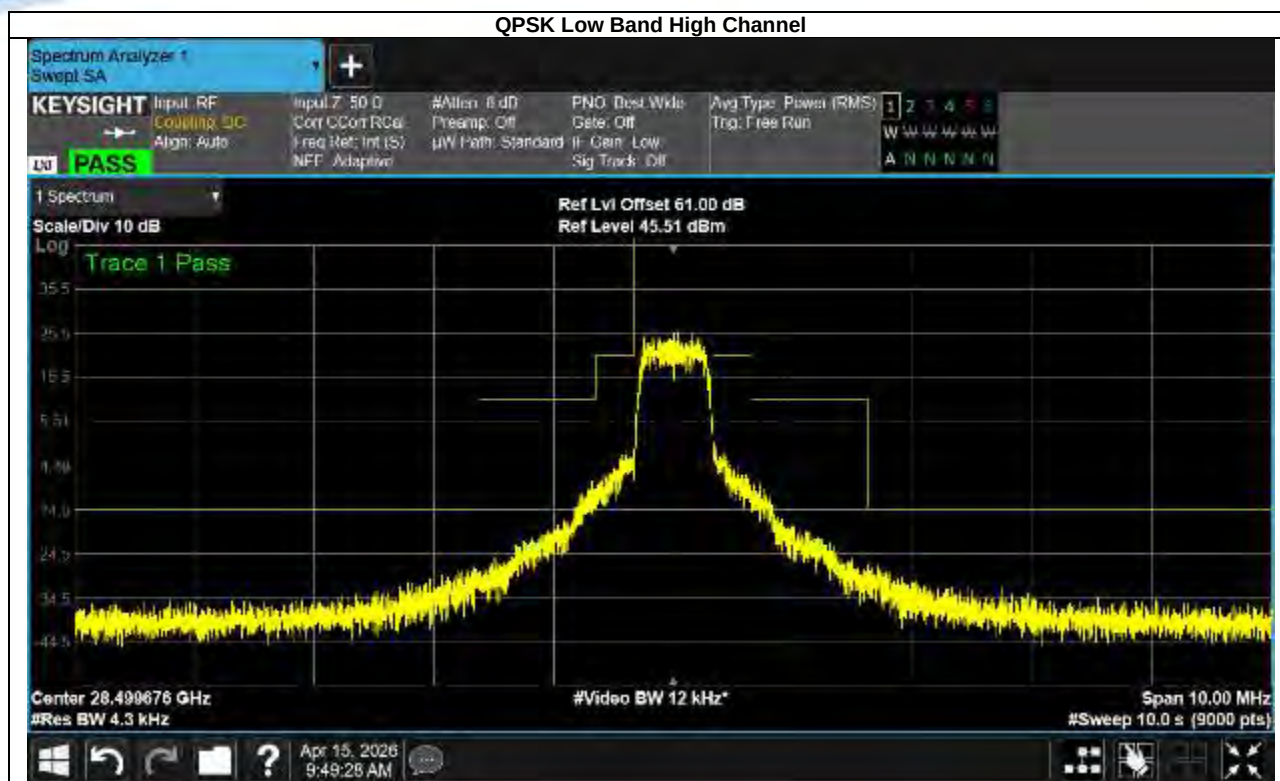
##### QPSK High Band

|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

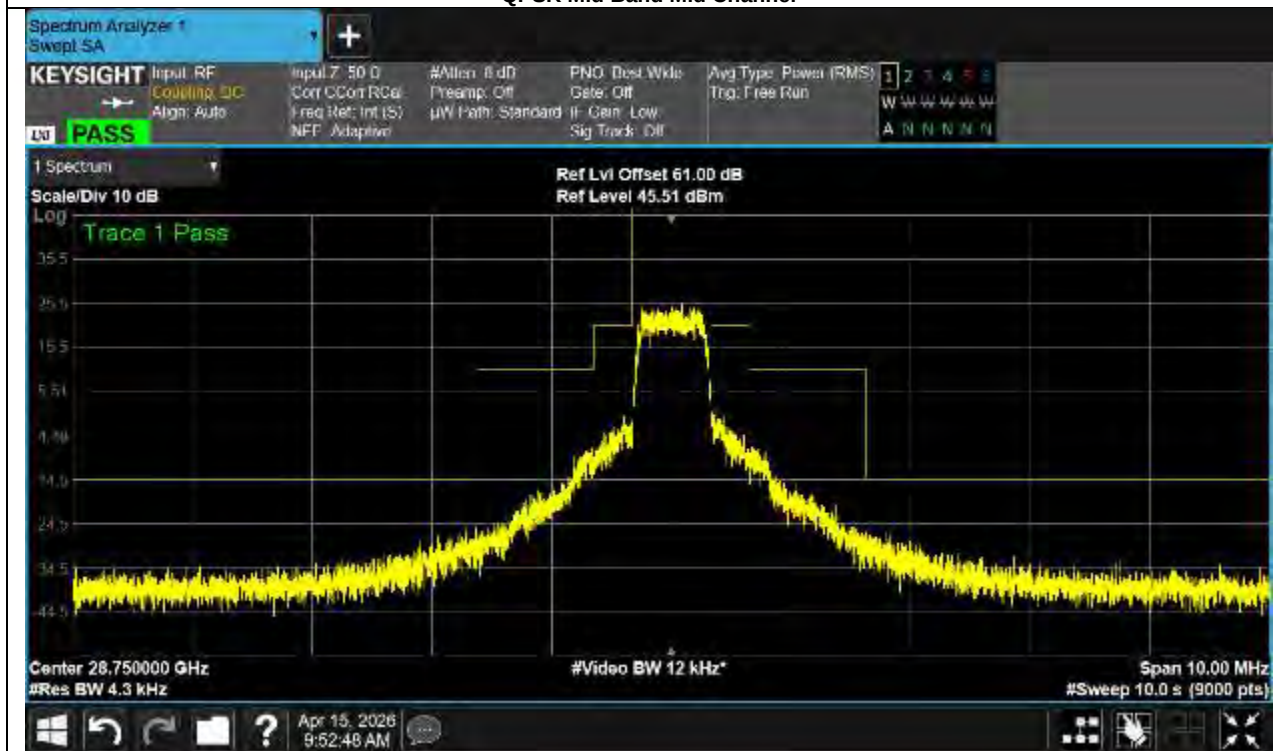
#### Traceability to Industry Recognized Test Methodologies

|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Work Instruction:</b>        | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b> | ±2.81 dB                         |

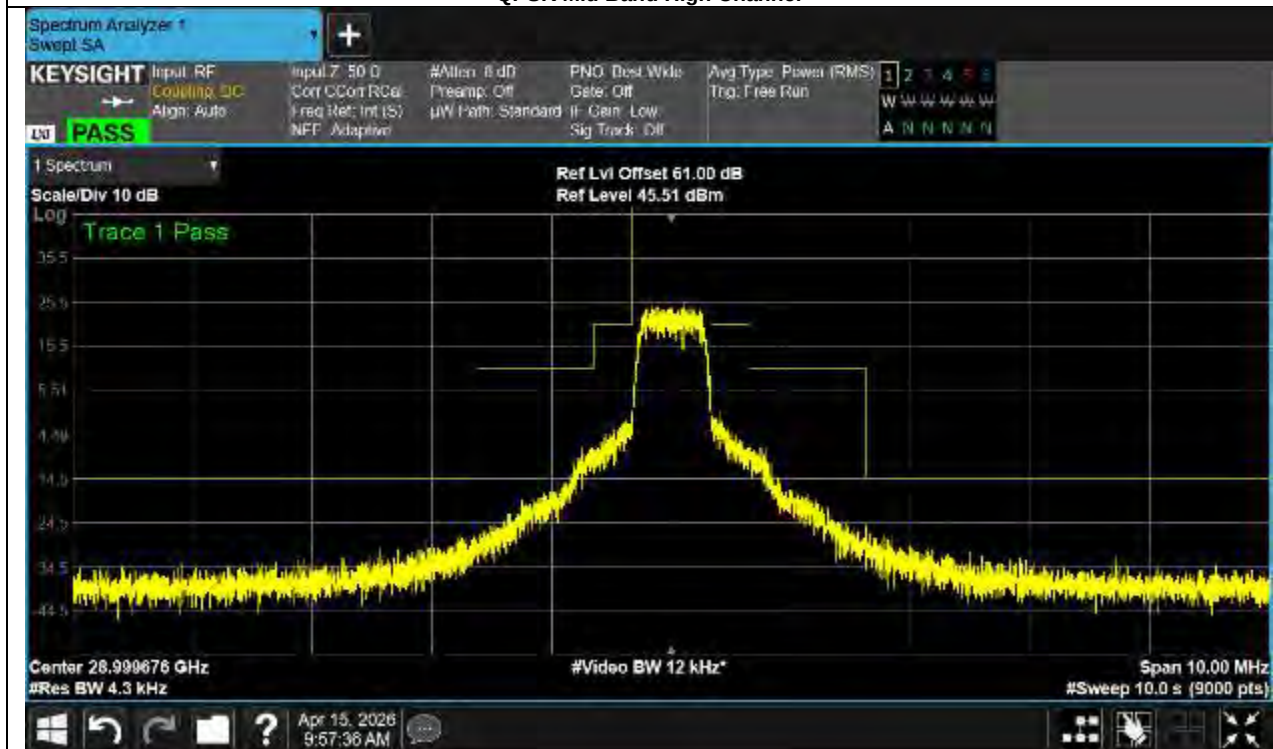


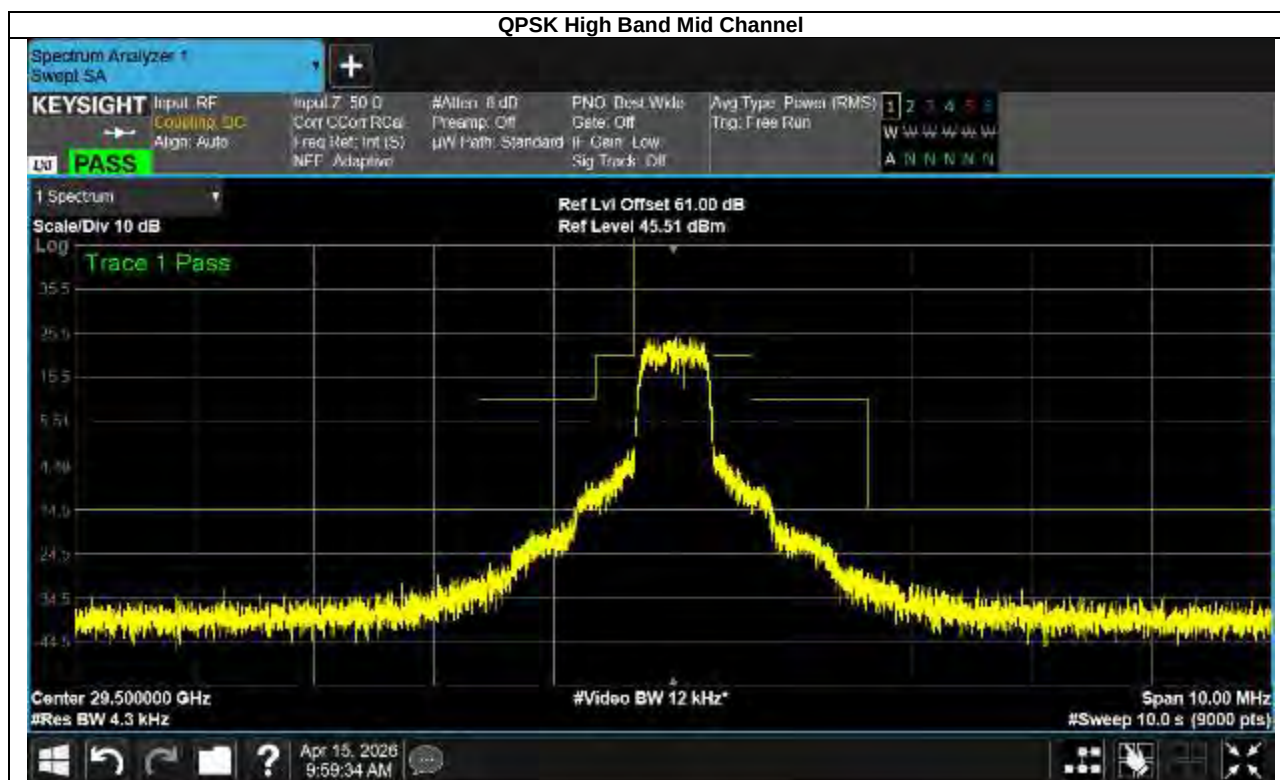
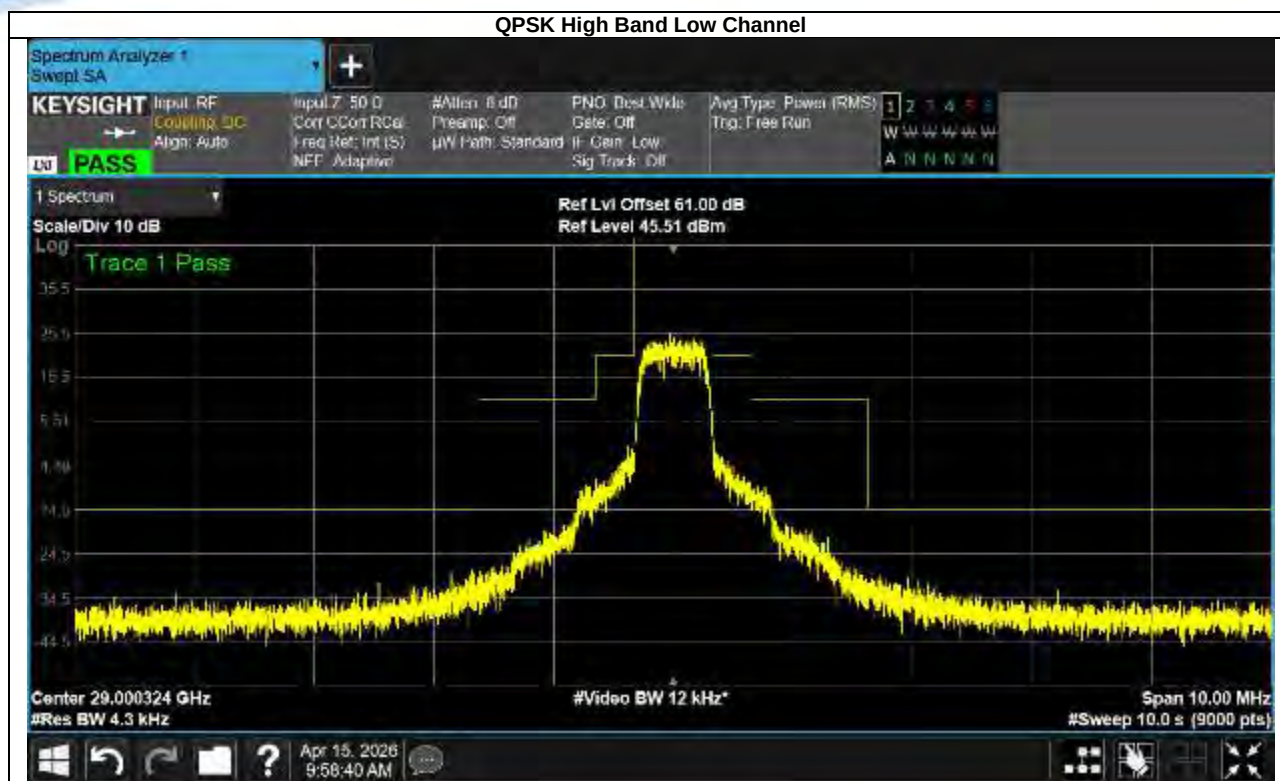


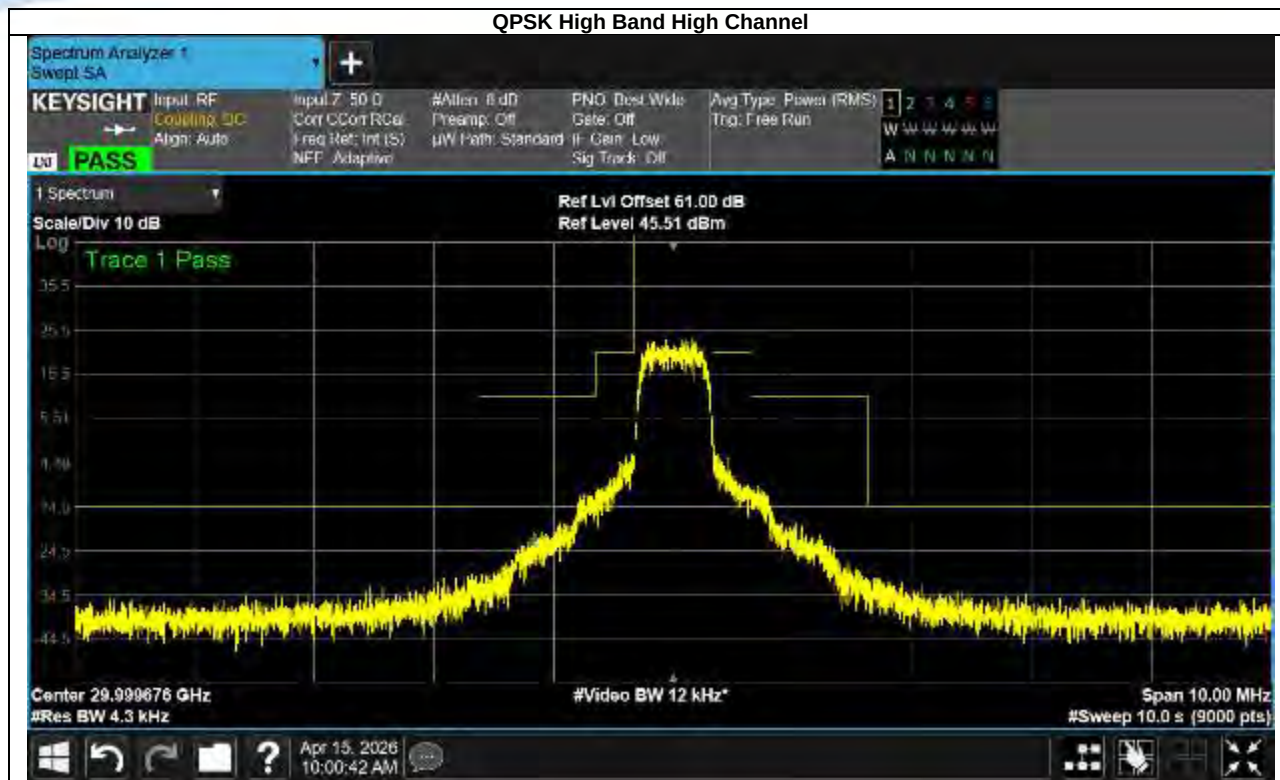
### QPSK Mid Band Mid Channel



### QPSK Mid Band High Channel







### 8.3.1.9. 8PSK 650KHz

#### Equipment Configuration for Transmitter Spectrum Emission Mask

|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | 8PSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

#### Test Measurement Results

##### 8PSK Low Band

|                         |               |           |
|-------------------------|---------------|-----------|
| OR OR LOW Band          |               |           |
| Temperature: 20 °C      | Power Setting | Compliant |
| Voltage: 115 Vac, 60 Hz |               |           |
| Test Frequency          |               |           |
| Low                     | Maximum       | Complies  |
| Mid                     | Maximum       | Complies  |
| High                    | Maximum       | Complies  |

##### 8PSK Mid Band

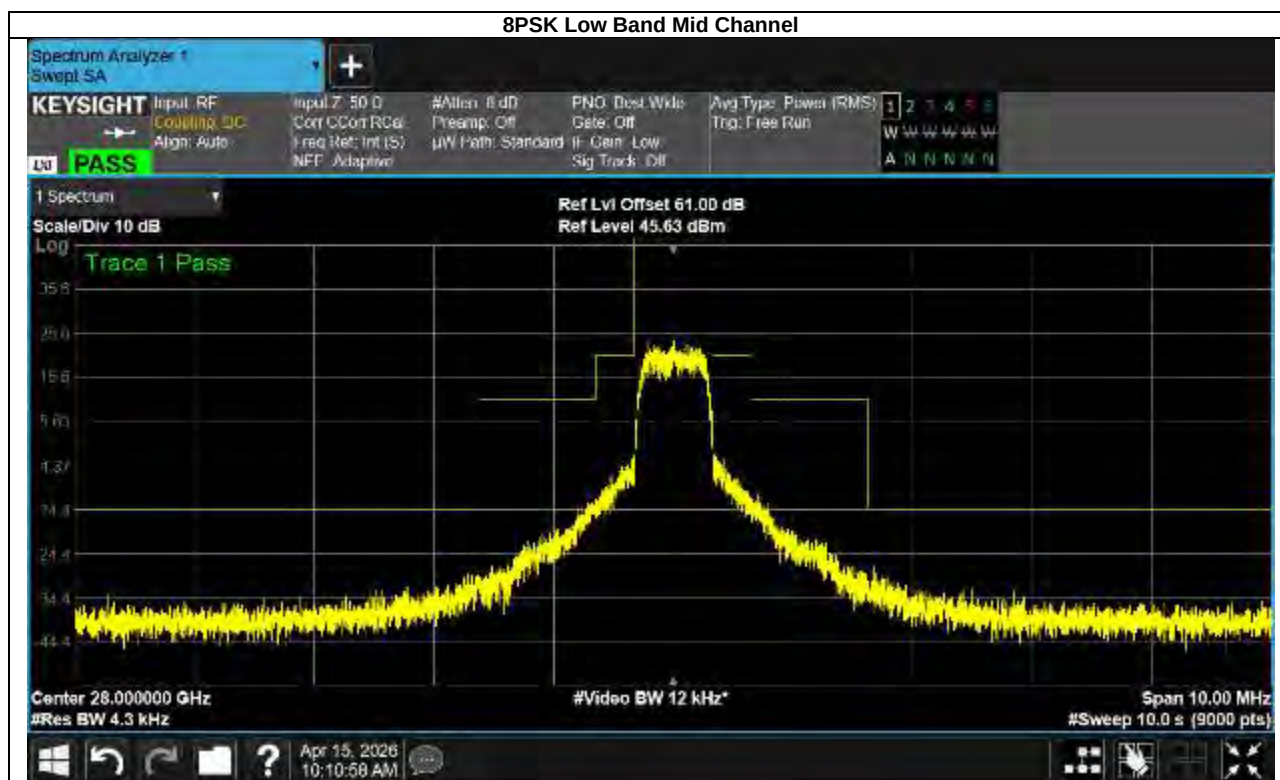
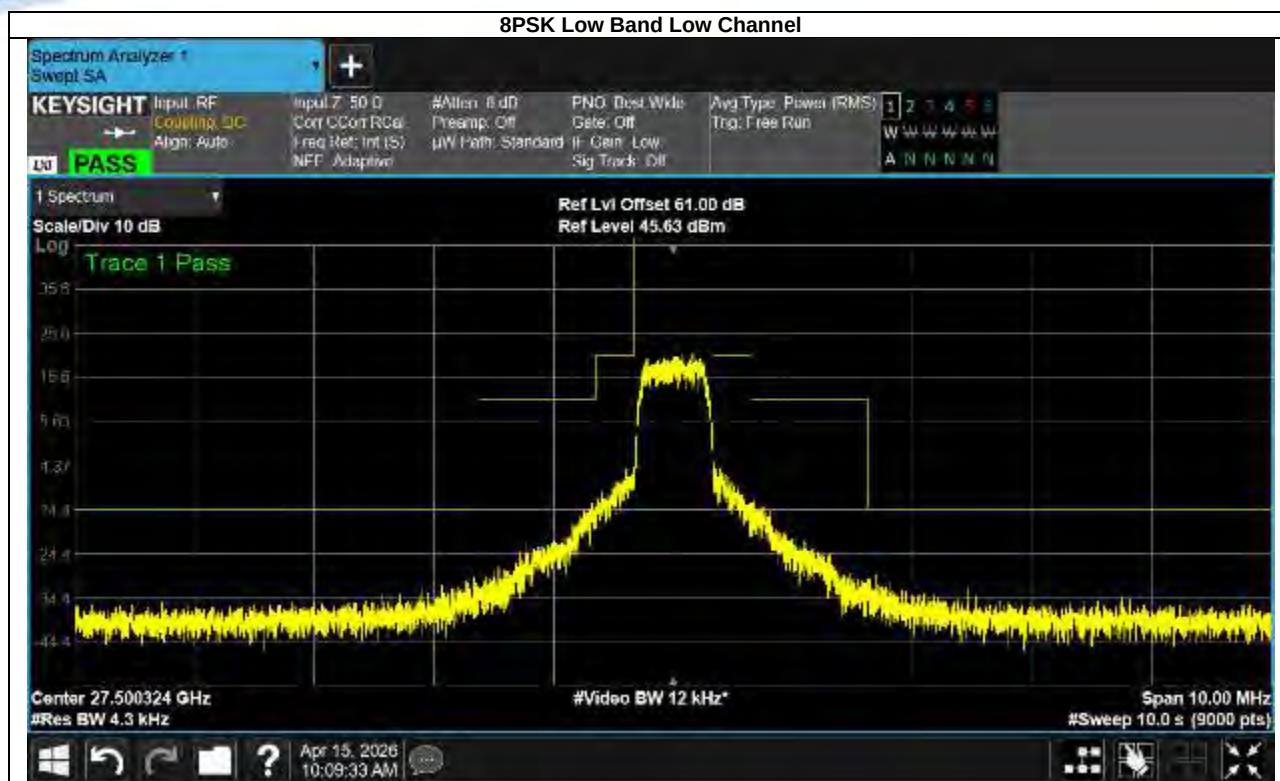
|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

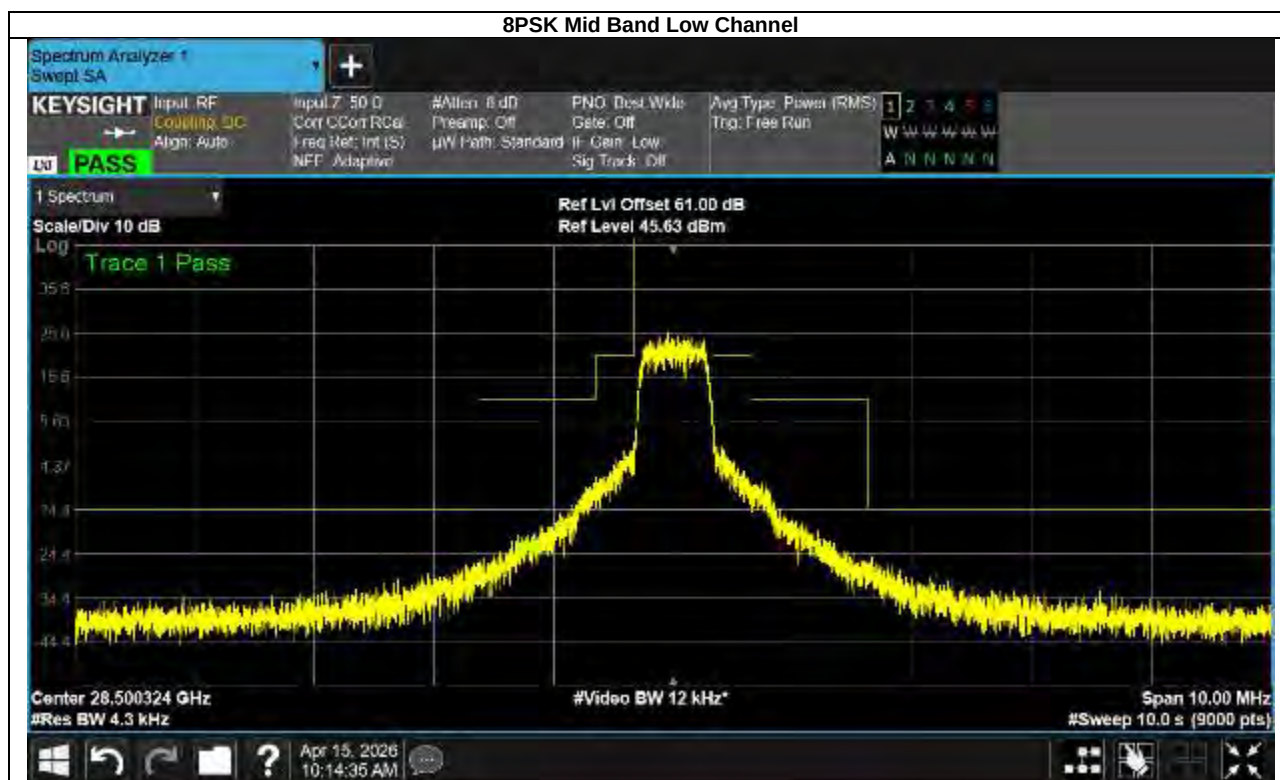
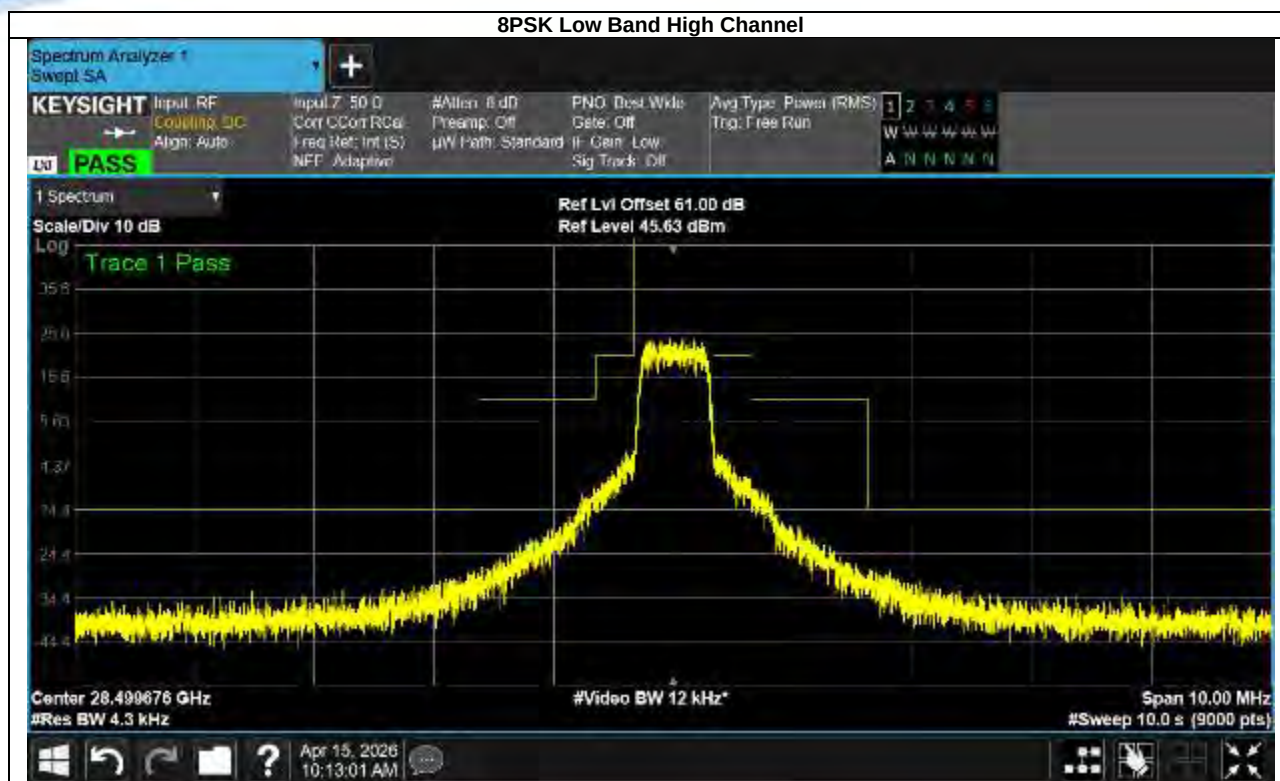
##### 8PSK High Band

|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

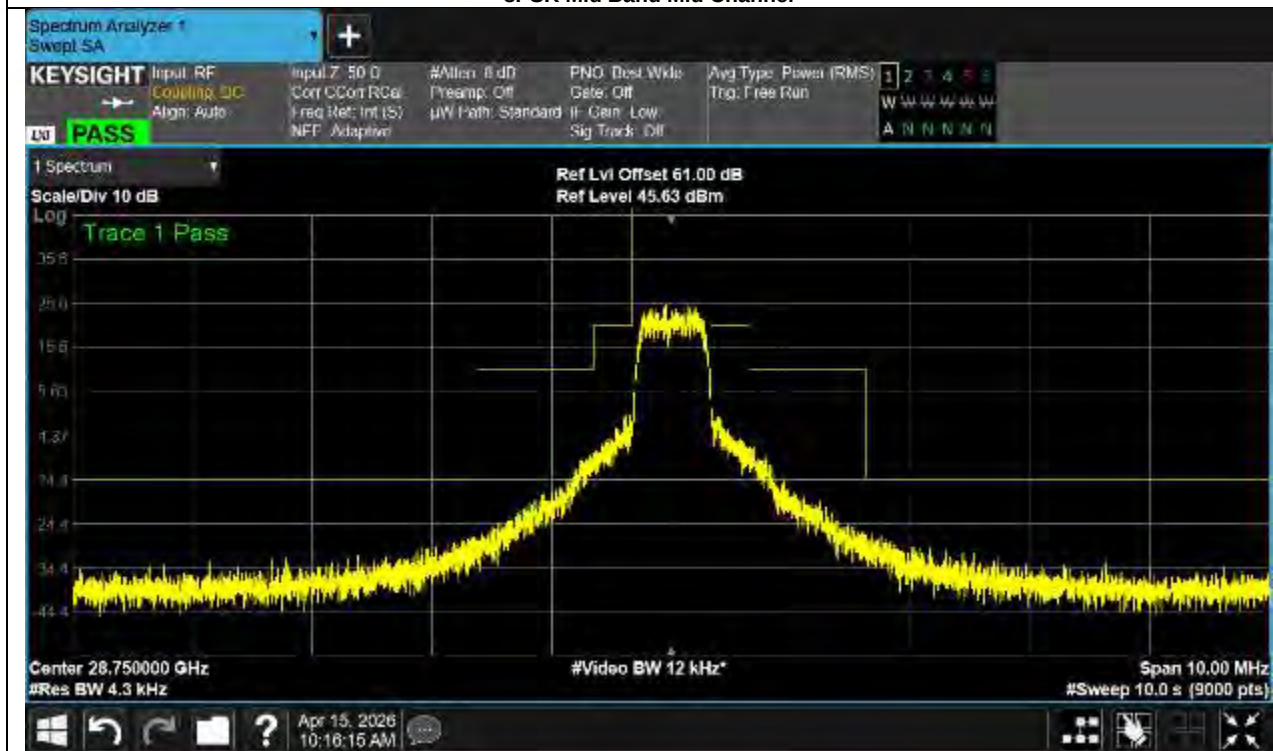
#### Traceability to Industry Recognized Test Methodologies

|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Work Instruction:</b>        | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b> | ±2.81 dB                         |

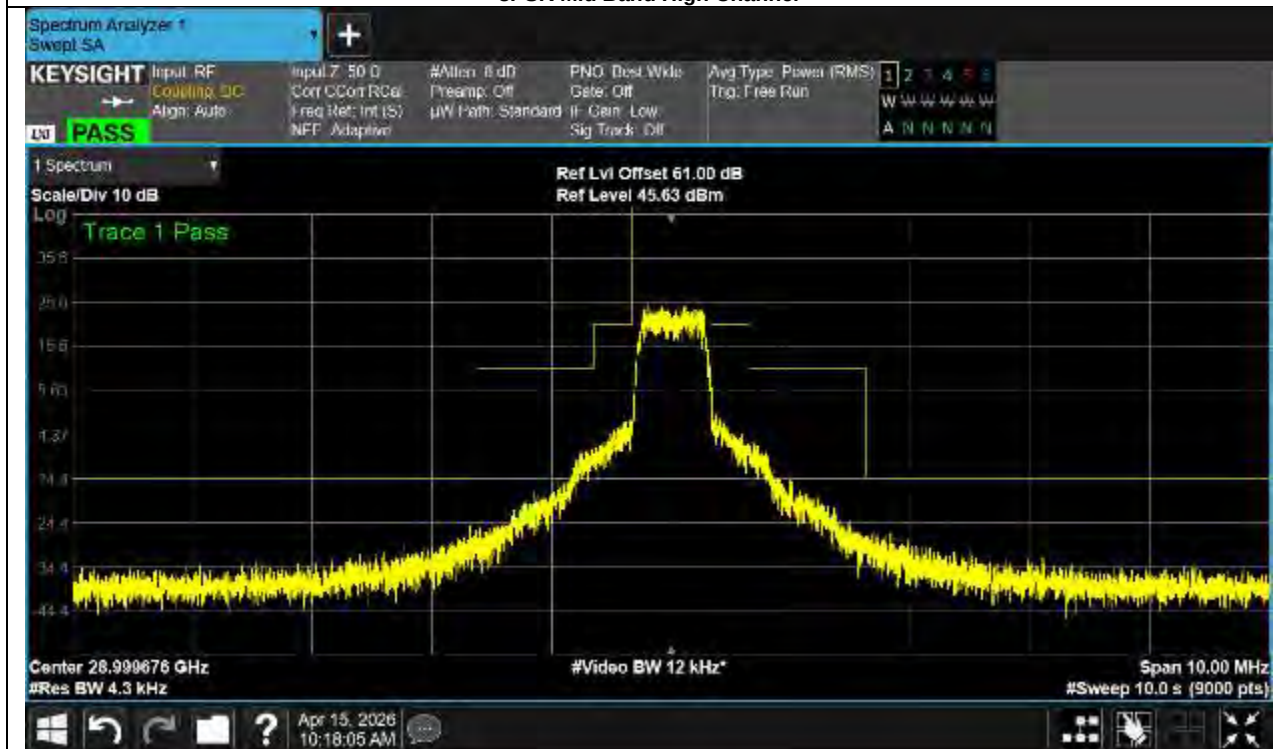


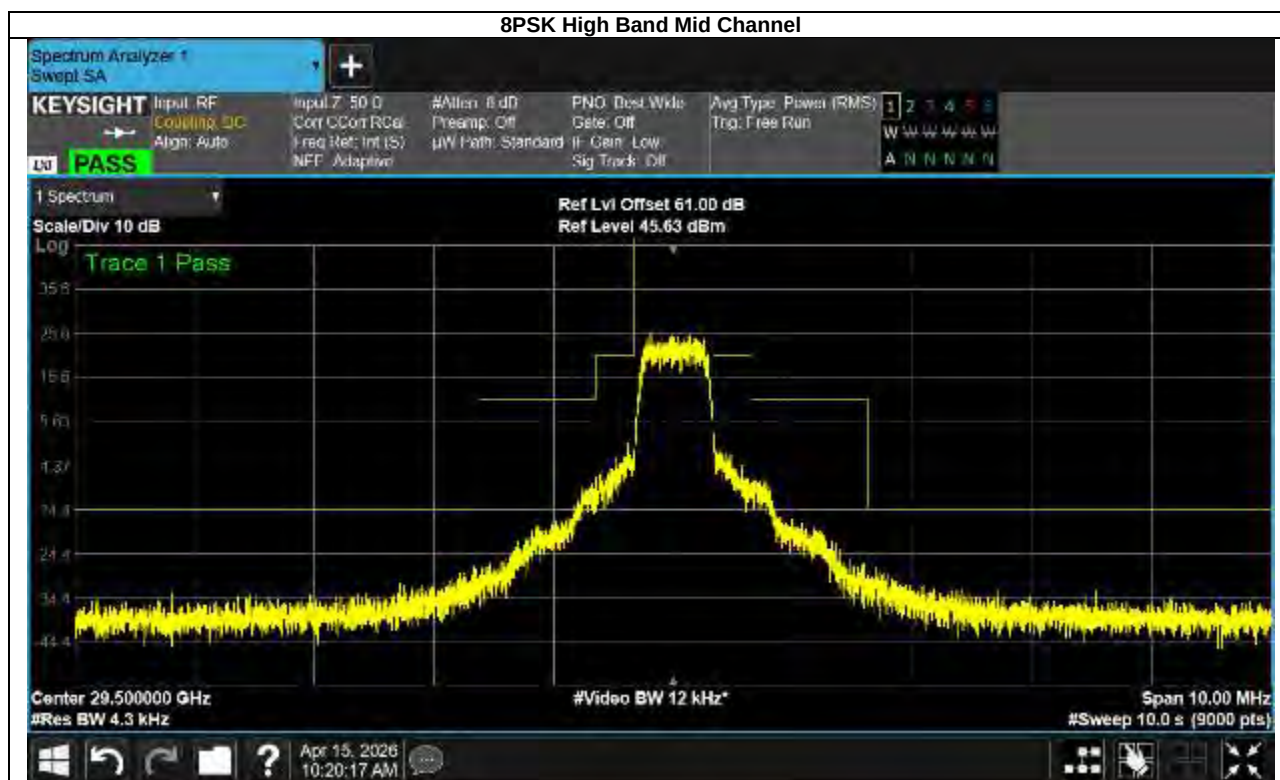
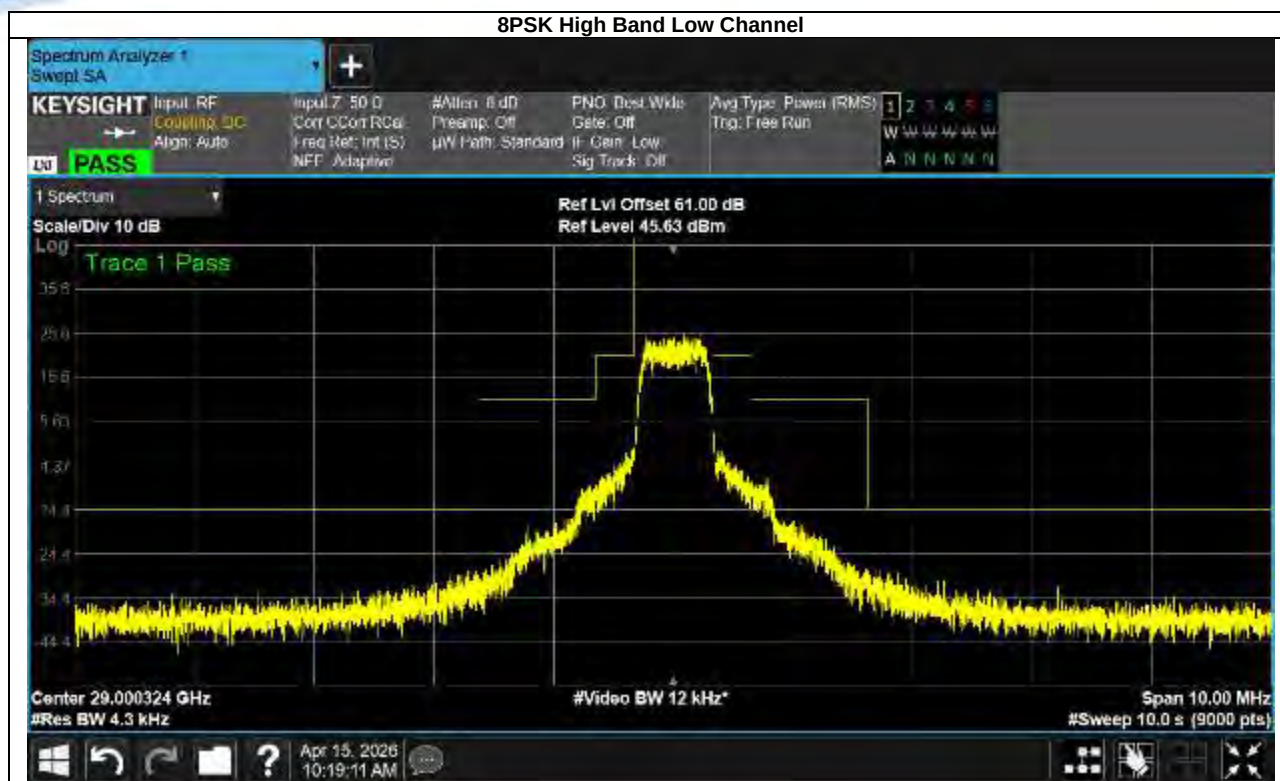


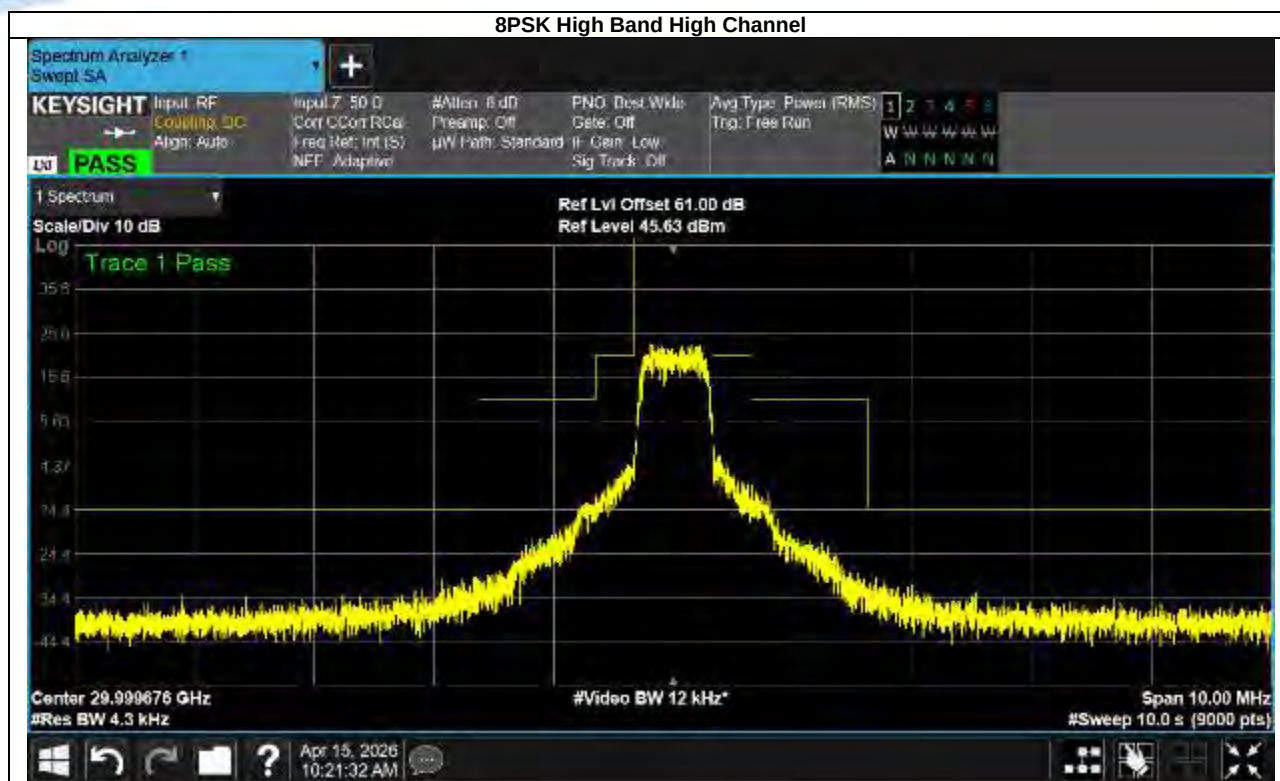
### 8PSK Mid Band Mid Channel



### 8PSK Mid Band High Channel







### 8.3.1.10. BPSK 7MHz

#### Equipment Configuration for Transmitter Spectrum Emission Mask

|                                |       |                        |     |
|--------------------------------|-------|------------------------|-----|
| <b>Variant:</b>                | 7 MHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK  | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |       |                        |     |

#### Test Measurement Results

##### BPSK Low Band

|                         |               |           |
|-------------------------|---------------|-----------|
| Temperature: 20 °C      | Power Setting | Compliant |
| Voltage: 115 Vac, 60 Hz |               |           |
| Test Frequency          |               |           |
| Low                     | Maximum       | Complies  |
| Mid                     | Maximum       | Complies  |
| High                    | Maximum       | Complies  |

##### BPSK Mid Band

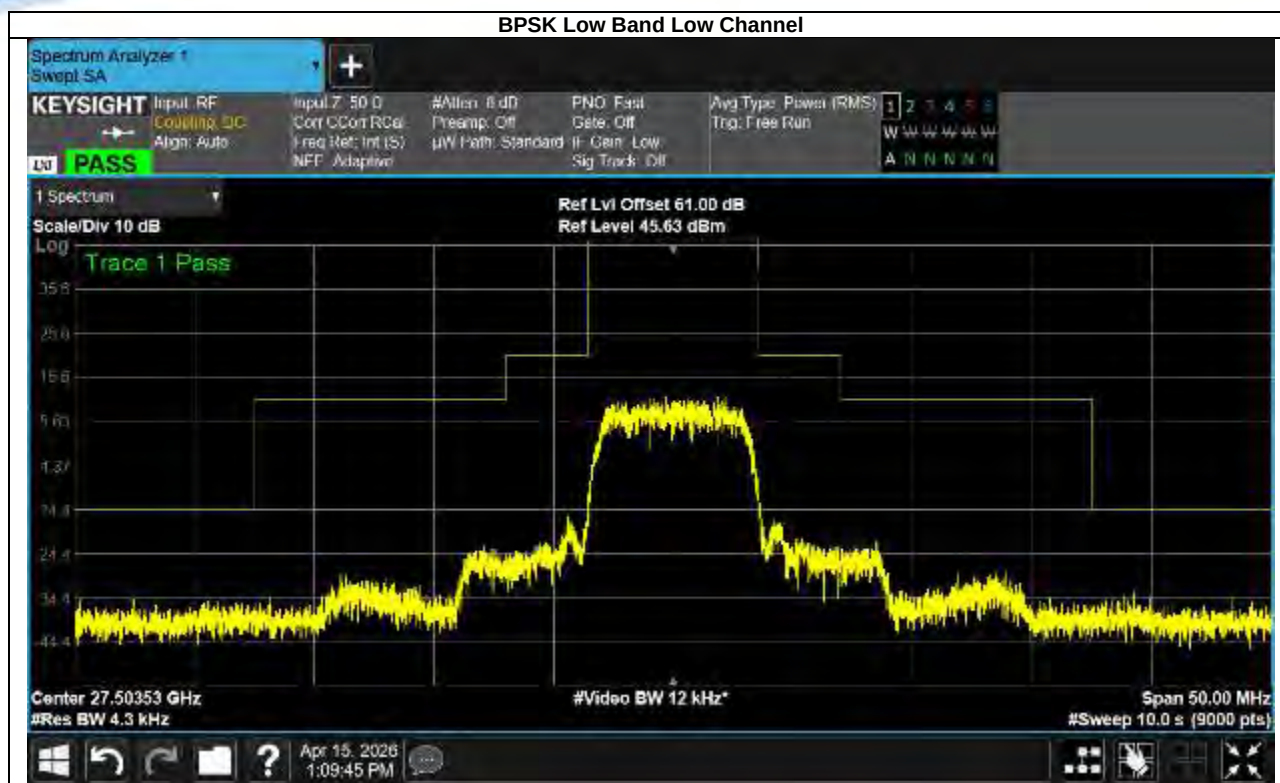
|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

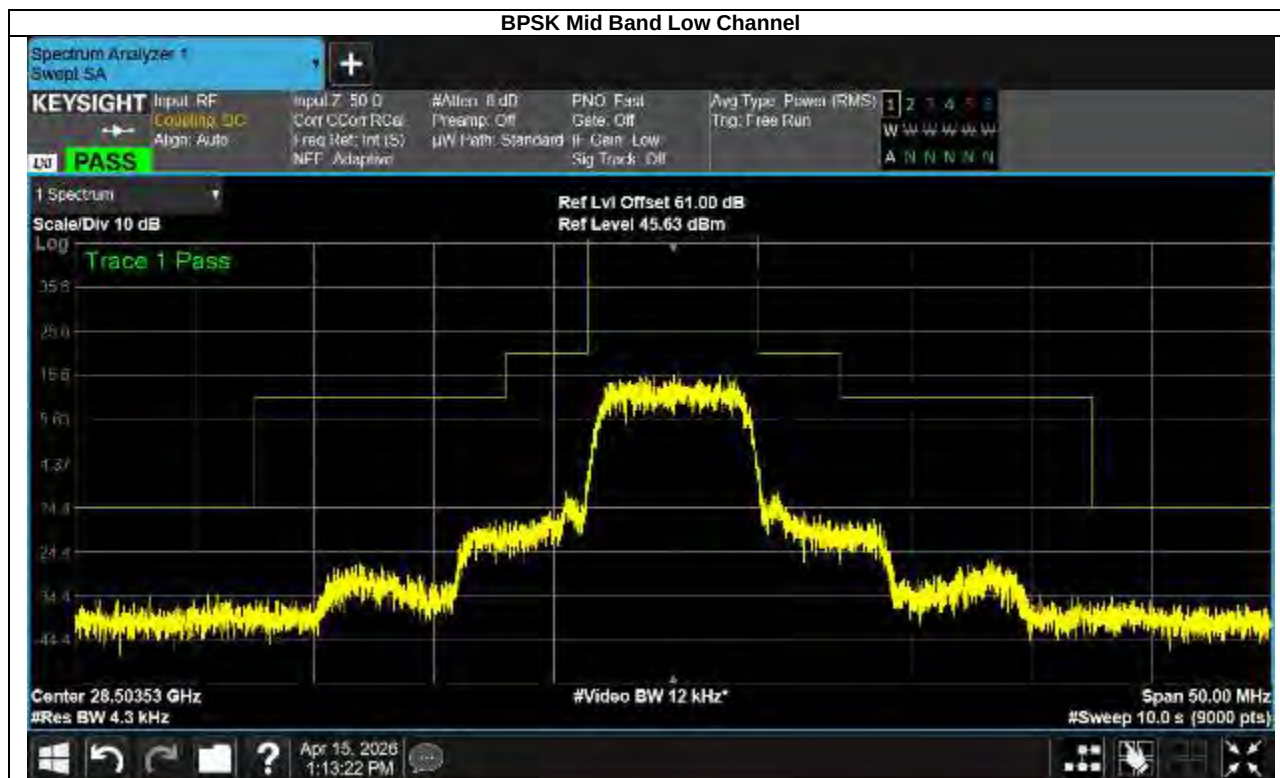
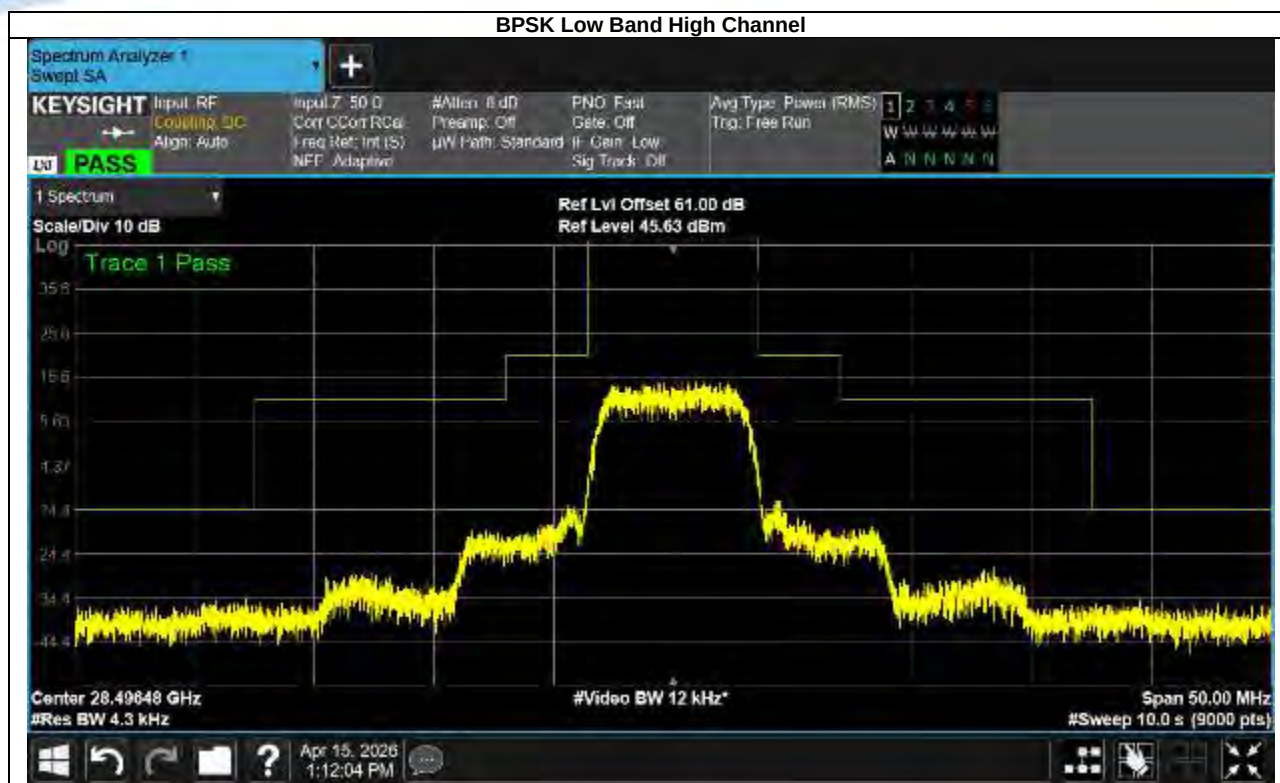
##### BPSK High Band

|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

#### Traceability to Industry Recognized Test Methodologies

|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Work Instruction:</b>        | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b> | ±2.81 dB                         |



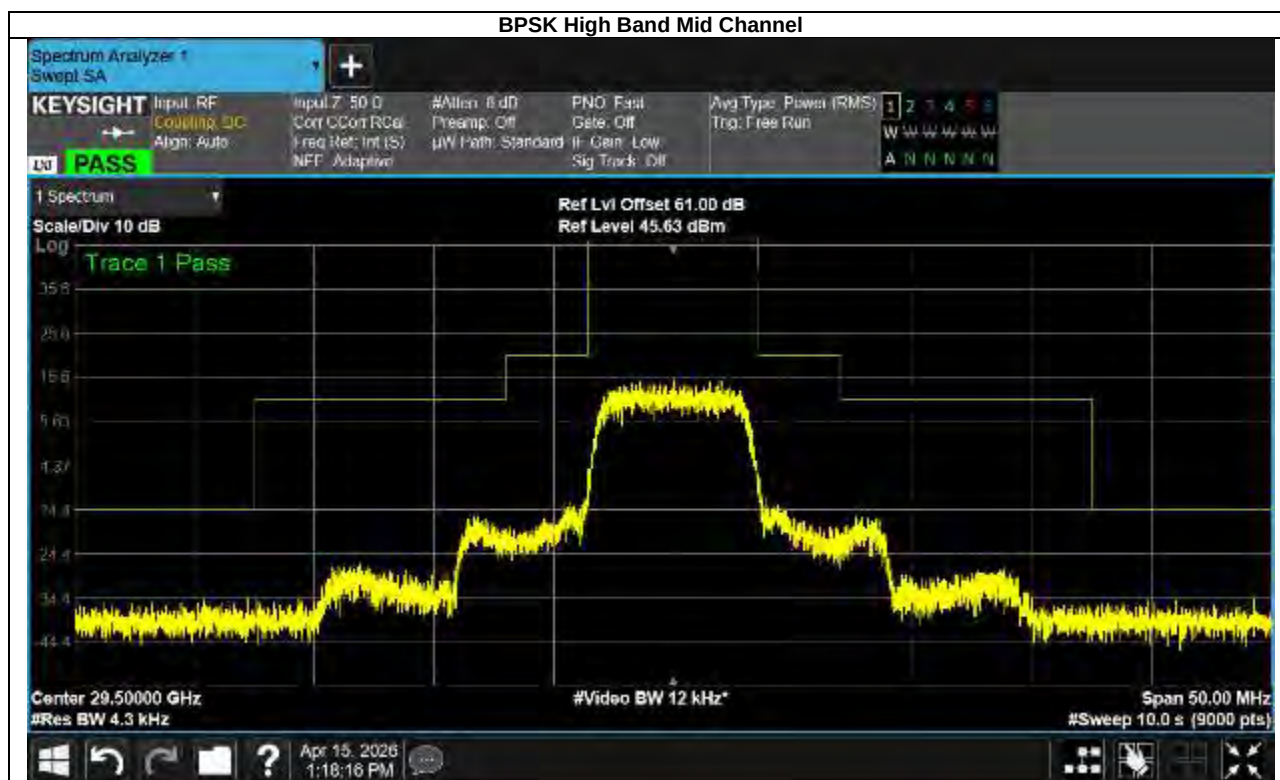
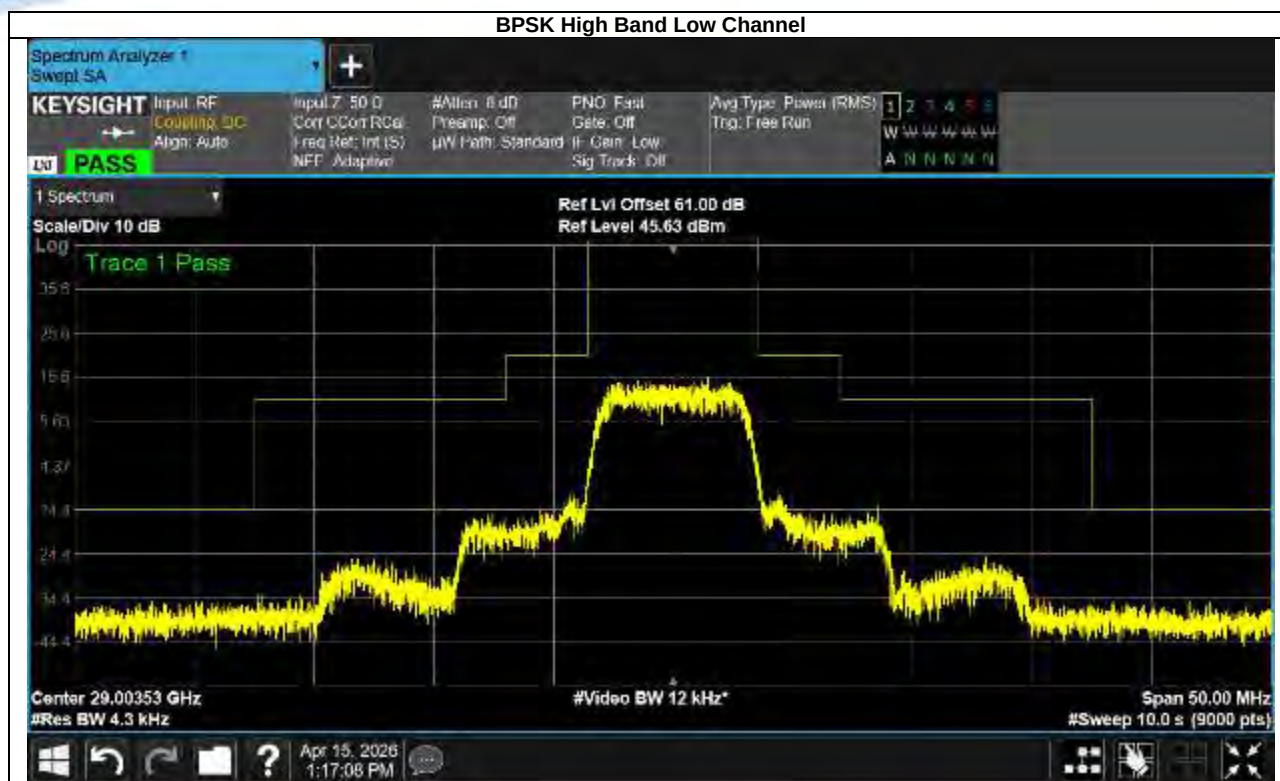


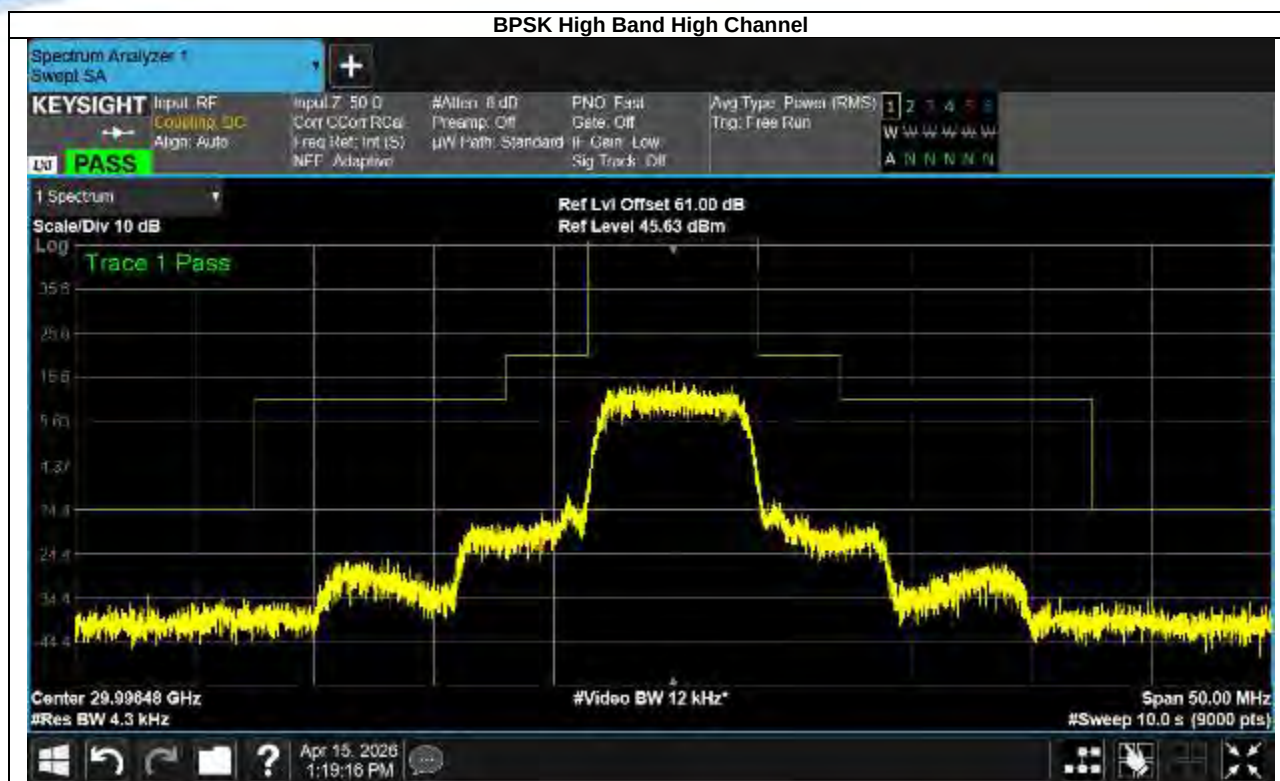
### BPSK Mid Band Mid Channel



### BPSK Mid Band High Channel







### 8.3.1.11. QPSK 7MHz

#### Equipment Configuration for Transmitter Spectrum Emission Mask

|                                |       |                        |     |
|--------------------------------|-------|------------------------|-----|
| <b>Variant:</b>                | 7 MHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | QPSK  | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |       |                        |     |

#### Test Measurement Results

##### QPSK Low Band

|                         |               |           |
|-------------------------|---------------|-----------|
| 7. SR Low Band          |               |           |
| Temperature: 20 °C      | Power Setting | Compliant |
| Voltage: 115 Vac, 60 Hz |               |           |
| Test Frequency          |               |           |
| Low                     | Maximum       | Complies  |
| Mid                     | Maximum       | Complies  |
| High                    | Maximum       | Complies  |

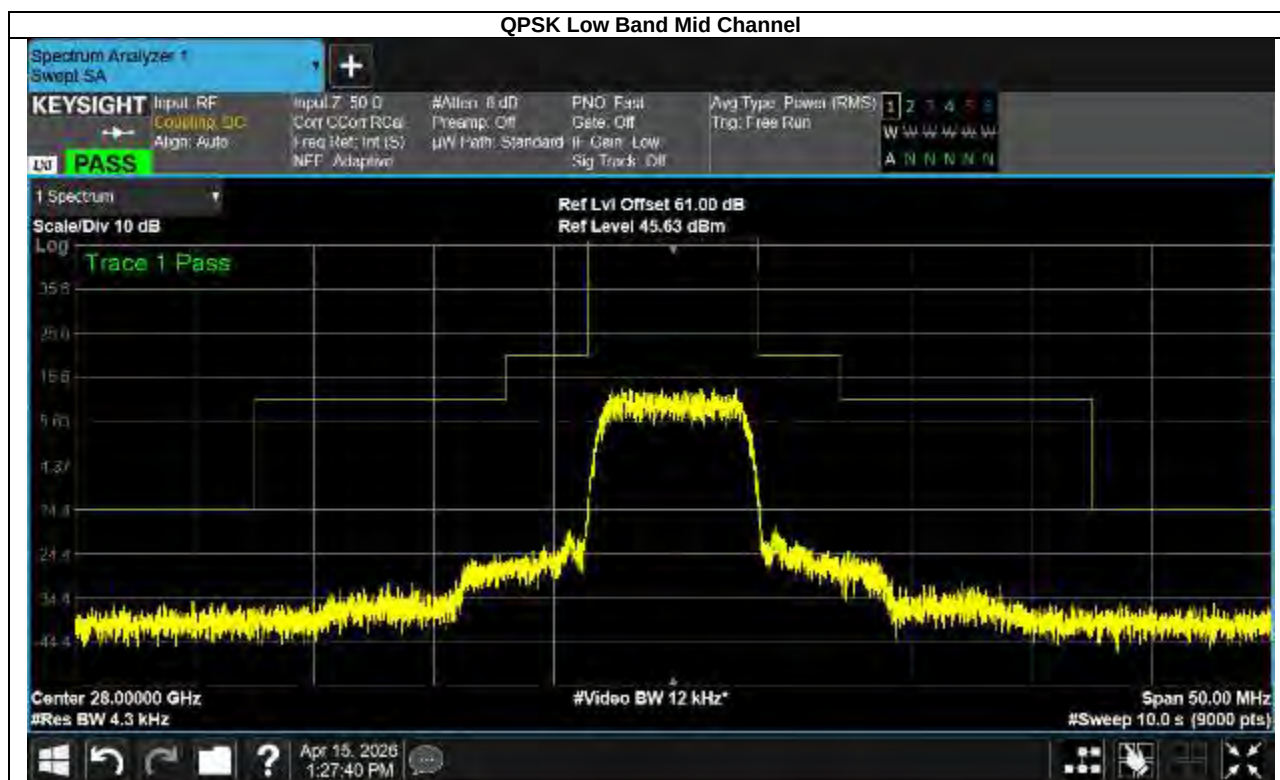
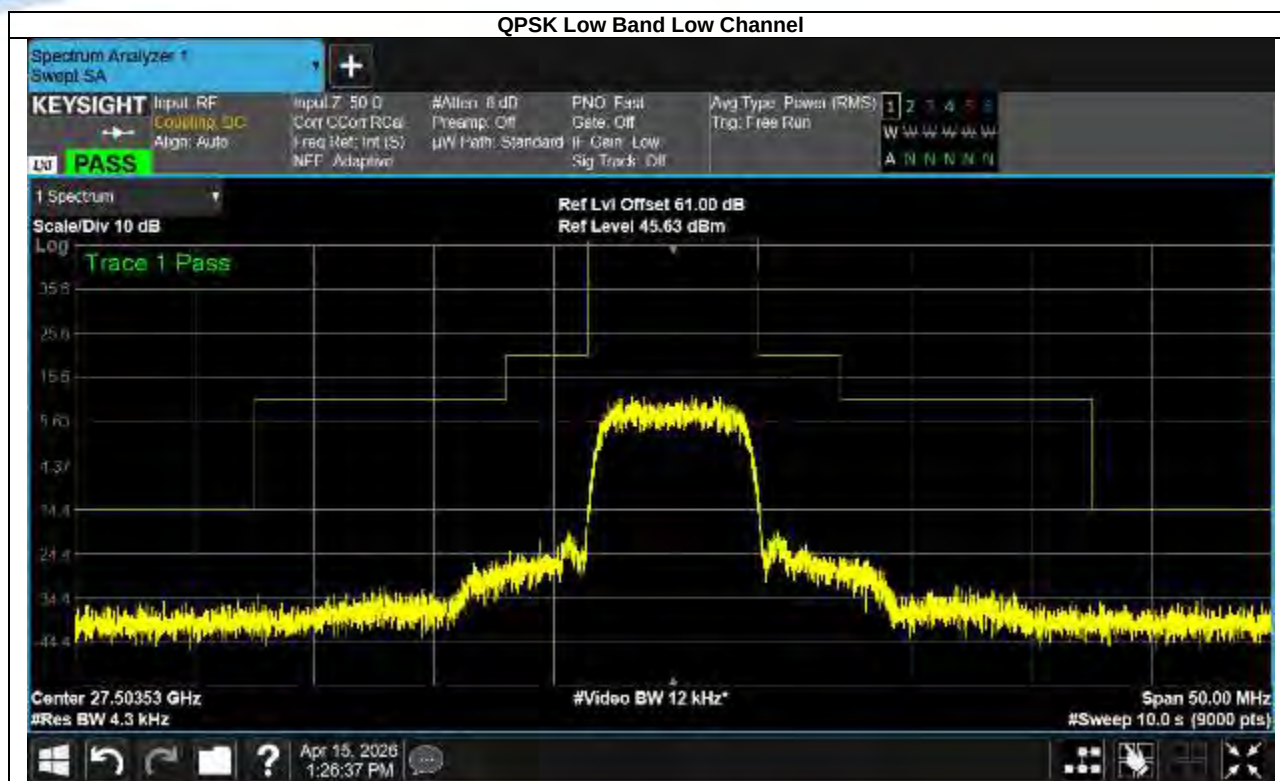
##### QPSK Mid Band

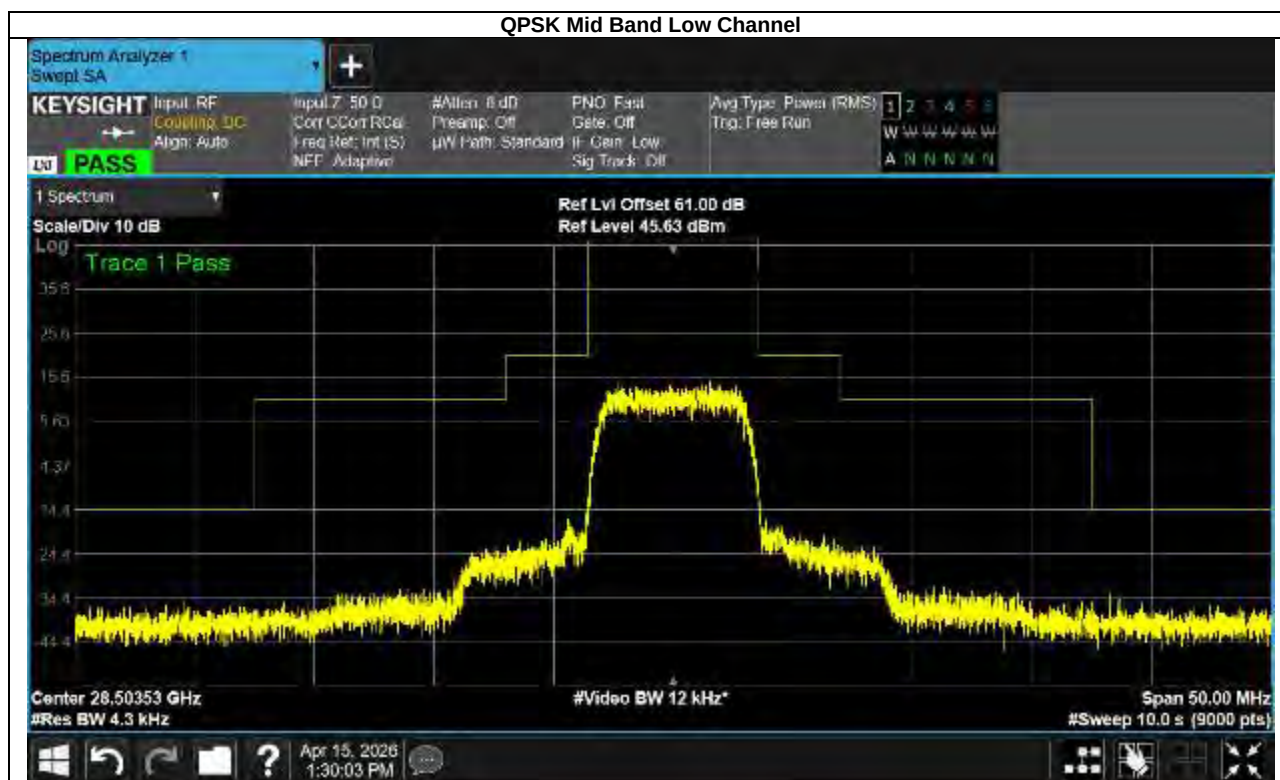
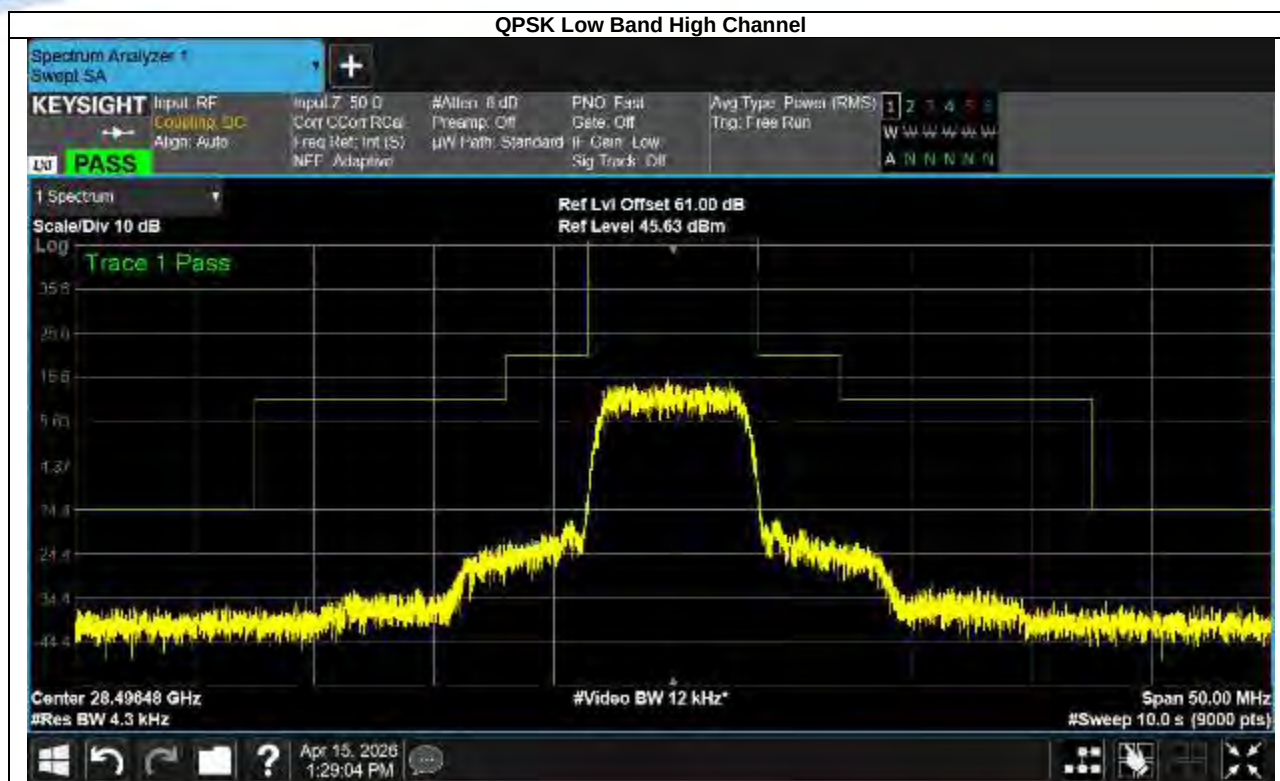
|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

##### QPSK High Band

|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

|                                                               |                                  |
|---------------------------------------------------------------|----------------------------------|
| <b>Traceability to Industry Recognized Test Methodologies</b> |                                  |
| <b>Work Instruction:</b>                                      | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b>                               | ±2.81 dB                         |



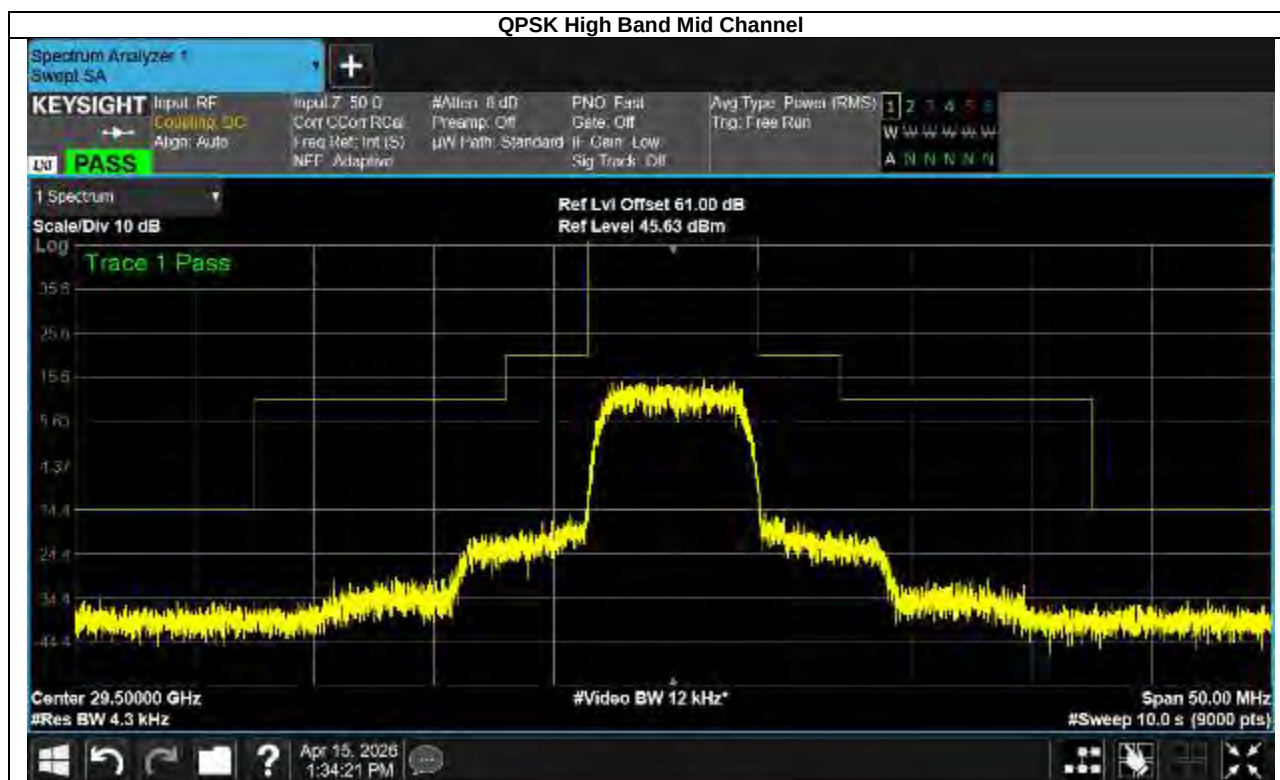
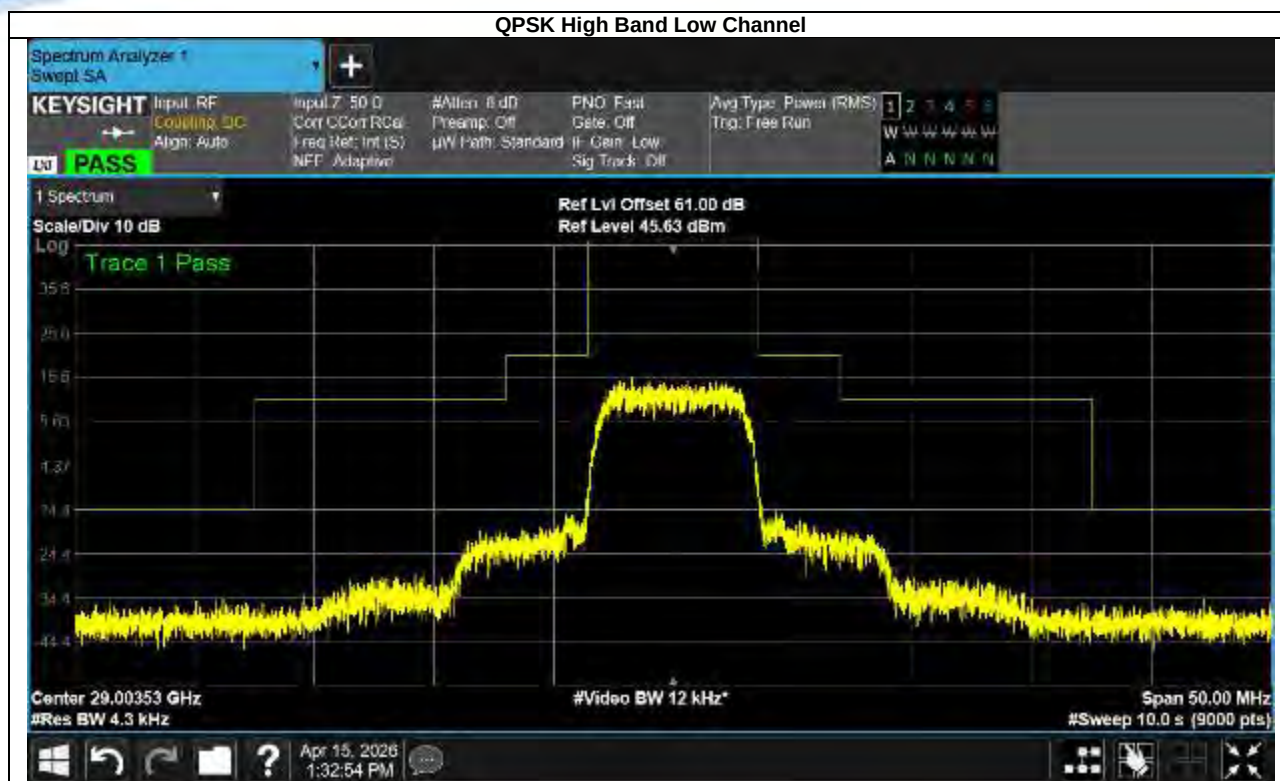


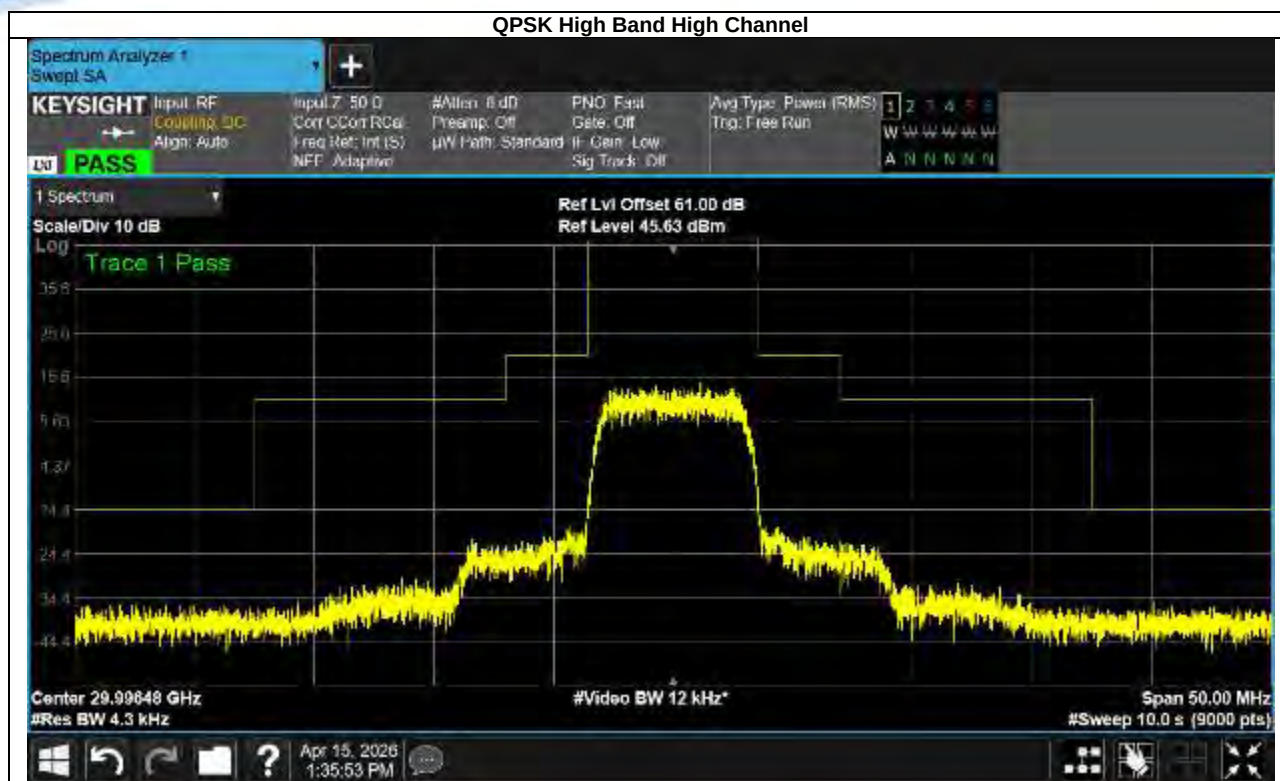
### QPSK Mid Band Mid Channel



### QPSK Mid Band High Channel







### 8.3.1.12. 8PSK 7MHz

#### Equipment Configuration for Transmitter Spectrum Emission Mask

|                                |       |                        |     |
|--------------------------------|-------|------------------------|-----|
| <b>Variant:</b>                | 7 MHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | 8PSK  | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |       |                        |     |

#### Test Measurement Results

##### 8PSK Low Band

|                         |               |           |
|-------------------------|---------------|-----------|
| OR OR LOW Band          |               |           |
| Temperature: 20 °C      | Power Setting | Compliant |
| Voltage: 115 Vac, 60 Hz |               |           |
| Test Frequency          |               |           |
| Low                     | Maximum       | Complies  |
| Mid                     | Maximum       | Complies  |
| High                    | Maximum       | Complies  |

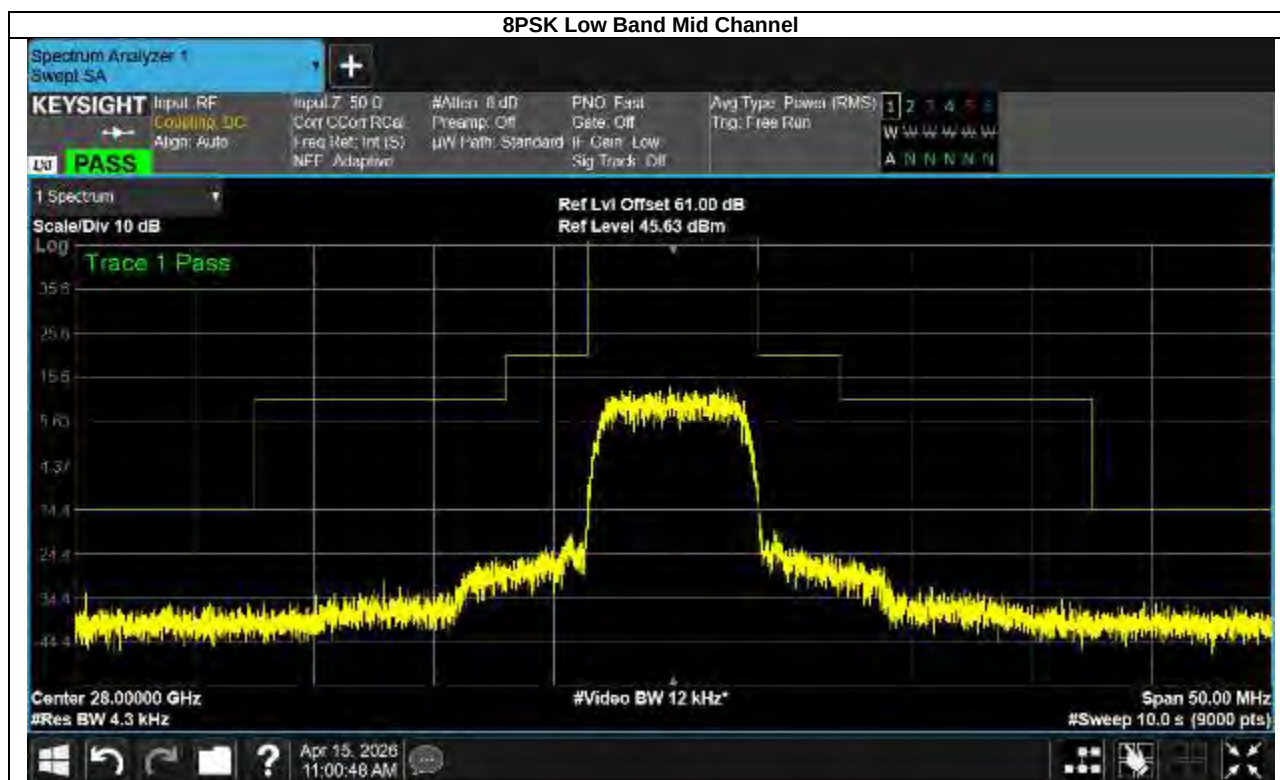
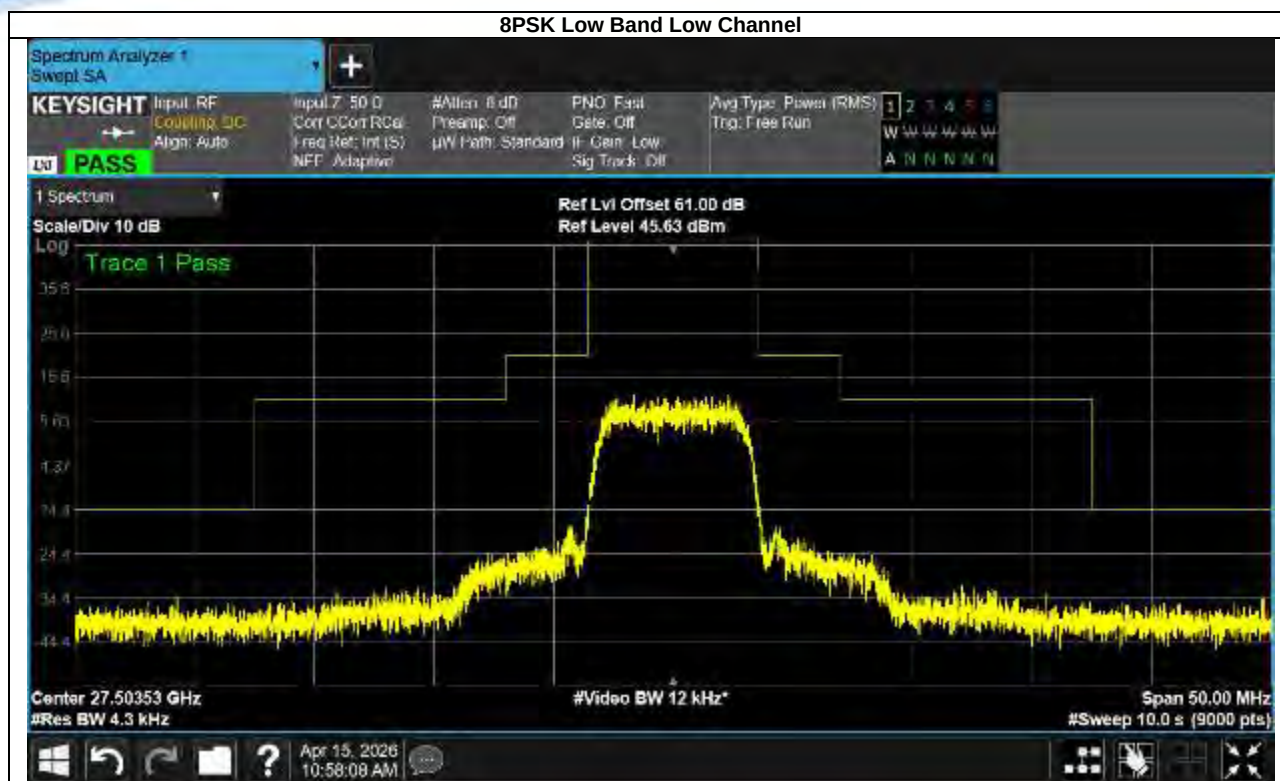
##### 8PSK Mid Band

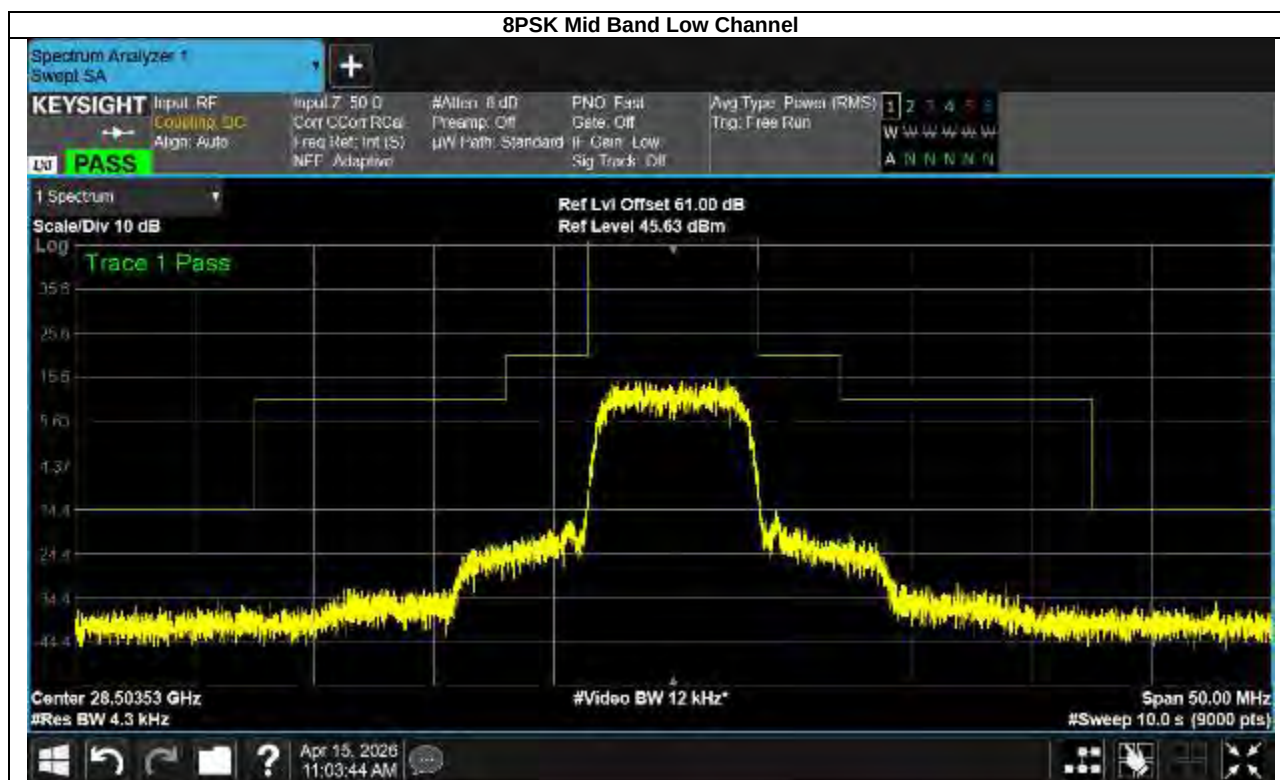
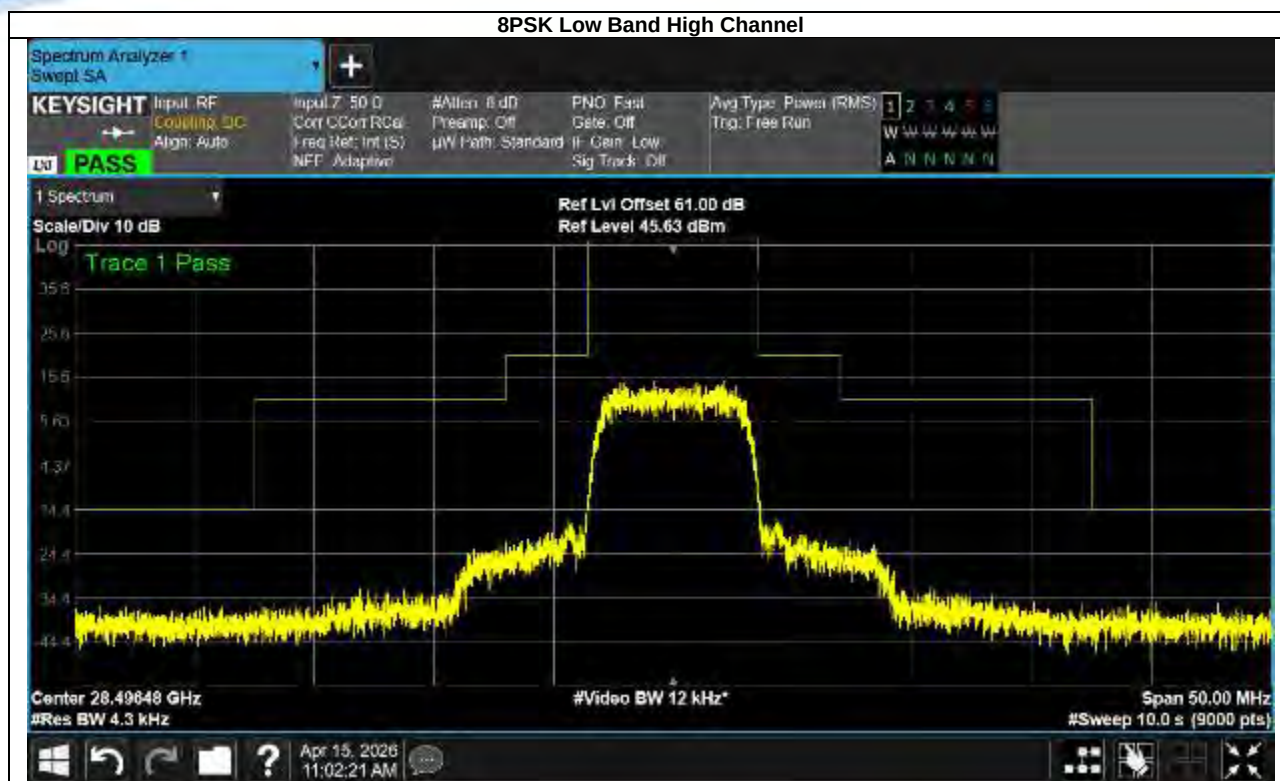
|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

##### 8PSK High Band

|             |         |          |
|-------------|---------|----------|
| <b>Low</b>  | Maximum | Complies |
| <b>Mid</b>  | Maximum | Complies |
| <b>High</b> | Maximum | Complies |

|                                                               |                                  |
|---------------------------------------------------------------|----------------------------------|
| <b>Traceability to Industry Recognized Test Methodologies</b> |                                  |
| <b>Work Instruction:</b>                                      | WI-03 MEASURING RF SPECTRUM MASK |
| <b>Measurement Uncertainty:</b>                               | ±2.81 dB                         |



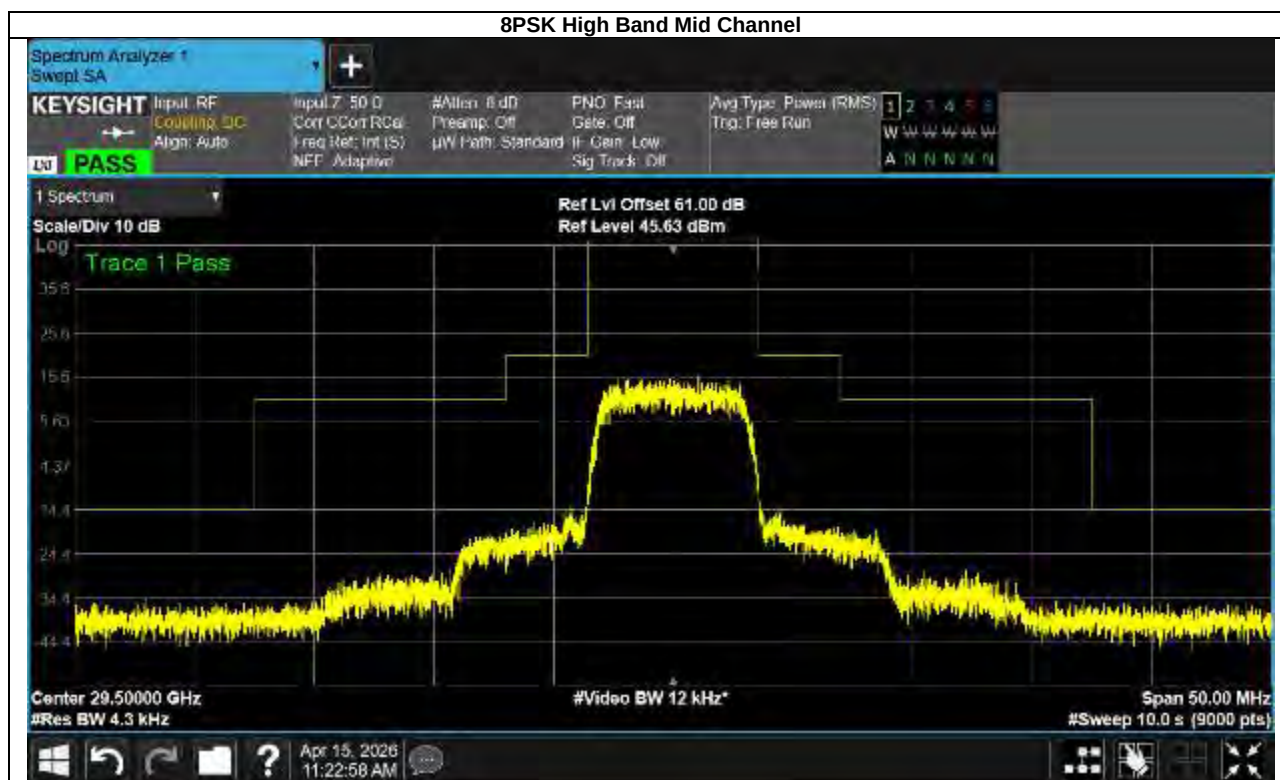
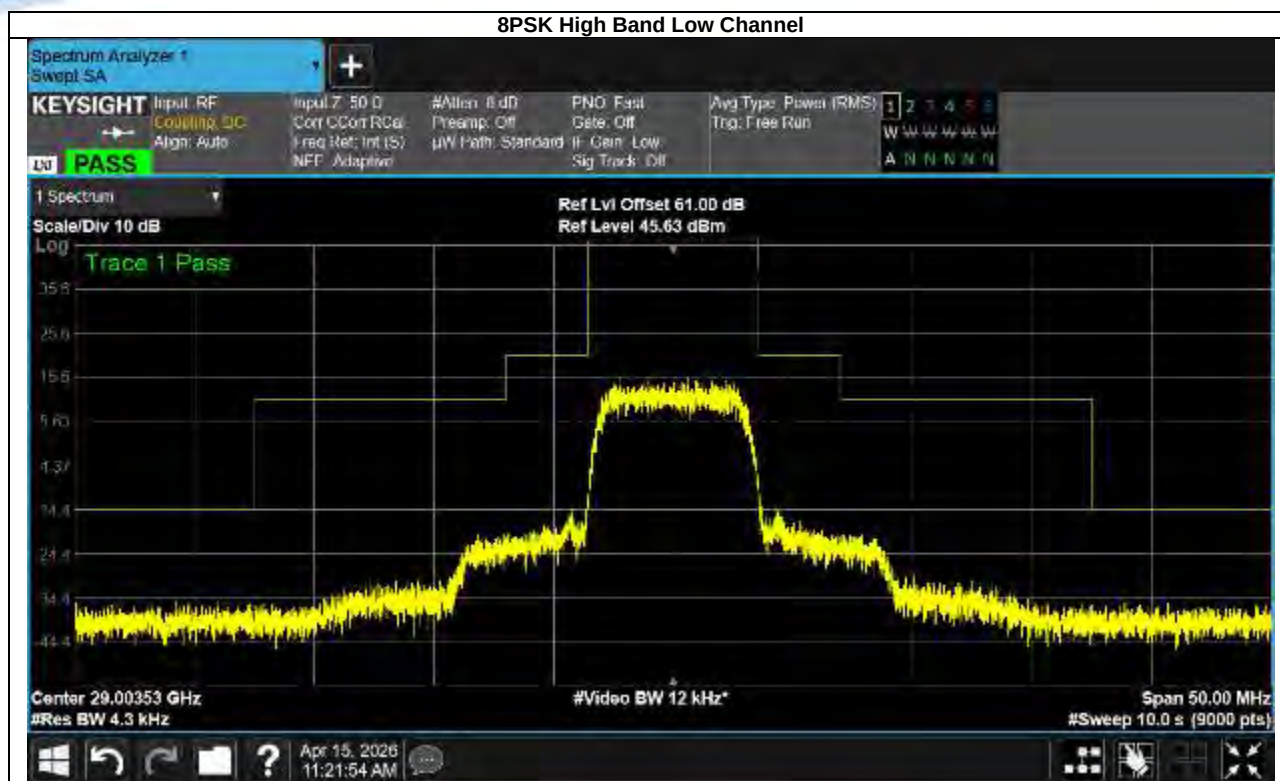


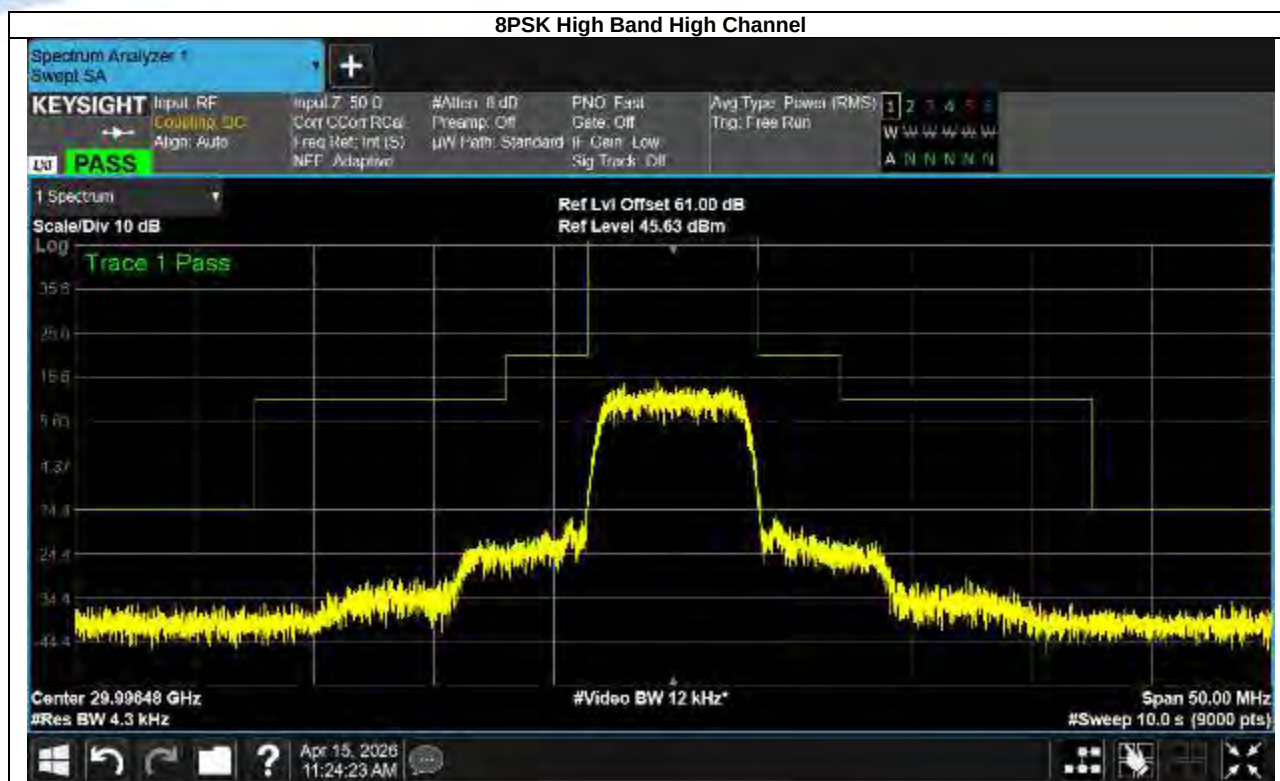
### 8PSK Mid Band Mid Channel



### 8PSK Mid Band High Channel







## 8.4. Transmitter Output Power

| Conducted Test Conditions for Transmitter Output Power                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                     |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------|-------------|
| Standard:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FCC Part 25                        | Ambient Temp. (°C): | 20.0 - 24.5 |
| Test Heading:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Transmitter Power Spectral Density | Rel. Humidity (%):  | 32 - 45     |
| Standard Section(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 25.204(a)                          | Pressure (mBars):   | 999 - 1001  |
| Reference Document(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | See Normative References           |                     |             |
| <b>General Test setup and Operational Mode(s)</b><br>Transmitter Power tests were performed using a spectrum analyzer in accordance with KDB 971168                                                                                                                                                                                                                                                                                                                                           |                                    |                     |             |
| Part 25.204(a) specifies that the spectral density is measured in a 4 kHz bandwidth. The closest selectable resolution bandwidth of 5 kHz was set with video bandwidth 20 kHz. An rms detector was utilized, sweep time set to auto and trace averaged over 100 sweeps. The analyzer span was set to twice the authorized bandwidth. The number of measurement points was set to at least 2 x span / resolution bandwidth. A marker was placed on the peak emission and the results recorded. |                                    |                     |             |
| The spectrum analyzer was connected to the antenna port on the EUT using suitable attenuation and a coaxial cable. A reference level offset was entered on the spectrum analyzer to compensate for the loss of the attenuator and coaxial cable. The second antenna port was also included and exercised.                                                                                                                                                                                     |                                    |                     |             |
| Nominal voltage 115 Vac 60 Hz. The EUT voltage was measured using a calibrated voltmeter                                                                                                                                                                                                                                                                                                                                                                                                      |                                    |                     |             |
| Test setup configuration per Section 6.2 'Conducted Test Setup'                                                                                                                                                                                                                                                                                                                                                                                                                               |                                    |                     |             |

#### 8.4.1.13. BPSK 650 KHz

##### Equipment Configuration for RF Output Power

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | BPSK Low Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 650 KHz        | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | BPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

##### Test Measurement Results

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 27500.324       | 45.05                 | -- | -- | -- | 45.05                                   | 47.0  | -1.95  | Max           |
| 28000.000       | 45.39                 | -- | -- | -- | 45.39                                   | 47.0  | -1.61  | Max           |
| 28499.676       | 45.18                 | -- | -- | -- | 45.18                                   | 47.0  | -1.82  | Max           |

##### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

|                                                    |
|----------------------------------------------------|
| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | BPSK Mid Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 650 KHz        | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | BPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

|                                 |
|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 28500.324       | 44.67                 | -- | -- | -- | 44.67                                   | 47.0  | -2.33  | Max           |
| 28750.000       | 45.66                 | -- | -- | -- | 45.66                                   | 47.0  | -1.34  | Max           |
| 28999.676       | 45.29                 | -- | -- | -- | 45.29                                   | 47.0  | -1.71  | Max           |

|                                                               |
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| <b>Traceability to Industry Recognized Test Methodologies</b> |
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| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

|                                                    |
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| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | BPSK High Band | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 650 KHz        | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | BPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

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|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 29000.324       | 45.34                 | -- | -- | -- | 45.34                                   | 47.0  | -1.66  | Max           |
| 29500.000       | 45.16                 | -- | -- | -- | 45.16                                   | 47.0  | -1.84  | Max           |
| 29999.676       | 44.24                 | -- | -- | -- | 44.24                                   | 47.0  | -2.76  | Max           |

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| <b>Traceability to Industry Recognized Test Methodologies</b> |
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| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

#### 8.4.1.14. QPSK 650 KHz

##### Equipment Configuration for RF Output Power

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | QPSK Low Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 650 KHz        | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | QPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

##### Test Measurement Results

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  | dBm                                     | dBm   | dB     | --            |
| 27500.324       | 45.27                 | -- | -- | -- | 45.27                                   | 47    | -1.73  | Max           |
| 28000.000       | 45.47                 | -- | -- | -- | 45.47                                   | 47    | -1.53  | Max           |
| 28499.676       | 45.41                 | -- | -- | -- | 45.41                                   | 47    | -1.59  | Max           |

##### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

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| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | QPSK Mid Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 650 KHz        | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | QPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

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|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 28500.324       | 44.92                 | -- | -- | -- | 44.92                                   | 47    | -2.08  | Max           |
| 28750.000       | 45.14                 | -- | -- | -- | 45.14                                   | 47    | -1.86  | Max           |
| 28999.676       | 45.44                 | -- | -- | -- | 45.44                                   | 47    | -1.56  | Max           |

|                                                               |
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| <b>Traceability to Industry Recognized Test Methodologies</b> |
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| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

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| <b>Equipment Configuration for RF Output Power</b> |
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|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | QPSK High Band | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 650 KHz        | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | QPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

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| <b>Test Measurement Results</b> |
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| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 29000.324       | 45.02                 | -- | -- | -- | 45.02                                   | 47    | -1.98  | Max           |
| 29500.000       | 45.06                 | -- | -- | -- | 45.06                                   | 47    | -1.94  | Max           |
| 29999.676       | 44.63                 | -- | -- | -- | 44.63                                   | 47    | -2.37  | Max           |

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| <b>Traceability to Industry Recognized Test Methodologies</b> |
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| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

#### 8.4.1.15. 8PSK 650 KHz

##### Equipment Configuration for RF Output Power

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | 8PSK Low Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 650 KHz        | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | 8PSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

##### Test Measurement Results

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  | dBm                                     | dBm   | dB     | --            |
| 27500.324       | 45.21                 | -- | -- | -- | 45.21                                   | 47    | -1.79  | Max           |
| 28000.000       | 45.14                 | -- | -- | -- | 45.14                                   | 47    | -1.86  | Max           |
| 28499.676       | 44.71                 | -- | -- | -- | 44.71                                   | 47    | -2.29  | Max           |

##### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

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| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | 8PSK Mid Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 650 KHz        | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | 8PSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

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| <b>Test Measurement Results</b> |
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| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 28500.324       | 45.09                 | -- | -- | -- | 45.09                                   | 47    | -1.91  | Max           |
| 28750.000       | 45.44                 | -- | -- | -- | 45.44                                   | 47    | -1.56  | Max           |
| 28999.676       | 45.01                 | -- | -- | -- | 45.01                                   | 47    | -1.99  | Max           |

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| <b>Traceability to Industry Recognized Test Methodologies</b> |
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| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

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| <b>Equipment Configuration for RF Output Power</b> |
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|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | 8PSK High Band | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 650 KHz        | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | 8PSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

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|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 29000.324       | 45.63                 | -- | -- | -- | 45.63                                   | 47    | -1.37  | Max           |
| 29500.000       | 44.64                 | -- | -- | -- | 44.64                                   | 47    | -2.36  | Max           |
| 29999.676       | 44.66                 | -- | -- | -- | 44.66                                   | 47    | -2.34  | Max           |

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| <b>Traceability to Industry Recognized Test Methodologies</b> |
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| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

#### 8.4.1.16. BPSK 7 MHz

##### Equipment Configuration for RF Output Power

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | BPSK Low Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 7 MHz          | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | BPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

##### Test Measurement Results

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  | dBm                                     | dBm   | dB     | --            |
| 27503.525       | 45.63                 | -- | -- | -- | 45.63                                   | 47.0  | -1.37  | Max           |
| 28000.000       | 45.51                 | -- | -- | -- | 45.51                                   | 47.0  | -1.49  | Max           |
| 28496.475       | 45.34                 | -- | -- | -- | 45.34                                   | 47.0  | -1.66  | Max           |

##### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

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| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | 8PSK Mid Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 7 MHz          | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | 8PSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

|                                 |
|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 28503.525       | 45.16                 | -- | -- | -- | 45.16                                   | 47.0  | -1.84  | Max           |
| 28750.000       | 45.41                 | -- | -- | -- | 45.41                                   | 47.0  | -1.59  | Max           |
| 28996.475       | 45.53                 | -- | -- | -- | 45.53                                   | 47.0  | -1.47  | Max           |

|                                                               |
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| <b>Traceability to Industry Recognized Test Methodologies</b> |
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| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

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| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | 8PSK High Band | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 7 MHz          | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | 8PSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

|                                 |
|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 29003.525       | 45.31                 | -- | -- | -- | 45.31                                   | 47.0  | -1.69  | Max           |
| 29500.000       | 44.84                 | -- | -- | -- | 44.84                                   | 47.0  | -2.16  | Max           |
| 29996.475       | 44.4                  | -- | -- | -- | 44.4                                    | 47.0  | -2.6   | Max           |

|                                                               |
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| <b>Traceability to Industry Recognized Test Methodologies</b> |
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| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

#### 8.4.1.17. QPSK 7 MHz

##### Equipment Configuration for RF Output Power

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | QPSK Low Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 7 MHz          | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | QPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

##### Test Measurement Results

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 27503.525       | 45.48                 | -- | -- | -- | 45.48                                   | 47    | -1.52  | Max           |
| 28000.000       | 45.51                 | -- | -- | -- | 45.51                                   | 47    | -1.49  | Max           |
| 28496.475       | 45.1                  | -- | -- | -- | 45.1                                    | 47    | -1.9   | Max           |

##### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

|                                                    |
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| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | QPSK Mid Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 7 MHz          | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | QPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

|                                 |
|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 28503.525       | 45.01                 | -- | -- | -- | 45.01                                   | 47    | -1.99  | Max           |
| 28750.000       | 45.23                 | -- | -- | -- | 45.23                                   | 47    | -1.77  | Max           |
| 28996.475       | 45.44                 | -- | -- | -- | 45.44                                   | 47    | -1.56  | Max           |

|                                                               |
|---------------------------------------------------------------|
| <b>Traceability to Industry Recognized Test Methodologies</b> |
|---------------------------------------------------------------|

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

|                                                    |
|----------------------------------------------------|
| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | QPSK High Band | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 7 MHz          | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | QPSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

|                                 |
|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 29003.525       | 45.01                 | -- | -- | -- | 45.01                                   | 47    | -1.99  | Max           |
| 29500.000       | 44.75                 | -- | -- | -- | 44.75                                   | 47    | -2.25  | Max           |
| 29996.475       | 44.6                  | -- | -- | -- | 44.6                                    | 47    | -2.4   | Max           |

|                                                               |
|---------------------------------------------------------------|
| <b>Traceability to Industry Recognized Test Methodologies</b> |
|---------------------------------------------------------------|

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

#### 8.4.1.18. 8PSK 7 MHz

##### Equipment Configuration for RF Output Power

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | 8PSK Low Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 7 MHz          | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | 8PSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

##### Test Measurement Results

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  | dBm                                     | dBm   | dB     | --            |
| 27503.525       | 45.52                 | -- | -- | -- | 45.52                                   | 47    | -1.48  | Max           |
| 28000.000       | 45.18                 | -- | -- | -- | 45.18                                   | 47    | -1.82  | Max           |
| 28496.475       | 45.31                 | -- | -- | -- | 45.31                                   | 47    | -1.69  | Max           |

##### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

|                                                    |
|----------------------------------------------------|
| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | 8PSK Mid Band  | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 7 MHz          | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | 8PSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

|                                 |
|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 28503.525       | 45.65                 | -- | -- | -- | 45.65                                   | 47    | -1.35  | Max           |
| 28750.000       | 45.29                 | -- | -- | -- | 45.29                                   | 47    | -1.71  | Max           |
| 28996.475       | 45.65                 | -- | -- | -- | 45.65                                   | 47    | -1.35  | Max           |

|                                                               |
|---------------------------------------------------------------|
| <b>Traceability to Industry Recognized Test Methodologies</b> |
|---------------------------------------------------------------|

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

|                                                    |
|----------------------------------------------------|
| <b>Equipment Configuration for RF Output Power</b> |
|----------------------------------------------------|

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| <b>Band:</b>                   | 8PSK High Band | <b>Duty Cycle (%):</b>        | 99             |
| <b>Bandwidth:</b>              | 7 MHz          | <b>Antenna Gain (dBi):</b>    | --             |
| <b>Modulation:</b>             | 8PSK           | <b>Beam Forming Gain (Y):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>             | SB             |
| <b>Engineering Test Notes:</b> |                |                               |                |

|                                 |
|---------------------------------|
| <b>Test Measurement Results</b> |
|---------------------------------|

| Test Frequency: | Measured Output Power |    |    |    | Calculated Total Power $\Sigma$ Port(s) | Limit | Margin | Power Setting |
|-----------------|-----------------------|----|----|----|-----------------------------------------|-------|--------|---------------|
|                 | rms Port Power (dBm)  |    |    |    |                                         |       |        |               |
|                 | a                     | b  | c  | d  |                                         |       |        |               |
| 29003.525       | 45.64                 | -- | -- | -- | 45.64                                   | 47    | -1.36  | Max           |
| 29500.000       | 45.09                 | -- | -- | -- | 45.09                                   | 47    | -1.91  | Max           |
| 29996.475       | 44.63                 | -- | -- | -- | 44.63                                   | 47    | -2.37  | Max           |

|                                                               |
|---------------------------------------------------------------|
| <b>Traceability to Industry Recognized Test Methodologies</b> |
|---------------------------------------------------------------|

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | $\pm 1.33$ dB                   |

## 8.5. Transmitter Conducted Emissions (Out of Band)

| Conducted Test Conditions for Transmitter Conducted Emissions (Out-of-Band)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                             |                     |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------|-------------|
| Standard:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FCC Part 25                                                 | Ambient Temp. (°C): | 20.0 - 24.5 |
| Test Heading:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Conducted Spurious Emissions<br>Radiated Spurious Emissions | Rel. Humidity (%):  | 32 - 45     |
| Standard Section(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 25.202(f) & 2.1051                                          | Pressure (mBars):   | 999 - 1001  |
| Test Method:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | FCC KDB 971168                                              |                     |             |
| Reference Document(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | See Normative References                                    |                     |             |
| <p><b>General Test setup and Operational Mode(s)</b></p> <p>Measurements were performed with the EUT transmitting at maximum power on low, mid and high channels on horizontal and vertical polarizations.</p> <p>Part 25.202(f) specifies emission limitations in a 4 kHz bandwidth. The closest selectable resolution &amp; video bandwidth of was set.</p> <p>The spectrum analyzer was connected to the antenna port on the EUT using suitable attenuation and a coaxial cable. A reference level offset was entered on the spectrum analyzer to compensate for the loss of the attenuator and coaxial cable.</p> <p>Any detected spurious emissions would be investigated in detail. All emissions were found to be &gt;30 dB below the limit. The highest emission level is reported in the results matrix.</p> <p>Nominal voltage 115 Vac 60 Hz. The EUT voltage was measured using a calibrated voltmeter</p> <p>As per "KDB 412172 EIRP Measurement Formulas"</p> <p>Distance = 3M = 9.54<br/>Frequency = 27GHz to 240GHz<br/>Speed of Light Constant = <math>20 \cdot \text{Log}(((4 \cdot 3.14)/(2.998 \cdot 10^8)),10) = -147.55</math><br/>Free Space Path Loss (FSPL) = Distance + Frequency + Speed of Light Constant</p> <p>Test setup configuration per Section 6.2 'Conducted Test Setup &amp; 6.1 Radiated Test Setup'</p> |                                                             |                     |             |

### 8.5.1. BPSK

#### 8.5.1.19. BPSK 650KHz Low Band Low Channel

##### Equipment Configuration for Transmitter Conducted Emission (Out-of-Band)

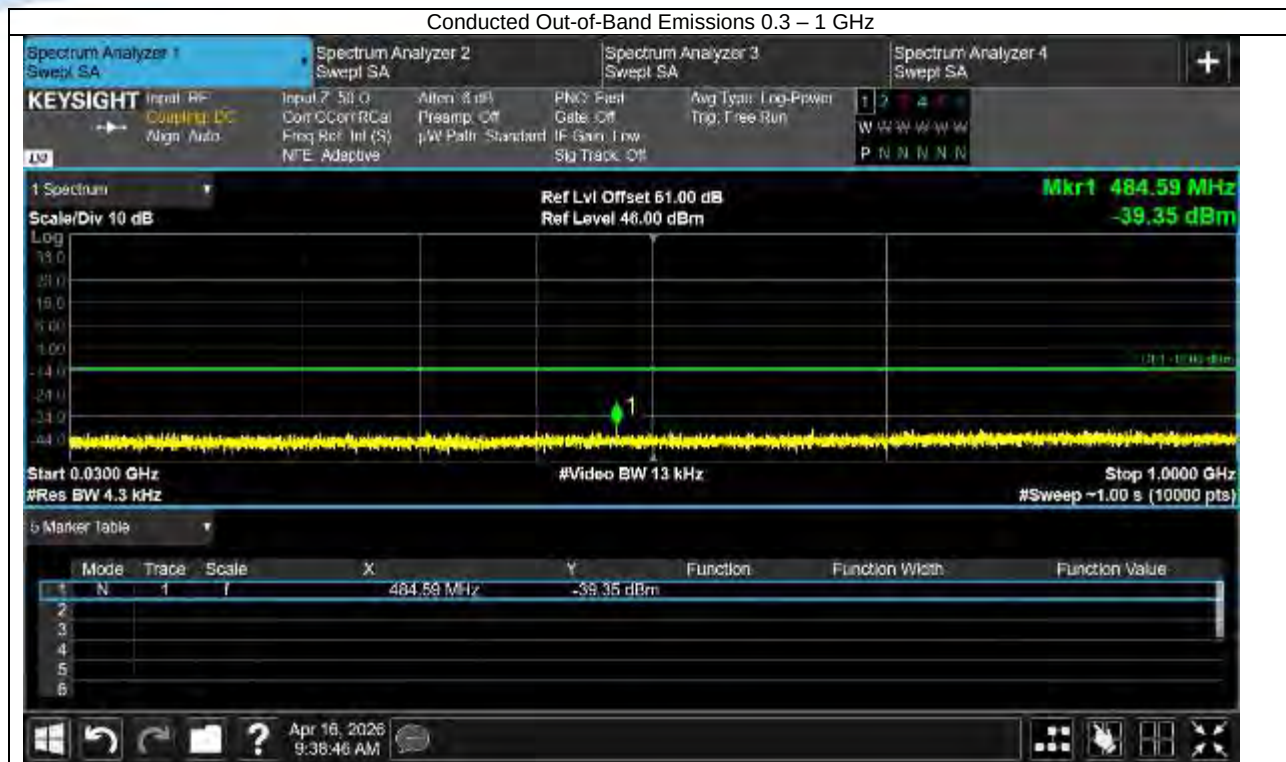
|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

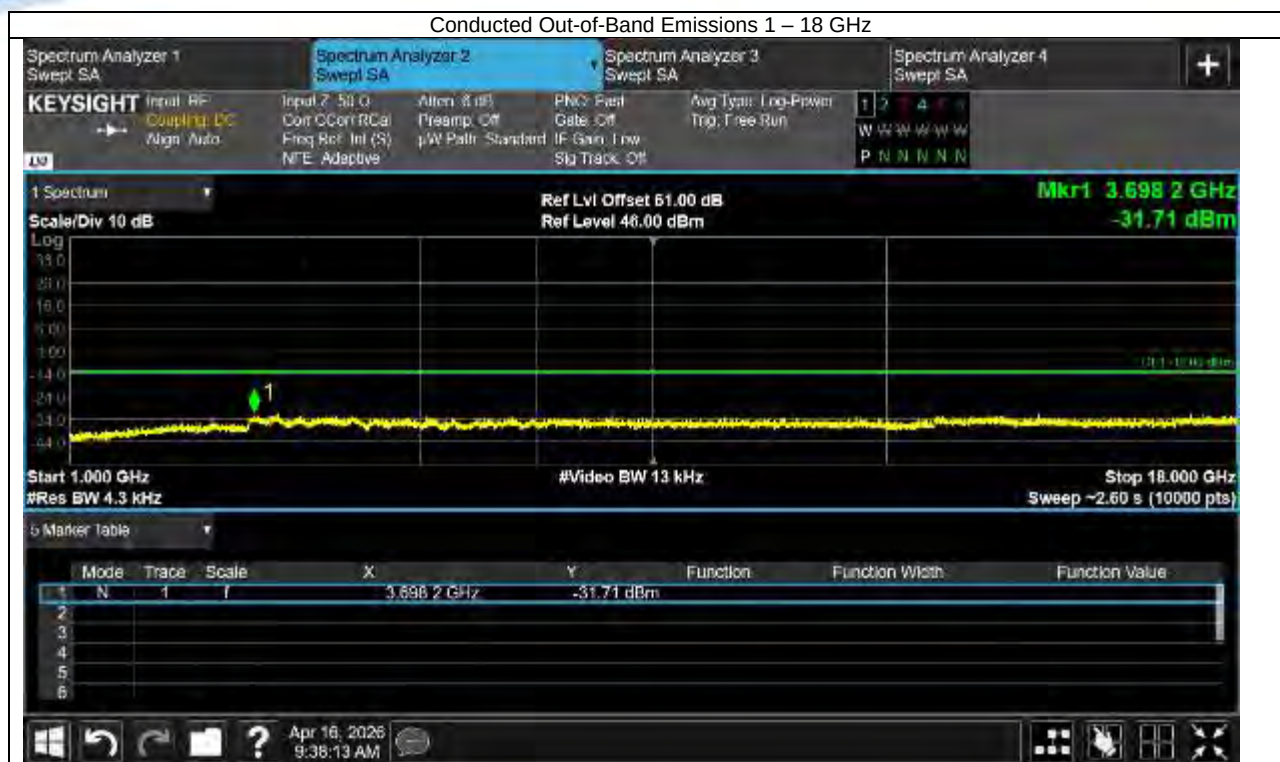
##### Test Measurement Results

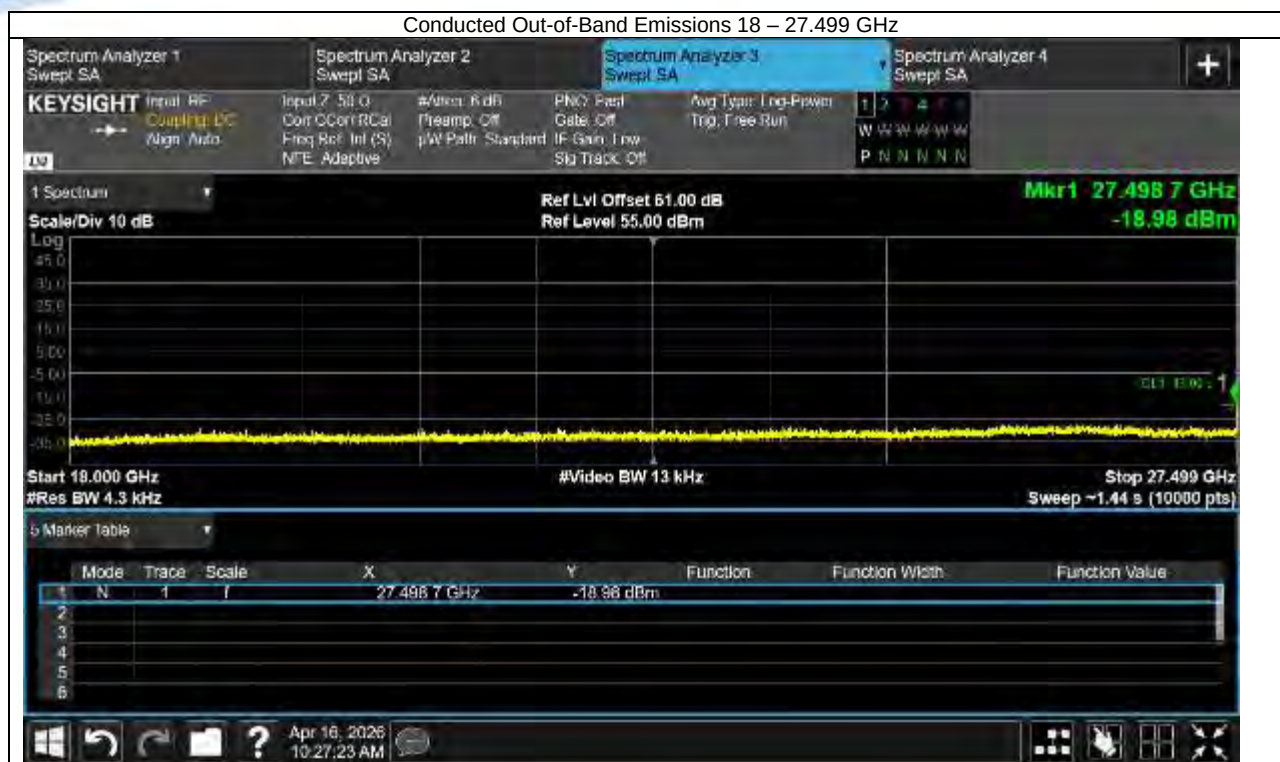
| Temperature: 20 °C<br>Voltage: 115 Vac, 60 Hz | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm) | Limit (dBm) | Margin (dB) | Compliant |
|-----------------------------------------------|-----------------|----------------------|-----------------------|-------------|-------------|-----------|
| Test Frequency: 27500.324 MHz                 |                 |                      |                       |             |             |           |
| 30MHz-1GHz                                    | 484.59          | -39.35               | --                    | -13         | -26.35      | Complies  |
| 1-18GHz                                       | 3698.20         | -31.71               | --                    | -13         | -18.71      | Complies  |
| 18-27.499GHz                                  | 27498.70        | -18.98               | --                    | -13         | -5.98       | Complies  |
| 27.501-40GHz                                  | 27501.90        | -14.69               | --                    | -13         | -1.69       | Complies  |
| 40-50GHz                                      | 49599.00        | -49.49               | --                    | -13         | -36.49      | Complies  |
| 50-75 GHz                                     | 55000.00        | -44.70               | -39.44                | -13         | -26.44      | Complies  |
| 75-110GHz                                     | 82500.70        | -62.31               | --                    | -13         | -49.31      | Complies  |
| 110-140GHz                                    | 132239.15       | -26.98               | -14.10                | -13         | -1.10       | Complies  |
| 140-150GHz                                    | 140916.75       | -41.30               | --                    | -13         | -28.30      | Complies  |

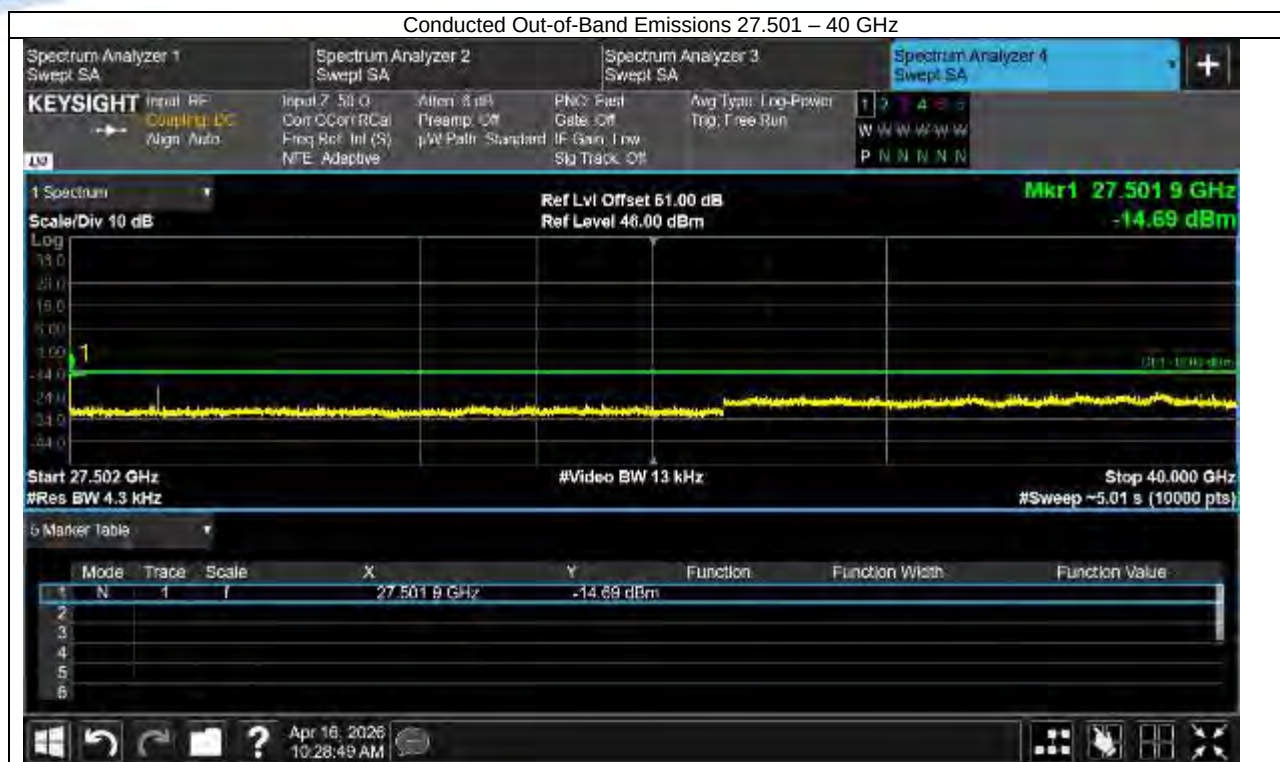
##### Traceability to Industry Recognized Test Methodologies

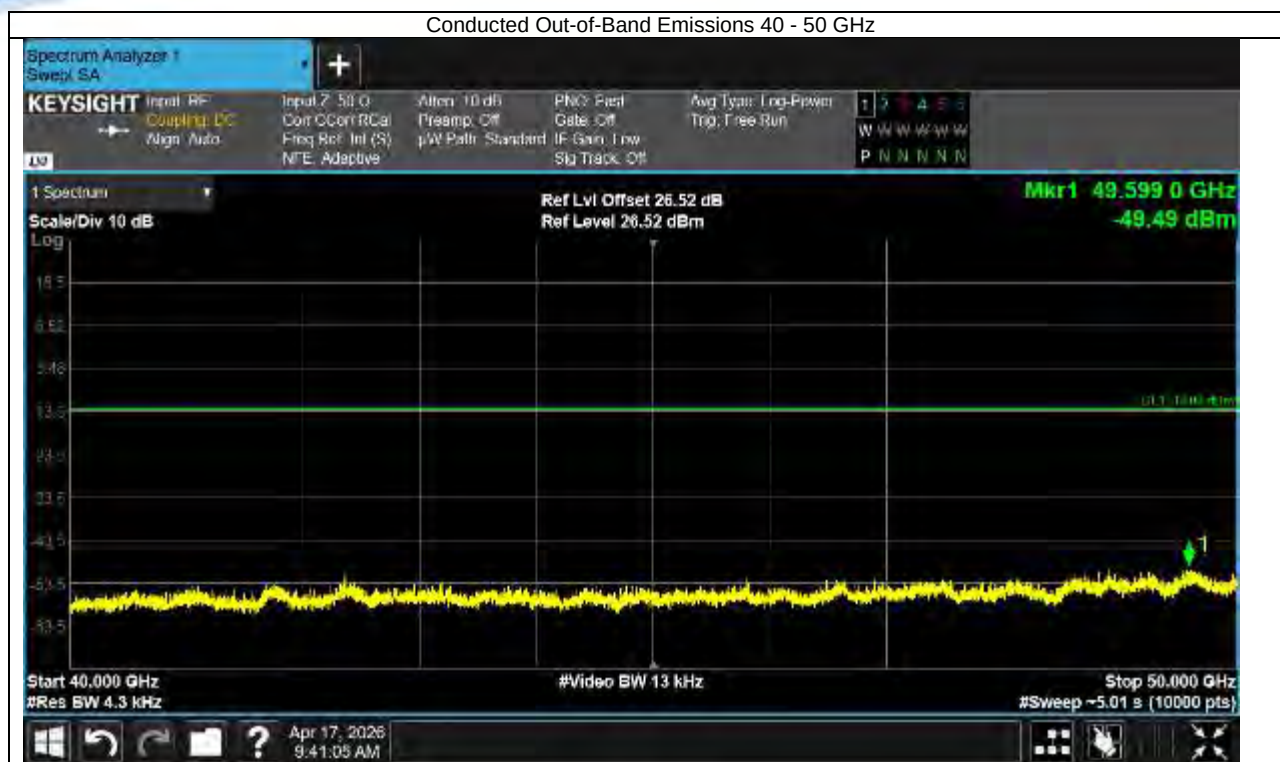
|                          |                                         |
|--------------------------|-----------------------------------------|
| Work Instruction:        | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS |
| Measurement Uncertainty: | <=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB     |

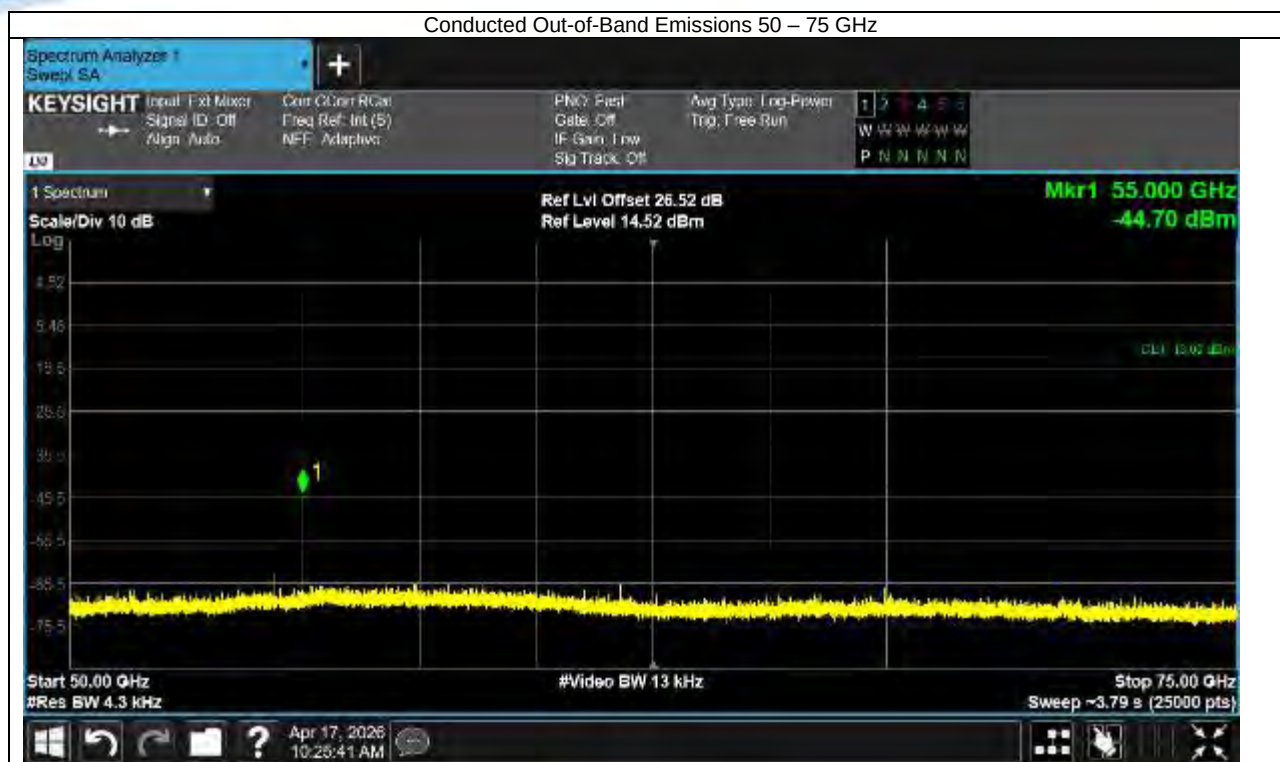


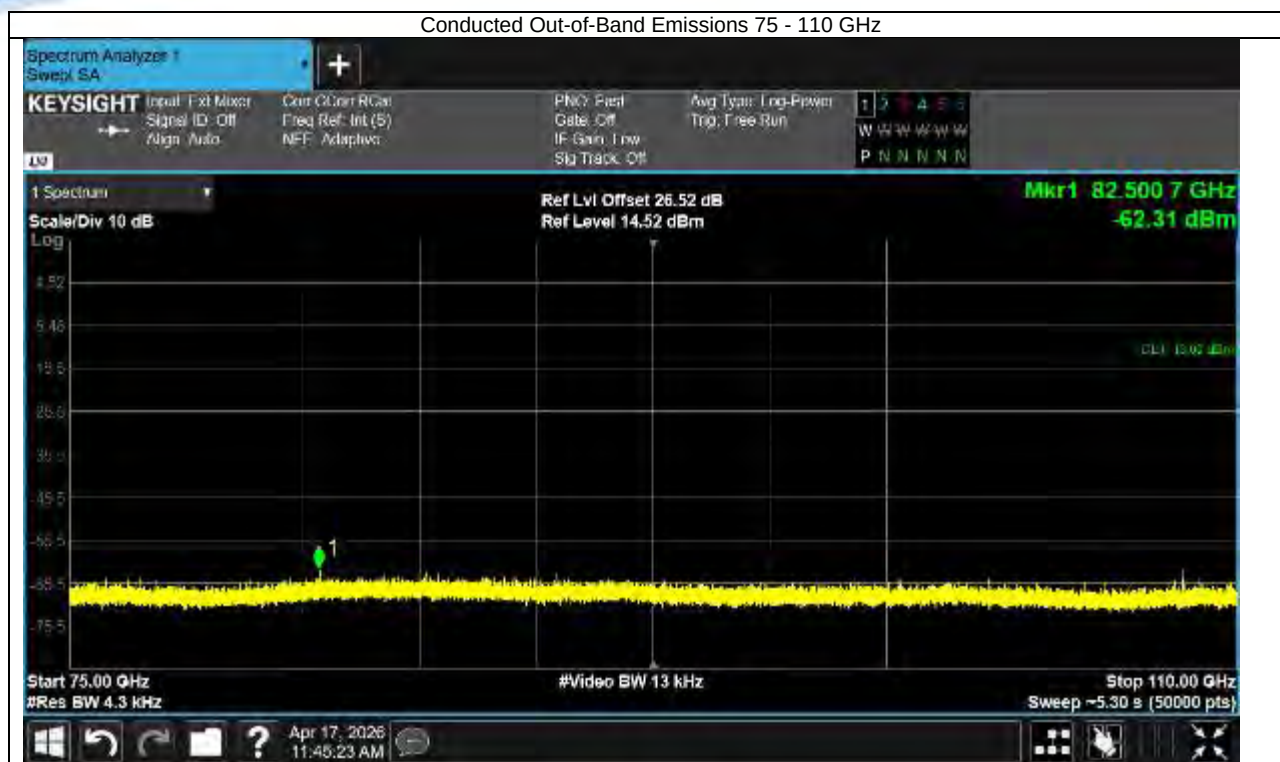




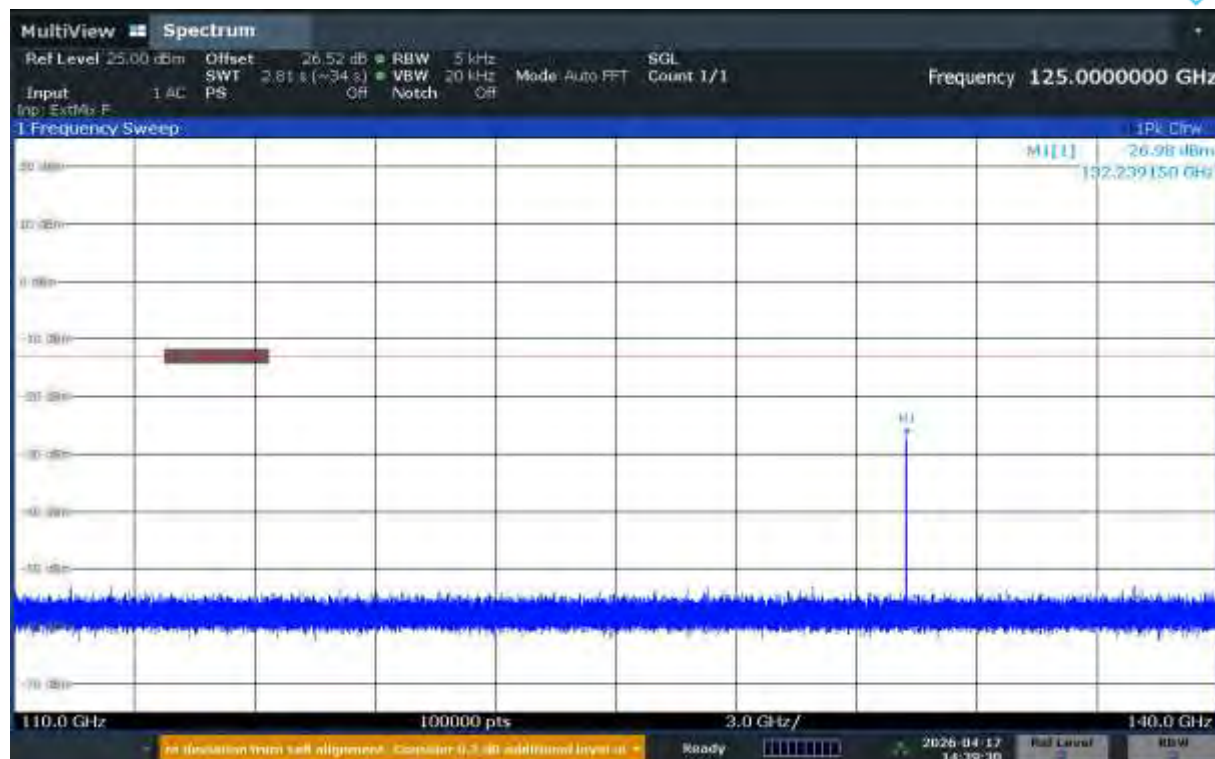






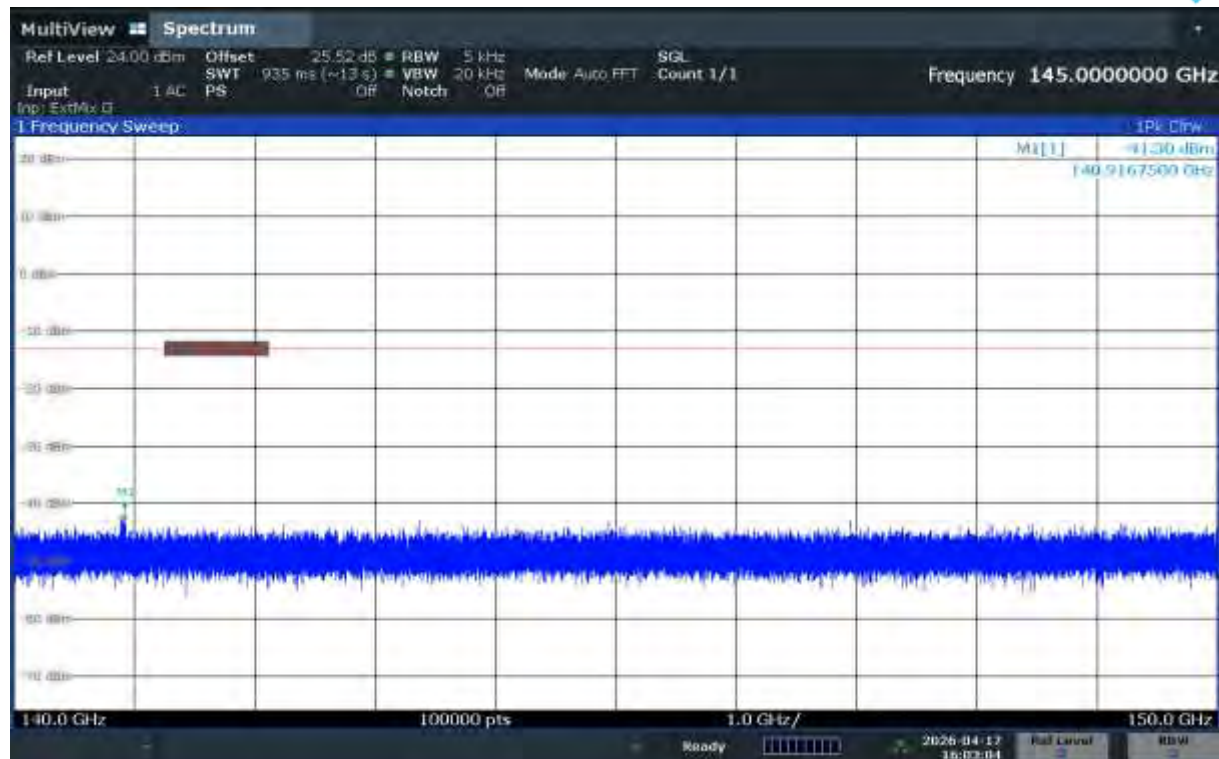


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:39:29

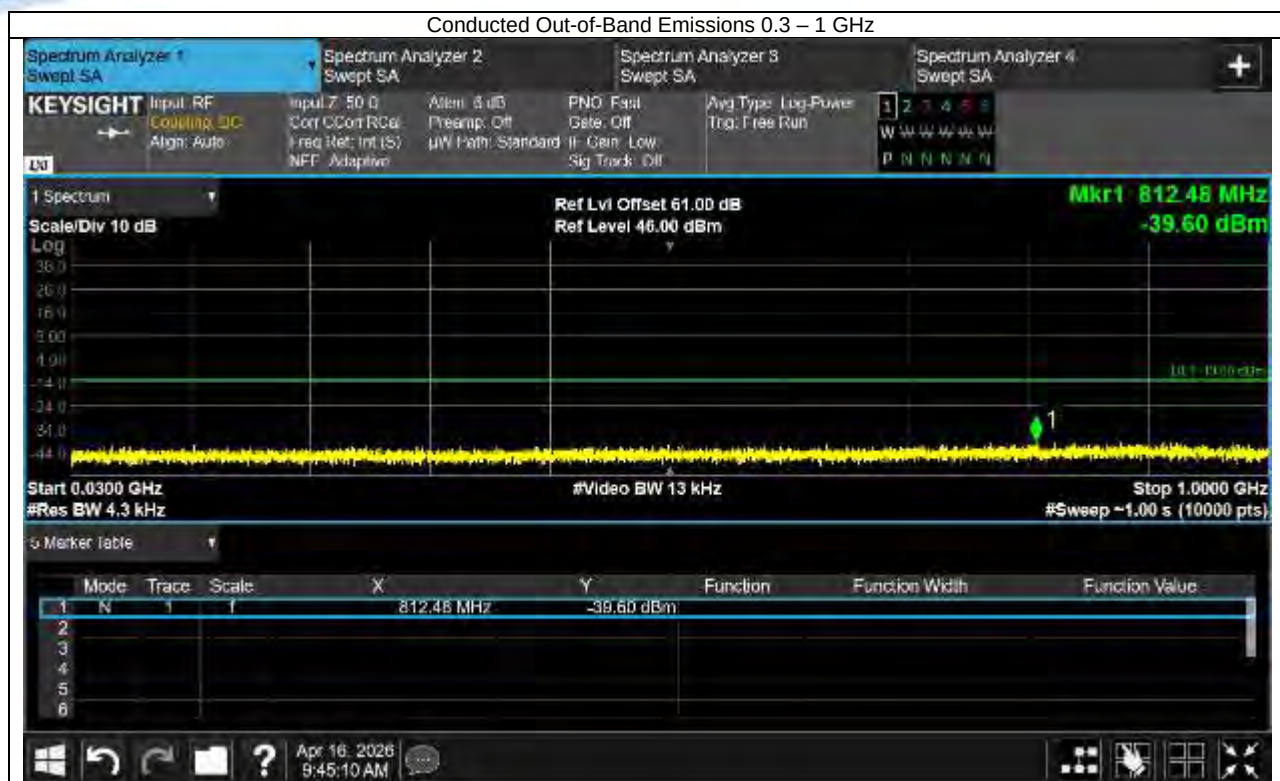
Conducted Out-of-Band Emissions 140 - 150 GHz

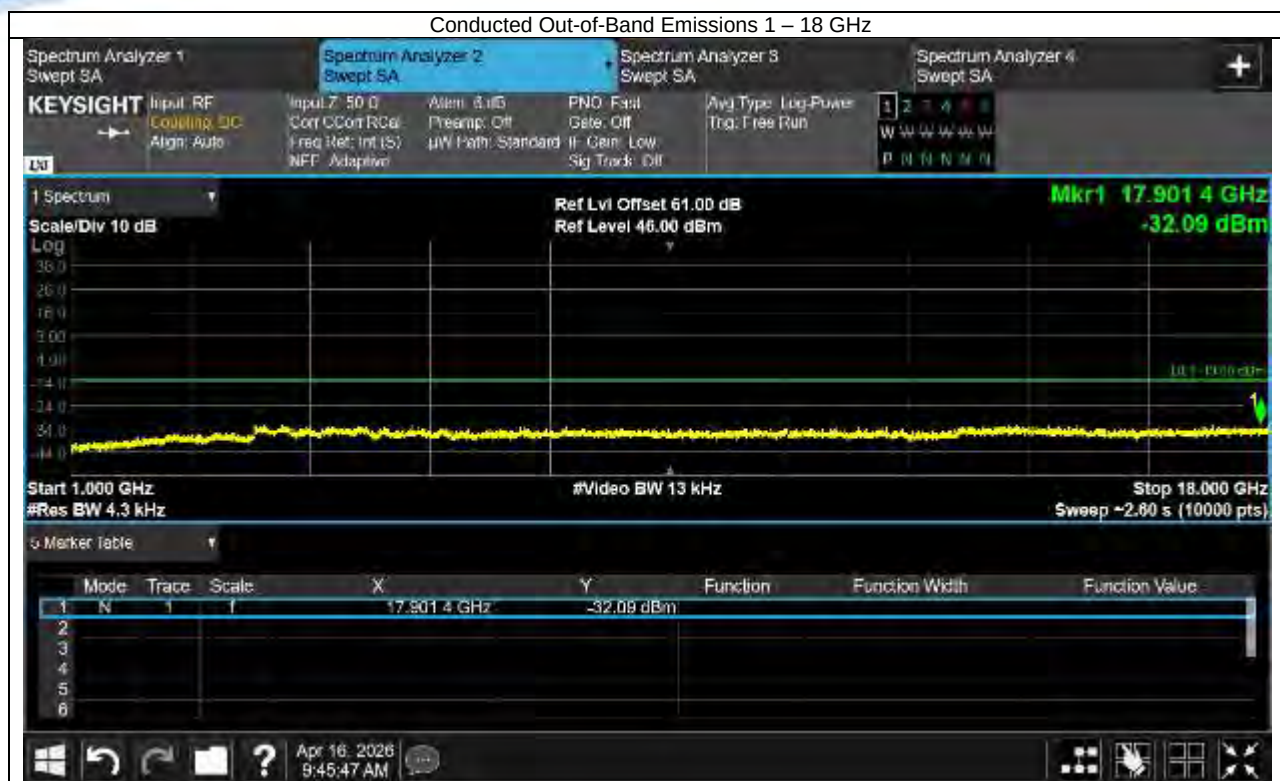


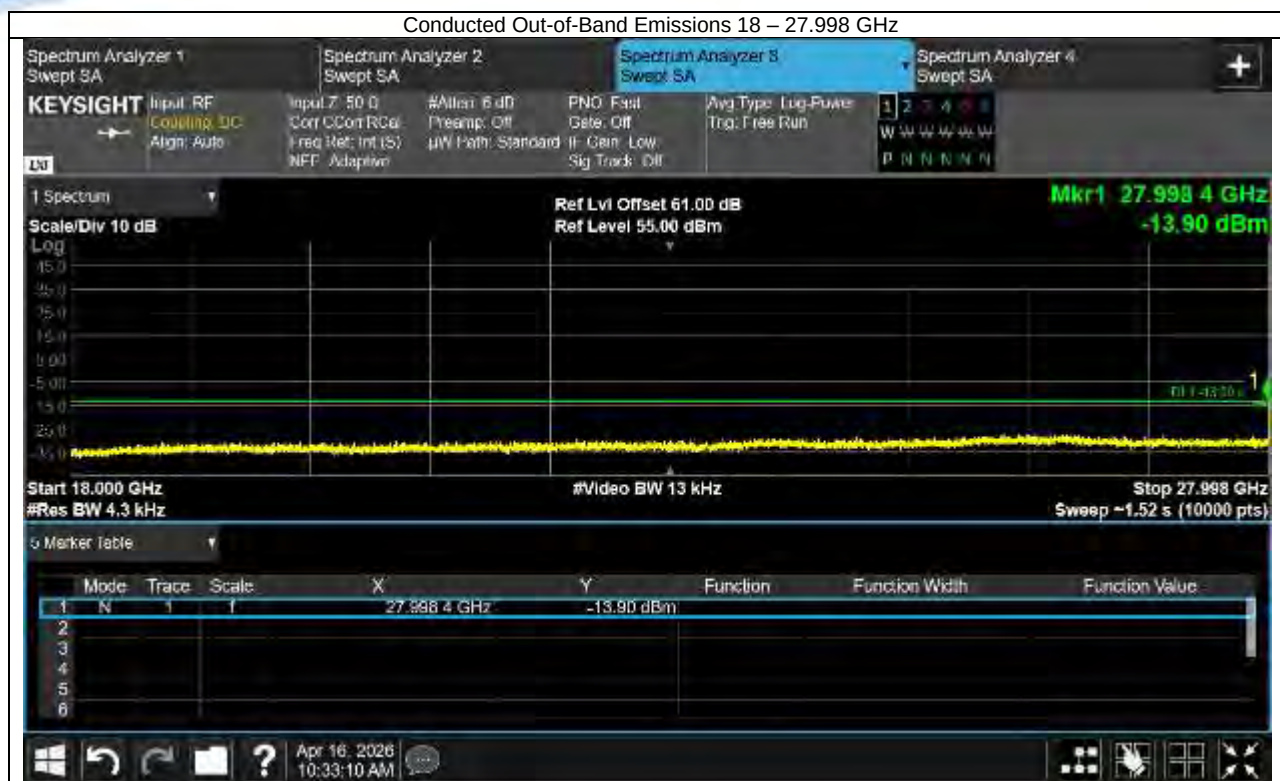
Date: 17.APR.2026 16:03:05

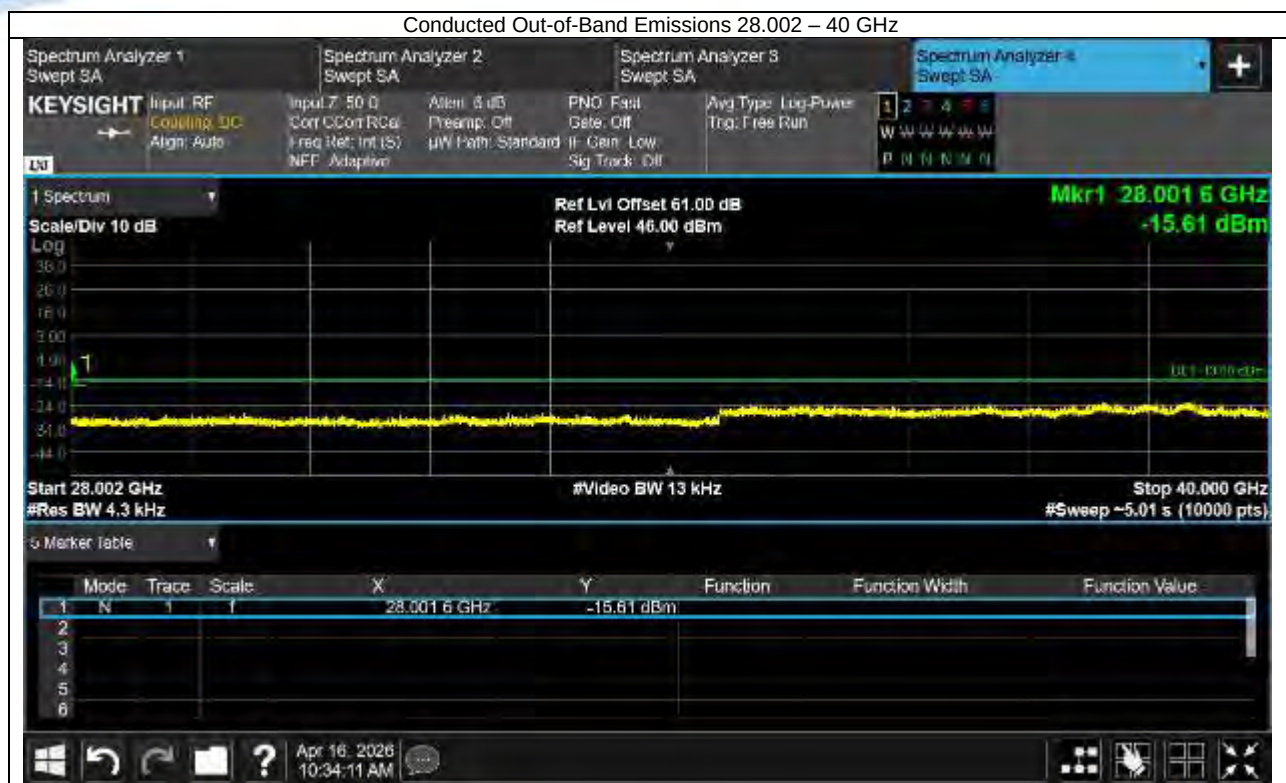
#### 8.5.1.20. BPSK 650KHz Low Band Mid Channel

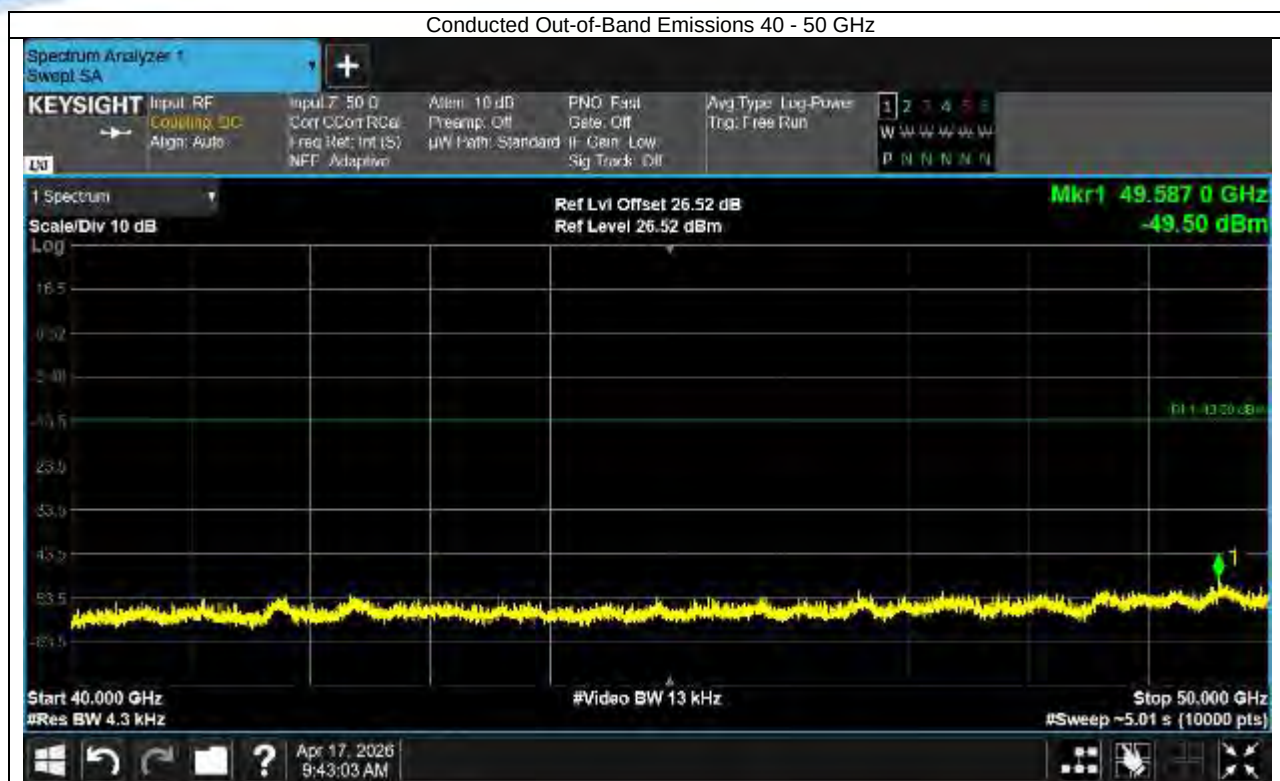
| Equipment Configuration for Transmitter Conducted Emission (Out-of-Band) |                 |                      |                                         |             |             |           |
|--------------------------------------------------------------------------|-----------------|----------------------|-----------------------------------------|-------------|-------------|-----------|
|                                                                          |                 |                      |                                         |             |             |           |
| Variant:                                                                 | 650 KHz         | Duty Cycle (%):      |                                         | 100         |             |           |
| Modulation:                                                              | BPSK            | Tested By:           |                                         | SB          |             |           |
| Engineering Test Notes:                                                  |                 |                      |                                         |             |             |           |
|                                                                          |                 |                      |                                         |             |             |           |
| Test Measurement Results                                                 |                 |                      |                                         |             |             |           |
|                                                                          |                 |                      |                                         |             |             |           |
| Temperature: 20 °C                                                       | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm)                   | Limit (dBm) | Margin (dB) | Compliant |
| Voltage: 115 Vac, 60 Hz                                                  |                 |                      |                                         |             |             |           |
| Test Frequency: 28000.00 MHz                                             |                 |                      |                                         |             |             |           |
| 30MHz-1GHz                                                               | 812.48          | -39.60               | --                                      | -13         | -26.60      | Complies  |
| 1-18GHz                                                                  | 17901.40        | -32.09               | --                                      | -13         | -19.09      | Complies  |
| 18-27.998GHz                                                             | 27998.40        | -13.90               | --                                      | -13         | -0.90       | Complies  |
| 28.002-40GHz                                                             | 28.00           | -15.61               | --                                      | -13         | -2.61       | Complies  |
| 40-50GHz                                                                 | 49587.00        | -49.50               | --                                      | -13         | -36.50      | Complies  |
| 50-75 GHz                                                                | 56000.00        | -47.10               | -41.68                                  | -13         | -28.68      | Complies  |
| 75-110GHz                                                                | 84000.10        | -62.12               | --                                      | -13         | -49.12      | Complies  |
| 110-140GHz                                                               | 134715.95       | -31.79               | -18.74                                  | -13         | -5.74       | Complies  |
| 140-150GHz                                                               | 148760.55       | -42.99               | --                                      | -13         | -29.99      | Complies  |
|                                                                          |                 |                      |                                         |             |             |           |
| Traceability to Industry Recognized Test Methodologies                   |                 |                      |                                         |             |             |           |
| Work Instruction:                                                        |                 |                      | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS |             |             |           |
| Measurement Uncertainty:                                                 |                 |                      | <=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB     |             |             |           |

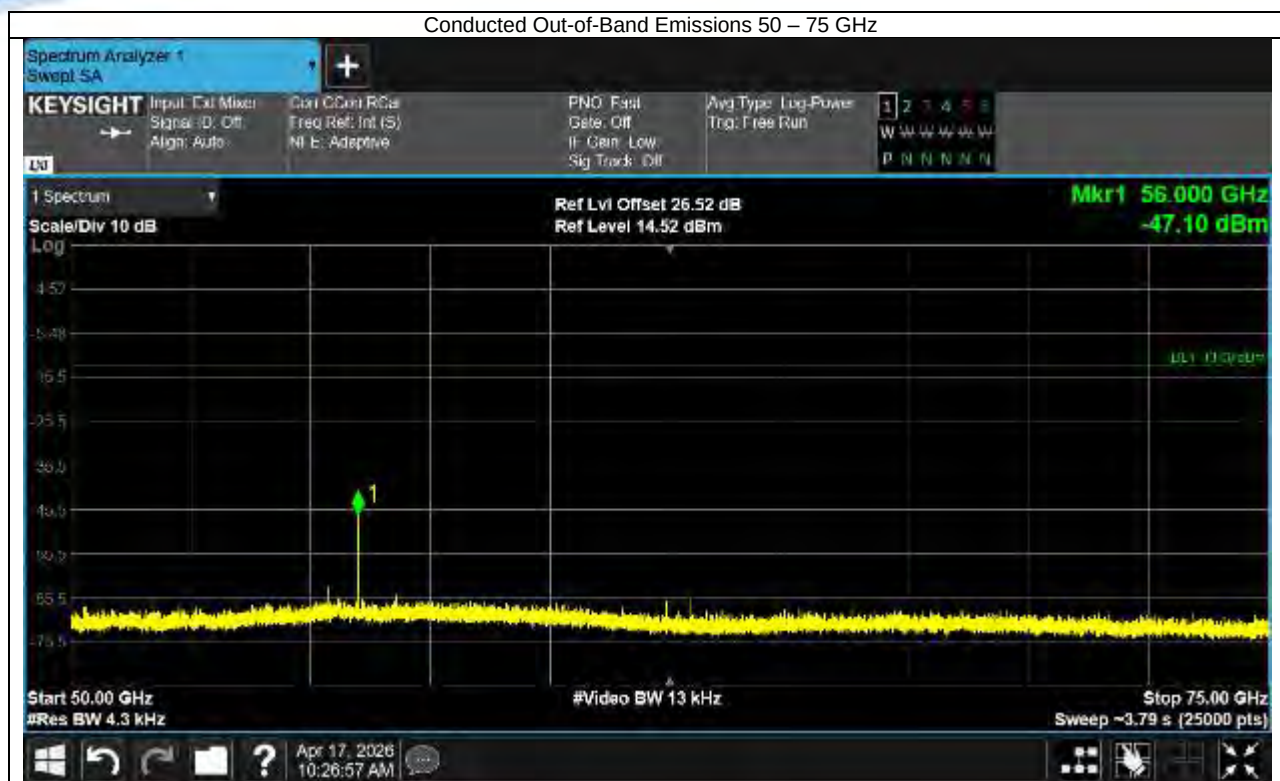


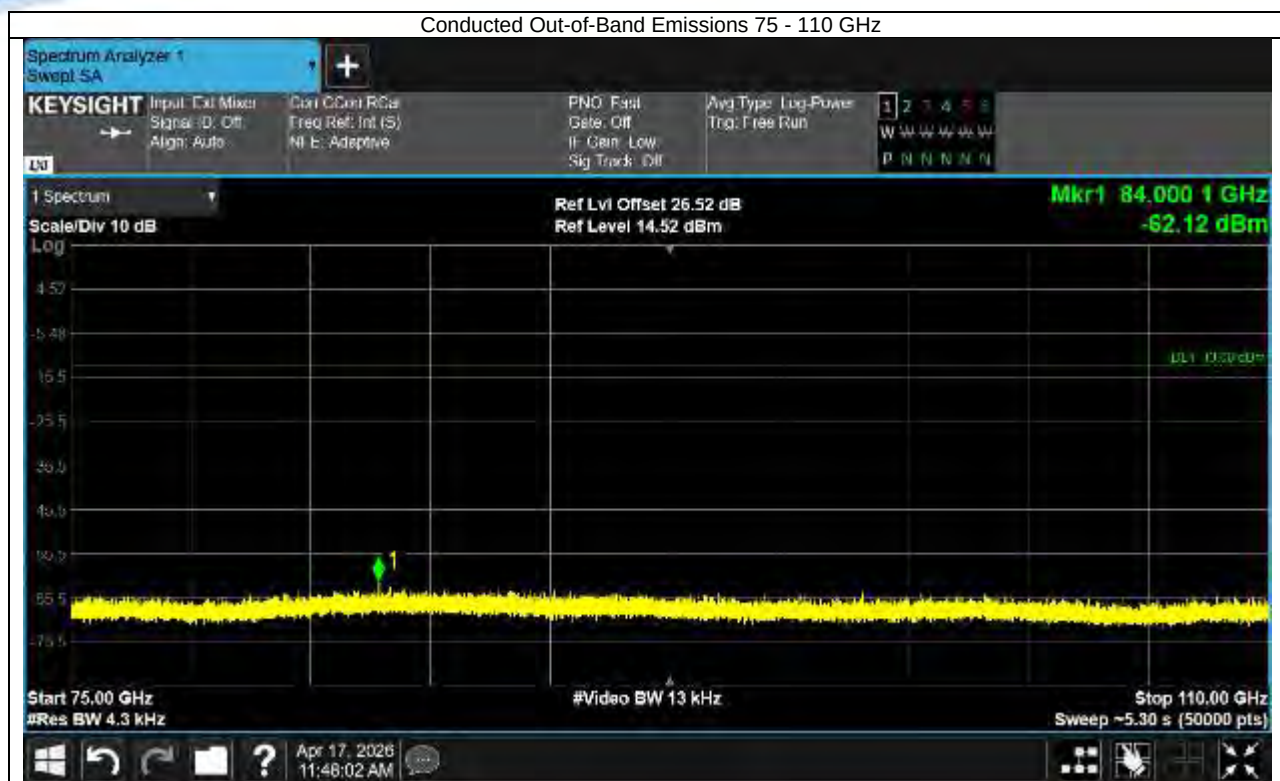




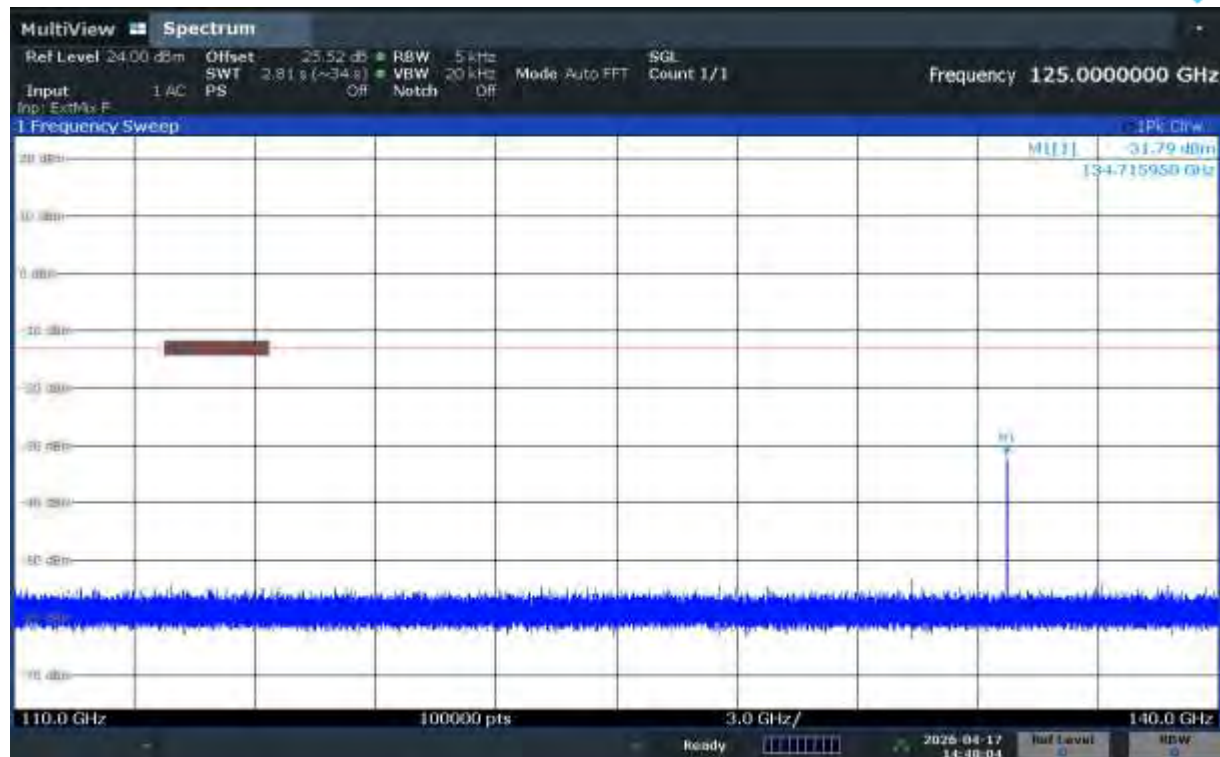






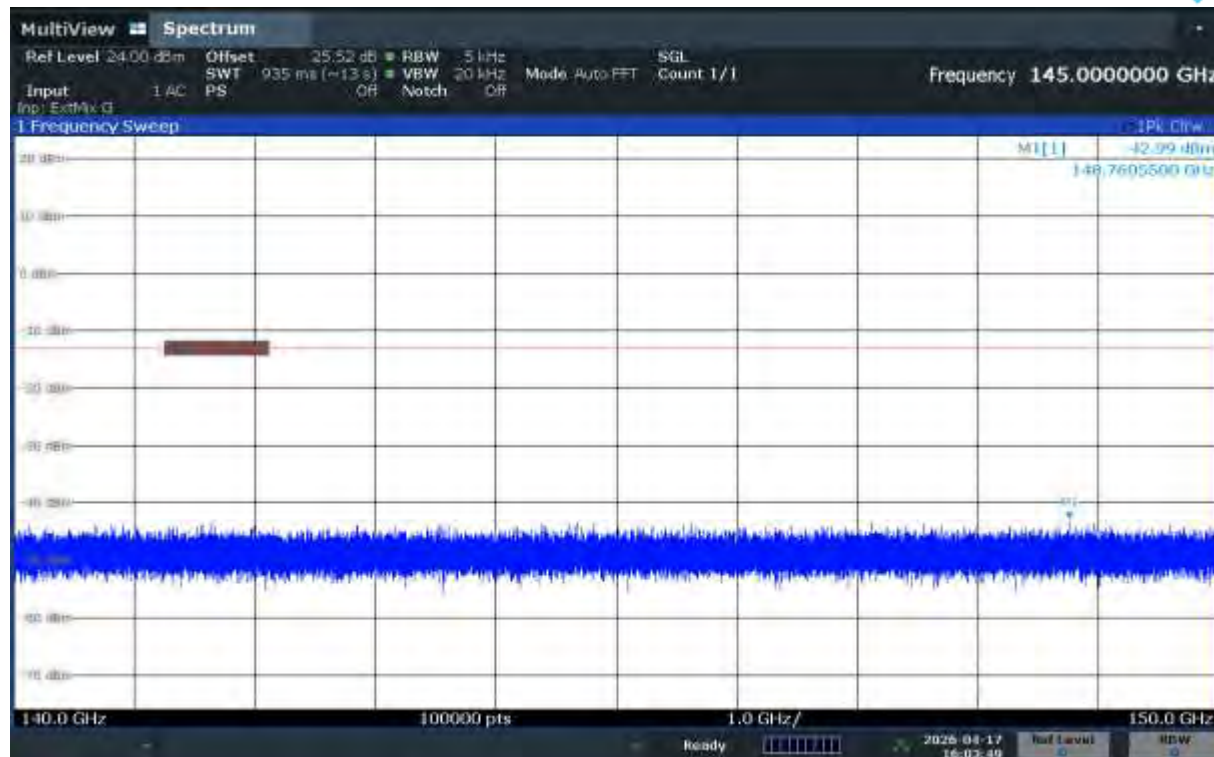


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:48:05

Conducted Out-of-Band Emissions 140 - 150 GHz



Date: 17.APR.2026 16:03:50

### 8.5.1.21. BPSK 650KHz Low Band High Channel

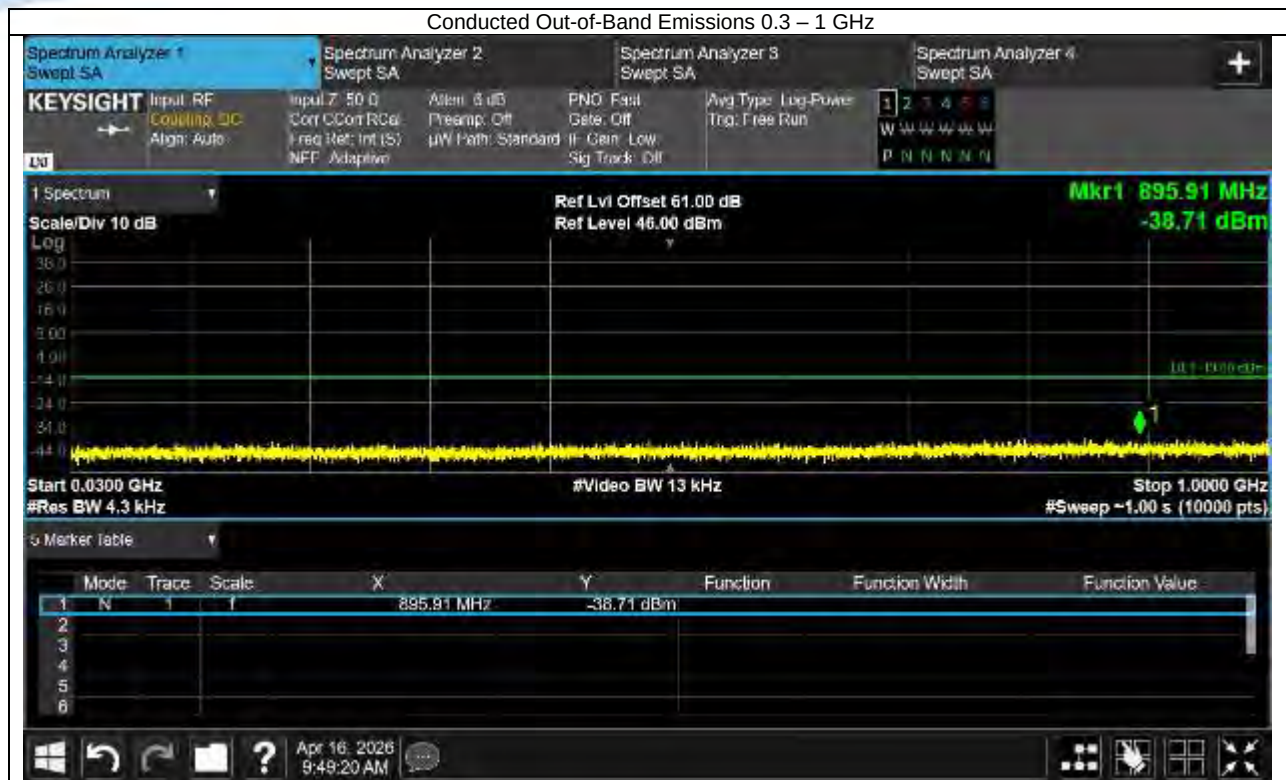
#### Equipment Configuration for Transmitter Conducted Emission (Out-of-Band)

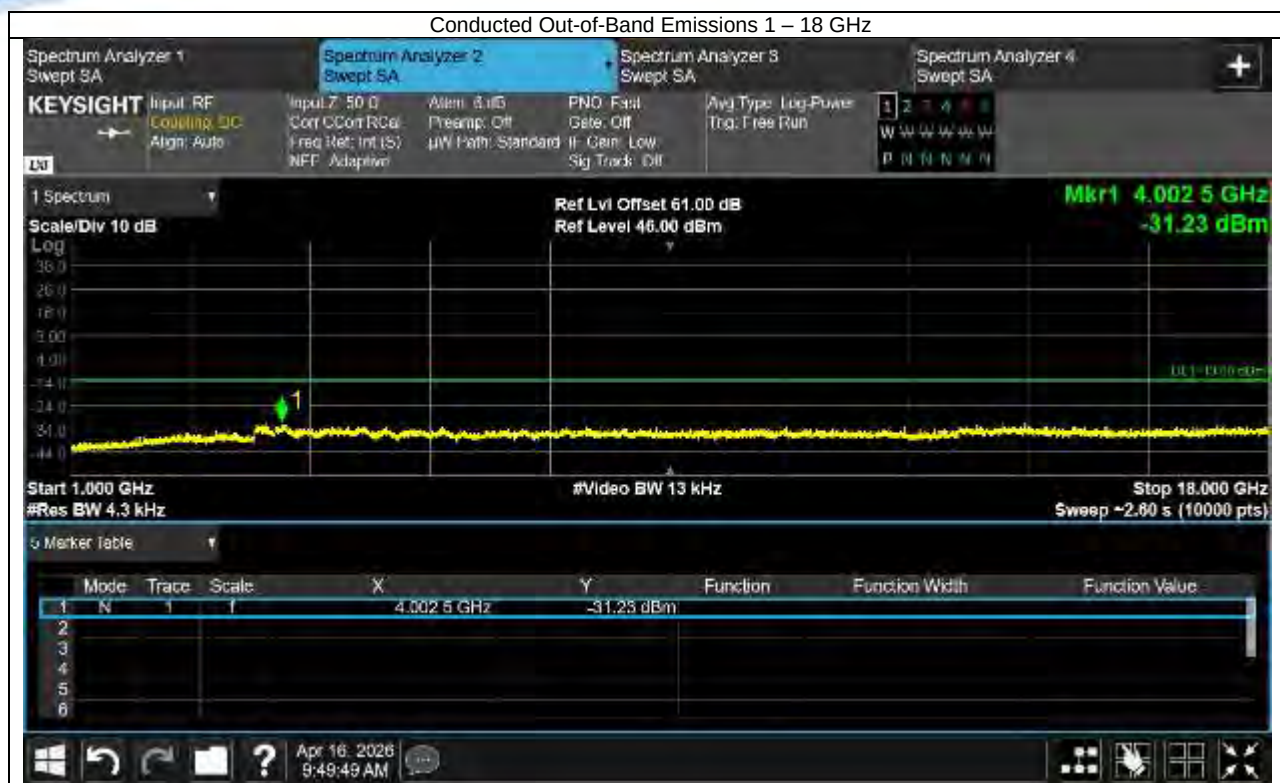
|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

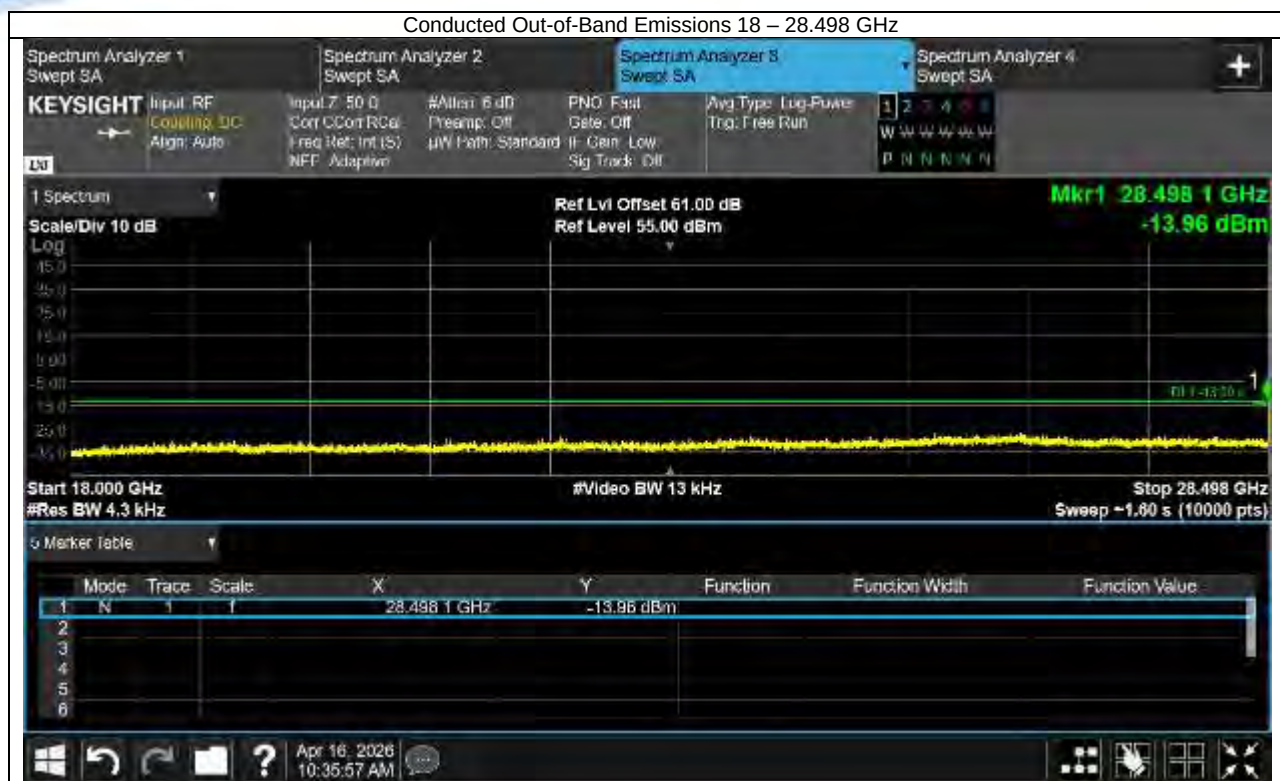
#### Test Measurement Results

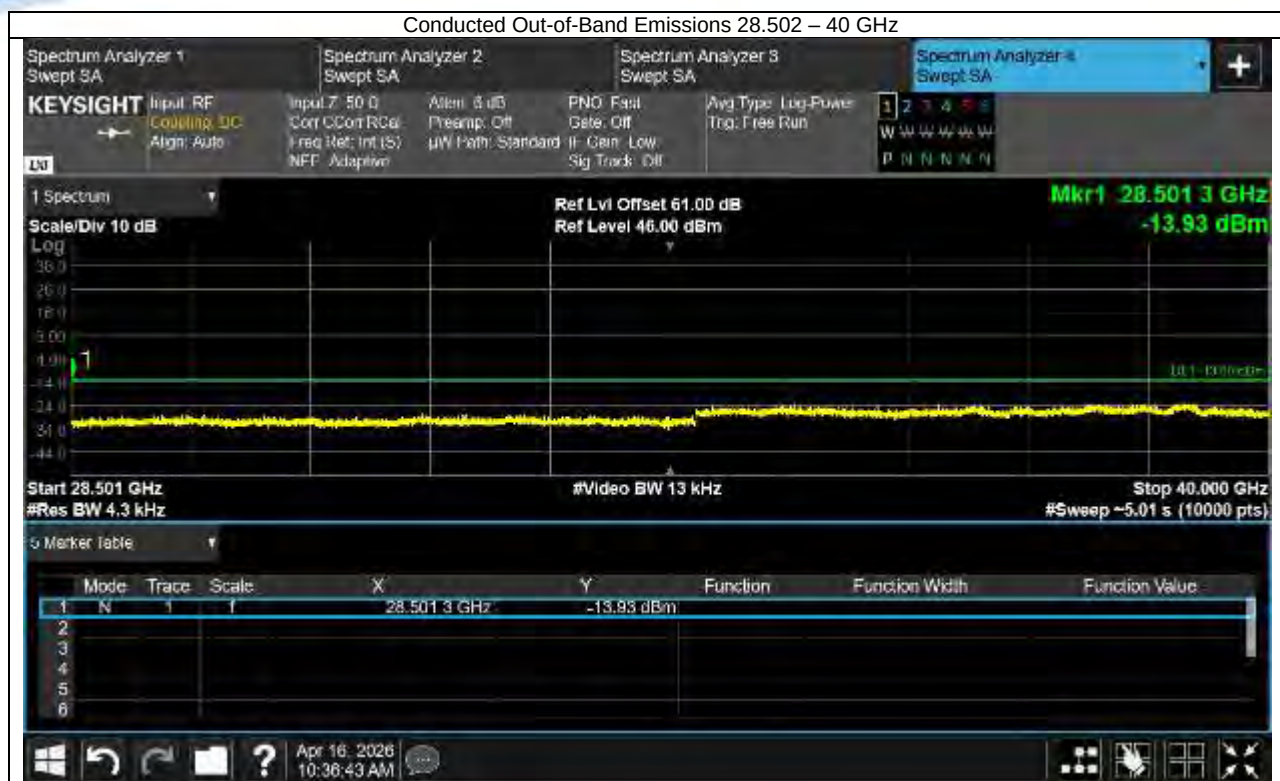
| Temperature: 20 °C            | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm) | Limit (dBm) | Margin (dB) | Compliant |
|-------------------------------|-----------------|----------------------|-----------------------|-------------|-------------|-----------|
| Voltage: 115 Vac, 60 Hz       |                 |                      |                       |             |             |           |
| Test Frequency: 28499.676 MHz |                 |                      |                       |             |             |           |
| 30MHz-1GHz                    | 895.91          | -38.71               | --                    | -13         | -25.71      | Complies  |
| 1-18GHz                       | 4002.50         | -31.23               | --                    | -13         | -18.23      | Complies  |
| 18-28.498GHz                  | 28498.10        | -13.96               | --                    | -13         | -0.96       | Complies  |
| 28.502-40GHz                  | 28501.30        | -13.93               | --                    | -13         | -0.93       | Complies  |
| 40-50GHz                      | 49605.00        | -50.01               | --                    | -13         | -37.01      | Complies  |
| 50-75 GHz                     | 64044.00        | -50.59               | -44.00                | -13         | -31.00      | Complies  |
| 75-110GHz                     | 85498.80        | -52.51               | --                    | -13         | -39.51      | Complies  |
| 110-140GHz                    | 137221.55       | -33.37               | -20.16                | -13         | -7.16       | Complies  |
| 140-150GHz                    | 149033.95       | -42.84               | --                    | -13         | -29.84      | Complies  |

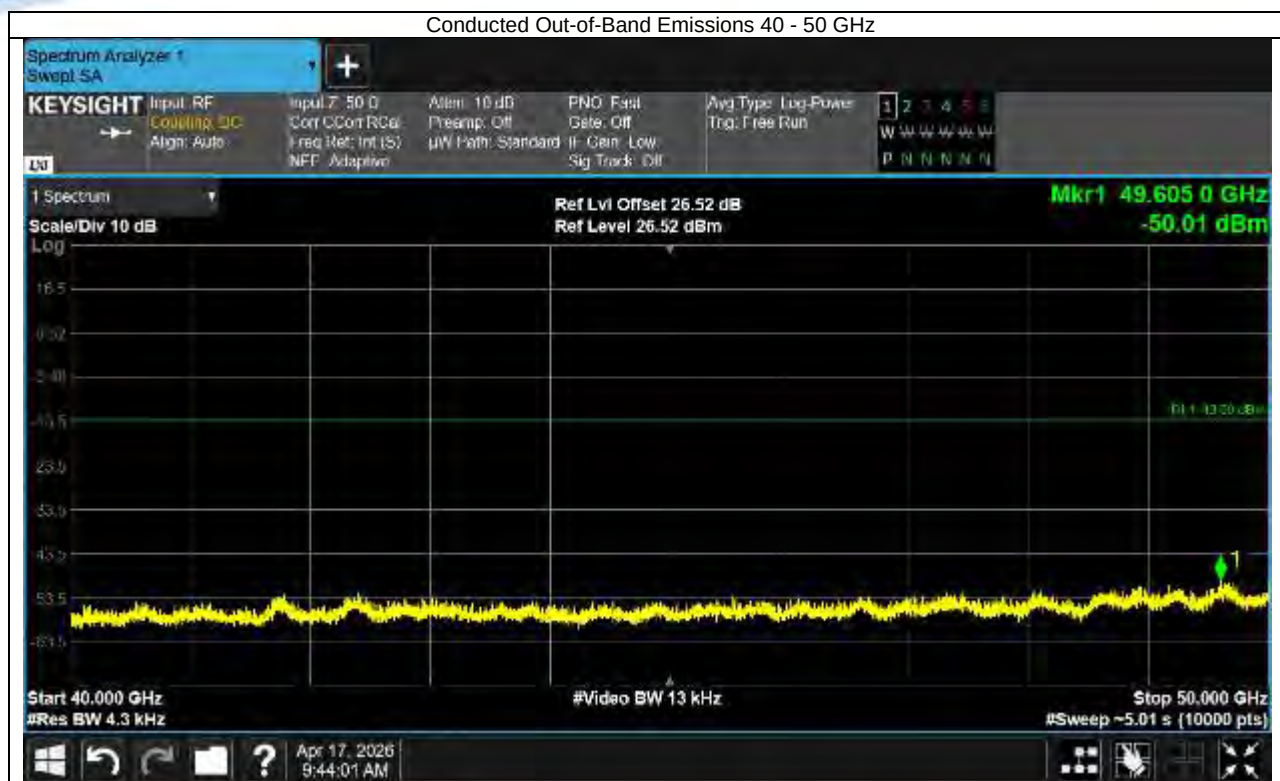
| Traceability to Industry Recognized Test Methodologies |                                         |
|--------------------------------------------------------|-----------------------------------------|
| Work Instruction:                                      | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS |
| Measurement Uncertainty:                               | <=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB     |

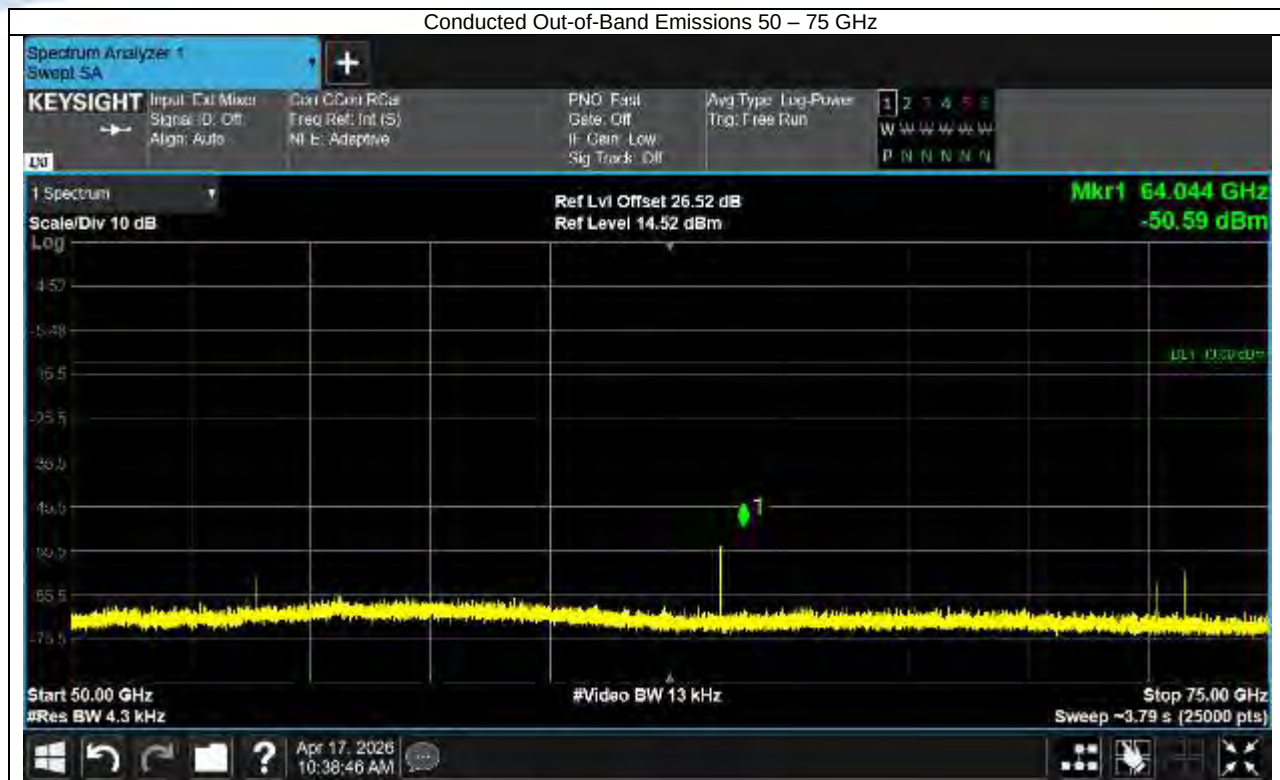


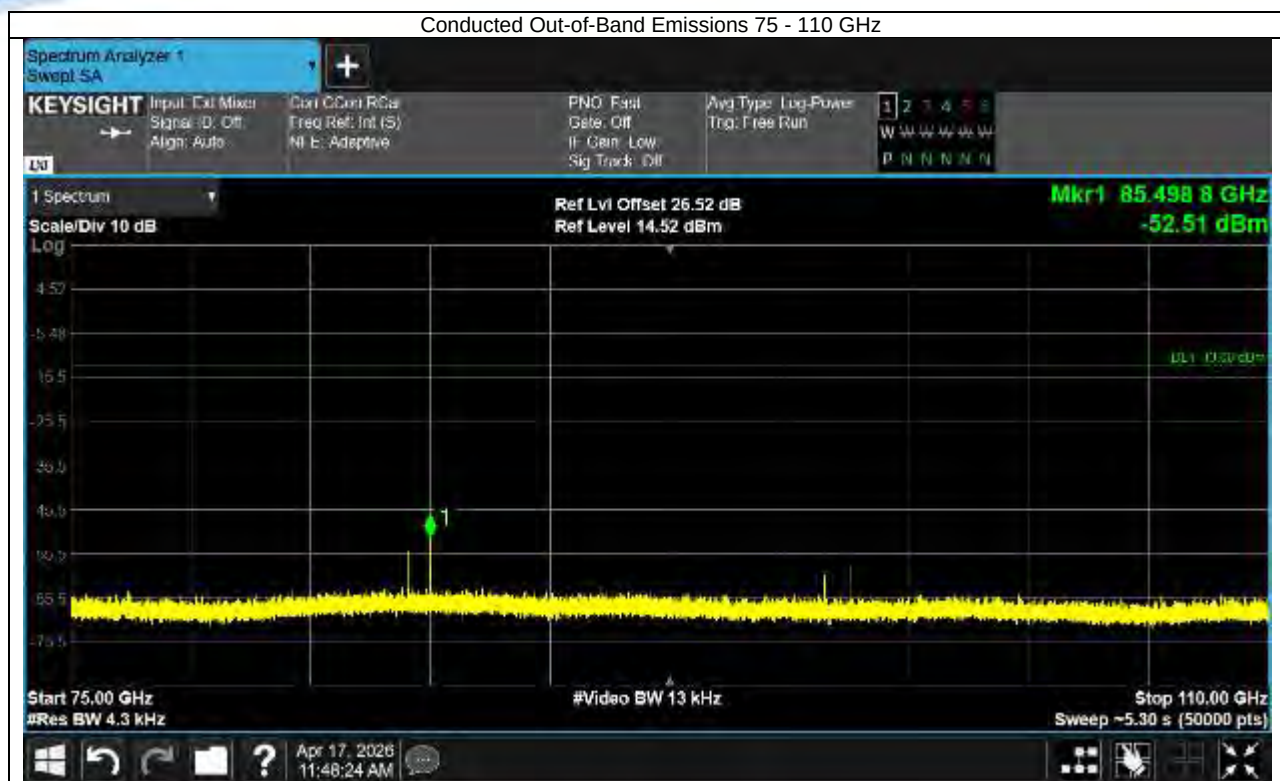




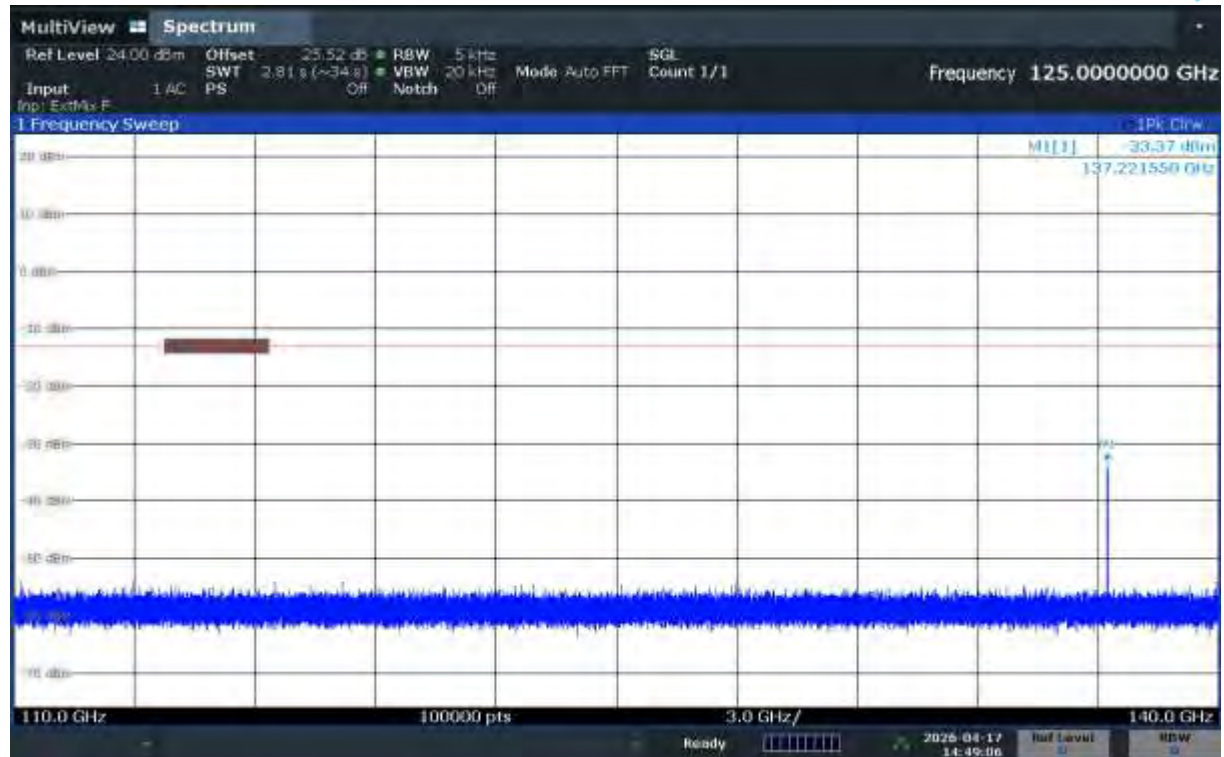






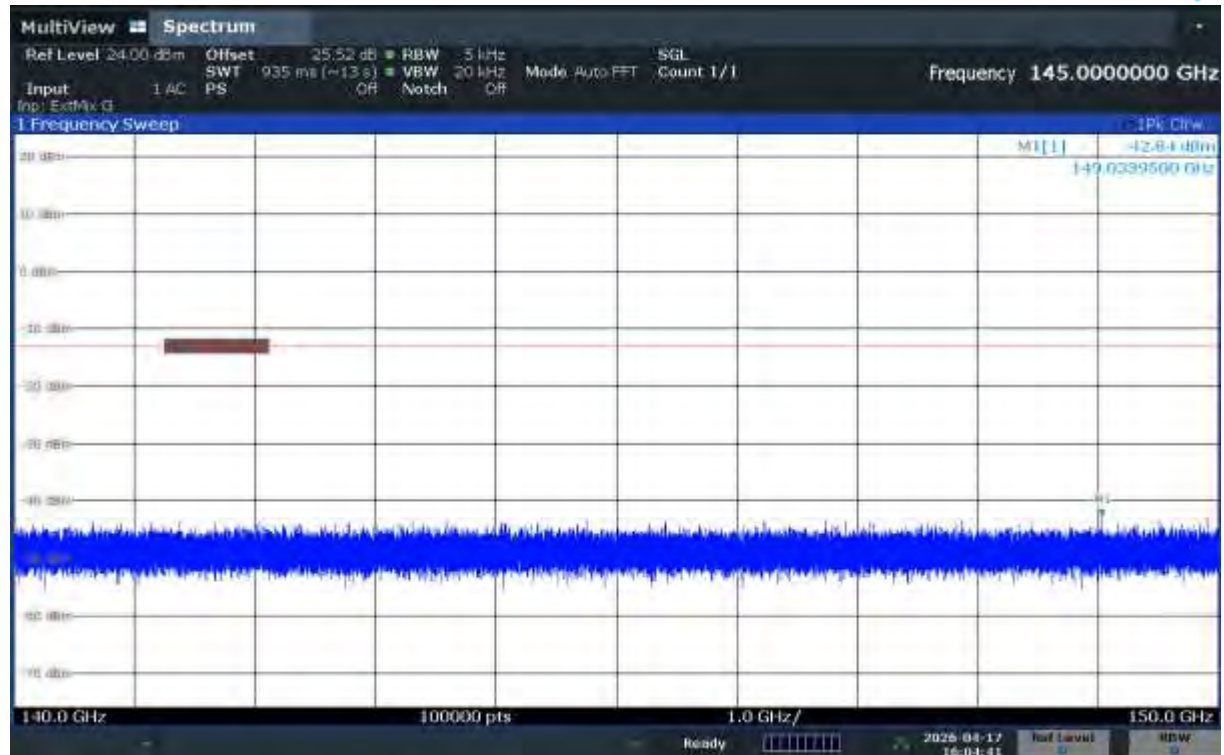


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:49:06

Conducted Out-of-Band Emissions 140 - 150 GHz



Date: 17.APR.2026 16:04:42

### 8.5.1.22. BPSK 650KHz Mid Band Low Channel

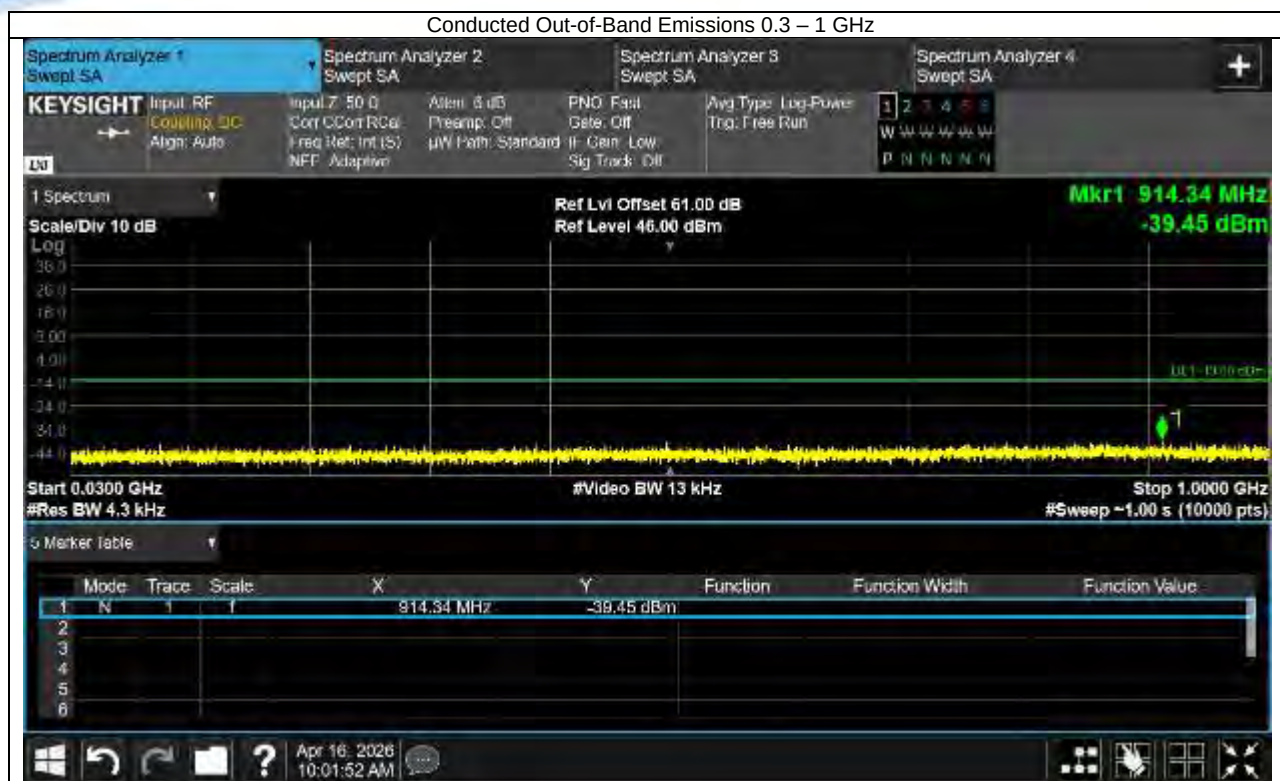
#### Equipment Configuration for Transmitter Conducted Emission (Out-of-Band)

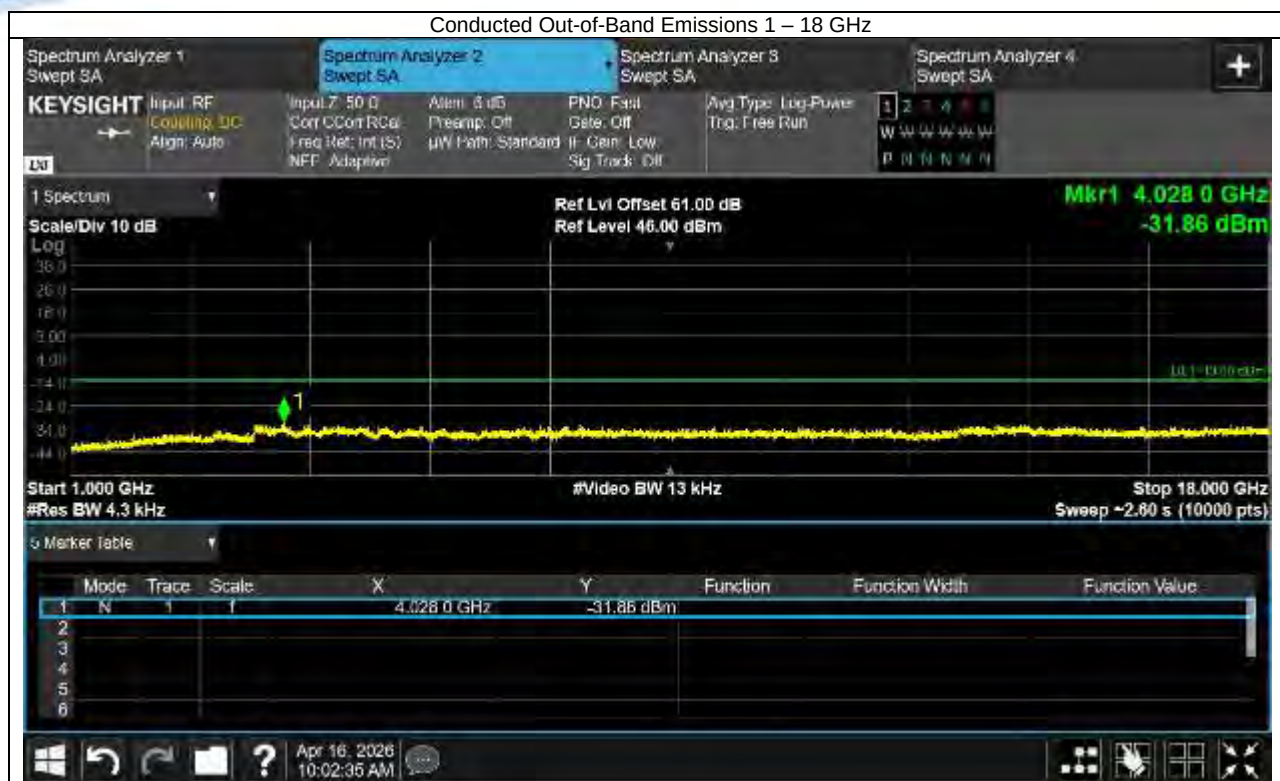
|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

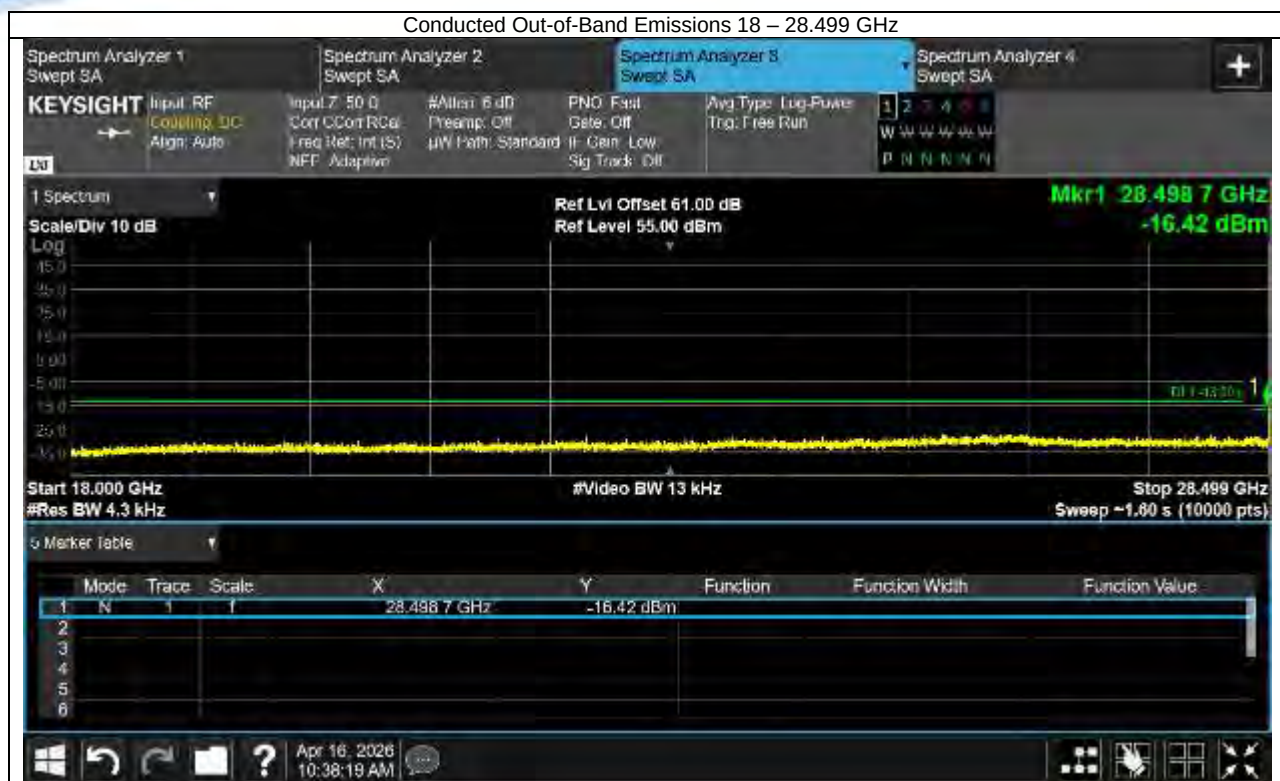
#### Test Measurement Results

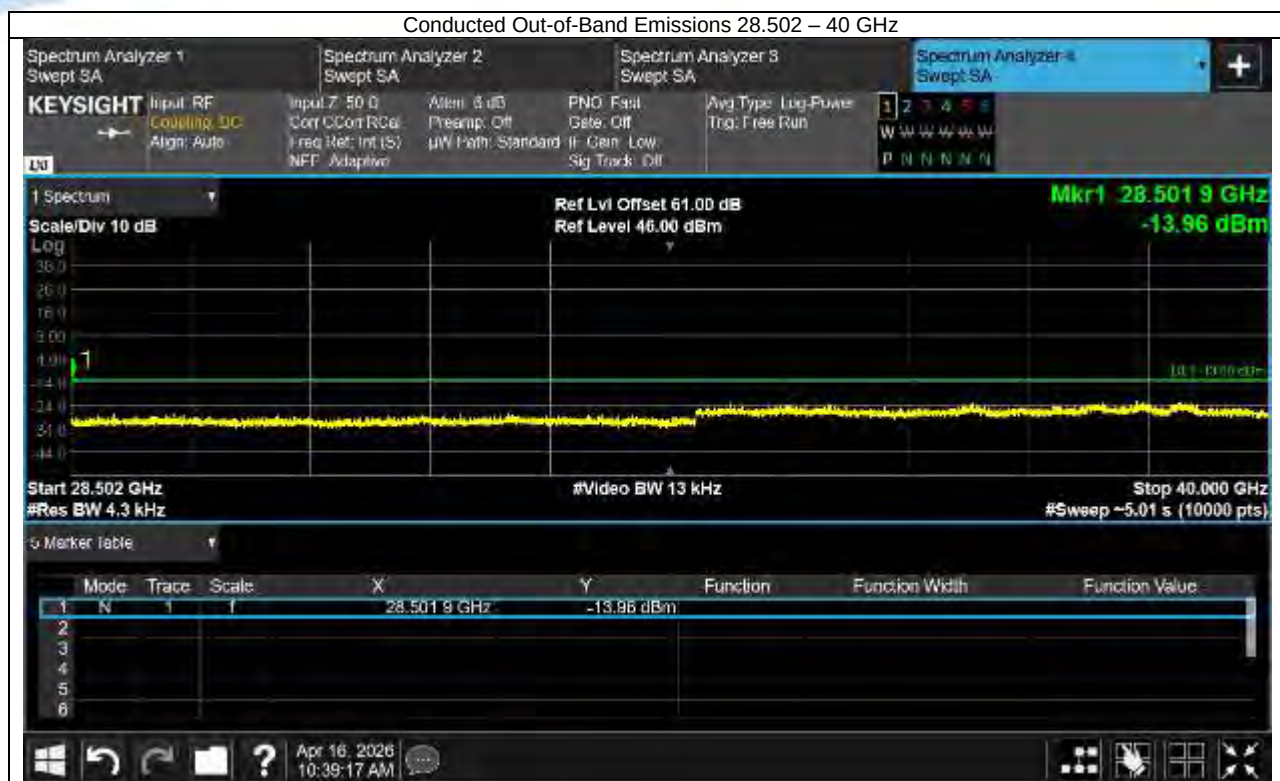
| Temperature: 20 °C            | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm) | Limit (dBm) | Margin (dB) | Compliant |
|-------------------------------|-----------------|----------------------|-----------------------|-------------|-------------|-----------|
| Voltage: 115 Vac, 60 Hz       |                 |                      |                       |             |             |           |
| Test Frequency: 28500.324 MHz |                 |                      |                       |             |             |           |
| 30MHz-1GHz                    | 914.34          | -39.45               | --                    | -13         | -26.45      | Complies  |
| 1-18GHz                       | 4028.00         | -31.86               | --                    | -13         | -18.86      | Complies  |
| 18-28.499GHz                  | 28498.70        | -16.42               | --                    | -13         | -3.42       | Complies  |
| 28.502-40GHz                  | 28501.90        | -13.96               | --                    | -13         | -0.96       | Complies  |
| 40-50GHz                      | 49636.00        | -49.92               | --                    | -13         | -36.92      | Complies  |
| 50-75 GHz                     | 64046.00        | -48.88               | -42.29                | -13         | -29.29      | Complies  |
| 75-110GHz                     | 85500.90        | -48.64               | --                    | -13         | -35.64      | Complies  |
| 110-140GHz                    | 137236.55       | -31.48               | -18.27                | -13         | -5.27       | Complies  |
| 140-150GHz                    | 146276.05       | -42.49               | --                    | -13         | -29.49      | Complies  |

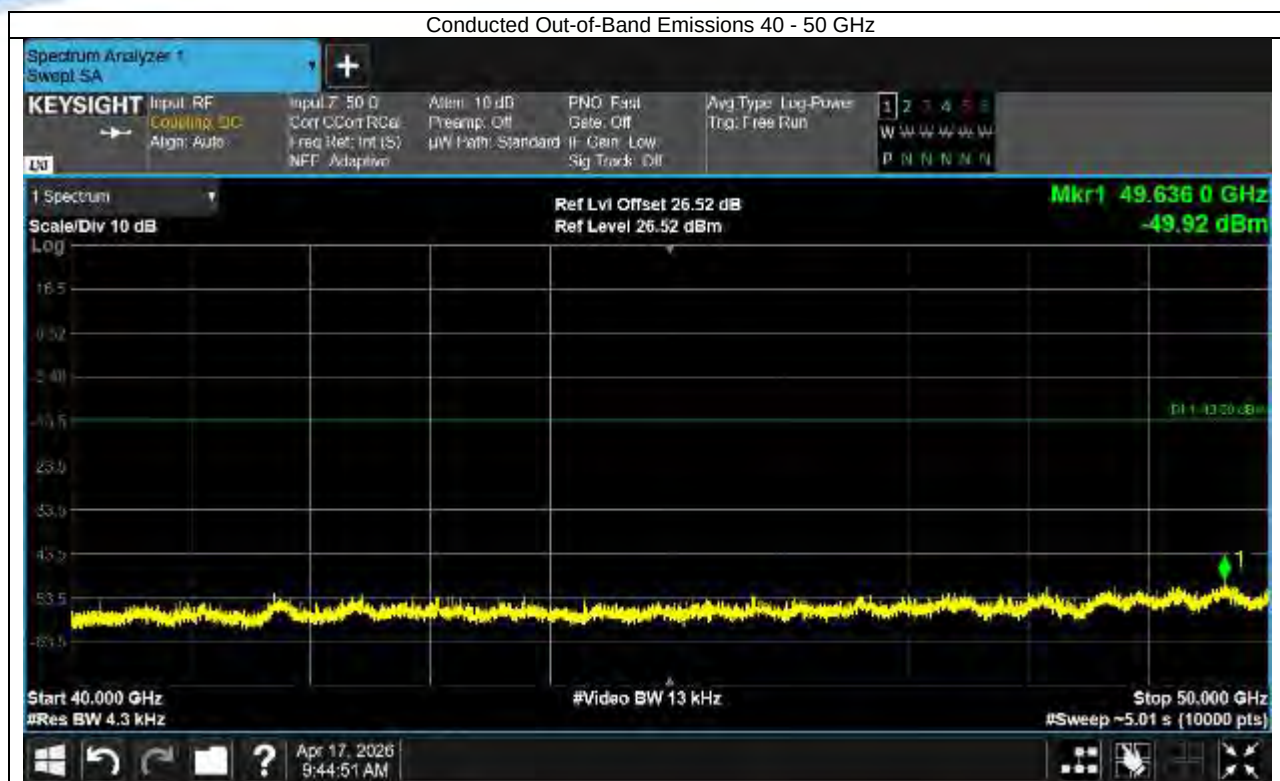
| Traceability to Industry Recognized Test Methodologies |                                         |
|--------------------------------------------------------|-----------------------------------------|
| Work Instruction:                                      | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS |
| Measurement Uncertainty:                               | <=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB     |

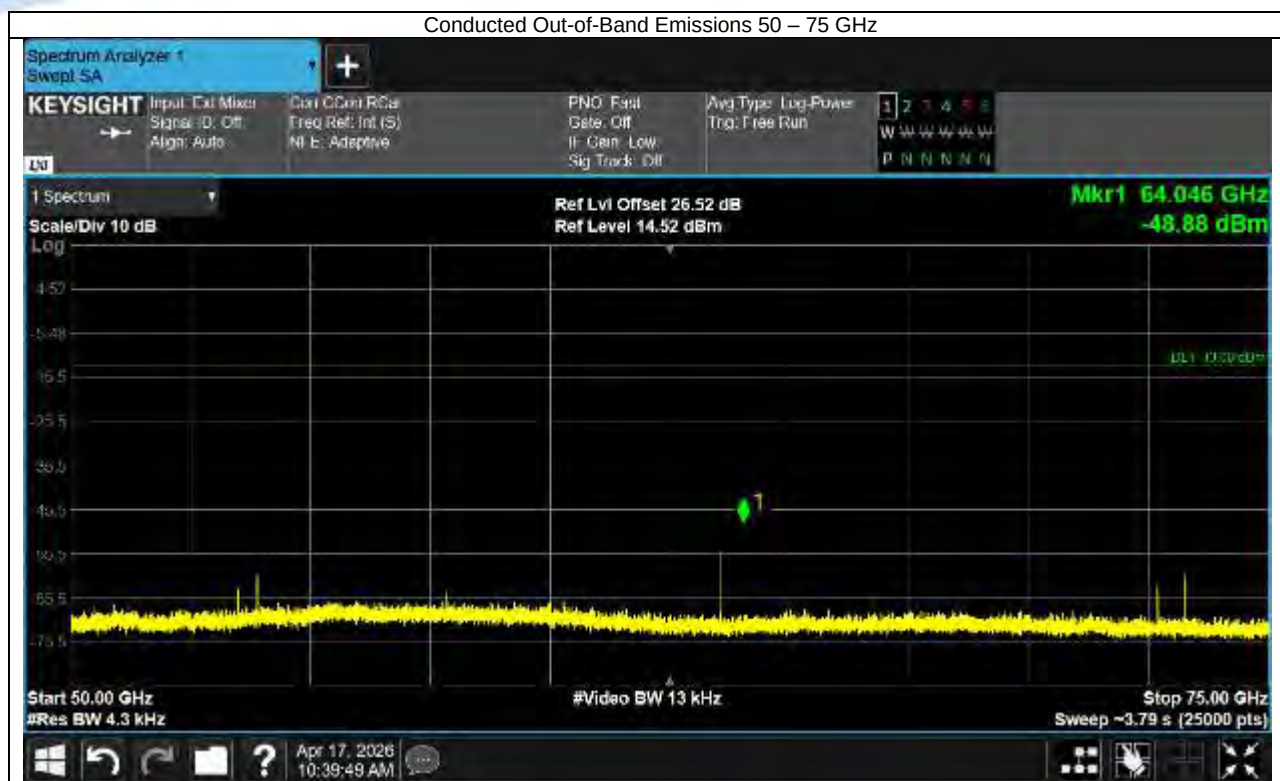


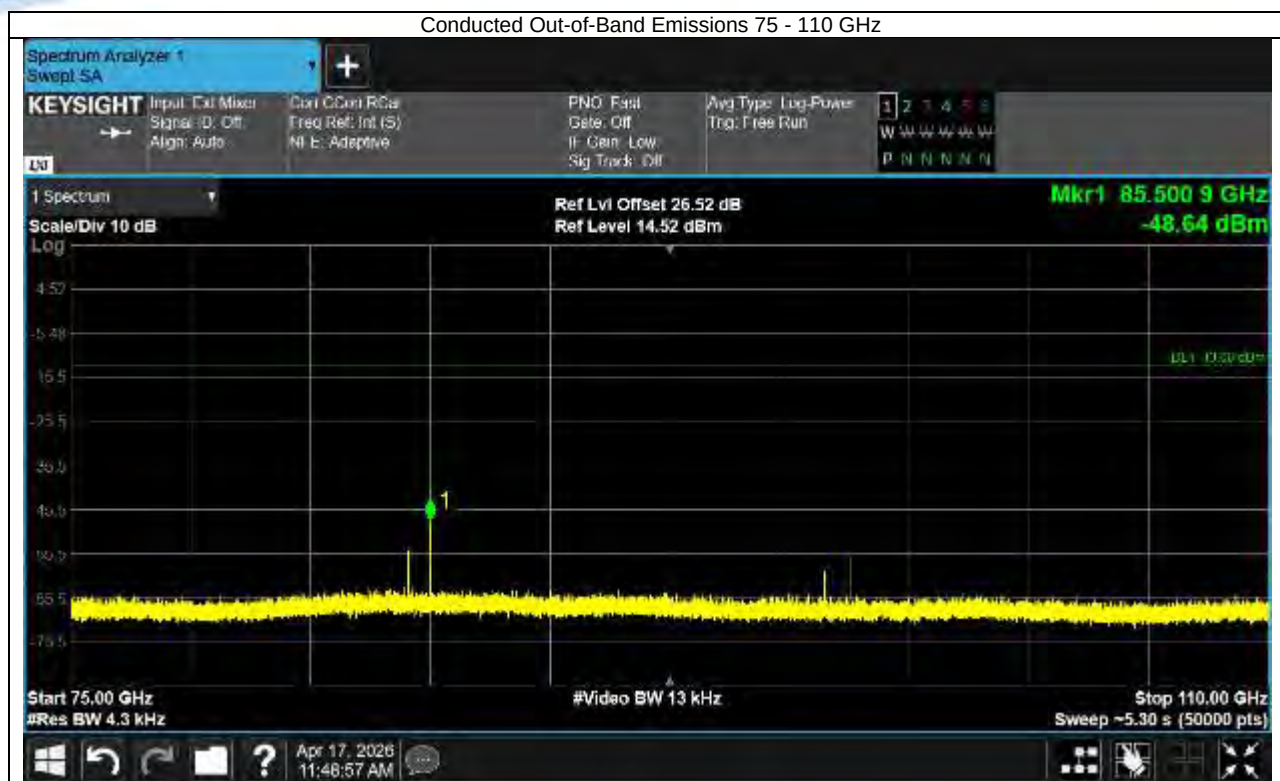




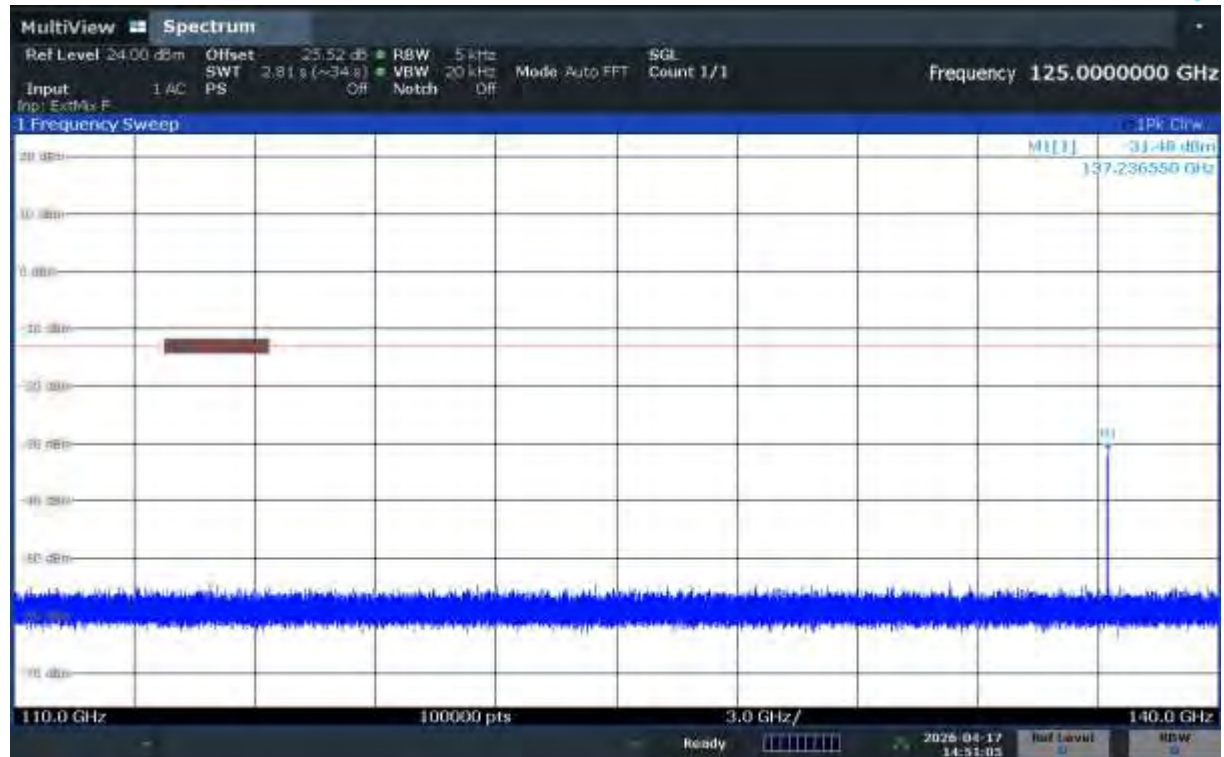






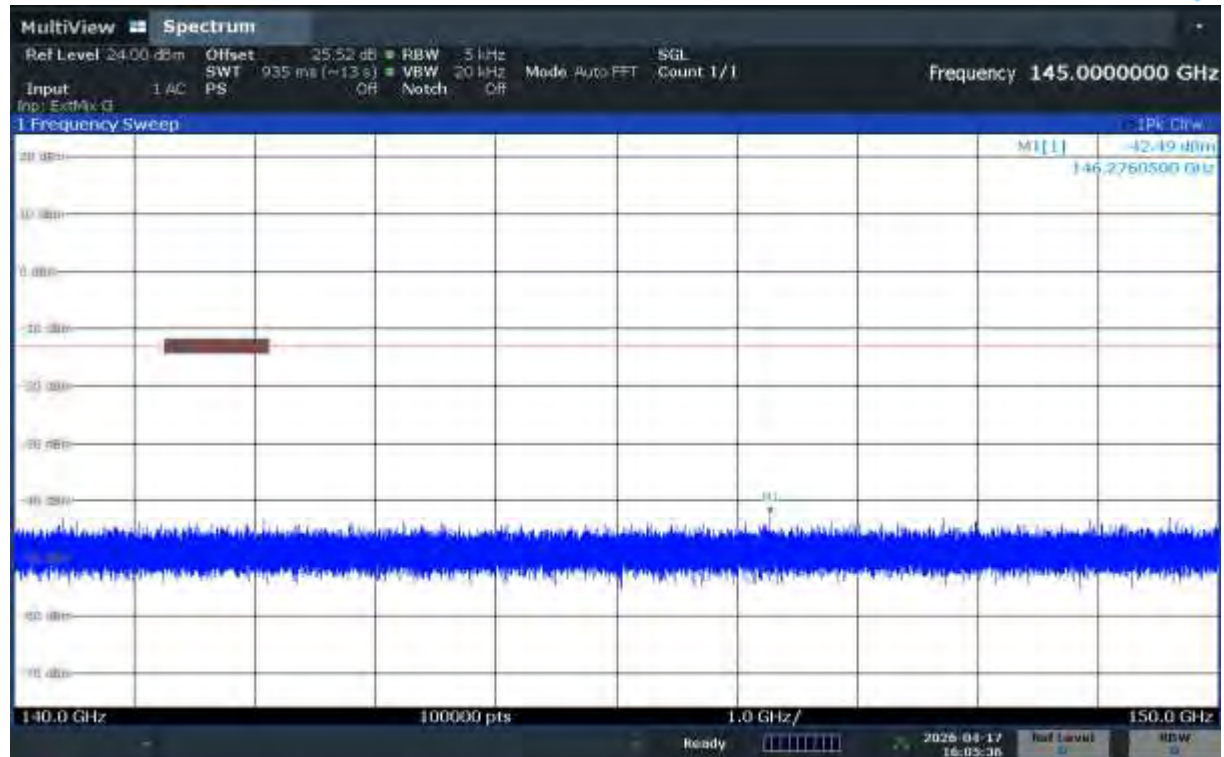


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:51:05

Conducted Out-of-Band Emissions 140 - 150 GHz



Date: 17.APR.2026 16:05:37

### 8.5.1.23. BPSK 650KHz Mid Band Mid Channel

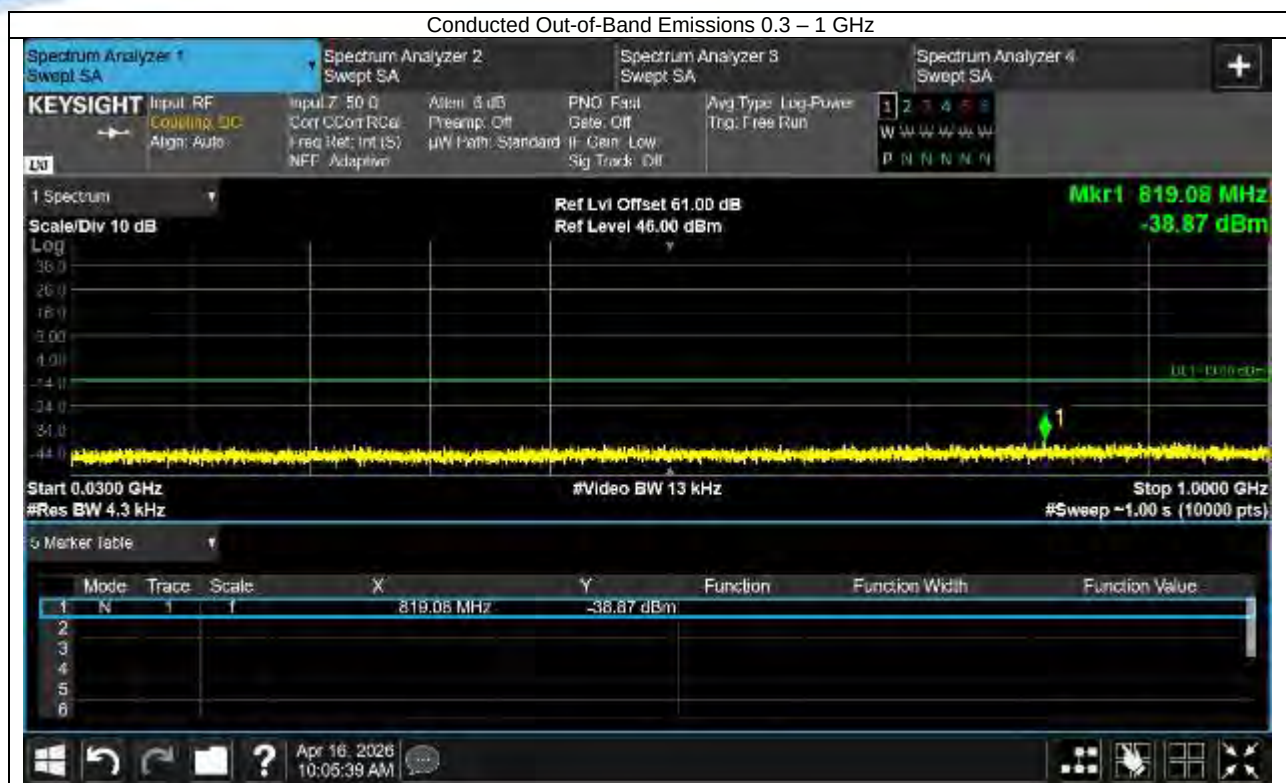
#### Equipment Configuration for Transmitter Conducted Emission (Out-of-Band)

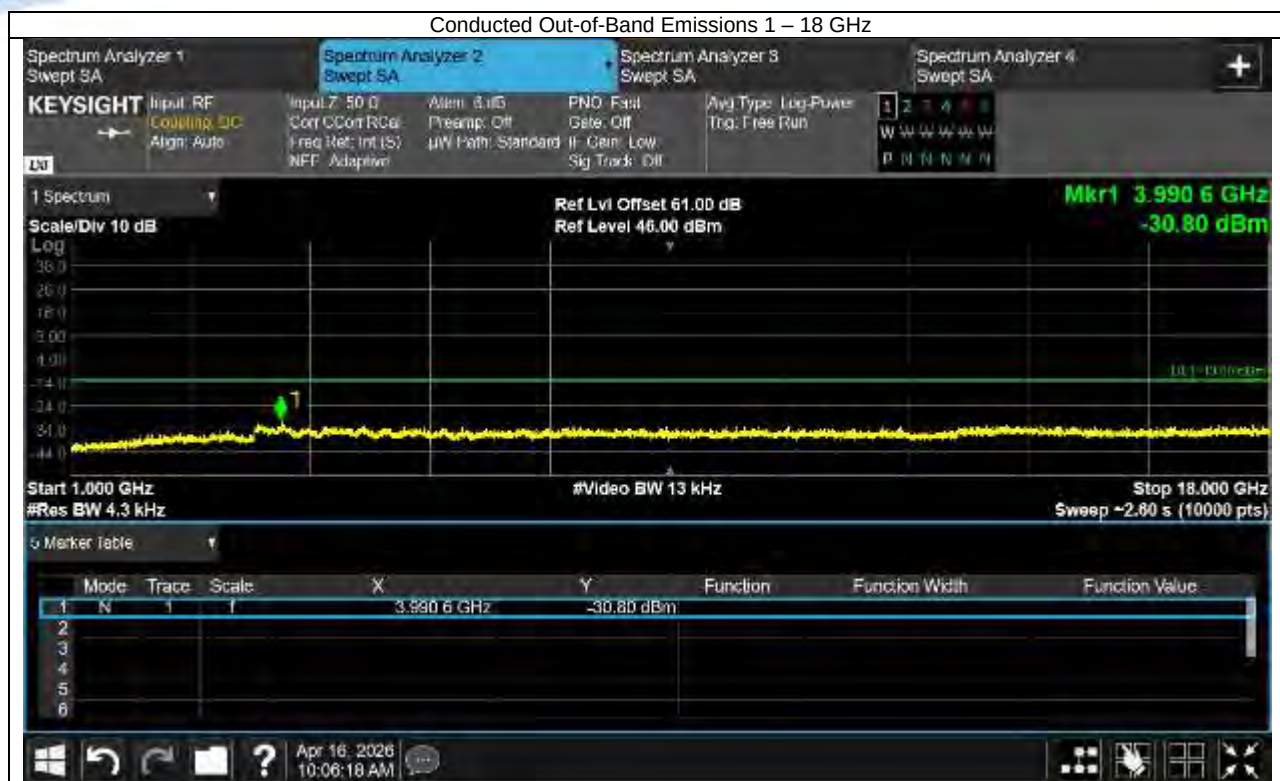
|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

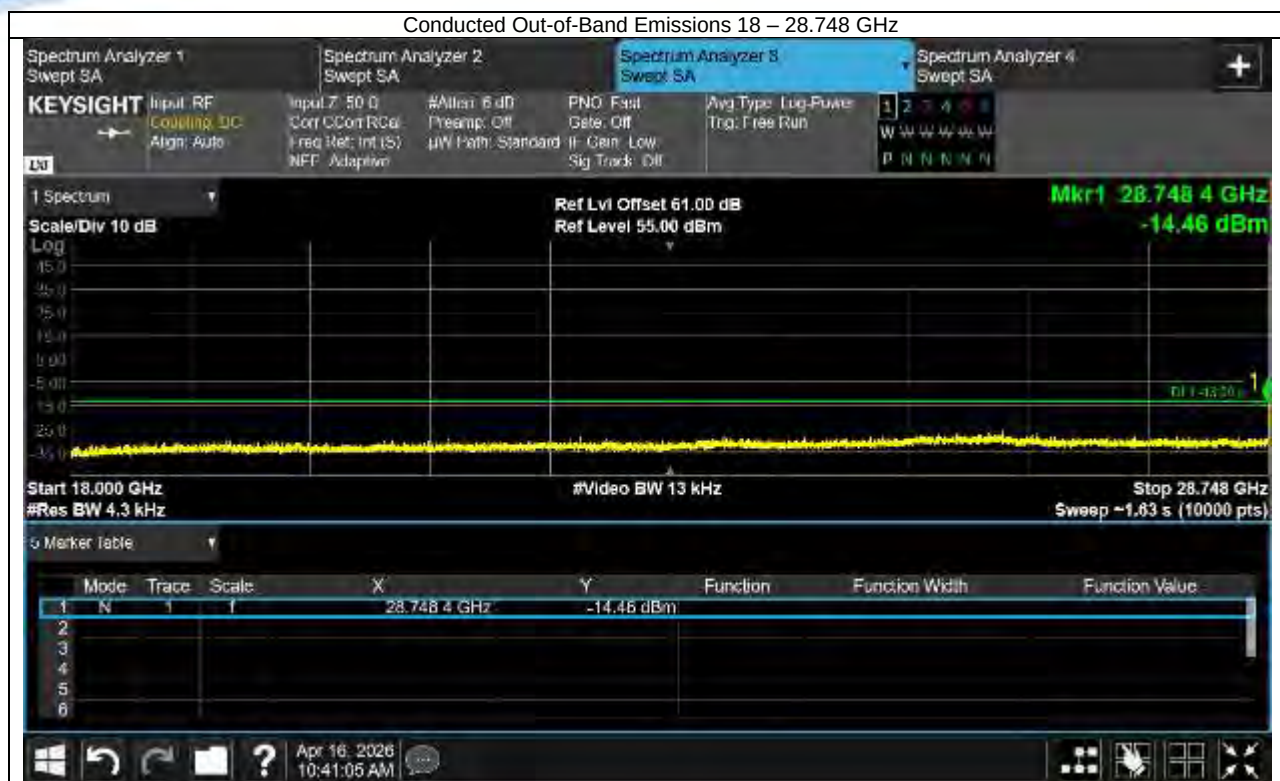
#### Test Measurement Results

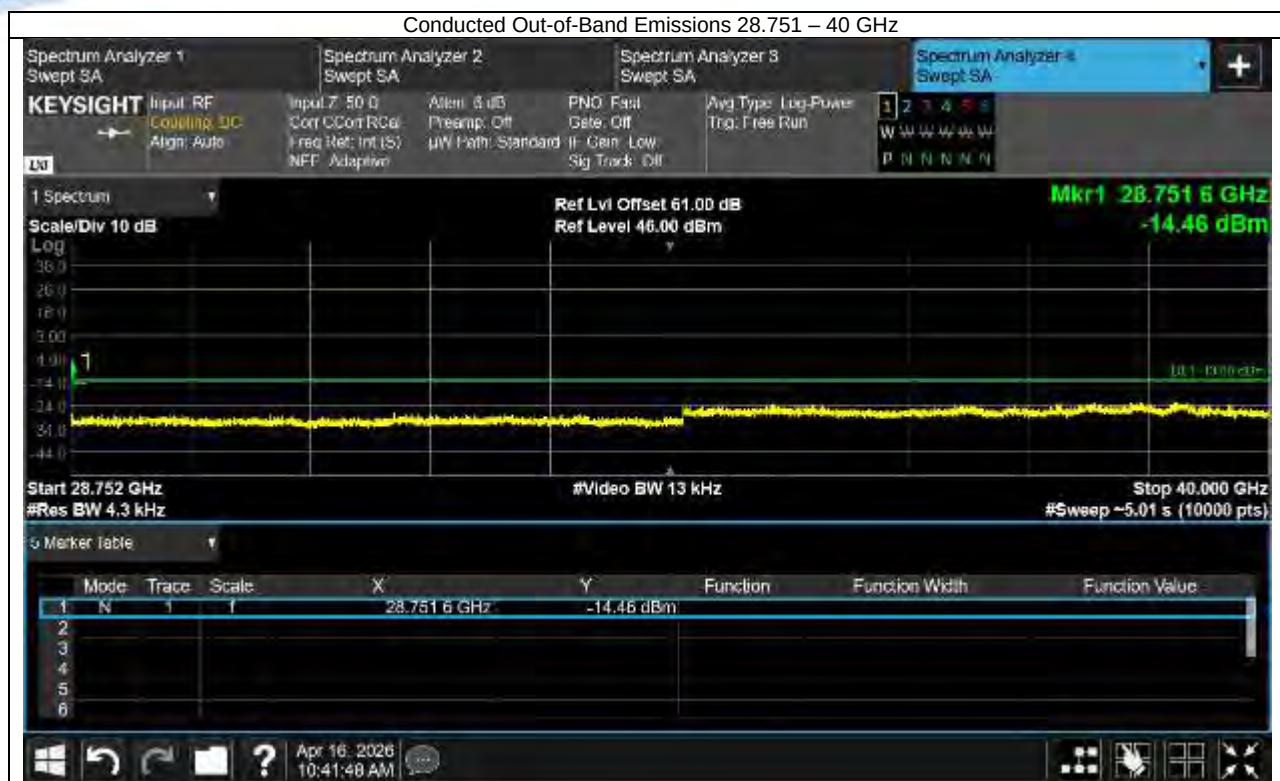
| Temperature: 20 °C           | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm) | Limit (dBm) | Margin (dB) | Compliant |
|------------------------------|-----------------|----------------------|-----------------------|-------------|-------------|-----------|
| Voltage: 115 Vac, 60 Hz      |                 |                      |                       |             |             |           |
| Test Frequency: 28750.00 MHz |                 |                      |                       |             |             |           |
| 30MHz-1GHz                   | 819.08          | -38.87               | --                    | -13         | -25.87      | Complies  |
| 1-18GHz                      | 3990.6          | -30.8                | --                    | -13         | -17.80      | Complies  |
| 18-28.748GHz                 | 28748.4         | -14.46               | --                    | -13         | -1.46       | Complies  |
| 28.751-40GHz                 | 28751.6         | -14.46               | --                    | -13         | -1.46       | Complies  |
| 40-50GHz                     | 48876.9         | -50.63               | --                    | -13         | -37.63      | Complies  |
| 50-75 GHz                    | 57500           | -48.15               | -42.50                | -13         | -29.50      | Complies  |
| 75-110GHz                    | 91935.4         | -59.84               | --                    | -13         | -46.84      | Complies  |
| 110-140GHz                   | 138474.95       | -38.23               | -24.95                | -13         | -11.95      | Complies  |
| 140-150GHz                   | 140974.5        | -42.95               | --                    | -13         | -29.95      | Complies  |

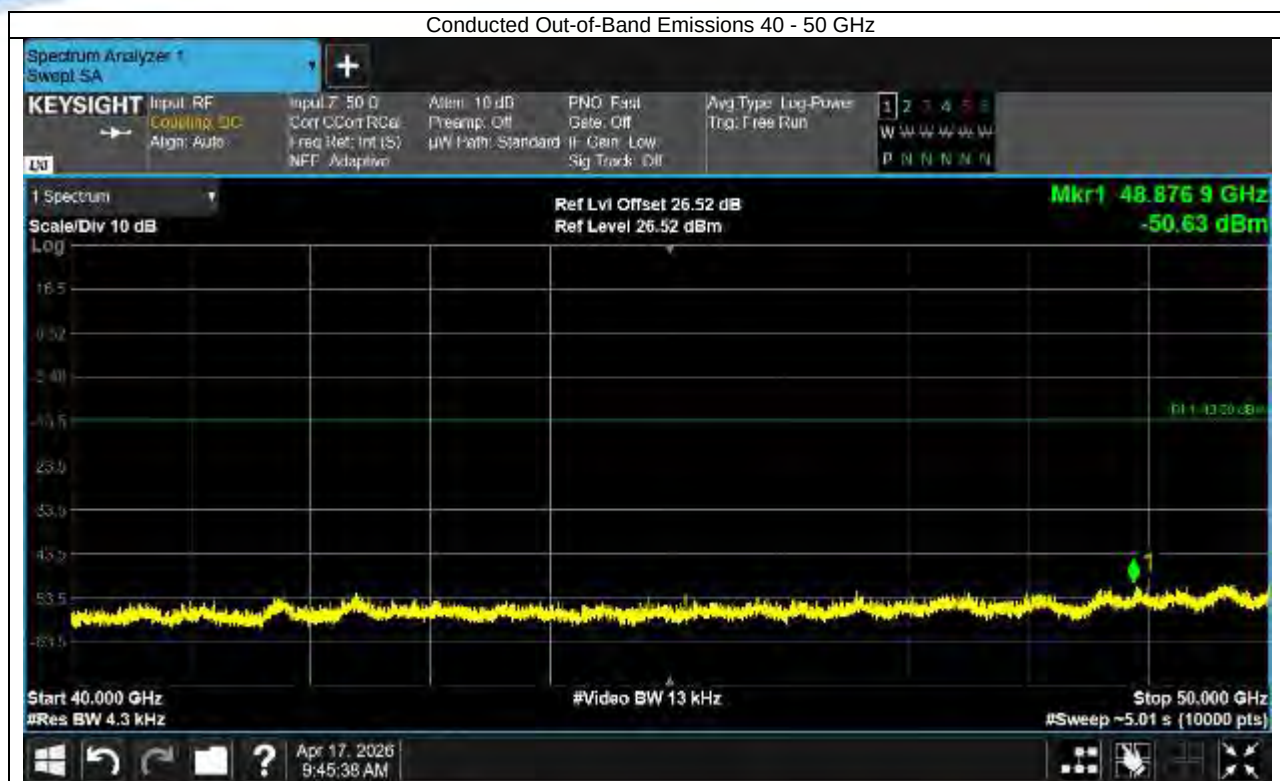
| Traceability to Industry Recognized Test Methodologies |                                         |
|--------------------------------------------------------|-----------------------------------------|
| Work Instruction:                                      | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS |
| Measurement Uncertainty:                               | <=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB     |

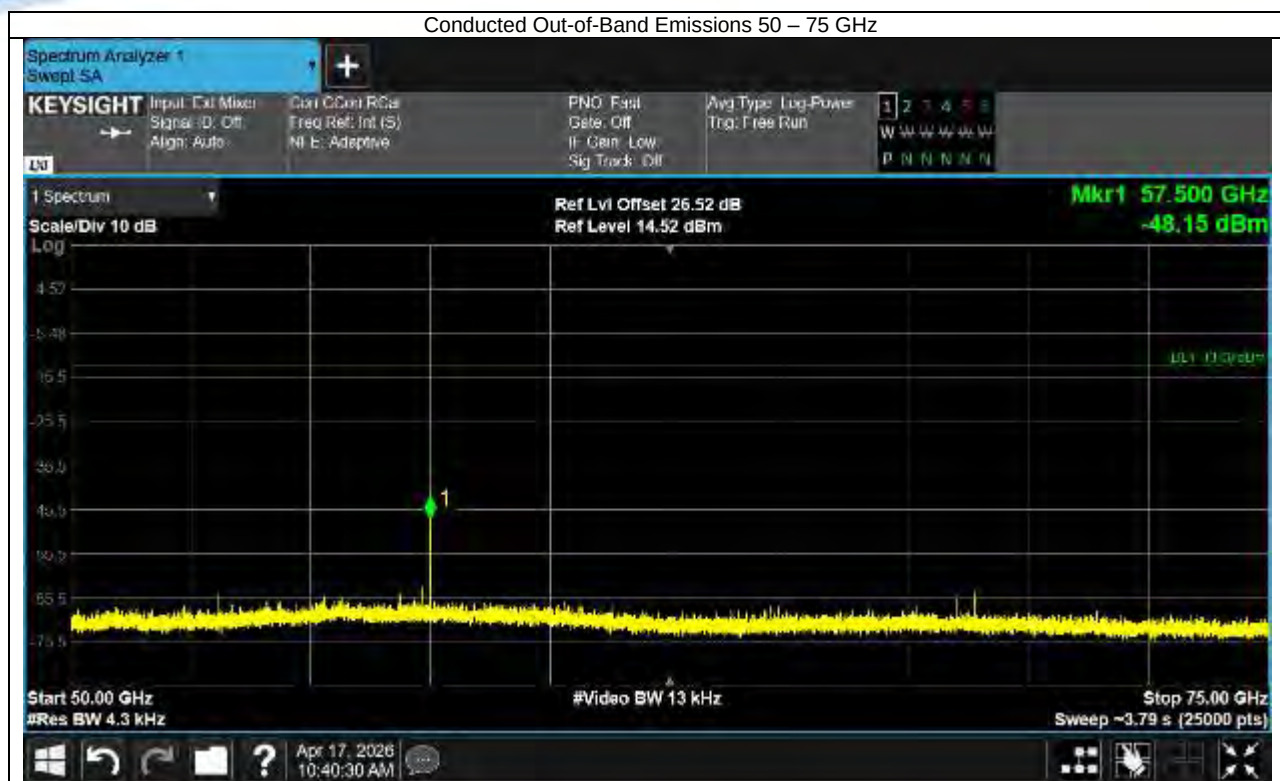


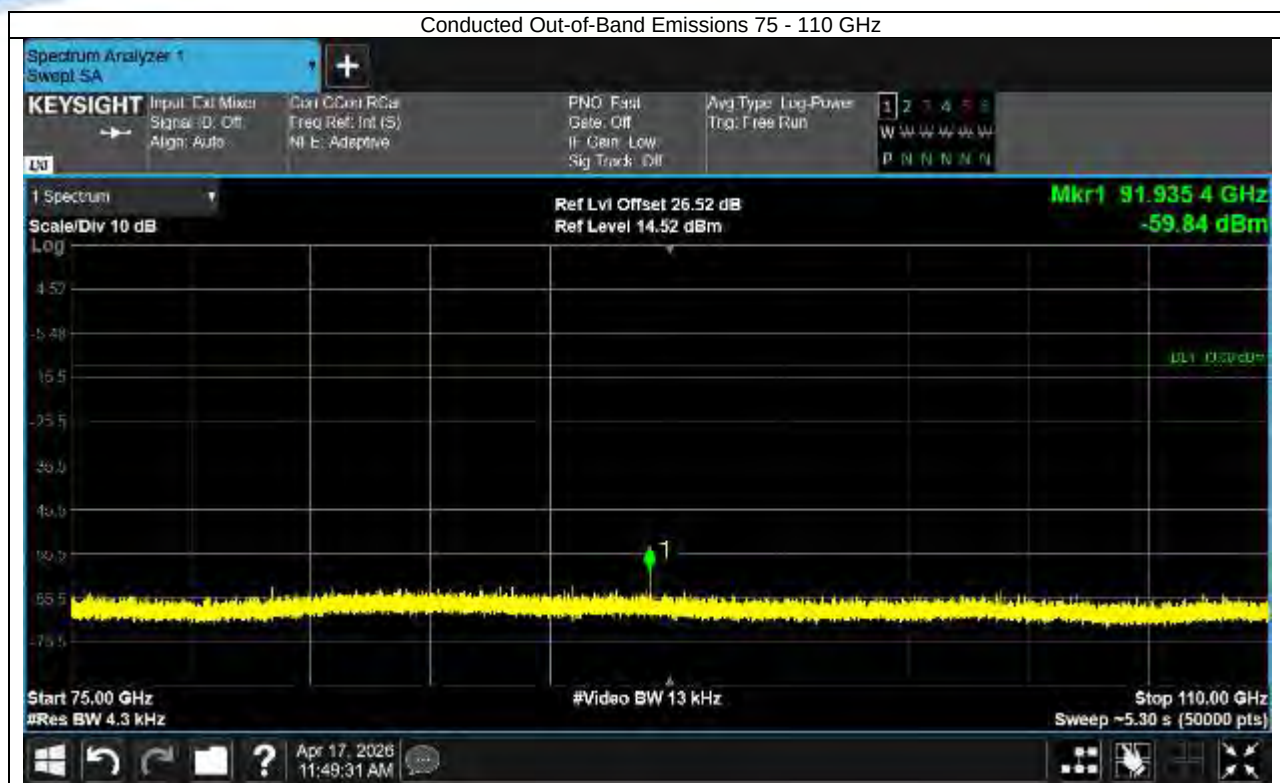




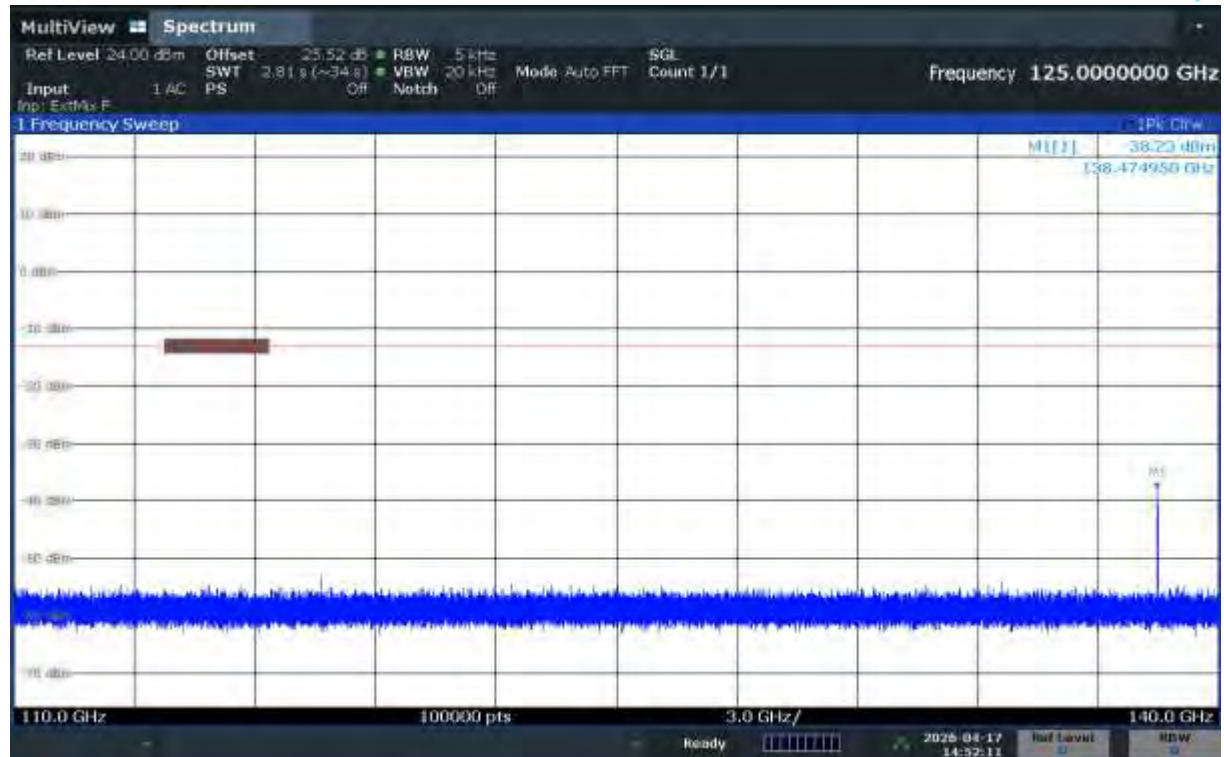






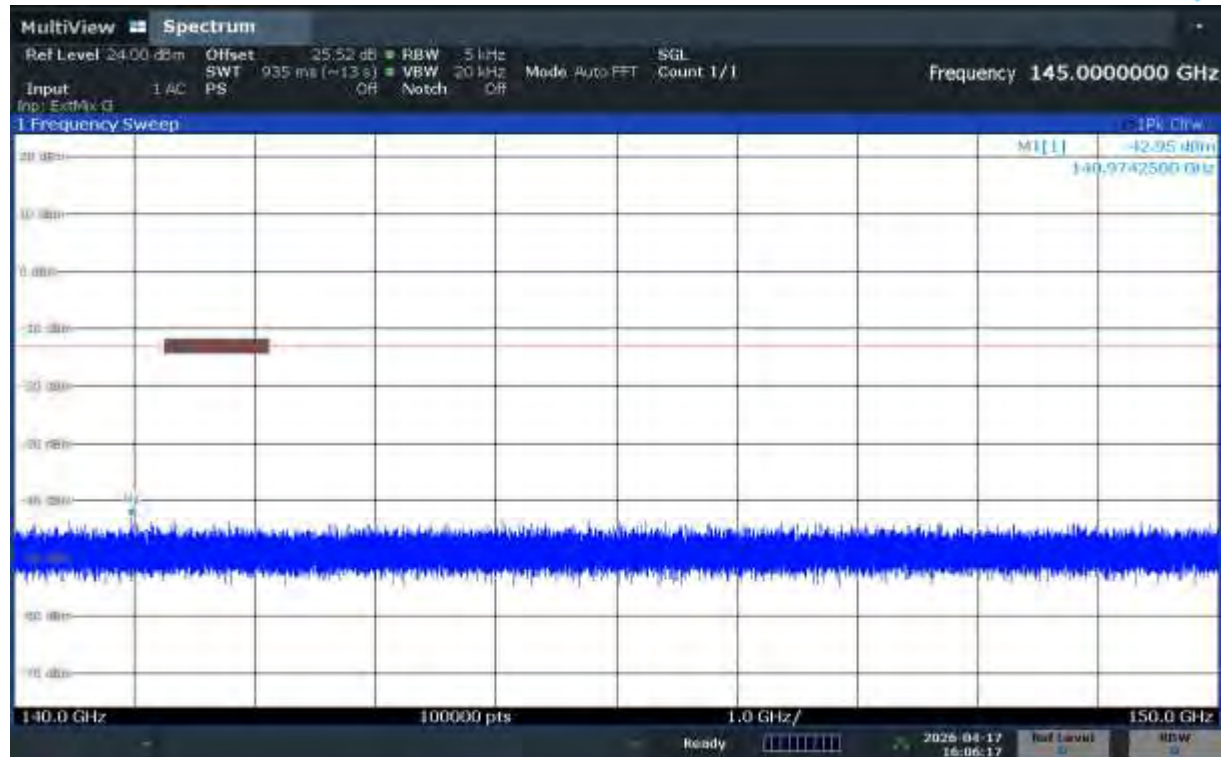


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:52:11

Conducted Out-of-Band Emissions 140 - 150 GHz



Date: 17.APR.2026 16:06:18

#### 8.5.1.24. BPSK 650KHz Mid Band High Channel

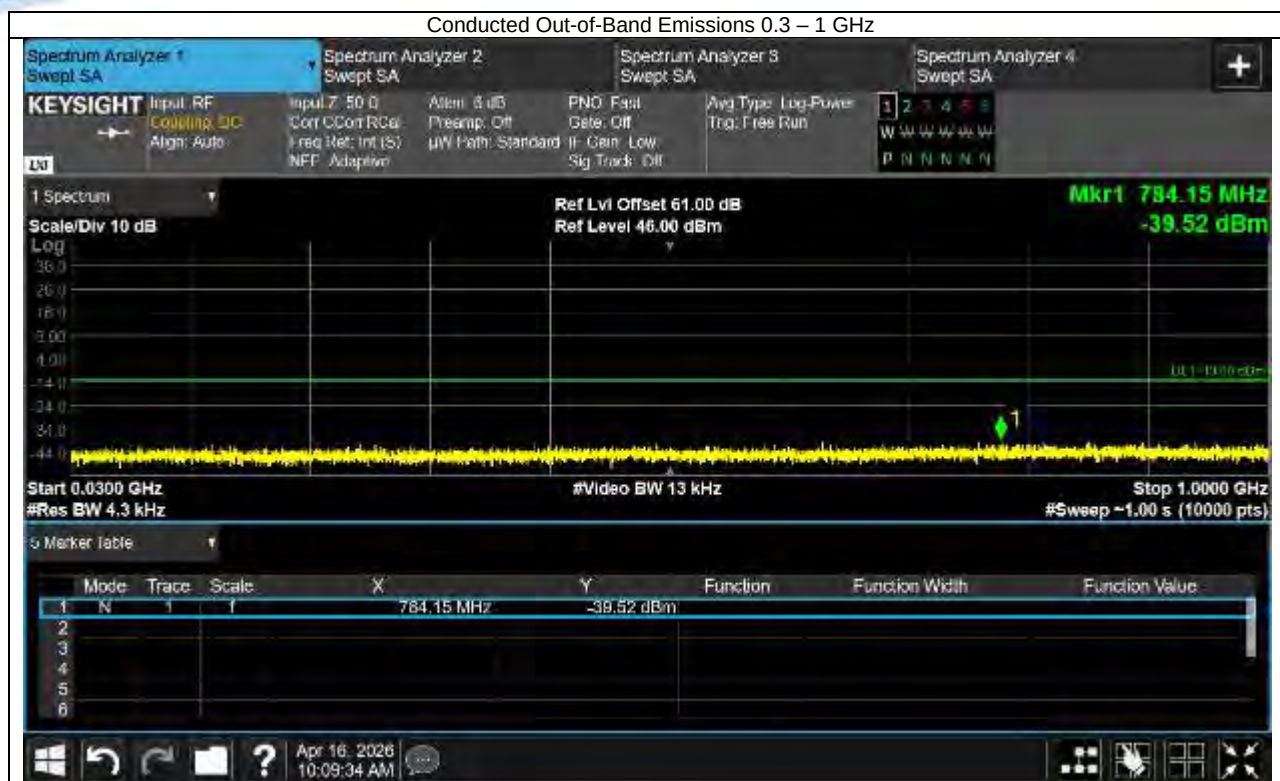
##### Equipment Configuration for Transmitter Conducted Emission (Out-of-Band)

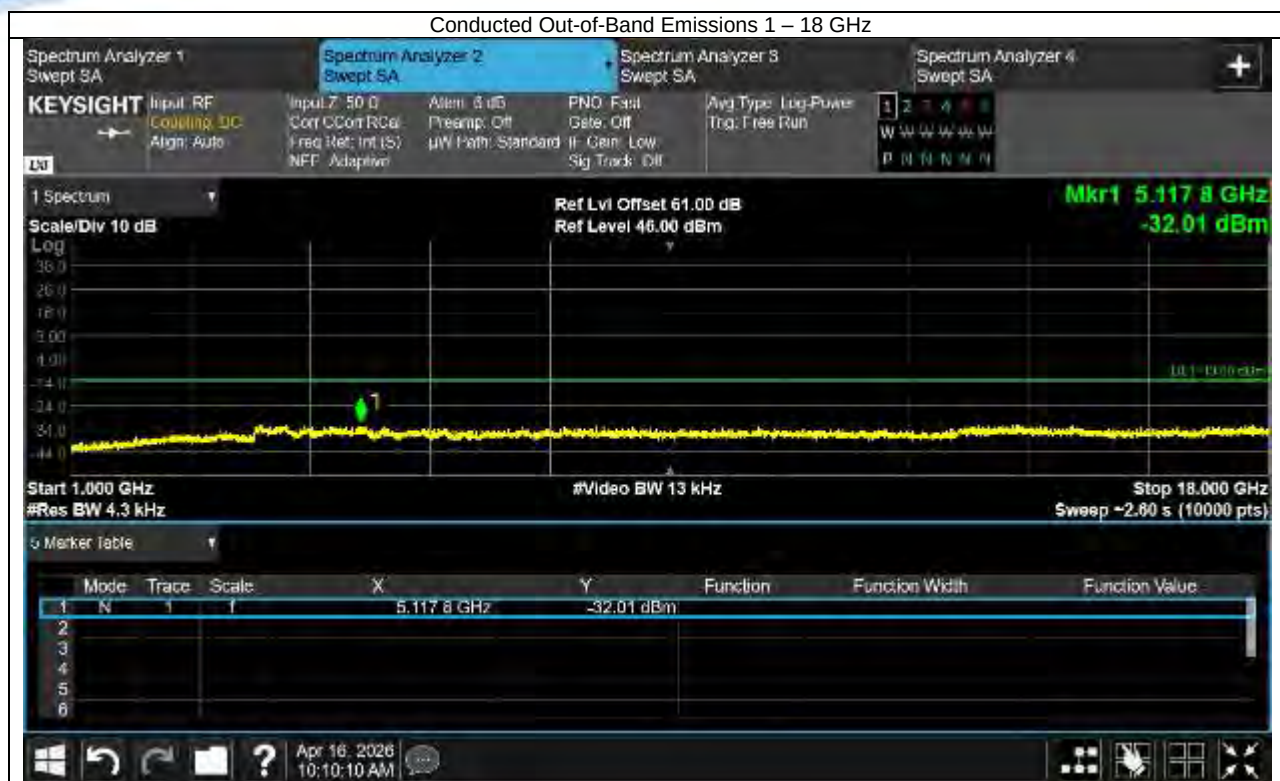
|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

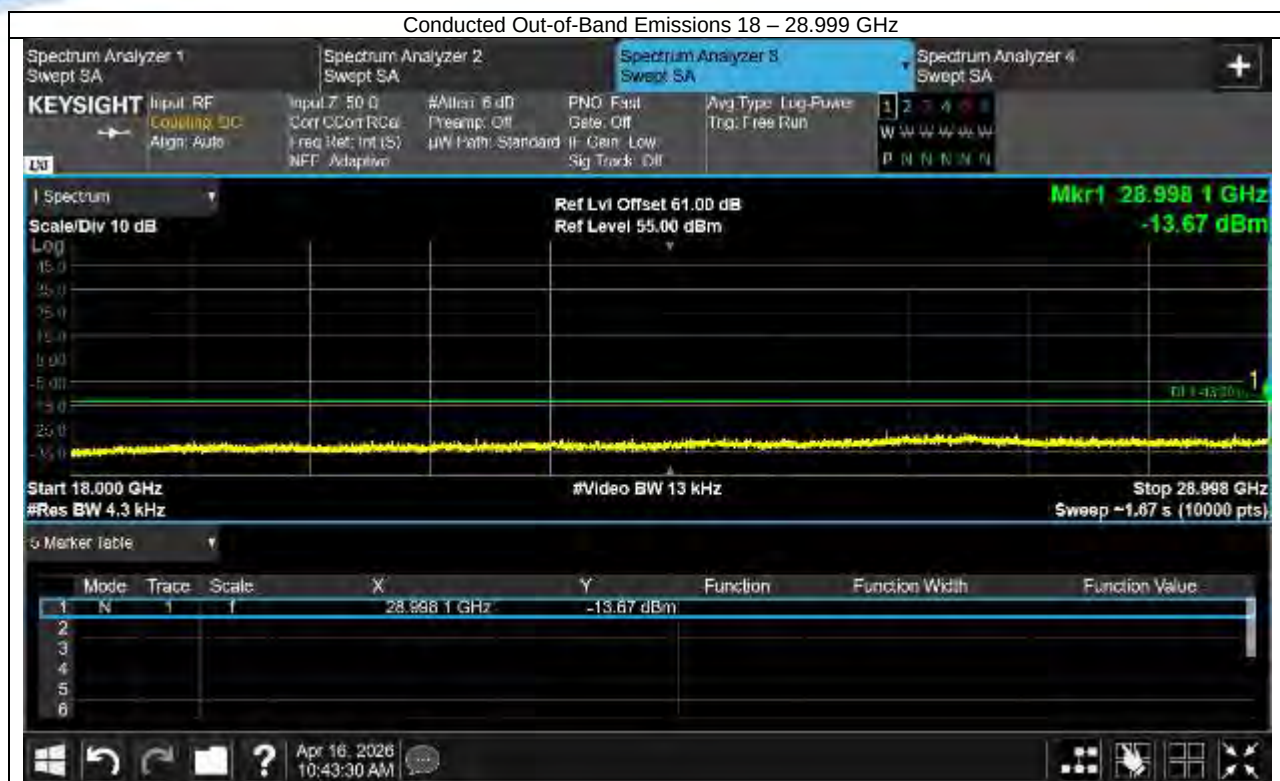
##### Test Measurement Results

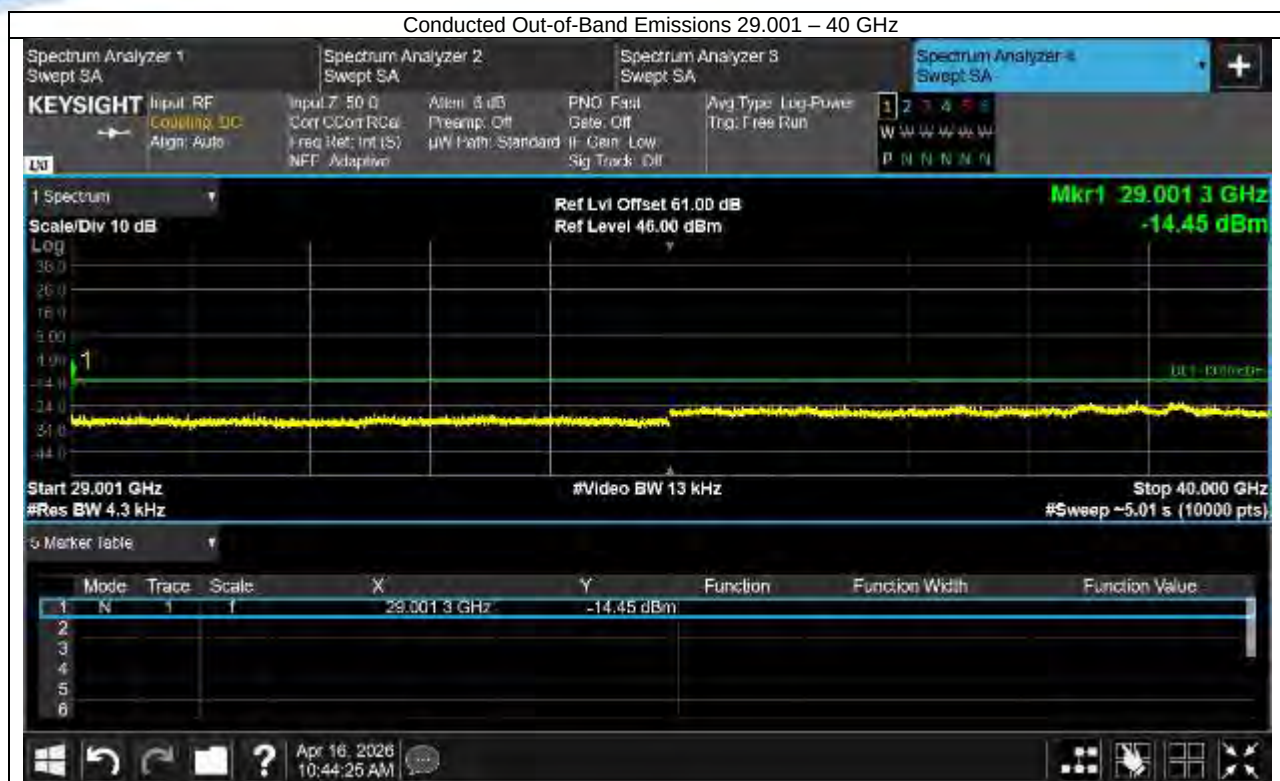
| Temperature: 20 °C            | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm) | Limit (dBm) | Margin (dB) | Compliant |
|-------------------------------|-----------------|----------------------|-----------------------|-------------|-------------|-----------|
| Voltage: 115 Vac, 60 Hz       |                 |                      |                       |             |             |           |
| Test Frequency: 28999.676 MHz |                 |                      |                       |             |             |           |
| 30MHz-1GHz                    | 784.15          | -39.52               | --                    | -13.00      | -26.52      | Complies  |
| 1-18GHz                       | 5117.80         | -32.01               | --                    | -13.00      | -19.01      | Complies  |
| 18-28.999GHz                  | 28998.10        | -13.67               | --                    | -13.00      | -0.67       | Complies  |
| 29.001-40GHz                  | 29001.30        | -14.45               | --                    | -13.00      | -1.45       | Complies  |
| 40-50GHz                      | 49632.00        | -49.98               | --                    | -13.00      | -36.98      | Complies  |
| 50-75 GHz                     | 57999.00        | -49.32               | -43.59                | -13.00      | -30.59      | Complies  |
| 75-110GHz                     | 86999.60        | -55.98               | --                    | -13.00      | -42.98      | Complies  |
| 110-140GHz                    | 139727.45       | -41.02               | -27.66                | -13.00      | -14.66      | Complies  |
| 140-150GHz                    | 144908.95       | -42.69               | --                    | -13.00      | -29.69      | Complies  |

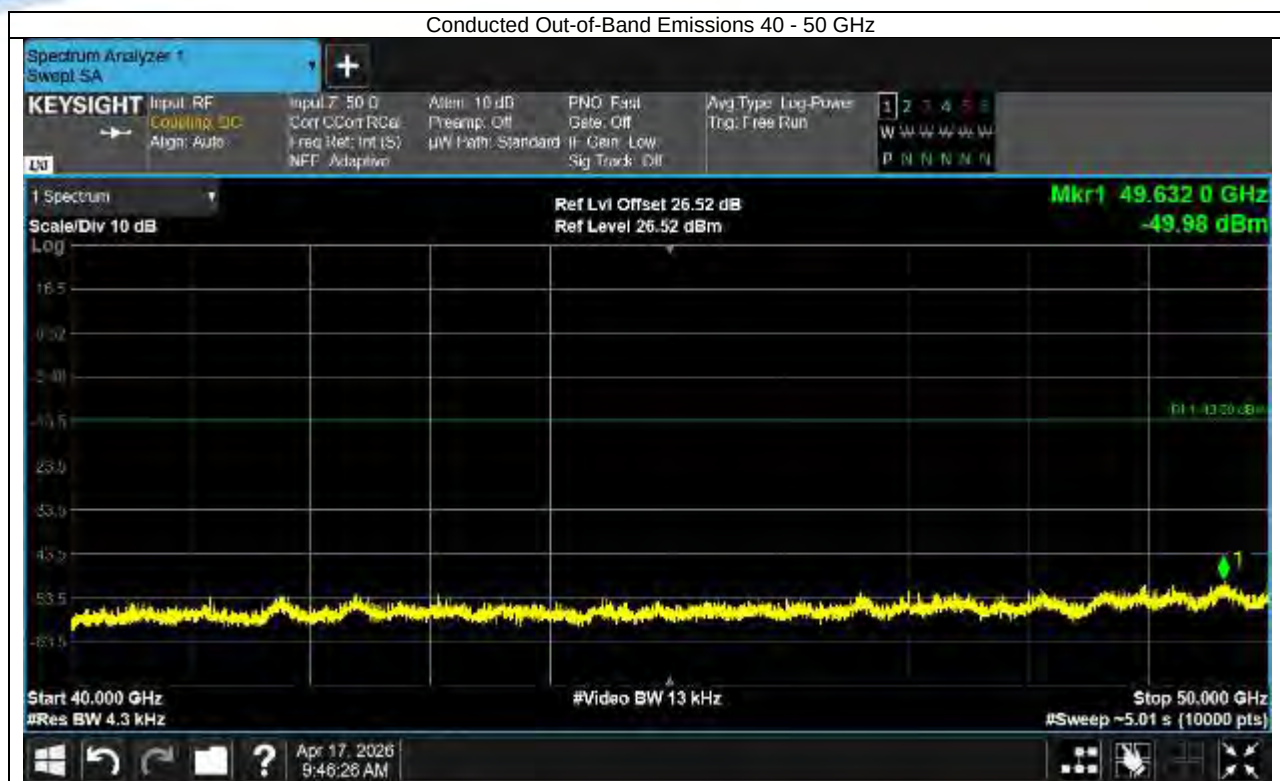
| Traceability to Industry Recognized Test Methodologies |                                               |
|--------------------------------------------------------|-----------------------------------------------|
| Work Instruction:                                      | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS       |
| Measurement Uncertainty:                               | <=40 GHz $\pm 2.37$ dB, > 40 GHz $\pm 4.6$ dB |

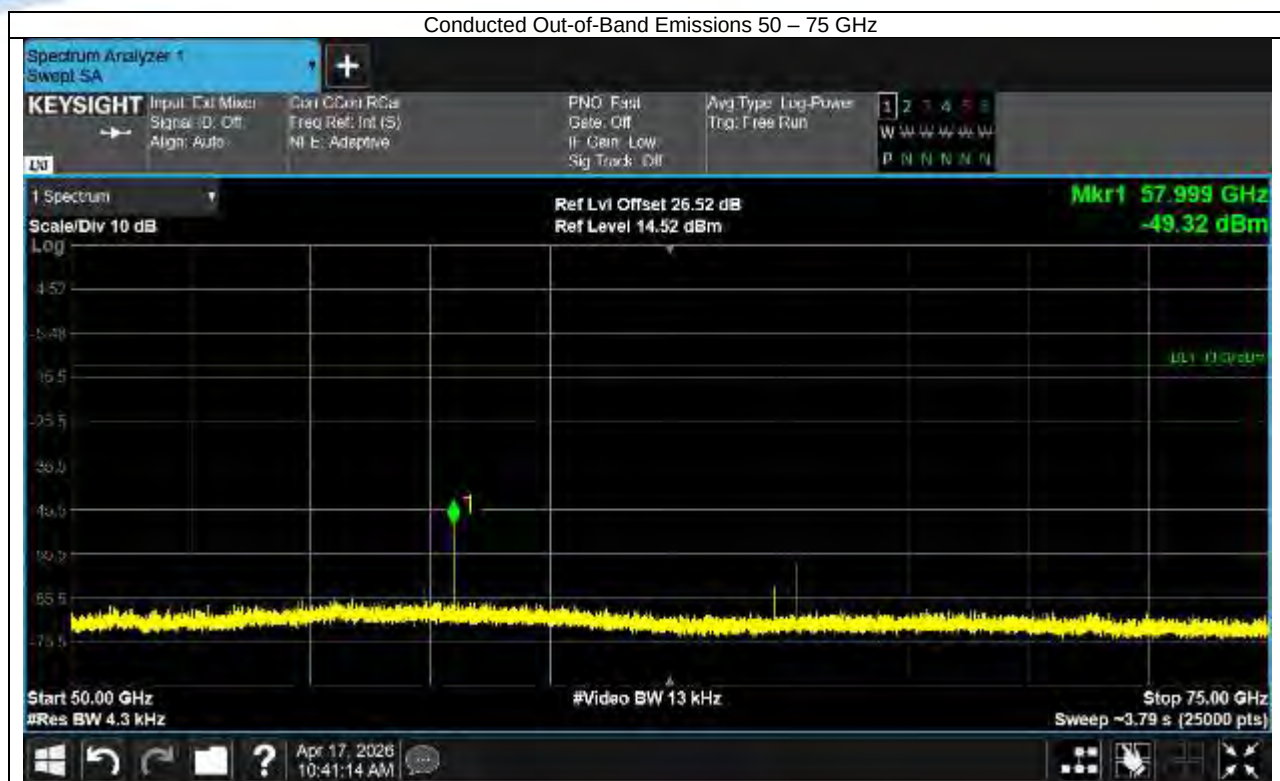


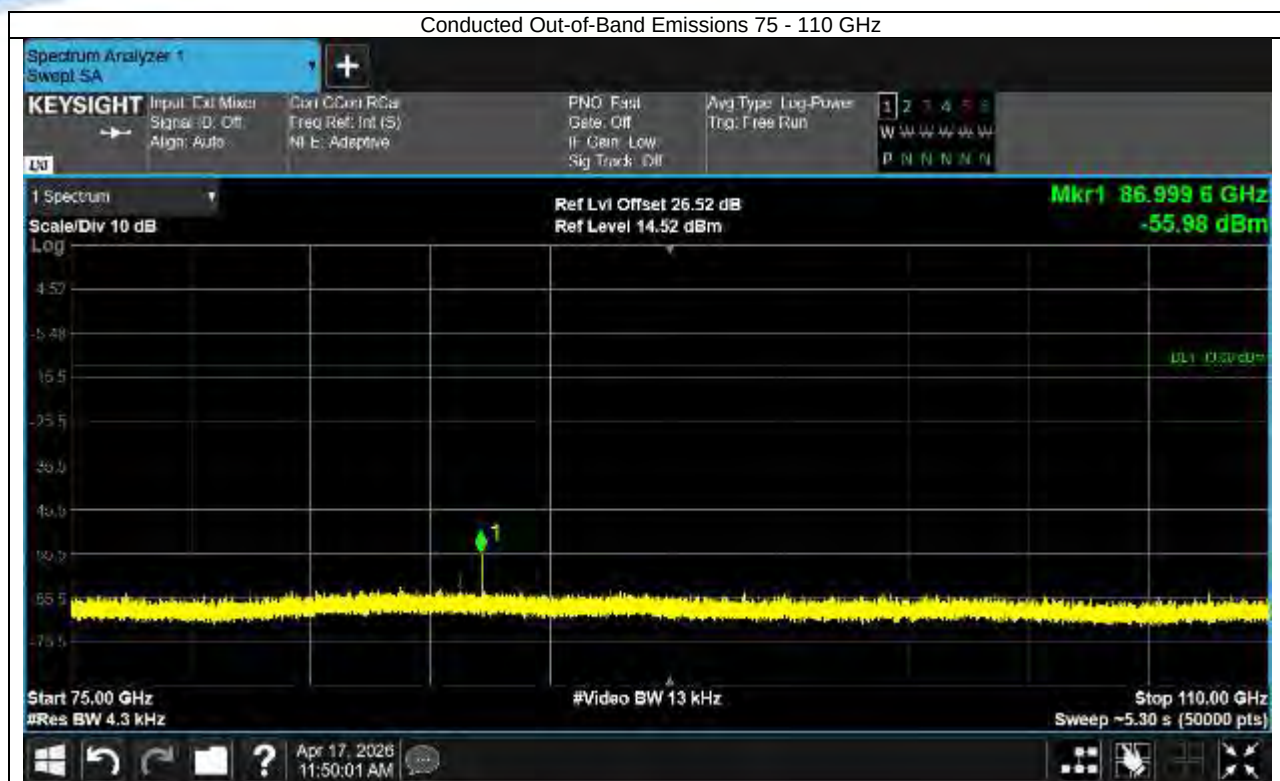




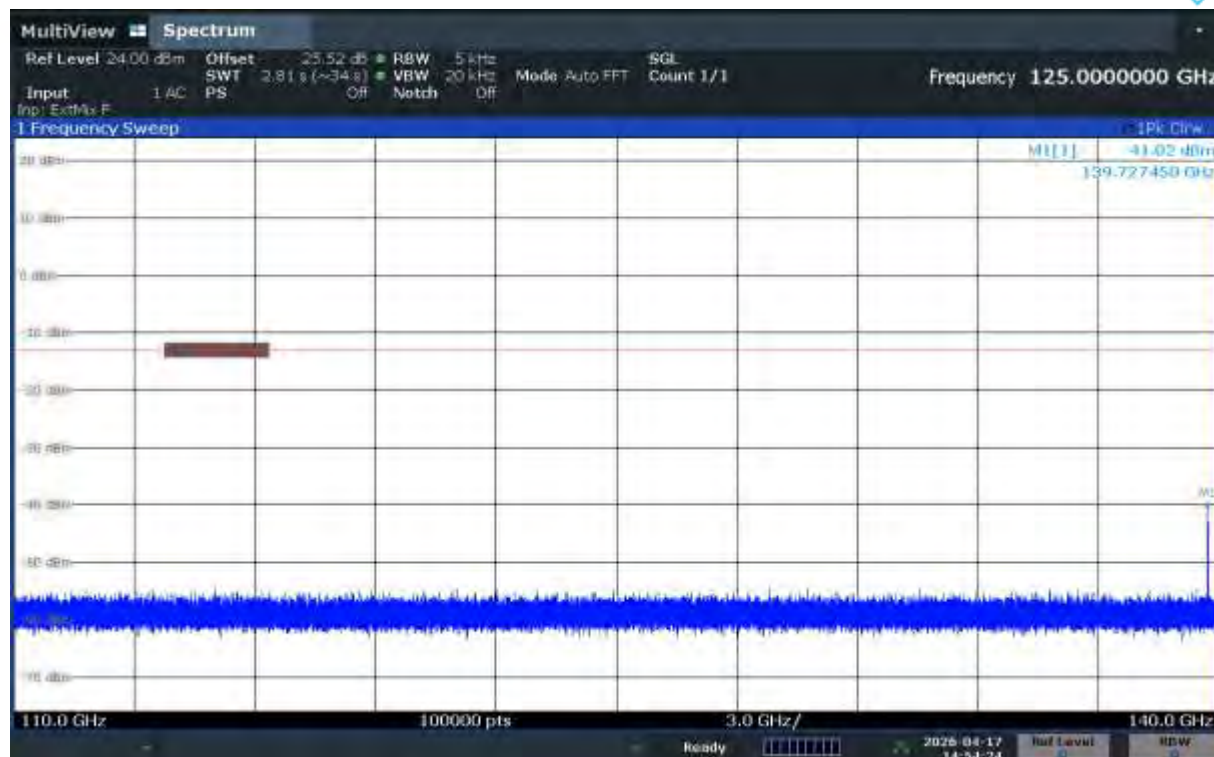






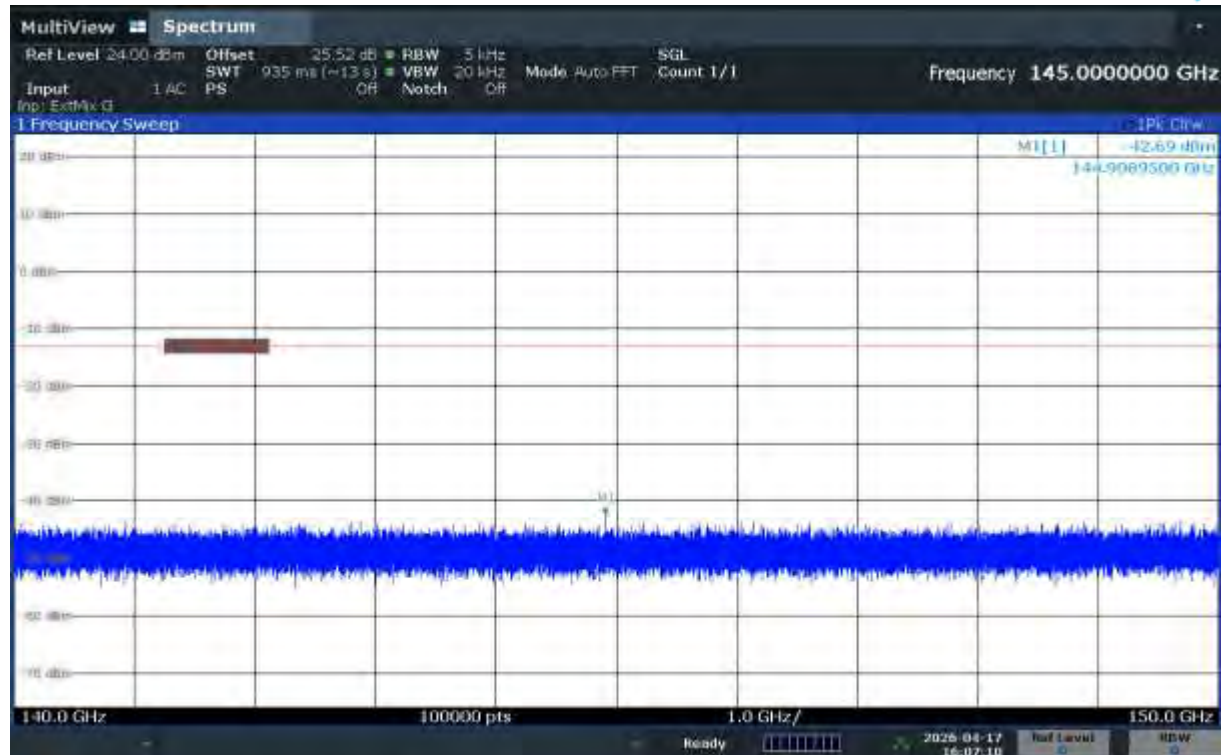


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:54:24

Conducted Out-of-Band Emissions 140 - 150 GHz



Date: 17.APR.2026 16:07:10

### 8.5.1.25. BPSK 650KHz High Band Low Channel

#### Equipment Configuration for Transmitter Conducted Emission (Out-of-Band)

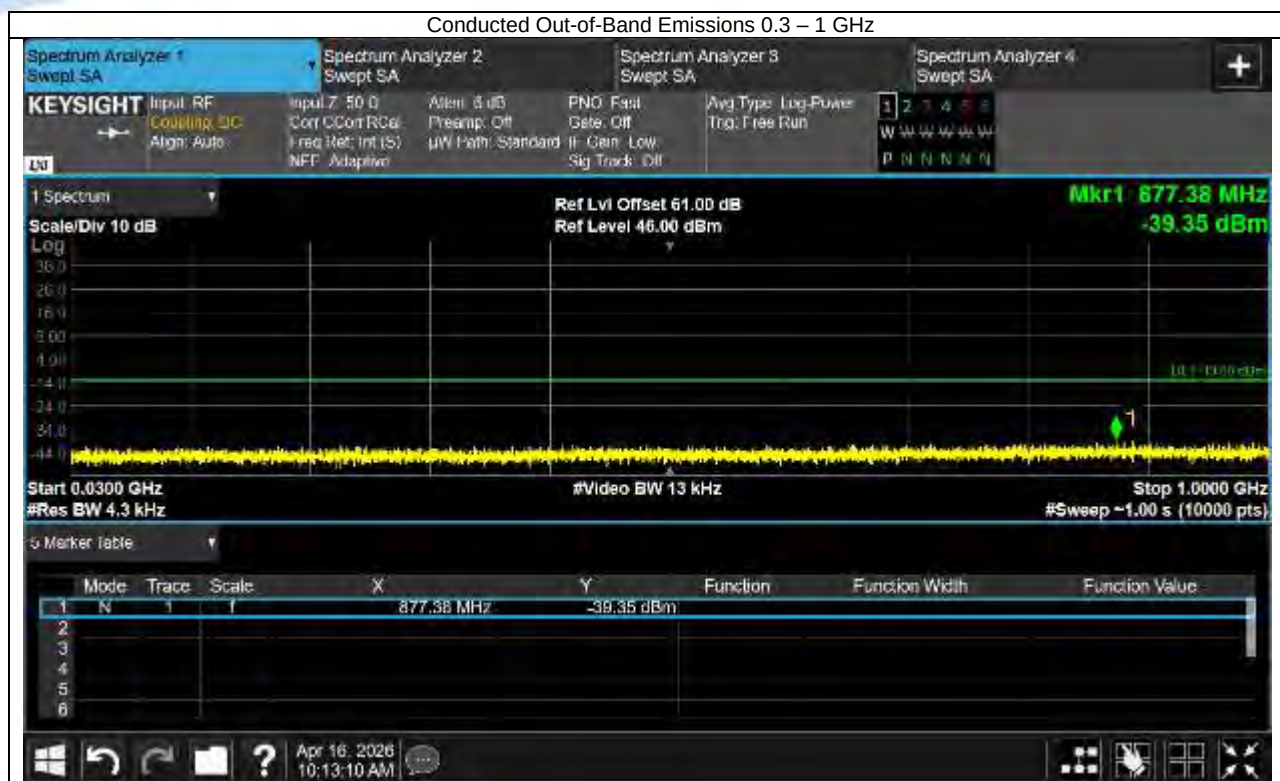
|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

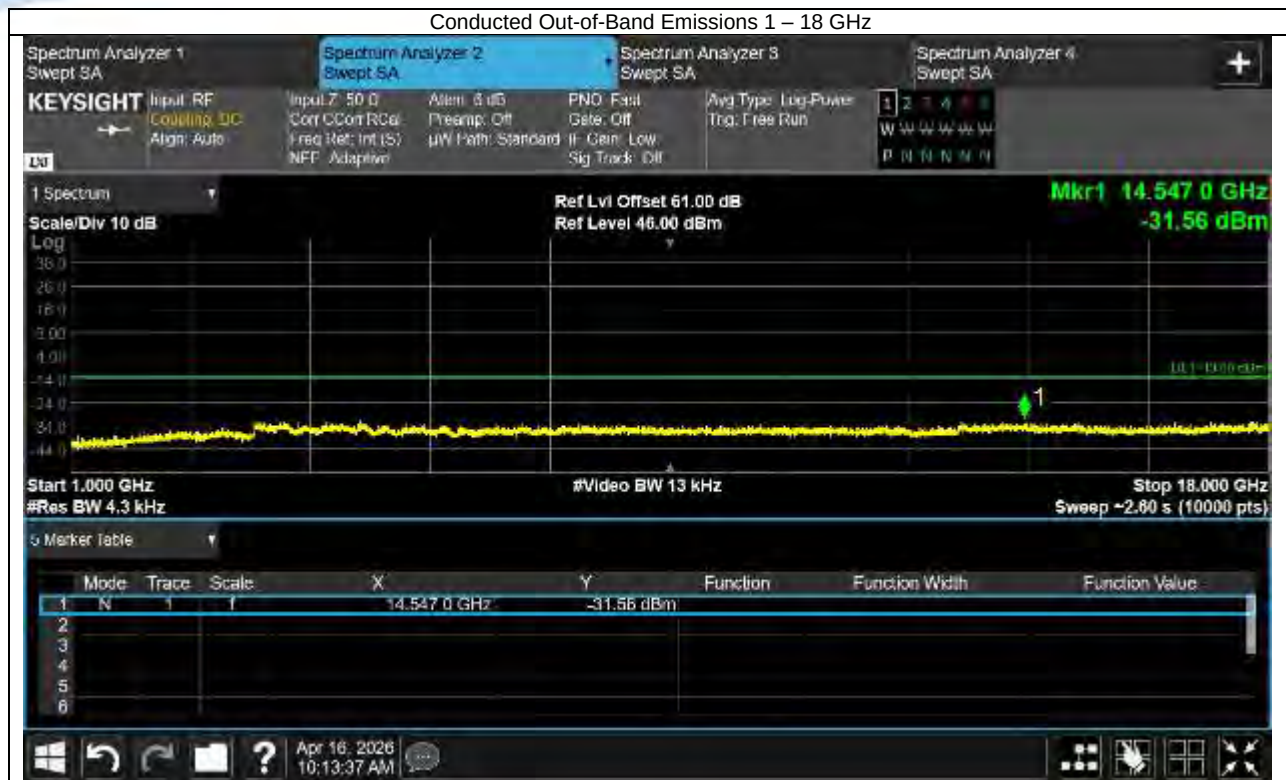
#### Test Measurement Results

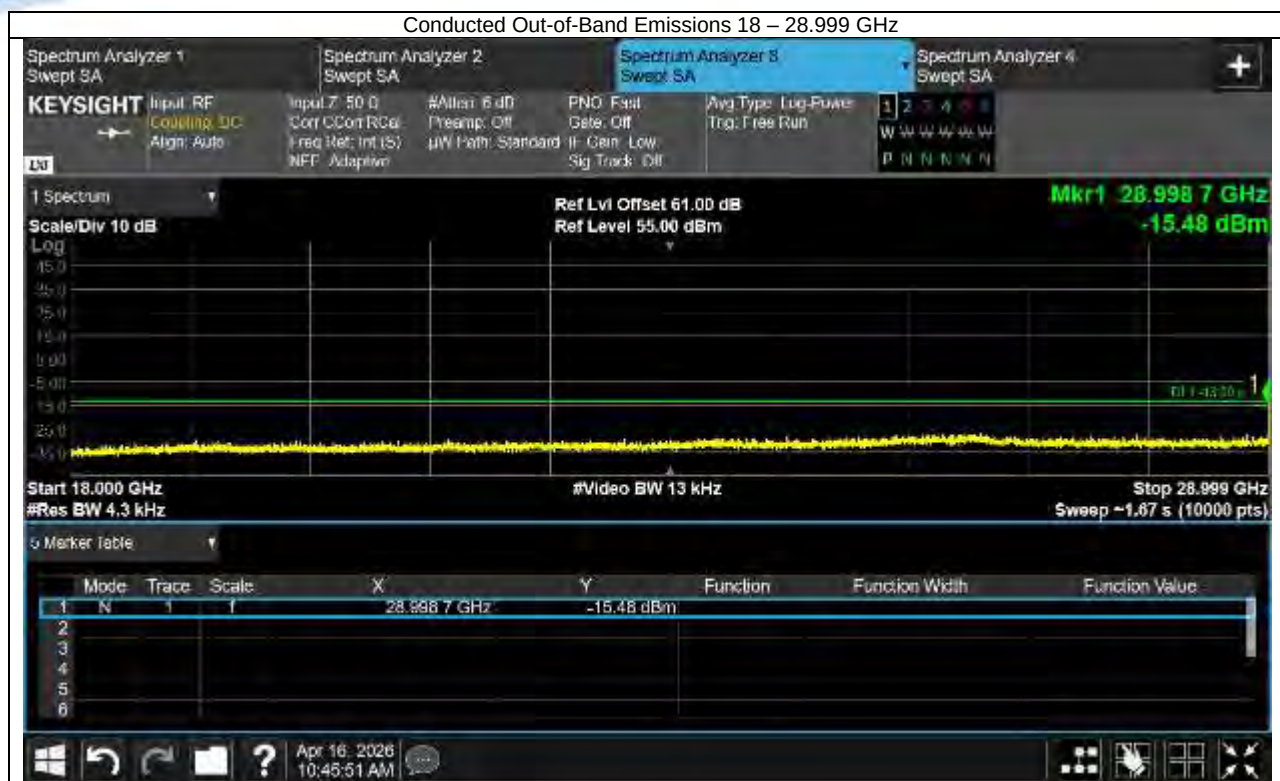
| Temperature: 20 °C            | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm) | Limit (dBm) | Margin (dB) | Compliant |
|-------------------------------|-----------------|----------------------|-----------------------|-------------|-------------|-----------|
| Voltage: 115 Vac, 60 Hz       |                 |                      |                       |             |             |           |
| Test Frequency: 29000.324 MHz |                 |                      |                       |             |             |           |
| 30MHz-1GHz                    | 877.38          | -39.35               | --                    | -13.00      | -26.35      | Complies  |
| 1-18GHz                       | 14547.00        | -31.56               | --                    | -13.00      | -18.56      | Complies  |
| 18-28.999GHz                  | 28998.70        | -15.48               | --                    | -13.00      | -2.48       | Complies  |
| 29.001-40GHz                  | 29001.90        | -14.13               | --                    | -13.00      | -1.13       | Complies  |
| 40-50GHz                      | 49625.00        | -49.43               | --                    | -13.00      | -36.43      | Complies  |
| 50-75 GHz                     | 58000.00        | -49.24               | -43.51                | -13.00      | -30.51      | Complies  |
| 75-110GHz                     | 87001.00        | -53.47               | --                    | -13.00      | -40.47      | Complies  |
| 110-140GHz                    | 139728.05       | -43.04               | -29.68                | -13.00      | -16.68      | Complies  |
| 140-150GHz                    | 148713.45       | -42.47               | --                    | -13.00      | -29.47      | Complies  |

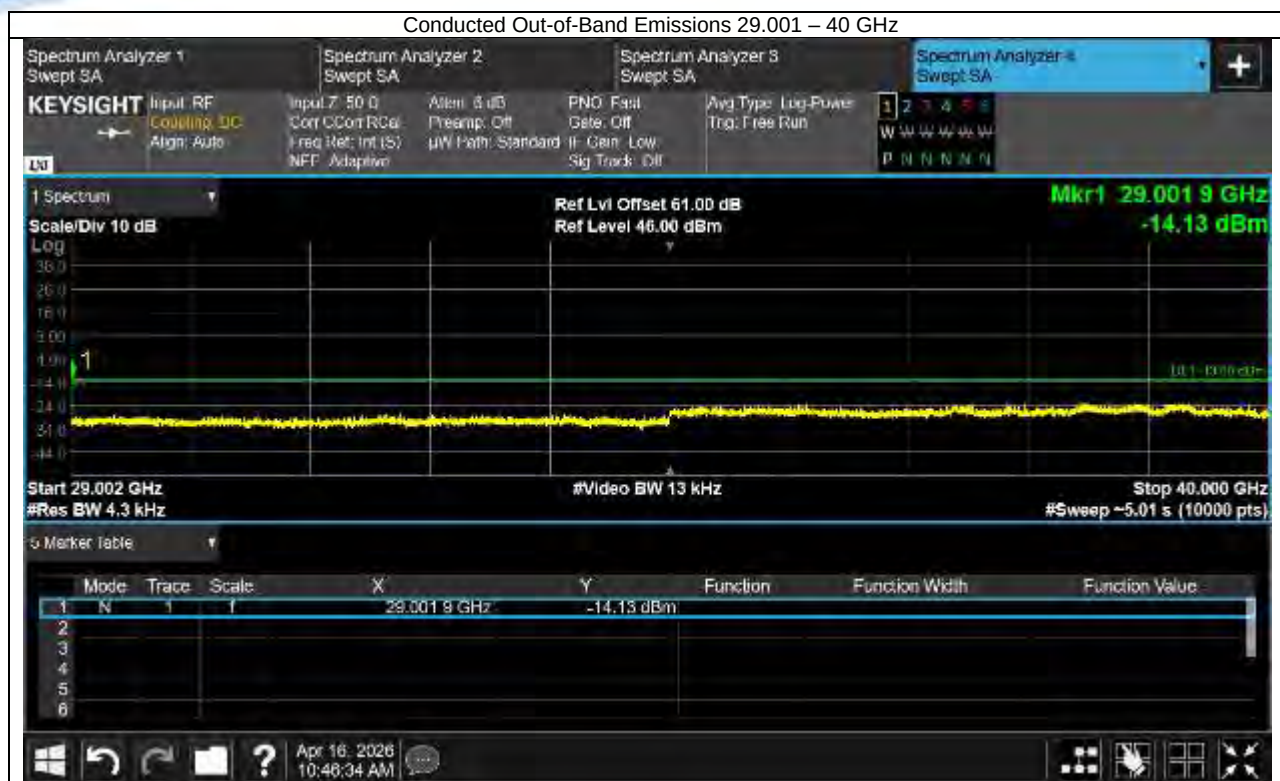
#### Traceability to Industry Recognized Test Methodologies

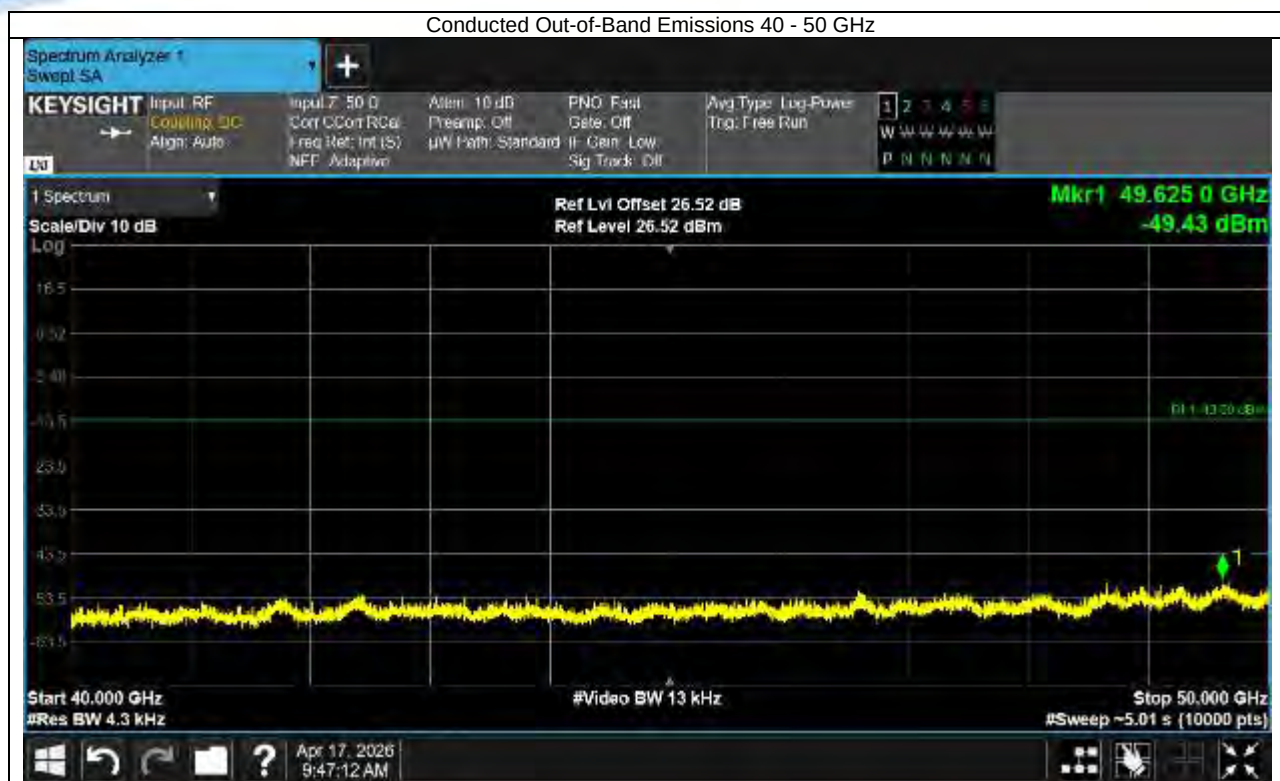
|                          |                                         |
|--------------------------|-----------------------------------------|
| Work Instruction:        | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS |
| Measurement Uncertainty: | <=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB     |

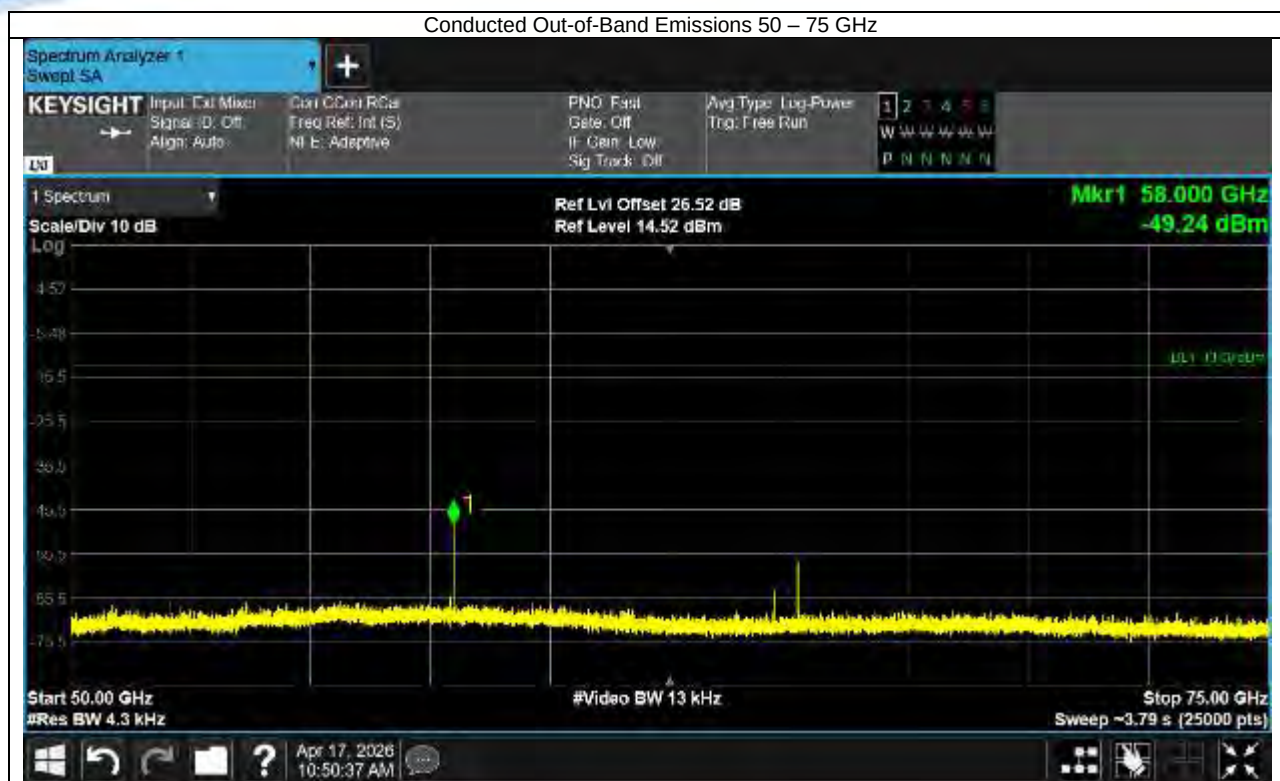


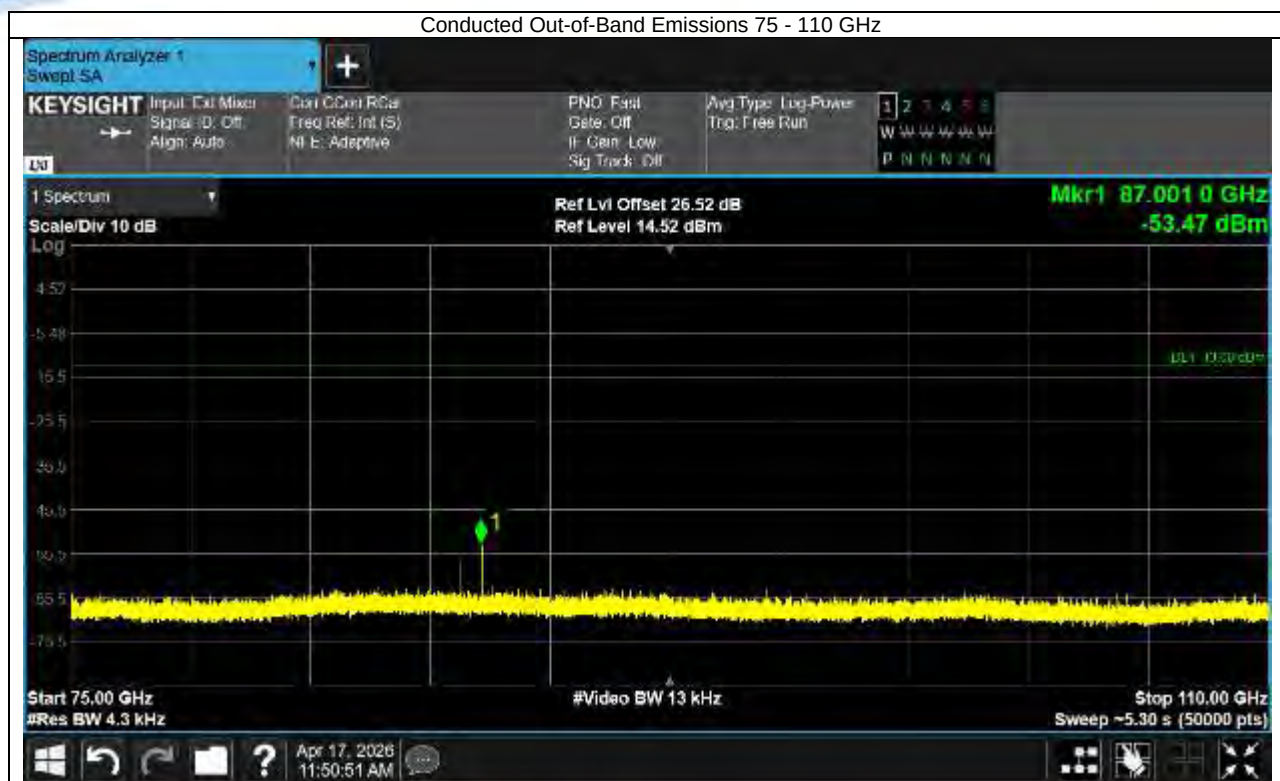




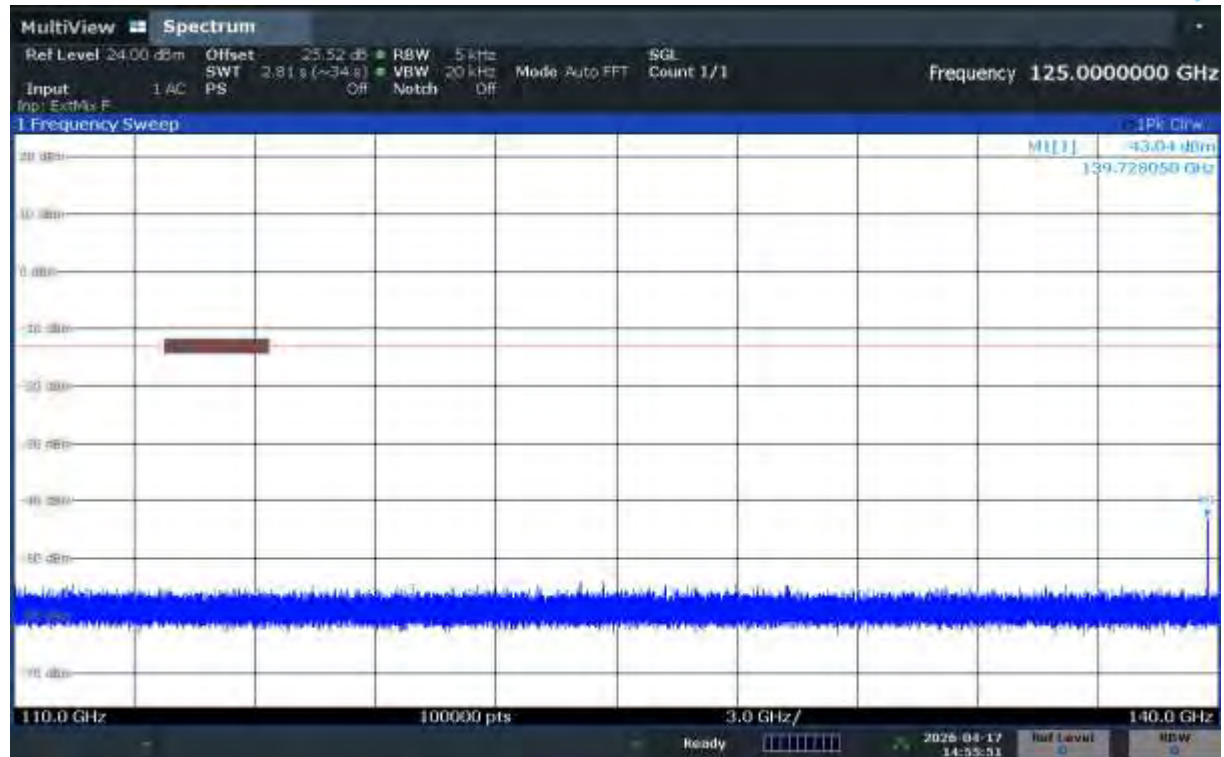






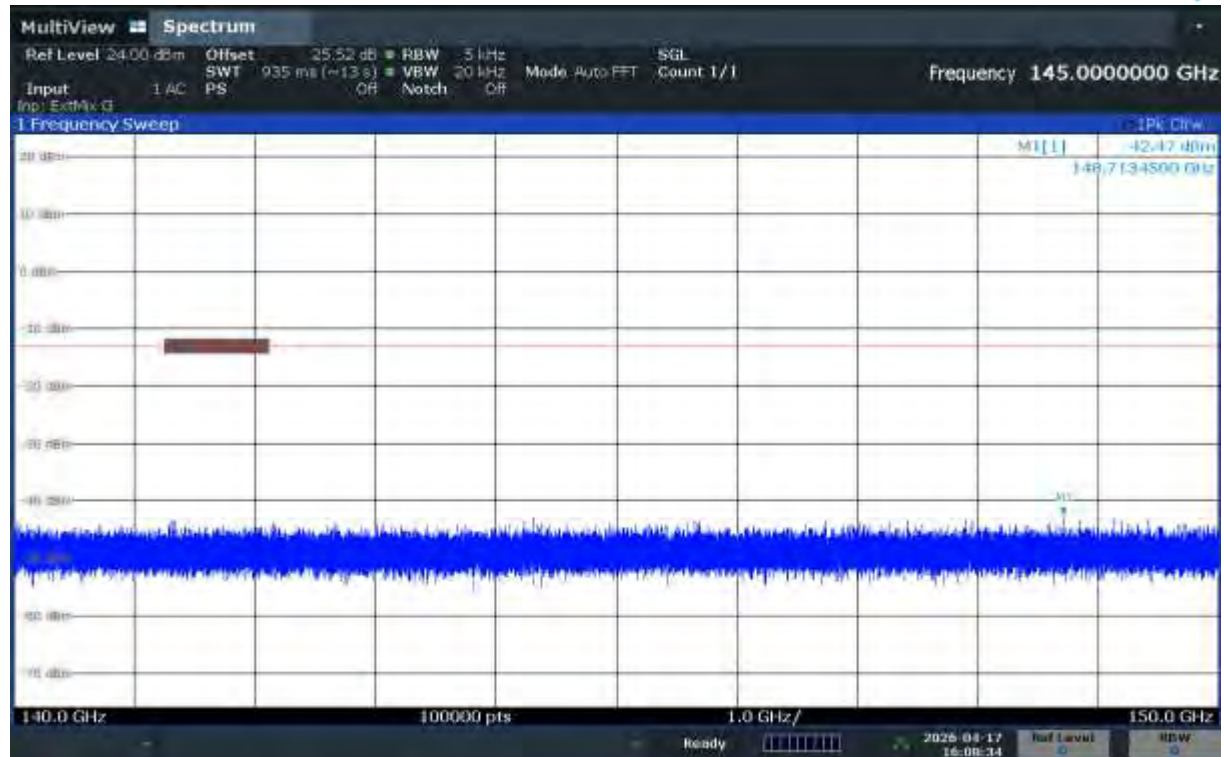


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:55:51

Conducted Out-of-Band Emissions 140 - 150 GHz



Date: 17.APR.2026 16:08:35

### 8.5.1.26. BPSK 650KHz High Band Mid Channel

#### Equipment Configuration for Transmitter Conducted Emission (Out-of-Band)

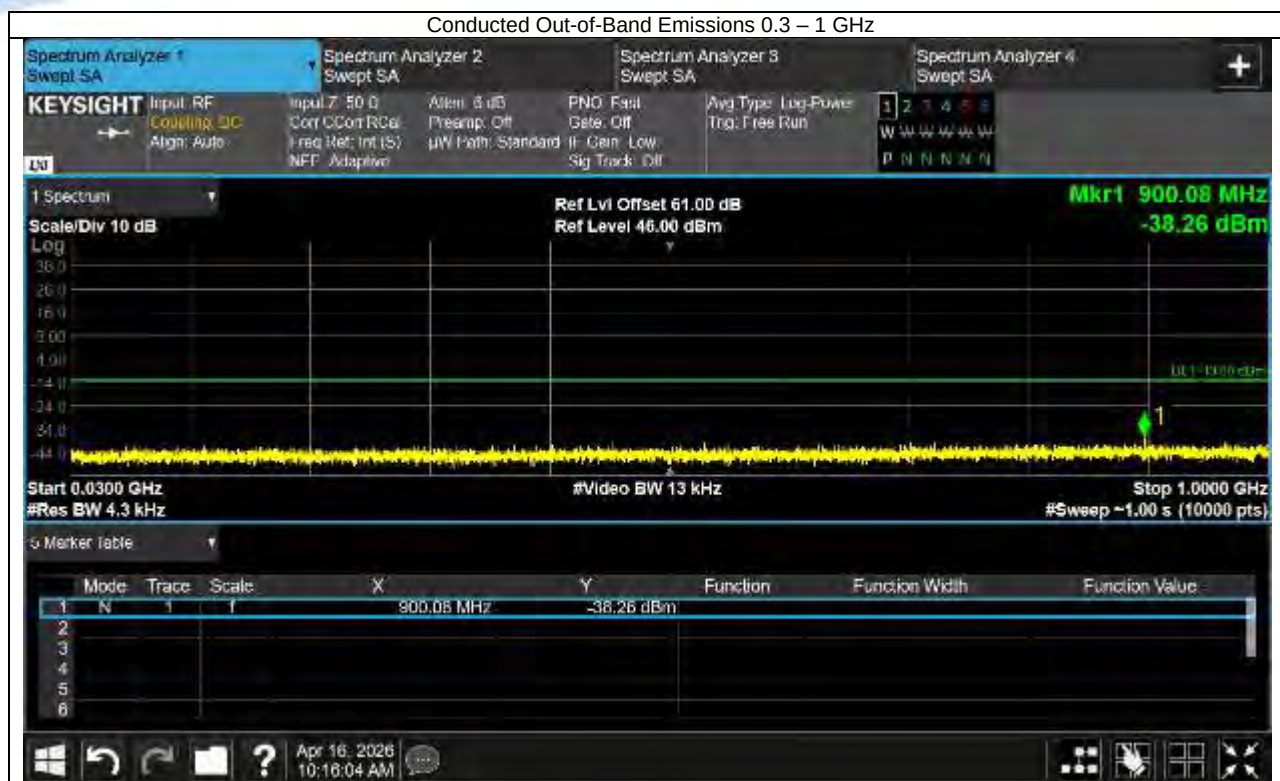
|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

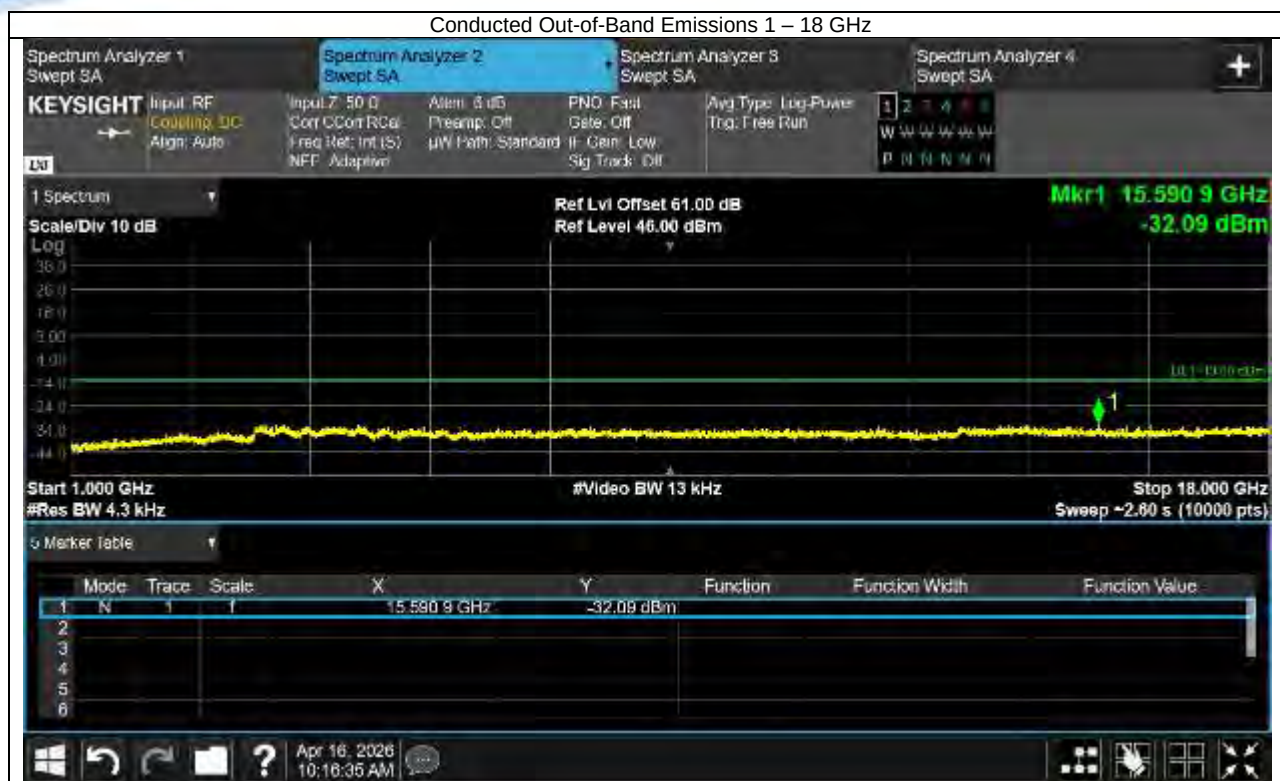
#### Test Measurement Results

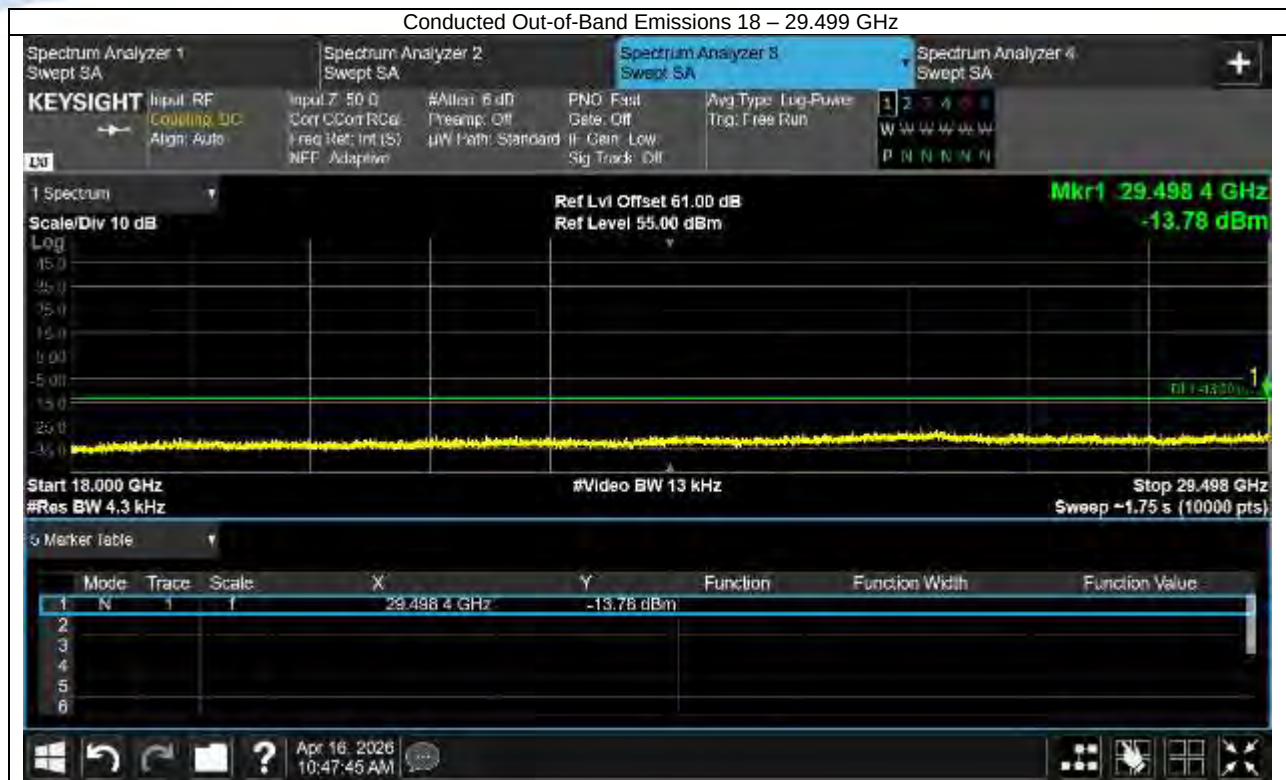
| Temperature: 20 °C           | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm) | Limit (dBm) | Margin (dB) | Compliant |
|------------------------------|-----------------|----------------------|-----------------------|-------------|-------------|-----------|
| Voltage: 115 Vac, 60 Hz      |                 |                      |                       |             |             |           |
| Test Frequency: 29500.00 MHz |                 |                      |                       |             |             |           |
| 30MHz-1GHz                   | 900.08          | -38.26               | --                    | -13.00      | -25.26      | Complies  |
| 1-18GHz                      | 15590.90        | -32.09               | --                    | -13.00      | -19.09      | Complies  |
| 18-29.499GHz                 | 29498.40        | -13.78               | --                    | -13.00      | -0.78       | Complies  |
| 29.501-40GHz                 | 29501.60        | -13.20               | --                    | -13.00      | -0.20       | Complies  |
| 40-50GHz                     | 49614.00        | -50.06               | --                    | -13.00      | -37.06      | Complies  |
| 50-75 GHz                    | 59000.00        | -44.95               | -39.08                | -13.00      | -26.08      | Complies  |
| 75-110GHz                    | 88499.80        | -47.87               | --                    | -13.00      | -34.87      | Complies  |
| 110-140GHz                   | 113206.85       | -53.72               | -42.18                | -13.00      | -29.18      | Complies  |
| 140-150GHz                   | 141970.55       | -43.37               | --                    | -13.00      | -30.37      | Complies  |

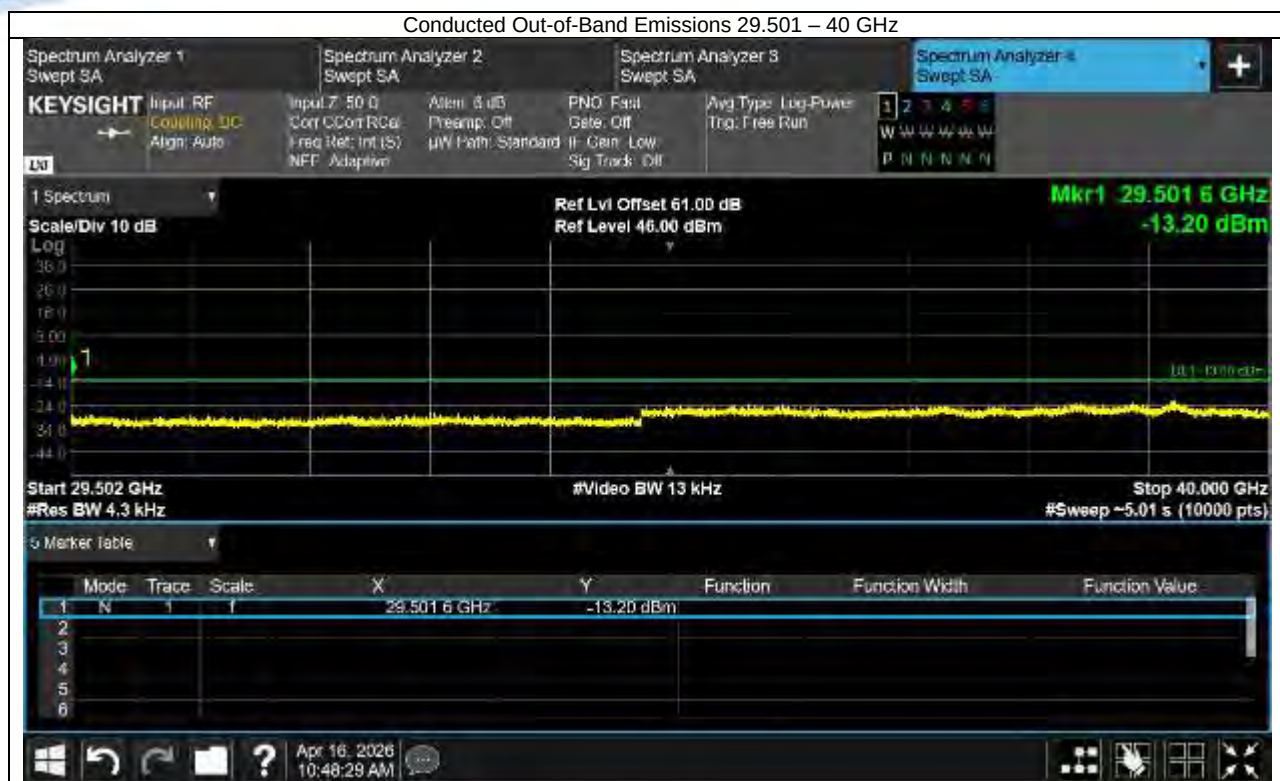
#### Traceability to Industry Recognized Test Methodologies

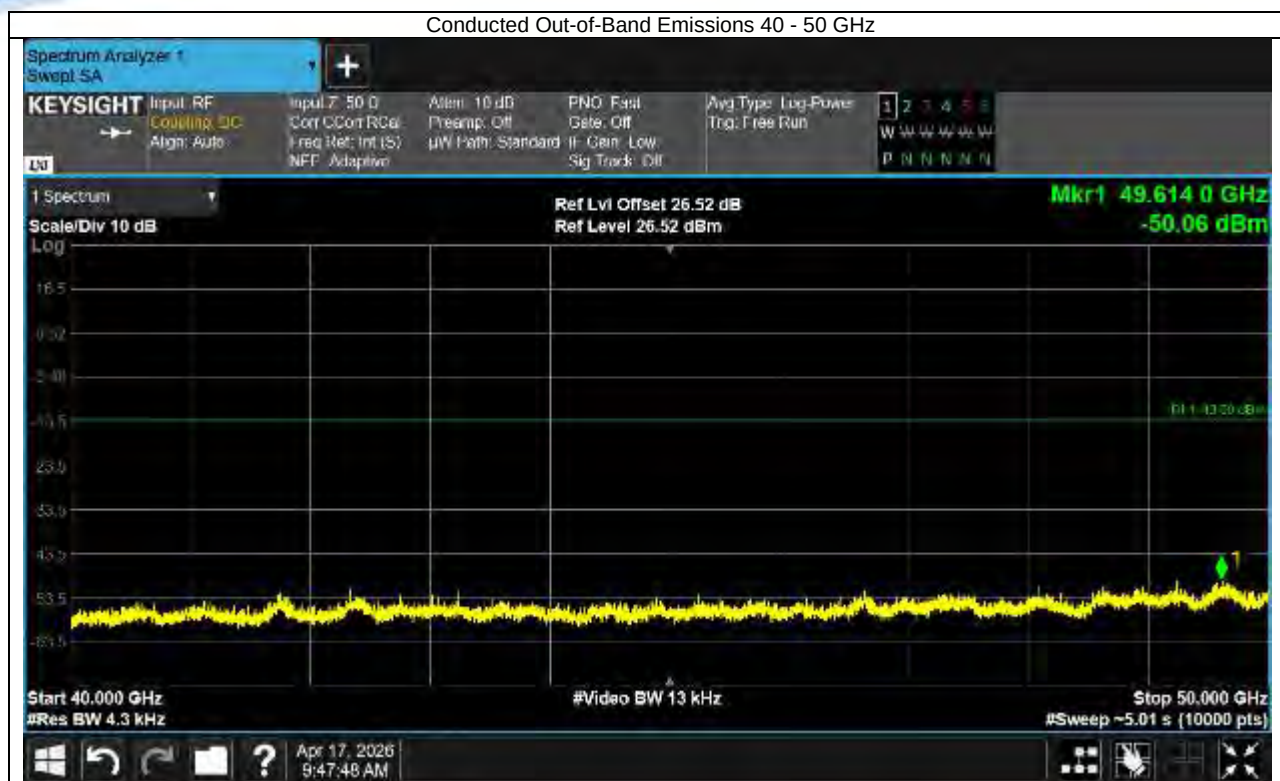
|                          |                                         |
|--------------------------|-----------------------------------------|
| Work Instruction:        | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS |
| Measurement Uncertainty: | <=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB     |

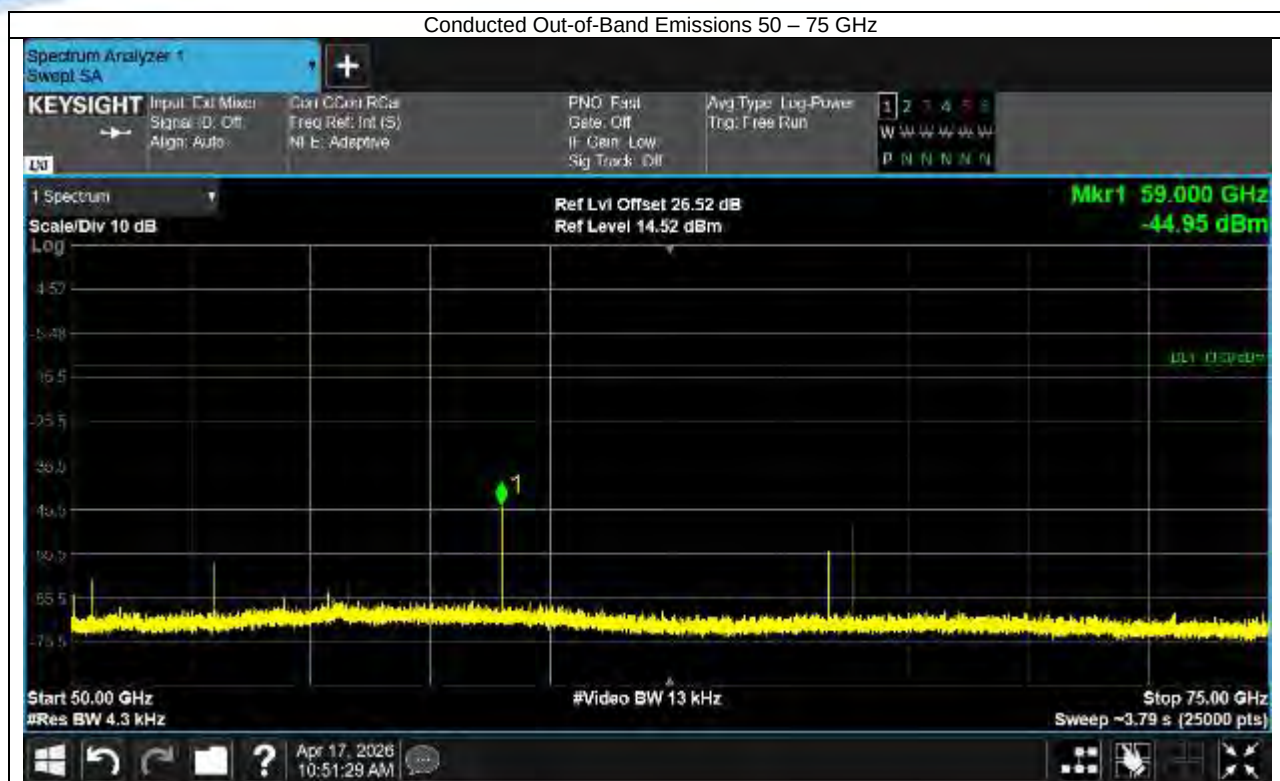


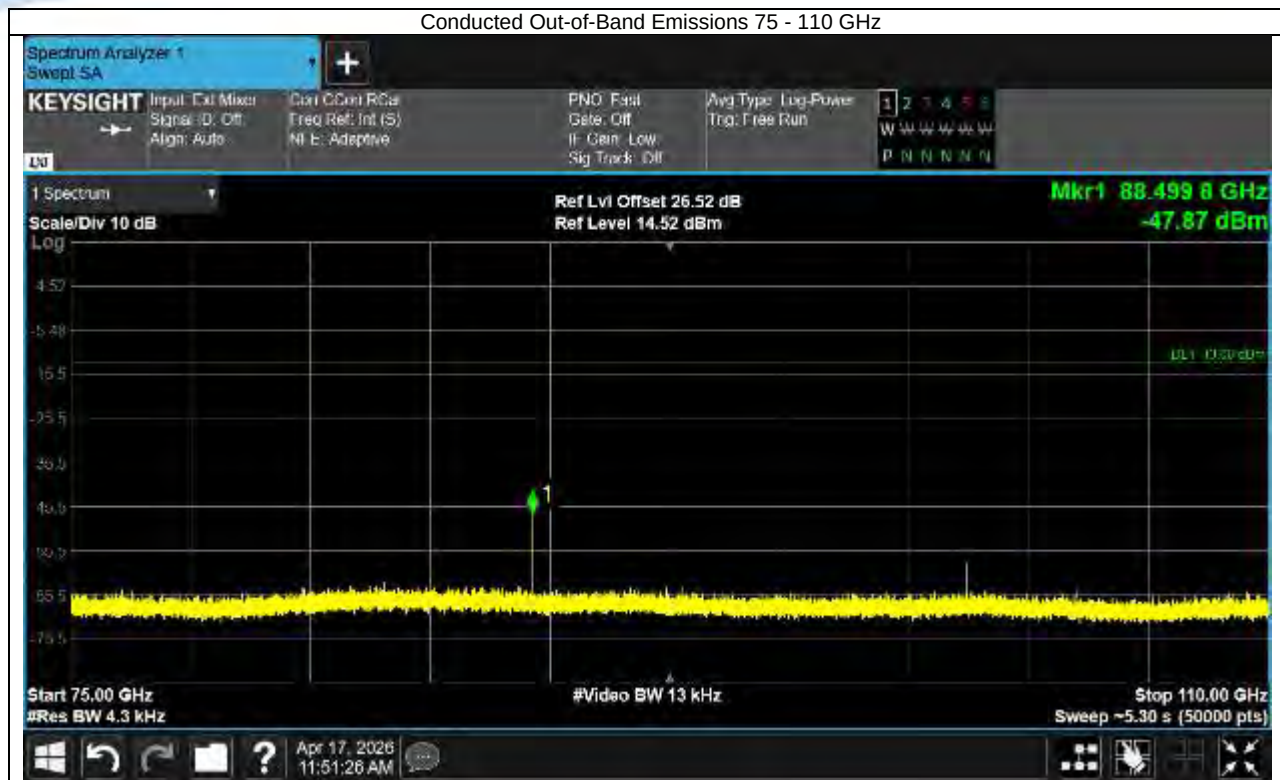




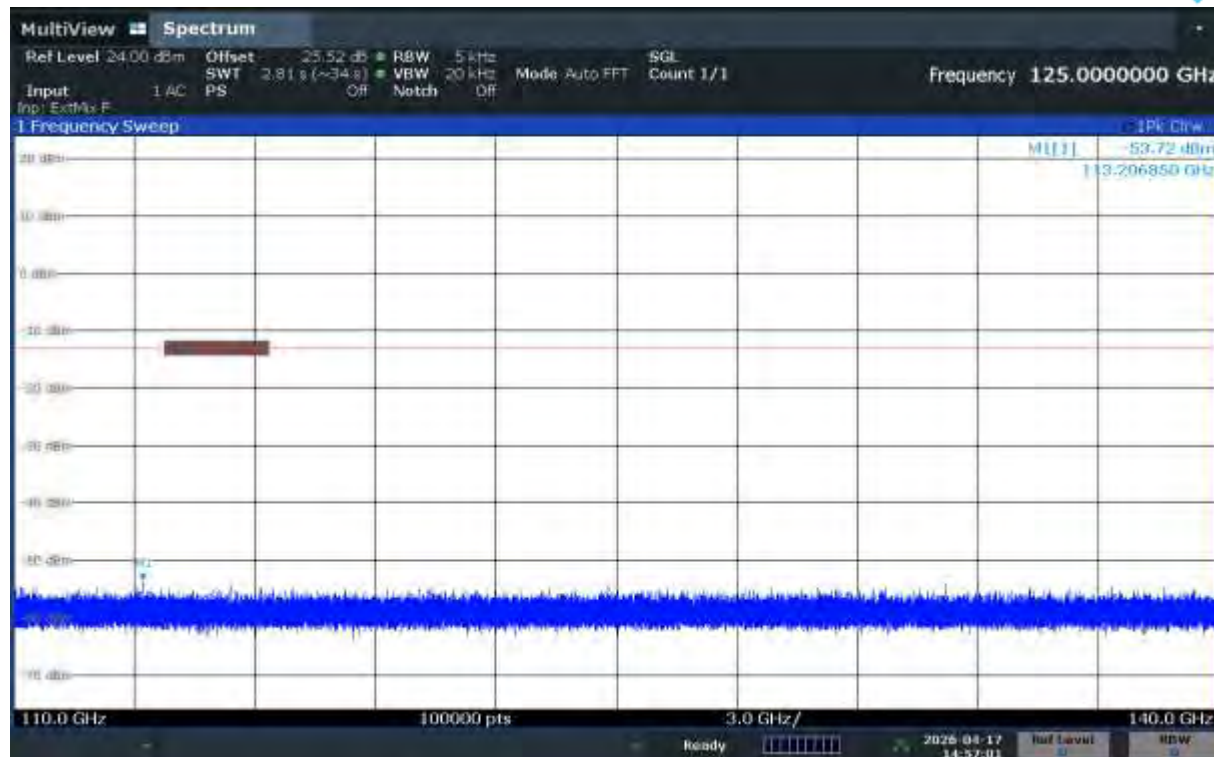






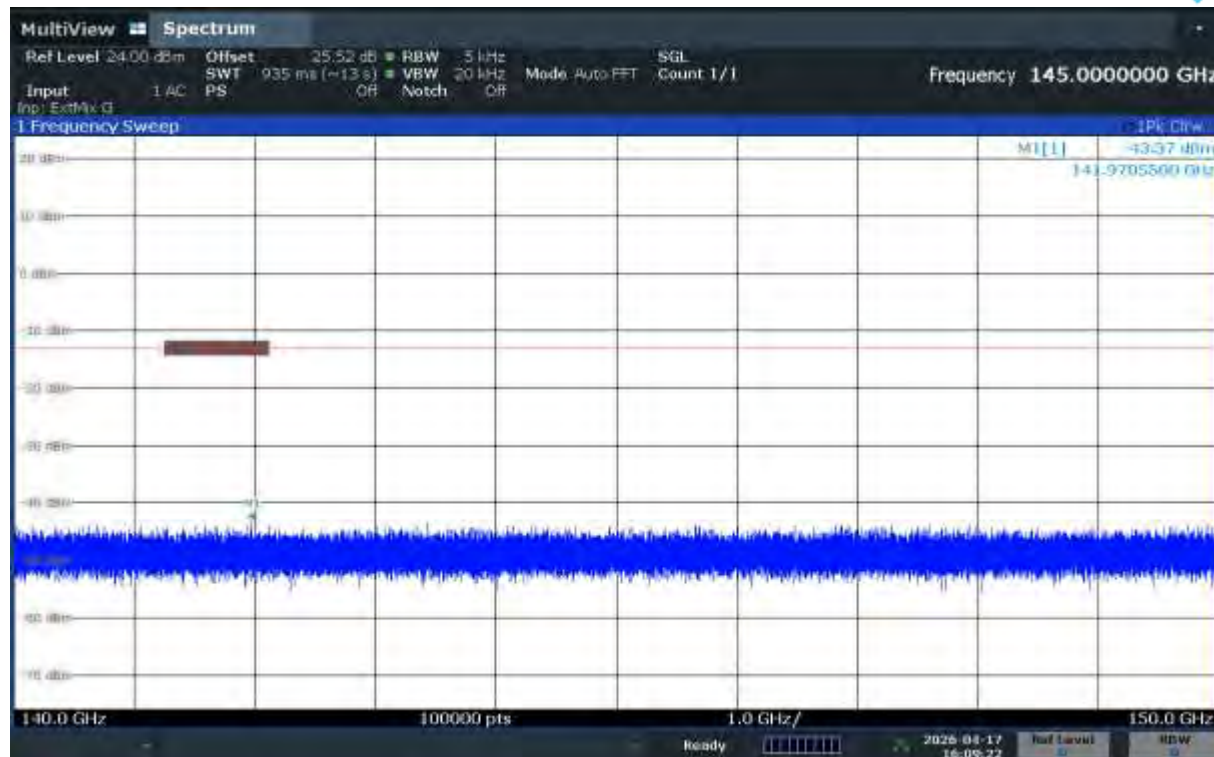


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:57:02

Conducted Out-of-Band Emissions 140 - 150 GHz



Date: 17.APR.2026 16:09:23

### 8.5.1.27. BPSK 650KHz High Band High Channel

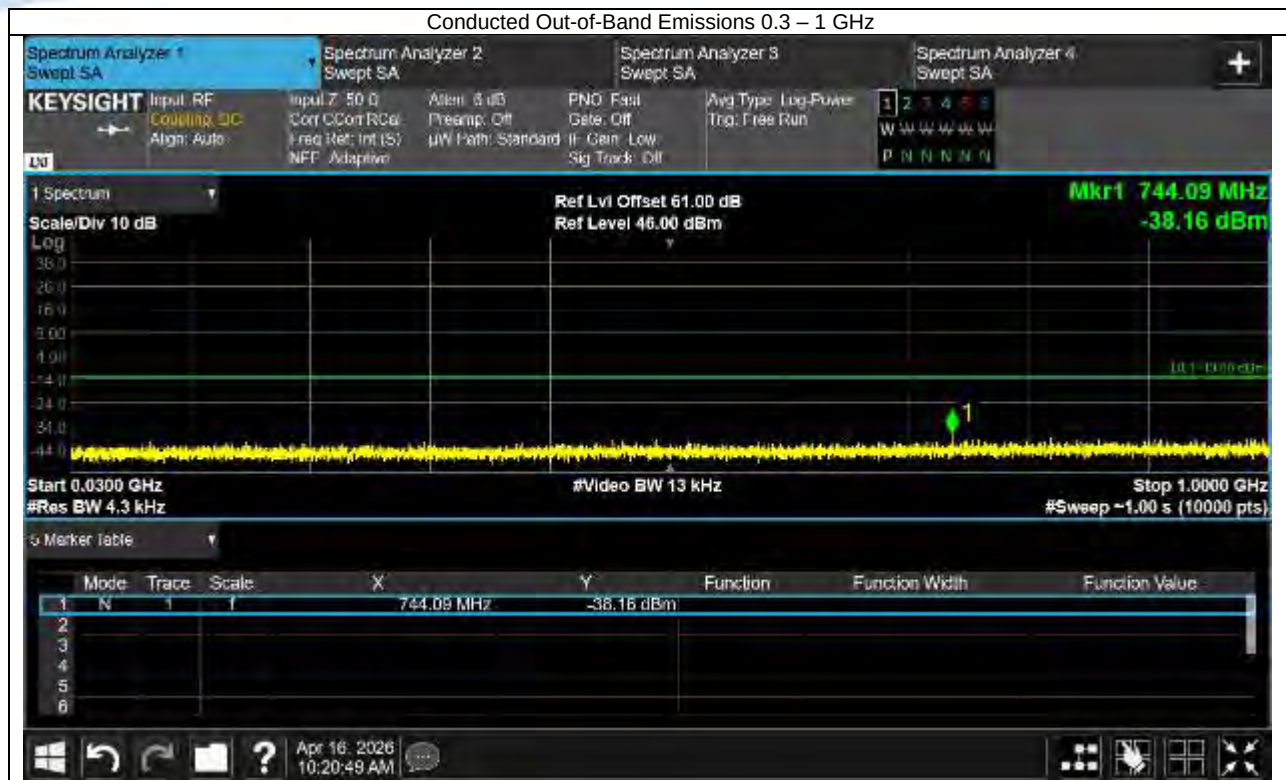
#### Equipment Configuration for Transmitter Conducted Emission (Out-of-Band)

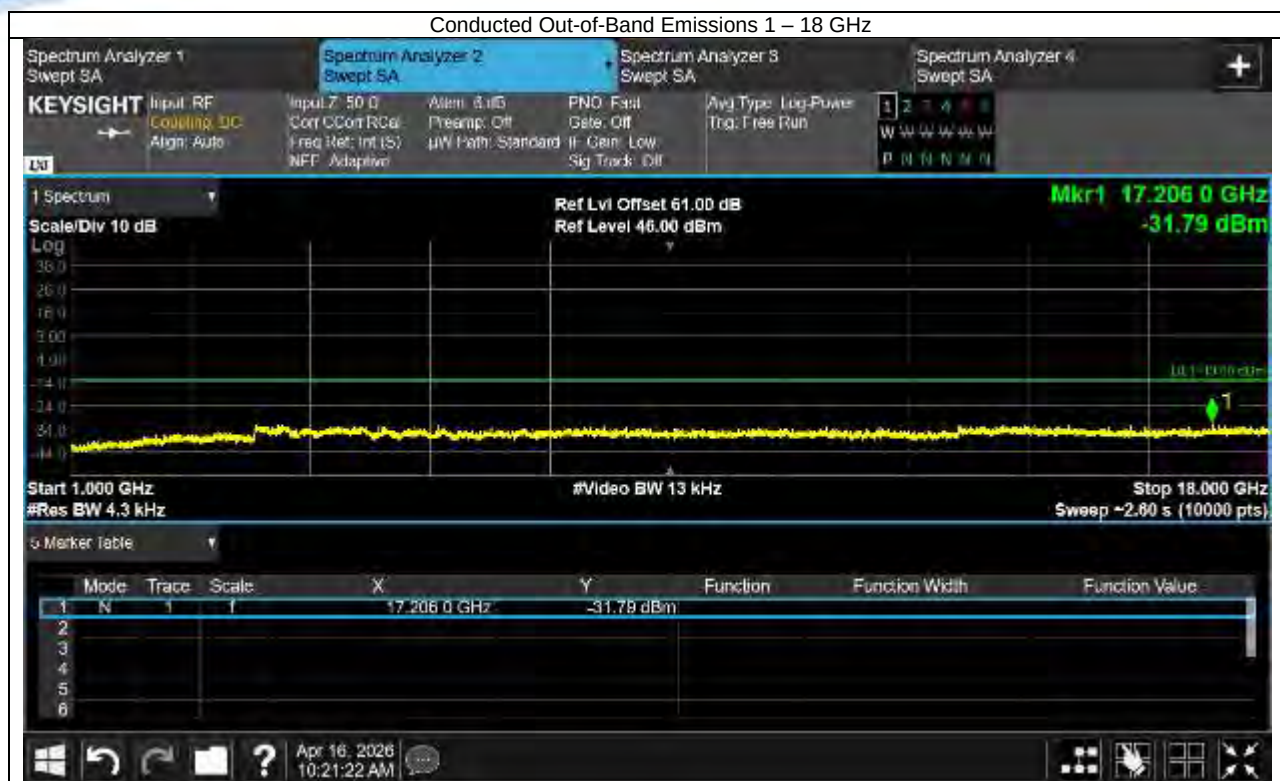
|                                |         |                        |     |
|--------------------------------|---------|------------------------|-----|
| <b>Variant:</b>                | 650 KHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK    | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |         |                        |     |

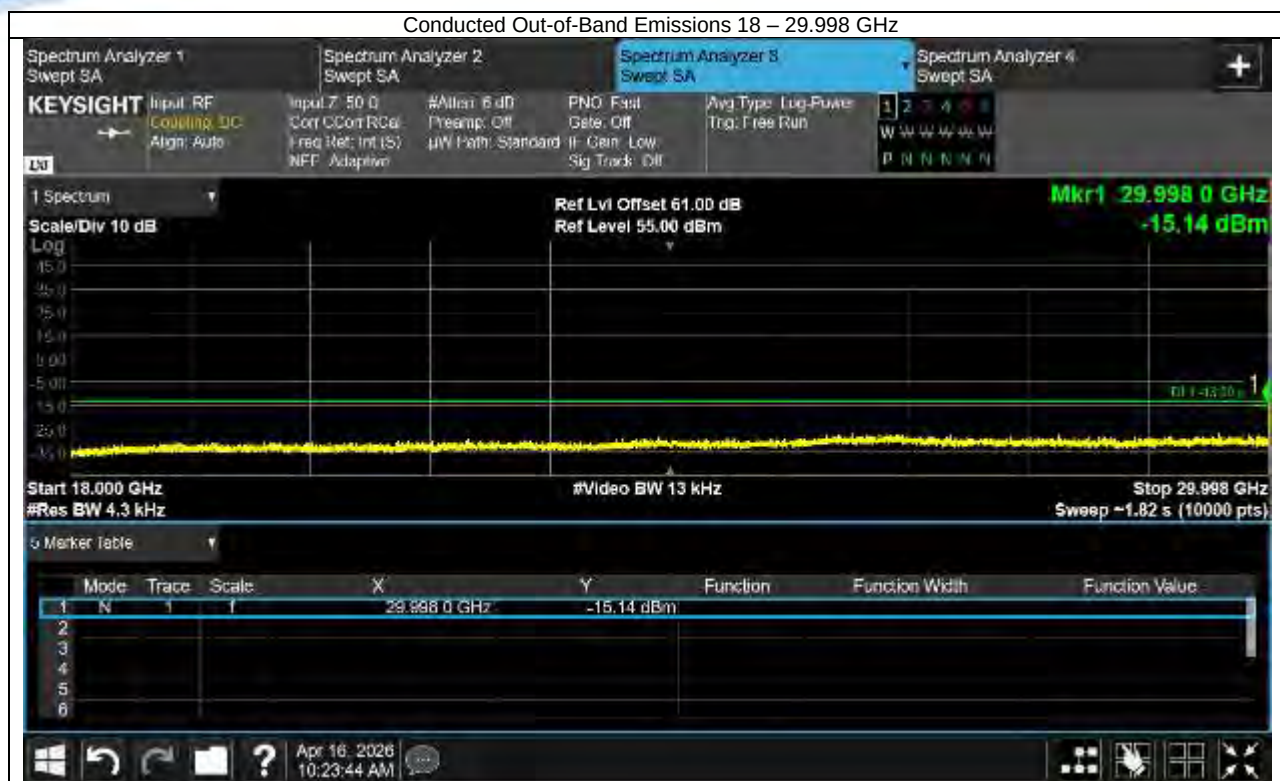
#### Test Measurement Results

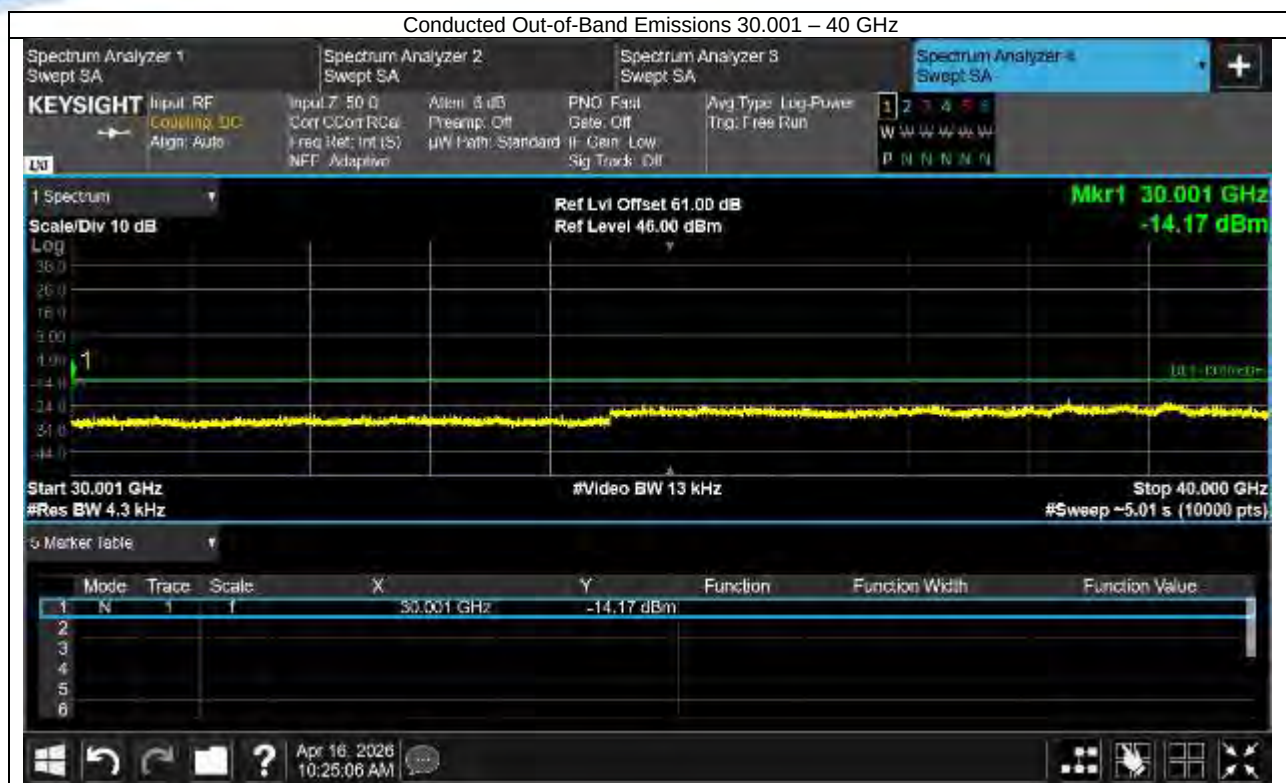
| Temperature: 20 °C            | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm) | Limit (dBm) | Margin (dB) | Compliant |
|-------------------------------|-----------------|----------------------|-----------------------|-------------|-------------|-----------|
| Voltage: 115 Vac, 60 Hz       |                 |                      |                       |             |             |           |
| Test Frequency: 29996.475 MHz |                 |                      |                       |             |             |           |
| 30MHz-1GHz                    | 744.09          | -38.16               | --                    | -13.00      | -25.16      | Complies  |
| 1-18GHz                       | 17206.00        | -31.79               | --                    | -13.00      | -18.79      | Complies  |
| 18-29.998GHz                  | 29998.00        | -15.14               | --                    | -13.00      | -2.14       | Complies  |
| 30.001-40GHz                  | 30001.00        | -14.17               | --                    | -13.00      | -1.17       | Complies  |
| 40-50GHz                      | 49601.00        | -50.10               | --                    | -13.00      | -37.10      | Complies  |
| 50-75 GHz                     | 59999.00        | -48.19               | -42.17                | -13.00      | -29.17      | Complies  |
| 75-110GHz                     | 89999.20        | -44.15               | --                    | -13.00      | -31.15      | Complies  |
| 110-140GHz                    | 110792.45       | -54.02               | -42.67                | -13.00      | -29.67      | Complies  |
| 140-150GHz                    | 149591.25       | -42.96               | --                    | -13.00      | -29.96      | Complies  |

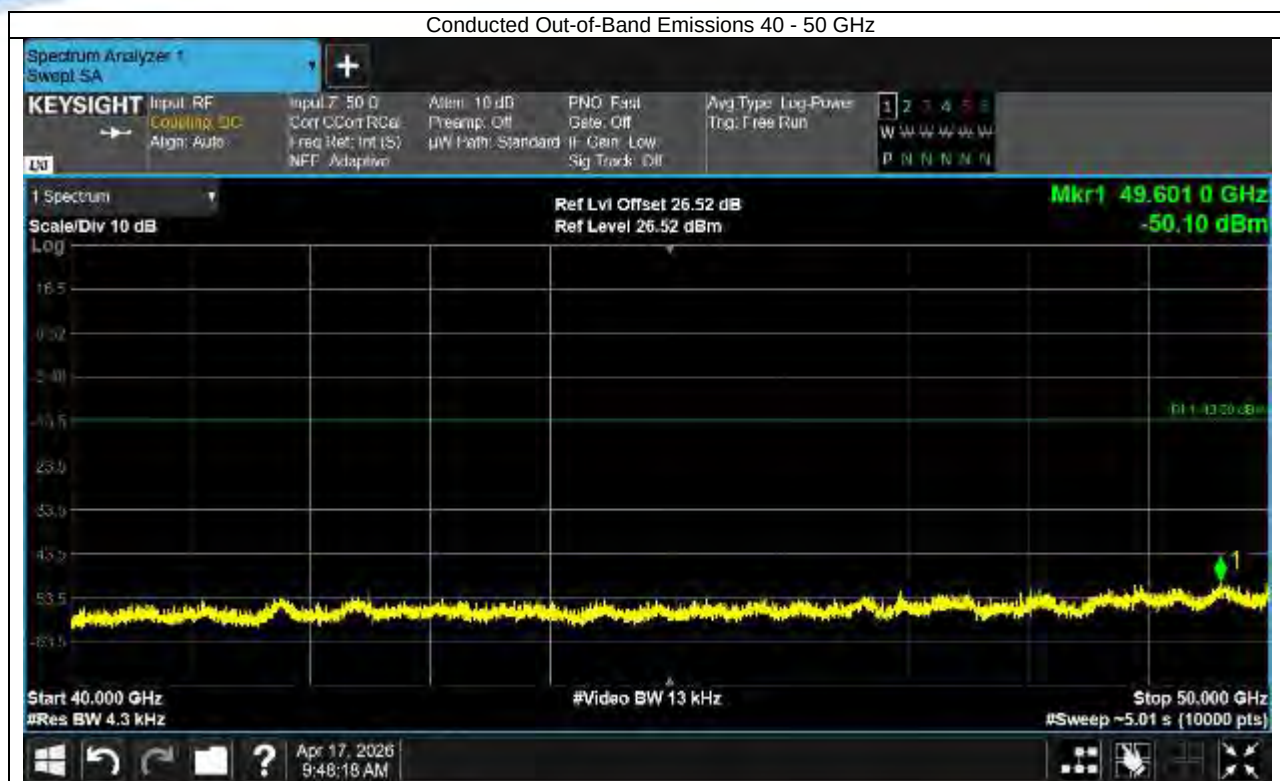
| Traceability to Industry Recognized Test Methodologies |                                         |
|--------------------------------------------------------|-----------------------------------------|
| Work Instruction:                                      | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS |
| Measurement Uncertainty:                               | <=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB     |

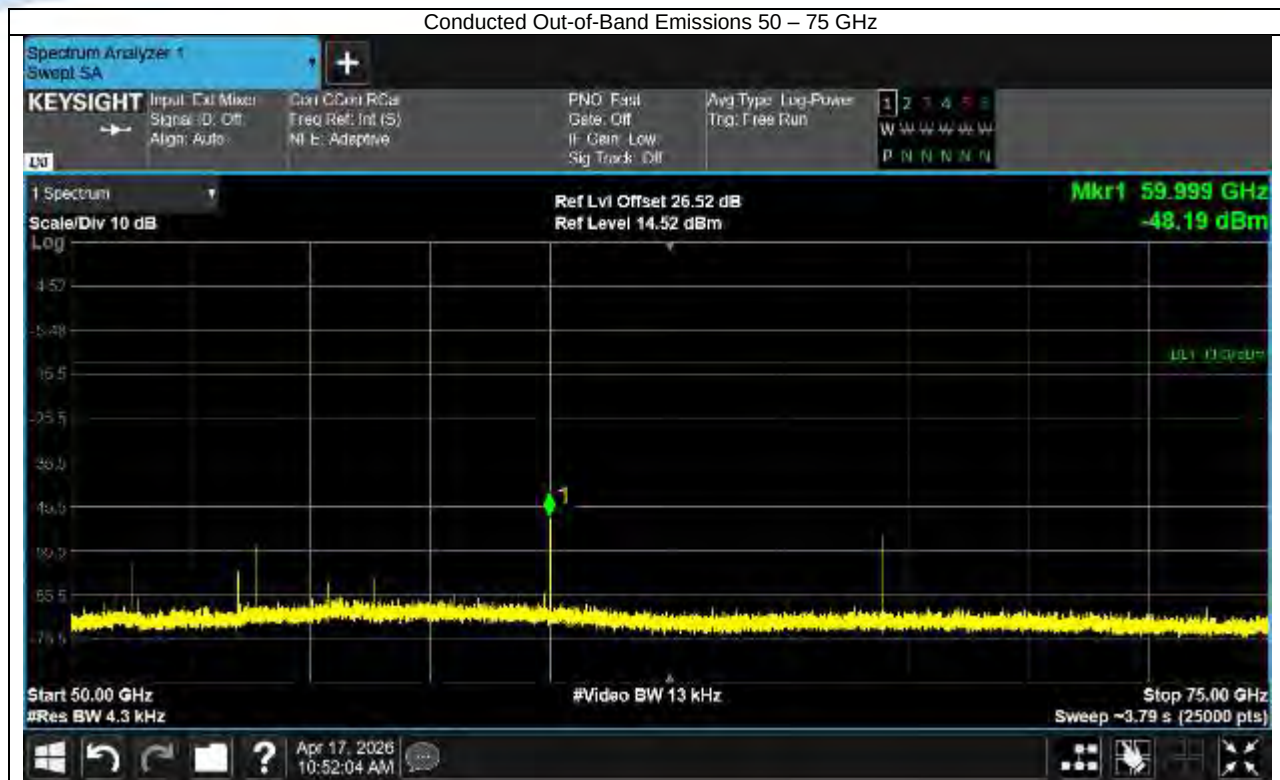


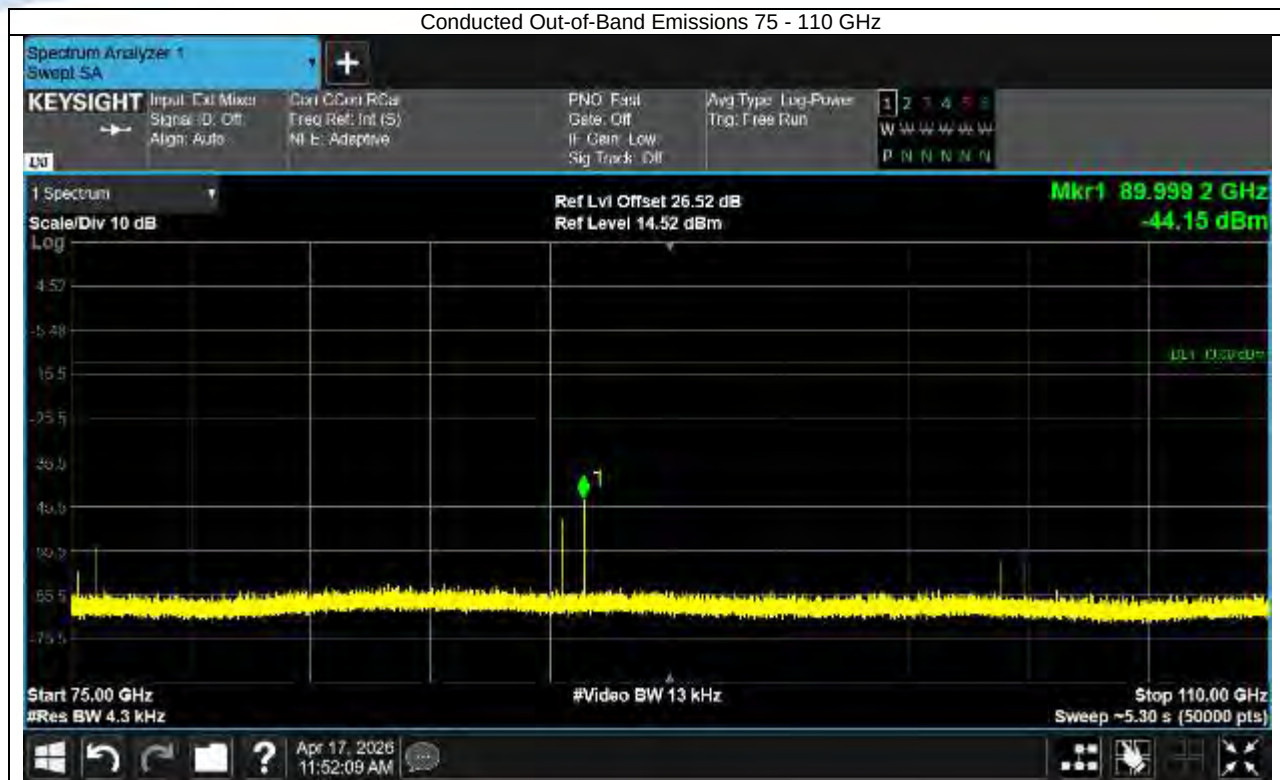




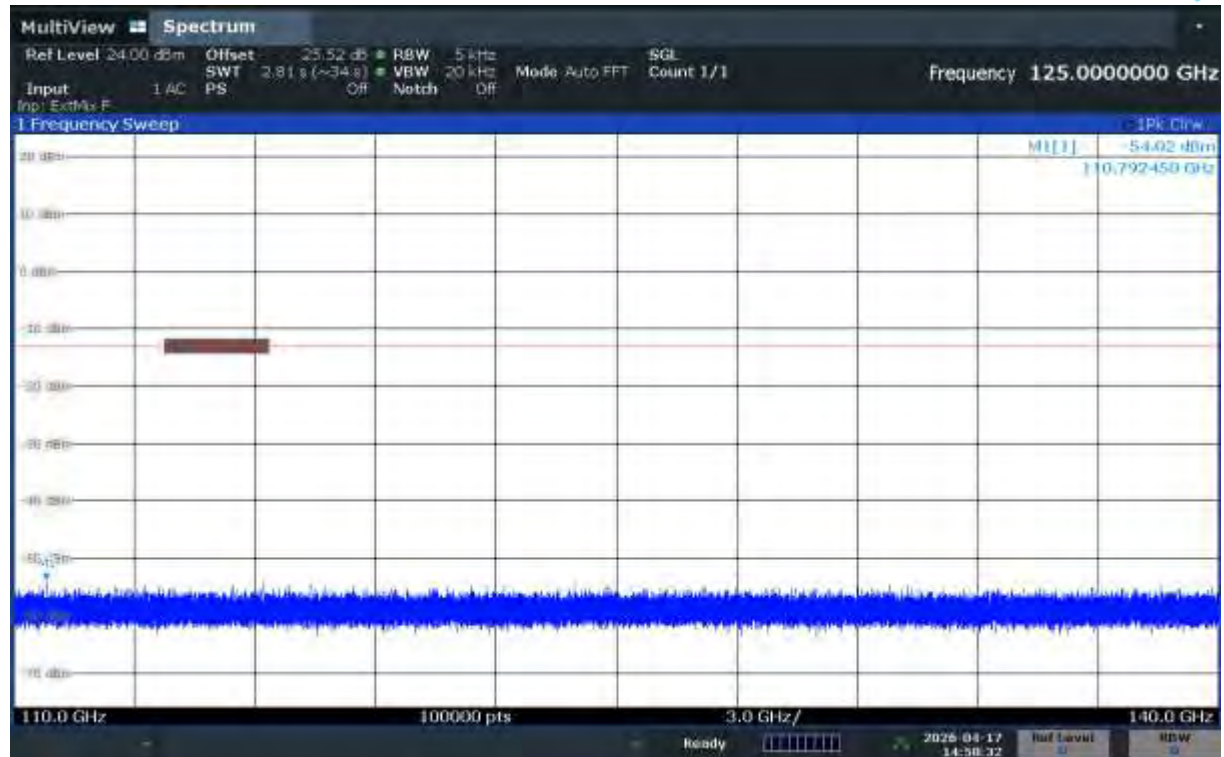






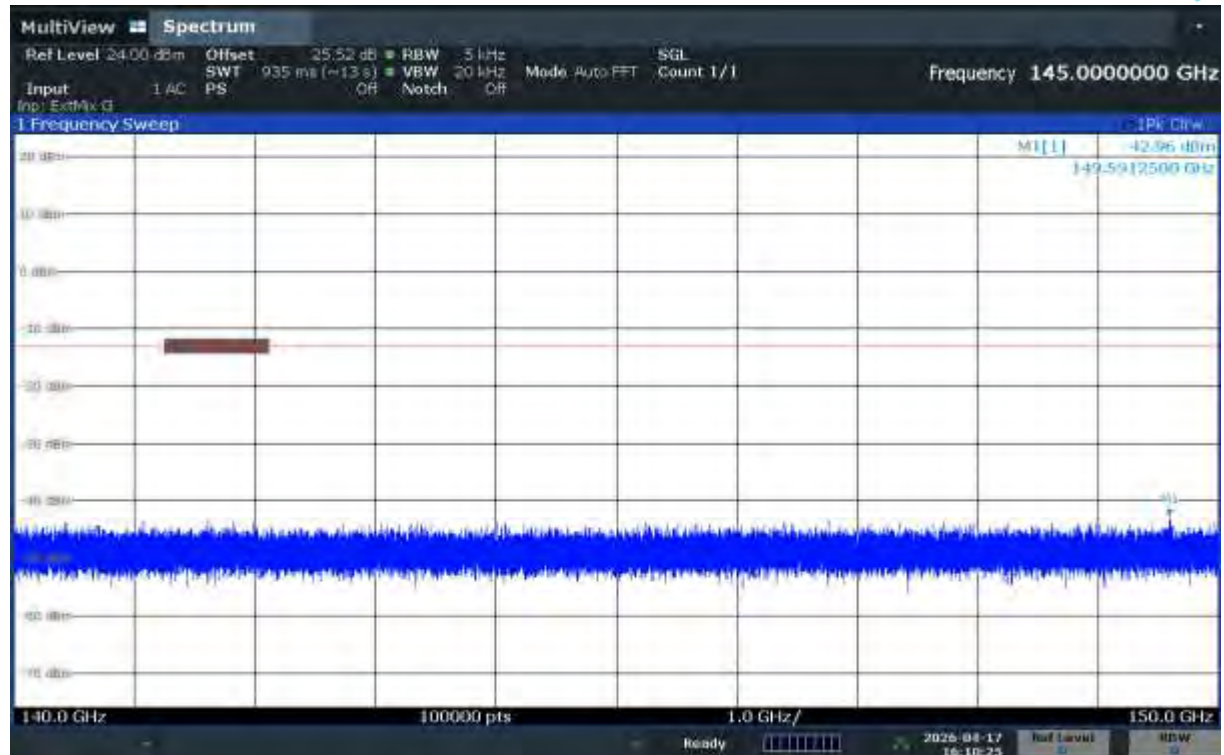


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:58:32

Conducted Out-of-Band Emissions 140 - 150 GHz



Date: 17.APR.2026 16:10:25

### 8.5.1.28. BPSK 7MHz Low Band Low Channel

#### Equipment Configuration for Transmitter Conducted Emission (Out-of-Band)

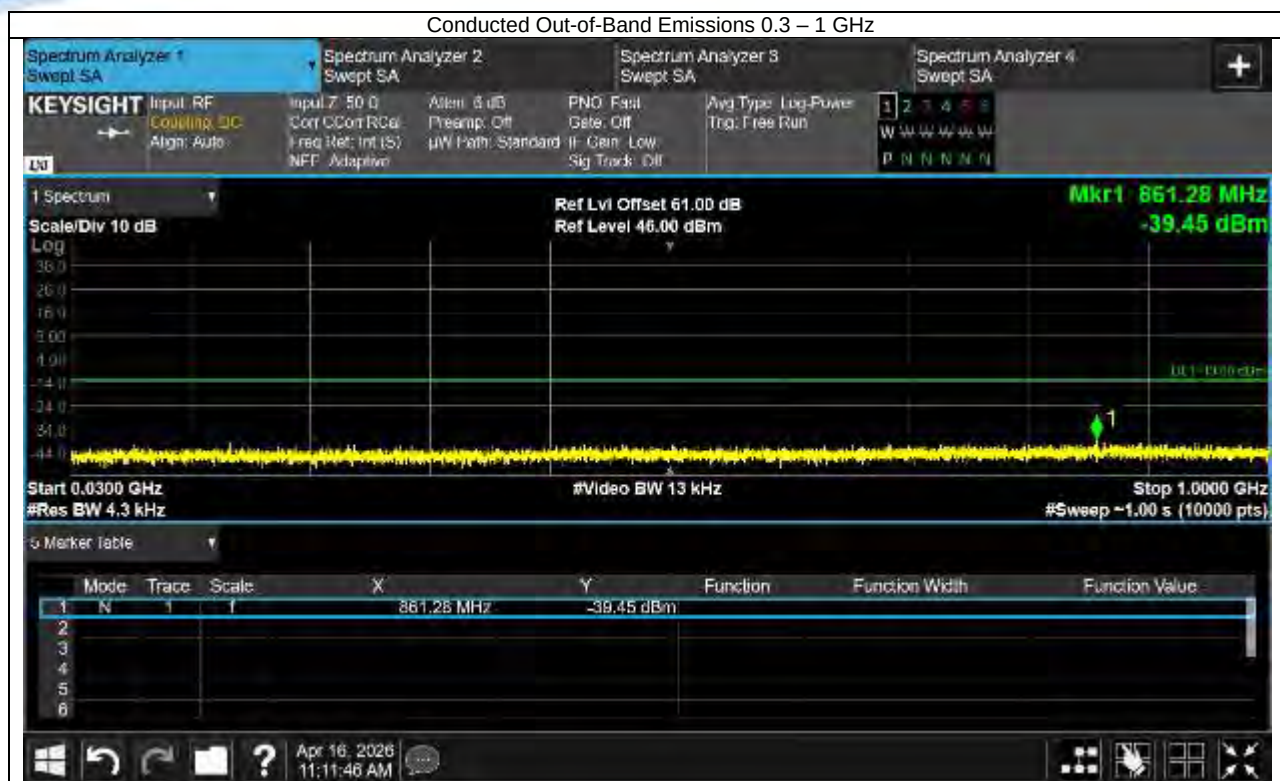
|                                |       |                        |     |
|--------------------------------|-------|------------------------|-----|
| <b>Variant:</b>                | 7 MHz | <b>Duty Cycle (%):</b> | 100 |
| <b>Modulation:</b>             | BPSK  | <b>Tested By:</b>      | SB  |
| <b>Engineering Test Notes:</b> |       |                        |     |

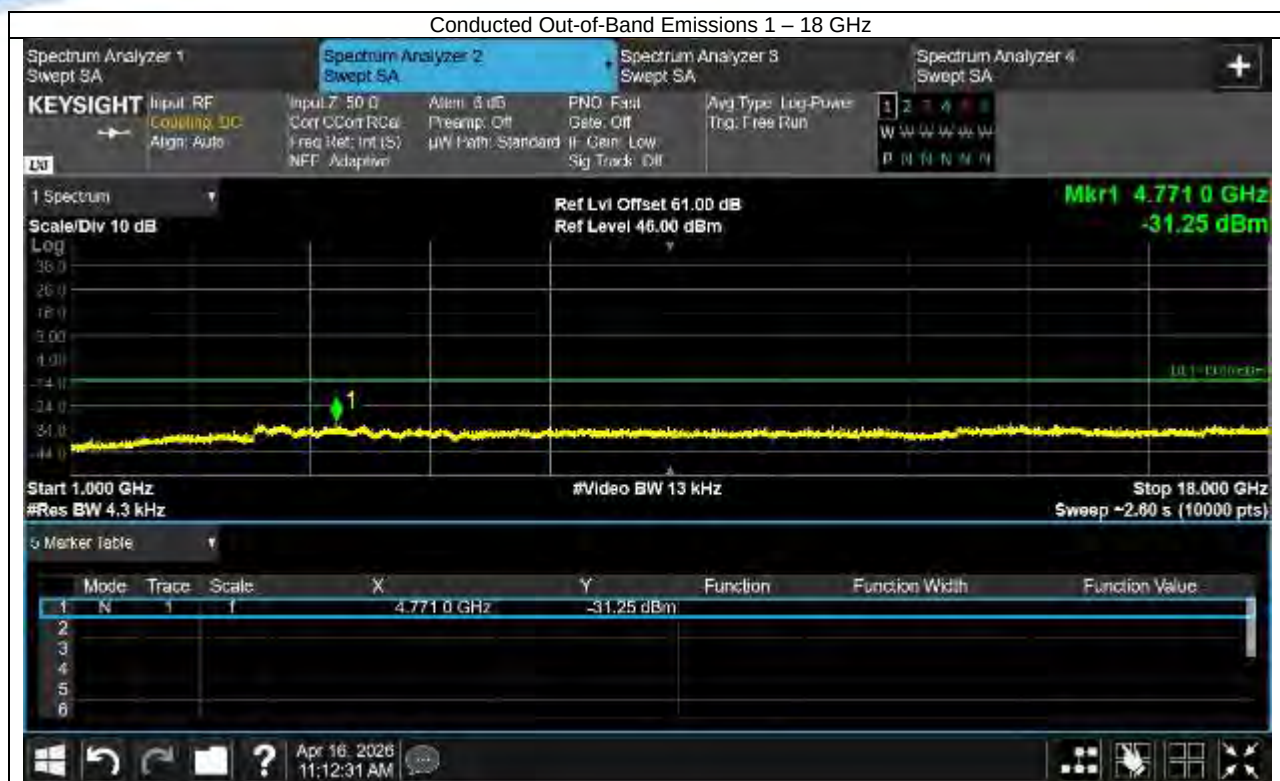
#### Test Measurement Results

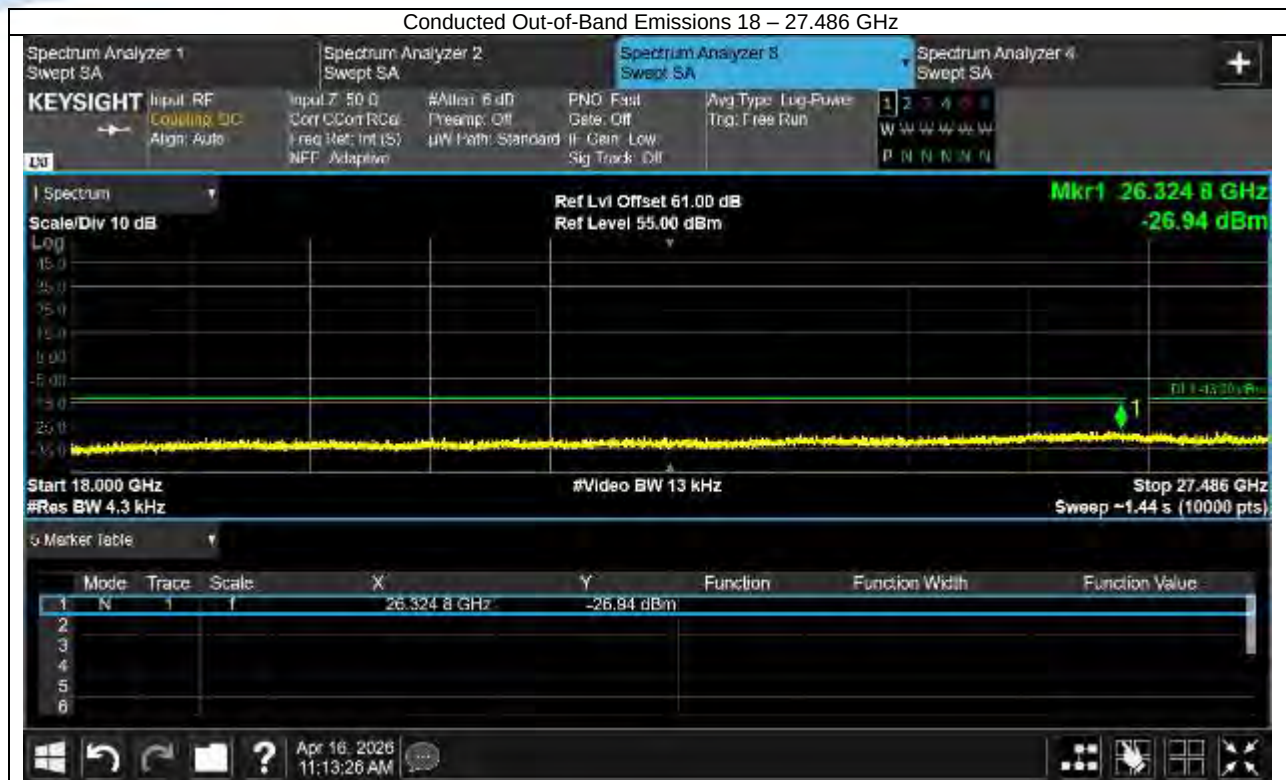
| Temperature: 20 °C<br>Voltage: 115 Vac, 60 Hz | Frequency (MHz) | Emission Level (dBm) | Corrected Level (dBm) | Limit (dBm) | Margin (dB) | Compliant |
|-----------------------------------------------|-----------------|----------------------|-----------------------|-------------|-------------|-----------|
| <b>Test Frequency: 27503.525 MHz</b>          |                 |                      |                       |             |             |           |
| <b>30MHz-1GHz</b>                             | 861.28          | -39.45               | --                    | -13.00      | -26.45      | Complies  |
| <b>1-18GHz</b>                                | 4771.01         | -31.25               | --                    | -13.00      | -18.25      | Complies  |
| <b>18-27.486GHz</b>                           | 26324.80        | -26.94               | --                    | -13.00      | -13.94      | Complies  |
| <b>27.521-40GHz</b>                           | 28457.00        | -19.33               | --                    | -13.00      | -6.33       | Complies  |
| <b>40-50GHz</b>                               | 49627.00        | -49.88               | --                    | -13.00      | -36.88      | Complies  |
| <b>50-75 GHz</b>                              | 55007.00        | -46.73               | -41.46                | -13.00      | -28.46      | Complies  |
| <b>75-110GHz</b>                              | 84392.10        | -63.04               | --                    | -13.00      | -50.04      | Complies  |
| <b>110-140GHz</b>                             | 132241.85       | -34.09               | -21.21                | -13.00      | -8.21       | Complies  |
| <b>140-150GHz</b>                             | 148817.45       | -42.67               | --                    | -13.00      | -29.67      | Complies  |

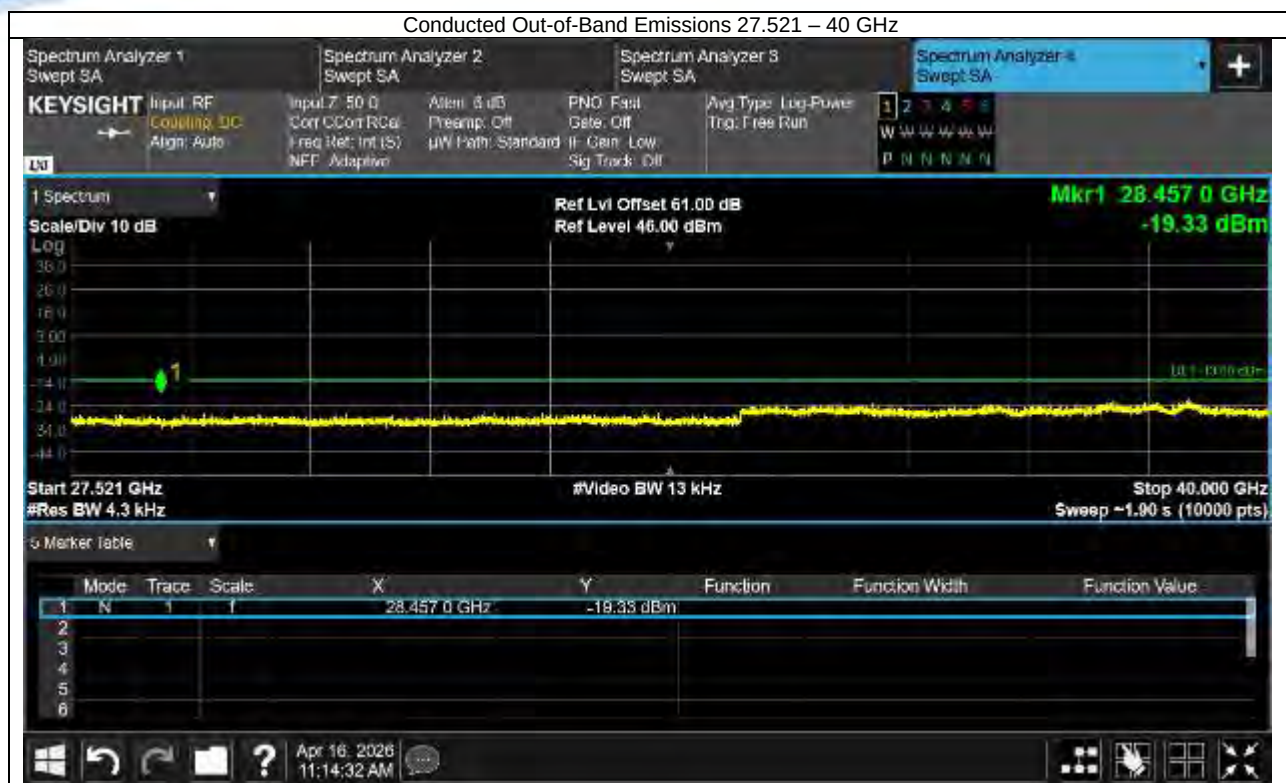
#### Traceability to Industry Recognized Test Methodologies

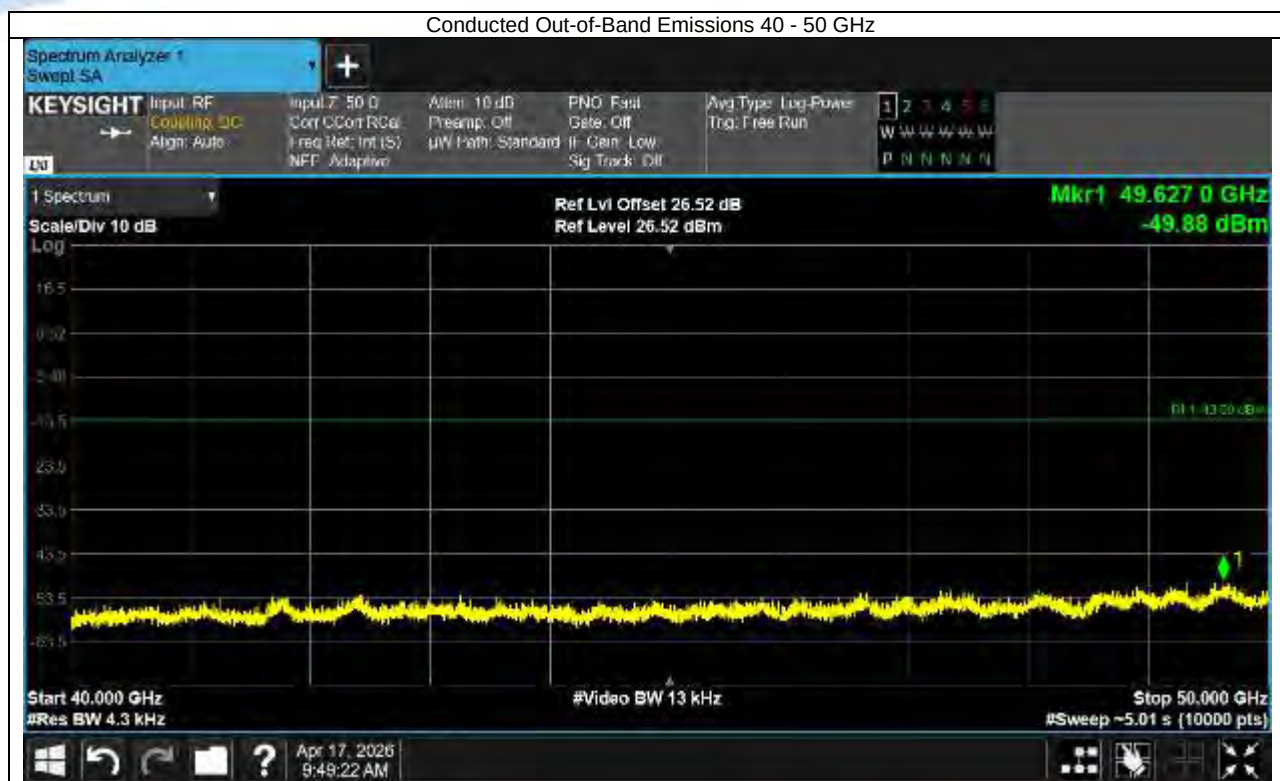
|                                 |                                         |
|---------------------------------|-----------------------------------------|
| <b>Work Instruction:</b>        | WI-05 MEASUREMENT OF SPURIOUS EMISSIONS |
| <b>Measurement Uncertainty:</b> | <=40 GHz ±2.37 dB, > 40 GHz ±4.6 dB     |

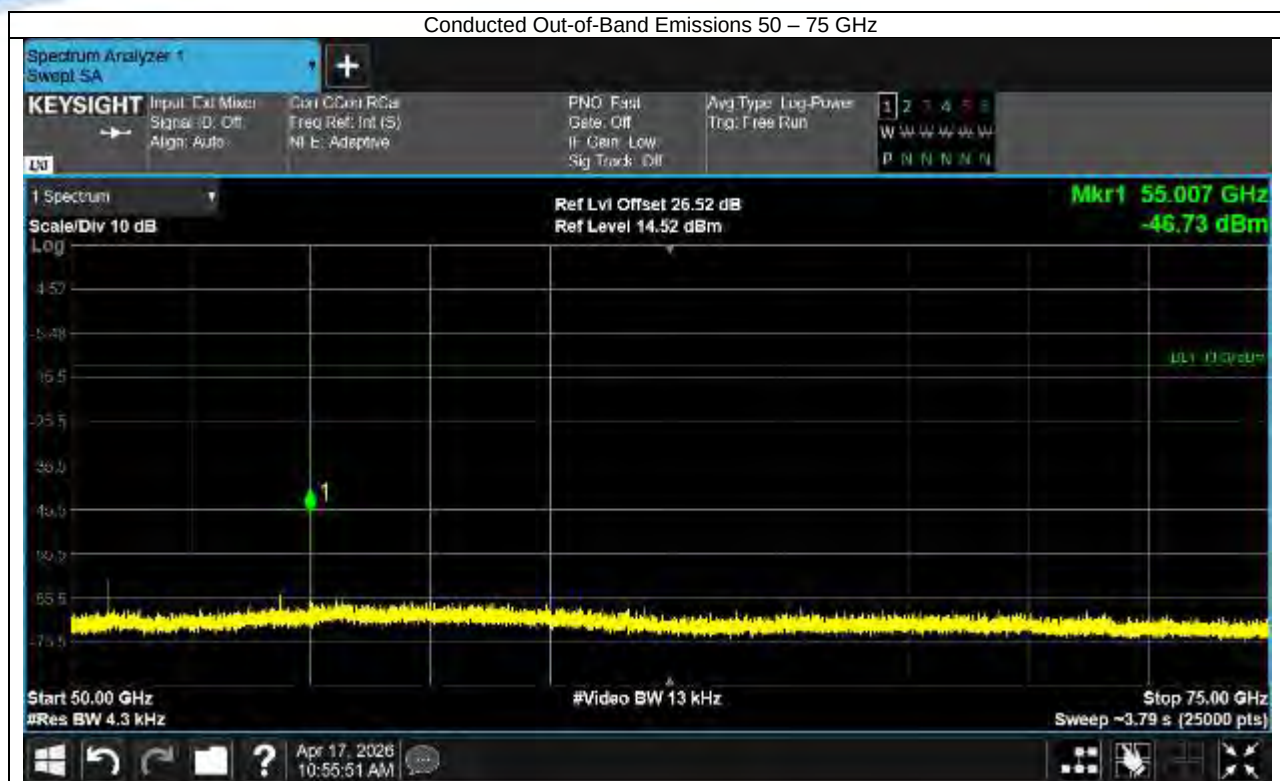


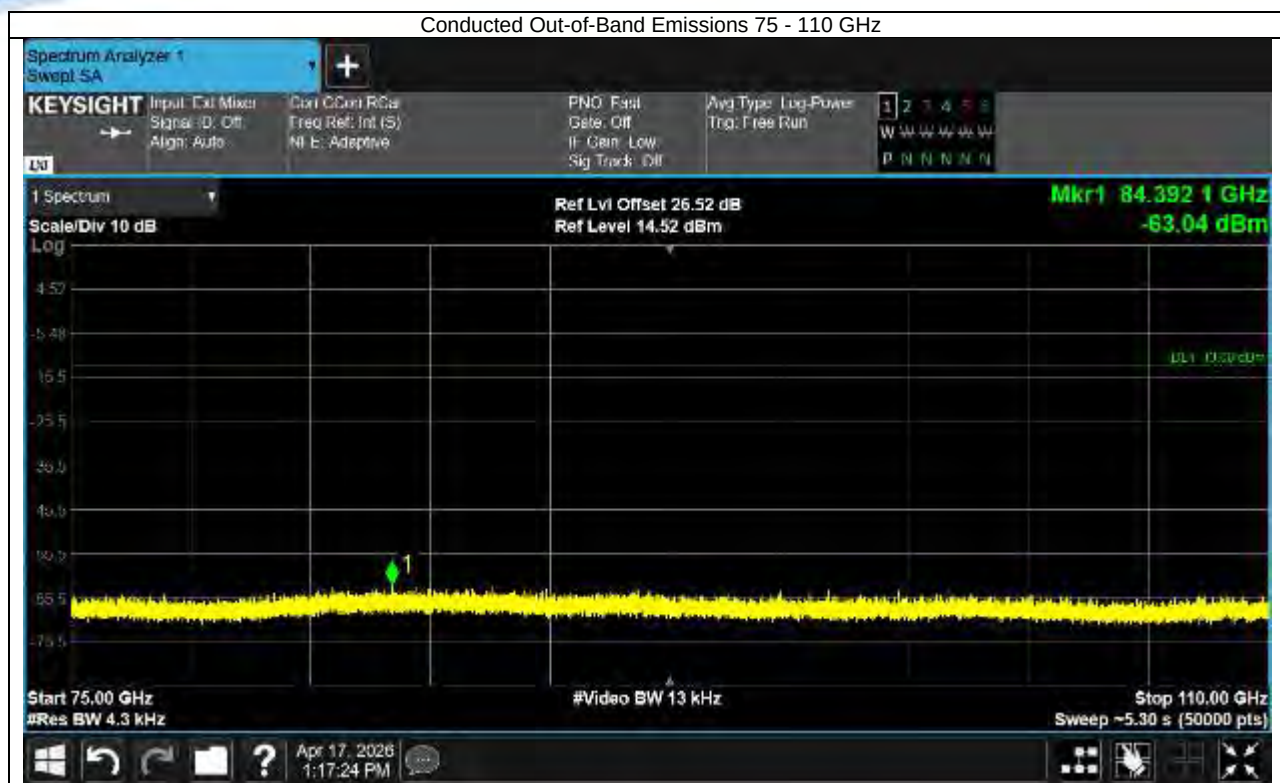




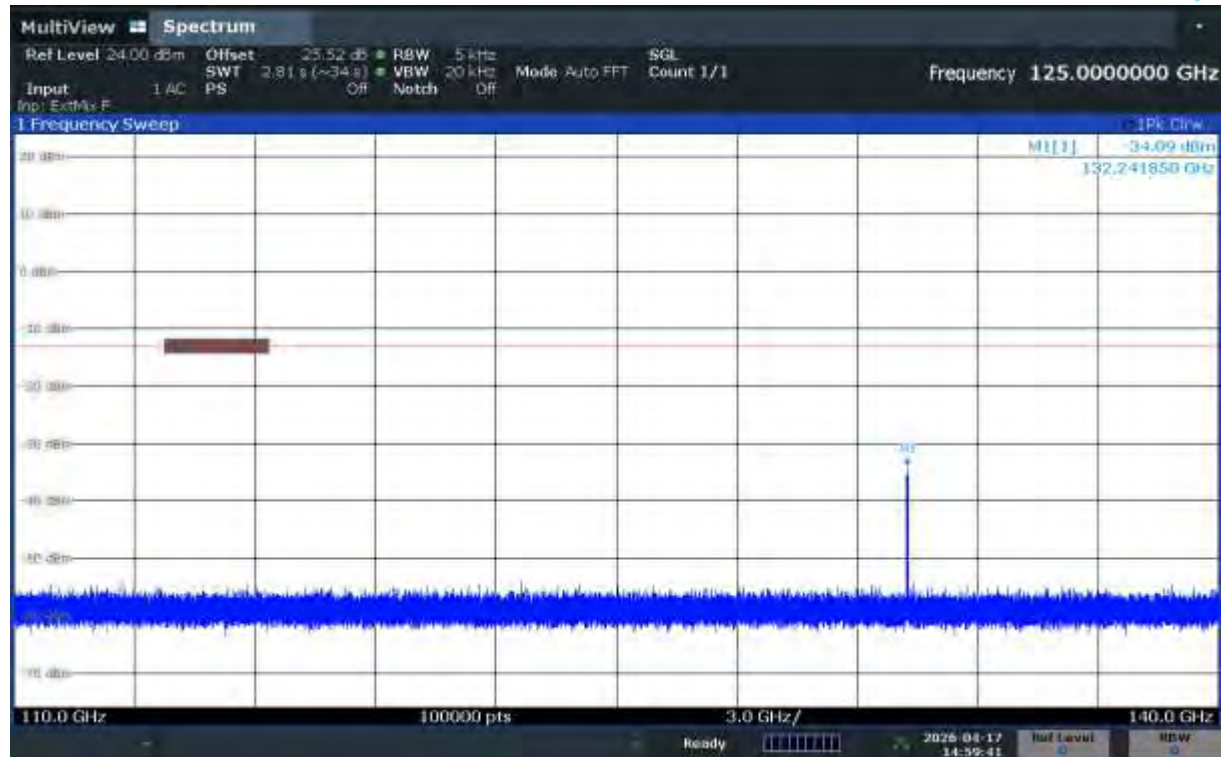






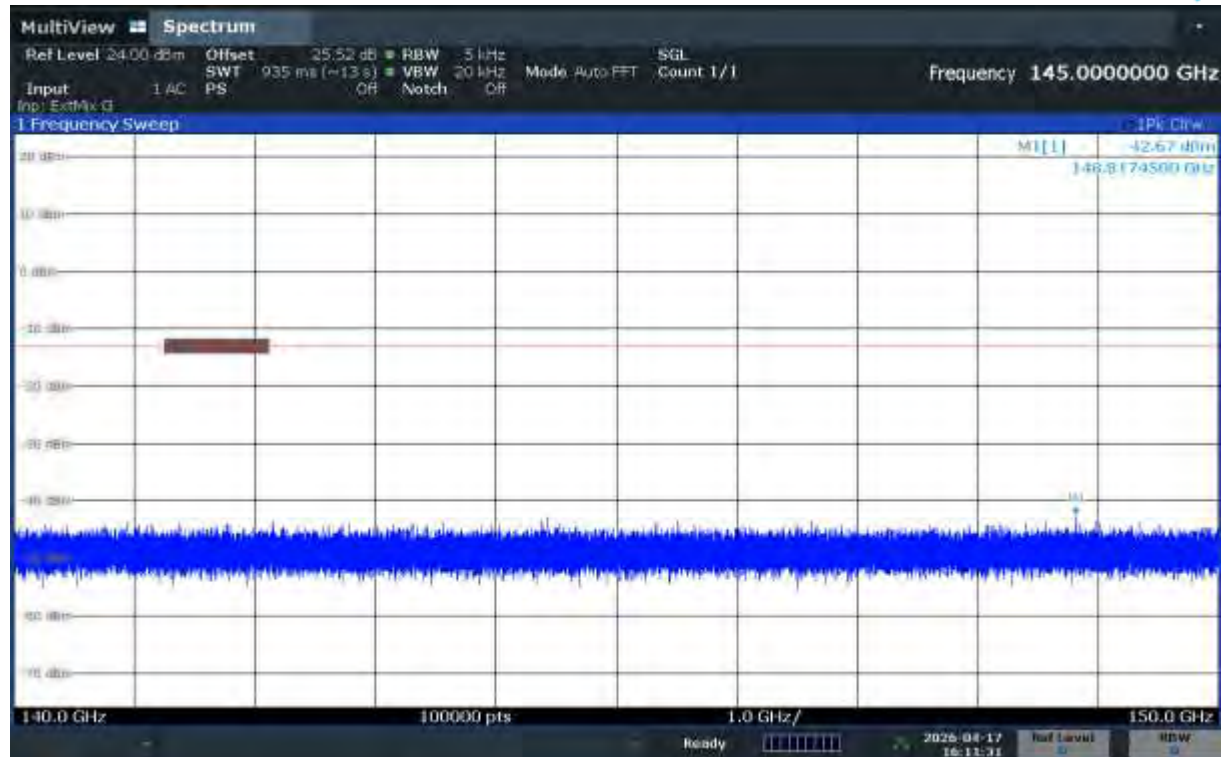


Conducted Out-of-Band Emissions 110 – 140 GHz



Date: 17.APR.2026 14:59:41

Conducted Out-of-Band Emissions 140 - 150 GHz



Date: 17.APR.2026 16:11:32