



REPORT

For

Dali Wireless, Inc.

535 Middlefield Road, Suite 280
Menlo Park, CA 94025



Date: 11 April 2022
Report No.: 20.01.20811
Revision No.: 1
Project No.: 20811
Equipment: Advanced Digital Distributed Antenna System
Model No.: AH37-3-PS-ABH-21-3N-D0
FCC ID: HCOAH373PSABH21A

**ONE STOP GLOBAL CERTIFICATION SOLUTIONS
ISO 17025 ACCREDITED**

Unit 205 – 8291 92 ST., Delta, BC
V4G 0A4, Canada
Phone: 604-247-0444
Fax: 604-247-0442
www.labtestcert.com

TABLE OF CONTENTS

| | |
|--|-----------|
| TEST REPORT_FCC Part 2, 90..... | 3 |
| Revision History..... | 4 |
| Device Under Test Description..... | 4 |
| Program details..... | 5 |
| Description of Equipment Under Test and Variant Models..... | 6 |
| Client Equipment Used During Test..... | 8 |
| Software and Firmware..... | 8 |
| Input/Output Ports..... | 8 |
| Power Interface..... | 9 |
| EUT Operation Modes..... | 9 |
| EUT Configuration Modes..... | 9 |
| Test Equipment Verified for function..... | 9 |
| Test Station Photo..... | 10 |
| Test Station Cables and Loads..... | 10 |
| Test Station Insertion Loss..... | 10 |
| Measurement Uncertainty..... | 11 |
| Result Summary..... | 12 |
| AGC Threshold..... | 13 |
| Test setup | 13 |
| Results – Output Power FCC Requirement | 14 |
| Occupied Bandwidth..... | 15 |
| Test setup | 16 |
| Results | 17 |
| Out of Band Rejection..... | 28 |
| Test setup | 28 |
| Results | 29 |
| Input-Versus-Output Signal Comparison..... | 32 |
| Test setup | 32 |
| Results | 33 |
| Input/output Power and Amplifier/Booster Gain..... | 53 |
| Test setup | 53 |
| Results | 54 |
| Out-Of-Band / Out-Of-Block Intermodulation and Spurious Emissions..... | 55 |
| Test setup | 56 |
| Results | 57 |
| Noise Figure..... | 75 |
| Test setup | 75 |
| Results | 76 |
| Frequency Stability..... | 77 |
| Radiated Emissions – Enclosure..... | 78 |
| Test setup | 79 |
| Measurement Procedure | 80 |
| Test Result | 80 |
| Test setup picture: | 81 |
| Graphical Representation for Emission - Radiated 30kHz to 30MHz | 82 |
| Graphical Representation for Emission - Radiated 30MHz to 1GHz | 83 |
| Graphical Representation for Emission - Radiated 1 to 9GHz | 84 |
| Table Representation for Emission - Radiated 30MHz to 9GHz | 84 |
| APPENDIX A: ISO 17025:2005 Accreditation Certificate..... | 85 |

| TEST REPORT_FCC Part 2, 90 | |
|-------------------------------------|---|
| Private Land Mobile Services | |
| Report Reference No.....: | 20.01.20811 |
| Report Revision History.....: | ✓ Rev. 1 |
| Compiled by (+ signature)..... | Jack Qin  |
| | |
| Approved by (+ signature)..... | David Johanson  2021 |
| Date of issue.....: | April 11,2022 |
| Total number of pages..... | |
| | |
| FCC Site Registration No.: | 721268 |
| IC Site Registration No.: | 5970A-2 |
| Testing Laboratory.....: | LabTest Certification Inc. |
| Address | Unit 3128-20800 Westminster HWY, Richmond, B.C. V6V 2W3 Canada |
| Applicant's name.....: | Dali Wireless, Inc. |
| Address | 535 Middlefield Road, Suite 280, Menlo Park, CA 94025 |
| Manufacture's Name | Dali Wireless (Canada) Inc. |
| Address | 8618 Commerce Court, Burnaby, B.C. V5A 4N6, Canada |
| Test specification: | |
| Standards.....: | <ul style="list-style-type: none"> ➤ FCC Part 2; 2019 ➤ FCC Part 90; 2019 |
| Test procedure.....: | <ul style="list-style-type: none"> ➤ FCC KDB 935210 D05 Indus Booster Basic Meas v01r03: April 15, 2019 ➤ ANSI/TIA-603- E-2016 ➤ ANSI C63.4:2014 |
| Test item description: | |
| Trade Mark.....: | AH37™ |
| Model/Type reference | AH37-3-PS-ABH-21-3N-D0-1 |
| Serial Number.....: | 10911213E01BB9002 |
| FCC ID | HCOAH373PSABH21A |

| Possible test case verdicts: | |
|---|----------|
| - test case does not apply to the test object.....: | N/A |
| - test object does meet the requirement.....: | P (Pass) |
| - test object does not meet the requirement.....: | F (Fail) |
| Testing: | |
| Date of receipt of test item.....: | |
| Date (s) of performance of tests.....: | |

Revision History

| Revision | Date | Reason For Change | Author(s) |
|----------|----------------|-------------------|-----------|
| 0 | March 31, 2022 | Initial Data | Jack Qin |
| 1 | April 11, 2022 | Update | Jack Qin |
| | | | |

Device Under Test Description

| | |
|--|---|
| Application for | PS 700/800/UHF AirHost Unit, Tri Band Medium Power DAS |
| Passing Transmit Frequency | 806 MHz – 816 MHz 799 MHz – 805 MHz 450 MHz – 470 MHz |
| Operating Transmit Frequency FCC | 806 MHz – 816 MHz 788 MHz – 798 MHz 799 MHz – 805 MHz 450 MHz – 454 MHz 456 MHz – 462.5375 MHz 462.7375 MHz – 467.5375 MHz 467.7375 MHz – 512 MHz |
| Passing Receive Frequency | 851 MHz – 861 MHz 769 MHz – 775 MHz 450 MHz – 470 MHz |

| | |
|--|--|
| Operating Receive Frequency FCC | 851 MHz – 861 MHz 758 MHz – 768 MHz 769 MHz – 775 MHz 450 MHz – 454 MHz 456 MHz – 462.5375 MHz 462.7375 MHz – 467.5375 MHz 467.7375 MHz – 512 MHz |
| Number of Channels | Up to 64 channels |
| Rated RF Output (e.i.r.p.)..... | 37 dBm |
| Modulation Type | P25 Phase I C4FM, CQPSK; P25 Phase II HDQPSK on full band of Band 800; FM on Band 800 between 806 MHz – 809 MHz only; P25 Phase I C4FM, CQPSK; P25 Phase II HDQPSK on Band 700 between 799 MHz – 805 MHz |
| Equipment mobility | Fixed |
| Operating condition..... | -40 to +50 °C |
| Mass of equipment (g)..... | < 27,700g |
| Dimension(W X D X H) | 410 mm X 230 mm X 696 mm |
| Nominal Voltages for: | <u>48 V</u> stand-alone equipment <u>48 V</u> combined (or host) equipment |
| Supply Voltage: | _____ AC _____ Amps <u>48V</u> DC <u>7.083</u> Amps |
| If DC Power: | ___ Internal Power Supply <input checked="" type="checkbox"/> External Power Supply ___ Battery <input type="checkbox"/> Nickel Cadmium <input type="checkbox"/> Alkaline <input type="checkbox"/> Nickel-Metal Hydride <input type="checkbox"/> Lithium-Ion <input type="checkbox"/> Other |

Program details

| | | |
|---------------------------------------|-------------------------------|---|
| Testing Facility by procedure: | | |
| <input checked="" type="checkbox"/> | Radiated Measurement | LabTest Certification Inc. |
| Testing location/ address..... : | | Unit 3128-20800 Westminster HWY, Richmond, B.C. V6V 2W3 Canada |
| <input checked="" type="checkbox"/> | Conducted Measurement: | LabTest Certification Inc. |

| | |
|----------------------------------|---|
| Testing location/ address..... : | Unit 3128-20800 Westminster HWY, Richmond, B.C. V6V 2W3 Canada |
|----------------------------------|---|

| Summary of testing: | |
|--|---|
| Tests performed (name of test and test clause): Conducted Measurement Radiated Emissions on Enclosure | Testing location: Bench top, Richmond In SAC, Richmond |
| <p>The tests indicated in Test Summary were performed on the product constructed as described below. The test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.</p> <p>Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. LabTest does not make any claims of compliance for samples or variants which were not tested.</p> | |

Description of Equipment Under Test and Variant Models

| |
|--|
| <p>Description: The AH37 /700PS/800PS/UHF PS is a tri-band remote unit that provides at least 5 W of output power on each band. The tri-band unit supports up to 3 bands in a sealed type 2 chassis for Class A operation.</p> <p>On the downlink path the hd37 PS remote receives an aggregated stream of digitized RF signals from an <i>air</i>Host PS, which it then converts into analog RF signals. Depending on the frequency band, the signal is amplified in the RF module and then sent out through simplex RF ports to an external filter.</p> <p>On the UL path the hd37 PS remote receives analog RF signals for the RF band, from an external filter. The RF signals are converted into a digital data stream and then delivered over optical fiber to an <i>air</i>Host PS. The hd37 PS remote also accommodates a 1 Gbps Ethernet backhaul for transporting the data from nearby IP devices such as security cameras and Wi-Fi access points.</p> <p>The intentional transmitter only exists in the uplink path and hence the EMC tests in this report dedicated to the uplink emission.</p> <p>In order to build up a complete signal booster system, the <i>hd37</i> was connected as the Auxiliary device. The signal was injected and ejected via coaxial cables from the <i>hd37</i> to the Equipment Under Test (EUT).</p> |
|--|



Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

AH37-3-PS-ABH-21-3N-D0-1 – tri band 700PS 800PS UHF PS model as tested

Tri Band

1. AH37-3-PS-ABH-21-3N-D0 (airHost37 with 700,800,UHF PS)
2. AH33-3-PS-ABH-21-3N-D0 (airHost33 with 700,800,UHF PS)

Dual Band:

1. AH37-2-PS-AB-21-2N-D0 (airHost37 with 700,800PS)
2. AH33-2-PS-AB-21-2N-D0 (airHost 33 with 700,800PS)
3. AH37-2-PS-AH-21-2N-D0 (airHost 37 with 700,UHF PS)
4. AH33-2-PS-AH-21-2N-D0 (airHost 33 with 700,UHF PS)
5. AH37-2-PS-BH-21-2N-D0 (airHost 37 with 800,UHF PS)
6. AH33-2-PS-BH-21-2N-D0 (airHost 33 with 800,UHF PS)

Single Band:

1. AH37-1-PS-A-21-1N-D0 (airHost 37 with 700PS)
2. AH33-1-PS-A-21-1N-D0 (airHost 33 with 700PS)
3. AH37-1-PS-B-21-1N-D0 (airHost 37 with 800PS)
4. AH33-1-PS-B-21-1N-D0 (airHost 33 with 800PS)
5. AH37-1-PS-H-21-1N-D0 (airHost 37 with UHF PS)
6. AH33-1-PS-H-21-1N-D0 (airHost 33 with UHF PS)

Client Equipment Used During Test

| Use* | Product Type | Manufacturer | Model | Comments |
|------|--------------------------------------|--------------------|------------------------|---|
| AE1 | <i>hd37, 700PS, 800PS, UHF PS</i> | Dali Wireless Inc. | hd37-3-PS-ABH-21-1N-D0 | Auxiliary equipment, which is the back end of signal booster system air interfaced to donor Base Station. |
| EUT | <i>airHost, 700PS, 800PS, UHF PS</i> | Dali Wireless Inc. | AH37-3-PS-ABH-21-3N-D0 | EUT where the RF (I/O) antenna attached via duplexers/multiplexer when necessary. |
| AE2 | Dali Matrix Console | Dali Wireless Inc. | hdCNSL-1-8-4-120G-AC | Auxiliary equipment provides the configuration and control interface to <i>airHost</i> and <i>hd37</i> . |
| AE3 | Power Supply | MeanWell | HGL-480H-48 | AC to DC Converter, I/P: 120VAC, 60Hz, 5.5A O/P: +48VDC, 480W |

Abbreviations:
 EUT - Equipment Under Test,
 AE - Auxiliary/Associated Equipment, or
 SIM - Simulator (Not Subjected to Test)

Software and Firmware

| Use* | Description | Version |
|------|--------------------|--------------|
| EUT | Software installed | 5.2.0-0.5594 |
| AE1 | Software installed | 5.2.0-0.5594 |
| AE2 | Software installed | 5.2.0-0.1111 |

Abbreviations:
 EUT - Equipment Under Test,
 AE - Auxiliary/Associated Equipment, or
 SIM - Simulator (Not Subjected to Test)

Input/Output Ports

| Port # | Name | Type* | Cable Max. >3m | Cable Shielded | Comments |
|--------|-----------------------------|-------|----------------|----------------|---------------------------|
| 1 | DC Power Port | DC | No | No | Dual feed 48 VDC Assembly |
| 2 | 3 * RF Input/Output Ports | I/O | No | No | N-Type Coaxial |
| 3 | 2 * Optical Fibre I/O Ports | I/O | No | No | LC/UPC Duplex |
| 4 | 2 * TP | TP | No | No | RJ-45 |

*Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
 I/O = Signal Input or Output Port (Not Involved in Process Control)
 TP = Telecommunication Ports

Power Interface

| Mode # | Voltage (V) | Current (A) | Power (W) | Frequency (DC/AC-Hz) | Phases (#) | Comments |
|--------|-------------|-------------|-----------|----------------------|------------|----------|
| 1 | 48 | - | - | DC | - | |

EUT Operation Modes

| Mode # | Description |
|--------|---|
| 1 | UL and DL transmission and receiving ON |

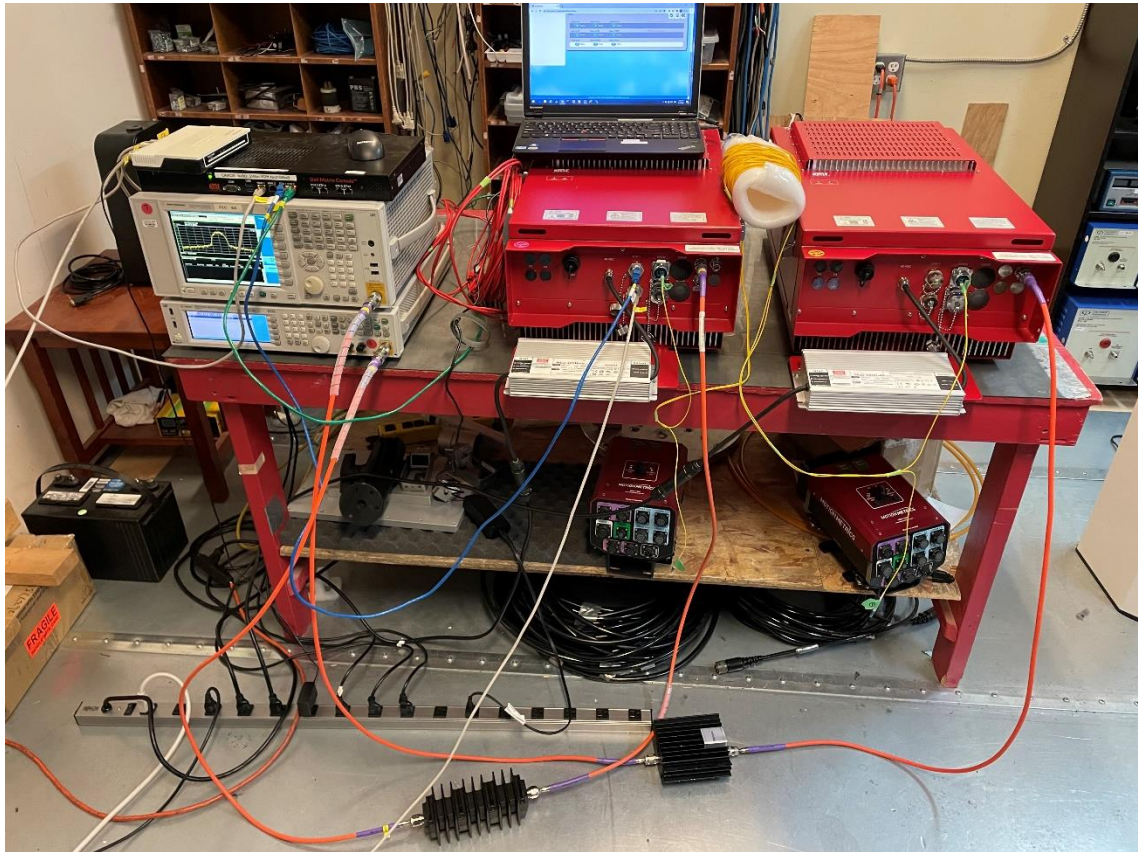
EUT Configuration Modes

| Mode # | Description |
|--------|---|
| 1 | hd37 maximum input threshold set to -55 dBm, uplink attenuation set to 0dB; AH37 uplink and downlink attenuation set to 0dB. |

Test Equipment Verified for function

| Model # | Description | Checked Function | Results |
|-----------|---------------------------|-------------------------------------|---|
| N9038A | Spectrum Analyzer | Frequency and Amplitude | Connected 50MHz and -20 dBm Ref_siganl and checked OK |
| JB1 | Antenna, 30 to 2000MHz | Checked structure | Normal – no damage |
| SAS-571 | Antenna, 1 to 18GHz | Checked structure | Normal – no damage |
| AL-130 | Antenna, 9kHz to 30MHz | Checked structure | Normal – no damage |
| KT-N5172B | Signal Generator | Frequency, Amplitude and Modulation | Within MFR Specs |
| KT-N9010A | Spectrum Analyzer | Frquency and Amplitude | Within MFR Specs |

Test Station Photo



Test Station Cables and Loads

| Model # | Manufacture | Description |
|-----------------|-------------|---|
| 3 x TM8-N1S1-60 | MegaPhase | N male to SMA male coaxial cable in 60 inches |
| 1 x 58-40-34 | Aeroflex | 40dB 50W attenuator |
| 1 x 49-30-34 | Aeroflex | 30dB 25W attenuator |

Test Station Insertion Loss

| | Band 800 | Band 700 | Band UHF |
|----------------|----------|----------|----------|
| UL Receiver | 31.0 dB | 31.0 dB | 30.7 dB |
| UL Transmitter | 40.7 dB | 41.0 dB | 41.2 dB |

Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests:

| Parameter | Uncertainty |
|-----------------------------------|-------------|
| Radio Frequency | ±1 ppm |
| Total RF Power: Conducted | ±1 dB |
| RF Power Density: Conducted | ±2.75 dB |
| Spurious Emissions: Conducted | ±3 dB |
| Temperature | ±1 °C |
| Humidity | ±5 % |
| DC and Low Frequency Voltages | ±3 % |
| Radiated Emission, 30 to 6,000MHz | ± 4.95 dB |

Uncertainty figures are valid to a confidence level of 95%.

Result Summary

The Compliance Status is a judgment based on the direct measurements and calculated highest emissions to appropriate standard limits. Measurement uncertainty values, provided on calibration certificates, were not be used in the judgment of the final status of compliance.

| FCC Part | | | |
|---|---|----------------------|--------|
| Test Type | Regulation | Measurement Method | Result |
| AGC Threshold | FCC KDB 935210 D05, v01r03, Section 4.2 | ANSI TIA-603- E-2016 | PASS |
| Out of Band Rejection | FCC KDB 935210 D05, v01r03, Section 4.3 | ANSI TIA-603- E-2016 | PASS |
| Input-versus-output Signal Comparison | FCC KDB 935210 D05, v01r03, Section 4.4 | ANSI TIA-603- E-2016 | PASS |
| Input/output Power and Amplifier/Booster Gain | FCC KDB 935210 D05, v01r03, Section 4.5 | ANSI TIA-603- E-2016 | PASS |
| Noise Figure | FCC KDB 935210 D05, v01r03, Section 4.6 | ANSI TIA-603- E-2016 | PASS |
| Measuring out-of-band/out-of-block (including intermodulation) and spurious emissions | FCC KDB 935210 D05, v01r03, Section 4.7 | ANSI TIA-603- E-2016 | PASS |
| Frequency stability | FCC KDB 935210 D05, v01r03, Section 4.8 | ANSI TIA-603- E-2016 | PASS |
| Spurious emissions radiated measurements | FCC KDB 935210 D05, v01r03, Section 4.9 | ANSI C63.4:2014 | PASS |

AGC Threshold

| | | | | | |
|---|---|--|--|--|-----------------|
| Governing Doc | FCC Part 2 2.1046(a) FCC Part 90.219(d) | | Room Temperature (°C) | | |
| Test Procedure | ANSI/TIA-603- E-2016; FCC KDB 935210 D05, v01r03; | | Relative Humidity (%) | | |
| Test Location | Richmond | | Barometric Pressure (kPa) | | |
| Test Engineer | | | Date | | March 7, 2022 |
| EUT Voltage | <input checked="" type="checkbox"/> +48VDC | | <input type="checkbox"/> 120VAC @ 60Hz | | |
| Test Equipment Used | Manufacturer | Model | Serial Number | Calibration date | Calibration due |
| Signal Generator | Keysight | N5172B | MY53050270 | Oct 9, 2021 | Oct 9, 2023 |
| Spectrum Analyzer | Keysight | N9010A | MY50520285 | Oct 11, 2021 | Oct 11, 2023 |
| Frequency Range: | <input checked="" type="checkbox"/> 806 MHz – 816 MHz; <input checked="" type="checkbox"/> 799 MHz – 805 MHz; <input checked="" type="checkbox"/> 450 MHz – 470 MHz | | | | |
| Detector: | <input checked="" type="checkbox"/> Peak | | | | |
| Type of Facility: | <input checked="" type="checkbox"/> Test bench | | | | |
| Distance: | <input checked="" type="checkbox"/> Direct | | | | |
| Arrangement of EUT: | <input checked="" type="checkbox"/> Table-top only <input type="checkbox"/> Floor-standing only <input type="checkbox"/> Rack Mounted | | | | |
| Output Power is less than 36.58 dBm in band 800, less than 36.75 dBm in band 700, and less than 35.28 dBm in band UHF. | | | | | |
| Compliant <input type="checkbox"/> | | Non-Compliant <input type="checkbox"/> | | Not Applicable <input checked="" type="checkbox"/> | |

Test setup

Description of test set-up:

Output power is measured by connecting a spectrum analyzer to RF output connector of EUT via 30dB Attenuator. With a nominal input power and the amplifier properly adjusted the RF output is measured. The EUT was set to **Operation Mode #1 with configuration Mode #1**. The maximum output power is measured when the Automatic Level Control (ALC) starting to compress the power and hold to a constant level.

```

    graph LR
      A[Vector Signal Generator] --- B[hd37]
      B --- C(( ))
      C --- D[EUT]
      D --- E[30 dB Attenuator]
      E --- F[Spectrum Analyzer]
    
```

Results – Output Power FCC Requirement

| Frequency Range (MHz) | Frequency (MHz) | Input Power Trip ALC (dBm) | Output Power (dBm) | Output Power (Watt) |
|-----------------------|-----------------|----------------------------|--------------------|---------------------|
| 806 - 816 | 806.0125 | -51.4 | 36.33 | 4.3 |
| | 811 | -51.2 | 36.58 | 4.55 |
| | 815.9875 | -51 | 36.44 | 4.4 |
| 799 - 805 | 799.0125 | -50.1 | 36.75 | 4.73 |
| | 802 | -50.1 | 36.71 | 4.68 |
| | 804.9875 | -50.1 | 36.44 | 4.41 |
| 450 - 470 | 455.8125 | -51 | 34.56 | 2.85 |
| | 456.85 | -52.2 | 35.28 | 3.37 |
| | 457.8875 | -51.4 | 33.17 | 2.08 |

Occupied Bandwidth

| | | | | | |
|---|---|-----------------------|---------------|------------------|-----------------|
| Governing Doc | FCC Part 2.2.1049 | Room Temperature (°C) | | | |
| Test Procedure | ANSI/TIA-603- E-2016; FCC KDB 935210 D05, v01r03 | Relative Humidity (%) | | | |
| Test Location | Richmond | Barometric Pressure | | | |
| Test Engineer | | Date | March 7, 2022 | | |
| EUT Voltage | <input checked="" type="checkbox"/> +48VDC <input type="checkbox"/> 120VAC @ 60Hz | | | | |
| Test Equipment Used | Manufacturer | Model | Serial Number | Calibration date | Calibration due |
| Signal Generator | Keysight | N5172B | MY53050270 | Oct 9, 2021 | Oct 9, 2023 |
| Spectrum Analyzer | Keysight | N9010A | MY50520285 | Oct 11, 2021 | Oct 11, 2023 |
| Frequency Range: | <input checked="" type="checkbox"/> 806 MHz – 816 MHz; <input checked="" type="checkbox"/> 799 MHz – 805 MHz; <input checked="" type="checkbox"/> 450 MHz – 470 MHz | | | | |
| Detector: | <input checked="" type="checkbox"/> Peak | | | | |
| Type of Facility: | <input checked="" type="checkbox"/> Test bench | | | | |
| Distance: | <input checked="" type="checkbox"/> Direct | | | | |
| Arrangement of EUT: | <input checked="" type="checkbox"/> Table-top only <input type="checkbox"/> Floor-standing only <input type="checkbox"/> Rack Mounted | | | | |
| Output signal has an occupied channel bandwidth less than the designated channel bandwidth on any location on the operating band. <ul style="list-style-type: none"> - C4FM < 12.5 kHz - CQPSK < 6.25 kHz - HDQPSK < 12.5 kHz - 4 kHz FM with 1kHz deviation < 12.5 kHz | | | | | |
| Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/> | | | | | |

Test setup

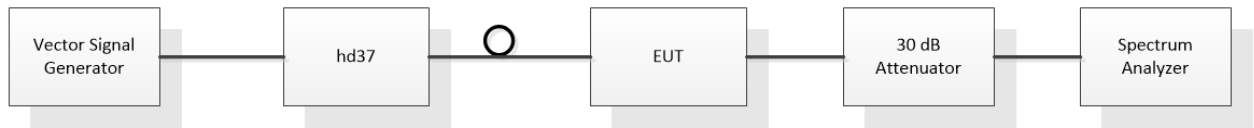
Description of test set-up:

Occupied Bandwidth is measured by connecting a Spectrum Analyzer to the RF output connector via 30dB attenuator. The required measurement resolution bandwidth (RBW) is 1% of the emission bandwidth. 99% energy rule was applied to measure the occupied channel bandwidth. The emission bandwidth is measured as the width of the signal between two frequency points on the channel edge, outside of which the transmission power is attenuated at least 26dB below the transmitter output power

The EUT was set to **Operation Mode #1 with configuration Mode #1.**

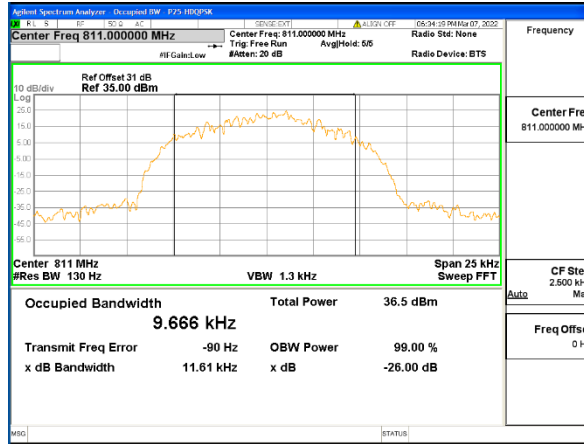
The occupied bandwidth of UL output is measured under one input conditions:

- Nominal: with input 0.5dB below AGC threshold

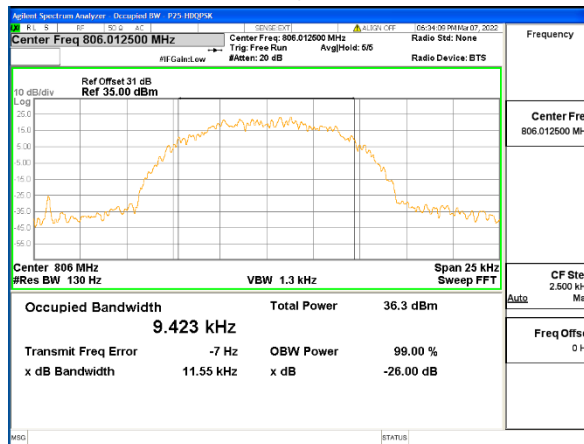


Results

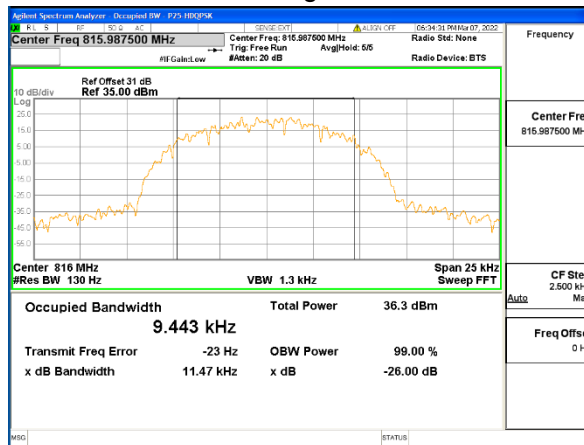
800PS HDQPSK Signal at 811 MHz



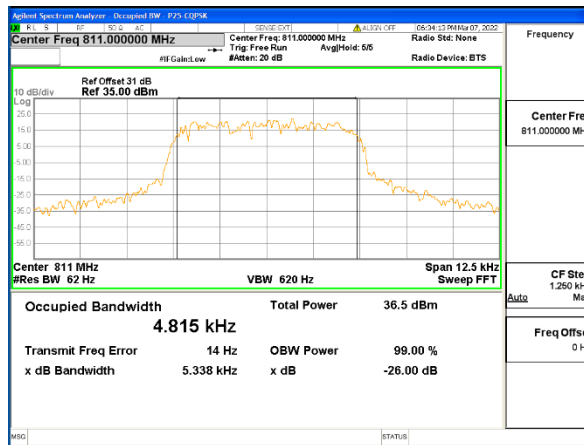
800PS HDQPSK Signal at 806.0125 MHz



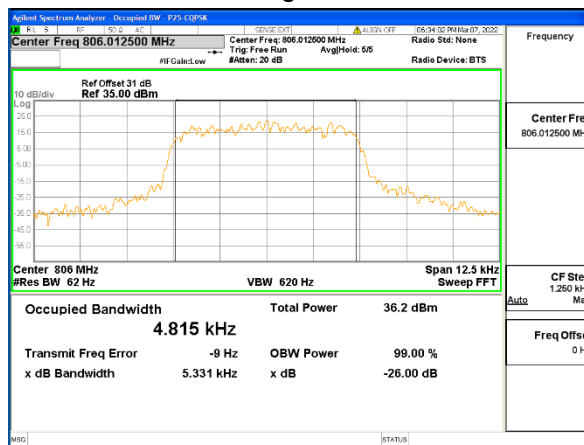
800PS HDQPSK Signal at 815.9875 MHz



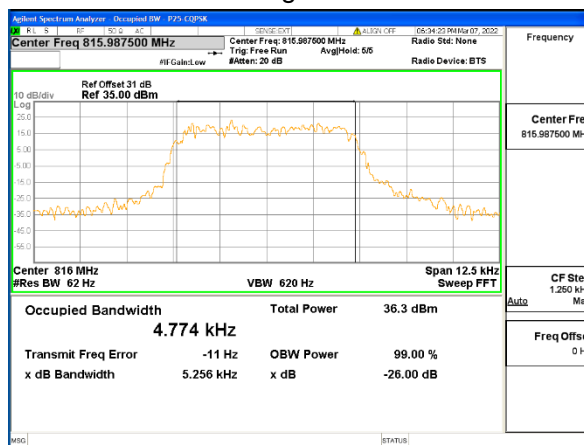
800PS CQPSK Signal at 811 MHz



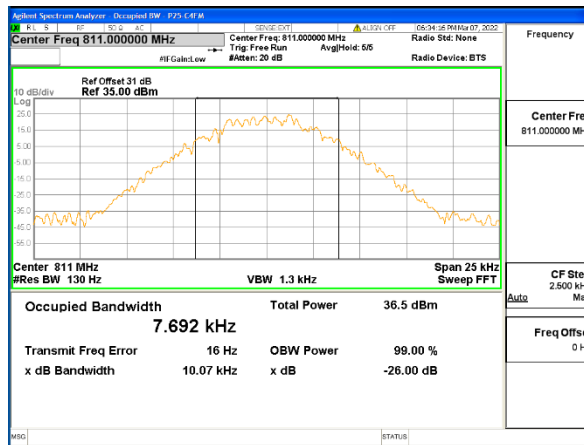
800PS CQPSK Signal at 806.0125 MHz



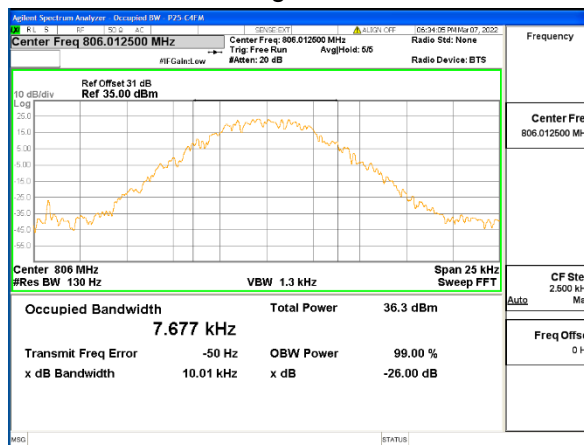
800PS CQPSK Signal at 815.9875 MHz



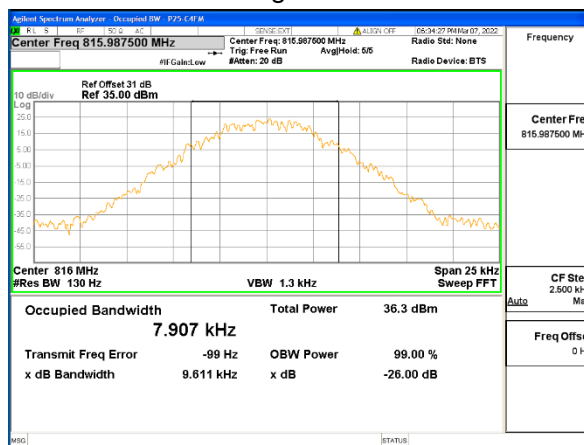
800PS C4FM Signal at 811 MHz



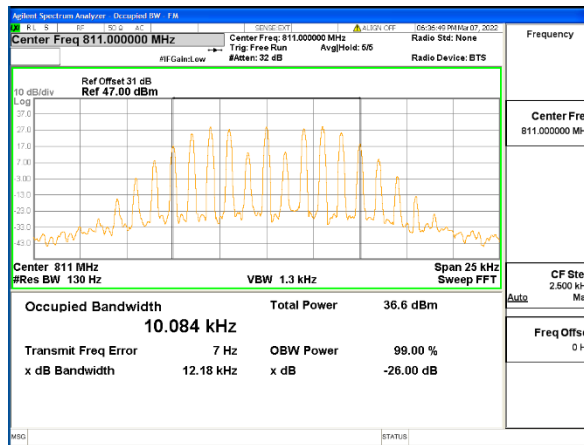
800PS C4FM Signal at 806.0125 MHz



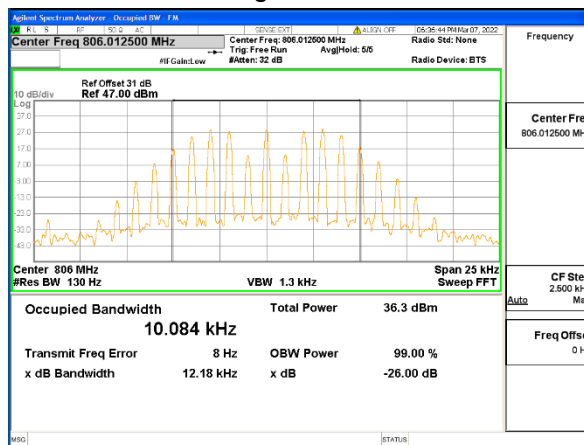
800PS C4FM Signal at 815.9875 MHz



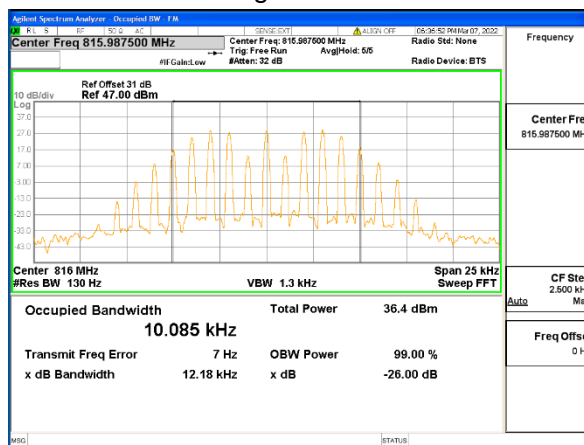
800PS FM Signal at 811 MHz



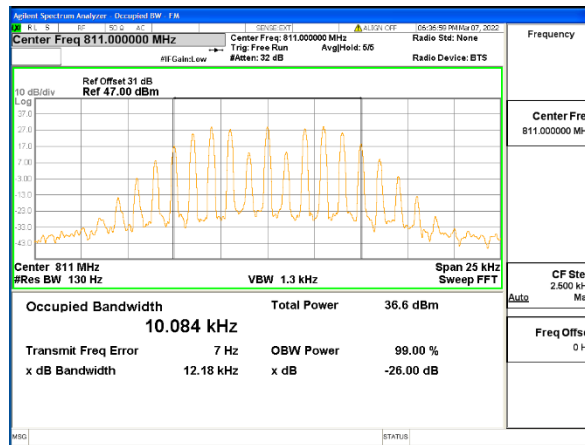
800PS FM Signal at 806.0125 MHz



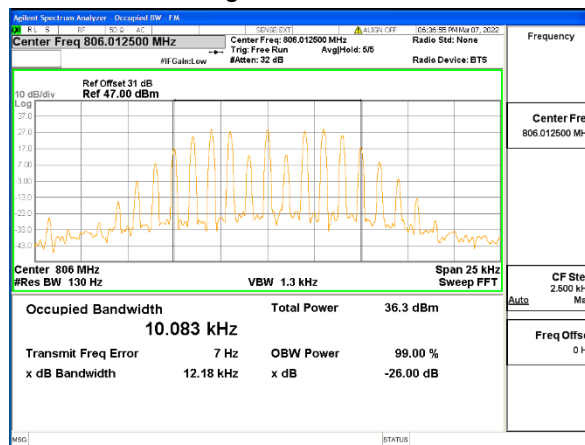
800PS FM Signal at 815.9875 MHz



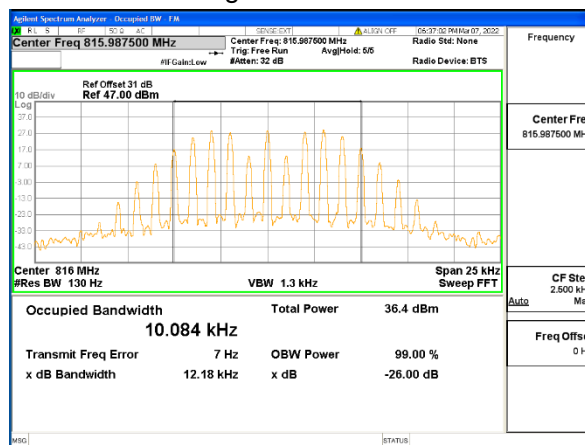
800PS FM Signal at 811 MHz ALC



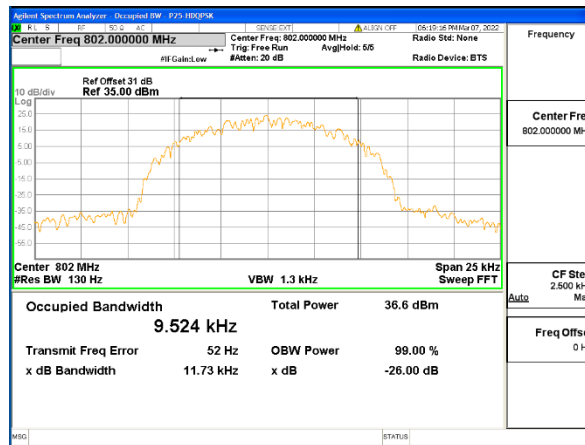
800PS FM Signal at 806.0125 MHz ALC



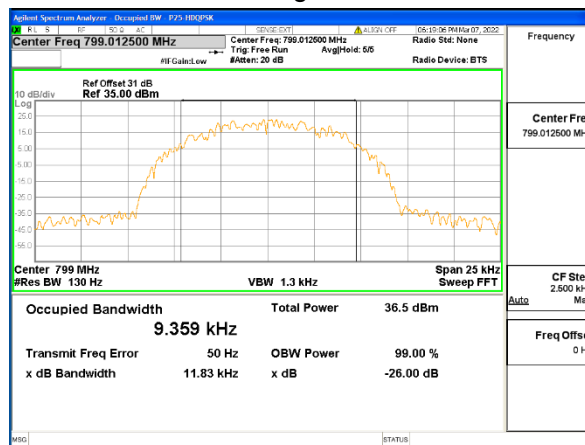
800PS FM Signal at 815.9875 MHz ALC



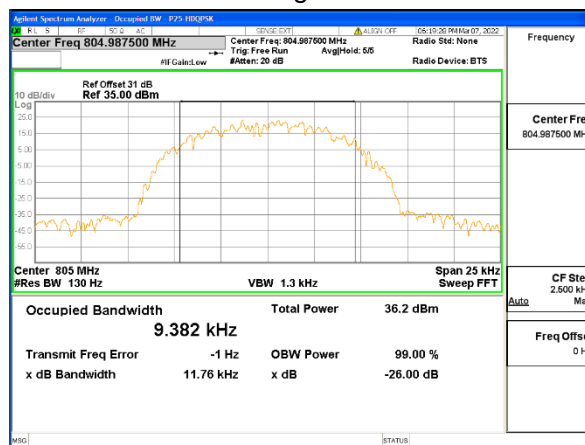
700PS HDQPSK Signal at 802 MHz



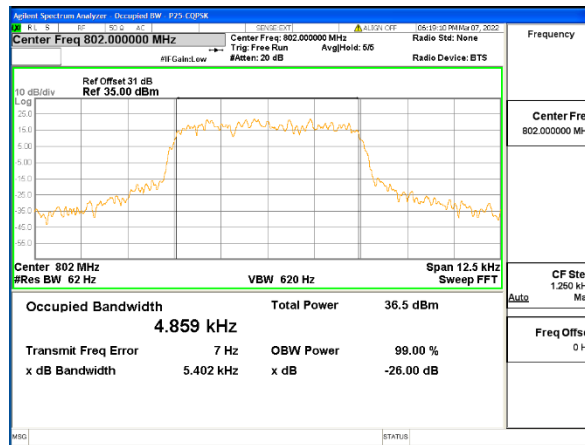
700PS HDQPSK Signal at 799.0125 MHz



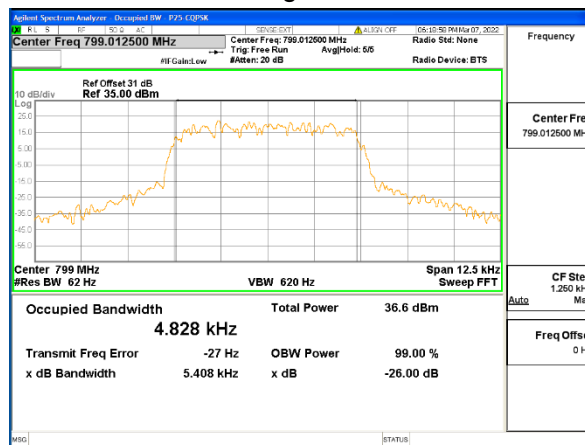
700PS HDQPSK Signal at 804.9875 MHz



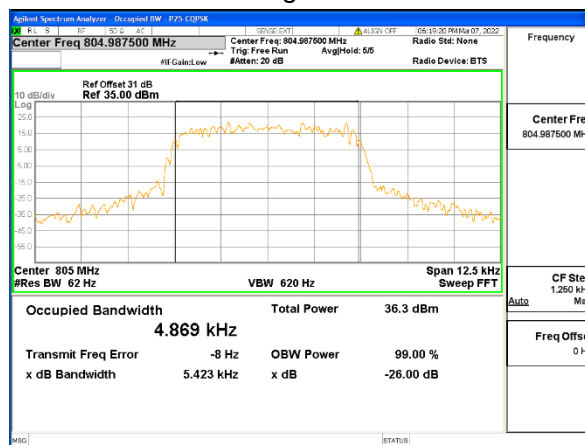
700PS CQPSK Signal at 802 MHz



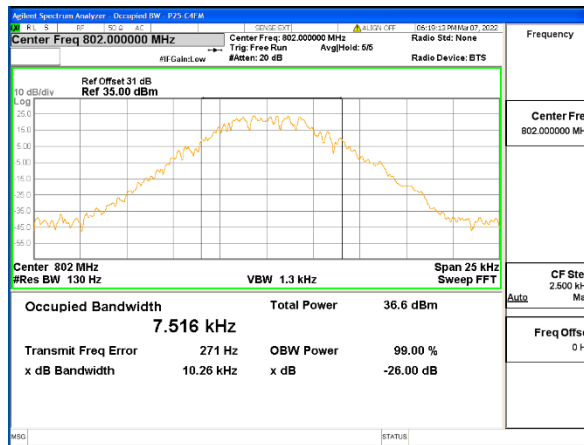
700PS CQPSK Signal at 799.0125 MHz



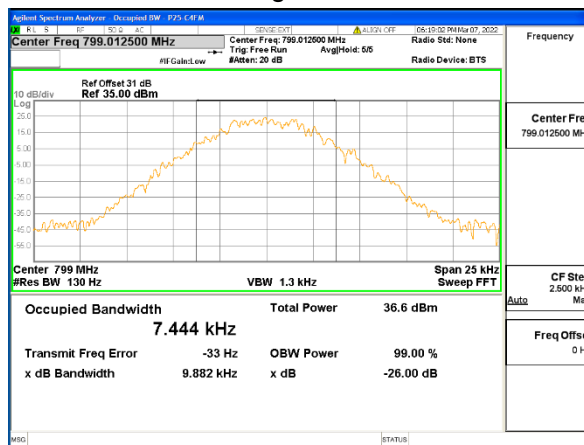
700PS CQPSK Signal at 804.9875 MHz



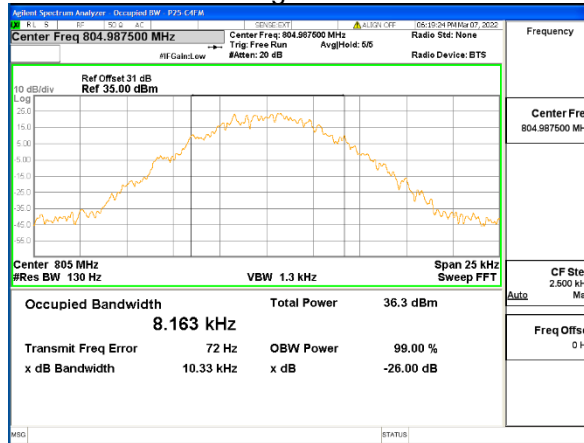
700PS C4FM Signal at 802 MHz



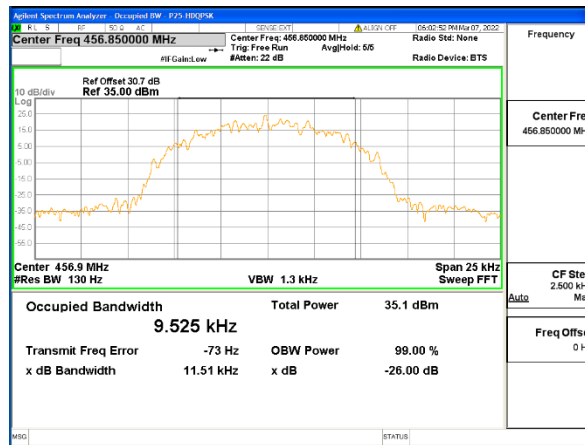
700PS C4FM Signal at 799.0125 MHz



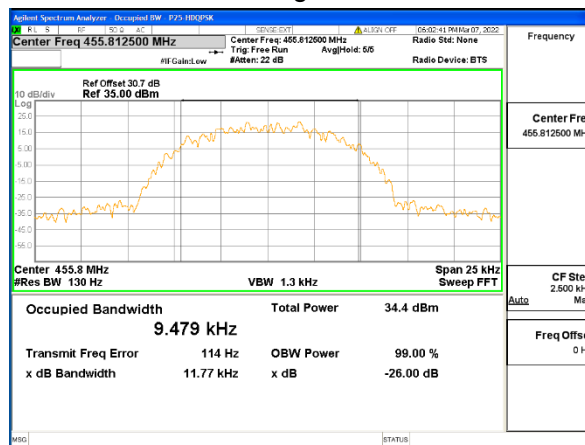
700PS C4FM Signal at 804.9875 MHz



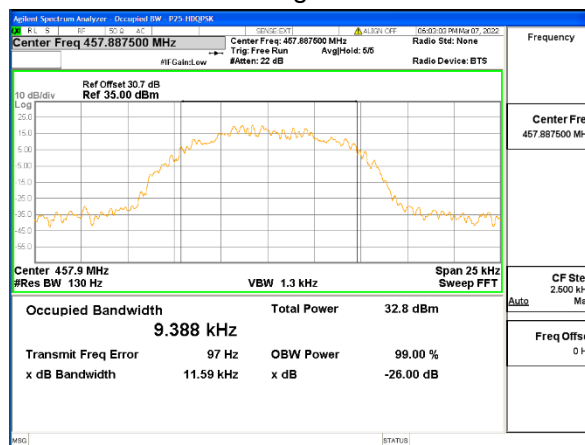
450PS HDQPSK Signal at 456.85 MHz



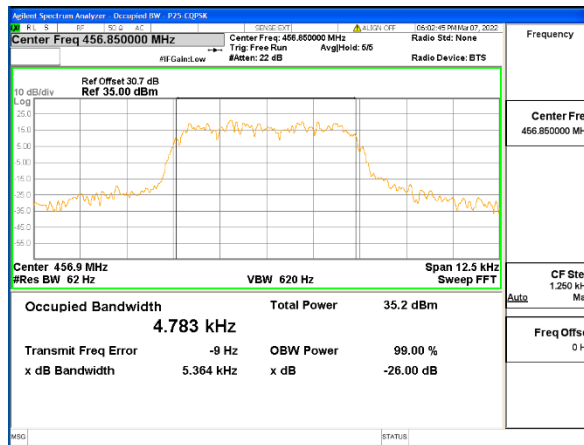
450PS HDQPSK Signal at 455.8125 MHz



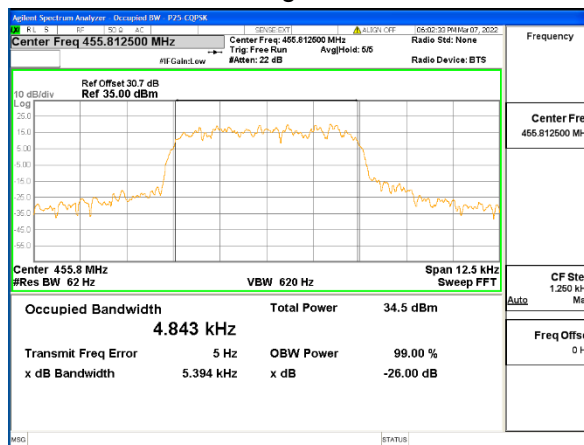
450PS HDQPSK Signal at 457.8875 MHz



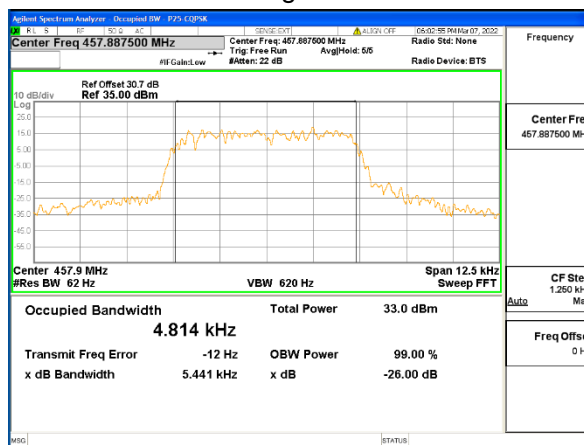
450PS CQPSK Signal at 456.85 MHz



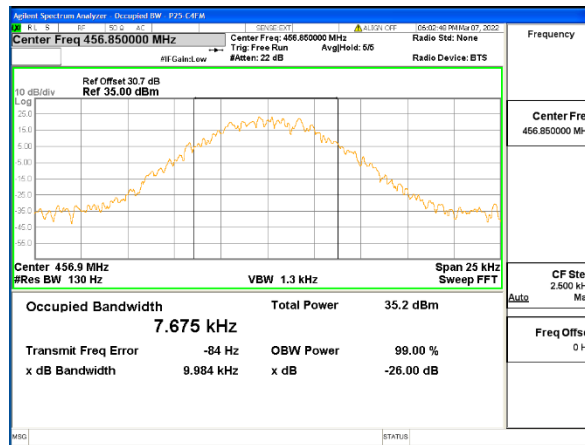
450PS CQPSK Signal at 455.8125 MHz



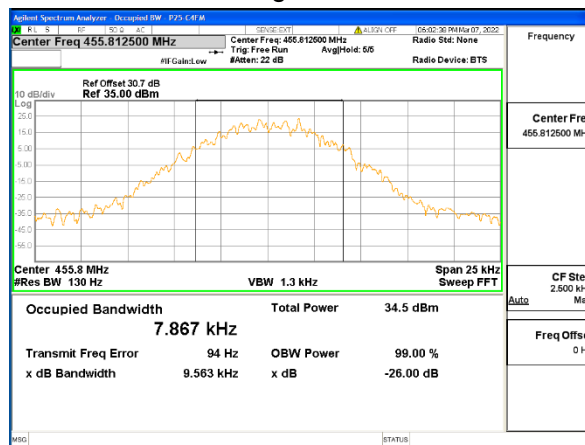
450PS CQPSK Signal at 457.8875 MHz



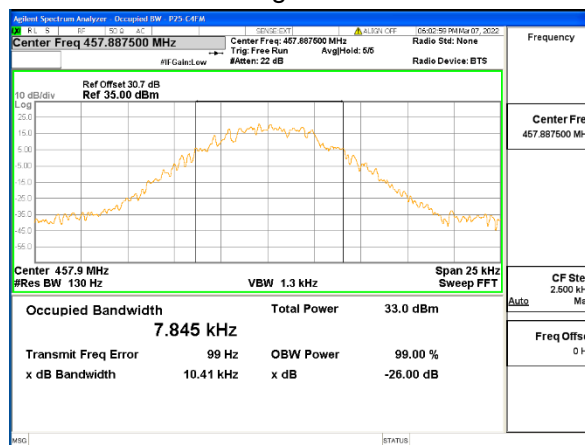
450PS C4FM Signal at 456.85 MHz



450PS C4FM Signal at 455.8125 MHz



450PS C4FM Signal at 457.8875 MHz



Out of Band Rejection

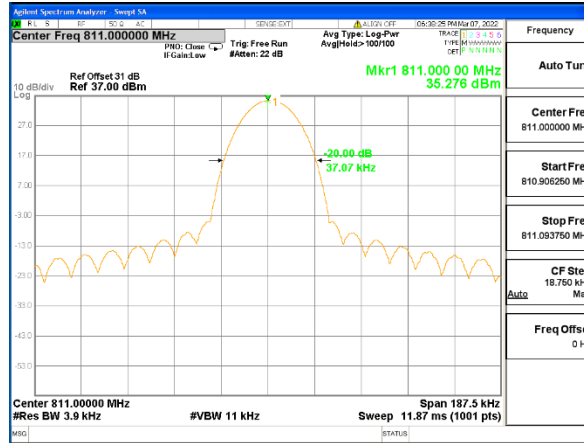
| | | | |
|--|--|--|---------------|
| Governing Doc | FCC Part 2 2.1046(a) FCC Part 90.219(d) | Room Temperature (°C) | |
| Test Procedure | ANSI/TIA-603- E; FCC KDB 935210 D05, v01r03 | Relative Humidity (%) | |
| Test Location | Richmond | Barometric Pressure | |
| Test Engineer | | Date | March 7, 2022 |
| EUT Voltage | <input checked="" type="checkbox"/> +48VDC | <input type="checkbox"/> 120VAC @ 60Hz | |
| Test Equipment Used | Manufacturer | Model | Serial Number |
| Signal Generator | Keysight | N5172B | MY53050270 |
| Spectrum Analyzer | Keysight | N9010A | MY50520285 |
| Frequency Range: | <input checked="" type="checkbox"/> Product Passband \pm 250% | | |
| Detector: | <input checked="" type="checkbox"/> Peak | | |
| RBW/VBW: | <input checked="" type="checkbox"/> 1 to 5% of the EUT passband / \geq 3 X RBW | | |
| Type of Facility: | <input checked="" type="checkbox"/> Tabletop | | |
| Distance: | <input checked="" type="checkbox"/> Direct | | |
| Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/> | | | |

Test setup

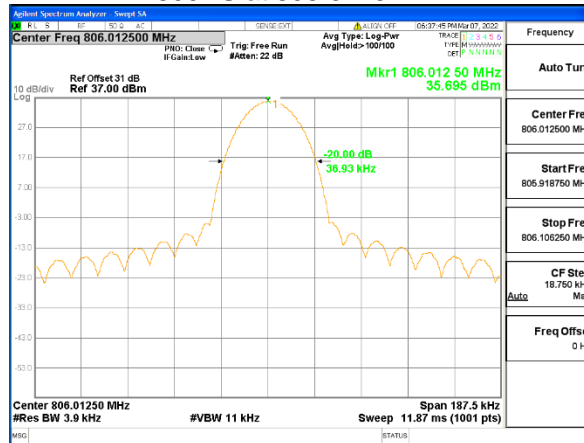
| |
|--|
| Description of test set-up: |
| <p>The procedure used was ANSI/TIA-603-E-2016 and FCC KDB 935210 D05 Indus Booster Basic Meas v01r03. The signal booster was set to maximum gain. A swept CW signal was set to the range of \pm250 % of the product pass band. The CW amplitude was set to 3 dB below the AGC threshold so that the ALC should not activate throughout the test.</p> <p>After the max-hold sweep trace was completed, a marker was set to the peak amplitude, and a 20dB bandwidth was measured between two additional markers fall 20 dB from the peak.</p> <p>The EUT was set to Operation Mode #1 with configuration Mode #1.</p> |
| <pre> graph LR A[Vector Signal Generator] --> B[hd37] B --> C(()) C --> D[EUT] D --> E[30 dB Attenuator] E --> F[Spectrum Analyzer] </pre> |

Results

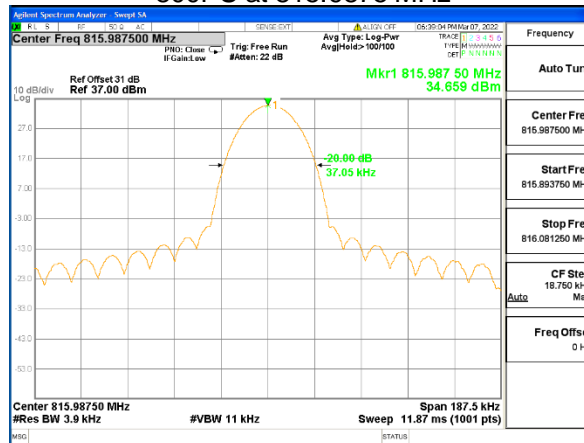
800PS at 811 MHz



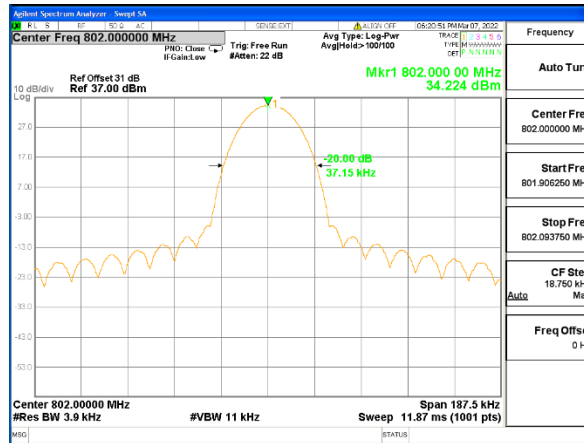
800PS at 806.0125 MHz



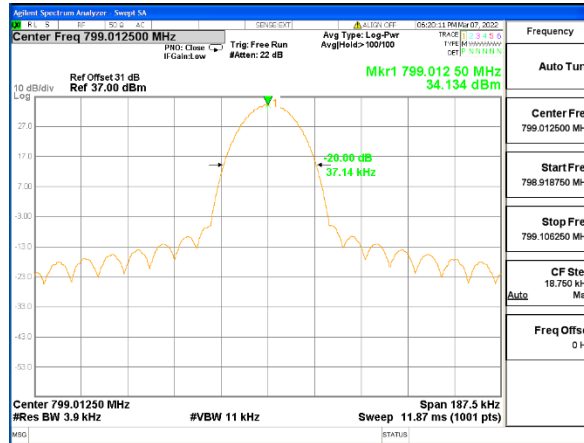
800PS at 815.9875 MHz



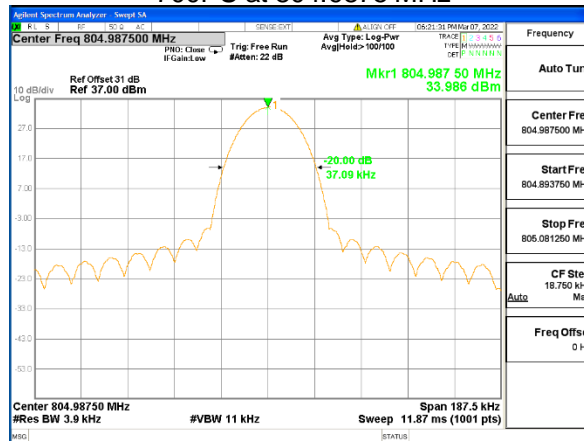
700PS at 802 MHz



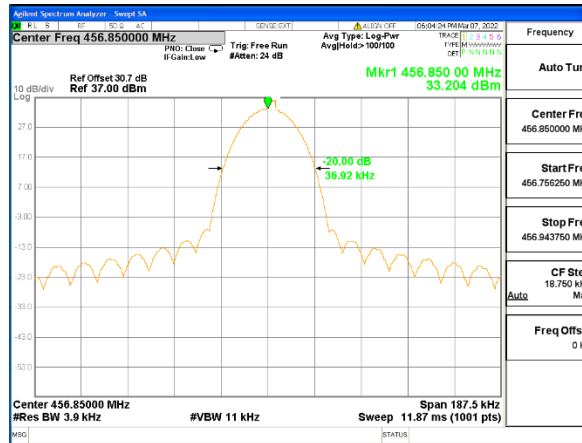
700PS at 799.0125 MHz



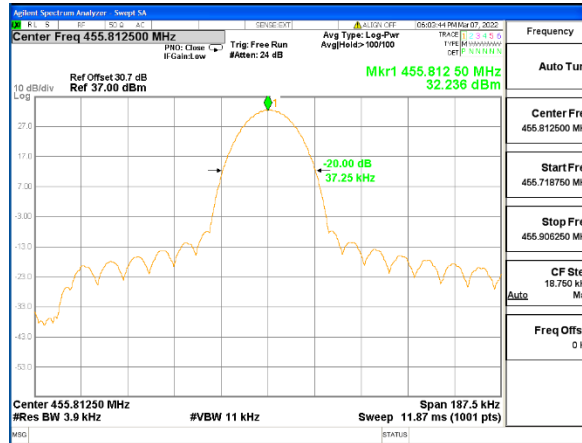
700PS at 804.9875 MHz



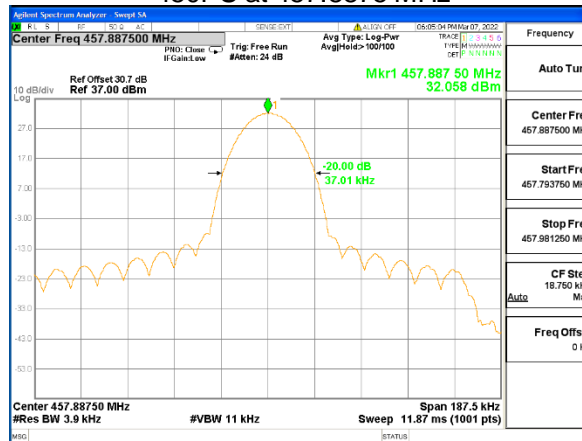
450PS at 456.85 MHz



450PS at 455.8125 MHz



450PS at 457.8875 MHz



Input-Versus-Output Signal Comparison

| | | | | | |
|--|---|--|--|---|-----------------|
| Governing Doc | FCC Part 90.210 (j) (h) (g) (c) (d) and (e) | | Room Temperature (°C) | | |
| Test Procedure | ANSI/TIA-603- E; FCC KDB 935210 D05, v01r03 | | Relative Humidity (%) | | |
| Test Location | Richmond | | Barometric Pressure (kPa) | | |
| Test Engineer | | Date | Mar 7, 2022 | | |
| EUT Voltage | <input checked="" type="checkbox"/> +48VDC | | <input type="checkbox"/> 120VAC @ 60Hz | | |
| Test Equipment Used | Manufacturer | Model | Serial Number | Calibration date | Calibration due |
| Signal Generator | Keysight | N5172B | MY53050270 | Oct 9, 2021 | Oct 9, 2023 |
| Spectrum Analyzer | Keysight | N9010A | MY50520285 | Oct 11, 2021 | Oct 11, 2023 |
| Frequency Range: | <input checked="" type="checkbox"/> 806 MHz – 816 MHz; <input checked="" type="checkbox"/> 799 MHz – 805 MHz; <input checked="" type="checkbox"/> 450 MHz – 470 MHz | | | | |
| Detector: | <input checked="" type="checkbox"/> Peak | | | | |
| RBW/VBW: | <input checked="" type="checkbox"/> 100 Hz | | | | |
| Type of Facility: | <input checked="" type="checkbox"/> Testbench | | | | |
| Distance: | <input checked="" type="checkbox"/> direct connect | | | | |
| Arrangement of EUT: | <input checked="" type="checkbox"/> Table-top only <input type="checkbox"/> Floor-standing only <input type="checkbox"/> Rack Mounted | | | | |
| Signal of all types of modulation is contained within the emission mask. | | | | | |
| Compliant <input checked="" type="checkbox"/> | | Non-Compliant <input type="checkbox"/> | | Not Applicable <input type="checkbox"/> | |

Test setup

Description of test set-up:

Spectrum Emission Mask is measured by connecting a Spectrum Analyzer to the RF output connector. The input power was adjusted to produce maximum output power on the antenna port. The reference level was measured with integrated BW of the designated channel BW. The emission was measured with RBW 100 Hz.

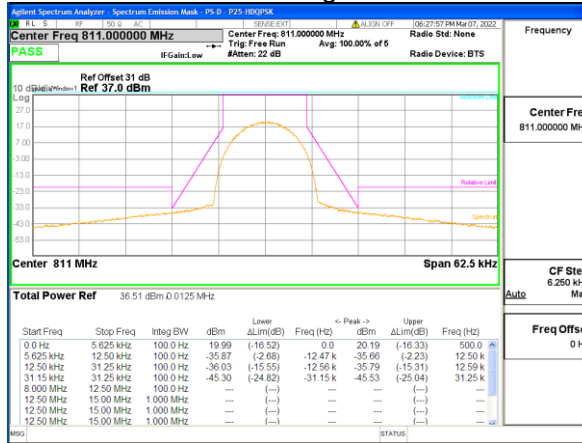
The EUT was set to **Operation Mode #1 with configuration Mode #1.**

```

    graph LR
      A[Vector Signal Generator] --- B[hd37]
      B --- C(( ))
      C --- D[EUT]
      D --- E[30 dB Attenuator]
      E --- F[Spectrum Analyzer]
    
```


Results

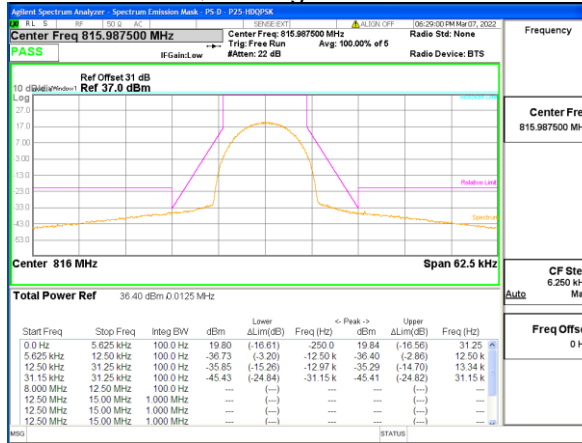
800PS HDQPSK Signal at 811 MHz



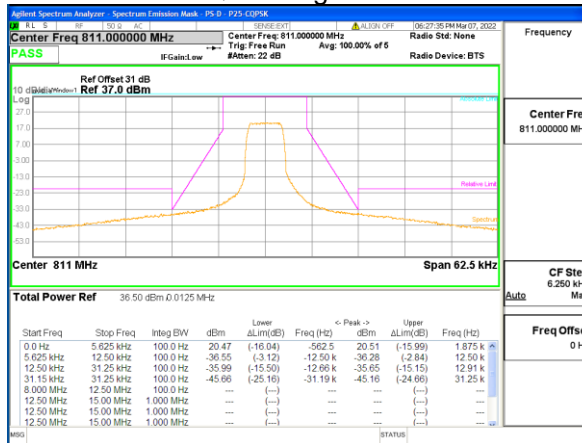
800PS HDQPSK Signal at 806.0125 MHz



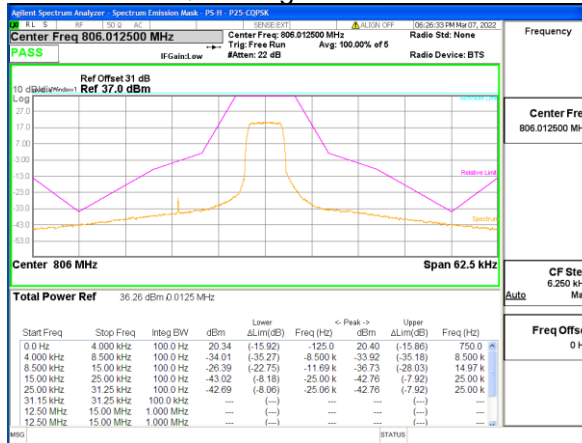
800PS HDQPSK Signal at 815.9875 MHz



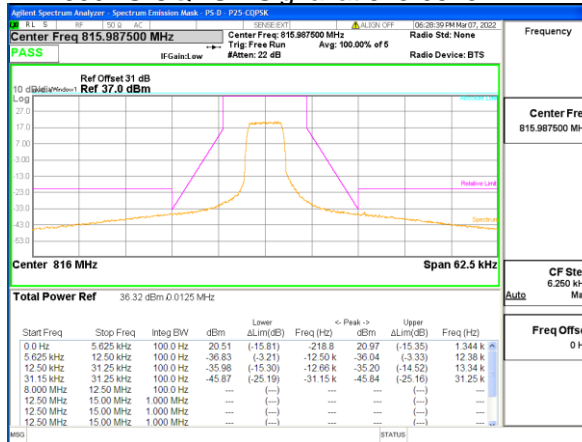
800PS CQPSK Signal at 811 MHz



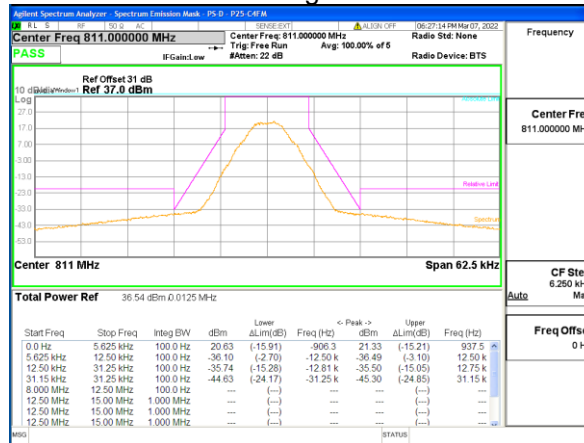
800PS CQPSK Signal at 806.0125 MHz



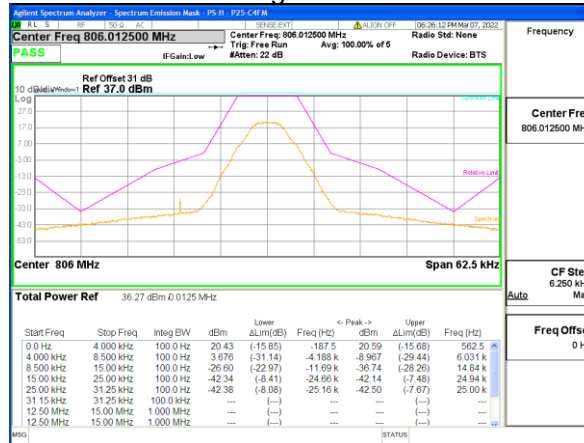
800PS CQPSK Signal at 815.9875 MHz



800PS C4FM Signal at 811 MHz



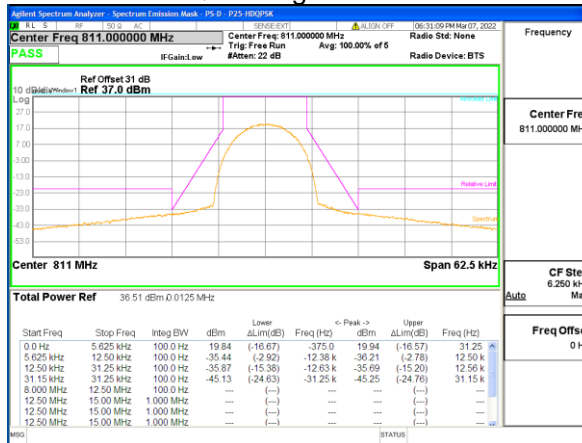
800PS C4FM Signal at 806.0125 MHz



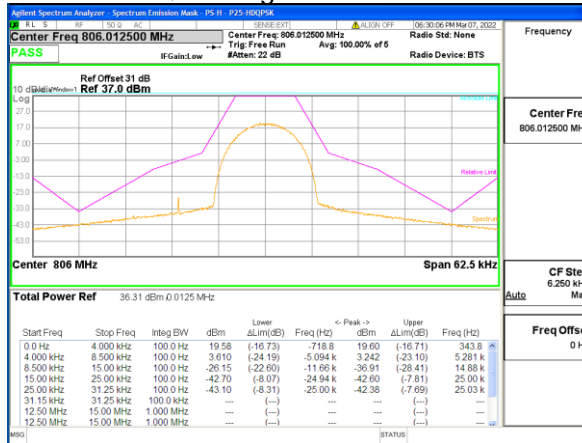
800PS C4FM Signal at 815.9875 MHz



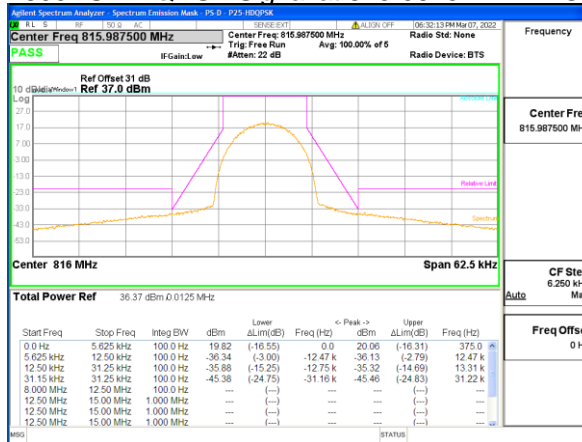
800PS HDQPSK Signal at 811 MHz ALC



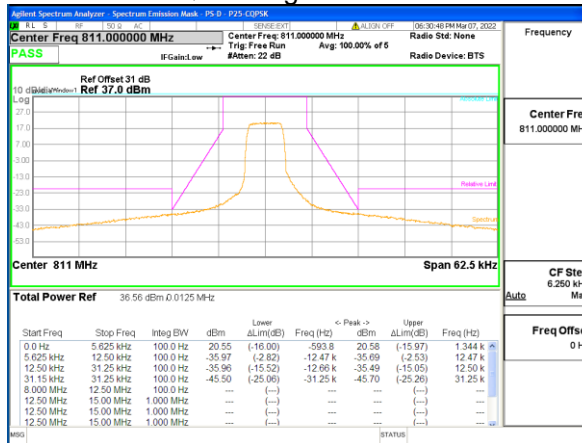
800PS HDQPSK Signal at 806.0125 MHz ALC



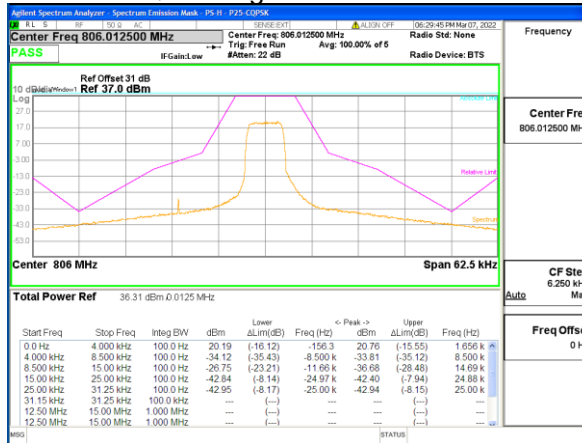
800PS HDQPSK Signal at 815.9875 MHz ALC



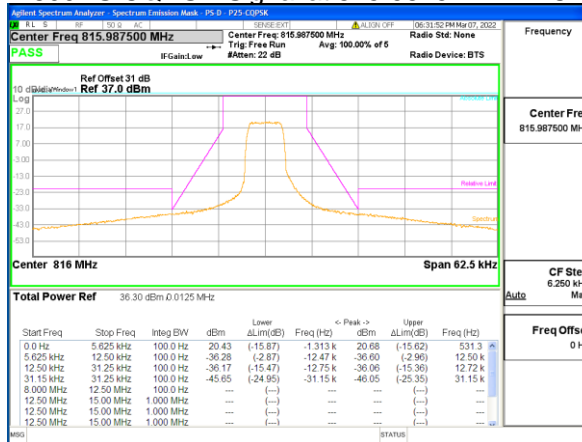
800PS CQPSK Signal at 811 MHz ALC



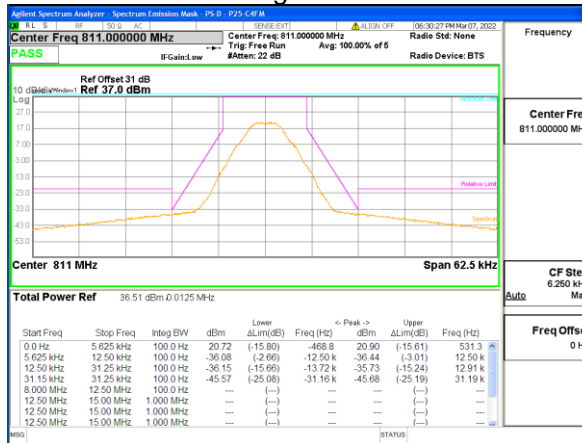
800PS CQPSK Signal at 806.0125 MHz ALC



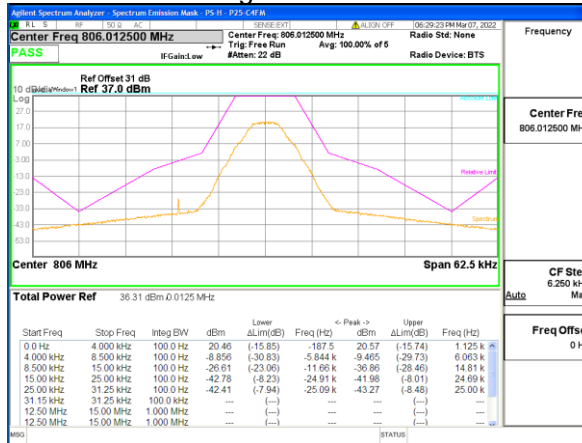
800PS CQPSK Signal at 815.9875 MHz ALC



800PS C4FM Signal at 811 MHz ALC



800PS C4FM Signal at 815.9875 MHz ALC



800PS C4FM Signal at 806.0125 MHz ALC



800PS FM Signal at 811 MHz



800PS FM Signal at 806.0125 MHz



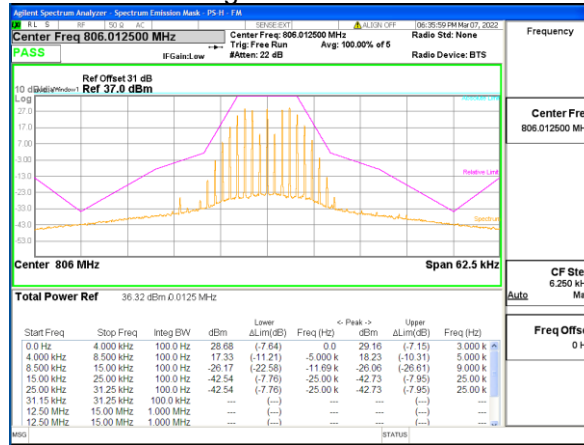
800PS FM Signal at 815.9875 MHz



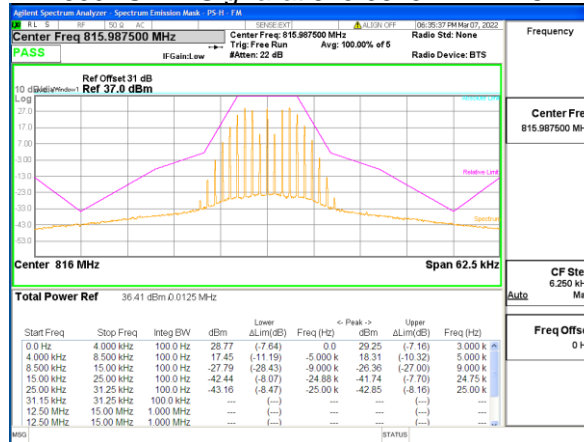
800PS FM Signal at 811 MHz ALC



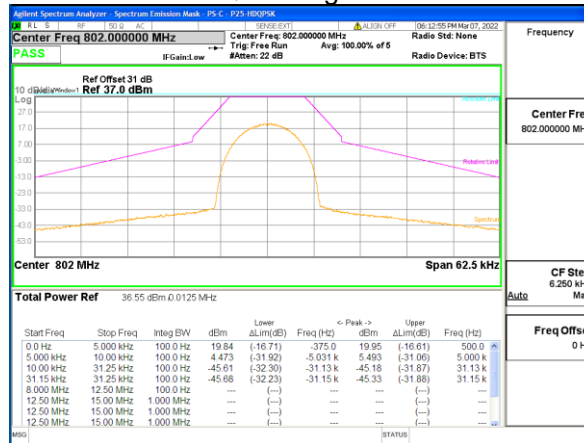
800PS FM Signal at 806.0125 MHz ALC



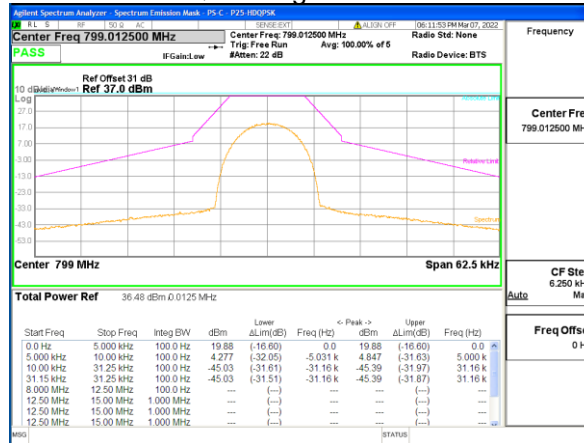
800PS FM Signal at 815.9875 MHz ALC



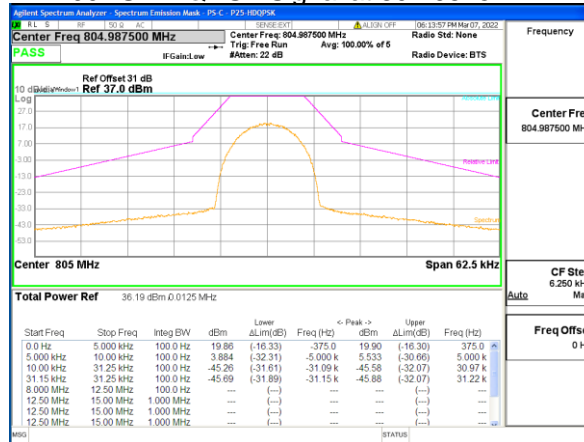
700PS HDQPSK Signal at 802 MHz



700PS HDQPSK Signal at 799.0125 MHz



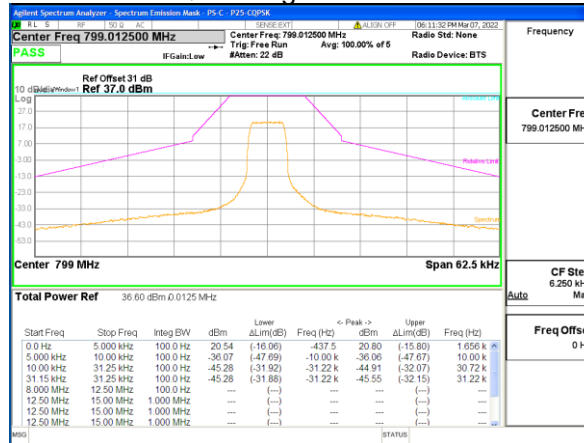
700PS HDQPSK Signal at 804.9875 MHz



700PS CQPSK Signal at 802 MHz



700PS CQPSK Signal at 799.0125 MHz



700PS CQPSK Signal at 804.9875 MHz

