



REPORT

For

Avari Wireless Inc.

1400 112th Ave SE, Ste 100
Bellevue, WA 98004, USA

Date: 2024-03-21
Report No.: 20.01.22107-1
Revision No.: 0
Project No.: 22107
Equipment: Tri-Band Medium Power Remote Unit
Model No.: RU37-3-PS-FAB-21-3N-A0-2/1
FCC ID: 2BA6ERU373PSABF21A

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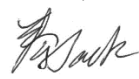

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Prepared by: LabTest Certification Inc.
Date Issued: 2024-03-21
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Client: Avari Wireless Inc.
Report No.: 20.01.22107-1
Revision No.: 0

TEST REPORT		
FCC Part 15 Subpart B		
FCC Part 90 - Private Land Mobile Services		
Report Reference No.:	20.01.22107-1	
Report Revision History.:	Rev. 0	
Compiled by (+ signature).....	Jack Qin	
Approved by (+ signature).....	Zara Vali	
Date of issue	2024-03-21	
Total number of pages	88	
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	Avari Wireless Inc.	
Address.....	1400 112th Ave SE, Ste 100 Bellevue, WA 98004	
Manufacture's Name	Avari Wireless Inc.	
Address	1400 112th Ave SE, Ste 100 Bellevue, WA 98004	
Test specification:		
Standards.....	<ul style="list-style-type: none">➤ FCC Part 15 Radio Frequency Devices, Subpart B - Unintentional Radiators - Class B➤ FCC Part 90 Private Land Mobile Radio Services	
Test procedure.....	<ul style="list-style-type: none">➤ KDB 935210 D05 Indus Booster Basic Meas v01r04➤ ANSI/TIA-603- E-2016➤ ANSI C63.4:2014	
Test item description :		
Trade Mark.....	RU37™	
Model/Type reference	RU37-3-PS-FAB-21-3N-A0-2/1	
Serial Number	10911137E01BD2001	
FCC ID	2BA6ERU373PSABF21A	
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)

Revision History

Revision	Date	Reason For Change	Author(s)
0	2024-03-21	Initial	Jack Qin

Test Conditions

General Conditions..... :	<div>1. This report is only referred to the item that has undergone the test.</div> <div>2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.</div> <div>3. This document is only valid if complete; no partial reproduction can be made without previous written permission of LabTest.</div> <div>4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of LabTest.</div>								
Measurement uncertainties :	<div>For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in CISPR 16-4-2/EN55016-4-2, IEC/EN 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.</div> <div>Uncertainties have been calculated according to the LabTest internal document, DCN. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%</div> <div>Refer to the Annex 1 for further information.</div>								
Environmental reference conditions..... :	<div>The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.</div> <div>The climatic conditions during the tests were within the following limits:</div> <table><tr><th>Temperature</th><th>Humidity</th><th>Atmospheric pressure</th></tr><tr><td>15 °C – 35 °C</td><td>30 % - 60 %</td><td>86 kPa – 106 kPa</td></tr></table> <div>If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.</div>			Temperature	Humidity	Atmospheric pressure	15 °C – 35 °C	30 % - 60 %	86 kPa – 106 kPa
Temperature	Humidity	Atmospheric pressure							
15 °C – 35 °C	30 % - 60 %	86 kPa – 106 kPa							

Device Under Test Description

Application for	PS 700/800/150 Air Master Unit, Dual Band Medium Power DAS
Passing Transmit Frequency	758 MHz – 775MHz 851 MHz – 869 MHz 152 MHz – 174 MHz
Operating Transmit Frequency FCC	758 MHz – 775 MHz 851 MHz – 869 MHz 150.8 MHz – 156.2475 MHz 157.1875 MHz – 161.575 MHz 161.775 MHz – 161.9625 MHz 162.0375 MHz – 173.4 MHz

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Passing Receive Frequency	788 MHz – 805 MHz 806 MHz – 824 MHz 152 MHz – 174 MHz
Operating Receive Frequency FCC	788 MHz – 805 MHz 806 MHz – 824 MHz 150.8 MHz – 156.2475 MHz 157.1875 MHz – 161.575 MHz 161.775 MHz – 161.9625 MHz 162.0375 MHz – 173.4 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 and Band 150 FM on Band 800 between 851 MHz – 869 MHz only;
Equipment mobility	Fixed
Operating condition	-40 to +50 °C
Mass of equipment (g)	< 27,700g
Dimensions (W X D X H)	410 mm X 230 mm X 696 mm
Supply Voltage:	<u>48V</u> DC <u>7.1</u> Amps
If DC Power:	<input type="checkbox"/> Internal Power Supply <input checked="" type="checkbox"/> External Power Supply <input type="checkbox"/> 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

Description of Equipment Under Test (EUT) and Variant Models

Description:

The RU37 800PS/700PS/150 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. On the downlink path the RU37 PS remote receives an aggregated stream of digitized RF signals from an DMU 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.

On the UL path the RU37 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 DMU PS. The RU37 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.

The intentional transmitter only exists in the downlink path and hence the EMC tests in this report dedicated to the downlink emission.

In order to build up a complete signal booster system, the DMU PS was connected as the Auxiliary device. The DMU PS does not have an antenna port, where the signal was injected and ejected via coaxial cables.

EUT Picture



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. LabTest does not make any claims of compliance for samples or variants which were not tested.

The variant models of RU37-3-PS-FAB-21-3N-A0-2/1 are listed as follows:

Tri Band

1. RU33-3-PS-FAB-21-3N-A0-2/1

Dual Band

1. RU37-2-PS-FA-21-3N-A0-2/1
2. RU33-2-PS-FA-21-3N-A0-2/1
3. RU37-2-PS-FB-21-3N-A0-2/1
4. RU33-2-PS-FB-21-3N-A0-2/1
5. RU37-2-PS-AB-21-1N-A0-2/1
6. RU33-2-PS-AB-21-1N-A0-2/1

Single Band

1. RU37-1-PS-F-21-2N-A0-2/1
2. RU33-1-PS-F-21-2N-A0-2/1
3. RU37-1-PS-A-21-1N-A0-2/1

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4. RU33-1-PS-A-21-1N-A0-2/1
5. RU37-1-PS-B-21-1N-A0-2/1
6. RU33-1-PS-B-21-1N-A0-2/1

Client Equipment Used During Test

Use*	Product Type	Manufacturer	Model	Comments
EUT	<i>RU37, 800PS, 700PS, 150 PS</i>	Avari Wireless Inc.	VL-RU37-3-PS-FAB-21-3N-A0-2	EUT where the RF (I/O) antenna is attached via duplexers/multiplexer when necessary.
AE1	<i>DMU, 800PS, 700PS, 150PS</i>	Avari Wireless Inc.	VL-DMU-3-PS-FAB-1-6N-D-1F	Auxiliary equipment, which is the front end of system interfaced to Base Station.
AE2	Element Manager (DMC)	Avari Wireless Inc.	EM-1A	Auxiliary equipment provides the configuration and control interface to <i>DMU</i> and <i>RU37</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	5.6.2-0.5763
AE1	Software installed	5.6.2-0.5763
AE2	Software installed	5.6.2-1359
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	DMU maximum input threshold set to -10 dBm, uplink attenuation set to 0dB; RU37 uplink and downlink attenuation set to 0dB.

Test Equipment Verified for function

Model #	Description	Checked Function	Results
KT-N9038A	Spectrum Analyzer	Frequency and Amplitude	Connected 50MHz and -20 dBm Ref_signal 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 49-30-34	Aeroflex	30dB 25W attenuator

Test Station Insertion Loss

	Band 800	Band 700	Band 150
DL Transmitter	33.6 dB	33.2 dB	31.8 dB
UL Receiver	1.1 dB	0.9 dB	0.8 dB

Result Summary

Summary of testing:

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.

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.

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.

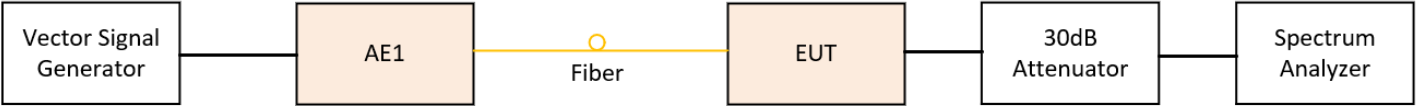
Test Item	Regulation	Measurement Method	Result
AGC Threshold	FCC part 90	ANSI TIA-603- E-2016, KDB 935210 D05, V01R04, SECTION 4.2	PASS
Out of Band Rejection	FCC part 90	ANSI TIA-603- E-2016, KDB 935210 D05, V01R04, SECTION 4.3	PASS
Input-versus-output Signal Comparison	FCC part 90	ANSI TIA-603- E-2016, KDB 935210 D05, V01R04, SECTION 4.4	PASS
Input/output Power and Amplifier/Booster Gain	FCC part 90	ANSI TIA-603- E-2016, KDB 935210 D05, V01R04, SECTION 4.5	PASS
Noise Figure	FCC part 90	ANSI TIA-603- E-2016, KDB 935210 D05, V01R04, SECTION 4.6	PASS
Measuring out-of-band/out-of-block (including intermodulation) and spurious emissions	FCC part 90	ANSI TIA-603- E-2016, KDB 935210 D05, V01R04, SECTION 4.7	PASS
Frequency stability	FCC part 90	ANSI TIA-603- E-2016, KDB 935210 D05, V01R04, SECTION 4.8	PASS
Spurious emissions radiated measurements	FCC part 90	ANSI C63.4:2014, KDB 935210 D05, v01r04, Section 4.9	PASS
Radiated Emissions	FCC Part 15/B	ANSI C63.4, CISPR 16-2-1	PASS
Conducted Emissions at AC Main	FCC Part 15/B	ANSI C63.4, CISPR 16-2-1	PASS

Test Result

1 AGC Threshold

Governing Doc	FCC Part 2 2.1046(a) FCC Part 90.219(d)	Room Temperature (°C)	20.5		
Test Procedure	ANSI/TIA-603- E-2016; KDB 935210 D05, v01r04	Relative Humidity (%)	38.6		
Test Location	Richmond	Barometric Pressure (kPa)	101.8		
Test Engineer	Jack Qin	Date	August 29, 2023		
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"/> 851 MHz – 869 MHz; <input checked="" type="checkbox"/> 758 MHz – 775 MHz; <input checked="" type="checkbox"/> 152 MHz – 174 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 or equal 37.03 dBm in band 800, less than or equal 37.06 dBm in band 450, less than or equal 37.05 dBm in band 150.					
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input 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.


Test Data

Frequency Range (MHz)	Frequency (MHz)	Input Power Trip ALC (dBm)	Output Power (dBm)	Output Power (Watt)
800PS 851 - 869	851.025	-13.0	37.03	5.04
	860	-15.6	37.00	5.01
	868.975	-15.2	37.03	5.04
700PS 758 - 775	758.025	-14.2	37.06	5.09
	766.5	-14.2	36.97	4.97
	774.975	-12.8	37.06	5.09
150PS 152 - 174	152.025	-12.6	36.97	4.97
	163	-13.4	36.92	4.92
	173.975	-13.2	37.05	5.07

2 Occupied Bandwidth

Governing Doc	FCC Part 2 2.1049	Room Temperature (°C)	20.5
Test Procedure	ANSI/TIA-603- E-2016; KDB 935210 D05, v01r04	Relative Humidity (%)	38.6
Test Location	Richmond	Barometric Pressure (kPa)	101.8
Test Engineer	Jack Qin	Date	August 29,2023
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
Calibration date	Calibration due		
Oct 9, 2021	Oct 9, 2023		
Oct 11, 2021	Oct 11, 2023		
Frequency Range:	<input checked="" type="checkbox"/> 851 MHz – 869 MHz; <input checked="" type="checkbox"/> 758 MHz – 775 MHz; <input checked="" type="checkbox"/> 152 MHz – 174 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.**

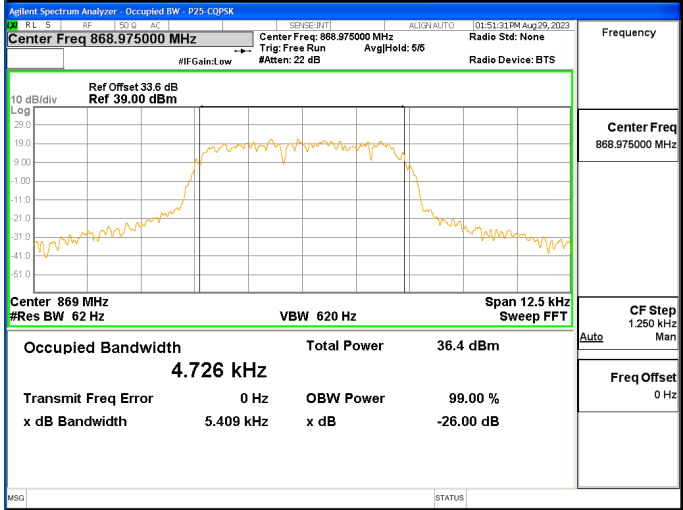
The occupied bandwidth of UL output is measured under one input conditions:

- Nominal: with input 0.5dB below AGC threshold

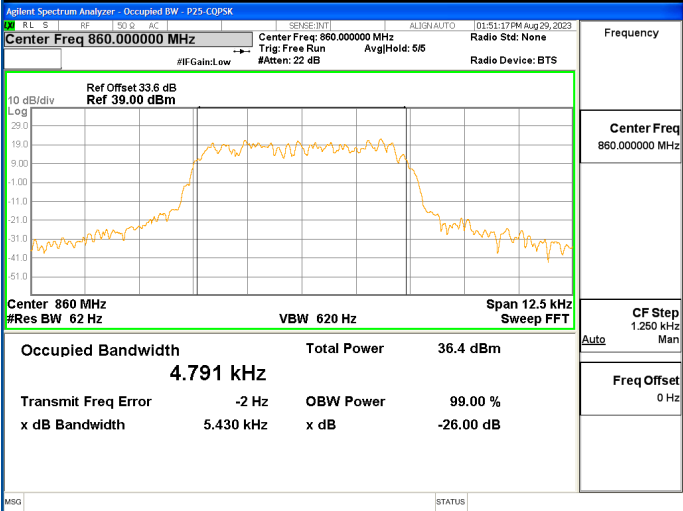


Test Data

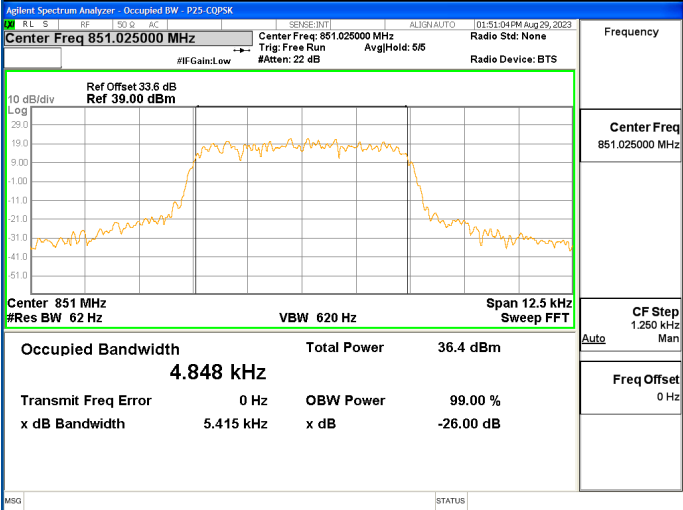
800PS CQPSK Signal at 868.975 MHz



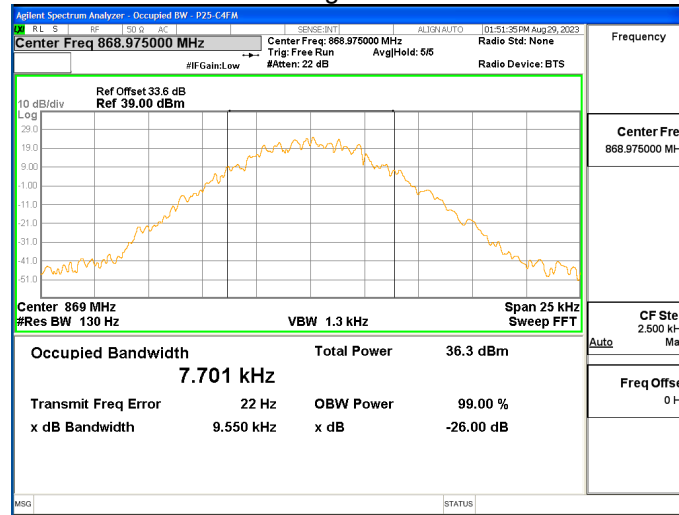
800PS CQPSK Signal at 860 MHz



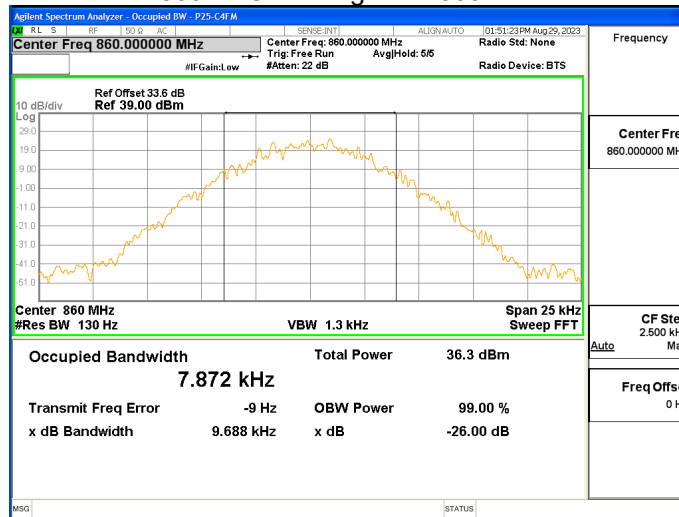
800PS CQPSK Signal at 851.025 MHz



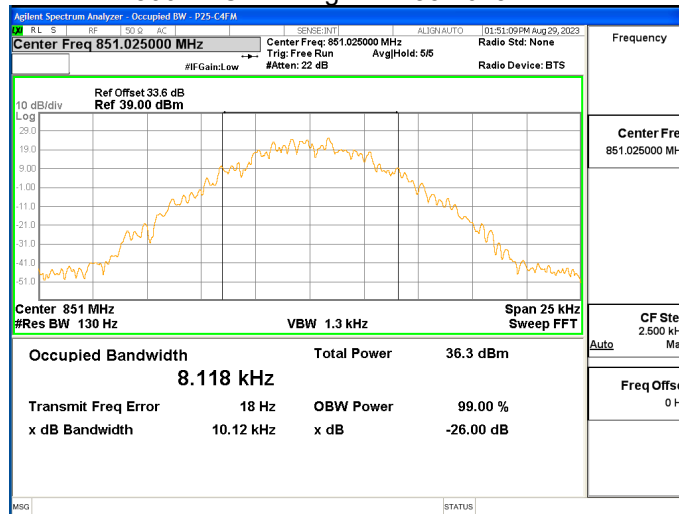
800PS C4FM Signal at 868.975 MHz



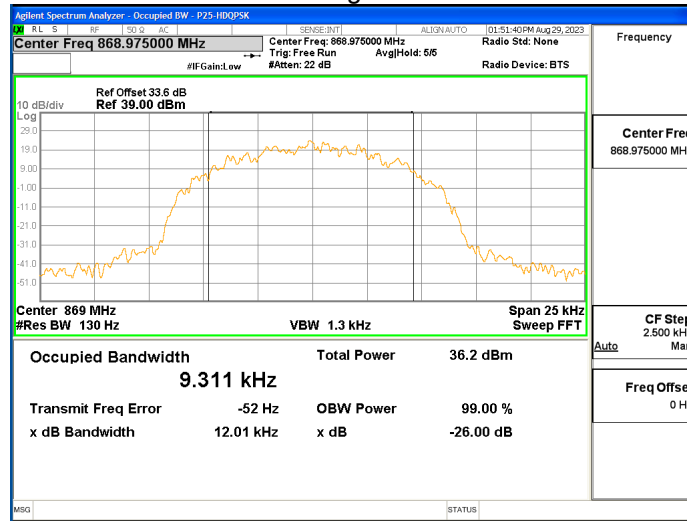
800PS C4FM Signal at 860 MHz



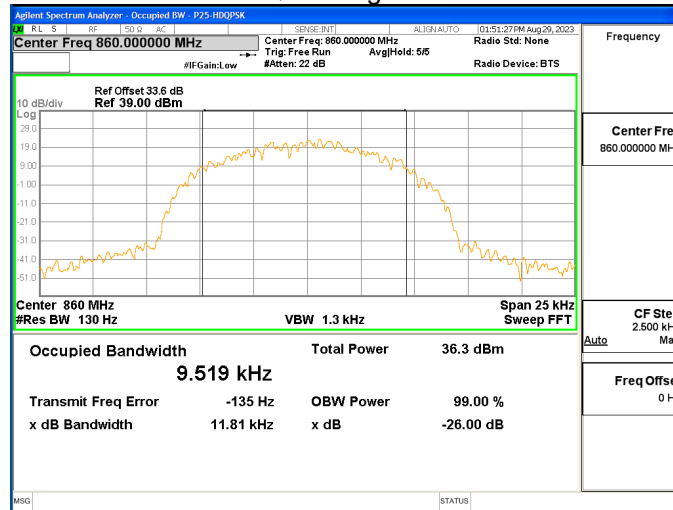
800PS C4FM Signal at 851.025 MHz



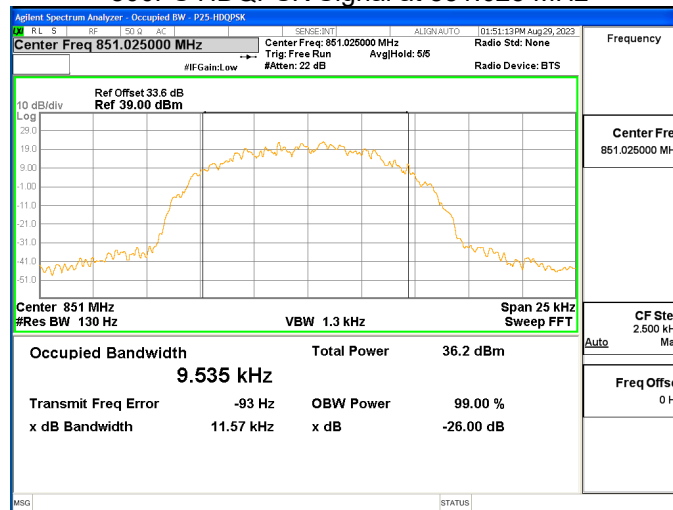
800PS HDQPSK Signal at 868.975 MHz



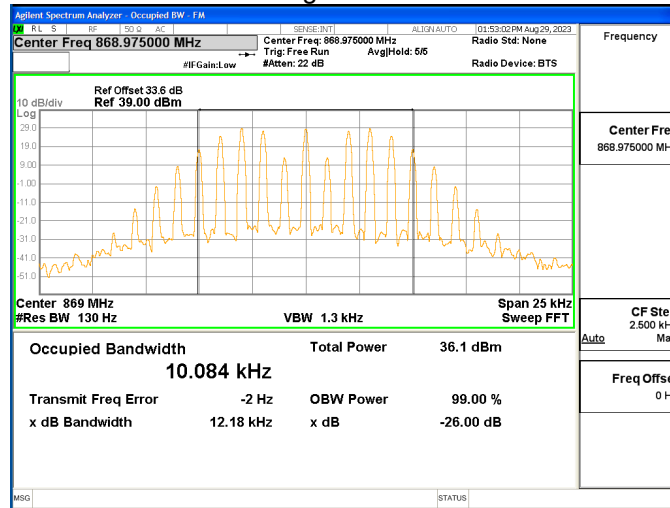
800PS HDQPSK Signal at 860 MHz



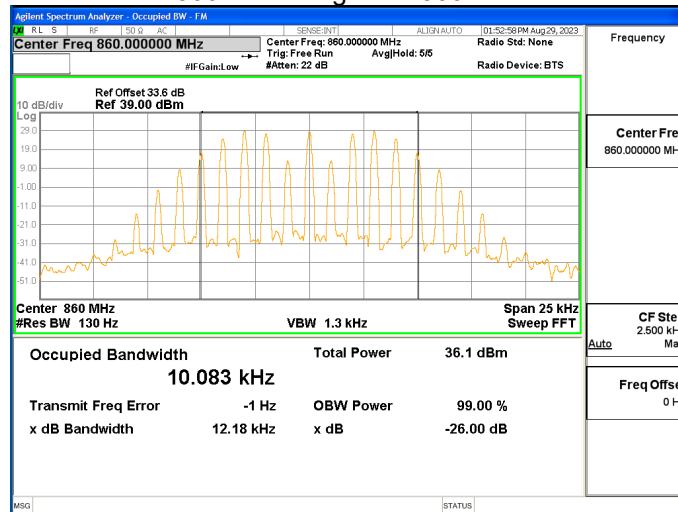
800PS HDQPSK Signal at 851.025 MHz



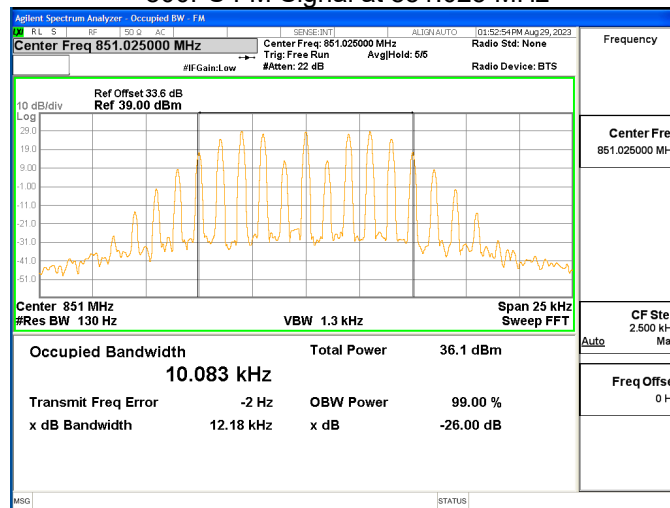
800PS FM Signal at 868.975 MHz



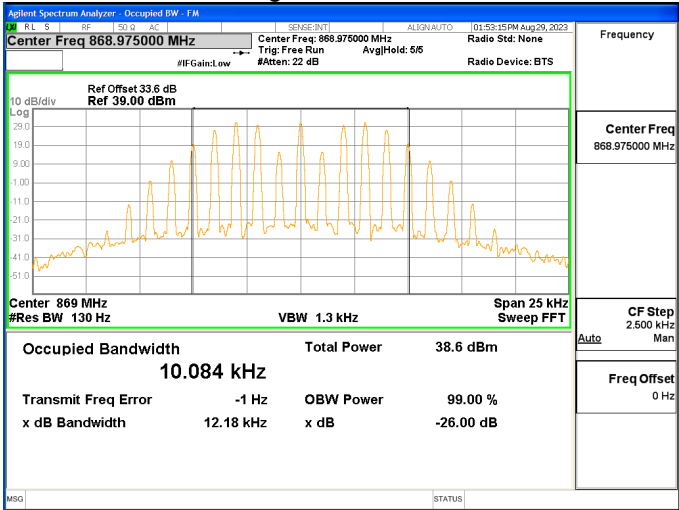
800PS FM Signal at 860 MHz



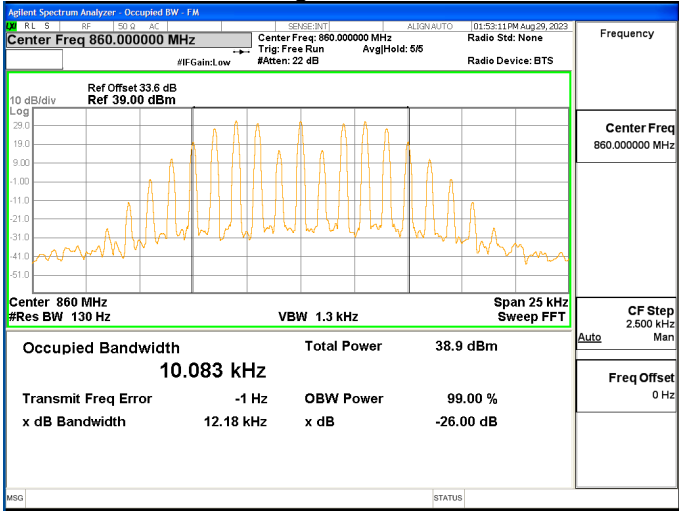
800PS FM Signal at 851.025 MHz



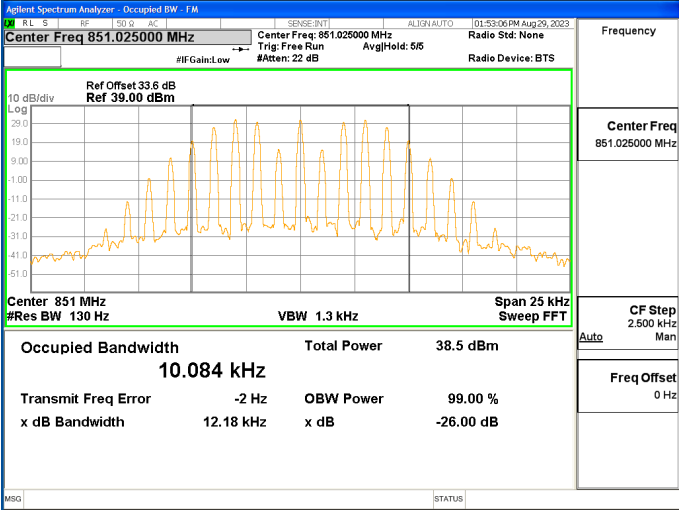
800PS FM Signal at 868.975 MHz ALC



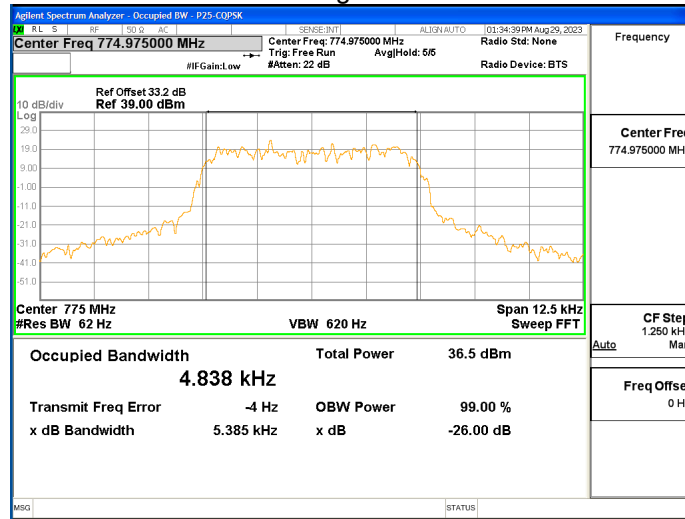
800PS FM Signal at 860 MHz ALC



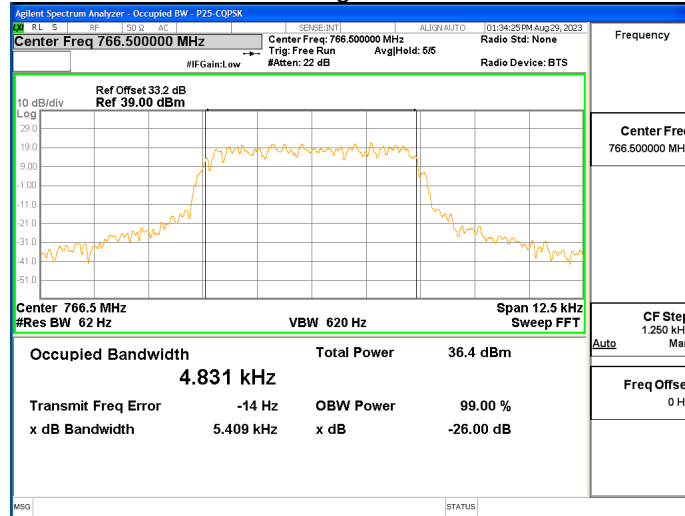
800PS FM Signal at 851.025 MHz ALC



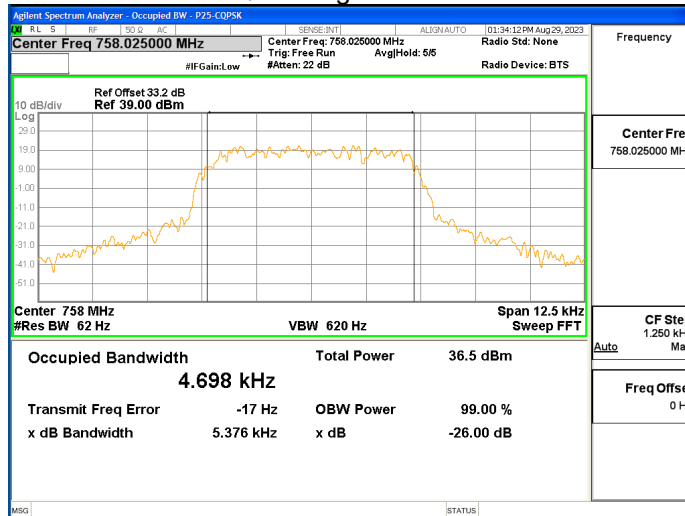
700PS CQPSK Signal at 774.975 MHz



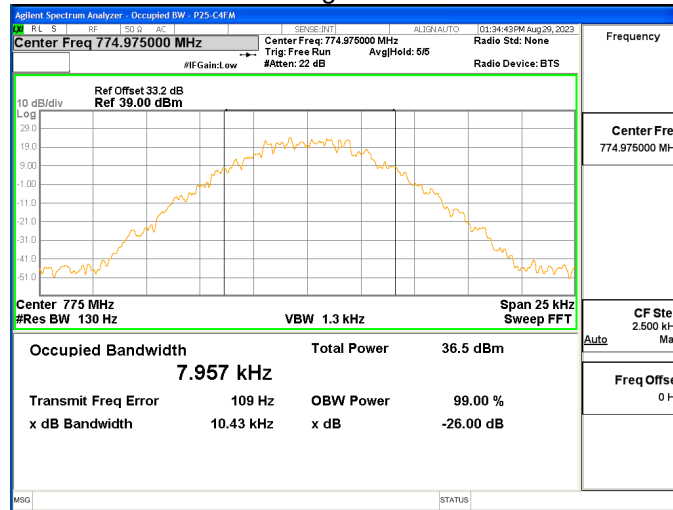
700PS CQPSK Signal at 766.500 MHz



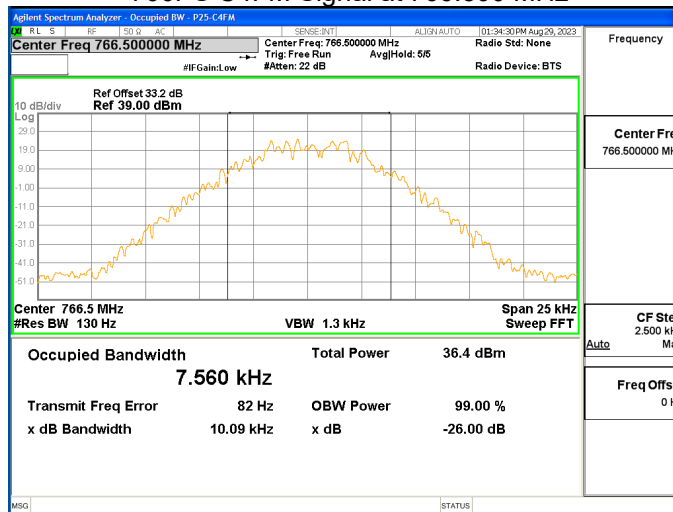
700PS CQPSK Signal at 758.025 MHz



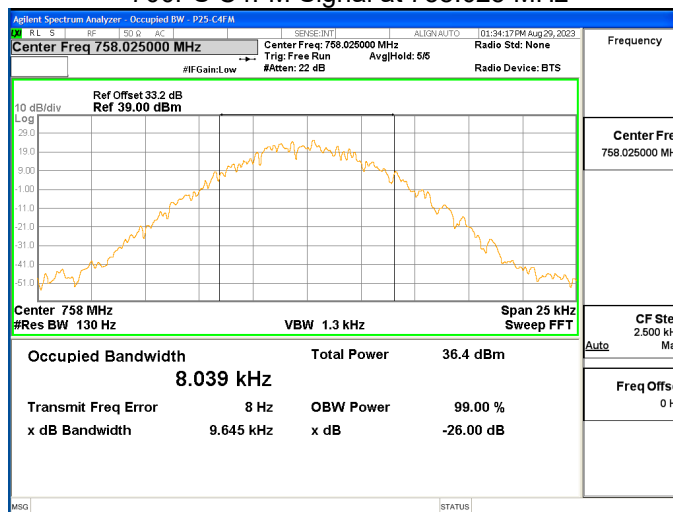
700PS C4FM Signal at 774.975 MHz



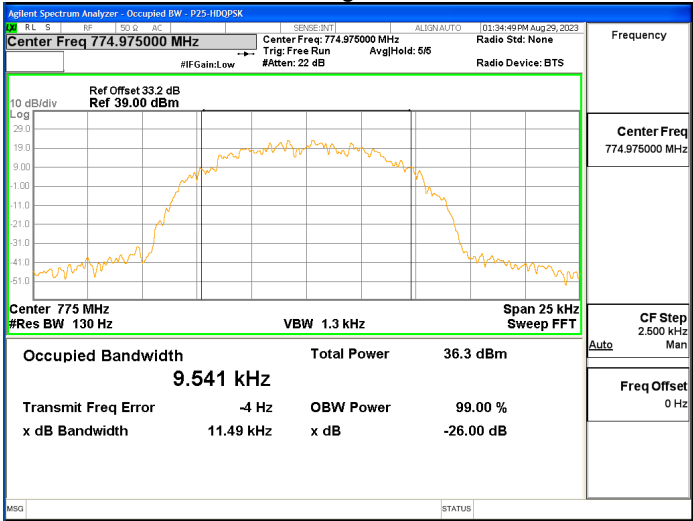
700PS C4FM Signal at 766.500 MHz



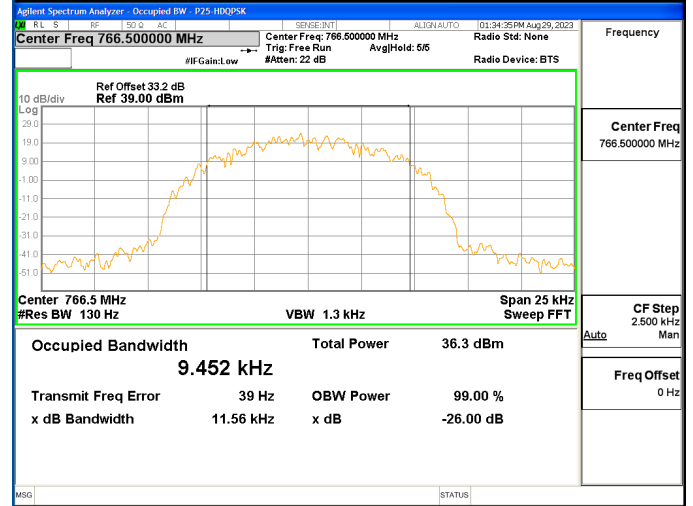
700PS C4FM Signal at 758.025 MHz



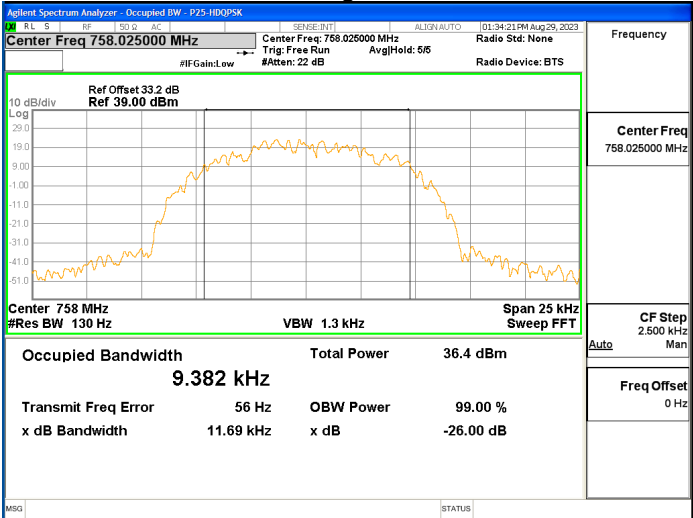
700PS HDQPSK Signal at 774.975 MHz



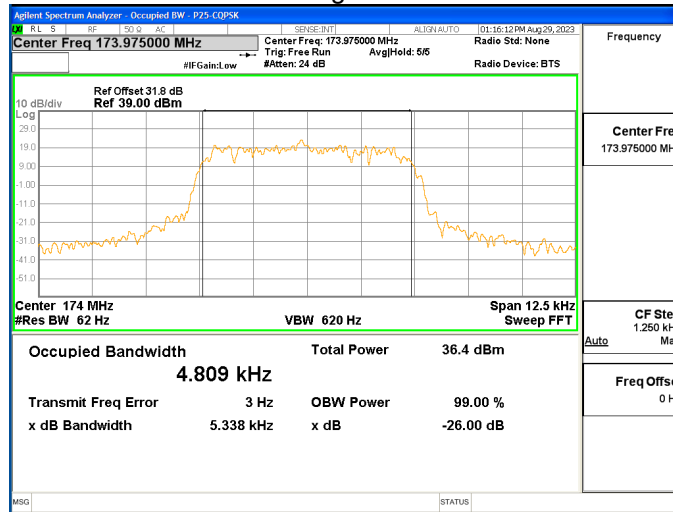
700PS HDQPSK Signal at 766.500 MHz



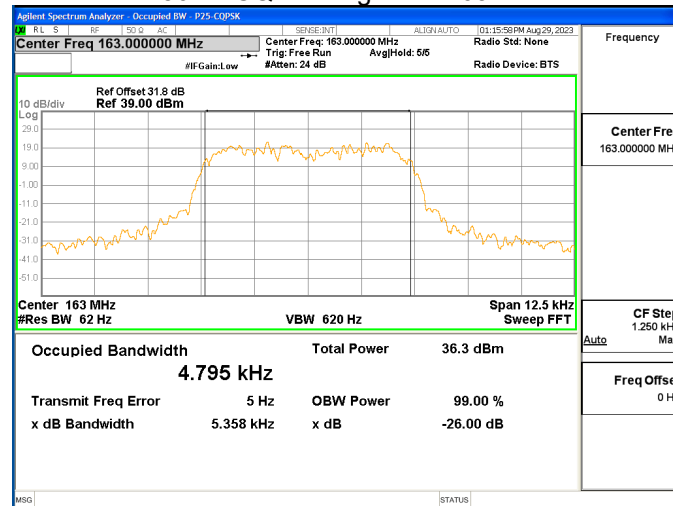
700PS HDQPSK Signal at 758.025 MHz



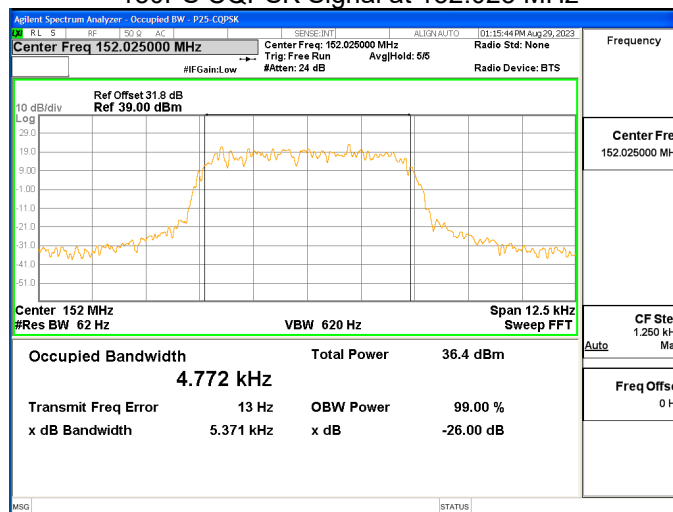
150PS CQPSK Signal at 173.975 MHz



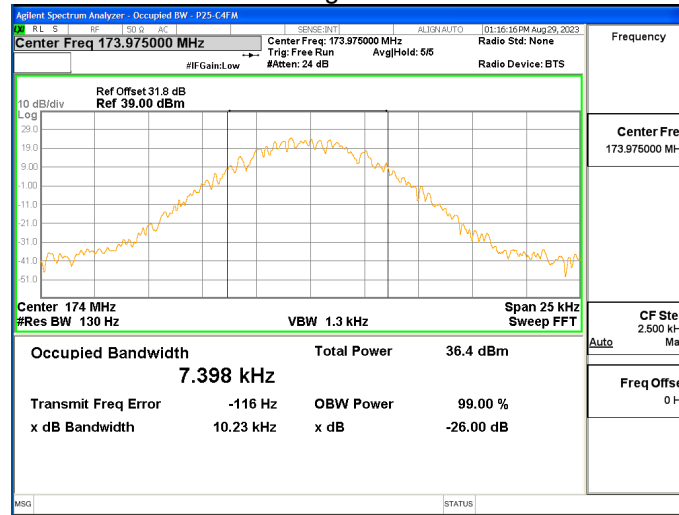
150PS CQPSK Signal at 163 MHz



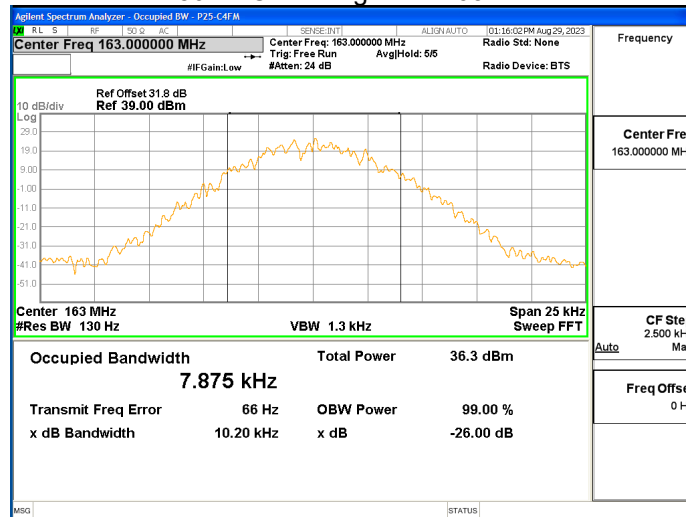
150PS CQPSK Signal at 152.025 MHz



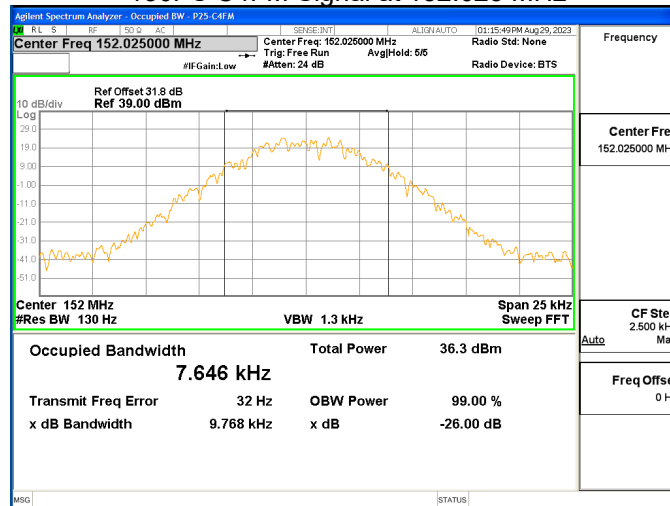
150PS C4FM Signal at 173.975 MHz



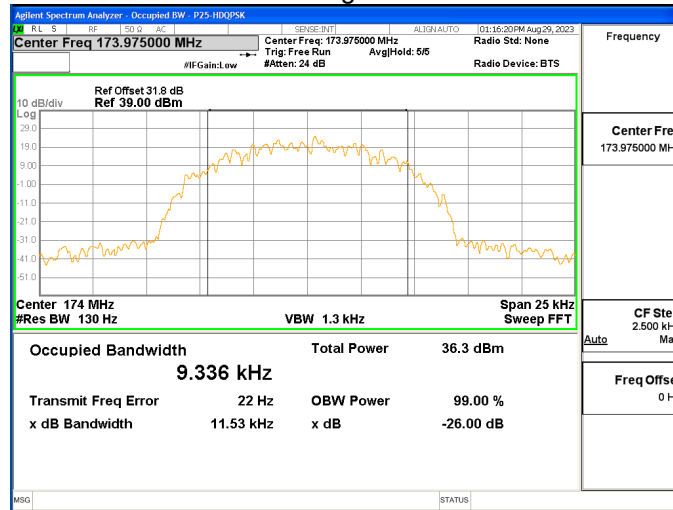
150PS C4FM Signal at 163 MHz



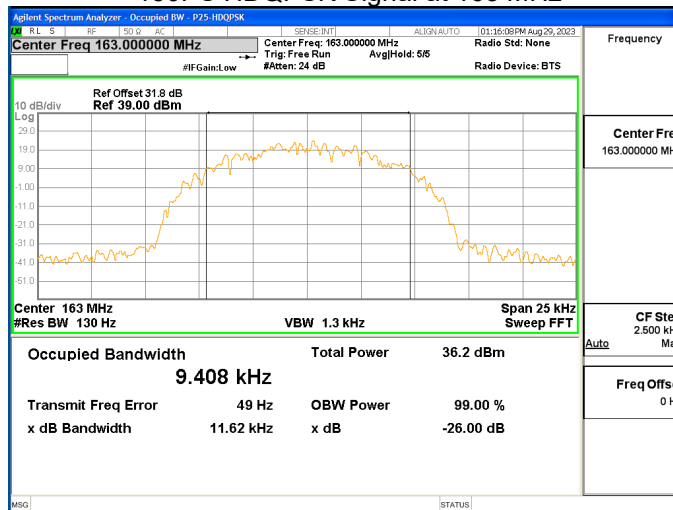
150PS C4FM Signal at 152.025 MHz



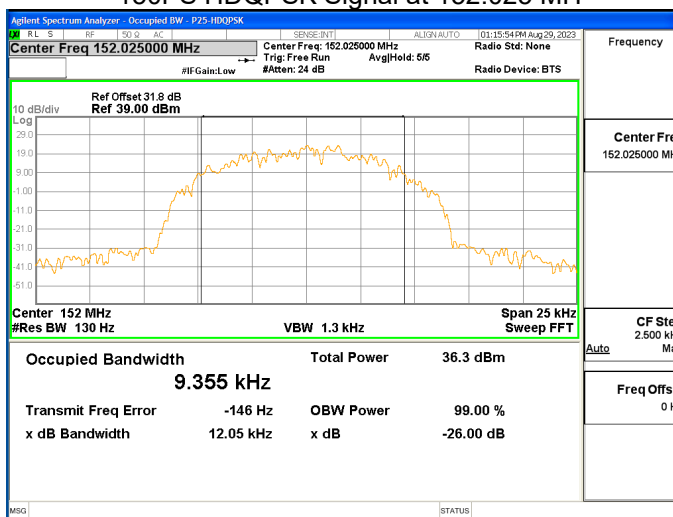
150PS HDQPSK Signal at 173.975 MHz



150PS HDQPSK Signal at 163 MHz



150PS HDQPSK Signal at 152.025 MHz



3 Out of Band Rejection

Governing Doc	FCC Part 2 2.1046(a) FCC Part 90.219(d)	Room Temperature (°C)	20.5
Test Procedure	ANSI/TIA-603- E; FCC KDB 935210 D05, v01r04	Relative Humidity (%)	38.6
Test Location	Richmond	Barometric Pressure (kPa)	101.8
Test Engineer	Jack Qin	Date	August 29,2023
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
Calibration date	Calibration due		
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 / $\geq 3 \times$ 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:

The procedure used was ANSI/TIA-603-E-2016 and FCC KDB 935210 D05 Indus Booster Basic Meas v01r04. The signal booster was set to maximum gain. A swept CW signal was set to the range of $\pm 250\%$ 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. 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.

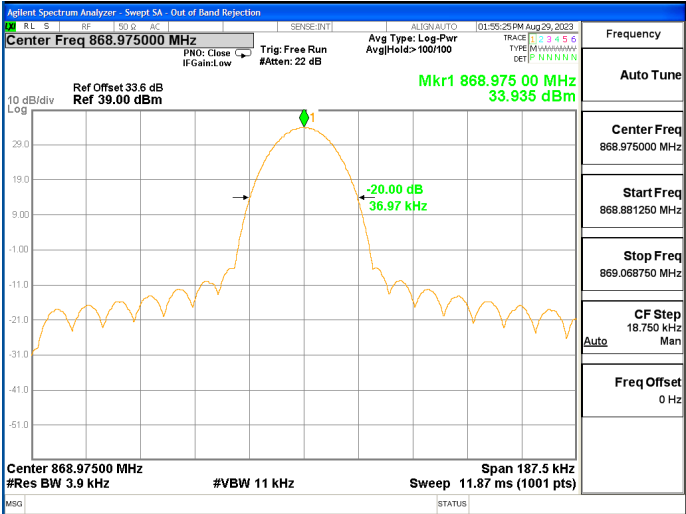
The EUT was set to **Operation Mode #1 with configuration Mode #1.**

```

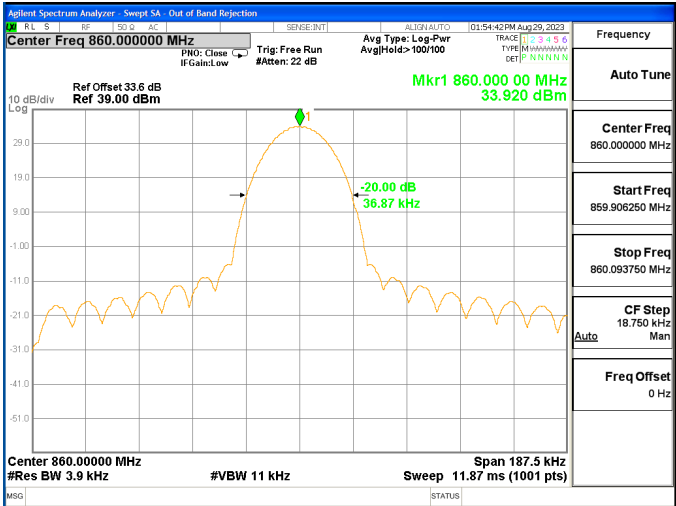
    graph LR
        VSG[Vector Signal Generator] --> AE1[AE1]
        AE1 -- Fiber --> EUT[EUT]
        EUT --> Att[30dB Attenuator]
        Att --> SA[Spectrum Analyzer]
    
```

Test Data

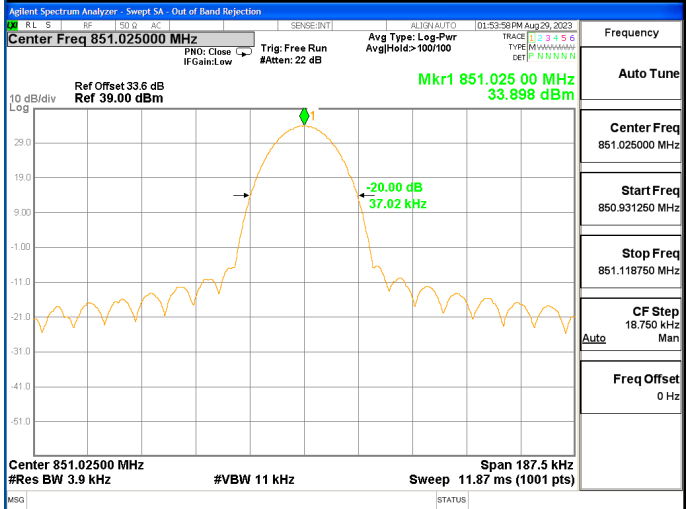
800PS at 868.975 MHz



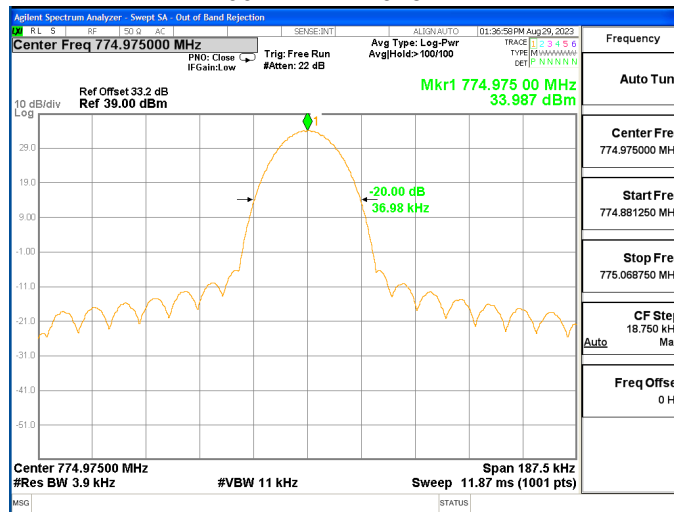
800PS at 860 MHz



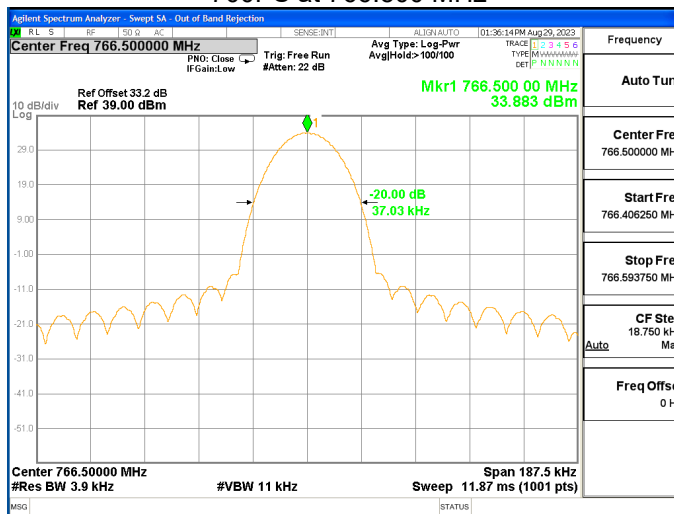
800PS at 851.025 MHz



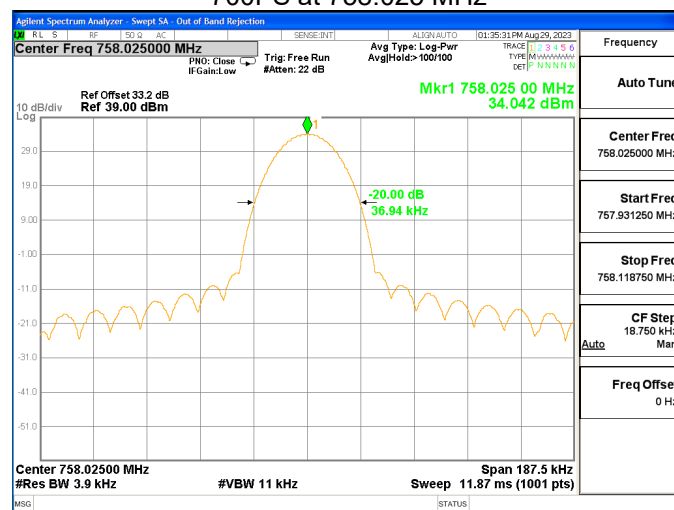
700PS at 774.975 MHz



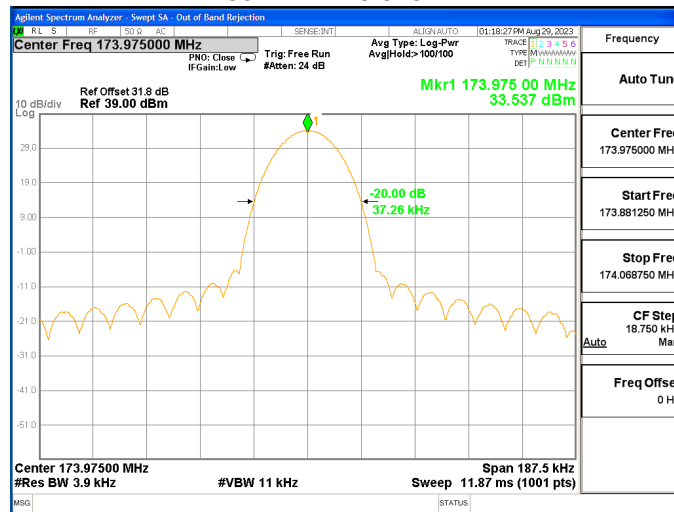
700PS at 766.500 MHz



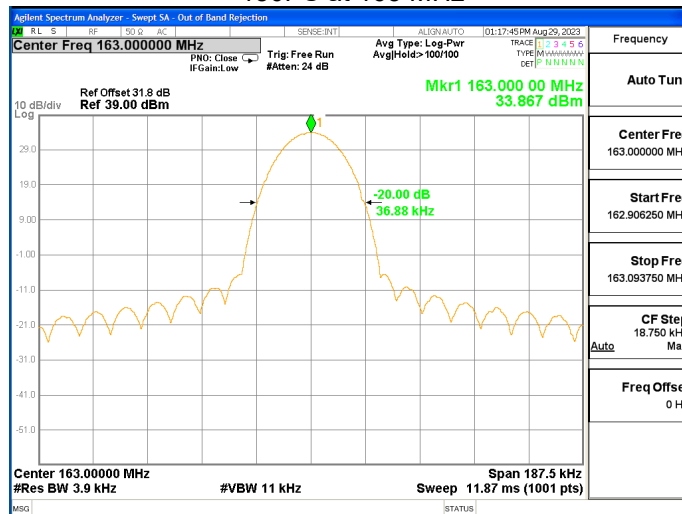
700PS at 758.025 MHz



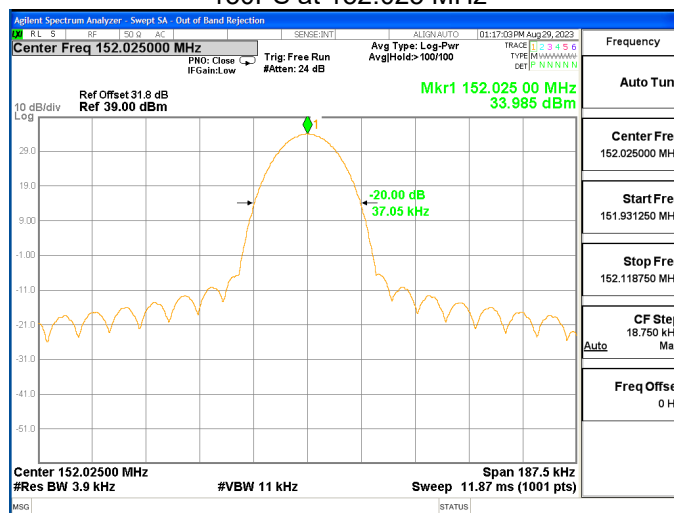
150PS at 173.975 MHz



150PS at 163 MHz



150PS at 152.025 MHz



4 Input-Versus-Output Signal Comparison

Governing Doc	FCC Part 90.210 (j) (h) (g) (c) (d) and (e)	Room Temperature (°C)	20.5
Test Procedure	ANSI/TIA-603- E; FCC KDB 935210 D05, v01r04	Relative Humidity (%)	38.6
Test Location	Richmond	Barometric Pressure (kPa)	101.8
Test Engineer	Jack Qin	Date	August 29, 2023
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"/> 851 MHz – 869 MHz; <input checked="" type="checkbox"/> 758 MHz – 775 MHz; <input checked="" type="checkbox"/> 152 MHz – 174 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.**

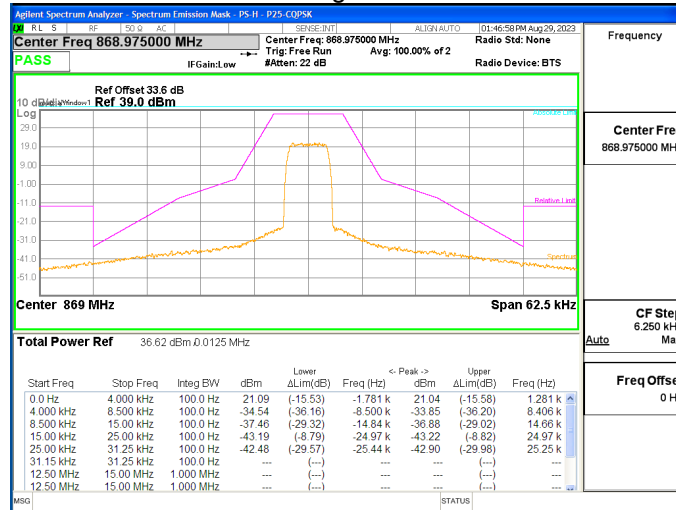
```

graph LR
    VSG[Vector Signal Generator] --> AE1[AE1]
    AE1 -- Fiber --> EUT[EUT]
    EUT --> Att[30dB Attenuator]
    Att --> SA[Spectrum Analyzer]

```

Test Data

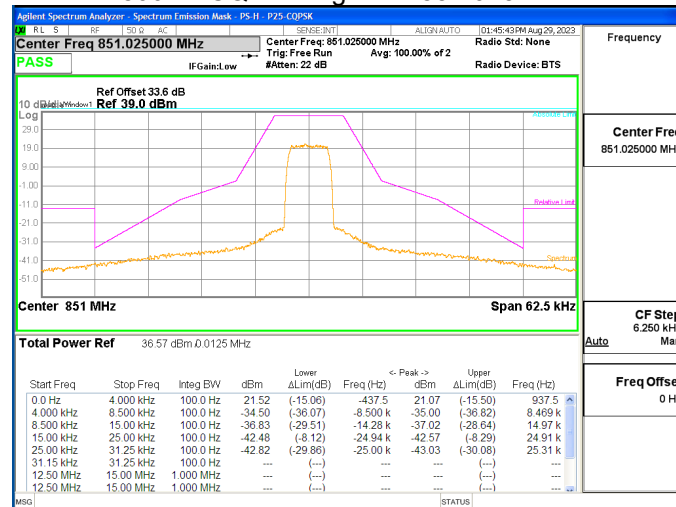
800PS CQPSK Signal at 868.975 MHz



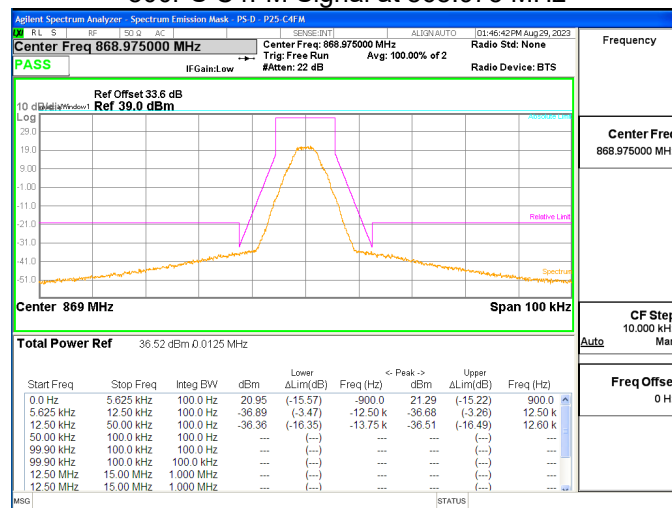
800PS CQPSK Signal at 860MHz



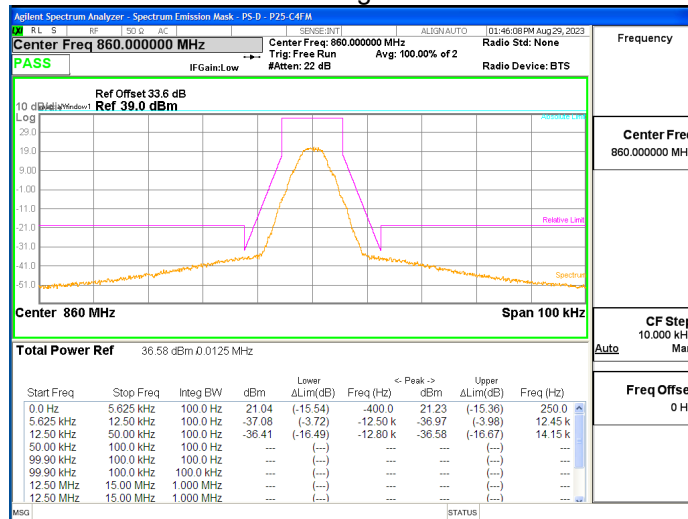
800PS CQPSK Signal at 851.025 MHz



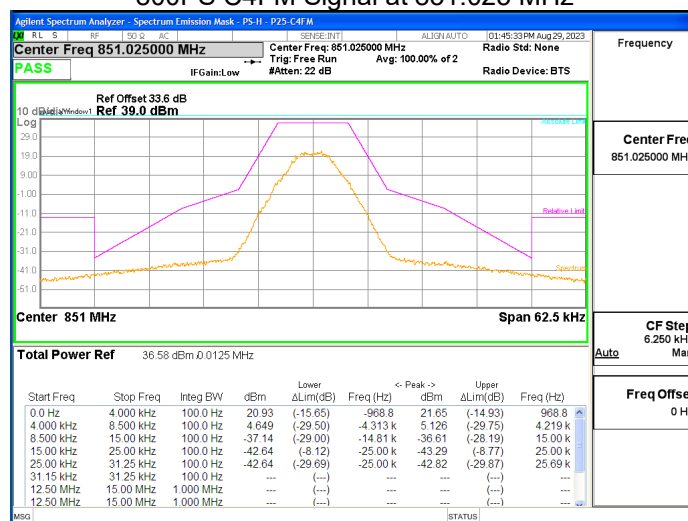
800PS C4FM Signal at 868.975 MHz



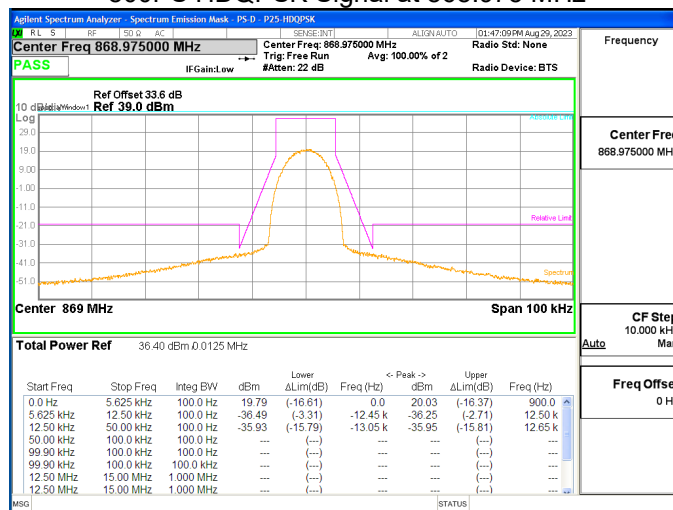
800PS C4FM Signal at 860MHz



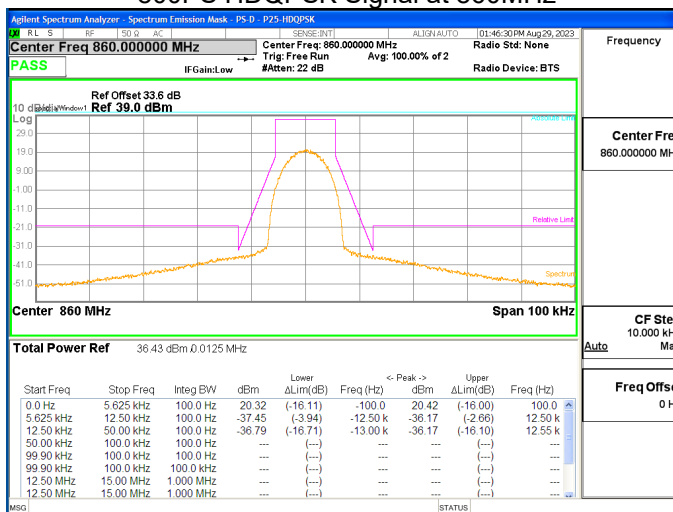
800PS C4FM Signal at 851.025 MHz



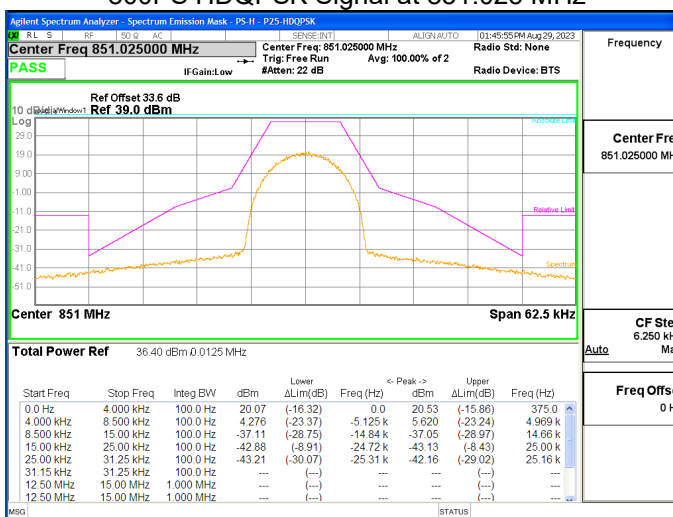
800PS HDQPSK Signal at 868.975 MHz



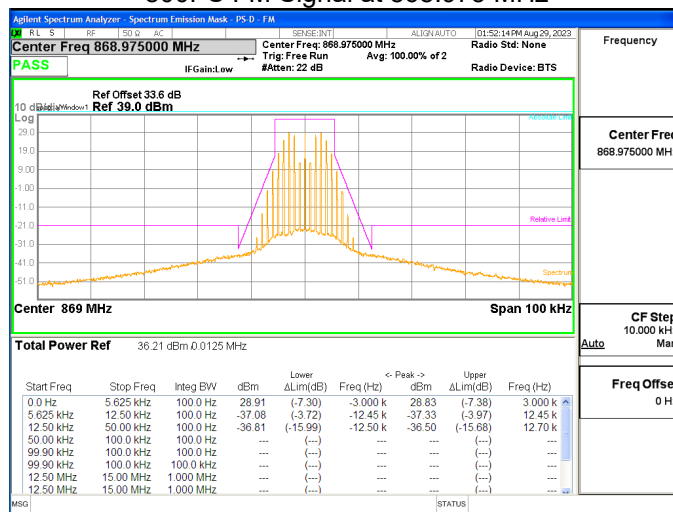
800PS HDQPSK Signal at 860MHz



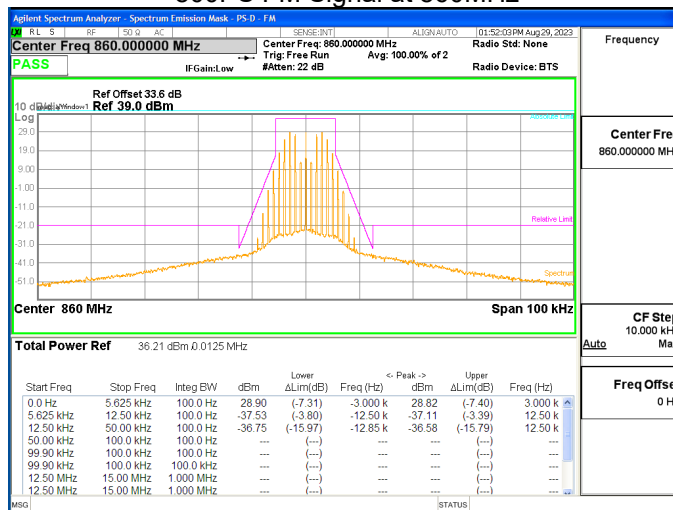
800PS HDQPSK Signal at 851.025 MHz



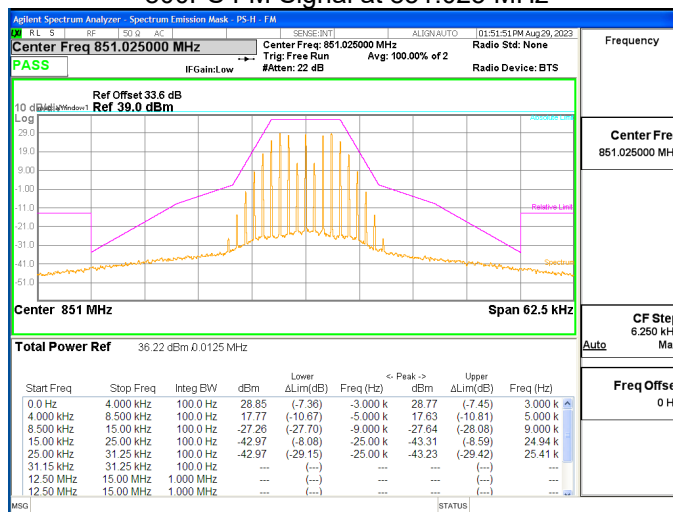
800PS FM Signal at 868.975 MHz



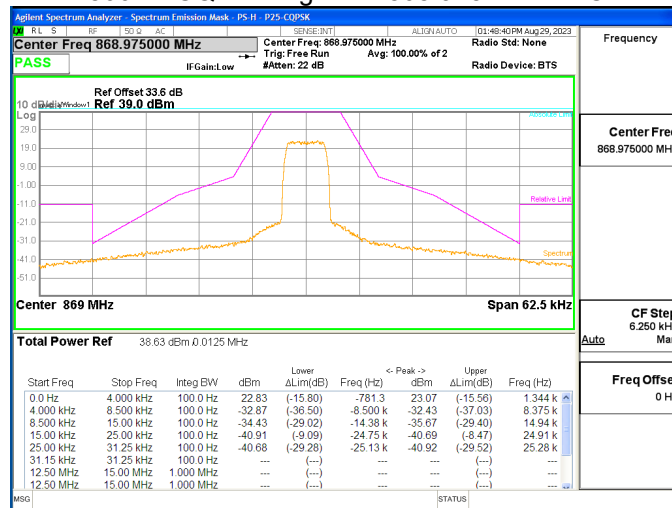
800PS FM Signal at 860MHz



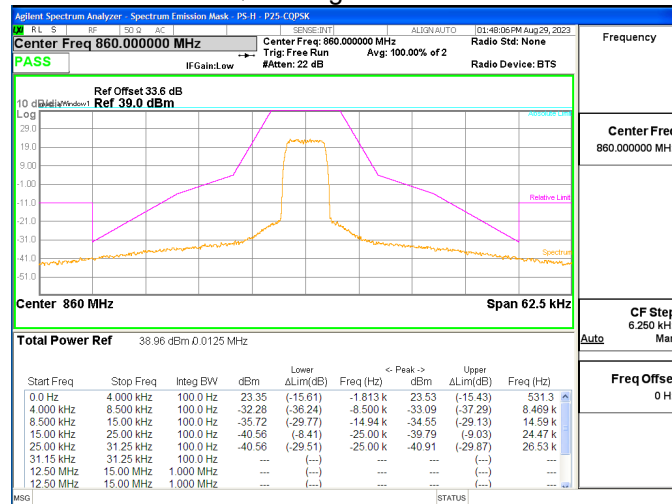
800PS FM Signal at 851.025 MHz



800PS CQPSK Signal at 868.975 MHz ALC



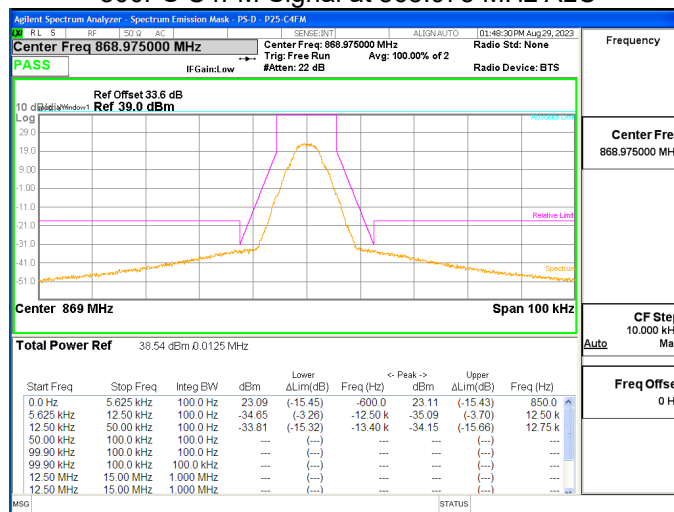
800PS CQPSK Signal at 860MHz ALC



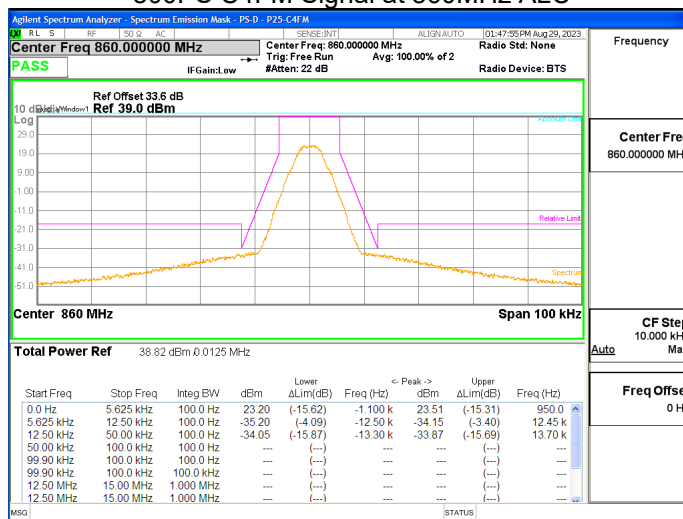
800PS CQPSK Signal at 851.025 MHz ALC



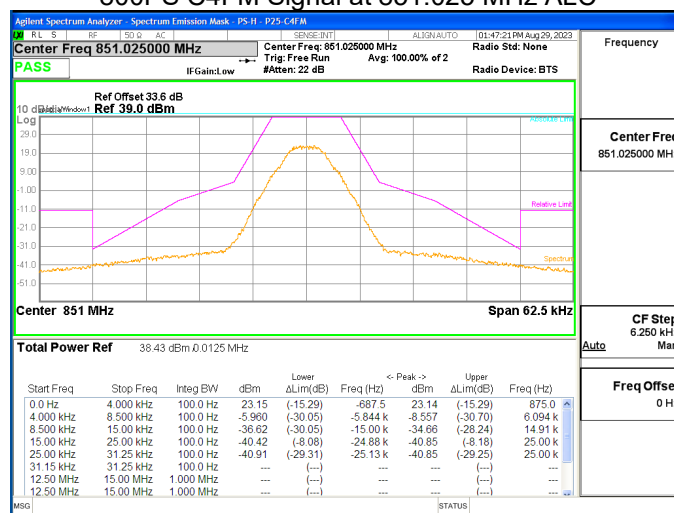
800PS C4FM Signal at 868.975 MHz ALC



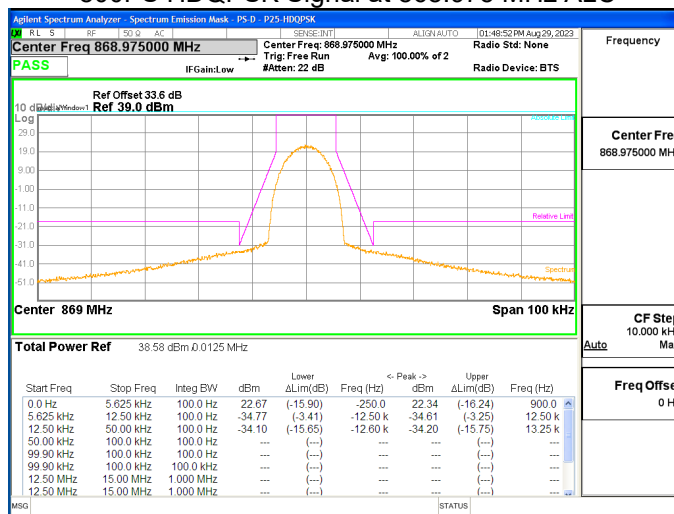
800PS C4FM Signal at 860MHz ALC



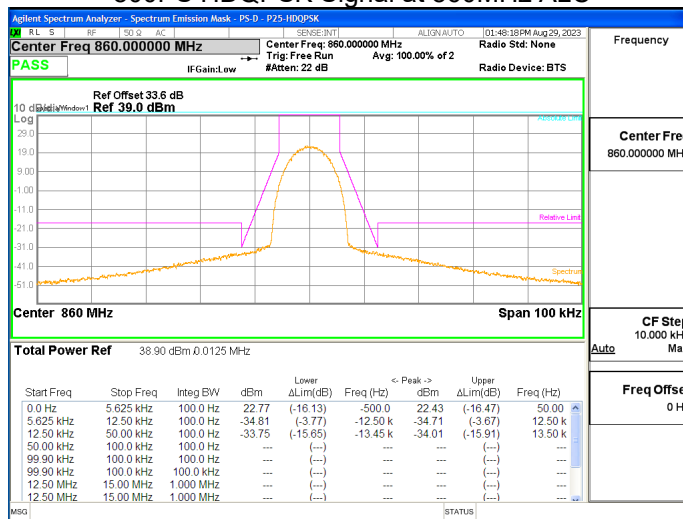
800PS C4FM Signal at 851.025 MHz ALC



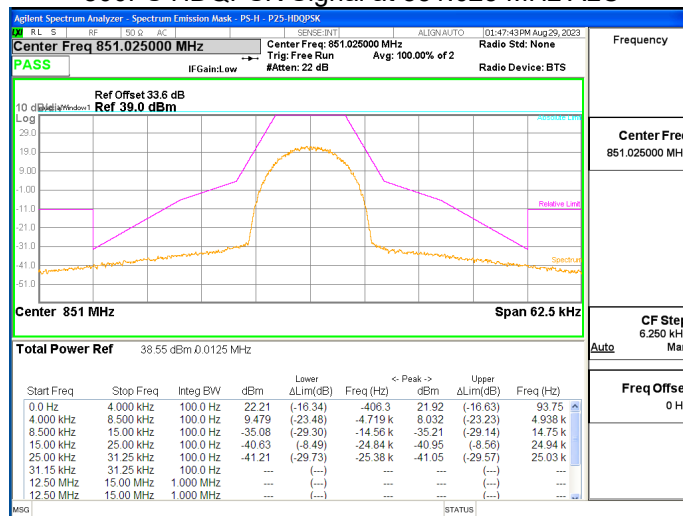
800PS HDQPSK Signal at 868.975 MHz ALC



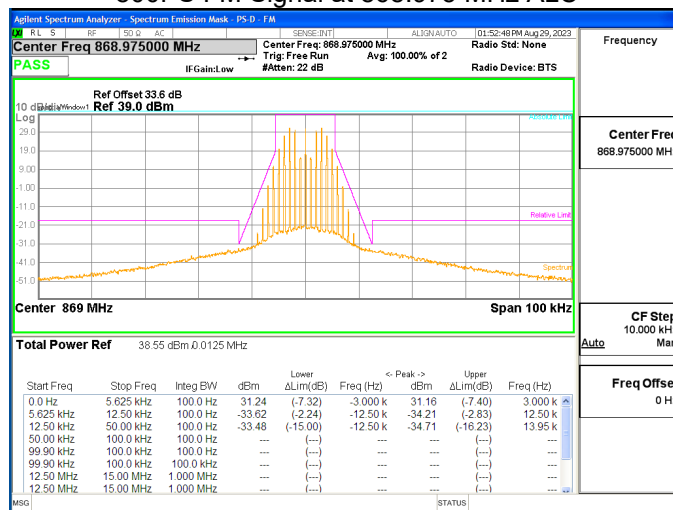
800PS HDQPSK Signal at 860MHz ALC



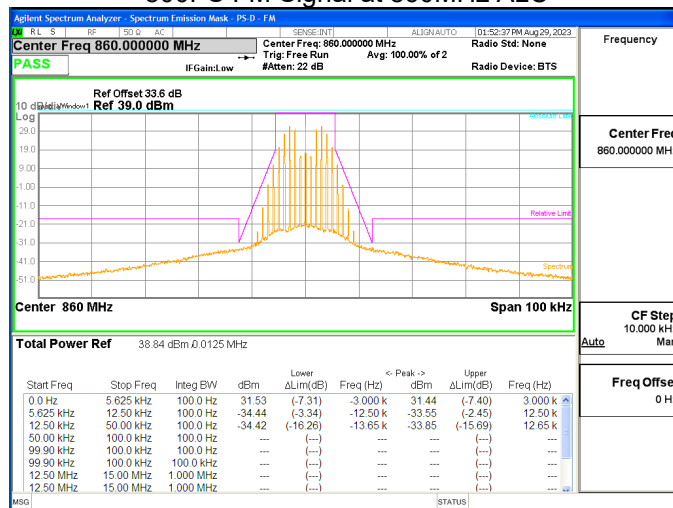
800PS HDQPSK Signal at 851.025 MHz ALC



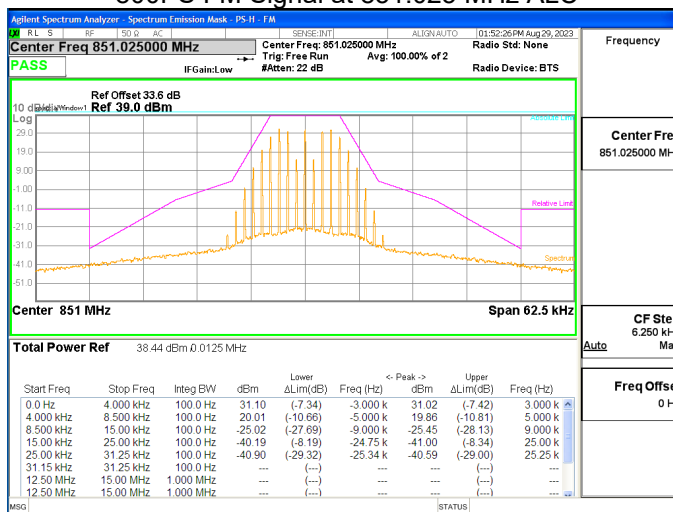
800PS FM Signal at 868.975 MHz ALC



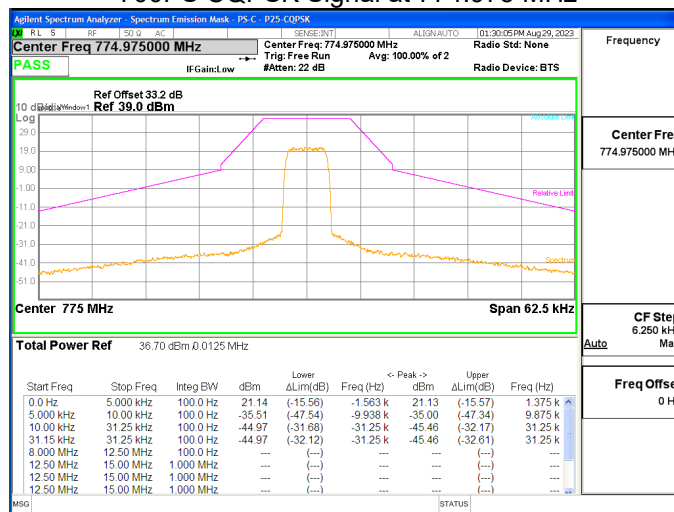
800PS FM Signal at 860MHz ALC



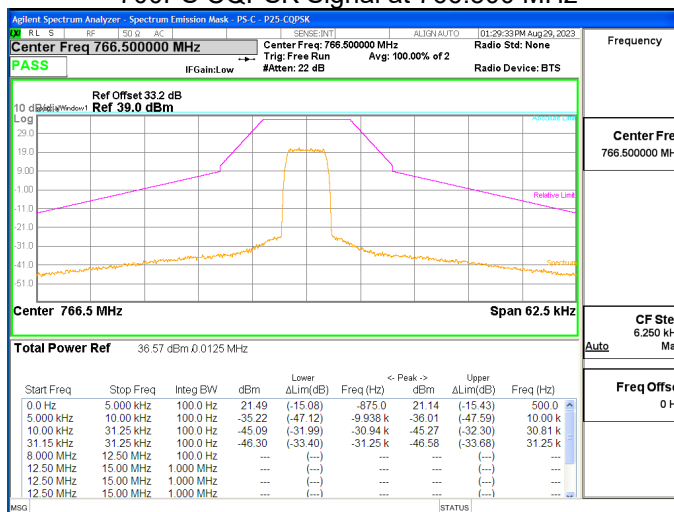
800PS FM Signal at 851.025 MHz ALC



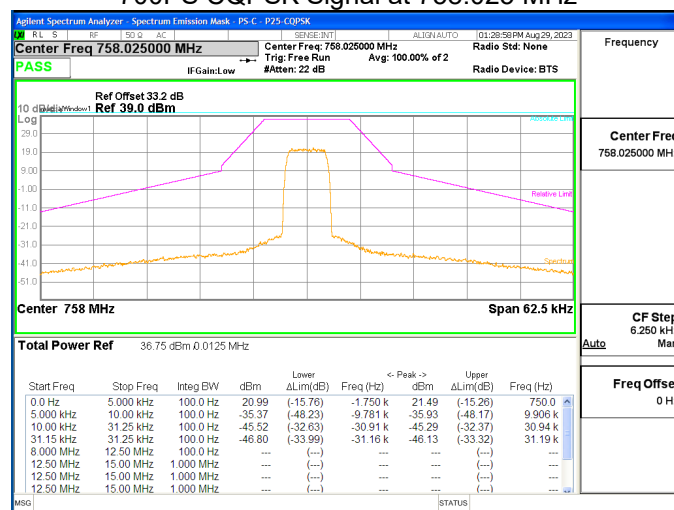
700PS CQPSK Signal at 774.975 MHz



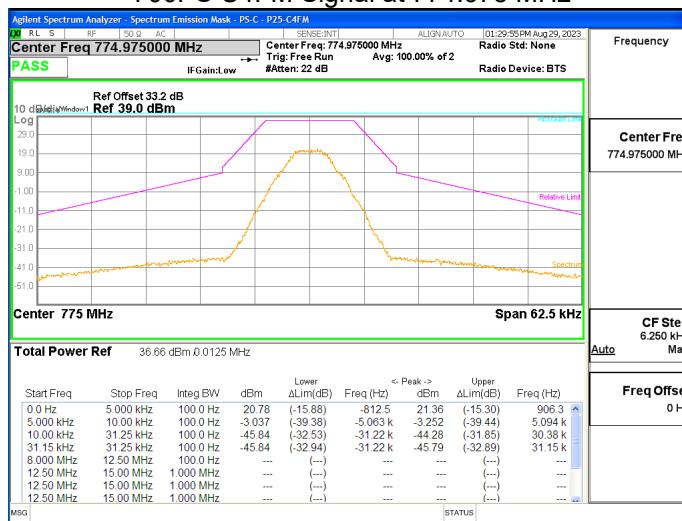
700PS CQPSK Signal at 766.500 MHz



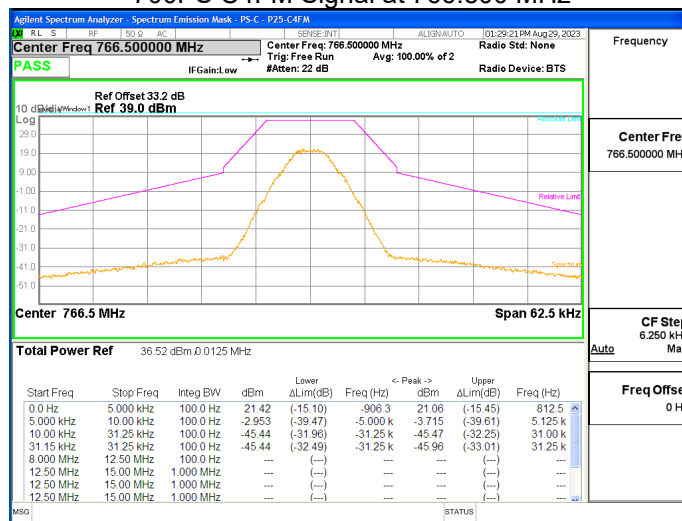
700PS CQPSK Signal at 758.025 MHz



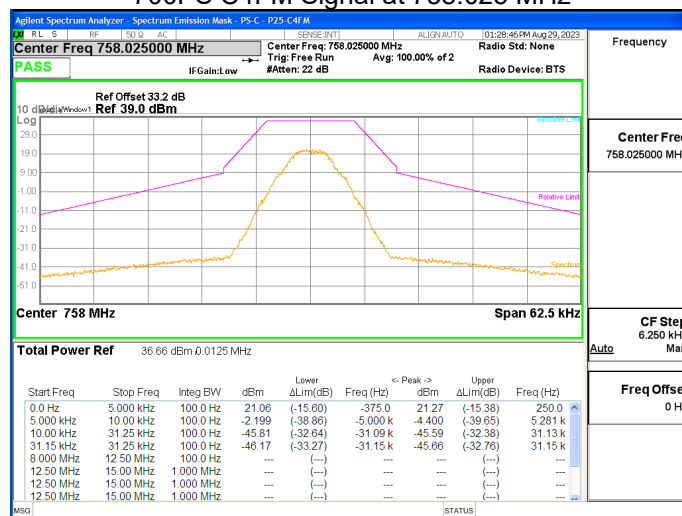
700PS C4FM Signal at 774.975 MHz



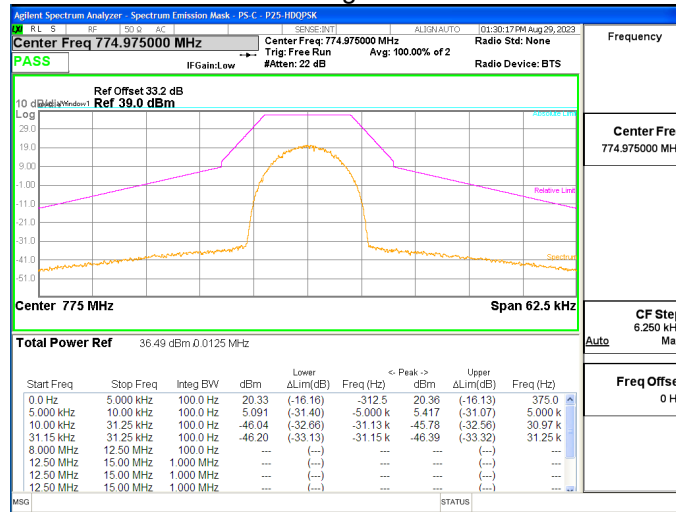
700PS C4FM Signal at 766.500 MHz



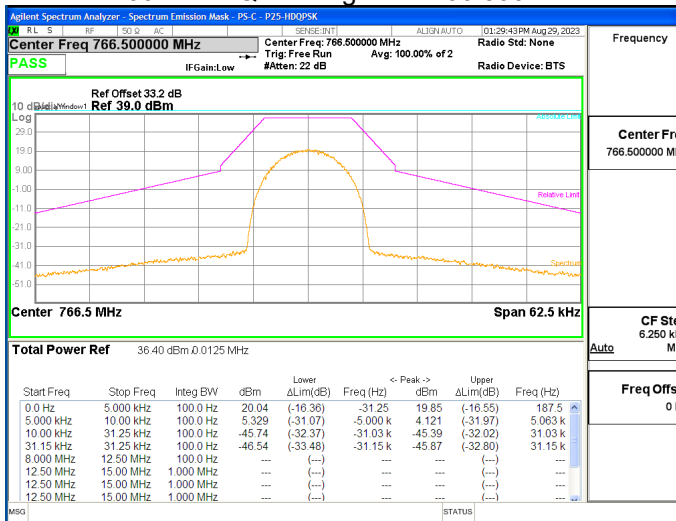
700PS C4FM Signal at 758.025 MHz



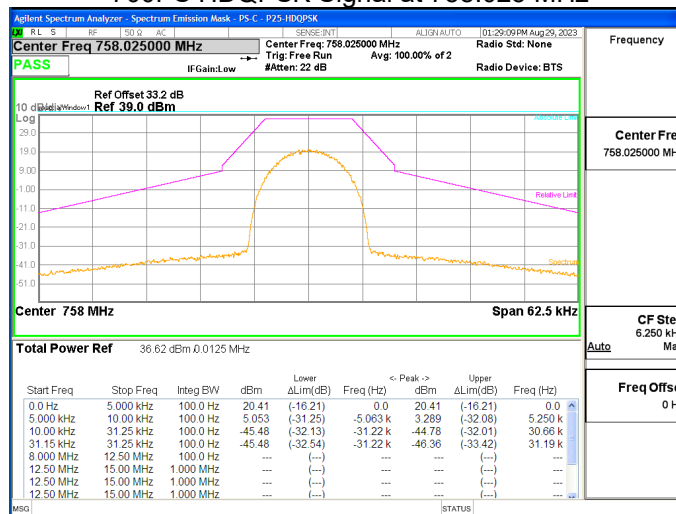
700PS HDQPSK Signal at 774.975 MHz



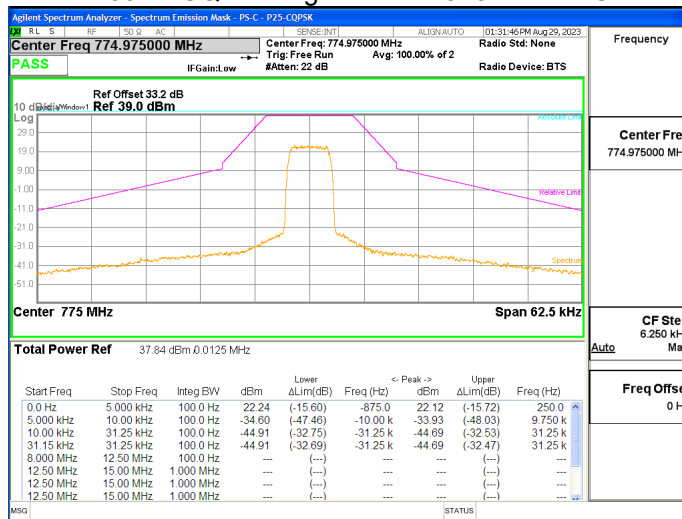
700PS HDQPSK Signal at 766.500 MHz



700PS HDQPSK Signal at 758.025 MHz



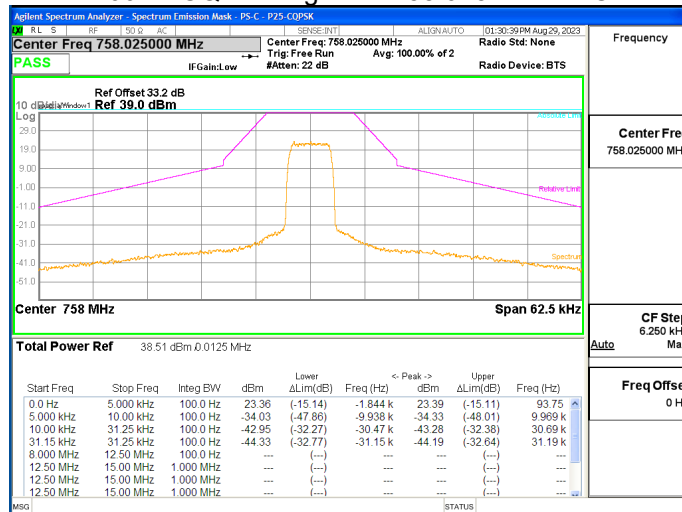
700PS CQPSK Signal at 774.975 MHz ALC



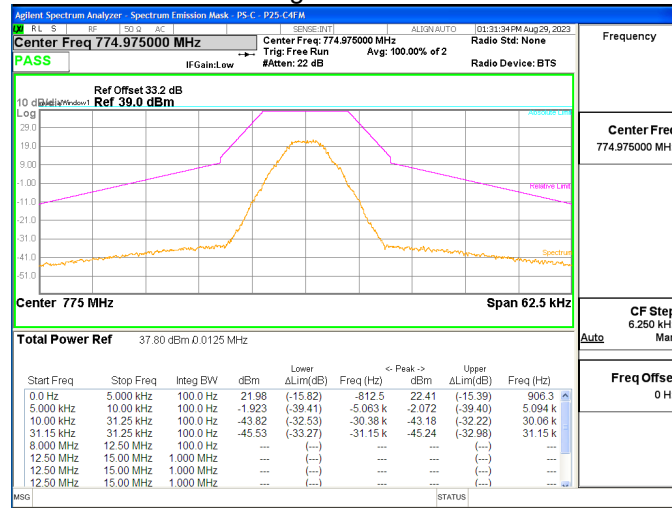
700PS CQPSK Signal at 766.500 MHz ALC



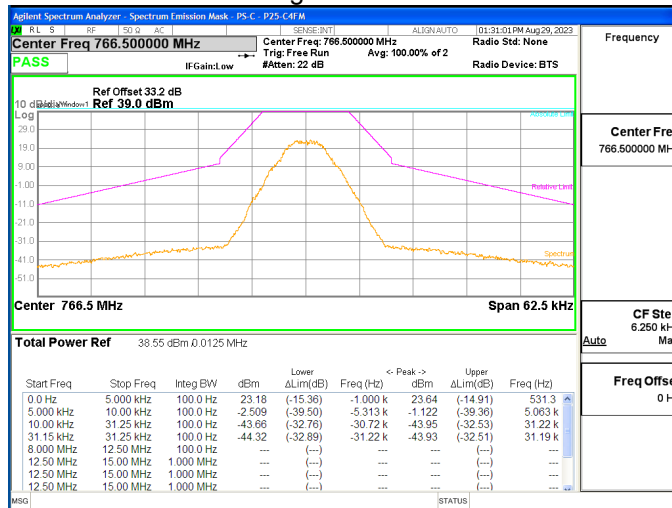
700PS CQPSK Signal at 758.025 MHz ALC



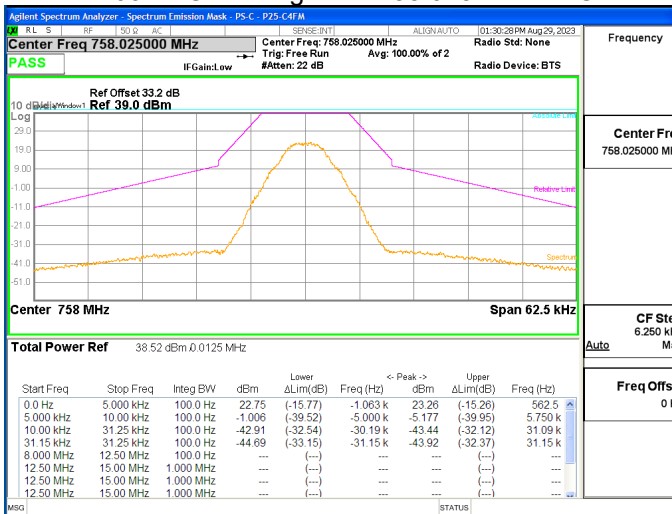
700PS C4FM Signal at 774.975 MHz ALC



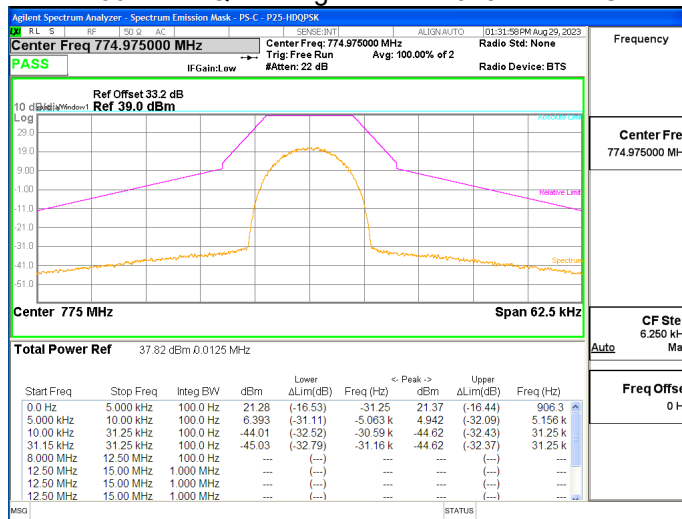
700PS C4FM Signal at 766.500 MHz ALC



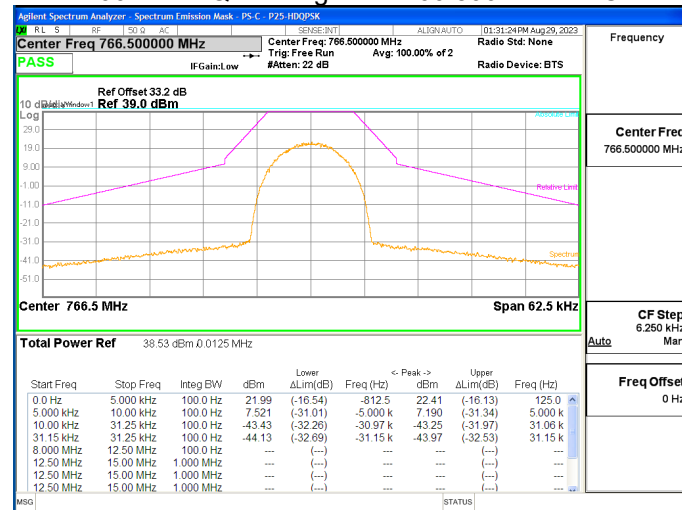
700PS C4FM Signal at 758.025 MHz ALC



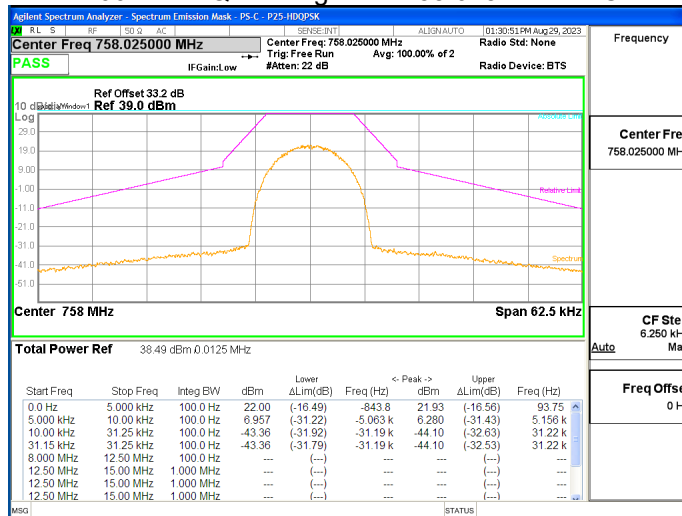
700PS HDQPSK Signal at 774.975 MHz ALC



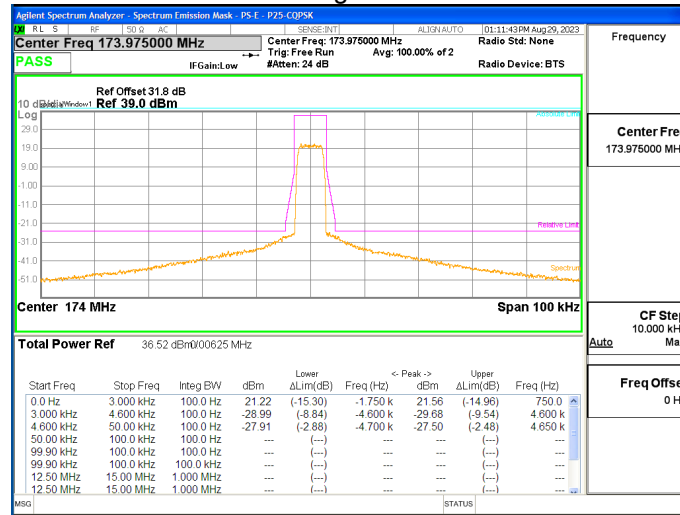
700PS HDQPSK Signal at 766.500 MHz ALC



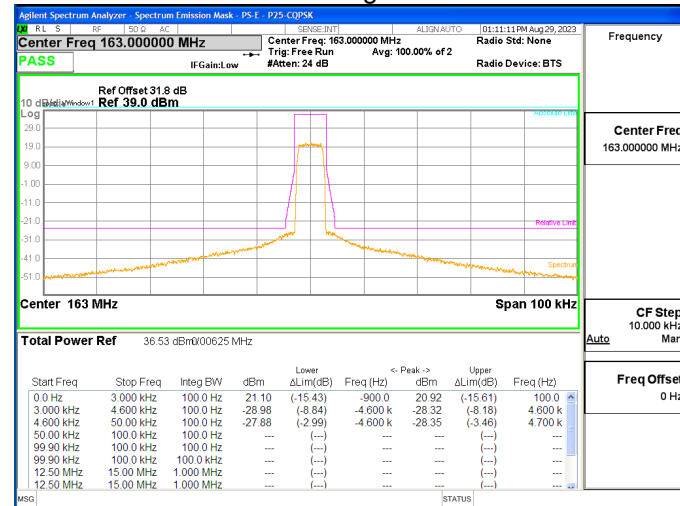
700PS HDQPSK Signal at 758.025 MHz ALC



150PS CQPSK Signal at 173.975 MHz



150PS CQPSK Signal at 163MHz



150PS CQPSK Signal at 152.025 MHz

