



Engineering Solutions & Electromagnetic Compatibility Services

FCC & ISED Class 2 Permissive Change Report

**L3Harris Corporation
221 Jefferson Ridge Parkway
Lynchburg, VA 24501**

**Model: XL-185P 7/8/900 MHz
MultiBand Portable Radio**

**FCC ID: OWDTR-0143-E
IC: 3636B-0143**

September 14, 2024

Standards Referenced for this Report	
Part 2: 2023	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
Part 15B: 2023	Radio Frequency Devices
Part 90: 2023	Private Land Portable Radio Services
ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
RSS-119 Issue 12	Land Mobile and Fixed Radio Transmitters and Receivers 27.41 to 960.0 MHz
ICES-003 Issue 7	Information Technology Equipment (Including Digital Apparatus) — Limits and Methods of Measurement

Report Prepared By: Daniel W. Baltzell

Document Number: 2024047

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from the standards referenced above.

Signature: 

Date: September 14, 2024

Typed/Printed Name: Desmond A. Fraser

Position: President

*This report may not be reproduced, except in full, without the full written approval of Rhein Tech Laboratories, Inc. and L3Harris Corporation. Test results relate only to the item tested.
This replaces Report R1.3.*

*These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANAB.
Refer to certificate and scope of accreditation AT-1445.*

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1 Test Result Summary

Test	FCC Reference	ISED Reference	Result
Field Strength of Spurious Radiation	2.1053(a)	RSS-Gen 6.13	Compliant
Occupied Bandwidth/ Emission Masks	2.1049, 90.210	RSS-119 5.5	Compliant

2 General Information

The following Class 2 Permissive Change Report is prepared on behalf of L3Harris Corporation in accordance with the Federal Communications Commission and ISED rules and regulations. The Equipment Under Test (EUT) was the XL-185P 7/8/900 MHz MultiBand Portable Radio.

All measurements contained in this application were conducted in accordance with the applicable sections of FCC Rules and Regulations CFR 47 Parts 2, 15, and 90, and ISED RSS-119. Calibration checks are performed regularly on the instruments, and all accessories including high pass filter, coaxial attenuator, preamplifier and cables.

2.1 Measurement Uncertainty

The measurement uncertainty complies with CISPR 16-4-2 limits and is not used to adjust measurements for compliance determination. Expanded uncertainty (U) for each scope, calculated per ANSI/NCSL Z540-2-1997 (R2002) with a type B evaluation, is provided in this RTL report. While this demonstrates RTL's commitment to transparency, compliance decisions are based solely on comparing measured values directly to the relevant standards' limits.

2.2 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the parking lot of Rhein Tech Laboratories, Inc., 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170.

ISED CAB ID: US0079, Company Number: 2956A

2.3 Related Submittal(s)/Grant(s)

This is a Class 2 Permissive Change to add frequency ranges 816-817 MHz and 861-862 MHz to the existing FCC grant and ISED certificate.

2.4 Tested System Details

The test sample was received on June 21, 2024. Listed below are the identifiers and descriptions of all equipment, cables, and internal devices used with the EUT for this test, as applicable.

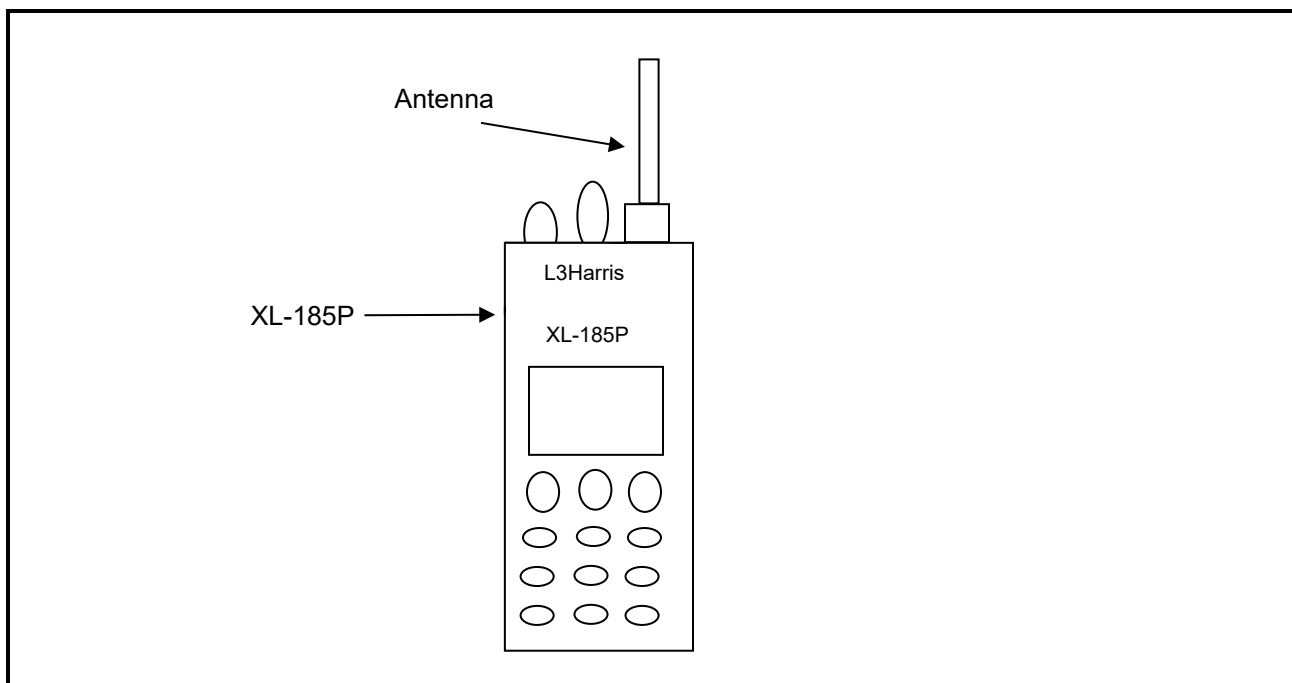
Table 2-1: Equipment Under Test (EUT)

Part	Manufacturer	Model	Serial Number	FCC ID	RTL Bar Code
Radio	L3Harris Corporation	XL-185P	A40326005691	OWDTR-0143-E	24440
½ Wave 762-944 MHz Antenna	L3Harris Corporation	14035-4450-01	N/A	N/A	23021

Table 2-2: Auxiliary Equipment

Part	Manufacturer	Model	Part Number	FCC ID	RTL Bar Code
Li-Ion Rechargeable Battery	L3Harris Corporation	14035-4010-04	010838	N/A	N/A

Figure 2-1: Configuration of Tested System



2.5 EUT Exercise Description

The EUT was supplied with the ability to change frequencies for testing radiated emissions. The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted. There were no deviations from the test standard(s) and/or methods. The test results reported relate only to the item tested.

The EUT was configured for testing in a manner simulating a typical end-user configuration. All circuitry, clocks, and oscillators were powered, and all functions were active. Applicable I/O ports to be cabled or loaded included Ethernet and data programming cables. For testing purposes, the EUT was programmed using a generic programming board.

3 FCC Part 2.1053(a): Field Strength of Spurious Radiation; Part 90.543: Out of Band Emissions Limit; RSS-Gen 6.13: Transmitter Unwanted Emissions

3.1 Test Procedure

ANSI 63.26, section 5.5.

The device uses digital modulation modulated to its maximum extent using a pseudo-random data sequence.

The spurious emissions levels were measured, and the device under test was replaced by a substitution antenna connected to a signal generator. This signal generator level was then corrected by subtracting the cable loss from the substitution antenna to the signal generator, and the gain of the antenna (dBi) was added to achieve the EIRP level, then converted from the corrected signal generator level (dBm) to dBc and compared to the limit.

For Tables 3.2 and 3.3 below, power was measured using ANSI C63.26, section 5.2. This measurement method is the same method used in the original application filing. This was the maximum level tested in the original application filing.

3.2 Test Data

Table 3-1: Environmental Conditions

Date	Temperature (°C)	Humidity (%)	Atmospheric Pressure (kPa)
July 9, 2024	33.9	50	100.3

Table 3-2: Field Strength of Spurious Radiation – 816.9875 MHz

Conducted Power 35.7 dBm; 3.7 W; Limit = $50+10\log P = 55.7$ dBc

Frequency (MHz)	Analyzer Level (dBuV)	Signal Generator Level (dBm)	Cable Loss to Transmit Antenna (dB)	Substitution Antenna Normalized Gain (dBi)	Corrected Signal Generator Level (dBc)	Margin (dB)
1633.975	27.7	-42.3	0.4	6.6	71.7	-16.0
2450.963	26.9	-50.9	0.4	7.3	79.7	-24.0
3267.950	9.6	-66.2	0.5	7.1	95.3	-39.7
4084.938	7.6	-62.2	0.6	8.0	90.5	-34.9
4901.925	4.5	-65.4	0.7	8.8	93.0	-37.3
5718.913	12.0	-58.2	0.9	9.1	85.7	-30.0
6535.900	8.0	-61.5	1.0	9.7	88.4	-32.8
7352.888	4.5	-62.8	1.1	8.7	90.9	-35.2
8169.875	4.6	-62.1	1.2	9.3	89.7	-34.0

Table 3-3: Field Strength of Spurious Radiation – 861.9875 MHz

Conducted Power 35.7 dBm; 3.7 W; Limit = $50+10\log P = 55.7$ dBc

Frequency (MHz)	Analyzer Level (dBuV)	Signal Generator Level (dBm)	Cable Loss to Transmit Antenna (dB)	Substitution Antenna Normalized Gain (dBi)	Corrected Signal Generator Level (dBc)	Margin (dB)
1723.975	25.2	-42.8	0.4	6.5	72.4	-16.7
2585.963	29.1	-48.3	0.5	7.4	77.0	-21.3
3447.950	10.9	-64.9	0.6	7.6	93.6	-37.9
4309.938	6.1	-64.5	0.7	8.8	92.1	-36.4
5171.925	4.8	-64.6	0.8	8.6	92.4	-36.7
6033.913	6.9	-62.7	0.9	9.4	89.9	-34.2
6895.900	4.7	-63.9	1.0	9.5	91.1	-35.5
7757.888	4.2	-63.5	1.1	9.3	91.0	-35.3
8619.875	4.3	-58.1	1.3	9.6	72.4	-16.7

Table 3-4: FCC Unintentional Digital/RX Emissions

Frequency (MHz)	Analyzer Level (dBuV)	Site Correction Factor (dB/m)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
31.008	11.6	21.0	32.6	40.0	-7.4
37.632	12.2	17.3	29.5	40.0	-10.5
44.384	14.1	14.0	28.1	40.0	-11.9
72.490	11.8	12.4	24.2	40.0	-15.8
116.100	9.3	14.2	23.5	43.5	-20.0
132.650	10.4	13.4	23.8	43.5	-19.7
333.430	1.7	20.7	22.4	46.0	-23.6

Measurement uncertainty: 30 MHz to 6 GHz = ± 4.8 dB; from 6 GHz and above = ± 5.2 dB. This measurement uncertainty is expanded for a 95% confidence level received with a coverage factor $k=2$ for the entire frequency range.

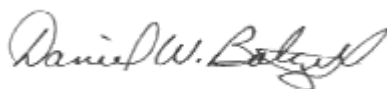
Table 3-5: Test Equipment Used For Testing Field Strength of Spurious Radiation and Unintentional Emissions

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900878	Rhein Tech Laboratories	AM3-1197-0005	3 meter antenna mast, polarizing	OATS1	N/A
901729	Insulated Wire Inc.	KPS-1503-3150-KPR	SMK RF Cables 20'	NA	12/29/2024
901242	Rhein Tech Laboratories	WRT-000-0003	Wood rotating table	N/A	N/A
901669	ETS-Lindgren	3142E	Biconilog Antenna (30 MHz – 6000 MHz)	00166065	07/11/2025
900321	EMCO	3161-03	Horn Antenna (4.0 - 8.2 GHz)	9508-1020	08/05/2024
900323	EMCO	3160-07	Horn Antenna (8.2 - 12.4 GHz)	9605-1054	08/05/2024
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	08/05/2024
901582	Rohde & Schwarz	1167.0000.02	Signal Generator	101903	05/27/2027
901773	Rohde & Schwarz	FSW50	Analyzer	101021	05/30/2025
901650	ETS-Lindgren	3117	Double Ridged Guide Antenna (1 - 18 GHz)	00152091	07/09/2025

Results: PASS

Test Personnel:

Daniel W. Baltzell
Test Engineer



Signature

July 9, 2024
Date of Tests

4 FCC Part 2.1049(c)(1): Occupied Bandwidth; Part 90.210 Authorized Bandwidth; ISED RSS-119 5.5: Channel Bandwidth, Authorized Bandwidth, Occupied Bandwidth and Spectrum Masks

Occupied Bandwidth - Compliance with the Emission Masks

4.1 Test Procedure

ANSI C63.26-2015, section 5.4

Device with digital modulation: Modulated to its maximum extent using a pseudo-random data sequence.

Part 90.210 Masks

Frequency band (MHz)	Mask for equipment with audio low pass filter	Mask for equipment without audio low pass filter
Below 25 ¹	A or B	A or C
25-50	B	C
72-76	B	C
150-174 ²	B, D, or E	C, D or E
150 paging only	B	C
220-222	F	F
421-512 ^{2 5}	B, D, or E	C, D, or E
450 paging only	B	G
806-809/851-854 ⁶	B	H
809-824/854-869 ^{3 5}	B, D	D, G.
896-901/935-940	I	J
902-928	K	K
929-930	B	G
4940-4990 MHz	L or M	L or M
5895-5925 ⁴		
All other bands	B	C

¹ Equipment using single sideband J3E emission must meet the requirements of Emission Mask A. Equipment using other emissions must meet the requirements of Emission Mask B or C, as applicable.

² Equipment designed to operate with a 25 kHz channel bandwidth must meet the requirements of Emission Mask B or C, as applicable. Equipment designed to operate with a 12.5 kHz channel bandwidth must meet the requirements of Emission Mask D, and equipment designed to operate with a 6.25 kHz channel bandwidth must meet the requirements of Emission Mask E.

³ Equipment used in this licensed to EA or non-EA systems shall comply with the emission mask provisions of § 90.691 of this chapter.

⁴ DSRCS Roadside Units in the 5895-5925 MHz band are governed under [subpart M of this part](#).

⁵ Equipment designed to operate on 25 kilohertz bandwidth channels must meet the requirements of either Emission Mask B or G, whichever is applicable, while equipment designed to operate on 12.5 kilohertz bandwidth channels must meet the requirements of Emission Mask D. Equipment designed to operate on 25 kilohertz bandwidth channels may alternatively meet the Adjacent Channel Power limits of § 90.221.

⁶ Transmitters utilizing analog emissions that are equipped with an audio low-pass filter must meet Emission Mask B. All transmitters utilizing digital emissions and those transmitters using analog emissions without an audio low-pass filter must meet Emission Mask H.

RSS-119 Authorized Bandwidths/Masks

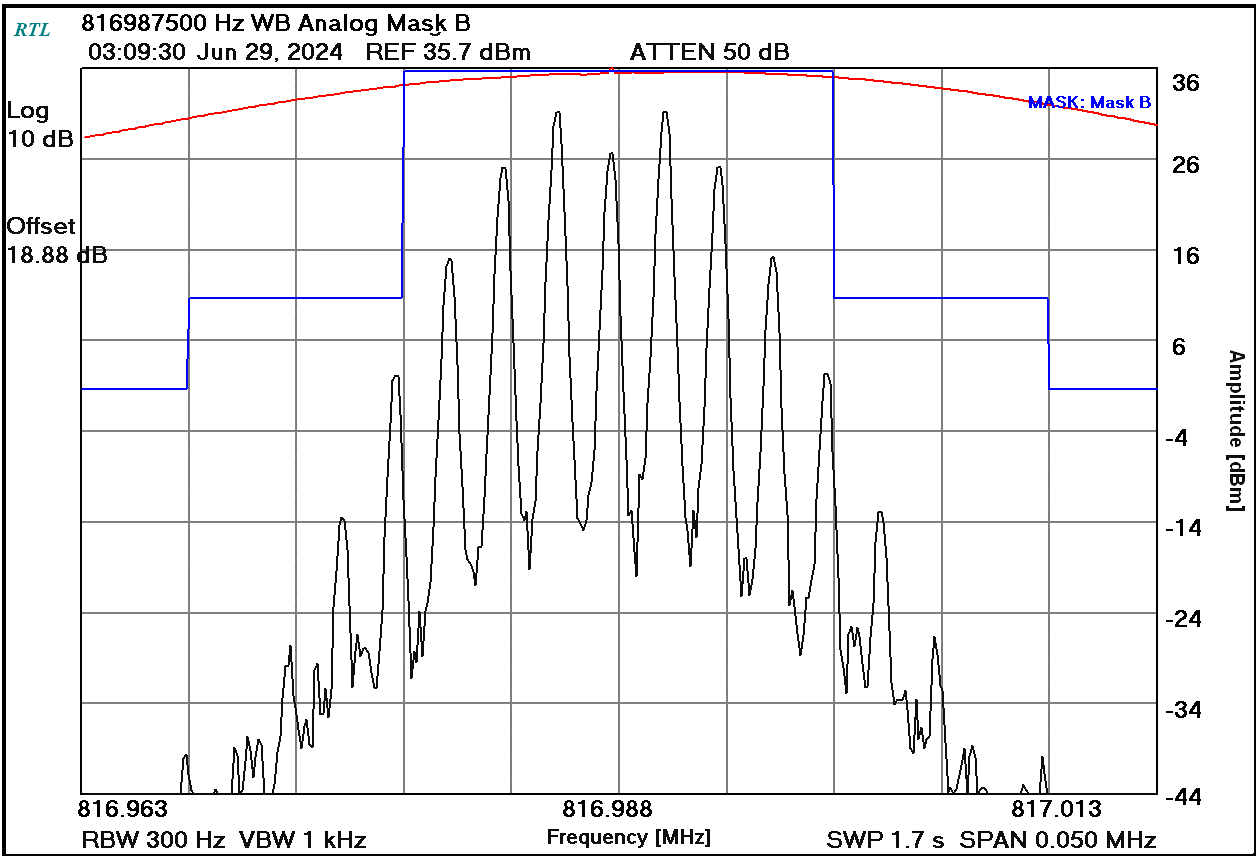
Frequency Band (MHz)	Related SRSP for Channeling Plan and ERP	Channel Bandwidth (kHz)	Authorized Bandwidth (kHz)	Spectrum Masks for Equipment With Audio Filter	Spectrum Masks for Equipment Without Audio Filter
806-821 / 851-866 and 821-824 / 866-869	SRSP-502	25	20 22	B Y	G Y
		12.5	11.25	D	D
		6.25	6	E	E

4.2 Test Data

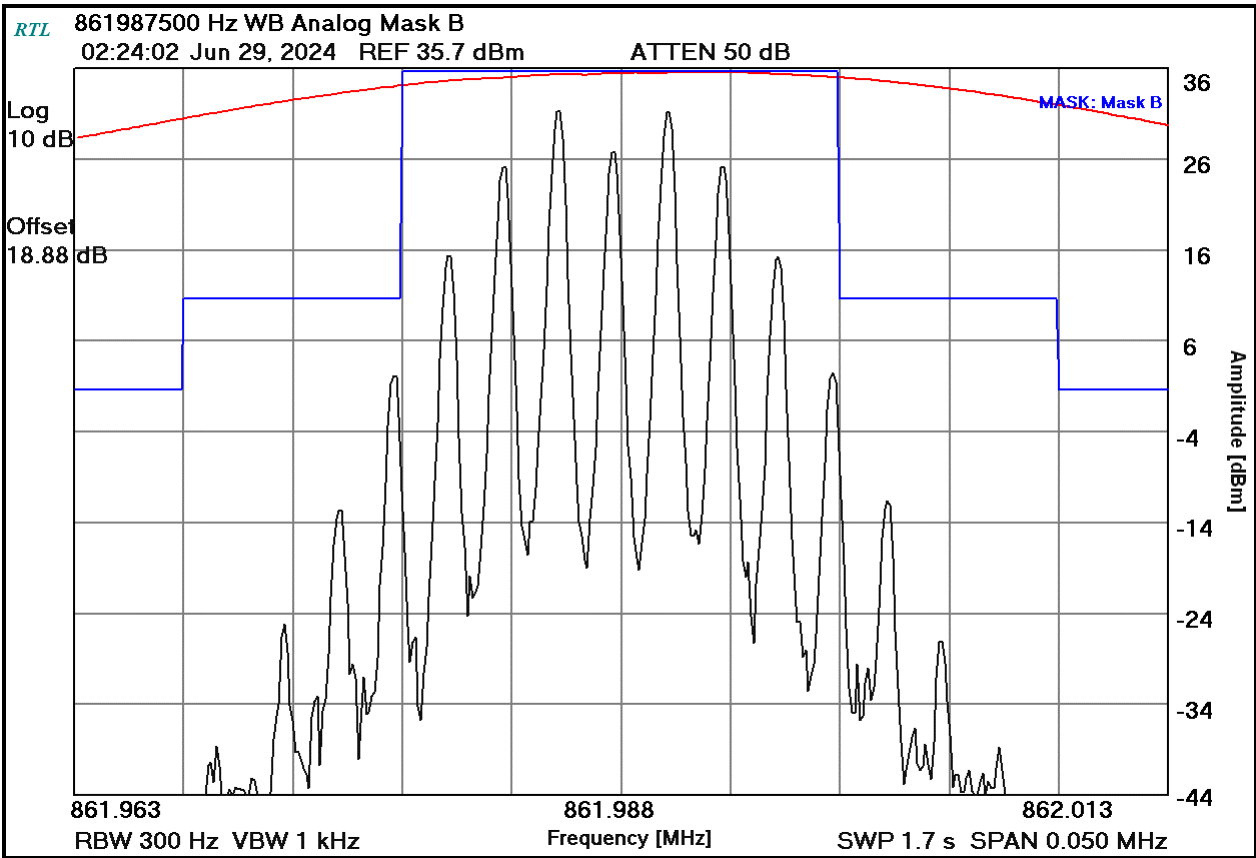
Table 4-1: Environmental Conditions

Date	Temperature (°C)	Humidity (%)	Atmospheric Pressure (kPa)
June 29, 2024	29.2	32	101.8
June 30, 2024	29.4	34	100.3

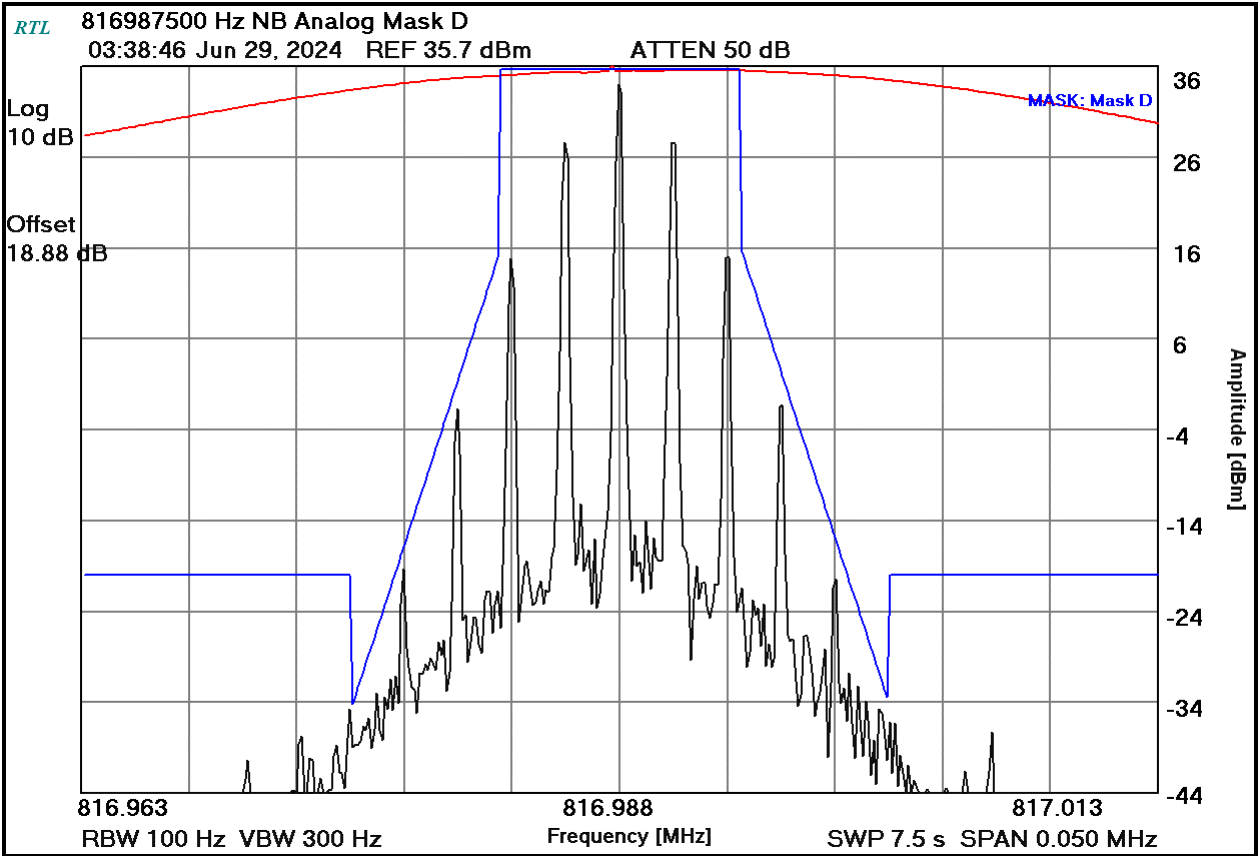
Plot 4-1: Occupied Bandwidth – 816.9875 MHz; WB Analog; Mask B



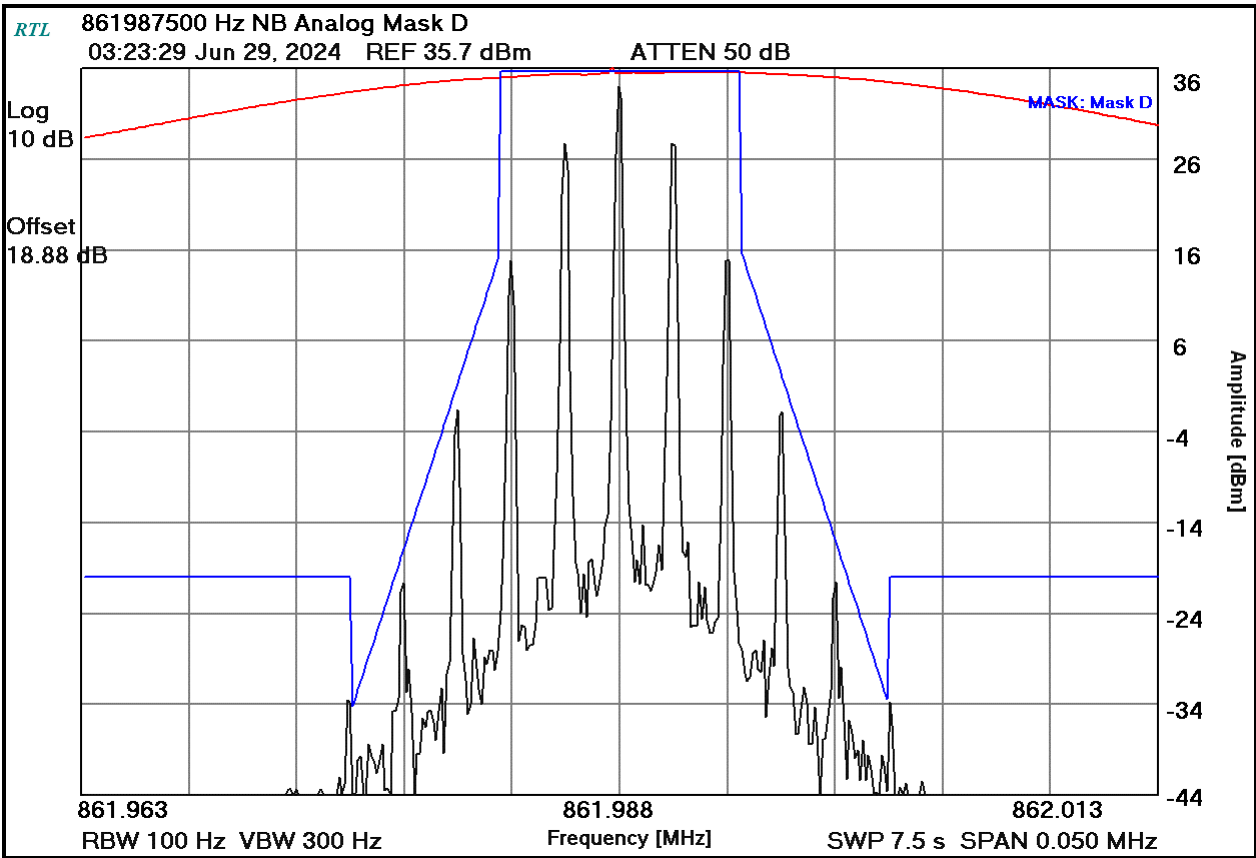
Plot 4-2: Occupied Bandwidth – 861.9875 MHz; WB Analog; Mask B



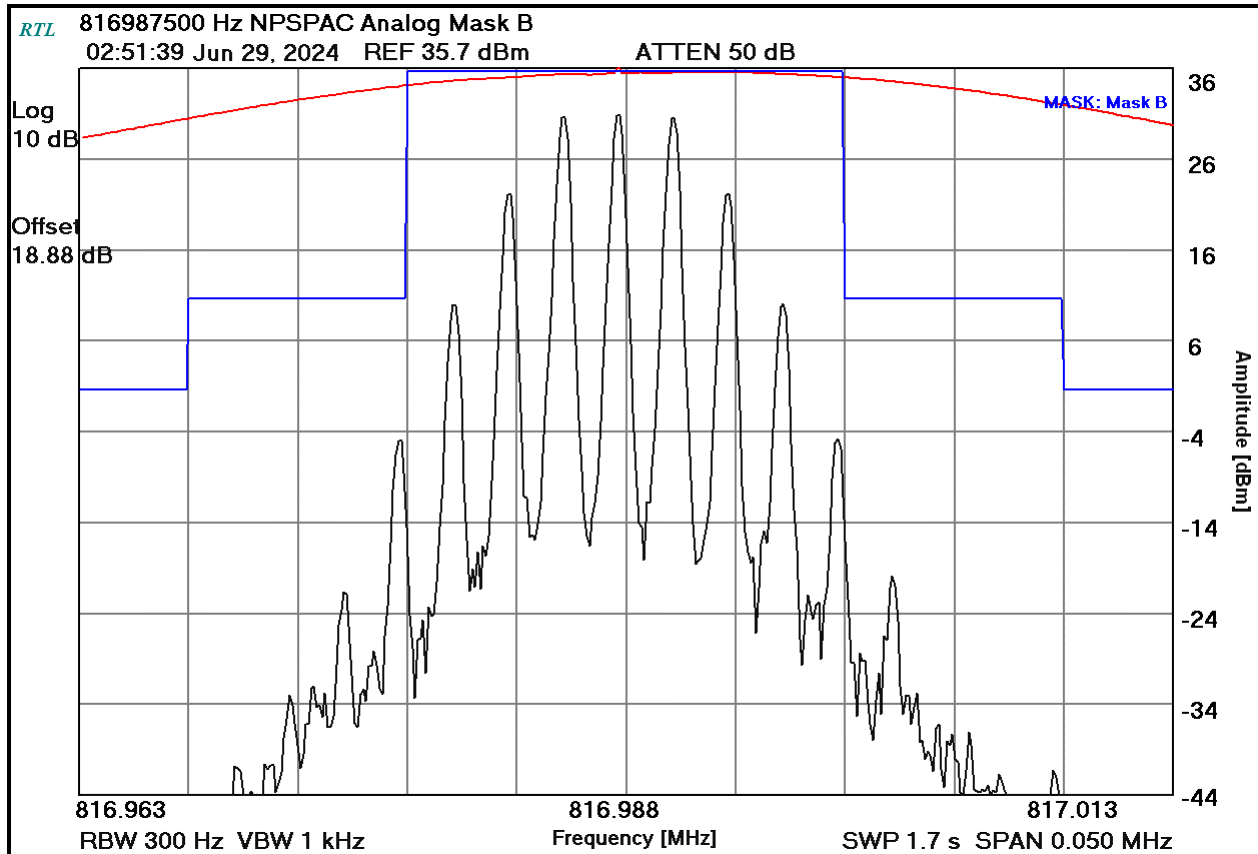
Plot 4-3: Occupied Bandwidth – 816.9875 MHz; NB Analog; Mask D



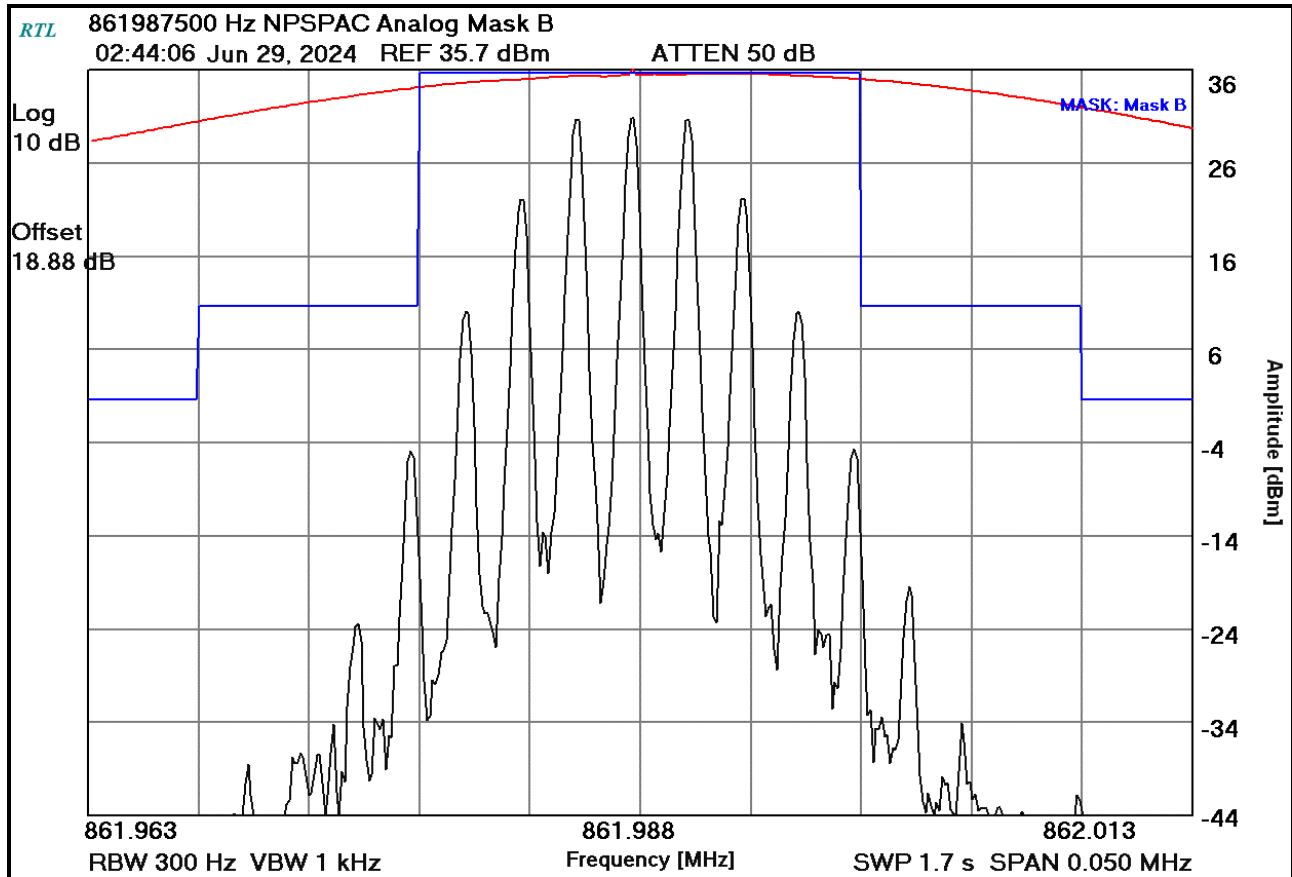
Plot 4-4: Occupied Bandwidth – 861.9875 MHz; NB Analog; Mask D



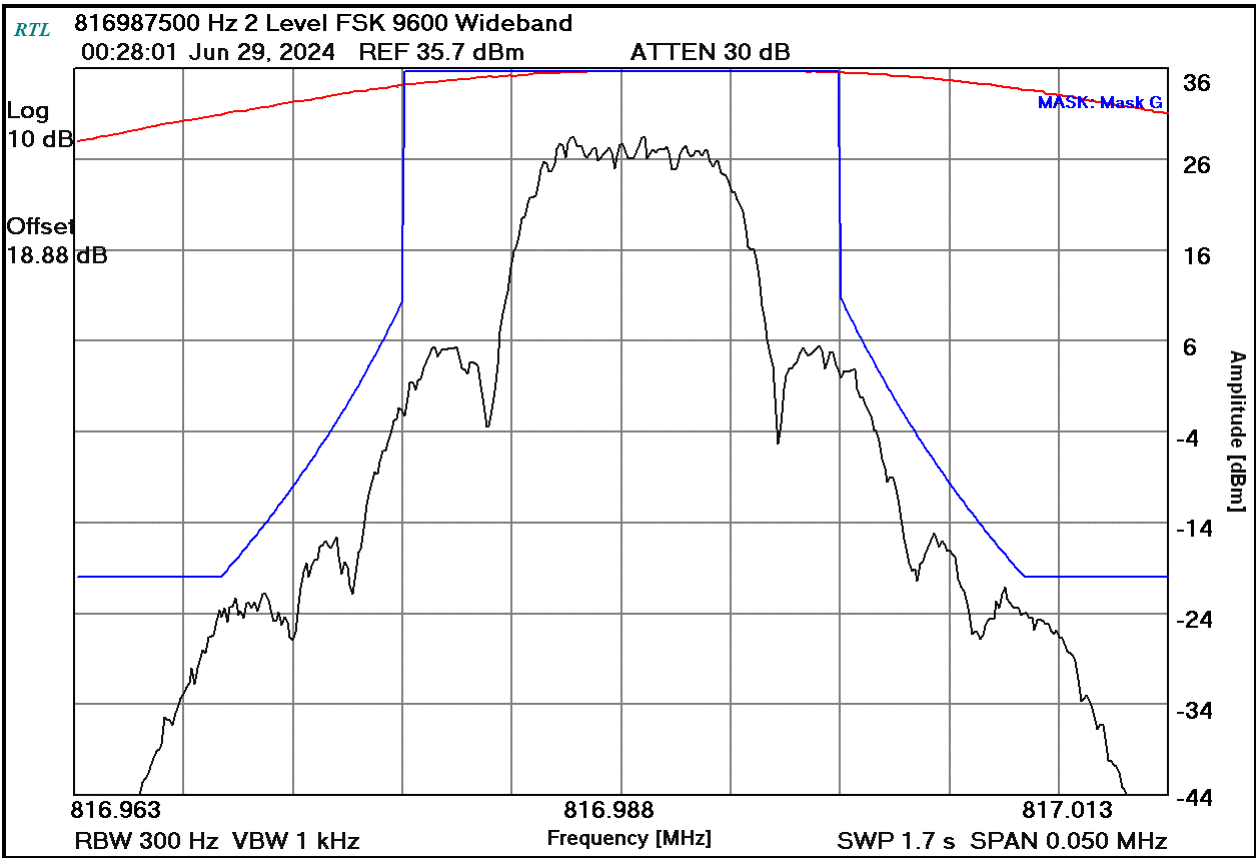
Plot 4-5: Occupied Bandwidth – 816.9875 MHz; NPSPAC Analog; Mask B



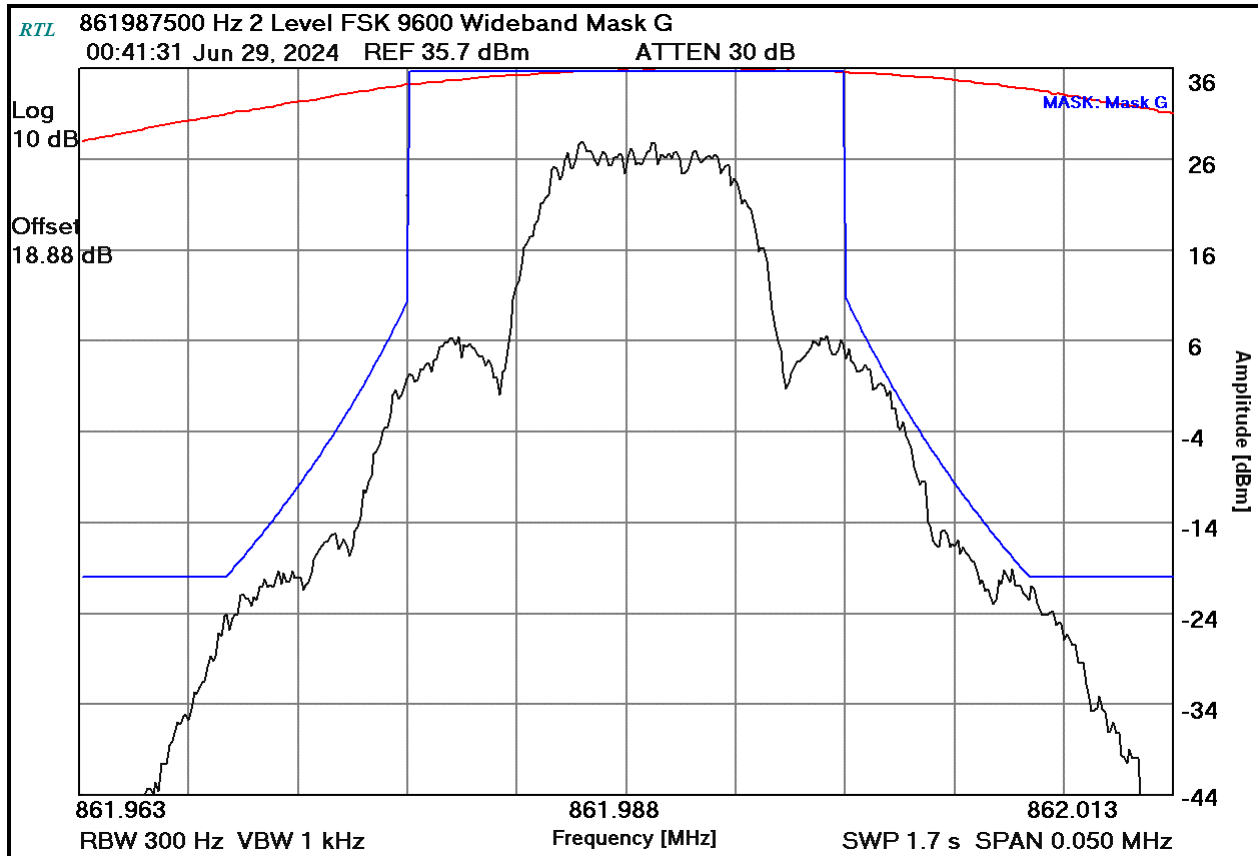
Plot 4-6: Occupied Bandwidth – 861.9875 MHz; NPSPAC Analog; Mask B



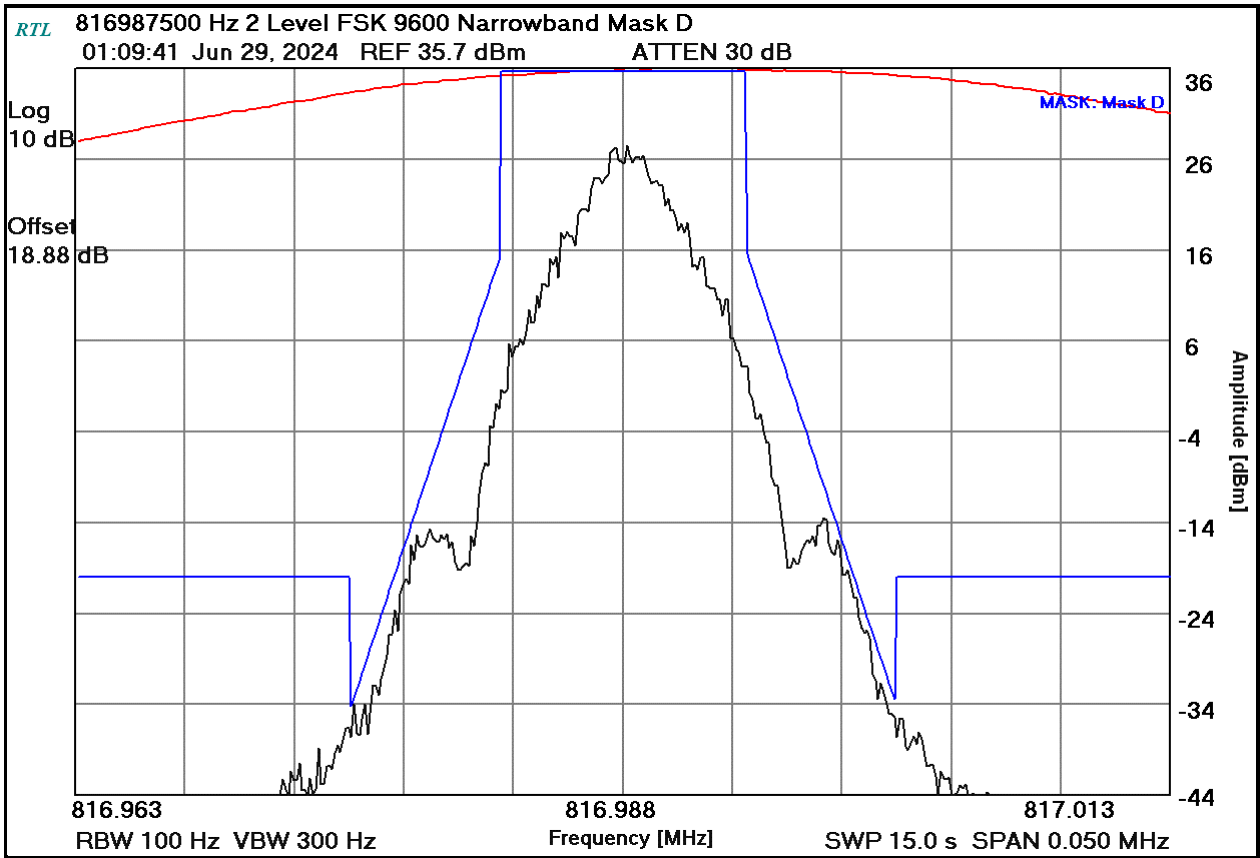
Plot 4-7: Occupied Bandwidth – 816.9875 MHz; WB 2-level FSK 9600; Mask G



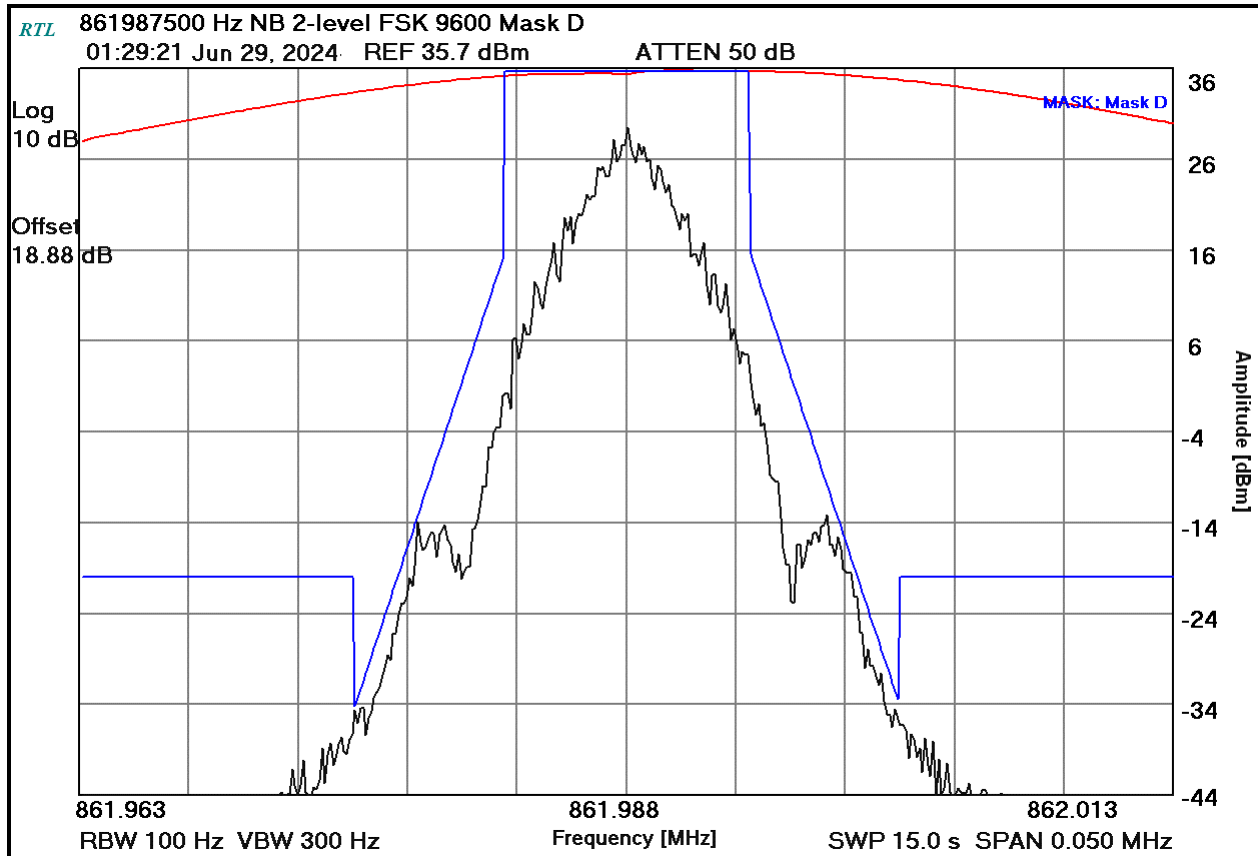
Plot 4-8: Occupied Bandwidth – 861.9875 MHz; WB 2-level FSK 9600; Mask G



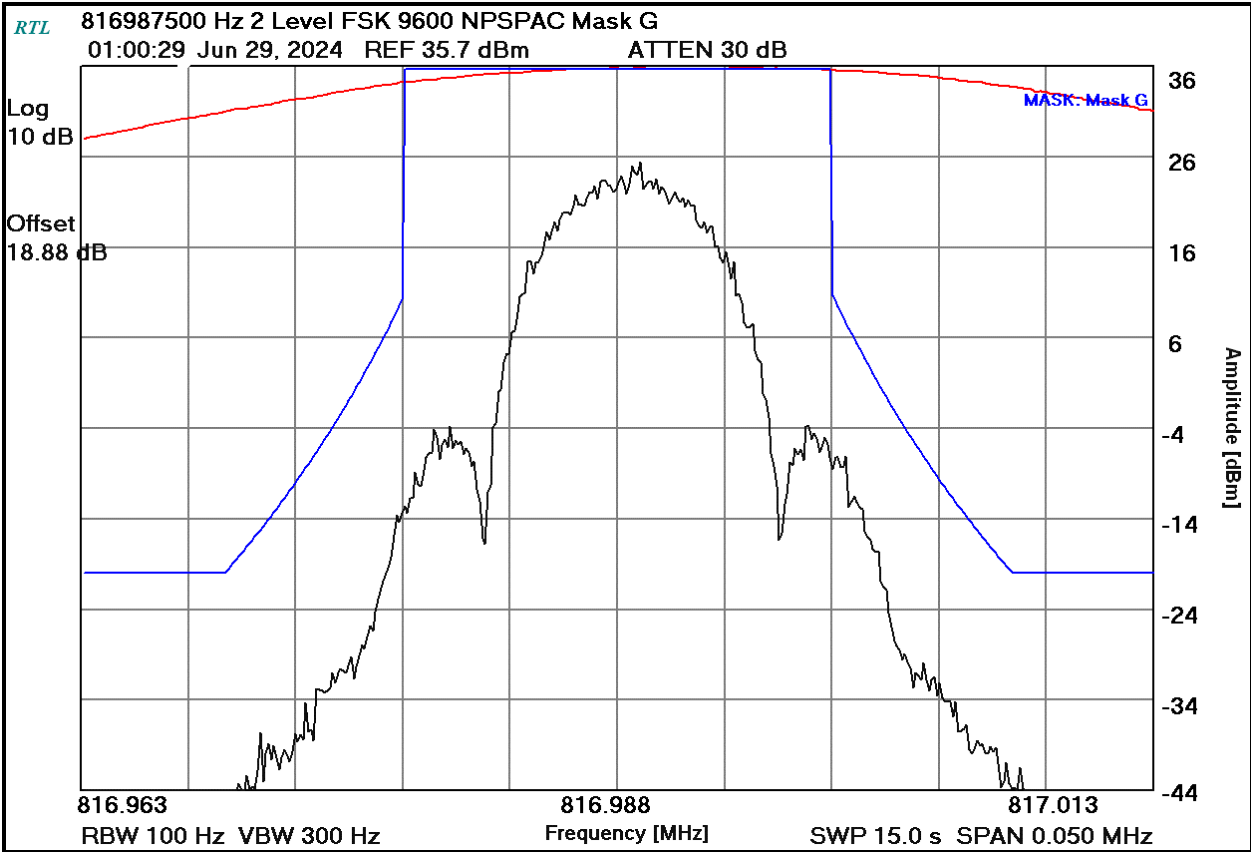
Plot 4-9: Occupied Bandwidth – 816.9875 MHz; NB 2-level FSK 9600; Mask D



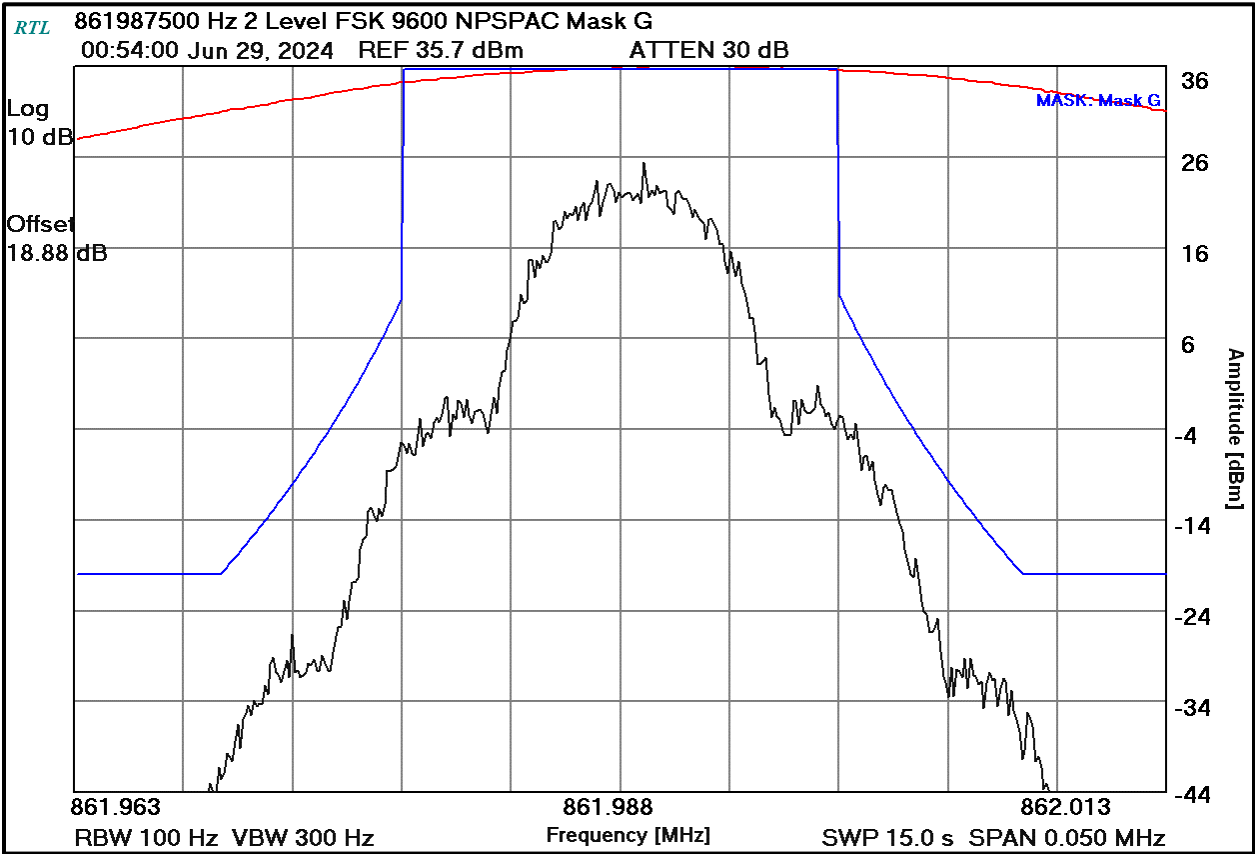
Plot 4-10: Occupied Bandwidth – 861.9875 MHz; NB 2-level FSK 9600; Mask D



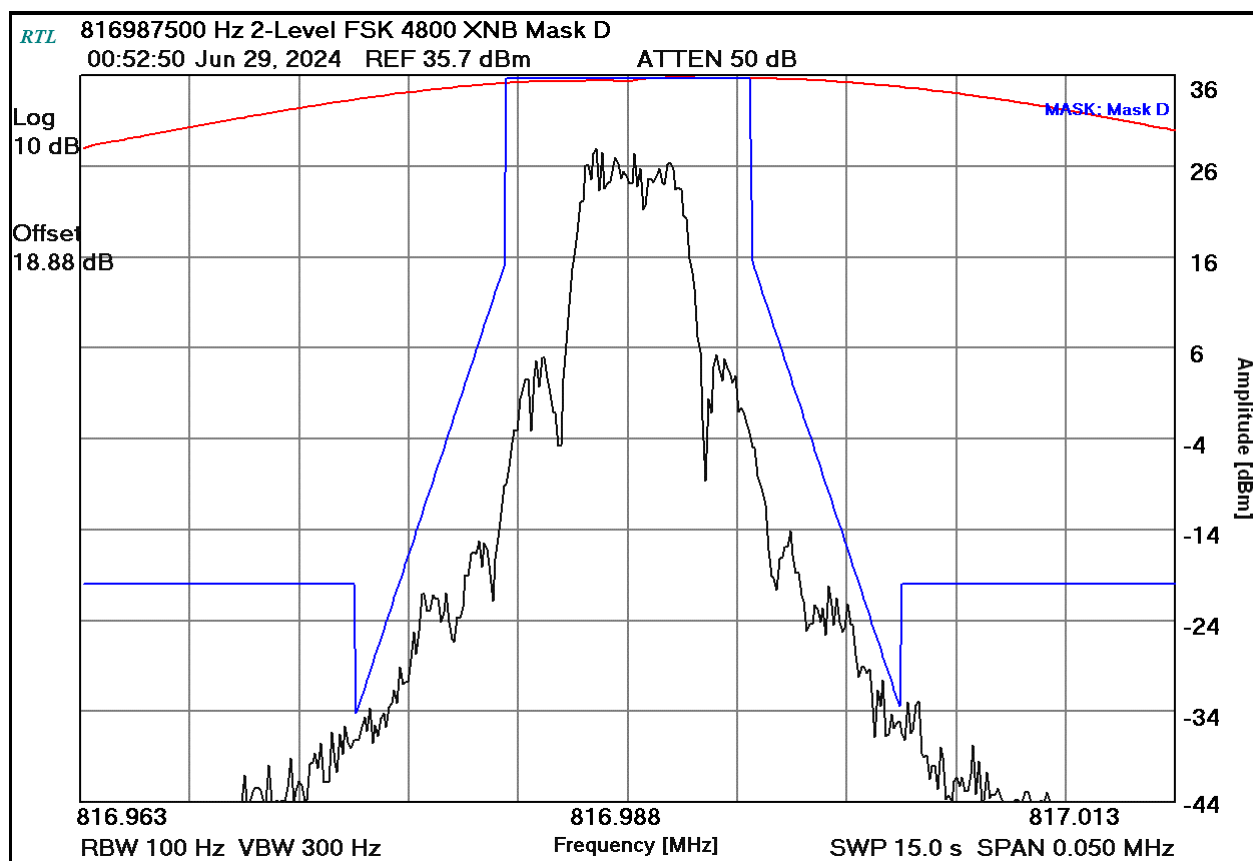
Plot 4-11: Occupied Bandwidth – 816.9875 MHz; 2-level FSK 9600 NPSPAC; Mask G



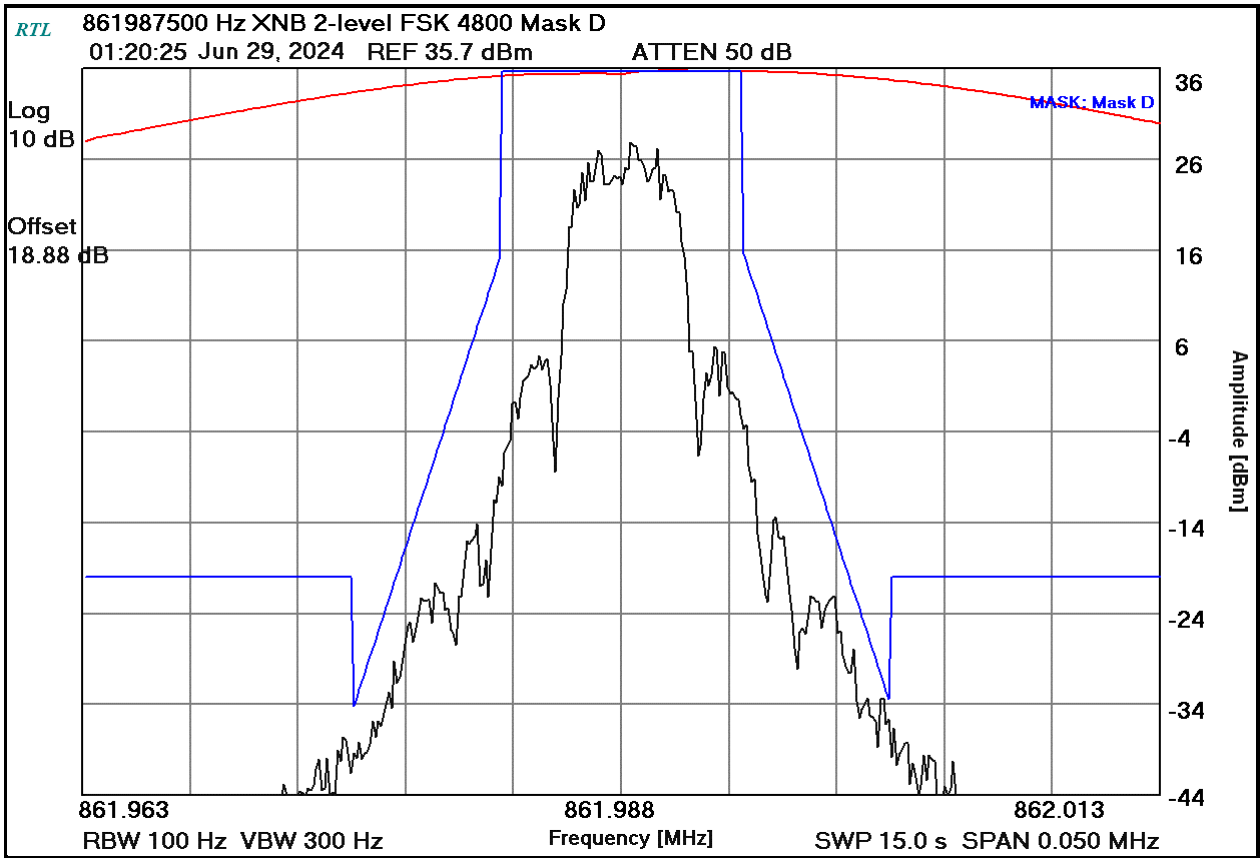
Plot 4-12: Occupied Bandwidth – 861.9875 MHz; 2-level FSK 9600 NPSPAC; Mask G



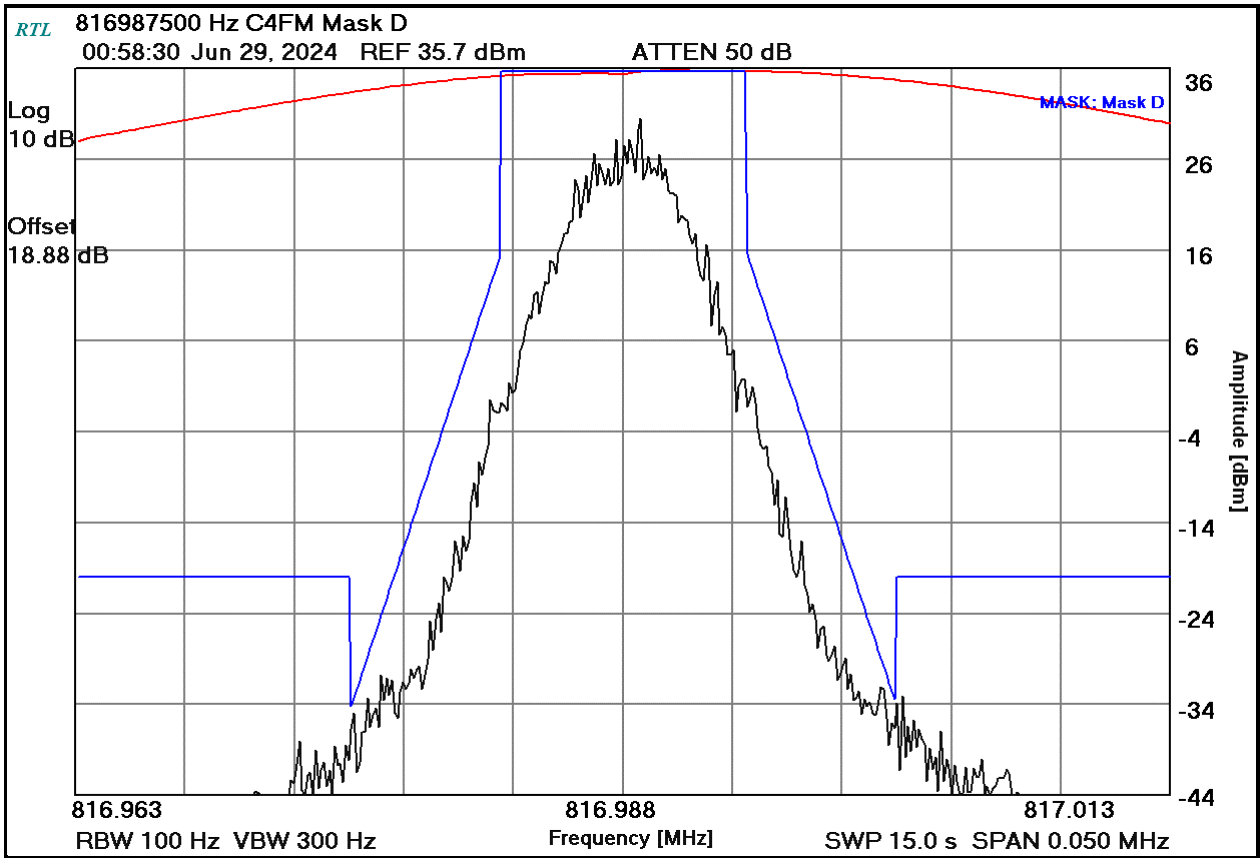
Plot 4-13: Occupied Bandwidth – 816.9875 MHz; XNB 2-level FSK 4800; Mask D



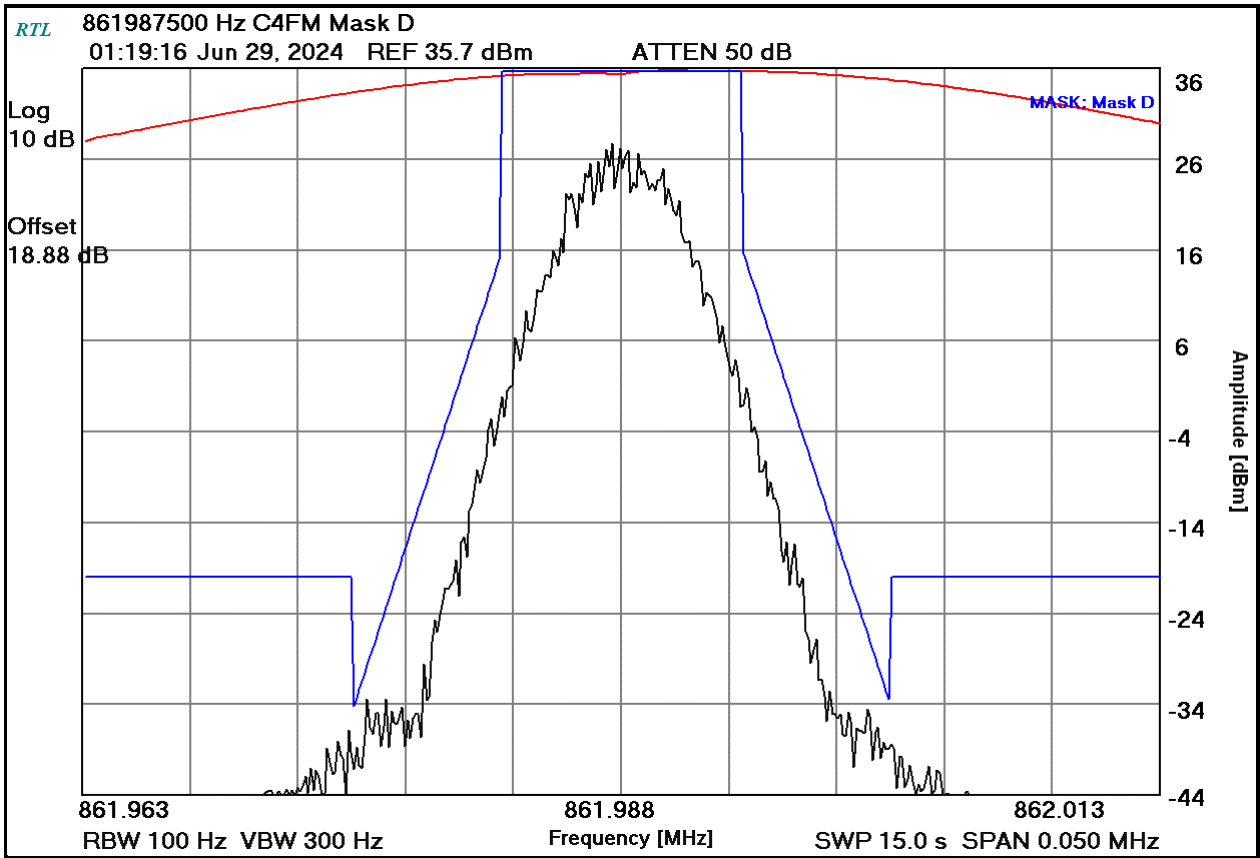
Plot 4-14: Occupied Bandwidth – 861.9875 MHz; XNB 2-level FSK 4800; Mask D



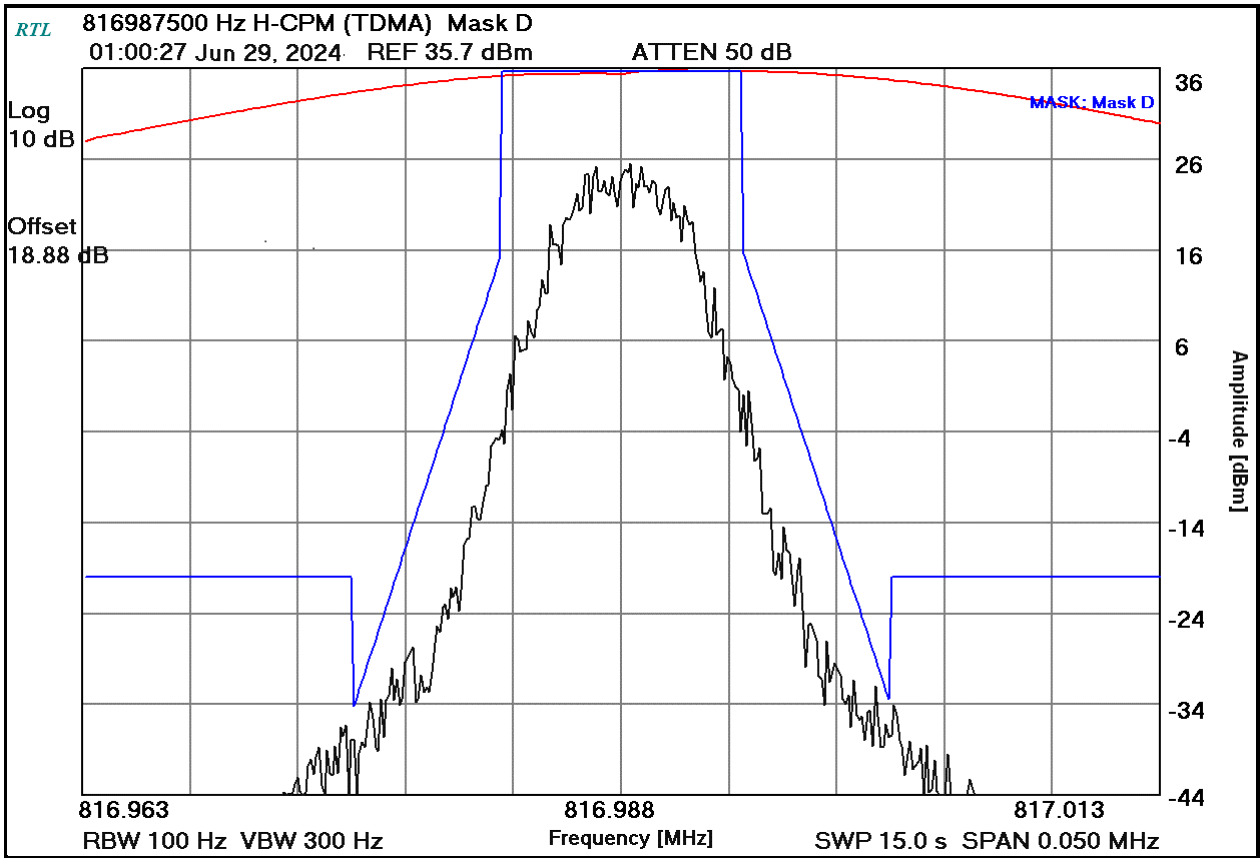
Plot 4-15: Occupied Bandwidth – 816.9875 MHz; C4FM; Mask D



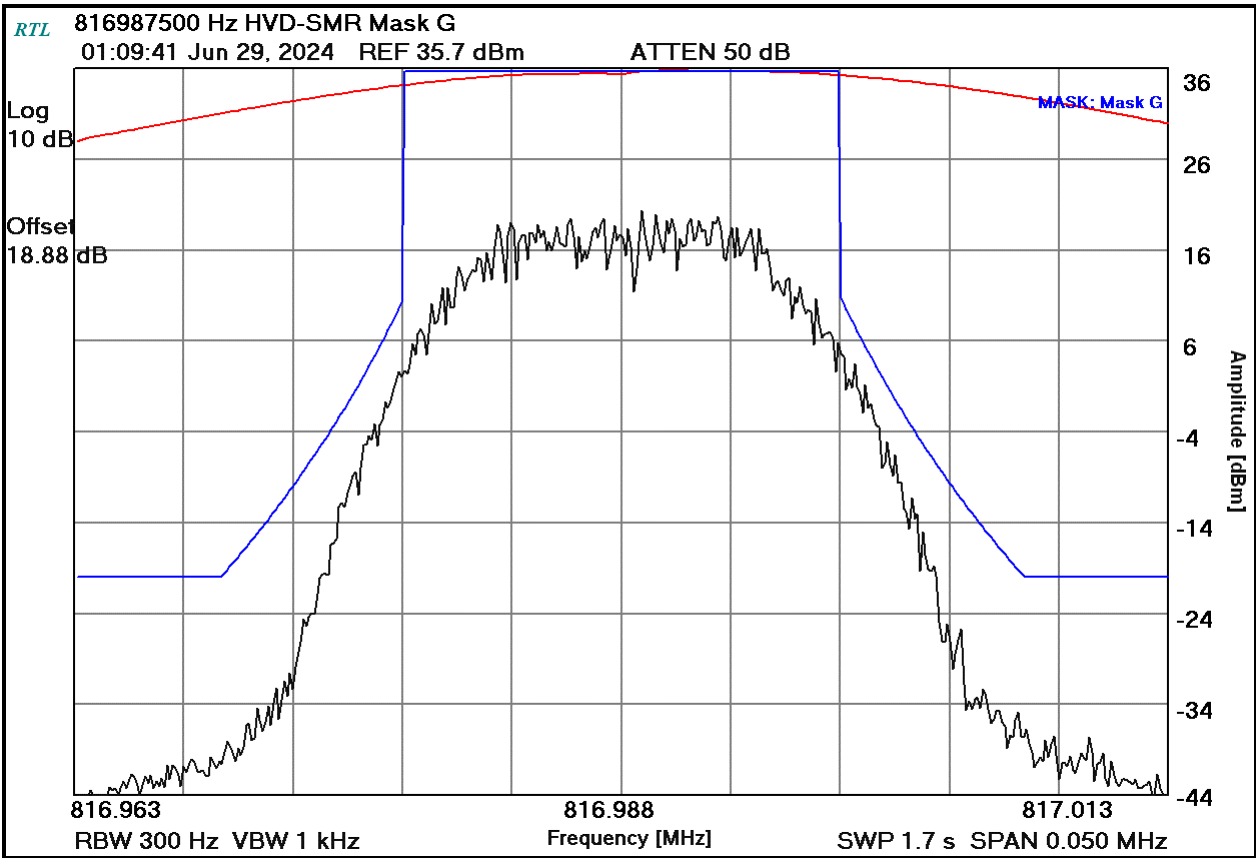
Plot 4-16: Occupied Bandwidth – 861.9875 MHz; C4FM; Mask D



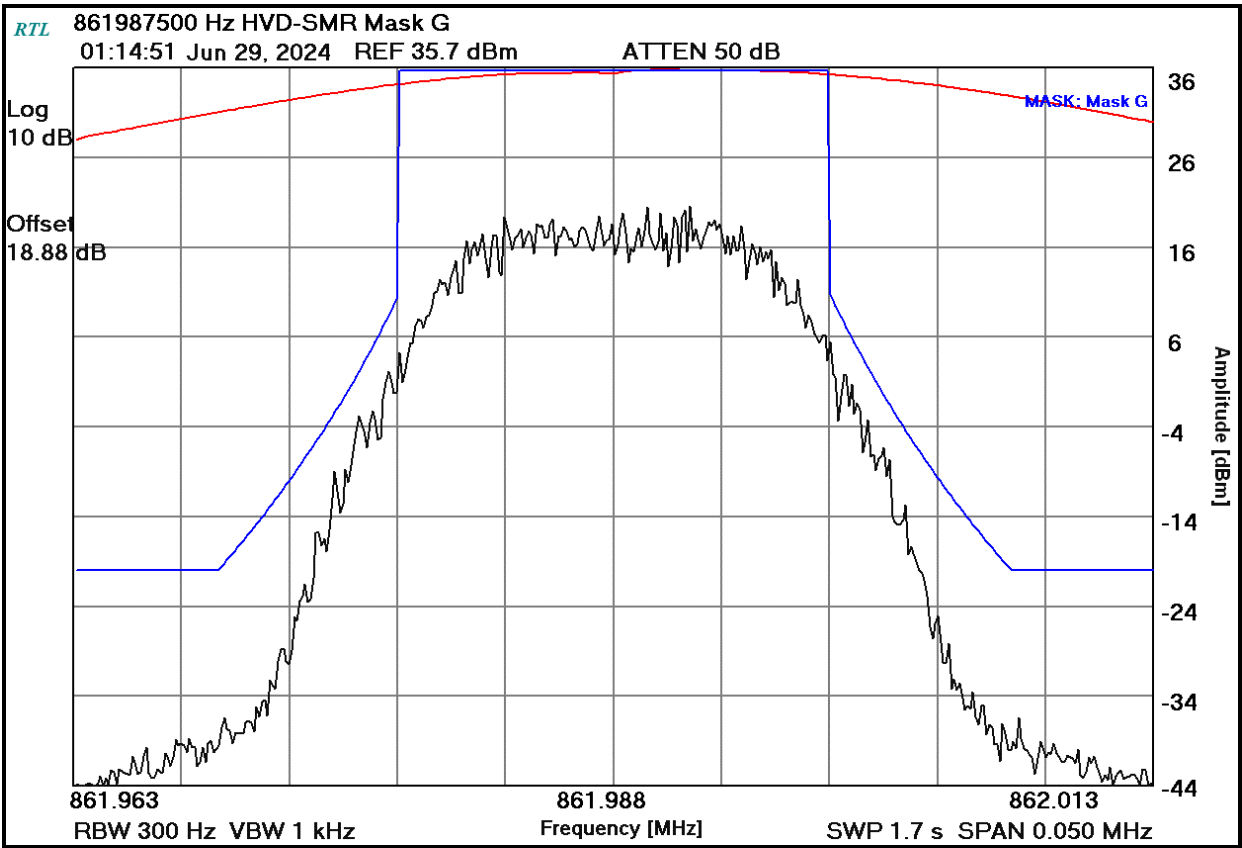
Plot 4-17: Occupied Bandwidth – 816.9875 MHz; H-CPM (TDMA); Mask D



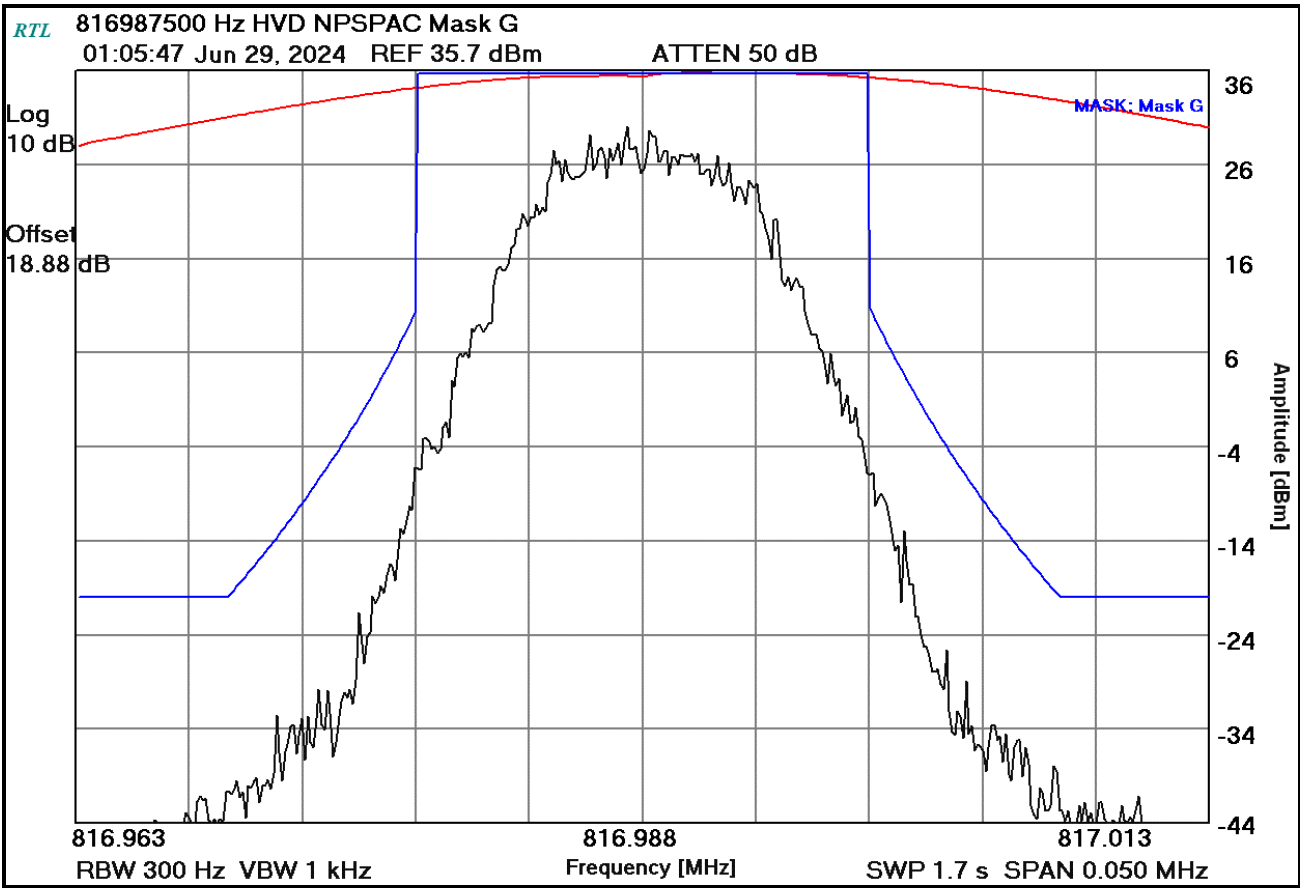
Plot 4-18: Occupied Bandwidth – 816.9875 MHz; HVD-SMR; Mask G



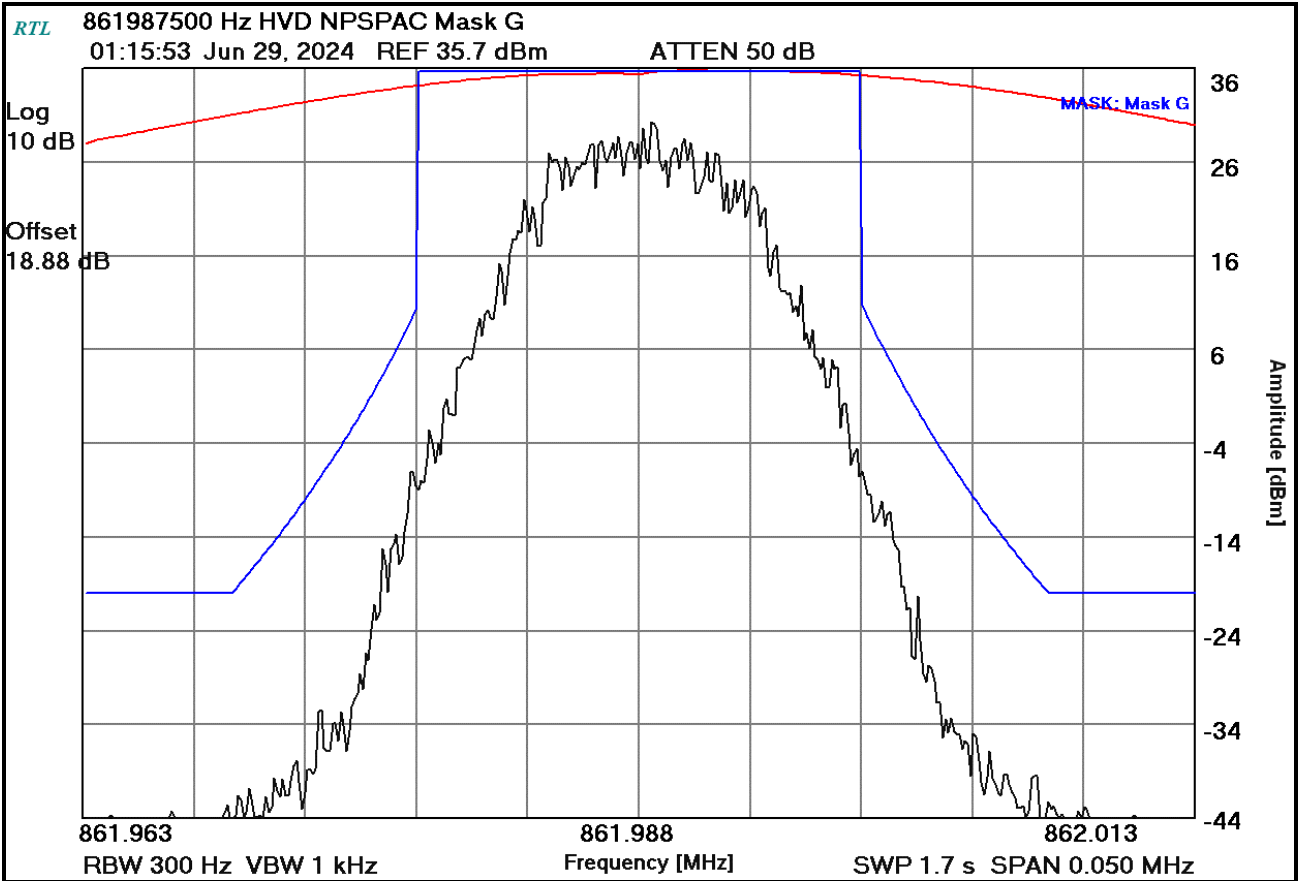
Plot 4-19: Occupied Bandwidth – 861.9875 MHz; HVD-SMR; Mask G

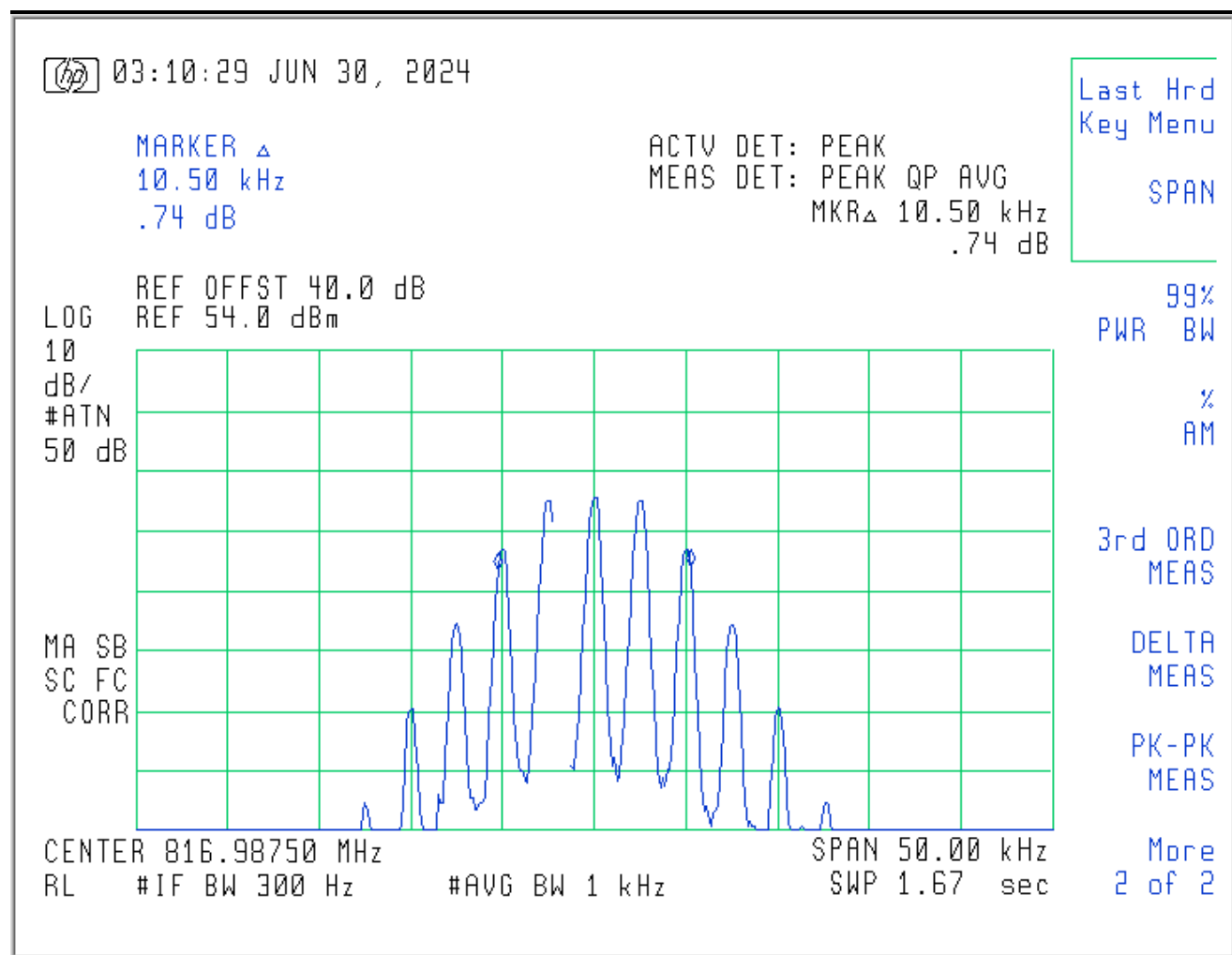


Plot 4-20: Occupied Bandwidth – 816.9875 MHz; HVD NPSPAC; Mask G

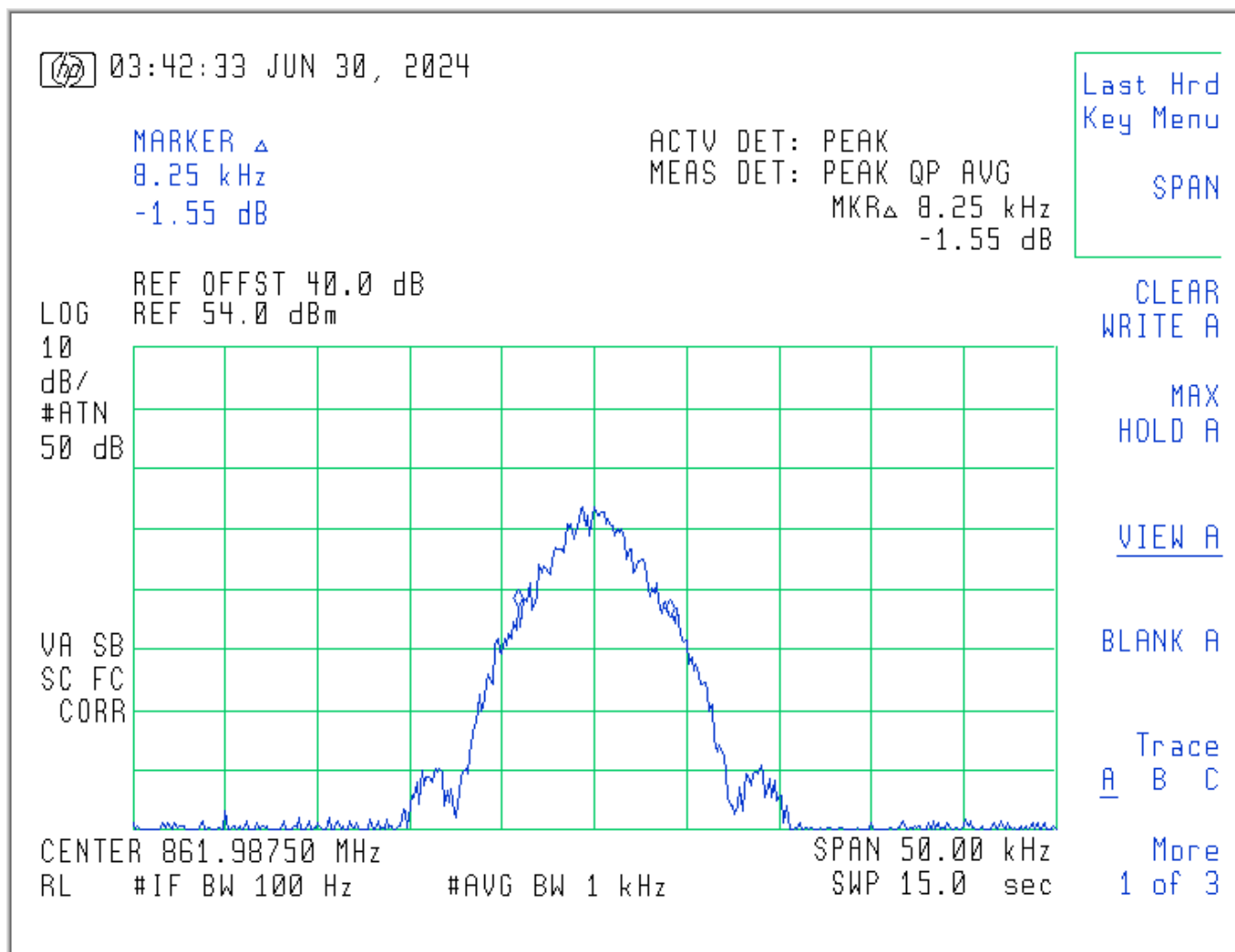


Plot 4-21: Occupied Bandwidth – 861.9875 MHz; HVD-NPSPAC; Mask G

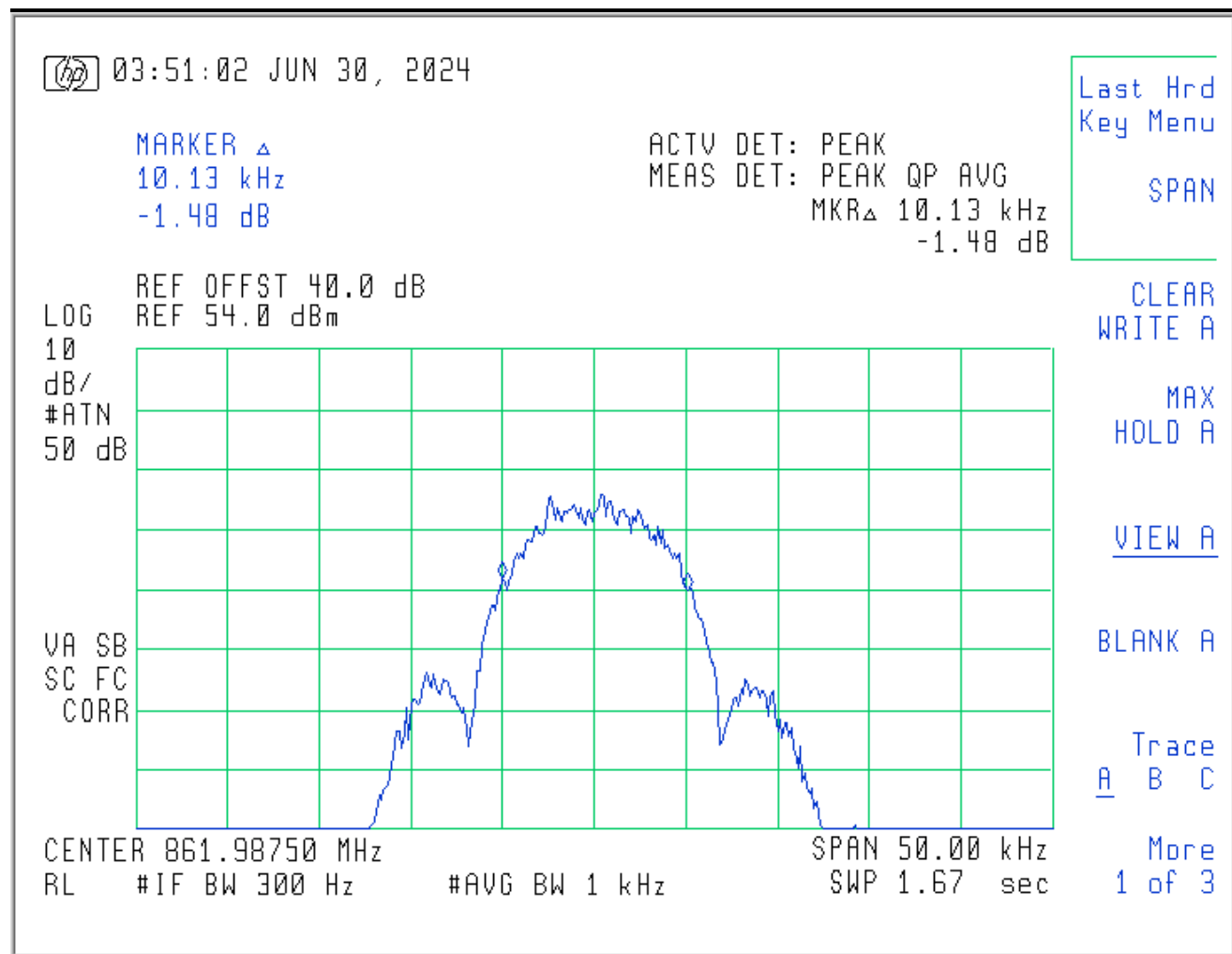




Plot 4-31: OBW 99%, 861.9875 MHz, NB 2-level FSK 9600



Plot 4-33: OBW 99%, 861.9875 MHz, 2-level FSK 9600 NPSPAC



Plot 4-37: OBW 99%, 861.9875 MHz, C4FM

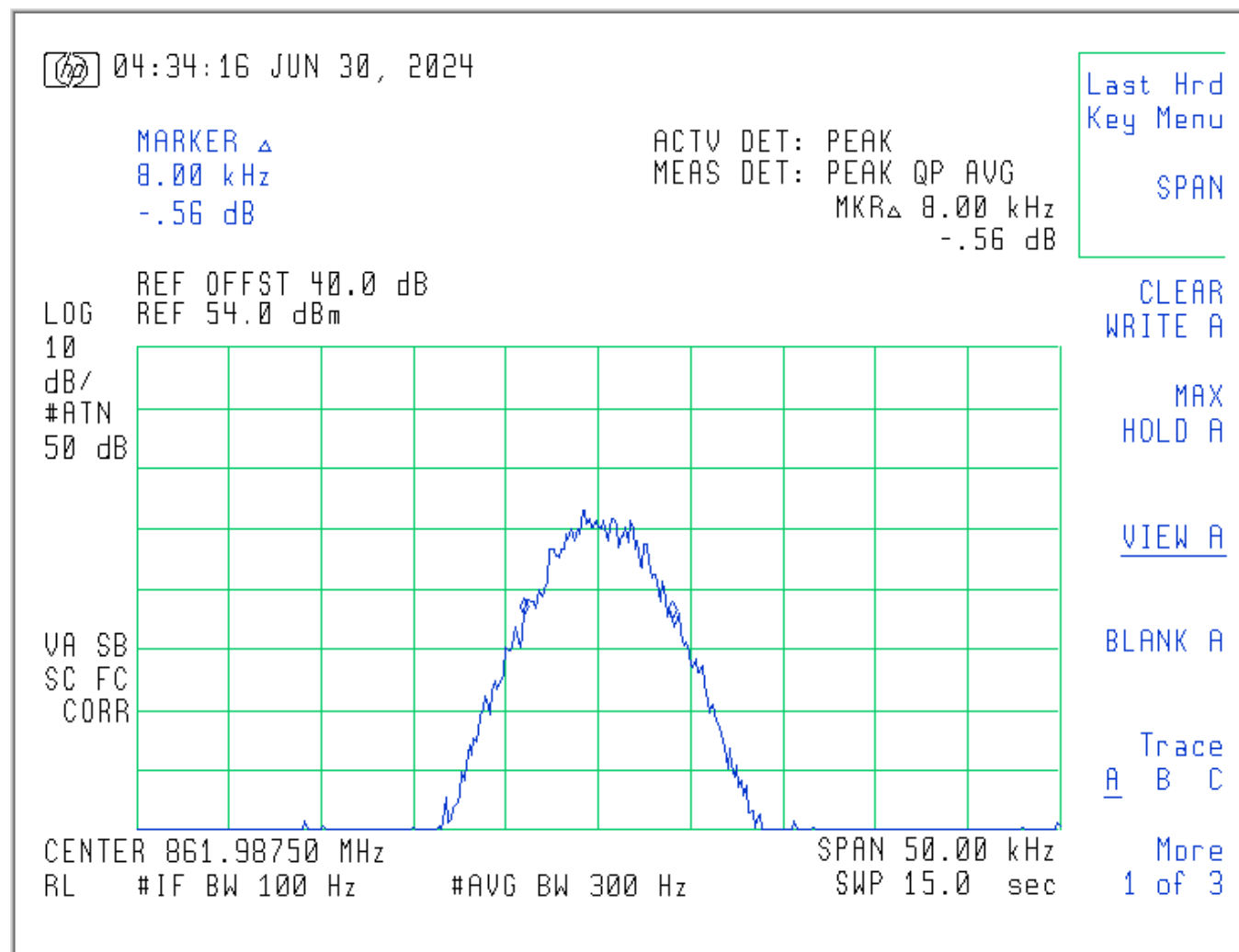
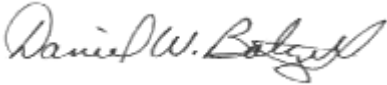


Table 4-2: Test Equipment Used For Testing Occupied Bandwidth

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Hewlett Packard	1166.1660.50	Spectrum Analyzer	200106	12/01/2024
901338	Weinschel Corp.	46-40-34	Attenuator (DC-18GHz, 40 dB, 25W)	BM0556	02/07/2025

Test Personnel:

Daniel W. Baltzell EMC Test Engineer	 Signature	June 29-30, 2024 Dates of Test
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5 Conclusion

The data in this Class 2 permissive change measurement report shows passing harmonic emissions levels for the L3Harris Corporation XL-185P 7/8/900 MHz MultiBand Portable Radio, FCC ID: OWDTR-0143-E, IC: 3636B-0143, and that this radio complies with the applicable requirements of FCC Parts 2, 90 and ISSED RSS-119 for a Class 2 permissive change.