

# LABORATORY TEST REPORT

## RADIO PERFORMANCE MEASUREMENTS

for the

TPHN0A Handportable Transceiver

Tested in accordance with:

FCC 47 CFR Parts 22, 27, 90 and 90R

RSS-119 Issue 12  
RSS-Gen Issue 5

Report Section: A of three sections  
Report Revision: 1  
Issue Date: 23 January 2023

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FCC Registration: 838288  
ISED Registration: 737A

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.

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FCC ID: CASTPHN0A  
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## REVISION HISTORY

Date	Revision	Comments
23 January 2023	1	Initial test report

For convenience, this test report is divided into 3 sections. This is section A.

Section A contains: Revision History

Introduction

Test Requirements and Result Summary

Statement of Compliance

Channel Table

List of Antennae Intended for use with the Device

Modulation types, Necessary Bandwidth & Emission Designators

Transmitter Output Power (Conducted)

Transmitter Audio Frequency Response – Pre-emphasis

Transmitter Modulation Limiting

Transmitter Occupied (99%) Bandwidth

Section B contains: Transmitter Spectrum Masks

Section C contains: Adjacent Channel Power Ratio

Transmitter Spurious Emissions (Conducted)

Transmitter Spurious Emissions (Radiated)

Transmitter Radiated Emissions in the GNSS Band

Transmitter Conducted Emissions in the GNSS Band

Transient Frequency Behavior

Transmitter Frequency Stability – Temperature

Transmitter Frequency Stability – Voltage

Receiver Spurious Emissions (Conducted)

Test Equipment List

Annex A – Test Setup Details

## INTRODUCTION

Type approval testing of the TPHN0A, 6/5/3 Watt, Handportable transceiver in order to demonstrate compliance with FCC 47 Parts 22, 27, 90 & 90R, and RSS-119 Issue 12 & RSS-Gen Issue 5. This radio supports analogue, digital FFSK, Digital Mobile Radio (DMR), APCO P25 phase-1 and APCO P25 phase-2 modulations.

### REPORT PREPARED FOR

Tait International Ltd  
245 Wooldridge Road  
Harewood  
Christchurch 8051  
New Zealand

### DESCRIPTION OF SAMPLE

Manufacturer	Tait International Limited
Equipment:	Handportable Transceiver
Type:	TPHN0A
Product Code:	T03-00071-NBAC
Serial Number(s):	26637742

Transmit Frequency range (MHz)	136 → 174	378 → 520	757 → 870	896 → 941
Rated Transmit Power (Watts)	6	5	3	3

Modulation		Channel Spacing	Speech Channels	Symbol Rate (symbols/sec)	Data Rate (bps)
Analogue FM		12.5 kHz	1	-	-
Analogue FM		25.0 kHz	1	-	-
FFSK	Fast Frequency Shift Keying	12.5 kHz	-	1200	1200
		25.0 kHz	-	1200	1200
		12.5 kHz	-	2400	2400
		25.0 kHz	-	2400	2400
Digital Mobile Radio (DMR)	4 Level FSK (2 slot TDMA) (ETSI TS102 361-1)	12.5 kHz	2	4800	9600
APCO P25 Phase 1	C4FM (TIA 102)	12.5 kHz	1	4800	9600
APCO P25 Phase 2	H-CPM (2 slot TDMA) (TIA 102)	12.5 kHz	2	6000	12000

### HARDWARE & SOFTWARE

Quantity: 1

	Analogue, FFSK and DMR tests	P25 tests
Hardware ID	TPGB11-N000_0003	TPGB11-N000_0003
Firmware Package	QIDMR_TRM45093.0074	QIP25_TRM45093.0074

### TEST CONDITIONS

All testing was performed between 1 → 30 November 2022, and 20 January 2023, and under the following conditions:

Ambient temperature: 15°C → 30°C  
Relative Humidity: 20% → 75%  
Standard Test Voltage 7.5 V<sub>DC</sub>

PROGRAMMING APPLICATION NAME  
DMR and P25 Terminals Programming Application

Version  
2.133.1.34 Alpha

## TEST REQUIREMENTS AND RESULT SUMMARY

ISED Specification	FCC Specification	Test Name	Test Methods	Result
RSS-119 5.4	FCC 47 CFR 2.1046	Transmitter Output Power (Conducted)	RSS-Gen 6.12 ANSI C63.26 5.2.4.2	P
No specification	FCC 47 CFR 2.1047 (a)	Transmitter Audio Frequency Response – Pre-emphasis	ANSI C63.26 5.3.3.2	P
No specification	FCC 47 CFR 2.1047 (b)	Transmitter Modulation Limiting	ANSI C63.26 5.3.2	P
RSS-119 5.5	FCC 47 CFR 2.1049 (c)	Transmitter Occupied (99%) Bandwidth	RSS-Gen 6.7 ANSI C63.26 5.4.4	P
RSS-119 5.5	FCC 47 CFR 90.210	Transmitter Spectrum Masks	RSS-119 4.2.2 TIA-603-E 2.2.11	P
RSS-119 5.8.9	FCC 47 CFR 90.543	Adjacent Channel Power Ratio	RSS-119 4.3 ANSI C63.26 6.5.2.4	P
RSS-119 5.8	FCC 47 CFR 2.1051	Transmitter Spurious Emissions (Conducted)	RSS-Gen 6.13 ANSI C63.26 5.7	P
RSS-119 5.8	FCC 47 CFR 2.1053	Transmitter Spurious Emissions (Radiated)	RSS-Gen 6.13 ANSI C63.26 5.5	P
No specification	FCC CFR 90.543	Transmitter Radiated Emissions in the GNSS Band	ANSI C63.26 6.5.2.7.3	P
RSS-119 5.8.9.2 rad	No specification	Transmitter Conducted Emissions in the GNSS Band	RSS-119 5.8 ANSI C63.26 6.5.2.7.4	P
RSS-119 5.9	FCC 47 CFR 90.214	Transient Frequency Behaviour	RSS-119 5.9 ANSI C63.26 6.5.2.2	P
RSS-119 5.3	FCC 47 CFR 90.214	Transmitter Frequency Stability - Temperature	RSS-Gen 6.11 ANSI C63.26 5.6.4	P
RSS-119 5.3	FCC 47 CFR 2.1055 (d) (1)	Transmitter Frequency Stability - Voltage	RSS-Gen 6.11 ANSI C63.26 5.6.5	P
RSS-Gen 7.4	FCC 47CFR 15.111	Receiver Spurious Emissions (Conducted)	RSS-Gen 7.4 TIA-603-E 2.1.2	P

Test Case Result Definitions	
No test Performed	N
Test does not apply to the test object	N/A
Test object meets requirements	P (Pass)
Test object does not meet requirements	F (Fail)
Test object is not conclusive	I (Inconclusive)

**Comments:**

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## STATEMENT OF COMPLIANCE

We, TELTEST LABORATORIES of 558 Wairakei Road, Christchurch, New Zealand, declare under our sole responsibility that the product:

Equipment: Handportable Transceiver  
Type: TPHN0A  
Product Code: T03-00071-NBAC  
Serial Number(s): 26637742  
Quantity: 1

to which this declaration relates, is in conformity with the following standards:

FCC 47 CFR Parts 22, 27, 90 and 90R

RSS-119 Issue 12 & RSS-Gen Issue 5

Signature: 

M. C. James  
Laboratory Technical Manager

Date: 3 March 2023

The results obtained in this test report pertain only to the item(s) tested. Teltest does not make any claims of compliance for samples or variants that were not tested.

CHANNEL TABLE

Channel Number	Label	Receive Frequency MHz	Transmit Frequency MHz	Power Watts	Channel Spacing kHz
1	138 NH	138.025	138.025	6	12.5
2	138 NL	138.025	138.025	1	12.5
3	143 NH	138.025	143.975	6	12.5
4	143 NL	138.025	143.975	1	12.5
5	148 NH	138.025	148.025	6	12.5
6	148 NL	138.025	148.025	1	12.5
7	150 NH	150.025	150.025	6	12.5
8	150 NL	150.025	150.025	1	12.5
9	150.05 NH	150.025	150.05	6	12.5
10	150.05 NL	150.025	150.05	1	12.5
11	162 NH	150.025	162.025	6	12.5
12	162 NL	150.025	162.025	1	12.5
13	173 NH	173.975	173.975	6	12.5
14	173 NL	173.975	173.975	1	12.5
15	378 NH *	378.025	378.125	5	12.5
16	378 NL *	378.025	378.125	1	12.5
17	406 NH	406.025	406.125	5	12.5
18	406 NL	406.025	406.125	1	12.5
19	418 NH	406.025	418.025	5	12.5
20	418 NL	406.025	418.025	1	12.5
21	429 NH	406.025	429.975	5	12.5
22	429 NL	406.025	429.975	1	12.5
23	438 NH	406.025	438.025	5	12.5
24	438 NL	406.025	438.025	1	12.5
25	450 NH	450.025	450.025	5	12.5
26	450 NL	450.025	450.025	1	12.5
27	460 NH	450.025	460.025	5	12.5
28	460 NL	450.025	460.025	1	12.5
29	469 NH	450.025	469.975	5	12.5
30	469 NL	450.025	469.975	1	12.5
31	491 NH	450.025	491.025	5	12.5
32	491 NL	450.025	491.025	1	12.5
33	491 WH	450.025	491.025	5	25.0
34	491 WL	450.025	491.025	1	25.0
35	511 NH	511.975	511.975	5	12.5
36	511 NL	511.975	511.975	1	12.5
37	511 WH	511.975	511.975	5	25.0
38	511 WL	511.975	511.975	1	25.0
39	757 NH	757.525	757.5	3	12.5
40	757 NL	757.525	757.5	1	12.5
41	757 WH	757.525	757.5	3	25.0
42	757 WL	757.525	757.5	1	25.0
43	768 NH	768.05	768.025	3	12.5
44	768 NL	768.05	768.025	1	12.5

Channel Table – continued

Channel Number	Label	Receive Frequency MHz	Transmit Frequency MHz	Power Watts	Channel Spacing kHz
45	768 WH	768.05	768.025	3	25.0
46	768 WL	768.05	768.025	1	25.0
47	769 NH	769.05	769.075	3	12.5
48	769 NL	769.05	769.075	1	12.5
49	769 WH	769.05	769.075	3	25.0
50	769 WL	769.05	769.075	1	25.0
51	774 NH	774.875	774.9	3	12.5
52	774 NL	774.875	774.9	1	12.5
53	774 WH	774.875	774.9	3	25.0
54	774 WL	774.875	774.9	1	25.0
55	775 NH	775.95	775.975	3	12.5
56	775 NL	775.95	775.975	1	12.5
57	775 WH	775.95	775.975	3	25.0
58	775 WL	775.95	775.975	1	25.0
59	787 NH	775.95	787.5	3	12.5
60	787 NL	775.95	787.5	1	12.5
61	787 WH	775.95	787.5	3	25.0
62	787 WL	775.95	787.5	1	25.0
63	798 NH	775.95	798.025	3	12.5
64	798 NL	775.95	798.025	1	12.5
65	798 WH	775.95	798.025	3	25.0
66	798 WL	775.95	798.025	1	25.0
67	799 NH	775.95	799.075	3	12.5
68	799 NL	775.95	799.075	1	12.5
69	799 WH	775.95	799.075	3	25.0
70	799 WL	775.95	799.075	1	25.0
71	804 NH	775.95	804.9	3	12.5
72	804 NL	775.95	804.9	1	12.5
73	804 WH	775.95	804.9	3	25.0
74	804 WL	775.95	804.9	1	25.0
75	805 NH	775.95	805.5	3	12.5
76	805 NL	775.95	805.5	1	12.5
77	805 WH	775.95	805.5	3	25.0
78	805 WL	775.95	805.5	1	25.0
79	805.9 NH	851.05	805.975	3	12.5
80	805.9 NL	851.05	805.975	1	12.5
81	805.9 WH	851.05	805.975	3	25.0
82	805.9 WL	851.05	805.975	1	25.0
83	806 NH	860.05	806.025	3	12.5
84	806 NL	860.05	806.025	1	12.5
85	806 WH	860.05	806.025	3	25.0
86	806 WL	860.05	806.025	1	25.0
87	815 NH	868.925	815.025	3	12.5
88	815 NL	868.925	815.025	1	12.5
89	815 WH	868.925	815.025	3	25.0



Channel Table - continued

Channel Number	Label	Receive Frequency MHz	Transmit Frequency MHz	Power Watts	Channel Spacing kHz
90	815 WL	868.925	815.025	1	25.0
91	823 NH	868.95	823.975	3	12.5
92	823 NL	868.95	823.975	1	12.5
93	823 WH	868.95	823.975	3	25.0
94	823 WL	868.95	823.975	1	25.0
95	851 NH	868.95	851.025	3	12.5
96	851 NL	868.95	851.025	1	12.5
97	851 WH	868.95	851.025	3	25.0
98	851 WL	868.95	851.025	1	25.0
99	860 NH	868.95	860.025	3	12.5
100	860 NL	868.95	860.025	1	12.5
101	860 WH	868.95	860.025	3	25.0
102	860 WL	868.95	860.025	1	25.0
103	868 NH	868.95	868.975	3	12.5
104	868 NL	868.95	868.975	1	12.5
105	868 WH	868.95	868.975	3	25.0
106	868 WL	868.95	868.975	1	25.0
107	896 NH	935.025	896.025	3	12.5
108	896 NL	935.025	896.025	1	12.5
109	899 NH	935.025	899.0	3	12.5
110	899 NL	935.025	899.0	1	12.5
111	900 NH	935.025	900.975	3	12.5
112	900 NL	935.025	900.975	1	12.5
113	902 NH	935.025	902.025	3	12.5
114	902 NL	935.025	902.025	1	12.5
115	915 NH	935.025	915.025	3	12.5
116	915 NL	935.025	915.025	1	12.5
117	928 NH	935.025	928.025	3	12.5
118	928 NL	935.025	928.025	1	12.5
119	931 NH	935.025	931.525	3	12.5
120	931 NL	935.025	931.525	1	12.5
121	935 NH	938.025	935.025	3	12.5
122	935 NL	938.025	935.025	1	12.5
123	939 NH	939.975	939.875	3	12.5
124	939 NL	939.975	939.875	1	12.5

\*Although not a frequency allocated by FCC or ISED for these rule parts, selected tests were performed at a transmit frequency of 378.125 MHz by customer request.

## LIST OF ANTENNAE INTENDED FOR USE WITH THE DEVICE

Model	Part Number	Antenna Type	Antenna Frequency	Antenna Peak Gain (dBi)
TPA-AN-001 (needs to be cut to have several ranges)	007-00022-02	Whip	135-225MHz	1
TPA-AN-034	007-00047-01	Helical	136-174MHz	-2
TPA-AN-002	007-00033-01	Whip (Same as TPA-AN-001 cut)	136-151MHz	1
TPA-AN-003	007-00034-01	Whip (Same as TPA-AN-001 cut)	150-162MHz	1
TPA-AN-032	007-00045-01	Helical	155-176MHz	1
TPA-AN-004	007-00035-01	Whip (Same as TPA-AN-001 cut)	162-174MHz	1
TPA-AN-037	007-00077-01	¼ Wave Whip	378-470MHz	1
TPA-AN-038	007-00079-01	Helical	378-470MHz	-1
TPA-AN-039	007-00039-00	¼ Wave Whip	380-420MHz	2
TPA-AN-027	007-00038-00	Helical	380-420MHz	1
TPA-AN-011	007-00023-02	Whip	400-470MHz	2
TPA-AN-013	007-00040-01	Helical	400-470MHz	1
TPA-AN-012	007-00041-01	Whip	450-520MHz	2
TPA-AN-015	007-00024-02	Helical	450-520MHz	1
TPA-AN-022	007-00025-10	½ Wave Whip	762-870MHz	1
TPA-AN-023	007-00030-01	Helical	762-870MHz	2
TPA-AN-028	007-00042-01	Helical	762-870MHz	1
TPA-AN-024	007-00028-01	¼ Wave Whip	896-941MHz	2
TPA-AN-051	007-00098-00	Multiband	136-174 & 378-520 & 757-870MHz	2.5
TPA-AN-050	007-00097-00	Multiband	136-174 & 378-520	2

The equipment tested has a 50 Ω coaxial antenna connection. No antenna was fitted to the EUT during testing the parameters in this report, except GNSS Radiated Emissions.

The EUT was connected as shown in Annex A, using a customer supplied test box to provide access to the analogue and digital interfaces. A “dummy” battery with connections for external DC supply was used to power the equipment.

## MODULATION TYPES, NECESSARY BANDWIDTH & EMISSION DESIGNATORS

### MODULATION TYPES:

F3E	Analogue Frequency Modulation (FM)	
F2D	FFSK	1200 bps and 2400 bps
FXW	DMR Digital Voice	9600 bps
FXD	DMR Digital Data	9600 bps
F1E	P25 phase 1 Digital Voice	9600 bps
F1D	P25 phase 1 Digital Data	9600 bps
F1W	P25 phase 2 Digital Voice / Data	12000 bps

CHANNEL SPACING:     12.5 kHz                                  25.0 kHz

### EMISSION DESIGNATORS:

	12.5 kHz	25.0 kHz
Analogue FM	11K0F3E	16K0F3E
FFSK Data 1200 bps	6K60F2D	9K60F2D
FFSK Data 2400 bps	7K80F2D	10K8F2D
Digital Voice DMR	8K00FXW	
Digital Data DMR	8K00FXD	
Digital Voice P25 phase 1	8K10F1E	
Digital Data P25 phase 1	8K10F1D	
Digital Data and Voice P25 phase 2	8K10F1W	

### CALCULATIONS

Equation:  $B_n = 2M + 2Dk$   
 (M is highest modulating frequency; D is peak allowable deviation; k is a constant of 1 for FM)

#### Analogue Voice: 12.5 kHz Bandwidth

Necessary bandwidth

M = 3.0 kHz

D = 2.5 kHz

$$B_n = (2 \times 3.0) + (2 \times 2.5) \times 1$$

$$= 11.0 \text{ kHz}$$

Emission Designator

**11K0F3E**

F3E represents an FM voice transmission

#### Analogue Voice: 25.0 kHz Bandwidth

Necessary bandwidth

M = 3.0 kHz

D = 5.0 kHz

$$B_n = (2 \times 3.0) + (2 \times 5.0) \times 1$$

$$= 16.0 \text{ kHz}$$

Emission Designator

**16K0F3E**

F3E represents an FM voice transmission

#### Fast Frequency Shift Keying (FFSK – 1200 bps): 12.5 kHz Channel Spacing

Necessary bandwidth

M = 1.8 kHz

D = 1.5 kHz (60% of peak deviation)

$$B_n = (2 \times 1.8) + (2 \times 1.5) \times 1$$

$$= 6.6 \text{ kHz}$$

Emission Designator

**6K60F2D**

F2D represents a FM data transmission with the use of a modulating sub carrier

#### Fast Frequency Shift Keying (FFSK – 1200 bps): 25.0 kHz Channel Spacing

Necessary bandwidth

M = 1.8 kHz

D = 3.0 kHz (60% of peak deviation)

$$B_n = (2 \times 1.8) + (2 \times 3.0) \times 1$$

$$= 9.6 \text{ kHz}$$

Emission Designator

**9K60F2D**

F2D represents a FM data transmission with the use of a modulating sub carrier

## Emission Designators – Continued

Fast Frequency Shift Keying (FFSK – 2400 bps): 12.5 kHz Channel Spacing  
Necessary bandwidth  
M = 2.4 kHz  
D = 1.5 kHz (60% of peak deviation)  
 $B_n = (2 \times 2.4) + (2 \times 1.5) \times 1$   
= 7.8 kHz

Emission Designator  
**7K80F2D**  
F2D represents a FM data transmission with the use of a modulating sub carrier

Fast Frequency Shift Keying (FFSK – 2400 bps): 25.0 kHz Channel Spacing  
Necessary bandwidth  
M = 2.4 kHz  
D = 3.0 kHz (60% of peak deviation)  
 $B_n = (2 \times 2.4) + (2 \times 3.0) \times 1$   
= 10.8 kHz

Emission Designator  
**10K80F2D**  
F2D represents a FM data transmission with the use of a modulating sub carrier

DMR: Digital Voice, 12.5 kHz Channel Spacing  
99% bandwidth  
= 8.0 kHz

Emission Designator  
**8K00FXW**  
FXW represents a FM Time Division Multiple Access (TDMA) combination of data and telephony

DMR: Digital Data, 12.5 kHz Channel Spacing  
99% bandwidth  
= 8.0 kHz

Emission Designator  
**8K00FXD**  
FXD represents FM Time Division Multiple Access (TDMA) data only

APCO P25 Phase 1: Digital Voice 12.5 kHz Channel Spacing  
99% bandwidth  
= 8.1 kHz

Emission Designator  
**8K10F1E**  
F1E represents a digital FM voice transmission

APCO P25 Phase 1: Digital Data 12.5 kHz Channel Spacing  
99% bandwidth  
= 8.1 kHz

Emission Designator  
**8K10F1D**  
F1D represents an digital FM data transmission

APCO P25 Phase 2: Digital Voice 12.5 kHz Channel Spacing  
99% bandwidth  
= 8.1 kHz

Emission Designator  
**8K10F1W**  
F1W represents a single FM telephony channel

APCO P25 Phase 2: Digital Data 12.5 kHz Channel Spacing  
99% bandwidth  
= 8.1 kHz

Emission Designator  
**8K10F1W**  
F1W represents digital FM data transmission

## TEST RESULTS

### TRANSMITTER OUTPUT POWER (CONDUCTED)

SPECIFICATION: FCC 47 CFR 2.1046  
RSS-119 5.4

GUIDE: ANSI C63.26 5.2.4.2

#### MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment set up.
2. The coaxial attenuator has an impedance of 50 Ohms.
3. The unmodulated output power was measured with an RF Power meter.

#### EXAMPLE CALCULATION:

$$\begin{aligned} \text{Power in dBm} &= \text{Measured power (dBm)} + \text{attenuator and cable loss (dB)} \\ \text{Chan 1 power (dBm)} &= 7.78 \text{ dBm} + 30.42 \text{ dB} \\ &= 38.2 \text{ dBm} \\ \text{Power in Watts} &= (10^{(38.2 \text{ dBm})/10})/1000 \\ &= 6.6 \text{ W} \end{aligned}$$

#### MEASUREMENT RESULTS:

Manufacturer's Rated Output Power:

Switchable: 6 W and 1 W

Nominal 6 W	Measured (W)	Variation (%)	Variation (dB)
138.025 MHz	6.6	10.2	0.4
143.975 MHz	6.5	8.3	0.3
148.025 MHz	6.7	11.7	0.5
150.025 MHz	6.4	7.1	0.3
150.05 MHz	6.4	6.9	0.3
162.025 MHz	5.5	-8.6	-0.4
173.975 MHz	6.0	-0.2	0.0

Manufacturer's Rated Output Power:

Switchable: 5 W and 1 W

Nominal 5 W	Measured (W)	Variation (%)	Variation (dB)
378.125 MHz	5.2	4.7	0.2
406.125 MHz	5.2	4.8	0.2
418.025 MHz	5.3	6.5	0.3
429.975 MHz	5.2	4.2	0.2
438.025 MHz	5.2	3.7	0.2
450.025 MHz	5.1	1.3	0.1
460.025 MHz	5.0	0.4	0.0
469.975 MHz	5.1	2.5	0.1
491.025 MHz	5.3	6.3	0.3
511.975 MHz	5.2	4.4	0.2

Transmitter Output Power (Conducted) – continued

Manufacturer's Rated Output Power:

Switchable: 3 W and 1 W

Nominal 3 W	Measured (W)	Variation (%)	Variation (dB)
757.5 MHz	2.9	-4.1	-0.2
768.025 MHz	3.0	-1.1	0.0
769.075 MHz	3.0	-1.0	0.0
774.9 MHz	2.9	-1.7	-0.1
775.975 MHz	3.0	-1.6	-0.1
787.5 MHz	2.9	-2.2	-0.1
798.025 MHz	3.1	2.3	0.1
799.075 MHz	3.1	2.6	0.1
804.9 MHz	3.1	4.3	0.2
805.5 MHz	3.1	4.3	0.2
805.975 MHz	3.1	2.7	0.1
806.025 MHz	3.0	0.1	0.0
815.025 MHz	2.8	-5.4	-0.2
823.975 MHz	2.7	-9.2	-0.4
851.025 MHz	3.1	2.9	0.1
860.025 MHz	3.1	2.5	0.1
868.975 MHz	2.9	-2.3	-0.1
896.025 MHz	3.2	8.1	0.3
899.0 MHz	3.2	6.8	0.3
900.975 MHz	3.2	5.8	0.2
902.025 MHz	3.1	4.6	0.2
915.025 MHz	3.0	-0.1	0.0
928.025 MHz	3.2	6.7	0.3
931.525 MHz	3.2	8.0	0.3
935.025 MHz	3.3	8.6	0.4
939.875 MHz	3.2	8.0	0.3

Measurement Uncertainty

± 0.6 dB

Transmitter Output Power (Conducted) – continued

Nominal 1 W	Measured (W)	Variation (%)	Variation (dB)
138.025 MHz	1.1	13.4	0.5
143.975 MHz	1.1	10.1	0.4
148.025 MHz	1.1	10.2	0.4
150.025 MHz	1.1	10.4	0.4
150.05 MHz	1.1	10.7	0.4
162.025 MHz	1.1	14.1	0.6
173.975 MHz	1.1	7.9	0.3
378.125 MHz	1.05	5.4	0.2
406.125 MHz	1.03	3.4	0.1
418.025 MHz	1.05	5.2	0.2
429.975 MHz	1.04	4.2	0.2
438.025 MHz	1.03	3.5	0.1
450.025 MHz	1.04	4.4	0.2
460.025 MHz	1.05	5.3	0.2
469.975 MHz	1.01	0.9	0.0
491.025 MHz	1.05	5.3	0.2
511.975 MHz	0.99	-1.2	-0.1
757.5 MHz	1.0	-1.1	0.0
768.025 MHz	1.0	1.0	0.0
769.075 MHz	1.0	0.4	0.0
774.9 MHz	1.0	-1.9	-0.1
775.975 MHz	1.0	-2.1	-0.1
787.5 MHz	0.9	-5.7	-0.3
798.025 MHz	1.0	0.9	0.0
799.075 MHz	1.0	1.7	0.1
804.9 MHz	1.0	4.8	0.2
805.5 MHz	1.1	5.1	0.2
805.975 MHz	1.0	4.2	0.2
806.025 MHz	1.0	4.4	0.2
815.025 MHz	1.0	3.5	0.2
823.975 MHz	1.0	-2.2	-0.1
851.025 MHz	1.1	9.5	0.4
860.025 MHz	1.1	7.3	0.3
868.975 MHz	1.0	4.0	0.2

Transmitter Output Power (Conducted) – continued

Nominal 1 W	Measured (W)	Variation (%)	Variation (dB)
896.025 MHz	1.1	12.2	0.5
899.0 MHz	1.1	10.6	0.4
900.975 MHz	1.1	9.5	0.4
902.025 MHz	1.1	8.4	0.3
915.025 MHz	1.0	1.5	0.1
928.025 MHz	1.1	9.0	0.4
931.525 MHz	1.1	10.6	0.4
935.025 MHz	1.1	11.9	0.5
939.875 MHz	1.1	11.6	0.5
Measurement Uncertainty		$\pm 0.6$ dB	

LIMIT CLAUSES:

FCC 47 CFR 90.205 (s)

The output power shall not exceed by more than 20%... the manufacturer's rated output power for the particular transmitter specifically listed on the authorization.

RSS-119 5.4

The output power shall be within  $\pm 1.0$  dB of the manufacturer's rated power.



## TRANSMITTER AUDIO FREQUENCY RESPONSE - PRE-EMPHASIS

SPECIFICATION: FCC 47 CFR 2.1047 (a)

GUIDE: ANSI C63.26 5.3.3.2

### MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment set up.
2. An audio input tone of 1000 Hz was applied with the level set to obtain 20% of maximum deviation. This was used as the 0 dB reference point.
3. The AF was varied while the audio level was held constant.
4. The response in dB relative to 1000 Hz was measured.

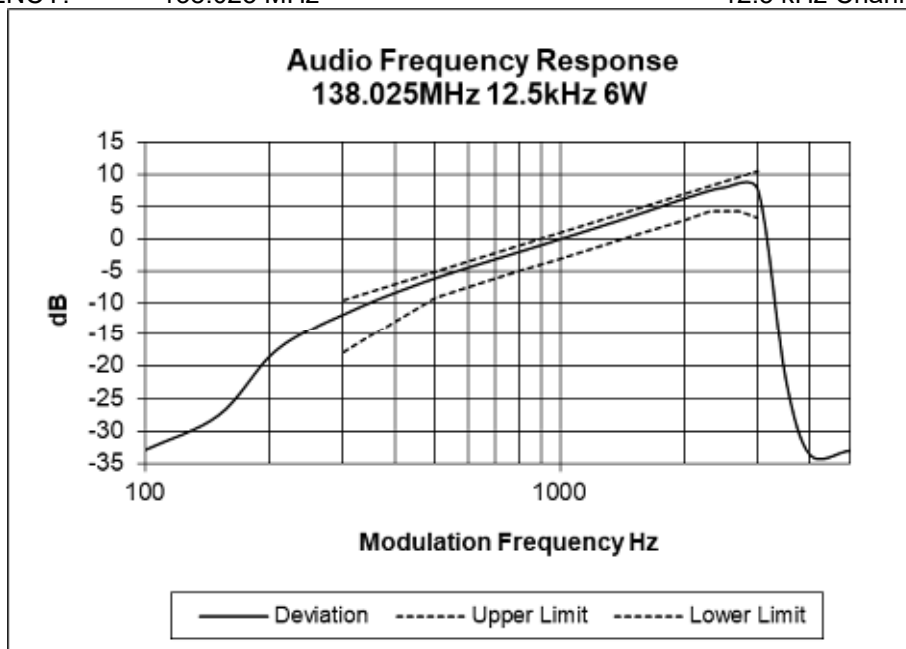
### MEASUREMENT RESULTS:

See the plots on the following pages for 12.5 kHz and 25 kHz channel spacing.

LIMIT CLAUSE: TIA/EIA-603E 3.2.6

MEASUREMENT UNCERTAINTY:  $\pm 1.5\%$

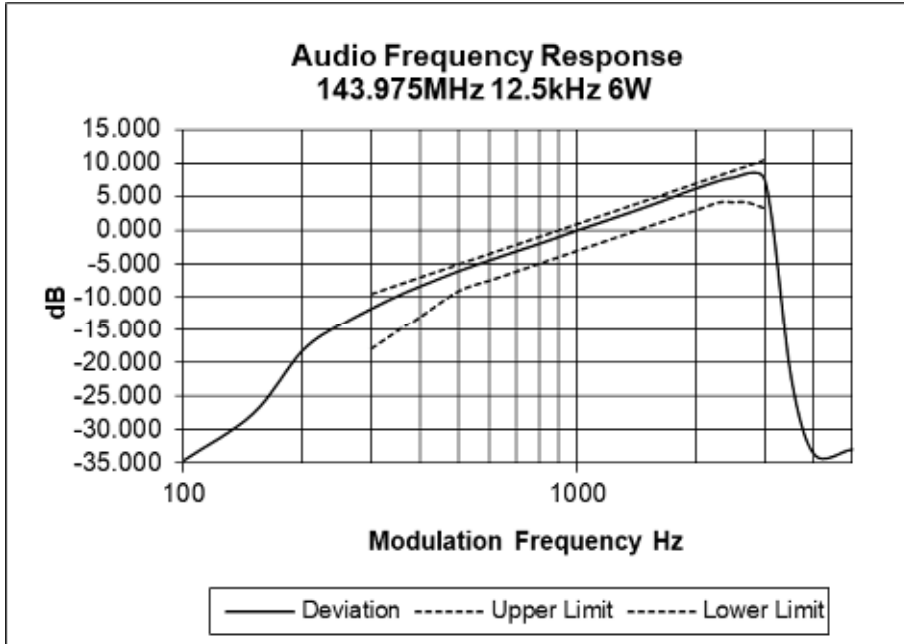
Tx FREQUENCY: 138.025 MHz 12.5 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

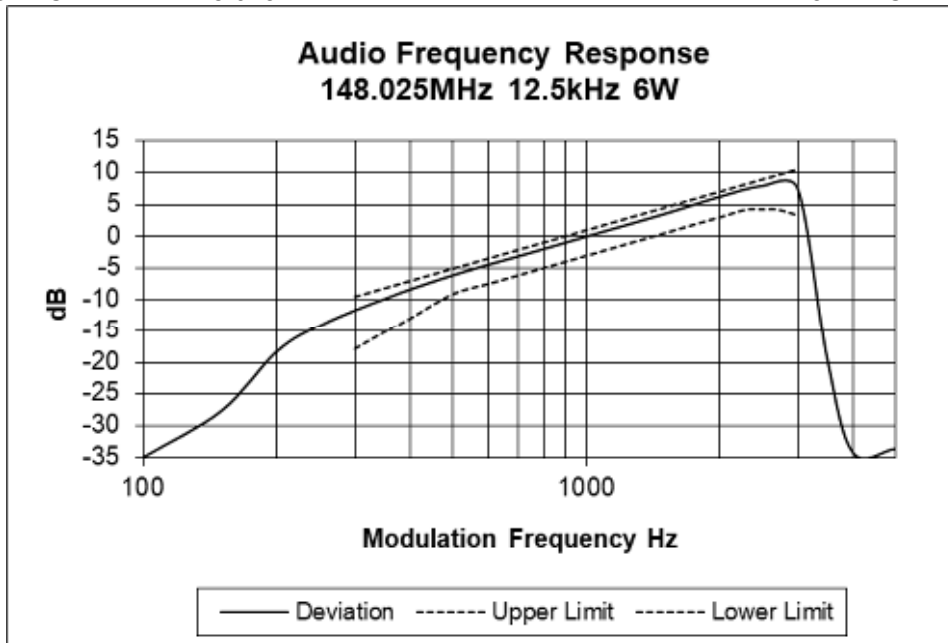
Tx FREQUENCY: 143.975 MHz

12.5 kHz Channel Spacing



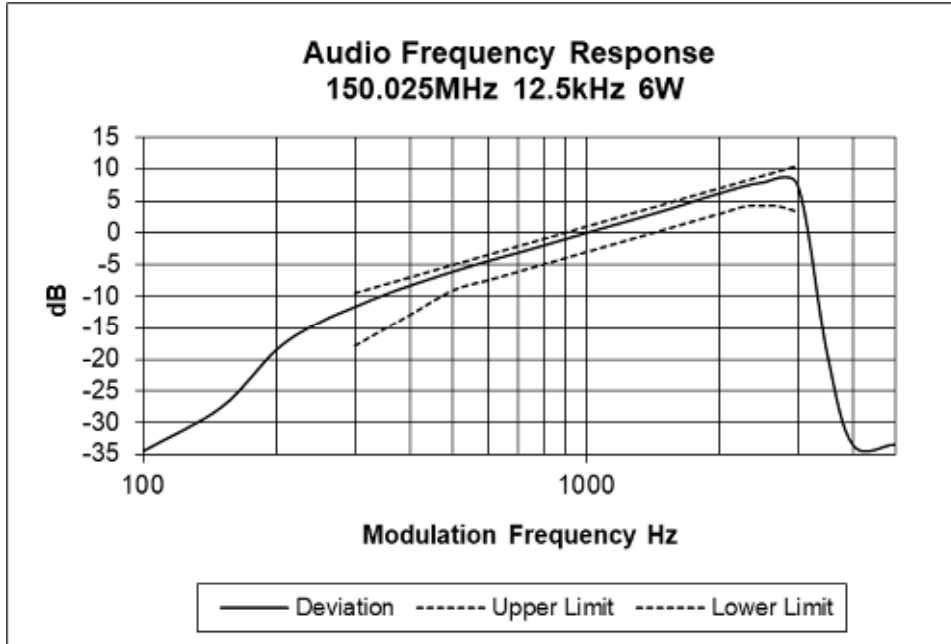
Tx FREQUENCY: 148.025 MHz

12.5 kHz Channel Spacing

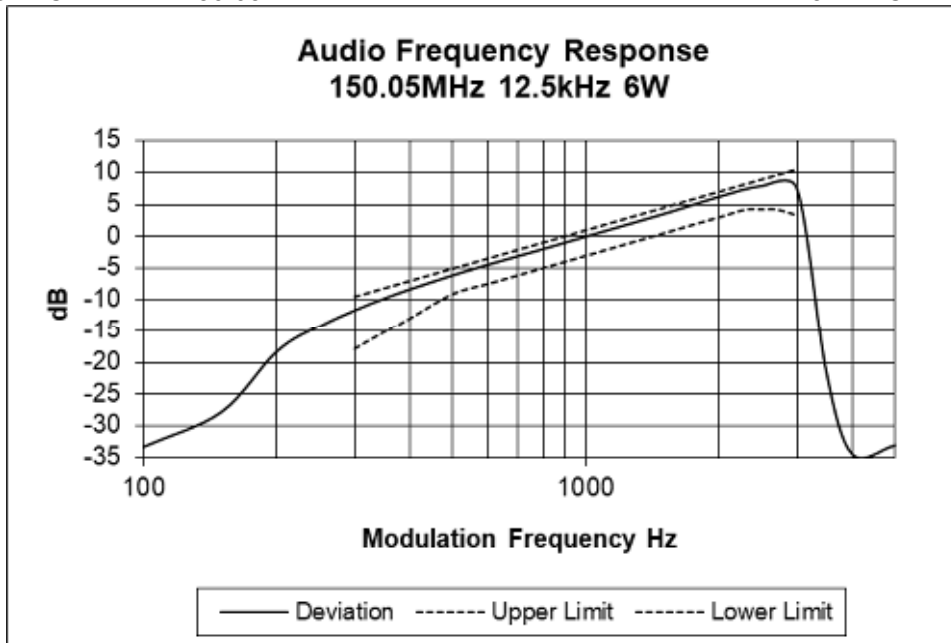


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 150.025 MHz 12.5 kHz Channel Spacing

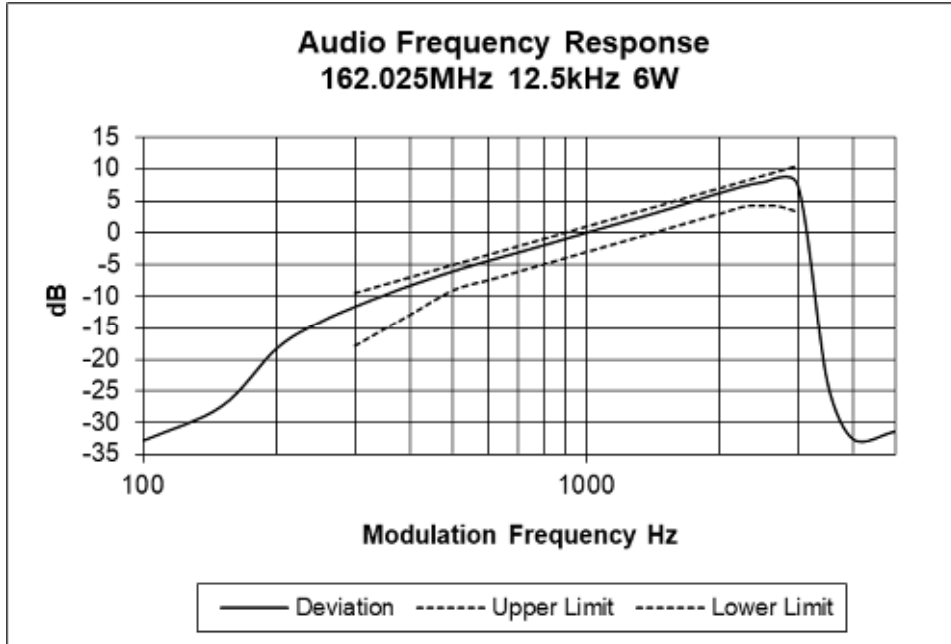


Tx FREQUENCY: 150.05 MHz 12.5 kHz Channel Spacing

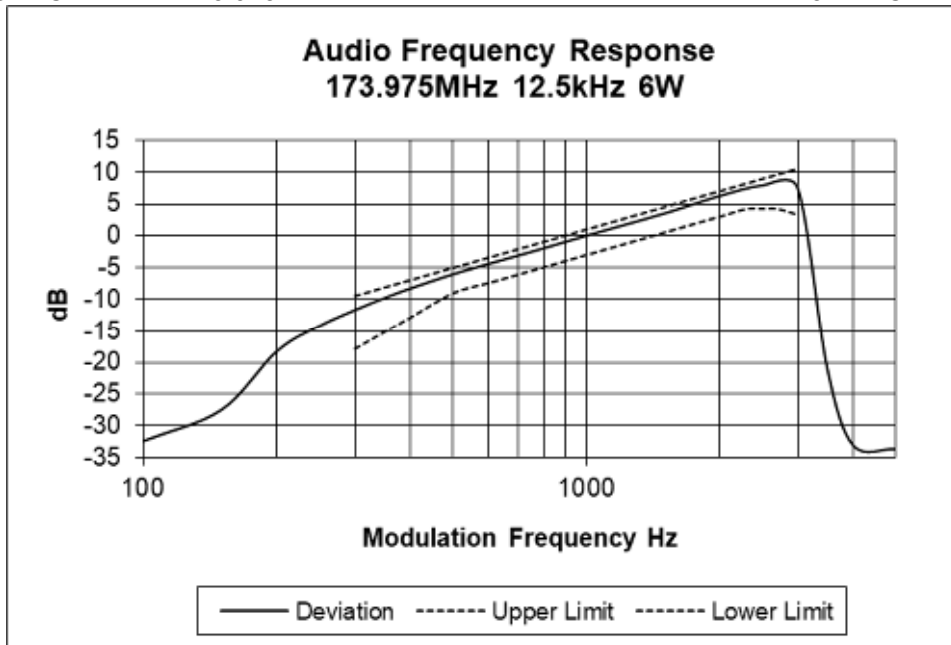


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 162.025 MHz 12.5 kHz Channel Spacing

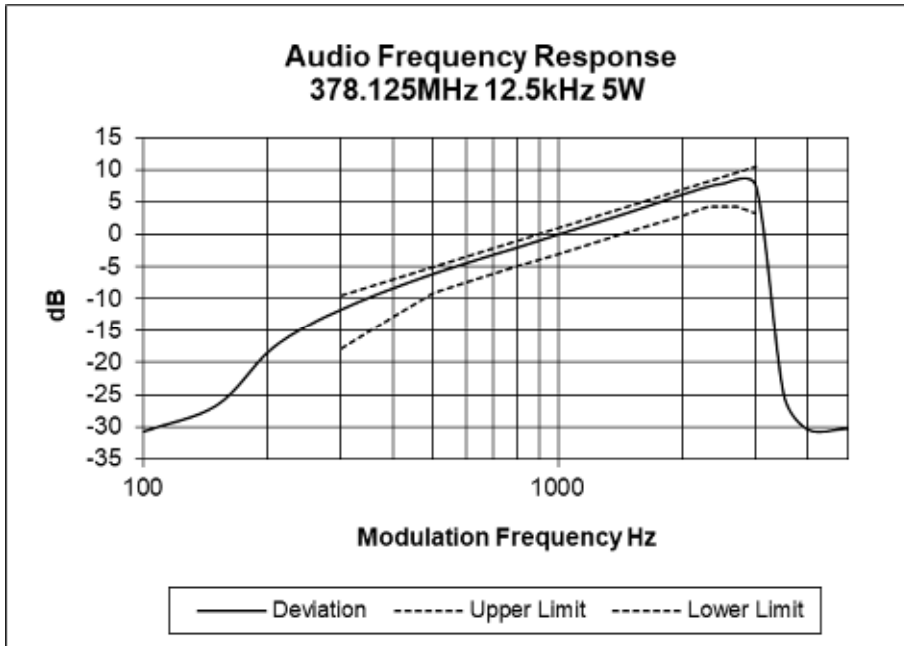


Tx FREQUENCY: 173.975 MHz 12.5 kHz Channel Spacing

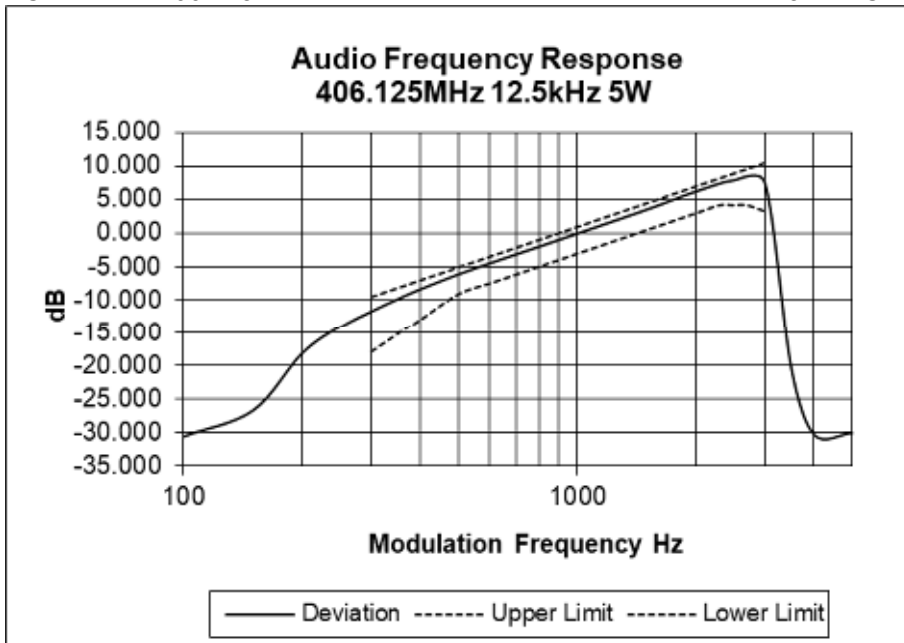


Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 378.125 MHz 12.5 kHz Channel Spacing

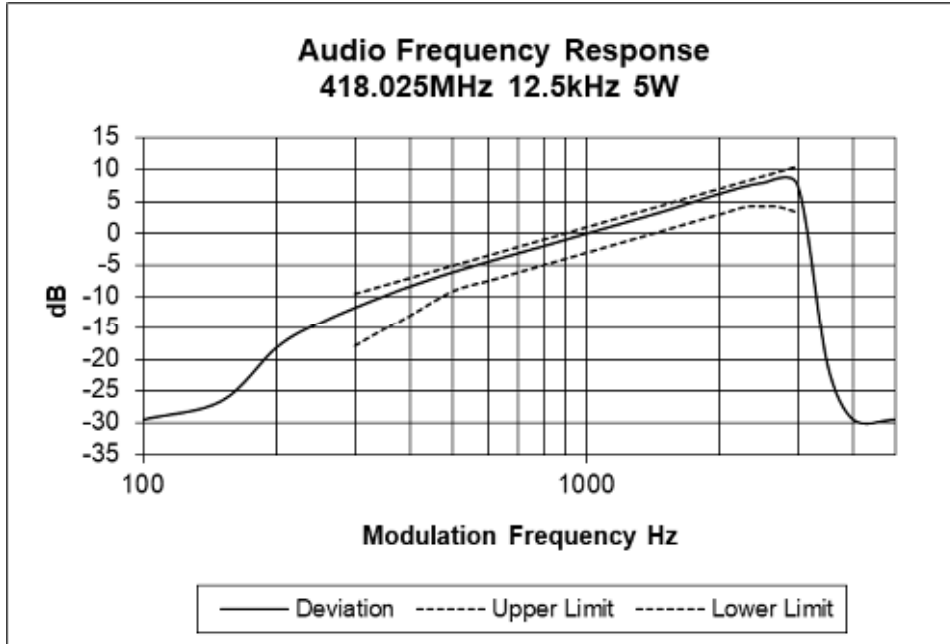


Tx FREQUENCY: 406.125 MHz 12.5 kHz Channel Spacing

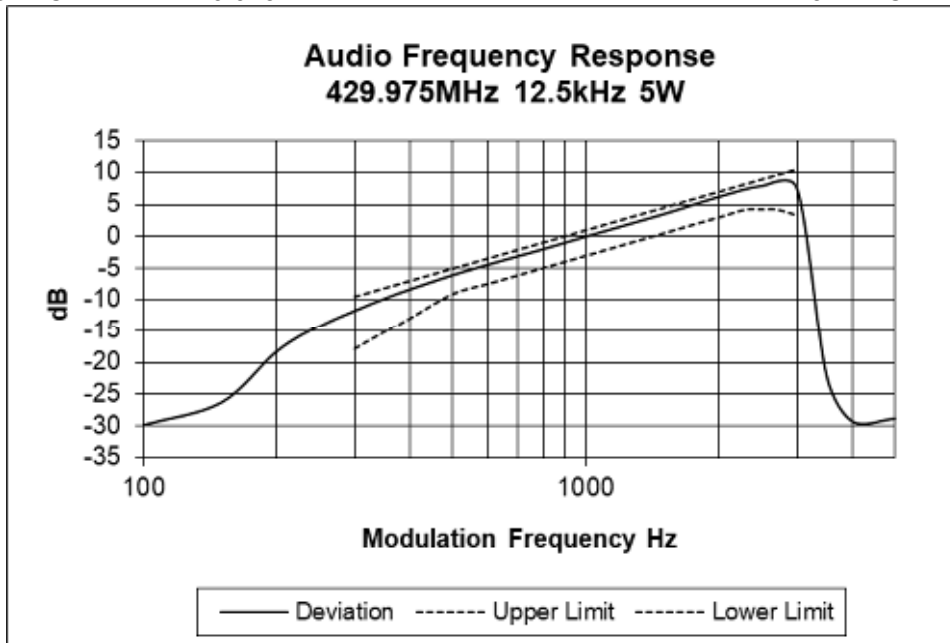


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 418.025 MHz 12.5 kHz Channel Spacing

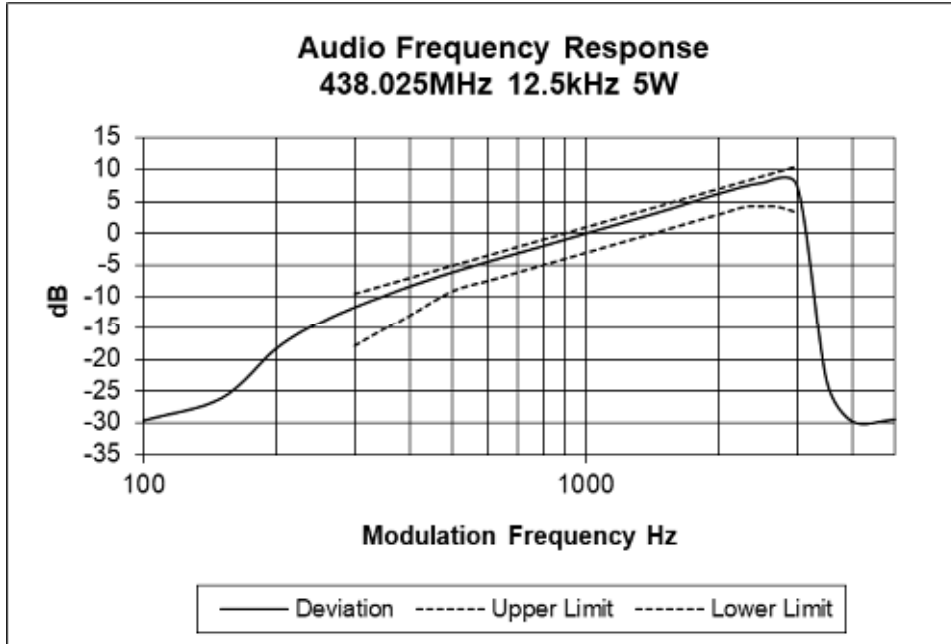


Tx FREQUENCY: 429.975 MHz 12.5 kHz Channel Spacing

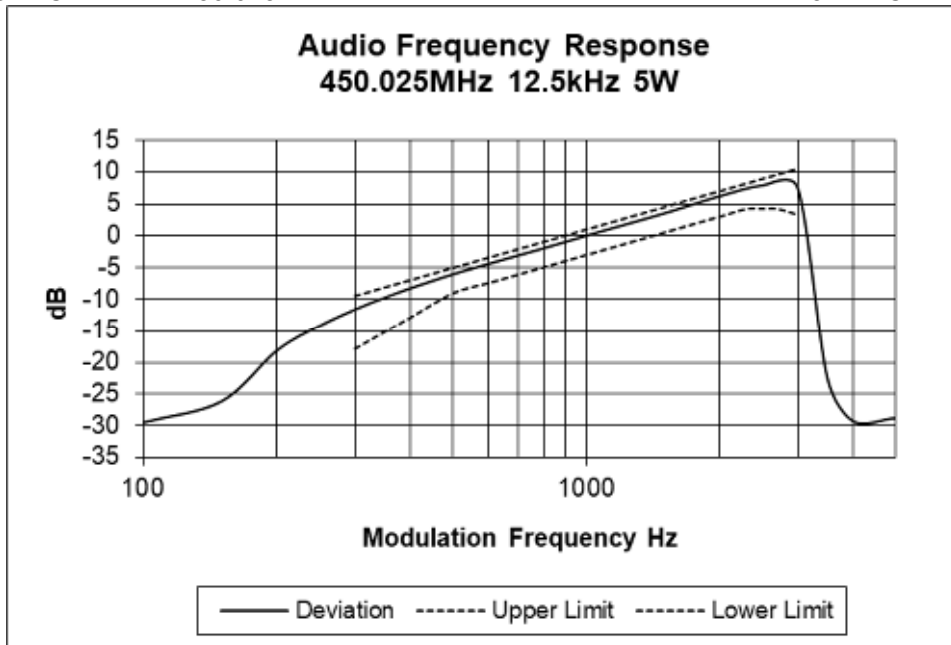


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 438.025 MHz 12.5 kHz Channel Spacing

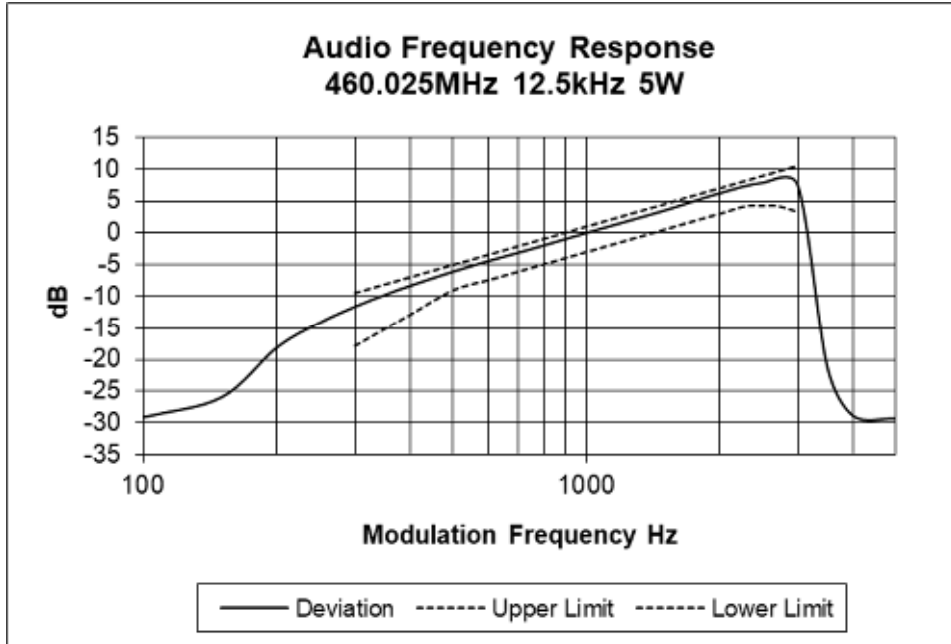


Tx FREQUENCY: 450.025 MHz 12.5 kHz Channel Spacing

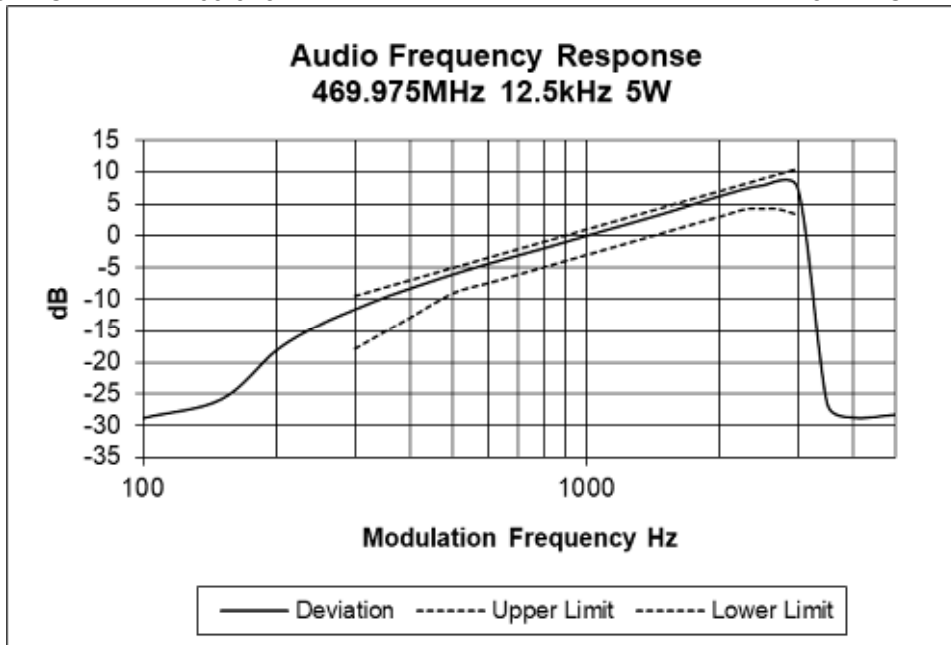


Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 460.025 MHz 12.5 kHz Channel Spacing



Tx FREQUENCY: 469.975 MHz 12.5 kHz Channel Spacing

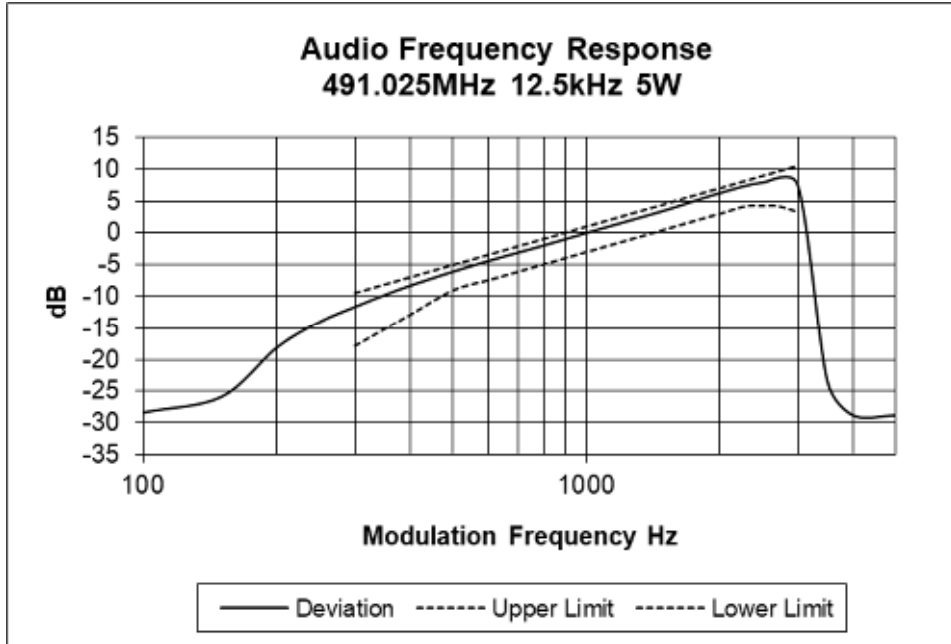




### Transmitter Audio Frequency Response – Pre-emphasis

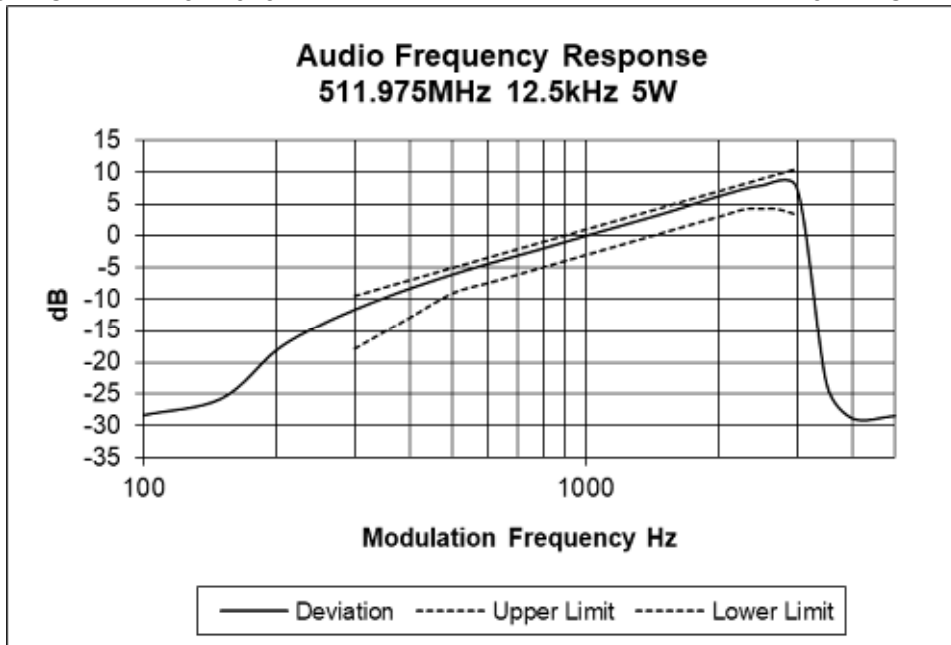
Tx FREQUENCY: 491.025 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 511.975 MHz

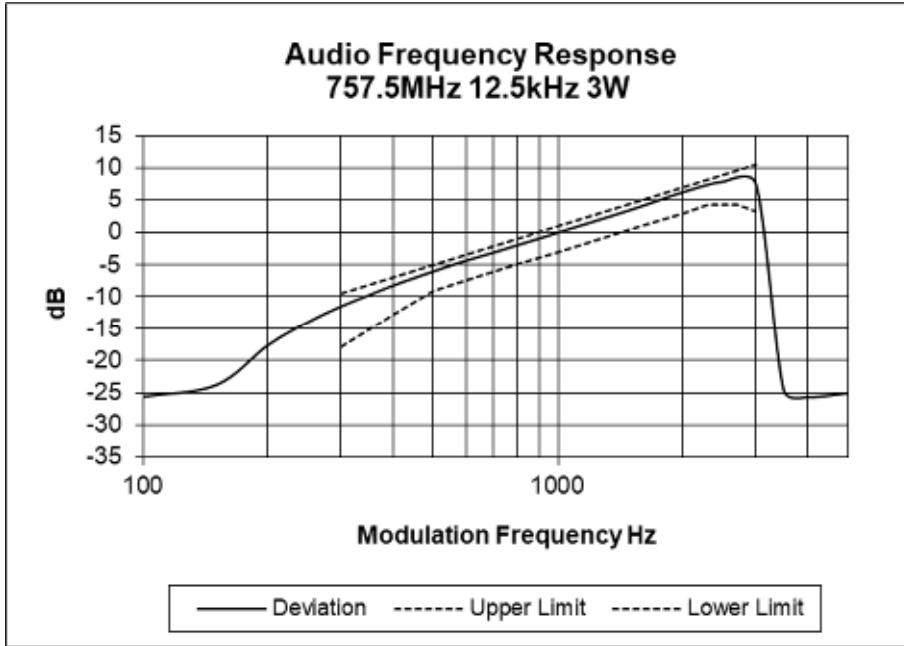
12.5 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

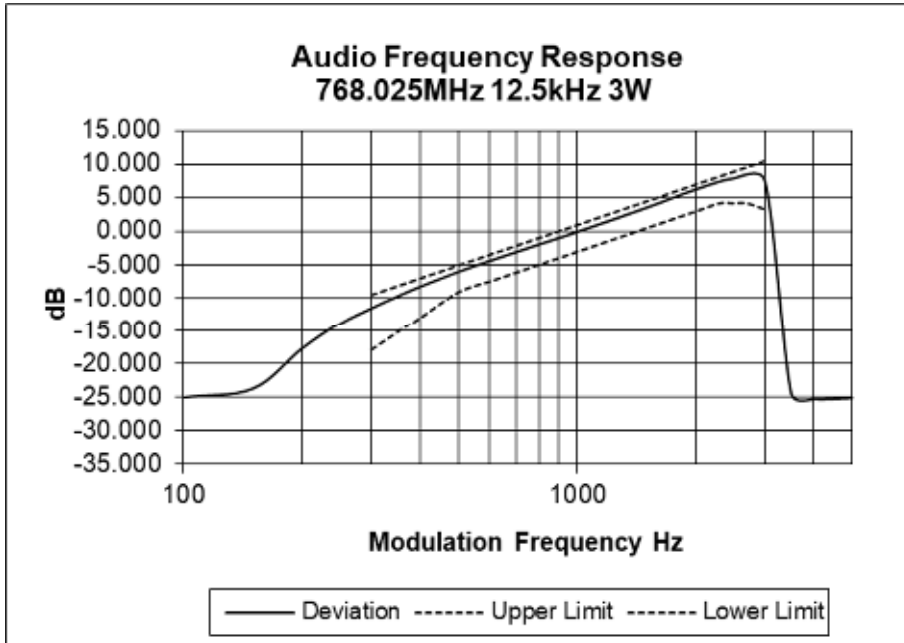
Tx FREQUENCY: 757.5 MHz

12.5 kHz Channel Spacing



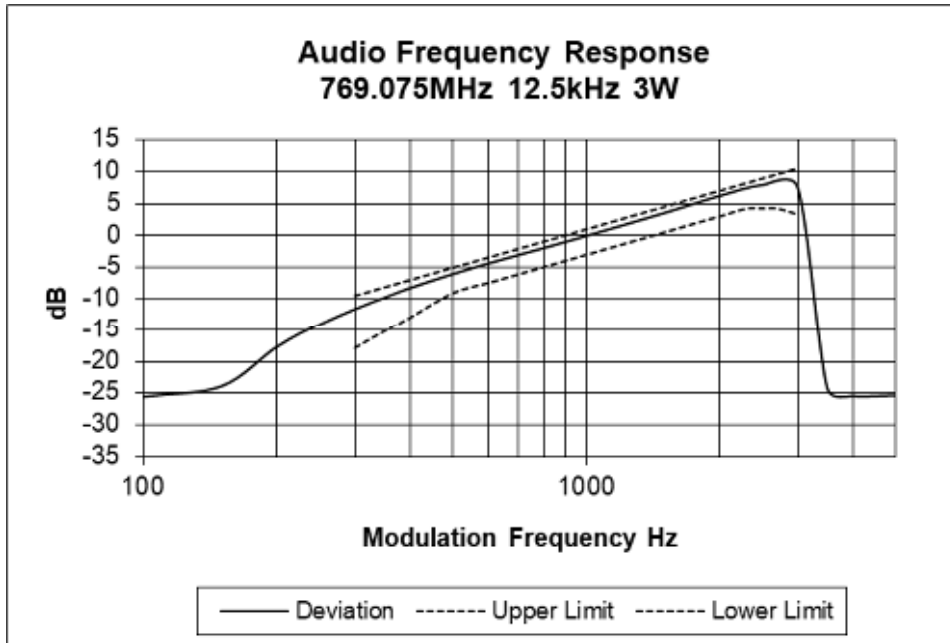
Tx FREQUENCY: 768.025 MHz

12.5 kHz Channel Spacing

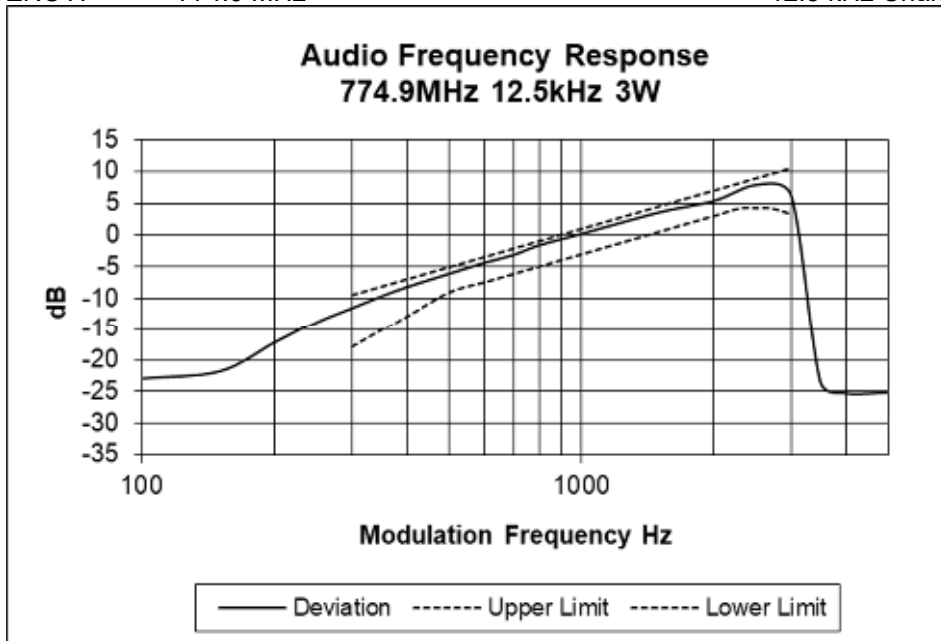


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 769.075 MHz 12.5 kHz Channel Spacing

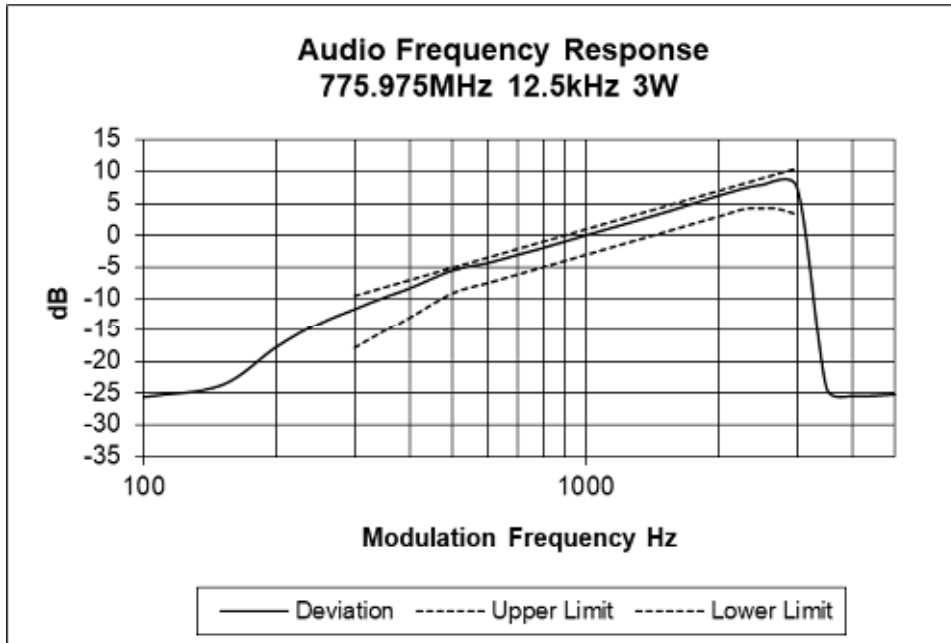


Tx FREQUENCY: 774.9 MHz 12.5 kHz Channel Spacing

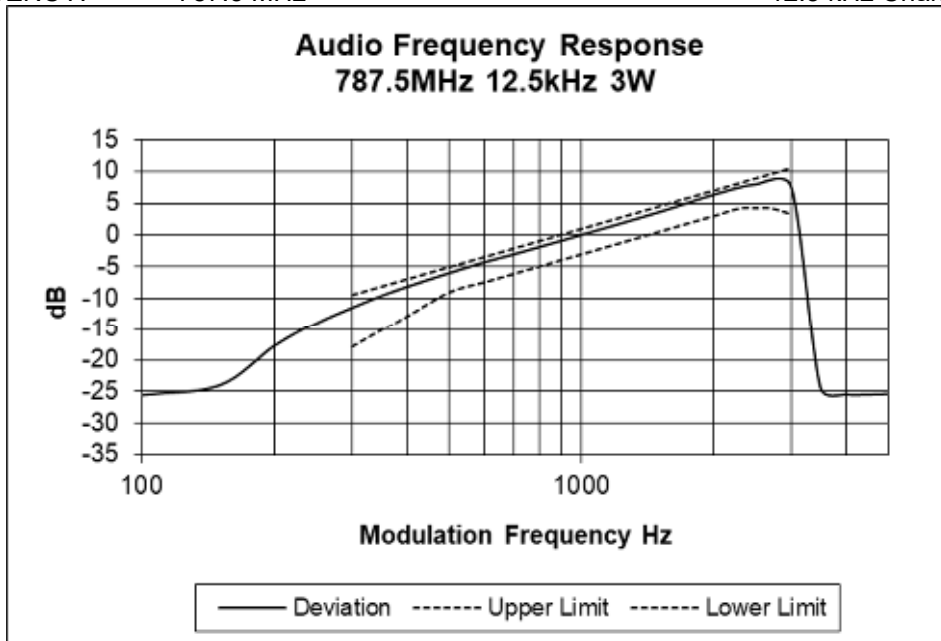


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 775.975 MHz 12.5 kHz Channel Spacing



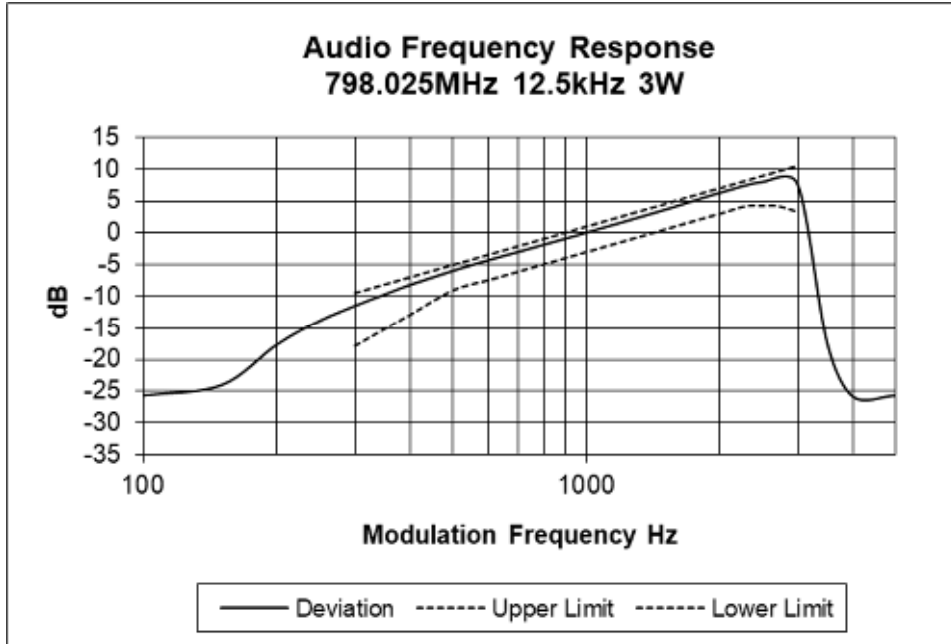
Tx FREQUENCY: 787.5 MHz 12.5 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

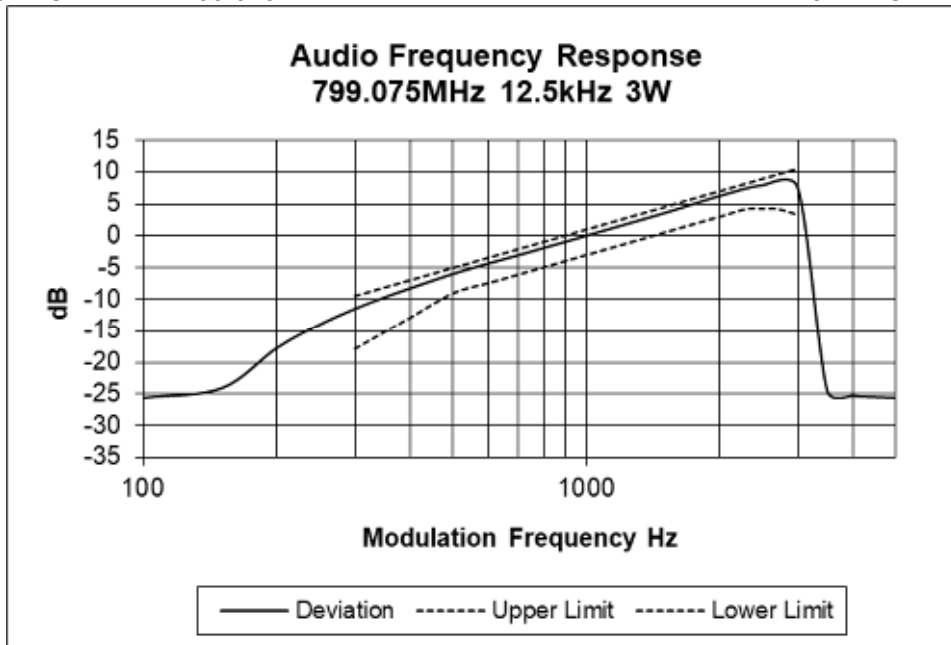
Tx FREQUENCY: 798.025 MHz

12.5 kHz Channel Spacing



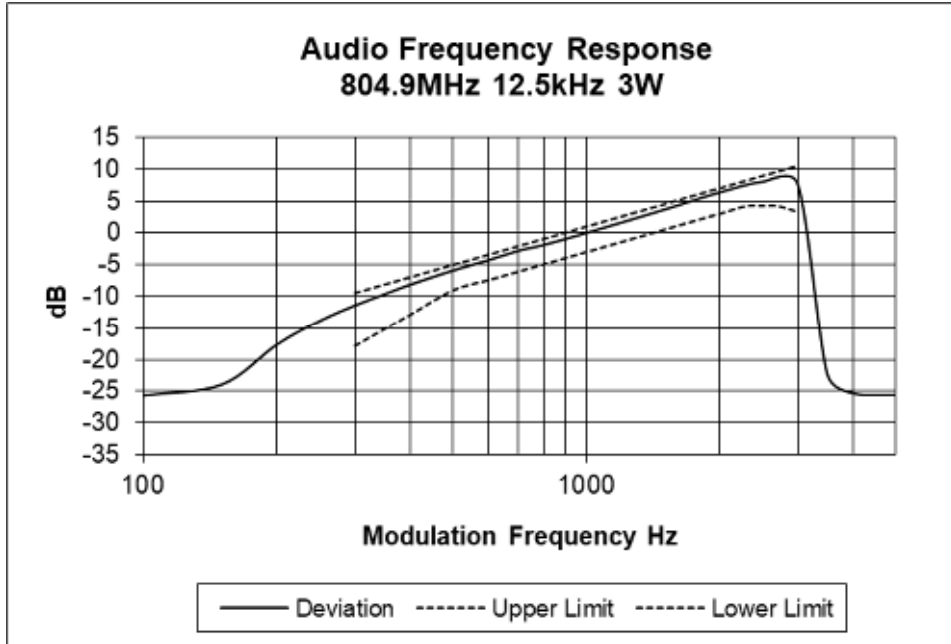
Tx FREQUENCY: 799.075 MHz

12.5 kHz Channel Spacing

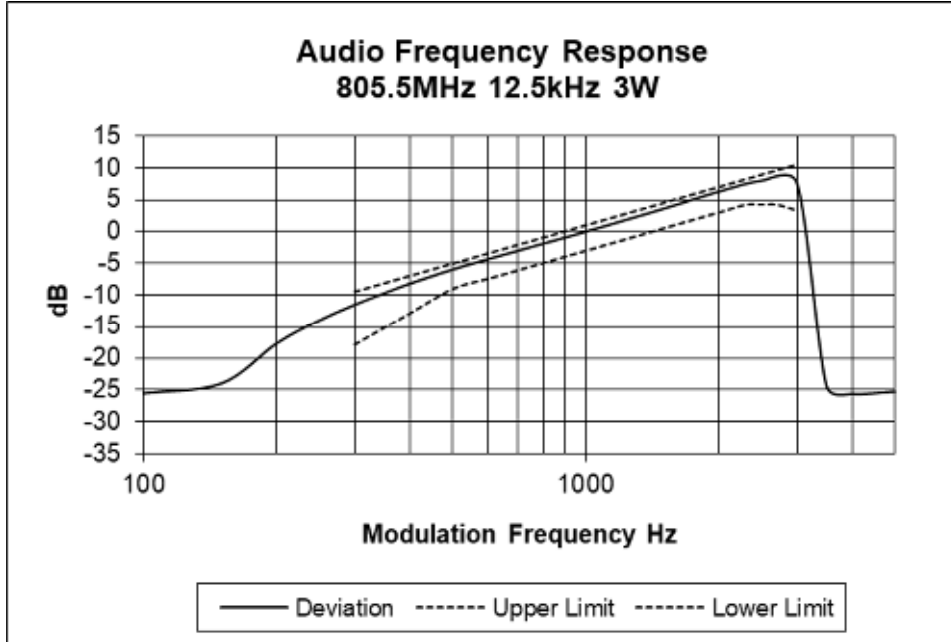


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 804.9 MHz 12.5 kHz Channel Spacing



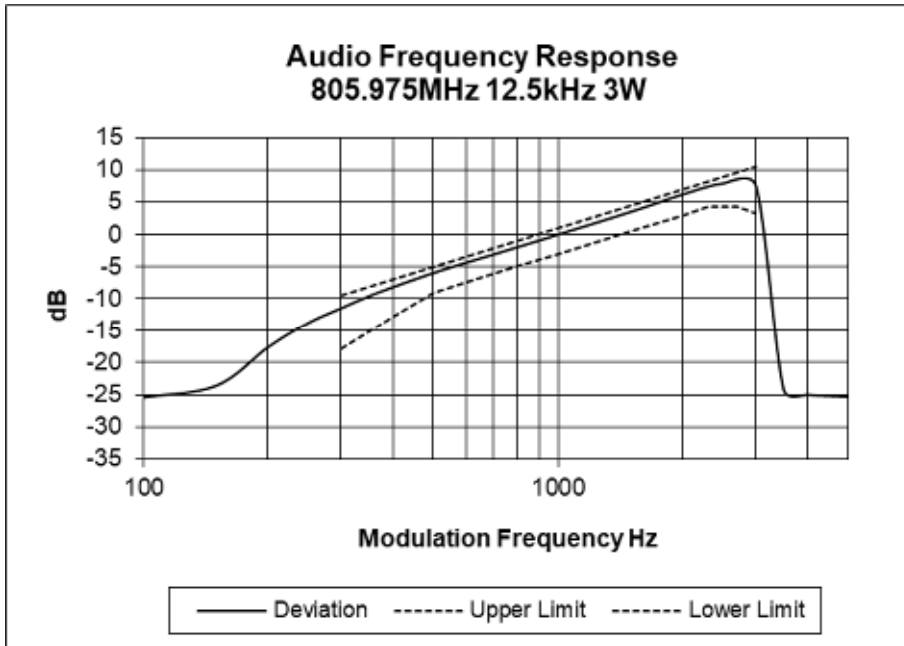
Tx FREQUENCY: 805.5 MHz 12.5 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

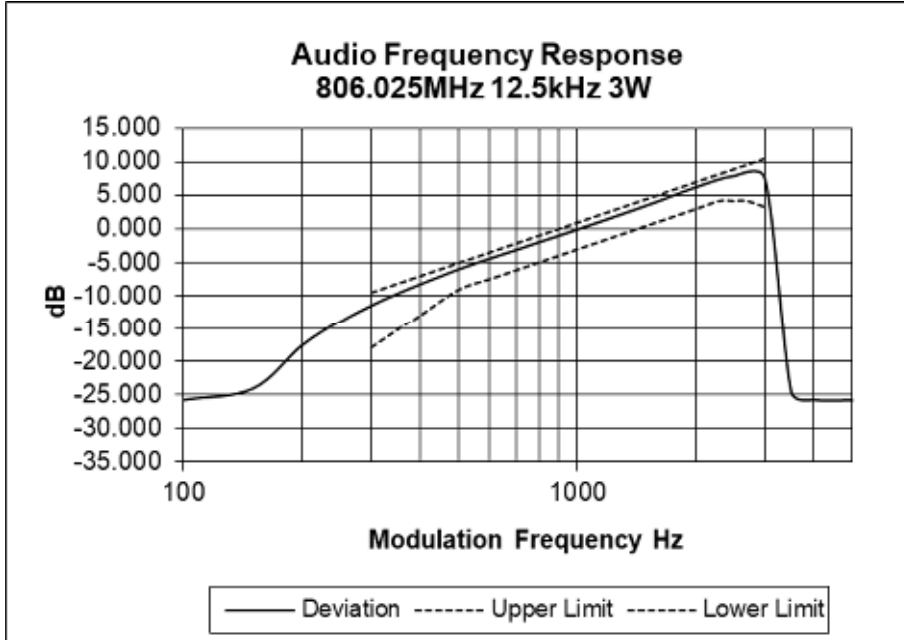
Tx FREQUENCY: 805.975 MHz

12.5 kHz Channel Spacing



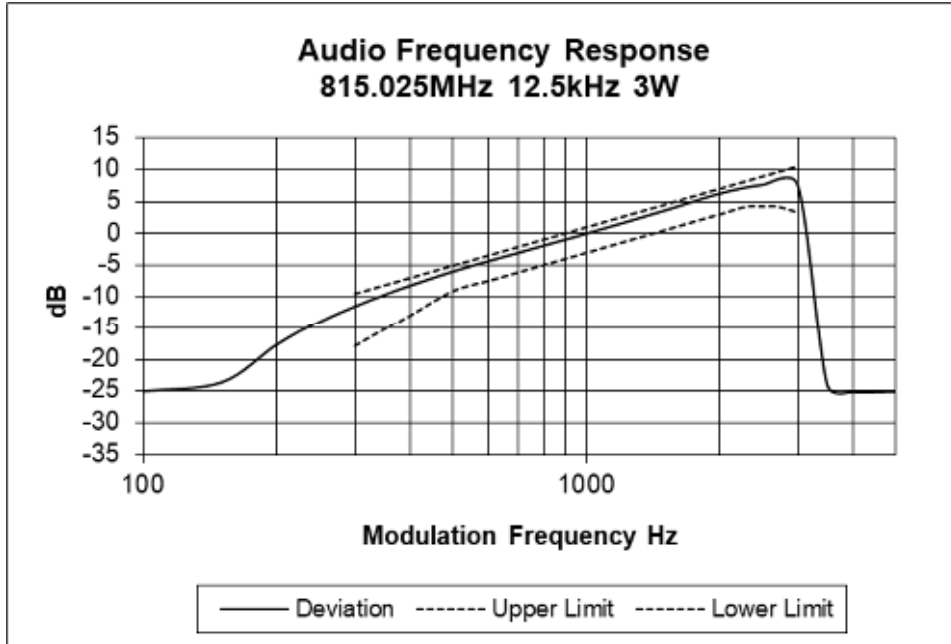
Tx FREQUENCY: 806.025 MHz

12.5 kHz Channel Spacing

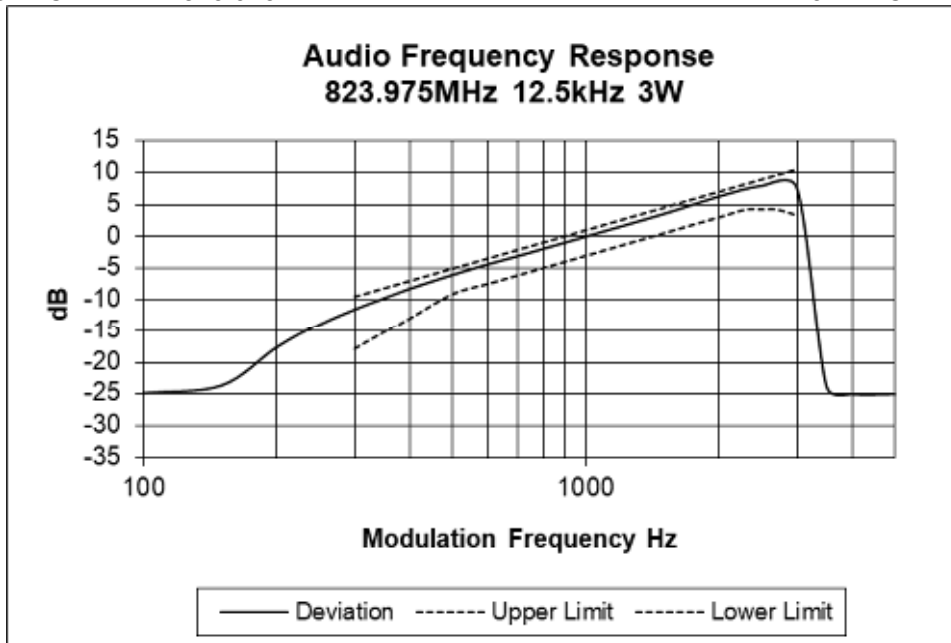


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 815.025 MHz 12.5 kHz Channel Spacing



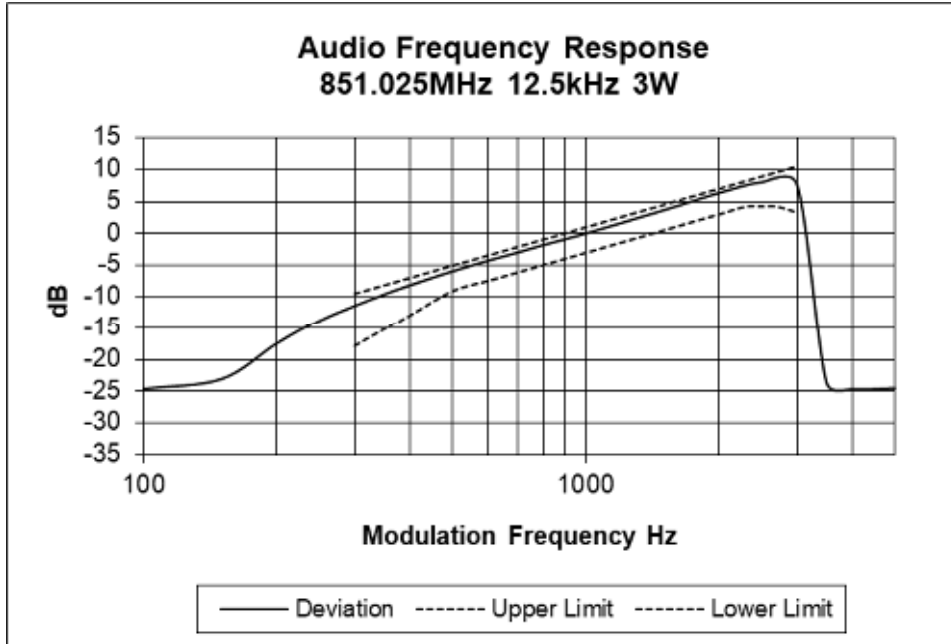
Tx FREQUENCY: 823.975 MHz 12.5 kHz Channel Spacing



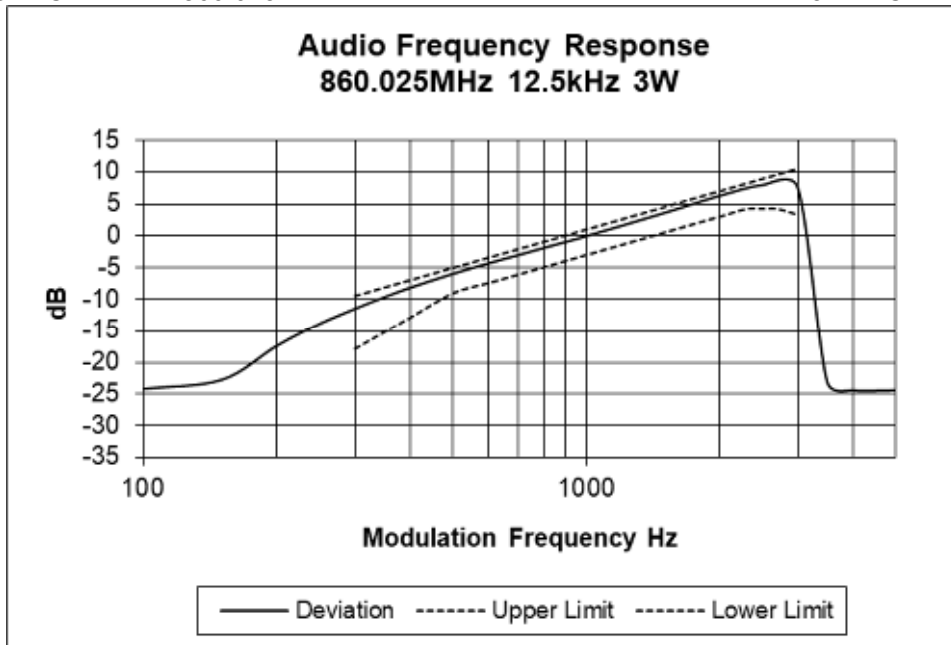


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 851.025 MHz 12.5 kHz Channel Spacing

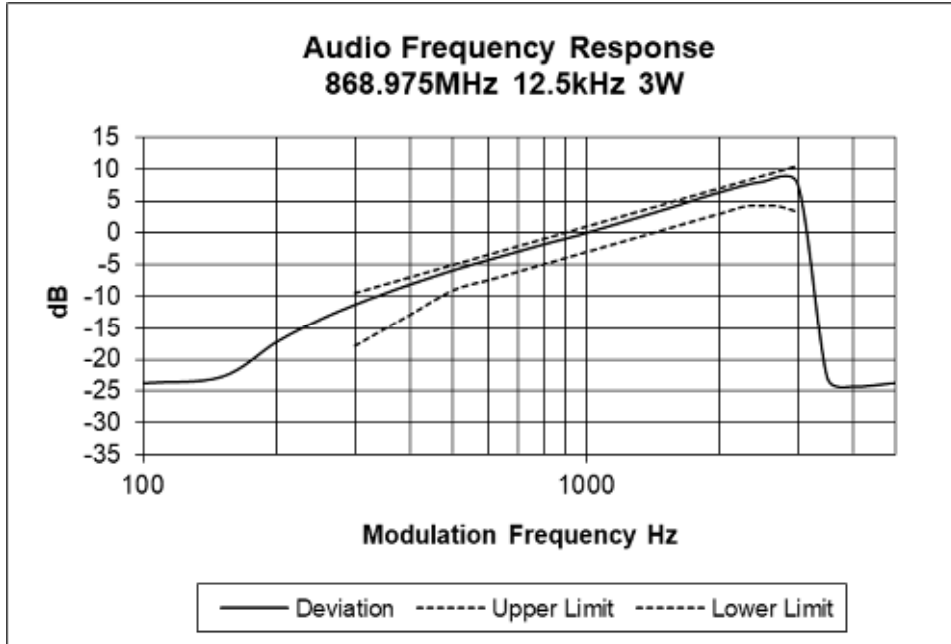


Tx FREQUENCY: 860.025 MHz 12.5 kHz Channel Spacing

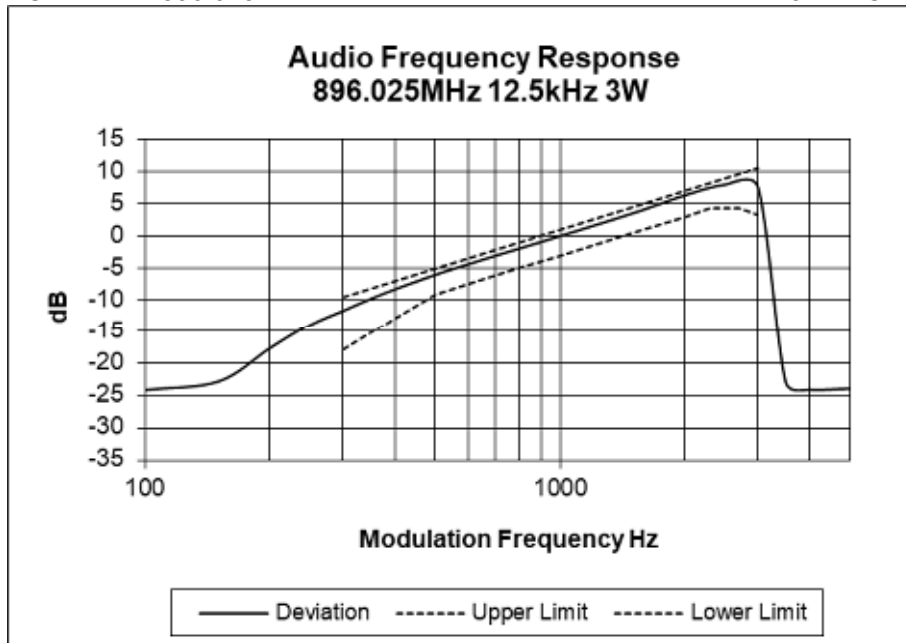


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 868.975 MHz 12.5 kHz Channel Spacing



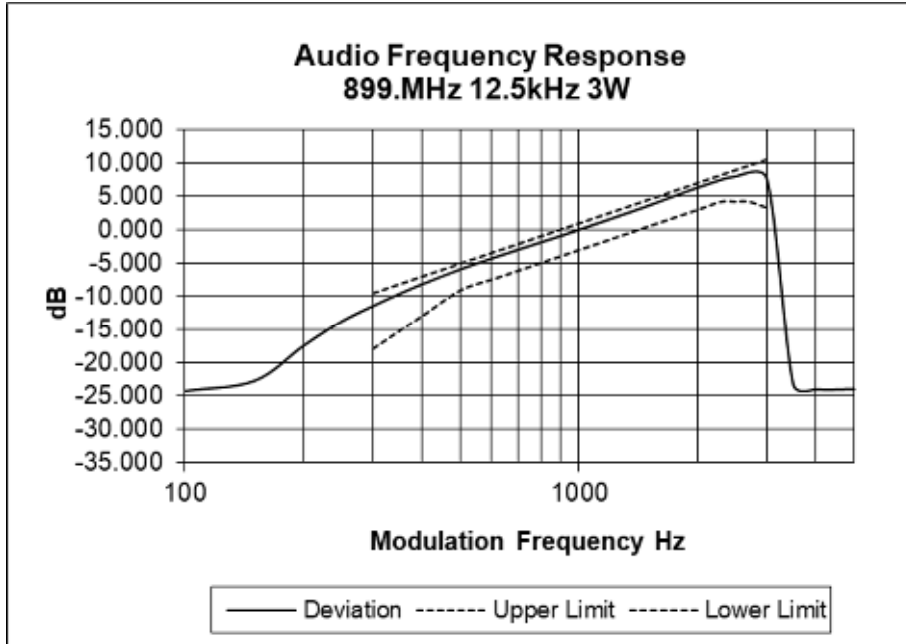
Tx FREQUENCY: 896.025 MHz 12.5 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

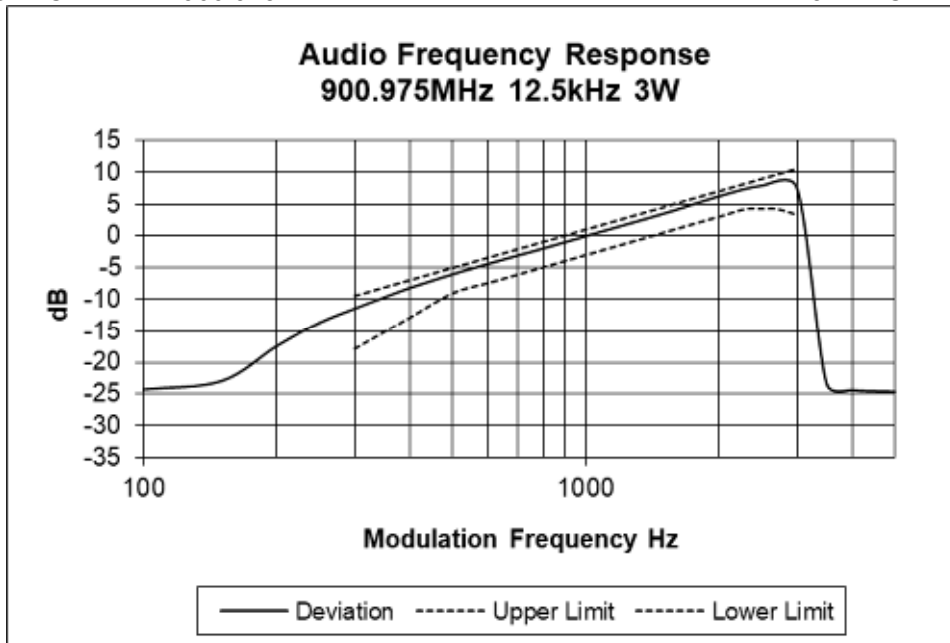
Tx FREQUENCY: 899.0 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 900.975 MHz

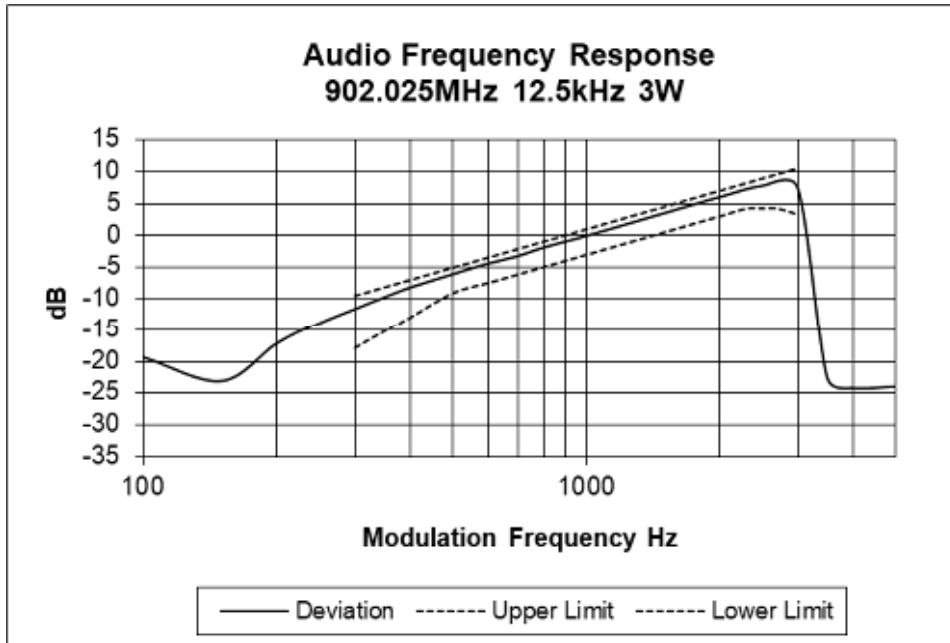
12.5 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

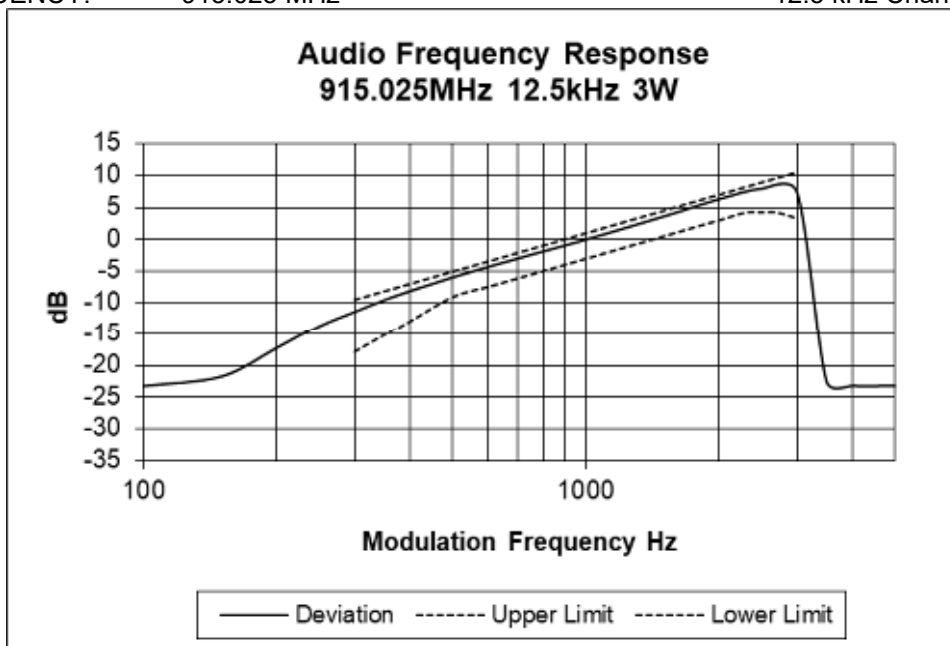
Tx FREQUENCY: 902.025 MHz

12.5 kHz Channel Spacing



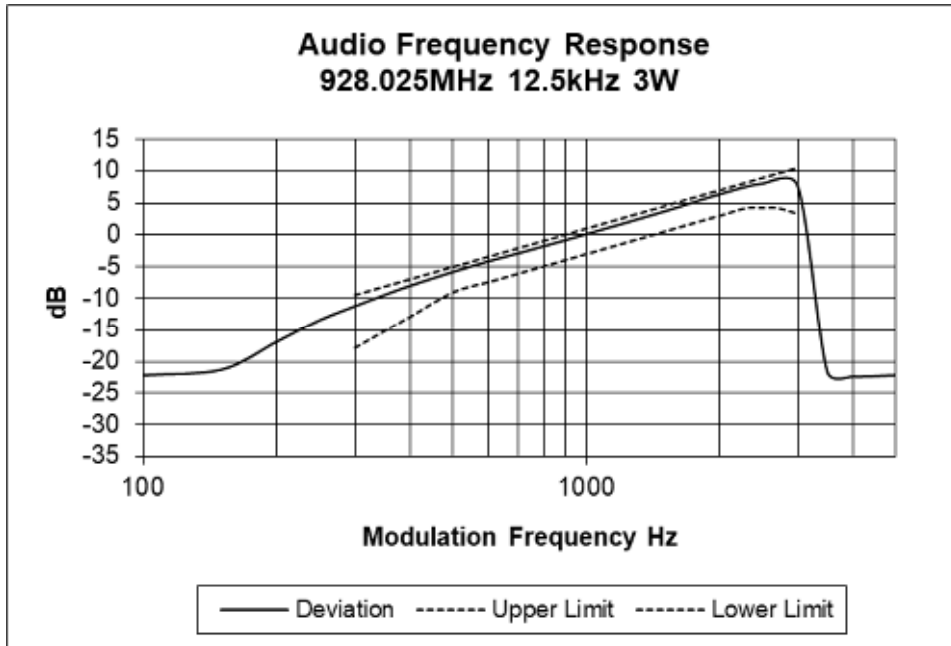
Tx FREQUENCY: 915.025 MHz

12.5 kHz Channel Spacing

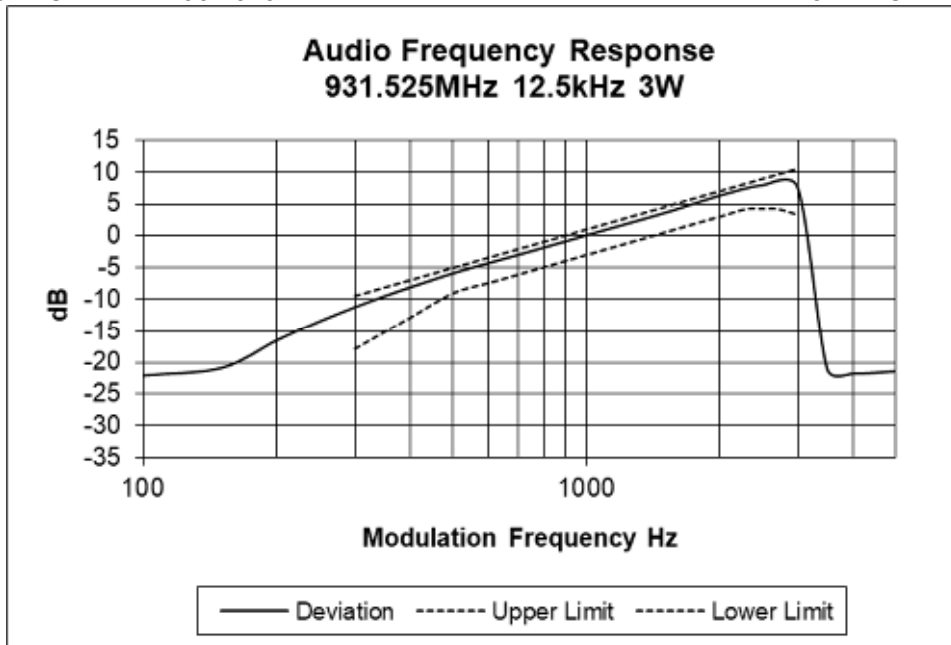


Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 928.025 MHz 12.5 kHz Channel Spacing



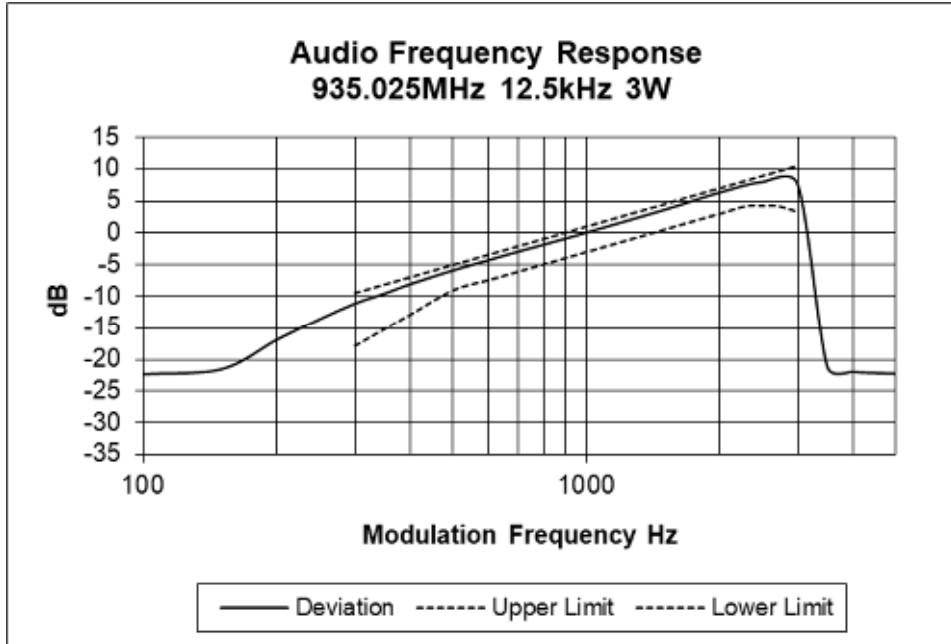
Tx FREQUENCY: 931.525 MHz 12.5 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

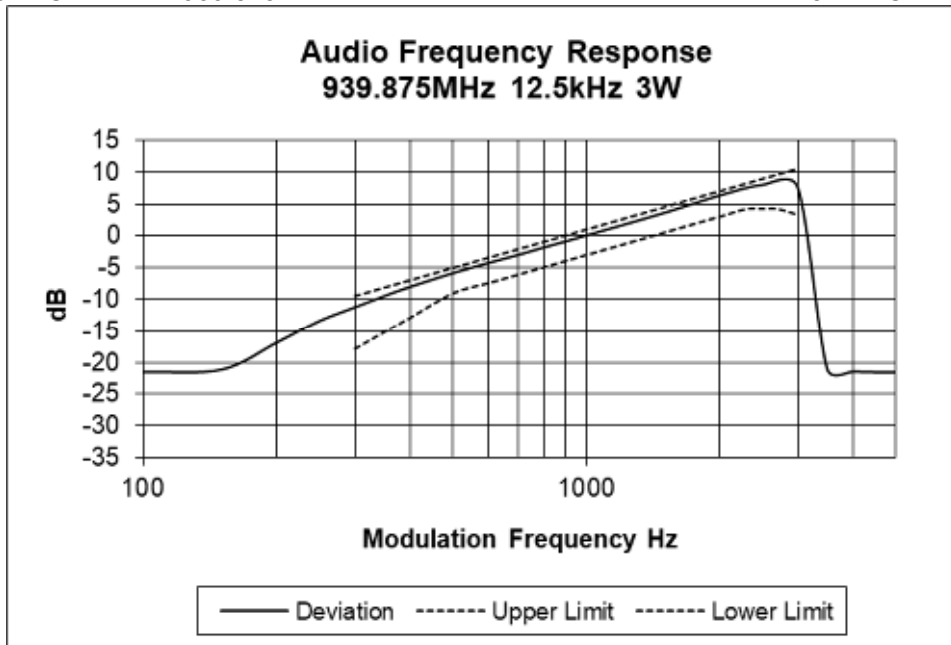
Tx FREQUENCY: 935.025 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 939.875 MHz

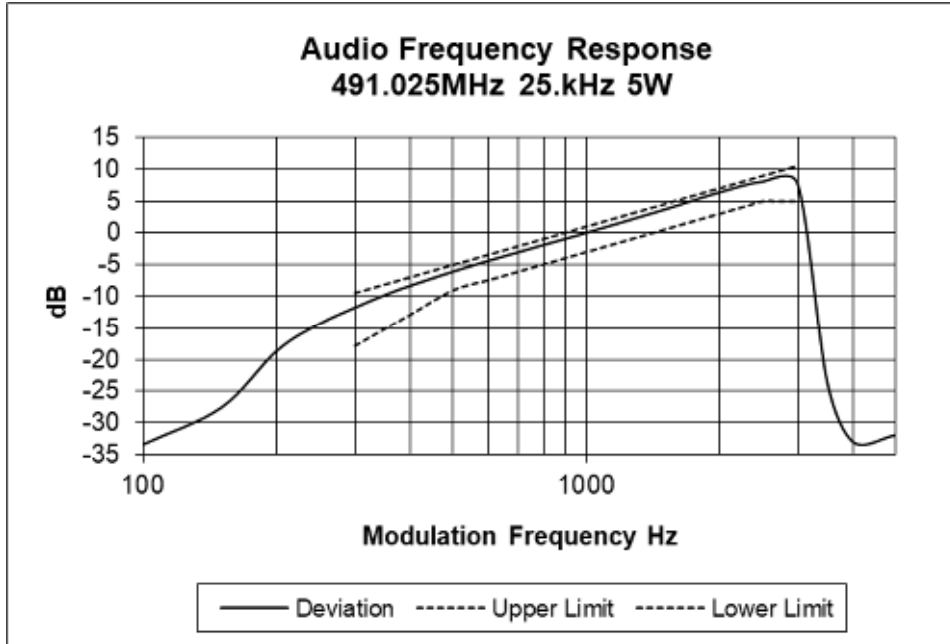
12.5 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

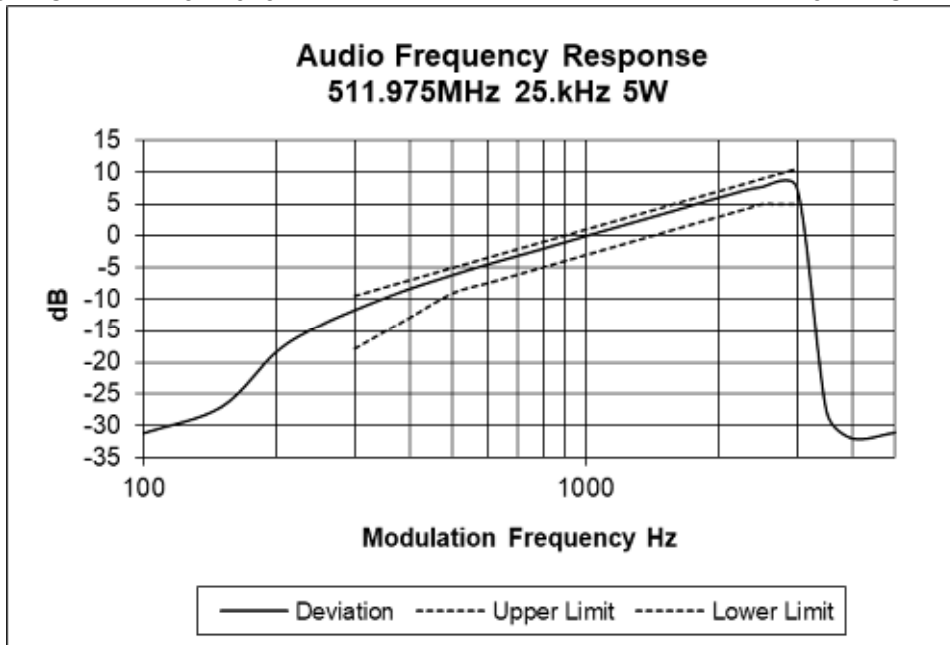
Tx FREQUENCY: 491.025 MHz

25 kHz Channel Spacing



Tx FREQUENCY: 511.975 MHz

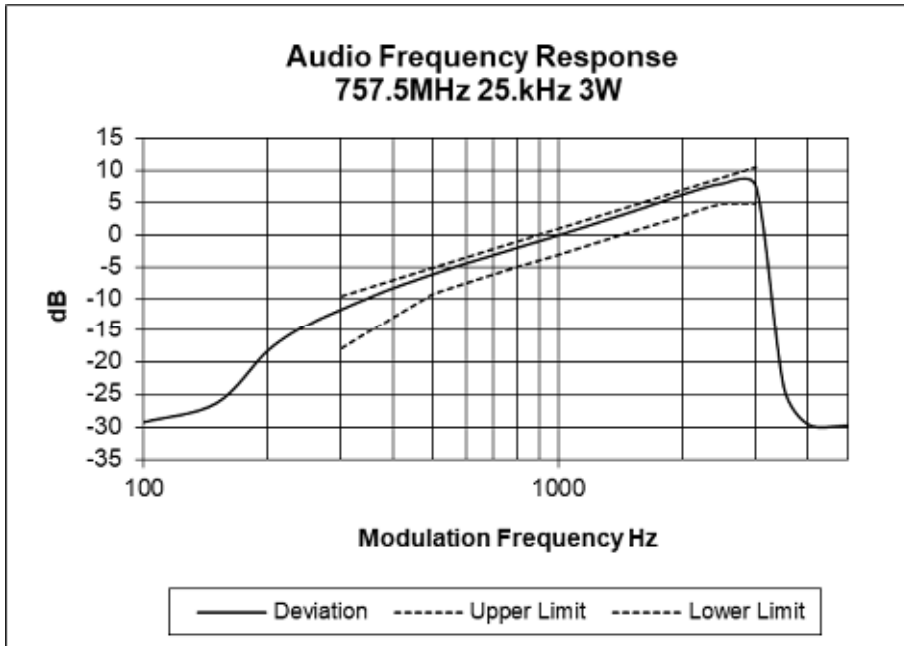
25 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

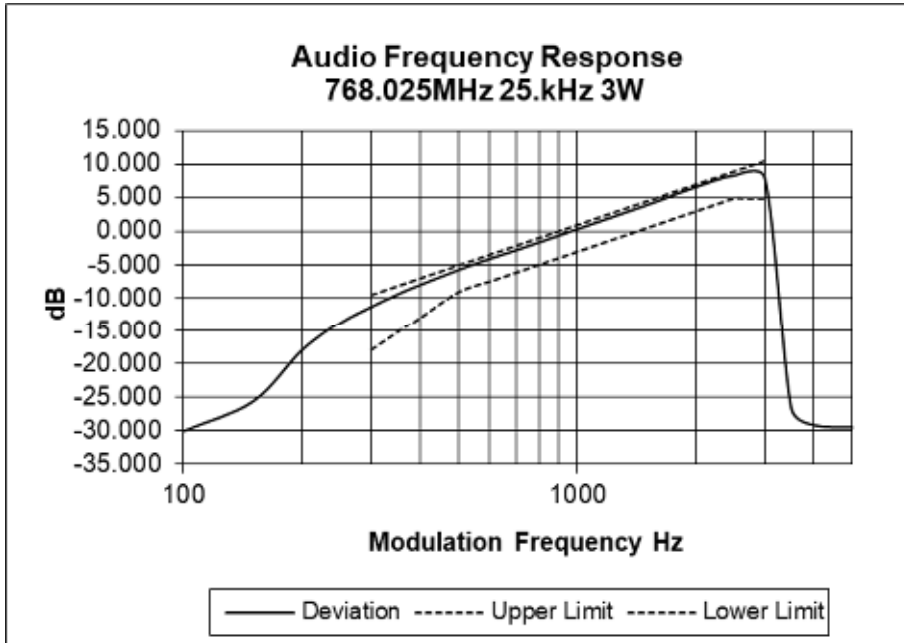
Tx FREQUENCY: 757.5 MHz

25 kHz Channel Spacing



Tx FREQUENCY: 768.025 MHz

25 kHz Channel Spacing

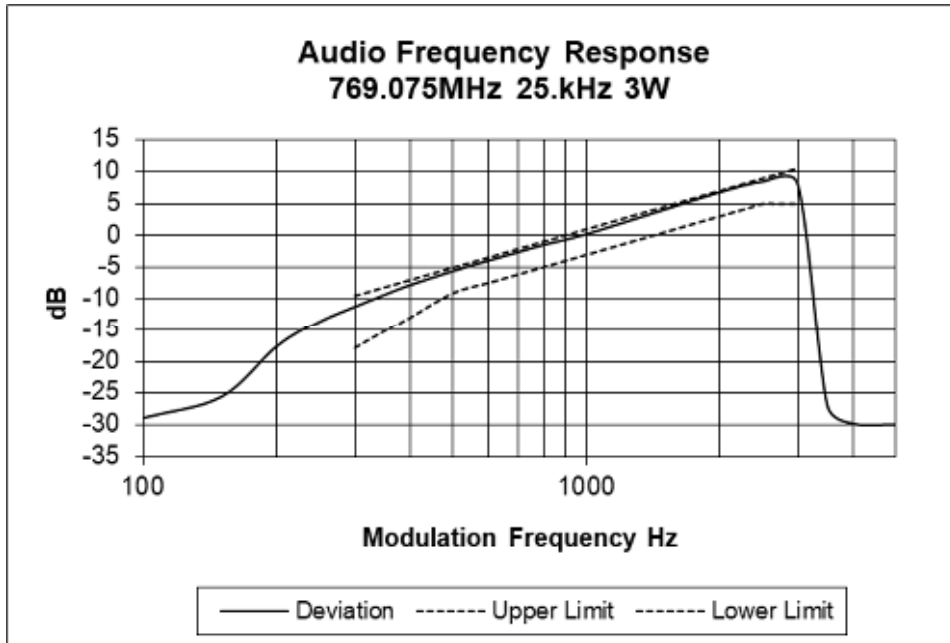




### Transmitter Audio Frequency Response – Pre-emphasis

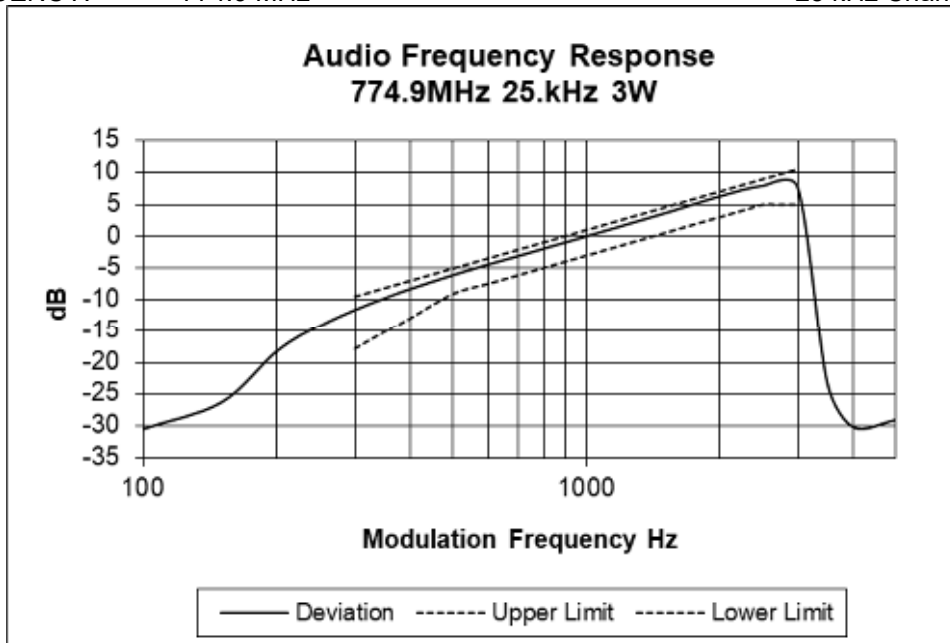
Tx FREQUENCY: 769.075 MHz

25 kHz Channel Spacing



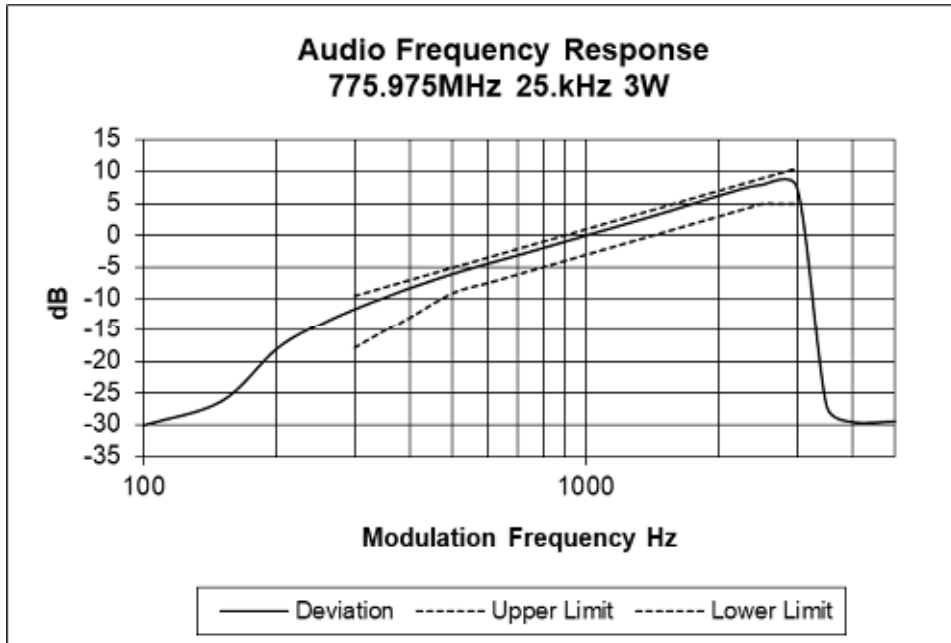
Tx FREQUENCY: 774.9 MHz

25 kHz Channel Spacing

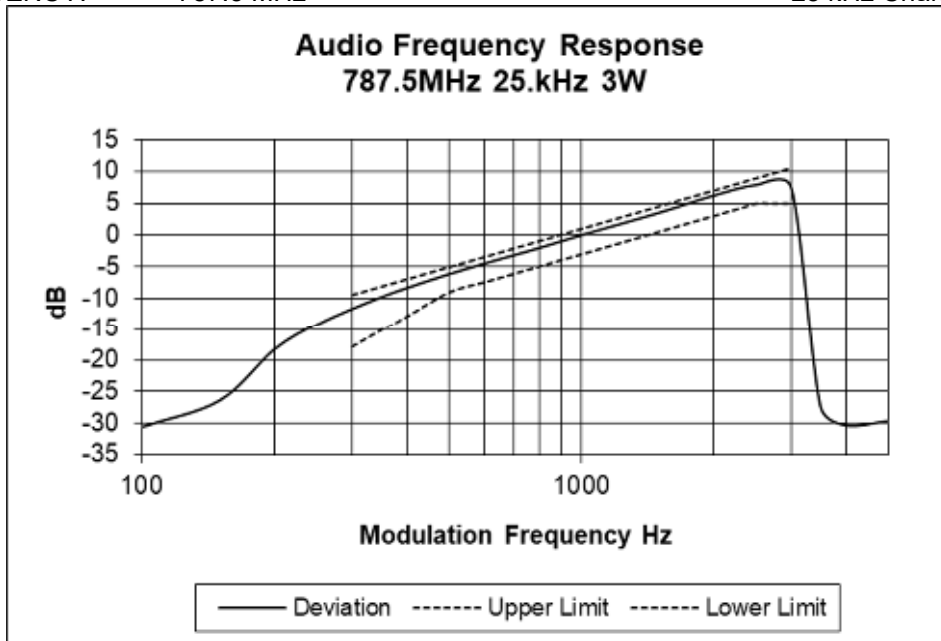


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 775.975 MHz 25 kHz Channel Spacing



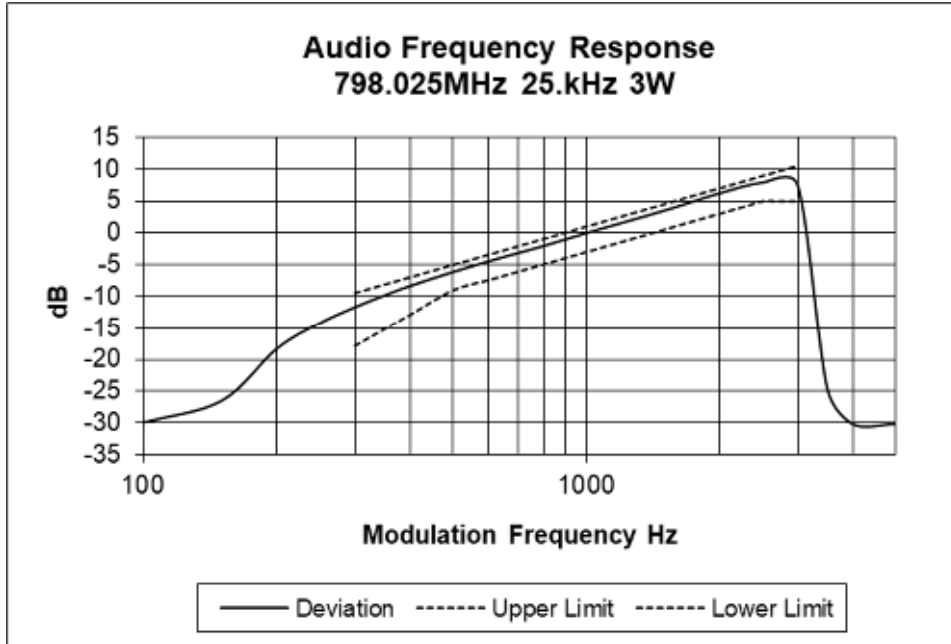
Tx FREQUENCY: 787.5 MHz 25 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

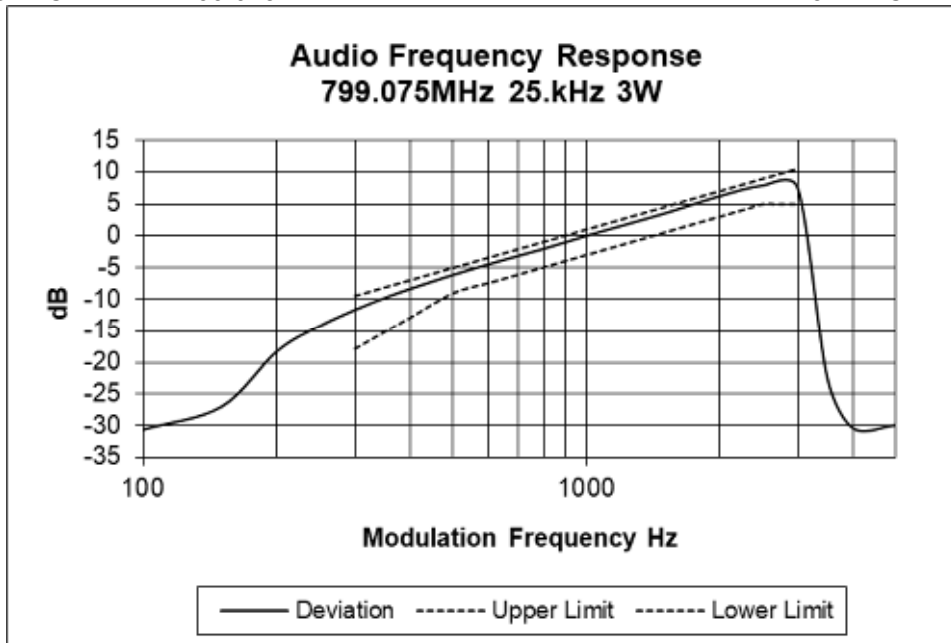
Tx FREQUENCY: 798.025 MHz

25 kHz Channel Spacing



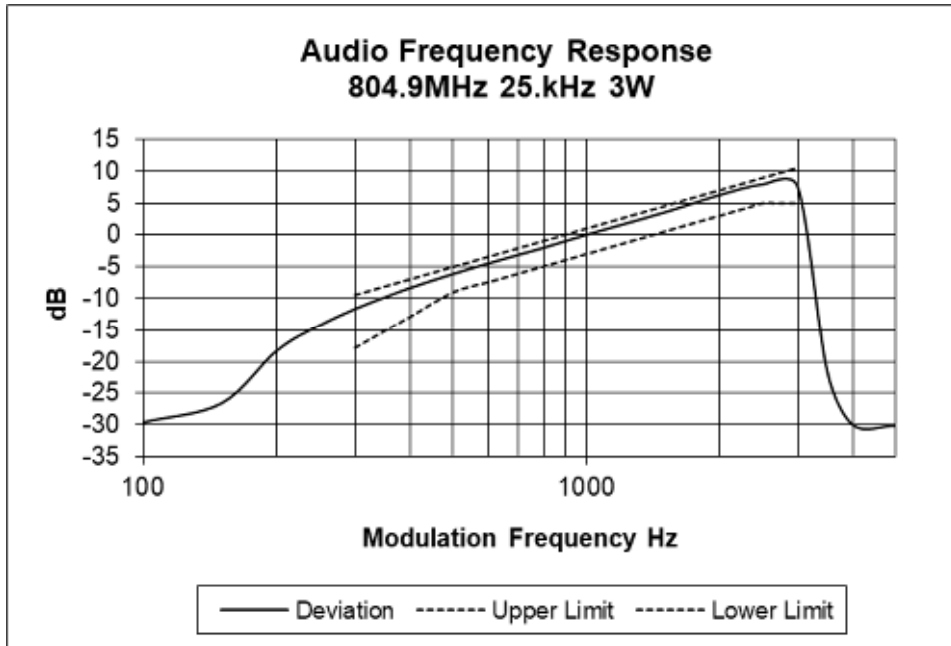
Tx FREQUENCY: 799.075 MHz

25 kHz Channel Spacing

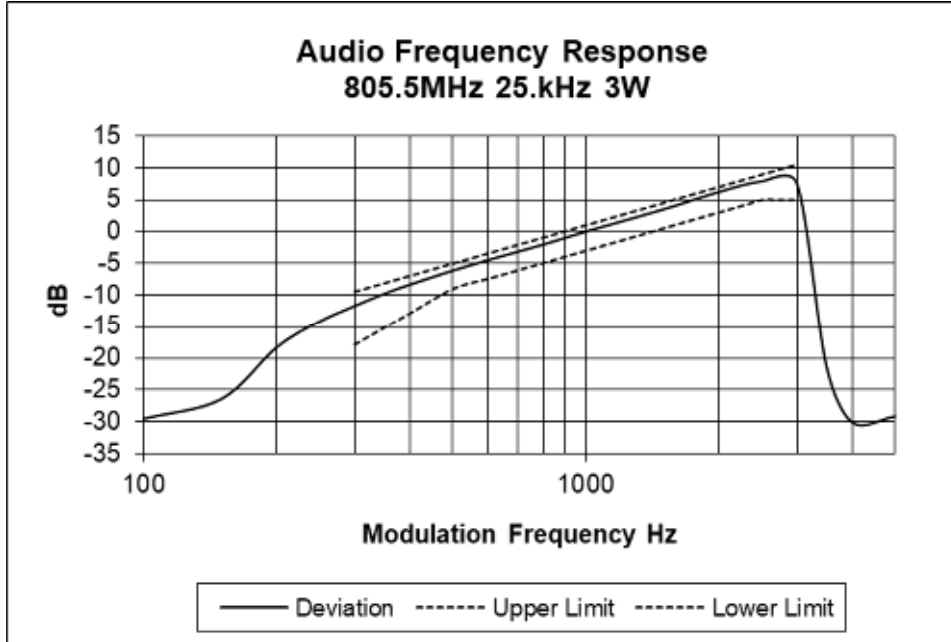


### Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 804.9 MHz 25 kHz Channel Spacing



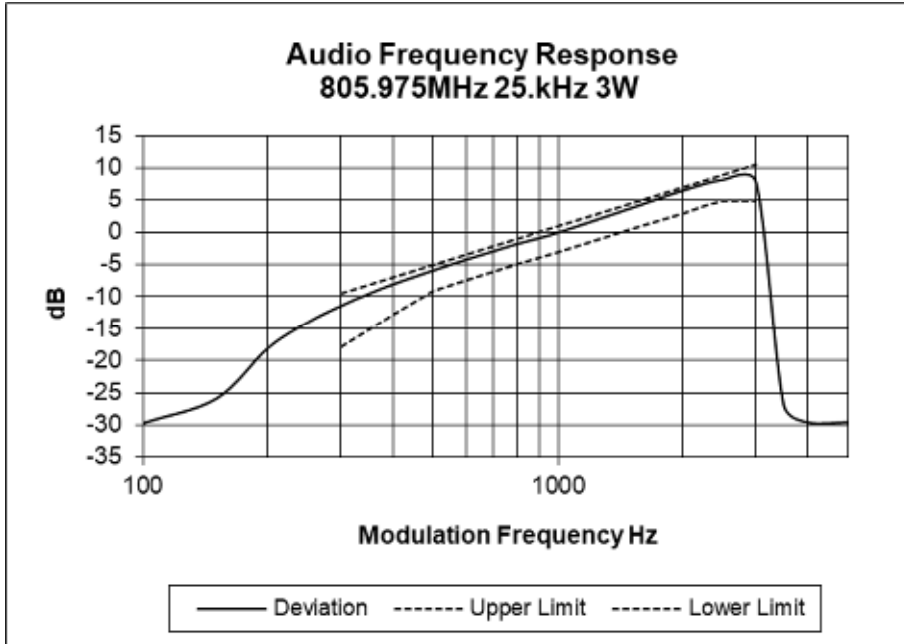
Tx FREQUENCY: 805.5 MHz 25 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

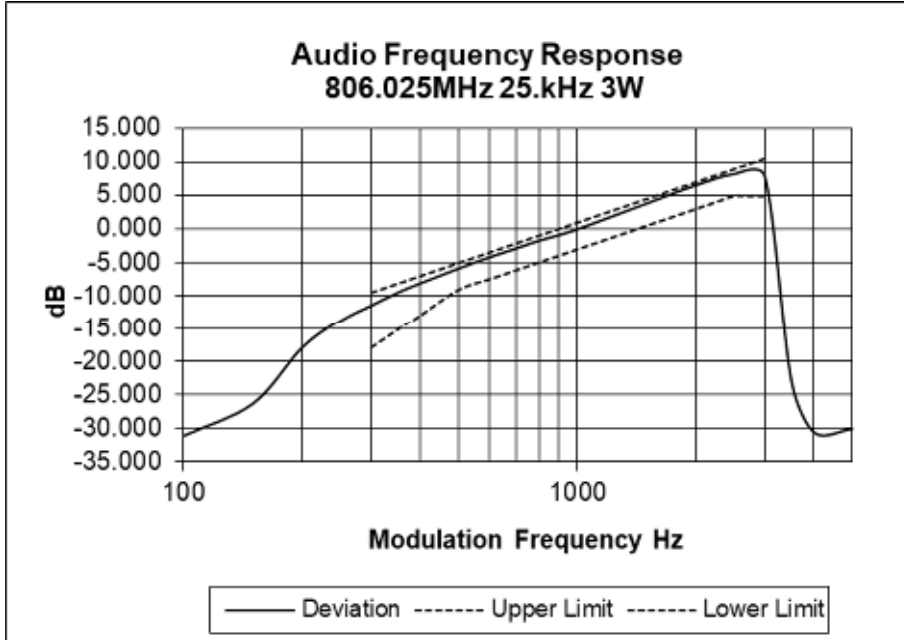
Tx FREQUENCY: 805.975 MHz

25 kHz Channel Spacing



Tx FREQUENCY: 806.025 MHz

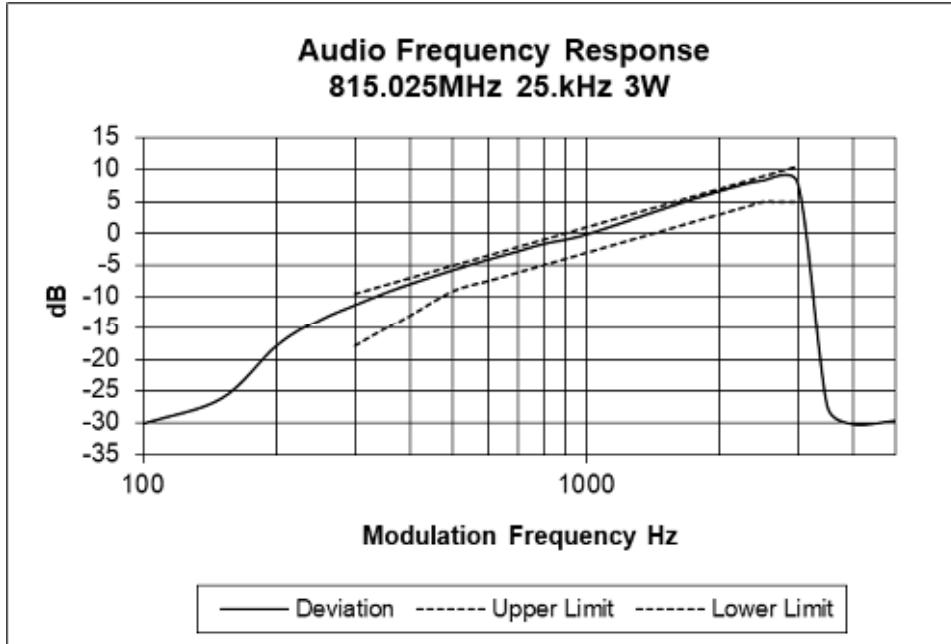
25 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

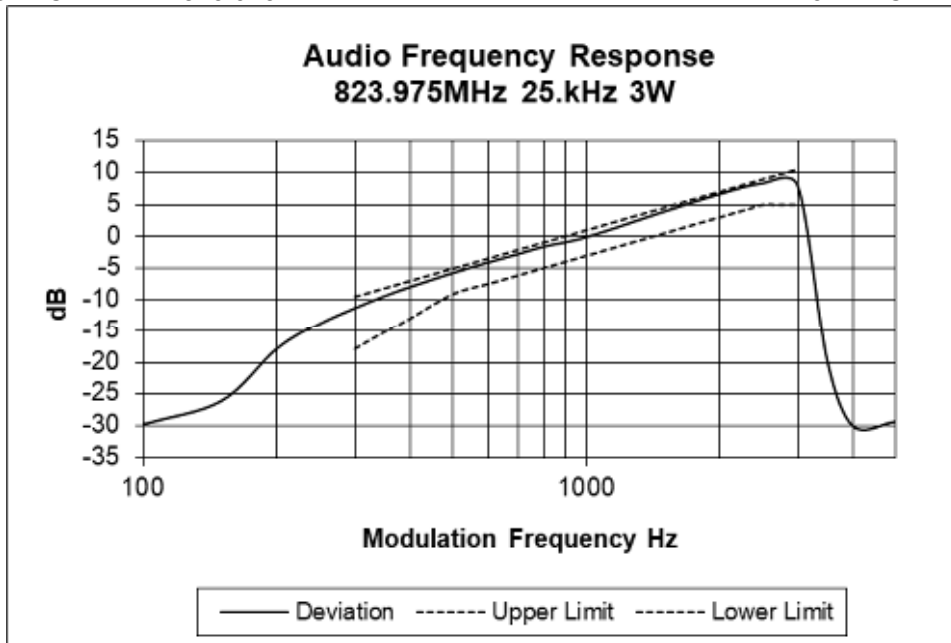
Tx FREQUENCY: 815.025 MHz

25 kHz Channel Spacing



Tx FREQUENCY: 823.975 MHz

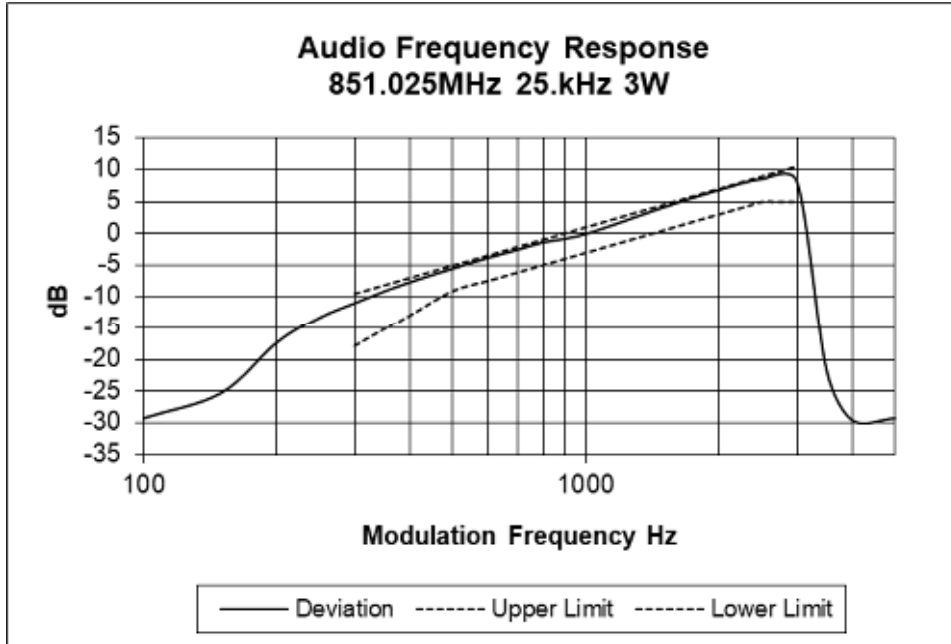
25 kHz Channel Spacing



### Transmitter Audio Frequency Response – Pre-emphasis

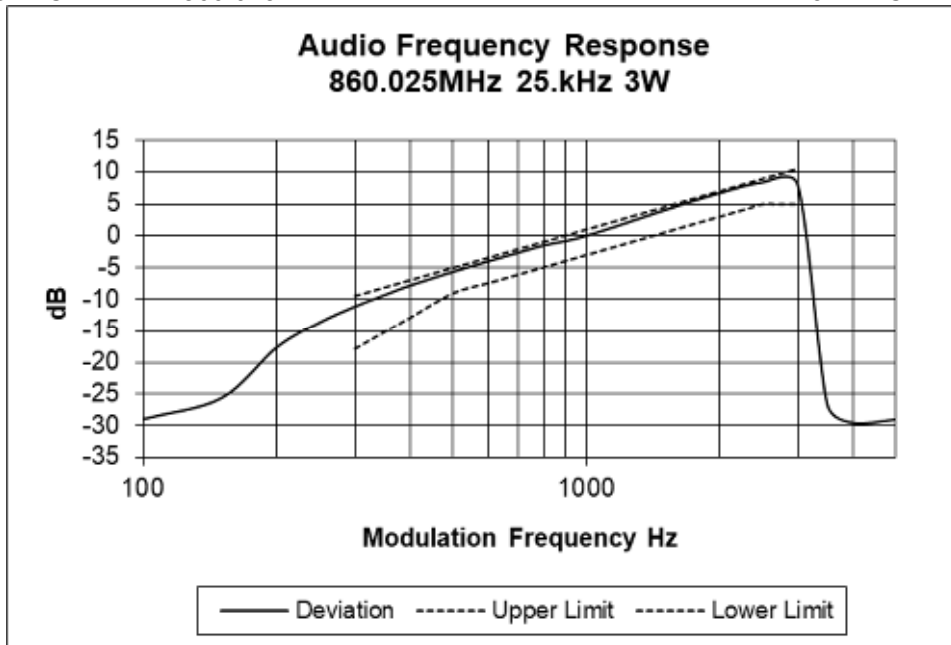
Tx FREQUENCY: 851.025 MHz

25 kHz Channel Spacing



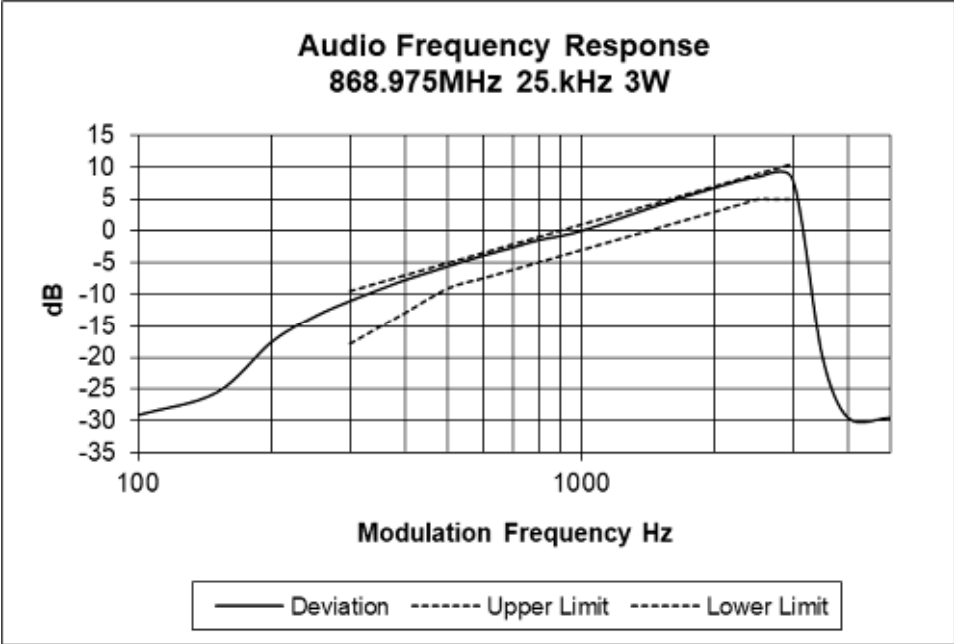
Tx FREQUENCY: 860.025 MHz

25 kHz Channel Spacing



Transmitter Audio Frequency Response – Pre-emphasis

Tx FREQUENCY: 868.975 MHz 25 kHz Channel Spacing





## TRANSMITTER MODULATION LIMITING

SPECIFICATION: FCC 47 CFR 2.1047 (b)

GUIDE: ANSI C63.26 5.3.2

### MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment set up.
2. An audio input tone of 1000 Hz was applied with the level set to obtain 60% of maximum deviation. This was used as the 0 dB reference point.
3. The modulation response was measured at four audio frequencies while increasing the input level in 5dB steps.
4. Additionally the level used to measure sideband spectrum (occupied bandwidth) was included in the level sweep.
5. Measurements were made for both Positive and Negative Deviation.

### MEASUREMENT RESULTS:

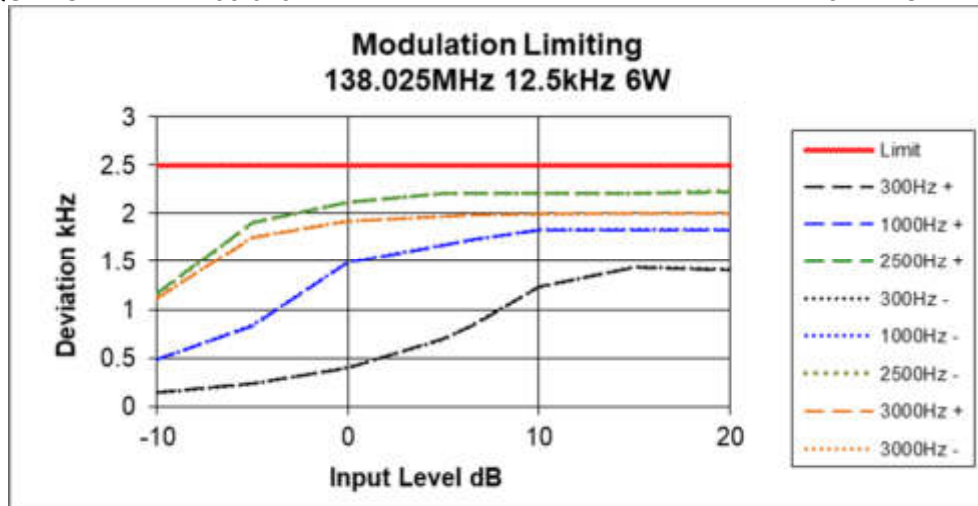
See the plots on the following pages for 12.5 kHz and 25 kHz channel spacing.

LIMIT CLAUSE: TIA/EIA-603E 1.3.4.4

MEASUREMENT UNCERTAINTY:  $\pm 1.5\%$

Tx FREQUENCY: 138.025 MHz

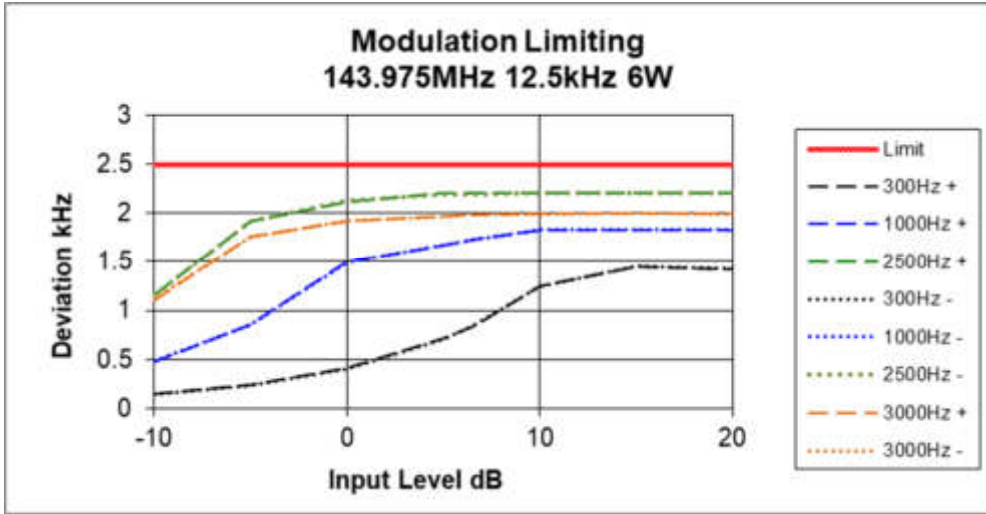
12.5 kHz Channel Spacing



### Transmitter Modulation Limiting

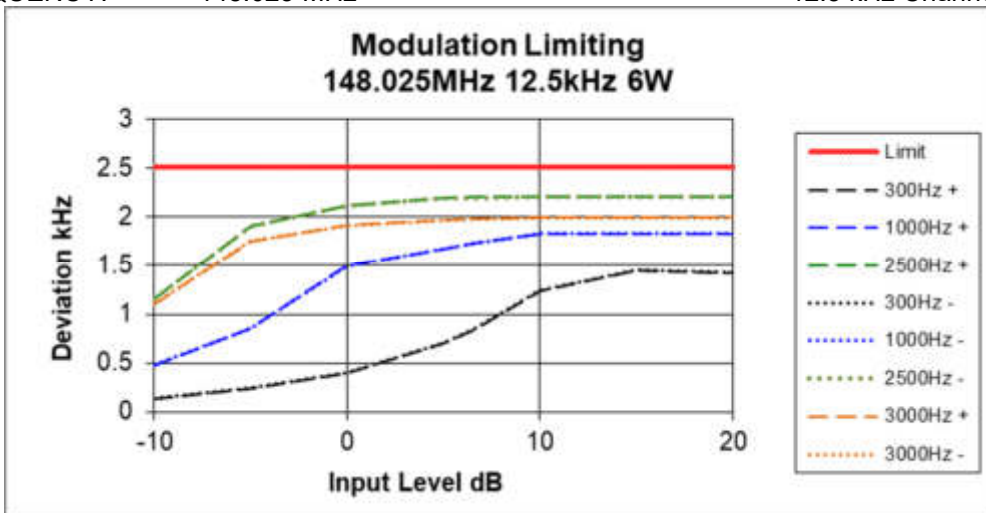
Tx FREQUENCY: 143.975 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 148.025 MHz

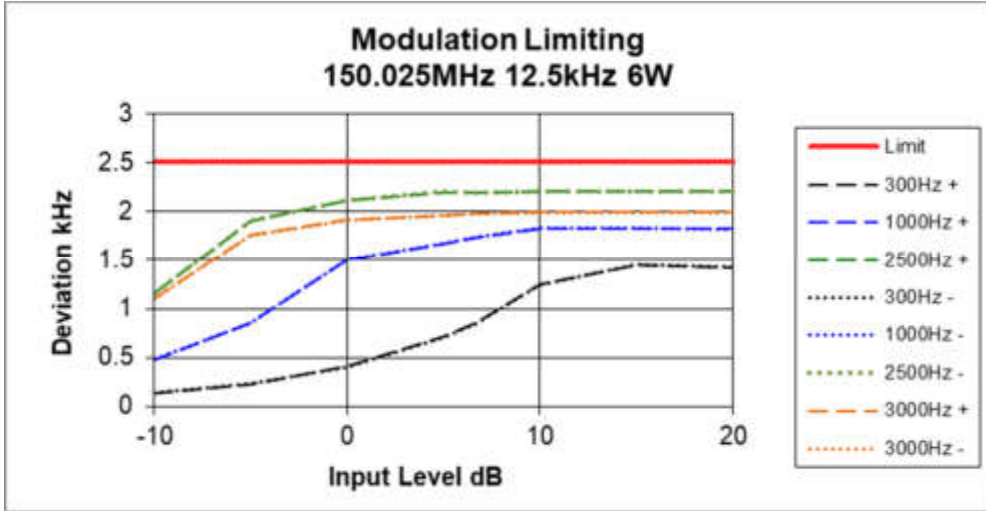
12.5 kHz Channel Spacing



### Transmitter Modulation Limiting

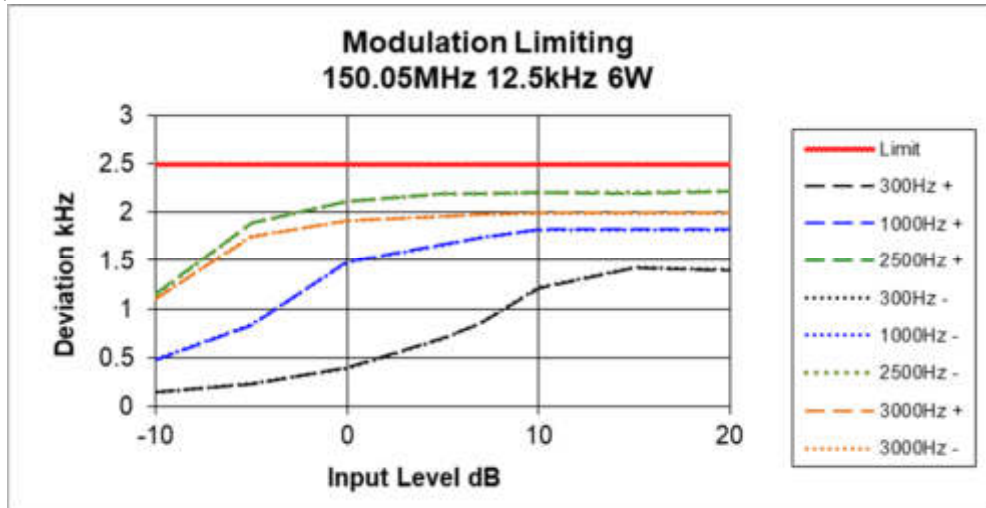
Tx FREQUENCY: 150.025 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 150.05 MHz

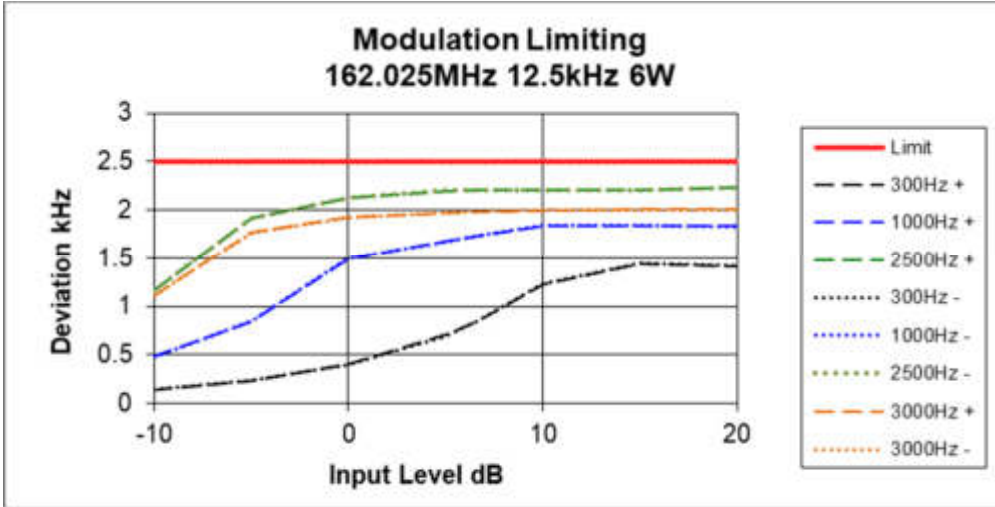
12.5 kHz Channel Spacing



### Transmitter Modulation Limiting

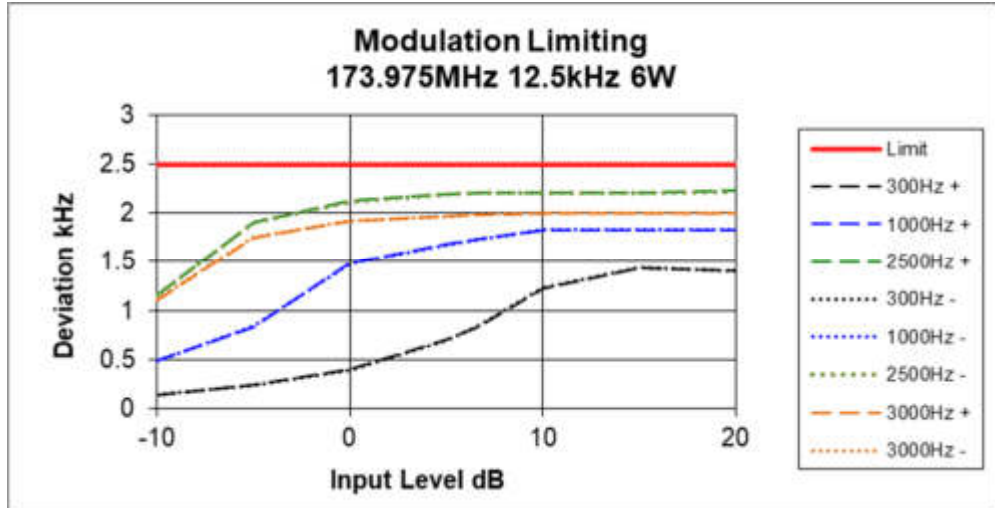
Tx FREQUENCY: 162.025 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 173.975 MHz

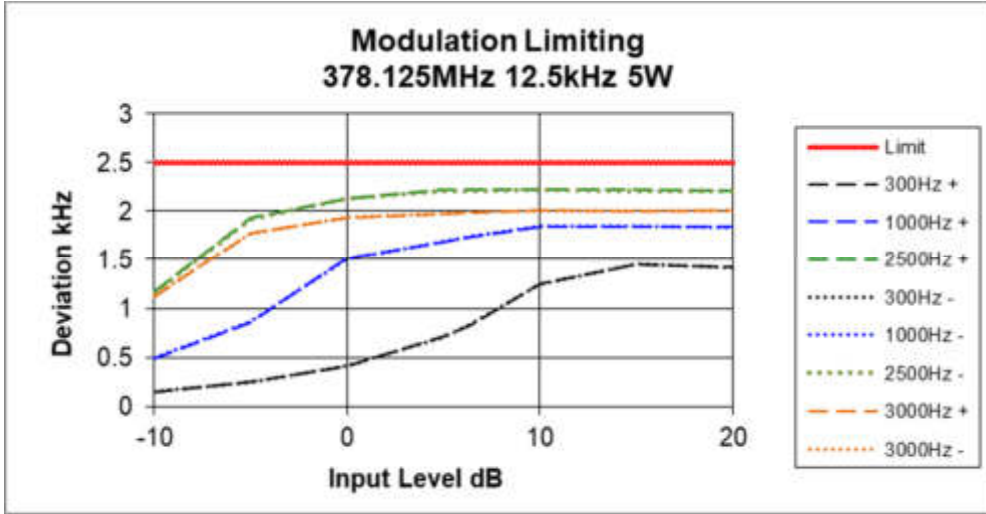
12.5 kHz Channel Spacing



### Transmitter Modulation Limiting

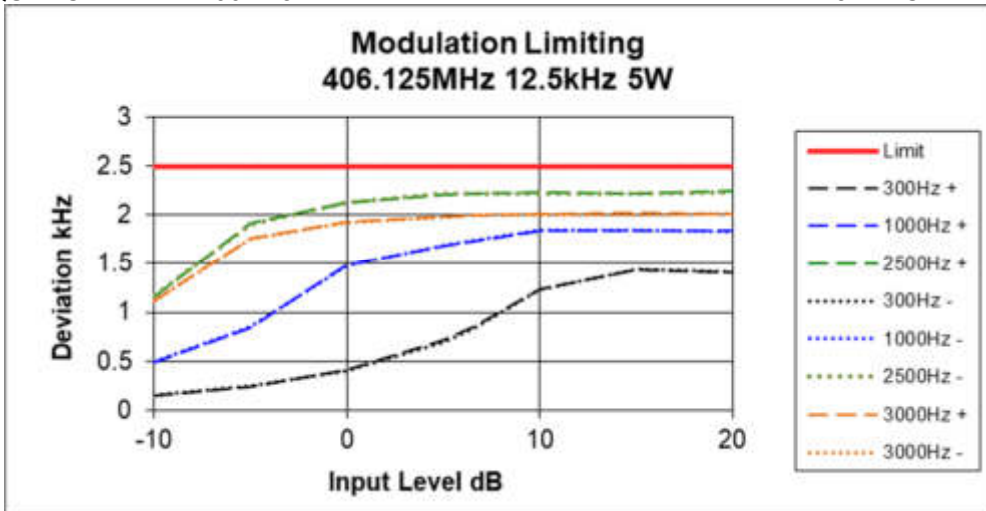
Tx FREQUENCY: 378.125 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 406.125 MHz

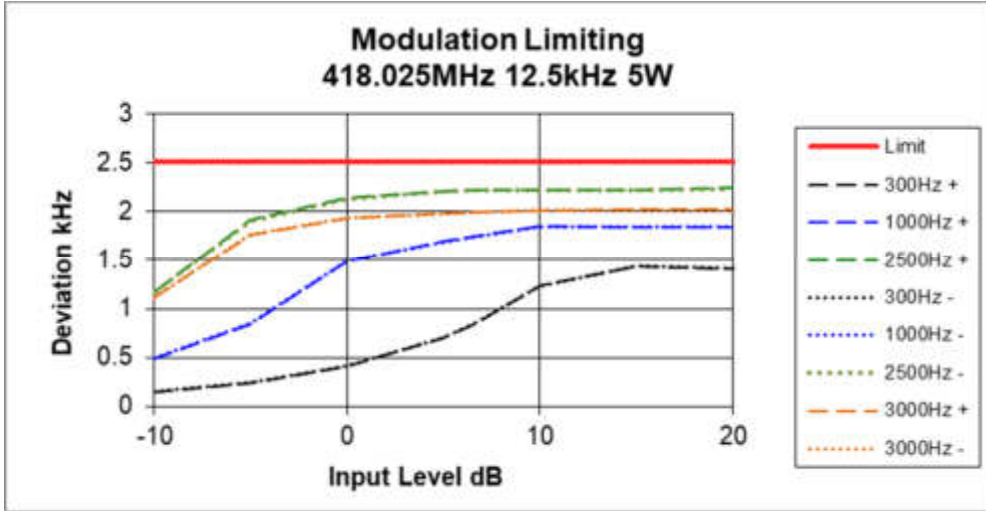
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

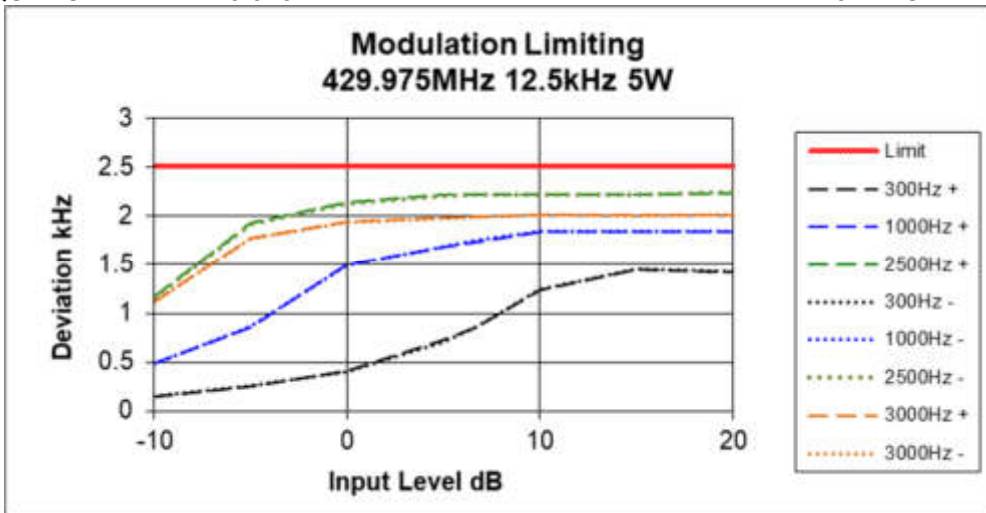
Tx FREQUENCY: 418.025 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 429.975 MHz

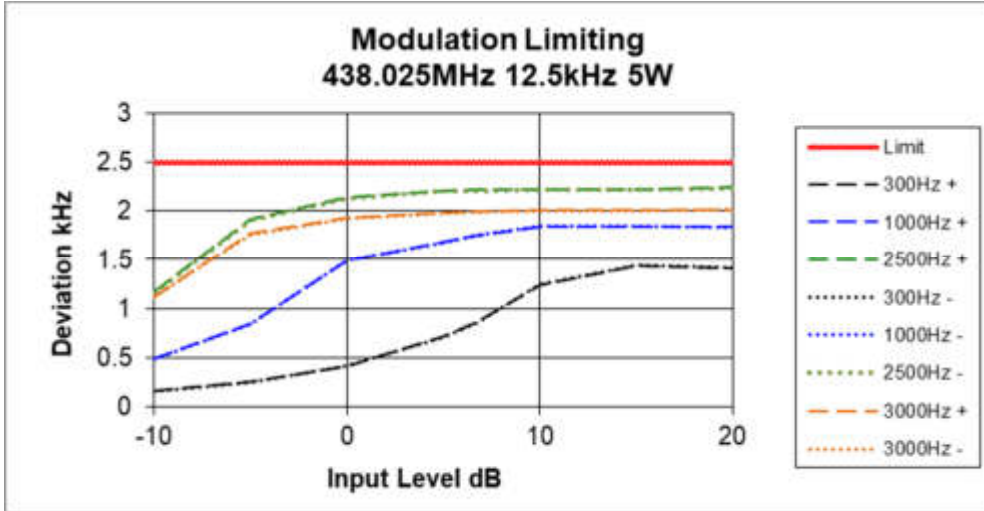
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

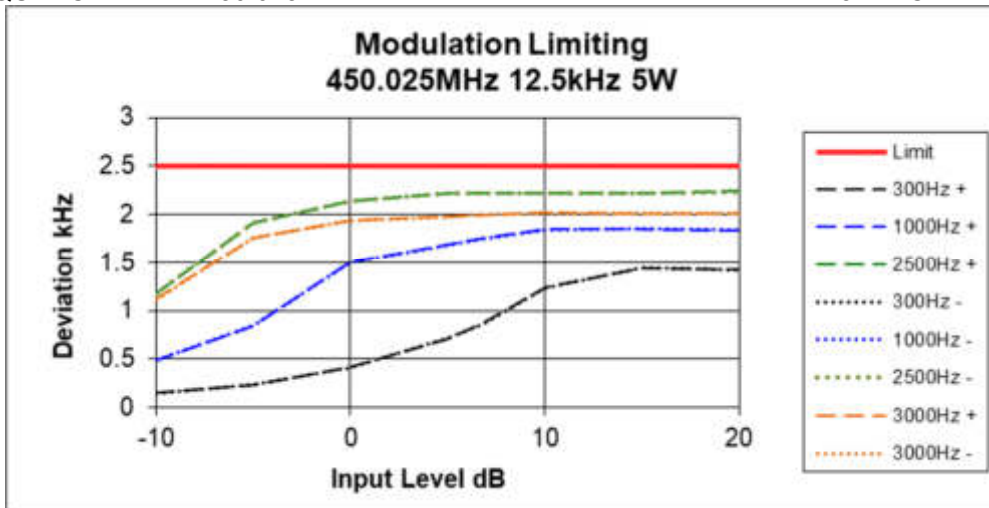
Tx FREQUENCY: 438.025 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 450.025 MHz

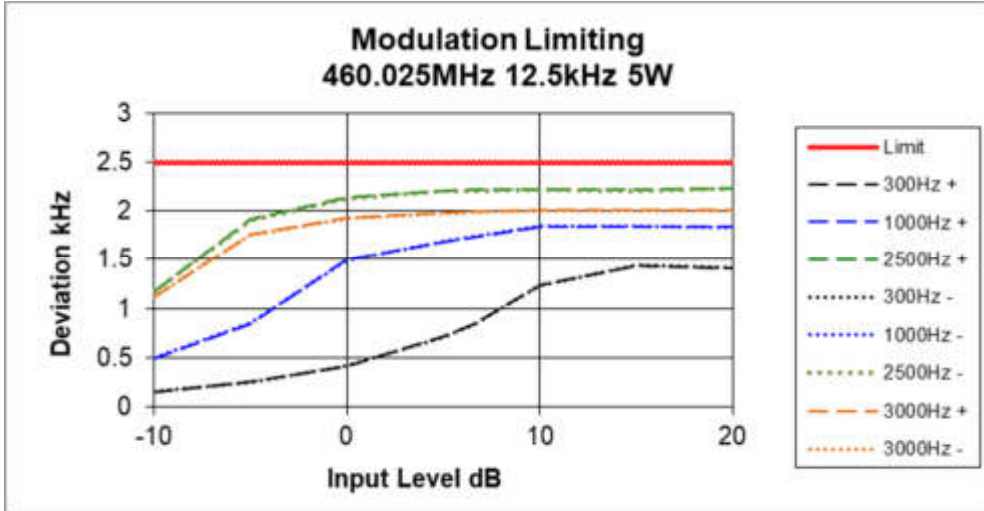
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

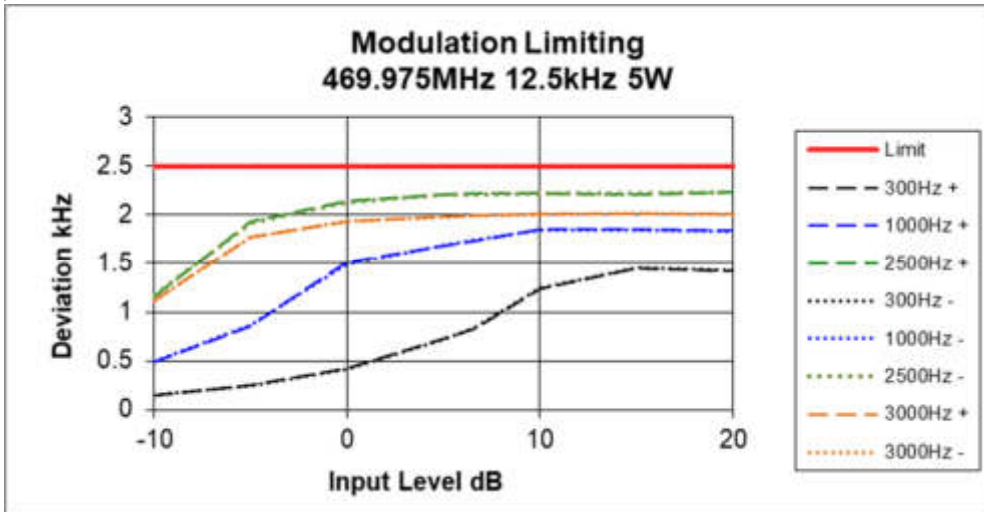
Tx FREQUENCY: 460.025 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 469.975 MHz

12.5kHz Channel Spacing

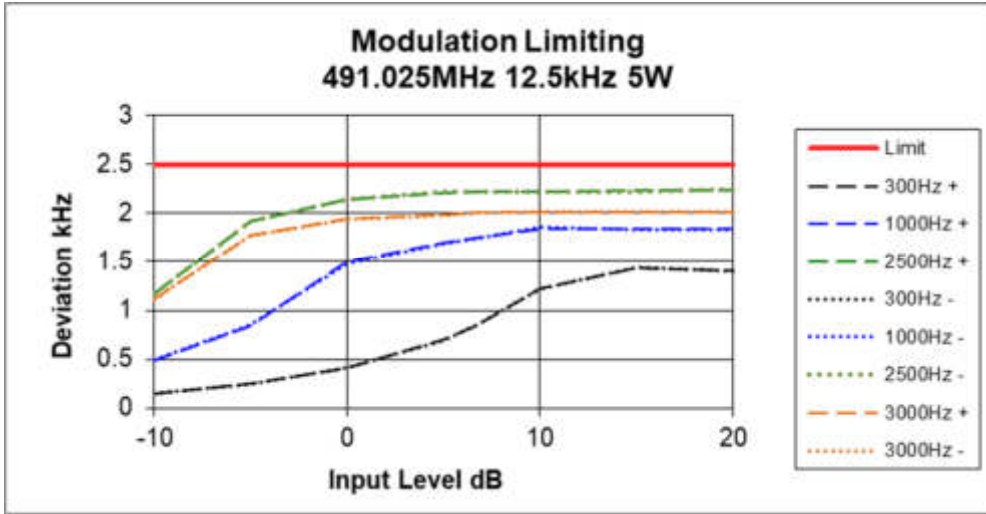




### Transmitter Modulation Limiting

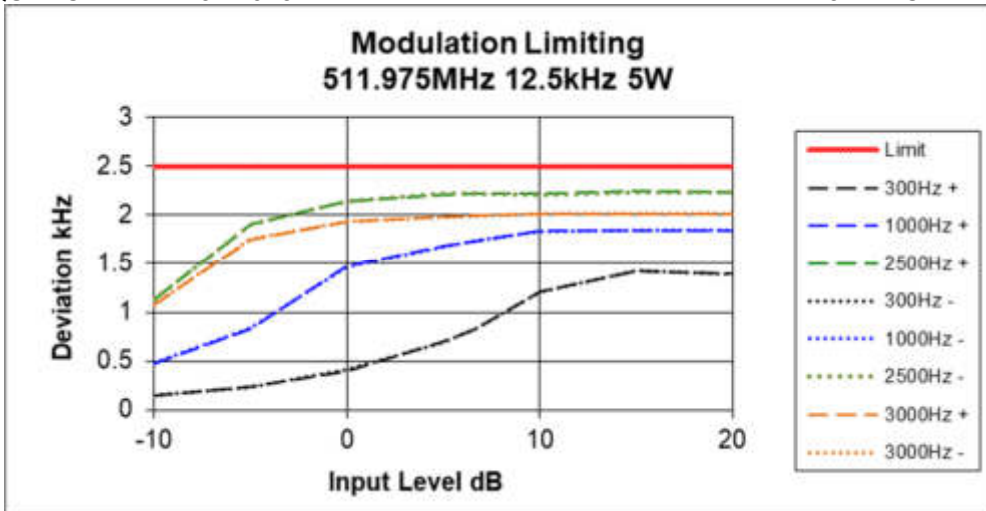
Tx FREQUENCY: 491.025 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 511.975 MHz

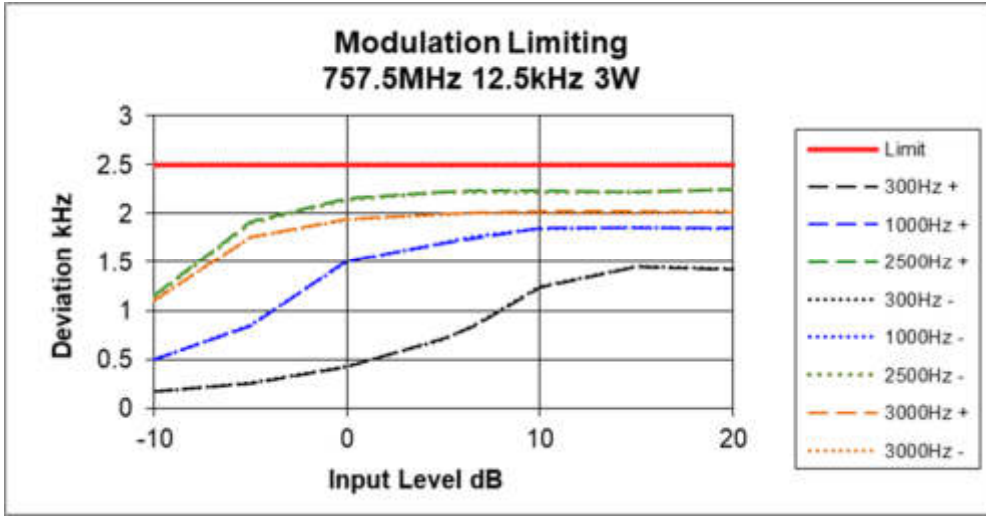
12.5 kHz Channel Spacing



### Transmitter Modulation Limiting

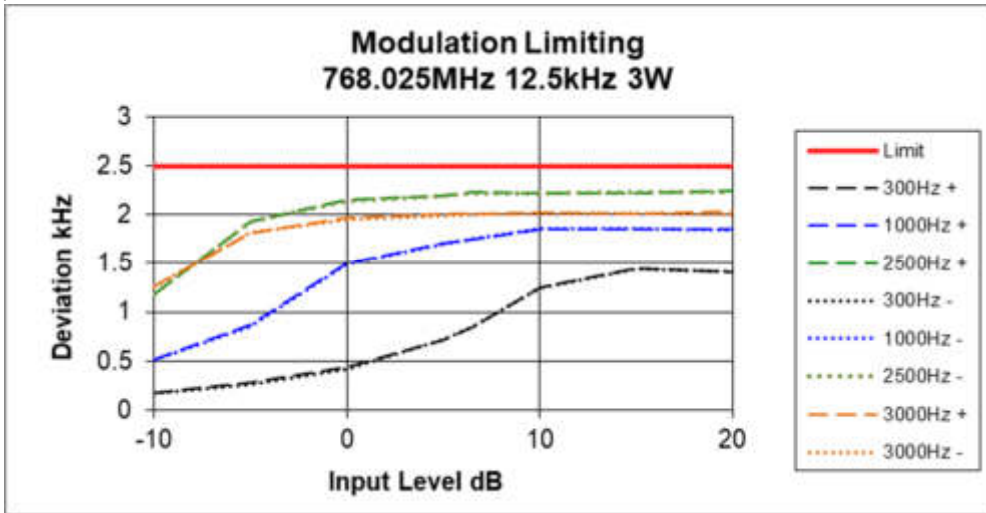
Tx FREQUENCY: 757.5 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 768.025 MHz

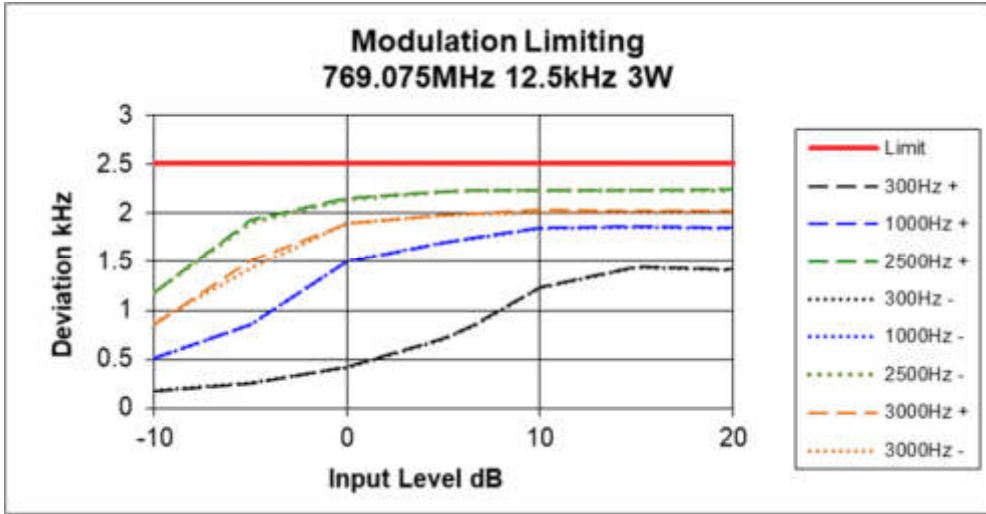
12.5 kHz Channel Spacing



### Transmitter Modulation Limiting

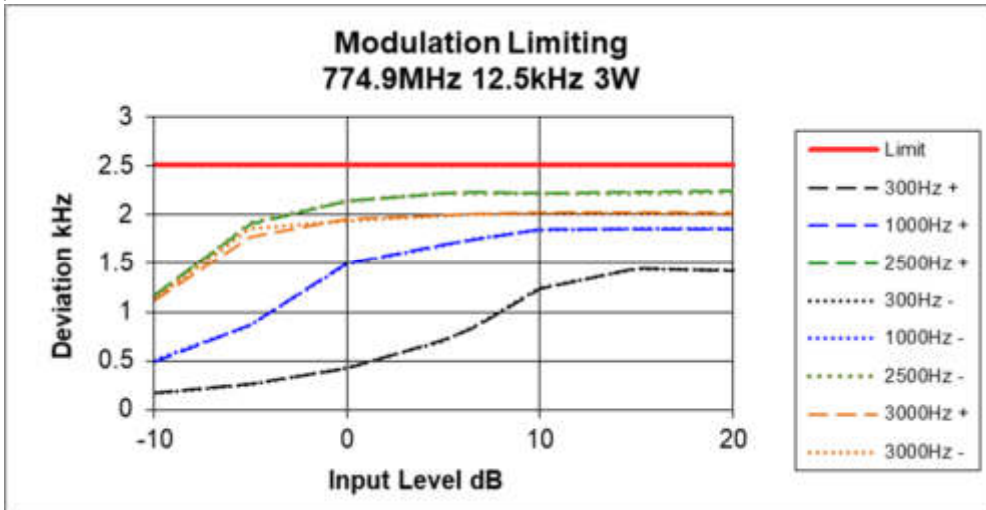
Tx FREQUENCY: 769.075 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 774.9 MHz

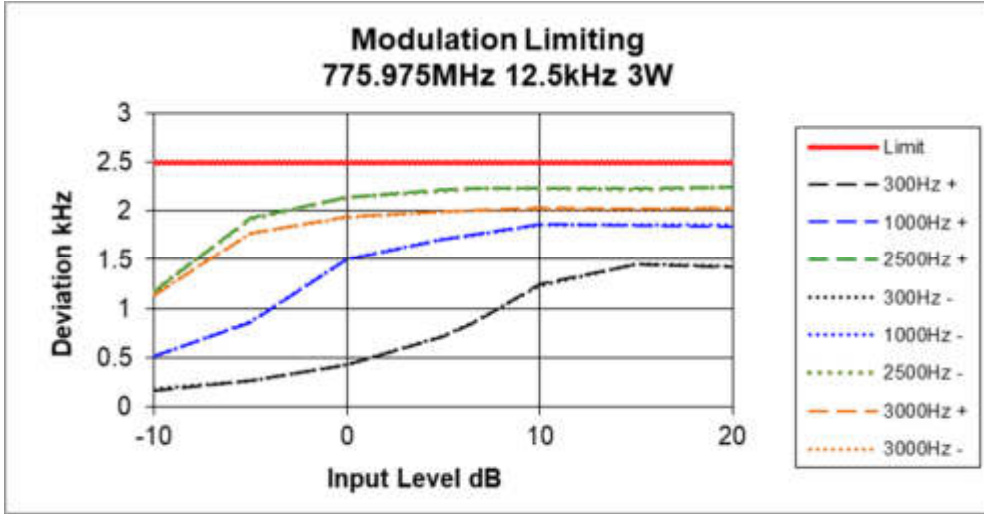
12.5 kHz Channel Spacing



### Transmitter Modulation Limiting

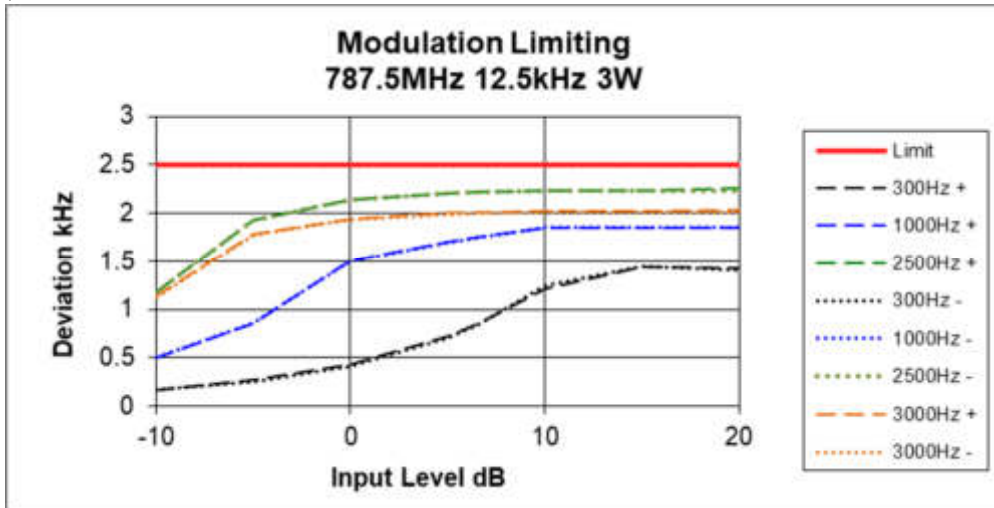
Tx FREQUENCY: 775.975 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 787.5 MHz

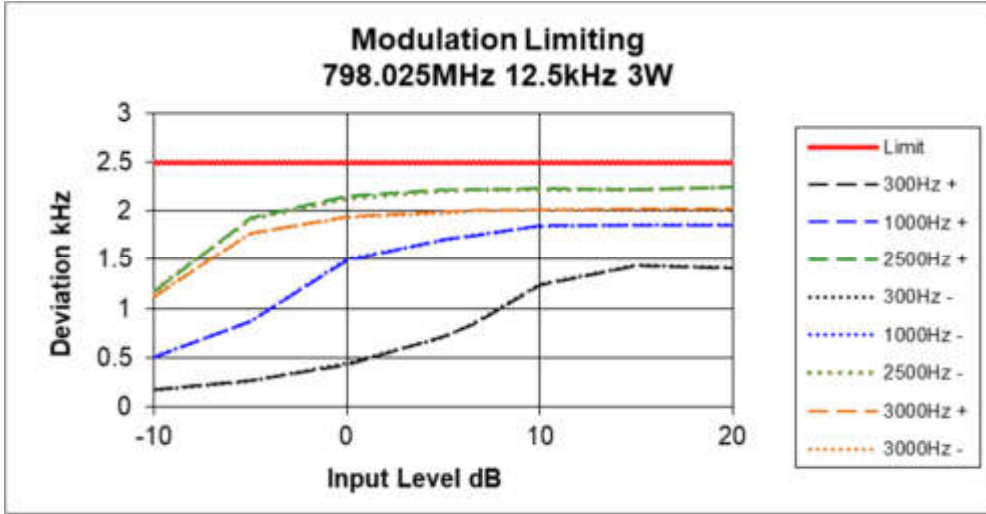
12.5 kHz Channel Spacing



### Transmitter Modulation Limiting

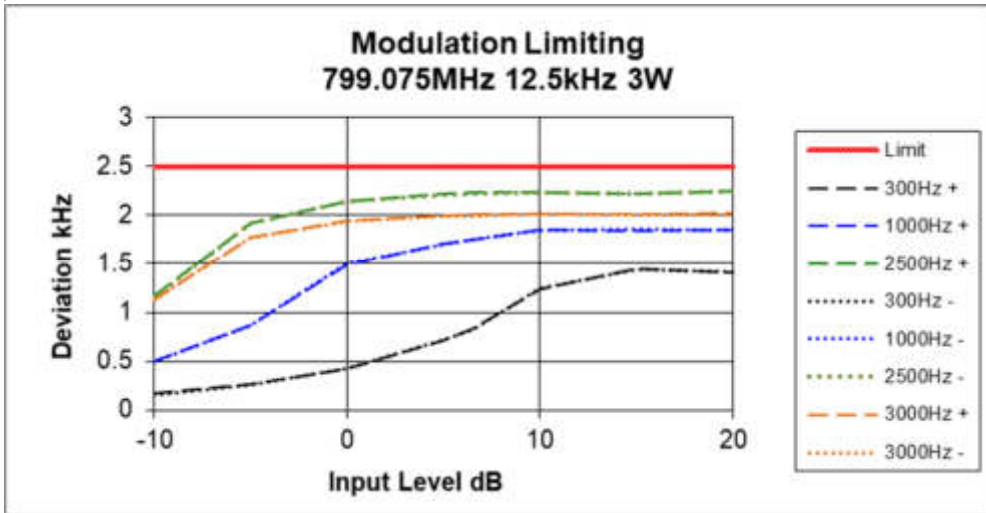
Tx FREQUENCY: 798.025 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 799.075 MHz

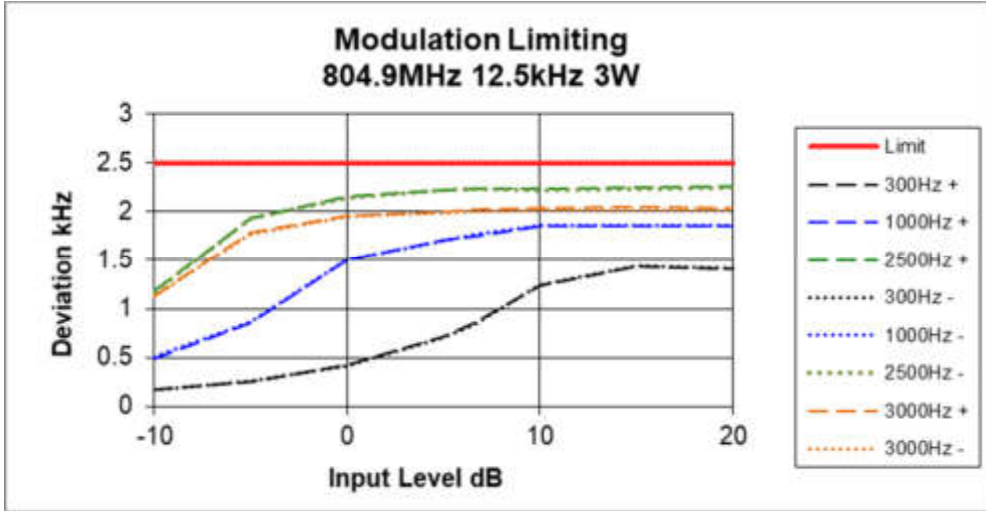
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

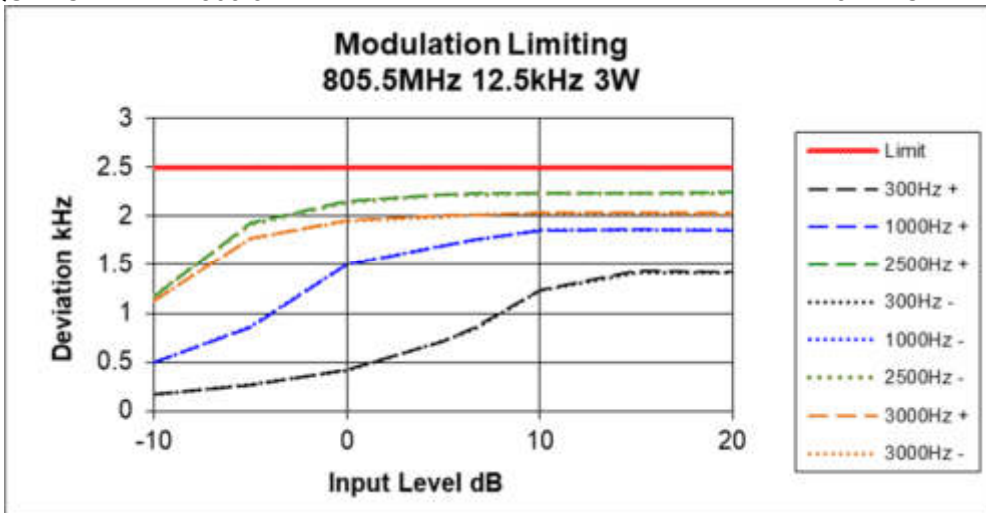
Tx FREQUENCY: 804.9 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 805.5 MHz

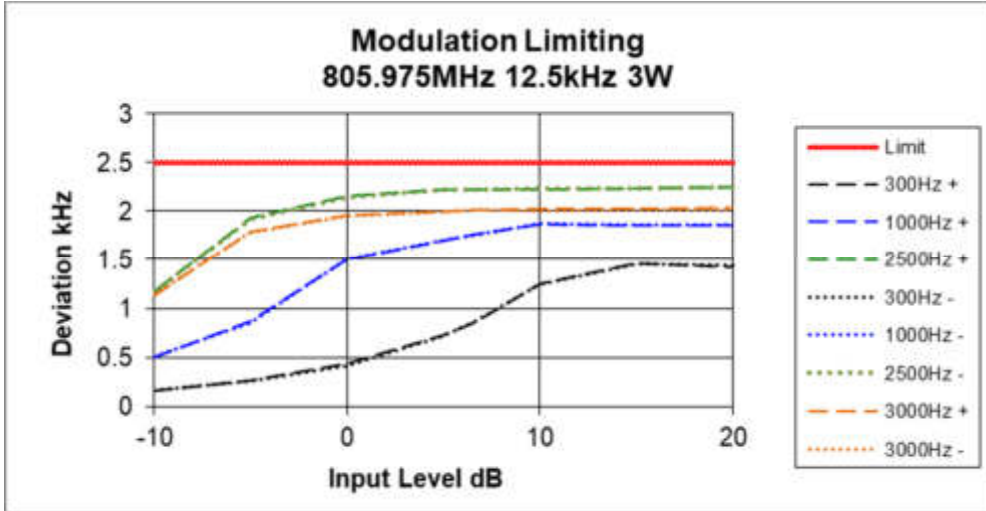
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

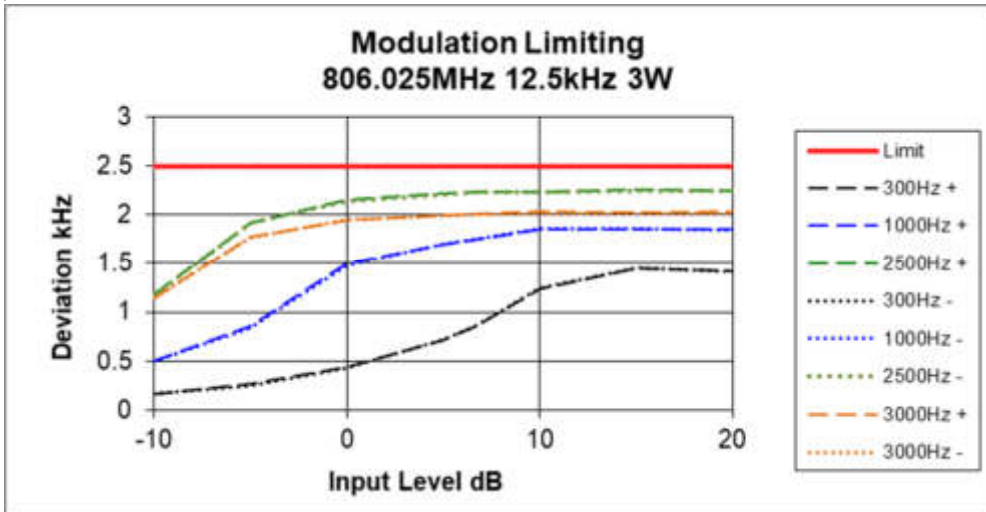
Tx FREQUENCY: 805.975 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 806.025 MHz

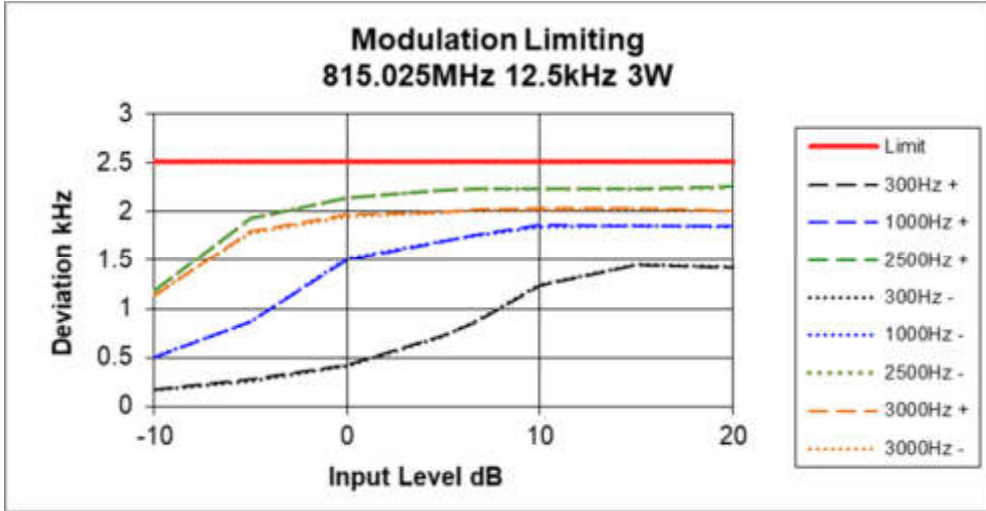
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

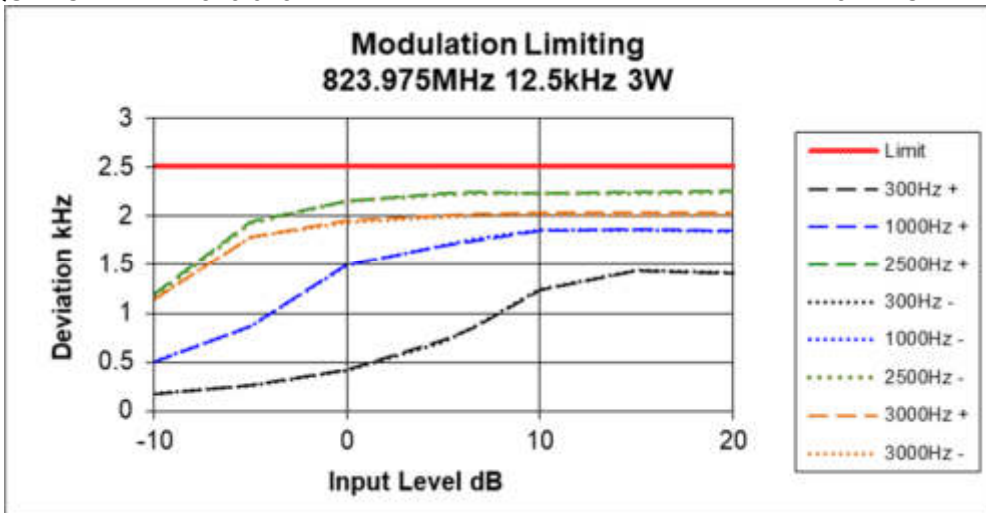
Tx FREQUENCY: 815.025 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 823.975 MHz

12.5kHz Channel Spacing

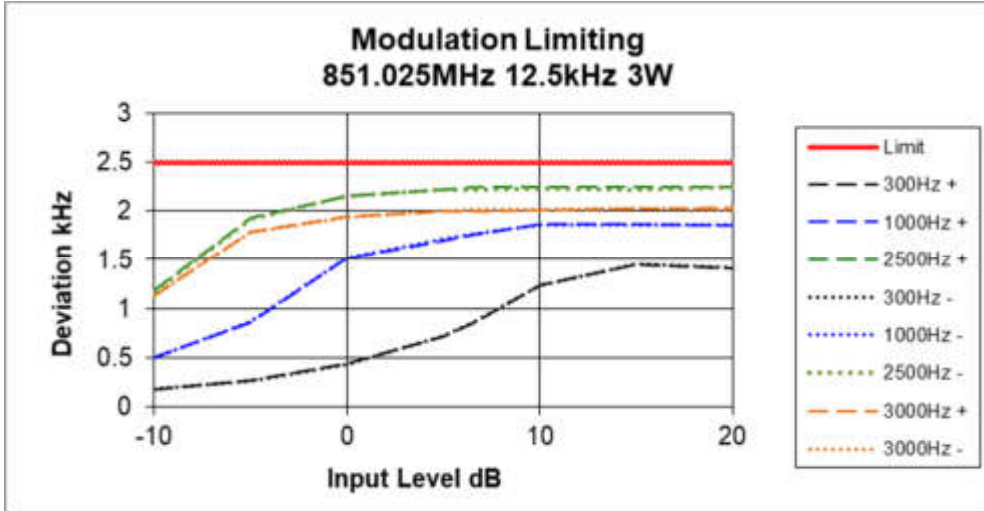




### Transmitter Modulation Limiting

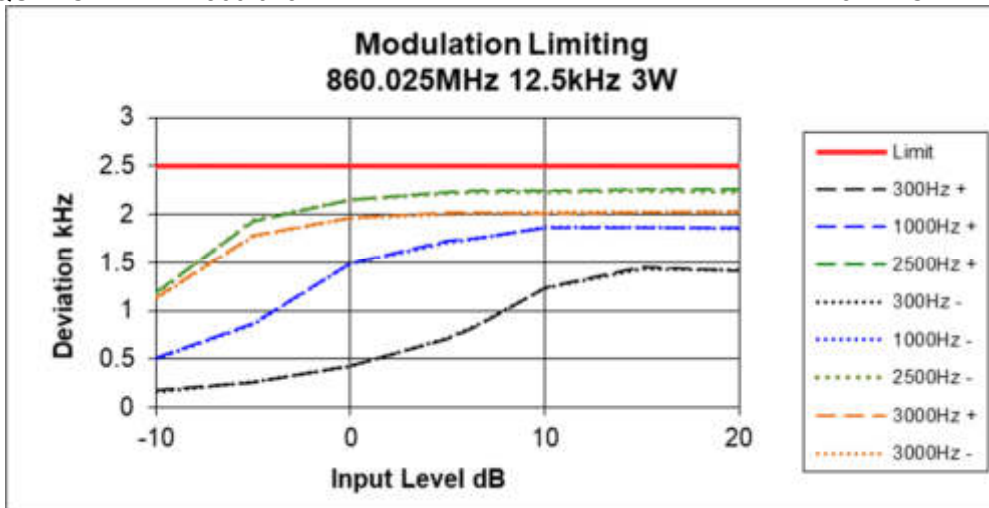
Tx FREQUENCY: 851.025 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 860.025 MHz

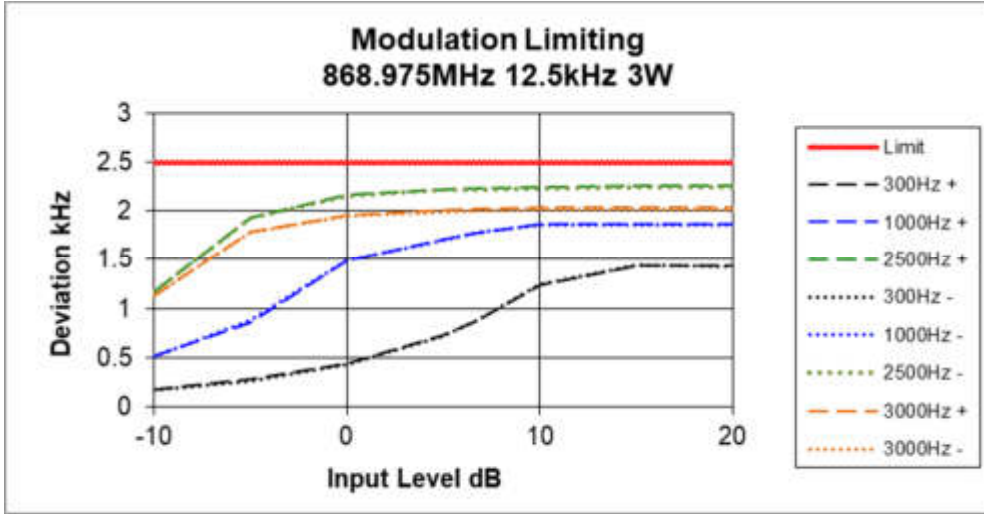
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

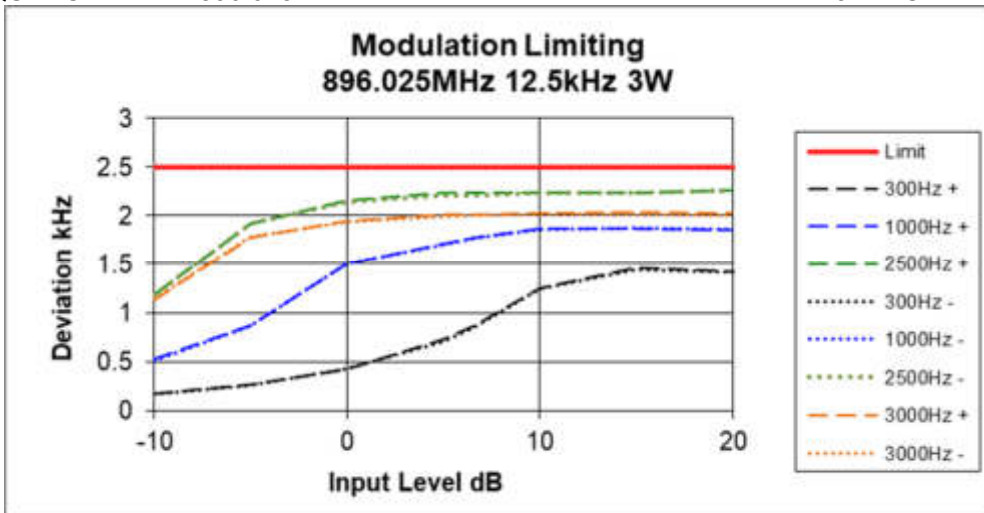
Tx FREQUENCY: 868.975 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 896.025 MHz

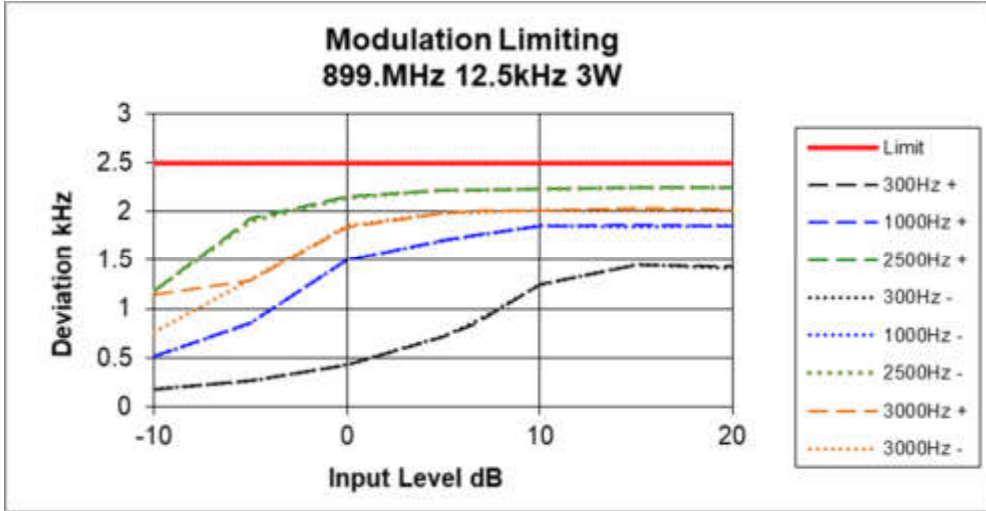
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

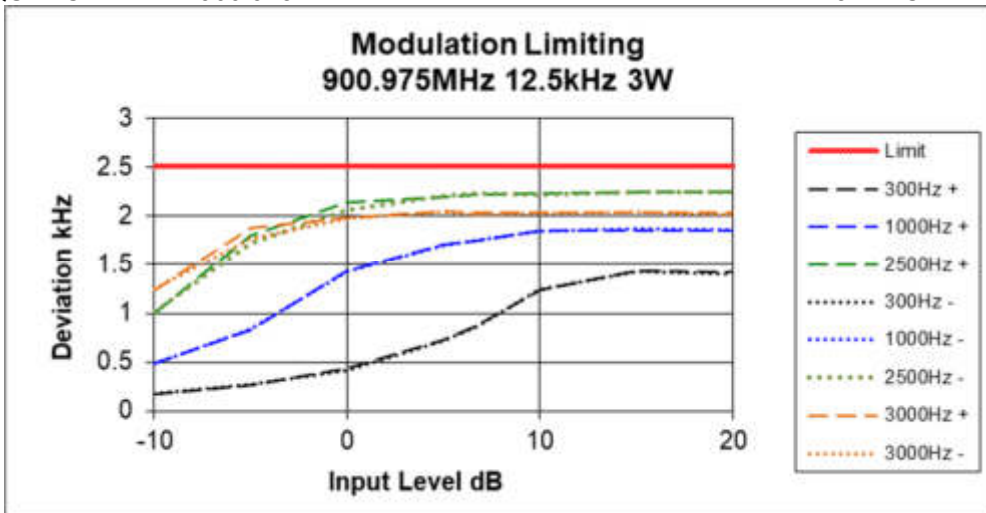
Tx FREQUENCY: 899.0 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 900.975 MHz

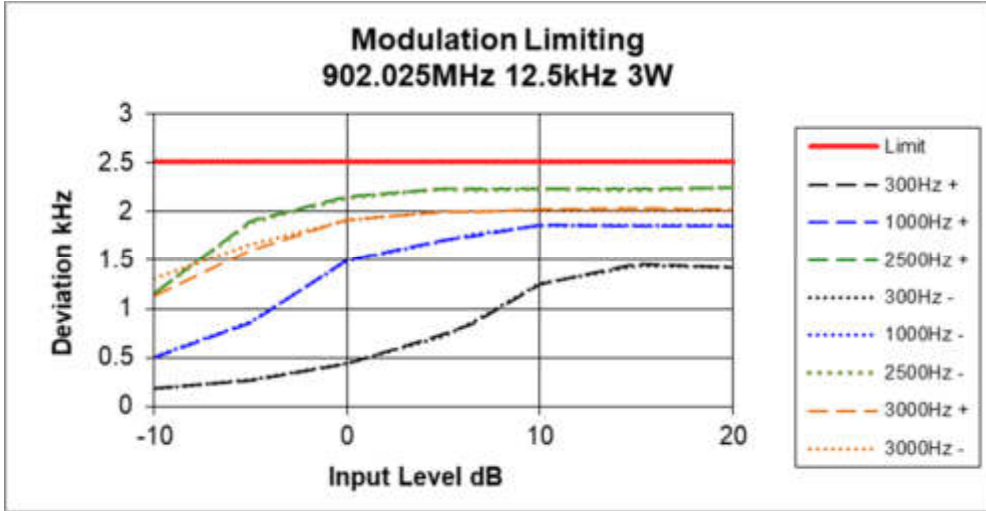
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

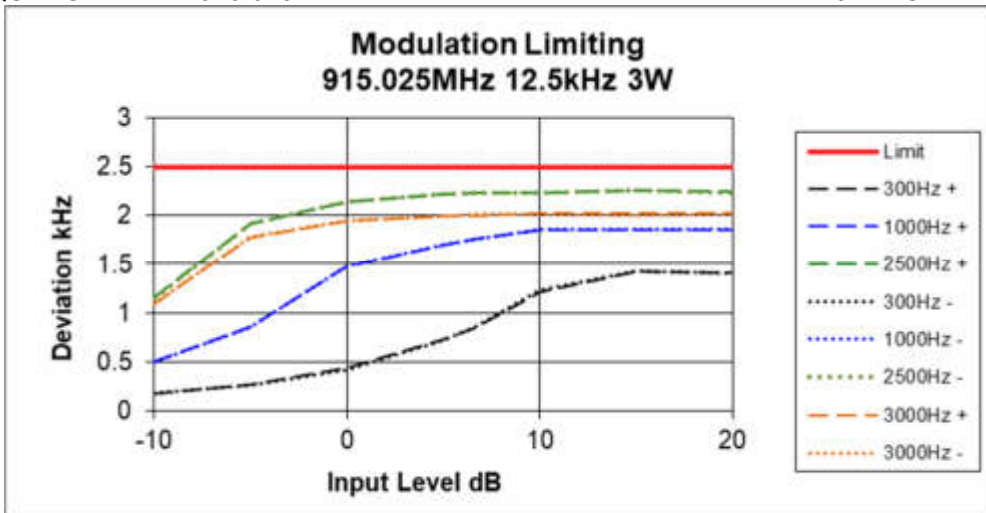
Tx FREQUENCY: 902.025 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 915.025 MHz

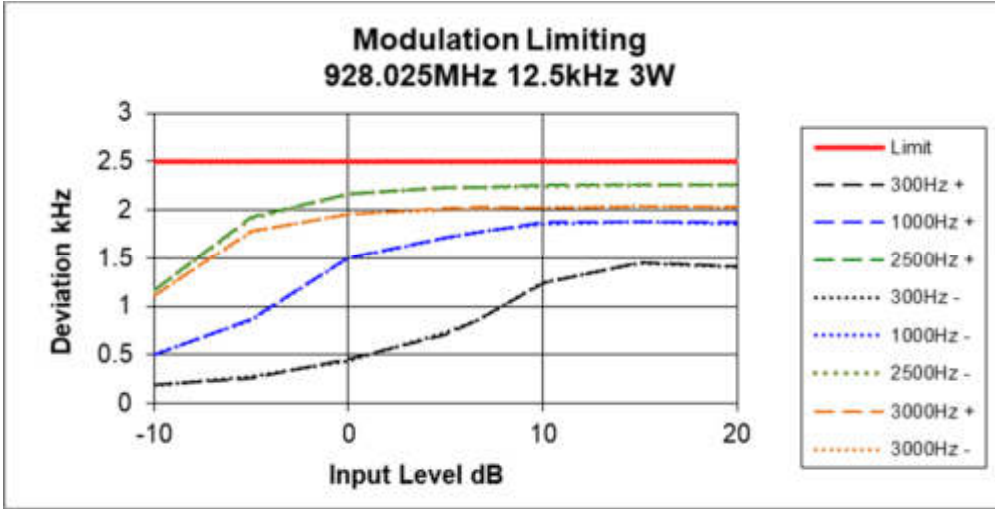
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

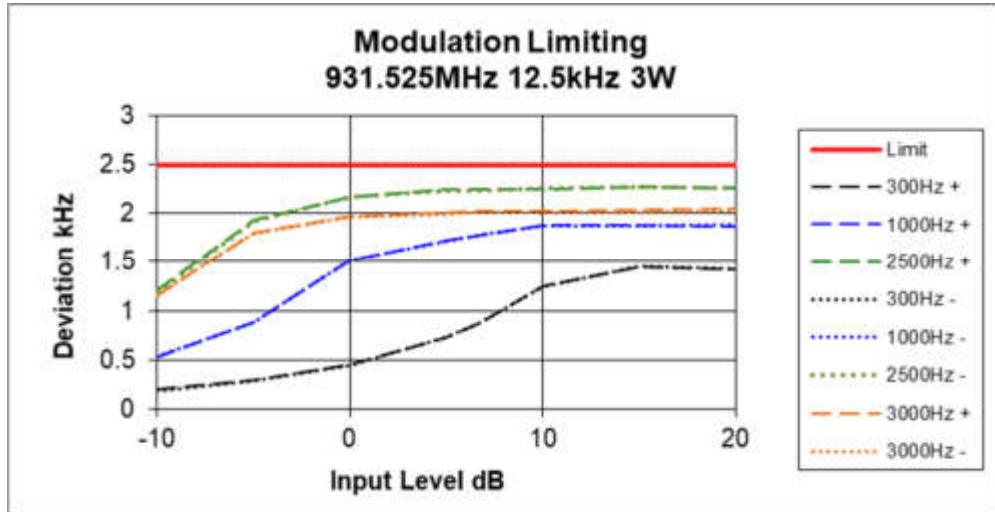
Tx FREQUENCY: 928.025 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 931.525 MHz

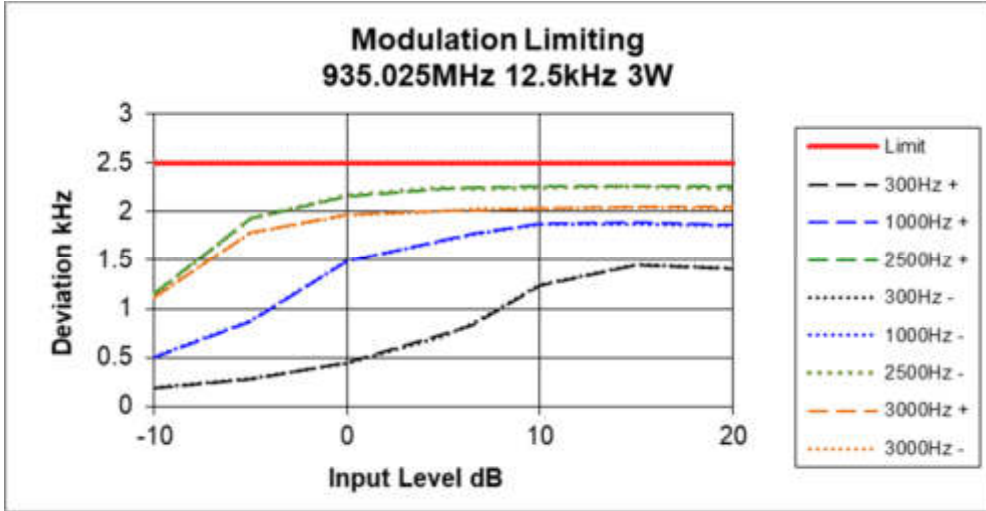
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

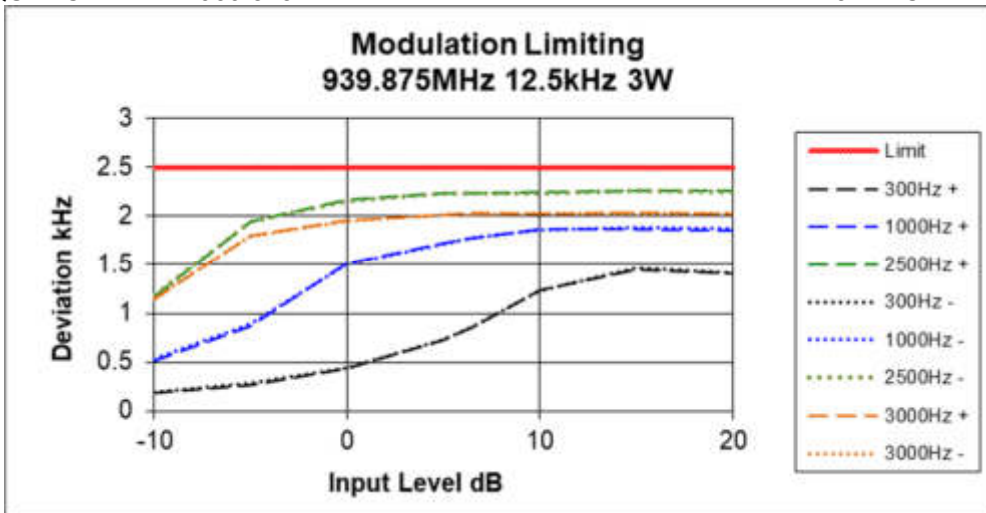
Tx FREQUENCY: 935.025 MHz

12.5kHz Channel Spacing



Tx FREQUENCY: 939.875 MHz

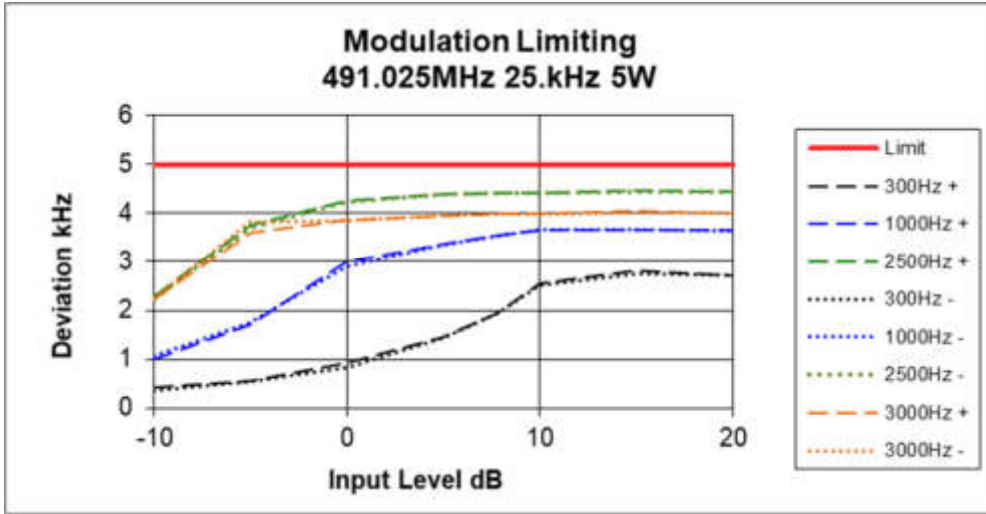
12.5kHz Channel Spacing



### Transmitter Modulation Limiting

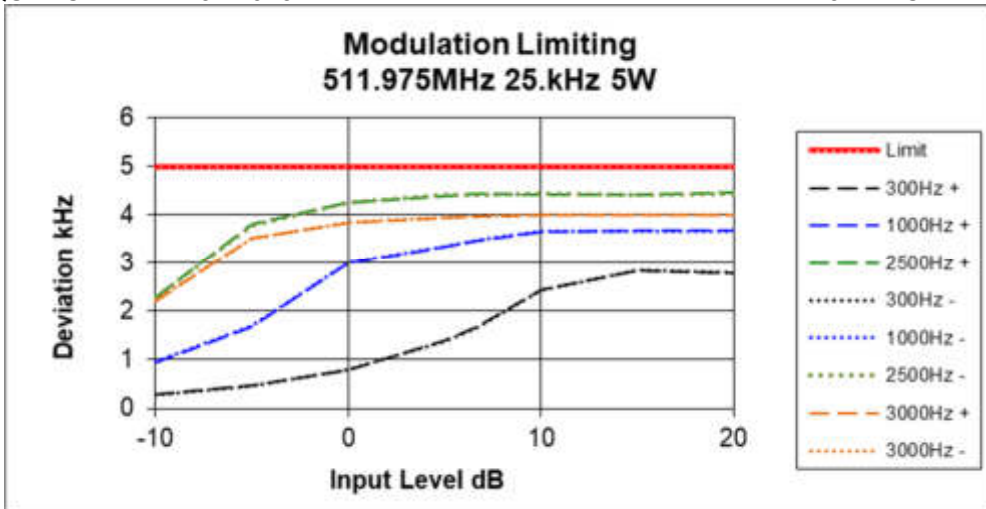
Tx FREQUENCY: 491.025 MHz

25 kHz Channel Spacing



Tx FREQUENCY: 511.975 MHz

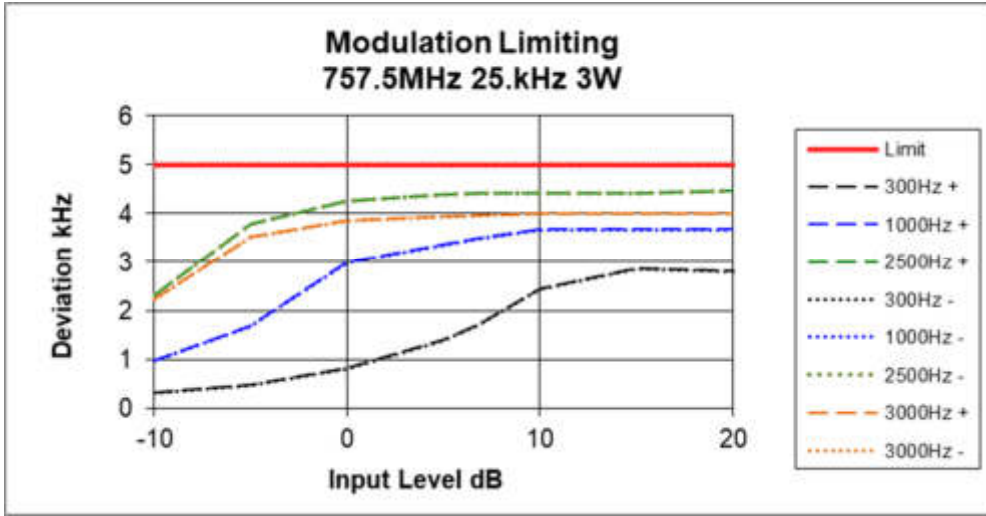
25 kHz Channel Spacing



### Transmitter Modulation Limiting

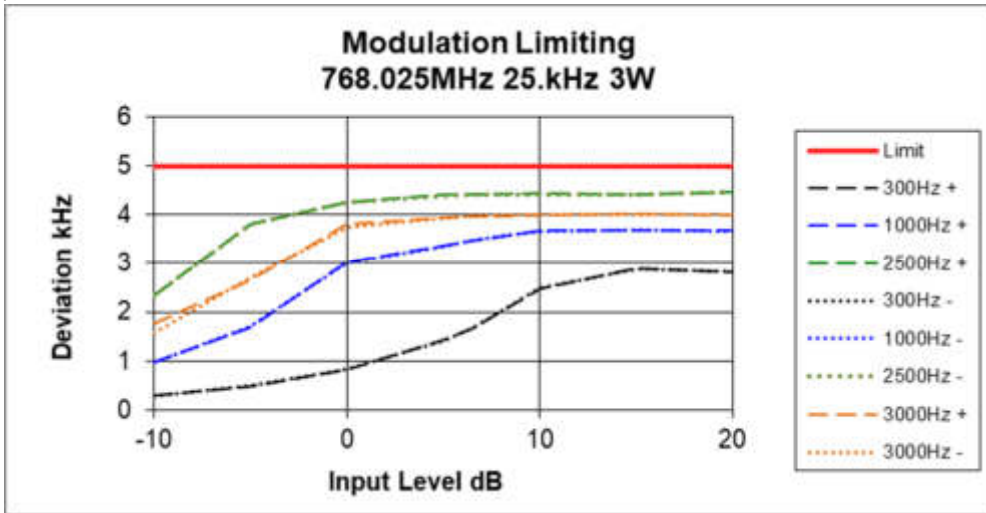
Tx FREQUENCY: 757.5 MHz

25 kHz Channel Spacing



Tx FREQUENCY: 768.025 MHz

25 kHz Channel Spacing

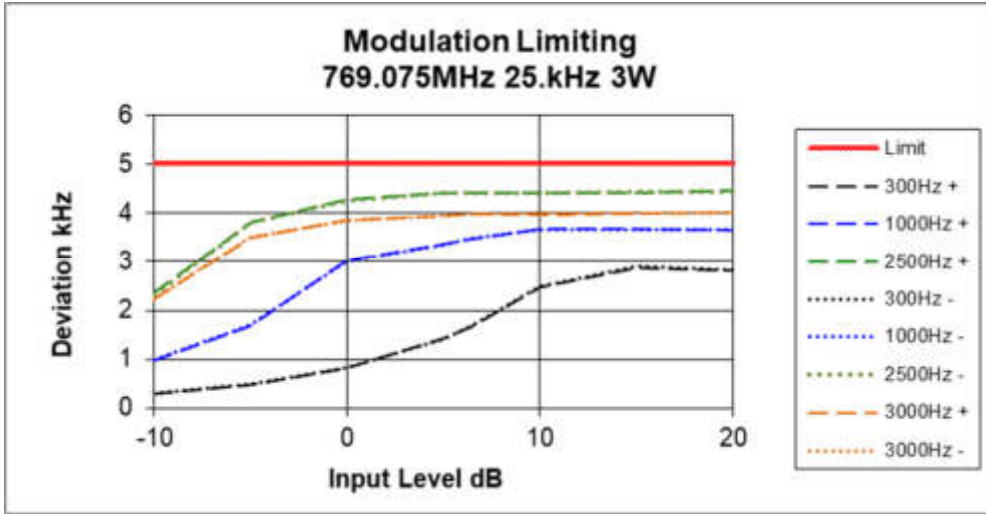




### Transmitter Modulation Limiting

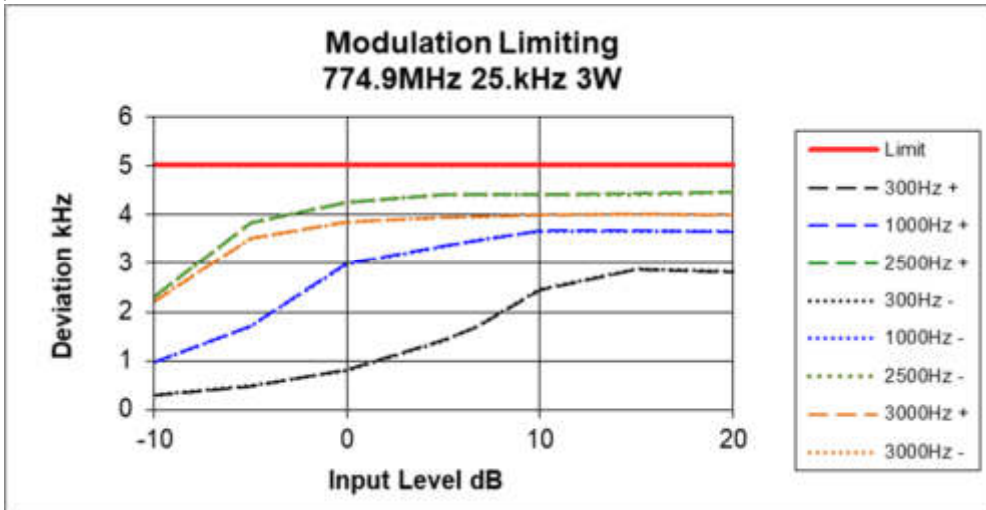
Tx FREQUENCY: 769.075 MHz

25 kHz Channel Spacing



Tx FREQUENCY: 774.9 MHz

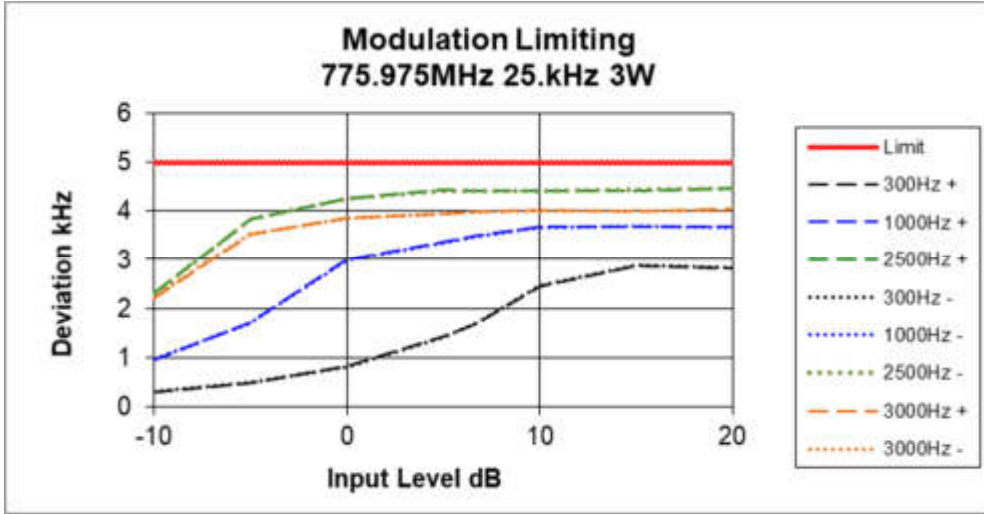
25 kHz Channel Spacing



### Transmitter Modulation Limiting

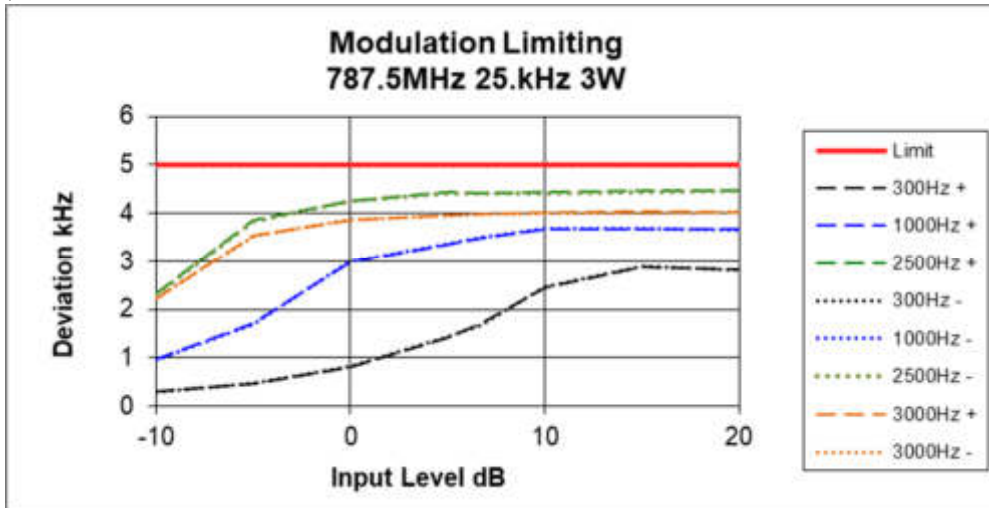
Tx FREQUENCY: 775.975 MHz

25 kHz Channel Spacing



Tx FREQUENCY: 787.5 MHz

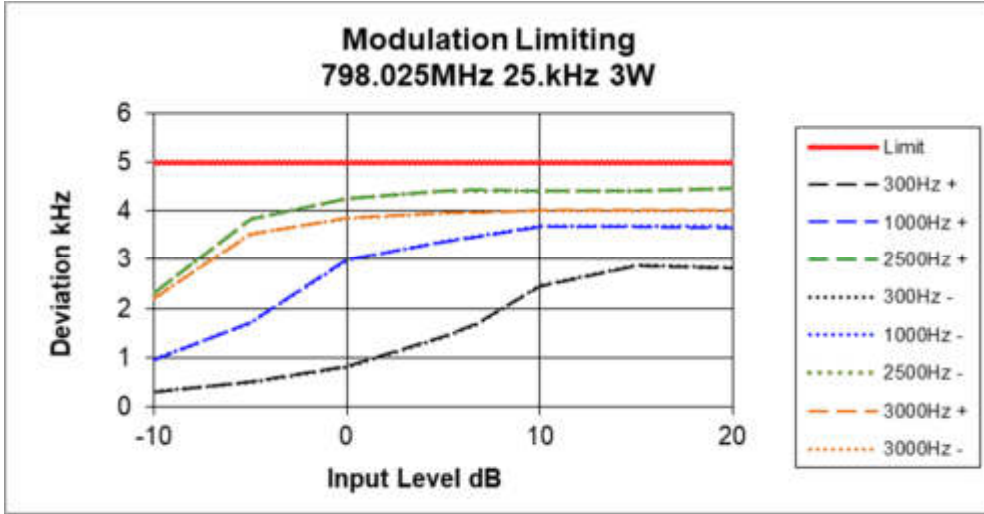
25 kHz Channel Spacing



### Transmitter Modulation Limiting

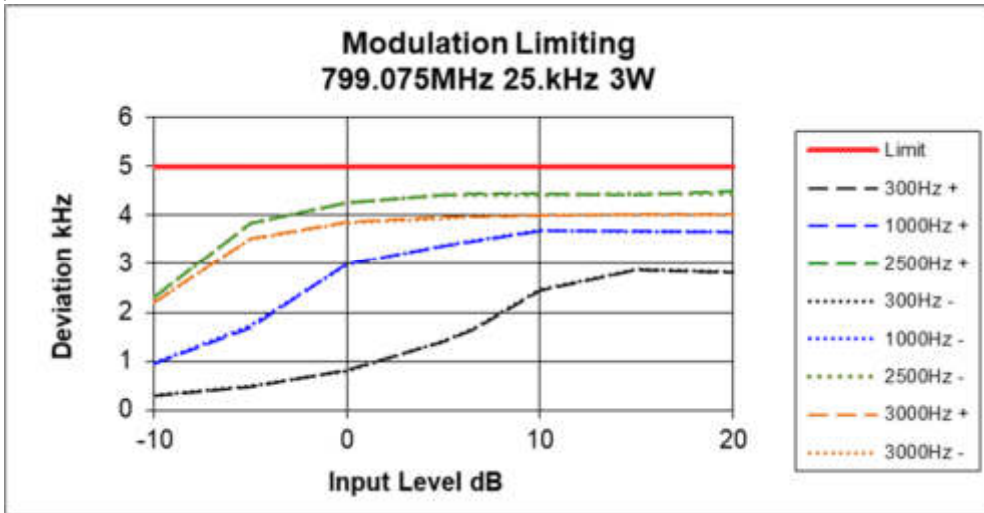
Tx FREQUENCY: 798.025 MHz

25kHz Channel Spacing



Tx FREQUENCY: 799.075 MHz

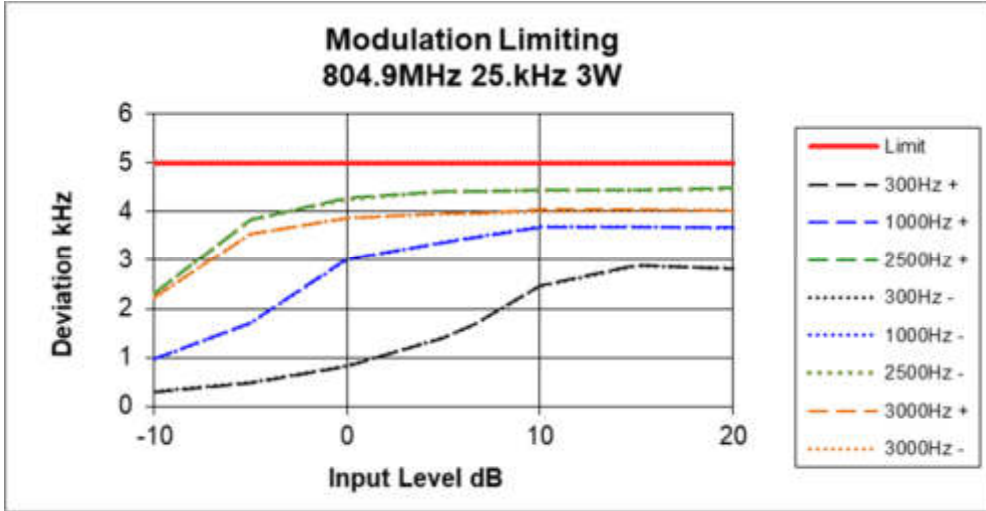
25kHz Channel Spacing



### Transmitter Modulation Limiting

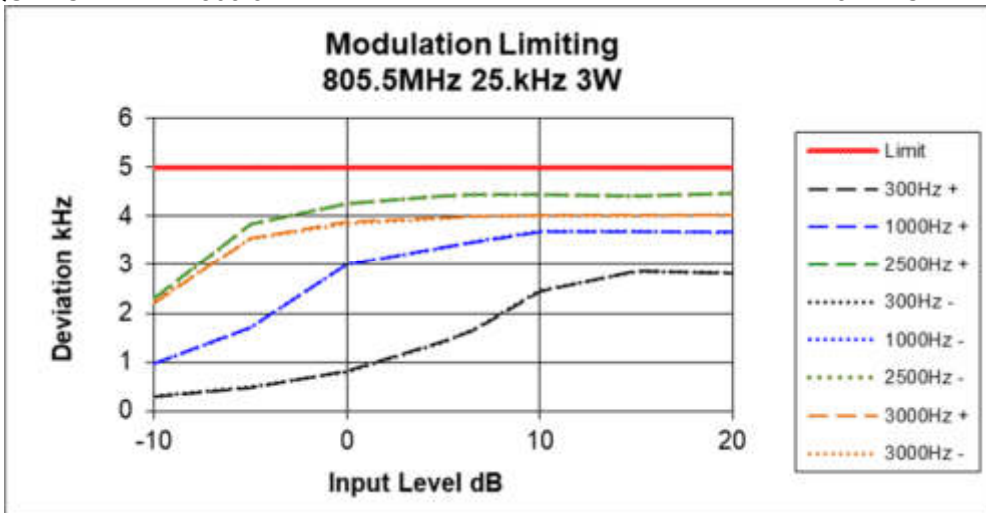
Tx FREQUENCY: 804.9 MHz

25kHz Channel Spacing



Tx FREQUENCY: 805.5 MHz

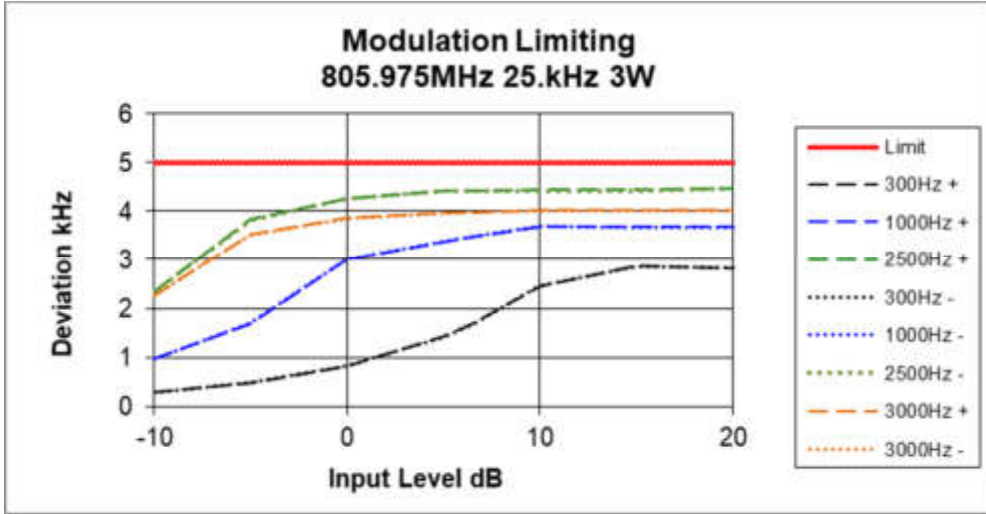
25kHz Channel Spacing



### Transmitter Modulation Limiting

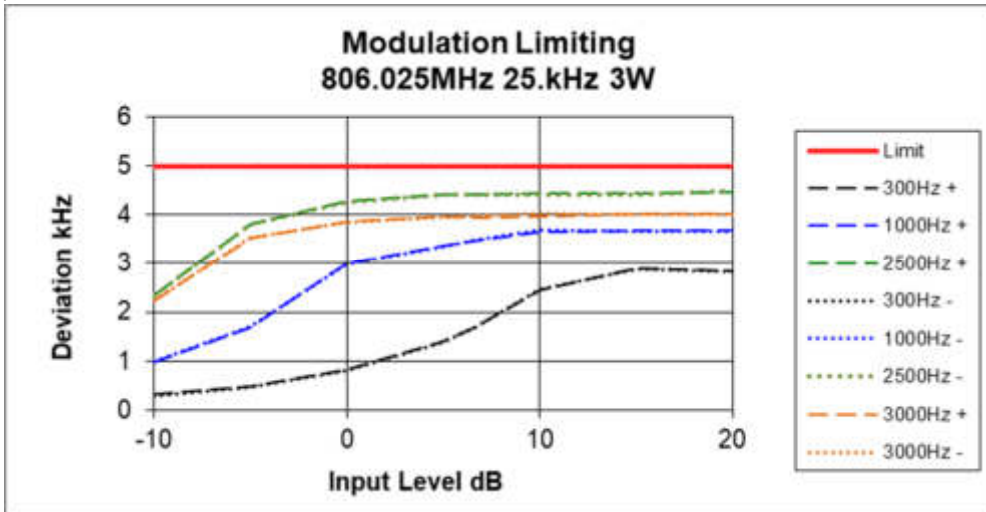
Tx FREQUENCY: 805.975 MHz

25kHz Channel Spacing



Tx FREQUENCY: 806.025 MHz

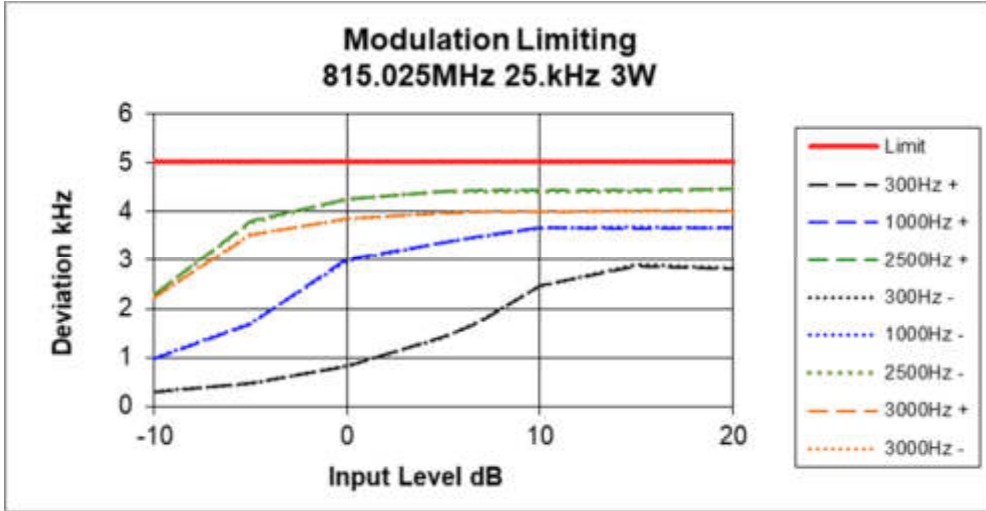
25kHz Channel Spacing



### Transmitter Modulation Limiting

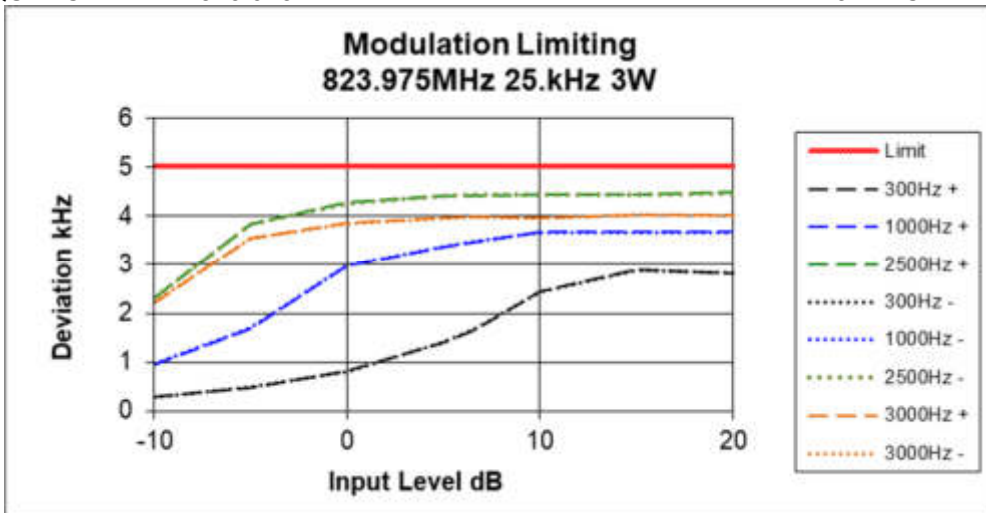
Tx FREQUENCY: 815.025 MHz

25kHz Channel Spacing



Tx FREQUENCY: 823.975 MHz

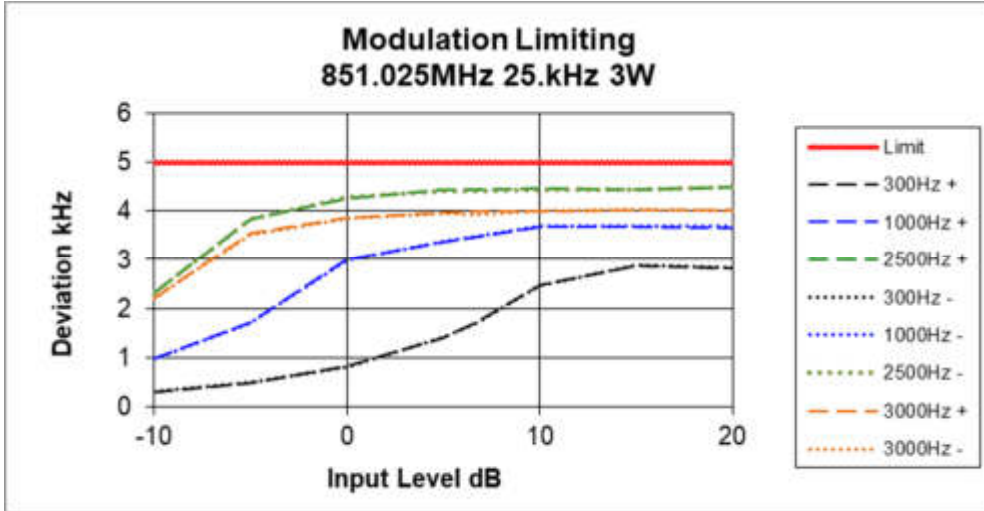
25kHz Channel Spacing



### Transmitter Modulation Limiting

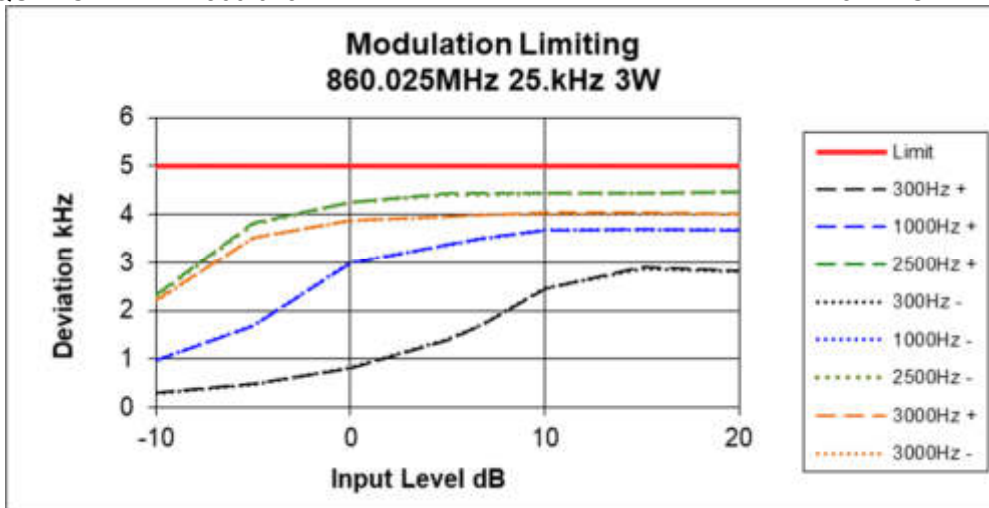
Tx FREQUENCY: 851.025 MHz

25kHz Channel Spacing



Tx FREQUENCY: 860.025 MHz

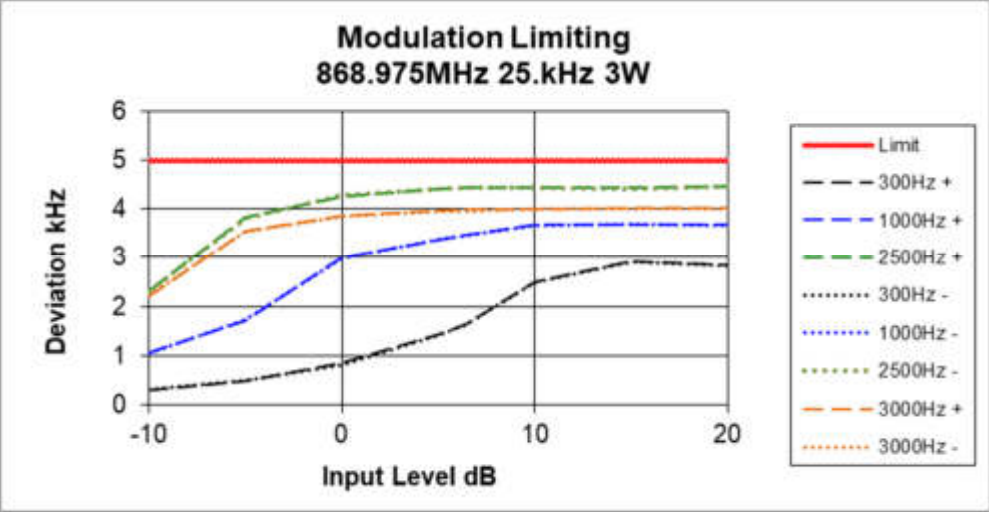
25kHz Channel Spacing



Transmitter Modulation Limiting

Tx FREQUENCY: 868.975 MHz

25kHz Channel Spacing





## TRANSMITTER OCCUPIED (99%) BANDWIDTH

SPECIFICATION: RSS-119 5.5

GUIDE: RSS-Gen 6.7

### MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment Set up.
2. For analogue measurements: The EUT was modulated by a 2500 Hz tone at an input level 16 dB above a level that produced 50% deviation. The input level was established at the frequency of maximum response of the audio modulating circuit.  
For Data measurements: The EUT was modulated with an internally generated pseudo random bit sequence at the appropriate Baud rates.

Transmitter Occupied (99%) Bandwidth

MEASUREMENT RESULTS:

Grey cells indicate test not required.

Channel Frequency (MHz)	Bandwidths (kHz)					
	Analogue	Analogue	FFSK 1200 bps	FFSK 1200 bps	FFSK 2400 bps	FFSK 2400 bps
	12.5 kHz chan spac	25 kHz chan spac	12.5 kHz chan spac	25 kHz chan spac	12.5 kHz chan spac	25 kHz chan spac
138.025 MHz	9.87		6.33		5.60	
143.975 MHz	9.87		6.27		5.47	
148.025 MHz	9.87		6.27		5.53	
150.025 MHz	9.87		6.20		5.47	
150.05 MHz	9.87		6.27		5.47	
162.025 MHz	9.87		6.20		5.53	
173.975 MHz	9.87		6.20		5.60	
406.125 MHz	9.93		6.40		5.60	
418.025 MHz	9.93		6.20		5.47	
429.975 MHz	9.93		6.27		5.47	
438.025 MHz	9.93		6.20		5.47	
450.025 MHz	9.93		6.20		5.47	
460.025 MHz	9.87		6.33		5.53	
469.975 MHz	9.93		6.27		5.53	
491.025 MHz	9.93	14.9	6.20	9.53	5.53	9.87
511.975 MHz	9.93	14.9	6.27	9.40	5.53	9.87
757.5 MHz	9.87	14.9	6.27	9.40	5.47	9.93
768.025 MHz	9.93	14.9	6.20	9.27	5.53	10.0
769.075 MHz	9.87	14.9	6.20	9.33	5.47	9.93
774.9 MHz	9.87	14.9	6.20	9.47	5.47	9.87
<u>Limit</u> Authorized Bandwidth 47 CFR 90.209 RSS 119 5.5	11.25	20.0	11.25	20.0	11.25	20.0
Necessary BW used in emission designator	11.0	16.0	6.6	9.6	7.8	10.8
Result	Pass	Pass	Pass	Pass	Pass	Pass

Transmitter Occupied (99%) Bandwidth

MEASUREMENT RESULTS:

Grey cells indicate test not required.

Channel Frequency (MHz)	Bandwidths (kHz)					
	Analogue	Analogue	FFSK 1200 bps	FFSK 1200 bps	FFSK 2400 bps	FFSK 2400 bps
	12.5 kHz chan spac	25 kHz chan spac	12.5 kHz chan spac	25 kHz chan spac	12.5 kHz chan spac	25 kHz chan spac
775.975 MHz	9.93	14.9	6.27	9.53	5.53	9.87
787.5 MHz	9.87	14.9	6.27	9.33	5.47	9.93
798.025 MHz	9.87	14.9	6.27	9.33	5.53	9.87
799.075 MHz	9.87	14.9	6.27	9.47	5.60	9.93
804.9 MHz	9.87	14.9	6.27	9.33	5.47	9.93
805.5 MHz	9.87	14.9	6.33	9.47	5.53	9.93
805.975 MHz	9.87	14.9	6.20	9.47	5.47	9.93
806.025 MHz	9.87	14.9	6.27	9.47	5.47	9.93
815.025 MHz	9.87	14.9	6.27	9.40	5.53	9.93
823.975 MHz	9.87	14.9	6.27	9.47	5.47	9.93
851.025 MHz	9.87	14.9	6.27	9.40	5.53	9.87
860.025 MHz	9.87	14.9	6.20	9.47	5.47	9.93
868.975 MHz	9.87	14.9	6.27	9.33	5.53	9.87
896.025 MHz	9.87		6.13		5.53	
899.0 MHz	9.87		6.33		5.53	
900.975 MHz	9.87		6.27		5.47	
902.025 MHz	9.87		6.27		5.53	
915.025 MHz	9.87		6.27		5.47	
928.025 MHz	9.87		6.20		5.53	
931.525 MHz	9.87		6.20		5.53	
935.025 MHz	9.87		6.33		5.53	
939.875 MHz	9.87		6.27		5.53	
<u>Limit</u> Authorized Bandwidth 47 CFR 90.209 RSS 119 5.5	11.25	20.0	11.25	20.0	11.25	20.0
Necessary BW used in emission designator	11.0	16.0	6.6	9.6	7.8	10.8
Result	Pass	Pass	Pass	Pass	Pass	Pass

Transmitter Occupied (99%) Bandwidth

MEASUREMENT RESULTS:

Channel Frequency (MHz)	Bandwidths (kHz)		
	DMR 12.5 kHz chan spac	P25 Phase I 12.5 kHz chan spac	P25 Phase II 12.5 kHz chan spac
138.025 MHz	7.80	7.93	8.07
143.975 MHz	7.80	7.93	8.00
148.025 MHz	7.93	7.87	7.93
150.025 MHz	7.80	8.00	7.80
150.05 MHz	7.87	7.87	7.93
162.025 MHz	7.87	7.93	7.93
173.975 MHz	7.80	7.80	8.07
406.125 MHz	7.93	8.07	7.87
418.025 MHz	7.87	8.07	8.00
429.975 MHz	7.93	8.07	8.00
438.025 MHz	7.93	8.00	7.93
450.025 MHz	7.87	8.00	8.07
460.025 MHz	7.93	7.87	8.07
469.975 MHz	7.87	7.80	8.00
491.025 MHz	7.80	7.80	8.00
511.975 MHz	7.80	8.00	7.87
757.5 MHz	7.87	7.73	7.73
768.025 MHz	7.87	8.00	8.00
769.075 MHz	7.93	8.00	8.00
774.9 MHz	7.93	8.07	8.07
<u>Limit</u> Authorized Bandwidth 47 CFR 90.209 RSS 119 5.5	11.25	11.25	11.25
Necessary BW used in emission designator	8.0	8.1	8.1
Result	Pass	Pass	Pass

Transmitter Occupied (99%) Bandwidth

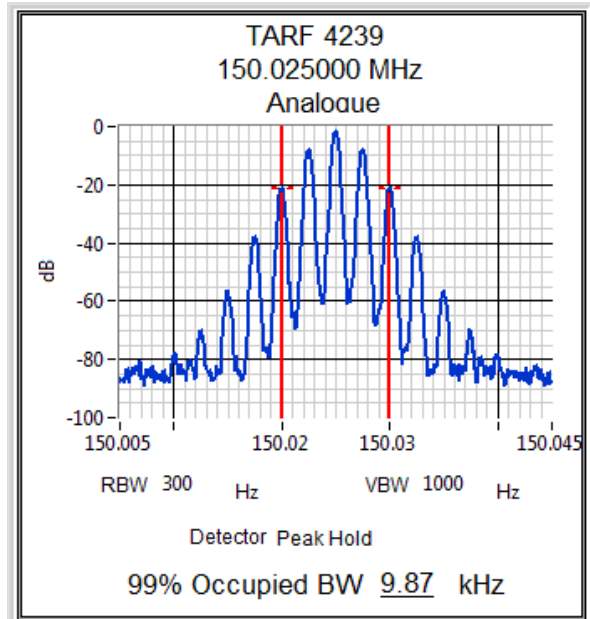
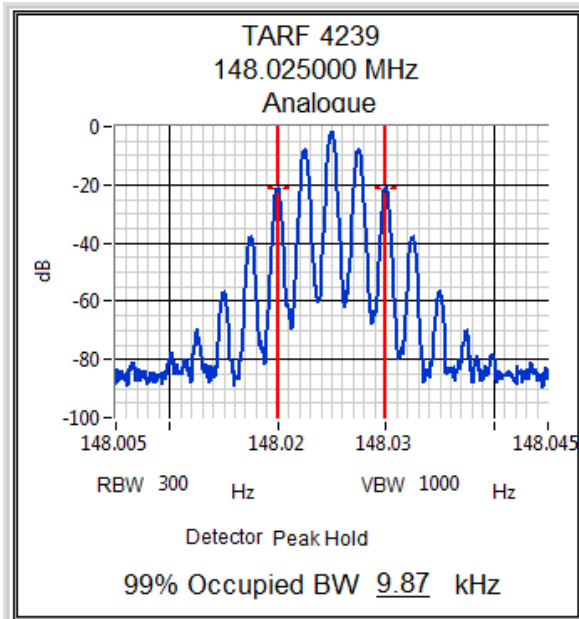
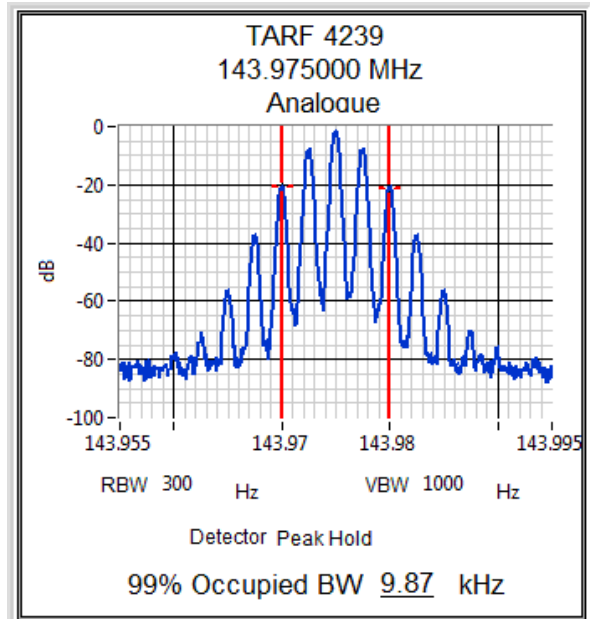
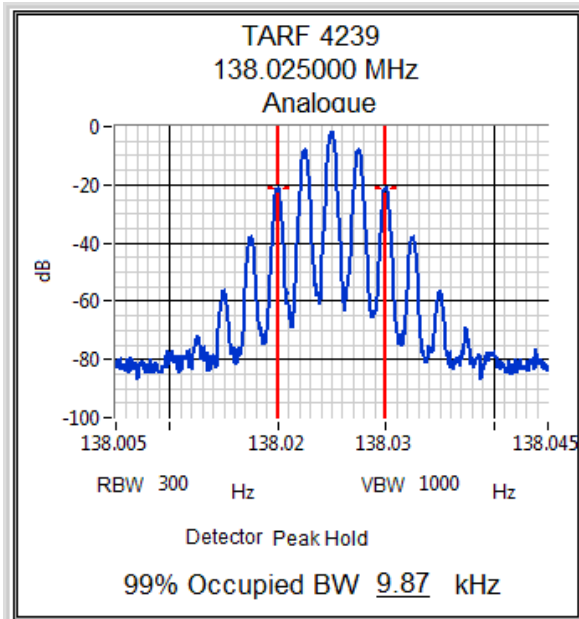
MEASUREMENT RESULTS:

Channel Frequency (MHz)	Bandwidths (kHz)		
	DMR 12.5 kHz chan spac	P25 Phase I 12.5 kHz chan spac	P25 Phase II 12.5 kHz chan spac
775.975 MHz	7.93	8.07	8.07
787.5 MHz	7.73	7.67	8.00
798.025 MHz	7.87	8.07	7.87
799.075 MHz	7.93	7.80	8.07
804.9 MHz	7.87	8.00	8.07
805.5 MHz	7.93	7.87	8.07
805.975 MHz	7.93	8.00	8.00
806.025 MHz	7.93	8.07	8.00
815.025 MHz	7.87	8.00	7.87
823.975 MHz	7.93	7.80	8.00
851.025 MHz	7.93	8.00	7.87
860.025 MHz	7.87	7.87	8.00
868.975 MHz	7.93	8.07	7.87
896.025 MHz	7.87	7.93	7.93
899.0 MHz	7.87	7.93	8.00
900.975 MHz	7.87	8.07	8.07
902.025 MHz	7.87	7.93	8.00
915.025 MHz	7.93	7.73	7.87
928.025 MHz	7.93	8.07	8.00
931.525 MHz	7.93	8.07	8.07
935.025 MHz	7.93	8.07	7.87
939.875 MHz	7.73	8.00	8.07
<u>Limit</u> Authorized Bandwidth 47 CFR 90.209 RSS 119 5.5	11.25	11.25	11.25
Necessary BW used in emission designator	8.0	8.1	8.1
Result	Pass	Pass	Pass

### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

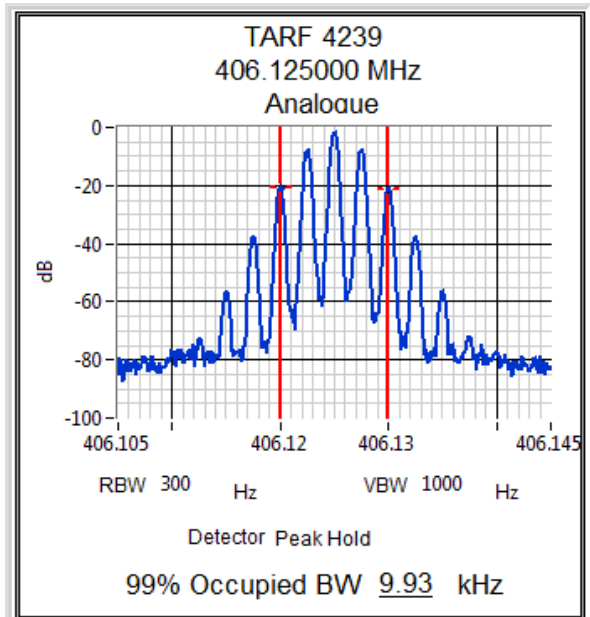
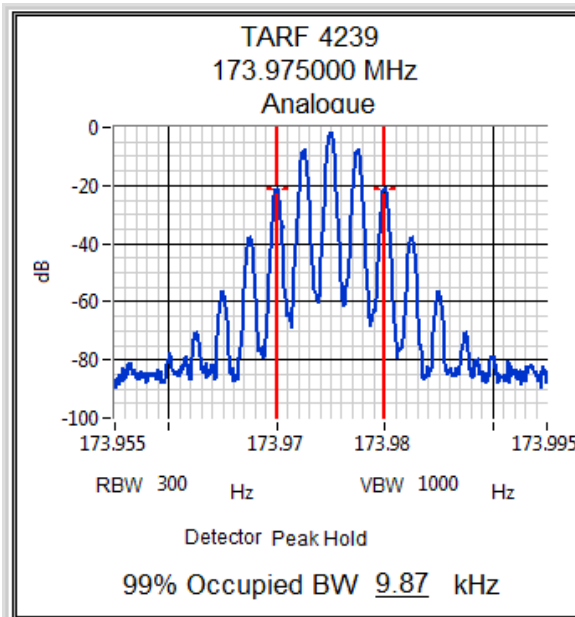
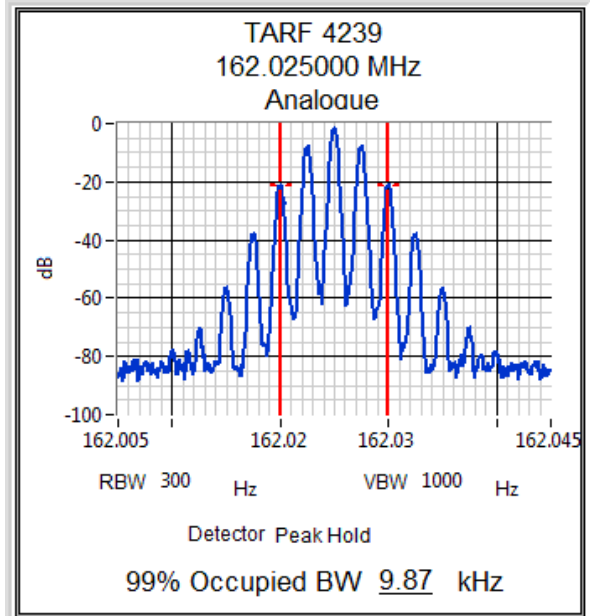
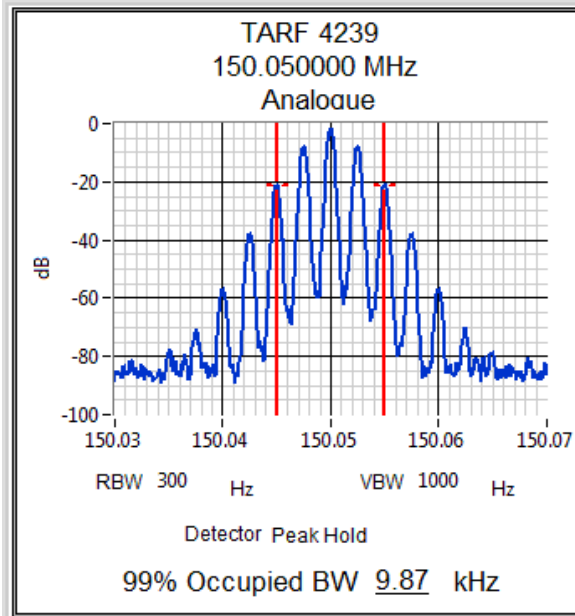
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

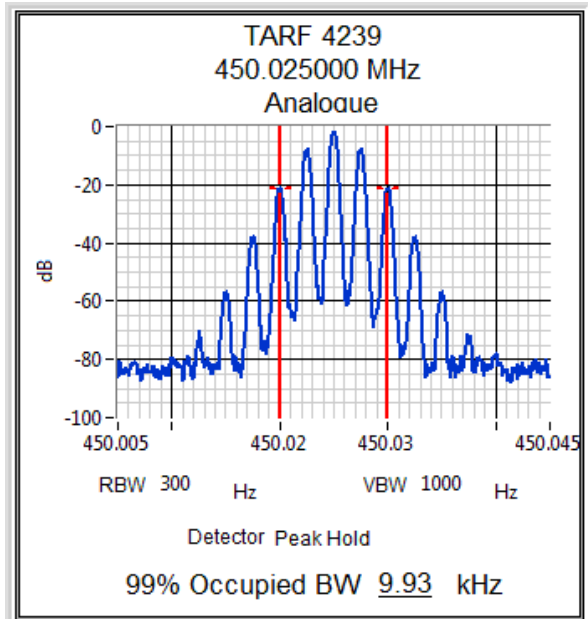
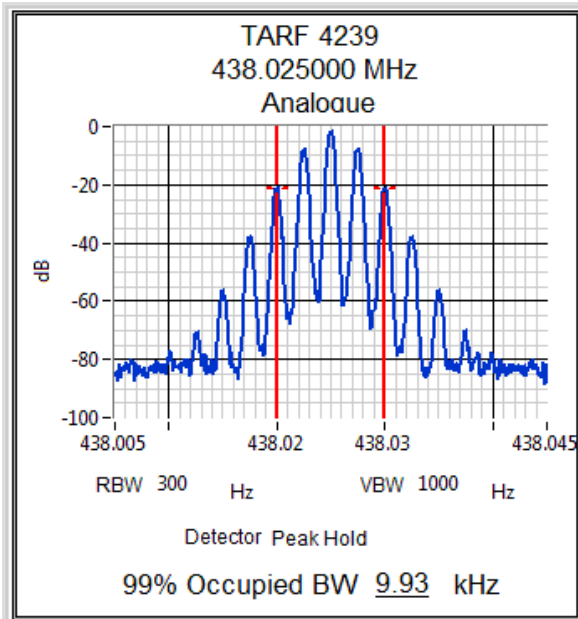
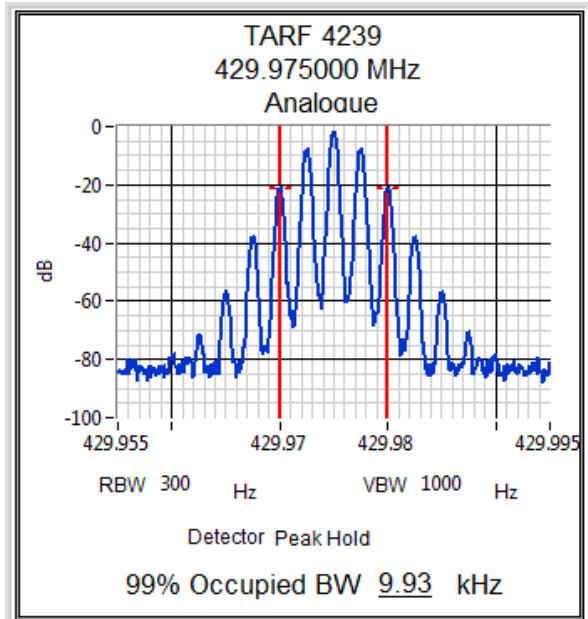
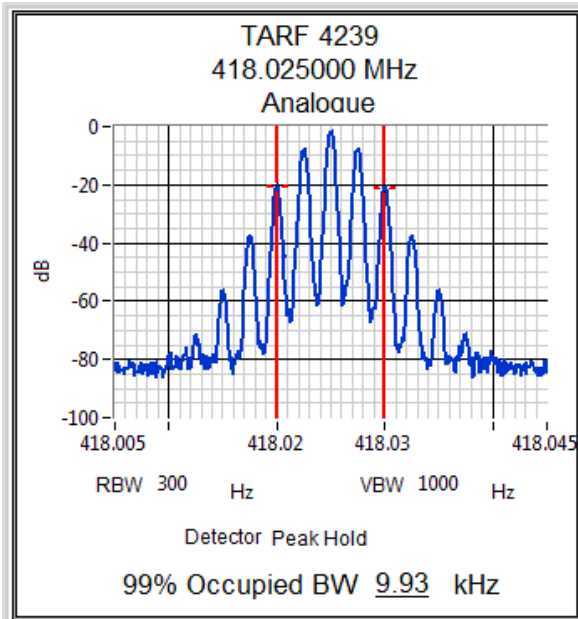
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

Analogue Modulation

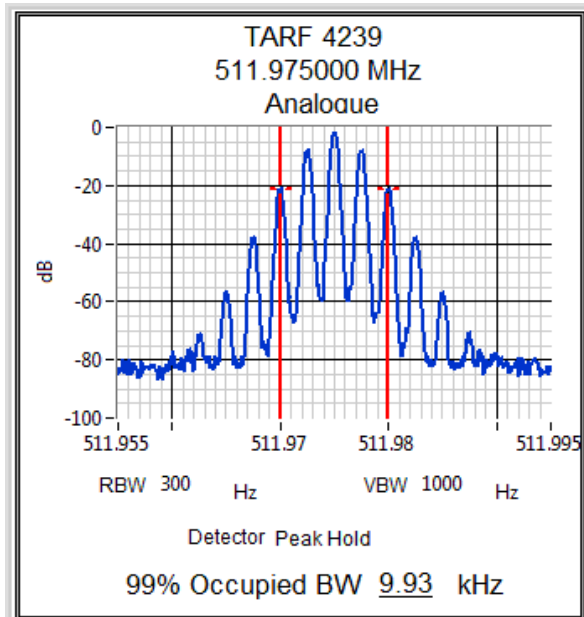
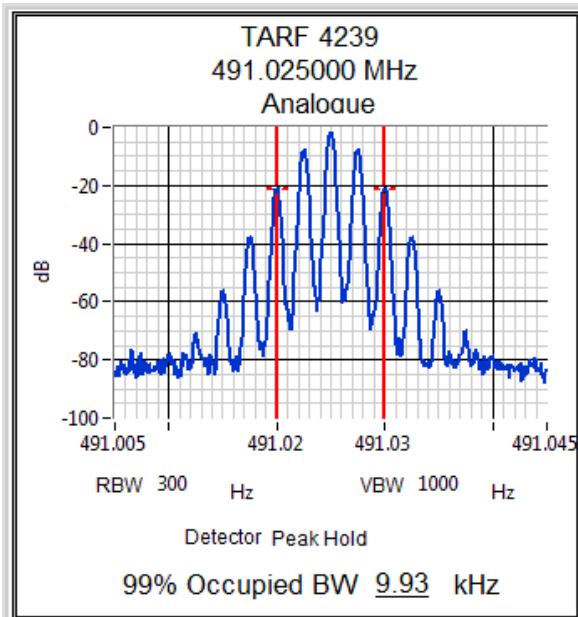
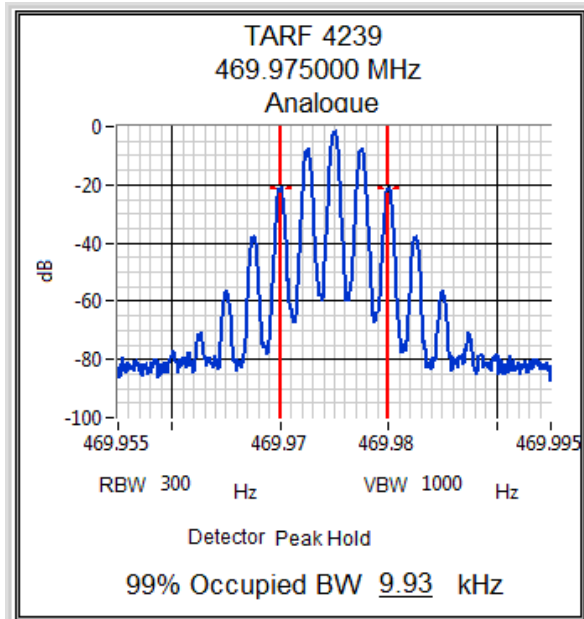
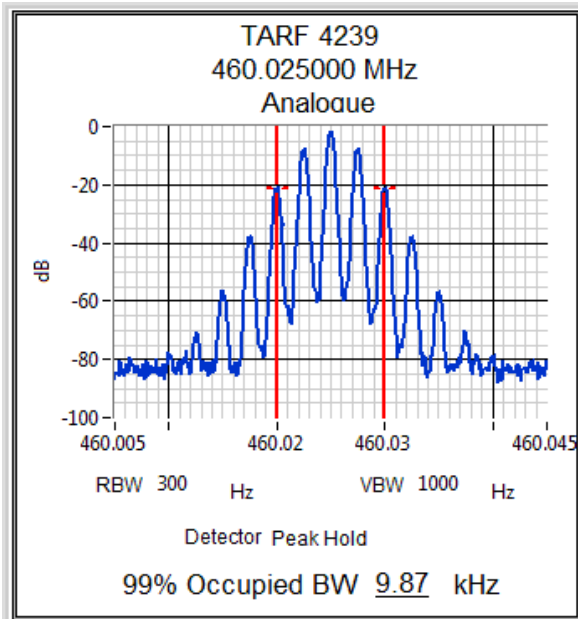




### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

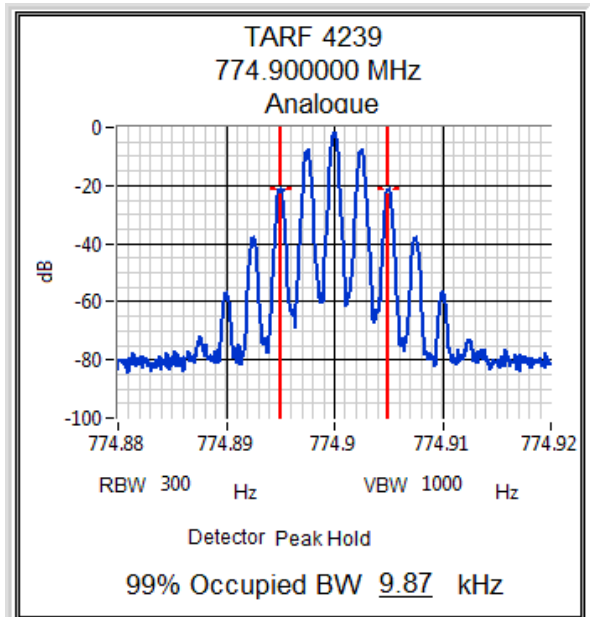
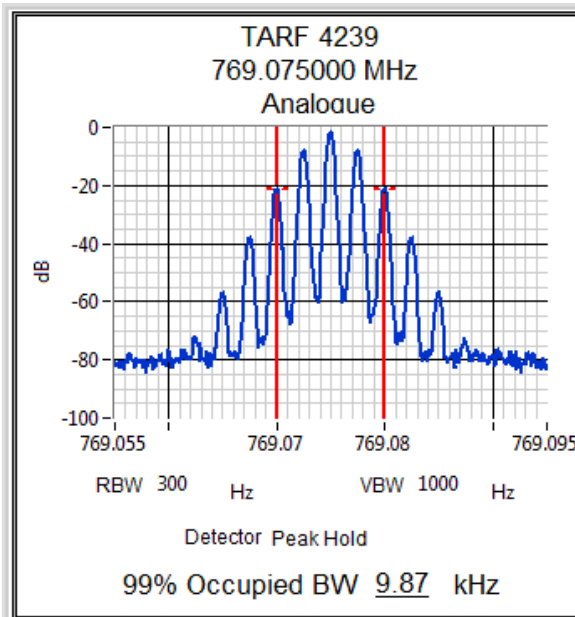
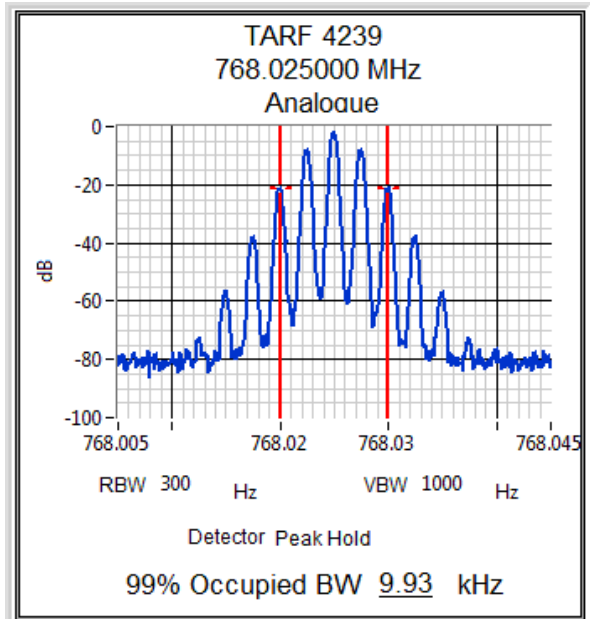
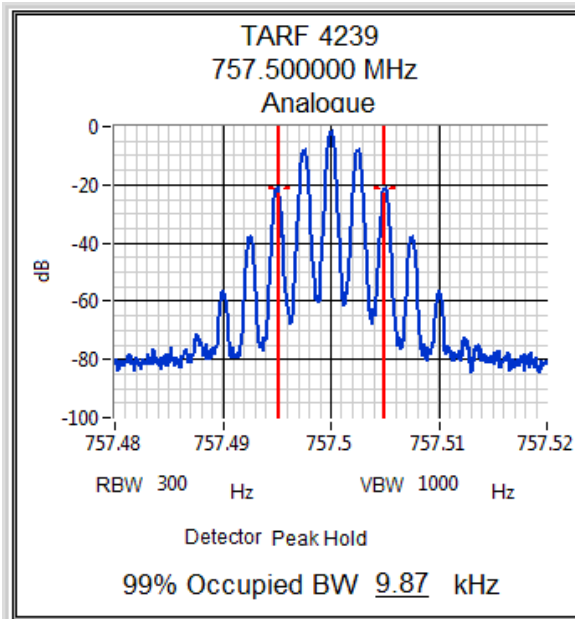
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

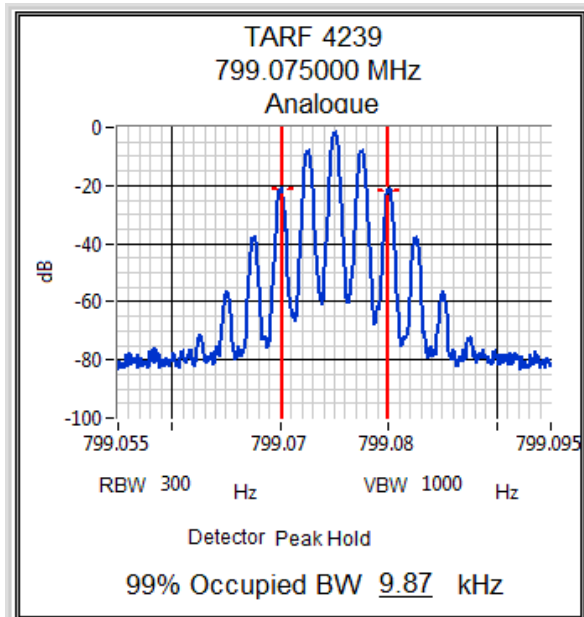
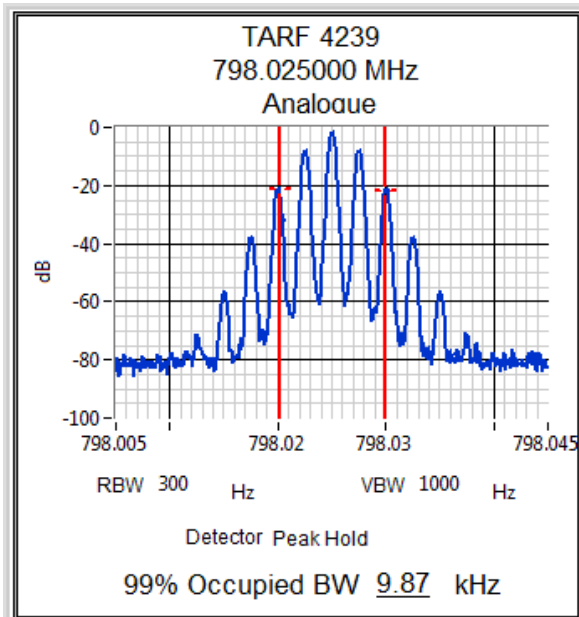
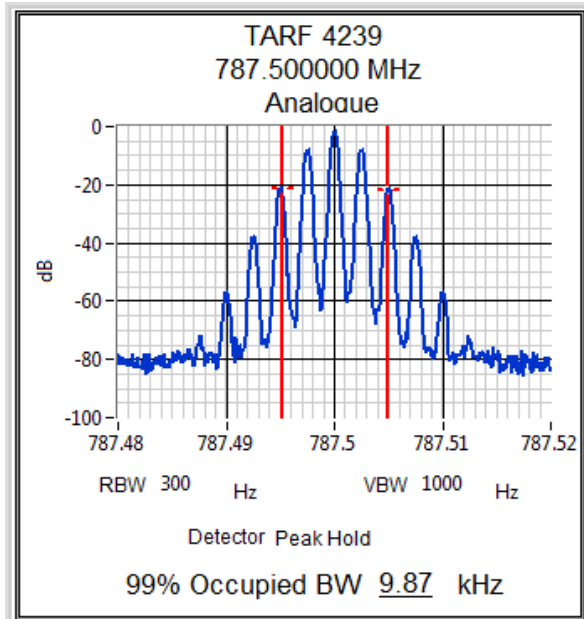
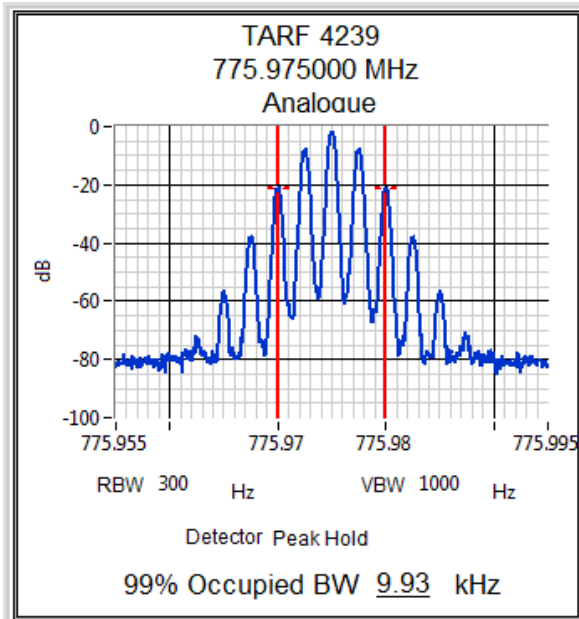
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

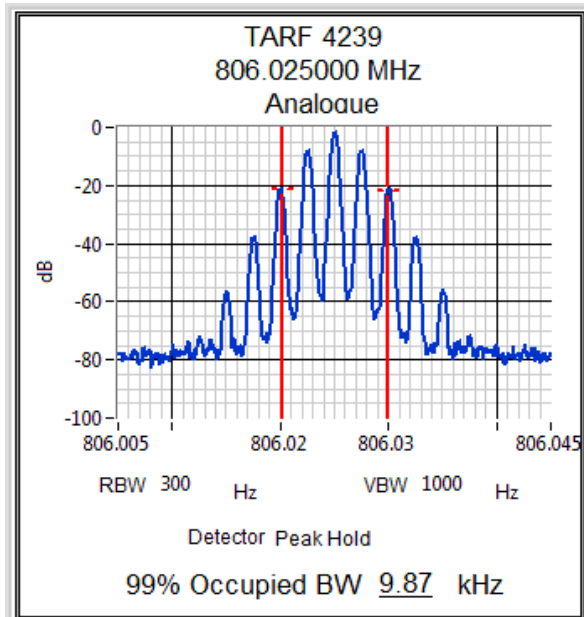
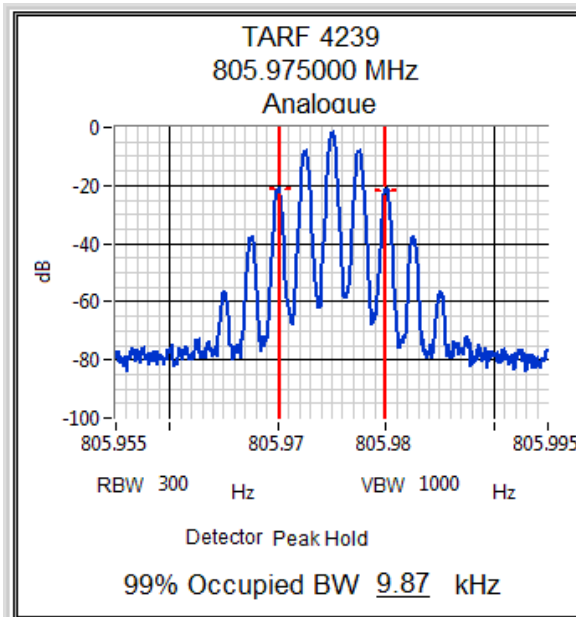
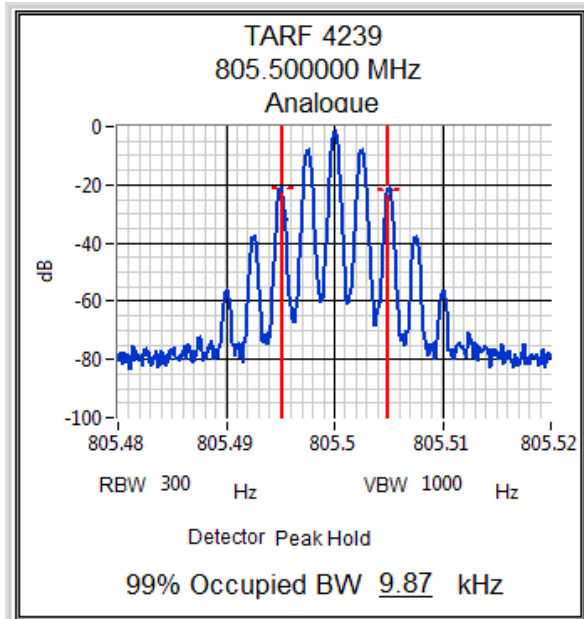
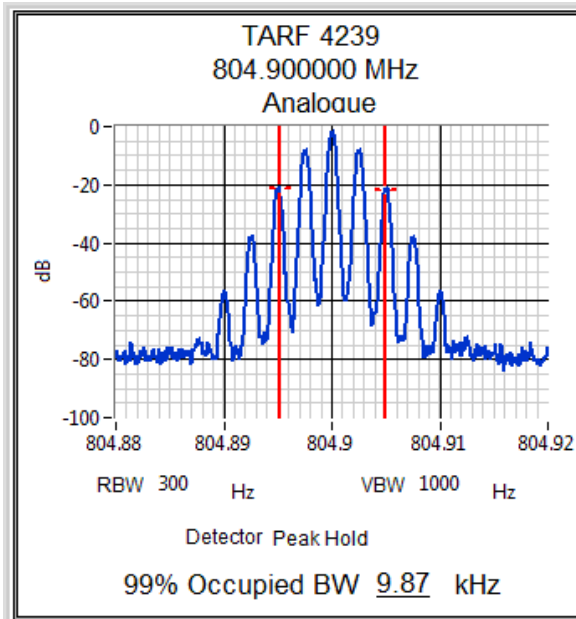
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

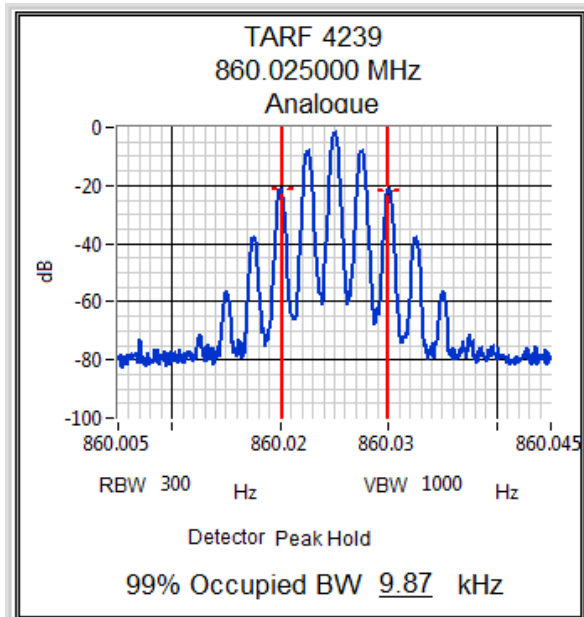
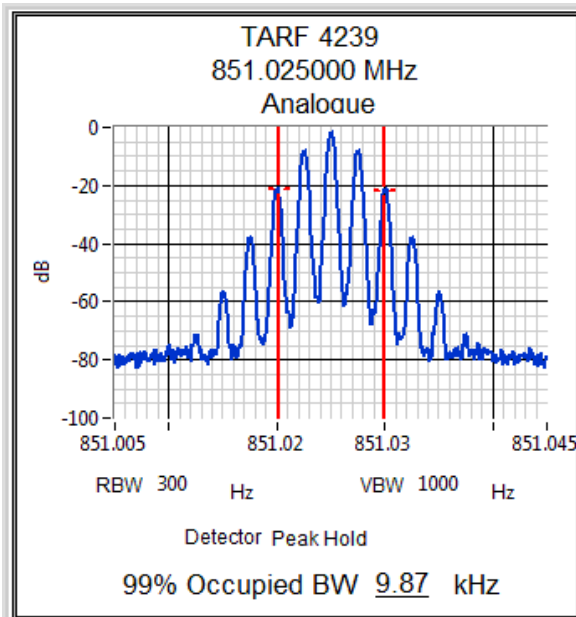
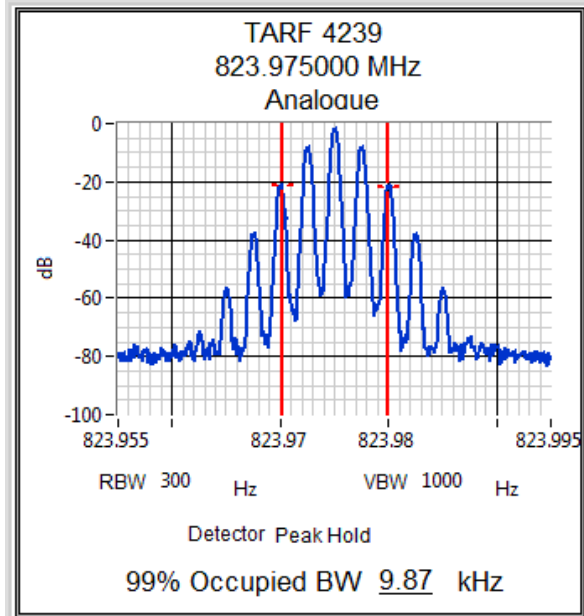
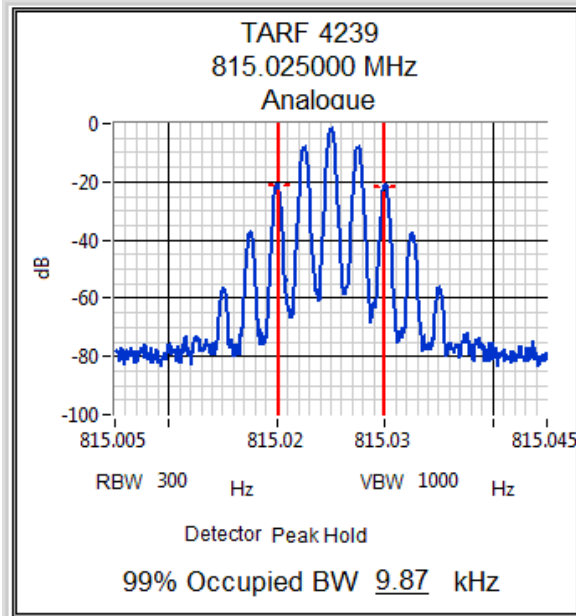
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

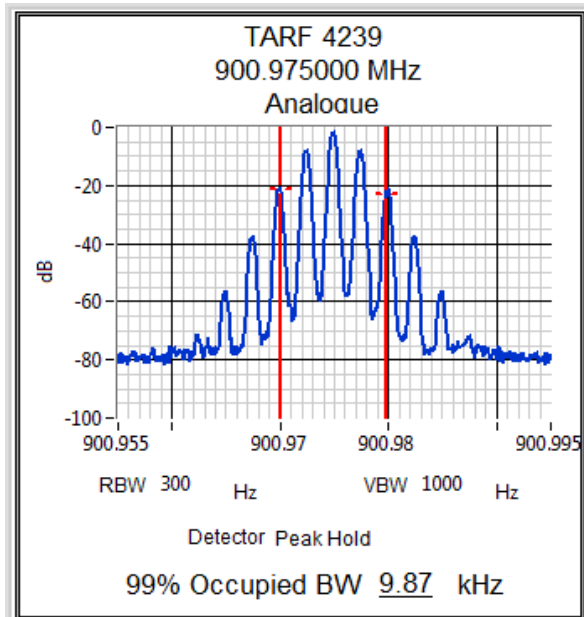
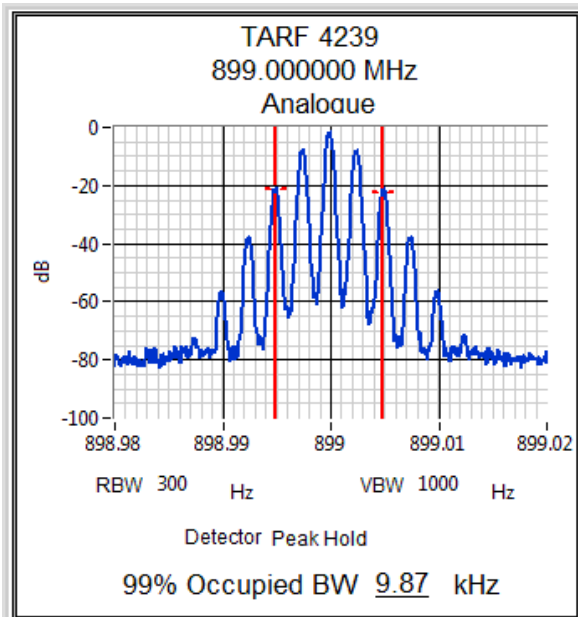
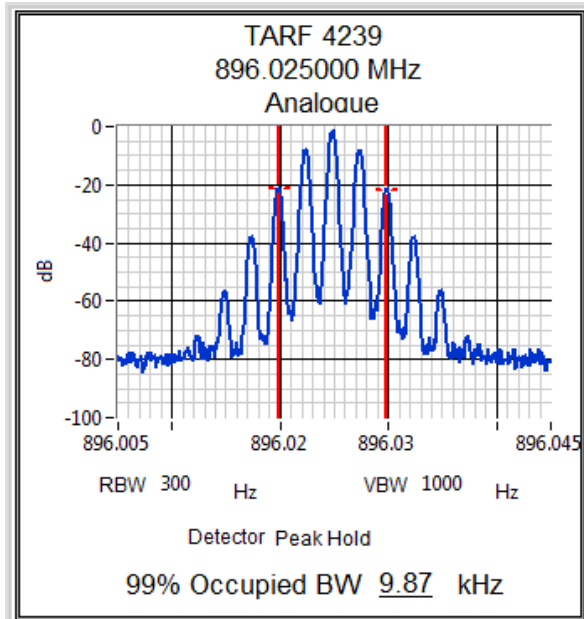
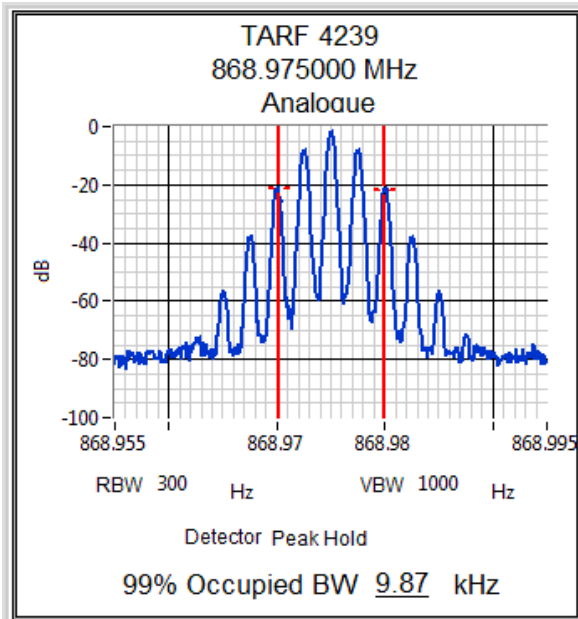
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

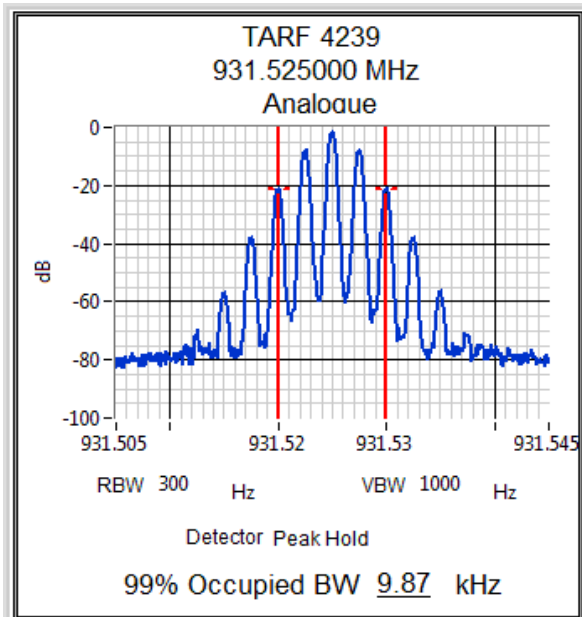
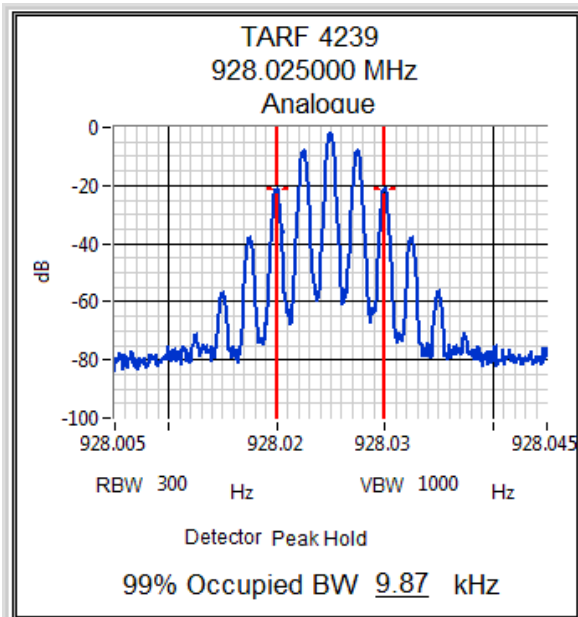
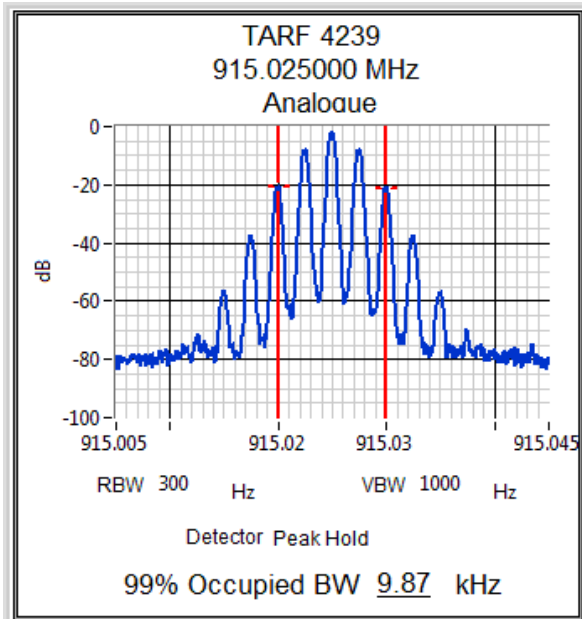
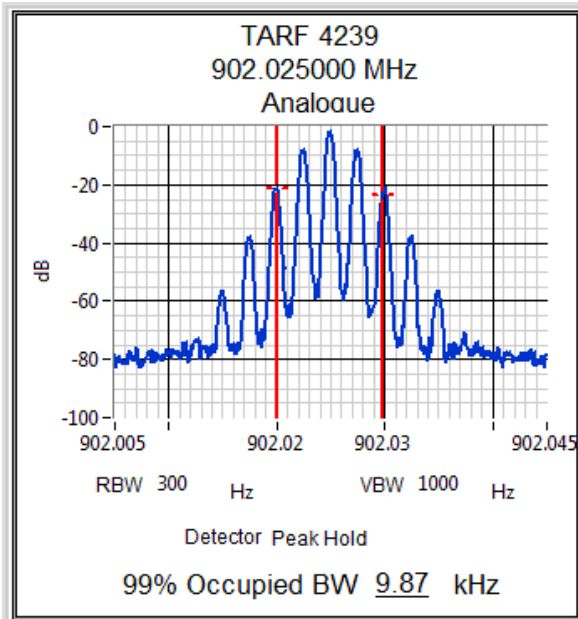
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

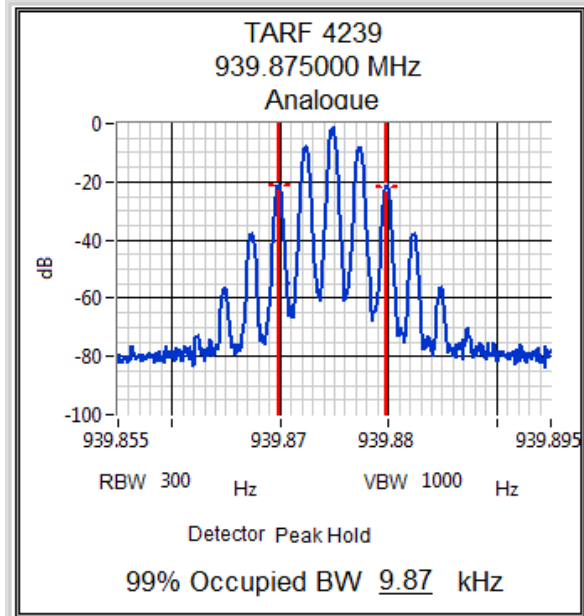
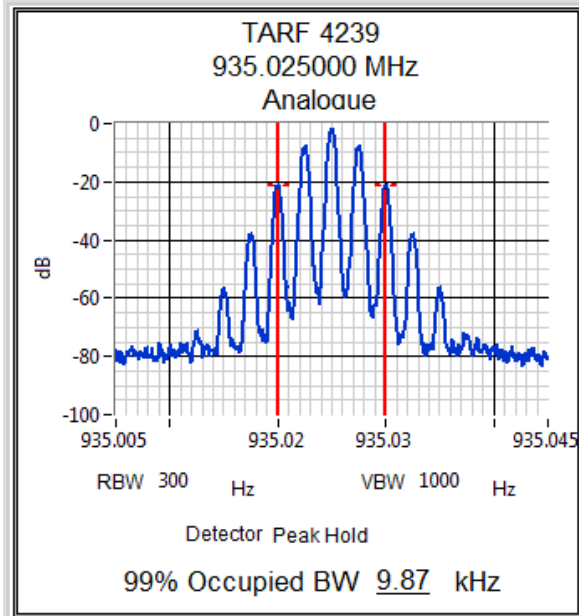
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing

Analogue Modulation

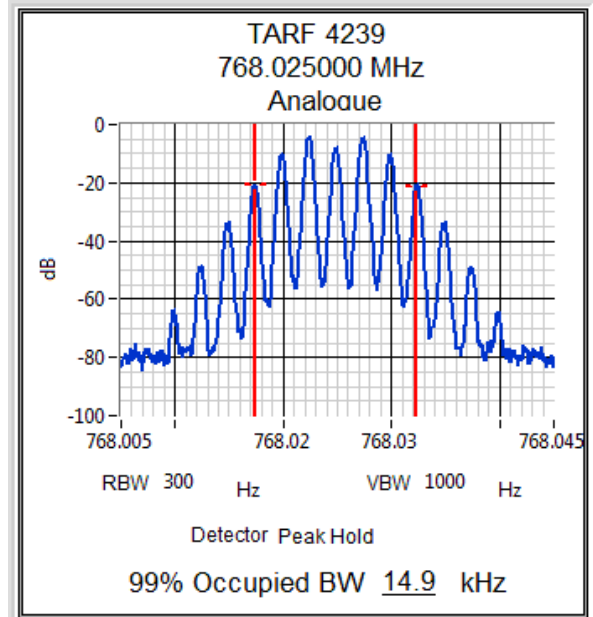
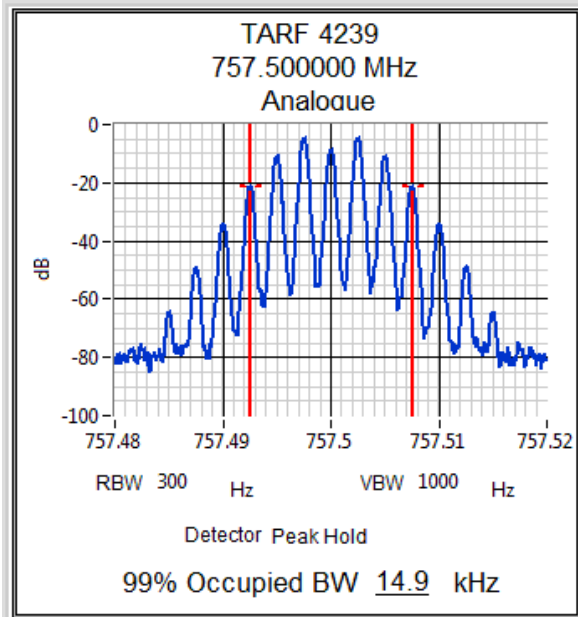
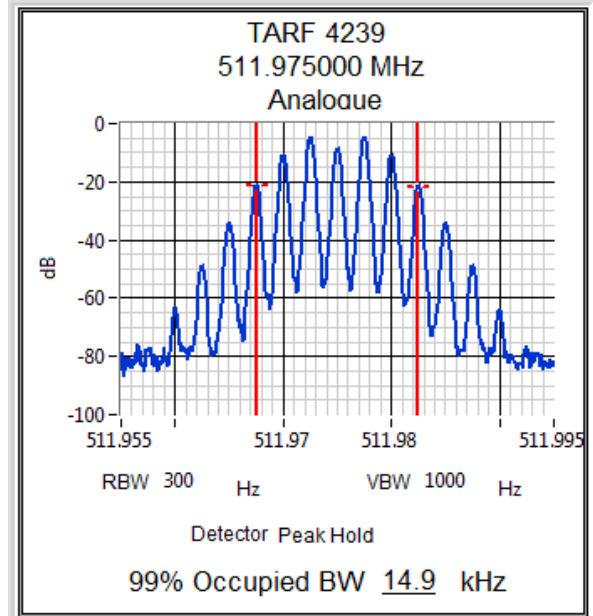
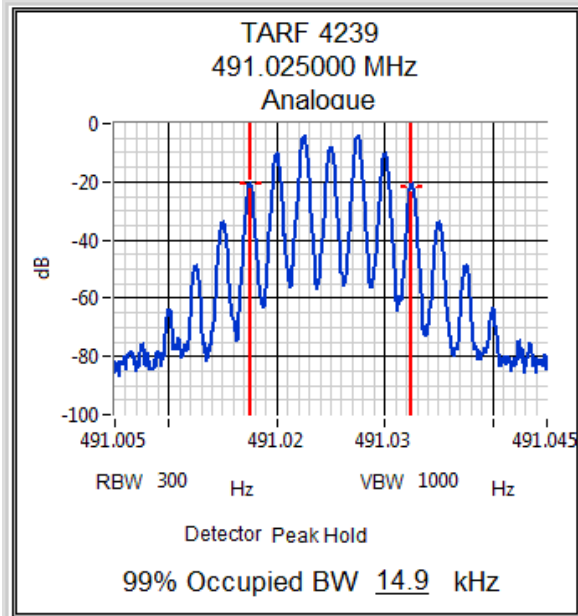




### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

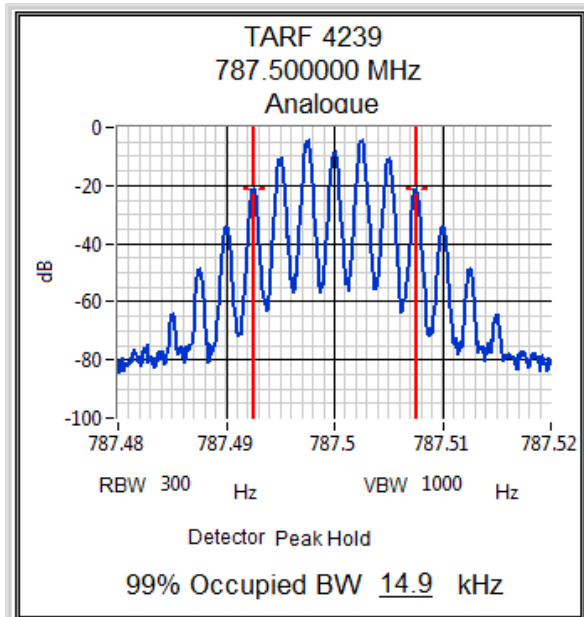
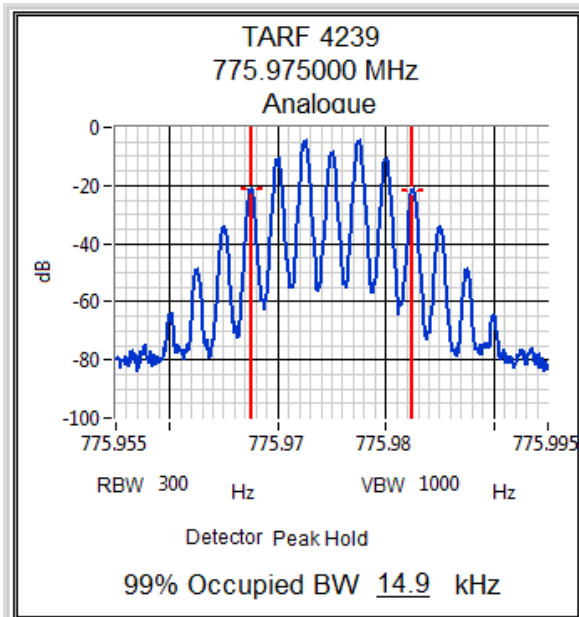
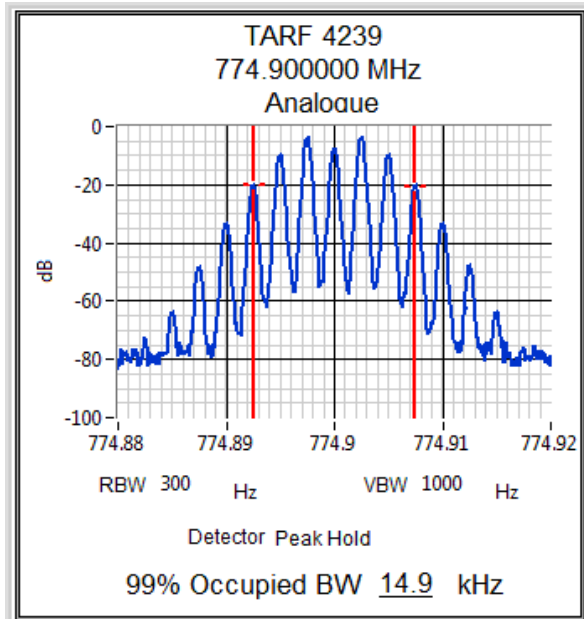
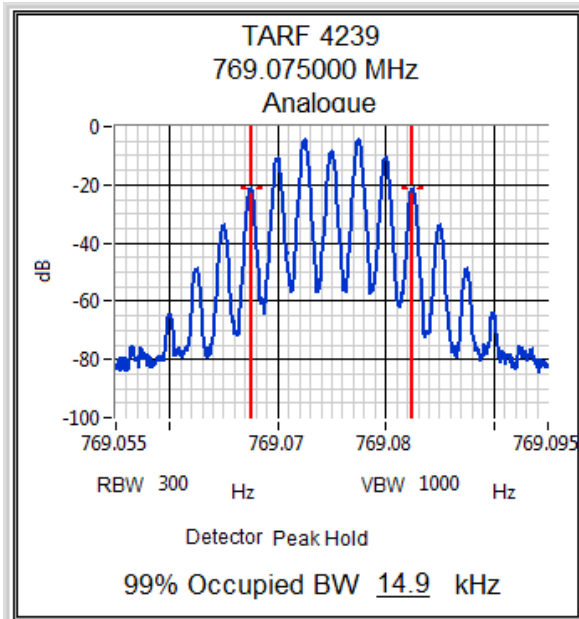
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

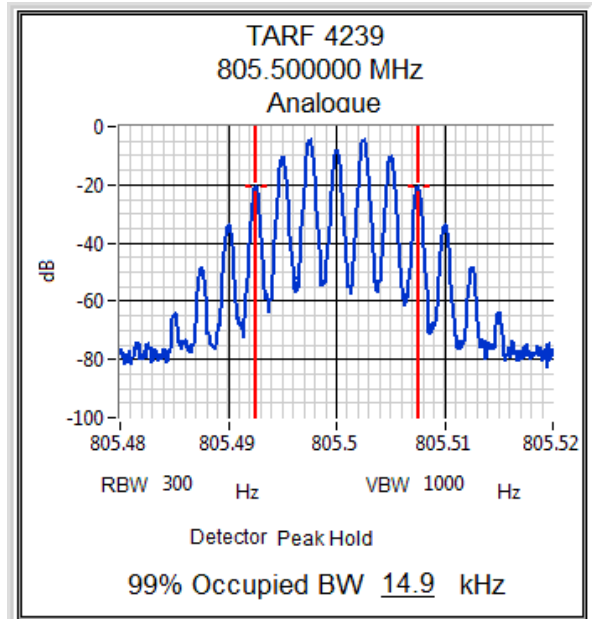
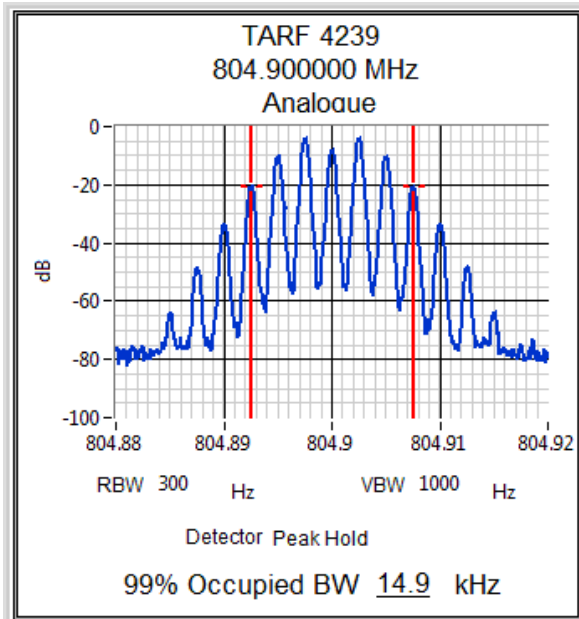
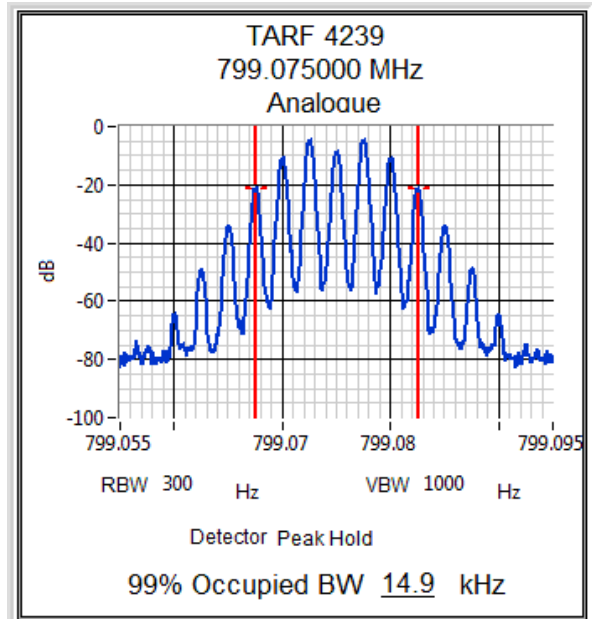
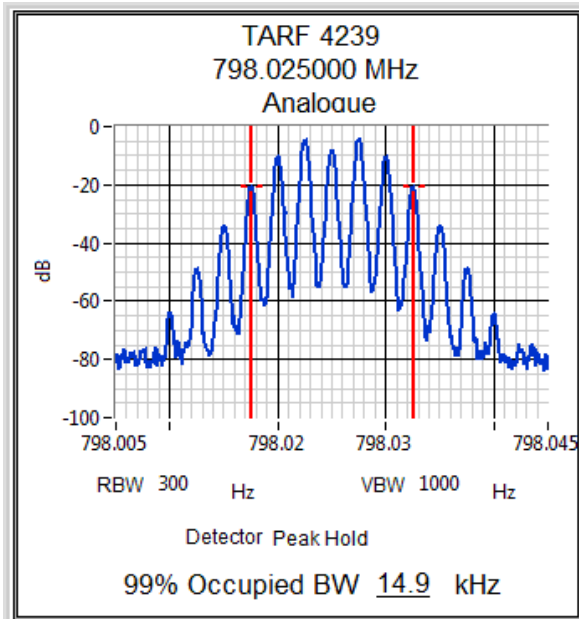
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

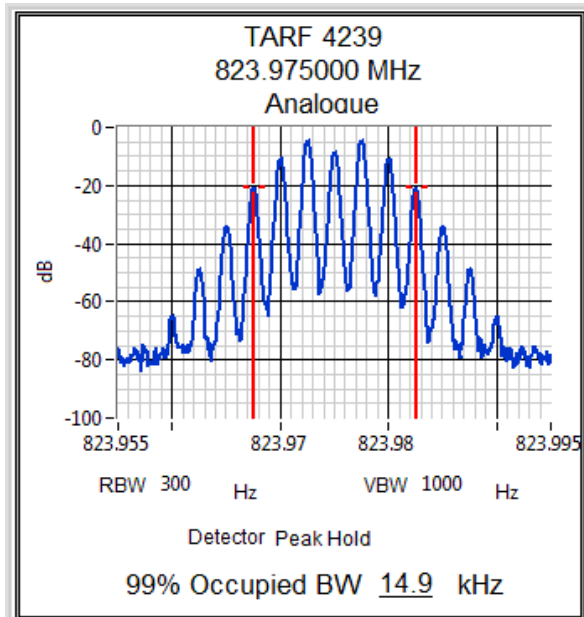
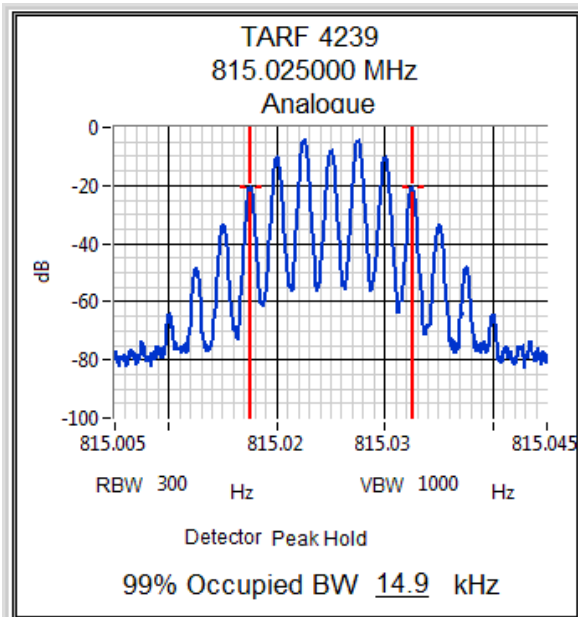
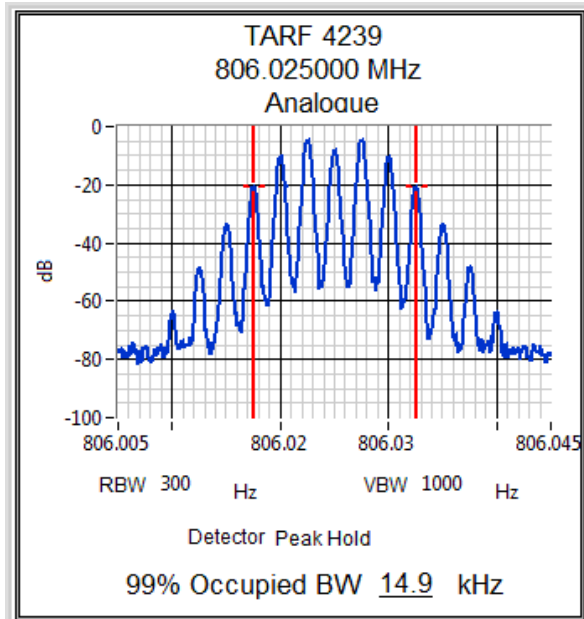
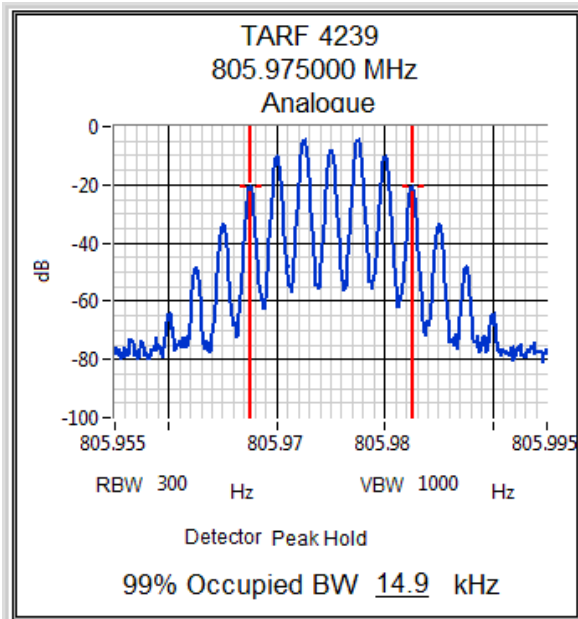
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

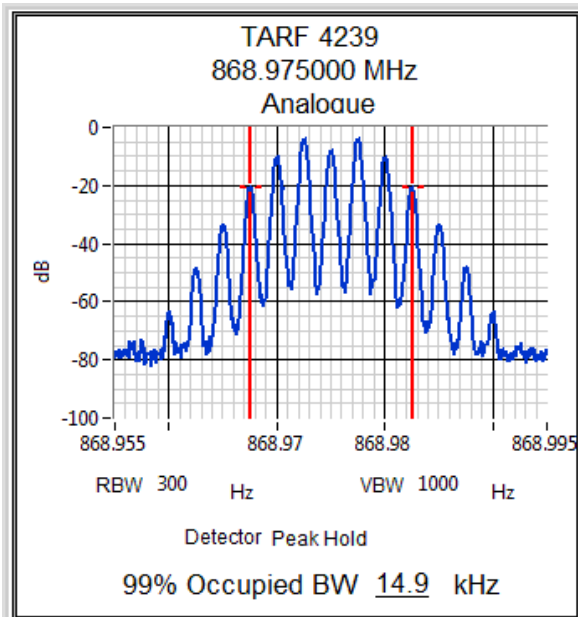
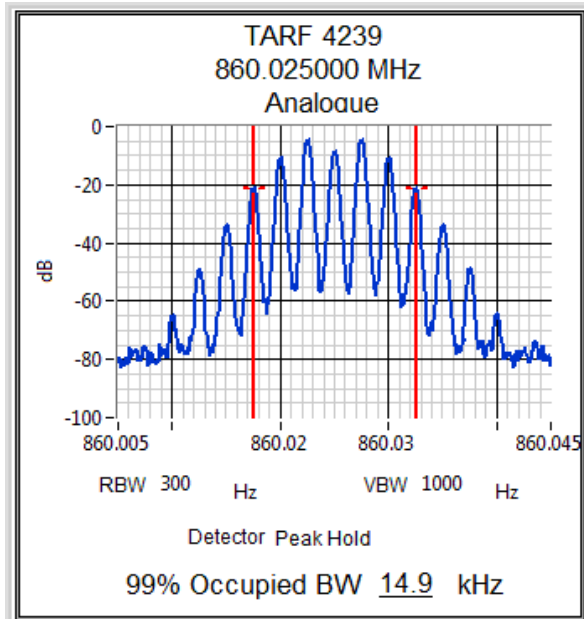
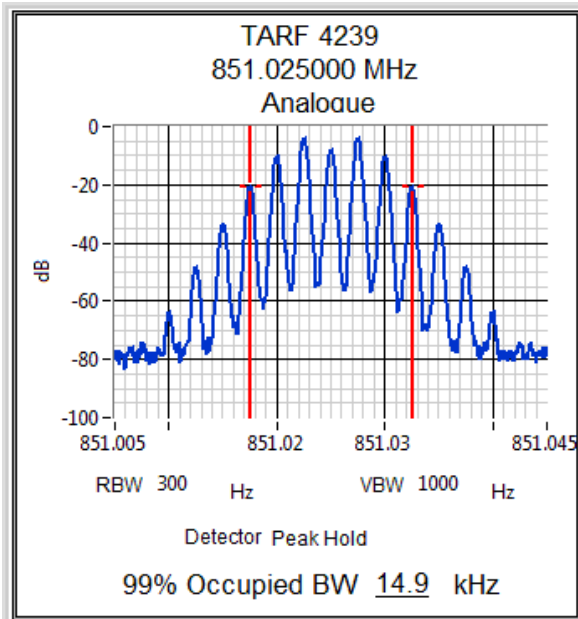
Analogue Modulation



### Transmitter Occupied (99%) Bandwidth

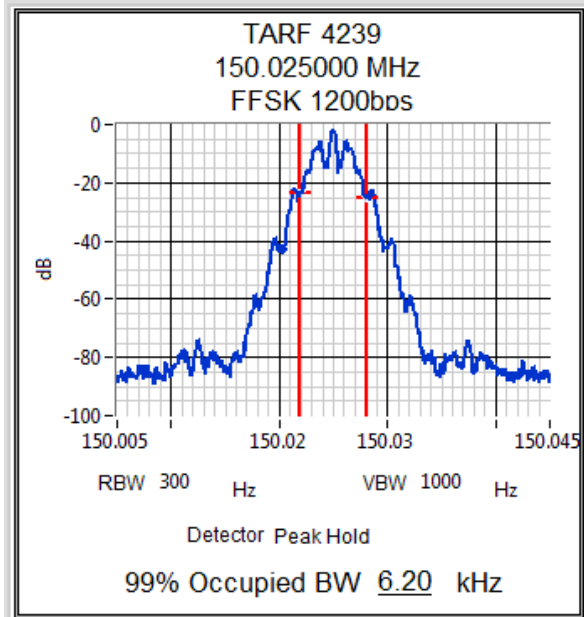
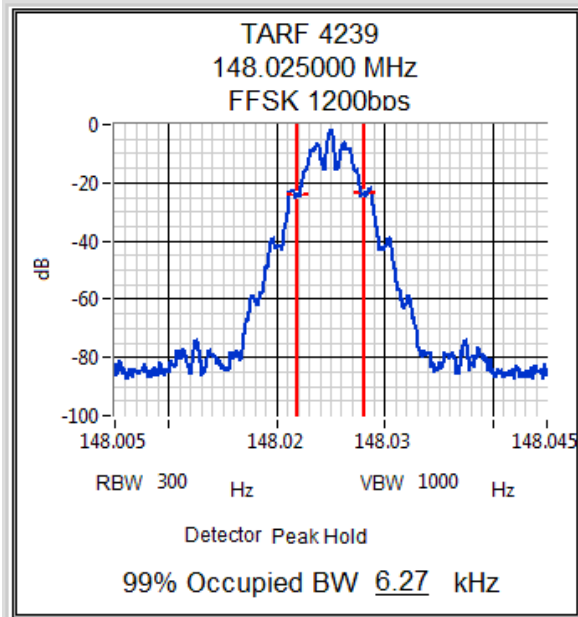
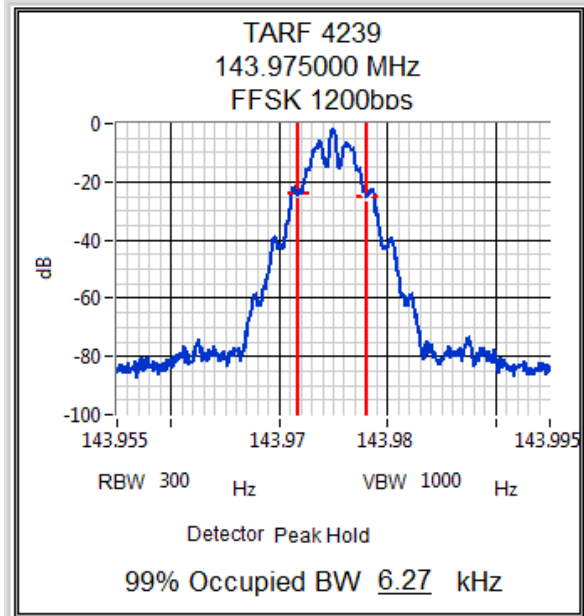
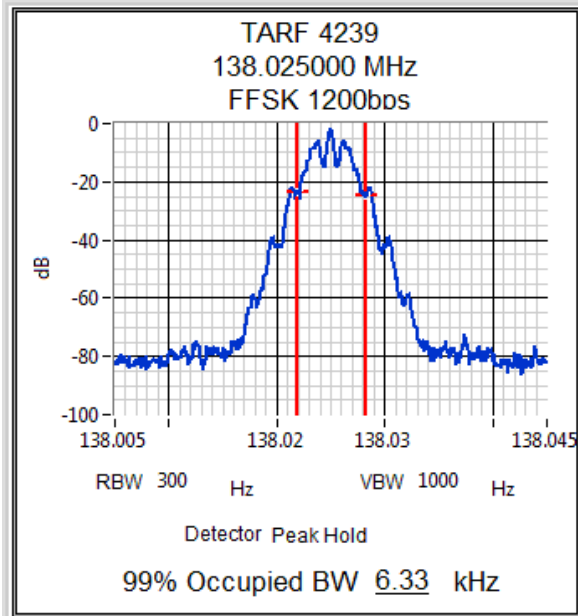
25 kHz ch spacing

Analogue Modulation



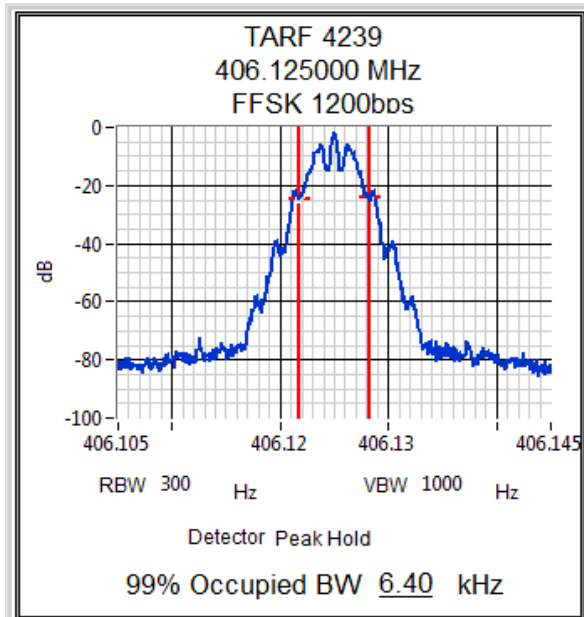
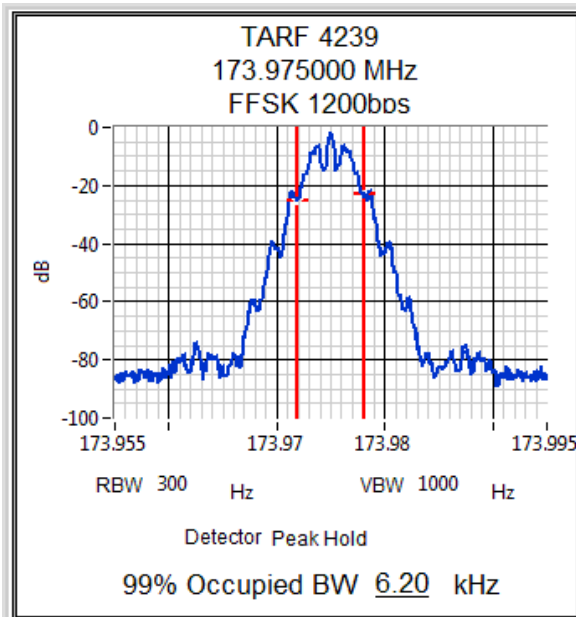
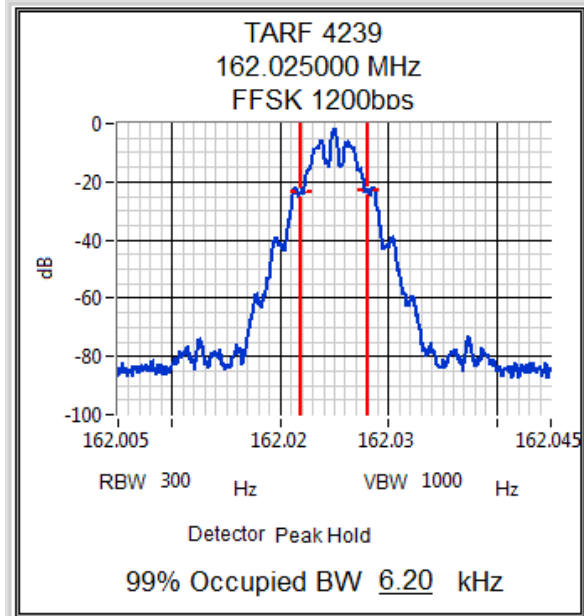
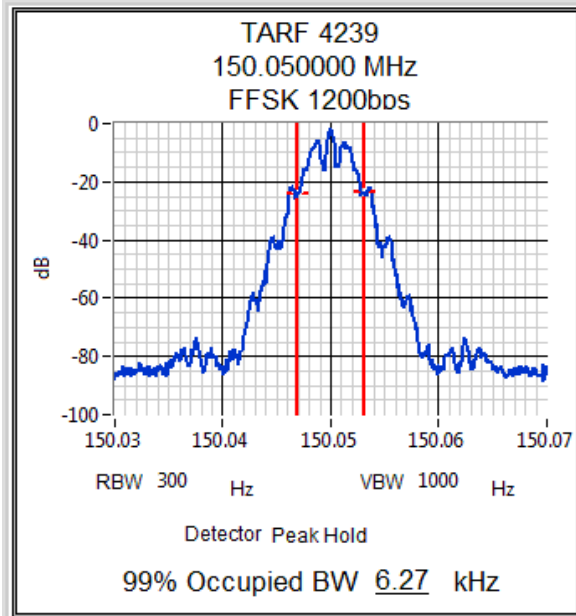
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation



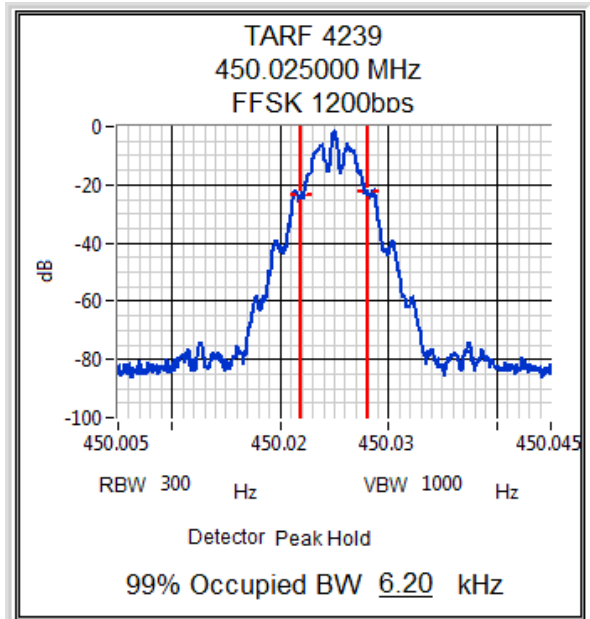
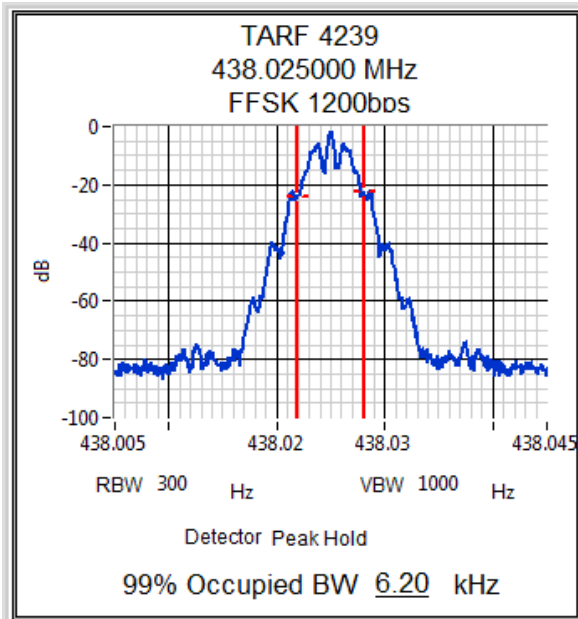
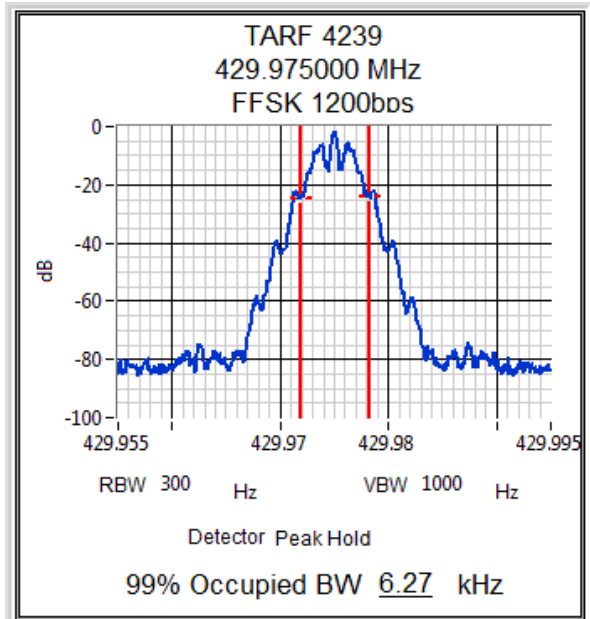
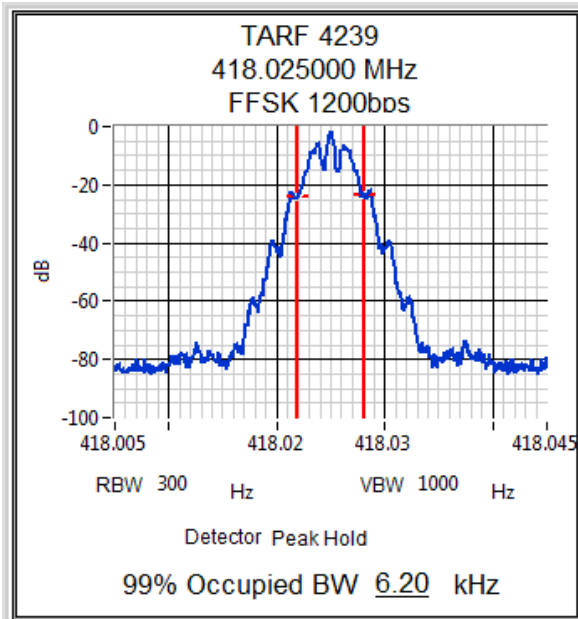
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation



### Transmitter Occupied (99%) Bandwidth

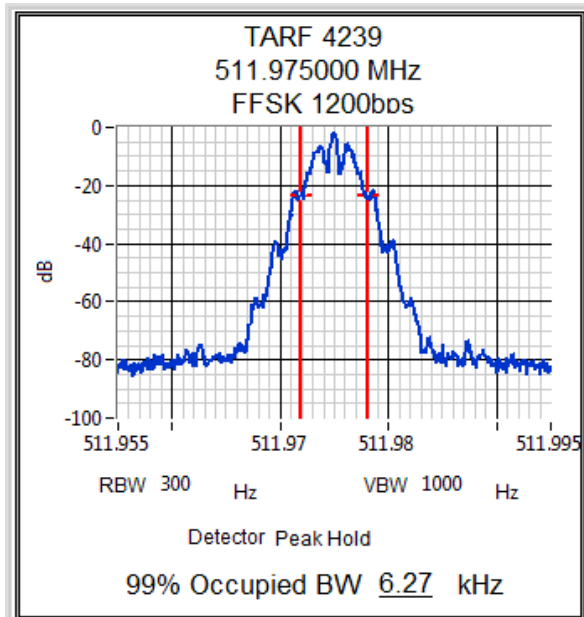
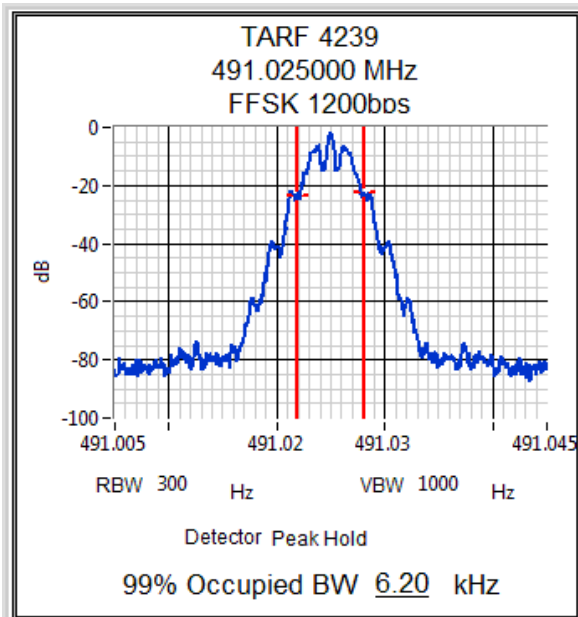
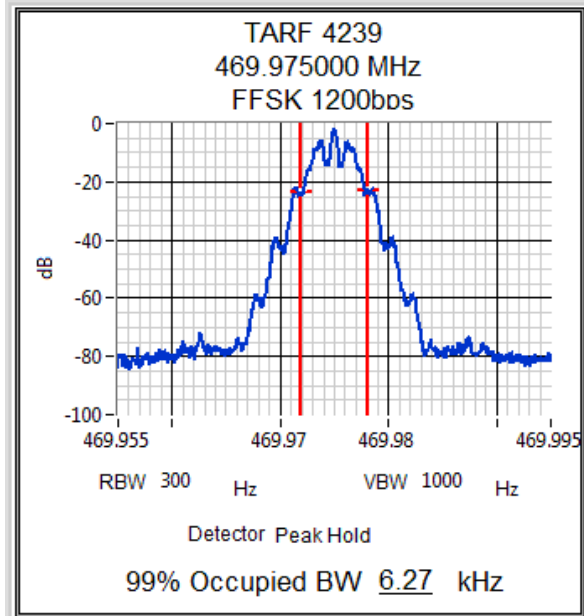
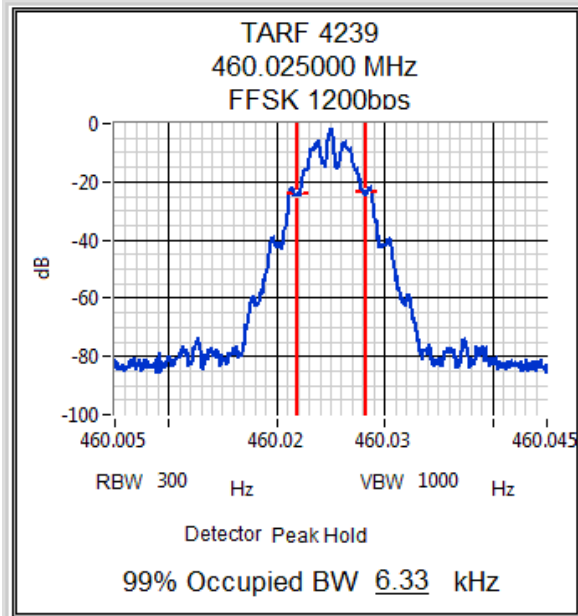
12.5 kHz ch spacing      FFSK 1200bps Modulation





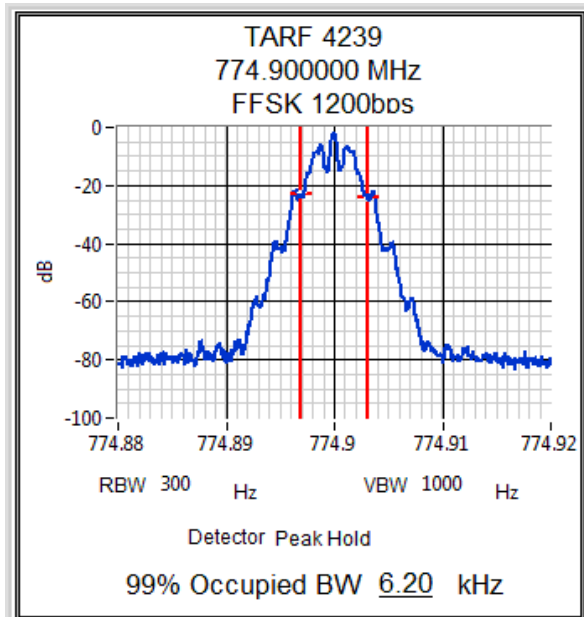
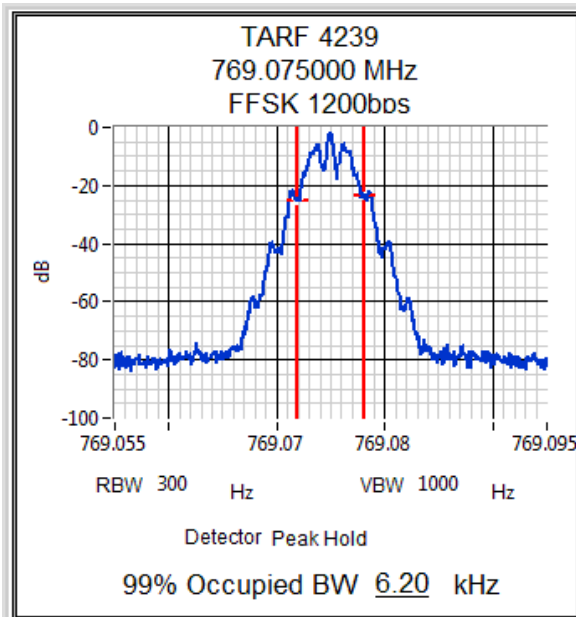
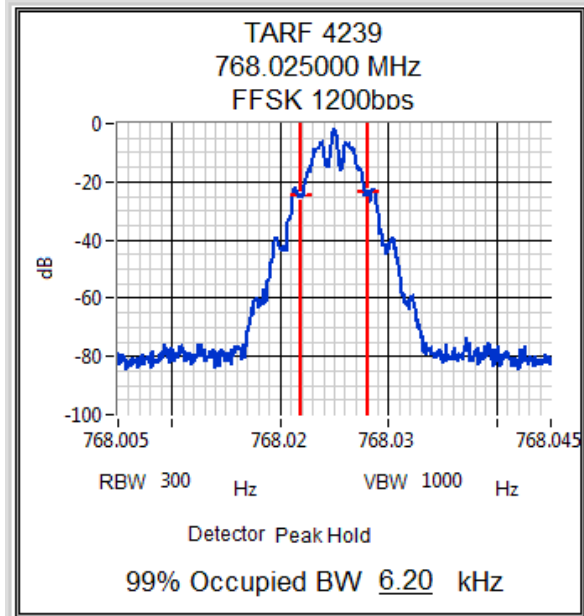
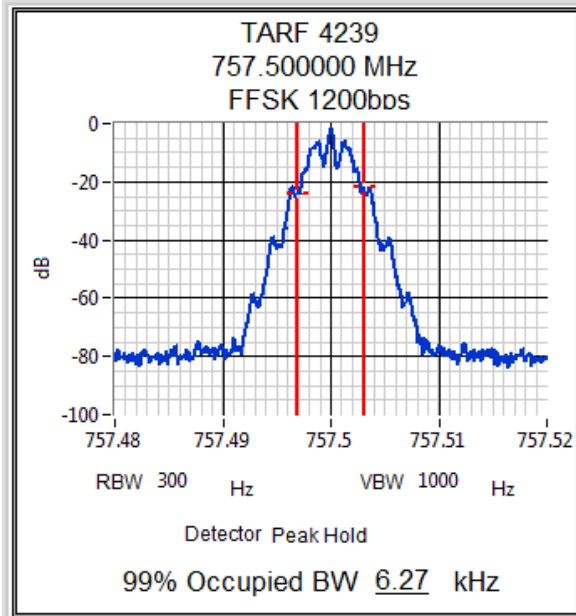
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation



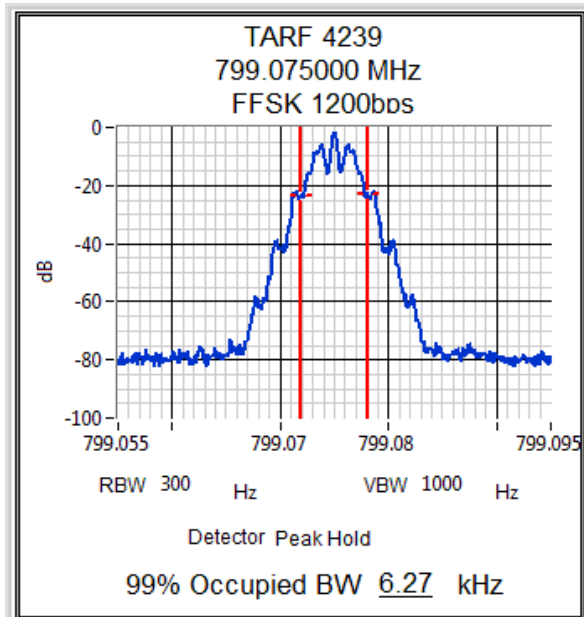
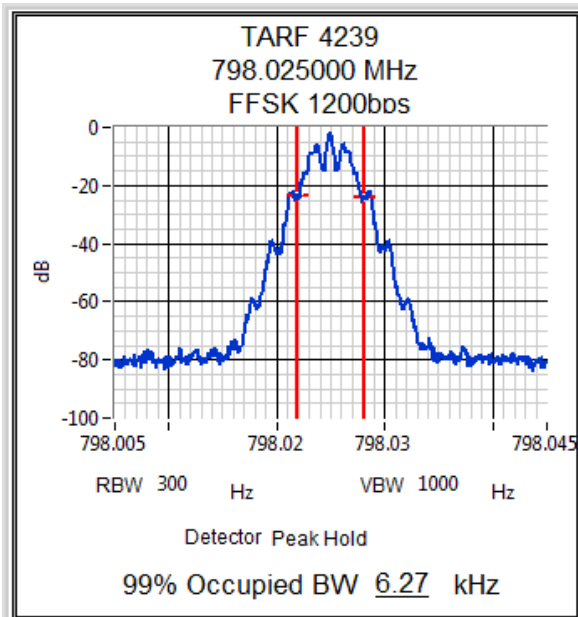
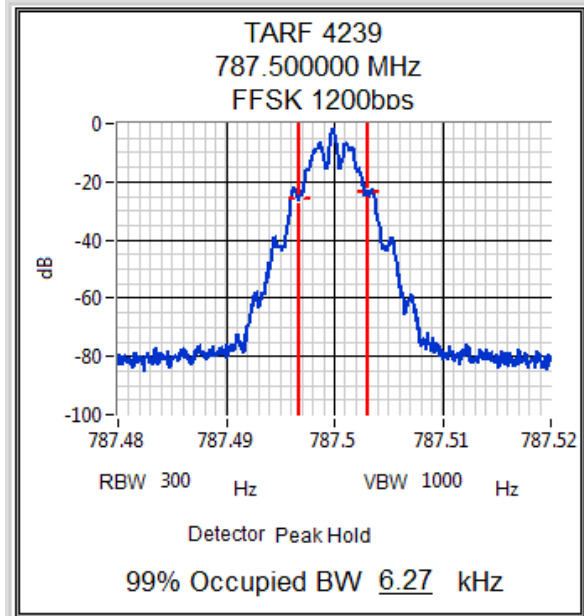
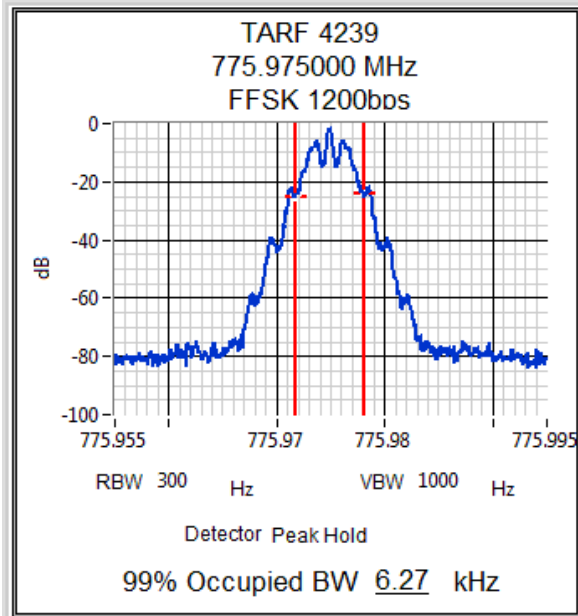
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation



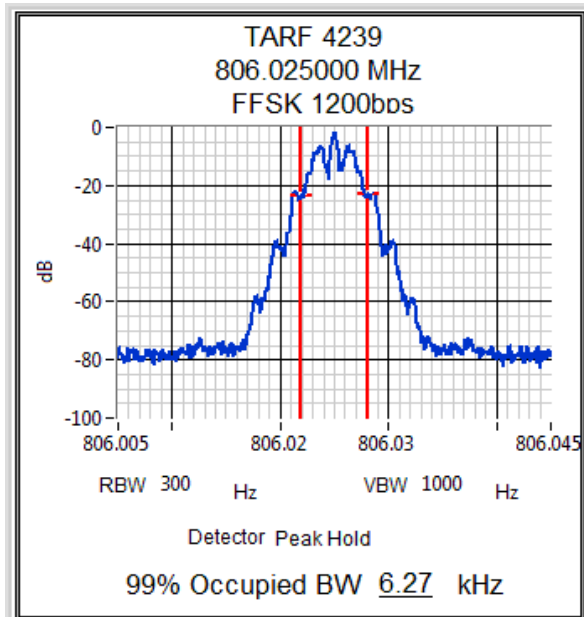
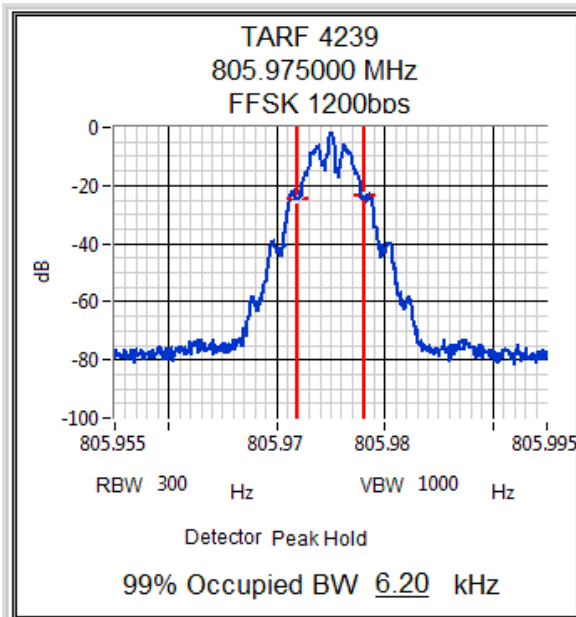
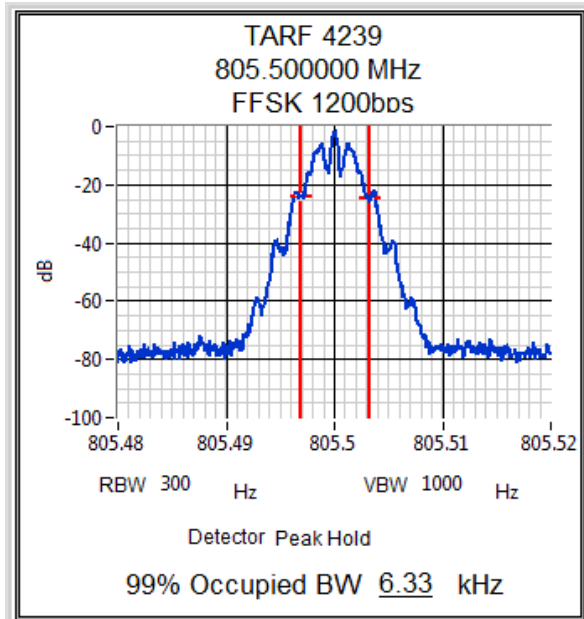
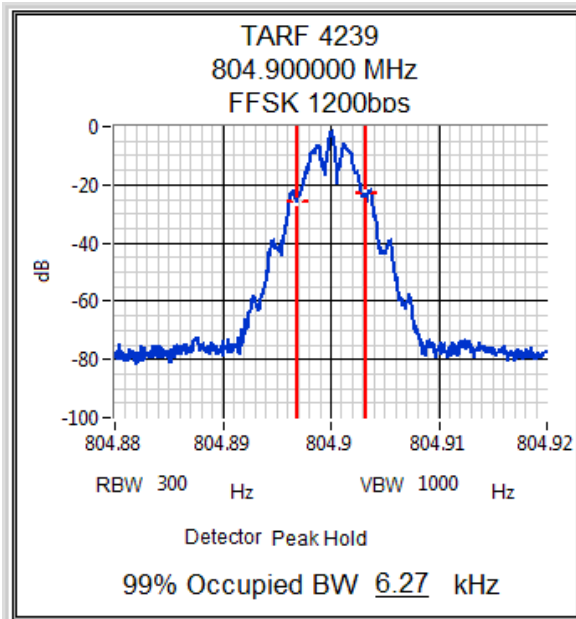
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation



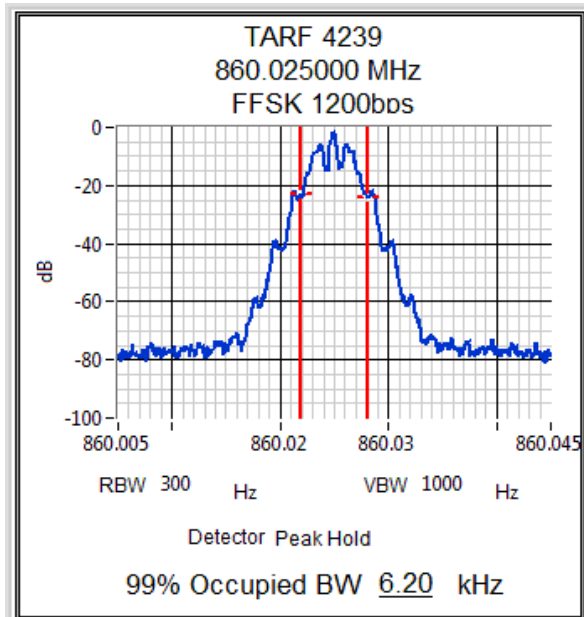
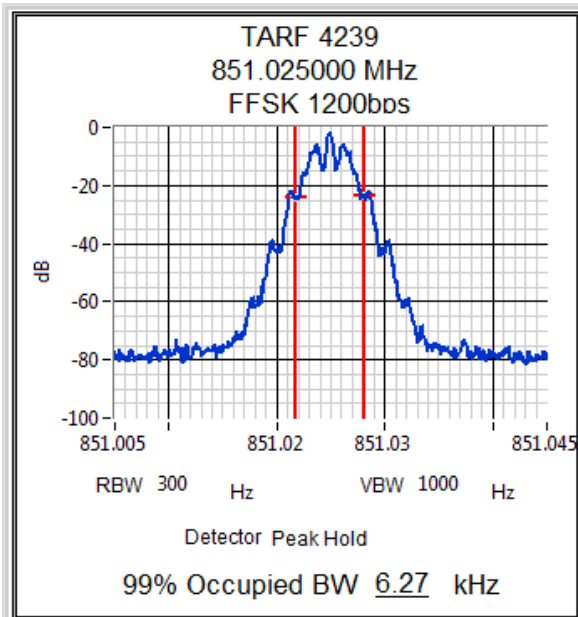
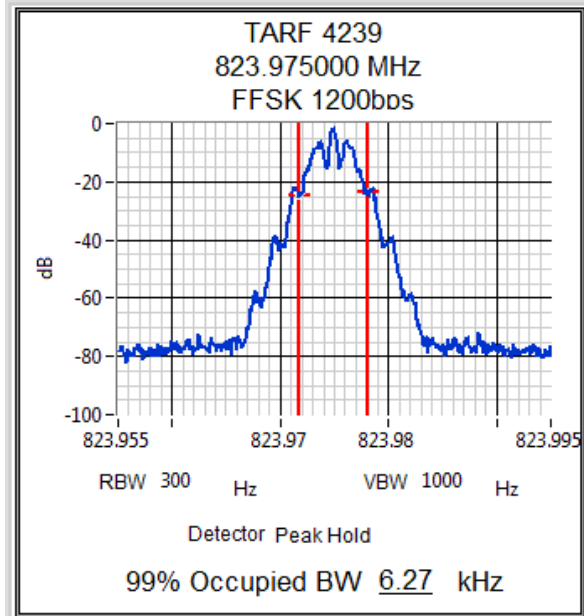
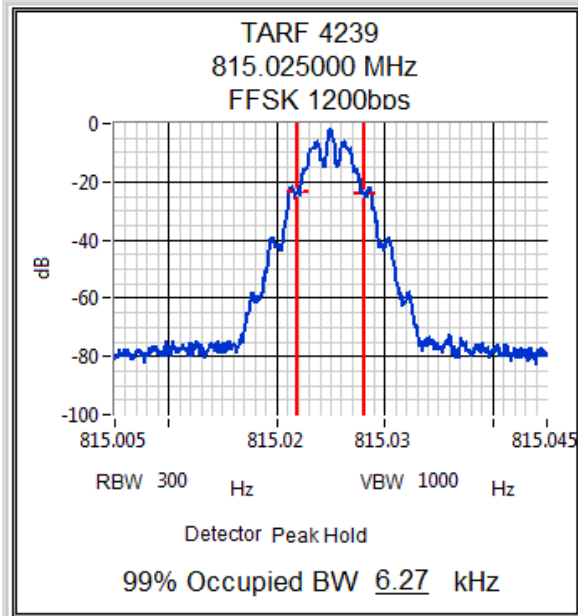
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation



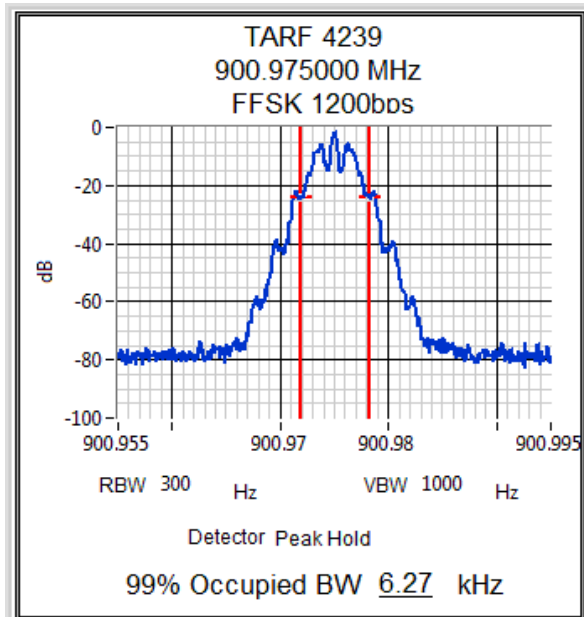
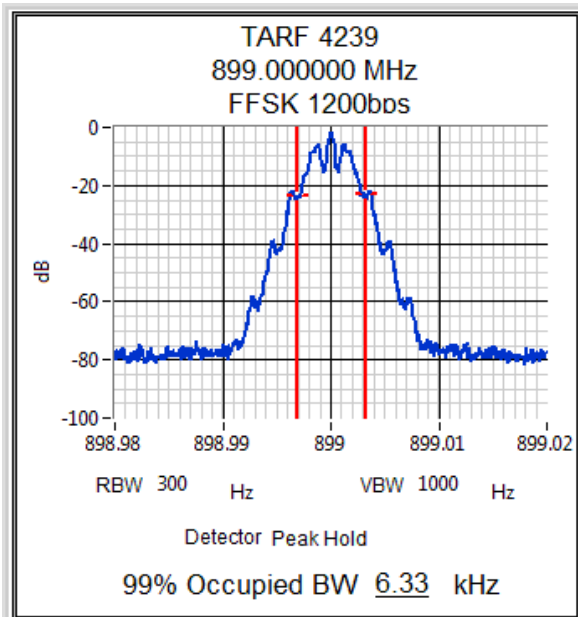
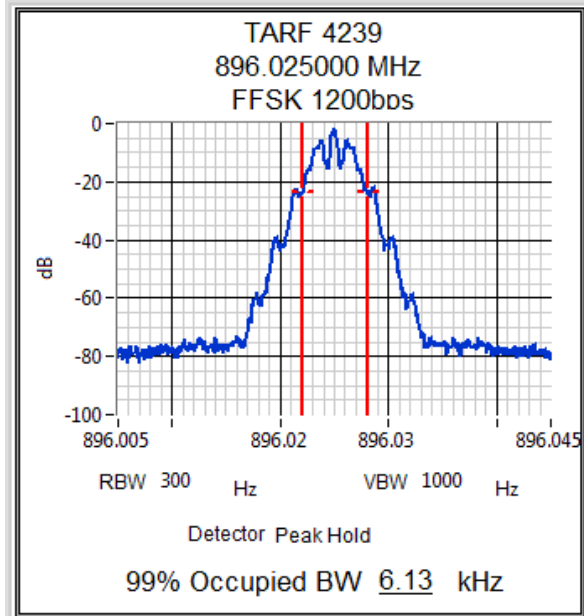
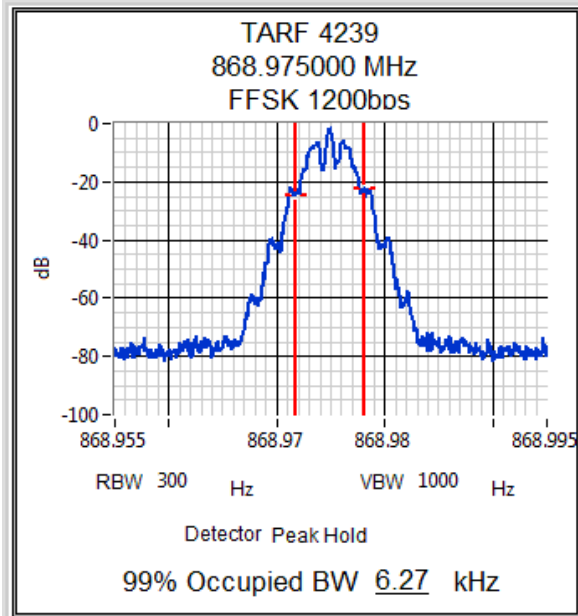
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation



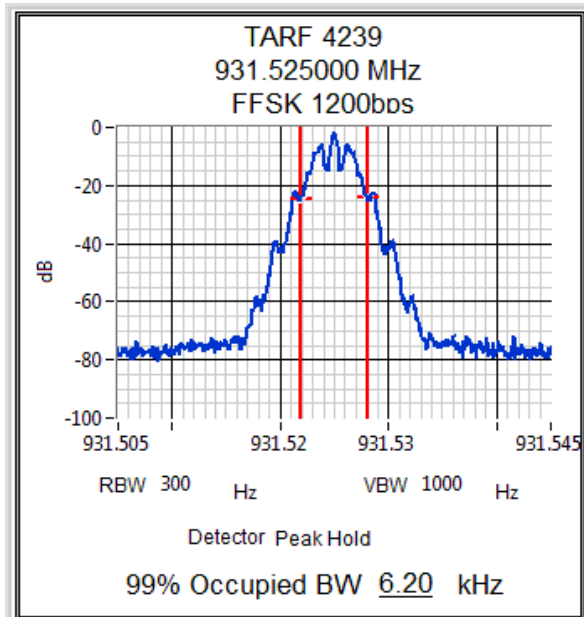
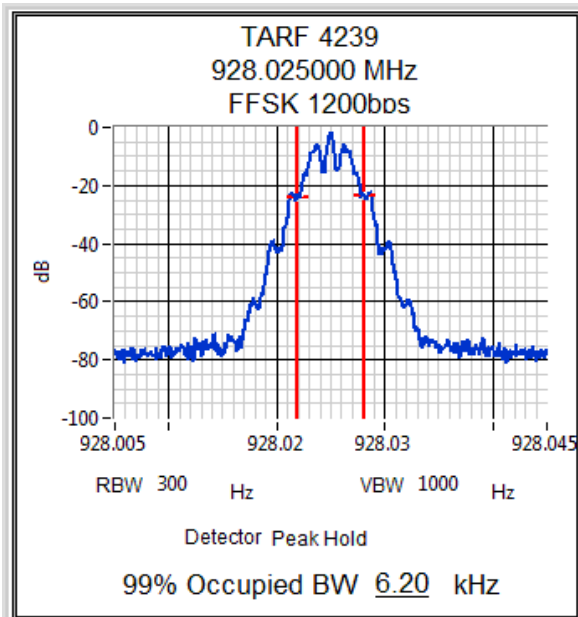
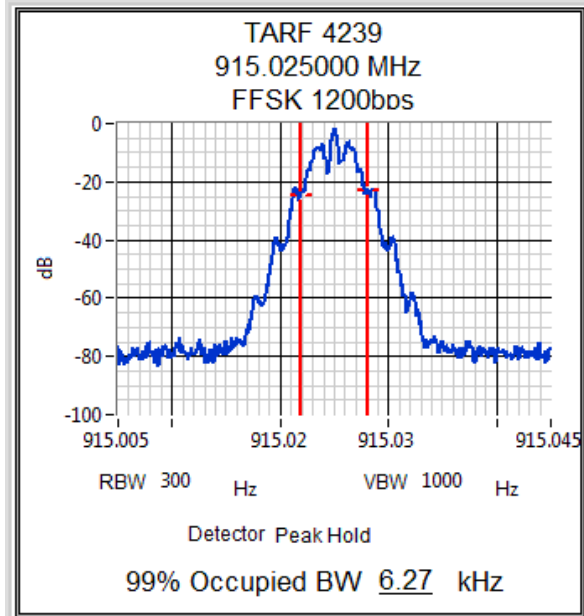
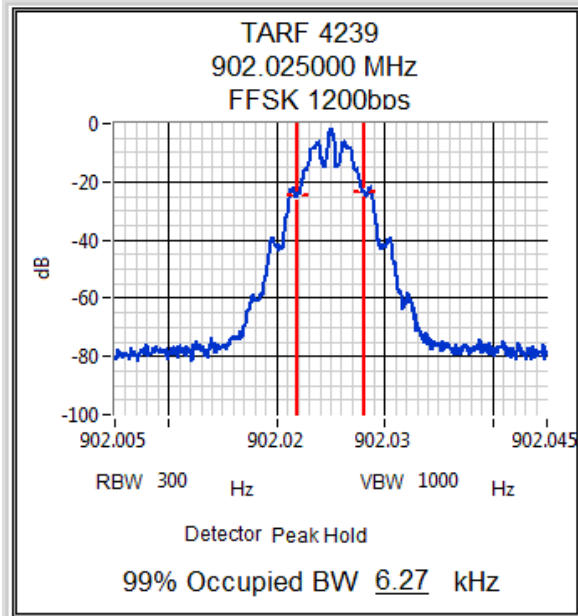
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation



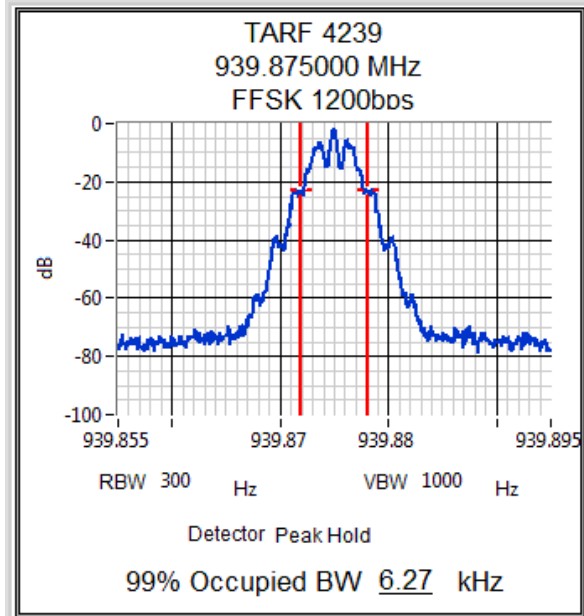
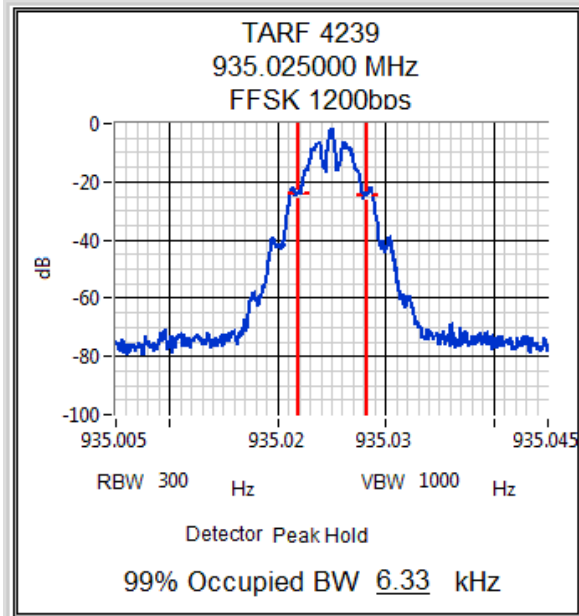
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 1200bps Modulation

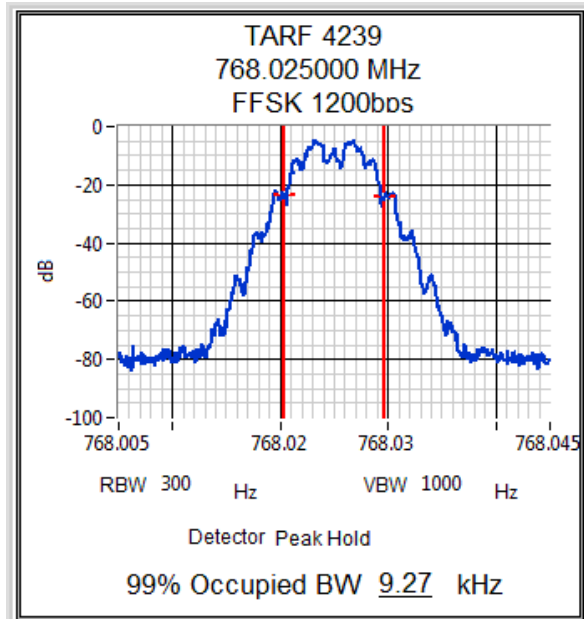
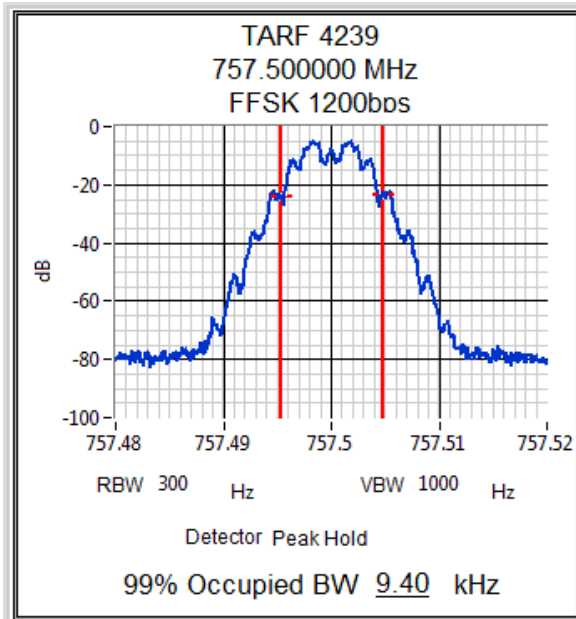
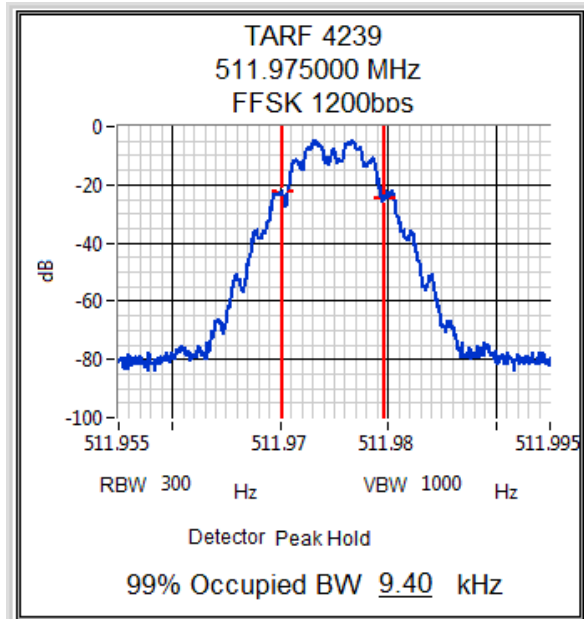
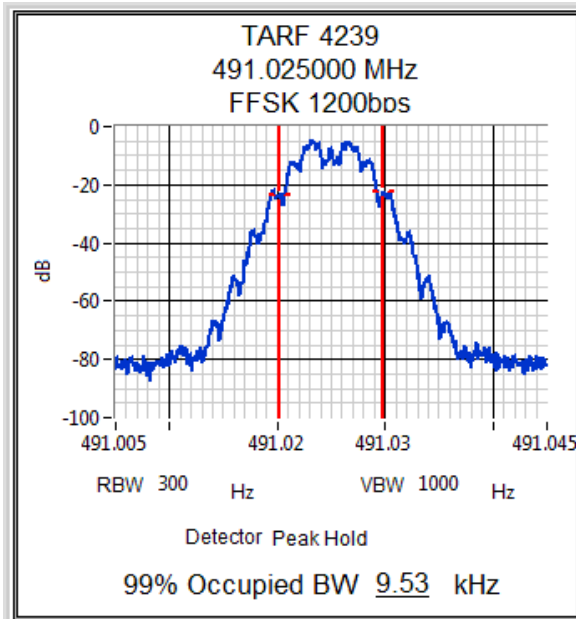




### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

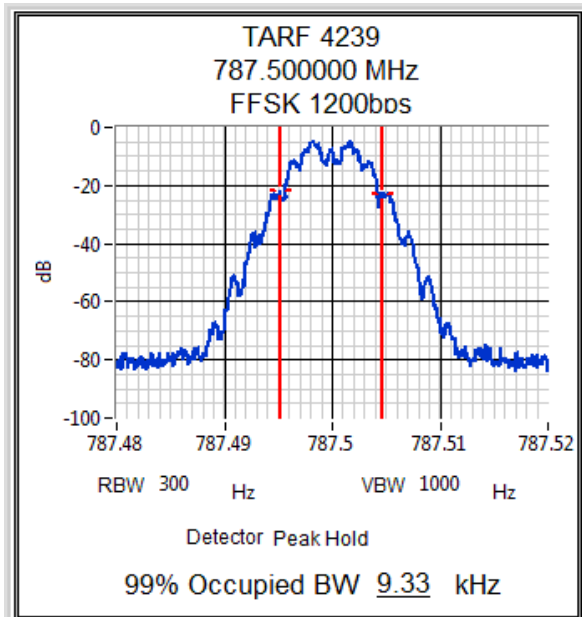
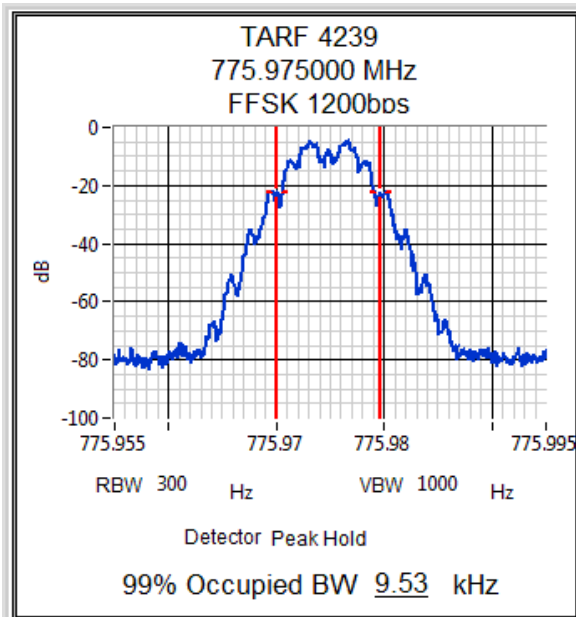
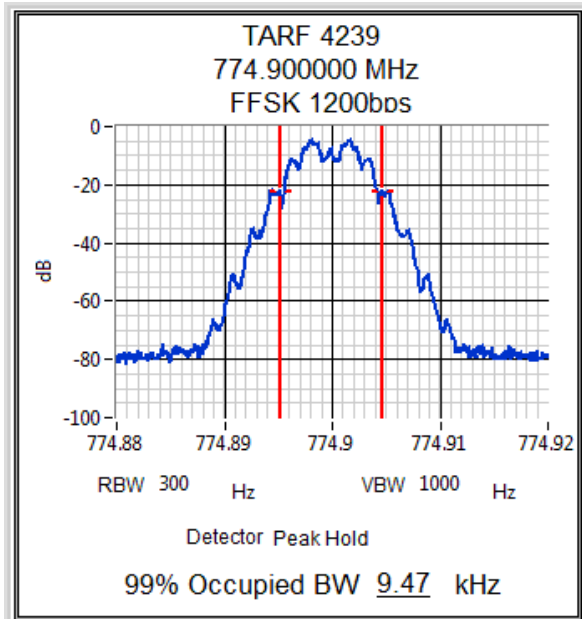
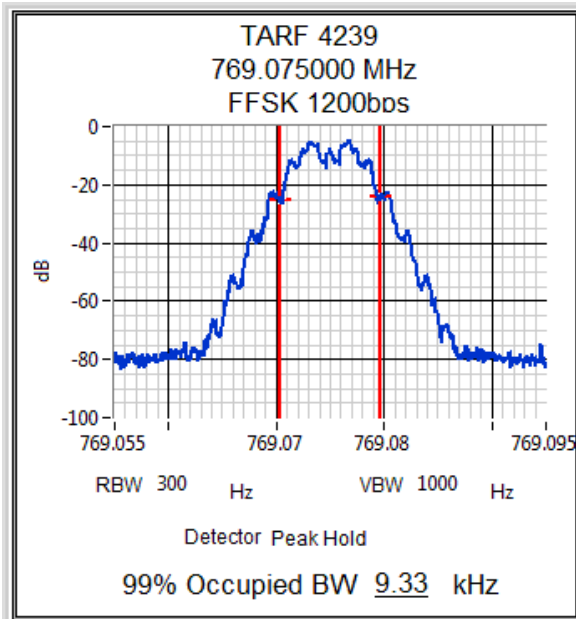
FFSK 1200bps Modulation



### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

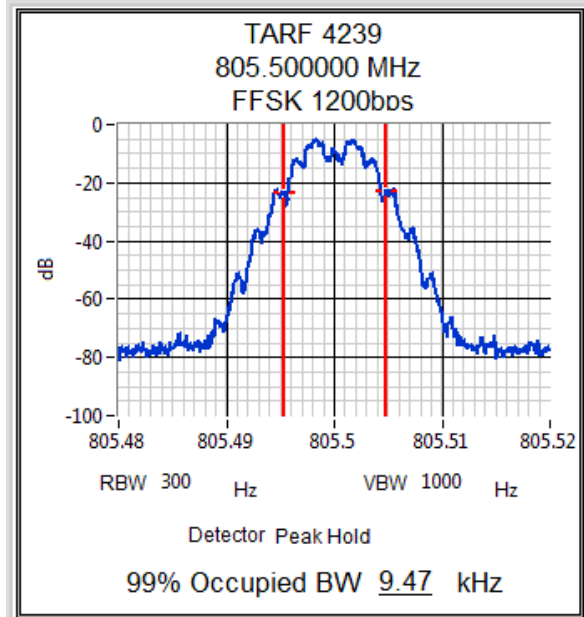
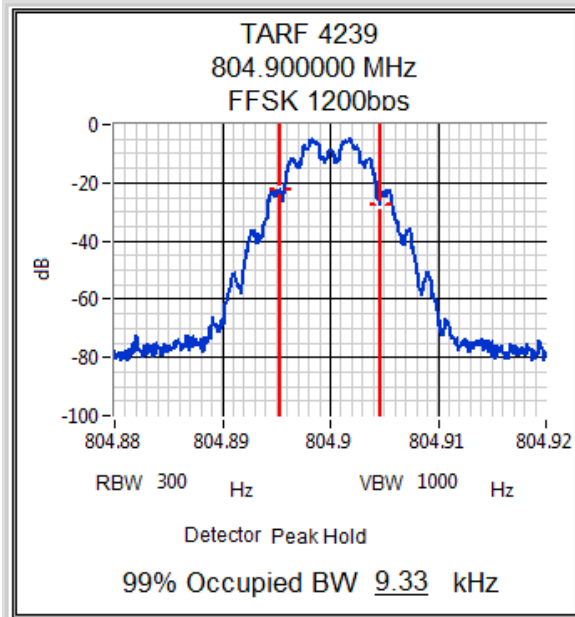
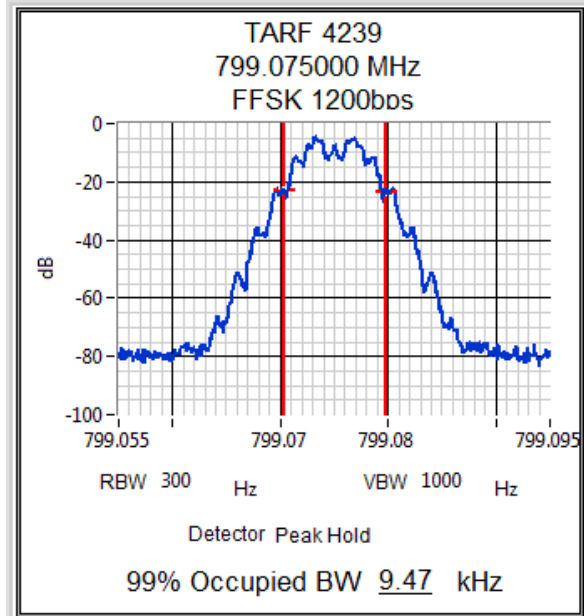
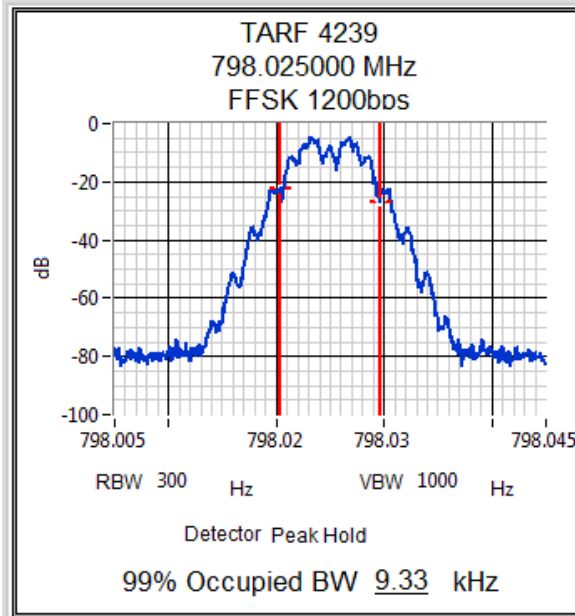
FFSK 1200bps Modulation



### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

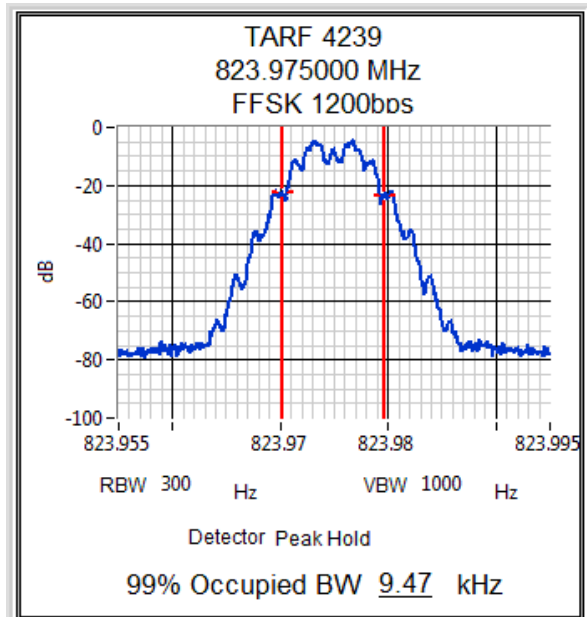
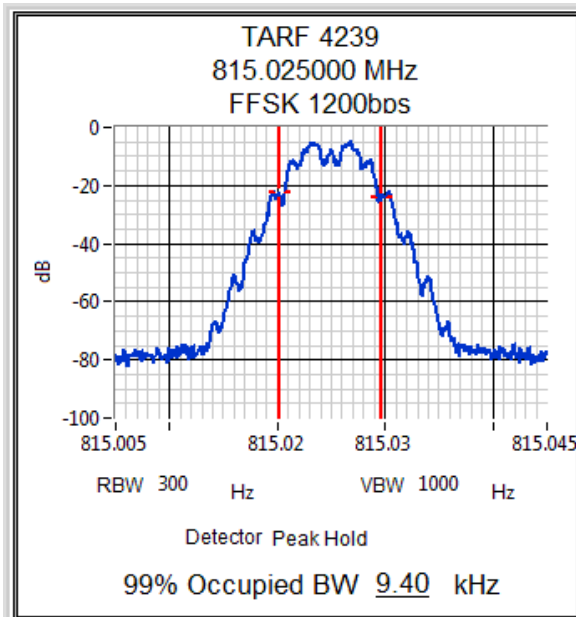
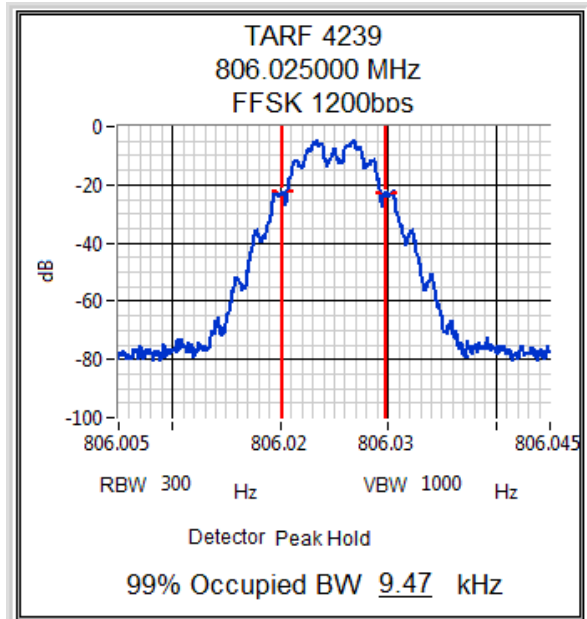
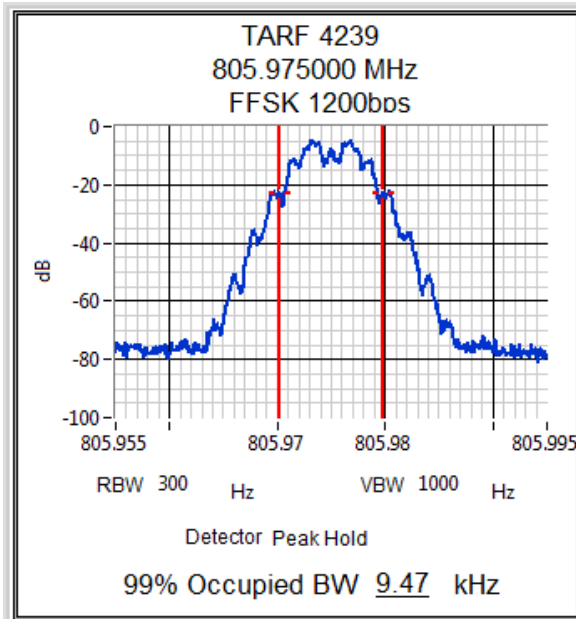
FFSK 1200bps Modulation



### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

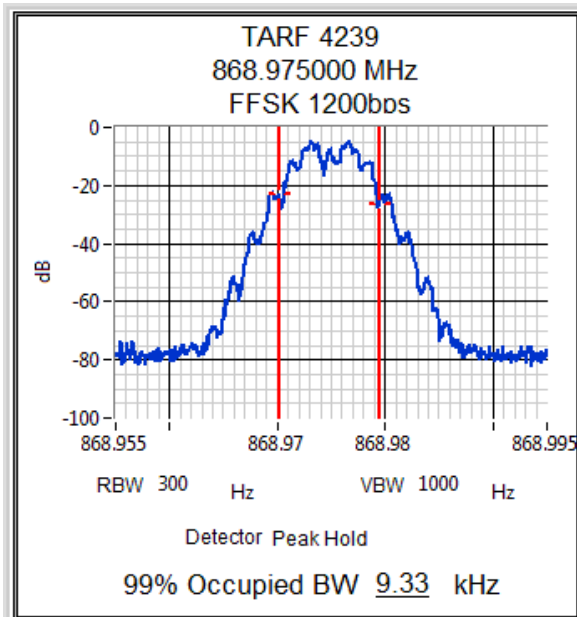
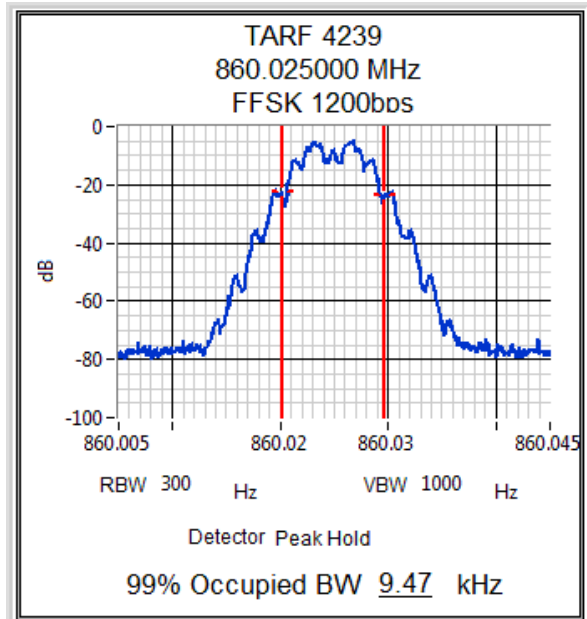
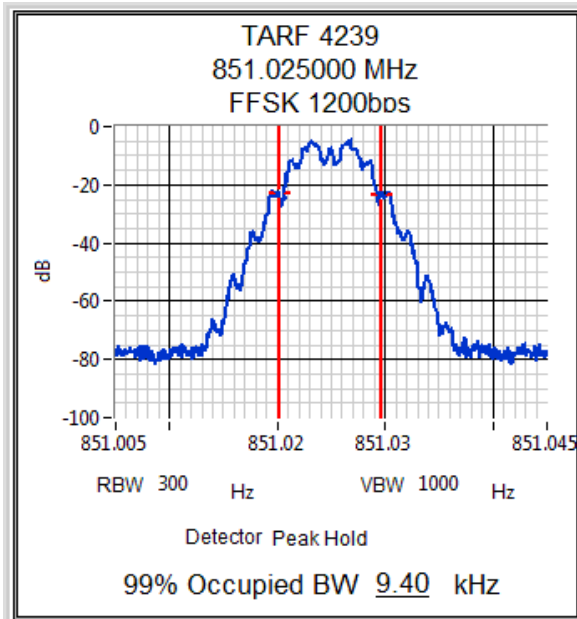
FFSK 1200bps Modulation



### Transmitter Occupied (99%) Bandwidth

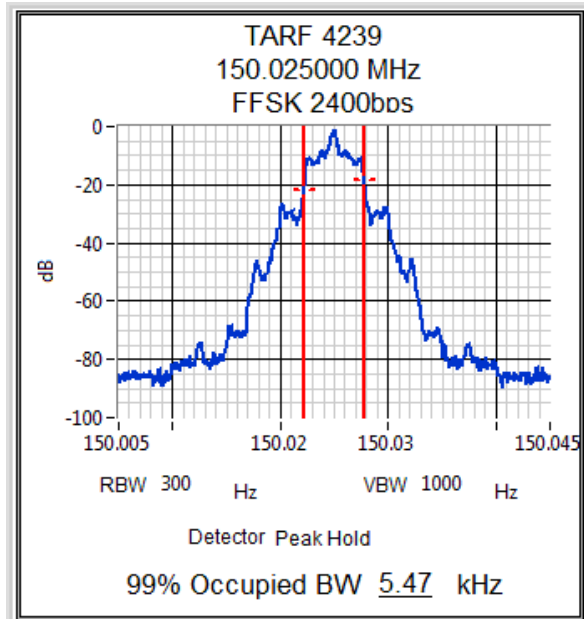
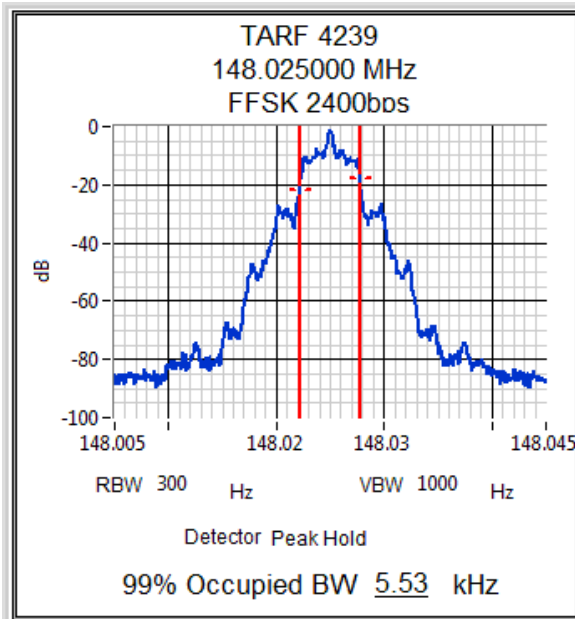
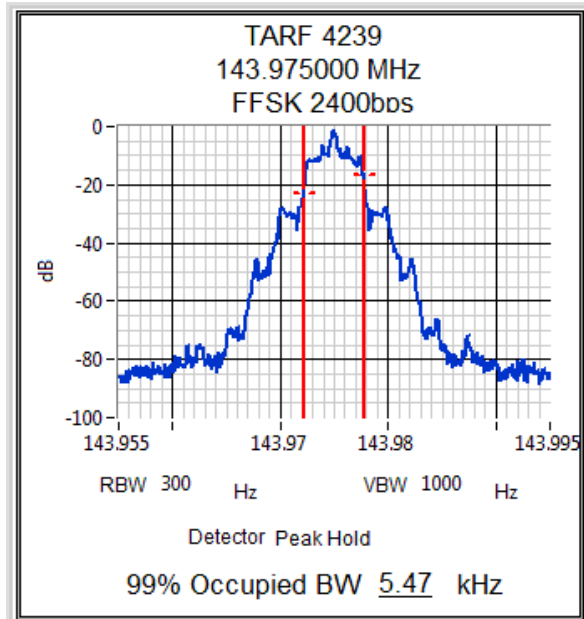
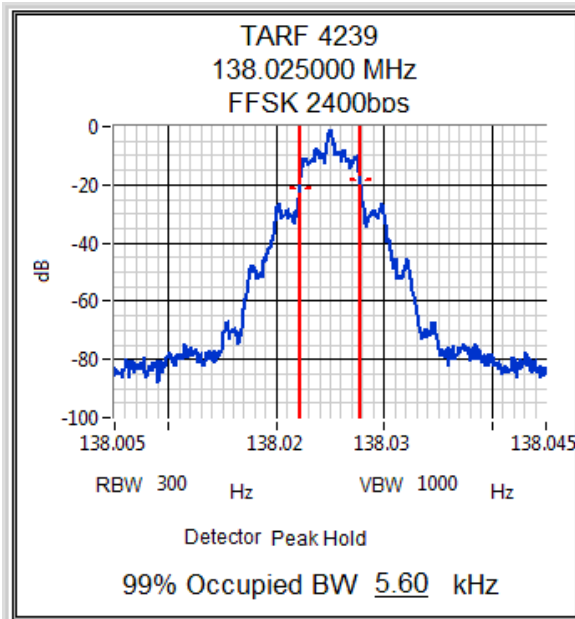
25 kHz ch spacing

FFSK 1200bps Modulation



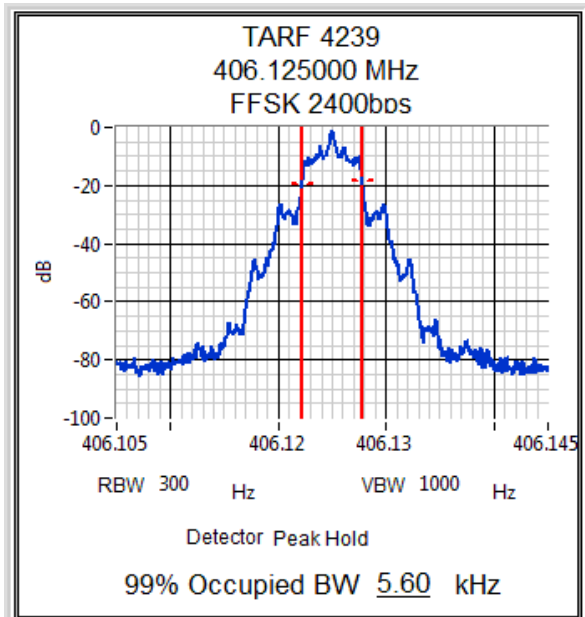
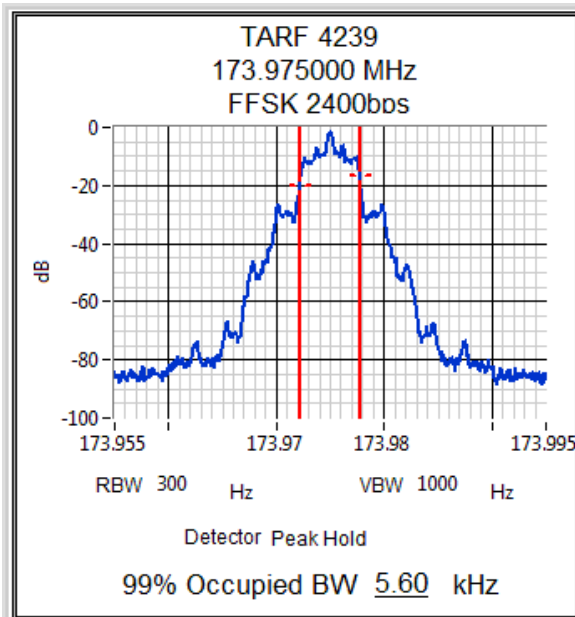
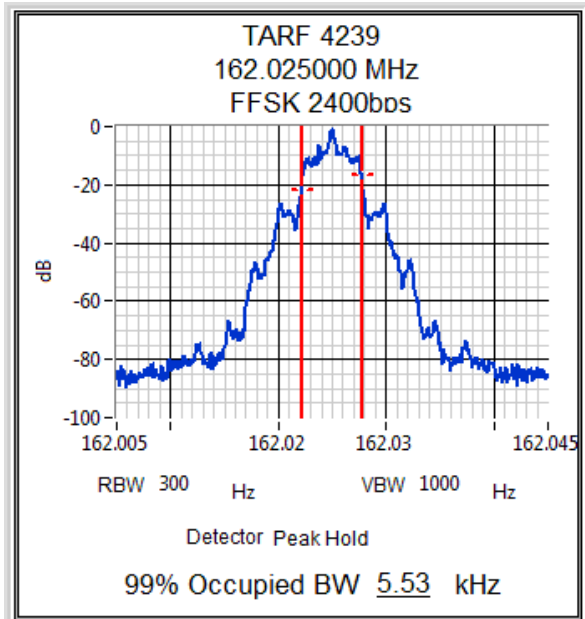
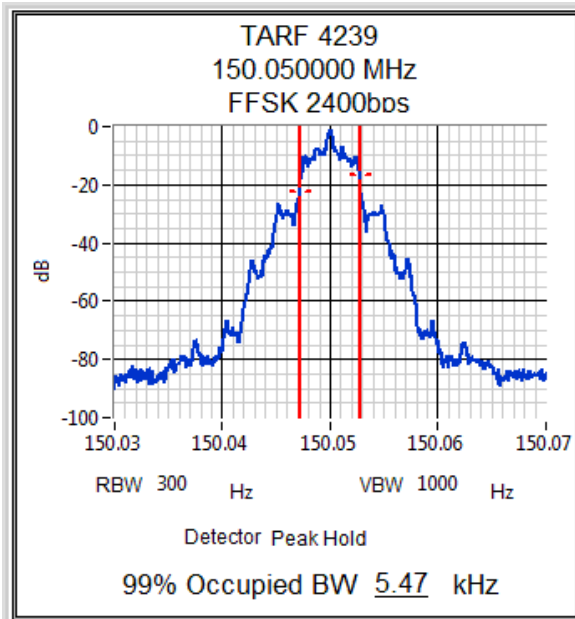
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation



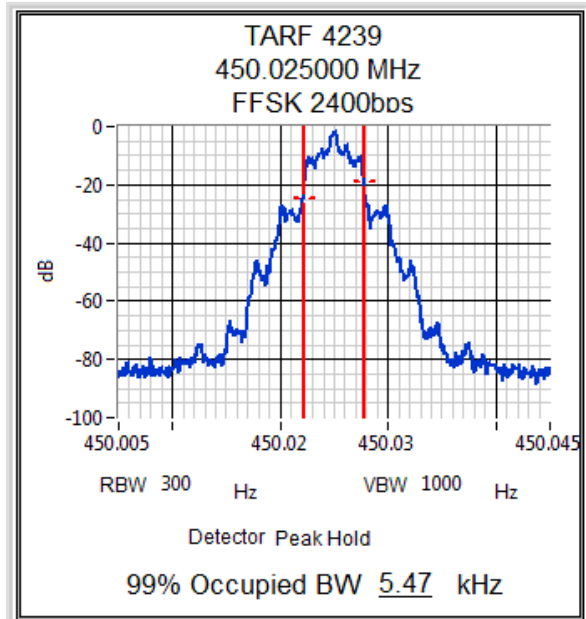
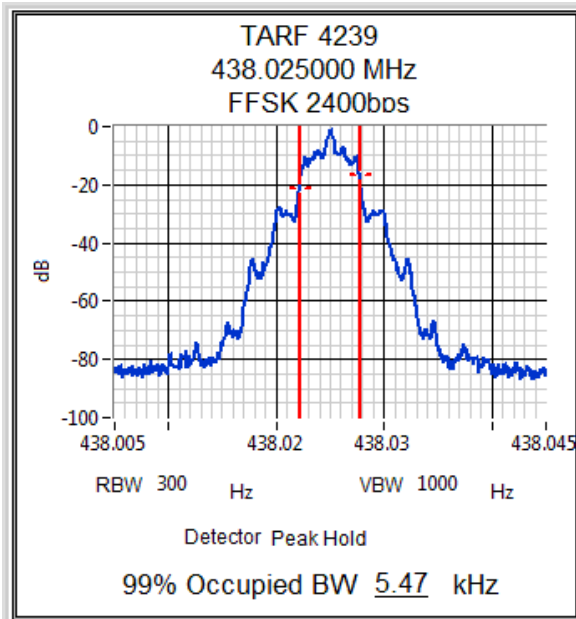
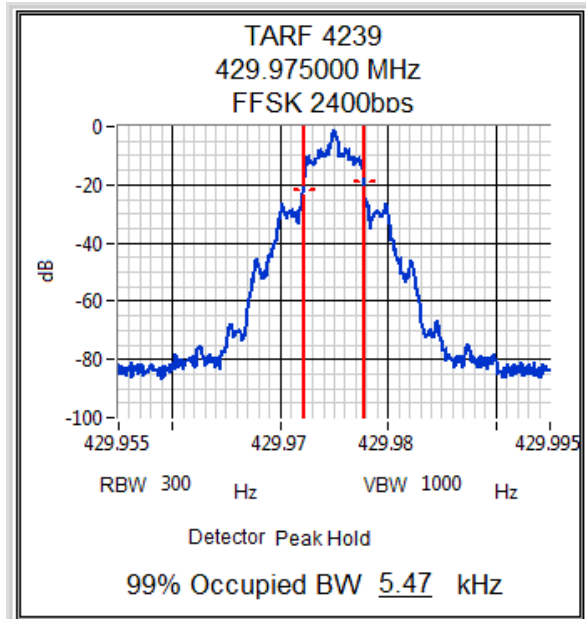
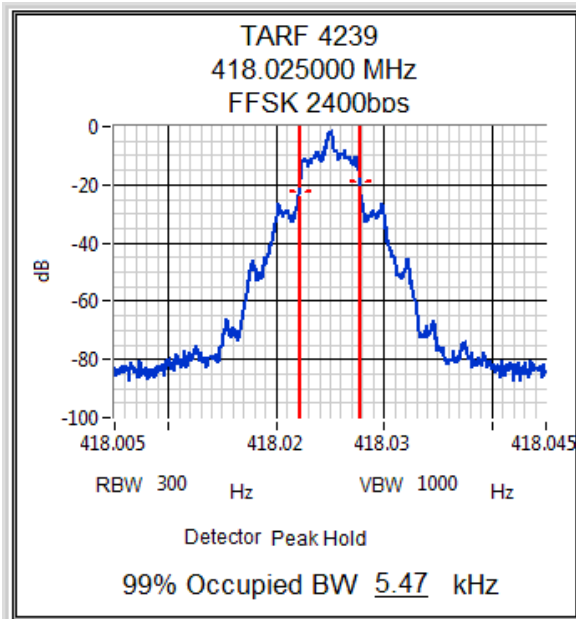
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation



### Transmitter Occupied (99%) Bandwidth

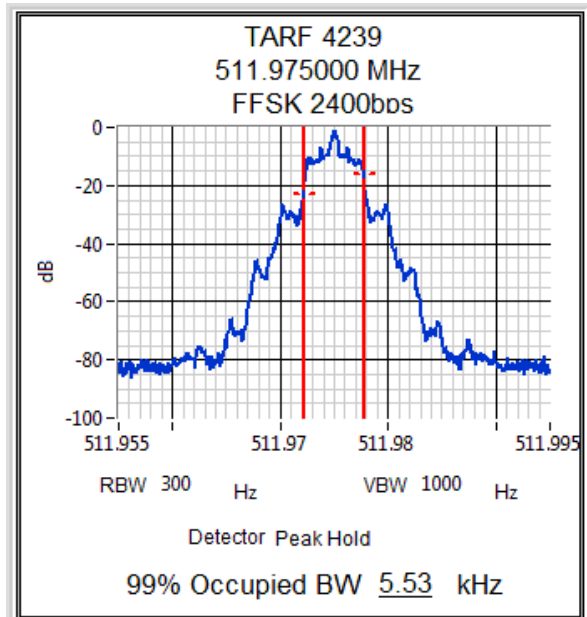
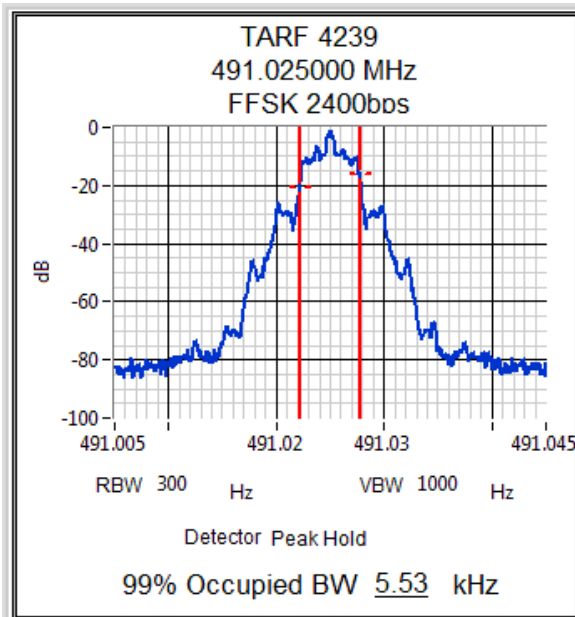
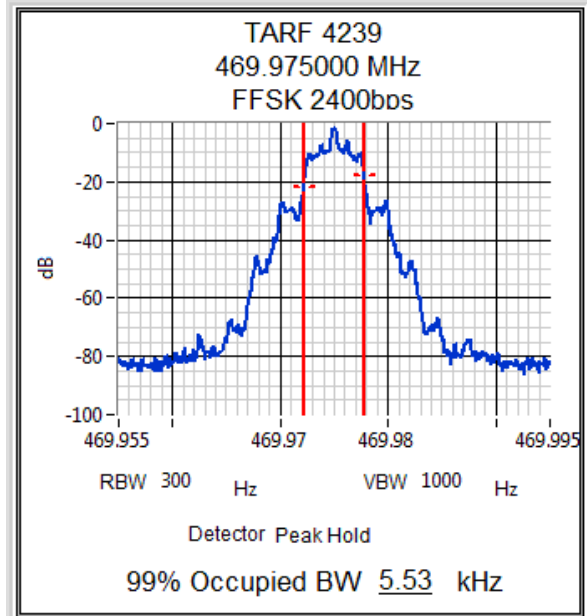
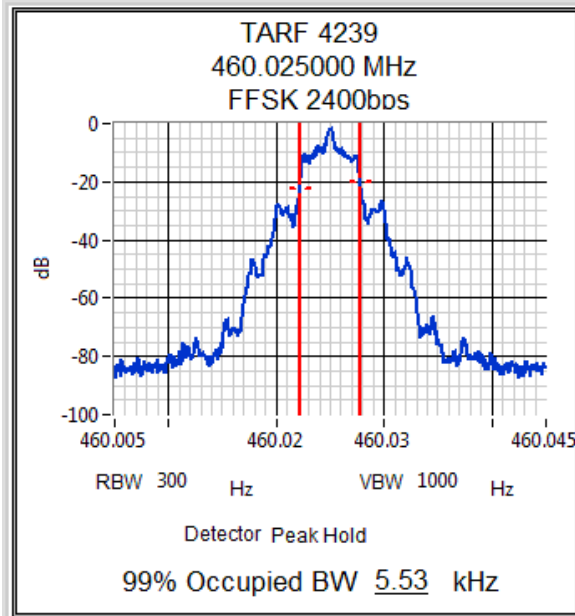
12.5 kHz ch spacing      FFSK 2400bps Modulation





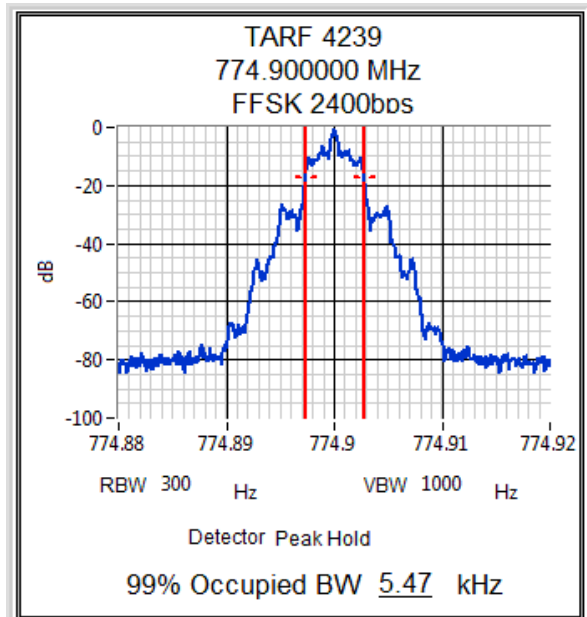
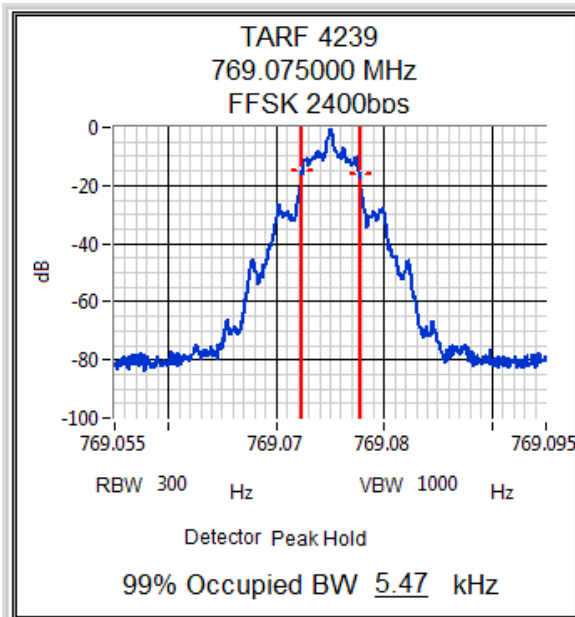
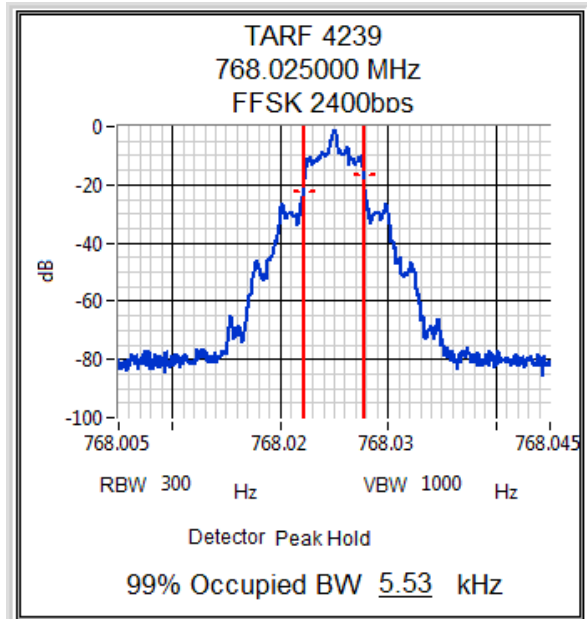
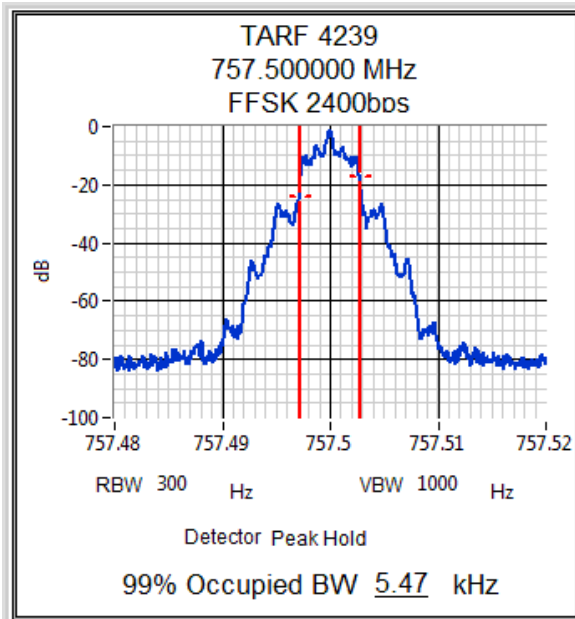
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation



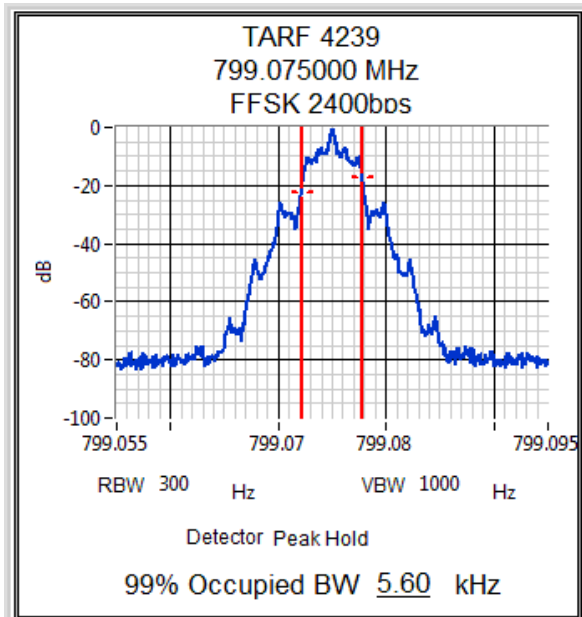
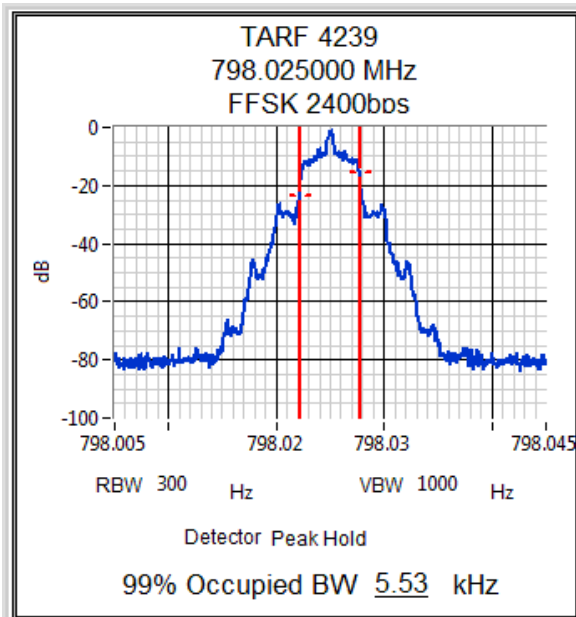
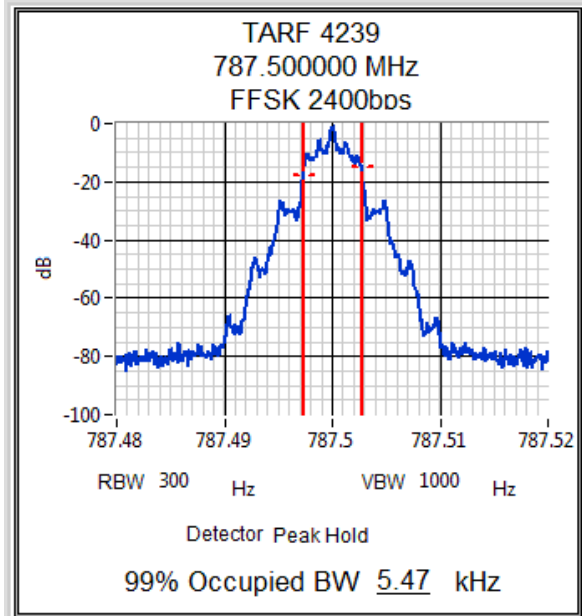
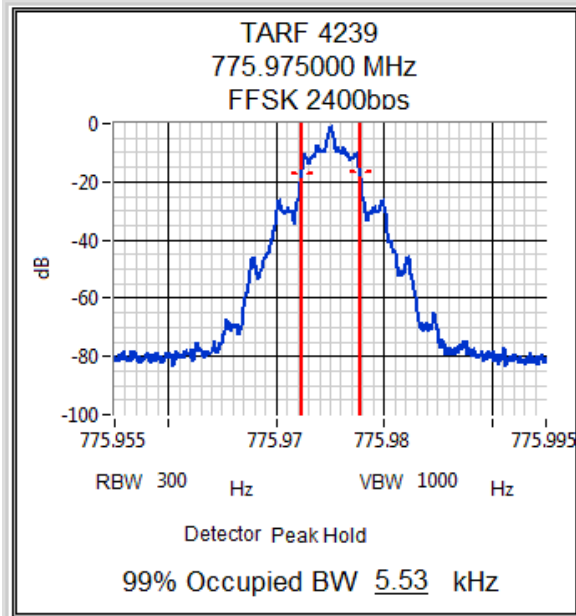
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation



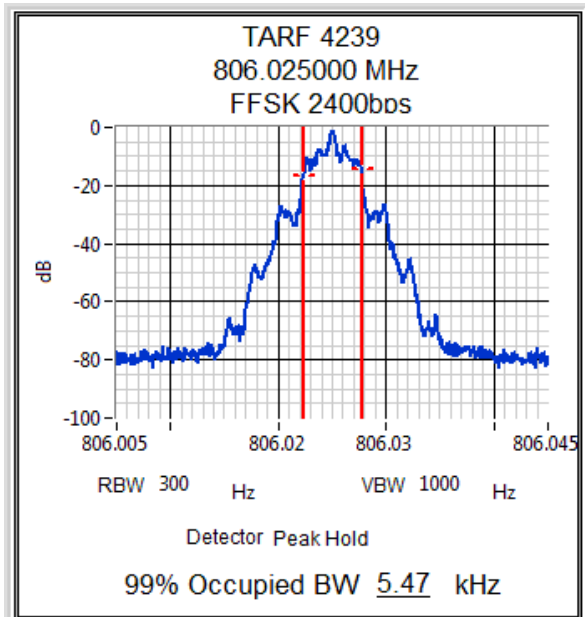
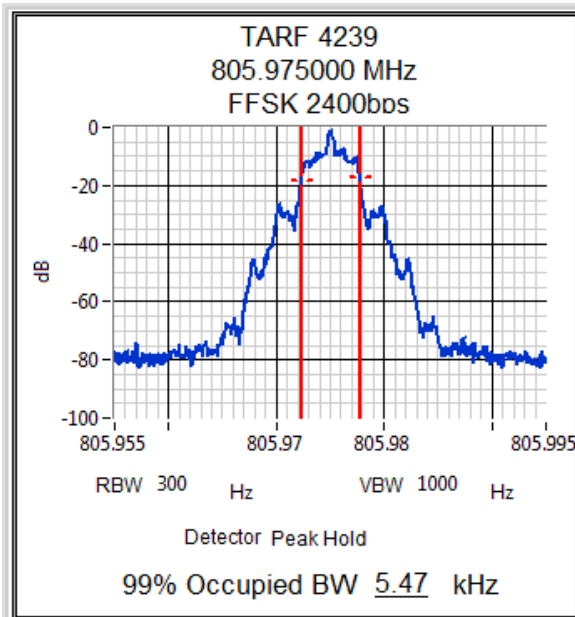
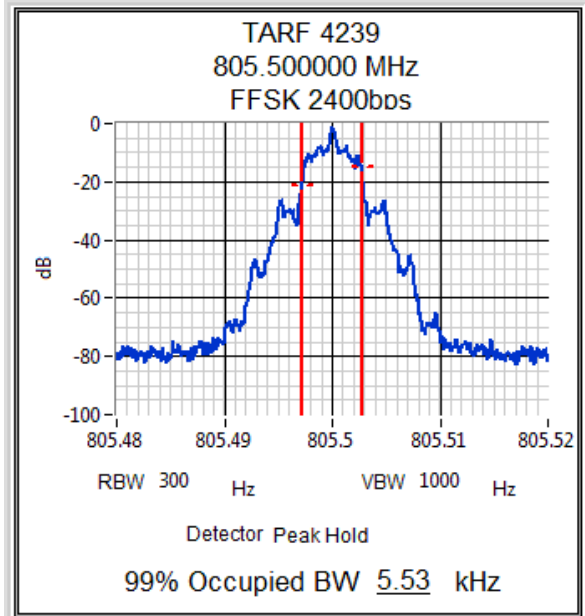
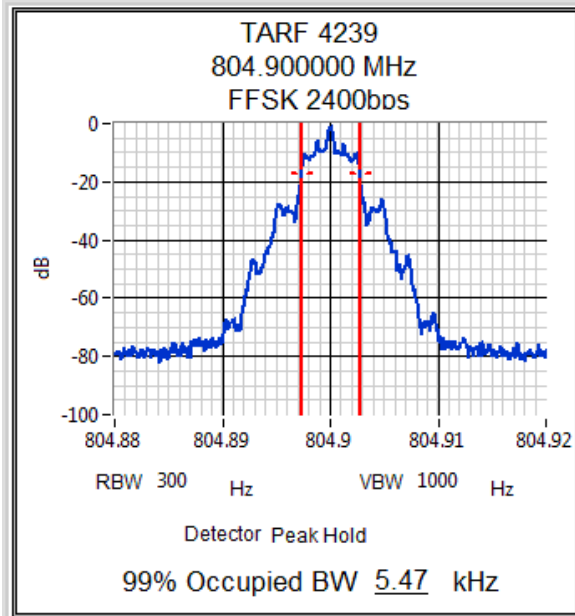
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation



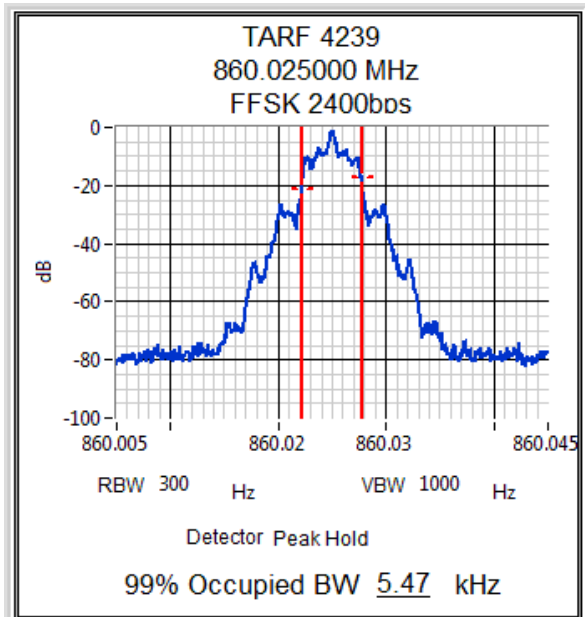
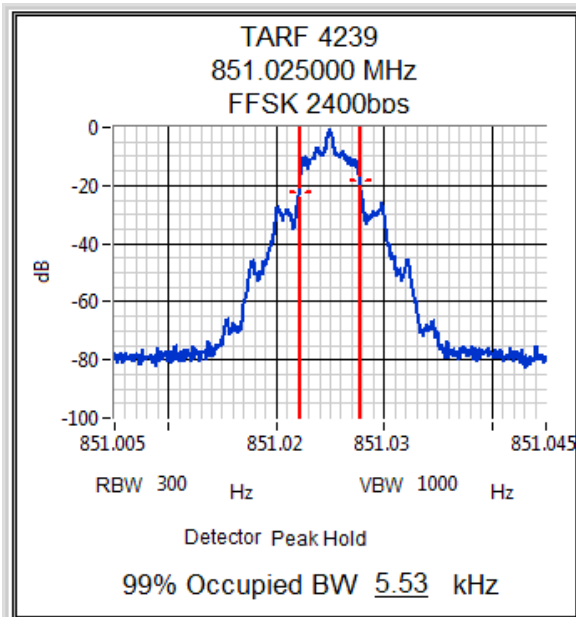
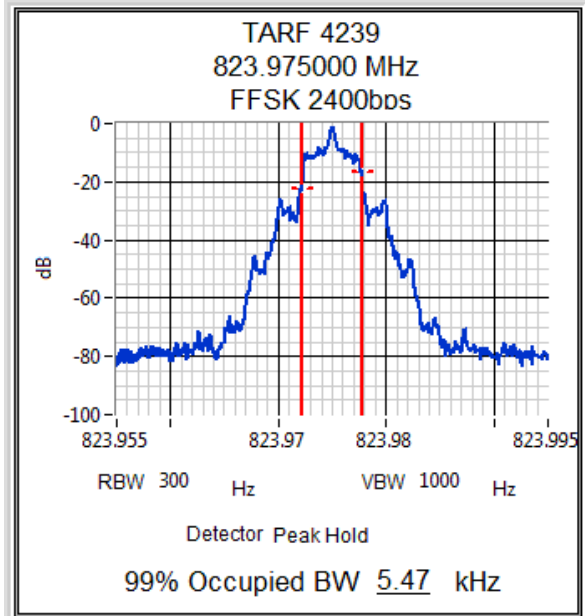
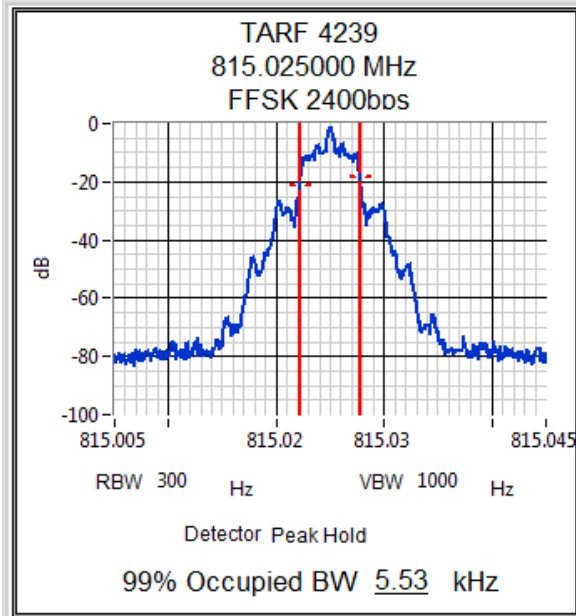
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation



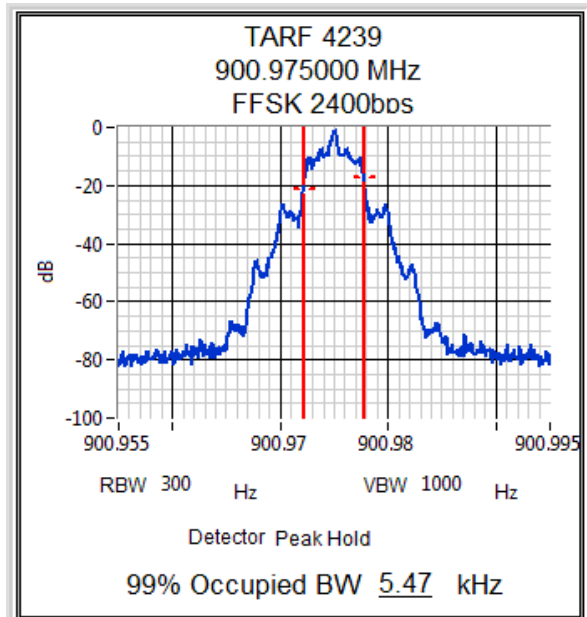
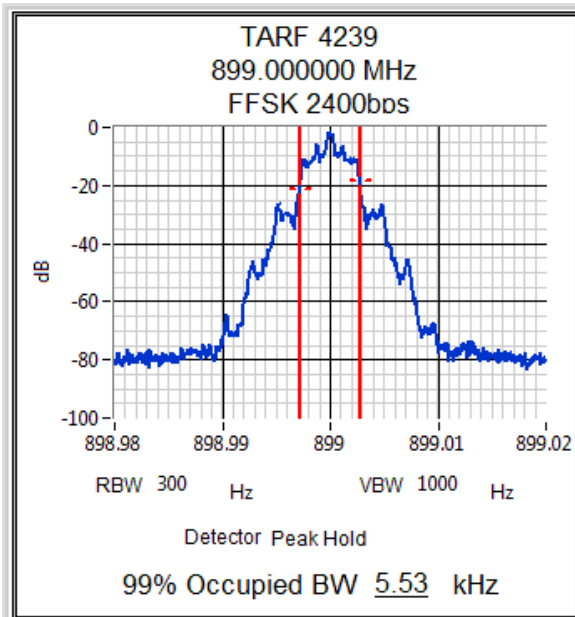
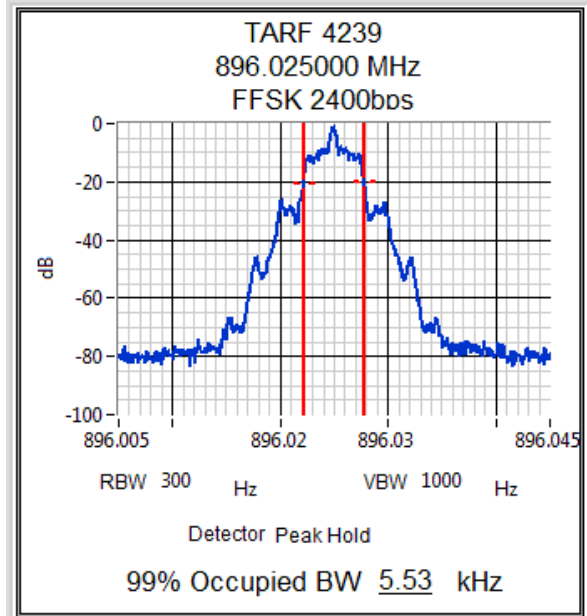
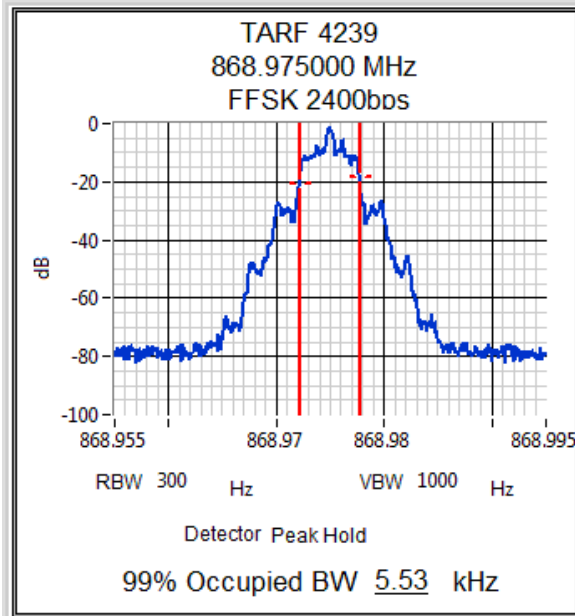
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation



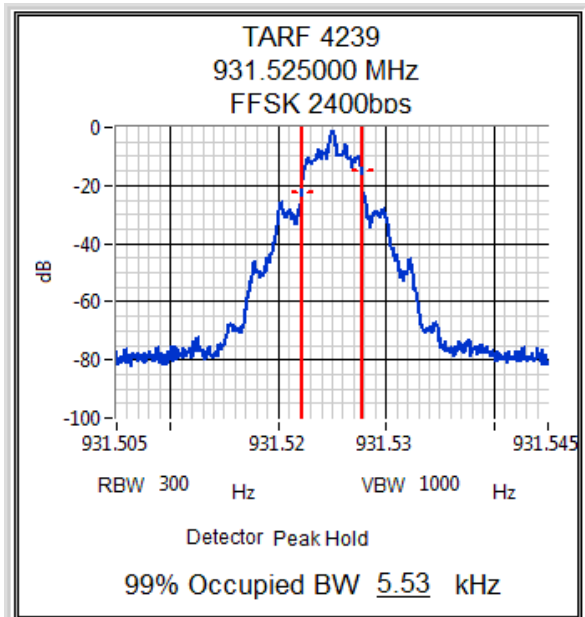
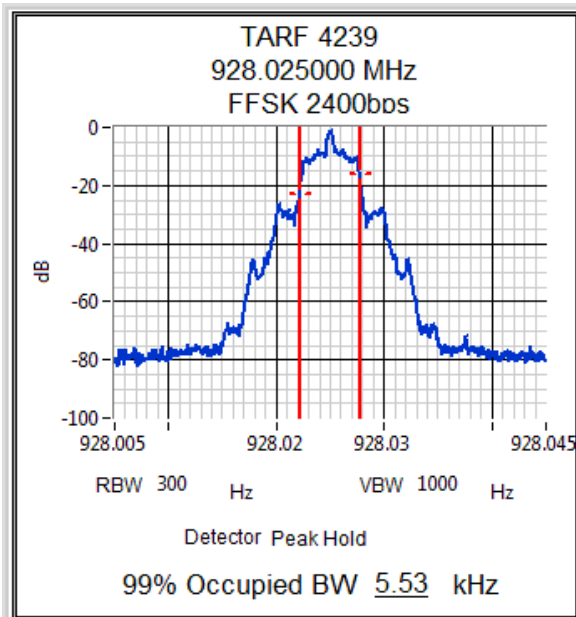
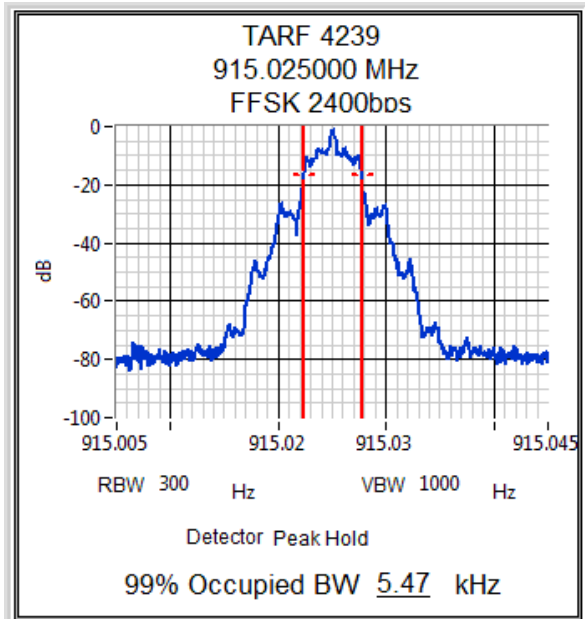
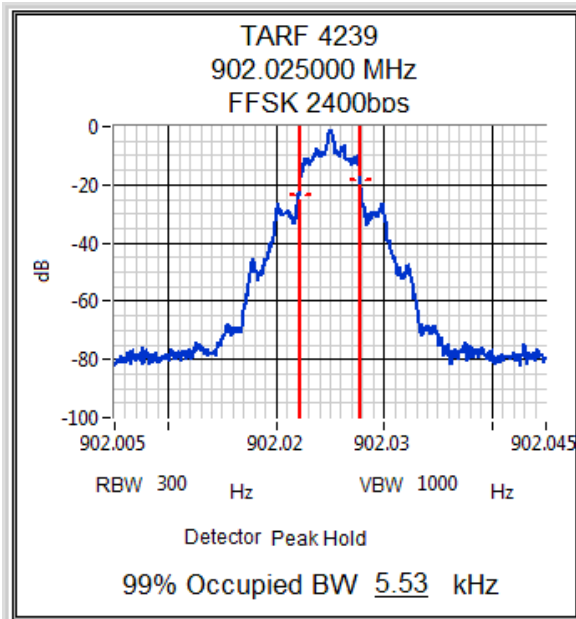
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation



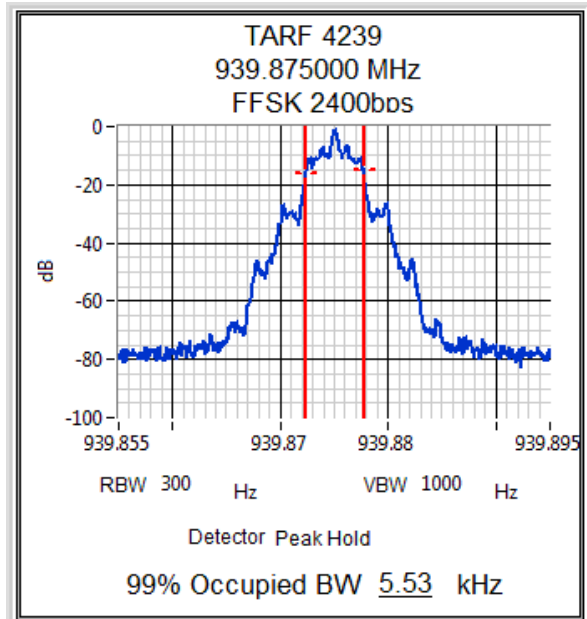
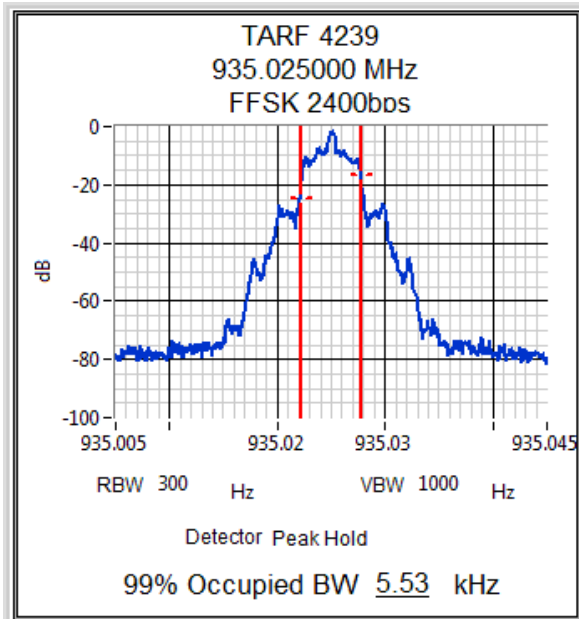
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      FFSK 2400bps Modulation

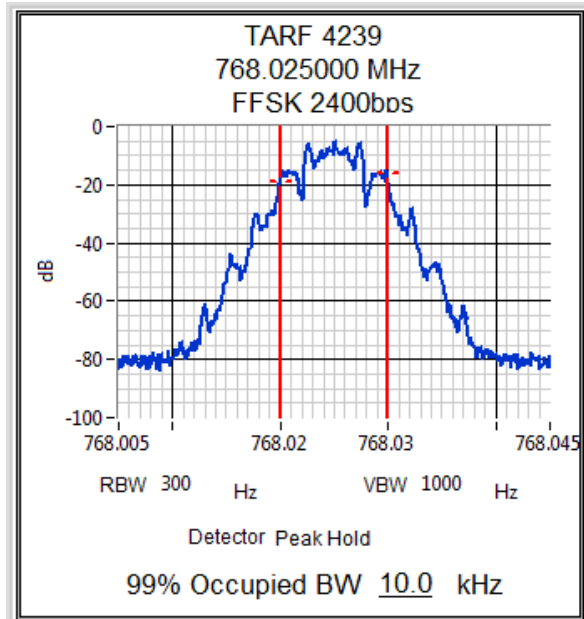
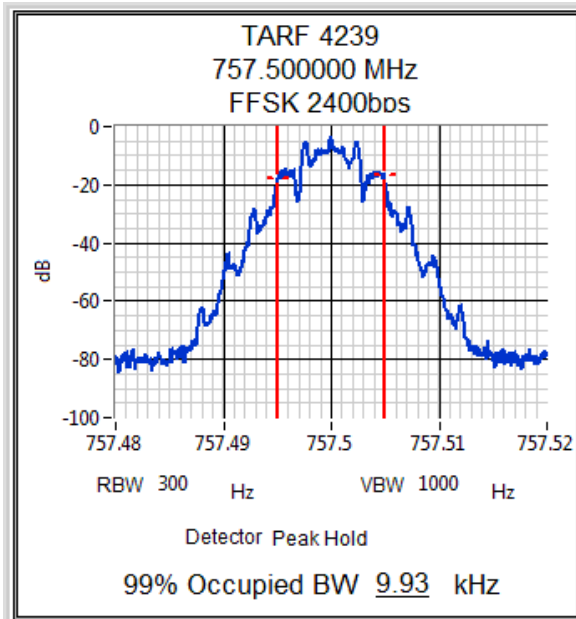
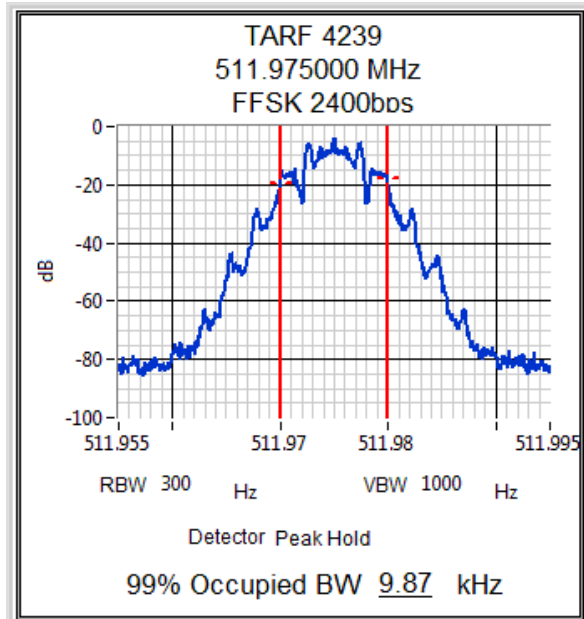
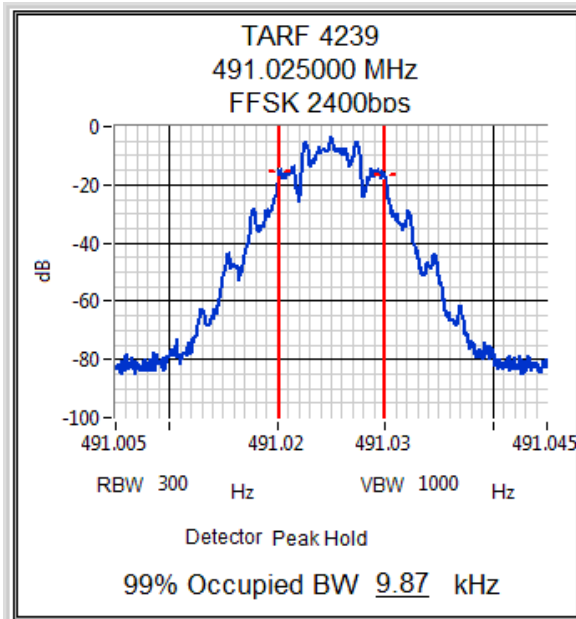




### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

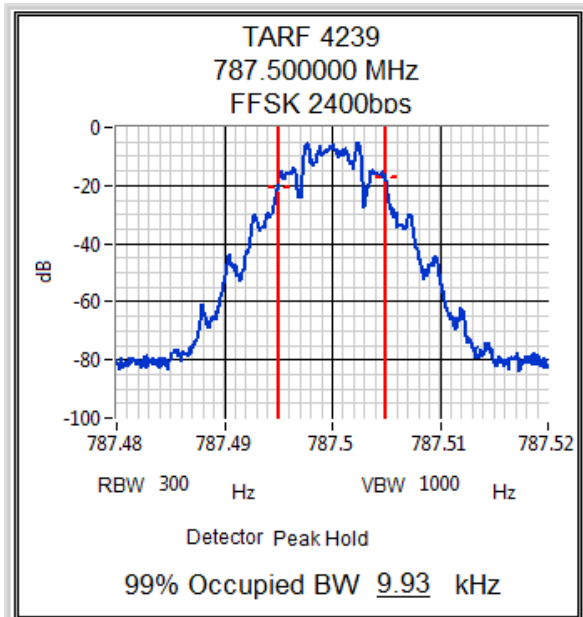
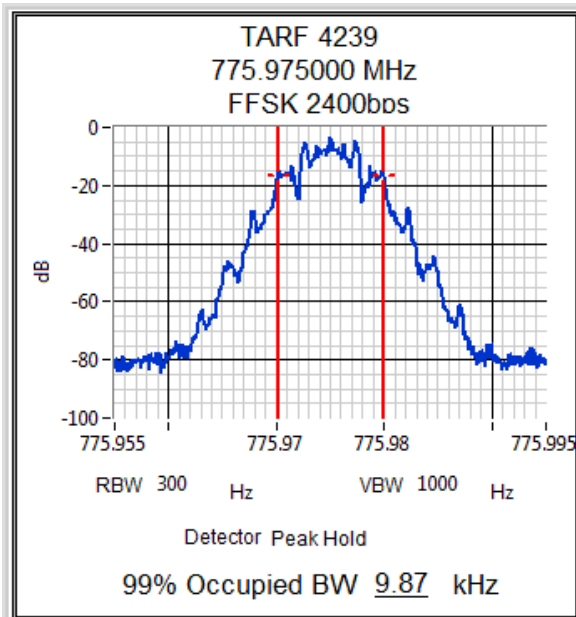
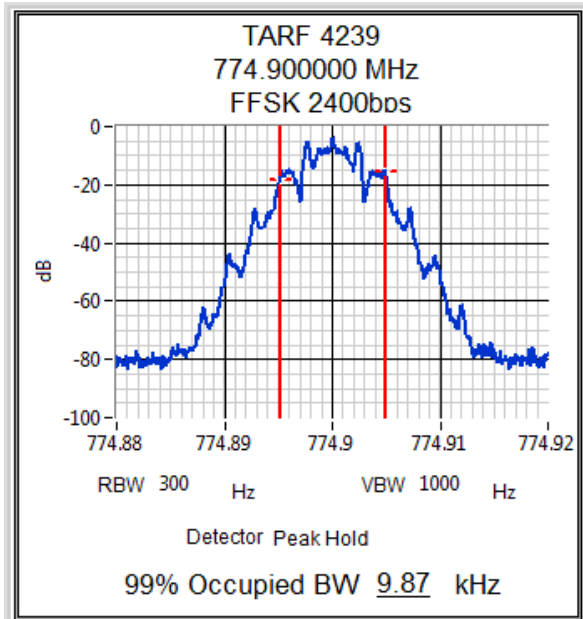
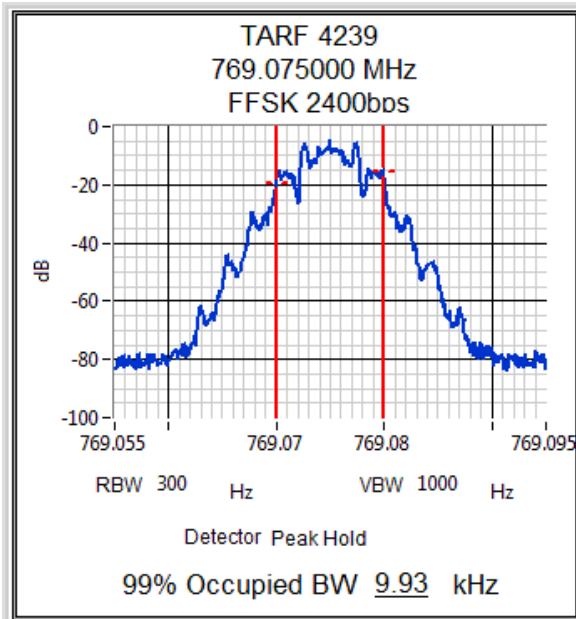
FFSK 2400bps Modulation



### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

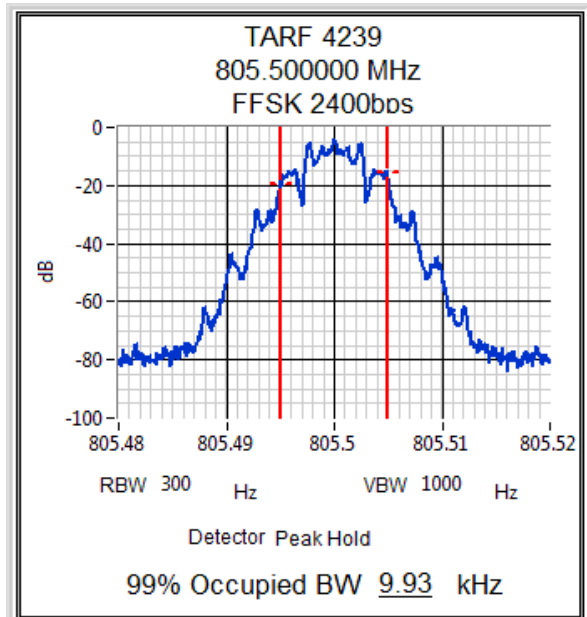
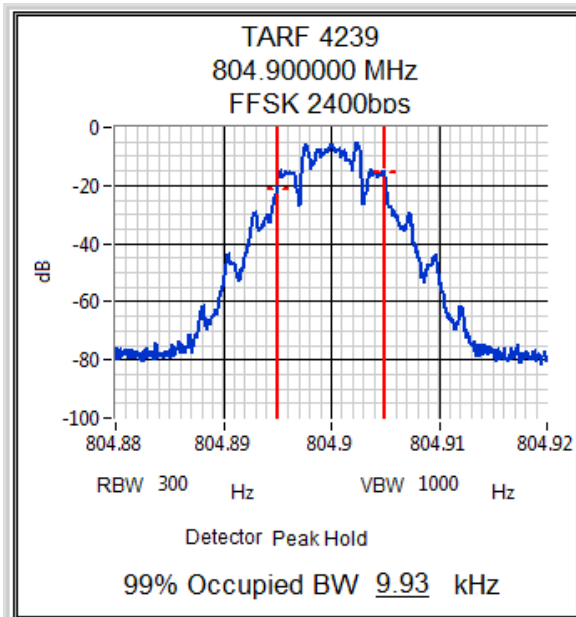
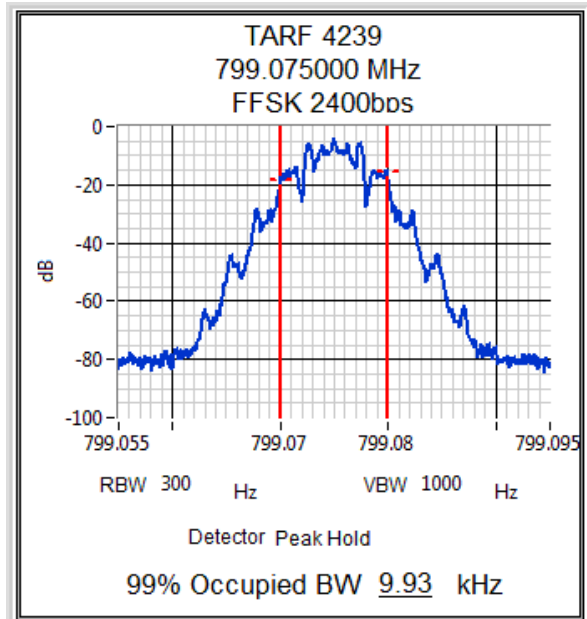
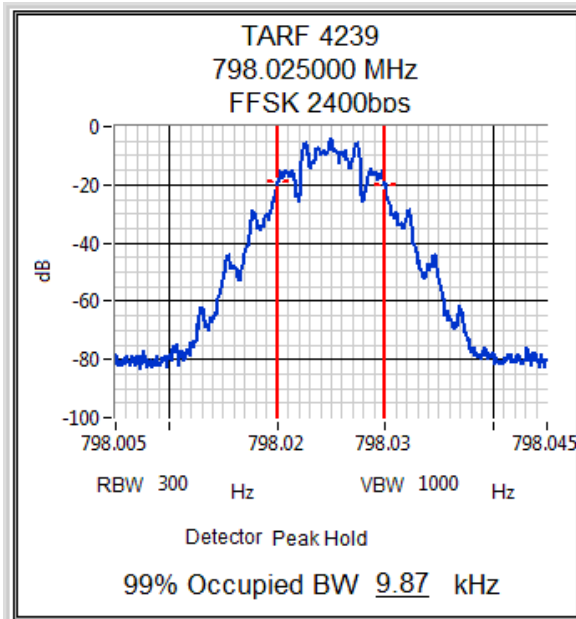
FFSK 2400bps Modulation



### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

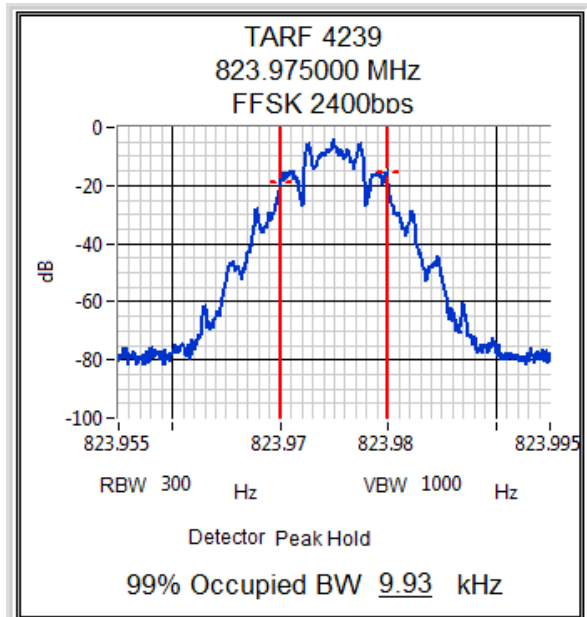
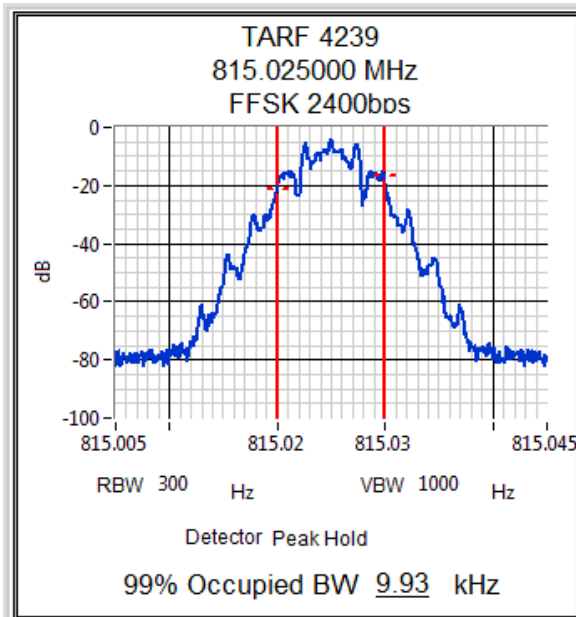
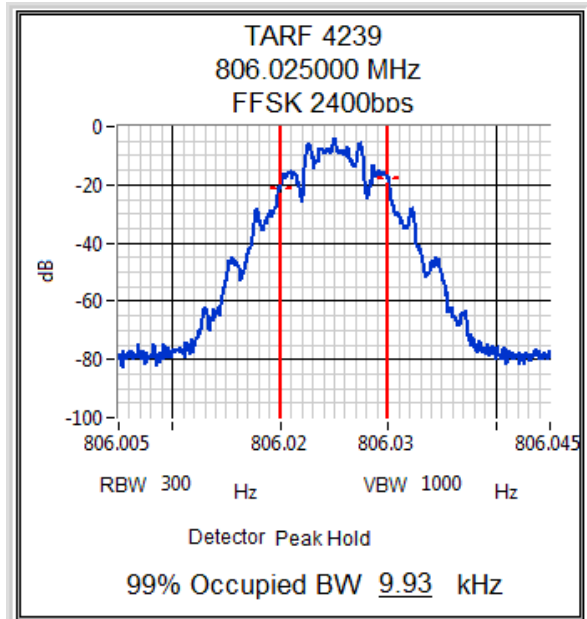
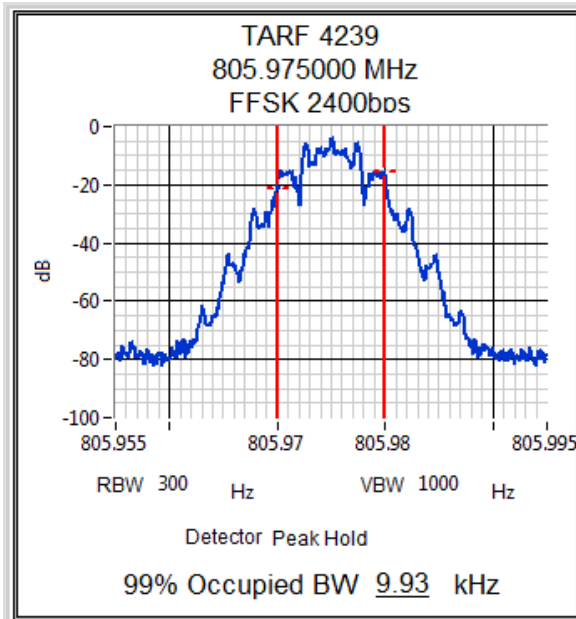
FFSK 2400bps Modulation



### Transmitter Occupied (99%) Bandwidth

25 kHz ch spacing

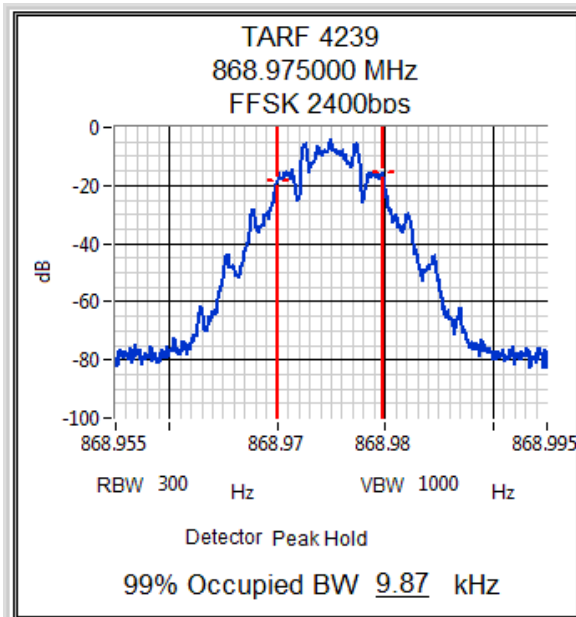
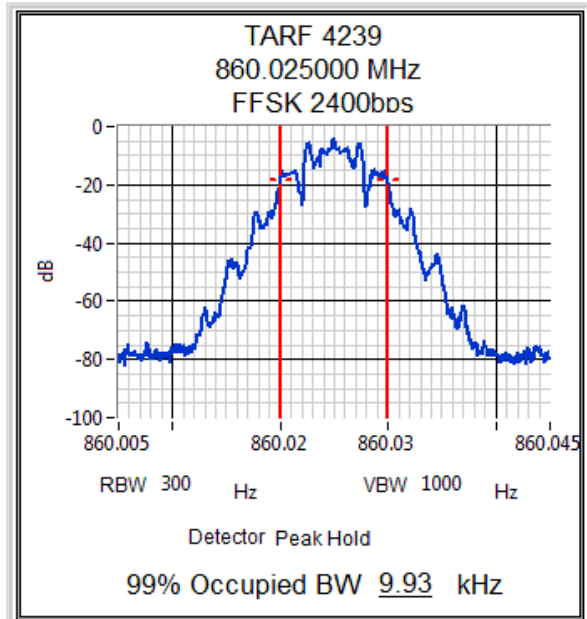
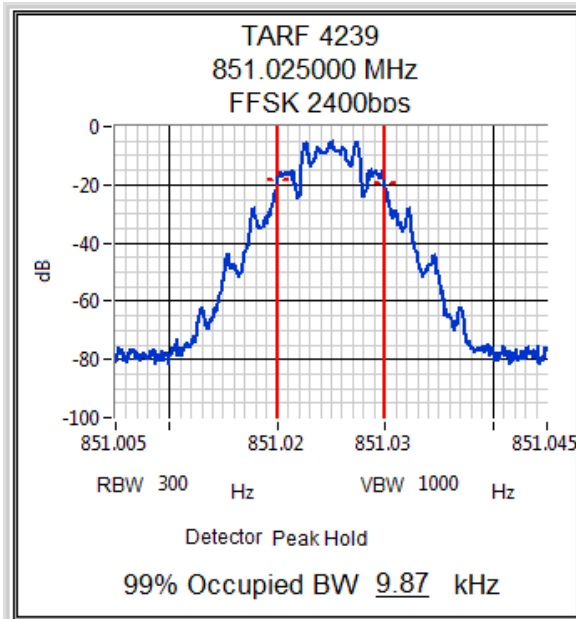
FFSK 2400bps Modulation



### Transmitter Occupied (99%) Bandwidth

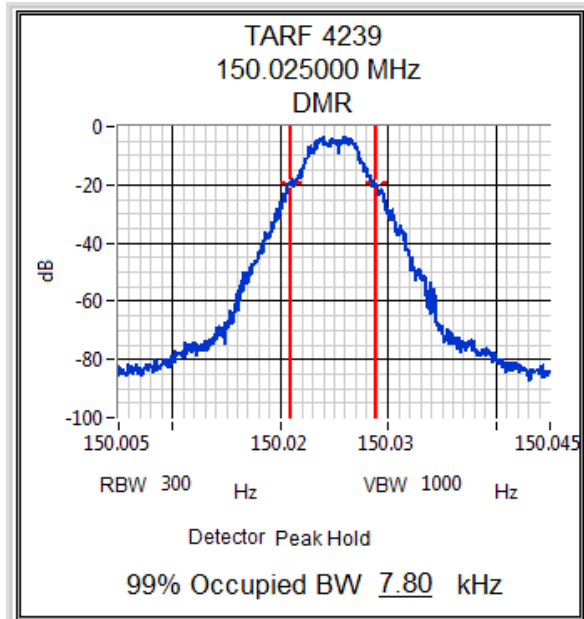
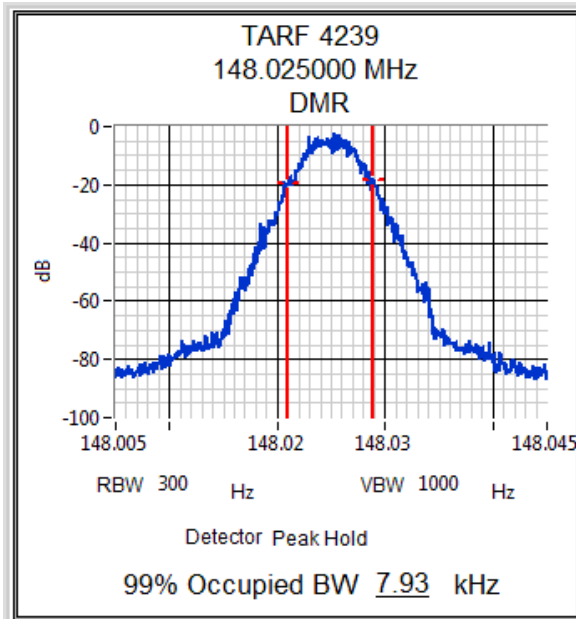
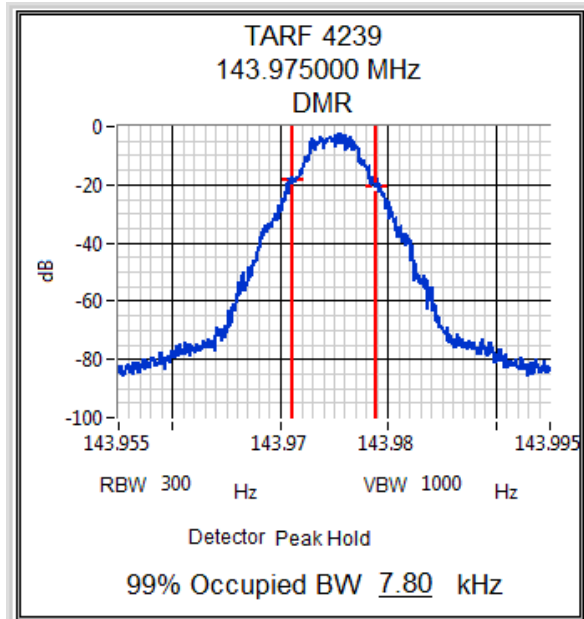
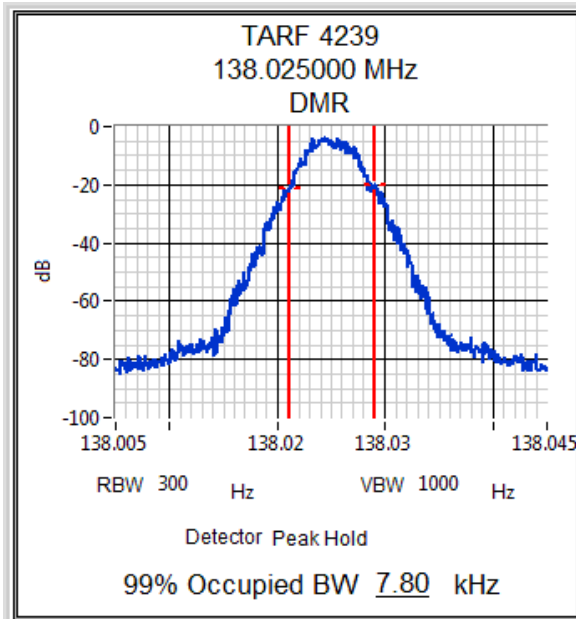
25 kHz ch spacing

FFSK 2400bps Modulation



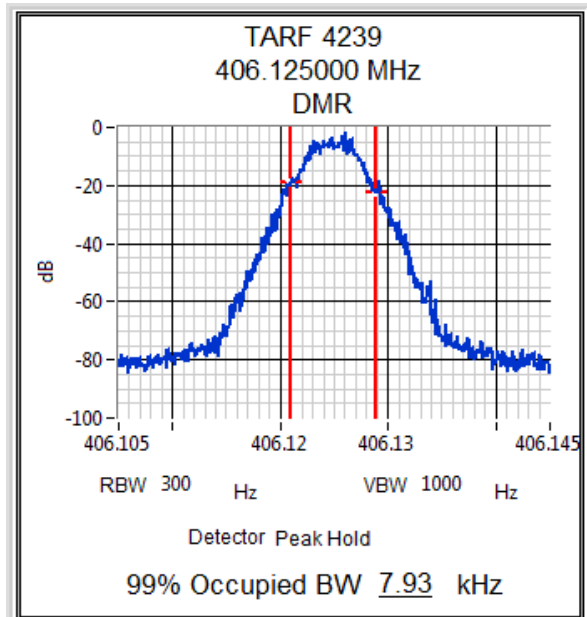
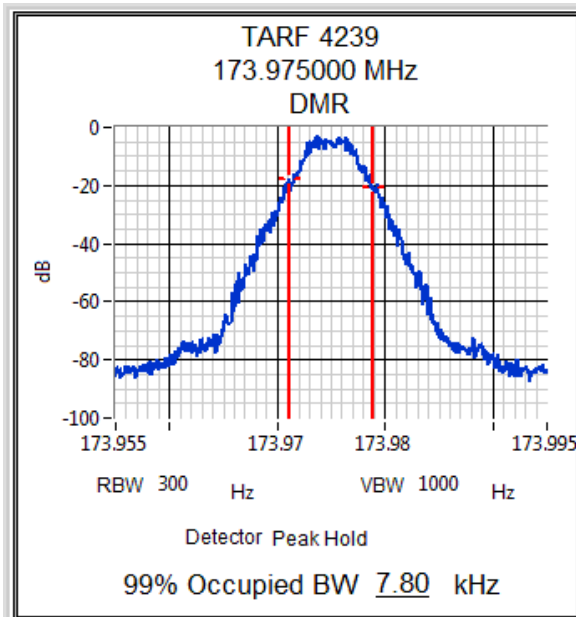
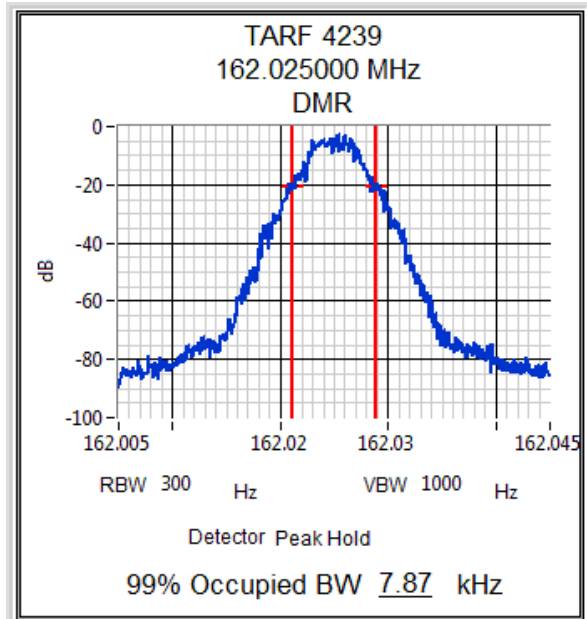
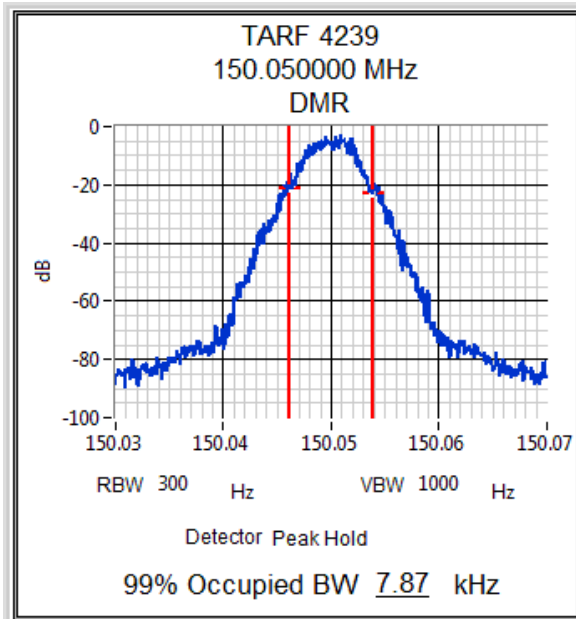
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing     DMR Modulation



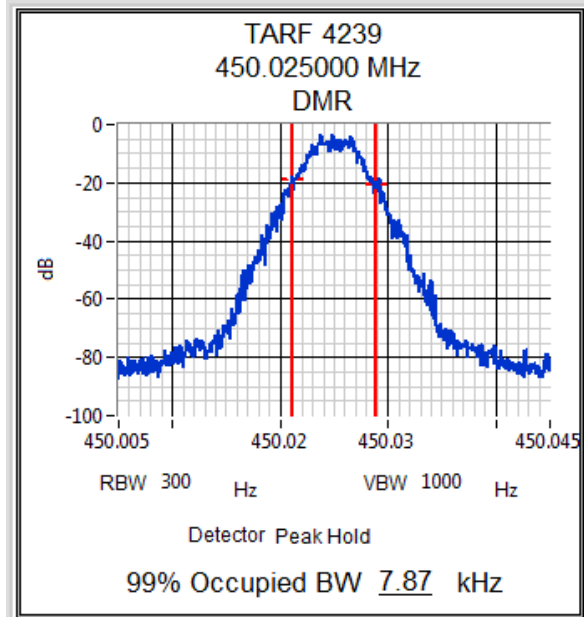
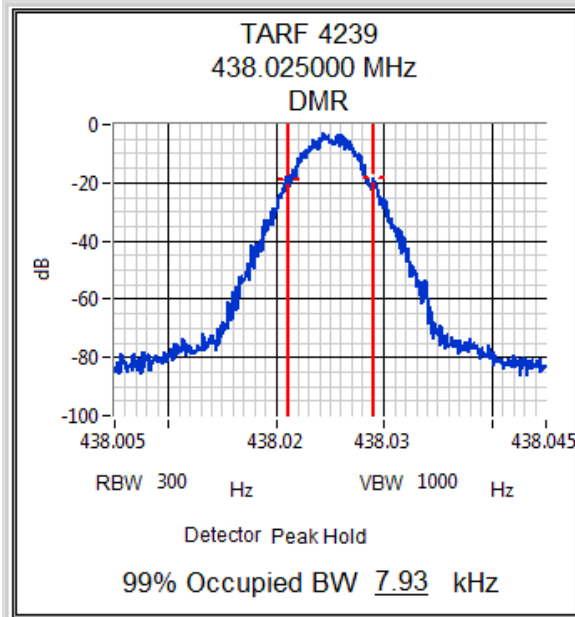
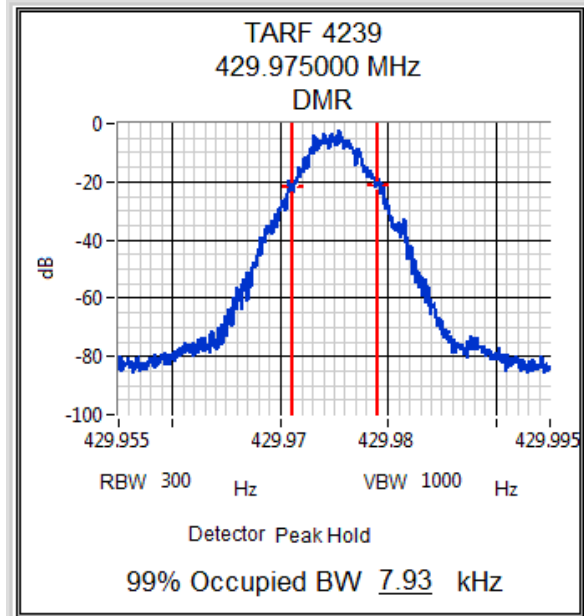
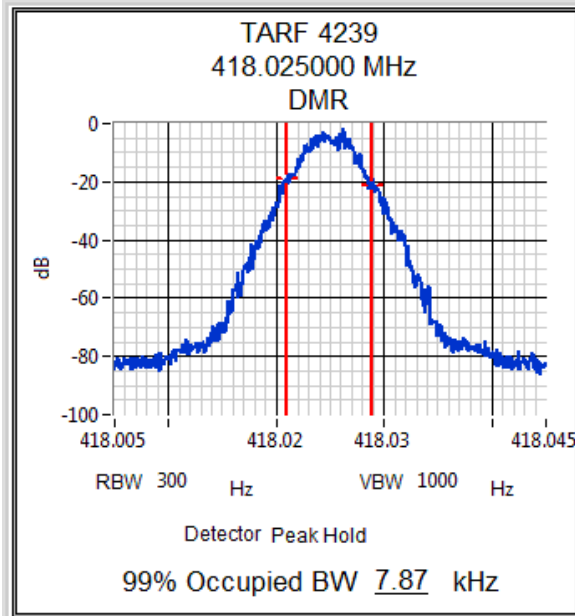
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing     DMR Modulation



### Transmitter Occupied (99%) Bandwidth

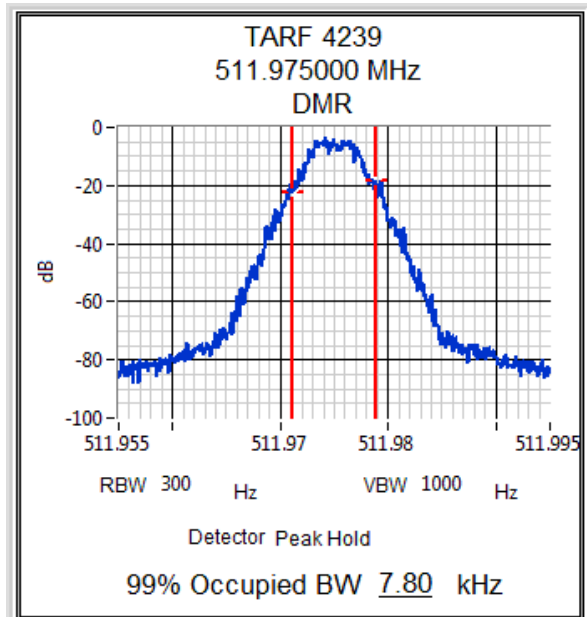
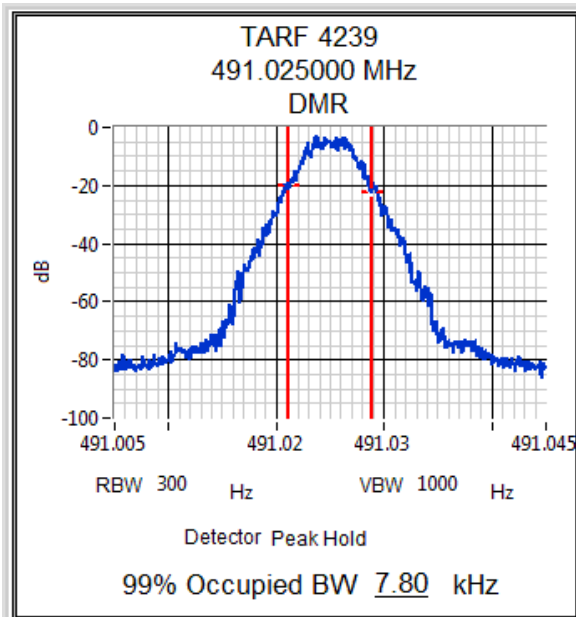
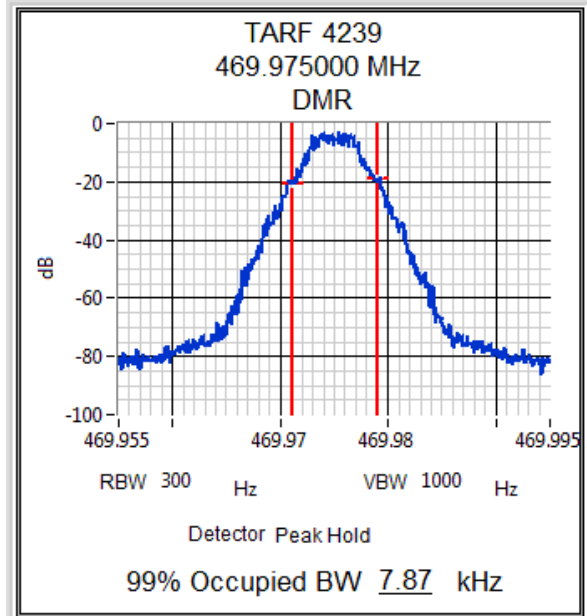
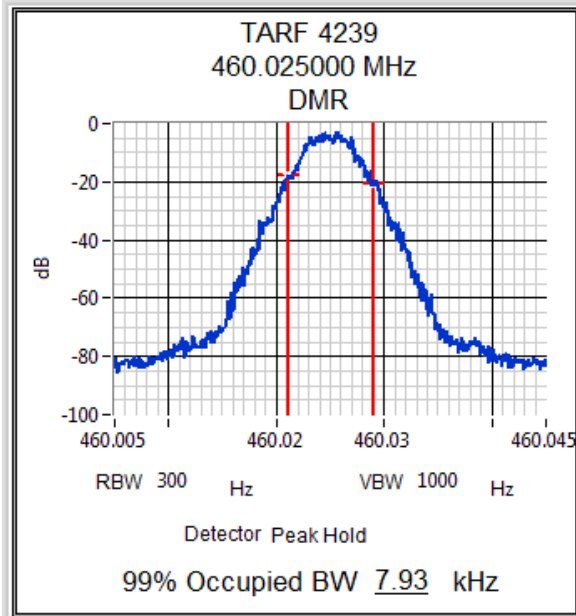
12.5 kHz ch spacing     DMR Modulation





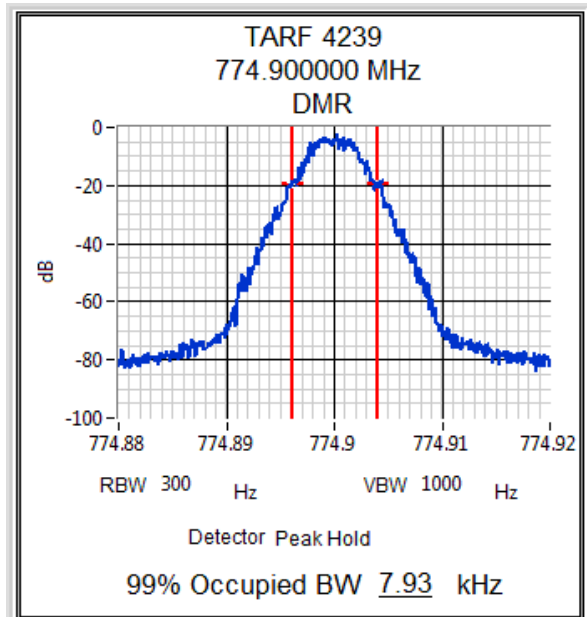
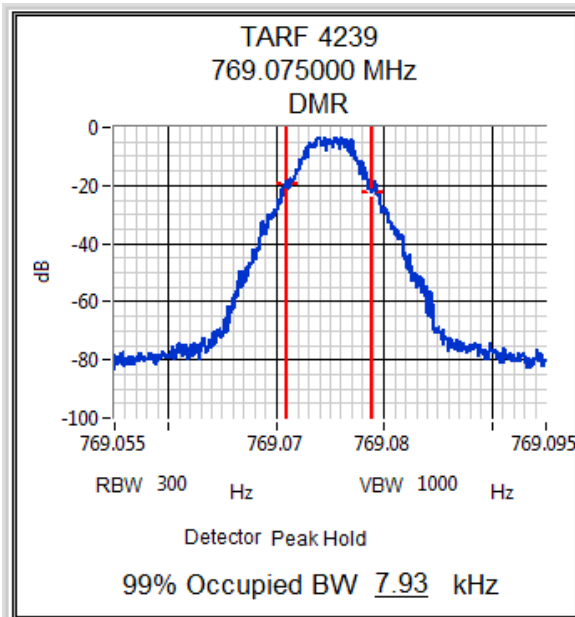
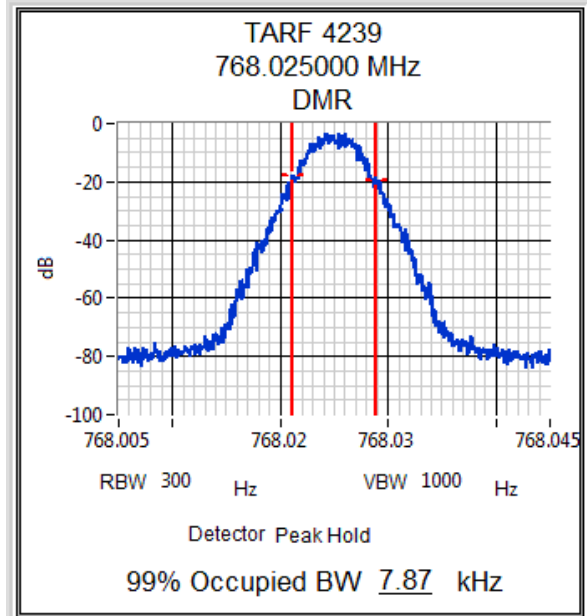
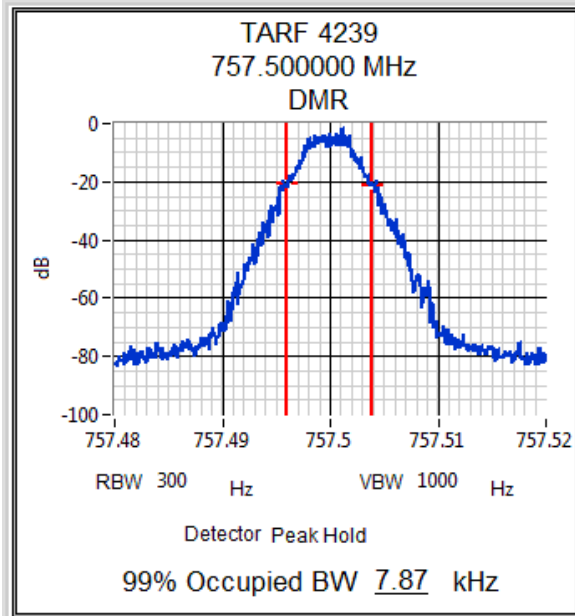
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      DMR Modulation



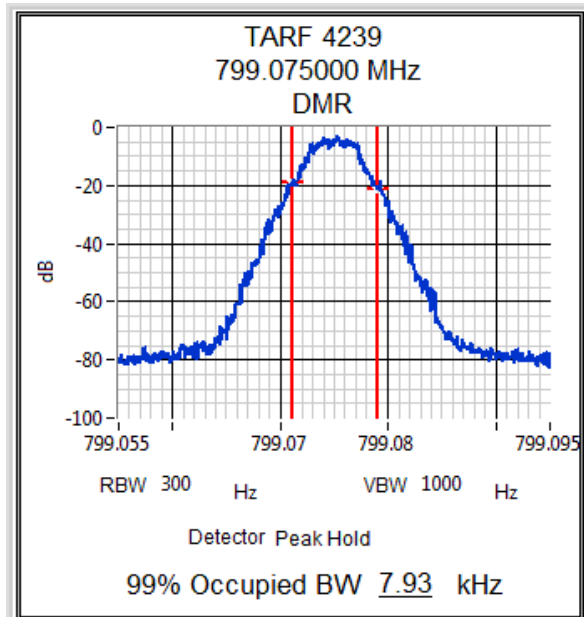
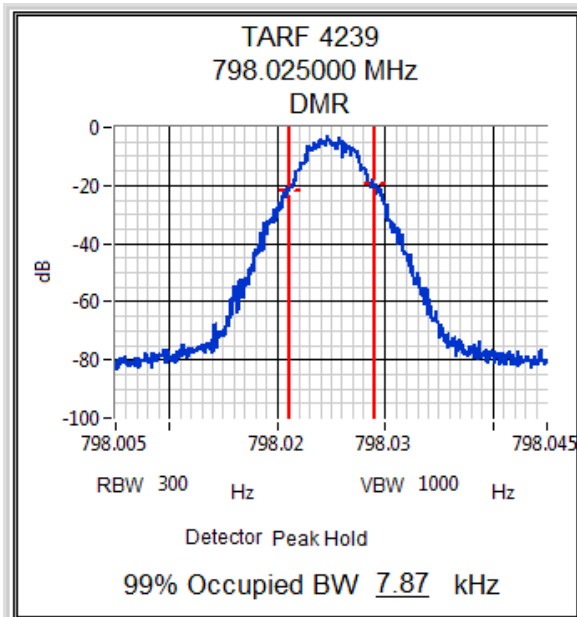
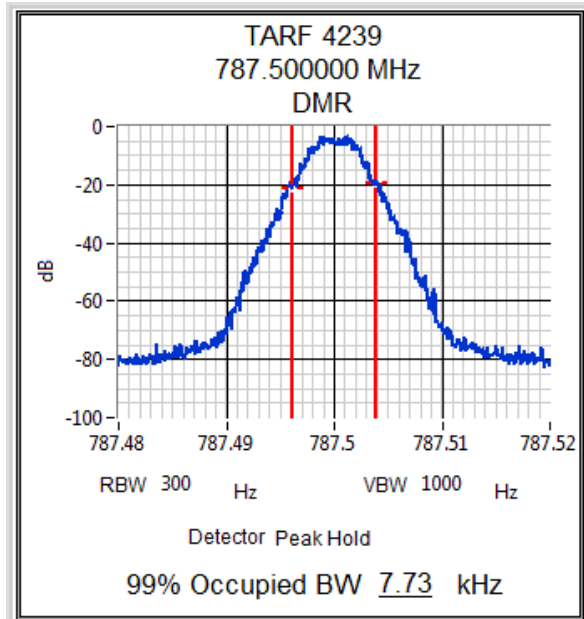
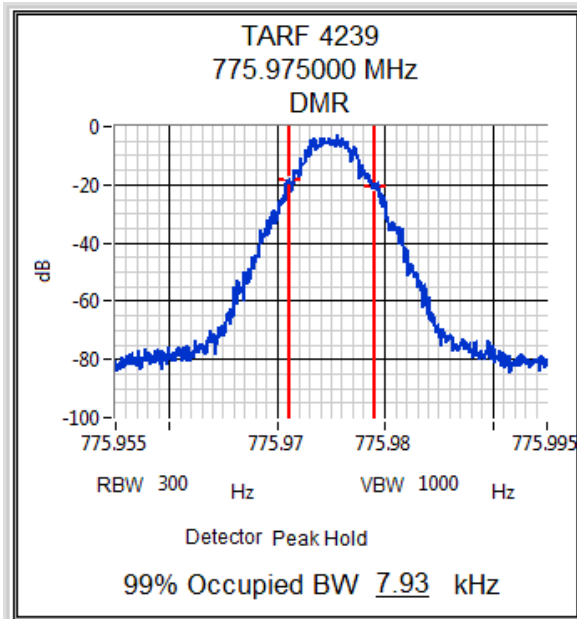
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing     DMR Modulation



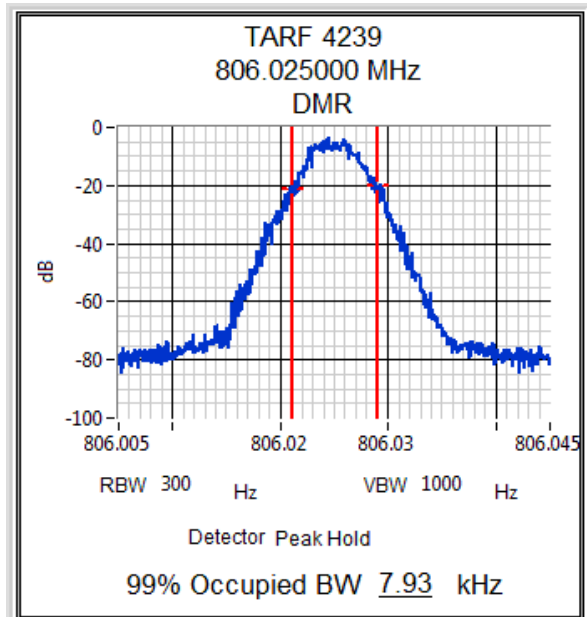
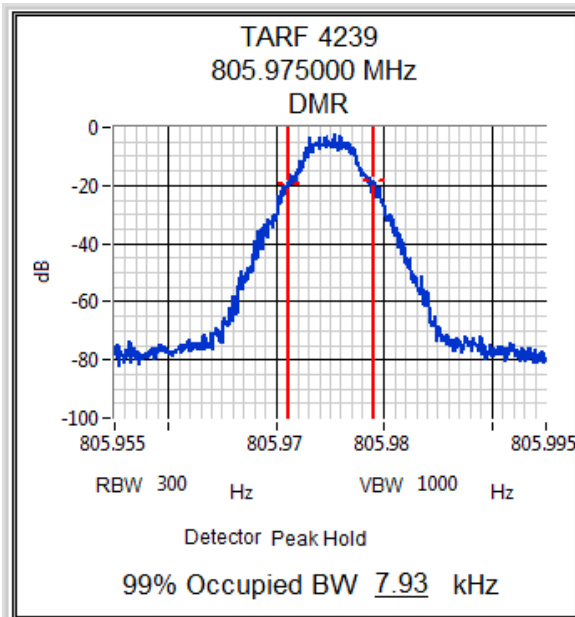
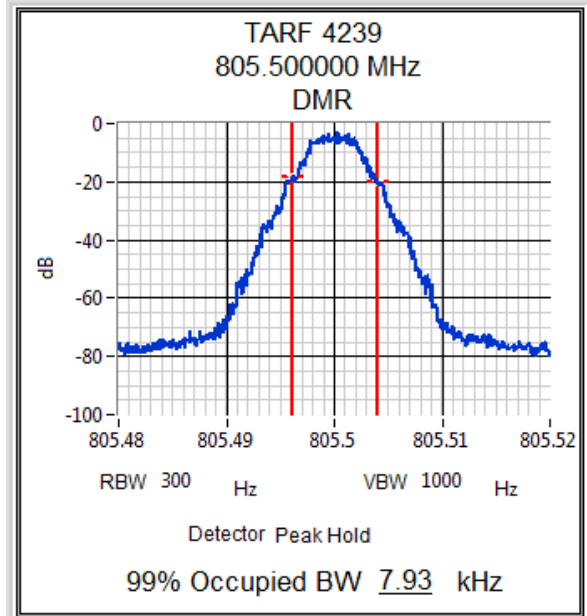
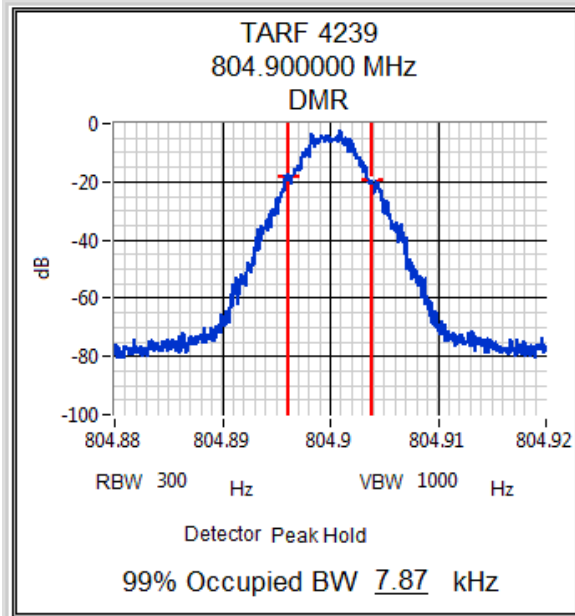
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing     DMR Modulation



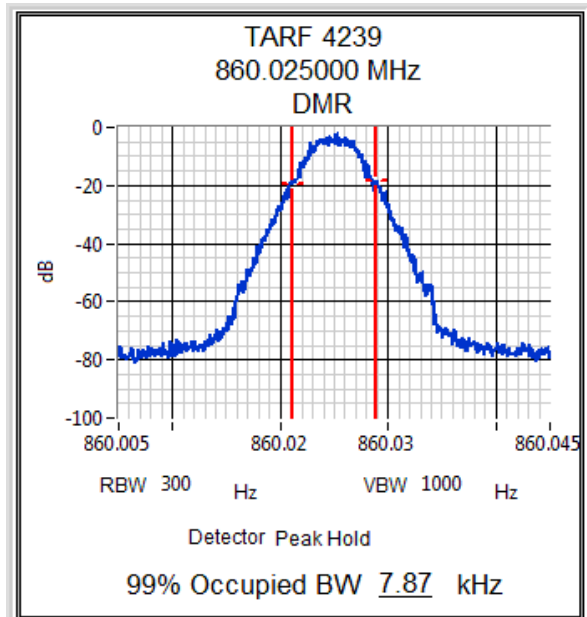
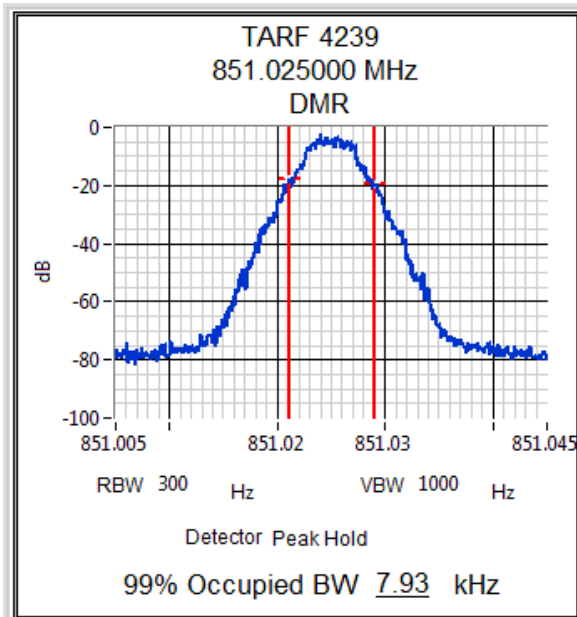
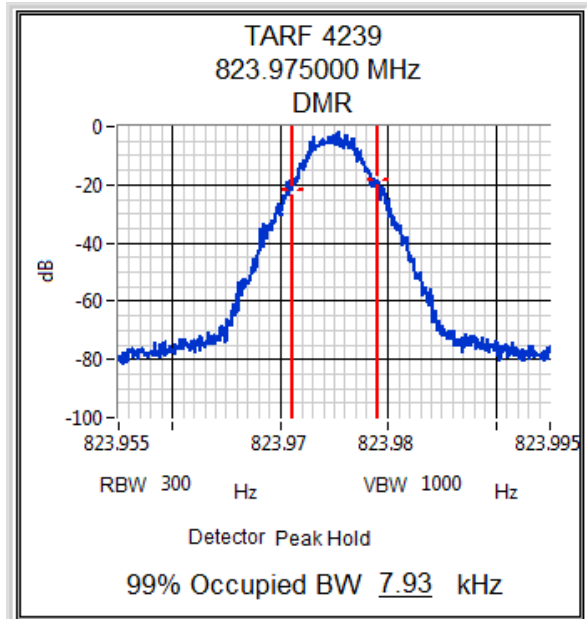
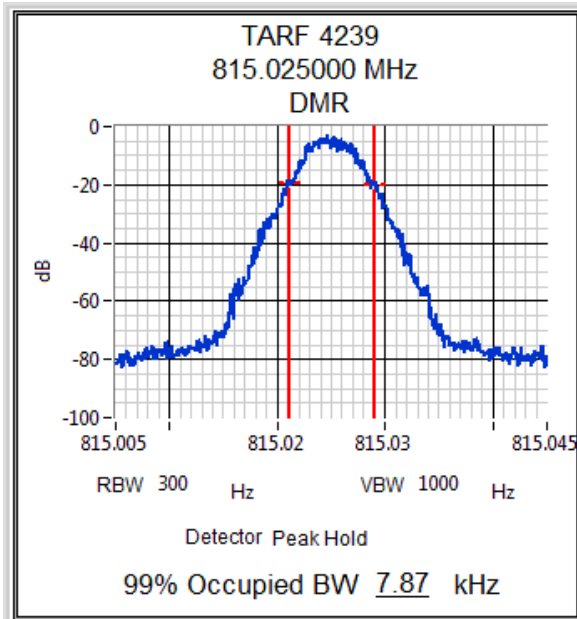
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing     DMR Modulation



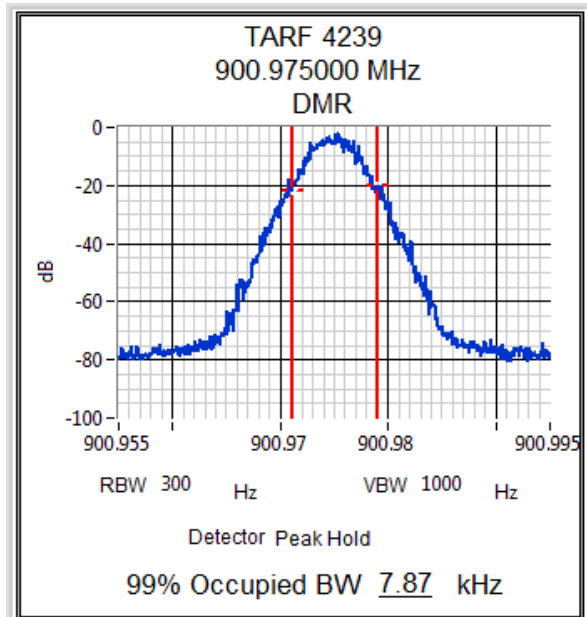
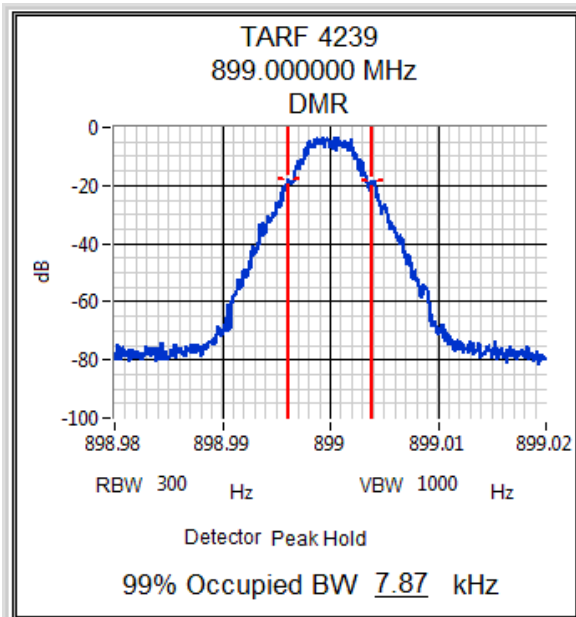
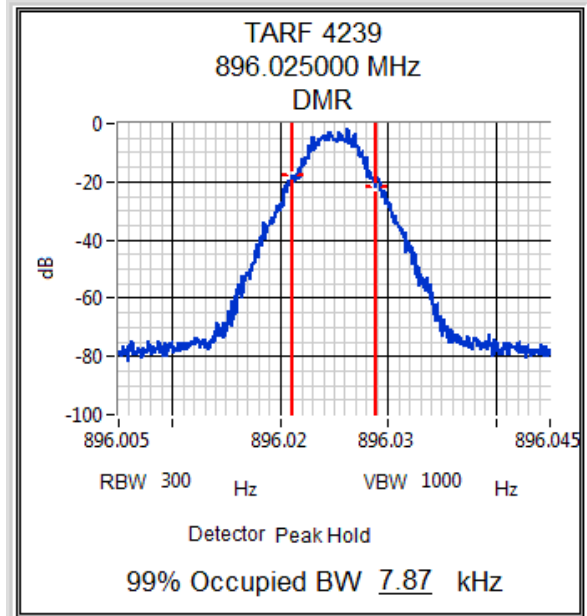
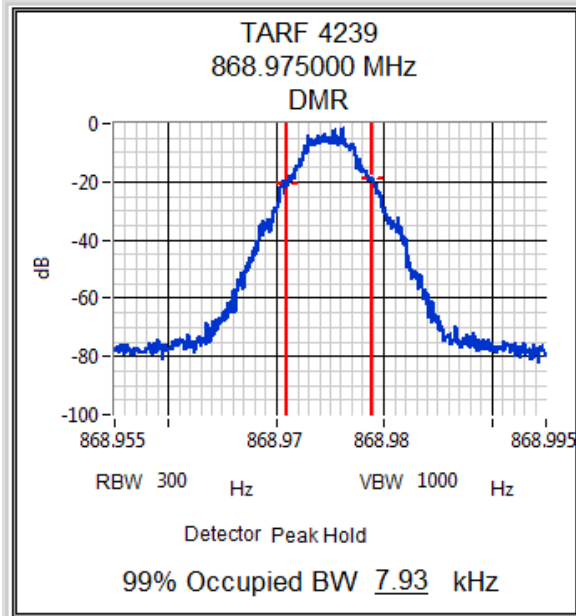
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing     DMR Modulation



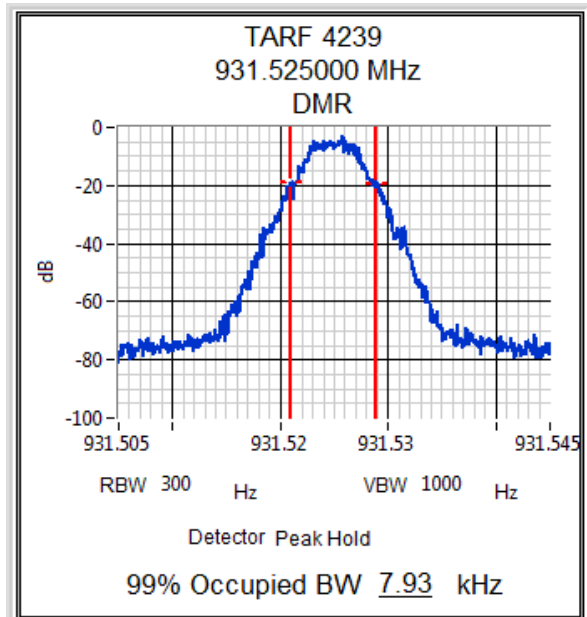
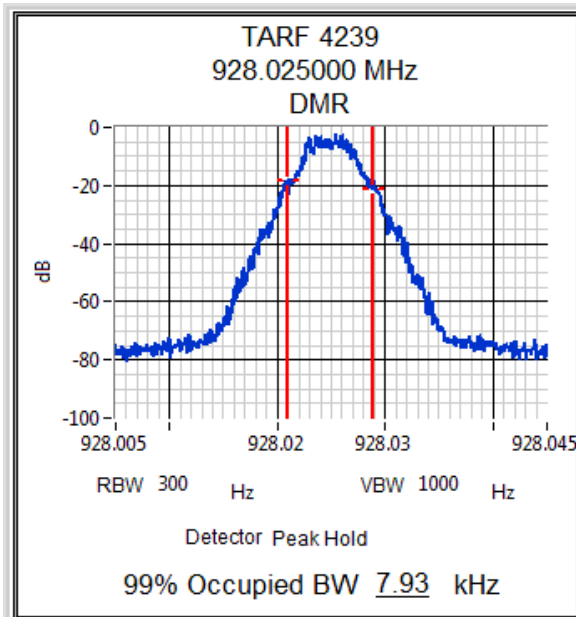
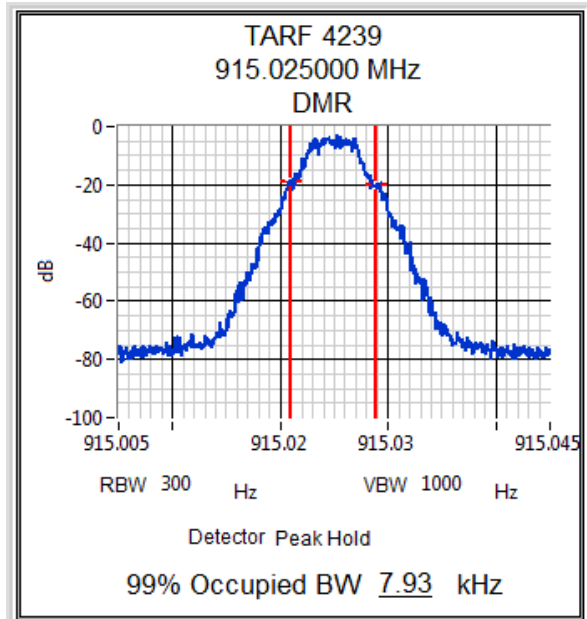
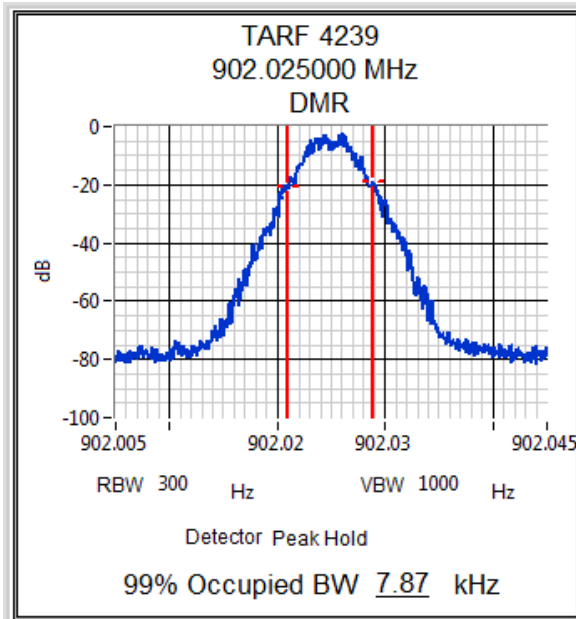
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing     DMR Modulation



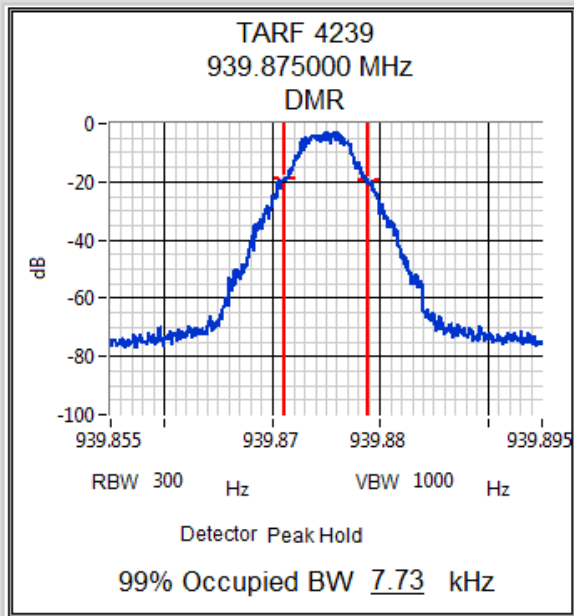
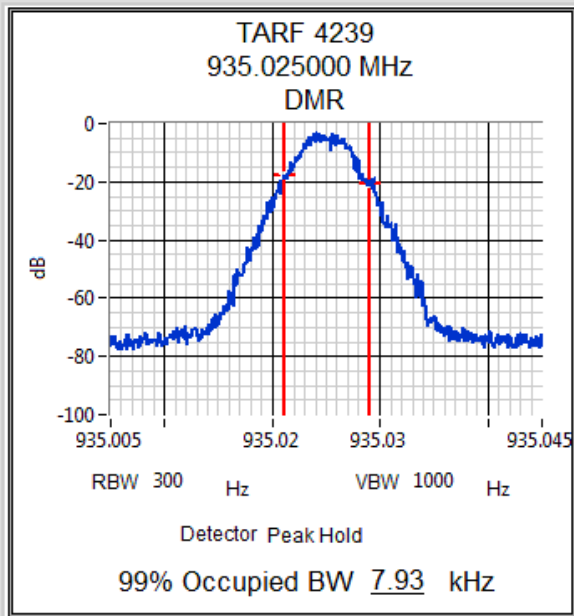
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing     DMR Modulation



Transmitter Occupied (99%) Bandwidth

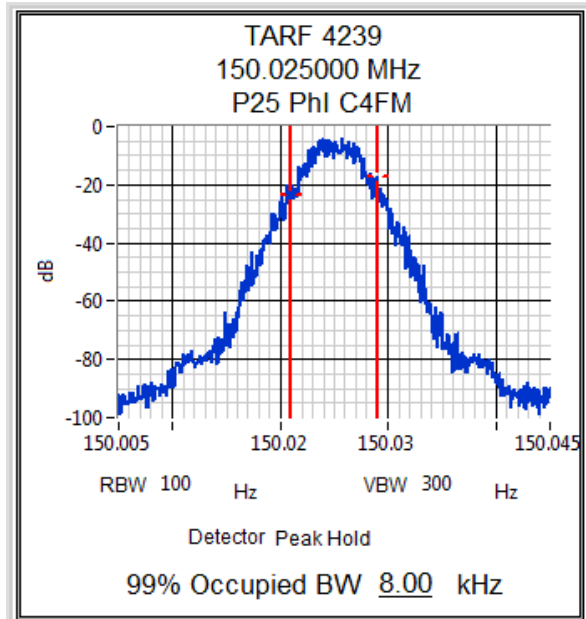
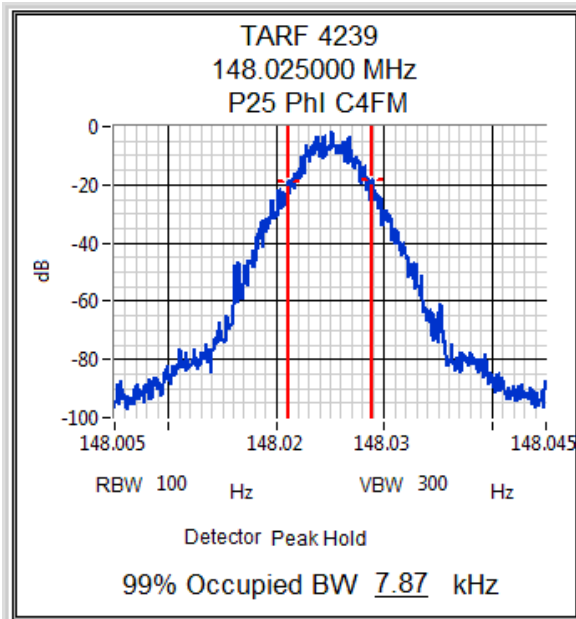
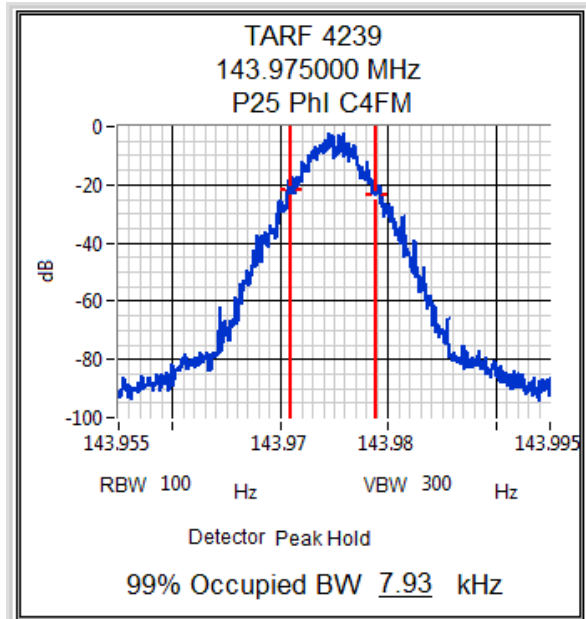
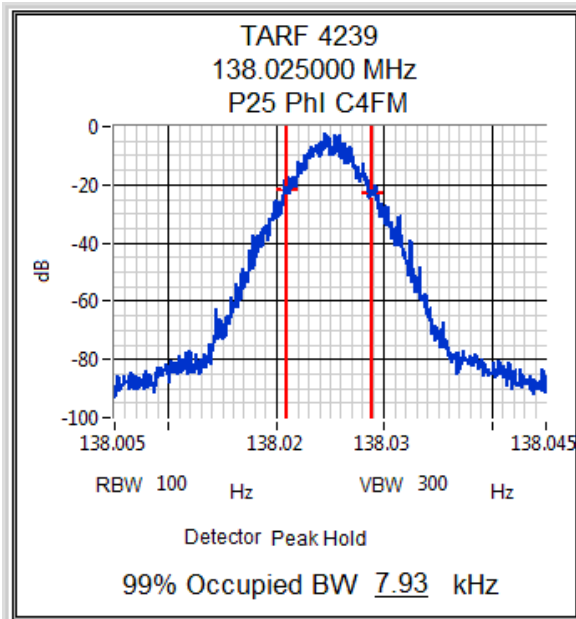
12.5 kHz ch spacing      DMR Modulation





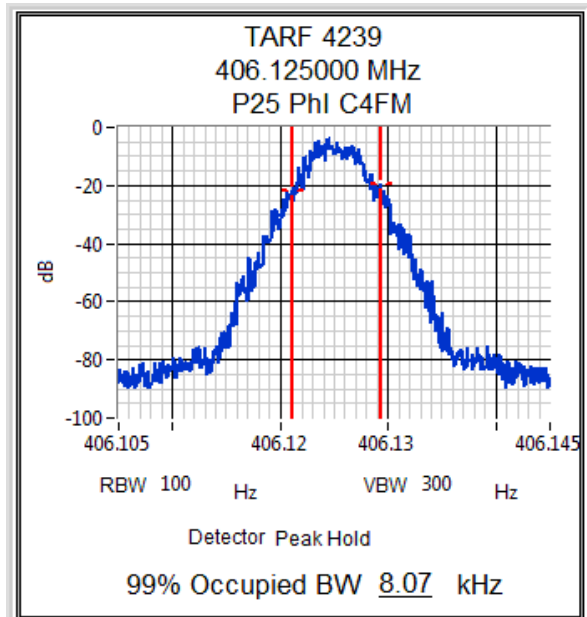
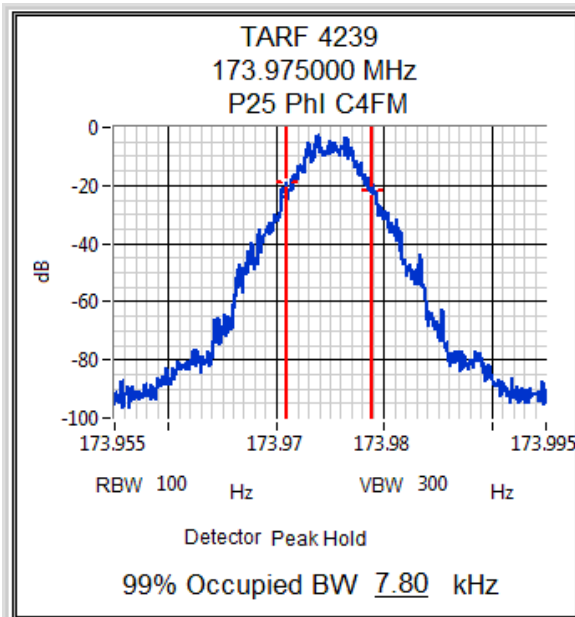
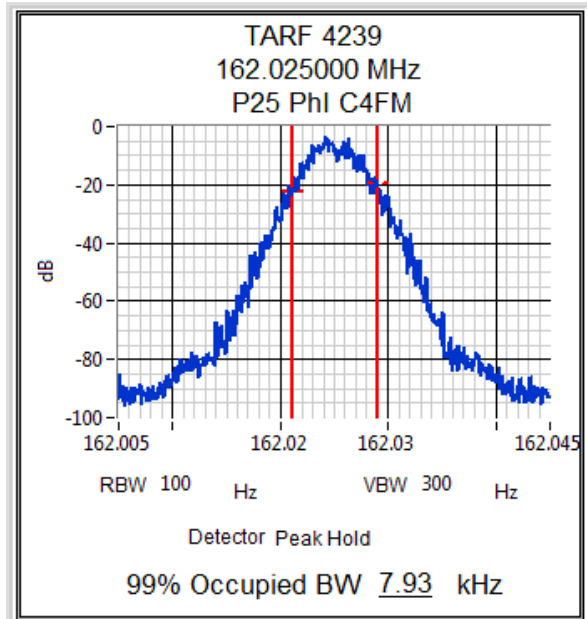
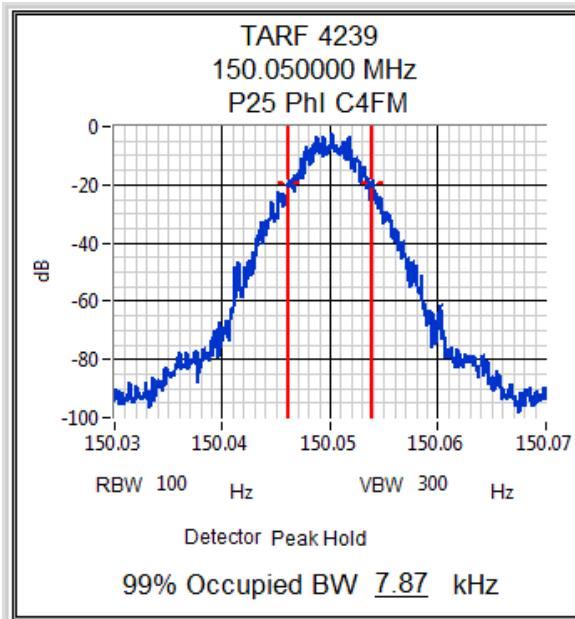
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      P25 Phase I Modulation



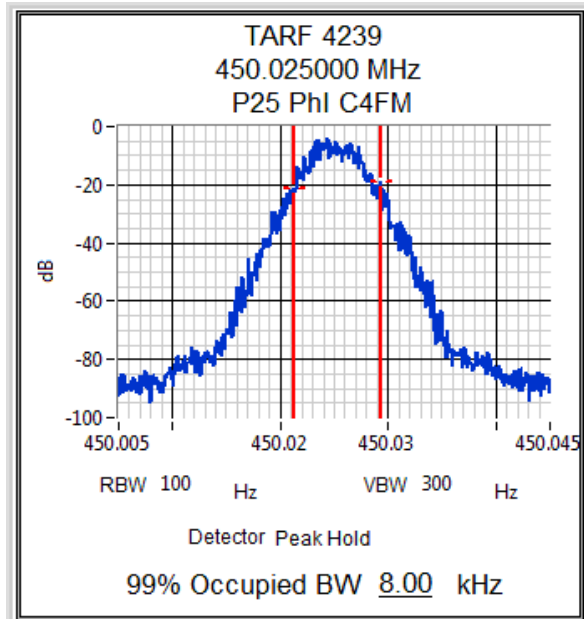
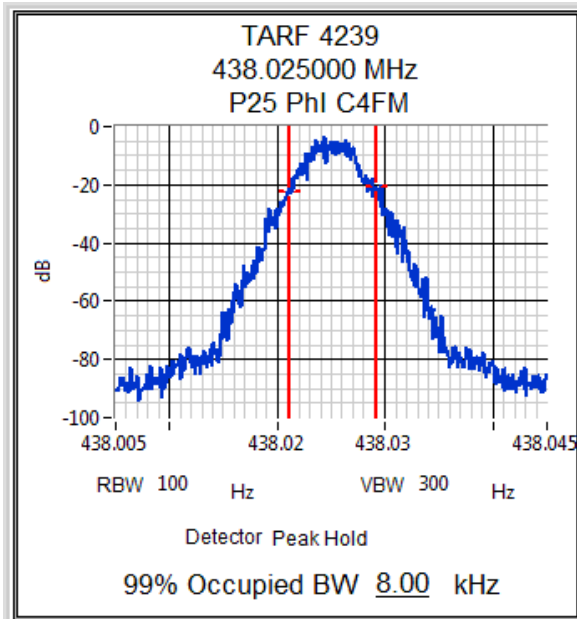
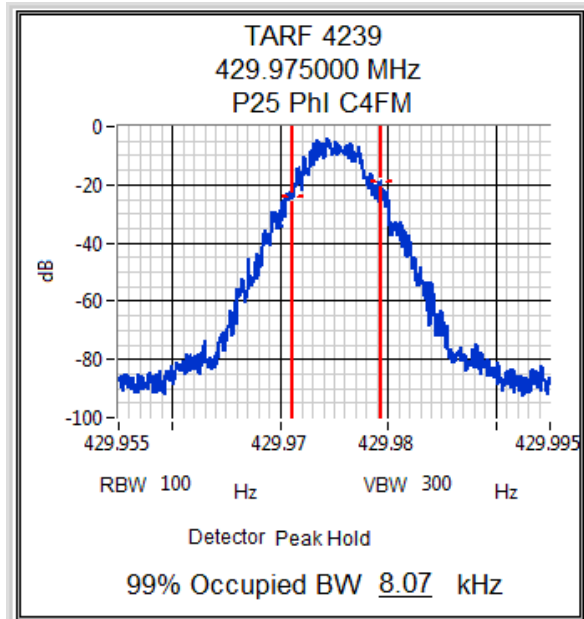
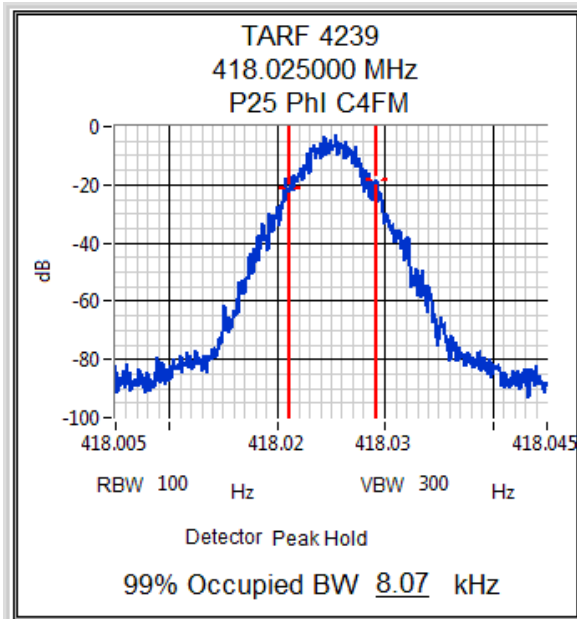
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase I Modulation



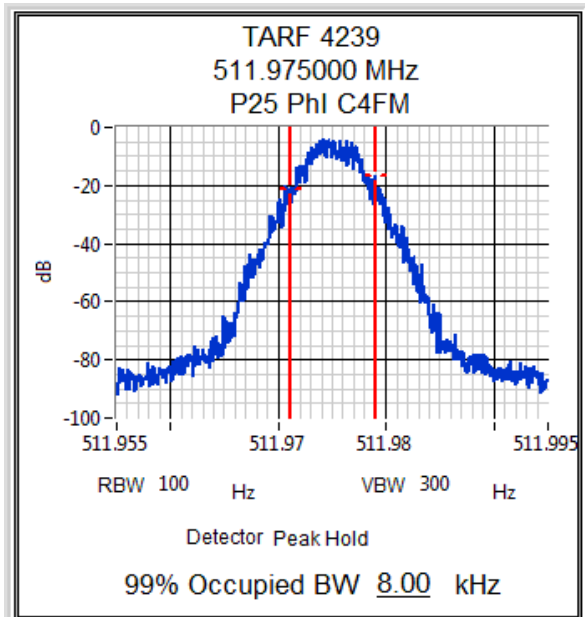
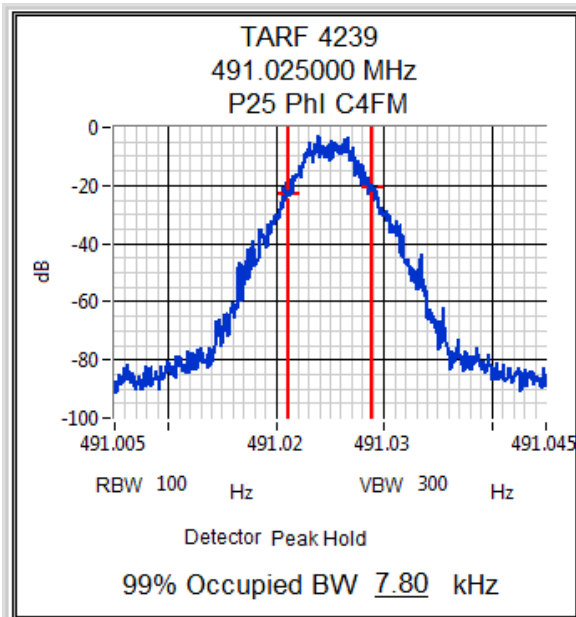
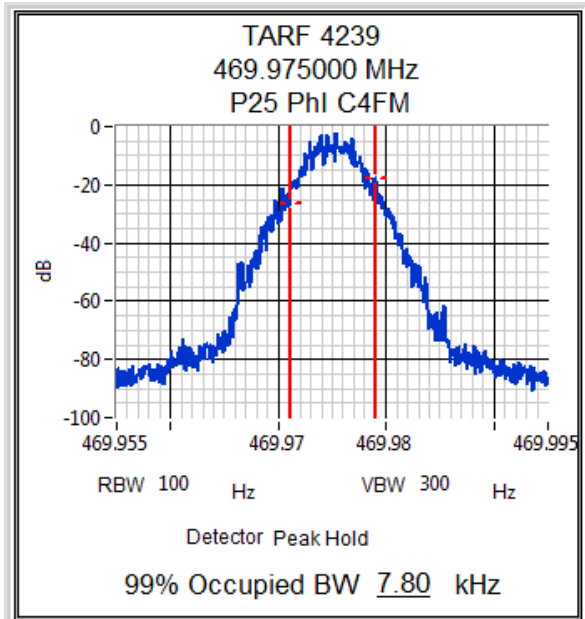
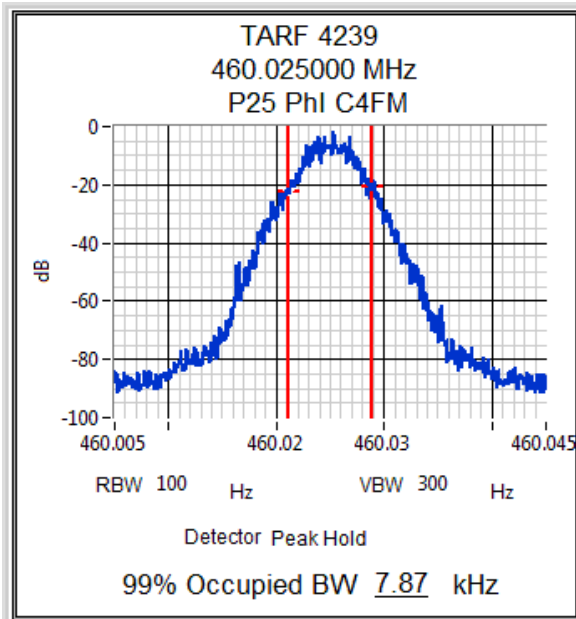
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase I Modulation



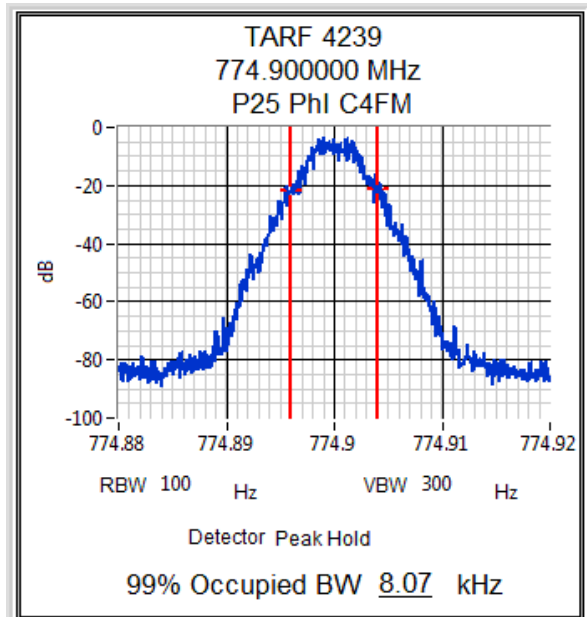
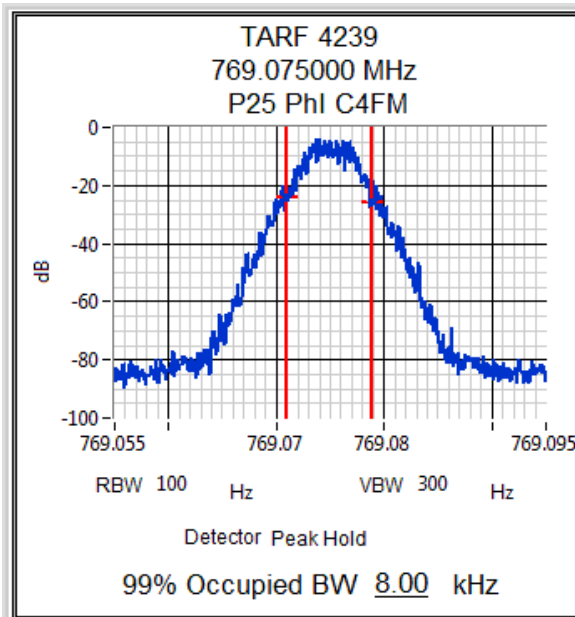
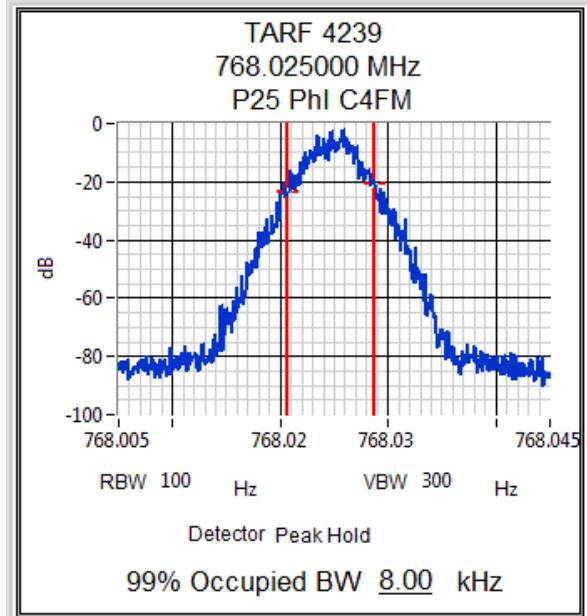
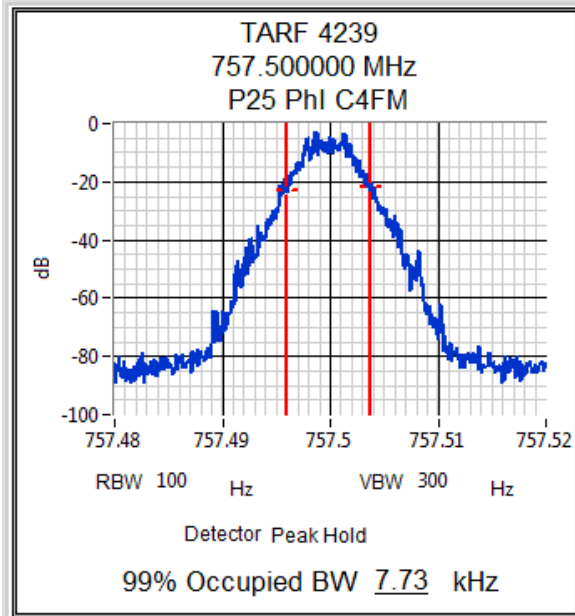
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase I Modulation



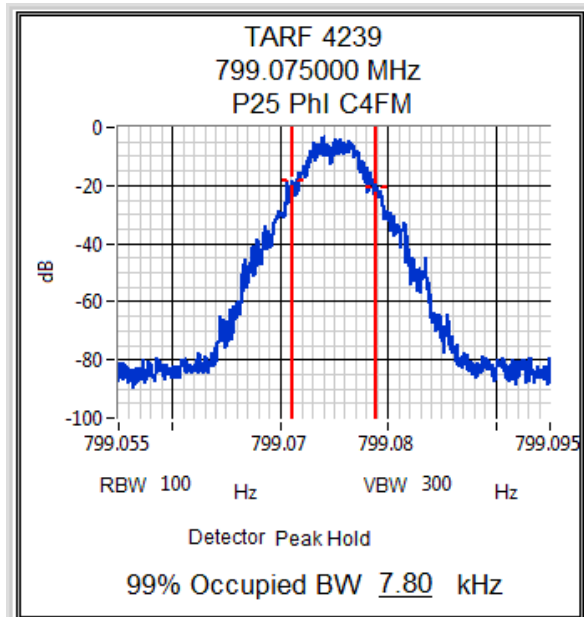
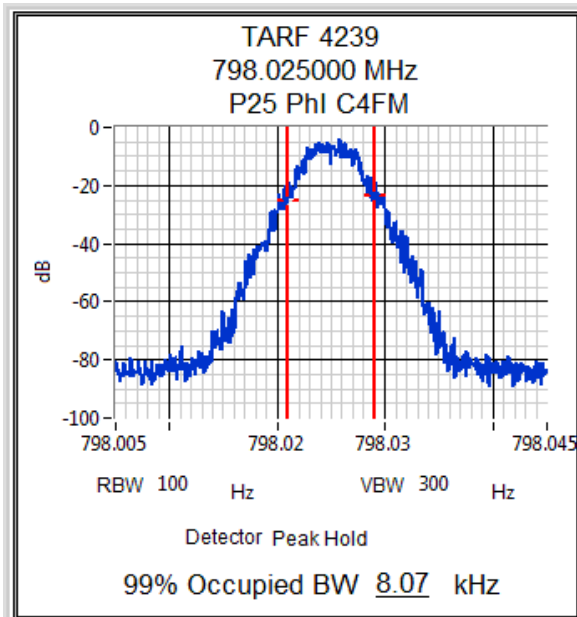
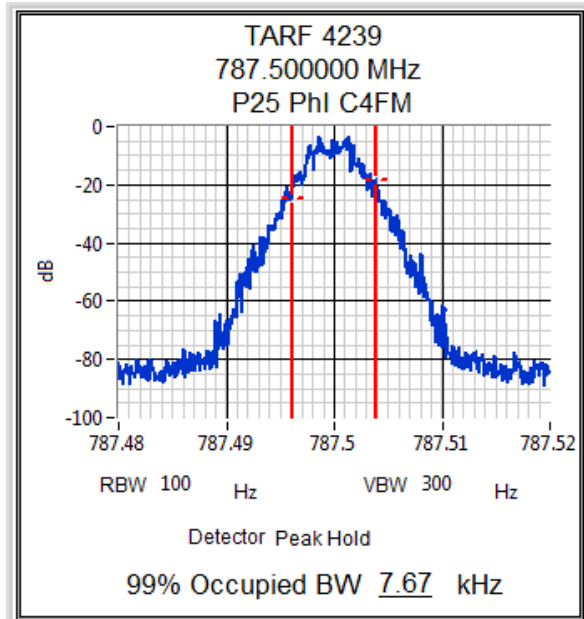
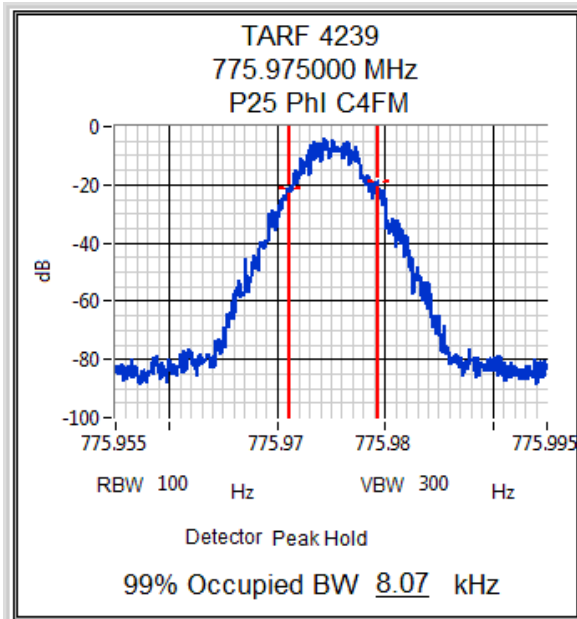
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      P25 Phase I Modulation



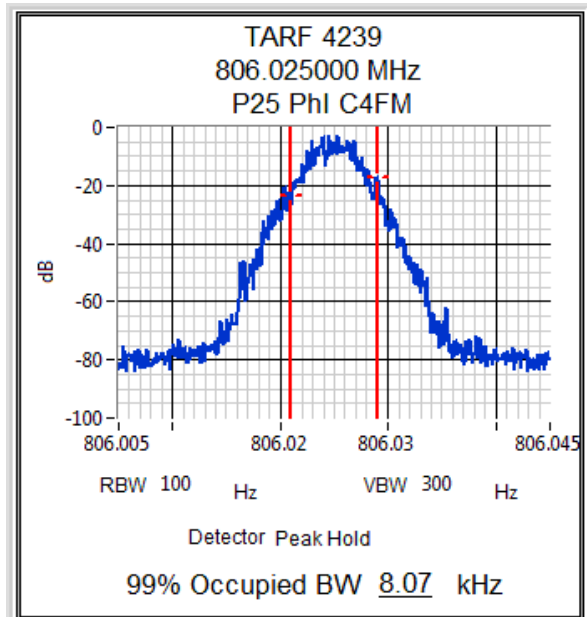
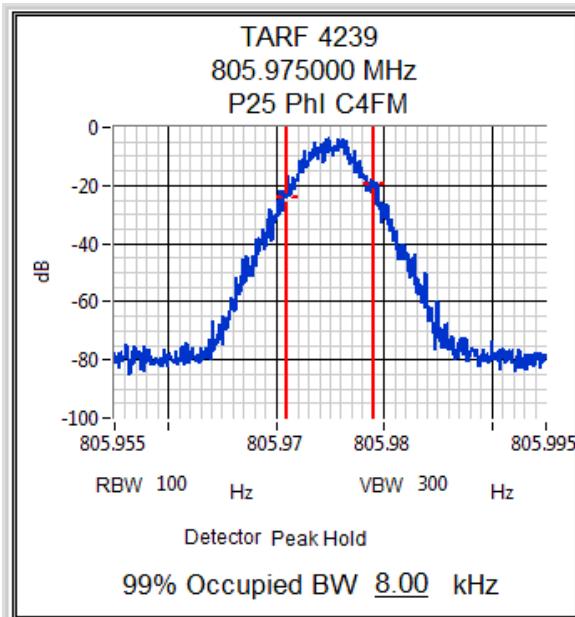
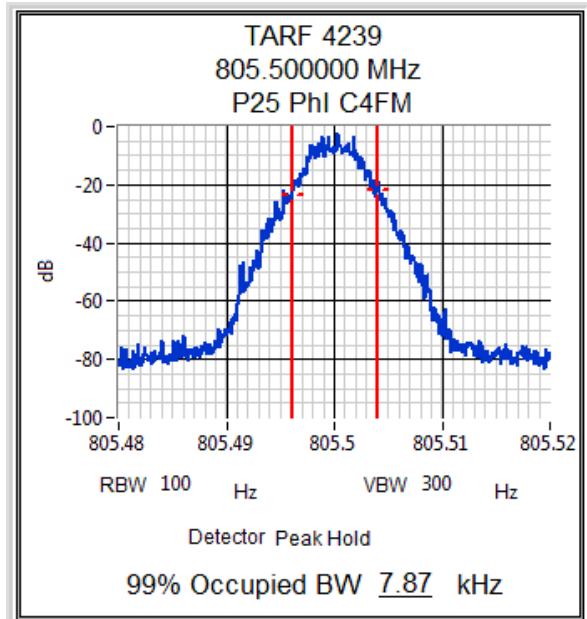
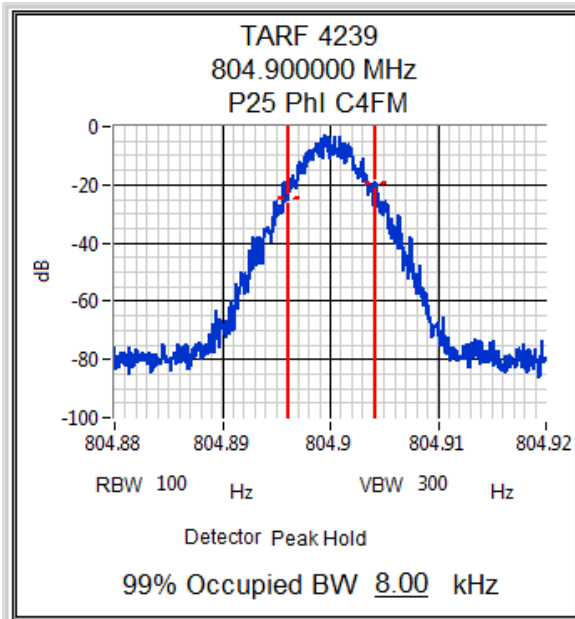
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      P25 Phase I Modulation



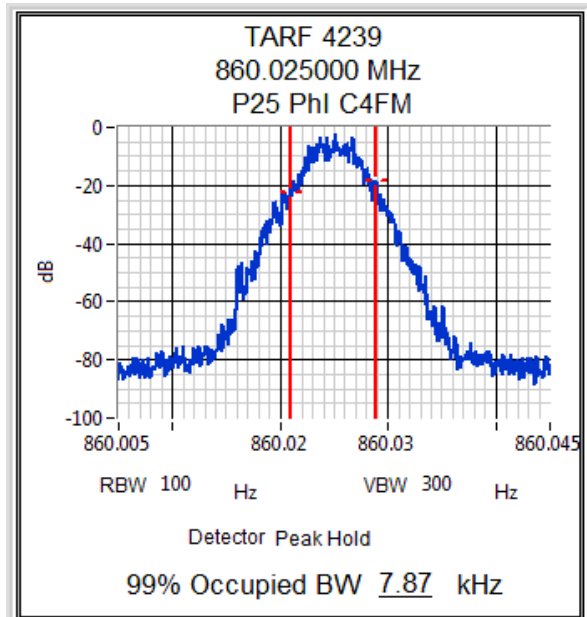
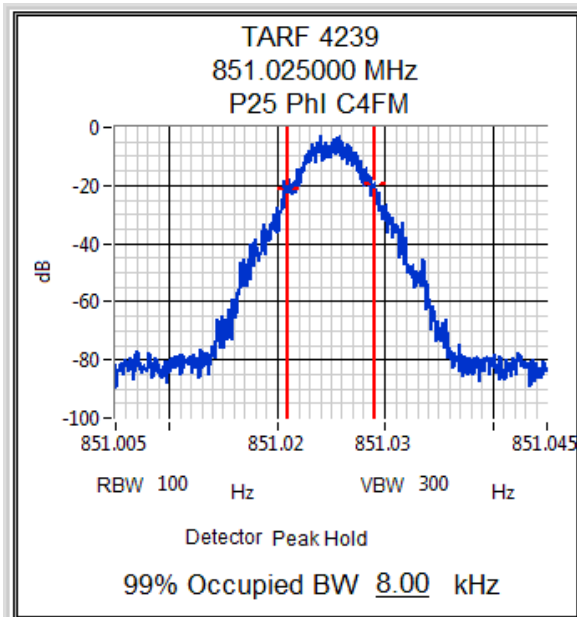
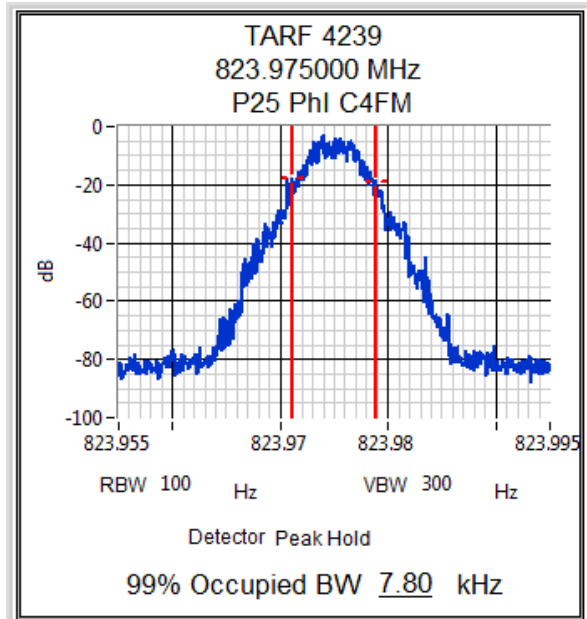
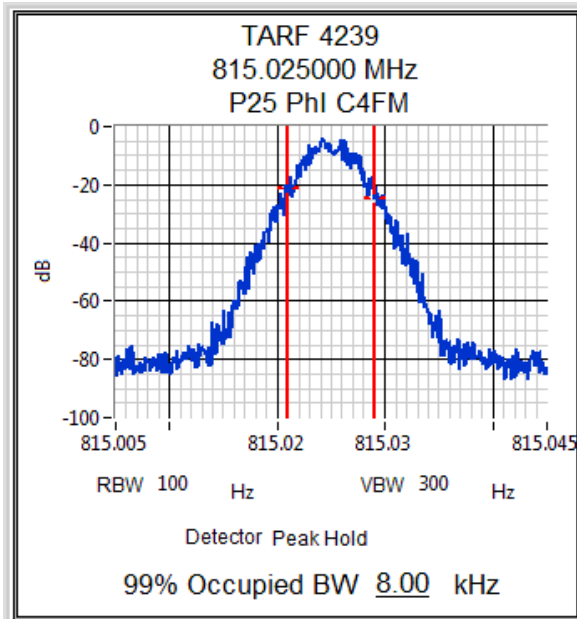
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      P25 Phase I Modulation



### Transmitter Occupied (99%) Bandwidth

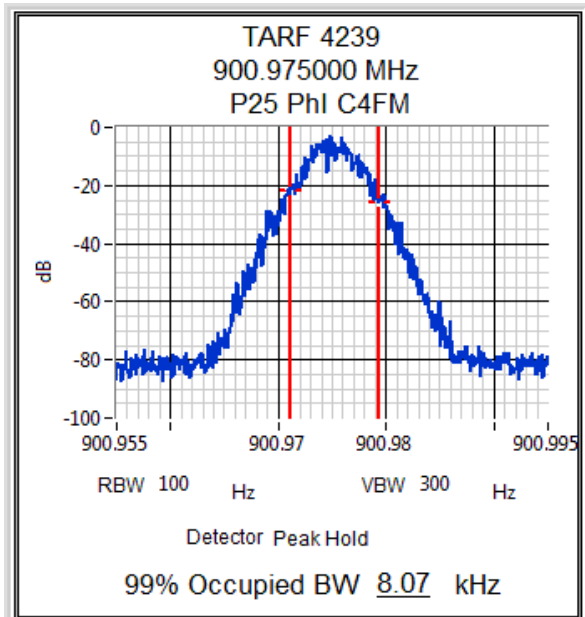
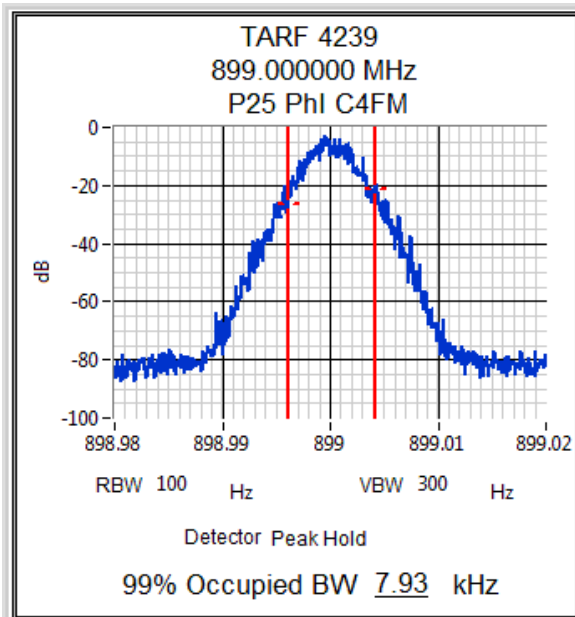
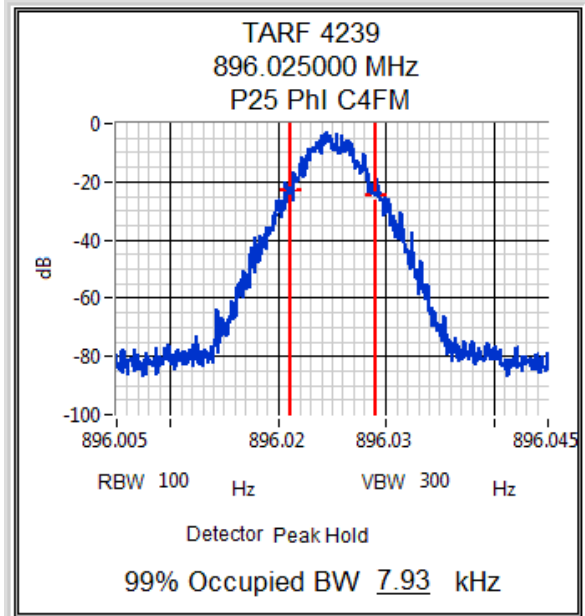
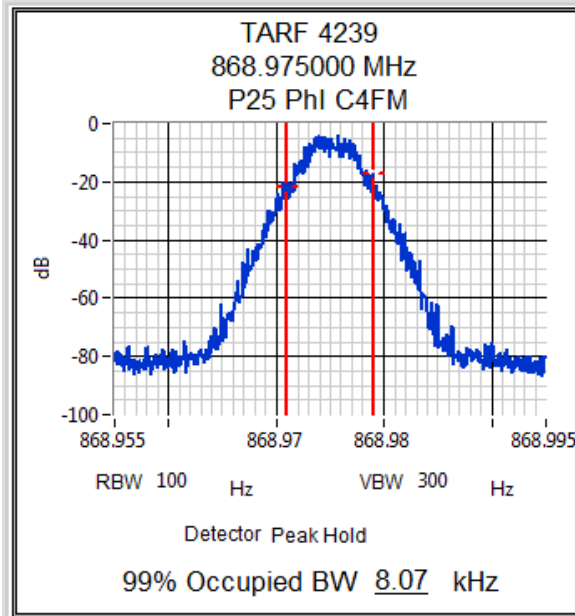
12.5 kHz ch spacing    P25 Phase I Modulation





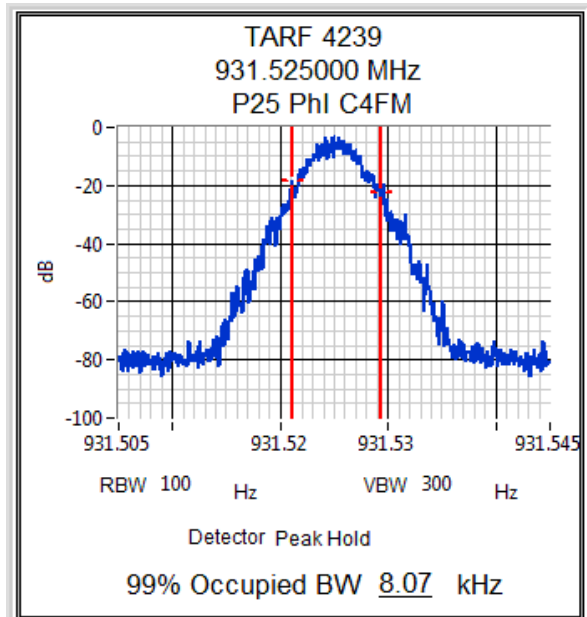
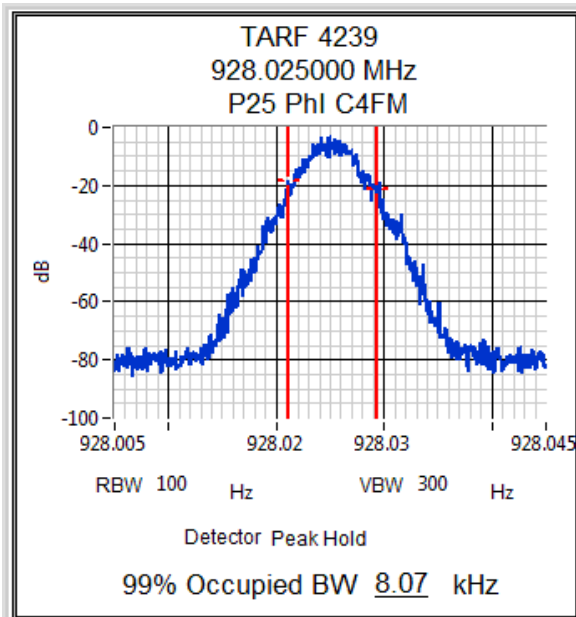
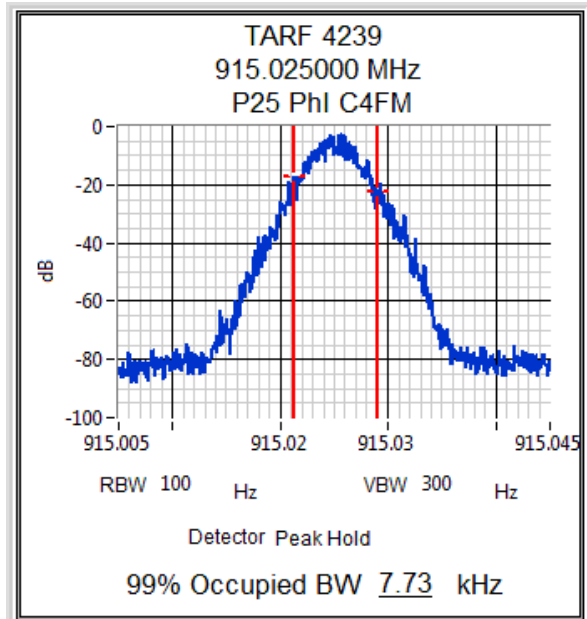
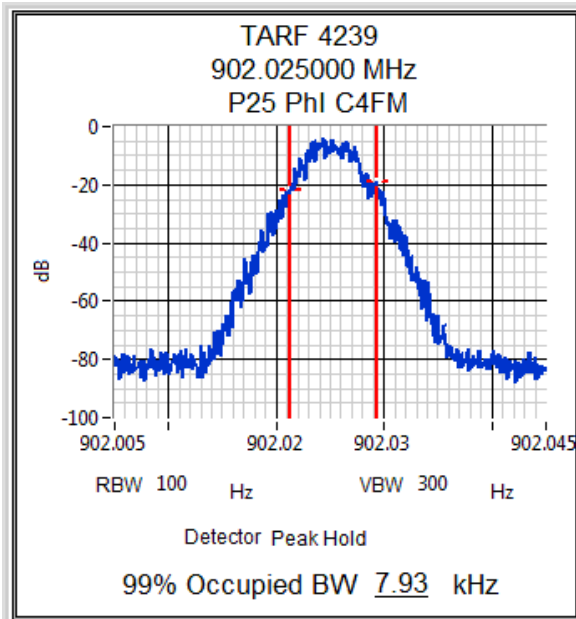
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase I Modulation



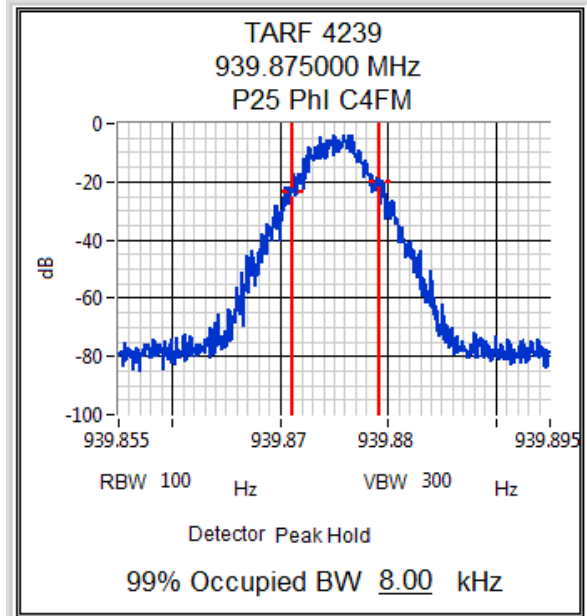
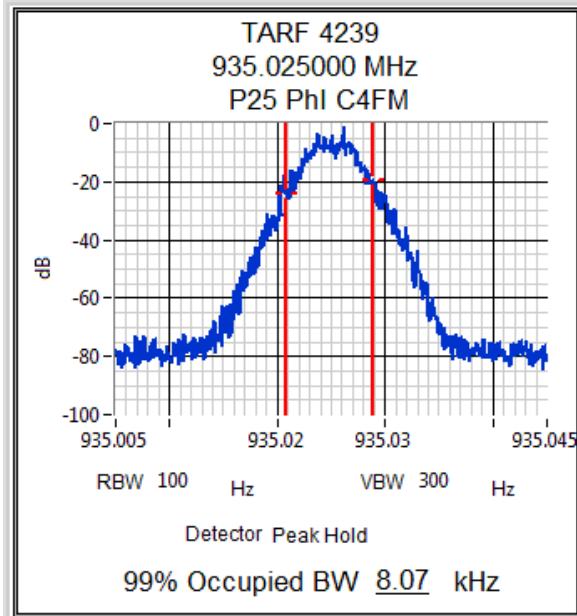
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase I Modulation



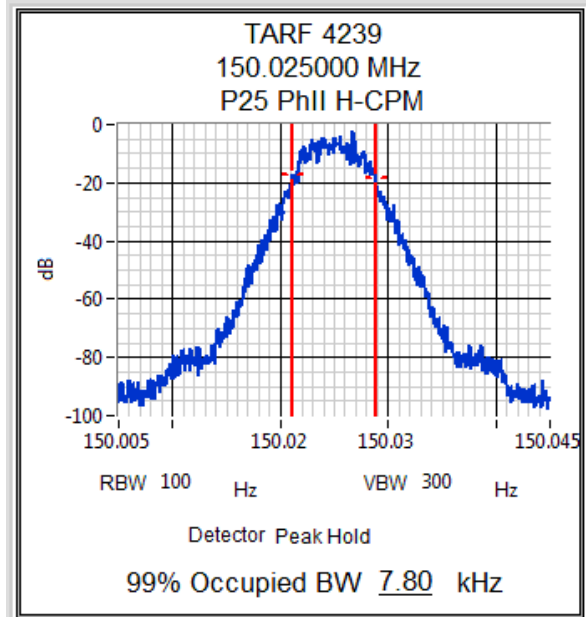
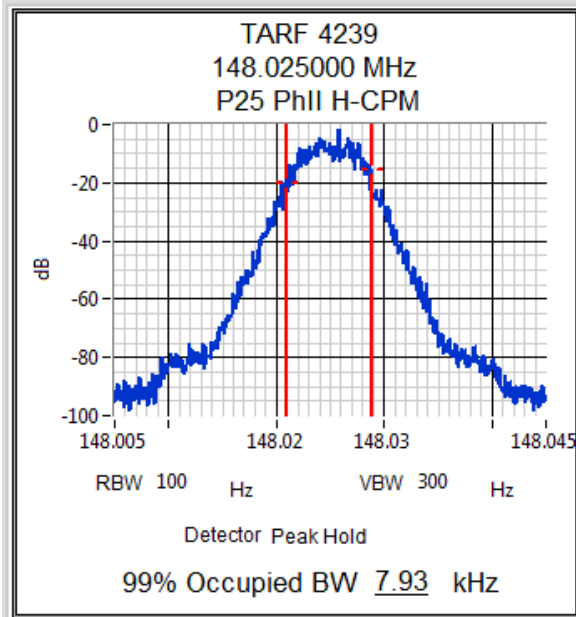
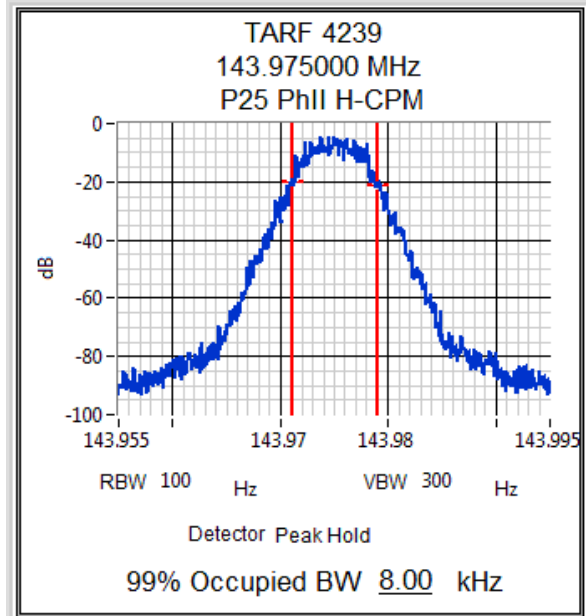
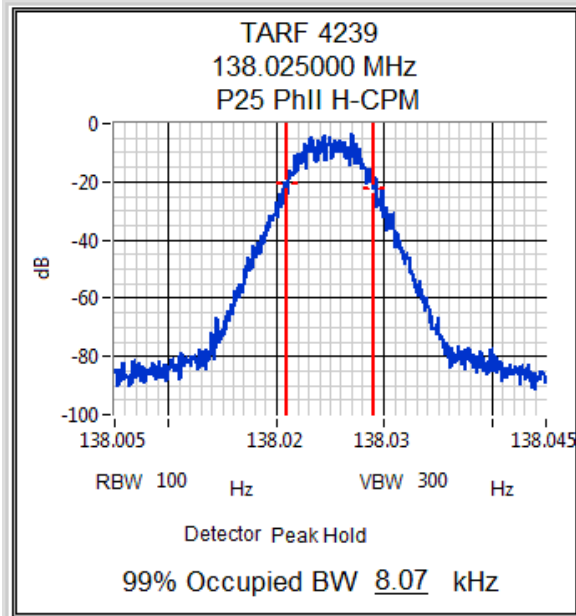
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      P25 Phase I Modulation



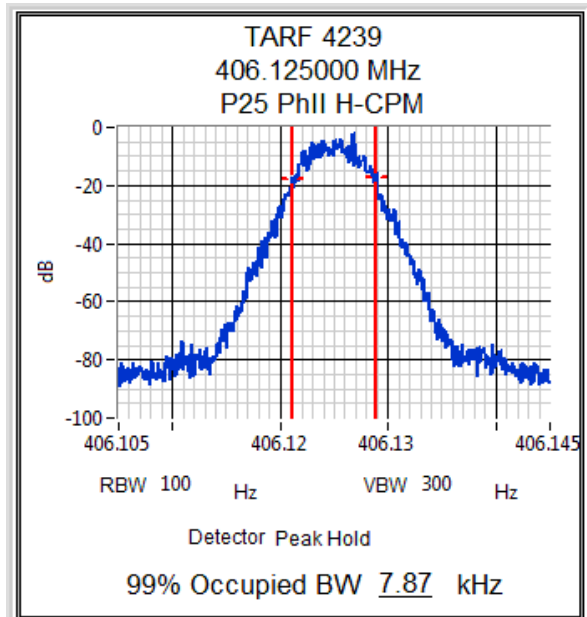
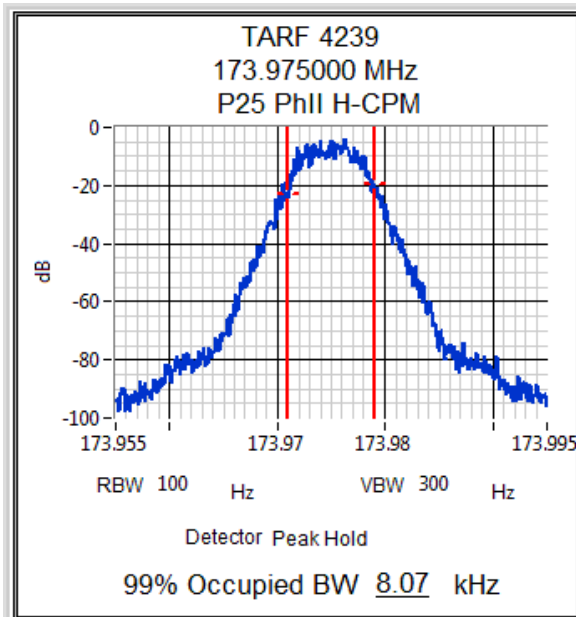
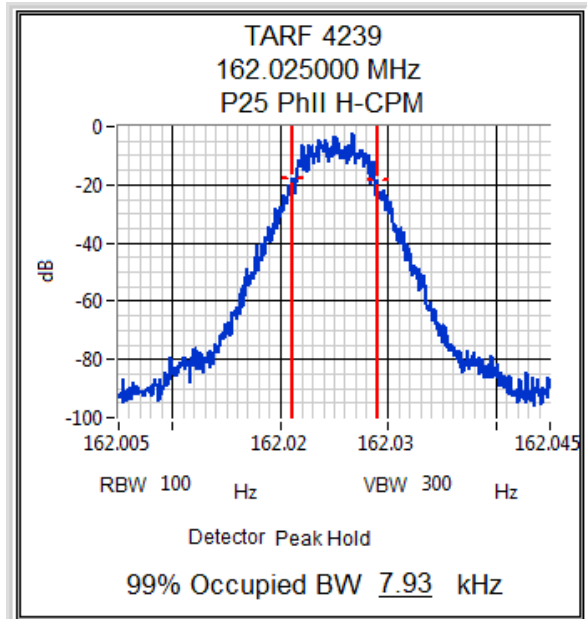
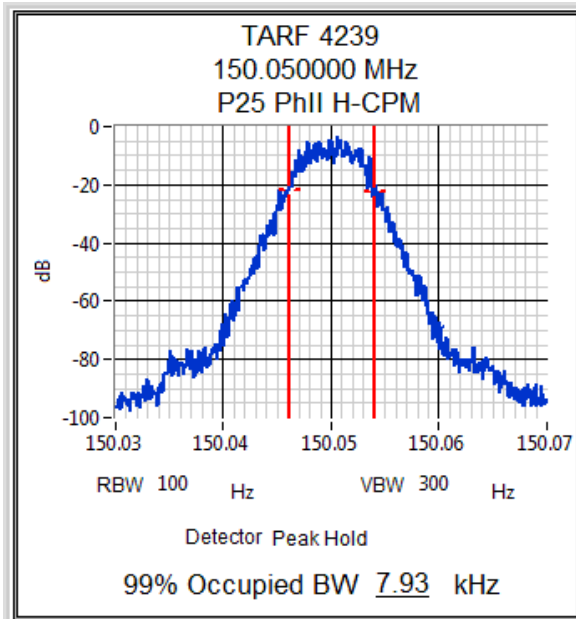
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      P25 Phase II Modulation



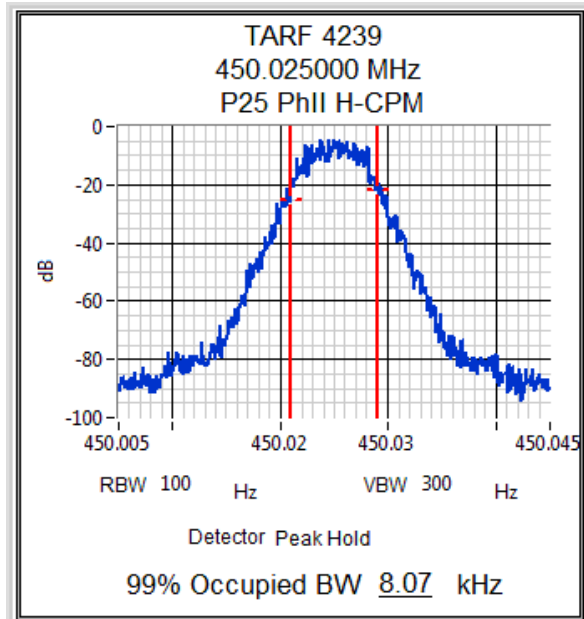
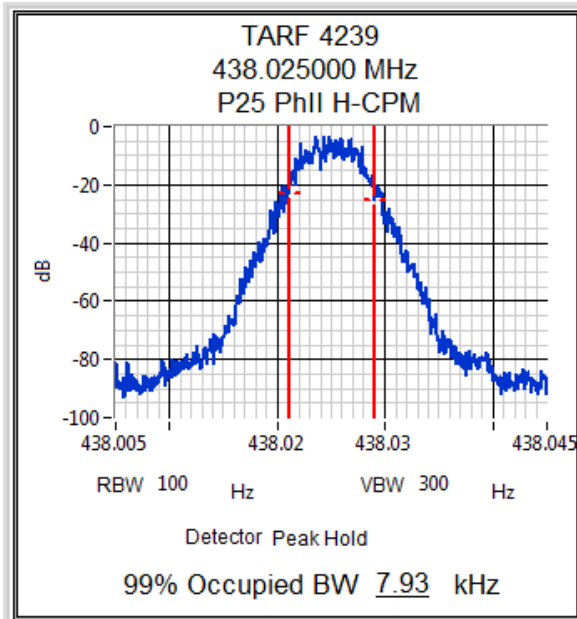
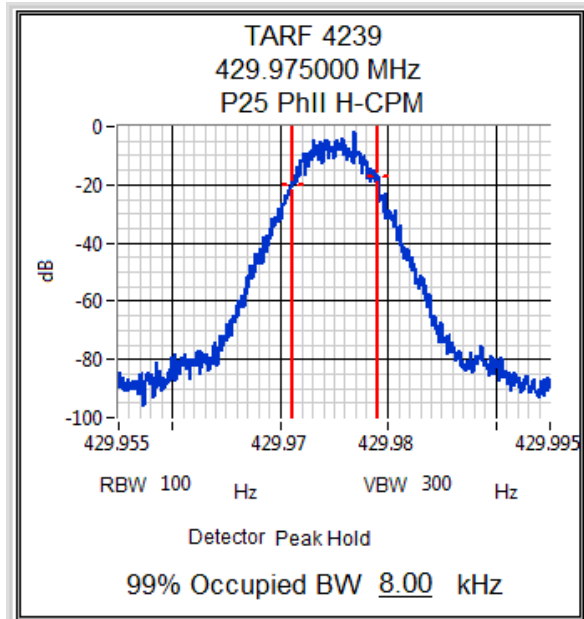
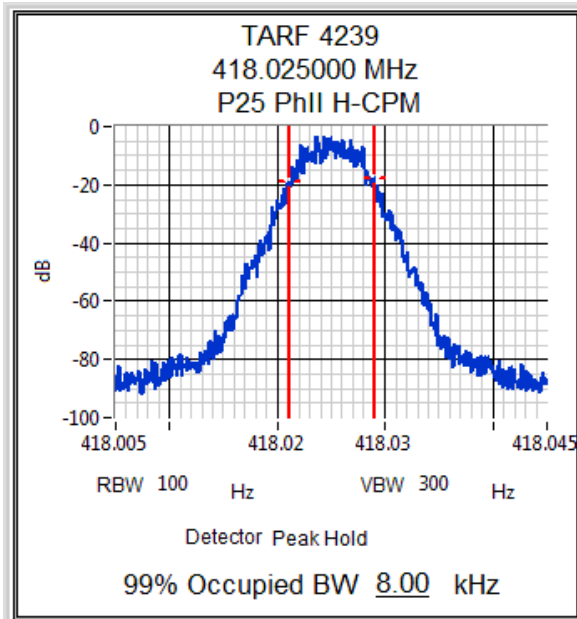
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase II Modulation



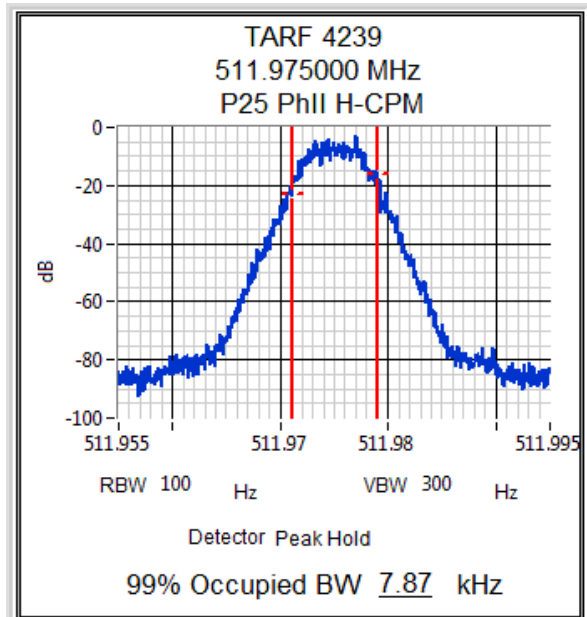
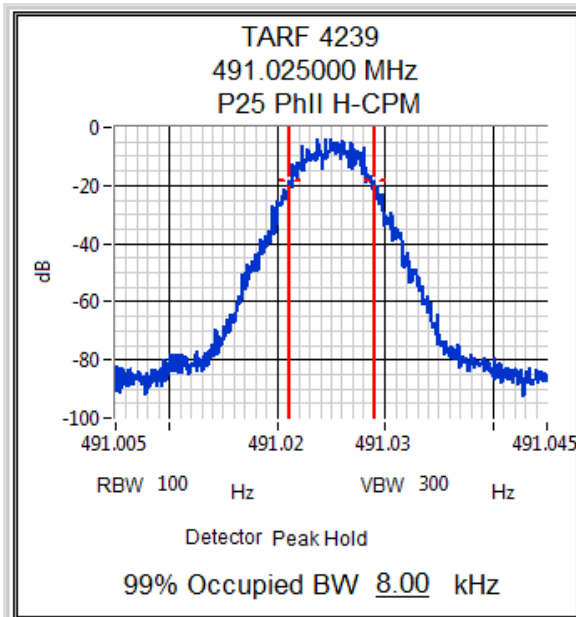
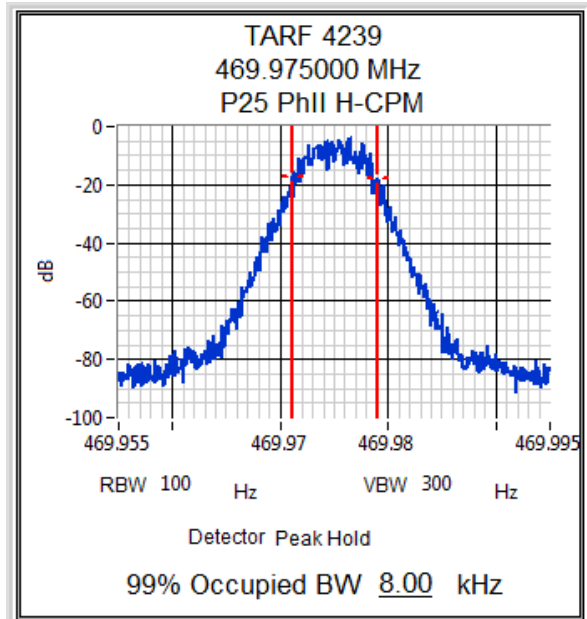
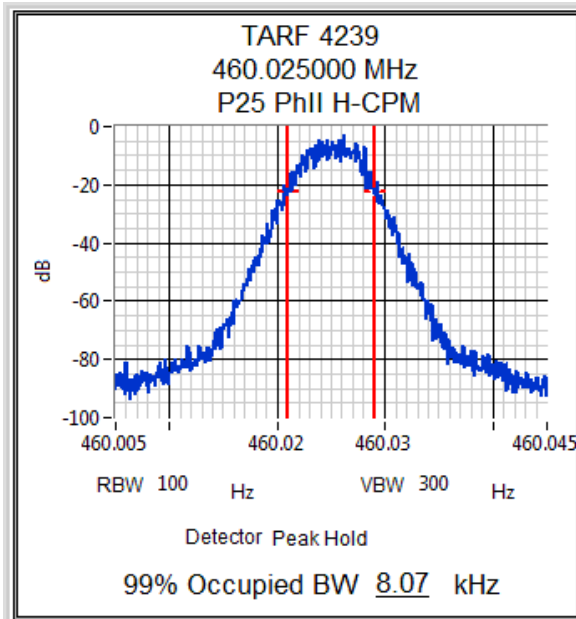
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      P25 Phase II Modulation



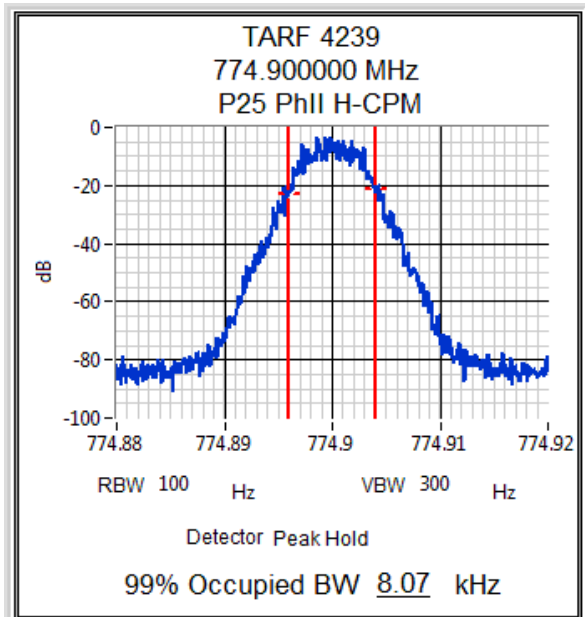
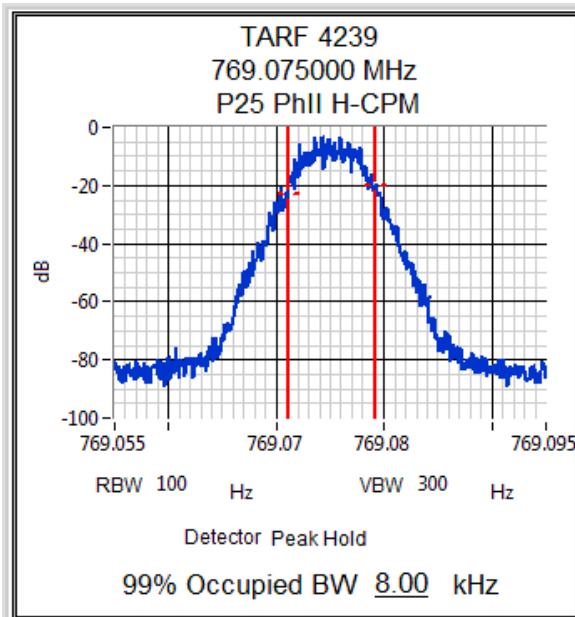
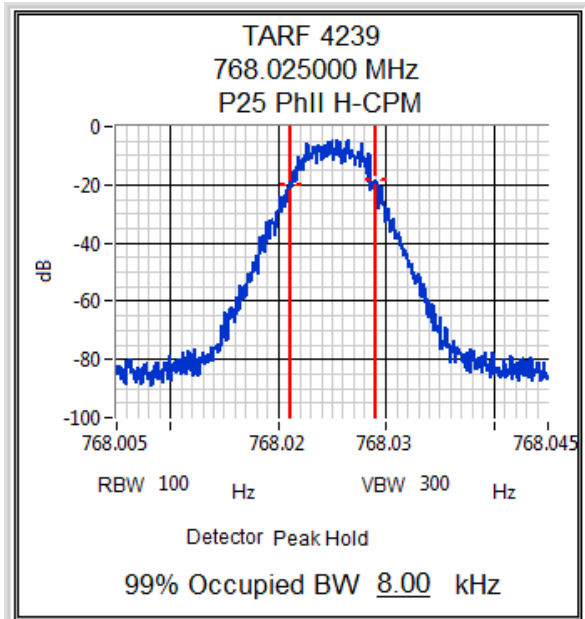
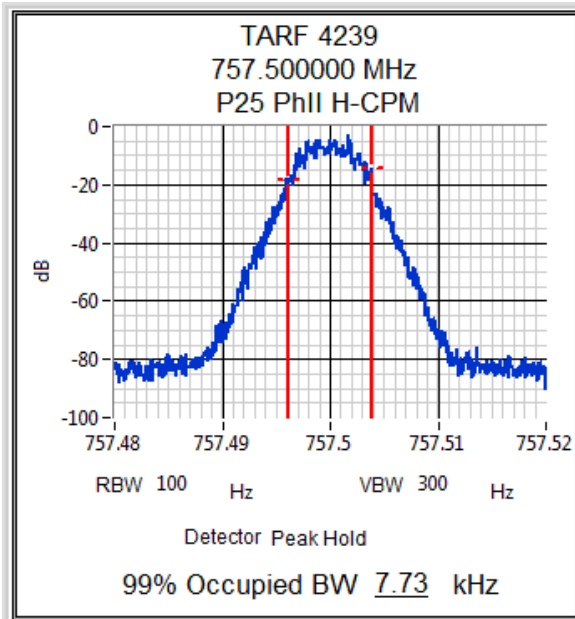
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase II Modulation



### Transmitter Occupied (99%) Bandwidth

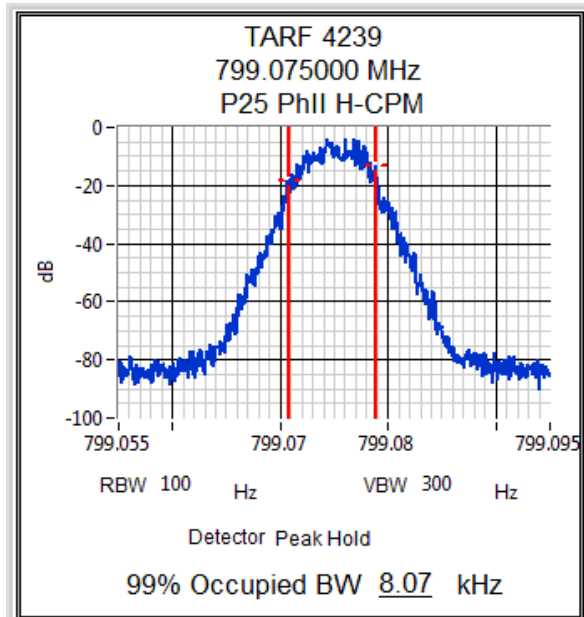
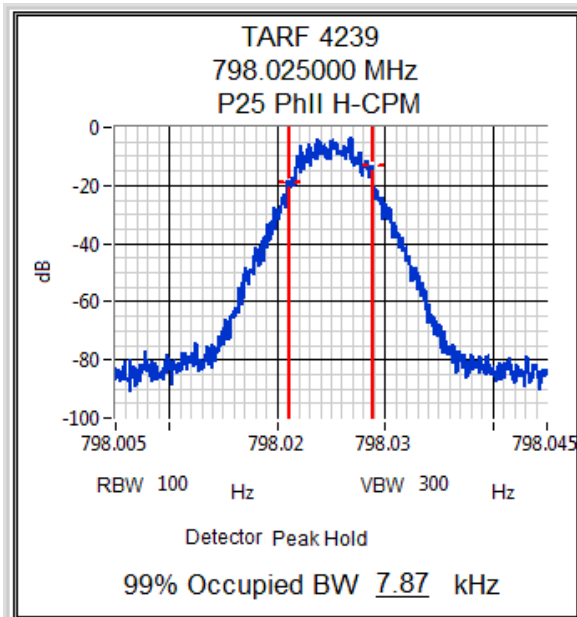
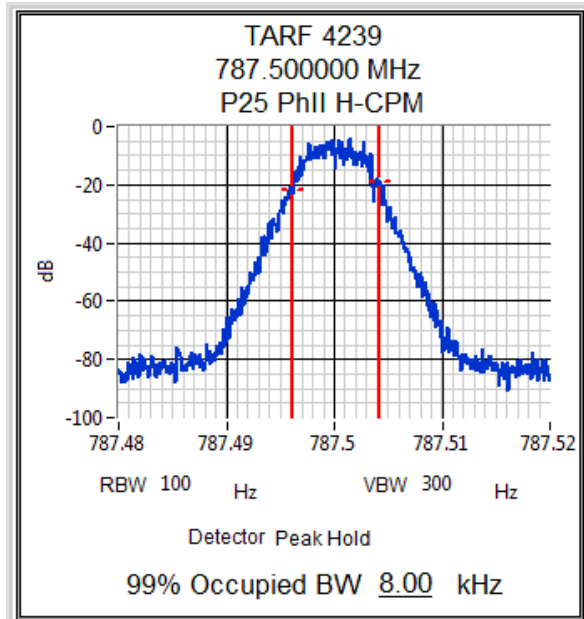
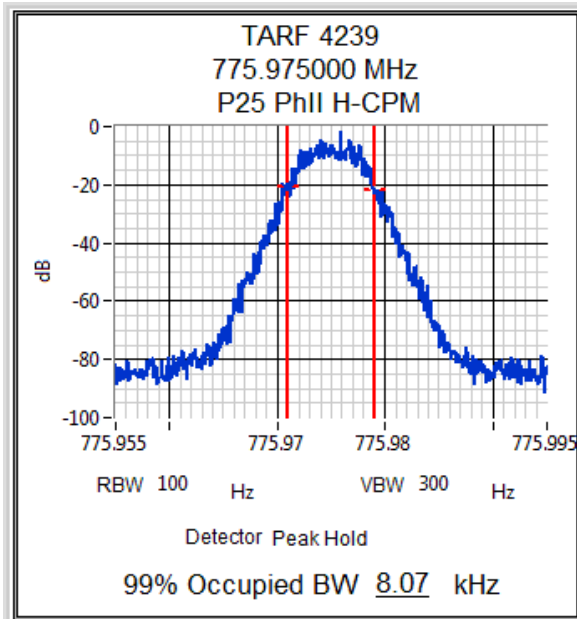
12.5 kHz ch spacing      P25 Phase II Modulation





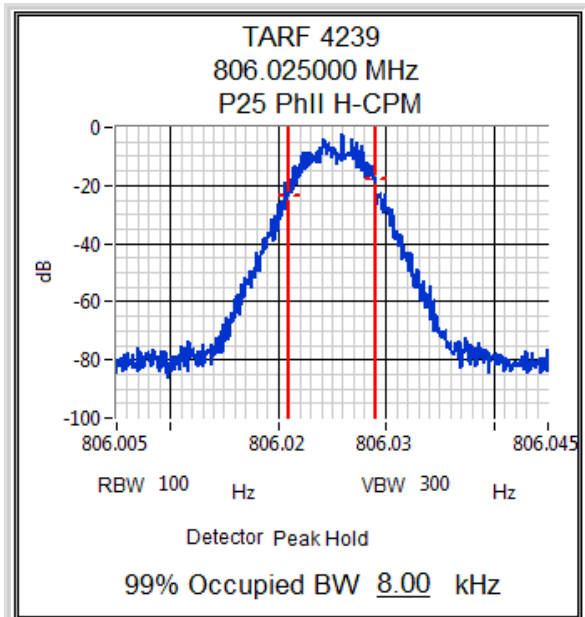
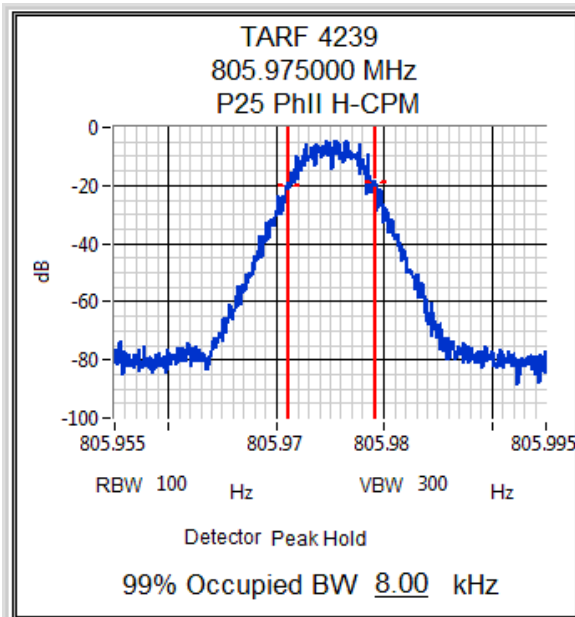
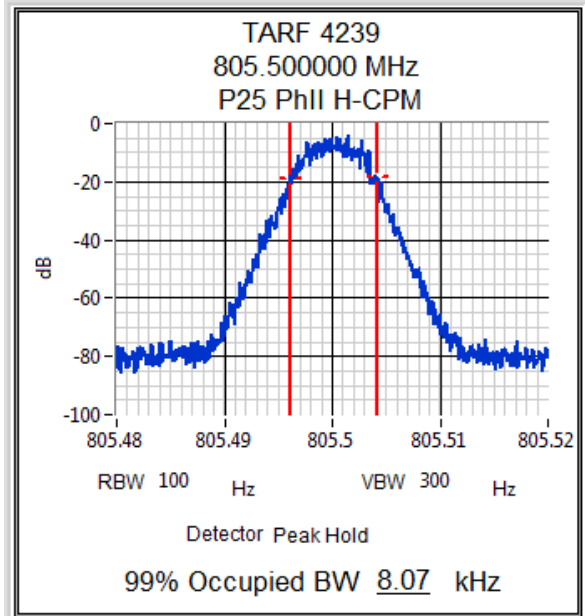
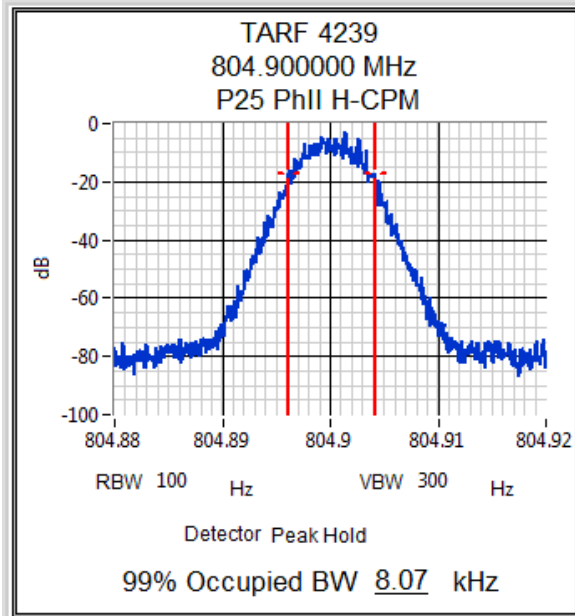
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase II Modulation



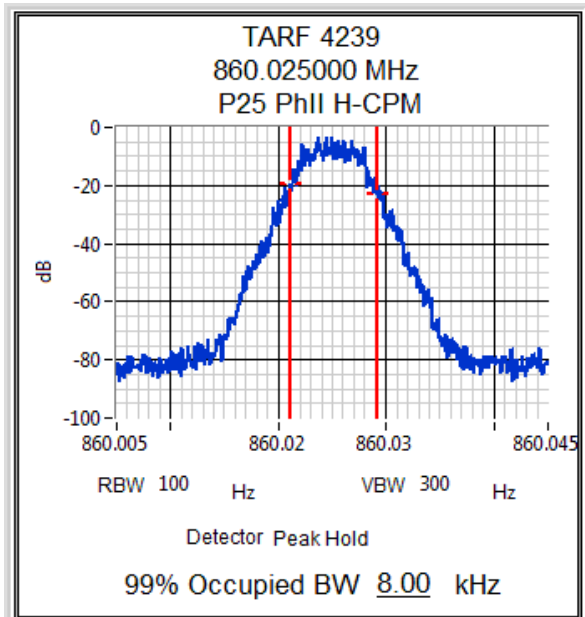
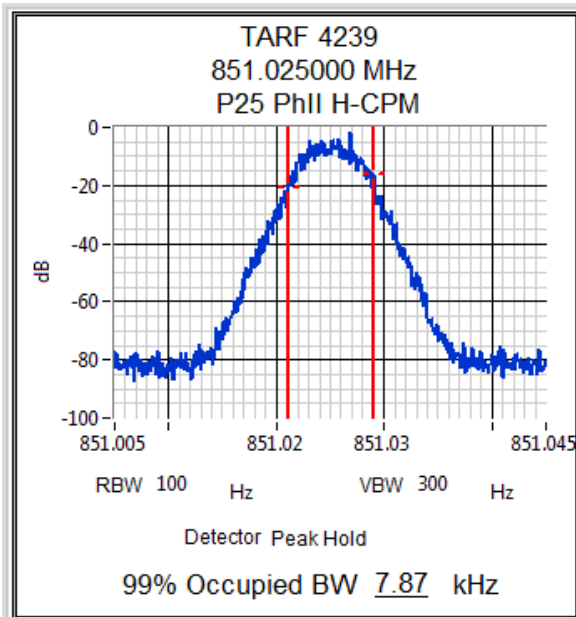
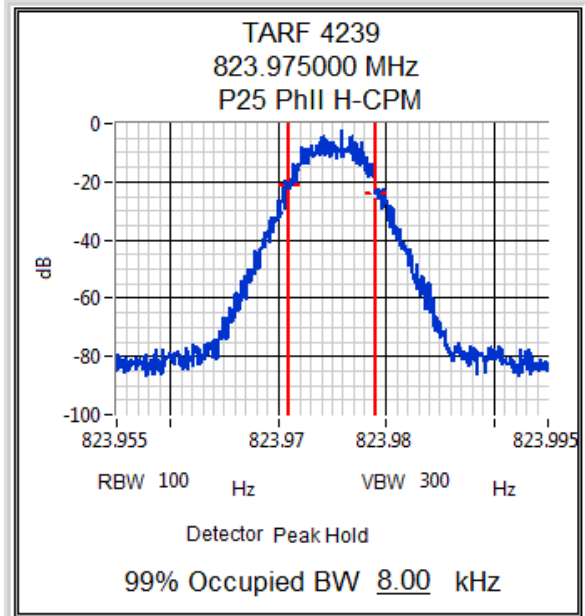
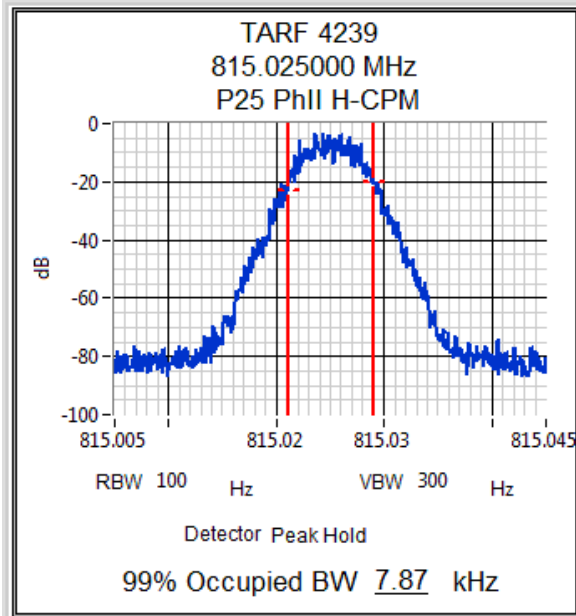
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase II Modulation



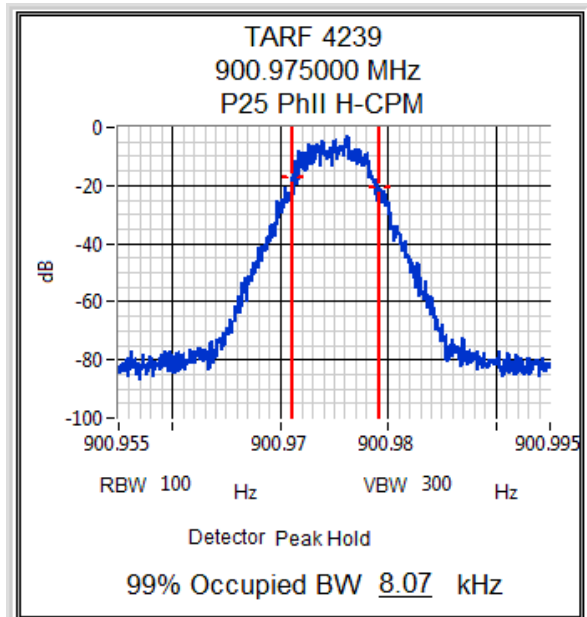
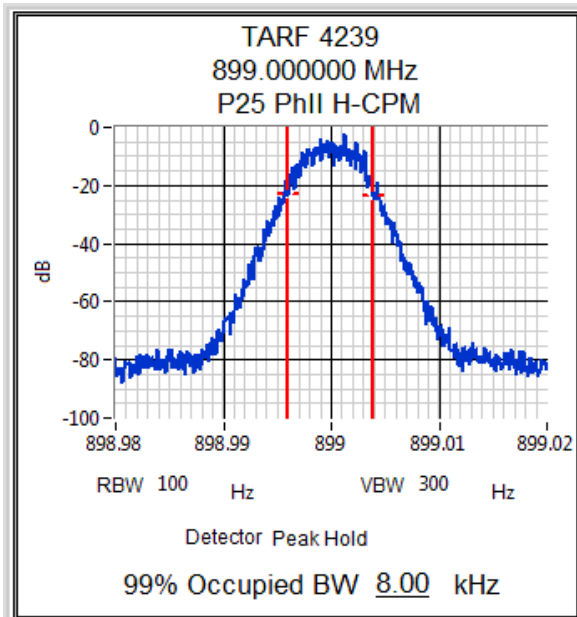
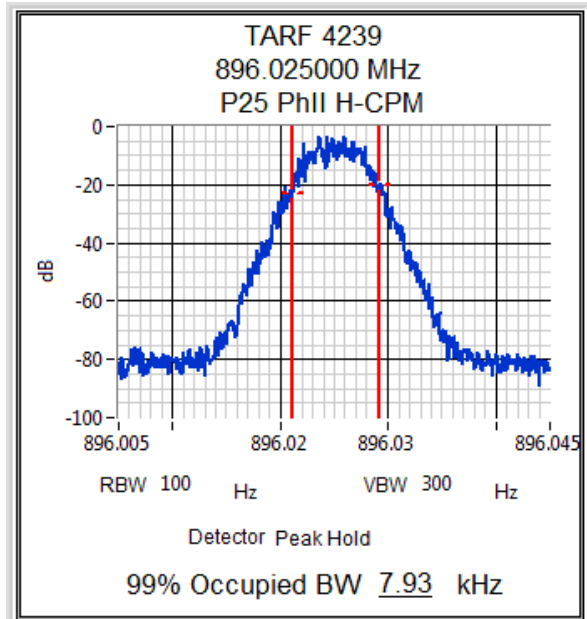
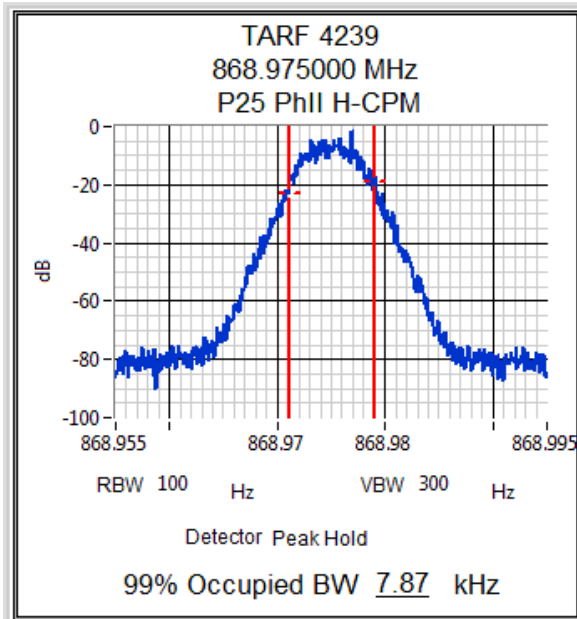
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase II Modulation



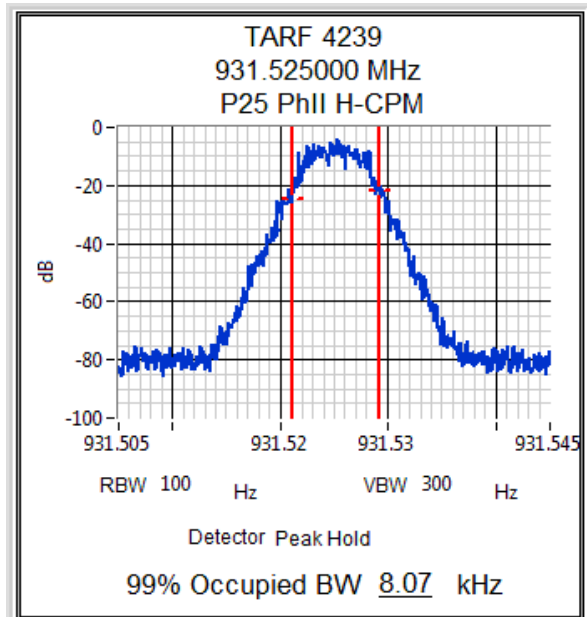
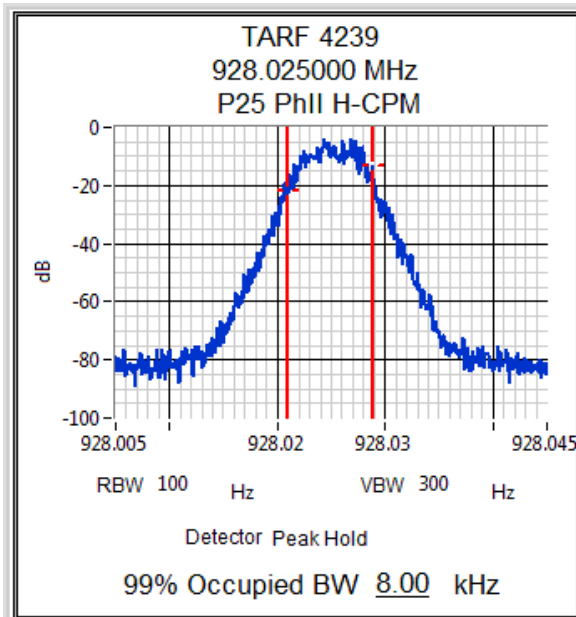
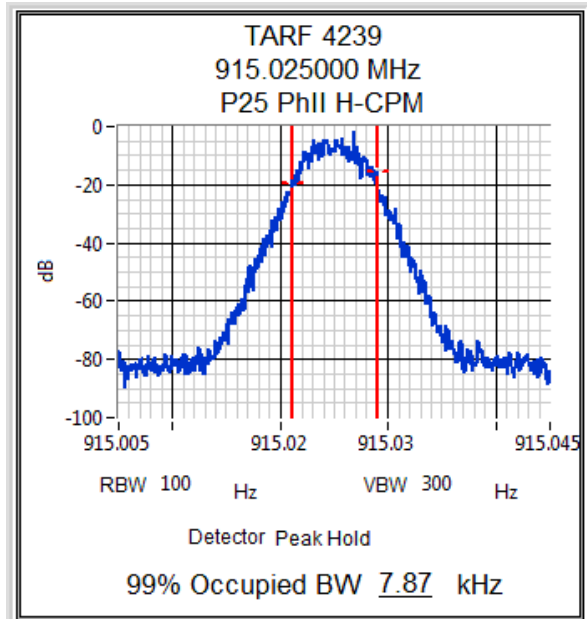
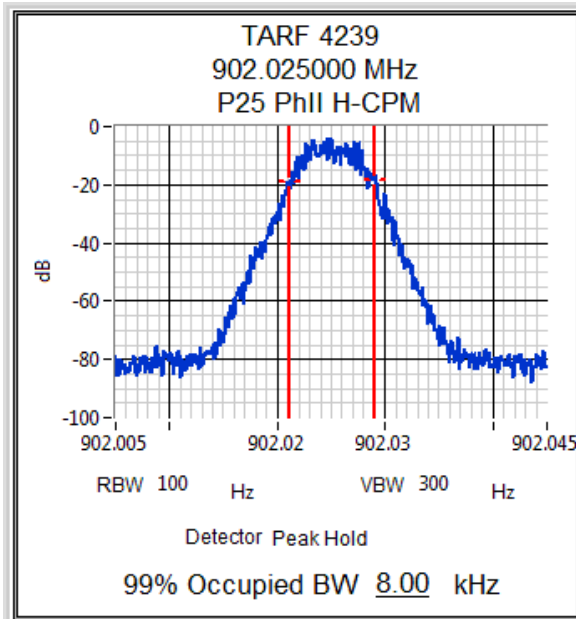
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase II Modulation



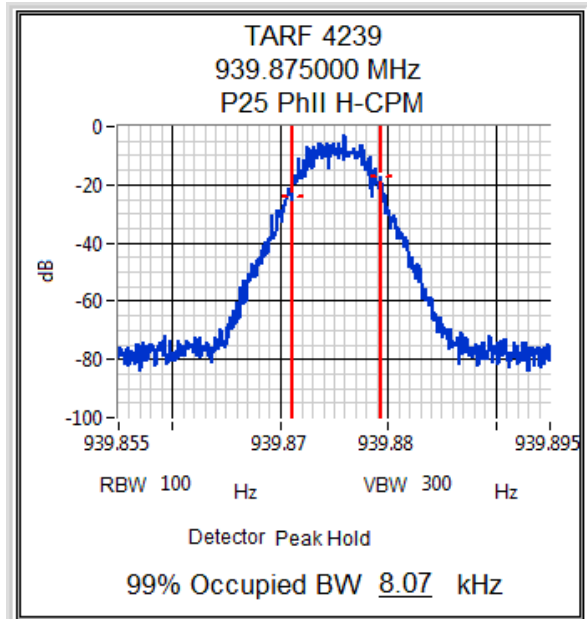
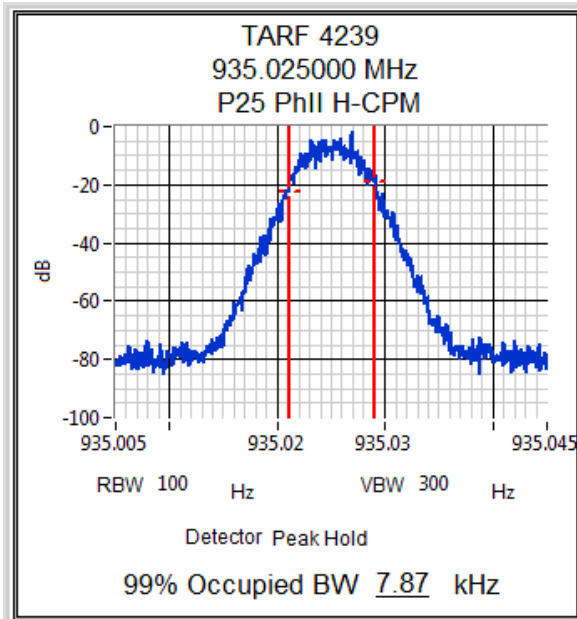
### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing    P25 Phase II Modulation



### Transmitter Occupied (99%) Bandwidth

12.5 kHz ch spacing      P25 Phase II Modulation



END OF REPORT 4239 SECTION A