

LABORATORY TEST REPORT

RADIO PERFORMANCE MEASUREMENTS

for the

TBCHGA Base Station Transceiver
Fitted with a 50 W Power Amplifier and 400 - 480 MHz Reciter

Tested in accordance with:

FCC 47 CFR Parts 22 and 90

RSS-119 Issue 12
RSS-Gen Issue 5

Report Revision: 1

Issue Date: 11 August 2025

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CHECKED & APPROVED BY: M. C. James


Laboratory Technical Manager



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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REVISION HISTORY

Date	Revision	Comments
11 August 2025	1	Initial test report

INTRODUCTION

Type approval testing of the TBCHGA, 50 Watt, Base Station transceiver in order to demonstrate compliance with FCC 47 Parts 22 & 90, 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 Limited
245 Wooldridge Road
Harewood
Christchurch 8051
New Zealand

DESCRIPTION OF SAMPLE

Manufacturer: Tait International Limited
Equipment: Base Station Transceiver
Type Code: TBCHGA
Frequency Range: 400 → 480 MHz
Transmit Power: 50 Watts

Modulation		Channel Spacing	Speech Channels	Symbol Rate (symbols/sec)	Data Rate (bps)
Analogue FM		12.5 kHz	1	-	-
		25.0 kHz	1	-	-
FFSK	Fast Frequency Shift Keying	12.5 kHz	-	1200	1200
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 1 Linear Simulcast Modulation	CQPSK (TIA102)	12.5 kHz	1	4800	9600
APCO P25 Phase 2	H-DQPSK (2 slot TDMA) (TIA 102)	12.5 kHz	2	6000	12000

HARDWARE & SOFTWARE

Quantity: 1

Module	Product Code	Serial Number	Firmware Version	Hardware Version
Reciter	T01-01103-VCZZ	18445359	p25-3.70.00.0006 dmr-3.70.00.0006	7.00
Power Amplifier	T01-01121-VABA	18410671	1.17.01.0001	0.07
Power Management Unit	T01-01140-ABAA	18910098	1.14.00.0001	4.00
Front Panel	T01-01110-AAAA	18162921	1.10.05.0001	0.04

TEST CONDITIONS

All testing was performed between 13 June 2025 → 07 August 2025, and under the following conditions:

Ambient Temperature: 15°C → 30°C
Relative Humidity: 20% → 75%
Standard Test Voltage: 120 V_{AC}

TEST REQUIREMENTS AND RESULT SUMMARY

Specification Versions: RSS-119 issue 12, RSS Gen issue 5, ANSI C63.26-2015, TIA-603-E

ISED Specification	FCC Specification	Test Name	Test Methods	Result
RSS-119 5.4	FCC 47 CFR 2.1046	Transmitter Output Power (Conducted)	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	ANSI C63.26 5.4.4	P
RSS-119 5.5	FCC 47 CFR 90.210	Transmitter Spectrum Masks	ANSI C63.26.5.7.3	P
RSS-119 5.8.9	FCC 47 CFR 90.543	Adjacent Channel Power Ratio	ANSI C63.26 6.5.2.4	N/A 2
RSS-119 5.8	FCC 47 CFR 2.1051	Transmitter Spurious Emissions (Conducted)	ANSI C63.26 5.7	P
RSS-119 5.8	FCC 47 CFR 2.1053	Transmitter Spurious Emissions (Radiated)	ANSI C63.26 5.5.3	P
RSS-119 5.8.9.2	FCC CFR 90.543	Transmitter Radiated Emissions in the GNSS Band	ANSI C63.26 6.5.2.7.3	N/A 2
RSS-119 5.8.9.2 rad	FCC CFR 90.543	Transmitter Conducted Emissions in the GNSS Band	ANSI C63.26 6.5.2.7.4	N/A 2
RSS-119 5.9	FCC 47 CFR 90.214	Transient Frequency Behaviour	ANSI C63.26 6.5.2.2	P
RSS-119 5.3	FCC 47 CFR 2.1055, FCC 47 CFR 90.213	Transmitter Frequency Stability - Temperature	ANSI C63.26 5.6.4	P
RSS-119 5.3	FCC 47 CFR 2.1055 (d) (1), FCC 47 CFR 90.213	Transmitter Frequency Stability - Voltage	ANSI C63.26 5.6.5	P
RSS-Gen 7.4	FCC 47 CFR 15.111	Receiver Spurious Emissions (Conducted)	ANSI C63.26 5.7	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:
N/A 1: Only required where the EUT is capable of Analogue modulation
N/A 2: Only required where the EUT transmits in the 768-776 or 798-806 MHz band (ISED), or 769-775 or 799-805 MHz band (FCC).
N/A 3: Only required where the EUT transmits in the 138-174 or 406.1-512 MHz band

STATEMENT OF COMPLIANCE

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

Equipment: Base Station Transceiver
Type: TBCHGA

Module	Product Code	Serial Number	Firmware Version	Hardware Version
Reciter	T01-01103-VCZZ	18445359	p25-3.70.00.0006 dmr-3.70.00.0006	7.00
Power Amplifier	T01-01121-VABA	18410671	1.17.01.0001	0.07
Power Management Unit	T01-01140-ABAA	18910098	1.14.00.0001	4.00
Front Panel	T01-01110-AAAA	18162921	1.10.05.0001	0.04

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

FCC 47 CFR Parts 22 and 90

RSS-119 Issue 12 & RSS-Gen Issue 5

Signature: 

Mike James
Technical Manager

Date: 28 August 2025

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.

95% measurement uncertainties are stated in this report but are not applied in the assessment of results.

LIST OF ANTENNAS INTENDED FOR USE WITH THE DEVICE

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

Antennas and transmitter power settings are selected with regard to the overall loss of the antenna system, the desired coverage and the EIRP limit of the license.

The radio manufacturer (Tait) does not manufacture specific antennas for this equipment but suggests the following from other suppliers.

Manufacturer	Part Number	Tuning Bandwidth and / or Frequency Range - MHz	Gain - dBd (dBi)
dBSpectra	DS3A06F36U-D or N	380-410MHz	6 (8.1)
dBSpectra	DS3A08F36U-D or N	380-410MHz	8 (10.1)
dBSpectra	DS4A00F36U-D or N	406-436MHz	0 (2.1)
dBSpectra	DS4A03F36U-D or N	406-436MHz	3 (5.1)
dBSpectra	DS4A06F36U-D or N	406-436MHz	6 (8.1)
dBSpectra	DS4A08F36U-D or N	406-436MHz	8 (10.1)
dBSpectra	DS4A10F36U-D or N	406-436MHz	10 (12.1)
dBSpectra	DS4A03F36D-D or N	406-436MHz	2 x 3 (5.1)
dBSpectra	DS4B06F36U-D or N	425-455MHz	6 (8.1)
dBSpectra	DS4B10F36U-D or N	425-455MHz	10 (12.1)
dBSpectra	DS4B03F36D-D or N	425-455MHz	2 x 3 (5.1)
dBSpectra	DS4C00F36U-D or N	450-482MHz	0 (2.1)
dBSpectra	DS4C03F36U-D or N	450-482MHz	3 (5.1)
dBSpectra	DS4C06F36U-D or N	450-482MHz	6 (8.1)
dBSpectra	DS4C08F36U-D or N	450-482MHz	8 (10.1)
dBSpectra	DS4C10F36U-D or N	450-482MHz	10 (12.1)
dBSpectra	DS4C00F36D-D or N	450-482MHz	2 x 0 (2.1)
dBSpectra	DS4C03F36D-D or N	450-482MHz	2 x 3 (2.1)
dBSpectra	DS4C06F36U3D or N	450-482MHz	6 (8.1)
dBSpectra	DS4C08F36U3D or N	450-482MHz	8 (10.1)
RFI	COL7, COL11	4% of 390-530MHz	3 (5.1)
RFI	COL8, COL12, COL19	10MHz within 380-530MHz	6 (8.1)
RFI	COL41 (-58/-65/-70/-71/-72)	20MHz within 380-520MHz	0 (2.1)
RFI	COL410 (-400/-420/-430/-470/-490/-530)	20MHz within 380-520MHz	9 (11.1)
RFI	COL43 (-400/-420/-430/-470/-490/-530)	20MHz within 380-520MHz	5 (7.1)
RFI	COL45 (-400/-420/-430/-470/-490/-530)	20MHz within 380-520MHz	7 (9.1)
RFI	BA40-57, BA80-57	330-420MHz	3 (5.1), 6 (8.1)
RFI	BA40-67, BA80-67	400-520MHz	3 (5.1), 6 (8.1)
RFI	BA160-67-T3	400-520MHz	9 (11.1)
RFI	BA4040-57	330-420MHz	2 x 3 (5.1)
RFI	BA4040-67	400-520MHz	2 x 3 (5.1)
RFI	EA40-57, EA80-57	330-420MHz	5 (7.1), 9 (11.1)
RFI	EA40-67, EA80-67	400-520MHz	5 (7.1), 9 (11.1)
RFI	EA4040-57	330-420MHz	2 x 5 (7.1)
RFI	EA4040-67	400-520MHz	2 x 5 (7.1)
RFI	OA20-57, OA40-57	330-420MHz	5 (7.1), 9 (11.1)
RFI	OA20-67, OA40-67	400-520MHz	5 (7.1), 9 (11.1)
RFI	OA2020-67	400-520MHz	2 x 5 (7.1)
RFI	RDA16-99	350-600MHz	12 (14.1)

CHANNEL TABLE

Channel Number	Transmit Frequency MHz	Receive Frequency MHz	Power Watts	Channel Spacing kHz
1	406.125	406.150	50	12.5
2	406.125	406.150	5	12.5
3	418.025	418.050	50	12.5
4	418.025	418.050	5	12.5
5	429.975	429.950	50	12.5
6	429.975	429.950	5	12.5
7	450.025	450.050	50	12.5
8	450.025	450.050	5	12.5
9	460.025	460.050	50	12.5
10	460.025	460.050	5	12.5
11	469.975	469.950	50	12.5
12	469.975	469.950	5	12.5
13	406.125	406.150	50	25.0
14	406.125	406.150	5	25.0
15	418.025	418.050	50	25.0
16	418.025	418.050	5	25.0
17	429.975	429.950	50	25.0
18	429.975	429.950	5	25.0
19	450.025	450.050	50	25.0
20	450.025	450.050	5	25.0
21	460.025	460.050	50	25.0
22	460.025	460.050	5	25.0
23	469.975	469.950	50	25.0
24	469.975	469.950	5	25.0

MODULATION TYPES, NECESSARY BANDWIDTH & EMISSION DESIGNATORS

MODULATION TYPES:

F3E	FM Analogue Voice	-	-
F2D	Fast Frequency Shift Keying	1200 symbols/sec	1200 bps
F1E	C4FM	4800 symbols/sec	9600 bps
F1D	C4FM	4800 symbols/sec	9600 bps
D1W	LSM Digital Voice / Data	4800 symbols/sec	9600 bps
D1W	LSM Digital Voice	4800 symbols/sec	9600 bps
D7W	H-DQPSK Digital Voice / Data	6000 symbols/sec	12000 bps
FXW	Digital Voice / Data	4800 symbols/sec	9600 bps
FXD	Digital Data	4800 symbols/sec	9600 bps

CHANNEL SPACING: 12.5 kHz

EMISSION DESIGNATORS:

Analogue Voice	11K0F3E
FFSK	7K60F2D
P25 Phase 1 Digital Voice	8K10F1E
P25 Phase 1 Digital Data	8K10F1D
LSM Digital Voice	8K70D1W
LSM Digital Voice/Data	8K70D7W
P25 Phase 2 H-DQPSK	9K80D7W
DMR Digital Voice / Data	8K00FXW
DMR Digital Data	8K00FXD

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 Channel Spacing

Necessary bandwidth	Emission Designator
M = 3.0 kHz	11K0F3E
D = 2.5 kHz	F3E represents an FM voice transmission
$B_n = (2 \times 3.0) + (2 \times 2.5) \times 1$ $= 11.0 \text{ kHz}$	

Analogue Voice 25.0 kHz Channel Spacing

Necessary bandwidth	Emission Designator
M = 3.0 kHz	16K0F3E
D = 5.0 kHz	F3E represents an FM voice transmission
$B_n = (2 \times 3.0) + (2 \times 5.0) \times 1$ $= 16.0 \text{ kHz}$	

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

Necessary bandwidth	Emission Designator
M = 1.8 kHz	7K60F2D
D = 2.0 kHz	F2D represents a FM data transmission with the use of a modulating sub carrier
$B_n = (2 \times 1.8) + (2 \times 2.0) \times 1$ $= 7.6 \text{ kHz}$	

APCO P25 Phase 1 (C4FM): 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 (C4FM): Digital Data, 12.5 kHz Channel Spacing
99% bandwidth
= 8.1 kHz
Emission Designator
8K10F1D
F1D represents a digital FM data transmission

APCO P25 Phase 1 (LSM, CQPSK) Digital Voice, 12.5 kHz Channel Spacing
99% bandwidth
= 8.7 kHz
Emission Designator
8K70D1W
D1W represents a single channel containing quantized or digital information combining two modulation modes simultaneously (amplitude + angle) for a voice transmission.

APCO P25 Phase 1 (LSM, CQPSK) Digital Data, 12.5 kHz Channel Spacing
99% bandwidth
= 8.7 kHz
Emission Designator
8K70D7W
D7W represents a single channel containing quantized or digital information combining two modulation modes simultaneously (amplitude + angle) for a transmission containing both voice and data.

APCO P25 Phase 2 (H-DQPSK): Digital Data 12.5 kHz Channel Spacing
99% bandwidth
= 9.8 kHz
Emission Designator
9K80D7W
D7W represents two or more channels containing quantized or digital information combining of two modulation modes simultaneously (amplitude + angle) for a data/telephony combination.

DMR: Digital Voice, 12.5 kHz Channel Spacing
99% bandwidth
= 8.0 kHz
Emission Designator
8K00FXW
FXW represents an 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

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:

Power in dBm =	Measured power (dBm) + attenuator and cable loss (dB)
Chan 1 power (dBm) =	16.25 dBm + 30.81 dB
	= 47.06 dBm
$(10^{(50.18\text{dBm})/10})/1000 =$	50.8 W

MEASUREMENT UNCERTAINTY: $\pm 0.6\text{dB}$

MEASUREMENT RESULTS:

Manufacturer's Rated Output Power:

Switchable: 50 W and 5 W

Nominal 50 W	406.125 MHz	418.025 MHz	429.975 MHz	450.025 MHz	460.025 MHz	469.975 MHz
Measured	50.8	52.1	52.5	52.0	52.1	50.9
Variation (%)	1.7	4.2	5.1	3.9	4.1	1.8
Variation (dB)	0.1	0.2	0.2	0.2	0.2	0.1

Nominal 5 W	406.125 MHz	418.025 MHz	429.975 MHz	450.025 MHz	460.025 MHz	469.975 MHz
Measured	5.4	5.3	5.2	5.2	5.3	5.4
Variation (%)	8.5	5.2	4.6	4.6	6.3	8.8
Variation (dB)	0.4	0.2	0.2	0.2	0.3	0.4

LIMIT CLAUSES:

FCC 47 CFR 90.205 (s)

The output power shall not exceed by more than 20% of 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 $\pm 1.0\text{ dB}$ 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 & 25.0 kHz channel spacing tested at 50 W transmit power.

LIMIT CLAUSE: TIA/EIA-603E 3.2.6

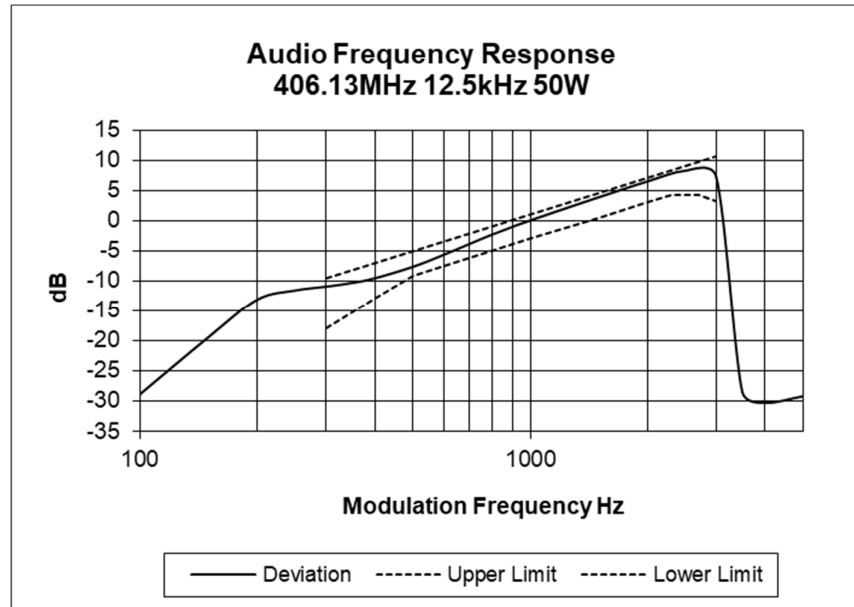
MEASUREMENT UNCERTAINTY: $\pm 1.5 \%$

SPECIFICATION: FCC CFR 2.1047 (a)

Transmitter Audio Frequency Response – Pre-emphasis

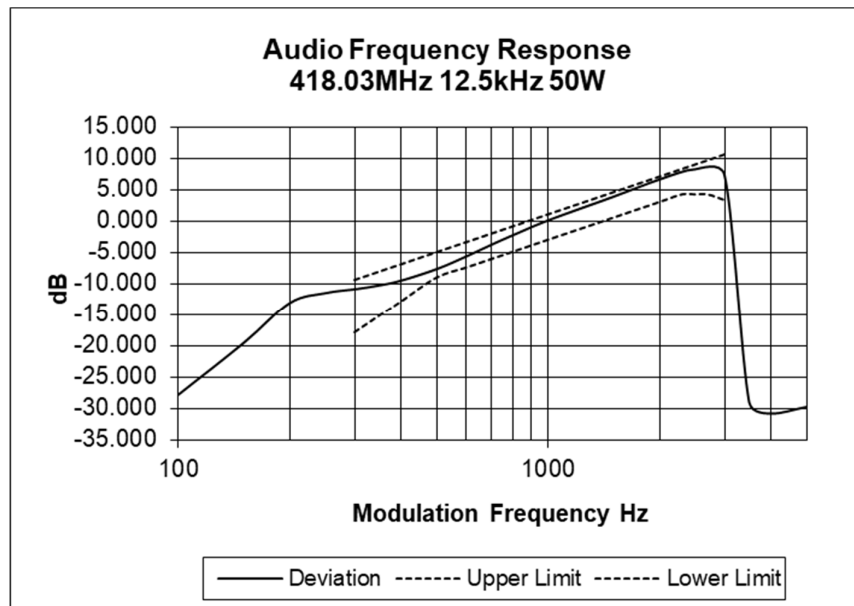
Tx FREQUENCY: 406.125 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 418.025 MHz

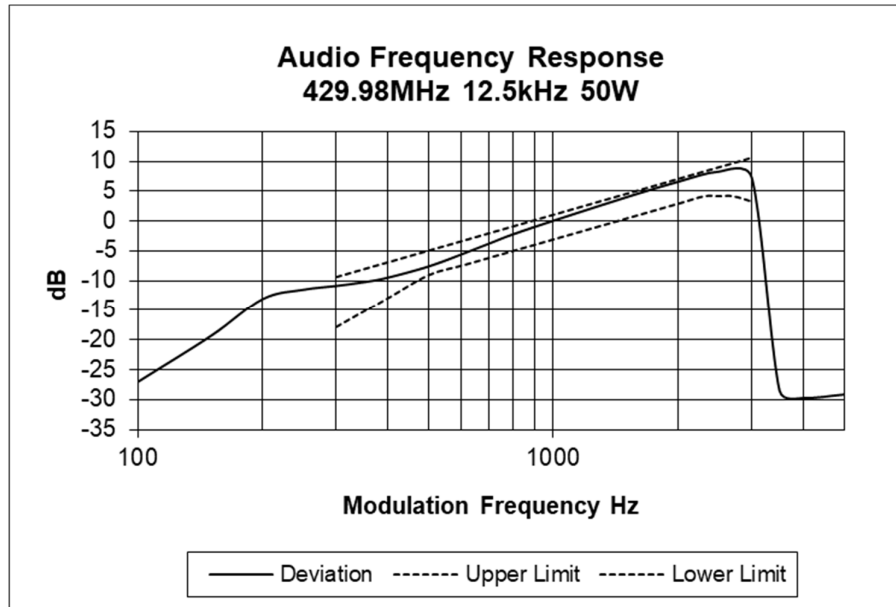
12.5 kHz Channel Spacing



Transmitter Audio Frequency Response – Pre-emphasis

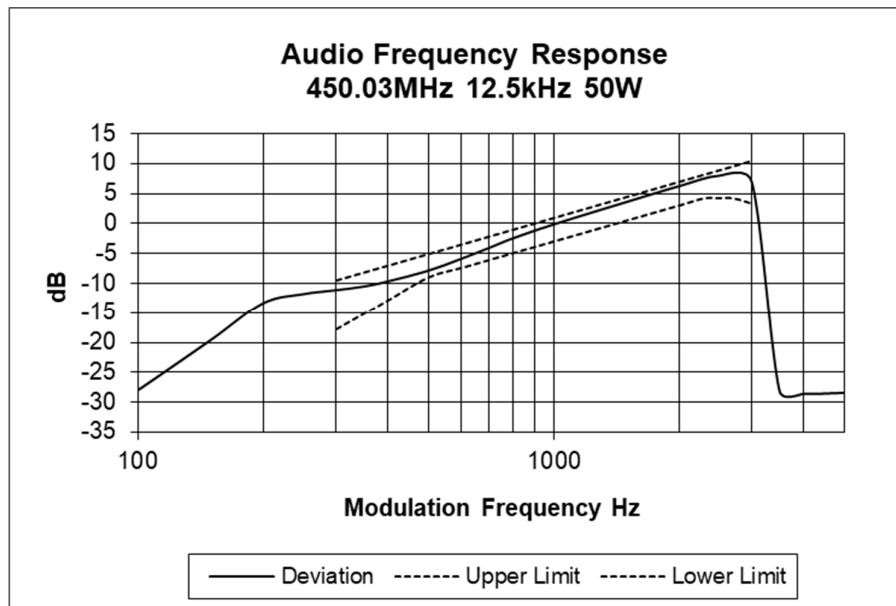
Tx FREQUENCY: 429.975 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 450.025 MHz

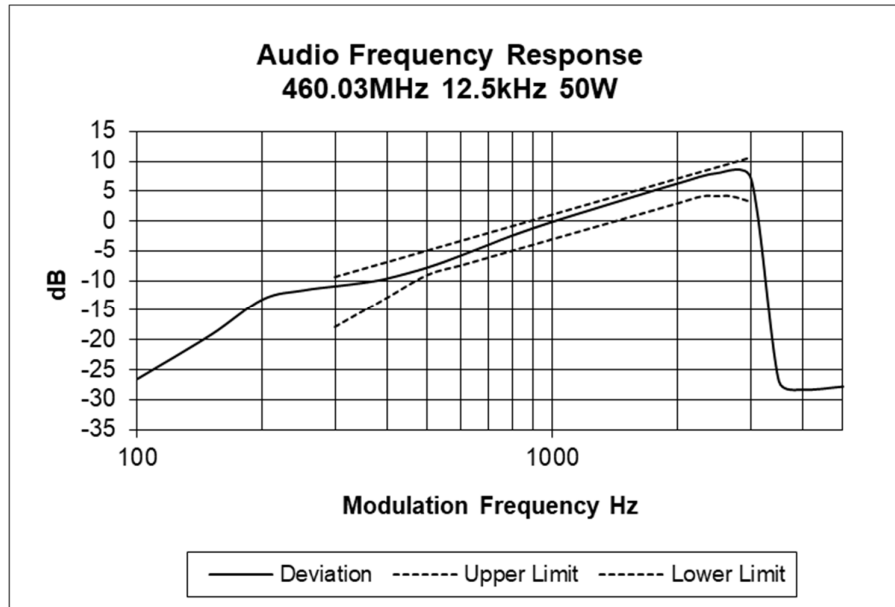
12.5 kHz Channel Spacing



Transmitter Audio Frequency Response – Pre-emphasis

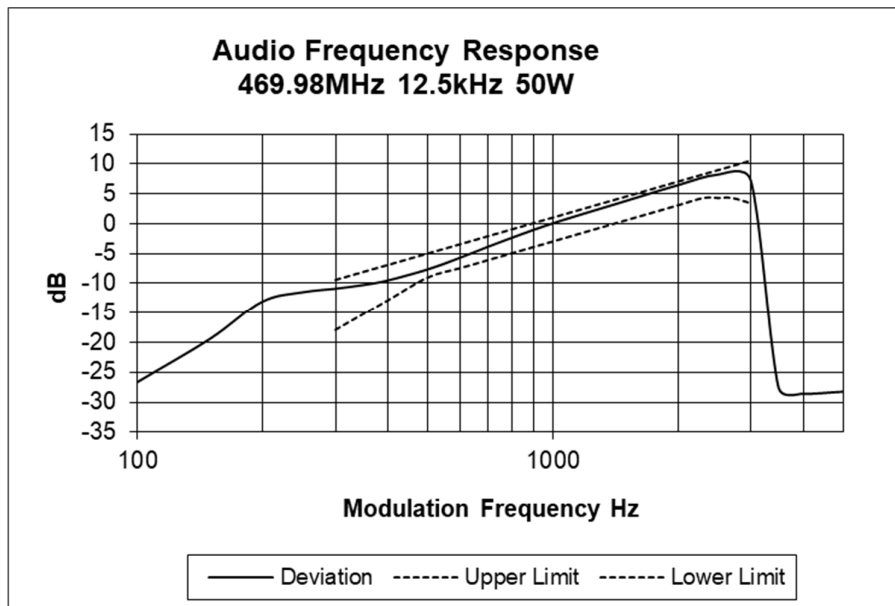
Tx FREQUENCY: 460.025 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 469.975 MHz

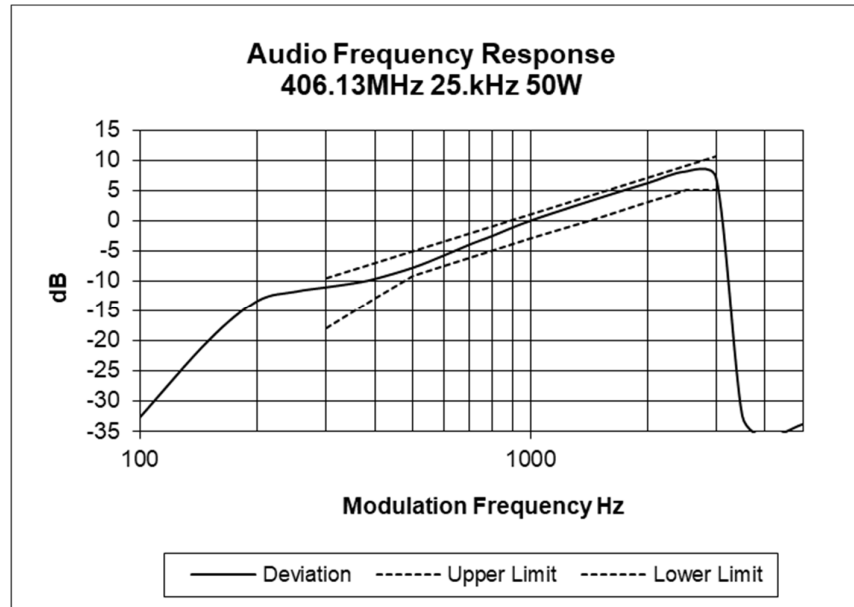
12.5 kHz Channel Spacing



Transmitter Audio Frequency Response – Pre-emphasis

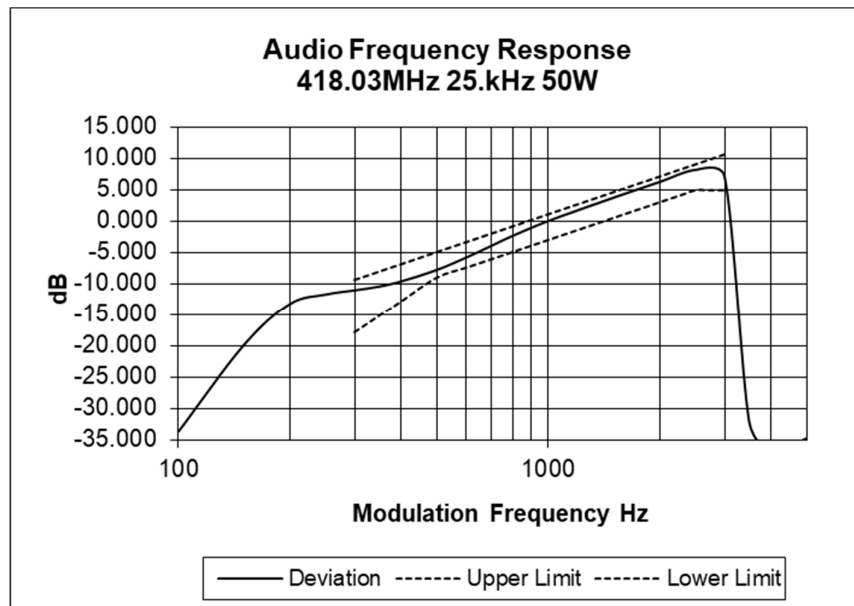
Tx FREQUENCY: 406.125 MHz

25.0 kHz Channel Spacing



Tx FREQUENCY: 418.025 MHz

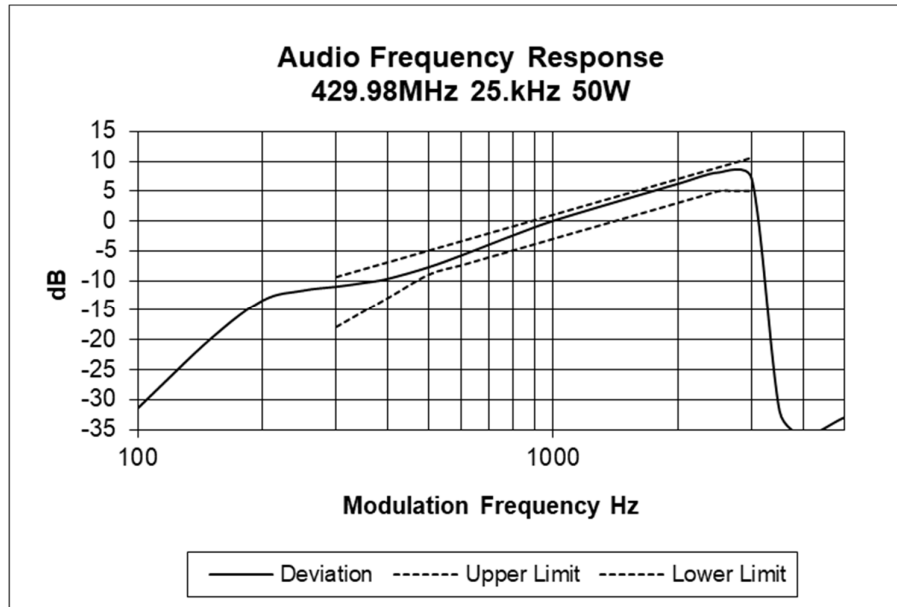
25.0 kHz Channel Spacing



Transmitter Audio Frequency Response – Pre-emphasis

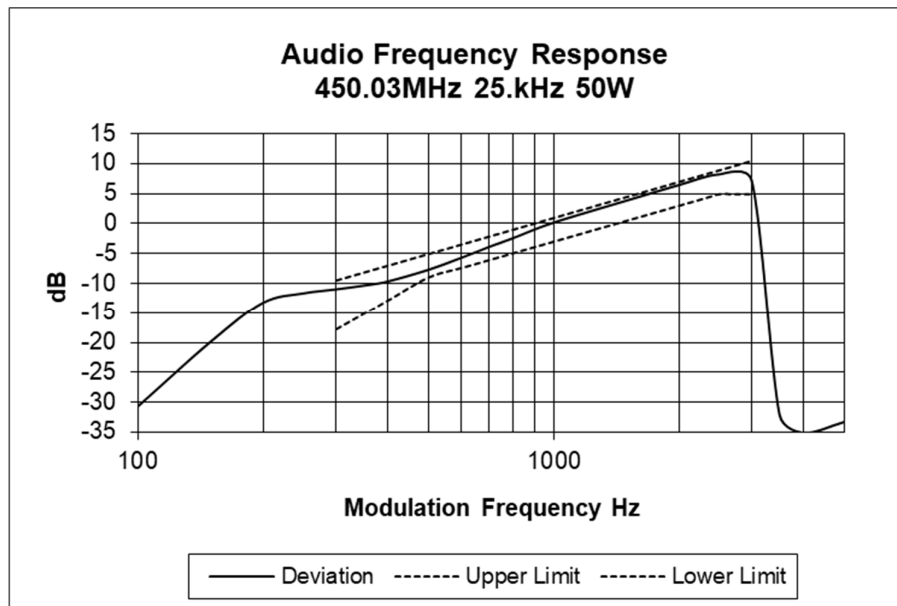
Tx FREQUENCY: 429.975 MHz

25.0 kHz Channel Spacing



Tx FREQUENCY: 450.025 MHz

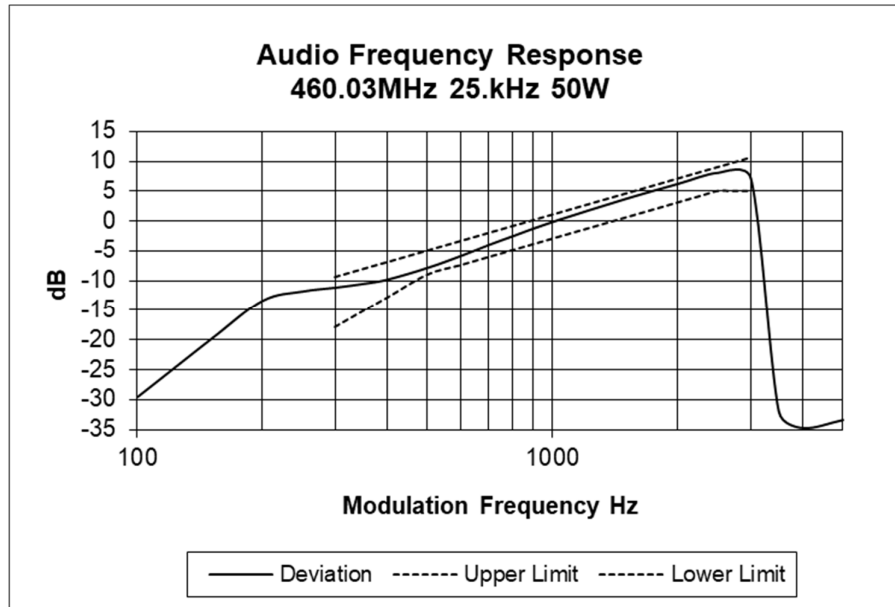
25.0 kHz Channel Spacing



Transmitter Audio Frequency Response – Pre-emphasis

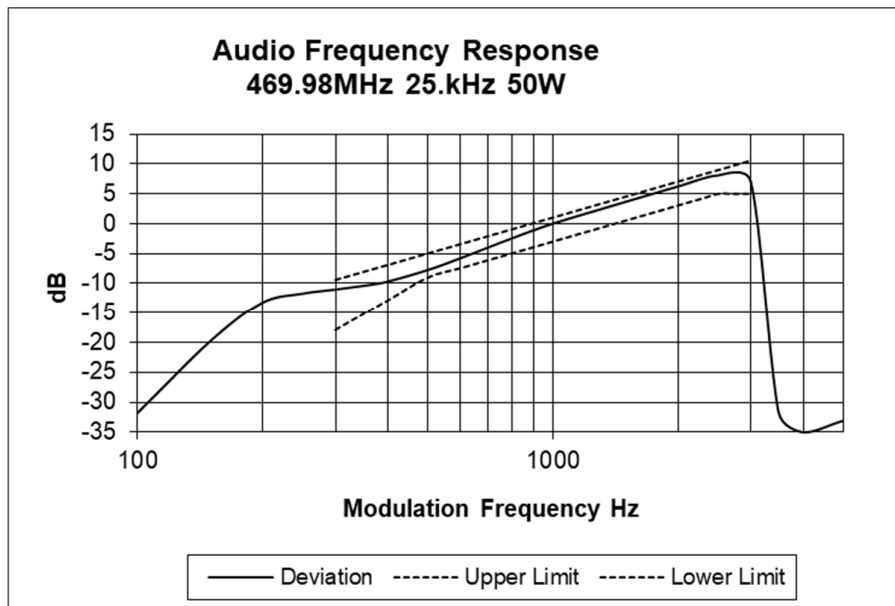
Tx FREQUENCY: 460.025 MHz

25.0 kHz Channel Spacing



Tx FREQUENCY: 469.975 MHz

25.0 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 & 25.0 kHz channel spacing.

LIMIT CLAUSE: TIA/EIA-603E 1.3.4.4

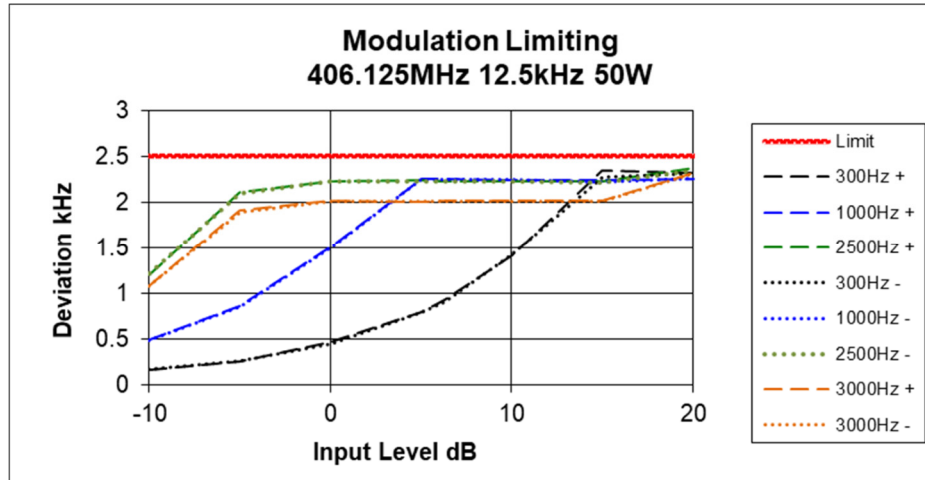
MEASUREMENT UNCERTAINTY: $\pm 1.5 \%$

SPECIFICATION: FCC CFR 2.1047 (b)

Transmitter Modulation Limiting

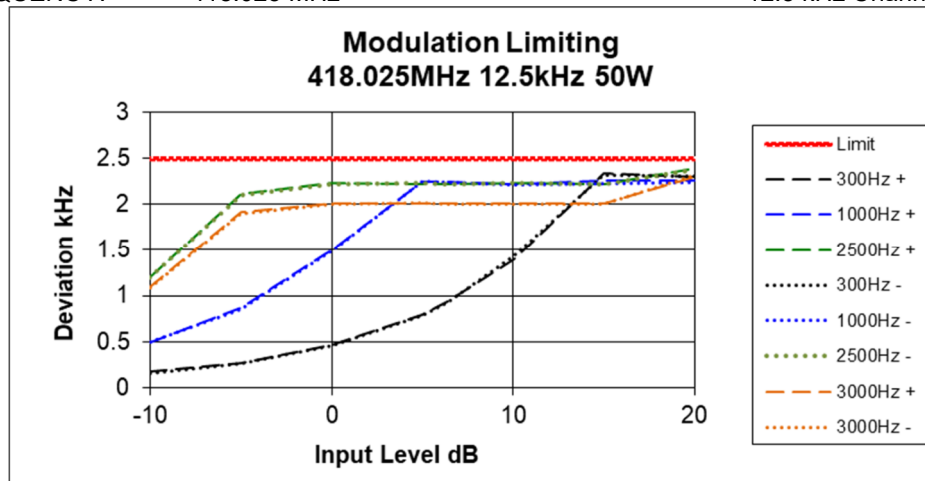
Tx FREQUENCY: 406.125 MHz

12.5 kHz Channel Spacing



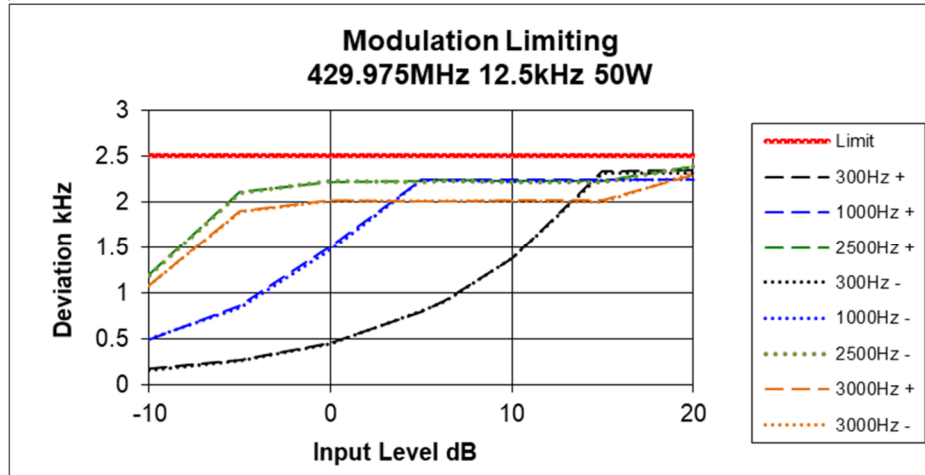
Tx FREQUENCY: 418.025 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 429.975 MHz

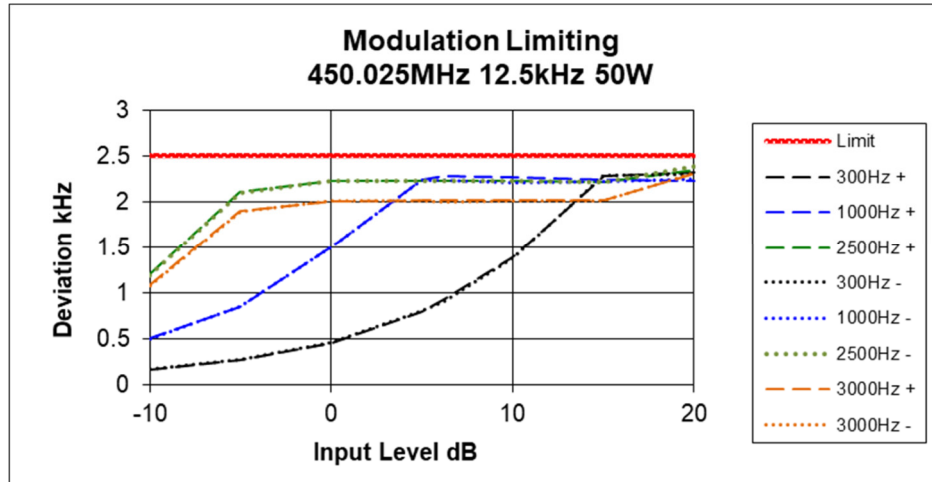
12.5 kHz Channel Spacing



Transmitter Modulation Limiting

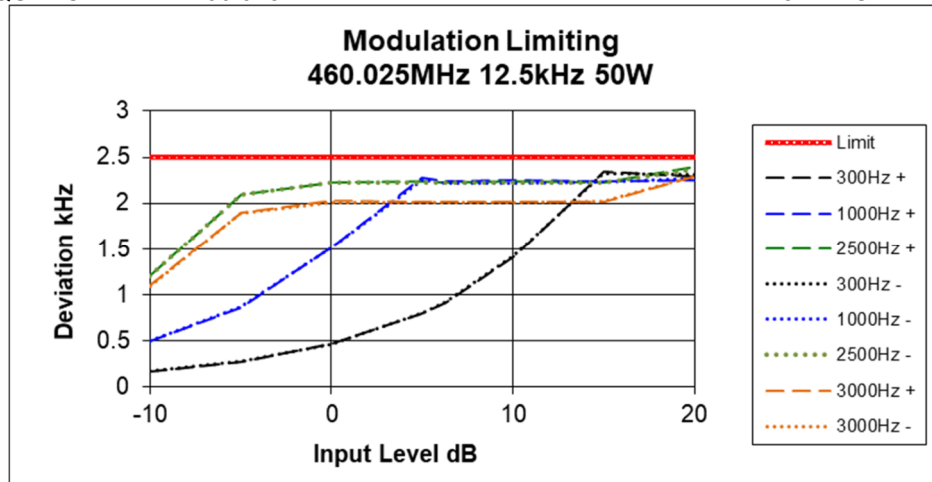
Tx FREQUENCY: 450.025 MHz

12.5 kHz Channel Spacing



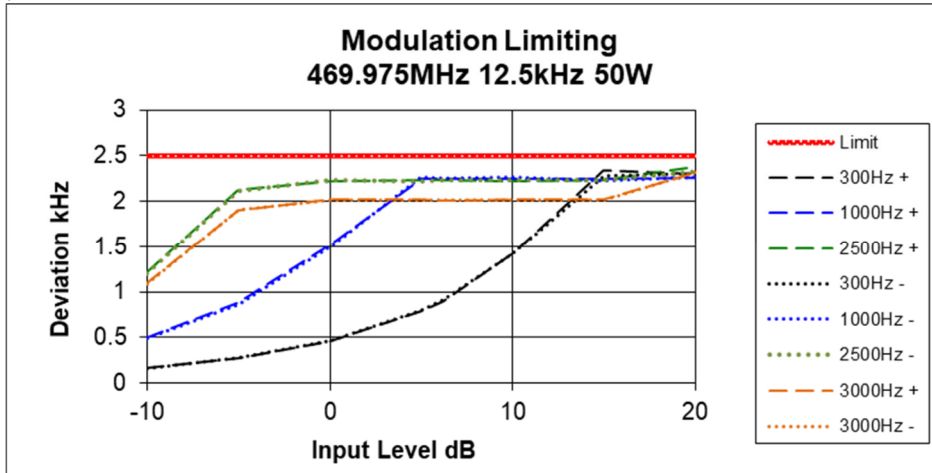
Tx FREQUENCY: 460.025 MHz

12.5 kHz Channel Spacing



Tx FREQUENCY: 469.975 MHz

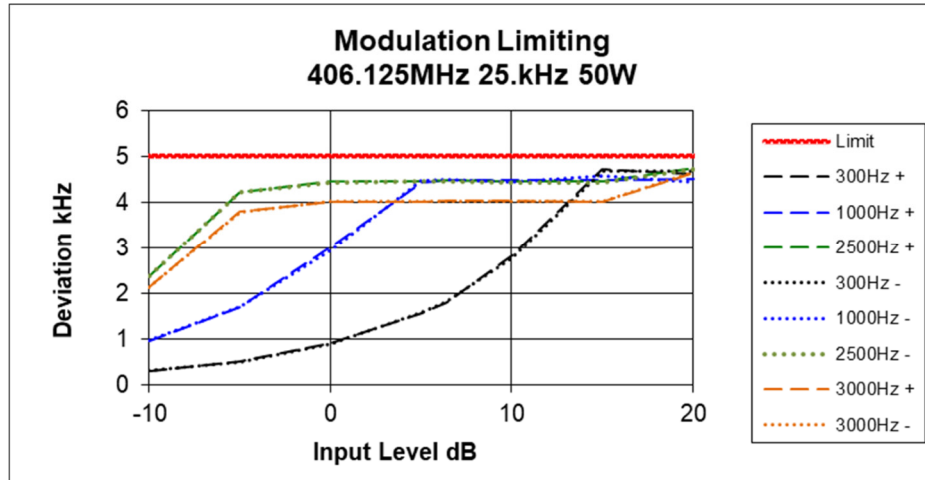
12.5 kHz Channel Spacing



Transmitter Modulation Limiting

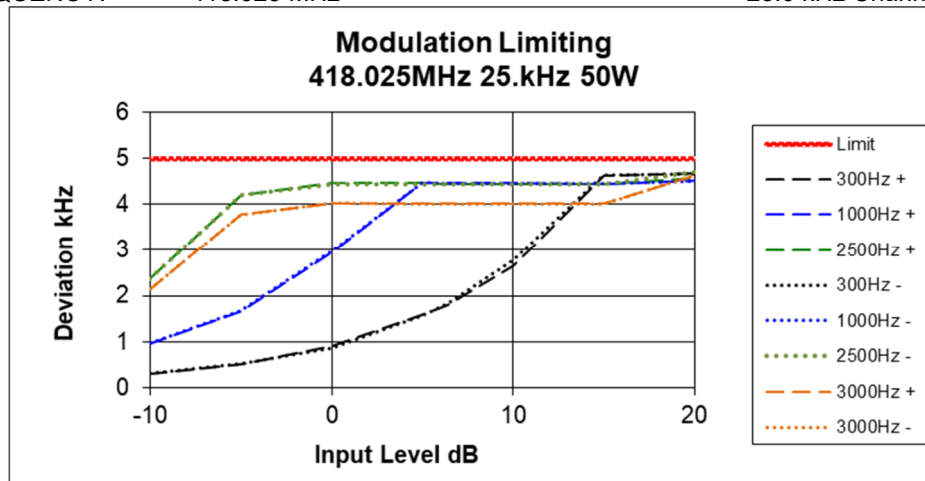
Tx FREQUENCY: 406.125 MHz

25.0 kHz Channel Spacing



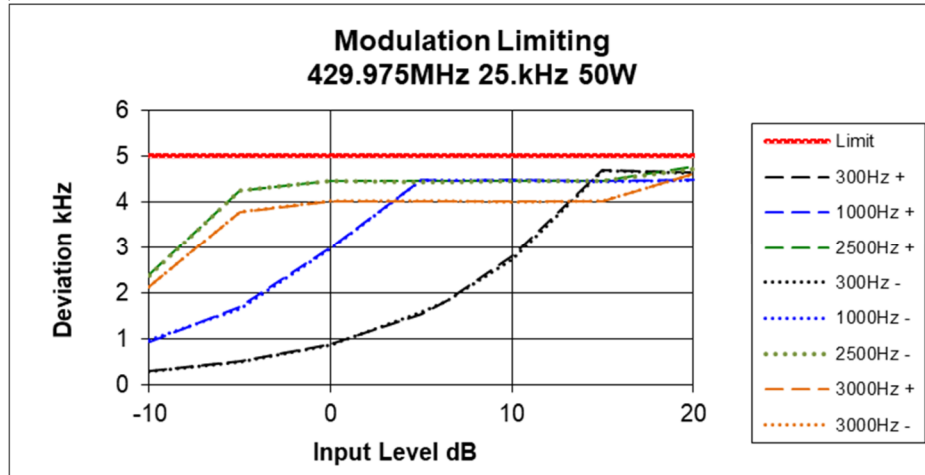
Tx FREQUENCY: 418.025 MHz

25.0 kHz Channel Spacing



Tx FREQUENCY: 429.975 MHz

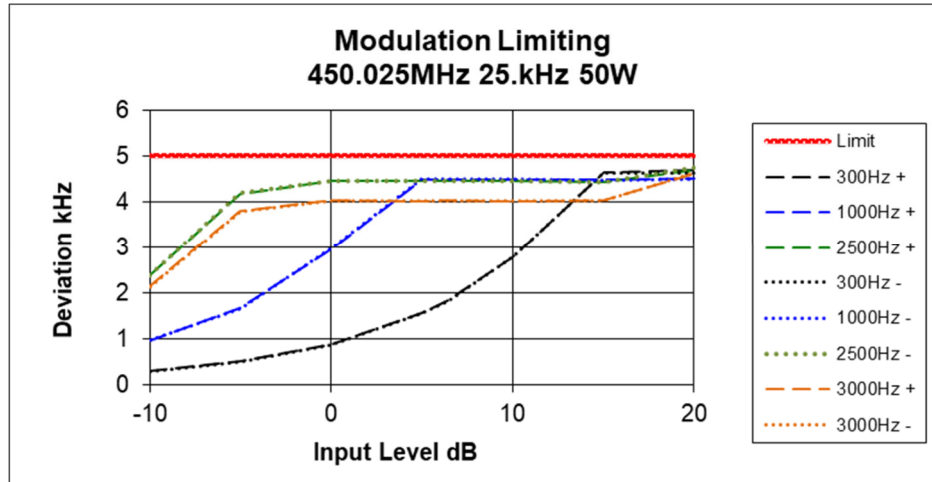
25.0 kHz Channel Spacing



Transmitter Modulation Limiting

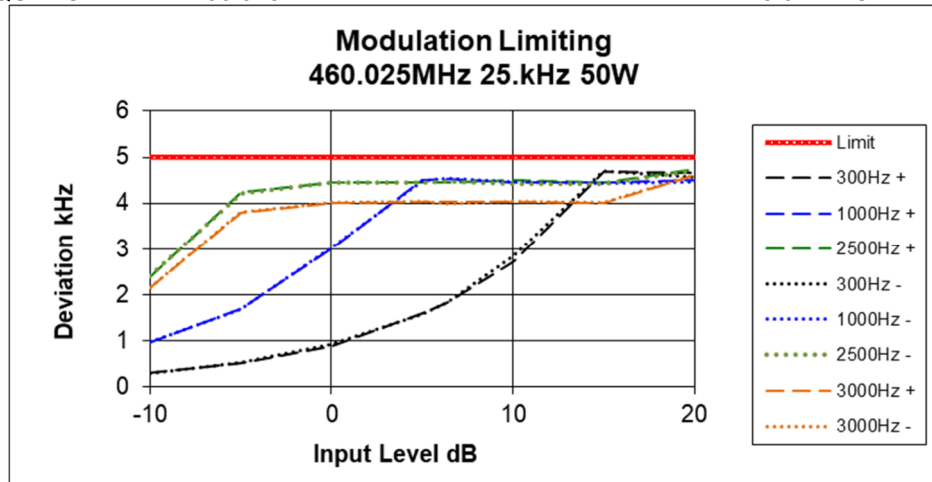
Tx FREQUENCY: 450.025 MHz

25.0 kHz Channel Spacing



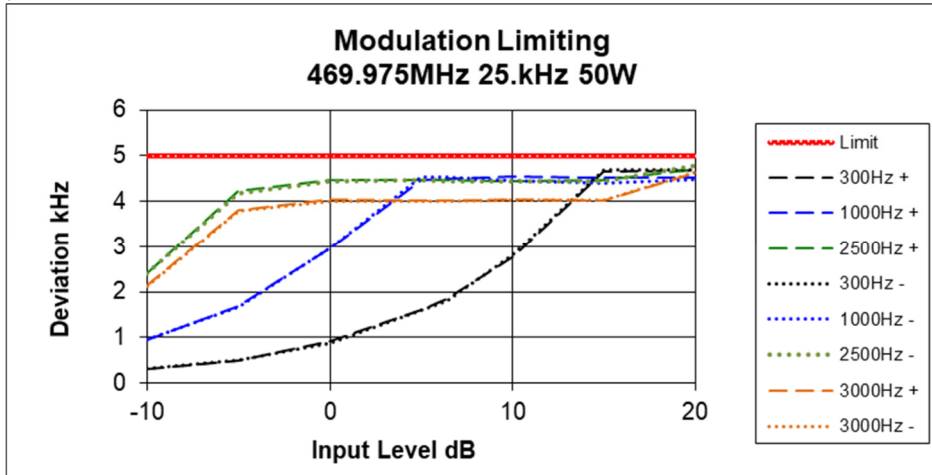
Tx FREQUENCY: 460.025 MHz

25.0 kHz Channel Spacing



Tx FREQUENCY: 469.975 MHz

25.0 kHz Channel Spacing



TRANSMITTER OCCUPIED (99%) BANDWIDTH

SPECIFICATION: FCC 47 CFR 2.1046
RSS-119 5.5

GUIDE: ANSI C63.26 5.4.4

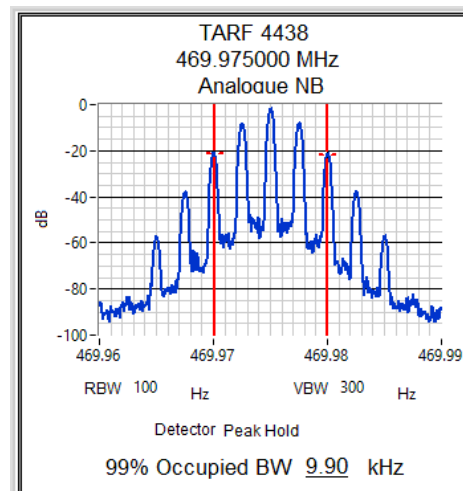
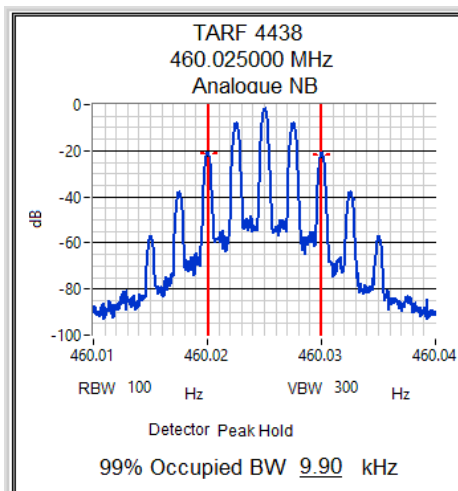
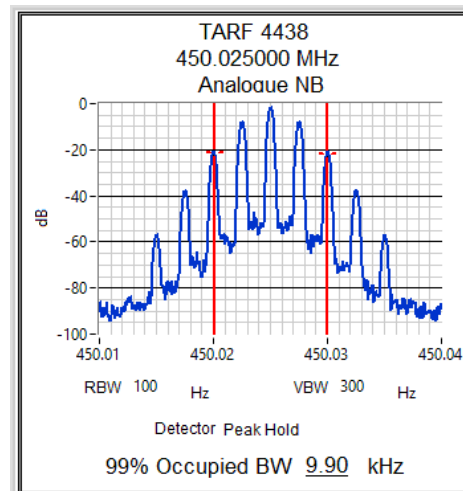
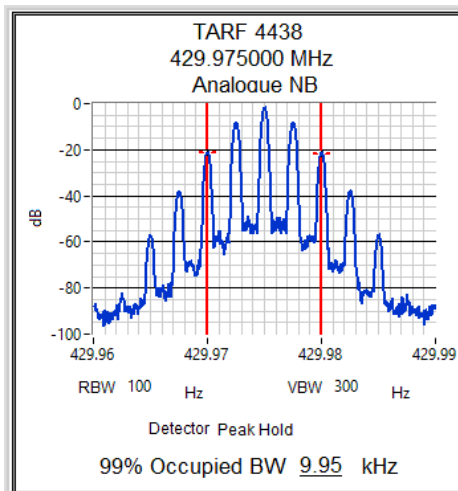
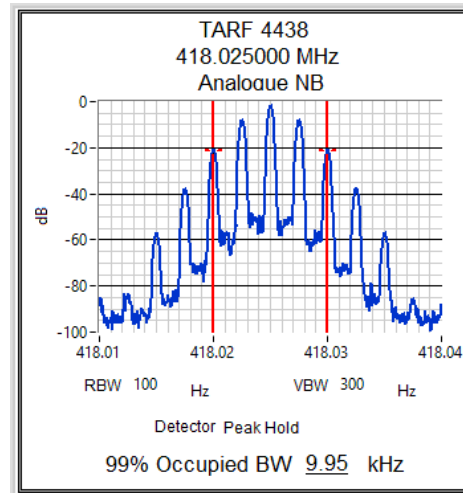
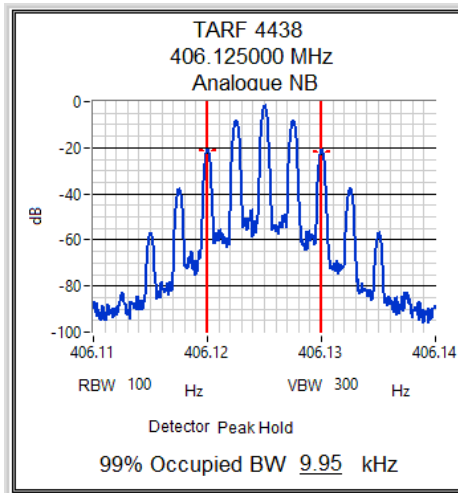
MEASUREMENT PROCEDURE:

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.
3. The Occupied Bandwidth was measured on the Spectrum Analyser, with bandwidth settings as follows.
Resolution Bandwidth = 100 Hz, Video Bandwidth = 300 Hz

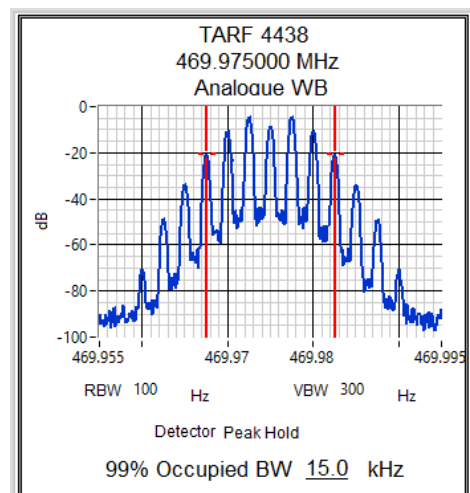
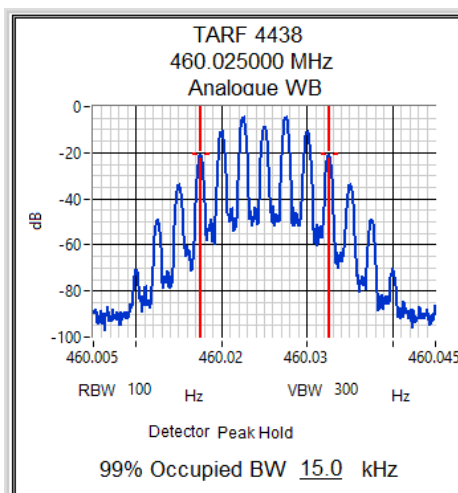
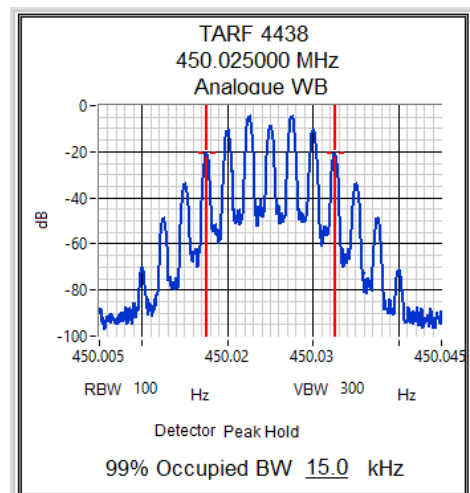
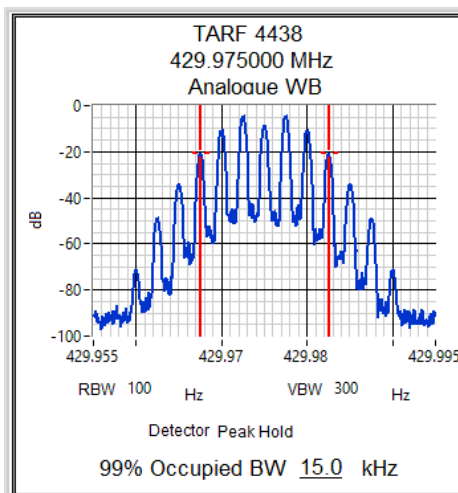
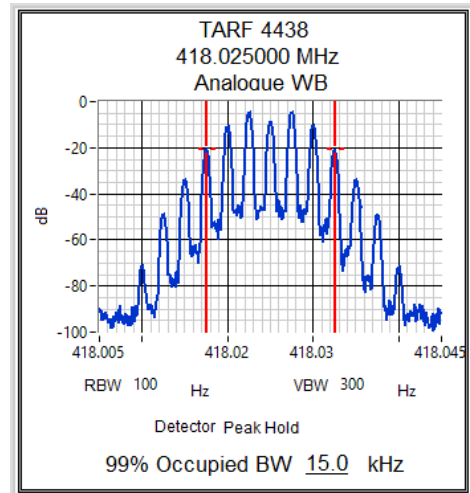
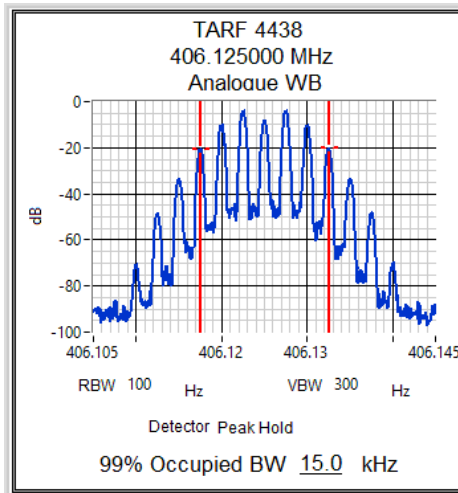
MEASUREMENT RESULTS:

Channel Frequency (MHz)	Channel Spacing (kHz)	Bandwidths (kHz)					
		Analogue	FFSK 1200	DMR	APCO P25 Phase I C4FM	APCO P25 Phase I LSM	APCO P25 Phase II H-DQPSK
406.125 MHz	12.5	9.95	7.00	7.57	7.75	8.43	9.60
418.025 MHz	12.5	9.95	6.97	7.53	7.75	8.48	9.60
429.975 MHz	12.5	9.95	6.97	7.60	7.79	8.40	9.60
450.025 MHz	12.5	9.90	6.97	7.60	7.75	8.47	9.60
460.025 MHz	12.5	9.90	6.97	7.60	7.79	8.43	9.60
469.975 MHz	12.5	9.90	6.97	7.63	7.79	8.43	9.60
406.125 MHz	25.0	15.0					
418.025 MHz	25.0	15.0					
429.975 MHz	25.0	15.0					
450.025 MHz	25.0	15.0					
460.025 MHz	25.0	15.0					
469.975 MHz	25.0	15.0					
<u>Limit</u> Authorized Bandwidth 47 CFR 90.209 RSS 119 5.5		NB: 11.25 WB: 20.0	11.25	11.25	11.25	11.25	11.25
Necessary BW used in emission designator		NB: 11.0 WB: 16.0	7.6	8.0	8.1	8.7	9.8
Result		Pass	Pass	Pass	Pass	Pass	Pass

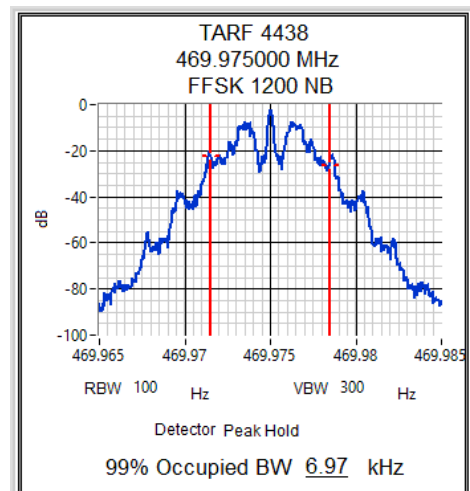
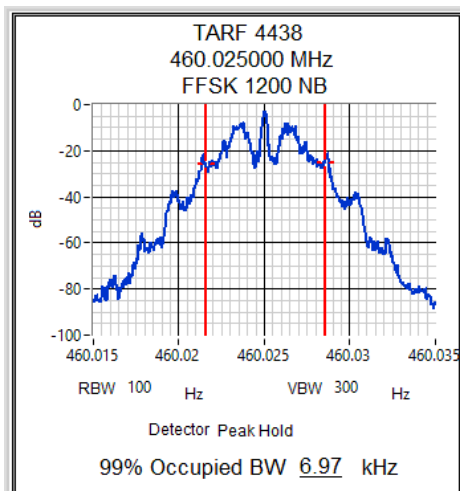
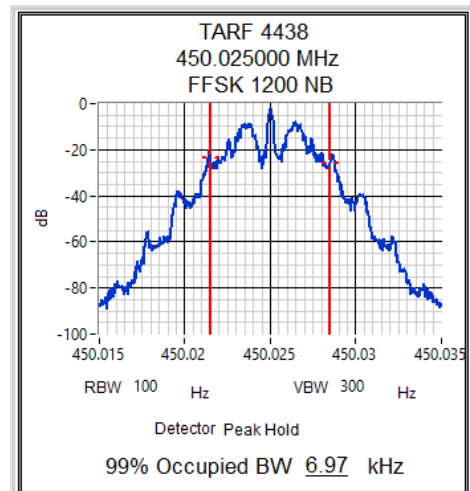
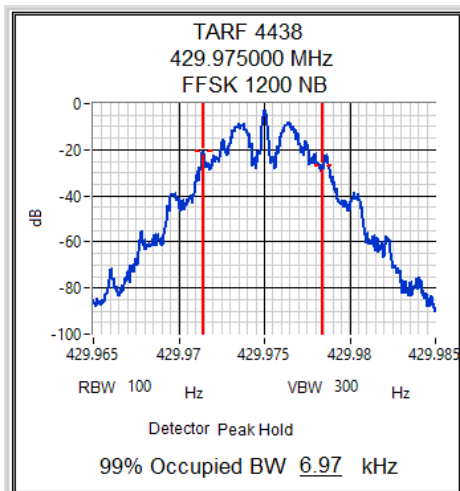
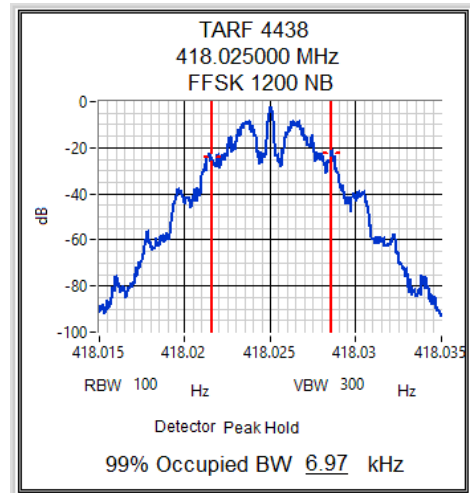
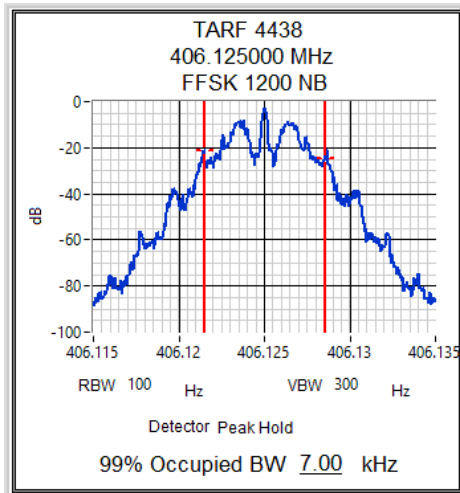
Transmitter Occupied (99%) Bandwidth – Analogue NB 50 W Power



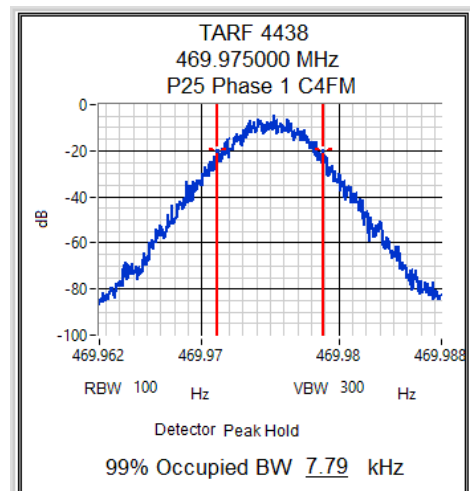
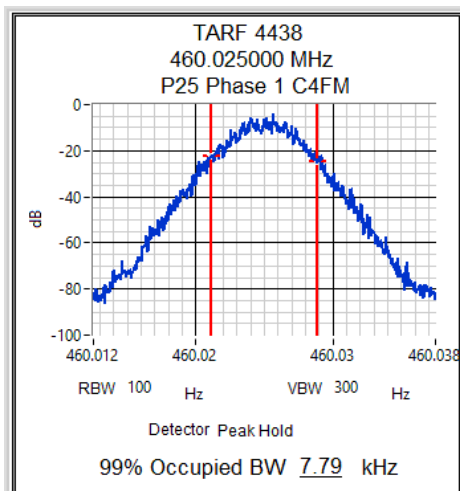
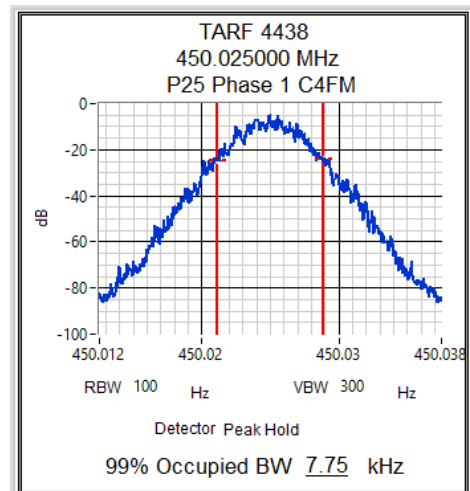
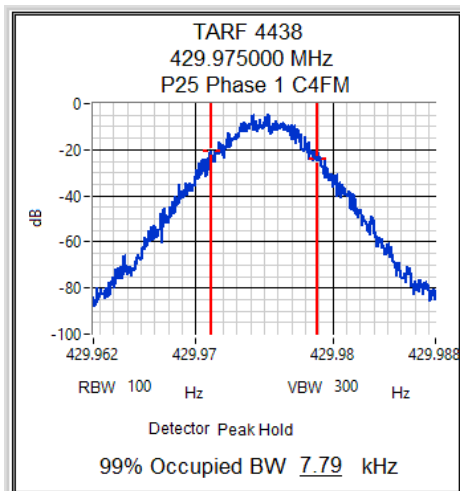
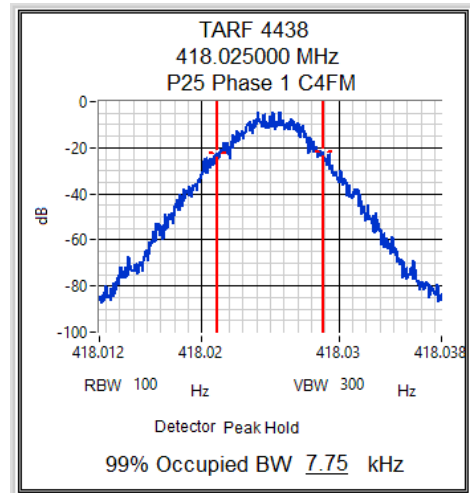
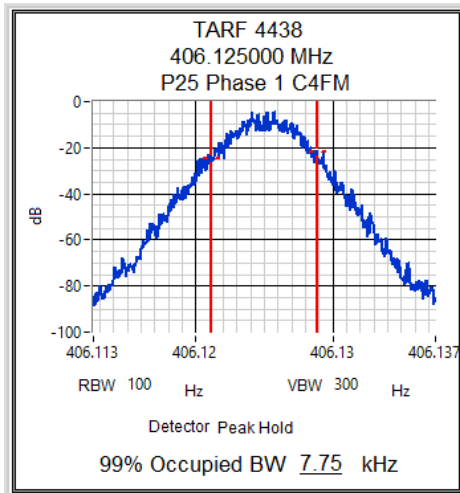
Transmitter Occupied (99%) Bandwidth – Analogue WB 50 W Power



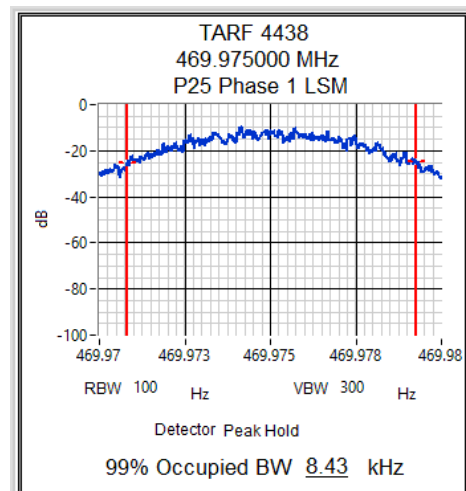
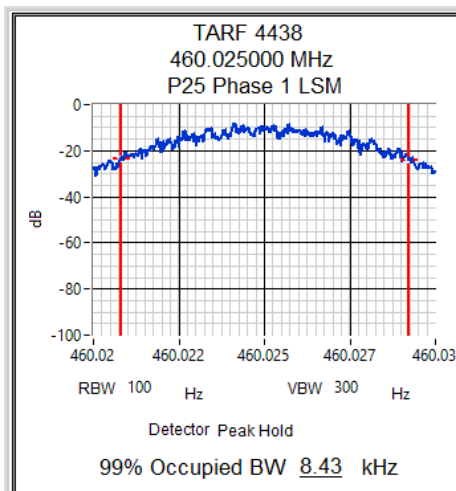
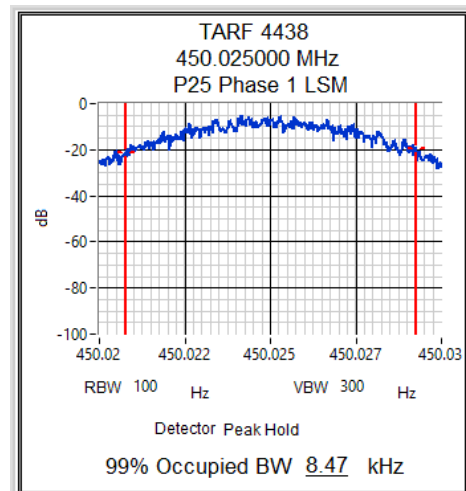
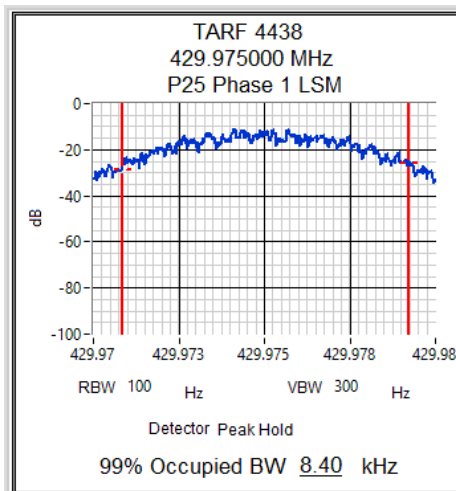
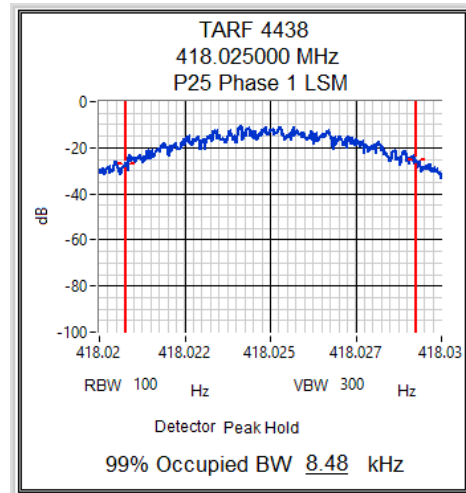
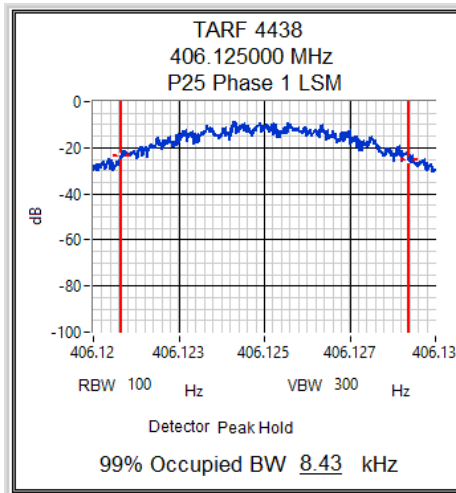
Transmitter Occupied (99%) Bandwidth – FFSK 1200bps NB 50 W Power



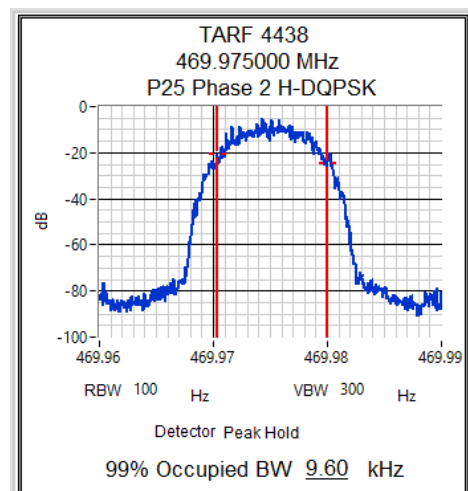
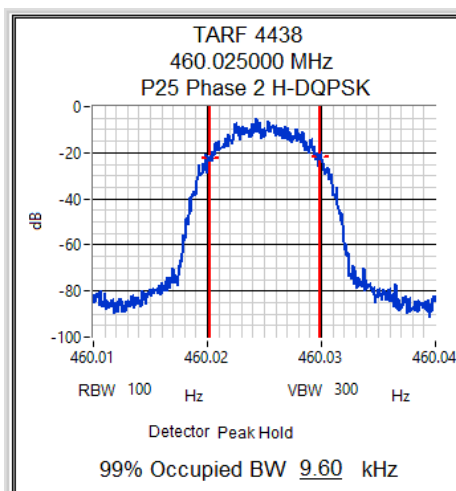
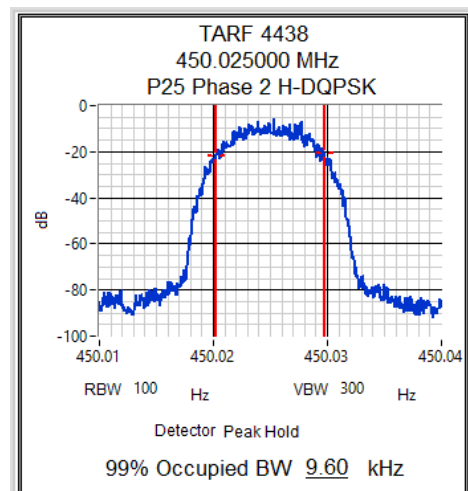
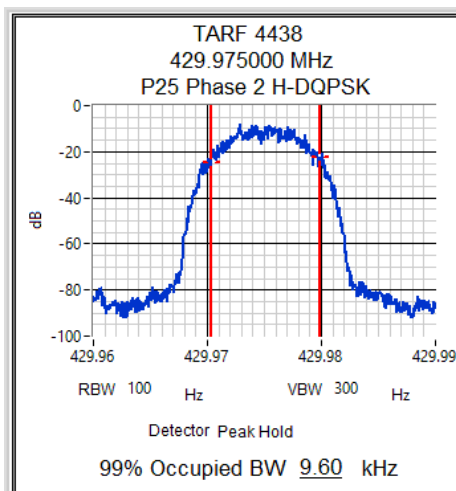
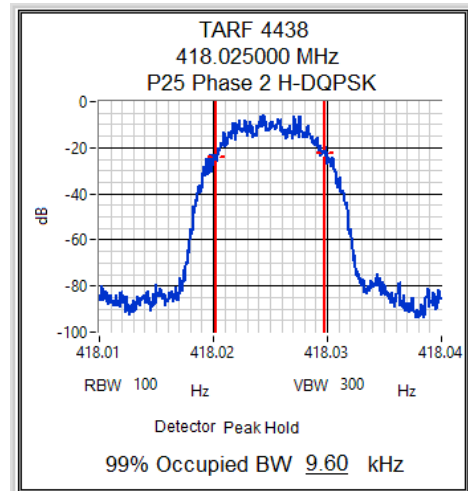
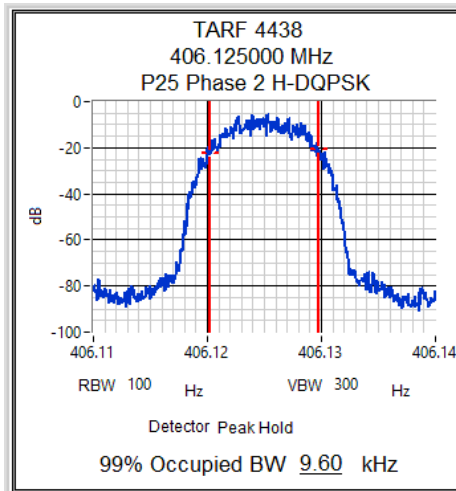
Transmitter Occupied (99%) Bandwidth – P25 Phase 1 C4FM 50 W Power



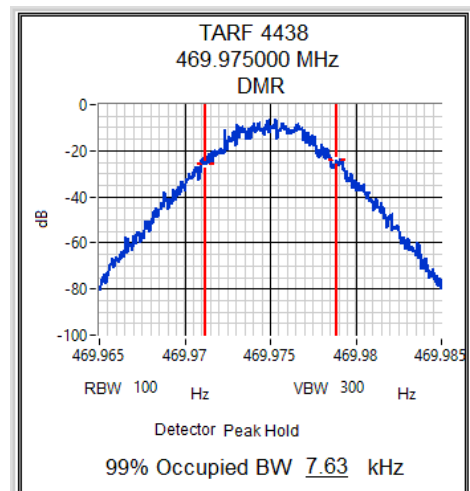
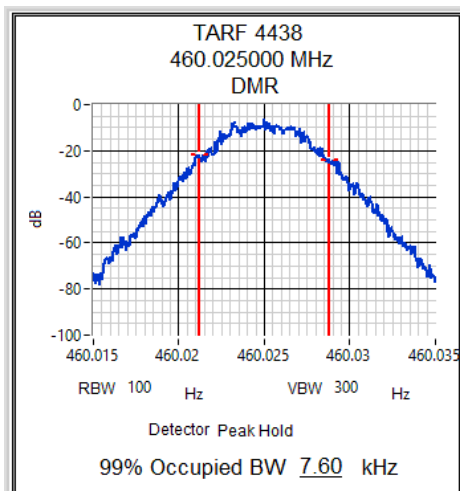
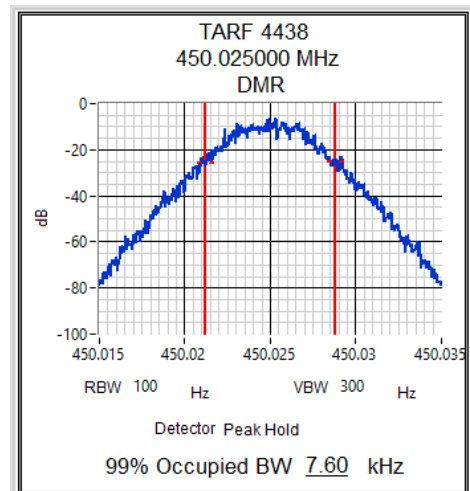
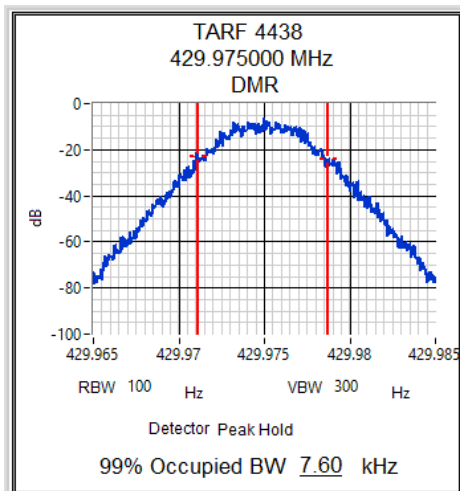
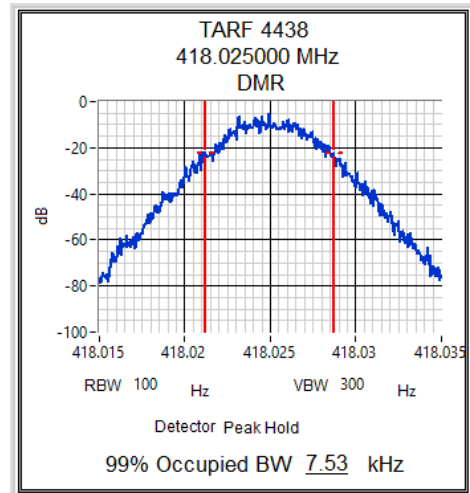
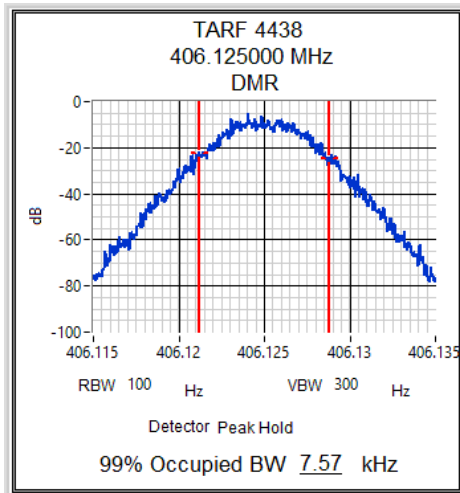
Transmitter Occupied (99%) Bandwidth – P25 Phase 1 LSM 50 W Power



Transmitter Occupied (99%) Bandwidth – P25 Phase 2 H-DQPSK 50 W Power



Transmitter Occupied (99%) Bandwidth – DMR 50 W Power



TRANSMITTER SPECTRUM MASKS

SPECIFICATION: FCC 47 CFR 2.1049 (c)

RSS-119 5.5

GUIDE: ANSI C63.26.5.7.3

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.
3. The Occupied Bandwidth was measured on the Spectrum Analyser, with bandwidth settings as noted on the recorded plots.

MEASUREMENT RESULTS:

See the plots on the following pages.

MEASUREMENT UNCERTAINTY 95% $\pm 0.65\text{dB}$

LIMIT CLAUSE: FCC 47 CFR 90.210

RSS-119 5.5

EMISSION MASKS

Channel Frequency	Modulation	Channel Spacing		
		12.5 kHz	20.0 kHz	25.0 kHz
406-430, 450-470 MHz (ISED) 421-512 MHz (FCC)	Analogue	D	-	B
	FFSK, Digital Voice/data	D	-	-

DATA SPEED

Digital Voice/Data	12.5 kHz Channel Spacing	9600 bps (DMR, P25 Phase I)
Digital Voice/Data	12.5 kHz Channel Spacing	12000 bps (P25 Phase II)

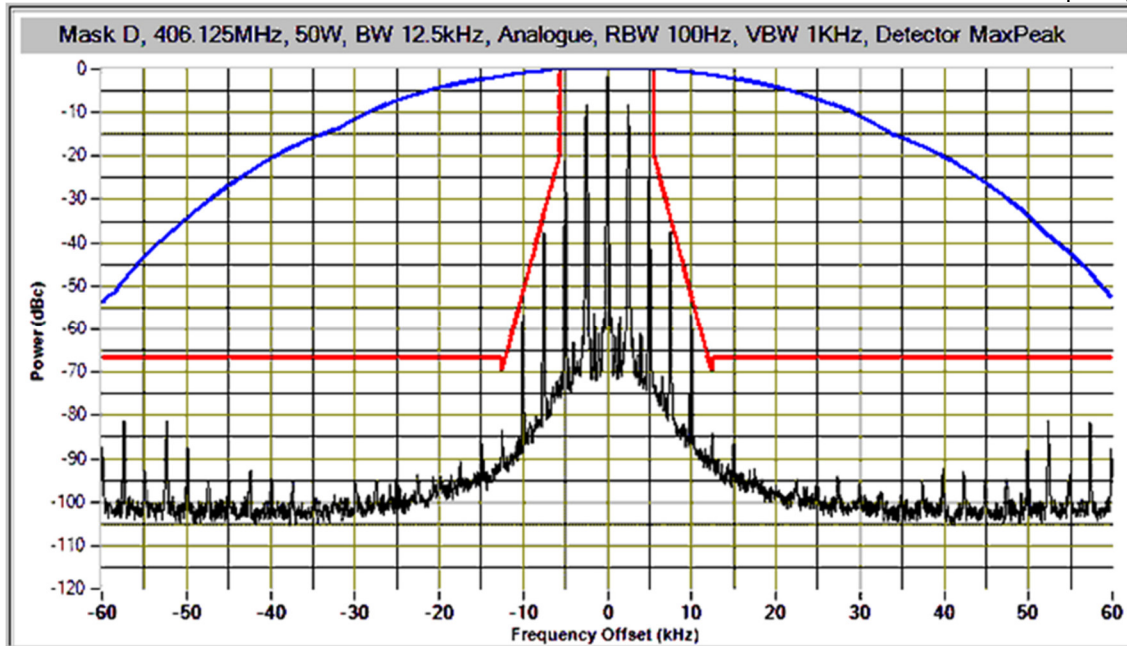
Transmitter Spectrum Masks

ANALOGUE VOICE

SPECIFICATION: FCC CFR 2.1049 (c)

RSS-119 5.5

Tx FREQUENCY: 406.125 MHz 50 W 12.5 kHz Channel Spacing



Tx FREQUENCY: 406.125 MHz 5 W 12.5 kHz Channel Spacing

