

Laboratory Test Report

Class II Permissive Change

On the

TMAB12-B100 Mobile Transceiver

In accordance with

FCC 47 CFR Parts 22 and 90

Report Revision: 1
Issue Date: 30-May-2006
FCC ID: CASTMAB1A

PREPARED BY: Marcus Ludwig _____
Test Technician

CHECKED & APPROVED BY: M C James _____
Laboratory Test Engineer



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
30-May-2006	1	Initial Report

Introduction

This is a Class II permissive change to Report 1896 (September 2003), and confirms performance of features added to the TMAB1A Mobile Transceiver, in accordance with:

FCC CFR 47 Parts 22 & 90

The added features are:

- 2400 bps FFSK data rate.
- 1200 bps POCSAG paging.

Report Prepared For

Tait Electronics Ltd
PO Box 1645
558 Wairakei Rd
Christchurch
New Zealand

Statement of Compliance

The TMAB12-B100 Mobile transceiver as tested in this report was found to conform to the following standards:

FCC CFR 47 Parts 22, 90

Description of Sample

Equipment: Mobile Transceiver

Manufacturer: Tait Electronics Limited
PO Box 1645
558 Wairakei Road
Christchurch
New Zealand

Type Code: TMAB1A

Product Code: TMAB12-B100

Serial Number: 19155005

Modulation type: F2D FFSK Data (1200 bps)
F2D FFSK Data (2400 bps)
F1D POCSAG Paging (1200 bps)
F1D THSD - Tait High Speed Data - CP4GFSK
(12 kbps for 12.5 kHz, 19.2 kbps for 25 kHz)

Channel spacing: 12.5 kHz, 25 kHz

Emission designators: 6K60F1D, 12K0F1D (POCSAG)
6K60F2D, 9K60F2D (FFSK 1200 bps)
7K80F2D, 10K8F2D (FFSK 2400 bps)
7K70F1D, 12K7F1D (THSD)

Rated Output Power: 25 Watts (max), 1 Watt (min)

Radio Software Version: QMA1F_std_02.11.00.00
QMA1B_std_1.03.00.0005
QMA1G_std_01.03.03.02

Test Conditions

All testing was performed at the following conditions.

Ambient Temperature	15°C → 30°C
Relative Humidity	20% → 75%
Standard Test Voltage	13.8 Vdc

Test Results

SIDEBAND SPECTRUM

SPECIFICATION: FCC 47 CFR 2.1049 (c)

GUIDE: TIA/EIA-603B 2.2.11

MEASUREMENT PROCEDURE:

1. Refer Appendix A for Equipment Set up.
2. The EUT was modulated with an internally pseudo random generated bit sequence at a Baud rate of 1200 bps for the POCSAG paging testing.
3. The EUT was also modulated with an internally pseudo random generated bit sequence at a Baud rate of 1200 and 2400 bps for the FFSK modulation. 12000 and 19200 bps internally pseudo random generated bit sequence was used for THSD.
4. The SIDEBAND SPECTRUM was measured on the Spectrum Analyser, with bandwidth settings as follows.

Emission Mask C – Resolution bandwidth = 300Hz, Video Bandwidth = 3 kHz
Emission Mask D – Resolution bandwidth = 100Hz, Video Bandwidth = 1 kHz

MEASUREMENT RESULTS:

See the plots on the following pages for 12.5 kHz & 25.0 kHz channel spacings.

LIMIT CLAUSE: FCC 47 CFR 90.210
 FCC 47 CFR 22.359

EMISSION MASKS

Emission Mask D	12.5 kHz Channel Spacing	FFSK; THSD
Emission Mask C	25.0 kHz Channel Spacing	FFSK; THSD; Paging (POCSAG)
Emission Mask C	12.5 kHz Channel Spacing	Paging (POCSAG)

DATA SPEED

FFSK	1200 bps	12.5 kHz Channel Spacing
FFSK	1200 bps	25.0 kHz Channel Spacing
FFSK	2400 bps	12.5 kHz Channel Spacing
FFSK	2400 bps	25.0 kHz Channel Spacing
POCSAG Paging	1200 bps	12.5 kHz Channel Spacing
POCSAG Paging	1200 bps	25.0 kHz Channel Spacing
THSD	12000 bps	12.5 kHz Channel Spacing
THSD	19200 bps	25.0 kHz Channel Spacing

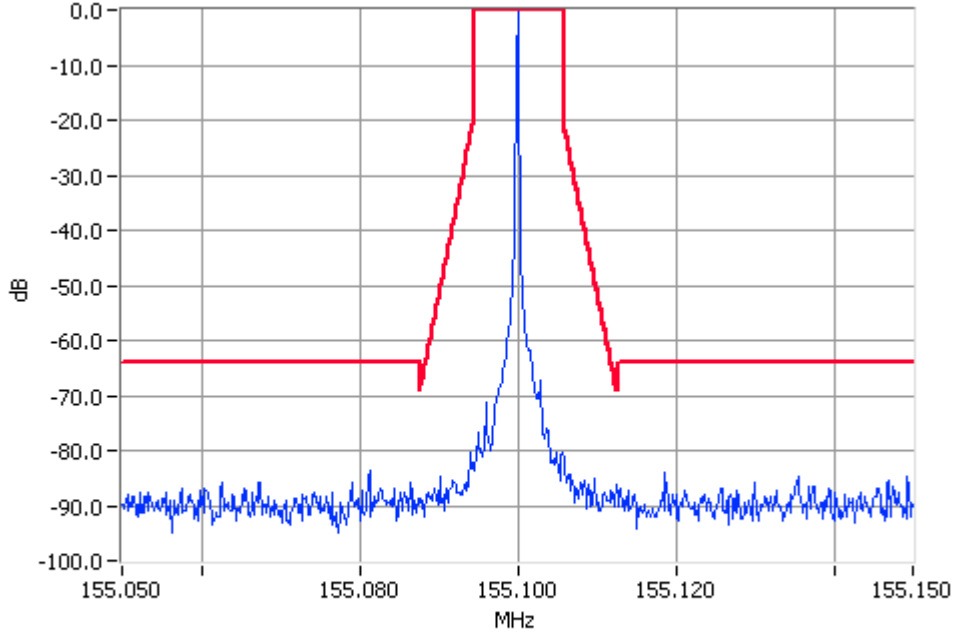
SIDEBAND SPECTRUM

FFSK

SPECIFICATION: FCC CFR 2.1049 (c)

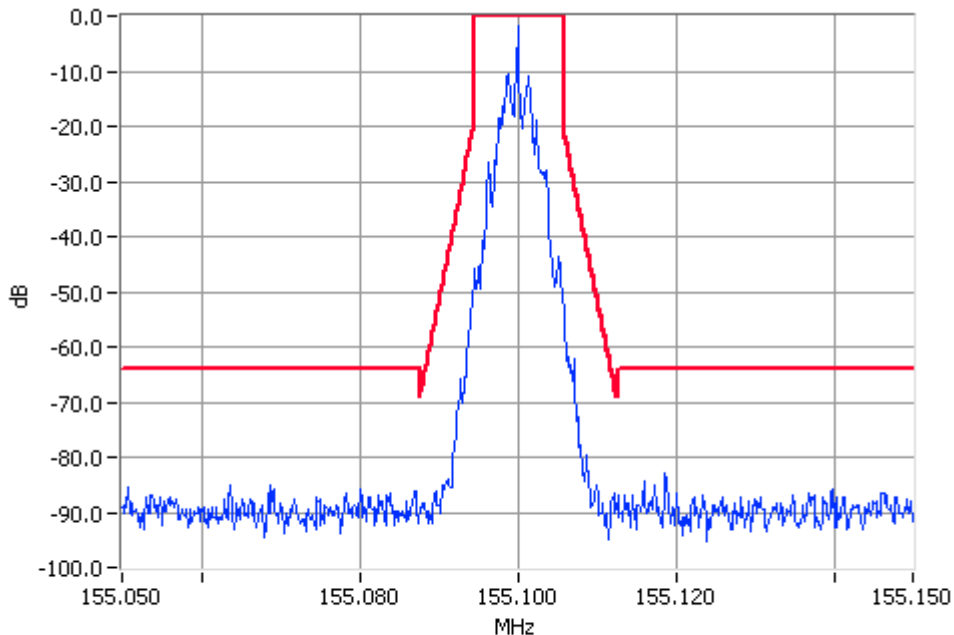
Tx FREQUENCY: 155.1MHz 25 W 12.5 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask D 25W Pass
RBW=100Hz VBW=1000Hz

1200 Baud:



Digital Modulation 155.1000MHz Mask D 25W Pass
RBW=100Hz VBW=1000Hz

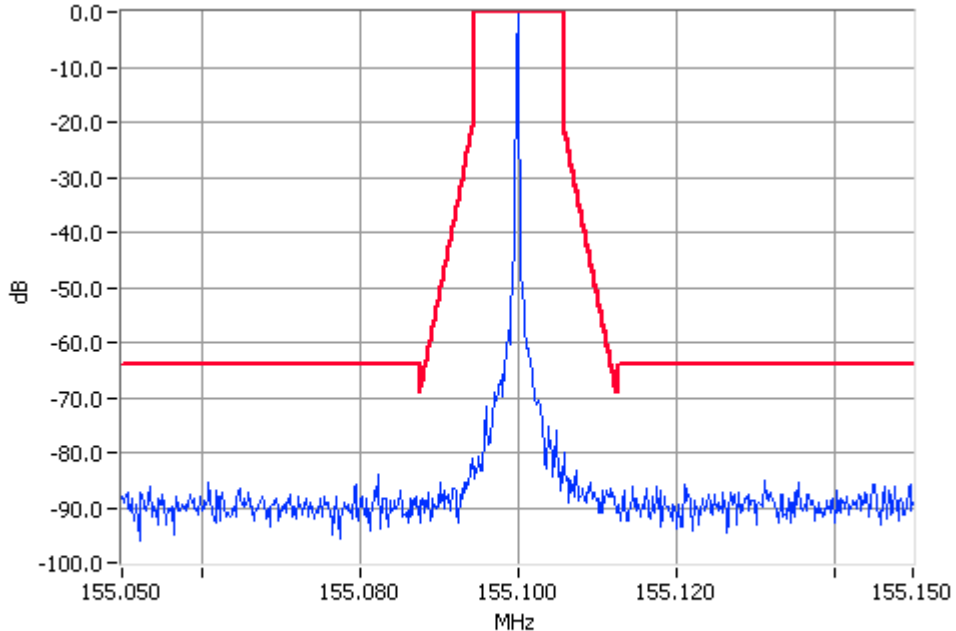
SIDEBAND SPECTRUM

FFSK

SPECIFICATION: FCC CFR 2.1049 (c)

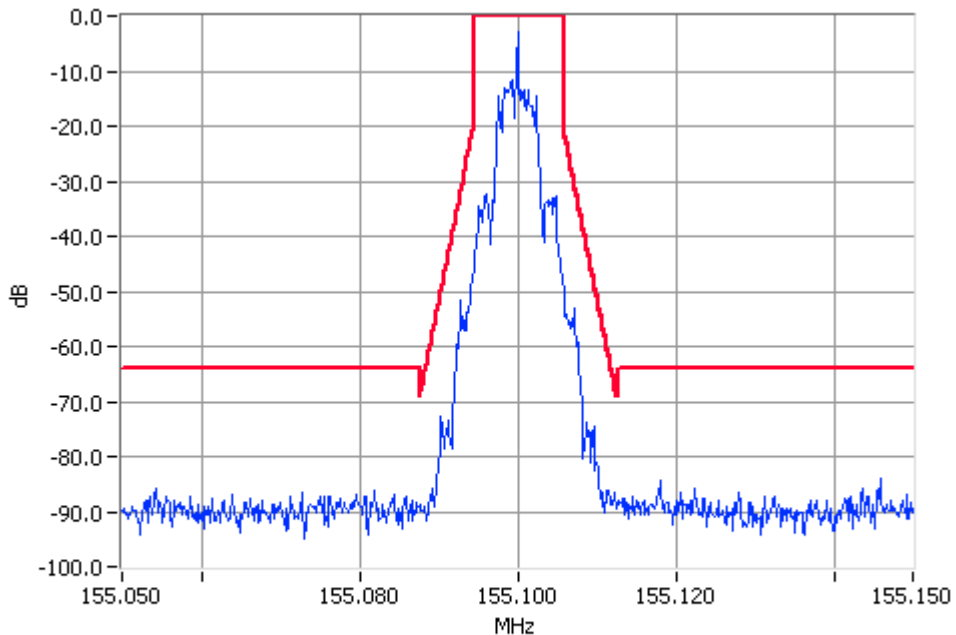
Tx FREQUENCY: 155.1MHz 25 W 12.5 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask D 25W Pass
RBW=100Hz VBW=1000Hz

2400 Baud:



Digital Modulation 155.1000MHz Mask D 25W Pass
RBW=100Hz VBW=1000Hz

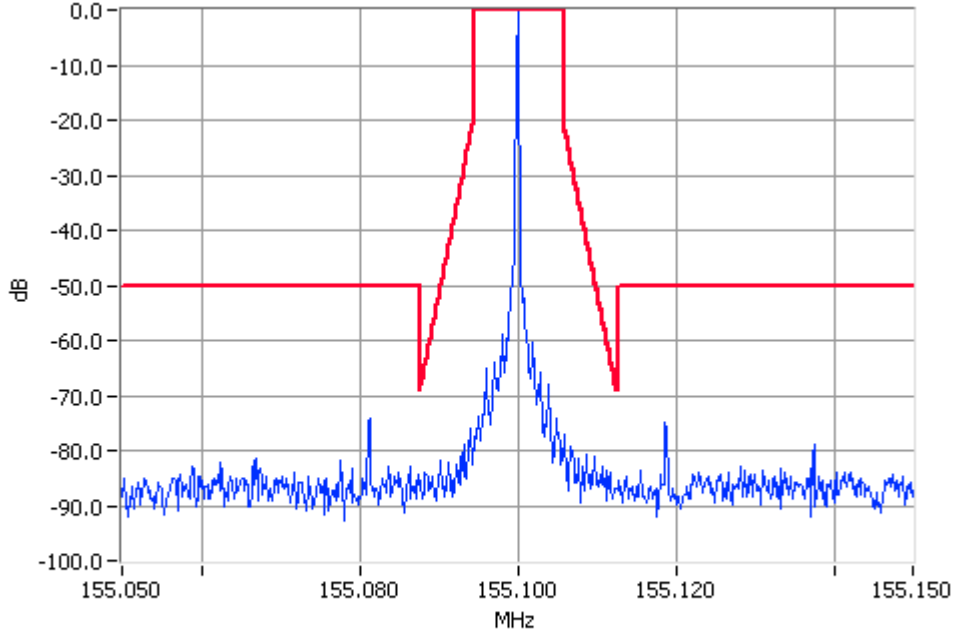
SIDEBAND SPECTRUM

FFSK

SPECIFICATION: FCC CFR 2.1049 (c)

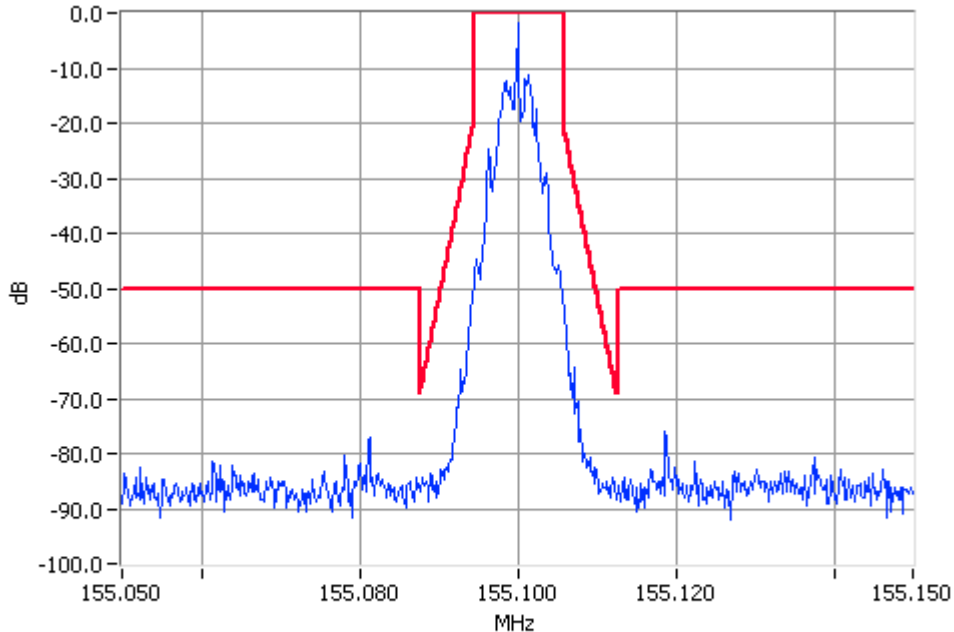
Tx FREQUENCY: 155.1MHz 1 W 12.5 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask D 1W Pass
RBW=100Hz VBW=1000Hz

1200 Baud:



Digital Modulation 155.1000MHz Mask D 1W Pass
RBW=100Hz VBW=1000Hz

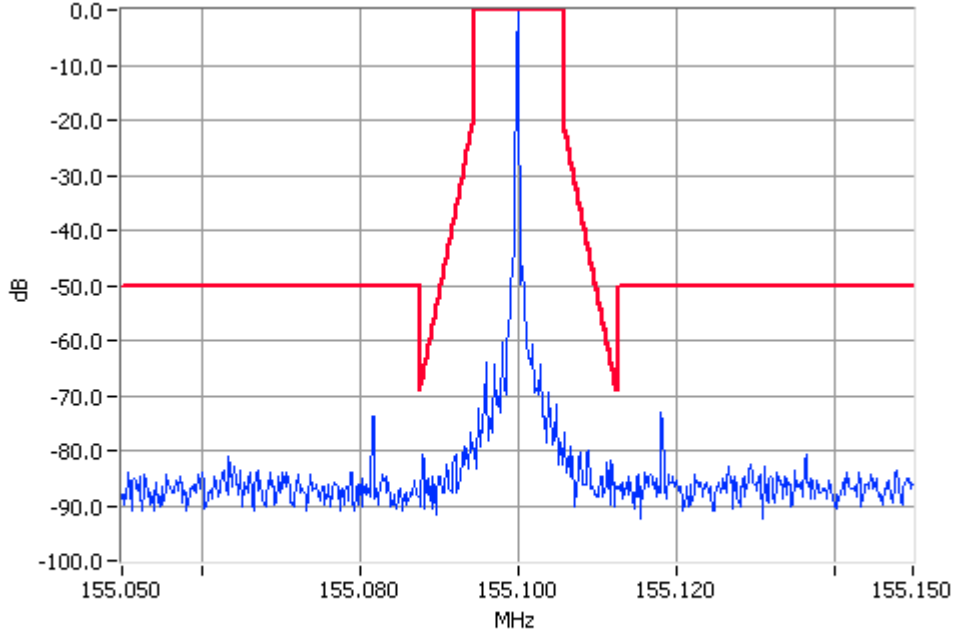
SIDEBAND SPECTRUM

FFSK

SPECIFICATION: FCC CFR 2.1049 (c)

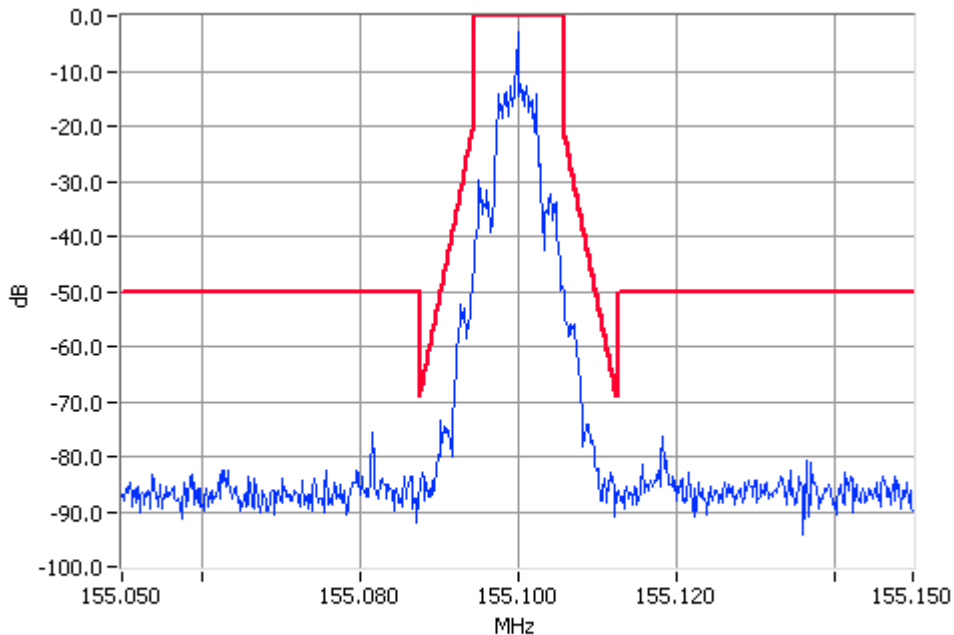
Tx FREQUENCY: 155.1MHz 1 W 12.5 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask D 1W Pass
RBW=100Hz VBW=1000Hz

2400 Baud:



Digital Modulation 155.1000MHz Mask D 1W Pass
RBW=100Hz VBW=1000Hz

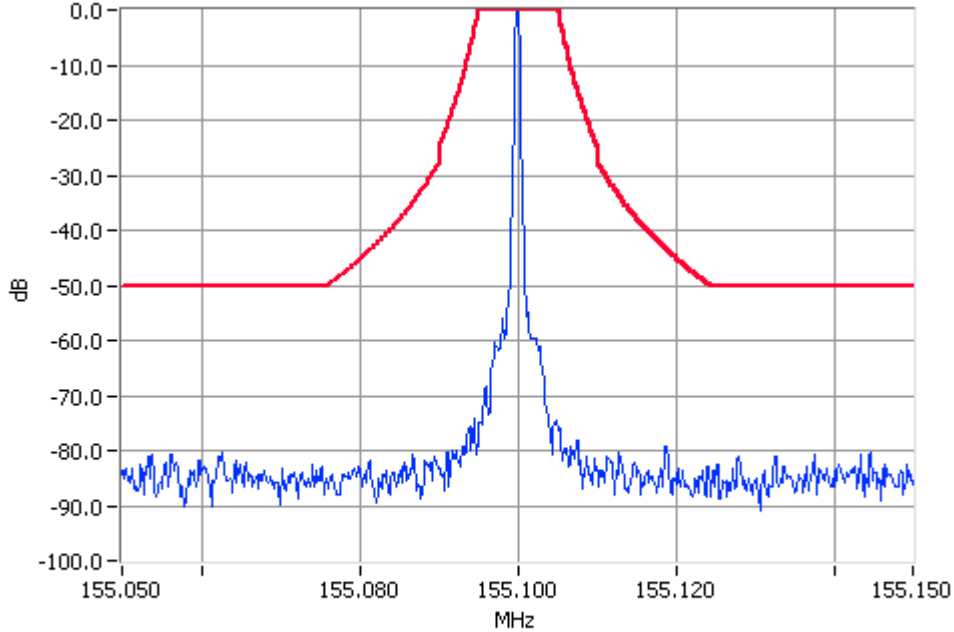
SIDEBAND SPECTRUM

FFSK

SPECIFICATION: FCC CFR 2.1049 (c)

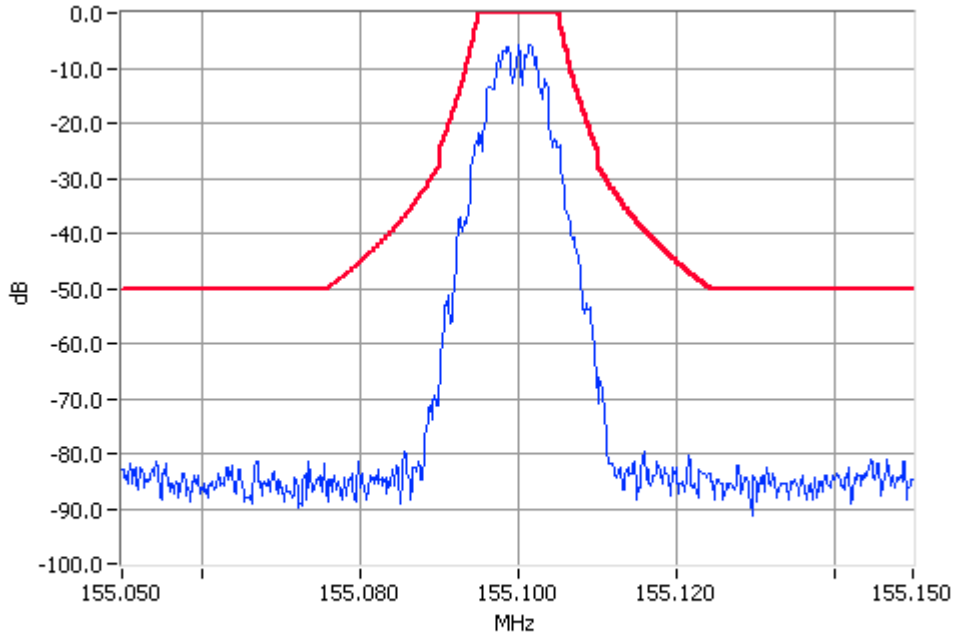
Tx FREQUENCY: 155.1MHz 25 W 25 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

1200 Baud:



Digital Modulation 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

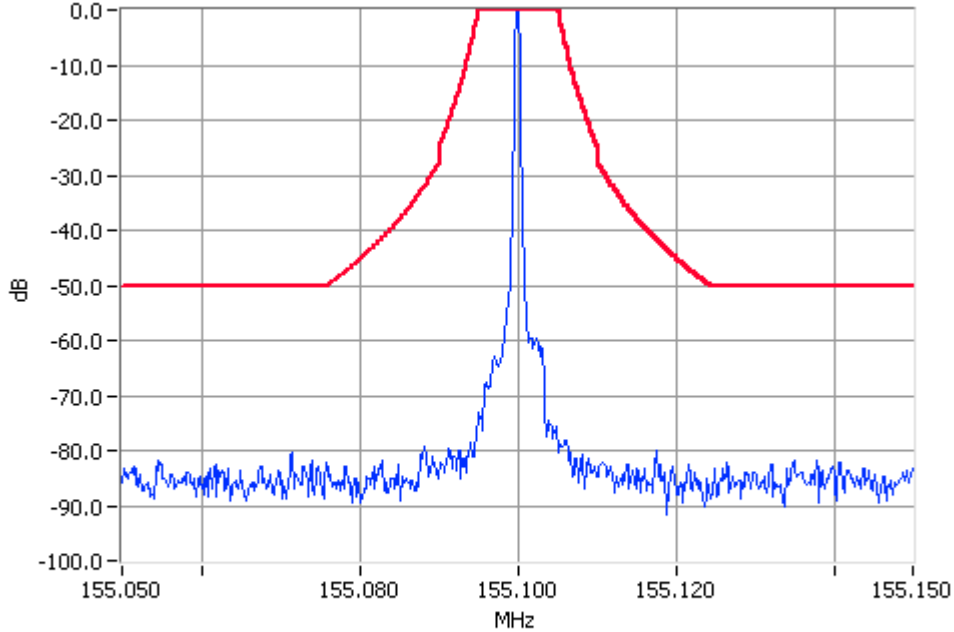
SIDEBAND SPECTRUM

FFSK

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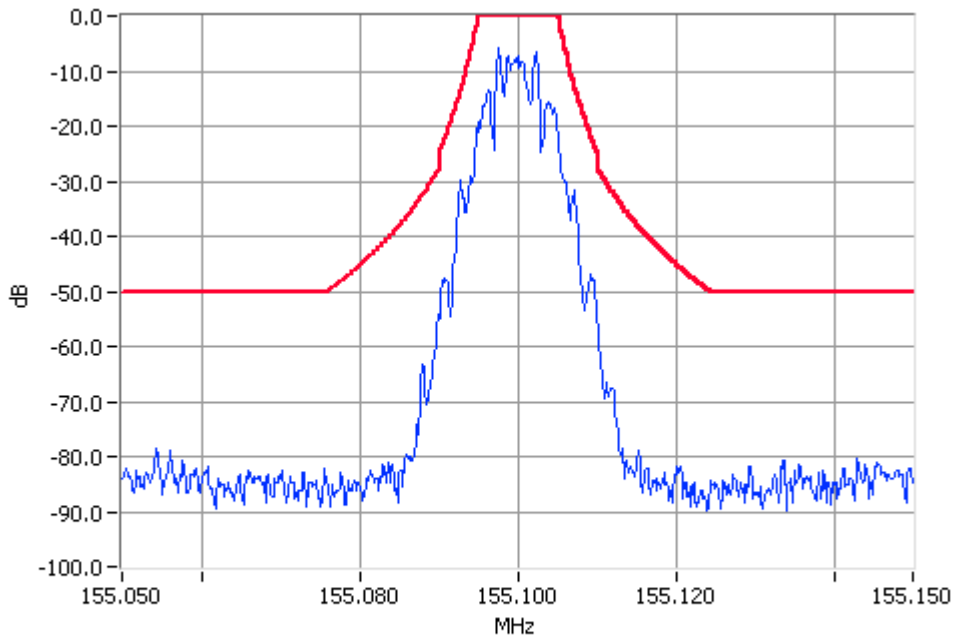
Tx FREQUENCY: 155.1MHz 25 W 25 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

2400 Baud:



Digital Modulation 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

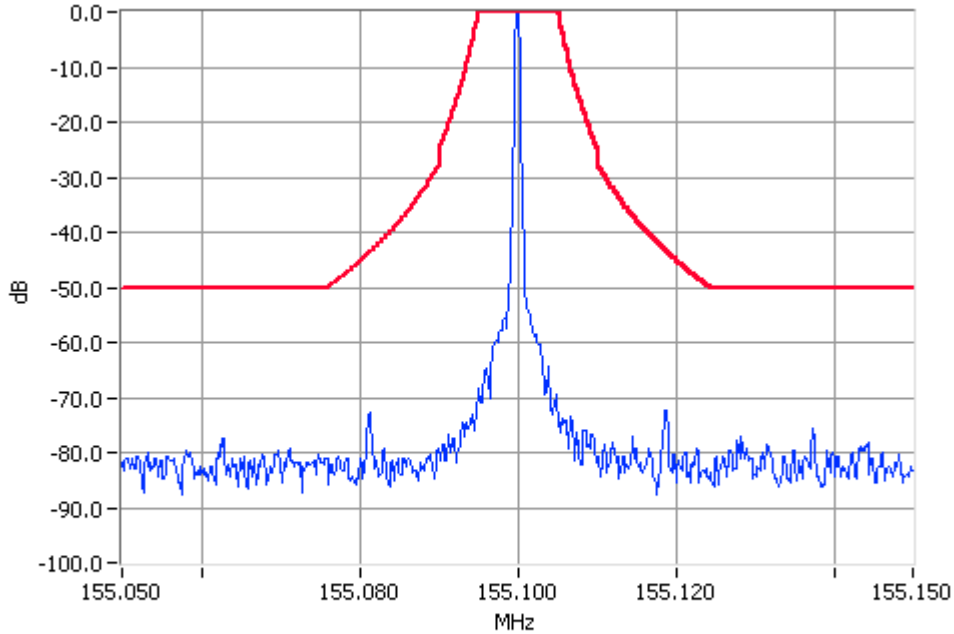
SIDEBAND SPECTRUM

FFSK

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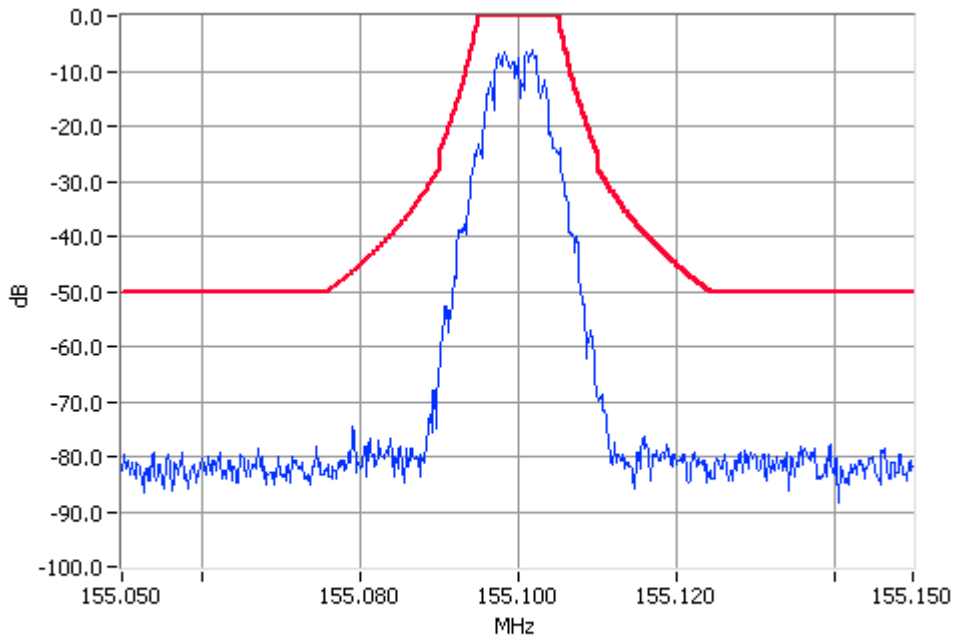
Tx FREQUENCY: 155.1MHz 1 W 25 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

1200 Baud:



Digital Modulation 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

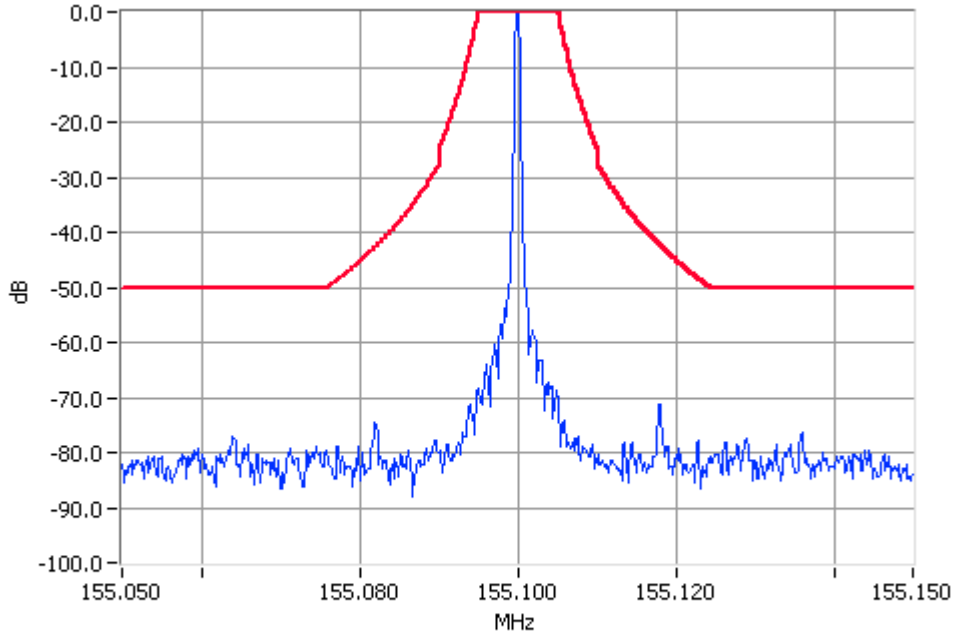
SIDEBAND SPECTRUM

FFSK

SPECIFICATION: FCC CFR 2.1049 (c)

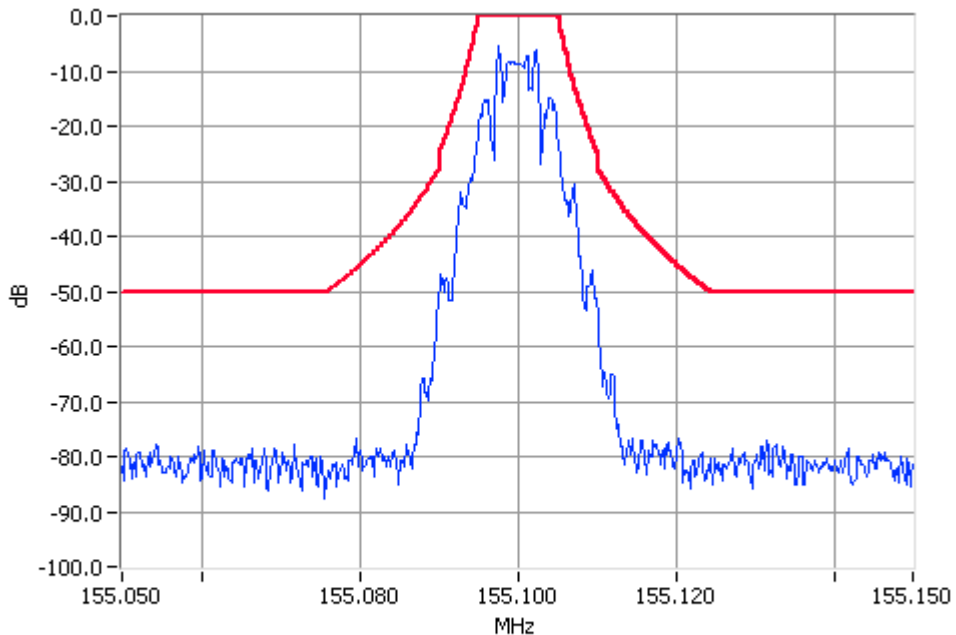
Tx FREQUENCY: 155.1MHz 1 W 25 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

2400 Baud:



Digital Modulation 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

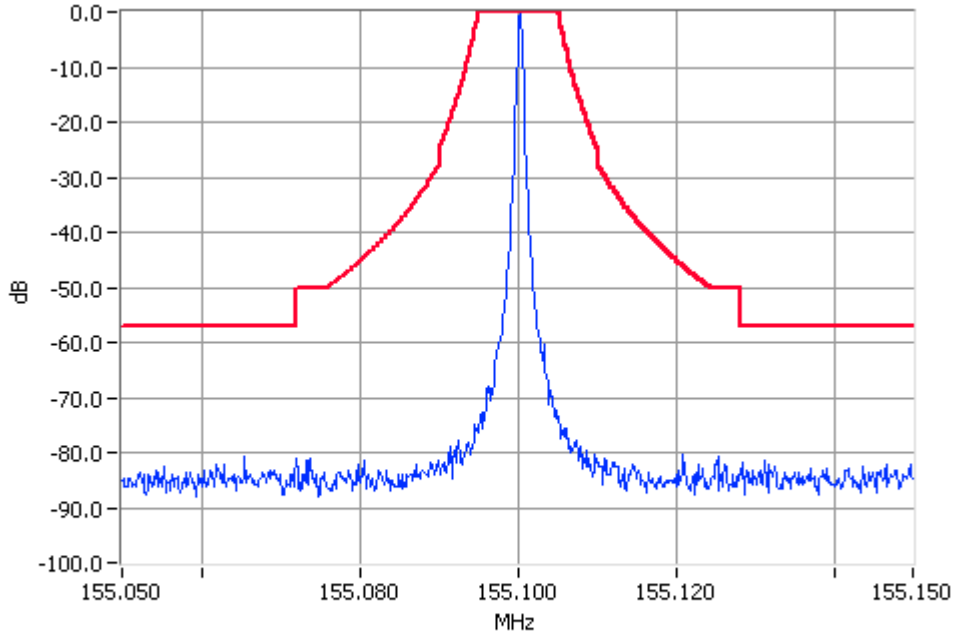
SIDEBAND SPECTRUM

PAGING (POCSAG)

SPECIFICATION: FCC CFR 2.1049 (c)

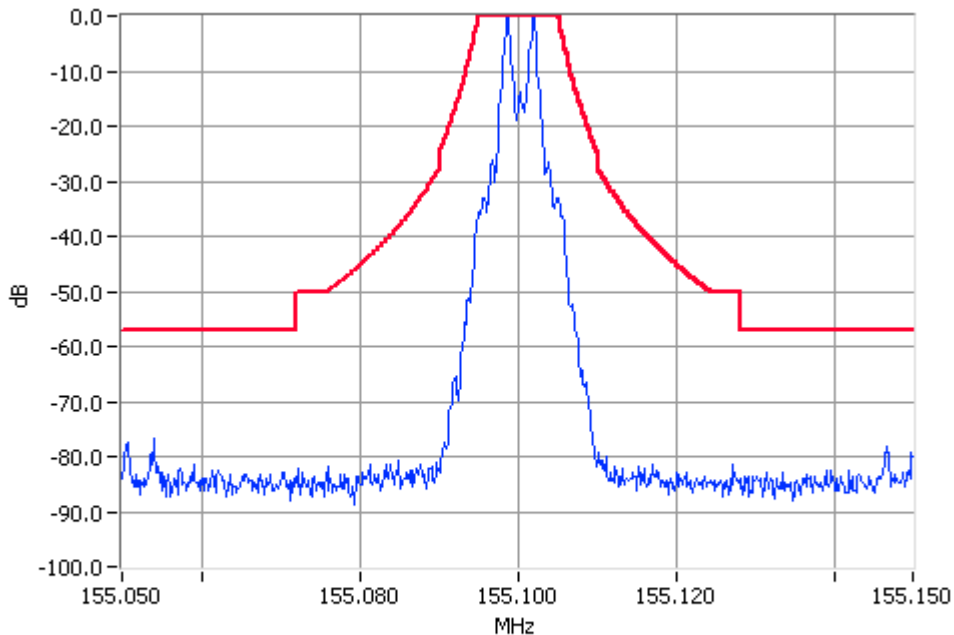
Tx FREQUENCY: 155.1MHz 25 W 12.5 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

1200 Baud:



Paging Modulation 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

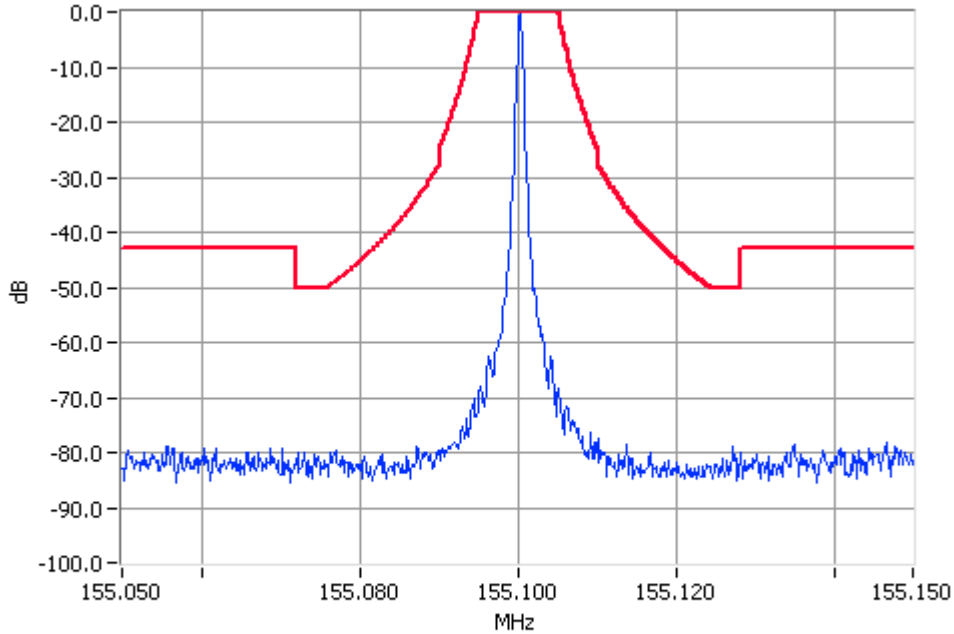
SIDEBAND SPECTRUM

PAGING (POCSAG)

SPECIFICATION: FCC CFR 2.1049 (c)

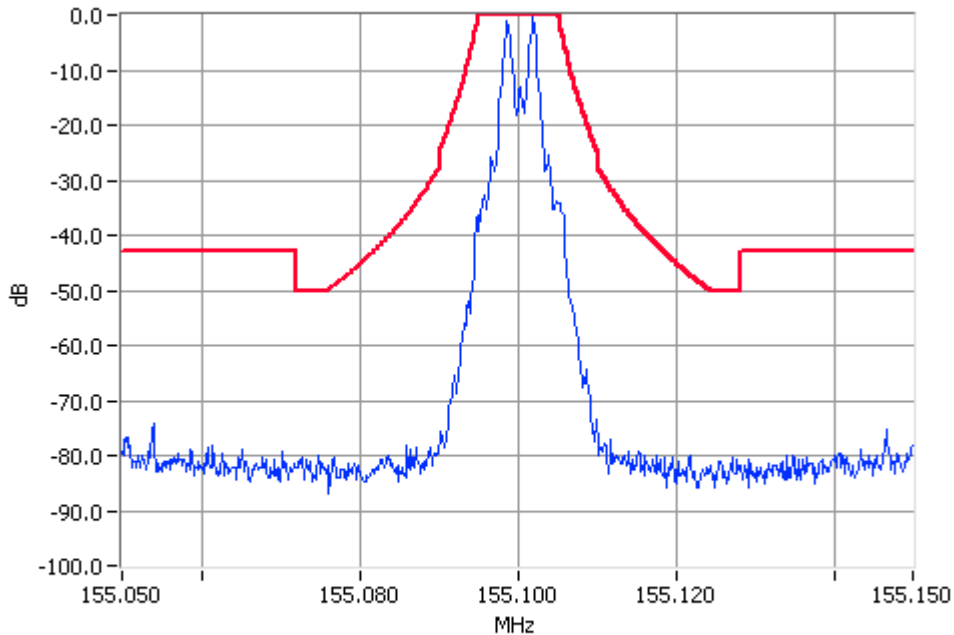
Tx FREQUENCY: 155.1MHz 1 W 12.5 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

1200 Baud:



Paging Modulation 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

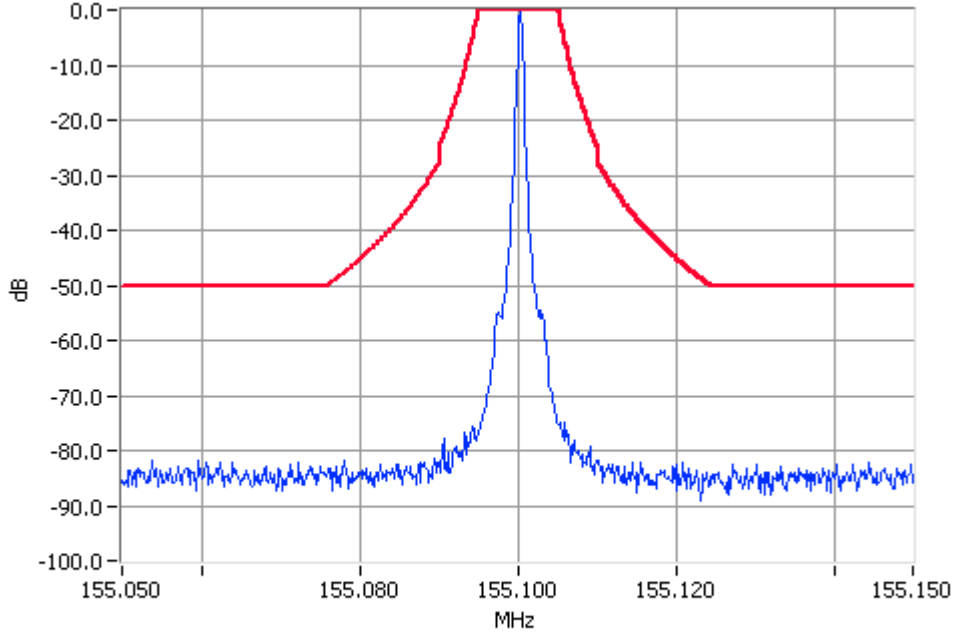
SIDEBAND SPECTRUM

PAGING (POCSAG)

SPECIFICATION: FCC CFR 2.1049 (c)

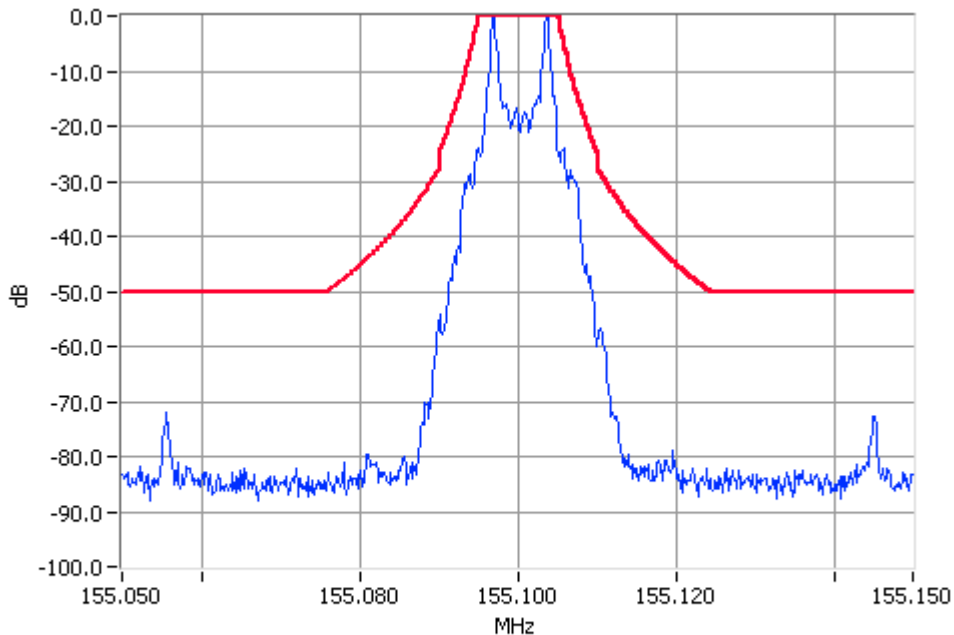
Tx FREQUENCY: 155.1MHz 25 W 25 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

1200 Baud:



Paging Modulation 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

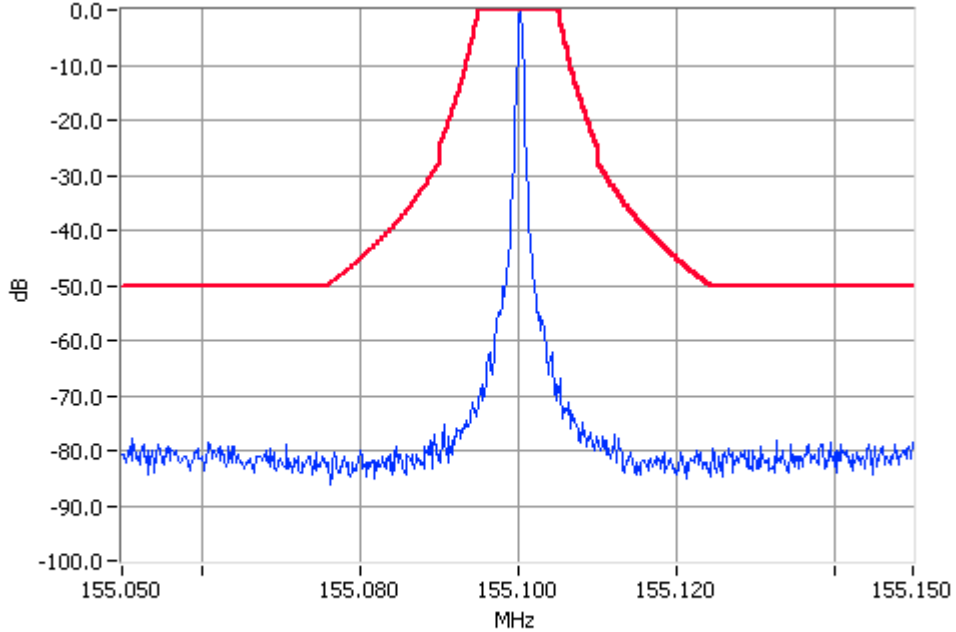
SIDEBAND SPECTRUM

PAGING (POCSAG)

SPECIFICATION: FCC CFR 2.1049 (c)

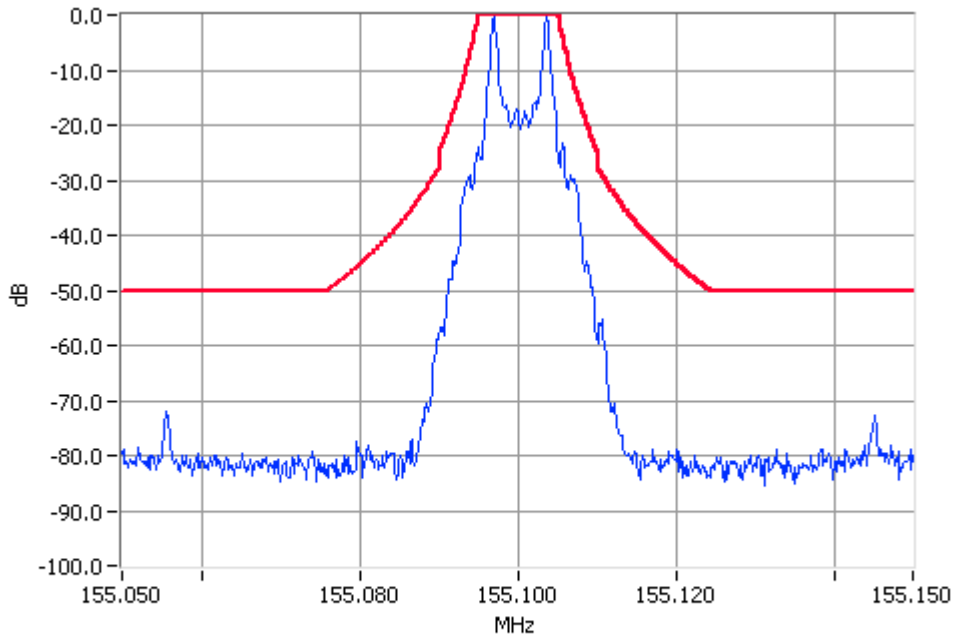
Tx FREQUENCY: 155.1MHz 1 W 25 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

1200 Baud:



Paging Modulation 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

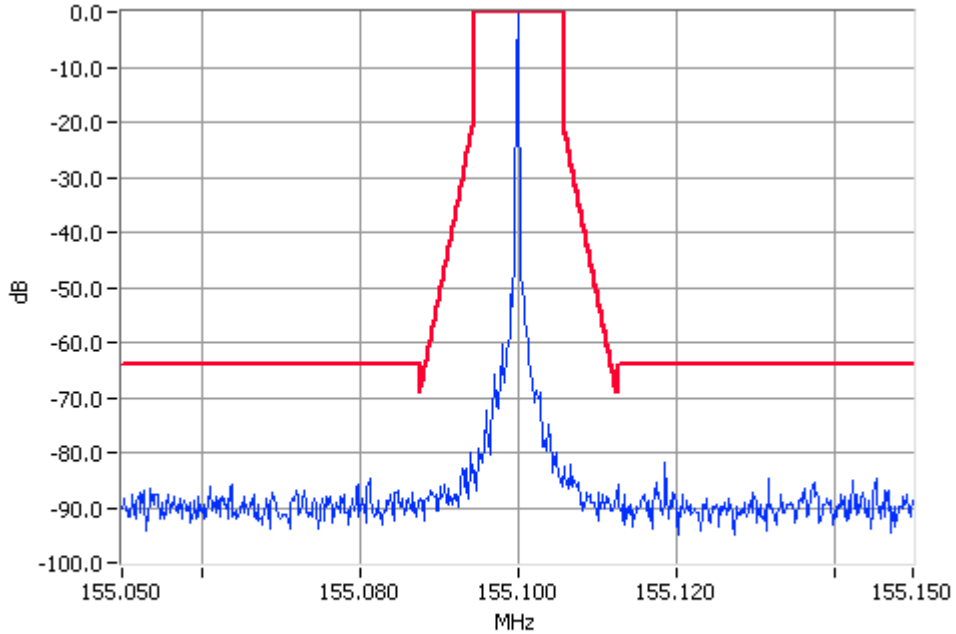
SIDEBAND SPECTRUM

THSD

SPECIFICATION: FCC CFR 2.1049 (c)

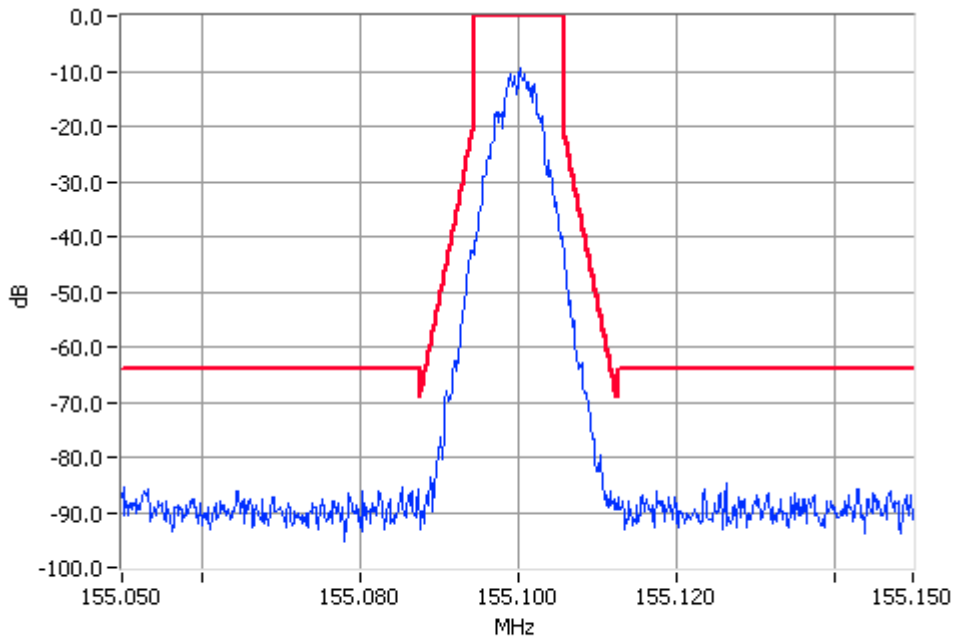
Tx FREQUENCY: 155.1MHz 25 W 12.5 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask D 25W Pass
RBW=100Hz VBW=1000Hz

12000 Baud:



Digital Modulation 155.1000MHz Mask D 25W Pass
RBW=100Hz VBW=1000Hz

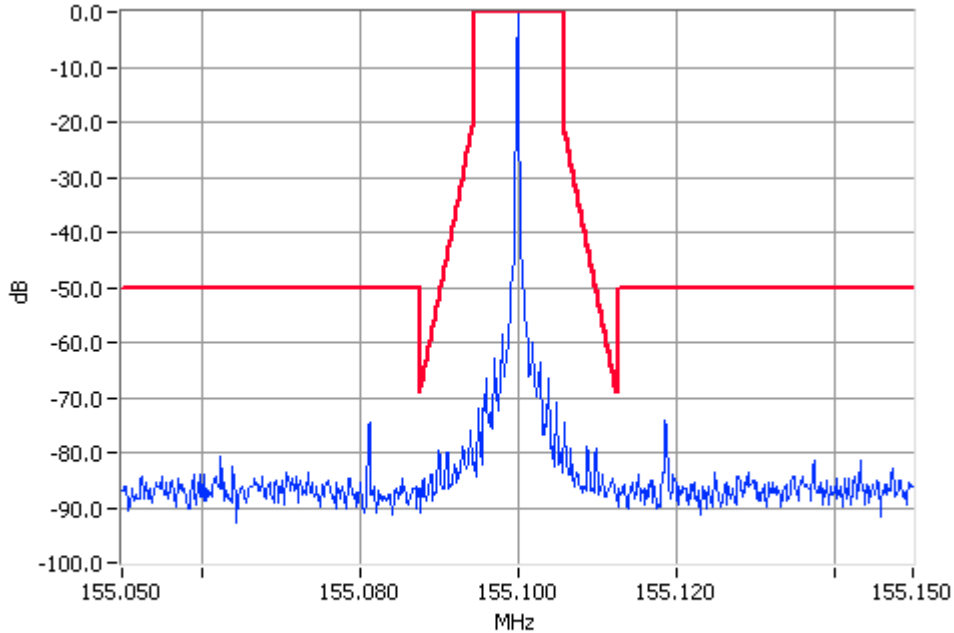
SIDEBAND SPECTRUM

THSD

SPECIFICATION: FCC CFR 2.1049 (c)

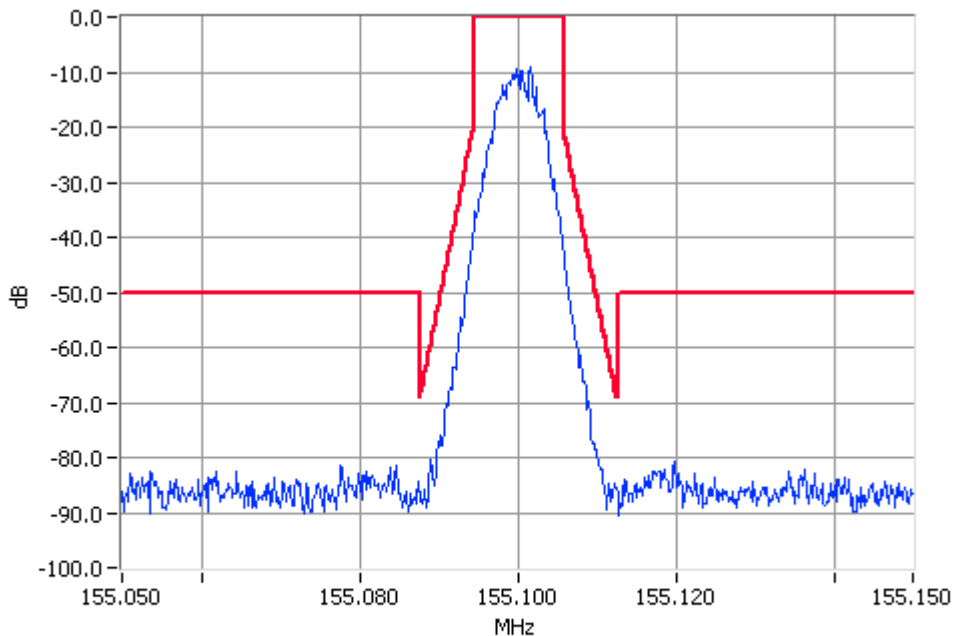
Tx FREQUENCY: 155.1MHz 1 W 12.5 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask D 1W Pass
RBW=100Hz VBW=1000Hz

12000 Baud:



Digital Modulation 155.1000MHz Mask D 1W Pass
RBW=100Hz VBW=1000Hz

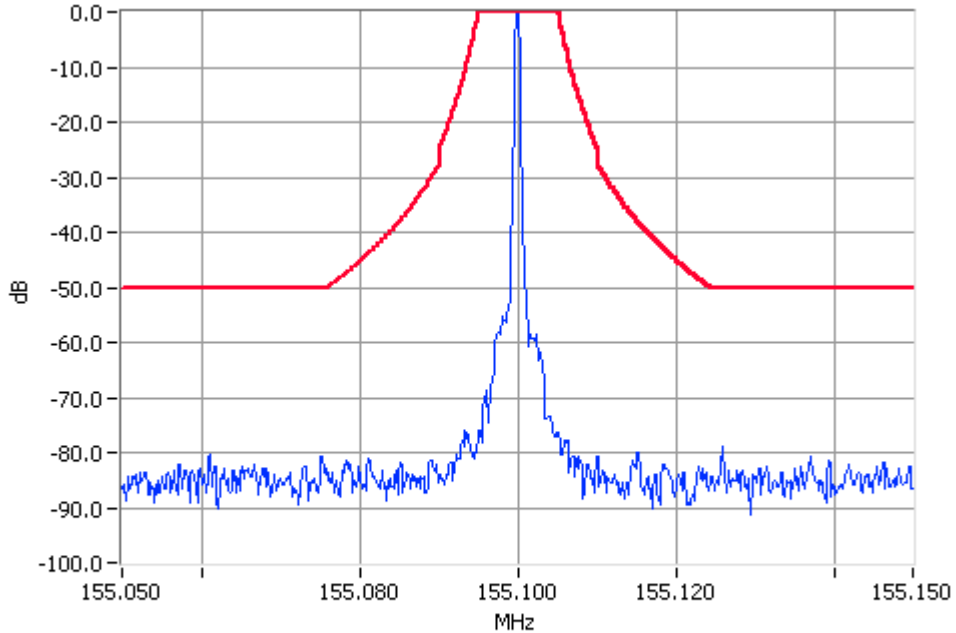
SIDEBAND SPECTRUM

THSD

SPECIFICATION: FCC CFR 2.1049 (c)

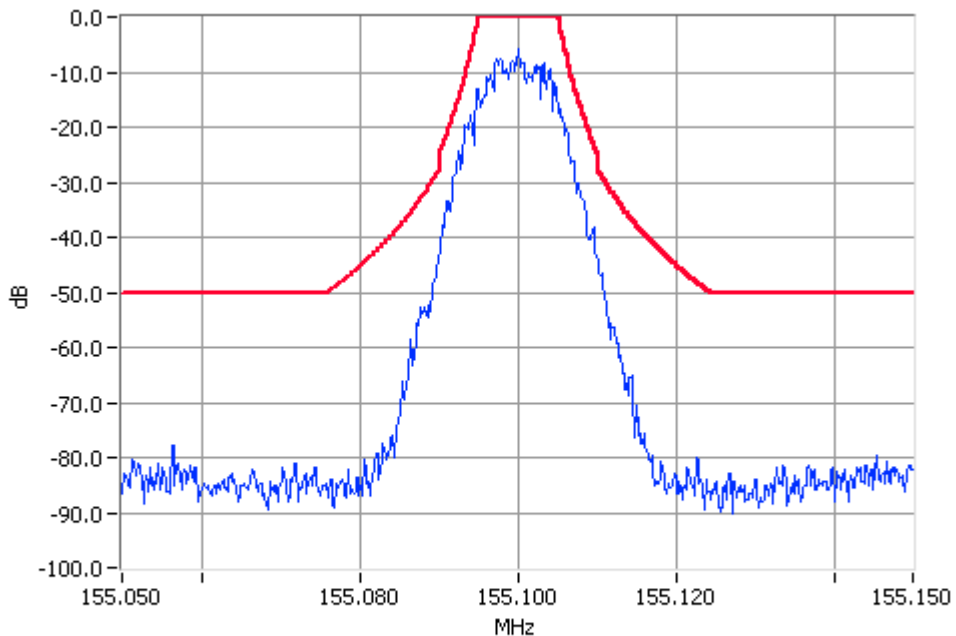
Tx FREQUENCY: 155.1MHz 25 W 25 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

19200 Baud:



Digital Modulation 155.1000MHz Mask C 25W Pass
RBW=300Hz VBW=3000Hz

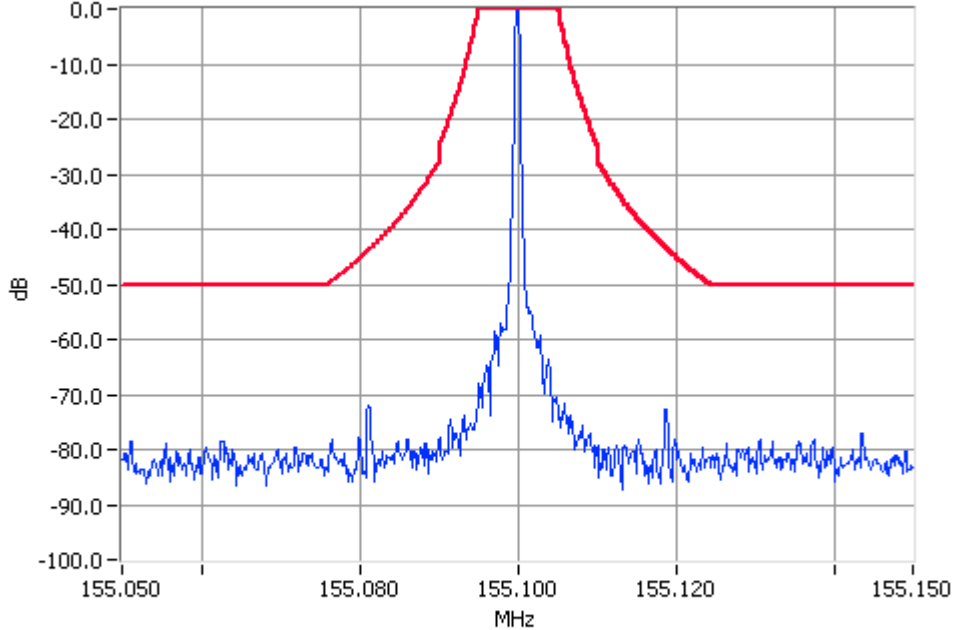
SIDEBAND SPECTRUM

THSD

SPECIFICATION: FCC CFR 2.1049 (c)

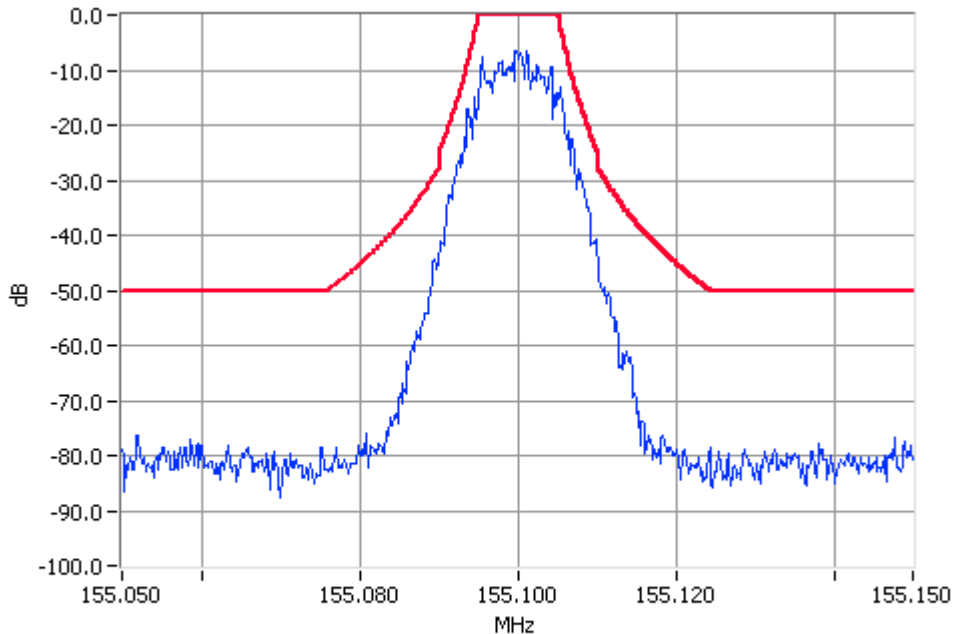
Tx FREQUENCY: 155.1MHz 1 W 25 kHz Channel Spacing

Unmodulated:



Unmodulated 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

19200 Baud:



Digital Modulation 155.1000MHz Mask C 1W Pass
RBW=300Hz VBW=3000Hz

TEST EQUIPMENT USED

No#	Equipment	Manufacturer	Model No	Serial No#	Tait ID	Cal Due
21	Power Supply	Rohde & Schwarz	NGS M32/10 192.0810.31	Fnr 434	E3556	26-Sep-06
82	3m Coax Cable BLUE)	Suhner	Sucoflex 104A	25033/4A	E3694	25-Nov-06
88	Spectrum Analyser	Hewlett Packard	HP8562E	3821A00779	E3715	25-Nov-06
123	Spectrum Analyser	Agilent	E4445A	MY42510072	E4139	30-May-06
137	1m Multiflex Cable	Suhner	MF141	TT007	E4443	25-Nov-06
138	1m Multiflex Cable	Suhner	MF141	TT086	E4444	25-Nov-06

APPENDIX A

TEST SETUP DETAILS

All testing is performed using the Teltest Radio **EVAL**uation system (TREVA), which is configured as shown below. The Spectrum Analyser is connected to the EUT via the attenuator network for Conducted Emissions testing, and **SIDEBAND SPECTRUM**.

