

Laboratory Test Report

For the

TBAB1 Base Station Transceiver

Tested In accordance with

FCC 47 CFR Parts 22, 74 and 90

Report Revision: 1
Issue Date: 27-September-2007
FCC ID: CASTBA9B1

PREPARED BY: Marcus Ludwig _____
Test Technician

CHECKED & APPROVED BY: S A Crompton _____
Laboratory Manager



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
27-September-2007	1	Initial test report

INTRODUCTION

The modulation range of the Tait base station equipment type TBAB1 (FCC ID: CASTBAB1) has been extended to now include Tait Simulcast Modulation (TSM).

This test report details performance of the TSM and reconfirms C4FM and Wide Pulse operation and should be read in conjunction with test reports 2041, 2041A, 2041B, 2142 and 2250.

FCC ID: CASTBAB1 included 100, 50 and 5 watt power amplifiers. With the addition of TSM modulation it is necessary to seek separate grants for each power level. This report, in conjunction with test reports listed above confirms performance of the 100W version (FCC ID: CASTBA9B1) of the TBAB1 base station.

FCC CFR47 Part 22, 74 & 90

REPORT PREPARED FOR

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

STATEMENT OF COMPLIANCE

The TBAB1 Base Station transceiver as tested in this report was found to conform to the following standards:

FCC CFR 47 Parts 22, 74 & 90

DESCRIPTION OF SAMPLE

Equipment: Base Station Transceiver.
136MHz to 156MHz (B2) / 148MHz to 174MHz (B3)

Type: TBAB1

Details:

Component:	Type:	Model:	S/N:
Rack	TBAB1	TBA2323-A000	18004353
TB9100 Reciter B2	TBA4B2	TBA40B2-PA00	18040691
TB9100 Reciter B3	TBA4B3	TBA40B3-PA00	18040378
100 W Power Amplifier	TBA9B1	TBA90B1-0000	18040543
Power Management Unit	TBA30A1	TBA30A1-1100	18016745
User Interface	TBA2060	TBA2060	~

Software Versions:

	TB9100 Reciter B2		TB9100 Reciter B3	
	Digital Board	Network Board	Digital Board	Network Board
Serial Number	18040691	2103810	18040378	2100331
Firmware	03.10	03.10	03.10	03.10
Kernel Version	~	03.10	~	03.10
Hardware	00.07	00.01	00.07	00.01
Database	~	03.10	~	03.10

Service Kit used: TB9100 CSS 3.10.14-en

TEST CONDITIONS

All testing was performed at the following conditions.

Ambient Temperature	15°C to 30°C
Relative Humidity	20% to 75%
Standard Test Voltage	120 V ac

NECESSARY BANDWIDTH AND EMISSION DESIGNATORS

SPECIFICATION: FCC 47 CFR 2.202

The Necessary Bandwidth is the minimum value of the occupied bandwidth sufficient to ensure the transmission of information at the rate and with the quality required for the system employed.

99 % Bandwidth Measurement Results

B2 Reciter:

	Channel Spacing	Power	99 % Bandwidth Measurement		
			TSM	C4FM	Wide Pulse
152.1 MHz	12.5 kHz	100 W	5.5 kHz	7.3 kHz	~
	25 kHz	100 W	~	~	8.1 kHz
	12.5 kHz	10 W	5.5 kHz	7.3 kHz	~
	25 kHz	10 W	~	~	8.3 kHz
153.1 MHz	12.5 kHz	100 W	5.4 kHz	7.3 kHz	~
	25 kHz	100 W	~	~	8.2 kHz
	12.5 kHz	10 W	5.4 kHz	7.4 kHz	~
	25 kHz	10 W	~	~	8.3 kHz

B3 Reciter:

	Channel Spacing	Power	99 % Bandwidth Measurement		
			TSM	C4FM	Wide Pulse
152.1 MHz	12.5 kHz	100 W	5.6 kHz	7.4 kHz	~
	25 kHz	100 W	~	~	8.2 kHz
	12.5 kHz	10 W	5.6 kHz	7.4 kHz	~
	25 kHz	10 W	~	~	8.2 kHz
158.1 MHz	12.5 kHz	100 W	5.5 kHz	7.4 kHz	~
	25 kHz	100 W	~	~	8.2 kHz
	12.5 kHz	10 W	5.6 kHz	7.4 kHz	~
	25 kHz	10 W	~	~	8.2 kHz

Emission Designators

TSM	6K10F1E	Digital Voice Open/Encoded TSM
	6K10F7E	Digital Voice/Data TSM
	6K10F1D	Data TSM
	6K10F7D	Dual Data TSM
C4FM	8K10F1E	Digital Voice Open/Encoded C4FM
	8K10F7E	Digital Voice/Data C4FM
	8K10F1D	Data C4FM
	8K10F7D	Dual Data C4FM
Wide Pulse	10K0F1E	Digital Voice Open/Encoded 4FSK
	10K0F7E	Digital Voice/Data 4FSK
	10K0F1D	Data 4FSK
	10K0F7D	Dual Data 4FSK

TEST RESULTS

SIDEBAND SPECTRUM

SPECIFICATION: FCC 47 CFR 2.1049 (c)

GUIDE: TIA/EIA-603C 2.2.11
TIA -102.CAAA - B

MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment Set up.

For TSM, C4FM and Wide Pulse Data measurements: The EUT was modulated with an internally generated bit sequence using the Conformance 1011Hz Test Pattern (TIA - 102.CAAA-B-2004). Using D-shell to switch between the three modulation types and the Service Kit was used to test in transmitter test mode.

2. The Sideband Spectrum was measured on the Spectrum Analyser, with bandwidth settings as follows.

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

MEASUREMENT RESULTS:

See the plots on the following pages tested at 158.1 MHz and 152.1 MHz, 100 and 10 Watts, 12.5 and 25 kHz channel spacing respectively.

LIMIT CLAUSE: FCC 47 CFR 90.210

EMISSION MASKS:

Emission Mask D	12.5 kHz Channel Spacing	C4FM and TSM
Emission Mask C	25 kHz Channel Spacing	Wide Pulse

DATA SPEED:

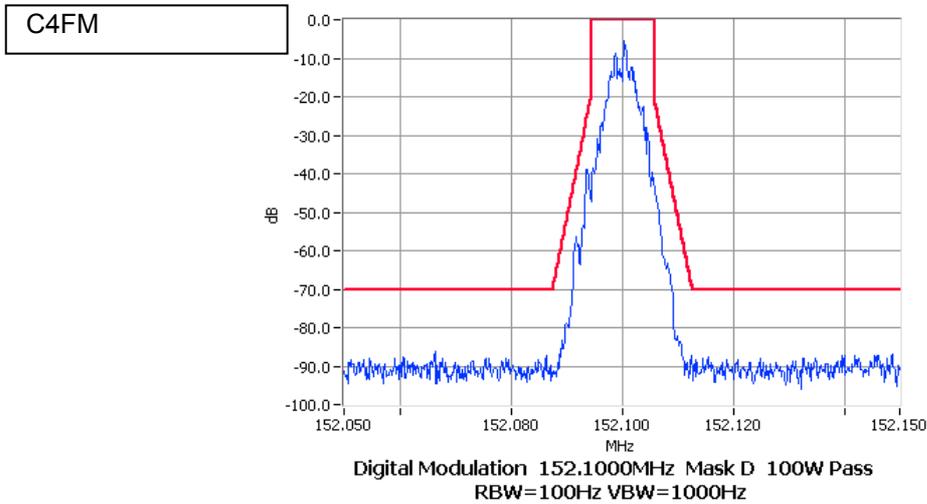
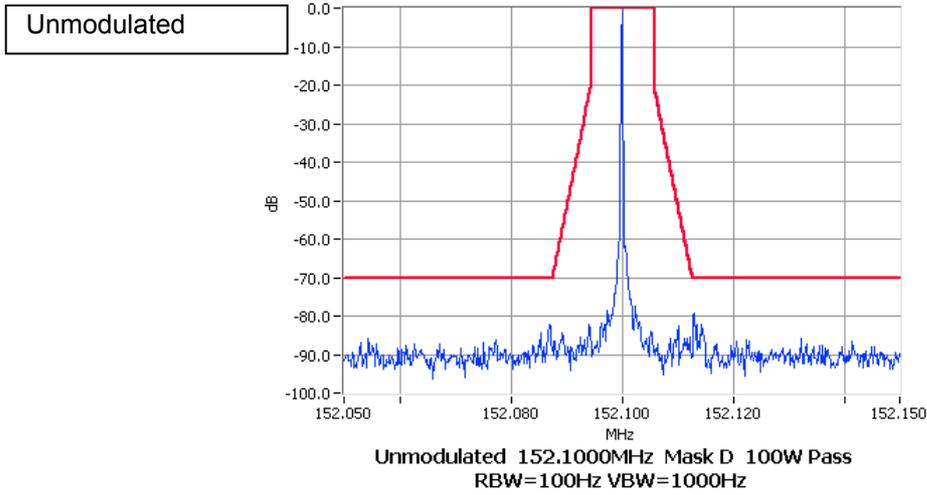
TSM	12.5 kHz Channel Spacing	9600 bps
C4FM	12.5 kHz Channel Spacing	9600 bps
Wide Pulse	25.0 kHz Channel Spacing	9600 bps

SIDEBAND SPECTRUM

SPECIFICATION: FCC CFR 2.1049 (c)

152.1 MHz B2 Reciter

Tx Power: 100 W Channel Spacing: 12.5 kHz Mask: D

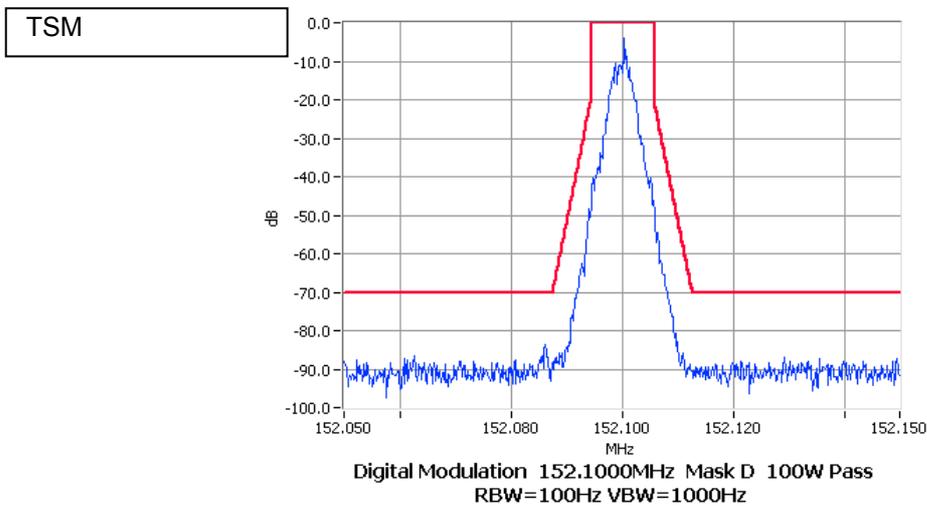
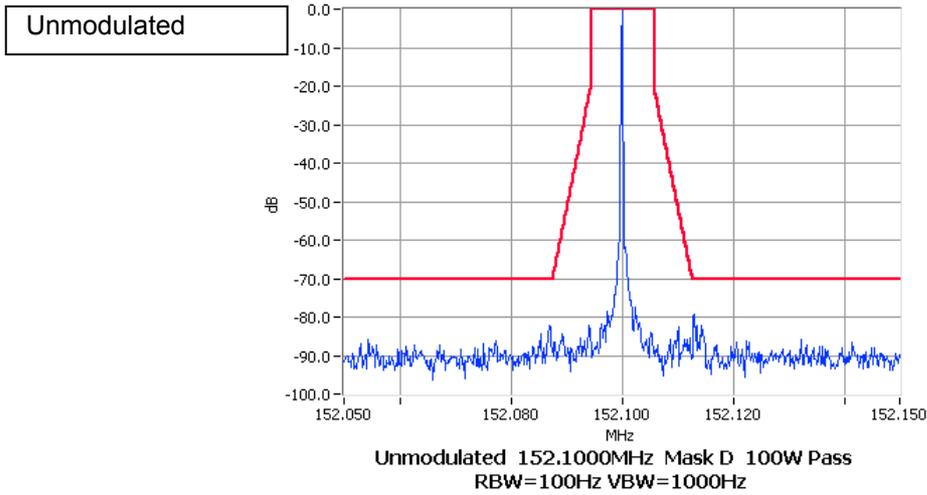


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SPECIFICATION: FCC CFR 2.1049 (c)

152.1 MHz B2 Reciter

Tx Power: 100 W Channel Spacing: 12.5 kHz Mask: D

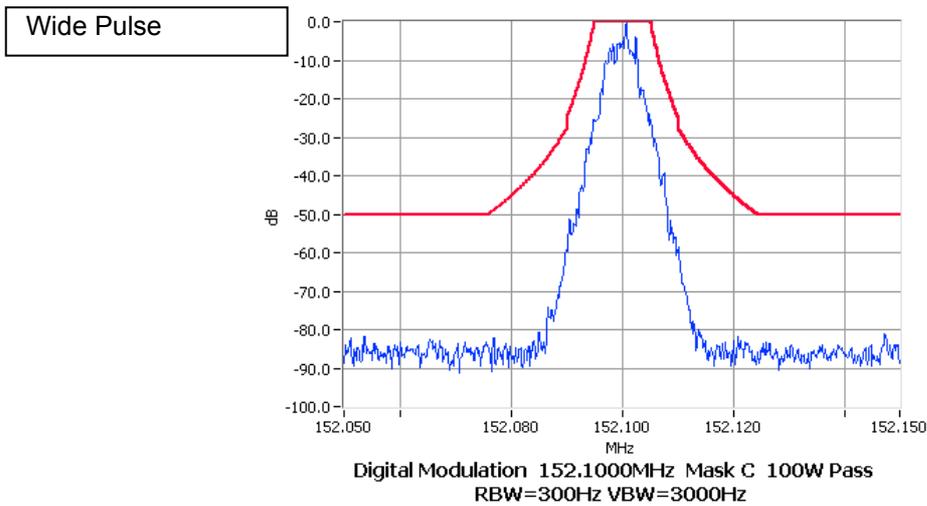
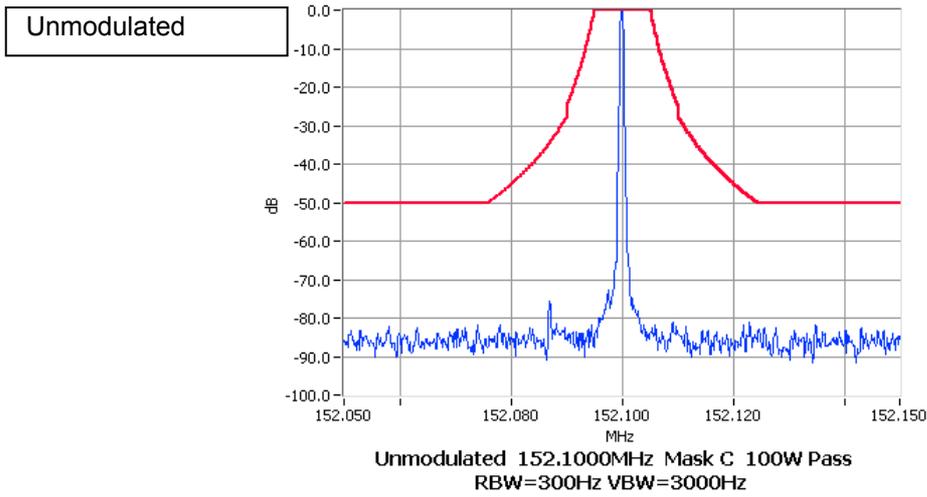


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SPECIFICATION: FCC CFR 2.1049 (c)

152.1 MHz B2 Reciter

Tx Power: 100 W Channel Spacing: 25 kHz Mask: C



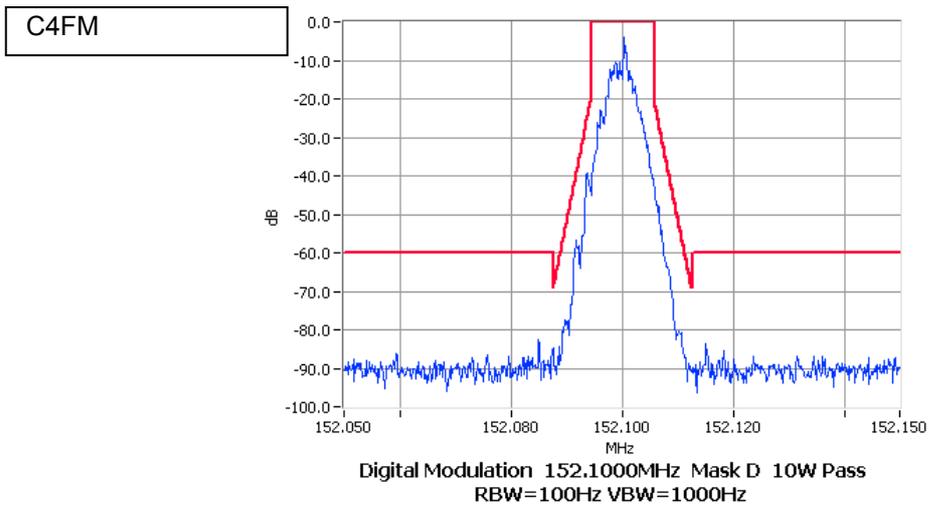
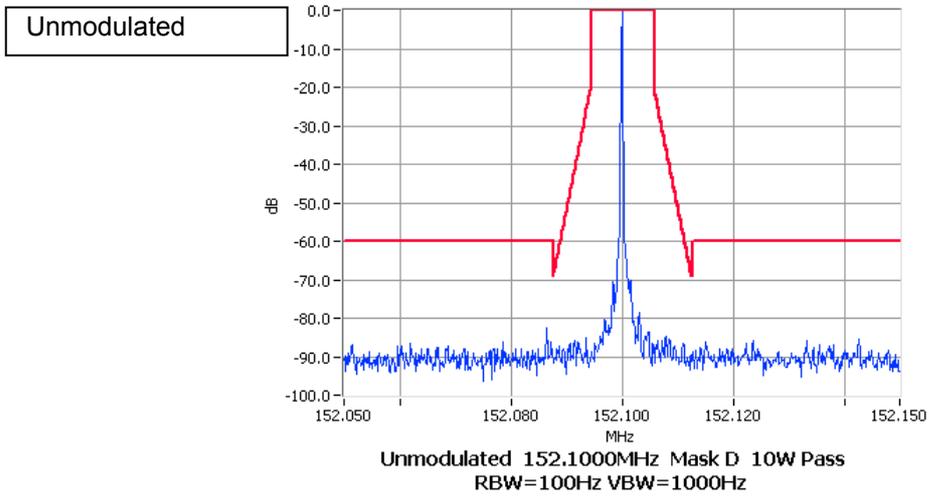
152.1 MHz

B2 Reciter

Tx Power: 10 W

Channel Spacing: 12.5 kHz

Mask: D



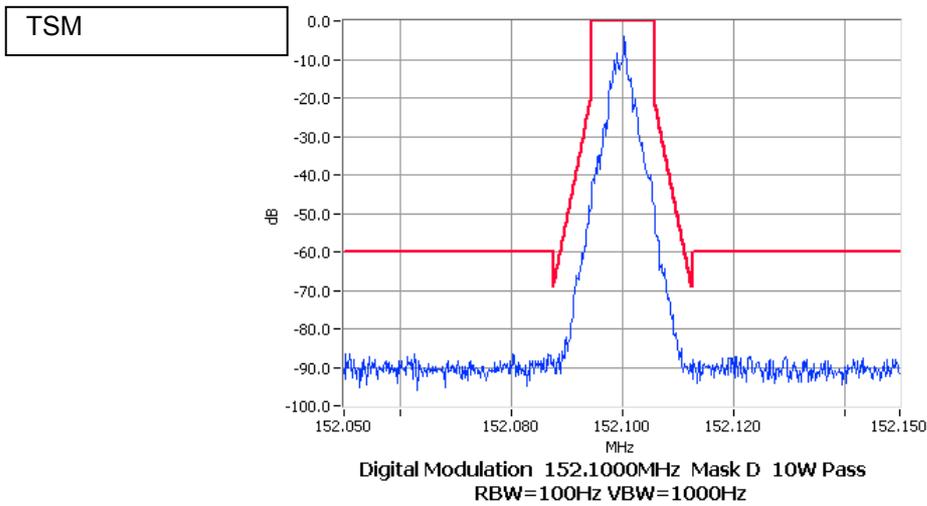
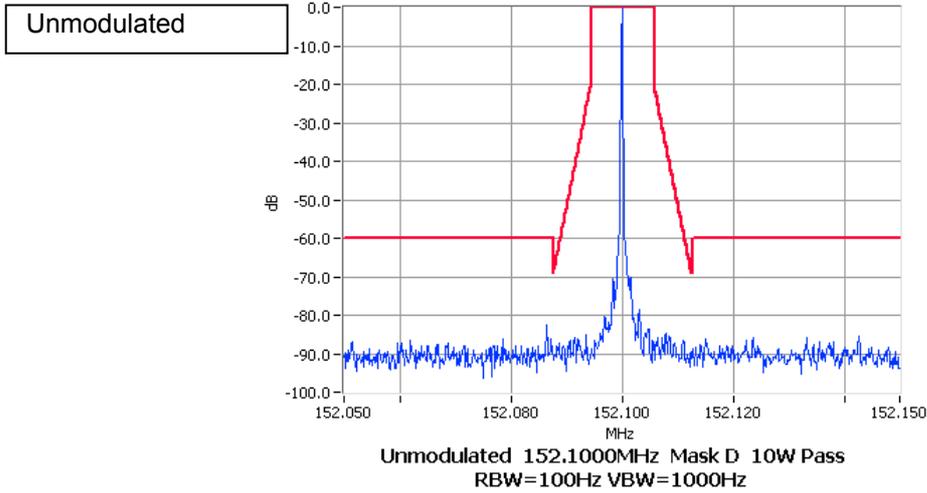
152.1 MHz

B2 Reciter

Tx Power: 10 W

Channel Spacing: 12.5 kHz

Mask: D



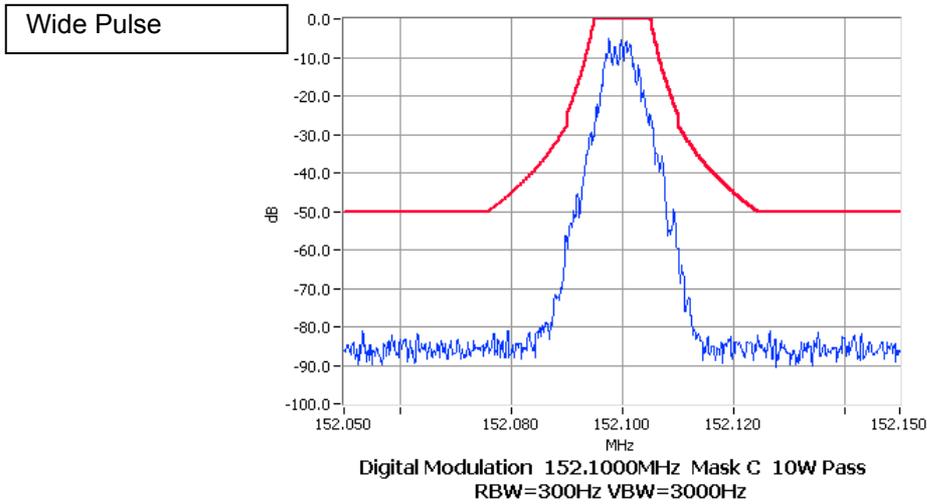
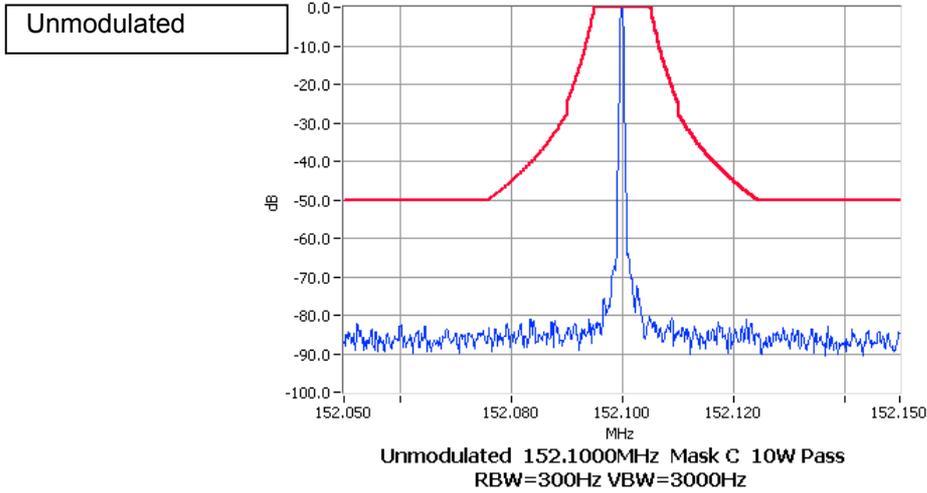
152.1 MHz

B2 Reciter

Tx Power: 10 W

Channel Spacing: 25 kHz

Mask: C



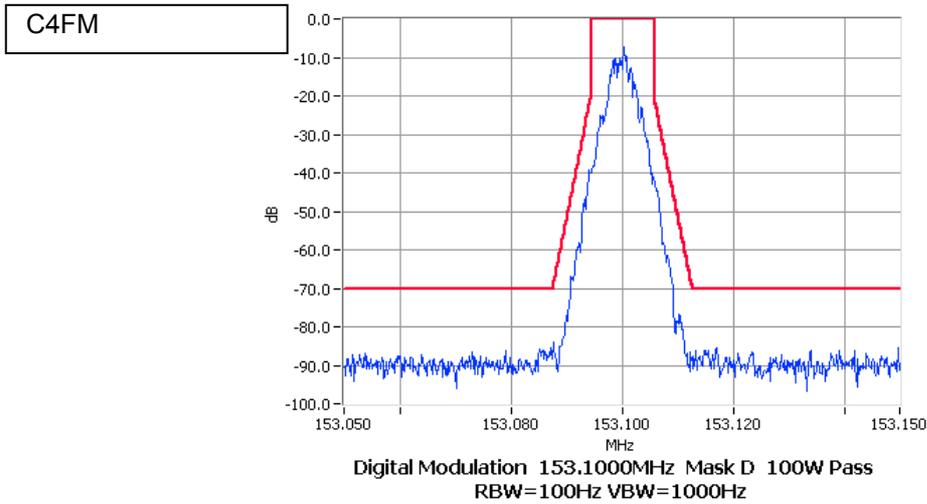
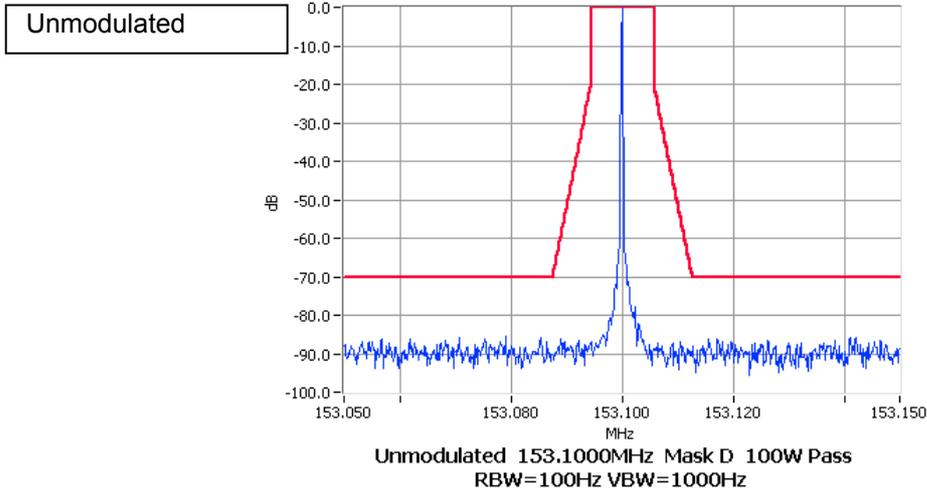
153.1 MHz

B2 Reciter

Tx Power: 100 W

Channel Spacing: 12.5 kHz

Mask: D



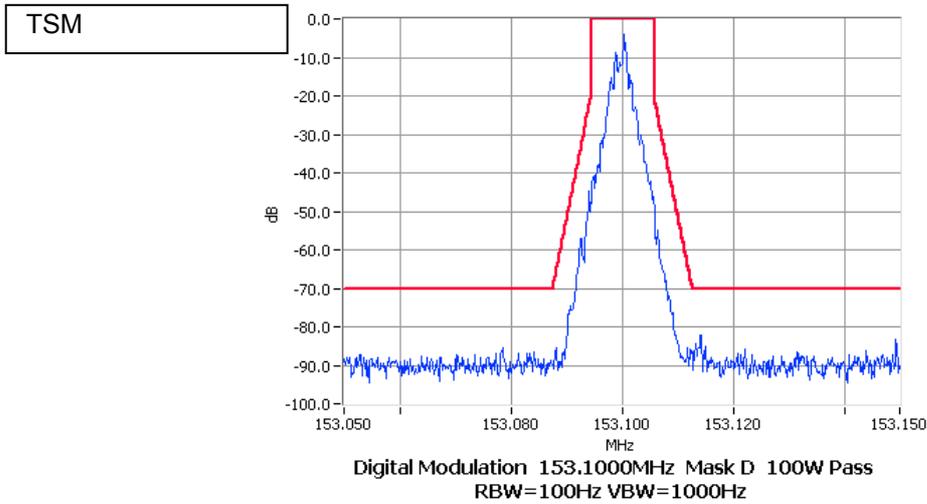
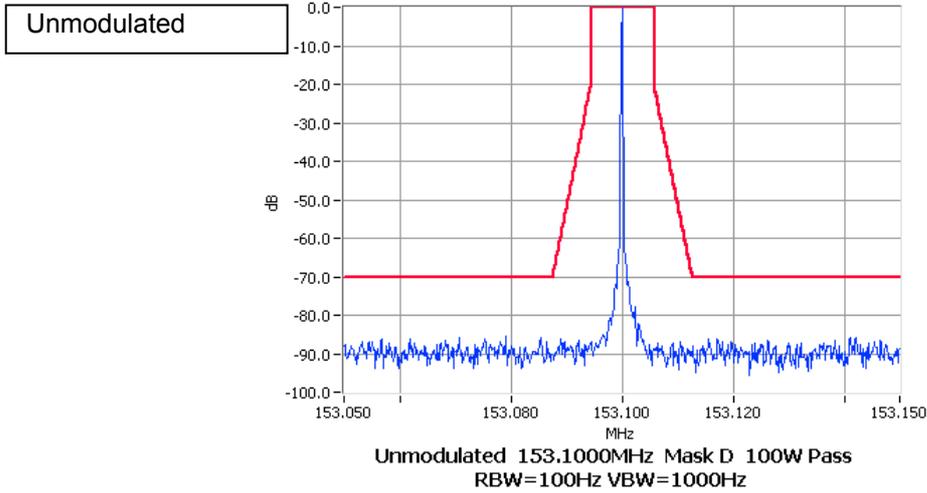
153.1 MHz

B2 Reciter

Tx Power: 100 W

Channel Spacing: 12.5 kHz

Mask: D



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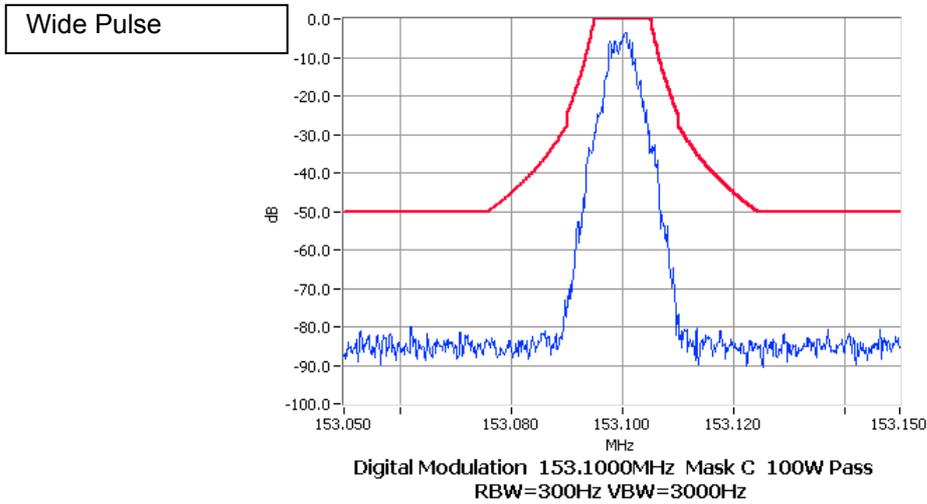
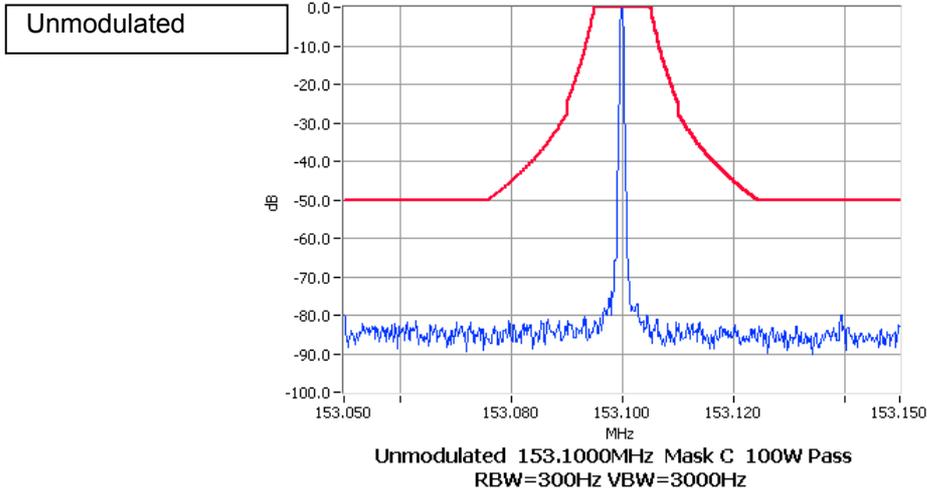
153.1 MHz

B2 Reciter

Tx Power: 100 W

Channel Spacing: 25 kHz

Mask: C



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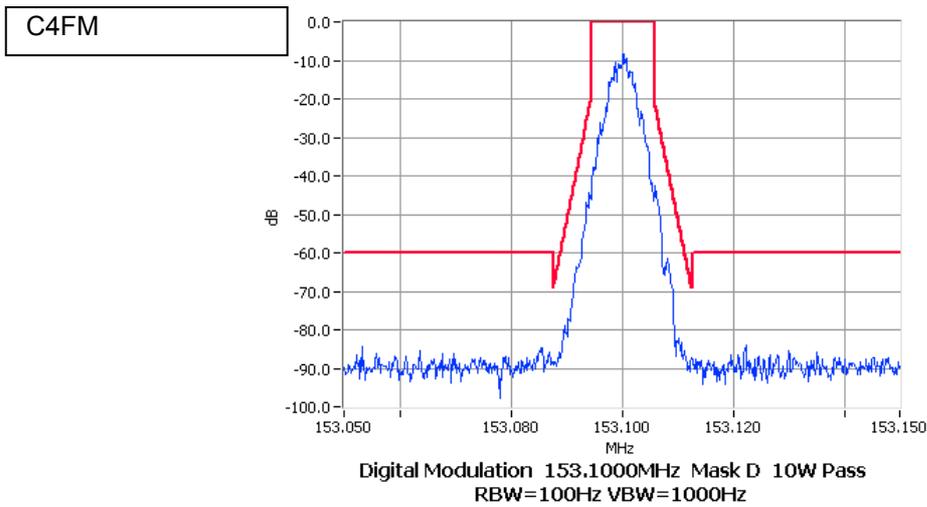
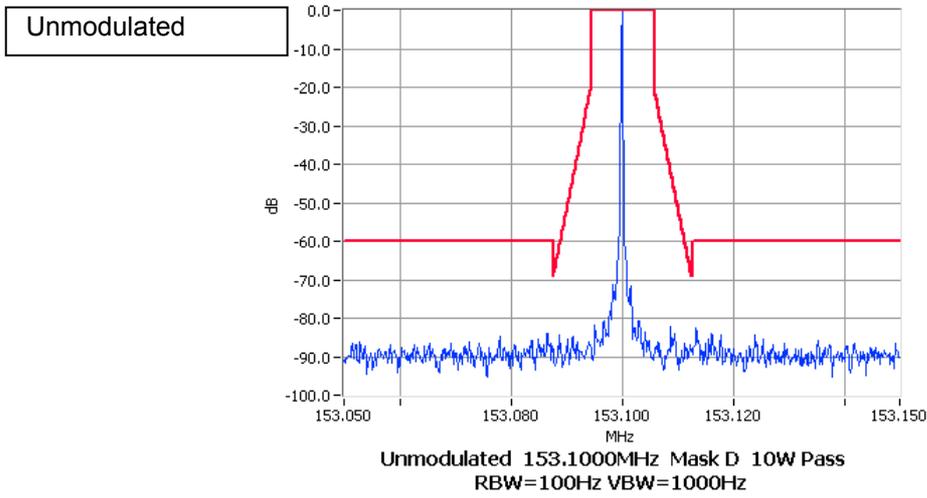
153.1 MHz

B2 Reciter

Tx Power: 10 W

Channel Spacing: 12.5 kHz

Mask: D



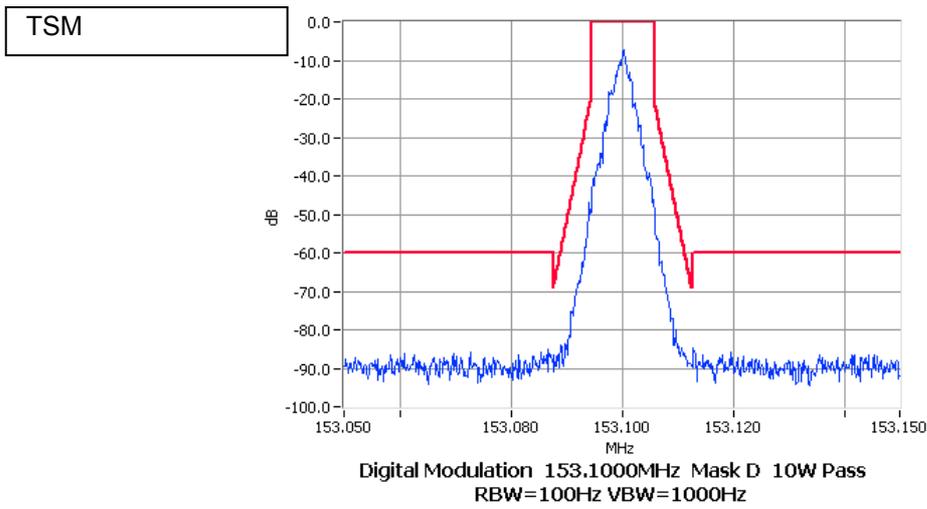
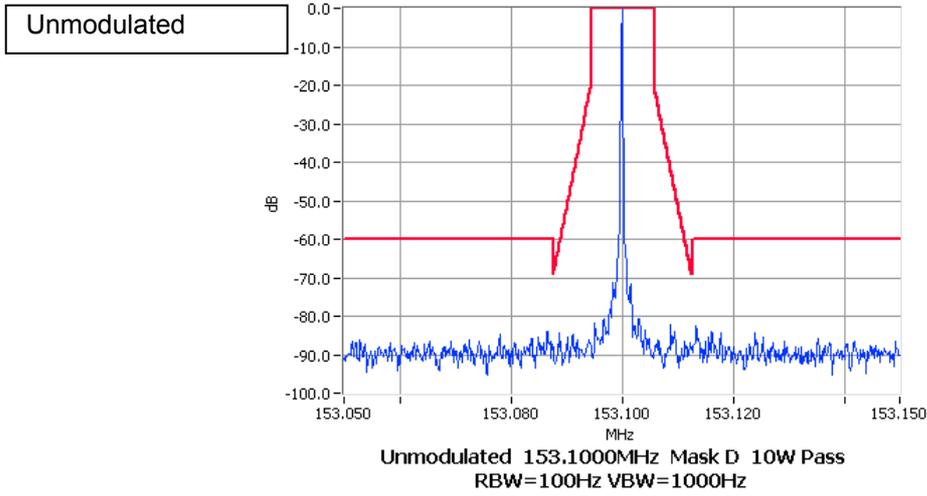
153.1 MHz

B2 Reciter

Tx Power: 10 W

Channel Spacing: 12.5 kHz

Mask: D



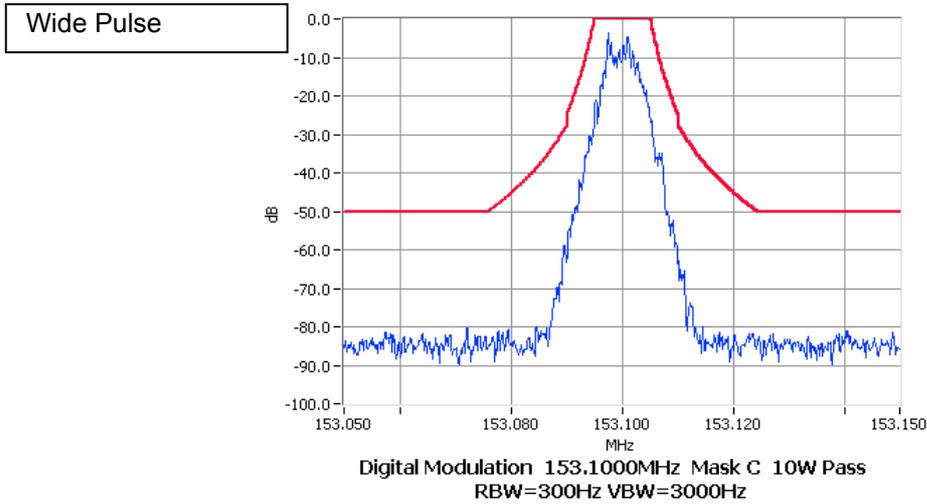
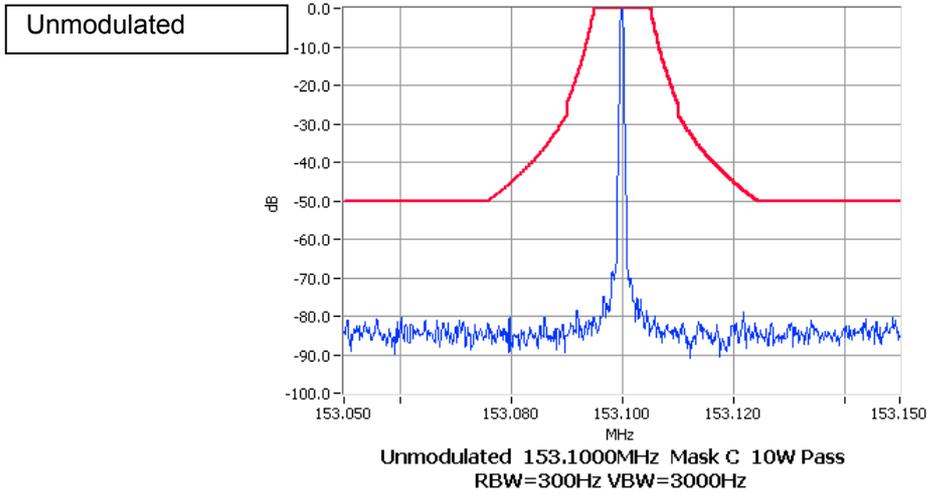
153.1 MHz

B2 Reciter

Tx Power: 10 W

Channel Spacing: 25 kHz

Mask: C



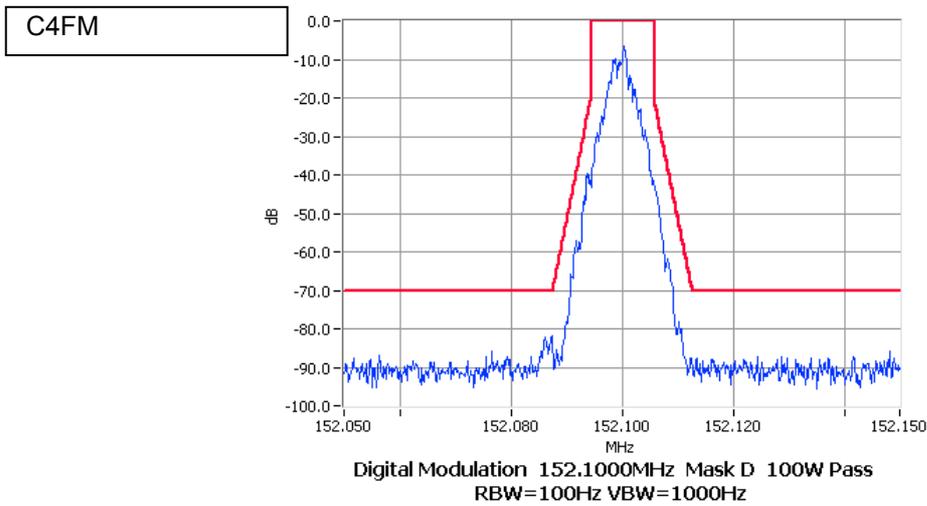
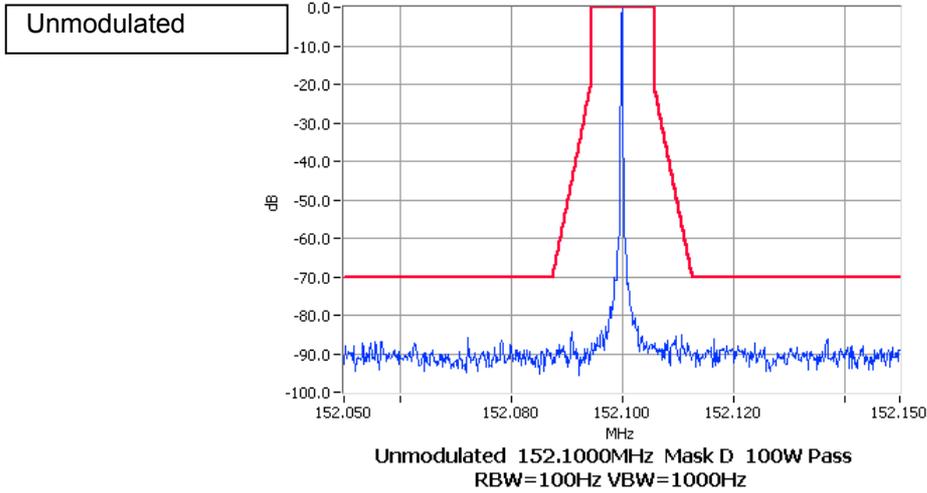
152.1 MHz

B3 Reciter

Tx Power: 100 W

Channel Spacing: 12.5 kHz

Mask: D



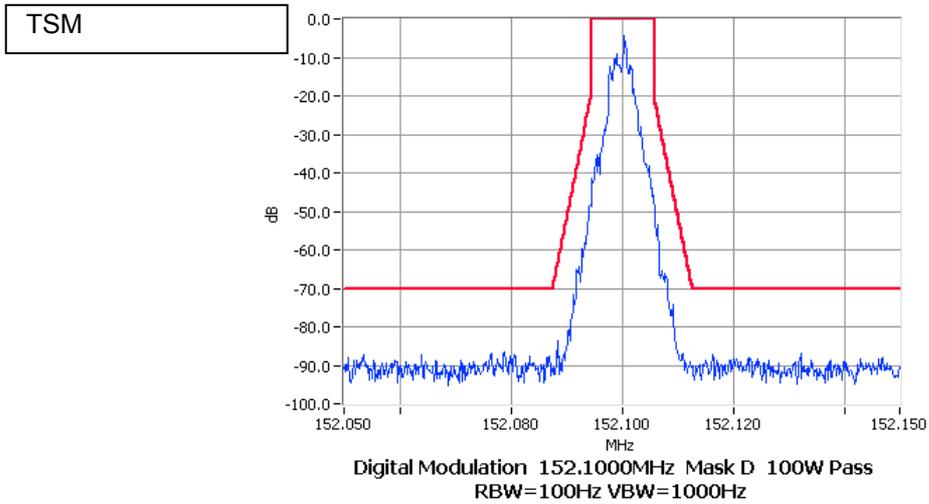
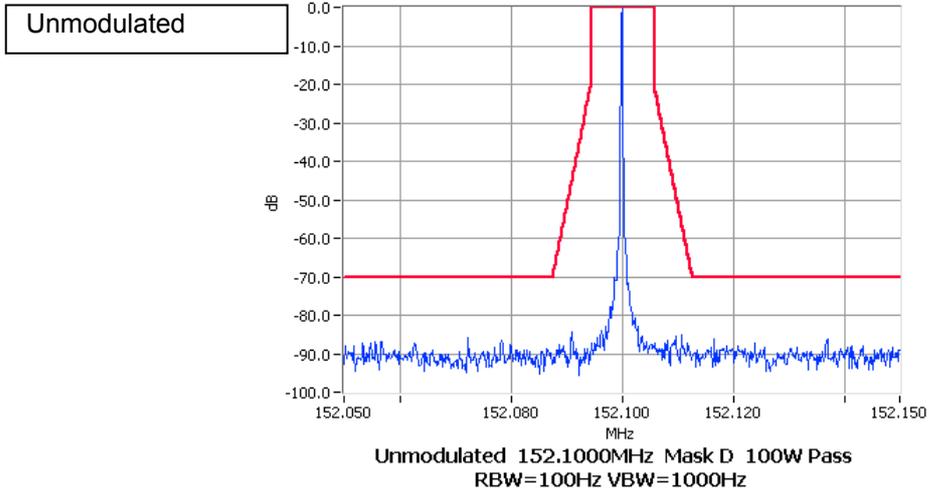
152.1 MHz

B3 Reciter

Tx Power: 100 W

Channel Spacing: 12.5 kHz

Mask: D



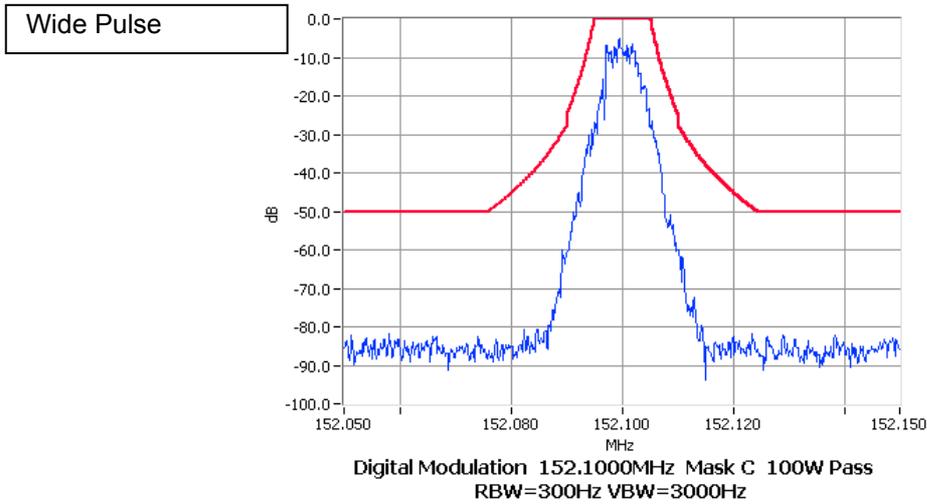
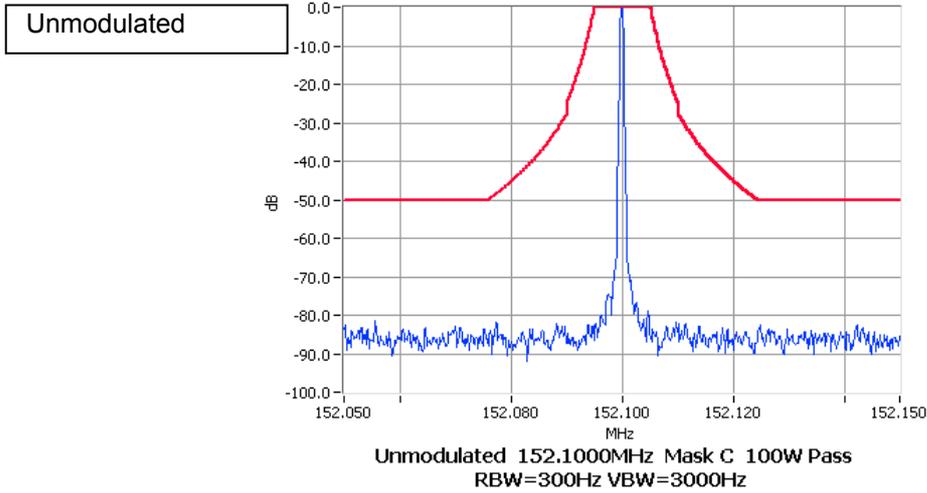
152.1 MHz

B3 Reciter

Tx Power: 100 W

Channel Spacing: 25 kHz

Mask: C



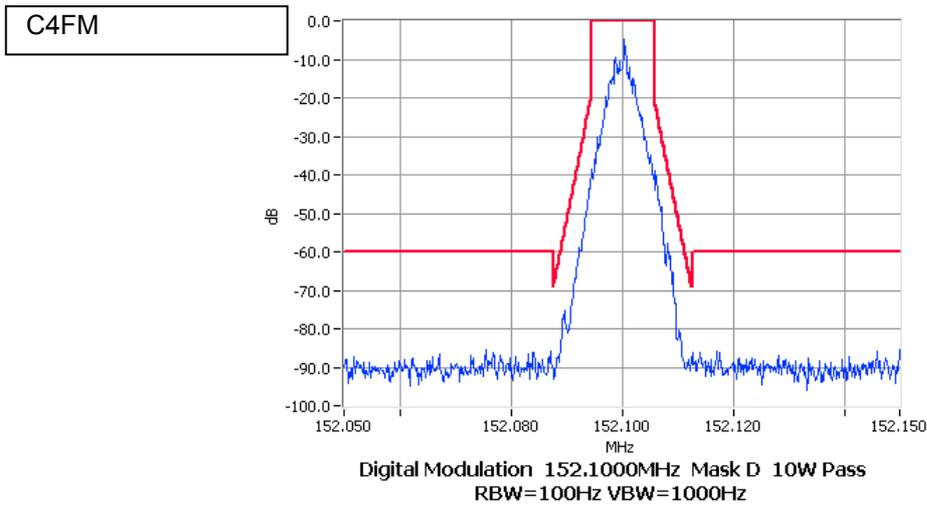
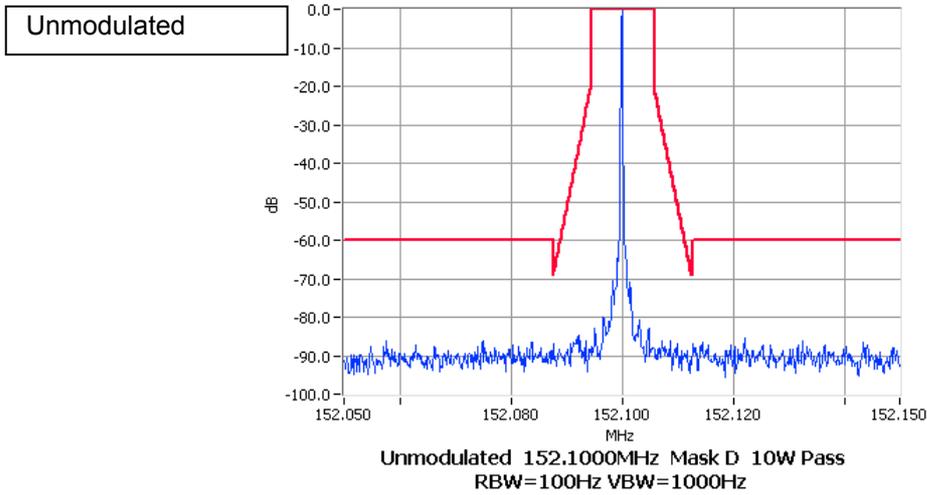
152.1 MHz

B3 Reciter

Tx Power: 10 W

Channel Spacing: 12.5 kHz

Mask: D



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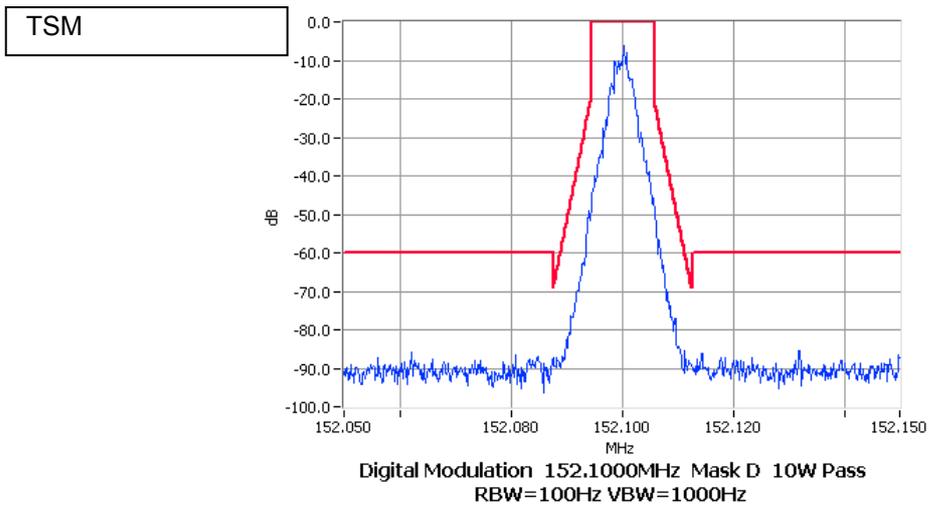
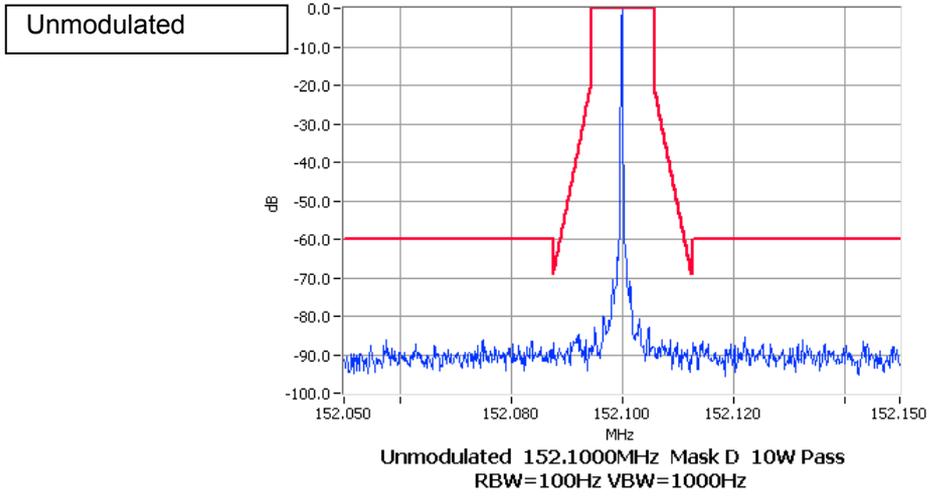
152.1 MHz

B3 Reciter

Tx Power: 10 W

Channel Spacing: 12.5 kHz

Mask: D



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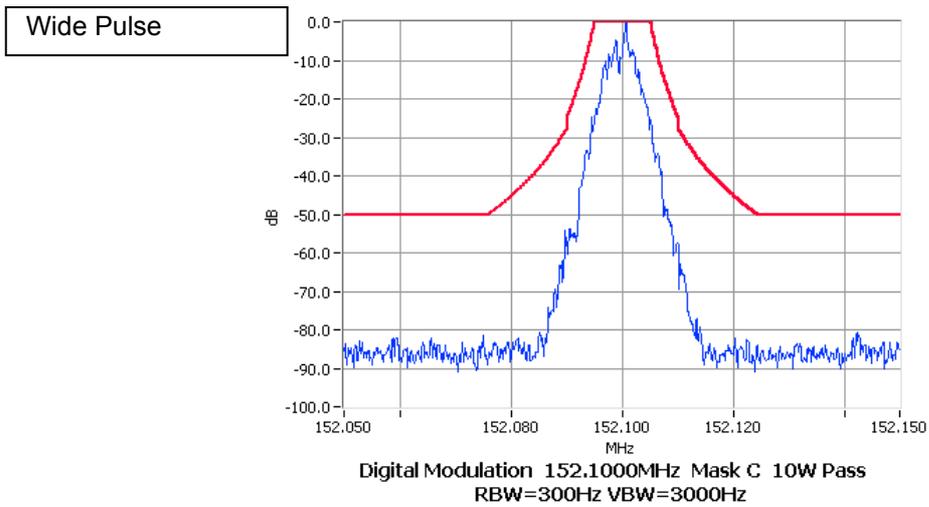
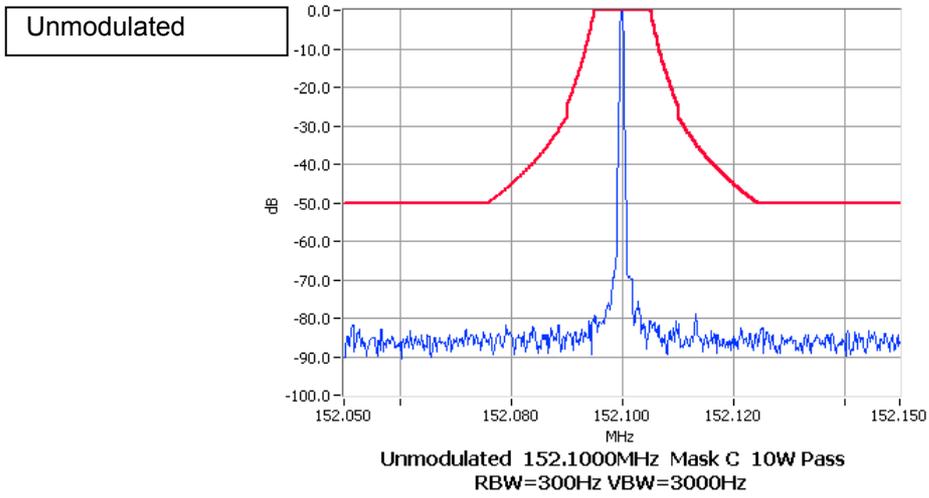
152.1 MHz

B3 Reciter

Tx Power: 10 W

Channel Spacing: 25 kHz

Mask: C



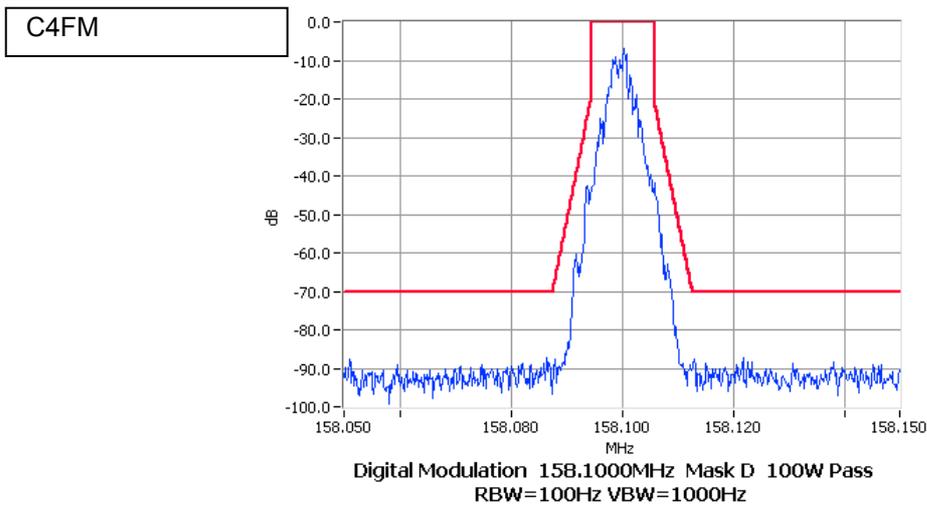
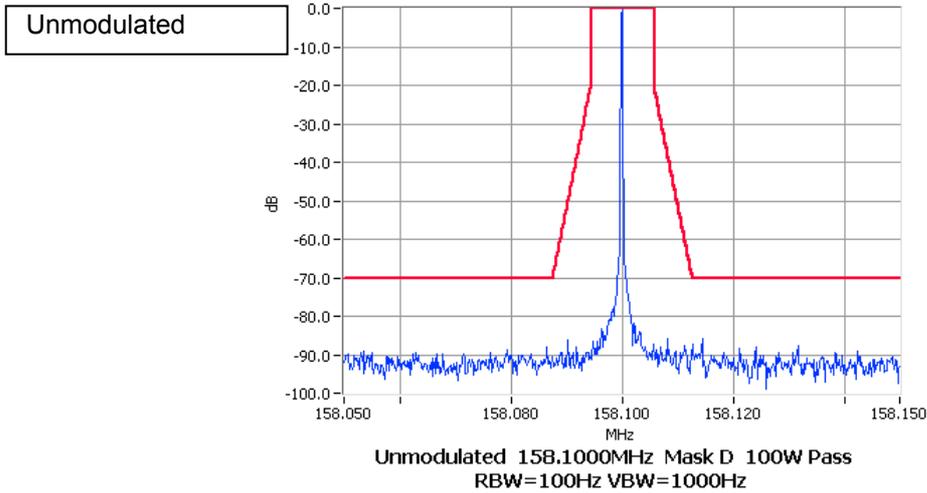
158.1 MHz

B3 Reciter

Tx Power: 100 W

Channel Spacing: 12.5 kHz

Mask: D



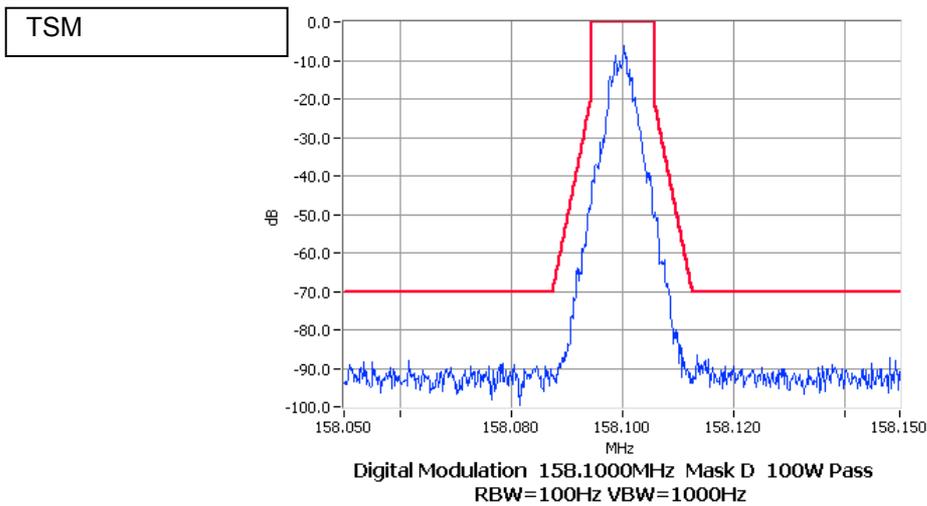
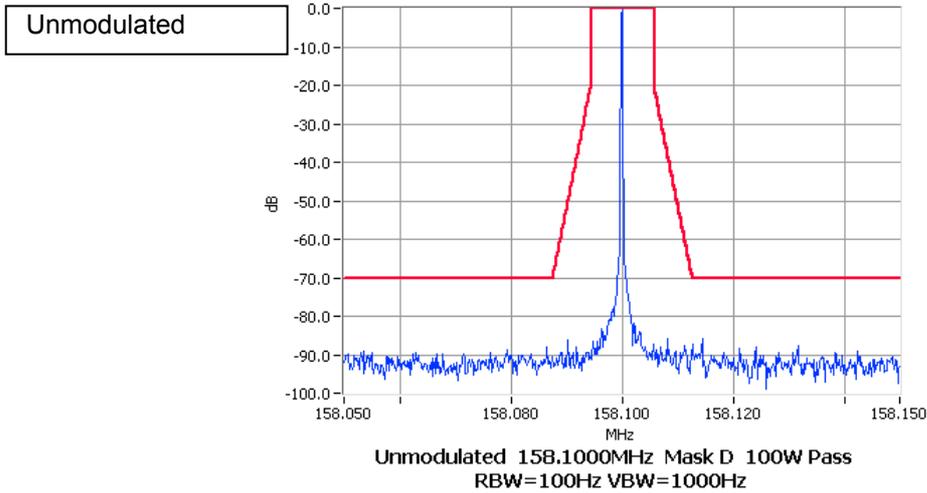
158.1 MHz

B3 Reciter

Tx Power: 100 W

Channel Spacing: 12.5 kHz

Mask: D



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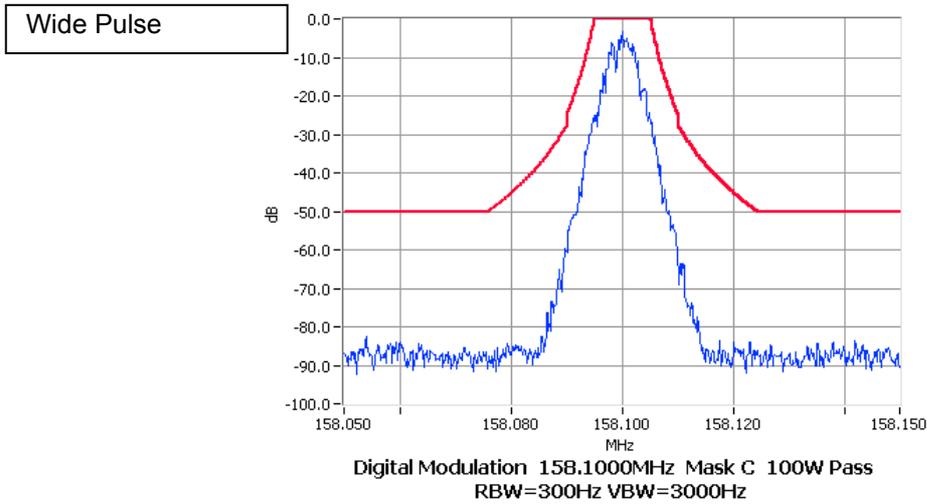
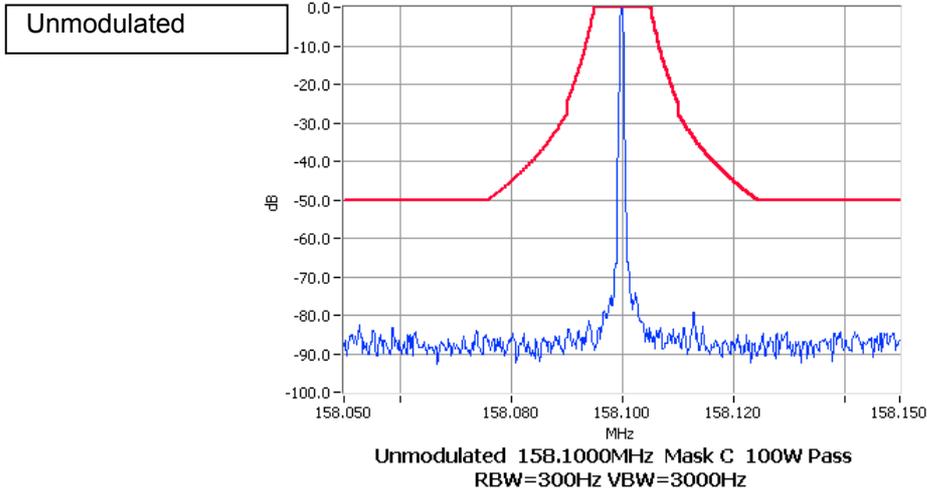
158.1 MHz

B3 Reciter

Tx Power: 100 W

Channel Spacing: 25 kHz

Mask: C



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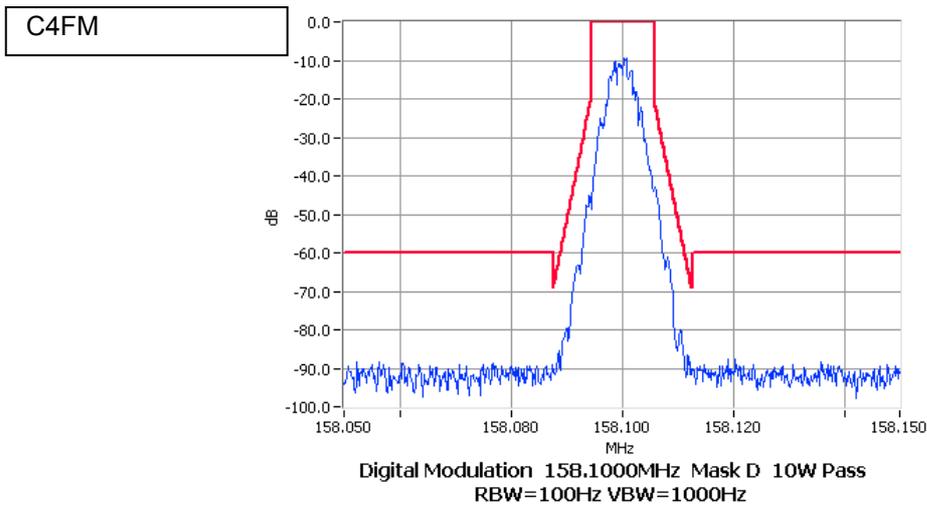
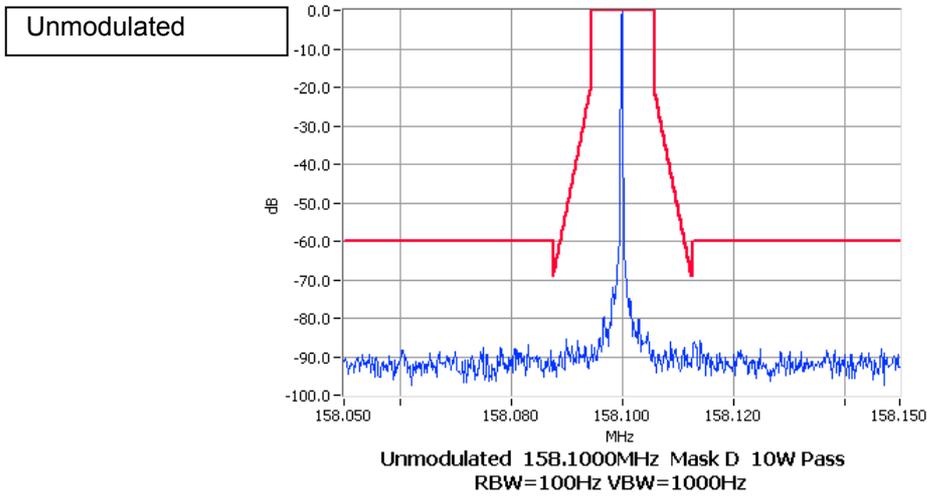
158.1 MHz

B3 Reciter

Tx Power: 10 W

Channel Spacing: 12.5 kHz

Mask: D



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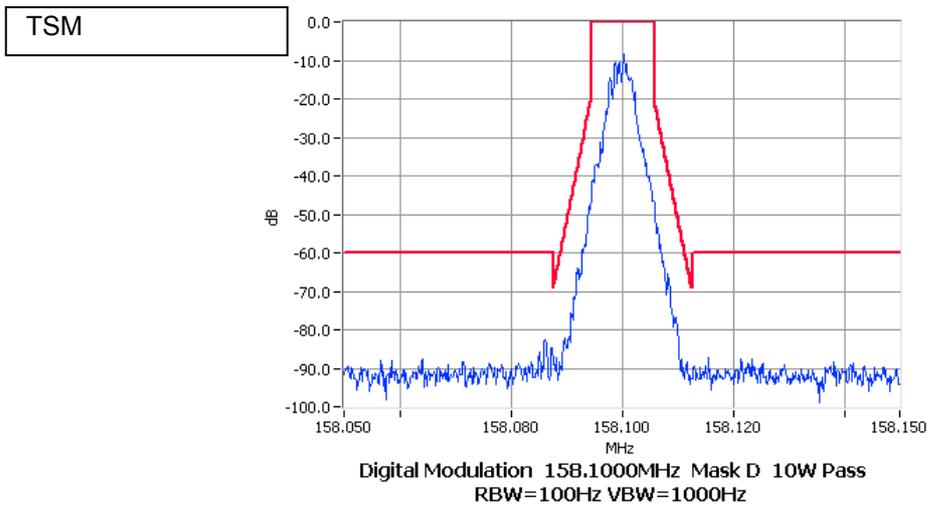
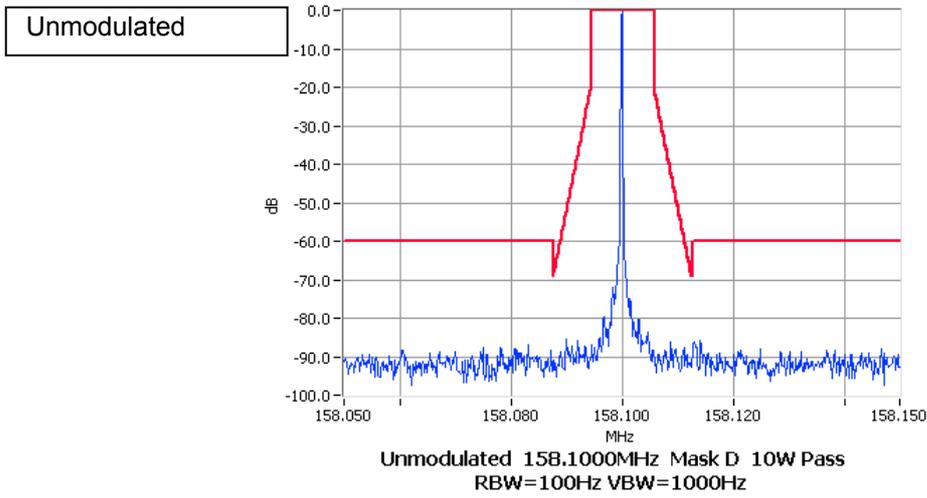
158.1 MHz

B3 Reciter

Tx Power: 10 W

Channel Spacing: 12.5 kHz

Mask: D



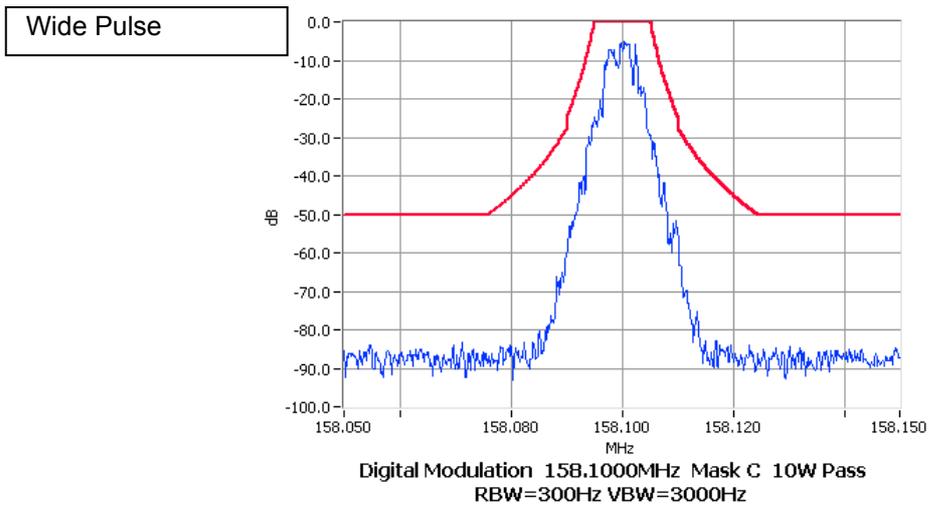
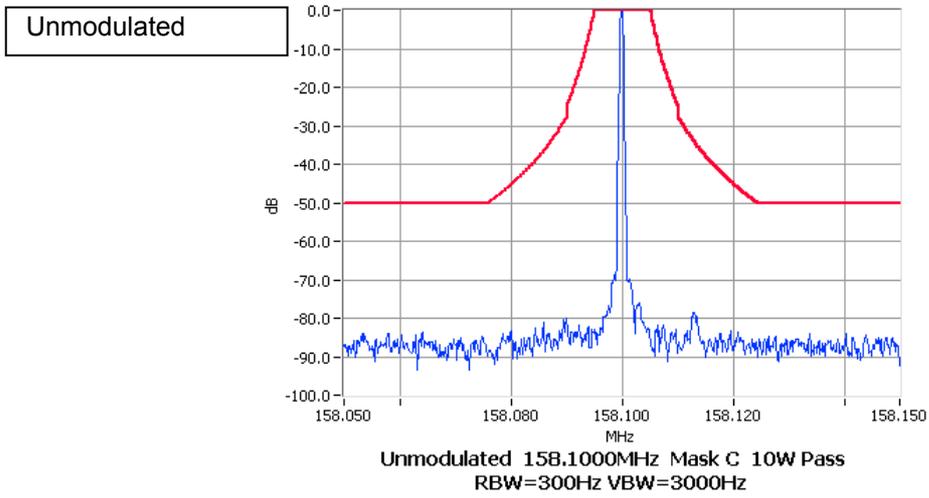
158.1 MHz

B3 Reciter

Tx Power: 10 W

Channel Spacing: 25 kHz

Mask: C



TEST EQUIPMENT USED

No#	Equipment	Manufacturer	Model No	Serial No#	Tait ID	Cal Due
60	RF Attenuator 250W	Weinschel	45-30-34	JW663	E3386	31-Oct-07
62	RF Attenuator 150W	Weinschel	57-10-34	LB590	E3674	1-Nov-07
66	RF Attenuator 25W	Weinschel	33-20-33	BD5871	E3673	31-Oct-07
85	1m Coax Cable (BLUE)	Suhner	Sucoflex 104A	25004/4A	E3691	30-Oct-07
123	Spectrum Analyser	Agilent	E4445A	MY42510072	E4139	17-Jul-08

ANNEX A

TEST SETUP DETAILS

The Spectrum Analyser is connected to the EUT via a 30dB attenuator.

