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43 ERIE ST., VICTORIA, BC  
CANADA, V8V 1P8

## TEST REPORT

Name Of Test: Occupied Bandwidth FCC Rules 47CFR 2.1049 (c) (1)

Test Performed By: Steve Burfoot

Test Date: March 3, 1999

Test Conditions: Modulated by a 2.5 kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.

Test Equipment: Daniels UT-3/860 –SWC300 UHF Radio Repeater Transmitter  
Avantest R3361A Spectrum Analyzer  
Marconi Instruments 2965A Radio Test Set  
See Diagram 1 for Test Setup

Minimum Standard: 47CFR 90.210 (b). The power of any emission must be below the unmodulated carrier power (P) as follows:

- (1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.
- (2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.
- (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least  $43 + 10 \log(P)$  dB.

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Test Results Summary: See attached graphs. (Diagrams 2 - 7)

<u>Test Specification</u>	<u>Test Description</u>	<u>Test Results</u>
47CFR 90.210 (b)	Occupied Bandwidth	<b>PASS</b>

Measurement Data: See attached graphs. (Diagrams 2 - 7)

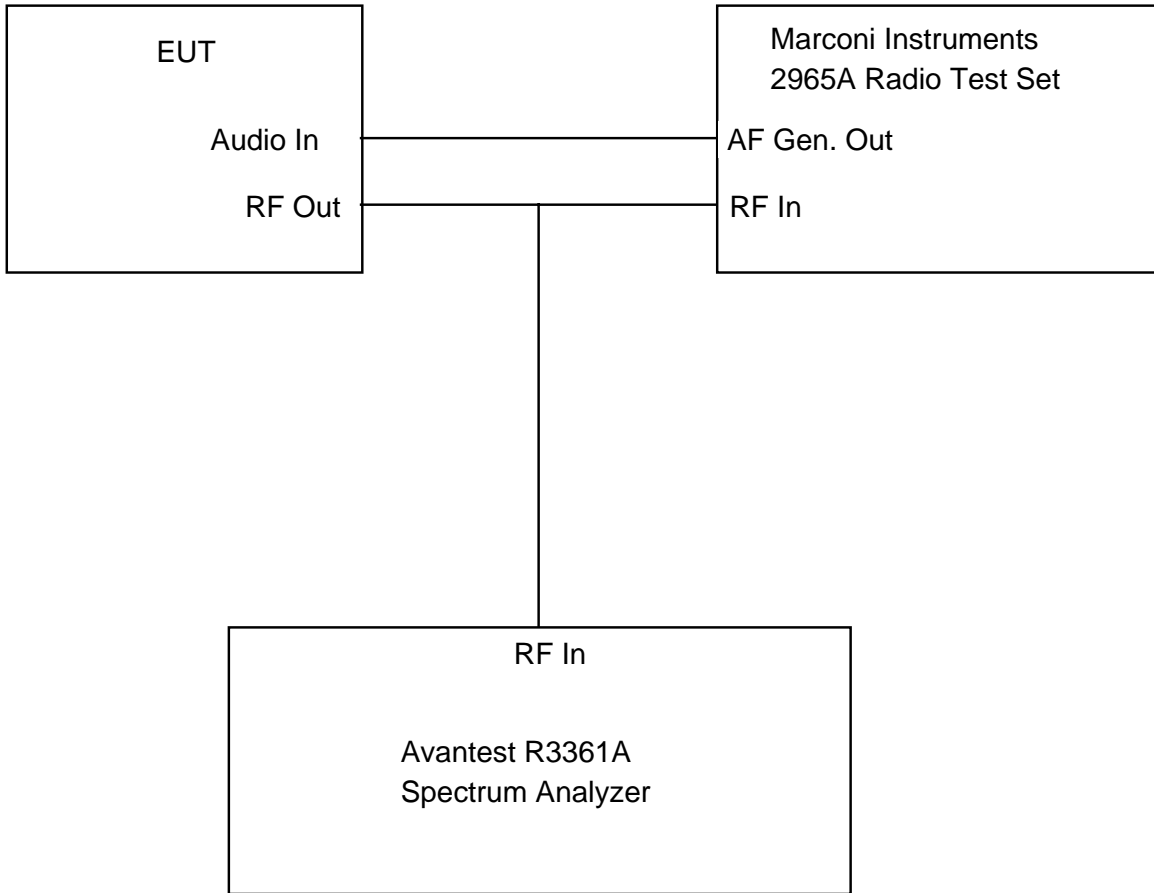
Dated this **16<sup>th</sup>** day of **MARCH**, 1999

By: **Ron Backlund**  
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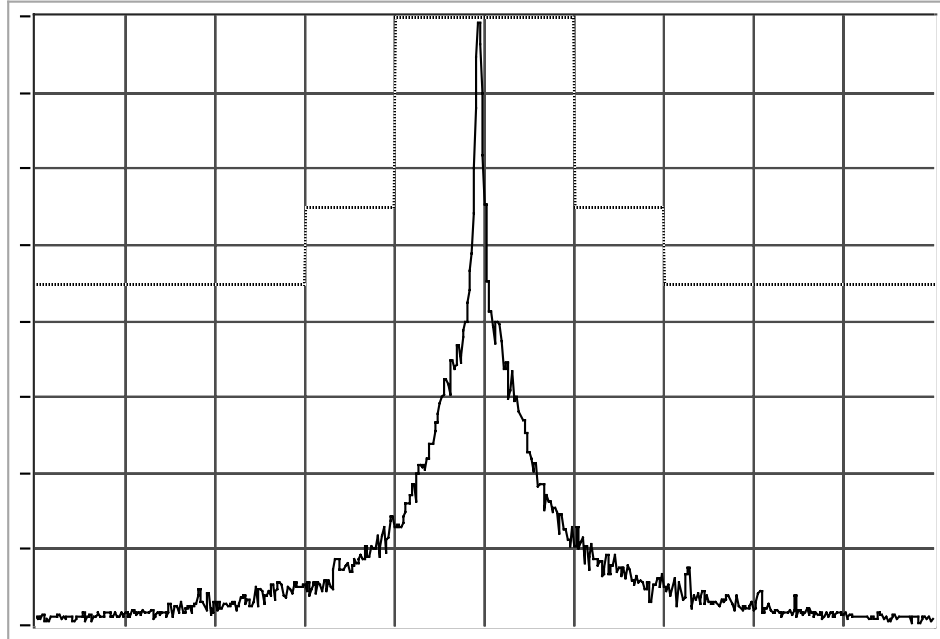
**Diagram 1 - Test Setup Block Diagram**

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Date: Wednesday, March 3,  
Time: 9:06 AM



Channel A	Channel B
TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 869.000000E+6 Hz START FREQUENCY: 868.950000E+6 Hz STOP FREQUENCY: 869.050000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm	TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 869.000000E+6 Hz START FREQUENCY: 868.950000E+6 Hz STOP FREQUENCY: 869.050000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm



Test Parameters

FCC PART 2  
OCCUPIED BANDWIDTH TEST      PARA. NO.: 2.1049 (c) (1)  
FCC ID.: H4JUT-3H  
FREQUENCY: 869.0000 MHZ  
POWER: 3W  
MODULATION: Unmodulated carrier.

Channel Selector  
CH A + B

CH A   
CH B 

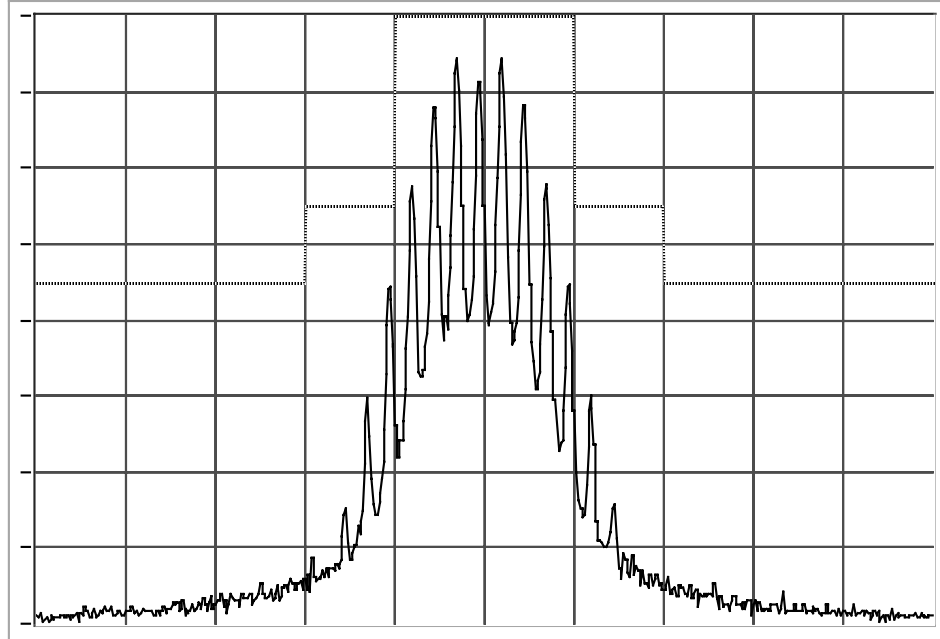
**Diagram 2 - Unmodulated Carrier at 869 MHz**

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Date: Wednesday, March 3, Time: 9:09 AM

Channel A	Channel B
TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 869.000000E+6 Hz START FREQUENCY: 868.950000E+6 Hz STOP FREQUENCY: 869.050000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm	TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 869.000000E+6 Hz START FREQUENCY: 868.950000E+6 Hz STOP FREQUENCY: 869.050000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm



Test Parameters



FCC PART 2

OCCUPIED BANDWIDTH TEST      PARA. NO.: 2.1049 (c) (1)

FCC ID.: H4JUT-3H

FREQUENCY: 869.0000 MHZ  
POWER: 3W  
MODULATION: 2.5 kHz tone at an input level 16dB greater than that necessary to produce 50 percent modulation.

Channel Selector  
CH A + B

CH A   
CH B 

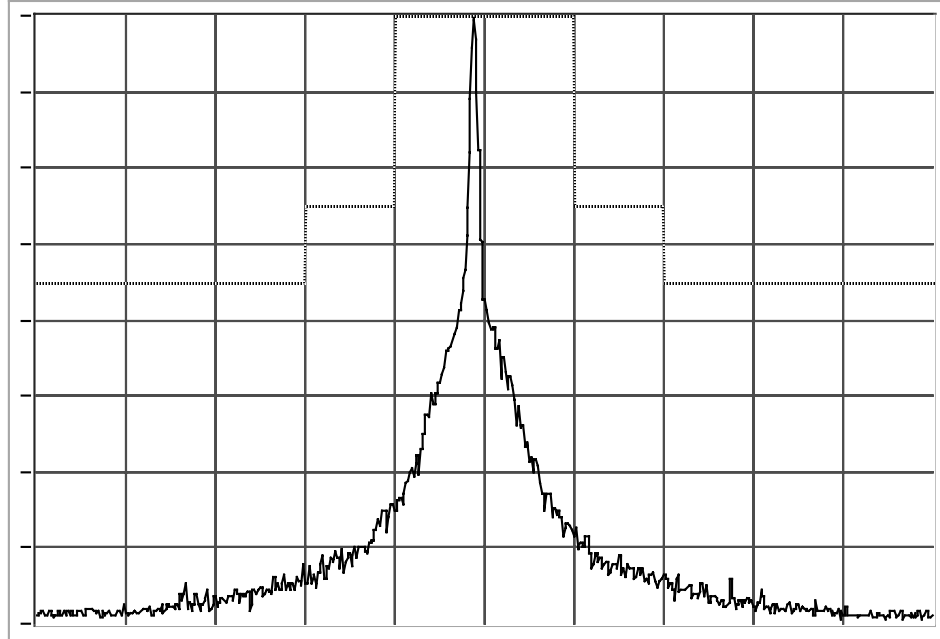
**Diagram 3 - Modulated Carrier at 869 MHz**

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Date: Wednesday, March 3, Time: 9:29 AM



Channel A	Channel B
TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 867.500000E+6 Hz START FREQUENCY: 867.450000E+6 Hz STOP FREQUENCY: 867.550000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm	TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 867.500000E+6 Hz START FREQUENCY: 867.450000E+6 Hz STOP FREQUENCY: 867.550000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm



Test Parameters

FCC PART 2  
OCCUPIED BANDWIDTH TEST      PARA. NO.: 2.1049 (c) (1)  
FCC ID.: H4JUT-3H  
FREQUENCY: 867.5000 MHZ  
POWER: 3W  
MODULATION: Unmodulated carrier.

Channel Selector  
CH A + B

CH A   
CH B 

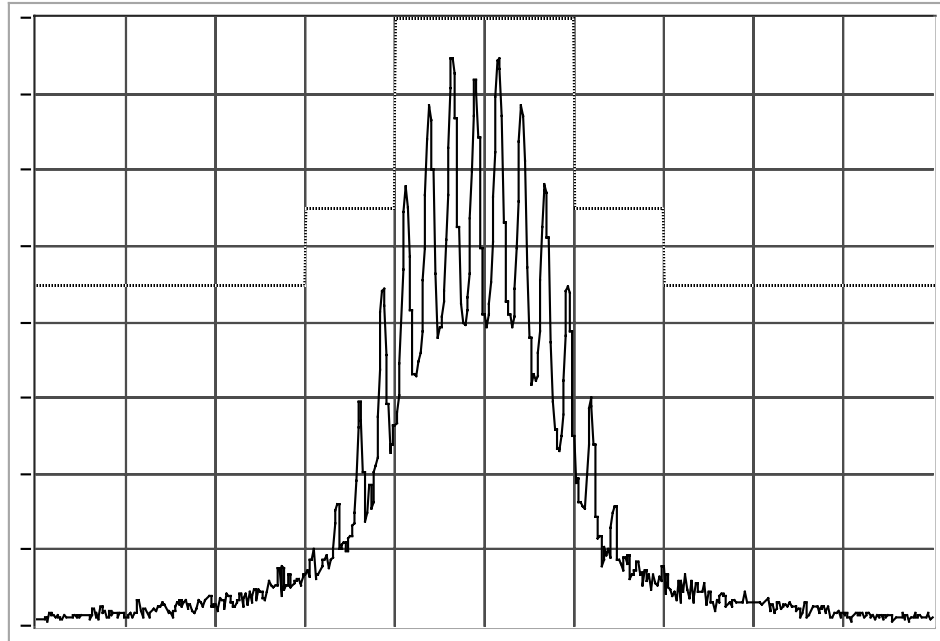
**Diagram 4 - Unmodulated Carrier at 867.5 MHz**

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Date: Wednesday, March 3, Time: 9:34 AM



Channel A	Channel B
TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 867.500000E+6 Hz START FREQUENCY: 867.450000E+6 Hz STOP FREQUENCY: 867.550000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm	TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 867.500000E+6 Hz START FREQUENCY: 867.450000E+6 Hz STOP FREQUENCY: 867.550000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm



Test Parameters

FCC PART 2  
OCCUPIED BANDWIDTH TEST      PARA. NO.: 2.1049 (c) (1)  
FCC ID.: H4JUT-3H  
FREQUENCY: 867.5000 MHZ  
POWER: 3W  
MODULATION: 2.5 kHz tone at an input level 16dB greater than that necessary to produce 50 percent modulation.

Channel Selector  
CH A + B

CH A   
CH B 

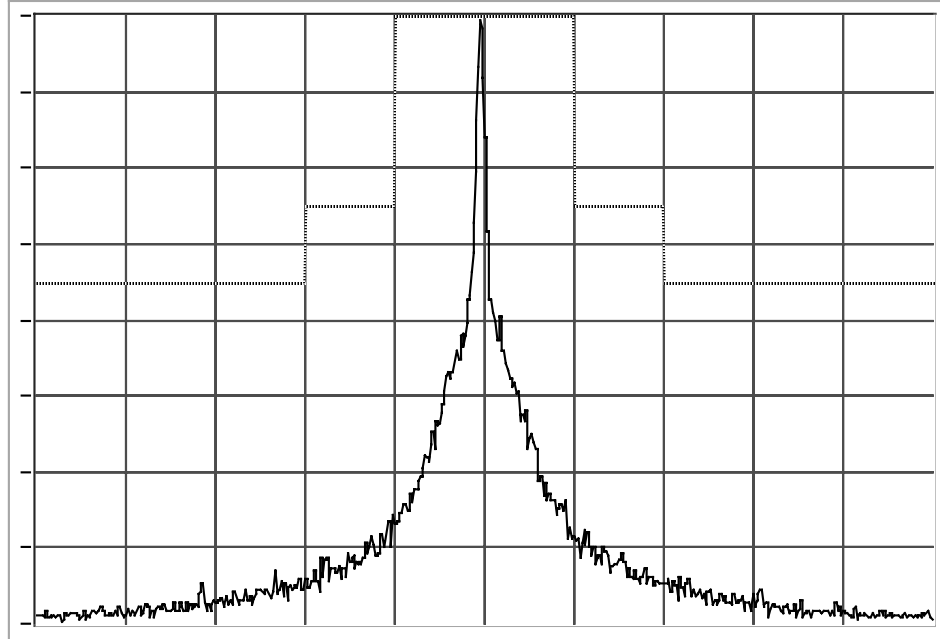
**Diagram 5 - Modulated Carrier at 867.5 MHz**

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Date: Wednesday, March 3,  
Time: 9:43 AM



Channel A	Channel B
TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 866.000000E+6 Hz START FREQUENCY: 865.950000E+6 Hz STOP FREQUENCY: 866.050000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm	TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 866.000000E+6 Hz START FREQUENCY: 865.950000E+6 Hz STOP FREQUENCY: 866.050000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm



Test Parameters

FCC PART 2  
OCCUPIED BANDWIDTH TEST      PARA. NO.: 2.1049 (c) (1)  
FCC ID.: H4JUT-3H  
FREQUENCY: 866.0000 MHZ  
POWER: 3W  
MODULATION: Unmodulated carrier.

Channel Selector  
CH A + B

CH A   
CH B 

**Diagram 6 - Unmodulated Carrier at 866 MHz**

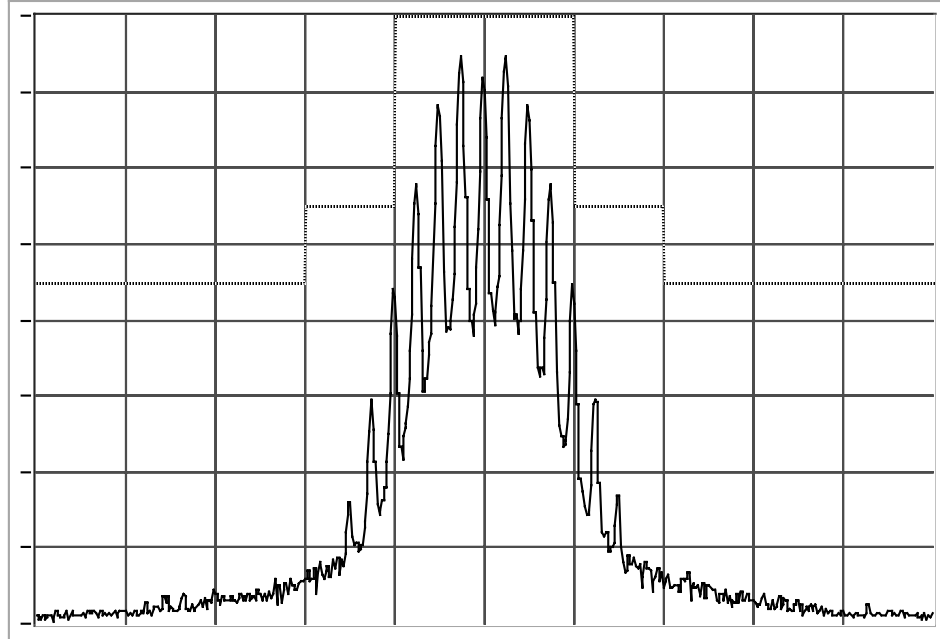


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CANADA, V8V 1P8

Date: Wednesday, March 3, Time: 9:46 AM



Channel A	Channel B
TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 866.000000E+6 Hz START FREQUENCY: 865.950000E+6 Hz STOP FREQUENCY: 866.050000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm	TRACKING GENERATOR: OFF TRACKING GENERATOR LEVEL: -10.00 dBm CENTER FREQUENCY: 866.000000E+6 Hz START FREQUENCY: 865.950000E+6 Hz STOP FREQUENCY: 866.050000E+6 Hz REFERENCE LEVEL: -1.00 dBm 10dB/DIV RESOLUTION BW: 300.000000E+0 Hz VIDEO BW: 10.000000E+3 Hz SPAN MODE: LINEAR SPAN: 100.000000E+3 Hz SWEEP SPEED: 50.000 second ATTENUATION: 10.00 dB UNIT: dBm



Test Parameters

FCC PART 2  
OCCUPIED BANDWIDTH TEST      PARA. NO.: 2.1049 (c) (1)  
FCC ID.: H4JUT-3H  
FREQUENCY: 866.0000 MHZ  
POWER: 3W  
MODULATION: 2.5 kHz tone at an input level 16dB greater than that necessary to produce 50 percent modulation.

Channel Selector  
CH A + B

CH A   
CH B 

**Diagram 7 - Modulated Carrier at 866 MHz**