

# Notch Filters

**DB4104** (30-50 MHz), **DB4140** (148-174 MHz), **DB4175** (450-470 MHz)

## Tuning Instructions

### PRODUCT DESCRIPTION

Decibel's Notch Filter is designed for use in certain radio systems where interfering signals are degrading the performance of the system. These narrow-band, band-stop filter networks provide the means to pass the station operating frequency with low insertion loss while rejecting an interfering signal which is very close to the "pass" frequency.

Maximum power handling capability of the filter is dependent upon the insertion loss at the operating frequency as shown below:

Insertion Loss	Power Rating (continuous)
1.0 dB	350 watts
2.0 dB	250 watts
3.0 dB	100 watts

### INSTALLATION

The filter can be mounted either vertically or horizontally and is usually mounted near or on the base station cabinet (the

interconnecting cable length between the filter and the station is not critical). To install, simply insert the filter in the transmission line circuit by means of the UHF tee (M-358) on the cavity (see Figure 1). Since the filter has been factory tuned, no further adjustment is necessary.

### FIELD TUNING

The Notch Filters are factory-tuned to the exact pass and reject frequencies and shipped ready for immediate installation; no further field tuning or adjustment is required. If it becomes necessary to change the frequencies of a Notch Filter, it may be returned to the factory for retuning or it can be field-tuned\* if the following equipment is available.

- A signal generator (50 ohms) capable of producing a signal at the reject frequency.
- A receiver tuned to the desired reject frequency.
- Two 50 ohm pads.

\*Note: There are different types of Notch Filters in each of the frequency bands. Each model will have basically the same frequency response across its own band. If it becomes nec-

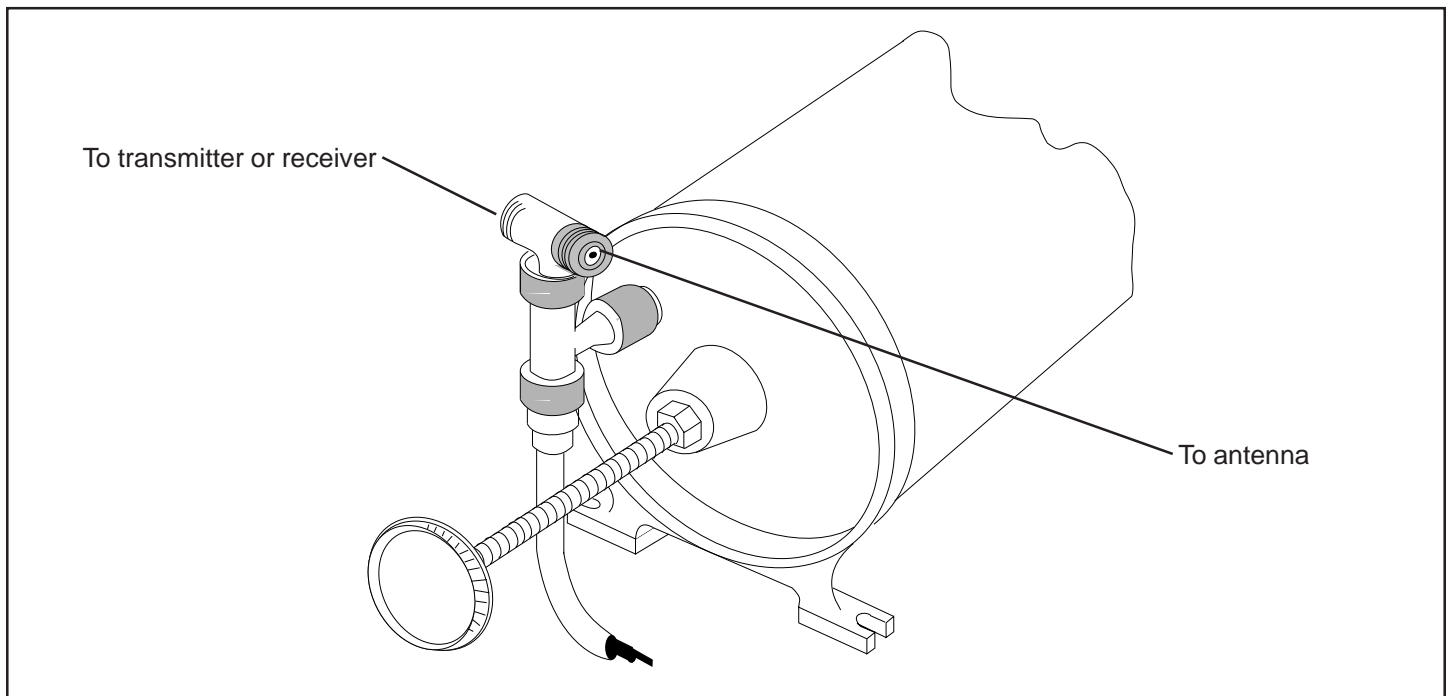


Figure 1 - Tee Connector



**DECIBEL PRODUCTS**  
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essary to change the frequency response, a different stub-harness configuration will be needed.

**FIELD TUNING PROCEDURE**

1. Connect equipment as shown in Figure 2.
2. Tune the signal generator to the desired reject frequency.
3. Tune each cavity for minimum signal into the receiver. (Clockwise on tuning screw decreases resonant frequency of cavity.)
4. Lock tuning screw nut after tuning each cavity.

**LABORATORY TUNING PROCEDURE**

1. Connect equipment as shown in Figure 3.
2. Connect the 3 dB pads to the Notch Filter terminals.
3. Tune signal generator to within 1 KHz of the reject frequency using the frequency counter.
4. Tune the local oscillator 30 MHz below the reject frequency to obtain a reading on the 30 MHz I.F. amplifier. Add or remove attenuation with the decade attenuators until I.F. amplifier reads on scale.

5. Tune each cavity for a minimum signal into the I.F. amplifier. (Clockwise on tuning screw lowers resonant frequency of cavity.)
6. Set reference reading on I.F. amplifier meter and note attenuation in decade attenuators.
7. Remove Notch Filter from setup and connect the 3 dB pads together. Add attenuation in the decade attenuators until the reference reading on I.F. amplifier is achieved. The difference in the decade attenuation readings from step 6 is the amount of attenuation through the filter at the reject frequency.
8. Lock tuning screw shaft after tuning each cavity.
9. With test equipment tuned to the pass frequency, measure insertion loss of the filter at the pass frequency.

***Warning!***  
**Installation of this product near electrical power lines is *dangerous*. For your safety, follow the installation procedures.**

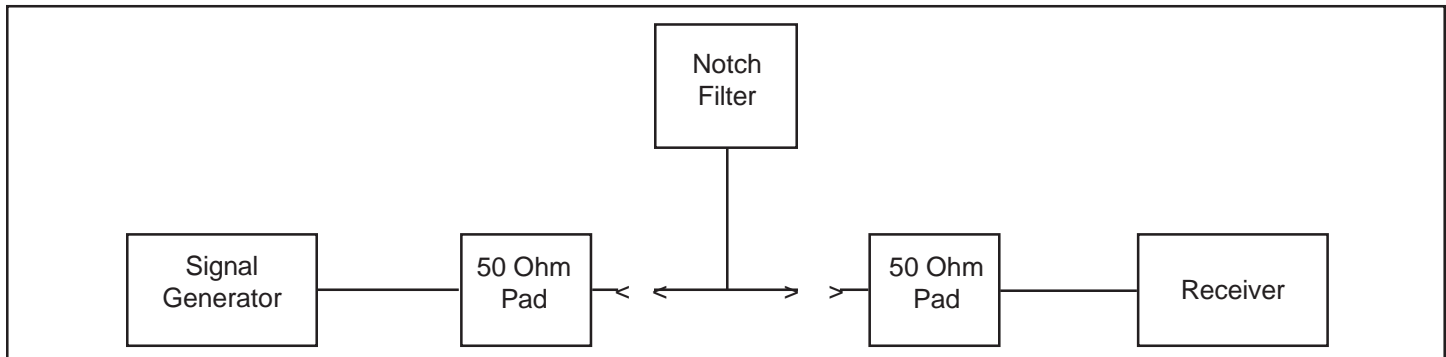


Figure 2 - Field Tuning Equipment

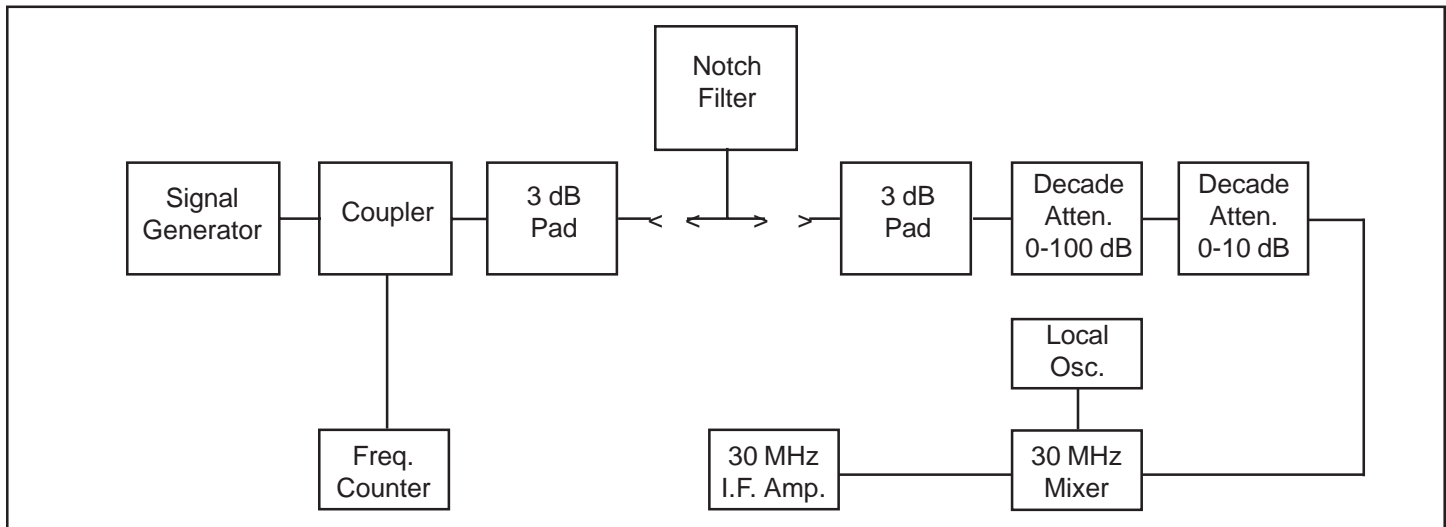


Figure 3 - Laboratory Tuning Equipment

