Band-Reject Duplexer

Model DB-4048 is designed for use with duplexer operating with close frequency spacing in the 146-174 MHz band. This duplexer includes the use of quarter-wave coaxial cables interconnected in a band-reject configuration with double isolated coaxial cable. Frequency stability over a wide temperature range is achieved by use of a threaded flange to control the length of the center conductor to each cavity. It is designed to handle transmitter power up to 100 watts. A sturdy steel cabinet is included.

The DB-4048 is a 6-cavity duplexer with three cavities in the transmitter section, three in the receiver section. It is generally suitable for use with most tube-type and many solid state type stations when the separation between transmit and receive frequencies is 50 MHz or more.

The duplexer response curves illustrate the typical isolation provided by the duplexer when operated at minimum frequency separation. Another curve is included showing isolation between frequencies with respect to frequency separation. At greater separation between transmit and receive frequencies, the rejection remains the same but the transmitter and receiver losses are less.

In any duplexer system, it is important that the duplexer and other components provide maximum isolation. A high degree of isolation between the transmitter and receiver, in order to prevent degradation of receiver performance, isolation becomes even more critical at close frequency separations. According to ARRL Handbook, transmission lines, such as two wires or solid conductor cables, may be used to interconnect the duplexer to the transmitter and receiver chassis. Flexible coaxial cable will minimize the effects of RF energy between the interconnecting cables. A suitable duplexer interconnecting cable kit (No. 11626) is available as an optional item.

The duplexer is factory tuned to the exact operating frequencies and stripped ready for immediate installation. No further field tuning or adjustment is normally required.

COMBINING: Under certain conditions the DB-4048 is suitable for combining two transmitters, but receivers or two simplex stations into a common antenna when the two frequencies involved are separated by 6.5 MHz or more.

**Electrical Data**

- **Frequency range**: 146-174 MHz
- **Frequency separation**: 5.5 MHz or more
- **Maximum power handled (continuous duty)**: 400 watts
- **Insertion loss transmitter to antenna at 60 MHz separation**: 12 dB
- **Insertion loss receiver to transmitter at 60 MHz separation**: 12 dB
- **Transmitter to receiver isolation at 60 MHz separation**: 30 dB
- **Receive isolation at 60 MHz separation**: 30 dB
- **Maximum VSWR (referenced to 60 ohms)**: 1.0 to 1
- **Temperature range**: -20°C to +70°C
- **Number of cavities**: 6
- **Number of cavities**: 6

**Mechanical Data**

- **Cabinet dimensions**: Height: 30" Width: 16.500" Depth: 14"
- **Connector terminations**: UHF Female/Nickelized D-shell/Dekk Brown
- **Housing weight**: 15 lbs
- **Shipping weight**: 150 lbs

**Transmit Operation**

The transmitter section of the duplexer consists of three quarter-wave cables and harnesses and is adjusted to pass the transmitted signal to the antenna with a low insertion loss. When operating the transmitter section, the receiver section must be terminated with the proper load to pass the transmitted signal to the antenna. The duplexer will be rejected.

**Receive Operation**

The receiver section of the duplexer consists of three quarter-wave cables and harnesses and is adjusted to pass the received signal from the antenna to the receiver with a low insertion loss while rejecting the transmitter section. The duplexer will be rejected.

**Operating Information**

- **DB-4048 Duplexer**: Exact frequency of the transmitter and the receiver must be specified.
- **DB-4048 WCD-828 Duplexer with 828 MHz Filter**: 100% weather resistant outdoor cabinet.