INSTRUCTION BOOK

FOR

CAT. NO. 506

DUPLEXER

(144–174 MHZ OR 220–225 MHZ)

SERIAL NO. __________
TRANSMIT __________
RECEIVE __________
DESCRIPTION

This duplexer consists of 4 505-509 pass-notch resonators arranged with two resonators in each of the two channels. It is available in both 144-174 MHz and 220-225 MHz versions. The units may be used at spacings from 600 KHz to 7 MHz in the 144 - 174 MHz frequency range, and at 1 - 5 MHz spacings in the 220-225 MHz range. A minimum isolation of 80 dB is provided in each of the two channels at 600 KHz separation at 150 MHz. Insertion loss is less than 2.0 dB under these conditions. At 220 MHz 90 dB isolation and 1.0 dB insertion loss are provided at 1.6 MHz separation. Each resonator has two adjustments. The larger central adjustment moves both the pass and notch frequencies, while the off-center smaller adjusting screw controls the pass-notch spacing. Any resonator may be adjusted to place the rejection notch on either side of the pass frequency.

TUNING INSTRUCTIONS

The units are normally supplied tuned to the desired frequencies and no readjustment should be required unless there has been a change in frequency.

The following equipment will be required to tune the duplexer:

1. A 50 ohm signal generator with variable attenuator which covers the desired transmit and receive frequencies.
2. A 50 ohm input receiver tuned to the desired transmit frequency.
3. A 50 ohm input receiver tuned to the desired receive frequency.
4. Two six dB attenuators to place in the lines to the receivers.

NOTE: Separate transmitter and receiver cables to duplexer to maintain isolation. Separation to be twelve inches minimum. The use of double shielded or solid outer jacket cable is strongly recommended.

The reject or notch frequency will maintain its spacing to the pass frequency when the pass adjustment of a cavity (the large central screw) is moved several MHz. For example, a system operating at 152 and 153 which is moved to 15¼ and 155 will require a minimum of readjustment if the pass adjustment is made first. It is therefore recommended that the pass adjustments be made first and
that the following step by step procedure be adhered to:

Locate the transmitter channel of the duplexer. Remove the cables from
the individual resonators and set them aside. The resonators are to be tuned
individually and then recabled together after tuning.

1. Connect the 2 resonators, one by one, between the generator and a
receiver tuned to the transmitter frequency and turn the large
central tuning screw for maximum transfer of signal at the
transmitter frequency.

2. Now connect the 2 resonators, one by one, between the generator and
a receiver tuned to the receiver frequency and tune the off-center
notching adjustment for minimum transfer of signal at the receiver
frequency.

NOTE: ADJUST SIGNAL GENERATOR OUTPUT TO PREVENT RECEIVER OVERLOAD
THROUGHOUT THE ADJUSTMENT PROCEDURE.

3. Repeat steps #1 and #2 on both transmitter resonators, especially
if the pass frequency has been moved more than 3 MHz or the pass-
stop spacing changed significantly.

4. Repeat step #1 in receiver channel after removing interconnecting
cables from the 2 resonators. Tune for maximum signal transfer at
the receiver frequency.

5. Repeat step #2 in the receiver channel. Tune both resonators for
minimum signal at the transmitter frequency.

6. Repeat steps #4 and #5.

7. The last adjustment to be made on any of the resonators is the notching
adjustment. For example, when repeating steps #1 and #2 they should
be repeated in that order. The same applies to repeating steps #4
and #5.

The cable harness may now be reconnected and the unit placed into
operation. All the interconnecting cables and cables to the antenna "tee" are
equal length.
ALL JUMPERS ARE 23" OF RG-214

TRANSMITTER PORT

RECEIVER PORT

MOUNTING BRACKET

ANTENNA PORT

UHF CONNECTORS

PASS ADJUSTMENT

NOTCH SPACING

SINGLE CAVITY