

INSTRUCTION BOOK

FOR

PD-497

DUPLEXER

(144-174MHz)

SERIAL No. _____

TRANSMIT _____

RECEIVE _____

CELWAVE R.F. INC.

CEL-21

MARLBORO, N.J.

PHOENIX, AZ.

REV # 1

DESCRIPTION

This duplexer consists of six PD-505 pass-notch resonators arranged with three in each of the two channels. The unit may be used at spacings from 500 KHz to 7 MHz in the 144-174 MHz frequency range. A minimum isolation of 85 dB is provided in each of the two channels at 500 KHz separation. Insertion loss is less than 1 dB under these conditions. 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 re-adjustment 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 154 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 three 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 three 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.

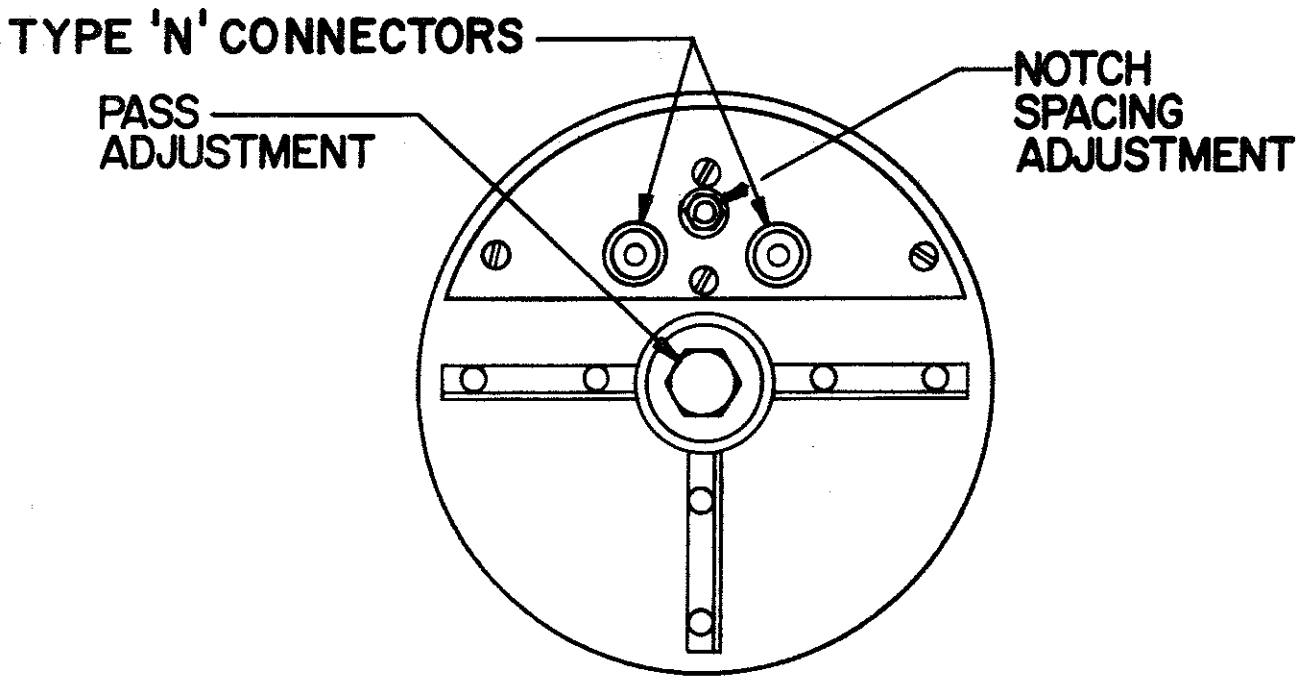
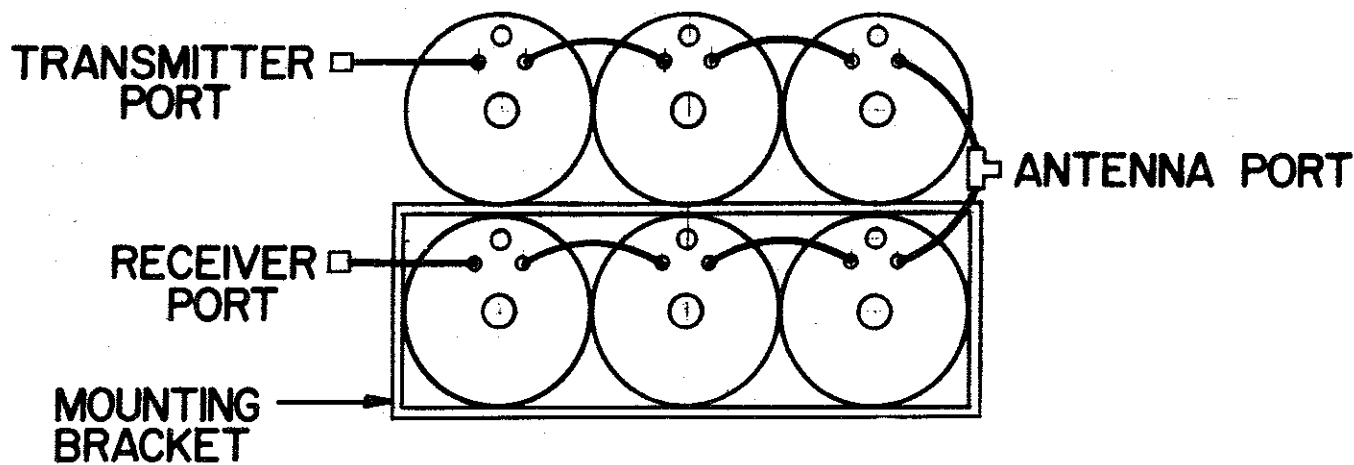
NOTE: ADJUST SIGNAL GENERATOR OUTPUT TO PREVENT RECEIVER OVERLOAD THROUGHOUT THE ADJUSTMENT PROCEDURE.

3. Repeat steps No. 1 and 2 on all three transmitter resonators, especially if the pass frequency has been moved more than 3 MHz or the pass-stop spacing changed significantly.
4. Repeat step No. 1 in receiver channel after removing interconnecting cables from the three resonators. Tune for maximum signal transfer at the receiver frequency.
5. Repeat step No. 2 in the receiver channel. Tune the three resonators for minimum signal at the transmitter frequency.
6. Repeat Steps No. 4 and 5.
7. The last adjustment to be made on any of the resonators is the notching adjustment. For example, when repeating steps No. 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.

FRONT VIEW OF DOUBLEXER WIRING



SINGLE CAVITY

592020 Conn - N-F-F-F TEE

Ø43.163 Ø23

Cable Assy Co.

NGM.

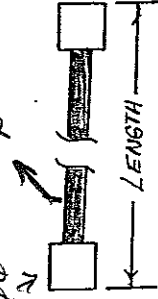
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RG214

CELWAVE

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6-29-95



CABLE LENGTH by PRODUCT (RG-214 COAX)

JAM

PRODUCTS-----	497		506		526		696		896		506-0		696 RELM	
	CAV	ANT	CAV	ANT	CAV	ANT	CAV	ANT	CAV	ANT	CAV	ANT	CAV	ANT
124-144 MHZ	9 1/2"	9 1/2"	9 1/2"	9 1/2"										
144-174 MHZ	9"	9"	9"	9"										
406-440 MHZ					12"	13"	12"	13"					12"	21"
440-470 MHZ					11 1/2"	12"	11 1/2"	12"					11 1/2"	20"
470-490 MHZ					10 1/2"	12"	10 1/2"	12"					10 1/2"	19"
490-512 MHZ					10 1/2"	11"	10 1/2"	11"						
800-860 MHZ									10 1/2"	11"				
860-960 MHZ									9"	9 1/2"				
66-88 MHZ											23"	23"		