

Instruction Book

For

Catalog Number: 0185417U04-U07

Frequency: 403-440 MHz 0185417U04
440-470 MHz 0185417U05
470-490 MHz 0185417U06
490-520 MHz 0185417U07

Document Part Number: 607100342500

Word File: 607100342.DOC

Dist: Production Supervisor, Phoenix, Corvallis
QC Supervisor, Marlboro
Marketing Distribution Manager, Marlboro

Note: Production Supervisor is responsible for maintaining document control for sub distribution to test stations.

Note: Distribution Manager is responsible for updating distributor and Glendale

RADIO FREQUENCY SYSTEMS
CELWAVE Cablewave



warehouse locations with latest revisions.

Note: Only the most current revision level of this document should be retained.
The second page contains the revision level history.
Discard documents without revision level identification.

```
/* $Log: W:/document/5417u04 $  
    REV 2.0    28 November, 2001    MVK  
    ECO 01-M1-227-SF  
    UPDATED COVER SHEET, TP WAS 5417U04  
  
    Rev 1.0    26 Mar 1996 08:29:32    MIKE  
    Initial revision.  
*/
```

TUNING INSTRUCTIONS

REFERENCE:

Reference Assembly	C-101435
Cable Kit Chart	A-101427
Cable Assembly	B-42512
Outline	C-101436
Antenna Cable Harness	B-101423

EQUIPMENT:

HP8753C Network Analyzer & S Parameter Bridge
7/16" Nut Driver
7/16" Open End Wrench
5/32" x 4" Round Blade Screwdriver

DESCRIPTION

The 0185417U04-U07 duplexers similar to (Celwave 526-4,5) consists of 6 dual notch resonators, 3 allocated for lowpass and 3 for highpass. Either highpass or lowpass can be receive or transmit. There are 4 frequencies splits due to intercavity and duplexing (antenna) cable changes across the 403-520 MHz tuning range. Frequency separation is 3-10 MHz across this range.

TUNING:

A dual notch resonator is one that can be tuned to exhibit either a lowpass or a highpass response. Lowpass using the reject notch on the high side of the pass frequency. Hipass using the reject notch on the low side of the pass frequency.

Initial tuning of the duplexer should be done with the intercavity and duplexing cables removed. (Reference the outline drawing for standard transmit receive locations).

Tune each resonator for the desired pass and notch frequencies.

This is accomplished by adjusting the pass response of the resonator on frequency by means of the pass adjustment screw in the center of each resonator. Turning the screw in will decrease the frequency; turning the screw out will increase the frequency. Since the amplitude response is fairly broad, the pass frequency is usually defined by the null in the return loss response. Then adjust the notch response on frequency by means of the notch adjustment screw located on the connector plate. Turn the screw in to move the high notch towards the pass on the low notch away from the pass. Turn the screw out to move the high notch away from the pass on the low notch towards the pass. (The high notch is used to create a lowpass response, the low notch is used to create a highpass response).

After each resonator has been aligned, cable together using the proper cable lengths as defined on the cable kit chart. If frequencies straddle a band split use the higher frequency cable set.

After cabling review the duplexed lowpass and highpass responses. Adjust the pass response of either side if necessary to optimize the insertion loss or return loss using the pass adjustment screw. Readjust the notch screws as required. Tighten all lock nuts on the pass and notch screws when complete. Some finess must be used when tightening as the response may shift slightly. Counter adjusting the screw when tightening the nut is helpful.

Retuning of the duplexer may be accomplished without uncabling the unit if done with some care. To do this move the low response to its new pass frequency by adjustment of the pass tuning screws in the middle of each lowpass cavity. Then move the highpass response to its new pass frequency by adjustment of the highpass cavity pass screws. The notch will move along with the pass so as to retain, approximately, the same pass-notch spacing. Next adjust the notch screw of the lowpass cavities to position the notch on the high frequency. Then position the notch screws of the highpass cavities on the low frequency. Readjust the pass screws to optimize the pass response if necessary. Readjust the notch screws to optimize the notch response if necessary. Tighten all locking nuts after tuning.

SPECIFICATION:

TEST FREQUENCIES	U04	U05	U06	U07
LO	420 MHz	450 MHz	470 MHz	490 MHz
HI	425 MHz	455 MHz	473 MHz	493 MHz

Individual Resonator Specifications (typical per resonator)

	Insertion Loss/Isolation	
	5 MHz sep.	3 MHz sep.
403-470 MHz	.2 dB/36 dB	-----
470-520 MHz	-----	.25 dB/33 dB

Duplexer Specifications:

	Insertion Loss	Return Loss	Isolation
U04, U05	1.3 dB	17 dB	120 dB
U06, U07	1.3 dB	17 dB	100 dB

