

Figure 1. Typical 4-Cavity Duplexer

1. INTRODUCTION

These duplexers are for use with Motorola FM two-way radio communications equipment operating in the 406-520 MHz frequency range. The duplexers are 1/4-wave cavity resonators, which are temperature compensated and are tuned with an adjustable center conductor. The duplexers contain loops or probes terminated in low profile receptacle connectors with Teflon™ insulation. Tables 1 and 2 provide the performance specifications of each model duplexer. Figure 2 provides a model breakdown of these units.

These units may be used in the antenna circuit of a base or repeater station to eliminate or minimize receiver desensitization or intermodulation due to strong local signals. Similarly, they may be used to reduce transmitter noise or intermodulation products.

Table 1. Model T4084A Performance Specifications

Operating Frequency	406-470 MHz
Transmitter or Receiver Insertion Loss:	
406-430 MHz	1.0 dB
430-470 MHz	1.0 dB
RCVR Isolation at Transmit Frequency	50 dB
XMTR Noise Suppression at Receive Frequency	50 dB
Transmitter-Receiver Isolation	45 dB
Frequency Separation (Min.)	5 MHz
VSWR Maximum	2:1
Maximum Power Input	250 W
Temperature Range	-30°C to +60°C
Size	19" W × 5-1/2" H × 8-1/2" D
Termination	UHF Female

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Teflon is a registered trademark of DuPont

**Table 2. Models T4085A & T5002A
Performance Specifications**

Operating Frequency	406-520 MHz
Transmitter Receiver Insertion Loss:	
406-430 MHz	1.6 dB
430-470 MHz	1.4 dB
470-520 MHz	1.3 dB
RCVR Isolation at Transmit Frequency	75 dB
XMTR Noise Suppression at Receiver Frequency	75 dB
Transmitter-Receiver Isolation:	
406-470 MHz	60 dB
470-520 MHz	70 dB
Frequency Separation (Min.):	
406-470 MHz	2 MHz
470-520 MHz	3 MHz
VSWR Maximum	2:1
Maximum Power Input	250 W
Temperature Range	- 30 °C to + 60 °C
Size	19" W × 5-1/2" H × 8-1/2" D
Termination	UHF Female

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

2. FIELD INSTALLATION

Step 1. Carefully unpack the unit and check for concealed damage.

Step 2. The units are designed to mount on any standard 19-inch wide rack. Select position in rack for best location of unit, i.e., closest proximity to associated equipment inputs and outputs.

Step 3. Mount the unit in place in rack with appropriate mounting hardware. The hardware supplied is

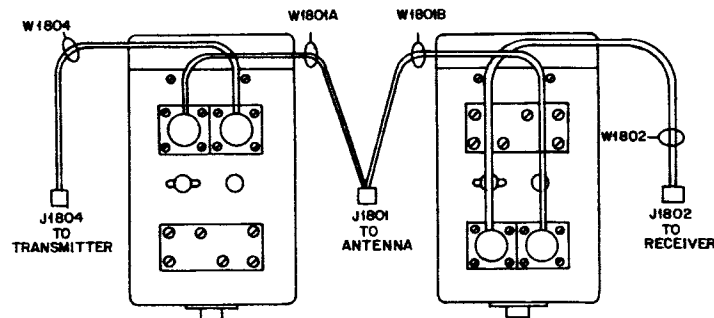
intended for use with Motorola cabinetry and equipment racks.

Step 4. Connect the duplexer to the transmitter and receiver. Refer to Figure 3 (for 2-cavity hook-up), and Figure 4 (for 4-cavity, hook-up).

Step 5. The duplexer must be connected to the transmitter and receiver with appropriate lengths of 50-ohm coaxial cable (customer supplied) to fit the individual installation.

IMPORTANT

All duplexers are factory set and **SHOULD NOT** be "fine-tuned" into the antenna systems, since isolation changes significantly with any readjustment of the center tuning shaft. Station and duplexer performance will remain within specification without duplexer readjustment, if the antenna VSWR is **LTE 2:1**. Antenna VSWR can be measured by inserting a UHF-rated, in-line wattmeter (capable of withstanding at least 120 watts) between the duplexer and the antenna, via J1801. The ratio of the forward to reverse power should be **GTE 9**. If the antenna VSWR exceeds 2:1, the antenna system must be corrected. If the duplexers must be re-tuned, due to station frequency re-assignment, follow the Recommended Tuning Procedure paragraphs provided at the end of this section.



BEPS-37151-0

DUPLXER KIT		TLE2351A	
FREQUENCY, MHz:		406-430	430-470
C A B L E I T S	W1801A p/o:	TKN8930A	TKN8931A
	W1801B p/o:	TKN8930A	TKN8931A
	W1802 p/o:	TKN8936A	
	W1804 p/o:	TKN8935A	

Figure 3. 2-Cavity Duplexer Cabling Detail

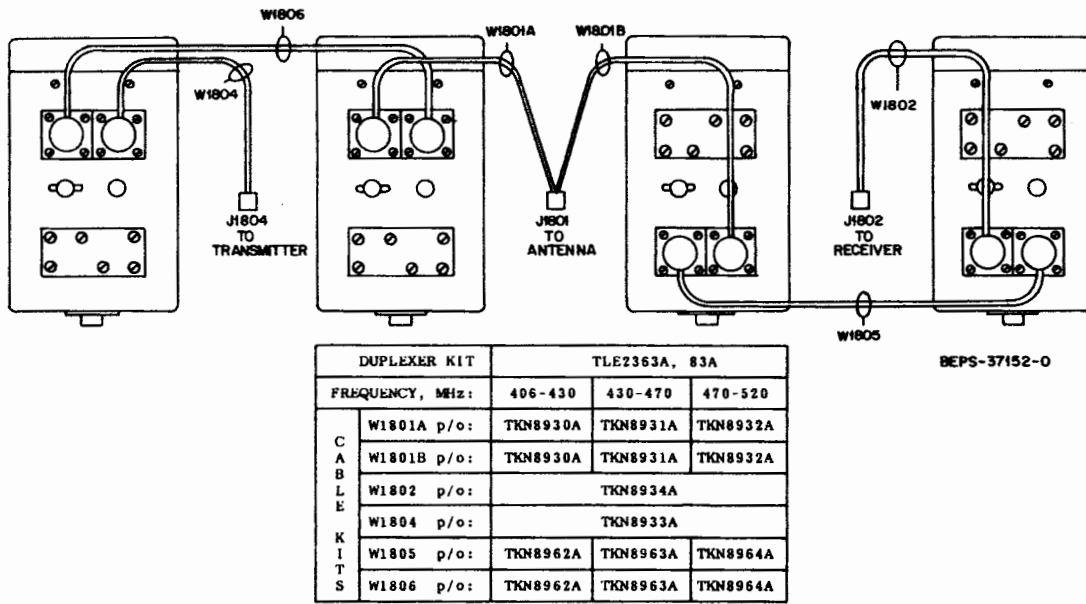


Figure 4. 4-Cavity Duplexer Cabling Detail

3. THEORY OF OPERATION

Each resonant cavity, technically a reentrant quarter-wave resonator, is a very high Q (low loss) tunable tank circuit. The dimensions of each resonator are designed for minimum loss. The cavities are tuned to the required pass frequency by an adjustment which changes the length of the center conductor. Lower frequencies have more of the center conductor inside the cavity, higher frequencies have correspondingly less. INVAR™, a material with a very low temperature coefficient of expansion (used for the tuning shaft), and special bimetallic washers are used to provide temperature compensation to minimize detuning due to ambient temperature changes.

Each resonant cavity is fitted with a specially designed pair of coupling elements (loops or probes). These loops and probes efficiently convert energy from the 50-ohm coaxial cable to the correct mode inside the resonant structure. When the cavity is not tuned to resonance, most of the energy is reflected. Only a small portion is able to excite the correct mode and reach the output element.

Pass-reject duplexers have their input and output coupling loops placed very close to each other, to take advantage of mutual inductive coupling. That is, small amount of energy is always being transferred between coupling loops because of their proximity. At one frequency, the energy transferred by mutual coupling cancels the energy transferred across by the resonant mode within the cavity. Thus, at one frequency, there is a reject notch in addition to the normal selectivity of the cavity. When coupling loops are used, the notch occurs above the pass frequency. When coupling probes are

used, the notch occurs below the pass frequency. The notch frequency is adjusted by changing the physical spacing between the coupling elements.

Cavities are used on each side of a duplexer. Those cavities tuned to pass the lower frequency have coupling loops (Figure 5) tuned to notch out the higher frequency. Those cavities tuned to pass the higher frequency have coupling probes (Figure 6) tuned to notch out the lower frequency. Odd quarter-wave coupling is used between cavities to obtain minimum pass frequency bandwidth and minimum insertion loss.

4. INSTALLATION OF COUPLING ELEMENTS

Coupling loops and probes are factory-installed. If it becomes necessary to change the coupling elements, refer to Figures 5, 6, and the mechanical detail photographs at the end of this section. Then, use one of the following procedures.

4.1 NOTCH COUPLING LOOPS PROCEDURE (Models TRN9040A or TRN9124A)

Models T4084A, T4085A, and T5002A each employ notch coupling loops. They have a fixed insertion loss of 0.5 - 0.7 dB when correctly installed. Refer to Figure 5. The notch coupling loops can be installed without removing the cavity bottom cover assembly.

Step 1. Place the adjustable loop in the right-hand (cavity viewed from the outside, tuning screw up, facing connectors) position so that the extruded and tapped hole in the loop lines up with the adjusting slot in the cavity body assembly.

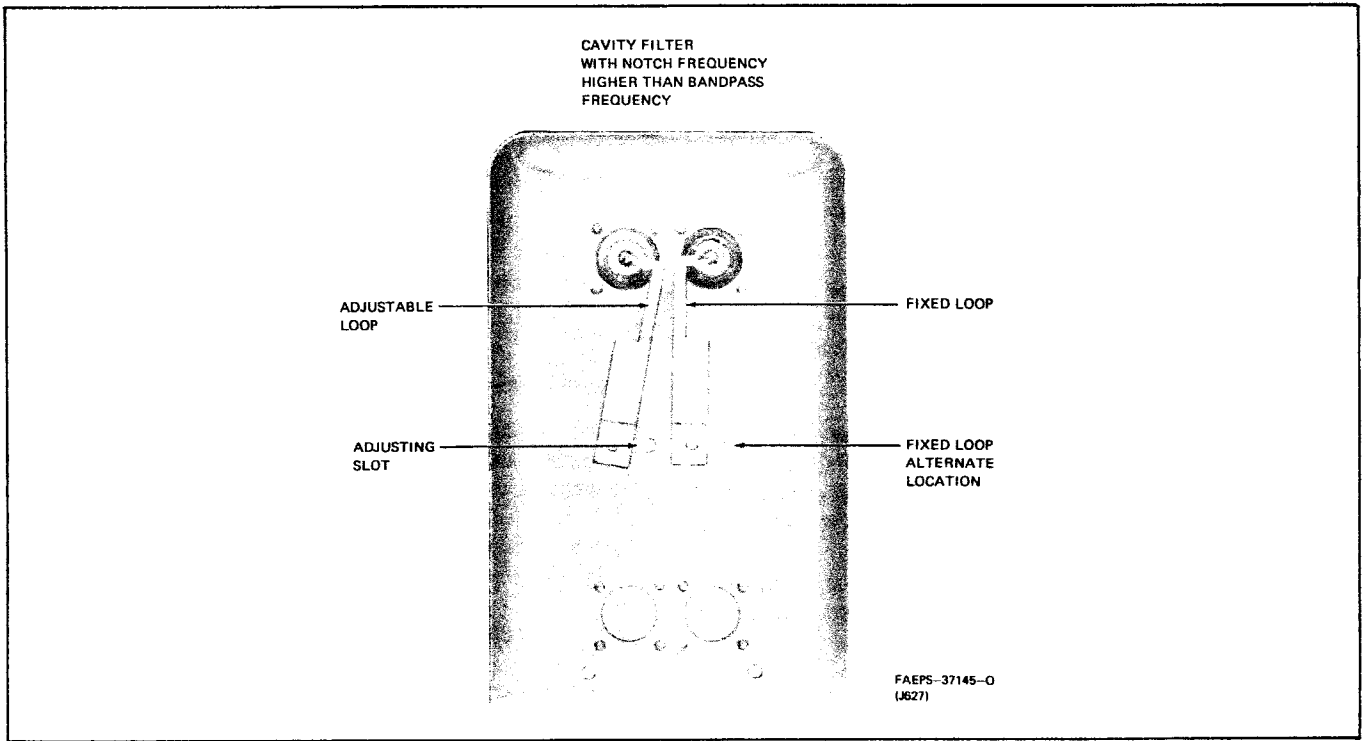


Figure 5. Notch Coupling Loops (Interior View)

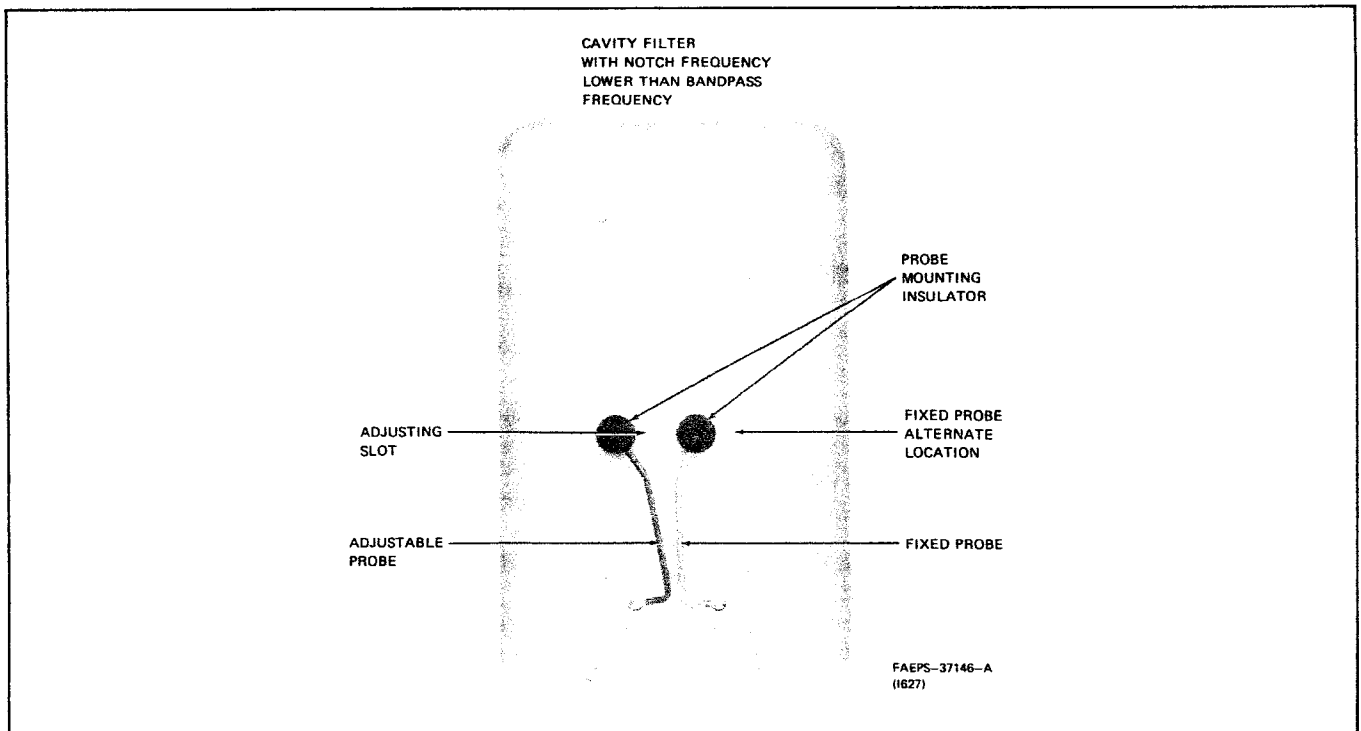


Figure 6. Notch Coupling Probes (Interior View)

Step 2. Secure the adjustable loop to the cavity body with a knurled machine screw provided, using a lockwasher and plastic washer under the screw head.

Step 3. Fasten the low profile connector to the cavity body with the self-tapping hardware provided.

Step 4. Determine the correct location for the fixed loop.

- If the required separation between the filter pass and reject frequencies is greater than or equal to 2 MHz and less than 3 MHz, use the fixed location closest to the adjusting slot, and loop kit Model TRN9124A.
- If the required separation between the filter pass and reject frequencies is greater than or equal to 3 MHz and less than 5 MHz, use the fixed location closest to the adjusting slot, and loop kit Model TRN9040A.
- If the required separation is greater than or equal to 5 MHz and less than 8 MHz, use the fixed location furthest (the alternate location) from the adjusting slot, and loop kit Model TRN9040A.

Step 5. Place the fixed loop in the left-hand position so that the extruded and tapped hole in the loop lines up with the desired fixed hole location in the cavity body.

Step 6. Secure the fixed loop to the cavity body with a knurled machine screw provided, using a lockwasher and plastic washer under the screw head.

Step 7. Fasten the low profile connector to the cavity body with the self-tapping hardware provided.

4.2 NOTCH COUPLING PROBES PROCEDURE (Model TRN9037A)

Models T4084A, T4085A, and T5002A each employ notch coupling probes. They have a fixed insertion loss of 0.5-0.7 dB when correctly installed. Refer to Figure 6.

Step 1. Remove the cavity bottom cover assembly.

Step 2. Place a mounting insulator on the adjustable probe.

Step 3. Insert the adjustable probe and the mounting insulator into the right-hand (cavity viewed from the outside, tuning screw up, facing connectors) loop position so that the copper, threaded stem of the mounting insulator extended through the adjusting slot in the cavity body.

Step 4. Secure the adjustable probe to the cavity body with a knurled nut provided, using a lock-washer and plastic washer under the nut.

Step 5. Fasten the low profile connector to the cavity body with the self-tapping hardware provided.

Step 6. Determine the correct location for the fixed probe.

- If the required separation between the filter pass and reject frequencies is greater than 2 MHz and less than or equal to 5 MHz, use the fixed location closest to the adjusting slot.
- If the required separation is greater than 5 MHz and less than 8 MHz, use the fixed location furthest (the alternate location) from the adjusting slot.

Step 7. Place the fixed probe in the left-hand position so that the mounting insulator stud extends through the desired fixed hole location in the cavity body.

Step 8. Secure the fixed probe to the cavity body with a knurled nut provided, using a lockwasher and plastic washer under the nut.

Step 9. Fasten the low profile connector to the cavity body with the self-tapping hardware provided.

Step 10. Replace the cavity bottom cover assembly.

5. RECOMMENDED TUNING PROCEDURE

All duplexers are tuned to the customer-specified frequencies prior to shipment from the factory. If system performance indicates that the duplexer is detuned, one of the following procedures may be used. Do not attempt to re-tune unless the following procedures have been both read, and it is certain that performance does not meet specifications.

The following tuning procedures assume that the entire duplexer is to be re-tuned. The terms "transmitter cavity(s)" or "receiver cavity(s)" in the following procedures refer to the cavity(s) having the same passband frequency range as the respective transmitter or receiver.

5.1 METHOD 1

5.1.1 Recommended Test Equipment

- Motorola R-2001 or R-1201 Signal Generator.
- Tunable receiver or two Motorola receivers, one tuned to each of the frequencies to be duplexed.

5.1.2 Tuning Procedure

Step 1. Move sliding screws as far apart as possible on each cavity and then tighten the screws.

Step 2. Tune the signal generator and the receiver to the duplex receive frequency.

Step 3. Connect the signal generator to the antenna port and the receiver to the receiver port.

Step 4. Tune the receiver cavity(s) for minimum insertion loss by adjusting the tuning rod screw.

Step 5. Tune the signal generator and the receiver to the duplex transmit frequency.

Step 6. Connect the receiver to the transmitter port.

Step 7. Tune the transmitter cavity(s) for minimum insertion loss by adjusting the tuning rod screw.

Step 8. Connect the receiver to the receiver port.

Step 9. Tune the receiver cavity(s) for maximum attenuation by using the Tuning The Notch procedure paragraphs provided at the end of this section.

Step 10. Tune the signal generator and the receiver to the duplex receive frequency.

Step 11. Connect the receiver to the transmitter port.

Step 12. Tune the transmitter cavity(s) for maximum attenuation by using the Tuning The Notch procedure paragraphs provided at the end of this section.

5.2 METHOD 2

5.2.1 Recommended Test Equipment

- Mixer circuit constructed as shown in Figure 7.
- Motorola R-2001 or R1201 Signal Generator.
- I-F output from R1201 Series Signal Generator equal to the duplex frequency separation or a Motorola S1056 Portable Test Set with a crystal frequency equal to the duplex frequency separation.
- Motorola S1350 Wattmeter.
- Motorola T1013 RF Load Resistor.
- Isolated Tee connector (construct this by removing the Tee port center pin of a UHF Tee connector). This provides 30 to 40 dB of isolation between the shunt path and the direct path through the Tee to protect the receiver when the transmitter is keyed.
- Transmitter and receiver from the station to be duplexed.

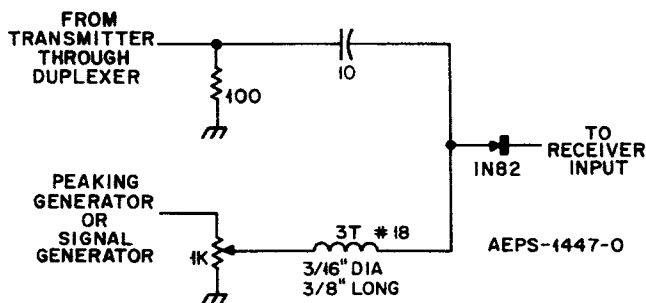


Figure 7. Mixer Circuit

5.2.2 Operation of the Mixer Circuit

Alignment of the duplexers can be simplified by using the mixer circuit shown in Figure 7. The mixer receives inputs from the transmitter and a low frequency source. The outputs from the mixer are frequencies above and below the transmitter frequency at separations equal to the output of the low frequency generator.

The receiver will respond to one of the mixer products and thus can be used indirectly to detect the transmitter frequency.

5.2.3 Tuning Procedure

Step 1. Move sliding screws as far apart as possible on each cavity and then tighten the screws.

Step 2. Connect the equipment as shown in Figure 8.

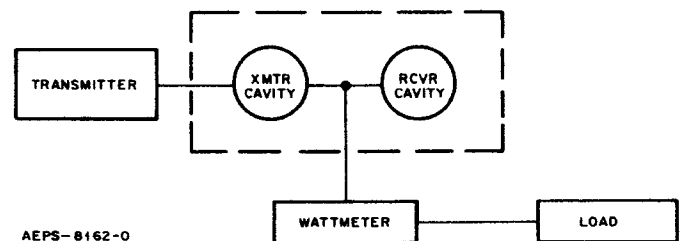


Figure 8. Method 2 Transmitter Branch Pass Test Set-Up

Step 3. Tune the transmitter cavity(s) for a maximum power reading on the wattmeter by adjusting the tuning rod screw.

Step 4. Connect the equipment as shown in Figure 9.

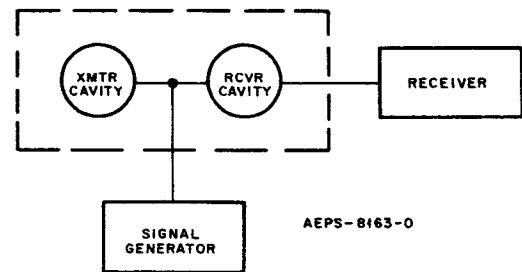


Figure 9. Method 2 Receiver Branch Pass Test Set-Up

Step 5. Tune the signal generator to the receive frequency.

Step 6. Tune the receiver cavity(s) for a minimum insertion loss (maximum signal at the receiver) by adjusting the tuning rod screw.

Step 7. Connect the equipment as shown in Figure 10.

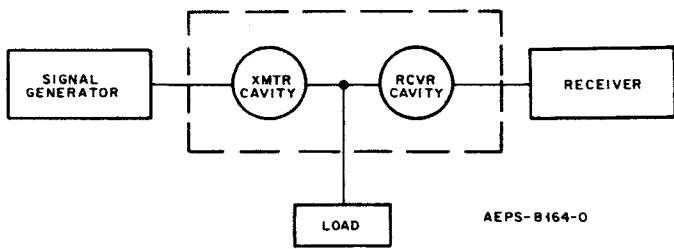


Figure 10. Method 2 Transmitter Branch Reject Test Set-Up

Step 8. Tune the transmitter cavity(s) for maximum attenuation by using the procedure Tuning The Notch.

Step 9. Connect the equipment as shown in Figure 11.

Step 10. Set the local oscillator source to the exact duplex frequency separation.

Step 11. Tune the receiver cavity(s) for maximum attenuation by using the Tuning The Notch procedure.

Step 12. Connect the duplexer to the transmitter, receiver and antenna with 50-ohm coaxial cable. Adjust the transmitter final amplifier for rated power into the duplexer.

5.3 TUNING THE NOTCH PROCEDURE

5.3.1 If the Notch (Reject) Frequency is Below the Pass Frequency (Probe Cavities):

Step 1. Loosen the knurled nut slightly.

Step 2. Slide nut until minimum signal is received and then re-tighten the nut. The probe may shift slightly when it is tightened. Therefore, it is advisable to have the nut tight enough so that it can be barely moved while adjusting it.

Step 3. Repeat for any other probe cavity.

5.3.2 If the Notch (Reject) Frequency is Above the Pass Frequency:

Step 1. Loosen the knurled screw slightly.

Step 2. Slide screw until minimum signal is received and then re-tighten the screw. The loop may shift slightly when it is tightened. Therefore, it is advisable to have the screw tight enough so that it can be barely moved while adjusting it.

Step 3. Repeat for any other loop cavities.

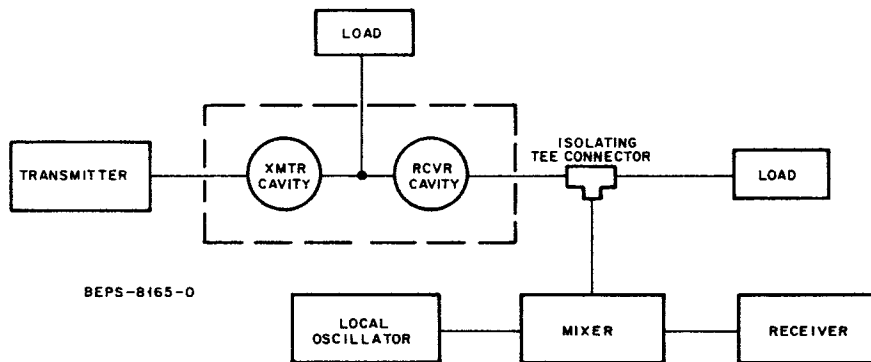


Figure 11. Method 2 Receiver Branch Reject Test Set-Up

parts list

TKN8930A Duplexer Antenna Cable (406-430 MHz) PL-8627-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
J1801	9-82442E05	connector, receptacle: female, single contact; UHF-type
W1801A	30-83278B01	cable: coaxial RG142B/U; 9.125" used
W1801B	30-83278B01	
18	2-131435	
19	7-83454N01	
21	15-83147P01	
mechanical parts		
	3-1937	SCREW, machine: 4-40 x 5/16"; 4 used
	4-114583	LOCKWASHER #4 split; 4 used

TKN8931A Duplexer Antenna Cable (430-470 MHz) PL-8628-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
J1801	9-82442E05	connector, receptacle: female, single contact; UHF-type
W1801A	30-83278B01	cable: coaxial, RG142B/U; 8.375" used
W1801B	30-83278B01	
18	2-131435	
19	7-83454N01	
21	15-83147P01	
mechanical parts		
	3-1937	SCREW, machine: 4-40 x 5/16"; 4 used
	4-114583	LOCKWASHER, #4 split; 4 used

TKN8932A Duplexer Antenna Cable (470-520 MHz) PL-8629-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
J1801	9-82442E05	connector, receptacle: female, single contact; UHF-type
W1801A	30-83278B01	cable: coaxial RG142B/U; 7.25" used
W1801B	30-83278B01	
18	2-131435	
19	7-83454N01	
21	15-83147P01	
mechanical parts		
	3-1937	SCREW, machine: 4-40 x 5/16"; 4 used
	4-114583	LOCKWASHER, #4 split; 4 used

TKN8933A 4-Cavity Duplexer Transmitter Cable PL-8630-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
J1804	9-82442E02	connector, receptacle: female, single contact; UHF-type
W1804	30-83278B01	cable: coaxial, RG142B/U; 6.75" used
18	2-131435	
19	7-83454N01	
20	15-483599	
mechanical parts		
	3-1937	SCREW, machine: 4-40 x 5/16"; 4 used
	4-114583	LOCKWASHER, #4 split; 8 used

TKN8935A 2-Cavity Duplexer Transmitter Cable PL-8631-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
J1804	9-82442E05	connector, receptacle: female, single contact; UHF-type
W1804	30-83278B01	cable: coaxial, RG142B/U; 7.75" used
18	2-131435	
19	7-83454N01	
20	14-483599	
mechanical parts		
	3-1937	SCREW, machine: 4-40 x 5/16"; 4 used
	4-114583	LOCKWASHER, #4 split; 4 used

TKN8962A 4-Cavity Duplexer Interconnect Cable (406-430 MHz) PL-8633-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
W1805	30-83278B01	cable: coaxial, RG142B/U; 10.125" used
W1806	30-83278B01	

TKN8934A 4-Cavity Duplexer Receiver Cable PL-8632-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
J1802	9-82442E02	connector, receptacle: female, single contact; UHF-type
W1802	30-83278B01	cable: coaxial, RG142B/U; 9.75" used
18	2-131435	
19	7-83454N01	
20	15-483599	
mechanical parts		
	3-1937	SCREW, machine: 4-40 x 5/16"; 4 used
	4-114583	LOCKWASHER, x 4 split; 4 used

TKN8953A 4-Cavity Duplexer Interconnect Cable (430-470 MHz) PL-8634-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
W1E35	30-83278B01	cable: coaxial, RG142B/U; 9.25" used
W1E36	30-83278B01	

TKN8954A 4-Cavity Duplexer Interconnect Cable (470-520 MHz) PL-8635-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
W1E35	30-83278B01	cable: coaxial, RG142B/U; 8.625" used
W1E36	30-83278B01	

TRN937A Coupling Probes PL-8636-A

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION	
	1-80778D87	Assembly Right Probe; includes: PROBE	
	24-84239A05		
	1-84997C01		
	4-84999C01		
	9-84000D01		
	14-84001D01		
	15-84998C01		
	42-82388C01		
	1-80778D88		Assembly Left Probe; includes: PROBE
	24-84239A05		
	1-84997C01		
	4-84999C01		
	9-84000D01		
	14-84001D01		
	15-84998C01	HOUSING, connector	
	42-82388C01		

TRN938A 4-Cavity Duplexer Mounting Hardware PL-8637-O

ITEM	MOTOROLA PART NO.	DESCRIPTION
1	3-3398	SCREW, tapping: 6-32 x 3/8"; 35 used
5	3-400356	SCREW, tapping: 4-24 x 1/4"; 56 used
6	15-84002D01	COVER, connector; 8 used
7	3-82245E04	SCREW, knurled; 4 used
8	2-84447A01	NUT, knurled; 4 used
9	15-84993C04	COVER, housing; 4 used
10	64-84253A03	PLATE, cover; 4 used
16	27-82934N01	CHASSIS, duplexer
17	42-82143C01	CLAMP, cable: 3/16" (BLK); 2 used

mechanical parts		
	3-83498N08	SCREW, tapping: M6 x 1 x 10mm; 4 used
	4-7569	WASHER, flat: 0.145 x 0.312 x .027"; 2 used
	4-9746	LOCKWASHER #8 split; 8 used
	4-9777	LOCKWASHER #4 split; 56 used
	4-10058B37	WASHER, nylon (BLK); 2 used
	4-82418B01	WASHER, insulator; 8 used
	14-84240A01	INSULATOR, probe mounting; 4 used
	33-84332B01	NAMEPLATE; 4 used

TKN8936A 2-Cavity Duplexer Receiver Cable PL-8640-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
J1802	9-82442E05	connector, receptacle: female, single contact; UHF-type
W1802	30-83278B01	cable: coaxial, RG142B/U; 10.75" used
18	2-131434	
19	7-83454N01	
20	15-483599	
mechanical parts		
	3-1937	SCREW, machine: 4-40 x 5/16"; 4 used
	4-114583	LOCKWASHER, #4 split; 4 used

RN9040A Coupling Loops (see note)

PL-8638-A

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
	1-80778D85	Assembly Loop Right; includes:
	24-84238A01	LOOP, cavity
	1-84997C01	HOUSING ASSEMBLY; includes:
	4-84999C01	WASHER, spacer
	9-84000D01	JACK, reversed end
	14-84001D01	INSERT, connector
	15-84998C01	HOUSING, connector
	42-82388C01	RING, retainer
	1-80778D86	Assembly Loop Left; includes:
	24-84238A03	LOOP, cavity
	1-84997C01	HOUSING ASSEMBLY; includes:
	4-84997C01	WASHER, spacer
	9-84000D01	JACK, reversed end
	14-84001D01	INSERT, connector
	15-84998C01	HOUSING, connector
	42-82388C01	RING, retainer

Use for: T-R Frequency Separation; GTE 3 MHz

N9041A Cavity (406-405 MHz)

PL-8639-A

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
	1-80778D95	Assembly Can Hardware; includes:
	1-80778D89	Assembly Tube miscellaneous; includes:
	41-84246A01	SPRING, contact
	47-84248A02	TUBE
	15-84244A02	HOUSING, cavity
	43-82155P01	BUSHING
	47-82154P01	SHAFT, tuning
mechanical parts		
	3-7110	SCREW, set; 8-32 x 3/16"; 3 used
	4-84250A01	WASHER, flat; 0.39 x 0.75 x 0.03; 2 used
	4-84251A01	WASHER, flat; 0.39 x 0.75 x 0.03; 2 used
	4-84994CC3	WASHER
	41-82152F01	SPRING, coil; cavity
	42-824977	RING, retainer
	47-84255A01	FLY, SEE

N5885A 2-Cavity Duplexer Mounting Hardware

PL-8641-C

ITEM	MOTOROLA PART NO.	DESCRIPTION
	3-3389	SCREW, set; 8-20 x 3/8"; 19 used
	3-400356	SCREW, set; 4-24 x 1/4"; 28 used
	15-84002D01	COIL, resonator; 6 used
	3-82245E04	SCREW, set; 12 used
	2-84447A01	WASHER, split; 4 used
	15-84993CC4	COIL, resonator; 2 used
0	64-84253A03	PLATE, cover
6	27-82934N01	WASHER, flat; 4 used
7	42-82143C01	CLAMP, plate; 3/16" (BLK); 2 used
mechanical parts		
	3-83498N03	SCREW, set; 1/5 x 1 x 10mm; 4 used
	4-7569	WASHER, split; 0.45 x 0.312 x .027"; 2 used
	4-9746	COIL, resonator; split; 4 used
	4-9777	COIL, resonator; split; 28 used
	4-10058B37	WASHER, flat (BLK); 4 used
	4-82418B01	WASHER, resonator; 4 used
	14-84240A01	ISOLATOR, probe mounting; 2 used

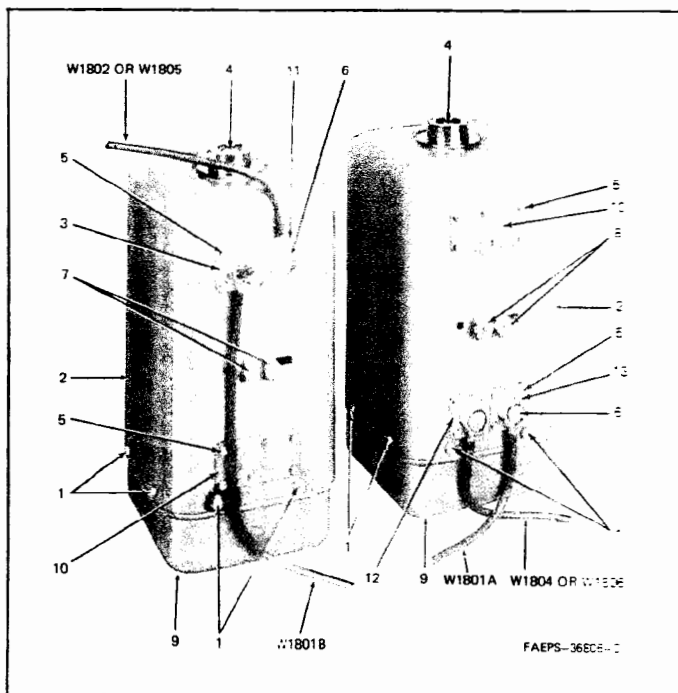
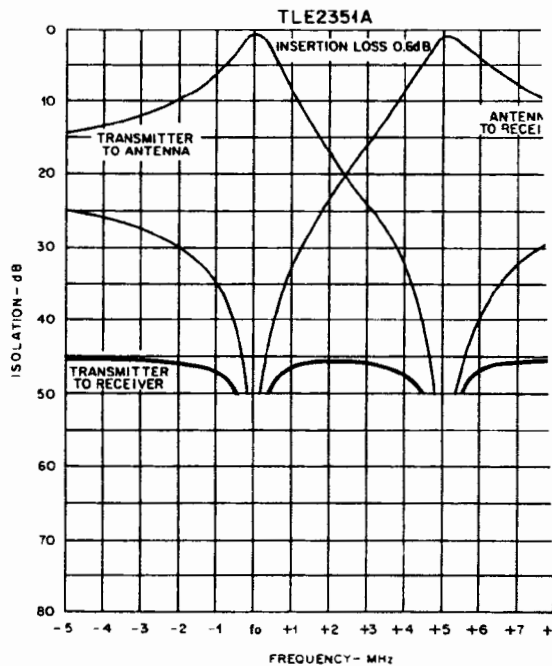
19124A Coupling Loops (see note)

PL-8667-A

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
	1-80778D85	Assembly Loop Right; includes:
	24-84238A01	LOOP, cavity
	1-84997C01	HOUSING ASSEMBLY; includes:
	4-84999C01	WASHER, spacer
	9-84000D01	JACK, reversed end
	14-84001D01	INSERT, connector
	15-84998C01	HOUSING, connector
	42-82388C01	RING, retainer
	1-80778D86	Assembly Loop Left; includes:
	24-84238A03	LOOP, cavity
	1-84997C01	HOUSING ASSEMBLY; includes:
	4-84999C01	WASHER, spacer
	9-84000D01	JACK, reversed end
	14-84001D01	INSERT, connector
	15-84998C01	HOUSING, connector
	42-82388C01	RING, retainer

Use for: 2 MHz GTE T-R Frequency Separation LT 3 MHz

PASS-REJECT DUPLEXER (2-CAVITY COMBINED LOOP & PROBE)

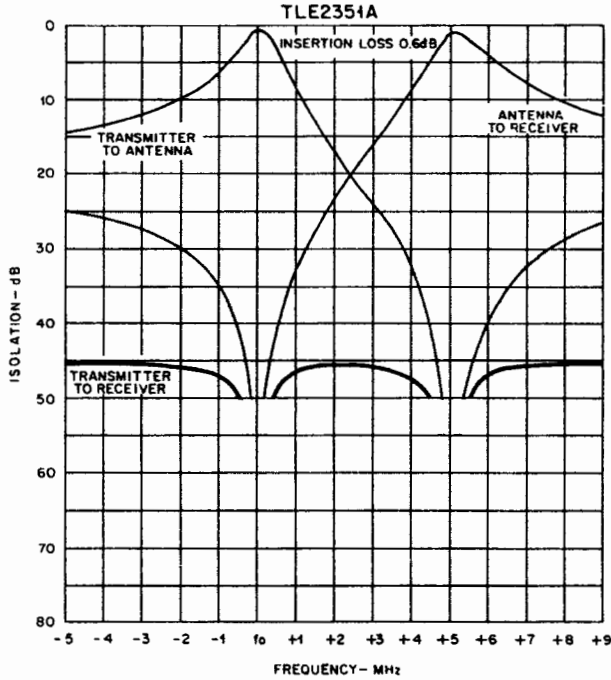


FAEPS-366DS-C

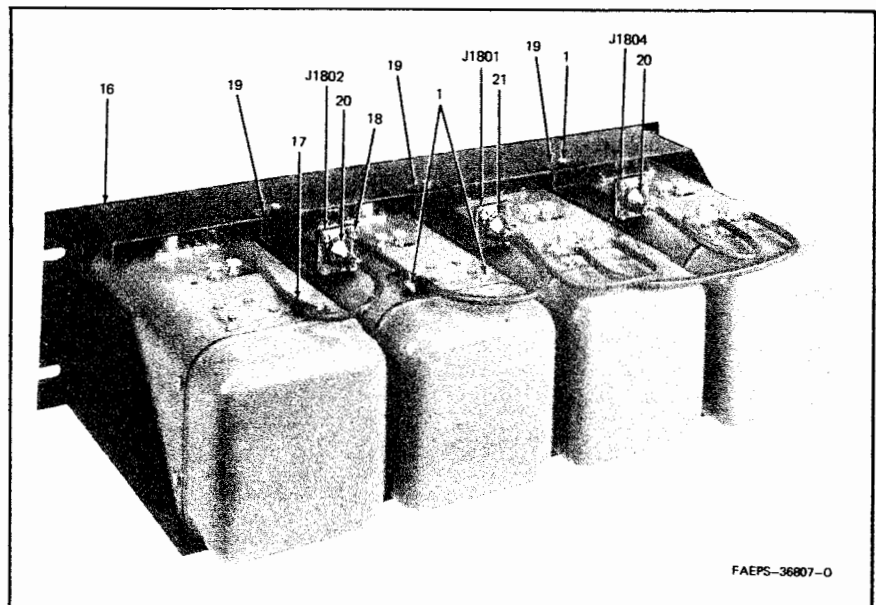
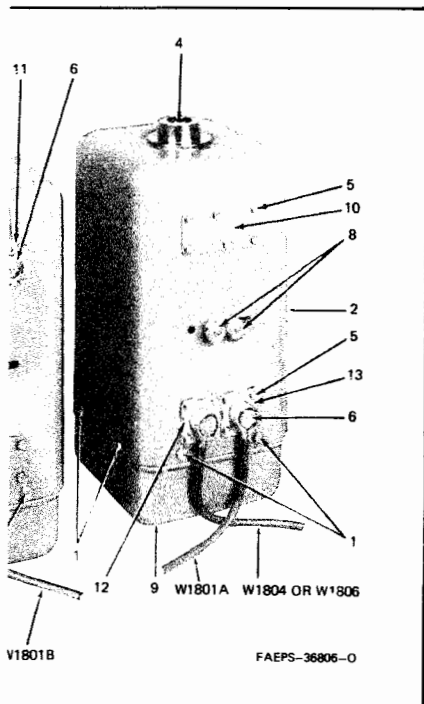
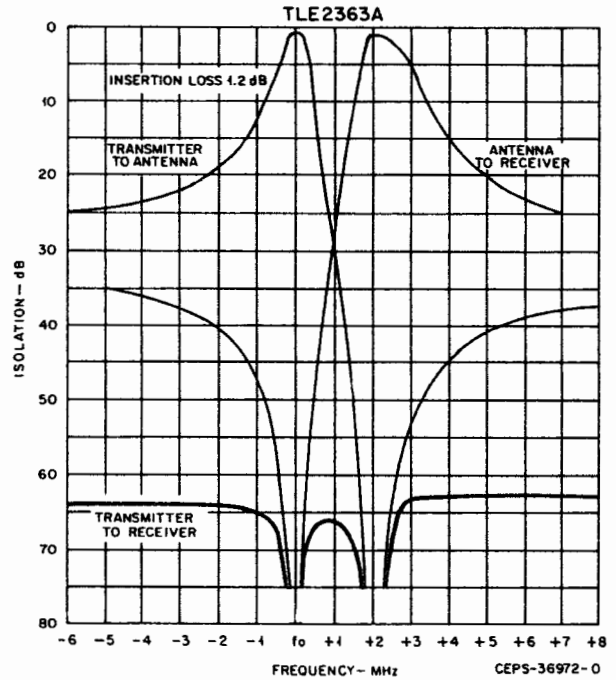
UHF DUPLEXER

MODELS T4084A, 85A, 5002A
406-520 MHz

PASS-REJECT DUPLEXER
(2-CAVITY COMBINED LOOP & PROBE)



PASS-REJECT DUPLEXER
(4-CAVITY COMBINED LOOP & PROBE)



Mechanical Detail Photographs,
Selectivity Curves, and Parts List
Motorola No. PEPS-37324-A
11/15/85-PHI

DUPLEXER