TL MICROWAVE RADIO
DIVERSITY SWITCH
GENERAL

1. GENERAL

1.01 The TL radio diversity switch is located on a panel directly above the power supply in the diversity transmitter-receiver cabinet or bay. It derives its power from the −20 volt regulated battery supply. It is necessary that the requirements of Section 409-302-500 be met before any performance checks are made on the switch. Diversity switch tests can be made without interrupting service.

2. BRIEF DESCRIPTION

2.01 The diversity panel provides a switch in the receiver baseband transmission path for selecting the better of two radio channels on a one-for-one basis. A 2600-cps pilot tone is monitored on each radio channel for detecting equipment failures. Receiver automatic gain control (AGC) voltage levels are also monitored to determine the comparative received signal condition on both radio channels. A logic circuit initiates the diversity switch as determined by the status of the monitored pilot tone and received signal levels.

3. TEST SEQUENCE

3.01 The diversity switch tests are arranged in sequence to minimize maintenance effort. Preliminary checks determine if the equipment is operating satisfactorily, and readjustment procedures are defined to bring the equipment into limits. If the equipment cannot be readjusted properly, procedures are outlined for replacing faulty units and realigning.

4. SPECIAL PRECAUTIONS

4.01 Since the diversity switch tests involve the interruption or attenuation of each radio channel in turn, it is very important, before proceeding with these tests, to establish that radio transmission conditions are stable and normal.

4.02 To ensure that service will not be interrupted or degraded, maintenance personnel should follow very closely the steps in Fig. 1.

4.03 Upon completion of tests on the switch, the MAN switch must be returned to the AUTO position.

Diversity System

(Steps 1 through 4 cover Manual Switch Operation; 5 and 6, Removal and Restoral of Transmitter; 7 and 8, Removal and Restoral of Receiver)

STEP	FUNCTION	ACTION	NOTES
1	Coordinate with Alarm Center	Obtain permission to perform manual switch at receiving station of section under test. a. If Note 1 applies, go to Step 3. b. If Note 2 applies, go to Step 2.	1. If no diversity alarm from station under test, proceed to Step 3. 2. If diversity alarm from station under test, find which pair involved (Step 2). a. If one of pair under test, locate and clear trouble before switching; b. If one of another pair terminating at same station, manual switch permissible on pair under test.
2	Find source of diversity alarm	Measure dc due to pilot in each J99262L Diversity Switch Panel in station under test, until source located: 1. Remove dust cover. 2. With KS-14510 Meter measure dc on PIL MON LEV jacks for each channel in turn (See Note 2). a. Tone present if -5 to -10V. b. Tone absent if -3V or less. 3. Close hinged panel and restore dust cover.	1. Diversity alarm conditions: a. Tone present on both, no alarm; b. Tone absent on both, no diversity alarm (but major alarm due to total absence of pilot); c. Tone present on one, absent on other, diversity alarm. 2. PIL MON LEV jacks for regular channel accessible on left side of panel behind dust cover; those for diversity channel accessible behind hinged panel on right.
3	Find active channel	With KS-14510 Meter (on 3-volt dc scale) measure from K4 jack to ground, Diversity Switch Panel under test. a. If no voltage, Regular channel active; b. If between -2 and -3V, Diversity channel active.	
4	Manuel switch	Operate the MAN switch from AUTO to the MAN position desired, Regular or Diversity.	The idle channel may now be removed from service for maintenance. a. Do Steps 5 and 6 to remove and restore transmitter from service. b. Do Steps 7 and 8 to remove and restore receiver from service.
5	Remove transmitter from service. CAUTION: Steps 1 through 4 must be done first.	1. Remove patch to Transmitter Baseband IN jack. 2. Terminate open patch at once (See Note).	Open output of diversity split-pad must be terminated to minimize effects of change of level on working line. A terminating jack for this purpose provided with TL Test Set.
6	Restore transmitter to service	When maintenance done: 1. Remove terminating jack applied in Step 5. 2. Restore transmitter input patch to IN jack of Transmitter BB Ampl. 3. At receiving location verify that service is now being received on the idle channel. See Note. 4. Restore the MAN switch to the AUTO position if no further maintenance required, or to other MAN position if the other channel is to be maintained.	Determine from the alarm center that a diversity alarm is not being received from the receiving location.
7	Remove receiver from service. CAUTION: Steps 1 through 4 must be done first.	No special action required	
8	Restore receiver to service	1. Verify that service is now being received on idle channel. See Note. 2. Restore the MAN switch to the AUTO position if no further maintenance required, or to other MAN position if the other channel is to be maintained.	Determine from the alarm center that a diversity alarm is not being received from the receiving location.

Non-Diversity System

1. Secure permission from Alarm and Control Center.
2. Perform needed maintenance.
3. Restore service.
4. Verify service restoral with Alarm and Control Center.

Determine from the alarm center that no alarms are present.

Fig. 1 – Procedures for Removing and Restoring Service