

TL MICROWAVE RADIO
TRANSMITTER TESTS
GENERAL

1. GENERAL

1.01 This section is one of a number of sections which describe the method of making tests and adjustments on the TL radio transmitter. The transmitter includes a baseband amplifier, transmitting klystron, a double-cross guide coupler, a reference cavity, and an isolator.

1.02 Tests and adjustments are performed to ensure that the transmitter is operated in accordance with Federal Communications Commission (FCC) regulations at the proper frequency, best average linearity, proper deviation, and maximum power output. Radio station transmitter log entries shall be made for both routine and maximum power output. Radio station transmitter which could result in a break or change in radio transmission.

1.03 Test procedures in these sections are based on the assumption that maintenance personnel are familiar with the operation of the necessary test equipment in accordance with Bell System Practices issued for that purpose.

1.04 Tests or adjustments made on transmitters which are part of nondiversity systems will usually interrupt or degrade service depending upon the operation being performed. Care should be taken to minimize these interruptions.

1.05 Tests or adjustments made on transmitters which are part of a diversity system can normally be made without interrupting or degrading service. This is accomplished by carefully removing the transmitter to be tested from service while service is maintained by the other.

1.06 Procedures for removing and restoring service on diversity and nondiversity systems are given in Fig. 1. It is important that these instructions be carefully followed to eliminate unnecessary service outages.

2. SAFETY PRECAUTIONS

2.01 Voltages inside the transmitter assembly are higher than those usually encountered in the telephone plant. Only that work which is absolutely necessary should be performed with the protective device disabled or removed. General instructions on the maintenance and handling of electronic equipment involving hazardous voltages as contained in Section 010-110-001 shall be strictly observed.

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)

<u>STEP</u>	<u>FUNCTION</u>	<u>ACTION</u>	<u>NOTES</u>
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 <u>idle</u> 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