

**L MULTIPLEX TERMINALS**  
**MMX-1**  
**TRANSMITTING MASTERGROUP BANK**  
**TURNOVER TESTS**

**PURPOSE OF TESTS**

To determine that the regular and spare transmitting mastergroup circuits, when multiplied, do not produce a large decrease in power because of phase difference.

**REASON FOR REISSUE**

To include reference to solid-state amplifiers in modified transmitting mastergroup panels. Arrows are used to indicate significant changes. *Equipment Test Lists are not affected.*

**SYNOPSIS**

In the MMX-1 mastergroup multiplex terminal, large numbers of circuits are assigned to common equipment units. Corresponding equipment units are provided as spare and are interchangeable if required. To avoid service interruptions when patching service from regular mastergroup circuits to spare mastergroup circuits on an in-service basis, it is important that little or no difference exists in the phase relationship between the corresponding circuits. A difference in phase relationship may occur from wiring turnover in the mastergroup equipment.

**METHOD OF TESTING**

In this test, the output power of the regular mastergroup circuit is measured. Output power is measured again when the regular mastergroup circuit is multiplied with a corresponding spare mastergroup. With little or no difference in phase relationship, the combined output power will differ only a small amount from the output power of either mastergroup bank when measured independently. ♦The transmitting mastergroup bank loss tests (Section 356-134-501) shall be performed prior to making this test.♦ The mastergroup circuit must be removed from service to perform this test.

**APPARATUS:**

*Transmission test equipment.* Refer to Section 356-010-500 and select, from available equipment, sending and receiving units having the following capabilities:

*Sending test equipment* capable of delivering, into 75-ohm circuits, 1500 kHz at -21 dBm.

**APPARATUS (Cont):**

*Receiving test equipment* capable of detecting, from 75-ohm circuits, signals between 1500 kHz and 6700 kHz at approximately -32.5 dBm.

In addition, the following are required:

*Spare or Out-of-Service Transmitting Mastergroup Bank*

*Sets 75-Ohm Multiple Jacks (2)*

*P2BJ Cords*

*368A Plugs (75 Ohms)*

STEP	PROCEDURE															
<p>1</p> <p>2</p> <p>3</p>	<p><b>Caution:</b> <i>◆ This test requires that the regular and spare mastergroup equipment panels contain like amplifiers. A loss of level may occur when patches are made between a panel containing a vacuum-tube amplifier and one equipped with solid-state amplifiers.◆</i></p> <p><b>Note:</b> If the requirements in this test cannot be met, check the carrier supply and the hybrid coils within the regular and spare transmitting mastergroup bank circuits for wiring turnover.</p> <p>Verify that the equipment to be tested is out of service.</p> <p>Prepare the RTE (receiving test equipment) for a 75-ohm terminated measurement of the translated input signal of the mastergroup under test at approximately -32.5 dBm.</p> <p><b>Note:</b> The input and the translated output frequencies are listed in Table A.</p> <p style="text-align: center;"><b>TABLE A</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3">TURNOVER TEST FREQUENCIES</th> </tr> <tr> <th>MG</th> <th>INPUT FREQ (KHZ)</th> <th>OUTPUT FREQ (KHZ)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1500</td> <td>1500</td> </tr> <tr> <td>2</td> <td>1500</td> <td>4100</td> </tr> <tr> <td>3</td> <td>1500</td> <td>6700</td> </tr> </tbody> </table> <p>Prepare the STE (sending test equipment) for an output of 1500 kHz at -21 dBm.</p>	TURNOVER TEST FREQUENCIES			MG	INPUT FREQ (KHZ)	OUTPUT FREQ (KHZ)	1	1500	1500	2	1500	4100	3	1500	6700
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MG	INPUT FREQ (KHZ)	OUTPUT FREQ (KHZ)														
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STEP	PROCEDURE
4	<p>Make patches (1), (2), (3), and (4) in Fig. 1.</p>
5	<p>Insert 75-ohm 368A plugs in the REG MG (*) IN B and SP MG (*) IN B jacks.</p> <p><b>Note:</b> The asterisk (*) refers to mastergroups 1, 2, and 3.</p>
6	<p>Measure and record the level of the output frequency (Table A) at the REG MG (*) OUT jack.</p> <p><b>Requirement:</b> Approximately <math>-32.5</math> dBm.</p>
7	<p>Make patches (5) and (6) in Fig. 1.</p>
8	<p>Measure the output frequency level of the multiplied mastergroup bank circuits.</p> <p><b>Requirement:</b> A decrease of not more than 2.5 dB from the value recorded in Step 6.</p>

STEP	PROCEDURE
9	Remove patches (3), (5), and (6) in Fig. 1.
10	Remove the 75-ohm 368A plugs from the REG MG (*) IN B and SP MG (*) IN B jacks.
11	Insert 75-ohm 368A plugs in the REG MG (*) IN A and SP MG (*) IN A jacks.
12	Make patch (7) in Fig. 1.
13	Measure and record the level of the output frequency at the REG MG (*) OUT jack.  <b>Requirement:</b> Approximately $-32.5$ dBm.
14	Make patches (6) and (8) in Fig. 1.
15	Measure the output frequency level of the multiplied mastergroup bank circuits.  <b>Requirement:</b> A decrease of not more than 2.5 dB from the value recorded in Step 13.
16	Remove all patch cords from the test jacks of the mastergroup bank circuits under test.
17	Remove the 75-ohm 368A plugs from the REG MG (*) IN A and SP MG (*) IN A jacks.
18	Insert 75-ohm 368A plugs in the REG MG (*) IN B and SP MG (*) IN B jacks.
19	Restore the mastergroup bank equipment to normal service.