

TYPE N AND ON CARRIER REPEATERS — REPEATERED HIGH-FREQUENCY LINE GENERAL INFORMATION — INITIAL LINE-UP AND MAINTENANCE TESTS

1. GENERAL

1.01 This section covers the operating instructions for initial line-up and maintenance tests on the repeater equipment components and repeatered high-frequency line of the N and ON carrier telephone systems.

1.02 The information in this section is intended to be used after the terminal and repeater equipment has been installed and the equipment and line facilities are ready for the tests and adjustments preparatory to placing the carrier system in service. The information also applies to the operation and maintenance of the system while it is in service.

1.03 The extended application of direct distance dialing and the related signaling equipment emphasize the necessity for closely following operating procedures which reduce to a minimum the number of circuit interruptions and irregularities which affect the operation of the signaling equipment. The necessity of applying test and operating procedures without omitting any steps is important in order to avoid irregularities which are likely to result from the use of abbreviated or unauthorized procedures.

1.04 Where direct distance dialing is in operation on the trunks working over a system, it is necessary that precautions be taken to avoid

false operation of switching equipment, cutoffs and wrong numbers. When a system or a channel is taken out of service, all trunks should be made busy to traffic at the secondary testboard or its equivalent at each end of the trunk.

Caution should be exercised to avoid causing hits on systems carrying SAGE, Data or Telegraph transmissions.

1.05 Testing and switching apparatus should be calibrated and maintained in accordance with standard instructions as outlined in Bell System Practices. The calibration of testing apparatus is important since the failure to meet test requirements may be due to errors caused by testing apparatus. Testing apparatus should be calibrated at such intervals as is necessary to insure accuracy of measurement.

2. INITIAL TESTS

2.01 Initial tests include those tests which are made on the cable facilities, testing apparatus, power supply, order wires, and alarm circuits to determine that all facilities will meet their individual requirements prior to the line-up procedure.

2.02 The initial line-up tests necessary to place an electron tube repeater in service in a high-frequency line are given in Table I:

TABLE I

| TEST | PURPOSE OF TEST | SECTION REFERENCE |
|------|---|-------------------|
| 1 | Check of Local Cabling, Span Pads, Artificial Line Sections, Networks and Noise Control Units | 362-405-501 |
| 2 | Adjustment of Power Supply and Sealing Current Over Cable to an Adjacent Repeater | 362-405-502 |
| 3 | DC Line Voltage Measurements | 362-405-503 |
| 4 | Heater and DC Regulator Measurements | 362-410-501 |
| 5 | Cathode Activity Measurements | 362-410-502 |
| 6 | Total Carrier Power Output | 362-415-501 |
| 7 | Individual Carrier Output | 362-415-502 |
| 8 | Compute Carrier Slope | 362-400-510 |
| 9 | Equalization of Individual Carrier at the Output of the Repeater (when required) | 362-415-503 |

SECTION 362-400-300

2.03 The initial line-up tests necessary to place a transistorized repeater in service in a high-frequency line are given in Table II:

TABLE II

| TEST | PURPOSE OF TEST | SECTION REFERENCE |
|------|---|-------------------|
| 1 | Check of Local Cabling, Span Pads, Artificial Line Sections, Networks and Noise Control Units | 362-405-501 |
| 2 | Adjustment of Power Supply and Sealing Current Over Cable and Check of Fuse Alarm | 362-405-515 |
| 3 | Check of Voltage Polarity, Current and Sealing Current Provisions | 362-405-516 |
| 4 | Measurement of DC Supply Current | 362-410-515 |
| 5 | Transistor Emitter Current and Thermistor Heater Current Tests | 362-410-516 |
| 6 | Total Carrier Power Output | 362-415-501 |
| 7 | Individual Carrier Output | 362-415-515 |
| 8 | Compute Carrier Slope | 362-400-510 |
| 9 | Equalization of Individual Carriers at the Output of the Repeater (when required) | 362-415-503 |

3. MAINTENANCE TESTS

3.01 The tests listed in Table III are made on a periodic basis to detect apparatus which has developed trouble or has aged to the point where, if it remained in service, it might cause impairment to service, as well as to indicate variations in the high-frequency line which need corrective measures.

TABLE III

| TEST | TEST PERIOD | SECTION REFERENCE |
|--|-------------|-------------------|
| <i>Electron Tube Repeaters</i> | | |
| Cathode Activity Test | 3M | 362-410-502 |
| Measurement of DC Supply Voltage on the Line | 3M | 362-405-503 |
| Heater and Regulator Tests | 3M | 362-410-501 |
| Total Carrier Power Output (Bridged) | 3M | 362-415-501 |
| <i>Transistorized Repeaters</i> | | |
| Measurement of DC Supply Current | 3M | 362-410-515 |
| Transistor Emitter Current and Thermistor Heater Current | 3M | 362-410-516 |
| Total Carrier Power Output (Bridged) | 3M | 362-415-501 |

3.02 The tests listed in Table IV should be made when electron tubes are replaced in electron tube repeaters.

TABLE IV

| TUBE REPLACED | TEST TO BE MADE | SECTION REFERENCE |
|---|--------------------------------------|-------------------|
| <i>H-L or L-H Repeaters</i> V1, V2, EW or WE, or V40, V41 | Heater and DC Regulator Tests | 362-410-501 |
| | Cathode Activity Tests | 362-410-502 |
| | Total Carrier Power Output (Bridged) | 362-415-501 |

3.03 The tests listed in Table V should be made when N or ON repeater units are replaced.

TABLE V

| UNIT REPLACED | TEST TO BE MADE | SECTION REFERENCE |
|---------------------------------|---|-------------------|
| <i>Electron Tube Repeaters</i> | Heater and DC Regulator Tests | 362-410-501 |
| | Total Carrier Power Output (Bridged) | 362-415-501 |
| | Channel Carrier at R1 Jack at Distant Terminal | 362-030-501 |
| <i>Transistorized Repeaters</i> | Measurement of DC Supply Current | 362-410-515 |
| | Transistor Emitter Current and Thermistor Heater Current | 362-410-516 |
| | Total Carrier Power Output (Bridged) | 362-415-501 |
| | Channel Carrier at R1 Jack at Distant Terminal | 362-030-501 |