



## TELEVISION TRANSMISSION

### ROUTINE AND MAINTENANCE TESTING

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#### 1. GENERAL

**1.01** This section prescribes tests, test procedures, intervals, and requirements for equipment and facilities devoted to television transmission.

**1.02** Initial lineup tests, as detailed in other sections, should be made in connection with the initial placing in service of equipment or facilities, or the reassignment of previously working facilities. Where changes of equipment or facilities are to be made subsequently which may effect the results obtained in the initial lineup tests, only those tests should be repeated whose results may be affected.

**1.03** In tests where one office sends and measurements are made by several offices,

the measurements should, where practicable, be made simultaneously. For simultaneous measuring, each intermediate office should measure transmission at a point which will not affect the through transmission.

**1.04** Noise and crosstalk measurements on television audio transmission equipment and facilities, including any required to determine their suitability for service, should be made in accordance with Sections 320-165-500 and 320-166-500.

**1.05** When necessary to make adjustments to bring the characteristic of equipment or facilities within limits, the characteristic should not be placed just within limits, but should be brought near the median of the limits to reduce the need for similar future adjustment.

#### 2. PRECAUTIONS AND INFORMATION

**2.01** When performing tests, care should be taken to avoid disturbances of adjacent working circuits. Maintenance or other work on or near television equipment (video or audio) should be avoided to the extent possible during periods when the equipment is in service. Where the work cannot be deferred, special precautions should be taken to avoid service interference; any equipment involved should be tested before being returned to service, sufficient to assure its suitability.

**2.02** Before placing new vacuum tubes in sockets, inspect the tube contacts and sockets for conditions that might cause loose connections. Contact springs should be checked for tension and follow.

**2.03** Tube type oscillators and transmission measuring equipment require an appreciable time to reach a condition of stable operation after the power is first turned on. Where practicable therefore, these should be "warmed up" for about 10 minutes before use; oscillators should be frequency-calibrated (especially at low frequencies) immediately prior to use.

### 3. TRANSMISSION TESTS

**3.01** Lineup tests should be made on all sections as prescribed for the types of facilities involved.

**3.02** Tests on occasional facilities should be made to the circuit terminals and to major intermediate junction points to which tests are made on paralleling permanent network circuits.

**3.03** Facility Control Offices should clear troubles promptly within units controlled and should maintain these units within prescribed transmission requirements.

**3.04** Routine lineup tests on network sections normally should be made (via customer release basis) prior to start of service. Tests on permanent unassigned facilities should, if feasible, be made during the same period. Subcontrol Offices in charge of lineup only should consult with Control Offices in determining testing periods.

**3.05** Network lineup tests should be made on backbone facilities and to selected sideleg terminal points as determined by the responsible Control Offices keeping in mind the desirability of testing as much of the network as possible.

### 4. PERIODIC TESTS—VIDEO

#### A. Overall Color Lineup Tests

**4.01** Overall color lineup tests are normally performed monthly, unless a trouble condition requires that a special test be conducted. Tests should be done in accordance with Sections 318-700-300 and 318-700-500 and the current telegram from the Network Control Office dealing with night tour television facility test procedures.

**4.02** The tests listed in above instructions should be done at all STOC and TFTP locations.

**4.03** The measuring points should be in readiness for the start of monthly tests and should observe and record each test signal. Immediately after the transmission of these test signals is completed, the measuring points should pass their results back to the Network Control Office via their Supervising Office.

**4.04** The Network Control Office should analyze and evaluate the results of the tests and should follow through to completion any corrective action needed.

#### B. Weekly Tests

**4.05** Weekly tests will be made to all designated offices as scheduled and directed by the Network Control Office.

**4.06** The weekly tests should consist of the following test signals: 25-kHz sine wave, multiburst, sine squared pulse and window, and modulated staircase.

**4.07** The measuring points should be in readiness for the start of weekly tests and should observe and record each test signal. Immediately after the transmission of these test signals is completed, the measuring points should pass their results back to their Supervising Office.

**4.08** The Network Control Office will analyze and evaluate the results of the weekly tests and will follow through to completion any corrective action needed.

#### C. Prior to Service Tests

**4.09** Prior to service test on contract (full-time) service should be conducted in each Control Office section to selected Subcontrol and STOC Offices.

**4.10** The multiburst test signal should be used for checking level and amplitude-frequency response. Participating offices should make corrections for minor deviations. The test signal from the General Control Office may be used for this purpose.

**4.11** It is *not* expected that receiving stations will be checked prior to start of service. Also a check with customer for switches or schedules is not required.

### 5. PERIODIC TESTS—AUDIO

#### A. General

**5.01** Routine lineup tests on network sections normally should be made on a customer release basis. Subcontrol Offices in charge of lineup

only should consult with Control Offices in determining testing periods.

**5.02** Network lineup tests should be made on backbone facilities and to selected sideleg terminal points as determined by the responsible Control Offices, keeping in mind the desirability of testing as much of the network as possible.

**5.03** All offices must be ready to measure promptly as the specified time and should measure simultaneously without interrupting the through circuits. In case of an interruption to the circuit, the General Control Office should be informed immediately.

**5.04** Tests on occasional (part-time) facilities should be scheduled in accordance with program transmission testing.

**5.05** Noise and harmonic distortion tests should be made as outlined in the appropriate Bell System Practice.

**5.06** Daily prior to service network test checks will not normally be made to stations.

#### **B. Monthly Overall Frequency Response Tests**

**5.07** An overall transmission frequency run should be made monthly on all television audio networks. This should be done under the direction of the General Control Office which should schedule the test and select the measuring offices, informing all concerned.

**5.08** The test should be conducted as follows.

(a) At the specified time the sending office should send test frequencies over the network under test. Measuring offices should be ready to measure.

(b) The sending office using an automatic tone changer sends 1 milliwatt of 1000-Hz tone for 2 minutes. The sending office should then proceed with the test, transmitting for 1 minute each of those frequencies specified for overall network check.

(c) Each office specified should measure using a suitable transmission measuring set. Under no condition should any office make any adjustments of gain or equalization during these tests.

**5.09** At the conclusion of the tests, each measuring office should transmit their results promptly to their Supervising Office.

**5.10** The Supervising Office will analyze the results of the tests and refer promptly sections requiring correction to the respective offices. Each office should arrange to do the necessary work as soon as possible, reporting to the Supervising Office initial and final sectional measurements plus troubles cleared and equalization changes made. The Supervising Office should then repeat the frequency run, measuring only at the office in whose section changes have been made and at other points sufficient to show the improvement made.

**5.11** Facility Control Offices should clear troubles promptly within units controlled and should equalize these units to meet prescribed requirements.

#### **C. Weekly TV Audio Tests**

**5.12** A weekly 1000-Hz test will be made to all designated offices as scheduled and directed by each Control Office for his territory. However, these tests should be coordinated with the General Control Office scheduling telegram.

**5.13** All measuring offices should report out-of-limit deviations to their respective Control Office.

**5.14** Control Offices should insure that Facility Control Offices follow through to completion any corrective action needed.

#### **D. Prior to Service Test Daily**

**5.15** Prior to service test on contract service should be conducted in each Control Office section to selected points who will participate.

#### **6. INVESTIGATION OF VIDEO TROUBLES**

**6.01** Hazardous voltages exist on nearly all units of television equipment. All work that involves the removal of can covers or checking of high voltages shall, therefore, be done in accordance with instructions contained in Section 010-110-001 and in a thoroughly safe manner.

**6.02** Instructions and information covering television signal analysis, VITS, VIRS, critical monitoring and the various procedures to be used for

**SECTION 318-010-306**

determining the type of impairment, location and clearance of the impairment are as follows:

<b>SECTION</b>	<b>TITLE</b>
318-015-000	Glossary of Television Terms
318-015-100	Television Signal Analysis
318-015-101	Relationship between Quality, Bandwidth, and Time of Transmission
318-015-102	Effects of Frequency Cutoff Characteristics
318-015-110	Low Frequency Noise Associated with Pickups
318-015-111	Video Tape Signal Analysis
318-725-500	Location and Clearing Impairments
318-725-501	Critical Monitoring—Video Monitors
318-725-502	Critical Monitoring—"A" Scope

<b>SECTION</b>	<b>TITLE</b>
318-725-503	Critical Monitoring—Test Signals
318-725-504	Levels
318-725-505	Interference
318-725-506	Low Frequency Interference
318-725-507	High Frequency Interference
318-725-508	Distortion
318-725-509	Low Frequency Distortion
318-725-510	Medium Frequency Distortion
318-725-511	High Frequency Distortion
318-725-512	Noise Measurements and Objectives
318-725-900	Use of VITS
318-725-900	Vertical Interval Reference Signal