

**PERFORMANCE REQUIREMENTS**  
**BO-39NS BASE STATION**  
**RADIO TRANSMITTER**  
**GENERAL EQUIPMENT REQUIREMENTS**  
**RADIO SYSTEMS**

**1. GENERAL**

**1.01** This section covers the requirements which the BO-39NS radio transmitter shall meet before turnover to the telephone company.

**1.02** It is expected that these tests will be made after installation is completed. If the wire line pair from the control terminal has been connected to the equipment, it shall be disconnected for the duration of these tests.

**1.03** Reference may be made to Section 800-630-180 covering general requirements and definitions for additional information to aid in the proper application of the requirements.

**1.04** The tests shall be performed in the order prescribed.

**1.05** The requirements are based on the use of the following test equipment or its equivalent:

KS-14510, List 1 Volt-ohm-milliammeter

Bird Termaline Wattmeter, Model 67

Hewlett-Packard 202C Audio Oscillator

Hewlett-Packard 400D Voltmeter

General Radio T Attenuator, Model 874GA (equipped with one male- and one female-type N fitting on the through leg and one female-type N fitting in the sampling leg)

Gertsch Frequency Meter, Model FM-7 with associated deviation meter DM-3 (equipped with an 8-foot length of RG8 cable with

one male-type N fitting and one male-type BNC fitting)

Patch Cord, 6 feet long (equipped with a 150-type plug on one end and a banana-type plug on the other)

+48 Volt Supply with 25-milliampere capacity

4- to 6-foot Length of RG8 Cable (equipped with male-type N fittings)

**2. REQUIREMENTS**

**2.01 Transmitter Power Output**

(a) Connect the Bird wattmeter to the transmitter output with a section of RG8 cable equipped with male-type N fittings. This connection is made to the coaxial fitting located on the top of the cabinet.

(b) Connect a lead to pin 3 of the microphone jack located on the exciter power supply. The transmitter may then be keyed by grounding this lead.

(c) Operate the REMOTE-LOCAL switch on the trunk terminating panel to the position marked LOC-HP.

(d) Apply primary ac power to the equipment by operating the switches on the power control panel and the power amplifier and exciter power supplies.

(e) Allow a 15-minute warmup period to permit the mercury vapor rectifier tubes to form.

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- (f) Push H reset button on the trunk terminating panel.
- (g) Key the transmitter and observe the power amplifier plate current and RF power output.

**Requirement 1:** The plate current shall be no greater than 200 ma.

**Requirement 2:** The power output shall be not less than 225 watts.

If these requirements are not met, refer to the detailed tuning instructions in the General Electric Company instruction manual LBI-8241.

- (h) Unkey the transmitter.

### 2.02 Transmitter Frequency

- (a) Insert the attenuator in the transmission line between the wattmeter load and the transmitter.
- (b) Connect the output of the attenuator to the Gertsch FM-7 frequency meter.
- (c) Key the transmitter and measure the operating frequency.

**Requirement:** The transmitter shall be operating within  $\pm 0.0001$  per cent of its assigned frequency.

If this requirement is not met, refer to the General Electric Company instruction book LBI-8241.

- (d) Unkey the transmitter.

### 2.03 Modulation Sensitivity and Deviation Limiting

- (a) Connect the output of the Hewlett-Packard 202C audio oscillator to the TRS jack on the trunk terminating panel.
- (b) Connect the output of the T attenuator to the Gertsch FM-3 deviation meter input.
- (c) Adjust the output of the audio oscillator to 1 volt at 1000 cps using the Hewlett-Packard 400D voltmeter to measure the voltage.

- (d) Key the transmitter and observe the deviation.

- (e) Reduce the output of the audio oscillator until the deviation is 3.3 kc, and observe the audio voltage required for this deviation. Record the value of voltage required.

**Requirement 1:** With 1 volt of audio at 1000 cps, the deviation shall be no greater than 5 kc  $+0 -5$  per cent.

**Requirement 2:** The voltage necessary for 3.3-kc deviation shall be no greater than 0.18 volt.

If these requirements are not met, refer to the General Electric Company instruction book LBI-8241.

### 2.04 RF Indicator

- (a) Connect the KS-14510, List 1 ohmmeter to terminal 1 and ground of TB703 located in the audio filter box.
- (b) Key the transmitter and observe the ohmmeter.
- (c) Reduce the power output to one half its normal output and observe the ohmmeter.

**Requirement:** The ohmmeter shall indicate continuity when the transmitter is keyed at full power and shall indicate open when the transmitter is keyed at half power.

If this requirement is not met, refer to the General Electric Company instruction book LBI-8241.

### 2.05 Modulation Indication

- (a) Operate the REMOTE-LOCAL switch on the trunk terminating panel to REMOTE.
- (b) Connect the output of the audio oscillator to the TRS jack on the trunk terminating panel.
- (c) Connect the ohmmeter to terminal 1 and ground of TB703 in the audio filter box.
- (d) Adjust the output of the audio oscillator to the value required in 2.03(e).

- (e) Push the H reset button on the trunk terminating panel.
- (f) Connect the output of the T attenuator to the deviation meter.
- (g) Apply +48 volts to terminal 2 of TB703 and observe the ohmmeter.
- (h) Reduce the audio voltage to the value required for 2-kc deviation and then remove +48 volts from terminal 2 of TB703.

- (i) Reapply +48 volts to terminal 2 of TB703 and observe the ohmmeter.

**Requirement:** The ohmmeter shall indicate continuity when the transmitter is deviating at 3.3-kc deviation. The ohmmeter shall only momentarily indicate continuity when the transmitter is rekeyed at 2-kc deviation.

If this requirement is not met, refer to the General Electric Company instruction book LBI-8241.