N2 CARRIER TELEPHONE SYSTEM
GROUP TRANSMITTING AND RECEIVING UNITS
TRANSISTOR EMITTER CURRENT TEST

This section describes the measurement of transistor emitter currents in N2 carrier group equipment. The voltage measured from an emitter test point to the −21 volt test point effectively measures the emitter current of that transistor. Any change in emitter current indicates a change in the current gain of that transistor or a change in biasing circuit component values due to aging or temperature change. The voltage from the emitter of Q3 to the −21 volt test point is especially sensitive to component degradation in the amplifier circuit. It is factory set to exactly 3 volts at room temperature and, therefore, is not affected by initial component tolerances. Its value will be affected only by component degradation and temperature changes.

The purpose of these tests is to indicate a trouble condition due to component degradation, not to specify the defective component.

If the voltages measured fall outside the limits specified, the unit should be replaced.

APPARATUS:

KS-14510 Volt-ohm-milliammeter or equivalent (20,000 ohms per volt, 2 per cent accuracy)

STEP	PROCEDURE
1	Measure the following voltages on both the group transmitting and the group receiving units and check that they fall within the specified limits. Use the 3-volt voltmeter scale whenever possible.

Caution: ***To assure that the bias voltages are not affected by over-driving the amplifier due to line noise or high signal level, do not make measurements on receiving group units unless carriers have been applied and the unit has regulated to the proper output power.***

Requirement: The voltages shall be as follows:

TEST POINTS ON FACE OF GROUP EQUIPMENT	TRANSMITTER		RECEIVER		NOMINAL VOLTAGE	VOLTAGE LIMITS
	HIGH GROUP	LOW GROUP	HIGH GROUP	LOW GROUP	volts	
EM1 to −21V	x	x	x	x	2.2	1.9 to 2.5
EM3 to −21V	x	x	x	x	3.0 (Factory Set)	2.6 to 3.6
EM4 to −21V	x		x	x	3.0	2.6 to 3.6
EM5 to −21V		x		x	2.2	1.6 to 3.6 ←
EM6 to −21V		x		x	4.2	3.4 to 5.0

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