

TYPE O AND ON CARRIER TELEPHONE SYSTEMS – TERMINALS AND JUNCTIONS
SUMMARY CHARTS – LINE-UP AND MAINTENANCE
O CARRIER TERMINALS – GROUP AND TWIN CHANNEL UNITS

The summary chart and diagrams in this section show the tests required for lineup and maintenance of the group and twin channel units in O carrier terminals.

This section is revised to add a twin channel received carrier frequency test.

The tests should be completed in numerical sequence with testing equipment that has been accurately calibrated.

It will be necessary to refer to associated sections for the detailed procedures and for steps to be taken where requirements are not met. Familiarity with the sections covering the testing methods in detail is essential before this section is used.

APPARATUS:

- 1 — Hewlett-Packard 400-Type Vacuum Tube Voltmeter (VTVM)
- 1 — KS-14510 Volt-Ohm-Milliammeter (VOM), or Equivalent (20,000 Ohms per Volt)
- 1 — Hewlett-Packard 5232A or 5532A Frequency Counter or Equivalent
- 1 — Oscilloscope
- 1 — O and ON Unit Extender (J98705AY)
- 1 — W2DW Cord (to Connect VTVM to Test Points)
- 1 — Channel Unit Test Stand (J98705M)
- 1 — P19A Cord (Used with Channel Unit Test Stand)
- 4 — P1M Cords with Hubbell 708S29 Alligator Clips (Used to Ground T Jacks)
- 1 — 368B Plug (135 Ohm)
- 1 — 262B Plug (600 Ohm)
- 1 — SOS3 Tube Shield (Coupling Device for Frequency Counter)

TABLE A

LINE-UP AND MAINTENANCE TESTS—TYPE O CARRIER GROUP AND TWIN CHANNEL UNITS

TEST	PURPOSE OF TEST	TEST STAND OR EXTENDER	MEAS EQPT REQUIRED		MEASURE TEST POINT TO GRD OR BETWEEN TEST POINTS	REQUIRED VALUE		ADJUST	TEST CONDITIONS AND REMARKS	SECTION REFERENCE	
			TESTING END	DISTANT END		TEST	READJUST				
1	Group osc output level	—	VTVM	—	CARR H or CARR L jack	-5 to +5 db	—	—	For adjustment, refer to 362-130-501.	362-130-501	
2	Group osc output frequency	Extender for adj	Counter	—	CARR H or CARR L jack	±10~ of specified frequency	—	—			
3	3700~ osc output level	—	VTVM	—	3700 jack	+3.0 to +4.5 db	+3.8 db	3700 OUT	If requirement is not met, check tubes per Section 362-110-503 before adjusting 3700 OUT potentiometer.	362-130-501, 362-110-503	
4	3700~ osc output waveform	—	Oscilloscope	—	3700 jack	Peaks rounded with no evidence of flattening	—	—	All channels in on-hook condition.	362-130-501	
5	3700~ osc output frequency	—	Counter	—	3700 jack	3700 ±20~	—	—	For adjustment refer to Section 362-130-501	362-130-501	
6	Twin channel unit output level	Extender for adj	VTVM	—	TC jack	+0.4 to +1.6 db	+1.0 db	TC	If adjusted, realign associated circuits.	362-120-501	
7	Twin channel unit frequency	Extender for adj	Counter	—	TC jack	184 or 192 kc ±10~	—	C4	After adjustment, the open area of C4 should be 50 degrees or greater.	362-120-501	
8	Group trmtg unit output level	Extender for adj	VTVM 4 P1M cords	—	For initial line-up — EQ BRDG jack	To OB, OC, OD systems: 2-twin ch units 0.0 to +4.0 db 1-twin ch unit -2.0 to +2.0 db	+2.0 db 0.0 db	OUT	Use both X <i>and</i> Y wiring. <i>Note:</i> Where it is necessary to have additional range to drop levels for coordination reasons, remove the X wiring. Ground all T jacks. For initial tests: Connected to OB, OC, OD systems — Terminate EQ jacks in 135 ohms. Connected to OA system — Terminate EQ jacks in 600 ohms. For recorded value: remove terminations and T jack grounds and measure at OUT jack. For maintenance: limits may be exceeded because of line impedance variations.	362-130-502	
						To OA system: 2-twin ch units +6.0 to +10.0 db 1-twin ch unit +4.0 to +8.0 db	+8.0 db +6.0 db				
						For record — OUT jack	To OB, OC, OD systems: +2.5 to 7.0 db	—			—
							To OA system: +8.5 to +13.0 db	—			
For maintenance — OUT jack	Recorded value ±2.0	Recorded value	OUT								

TABLE A

LINE-UP AND MAINTENANCE TESTS—TYPE O CARRIER GROUP AND TWIN CHANNEL UNITS (Cont)

TEST	PURPOSE OF TEST	TEST STAND OR EXTENDER	MEAS EQPT REQUIRED		MEASURE TEST POINT TO GRD OR BETWEEN TEST POINTS	REQUIRED VALUE		ADJUST	TEST CONDITIONS AND REMARKS	SECTION REFERENCE
			TESTING END	DISTANT END		TEST	READJUST			
9	Group rec unit output level	—	VTVM	4 P1M cords	OUT jack	+1.8 to +5.5 db	+3.5 db	OUT	<p>Ground all T jacks at distant terminal. Wait at least 3 minutes after T jacks are grounded before measuring.</p> <p>Groups connected to OA carrier:</p> <p>OA-LGT — Turn REG potentiometer to extreme counterclockwise position.</p> <p>OA-HGT — Adjust REG potentiometer per Section 362-135-501.</p> <p>Wait at least 3 minutes for stabilization after adjustment of OUT potentiometer and remeasure.</p> <p>OA HGT — Recheck REG jack voltage per Section 362-135-501.</p>	362-135-501
10	Twin channel regulator adjustment	Extender or test stand for adj	VOM	4 P1M cords	REG jack to +130V jack in test stand or +130V jack in terminal.	+0.4 to +2.0 v	+1.0 v	REG	<p>Caution: Approximately 125 volts on REG jack, insert test cord in REG jack last.</p> <p>Start reading on 300-volt scale of meter for protection.</p> <p>Ground all T jacks at distant end; wait at least 3 minutes for regulator to stabilize.</p> <p>Adjustment made in test stand; reading will be slightly higher in terminal.</p>	362-125-501
11	Twin channel received carrier frequency	—	Counter and SOS3 tube shield	—	V3 of regulator amplifier	184 or 192 $\pm 30\sim$	—	—	If requirement is not met, refer to carrier frequency shift trouble investigation procedure in Section 362-125-501.	362-125-501

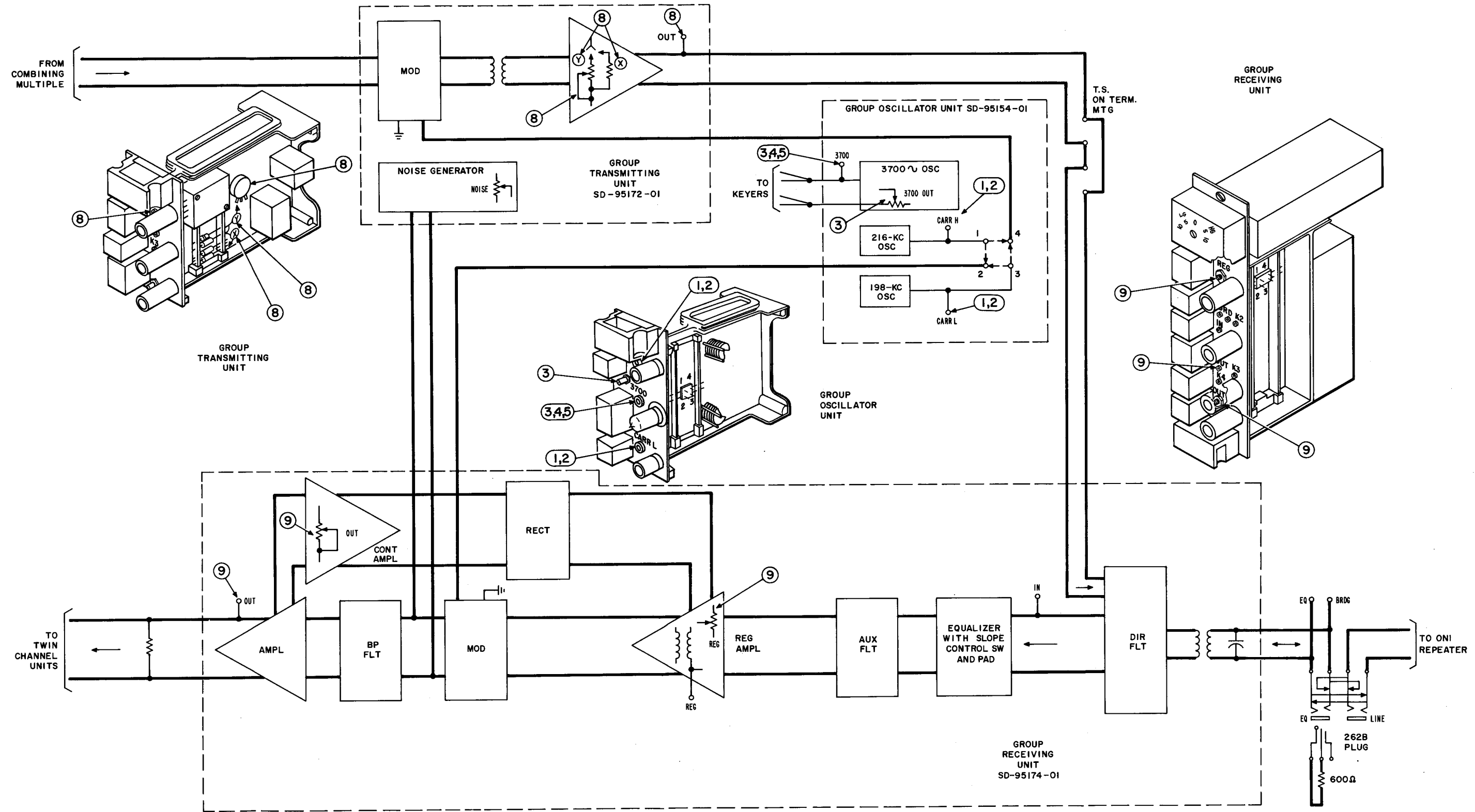


Fig. 1 — Line-Up and Maintenance Tests — OA Terminal

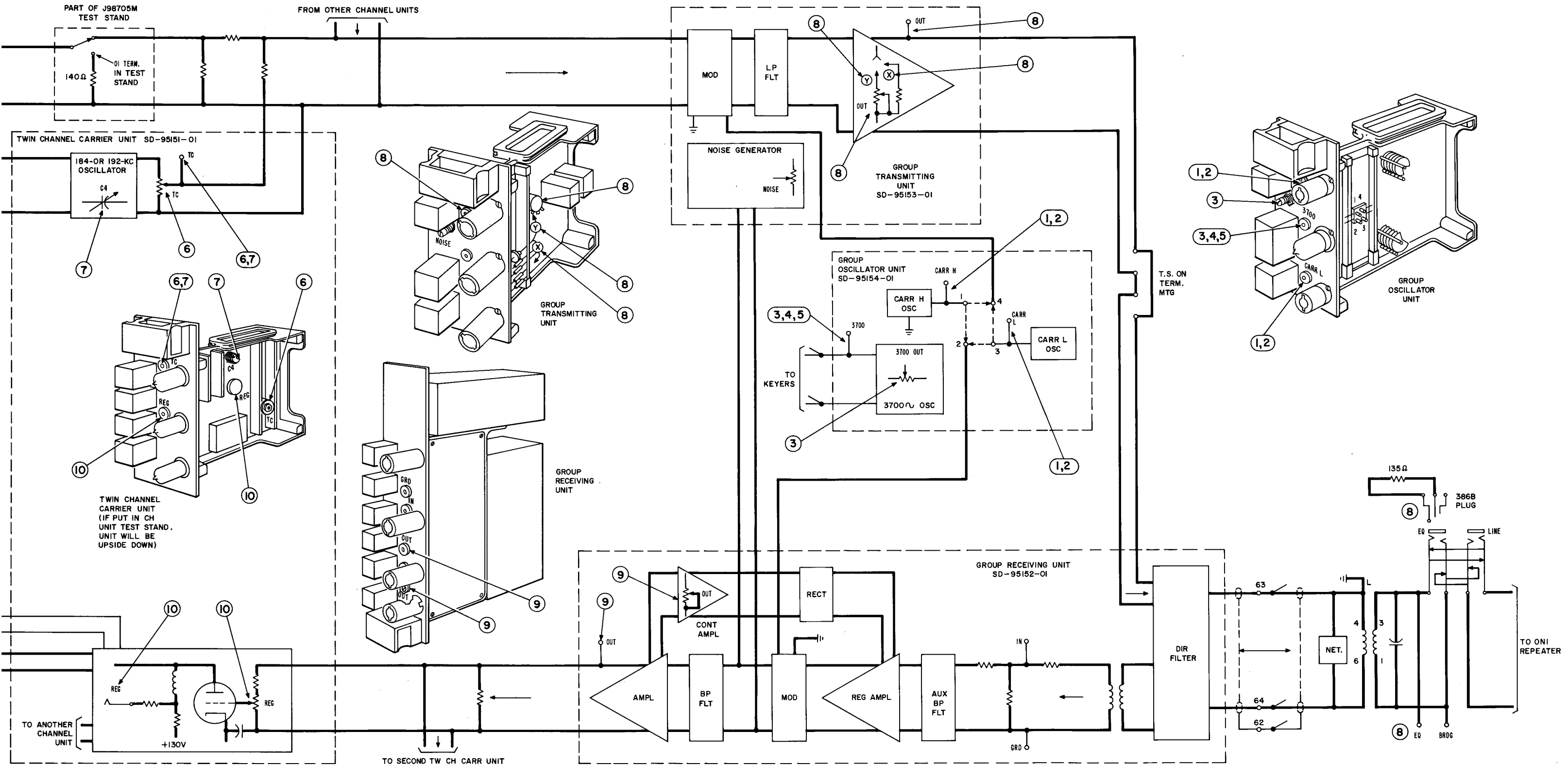


Fig. 2 — Line-Up and Maintenance Tests — OB, OC, and OD Terminals

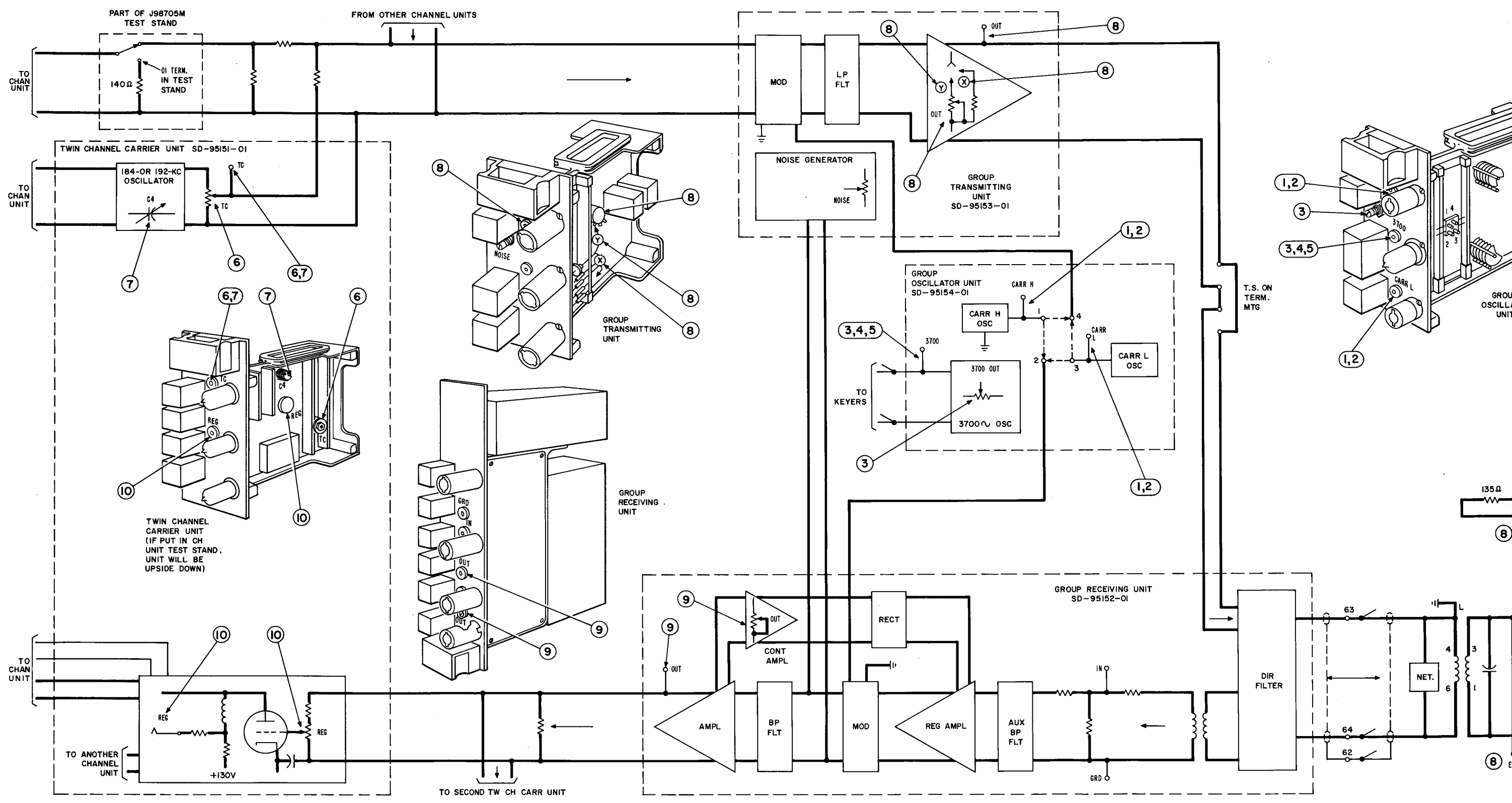


Fig. 2 — Line-Up of OB, OC, and