SERVICING CENTER TESTS USING 5U (J98705U) TEST SET J98706J, K, CA, DA, EA, AND FA REPEATERS ON CARRIER SYSTEM—OVER-ALL TESTS

These repeaters are used at a carrier-to-radio junction. The repeaters consist of combinations of low-high (L-H), high-low (H-L), low-low (L-L), and high-high (H-H) subassemblies. The L-H and H-L subassemblies are identical to the type N repeater subassemblies. The L-L and H-H subassemblies receive the low group and high group line frequencies respectively, amplify and regulate them for transmission at the desired level.

The tests outlined herein are designed to check the characteristics of all subassemblies comprising the ON-to-radio repeaters.

APPARATUS:

1—Vacuum Tube Voltmeter
1—Oscillator
1—P2OD Cord
1—P2CC Cord
2—P2BP Cords
1—Volt-Ohm-Milliammeter
1—124B Adapter
2—Shorting Cords for Nonreg. Gain Test. (These are made from one-inch pieces of No. 14 bare soft drawn copper wire with KS-7680 clips soldered on each end.)

STEP	PROCEDURE
1	Switches A and B on 5U test set are set on OFF position.
2	Connect repeater, oscillator, and vacuum tube voltmeter to 5U test set as shown on associated sketches. (Note connection for nonregenerative gain test—Test 6.)
3	Strap repeater for X wiring for Tests 1, 2, 5, and 6 and Y wiring for Tests 3 and 4.
4	Insert a 427A vacuum tube in V41 and adjust filament and check plate voltages on 5U test set. ***Requirement:*** Filament 10 volts Plate 128 to 130 Volts
5	Make tests for the following subassemblies as outlined below.

	For Subassembly	*Of Repeater Unit*
Follow Test Procedure in Section E34.035.10	Chart D L-H	J98706 EA and FA
	Chart B H-L	J98706 CA and DA
Follow Test Procedure in this section	Chart A L-L	J98706 J, K, CA, DA, EA, and FA
	Chart B H-H	J98706 J and K

STEP	PROCEDURE
6	The nonregenerative gain test is discussed in Part 4 of Section E34.035.00. To make tests on L-L and H-H subassemblies (Test 4) P2CC cord is in SEND jack. Unsolder lead terminal 1 of T3 and connect P2CC cord between this terminal and a chassis ground as far away as possible from this terminal. Unsolder R24 from junction of C11-RT1 and place a short between the unsoldered end of R24 and the junction of C9 and R20. Place another short from the junction of C6-R12 to the junction of C4-R10 for the L-L subassembly and C4-R25 for the H-H subassembly. After the tests are completed, rewire to original connections.

CHART A

L-L SUBASSEMBLIES — CHART A

PURPOSE OF TEST	SWITCH POS. C	SWITCH POS. D	ATT (db)	CAL (db)	OSC FREQ (KC)	REPT SLOPE SWITCH SETTING	P2CC CORD IN SEND JACK	TEST LIMITS MIN	TEST LIMITS MAX	TS TST	TEST CONDITIONS AND REMARKS
1. THERMISTOR RESISTANCE CHECK (COLD)								150,000 Ohms			Dc power should be OFF. Meas. dc resistance across each thermistor bead (RT1 terminals 1 and 2) when the thermistor is at room temp. and has not been energized for at least 20 minutes. Use volt-ohm-milliammeter.
2. THERMISTOR RESISTANCE CHECK (HOT)	17	18	Remove Oscillator						½ Value of Test 1		Dc power on On. Leave power on 15 min. Measure dc resistance of each thermistor.
3. TRAN GAIN TEST	W-E 17	10	32	0	96	A		−1.0 db	+1.0 db		**Measured value between these limits is M value.
			32	0	136	A		M −0.7 db	M +0.7 db		Measured value between these limits is N value.
			32	0	136	B		N −0.1 db	N +1.3 db		
			33	0	136	C		N −0.4 db	N +1.0 db		
			32	0	56	A		M −1.3 db	M +0.9 db		Measured value between these limits is P value.
	E-W 18		31	0	56	B		P −1.0 db	P +0.6 db		
			30	0	56	C		P −1.0 db	P +0.6 db		
4. NON-REGEN GAIN	W-E 17	10	35	0	80	A	X	−1.0 db	+10.0 db		See text for procedure.
			24	0	30	A	X	−3.0 db	+ 3.0 db		
	E-W 18		27	0	200	A	X	−3.0 db	+ 3.0 db		
5. THERMISTOR REGULATION TEST	W-E 17 / E-W 18	10	23	0.5	96	B		−5.0 db	− 1.0 db		Connect RT1 thermistor in place of the 20,000-ohm resistor R24. Wait 15 min. before taking readings.
6. THERMISTOR RESISTANCE CHECK	W-E 17 / E-W 18	10	23	0.5	96	B		7000 Ohms	11,000 Ohms		Dc power on ON. Measure at same terminals as Test 1.

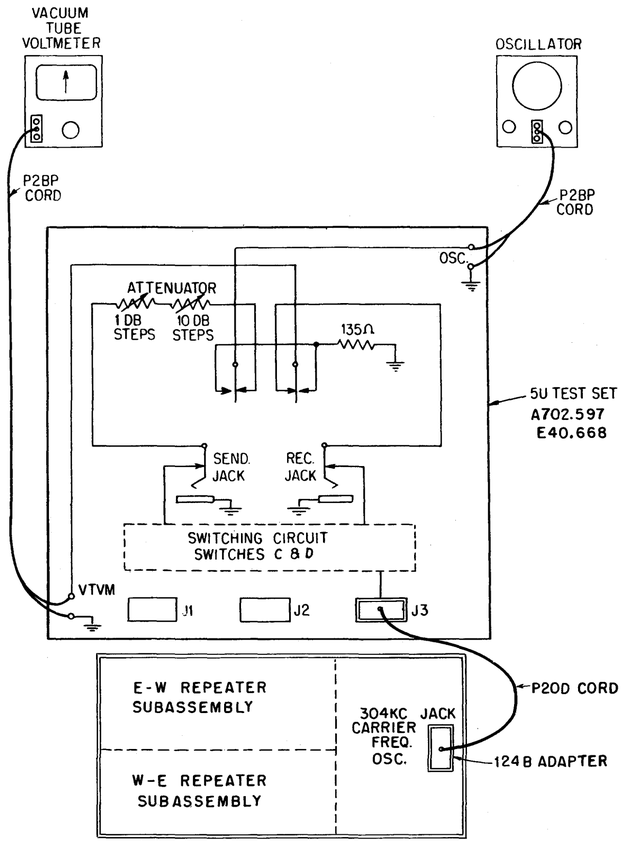
** If necessary, adjust the connections to resistors R10, R11 and R12.

CHART B

H-H SUBASSEMBLIES OF J98706J AND J98706K — CHART B

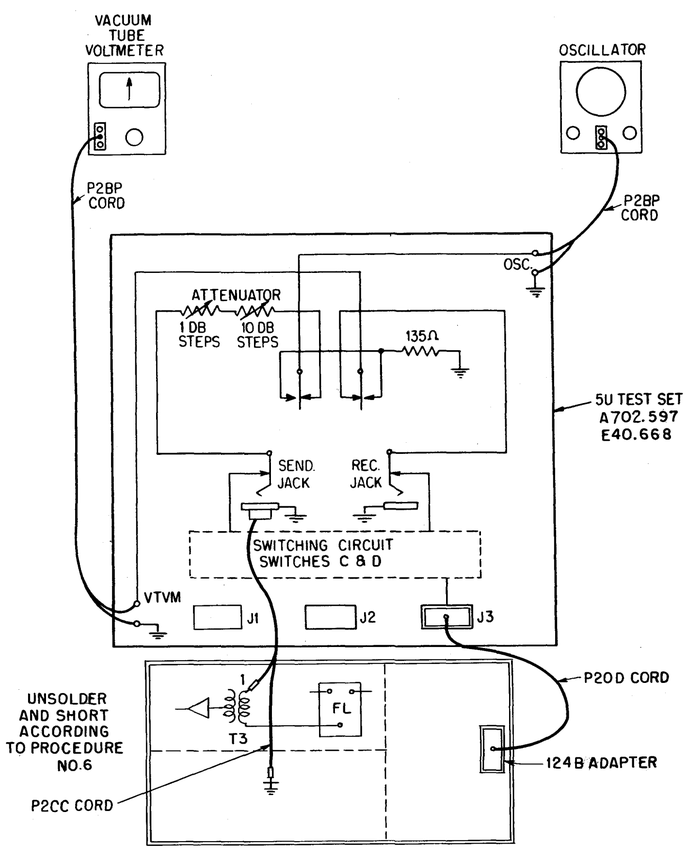
PURPOSE OF TEST	SWITCH POS. C	SWITCH POS. D	ATT (db)	CAL (db)	OSC FREQ (KC)	REPT SLOPE SWITCH SETTING	P2CC CORD IN SEND JACK	TEST LIMITS MIN	TEST LIMITS MAX	TS TST	TEST CONDITIONS AND REMARKS
1. THERMISTOR RESISTANCE CHECK (COLD)								150,000 Ohms			Dc power should be OFF. Meas. dc resistance across each thermistor bead (RT1 terminals 1 and 2) when the thermistor is at room temp. and has not been energized for at least 20 minutes. Use volt-ohm-milliammeter.
2. THERMISTOR RESISTANCE CHECK (HOT)	17	18	Remove Oscillator						½ Value of Test 1		Dc power on On. Leave power on 15 min. Measure dc resistance of each thermistor.
3. TRAN GAIN TEST		10	30	0	208	A		−2.8 db	− 0.8 db		**Measured value between these limits is M value.
	W-E 17		30	0	168	A		M − .9 db	M + .5 db		Measured value between these limits is N value.
			31	0	168	B		N − .5 db	N + .9 db		
			32	0	168	C		N − .3 db	N +1.1 db		
			30	0	248	A		M −1.3 db	M + .7 db		Measured value between these limits is P value.
	E-W 18		29	0	248	B		P − .8 db	P + .8 db		
			29	0	248	C		P −1.4 db	P + .2 db		
4. NON-REGEN GAIN	W-E 17	10	35	0	200	A	X	0.0 db	+10.0 db		See text for procedure.
			29	0	100	A	X	−3.0 db	+ 3.0 db		
	E-W 18		32	0	300	A	X	−3.0 db	+ 3.0 db		
5. THERMISTOR REGULATION TEST	W-E 17	10	10	0	208	B		+4.0 db	+ 7.0 db		Connect RT1 thermistor in place of the 20,000-ohm resistor R24. Wait 15 min. before taking readings.
	E-W 18										
6. THERMISTOR RESISTANCE CHECK	W-E 17	10	10	0	208	B		7000 Ohms	11,000 Ohms		Dc power on ON. Measure at same terminals as Test 1.
	E-W 18										

** If necessary adjust the connections to resistors R9, R10 and R12.



OVERALL REPEATER

SD-95189-01	J98706J	SD95217-01	J98706EA
SD 95215-01	J98706FA	SD95218-01	J98706CA
SD 95216-01	J98706DA	SD95221-01	J98706K



NON-REGENERATIVE GAIN TEST (TEST 4) OVERALL REPEATER