

**TYPE N1, O, AND ON CARRIER TELEPHONE SYSTEMS –
OVERALL CHANNEL LINE-UP
SUMMARY CHARTS – LINE-UP AND MAINTENANCE
N1 CARRIER – THRU CHANNEL UNIT (J98703AH)**

This section is revised to change requirements when the thru channel unit is connected to a complementary N thru channel unit. Since this reissue covers a general revision, marginal arrows ordinarily used to indicate changes have been omitted.

This section consists of an overall diagram of the channel unit and charts giving the tests required for line-up and maintenance of a channel using the thru channel unit. Chart I is provided for the standard testing arrangement. Chart II is provided for locations where a mobile carrier test bay is used.

Two thru channel units (TCU) are used in tandem to extend services. The thru channel unit that receives test tone or signaling tone from a distant terminal is the receiving TCU, and the thru channel unit that transmits toward a distant terminal in the same direction is the complementary TCU.

The TCU consists of a thru VF channel subassembly and a carrier frequency subassembly. The carrier frequency subassembly may be modified (blue label on the handle) or original (silver label or no label on the handle).

The carrier frequency subassembly is identical to that used in the J98703FA message channel unit, and tests and adjustments involving the carrier frequency subassembly are also identical.

It will be necessary to refer to associated sections in this division of practices 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.

For investigation of noise on the overall message channel, the noise measurement at the output of the thru channel unit will be approximately 28 db higher than a comparable message channel unit because of the absence of the expander in the TCU.

The tests must be completed in numerical sequence with testing equipment which has been accurately calibrated.

APPARATUS:

- 1 — Hewlett-Packard 400-type Vacuum Tube Voltmeter (VTVM)
- 1 — KS-14510 Volt-Ohm-Milliammeter, or equivalent (20,000 ohms per volt)
- 1 — W2DW Cord (to connect VTVM to test points)
- 1 — Channel Unit Test Stand (J98705M)
- 1 — P19A Cord (used with channel test stand)
- 1 — 262B Plug (600 ohms)

CHART I

LINE-UP AND MAINTENANCE TESTS FOR N1 CARRIER THRU CHANNEL UNITS (J98703AH)

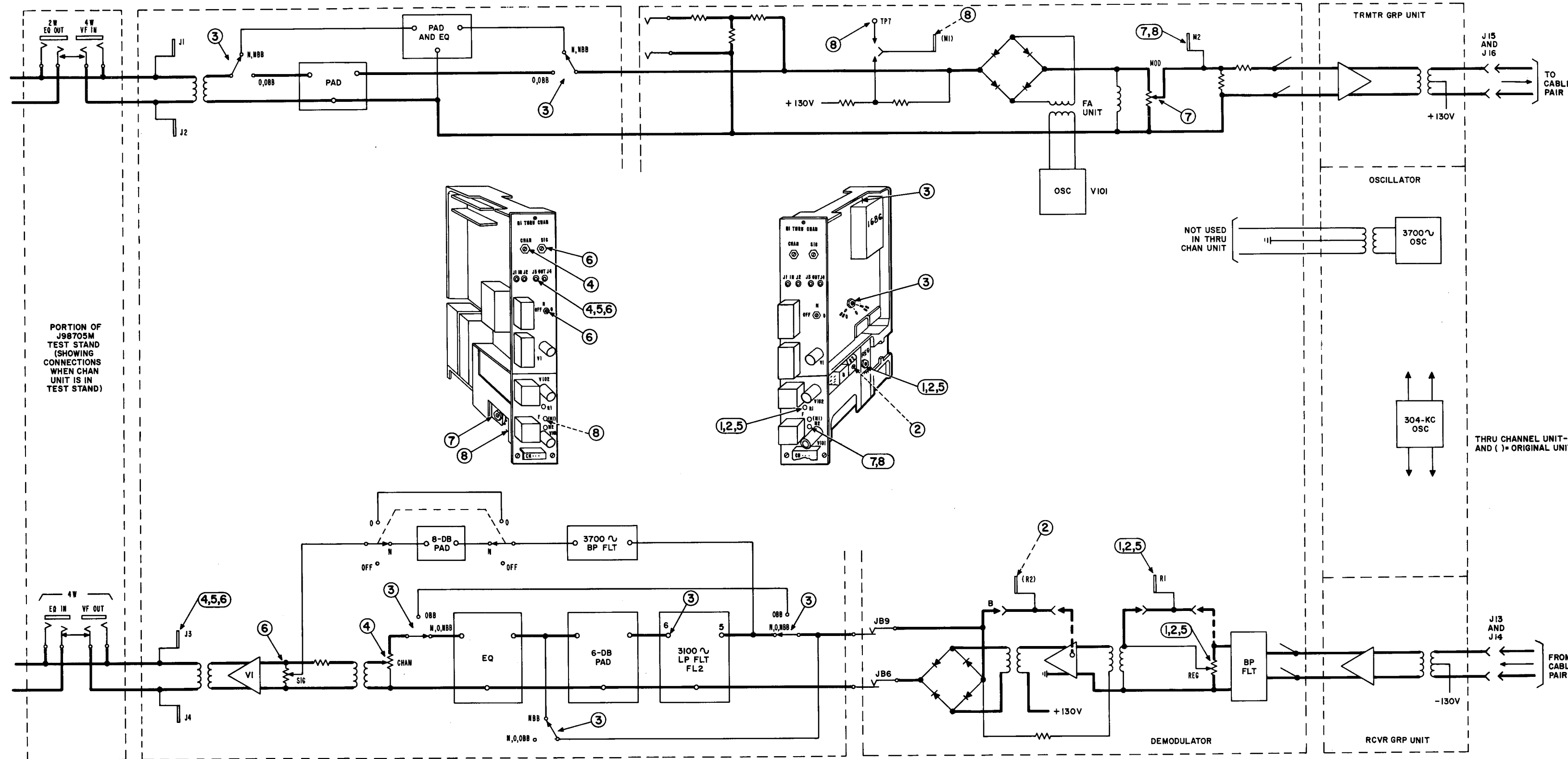
TEST	PURPOSE OF TEST		TEST STAND	MEAS EQUIP. REQUIRED		MEASURE TEST POINT TO GRD OR BETWEEN TEST POINTS	REQUIRED VALUE		ADJUST	TEST CONDITIONS AND REMARKS		SECTION REFERENCE
				TESTING END	DISTANT END		TEST	READJUST				
1	Received channel carrier level		Yes	VTVM	—	R1	<i>Line-up:</i> -21.0 ± 8.0 db <i>Maintenance:</i> recorded value ± 5.0 db	—	—	Modified units — set REG potentiometer for maximum reading.		362-030-501
2	Channel regulator	original	Yes	VOM	—	R2 jack and +130V jack in test stand	3.0 ± 0.4 volts	3.0v dc	REG	<i>Caution: Approximately 125 volts on R2 jack, insert test cord in R2 jack last.</i>		
		modified	Yes	VTVM	—	R1	-33.0 ± 5.0 db	-33.0 db	REG	—		
3	Demodulator output level		Yes	VTVM	1000~ test tone	Term. 6 of FL2 (168G)	$+12.5 \pm 1.5$ db	—	—	Set OBB-O-N-NBB switch to N when 3700~ signaling is used, otherwise to NBB.	<i>Distant end:</i> Send 1000~ at; 0 dbm (2W) -16 dbm (4W) -13 dbm at -13 db offices Off hook on M lead.	362-310-501
4	1000~ output level		Yes	VTVM 262B plug	2B sig test set 1000~ test tone	J3 - J4	$+4.0 \pm 1.0$ db (-16 db offices) $+7.0 \pm 1.0$ db (-13 db offices)	+4.0 db +7.0 db	CHAN	<i>Testing end:</i> Terminate VF OUT jack in 600 ohms.		
5	Channel regulation	a	Yes	VTVM	2B sig test set 1000~ test tone	R1	—	-41.0 db	REG	Modified units only. (See Note.) For original units see Section 362-030-501.		
		b				J3 - J4	$+3.5$ to $+4.5$ db (-16 db offices) $+6.5$ to $+7.5$ db (-13 db offices)	—	—			
		c				R1	—	-33.0 db	REG			
6	3700~ output level		Yes	VTVM 262B plug	2B sig test set	J3 - J4	Switch in N position: -1.5 ± 1.0 db	-1.5 db	SIG	<i>Testing end:</i> Set OFF-N-O switch to N or O depending on type of system to which channel will be connected. Terminate VF OUT jack in 600 ohms.	<i>Distant end:</i> On hook on M lead.	362-310-501
							Switch in O position: $+5.5 \pm 1.0$ db	$+5.5$ db				
7	Channel carrier output level		Yes	VTVM	—	M2	Recorded value ± 0.5 db	Recorded value	MOD	Maintenance only. See Section 362-025-501 for line-up.		362-025-501
8	Channel carrier leak		Yes	VTVM	2B sig test set	M2	At least 18 db below the recorded value used in test 7.	—	—	Ground M1 jack (original units) or TP7 (modified units).		

Note: Original units have a silver label (or no label) on the handle. Modified units have a blue label on the handle.

CHART II
LINE-UP PROCEDURES FOR N1 CARRIER THRU CHANNEL UNITS (J98703AH)
USING THE MOBILE CARRIER TEST BAY

TEST	PURPOSE OF TEST		METER SWITCH	VF PATH SWITCH	MEASURE TEST POINT TO GRD OR BETWEEN TEST POINTS	REQUIRED VALUE		ADJUST	TEST CONDITIONS AND REMARKS		SECTION REFERENCE	
						TEST	READJUST					
1	Received channel carrier		5	4	R1	<i>Line-up:</i> -21.0 ± 8.0 db <i>Maintenance:</i> Recorded value ± 5.0 db		—	Modified units — Set REG potentiometer for maximum reading.		362-030-501	
2	Channel regulator	original	3	4	R2	3.0 \pm 0.4 volts		3.0v dc	REG	<i>Caution: Approximately 125 volts on R2 jack, insert test cord in R2 jack last.</i>		
		modified	5	4	R1	-33.0 ± 5.0 db		-33.0 db	REG	—		
3	Demodulator output		5	4	Term. 6 FL2 (168G)	$+12.5 \pm 1.5$ db		—	—	Set OBB-O-N-NBB switch to N when 3700~ signaling is used, otherwise to NBB.	362-310-501	
4	Voice frequency 1000~ output		7	6	VF OUT	$+4.0 \pm 1.0$ db (-16 db offices)	$+4.0$ db	CHAN	—			
5	Channel regulation	a	5	4	R1	—			-41.0 db	REG	Modified units only. (See Note.) For original units see Section 362-030-501.	362-030-501
		b	7	6	VF OUT	$+3.5$ to $+4.5$ db (-16 db offices) $+6.5$ to $+7.5$ db (-13 db offices)	—		—			
		c	5	4	R1	—		-33.0 db	REG			
6	3700~ output		7	6	VF OUT	Switch in N position: -1.5 ± 1.0 db	-1.5 db	SIG	<i>Testing end:</i> Set OFF-N-O switch to N or O depending on type of system to which channel will be connected. <i>Distant end:</i> On hook on M lead.		362-310-501	
						Switch in O position: $+5.5 \pm 1.0$ db	$+5.5$ db					
7	Channel carrier output		5	4	M2	Recorded value ± 0.5 db		Recorded value	MOD	Maintenance only. See Section 362-501 for line-up.		362-025-501
8	Channel carrier leak		5	4	M2	At least 18 db below the recorded value used in test 7.		—		Ground M1 jack (original units) or TP7 (modified units).		

Note: Original units have a silver label (or no label) on the handle. Modified units have a blue label on the handle.



PORTION OF J98705M TEST STAND (SHOWING CONNECTIONS WHEN CHAN UNIT IS IN TEST STAND)

THRU CHANNEL UNIT-- AND () = ORIGINAL UNIT

Fig. 1 — Line-Up and Maintenance Tests for N1 Carrier Thru Channel Unit (J98703AH)