HIGH SEAS AND OVERSEAS RADIO
MARITIME LINCOMPEX 100/101 TRANSMIT/RECEIVER TERMINAL
TESTS

CONTENTS PAGE

1. GENERAL

1.01 This section provides information on the testing of the Lincompex 100/101 transmit and receive unit (Fig. 1). For a description of the transmit unit, see Section 403-311-101 and for the receive unit, see Section 403-311-102.

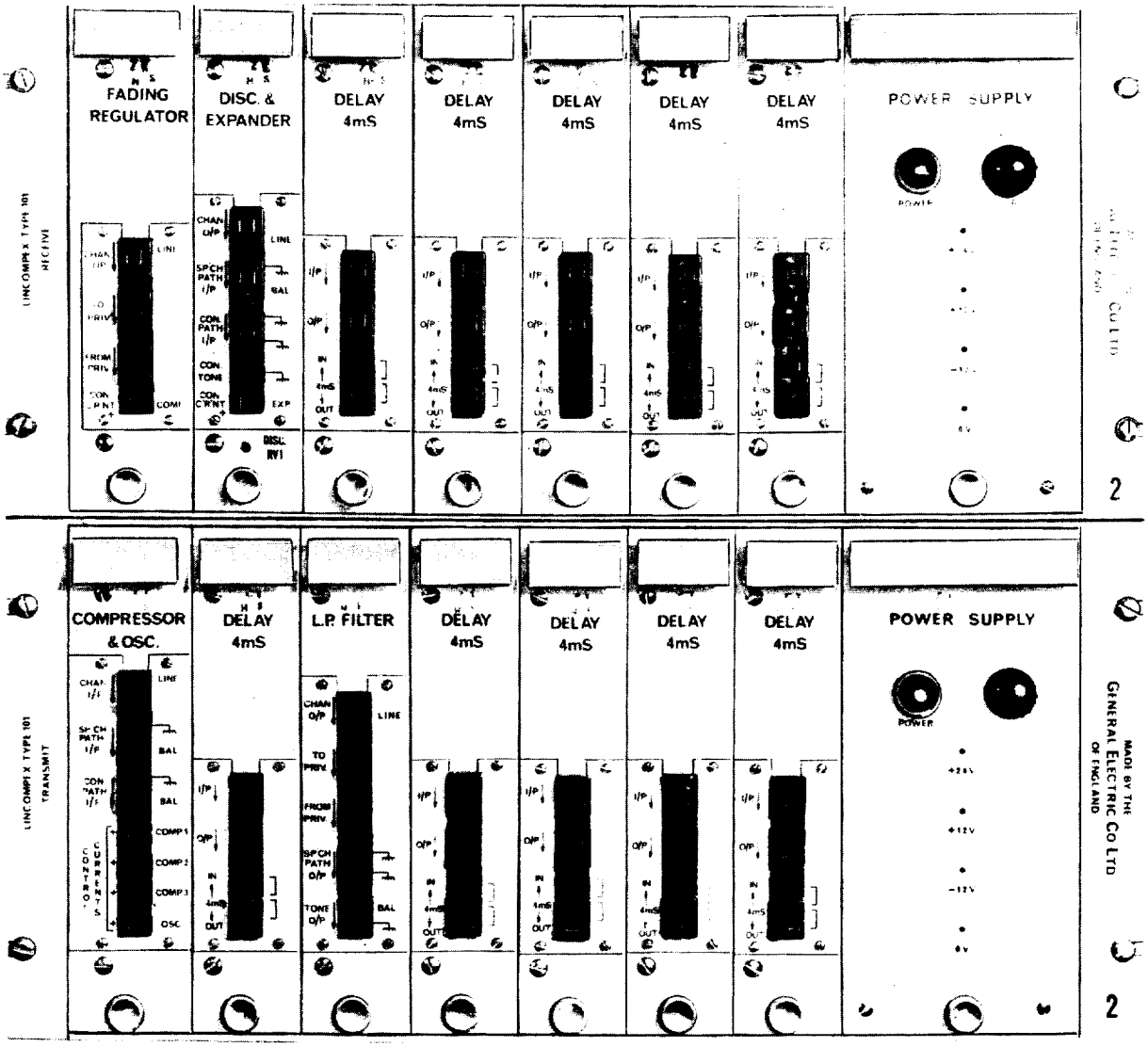

Fig. 1—Lincompex 101 Transmit and Receive Unit

1.02 The Lincompex transmit and receive path can be isolated by removing the CHAN I/P and CHAN O/P links on each unit. This enables the Lincompex equipment to be completely checked using the test points on the front of the modules.

2. APPARATUS

2.01 The following equipment, or its equivalent, should be used to test the Lincompex transmit and receive units:

1—Digital Frequency Counter with an input impedance high compared with 600 ohms; Frequency Range: 2000 to 3000 Hz to an accuracy of ±0.1 Hz

2—Signal Generators, Frequency Range: 800 to 3000 Hz; Output Impedance: 600 ohms; Output Level Range: −71 to +5 dBm

1—DC Voltmeter; 20,000 ohm per volt multimeter or digital voltmeter; Accuracy: ±2 percent

1—AC Voltmeter, Frequency Range: 800 to 3000 Hz terminated in 600 ohms; Level Range: −71 to +10 dBm; Accuracy: ±0.1 dB

2—Resistors; 600 ohms noninductive.

3. TESTS

CHART 1

TRANSMIT UNIT

STEP	PROCEDURE

Note 1: Before commencing the tests, the Lincompex equipment should be allowed to warm up for at least 2 hours.

Note 2: No adjustment should be made unless the measurements are outside the limits quoted. If the measurements are outside the limits, and no fault has occurred, then the module may have to be realigned to ensure correct operation. ***For alignments see Section 403-311-502.***

Note 3: Certain circuits are sensitive to supply voltage changes. If the voltages are reset, it is necessary to carry out the full alignment procedure. Measure the dc voltages at the test points on the front panel using the digital voltmeter.

Requirement: The voltages should be:
+24V ±0.02V
+12V ±0.02V
−12V ±0.02V

If necessary, voltages may be adjusted by resetting the potentiometers' RV1 (+24V), RV2 (+12V), and RV3 (−12V) on the rear plate. To do this the small locking screw adjustment to the potentiometer should first be slackened, and then locked after the adjustment is complete.

1 Remove the CHAN I/P link (TP1 and TP2) on the COMPRESSOR & OSC module (Fig. 2) and inject a 1000-Hz signal at a level of −16 + X dBm into TP2 (X is the setting of attenuator AT1).

CHART 1 (Cont)

STEP	PROCEDURE
2	Measure across the CONTROL CURRENTS test points on the COMPRESSOR & OSC module. ***Requirement:*** The voltages should be as follows: COMP 1 (TP7) 597 mV $\pm$60 mV COMP 2 (TP8) 597 mV $\pm$60 mV COMP 3 (TP9) 597 mV $\pm$60 mV OSC (TP10) 597 mV $\pm$20 mV.
3	If the requirement of Step 2 is not met, carry out Steps 2 through 9 of Chart 1, Section 403-311-502.
4	Remove the I/P link (TP1 and TP2) from the X2 delay module (Fig. 3) and measure the terminated level at TP1. Replace the I/P link, remove the O/P link (TP3 and TP4), and check that the terminated level at TP3 is within 0.3 dB of the level of TP1. Repeat for delay modules X3 through X6.
5	If any delay gain in Step 4 is outside this limit, carry out Steps 10 through 13 of Chart 1, Section 403-311-502.

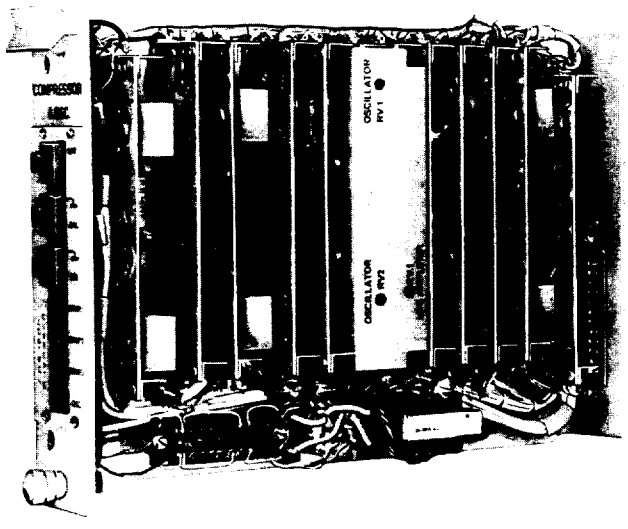

Fig. 2—Compressor and Oscillator Module

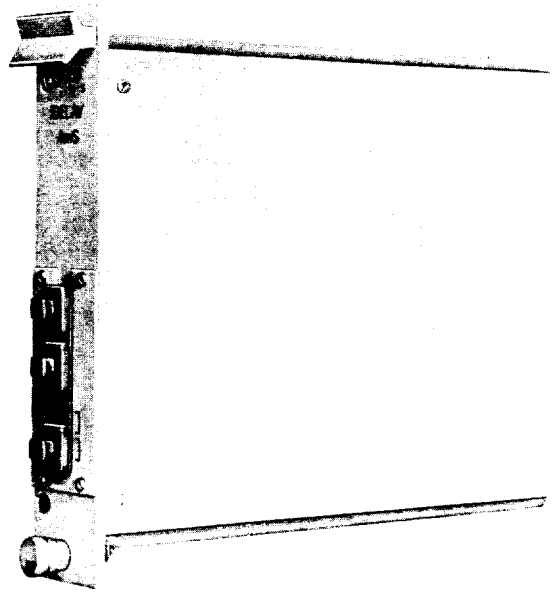

Fig. 3—4-mS Delay Module

CHART 1 (Cont)

STEP	PROCEDURE
6	Remove the TO PRIV link (TP3 and TP4) on the L.P. filter module (Fig. 4) and measure the terminated level at TP3. ***Requirement:*** This level should be 0 dBm $\pm$1 dB.

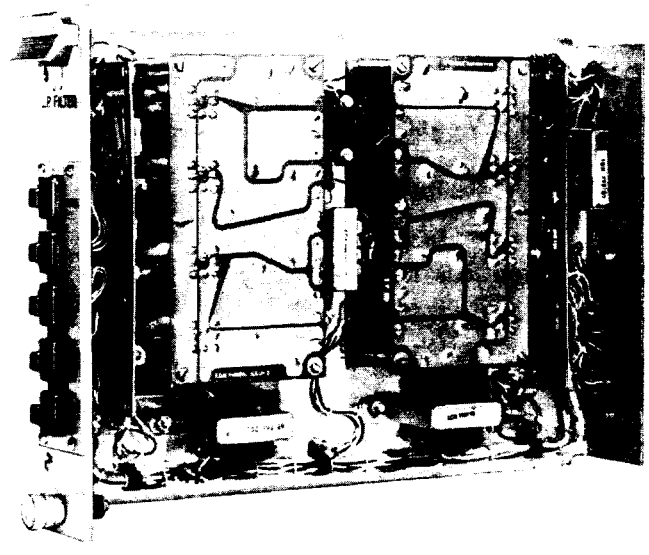

Fig. 4—L.P. Filter Module

7	If the requirement of Step 6 is not met, carry out Steps 14 and 15 of Chart 1, Section 403-311-502.
8	Reduce the input signal level by 55 dB. ***Requirement:*** The output level at TP3 on the L.P. filter should be -12 dBm + 1 dB $-$ 2 dB.
9	If the requirement of Step 8 is not met, carry out Steps 16 through 19 of Chart 1, Section 403-311-502.
10	Replace the TO PRIV link and reset the input signal level to $-16 + X$ dBm.
11	Remove the CHAN O/P (TP1 and TP2) and TONE O/P (TP9 and TP10) links on the L.P. filter module and terminate TP10 with a 600-ohm resistor.
12	Measure the terminated level at TP1 on the L.P. filter module. ***Requirement:*** This level should be $+8 - y$ dBm $\pm$1 dB (y is the setting of the output attenuator AT2).

CHART 1 (Cont)

STEP	PROCEDURE
13	If the requirement of Step 12 is not met, carry out Steps 21 and 22 of Chart 1, Section 403-311-502.
14	Replace the TONE O/P link, remove the SP'CH PATH O/P link (TP7 and TP8), and terminate TP8 with a 600-ohm resistor. ***Requirement:*** The terminated level at TP1 should now be 5 dB $\pm$1 dB below the level measured in Step 12.
15	Connect the frequency counter to TP1 on the L.P. filter module. The frequency counter should indicate as indicated below when the input signal level at TP2 on the COMPRESSOR & OSC module is varied as follows: **Signal Level at TP2** — **Frequency at TP1** $-16 + X$ dBm — 2530 Hz $\pm$1 Hz $-41 + X$ dBm — 2580 Hz + 3 Hz − 2 Hz $-71 + X$ dBm — 2640 Hz + 4 Hz − 3 Hz
16	If the frequencies on Step 15 are only slightly outside the limits, carry out Steps 31 through 36 of Chart 1, Section 403-311-502. Otherwise, carry out Steps 25 through 36 of that chart.

CHART 2

RECEIVE UNIT

STEP	PROCEDURE
1	Remove the CHAN I/P link (TP1 and TP2) on the FADING REGULATOR module (Fig. 5).
2	Inject into TP2 a 1000-Hz signal at a level of $-15 + X$ dBm (X is the setting of input attenuator AT1).
3	Measure across the CON. C'R'NT. test point on the FADING REGULATOR module. ***Requirement:*** The voltage should be 270 mV $\pm$10 mV.
4	If the requirement of Step 3 is not met, carry out Steps 2 through 6 of Chart 2, Section 403-311-502.

CHART 2 (Cont)

STEP	PROCEDURE
5	Remove the TO PRIV link (TP3 and TP4) on the FADING REGULATOR module and measure the terminated level at TP3. ***Requirement:*** This level should be 0 dBm $\pm$1 dB.
6	If the requirement of Step 5 is not met, carry out Step 7 of Chart 2, Section 403-311-502.
7	Reduce the input signal by 35 dB. ***Requirement:*** The TO PRIV level at TP3 should be -17 dBm + 1 dB $-$ 2 dB.
8	If the requirement of Step 7 is not met, carry out Steps 8 and 9 of Chart 2, Section 403-311-502.
9	Replace the TO PRIV link, and reset the input signal level to -15 + X dBm.
10	Remove the I/P link (TP1 and TP2) from the X2 delay module and measure the terminated level at TP1.
11	Replace the I/P link, remove the O/P link (TP3 and TP4), and check that the terminated level at TP3 is within 0.3 dB of the level at TP1. Repeat for delay modules X3 through X6.
12	If any delay gain is outside the limit of Step 11, carry out Steps 10 through 13 of Chart 1, Section 403-311-502.
13	Remove the CON PATH I/P link (TP5 and TP6) on the DISC. & EXPANDER module (Fig. 6) and inject into TP6 a signal of -2 dBm at a frequency of 2530.0 Hz $\pm$0.1 Hz from a second signal generator.

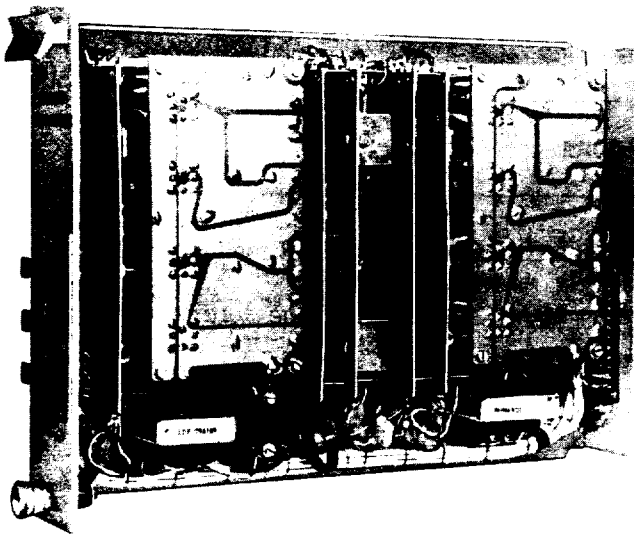

Fig. 5—Fading Regulator Module

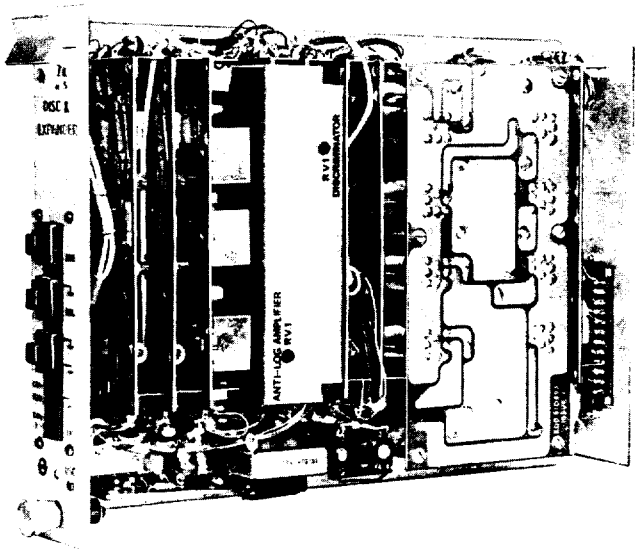

Fig. 6—Discriminator and Expander Module

CHART 2 (Cont)

STEP	PROCEDURE
14	Measure across the EXP. CON. C'R'NT. test point on the DISC. & EXPANDER module. ***Requirement:*** The voltage should be 360 mV $\pm$10 mV.
15	If the requirement of Step 14 is not met, carry out Steps 11 and 12 of Chart 2, Section 403-311-502.
16	Remove the CHAN O/P link (TP1 and TP2) on the DISC & EXPANDER module and measure the terminated level at TP1. ***Requirement:*** The level should be +7 − y dBm $\pm$1.5 dB (y is the setting of the output attenuator AT2).
17	If the requirement of Step 16 is not met, carry out Steps 13 and 14 of Chart 2, Section 403-311-502.
18	Adjust the CON PATH I/P signal at TP6 to a frequency of 2620.0 Hz $\pm$0.1 Hz. ***Requirement:*** The output level should be −38 − y dBm + 1.5 dB − 2.5 dB.
19	If the requirement of Step 18 is not met, carry out Steps 15 and 16 of Chart 4, Section 403-311-502.
20	Remove all test equipment and replace all bridging links.