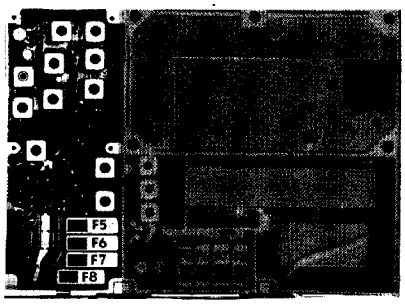
MOBILE RADIO (Includes Addendum #1)

MASTR II
MAINTENANCE MANUAL
WIDE-SPACED TRANSMITTER
OPTIONS 9203, 9204 & 9205

Maintenance Manual LBI-4894

WIDE-SPACED TRANSMITTER



SPECIFICATIONS *

OPTION 9203 - Wide-Spaced Transmitter, ±0.0005% Freq. Stability

OPTION 9204 - Wide-Spaced Transmitter, ±0.0002% Freq. Stability

OPTION 9205 - Wide-Spaced Transmitter with Dual Front End (Utilizes Option 9201 or 9202 with 9203 or 9204)

FREQUENCY RANGE	42-50 MHz (Low Band)
(8-Frequency Capability)	138-174 MHz (High Band) 406-420 & 450-512 MHz (UHF)
Maximum Frequency Spread Each Exciter	Refer to the Applicable Transmitter Maintenance Manual.
Between Two Exciters	Full exciter frequency range.
Temperature Range	-40°C to +70°C (-40°F to +158°F)
Exciter Combiner	
Insertion Loss	0.5 dB (Maximum)
Current Drain (Tx Keyed) 13.4 Volts	30 mA (Maximum)

*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

GENERAL ELECTRIC

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(The addendum follows page 14)

WARNING

Although the highest DC voltage in the radio is supplied by the vehicle battery, high current may be drawn under short circuit conditions. These currents can possibly heat metal objects such as tools, rings, watchbands, etc. enough to cause burns. Be careful when working near energized circuits!

High-level RF energy in the transmitter Power Amplifier assembly can cause RF burns. KEEP AWAY FROM THESE CIRCUITS when the transmitter is energized!

DESCRIPTION

The Wide-Spaced Transmitter option (WST) provides a second exciter in MASTR II "E" Series mobile combinations to allow frequency spacing up to the full range of the transmitter PA. In Low Band and UHF combinations, the frequency range of the Second Exciter must be the same as the exciter in the basic mobile combination. In High Band combinations, either range of exciter can be used.

A total of eight frequencies can be used between the two exciters, and the frequency stability for all channels in a standard combination must be the same.

A WST with Dual Front End option is also available for use in "E" Series combinations. Refer to the applicable Maintenance Manual for details of the Dual Front End.

The WST option consists of the following modules:

- Second Exciter Board (modified standard module)
- Second System Board
- Exciter Combiner Board

SECOND EXCITER BOARD

The Second Exciter Board mounts in a Lexan® mounting frame in the hinged bottom section of the radio. The mounting frame also houses the Dual Front End (DFE) modules, when used.

SECOND SYSTEM BOARD

A Second System Board mounts on the front of the module mounting frame, and provides interconnection between the top section of the radio and the modules in the hinged bottom section. The board also contains an integrated circuit 10-volt regulator and control circuit to supply a regulated +10 volts for the modules in the bottom section.

The Second Exciter board connects to J951 on the Second System Board. In DFE applications, the Osc/Mult board connects to J952, and the MIF Switch/2nd Converter board connects to J953. Connections to the main (1st) Exciter board, main systems board and the receiver IFAS board are made through cable assembly W951. Refer to the Cable Harness Diagram and Interconnection Diagrams for complete details (see Table of Contents).

The Exciter Combiner Board mounts to the panel on the front of the transmitter PA assembly. The combiner functions as a wide-band, solid state RF switch that provides a low loss RF path between the active exciter board and the input of the PA assembly. A second power adjust potentiometer (R2115) on the combiner board is provided so that both frequencies (or groups of frequencies) can be set to the desired power level.

RF from J101 on the two exciter boards is connected through 50-ohm RF cables to J2101 and J2103 on the combiner board. The RF output of the combiner connects from J2102 to the PA input jack J201 through a 50-ohm RF cable.

DC power for the combiner is connected from C297 (A+) and C298 (A-) on the transmitter PA assembly. The output of the combiner power adjust circuit connects to the PA assembly Power Control circuit through RF filter Capacitor C2101 on the PA.

CIRCUIT ANALYSIS

10-VOLT REGULATOR

The 10-Volt Regulator IC on the Second System board contains the following circuits:

- 10-Volt Regulator Reference Amplifiers
- Compensation Voltage Divider
- Receiver Muting and Delay (not used)
- Transmitter Keying and Delay
- Receiver Oscillator Control
- Transmitter Disable

A typical regulator IC is shown in Figure 1.

<u>10-Volt Regulator</u>

The 10-Volt regulator includes regulator amplifiers Q1 and Q2 (in the IC), and regulator pass transistor Q951. Q951 is mounted on a heatsink located on the 2nd System Board. The regulator circuit provides a closely-controlled supply voltage for the 2nd exciter and for Dual Front End, when present. Input voltage (A+) is supplied from hole H70 on the main system board.

Turning on the radio applies voltage (A+) to input filter C954; to pin 1 of the regulator and to the base of Q1, causing it to conduct. This turns on PNP regulator pass transistor Q951 and an output voltage appears at the collector. When the output voltage (at pin 3) reaches 10 Volts, zener diode VR1 breaks down, and Q2 starts conducting.

If the output voltage starts to increase, the base current of Q2 also

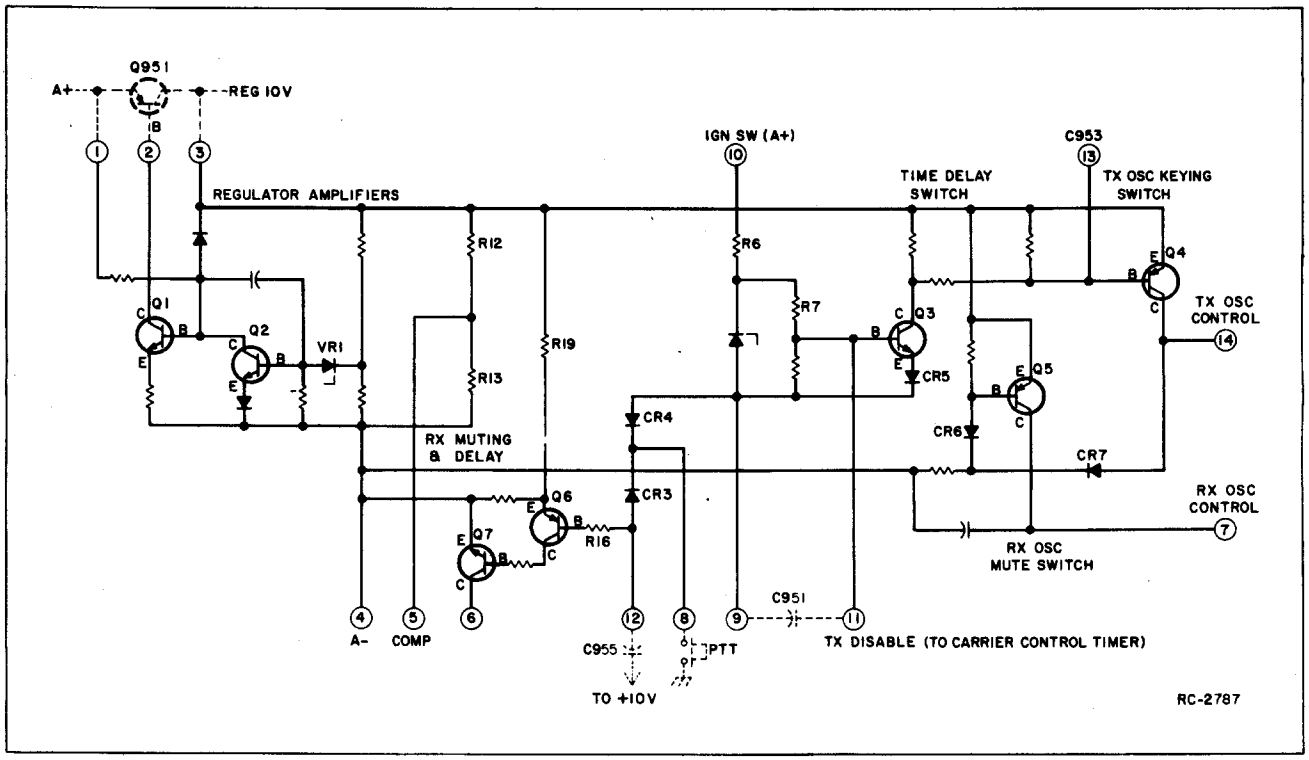

Figure 1 - Typical Regulator IC

increases, causing it to conduct harder. This causes Q1 to conduct less, decreasing the forward bias on Q951. The voltage drop across Q951 increases and the output remains constant.

When the input voltage starts to drop, the output voltage also tends to drop, causing Q2 to conduct less. This allows Q1 to conduct harder, increasing the forward bias on Q951 and causing it to conduct harder. This reduces the voltage drop across Q951 keeping the output constant.

Service Note: The 10-Volt regulator is protected against short circuits. When supply voltage is present but there is no 10-Volt output, the trouble is probably not in the 10-Volt regulator. Always check for a short (or high drain) on the 10-Volt line before replacing the regulator.

Compensation Voltage Divider

When the regulator is turned on, the 10-Volt output is applied to a voltage divider network consisting of R12 and R13. This high impedance source provides a stable 5-Volt compensation input (at pin 5) to the Second Exciter and the Dual Front End ICOMs. This source must not be used for ano other purpose.

Transmitter Keying

Pressing the PTT switch on the microphone connects pin 8 of the regulator IC to A-. Capacitor C951 starts to charge through R6 and R7. In 15 milliseconds, C951 is charged to a voltage high enough to allow time delay switch Q3 to turn on. This causes transmitter oscillator control switch Q4 to turn on. Turning on Q4 applies voltage to the transmitter ICOM(s), keying the transmitter. Keying the transmitter ICOM is the only keying control function in the transmitter. The collector voltage of Q4 also reverse biases CR6, turning off Q5 and removing the supply voltage to the receiver ICOM(s).

Receiver Oscillator Control

When the radio is in the receive mode (transmitter unkeyed), transmitter oscillator control switch Q4 is off and receiver oscillator control switch Q5 is conducting. The voltage at the collector of Q5 is applied to the receiver ICOM(s).

Transmitter Disable

In radios equipped with a Carrier Control Timer (CCT), pin 11 connects through CR951 to P907-1 (TX DISABLE) on the Carrier Control Timer plug. When the timing cycle

on the Carrier Control Timer runs out, A- is applied to pin 11, turning off the transmitter oscillator control voltage which turns off the transmitter. CR952 provides diode isolation between the CCT Tx Disable lead and the transmit oscillator control for the main exciter.

EXCITER-COMBINER

The Exciter Combiner is a wide band, solid state RF switch which provides a low-loss RF path between the selected (active) output of two exciters and the input to the Power Amplifier. Two identical channels (paths) are provided through the Exciter Combiner, each having its own activity detector. When either of the two Exciters becomes active, the activity detector senses and selects the active channel, and at the same time inhibits the inactive channel.

A power adjust potentiometer (R2115) on the combiner board is provided for adjusting the output of the PA to the exciter which gives the highest PA output. Instructions for setting R2115 are contained in the Adjustment Procedure (see Table of Contents).

RF from the 1st Exciter is applied to J2101. The 2nd Exciter RF is applied to J2103. When the 2nd Exciter becomes active (keyed), the Activity Detector circuit (comprised of R2101, R2102 and CR2101), rectifies the RF signal. The resultant positive DC output voltage from CR2101 is applied to DC Switch circuit Q2101 and Q2102. This positive voltage turns Q2101 on, causing Q2102 to turn on. With Q2102 on, Pin diode CR2102 is forward biased through the DC path from the collector of Q2102, L2101, CR2102, L2102 and R2107 to A-. This provides a low resistance RF path from J2103 through CR2104, CR2102, and C2108 to input jack J2102, applying the Second Exciter output to the input of the power amplifier.

At the same time that transistor Q2102 is turned ON, Ground Clamp Switch Q2103 is turned ON. This places the base of Q2106 near A-, inhibiting the 1st Exciter activity Detector circuit and eliminating simultaneous selection of Exciters.

When the 1st Exciter becomes active, the Activity Detector circuit (comprised of R2112, R2113 and CR2104) rectifies the RF signal from the 1st Exciter (J2101). The positive DC voltage developed from CR2104 is applied to DC Switch circuit Q2106 and Q2105. This positive voltage turns Q2106 on, causing Q2105 to turn on. With Q2105 on, pin diode CR2103 is forward biased through the DC path from the collector of Q2105, L2103, CR2103, L2102 and R2107 to A-. A low resistance RF path is now provided from J2101 through C2110, CR2103 and C2108 to J2102, applying the First Exciter output to the input of the power amplifier.

When Q2105 is turned on, Ground Clamp Switch Q2104 is turned on. This places the base of Q2101 near A-, inhibiting the 1st Exciter Activity Detector circuit and eliminating simultaneous selection of Exciters.

Transistor Q2107 and potentiometer R2115 are provided as a second power level adjustment circuit which is connected to hole H-50 on the PA assembly. Jumper P2101 is normally connected to the DC Switch circuit (J2104 or J2105) of the Exciter which provides the highest power output level from the PA assembly. When the Exciter with the associated power level potentiometer (R2115) is selected, the voltage at J2104 or J2105, as applicable, will switch from zero volts to near A+. This causes Q2107 to turn on, placing potentiometer R2115 in parallel with the power adjust potentiometer in the PA assembly. Potentiometer R2115 re-establishes the reference voltage to the Power adjust circuit in the PA, and can be adjusted to reduce the power out of the PA to the same output level of the other exciter.

MAINTENANCE

DISASSEMBLY

To gain access to the modules in the hinged bottom section for servicing:

1. Remove the radio from its mounting frame and turn the radio over.
2. Loosen the two captive screws securing the bottom cover and remove the cover. All major modules are now available for servicing.
3. To service the modules from the bottom, loosen the screw in the retaining latch and slide the latch open. The hinged bottom section will now swing open.
4. Removal of modules or board assemblies from the Wide-Spaced Transmitter (or DFE if present) is essentially the same as for a standard unit. Refer to the applicable Maintenance Manuals for details.

TROUBLESHOOTING

Second Exciter

To service the Second Exciter, refer to the applicable Transmitter Maintenance Manual.

Exciter Combiner

Voltage readings for the Combiner board are shown on the Combiner Schematic Diagram (See Table of Contents).

Second System Board

Refer to the following chart for a Troubleshooting Procedure for the 10-Volt regulator.

10-VOLT REGULATOR U951

SYMPTOM	PROCEDURE
No 10-Volt output	1. Check input voltage (A+) at pin 1 of U951. 2. Remove the Power/Control cable from J901. Check for shorts from Pins 3, 7 and 14 to A-. These readings should be no less than 100 ohms. 3. Check Pass transistor Q951. 4. Replace U951.
Regulator output too high	1. Check Q951. 2. Replace U951.
No switched 10-Volts for Second Exciter	1. Check for shorts from Pins 7 and 14 to A-. 2. Check to see that Pin 8 of U951 goes to A- when PTT switch is pressed. 3. Replace U951.

ADJUSTMENT PROCEDURE

CAUTION

Do NOT put ICOMs on the same channel on both exciter boards! For example, if an ICOM is in the F1 position on the main (top) exciter, do not put an ICOM in the F1 position on the Second Exciter board. Keying the transmitter with two ICOMs on the same channel could damage the PA.

1. Remove the radio from its mounting frame, and remove the top and bottom covers.
2. Align the main (top) exciter as directed in the appropriate transmitter Maintenance Manual, except do not set the Power Adjust control on the transmitter PA.
3. Align the Second Exciter except do not set the Power Adjust control on the PA.
4. Open the hinged bottom section as directed in the Disassembly Procedure, and unplug the Green lead (P2101) on the Combiner board.
5. Key the transmitter and set the Power Adjust control on the PA for desired power output.
6. Switch the frequency selector switch to a channel on the other exciter board. Then key the transmitter and determine which exciter provides the highest power output reading.
7. Connect the Green lead (P2101) to J2105 (main exciter) or J2104 (Second Exciter), whichever provides the highest PA output power.
8. Switch to a channel on the exciter with the lowest power output. Key the transmitter and adjust the Power Level Control on the PA for the desired power output.
9. Switch to a channel on the exciter with the highest power output. Key the transmitter and adjust R2115 on the Exciter Combiner board for the desired power output.

MODIFICATIONS

Modifications are required to the PA assembly and the Second Exciter board for WST applications. Both boards are identified by a GREEN color dot near the board assembly number after modification. The main system board is also modified.

PA ASSEMBLY

1. C2101 is added to H49 on the PA board (see Cable Harness Routing Diagram).
2. A sleeved DA jumper (#22 AWG wire size) is connected from the top terminal of C2101 to H50.
3. The Blue power adjust wire from the Combiner is connected to the bottom terminal of C2101.

SECOND EXCITER MODIFICATIONS

The Second Exciter modifications consist of removing a resistor and a capacitor or removing a jumper in the microphone supply circuit. Refer to the instructions on the applicable exciter Schematic Diagram for details.

MAIN SYSTEM BOARD

The run between H83 and H84 on the bottom of the main system board is cut. This permits proper transmit disable functions on both exciters when a Carrier Controlled Timer is used. The system board is <u>not</u> identified by a GREEN color dot.

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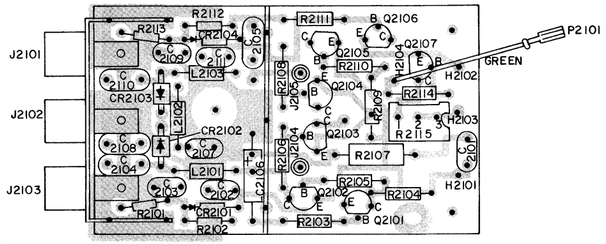
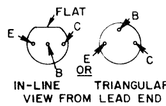
COMBINER BOARD



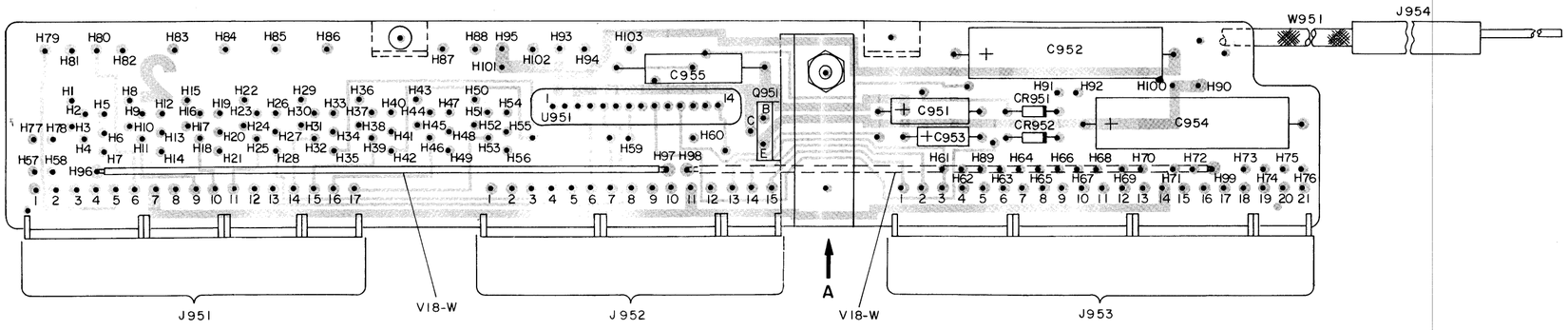
LEAD IDENTIFICATION
FOR Q2101 - Q2107

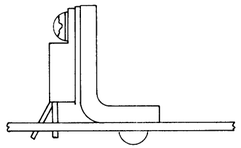


NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

(19C321780, Rev. 0)
(19B226055, Sh. 2, Rev. 0)
(19B226055, Sh. 3, Rev. 0)

SECOND SYSTEM BOARD





VIEW AT "A"

TERMINATE WIRES OF W951 PER CHART BELOW

COLOR	TO
W-O-BK	H77
W-O-BR	H78
W-O-R	H79
W-O-G	H80
W-BR	H81
W-R	H82
W-BL	H83
W-V	H84
W-GY	H85
W-O	H86
Y	H87
W-Y-BR	H88
V18-R	H90
BK	H92
O	H91
BR	H93
R	H94
V18-BK	H95
V	H89

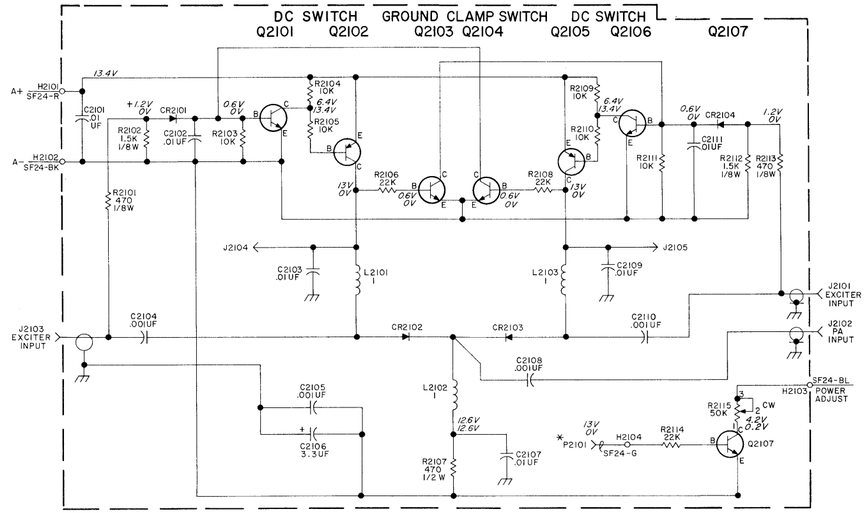
(19D423474, Rev. 0)
(19D417281, Sh. 2, Rev. 2)
(19D417281, Sh. 3, Rev. 1)

RUNS ON SOLDER SIDE
RUNS ON BOTH SIDES
RUNS ON COMPONENT SIDE

OUTLINE DIAGRAMS

SECOND SYSTEM BOARD AND
EXCITER COMBINER BOARD

COMBINER BOARD



SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
PLI9C320698G1	

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

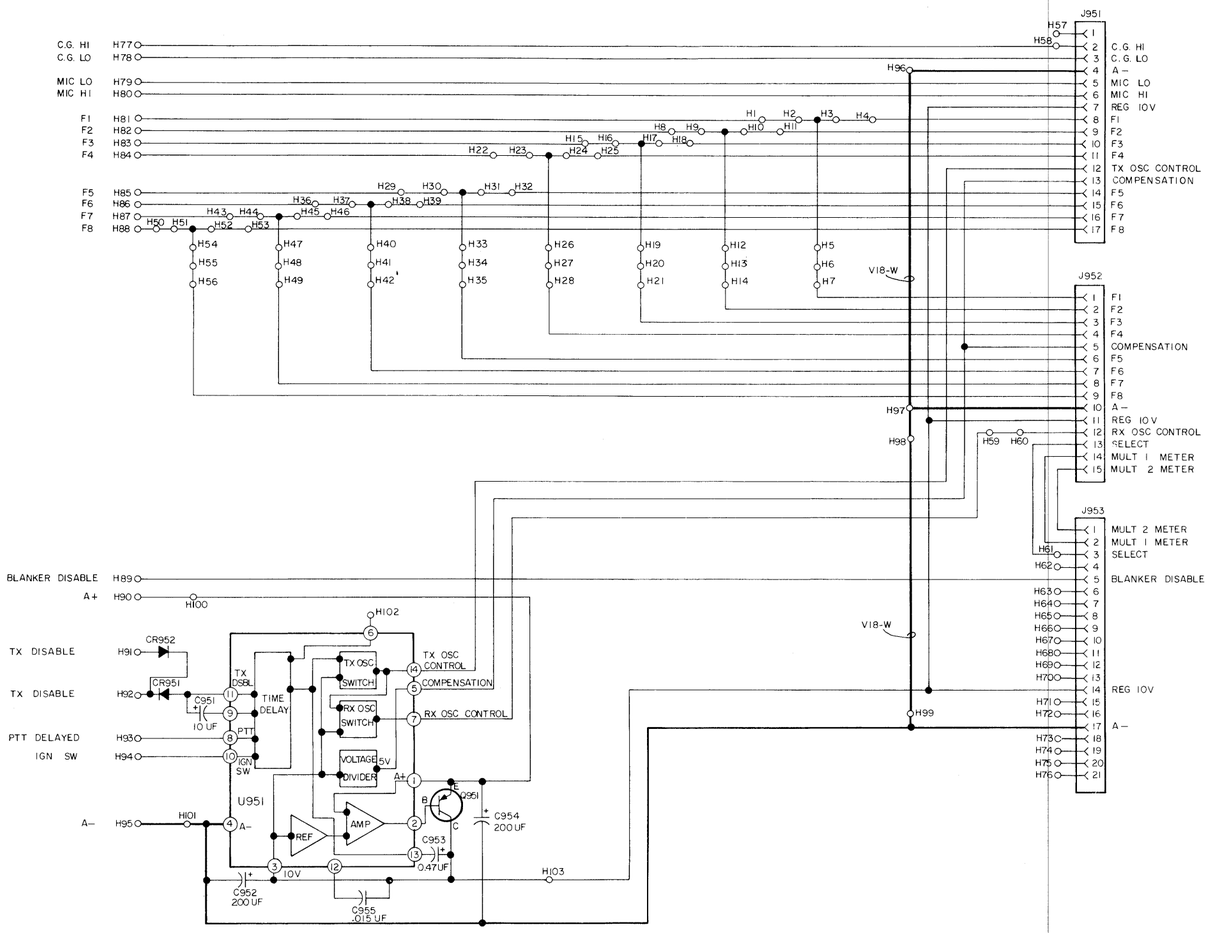
* P2101 MAY CONNECT TO EITHER J2104 OR J2105.

VOLTAGE READINGS

VOLTAGE READINGS ARE TYPICAL READINGS MEASURED WITH A 20,000 OHM-PER-VOLT METER TO H2102. VOLTAGES ON TOP INDICATE AN EXCITER INPUT. VOLTAGES ON BOTTOM INDICATE NO EXCITER INPUT.

(19C320708, Rev. 1)

SECOND SYSTEM BOARD



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NOTES:

1. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

(19D417268, Rev. 2)

SCHEMATIC DIAGRAMS

SECOND SYSTEM BOARD AND EXCITER COMBINER BOARD

PARTS LIST

LBI-4895

WIDE SPACED TRANSMITTER

SYMBOL	GE PART NO.	DESCRIPTION
		SECOND EXCITER BOARD (Refer to Applicable Transmitter Maintenance Manual)
		SECOND SYSTEM BOARD 19D417298G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C951	19B200240P10	Tantalum: 10 µf ±5%, 15 VDCW.
C952	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TTX.
C953	5496267P28	Tantalum: 0.47 µf ±20%, 35 VDCW; sim to Sprague Type 150D.
C954	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TTX.
C955	19C300075P15001J	Polyester: 15,000 pf ±5%, 100 VDCW; sim to GE Type 61F.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR951 and CR952	19A115250P1	Silicon.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J951		Connector. Includes:
	19A116659P5	Printed board: sim to Molex 09-52-3031.
	19A116659P6	Printed board: sim to Molex 09-52-3061.
	19A116659P7	Printed board: sim to Molex 09-52-3041.
J952		Connector. Includes:
	19A116659P5	Printed board: sim to Molex 09-52-3031.
	19A116659P6	Printed board: sim to Molex 09-52-3061. (Quantity 2).
J953		Connector. Includes:
	19A116659P5	Printed board: sim to Molex 09-52-3031.
	19A116659P6	Printed board: sim to Molex 09-52-3061. (Quantity 3).
J954		(Part of W951).
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q951	19A116375P1	Silicon, PNP.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - - -
U951	19D416564G2	Regulator, 10 v.
		- - - - - - - - - - - CABLES - - - - - - - - - - -
W951		CABLE ASSEMBLY 19B226054G1
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J954		Connector. Includes:
	19A129854P1	Shell.
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108.
		EXCITER COMBINER BOARD 19C320698G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C2101 thru C2103	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C2104 and C2105	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C2106	5496267P9	Tantalum: 3.3 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C2107	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C2108	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C2109	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C2110	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C2111	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR2101	19A115250P1	Silicon.
CR2102 and CR2103	19A116925P1	Silicon.
CR2104	19A115250P1	Silicon.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J2101 thru J2103		Connector. Includes:
	7104941P16	Connector, phono: Jack; sim to National Tel Barrel Ceramic.
J2104 and J2105	19A116366P3	Contact, electrical: sim to Cambion 460-3232-02-03.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L2101 thru L2103	19B209420P113	Coil, RF: 1.00 µh ±10%, 0.74 ohms DC res max; sim to Jeffers 4426-6.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P2101	19A115834P4	Contact, electrical: sim to AMP 2-332070-9.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q2101	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q2102	19A115852P1	Silicon, PNP; sim to Type 2N3906.
Q2103 and Q2104	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q2105	19A115852P1	Silicon, PNP; sim to Type 2N3906.
Q2106 and Q2107	19A115910P1	Silicon, NPN; sim to Type 2N3904.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R2101	3R151P471J	Composition: 470 ohms ±5%, 1/8 w.
R2102	3R151P152J	Composition: 1500 ohms ±5%, 1/8 w.
R2103 thru R2105	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 w.
R2106	3R152P223J	Composition: 22,000 ohms ±5%, 1/4 w.
R2107	3R77P471J	Composition: 470 ohms ±5%, 1/2 w.
R2108	3R152P223J	Composition: 22,000 ohms ±5%, 1/4 w.
R2109 thru R2111	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 w.
R2112	3R151P152J	Composition: 1500 ohms ±5%, 1/8 w.
R2113	3R151P471J	Composition: 470 ohms ±5%, 1/8 w.
R2114	3R152P223J	Composition: 22,000 ohms ±5%, 1/4 w.
R2115	19A116559P224	Variable, cermet: 50,000 ohms ±20%, .5 w; sim to CTS Series 360.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19B226056P1	Shield. (Located in center of Combiner Board).
	19B226057P1	Support. (Mounts J2101-J2103).
	19A116023P1	Insulator, plate. (Used with Q951).
	19A116022P1	Insulator, bushing. (Used with Q951).
	19A129851P1	Support. (Used with Q951).
	19A129852P1	Support. (Secures System Board to Module mounting frame).
	19B201074P204	Tap screw, Phillips POZIDRIV®: No. 4-40 x 1/4. (Secures System Board to Module mounting frame).
		WIDE SPACED TRANSMITTER MOD KIT 19A129737G3
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C2101	19B209503P3	Ceramic, feed-thru: 1000 pf +100% -0%, 100 VDCW; sim to Erie Style 2425-002.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	5491689P93	RF Cable: approx 19 inches long. (Connects Combiner to 2nd Exciter).
	19A129694G3	Cable: approx 7-1/2 inches long. (Connects Combiner to 1st Exciter).
	19A129694G4	Cable: approx 7-1/2 inches long. (Connects Combiner to PA).
	19A130049P1	Label. (PA Modification).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

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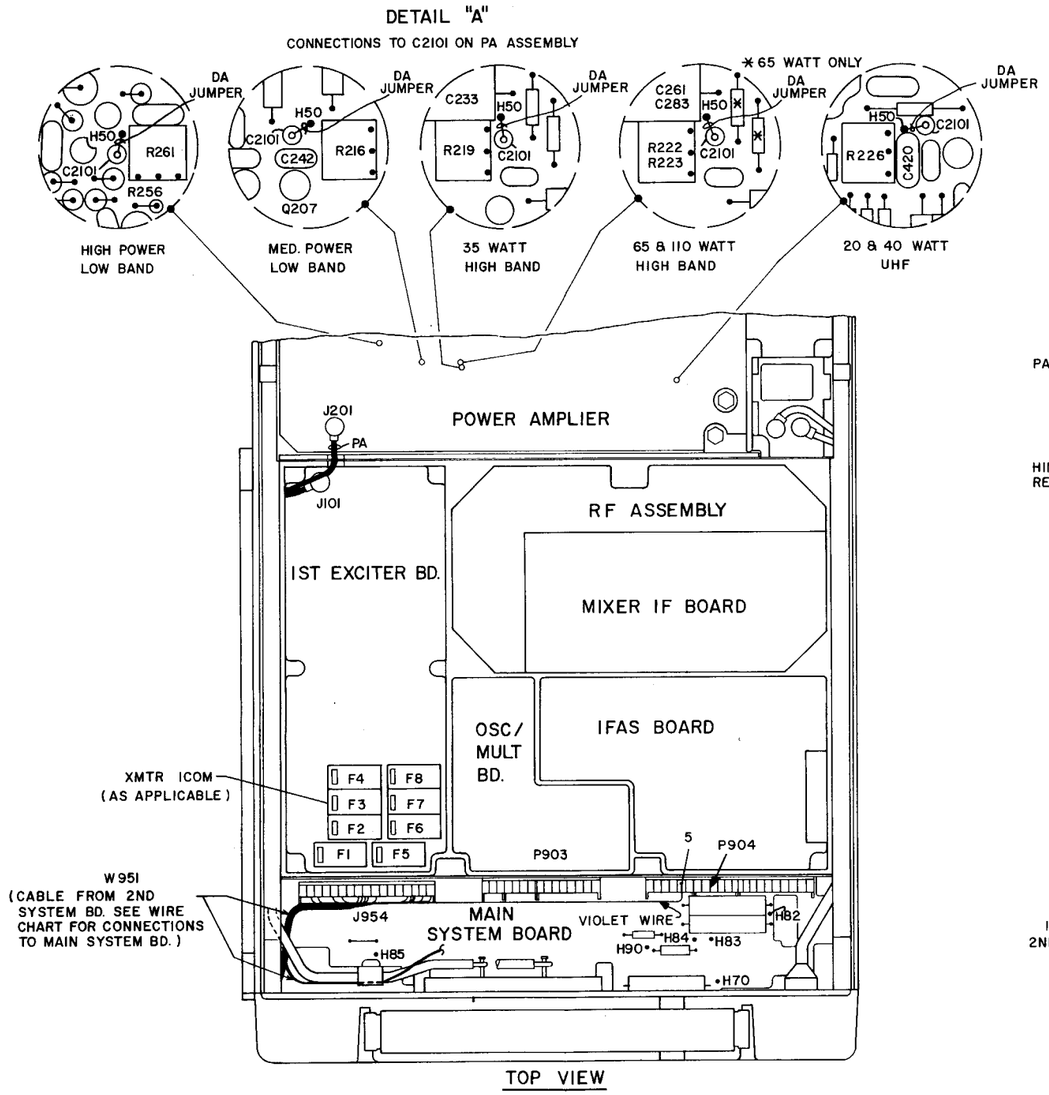
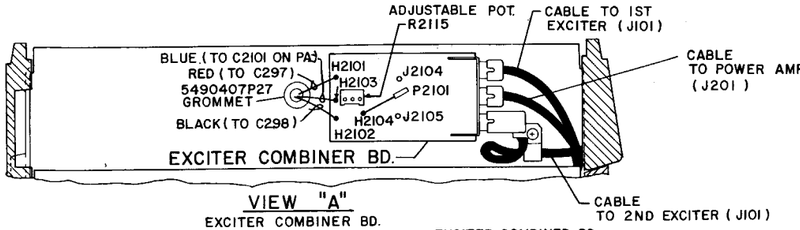


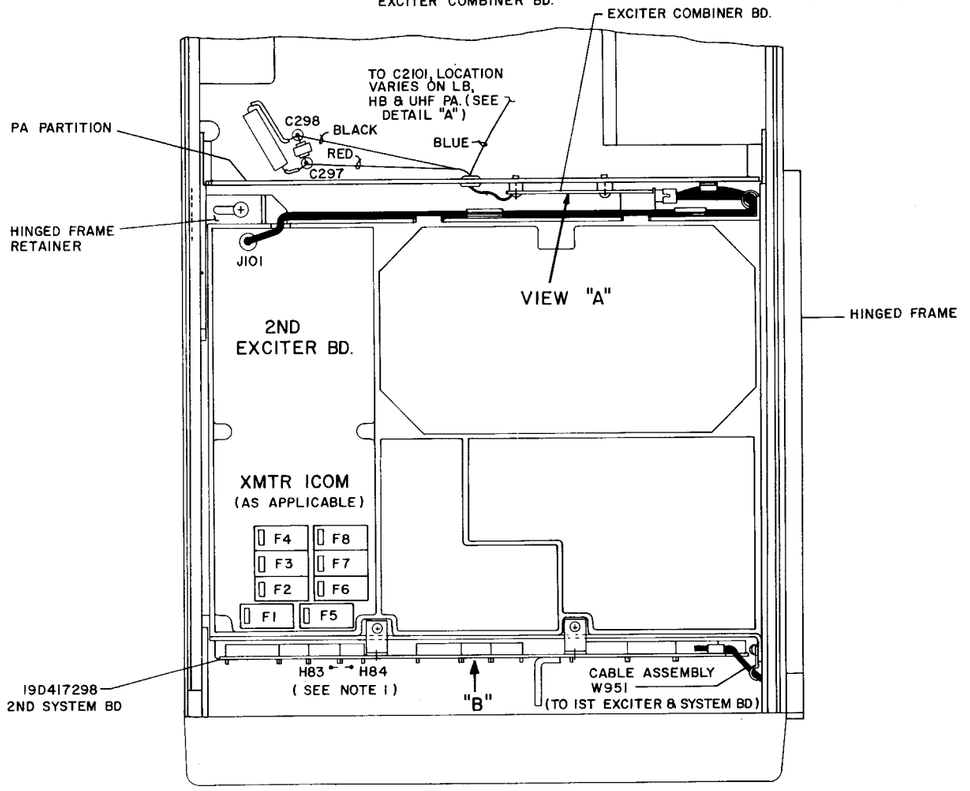
TOP VIEW

WIRE CHART	
WIRE COLOR	TO MAIN SYSTEM BD.
V18 - RED	H70
V18 - BLACK	H82
24 - BLACK	H83
24 - ORANGE	H84
24 - BROWN	H85
24 - RED	H90

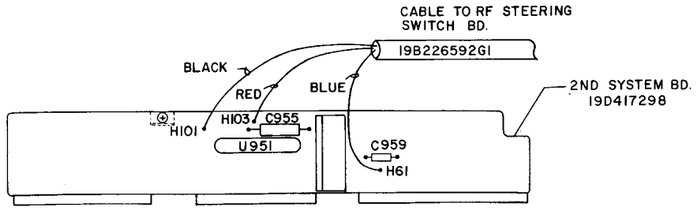
NOTES:
1. THE PRINTED WIRE RUN BETWEEN HOLE H83 & H84 ON BOTTOM OF MAIN SYSTEM BOARD IS REMOVED FOR WIDE - SPACED TRANSMITTER APPLICATIONS.



VIEW "A"
EXCITER COMBINER BD.



BOTTOM VIEW
OF HINGE ASSEMBLY

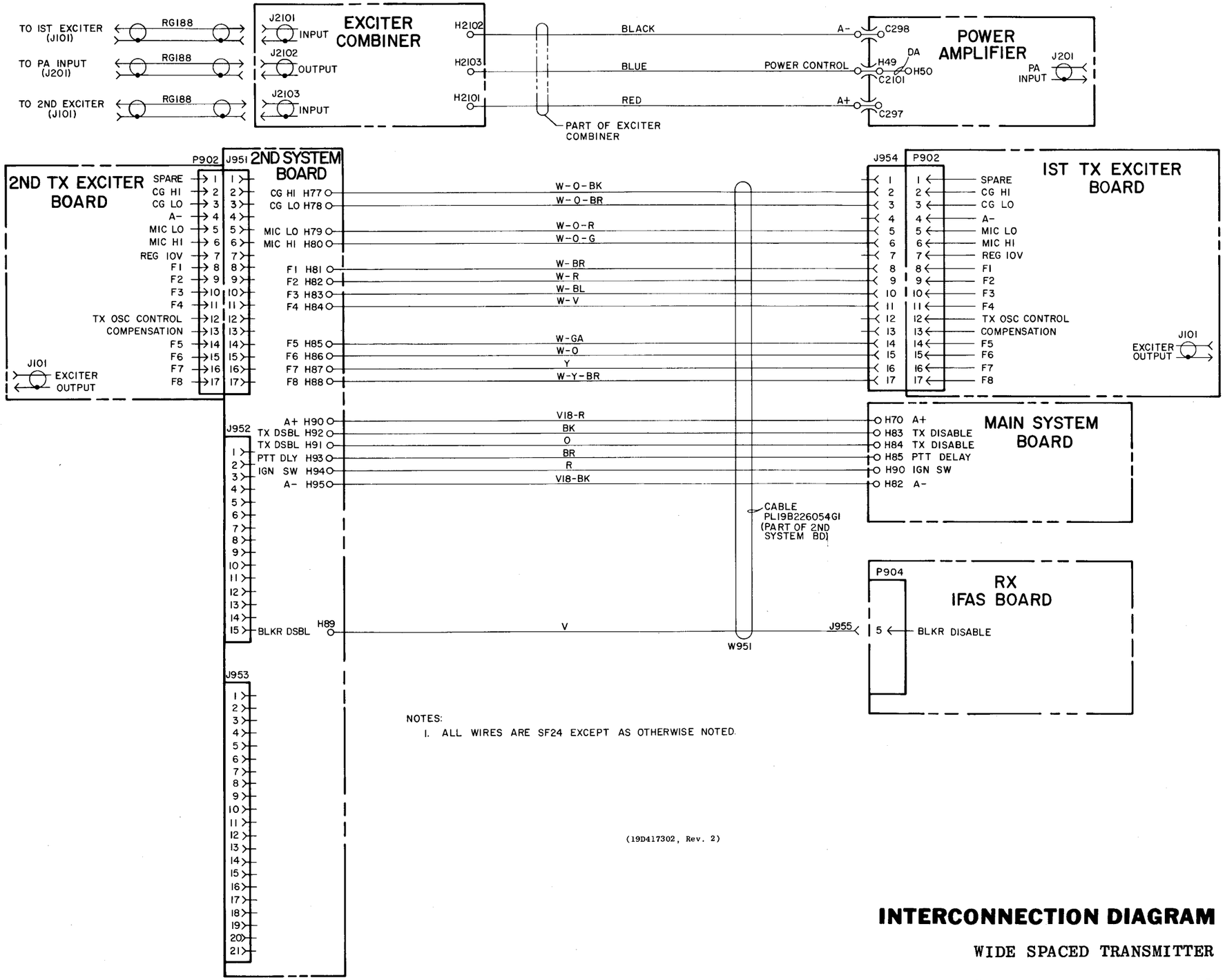


VIEW "B"
(TERMINATION FOR LEADS FROM R.F. STEERING SWITCH WHEN DFE & WIDE SPACED TRANSMITTER OPTIONS ARE COMBINED.)

RC - 2792

CABLE ROUTING DIAGRAM

WIDE SPACED TRANSMITTER



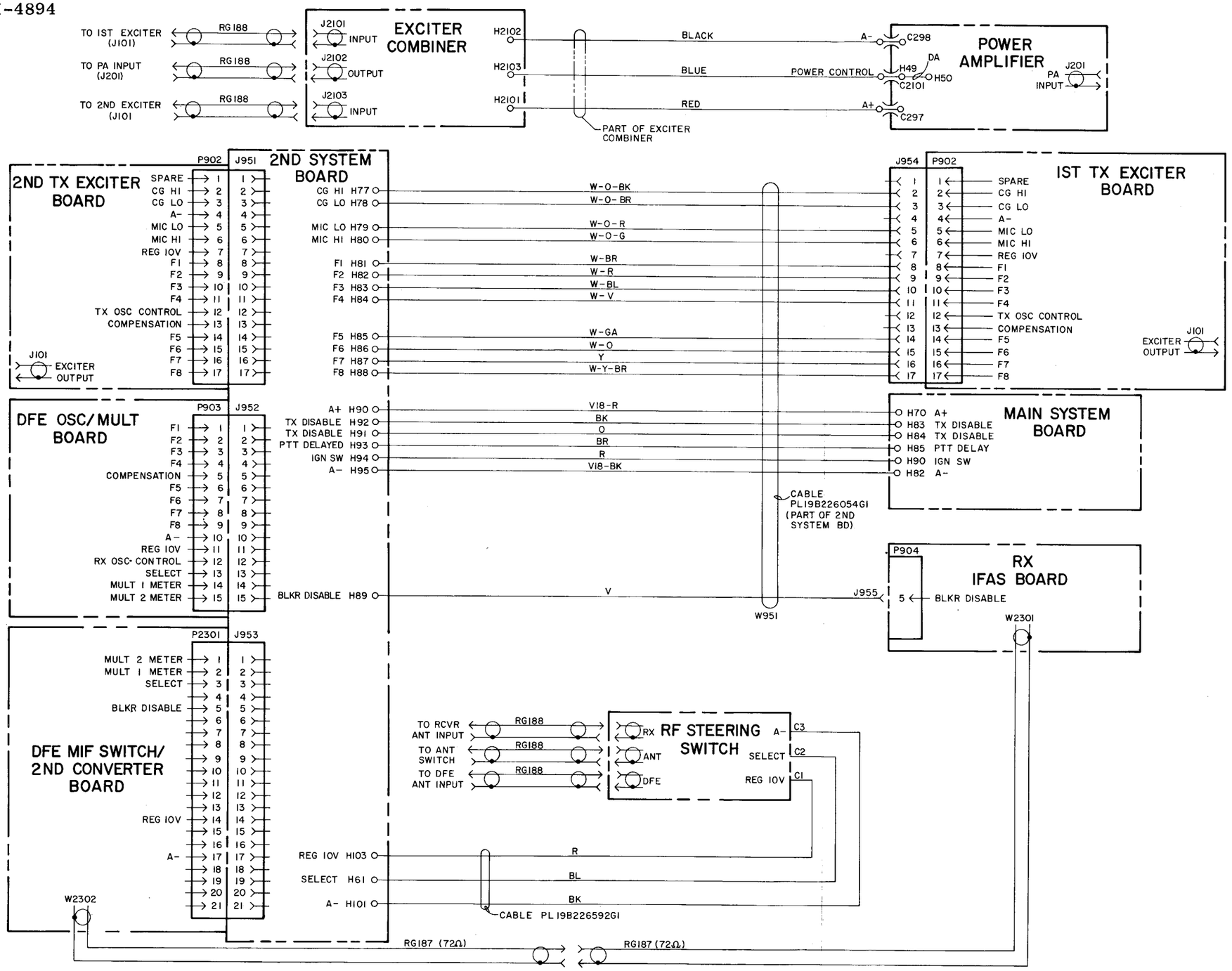
NOTES:

1. ALL WIRES ARE SF24 EXCEPT AS OTHERWISE NOTED.

(19D417302, Rev. 2)

INTERCONNECTION DIAGRAM

WIDE SPACED TRANSMITTER



NOTES:

1. ALL WIRES ARE SF24 EXCEPT AS OTHERWISE NOTED.

INTERCONNECTION DIAGRAM

WIDE SPACED TRANSMITTER
AND DUAL FRONT END

(19D417914, Rev. 1)

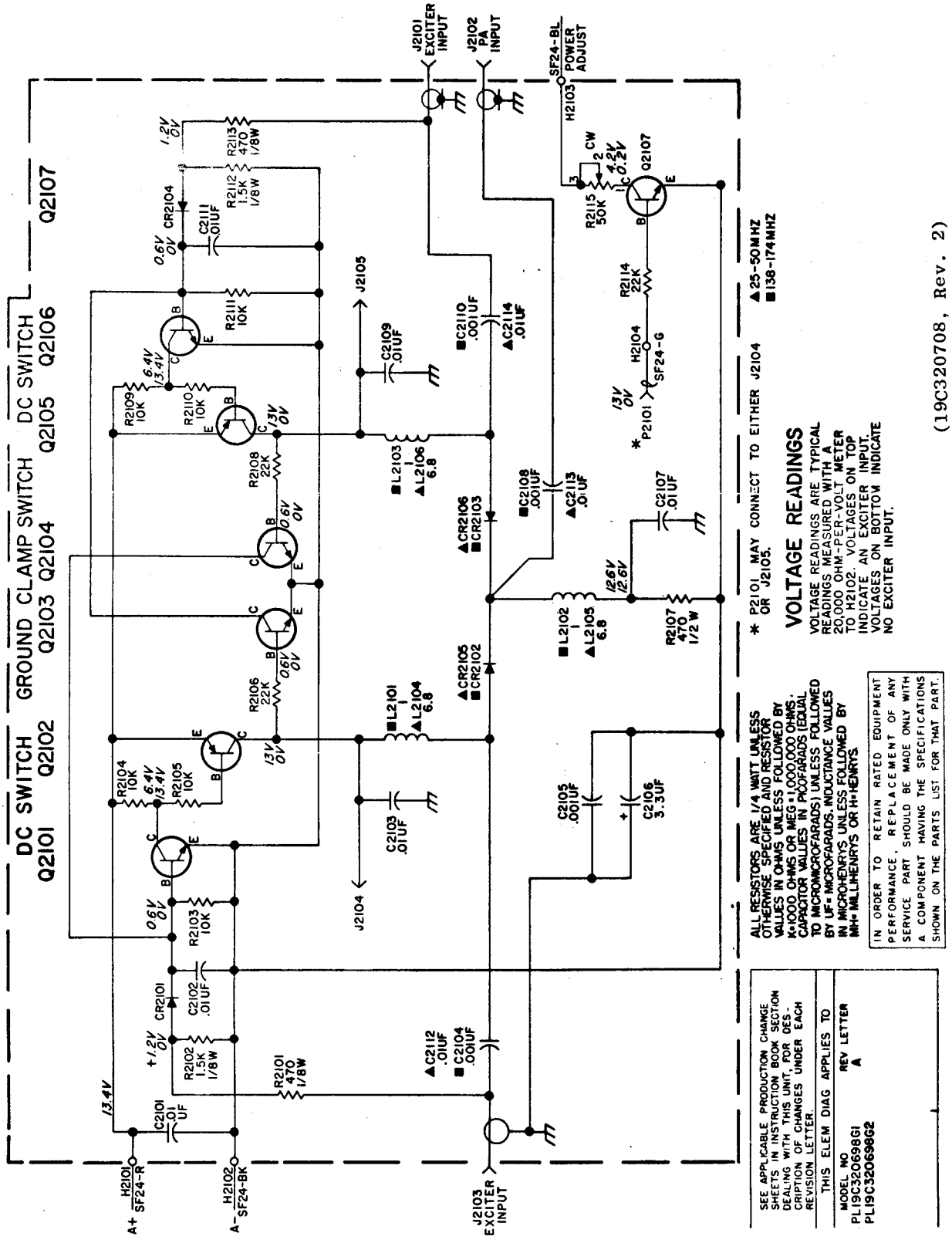
The following revision letter change has been made to improve operation of the exciter combiner in the 25-50 MHz range. Refer to Schematic Diagram on Page 2.

This addendum should be kept with LBI-4894.

Exciter Combiner Board 19C320698G1

Rev. A - Added exciter combiner board 19C320698G2 for 25-50 MHz operation. Deleted the following components from 19C320698G1: C2104, C2108, C2110, L2101, L2102, L2103, CR2102 and CR2103.

ADDED	DESCRIPTION
C2112, C2113 and C2114	19A116192P1 - Capacitor, ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121-M050-W5R-103M.
L2104, L2105 and L2106	19B209420P123 - Coil, RF: 6.80 µh ±10%, 1.80 ohms DC res max; sim to Jeffers 4446-2.
CR2105 and CR2106	19A116925P3 - Diode, silicon.



SCHEMATIC DIAGRAM

EXCITER COMBINER 19C320698G1, 2