Fra 029EV

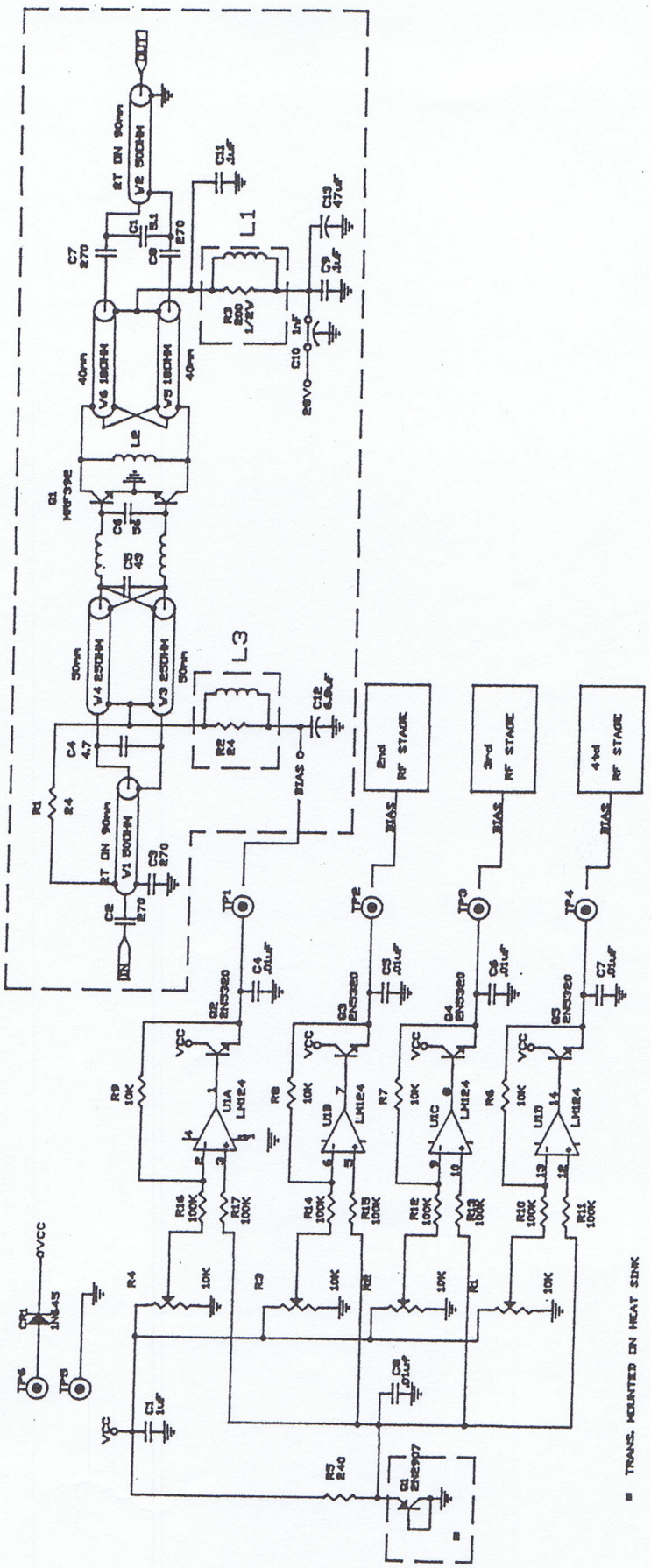

Figure 2-8. Basic Amplifier Assembly - One RF Stage, Electrical Diagram

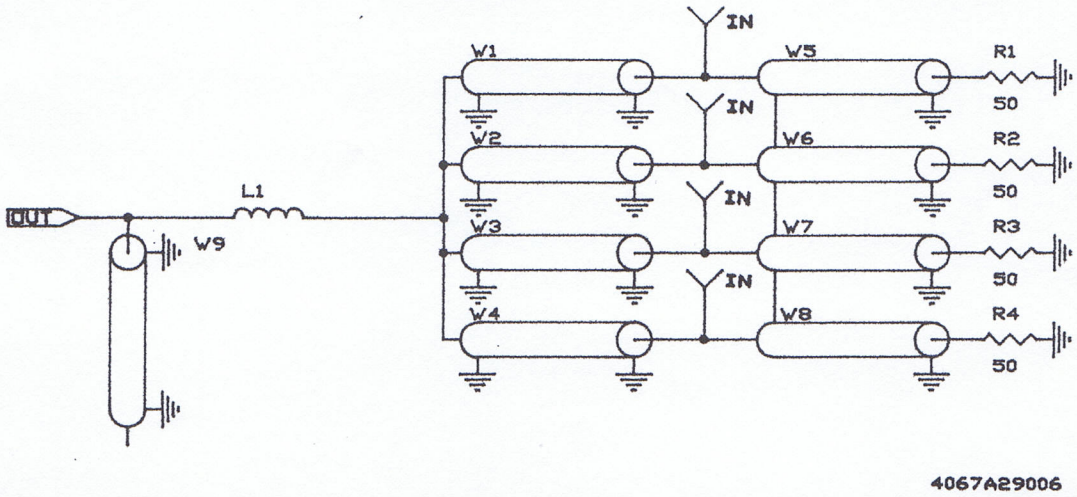

Figure 2-9. 4:1 Combiner Assembly 1A1A1A1A1A3,1A1A2A1A1A3 - Electrical Diagram

2-2.5.2. 1:6 Divider Assembly 1A1A1A1A2, 1A1A2A1A2 (see Figure 2-10). The divider accepts the signal from driver 1A1A1A1A1A1 and divides it into six signals. It consists of impedance matching capacitors C1 to C3 and coil L1, coaxial cables W1 to W6 (which divide the signals using the Wilkinson method), coaxial cables W7 to W12 with resistors R1 to R6 which are used for isolation and coaxial cables W13 to W18 which are connected to J1 to J6 and used as transmission lines.

The 1:6 divider specifications are as follows:

Frequency band	225 to 400 MHz
Ports	7
Power In	50 W
VSWR In	1.5:1 max
VSWR Out	1.5:1 max
Max Insertion Loss	0.4 dB
Phase Balance	± 5° max

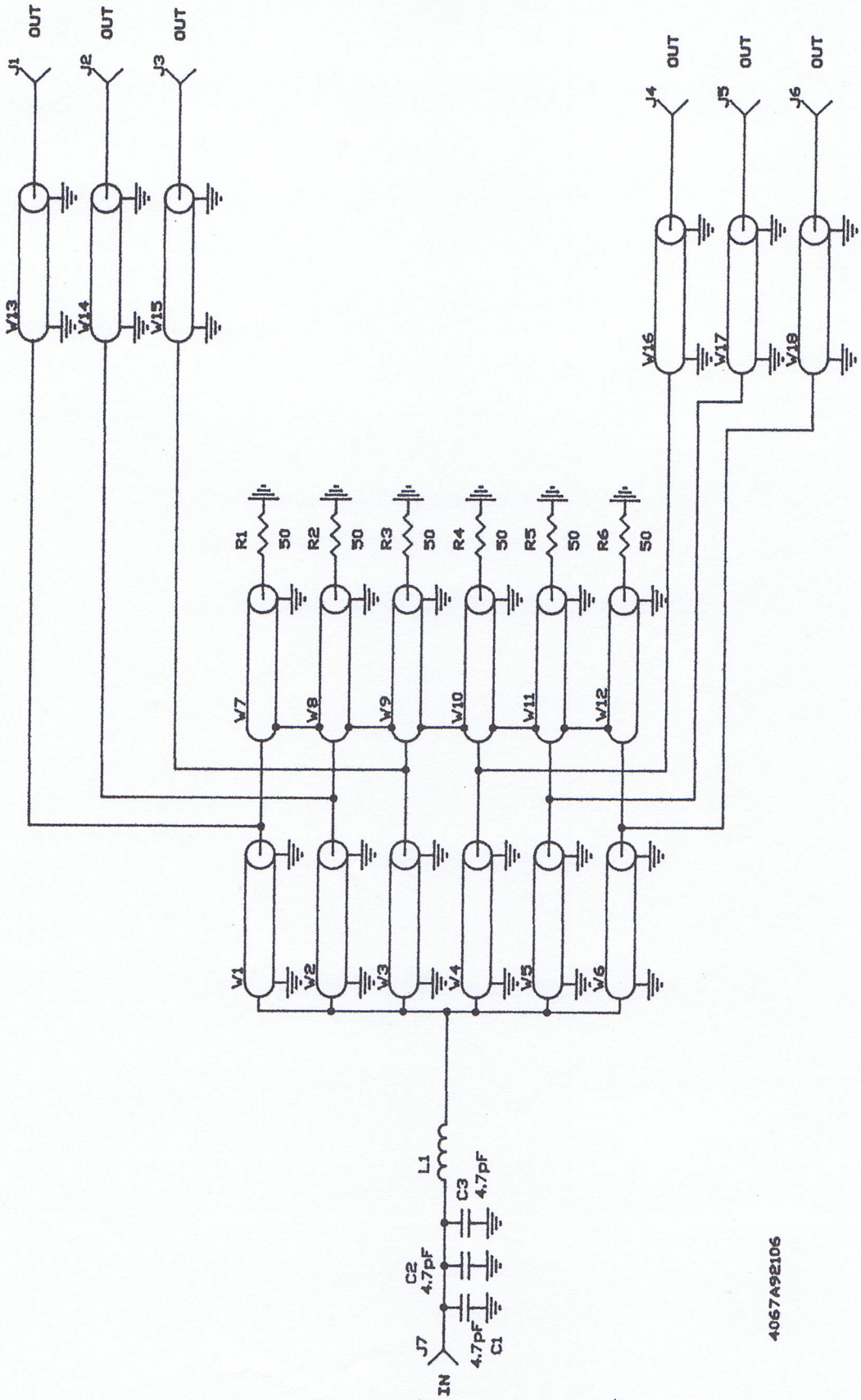

Figure 2-10. 1:6 Divider Assembly 1A1A1A1A2, 1A1A2A1A2, Electrical Diagram

2-2.5.3. **6:1 Combiner Assembly 1A1A1A3, 1A1A2A1A3** (see Figure 2-11). The task of the 6:1 combiner is to combine the signals arriving from the six basic amplifiers assemblies. The six signals are combined in two stages. The first stage is comprised of two 1:3 combiners. The second stage includes a 2:1 combiner which combines two signals arriving from the output of the 3:1 combiners. The input signals which go through connectors J1 to J3 are fed through W15 to W17 to the first 3:1 combiner, comprising of W3 to W5. The isolation network is comprised of W9 to W14, W23, W24 and resistors R1 to R6. The input signals which go through connectors J4 to J6 are fed through W18 to W20 to the second 3:1 combiner which is comprised of W6 to W8. The 2:1 combiner consists of W1 and W2. Stub capacitors W21, W22 with coil L1 are impedance matching network.
The 6:1 combiner specifications are as follows:

Frequency band	225 to 400 MHz
Ports	7
Power In (each input)	150 W
VSWR In	1.5:1 max
VSWR Out	1.5:1 max
Max Insertion Loss	0.4 dB
Phase Balance	± 5° max

2-2.6. **2:1 Combiner Assembly 1A1A1A7, 1A1A2A7** (see Figure 2-12). The combiner accepts the output signals from the master and slave power amplifiers at input connectors J1 and J2. The two signals are combined through coaxial cables W1, W2. W9 and W10 are used for input signal impedance matching. W3, W4 and W7 with resistors R1 and R2 provide signal isolation. The combined signal goes to the output of the combiner (connector J3) through coil L1 and impedance matching capacitors W5 and W6.
In addition, there are two identical power sampling circuits for the two input signals. For example, the input signal received at connector J1 is connected to capacitors C2 and C4. The signal is rectified by diodes CR2 and CR4 and

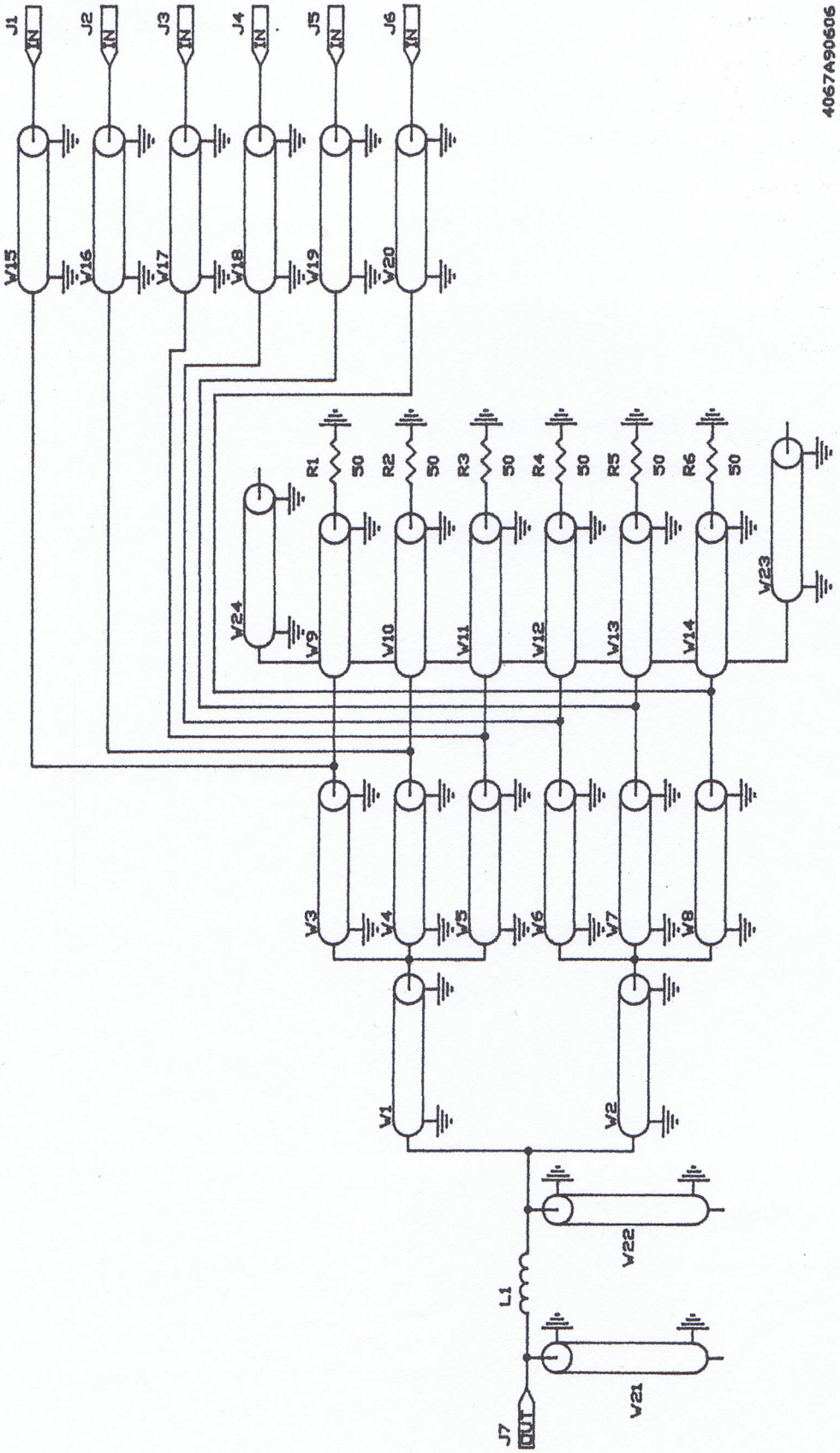

Figure 2-11. 6:1 Combiner Assembly 1A1A1A1A3,1A1A2A1A3 - Electrical Diagram

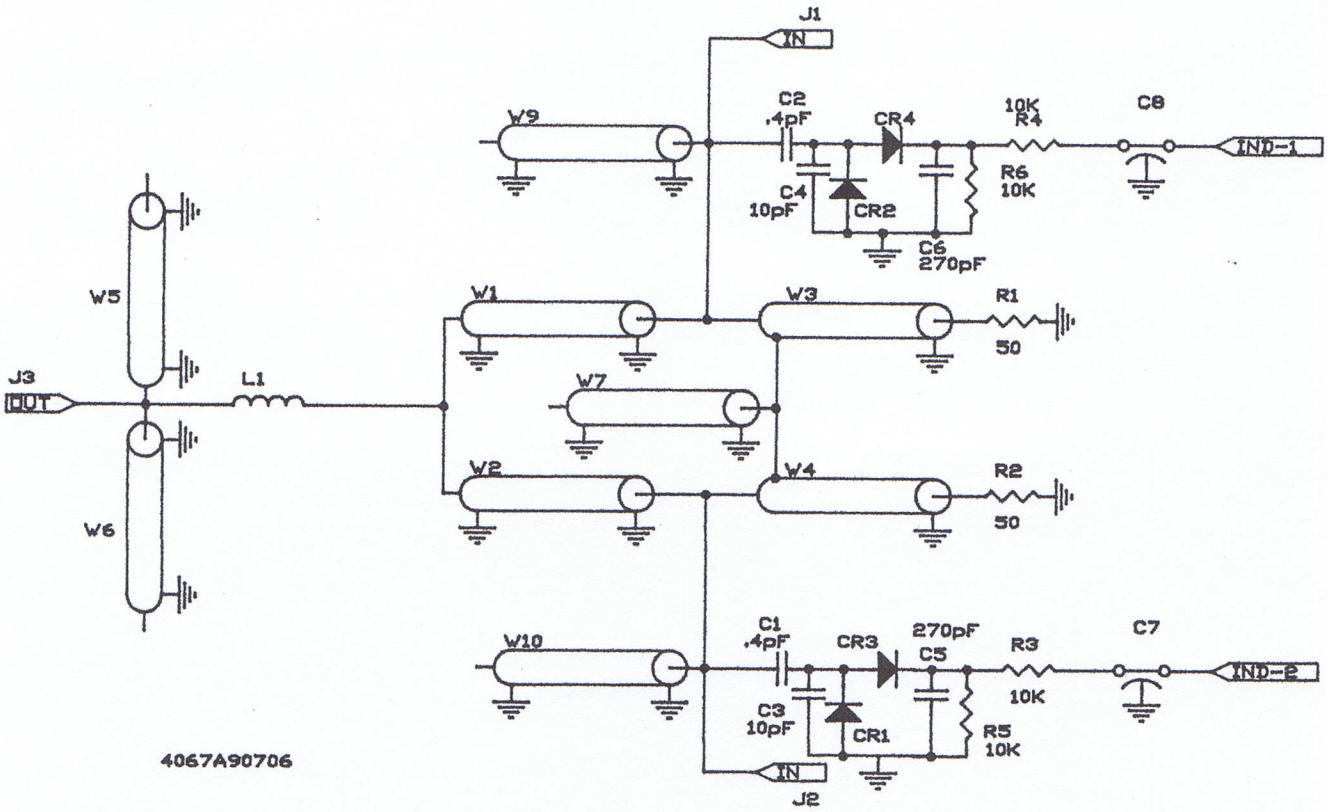

Figure 2-12. 2:1 Combiner Assembly 1A1A1A7, 1A1A2A1A3 - Electrical Diagram

filtered by capacitor C6. The power sample then goes to the IND-1 output (IND-2 for the other sampling circuit) through resistor R4 and feedthrough capacitor C8. The 2:1 combiner specifications are as follows:

Frequency band	225 to 400 MHz
Ports	3
Power In (each input)	800 W CW max
VSWR In	2:1 max
VSWR Out	2:1 max
Max Insertion Loss	0.45 dB max
Phase Balance	± 5° max

2-2.7. Directional Coupler 1A1A1A8, 1A1A2A8 (see Figure 2-13). The output signal from the 2:1 combiner is applied to input connector J1 of the directional coupler. Power sampling of the input signal is initiated at capacitor C5 and coils L3, L5 (which flatten the signal), and the sampled voltage is developed on resistor R8. The signal is rectified by diodes CR1 and CR2 and filtered through capacitor C1 and coil L1. Capacitor C4 and resistor R7 provide signal directivity. The directional coupler specifications are as follows:

Frequency Band	225 to 400 MHz
Insertion Loss	0.3 dB max
VSWR	2:1 max
Coupling	35 ± 3 dB max RF
Directivity	20 dB
Flatness	1 dB max

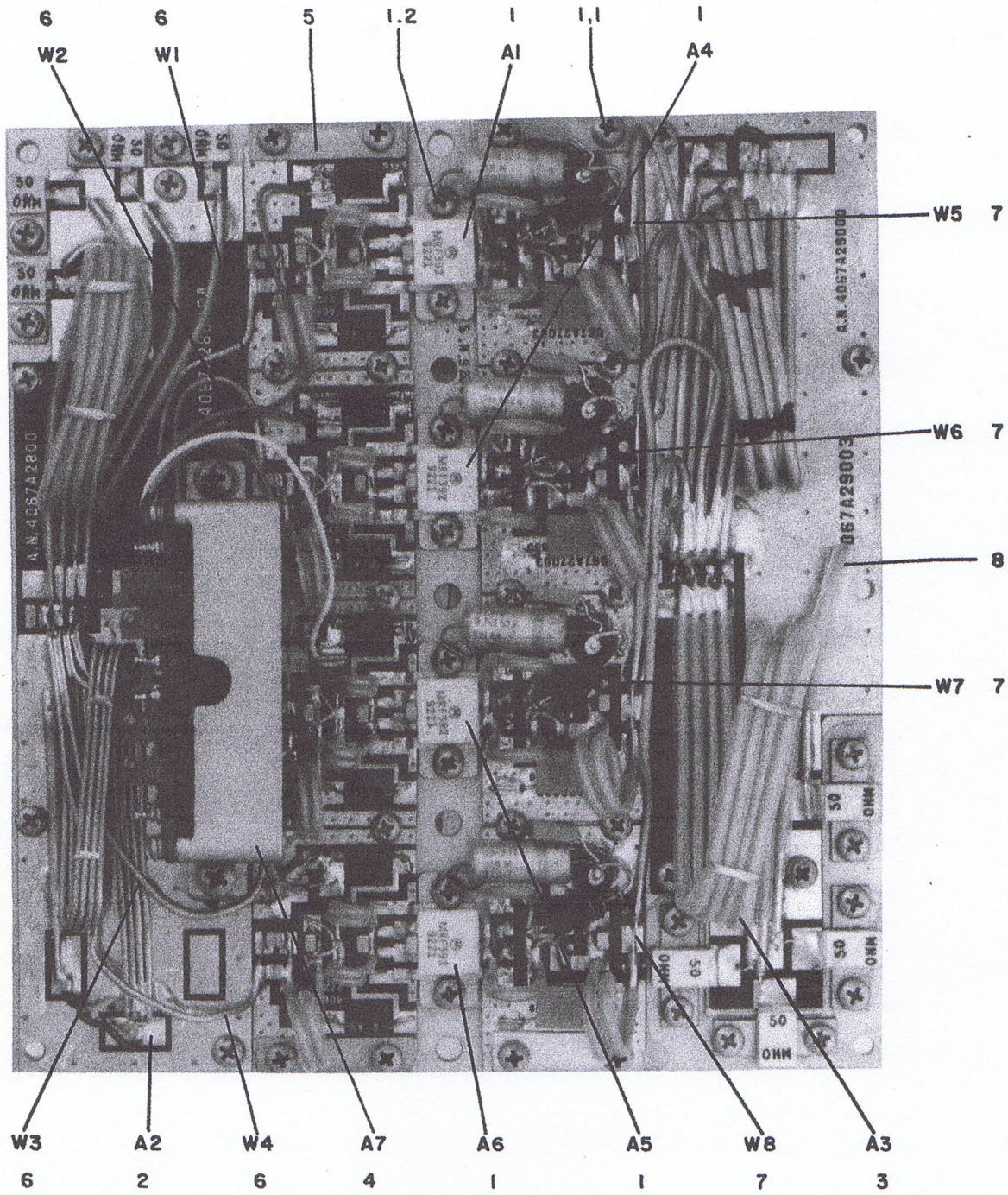

FIGURE 5. POWER AMPLIFIER MODULE ASSEMBLY, 1A1A1A1A1, (1A1A1A1A5-1A1A1A1A10), 1A1A2A1A1, (1A1A2A1A5-1A1A2A1A10)

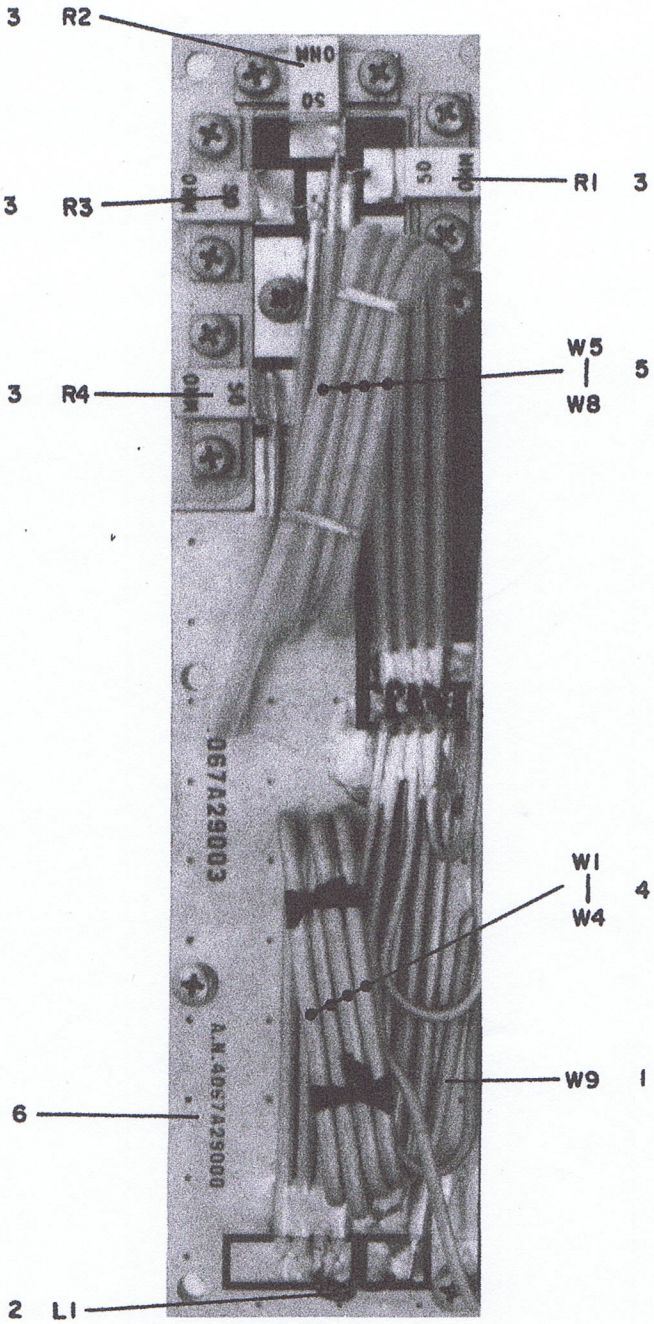

FIGURE 8. COMBINER ASSEMBLY, 4:1, 1A1A1A1A1A3, 1A1A2A1A1A3