



DEM 1691LNA, 1500LNA and 1400LNA
GaAs-FET Pre-Amplifier

PARTS LIST

C1	ATC chip cap, 12 pF
C4	ATC chip cap, 100 pF
C2, C3	ATC chip cap, 470 pF
C5,C8	Ceramic chip cap, 0.1 μ F
C7	Tantalum chip capacitor, 1.0 μ F, (white band is positive)
C9	8-32 feed-thru capacitor and hardware (with complete kit option)
D1	1N914 diode
J1, J2	SMA or optional type "N" connector and hardware (with complete kit option)
L1	.33 μ H molded choke
L2	1400-2Turns 0.050" dia., 1500-1Turn 0.050" dia., 1691-0.5" piece long bent in to a loop of #28 enamel wire.
Q1	GaAs FET ATF10136
R1	Chip resistor 100 Ω
R2-R3	Chip resistor 24 Ω
R4-R6	Chip resistor 300 Ω
U1	78L09 9 volt regulator
Misc.	Pre-drilled die-cast box and/or PC board

ASSEMBLY INSTRUCTIONS

1. Prepare connectors. Fit J1 and J2 by inserting them in the cover holes and trimming the Teflon flush with the inside of the cover. Excess Teflon will raise the PC board off of the cover so make a good, clean cut. Place the circuit board inside the lid and mount the connectors. Install C9, do not forget the ground lug. Tighten all of the hardware. Again, make sure the board is flush with the cover. Re-trim the connectors if necessary.

2. In an ESD free environment, and referring to the component layout, install the GaAs FET, Q1 first. Note the position of the gate lead, center it on the pads and solder into place. Now install the rest of the components in the following order. C1, R1, L1, R4, R5, R6, C5, C4, C7, C8, and U1(note polarity of C7 and C8). Now install C2 and C3 as shown in the diagram. C2 and C3 are positioned this way to provide Q1 with some source lead inductance which is important to help achieve a good input VSWR. Install R2 and R3 next. Finally install L2. Solder one end of L2 to the end of the pad and then bend the Gate lead of Q1 up as shown and solder the other end of L2 to it with a minimal amount of solder as possible. Install D1 last and remember to solder the center pins of J1 and J2. Check all connections and component placements again.

TEST AND TUNE-UP

3. Check the pre-amp for shorts, opens, and wrong values. If OK, connect it to a 50 ohm system. (Ant., receiver, signal gen., etc.) Apply +11 to +16 VDC to C9. The current drain should be approximately 55-65 ma. If you can't measure it from your power supply, measure the voltage drop across the R4-R6 combination and use Ohms law to calculate the Drain current. If the current drain is too low add a 24



ohm resistor from the source to ground. (same as R2 and R3) Refer to schematic for other test points. If OK, your pre-amp should be providing a minimum gain of 14db. The gain could be peaked by bending or stretching L2. The pre-amp could also be optimized for best noise figure on a noise figure meter.

SPECS.: 1691,1500, 1400 MHz. Gain > 14db, NF < 0.8dB

Any questions or comments please feel free to contact us at any time. Good luck with your pre-amp .

