A 5 WATT AMPLIFIER FOR THE EPIPHYTE

Derry Spittle VE7QK, 1241 Mt. Crown Rd. N.Vancouver, BC, Canada. V7R 1R9
e-mail : jds@freenet.vancouver.bc.ca

The Epiphyte, a simple QRP SSB Transceiver, appeared in SPRAT 81

The Epiphyte 80m SSB Transceiver was designed primarily to enable backpackers to communicate with the nightly BC Public Service Net. In this respect its performance has lived up to expectations. Still, in deference to those who wish to run a bit more power - which means just about everyone - here is a simple 5W amplifier which uses and inexpensive IRF510 Mosfet. It is designed as a "stand alone" unit which may (a) be left connected to switch in or out as desired, (b) be used with any other 80m transmitter in the 1W class, or (c) be left at home whenever you wish to remain "true to the cause"

During receive, K-1 by-passes the amplifier leaving the Epiphyte connected directly to the antenna. During transmit, the relay closes to connect the Epiphyte and the antenna to the amplifier RF input and output respectively. At the same time the PNP switch, Q2, applies B+ to VR1 to forward bias Q1
LED1 lights when the amplifier is on. LED2 lights when the Q1 is forward biased. LED3 lights with RF current to monitor the modulation. LED1 and LED2 may either be mounted on the panel or directly to the PCB. The Epiphyte PTT switch also controls the amplifier. D1 and D2 prevent DC from feeding back through a relay coil when either unit is switched off

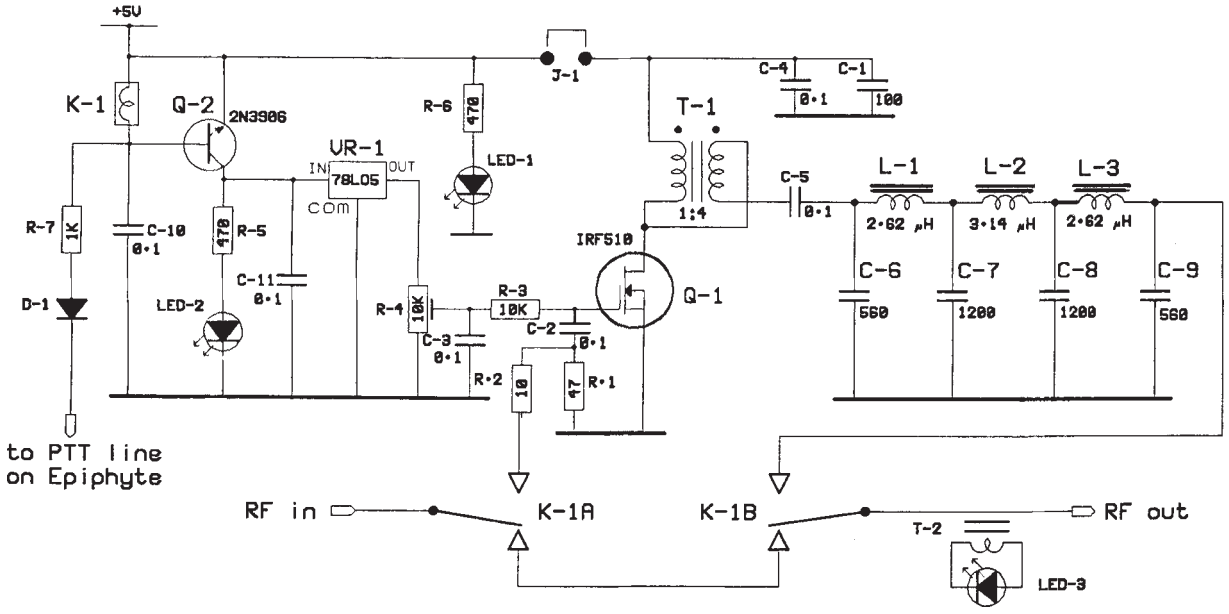
Before attempting to monitor the current in Q1, remove the shorting jumper and set the bias to around 2.5v with R4. Then with the meter installed, adjust the bias for an idling current of 20mA. The current will rise to 500 or 600mA with modulation. The amplifier board is drilled to accommodate Molex connectors if you so wish and, as in the Epiphyte, negative leads may be omitted if the PCB is securely mounted on a metal chassis. Once the components and the PCB are on hand it can easily be put together in a couple of evenings.

While the 7-element Chebyshev LP filter will further attenuate any out of band spurious responses it will do nothing to reduce IMD within the passband. The input signal must therefore be free from distortion. The amplifier output should be monitored with an oscilloscope to verify that it is not being overdriven. It requires about 0.5W drive to give an output of 5W. A 2A power supply will comfortably handle the Epiphyte, amplifier and an LED digital readout. With normal usage, 1 7Ah gel-cell will provide a week or more of portable operation between charges.

PARTS LIST

R-1	47	L-1 & 3	2.62µH (22 turns on T44-61 toroid)
R-2	10	L-2	3.14µH (25 turns on T44-61 toroid)
R-3	10K	Q-1	IRF 510 + heat sink
R-4	10K 10-t. pot.	Q-2	2N3906
R-7	1K	VR-1	78L05
R-5 & ,6	470	D-1 & 2	1N914
C-1	100µF electrolytic	LED-1, 2, 3	
C-2, 3, 4, 10	0.1µF	J-1	0.1" shorting jumper & header
C-6 & 9	560pF	Power plug , socket and fused lead	
C-7 & 8	1200pF	1 & 2	BNC connectors
T-1	1:4 step-up transformer (5 bifilar turns over a pair of FB 43-2401 beads)		
T-2	3 turns on FT37-61 toroid		
K-1	DPDT relay (Clare LM44D00 or equivalent)		
Chassis	Aluminium sheet c. 3.5" x 6". 1" panels along the short sides		
Molex connectors and terminal housings. 1 x 3-pin & 2 x 2-pin			
Heat sink on Q-1			

FIG 1 - 5W AMPLIFIER FOR THE EPIPHYTE



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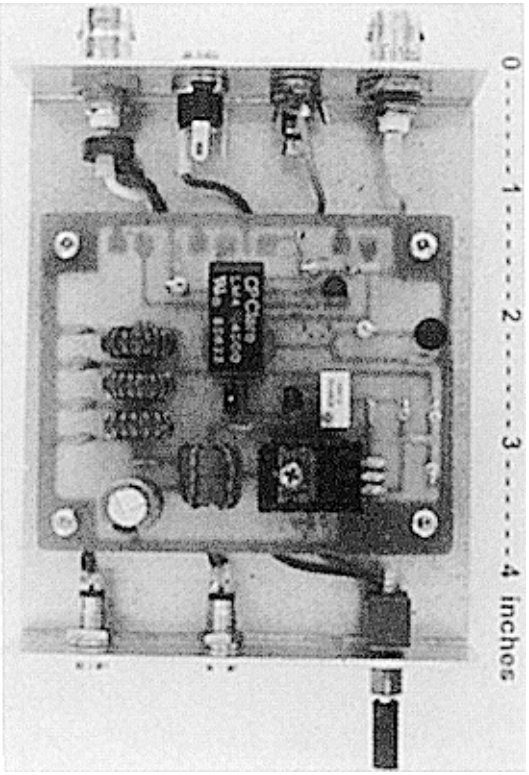
LAYOUT OF THE 5 WATT AMPLIFIER

PCBs : Hands Electronics
see advert this issue
Parts : JAB Electronics
0121 - 366 - 6928



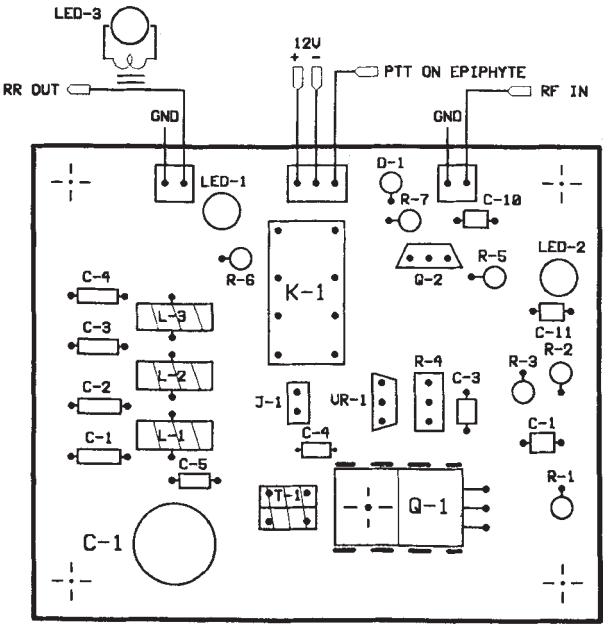


FIGURE 2 - COMPONENT LAYOUT