level to face subsequent attenuation by the noise blanking circuitry and crystal filter. It will receive no further amplification until it reaches Q4. FETs in general and junction FETs in particular show some of the best linearity of any semiconductor amplifying device. The grounded gate mode is the most linear of all because negative feedback is inherent in its operation. The other point about the grounded gate mode is that the input at source terminal is almost purely resistive providing a good termination for any filter combination.

The output from IFT1 and IFT2 will be in the region of 50 to 100 ohms. The FET should be able to match this. The parameter which controls this is device transconductance. In the days of valves it used to be quoted in mA/V, a nice comprehensible unit. These days millimhos, micromhos and siemens are all the rage but they amount to the same thing. The J310 device quoted for Q1 has a transconductance of between 10 to 18 millimhos, in English 10 to 18 mA/V. As a complete aside, I always think to myself of some spotty youth, somewhere in the development labs of Silicon Valley inadvertently rechristening something which had been known and understood by the valve world for ages. Anyway, if the current increases by, say 10mA for every volt, then the equivalent source resistance would be 100 ohms. A 5 millimho device such as a BF256 would have an input resistance of 200 ohms, too high for the intended application.

For linear operation, the FET should be biased to a fairly high operating current. R1 in the source circuit should set the standing current to about 15mA although the absolute value will vary from device to device. There are a few comments to make about the gate circuit. Normally with 'grounded gate' it should be just that. Effectively it is, in the receive mode. In transmit, the TX carrier is injected onto the gate. Q1 then acts as a source follower and the signal travels backwards over the receive path to the double balanced mixer.

The other point about the grounded gate mode is that the input at source terminal is almost