

## **Phase Priming and Injection Locking**

Magnetron oscillation builds up from random noise, at a frequency determined by the anode. A low power signal injected into the magnetron before it begins to oscillate will control the phase, but not the frequency of oscillation. This is known as phase priming.

Higher levels of injected signal lock both the phase and oscillation frequency. In general, it is most convenient to inject the locking signal into the output of the magnetron, via a circulator. Magnetron 'chains' are used to give the system a higher overall gain.

One example of this type of system is the PLM5800 series of Ku-band, 2-magnetron amplifier chains incorporating circulators. These offer:

- Output power up to 400 W in Ku-band.
- Duty cycle in excess of 10% possible.
- Three-second starting.
- Weight less than 1 kg.
- Gain in excess of 20 dB (total system gain).