Description.

Linwave Technology have utilised their experience of manufacturing and packaging gunn diode devices over a number of years to develop a broad-band oscillator array module. The system consists of a number of individually tuned gunn oscillator blocks, producing power across a number of over-lapping output frequency bands which can be subsequently combined to provide broad-band performance.

The module includes the PSU driver circuitry for the individual gunn oscillators, and the standard system consists of four devices with over-lapping output frequencies, although additional units can be included as required to further extend the product bandwidth.

Figure 1. Broad-band Oscillator Unit.
Figure 1 shows the module enclosure with the standard 12V supply and TTL inputs to the Gunn oscillator drive circuitry which are located on the front face. Figure 2 shows the waveguide flange outputs of each oscillator stage on the rear face of the unit, which can be used either as independent output stages, or combined to give a broad-band performance.

The unit is supplied with the individual oscillator stages pre-tuned to optimise their performance over the frequency bands indicated, so that the user can operate the system without undertaking additional tuning of the module. Further adjustments to performance can be achieved through tuning of the individual oscillator assemblies during manufacture and set-up if required (please contact the local sales representative for further information if you require different frequencies of operation or alternative output power levels).

Preliminary test data for the standard four channel system is given overleaf in Figures 3 – 6.

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Figure 3 – Power Output over Frequency – Channel 1.

Figure 4 – Power Output over Frequency – Channel 2.
Figure 5 – Power Output over Frequency – Channel 3.

Figure 6 – Power Output over Frequency – Channel 4.

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Typical Product Applications.

The unit has been designed to allow the user to operate it over the 4 independent discrete bands (60-75GHz, 75-85GHz, 85-95GHz and 95-105GHz) as separate channels, or to combine the outputs to provide a broad-band source operating at 60-105GHz. This allows the user a degree of flexibility to generate Microwave energy targeted over a specific band of interest, whilst also providing broad-band capabilities which would allow them to consider spurii and other typical out of band performance characteristics.

The unit is intended for laboratory use as a bench top RF source, and is housed in a robust enclosure to provide protection to the gunn oscillators and associated drive circuitry. The system comes with 4 channels in the standard band configurations indicated previously, but further channels can be added, and the individual bands can be tuned during manufacture to provide a degree of flexibility for the end users specific applications.

The gunn oscillators in the unit can be used to generate microwave energy at low power levels (around 16-18dBm) and are typically used for:-

Military and commercial radio communications.
Automotive radar applications.
Broad band radar sources.
Microwave transmitters.
Enclosure Mounting Hole Locations

Overall Enclosure Dimensions

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Input Connections

4x 12V BNC FEMALE CONNECTORS

4x TTL SMA FEMALE CONNECTORS

Output Connections

"STANDARD" WG27 R900 WR10 WAVEGUIDE FLANGE

"STANDARD" WG26 R740 WR12 WAVEGUIDE FLANGE

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Input Connector Dimensions

Output Connector Dimensions

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