



# Linwave Technology

Microwave Customised Hybrids



# Linwave Technology – about us

Linwave Technology is a supplier of novel custom RF & Microwave products for a wide range of applications; based in Lincoln UK . Each of our solutions is tailored to meet a specific customer challenge and enhance their overall system performance.

Product Examples include Analogue and Digital Transceivers, Power Amplifiers, Sources, Multi-chip Hybrids, Millimetre wave Diode assemblies. Our products have already supported customers in Defence, Avionics, Marine, Industrial, Satcom, Healthcare, Space, Wireless, Transport and Security.

We have a unique combination of broad market alignment and deep technology understanding that can help solve some of today's hardest RF problems. Linwave solutions can range from open die IC's -utilising on site wire bonding and clean room facilities, up to modules with integrated software GUI. Products can be subjected to environmental approval plans in association with appropriate market & legislative directives proving compliance ahead of further systems integration. Our engineered integrated solutions provide top tier customers with options to add functionality and performance for enhanced systems performance for key SWaP advantages (size weight power).

Unique bespoke solutions need close working relationships. We excel at close collaboration to ensure project scope is understood and can be delivered effectively.



# Linwave Technology – about us

- Product is structured around four key product pillars to exploit key skills and technologies within the Business:-

Converters and Transceivers / Power Amplifiers / [Hybrid Multichip QFN Modules](#) / Semiconductors

- Offer a broad range of design and manufacturing capability which is unique amongst UK SMEs, including:-
  - RF design and performance enhancement capability.
  - Specialist vertical design integration from die up.
  - Chip and wire design and build capability.
  - Design & test capability to 94GHz.
  - ITAR-free designs where needed.
  - On-site prototyping to volume manufacturing capability & experience.

# Facilities & Capabilities – Clean Room

- Class 10000 clean room.
- Temperature and humidity controlled.
- Inert gas hermetic sealing – vacuum furnace and projection welding facilities.
- Wafer probe capability.
- Manual and Semi-Automated ball, wedge tape and wire bonding.



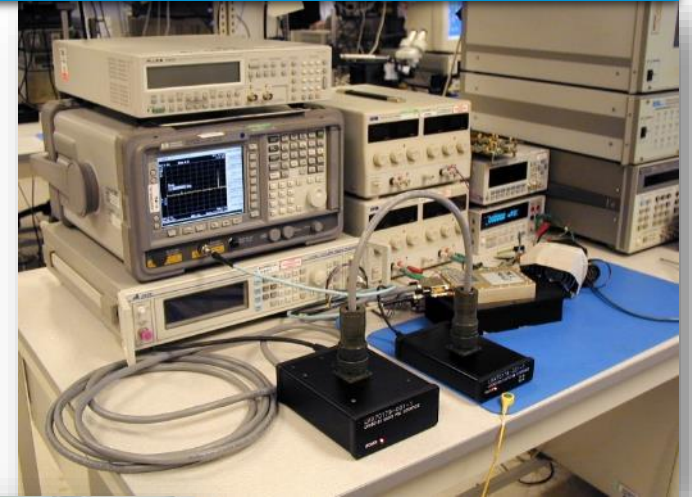
# Facilities & Capabilities - Assembly

- Hybrid chip & wire assembly capability:-
  - Eutectic die attach.
  - Epoxy die attach.
  - Gold wedge, ball, ribbon bonders.
  - Bond pull tester.
  - Wet etch capability.
  - Dry Nitrogen backfill.
  - Gap welder.
  - Vacuum furnace.
  - Custom specific tooling.



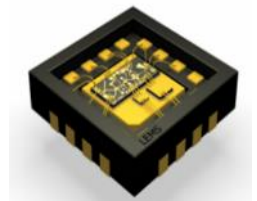
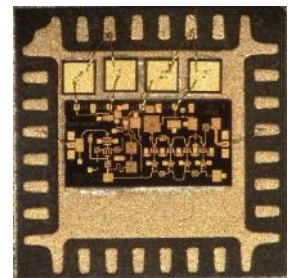
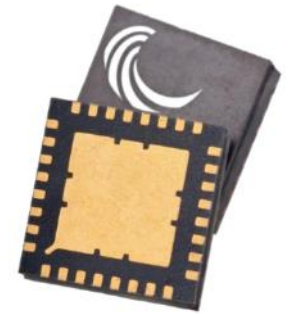
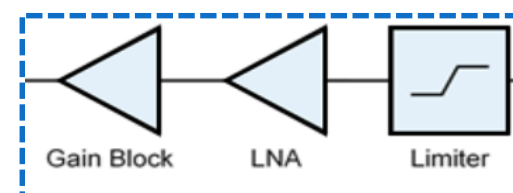
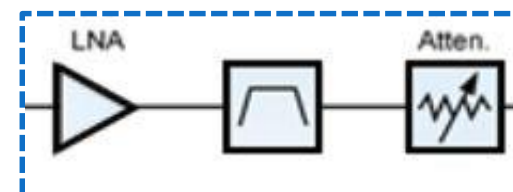
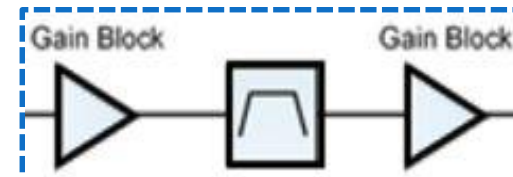
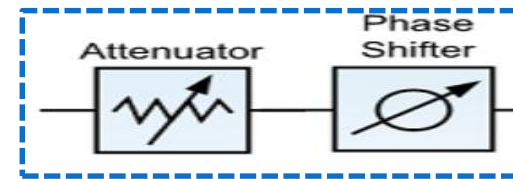
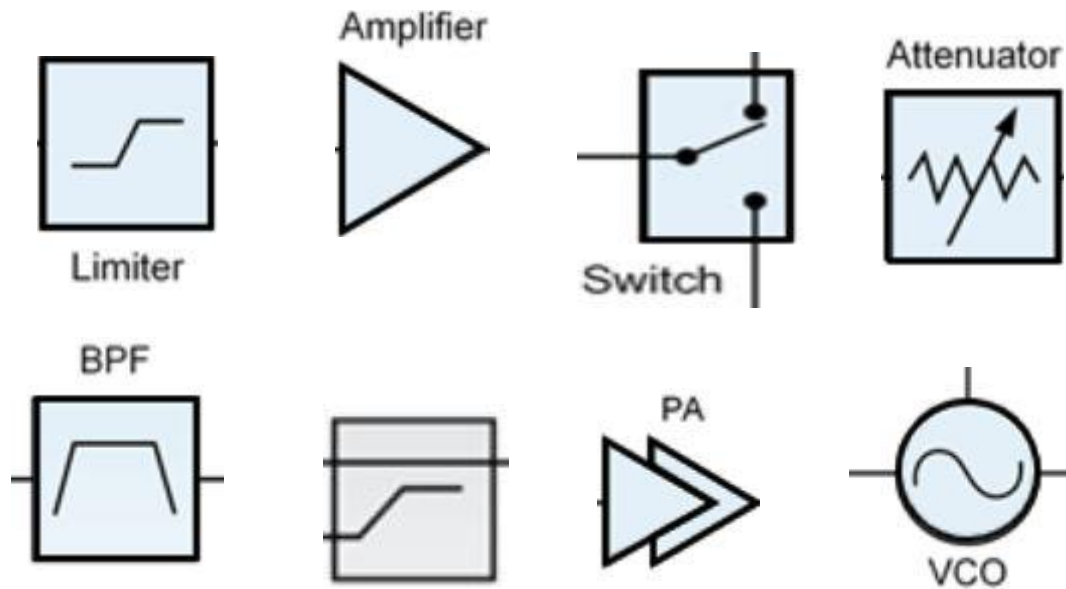
# Facilities & Capabilities - Test

- Spectrum, Vector, Power, Noise and Scalar Analysis to 110 GHz.
- Modulated test sources & AW capability.
- Phase noise capability.
- Temp cycle facilities.
- Measurement automation routines for repetitive tests.
- Environmental testing including hot / cold store, Burn-in ovens and operational vibration and shock tests.



# Product Range

- Chip scaled packages QFN and ceramic
- Custom feature sets :



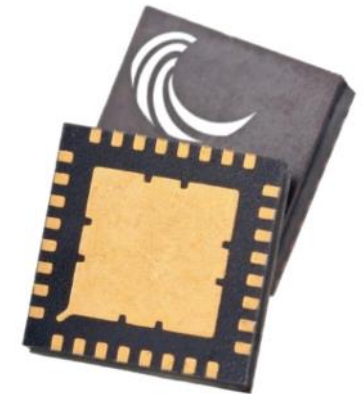
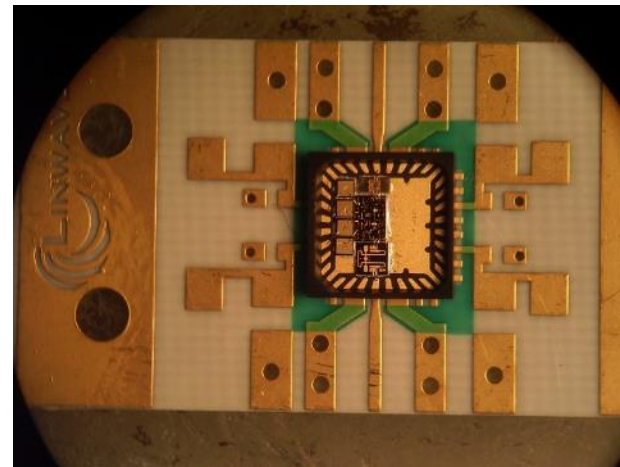
# Defence Case Study – QFN Limiter LNA



**Application: Radar, EW Front end**

## **Product Features:**

- 2-18GHz Limiter + LNA
- High isolation 2 stage limiter
- 5W CW power handling
- Nominal gain 16dB with 3dB NF
- Multi function variants available
  - Feature sets – Filters, switches, LNA
- Optimised selection or banding of die parts for specific applications





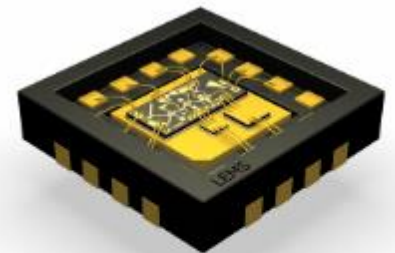
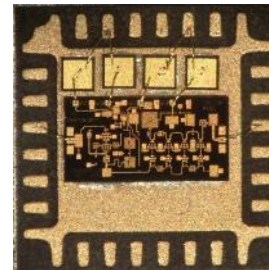
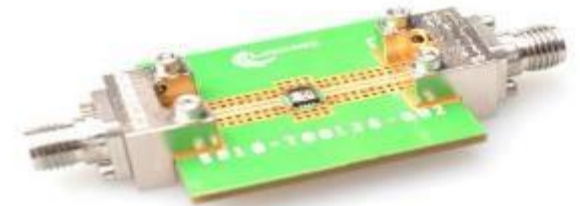
# Defence Case Study – PIN Limiter



**Application: Radar, EW Front end, Test**

## **Product Features:**

- 2.0 -20GHz coverage
- 5W power handling
- Low Flat Leakage response 18dBm
- Low loss 1dB typ



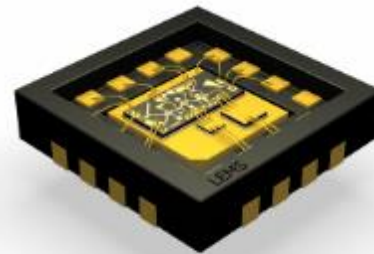
# Defence Case Study – Detector



**Application: Radar, EW Front end, Test**

## **Product Features:**

- 0.01 -20GHz coverage
- 3X3 QFN
- Sensitivity 800mV/Mw
- No bias needed



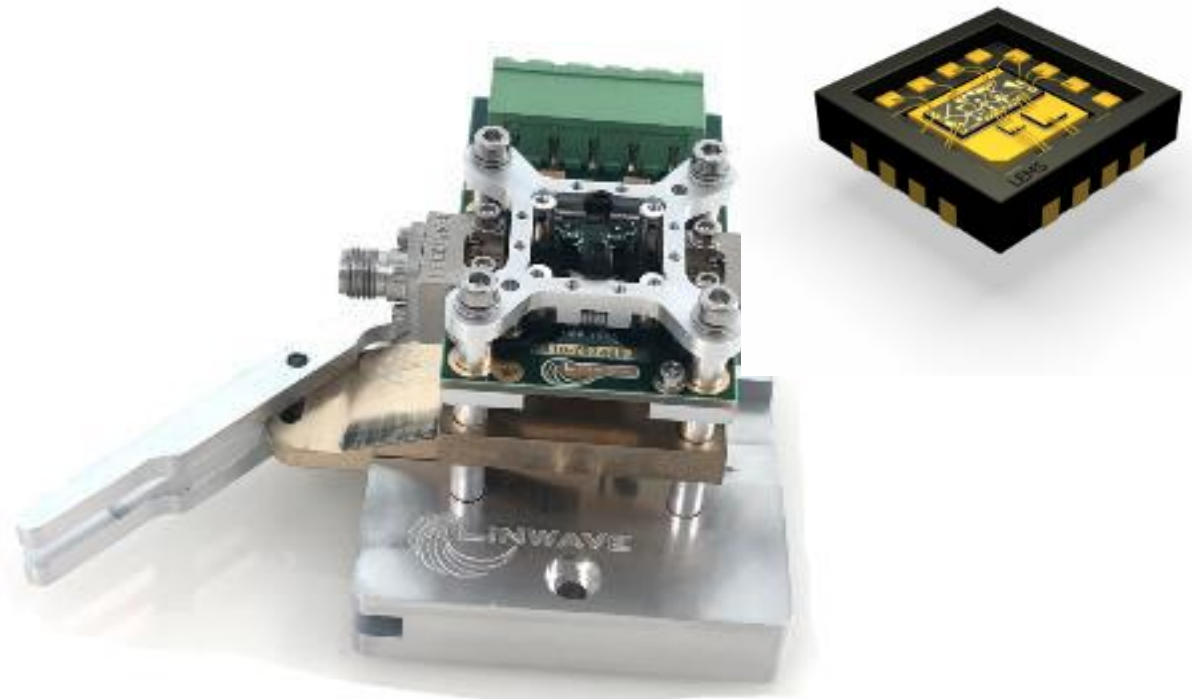
# Defence Case Study – Test Jigs



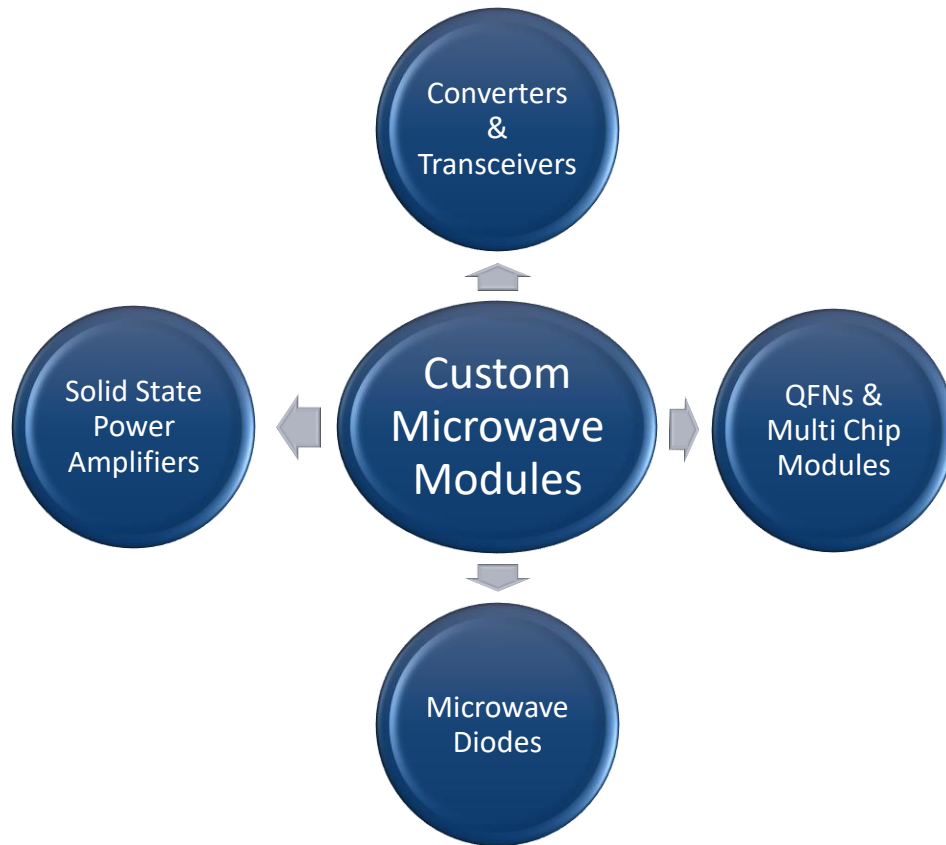
**Application: QFN support for in line test**

## Product Features:

- Novel design approach, patent pending
- Non destructive testing to 20GHz
- Elastomer test interface for repeatability
- Low interconnector resistance
- Wide temp range -40C to +85C
- Consistent pressure application



# Products & Technologies Summary



Linwave Technology  
Marlin Building, 4 Sadler Rd  
Lincoln LN6 3RS. UK.  
Tel: +44 (0) 1522 686690  
Email: [sales@Linwave.co.uk](mailto:sales@Linwave.co.uk)  
Company Reg 04478971

