



# NovaUCD

## Technology Licensing Opportunity



# New Broadband Integrated Gallium Nitride Power Amplifier

*- Efficient and broadband power conversion for RF and mm-wave transmitters*



### Opportunity:

Gallium Nitride (GaN) power amplifiers (PAs) are one of the key driving technologies enabling the next generation of wireless communication networks. Monolithic Microwave Integrated Circuit (MMIC) GaN PAs are critical components in the next generation transmitters where high output power, high efficiency, and compact size are required. Existing PA architectures deliver efficient operation but only do so over very narrow frequency bandwidths.

To overcome the current restrictions in attaining both efficient and broadband operation in wireless transmitters researchers from University College Dublin have developed new MMIC GaN PA architectures that achieve high back-off efficiency over a broad bandwidth. Operation has been demonstrated in the 4-7 GHz region of the RF spectrum and work is ongoing to demonstrate the technology in the mm-wave region at frequencies in the 26–40 GHz range.

### Applications:

The new MMIC GaN PA architecture can be incorporated into an RF and mm-wave wireless transmitter for 5G communication networks, automotive radar, satellite communications as well as sensing and imaging applications. We envision a fully integrated mm-Wave transmitter using the developed ideas.

### Key Features/Advantages:

- Broadband operation to cover several mm-wave applications.
- Reconfigurable (power, gain, frequency) operation.
- Compact MMIC implementation.
- Extension to a fully integrated transmitter.

### Value Proposition:

A power amplifier architecture that achieves high back-off efficiency over a broad bandwidth suitable for use in broadband RF and mm-wave digital transmitters.

### Market:

Wireless Communications and Networks, in particular 5G Base Station Transceivers. Autonomous Vehicle Radar and RF sensing. Defence Communications.

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