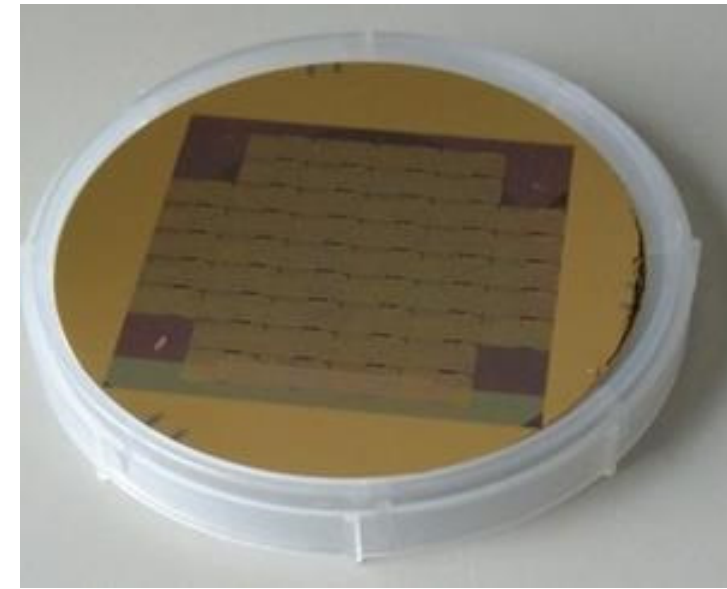


iBROW final project results

The project has achieved success right across its broad and ambitious work programme, including the following highlights, world firsts and new state-of-the-art breakthroughs:

- Improved resonant tunnelling diodes (RTD) devices
 - New state-of-the-art in RTD power and efficiency for electronic RTDs and RTD photodiodes (PDs)
 - RTDs successfully demonstrated from direct epitaxial growth on silicon substrate
 - First ever RTDs from direct silicon wafer bonding
- Developments in application of RTDs in wireless networks
 - RTDs used to drive laser diodes and RTD-PDs used as photo-detectors at GHz frequencies
 - Improved understanding of device physics
 - Clear suggestions for improved future designs



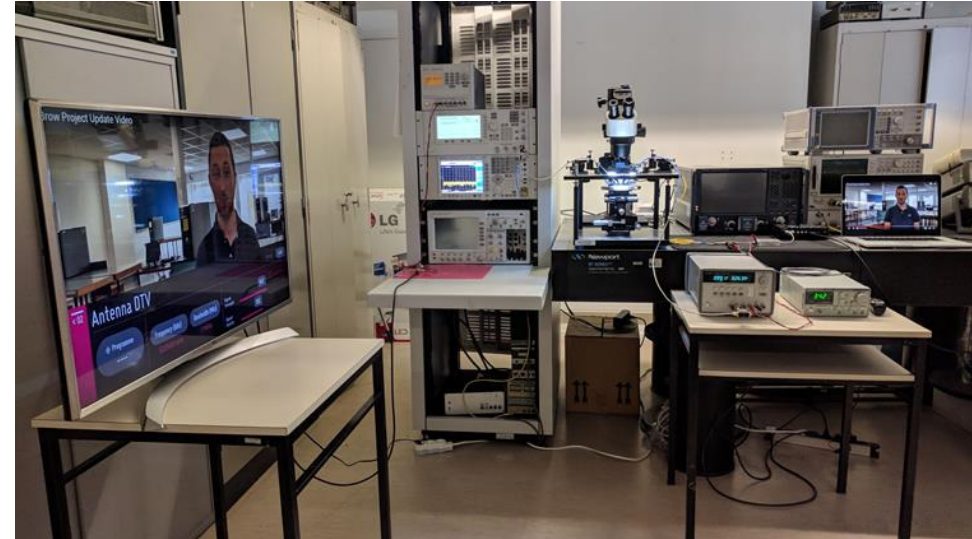
iBROW 2-inch InGaAs/AlAs-on-Si wafer to realise the first RTD oscillators on silicon substrate.



iBROW application of RTDs in wireless communications systems



- First ever transmission using RTD-PDs with advanced modulation formats
 - QPSK, 16-QAM and OFDM
- Demonstration of RTD synchronisation using injection locking mode
- New state-of-the-art RTD transmission for W-band (84 GHz) and J-band (300 GHz)
 - 15 Gbps over 50 cm with correctable BER using e-RTDs (84 GHz)
 - 1.5 Gbps over 20 m HD video transmission using e-RTDs (300 GHz)
 - 16 Gbps over 30 cm with correctable BER using e-RTDs (300 GHz)
- First ever DVB-T audio/video transmission using RTD-PDs (10 GHz).



A video explaining the set-up is available
<https://www.youtube.com/watch?v=4gjaVpJQrkg>



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