

## Ultra thin wifi antenna having data transfer speeds upto 20 GBPS

A research Organization have developed the first compact high performance silicon-based cavity-backed slot (CBS) antenna that operates at 135 GHz. The antenna demonstrated 30 times stronger signal transmission over on-chip antennas at 135 GHz. At just 1.6mm x 1.2mm, approximately the size of a sesame seed, it is the smallest silicon-based CBS antenna reported to date for ready integration with active circuits. This innovation will help realise a wireless communication system with very small form factor and almost two-thirds cheaper than a conventional CBS antenna. The antenna, in combination with other millimetre-wave building blocks, can support wireless speed of 20 Gbps – more than 200 times faster than present day Wi-Fi1, to allow ultra fast point-to-point access to rich media content, relevant to online learning and entertainment.

The novel use of polymer filling enables >70% antenna size shrinkage and a record high gain of 5.68 dBi at 135 GHz. By filling the antenna cavity with polymer instead of air, they can achieve a flat surface for subsequent processing by standard technology that is amenable to mass production.

“The team has also designed a three-dimensional (3D) architecture to integrate the antenna with active circuits to form a fully integrated wireless millimetre-wave system-in-package solution with high performance, reduced footprint and low electromagnetic interference,”

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