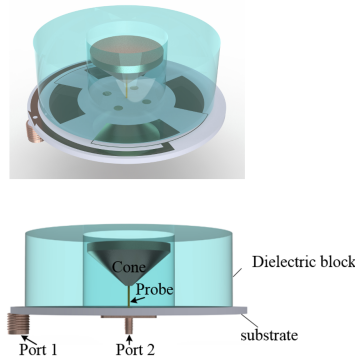


# Dual-frequency Omnidirectional Antenna with Large Frequency Ratio



Communications & Information

Digital Broadcasting, Telecommunication and Optoelectronics



## IP Status

Patent filed



Technology Readiness  
Level (TRL) ?

4

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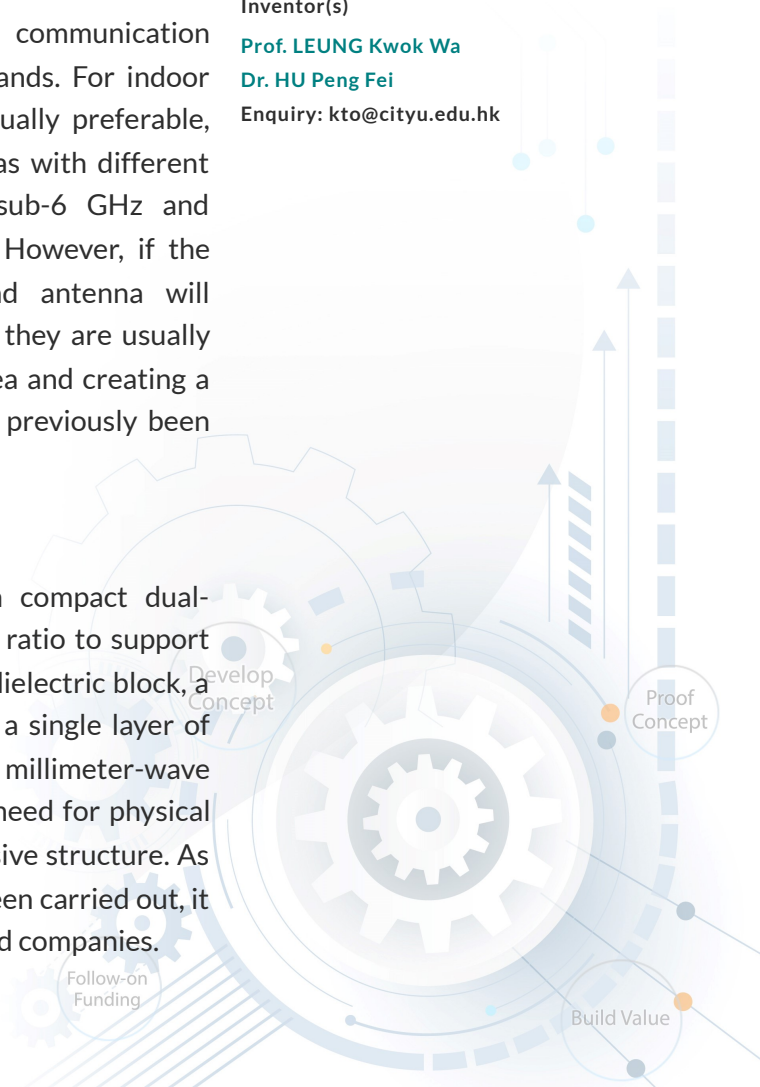
## Opportunity

Both sub-6 GHz and millimeter-wave frequency bands are included in the 5G spectrum, which is critical to state-of-the-art wireless communication systems. Thus, modern antennas need to support both bands. For indoor wireless communication, omnidirectional antennas are usually preferable, due to their broad coverage. Two omnidirectional antennas with different operating frequencies can be used to support both sub-6 GHz and millimeter-wave frequency (dual-frequency) applications. However, if the two antennas are too close together, the lower-band antenna will significantly interfere with the upper-band antenna. Thus, they are usually positioned far away from each other, occupying a large area and creating a bulky structure. No compact omnidirectional antenna has previously been developed for dual-frequency indoor applications.

## Technology

The invention presents a novel method of designing a compact dual-frequency omnidirectional antenna with a large frequency ratio to support indoor 5G wireless communication. It consists of a hollow dielectric block, a modified coaxial probe, and feeding circuits fabricated on a single layer of substrate. It can simultaneously support sub-6 GHz and millimeter-wave bands with high isolation between the bands without the need for physical separation of antennas, creating a small-scale and unobtrusive structure. As complete feasibility studies of the invention have already been carried out, it can be directly integrated with production lines by interested companies.

## Advantages



- More compact and less bulky, with no need for physical separation of antennas
- Better performance, with stable radiation patterns and high isolation between its two ports
- Two operating bands are independently tunable

## Applications

- Indoor 5G wireless communication systems, such as wireless routers
- Providing stable wireless access for mobile terminals
- Potential users: Qualcomm Inc., USA, Smiley Antenna Co., Inc. USA, Cisco Systems, Inc., USA, Huawei Technologies Co Ltd, China

