

# Antenna and RF Frontend Design Technologies for Millimeter-wave Fifth Generation (5G) Cellular Devices

## Abstract

Expanding the technological footprint of millimeter wave antennas and propagation for 5G cellular, access and infrastructures is expected to introduce unprecedented challenges. Practical design considerations and potential novel solutions related to the realization of millimeter-wave antennas with beamforming capabilities are discussed in detail. This talk attempts to assess the future direction of 5G mobile antennas and AiP for cellular devices such as smartphones using a holistic approach. The latest design environment surrounding 5G mobile antennas is first described. Afterwards, a series of detailed demonstrations are discussed.

## Speaker Prof. Wonbin Hong

Assistant Professor, Department of  
Electrical Engineering, Pohang  
University of Science and Technology



**Date: 2:00~3:30pm, Feb 8, 2018**

**Venue: 533-1, 5<sup>th</sup> Floor Information and Electrical Building, Feng Chia University**

Wonbin Hong received his B.S. in electrical engineering from Purdue University, West Lafayette in 2004 and Masters and Ph.D. also in electrical engineering from the University of Michigan, Ann Arbor in 2005 and 2009 respectively. As of 2016 February, Dr. Hong is with the Department of Electrical Engineering at POSTECH (Pohang University of Science and Technology) as an assistant professor. From 2009 to 2016, he was with Samsung Electronics as a principal and senior engineer. Dr. Hong is one of the first researchers to pioneer the concept and design of millimeter-wave antennas and RF front-ends in the field of consumer electronics including mobile terminals and access points for the much anticipated ultra-fast broadband wireless solutions such as 5G communication and IEEE 802.11ay. He has authored and co-authored more than 50 peer-reviewed journals, conference papers, two book chapters and is the inventor of more than 60 patent inventions. In addition, Dr. Hong is the inventor and served as the project lead of the world's first OLED display-embedded invisible antenna for three separate wireless connectivity applications. This completely invisible antenna technology was commercialized in 2016 resulting in approximately 3 million invisible antennas in production worldwide. He is currently serving as the Associate Editor of the IEEE Transaction on Antennas and Propagation and served as the Guest Editor of the IEEE Transaction on Antennas and Propagation Special Edition on Antennas and Propagation Aspects of 5G Communications in 2017.

**Sponsored by Feng Chia University, Department of Electrical Engineering  
Taiwan Electromagnetic Industry-Academia Consortium  
IEEE APS Taipei Chapter**