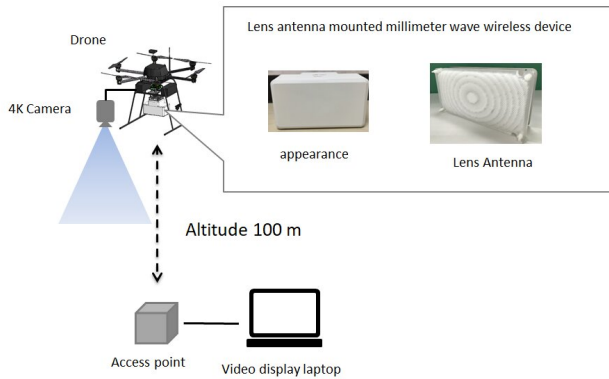


Drone transmits uncompressed 4K video in real time using millimeter wave tech

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SECOM and Tokyo Tech jointly developed a millimeter wave wireless communication system that enables long distance communication, and succeeded in transmitting 4K uncompressed video in real time from a drone.

Credit: Kei Sakaguchi

SECOM and Tokyo Institute of Technology have jointly developed a millimeter-wave wireless communication system that enables long distance communication, and succeeded in transmitting 4K uncompressed video in real time from a drone.

SECOM is focusing on services for securing wide area facilities by using [wireless communication technology](#) for drones. Wide area surveillance with [drone](#) requires real time [transmission](#) of high definition [video](#) such as uncompressed 4K videos providing the professional resolution, for rapid and accurate analyses.

Tokyo Tech has been working on millimeter wave wireless [communication](#) systems including 5G-MiEdge project. The research results from 5G-MiEdge project were applied for design and development of the video transmission over millimeter wave wireless links.

Millimeter wave wireless communication is

expected to be used in 5G because of the high-speed communication, but there is a problem that communication distance is limited due to large attenuation of radio waves. SECOM and Tokyo Tech have been conducting joint research since 2018 under the framework of the SOFTech Consortium for the development of a millimeter-wave wireless communication device capable of long-distance transmission of images using a lens antenna developed by Intel.

Lens antennas enable long distance communication by narrowing the emission angle of radio waves. However, they have not been used for drones due to their size and weight. To address this problem, the engineering team from SECOM and Tokyo Tech developed a video transmission system with a millimeter wave wireless communication device that uses a small, lightweight lens antenna that can be mounted on a drone. With it, they realized real-time transmission of 4K uncompressed video. Delay using the system is also dramatically reduced compared to conventional compressed transmission.

In their tests, the team was able to use a drone to take video in 4K and transmit the video in [real time](#) from over 100 m in the air to an access point on the ground. This technology enables the provision of "safe and secure" services in various fields, such as stadium security, and infrastructure monitoring by drones.

Provided by Tokyo Institute of Technology

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