

Press release by SGJ HQ for stock market

July 9, 2019

Development of optical electric field sensor for 5G base station antenna measurement

Our company successfully developed an optical electric field sensor to accurately measure the strength and phase of radio waves transmitted by the 5G base station antenna with Mie University Faculty of Engineering and Japan National Research and Development Laboratory. Among the frequency bands used for 5G, this is the world's first optical electric field sensor that can measure the 28GHz.

The 28GHz band is a new commercialized radio frequency band with the development of 5G. Compared to frequency band less than 3.6GHz that is used for 4G, it has a high straightness and it has difficulty to fly long distances. Therefore, in order to efficiently install a 5G base station that uses the 28 GHz band, it is necessary to adjust the position and angle of antenna by accurately measure the radiation pattern such as the direction and intensity of radio waves emitted by the antenna of the ground station.

In anticipation of the launch of 5G on a global scale, we started to develop an optical electric field sensor that can accurately measure since late 2017. And since June 2018, we started the joint research with Mie University and Japan National Research and Development Laboratory and have been resolving technical issues by bringing up each knowledge.

The developed optical electric field sensor adopts an antenna electrode structure that integrates an antenna that receives radio waves and an electrode that modulates the received radio waves into an optical signal. It enables the high sensitivity by arranging multiple antenna electrodes in series in the optical waveguide.

It is proven that by arranging multiple antenna electrodes symmetrically, two orthogonal polarization components can be measured simultaneously, which is expected to significantly reduce the time and effort for measurement. (patent pending) Because the sensor head has no metal part other than the antenna electrode, and the effect of interference with the surrounding metal is small, it enables extremely accurate measurement.



28 GHz band antenna electrode type sensor head

We plan to start selling engineering samples from the second half of fiscal year 2019. We plan to promote widely to the world's telecommunications carriers, antenna manufacturers, research institutes, and universities. The results of this research are scheduled to be announced on July 10, 2019 at the OECC / PSC 2019 International Conference on Optoelectronics held at the Fukuoka International Congress Center.