

February 20, 2019

To whom it may concern,

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Development of New Optical Power Feeding RoF System by Tamagawa Electronics Co., Ltd.

"Optical transmission / power feeding-type high-bandwidth electromagnetic wave measuring equipment" (hereafter "Optical Power Feeding RoF System") developed by our subsidiary, Tamagawa Electronics Co., Ltd. (hereafter "Tamagawa Electronics") received "Encouragement Prize" at "The 33rd Kanagawa Industrial Technology Development Award" as announced on October 12, 2016, and furthermore this system has been adopted in the study on encouragement of commercialization publicly solicited by Kanagawa Institute of Industrial Science and Technology as announced on July 18, 2017.

Please be informed that new type Optical Power Feeding RoF System developed by Tamagawa Electronics was discussed in introduction of the article and at the conference as follows.

1. An article on the relevant technology was introduced in "Hikari Alliance" February 2019 (Japan Industrial Publishing Co., Ltd.)

<Abstract>

It is required to accurately measure electrical noise which induces malfunction of in-vehicle electronic devices. The technology of small, wide-band and high-sensitivity electromagnetic wave measuring system is introduced, which can make measurement without causing impact to electromagnetic field in an anechoic chamber by directly converting electrical noise to light and using optical fibers for signal transmission and using light for power feeding.

2. Introduced at the research conference of the Institute of Electronics, Information and Communication Engineers

Name of conference: Optical-application Electromagnetic Field Measurement (PEM), Special Research Committee of Experts, the 3rd Conference

Title: Low frequency noise measurement by using Optical Power Feeding RoF System Date: November 19, 2018

<Abstract>

We proposed the noise measurement method focusing on low frequency under 10MHz (for automobiles) by using our Optical Power Feeding RoF System. Optical Power Feeding RoF System affords frequency measurement range from 100kHz to 6GHz, which enables measurement of low frequency.

The Institute of Electronics, Information and Communication Engineers, lecture paper details: <u>https://www.ieice.org/ken/paper/20181119h174/</u>

Tamagawa Electronics will continue the researches through cooperation among government, industry and academia for further enhancement of performance.