MIRAIT

NEWS RELEASE

January 20, 2020
MIRAIT Holdings Corporation

MIRAIT and METAWAVE conducted indoor demonstration test of ECHO™, a reflector using metamaterial technology for 5G area construction

MIRAIT Corporation (Headquarters: Koto-ku, Tokyo; President: Toshiki Nakayama; hereinafter, MIRAIT) , which is a Group company of MIRAIT Holdings Corporation, and Metawave Corporation (Headquarters: Palo Alto, California, USA; CEO: Maha Achour, hereinafter Metawave) conducted radio wave propagation experiments in the quasi-millimeter wave band using metamaterial reflectors. They confirmed that the result reached the expected performance level.

MIRAIT is working to accelerate the technological development of the next-generation 5G mobile communication system, and emerging enterprise local 5G which will start in earnest in the spring of 2020. Metawave has state-of-the-art technology in this field, and since last December, and MIRAIT has been evaluating to confirm the practicality of Metawave's metamaterial reflectors which are attracting attention as an effective tool for building 5G areas. In this experiment, basic electromagnetic coupling and radiation characteristics such as the reflectance of the metamaterial reflector were confirmed. From here on, the two companies will confirm the effectiveness of metamaterial reflectors in 5G area construction based on a series of processes such as 3D data conversion of indoor space, radio wave propagation simulation, and reflector design.

MIRAIT has been engaged in the electrical equipment business, software business, and ICT business for many years, focusing on the construction of fixed communication equipment and mobile network equipment. MIRAIT strives to provide new solutions that meet the demands of society with the aim of realizing smart offices and smart towns by strengthening the business base with the engineering skills in each field.

Metawave is a U.S. startup with state-of-the-art technology in the field of developing 5G radar platforms that enhance the performance of radars used in 5G area expansion and autonomous driving. Metawave ECHO™ passive reflectors enable faster, more efficient 5G and fixed wireless deployments to bring high-speed connectivity to billions of users as they connect indoors and outdoors around the world.

Based on this experiment, MIRAIT and Metawave will continue to actively accumulate knowledge on the practical application of new technologies for building 5G areas. Both companies aim to creating efficient and detailed areas using quasi-millimeter waves in 5G, which is expected to be widely used, for building private networks such as construction sites, logistics / warehouses, stadiums, hotels, office buildings, and the like as well as telecommunications carriers.

*1 Reflector using metamaterial technology
Metamaterials are artificial materials that behave in response to electromagnetic waves including light, which are not found in natural materials. Purpose of applying the metamaterial reflectors for constructing 5G areas using millimeter waves and quasi-millimeter waves is to expand areas (outdoors / indoors) where otherwise impossible due to the effects of shielding.

*2 ECHO（TM）
ECHO (TM) is a quasi-millimeter wave reflector developed by Metawave, which uses metamaterial technology.

*3 Quasi-millimeter wave band
In high-frequency radio, a wavelength band whose wavelength is close to millimeters. The area around 20 GHz to 30 GHz is often called a quasi-millimeter wave. Until now, it has not been used in the field of mobile communications, so there is room in the frequency bandwidth, and it is suitable for ultra-high-speed, large-capacity communications. On the other hand, there is a problem that the straightness is higher than the frequency band used conventionally, and the amount of attenuation due to rainfall or shielding is large, but this has been solved by utilizing a reflector using metamaterial technology.

※ The company names, product names, system names, etc. described in this article are registered trademarks and trademarks of each company and each organization.

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About Metawave

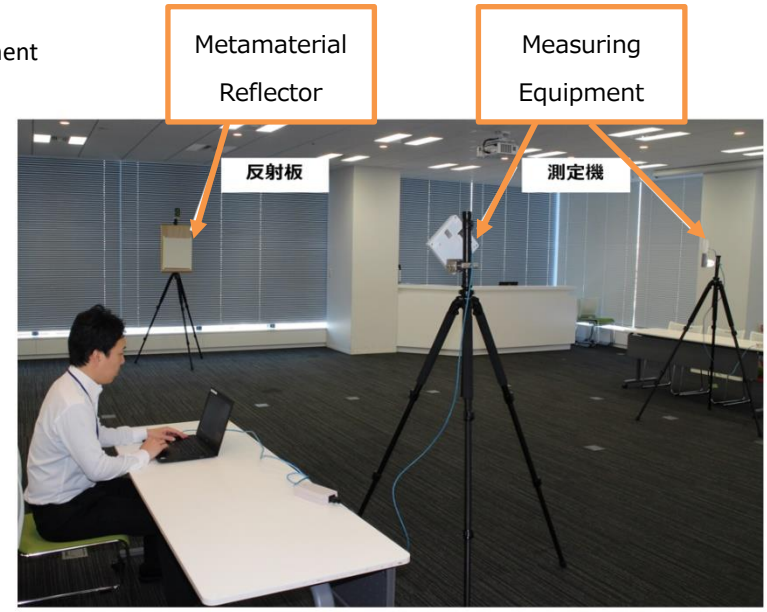
Company name:	Metawave Corporation
Established:	August, 2017
Head office:	1023 Corporation Way, Palo Alto, CA USA
Representative:	Maha Achour
Description:	Development of data communication antenna and in-vehicle millimeter wave radar

About MIRAIT

Company name:	MIRAIT Corporation
Established:	December 21, 1944
Head office:	5-6-36, Toyosu, Koto-ku, Tokyo 135-8112
Representative:	President and CEO Toshiki Nakayama
Description:	Information and Communication Engineering Business

Attachment

■Experiment



Measurement of basic features of Metamaterial Reflector

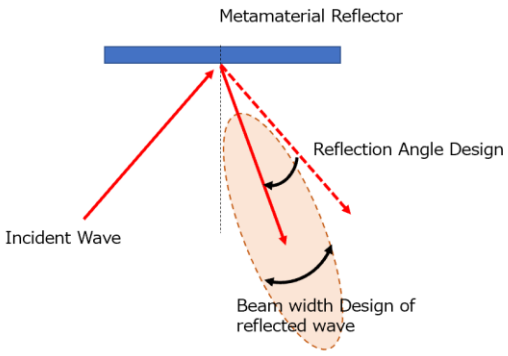


Image of Beamforming by Metamaterial Reflector

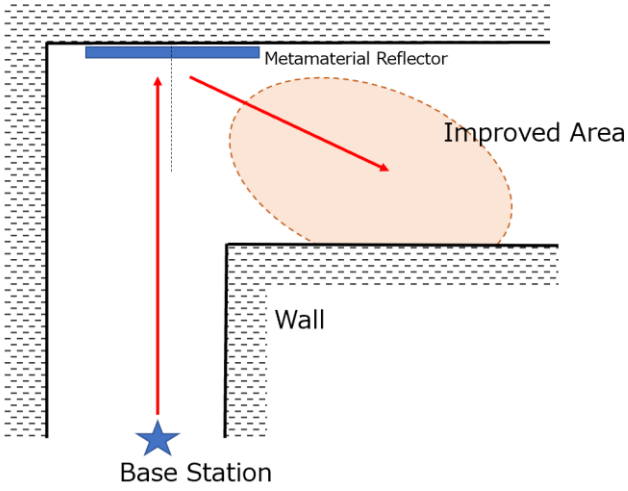


Image of 5G area improvement by Metamaterial Reflector

Metawave ECHO™ passive reflector features and characteristics

- Fully passive with no power supply required, can be installed anywhere, indoors and outdoors
- Beam forming technology using proprietary technology
- Extension of 5G NR
- Coverage for indoor dead zones and shadowed areas
- Supports high-density areas such as stadiums, shopping malls, office buildings, and airports
- Advertisement, messaging, or concealment film on cover is available as an option