

MITSUBISHI ELECTRIC CORPORATION
PUBLIC RELATIONS DIVISION
7-3, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8310 Japan

FOR IMMEDIATE RELEASE

No. 2984

Customer Inquiries

Media Inquiries

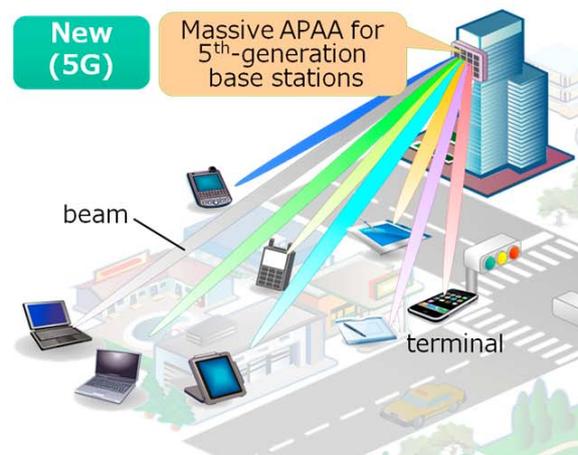
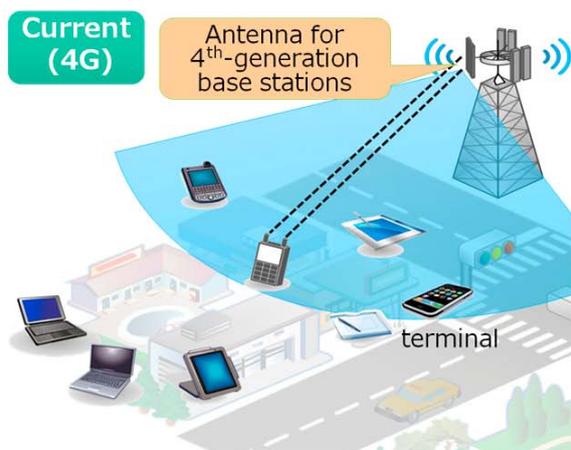
Information Technology R&D Center
Mitsubishi Electric Corporation
www.MitsubishiElectric.com/ssl/contact/company/rd/form.html
www.MitsubishiElectric.com/company/rd

Public Relations Division
Mitsubishi Electric Corporation
prd.news@nk.MitsubishiElectric.co.jp
www.MitsubishiElectric.com/news

Mitsubishi Electric's New Multibeam Multiplexing 5G Technology Achieves 20Gbps Throughput

Will enable faster, higher-quality connections in crowded urban areas

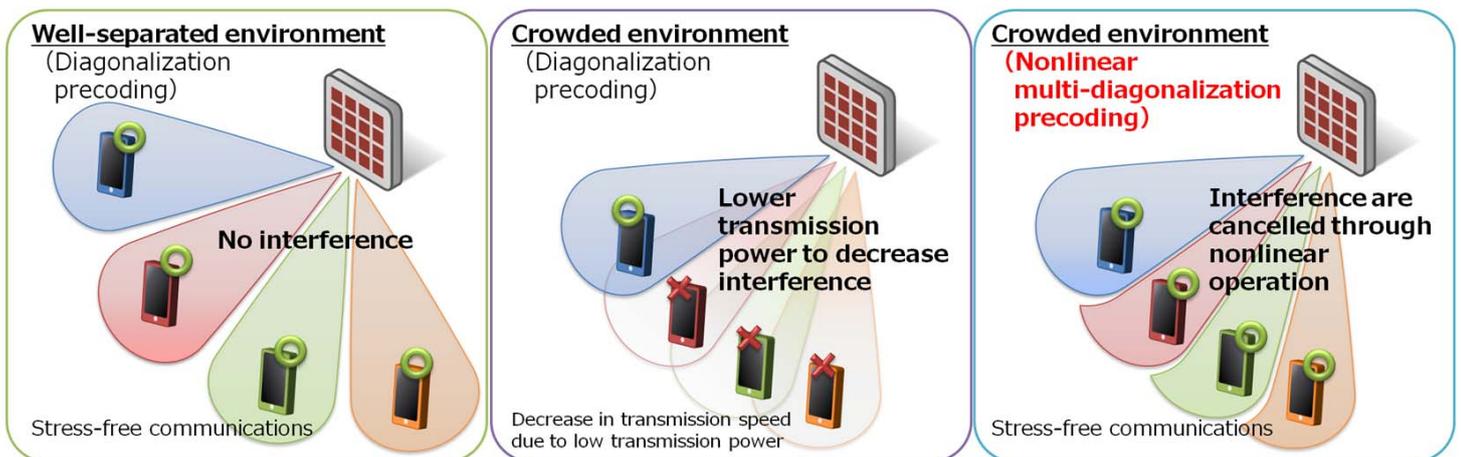
TOKYO, January 21, 2016 – [Mitsubishi Electric Corporation](http://www.mitsubishielectric.com) (TOKYO: 6503) has developed a new multibeam multiplexing radio communication technology for base stations of envisioned fifth-generation (5G) mobile communication systems by combining tens of active phased-array antennas with massive antenna elements (massive APAA) and a new precoding technology for parallel transmission of data streams by transmitters. The wideband communication technology will enable high-speed communication in high-frequency bands expected to be used for 5G systems. The new multibeam multiplexing technology will achieve transmission speeds of 20Gbps, or around 60 times faster than current 4G mobile base stations that use multi-input multi-output (MIMO) technology (as of January 21, 2016). Details will be announced at the IEICE Technical Committee on Radio Communication Systems in Tokyo on March 2.



Massive MIMO technology that would facilitate the use of more than several hundred antenna elements is drawing attention as a way to compensate for propagation loss in the high-frequency bands (from 4GHz) that will be used for 5G. Fully digitized signal processing would require enormous digital circuitry and power consumption, so one of the practical solutions is a hybrid configuration that combines analog and digital processing. The massive APAA technology developed by Mitsubishi Electric is a proven technology that is already used commercially for satellites and other systems.

Mitsubishi Electric developed its new multibeam multiplexing technology by combining massive APAAs and precoding technology in transmitters that deliver increased transmission power to overcome propagation loss in high-frequency bands. In comparison with two-beam transmissions of current 4G mobile base stations, up to 16-beam transmissions can achieve up to 20Gbps to satisfy needs for higher data rates.

When mobile terminals are in proximity in a crowded environment, signals from base stations can interfere with each other. In conventional diagonalization precoding schemes, the transmission power of interfering signals is lowered to reduce interference, but this also results in decreased transmission speeds. Mitsubishi Electric's solution is its new nonlinear multi-diagonalization precoding technology combining multi-diagonalization precoding, with inherent interference, and nonlinear operation, which removes interference through multi-diagonalization precoding. Since transmission power does not have to be lowered, the result is high-capacity communication at 20Gbps in crowded environments.



Mitsubishi Electric is also engaged in other efforts to commercially deploy ultra-high-speed communication exceeding 20Gbps to accommodate the increasing number of terminals in the Internet of Things (IoT). In September 2015, Japan's Ministry of Internal Affairs and Communications entrusted Mitsubishi Electric with a research project to realize 5G mobile communication systems that could achieve peak throughput of 20Gbps. A system demonstration is scheduled in 2018. Going forward, Mitsubishi Electric will work toward realizing practical use of these technologies in commercial 5G systems after 2020.

The news release includes a part of the results of “The research and development project for realization of the fifth-generation mobile communications system” commissioned by Japan’s Ministry of Internal Affairs and Communications.

###

About Mitsubishi Electric Corporation

With over 90 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavors to be a global, leading green company, enriching society with technology. The company recorded consolidated group sales of 4,323.0 billion yen (US\$ 36.0 billion*) in the fiscal year ended March 31, 2015. For more information visit:

<http://www.MitsubishiElectric.com>

*At an exchange rate of 120 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2015