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FOR IMMEDIATE RELEASE

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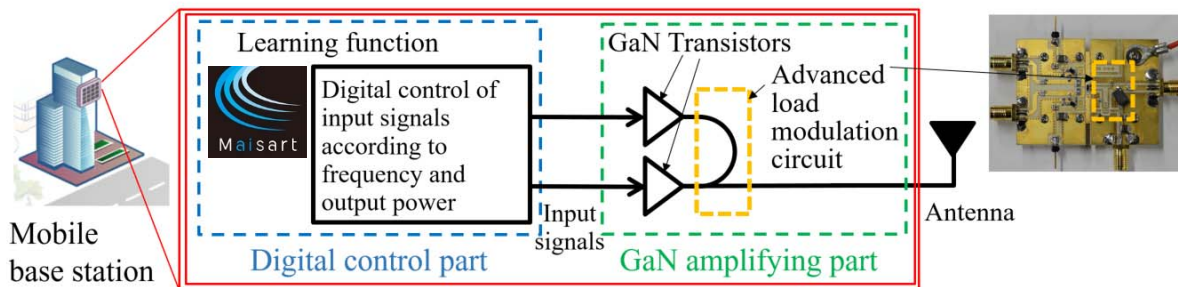
Mitsubishi Electric Develops Ultra-Wideband Digitally Controlled GaN Amplifier for Mobile Base Stations

*Expected to contribute to large-capacity communication and
reduce power consumption of mobile base stations*

TOKYO, January 10, 2019 – [Mitsubishi Electric Corporation](http://www.mitsubishielectric.com) (TOKYO: 6503) announced today its development of the world's first* ultra-wideband digitally controlled gallium nitride (GaN) amplifier, which is compatible with a world-leading range of sub-6GHz bands focused on fifth-generation (5G) mobile communication systems. With a power efficiency** rating of above 40%, the amplifier is expected to contribute to large-capacity communication and reduce the power consumption of mobile base stations.

* According to Mitsubishi Electric research as of January 10, 2019

** Output power level equivalent to 6.5dB peak-to-average power ratio (PAPR) modulated signal



Ultra-wideband digitally controlled GaN


Key Features

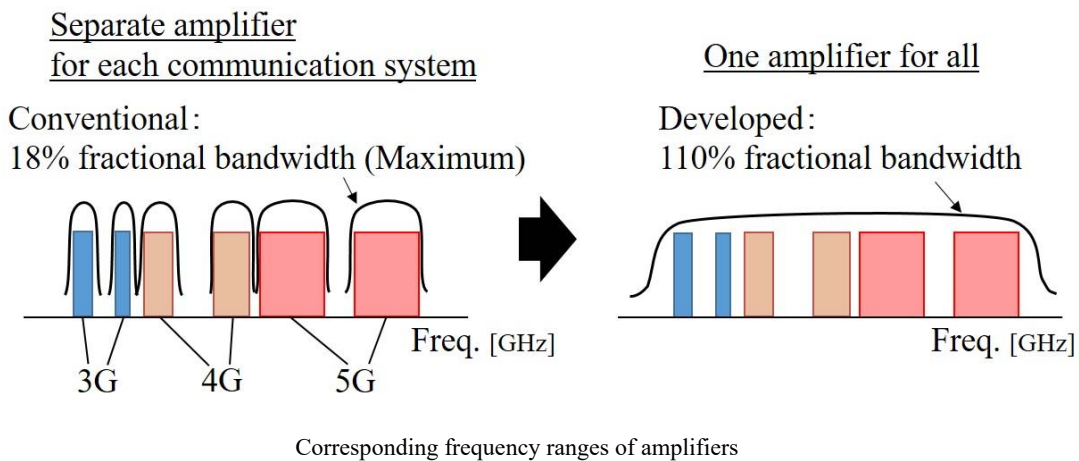
1) Novel load modulation achieves wideband operation and contributes to large-capacity communication

- Mitsubishi Electric's novel ultra-wideband digitally controlled GaN amplifier uses an advanced load modulation circuit with two parallel GaN transistors. The circuit expands the bandwidth of load modulation, a key factor for the amplifier's high-efficiency operation, for wideband (1.4–4.8GHz) operation.
- Wide-band operation of amplifier supports several frequency bands.

2) **Digital control realizes high-efficiency operation and reduces power consumption of mobile base stations**

- Digitally controlled input signals for amplifier realize high-efficiency load modulation of above 40% over 110% of the fractional bandwidth. Digital control employs learning function based on Maisart^{®***}.
- Improved efficiency of amplifier helps to reduce power consumption in mobile base stations.

*** Mitsubishi Electric's AI creates the State-of-the-ART in technology  **Maisart**



Measurement Results

Frequencies	Fractional bandwidth	Efficiency
1.4–4.8GHz	110%	Over 40%

Output power level equivalent to 6.5dB PAPR modulated signal

About Maisart

Maisart encompasses Mitsubishi Electric’s proprietary artificial intelligence (AI) technology, including its compact AI, automated design deep-learning algorithm and extra-efficient smart-learning AI. Maisart is an abbreviation for "Mitsubishi Electric's AI creates the State-of-the-ART in technology." Under the corporate axiom "Original AI technology makes everything smart," the company is leveraging original AI technology and edge computing to make devices smarter and life more secure, intuitive and convenient.

Patents

Pending patents for the technology announced in this news release number two in Japan and two outside of Japan.

R&D Facilities Involved

Information Technology R&D Center, Mitsubishi Electric Corporation
Mitsubishi Electric Research Laboratories, Inc.

Maisart is a registered trademark of Mitsubishi Electric Corporation.

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About Mitsubishi Electric Corporation

With nearly 100 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 4,444.4 billion yen (in accordance with IFRS; US\$ 41.9 billion*) in the fiscal year ended March 31, 2018. For more information visit:

www.MitsubishiElectric.com

*At an exchange rate of 106 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2018

About Mitsubishi Electric Research Laboratories, Inc.

Mitsubishi Electric Research Laboratories (MERL) is the North American subsidiary of the corporate research and development organization of Mitsubishi Electric Corporation. MERL conducts application-motivated basic research and advanced development in optimization, control and signal processing

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