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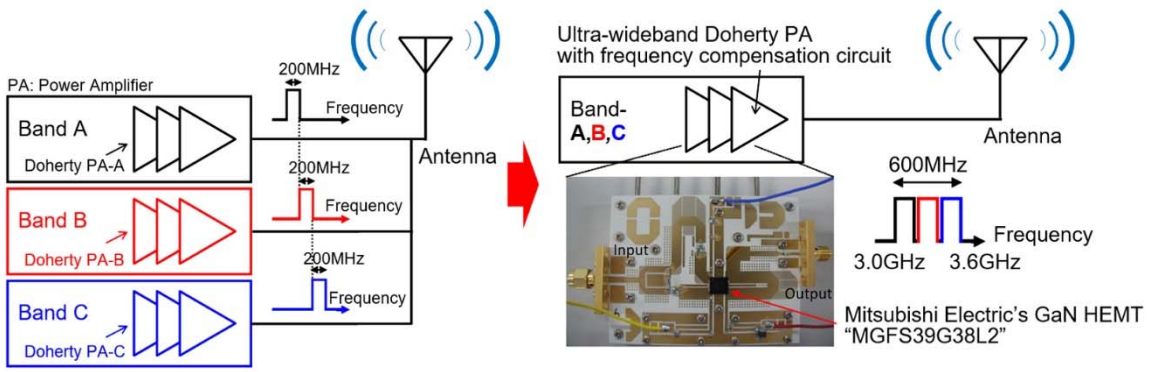
Mitsubishi Electric Develops World's First Ultra-Wideband GaN Doherty Power Amplifier for Next Generation Wireless Base Stations

Unmatched spectral compatibility will reduce size and energy consumption of next generation wireless base stations

TOKYO, January 12, 2017 – Mitsubishi Electric Corporation (TOKYO: 6503) and Mitsubishi Electric Research Laboratories (MERL) announced today their development of an ultra-wideband gallium nitride (GaN) Doherty power amplifier for next generation base stations that is compatible with a world-leading range (company estimate) of frequency bands above 3GHz to cover an operating bandwidth of 600MHz. The technology is expected to help reduce the size and energy consumption of next generation wireless base stations. Technical details will be presented at the IEEE Topical Conference on RF/Microwave Power Amplifiers for Wireless and Radio Applications (PAWR2017) during Radio & Wireless Week (RWW) in the U.S. city of Phoenix, Arizona from January 15-18, 2017.



Power amplifier units in base stations for next generation wireless systems
(Left: conventional Doherty power amplifiers, Right: newly developed Doherty power amplifier)

To help meet a rapid rise in demand for increasing wireless capacity, mobile technologies are shifting to next generation systems that raise capacity by allocating new frequency bands above 3GHz and using multiple frequency bands. Generally, power amplifiers operate with less efficiency in higher frequencies. Also, different power amplifiers are needed for different frequency bands, which can require larger base stations. As such, extra- efficient power amplifiers compatible with multiple frequencies are in demand.

Mitsubishi Electric's new ultra-wideband GaN Doherty power amplifier uses advanced frequency-compensation circuits with Doherty architecture for enhanced efficiency in a very wide band range. Its efficiency rating of 600MHz above 3GHz was the world's widest level as of January 12, 2017.

Key Features

The new power amplifier's frequency-compensation circuit enhances efficiency over a wide frequency range to enable wider performance by three times, a world record for Doherty power amplifiers (600MHz). Wideband, high-efficiency performance for efficient amplification of multiple radio frequencies by just one power amplifier will help to reduce base station size and cooling needs. Mitsubishi Electric's high-efficiency GaN devices (MGFS39G38L2) contribute to a world-class drain efficiency of more than 45.9 percent in the 3.0 to 3.6GHz frequency range, thereby reducing energy consumption. Further, an adjacent channel leakage ratio (ACLR) of -50dBc is achieved with a commercial digital pre-distortion (DPD) technique for LTE (Long-Term Evolution) 20MHz signals.

Specifications

Ultra-wideband GaN Doherty power amplifier				
Frequencies	Output power	Drain efficiency	ACLR	Input signal
3.0–3.6GHz	33.6–34.6dBm	45.9–50.2%	-50dBc	20MHz LTE 7.5dB PAPR

Patents

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

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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 4,394.3 billion yen (US$ 38.8 billion*) in the fiscal year ended March 31, 2016. For more information visit:
www.MitsubishiElectric.com

*At an exchange rate of 113 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2016

About Mitsubishi Electric Research Laboratories (MERL)

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. For more information visit: www.merl.com