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Mitsubishi Electric Delivers Radio Equipment for Communication-based Train Control System on Tokyo Metro's Marunouchi Line

Highly reliable communication will raise railway safety and reliability

TOKYO, February 22, 2018 – [Mitsubishi Electric Corporation](http://www.mitsubishielectric.com) (TOKYO: 6503) announced today that it has filled an order by Tokyo Metro Co., Ltd for radio equipment to be used in what is believed to be Japan's first communication-based train control system (CBTC) for subways. The delivery includes wayside radio equipment for a branch of Tokyo Metro's Marunouchi Line between Nakano-sakaue and Honancho stations and on-board radio equipment for a train that will be operated on the line for verification purposes.

Tokyo Metro will evaluate and verify the equipment through trial operations, aiming at full commercial deployment on the entire Marunouchi Line by the end of fiscal year 2023.



Train with on-board radio equipment



Wayside radio equipment

CBTC systems are being used to upgrade the detection of train locations and management of train intervals (headways), which are conventionally performed with wayside equipment (e.g., track circuits and signals). In particular, CBTC systems can enhance high-density train operations and reduce wayside equipment maintenance costs. However, increasing demands to ensure railway system safety and security are creating needs for advanced security solutions and radio equipment that is highly resistant to radio wave interference.

Mitsubishi Electric was able to respond to these demands by leveraging radio communication technologies that the company has cultivated over the years in fields including aerospace. The company will now assist Tokyo Metro in verification tests of the recently delivered wayside and on-board radio equipment, aiming at the launch of a commercial CBTC system by the end of fiscal year 2023. Going forward, Mitsubishi Electric expects to expand its business in transportation systems by supplying various railway signaling systems to railways around the world.

Features

1) Stable radio communications and high resistance to radio-wave interference

- Reliable, continuous communications realized due to resistance to interference from other radio equipment, even in stations or urban areas with dense radio waves
- Highly reliable communication data due to minimized impact from radio-interference noise

2) Safe & secure train control thanks to advanced security system

- High-safety communications between on-board and wayside equipment achieved with Mitsubishi Electric's proprietary authentication algorithm to prevent unauthorized access
- Encryption key management to reduce risks of information leakage or data falsification due to an encryption key leak
- Compliance with advanced security requirements of CBTC systems to ensure safe and secure train management

3) Optimized number and arrangement of wayside radio equipment for minimized costs

- Mitsubishi Electric's proprietary algorithm reduced the time required to simulate radio wave propagation (reduced from days to just several hours) when performing simulations
- High-accuracy simulations enabled the number and arrangement of wayside radio equipment to be optimized to reduce equipment costs while maintaining necessary radio wave intensity

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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 4,238.6 billion yen (US\$ 37.8 billion*) in the fiscal year ended March 31, 2017. For more information visit:

www.MitsubishiElectric.com

*At an exchange rate of 112 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2017