

Mitsubishi Chemical, Sharp, NICT, and TECHLAB Agree to Jointly Develop Ultra-Compact, Lightweight Satellite Communication Terminals for Mobility Applications

Pursuing miniaturization and weight reduction with a view to installation in drones and automobiles

Realizing high-speed, large-capacity communications in areas where cellular communications are difficult, such as mountainous regions and disaster-stricken areas

Mitsubishi Chemical Corporation (Head Office: Chiyoda-ku, Tokyo; President: Manabu Chikumoto; hereinafter “Mitsubishi Chemical”), Sharp Corporation (Head Office: Sakai-shi, Osaka; CEO: Masahiro Okitsu; hereinafter “Sharp”), the National Institute of Information and Communications Technology (Headquarters: Koganei-shi, Tokyo; President: Hideyuki Tokuda; hereinafter “NICT”), and Techlab Co., Ltd. (Head Office: Tama-shi, Tokyo; Representative Director: Hiroshi Hatakeyama; hereinafter “TECHLAB”) have agreed to jointly develop ultra-compact, lightweight LEO satellite communication terminals for mobility applications. The companies aim to put this technology into practical use at an early stage with a view to installation in drones and automobiles.



Antenna made by Sharp

Heat dissipation plate

Ultra-compact, lightweight terminal

LEO (Low Earth Orbit) satellite communications enable high-quality, high-speed, large-capacity communications even in areas where cellular communications are difficult, such as mountainous regions, offshore locations, and remote islands. With this agreement, the companies will begin joint development of ultra-small, lightweight LEO satellite communication user terminals. Mitsubishi Chemical’s highly heat-conductive, lightweight carbon fiber/graphite sheet composite materials and TECHLAB’s design and manufacturing techniques that enable structures excellent in heat dissipation will be combined to achieve ultra-small, lightweight terminals, which are less than one-tenth the size and weight of the terminal Sharp is currently developing (approximately 20cm × 20cm × 3cm, 1kg). By enabling installation in various mobile devices such as drones and automobiles, we will greatly expand the range of applications for LEO satellite communications, including securing communication lines in mountainous regions and disaster-stricken areas, real-time transmission of location information, and use in autonomous vehicles.

This initiative will be exhibited at the SPEXA (Space Business Expo) 2025, to be held from July 30 (Wed) to August 1 (Fri) at Tokyo Big Sight (Koto-ku, Tokyo), at a booth in the Satellite

Data and Space Utilization Area (South Exhibition Hall, S7-11) and the Sharp booth (same hall, S6-34).

Roles of each company

Sharp	Development of LEO satellite communication terminals utilizing size and weight reduction techniques and communication techniques cultivated through the design of smartphones.
Mitsubishi Chemical	Development of highly heat-conductive, lightweight new composite materials for heat dissipation plates
NICT	Overall antenna design and simulation for ultra-small, lightweight antennas, including heat dissipation structure
TECHLAB	Forming and processing of new materials

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