

Press Information

Kyocera Corporation and SoftBank Corp. Succeeded in Demonstration of Backhaul System Utilizing 5G Millimeter-Wave

Kyoto/London, 04. August 2022. KYOCERA Corporation (“Kyocera”) and SoftBank Corp. (“SoftBank”) conducted a backhaul system verification test utilizing the millimeter-wave band allocated to SoftBank for 5G (referred to as “5G millimeter-wave”) at SoftBank base stations located in Akiruno City, Tokyo, from January to April 2022. This system used a 5G millimeter-wave to connect a backhaul link between a donor station and a relay node station that constitutes the access area. The donor station conformed to the O-RAN Alliance¹ fronthaul specifications that connect to the network. In view of the demonstration test results, Kyocera and SoftBank are pleased to announce that they successfully verified stable communications and system effectiveness.



Donor Station



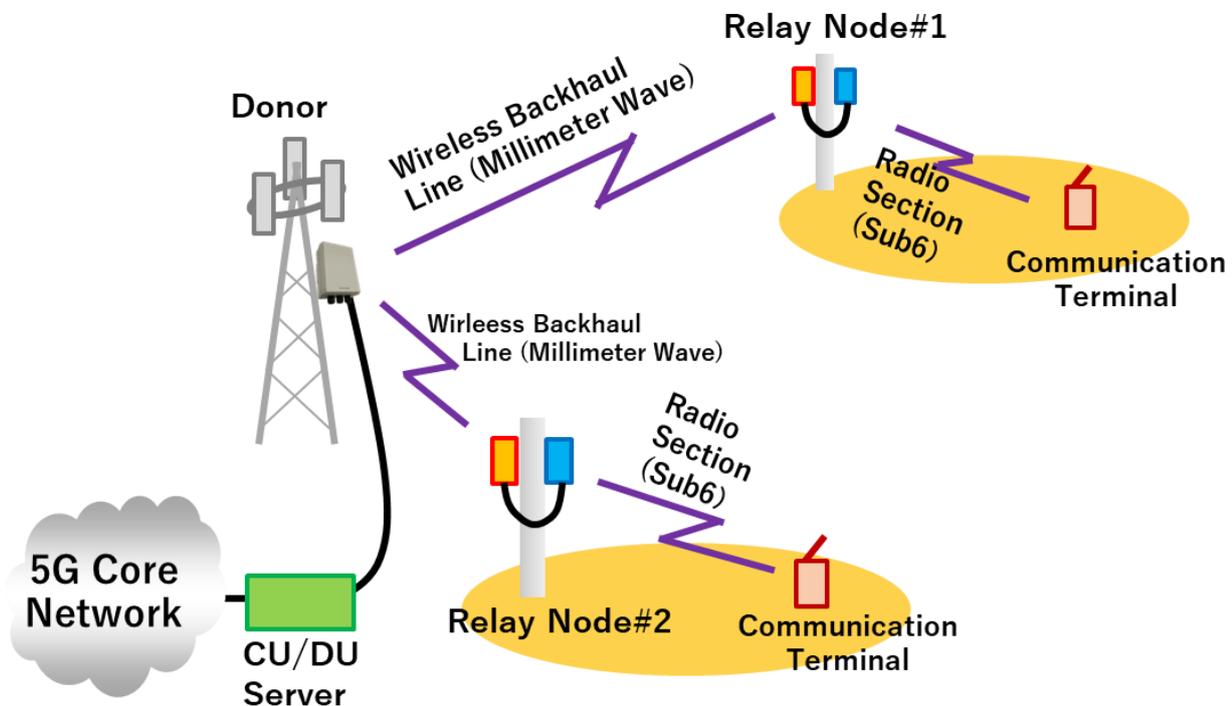
Relay Node Station

Outline of the Demonstration Experiment

Term	January – April 2022
Place	Akiruno City, Tokyo
Purpose	Used a 5G millimeter-wave backhaul system test to: <ul style="list-style-type: none"> • Verify the effectiveness of millimeter waves as a backhaul line • Establish end-to-end communications from the CU (Centralized Unit, aggregation node) / DU (Distributed Unit, distributed nodes) server to the communication terminals

¹ The O-RAN Alliance, which stands for "Open Radio Access Network Alliance" is an industry group dedicated to making 5G and other next-generation wireless access networks more open and intelligent.

	<ul style="list-style-type: none"> • Confirm the effects of weather changes such as rainfall and snowfall • Collect data for the development of commercial products conforming to O-RAN Alliance specifications, etc.
Content	<ul style="list-style-type: none"> • Two relay node stations: one 260m away and another 1,270m away from the donor station, were installed. • Connected the 5G millimeter-wave as a backhaul line. Conducted connection tests from the 5G core network server to the communication terminals via CU/DU, donor station, and relay node station.
Results	<ul style="list-style-type: none"> • Verified end-to-end connectivity from the CU/DU server to the communication terminals. • Confirmed that a backhaul system utilizing a 5G millimeter-wave could stably connect at a 1 km distance or more from a donor station. In addition, it could be connected not only in fine weather but also in case of rain or snowfall.



Structure of the demonstration experiment

Experiment Results

Through this demonstration, Kyocera and SoftBank confirmed that a backhaul system utilizing 5G millimeter-wave would contribute to shortened construction periods and cost reductions through efficient use in areas where 5G networks are difficult to install due to challenges such as



topography. Both companies also confirmed that 5G millimeter-wave technology could be a new means of communication between base stations and terminals.

Future Developments

Kyocera and SoftBank will continue to consider how to address issues such as lowering power consumption and operational automation. Both companies will also consider systems that can be applied to various needs in Japan and overseas.

About SoftBank Corp.

Guided by the SoftBank Group's corporate philosophy, "Information Revolution – Happiness for everyone," SoftBank Corp. (TOKYO: 9434) provides telecommunications services and combines them with advanced technologies to develop and operate new businesses in Japan and globally. In the year ended March 2022, SoftBank Corp. registered 5.7 trillion yen of revenue, 985.7 billion of operating income, and had 319 group companies (245 subsidiaries and 74 affiliates), both in Japan and abroad. SoftBank Corp. has 57 million mobile and broadband subscribers in Japan, and through its group companies Yahoo Japan Corporation, PayPay Corporation and LINE Corporation, 86 million online media users, 46 million smartphone payment users and 92 million communication app users, respectively (as of May 11, 2022). With this strong business foundation and compelling number of customer touchpoints, SoftBank Corp. is expanding into non-telecom fields in line with its "Beyond Carrier" growth strategy while further growing its telecom business. Also, by fully harnessing the power of 5G, AI, IoT, Digital Twin, Non-Terrestrial Network (NTN) solutions, including High Altitude Platform Station (HAPS)-based stratospheric telecommunications, and other key technologies, SoftBank Corp. aims to realize the "Implementation of Digitalization into Society." In recognition of its ESG initiatives, SoftBank Corp. was selected for inclusion in the Dow Jones Sustainability Indices, FTSE4Good, 2022 Constituent MSCI Japan ESG Select Leaders Index and other leading global ESG investments indices. To learn more, please visit <https://www.softbank.jp/en/>



For more information on Kyocera: www.kyocera.co.uk

About Kyocera

Headquartered in Kyoto, Japan, KYOCERA Corporation is one of the world's leading manufacturers of fine ceramic components for the technology industry. The strategically important divisions in the KYOCERA Group, which is comprised of 298 subsidiaries (as of March 31, 2022), are information and communications technologies, products which increase quality of life, and environmentally friendly products. The technology group is also one of the most experienced producers of smart energy systems worldwide, with more than 45 years of know-how in the industry. The company is ranked #603 on Forbes magazine's 2021 "Global 2000" listing of the world's largest publicly traded companies.

With a global workforce of over 83,000 employees, Kyocera posted sales revenue of approximately €13,42 billion in fiscal year 2021/2022. The products marketed by the company in Europe include printers, digital copying systems, semiconductor-, fine ceramic-, automotive- and electronic components as well as printing devices and ceramic kitchen products. The KYOCERA Group has two independent companies in the United Kingdom: KYOCERA Fineceramics Ltd. and KYOCERA Document Solutions Ltd.

The company also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr. Kazuo Inamori — to individuals worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (approximately €710,000* per prize category).

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