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# Tokyo Institute of Technology researchers designed low-cost transceiver to boost 5G network

[Devdiscourse News Desk](#) | [Tokyo](#) | Updated: 20-02-2019 16:28 IST | Created: 20-02-2019 13:24 IST

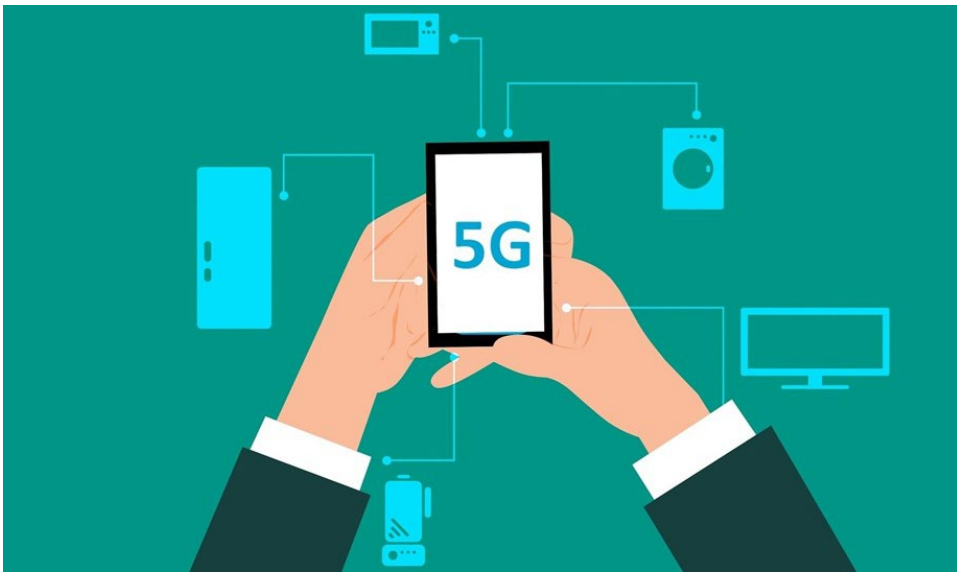


Image Credit: IANS

Scientists have designed a low-cost **transceiver**, measuring just three by four millimetres, that could improve the performance of fifth-generation cellular network (5G) and the Internet of Things (IoT) devices. A **transceiver** is a device that can both transmit and receive communications, in particular, a combined **radio transmitter** and receiver.

The **researchers** from the **Tokyo Institute of Technology** in Japan devised a strategy to support high-

speed mobile data access using the millimetre-wave spectrum for next-generation 5G wireless networks. Their proposed 28 gigahertz (GHz) **transceiver** combines beamforming, a highly efficient signal processing method, with dual-polarised, multiple-input and multiple-output (MIMO) technology.

Its array of antennas can respond to both horizontal and vertical radio waves at the same time, **researchers** said. Preliminary testing showed that the maximum data rate achieved was 15 gigabits per second (Gb/s). This data rate is 25 per cent higher than that achieved by previous comparable **models**, they said.

As a continuation of the group's work on developing top-level transceivers using minimal components, the

researchers achieved a design around half the size of current technology. The smaller the chip, the better for 5G, owing to the anticipated demand for high-performance, area-efficient transceivers for use in tiny and portable sensors and devices.

"Compared with the conventional switch-based bi-directional approach, our bi-directional amplifier completely shares the inter-stage matching networks between the transceiver and the receiver. Thus, the required on-chip area is further minimised," said Kenichi Okada from Tokyo Institute of Technology, who led the research. Japan is currently stepping up efforts to prepare for 5G ahead of the Tokyo 2020 Olympic and Paralympic Games.

There are expectations for 5G services to enable higher data throughput for applications such as live-streaming high-definition video and for potentially trillions of new IoT devices that can share data around the clock, as well as to increase the speed and responsiveness of communication networks overall.

(With inputs from agencies.)

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# Maharashtra identifies 1 crore fake ration cards with help of digital initiatives

Devdiscourse News Desk | Mumbai | India | Updated: 20-02-2019 16:55 IST | Created: 20-02-2019 16:41 IST



Maharashtra has found as many as 10 million fake ration cards using technology tools, Chief Minister [Devendra Fadnavis](#) said Wednesday. He also announced the new model request for proposal (RFP) while tendering out IT contracts, developed by industry lobby [Nasscom](#) and the [Union ministry](#) of electronics and IT.

"The public distribution system (PDS) has changed through technology initiatives. With all the digital initiatives, we have actually found out 10 million fake ration cards," Fadnavis told the annual [Nasscom](#) leadership forum here. The Western state, having a [population](#) of over 11 crores, is using technology across all spheres to drive efficiency and for better allocation of resources, he said.

Technological tools have taken down malnutrition-related deaths to zero in Harisal [village](#) of Amravati district, Fadnavis said. On the industry's long-standing demand of tender contracts structuring, Fadnavis announced that the model RFP will be adopted in two months by the state.

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