

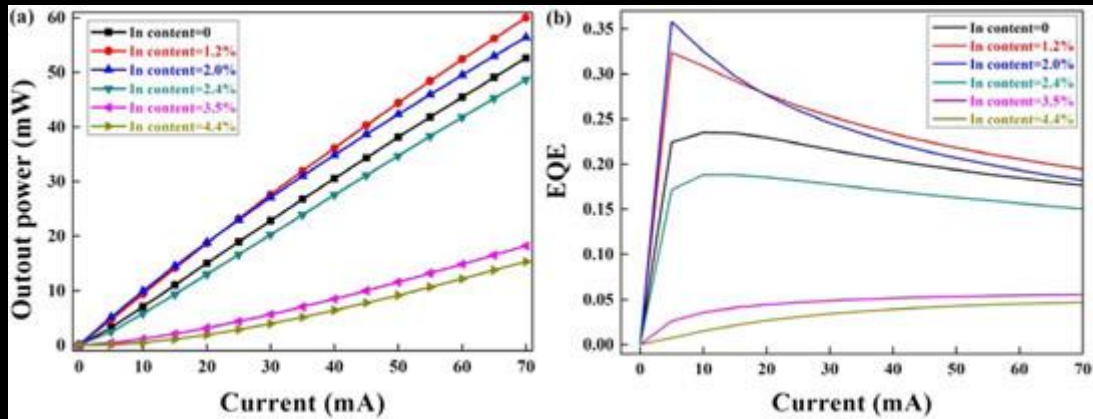
6 GBS ACHIEVED BY WIRELESS DATA TRANSMISSION

Ninja Bits: German scientists has finally transmitted data reaching world record speeds of 6 Gigabits per second. They performed this feat over a distance of 37 Kms.



“Nothing is Impossible” is a famous saying amongst humans. Such humans that fully believes that if they put their soul and mind to anything, one can achieve their goals. And German scientists has proven that saying holds true once again. These scientists have achieved world record speeds that is ten times faster than that of what wireless data speeds has been before.

The researchers from the University of Stuttgart, the Karlsruhe Institute of Technology, as well as the Fraunhofer Institute for Applied Solid State Physics, has joined together in order to create a new world record for wireless data transmission. They were successful by sending the information of a typical DVD in just under a 10 second time-frame by means of utilizing radio waves. This simply means that the researchers have successfully reached their new record by using millimeter-waves in order to be able to properly transmit at a new data rate of 6 Gigabit per second, over a 37 kilometers. This holds to be 10 times faster than our typical data transmission means.



This new and extremely fast data rates has been accomplished by using efficient transmitters as well as receivers using radio frequencies of 71-76 Gigahertz inside of the E-Band of the electromagnetic spectrum. This then is regulated in order to accomplish terrestrial and even satellite broadcasting.

The experiment was a part of a collaborative project 'Advanced E Band Satellite Link Studies' (ACCESS) for short. This was executed by the researcher group that was led by Ingmar Kallfass which was attending the Institute of Robust Power Semiconductor Systems from the University of Stuttgart, the Institute für Hochfrequenztechnik and Elektronik from KIT, Radiometer Physics GmbH, and the Fraunhofer Institute for Applied Solid State Physics.

While performing tests of their experiment, the researches had been able to send data packets between Cologne's 45-Story Uni-Centre and the Space Observation Radar TRR that is located at Fraunhofer Institutue for High-Frequency Physics and Radar Techniques in Wachtberg. This is approximately 37Km away from each other. In order to properly achieve the high-data rates combined together with the unprecedented distance, the researchers on the project had also designed and developed innovative transmitters as well as the receivers in order to completely fulfill the powerful signal amplifiers. This new transistor-based device combined together in a new form for what the researchers labeled as monolithically integrated millimeter-wave circuits (MMICs).



The new circuit increased the entire broadband signal in order to fulfill a transmission power of just 1W, with the aid of power amplifiers that was based upon a gallium nitride. This signal was then transmitted into an extremely high directive parabolic antenna and was consequently received at the receiving end at the other station. These sensitive receivers are equipped with a low-noise amplifier at the other station. While the data was faded dramatically during the transmission, the sensitive receivers that were equipped with the low-noise amplifiers were still able to detect it.

The Terrestrial radio transmissions inside of the E-Band are completely suitable as a new cost-effective replacement for a full deployment of optical fiber or as well as ad-hoc networks, in which a case of a major catastrophic disasters. This can also be utilized for connecting base-stations in the backhaul of new lines of mobile communication systems.

The primary purpose of the research conducted by the researchers of the project, ACCESS, is to be able to provide enhance satellite data transmission. However, this new line of technology may also be applied in order to assist in the work of terrestrial conditions, thus, potentially providing a fiber-optic-level of data speeds without the major headache of laying down cables and building those expensive infrastructures.



This project has not only been approved, but it was also funded by the Germany's Federal Ministry for Economy and Energy. Which is completely devoted in order to make the satellite internet connections even faster than ever before, they are also aiming to enhance the terrestrial wireless internet access for those who are in need.

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