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LASER COMMUNICATION IN SPACE - STATUS AND APPLICATIONS

Abstract

Laser Communication have left the status of RD programs and are now applied in commercial satellite communication systems. The European Data Relay System (EDRS) is relying on optical inter satellite links at a data rate of 1.8 Gbps for its commercial data relay service since 2016. Each day app. 50 optical Inter Satellite Links between surveillance Satellites in low earth orbits and geostationary Data Relay Satellites are successfully performed. The actual number has reached over 45,000 optical links, each day growing. Beside the high data rate the use of Laser Communication in Space provides low probability of detection (LPD) and low probability of interference (LPI). Such features are extremely important for sensitive information (GOVSATCOM) and for beyond line of sight Airborne Connectivity, looking for robust and in combination with GEO relays near real time transmission. As core of the presentation the actual in orbit results of Copernicus and EDRS will be shown. An overview of the the running LCT production and LCT portfolio will be presented as well. The concept of modular LCT design with different subsystems ensures, that the heritage derived from the EDRS LCTs can be transferred to other applications and reduce the time to market and NRE costs. Here new applications like Quantum Key Distribution (QKD) technology based on existing Laser Communication Terminals will take benefit.