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THE USE OF GIGABIT OPTICAL COMMUNICATION FOR ROBUST INTER SATELLITE LINKS

Abstract

"The use of Gigabit Optical Communication for robust Inter Satellite Links"

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Summary (approx. 300 words)

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 sucessfully performed. The actual number has reached 35,000 optical links, each day growing. Beside the high data rate (100 Gbps under development) 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 beyond line of sight Satcom Airborne Connectivity and MILSATCOM users, looking for robust and near real time connectivity. 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 will be presented as well. The new concept of modular LCT design with exchangeable building blocks and 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. The modular design allows to spin off parts of the LCT as standalone products to further broaden the range of applications. Here is the use for Quantum Key Distribution (QKD) technology based on existing Laser Communication Terminals is a topic which will be addressed.