

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Advanced Systems (1)

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HIGH CAPACITY FEEDER LINKS

Abstract

Each communication satellite has two types of links, user links and feeder links. A TV broadcast satellite user link is the downlink delivering the TV programmes to a large number of customers. In broadband satellite systems the user links are bi-directional up and downlinks of user data. The uplink of TV broadcast is the feeder link and up and downlink for broadband satellites to gateways are the feeder links. From a satellite operator's point of view, revenues are generated by user links. Feeder links are a necessity but provide no direct revenue. Considering the limited electromagnetic spectrum available to satellite operators, capacity and consequently revenues can be increased only by using another part of the electromagnetic spectrum for the feeder links. One solution is to use the higher frequency Q/V band for feeder links. However, there is only a fraction of the whole band assigned primarily for satellite communications and the other issue is the sensitivity to atmospheric effects, such as hydrometeors. The next choice would be in the optical spectral band. It is the objective of this paper to analyse the transmission aspects of optical feeder links and to evaluate technical solutions for future very high capacity, terabit satellite, solutions by exploring existing technologies and creating synergies with terrestrial optical communication technologies.