Abstract: Multi-band user terminal capability is a requirement which is typical of global mobile access or fixed services where High-Throughput Satellites (HTS) Internet access is combined with Direct-to-Home (DTH) reception. These scenarios indeed mandate combined operation at Ku and Ka-band. This requires updated electronics and an antenna reflector tuned to both Ku- and K-/Ka-band frequencies. In such systems, a low loss and low cost diplexer is a key component enabling two RF chains to share a common antenna. Low-loss RF components are currently designed in waveguide technology. This has inconveniences in terms of size, weight, cost, incompatibility with monolithic circuits and increased fabrication complexity at the higher frequencies. The STEDI activity aims at developing three diplexer prototypes using three different technologies (micromachining, LTCC and thin-film), aiming at large-scale fabrication of RF filters compatible with planar monolithic circuits. Particular emphasis will be devoted to Substrate Integrated Waveguide (SIW) implemented on ceramic-based substrate, which have recently demonstrated the potential of high Q-factor and cost-effective solutions up to the millimetre-wave range.