

## Interference coupling loss between highaltitude platform gateway and fixed satellite service earth station at 5850-7075 MHz

### Abstract:

High Altitude Platform Station (HAPS) is a new type of communications station that is expected to operate in parallel with terrestrial and satellite systems. Under agenda item 1.20 of next World Radio Conference 2012 (WRC-12), a new spectrum allocation for HAPS gateway link is proposed in the frequency band 5850-7075 MHz. Although the proposed band will provide reliable communication, the band is already saturated by the allocations of Fixed Satellite Service (FSS) earth station transmissions that have signal levels much higher than those in HAPS systems. Besides, the current HAPS spectrum sharing regulation method has limitations, such as coordination using separation distance as a dominant factor, ignoring the frequency isolation effects, and implementing Free Space Loss (FSL) model as a default propagation mechanism; thus, pessimistic results lead to large separation distances. To illuminate HAPS' chance for spectrum sharing with existing services, this paper proposes a new spectrum-sharing prediction method using the spectral technique of Net Filter Discrimination (NFD) along with the antenna height within a deployment area. Reduction in required physical isolation is achieved, and frequency isolation produces an Interference Coupling Loss (ICL) that can utilize the radio spectrum resource as efficiently as possible.