

## Potential interference and rain attenuation at 21.4-22 GHz downlink broadcasting satellite signals

### Abstract

World Radio Conference WRC-1992 has allocated the frequency band 21.4-22.0 GHz to regions 1 and 3 to be utilised to carry direct broadcasting satellite (DBS) services. This high-frequency band is more susceptible to rain attenuation, leading to degradation of the signal quality. Moreover, this frequency band is assigned to two different services, i.e. satellite broadcasting and fixed mobile services at the same regions; hence, the impact of intersystem interference in a degraded signal is a critical issue in the DBS receiver. In this study, the effects of rain attenuation on the DBS downlink signals as well as the impact of the potential interference on the reception quality will be estimated. An interference scenario will be introduced to investigate the system performance in both propagation mechanisms of clear-sky and rain conditions.