

Title: Spectrum investigation for sharing analysis between BWA system and FSS receiver

Author/Authors: Zaid A. Hamid, Kanar R. Tariq, Mohammed Majed, Tharek Abd. Rahman

Abstract: In this research, testing the compatibility between Fixed Broadband Wireless Access (BWA) as a case study for the International Mobile Telecommunication (IMT-Advanced) and Fixed Satellite Services (FSS) networks in 3400-4200MHz range (C-band) has been studied and discussed in details. The interference between Fixed Satellite Service earth station(FSS ES) and Broadband Wireless Access(BWA) is considered and the aim of the article is to avoid interference between FSS ES and BWA by using minimum separation distance. Possibility of coexistence and sharing analysis were obtained by taking into account the detailed calculations of the most useful formulas for path loss effect and clutter loss by using the existing parameters of FSS and the BWA base station parameters located in the wireless communication center, Universiti Teknologi Malaysia (UTM). In-band interference has been concluded, analyzed and simulated (using Matlab) for several environments (rural, suburban, urban and densurban) in response to different clutter altitude. Channel prediction for two scenarios (rural and suburban) as a trail map was delineated by ATDI software. Simulation results indicate that the proposed mitigation scheme is highly efficient in terms of reducing the separation distances. Comparing the measurements with simulated result has also been done with high percentage of accuracy to show the amount of closeness or similarity between both results.