

Mobile Set-top Box over the Internet of Things (IoT) to Secure Rain-Induced Signal Outages Issue in Satellite Broadcasting Services

Fazdliana Samat¹, Jit Mandeep¹, Abdulmajeed Al-Jumaily², and Aduwati Sali³

¹Universiti Kebangsaan Malaysia

²Universidad Carlos III de Madrid

³Universiti Putra Malaysia Fakulti Kejuruteraan

November 17, 2022

Abstract

A satellite signal's power and amplitude experiences eventual impairment during its propagation to the earth, especially when entering the path of an area receiving a significant volume of rain, such as the tropical region. Direct-to-Home (DTH) service is one application that is affected by heavy rain, causing frequent signal loss and a lot of user disappointment. The current mitigation techniques employed by service providers have been reviewed to recover the signal and bring back the subscribers' interest, especially in tropical regions. Besides adaptive code modulation schemes and power control, many providers require consumers to switch to WiFi or mobile network services; however, viewing live TV has become distracting. Therefore, we suggest a new conceptual multi-site diversity approach that connects each home-set-top box using the MQTT protocol in an IoT mobile environment. The smart set-top TV could help share the channel content through the mobile network when any is down due to a signal outage. This concept is simulated for realization using the developed MQTT multiple-site diversity simulator. This article highlights satellite signal recovery by employing device-to-device (D2D) communication over a 5G mobile network.

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