ABSTRACT

The transition to DVB-T2 has significantly enhanced broadcast quality and efficiency in Indonesia, though achieving optimal coverage remains challenging due to Sumatera's diverse topography. This study assesses field test results from the Regulation of the Minister of Communication and Information Number 6 of 2019. Using Radio Planner 3.0, geographic and demographic data were integrated to improve prediction accuracy. Notable blank spots were identified in high-altitude and remote regions, where the terrain obstructs line-of-sight transmission. Path analysis further reveals terrain-induced attenuation, especially in mountainous areas, where diffraction and shadowing notably reduce signal strength. Several areas identified as blank spots or those with poor signal quality based on coverage prediction could benefit from improved signal quality by adding new sites, such as in the Sungai Nanam area.

The border between Sumatera or Batam and Singapore presents potential signal overlap for various services, including DVB-T2 broadcasting and mobile communication networks. after changing the type of antenna at the TVRI Batam transmitter to directional antenna, azimuth direction of 125 degrees and a reduction in transmit power from 10.000 W to 3000 W. the signal from TVRI Batam in Singapore is no longer as strong as before. Base on point calculation around 42.8 dBµV/m.

For scenario 1 at co channel analysis indicated that when the distance was reduced to 0.2 km, the iRSS increased to -108 dBm, leading to a 4% blocking probability. At a direct overlap (0 km separation), the iRSS rose sharply to -70 dBm, causing severe interference with a 94% blocking probability. For scenario 2 the interfering received signal strength (iRSS) increased significantly, leading to higher interference levels. At 100 km, no blocking occurred, while at 75 km, blocking was observed in 21 %. With the updated configuration raising the antenna height to 50 meters and using a 17 dBi directional antenna power transmit 60 dBm, the signal strength in the Batam area improved compared to the 55 dBm, 45-meter setup. SEAMCAT coexistence analysis confirmed that no blocking occurred, indicating zero interference between systems. This ensures compliance with cross-border spectrum regulations, maintaining strong domestic coverage in Batam while preventing signal overspill into neighboring Singapore.

Keywords: DVB-T2, Coverage Prediction, ITU-R P.1546-6, Signal Strength, Co-Channel, Sumatera, Indonesia.