ABSTRACT

Indonesia, as a maritime country and one of the archipelagic countries in the world, of course, has various problems, one of which is broadband access. An efficient and reliable communications infrastructure is eesential. Satellites have the distinctive ability to cover large geographical areas through a minimum amount of ground infrastructure, which qualifies them as an attractive solution to meet a growing number of diverse applications and services either as stand-alone systems or as integrated satellite-terrestrial networks. In general, satellites are divided into GSO and non-GSO satellites, which have several differences. If the two satellites operate on the same band frequency, they will trigger interference and can interfere with existing GSO satellites. To address this, the International Telecommunication Union (ITU) requires non-GSO systems to protect GSO satellites from harmful interference, ensuring both can operate without compromising communication services. This study aims to conduct the technical aspects of Satria-1 and Starlink based on the frequency bands selected by Indonesia in Ka-Band frequency and review and study the results of EPFD downlink calculations, to determine whether the results exceed the limits set by ITU. This study evaluate the technical interference analysis between the Starlink Generation & Satria-1 satellites. With different orbital altitudes and the same use of frequencies, there are interference that affects the performance of each satellite. In this study, the power flux density value calculated using various calculation parameters that can then be used to calculate the EPFD value. This EPFD calculation concentrates on the downlink directions and must comply with the EPFD value limit set by the Radio Regulation Article. Based on the simulation of EPFD with 4 scenarios and changes in the 10 watt and 1 watt starlink power transmit show that the EPFD value on the earth station and the Satria-1 user terminal due to Starlink interference exceeds the limit set by the ITU, especially article 22 of the radio regulation.

Keywords: Starlink, Satria-1, Interference,EPFD,ITU.