

ABSTRACT

One of the candidates for the mid-band frequency which is proposed for use of the 5G technology frequency is at 3.5 GHz, but this frequency is also used by several satellite communication system operators in Indonesia. Based on the results of the World Radio Congress 2019, Indonesia gets a frequency range from 3500 - 3600 MHz for IMT-Systems (including 5G technology). Even based on research conducted by the GSMA, most countries in Southeast Asia use the frequency range 3400 - 3700 MHz for the use of satellite communication systems.

In this final project, the interference is analyzed in the extended C-band frequency, namely in the range 3400-3700 MHz, using data from the Telkom-1 satellite and 5G parameter data. The observed parameter is that the carrier signal is affected by the interference signal generated by the two systems, commonly called the carrier to interference ratio (C / I). The research was conducted so that the C / I value of the two systems was above the C / I threshold value, resulting in the minimum distance between the earth station and BS 5G which was divided into several test scenarios.

With the C / I threshold value obtained from the calculations carried out of -12.4856 dB, the results show that the second scenario is better than the first scenario with a minimum distance value difference of 266 km - 149 km, from the use of 3500 MHz and 3640 MHz frequencies shows the results of the second scenario. It is better with a further 7 μ m difference in the third scenario, and in the fourth scenario of all clutter loss zones being compared, the farthest distance results in values of 5 km (indoor hotspot), 60 km (dense urban), and 107 km (rural) in the zone. clutter loss industrial zone.

Keywords : Interference, *carrier to interference ratio*, 5G, Telkom-1 Satellite