

## ABSTRACT

*Medan City is the capital city of North Sumatera Province, known as the Paris van Sumatera. As the largest city on the island of Sumatera, Medan City has a large area with a large population to serve as a trading and port city. To support the activities of it's residents, technology is needed, especially telecommunications networks. 5G New Radio telecommunication network technology is presented in Medan City. With this new network technology, Medan City as one of the first 13 cities in Indonesia to receive 5G network deployment and which plays a role as the centre of business, government, education, and health activities in the Western Indonesia region, especially Sumatera Island.*

*This research uses a frequency of 2.3 GHz consisting of coverage planning and capacity planning using Urban Macro propagation using the Standalone (SA) scenario scheme because this technology is a network that operates independently without relying on the existing 4G network.*

*The design based on coverage planning resulted in 11 sites with SS-RSRP obtained of -96.53 dBm the average signal is included in the good classification, SS-SINR of 25.27 dB the signal classification is included in the good category according to KPI, while capacity planning resulted in 27 sites with SS-RSRP of -83.17 dBm the signal classification is included in the good category, SS-SINR of 12.04 dB the signal classification is included in the normal category according to KPI.*

**Keywords :** 5G, New Radio, Outdoor-to-Outdoor