

ABSTRACT

TETRA (Terrestrial Trunked Radio) is a wireless communication technology which is standardized by Europe standardization cooperation, ETSI (European Telecommunication Standard Institute) that almost the same with cellular telecommunication technology nowadays. Digital radio trunking usually used by instances that need particular wireless telecommunication network such as, police forces, military, transportation company, mine company, and other companies.

Today, police forces in Bandung use radio trunking communication networks, but the networks that they have are still not optimum yet because the radio trunking they use are still in analog type and the site placements are still not strategic enough. In analog technology, there are deficiencies in the utilization of frequency carrier that is 1 carrier can only contain 1 channel, so that when condition of the traffic is dense, the possibility of blocking will be even greater. Therefore carried out digital radio trunking planning (TETRA) that has excesses in utilization frequency carrier that is 1 carrier can contain 4 channels and also relocate the base station in order to gain better signal quality.

Police forces use radio trunking analog by placing the base station in the north of Bandung with 3 Trx/3 channels and GOS 10% to supply 591 users with the density of MS users which are located in the center of Bandung. In the digital radio trunking planning, base station placed in the center of Bandung with 3 Trx/12 channels and GOS 2% to supply 591 MS users. Existing radio trunking use transmitter power of 100 watts, meanwhile digital radio trunking use transmitter power of 40 watts. Because the transmitter power value is different, it will affect the value of EIRP. Because the value of EIRP is different, it affected in each MAPL calculation planning. Existing radio trunking obtained MAPL of 161 dB. Because the value of MAPL is different, it affects in the calculation of coverage area. Existing radio trunking has coverage area of 492.1 km² while digital radio trunking has coverage area of 381.5 km².

Keywords: TETRA, ETSI, GOS, MS, EIRP, MAPL, Trx, *wireless, hacking*.