

ABSTRACT

Trunking radio system in general is a group of systems consisting of one or more base stations that use several frequencies thus allowing the distribution channel for communication between the groups that are governed by the Control Channel. Trunking radio system has some differences with the GSM cellular system including operating frequency, bandwidth, devices, services and security. Discussion of performance of radio trunking there are two aspects to consider which are coverage and capacity aspects. Coverage aspect consists of RSSI, BER and DAQ while capacity aspects related to the condition of the traffic channels.

In the field measurement shows that RSSI in indoor and outdoor is appropriate ETSI standards of -113 dBm and Hytera DMR standard of -117.5 dBm but there is queuing problem at outdoor RSSI uplink at waypoint 454. In the BER measurement there is 2% difference between the BER data sheet and BER measurements. DAQ values already meet the minimum standards of 3.4 point while the observation of the traffic channel on 7th October 2015 founds that 7 traffic channels is able to accommodate the traffic communication on that date.

According field measurement tests, there are two problems that must be corrected, BER which correlate with coverage and queuing which correlate with capacity problems. BER problems cannot be done due to BER tool is not available so the focus of the analysis aimed at the queuing problem. Based on the traffic channel analysis, application of 10 traffic channels is able to minimize queuing problem. Application of 10 traffic channels can accommodate the total of 5.285 Erlang traffic with every user traffic amount is 0.050 Erlang. Each user can make 9 calls on busy hour with the call duration is 21 s.

Keyword: DMR, Performance, Improvement