Broadband Services for Remote Areas in the Sultanate of Oman

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Abstract

Telecom sector is one of the most dynamic sectors and it is true to say that every day there is something new in this sector. This is very clear, as in the near past, people were talking about basic telephone services as one of the complimentary services, and then they started to be interested in connecting to Internet and mobile services. Today, people consider the access to the broadband services as one of the human rights.

This makes telecom operators and service providers compete among each other to provide this right to their consumers and to invest huge amount of money to build a telecom infrastructure that ensures delivering these services. Beside that, the governments of many countries started setting long run strategies to develop this important sector.

Based on the above view, this work focuses on evaluating the telecom services in the rural areas in the Sultanate of Oman. It discusses also one of technical solutions which could be used to serve these areas with the broadband services. The suggested solution was selected to be WiMAX as a wireless solution due to the difficult terrain of the Sultanate and also the availability and affordability of end users.

Three propagation models (Ericsson, SUI and COST 231 Hata) were tested against the actual field measurements collected from rural areas served by WiMAX sites which is operating in 2.3GHz band when a 6m antenna height was used.

It was concluded that COST 231 Hata model is the closest model to the field measurement. This model was theoretically implemented in one village called Buwah in Wilayat of Nakhal as a successful case study which could be used in other villages with similar terrain.