

Performance analysis of LTE Broadcasting in Single Frequency

BRUNO L. SOUZA (IC), RAFAEL S. OLIVEIRA (IC), RANGEL ARTHUR (PQ).

Abstract

This research aims to technology performance analysis LTE (4th generation mobile - 4G) Broadcasting in single frequency networks.

Key words: LTE, BROADCAST, SFN;

Introduction

This research aims to technology performance analysis LTE Broadcasting in single frequency networks. The LTE technology belongs to the 4th generation mobile (4G) and can enable the convergence of services such as mobile telephony and video reception. Single Frequency Networks, are already used in Brazil for the dissemination channels, ensuring better coverage and ease of access. The National Telecommunications Agency (Anatel) recently approved the allocation of the 700 MHz band, currently occupied by the channels 52-69 of broadcast television, for telephony and Internet 4G LTE Broadcasting. This work aims to study the LTE technology Broadcasting and investigate the possibility of receiving a single frequency networks.

Results and Discussion

With the simulation using the Celplanner software, can analyze the coverage area (figure 1) using the authorized frequency in Brazil for the fourth generation of mobile telephony in the city of Limeira, the 2500MHz frequency range. Studies of how they behave the HEVC codecs (High Efficiency Video Coding / H.265) showed that it clearly shows effective transmission in the LTE, but that requires more robust devices, which can become a problem for simpler devices, which would not be able to play such content efficiently, but at the same time there was a spectrum of gain due to reduction of the bit rate of the video on HEVC encoding. By using SFN and MIMO can obtain a greater recovery of the cover, enabling a proper reception in locations where they are often weak or nonexistent.

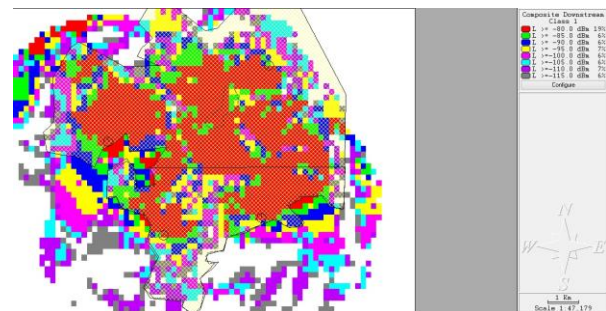


Figure 1 - Signal strength of Limeira with ERB

Conclusions

It can be concluded from this study that through the use of a small band of the LTE transmission spectrum for broadcasting is very advantageous since it is possible to provide the transmission of an important event or location for such a large region reserving a small range even if momentary, which affects a large number of devices without the network is congested, or causes any kind of limitation to this spectrum reserved for this purpose.

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¹ Silvio Renato Messias de Carvalho.

Utilização da Rede SFN para Expansão da Rede de Retransmissão Regional da TV Digital Aberta Terrestre. Dissertação de Mestrado, FECC UNICAMP

² Laurent Gallo and Jérôme Harri.

Short Paper: A LTE-Direct Broadcast Mechanism for Periodic Vehicular Safety Communications. Mobile Communications Department, EURECOM

³ Lecompte, David, Frédéric, Gabin.

Evolved Multimedia Broadcast/Multicast Service (eMBMS) in LTE-Advanced: Overview and Rel-11 Enhancements. Technology Updates on LTE Advanced