

## Comparison of performance of standard ISDB-T New Generation with LTE Broadcasting

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### Abstract

This research aims to compare the performance of LTE-Broadcasting and the ISDB-T standard technologies, with proposed changes in recent articles in the literature.

**Key words:** ISDB-T NG, SFN, LTE.

### Introduction

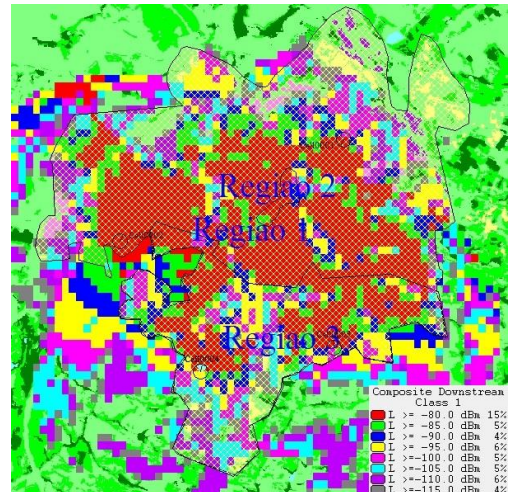
These proposed changes in recent articles in the literature have not yet been standardized, but have been referred to as ISDB-T New Generation by the academic community. The patterns will be studied and coverage area of the simulations will be made through the CelPlanner® prediction software. These coverage simulations will be performed using a single transmitter and with two or transmitters working on the same frequency (SFN - Single Frequency Network). This comparison is important. This work aims to study and define which technology is most efficient in the issue of spectrum allocation vs. transmission rate.

### Methods

In the simulations made in the city of Limeira, in São Paulo, we used Celpalinner software and configured as follows the ERB (Radio Base Station), we used four towers as they were in a SFN network, set the frequency of 2.5GHz and 10MHz wide range, with a 60W power equivalent to 48dBm, the antennas used are directional 120°.

### Results and Discussion

In the simulation of LTE, the map was divided into three regions, one belonging to the city center, densely populated area, another south of the city, a low density area and the other area the rest of the city one area media density, hence it was possible to see which sites are essentially need a strong signal or at least a medium-intensity signal. The antennas were arranged in 7 different ways, after made many tests to find the best positions, which can be seen that the best locations are in areas of high altitude compared to other places, thus avoiding shady places, reducing the number antennas and increasing the quality of the signal received by the devices, realizing of course that this antenna needs to be in an urban or very close area of an urban area, preferably close to high-density areas. With arranged antennas at selected sites, it was then taken to test transmitting each of them separately, in order to analyze its radius operation and subsequently all the antennas transmitting simultaneously at the same frequency, as shown in figure 1.



**Image 1.** All antennas working together with the regions highlighted using the LTE standard 2.5GHz.

### Conclusions

There is a very large field to be explored in the LTE area, with the advent of LTE-Advanced and the Brazilian Digital TV, with standardization and specification of formats and standards of the new ISDB-T New Generation Technology by the Brazilian government.

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