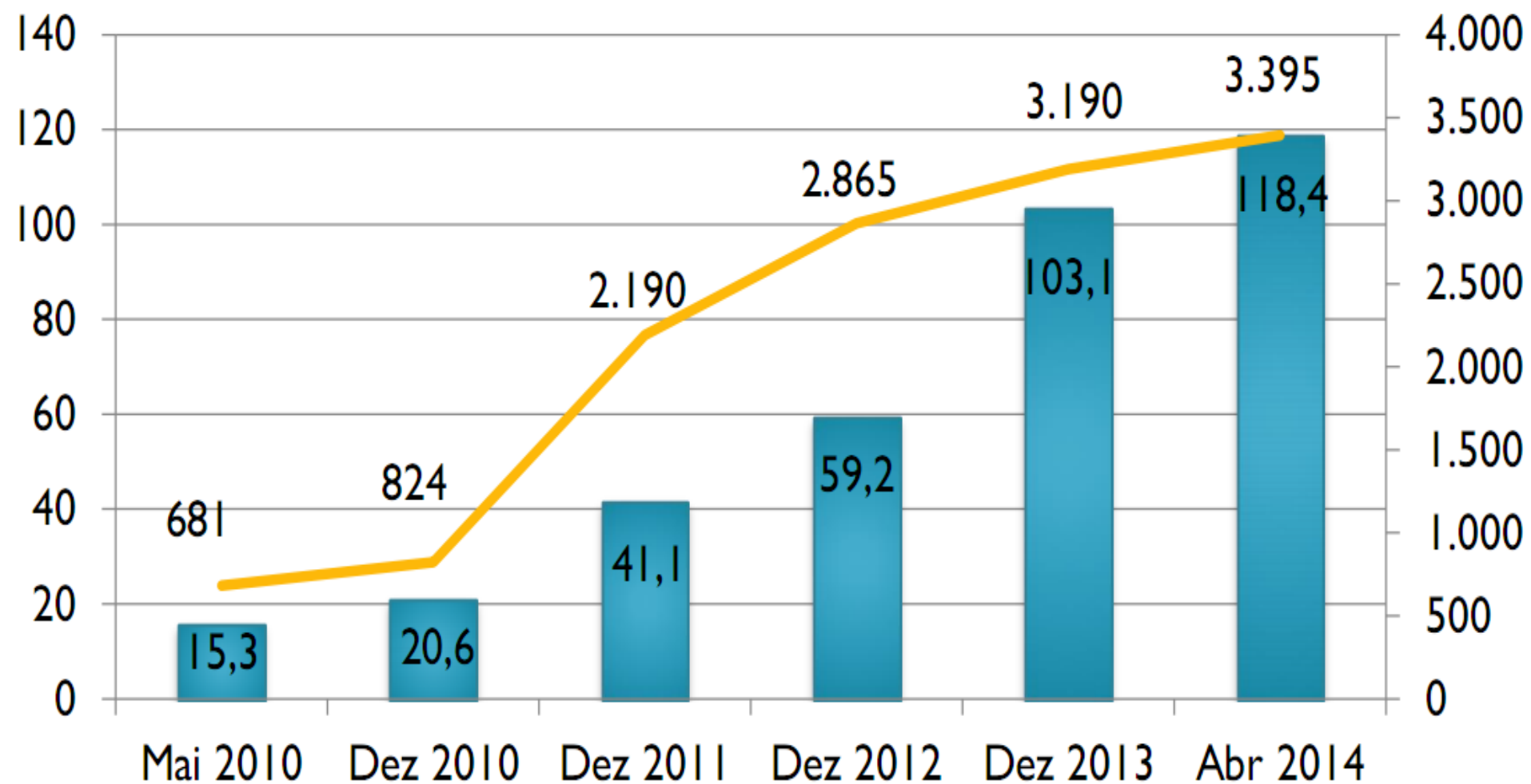




LTE 450MHz in Brazil

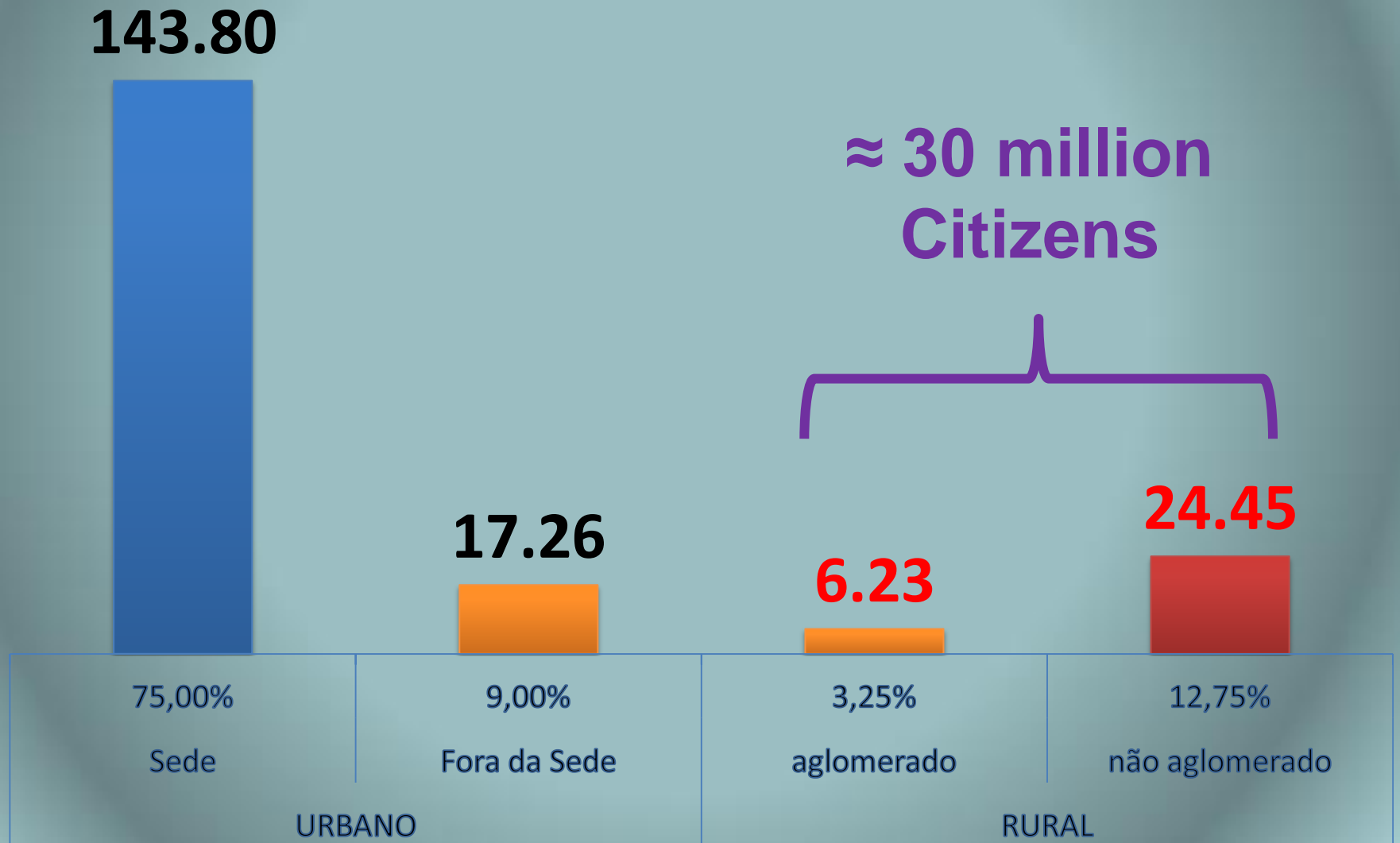
June, 2014

Mobile broadband (3G+4G): n. of accesses (million) and n. of cities covered

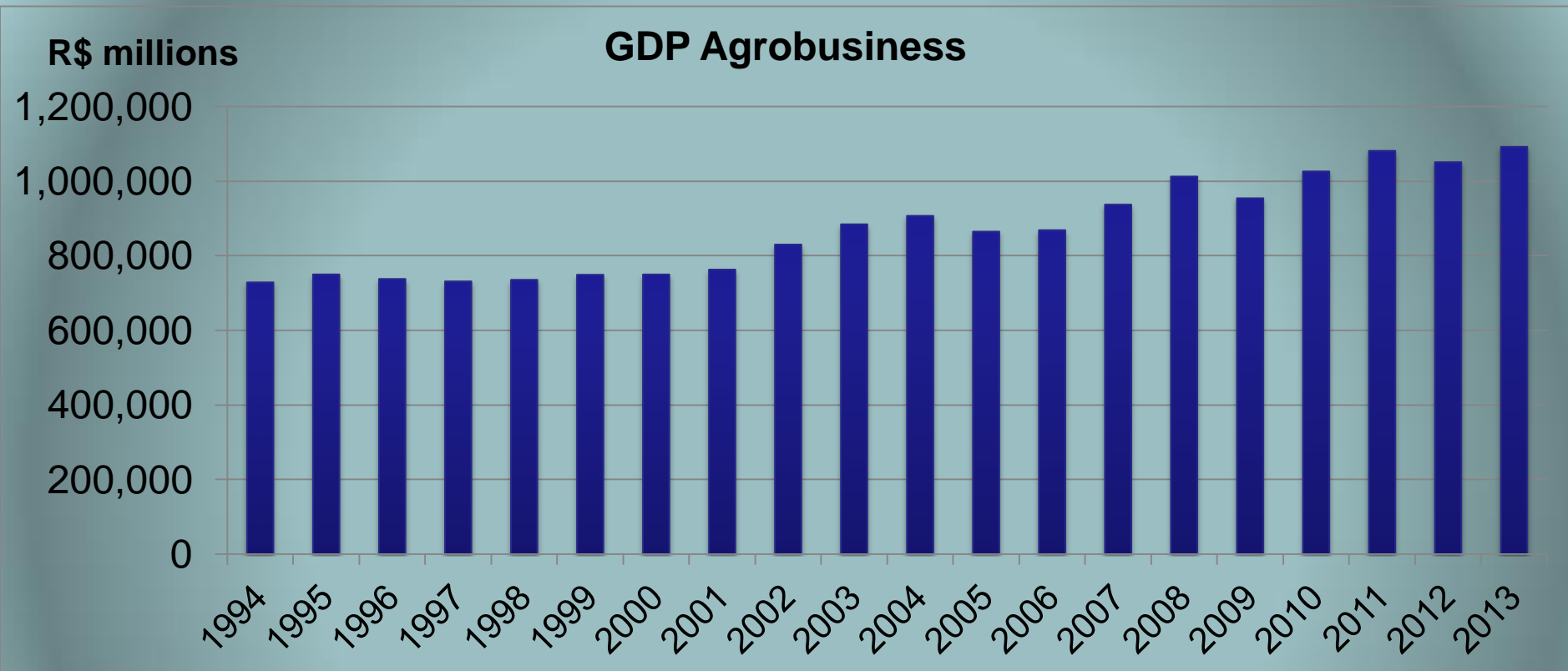


Source: National Telecommunication Agency (ANATEL)

Rural vs. Urban Distribution Scenario in Brazil



Opportunities



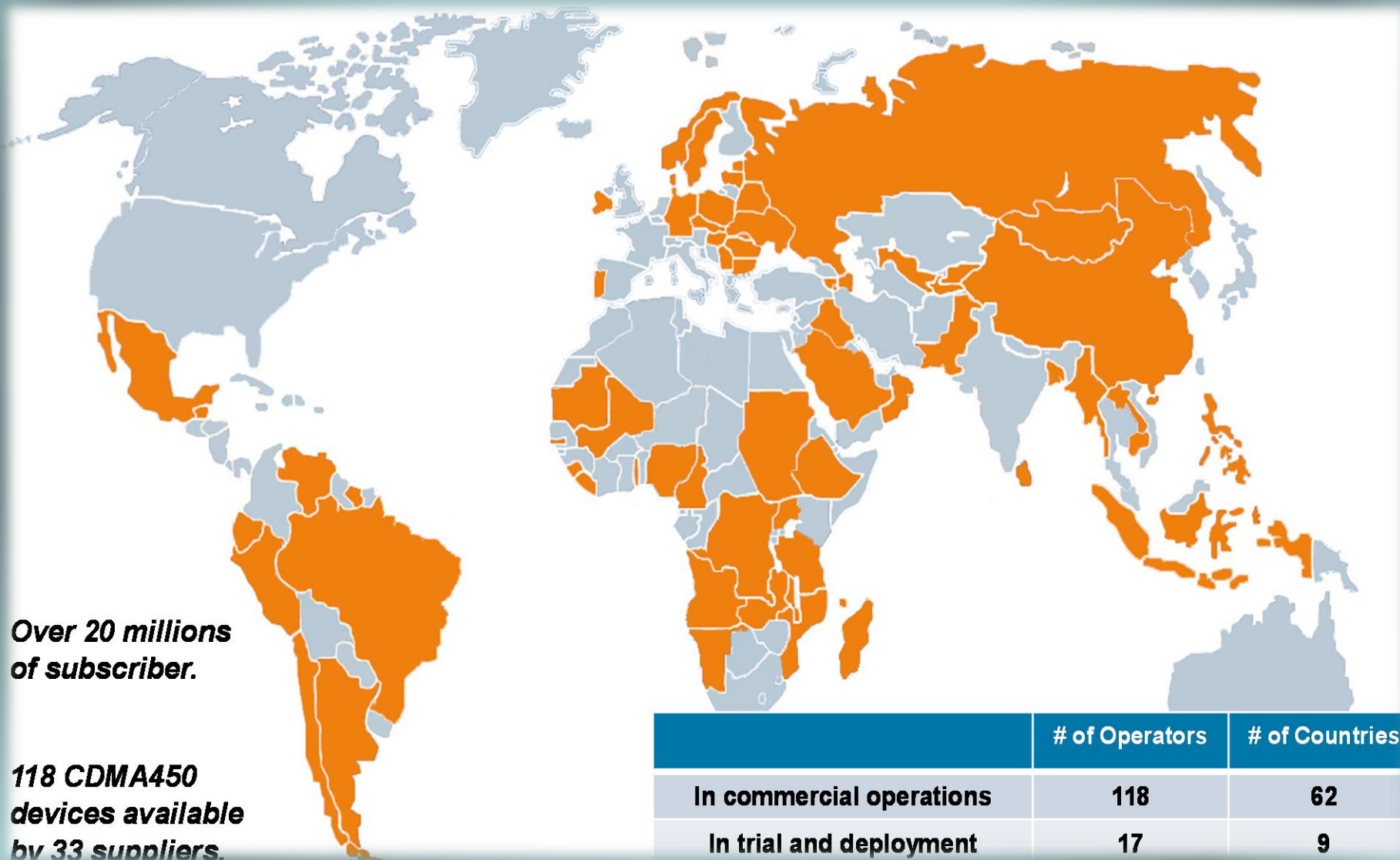
2013 GDP from agrobusiness:

> USD 500 Billion

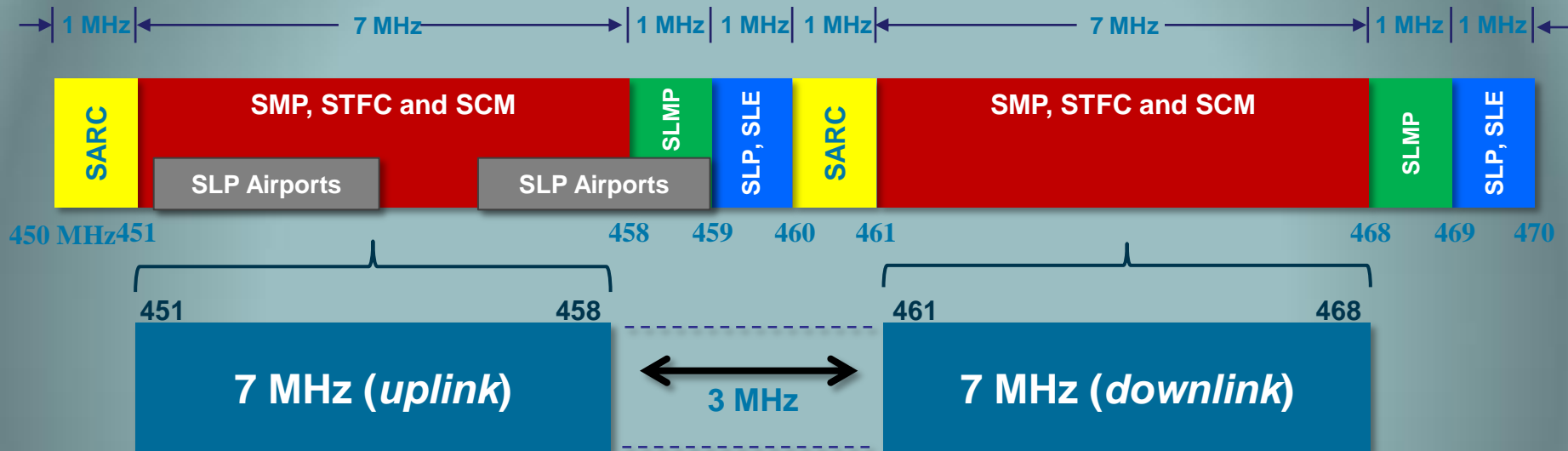
> 20% of Brazil GDP

Global Scenario for 450 MHz Band

An opportunity to LTE



Channelization for 450 MHz Band in Brazil



Small separation between TX and RX channels:

- 40x smaller than Band 7 (2,6 GHz) !!
- Challenge for the duplexer project (band rejection x size x weight)

Narrow band interference due to legacy voice systems in the refarming period.

3GPP Standardization - 450 MHz: Band 31

3GPP TSG RAN Meeting #57

RP-121414

Chicago, USA, Sep. 4 - 7, 2012

Source: Alcatel Lucent, CPqD, EADS, HiSilicon, Huawei, Mediatek, NEC, Nokia, Nokia Siemens Networks, Qualcomm Inc., Samsung, Telecom Italia, ZTE, Motorola Solutions

Title: New work item proposal: Introduction of LTE 450 in Brazil - Feature

Agenda item: 13.1

Document for: Approval

3GPP™ Work Item

For guidance, see [3GPP Working Procedure](#)

3GPP TR 36.840 V1.0.1 (2013-06)

Technical Report

3rd Generation Partnership Project;
Technical Specification Group Radio Access Networks;
LTE 450 MHz in Brazil Work Item Technical Report
(Release 12)



2012 4G Brazilian Auction

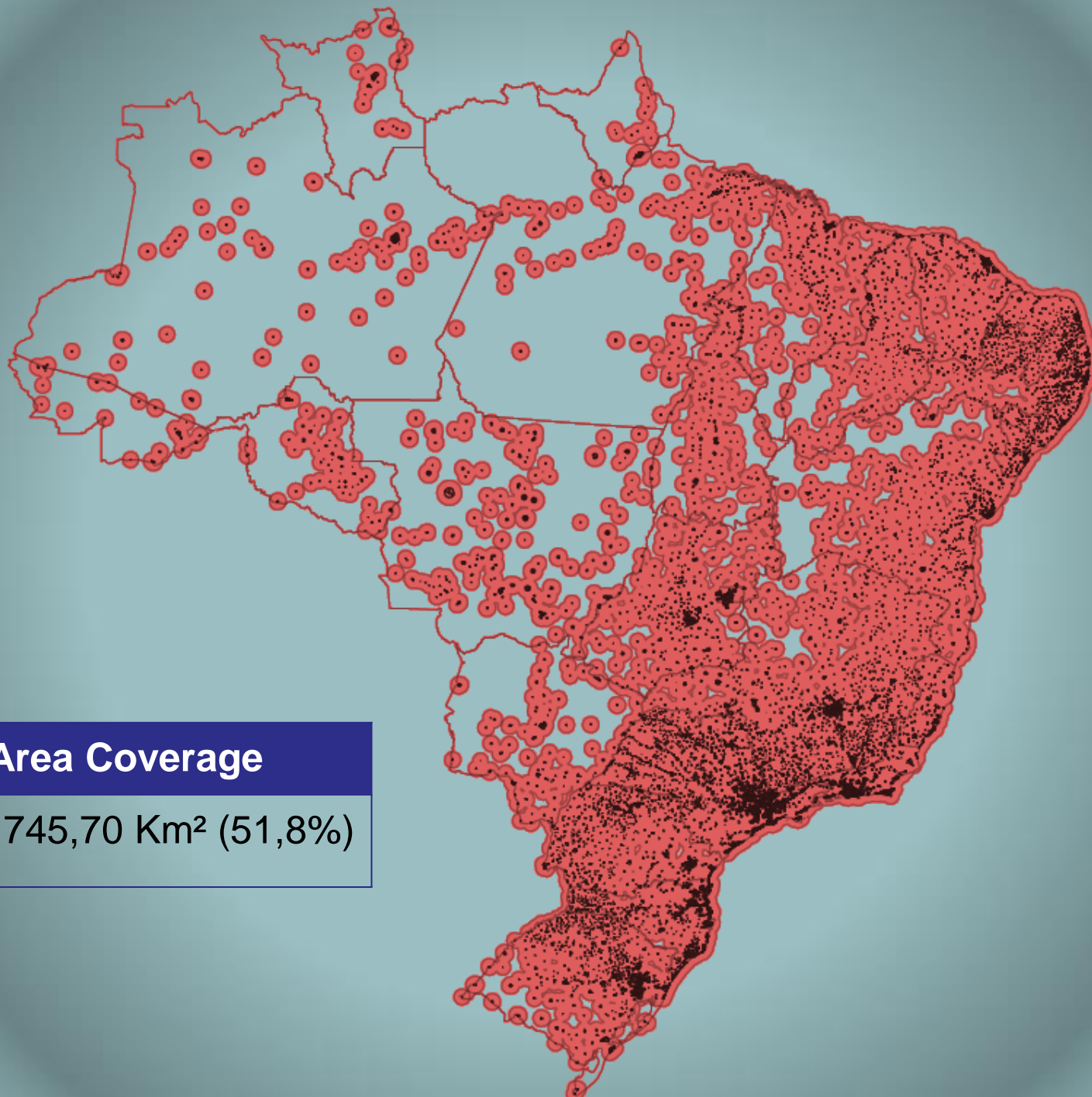
Main rules applicable for for 450 MHz band:

- Target to the rural area digital inclusion.
- All rural schools* must be connected.
- The coverage the area with 30 km radius from the boundaries of the main city.
- The operators must follow the following schedule deployment:

Final date	% of cities**
Jun/30/2014	30
Dec/31/2014	60
Dec/31/2015	100

* Some municipalities are very large like Altamira-PA, which is almost twice the size of Portugal.

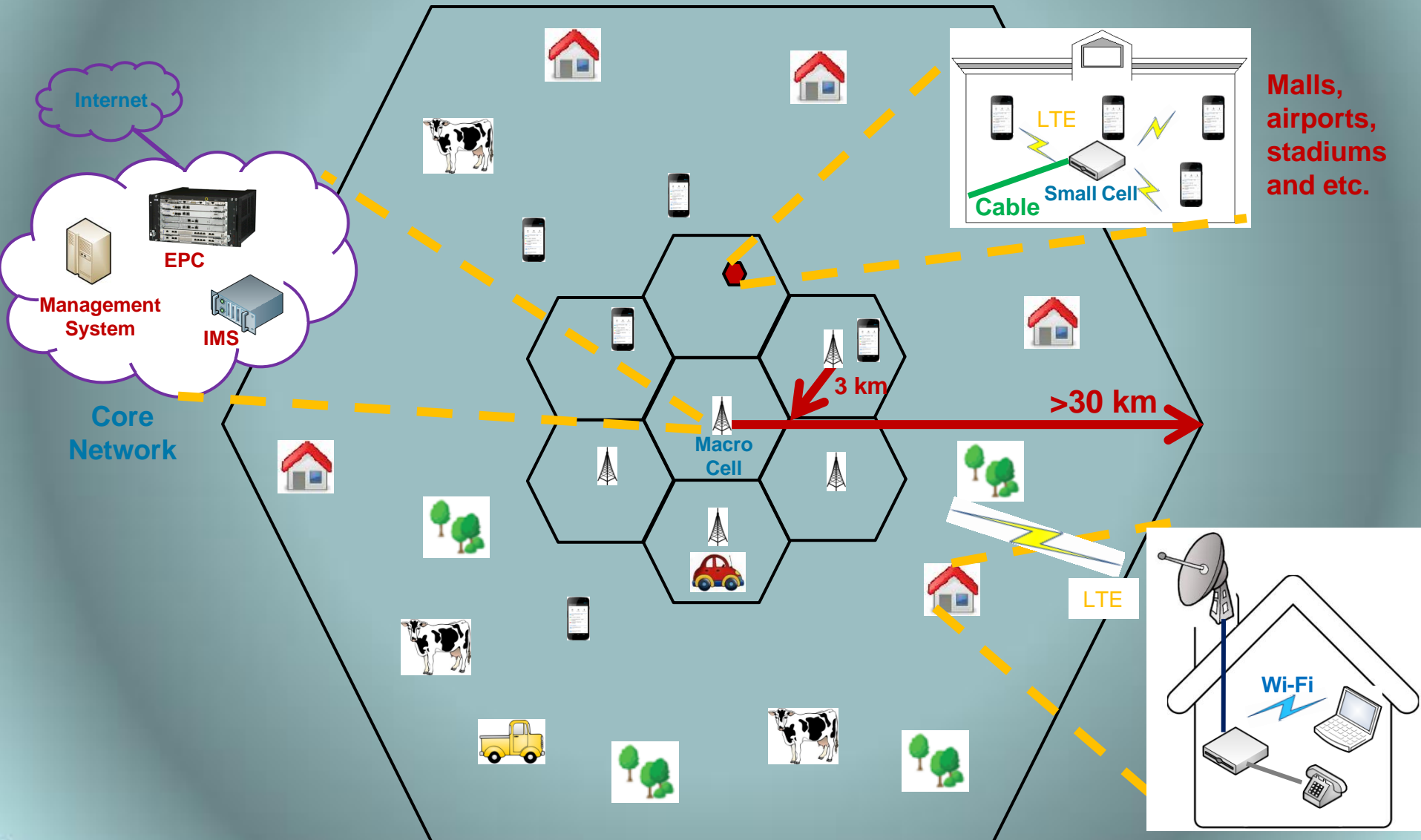
** Brazil comprises 5570 municipalities.



Area Coverage

4.409.745,70 Km² (51,8%)

LTE 450 MHz Deployment Scenario



LTE 450 MHz Products from Brazilian Industry



Base station



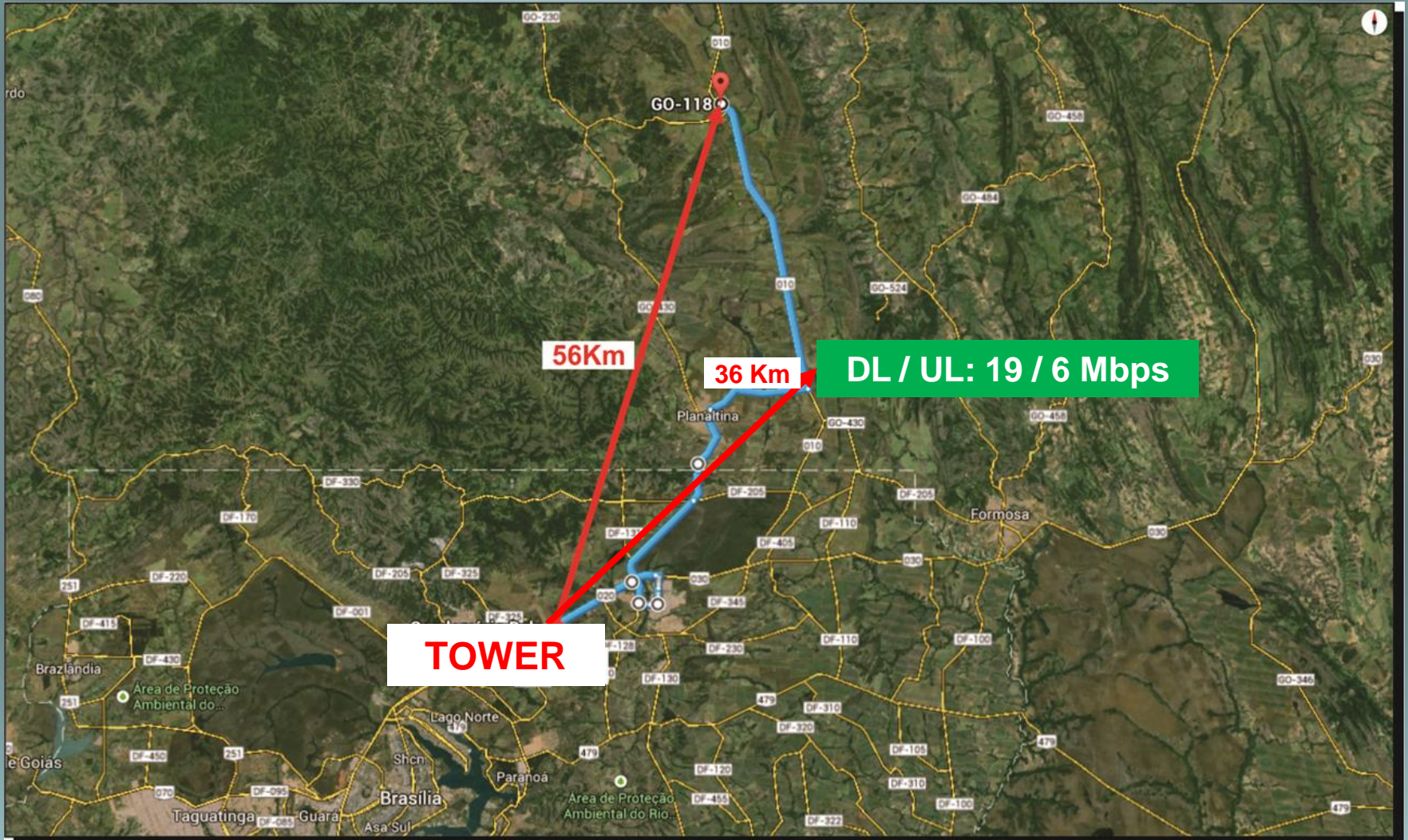
Indoor CPE



Outdoor CPE

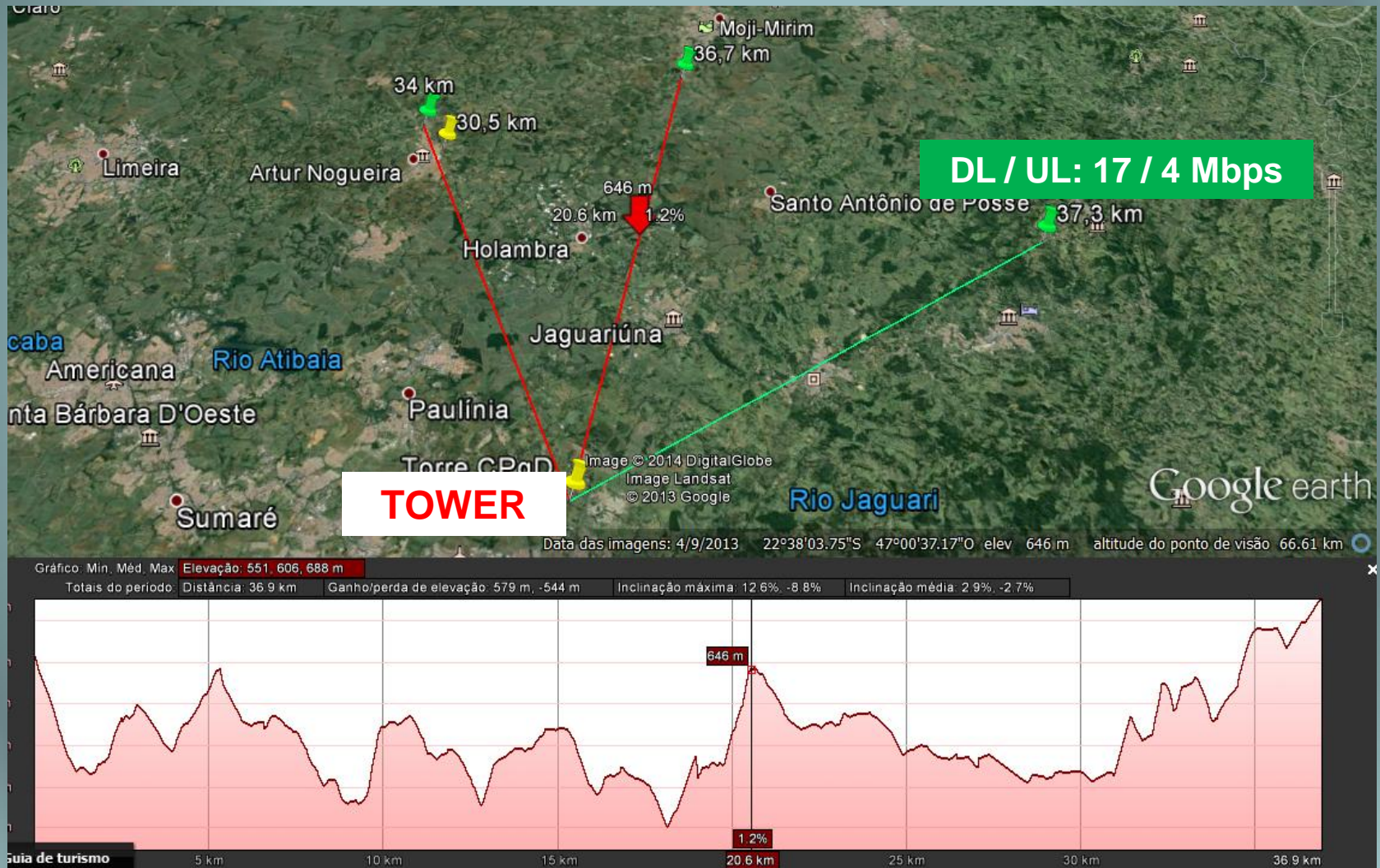
LTE 450 MHz Field Trials in Brazil

Telecom A - Brasilia




LTE 450 MHz Field Trials in Brazil

Telecom B – São Paulo




LTE 450 MHz is Available !



TeleGeography
AUTHORITATIVE TELECOM DATA

Russia round-up: Rostelecom plots 450MHz LTE trial;

4 Sep 2013

 [Russia](#)

Russia's State Radio Frequency Commission (SRFC) has reportedly authorised national operator Rostelecom to carry out Long Term Evolution (LTE) testing in the 450MHz band, according to Digit.ru. The tests will be carried out by CDMA operator SkyLink, a subsidiary of Rostelecom, and take place in the Kostroma region.



americas
Business insight in Latin America

Telecommunications - Brazil



Qualcomm: Chipsets ready, but no orders yet for LTE 450MHz processors


By Pedro Ozores - Monday, March 17, 2014

US chipmaker Qualcomm's first chipsets for LTE transmission in the 450MHz spectrum were ready in February, but the company has received no orders from telecoms operators yet.


CDMA Operators Seeking LTE Licenses in 450Mhz Spectrum Bands

Published on: 25th Sep 2010

Note -- this news article is more than a year old.



Six mobile networks that operate a CDMA network in the 450Mhz spectrum have applied to the International Telecommunication Union (ITU) and their regulators for permission to use the spectrum for LTE services.



HOME PRODUCTS COMPANY NEWS & EVENTS CONTACT

ALTAIR SEMICONDUCTOR CHIPSETS NOW OPERATIONAL ON 450MHZ FREQUENCY BAND

NOV 14, 2012


Becomes first chipset provider to announce support for LTE over this spectrum, joining leading infrastructure vendors who have committed to providing LTE solutions for 450MHz

Romanian Regulator Opens Consultation on 450Mhz Radio Spectrum Use

Published on: 29th Apr 2012

Note -- this news article is more than a year old.


By: [Ian Mansfield](#)



Romania's telecoms regulator Ancom has posted a questionnaire aimed at finding the views of all interested parties concerning the future use of the 453 457.5 MHz 463 467.5 MHz frequency band (the 450 MHz band).



WXBR JÁ NEGOCIA COM OPERADORAS DA AMÉRICA LATINA E EUROPA OFERTA DE SOLUÇÃO PARA LTE EM 450 MHZ



EXAME · VOCÊS/A · PME

Operadoras testam LTE 450 MHz nacional

As operadoras devem atender a área rural (limitada a uma área de 30 km da área urbana) de 30% dos municípios das suas áreas de outorga até junho de 2014

THANK YOU

José Gontijo

Director of Industry, Science and Technology

Ministry of Communication

Brasil

jose.gontijo@comunicacoes.gov.br