

Broadband Wireless Access in Brazil – Regulation and Perspectives

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Summary

- ◆ **Definitions**
- ◆ **Aspects of Wireless Access**
- ◆ **BWA Regulation in Brazil**
- ◆ **BWA perspectives in Brazil**
- ◆ **Summary**

DEFINITIONS

- **wireless access** end-user radio connection(s) to core networks.
- **fixed wireless access** wireless access application in which the location of the end-user termination and the network access point to be connected to the end-user are fixed.
- **mobile wireless access** wireless access application in which the location of the end-user termination is mobile.
- **nomadic wireless access** wireless access application in which the location of the end-user termination may be in different places but it must be stationary while in use.
- **broadband wireless access** wireless access in which the connection(s) capabilities are higher than the primary rate (i.e. >1 544 kbit/s).

Reference: [Recommendation ITU-R F.1399](#), "Vocabulary of terms for wireless access"

ASPECTS OF WIRELESS ACCESS

- ◆ **Mobility capabilities of the terminal**
 - fixed, nomadic, mobile, restricted mobility (e.g. within a single cell), etc.
- ◆ **Service support capabilities**
 - narrow-band, broadband, multimedia, etc.
- ◆ **Type of telecommunication service**
 - conversational, distribution, information retrieval.
- ◆ **Connectivity**
 - e.g., Internet, PSTN, etc.
- ◆ **Radio transmission technology**
 - access technique (TDMA, CDMA, etc.), modulation technique (analogue, digital, etc.), duplex technique (FDD, TDD, etc.), etc.
- ◆ **Delivery mechanism**
 - terrestrial, satellite, etc.

Reference: [Recommendation ITU-R F.1399](#),
"Vocabulary of terms for wireless access"



BWA REGULATION IN BRAZIL

Licensed Spectrum

- 400 MHz
- 2.6 GHz
- 3.5 GHz
- 10.5 GHz
- Others

Unlicensed Spectrum

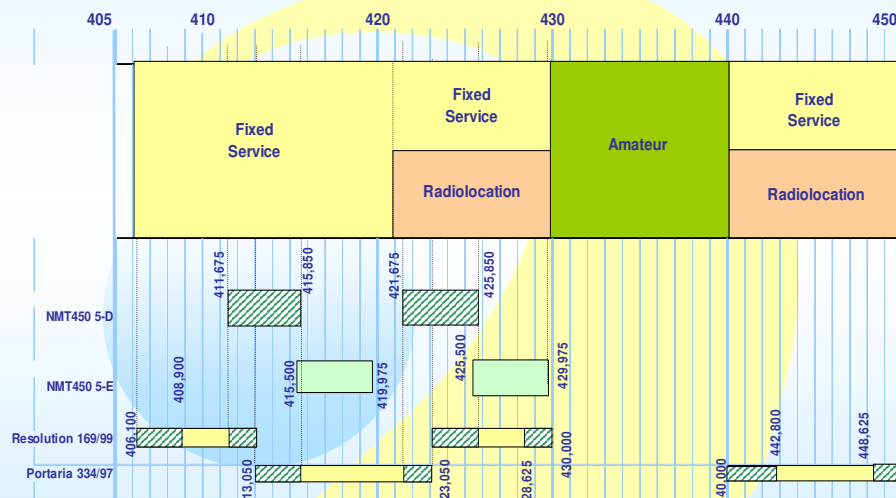
- 2.4 GHz
- 5 GHz



BWA Regulation in Brazil



400 MHz – Group D





BWA Regulation in Brazil



400 MHz – Resolution 395 - Feb 28, 2005

Relevant Aspects

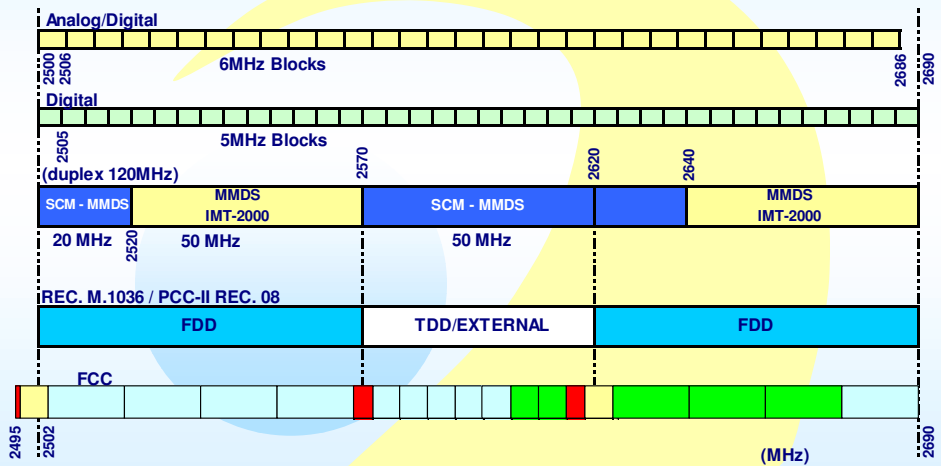
- Suitable for remote areas;
- Digital inclusion;
- Technological update;
- More efficient use of spectrum.



BWA Regulation in Brazil



2.6 GHz

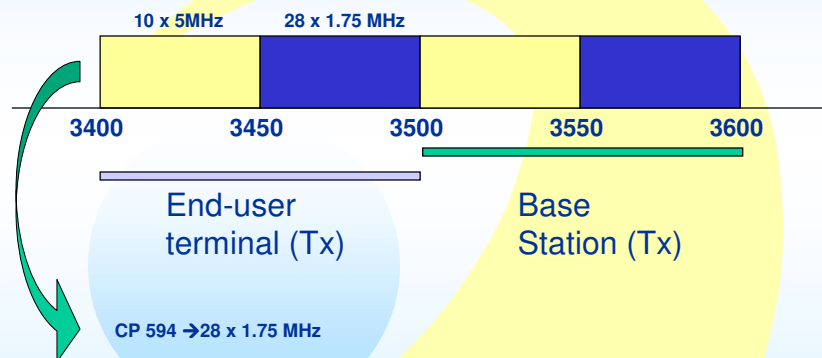


2.6 GHz – Public Consultation 593 - Feb. 04, 2005

Relevant Aspects

- Currently used by MMDS;
- 90 MHz designated to SCM;
- Development of new technologies;
- 100 MHz planned for IMT 2000 use;
- 5 MHz blocks optimized for digital technologies;
- Restricted mobility;
- New investments expected.

3.5 GHz





BWA Regulation in Brazil



3.5 GHz – Public Consultation 594 – Feb. 10, 2005

◆ Relevant Aspects

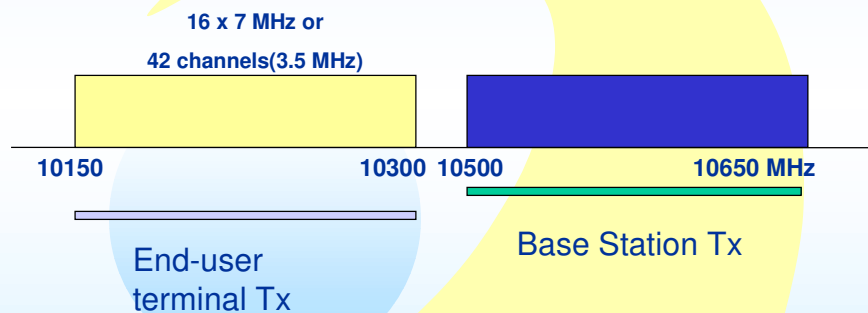
- Frequency band currently available for Fixed services (STFC/SCM);
- Point-multipoint systems (licensed);
- Deployment of new technologies;
- Aggregated blocks allowed;
- New auctions planned;
- New investments expected.



BWA Regulation in Brazil



10.5 GHz

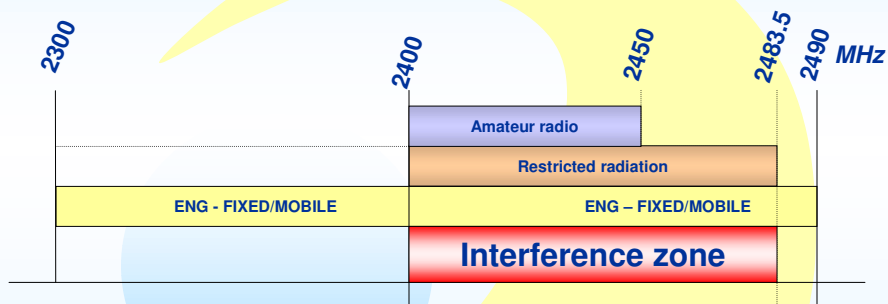


10.5 GHz – Resolution 307 - Aug 14, 2002

◆ Relevant Aspects

- Frequency band currently available for Fixed (STFC/SCM) and ENG services;
- Point-multipoint systems (licensed);
- Deployment of new technologies;
- Aggregated 3.5 or 7 MHz blocks allowed;

2.4 GHz



- Primary - ENG
- Secondary – Amateur radio.
- Secondary – RLANS and other restricted radiation devices.



BWA Regulation in Brazil



2.4 GHz – Resolution 365 – May10, 2004

Relevant Aspects

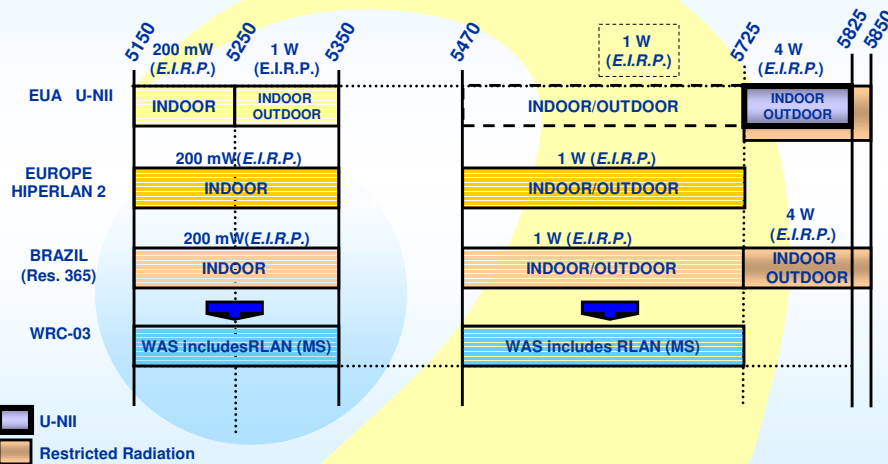
- RLAN, Bluetooth, Restricted Radiation devices and ENG;
- Extensively used;
- 802.11b up to 11 Mbits – spread spectrum;
- 802.11g, ETSI BRAN HIPERLAN 1 up to 54 Mbits – OFDM;
- License-exempt equipment;
- Indoor applications;
- Sharing on a secondary basis with ENG;
- Tx power > 400 mW/ cities > 500,000 inhab. → licensed stations.



BWA Regulation in Brazil



5 GHz





BWA Regulation in Brazil



5 GHz – Resolution 365 – May 10, 2004

◆ Relevant Aspects

- RLANs and other restricted radiation applications;
- 802.11a, ETSI BRAN HIPERLAN 2 up to 54 Mbits – OFDM;
- License-exempt equipment;
- DFS and TPC mechanisms;
- Secondary basis;
- Costs currently high .



BWA PERSPECTIVES IN BRAZIL



Technology Neutrality

- Foster innovation
- Offer advantages to operators
- Market oriented
- Ensure minimal technology standardisation
- Bring technology development



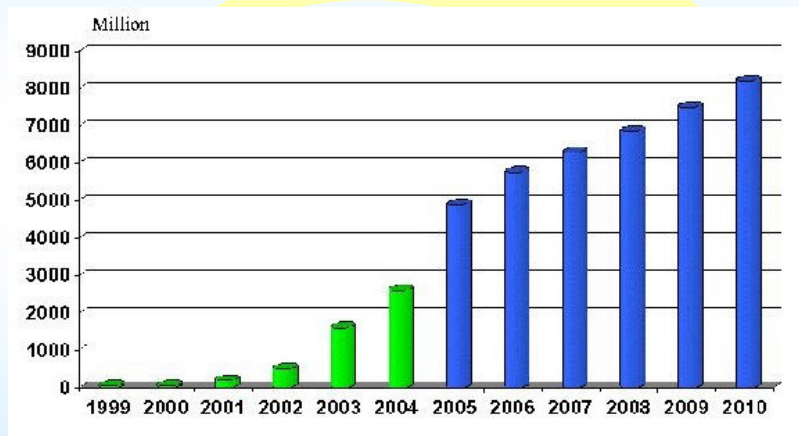
Nomadic access regulation

- Fixed applications vs mobile applications
- Nomadic BWA systems
- Regulation proposal
 - Concerns
 - Rights of mobile operators
 - Fixed and mobile convergence
 - Limits and enforcement

Broadband access growth in Brazil

- More than 300 SCM operators
 - Both small and big cities
 - Great BWA users
- Competition to incumbent operators
- Intensive use of unlicensed spectrum
- Focus on internet access
 - Voip

Broadband access growth in Brazil





2.4 GHz Licensed Spectrum

- Sharing with Electronic news gathering
- BWA based on 2.4 GHz will be licensed if:
 - Transmission Power > 400 mW
 - Cities above 500.000 inhabitants
- Promotion of unlicensed spectrum in the 5 GHz band



3.5 GHz and 10.5 GHz Auctions

- CP 594 on 3.5 GHz band
 - Aligned with ITU-R
 - Aligned with international forum
- 2002 auctions
 - National licenses
 - 3.5 GHz – 10.5 MHz paired, R\$5,285,471.21
 - 10.5 GHz – 14 MHz paired,
 - Regional licenses
 - 3.5 GHz – 7 MHz paired, R\$1,924,761.91
 - 10.5 GHz – 7 MHz paired, R\$1,274,662.90
 - Total income
 - 3.5 GHz – R\$ 23,001,969.94
 - 10.5 GHz – R\$ 5,814,159.96



400 MHz Spectrum Auctions

- Call for operators interest: Jan 2004
 - 11 operators replied favourably
- Resolution 395
 - 411.675 MHz-415.850 MHz and 421.675-425.850 MHz bands
 - Trunking and fixed multimedia
- Auction process is being prepared



3 G Spectrum Auction – Objectives

- Competition
 - New mobile operator
 - Area 1 and 2 – São Paulo
 - Area 10 – Northeast
- Digital inclusion
 - Promote the 3 G services offer by auctioning the spectrum available in 1.9 and 2.1 GHz

3 G Spectrum Auction – 2005 Targets

- Choose one of the alternatives
- Determine the evolution on regulation existent and establish the authorisation rules
- Conduct the authorisation process
- Define the winners and sign the due authorisation

Summary

- ◆ Regulation focused on market needs
- ◆ Fast Broadband access growth
- ◆ Auction timely designed to attend market needs / trends