



Overview of Wireless Broadband in the Americas

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Summary

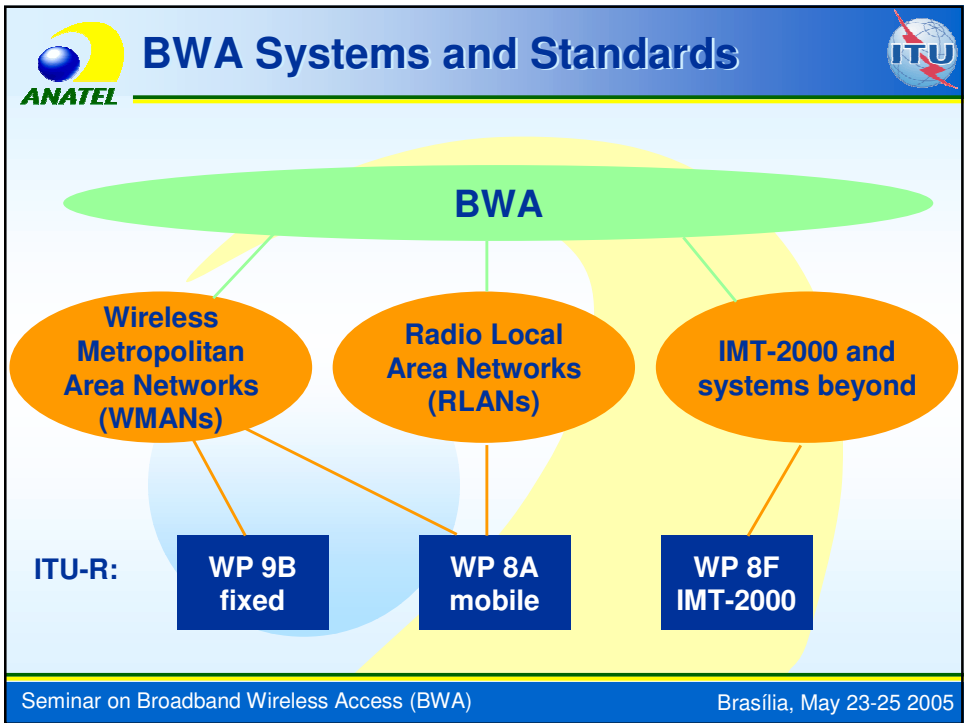
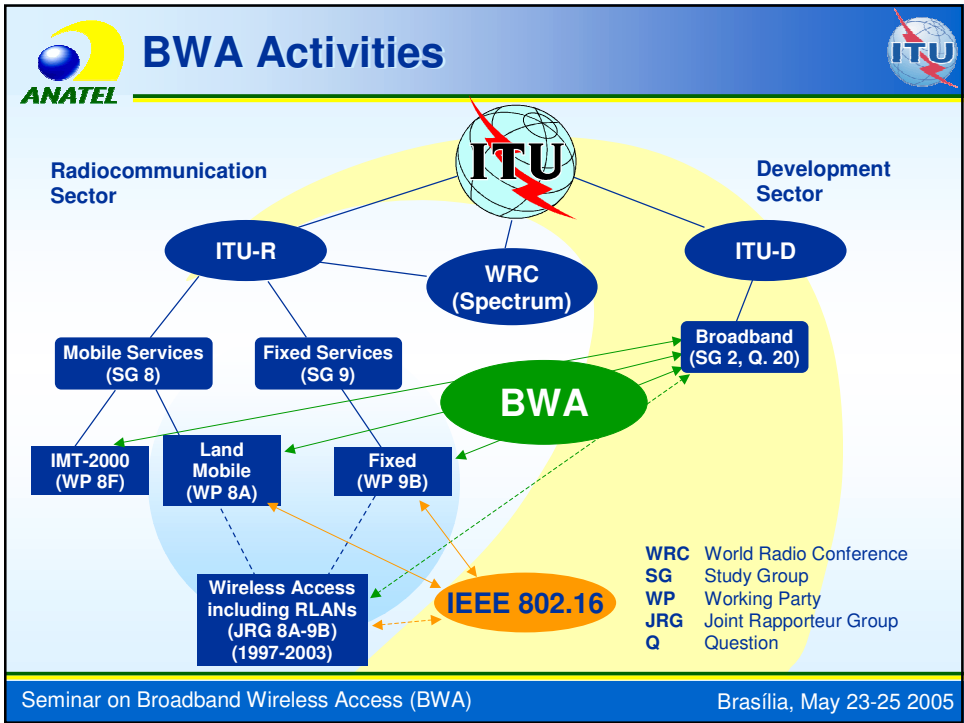
- ◆ Definitions
- ◆ ITU
- ◆ Citel
- ◆ Brazil

- ◆ **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"

- ◆ **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"



- ◆ **455 MHz has been newly allocated to the Mobile Service on a primary basis for use by RLANs in the 5 GHz band:**
 - 5150-5250 MHz, 5250-5350 MHz and 5470-5725 MHz.
- ◆ **The operation of EESS, SRS and Radiolocation systems are protected through the adopted technical limits.**
- ◆ **Technical limits (Resolution 229 - WRC-03):**
 - 5150-5250 MHz: 200 mW e.i.r.p. (max), indoor only.
 - 5250-5350 MHz: Dynamic Frequency Selection (DFS) and Transmitter Power Control (TPC) are required; 200 mW e.i.r.p., predominantly indoor use but outdoor use is also allowed; for >200 mW.
 - 5470-5725 MHz: DFS and TPC are required; 1 W e.i.r.p. (max), 250 mW transmitter power (max).

- ◆ **In addition to WRC-03 allocations, 125 MHz of spectrum (5725 – 5850 MHz) is also available for use in some countries on a national basis (83.5 MHz is already in use in 2.4 GHz band by RLANs)**
- ◆ **Strong commercial interest (license-exempt equipment)**
- ◆ **Can provide broadband solutions, both urban and rural**



IMT-2000 terrestrial radio interfaces

(Recommendation ITU-R M.1457)



Full Name	Short	Common Names
IMT-2000 CDMA direct spread	IMT- DS	UTRA FDD WCDMA UMTS
IMT-2000 CDMA multi-carrier	IMT- MC	CDMA2000 1x and 3x CDMA2000 1xEV-DO CDMA2000 1xEV-DV
IMT-2000 CDMA TDD (time-code)	IMT- TC	UTRA TDD 3.84 Mchip/s high chip rate UTRA TDD 1.28 Mchip/s low chip rate (TD-SCDMA) UMTS
IMT-2000 TDMA single-carrier	IMT- SC	UWC-136 EDGE
IMT-2000 FDMA/TDMA (frequency-time)	IMT- FT	DECT



Frequency spectrum requirements



- ◆ Spectrum may need to be shared with other Radiocommunication Services in the same band and might not all be available everywhere.
- ◆ For IMT-2000, 749 MHz of spectrum has been identified:
 - 806-960 MHz
 - 1710-2025 MHz
 - 2110-2200 MHz
 - 2500-2690 MHz
- ◆ More spectrum may be needed for systems beyond IMT-2000 from year 2010 onwards; this issue will be addressed at WRC-07.



Relationship of IMT-2000 with other radio systems



- ◆ RLANs, WMANs and broadcasting can be synergistic with mobile (cellular) networks such as IMT-2000.
- ◆ While the capabilities of cellular networks such as IMT-2000 offer extensive mobility features and cost-effective wide area coverage, RLANs enable high-quality data throughput capacity in specific areas (hotspots).
- ◆ Currently, broadband RLANs enable data rates of up to 54 Mbit/s (Recommendation ITU-R M.1450).
- ◆ A single device may support different technologies (e.g. IMT-2000, RLAN, short-range connectivity) operating simultaneously.



Citel



Permanent Consultative Committee II (PCC.II) - WG Terrestrial Fixed and Mobile Radiocommunication Services

- ◆ Recommendation PCC.II/REC. 7 (III-04) - *Frequency Arrangement for Implementation of the Terrestrial Component of IMT-2000 in the bands of 2500 – 2690 MHz; and*
- ◆ Recommendation PCC.II/REC. 8 (IV-04) - *Frequency Arrangement for IMT-2000 in the bands 806 - 960 MHz, 1710 - 2025 MHz, 2110 - 2200 MHz and 2500 - 2690 MHz.*

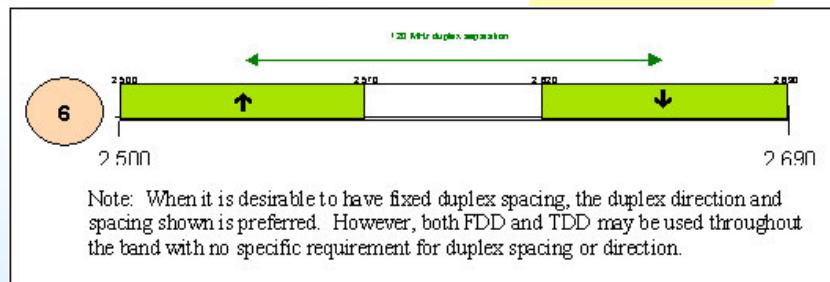
Recommendation PCC.II/REC. 7 (III-04) - *FREQUENCY ARRANGEMENT FOR IMPLEMENTATION OF THE TERRESTRIAL COMPONENT OF IMT-2000 IN THE BANDS OF 2500 – 2690 MHZ*, recommends:

- ◆ **For IMT 2000, this band should be used by terrestrial component only;**
- ◆ **50 MHz center block;**
- ◆ **Guard bands between side blocks and center block should be included in center block.**

Recommendation PCC.II/REC. 8 (IV-04) - *FREQUENCY ARRANGEMENT FOR IMT-2000 IN THE BANDS 806 - 960 MHZ, 1710 - 2025 MHZ, 2110 - 2200 MHZ AND 2500 - 2690 MHZ*, recommends:

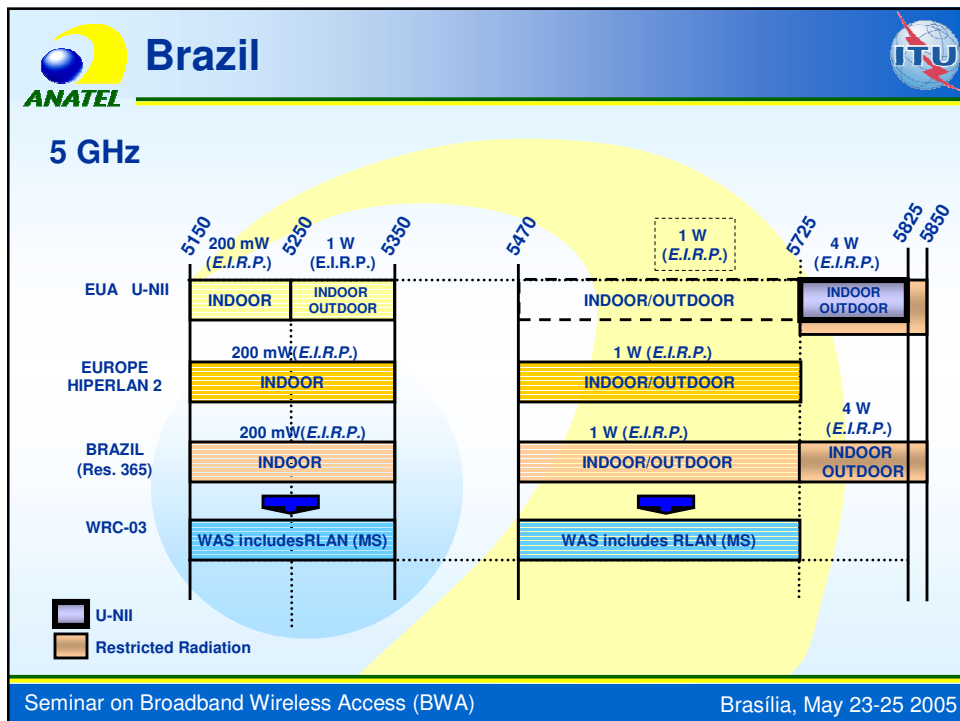
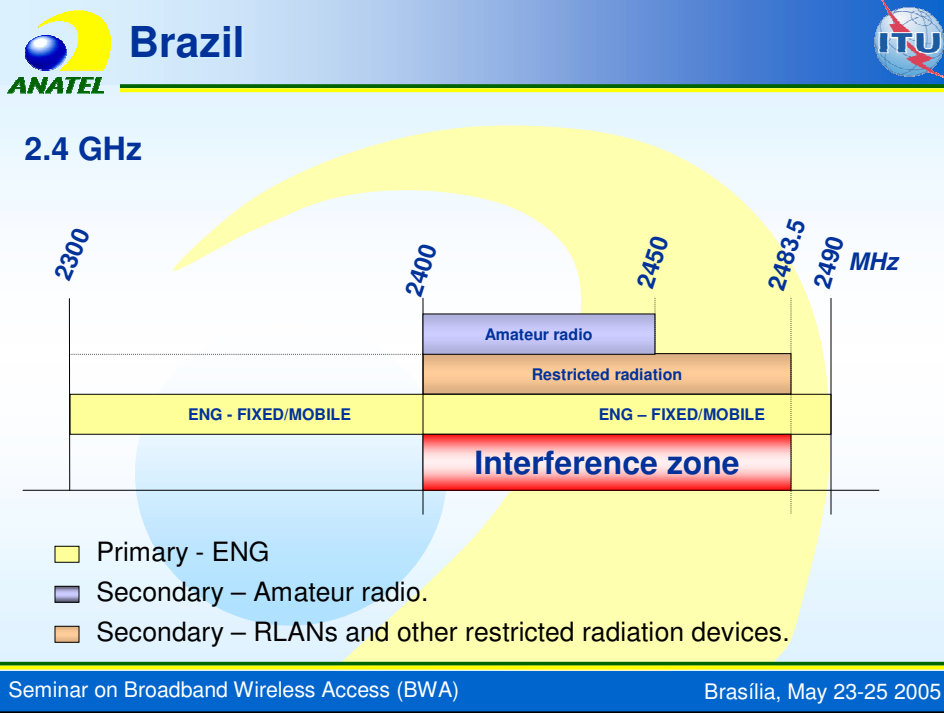
- ◆ **Spectrum identification for IMT 2000 should consider:**
 - Harmonizing IMT 2000 frequency bands;
 - Maximizing harmonization of the use of band 2110-2170 MHz;
 - Facilitating global roaming; and
 - Minimizing equipment costs.
- ◆ **Partial use of bands should be consistent with duplex separation of entire band.**

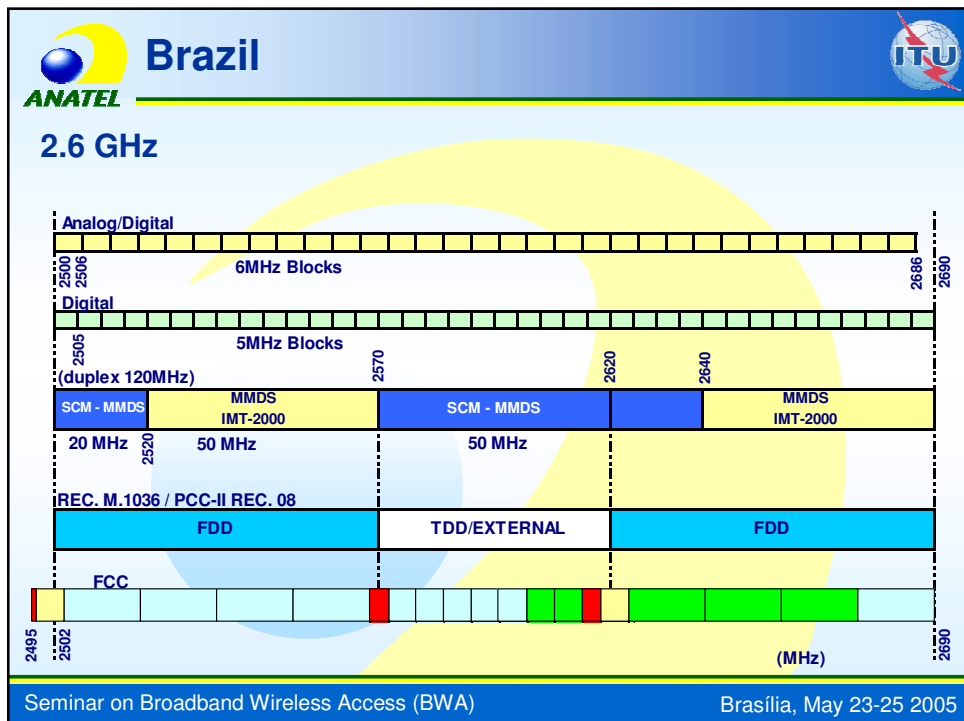
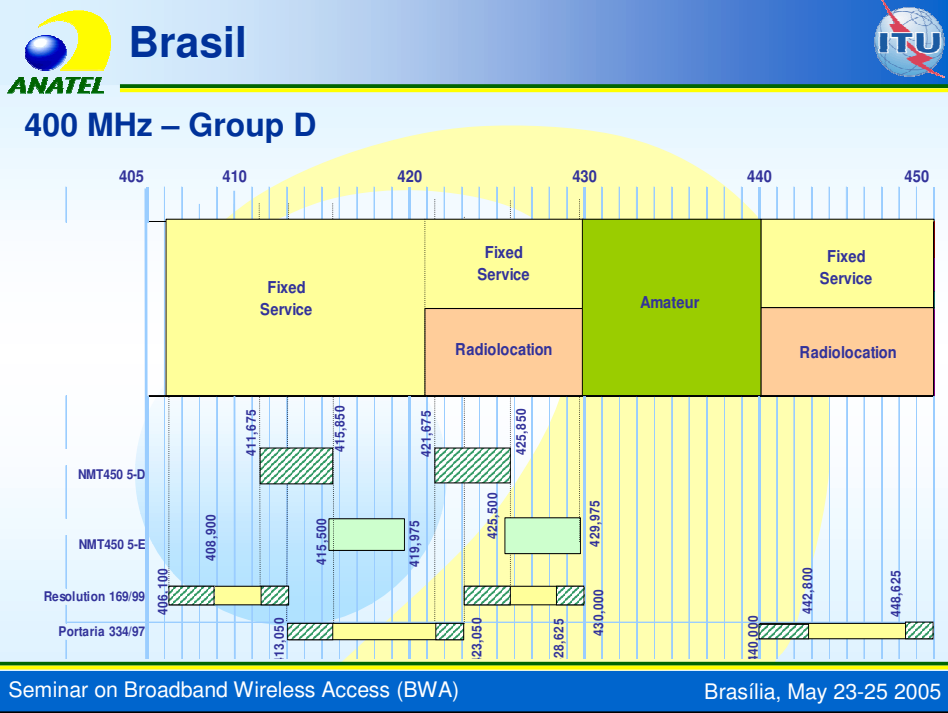
Recommendation PCC.II/REC. 8 (IV-04) - *FREQUENCY ARRANGEMENT FOR IMT-2000 IN THE BANDS 806 - 960 MHZ, 1710 - 2025 MHZ, 2110 - 2200 MHZ AND 2500 - 2690 MHZ, recommends:*



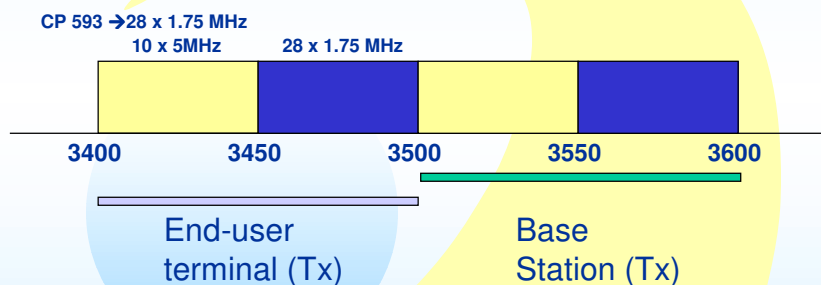
Recommendation PCC.II-REC. XXX (V-05) - *USE OF THE 410-430 MHZ AND 450-470 MHZ BANDS FOR FIXED AND MOBILE SERVICES FOR DIGITAL COMMUNICATION PARTICULARLY IN LOW POPULATION DENSITY AREAS, recommends:*

- **Spectrum availability through technical and/or regulatory means;**
- **Coexistence with new and existing systems without harmful interference;**
- **Existing systems should not be constrained;**
- **Coordination agreements between administrations can be achieved;**
- **Sharing studies required.**





3.5 GHz



Summary

- ◆ There is enough regulated spectrum (400/900 MHz, 1.8/1.9/2.1 GHz, 2.4/5.0 GHz and 2.6/3.5/10.5 GHz) to fulfill the needs of new converging broadband wireless technologies and to overcome the challenges posed by their deployment.
- ◆ The license-exempt frequency bands represent a strong economic interest and their applications are synergistic with those of the licensed frequency bands.