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Inter-American Telecommunication Commission
Organization of American States

Electronic Bulletin / Number 31 - January, 2007 Versión Español

Spectrum for International Mobile Telecommunications (IMT)

The Permanent Consultative Committee II (Radiocommunications including Broadcasting, PCC.II) will hold a Seminar on Terrestrial Spectrum for International Mobile Telecommunications (IMT) on Monday, 16 April 2007, in San Salvador, El Salvador, the day before the IX meeting of PCC.II. This seminar is being organized and sponsored by the Mobile Industry Backing Terrestrial Spectrum for IMT, or **mib** for short (see http://standards.nortel.com/spectrum4IMT). **mib** is an industry group that is promoting, in collaboration with the forums, the preparations for WRC-07 Agenda Item 1.4: "to consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 taking into account the results of ITU-R studies in accordance with Resolution 228 (Rev. WRC-03)".

The World Radiocommunication Conference (WRC-07) will take place in Geneva, Switzerland, from 22 October to 16 November 2007. There has been a tremendous effort within CITEL to prepare for this event, in particular for the item on the identification/allocation of spectrum for IMT, which includes the future development of IMT-2000 and systems beyond IMT-2000, the latter referred to as IMT-Advanced. The preparatory work is conducted in ITU-R Working Party 8F where CITEL members have been strong contributors (see Coordination of CITEL preparations for the ITU-R Working Party 8F).

The new capabilities of IMT-Advanced are envisaged to handle a wide range of supported data rates according to economic and service demands in multi-user environments with target peak data rates of up to approximately 100 Mbit/s for high mobility such as mobile access and up to approximately 1 Gbit/s for low mobility such as nomadic/local wireless access. Compare this with the original IMT-2000 deployments which supported up to 144 kbit/s for high mobility and 2 Mbit/s for low mobility. Currently the IMT-2000 standard supports up to about 14 Mbit/s and further enhancements are being developed. The IMT-2000 radio technologies are expected to contribute and converge towards IMT-Advanced, supported by a common packet core network. (see Wireless access standards for NGN).

The approach of **mib** is to use the results of the studies in ITU-R Working Party 8F and additional material, particularly focusing on the telecommunication trends and the resulting benefits from services and applications that will be facilitated by the identification/allocation of spectrum for IMT under Agenda Item 1.4. An objective of **mib** is also to show that WRC-07 is the crucial time for such identification/allocation.

mib is inspired by the ITU vision for a global mobile society, where every person has mobile access and is connected wirelessly. Global spectrum availability is the key to realize this vision. Spectrum for the global mobile society: what usage could be more valuable and more important?

The key **mib** messages are:

1. Mobile communications facilitate economic growth and development, and enable new jobs and new business creation.
2. The market for mobile services continues to evolve and grow.
3. Studies show that the amount of total traffic per user per day will rise almost 50 times from today by 2020 in some markets.
4. High bit-rate services experienced in cable and fixed (DSL) networks will be expected from mobile networks as users demand the same services and same quality.
5. More spectrum will be needed for IMT services in a response to increased traffic.
6. Existing spectrum bands will not be sufficient to carry the predicted traffic for IMT services after the year 2015.
7. WRC-07 decision would enable IMT deployment in year 2015-2020 timeframe
8. WRC-07 is the right time to identify spectrum for IMT.

The spectrum requirements for IMT are significant to enable the ITU vision of connecting the unconnected by 2015. As indicated by Report ITU-R M.2078, the predicted total spectrum bandwidth requirement for both existing mobile cellular systems, including pre-IMT-2000 and IMT-2000 and its enhancements, and IMT-Advanced for the year 2020 was calculated for both low and high user-demand scenarios to be 1 280 MHz and 1 720 MHz, respectively. It should be noted that this lower figure (1 280 MHz) is higher than the requirements for some countries. In addition, there are some countries where the requirement is larger than the higher value (1 720 MHz). The spectrum prediction is based on an assumption of one network deployment. In case of several parallel network deployments in a country, spectrum requirements will be higher as provided by Report ITU-R M.2078.

Mobile and wireless industry are developing technologies to enhance spectrum usage efficiency and also studying proposed new concepts for future spectrum management. However, new spectrum management concepts are long-term issues and will not eliminate the benefits of globally common spectrum bands, such as economies of scale, global roaming, and smooth implementation. Therefore, spectrum harmonization is still a strong requirement.

Planning for future spectrum needs for IMT must be done today to be able to respond to the future demand of global mobile society. The WRC-07 agenda was set at WRC-03 in anticipation of the rapid market growth of mobile communications, which is the reality today. It is beneficial to know spectrum bands well in advance to start the development of radio interface standards and detailed band planning.

Furthermore, administrations and industry must recognize that additional time is needed for spectrum to be made available to accommodate the necessary regional and national consultations that follow after WRC decisions and, if required, give sufficient time to move/retire/renew existing spectrum equipment and design new equipment and deploy and build the systems.

WRC-07 is the right time to identify new spectrum for IMT. Indeed, it typically takes about 7-10 years from a WRC-decision until spectrum can be made available, for example, after WARC-92, IMT-2000 started to be licensed around the year 2000 in the identified bands (i.e., 8 years later) and after WRC-2000, that identified the band 2500-2690 MHz, IMT-2000 is scheduled to be licensed in this band starting from 2007 (i.e., 7 years later). Therefore, after WRC-07 licensing of new bands could start from around 2015. Also, by providing harmonized spectrum solution for IMT at WRC-07, un-necessary regional diversions can be avoided. Therefore WRC-07 is the right moment!

mib is also conducting other seminars as outlined in the **mib** web site. In particular, successful seminars have already been held in the APT region (Bangkok, Thailand, 7 January 2007) and Africa (Yaoundé, Cameroon, 16 January 2007). Those interested in attending the CITEL seminar on 16 April 2007 on Terrestrial Spectrum for IMT should contact the CITEL Secretariat to obtain registration information.

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References:

CITEL PCC.II
http://www.citel.oas.org/ccp2-radio.asp

mib web site:
http://standards.nortel.com/spectrum4IMT

Coordination of CITEL preparations for the ITU-R Working Party 8F:
http://www.citel.oas.org/newsletter/2005/enero/8f_i.asp

Wireless access standards for NGN:
http://www.citel.oas.org/newsletter/2006/diciembre/ngn_i.asp

Additional Information: *Please access here the draft calendar of the Seminar that is scheduled for April 16, 2007 in San Salvador, El Salvador.*