



PUBLIC NOTICE

FEDERAL COMMUNICATIONS COMMISSION
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Report No. IN 98-48

INTERNATIONAL ACTION

August 26, 1998

COMMISSION STAFF SEEK COMMENT ON SPECTRUM ISSUES RELATED TO THIRD GENERATION WIRELESS/IMT-2000

The International Telecommunication Union (ITU) is in the process of identifying the long-term spectrum requirements for future "third generation" mobile wireless telecommunications systems, referred to as International Mobile Telecommunications - 2000 (IMT-2000). In 1992, the ITU identified 230 megahertz of spectrum near 2 GHz that could be used by administrations wishing to implement IMT-2000 systems. Based on concerns that 230 megahertz might be insufficient in the long term, the ITU is now considering whether additional spectrum should be identified for IMT-2000 systems. In conjunction with the ITU's efforts, Commission staff are participating in domestic and international efforts to determine whether additional spectrum is required for IMT-2000 systems and, if so, how much. This determination, along with the possible identification of frequency bands that could be made available for use by IMT-2000 systems, must include consideration of numerous factors, including: other wireless services that have already been authorized; compatibility with current spectrum uses; interference potential; and sharing issues. To refine our analysis of potential IMT-2000 spectrum needs, we seek comment on a series of questions, given below, regarding the types of wireless services expected in the future, bandwidth and overall spectrum requirements, spectrum location, technological advancements, and spectrum efficiency. We also seek comment regarding the potential impact on the existing services and the potential for IMT-2000 sharing with those services.

I. Background

For several years the ITU has been developing recommendations for a new generation of mobile wireless telecommunications systems. These IMT-2000 systems are expected to become available for use around the year 2000, subject to market considerations. It is anticipated that IMT-2000 systems will offer greatly enhanced data and bandwidth capabilities, and will begin to converge differing regional or national mobile systems into a radio infrastructure capable of offering services on a global basis. IMT-2000 systems would be capable of providing a wide range of services (multimedia, video-teleconferencing, high speed internet, speech and high rate data) over a wide range of environments (e.g. indoor, pedestrian, vehicular, urban, and rural), and would allow the integration of both terrestrial and satellite-based service.

The spectrum issues associated with IMT-2000 have been addressed through successive World Radiocommunication Conferences (WRCs). The 1992 World Administrative Radiocommunication Conference (WARC-92) identified 230 megahertz (1885-2025 and 2110-2220 MHz) for use on a worldwide basis by administrations wishing to implement IMT-2000

systems¹. Later, in response to concerns that 230 megahertz of spectrum for IMT-2000 systems might be insufficient in the long term to accommodate the anticipated growth of wireless services, WRC-97 decided that IMT-2000 issues should be re-examined at the next WRC (scheduled for the year 2000). Specifically, WRC-97 decided that WRC-2000 will undertake the:

"review of spectrum and regulatory issues for advanced mobile applications in the context of IMT-2000, noting that there is an urgent need to provide more spectrum for the terrestrial component of such applications and that priority should be given to terrestrial mobile spectrum needs, and adjustments to the Table of Frequency Allocations as necessary;" and,

"identification of a global radio control channel to facilitate multimedia terminal operation and worldwide roaming of IMT-2000"²

In the United States, Personal Communications Service (PCS) systems operate in the 1850-1990 MHz band, which significantly overlaps with the spectrum identified by the ITU for IMT-2000 systems. In addition, the Commission has allocated 1990-2025 MHz and 2165-2200 MHz for Mobile-Satellite Service (MSS) stations. Both PCS and MSS licenses offer services that are similar (but not necessarily as advanced as) those anticipated for IMT-2000 systems. FCC rules allow any Commercial Mobile Radio Service (CMRS) licensee the flexibility to change their existing radio transmission technology without further approval. Thus, existing U.S. CMRS licensees could implement IMT-2000 technology in their existing bands once this technology becomes available. Given the anticipated growth for wireless services, and the potential demand for new, higher data rate and bandwidth services that may be satisfied by IMT-2000 systems, some members of the U.S. wireless industry have indicated a need for additional spectrum that could be used to provide IMT-2000, or IMT-2000-like, services in the 2005-2010 timeframe.

II. IMT-2000 Issues for Comment

The U.S. must work proactively to develop positions on IMT-2000 issues, because such issues will likely be one of the major topics discussed at WRC-2000. The U.S. positions on the radio aspects of IMT-2000 are being developed in an ad hoc group of U.S. government and industry participants in the ITU IMT-2000 activities.³ This group has been developing some preliminary estimates of the future IMT-2000 spectrum requirements for the 2005-2010 timeframe. U.S. proponents of IMT-2000 have initially estimated their requirements to be approximately 499 megahertz for terrestrial wireless systems, approximately 309 megahertz more than the existing PCS, cellular, and enhanced Specialized Mobile Radio spectrum. Furthermore, space system proponents have estimated that they will need 136 megahertz above and beyond that already available for MSS. We believe that additional public comment may help the U.S. government to develop, elaborate and refine these estimates as well as its positions on IMT-2000 spectrum issues. Considering the amount of spectrum contained in the initial spectrum estimates, as well as the desire for using spectrum below 3 GHz, it is essential that the current users of the spectrum take part in this dialogue. Recognizing that IMT-2000 incorporates both satellite and terrestrial components, we invite comments from both industries on the following topics and questions:

¹ This was subsequently modified in 1995 and 1997. See Section S5.388 of the ITU Radio Regulations.

² See "resolves" 1.6 of Resolution 721 (WRC-97).

³ For further information on this group, contact Henry Straube, U.S. Representative to ITU-R Task Group 8/1, FCC International Bureau, 2000 M Street, NW, Room 800, Washington DC, 20554; phone 202-418-2144; email hstraube@fcc.gov.

A. Service Types and Traffic Characteristics

1. What type of services (e.g. voice, data) should be envisioned as part of IMT-2000?
2. If multiple environments (i.e., indoor office, residential, pedestrian, outdoor vehicular, satellite, etc.) are envisioned for IMT-2000, must each service be available in all environments?
3. Do you anticipate that there will be a need for IMT-2000 services in the U.S.? If so, when do you project that each of these IMT-2000 services will be needed or offered in the U.S.?
4. What type of market growth do you project for IMT-2000 services between now and the year 2010?
5. What are your traffic projections for each of type of IMT-2000 service?
6. How do your traffic projections differ by geographic area? (e.g., rural U.S., urban U.S., developed countries, less developed countries, etc.)
7. What range of data rates will be needed to support each type of IMT-2000 service?
8. Are each of these data rates realistic in a mobile environment?

B. Spectrum Requirements

9. How much bandwidth is needed to support these data rates for each IMT-2000 service? Will current terrestrial mobile/MSS allocations be sufficient to provide IMT-2000 services in the year 2010?
10. Can some or all IMT-2000 services be provided in existing mobile/MSS bands? What is the advantage or disadvantage in identifying specific spectrum for IMT-2000 in the ITU's International Radio Regulations.
11. Does our CMRS spectrum cap impact upon the ability for existing licensees to provide IMT-2000 services?
12. Will the current mobile/MSS spectrum allocations in the U.S., the Americas, and worldwide be sufficient for IMT-2000 in the year 2010? If additional spectrum is required, would commercial operators be willing to pay for additional spectrum by way of an auction or other means?
13. If additional frequency bands are made available for IMT-2000 services, what approaches should be used to reaccommodate or compensate existing users of those bands?

C. Spectrum Location

14. Must each of the IMT-2000 services operate below 3 GHz? If so, why? If not, what IMT-2000 services might be amenable to different spectrum and why?
15. Which, if any, of the IMT-2000 services require contiguous spectrum bands?
16. Are common worldwide mobile/MSS allocations necessary for IMT-2000 systems? If so, how large must they be? Recognizing that IMT-2000 terrestrial communications will generally be short range, can (or should) some IMT-2000 services be accommodated using national or regional mobile/MSS allocations instead of common international allocations?
17. Is a global control channel desirable, and if so, how much spectrum is required?
18. Can unpaired spectrum blocks be allocated and used effectively?

D. Technological Advances and Spectrum Efficiency

19. What technological advances are available today, or will be in the near future, that may be expected to improve spectrum efficiency for third generation wireless/IMT-2000 systems?
20. What techniques might be required to facilitate sharing between IMT-2000 and other services?

Interested parties should file comments by no later than September 30, 1998. Please submit an original and one copy of your comments to Richard B. Engelman, Chief, Planning & Negotiations Division, International Bureau, Federal Communications Commission, 2000 M St., N.W., Suite 800, Washington, D.C. 20554. Parties preferring to email their comments should address their comments to: wrc-99@fcc.gov. Comments will be available for viewing in the FCC's International Reference Center, 2000 M St., N.W., Room 102, Washington, DC, (telephone 202-418-1492). Copies of these comments will also be available through the Commission's duplicating contractor: International Transcription Service, Inc., 1231 20th Street, N.W., Washington, DC 20036, telephone (202) 857-3800. Action by Chief, International Bureau, under delegated authority pursuant to 47 C.F.R. § 0.261(a)(2). For additional information, contact Maureen C. McLaughlin at (202) 418-2404.

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