

# Reports on ITU Radiocommunication Assembly 2003 and World Radiocommunication Conference 2003

*The Radiocommunication Assembly 2003 (RA-03) and World Radiocommunication Conference 2003 (WRC-03) of the International Telecommunication Union (ITU) were held in Geneva, Switzerland from June 2nd through 6th (RA-03) and June 9th through July 4th (WRC-03) in 2003, respectively. At RA-03 and WRC-03, a wide variety of radio-communication issues were discussed, not only pertaining to mobile communication, but also broadcasting, radio astronomy and radionavigation. This article reports the summary of deliberation and the main results reached at these conferences, focusing on the topics that are closely related to mobile communication.*

Akira Hashimoto

Hitoshi Yoshino

Kenji Kamogawa

Hideaki Toubé

Tsuyoshi Ono

## 1. ITU Radiocommunication Assembly 2003 (RA-03)

### 1.1 Overview of RA-03

The Radiocommunication Assembly 2003 (RA-03) is an assembly that reviews the structure of Study Groups (SG) of the International Telecommunication Union-Radiocommunication Sector (ITU-R), approves Recommendations and Questions for the next study period, reviews working methods, and appoints Chairmen and Vice-Chairmen of the SGs.

A total of 407 delegates from 86 countries and 11 regional organizations participated in RA-03. 29 delegates attended from Japan, led by Mr. H. Ishihara, Director-General for Technology Policy Coordination, the Ministry of Public Management, Home Affairs, Posts and Telecommunications. From NTT DoCoMo, four people—three of the writers of this article (A. Hashimoto, K. Kamogawa and H. Toubé) and a technical advisor, Mr. M. Murotani from the Network Planning Department—participated. At RA-03, Mr. Y. Ito (KDDI Corp.; former Chairman of SG4) was appointed as the Chairman of the plenary assembly, the first Japanese Chairman in the history of RA.

### 1.2 Approval of Draft Recommendations

Draft Recommendations (Draft New Recommendations and Draft Revised Recommendations) submitted from each SG, as well as proposals for modifications to these Draft Recommendations from some countries submitted to RA-03, were discussed. As a result of the discussions, each of the 37 Recommendations (25 new and 12 revised) was eventually approved while slight modifications or some reservations from objecting countries were made to some of them.

Regarding the Draft New Recommendation from ITU-R Study Group 8 (SG8) related to the Fourth-Generation (4G) mobile communication systems, some African countries proposed small modifications concerning migration from the current mobile communication systems, requesting that more consideration should be given to developing countries. Moreover, Israel and Syria expressed the opinion that the term “vision” is not suitable for a Recommendation in general. Through the discussion among the interested countries, the text of the Recommendation was slightly re-drafted with respect to the terminology including the title, and then approved. The approval of this Recommendation means that the study of Working Party 8F (WP8F) under

SG8 in the previous study period has been conducted, and that further study related to 4G mobile communication systems is required on a global basis. Furthermore, this result could significantly affect the discussion of the Agenda Item concerning 4G mobile communication systems at the World Radiocommunication Conference 2003 (WRC-03) right after RA-03.

Important Recommendations approved at the RA-03 include the following.

- Framework and overall objectives of the future development of IMT-2000 and systems beyond IMT-2000 (Recommendation ITU-R M.1645)
- Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications-2000 (IMT-2000) in the bands 806-960 MHz, 1710-2025 MHz, 2110-2200 MHz and 2500-2690 MHz (Recommendation ITU-R M.1036-2)
- A method for assessing the required spectrum for broadband nomadic wireless access systems including radio local area networks using the 5 GHz band (Recommendation ITU-R M.1651)
- Dynamic Frequency Selection (DFS) in wireless access systems including Radio Local Area Networks (RLAN) for the purpose of protecting the radiodetermination service in the 5 GHz band (Recommendation ITU-R M.1652)
- Operational and deployment requirements for wireless access systems including radio local area networks in the mobile service to facilitate sharing between these systems and systems in the Earth exploration-satellite service (active) and the space research service (active) in the band 5470-5570 MHz within the 5460-5725 MHz range (Recommendation ITU-R M.1653)

### 1.3 Questions and SG Structure for the Next Study Period

Draft Questions (including continued Questions) submitted to RA-03 from each SG were discussed and a total of 361 Questions, including those on 4G mobile communication systems, 5 GHz band RLAN and wireless access, were approved.

Regarding Resolution ITU-R 4-3 (SG structure), the subjects of discussion included 1) Merger of SG1 and SG3, 2) Merger of SG8 and SG9 (WP8D merged to SG4) and 3) Integration of Working Parties for High Frequency (HF) issues. The decision was to maintain the current structure, but each of

the related SGs will study advantages and disadvantages of the reorganization in the future and report the result to the next RA.

Moreover, SG Chairmen and Vice-Chairmen were appointed for the next study period (**Table 1**). Four candidates from Japan, Mr. M. Abe (KDDI Corp.; SG4), Mr. J. Kumada (NHK; SG6), Mr. T. Mizuike (KDDI Corp.; SG8) and Mr. A. Hashimoto (NTT DoCoMo, Inc.; SG9) were selected as SG Vice-Chairmen.

### 1.4 Improvement of Recommendation Approval Procedure

Currently, for the final approval of ITU-R Recommendations, it is generally required to follow a procedure where a Recommendation is first adopted and then approved in a two-step correspondence. In the worst case, this process may require up to about seven months after the SG meeting. In order to shorten this period, a Procedure for Simultaneous Adoption and Approval (PSAA) was introduced. By choosing either PSAA or the existing procedure depending on the situation, the time required from the SG meeting to the final approval can be shortened to approximately three months.

### 1.5 Purpose of CPM-2 Meeting

Since the International Telecommunication Union (ITU) is facing a severe financial situation, it is required for each organization within ITU to reduce its expenditures. Deliberations were made upon reduction of paper-based documents for meetings, use of electronic documents and shortening of various meeting periods. In particular, several European countries and Canada expressed the opinion that Conference Preparatory Meeting-2 (CPM-2), which is held approximately six months before WRC, is becoming more like an information meeting and that

**Table 1 List of SG structures**

SG	Chairperson
SG1 (Spectrum management)	T. Jeacock (UK)
SG3 (Radiowave propagation)	D.G. Cole (Australia)
SG4 (Fixed-satellite service)	V. Rawat (Canada)
SG6 (Broadcasting services)	A. Magenta (Italy)
SG7 (Science services)	R. M. Taylor (USA)
SG8 (Mobile, radiodetermination, amateur and related satellite services)	C. Van Diepenbeek (Netherlands)
SG9 (Fixed service)	V. Minkin (Russia)

improvements in terms of resource reduction, such as shortening of the period, are required. However, there were strong objections from mainly the developing countries, arguing that the current period and framework should be maintained. Therefore, no substantial revision was made to the ITU-R Resolution 2-3 that specifies the principle and the scope of the CPM.

## 2. ITU World Radiocommunication Conference 2003 (WRC-03)

### 2.1 Overview of the WRC-03

The World Radiocommunication Conferences (WRC) are international conferences that consider revisions of the Radio Regulations (RR), complementing the Constitution and the Convention of the International Telecommunication Union. RR stipulates allocation/allotment of radio frequencies used for radiocommunication services, detailed regulatory and procedural matters, including technical characteristics of radio stations, administrative and operational provisions of radio stations, etc. Member States of ITU are required to comply with RR, and thereby radio frequencies used by mobilephones are also regulated according to RR. The Conferences are usually held for a period of four weeks every three to four years. This year, approximately 2,300 delegates from 145 countries and 15 regional organizations participated in the Conference. Around 100 delegates from Japan attended the Conference, lead by Mr. S. Ohshima, Ambassador to Mission Permanente du Japon auprès des Organisations Internationales à Genève (the permanent mission of the Government of Japan to international organizations in Geneva) and Mr. T. Kito, Director-General of the Radio Department, the Ministry of Public Management, Home Affairs, Posts and Telecommunications of Japan. From NTT DoCoMo, six people—the five authors of this article and a technical advisor, Mr. M. Murotani from the Network Planning Department—participated.

### 2.2 The Future Development of IMT-2000 and Systems Beyond IMT-2000 (Agenda Item 1.22)

Under this Agenda Item, the progress of ITU-R studies on the future development of IMT-2000 and systems beyond IMT-2000 was reviewed, and detailed issues to be

discussed at WRC-07 under the Agenda Item pertaining to the spectrum requirements of the systems were identified.

WRC-2000 invited ITU-R to continue studies on overall objectives, applications and technical and operational implementation, as well as to study the spectrum requirements and potential frequency ranges for these systems. In response to Resolution 228 (WRC-2000), ITU-R has studied the objectives and framework of the systems and incorporated the study results in Recommendation ITU-R M.1645, "Framework and overall objectives of the future development of IMT-2000 and systems beyond IMT-2000." This Recommendation defines the future framework of such systems and concludes that systems beyond IMT-2000 that have capabilities to support high-speed data transmissions will be required from 2010. Taking into account the above study results at ITU-R, WRC-03 deliberated on whether or not the radio spectrum required for the future systems should be considered as an Agenda Item at WRC-07.

The Asia-Pacific Telecommunity (APT) and Japan proposed that a new agenda, which suggests a possible spectrum identification for systems beyond IMT-2000, should be set at WRC-07 and that requirements specific to developing countries also be taken into consideration. Thus, APT and Japan proposed a modification to Resolution 228 (WRC-2000) according to the proposals above. Iran supported this proposal in principle, but proposed further that the frequency bands below 1 GHz are already extensively used by various services and should not be included in the target frequency bands to be considered.

On the other hand, the European Conference of Postal and Telecommunications Administrations (Conférence Européenne des administrations des Postes et des Télécommunications (CEPT)) advocated that it is necessary to orderly develop and implement systems beyond IMT-2000 in harmony with the ongoing deployment of IMT-2000, taking duly into account market demands. Thus, it proposed revisions of Resolution 228 (WRC-2000) for both the future development of IMT-2000 and systems beyond IMT-2000 such that ITU-R should continue to study the technical and operational issues, and that spectrum requirements and potential frequency ranges for these systems should be considered at WRC-07.

Moreover, the Inter-American Telecommunications

Commission (Comisión Interamericana de TELecomunicaciones (CITEL)) proposed that the technical characteristics of systems beyond IMT-2000 have not yet been well identified in ITU-R Recommendations and are still under study, and that, when considering potential frequency ranges, it is important to examine frequency sharing feasibility with existing services already having allocations in the potential spectrum ranges, and protection of the existing services from the interference caused by the future development of IMT-2000 and systems beyond IMT-2000.

The Russian group countries proposed modifications to Resolution 228 (WRC-2000) so that an ITU-R study should be conducted on the protection of existing services and spectrum identification for the current IMT-2000 in the frequency bands below 600 MHz. The Arab League, on the other hand, proposed that ITU-R should continue the study on the future development of IMT-2000 and systems beyond IMT-2000 and that, although it supports setting a new agenda at WRC-07, sufficient attention should be paid to the protection of existing services and migration from existing systems to future systems. It also proposed that it is necessary to take into account the particular needs of

developing countries, including the use of satellite components of IMT-2000.

The African countries proposed that it is necessary for ITU-R to study the use of the frequency bands below 600 MHz for the current IMT-2000 in order to ensure sufficient area coverage.

As seen from the opinions outlined above, each country and region is interested in different issues regarding the future development of IMT-2000 and systems beyond IMT-2000, and some of these issues caused conflict among the regions. However, as a result of exhaustive discussion, it was agreed to set a new agenda at WRC-07. The revisions of Resolution 228 (WRC-2000) were discussed thoroughly through several week-ends, and a revision was finally formulated that all the countries could agree upon, reflecting the detailed requests from each country as far as possible.

**Table 2** shows the approved Resolutions pertaining to the future development of IMT-2000 and systems beyond IMT-2000. Resolution 802 [COM7/A] is a resolution which resolves to recommend to the ITU-R Council 21 Agenda Items for WRC-07, including Agenda Item 1.4 on the future development of IMT-2000

**Table 2 Resolutions in WRC-03 (Excerpt) related to systems beyond IMT-2000**

WRC-03 Resolutions	Text of the Agenda Item or "resolves" in Resolution
Resolution 802 [COM7/A] 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);
Resolution 228 (Rev. WRC-03) (Studies on frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 as defined by ITU-R)	<ol style="list-style-type: none"> <li>1. to invite ITU-R to further study technical and operational issues relating to the future development of IMT-2000 and systems beyond IMT-2000, and develop Recommendations as required;</li> <li>2. to invite ITU-R to report, in time for WRC-07, on the results of studies on the spectrum requirements and potential frequency ranges suitable for the future development of IMT-2000 and systems beyond IMT-2000, taking into account: <ul style="list-style-type: none"> <li>• the evolving user needs, including the growth in demand for IMT-2000 services;</li> <li>• the evolution of IMT-2000 and pre-IMT-2000 systems through advances in technology;</li> <li>• the bands currently identified for IMT-2000;</li> <li>• the time-frame in which spectrum would be needed;</li> <li>• the period for migration from existing to future systems;</li> <li>• the extensive use of frequencies below those identified for IMT-2000 in No. 5.317A;</li> </ul> </li> <li>3. to invite ITU-R to conduct regulatory and technical studies on the usage of frequencies below those identified for IMT-2000 in No. 5.317A for the future development of IMT-2000 and systems beyond IMT-2000, notably assessing their advantages and disadvantages, taking into account recognizing e) and j) below;</li> <li>4. that the studies referred to in resolves 1 and 2 should take into consideration the particular needs of developing countries including use of the satellite component of IMT-2000 for suitable coverage of these countries;</li> <li>5. that the studies referred to in resolves 1, 2 and 3 should include sharing and compatibility studies with services already having allocations in potential spectrum for the future development of IMT-2000 and systems beyond IMT-2000 taking into account the needs of other services;</li> <li>6. that WRC-07 should consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000, taking due account of the results of ITU-R studies, in accordance with this Resolution.</li> </ol>

recognizing

- e) the need, in many developing countries and countries with large areas of low-population density, for the cost-effective implementation of IMT-2000, the future development of IMT-2000 and systems beyond IMT-2000, and that the propagation characteristics of frequency bands below those identified in No. 5.317A result in larger cells;
- j) that frequencies below those identified for IMT-2000 in No. 5.317A are extensively used by terrestrial services with applications other than IMT-2000 and systems beyond IMT-2000,

and systems beyond IMT-2000, Resolution 228 (Rev. WRC-03) resolves frequency related matters for the future development of IMT-2000 and systems beyond IMT-2000. The resolves in Resolution 228 (Rev. WRC-03) are basically divided into two parts. Resolves 1 to 5 in the Resolution 228 (Rev. WRC-03) in Table 2 are requests for studies to be performed by ITU-R. ITU-R is obliged to report the results of its studies to WRC-07 according to these five resolves. These resolves request study on the spectrum requirements and potential frequency ranges suitable for the future development of IMT-2000 and systems beyond IMT-2000, as well as frequency sharing and compatibility with services already having allocations in potential spectrums for the future development of IMT-2000 and systems beyond IMT-2000. It is also requested to study the use of the satellite component of IMT-2000 and technical feasibility of the use of frequencies below 600 MHz for terrestrial systems in order to achieve suitable area coverage in developing countries, which have sparsely populated areas. These proposals are set for the purpose of additional frequency identification for the current IMT-2000, rather than for the future development of IMT-2000 and systems beyond IMT-2000. The study items above will be considered in detail in the ITU-R WP8F. Lastly, resolve 6 confirms that WRC-07 should consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 as an Agenda Item.

## 2.3 5 GHz Allocation Issues (Agenda Item 1.5)

This Agenda Item deals with new and additional allocations to the mobile, fixed, radiolocation (radar), Earth exploration-satellite and space research services, and the following four sub-issues have been identified in Resolution 736 (WRC-2000).

- 1) Allocation of frequencies to the mobile service in the bands 5150-5350 MHz and 5470-5725 MHz for the implementation of wireless access systems including RLANs
- 2) A possible allocation in Region 3 to the fixed service in the band 5250-5350 MHz, while fully protecting the worldwide Earth exploration-satellite (active) and space research (active) services
- 3) Additional primary allocations for the Earth explo-

ration-satellite service (active) and space research service (active) in the frequency range 5460-5570 MHz

- 4) A review, with a view toward upgrading, of the status of frequency allocations to the radiolocation service in the frequency range 5350-5650 MHz

Since this Agenda Item deals with complicated frequency allocations where many radiocommunication services are involved, technical and operational restrictions required for the frequency sharing have been extensively discussed in the concerned ITU-R groups during the past several years. In this conference, WG5D (chaired by A. Hashimoto, NTT DoCoMo), a working group that focuses on the 5 GHz allocation, was established under Committee 5 to consider the four issues described above.

**Figure 1** shows the frequency bands and radiocommunication services that were discussed under this Agenda Item.

### 1. Allocation to the mobile service for RLAN

Issue 1) deals with RLAN, which is becoming popular as de facto standards (e.g., IEEE802.11a) have been established in this band, and which most of the countries, including European countries and the U.S., are highly interested in. The frequency bands under consideration for the new allocation for RLAN are originally based on the proposal from CEPT corresponding to the bands for High Performance Radio LAN (HIPERLAN) promoted by the European Telecommunications Standardization Institute (ETSI) (for easy understanding of the later explanation in this article, the bands are divided into the following three sub-bands).

- Band (a): 5150 to 5250 MHz
- Band (b): 5250 to 5350 MHz
- Band (c): 5470 to 5725 MHz

The U.S. and Canada have promoted the Unlicensed-National Information Infrastructure (U-NII) initiative as their domestic rules since 1997, using the 300 MHz from 5150 to 5350 MHz and from 5725 to 5825 MHz for wireless access including RLANs, which these countries have been using. This means that the former band corresponds to band (a) and (b) of the target frequency bands of the discussion, but the use of band (c) was not allowed. In fact, the U.S. proposed to "postpone the conclusion on the allocation of band (c) to the mobile service until WRC in 2007," in the previous Conference Preparatory Meeting

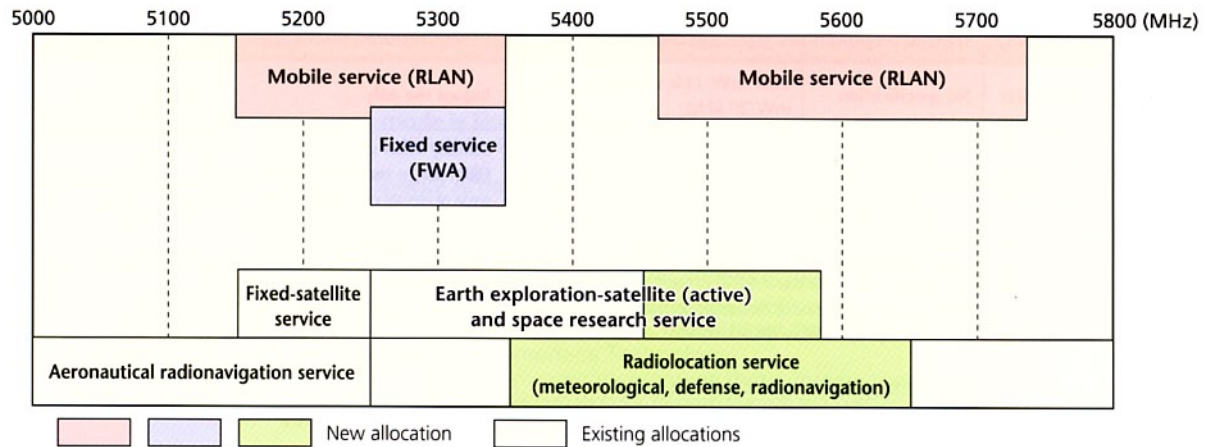


Figure 1 5 GHz frequency allocation

held in November 2002 (CPM02-2). This proposal, however, was unfavorably received by many other countries as it “neglects three years of studies in ITU-R.” The U.S. thus had decided to support the allocation of band (c) to the mobile service at the end of January 2003, immediately before this conference, with the condition that dynamic frequency selection functions should be attached to RLAN in order to ensure co-existence with the existing radar systems.

Regarding bands (a) and (b), the European countries and the U.S. shared the same opinion about the use of RLAN, but the operational restrictions in band (b) were different between HIPERLAN and devices operating under U-NII. While the HIPERLAN standards adopted by the European countries impose an operational restriction of “indoor use only” on RLAN in order to protect Earth exploration-satellites promoted by the European Space Agency (ESA), U-NII allows outdoor use as well and the allowable limit of its Equivalent Isotropically Radiated Power (EIRP) is larger than the European proposal. From the standpoint of the U.S. and Canada, it is desirable that

the operational restrictions already in force within these countries are maintained without significant changes in the new international rules to be adopted in this conference. Against this background, as shown in **Table 3**, agreement on technical/operational restrictions in band (b) was a key point in relation to the RLAN allocation issue.

Hot debate on the RLAN technical/operational restrictions in Table 3 went on for two weeks including weekend meetings. The proper handling of band (b), however, could not be agreed upon in the discussion of the corresponding work group. Thus an ad hoc group was established under Committee 5 and the conclusion shown in **Table 4** was reached as a result of an extended deliberation in that group.

## 2. Allocation to the fixed service for FWA

Regarding issue 2), which was proposed by Japan at the previous WRC, the primary issue was establishing restrictions that allow co-existence with EESS, an existing service. In the discussion of protection of EESS, which is stressed by the European countries, it was considered possible to suppress

Table 3 Proposals for technical/operational restrictions for the new mobile service allocation (RLANs) in the 5 GHz range

Region Frequency band	Europe/CEPT and Arab states	South and North America/CITEL	Asia-Pacific/APT
5150 – 5250 MHz	Restricted to indoor use with a maximum mean Equivalent Isotropically Radiated Power (EIRP) of 200 mW and a maximum mean EIRP density of 10 mW/MHz in any 1 MHz band or 0.04 mW/4 kHz or less		
5250 – 5350 MHz	Limited to indoor use with a maximum mean EIRP of 200 mW, Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC) are required.	Permitted to be used outdoors with a maximum mean EIRP of 1 W*, EIRP restriction according to angle of elevation (using directional antennae), DFS required, TPC not required.	Limited to indoor use with a maximum mean EIRP of 200 mW, DFS and TPC are required.
5470 – 5725 MHz	Permitted to be used outdoors with a maximum mean EIRP of 1 W*, DFS and TPC are required.		

\* The CITEL proposal also specifies transmitter output of 250 mW or less.

**Table 4 Technical/operational restrictions for RLAN specified in resolution 229 [COM5/16]**

Frequency band	Transmitter output	Effective Isotropically Radiated Power (EIRP)	Operational restriction	Interference reduction measure
5150 – 5250 MHz	No specification	200 mW (10 mW/MHz, 0.25 mW/25 kHz)	Indoor use only	No specification
5250 – 5350 MHz	No specification	200 mW (10 mW/MHz)	Basically indoor use* <sup>2</sup> EIRP must be restricted according to angle of elevation for outdoor use	Must be equipped with TPC* <sup>3</sup> and DFS
5470 – 5725 MHz	250 mW* <sup>1</sup>	1 W (50 mW/MHz)	Indoor/outdoor use	

\*1 The domestic regulations adopted before the WRC-03 could be operated in a flexible manner.

\*2 Each country is requested to take appropriate measures so that the predominant number of RLAN terminals are used indoors.

\*3 EIRP is reduced by 3 dB if not equipped with TPC.

emissions from the FWA transmitters in the satellite direction because the fixed service uses directional antennae. Furthermore, the number of stations operating in this service will not become too dense and can be managed and controlled. Thus, Recommendation ITU-R F.1613, which specifies technical restrictions to suppress the amount of interference into the EESS satellite receivers within the allowable limit, had been adopted. In this issue, the focus of argument was, therefore, whether to allow allocation to the fixed service for all the countries in Region 3 or to allow this allocation to the fixed service for only those countries in Region 3 that especially desire FWA implementation. In addition to protection of EESS, compatibility with radar is also required in this band. Thus, the latter approach was adopted taking into account that some APT countries do not require allocation to the fixed service and that radar (especially mobile radar) of countries outside that region may be influenced by FWA. According to the final result, allocation to the fixed service has only been allowed for 12 countries in the Asia-Pacific region (in a footnote allocation associated with the Table of frequency allocations).

### 3. Allocations to the Earth exploration-satellite, space research service and radiolocation service

Issues 3) and 4) were proposed mainly for the purpose of counterbalancing of the existing services against the new allocation in issue 1), and the allocation itself was approved. In the bands where more than one service co-exist, the priority of the implementation in terms of interference coordination among these services was the focus of discussion. Several provisions that “stations in the new services shall not claim protection” from existing services such as “fixed-satellite service (5150-5250 MHz)” and “radio navigation service (5350-5650 MHz)” were agreed upon.

## 3. Conclusion

This article gave a summary of the deliberation and main results reached at RA-03 and WRC-03 that were held in Geneva, Switzerland during June through July 2003.

It was decided that frequency related matters for the future development of IMT-2000 and systems beyond IMT-2000 will be reported to and considered at WRC-07 (WRC-07 Agenda Item 1.4). In CPM06-1, which was held immediately after WRC-03, studies related to WRC-07 Agenda Item 1.4 were assigned to ITU-R SG8 (WP8F) and, accordingly, WP8F will take the initiative in studying the spectrum requirements and potential frequency ranges as well as frequency sharing and compatibility with other services, and in developing ITU-R Recommendations by incorporating the results of its studies. At WRC-07, spectrum identification for the future development of IMT-2000 and systems beyond IMT-2000 will be discussed.

Also, 5 GHz RLANs are expected to further prevail in the future, as the available frequency bands are significantly expanded on a global basis.

## REFERENCES

- [1] Resolution 228 (Rev.WRC-03): “Studies on frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 as defined by ITU-R,” Provisional Final Acts WRC-2000, pp.402–405, Jul. 2003.
- [2] Resolution 802 [COM7/A] (WRC-03): “Agenda for the 2007 World Radiocommunication Conference,” Provisional Final Acts WRC-2000, pp.520–523, Jul. 2003.
- [3] Resolution 229 [COM5/16] (WRC-03): “Use of the bands 5 150-5 250, 5 250-5 350 MHz and 5 470-5 725 MHz by the mobile service for the implementation of wireless access systems including radio local area networks,” Provisional Final Acts WRC-2000, pp.494–497, Jul. 2003.
- [4] “Allocation of ITU-R preparatory work for the WRC-07,” Administrative Circular CA/128 Annex 8, pp.20–46, Jul. 2003.