

PCC.III/REC.48 (XII-99)¹

**SPECTRUM PRINCIPLES FOR THE SATELLITE
COMPONENT OF IMT-2000, IN RELATION TO WRC-2000**

The XIIth Meeting of Permanent Executive Committee III – Radiocommunications,

CONSIDERING:

- (a) That WRC-2000 agenda item 1.6.1 calls for the assessment of the spectrum needs for IMT-2000;
- (b) That CITELE PCC.III adopted PCC.III/RES. 71(XII-99) concerning IMT-2000 terrestrial component spectrum principles;
- (c) That the CITELE PCC.III Draft Report for WRC-2000 (PCC.III.doc.1148.98 rev.1 corr. 2) contains the terrestrial component spectrum principles in Chapter 1;
- (d) That issues concerning the satellite component of IMT-2000 are also included in the consideration of WRC-2000 agenda item 1.6.1, and
- (e) That the draft CPM-99 report will address both the terrestrial and satellite components of IMT-2000 and that this Report will be subject to review and approval of participating administrations;

RECOGNIZING:

That CITELE member administrations have been active participants in the CPM-related activities in ITU-R Task Group 8/1;

RECOMMENDS:

That CITELE Member States adopt the spectrum principles for the satellite component of IMT-2000 contained in the Annex to this Resolution.

URGES:

CITELE Member States to contribute and participate in the 1999 Conference Preparatory Meeting to take place in Geneva from 15 to 26 November 1999, bearing in mind these spectrum principles.

ANNEX

**PRINCIPLES FOR UTILIZATION OF SATELLITE COMPONENT IMT-2000
SPECTRUM AS THE BASIS FOR CITELE PCC.III STUDIES ON WRC-2000
AGENDA ITEM 1.6.1**

¹ Reference: PCC.III/doc.1272/99 rev.1

CITEL PCC.III, having examined spectrum issues regarding satellite IMT-2000 implementation in region 2, and at the same time taking into account the situation in other geographic areas of the world, has developed the following spectrum utilization principles for the satellite component of IMT-2000:

- 1 Only with a combination of terrestrial and satellite networks can IMT-2000 services be provided on a truly global basis. Therefore, to insure the global nature of IMT-2000, sufficient spectrum needs to be made available for the satellite component.

Rationale: It is not expected to be economically feasible to deploy terrestrial IMT-2000 equipment in all areas of all landmasses of the world, regardless of whether or not terrestrial spectrum is available on a global basis. However, the satellite component can provide IMT-2000 applications in such areas where the cost of terrestrial IMT-2000 deployment is considered to be prohibitive.

Just as there are areas of the world where terrestrial systems will provide the brunt of IMT-2000 services, there are areas where the situation will be reversed, that is, the satellite component will be the dominant provider of IMT-2000 services. WRC-2000 should insure that the provision of IMT-2000 is truly global in scope, and that it cannot be achieved without sufficient availability of spectrum for the satellite component.

- 2 To fully account for the spectrum needs of the IMT-2000 satellite component under WRC-2000 agenda item 1.6.1, the differences between MSS and MS systems in terms of spectrum utilization and system deployment must be considered.

Rationale: First it should be considered that the deployment of terrestrial mobile personal communications systems are much more mature than that of MSS systems providing GMPCS, or any type of personal communications. GMPCS systems have just started operation within the last six months, while systems operating in the mobile service providing personal communications have been in operation for well over ten years.

It is expected that at least some terrestrial IMT-2000 spectrum may be provided as the equipment of systems using current Mobile Service spectrum ages and has to be replaced. Likewise satellite system equipment ages and has to be ultimately replaced; however, the magnitude of equipment replacement for satellite systems is much more difficult and expensive to accomplish, and should be taken into account in the provision of satellite IMT-2000 spectrum.

- 3 According to market demand, it is desirable to consider additional worldwide IMT-2000 spectrum, that is common on a global basis, in response to WRC-2000 agenda item 1.6.1, while recognizing the needs of other radio services.

Rationale: The availability of worldwide spectrum for the IMT-2000 terrestrial component has been stated as important since IMT-2000 is a concept that is to be global in scope. However, availability of global spectrum for the satellite

component is even more important. Deployment costs of MSS systems may become prohibitive if global spectrum is not available. This owes to the inherent differences between satellite and terrestrial systems – such as what is the equivalent of the base station for a mobile satellite system is located at an altitude of hundreds if not thousands of kilometers above the earth. Global spectrum is also important with respect to principle 1).

- 4 All existing frequency bands allocated to the Mobile Satellite Service for which first or second-generation mobile satellite systems are in operation should be considered for use by satellite IMT-2000.

Rationale: There are several reasons why this principle is important. First, even though it was a standing agenda item, it was next to impossible to secure any significant additional MSS allocations at the last two WRCs. Therefore the best opportunity to identify any additional spectrum for the IMT-2000 satellite component is from MSS spectrum already allocated.

There is no doubt that the current MSS allocations are already very extensively utilized, but the time frame talked about with regards to WRC-2000 agenda item 1.6 is year 2005 and beyond. However, it is anticipated that future MSS systems, regardless of their compliance with IMT-2000 Recommendations, will employ design techniques that would render their systems much more spectrally efficient than what was feasible in the past. It is therefore assumed that the next generations of new MSS systems or the replacement of existing systems would not require as much spectrum as some of the current MSS systems, especially GSO systems.

- 5 Taking into account the other principles, the use of spectrum allocated to the MSS for satellite IMT-2000 systems should continue to be at the discretion of Administrations. The bands should not be identified with the words “initial” or “additional” in the Radio Regulations.

Rationale: CITEP PCC.III is of the opinion that the use of spectrum for IMT-2000 systems should continue to be an option for administrations, as is the case with the frequency bands already identified for IMT-2000, 1885-2025 / 2110-2200 MHz, by means of No. S5.388 of the ITU Radio Regulations. It is important to not distinguish amongst the IMT-2000 frequency bands in order to avoid the conferring of a type of “poor relation” status or preference to any bands that have been, or may be identified for satellite IMT-2000

- .6 Some future satellite IMT-2000 applications may require very high data bit rates where the user is likely to be stationary. For such applications, it may be possible to utilize frequency bands above 3 GHz, if the results of ITU-R studies demonstrate that spectrum will be required for these applications.

Rationale: Expected demand for high data-bit rate applications is a not insignificant part of the terrestrial IMT-2000 spectrum requirement. It still remains a question for the satellite component as to what bit rates can be

realistically provided by satellite IMT-2000, given the limited spectrum available and the physical limitations of satellite systems.

If a demand for high data bit rate services via satellite IMT-2000 would appear to become a reality, then frequencies above 3 GHz could be considered for such applications. With regards to WRC-2000 agenda item 1.6.1, priority in use of MSS spectrum below 3 GHz should be given to MSS systems that need to provide user mobility