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| **World Radiocommunication Conference (WRC-15)Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| PLENARY MEETING | **Document 99-E** |
|  | **19 October 2015** |
|  | **Original: English** |
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| Finland |
| Proposals for the work of the conference |
|  |
| Agenda item 1.1 |

1.1 to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution **233 (WRC‑12)**;

Introduction

Resolution 233 (WRC-12) calls for studies on additional spectrum requirements for International Mobile Communications (IMT) and potential candidate frequency bands.

The studies on spectrum requirements should take into account technical and operational characteristics of IMT systems and the bands currently identified for IMT, the technical conditions of their use and the possibility of optimizing the use of these bands with a view to increasing spectrum efficiency. The studies should also take into account the evolving needs, including user demand for IMT and other terrestrial mobile broadband applications and the time-frame in which spectrum would be needed.

The study on potential candidate frequency bands should take into account sharing and compatibility studies with services already having allocations in the potential candidate bands and in adjacent bands, as appropriate as well as the current and planned use of these bands by the existing services, as well as the applicable studies already performed in ITU-R.

In preparation for WRC-15 ITU-R has considered the following bands as potential candidate frequency bands under this Agenda Item: 470‑694/698 MHz, 1 350-1 400 MHz, 1 427-1 452 MHz, 1 452-1 492 MHz, 1 492-1 518 MHz, 1 518-1 525 MHz, 1 695‑1 710 MHz, 2 700-2 900 MHz, 3 300-3 400 MHz, 3 400-3 600 MHz, 3 600‑3 700 MHz, 3 700-3 800 MHz, 3 800-4 200 MHz, 4 400-4 500 MHz, 4 500‑4 800 MHz, 4 800-4 990 MHz, 5 350-5 470 MHz, 5 725‑5 850 MHz, and 5 925‑6 425 MHz.

Report ITU-R M.2290[[1]](#footnote-1) provides the results of studies that estimate the global spectrum requirements for IMT to be in the range of 1 340 to 1 960 MHz for the year 2020, for lower and higher user density settings respectively.

Justification for new allocation for Mobile Service and IMT identification

In considering the global spectrum requirements under WRC-15 Agenda Item 1.1, it is important to acknowledge, as reflected in *recognizing d)* of Resolution 233 (WRC-12), that the spectrum below 1 GHz is exceptionally suited for mobile broadband applications. In particular, the unique propagation characteristics of the bands below 1 GHz allow for wider area coverage which in turn requires less infrastructure and facilitates service delivery to rural or sparsely populated areas, as reflected in *recognizing c)* of Resolution 233 (WRC-12).

The 470-806/862 MHz frequency range is allocated to the broadcasting service on a primary basis in all three Regions and used predominantly for the delivery of broadcast television. Broadcasting continues to be an important service as broadcast television stations provide information and video programming that is responsive to the needs and interests of the communities they serve. Moreover, broadcast television itself continues to evolve to keep pace with technological and marketplace changes. Many television broadcasters now pursue a three-screen approach, sharing their programming online and on mobile devices, in addition to providing it over the air.

In the future, distribution of audio-visual services over IMT will increase and it will be one major traffic contributor in IMT networks. The use of audio-visual content on various platforms (e.g. smart phones and tablets) anywhere and anytime is becoming a growing trend. To fulfil this trend, new features of IMT, like enhanced Multimedia Broadcast Multicast Services (eMBMS) or further evolution of LTE broadcast services can provide audio-visual content to multiple users.

Latest studies are showing that people are changing their way to use different types of media and audio-visual content towards non-linear usage, this creates the demand for mode flexible ways to provide this content to users. Delivering audio-visual services over IMT can provide additional possibilities to use frequency band 470-694 MHz more efficiently and economically based on the real demand on national basis.

It is necessary to create additional possibilities for national administrations to decide what is the best and most flexible way to provide broadcasting content by supporting a co-primary allocation for Mobile Service in the frequency band 470-694 MHz.

The protection of the Broadcasting Service is an important consideration. ITU-R studies presented in Report ITU-R BT.2337-0 indicate that co-frequency sharing in the UHF band between IMT and DTTB may require significant cross-border separation distances for the protection of broadcasting reception from interference from IMT base stations as well as for the protection of IMT base station receivers from broadcasting transmitters. Nevertheless, IMT traffic is constantly growing especially in the downlink direction due to e.g. video streaming and viewing of audio-visual broadcast content on mobile devices. This trend increases the need especially for additional downlink transmission capacity which could be catered for, by allocating additional frequency resources in the downlink direction for IMT. The growing demand for IMT downlink traffic could be only partially satisfied by using available broadcasting resources in the Geneva 06 Plan for additional IMT downlink capacity. Using the GE06 resources for IMT downlink instead for Broadcasting Service, would not increase the interference potential into broadcast reception nor other primary services of other countries, from that generated by Broadcasting Service. The flexible use of GE06 resources for either broadcasting or IMT would support the need to satisfy capacity requirements for both, based on national needs. However, to enable this flexibility, a co-primary allocation for Mobile, except aeronautical Mobile Service together with IMT identification of the band 470-694 MHz is needed. The use of stations of the Mobile Service in the band 470-694 MHz is also subject to the successful application of the procedures of GE06.

Proposals

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. 2.1)

MOD FIN/99/1

460-890 MHz

|  |
| --- |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 460-470 FIXED MOBILE 5.286AA Meteorological-satellite (space-to-Earth)  5.287 5.288 5.289 5.290 |
| 470-790BROADCASTING5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.311A 5.312 5.312A MOD 5.317AADD 5.XXX | 470-512BROADCASTINGFixedMobile5.292 5.293 | 470-585FIXEDMOBILEBROADCASTING5.291 5.298 |
| 512-608BROADCASTING5.297 |
| 585-610FIXEDMOBILEBROADCASTINGRADIONAVIGATION5.149 5.305 5.306 5.307 |
| 608-614RADIO ASTRONOMYMobile-satellite exceptaeronautical mobile-satellite(Earth-to-space) |
| 610-890FIXEDMOBILE 5.313A MOD 5.317ABROADCASTING |
| 614-698BROADCASTINGFixedMobile5.293 5.309 5.311A |
| 698-806MOBILE 5.313B MOD 5.317ABROADCASTINGFixed5.293 5.309 5.311A |
| 790-862FIXEDMOBILE except aeronautical mobile 5.316B MOD 5.317ABROADCASTING5.312 5.314 5.315 5.316 5.316A 5.319 |
| 806-890FIXEDMOBILE MOD 5.317ABROADCASTING |
| 862-890FIXEDMOBILE except aeronauticalmobile MOD 5.317ABROADCASTING 5.322 |
| 5.319 5.323 | 5.317 5.318 | 5.149 5.305 5.306 5.3075.311A 5.320 |

This proposal is only related to the frequency band 470-694 MHz.

ADD FIN/99/2

5.XXX *Additional allocation*:  In Finland, the frequency band 470-694 MHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis and applying the provisions of GE06 Agreement.     (WRC-15)

**Reasons:** The allocation of the band 470-694 MHz for mobile, except aeronautical mobile, service provides the flexibility of the use of this band in the future. Protection of the other radio services in the neighbouring countries is ensured by application of GE06.

MOD FIN/99/3

5.317A Those parts of the band 698-960 MHz in Region 2 and the band 470-790 MHz in Region 1 and 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolutions **224 (Rev.WRC‑12)** and **749 (Rev.WRC‑12)**, as appropriate. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.    (WRC‑15)

**Reasons:** This change extends the IMT identification to include the frequency band 470-790 MHz by footnote 5.XXX in Region 1.

Note: This proposal should be viewed together with the European proposals to amend the 694-790 MHz band under WRC-15 agenda item 1.2.

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1. [Report ITU-R M.2290](http://www.itu.int/pub/R-REP-M.2290) - “Future spectrum requirements estimate for terrestrial IMT”. [↑](#footnote-ref-1)