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|  | ASIA-PACIFIC TELECOMMUNITY | Document No: |
| **The 2nd Meeting of the APT Conference Preparatory Group for WRC-23 (APG23-2)** | **APG23-2/INF-06** |
| 19 – 23 April 2021, Virtual/Online Meeting | 14 March 2021 |

Chairman, DG on Res. 655 (WRC-15)

**brief on wrc-23 Resolution 655 (WRC-15)**

**Resolution 655 (WRC-15):**

*Definition of time scale and dissemination of time signals via radiocommunication systems*

**Relevant Resolutions and Responsible/Contributing ITU-R Groups**

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| Resolution **655** **(WRC-15)**  Definition of time scale and dissemination of time signals via radiocommunication systems | *resolves to invite ITU-R*  1 to strengthen the cooperation between ITU-R and BIPM, the International Committee for Weights and Measures (CIPM), CGPM, as well as other relevant organizations, and to carry out a dialogue concerning the expertise of each organization;  2 to further and more widely study in cooperation with the relevant international organizations, concerned industries and user groups, through the participation of the membership, the various aspects of current and potential future reference time scales, including their impacts and applications;  3 to provide advice on the content and structure of time signals to be disseminated by radiocommunication systems, using the combined expertise of the relevant organizations;  4 to prepare one or more reports containing the results of studies that should include one or more proposals to determine the reference time scale and address other issues mentioned in 1, 2 and 3 above,  *resolves*  that until WRC-23, UTC as described in Recommendation ITU-R TF.460-6 shall continue to apply, and for most practical purposes associated with the Radio Regulations, UTC is equivalent to mean solar time at the prime meridian (0° longitude), formerly expressed in GMT,  *instructs the Director of the Radiocommunication Bureau*  1 to invite the relevant international organizations such as the International Maritime Organization (IMO), the International Civil Aviation Organization (ICAO), CGPM, CIPM, BIPM, the International Earth Rotation and Reference Systems Service (IERS), the International Union of Geodesy and Geophysics (IUGG), the International Union of Radio Science (URSI), the International Organization for Standardization (ISO), the World Meteorological Organization (WMO) and the International Astronomical Union (IAU) to participate in the work mentioned in *resolves to invite the ITU Radiocommunication Sector*;  2 to report on the results of the ITU-R studies to WRC-23,  *instructs the Director of the Radiocommunication Bureau*  to assist the participation of developing countries in meetings, within approved budgetary resources,  *invites administrations*  to participate in the studies by submitting contributions to ITU-R,  *instructs the Secretary-General*  to bring this Resolution to the attention of IMO, ICAO, CGPM, CIPM, BIPM, IERS, IUGG, URSI, ISO, WMO and IAU. |

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| **Responsible group** | **Contributing group** |
| **WP 7A** | **-** |

**1. Background Information**

Coordinated Universal Time (UTC) is the international standard time-scale for all practical timekeeping in the modern world. The UTC time-scale is maintained by the International Bureau of Weights and Measures (BIPM) and adjusted by insertion or deletion of seconds (positive or negative leap-seconds) to ensure approximate agreement with mean solar time (UT1). A leap second was added most recently on 31 December 2016 at 23:59:60 UTC.

WRC-15 considered “Future of the Coordinated Universal Time time-scale” under AI 1.14, including removal of the leap second insertion or deletion from the definition of UTC, and decided that further studies were required on current and potential future reference time-scales, including their impact and applications. The results of the ITU-R studies will be reported to WRC-23. Until then, UTC shall continue to be applied as described in Recommendation ITU-R [TF.460-6](https://www.itu.int/rec/R-REC-TF.460/recommendation.asp?lang=en&parent=R-REC-TF.460-6-200202-I) and as maintained by BIPM.

The position of [APT](https://www.itu.int/dms_pub/itu-r/md/15/wrc15/c/R15-WRC15-C-0032!A14!MSW-E.docx) on this topic (AI 1.14) at WRC-15 was as follows:

* APT Members support Method A1[[1]](#footnote-1) of the [CPM Report](https://www.itu.int/md/R12-CPM15.02-R-0001/en) to WRC-15.
* APT Members support the modifications to Radio Regulations in accordance with section 2/1.14/5.1.1 of the CPM Report corresponding to Method A1.
* To allow for an adequate period of time for legacy systems reliant on the use of leap seconds to adapt to the change in UTC, the application of the suppression of leap second adjustments to UTC will be effective no less than five years after the date of entry into force of the Final Acts of the WRC-15.

It should be noted that although Resolution 655 instructs the BR Director to report on the progress of this Resolution to WRC-23, this topic is not included in the table of contents of the draft CPM Report to WRC-23. It can be assumed that the results of the ITU-R studies relevant to this topic will be directly reported by the BR Director to WRC-23, as for those topics of RR No. 21.5 limit and Resolution 427 (WRC-19), but clarification is needed.

**2. Information on on-going ITU-R Study**

The responsible group in ITU-R is WP 7A.

After WRC-15, WP 7A started studies called for by Resolution **655 (WRC-15)** and is currently developing working document towards the preliminary draft new Report   
ITU-R TF.[UTC], “Content and structure of time signals to be disseminated by radiocommunication systems and various aspects of current and potential future reference time scales, including their impacts and applications in radiocommunication” ([Annex 2](https://www.itu.int/dms_ties/itu-r/md/19/wp7a/c/R19-WP7A-C-0013!N02!MSW-E.docx) to the WP 7A Chairman’s Report (Doc. [7A/13](https://www.itu.int/md/R19-WP7A-C-0013/en))).

This report will cover the following topics:

* the role of the various organizations having responsibilities for the definition, maintenance, realization and dissemination of UTC;
* background on the origins of UTC and the importance of using UTC for different applications, including new technologies (navigation, telecommunications, networks, and civil time keeping), and the impact of leap second insertions;
* the description of current and potential future time scales, including technical issues related to the future of UTC;
* the dissemination of time signals via radiocommunication systems;
* the use of UTC in radiocommunication services and other applications;
* the impact of using UTC on radiocommunication services and other applications.

Annex: 1

Annex

Excerpt from CPM Report to WRC-15

2/1.14/5 Methods to satisfy the agenda item

2/1.14/5.1 Method A

2/1.14/5.1.1 Method A1

A continuous reference time-scale is feasible and it can be achieved by stopping the insertion of leap seconds in UTC. To allow for an adequate period of time for those legacy systems reliant on the use of leap seconds to adapt to the change in UTC, the application of the suppression of leap second adjustments to UTC will be effective not earlier than five years after the date of entry into force of the Final Acts of the WRC-15.

For applications requiring knowledge of UT1 the difference between UT1 and UTC will continue to be provided by IERS with a much higher precision than that available from present broadcast UTC.

The name of UTC will be retained.

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1. As to Method A1, see Annex, where the relevant texts are excerpted from CPM Report to WRC-15. [↑](#footnote-ref-1)