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| **The APT Conference Preparatory Group for WRC-15**  |  |
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**preliminary views on WRC-15 agenda items 2, 4, 8,
9.1.4, 9.1.6, 9.1.7 and 10**

**Agenda Item 2:**

*to examine the revised ITU‑R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution****28 (Rev.WRC‑03)****, and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in Annex 1 to Resolution****27 (Rev.WRC‑12)****;*

**APT Preliminary View**

APT Members support examination and review of ITU-R Recommendations incorporated by reference and the corresponding references in the Radio Regulations in accordance with Resolution **28 (Rev.WRC-03)** and the principles contained in Annex 1 of Resolution **27 (Rev.WRC-12)**.

APT Members are urged to use the basic concepts and processes presented in Resolutions **27 (Rev.WRC-12)** and Resolution **28 (Rev.WRC-03)** to develop their proposals for consideration by future APG meetings.

**Agenda Item 4:**

*in accordance with Resolution* ***95 (Rev.WRC‑07)****, to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;*

**APT Preliminary Views**

APT Members are encouraged to review Resolutions and Recommendations of the previous conferences in accordance with Resolution **95 (Rev.WRC-07)** with a view to developing regional positions in APG15.

To facilitate consideration of the Agenda Item 4 at future APG15 meetings, a list of the past conference Resolutions and Recommendations is provided in the table in Attachment 1 to this document. This table is intended to summarize the possible course of actions to be taken in response to the concerned Resolution or Recommendation. Furthermore, a reference is made to the relevant WRC Agenda item for those Resolutions and Recommendations which are covered by the agenda of WRC-15 other than Agenda item 4.

**Agenda Item 8:**

to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution **26 (Rev.WRC-07)**;

**APT Preliminary Views**

APT Members are encouraged to review their footnotes and to propose, as soon as possible, the deletion of their country names or the deletion of country footnotes to the Table of Frequency Allocations in Article **5** of the Radio Regulations, if no longer required, taking into accountResolution **26 (Rev.WRC-07)**.

APT Members do not support the use of this Agenda item to facilitate the adding of country names to footnotes or the addition of new country footnotes.

**Agenda Item 9.1.4**

*9 to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:*

*9.1 on the activities of the Radiocommunication Sector since WRC‑12;*

*9.1.4 Updating and rearrangement of the Radio Regulations*

**APT Preliminary Views**

APT Members are invited to follow the ITU-R studies on this issue. However, APT Members are of the view that revision of the Radio Regulations should not lead to any difficulty in the interpretation and its implementation.

**Agenda Item 9.1.6**

*9 to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:*

*9.1 on the activities of the Radiocommunication Sector since WRC‑12;*

*9.1.6 Resolution* ***957 (WRC-12):*** *Studies towards review of the definitions of fixed service, fixed station and mobile station*

**APT Preliminary Views**

Noting that the responsible working parties for satellite and terrestrial services have indicated that modifications to the definitions of fixed service, fixed station or mobile station would have adverse impact on the operation of various satellite radiocommunication services/systems, therefore APT Members are of the view that there is no need to modify the existing definitions of fixed service, fixed station and mobile station.

APT Members support the conclusion reached by ITUR-WP1B under this item i.e. no change to the Radio Regulations and suppression of Resolution **957 (WRC-12)**.

**Agenda Item 9.1.7**

*9 to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article****7*** *of the Convention:*

*9.1 on the activities of the Radiocommunication Sector since WRC‑12;*

*9.1.7 Resolution* ***647 (Rev.WRC-12)****: Spectrum management guidelines for emergency and disaster relief radiocommunication*

**APT Preliminary Views**

APT Members support to continue the ITU-R studies related to spectrum management guidelines for emergency and disaster relief radiocommunication. APT Members are encouraged to consider the outcomes of ITU-R Working Party 1B, June 2014 and contribute to the next APG meeting.

**Agenda Item 10**

*to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention,*

**APT Preliminary Views**

APT Members are invited to examine the proposed Agenda items within the Resolution **808 (WRC-12)**. APT Members are also invited to provide new items for inclusion to agenda of WRC-18, taking into account the principles described in Resolution **804 (WRC-12)** and using the template annexed to the Resolution.

**ATTACHMENT 1**

To facilitate consideration of the Agenda item 4 at future APG15 meetings, a list of the past conference Resolutions and Recommendations is provided in the Table below. This table is intended to summarize the possible course of actions to be taken in response to the concerned Resolution or Recommendation. In this connection, the following points need to be noted:

* - For many Resolutions & Recommendations, old comments made by the APG in its proposal to the previous WRC are retained in the “Remark” column (*in the italic letters*) for information and updating by the future APG15 meetings;
* the Resolutions contained in the shaded rows are those explicitly on the WRC-15 Agenda items (or, in some cases, on the preliminary agenda for WRC-18). Initial consideration on such Resolutions, as usual practice, may be referred to the Working Parties responsible for those Agenda Items;
* - Consideration is focused only on those Resolutions/Recommendations that would not be considered in relation to the Agenda Items other than AI 4 (i.e. excluding the Resolutions in the shaded rows in the Table which are explicitly on the other agenda items);
* - The information on the status of the ITU-R studies invited in the Resolutions may be needed as provided in the “Remarks” column of the Table for future consideration of this agenda item;
* - The column for “New proposed action” (NOC/MOD/SUP) is still preliminary and open for further consideration.
* This Table is a basis for discussion at the next APG meeting.

List of WRC Resolutions & Recommendations
for consideration by WRC-15 under Agenda item 4

| Res. No. | Subject | Remarks (The text in the italic letters indicates comments made by the APG in its common proposal to the WRC-12) | Action taken by WRC-12 | New proposed action |
| --- | --- | --- | --- | --- |
| Resolutions |
| 1 | Notification of frequency assignments | *Still relevant. This Resolution is referred to in No.****26/5.2*** *of Appendix* ***26****.*Still relevant. | NOC |  |
| 2 | Equitable use of GSO and frequency bands for space services | *Still relevant*.Still relevant. | NOC | NOC |
| 4 | Period of validity of GSO space systems | *Still relevant. There is no progress in the ITU-R studies invited in this Resolution.*Still relevant. | NOC | NOC |
| 5 | Technical cooperation with the developing countries in the study of propagation in tropical areas | *Still relevant; text was updated at WRC‑03 supported by ITU-R studies.*Still relevant. | NOC |  |
| 7 | National radio-frequency management | *Still relevant; text was updated at WRC‑03 supported by BR and ITU-R studies with respect to spectrum management systems for developing countries.*Still relevant. | NOC |  |
| 10 | Wireless communications by the International Red Cross and Red Crescent Movement | *Still relevant.*Still relevant. | NOC |  |
| 11 | Use of satellite orbital positions and associated frequency spectrum to deliver international public telecommunication services in developing countries |  For consideration by WRC-15 (**Agenda item 9.1 Issue 9.1.3).** | ADD |  |
| 12 | Assistance and support to Palestine | Still relevant. | ADD |  |
| 13 | Formation of call signs | *Still relevant. This Resolution is referred to in No.****19.32****.*Still relevant. | NOC |  |
| 15 | International cooperation in space radiocommunications | *Still relevant; text wasupdated at WRC‑03. Implemented through liaison with ITU-D Study Groups and BR/BDT seminars.* Still relevant. | NOC |  |
| 18 | Procedure for identification of position of ships and aircraft of non-parties in an armed conflict | *The ITU-R studies requested in this Resolution have made fair progress by revising two ITU-R Recommendations, i.e. M.493 and M.1371, therefore “requests ITU-R” may be reviewed or suppressed. However this Resolution is still useful for voice communication procedures.*Still relevant.Text wasupdated at WRC‑12 to reflect the study results in ITU-R. | MOD | NOC |
| 20 | Technical cooperation with developing countries – Aeronautical telecommunications | *Still relevant; text wasupdated at WRC-03.*Still relevant. | NOC |  |
| 25 | Operation of Global Satellite Systems for personnel communications | *Still relevant.*Still relevant. | NOC |  |
| 26 | Review of footnotes | For consideration by WRC-15 (**Agenda item 8)**. Still relevant (permanent agenda item at each WRC). | NOC |  |
| 27 | Incorporation by reference/principles | For consideration by WRC-15 (**Agenda item 2)**.Still relevant (permanent agenda item at each WRC). | MOD |  |
| 28 | Revision of references to ITU-R Recommendations incorporated by reference in the Radio Regulations | For consideration by WRC-15 (**Agenda item 2)**.Still relevant (permanent agenda item at each WRC); linked with Resolution 27. | NOC |  |
| 33 | Procedure for BSS prior to the entry into force of agreements and plans for the BSS | *CPM Report to WRC-12 suggested that this Resolution could be suppressed with the reason that the processing of filings under this Resolution completed before WRC-07. The follow-up coordination, however, may still be needed. It should be noted that this Resolution is referred to in No.* ***5.396A*** *and some other provisions.*Still relevant. This Resolution is referredto in Resolution **34** (**Rev.WRC-03**). | NOC  | NOC |
| 34 | Establishment of BSS in Region 3 in the band 12.5-12.75 GHz and sharing with other services in Regions 1, 2, and 3 | *Still relevant. The substance of this Resolution relates to Resolution* ***33*** *(****Rev.WRC-03****).*Still relevant. | NOC | NOC |
| 42 | Interim systems in R2 (BSS and FSS) in AP30/30A bands | *Still relevant; text wasupdated at WRC-03.*Still relevant; text was updated at WRC-12. | MOD | NOC |
| 49 | Administrative due diligence applicable to some satellite radiocommunication services | *Still relevant(see ASP/26A28/25 under WRC-12 Agenda item 7).*Still relevant; text was updated at WRC-12. | MOD | NOC |
| 51 | Transitional arrangements concerning coordination and notification | *In accordance with Resolution 97 (WRC-07) (further resolves 3), this Resolution be abrogated as of 1 January 2010.*This Resolution should have been suppressed at the previous WRC. | SUP(Decision taken by WRC-07, but still in RR) | SUP |
| 55 | Electronic submission of notice forms forsatellite networks, earth stations and RAS stations | *The text under “resolves” and“instructs the BR” may be reviewed with the reason that some items are implemented as suggested in the CPM Report to WRC-12.*Still relevant; text was updated at WRC-12. New submission methods may be implemented by the BR. | MOD | NOCor MOD |
| 58 | Transitional measures for coordination between GSO FSS earth stations and non-GSO FSS in the bands 10.7‑12.75 GHz, 17.8-18.6 GHz and 19.7‑20.2 GHz using epfd limits | *Still relevant. CPM Reportto WRC-12 suggests that updating may be required in view of development within BR leading to the completion of the “epfd” simulation software package.*Still relevant; The paragraph *“instructs the BR”*may be reviewed in the light of the progress of the work within the BR. | NOC |  |
| 63 | Protection from ISM equipment | *Modifications are proposed for further review of the radiation limit of ISM equipment taking into account the protection criteria of the radio services using digital technology (see ASP/26A29/1 under WRC-12 Agenda item 8.1.1).*Still relevant. Text was updated at WRC-12. It is required to examine whether there is any progress in the ITU-R studies invited in this Resolution. | MOD |  |
| 67 | Updating and rearrangement of the Radio Regulations |  For consideration by WRC-15 (**Agenda item 9.1 Issue9.1.4).** | ADD |  |
| 72 | Regional preparations for WRC | *Some actions are completed, but it is still relevant.*Still relevant. | NOC |  |
| 73 | Compatibility BSS-R1/FSS-R3 in 12.2-12.5GHz | *Still relevant to Region 3 countries.*Still relevant.  | NOC | NOC |
| 74 | Process to keep the technical bases of Appendix **7** current | *The ITU-R study invited in this Resolution is still under way (not completed).*Still relevant. It is required to examine whether there is any progress in the ITU-R studies invited in this Resolution. | NOC | NOC |
| 75 | Development of the technical basis for determining the coordination area of a receiving earth station in SRS with HDFS in the 31.8-32.3  and 37-38 GHz bands | *While the studies invited in this Resolution have been partly completed (Recommendations ITU-R F.1760 and F.1765), further study may be needed to determine the coordination between a receiving earth station of the space research service (deep space) and other services in the band 37-38 GHz.*Still relevant. Text was updated at WRC-12. It is required to examine whether there is any progress in the ITU-R studies invited in this Resolution. | MOD |  |
| 76 | Development of calculation methodologies concerning aggregate epfd produced by non‑GSO in the bands 10.7-30 GHz | *This Resolution is referred to in No.* ***22.5K****. Annex contains necessary epfd criteria. Invites ITU-R may need to be updated taking into account Recommendation ITU-R S.1588 in force. In Annex 1 the versions of Recommendations ITU-R S.1428 and ITU-R BO.1443 need to be updated.*Still relevant. The version numbers of and/or the languages associated with the referenced ITU-R Recommendations, and period to report to BR may need to be reviewed. | NOC | MOD |
| 80 | Principles of the Constitution, to be taken into consideration | For consideration by WRC-15 (**Agenda item 9.3)**Still relevant. | NOC |  |
| 81 | Evaluation of administrative due diligencefor satellite networks | *Most information may be obsolete. Although resolves 2 may still be relevant, this Resolution could be suppressed.*Possibility of suppression of this Resolution needs to be considered. So-called “paper satellite” issue has been already solved and Resolution **49** (**Rev. WRC-12**), in which this issue is implemented, has served its purpose (see also ITU-R Circular Letter CR/301). | NOC | SUP |
| 85 | Protection of GSO systems (FSS and BSS) from non-GSO FSS systems | *Still relevant. CPM Reportto WRC-12 suggests that updating may be required in view of development within BR leading to the completion of the “epfd” simulation software package.*Still relevant. The paragraph*“instructs the BR”*may be reviewed in the light of the development of the “epfd” simulation software package within the BR. | NOC |  |
| 86 | Criteria for implementation of Res. **86(Rev. PP-02**) | For consideration by WRC-15 (**Agenda item 7)**Still relevant. | NOC |  |
| 95 | Review of Resolution/Recommendation | For consideration by WRC-15 (**Agenda item 4)**Still relevant (permanent agenda item at each WRC). | NOC |  |
| 98 | Provisional application of certain provisions of the Radio Regulationsas revised by WRC-12 and abrogation of certainResolutions and Recommendations | As recent practice at the WRC, this Resolution would be replaced with the new one having the same purpose in accordance with the results of WRC-15. | ADD | SUP |
| 111 | Planning of the FSS in18/20/30 GHz | *Still relevant.The ITU-R study invited in this Resolution is still under way (not completed).*Possibility of suppression of this Resolution needs to be considered.In addressing WRC-12 Agenda item 1.13, it was understood that *a priori*planning is not necessary and should be avoided because it freezes access according totechnological assumptions at the time of planning and prevents flexible use taking account ofreal world demand and developments (see also Resolution **551 (WRC-07)**). | NOC |  |
| 114 | Compatibility between ARNS and FSS (feeder links for MSS) in 5 GHz | For consideration by WRC-15 (**Agenda item 1.7).**This Resolution is referred to in Nos. **5.444** and **5.444A**. | MOD |  |
| 122 | Use of the bands47/48 GHz by HAPS and other services | *Still relevant.This Resolution is referred to in No.****5.552A****.*Still relevant.This Resolution is referred to in No. **5.552A**. | NOC |  |
| 125 | Sharing MSS/RA in 1.6 GHz | *Updating of the version of the referenced Recommendations (RA.769 and M.1316) may be necessary. These are not incorporated by reference.*Still relevant. Text was slightly updated at WRC-12. The referenced Recommendations have not been updated. | MOD | NOC |
| 140 | Equivalent epfd limits in 19.7-20.2 GHz | *Still relevant. There is no progress in the ITU-R study invited in this Resolution. This Resolution is referred to in No.* ***22.5CA****.*Since “*resolves*”in this resolution would be obsolete, possibility of suppression of this Resolution needs to be considered. | NOC |  |
| 142 | Transitional arrangements for use of the band 11.7-12.2 GHz by GSO/FSS networks in Region 2 | *CPM Reportto WRC12 suggests that “resolves 1, 2 and 4” have been implemented, however “resolves 3” is still relevant.*It is required to examine the status of the implementation of “*resolves”*in this Resolution. | NOC |  |
| 143 | Guidelines for implementation of high-density applications in the FSS in identified frequency bands | *Still relevant. This Resolution is referred to in No.****5.516B****.*Still relevant. | NOC |  |
| 144 | Special requirements of geographically small countries operating earth stations in the FSS in the band 13.75-14 GHz | *Still relevant. There is little progress in the ITU-R study invited in this Resolution.*Still relevant. There has been no progress in the ITU-R study invited in this Resolution at this stage. | NOC |  |
| 145 | Use of the bands 27.5-28.35 GHz and 31-31.3 GHz by HAPS in the fixed service | *Still relevant. This Resolution is referred to in Nos.****5.537A*** *and* ***5.543A****. The ITU-R study invited in this Resolution has made little progress. The content of the requested study may be reviewed.*Still relevant.It is required to examine whether there is anyneed to continue the ITU-R studies invited in this Resolution. | MOD |  |
| 147 | Power flux-density limits for certain systems in the fixed-satellite service using highly-inclined orbits having an apogee altitude greater than 18 000 km and an orbital inclination between 35° and 145° in the band 17.7-19.7 GHz | *Still relevant.*Still relevant. This Resolution is referred to in No.**22.16.6A, 6B and 6C**. | NOC |  |
| 148 | Satellite systems formerly listed in Part B of the Plan of Appendix **30B** | *Still relevant.*Still relevant. | NOC |  |
| 149 | Submissions from new Member States of the Union relating to Appendix **30B** of the Radio Regulations | *This Resolution could be suppressed since most resolves and all instructs have been implemented as suggested by the CPM Report to WRC-12.*It is required to reconsider treatment of this Resolution.  | MOD |  |
| 150 | Use of the bands 6 440-6 520 MHz and 6 560-6 640 MHz by gateway links for high-altitude platform stations in the fixed service | Still relevant. | ADD |  |
| 151 | Additional primary allocations to the fixed-satellite service (FSS) in frequency bands between 10 and 17 GHz in Region 1 | For consideration by WRC-15 (**Agenda item 1.6.2).** | ADD |  |
| 152 | Additional primary allocations to the fixed-satellite service (FSS) in the Earth-to-space direction in frequency range13 – 17 GHz bands in Region 2 and Region 3 | For consideration by WRC-15 (**Agenda item 1.6.2).** | ADD |  |
| 153 | To consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems in non-segregated airspaces | For consideration by WRC-15 (**Agenda item 1.5).** | ADD |  |
| 154 | Consideration of technical and regulatory actions in order to support existing and future operation of fixed-satellite service earth stations within theband 3 400-4 200 MHz, as an aid to the safe operation of aircraft and reliable distribution of meteorological information in some countries in Region 1 |  For consideration by WRC-15 (**Agenda item 9.1 Issue9.1.5)** | ADD |  |
| 205 | Protection of the systems operating in the mobile-satellite service in the band 406-406.1 MHz | For consideration by WRC-15 (**Agenda item 9.1 Issue9.1.1).** | MOD |  |
| 207 | Measures to address unauthorized use of frequencies in the band allocated to the MMS/AM(R)S | *Still relevant; text recently updated. Monitoring reports regularly posted on the ITU website.*Still relevant. | NOC | NOC |
| 212 | Implementation of IMT | *Still relevant.This Resolution is referred to in Nos.****5.351A*** *and* ***5.388****.*Still relevant. | NOC |  |
| 215 | Coordination among MSS in the band 1-3 GHz | *The ITU-R study invited in this Resolution is still under way.**Updating of the referenced Resolution 46 (already suppressed) or the version of the referenced Recommendations (M.1186 and M.1187) may be necessary, if it is retained. These are not incorporated by reference.*Still relevant. Text was updated at WRC-12. The ITU-R study invited in this Resolution is still under way. | MOD |  |
| 217 | Wind profiler radars | *This Resolution is referred to in Nos.****5.162A*** *and* ***5.291A****.**Updating of the referenced Recommendations (M.1085<already deleted>, M.1226 and M.1227) may be necessary. These are not incorporated by reference.*Editorial review may be required for the referenced ITU-R recommendations. | NOC |  |
| 221 | HAPS for IMT-2000 in the bands around 2 GHz | *This Resolution is referred to in No.****5.388A****.**Still relevant. The ITU-R study invited in this Resolution has made little progress.*The ITU-R study invited in this Resolution has made no progress. | NOC |  |
| 222 | Use of the frequency bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite service, and procedures to ensure long-term spectrum access for the aeronautical mobile-satellite (R) service | *Modifications are proposed to clarify use of AMS(R)S spectrum in these bands (see ASP/26A7/5 under WRC-12 Agenda item 1.7).*Still relevant. Text was updated at WRC-12. | MOD | NOC |
| 223 | Additional bands identified for IMT | *Still relevant. This Resolution is referred to in Nos.****5.384A*** *and* ***5.388****.**The ITU-R study invited in this Resolution has made fair progress but not completed. Invites ITU‑R may be reviewed including editorial changes.*Still relevant. The paragraph “*Invites ITU‑R”*may be updated to reflect the results of recent ITU-R studies. | MOD |  |
| 224 | Frequency bands for the terrestrial component of IMT below 1 GHz. | *Still relevant. This Resolution is referred to in No.****5.317A****.**The ITU-R study invited in this Resolution has made fair progress but not completed. Modification to reflect this progress may be needed.*Still relevant. Text was updated at WRC-12. The paragraph “*Invites ITU‑R”*may be updated to reflect the results of recent ITU-R studies. | MOD |  |
| 225 | Use of additional bands for the satellite component of IMT | *Still relevant. This Resolution is referred to in No.****5.351A****. The result of WRC-07 needs to be reflected (the bands 2 500-2 520 MHz and 2 670-2 690 MHz are allocated to the MSS only in Region 3).*Still relevant. Text was updated at WRC-12. The ITU-R study invited in this Resolution is still under way. | MOD |  |
| 229 | Use of bands 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz for WAS including RLAN | *Still relevant. This Resolution is referred to in Nos.****5.446A****,* ***5.447*** *and* ***5.453****.**The ITU-R studies invited in this Resolution have made fair progress. Recommendation ITU-R M.1652 incorporated by reference in this Resolution is being revised.*Still relevant. Text was updated at WRC-12. The ITU-R study invited in this Resolution is still under way. | MOD |  |
| 232 | Use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service in Region 1 and related studies | For consideration by WRC-15 (**Agenda item 1.2).** | ADD |  |
| 233 | Studies on frequency-related matters on International Mobile Telecommunications and other terrestrial mobile broadband applications | For consideration by WRC-15 (**Agenda item 1.1).** | ADD |  |
| 234 | Additional primary allocations to the mobile-satellite service within the bands between 22 to 26 GHz | For consideration by WRC-15 (**Agenda item 1.10)** | ADD |  |
| 331 | Operation of the GMDSS | *Still relevant. IMO still requires VHF channel 16 watch-keeping by SOLAS ships and coast stations for the foreseeable future, and the frequency 2 182 kHz is still important for distress and safety communications by voice.*Still relevant. Text was updated at WRC-12. The ITU-R study invited in this Resolution is still under way. | MOD | NOC |
| 339 | Coordination of NAVTEX | *Still relevant.*Still relevant.  | NOC | NOC |
| 343 | Certificates for vessels using GMDSS equipment on a non-compulsory basis | *Still relevant. The outdated descriptions and harmonization with Article 47, which was revised by WRC-07, may need to be modified.*Still relevant. Text was updated at WRC-12. It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution. | MOD | NOC |
| 344 | Management of maritimeidentity numbering resource | *Still relevant. The ITU-R studies invited in this Resolution have made fair progress. Recommendation ITU-R M.585 incorporated by reference in this Resolution has been revised. Also, the use of MMSI is expanding to AIS and its related systems. The outdated descriptions need to be modified.*Still relevant. Text was updated at WRC-12. It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution. | MOD | NOC |
| 349 | Procedures for cancelling false alerts in GMDSS | *Still relevant. The texts relating to the procedures for cancelling false alerts, e.g. Annexes 1, 2 and 3, need to be harmonized with Article 32 revised by WRC-07.*Still relevant. Text was updated at WRC-12. | MOD | NOC |
| 352 | Use of carrier frequencies 12 290 kHz and 16 420 kHz for safety-related calling to and from resource coordination centre | *Still relevant.*Still relevant. | NOC | NOC |
| 354 | Distress and safety radiotelephony procedures for 2 182 kHz | *Still relevant.*Still relevant. | NOC | NOC |
| 356 | ITU maritime service information registration | Still relevant.The ITU-R consultation invited in this Resolution is still under way. | NOC | NOC |
| 358 | Consideration of improvement and expansion of on-board communication stations in the maritime mobile service in the UHF bands | For consideration by WRC-15 (**Agenda item 1.15)** | ADD |  |
| 359 | Consideration of regulatory provisions for modernization of GMDSS and studies related to e-navigation | This Resolution is referred to in preliminary agenda item 2.1 for WRC-18 in Resolution 808, and may be considered under WRC-15 Agenda item 10. | ADD | MOD |
| 360 | Consideration of regulatory provisions and spectrum allocations for enhanced Automatic Identification System technology applications and for enhanced maritime radiocommunication | For consideration by WRC-15 (**Agenda item 1.16)** | ADD |  |
| 405 | Frequencies for AM(R)S | Still relevant; ongoing activities in ICAO. | NOC |  |
| 413 | Use of the band 108-117.975 MHz by AM (R)S | *While studies on protection of FM broadcasting receivers operating below 108 MHz have been completed,further compatibility studybetween digital soundbroadcasting below 108 MHz and AM(R)S needs to be continued (see ASP/26A4/1 under WRC-12 Agenda item 1.4).*Text was updated at WRC-12. It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution. | MOD | NOC |
| 416 | Use of the bands 4 400-4 940 MHz and 5 925-6 700 MHz by an aeronautical mobile telemetry application in the mobile service | Still relevant. This Resolution is referred to in Nos. **5.440A**, **5.442** and **5.457C**. | NOC |  |
| 417 | Use of the band 960-1 164 MHz by AM (R)S | *Studies on protection of RNSS and non-ICAO ARNS systems have been completed. It is still important that practical operational measures be developed to facilitate the coordination between AM(R)S systems and non-ICAO ARNS systems (see ASP/26A4/2 under WRC-12 Agenda item 1.4).*Still relevant.Text was updated at WRC-12. | MOD |  |
| 418 | Use of the band 5 091-5 250 MHz by the aeronautical mobile service for telemetry applications | *Still relevant. This Resolution is referred to in Nos.****5.444B*** *and* ***5.446C****.**The ITU-R studies invited in this Resolution have made little progress.*Text was updated at WRC-12. The ITU-R study invited in this Resolution is still under way. | MOD |  |
| 422 | Development of methodology to calculate aeronautical mobile-satellite (R) service spectrum requirements within the frequency bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) | Still relevant. It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution. | ADD |  |
| 423 | Consideration of regulatory actions, including allocations, to support Wireless Avionics Intra-Communications | For consideration by WRC-15 (**Agenda item 1.17)** | ADD |  |
| 506 | Use of the 12 GHz bands by GSO BSS only | *Still relevant.*Still relevant. | NOC | NOC |
| 507 | Agreements/Plans for BSS | *Still relevant. This Resolution is referred to in Resolution 525(Rev.WRC-07).*Still relevant. | MOD | NOC |
| 517 | Introduction of digital and SSB modulations in the HFBC | Still relevant. This Resolution is referred to in No.**5.134**.It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution. | NOC | NOC |
| 526 | Additional provisions for use for the BSS bands for HDTV | *The substance is obsolete. It may be suppressed.* Text was updated at WRC-12. The scope was changed to mainly focus on Region 2. | MOD | NOC |
| 528 | Introduction of BSS (sound) in 1-3 GHz | *Still relevant. This Resolution is referred to in Nos.****5.417A****,* ***5.418*** *and* ***5.393****.**The text under “resolves 1” is outdated and may be reviewed.**References to Resolution* ***33*** *(****Rev.WRC-03****), in resolves 3, may need to be changed to refer to Article 11, since all the concerned networks have been already in operation.*Review of the text may be needed in view of the previous proposal to WRC-12.  | NOC | NOC |
| 535 | Information for application of Article 12 | *Still relevant.*Still relevant. | NOC | NOC |
| 536 | BSS satellites serving other countries | *Still relevant.*Still relevant. | NOC | NOC |
| 539 | Use of the band 2 630-2 655 MHz for non-GSO BSS in certain Region 3 countries | *Still relevant. This Resolution is referred to in Nos.****5.417A*** *and* ***5.418****.*Still relevant to certain Region 3 countries. | NOC | NOC |
| 543 | Provisional RF protection ratios for analogue and digital emissions in HFBC | *Still relevant. This Resolution is referred to in 1.1 and 2.5 of Part C of Appendix* ***11****. The ITU-R studies invited in this Resolution have made little progress.*Still relevant.It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution. | NOC | NOC |
| 547 | Updating of the “Remarks” columns in AP30/30A | *Still relevant.*Review of the text of each columnmay be needed. | NOC | MOD |
| 548 | Application of the grouping concept in AP30/30A in Regions 1 and 3 | *Still relevant. As suggested in the CPM Report to WRC-12, it may need some updates in view of completion of some actions.*Still relevant. Text was updated at WRC-12. | MOD | NOC |
| 549 | Use of the frequency band 620-790 MHz for existing assignments to stations of BSS | *Still relevant.*Still relevant. Status of the operation of two specific BSS referred to in this Resolution needs to be confirmed. | NOC | NOC |
| 550 | Information relating to the high-frequency broadcasting service | *Still relevant. The ITU-R studies invited in this Resolution have made little progress.*Still relevant.It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution. | NOC | NOC |
| 552 | Long-term access to and development in the band 21.4-22 GHz in Regions 1 and 3 | Still relevant. | ADD | NOC |
| 553 | Additional regulatory measures for broadcasting-satellite networks in the band 21.4-22 GHz in Regions 1 and 3 for the enhancement of equitable access to this band | Still relevant. | ADD | NOC |
| 554 | Application of pfd masks to coordination under No. 9.7 for broadcasting-satellite service networks in the band 21.4-22 GHz in Regions 1 and 3 | Still relevant. | ADD | NOC |
| 555 | Additional regulatory provisions for broadcasting-satellite service networks in the band 21.4-22 GHz in Regions 1 and 3 for the enhancement of equitable access to this band | Still relevant. | ADD | NOC |
| 608 | Use of 1 215-1 300 MHz band by systems in the RNSS (space-to-Earth) | *Still relevant. This Resolution is referred to in No.****5.329****.**CPM Report to WRC-12 suggests that the modification may be necessary due to the development of new relevant ITU-R Recommendations, or that it could be suppressed with the reason that no more study is needed. WRC-12 should make an appropriate decision depending on the latest status of the ITU‑R studies.*The result of ITU-R studies is now available as Report ITU-R M.2284, which was approved in December 2013. This Resolution may need updating (including its suppression) in view of the APT proposal to the previous WRC. | NOC |  |
| 609 | Protection of ARNS from the epfd produced by RNSS networks and systems in the 1 164-1 215 MHz band | Still relevant. This Resolution is referred to in No. **5.328A**. | NOC |  |
| 610 | Coordination of RNSS networks and systems in the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz | Still relevant. This Resolution is referred to in No. **5.328B**. | NOC |  |
| 612 | Use of the radiolocation service between 3 and 50 MHz to support oceanographic radar operations | *Modifications are proposed for technical and regulatory requirements for oceanographic radar operation (see ASP/26A15/23under WRC-12 Agenda item 1.15).*Still relevant.Text was updated at WRC-12. | MOD |  |
| 641 | Use of the band 7 000-7 100 kHz | Still relevant. | NOC | NOC |
| 642 | Earth stations in the amateur-satellite service | Still relevant. | NOC |  |
| 644 | Early warning, disaster mitigation and relief operation | *Still relevant. The ITU-R studies invited in this Resolution have made fair progress. Recommendations ITU-R M.1854 and S.1001-2, and Reports ITU-R M.2149 and S.2151 are in force. These points may be reflected in the updated text.*Still relevant. Text was updated at WRC-12. Since this Resolution has some relevance to Resolutions **646** and **647**, the text may further be updated in this respect. | MOD |  |
| 646 | Public protection and disaster relief | For consideration by WRC-15 (**Agenda item 1.3).** | MOD |  |
| 647 | Spectrum management guidelines for emergency and disaster relief radiocommunication | For consideration by WRC-15 (**Agenda item 9.1 Issue 9.1.7)** | MOD |  |
| 648 | Studies to support broadband public protection and disaster relief | For consideration by WRC-15 (**Agenda item 1.3).** | ADD |  |
| 649 | Possible allocation to the amateur service on a secondary basisat around 5 300 kHz | For consideration by WRC-15 (**Agenda item 1.4).** | ADD |  |
| 650 | Allocation for the Earth exploration-satellite service (Earth-to-space) in the 7-8 GHz range | For consideration by WRC-15 (**Agenda item 1.11)** | ADD |  |
| 651 | Possible extension of the current worldwide allocation to the Earth exploration-satellite (active) service in the frequency band 9 300-9 900 MHz by up to 600 MHz within the frequency bands 8 700-9 300 MHz and/or 9 900-10 500 MHz | For consideration by WRC-15 (**Agenda item 1.12)** | ADD |  |
| 652 | Use of the band 410-420 MHz by the space research service (space-to-space) | For consideration by WRC-15 (**Agenda item 1.13)** | ADD |  |
| 653 | Future of the Coordinated Universal Time time-scale | For consideration by WRC-15 (**Agenda item 1.14)** | ADD |  |
| 654 | Allocation of the band 77.5-78 GHz to the radiolocation service to support automotive short-range high-resolution radaroperations | For consideration by WRC-15 (**Agenda item 1.18)** | ADD |  |
| 673 | The importance of Earth observation radiocommunication applications | *Still relevant under WRC-12 (Agenda item 8.1.1(Issue C****)****).*Still relevant. Text was updated at WRC-12. | MOD |  |
| 703 | Calculation methods and interference criteria recommended by ITU-R for sharing frequency bands between space and terrestrial services or between space services | *The list of the relevant ITU-R Recommendations have been and will be prepared electronically by the BR.*Still relevant. | NOC |  |
| 705 | Protection of services in 70-130 kHz | *Some elements still relevant; for consideration by a future WRC, inviting Council to place on the agenda of the next WRC.*Still relevant. | NOC |  |
| 716 | Use of bands around 2 GHz by FS and MSS | *This Resolution is referred to in Nos.* ***5.389A****,* ***5.389C*** *and* ***5.390****.**A part of the invited study has been completed, as the results are provided in Recommendation ITU-R F.1335. The term IMT-2000 be replaced with IMT.*Text was updated at WRC-12 removing the study item on the FS. It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution in relation to the MSS. | MOD |  |
| 729 | Adaptive systems at MF/HF | *Still relevant; this Resolution is referred to in several items in Table 1 of Annex 1 to Appendix* ***4****. CPM Report to WRC-12suggests that it may be suppressed after WRC-12.*Still relevant. | NOC |  |
| 731 | Sharing and adjacent-band compatibility between active and passive services above 71 GHz | *The relevant study can be done by ITU-R without this Resolution (see ASP/26A8/2 under WRC-12 Agenda item 1.8).*Still relevant. Text was updated at WRC-12. It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution. | MOD |  |
| 732 | Sharing between active services above 71 GHz | *The relevant study can be done by ITU-R without this Resolution (see ASP/26A8/3 under WRC-12 Agenda item 1.8).*Still relevant. Text was updated at WRC-12. It is required to examine whether there is anyprogress in the ITU-R studies invited in this Resolution. | MOD |  |
| 739 | Compatibility between RA and active space services | *Still relevant. This Resolution is referred to in Nos.****5.347A*** *and* ***5.208B****.*Still relevant. | NOC | NOC |
| 741 | Protection of RA in the bands 4 990-5 000 MHz | *Still relevant. This Resolution is referred to in No.****5.443B****.* *As suggested in the CPM Report toWRC-12, editorial modification may be required to the version number of the referenced ITU-R Recommendation.*Still relevant. Text was updated at WRC-12.The version number of Recommendation M.1583- 1 which is incorporated by reference may be reviewed under Agenda item 2. | MOD |  |
| 743 | Protection of single-dish RA stations in the band 42.5-43.5 GHz | *Still relevant. This Resolution is referred to in Nos.****5.551H*** *and* ***5.551I****. The ITU-R studies invited in this Resolution have made little progress.*Still relevant. The text under “*invites ITU-R*” and Note 1 which include old information may require updating. | NOC | MOD |
| 744 | Sharing between MSS (Earth-to-space) and other services in the bands 1 668-1 668.4 MHz and 1 668.4-1 675 MHz | Still relevant. This Resolution is referred to in No. **5.379D**. | NOC |  |
| 748 | Compatibility between the aeronautical mobile (R) service and the fixed-satellite service (Earth-to-space) in the band 5 091-5 150 MHz | *Still relevant. This Resolution is referred to in No.****5.444B****.**As suggested in the CPM Report to WRC-12, editorial modification may be required to the version number of the referenced ITU-R Recommendation.*Still relevant. Text was updated at WRC-12. | MOD |  |
| 749 | Use of the band 790-862 MHz in countries in Region 1 and Islamic Republic of Iran by mobile applications and by other services | *Modifications are proposed, intending to cover the particular requirements of an APT Member country who is a contracting member to the GE06 Agreement (see ASP/26A17/3 under WRC-12 Agenda item 1.17).*Still relevant. Text was updated at WRC-12. | MOD |  |
| 750 | Compatibility between the Earth exploration-satellite service (passive) and relevant active services | *Still relevant. This Resolution is referred to in No.****5.338A****.*Still relevant.Text was editorially updated at WRC-12. | MOD |  |
| 751 | Use of the frequency band 10.6-10.68 GHz | Still relevant. This Resolution is referred to in No. **5.482A**. | NOC |  |
| 752 | Use of the frequency band 36-37 GHz | Still relevant. This Resolution is referred to in No. **5.550A**. | NOC |  |
| 755 | Power flux-density limits for transmitting stations in the 21.4-22 GHz band | Still relevant. | ADD |  |
| 756 | Studies on possible reduction of the coordination arc and technical criteria used in application of No. 9.41 in respect of coordination under No. 9.7 |  For consideration by WRC-15 (**Agenda item 9.1 Issue9.1.2)** | ADD |  |
| 757 | Regulatory aspects for nano- and picosatellites | For consideration by WRC-15 (**Agenda item 9.1 Issue9.1.8)**This Resolution is referred to in preliminary agenda item 2.2 for WRC-18 in Resolution 808, and may also be considered under WRC-15 Agenda item 10. | ADD |  |
| 758 | Allocation to the fixed-satellite service and the maritime-mobile satellite service in the 7/8 GHz range | For consideration by WRC-15 (**Agenda item 1.9)** | ADD |  |
| 804 | Principles for establishing agendas for world radiocommunication conferences | Still relevant.This Resolution may also be considered under agenda item 10. | MOD |  |
| 806 | Preliminary agenda for the 2015 WorldRadiocommunication Conference | *To be suppressed at WRC-12 (see ASP/26A30/2 under WRC-12 Agenda item 8.2).*This Resolution should have been suppressed at WRC-12, being superseded byResolution 807. | NOC | SUP |
| 807 | Agenda for the 2015 World Radicocommunication Conference | To be suppressed at WRC-15 completing its role. | ADD | SUP |
| 808 | Preliminary agenda for the 2018 World Radicocommunication Conference | For consideration by WRC-15 (**Agenda item 10).**As usual practice at every WRC, a new Resolution is to be developed for the agenda items for the next WRC. | ADD | SUP |
| 900 | Review of the RoP for No. 9.35 | *Parts still relevant, in particular resolves 3, since some networks are under the Notification process.*It is required to confirm whether the BR’s actions instructed in this Resolution are implemented. | NOC | NOC |
| 901 | Determination of the orbital arc separation | *Still relevant. This Resolution is referred to in Table 5-1 of Appendix* ***5****. ITU-R studies are ongoing in Study Group 4 and SC. Recommendation ITU‑R S.1780 has been in force.*Still relevant. It is required to examine the status of progress in the ITU-R studies invited in this Resolution, including the development of Recommendation ITU-R S.1780.. | NOC | NOC |
| 902 | Provisions related to earth stations located on board vessels, in FSS networks in 5 925-6 425 MHz and 14-14.5 GHz |  For consideration by WRC-15 (**Agenda item 1.8)** | NOC |  |
| 903 | Transitional measures for certain BSS/FSS systems in the band 2 500-2 690 MHz | *Still relevant. This Resolution is referred to in No.****21.16.3A****.*Still relevant. The information in Annex 1(list of the satellite to be coordinated) may be updated. | NOC | NOC |
| 904 | Transitional measures for coordination between MSS (Earth-to-space) and SRS (passive) in the band 1 668-1 668.4 MHz for a specific case | *Still relevant. This Resolution is referred to in No.****5.379B****.*Still relevant. Status of the coordination process for SPECTR-R in the SRS (passive) referred to in “*resolves*” needs to be confirmed. | NOC |  |
| 906 | Electronic submission of notice forms for terrestrial services to the Radiocommunication Bureau and exchange of data between administrations | *As suggested in the CPM Reportto WRC-12, this Resolution has been already implemented and could be suppressed.*Still relevant. Text was updated at WRC-12. | MOD |  |
| 907 | Use of modern electronic means of communication for administrative correspondence related to advance publication, coordination and notification of satellite networks including that related to Appendices 30, 30A and 30B, earth stations and radio astronomy stations | Still relevant. | ADD | NOC |
| 908 | Electronic submission and publication of advance publication information | Still relevant. | ADD | NOC |
| 909 | Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the uplink bands 5 925-6 425 MHz and 14-14.5 GHz | For consideration by WRC-15 (**Agenda item 1.8).** | ADD |  |
| 957 | Studies towards review of the definitions of *fixed service*, *fixed station* and *mobile station* |  For consideration by WRC-15 (**Agenda item 9.1 Issue9.1.6)** | ADD |  |

| Rec. No. | Subject | Remarks (The text in the italic letters indicates comments made by the APG in its common proposal to the WRC-12) | Action taken by WRC-12 | New proposed action |
| --- | --- | --- | --- | --- |
| Recommendations |
| 7 | Standard license forms for ship/ship-earth stations and aircraft/aircraft-earth stations | Still relevant. | NOC | NOC |
| 8 | Automatic identification of stations | *Still relevant (in the new context), ongoing studies.* RR Article 19 has been well established and respected since this Recommendation was approved 35 years ago. | NOC |  |
| 9 | Operation of BC stations on board ships/aircraft | Still relevant. | NOC | NOC |
| 16 | Interference management for stations that may operate under more than one terrestrial radiocommunication service | Still relevant. | ADD |  |
| 34 | Principles for allocation of frequency bands | *This Resolution may be considered in relation toWRC-12 Agenda item 1.2.*Still relevant. Text was largely revised at WRC-12. | MOD |  |
| 36 | International monitoring of emissions from space stations | Still relevant; ongoing studies in ITU-R Study Group 1. | NOC |  |
| 37 | Operational procedures for ESV | *Still relevant. This Recommendation is referred to in Resolution* ***902 (WRC-03)****.*The topic of this Recommendation has relevance to WRC-15 agenda item 1.8.For the moment, review of this Recommendation has not been discussed at the relevant ITU-R group. | NOC |  |
| 63 | Calculation of necessary bandwidth | *Still relevant (in the new context). Recommendation ITU‑R SM.328-11 (approved 2006) in force; studies continue.*The issue of “calculation of necessary bandwidth” has been well addressed in Recommendation ITU-R SM.1138, which is incorporated by reference in Appendix **1** (Section 1). It is questionable to retain this Recommendation.  | NOC |  |
| 71 | Type approval of radio equipment | Still relevant | NOC |  |
| 75 | Study of boundary between out-of-band and spurious domains of primary radars using magnetrons | *Still relevant; ongoing studies in ITU-R Study Group 1 to review Recommendation ITU‑R SM.1541-3 and/or other texts.*Still relevant. ITU-R studies are ongoing. | NOC |  |
| 76 | Deployment and use of cognitive radio systems | Still relevant. ITU-R studies are ongoing. | ADD |  |
| 100 | Bands for troposcatter | Still relevant. | NOC |  |
| 206 | Use of integrated MSS and ground component systems in some frequency bands identified for the satellite component of IMT | *The ITU-R study recommended in this Recommendation has made fair progress.*Still relevant. ITU-R studies are ongoing. | MOD |  |
| 207 | Future IMT systems | *The ITU-R study is commencing in the relevant group.*The referenced ITU-R Question needs to be reviewed. | NOC |  |
| 316 | Use of ship earth stations within harbours | Some aspects still relevant. | NOC |  |
| 401 | Use of aeronautical mobile worldwide frequencies | *Although this Recommendation contains useful suggestions to administrations, it is observed only by a few administrations.*Some aspects still relevant. | NOC |  |
| 503 | HFBC | Still relevant | NOC | NOC |
| 506 | Harmonics in broadcasting-satellite stations | Still relevant | NOC | NOC |
| 520 | Elimination of out-of-band HFBC emissions | Still relevant | NOC | NOC |
| 522 | Coordination of HFBC schedules in the bands between 5 900 kHz and 26 100 kHz | Still relevant | NOC | NOC |
| 608 | Guidelines for consultation meetings established in Resolution 609 | Still relevant. This Recommendation is referred to in Resolution**609**(**Rev.WRC-07**). | NOC |  |
| 622 | Sharing of bands 2 025-2 110 MHz and 2 200-2 290 MHz by the SR, SO, EESS, FS and MS | Still relevant | NOC |  |
| 707 | Sharing between the inter-satellite service and the radionavigation service in the band 32-33 GHz | *Still relevant, ongoing studies with a view to present results to a future WRC. Recommendation ITU‑R S.1151 in force.This Recommendation is referred to in No.****5.548****.*Development of Recommendation ITU‑R S.1151 could be reflected in this Resolution as a study result.  | NOC |  |
| 724 | Use by civil aviation of frequency allocations on a primary basis to the fixed-satellite service | Still relevant. | NOC |  |

**ATTACHMENT 2**

**1. Background**

According to the result of the 2nd meeting of the APT Conference Preparatory Group for WRC-15 (APG15-2), APT members are invited to examine the proposed Agenda Items within the Resolution 808 (WRC-12), and to provide new items for inclusion to agenda of WRC-18, taking into account the principles described in Resolution 804 (WRC-12) and using the template annexed to the Resolution.

Today’s world is powered by information: the opportunities created by Information and Communication Technology (ICT) development have been one of the main impacting factors on how the society evolved in the past decades.

In 2020 and beyond the wireless communication services will expand into new market segments such as smart grid, e-health, ITS, traffic control and safety. These new market areas as well as the need for efficient delivery of wireless broadband services are expected to bring new requirements that will in some cases extend beyond what can be addressed in today’s IMT application areas.Specifically, the mobile data traffic volume of future will increase rapidly beyond imagination, for instance, many users could be using high-resolution mobile streaming services in real-time on a crowded subway/bus and in public places, as well as future services such as IOT, mobile big data, virtual reality, online games, augmented reality and high QoS instantaneous cloud data services at the same time. In addition, it can be envisaged that demand for unpredictable and numerous these services will require networks and devices to support considerably wider bandwidth than existing mobile broadband networks from around 2020 onwards.

Those mobile traffic demands should be fulfilled by new future mobile communication technologies, which should be operated in wider bandwidths as well as providing higher spectral/areal efficiency. Considering hardware implementation complexity in modern smart mobile devices and to maximize data delivery efficiency, the wide bandwidth should be contiguous. Therefore contiguous wide bandwidth, for instance at least 500 MHz, will be a critical factor.

The contiguous wide bandwidth can be secured in the bands above 6 GHz. However, there has never been any consideration to utilize the bands above 6 GHz for IMT so far due to some technical/operational aspects. However given that thoseaspectsare being resolved, it is expected that the bands above 6 GHz can be utilized for IMT andto provide very high capacity performance in the future:

*The bands above 6 GHz have been perceived as inappropriate to cover macro cell size.*

* It can be noted, however, thatthe cell size is getting smaller (e.g. or the order of some hundreds of meters) to provide larger cell capacity in dense areas. In that situation, the higher frequency bands can fully cover the cell size and small cells may even take an advantage of higher frequency bands to minimize interferences to other cells.

*Semiconductor technology did not support hardware implementation in mobile devices in the efficiency, size, and cost perspectives.*

* It can be noted, however, thathigh frequency hardware technology has been considerably enhanced and can be implemented in mobile devices. For instance, already semiconductor for 60GHz Wi-Fi have been commercialized and are expected to be implemented in mobile devices. Furthermore some advanced technologies such as massive MIMO and beam-forming can be quite well implemented at higher frequency bands by leveraging advantages of the shorter wavelength.

With these motivations, ITU-R Working Party 5D has been performing the relevant studies to utilize higher frequency bands for future IMT. In addition, global researches for future IMT have been emphasizing the possible use of higher frequency bands.

Considering the above background, the Republic of Korea is of the view that the higher frequency bands will be critical and essential for future IMT with very high capacity and therefore proposes the identification of IMT in higher frequency bands above 6 GHz including possible additional mobile allocations on a primary basis.

**2. Proposal**

The Republic of Korea has a preliminary view that IMT identification in higher frequency bands, such as from 6 GHz to [60]/[100] GHz, should be considered under a WRC-18 Agenda Item.

Annexes: 1. Proposal for the preliminary WRC-18 Agenda Item

 2. Further information for the preliminary WRC-18 Agenda Item

**Annex 1to Attachment 2: Proposal for the preliminary WRC-18 Agenda Item**

**ANNEX 2 TO RESOLUTION 804 (WRC-07)**

|  |
| --- |
| **Subject: Proposal for WRC-18 Agenda Item**  |
| **Origin: Republic of Korea** |
| ***Proposal:****To consider identification to IMT in the frequency range between 6 GHz and [60]/[100] GHz including possible additional allocations to mobile service on a primary service in accordance with Resolution YYY (WRC-15);*  |
| ***Background/reason:***Today’s world is powered by information: the opportunities created by Information and Communication Technology (ICT) development have been one of the main impacting factors on how the society evolved in the past decades.In 2020 and beyond the wireless communication services will expand into new market segments such as smart grid, e-health, ITS, traffic control and safety. These new market areas as well as the need for efficient delivery of wireless broadband services are expected to bring new requirements that will in some cases extend beyond what can be addressed in today’s IMT application areas.Those mobile traffic demands should be fulfilled by new future mobile communication technologies, which should be operated in wider bandwidths as well as providing higher spectral/areal efficiency. Considering hardware implementation complexity in modern smart mobile devices and to maximize data delivery efficiency, the wide bandwidth should be contiguous. Therefore the contiguous wide bandwidth, for instance at least 500 MHz, will be a critical factor. The contiguous wide bandwidth can be secured in the bands above 6 GHz and it is expected that the bands above 6 GHz can be utilized for IMT andto provide very highcapacity performance in the future.With these motivations, ITU-R Working Party 5D has been performing the relevant studies to utilize higher frequency bands for future IMT. In addition, global researches for future IMT have been emphasizing the possible use of higher frequency bands. Considering the above background, it is believed that the higher frequency bands will be critical and essential for future IMT with very high capacity and therefore proposes the identification of IMT in higher frequency bands above 6 GHz including possible additional mobile allocations on a primary basis. |
| ***Radiocommunication Services concerned:*** Fixed Service, Fixed Satellite Service, and other services |
| ***Indication of possible difficulties:***The proposed bands are widely used for terrestrial and space services on a co-primary basis. |
| ***Previous/ongoing studies on the issue:***Some of studies have been already initiated and are now ongoing in the ITU-R WP 5D. |
| ***Studies to be carried out by:***ITU-R WP 5D | ***with participation of:***Administrations and Sector members of the ITU-R |
| ***ITU-R Study Groups concerned:***SG5 and other groups |
| ***ITU resource implications, including financial implications (refer to CV 126):***This proposed agenda item will be studied within the normal ITU-R procedures and planned budget. As the responsible group on IMT studies, ITU-R WP 5D usually has meetings three times a year which last 6days each. |
| ***Common regional proposal:***Yes/No | ***Multicountry Proposal:***Yes/No***Number of countries:*** |
| ***Remarks*** |

**Annex 2 to Attachment 2: Further information for the preliminary WRC-18 Agenda Item**

**1. Global movements for higher frequency**

With the motivation, the ITU-R Working Party 5D has been studying the vision of future IMT and the feasibility of utilizing higher frequency bands for future IMT around 2020 and beyond. During its study period, however, WP 5D as the responsible group on IMT matters had recognized the necessity for providing IMT services in not only the frequency bands below 6 GHz, to accommodate user demands in 2020 but also the potential for new technologies that will provide new high capacity services in frequency bands above 6 GHz. These will satisfyhigh peak demands exceeding normal average capacity required in certain areas and delivered in bands below 6GHz.

The relevant studies are within ITU-R WP 5D are as follows.

* Draft New Report ITU-R M.[IMT.BEYOND2020.TRAFFIC] (October 2014) to provide estimates of IMT (including cellular and Mobile broadband) traffic and estimates of numbers of subscriptions and also including other relevant information impacting traffic estimation. This Report covers a period of 2020-2025, building on the estimates done in Report ITU-R M.2243.
* Draft New Recommendation ITU-R M.[IMT.VISION] (June 2015) to define what will be the roles of IMT and how could IMT better serve society in the future and the framework and overall objectives of the future development of IMT for 2020 and beyond including the radio access network. The framework will also consider the future development of IMT as described in the Recommendation ITU-R M.1645. The Recommendation recommends the framework and objectives of the future development of IMT for 2020 and beyond.
* Draft New Report ITU-R M.[IMT.FUTURE TECHNOLOGY TRENDS] (October 2014) to provide a broad view of future technical aspects of terrestrial IMT systems considering the approximate time frame 2015-2020 and beyond and to provide information on trends of future IMT technology aspects
* Draft New Report ITU-R M.[IMT.ABOVE 6 GHz] (June 2015) to provide information on technical feasibility of IMT in the bands above 6 GHz. Technical feasibility includes information on how current IMT systems, their evolution, and/or potentially new IMT radio interface technologies and system approaches could be appropriate for operation above 6 GHz, taking into account the impact of the propagation characteristics related to the possible future operation of IMT in those bands.Technology enablers such as developments in active and passive components, antenna techniques, deployment architectures, and the results of simulations and performance tests are considered.

Some of these studies would address future IMT technology and services in bands above 6 GHz in the light of the evolution trends of technology and service aspects in a timely manner as scheduled.

In addition, recently global 5G research organizations and projects have been studying use of higher frequency technologies for future IMT, and it has been well expressed during the ‘workshop on research views of IMT beyond 2020[[1]](#footnote-1)’ hosted by ITU during the 18th meeting of ITU-R WP5D on February 2014. In this workshop, 6 research organizations out of 7 have expressed their interests. We can imagine the higher frequency technology will be one of the key technologies which compose the future IMT.

Also 3GPP developing technical specifications in the fields of mobile communications held a workshop on ‘3GPP RAN workshop on Release 12 and onwards[[2]](#footnote-2)’ on June 2012. During the workshop, some 3GPP individual members expressed their interests in the possibilities and needs of higher frequency bands for future mobile broadband as potential items. Moreover, industry and academia are competitively announcing their vision for future IMT utilizing the higher frequency bands by means of several white papers and research papers.

**2. Needs and benefits of higher frequency bands for future IMT**

**2.1 Economic impacts**

Report ITU-R M.2243 describes that mobilecommunications including mobile broadband communications have been playing important roles in the economic and social developments of both developed and developing countries, such as growth of economy, mitigation of digital divide, improvement of life quality, and facilitation of other relating industries. New traffic forecasts are provided by a number of industry sources for the forecast up to 2015 and one source for the forecast between 2015 and 2020 is taking into account new market trends and market drivers. Developing countries will also play an important role in the next period due to their large markets and relatively low deployment levels of IMT up until now. With the introduction of higher capability networks and enhanced devices, even more user friendly interfaces will emerge to make mobile applications more generally accessible.

In a World Bank Report[[3]](#footnote-3), it was found that in low- and middle-income countries every 10 percentage point increase in broadband penetration accelerates economic growth by 1.38 percentage points: more than in high-income countries and more than for other telecommunications services.

ITU-D published the Report “The impact of broadband on the economy (April 2012)” and this Report indicates the multiple effects of the economic impact of broadband: contribution of broadband to GDP growth, impact on productivity, impact on job creation, creation of consumer surplus and impact on firm efficiency.

**2.2 Service aspects**

The growth of IMT network data traffic is expected to accelerate in the coming years as reported in Report ITU-R M.2243, driven by new devices and capabilities as well as new applications and services. Especially, services requiring higher data rate and the real-time delivery of large amounts of data are needed in dense urban areas with small cell areas. Additionally, IMT technologies, services and applications will be widely deployed in short-range areas in the near future.This means that these usages may cause capacity problems in a specific area or at a specific time in which a number of users demand high performance data services leading to a peak data rate.

And the processing of high mobile data rates and satisfaction of Quality of Experience (QoE) for users will be required simultaneously in the future in response to the increasing user demands and trends of user equipment and service. The requiring performance indicator for servicesis based on user experiences through product and service over the existing QoS.

Additionally, considering the increase of required QoE and development trends of technology, future IMT can provide attractive services compared to the existing IMT technologies. In particular, maximum tens of Gbps data rate will be required to support high-resolution mobile video streaming service in real-time.

Therefore, multi-Gbps data rate per user should be taken into account to implement the future IMT services requiring QoE and high mobile data rates. Practically this specific high peak requirement will need to be supported by additional spectrum such as that above 6GHz where spectrum can be made available to accommodate wide system bandwidths which allow for efficient high data rate service delivery.

**2.3 Technology aspects**

The growth of IMT network data traffic is expected to accelerate driven by new devices and applications,especially requiring higher data rate and real-time delivery in dense urban areas with small cells. And a variety of short range applications would be introduced based on IMT technologies and networks in the near future and cause a further explosive increase ofmobile data traffics. It means that these situations may deteriorate capacity problems in a specific area or at a specific time in which a number of users demand simultaneously high performance data services leading to a peak data rate.

Multi-Gbps data rate per user should be taken into account to implement the coming mobile broadband services requiring QoE and high mobile data rates that requires additional spectrum to accommodate wide system bandwidths.

Various advanced antenna technologies are being developed and improved recently, however it may be difficult to increase the number of antenna elements in lower frequency bands because of the limitation of form factor size. It is much easier to accommodate the large number of antenna in the higher frequency bands.

As for carrier aggregation (CA) technology to extend the operating bandwidth, it is aapproach to make wider bandwidths by aggregating the fragmented frequency bands in order to overcome the limitation of spectrum resource in lower frequency bands. From an implemental point of view, however, carrier aggregation technology would bring inefficiency of switching loss. Also carrier aggregation might require Multi Mode & Multi Band (MMMB) power amplifiers to implement the technology; this is inefficient in its performance and more expensive with respect to the component which is dedicated to a single band.

Taking the above reasons into account, the use of higher frequency bands makes it practical to implement higher order antenna arrays and to utilize massive MIMO technologies with reasonable hardware form factors. Also large chunk contiguous bandwidth in these higher frequency bands can be considered for IMT implementation.Traditionally the use of very high frequencies such as above 6 GHz for mobile use is considered difficult. In particular, because of the laws of propagation, higher frequencies will result in higher propagation losses between transmitters and receivers. Moreover, it is considered that signals at higher frequencies may not reach the user under NLoS conditions due to a low diffraction effect. Large path loss and the link fragility of the bands above 6 GHz are definitely the key challenges that need to be overcome in order to make mobile communication a reality. However the small wavelength of higher frequency bands enables narrow beamforming using large number of antenna elements in smaller form factor to form directional beams with large antenna array gain, which makes it possible to combat the large propagation loss.

In addition, it is expected that higher frequencies with wider spectrum bandwidths can be used overlaid with existing IMT networks in order to fulfil extremely high user traffic demands in specific areas or at specific times. As a potential deployment scenario, in that case bands below 6GHz can be utilized for high mobility and large coverage data services, meanwhile bands above 6GHz can be reserved for ultra high data rate services.

The use ofhigher frequency bands represents a promising approach to meet the densification challenges addressed by small cells. The use of higher frequency bands for small cells is expected to provide the necessary scalability, capacity and density required for a seamless integration of these cells into the cellular network infrastructure. The higher frequency bands offer larger spectrum availability, increased network capacity, and greater potential for network densification while reducing the need for high spectral efficiencies and high peak to average power ratio (PAPR) waveforms. The detailed studies of the technical feasibility to utilize higher frequency bands for IMT are under progress in ITU-R WP 5D as well as several global research projects, industry and academia.

From the technical point of view on bands above 6 GHz, the detailed information and feasibility is being developed in Draft New Report ITU-R M.[IMT.ABOVE 6 GHz] (June 2015) by ITU-R WP 5D.

**2.4 Spectrum aspects**

There are several candidate frequency bands that are capable of providing at least 500 MHz to 1 GHz of continuous bandwidth and also are allocated to the Mobile Service in the Radio Regulations. The following figureproposessome potential bands that meet the above criteria noting that detailed usage of the bands needs to be investigated further. Although many parts of these bands are already used and allocated for fixed service, satellite service and mobile service, etc., taking into account availability provision of frequency, economy of scale and global harmonization, usage for future IMT service and mobile broadband service is worth considering additional spectrum identification of certain bands in the range from [6] GHz to [60]/[100] GHz that are currently allocated globally on a co-primary basis to the Mobile Service.

It is obvious that bands above 6GHz are appropriate to support the upcoming IMT services requiring higher performance. In addition, for future IMT systems in the year 2020 and beyond, contiguous and broader channel bandwidths would be needed to support continued growth. Therefore, availability of spectrum resources that could support broader, contiguous channel bandwidths for possible access around year 2020 should be explored.



**3. Ongoing study on the technical feasibility of ITU-R in bands above 6 GHz**

ITU-R WP 5D is developing a Draft New Report ITU-R M.[IMT.ABOVE 6 GHz] to provide information on technical feasibility of IMT in the bands above 6 GHz. In particular, this draft Report (Doc. 5D/615 att. 5.10) shows several examples on the preliminary technical feasibilities by testing and analyzing the bands above 6 GHz.

* From the standpoint of semiconductor technology, we have shown by pointing to credible references that both MMIC-based and silicon-based technologies for power amplifier are adequately developedand are now mature for implementation. The current semiconductor technologies are mature enough to implement the essential RF components for IMT system above 6 GHz bands.
* To build trust in the propagation physics of thebands above 6 GHz channel, we shared the results,obtained through extensive measurement, which indicate that the observed/measured pathloss exponentsare adequate for supporting a communication link over 200 meters even in outdoor NLoSenvironments. Higherfrequency is feasible for mobile broadband access, i.e. IMT, over 200 meters even in outdoor NLoSenvironments.
* The prototype system using pencil beamforming has been developed and various tests were conducted with real time processing. First of all, the maximum range in LoS environments was provided as 1.7 km but it is evident that using higher power will result in the lengthened distance more than 2 km. Mobility test results were also provided in NLoS environments.With around 8 km/h speed of MS, it was verified that stable communication link was maintained thanks to fast beam tracking algorithm. Final results show that signal is still pretty well received and some coverage for communication link can be retained even inside the building with window glass.
All test results point out the possibility of higher frequency bands for IMT systems.
* Coverage test results are provided by using the higher frequency prototype IMT systems with a large system bandwidth in excess of 500 MHz at 28 GHz, and with tens of antennas placed in planar arrays at both of the communicating ends. The system incorporates a real-time baseband modem, full higher frequency RF circuitry, and relevant software. With the system, we successfully demonstrated that the higher frequency band is capable of supporting a few hundred meter radius in a typical urban environments.

**ATTACHMENT 3**

**future development of mobile communication systems for 2020 and beyond**

# 1 Introduction and background

This contribution presents information on various activities of future development of mobile communication systems for 2020 and beyond, so called the 5th generation (5G) mobile communication systems.

## 1.1 Activities in Japan

In Japan, mobile industries and academia are conducting research activities on future development of mobile communications systems for 2020 and beyond.

In addition, in response to the rising expectations and needs for the advancement of wireless communications, the Ministry of Internal Affairs and Communications (MIC) has recently established“Radio Policy Vision Meetings.”(1) The MIC expects that the Meetings will be an opportunity for a concrete discussion about a fundamental review of its policy to solve radio frequency depletion along with the ideal state of new radio wave applications to make Japan the world’s most advanced wireless nation on an ongoing basis. One of the items to be discussed in the Meetings is to identify expectations and issues for realization of future mobile communication systems for2020 and beyond.

## 1.2 Activities in ITU-R

The frequency-related matters on IMT, not categorized as 5G, and other terrestrialmobile broadband applications has been addressed as Agenda Item 1.1 of WRC-15under the Resolution **233 (WRC-12)** in which predicted total spectrum requirements for 2020 is noted. ITU-R Working Party 5D (WP 5D) is now developing a draft new Recommendation “Framework and overall objectives of the future development of IMT for 2020 and beyond” which is planned to be finalized in 2015. This Recommendation will contain the longer term vision of IMT for 2020 and beyond and will provide a framework and overall objectives of the future developments of IMT.Furthermore, WP 5D has also initiated studies on the technicalfeasibility of IMT in the bands above 6 GHz.

## 1.3 Other activities

Activities towards development of the 5G mobile communication systems are becoming more intense in various countries including in the Asia-Pacific region.

Furthermore, in Europe, some administrations and mobile industry members provided their views to establish a new agenda item for the ITU World Radiocommunication Conference 2018 (WRC-18) with the objective of identifying common spectrum for these systems in the sub-committee dealing Agenda Item 10 of WRC-15 and project team not directly engaged to agenda items of WRC(2)-(5), but the draft CEPT brief(6) does not contain this issue at this stage.

# 2 Proposal

Taking into account the background information presented above, Japan believes that it would be useful for the APG15 to initiate preliminary discussions about how to address“frequency-related matters for future development of mobile communication systems for 2020 and beyond” in preparation for future Conference agenda to be considered atWRC-15.

Based on discussion results in the APG15-3, Japan may provide further considerations on this issue in the APG15-4 meeting in January, 2015.

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