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**APT Wireless Group Work Plan**

Updated at

The 26th Meeting of APT Wireless Group

14 - 18 September 2020

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# 1. AWG STRUCTURE:

AWG consists of Plenary and three Working Groups (WGs). Sub-Working Groups (Sub-WG) and Task Groups (TGs) are formed under the WGs. Following AWG structure was approved at AWG-19 held from 2 to 5 February 2016 in Chiang Mai, Thailand and updated at AWG-26 held from 14 to 18 September 2020 in Virtual Meeting.

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| **Working Group on Spectrum Aspects**  **(wg Spec)** | **Working Group on Technology Aspects**  **(WG Tech)** | **Working Group on**  **Services and Applications**  **(WG S&A)** |
| Sub Working Group on Spectrum Arrangement and Harmonization  (Sub-WG SA&H**)** | Sub Working Group on IMT  (Sub-WG IMT) | Task Group on Modern Satellite Applications  (TG MSA) |
| Task Group on High Altitude Platform Station  (TG HAPS) | Task Group on Aeronautical and Maritime  (TG A&M) |
| Sub Working Group on Sharing Studies  (Sub-WG SS) | Task Group on Fixed Wireless and Ground-Based Radar Systems  (TG FWS/GBRS) | Task Group on Public Protection and Disaster Relief  (TG PPDR) |
| Task Group on Internet  of Things  (TG IoT) | Task Group on Railway Radiocommunications  (TG RR) |
| Sub Working Group on Spectrum Monitoring  (Sub-WG SM) | Task Group on Intelligent Transportation Systems  (TG ITS) |  |
| Task Group on Wireless Power Transmission  (TG WPT) |

# 2. TERMS OF REFERENCE OF THE AWG WORKING GROUPS

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| **WG Spec** | * To develop plans for harmonized spectrum usage for radiocommunication systems in the region; * To develop optimum sharing methodologies, conduct coexistence and compatibility studies between radiocommunication services and systems to ensure compatibility; * To study the impact of interference to radiocommunication services from other sources; * To coordinate efforts to eliminate harmful interference between concerned countries, as appropriate. |
| **WG Tech** | * To carry out studies and develop deliverables which facilitate development of new wireless technologies; * To share information on emerging wireless technologies, including use cases of the technologies; * To encourage industry research and development; * To perform studies of technical and operational matters related to WRC issues, in order to assist APT Members’ to have a better understanding of the issues; * To conduct technical consultation based upon the requests of APT Members to meet the needs of the developing countries, and reflect in the work and deliverables of the WG TECH; * To identify the spectrum requirements for new radio technologies. |
| **WG S&A** | * To carry out studies and develop deliverables which facilitate the introduction of new wireless applications and radiocommunication services; * To perform the study on implementation and deployment of radiocommunication services and applications; * To perform studies related to WRC issues in the scope of WG S&A, in order to assist APT Members’ to have a better understanding of the issues; * To study market and user requirements of wireless services and applications; * To share information on emerging wireless applications; * To develop and update recommendations and reports, other documentation, on wireless services and applications; and * To ensure that the requirements and needs of the developing countries are reflected in the work and deliverables of the WG S&A. * To identify the spectrum requirements for wireless applications and services |

**3. TERMS OF REFERENCE OF THE SUB WORKING GROUPS AND TASK GROUPS**

**Sub Working Groups of Working Group on Spectrum Aspects**

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| **Sub-WG SA&H** | * To review the availability of spectrum resulting required for the introduction of new system technologies or revised allocations and the potential new or alternative uses of the spectrum thus made available for new applications; * To develop recommended harmonized approaches for the introduction of new wireless technologies, services and application in such spectrum, including preferred frequency band and associated technical characteristics; * To develop APT Recommendations/Reports on spectrum arrangement and/or harmonization; * To review any draft texts on spectrum arrangement and/or harmonization, which may be included in APT Recommendations and/or Reports already developed in AWG. |
| **Sub-WG**  **SS** | * To conduct sharing and compatibility studies between different systems and applications in the same and adjacent bands; * To study characteristics and methodologies for modelling and simulation to support the above-mentioned sharing and compatibility studies; * To study techniques and technical conditions for sharing and compatibility among these systems and applications; * To develop related APT Reports and/or Recommendations and other documentation resulting from these studies; * To review any draft texts on sharing and compatibility matters which may be included in APT Recommendations and/or Reports already developed in AWG. |
| **Sub-WG SM** | * To share information on spectrum monitoring and analysis methods with spectrum monitoring systems and to set up programs such as frequency occupancy measurement; * To share members’ case studies on harmful interference and its elimination; * To promote the introduction and implementation of new technologies and applications which could be used in spectrum monitoring activities in the Asia-Pacific region; * To exchange views and develop the methods for cooperation on preventing interference between neighboring countries; * To share information and good practices on the planning, operational, management and maintenance method of monitoring stations and other facilities and to develop related AWG documents; * To facilitate the deployment of the APT Frequency Information System (AFIS). |

**Sub Working Group and Task Groups of Working Group on Technology Aspects**

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| **Sub-WG IMT** | * To review activities on the future development of IMT discussed inthe ITU-R Working Party 5D (WP 5D) and relevant organizations; and * To study technology related aspects of the on-going and future development and implementation of IMT in the Asia-Pacific region. |
| **TG FWS/GBRS** | - To gather following information regarding fixed wireless and ground-based radar systems:  o Frequency planning and usage;  o Licensing conditions;  o Usages and applications;  o Standardization activities;  - To study on following questions regarding fixed wireless and ground-based radar systems:  o Current status of frequency planning and usage, frequency assignment, band width, main usages and applications;  o Trends on technology development and R&D prospects on future usages and new applications;  - Based on the above studies, to develop Reports and/or Recommendations as appropriate. |
| **TG IoT** | * To study technical and operational characteristics of IoT and carry out studies on the working scenarios, wireless systems and applications for implementation and development of IoT in APT region ; * To share information on advanced technologies related to IoT with APT Members. * To share information about IoT on current status of regulation and frequency use in Asia-Pacific region, relevant technical standards, technical evolving trends, and studies upon IoT in relevant international and regional organization; * To study market and user requirements of IoT; * To identify the implications of spectrum management for IoT; * To develop related APT Recommendations/Reports or other documentation resulting from above activities and, * To enhance and timely update the published APT Recommendation/Reports on SRD, UWB and RFID |
| **TG ITS** | * To share information on current status of regulation and frequency use of ITS radio system; * To determine the spectrum needs (if any) of ITS radio communications; * To invite and collect information relevant to possible regional harmonization of ITS radio-communications spectrum, taking into account the trends and studies towards spectrum harmonization, applications and standards developments; * To share information on current status of introduction and development of ITS radio system; * To study and discuss useful ITS applications and standardization in the Asia-Pacific region;   To develop Recommendations and Reports on ITS Radiocommunications as required. |
| **TG WPT** | - To gather following information   * Applications Potential market * Relevant technical and operational characteristics for WPT Standardization efforts in the world * To study following questions * What category of spectrum usage could administrations consider? (e.g., ISM or others) * What radio frequency bands are suitable for WPT? * What steps are required to make sure radio services protected from the usage of WPT? * What are impacts on human body from RF exposure of WPT? * Based on the above studies, to develop the recommendation and/or report, as appropriate. |
| **TG HAPS** | * To study the operational scenarios and deployment of HAPS in APT region; * To share information about HAPS on current status of frequency usage and national regulatory experiences in Asia-Pacific region, relevant technical standards, technical evolving trends, and studies upon HAPS in relevant international and regional organization; * To study market and user requirements of HAPS; * To develop related APT Recommendations/Reports and other documentation resulting from above activities. |

**Task Groups of WG Service and Applications**

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| **TG MSA** | * To assist the requirements of the APT membership in putting into practice modern satellite applications in a national context. * In this context, to develop reports on satellite applications in the Asia Pacific Region, such as satellite communication systems, satellite devices, key components, interfaces, interconnection and intercommunication, licensing, Ka-band applications and deployment, satellite broadband applications, new applications of mobile satellite, disaster relief applications etc., to serve the mutual interests inside the APT and outside, for instance in the ITU-R Study Group 4, without overlapping with the activities of APG. * To study and develop possible techniques that may be used to improve the compatibility between satellite and other services. |
| **TG A&M** | * To consider the following issues of the use of mobile phone as well as the use of other modern wireless technologies on-board the aircraft and vessels:   For the use of mobile phones on-board the aircraft and vessels:   * + - Licensing issues and possible ways to harmonize the approach to licensing by APT members such as mutual recognition while taking due account of national differences;     - Spectrum matters noting that currently a number of different frequency bands and different mobile technologies are in use in the Asia-Pacific region; and     - Researching technical requirements especially in regard to the capability of the equipment on-board the aircraft and vessels as well as the technical and operational conditions of each country being over-flown.     For other wireless technologies:   * + - Service and application issues including technical characteristics, preferred frequency bands and the use of these frequency bands.     - Associated regulatory and licensing issues, when considered appropriate. and     - To study and review future wireless communication technologies on aeronautical and maritime |
| **TG RR** | * To study the operational scenarios and deployment of railway radiocommunication systems; * To share information about railway radiocommunication systems on current status of spectrum usage and national regulatory experiences in Asia-Pacific region, relevant technical standards, technical evolving trends, and studies upon railway radiocommunication systems in relevant international and regional organizations; * To study the system description, architecture, functionality and service requirements etc. of railway radiocommunication systems; * To develop related APT Recommendations/Reports and other documentation resulting from above activities; * To provide information on various potential services and applications, and success factors to deliver services and applications for railway radiocommunication systems. |
| **TG PPDR** | * Study the working scenarios and implementation strategies of PPDR Radiocommunications; * Develop Reports and recommendations on PPDR technologies, user requirements, spectrum requirements and implementation strategies; * Share information about PPDR radiocommunication on current status of spectrum usage and deployment scenarios in Asia-Pacific region, relevant technical standards, technical evolving trends with relevant international and regional organizations; * Develop related APT Recommendations/Reports and other documentation resulting from above activities. |

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# 4. LIST OF OFFICE BEARERS

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| **AWG**  **Chairman** | **Mr. Le Van Tuan**  Authority of Radio Frequency Management  Viet Nam (S. R. of)  E-mail: [lvtuan@vnta.gov.vn](mailto:lvtuan@vnta.gov.vn) | **AWG**  **Vice-Chairman** | **Dr. Dae Jun Kim**  TTA  Korea (R. of)  E-mail : [kdj@tta.or.kr](mailto:kdj@tta.or.kr) |
| **AWG Vice- Chairman** | **Dr. Eng. Khoirul Anwar**  Telkom University  Indonesia  Email: [anwarkhoirul@telkomuniversity.ac.id](mailto:anwarkhoirul@telkomuniversity.ac.id) | **Chairman**  **WG Spec** | **Mr. John Lewis**  Added Value Applications  New Zealand  Email: john.lewis@bluewin.ch |
| **Chairman WG Tech** | **Mr. Hu Wang**  Huawei Technologies Co., Ltd.  China (P. R. of)  Email: [wanghu.wanghu@huawei.com](mailto:wanghu.wanghu@huawei.com) | **Chairman**  **WG S&A** | **Mr. Takahiko Yamazaki**  Mitsubishi Electric Corporation  Japan  Email:  [Yamazaki.Takahiko@ak.MitsubishiElectric.co.jp](mailto:Yamazaki.Takahiko@ak.MitsubishiElectric.co.jp) |

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| **Sub-WGs of WG on SPEC** | | | |
| **Sub-WG SA&H** | **Ms. Lyu Boya**  Huawei Technologies Co. Ltd.  China **(P. R. of)**  **Email:** [lvboya@huawei.com](mailto:lvboya@huawei.com) | **Sub-WG Sharing** | **Mr. Alex Orange**  Qualcomm International Inc., Hong Kong  E-mail : [aorange@qti.qualcomm.com](mailto:aorange@qti.qualcomm.com)  **Mr. Yiran Jin**  Samsung Electronics  Korea (R. of)  Email: [yiran.jin@samsung.com](mailto:yiran.jin@samsung.com) |
| **Sub-WG SM** | **Mr. Huang Jia**  State Radio Monitoring Center  China **(P. R. of)**  **Email:** [ferrero.huang@srrc.org.cn](mailto:ferrero.huang@srrc.org.cn) |
| **Sub-WG and TGs of WG TECH** | | | |
| **Sub-WG IMT** | **Mr. Yasuhiro Kato**  **Association of Radio Industries and Businesses (ARIB)**  Japan  Email: [y-kato@arib.or.jp](mailto:y-kato@arib.or.jp) | **TG HAPS** | **Dr. Lang Baozhen**  **China Academy of Information and Communications Technology**  China (P. R. of)  E-mail : [langbaozhen@sina.cn](mailto:langbaozhen@sina.cn) |
| **TG FWS** | **Dr. Tetsuya Kawanishi**  NICT  Japan  Email: [kawanishi@nict.go.jp](mailto:kawanishi@nict.go.jp) | **TG IOT** | **Dr. Satoshi Tsukamoto**  National University Corporation, Toyohashi University of Technology, Japan  Email: [tsukamoto@comm.ee.tut.ac.jp](mailto:tsukamoto@comm.ee.tut.ac.jp)  **Mohammad Mahdi Askari**  Communication Regulatory Authority, Islamic Republic of Iran  Email : [m.askari@cra.ir](mailto:m.askari@cra.ir) |
| **TG ITS** | **Mr. Satoshi Oyama Association of Radio Industries and Businesses (ARIB) Japan Email :** [s-oyama@arib.or.jp](mailto:s-oyama@arib.or.jp) | **TG WPT** | **Dr. Chan Hyung Chung**  Director, Association (RAPA)  Korea (R. of)  Email: [backbum@rapa.or.kr](mailto:backbum@rapa.or.kr) |
| **TGs of WG S&A** | | | |
| **TG MSA** | **Ms. Masmurni Binti Abdul Rahman Measat Satellite Systems Sdn Bhd**  **Malaysia Email :** [masmurni@measat.com](mailto:masmurni@measat.com) | **TG RR** | **Mr. Liu Bin**  State Radio Monitoring Center China (P. R. of)  Email: [liubin@srrc.org.cn](mailto:liubin@srrc.org.cn) |
| **TG A&M** | **Dr. Xu Ying**  State Radio Monitoring Center  China (P. R. of)  E-mail: [xuying@srrc.org.cn](mailto:xuying@srrc.org.cn) | **TG PPDR** | **Mr. Bharat Bhatia**  Motorola India Pvt. Ltd.  India (R. of)  E-mail : [bharat.bhatia@motorola.com](mailto:bharat.bhatia@motorola.com) |

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# 5. MICRO WORK PLAN

**5.1 Working Group on Spectrum Aspects**

* + 1. **Sub-Working Group on Spectrum Arrangements and Harmonization**

**5.1.1.1 Studies on frequency arrangement(s) in the band 1 427 – 1 518 MHz**

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| **Title** | **Studies on frequency arrangement(s) in the band 1 427 – 1 518 MHz** |
| **Document Type** | Report |
| **Group/Chair** | WG-SPEC/Sub-WG 1/Ms LYU Boya |
| **Editor(s)** |  |
| **Scope** | To provide technical and regulatory considerations on development of the frequency arrangement(s) in the band 1 427 – 1 518 MHz and possible harmonized frequency arrangement(s) for IMT systems in the band for the Asia-Pacific region |
| **Purpose** | To provide administrations in the Asia-Pacific region wishing to implement IMT systems with relevant information on development of the frequency arrangement(s) in the band 1 427 – 1 518 MHz.  To reflect the views of these administrations in the region into the on-going work in ITU-R WP 5D, as necessary. |
| **Related Document** | Recommendation ITU-R M.1036-5  Resolution 223 (Rev.WRC-15)  Resolution 750 (Rev.WRC-15)  Resolution 761 (WRC-15) |
| **Related Organization** | ITU-R  3GPP |
| **Timelines** | **2016**  **AWG-20**   * + Develop a workplan for the studies   + Discuss and develop a working document towards a draft new APT/AWG Report on frequency arrangement(s) in the band 1 427 – 1 518 MHz based on the contributions and meeting discussions.   **2017**  **AWG-21**   * + Continue to develop the working document based on the contributions and meeting discussions.   + Review the study results in other AWG sub-Working groups   + Develop a questionnaire   **AWG-22**   * + Review responses to the questionnaire   + Continue to develop the working document based on the contributions and meeting discussions.   **2018**  **AWG-23**   * + Review responses to the questionnaire   + Continue to develop the working document based on the contributions and meeting discussions.   **AWG-24**   * + Review responses to the questionnaire   + Continue to develop the working document based on the contributions and meeting discussions.   **2019**  **AWG-25**   * + Update the working document towards a draft new APT/AWG Report on studies on frequency arrangements for IMT in the band 1427-1518 MHz   + Review the study results from other AWG sub-working groups   **2020**  **AWG-26**   * + Update the working document towards a draft new APT/AWG Report on studies on frequency arrangements for IMT in the band 1427-1518 MHz   **2021**  **AWG-27**   * + Finalize a draft new APT/AWG Report on studies on frequency arrangements for IMT in the band 1427-1518 MHz for approval in the AWG Plenary   Note: this timeline will be reviewed at every AWG meeting |

**5.1.1.2 Frequency ranges on non-beam WPT for Electric Vehicles (WPT-EV)**

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| **Title** | **Frequency ranges on non-beam WPT for Electric Vehicles (WPT-EV)** |
| **Document Type** | APT Recommendation |
| **Group/Chair** | WG-TECH/TG WPT/Mr. Chan Hyung Chung WG-SPEC/SWG SA&H/Ms. LYU Boya |
| **Editor(s)** | Mr. ISHIDA, Kaz (Japan) |
| **Scope** | Draft and complete the APT Recommendation on frequency ranges for non-beam WPT-EV |
| **Purpose** | Study and identify frequency ranges for non-beam WPT-EV in APT countries:   1. To ensure that non-beam WPT-EV applications and equipment minimize the potential for harmful interference to radiocommunication services including the standard frequency and time signal service and the radio astronomy service, so that these remain protected from radio frequency energy emanating from WPT-EV falling into all bands. 2. To facilitate smooth deployment of WPT systems without spectrum concerns; 3. To maximize users’ benefit of WPT given by global or regional spectrum harmonization; 4. To address APT administrations to take appropriate regulatory measures on spectrum that should be taken into consideration when WPT-EV is deployed. |
| **Related Document** | Draft Revision of Recommendation ITU-R SM.2110-0“Guidance on frequency ranges for operation of non-beam wireless power transmission for electric vehicles” (In adoption / approval process in summer-autumn 2019; See Doc. [1/217(Rev.1)](https://www.itu.int/md/R15-SG01-C-0217/en) & [CACE/898](https://www.itu.int/md/R00-CACE-CIR-0898/en) for Adoption)  [APT/AWG/REP-76](https://www.apt.int/AWG-RECS-REPS) APT Report “Frequency Ranges used for Non-Beam WPT for Electric Vehicles”  Report ITU-R SM.2451-0 (WPT\_EV\_IMPACT) - Assessment of impact of wireless power transmission for electric vehicle charging (WPT-EV) on radiocommunication services (*Publication work in progress in summer 2019*; See [Doc. 1/214(Rev.1)](https://www.itu.int/md/R15-SG01-C-0214/en))  ITU-R Question [ITU-R 210-3/1](https://www.itu.int/md/R12-WP3M-C-0066/en)  [Report ITU-R SM.2303-2](https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-SM.2303-2-2017-PDF-E.pdf) “Wireless power transmission using technologies other than radio frequency beam”  [APT/AWG/REC-10](https://www.apt.int/AWG-RECS-REPS) APT recommendation on frequency ranges for Non-Beam WPT for mobile devices |
| **Related Forums and Organization** | ITU-R SG1, WP 1A, and WP 1B |
| **Timelines** | WG-TECH reviews on technical aspects first, followed by review on spectrum aspects in WG-SPEC.  **2019**   * AWG-25   + Development of the Work Plan.   + Review the initial draft and share information on the latest study results on the impact from WPT-EV to radiocommunication systems.   **2020**   * AWG-26   + Study ITU-R’s WPT-EV Recommendation approval on frequency ranges (Taking place in the latter half of 2019).   + Study APT-specific requirements on the frequency ranges.   + Update the draft.   **2021**   * AWG-27   + Finalize the new draft APT recommendation to send out for the APT approval process. |

**5.1.1.3 Revision of APT/AWG/REP-79 APT Report on frequency arrangements for IMT in the band 470 –698 MHz**

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| **Title** | **Revision of APT/AWG/REP-79 APT Report on frequency arrangements for IMT in the band 470 –698 MHz** |
| **Document Type** | Report |
| **Group/Chair** | WG-SPEC/Sub-WG 1/Ms.LYU Boya |
| **Editor(s)** | Dr. Mansoor Shafi |
| **Scope** | To revise the APT/AWG/REP-79 to develop frequency arrangements in the band 470-703 MHz for those countries in APAC that wish to implement both the APT700 and a 600 MHz frequency arrangements that is optimal for APT countries |
| **Purpose** | To revise the APT/AWG/REP-79 to develop frequency arrangements in the band 470-703 MHz for those countries in APAC that wish to implement both the APT700 and a 600 MHz frequency arrangements that is optimal for APT countries  To support and assist APT Members in using the radio frequency spectrum and deploying radio networks effectively |
| **Related Document** | APT/AWG/REP-79 APT REPORT ON  FREQUENCY ARRANGEMENTS FOR IMT IN THE BAND 470 –698 MHZ  ITU-R Recommendation M. 1036-6 |
| **Related Organization** | ITU-R WP5D  3GPP |
| **Timelines** | **AWG-26 (Sep. 2020 online)**   * Consider input documents * Develop workplan * Develop working document * Prepare and send Liaison Statement to 3GPP   **AWG-27 (2021)**   * Consider input documents * Consider reply from 3GPP * Continue developing working document * Prepare and send a further Liaison Statement to 3GPP if necessary.   **AWG-28 (2021)**   * Consider input documents * Finalise revision of APT/AWG/REP-79 for approval |

* + 1. **Sub-Working Group on Sharing Studies**
       1. **Sharing and compatibility studies for selected frequency bands below 6 GHz**

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| **Title** | **Sharing and compatibility studies for selected frequency bands below 6 GHz** | | |
| **Document Type** | APT Report(s) | | |
| **Group/Chair** | WG-SPEC/Sub-WG Sharing Studies/Mr. Alex Orange | | |
| **Editor(s)** | TBD | | |
| **Scope** | * To conduct sharing and compatibility studies to facilitate IMT implementation and not related to WRC-19 for the interested APT members: * 470-698 MHz * 1427-1452 MHz * IMT in 1492-1518 MHz and MSS in 1518-1525 MHz * 4 400 – 4 500 MHz * 4 800 – 4 990 MHz * And to undertake further sharing and compatibility studies if requested by APG.   Note: frequency ranges above are an initial list. This list could be updated in future AWG meetings. | | |
| **Purpose** | * To conduct sharing and compatibility studies between IMT and other services within the APT region on the listed and neighboring frequency bands. * To develop APT Report in accordance with relevant study results. | | |
| **Related Document** |  | | |
| **Related Organization** | ITU-R | | |
| **Timelines** | **2016**  **AWG-19 (2016 Feb.)**   * Identify the frequency bands requiring the sharing study in AWG. * Develop work plan and timeline for the joint task group. * Adopt the work plan and frequency bands requiring sharing studies. * Provide additional questionnaires to TG IMT on the survey. * Inform the initiation of this study to APG 19-1.   **AWG-20 (2016-Sep.)**  Update the work plan  Consider input contributions.  Develop a working document towards a draft new Report in relation to listed frequency bands.  **2017**  **AWG-21(2017 -Apr.)**   * Consider and review the input contributions. * Further develop a working document towards a draft new Report in relation to a frequency band.   **AWG-22 (2017-Sep.)**   * Discuss the input contributions. * Develop the working document towards a draft new Report. * Submit study results to APG and relevant ITU-R groups as appropriate.   **2018**  **AWG-23 (2018-1Q)**   * Discuss the input contributions. * Further develop the working document towards a draft new Report. * Submit study results to APG and relevant ITU-R groups as appropriate.   **AWG-24 (2018-3Q)**   * Discuss the input contributions. * Further develop the working document towards a draft new Report.   **2019**  **AWG-25 (2019-2Q)**   * Discuss the input contributions. * Further develop the working document towards a draft new Report.   **2020**  **AWG-26 (2020)**   * Discuss the input contributions. * Further develop the working document towards a draft new Report.   **2021**  **AWG-27 (2021)**  Discuss the input contributions.  Complete the working document(s) towards the draft new Report (s).  Submit study results to APG and relevant ITU-R groups as appropriate Finalize the draft new Report(s) and approve it/them. | | |
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| * + - 1. **Report on mitigation measures to improve coexistence of 4G-LTE and 5G-NR around 3300 MHz and 3600 MHz and other systems operating in adjacent and in-band spectrum** | | | |
| **Title** | | **Report on mitigation measures to improve coexistence of 4G-LTE and 5G-NR around 3300 MHz and 3600 MHz and other systems operating in adjacent and in-band spectrum** |
| **Document Type** | | Report |
| **Group/Chair** | | SWG Spectrum Sharing/Mr. Alex Orange |
| **Editor(s)** | |  |
| **Scope** | | Provide up-to-date information on techniques, measures, mechanisms and their efficacy to improve coexistence of 4G-LTE and 5G-NR systems around 3300 MHz and 3600 MHz with other systems operating in adjacent and in-band spectrum. |
| **Purpose** | | Provide APT member countries with practical information on improving coexistence of 4G-LTE and5G-NR systems operating around 3300 MHz and 3600 MHz with other systems operating in adjacent and in-band spectrum to maximize the utility and value of the radio spectrum, and accommodate new and incumbent usage |
| **Related Document** | |  |
| **Related Forums** | | ITU-R SG5 WP 5D, SG4 WP4A, 3GPP |
| **Timelines** | | **AWG-24 September 2018**  🡪 create, and approve the work plan  🡪 develop content for working document towards a Draft New Report  **AWG-25 (2019)**  🡪 Review input documents to meeting  🡪 Create initial working document toward a Draft New Report  **AWG-26 (2020)**  🡪 Review input documents to meeting  🡪 Update the working document toward a Draft New Report with input contributions  **AWG-27 (2021)**  🡪 Review input documents to meeting  🡪 Update the working document toward a Draft New Report  🡪 Approve working document as Draft New Report  **AWG-28 (2021)**  🡪 Approve DNR as Draft New Report |

* + - 1. **Study on technical and operational measures for coexistence between terrestrial and satellite IMT systems deployed in 1 980-2 010 MHz/2 170-2 200 MHz in the Asia-Pacific Region**

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| **Title** | **Study on technical and operational measures for coexistence between terrestrial and satellite IMT systems deployed in 1 980-2 010 MHz/2 170-2 200 MHz in the Asia-Pacific Region** |
| **Document Type** | Report |
| **Group/Chair** | SWG Spectrum Sharing/Mr. Alex Orange |
| **Editor(s)** |  |
| **Scope** | 1. Analyze the status quo and plans of IMT deployment in the bands of 1980-2010 MHz and 2170-2200 MHz in APT member countries. 2. Review and analyze the related study results of ITU-R regarding the coexistence and compatibility for the deployment of satellite and terrestrial components of IMT in the bands of 1980-2010 MHz and 2170-2200 MHz. 3. Considering the specific requirements in APT region, further study on feasible technical and operational measures for effectively mitigating the potential interference between the satellite and terrestrial IMT systems in the bands of 1980-2010 MHz and 2170-2200 MHz. |
| **Purpose** | 1. Facilitate the development and co-existence of both satellite and terrestrial components of IMT in the bands of 1980-2010 MHz and 2170-2200 MHz in the Asia-Pacific region. 2. Provide information for the coordination between related countries. |
| **Related Document** | Resolution 212 (Rev.WRC-19)  Recommendation ITU-R M.1036-5  APT Report-46 Rev.2 |
| **Related Organization** | ITU-R, AWG |
| **Timelines** | **2018**  AWG-24:   * + Initial of the work.   + Discuss the scope of the work.   + Develop work plan and timeline.   **2019**  AWG-25:   * + Develop the working document based on the contributions and meeting discussion.   + Review and analyse the results of the sharing studies in ITU-R.   + Update the work plan and timeline, as appropriate.   **2020**  AWG-26:   * + Continue developing the working document based on the contributions and meeting discussion.   + Review and analyse the results of the sharing studies in ITU-R.   + Update the work plan and timeline, as appropriate.   **2021**  AWG-27:   * + Develop the working document based on the contributions and meeting discussion.   + Finalize and approve the working document and approve. |

* + 1. **Sub-Working Group on Spectrum Monitoring**

**5.1.3.1 APT Report on spectrum monitoring technologies and measures on civilian use of very small unmanned aircraft**

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| --- | --- |
| **Title** | **APT Report on spectrum monitoring technologies and measures on civilian use of very small unmanned aircraft** |
| **Document Type** | Report |
| **Group / Chair** | Spectrum sub-Working Group-Spectrum Monitoring /Mr. ZHENG Gaozhe |
| **Editor(s)** | Mr. ZHENG Gaozhe |
| **Scope** | To discuss and investigate the subject-matter relevant to spectrum monitoring technologies and measures on civilian very small UAS. |
| **Purpose** | To exchange knowledge and share information on this issue in APT countries. |
| **Related Document** |  |
| **Related Organization** | ITU-R |
| **Timelines** | AWG-25 (2019)   * Agree and Initiate new work item   AWG-26 (2020)   * Consider the input contribution and draft working document   AWG-27, 28 (2021)   * Consider the input contribution and draft working document   AWG-29 (2022)   * To finalize the Report |

**5.2 Working Group on Technology Aspects**

**5.2.1 Sub-Working Group on IMT**

**5.2.1.1 Necessary technical conditions to support technology neutrality and spectrum efficiency for implementation of IMT networks in bands identified for IMT**

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| --- | --- |
| **Title** | **Report(s) on necessary technical conditions to support technology neutrality and spectrum efficiency for implementation of IMT networks in bands identified for IMT** |
| **Document Type** | APT/AWG Report(s) |
| **Group/Chair** | WG-Technology Aspects / Sub-WG IMT, Mr. Yasuhiro Kato (J) |
| **Editor(s)** | Nguyen Thu Ha (VTN) |
| **Scope** | To support and assist APT Members in using the radio frequency spectrum and deploying radio networks effectively, it needs studies on establishing the necessary technical conditions to be applied for implementation of IMT networks that could help APT Members on regulating the neutrality and spectrum efficiency of bands identified for IMT: |
| **Purpose** | * To collect information on regulatory for implementation of IMT networks in the frequency bands identified for IMT in Asia-Pacific Region * To develop an APT/AWG survey Report by compiling the responses from APT Members * To develop an APT/AWG technical Report to provide the necessary technical conditions (frequency ranges, power limits, spectrum masks…) to be applied for implementation of IMT networks in the frequency bands identified for IMT to support technology neutrality and spectrum efficiency |
| **Related Document** | **APT/AWG/REP-15**: Information of Mobile Operator’s Frequencies, Technologies and License Durations in Asia Pacific Countries  **APT/AWG/REP-84**: Regulatory Information For Implementation Of IMT Networks in Asia-Pacific Region |
| **Related Forums and Organization** | ITU-R WP 5D, 3GPP |
| **Timelines** | **2017**  AWG-22 (September)   * Initiate work item. * Prepare and issue a questionnaire to seek information from APT Members. * Invite APT members to provide their initial responses to the questionnaire until AWG-24. * Develop a detailed work plan and timeline.   **2018**  AWG-23 (April)   * Review the initial responses from APT Members and corresponding input contributions. * Draft the working document towards an APT/AWG survey Report to summarize the responses to the questionnaire based on the contributions from APT Members and the meeting discussion. * Consider to develop the working document towards an APT/AWG technical Report as appropriate. * Update the detailed work plan.   AWG-24 (September)   * Consider relevant input documents. * Finalize the working document as an APT/AWG survey Report. * Draft the working document towards an APT/AWG technical Report. * Update the detailed work plan.   **2019**  AWG-25 (July)   * No input documents. * Update the detailed work plan.   **2020**  AWG-26 (September)   * No input documents. * Update the detailed work plan.   **2021**  AWG-27   * Consider relevant input documents. * Finalize the working document towards an APT/AWG technical Report. |

**5.2.1.2 Current status and future plan of implementation and deployment of IMT-2020 (5G) in Asia-Pacific region**

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| --- | --- |
| **Title** | **Current status and future plan of implementation and deployment of IMT-2020 (5G) in Asia-Pacific region** |
| **Document Type** | APT/AWG Report |
| **Group/Chair** | WG-TECH/Sub-WG IMT, Mr. Yasuhiro Kato (J) |
| **Editor(s)** | Mr. Meng Xi (CHN) |
| **Scope** | To collect information on the current status and future plan of IMT-2020 (5G) in APT countries and on industry activities |
| **Purpose** | To facilitate study on 5G in Asia-Pacific region |
| **Related Document** | APT/AWG/REP-15: Information of Mobile Operator’s Frequencies, Technologies and License Durations in Asia Pacific Countries |
| **Related Organization** | ITU-R WP 5D, 3GPP |
| **Timelines** | **AWG-23 (April, 2018)**   * Develop work plan and timeline, * Prepare and issue a questionnaire to seek information from APT Members.   **AWG-24 (September, 2018)**   * Consider the responses from APT Members, * Consider input contributions, * Develop a working document towards an APT/AWG Report to summarize the responses to the questionnaire.   **AWG-25 (July, 2019)**   * Consider input contributions, * Update the working document as an APT/AWG Report. * Update the detailed work plan.   **AWG-26 (September, 2020)**   * Consider input contributions, * Update the working document as an APT/AWG Report.   **AWG-27 (2021)**   * Consider input contributions, * Update the working document and finalize it as an APT/AWG Report. |

**5.2.1.3 Studies on implementation aspects of IMT-2020 in the frequency bands below 6 GHz in Asia-Pacific region**

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| --- | --- |
| **Title** | **Studies on implementation aspects of IMT-2020 in the frequency bands below 6 GHz in Asia-Pacific region** |
| **Document Type** | APT/AWG Report |
| **Group/Chair** | WG-TECH/Sub-WG IMT, Mr. Yasuhiro Kato(J) |
| **Editor(s)** | TBD |
| **Scope** | To study implementation aspects of IMT-2020 in the frequency bands below 6 GHz in the Asia-Pacific region. The studies include investigations on:   * on-going industry developments, * migration of networks from IMT-2000/IMT-Advanced to IMT-2020, * technical conditions to be applied for Active Antenna Systems (AAS) for IMT-2020 and for evolution of IMT-Advanced networks |
| **Purpose** | To provide APT Members with information relevant to implementation aspects of IMT-2020 in the frequency bands below 6 GHz in their countries. |
| **Related Document** | TBD |
| **Related Organization** | 3GPP, ITU-R |
| **Timelines** | **2018**  AWG-24 (September)   * + Develop a work plan and timeline,   **2019**  AWG-25 (July)   * + Consider received contributions,   + Develop a skeleton of the working document,   **2020**  AWG-26 (September)   * + Consider received contributions, * Update the working document and the detailed workplan   **2021**  AWG-27   * + Consider received contributions,   + Update the working document   AWG-28   * + Consider received contributions.   + Update the working document and finalize it as an APT/AWG Report. |

**5.2.1.4 Studies on 5G implementation in frequency bands above 24.25 GHz**

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| **Title** | **Studies on 5G implementation in frequency bands above 24.25 GHz** |
| **Document Type** | APT/AWG Report |
| **Group/Chair** | WG-TECH/Sub-WG IMT, Mr. Yasuhiro Kato (J) |
| **Editor(s)** | Mr. Diwakar Sharma (Samsung) |
| **Scope** | To study current or intended implementation of 5G in the frequency bands above 24.25 GHz. The studies include investigations on:   * global trends, * on-going specification developments by 3GPP (currently, in the 24.25-27.5 GHz, 26.5-29.5 GHz, 37-40 GHz, and 39.5-43.5 GHz bands), * on-going industry developments, * case studies in those countries that have implemented or plan to implement 5G. |
| **Purpose** | To provide APT Members with relevant information on 5G mentioned in the scope. |
| **Related Document** | TBD |
| **Related Organization** | 3GPP, ITU-R |
| **Timelines** | **2018**  AWG-24 (September)   * + Consider received contributions,   + Develop a work plan and timeline,   **2019**  AWG-25 (July)   * + Consider received contributions,   + Develop a working document and update work plan   **2020**  AWG-26 (September)   * + Consider received contributions,   + Update the working document and the detailed workplan   **2021**  AWG-27   * + Consider received contributions,   + Update the working document   AWG-28   * + Consider received contributions,   + Update the working document and finalize it as an APT/AWG Report. |

**5.2.1.5 Update on APT/AWG/REP-15 (Rev.6)**

|  |  |
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| **Title** | **Update on APT/AWG/REP-15 (Rev.6)** |
| **Document Type** | APT/AWG Report |
| **Group/Chair** | WG-TECH/Sub-WG IMT, Mr. Yasuhiro Kato (J) |
| **Editor(s)** | Mr. Yasuhiro Kato (J) |
| **Scope** | To update APT/AWG/REP-15(Rev.6) “Information of Mobile Operator’s Frequencies, Technologies and License Durations in Asia Pacific Countries” |
| **Purpose** | To provide APT Members with latest information on Mobile operators’ frequencies, technologies and license duration in APT countries |
| **Related Document** | None |
| **Related Organization** | 3GPP, ITU-R |
| **Timelines** | **2020**  AWG-26 (September)   * + Consider received contributions * Develop a working document and work plan   + Issue Circular Letter to invite updated information   **2021**  AWG-27   * + Consider received contributions,   + Update the working document and finalize it as an APT/AWG/REP-15(Rev.7) |

**5.2.2 Task Group on Fixed Wireless Systems and Ground-Based Radar Systems**

**5.2.2.1 Models for FWS link performance degradation due to wind**

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| **Title** | **Models for FWS link performance degradation due to wind** |
| **Document Type** | APT Recommendation or report |
| **Group/Chair** | TG FWS/Dr. Tetsuya Kawanishi |
| **Editor(s)** | Mr. Eisaku Sasaki and Mr. Meng Xi, |
| **Scope** | Draft and complete the APT Recommendation/Report on models for FWS link performance degradation due to wind |
| **Purpose** | Study and identify the models for FWS link performance degradation |
| **Related Document** | APT report on FWS Link Performance under severe weather conditions |
| **Related Forums and Organization** | ITU-R SG3 WP 3J, WP 3K and WP 3M, and SG5 WP 5C |
| **Timelines** | 2018   * AWG-23:   + Development of the Work Plan at TG-FWS   + Development of the working document to establish the basic structure of the Recommendation or Report * AWG-24:   + Development of the preliminary draft new Recommendation/Report to organize the technical basis etc.   2019   * AWG-25:   + Continue development of the preliminary draft new Recommendation/Report   2020   * AWG-26:   + Continue development of the preliminary draft new Recommendation/Report * 2021AWG-27:   + Continue development of the preliminary draft new Recommendation/Report * AWG-28:   + Finish development of the preliminary draft new Recommendation/Report and upgrade it to draft new Recommendation/Report. |

**5.2.2.2 Point-to-point radiocommunication systems operating in the frequency band 252-296 GHz**

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| **Title** | **Point-to-point radiocommunication systems operating in the frequency band 252-296 GHz** |
| **Document Type** | Report |
| **Group/Chair** | TG-FWS/ Mr. Tetsuya Kawanishi, Japan |
| **Editor(s)** | TBD |
| **Scope** | Provide point-to-point radiocommunication system architecture and their technical and operational characteristics. |
| **Purpose** | Provide point-to-point radiocommunication system architecture and their technical and operational characteristics to APT member countries as guidance. |
| **Related Document** | Report ITU-R F.2416, Technical and operational characteristics and applications of the point-to-point fixed service applications operating in the frequency band 275-450 GHz.  Report ITU-R M.2417, Technical and operational characteristics of land-mobile service applications in the frequency range 275-450 GHz.  APT/AWG/REP-66(Rev.1), Short range radiocommunication systems and application scenarios operating in the frequency range 275-1000GHz. |
| **Related Forums** | ITU-R WP 5A |
| **Timelines** | **26th meeting**   * Create a work plan * Create a working document of a draft new APT Report   **27th meeting**   * Consider input contributions * Continue drafting a working document of a draft new APT Report * Prepare a liaison statement to ITU-R WP5C, if necessary   **28th meeting**   * Consider input contributions * Continue drafting a working document of a draft new APT Report * Joint meeting with WG-SPEC, if necessary * Prepare a liaison statement to ITU-R WP5C, if necessary   **29th meeting**   * Finalize the draft new APT Report and submit to the plenary |

**5.2.2.3 Walk-through scanning systems operating in the frequency band 275-1000 GHz**

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| --- | --- |
| Title | Walk-through scanning systems operating in the frequency band 275-1000 GHz |
| Document Type | Report |
| Group/Chair | TG-FWS/ Mr. Tetsuya Kawanishi, Japan |
| Editor(s) | TBD |
| Scope | Provide walk-through scanning system architecture and their technical and operational characteristics. |
| Purpose | Provide walk-through scanning system architecture and their technical and operational characteristics to APT member countries as guidance. |
| Related Document | Report ITU-R SM.2352, Technology trends of active services in the  frequency range 275-3 000 GHz.  Report ITU-R SM.2450, Sharing and compatibility studies between land-mobile, fixed and passive services in the frequency range 275-450 GHz.  APT/AWG/REP-66(Rev.1), Short range radiocommunication systems and application scenarios operating in the frequency range 275-1000GHz. |
| Related Forums | ITU-R WP1A and WP5B |
| Timelines | **26th meeting**   * Create a work plan * Create a working document of a draft new APT Report   **27th meeting**   * Consider input contributions * Continue drafting a working document of a draft new APT Report * Prepare a liaison statement to ITU-R WP1A and WP5B, if necessary   **28th meeting**   * Consider input contributions * Continue drafting a working document of a draft new APT Report * Prepare a liaison statement to ITU-R WP1A and WP5B, if necessary   **29th meeting**   * Finalize the draft new APT Report and submit to the plenary |

**5.2.3 Task Group on Internet of Things**

**5.2.3.1 LPWAN for IoT based on non-cellular technologies**

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| --- | --- |
| **Title** | **New APT report on** **LPWAN for IoT based on non-cellular technologies** |
| **Document Type** | Report |
| **Group/Chair** | WG-TECH/TG-IoT |
| **Editor(s)** | Mr. Nguyen Anh Tuan (Vietnam) |
| **Scope** | * To provide information on technical characteristics, standards and frequency bands for LPWAN IoT. * To study on technical and operational aspects such as  1. Technical requirements and field tests for the LPWAN IoT. 2. operational issues encountered in LPWAN IoT deployment and its solutions (if any).  * To study the potential harmonization opportunities on the frequency range and technical specification for the deployment of LPWAN IoT. |
| **Purpose** | To support Administrations in the implementation of non-cellular LPWAN IoT service in the unlicensed or/and licensed spectrum. |
| **Related Document** | * RESOLUTION 958 (WRC-15) "Urgent studies required in preparation for the 2019 World Radiocommunication Conference". * ITU-R SM.2423 on “Technical and operational aspects of low-power wide-area networks for machine-type communication and the Internet of Things in frequency ranges harmonised for SRD operation”. * APT/AWG/REP-35 (Rev.1) “APT Report on “Frequency bands for harmonized use of SRDs”. * APT/AWG-24/TMP “APT Survey Report on Current Status and Future Plan of Implementation and Development of Internet of Things in Asia Pacific Countries”. |
| **Related Organization** | APT |
| **Timelines** | **2018**  AWG-24:   * + Initiate the workplan   + Discuss and develop the working document structure towards new APT report on LPWAN IoT using non-cellular technologies   + Discuss the work plan and timeline   + Call for contributions   **2019** AWG-25:   * + Consider the received contributions   + Develop a working document for new draft report based on received contributions   **2020**  AWG-26:   * + Consider the received contributions   + Update a working document for new draft report based on received contributions   + Call for contributions   **2021**  AWG-27:   * + Consider the received contributions   + Finalise the Recommendation/report of APT/AWG |

**5.2.4 Task Group on Intelligent Transportation Systems**

**5.2.4.1 Cellular based V2X for ITS applications in APT countries**

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| --- | --- |
| **Title** | **Cellular based V2X for ITS applications in APT countries** |
| **Document Type** | Report |
| **Group/Chair** | TG ITS/ Mr. Satoshi (Sam) Oyama, Japan |
| **Editor(s)** | Dr. Michael Park, Korea (Republic of) |
| **Scope** | Provide up-date information on Cellular based V2X technologies, spectrum, and others in APT member countries. |
| **Purpose** | Provide APT member countries with practical information on the currently considered Cellular based V2X technologies, spectrum, and others with the purpose of reaching harmonization to the greatest extent. |
| **Related Document** | Usage of ITS in APT countries (Document# APT/AWG/REP-18 (Rev. 2)) |
| **Related Forums** | APG, ITU-R WP 5A |
| **Timelines** | **The 24th meeting (Bangkok) in September 2018**   * + create a work plan   + create preliminary contents for the Report   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 25th meeting (Tangerang, Indonesia) in June/July 2019**   * + create initial working document toward a Preliminary Draft New Report   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 26th meeting (Virtual) in September 2020**   * + carry forward a working document toward Preliminary Draft New Report with input contributions   **The 27th meeting (T.B.D.) in [Spring] 2021**   * + modify the working document toward a Preliminary Draft New Report with input contributions   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 28th meeting (T.B.D.) in [Autumn] 2021**   * + modify the working document toward a Preliminary Draft New Report with input contributions   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 29th meeting (T.B.D.) in [Spring] 2022**   * + modify the working document toward a Preliminary Draft New Report with input contributions   + obtain agreement as a Preliminary Draft New Report   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 30th meeting (T.B.D.) in [Autumn] 2022**   * + finalize and obtain approval on the Draft New Report   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary |

**5.2.4.2 Millimeter wave ITS applications in APT countries**

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| **Title** | **Millimetre wave ITS applications in APT countries** |
| **Document Type** | Report |
| **Group/Chair** | TG ITS/ Mr. Satoshi (Sam) Oyama, Japan |
| **Editor(s)** | Dr. Kazuaki Takahashi, Panasonic, Japan |
| **Scope** | Provide up-date information on the currently considered ITS technologies, spectrum, status of Millimetre wave communication services and sensors in APT member countries. |
| **Purpose** | Provide APT member countries with practical information on the currently considered millimetre wave ITS technologies, spectrum, status of commercialization service and others with the purpose of reaching harmonization to the greatest extent |
| **Related Document** | Usage of ITS in APT countries (Document# APT/AWG/REP-18 (Rev. 2)) |
| **Related Forums** | APG, ITU-R WP 5A |
| **Timelines** | **The 24th meeting (Bangkok) in September 2018**   * + create a work plan   + create preliminary contents of the Report   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 25th meeting (Tangerang, Indonesia) in June/July 2019**   * + create initial working document toward a Preliminary Draft New Report   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 26th meeting (Virtual) in September 2020**   * + carry forward a working document toward Preliminary Draft New Report with input contributions   **The 27th meeting (T.B.D.) in [Spring] 2021**   * + modify the working document toward a Preliminary Draft New Report with input contributions   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 28th meeting (T.B.D.) in [Autumn] 2021**   * + modify the working document toward a Preliminary Draft New Report with input contributions   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 29th meeting (T.B.D.) in [Spring] 2022**   * + modify the working document toward a Preliminary Draft New Report with input contributions   + obtain agreement as a Preliminary Draft New Report   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary   **The 30th meeting (T.B.D.) in [Autumn] 2022**   * + finalize and obtain approval on the Draft New Report   + send liaison statement to ITU-R WP 5A and/or related organisations, if necessary |

**5.2.4.3 Vehicle Mounted Earth Stations (VMES) in Ku-Band GSO FSS Networks**

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| **Title** | **Vehicle Mounted Earth Stations (VMES) in Ku-Band GSO FSS Networks** |
| **Document Type** | Report |
| **Group/Chair** | TG ITS/ Mr. Satoshi (Sam) Oyama, Japan |
| **Editor(s)** | Dr Bob Horton, Australia and Oki Boskoro Rachmat (Intelsat) |
| **Scope** | Evaluate relevance to APT Region; Analyze studies and compatibility of VMES with existing services within the APT Region. |
| **Purpose** | Enhance the understanding and application of VMES in the APT Region. |
| **Related Documents**  **(ITU/APT)** | ITU-R.1857, ETSI EN 302 977, USA (FCC) §25.226 |
| **Related Organization** | Intelsat |
| **Timelines** | **The 24th meeting (Bangkok) in September 2018**   * create a work plan * create questionnaire to survey the potential of VMES within APT countries   **The 25th meeting (Tangerang, Indonesia) in June/July 2019**   * present and analyze VMES questionnaire responses from APT members * evaluate available studies and compatibility of VMES with other services in Ku-band * develop outline of VMES in Ku-band Report and request inputs   **The 26th meeting (Virtual) in September 2020**   * analyze further inputs to VMES questionnaire from APT members * modify the working document toward a Preliminary Draft New   Report based on the inputs from APT members   * obtain agreement as a Preliminary Draft New Report   **The 27th meeting (T.B.D.) in [Spring] 2021**   * analyze further inputs to VMES questionnaire from APT members * develop and finalize VMES in Ku-band Report based on the inputs from APT members |

**5.2.5 Task Group on Wireless Power Transmission**

**5.2.5.1 Radio Frequency Beam WPT**

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| --- | --- |
| Title | Radio Frequency Beam WPT |
| Document Type | APT/AWG Report |
| Group/Chair | WG on Technology /TG WPT/ Chan Hyung CHUNG (Korea) |
| Editor(s) | Mr. NGUYEN DINH TUAN(Vietnam), Dr. Won Ho Jang (Korea) |
| Scope | To draft and complete the APT Report on frequency ranges used for Radio Frequency Beam WPT technologies for electric devices.  To study possible frequency ranges described in the APT Report on WPT and the latest WPT studies in ITU-R. |
| Purpose | Study frequency ranges and Service applications used for Radio Frequency Beam WPT technologies  Not to cause harmful interference to radiocommunication services;   1. To facilitate smooth deployment of Radio Frequency Beam WPT systems without spectrum concerns; 2. To collect information on spectrum requirements and related matters of Radio Frequency Beam WPT; |
| Related Document | 1. APT Survey Report on WPT 2. APT Report on WPT 3. ITU-R Question ITU-R 210-3/1 4. Recommendation ITU-R SM.2303-2 Wireless power transmission using technologies other than radio frequency beam 5. Recommendation ITU-R SM.2110-0 Frequency ranges for operation of non-beam Wireless Power Transmission (WPT) systems 6. Recommendation ITU-R SM.2392-0 Applications of wireless power transmission via radio frequency beam |
| Related Forums and Organization | APG, ITU-R SG1, WP 1A, and WP 1B |
| Timelines | **2018 April (AWG-23)**   * Approval of the Work Plan * Initiation of new report for Radio Frequency Beam WPT   **2018 September (AWG-24)**   * Prepare Drafting the New Working Document (WD)   **2019 July (AWG-25)**   * Review and update DNR   **2020 September (AWG-26)**   * Studies on spectrum sharing and impact of WPT to existing radiocommunication services and etc. * Review and update DNR   **2021 AWG-27**   * Studies on spectrum sharing and impact of WPT to existing radiocommunication services and etc. * Approval of DNR for an AWG output for Report |

**5.2.5.2 Frequency ranges for non-beam Wireless Power Transmission for Electric Vehicles (WPT-EV)**

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| **Title** | **Frequency ranges for non-beam Wireless Power Transmission for Electric Vehicles (WPT-EV)** |
| **Document Type** | APT Recommendation |
| **Group/Chair** | WG-TECH/TG WPT/Mr. Chan Hyung Chung WG-SPEC/SWG SA&H/Ms. LYU Boya |
| **Editor(s)** | Mr. ISHIDA, Kaz (Japan) |
| **Scope** | Draft and complete the APT Recommendation on frequency ranges for non-beam WPT-EV |
| **Purpose** | Study and identify frequency ranges for non-beam WPT-EV in APT countries:   1. To ensure that non-beam WPT-EV applications and equipment minimize the potential for harmful interference to radiocommunication services including the standard frequency and time signal service and the radio astronomy service, so that these remain protected from radio frequency energy emanating from WPT-EV falling into all bands. 2. To facilitate smooth deployment of WPT systems without spectrum concerns; 3. To maximize users’ benefit of WPT given by global or regional spectrum harmonization; 4. To address APT administrations to take appropriate regulatory measures on spectrum that should be taken into consideration when WPT-EV is deployed. |
| **Related Document** | 1. Draft Revision of Recommendation ITU-R SM.2110-0“Guidance on frequency ranges for operation of non-beam wireless power transmission for electric vehicles” (In adoption / approval process in summer-autumn 2019; See Doc. [1/217(Rev.1)](https://www.itu.int/md/R15-SG01-C-0217/en) & [CACE/898](https://www.itu.int/md/R00-CACE-CIR-0898/en) for Adoption) 2. [APT/AWG/REP-76](https://www.apt.int/AWG-RECS-REPS) APT Report “Frequency Ranges used for Non-Beam WPT for Electric Vehicles” 3. Report ITU-R SM.2451-0 (WPT\_EV\_IMPACT) - Assessment of impact of wireless power transmission for electric vehicle charging (WPT-EV) on radiocommunication services (*Publication work in progress in summer 2019*; See [Doc. 1/214(Rev.1)](https://www.itu.int/md/R15-SG01-C-0214/en)) 4. ITU-R Question [ITU-R 210-3/1](https://www.itu.int/md/R12-WP3M-C-0066/en) 5. [Report ITU-R SM.2303-2](https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-SM.2303-2-2017-PDF-E.pdf) “Wireless power transmission using technologies other than radio frequency beam” 6. [APT/AWG/REC-10](https://www.apt.int/AWG-RECS-REPS) APT recommendation on frequency ranges for Non-Beam WPT for mobile devices |
| **Related Forums and Organization** | ITU-R SG1, WP 1A, and WP 1B |
| **Timelines** | WG-TECH reviews on technical aspects first, followed by review on spectrum aspects in WG-SPEC.  **2019**   * AWG-25   + Development of the Work Plan.   + Review the initial draft and share information on the latest study results on the impact from WPT-EV to radiocommunication systems.   **2020**   * AWG-26   + Study ITU-R’s WPT-EV Recommendation approval on frequency ranges (Taking place in the latter half of 2019).   + Study APT-specific requirements on the frequency ranges.   + Update the draft.   **2021**   * AWG-27   + Finalize the new draft APT recommendation to send out for the APT approval process. |

**5.2.6 Task Group on High Altitude Platform Station**

**5.2.6.1 Current status and future plan on regulations and usage of HAPS in the fixed service in APT countries**

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| --- | --- |
| Title | Current status and future plan on regulations and usage of HAPS in the fixed service in APT countries |
| Document Type | APT Report |
| Group/Chair | TG- HAPS / Mr. LANG BAOZHEN (CHN) |
| Editor(s) | Mrs. ANNA CHRISTINA SITUMORANG (INS) |
| Scope | To analyze and provide information about current and future plan of regulations and usage of HAPS in APT countries |
| Purpose | To provide updates about current status and future plan of regulations and usage of HAPS in APT countries in the form of an APT Report, which can be used as a reference in developing and implementing HAPS |
| Related Document | 1. 6 440-6 520 MHz, 6 560-6 640 MHz: ITU-R Rec.: F.1764, F.1891, F.2011, P.1409; 2. 27.9-28.2 GHz, 31.0-31.3 GHz: ITU-R Rec.: F.1569, F.1570, F.1607, F.1609, F.1612, SF.1601; 3. 47.2-47.5 GHz, 47.9-48.2 GHz: ITU R Rec.: F.1500, F.1501, F.1608, F.1819, F.1820, SF.1843; 4. Report ITU-R F.2240: Interference analysis modelling for sharing between HAPS gateway links in the fixed service and other systems/services in the range 5 850-7 075 MHz; 5. Report ITU-R F.2437: Sharing and compatibility studies of HAPS systems in the fixed service for the frequency band 6 440-6 520 MHz; 6. Report ITU-R F.2438: Spectrum needs of high altitude platform stations broadband links operating in the fixed service; 7. Report ITU-R F.2439: Deployment and technical characteristics of broadband high altitude platform stations in the fixed service in the frequency bands 6 440-6 520 MHz, 21.4-22.0 GHz, 24.25-27.5 GHz, 27.9-28.2 GHz, 31.0-31.3 GHz, 38.0-39.5 GHz, 47.2-47.5 GHz and 47.9-48.2 GHz used in sharing and compatibility studies; 8. Report ITU-R F.2473: Sharing and compatibility studies of HAPS systems in the fixed service in the 27.9-28.2 GHz and 31.0-31.3 GHz frequency ranges; 9. Report ITU-R F.2475: Sharing and compatibility studies of HAPS in the fixed service in the 38-39.5 GHz frequency range; 10. Report ITU-R F.2476: Sharing and compatibility studies of HAPS systems in the fixed service in the 47.2-47.5 GHz and 47.9-48.2 GHz frequency ranges; 11. Resolution **150 (WRC-12)**; 12. Final Acts of WRC-19 on RR Article 5, 11, Resolution: 145 (Rev.WRC-19), 167 (WRC-19), 168 (WRC-19) and 122 (Rev.WRC-19); and 13. WTDC2017 RESOLUTION 9 (Rev. Buenos Aires, 2017): Participation of countries, particularly developing countries, in spectrum management. |
| Related Organization | ITU-D, ITU-R, APT (ASTAP, PRF) |
| Timelines | **The 25th meeting (Tangerang, Indonesia) in July 2019**   * Developing and approval of the draft work plan * Presenting the proposed draft questionnaire for further development subject to outcome of WRC19 AI 1.14. * Initiating the development of the draft frame/skeleton of APT Report   **The 26th meeting (virtual meeting) in September 2020**   * Developing and approval of the questionnaire * Developing the draft APT Report * Updating the workplan   **The 27th meeting (Location TBD) in date TBD**   * Collecting the questionnaire responses * Developing the draft APT Report based on input contributions and responses to questionnaire.   **The 28th meeting (Location TBD) in date TBD**   * Adopting the draft APT Report. * Considering the future work plan (if required) |

**5.3 Working Group on Service and Applications**

**5.3.1 Task Group on Modern Satellite Applications**

**5.3.1.1 Developments in industrial IoT applications using satellite technologies**

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| --- | --- |
| **Title** | **Developments in industrial IoT applications using satellite technologies** |
| **Document Type** | Report |
| **Group/Chair** | WG S&A/TG MSA/Ms. Masmurni Abdul Rahman |
| **Editor(s)** | Ms. Masmurni Abdul Rahman |
| **Scope** | Provide valuable information to APT members on developments in industrial IoT applications using satellites technologies. |
| **Purpose** | To provide valuable information on introduction of industrial IoT applications using future and current satellite technologies, to share efforts and several information within Asia Pacific countries, and to discuss on satellite applications. |
| **Related Document** | - |
| **Related Organization** | ITU WP 4B |
| **Timelines** | **2019**   |  |  |  | | --- | --- | --- | | AWG-25 | 🡪 | Initial revision of Terms of Reference and workplan. | |  |  |  |   **2020**   |  |  |  | | --- | --- | --- | | AWG-26 | 🡪 | Consider input contributions and develop the report. | |  |  |  | | **2021** |  |  | | AWG-27 | 🡪 | Consider input contributions and develop the report. | | AWG-28 | 🡪 | Continue developing the report. | |  |  |  | | **2022** |  |  | | AWG-29 | 🡪 | Finalize report. | |

**5.3.2 Task Group on Aeronautical and Maritime**

**5.3.2.1 The use of cellular networks for unmanned aircraft system operations**

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| --- | --- |
| **Title** | **The use of cellular networks for unmanned aircraft system operations** |
| **Document Type** | Report |
| **Group / Chair** | TG-Aeronautical and Maritime / Dr. YING XU |
| **Editor(s)** | Ms. Takako Kitahara |
| **Scope** | To study and summarize regulatory studies, research and development of related technologies, service and application case examples related to use of cellular networks for unmanned aircraft system (UAS) operations. |
| **Purpose** | To exchange information and references on studies related to use of cellular network for UAS operations in the aim to facilitate cellular drone application in the APT regions and to provide related information to APT members. |
| **Related Document** | ITU-T SG20 work item [Y.IoT-UAS-Reqts] under Question 2/20  3GPP TR 22.829, TR 22.825, TR 23.755, document on Study on supporting Unmanned Aerial Systems Connectivity, Identification, and Tracking |
| **Related Organization** | ITU, 3GPP |
| **Timelines** | AWG-25(2019)   * Agree to the scope and purpose of the study * Develop draft work plan and timeline   AWG-26 (2020) and AWG-27/28 (2021)   * Consider the input contribution and draft working document   AWG-29 (2022)   * Finalize the Report |

**5.3.3 Task Group on Public Protection and Disaster Relief**

**5.3.3.1 APT Report on emerging critical applications of IMT for industrial, societal and enterprise users**

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| --- | --- |
| **Title** | **APT Report on emerging critical applications of IMT for industrial, societal and enterprise users** |
| **Document Type** | APT/AWG Report |
| **Group/Chair** | WG Services and Applications (TG PPDR) jointly with WG Tech (SWG-IMT) |
| **Editor(s)** | TBD |
| **Scope** | Development of a new APT Report on new/ emerging critical applications of IMT-Advanced and IMT-2020 for industrial, societal and enterprise users. |
| **Purpose** | To facilitate study on emerging critical applications of IMT Advanced and IMT-2020 in the Asia Pacific region |
| **Related Document** | TBD |
| **Related Forums and Organization** | ITU-R WP 5D, WP 5A, 3GPP, FCC, CEPT |
| **Timelines** | **2019 July (AWG-25)**   * Proposal of new AWG report. * Approval of the Work Plan   **2020 MONTH TBD (AWG-26)**   * Drafting of Working Document (WD) * Send any LS if required * Update the work plan   **2020 MONTH TBD (AWG-27)**   * Review and update the working document * Send any LS if required * Update the work plan   **2021 MONTH TBD(AWG-28)**   * Finalize working document and approve the Report |

**5.3.3.2 Working Document for a Draft APT Survey Report on Alerting Means over IMT networks to the Public in APT Member Countries**

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| --- | --- |
| **Title** | **Working Document for a Draft APT Survey Report on Alerting Means over IMT networks to the Public in APT Member Countries** |
| **Document Type** | APT Survey Report [TBD] |
| **Group/Chair** | TG PPDR jointly with SWG IMT |
| **Editor(s)** | Hyounhee KOO (Republic of Korea) |
| **Scope** | - To survey the current alerting means over IMT networks to the public in APT member countries  - To identify the commonality and differences of current alerting means over IMT networks among APT member countries based on the survey outcome of questionnaires answered by APT member countries  - To develop considerations on how to improve alerting means over IMT networks  - To consider the development of APT recommendations or Report on how to enhance alerting means over IMT networks based on the global collaboration among APT member countries |
| **Purpose** | - To inform APT member countries of the recent 3GPP work on enhancements of public warning service over IMT networks  - To develop comparison results on the current alerting means over IMT networks (e.g. 2G, 3G or LTE) that have been employed by APT member countries  - To propose the considerations and the action items (if necessary) for the enhancement of alerting means over IMT networks for the public of APT member countries who are either in their country or in other country that provides public warning service over IMT networks in terms of the enhancement of the human perception |
| **Related Document** | [3GPP TS 22.268 Public Warning System (PWS) requirements](https://www.3gpp.org/DynaReport/22268.htm)  [3GPP TS 23.041 Technical realization of Cell Broadcast Service (CBS)](https://www.3gpp.org/DynaReport/23041.htm)  [3GPP TR 22.869 Feasibility study on enhancements of Public Warning System](https://www.3gpp.org/DynaReport/22869.htm)  [3GPP TR 23.735 Study on enhancements of Public Warning System](https://www.3gpp.org/DynaReport/23735.htm) |
| **Related Forums** | 3GPP SA WG1, 3GPP TSG SA plenary, 3GPP CT WG1, 3GPP TSG CT plenary |
| **Timelines** | **The 25th  meeting (Indonesia) in July 2019**  🡪 To approve the workplan and the questionnaire and to start the task  **The 26th meeting(TBD) in 2020**  🡪 To collect the response of questionnaire by APT members and to provide the update on 3GPP ePWS work  **The 27th meeting(TBD) in 2021 [TBD]**  🡪 To update working document  **The 28h meeting(TBD) in 2021[TBD]**  🡪 To update working document toward a draft APT (Survey) Report |

**5.3.4 Task Group on Railway Radiocommunication**

**5.3.4.1 Railway radiocommunication system for passengers’ access to information and Internet services**

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| --- | --- |
| **Title** | **Railway radiocommunication system for passengers’ access to information and Internet services** |
| **Document Type** | APT Report |
| **Group/Chair** | TG Railway/ Mr. Bin LIU, CHINA |
| **Editor(s)** | Hokyom KIM (ETRI, Republic of Korea), Mr. Zhan ZHANG (Ericsson Thailand) |
| **Scope** | To study railway radiocommunication systems to enable passengers access to information and Internet services other than RSTT |
| **Purpose** | To share information on national implementation experiences of railway radiocommunication system to enable passengers access to information and Internet services other than RSTT in Asia-Pacific Region. |
| **Related Document** |  |
| **Related Forums** |  |
| **Timelines** | **The 21th meeting (Bangkok) in April 2017**  🡪to start the study by conducting the workplan  **The 22nd meeting in 2017**  🡪to collect information on railway radiocommunication system to enable passengers access to information and Internet services and to discuss the structure and contents of the Report according to contributions from APT Member countries  **The 23rd meeting in 2018**  🡪to improve the Report.  **The 24th meeting in 2018**  🡪to improve the Report.  **The 25th meeting in 2019**  🡪to finalize the Report (if possible).  **The 27th meeting in 2021**  🡪to finalize the Report. |

**5.3.4.2** **Operational scenarios and relevant national regulatory experiences upon systems of train positioning application of RSTT in APT countries**

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| --- | --- |
| **Title** | **Operational scenarios and relevant national regulatory experiences upon systems of train positioning application of RSTT in APT countries** |
| **Document Type** | APT Report |
| **Group/Chair** | TG on Railway/ Mr. Bin LIU, CHN |
| **Editor(s)** | Dr. Jin SHI (CHN) |
| **Scope** | 1. To share operational scenarios of systems of train positioning application of RSTT in APT countries (e.g. information on architectures, operating mechanism, status of spectrum usage). 2. To share national regulatory experiences (including relevant technical standards) upon systems of train positioning application of RSTT in APT countries. |
| **Purpose** | To share operational scenarios and relevant national regulatory experiences upon systems of train positioning application of RSTT in APT countries |
| **Related Document** | The APT report [APT/AWG/REP-78](https://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-78_APT_Report_RSTT_System_Description.docx), Report [ITU-R SM.2442](https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-M.2442-2019-MSW-E.docx)-0, |
| **Related Forums** | **ITU-R WP5A** |
| **Timelines** | **The 25 nd meeting of AWG**  🡪 to start.  **The 26nd meeting of AWG**  🡪 to collect information according to contributions from APT Members.  **The 27nd meeting of AWG**  🡪 to finalize the Report (if possible). |

**6. SUMMARY OF WORK PLAN STATUS**

| **No.** | **Work Item** | **Responsible Group** | **Expected**  **Deliverable** | **Completion Target** |
| --- | --- | --- | --- | --- |
| 1 | Studies on frequency arrangement(s) in the band 1 427 – 1 518 MHz | Sub-WG SA&H | Report | AWG-27 |
| 2 | Frequency ranges on non-beam WPT for Electric Vehicles (WPT-EV) | Sub-WG SA&H | Recommendation | AWG-27 |
| 3 | Revision of APT/AWG/ REP-79 APT Report on frequency arrangements for IMT in the band 470 –698 MHz | Sub-WG SA&H | Report | AWG-28 |
| 4 | Sharing and compatibility studies for selected frequency bands below 6 GHz | Sub-WG Sharing | Report | AWG-27 |
| 5 | Mitigation measures to improve coexistence of 4G-LTE and 5G-NR operating in the 3400 - 3600 MHz band and other systems operating in adjacent spectrum | Sub-WG Sharing | Report | AWG-28 |
| 6 | Study on technical and operational measures for coexistence between terrestrial and satellite IMT systems deployed in 1 980-2 010 MHz/ 2 170-2 200 MHz in the Asia-Pacific Region | Sub-WG Sharing | Report | AWG-27 |
| 7 | Spectrum monitoring technologies and measures on civilian use of very small unmanned aircraft | Sub-WG SM | Report | AWG-29 |
| 8 | Necessary technical conditions to support technology neutrality and spectrum efficiency for implementation of IMT networks in bands identified for IMT | Sub-WG IMT | Report | AWG-27 |
| 9 | Current status and future plan of implementation and deployment of IMT-2020 (5G) in Asia-Pacific region | Sub-WG IMT | Report | AWG-27 |
| 10 | Studies on implementation aspects of IMT-2020 in the frequency bands below 6 GHz in Asia-Pacific region | Sub-WG IMT | Report | AWG-28 |
| 11 | Studies on 5G implementation in frequency bands above 24.25 GHz | Sub-WG IMT | Report | AWG-28 |
| 12 | Update on APT/AWG/REP-15 (Rev.6) | Sub-WG IMT | Report | AWG-27 |
| 13 | Models for FWS link performance degradation due to wind | TG FWS/GBRS | Recommendation/Report | AWG-28 |
| 14 | Point-to-point radiocommunication systems operating in the frequency band 252-296 GHz | TG FWS/GBRS | Report | AWG-29 |
| 15 | Walk-through scanning systems operating in the frequency band 275-1000 GHz | TG FWS/GBRS | Report | AWG-29 |
| 16 | LPWAN for IoT based on non-cellular technologies | TG IoT | Report | AWG-27 |
| 17 | Cellular based V2X for ITS applications in APT countries | TG ITS | Report | AWG-30 |
| 18 | Millimetre wave ITS applications in APT countries | TG ITS | Report | AWG-30 |
| 19 | Vehicle Mounted Earth Stations (VMES) in Ku-Band GSO FSS Networks | TG ITS | Report | AWG-27 |
| 20 | Radio Frequency Beam WPT | TG WPT | Report | AWG-27 |
| 21 | Frequency ranges on Non-Beam WPT for Electric Vehicles (WPT-EV) | TG WPT | Recommendation | AWG-27 |
| 22 | Current status and future plan on usage of HAPS in Fixed service allocations in APT countries | TG HAPS | Report | AWG-28 |
| 23 | Developments in industrial IoT applications using satellite technologies | TG MSA | Report | AWG-29 |
| 24 | The use of cellular networks for unmanned aircraft system operations | TG A&M | Report | AWG-29 |
| 25 | Emerging Critical Applications of IMT for Industrial, Societal and Enterprise Users | TG PPDR | Report | AWG-28 |
| 26 | Alerting Means over IMT networks to the Public in APT Member Countries | TG PPDR (jointly with Sub-WG IMT) | Report | AWG-28 |
| 27 | Railway Radiocommunication system for passengers’ access to information and Internet services | TG RR | Report | AWG-27 |
| 28 | Operational scenarios and relevant national regulatory experiences upon systems of train positioning application of RSTT in APT countries | TG RR | Report | AWG-27 |