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|  | ASIA-PACIFIC TELECOMMUNITY | |
| **The APT Wireless Group** |  |
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**APT Wireless Group Workplan**

*Updated at AWG-23, 9-13 April 2018*

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# 1. AWG STRUCTURE:

AWG is 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-20 held from 6 to 9 September 2016 in Bangkok, Thailand.

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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 Aeronautical and Maritime (TG A&M) |
| Sub Working Group on Sharing Studies  (Sub-WG SS) | Task Group on Fixed Wireless Systems (TG FWS) | Task Group on PPDR  (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

**Inside APT:**

* APG
* ASTAP
* PRF, SATRC

**Outside APT:**

* ITU-R SGs
* CEPT, 3GPP etc.

**Inside APT:**

* APG
* ASTAP
* PRF, SATRC

**Outside APT:**

* ITU-R SGs
* CEPT, 3GPP etc.

**Inside APT:**

* APG
* ASTAP
* PRF, SATRC

**Outside APT:**

* ITU-R SGs
* CEPT, 3GPP etc.

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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 WG 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 Groups and Task Groups of WG Technology Aspects**

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| **Sub-WG IMT** | * To review activities on the future development of IMT discussed in the 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. |
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| **TG FWS** | * To gather following national information regarding fixed wireless systems: * Frequency planning and usage; * Licensing conditions; * Usages and applications; * Standardization activities; * To study on following questions regarding fixed wireless systems: * Current status of frequency planning and usage, frequency assignment, band width, main usages and applications; * 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. |

**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. |

# 4. LIST OF THE OFFICE BEARERS

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| **AWG**  **Chairman** | **Dr. Kohei Satoh**  Association of Radio Industries and Businesses (ARIB)  Japan  E-mail: [satoh@arib.or.jp](mailto:satoh@arib.or.jp) | **AWG Vice-Chairman** | **Ms. Zhu Keer Ministry of Industry and Information Technology, China (People's Republic of) E-mail:** [zhukeer@miit.gov.cn](mailto:zhukeer@miit.gov.cn) |
| **AWG Vice- Chairman** | **Mr. Le Van Tuan**  Authority of Radio Frequency Management, Socialist Republic of Vietnam  E-mail: [tuanlv@rfd.gov.vn](mailto:tuanlv@rfd.gov.vn) | **Chairman WG Spec** | **Mr. John Lewis**  Added Value Applications, New Zealand  Email: [john.lewis@ties.itu.int](mailto:john.lewis@ties.itu.int) |
| **Chairman WG Tech** | **Dr. Dae Jun Kim**  TTA, Republic of Korea  E-mail : [kdj@tta.or.kr](mailto:kdj@tta.or.kr) | **Chairman WG S&A** | **Dr. Eng. Khoirul Anwar**  Telkom University  Indonesia  Email: [anwarkhoirul@telkomuniversity.ac.id](mailto:anwarkhoirul@telkomuniversity.ac.id) |

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| **Sub-WGs of WG SPEC** | | | |
| **Sub-WG SA&H** | **Ms. Lyu Boya**  Huawei Technologies Co. Ltd., China **(People's Republic 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)  **Dr. Jung Soo Woo**  Samsung Electronics, Republic of Korea  Email: [jungsoo.woo@samsung.com](mailto:jungsoo.woo@samsung.com) |
| **Sub-WG SM** | **Mr. Huang Jia**  State Radio Monitoring Center, China **(People's Republic of)**  **Email:** [ferrero.huang@srrc.org.cn](mailto:ferrero.huang@srrc.org.cn) |  |  |
| **Sub-WG and TGs of WG TECH** | | | |
| **Sub-WG IMT** | **Dr. Hiroyuki Atarashi**  NTT DoCoMo Inc., Japan  Email: [hiroyuki.atarashi.yt@nttdocomo.com](mailto:hiroyuki.atarashi.yt@nttdocomo.com) |  |  |
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| **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)  Republic of Korea  Email: [backbum@rapa.or.kr](mailto:backbum@rapa.or.kr) |
| **TGs of WG S&A** | | | |
| **TG MSA** | **Ms. Geetha Remy Vincent Measat Satellite Systems Sdn Bhd, Malaysia Email :** [geetha@measat.com](mailto:geetha@measat.com) | **TG RR** | **Mr. Liu Bin**  State Radio Monitoring Center, China (People’s Republic of)  Email: [liubin@srrc.org.cn](mailto:liubin@srrc.org.cn) |
| **TG A&M** | **Dr. Xu Ying**  State Radio Monitoring Center,  China (People's Republic of)  E-mail: [xuying@srrc.org.cn](mailto:xuying@srrc.org.cn) |  |  |
| **TG PPDR** | **Mr. Bharat Bhatia**  Motorola India Pvt. Ltd.  E-mail : [bharat.bhatia@motorola.com](mailto:bharat.bhatia@motorola.com) |  |  |

**APT Secretariat Contacts**

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| **Mr. Forhadul Parvez**  Programme Officer  Asia-Pacific Telecommunity (APT)  12/49, Soi 5, Chaengwattana Road  Bangkok 10210, Thailand  Tel: 66-2-5730044 (Ext: 107)  Email: [parvez@apt.int](mailto:parvez@apt.int); [aptawg@apt.int](mailto:aptawg@apt.int) |  |

# 4. MICRO WORKPLAN

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

**Sub-WG Spectrum Arrangement and Harmonization:**

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| **Title** | **Harmonized frequency arrangement in the band 3 300 – 3 400 MHz** |
| **Document Type** | Recommendation/Report |
| **Group/Chair** | WG-SPEC/Sub-WG 1/Ms. LYU Boya |
| **Editor(s)** |  |
| **Scope** | To develop possible harmonized frequency arrangement in the band 3 300-3 400MHz in APT region |
| **Purpose** | To develop APT Recommendation/Report for harmonized frequency arrangement in the band 3 300-3 400MHz for IMT systems  To develop contribution to ITU-R WP5D with respect to frequency arrangement in the band 3 300-3 400MHz for IMT systems |
| **Related Document** | Recommendation ITU-R M.1036-5 |
| **Related Organization** | ITU-R  3GPP |
| **Timelines** | **2016**   * AWG-19:   + Develop work plan   + Discuss the structure of the working document * AWG-20:   + Develop a working document towards a draft new APT/AWG Recommendation/Report on harmonized frequency arrangement in the band 3 300 – 3 400 MHz based on the contributions and meeting discussions.   + Inform the study progress to ITU-R WP5D, as appropriate   **2017**   * AWG-21:   + Continue to develop the working document towards a draft new APT/AWG Recommendation/Report on harmonized frequency arrangement in the band 3 300-3 400 MHz based on the contributions and meeting discussions.   + Review the study results in other AWG sub-Working groups   + Inform the study progress to ITU-R WP5D, as appropriate * AWG-22:   + - Continue to develop the working document towards a draft new APT/AWG Recommendation/Report on harmonized frequency arrangement in the band 3 300-3 400 MHz based on the contributions and meeting discussions.     - Review the study results in other AWG sub-Working groups     - Inform the study progress to related organization as appropriate.   2018   * AWG-23:   + - Continue to develop the working document towards drat new APT/AWG Recommendation/Report on harmonized frequency arrangement in the band 3 300-3 400 MHz based on the contributions and meeting discussions     - Review the study results in other AWG sub-Working groups     - Inform the study progress to related organization as appropriate.     - AWG-24:     - Continue to develop the working document towards drat new APT/AWG Recommendation/Report on harmonized frequency arrangement in the band 3 300-3 400 MHz based on the contributions and meeting discussions     - Review the study results in other AWG sub-Working groups     - Inform the study progress to related organization as appropriate     - AWG-25     - Finalize APT/AWG Recommendattion/Report on harmonized frequency arrangement for IMT in the band 3300-3400 MHz     - Inform the study progress to related organisation as appropriate   Note: this timeline will be reviewed at every AWG meeting and may be extended to AWG-26 |

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| **Title** | **Frequency arrangements in the band 4 800 – 4 990 MHz** |
| **Document Type** | Recommendation/Report |
| **Group/Chair** | WG-SPEC/Sub-WG 1/Ms.LYU Boya |
| **Editor(s)** |  |
| **Scope** | To develop possible frequency arrangements in the band 4 800-4 990MHz for administrations wishing to implement IMT in APT region |
| **Purpose** | To develop APT Recommendation/Report for frequency arrangements in the band 4 800-4 990MHz for IMT systems  To develop contribution to ITU-R WP5D with respect to frequency arrangements in the band 4 800-4 990MHz for IMT systems |
| **Related Document** | Recommendation ITU-R M.1036-5 |
| **Related Organization** | ITU-R  3GPP |
| **Timelines** | **2016**   * AWG-19:   + Develop work plan   + Discuss the structure of the working document * AWG-20:   + Develop a working document towards a draft new APT/AWG Recommendation/Report on frequency arrangements in the band 4 800 – 4 990 MHz based on the contributions and meeting discussions.   + Inform the study progress to ITU-R WP5D, as appropriate   **2017**   * AWG-21:   + Continue to develop the working document towards a draft new APT/AWG Recommendation/Report on frequency arrangements in the band 4 800 – 4 990 MHz based on the contributions and meeting discussions.   + Review the study results in other AWG sub-Working groups   + Inform the study progress to ITU-R WP5D, as appropriate * AWG-22:   + Continue to develop the working document towards a draft new APT/AWG Recommendation/Report on frequency arrangements in the band 4 800 – 4 990 MHz based on the contributions and meeting discussions.   + Review the study results in other AWG sub-Working groups   + Inform the study progress to related organization as appropriate.   2018   * AWG-23:   + Continue to develop the working document towards draft new APT/AWG Recommendation/Report on harmonized frequency arrangement for IMT in the band 4 800-4 990 MHz based on the contributions and meeting discussions.   + Review the study results in other AWG sub-Working groups   + Inform the study progress to related organization as appropriate. * AWG-24:   + Continue to develop the working document towards draft new APT/AWG Recommendation/Report on harmonized frequency arrangement for IMT in the band 4 800-4 990 MHz based on the contributions and meeting discussions.   + Review the study results in other AWG sub-Working groups   + Inform the study progress to related organization as appropriate.   **2019**   * AWG 25:   + Finalize new APT/AWG Recommendation/Report on harmonized frequency arrangement for IMT in the band 4 800-4 990 MHz   + Inform the study progress to related organization as appropriate. |

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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**   * + Finalize a drat APT/AWG Report on studies on frequency arrangement(s) for IMT in the band 1427-1518 MHz for approval in the AWG Plenary   + Review the study results from other AWG sub-working groups   + Inform results of the studies to the related organization, as appropriate.   Note: this timeline will be reviewed at every AWG meeting and may be extended to AWG-26 |

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| **Title** | **Frequency Ranges for Non-Beam WPT for Mobile Devices** |
| **Document Type** | APT Recommendation |
| **Group/Chair** | WG-TECH/TG WPT/Mr. Chan Hyung Chung WG-SPEC/SWG SA&H/Ms. LYU Boya |
| **Editor(s)** |  |
| Scope | Draft and complete the APT Recommendation on frequency ranges for non-beam WPT technologies for mobile devices.  In addition to 6765 kHz – 6795 kHz (see RR No. 5.138), other frequency ranges will be added in the recommendation with impact studies. |
| **Purpose** | Study and identify frequency ranges for non-beam WPT technologies for mobile devices:   1. Not to cause harmful interference to radiocommunication services; 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 is deployed. |
| **Related Document** | 1. APT Survey Report on WPT 2. APT Report on WPT (APT/AWG/REP-62(Rev.1)) 3. ITU-R Question ITU-R 210-3/1 4. [Draft new APT recommendation on frequency ranges for Non-Beam WPT for mobile devices] 5. Report ITU-R SM.2303-1“Wireless power transmission using technologies other than radio frequency beam” 6. Recommendation ITU-R SM.2110-0 “Frequency ranges for operation of non-beam wireless power transmission systems” |
| **Related Forums and Organization** | ITU-R SG1, WP 1A, and WP 1B |
| **Timelines** | **2016**   * AWG-19:   + Development of the Work Plan at WG-TECH   + Handover to WG-SPEC for spectrum requirements and related matters * AWG-20   + Initiation of new work   + Introduction of the work plan to WG-SPEC / Sub-WG SA&H   2017   * AWG-21   + Review spectrum requirements of WPT for mobile devices   + Review the latest ITU-R Preliminary Draft New Recommendation (PDNR) on WPT   + Development of the APT PDNR for mobile devices * AWG-22   + Review spectrum requirements of WPT for mobile devices   + Review the ITU-R approved Recommendation   + Finalize the new APT recommendation for mobile devices.   + Develop the questionnaire on Non-ISM frequency bands for Non-Beam WPT for mobile devices.   2018   * AWG-23   + Studies on Spectrum impact of WPT to radiocommunication services.   + Collect the responses and summarize the regulatory status in APT member countries for non-beam WPT for mobile devices.   + Review the ITU-R Recommendation and activity.   + Draft the revision of APT recommendation for mobile devices * AWG-24   + Studies on Spectrum impact of WPT to radiocommunication services.   + Summarize the regulatory status in APT member countries for non-beam WPT for mobile devices.   + Review the ITU-R Recommendation and activity.   + Finalize the revision of APT recommendation for mobile devices |

**Sub-WG Sharing Studies:**

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| **Title** | **Sharing and Compatibility Studies for Selected Frequency Bands Below 6GHz** |
| **Document Type** | APT Report and liaison statement to APG |
| **Group/Chair** | WG-SPEC/Sub-WG Sharing Studies/Mr. Alex Orange |
| **Editor(s)** | TBD |
| **Scope** | To review ITU-R studies on the following frequency bands:   * 1 452 – 1492 MHz (WRC-19 Agenda Item 9.1 CPM Report Issue 9.1.2) * 1 980 – 2 010 / 2 170 – 2 200 MHz (WRC-19 Agenda Item 9.1 CPM Report Issue 9.1.1) * And to undertake further sharing and compatibility studies if requested by APG.   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 * 3 300 – 3 400 MHz * 4 400 – 4 500 MHz * 4 800 – 4 990 MHz   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 material from an APT perspective and send relevant results of these studies of those bands that are relevant for WRC-19 to APG. * 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 preliminary 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 preliminary draft new Report in relation to a frequency band.   **AWG-22 (2017-Sep.)**   * Discuss the input contributions. * Develop the working document towards a preliminary 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 preliminary draft new Report. * Submit study results to APG and relevant ITU-R groups as appropriate.   **AWG-24 (2018-3Q)**   * Finalize the draft new Report and approve it. * Complete the working document towards a preliminary draft new Report. * Submit study results to APG and relevant ITU-R groups as appropriate   **AWG-25 (2019-1Q)**   * Finalize the draft new Report and approve it. |

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| **Title** | **Sharing and compatibility studies for IMT above 24 GHz** |
| **Document Type** | Report and liaison statement to APG / relevant ITU-R groups as appropriate |
| **Group/Chair** | WG-SPEC/Sub-WG Sharing Studies/Mr. Jungsoo Woo |
| **Editor(s)** | TBD |
| **Scope** | 1. To survey existing services or applications operating on a primary basis in APT region in the frequency ranges listed in Resolution 238 [COM6/20] (WRC-15), especially within 24.25 – 43.5 GHz 2. To review the relevant parameters of TG5/1 for the existing service/applications surveyed in APT region. 3. To review and analyze the results of the sharing studies of TG5/1 based on the existing service/applications surveyed in APT region 4. To deliver study results to APG, as appropriate 5. To develop APT Report in accordance with relevant study results |
| **Purpose** | Provide APT member countries with regionally adapted studies for implementing IMT above 24GHz |
| **Related Document** | ITU-R Administrative circular CA/226 (related to WRC-19 agenda item 1.13) |
| **Related organizations** | ITU-R, 3GPP, CEPT ECC and other relevant regional study groups |
| **Timelines** | **AWG-19 (2016-2)**   * Adopt the work plan * Invite contributions to describe implementations of existing services/applications in the frequency ranges listed in Resolution 238 [COM6/20] (WRC-15)   **AWG-20 (2016-Sep.)**   * Consider input contributions describing implementations of existing services/applications in the frequency range listed in Resolution 238 [COM6/20] (WRC-15) * Discuss RF characteristics and relevant propagation models as required to support sharing studies for IMT above 24 GHz and existing services based on input contributions * Invite the sharing study in the frequency ranges listed in Resolution 238 [COM6/20] (WRC-15) * Develop a working document towards a preliminary draft new Report   **AWG-21 (2017-Apr.)**   * Provide technical characteristics for sharing studies based on input contributions * Provide propagation models for sharing studies based on input contributions * Discuss sharing studies based on input contributions * Submit study results to APG and relevant ITU-R groups as appropriate * Update the working document towards a preliminary draft new Report   **AWG-22 (2017-3Q)**   * Discuss the received contributions * Submit study results to APG and relevant ITU-R groups as appropriate * Update the working document towards a preliminary draft new Report   **AWG-23 (2018-1Q)**   * Discuss the received contributions * Submit study results to APG and relevant ITU-R groups as appropriate * Complete the working document towards a preliminary draft new Report   **AWG-24 (2018-3Q)**   * Finalize the draft new Report and approve it |

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| **Title** | **Studies related to techniques and technical conditions for Licensed-Assisted Access (LAA) and 5G New Radio - Shared Spectrum (5G NR-SS) as national solutions for accessing shared spectrum** |
| **Document Type** | APT Report |
| **Group/Chair** | WG-SPEC/Sub-WG Sharing Studies/Mr. Alex Orange |
| **Editor(s)** | TBD |
| **Scope** | To undertake Studies related to techniques and technical conditions for Licensed-Assisted Access (LAA) and 5G New Radio - Shared Spectrum (5G NR-SS) as national solutions for accessing shared spectrum |
| **Purpose** | * To conduct the studies in the scope section above to inform APT Members of existing technologies and techniques for improving the utility and capability of mobile network deployments in their jurisdictions by leveraging “unlicensed” spectrum bands * . * To develop APT Report in accordance with relevant study results. |
| **Related Document** | APT AWG Report REP-07 (Rev.5) and APT AWG REP-35 |
| **Related Organization** | 3GPP, ETSI, CEPT, FCC |
| **Timelines** | **AWG-23 (2018-1Q)**   * Adopt the draft work plan * Invite contributions on technical, operational, standards, and regulatory developments related to LAA. * Develop the working document towards a preliminary draft new Report.   **AWG-24 (2018-3Q)**   * Discuss received contributions * Adjust work plan if required * Complete the working document towards a preliminary draft new Report   **AWG-25 (2019-1Q)**   * Discus received contributions * Complete the working document towards a preliminary draft new Report * **AWG-26 (2020-1Q)** Discuss received contributions * Finalize the draft new Report and approve it |

**Sub-WG Spectrum Monitoring:**

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| **Title** | **Spectrum Monitoring Techniques and Methods under Multi-Path Environment** |
| **Document Type** | APT Report |
| **Group / Chair** | Spectrum sub-Working Group-Spectrum Monitoring /Mr. HUANG Jia |
| **Editor(s)** |  |
| **Scope** | To study and summarize the spectrum monitoring techniques and methods which could be used by administrations in APT region for spectrum monitoring under multi-path environment. |
| **Purpose** | To provide solution examples or references for the spectrum monitoring techniques and methods under multi-path environment to administrations in APT region |
| **Related Document** |  |
| **Related Organization** | ITU-R |
| **Timelines** | AWG-23/24/25/26 (2018, 2019)   * Consider the input contribution and draft working document   AWG-27(2020)   * To finalize the Report |

**Sub-WG and TGs of Working Groups Technology Aspects**

**Sub-Working Group on IMT:**

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| **Title** | **Survey of Usage and Future Plan of Frequency Bands in relation to Studies on WRC-19 Agenda Item 1.13 in Asia-Pacific Region** |
| Document Type | APT Report, Liaison statement to APG |
| Group/Chair | WG-TECH/Sub-WG IMT, Dr. Hiroyuki Atarashi (J) |
| Editor(s) | Ms. Boya Lyu (CHN) |
| Scope | To facilitate the study in relation to WRC-19 Agenda item 1.13 in APG, AWG-19 developed a questionnaire to collect information on usage and future plan as well as other relevant information for the frequencies to be studied for IMT under Resolution 238 (WRC-15) in Asia-Pacific Region. |
| Purpose | To collect information on usage and future plan as well as other relevant information for the frequencies to be studied for IMT under Resolution 238 (WRC-15) in Asia-Pacific Region,  To develop an APT/AWG Report by compiling the responses from APT members, and sent it to APG 19-2. |
| Related Document | Resolution 238 (WRC-15) |
| Related Organization | ITU-R |
| Timelines | **AWG-19 (2016 Feb.)**   * Develop work plan and timeline. * Prepare and issue a questionnaire to seek information from APT members. * Inform the initiation of this study to APG 19-1. * Invite APT members to provide their initial responses to the questionnaire until AWG-20.   **AWG-20 (2016 September)**   * Review the initial responses from APT members and corresponding input contributions. * Review needs for further information. * Draft a working document towards an APT/AWG Report to summarize the responses to the questionnaire based on the contributions from APT members and the meeting discussion.   **AWG-21 (2017 April)**   * Review the further responses from APT members and corresponding input contributions. * Update the working document. * Provide progress of the studies to APG 19-2. * Recirculate the questionnaire and invite APT members to provide their further responses until AWG-23.   **AWG-22 (2017 September**)   * Review the further responses from APT members and corresponding input contributions. * Update the working document. * Provide progress of the studies to APG 19-3.   **AWG-23 (2018 April)**   * Review the further responses from APT members and corresponding input contributions. * Update the working document.   **AWG-24 (2018 September)**   * Review the further responses from APT members and corresponding input contributions. * Update the working document and finalize it as an APT/AWG Report. * Provide the final report to APG 19-4. |

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| **Title** | Report(s) on minimum recommended 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, Dr. Hiroyuki Atarashi (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 minimum recommended 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 minimum recommended 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 |
| **Related Forums and Organization** | ITU-R WP 5D, 3GPP |
| **Timelines** | **2017**  AWG-22   * 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   * 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 meMmbers 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   * Consider relevant input documents. * Finalize the working document as an APT/AWG survey Report. * Continue to develop the working document towards an APT/AWG technical Report as appropriate. * Update the detailed work plan.   **2019**  AWG-25   * Consider relevant input documents. * Finalize the working document as an APT/AWG technical Report. |

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| **Title** | **Implementation of Public Safety LTE (PS-LTE) Networks** |
| **Document Type** | APT/AWG Report |
| **Group/Chair** | WG-Service and Applications / TG-PPDR, Mr. Bharat Bhatia and  WG-Technology Aspects / Sub-WG IMT, Dr. Hiroyuki Atarashi |
| **Editor(s)** | TBD |
| **Scope** | This study summarizes present status of international standardization of PS-LTE technologies by 3GPP and relevant implementation activities in some countries in the world including the Asia-Pacific Region. It also summarizes technical subjects that are important for implementation of PS-LTE networks. |
| **Purpose** | * To share the relevant information from some countries with the APT Members wishing to consider implementation of PS-LTE technologies in their countries. |
| **Related Document** | TBD |
| **Related Forums and Organization** | 3GPP, ITU-R WP 5D, WP 5A |
| **Timelines** | **2016**  AWG-19 (February)   * Consider relevant input documents * Develop a detailed work plan   AWG-20 (September)   * Consider relevant input documents * Review and update the detailed work plan   **2017**  AWG-21 (April)   * Consider relevant input documents * Consider to develop a working document, if necessary * Review and update the detailed work plan, if necessary   AWG-22 (September)   * Consider relevant input documents * Review and update the working document and the detailed work plan, if necessary   **2018**  AWG-23 (1Q)  No input contribution received at AWG-AWG-24 (3Q)   * Consider relevant input documents * Review and update the working document and the detailed work plan, if necessary * Finalize the Report and send for approval |

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| **Title** | **Draft revision of APT Report on Information on Mobile Operator’s frequencies, technologies and license duration in Asia Pacific countries** |
| Document Type | APT/AWG Report |
| Group/Chair | WG-TECH/Sub-WG IMT, Dr. Hiroyuki Atarashi (J) |
| Editor(s) | TBD |
| Scope | To update APT/AWG/REP-15 (Rev.4). |
| Purpose | To reflect the latest implementation status of the frequency bands released for terrestrial mobile cellular networks in APT Member countries. |
| Related Document | APT/AWG/REP-15 (Rev.4) |
| Related Organization | ITU-R |
| Timelines | **AWG-23 (April, 2018)**   * Develop work plan and timeline, * Develop a working document “Draft revision of APT Report on Information on Mobile Operator’s frequencies, technologies and license duration in Asia Pacific countries”, * Develop and issue a circular letter to seek updated information from APT Members.   **AWG-24 (September, 2018)**   * Consider input contributions, * Update the working document and finalize it as an APT/AWG Report. |

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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, Dr. Hiroyuki Atarashi (J) |
| Editor(s) | TBD |
| Scope | To collect information on the current status and future plan of IMT-2020 (5G) in APT countries |
| Purpose | To facilitate study on 5G in Asia-Pacific region |
| Related Document | TBD |
| Related Organization | ITU-R |
| 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 (2019)**   * Consider input contributions, * Update the working document and finalize it as an APT/AWG Report. |

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| **Title** | **Technologies of Fixed Wireless Systems to Provide Remote Connectivity** |
| **Document Type** | APT/AWG Report |
| **Group/Chair** | WG-TECHNOLOGY/TG-FWS/Dr. Tetsuya KAWANISHI |
| **Editor(s)** | MS. NGUYEN Thu Ha and MS. Yumi UEDA |
| **Scope** | The fixed wireless radio system with superiorities such as low cost and easy construction is considered to be a more effective solution to the digital divide. To study variety cases of the fixed wireless radio system applied are believed to help the effort on bridging the digital divide. |
| **Purpose** | Propose to develop a new APT report on applications of fixed wireless systems to provide remote connectivity |
| **Related Documents** | APT/AWG/REP-54 APT Survey Report on Fixed Wireless Systems |
| **Related**  **Organization** | TBD |
| **Timelines** | **AWG-21 (2017 April)**   * Initiate to develop the new APT report   **AWG-22 (2017 September)**   * Drafting the new APT report   **AWG-23 (2018 2Q)**   * Drafting the new APT report   **AWG-24 (2018 3Q)**   * Completion of draft for the new APT report |

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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** | [Draft new 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 * AWG-27   + Finish development of the preliminary draft new Recommendation/Report and upgrade it to draft new Recommendation/Report. |

**Task Group on Internet of Things:**

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| **Title** | **Current Status and Future Plan of Implementation and Deployment of IoT in APT Countries** |
| **Document Type** | APT Report |
| **Group/Chair**  **Co-chair** | WG-TECH/TG-IoT / Dr. Satoshi TSUKAMOTO (Japan)  Mr. M.M.ASKARI, IRAN (Islamic Republic of.) |
| **Editor(s)** | Ms. Mary Lim (Sigfox Singapore Pte Ltd.) |
| **Scope** | * To share information on current status and future plan of implementation and deployment of IoT in Asia-Pacific region and exchange related experiences. |
| **Purpose** | * To provide APT member countries information on current status and future plan of implementation and deployment of IoT and related experiences in Asia-Pacific Region. To provide information for the study work on WRC-19 Agenda Item 9.1, Issue 9.1.8 on Resolution 958 (WRC-15) Annex item 3, if requested by APG |
| **Related Document** | * RESOLUTION 958 (WRC-15) "Urgent studies required in preparation for the 2019 World Radiocommunication Conference" Annex item 3 |
| **Related Forums and Organisation** | ITU-R Working Party 1B, 5A, 5D |
| **Timelines** | **The -22nd meeting (Busan, Republic of Korea) in Sept.2017**   * Initiate the task in AWG * Develop the workplan * Prepare and circulate the questionnaire to APT members   **The 23rd meeting (Da Nang) in 2018**   * Review the responses from APT members * Prepare a working document towards an APT Report on current status and future plan of implementation and deployment of IoT in Asia-Pacific region based on collected responses from APT members   **The 24th meeting (Bangkok) 2018**   * Review the responses from APT members * Finalize the draft APT Report for approval * Consider the future work plan and working method in accordance with the proposal from APT members |

**Task Group on Intelligent Transportation System:**

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| **Title** | **The usage of ITS in APT countries (Revision 2)** |
| **Document Type** | Report |
| **Group/Chair** | ITS TG/ Mr. Satoshi (Sam) Oyama, Japan |
| **Editor(s)** | Mr. Andy Phang, Infocomm Media Development Authority, Singapore |
| **Scope** | Provide up-date information on the currently used ITS technologies, frequency bands, status of commercialization service and others in APT member countries. |
| **Purpose** | Provide APT member countries with practical information on the currently used ITS technologies, frequency bands, 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. 1)) |
| **Related Forums** | APG, ITU-R SG5 WP 5A |
| **Timelines** | **The 21st meeting (Bangkok) in April 2017**  🡪 collect the responses  🡪 Inform APG19-2 study progress on ITS  🡪 consideration of input contribution for ITU-R SG5 WP 5A  **The 22nd  meeting (Busan) in September 2017**  🡪 finalize and get approval on the Report (Revision 2)  🡪 inform the study results on ITS to APG19-3  🡪 input contribution for ITU-R SG5 WP 5A  🡪 send a circular letter to APT members to request for further contribution  **The 23rd meeting (Danang ) in April 2018**  🡪 modify the Report (Revision 2) with comments collected  🡪 inform the study results on ITS to APG19-4  🡪input contribution for ITU-R SG5 WP 5A  **The 24th meeting (Bangkok ) in September 2018**  🡪 modify the Report if some inputs are received  🡪 draft LS on ITS to APG19-4  🡪 discuss the preliminary draft new work plans |

**TG WPT:**

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| **Title** | **Survey for 100 to 300kHz band Non-Beam WPT** |
| **Document Type** | APT /AWG Survey Report |
| **Group/Chair** | WG-TECH /TG-WPT/Mr. Chan Hyung CHUNG (Korea) |
| **Editor(s)** | Mr. Qiaojian SONG (Apple South Asia) |
| **Scope** | This survey is to collect information of regulation for the bands 100 – 300kHz in Asia Pacific region and the incumbent system to be protected from Non-Beam WPT Mobile devices.  This Survey Report is designed for administrations to provide the information concerning Non-Beam WPT for mobile devices. |
| **Purpose** | To exchange information about 100~300kHz band non beam WPT and study for harmonization of WPT in Asia Pacific region |
| **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 |
| **Related Forums and Organization** | ITU-R SG1 WP 1A  In addition, APT may need to talk with the following SDOs and/or forums as appropriate: ATIS, AirFuel, BWF, CEA, ETSI, IEC, IEEE, ISACC, NFC Forum, TIA, SAE and WPC |
| Timelines | **2017 September (AWG-22)**  - Initiate the task  - Prepare the questionnaire for Survey of 100~300kHz band use  **2018 April (AWG-23)**   * Collect the Response of Questionnaire and Review * Prepare working document toward a draft APT new Survey Report   **2018 September (AWG-24)**   * Improve working document towards a draft APT Survey Report * Finalize the draft APT Survey Report |

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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. Park (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 February (AWG-25)**   * Studies on spectrum sharing and impact of WPT to existing radiocommunication services and etc. * Review and update PDNR   **2019 September (AWG-26)**   * Studies on spectrum sharing and impact of WPT to existing radiocommunication services and etc. * Approval of PDNR for an AWG output for Report |

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| **Title** | **Impact study for Non-Beam WPT for Mobile Devices** |
| **Document Type** | APT/AWG Report |
| **Group/Chair** | WG-TECH/TG WPT/Mr. Chan Hyung Chung |
| **Editor(s)** | Song Qiaojian/Apple South Asia Pte Ltd |
| Scope | Prepare impact study report for Non-Beam WPT for Mobile Devices |
| **Purpose** | Impact study for non-beam WPT technologies for mobile devices:   1. Not to cause harmful interference to incumbent radiocommunication services; 2. To facilitate smooth deployment of WPT systems without spectrum concerns; |
| **Related Document** | 1. Ongoing APT New Survey Report for 100 to 300kHz non-ISM band for Non-Beam WPT 2. APT Report on WPT (APT/AWG/REP-62(Rev.1)) 3. Report ITU-R SM.2303-2“Wireless power transmission using technologies other than radio frequency beam” |
| **Related Forums and Organization** | ITU-R SG1, WP 1A, and WP 1B |
| **Timelines** | **2018**   * AWG-23   + Initiate the task in AWG   + Develop a work plan   + Develop the incumbent victim system parameters list * AWG-24   + Review specific parameters necessary for impact studies with APT members contribution and existing standards   + Develop a draft impact study report for non-beam WPT for mobile device based on contributions and meeting discussion   **2019**   * AWG-25   + Finalize the impact study report |

**TGs of Working Group Service & Applications**

**Task Group on Modern Satellite Applications:**

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| **Title** | **Integration of Satellite Technology into the Next Generation Access Technologies Ecosystem** |
| **Document Type** | Report |
| **Group/Chair** | WG S&A/TG MSA/Ms. Geetha Remy Vincent |
| **Editor(s)** | Ms. Geetha Remy Vincent |
| **Scope** | To identify the key requirements that would allow the Integration of Satellite Technology into the Next Generation Access Technologies Ecosystem |
| **Purpose** | To develop an APT Report which helps APT members understand the potential and capabilities in integrating satellite solutions into the next generation access technologies environment in the Asia Pacific region. |
| **Related Document** | - |
| **Related Organization** | APT, WP4A |
| **Timelines** | **2017**   |  |  |  | | --- | --- | --- | | AWG-21 | 🡪 | Initiate the task in AWG. | |  | 🡪 | Develop work plan and timeline. | | AWG-22 | 🡪 | Prepare a working document towards an APT Report based on inputs from APT members |   **2018**   |  |  |  | | --- | --- | --- | | AWG-23 | 🡪 | Prepare a working document towards an APT Report based on inputs from APT members | | AWG-24 | 🡪 | Finalize the draft APT Report for approval. | |  | 🡪 | Consider the future work plan and working method in accordance with the proposal from APT members. | |  |  |  | |

**Task Group on Aeronautical & Maritime:**

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| **Title** | **Current and Future Usage of Unmanned Aircraft** |
| **Document Type** | APT Report |
| **Group/Chair** | TG-Aeronautical and Maritime |
| **Editor(s)** | Chairman TG-Aeronautical and Maritime, [Ms. Takako KITAHARA] |
| **Scope** | Provide information on various potential services and applications, and success factors to deliver services and applications for public use of unmanned aircraft, disaster relief case studies and future challenges |
| **Purpose** | To identify the future needs of special communications for social, industrial and economic development which could be satisfied by services and applications on unmanned aircraft systems. |
| **Related Document** | NONE |
| **Related Forums** | ITU WP 5B |
| **Timelines** | **2015:**  AWG-18 🡪Initial revision of Terms of Reference  **2016:**  AWG-19 🡪Review input contributions and initiate studies on the topic of service and application for public use of unmanned aircraft, and review ToRAWG-20🡪 Initiate report based on the results of studies.  **2017:**  AWG-21🡪 Continue development of report, development and circulation of survey questionnaire on current spectrum usage and future plan of unmanned aircraft system  AWG-22🡪 Compilation of questionnaire responses, continue development of report  **2018:**  AWG-23🡪 Compilation of questionnaire responses, continue development of report. Finalize report, development a new survey report if necessary.  AWG-24🡪 Continue development of report  **2019:**  AWG-25🡪 Finalize the report |

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| **Title** | **Broadband Wireless Air-to-Ground Communications Links with Passenger Aircraft** |
| **Document Type** | APT Report |
| **Group/Chair** | TG-Aeronautical and Maritime / Dr. YING XU |
| **Editor(s)** | Chairman TG-Aeronautical and Maritime, Mr. Stewart Wallace |
| **Scope** | Develop a new Report on the Technical Characteristics, Operating Provisions and Regulatory Provisions on the broadband Wireless Air-to-Ground Communications Links with Passenger Aircraft |
| **Purpose** | AWG consider developing harmonized arrangements for technical characteristics, operating provisions and regulatory provisions for air-to-ground mobile broadband links to passenger aircraft, to enable seamless passenger flight operations across the entire region, and aligned with similar developments already occurring in other regions. |
| **Related Document** | ITU-R. Report M.2282. |
| **Timelines** | 2017:  AWG-21: Initiate the development of new AWG Report  AWG-22: Continue development of draft new AWG Report  2018:  AWG-23 : Continue development of draft new AWG Report  AWG-24 : Completion of draft new AWG Report |

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| **Title** | **Technical Conditions for the Use of Mobile Communication Services Onboard Aircraft** |
| **Document Type** | Guideline Report |
| **Group/Chair** | TG-Aeronautical and Maritime / Dr. YING XU |
| **Editor(s)** | Chairman TG-Aeronautical and Maritime, Mr Eric Wawrzynkowski |
| **Scope** | To review the APT guidelines on technical conditions for the use of mobile phone onboard aircraft |
| **Purpose** | To consider the possibility of making optional the use of the controlled equipment within the Mobile communication system onboard the aircraft |
| **Related Document** | APT/AWG/OP-02 (Rev.2) |
| **Timelines** | 2017:  AWG-22: Initiate the modification of AWG guideline  2018:  AWG-23: Continue development of AWG guideline  AWG-24: Finalize the modification of AWG guideline |

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| **Title** | **Implementation of the Bands 108 – 117.975 MHz, 328.6-335.4 MHz and 960-1164 MHz for the Aeronautical Radionavigation Systems in APT region** |
| **Document Type** | Report |
| **Group/Chair** | TG-Aeronautical and Maritime / Dr. YING XU |
| **Editor(s)** | Chairman TG-Aeronautical and Maritime, Mr. Bui Ha Long (VTN) |
| **Scope** | To support and assist APT Members in using the mentioned radio frequency spectrum and deploying aeronautical radionavigation systems in these bands effectively |
| **Purpose** | To recognize the commonly used of these spectrum in order to facilitate the efficient usage, border coordination on these frequencies among APT countries. |
| **Related Document** | NONE |
| **Timelines** | 2017:  AWG-22: Initiate the development of AWG Report  2018:  AWG-23: Continue development of draft new AWG Report  AWG-24: Continue development of draft new AWG Report  2019:  AWG-25: Continue development of draft new AWG Report  2020:  AWG-26: Complete draft new AWG Report |

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| Title | [UHF-MAR] Study of usage of the bands 457.5125-457.5875 MHz and 467.5125-467.5875 MHz by the maritime mobile service in Asia Pacific region |
| Document Type | Report |
| Group/Chair | TG-Aeronautical and Maritime / Dr. YING XU |
| Editor(s) | Chairman TG-Aeronautical and Maritime, Bui Ha Long (VTN) |
| Scope | To develop APT/AWG Report/guideline on the use of the bands 457.5125-457.5875 MHz and 467.5125-467.5875 MHz for UHF on-board vessel communication in Asia Pacific region. |
| Purpose | To support the wide usage of UHF on-board vessel communication in the bands 457.5125-457.5875 MHz and 467.5125-467.5875 MHz in Asia-Pacific region. |
| Related Document | NONE |
| Timelines | 2018:  AWG-23: Discuss the scope of the draft new AWG Report/guideline  AWG-24: Further discuss the scope and the structure of the working document  2019:  AWG-25: Continue development of the draft new AWG Report/guideline  2020:  AWG-26: Continue development of the draft new AWG Report/guideline  AWG-27: Completion of draft new APT Report |

**TG Railway Radiocommunication:**

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| **Title** | **System Deployment and Relevant Testing Studies of Railway Radiocommunication System between Train and Trackside (RSTT) in APT Countries** |
| **Document Type** | APT Report |
| **Group/Chair** | TG on Railway/ Mr. Bin LIU, CHN |
| **Editor(s)** | Mr. BO JIANG (China) |
| **Scope** | 1. to share experiences of deployment of railway radiocommunication systems,  2. to share field testing studies related to deployment of RSTT and studies on radio propagation characteristics under high speed movement in typical scenarios. |
| **Purpose** | To provide administrations and railway operators in Asia-Pacific region with relevant information on experiences and supplemental studies of RSTT deployment. |
| **Related Document** | Working document towards preliminary draft APT Report on [Systems descriptions technologies and implementation of] Railway Radiocommunication System between Train and Trackside (RSTT) |
| **Related Forums** | **ITU-R WP5A** |
| **Timelines** | **The 21th meeting of AWG in 2017**  🡪 to start the study by conducting the working plan.  **The 22nd meeting of WG in 2017**  🡪 to develop the document based on the input contributions.  **The 23rd meeting of AWG in 2018**  🡪 to improve the Report **The 24th meeting of AWG in 2018**  🡪 to finalize the Report. (if possible  **The 25th meeting in 2019**  🡪 to finalize the Report. |

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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) |
| **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 finalize the Report (if possible)  **The 25th meeting in 2019**  🡪to finalize the Report |

**Task Group on Public Protection and Disaster Relief: (Jointly with Sub-WG IMT)**

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| **Title** | **Narrowband PPDR Applications and Systems in the UHF band in Region 3** |
| **Document Type** | APT Report |
| **Group/Chair** | WG-S&A/Dr. Khoirul Anwar/ Sub-WG TG-PPDR/Mr. Bharat Bhatia |
| **Editor(s)** | Jung, Young Ju (Samyoung Celetra Inc.) |
| **Scope** | To develop APT Report on narrowband PPDR application and systems in the UHF band   1. User requirements analysis on narrowband PPDR system 2. Characteristics of typical digital narrowband PPDR technologies 3. Interoperability between narrowband and broadband PPDR systems 4. Future directions on narrowband PPDR applications and systems |
| **Purpose** | Study and identify narrowband PPDR applications and systems in UHF bands   1. To identify the role of narrowband PPDR technologies in UHF bands 2. To identify the interoperability issues between narrowband PPDR and broadband PPDR systems. 3. To investigate the technology evolution of narrowband PPDR applications and systems including Unified Communications Services. |
| **Related Document** | 1. Resolution 646 (Rev. WRC-15) on Public protection and disaster relief 2. APT Report on Harmonization of Frequency Ranges for use by wireless PPDR Applications in Asia Pacific Region (APT/AWG/REP-73) 3. Recommendation ITU-R M.2015-1 (02/20185) Frequency arrangements for public protection and disaster relief radiocommunication systems in accordance with resolution 646 (Rev.WRC-15) 4. Recommendation ITU-R M.2009 Radio interface standards for use by public protection and disaster relief operations in some parts of the UHF band in accordance with Resolution 646 (Rev.WRC-012) 5. Report ITU-R M.2377 Radiocommunication objectives and requirements for Public Protection and Disaster Relief (PPDR 6. Report ITU-R M.2014-3 (11/2016) Digital land mobile systems for dispatch traffic 7. Working Document towards a preliminary Draft New ITU-R Report on CDLMRPMR Conventional digital land mobile radio systems |
| **Related Forums and Organization** | ITU-R, TCCA, DMR association, APCO P25 |
| **Timelines** | **2017**   * AWG-22:   + Development of the Work Plan at TG-PPDR   + Discuss the structure of the working document   + Start the draft of the working document   **2018**   * AWG-23:   + Review on narrowband UHF digital mobile radio technologies for PPDR applications.   + Develop working document towards a draft APT/AWG Recommendation/Report on UHF narrowband PPDR applications and system having interoperability for Unified Communications with broadband PPDR   + Continue to develop the working documents on Unified Communications Digital Mobile Radio for narrowband PPDR applications and systems * AWG-24   + Finalize APT/AWG Report on narrowband PPDR applications and systems in the UHF bands below 1 GHz narrowband PPDR applications and systems in the UHF in region 3. |

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| **Title** | Implementation of Public Safety LTE (PS-LTE) networks |
| **Document Type** | APT/AWG Report |
| **Group/Chair** | WG-Service and Applications / TG-PPDR, Mr. Bharat Bhatia and  WG-Technology Aspects / Sub-WG IMT, Dr. Hiroyuki Atarashi |
| **Editor(s)** | TBD |
| **Scope** | This study summarizes present status of international standardization of PS-LTE technologies by 3GPP and relevant implementation activities in some countries in the world including the Asia-Pacific Region. It also summarizes technical subjects that are important for implementation of PS-LTE networks. |
| **Purpose** | * To share the relevant information from some countries with the APT Members wishing to consider implementation of PS-LTE technologies in their countries. |
| **Related Document** | TBD |
| **Related Forums and Organization** | 3GPP, ITU-R WP 5D, WP 5A |
| **Timelines** | **2016**  AWG-19 (February)   * Consider relevant input documents * Develop a detailed work plan   AWG-20 (September)   * Consider relevant input documents * Review and update the detailed work plan   **2017**  AWG-21 (April)   * Consider relevant input documents * Consider to develop a working document, if necessary * Review and update the detailed work plan, if necessary   AWG-22 (September)   * Consider relevant input documents * Review and update the working document and the detailed work plan, if necessary   **2018**  AWG-23 (1Q)   * No input contribution received at AWG-23   AWG-24 (3Q)   * Consider relevant input documents * Review and update the working document and the detailed work plan, if necessaryFinalize the Report and send for approval |

**5. SUMMARY WORKPLAN STATUS**

| **No.** | **Work Item** | **Responsible Group** | **Expected Deliverable** | **Completion Target** |
| --- | --- | --- | --- | --- |
| 1 | Studies on frequency arrangements in the band 1427-1518 MHz | Sub-WG SA&H | Report | AWG-25 |
| 2 | Harmonized frequency arrangement in the band 3 300 – 3 400 MHz | Sub-WG SA&H | Report/  Recommendation | AWG-25 |
| 3 | Frequency arrangement in the band 4 800 – 4 990 MHz | Sub-WG SA&H | Report/  Recommendation | AWG-25 |
| 4 | Frequency ranges for non-beam WPT for mobile devices | Sub-WG SA&H | Recommendation | AWG-24 |
| 5 | Sharing and compatibility studies for selected frequency bands below 6GHz | Sub-WG Sharing | Report, Liaison Statements | AWG-25 |
| 6 | Sharing and compatibility studies for IMT above 24GHz | Sub-WG Sharing | Report, Liaison Statements | AWG-24 |
| 7 | Studies related to techniques and technical conditions for Licensed-Assisted Access (LAA) and 5G New Radio - Shared Spectrum (5G NR-SS) as national solutions for accessing shared spectrum | Sub-WG Sharing Studies | Report | AWG-26 |
| 8 | Spectrum monitoring techniques and methods under multi-path environment | Sub-WG SM | Report | AWG-27 |
| 9 | Survey of usage and future plan of frequency bands in relation to studies on WRC-19 agenda item 1.13 in Asia-Pacific region | Sub-WG IMT | Report, Liaison Statements | AWG-24 |
| 10 | Report(s) on minimum recommended technical conditions to support technology neutrality and spectrum efficiency for implementation of IMT networks in bands identified for IMT | Sub-WG IMT | Report | AWG-25 |
| 11 | Survey on required set of technical conditions to support technology neutrality and spectrum efficiency for implementation of IMT in bands identified for IMT | Sub-WG IMT | Report | AWG-25 |
| 12 | Implementation Public Safety LTE (PS-LTE) Networks | Sub-WG IMT (jointly with TG PPDR) | Report | AWG-24 |
| 13 | Draft revision of APT Report on Information on Mobile Operator’s frequencies, technologies and license duration in Asia Pacific countries | Sub-WG IMT | Report | AWG-24 |
| 14 | Current status and future plan of implementation and deployment of IMT-2020 (5G) in Asia-Pacific region | Sub-WG IMT | Report | AWG-25 |
| 15 | Technologies of Fixed Wireless System to provide remote connectivity | TG FWS | Report | AWG-24 |
| 16 | Models for FWS link performance degradation due to wind | TG FWS | Recommendation/Report | AWG-27 |
| 17 | Current status and future plan of implementation and deployment of IoT in APT countries | TG IoT | Report | AWG-24 |
| 18 | The usage of ITS in APT countries (Revision 2) | TG ITS | Report | AWG-24 |
| 19 | Survey for 100 to 300kHz band Non-Beam WPT | TG WPT | Report | AWG-24 |
| 20 | Radio Frequency Beam WPT | TG WPT | Report | AWG-26 |
| 21 | Impact study for Non-Beam WPT for Mobile Devices | TG WPT | Report | AWG-25 |
| 22 | Integration of satellite technology into the next generation access technology ecosystem | TG MSA | Report | AWG-24 |
| 23 | Current and future usage of unmanned aircraft | TG AM | Report | AWG-25 |
| 24 | Broadband Wireless Air-to-Ground Communications links with passenger aircraft | TG AM | Report | AWG-24 |
| 25 | Technical conditions for the use of mobile communication services onboard aircraft | TG AM | Report | AWG-24 |
| 26 | Implementation of the bands 108-117.975 MHz, 328.6-335.4 MHz and 960-1164 MHz for the aeronautical radionavigation systems in APT region | TG AM | Report | AWG-26 |
| 27 | [UHF-MAR] Study of usage of the bands 457.5125-457.5875 MHz and 467.5125-467.5875 MHz by the maritime mobile service in Asia Pacific region | TG AM | Report | AWG-27 |
| 28 | Implementation of Public Safety LTE (PS-LTE) networks | TG PPDR | Report | AWG-24 |
| 29 | System deployment and relevant testing studies on Railway Radiocommunication System between Train and Trackside (RSTT) in APT countries | TG RR | Report | AWG-25 |
| 30 | Railway Radiocommunication System for passengers’ access to information and internet services | TG RR | Report | AWG-25 |
| 31 | Narrowband PPDR applications and systems in the UHF band in Region 3 | TG PPDR | Report | AWG-24 |