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|  | ASIA-PACIFIC TELECOMMUNITY | Document No: |
| **The 4th Meeting of the APT Conference Preparatory****Group for WRC-19 (APG19-4)** | **APG19-4/OUT-23** |
| 7 – 12 January 2019, Busan, Republic of Korea | 12 January 2019 |

Working Party 2

**PRELIMINARY VIEWs on WRC-19 agenda item 9.1 (ISSUE 9.1.8)**

**Agenda Item 9.1 Issue 9.1.8:**

*Studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in order to develop Recommendations, Reports and/or Handbooks, as appropriate, and to take appropriate actions within the ITU Radiocommunication Sector (ITU-R) scope of work, in accordance with Resolution* ***958 (WRC-15)***

**1. Background**

Resolution **958 (WRC-15)** calls for ITU-R to study technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum for narrowband and broadband machine-type communication (MTC) infrastructure in order to develop Recommendations, Reports and/or Handbooks, as appropriate.

ITU-R Working Party 5D (WP 5D), which is the responsible group on Agenda Item 9.1 (Issue 9.1.8), has developed [report ITU-R M.2440](https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-M.2440-2018-PDF-E.pdf), and the draft CPM text in [Document CPM19-2/1-E](https://www.itu.int/md/R15-CPM19.02-C-0001), Chapter 2 (Agenda Item 9.1 (9.1.8)). ITU-R WPs 1B, and 5A as the concerned groups, have also developed New Report ITU-R SM.2423-0 (LPWAN.MTC), as explained in [Revision 1 to Document 1/135-E](https://www.itu.int/md/R15-SG01-C-0135/_page.print) and working document towards a preliminary draft new Report ITU-R M.[NON\_IMT.MTC\_USAGE], as explained in Document [5A/650 Annex 33](https://www.itu.int/dms_pub/itu-r/md/15/wp5a/c/R15-WP5A-C-0650%21N33%21MSW-E.docx); [663](http://www.itu.int/md/R15-WP5A-C-0663) (WP 1B); [675](http://www.itu.int/md/R15-WP5A-C-0675) (WP 5D); [707](http://www.itu.int/md/R15-WP5A-C-0707) (Germany); and [708](http://www.itu.int/md/R15-WP5A-C-0708) (Germany).

In accordance with APG-19 Liaison statement, AWG (APT Wireless Group) provide the APT Report on "*Current Status and Future Plan of Implementation and Development of IoT in Asia Pacific Countries*", as explained in [APG19-4/INP-06](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-06)and [Report No. APT/AWG/REP-86](https://www.apt.int/sites/default/files/APT-AWG-REP-86_IoTimplementation_and_deployment.docx).

According to draft CPM Report, the results of ITU-R studies of the current and future spectrum use for narrowband and broadband MTC performed, as expressed in Resolution **958 (WRC-15)**, concluded that there is no need for any regulatory action in the Radio Regulations with regard to specific spectrum intended for use by those applications. Nonetheless, there are other mechanisms, which could facilitate the harmonized use of spectrum to support the implementation of narrowband and broadband MTC infrastructures, including ITU-R Recommendations or Reports. ([Document CPM19-2/1-E](https://www.itu.int/md/R15-CPM19.02-C-0001))

**2. Documents**

**2.1 Input Documents:**

[APG19-4/INP-06](https://www.apt.int/sites/default/files/2018/10/APG19-4-INP-06_LS_from_AWG.docx) ( Chairman of AWG), [APG19-4/INP-16](https://www.apt.int/sites/default/files/2019/01/APG19-4-INP-16__AUS2_-_Australian_Contribution_to_APG19-4_Chapter_2.docx) ( AUS), [APG19-4/INP-23](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-23_NZ2_WP2.docx) (NZL), [APG19-4/INP-42](https://www.apt.int/sites/default/files/2019/01/APG19-4-INP-42_MLA_SNG_THA_WP2_AI_9.1.8.docx) (MLA, SNG, THA), [APG19-4/INP-60](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-60_2_J_WP2.docx) (J), [APG19-4/INP-75(Rev.1)](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-75_WP2_kor_Rev.1.docx) (KOR), [APG19-4/INP-84](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-84_IRN_Chapter_2.docx) (IRN), [APG19-4/INP-101](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-101_China5_Preliminary_views_on_WRC-19_AI_1.13_1.16_9.1_issues_9.1.1_9.1.5_9.1.8_rev_3.docx) (CHN), [APG19-4/INP-109](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-109_BGD_WP2.docx) (BGD), [APG19-4/INP-114](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-114_Preliminary_India_Views_on_Agenda_1.13_1.16_9.1_Issue_9.1.8.docx) ( IND), [APG19-4/INP-119](https://www.apt.int/sites/default/files/2019/01/APG19-4-INP-119_INS2_Preliminary_View_-_WP2.docx)(INS)

**2.2 Information Documents:**

[APG19-4/INP-09(Rev.1)](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-09Rev.1_Report-second_Inter-regional_Workshop_on_preparations_for_WRC-19.docx) (Chairman APG19), [APG19-4/INF-03](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-03_IARU.DOCX%22%20%5Ct%20%22_blank) (IARU R3),[APG19-4/INF-22](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-22_CITEL_PPT.pdf) (CITEL), [APG19-4/INF-23](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-23_CEPT_PPT.pdf) (CEPT), [APG19-4/INF-24](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-24_RCC.pdf) (RCC), [APG19-4/INF-02](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-02_WMO-Position_20181109.docx%22%20%5Ct%20%22_blank) (WMO)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Chairman of AWG** - **Document** [**APG19-4/INP-06**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-06)

At AWG-22, the Task Group on Short Range Devices (TG SRD) was renamed to Task Group on IoT (TG IoT) to study and discuss topics relating to Internet of Things (IoT). A questionnaire was developed to collect information on current status and future plan of implementation and deployment of IoT in APT Member countries. Based on the replies to the questionnaire and the input contributions received at the AWG-23 and AWG-24, AWG approved the APT Report on "*Current Status and Future Plan of Implementation and Development of IoT in Asia Pacific Countries*" (Report No. APT/AWG/REP-86). The Report is attached in the Annex of this Liaison Statement.

**3.1.2 Australia** - **Document** [**APG19-4/INP-16**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-16)

Australia is of the view that there is no need to take any regulatory action in the Radio Regulations with respect to specific spectrum for the use of narrowband and broadband machine-type communication applications in the Radio Regulations, consistent with the current Draft CPM Report conclusion.

Australia supports the development of appropriate ITU-R Recommendations, Reports and/or Handbooks on technical and operational aspects of using different radio networks and systems for the implementation of narrowband and broadband machine-type communication infrastructures.

Any future study can be accommodated in the scope of work of the ITU Radiocommunication Sector (ITU-R).

Accordingly, number 3) of the Annex to Resolution **958 (WRC-15)** can be suppressed.

Australia supports the APT Preliminary View from the APG19-3 meeting.

**3.1.3 New Zealand** - **Document** [**APG19-4/INP-23**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-23)

New Zealand supports no change to the Radio Regulations. New Zealand is of the view that there is no need to identify dedicated spectrum for Internet of Things (IoT) or Machine-type communication (MTC) in the Radio Regulations. IoT/MTC could be deployed in frequency bands already allocated to Mobile Service, or already identified for IMT use. Such applications can be clarified through development of appropriate ITU-R Recommendations, Reports and/or Handbooks.

**3.1.4 Malaysia, Singapore, Thailand** - **Document** [**APG19-4/INP-42**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-42)

Malaysia, Singapore and Thailand’s view remain unchanged in that IMT-based MTC/IoT applications should be able to use existing frequency bands allocated to MOBILE service that could support mobile broadband deployment, including those already identified for IMT.

As concluded in the draft CPM text:

* There is no need to identify specific spectrum for those applications in the Radio Regulations.
* There may be other ways to address the harmonized use of spectrum to support the implementation of narrowband and broadband MTC.
* The study of technical and operational aspects including the potential harmonized spectrum usage to support the implementation of narrowband and broadband MTC infrastructures could be further accomplished through the course of the work in ITU-R Study Groups including the development of ITU-R Recommendations, Reports and/or Handbooks, as appropriate.
* Possible example(s) of the potential harmonized use of IMT-based MTC, based on IMT frequency arrangements provided by Recommendation ITU-R M.1036, can be found in PDN Report ITU-R M.[IMT.MTC] and for non-IMT technologies in PDN Report ITU-R M.[NON\_IMT.MTC\_USAGE]

**3.1.5 Japan** - **Document** [**APG19-4/INP-60**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-60)

Japan supports the ITU-R studies on the technical and operational aspects of radio networks and systems, as well as needed spectrums, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in accordance with Resolution **958 (WRC-15)**, from the viewpoint of IMT and non-IMT technologies.

Japan is of the view that there is no need to identify specific spectrums for MTC applications according to the ITU Radio Regulations. Because, at least for MTC using IMT, it is available flexibly in the allocated frequency bands identified for IMT.

**3.1.6 Korea** - **Document** [**APG19-4/INP-75(Rev.1)**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-75%28Rev.1%29)

The Republic of Korea is of the view that there is no need to take any regulatory action in the Radio Regulations with respect to specific spectrum for the use of those applications in the Radio Regulations.

**3.1.7 Iran (Islamic Republic of)** - **Document** [**APG19-4/INP-84**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-84)

Identical to APT Preliminary View provided in the Document APG19-3/OUT-12

**3.1.8 China (People’s Republic of)** - **Document** [**APG19-4/INP-101**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-101)

China's preliminary views are as follows:

1. China is of the view that the existing frequency arrangements for IMT, detailed in Rec. ITU-R M.1036, can help enable a wide range of narrowband and broadband MTC applications and devices.
2. China supports the conclusion of ITU-R studies and contents in CPM texts for this agenda item. China also supports APT to formulate preliminary common views that *there is no need to take any regulatory action in the Radio Regulations with respect to specific spectrum for the use of those applications in the Radio Regulations* subject to discussion and agreement, and to actively harmonize with other regional groups.

**3.1.9 Bangladesh** - **Document** [**APG19-4/INP-109**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-109)

Bangladesh supports no change to the Radio Regulations. Bangladesh is of the view that there is no need to identify specific spectrum for the use of narrowband and broadband MTC applications in the Radio Regulations. MTC could be deployed in frequency bands already allocated to Mobile Service, or already identified for IMT use.

Bangladesh supports that development of appropriate ITU-R Recommendations, Reports and/or Handbooks for such kind of applications.

**3.1.10 India (Republic of)** - **Document** [**APG19-4/INP-114**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-114)

India is of the view that narrowband and broadband machine-type communication infrastructures should be able to use existing frequency bands allocated to MOBILE service. This includes frequency bands identified for IMT.

As concluded in the CPM text:

* there is no need to identify specific spectrum for those applications in the Radio Regulations.
* There is no need for any regulatory action in the Radio Regulations with regard to specific spectrum requirement for MTC.
* there may be other ways to address the harmonized use of spectrum to support the implementation of narrowband and broadband MTC.
* The study of technical and operational aspects including the potential harmonized spectrum usage to support the implementation of narrowband and broadband MTC infrastructures could be further accomplished through the course of the work in ITU-R Study Groups including the development of ITU-R Recommendations, Reports and/or Handbooks, as appropriate.

**3.1.11 Indonesia (Republic of)** - **Document** [**APG19-4/INP-119**](file:///C%3A%5CUsers%5Cadmin%5CDownloads%5CAPG19-4%5CINP-119)

Indonesia supports studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband Machine-Type Communication (MTC) infrastructures. The potential harmonized spectrum usage of MTC could be further accomplished through the course of the work in ITU-R Study Groups including the development of ITU-R Recommendations, Reports and/or Handbooks, as appropriate.

Indonesia is of the view that IMT-based MTC could use the frequency bands that are already identified to IMT. For non-IMT technologies, it can be considered to use Radio Local Area Network (RLAN) technologies to support MTC applications. The harmonized use of existing spectrum used by RLAN systems at suitable power levels provides economies of scale to facilitate the deployment of non-IMT MTC ecosystems in a timely and cost-effective manner.

**3.2 Summary of issues raised during the meeting**

APT Members endorse the current conclusion of draft CPM text that no change to the Radio Regulations is required under this issue. ([Document CPM19-2/1-E](https://www.itu.int/md/R15-CPM19.02-C-0001), Chapter 2 (Agenda Item 9.1 (9.1.8))).

APG19-4 noted AWG liaison statement concerning studies in AWG associated with WRC-19 agenda item AI 9.1 Isusse 9.1.8, in document [APG19-4/INP-06](file:///C%3A%5C%5CUsers%5C%5Cadmin%5C%5CDownloads%5C%5CAPG19-4%5C%5CINP-06).

**4. APT Preliminary View(s)**

APT Members support results of ITU-R studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in accordance with Resolution **958 (WRC-15)** contained in draft CPM report for Agenda Item 9.1 issue 9.1.8.

APT Members are of the view that the possible harmonized use of spectrum to support narrowband and broadband machine-type communication applications can be achieved through ITU-R Recommendations/Reports and there is no need to make any changes to the Radio Regulations nor any identification of spectrum to support narrowband and broadband machine-type communication applications in the Radio Regulations, consistent with the current Draft CPM Report conclusion.

**5. Other View(s)**

None

**6. Issues for Consideration at Next APG Meeting**

None

**7. Views from Other Organisations**

**7.1 Regional Groups**

**7.1.1 ASMG** - **Document** [**APG19-4/INP-09(Rev.1)**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-09Rev.1_Report-second_Inter-regional_Workshop_on_preparations_for_WRC-19.docx)

For Broadband MTC and IoT applications: Support the use of existing bands identified for IMT systems to support the implementation of broadband communications infrastructure from machine to machine and IoT

For Narrowband MTC and IoT applications; Support the possibility of:

* Using existing bands identified for IMT systems, such as 694–960 MHz
* Harmonized use of 2x3 MHz 733-736/788-791 MHz in the 700 MHz band for narrowband MTC/IoT in interested countries
* Use of IMT bands for other applications

**7.1.2 ATU – Document** [**APG19-4/INP-09(Rev.1)**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INP-09Rev.1_Report-second_Inter-regional_Workshop_on_preparations_for_WRC-19.docx)

The No Change approach

**7.1.3 CEPT** - **Document** [**APG19-4/INF-23**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-23_CEPT_PPT.pdf)

CEPT supports studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in order to develop Recommendations, Reports and/or Handbooks, as appropriate.

CEPT is of the view that no modifications to the Radio Regulations are required in order to resolve Agenda item 9.1 issue 9.1.8. CEPT supports the consideration of IMT technologies within Agenda item 9.1 issue 9.1.8 as well as the consideration of non-IMT technologies in the purview of WPs 1B and 5A related to machine-type communications.

**7.1.4 CITEL** - **Document** [**APG19-4/INF-22**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-22_CITEL_PPT.pdf)

Issue 9.1.8: Narrowband and broadband machine-type communication infrastructures

NOC IAP/9.1/9.1.8/1

Argentina, Brazil, Canada, Colombia, Dominican Republic, Ecuador, Guatemala, Mexico, Panama, United States of America, Uruguay Radio Regulations Volumes 1 & 2

Reasons: Analysis of the current and future spectrum use for narrowband and broadband machine type communications (MTC), also known as machine-to-machine (M2M) or Internet of Things (IoT), concluded that there is no need to identify specific spectrum for those applications. Therefore, no change to the Radio Regulations or regulatory action is required.

SUP IAP/9.1/9.1.8/2 ANNEX TO RESOLUTION 958 (WRC-15)

Reasons: Analysis of the current and future spectrum use for narrowband and broadband machine type communications (MTC), also known as machine-to-machine (M2M) or Internet of Things (IoT), concluded that there is no need to identify specific spectrum for those applications. Therefore, no change to the Radio Regulations or regulatory action is required. No changes also apply to RR Volume 3, apart from the suppression proposed to parts of Resolution 958 (WRC-15).

**7.1.5 RCC** - **Document** [**APG19-4/INF-24**](https://www.apt.int/sites/default/files/2019/01/APG19-4-INF-24_RCC.pdf)

The RCC Administrations consider that any modifications to the Radio Regulations provisions related to regulation of using narrowband and broadband machine-type communication applications are not necessary.

The RCC Administrations support the development of ITU-R Recommendations, Reports and/or Handbooks on technical and operational aspects of using different radio systems and technologies, as well as on spectrum needed and experience in spectrum use, to support the implementation of narrowband and broadband machine-type communication infrastructures.

**7.2 International Organisations**

**7.2.1 WMO** - **Document** [**APG19-4/INF-02**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-02_WMO-Position_20181109.docx)

Resolution **958**, specifically Issue 3) in the Annex to Resolution **958** states: “Studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in order to develop Recommendations, Reports and/or Handbooks, as appropriate, and to take appropriate actions within ITU-R scope of work.”.

WMO will monitor this AI to ensure that the results of these studies will not adversely impact any service used for meteorological operations.

**7.2.2 IARU** - **Document** [**APG19-4/INF-03**](https://www.apt.int/sites/default/files/2018/12/APG19-4-INF-03_IARU.DOCX)

The IARU supports the conclusions on this agenda item mentioned in Chapter 5 of Draft CPM [Report](https://www.itu.int/md/R15-CPM19.02-C-0001/en) for WRC-19.

**7.2.3 ICAO**

* None (https://www.icao.int/Pages/default.aspx)

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