

9 August 2019

The Chairman
Malaysian Communications and Multimedia Commission
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Jalan Impact, Cyber 6
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Malaysia
(Attention: Spectrum Planning Division)
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Public Consultation – Proposed Malaysia’s Position for World Radiocommunication Conference 2019 (WRC-19) Agenda Items

Dear Chairman,

Please find attached the views of the Global Satellite Coalition (“GSC”)¹ on the above-reference Public Consultation issued by the Malaysian Communications and Multimedia Commission (MCMC), comprising:

Annex 1 – GSC Positions on Certain WRC-19 Agenda Items
Annex 2 – GSC Letter to Minister re Spectrum for 5G

The GSC is the voice of the global satellite industry that represents the combined membership of seven satellite associations across the globe – the Satellite Communications Brazilian National Association (ABRASAT),² Asia Pacific Satellite Communications Council (APSCC),³ Asia Video Industry Association (AVIA),⁴ Communications Alliance-Satellite Services Working Group (CA SSWG),⁵ EMEA Satellite Operators Association (ESOA),⁶ Global VSAT Forum (GVF),⁷ and the Satellite Industry Association (SIA) – covering all continents and all ITU regions.

Please contact GSC (info@gscoalition.org), APSCC (gregg@gapsat.com) or AVIA (john@avia.org) if you have any questions about this submission.

Sincerely yours,

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¹ See gscoalition.org.

² See www.abrasat.org.br.

³ See www.apsc.org.kr.

⁴ See www.asiavia.org.

⁵ See www.commsalliance.com.au/Activities/committees-and-groups/SSWG.

⁶ See www.esoa.net.

⁷ See www.gvf.org.

ANNEX 1 – GSC POSITIONS ON CERTAIN WRC-19 AGENDA ITEMS

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| AGENDA ITEM | AGENDA DESCRIPTION | MALAYSIA POSITION | PACP | GSC POSITION |
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| Agenda Item 1.12 | Harmonization of frequency bands in order to improve Intelligent Transport Systems (ITS) in accordance with Resolution 237 (WRC-15) | Malaysia is of the view that the recommendation can be used to achieve harmonisation and that there is no need to specify frequency ranges in the Radio Regulation (RR) | <p>APT members:</p> <ol style="list-style-type: none"> 1. Support possible harmonization of frequency bands in existing mobile service allocations for implementation of ITS and consideration of 5850 – 5925 MHz as global harmonized frequency band for evolving ITS. 2. Agree that no changed be made to the Table of Frequency Allocations are required for harmonization of spectrum for ITS. 3. Have the view that the use of frequency bands by ITS should not put constraints on primary services which have already been allocated these frequency bands and should take appropriate account for interference, including FSS earth station uplinks. 4. Support suppression of Resolution 237 (WRC-15) | <ol style="list-style-type: none"> 1. No changes to the Radio Regulations are necessary. 2. GSC is of the opinion that Method A offers the best balance between the level of harmonization and flexibility for administrations and industry to implement ITS. 3. Harmonization of frequencies for ITS can be achieved through developing applicable ITU R Recommendations and/or Reports. |

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| Agenda Item 1.14 | Consideration of ITU-R studies in accordance with Resolution 160 (WRC-15) on the appropriate regulatory actions for high-altitude platform stations (HAPS) | Malaysia is of the view that the existing provisions in the RR are sufficient for HAPS applications in their country | <p>APT members:</p> <ol style="list-style-type: none"> 1. Support no changes to RR (Method A of CPM report) to ensure protection of existing services that are allocated to the frequency bands 6440 – 6520 and 6560 – 6640 MHz. 2. View that consideration of the band 24.25 – 27.5 GHz in Region 2 should not limit the possibility to identify the band for IMT on a global basis under WRC-19 Agenda item 1.13. 3. No consensus of Method to address this agenda item in frequency bands: 27.9 – 28.2, 31 – 31.3, 38 – 39.5, 47.2 – 47.5 and, 47.9 – 48.2 GHz. | <ol style="list-style-type: none"> 1. Ensure the protection of existing FSS, and other services, in the identified bands and those adjacent to it. 2. Ensure that new FSS systems can be deployed in the future, without significant constraints and without unacceptable interference from HAPS. |

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| Agenda Item 1.13 | Identification of frequency bands for the future development of International Mobile Telecommunications (IMT) + additional allocations to the mobile service, in accordance with Resolution 238 (WRC-15) | <p>Malaysia:</p> <ol style="list-style-type: none"> 1. Supports identification of terrestrial component of IMT in the following bands: 24.25 to 27.5 GHz, 37 to 40.5 GHz, 40.5 to 42.5 GHz, 42.5 GHz to 43.5 GHz, 47.2 to 50.2 GHz, 50.4 to 52.6 GHz and 66 to 71 GHz. 2. Will not oppose identification of IMT in the following frequency bands: 45.5 to 47 GHz, 47 to 47.2 GHz, 71 to 76 GHz, 81 to 86 GHz. 3. Supports no change to the RR in the 31.8 to 33.4 GHz frequency band. | <p>APT members:</p> <ol style="list-style-type: none"> a) 24.25 – 27.5 GHz: Support identifying this frequency band for IMT through Method A2 together with new WRC Resolution. b) 31.8 – 33.4 GHz: Support Method B1. c) 37-40.5, 40.5 – 42.5, 42.5 – 43.5 GHz: Support use of these frequency bands for IMT through methods C2, D2 and E2. d) 45.5 – 47 GHz: Do not support IMT in this band. e) 47 – 47.2 GHz: Do not support IMT in this band. f) 47.2 – 50.2 GHz: Further investigation is needed to consider IMT. g) 50.4 – 52.6 GHz: Further investigation needed to consider IMT. h) 66 – 71 GHz: Support identification of frequency band for IMT but still investigating a Method and conditions to be adopted to identify the band for IMT. | <ol style="list-style-type: none"> 1. GSC supports identification for IMT in the bands 24.25 to 27.5 GHz (26GHz) globally, 40.5 to 43.5 GHz in Region 3 (40 GHz), and 66 to 71 GHz (66 GHz) globally, as well as 81-86 GHz. This yields up to 16.75 GHz of spectrum for IMT-2020. 2. Power and pointing conditions on IMT base stations (that do not put undue constraints on IMT) are needed to avoid interference from IMT base stations into satellite receivers. 3. Measures needed to ensure future and sustainable and viable access for FSS services. 4. The specific Methods and Options in the CPM Report supported by GSC are: <ol style="list-style-type: none"> a) 24.25-27.5 GHz: Method A2 (Alternative 1 or 2), subject to: <ul style="list-style-type: none"> • Condition A2d Option 1 • Condition A2e Option 3 (with 37 dBm/200 MHz) • Condition A2g Option 3 or 4 Draft new Resolution [A113-IMT 26 GHz] (WRC-19) b) 31.8-33.4 GHz: Method B1 (No change) (same as Malaysia proposal and PACP) c) 37.0-40.5 GHz: In Region 3, Method C1 (No change) |

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| | | | <p>i) 71 – 76: Further investigation needed to consider IMT.</p> <p>j) 81 – 86: Further investigation needed to consider IMT.</p> | <p>Draft new Resolution [B113-IMT 40/50GHz] (WRC-19)</p> <p>d) 40.5-42.5 GHz: In Region 3, Method D2, Conditions D2a Option 1. Draft new Resolution [B113-IMT 40/50GHz] (WRC-19)</p> <p>e) 42.5-43.5 GHz: In Region 3, Method E2, subject to:</p> <ul style="list-style-type: none"> • Condition E2a Option 2 (with 37 dBm/200 MHz) • Condition E2c Option 3 or 4 • Condition E2d Option 1 <p>Draft new Resolution [B113-IMT 40/50GHz] (WRC-19)</p> <p>f) 45.5-47.2 GHz: Methods F1 and G1 (No change, same as PACP)</p> <p>g) 47.2-50.2 GHz: Method H1 (No change)</p> <p>h) 50.4-52.6 GHz: Method I1 (No change)</p> <p>i) 66-71 GHz: Method J2 (either alternative 1 or 2) with the conditions of Draft new Resolution [C113-IMT 66/71 GHz-J2] (WRC-19)</p> <p>j) 71-76 GHz: Method K2 (either alternative 1 or 2) with the conditions of Draft new Resolution [E113-IMT 70/80 GHz] (WRC-19)</p> |


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| | | | | <p>k) 81-86 GHz: Method L2 (either alternative 1 or 2) with the conditions of Draft new Resolution [E113-IMT 70/80 GHZ] (WRC-19)</p> |
| <p>Agenda Item 1.16</p> | <p>Consideration of issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5150 MHz and 5925 MHz, and taking appropriate regulatory actions, including additional spectrum allocations to the mobile service in accordance with Resolution 239 (WRC-15)</p> | <p>Malaysia:</p> <ol style="list-style-type: none"> 1. Supports revision of resolution 229 (Rev.WRC-12) for 5150 to 5250 MHz band to enable outdoor WAS/RLAN operations with associated conditions to protect the incumbent services. 2. Supports no change to the RR for the 5250 - 5350 MHz, 5350 - 5470 | <p>APT members:</p> <ol style="list-style-type: none"> 1. View protection of incumbent services current and planned usage of the bands between 5150 and 5925 MHz should be ensured, without unacceptable constraints on such services. 2. Support NOC to the RR for the use of WAS/RLAN to protect incumbent services in bands 5250 – 5350, 5350 – 5470 and 5850 – 5925 MHz. 3. Support the allocation of band 5725 – 5850 MHz to | <p>No change for the bands 5150-5250 MHz, 5725-5850 MHz and 5850-5925 MHz: these bands should not be identified for RLAN due to difficulties in coexisting with incumbent services, notably FSS and MSS feeder links.</p> <p>Practical experience in the U.S. has shown that protection measures of incumbent satellites services in 5150-5250 MHz (GlobalStar) is difficult to enforce and unreliable, which raises questions about the effectiveness of protection measures in other bands.</p> |

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| | | <p>MHz and 5850 - 5925 MHz bands. Supports regional primary mobile service allocation in the band to accommodate WAS/RLAN for the 5725 - 5850 MHz band.</p> | <p>the mobile service on a primary basis in Region</p> <ol style="list-style-type: none"> 4. Do not support Method A2, A4, A5 and A6 for frequency band 5150 – 5250 MHz. 5. Support consideration of outdoor WAS/RLANs operation under condition of full protection of incumbent services. | |
| Agenda Item 1.4 | <p>Consideration of studies in accordance with Resolution 557 (WRC-15) and revision of Annex 7 to Appendix 30 (Rev.WRC-15) whilst ensuring protection of existing and planned fixed-satellite service networks.</p> | <p>Malaysia is in favour of the deletion of some limitations of Annex 7 to RR Appendix 30 (Rev.WRC-15) for the sake of flexibility.</p> | <p>APT Members support Method B of CPM19-2 text on this Agenda Item. APT Members are of the view to support ITU-R studies and that any possible revision of the limitations of Annex 7 to Radio Regulations Appendix 30 (Rev.WRC-15) under Resolution 557 (WRC-15) should not adversely affect current and future FSS/BSS usage in the 11.7 – 12.7 GHz frequency band for Region 3.</p> | <p>GSC supports Method B in the CPM Report, consisting in of relaxation/removal of certain Annex 7 limitations to allow for an improved and more efficient overall use of the AP30 bands, taking into account the protection of existing operation services. This method respects the deployment of current and future FSS networks’ ability to serve its own Region in its entirety by applying appropriate regulatory measures to ensure their protection and future development</p> |

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| Agenda Item 1.5 | To consider the use of the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) by earth stations in motion (ESIM) communicating with geostationary space stations in the fixed-satellite service and take appropriate action, in accordance with Resolution 158 (WRC-15). | <p>Malaysia is of the view that deployment of ESIM in 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) frequency bands will enable expansion of fixed-satellite service type of applications in providing broadband services. Malaysia is considering:</p> <ol style="list-style-type: none"> 1. Maritime ESIM: considered with minimum distance from the low-water mark as officially recognised by the coastal State. 2. Aircraft ESIM: considered with maximum pfd limit and minimum altitude distance from the ground. 3. Land ESIM: May not be considered. 18 GHz band is extensively used by fixed and fixed-satellite services, while the 28 GHz band has been identified for 5G | <p>APT Members support the PACP as shown in section 5 based on the input contributions and discussions during the meetings. (document below)</p> <div style="text-align: center;">  PACP 1.5 with clean RES.docx </div> <p>However, there was no consensus in the PACP on the conditions for maritime, aircraft or land ESIMs, or on protection of non-GEO satellites.</p> | <p>GSC does not support the PACP in its current form, as it does not reflect APT Members' consensus views on several major issues and could lead to confusion if submitted to WRC-19. Therefore, GSC recommends that Malaysia not support the PACP 1.5</p> <p>GSC supports allowing aeronautical, maritime, and land ESIM operations within GSO FSS networks in the Bands 17.7-19.7 GHz and 27.5-29.5 GHz, subject to technical and regulatory protection mechanisms for existing FSS operations & other allocated services.</p> <ol style="list-style-type: none"> 1. For the protection of non-GSO FSS systems (corresponding to PACP 1.5 <i>resolves</i> 1.14) operating in the frequency band 27.5-28.6 GHz, GSC supports an off-axis EIRP density mask outside 3 degrees of the GSO arc (corresponding to PACP 1.5 Annex 1, section 1(a) and section 1(b), Option 1). The GSC does not support Option 2 in PACP Annex, section 1(b), as it was not supported by studies. 2. For the protection of non-GSO MSS feeder links (corresponding to PACP 1.5 <i>resolves</i> 1.15) operating in 29.1- |

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| | | <p>deployment in Malaysia. In addition, Malaysia is of the view that operation of ESIM should not release operators from their obligation to protect existing services.</p> | | <p>29.5 GHz, the GSC (other than Iridium) supports no limits as interference issues are dealt with in the current coordination process (corresponding to Option 2 in the PACP 1.5).</p> <ol style="list-style-type: none"> 3. For maritime ESIMs: GSC supports a requirement for ESIMs seeking to operate within 60-70 km distance of low water mark of a country to obtain the prior agreement of the concerned coastal State. 4. For aircraft ESIMs: GSC supports the pfd mask under Option 1 of Method B in the DRAFT NEW RESOLUTION [A15] (WRC-19) to provide protection for terrestrial services. With such a pfd mask, altitude limits become unnecessary for the protection of terrestrial services, and may unnecessarily limit aircraft connectivity at altitudes at which aircraft regularly operate and require broadband connectivity. 5. For land ESIMs: GSC supports the operation of land ESIMs in the 28 GHz and 18 GHz band. GSC opposes the identification of the 28 GHz band for 5G, because (a) the band is being used extensively by satellite, including on |

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| | | | | <p>the upcoming MEASAT 3d that will provide broadband connectivity to all of Malaysia; (b) the 28 GHz is not among the AI 1.13 candidate bands and so is unlikely to be internationally harmonized; and (c) there is plenty of other spectrum for 5G, including >33 GHz being considered under AI 1.13. See <u>Annex 2</u> attached. Moreover, the presence of FS and FSS in the 18 GHz band should not preclude land ESIMs because ESIMs will be an application of the FSS and FS will be protected by applicable PFD limits on the FSS downlink.</p> |

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| Agenda Item 1.6 | To consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space), in accordance with Resolution 159 (WRC-15), which is one of the issues with this agenda item the other is, Modification of Resolution 750 (Rev.WRC-15) | <p>Malaysia:</p> <ol style="list-style-type: none"> 1. Supports development of regulatory framework. 2. Has the view that regulatory framework should ensure the protection of existing services to which these frequency bands are allocated. 3. Support the modification of Resolution 750 (Rev.WRC-15) but Malaysia may only consider the revision of limits for non-GSO systems as modifications for GSO networks are not within the scope of this agenda. | <p>APT Members support:</p> <ol style="list-style-type: none"> 1. Establishment of regulatory and procedural conditions for non-GSO FSS satellite systems in the frequency bands mentioned while ensuring protection to GSO satellite networks in FSS, MSS and BSS, and existing primary services in the same bands as well as protection of the EESS (passive) in the frequency bands 36 – 37 GHz and 50.2 – 50.4 GHz and the radio astronomy in frequency bands 42.5 – 43.5 GHz, 48.94 – 49.04 GHz and 51.4 – 54.25 GHz. 2. Support Method A of Issue 1 in the CPM Report. 3. Support consideration of Resolutions addressing: - generic GSO Reference Links and calculation procedures, that may be used to verify the compliance of non-GSO systems, and; - regulatory provisions to protect GSO satellite networks based on appropriate sharing methodology and reference | <p>GSC:</p> <ol style="list-style-type: none"> 1. Supports the advancement of next generation satellite technology for non-GSO and GSO networks through the establishment of a framework. 2. Supports development of a new Recommendation for the calculation of maximum permissible levels of interference between non-GSO and GSO systems. 3. Supports the use of a single-entry and aggregate unavailability and percent degraded throughout metric in order to allow for the efficient maximum use of the frequency bands under consideration. 4. Support an effective mechanism to ensure the aggregate unavailability limit is not exceeded by the NGSOs, in order to protect the GSOs |

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| | | | characteristics of GSO satellite networks. 4. Support ensuring protection of EESS from unwanted emission in adjacent bands. | |
| Agenda Item 7 - Issue A | Bringing into use (BIU) of frequency assignments to all non-GSO systems, and consideration of a milestone-based approach for the deployment of non-GSO systems in specific frequency bands and services | Malaysia: 1. Supports requirement for Bringing into use of frequency assignments of non-GSO systems and introduction of a milestone-based approaches for | APT members: 1. Have the view that definition of BIU of frequency assignments to non-GSO systems should be in accordance with the current practice as contained in the Rules of Procedure (keep a continuous period of 90 days for frequency | GSC's General Position for Agenda Item 7: 1. Favours a stable and predictable regulatory framework for efficient and economical use of spectrum and orbit resources. Hence, GSC supports retaining the current process of continuing evolution at successive WRCs of the regime governing space service, increasing flexibility to access |

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| | | <p>deployment of non-GSO systems.</p> <p>2. Supports a new ITU-R Resolution for implementation of milestone-based approach for deployment of non-GSO systems in certain frequency bands and services.</p> | <p>assignments of the FSS/MSS/BSS.</p> <p>2. Could support Option 2, as outlined in the CPM19-2 report for provision No. 11.44C of the BIU.</p> <p>3. Could support Option 1, the commencement date of the milestone process to be 1 Jan. of 2001.</p> <p>4. Support application of the milestone-based approach to non-GSO systems operating in the FSS, BSS and MSS but not the RNSS.</p> <p>5. Members do not support the application of tolerance values at this stage as no technical basis has been developed in the ITU-R to determine how much deviation could be tolerated between the characteristics of the notified orbital planes and the characteristics of the orbital planes associated with any developed space stations.</p> | <p>spectrum while protecting existing systems.</p> <p>2. Favours the review of any RR provision which can bring accurate solutions to specific detected inconsistencies and develop new improved provisions with emphasis on solving the most urgent issues, i.e. well characterized issues whose improvement is urgent and impacting.</p> |

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| Agenda Item 7 - Issue B | Application of coordination arc in the Ka-band, to determine coordination requirements between the fixed-satellite service and other satellite services | Malaysia supports use of coordination arc with a value of 8 degrees as coordination criteria to determine if coordination is required between fixed-satellite service and mobile-satellite service systems in the said Ka-band in all three (3) Regions, while keeping the possibility for administrations to request $\Delta T/T$ criteria. | APT Members support the use of the coordination arc with a value of 8 degrees as coordination criteria, to determine if coordination is required between FSS and MSS systems and between MSS systems in the frequency bands 29.5-30 GHz (Earth-to-space)/19.7-20.2 GHz (space-to-Earth) while keeping the possibility to request application of RR No. 9.41 to include additional satellite networks that would be affected taking into account the $\Delta T/T > 6\%$ criteria without modifications to current category of allocation in the frequency bands above. | |
| Agenda Item 7 - Issue C1 | Issue proposes alignment of text in paragraph 8.13 of Article 8 of Radio Regulations Appendix 30B with that of No. 11.43A of Radio Regulations Article 11 due to regulatory inconsistency between the objectives of the two provisions/paragraph | Malaysia supports to address the regulatory inconsistency identified by aligning the text of paragraph 8.13 of Article 8 of Radio Regulations Appendix 30B with that of No. 11.43A of Radio Regulations Article 11 | APT Members support the single method in the CPM Report to address this issue by aligning the text of paragraph 8.13 of Article 8 of RR Appendix 30B with that of RR No. 11.43A of RR Article 11 while ensuring that this alignment should not impact on any other current regulatory practice. | |

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| Agenda Item 7 - Issue C2 | Issue addresses unavailability of specific provision authorising the application from administrations when applying Article 6 of the Radio Regulations Appendix 30B for additional use for either of two sub-bands of 250 MHz each in the 13-11 GHz frequency band. | Malaysia supports to add another footnote to paragraph 6.1 of Radio Regulations Appendix 30B to address the issue. | APT Members support the single method in the CPM Report which can allow administrations to submit an application for one of the blocks/sub-bands of 250 MHz (10.7-10.95 GHz or 11.2 11.45 GHz for downlink and 12.75-13.0 GHz or 13.0-13.25 GHz for uplink) in an explicit submission of one of the blocks/sub-bands under RR Appendix 30B. | |
| Agenda Item 7 - Issue C3 | Issue proposes modification to the Radio Regulations to clearly stipulate that an administration identified under § 6.6 of Appendix 30B cannot be subject to § 6.13 – 6.15 of Appendix 30B. | Malaysia supports to add new provision in Article 6 of Appendix 30B to clearly stipulate that § 6.13 – 6.15 of Appendix 30B do not apply in the context of requirements associated with § 6.6 of Radio Regulations Appendix 30B. | APT Members support the single method in the CPM Report to add a new provision in Article 6 of RR Appendix 30B to clearly state that § 6.13 to 6.15 of RR Appendix 30B do not apply in the context of requirements associated with §6.6 of RR Appendix 30B. | |
| Agenda Item 7 - Issue C4 | Issue proposes possibility of allowing a single notice to be treated as and examined in respect of, the relevant provisions of Articles 4 and 5 of Radio Regulations Appendices 30/30A. Sections 4.1.12, 4.2.16 and 5.1.1/5.1.2 | Malaysia supports the proposed modifications to the Sections mentioned and address the issue. | APT Members support the single method in the CPM Report to modify § 4.1.12bis and § 4.2.16bis of RR Appendices 30 and 30A to allow administrations to request the Bureau to have notices submitted under any of these two provisions also examined with respect to § 5.1.1 of RR Appendix 30 and § 5.1.2 of RR Appendix 30A for notification. | |

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| Agenda Item 7 - Issue C5 | Issue addresses requirement for the Radiocommunication Bureau to send reminder to the notifying administration at any point during the 6-month period to resubmit their notified frequency assignments, which were returned due to an unfavourable finding with respect to Radio Regulations Nos. 11.32, 11.32A or 11.33 | Malaysia supports modification of Radio Regulations No. 11.46 requiring the Radiocommunication Bureau to remind the notifying administration of the 6-month deadline. | APT Members supports the single Method for the Issue C5, as outlined in the CPM19-2 Report. | |
| Agenda Item 7 - Issue C6 | Issue proposes modification to the Radio Regulations to allow submission of one notice for entry into the List under § 6.17 and for notification under § 8.1 at the same time. This would simplify the processing and reduce the workload of the Radiocommunication Bureau and administrations. | Malaysia supports modification of § 6.17 of Radio Regulations Appendix 30B to allow one submission to be treated in respect of both provisions (§ 6.17 and § 8.1 of Radio Regulations Appendix 30B) and modification of Radio Regulations Appendix 4 to enable this. | APT Members support the single method in the CPM Report to allow a single submission to be treated both in respect of entry into the List under §6.17 and notification under §8.1 of RR Appendix 30B to reduce workload of both administration and the Bureau. | |

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| Agenda Item 7 - Issue C7 | Issue proposes amendment to Radio Regulations Appendices 30A and 30B for the possibility of obtaining agreement from affected administrations for a specified period, to be harmonised among Radio Regulations Appendices 30, 30A and 30B | Malaysia supports to add new provision § 6.15bis to Article 6 and a new provision § 8.16bis to Article 8 of Radio Regulations Appendix 30B in order to recognise the possibility of obtaining agreement from affected administrations for a specified period. Furthermore, in order to harmonise Radio Regulations Appendices 30, 30A and 30B, modification to § 5.2.6 to Article 5 of Appendix 30A would be necessary | APT Members support the single method in the CPM Report to add a new provision 6.15bis to Article 6 and a new provision §8.16bis to Article 8 of RR Appendix 30B in order to recognize the possibility of obtaining agreement from affected administrations for a specified period. It is also proposed to modify § 5.2.6 of Article 5 of Appendix 30A to Radio Regulations. | |
| Agenda Item 7 - Issue D | Identification of those specific satellite networks and systems with which coordination needs to be affected under Radio Regulations Nos. 9.12, 9.12A and 9.13 | Malaysia supports to add the requirements to have: <ol style="list-style-type: none"> 1. a pre-compiled list of potentially affected satellite networks and/or systems included in the CR/C Special Section for coordination under RR Nos. 9.12, 9.12A and 9.13 | APT Members support the Method D1 for the Issue D, as outlined in the CPM19-2 Report. Under this method, it is proposed to add the requirements to have: <ol style="list-style-type: none"> 1. a pre-compiled list of potentially affected satellite networks and/or systems, published for information only, included in the CR/C Special Section for coordination under RR Nos. 9.12, 9.12A and 9.13, by | |

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| | | <p>2. the definitive list of affected satellite networks or systems to be considered when effecting coordination under Radio Regulations Nos. 9.12, 9.12A and 9.13 to be included in the CR/D Special Section by stipulating it in Radio Regulations No. 9.53A.</p> | <p>stipulating it in RR No. 9.36.1;</p> <p>2. the definitive list of affected satellite networks or systems to be considered when effecting coordination under RR Nos. 9.12, 9.12A and 9.13 to be included in the CR/D Special Section by stipulating it in RR No. 9.53A.</p> | |
| Agenda Item 7 - Issue E | Resolution related to Radio Regulations Appendix 30B | Malaysia supports establishment of special measures to be applied once with respect to the submission received from an administration having no frequency assignments in the Radio Regulations Appendix 30B List the details of which are to be contained in a WRC Resolution to facilitate the tasks of those administrations to provide an economically viable | <p>APT members:</p> <p>1. support the single method in the CPM text to establish special measures to be applied once with respect to the submission received from an administration having no frequency assignments in the RR Appendix 30B List the details of which are to be contained in a WRC Resolution to facilitate the tasks of those administrations to provide an economically viable</p> | |

ANNEX 1 – GSC POSITIONS ON CERTAIN WRC-19 AGENDA ITEMS

| AGENDA ITEM | AGENDA DESCRIPTION | MALAYSIA POSITION | PACP | GSC POSITION |
|-------------|--------------------|--|---|--------------|
| | | <p>satellite service to its national territory as initially considered when the allotment Plan was established in 1988</p> | <p>satellite service to its national territory as initially considered when the allotment Plan was established in 1988.</p> <p>2. Propose to consider these matters:</p> <p>a) To take into account the relative space station uplink receive antenna gain of the potentially affected assignment at the location of the interfering earth station for uplink PFD criteria;</p> <p>b) To assist administrations intending to use above mentioned special procedures to be able to implement/ accommodate these satellite networks if all measures mentioned in draft resolution did not help to resolve incompatibility with respect to satellite network in Appendix</p> | |

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| | | | <p>30B having Global/Regional coverage but with final service area limited to few numbers of contiguous or non-contiguous countries; and</p> <p>c) take necessary actions for inclusion of above a) and b) in draft Resolution, as appropriate.</p> | |
| Agenda Item 7 - Issue F | Measures to facilitate entering new assignments into the Radio Regulations Appendix 30B List | Malaysia supports updating the coordination triggers to take into account technological advances that facilitates coordination of submission of new networks while assuring adequate protection of existing allotment and operational additional systems recorded in the List. | APT members support to further study the measures to facilitate entering new assignments into the RR Appendix 30B List. | |

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| Agenda Item 7 - Issue G | Updating the reference situation for Regions 1 and 3 networks under Radio Regulations Appendices 30 and 30A when provisionally recorded assignments are converted into definitive recorded assignments | Malaysia supports the reference situation of the interfered-with network should be updated in consultation with, and only with the agreement of the affected administration, with modification of § 4.1.18bis of Radio Regulations Appendices 30 and 30A. | APT Members do not support Method G2 in the CPM Report. APT Members could not agree on a common view and decided not to develop Preliminary APT Common Proposal (PACP) for Agenda Item 7 Issue G. | |
| Agenda Item 7 - Issue H | Modifications to Radio Regulations Appendix 4 data items to be provided for non-GSO satellite systems | Malaysia supports modifications to RR Appendix 4 as follows: <ol style="list-style-type: none"> 1. extension of the requirement in RR Appendix 4 for APIs and notifications for frequency assignments to non-GSO systems. 2. addition of new mandatory & optional items for API and notifications for frequency assignments to non-GSO systems. 3. additional new data items in RR | APT Members support the single Method for the Issue H, as outlined in the CPM19-2 Report. | |

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| | | <p>Appendix 4 for the provision of information.</p> <p>4. additional new data items in RR Appendix 4 or modify existing ones to implement changes associated with revision of recommendation ITU-R S.1503.</p> | | |
| Agenda Item 7 - Issue I | Modified regulatory procedure for non-GSO satellite systems with short-duration missions | Malaysia supports modification to Radio Regulations Articles 9 and 11, including addition of a new WRC Resolution. | <p>APT members:</p> <ol style="list-style-type: none"> 1. Support Method I2 to develop a new WRC Resolution together with an associated regulatory procedure for non-GSO satellite systems with short-duration missions. 2. View that simplified regulatory regime for non-GSO satellite systems with short-duration missions should not place additional burden on potentially affected administrations. | |

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| AGENDA ITEM | AGENDA DESCRIPTION | MALAYSIA POSITION | PACP | GSC POSITION |
|-------------------------|--|---|--|--------------|
| | | | <ol style="list-style-type: none"> 3. support the retention of the typical 4 month commenting period from the date of BR IFIC containing information published under No. 9.2B. 4. view that this Resolution should apply only to non-GSO networks or systems identified by the notifying administrations as short duration mission. | |
| Agenda Item 7 - Issue J | Pfd limit in Section 1, Annex 1 of Radio Regulations Appendix 30 | Malaysia supports to allow List assignments to exceed the pfd limit given only within the national territory. Condition that the assignment does not overlap with the Regions 1 and 3 guard bands as defined in § 3.9 of Annex 5 to Radio Regulations Appendix 30 | APT Members could not agree on a common view and decided not to develop Preliminary APT Common Proposal (PACP) for Agenda Item 7 Issue J. | |
| Agenda Item 7 - Issue K | Difficulties for Part B examinations under § 4.1.12 or 4.2.16 of Radio Regulations Appendices 30 and 30A and § 6.21 c) of Radio Regulations Appendix 30B | Malaysia supports to add one more examination under § 4.1.12 and § 4.2.16 of Radio Regulations Appendices 30 and 30A and § 6.21 c) of Radio Regulations Appendix 30B | APT members support the Method in the CPM Report to add one more examination under § 4.1.12 and § 4.2.16 of RR Appendices 30 and 30A and § 6.21 c) of RR Appendix 30B such that should any remaining affected networks whose assignments have been entered in the List before the submission under | |

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|--------------------------------------|--|---|--|---|
| | | | <p>§ 4.1.12 and § 4.2.16 of RR Appendices 30 and 30A or § 6.17 of RR Appendix 30B, the Bureau shall further examine if the remaining corresponding assignments in the List are still considered as being affected.</p> | |
| <p>Agenda Item 9.1 - Issue 9.1.3</p> | <p>Resolution 157 (WRC-15) on study of technical and operational issues and regulatory provisions for new non-geostationary-satellite orbit systems in the 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725-7 025 MHz frequency bands allocated to the fixed-satellite service.</p> | <p>Malaysia supports no change to the values of the existing limits presented in Radio Regulations Article 22 (epfd) and Article 21 (pfd) for the 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz, and 6 725-7 025 MHz frequency bands.</p> | <p>APT Members support no change (NOC) to the Radio Regulations to satisfy agenda item 9.1, issue 9.1.3 based on study results of ITU-R for new non-GSO systems in the 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725-7 025 MHz frequency bands under the terms of Resolution 157 (WRC-15).</p> | <p>In-line with the conclusions of the CPM Report, Malaysia’s proposed position, and the PACP, GSC supports “No Change” to the current limits in Articles 21 and 22 of the RR, particularly as ITU-R studies have shown that circular-orbit non-GSO FSS operations used for global broadband services in the examined bands could result in large exceedances when tested against Rec. ITU-R S.1323, protection requirements to ensure compatibility of non-GSO operations with GSO networks.</p> |

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| Agenda Item 9.1 - Issue 9.1.9 | Resolution 162 (WRC-15) on studies relating to spectrum needs and possible allocation of the frequency band 51.4-52.4 GHz to the fixed-satellite service (Earth-to-space). | Malaysia is currently studying the possibility of allocation to International Mobile Telecommunications (IMT) in the 51.4-52.4 GHz frequency band. | APT Members support a new primary allocation to the fixed-satellite service (Earth-to-space) in the frequency band 51.4-52.4 GHz limited to FSS gateway links for geostationary orbit use subject to regulatory provisions to ensure protection of currently allocated services in the same frequency band and in adjacent frequency bands. | GSC supports: <ol style="list-style-type: none"> 1. Allocation of the band 51.4-52.4 GHz as primary for Earth-to-Space FSS GSO feeder links which will ensure that the use will protect existing services, in the band in adjacent bands, by applying the appropriate conditions under Option 1 of the CPM. 2. The FSS Earth stations operating in this band shall limit the unwanted emission power levels within the EESS (passive) band according to the conclusions of the studies, and this should be specified in the revision of Resolution 750 (Rev. WRC-15) |
| Agenda Item 1.10 | To consider spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System (GADSS), in accordance with Resolution 426 (WRC-15) | Malaysia supports recognition of GADSS in the Radio Regulations by: <ol style="list-style-type: none"> 1. Amendment of existing article on “Distress and Safety Communications”; and 2. Addition of new article to describe GADSS. | APT members: <ol style="list-style-type: none"> 1. support the ITU-R studies being undertaken for the introduction and use of Global Aeronautical Distress and Safety System (GADSS) in accordance with Resolution 426 (WRC-15). 2. APT Members are of the view that: <ul style="list-style-type: none"> - no additional spectrum allocations and no changes to Article 5 of the Radio Regulations are required; | GSC is of the view that: <ol style="list-style-type: none"> 1. Studies on regulatory provisions required for the implementation of GADSS should take into account the GADSS concept provided by ICAO. 2. No need for changes to the RR Article 5 are necessary for GADSS requirements. 3. No list of GADSS frequencies required in the RR. 4. Modifications of RR (other than Article 5) to facilitate introduction of GADSS may be required. |

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| | | | <ul style="list-style-type: none"> - modification of Chapter VII in the Radio Regulations to facilitate introduction of GADSS is required including modification of Article 30 General provision and addition of Article 34A; - the details of the GADSS elements are defined in Annexes to the ICAO Convention; - any studies on regulatory provisions required for the implementation of GADSS should take into account the GADSS concept provided by ICAO <p>3. support Method A contained in the CPM report regarding this agenda item.</p> | |

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| <p>Agenda Item 9.1 - Issue 9.1.7</p> | <ol style="list-style-type: none"> 1. Issue 2a - examination on the need for possible additional measures in order to limit uplink transmissions of terminals to those authorised terminals in accordance with No.18.1. 2. Issue 2b - possible methods that will assist administrations in managing the unauthorized operation of earth station terminals deployed within their respective territories, as a tool to guide their national spectrum management programme. | | <ol style="list-style-type: none"> 1. With respect to Issue 2a) in the Annex of Resolution 958 (WRC-15), APT Members support no change to the Articles of the RR, since the current Articles are sufficient. 2. With respect to Issue 2b) in the Annex of Resolution 958 (WRC-15), APT Members support the following option in the CPM Report (see Document R15-CPM19.02-R-0001): <ul style="list-style-type: none"> - to provide necessary guidelines on satellite monitoring capabilities, along with possible revision and/or further development of ITU-R Reports or Handbooks to assist administrations with managing unauthorized operation of earth stations deployed within their territory, as a tool to guide their national spectrum management. 3. APT Members support suppression of item 2) of the | <p>GSC recognises the concerns of administrations affected by unauthorized operation of earth station terminals.</p> <ol style="list-style-type: none"> 1. In relation to Issue 2a in Annex to Resolution 985 (WRC-15), GSC supports the “No Change” position in the PACP. 2. In relation to Issue 2b in Annex to Resolution 985 (WRC-15), GSC supports ITU-R studies on best practices in training and monitoring capabilities, to assist national administrations in inhibiting the use of unauthorized uplink earth terminals and to enable national administrations to locate and terminate the unauthorized transmissions (generally consistent with the direction of the PACP.) |

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| | | | Annex to Resolution 958 (WRC-15). | |

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| AGENDA ITEM | AGENDA DESCRIPTION | MALAYSIA POSITION | PACP | GSC POSITION |
|----------------|---|---|---|--|
| Agenda Item 10 | To recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention | Malaysia is of the view that proposals for agenda item 10 could be supported subject to compatibility with existing services. | <p>APT Members:</p> <ol style="list-style-type: none"> 1. support the preliminary items 2.1 (modernisation of GMDSS) 2. could support the preliminary items 2.2 (spaceborne radar sounders in 45 MHz), 2.3 (space weather sensors) and 2.5 (review of 470-960 MHz in Region 1), and object to preliminary item 2.4 as included in Resolution 810 (WRC-15) as WRC-23 agenda items. 3. support the following items to be included in the agendas of WRC-23: <ul style="list-style-type: none"> - Studies on frequency-related matters for identification of International Mobile Telecommunications in the frequency range of 7 025-7 125 MHz, or part thereof, for the future development of International Mobile | GSC observes that there is an FSS uplink allocation in a portion of 7025-7125 MHz, and that there are MSS and BSS allocations below 2.7 MHz, many of which are in use today to provide important satellite services. |

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| | | | <p>Telecommunications for 2020 and beyond.</p> <ul style="list-style-type: none"> - to consider identification of certain frequency bands below 2.7 GHz identified for IMT for use by high altitude platform station as IMT base stations (HIBS), and whether changes are needed to the set of existing bands identified for use by HIBS. <p>4. recognize that India is facing the issue of interference to MSS from the terrestrial IMT systems in the 2 655-2 690 MHz frequency band.</p> <p>5. support the inclusion of the following items in the agendas of WRC-23:</p> <p>a) to consider improvement of efficiency in the use of the VHF maritime frequency bands 156.0125-157.4375 MHz and 160.6125-162.0375 MHz in the maritime mobile service.</p> | |

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| | | | <p>b) to consider an AMS(R)S allocation for both the uplink and downlink of aeronautical VHF applications in the frequency band 117.975 – 137 MHz, while ensuring that any harmful interference is not caused or any additional constraints are not placed on incumbent services in the same and adjacent bands, especially the AM(R)S (117.975 – 137 MHz) and the ARNS (108 – 117.975 MHz).</p> <p>c) to consider that further operational, technical and regulatory issues may need to be addressed, which require continuing studies, on the status of the station aboard suborbital vehicles and type of applications, and on the potential interference to be considered with regards to radiocommunication systems operating on suborbital vehicles.</p> | |

ANNEX 2 – GSC LETTER TO MINISTER RE SPECTRUM FOR 5G

17 July 2019

YB Tuan Gobind Singh Deo,
Minister of Communications and Multimedia,
Ministry of Communications and Multimedia Malaysia,
Lot 4G9, Persiaran Perdana, Presint 4,
Pusat Pentadbiran Kerajaan Persekutuan,
62100, Wilayah Persekutuan Putrajaya
Malaysia

Cc: **YBrs. Encik Al-Ishsal bin Ishak**
Chairman
Malaysian Communications and Multimedia Commission
MCMC Tower 1, Jalan Impact, Cyber 6
63000 Cyberjaya, Selangor Darul Ehsan
Malaysia

BY EMAIL

Dear Sir,

SPECTRUM FOR 5G IN MALAYSIA

We write to you on behalf of the Global Satellite Coalition (GSC)¹, to bring to your kind attention a matter of extreme importance with respect to the mobile industry's sustained attempts to take over spectrum currently used for satellite services.

We understand that the 5G industry in Malaysia is pursuing parts of the spectrum currently being used to provide important satellite services in the 3.4-3.8 GHz and 27.0-29.5 GHz band. This is part of a worldwide campaign to take over as much spectrum as possible for terrestrial 5G services, regardless of impact on other services and without relying on any realistic assessment of 5G spectrum demand.

In GSC's view, neither the 3.4-3.8 GHz band nor the 27.0-29.5 GHz band are needed for 5G. Any realistic 5G spectrum requirements can be met using other available frequency bands without disturbing the existing and planned satellite services in either band.

Satellite Services in the 3.4-3.8 GHz and 27.0-31 GHz bands

The Malaysian satellite operator, MEASAT, in addition to the band 3.8-4.2 GHz, currently operates one satellite in the 3.4-3.7 GHz band and three satellites in the 3.7-4.2 GHz band. These bands are

¹ The GSC is the voice of the global satellite industry that represents the combined membership of seven satellite associations: Satellite Communications Brazilian National Association (ABRASAT), Asia-Pacific Satellite Communications Council (APSCC), Asia Video Industry Association (AVIA), Communications Alliance (CA), EMEA Satellite Operators Association (ESOA), Global VSAT Forum (GVF), Satellite Industry Association (SIA) – covering all continents and all ITU regions.

currently being used to provide a multitude of services including: very small aperture terminal (VSAT) networks, internet services, point-to multipoint links, as well as video broadcasting and satellite news gathering services in Malaysia. To address national demand, MEASAT plans to continue utilizing the entire spectrum of 3.4–4.2 GHz on their future satellite. This satellite, MEASAT-3d, is currently being built and is scheduled to launch in 2021.

In addition, international satellite operators, such as PT Telkom, Thaicom, Intelsat, ABS, APT Satellite, Asiasat and SES, also operate more than eighty C-band satellites that use all or parts of the 3.4-3.8 GHz band in Region 3, to meet the demand for the highly reliable C-band satellite services. With over 3800 TV channels distributed by C-band in Asia, it remains the band of choice for media distribution in Asia. Many other services are provided by C-band satellite in Asia Pacific, including those depicted on the recently produced AVIA – GSC information sheet, “C-band is critical for satellite services”, as attached in Annex A of this letter.

The upcoming MEASAT-3d satellite will also carry a Ka-band payload in the band 27.0-31 GHz to provide High Throughput Satellite (HTS) service in Malaysia. The new HTS Ka-band mission features multiple user spot beams optimized to deliver high speed broadband communications over Malaysia. MEASAT-3d will aid in bridging the digital divide in Malaysia by enabling 100% coverage for high speed consumer broadband services to all Malaysian households.²

MEASAT-3d will join the many geostationary and non-geostationary HTS systems that have been launched around the world that use the Ka-band in the range 27.0-31 GHz. For services in the Asia-Pacific region alone, over twenty-five satellites using this band have been launched in just the last 6 years. Many more satellites that use this band are expected to be launched in the next 3 years, including several large constellations of non-geostationary satellites. Annex B summarizes the Ka-band satellites with global / Asia Pacific coverage or coverage over specific countries in Asia Pacific; those with launch dates from July 2019. Today, satellite networks in the Ka-band connect millions of people around the world and provide essential connectivity to governments and many important economic sectors, such as agriculture, aviation, maritime, telecommunications, and energy.

Neither the 3.4-3.8 GHz nor the 27.0-29.5 GHz bands are required for 5G in Malaysia

We believe satellite services and investments made to operate in the 3.4-3.8 GHz and 27.0-29.5 GHz bands need not be jeopardized to meet realistic 5G spectrum requirements in Malaysia. There is ample spectrum in other bands that could be used for 5G without touching satellite bands.

5G spectrum requirements should be based on realistic estimates:

Based on the traffic forecast-based approach in Report ITU-R M.2290-0, it was estimated that the 5G spectrum requirements vary between 1.34 GHz and 1.96 GHz in the lower and higher user

² Airbus, “Airbus to build multimission satellite for MEASAT” Source: <https://www.airbus.com/newsroom/press-releases/en/2019/05/airbus-to-build-multimission-satellite-for-measat.html>.

settings respectively. It was also found that there are other modelling approaches as being considered by ITU Working Party 5D which estimates a total of 19.7 GHz. The high-end of these estimates are wildly unrealistic. To test the upper limit of mobile spectrum requirements, LS Telcom examined how much spectrum would be required to enable every person on Earth to stream unique 4K video to their mobile device for 16 hours a day.³ It was found that this extreme level of mobile data consumption would require *less* spectrum (38% per annum compounded to 2035) than the extrapolated 5G spectrum demand estimates, based on the then recent rapid annual growth of 50% per annum compound annual growth. A more realistic estimate of 6 hours of unique video per day, half of which is 4K video, indicated only 28% compound annual growth to 2035. Even this is a very high estimate, since it is unlikely that so much unique video could be found, and assuming not, there are far more efficient ways to deliver it to multiple devices, e.g. broadcast mode, particularly for live content.

Indeed, countries that have examined the question more closely have invariably concluded that considerably less spectrum is required. For example, a whitepaper released by Universiti Teknologi Malaysia (UTM)⁴ estimated that the spectrum gap for mobile broadband services in Malaysia would be just 177 MHz in 2020, after the 700 MHz and 1400 MHz bands are taken into account.

Singapore's IMDA, after a detailed review of various models and its own data on mobile data consumption growth, has estimated that densely-populated Singapore would need 3360 MHz of 5G spectrum in the 2022-2025 timeframe. These estimates could be made even more realistic by examining the efficiency with which mobile data is delivered in other countries. For example, Finnish regulator, Traficom reported that the Finnish mobile operators deliver an average of 16.1 gigabytes of data per month to each SIM in Finland,⁵ using 655.4 MHz of licensed spectrum in total divided among 5 carriers.⁶ In contrast, the top three Malaysian mobile data operators, Digi, Maxis and Celcom, delivering a weighted average of 12.3 gigabytes per month⁷ based on 620 MHz of

³ LS Telecom, "When will Exponential Mobile Growth Stop?" Source: https://www.lstelcom.com/fileadmin/content/marketing/news/2017_LStelcom_Report_WhenWillExponentialMobileGrowthStop.pdf

⁴ UTM "Perspective on Malaysia Mobile Broadband Development 2020". Source: https://www.malaysianwireless.com/wp-content/uploads/2017/08/UTM_Perspective-on-Malaysia-Mobile-Broadband-Development-2020.pdf.

⁵ Statistics Table on Communications Services, 2H/2018, cell E114/(cell E21 * 1000 *6). Source: <https://www.traficom.fi/sites/default/files/media/publication/Viestintapalveluiden-tilastokoonti ods>

⁶ Spectrum Monitoring Frequency Table comprising mostly 4G, but also 3G and 2G services using spectrum in 450, 700, 800, 900, 1800, 2100 and 2600 MHz bands. Source: <https://www.spectrummonitoring.com/frequencies/#Finland>

⁷ 3Q and 4Q 2018 subscriber data for Digi, Maxis and Celcom. Source: <https://www.malaysianwireless.com/2019/01/digi-mobile-subscriber-base-4q18/>, <https://www.malaysianwireless.com/2019/02/maxis-prepaid-subscribers-4q18/> and <https://www.malaysianwireless.com/2019/03/celcom-mobile-subscribers-4q18/>

licensed spectrum , with a further 30 MHz apparently available but not licensed.⁸ Allowing for the difference in available spectrum, the top three Malaysian mobile data operators deliver about 19.2% less data per subscriber than the average Finnish mobile operator. This may be due to lower proportion of 4G usage in Malaysia as compared to earlier generations, among other factors.

It is important not to over allocate spectrum for 5G, especially when the business cases for many 5G applications remain uncertain and when re-allocation would negatively impact existing services and investments in the bands in question.

Spectrum options in Malaysia to meet realistic 5G requirements:

According to LS Telcom⁹, there is 915 MHz of harmonized spectrum in ITU Region 3 that has been identified for IMT. In this regard, Malaysia has a number of spectrum options for meeting more realistic 5G requirements. Since Malaysia has so far only licensed no more than 620 MHz of spectrum for mobile services (with another 30 MHz available but not licensed), nearly 300 MHz of IMT spectrum is still available for 5G requirements. For instance, the 4.4-5.0 GHz band may be a good candidate for 5G as this band is not being used by satellite services in Malaysia.

GSC believes that Malaysia’s “low-band” (<1 GHz) and “mid-band” (1 to 6 GHz) 5G spectrum requirements can be met from these other bands without displacing existing satellite services in the 3.4-3.8 GHz. It should be recalled that, at WRC-15, most ITU Region 3 countries, including Malaysia, opposed a regional International Mobile Telecommunications (IMT) identification for the 3.4-3.6 GHz band. In fact, only 11 countries in ITU Region 3, not including Malaysia, elected to identify the 3400-3600 MHz band for IMT under ITU footnotes No. 5.5.432, 432A, 432B and 5.433A. At that time, Malaysia took the decision not to be included in these footnotes in recognition of the important satellite services being provided in the band in Malaysia and throughout the region, by MEASAT and other international satellite operators in the region. We believe the reasons that prompted Malaysia’s position at WRC-15 regarding the criticality of fixed-satellite services (FSS) for essential connectivity – not only in urban areas but also to remote and hard-to-reach areas, particularly in high rainfall regions – remain very much valid today, and as such, a change is not warranted.

In the millimetre wave spectrum, most countries are focusing on the 24.25-27.5 GHz band or parts thereof for 5G. Australia, Brazil, China, the EU-28, the Arab League and Russia are all prioritizing this band for 5G. Up to 3250 MHz of spectrum is available in this range, which is more than enough to meet any realistic estimate of 5G spectrum requirements. Moreover, the band stands a high chance of international harmonization since it is among those being considered by WRC-19 for IMT-2020. Satellite service allocations that are in portions of the 26 GHz band can be protected

⁸ Spectrum Monitoring Frequency Table comprising 4G, 3G and 2G services using spectrum in 850, 900, 1800, 2100 and 2600 MHz bands. Source: <https://www.spectrummonitoring.com/frequencies/frequencies3.html#Malaysia>

⁹ LS Telecom, “Analysis of the World-Wide Licensing and Usage of IMT Spectrum”. Source: https://www.esoa.net/cms-data/positions/2019_Study_LicensingUseofMobileSpectrum_1.pdf

with reasonable regulatory measures. While MEASAT is proposing to use the 27.0-27.5 GHz on MEASAT-3d, that still leaves plenty of millimetre wave spectrum in the 24.25-27.0 GHz band that is relatively lightly used by satellite services, not to mention the over 33 GHz of total spectrum above 24 GHz being studied by the ITU for IMT-2020. It is recommended that this 500 MHz of spectrum be preserved for continued use for FSS, as is being considered by Australia¹⁰.

The 27.5-29.5 GHz band stands in stark contrast to the 24.25-27.5 GHz band. At WRC-15, this band was excluded from the spectrum being considered for IMT-2020 in recognition of the intense use of these bands by satellite services. Indeed, as noted above, this band is a critical uplink band for virtually all modern HTS systems and is used for both gateways and user terminals. There is an Agenda Item at WRC-19 to *expand* the use of the 27.5-29.5 GHz band for Earth Stations in Motion (ESIMs). Satellite manufacturers and operators have invested hundreds of billions of dollars in 27.5-29.5 GHz band satellites and other critical infrastructure, including rockets and manufacturing facilities, Internet gateways and other ground infrastructure, and the devices that connect consumer, business and government users to the Internet. Because of that investment, hundreds of millions of satellite broadband connections now occur over the Ka-band and, in particular, the 27.5-29.5 GHz band every day.

Fortunately, there is no need to look to the 27.5-29.5 GHz band for 5G because there will be ample other millimetre wave spectrum available for 5G in the 24.25-27.5 GHz band. For example, Australia recently reached the preliminary conclusion that it need not consider the 27.5-29.5 GHz band for 5G: *“Given that planning decisions in 26 GHz accommodate 2.4 GHz of spectrum suitable for wide area wireless broadband, the ACMA has formed the preliminary views that these applications are adequately catered for in the 26 GHz band.”*¹¹ WRC-19 is also expected to identify tens of gigahertz of additional spectrum above 24 GHz for IMT-2020.

Recommendations

We therefore respectfully request that Malaysia consider available IMT bands other than the 3.4-3.8 GHz and 27.0-29.5 GHz bands to satisfy 5G spectrum requirements. As some countries have found, there are ample other bands that can be used to meet any realistic assessment of 5G spectrum demand. These could include portions of the 3.3-3.4 GHz, the 4.4-5.0 GHz, and the 24.25-27.0 GHz, as well as the tens of Gigahertz of spectrum expected to be identified for IMT-2020 at WRC-19. There is simply no need to disturb the valuable satellite services being provided and planned in the 3.4-3.8 GHz and 27.0-29.5 GHz bands in order to satisfy 5G requirements. Instead, Malaysia can have both robust satellite services and 5G services through a balanced choice for 5G.

¹⁰ ACMA, “Future use of the 26 GHz band—Planning decisions and preliminary views” Source: <https://www.acma.gov.au/theACMA/-/media/9C1539075B074218AE7A88578F8C9178.ashx>.

¹¹ ACMA, “Replanning of the 28 GHz band – Options Paper” Source: <https://www.acma.gov.au/theACMA/-/media/A18AE5C2EE354C94837C87E2D7FDF2A2.ashx>; see also ACMA, “Future use of the 26 GHz band—Planning decisions and preliminary views” Source: <https://www.acma.gov.au/theACMA/-/media/9C1539075B074218AE7A88578F8C9178.ashx>.

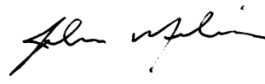
Sincerely yours,



Aarti Holla-Maini
ESOA



David Meltzer
GVF



John Medeiros
AVIA



Gregg Daffner
APSCC



Tom Stroup
SIA



Fabio Alencar
Abrasat



John Stanton
CA SSWG