

GSMA submission to MCMC Public Consultation on Proposed Malaysia's Positions for WRC-23 Agenda Items

Introduction

The mobile industry connects more than 5 billion people today. It is this connectivity, underpinned by mobile networks, that has transformed the way businesses operate and people live, work and play over the past decade. In Malaysia, mobile operators are playing a critical role in developing the digital infrastructure and innovative services to help drive the nation's digital transformation and promote digital equality by making essential services and applications available to citizens across the country.

5G will be the catalyst for much of the innovation and new services on mobile-based platforms over the coming years to 2030 and beyond. Like every generation of mobile technology, access to spectrum is key to unlocking the full potential and benefits that 5G offers.

What is at stake during WRC-23?

There are already over 1.3 billion 5G connections as of Q2 2023 and 5G will overtake 4G to become the dominant mobile technology by the end of this decade.¹ Spectrum availability is critical to encourage the investment required to expand mobile access, meet the increase in demand for data services and enhance the quality and range of services offered.

Mid-band spectrum, which lie in the 1-7 GHz range, offers the wide, contiguous channels which are ideal for city-wide 5G capacity. Mid bands are at the core of 5G and will generate an increase of more than \$610 billion in global GDP in 2030, accounting for almost 65% of the overall socio-economic value generated by 5G.²

On average, 2 GHz of mid-band spectrum will be required per country to support the growth of 5G by 2030.³ Yet, many countries in Asia Pacific (ITU Region 3), including Malaysia, are facing a mid-band spectrum deficit.⁴ The upcoming WRC-23 presents the opportunity for countries to secure sufficient spectrum resources to support the expansion of 5G networks.

In particular, at WRC-23 the future of the upper 6 GHz band (6425-7125 MHz) for IMT will be decided. The 6 GHz band will be a crucial resource to enable cost-efficient expansion of future networks. Demand will not come to a standstill as 5G develops into 5G-Advanced. As network quality improves throughout the decade, traffic volume will follow. Without access to the 6 GHz band, it will be very difficult for operators to satisfy future demand for data, especially in heavily populated urban areas.

The GSMA strongly urges MCMC take positive steps to support 6 GHz band (6425-7125 MHz) for IMT at APG23-6 and WRC-23 through:

- Identification of 7025-7125 MHz for IMT globally; and
- Identification of 6425-7025 MHz for IMT through a Region 3 country footnote

¹ GSMA. The Mobile Economy 2023. <https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/03/270223-The-Mobile-Economy-2023.pdf>

² GSMA. The Socio-Economic Benefits of Mid-Band 5G Services. <https://www.gsma.com/spectrum/wp-content/uploads/2022/02/mid-band-5G-spectrum-benefits.pdf>

³ GSMA. Vision 2030: insights for mid-band spectrum needs. <https://www.gsma.com/spectrum/wp-content/uploads/2022/07/5G-Mid-Band-Spectrum-Needs.pdf>

⁴ In Malaysia, the current supply of mid-band spectrum for mobile broadband services is around 760 MHz, comprising 1800 MHz, 2100 MHz, 2300 MHz, 2600 MHz and 3500 MHz.



In doing so, the MCMC can help build a clear spectrum roadmap going into 2030, providing certainty for operators to invest in 5G infrastructure rollout and facilitating 5G-enabled digital innovation and socio-economic progress for Malaysia in the years ahead.

Further information on GSMA's views are specific agenda items related to mobile are provided in the annex below for MCMC's consideration. We remain available for any questions and for any meeting with MCMC as needed.

Annex – GSMA comments and views

Agenda Item	Comments and Views on Proposed Malaysia’s Positions
Fixed, Mobile and Broadcasting Issues	
<p>1.1</p>	<p>The GSMA recognises the importance of AMS/MMS and their coexistence with both existing and future IMT deployments in the band 4.8-4.99 GHz. The 4.4 – 5 GHz frequency range has already been defined in 3GPP as NR band n79. This band is already used for IMT services without restrictions in some countries.</p> <ul style="list-style-type: none"> • The GSMA does not support deletion of ITU-R Resolution 223 Resolves 5. • We oppose any conditions which restrict IMT in the band and are considering options for pfd at a certain distance of the coastline. <p>The GSMA recognises that Methods E, F and, depending on the agreed limit, Method C may support the above position.</p>
<p>1.2</p>	<p><u>3 300-3 800 MHz</u></p> <p>The 3.5 GHz range (3 300-4 200 MHz) is the 5G launch band in most countries and as such has the deepest ecosystem and most affordable devices. The band 3 300-3 800 MHz is covered by 3GPP as NR bands n77 and n78.</p> <p>To broaden harmonisation and provide valuable additional bandwidth in the 3.5 GHz range,</p> <ul style="list-style-type: none"> • The GSMA supports IMT identification of the band 3 300-3 400 MHz in Regions 1 and 2. • The GSMA supports IMT identification of the band 3 600-3 800 MHz in Regions 1 and 2. <p>Although the 3.5 GHz frequencies are not discussed in Region 3, the process being considered through the WRC cycle will be beneficial to APT countries seeking to make wider use of the 3.5 GHz range. Many APT Members are already making good use of this band leveraging on the primary mobile allocation in the Radio Regulations, and new sharing studies taking into account the latest technological developments such as active antenna systems (AAS) can help in local co-existence discussions and help maximise the benefits to Region 3 countries from the use of this spectrum for 5G.</p> <p>Existing mobile allocations in parts of the 3.5 GHz range facilitate 5G use of the band in Region 3. Furthermore, APT Members who are not already signatory to footnotes relating to the 3.5 GHz range may be able to become so, namely:</p> <p>FN 5.429F identification for IMT in 3 300-3 400 MHz FN 5.432A/B identification for IMT in 3 400-3 500 MHz FN 5.433A identification for IMT in 3 500-3 600 MHz</p> <p><u>6 425-7 125 MHz</u></p> <p>The band 6 425-7 125 MHz is being considered for IMT in Region 1 while 7 025-7 125 MHz is being considered globally. However, there are already clear interests</p>

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	<p>and proposals from major markets outside Region 1 with significant economies of scale to identify 6 425-7 025 MHz via country footnote(s).⁵</p> <p>Studies at ITU have shown that sharing between IMT and other services, including FSS, FS, SRS and SOS, in the 6 425-7 125 MHz range is feasible. A GSMA study also finds there are no additional technical barriers to the development of the 6 GHz IMT ecosystem.⁶</p> <p>In the upper 6 GHz band, there are competing claims for use of the spectrum for IMT and Wi-Fi, and the question of whether or not there will be an IMT identification or 'no change' in this band at WRC-23 has become a proxy for whether or not the band will be used for licensed IMT, or Wi-Fi on a licence-exempt, no-interference, no-protection basis.</p> <p>The GSMA supports IMT identification of 7 025-7 125 in Region 3 and Region 2, and IMT identification of 6 425-7 125 MHz in Region 1. The GSMA suggests Methods 4B and 5B for 6 425-7 125 MHz.</p> <p>Some administrations may feel more comfortable if non-restrictive technical conditions are defined in the footnote, and in which case, these should be done in such a way as to not restrict mobile and Methods 4C and 5C may support such an approach.</p> <p>The GSMA believes that APT Members that wish to use the whole upper 6 GHz band (6 425-7 125 MHz) for IMT should harmonise national positions through country footnote(s) in the Radio Regulations, together with other interested administrations at WRC-23.</p> <p><u>10.0-10.5 GHz</u></p> <p>An allocation to mobile service on a co-primary basis and IMT identification in Region 2 will provide opportunity for the development of 5G globally since the band is already allocated to mobile service on co-primary basis in Region 1 and Region 3.</p>
<p>1.3</p>	<p>Agenda Item 1.3 is an opportunity to achieve greater harmonisation of the 3.5 GHz range in Region 1. Along with Agenda Item 1.2 above, which considers the identification of 3 300-3 400 MHz and 3 600-3 800 MHz for IMT, a primary allocation for mobile within 3 600-3 800 MHz in Region 1 will broaden global harmonisation of the 3.5 GHz range, enable greater benefit from economies of scale and support mid-band capacity requirements of IMT-2020.</p> <p>The GSMA supports the allocation of the band 3.6-3.8 GHz for co-primary Mobile and its identification for IMT.</p>
<p>1.5</p>	<p>Agenda Item 1.5 is considering possible regulatory actions in the frequency band 470-694 MHz in Region 1. This band is allocated to broadcasting service in the ITU Radio Regulations in Region 1. In Region 3 it is allocated to fixed, mobile and</p>

⁵ For example, China's identification of 6 425–7 125 MHz to IMT in the country's table of frequency allocations, taking effect from 1 July 2023.

⁶ <https://www.gsma.com/spectrum/wp-content/uploads/2022/08/6-GHz-IMT-Ecosystem.pdf>

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	<p>broadcasting while in Region 2 the band holds allocations to fixed, broadcasting, mobile and other services in parts of the band.</p> <p>Frequencies below 1 GHz can be used to provide increased 5G capacity and performance in rural areas. This helps countries meet social goals, achieve digital parity between urban and rural, as well as helping networks reach deeper in-buildings, cover agricultural areas with IoT and develop transport communications.</p> <p>The GSMA supports a primary mobile allocation in the band 470-694 MHz in Region 1. This will allow countries that wish to do so to identify the band, or parts thereof, for IMT.</p> <p>The development of sub 694/8 MHz frequencies for mobile around the world may be of benefit to APT Members, noting the recent agreement of the APT 600 band plan and current 3GPP work on APT 600 NR specifications (5G NR band n105 is defined for APT 600).</p>
<p>RR No. 21.5</p>	<p>The 26 GHz band (24.25-27.5 GHz) was identified for IMT at WRC-19, with Resolution 242 (WRC-19) containing conditions to protect satellite services in the band. Following discussions at WRC-19 on the applicability of the limit specified in RR No. 21.5 to IMT stations in the 26 GHz band that use AAS antennas, WRC-19 Document 550 invited ITU-R to study this matter, despite that Resolution 242 already contains technical conditions.</p> <p>RR No. 21.5 limits the "power delivered by a transmitter to the antenna of a station". Various Articles of the Radio Regulations (e.g. RR Nos. 1.157 to 1.159) indicate that, in the case of IMT stations that use an antenna system that consists of an array of active elements, RR No. 21.5 applies to the power delivered by a single transmitter to the radiating element(s) connected to that transmitter through the antenna transmission line. Hence, when notifying a station that utilises AAS, we believe that the power delivered to the antenna (8AA) should be interpreted as the power delivered by a single transmitter to the radiating element(s) connected to that transmitter.</p> <p>GSMA believes that total radiated power (TRP) does not represent emissions in the direction towards a satellite and is mainly comprised of emissions in other directions. TRP does not account for the beamforming effects, which is a key characteristic of IMT AAS base stations and facilitates sharing, as it directs the radiated emissions towards the mobile terminals whilst reducing the radiation towards unintended directions (such as towards space satellite receivers).</p> <p>Thus, a solution based on TRP would be a blunt instrument with regard to protection of satellite services, and would impose unnecessary constraints on IMT deployments. Furthermore, RR No. 21.5 was originally developed in the 1960s/70s, when systems commonly available had much smaller operating bandwidths (at most a few tens of MHz) compared with those of IMT systems in the 26 GHz band.</p> <p>We recognise that satellite services have the right to be protected, but we believe that the risk of interference from IMT into satellite receivers in the 26 GHz band has been over-stated. This sharing scenario was extensively studied for WRC-19, and was found not to be a problem, and WRC-19 Resolution 242 already contains</p>

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	<p>conditions to protect satellite services in the band. Unnecessary restrictions on mobile networks in bands that are already used or planned to be used for IMT should be avoided.</p> <p>In summary,</p> <ul style="list-style-type: none"> • GSMA does not believe that an approach based on total radiated power (TRP) is an appropriate way forward. • Discussions on RR No. 21.5 should be limited to the question of notification and verification of IMT stations in the 26 GHz band. • When notifying a station that utilises AAS, we believe that the power delivered to the antenna (8AA) should be interpreted as the power delivered by a single transmitter to the radiating element(s) connected to that transmitter.
<p>General and Regulatory Issues</p>	
<p>10</p>	<p><u>New Agenda Item for IMT-2030</u></p> <p>6G is expected to become the primary mobile technology in the 2030s and will offer an enhanced user experience compared to previous generations. This next generation aims to address applications and usage scenarios, such as immersive communications, critical services and sensing applications, through a hybrid and diverse technology approach.</p> <p>6G comes with new spectrum considerations. Among these are additional capacity and new frequency ranges, from low to very high bands, to support these next-gen services. The agenda for WRC-27 to be defined under WRC-23 Agenda Item 10 should open the path towards future mobile generations keeping pace with technology evolution. Even with enhanced spectrum efficiency and novel sharing techniques, 6G will come with new spectrum needs aiming to enable broader, contiguous channel bandwidths.</p> <p>A possible new frequency range for 6G is 7-24 GHz with a particular focus on 7-15 GHz. This is supported by the GSMA following discussions with the mobile community and represents a potential new agenda item for consideration during the 2023-2027 WRC study cycle at the ITU.</p> <p>The GSMA supports a new agenda item for WRC-27 regarding possible additional identification for IMT within the range 7-15 GHz with a focus on:</p> <ul style="list-style-type: none"> • 7.125-8.5 GHz, 12.75- 13.25 GHz, 14.5-15.35 GHz, 10.7-11.7 GHz, 11.7-12.75 GHz, 14-14.5 GHz, and 9.8-10.6 GHz, and also • 4.4-4.8 GHz and 3.8-4.2 GHz.