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BY EMAIL

YBhg. TAN SRI MOHAMAD SALIM BIN FATEH DIN
Chairman
Malaysian Communications and Multimedia Commission
MCMC Tower 1
Jalan Impact, Cyber 6
63000 Cyberjaya
Selangor Darul Ehsan
(Attention: Spectrum Planning and Assignment Division)
Email: npwg.sec@mcmc.gov.my

Dear YBhg. Tan Sri Mohamad Salim,

MEASAT VIEWS TOWARDS THE PUBLIC CONSULTATION ON THE PROPOSED MALAYSIA'S POSITIONS FOR WORLD RADIOCOMMUNICATION CONFERENCE 2023 (WRC-23) AGENDA ITEMS

With reference to the Malaysian Communication and Multimedia Commission (MCMC) Public Consultation on the Proposed Malaysia's Positions for World Radiocommunication Conference 2023 (WRC-23) Agenda Items published on 17 July 2023, MEASAT Satellite Systems Sdn. Bhd. (MEASAT) submits herewith our response to the Public Consultation as attached in Attachment 1.

MEASAT further elaborates on our views towards the future agenda items under WRC-23 agenda item 10 as attached in Attachment 2. On a related matter, MEASAT also includes views on key satellite regulatory matters that will be discussed under WRC-23 Agenda Item 9.3 in response to Resolution 80 (Rev.WRC-07) in Attachment 3.

MEASAT would also like to take this opportunity to highlight our views on the new Resolutions related to satellite services that was developed at the Plenipotentiary Conference 2022 (PP-22), that may be discussed at the Conference, as follows:

- a) **Resolution 218 (PP-22):** *ITU's role in the implementation of the "Space2030" Agenda: space as a driver of sustainable development, and its follow-up and review process*

Fixed-satellite service (FSS) national allotment plan and regional broadcasting-satellite service (BSS) plans were established in the Radio Regulations in certain frequency bands to achieve the objective of guaranteeing equitable access to the geostationary-satellite orbit (GSO) for all Member States of the Union. However, some of these national frequency assignments and allotments, especially those of developing countries in the Regions 1 and 3 BSS plan and in the FSS plan, have been severely degraded over time, making it difficult for

these countries to use them. Statistics provided and regularly updated by the Radiocommunication Bureau (BR) demonstrate the nature and extent of the issue.

The Resolution *resolves* for ITU to support the implementation of the "Space2030" Agenda to be consistent with Article **44** of the Constitution, that calls for equitable access to orbits and frequencies, considering the special needs of the developing countries and the geographical situation of particular countries.

The Resolution *invites Member States and Sector Members* to actively participate in the implementation of the "Space2030" Agenda, in supporting the achievement of the Sustainable Development Goals (SDGs) and also instructs WRC-23 (and subsequent WRCs) to continue to give high priority to the matter of **equitable access** to satellite orbit, taking into account the special needs of developing countries and geographical situation of particular countries.

MEASAT shares the same sentiment that there should be equitable access to orbits and frequencies, particularly considering the special needs of the developing countries.

For example, the terrestrial 5G IMT services have been allocated a very large amount of spectrum over the past two decades, particularly in the last WRC-19 conference. Still, these services are seeking more data capacity and demanding for more spectrum, by looking to take away spectrum resources that are needed to maintain the key services provided by incumbent services e.g., the band 6425 – 7025 MHz which is currently allocated to FSS and FSS Plan in Appendix **30B**.

While the global telecommunication market appears to be highly focused on terrestrial 5G roll-out, satellite systems continue to evolve and provide increasingly modern innovative services with attractive pricing and bandwidth to users. To continue to be able to viably provide satellite services, MEASAT is of the view that there should be detailed review on the spectrum needs before undertaking new IMT spectrum planning beyond currently allocated. Also, any consideration of spectrum allocation / re-allocation or new services should be carried out without displacement of incumbent services in the same band and geographic area.

b) **Resolution 219 (PP-22): Sustainability of the radio-frequency spectrum and associated satellite-orbit resources used by space services**

In recent times, there has been continued and expanded launch and operation of a large number of non-geostationary (non-GSO) satellites in outer space. There is a need to review technologies used in satellite networks in the geostationary satellite orbit (GSO), as well as the increased numbers of satellites within non-GSO satellite systems, with a view to addressing them, if necessary, in the Radio Regulations and in the processing of frequency assignments by the Radiocommunication Bureau (BR). The available radio-frequency spectrum and associated orbit resources are limited and must be

shared among all nations. There are provisions in the Radio Regulations to protect GSO satellite networks from non-GSO satellite systems.

The Resolution, as a matter of urgency, calls for necessary studies through relevant ITU Radiocommunication Sector (ITU-R) study groups on the issue of the increasing use of radio-frequency spectrum and associated orbit resources in non-GSO orbits and the long-term sustainability of these resources, as well as on equitable access to, and rational and compatible use of the GSO and non-GSO orbit and spectrum resources, consistent with the objectives of Article **44** of the Constitution.

The Resolution further *encourages Member States*, when authorizing non-GSO systems, to take all necessary actions to avoid unacceptable interference to GSO and other non-GSO systems, as well as to other radio services, of other administrations and to ensure the efficient use of radio-frequency spectrum and associated satellite-orbit resources; to this effect, the necessary regulatory frameworks need to be developed for the operation of non-GSO systems.

The Resolution *instructs the Director of the Radiocommunication Bureau* to report to WRCs, preferably WRC-23, on the results of implementation of this resolution.

The coexistence of GSO and non-GSO fixed satellite service systems within the same spectrum to enhance the spectrum efficiency has attracted many interests lately. However, one of the main challenges in the coexistence of geostationary satellite orbit (GSO) and non-geostationary satellite orbit (NGSO) satellite networks is to mitigate the in-line interference caused by an NGSO satellite to the GSO earth terminal, while the NGSO satellite is crossing the GSO satellite's illumination zone. Unless the non-GSO systems appropriate mitigation measures, in-line interference events with GSO networks will repeatedly degrade and disrupt services to end users of GSO networks.

In this context, to avoid undisrupted satellite services to users nationwide, MEASAT is of the view that there should be continued assurance for GSO services while avoiding inefficient constraints from the deployment of NGSO systems.

Thank you.

Yours sincerely,

**For and on behalf of
MEASAT Satellite Systems Sdn Bhd**



Simon Cathcart
Chief Executive Officer

Encls.

ATTACHMENT 1 MEASAT comments and views on the proposed Malaysian positions towards WRC-23 agenda items

Agenda Item	Comments and Views on Proposed Malaysia's Positions
Fixed, Mobile and Broadcasting Issues	
1.1	No comments.
1.2	<p>MEASAT supports the potential IMT identification in the frequency band 7 025-7 125 MHz, or parts thereof, to achieve globally harmonized utilization with appropriate regulatory and technical conditions, taking into account the results of studies to ensure the protection of services to which the frequency band is allocated on a primary basis and, as appropriate, on services in adjacent bands, without imposing additional regulatory or technical constraints on those services.</p> <p>Accordingly, MEASAT support Method 5C or Method 5D in the CPM Report, that includes conditions for IMT to ensure the protection, continued use and future development of the fixed-satellite service (Earth-to-space).</p>
	<p>MEASAT notes that Region 3 is not within the scope for the frequency bands 3300-3400 MHz, 3600-3800 MHz, 6425-7025 MHz and 10.0-10.5 GHz. Nevertheless, MEASAT is of the view that any potential IMT identification in Regions 1 and 2 should be subject to protection of services in Region 3 to which the frequency band is allocated on a primary basis and in adjacent bands, such that these services shall in no way be adversely affected.</p>
1.3	<p>MEASAT notes that Region 3 is not within the scope for the frequency bands 3 600-3 800 MHz. Nevertheless, MEASAT is of the view that any potential IMT identification in this band in Region 1 should be subject to protection of services in Region 3 to which the frequency band is allocated on a primary basis and in adjacent bands, such that these services shall in no way be adversely affected.</p>
1.4	<p>MEASAT is of the view that the consideration of the use of HIBS in the frequency bands below 2.7 GHz already identified for IMT, as referred to in Resolution 247 (WRC-19), shall ensure the protection of existing services to which the frequency band is allocated on a primary basis, and the adjacent bands, and not impose any additional regulatory or technical constraints on the deployment of ground-based IMT systems in the frequency bands.</p> <p>With reference to Bands C and D, MEASAT supports Method C3 and Method D3 in the CPM Report, respectively, for the use of HIBS not claiming protection from existing primary services. MEASAT is of the view that, for purposes of aiding planning and coordination with neighbouring and concerned countries, the requirement for the notifying administration of HIBS at the time of submission of the RR Appendix 4 information to the Radiocommunication Bureau (BR) to send an objective, measurable and enforceable commitment undertaking that in case of causing unacceptable interference, may facilitate administration to reduce the interference to the acceptable level.</p>
1.5	No comments.
9.1(c)	<p>MEASAT supports the modification of existing or, if required, the development of new ITU-R Recommendations, Reports and/ or Handbooks to address the issue for the use of IMT technology in the frequency bands allocated to the fixed service on a primary basis.</p> <p>MEASAT shares the same view as indicated in Alternative 2 in the CPM Report that there is no need to have any draft new or revised Resolution on this matter. Except for the suppression of Resolution 175 (WRC-19), MEASAT opposes any changes to the Radio Regulations being made under this topic.</p>
RR No. 21.5	<p>MEASAT supports the on-going studies on the use of total radiated power (TRP) parameter of an IMT station using active antenna systems (AAS) in the band 24.25-27.5 GHz within a defined reference bandwidth to capture the "power delivered to the antenna of a station" in RR No. 21.5 for the notification of IMT stations using AAS.</p> <p>MEASAT is of the view that verification of RR No. 21.5 should ensure appropriate protection to satellite services while not constraining the use of IMT in the 26 GHz band.</p>
Aeronautical, Maritime and Amateur Issues	
1.6	No comments.
1.7	No comments.

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1.8	<p>The frequency bands identified in <i>resolves 1</i> of Resolution 155 (Rev.WRC-19) are heavily used by fixed satellite service (FSS). It is noted that, even after extensive studies, there are still key problems that have not been resolved, in particular the contradiction between the safety nature of the operation of UAS and the non-safety status of the fixed-satellite service.</p> <p>At the same time, considering the progress by the International Civil Aviation Organization (ICAO) in the process of establishing and preparing Standards and Recommended Practices (SARPs) for the safe operation of unmanned aircraft systems, MEASAT supports Method B in the CPM Report, for revisions to Resolution 155 (Rev.WRC-19), on the basis that, compliance with the Resolution would ensure that all required ITU-R technical, operational, and regulatory conditions are met, and would not adversely affect existing and future FSS networks or terrestrial services.</p>
1.9	No comments.
1.10	No comments.
1.11	No comments.
9.1(b)	No comments.
Res. 427	No comments.
Science Issues	
1.12	No comments.
1.13	No comments.
1.14	No comments.
9.1 (a)	No comments.
9.1 (d)	No comments.
Res. 655	No comments.
Satellite Issues	
1.15	<p>MEASAT supports Method B in the CPM Report to develop the regulatory framework and technical requirements for the operation of earth stations on aircraft and vessels communicating with geostationary satellite (GSO) space stations in the frequency band 12.75-13.25 GHz (Earth-to-space), while ensuring protection of services currently allocated in this frequency band and bands adjacent to it; and does not result in any changes or restrictions to the allotment in the Plan, assignments in the List of Appendix 30B, and those recorded in the Master International Frequency Register (MIFR) including the assignments arising from the implementation of Resolution 170 (WRC-19).</p> <p>However, this method should carefully examine, verify, and validate all shortcomings, deficiencies, and incomplete operational / regulatory obstacles to ensure identified protection of allocated services <i>inter alia</i> protection of terrestrial services is addressed.</p>
1.16	<p>MEASAT supports Method B in the CPM Report to develop a regulatory framework to facilitate the use of earth stations in motion within non-geostationary satellite (non-GSO) fixed-satellite service (FSS) in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space), while ensuring protection of geostationary satellite (GSO) FSS networks and other services operating in the same frequency bands and in adjacent bands.</p> <p>However, this method should carefully examine, verify, and validate all shortcomings, deficiencies, and incomplete operational / regulatory obstacles to ensure identified protection of allocated services <i>inter alia</i> protection of terrestrial services and GSO FSS are addressed.</p>
1.17	MEASAT supports Method B in the CPM Report to develop a regulatory framework to enable the operation of satellite-to-satellite links between user-NGSO and GSO-service provider operating the "within cone of coverage" concept of

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	<p>operation within the fixed-satellite service (FSS) allocation in the 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz bands, or parts thereof, while ensuring protection of existing services in the same frequency bands and adjacent bands.</p> <p>MEASAT notes that this method also proposes no change to the frequency band 11.7-12.7 GHz as the studies did not support use of the band for space-to-space links.</p> <p>The introduction of satellite-to-satellite transmissions must ensure the same level of protection for GSOs and non-GSOs as currently provided in the RR and should not impose any new constraints on GSOs and non-GSOs to protect satellite-to-satellite links from interference.</p>	
1.18	<p>MEASAT is of the view that any potential new allocations to the mobile-satellite service in the frequency bands 1 695-1 710 MHz, 2 010-2 025 MHz, 3 300-3 315 MHz and 3 385-3 400 MHz for future development of narrowband mobile-satellite systems is subject to protection of existing primary services in those frequency bands and adjacent frequency bands.</p>	
1.19	<p>MEASAT supports Method B Alternative 2 in the CPM Report, for the allocation of the band 17.3-17.7 GHz to fixed-satellite service (FSS) in the space-to-Earth direction in Region 2, subject to ensuring protection to existing allocations, and without imposing any additional constraints on existing allocations to the broadcasting-satellite service (BSS) (space-to-Earth) in Region 2 and the fixed satellite service (FSS) feeder links for BSS (Earth-to-space) under RR Appendix 30A.</p>	
7	<p>Topic A</p>	<p>MEASAT supports Method A2 in the CPM Report for the development of the definition of tolerances of non-geostationary (non-GSO) space stations that operate in the FSS, BSS and MSS, limited to the differences between the notified and deployed non-GSO orbital characteristics for the inclination of the orbital plane, the altitude of the apogee of the space station, the altitude of the perigee of the space station and the argument of the perigee of the orbital plane.</p> <p>At the same time, while a certain degree of flexibility regarding any deviation from the characteristics of a notified orbital plane is required, MEASAT concurs that it is important not to over-regulate deviations/tolerances in a way that limits administrations' flexibility, and that does not inappropriately limit entry of additional systems.</p> <p>MEASAT is of the view that appropriate regulatory consequences/measures need to be developed taking into account the operational aspects of the non-GSO space stations in the FSS, BSS and MSS, if the operations are beyond the specified allowable tolerances. MEASAT is also of the view that these regulatory measures should not have retroactive application.</p>
	<p>Topic B</p>	<p>MEASAT supports Method B2 in the CPM Report for the development of final post-milestone procedures at WRC-23 to replace the post-milestone procedures defined in <i>resolves 19</i> of Resolution 35 (WRC-19), to ensure that the number of space stations recorded in the Master International Frequency Register (MIFR) for non-geostationary satellite (non-GSO) systems closely aligns with what is actually deployed in space, while maintaining some degree of operational flexibility which is necessary for the maintenance of the non-GSO system in the FSS, BSS and MSS.</p> <p>Under this method, MEASAT supports the adoption of a new Resolution to replace <i>resolves 19</i> of Resolution 35 (WRC-19) at WRC-23, suppressing <i>resolves 19</i> of Resolution 35 (WRC-19) and leaving the rest of the Resolution 35 (WRC-19) as is otherwise. MEASAT also supports the development of appropriate regulatory consequences for frequency assignments to non-GSO systems that do not respect the procedures in this new Resolution on post-milestone procedures.</p>
	<p>Topic C</p>	<p>MEASAT supports to extend the concept RR No. 22.2 to GSO MSS with respect to non-GSO systems in the frequency bands 7 250-7 750 MHz (space-to-Earth), 7 900-8 025 MHz (Earth-to-space), 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space) in the relevant provisions of RR Article 5, under Method C3 in the CPM Report.</p>
	<p>Topic D</p>	<p>D1: MEASAT supports the modification in Appendix 1 to Annex 4 of Appendix 30B of the Radio Regulations to reflect the values of the minimum orbital separation as adopted by WRC-19 in §1.1 and §1.2 of Annex 4 of RR Appendix 30B, under the single method in the CPM Report.</p> <p>D2: MEASAT supports the modification of RR Appendix 4 to support the implementation of agreed revisions to Recommendation ITU-R S.1503, including new data elements and modified data items, under the single method in the CPM Report.</p>

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	<p>D3: MEASAT supports the modification to the RR to add a procedure for BR to send a formal reminder for the confirmation of bringing into use or bringing back into use of frequency assignments under RR Nos. 11.44B, 11.44C, 11.49, RR Appendices 30/30A § 5.2.10 and RR Appendix 30B § 8.17 where the notifying administration shall inform the Bureau within 30 days of the end of the 90-day period after the bringing into use or bringing back into use that a space station in the geostationary-satellite or non-geostationary-orbit having the capability to transmit or receive on that assigned frequency, has been deployed and maintained at the notified orbital position or one of the notified orbital planes, as appropriate, for a continuous period of 90 days.</p>
Topic E	<p>MEASAT supports granting new ITU Member States the same right as those Member States in RR Appendix 30B, based on principles stipulated in Article 44 of the Constitution, Resolution 2 (Rev.WRC-03) and those contained in Article 1 of RR Appendix 30B, under Method E3 in the CPM Report.</p>
Topic F	<p>MEASAT supports Method F3 in the CPM Report to facilitate equitable feeder-link/uplink spectrum access while taking into consideration existing assignment and allotments in RR Appendices 30A and 30B, which,</p> <ul style="list-style-type: none"> - allows an administration to request exclusion of its territory from the feeder-link service area of a satellite network of other administrations at any time; - allows relocation of test points from the excluded territory to a new location within the remaining part of its service area if such relocation does not cause more interference. - requests a notifying administration of a satellite network having relative satellite antenna gain derived from the minimum ellipse required to cover the service area of equal to or less than -20 dB over the territory of other administrations to accept uplink interference emanating from the territory of those other administrations if so requested.
Topic G	<p>MEASAT supports modification of Resolution 770 (WRC-19) to facilitate the implementation of the methodology contained in that Resolution under Method G3 in the CPM Report.</p>
Topic H	<p><u>Implicit agreement</u> MEASAT supports the enhanced protection of Appendices 30 and 30A in Regions 1 and 3 and Appendix 30B for networks in the Plan and the List, and hence, supports the removal of the concept of the "implicit agreement" in the RR Appendices 30, 30A and 30B, under Method H1B Option 2 in the CPM Report.</p> <p><u>EPM degradation tolerance in Appendices 30 and 30A in Regions 1 and 3</u> MEASAT notes that the revision of the Regions 1 and 3 Plan by WRC-2000 was accompanied with an increase in the equivalent downlink protection margin from 0.25 dB to a value of 0.45 dB to facilitate the replanning and that, after revising the Plans the tolerance was maintained at 0.45 dB, despite Plan assignments holding a higher status than List assignments. However, MEASAT is of the view that, since the Plan from WRC-2000 is based on the EPM degradation tolerance of 0.45 dB, the modification of the EPM degradation tolerance would create inconsistencies to the basis of the Plan in WRC-2000 and sharing criterion, and therefore, support Method H2A in the CPM Report.</p>
Topic I	<p>MEASAT supports Method I2 in the CPM Report to define a new type of agreement between an additional system and a national allotment in Appendix 30B permitting the additional system to cover the territory of a national allotment in Appendix 30B until the BIU of the national allotment in Appendix 30B.</p>
Topic J	<p>MEASAT supports developing a methodology for calculating the aggregate epfd produced by non-GSO FSS systems operating or planning to operate co-frequency in the frequency bands referred to in Resolution 76 (Rev.WRC-15), and thereafter, a methodology to correct any exceedance of the aggregate epfd limits by all those operational non-GSO FSS systems that would meet the criteria in a potential revision of Resolution 76 (Rev.WRC-15) or one or more ITU-R Recommendations, as appropriate.</p> <p>MEASAT is of the view that, until the relevant methodologies are available, in case the aggregate epfd limits in Tables 1A to 1D are exceeded, the protection of GSO shall continue to be ensured by the provisions of RR No. 22.5K and non-GSO FSS administrations to take all necessary measures to reduce the aggregate epfd levels. Therefore, MEASAT supports Method J4 in the CPM Report.</p>
Topic K	<p>MEASAT supports the modification of paragraphs 1 and 2 of the Attachment to Resolution 553 (Rev.WRC-15) to remove the restrictions in the Resolution that could prevent administrations from effectively using the Resolution, under Method K2 in the CPM Report.</p>
<p>General and Regulatory Issues</p>	

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2	MEASAT supports the examination and review of ITU-R Recommendations incorporated by reference into the Radio Regulations and, where appropriate, the updating of these references in accordance with Resolution 27 (Rev.WRC-19) .
4	MEASAT supports the review of the Resolutions and Recommendations of previous conferences, in accordance with Resolution 95 (Rev.WRC-19) , with a view to keep them relevant and up to date.
8	MEASAT supports the principles and intent of Resolution 26 (Rev.WRC-19) and the WRC standing agenda item for administrations to remove their country footnotes or their country names associated with specific footnotes of the Table of Frequency Allocations in Article 5 of the Radio Regulations when no longer required.
10	<p>MEASAT supports the proposals for agenda item 10 subject to protection of existing services to which the frequency band is allocated on a primary basis, and the adjacent bands, and not impose any additional regulatory or technical constraints to those services.</p> <p>MEASAT is of the view that new proposals should be carefully considered based on spectrum need and technology advancement, so that there will not be spectrum hoarding without an actual need for the spectrum.</p> <p>See Attachment 2 for further details.</p>

ATTACHMENT 2 MEASAT comments and views on the future agenda items under WRC-23 agenda item 10

WRC-27 Agenda Item	Issue	ITU Regions	Frequency Ranges	Comments and Views
2.2	GSO FSS ESIM in QV-bands	Global	37.5-39.5 GHz 39.5-42.5 GHz 47.2-50.2 GHz 50.4-51.4 GHz	<p>The frequency bands are globally allocated to the fixed-satellite service (FSS) on a primary basis. As such, sharing and compatibility studies between ESIMs operating with GSO FSS networks and current and planned stations of existing services allocated in these frequency bands and, in adjacent frequency bands, will be required in order to ensure protection of, and not impose undue constraints on, those services.</p> <p>MEASAT <u>supports</u> this topic as it will provide additional satellite services / applications in the Q/V-bands.</p>
2.3	Spectrum allocation (all or part) of the band [43.5-45.5 GHz] to FSS	Global	43.5-45.5 GHz (or portions thereof)	<p>Satellite systems are increasingly being used to deliver broadband services and can help enable universal broadband access. The next-generation fixed-satellite service (FSS) technologies for broadband will increase speeds (45 Mbit/s is already available), with faster rates expected in the near future, and technological developments such as advances in spot-beam technologies and frequency reuse are used by the FSS in spectrum above 30 GHz to increase the efficient use of spectrum.</p> <p>MEASAT <u>supports</u> this topic as additional FSS spectrum will be beneficial to support high-density fixed-satellite service applications.</p>
2.4	FSS/MSS to protect FS in the bands 71-76 GHz and 81-86 GHz (Article 21)	Global	71-76 GHz 81-86 GHz	<p>The bands 71-76 GHz and 81-86 GHz are allocated on a primary basis, among other services, to the fixed service globally. The frequency band 71-76 GHz is also allocated to the FSS (space-to-Earth) and MSS (space-to-Earth) and the frequency band 74-76 GHz is allocated to BSS. The frequency band 81-86 GHz is also allocated to the FSS and MSS (Earth-to-space). The call for study under Resolution 775 (WRC-19) recognizes that there is no intention to change the existing allocations or status of those allocations in Article 5 of the Radio Regulations for the frequency bands 71-76 GHz and 81-86 GHz.</p> <p>MEASAT <u>supports</u> the topic, subject to no changes in allocations or no additional restrictions to satellite services.</p>
2.5	Compatibility between satellite services and passive services in the bands 71-76 GHz and 81-86 GHz	Global	71-76 GHz 81-86 GHz	<p>The bands 76-77.5 GHz, 79-81 GHz and 81-86 GHz are allocated to the radio astronomy service (RAS) on a primary basis; and the band 86-92 GHz is allocated to the Earth exploration-satellite service (EESS) (passive), the space research service (SRS) (passive) and RAS. The band 71-76 GHz is also allocated to the FSS (space-to-Earth) and MSS (space-to-Earth) and the band 74-76 GHz is allocated to BSS; and the frequency band 81-86 GHz is also allocated to the FSS and MSS (Earth-to-space).</p> <p>Recognizing that there are an increasing number of satellite filings in the frequency bands 71-76 GHz and 81-86 GHz, Resolution 776 (WRC-19) calls for</p>

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WRC-27 Agenda Item	Issue	ITU Regions	Frequency Ranges	Comments and Views
				<p>appropriate studies to determine the technical conditions for satellite services in the band 81-86 GHz to protect the EESS (passive) and SRS (passive) in the band 86-92 GHz and RAS in the band 76-77.5 GHz, 79-81 GHz, 81-86 GHz and 86-92 GHz without unduly constraining satellite systems.</p> <p>MEASAT <u>supports</u> the topic, subject to no changes in allocations or no additional restrictions to satellite services.</p>
2.7	<p>NGSO FSS in the bands 71-76 GHz (space-to-Earth and proposed new Earth to-space) and 81-86 GHz (Earth-to-space)</p>	Global	71-76 GHz 81-86 GHz	<p>Next-generation fixed-satellite service (FSS) technologies are required to deliver multi-terabit speeds to support demanding real-time applications, which can be delivered by large constellation non-geostationary-satellite (non-GSO) FSS systems that GSO networks are operating or planned to operate in these frequency bands and that some administrations are considering deploying high-density fixed-service links in these frequency bands.</p> <p>Studies are required in order to ascertain the feasibility of, and conditions for, non-GSO FSS satellite system feeder links sharing the frequency bands 71-76 GHz (space-to-Earth) and 81-86 GHz (Earth-to-space) with GSO links and with other non-GSO FSS satellite systems.</p> <p>Studies are also required to ascertain the feasibility of, and conditions for, a possible new allocation to the FSS (Earth-to-space), for reverse-band feeder links for non-GSO FSS satellite systems in the frequency band 71-76 GHz.</p> <p>MEASAT <u>supports</u> the topic, subject to no changes in allocations or no additional restrictions to GSO satellite services.</p>
2.8	<p>Conditions for intersatellite links in the bands between 1-3 GHz among NGSO and GSO in the MSS</p>	Global	1-3 MHz	<p>Currently, the only option for MSS space stations in the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 645.5 MHz, 1 646-1 660.5 MHz and 2 483.5-2 500 MHz needing to communicate with other orbital space stations is to operate under RR No. 4.4, without recognition and on a non-harmful interference/non-protected basis in frequency bands allocated to another space service.</p> <p>The studies would develop technical conditions and regulatory provisions for the operation of space-to-space links in these frequency bands, including new or revised MSS allocations or the addition of ISS allocations, on a secondary basis, while ensuring the protection of, and without imposing additional constraints on, other MSS operations or services allocated in those and adjacent frequency bands.</p> <p>MEASAT <u>supports</u> the topic, subject to no changes in allocations or no additional restrictions imposed on primary services to which the frequency band and adjacent frequency bands are currently allocated.</p>
2.13	<p>Worldwide allocation to MSS for narrowband mobile-satellite systems in the bands [1.5-5 GHz]</p>	Global	[1.5-5 GHz]	<p>The possible allocation to mobile-satellite service for the future development of narrowband mobile-satellite systems supports expansion of satellite services.</p>

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WRC-27 Agenda Item	Issue	ITU Regions	Frequency Ranges	Comments and Views
				MEASAT <u>supports</u> the topic, subject to no changes in allocations or no additional restrictions imposed on primary services to which the frequency band and adjacent frequency bands are currently allocated.
NEW	GSO FSS in the 13.75-14 GHz	Global	13.75-14 GHz	<p>Proposal to review the usage and sharing conditions of the band 13.75-14 GHz to enable efficient use of the band by uplink GSO FSS earth stations, including FSS earth stations using smaller antenna sizes.</p> <p>MEASAT <u>supports</u> the topic that will allow smaller antenna sizes based on today's technological advancement.</p>
NEW	Possible allocation for gateway earth stations operating with non-GSO FSS in the band 51.4-52.4 GHz FSS (Earth-to-space)	Global	51.4-52.4 GHz	1 GHz of spectrum in the band 51.4-52.4 GHz was allocated to GSO FSS at WRC-19. As implementation of this band by GSO is still in the initial stages, to allow appropriate opportunity and development for GSO FSS, MEASAT propose to <u>defer</u> the proposed allocation to future conferences, as much as possible.
NEW	Possible primary allocation to the FSS in the space-to-Earth direction in 17.3-17.7 GHz in Region 3	Global	17.3-17.7 GHz	<p>Similar to current WRC-23 AI 1.19 for allocation in Region 2. Region 1 already has allocation in this band.</p> <p>The 400 MHz of spectrum currently allocated to feeder links for the broadcasting-satellite service under Appendix 30A.</p> <p>MEASAT <u>supports</u> the topic, subject to no changes in allocations or no additional restrictions imposed on primary services to which the frequency band and adjacent frequency bands are currently allocated.</p>
NEW	International Mobile Telecommunications (IMT) for 2030 and beyond	Global	Undefined	<p>Proposal to consider possibility of identification of additional frequency bands for IMT including additional allocation to mobile service on a primary basis, in particular frequency bands which have not been studied for IMT at the previous WRCs, taking into account the evolution of IMT technology and the expanding role of IMT such as to bridge the digital divide and to facilitate the digital transformation.</p> <p>MEASAT <u>opposes</u> any consideration of identification of additional frequency bands for IMT, subject to spectrum need and exhaustion of allocation spectrum globally.</p>
NEW	Studies towards potential new allocations to the non-GSO MSS for satellite component of IMT in the frequency bands identified for IMT and/or allocated to MS below 7 GHz	Global	below 7 GHz	<p>Proposal to consider possibility of identification of additional frequency bands for IMT including additional allocation to mobile service on a primary basis, in particular frequency bands which have not been studied for IMT at the previous WRCs, taking into account the evolution of IMT technology and the expanding role of IMT such as to bridge the digital divide and to facilitate the digital transformation.</p> <p>MEASAT <u>opposes</u> any consideration of identification of additional frequency bands for IMT, subject to spectrum need and exhaustion of allocation spectrum globally.</p>

MEASAT Satellite Systems Sdn. Bhd

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WRC-27 Agenda Item	Issue	ITU Regions	Frequency Ranges	Comments and Views
NEW	Development of a regulatory framework for non-GSO FSS, to ensure the protection of GSO FSS and BSS networks	Global	-	<p>It is necessary to conduct studies on technical measures and regulatory frameworks for non-GSO systems to ensure the protection of GSO systems and promote the long-term sustainability of radio-frequency spectrum and associated orbit resources, as well as on equitable access, and rational and compatible use of these resources.</p> <p>MEASAT <u>supports</u> the topic, to develop, as appropriate, a framework for non-GSO FSS, to ensure the protection of GSO FSS and BSS networks.</p>
NEW	Sharing between non-GSO systems and GSO networks in the portions of 14/11 GHz and 30/20 GHz frequency bands in which Article 22 epfd limits apply	Global	14/11 GHz 30/20 GHz	<p>Study to review and update the regulatory provisions for spectrum sharing between non-GSO systems and GSO networks in the portions of the 14/11 GHz and 30/20 GHz frequency bands in which Article 22 epfd limits apply. The work should aim at defining a sharing framework, similar to that developed by WRC-19 under No 22.5L and No 22.5M, that ensures equitable and efficient spectrum sharing between non-GSO systems and GSO networks. Study topic not favourable to GSO as may result in some conditions for GSO.</p> <p>MEASAT <u>opposes</u> the topic as there have been no issues raised with regard to the use of Article 22. for spectrum sharing between non-GSO systems and GSO networks in the portions of the 14/11 GHz and 30/20 GHz frequency bands.</p>

ATTACHMENT 3 MEASAT comments and views on Satellite Regulatory Matters under Agenda Item 9.3 in response to Resolution 80 (Rev.WRC-07)

(Reference: [Report by the Radio Regulations Board to WRC-19 Resolution 80 \(Rev. WRC-07\)](#))

Issue	Comments and Views
Issues related to the implementation of Resolution 559 (WRC-19)	<p>Since WRC-19, the Board was extensively involved in the implementation of Resolution 559 (WRC-19) and made decisions that were necessary to ensure the objectives of restoring access to the national frequency assignments in the BSS Plans was fulfilled and did not raise concerns from administrations.</p> <p>MEASAT is of the view that, in line with the objectives of Resolution 559 (WRC-19), to allow administrations with degraded BSS frequency assignments to regain resources in the BSS Plan, the Board recommendations to the Conference are favourable to support eligible administrations in Regions 1 and 3 restore access to the national frequency assignments in the BSS Plans.</p>
Force majeure	MEASAT is of view that, Board's recommendation on the minimum required information to facilitate the consideration of a request for extension of the regulatory time-limit due to force majeure is appropriate.
Co-passenger delay	MEASAT is of view that, Board's recommendation on the additional information to facilitate the consideration of a request for extension of the regulatory time-limits due to co-passenger delay is appropriate.
Requests from developing countries that do not qualify as force majeure or co-passenger	MEASAT is of view that, Board's recommendation on this matter is favourable to developing countries, including Malaysia. However, careful consideration is required to ensure no misuse of large operators through the developing countries i.e., request should be validated to ensure authenticity.
Inability to resubmit Appendix 30B notice when returned by the Bureau	MEASAT is of view that, Board's recommendation on this matter is favourable to allow resubmission with the same date of receipt. <i>Note: it is currently possible for AP30/30A notices.</i>
International monitoring	MEASAT is of view that, Board's recommendation for international monitoring could help resolve interference issues especially in cases where administration deny being the source and are not cooperative in resolving the interference, and in cases when administrations have different interpretation of interference assessment. The challenge might be that the administration may not accept the BR findings.
Application of Article 48 of the ITU Constitution	MEASAT is of view that, Resolution 216 that was adopted at Plenipotentiary Conference (PP-22) addresses the basic principles associated with the invocation of Article 48 of the ITU Constitution and provides the necessary guidance to the Bureau and the Board on how to address cases where Article 48 of the ITU Constitution may appear to have been improperly invoked or is no longer being properly applied. At the same time, while <i>resolves</i> have detailed "encouraged" action by administrations, there may still be lack of transparency when RRB is required to maintain the sensitivity and confidentiality of the information provided for frequency assignments for which Article 48 is invoked.
Practice of "satellite hopping"	MEASAT is of view that, Board's recommendation to review possible measure to address two spectrum reservation practices is favourable and will restrain possibilities to slot/spectrum reservation.
Recording of frequency assignments under No. 4.4	MEASAT is of view that, the use of a frequency band for a different purpose than the one specified in the Table of Frequency Allocations may not raise compatibility issues when the station operates within the same technical parameters, but it does contribute to spectrum scarcity for the intended radiocommunication service, and that Board's recommendation would provide protection of allocated services / frequencies.