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**The Chairman**  
**Malaysian Communications and Multimedia Commission**  
MCMC Tower 1  
Jalan Impact, Cyber 6  
63000 Cyberjaya  
Selangor Darul Ehsan  
Malaysia  
(Attention: Spectrum Planning and Assignment Division)

14 August 2023

At the onset, OneWeb would like to thank the MCMC for the opportunity to provide comments on their Consultation Paper on WRC-23 agenda items.

OneWeb has finished deploying all its gen-1 satellites to ensure the global coverage, and is busy deploying the ground infrastructure to cover the South East Asia. The primary goal of OneWeb satellite network is to bridge the digital divide by catering to populations that are currently underserved by traditional terrestrial broadband solutions, including rural and remote areas with limited or no access to high-speed internet. OneWeb is able to deliver low-latency, high-speed broadband services to these communities, fostering economic growth, enhancing educational opportunities, and improving access to healthcare services through telemedicine.

OneWeb is pleased to provide our views on selected agenda items of critical importance for OneWeb. We remain at the disposal of MCMC should any clarification be required.

Kind Regards



Peng Zhao

VP Government Affairs and Policy

OneWeb



Agenda Item	Comments and Views on Proposed Malaysia's Positions
<b>Fixed, Mobile and Broadcasting Issues</b>	
1.1	
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1.3	
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9.1(c)	
RR No. 21.5	
<b>Aeronautical, Maritime and Amateur Issues</b>	
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<b>Science Issues</b>	

<b>Agenda Item</b>	<b>Comments and Views on Proposed Malaysia's Positions</b>
<b>1.12</b>	
<b>1.13</b>	
<b>1.14</b>	
<b>9.1 (a)</b>	
<b>9.1 (d)</b>	
<b>Res. 655</b>	
<b>Satellite Issues</b>	
<b>1.15</b>	<p>OneWeb is concerned about interference to NGSO satellite receiver systems from the inclusion of maritime and aeronautical ESIMs transmitting to GSO systems. The M-ESIM and A-ESIM systems require greater power to reach the GSO arc than the NGSO altitudes and will cover new locations not previously covered by traditional FSS Earth stations, such as the ocean areas. On-axis and off-axis EIRP density limits are proposed for both M-ESIM and A-ESIM systems to protect NGSO spacecraft receivers as follows:</p> <p>OneWeb supports the limits contained in Section 4/1.15/5.2 For Method B, ANNEX 3 TO DRAFT NEW RESOLUTION [A115] (WRC-23) of the draft CPM report. This Annex contains EIRP density limitations based on a compromise solution as described in 4/1.15/3.6.2 of the Draft CPM Report. OneWeb submitted detailed supporting technical studies that have been included under Document 4A/847 that led to the inclusion of the limits on both Maritime and Aeronautical ESIMs. OneWeb also agreed that the BR would not check these values for compliance, however, compliance with the limits must remain mandatory</p>
<b>1.16</b>	
<b>1.17</b>	<p>OneWeb supports having Inter Satellite Links (ISLs) well-regulated at the ITU level.</p> <p>OneWeb operates Earth-to-space gateway links in the 27.5-30.0 GHz band, so there is potential for interference to the OneWeb spacecraft receivers. Satellite-to-satellite transmissions need to be appropriately limited to ensure interference is reduced to acceptable levels. Interference into the main beam of</p>

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	<p>the satellite receiver can exceed hardware damage thresholds if not appropriately controlled.</p> <p>OneWeb supports a <b>new ISS allocation</b> with a footnote that recognizes satellite-to-satellite operations as part of the intersatellite service in these bands, <b>limiting the applications solely to space research, space operation and/or EESS applications, and also transmissions of data originating from industrial and medical activities in space.</b></p> <p>OneWeb supports the <b>within-the-cone scenario</b> as these links have been widely studied; hence, OneWeb does not support the extended-cone scenario for NGSO-to-NGSO links. It may be possible to accommodate an augmented cone scenario for NGSO-to-GSO links depending on how such scenarios are defined; however, NGSO-to-NGSO links must be limited to within the cone to enable compatibility with existing NGSO FSS systems.</p> <p>Protection of NGSO system is in <b>ANNEX 4 TO DRAFT NEW RESOLUTION [A117-B1](WRC-23)</b> deals with “Provisions for non-GSO space stations transmitting in the frequency band 27.5-30.0 GHz to protect non-GSO space stations”.</p> <p>OneWeb supports a maximum EIRP density value of -17.5 dBW/Hz to protect from non-GSO user station to GSO links.</p> <p>OneWeb supports an EIRP density limit of <b>-30 dBW/Hz</b> for LEO-to-LEO links and <b>-20 dBW/Hz</b> LEO-to-MEO links.</p> <p>OneWeb supports hard limits to ensure no potential for hardware damage. Hardware damage is an irreversible component level failure that can occur on the spacecraft when component power ratings are exceeded, this may occur from inter-satellite links if there are no proper restrictions put in place to prevent such occurrence. OneWeb supports the following provisions to prevent hardware damage:</p> <p>c) Non-GSO space stations transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30 GHz <b>shall not operate at orbital altitudes greater than or equal to 900 km and less than 1 290 km</b></p> <p><i>c bis)</i> The emissions from any non-GSO space station transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30 GHz to communicate with a non-GSO system with a minimum operational altitude <b>higher than 2 000 km</b> shall not exceed an on-axis e.i.r.p. spectral density of -20 dBW/Hz and the total e.i.r.p. from any non-GSO space station shall not exceed:</p> <table border="1" data-bbox="608 1859 1192 1995"> <thead> <tr> <th data-bbox="608 1859 963 1995">Transmitting non-GSO space station operational altitude (km)</th> <th data-bbox="963 1859 1192 1995">Maximum total e.i.r.p. (dBW)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Transmitting non-GSO space station operational altitude (km)	Maximum total e.i.r.p. (dBW)		
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7	<p><b>Topic A</b></p>	<p>OneWeb supports the method that provides adequate tolerance to accommodate other NGSO systems in similar altitudes to ensure efficient sharing of orbital resources and the tolerance should be just adequate for operators to safely fly their satellites on a day-to-day basis. Noting that this tolerance is only for determining whether an operator is operating satellites within its ITU filing parameters, and sufficient ITU filing tolerance is required to enable accommodation of additional systems on an operational basis.</p> <p>OneWeb supports <b>Method A2</b> with an adequate absolute value in kilometers or a formula that defines the tolerance based on the orbit altitude. OneWeb believes that <b>+/- 100 km</b> provides adequate flexibility for operators to safely fly their satellites and to accommodate other systems in similar altitudes.</p> <p>OneWeb believes that the ultimate tolerances defined need to provide adequate flexibility for NGSO systems to deploy as planned. For example, a NGSO operator maintains a separation of several kilometers between each of its planes to avoid the possibility of collisions between its own satellites. Further, providing adequate flexibility would enable NGSO operators to accommodate new systems without having a negative impact on the status of their ITU filing.</p>
	<p><b>Topic B</b></p>	<p>The first large NGSO systems subject to milestones will reach their 100% milestone as of <b>1 February 2028</b>, after WRC-27 (see resolves 8c) of Resolution 35). Thus, no system will be in a post milestone situation until after WRC-27 and it makes sense to wait until that conference to develop post milestone procedures.</p> <p>OneWeb recommends <b>Method B1</b> NOC, and that the community wait until WRC-27 to address this issue, after experience is gained with the Resolution 35 milestone process.</p>
	<p><b>Topic C</b></p>	
	<p><b>Topic D</b></p>	<p><b>Topic D2</b> The current version of Recommendation ITU-R S.1503-3 does not adequately model interference from NGSO systems and needs further updates (currently being pursued in Working Party 4A). Topic D2 will allow the associated necessary updates to the Appendix 4 data items at WRC-23 to gather the necessary information for the foreseen updates to Recommendation ITU-R S.1503.</p>

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		<p>OneWeb supports the improvement of Recommendation ITU-R S.1503 to accurately model NGSO systems while ensuring the Article 22 EPFD limits are met to protect GSO systems.</p> <p><b>Topic D3</b> Under this Topic, BR reminders would be sent with respect to the need to confirm the bringing into use or bringing back into use of satellite networks. OneWeb supports additional reminders from the BR to support administrations in maintaining their ITU filings.</p>
	<b>Topic E</b>	
	<b>Topic F</b>	
	<b>Topic G</b>	
	<b>Topic H</b>	
	<b>Topic I</b>	
	<b>Topic J</b>	<p>OneWeb supports <b>Method J5</b> to Modify Resolution 76 (Rev.WRC-15) to call for further study on accurate modelling of non-GSO systems and a regulatory procedure for assuring compliance with the aggregate emission limits.</p> <p>OneWeb supports inclusion of only operational NGSO systems in any consultation meetings, with a minimum number of operational satellites identified under Resolution 35. Further, the NGSO FSS systems included should be providing regular operations as envisioned under the associated ITU filing.</p> <p>In addition, OneWeb believes that an NGSO system operating under multiple ITU filings should be treated as a single system for purposes of Resolution 76; additional provisions may be required to manage such situations &amp; EPFD compliance.</p> <p>Critically, prior to conducting any consultation meetings, an accurate aggregate calculation method is needed to determine the EPFD statistics resulting from multiple NGSO FSS systems operating together. Otherwise, there will be no meaningful information on the situation vis a vis the aggregate EPFD limits and the meetings will not be productive.</p>



Agenda Item	Comments and Views on Proposed Malaysia's Positions	
	Topic K	
<b>General and Regulatory Issues</b>		
<b>2</b>		
<b>4</b>		
<b>8</b>		
<b>10</b>	<p><b>Review the usage of the band 13.75-14 GHz and study for possible revisions to the sharing conditions indicated in RR Nos. 5.502 and 5.503</b></p> <p><b>OneWeb support</b> review the usage of the band 13.75-14 GHz and study for possible revisions to the constraints in RR Nos. 5.502 and 5.503, established over 20 years ago, to enable efficient use of the band by uplink geostationary and non-GSO FSS earth stations. There has been rapid increase in the number of (GSO) and (non-GSO) satellite networks in recent decades. The use of smaller FSS earth stations at frequencies around 10-15 GHz has also been increasing with the deployment of satellites providing large throughput and broadband connections</p> <p><b>Use of the 51.4-52.4 GHz frequency band allocated to the FSS (Earth-to-space) by gateway earth stations of non-geostationary systems</b></p> <p><b>OneWeb supports</b> the inclusion of a WRC-27 Agenda Item that studies and defines the technical and operational measures as well as the necessary regulatory provisions, in order to facilitate the use of the 51.4-52.4 GHz frequency band allocated to the fixed-satellite service (Earth-space) by gateway earth stations of non-geostationary systems.</p> <p><b>Studies to consider possible future IMT identification in the 7-24 GHz frequency range</b></p> <p>7-24 GHz contains core Ku and Ka frequency bands for the satellite telecommunications sector and OneWeb has deployed over 630 Ku/Ka-band LEO satellites operating. Considering IMT obtained at previous WRC a total of 17.25 GHz of mmWave spectrum that is today mostly unused, <b>OneWeb strongly opposes</b> the inclusion of 10.7-12.7,13.75-14.5 GHz, and 17.8-19.3 GHz as potential additional spectrum for IMT within the 7-24 GHz range to be considered.</p>	