

Preamble & Introduction

The geostationary orbit has been heavily populated for some time, but limited to using frequencies at, or below, Ku-band. Recently, technological developments have made operations in the until-now under-exploited Ka-band, an economically viable option. Theoretically this ought to open up more spectrum for satellite, and yet, for several reasons, including the loss of C-band frequencies to 5G operators, the reality is different; there continues to be insufficient capacity for satellite to service the emerging new types of requirements which the public expect and demand, not just for the UK, but globally.

Non GSO constellations can circumvent many of the limitations associated with GEO by virtue of their ability to operate from literally anywhere in the sky. Other than for latitudes between the tropics and the equator, the number of visible GEO satellites is limited - from Edinburgh (UK) for example, only 32 GEO orbit locations are visible above a 20 degree elevation angle (28.5°E.L to 33.5°W.L.); by contrast, analysis shows that over a thousand MEO & LEO sufficiently spaced locations, could be visible. Our satellite industry must exploit this significant benefit in order to fulfil this transient and growing demand

GSO systems were designed with regulatory interventions to facilitate frequency sharing every 2 to 3 degrees of orbital arc – strict constraints were placed on the performance of the user terminals regarding main lobe and sidelobes to enable this sharing. For NGSO, such constraints are again necessary, and in fact due to the reality of frequent in-line events between satellites in different orbits, outages due to interference will occur. As with solar conjunctions in GSO, these cannot be avoided, but because of the frequency with which they will occur specifications and internationally agreed standards must become mandatory in order to keep the durations of such outages to the absolute minimum. Whilst acknowledging Ofcom's role (and that of the ITU) and the statements in paragraphs 2.17 – 2.21, Methera strongly urges Ofcom, through its relationships at CEPT, ITU, WRC level to encourage a joined-up global approach to this challenge.

Methera, applauds Ofcom in taking this initiative in the UK and is pleased to respond herein.

Your response

Question	Your response
Question 1: Do you have any comments on our assessment of the interference challenges raised by NGSO systems and their potential impact on a) service	Confidential? – No NGSO is a broad category and co-ordination between <u>all</u> NGSO systems is crucial. The Ofcom document makes multiple references to LEO (naming several LEO operators), but none to MEO or GEO. Methera is concerned that the focus is primarily on LEO and asks that Ofcom also considers, with equal focus, <u>all</u> other orbits, including MEO (such as Methera Global, O3B, mPower). Ultimately, space-based connectivity for users is likely to be based on hybrid solutions which will include satellites in a variety of altitudes , such as MEO and

quality; and b) competition?

HEO. Moving more slowly than LEO, satellite constellations at higher altitudes deliver significantly longer periods (several hours) of continuous service between handovers and are easier to track; MEO and HEO constellations should be considered as complementary rather than competing technologies.

In considering service quality, it is not about degradations, it is about outages; overall service availability will include a contribution determined by the frequency and duration of outages due to in-line events and our industry must understand and accept this by developing and agreeing strategies, standards, policies and procedures which reduce the impact on users. We urge Ofcom to focus on an approach which maximises availability by minimising outages and will inevitably call for the highest standards regarding antenna off-axis performance.

Question 2: Do you have any comments on our approach to dealing with the interference challenges raised by NGSO systems?

Confidential? – No

Ofcom is proposing that any NGSO network or gateway licence will only be issued subject to it being satisfied that co-existence is possible. Methera agrees that this is necessary and essential but has some concerns.

- How does Ofcom propose to measure “satisfaction”?
- Can Ofcom ensure that its approach will not, by default, favour existing licensees over new applicants?
- How will Ofcom address poor performance or non-compliance (even against standards which, as yet, may not have been agreed) on the part of existing operators? More generally, Ofcom might consider taking leadership in this important process of introducing new standards as well as encouraging efforts through CEPT, ETSI, ITU and so on
- How would Ofcom compel an existing operator to be proactive in supporting any co-existence assessment should it be unwilling to do so?
- What right of appeal would either operator have, if dissatisfied with the outcome?

In short, the approach must be fair to all, and should not be to the detriment/exclusion of future entrants.

Methera agrees with the concept of a network licence for user terminals, and with the principle of an expiration date on licences which are issued but not, in a reasonable timescale, begun to be used.

	<p>As a separate point, Methera does not see a need to maintain geographic separation between different operators' gateways and is concerned that that such a condition could result in some operators having to operate from less attractive (access, connectivity, security, etc.) locations than others and would ask Ofcom to revisit this point. Methera expects technology to develop to enable diversity on gateway links as an example that merits consideration.</p>
<p>Question 3: Do you have any comments on the proposed updates to our process for NGSO gateway and network licences?</p>	<p>Confidential? – No</p> <p>We acknowledge the need to find solutions which (a) mitigate against interference (although as in our response to Q1, this may be better described as maintaining QoS by minimising outage durations and their system impacts), and yet (b) do not constrain competition.</p> <p>One option open to any regulator is to partition spectrum and offer each operator its own exclusive (i.e. unshared) band. Methera has the following concerns and is seeking clarity on Ofcom's position regarding such an approach:</p> <ul style="list-style-type: none"> • Partitioning reduces any individual operator's throughput capacity, impacting existing business cases. • If partitioning is effected through auction (as with recent 5G allocations in 700 MHz and 3.8 GHz bands), then this favours well-funded established players, over smaller, niche and early-stage operators • Partitioning usually results in all available capacity being allocated to a pre-determined number of players at the outset, closing the door to future new entrants. <p>Regarding the process described in 4.20 and 4.22, Methera would ask</p> <ul style="list-style-type: none"> • Will decisions be made by Ofcom alone, or in consultation with other bodies/experts, and what right there will be for licence holders or licence applicants to challenge a decision after Step 6? • What steps will Ofcom take if the "existing" (or similar) licensee were not forthcoming with information required to undertake the co-existence calculations.
<p>Question 4: Do you have any comments on the proposed updates to existing and new NGSO network licences?</p>	<p>Confidential? – No</p> <p>Methera agrees with the action proposed to be taken and as described in Section 5.5 on the basis that it removes what could be considered as an unfair advantage held by incumbents whose licences were issued at a time before the challenges associated with co-existence for NGSOs was fully understood.</p>

Question 5: Do you have any comments on the proposed updates to existing and new NGSO gateway licences?	Confidential? – No Our comments are the same as we have set out in our response to your question 4 above.
Question 6: Do you agree with our proposal regarding NGSO terminals operating in Ka band?	Confidential? – No Ofcom is proposing that the WT Act be amended such that NGSO land terminals are no longer exempt under HDFSS or ESOMPS and therefore must be operated under a network licence. Methera agrees with this proposal

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