

Inmarsat response to the Ofcom consultation document “Non-geostationary satellite systems”

27 September 2021

General comments

Inmarsat generally concurs that Ofcom should have the tools to ensure that the use of certain bands by non-GSO FSS systems is properly managed. We agree that new regulatory tools may be needed, when taking account of the large number of non-GSO systems being developed and proposed, and the fact that many new systems intend to share the same frequency bands.

Inmarsat concurs with the sentiment that reliance on the ITU based coordination rules alone may not be adequate, not least because the first-come first-served priority system creates a risk that new systems could be blocked or unfairly limited by those with higher priority. The formal ITU coordination requirements are between administrations. As such, coordination requirements between different NGSO systems within an administration may be based on different approaches that may promote further frequency sharing of spectrum and other policy requirements (e.g., competition, service obligation, etc) within an administration.

The situation is different for GSO systems, where the scope for two GSO systems to share the same frequency band is well established and is enabled through the use of orbital separation, earth station equipment standards and recommended earth station off-axis EIRP limits. For NGSO systems, in contrast, the parameters to allow for shared use of the same bands are not currently well defined.

There is clearly a balance to be met. On one hand, new NGSO systems may need access to large amounts of spectrum that is free from excessive interference, and require a regulatory environment that is not subject to sudden change that can harm its operations in the future. On the other hand, it is necessary to ensure that multiple systems are able to operate in the same frequency bands, including those which may evolve at a later date. Finding that balance is difficult but is necessary.

Unfortunately, we find that Ofcom’s consultation document does not include the detail to clearly describe how that balance would be defined. For example, it is not clear the extent to which NGSO system A would need to accept interference from NGSO system B. Without defined criteria on this and other aspects of this consultation, there would be insufficient clarity and transparency in the proposed new regulations. This risks arbitrary and unpredictable application of the proposed new regulations and could leave the process open to protracted technical and legal discussions. Hence, Inmarsat is not able to support the proposed regulatory changes as they stand. We suggest that Ofcom conducts further consultation with the industry to arrive at specific criteria that would be applied by Ofcom to assess the impact on service quality and competition.

Although not specifically addressed in this consultation document, the proposed new NGSO FSS systems also raise potential interference concerns with GSO FSS systems that operate in the same bands. While there are ITU regulations in place to manage such interference (No. 22.2 and Article 22 e) limits), there are concerns that new NGSO systems may not fully comply. This is evident in some of the filed NGSO satellite and earth station PFD and EIRP masks by NGSO operators which have unrealistic high antenna discrimination values towards the GSO arc or GSO earth stations. The use of such artificial masks would suggest significantly less interference to the GSO networks than would result in practice. Ofcom may need to take action to ensure that NGSO systems operating in the UK meet the ITU requirements for protection of GSO FSS networks. We recommend that Ofcom, in continuing the work on these proposals, ensures that the regulatory tools to manage NGSO systems also cover NGSO-GSO sharing issues.

These general comments cut across all the specific questions in the consultation document, but we provide some additional comments below.

On one additional point of detail, we have found that the frequency bands for which the new regulations would apply are not clearly explained in the consultation document. It is clear from the discussion that the issues are related to systems planned in Ku-band and commercial Ka-band, but we could not find an exact definition of the applicable bands. This important detail also prevents Inmarsat from being able to support Ofcom's proposals as they stand.

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 quality; and b) competition?

The assessment of service quality and competition issues must both be underpinned by interference criteria. Ofcom proposes to introduce checks that NGSO systems (old and new) can coexist, but some clear interference criteria need to be established first. Otherwise, it seems impossible to make a determination of whether System A causes excessive degradation to service quality to System B, and vice versa.

Similarly, with regard to the "competition check", Ofcom proposes to assess the technical constraints that the gateway or user terminals would create on future licensees. However no technical criteria are proposed in the consultation document.

In defining such criteria, it will be important to consider the extent to which any system should be entitled to protection from interference. For example consider that there are three NGSO systems, A, B and C. The design of System A is such that it is more susceptible to interference than System B. System C operates on the same frequencies as System A and System B but has to operate under more restrictive conditions in the frequency band shared with System A, compared with the frequency band shared with System B. It seems reasonable to ask whether System A should be entitled to operate with a system design that leads to greater constraints than System B. Ofcom raised similar issues in its recent consultation on "Supporting the UK's Wireless Future", but the current consultation document seems to be missing any details on how this might be applied for NGSO FSS systems.

Inmarsat agrees with the principle that NGSO systems should be designed from the outset to facilitate sharing with other NGSO systems to the extent feasible and practicable.

However it is obvious that some NGSO systems may not be able to conclude on coordination or coexist in the same frequency band. The consultation does not describe what action would be taken in that circumstance. For example, would Ofcom require the frequency band to be split between System A and System B in such a circumstance or impasse? Ofcom clearly intends to allow for a possible *reduction* in the frequencies authorised to any system in the UK, which could have significant implications for any system and the services provided to UK customers. The scope and process to implement such a drastic change requires greater clarity and would need to be clearly defined.

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

See answer to Q1.

Question 3: Do you have any comments on the proposed updates to our process for NGSO gateway and network licences?

We note that Ofcom proposes (section 4.16) to require applicants to provide credible evidence about the technical ability of their system and future systems to coexist. As noted above, this could take into account the ability of the system to cause interference to other NGSO systems but also to take into account the ability of the system to constrain other systems by being susceptible to interference. In line with our general comments above, Inmarsat does not consider that such a requirement could be implemented unless there are clearly defined technical criteria. We also note a practice by a few parties that the proposed separation distances with other gateways would be relatively modest (for example tens of kilometres) in seeking access to NGSO gateway operation, but subsequently in discussions with others parties seeking shared access with these same gateways the requested protection distances expand to hundreds of kilometres and more. Such use of inconsistent protection criteria should be avoided to promote sharing of NGSO gateway spectrum, and should be set to the minimum separation distances necessary, taking into account local topology if need be.

We support the approach of making applications open for public comment, in a similar manner to the licencing process adopted by the United States of America. The published information would be sufficiently detailed to allow for an independent assessment of the applicants system with respect to the criteria. The applicant should be allowed to make their own analysis of coexistence with other NGSO systems, and which would require information on the technical characteristics of the other systems to be available. Ofcom would need to ensure that the necessary information is provided by NGSO operators and the assessment of interference is open for public comment.

Question 4: Do you have any comments on the proposed updates to existing and new NGSO network licences?

Comments in response to Question 3 apply here also.

Question 5: Do you have any comments on the proposed updates to existing and new NGSO gateway licences?

The proposed requirements include a statement that Ofcom may take action to require a change of use in the event of “a material and recurring degradation of services”. In line with comments above, Inmarsat considers that clear technical criteria need to be defined before such a regulation could be implemented.

Question 6: Do you agree with our proposal regarding NGSO terminals operating in Ka band?

Inmarsat can accept that a network licence would be necessary for NGSO systems, irrespective of the type of user terminals that are in use (land, ship or aircraft).

Summary of Comments

Inmarsat requests that before implementing any of the proposed new regulations, Ofcom conducts further consultation with industry to address the following:

- To clearly establish criteria that will be used to assess compliance with proposed new requirements for service degradation, coexistence and competition.
- To adopt regulations that enable Ofcom to take action if there is evidence that a NGSO system does not comply with the Article 22 efd limits for protection of GSO networks.
- To clearly establish the applicable frequency bands for the proposed new rules.
- To ensure that sufficient information on the characteristics of NGSO systems is available as part of the proposed new licensing process, so that the opportunity exists for independent assessment of the checks on coexistence and competition.
