25 September 2025

Ministry of Economic Affairs and Climate
Bezuidenhoutseweg 73
2594 AC The Hague
Netherlands

Submitted online: https://www.internetconsultatie.nl/nfp2025/b1.

Re: Consultation on the Amendment to the National Frequency Plan 2025-1

Viasat Inc. ("Viasat") provides the following comments to the Ministry of Economic Affairs and Climate ("Ministry") on the public consultation on "Amendment to the National Frequency Plan 2025-1" ("Consultation")[1]. This amendment for the National Frequency Plan 2014 (NFP) was drafted to address the changing frequency needs of satellite operators which connect their networks in or via the Netherlands to the global terrestrial telecom infrastructure. This draft amendment specifically addresses the extension of frequency spectrum for coordinated satellite earth stations in the 28 GHz band by adding "FSS_ES" in the frequency sub-bands 27.8285-28.4445 GHz and 28.9485-29.4525 GHz with respect to national and ITU band limits. Also, the amendment proposes to add ITU footnotes relevant to "FSS_ES" entries.

In these comments Viasat: (1) provides information on satellite-powered broadband services in the 27.5-30 GHz uplink (Earth-to-space) band that includes the entire critical 27.5-29.5 GHz (28 GHz) band; (2) supports the Ministry decision to harmonize the use of spectrum in the Netherlands with the majority of European countries by enabling the use of the entirety of the 28 GHz band for coordinated satellite earth stations (*i.e.,* Fixed-Satellite Service (FSS) (Earth-to-space)) in the NFP and including relevant ITU footnotes; and (3) provides recommendations on authorizing non-geostationary (NGSO) systems and associated coordinated satellite earth stations to ensure efficient use of spectrum and orbits in the Netherlands. Such an approach will allow Dutch users the same opportunities as users in other European countries, and around the world, to enjoy the benefits of advanced broadband satellite services in the Netherlands whether at home, work or on the move.

[1] *See Draft decision on NFP amendment 28 GHz band,* https://www.internetconsultatie.nl/nfp2025/b1.

Viasat is a leading provider of communications solutions globally across a wide variety of technologies, both satellite and terrestrial. Among other things, Viasat provides hundreds of millions of high-speed broadband connections every year to households, businesses and passengers in North America, Central America, Latin America,[2] Australia,[3] Asia-Pacific, Africa, and across Europe[4], including through capabilities obtained through the acquisition of Inmarsat[5]. That acquisition has enabled the combined company to bring together spectrum, satellite, and terrestrial assets, including capacity on 21 on-orbit satellites operating in the Ka-, L- and S- bands.

The international satellite communications industry relies on the 28 GHz band for critical services. It is a key band for FSS (Earth-to-space) as the entire 28 GHz band has been allocated globally on a primary basis, as incorporated and adopted in Article 5 of the ITU Radio Regulations. Access to the entire 28 GHz band is a critical resource for the rapidly expanding satellite-powered Ka band connected world. In the case of the 28 GHz band, satellite operators have made substantial investments based on the global validation of satellite broadband use of the entire 28 GHz band at ITU World Radio Conference 2015 (WRC-15), World Radio Conference 2019 (WRC-19), and World Radio Conference 2023 (WRC-23). The decisions of these World Radiocommunication Conferences have provided confidence for making those investments and the result is

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2 *See Viasat Brings Fastest Home Satellite Internet Service to Mexico*, https://investors.viasat.com/news-releases/news-release-details/viasat-brings-fastest-home-satellite-internet-service-mexico ; *Viasat Completes Brazilian Residential Internet Service Roll-Out--Now Covers 100% of the Country; Offers New Premium Satellite Internet Service Plan with Highest Speed and Data*, *https://www.viasat.com/news/latest-news/satellite-internet/2020/viasat-completes-brazilian-residential-internet-service-roll-out-now-covers-100-of-the-country-offers-new-premium-satellite-internet-service-plan-with-highest-speed-and-data/* .

3 *See Viasat Wins $286 M Satellite Broadband Deal with Australia*, https://spacenews.com/viasat-wins-286m-satellite-broadband-deal-australia/.

4 *See KLM Introduces Viasat In-Flight Wi-Fi on European Flights (April 22, 2021)*, https://investors.viasat.com/news-releases/news-release-details/klm-introduces-viasat-flight-wi-fi-european-flights; *Viasat Completes Acquisition of Remaining Stake in its European Broadband Joint Venture, inclusive of the Ka-Sat Satellite and Ground Assets* (April 30, 2021), https://www.viasat.com/news/latest-news/corporate/2021/viasat-completes-acquisition-of-remaining-stake-in-its-european-broadband-joint-venture-inclusive-of-the-ka-sat-satellite-and-ground-assets/; Avanti Communications and Viasat Energy Services sign long term Ka-band capacity lease agreement targeting the energy sector, https://www.viasat.com/news/latest-news/energy/2022/avanti-communications-and-viasat-energy-services-sign-long-term-ka-band-capacity-lease-agreement-targeting-the-energy-sector/.

5 *See Viasat's Acquisition of Inmarsat Proceeds to Close* (May 25, 2023), https://news.viasat.com/newsroom/press-releases/viasat-acquisition-of-inmarsat-proceeds-to-close.

that satellite networks are being built and deployed around the world, including for the Netherlands, for expansive use of the 28 GHz band, especially for aircraft for gate-to-gate connectivity, ships for pier-to-pier connectivity, and for trains and buses for land mobile broadband connectivity.

In recognition of the continued expanded use of the 28 GHz band for satellite-powered connectivity, WRC-23 extend use of the 28 GHz band by satellite services (*i.e.*, FSS (Earth-to-space) geostationary (GSO) Earth Stations in Motion (ESIM) pursuent to Resolution 169 (Rev. WRC-23)[6] and FSS (Earth-to-space) non-geostationary (NGSO) ESIM pursuant to Resolution 123 (WRC-23)[7], Inter-Satellite Service pursuant to Resolution 679 (WRC-23)[8]). Today, after these global decisions and the deployment of satellite services using the band, there is no question that the 28 GHz band is as a core globally harmonized satellite frequency band.

At the European level, the entire 28 GHz band is allocated to FSS (Earth-to-space) on a primary basis according to ERC Report 25 (European Common Allocation Table)[9]. ECC/DEC/(05)01[10] which contains the operational and technical requirements for use of uncoordinated FSS earth stations, states that: *"This ECC Decision identifies bands for FS and uncoordinated FSS earth stations, taking into account the existing channel arrangement for the FS as detailed in CEPT Recommendation T/R 13-02. However, coordinated FSS earth stations can still make use of the whole band 27.5-29.5 GHz, using established coordination procedures."* Most European countries followed the CEPT harmonization approach, allowing the use of entire 28 GHz band for FS and FSS stations

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6 *See Resolution 176 (rev. WRC-23) Studies on the use of the frequency bands 47.2-50.2 GHz (Earth-to-space)and 50.4-51.4 GHz (Earth-to-space), or parts thereof, by aeronautical and maritime earth stations in motion in the fixed-satellite service,* https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A0000100001PDFE.pdf.

7 *See Resolution 123 (WRC-23) Use of 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) by aeronautical and maritime earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service,* https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.16-2024-PDF-E.pdf.

8 *See Resolution 679 (WRC-23) Use of the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz by the inter-satellite service,* https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.16-2024-PDF-E.pdf.

9 *See ERC Report 25 The European table of frequency allocations and applications in the frequency range 8.3 kHz to 3000 GHz (ECA Table). Approved October 2021, Editorial update 8 March 2024,* https://docdb.cept.org/download/4468.

10 *See ECC/DEC/(05)01 of 18 March 2005 on the use of the band 27.5-29.5 GHz by the Fixed Service and uncoordinated Earth stations of the Fixed-Satellite Service (Earth-to-space) (latest amended on 8 March 2019), https://docdb.cept.org/document/384.*

on a coordinated basis, while a few countries, as is the case in the Netherlands, Belgium, and the UK, have limited use of portions of the FSS allocations in the 28 GHz band. However, there is a growing move towards opening up the 28 GHz band to FSS services to accommodate the increasing number of satellite operators and the increasing spectrum needs. For example, Ofcom (UK) increased the use of the 28 GHz band for satellite gateways by opening additional 2x112 MHz (*i.e.*, 28.1925-28.3045 GHz and 29.2005-29.3125 GHz) in in London and Northen Ireland in February 2025[11].

The Viasat satellites that use the 28 GHz band today bridge the digital divide and will continue to do so in the future. These satellites also provide ubiquitous connectivity using the same 28 GHz band spectrum for users at fixed locations in homes and businesses and on the move. The use of the entire 28 GHz band by FSS in the Netherlands will allow Viasat to fully utilize its geostationary networks, including the GX5 network, in Europe, and provide high quality services to the Netherlands' and other European customers. Currently Viasat's satellite earth station in Burum for the GX5 network is using a small portion of the band, full access to the 28 GHz band would mean more capacity and effective use of GX5 network over the Netherlands and the rest of Europe.

Viasat supports the conclusions of the research from the Authority for Digital Infrastructure (RDI)[12] and Dialogic[13] which have shown that extension of the spectrum use for coordinated satellite earth stations is not expected to result in significant limitations for other applications in the 28 GHz band. Coordinated satellite earth stations can make use of the whole 28 GHz band based on established coordination procedures with FS stations. Satellite geostationary networks rely on very directive antennas (*i.e.*, beamwidth is less than 1 degree) that are always pointed up towards geostationary orbit at the same orbital location and have a very limited radio wave footprint on the ground. Moreover, multiple satellite communications operators reuse the same radio frequency bands, based on ITU coexistence procedures.

Notably, this proceeding implicates issues regarding NGSO coexistence in the same spectrum with both GSO networks and other NGSO systems —a matter on which there is

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11 *See Statement: Increasing use of the 27.5-30 GHz and 32 GHz bands*, https://www.ofcom.org.uk/spectrum/space-and-satellites/increasing-use-of-the-27-5-to-30-ghz-band.

12 *See Advisory Report from RDI 28 GHz*, https://www.internetconsultatie.nl/nfp2025/document/14476.

13 *See Effects of the use of the full 28 GHZ band by satellite earth stations in the Netherlands*, https://www.internetconsultatie.nl/nfp2025/document/14055.

no consensus in the industry and on which the leading satellite trade association, GSOA, takes no position.

Viasat therefore urges the Ministry and the RDI to use the national authorization processes to fully mitigate the risks associated with operations of large NGSO mega-constellations by imposing appropriate conditions on their market access authorizations recognizing the sovereignty of The Netherlands to decide which operator can operate in the country. The NGSO mega-constellation operators are attempting to deploy their systems ahead of others without taking into account future operators' requirements. If these operators are given uncontrolled access to markets, including through spectrum and orbital resource authorizations, it will make it difficult, if not impossible, for other NGSO satellite systems to share the same spectrum and orbital resources, at virtually *any* orbit, no matter the mission. The proliferation of NGSO mega-constellations presents a wide range of challenges for regulators and other satellite operators around the world, by:

- Generating unacceptable levels of interference to GSO and NGSO systems through the operation of vast numbers of satellites (up to tens of thousands) covering the sky, look angles, and constraining the ability of other NGSO systems and GSO networks to deploy, innovate, and compete;
- Consuming an undue amount of spectrum and orbital resources in contravention of the ITU Constitution, specifically Article 44, paragraph 2, which recognizes that radio frequencies and the associated orbital resources are limited natural resources and must be used "*rationally, efficiently, and economically*";
- Consuming more than their fair share of the overall interference "*budget*", that all NGSO systems may cause to GSO networks, thereby hindering opportunities for other parties, including national operators, to operate their own NGSO systems; and
- Precluding equitable access to spectrum and the orbital resources by other NGSO systems by using up all available "*look angles*" through the extremely large number of satellites within their networks and particularly when employing small user terminals with wide beamwidths.

For example, using 1000s of satellites and small user antennas allows mega-constellations to consume virtually all "*look angels*" towards space, blocking smaller NGSO systems. The use of small antennas and phased arrays by larger NGSO systems

worsens the sharing situation. Therefore, a solution is required, else only limited NGSO services will be available for the Netherlands.

In addition, Viasat urges the Ministry and the RDI to acknowledge the potential negative impact of NGSO mega-constellations and propose safeguards such as mandatory compliance with the ITU Radio Regulations, Article 22 and Resolution 76 (Rev. WRC-23) EPFD limits.

In order to ensure NGSO operators do not exceed the ITU mandated EPFD limits, the Netherlands should consider imposing the following conditions on prospective NGSO system authorizations:

- Each NGSO system operator shall comply with the single-entry EPFD limits in the ITU RR Article 22 and all NGSO systems, collectively, shall comply with the aggregate EPFD limits in Resolution 76 (Rev. WRC-23);
- Each individual NGSO system operator shall operate its system as a single constellation for purposes of the EPFD limits, no matter how many ITU filings it may seek to operate under;
- Each NGSO system operator shall confirm that its deployed NGSO system is fully consistent with its ITU filings and its operation as described in the EPFD tests;
- Each NGSO system operator shall comply with all the parameters provided in its ITU filing, specifically:
    - Maximum number of co-frequency beams serving a specific location in the Netherlands, commonly known as "Nco";
    - Minimum GSO arc avoidance angle, commonly known as "*alpha angle*"; and
    - The downlink power flux density mask ("PFD mask"), taking into account the actual characteristics of the NGSO system as deployed, including the radiation pattern of its satellite antenna.

To summarize, Viasat supports the amendment of NFP proposing to add coordinated earth stations ("FSS_ES") in the in the frequency sub-bands 27.8285-28.4445 GHz and 28.9485-29.4525 GHz, on a co-primary basis with FS links and looks forward to its publication and entry into force on the day after the decision is published in the Government Gazette.

Viasat appreciates the Ministry's consideration of the important information above as well as the Ministry's commitment to the development of satellite broadband services throughout the 28 GHz portion of the Ka band. We remain at your disposal to answer any further questions or provide further details.