

Per E-Mail: PC_SatCom_Report@berec.europa.eu

Body of European Regulators for Electronic
Communications,
Meierovica Bulvaris 14,
Riga, LV-1050, Latvia

Contact	E-Mail	Phone	Date
Dr. Frederic Ufer	fu@vatm.de	+49 (0)221 3767733	23 August 2022
Lilyana Borisova	lb@vatm.de	+49 178 9624307	23 August 2022

BoR (22) 83

Public Consultation BoR (22) 83 Draft BEREC on Satellite Connectivity for Universal Service

here: Position Paper of VATM e.V. Germany (does not include business and trade secrets)

We hereby submit the views of the member companies of VATM on the draft BEREC Report on Satellite Connectivity for Universal Service. VATM welcomes the draft report and based on the experiences and contributions of our member companies, we would like to submit our comments and remarks.

The report explores the views and considerations of different EU stakeholders on the potential of the available and to-be-made-available satellite solutions on the EU connectivity market with regard to their deployment for universal connectivity service. As VATM has been actively involved in the discussion on this topic in Germany, we would like to highlight the experiences we gathered during the process of setting the groundwork for the *Regulation on Minimum guaranteed provision of telecommunication services (TK-Mindestversorgungsverordnung*, in the following - *TKMV*¹). The result was that through the adoption of this special regulation the standards for universal service in Germany were defined. It established the minimum requirements for universal service at 10 Mbit/s download, 1.7 Mbit/s upload and 150 milliseconds latency. In summary, it must be stated that the chosen latency threshold could not be proven

¹ Bundesministerium für Jüstiz (2022): *Verordnung über die Mindestanforderungen für das Recht auf Versorgung mit Telekommunikationsdiensten*. ([TKMV - Verordnung über die Mindestanforderungen für das Recht auf Versorgung mit Telekommunikationsdiensten * \(gesetze-im-internet.de\)](#), last accessed on 9. August)

to be necessary by the experts invited to give expert opinions as it was extremely politically motivated, while the specified data thresholds were generally correctly determined.

We note that BEREC has examined the issue of the applicability of satellite solutions in the context of the obligations set out in Part III, Title I, Universal Service Obligations of the European Electronic Communications Code (hereinafter *EECC*) and defined in Annex V *EECC*. With regard to latency, we urge BEREC not to be guided by the politically motivated decision in Germany but by the facts and figures of the expert opinions and the experiences in the technical field and the evidence gathered based on user evaluation.

We would like to point out that the expert opinions prove that latency **above 150 milliseconds** in all relevant application areas for home office, including VPN and web meetings, secures a good customer satisfaction. Even though there is a tendency towards slow decrease of the customer satisfaction, this does not make the functionality of the application itself not possible or not practical. This was explicitly confirmed during the Bundestag hearing² by the expert witness Mr. Wansch from the Fraunhofer Institute, who had been part of the expert group commissioned to prepare the Fraunhofer study on Satellite connectivity for universal service (*Realisierungsoptionen einer angemessenen Versorgung über Satellit im Kontext des novellierten Universaldienstes*)³. The full satellite functionality was also proven during a test demonstration organised by VATM for the MPs and expert witnesses in Berlin later on the same day of the hearing, where the chairwoman of the committee and representatives of almost all parliamentary groups in the Bundestag gathered to personally see the demonstration.

Apart from the mean data thresholds which are easily achieved using satellite, in certain individual cases, even higher demands could be satisfied by MEO or LEO satellites. In this regard, it would be unjustified to exclude GEO satellites, which in 95% of all cases guarantee satisfactory coverage for businesses and the population. Exceptions apply in cases such as poorly configured VPNs, when other satellites such as MEO or LEO could be preferable solution.

In Germany, focusing on latency was not determined by functionality but rather by the desire to ensure the highest quality standards for all services. This is what also the Fraunhofer study admits, as it explicitly avoids setting a definition of a sufficient level of customer satisfaction in relation to functionality.

² Deutscher Bundestag (2022): Anhörung über die TK-Mindestversorgungsverordnung ([Deutscher Bundestag - Anhörung über die TK-Mindestversorgungsverordnung](#), last accessed on 15. August).

³ Fraunhofer Institut (2021): *Studie/Gutachten: Realisierungsoptionen einer angemessenen Versorgung über Satellit im Kontext des novellierten Universaldienstes*. ([Standard \(bundesnetzagentur.de\)](#), last accessed on 15. August).

In reality, the threshold currently set by the TKMV means that households at the end of many existing copper lines cannot be supplied promptly but must wait for a questionable upgrade of copper networks or the construction of new fiber networks. It is particularly critical that these households are often located in otherwise very well-supplied (vectoring-) areas and will probably be connected to new fiber networks only along with the well-supplied households at a correspondingly late stage. At the same time, a faster point-to-point deployment of a fiber network instead of sensibly planned area expansion is neither economically nor technically feasible. In addition, the individual connection of such *white spots* with fiber optics would also be legally problematic, since the supply would have to be carried out within the framework of the universal service at the expense of the companies and not within the framework of the otherwise usual subsidy for white spots.

VATM is fully convinced that universal service in the transition to gigabit coverage is mandatory and, similarly to the findings of the study commissioned by the Swedish regulator PTS (*Satellit: en möjlighet till snabbt bredband 2025*⁴), we believe this can only be secured quickly by making sensible use of satellite technology to provide coverage to the population in thousands of individual cases for the transition period of copper switch off (and only for this!). VATM considers this approach to be applicable to Germany and to large parts of the EU. However, we agree with the findings of the current BEREC report which support a case-by-case approach based on national and regional specifications.

We, therefore, urge BEREC to actively support satellite technology as a universal service solution, at least in the medium term, as a complementary measure to high-speed fibre roll-out. As the PTS study states, a palette of interventions and measures will be needed to address the many different types of connectivity challenges that exist in order to provide broadband to everyone, regardless of geographical, social and economic circumstances.⁵

In addition, we propose that BEREC examine the need for a voucher option to meet the demand for satellite connections in those areas where fibre roll-out is not going to start in the foreseeable future and to cover the basic needs of the population living there. This is exactly what the universal service mission is all about - a quick but also practicable solution for the

⁴ PTS (2022): *Satellit: en möjlighet till snabbt bredband 2025*. (<https://www.pts.se/globalassets/startpage/dokument/icke-legala-dokument/rapporter/2022/internet/satellit---en-mojlighet-till-snabbt-bredband-2025.pdf>, last accessed on 15. August).

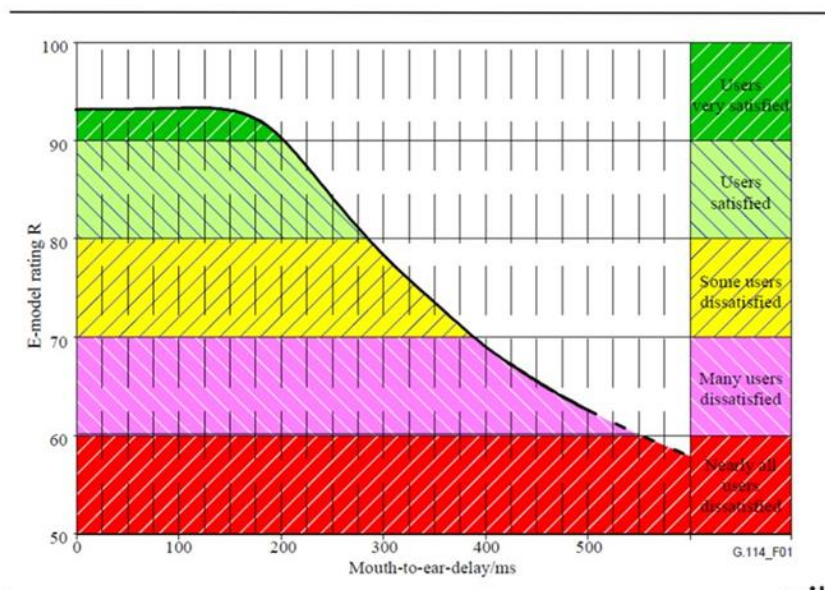
⁵ PTS (2022): *Satellit: en möjlighet till snabbt bredband 2025: Sammanfattning*. (<https://www.pts.se/globalassets/startpage/dokument/icke-legala-dokument/rapporter/2022/internet/satellit---en-mojlighet-till-snabbt-bredband-2025.pdf>, last accessed on 15. August).

affected households who cannot expect a fast internet connection in a timely manner as part of the regional white spots programmes.

In this context, we would like to note that the current BEREC report predominantly cites the results of the Fraunhofer study. Since the Fraunhofer study was carried out consistently and with particular attention to the technical details, we generally welcome this approach, manifesting that the current BEREC report intends to rely primarily on technical expertise. However, we would like to note that the current report, similar to the German discussion in the national context, does not seem to value some of the results of the study correctly.

This applies above all to the following findings of the WIK report, which we would like to highlight as follows.

Abbildung 3-12: Zufriedenheit von Nutzern mit der Signalqualität von Telefongesprächen in Abhängigkeit der unidirektionalen Übertragungszeit (Mouth-to-Ear)



Quelle: ITU (2003): ITU-T G.114, zitiert aus Kühling, J. (2019), S. 163

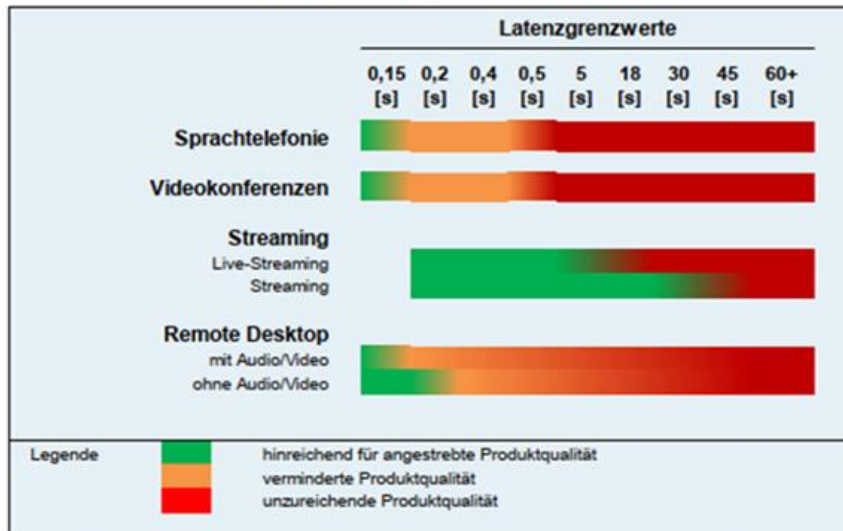
wik
CONSULT

Figure 1: Customer satisfaction of the signal quality in relation to latency

The study shows that customer satisfaction ("users satisfied" in the chart above) not only for voice telephony, but also for the other use cases extends to about 300 milliseconds and, with slight restrictions, to almost 400 milliseconds. In that regard, VATM would like to note that the International Telecommunications Union (ITU) also defines this last value as a limit (see graph

below). Therefore, no technology that complies with the international specifications and can ensure sufficient customer satisfaction should be excluded.

Abbildung 3-13: Obergrenzen für die zulässige Latenz der Produkte und Graubereiche ihrer Funktionsfähigkeit



Quelle: WIK auf Basis von Latenzgrenzwerten von ITU-G. 1010 (150ms und 400ms), Theo Technologies (2018): The importance of low latency in video streaming; <https://www.theoplayer.com/blog/the-importance-of-low-latency-in-video-streaming> (200ms, 500ms, 5s, 18s, 30s, 45s, 60+) und Microsoft (2021): Determine user connection latency in Azure Virtual Desktop; <https://docs.microsoft.com/en-us/azure/virtual-desktop/connection-latency> (150ms und 200ms).

Figure 2: ITU specifications with regard to latency

As the graphics clearly show, both functionality of the service and the consumer satisfaction are secured even above 150 milliseconds latency. These data relate above all to GEO satellites, meaning that they cover all necessary technical and user requirements to be widely acceptable connectivity solution in underserved areas.

We would like to emphasize the fact that in Germany the limit of 150 milliseconds latency was justified with explicit reference to the usual quality in the fixed network. This is stark evidence that the assessment of the satellite technology was not technology-neutral, but directly linked to the usual values in the fixed network. This says nothing about the functionality via satellite and must not be used as a justification for technical limits.

The expert Wansch from the Fraunhofer Institute referred to this several times during the Bundestag hearing and emphasised the sufficient functionality of satellites even in the case of multiple use in the household:⁶

Die Fragestellung, ob „ein durchschnittlicher Haushalt mit 2 Personen digitale Alltagsdienste wie Videokonferenzen, Streaming oder digitale Bildungsangebote gleichzeitig und problemlos mit der vorgeschlagenen Mindestbandbreite von 10 Mbit/s im Download und 1,7 Mbit/s im Upload nutzen kann“, lässt sich auf Grundlage der gesammelten Daten mit „im Regelfall ja“ beantworten.⁷

...

Die in der Studie gemachten Angaben zur Teleheimarbeit sind „je Arbeitsplatz“. Die definierten Referenzszenarien „gewöhnliche private Nutzung“, „intensive private Nutzung“, „Teleheimarbeit (VPN, Remote Desktop)“, „Teleheimarbeit (Cloud oder Offline)“, „Teleheimarbeit (Konferenzen)“ erlauben die einfache Kombination der verschiedenen Nutzungsarten einer oder von mehreren Personen im Haushalt.⁸

Mr Wansch also addressed the problem of VPN use with GEO satellites and pointed out that problem cases often exist due to the configuration and can usually be eliminated if the special features of satellite communication are taken into account:⁹

⁶ Deutscher Bundestag (2022): Anhörung über die TK-Mindestversorgungsverordnung: Stellungnahmen von Fraunhofer zur Mindestversorgungsverordnung, S. 4-5. ([220503 Fragenkatalog ÖA TKMV_09.05.22 \(bundestag.de\)](#) last accessed on 9 August 2022).

⁷ Convinience translation:

“The question of whether "an average household with 2 people can use every day digital services such as video conferences, streaming or digital education services simultaneously and without problems with the suggested minimum bandwidth of 10 Mbit/s for download and 1.7 Mbit/s for upload" can be answered with "yes in general" based on the collected data.”

⁸ Convinience translateion:

„The information provided in the study on teleworking is "per workplace". The defined reference scenarios "ordinary private use", "intensive private use", "teleworking at home (VPN, remote desktop)", "teleworking at home (cloud or offline)", "teleworking at home (conferences)" allow for the simple combination of the different types of use by one or more persons in the household.“

⁹ Deutscher Bundestag (2022): Anhörung über die TK-Mindestversorgungsverordnung: Stellungnahmen von Fraunhofer zur Mindestversorgungsverordnung, S. 5. ([220503 Fragenkatalog ÖA TKMV_09.05.22 \(bundestag.de\)](#) last accessed on 9 August 2022).

Alternative VPN-Konfigurationen als „split tunnel“, bei denen nur kritische Daten (z. B. Dateizugriffe, E-Mails) im VPN-Tunnel übertragen werden, sind möglich und erlauben „Maßnahmen zur Qualitätsverbesserung“ auf Seiten des Satellitenfunk-Betreibers. Eine solche aus Sicht des Satellitenfunks sinnvolle „split tunnel“-Konfiguration ermöglicht eine „problemlose“ Nutzung geostationärer Satelliten insbesondere für Dienste im Bereich der Teleheimarbeit(...)¹⁰

...

Bei Wahl einer geeigneten und sinnvollen Konfiguration (auf Seiten des Nutzers, des Satellitenfunkbetreibers und des Dienstansbieters) sind z. B. Videokonferenzen auch über geostationäre Satelliten möglich und die "wahrgenommene Qualität" unterscheidet sich dabei nach eigenen Erfahrungen nicht von anderen im internationalen Umfeld geführten Videokonferenzen mit den häufig genutzten Tools.¹¹

Therefore, we would like to call on BEREC to take a technology-neutral position with regard to satellite. Different satellite solutions, including GEO satellites, should be considered in the current report and generally on an equal footing with the rest of the connectivity solutions on the market and be acceptable within the framework of universal service. This approach would not prevent a possible deployment via technically upgraded copper cable or a fiber connection to be considered in individual cases locally if this does not cause excessive costs. On the contrary, all available solutions must be taken into account in order to provide connectivity ecosystem of technologies complimenting each other and providing services in a meaningful and economically viable way. This means that it should be possible to perform a cost-benefit analysis of all available technologies outside of the scope of state subsidies, especially in the case

¹⁰ Convenience translation:

“Alternative VPN configurations as "split tunnels", in which only critical data (e.g. file access, e-mails) are transmitted in the VPN tunnel, are possible and allow "quality improvement measures" on the part of the satellite radio operator. Such a "split tunnel" configuration, which is more appropriate for satellite-based service enables the "problem-free" use of geostationary satellites, especially for services in the area of teleworking.”

¹¹ Convenience translation:

“If a suitable and appropriate configuration is chosen (on the part of the user, the satellite operator and the service provider), video conferences are also possible via geostationary satellites, for example, and the "perceived quality" based on our own experience does not differ from other video conferences conducted in an international environment with the frequently used tools.”

of universal service, in order to objectively assess their possible applications, then rather excluding them in advance.

If this is not done and satellite, especially GEO satellites, would be technically excluded without an absolutely compelling reason, this would mean discrimination against European providers in particular compared to other providers from the USA or Asia, for example. We would like to point out that this would cause lasting serious damage to the EU internal market as well as to the national markets for satellite solutions and send a devastating political signal.

In conclusion, VATM would like to emphasize that the satellite can be an effective remedy in the middle term **until 2030** complimentary to the good 5G coverage for those left to wait for their fiber connection – in both rural and densely populated areas. As it is a well-documented fact that today satellite constitutes a viable solution to the problem of connecting remote cell sites and makes it possible to deliver an affordable service to end-users securing the provision of mobile services in remote areas as well as areas struck by natural disasters – solution used also by many mobile operators, we invite BEREC to endorse the satellite technology as a universal service capable solution providing connectivity in a fast and inclusive manner for all EU citizens.

VATM is looking forward to the future work of BEREC on the matters highlighted in the draft report and hopes that our comments and suggestions would be taken into account in the final version of the report when addressing these topics.