03. August 2022

ARD and Deutschlandradio response to

RSPG Draft Opinion on the ITU-R World Radiocommunication Conference 2023

A. BACKGROUND

ARD is the cooperation of regional public services broadcasters in Germany.
Deutschlandradio is a broadcasting organization in Germany that produces three nationwide radio programs.
ARD, ZDF and Deutschlandradio form the public broadcasting system in Germany.

We daily generate public service media by the use of radio spectrum for millions of viewers and listeners. The use of this spectrum for wireless media production as well as for content distribution creates social and cultural values that are essential for social cohesion and the strengthening of democracy in Germany and Europe.

ARD and Deutschlandradio welcome the opportunity to comment on the draft Radio Spectrum Policy Group (RSPG) Opinion on the ITU-R World Radiocommunication Conference 2023. The comments focus on the WRC-23 agenda item 1.5 that relates to broadcasting services.

B. COMMENTS ON THE DRAFT RSPG OPINION

4.3 WRC-23 Agenda Item 1.5 (UHF Review)

DTT needs the UHF band

The sub-700 MHz band, from 470-694 MHz is used in all EU countries and in almost all European countries to provide free-to-air digital terrestrial television (DTT) services to their audiences. The band is shared with wireless production systems such as radio microphones and talkback systems (collectively referred to as PMSE) and with radio astronomy.

On the way to the digital society, DTT successfully fulfilled its role of providing citizens with low-threshold, cost-effective and reliable quality content. These central features of DTT will be retained in the long term and form the basis for making an important contribution to the democratic society and digital participation in Germany beyond 2030. The prerequisite for this is the unchanged availability of the UHF TV frequency spectrum (470 - 694 MHz).

DTT in the UHF band remains crucial for its efficient delivery of linear services to very large audiences, its near-universal reach, its free-to-air focus, and its resilience in times of crisis. Both public service and commercial channels are provided via DTT, contributing to a healthy competition in the media sector and generating commercial value alongside the considerable public benefits. The usage of DTT is simple and cheap: plugging in a TV set offers immediate access to a plethora of programmes.

One clear trend in media usage is increasing mobility. Cable, satellite and IPTV are not able to meet this demand. Ensuring easy access to journalistic quality content in mobile usage situations via DTT without data volume limits is of particular significance for democracy.

DTT in the UHF band enables innovation

The usage behaviour with regard to media consumption, especially of video content, is changing. DTT offers the best prerequisites for meeting these changing usage requirements in the long term.

While the living room used to be the place where broadcast video content was enjoyed at very specific times, often together with the whole family, today video consumption is increasingly moving out of living rooms and away from TV screens to various mobile devices such as smartphones, tablets and laptops.

Mobile reception inevitably requires a terrestrial broadcasting system. The requirements for a future terrestrial broadcasting distribution system that can satisfy the above-mentioned user needs can be described as follows:

- Mobile, linear television must be possible on mobile devices, such as smartphones and tablets at present, without consuming data volume.
- From the user's point of view, linear and non-linear content must merge on one device.
- At the same time, it must be possible to reach any number of users - there must be no network congestion or loss of quality; it must also be possible to receive linear broadcast content even when mobile networks are overloaded, e.g. during major events.
- Broadcasters must continue to be able to reach viewers directly, without discrimination, at low cost and, optionally, without any traceability of the content used.
- In a self-contained terrestrial broadcasting network, the transmission of information to mobile devices must be ensured in disaster and crisis situations.

Broadcast technologies are the most economical way to make curated attractive content available to the citizens. Irrespective of the number of concurrent viewers, the networks always remain equally stable and functional.

Broadcasters are currently establishing the basis in the relevant standardization bodies (EBU, ETSI, 3GPP, ITU) to enable the necessary technical options for broadcasting in line with the aforementioned requirements. At this point in time, 5G Broadcast or one of its successor technologies seems to be a promising broadcasting technology to meet these future requirements. The standard allows linear TV anonymously and without data volume consumption on 5G Broadcast-enabled mobile devices such as smartphones and tablets. Portable and stationary TV sets could be equipped with corresponding 5G broadcast receivers, as well as infotainment systems in cars. The advantage of this technological approach is that there is a possibility to seamlessly combine broadcasting content distributed by independent broadcast networks with individual mobile communications on one device. This development will make it possible for the first time in history to create a uniform global standard for terrestrial television distribution with enormous economies of scale.

For this reason, in Germany various broadcasters and broadcast network operators, together with representatives from the telecommunications, automotive and science sectors, are testing the possibilities of a potential deployment of 5G Broadcast in the future within several field trials.

The UHF band is the spectrum currently used for DTT. It is the prerequisite for terrestrial broadcasting to be able to exploit opportunities for further development towards new technologies in order to reflect people's changing usage behaviour and thus enable the accessibility of mobile devices such as smartphones or tablets via broadcasting. These devices, which are in almost everyone’s pocket, are indispensable for providing the population with comprehensive information in the event of a disaster.

Ongoing broadcasting innovation requires a stable regulatory framework without changes to the current UHF-spectrum designation.

The UHF band is also indispensable for creative and content industries

PMSE applications are essential not only for broadcasters and other content producers but also for cultural, sporting, artistic, political, religious, educational, and civic society organizations. Some of these are significant economic sectors, and all are key components of society and people's social lives.

Wireless PMSE equipment allows operational flexibility at reduced production costs. This has resulted in a steadily increasing number of productions and their complexity and, as a consequence, an increasing spectrum demand especially at large events.

The UHF band remains indispensable for audio PMSE applications such as wireless microphones and other production audio communications. These applications generate significant economic, cultural, and social benefits for the European media, cultural and creative industries. At present, no alternative frequency band has been identified for these applications with equivalent favourable physical characteristics, capacity and predictable interference conditions.

While new systems such as 5G and DECT-2020 are being extensively studied in terms of their suitability for professional content production, it is clear that they will be complementary to the existing PMSE systems and not their replacement. This is particularly true for audio PMSE operating in the UHF band where current 5G-based solutions remain inferior to the existing conventional technologies in terms of both technical performance (e.g. ultra-low latency) and spectrum efficiency.

It is important to ensure that DTT and audio PMSE continue operating in the UHF band without additional constraints or further reduction of the available spectrum. The sub-700 MHz band is the only remaining spectrum for DTT. For PMSE audio services there is no alternative frequency band with similar physical characteristics.

Current regulation is flexible to enable innovation

Regulatory flexibility exists under current rules at both international and EU level, with the ITU GE06 Agreement and the EU UHF Decision.

The GE06 frequency Agreement gives administrations the rights to use certain frequencies over certain geographical areas for broadcasting services or other primary terrestrial services, without specifying exactly which technologies should be used, the so called 'envelope concept'. This flexibility has been used to facilitate the transition from DVB-T to DVB-T2 in Germany and may also be used for the implementation of 5G Broadcast or one of its successor technologies by some countries while neighbouring countries retain DVB systems. The Agreement also includes Declaration 42, co-signed by all EU countries, which allows the use of the envelope concept for other terrestrial services without the need to be a primary service in the band.

Similarly, Article 4 of the EU UHF Decision, while providing priority to broadcasting use of the UHF band, allows other use if compatible with national broadcast needs and if it doesn't create interference to other countries.

Co-primary allocation does not provide flexibility

A co-primary allocation of the UHF band is often claimed as a way to allow national regulators to decide how to use the UHF band in their own country and in accordance with the national

need for broadcasting and mobile services. But national flexibility between broadcasting and mobile services, both being primary users of the sub-700 MHz band, is not realistic.

IMT networks in the UHF band are not technically compatible with DTT and PMSE. The most critical case is the interference from DTT to the mobile uplink reception by the base stations; it requires large geographical separation distances that could go up to several hundreds of kilometers. This is confirmed by various studies[1] and real cases[2] of interference.

Individual countries are not free to choose how they use spectrum because they have to protect the services in the neighbouring countries from interferences. The consequence is that, given European geography and population distribution, each country's use of the UHF band has a significant effect on neighbouring countries. In the absence of large-scale coordination, the result of a co-primary allocation would be that in large areas of Europe, neither terrestrial broadcasting nor mobile services could be deployed in large parts of the sub-700 MHz band. A choice would need to be made for the whole of Europe as it was necessary in the 700 MHz and 800 MHz bands[3].

RSPG recommendation in the draft Opinion

ARD and Deutschlandradio welcome the RSPG recommendation to the European Commission to ensure that the decision of WRC-23 on the Agenda item 1.5 is compliant with the Decision (EU) 2017/899 providing priority to broadcasting and PMSE usage until at least end of 2030. We recall that this Decision is the result of a political compromise, by which the 700 MHz band could be harmonised in the EU to develop 5G, whilst DTT and PMSE could maintain their use of the sub-700 MHz band. We would like to emphasise that DTT and PMSE will need to retain access to the sub-700 MHz band well beyond 2030 in Germany.

We agree that this objective can be achieved by 'No Change' at WRC-23.

With regard to a possible agenda item for WRC-27 or WRC-31 ARD and Deutschlandradio are of the view that 2027 would be too early while 2031 might be an appropriate timeframe to review the technological and market developments in the UHF band.

However, we are concerned about the Note in section 4.3.3 in the draft RSPG Opinion, which states that the same objective could be achieved by a co-primary allocation which should become effective at a later stage (e.g. 31.12.2030). It is not appropriate to make an allocation in 2023 with an effective starting date far in the future, such as 2030, as suggested in the Draft RSPG Opinion. ARD and Deutschlandradio believe that a later review of technological and market developments relevant to future use of the UHF band will be necessary before taking any decisions regarding the allocation of the 470-694 MHz band.

Technical studies and the experience with the repurposing of 700 MHz and 800 MHz bands clearly show that sharing between DTT and PMSE on one side and wireless broadband communication systems such as 4G and 5G on the other side is not possible. Further repurposing of spectrum below 694 MHz for wireless broadband systems would eliminate the current economic and social benefits[4] of DTT and PMSE, as described above. Therefore, ARD and Deutschlandradio request RSPG to avoid recommending a co-primary allocation to the mobile service in the band 470-694 MHz at WRC-23 under agenda item 1.5.

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[1] See Report ITU-R BT.2337 "Sharing and compatibility studies between digital terrestrial television broadcasting and terrestrial mobile broadband applications, including IMT, in the frequency band 470-694/698 MHz".
[2] See Report ITU-R BT.2301 "National field reports on the introduction of IMT in the bands with co-primary allocation to the broadcasting and the mobile services".
[3] As noted in the draft RSPG Opinion on the WRC-23, the 700 MHz and 800 MHz band have already been repurposed for harmonised for provision of electronic communication services, leading to a substantial reduction of spectrum for PMSE.
[4] Besides, DTT on lower UHF spectrum is a green distribution delivery method. A recent study shows that DTT distribution consumes substantially less energy, when compared to IP-delivered methods, for the delivery of the same content to as many viewers.

ARD and Deutschlandradio hence propose to amend the current RSPG Opinion as follows:

> **Note: The RSPG is of the view that the above outlined recommendation is ensured by ~~various options. One can be~~ No Change at WRC-23, with a possible agenda item for ~~WRC-27 or~~ WRC-31. ~~Another one can be a co-primary allocation to the mobile service which should become effective at a later stage (e.g. 31.12.2030).~~ It is further noted that the EU Position on this agenda item should avoid ambiguity.**