EBU

OPERATING EUROVISION AND EURORADIO

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EBU response to

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

A. BACKGROUND

The European Broadcasting Union (EBU) is the world's leading alliance of public service media (PSM). It is a not-for-profit organisation that represents 112 member organizations in 56 countries and additional 31 Associates worldwide. PSM organizations are entrusted with providing a service of general interest, which consists in the provision of high-quality content and services that fulfil the cultural and democratic needs established at national level for the people of each EU Member State.

The EBU and its Members 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 those WRC-23 agenda items that relate to broadcasting services.

B. COMMENTS ON THE DRAFT RSPG OPINION

4.3 WRC-23 Agenda Item 1.5 (UHF Review)

Civil Society needs Broadcasters' Use of 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 citizens. The use of DTT is crucial to fulfil PSM obligations to reach all parts of the society – a duty that has been placed on PSM organisations by governments on behalf of their citizens. The band is shared with wireless production systems widely used by the creative industries, such as radio microphones and talkback systems (collectively referred to as PMSE), and with radioastronomy.

DTT in the UHF band remains critically important for the efficient delivery of linear services to very large audiences, for its near-universal reach, for its free-to-air focus, and for 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. DTT is funded by PSM and commercial TV providers, it is simple and free to receive - plugging in a TV set offers immediate access to a plethora of programmes. EBU research[1] shows that PSM (including radio and online services as well as TV) costs, on average, a little more than €3 per month per person in Europe; in many countries, PSM is supplemented by commercial free-to-air television, which is funded by advertising.

[1] EBU Research data available to all (requires the creation of an EBU login): https://www.ebu.ch/files/live/sites/ebu/files/Publications/MIS/login_only/infographic/EBU-MIS-Funding_of_PSM_2021_Infographic.pdf.

Platform of Choice

The primary TV receiver platform market share in the EU shows that DTT remains, alongside satellite networks, the preferred television platform (each platform taking 29% of market share); in contrast, IPTV consumption, while increasing, remains lower compared to DTT and satellite (20%)[2]. Furthermore, DTT serves a majority of secondary TV sets, thereby increasing the total reach of DTT.

Viewers still Choose Linear TV

Linear television viewing remains stable over the long term, at more than 3h30min per day, since 2003[3], making up more than 88% of total live TV viewing across Europe. Total time-shifted TV viewing has raised around 5 percentage points since 2016. Even amongst European youth (15-24 year olds), live consumption makes up 85% of TV viewing.

DTT is particularly accessed by the elderly and other vulnerable groups in society – those for whom use of the internet is not a daily habit and who are less likely to have home internet access.

DTT is the only TV platform that provides free-to-air access to TV services in all countries, ensuring that PSM programmes are available to everyone even in times of economic difficulties when paid-for services such as SVODs struggle to retain their subscribers.

Future Need for DTT

The recent data show a very small year-on-year decline in use of DTT. The EBU, therefore, believes that the viewer demand for DTT will continue in the medium term (10 years), and possibly even beyond. Therefore, DTT will remain critical to efficient delivery of PSM content in most, probably all, EU countries well into the 2030s, and possibly into the 2040s.

Resilience in Times of Crisis

At times of national or international crisis, or natural disaster DTT has proven to be a valuable and robust technology to convey information to the public. The underlying infrastructure guarantees one-to-many communications that is far-reaching, and is resilient to network congestion, power or Internet outages or jamming. Long-term access to dedicated spectrum ensures that DTT remains a reliable way to convey essential news and communication from local and national authorities.

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 civil society organizations. Some of these are significant economic sectors, and all are key components of society / people's social lives. Together they contribute hugely towards national cultural expression and identity.

Wireless PMSE equipment allows great operational flexibility with low 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

[2] Data from the European Audiovisual Observatory.
[3] EBU Research data available to all (requires the creation of an EBU login): https://www.ebu.ch/files/live/sites/ebu/files/Publications/MIS/login_only/audiences/EBU-MIS-TV_Audience_Trends_2022_Public.pdf.

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 professional live audio PMSE production 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[4].

The combined use of the UHF band by DTT and PMSE offers huge public value, and no viable alternative for creating and delivering content as efficiently have been identified. In particular, the very widespread public use of DTT is not something that can be shifted quickly or at low cost.

It is therefore critically important to ensure that DTT and audio PMSE continue operating in the UHF band without additional constraints or further reduction of the available spectrum. Sub-700 MHz is the only spectrum for DTT available in all countries and is used by over half the European population on primary and secondary sets. For PMSE audio services, there is no alternative frequency band with equivalent favourable physical characteristics, capacity, and predictable interference conditions.

DTT in the UHF band enables innovation

The DTT platform is evolving to more spectrum-efficient technologies: DVB-T2 combined with high-efficiency video coding standards allows the introduction of free-to-air HDTV and UHDTV services in the UHF band.

At home, HbbTV functionality built into TV receivers combines, linear content from broadcasting platforms with on-demand content provided via broadband platforms. DVB-I is an emerging broadcast technology that will provide a common service layer across broadcast and broadband networks to simplify the delivery of audiovisual content to different platforms.

A new technology has also been standardized as ETSI TS 103 720 'LTE-based 5G terrestrial broadcast system' - a new broadcasting system to be deployed in a Standalone downlink-only ("SDO") arrangement that uses some 5G-based technologies, but, unlike mobile broadband networks, standalone 5G Broadcast supports free-to-air and 'receive-only mode' services, thus allowing devices without a Mobile Network Operator (MNO) subscription to access content.

With standalone 5G Broadcast, PSM organizations will have an option to support media consumption on mobile devices (smartphones, tablets, cars) in full compliance with their public service remit. **Importantly, standalone 5G Broadcast can use the sub-700 MHz band alongside DTT and PMSE under the Geneva-06 Agreement[5] (GE06), and without changes to the current designation to the UHF band in the Radio Regulations. However, such ongoing innovation does require assurances of a stable regulatory framework, which an allocation to the mobile service casts doubt on.**

Current regulation is flexible to enable innovation

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

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[4] EBU Tech Report 056 '5G for professional media production and contribution'.

[5] Regional Agreement relating to the planning of the digital terrestrial broadcasting service in Region 1 (parts of Region 1 situated to the west of meridian 170° E and to the north of parallel 40° S, except the territory of Mongolia) and in the Islamic Republic of Iran, in the frequency bands 174-230 MHz and 470-862 MHz.

The GE06 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 many countries and could also be used for the implementation of 5G Broadcast standalone 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 band for other terrestrial services (within the envelope concept) without the need for those services to be primary in the band.

The main effect of the EU UHF Decision[6] (Articles 1-3,5) was to ensure availability, on a coordinated basis across the EU, of the 700 MHz band for mobile broadband. Article 4 guarantees access to the sub-700 MHz band for DTT and PMSE, according to national needs, until ***at least 2030***.

The EBU believes that any change of EU regulation of the band 470-694 MHz would require a prior agreement on a new EU policy framework for that band.

Co-primary allocation does not provide flexibility

A co-primary allocation of the UHF band is sometimes claimed to give national regulators flexibility to decide how the UHF band is used in their own country, in accordance with national needs for the broadcasting and mobile services. But national flexibility between broadcasting and mobile services, if both are primary services in the sub-700MHz 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 – studies[7,8] have shown that this case requires large geographical separation distances of up to several 100s of km. This is confirmed by real cases[9] 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 a large-scale, costly re-planning exercise, harmful interference between terrestrial broadcasting and mobile services would hinder deployments across large areas of Europe. Consequently, for a co-primary allocation the sub-700 MHz band to be meaningful a choice would need to be made for whole of the EU, with compromises having to be made around external borders (as indeed was necessary for both the 700 MHz and 800 MHz bands[10]). This analysis is supported by the UHF Decision of 2017 which, as set out above, was concerned primarily about harmonising the release of the 700 MHz band to avoid interference, accepting that such interference was inevitable to some degree on external borders.

Mobile Use of UHF

Since 2012, the 800 MHz band has been available for mobile broadband across the EU and has been widely implemented with 4G/LTE systems. Since 2020, the 700 MHz band has been made available and is expected to be implemented with 5G systems. In addition, the 900 MHz band is now expected to migrate from legacy 2G use to 5G use over the next decade. In

[6] Decision (EU) 2017/899 of the European Parliament and of the Council of 17 May 2017 on the use of the 470-790 MHz frequency band in the Union.

[7] 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".

[8] Sharing studies submitted to ITU-R Task Group 6-1 have confirmed earlier findings.

[9] 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".

[10] 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 / mobile networks, leading to a substantial reduction of spectrum for DTT and PMSE.

summary, this amounts to a tripling of mobile capacity of the sub-1 GHz bands from 2020 to 2030. No evidence has been produced showing that further capacity increases are needed.

Indeed, the current deficiencies in mobile coverage of rural areas are not due to the lack of spectrum but rather due to insufficient network infrastructure. This issue cannot be resolved with additional UHF spectrum, but only by further extensions of mobile network infrastructure. Where mobile network capacity does need to be increased, this can better be achieved by network densification including using the higher frequency bands that are much better suited for this purpose and that are already available[11] for mobile services.

We note that the European Commission DESI 2021 report shows that "the total EU harmonised radio spectrum for terrestrial services capable of providing wireless broadband electronic communication services amounts to 4340 MHz"[12].

RSPG recommendation in the draft Opinion

The EBU welcomes 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 2030. We recall that this Decision is the result of a political compromise, by which the 700MHz band could be harmonised in the EU to develop 5G, whilst DTT and PMSE could maintain their use of the sub-700MHz band until at least 2030. We would now emphasise (as explained above) that market development since 2017 are such that DTT and PMSE will need to retain access to the sub-700 MHz band well beyond 2030 in most European countries.

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

With regard to a possible agenda item to reconsider this matter at either WRC-27 or WRC-31, the EBU is of the view that given the slow pace of market development for DTT (see sections on use of DTT above), 2027 would be too early to make an informed decision. On the other hand, 2031 might be a more 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). Given that the DTT market is only changing slowly, it would not be appropriate to make an allocation in 2023 with an effective starting date far in the future, such as 2030. The EBU believes 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.

Taking into account that technical studies and the experience with the repurposing of the 700 MHz and 800 MHz bands clearly show that sharing between DTT and PMSE and wireless broadband communication systems such as 4G and 5G is not possible, any further repurposing of spectrum below 694 MHz for wireless broadband systems would eliminate the current economic and social benefits (including for the environment)[13] of DTT and PMSE.

Therefore, the EBU requests the RSPG not to recommend a co-primary allocation to the mobile service in the band 470-694 MHz at WRC-23 under agenda item 1.5.

The EBU therefore proposes to amend the note in 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**

[11] See DESI 2021, page 43.
[12] See European Commission Digital Economy and Society Index (DESI) 2021, page 42.
[13] DTT in the 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.

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.

4.2 WRC-23 Agenda Item 1.3 (MS 3 600-3 800 MHz)

EBU notes that this agenda item seeks to identify further “mid band” spectrum for the mobile service, presumably for IMT.

The band 3 600 - 3 800 MHz in Region 1 was originally used for C-Band satellite downlink channels. However, in parts of Region 1, this band is no longer available for broadcasters’ distribution and contribution or is being withdrawn from such use as they have been instead allocated to the mobile services for use by IMT applications. There is no suitable alternative satellite spectrum available to replace any further loss of C-Band spectrum, particularly in areas subject to high rainfall rates.

The EBU position is that broadcasters’ use of 3600 - 3800 MHz and adjacent bands in the remaining parts of Region 1 should be protected.

RSPG Recommendation

The EBU notes the RSPG recommendation that the European Commission proposes an EU position to the Council to update the allocation of the 3 600-3 800 MHz frequency band to a primary mobile allocation within Region 1. We are of the view that a primary mobile allocation in this band must be associated with technical conditions suitable to ensure protection of existing services in the 3 600-3 800 MHz. This can be achieved by applying the conditions that are currently in force in Europe across the rest of Region 1.

The EBU notes that protection of services in the adjacent bands, in particular in the 3 800 MHz-4 200 MHz, is not considered in the RSPG recommendation and encourages the RSPG to include it in its recommendation.