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Reply of ARD and Deutschlandradio to

Draft Radio Spectrum Policy Group (RSPG) Opinion on Strategy on the future use of the frequency band 470-694 MHz beyond 2030 in the EU

ARD¹ and Deutschlandradio thank the RSPG for the opportunity to comment on the draft RSPG Opinion “Strategy on the future use of the frequency band 470-694 MHz beyond 2030 in the EU”.

ARD and Deutschlandradio produce and distribute media content every day for millions of viewers and listeners thereby creating public value for society. One important means for this is the use of radio spectrum especially in the lower UHF-Band. The use of this spectrum for wireless media production as well as for content distribution creates social and cultural values and is essential for social cohesion, fostering cultural and linguistic diversity as well as supporting media freedom and pluralism in Europe.

Already the Radio Spectrum Decision of 2002² recognizes that “Radio spectrum policy in the Community should contribute to freedom of expression, including freedom of opinion and freedom to receive and disseminate information and ideas, irrespective of borders, as well as freedom and plurality of the media.” (Recital 3). These principles and aims are continuously reiterated e.g. in the European Electronic Communication Codes (especially in article 4, 45 and 48). The specific role audio-visual media play for society is also the basis of the Audiovisual Media Services Directive. In addition, the European Commission in September 2022 proposed an European Media Freedom Act thereby taking great effort to protect and promote Media freedom and pluralism in the EU as it recognizes the essential importance of the media for a functioning democracy and the rule of law. Thus, any development in the field of spectrum policy has to take into account the role of media for society, including its production and its means of distribution.

In that light, we would like to recall that the UHF band 470-694 MHz is the core band for PMSE (Programme Making and Special Events). This is why ARD and Deutschlandradio heavily use

¹ ARD: Arbeitsgemeinschaft der öffentlich-rechtlichen Rundfunkanstalten in Deutschland

² Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision)

these frequencies to produce media content as there is no suitable replacement. Modern media production, be it sports, interviews or music events can only be done by using wireless microphones, IEMs (In-Ear Monitors) etc. Any further reduction of the available UHF spectrum would harm the production of large and mid-size media events.

Additionally, there are millions of households whose main means of TV reception is DTT (Digital Terrestrial Television). We provide DTT on a free-to-air basis, through resilient networks that even withstand crisis and disaster conditions. In the future, there is the possibility to use 5G Broadcast. 5G Broadcast addresses mobile devices we all carry in our pockets, like smartphones and tablets. As a Public Service Broadcaster, we follow closely the change of viewing habits. This could potentially be addressed by deploying self-operated 5G broadcast networks to reach growing mobile audiences. For this purpose, own licenses of UHF spectrum for Public Service Media are indispensable. **Therefore, we strongly urge to keep the whole of the remaining UHF spectrum for culture and broadcasting beyond 2030.**

ARD and Deutschlandradio welcome the balanced wording of the draft RSPG opinion on the future use of the frequency band beyond 2030 considering the relevance of DTT and PMSE. We agree that the three scenarios described in the draft are the ones realistic and meaningful. In particular, we appreciate the description of “Scenario 1: Prevalent broadcasting” as this reflects the prevailing situation of the current and most likely future use of the band in the EU. ARD invested heavily in the existing DTT networks to provide a nationwide coverage which are also very resilient to cyber-attacks. Nevertheless, we would like to add the following comments:

Chapter 3.1 “Article 4 of Decision (EU) 2017/899 – main points” correctly describes the so called “envelope concept” established in the GE06 agreement. As the draft rightly points out Article 4 of the UHF-Decision already gives a lot of flexibility. At the same time, it is however important to note that up to today no mobile network operator applied for such a kind of flexibility.

In chapter 3.3.2 “5G Broadcast” the opinion states “*that 5G Broadcast is an application of the Broadcast Service*”. It is important to note that it can be deployed as a standalone network, using broadcast network infrastructure, including HPHT stations. The broadcast channel bandwidths 6, 7 and 8 MHz have already been standardized in Rel-17. In 3GPP RAN4 there is an active work item which aims at making available the band 470 – 694/698 MHz for 5G Broadcast. The finalization of this work is currently foreseen for September 2023.

Next, the draft states: “*an interleaved spectrum usage of DTT roof-top reception and 5G Broadcast would generate interference from 5G Broadcast to DTT fixed reception*”. This is not correct. 5G Broadcast trials have shown that there is no issue sharing the spectrum between DTT and 5G Broadcast. For example, the Media2Go trial in the Stuttgart area was using HPHT stations and a few small mobile base station sites. The internationally coordinated TV Channel 40 was used. No issues whatsoever with other DVB-T2 deployments have been reported. Another example is the 5G Broadcast trial of NDR. In Hamburg there is a DVB-T2 signal in channel 33 while simultaneously a 5G Broadcast signal in the adjacent channel 34 is transmitted. No interferences were detected.

It is important to understand that DVB-T2 and 5G Broadcast address different use cases. Even though DVB-T2 also includes configurations which target portable and mobile coverage, DVB-T2 is often used for stationary reception for dedicated broadcast receivers. In contrast, 5G Broadcast as part of the 3GPP family of standards targets 3GPP devices, primarily smartphones and tablets but also in-car infotainment systems for portable and mobile reception. To reach mobile TV receivers by DVB-T2 either dedicated receivers or auxiliary receiver equipment is needed. In-car infotainment systems have to be integrated separately into the car. But smartphones and tablets cannot be reached directly by DVB-T2 as there is

no corresponding receiver integrated in 3GPP devices. It is very unlikely that inclusion of DVB-T2 receivers will ever happen.

Furthermore, in case of a split of the UHF spectrum, e.g. the use of the 600 MHz band for mobile networks, would be foreseen this would inevitably lead to significant interferences from mobile base stations to DTT reception due to overloading. As of today, millions of existing DTT receivers are in use in private households. These receivers are “open” for DTT reception in the whole band 470 – 694 MHz. In case of alternative UHF usages like mobile networks, thousands of 4G/5G base stations in close vicinity of populated areas would cause severe DTT interferences in an area around these base stations of a diameter of several hundred meters, the so called “hole punching” effect. In Germany, the DTT networks are designed for mobile and portable reception. The mobile/portable receivers cannot be retrofitted with additional filters. This fact would essentially prevent any further DTT operation as it would require the replacement of all existing DTT receivers.

In chapter 3.3.3 the RSPG opinion states that a use of the 600 MHz band for mobile “*means a reduction of the spectrum available to DTT and PMSE by 80 MHz which equals to 10 TV channels*”. Though this is technically correct, it could cause the impression that only 10 TV programmes are lost. ARD investigated this very scenario with the result that there is a disproportionate loss of spectrum for broadcast due to the nature of the GE06 agreement. GE06 provides equal access to spectrum but not with consecutive 8 MHz-channels. Therefore, the loss of 10 x 8 MHz consecutive channels in the 600 MHz band would lead to regional asymmetries with the result that in particular in boarder areas an above average amount of spectrum would be lost for broadcast. In Germany this would mean the loss of three, in some areas even four out of six DTT multiplexes. Each multiplex is in Germany equivalent to up to 7 TV programmes. In other words, in accordance with the draft RSPG opinion in some areas two thirds of all programmes, i.e. at least around 20 TV programmes would be lost. The introduction of 5G Broadcast would not be possible. Additionally, the capacity for PMSE would be reduced by around 50%.

In chapter 4.3.1 regarding “Scenario 3: Broadcasting limited, Mobile (Full FDD band plan)” the RSPG opinion states that a limited broadcasting usage would give the opportunity to introduce mobile broadband by implementation of the 600 MHz band plan and “*this would also mean that the national solutions for the PMSE usage in this band may be in place, though less spectrum will be available*”.

It is important to note that even a decline in broadcasting usage still requires, at least, the current amount of pan-European available UHF spectrum for PMSE. The need for wireless PMSE applications is constantly rising due to the use of more wireless devices and increased quality requirements. De-harmonised national PMSE spectrum solutions would be prohibitive for cross-border cultural media productions. To be as reliable as possible, media production companies bring their own wireless PMSE equipment across European borders. This is indispensable as culture and media production is accountable for one of the largest industrial sectors in Europe. Therefore, we strongly recommend keeping the existing Europe-wide UHF spectrum solution, also to avoid another blow to culture after the Corona pandemic.

Furthermore the draft states that “*access to linear audio-video content could in most cases take place via means other than DTT.*” In Germany DTT is designed for mobile and portable reception. Neither fixed broadband, satellite, FWA (Fixed Wireless Access), Multichannel Multipoint Distribution Service (MMDS) nor cable TV are suitable for this use case. The only potentially viable solution could be 5G Broadcast bearing in mind that these networks would be operated by traditional broadcasters still requiring access to the UHF spectrum as today.

Regarding “*changing patterns of media viewing/consumption*” we would like to draw the attention to the significantly rising mobile usage of DVB-T2 in Germany. Since 2019 there is a continued 30% increase of mobile linear TV usage of now 5.7 million German households³.

In chapter 5.1 “Recommendations” the RSPG encourages Member States to “*explore circumstances, in partnership with neighbouring countries, of flexibility near their shared border*” even before 2030. ARD and Deutschlandradio would like to recall that the current European legislation protects DTT and PMSE usages unrestrictedly across Europe until 2030. Any premature weakening of existing law is unduly threatening DTT and media production. The mentioned shared borders are those regions already suffering spectrum scarcity for DTT and PMSE. In some western German cities, e.g. in the border triangle of Belgium, the Netherlands and Germany, the spectrum situation is already exceedingly difficult for broadcasting and media production.

Recommendation 5 recognises the need for several other mobile usages other than Wireless Broadband Electronic Communication Services (i.e. PPDR, defence) and PMSE and recommends that in case of decreasing needs for broadcasting at national level, spectrum should also be made available nationally for these use cases. ARD and Deutschlandradio would like to point out that any compulsory, automatic mechanism to re-assign spectrum, solely targeting and applied to broadcasting, is not acceptable. Current and future PMSE use does not allow for a further spectrum reduction. At the same time the demand for the above mentioned other mobile usages could be met in other frequency bands. Mobile future technologies with a high demand for data throughput like 6G require anyway higher frequencies than the TV-UHF band.

Recommendation 8 urges Member States “wishing to continue to use sub-700 MHz band primarily for broadcasting, strive to implement most efficient technologies (such as T2/HEVC)”. ARD and Deutschlandradio fully support this view, noting that we already implemented the utmost efficient DTT technologies like DVB-T2 in conjunction with HEVC. In contrast, we miss similar requirements for mobile network operators which are asking for additional spectrum in the sub-700 MHz band and are still operating less efficient 2G and 3G networks. All services using spectrum should be measured by the same standard when it comes to the use of the most efficient technology. The temporarily prolonged use of 2G/3G networks to cater for important legacy services like eCall is without doubt necessary. On the other hand, some Member States prepare the phasing out of all 2G/3G networks. ARD and Deutschlandradio advocate for a modernization of mobile networks replacing 2G/3G by 4G/5G to lower the pressure on the UHF band for broadcasting. Critical legacy services could be maintained by keeping a “night light solution”, i.e. operating a single legacy 2G network with reduced capacity.

Finally, we would like to provide additional information on Annex III “5G Broadcast Trials” on the test deployment of “5G Media2Go” at ARD/SWR in Germany:

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5. Germany

Between October 2020 and December 2022, a cross-industry consortium consisting of public service media, car manufacturers, telecom operator, network infrastructure providers and universities carried out a comprehensive 5G Broadcast project, called 5G Media2Go, in the wider Stuttgart area with the following objectives:

- Verification of 5G Broadcast as a system being capable of delivering linear media services to in-car infotainment systems.

³ https://www.media-broadcast.com/wp-content/uploads/2022/11/20221107_PM_Digibericht-Video-2022-Kantar.pdf

- Deployment of a 5G broadcast network in the wider Stuttgart area consisting of two high-power-high-tower transmitters (HPHT) and a set of low-power-low-tower stations (LPLT).
- Integration of different media services in the infotainment system of a car, i.e. linear TV, ARD Mediathek and georeferenced recommendations.
- Execution of measurement campaigns to assess quality of service and coverage of the 5G Broadcast transmissions.

To this end, a 5G Broadcast network was deployed consisting of two HPHT stations operating at 73 and 20 kW, respectively, and up to four smaller stations with ERPs in the range of 200 W-1 kW. The coverage was provided to a large extent by the two HPHT stations. The TV channel 40 was used. As this frequency was fully coordinated upfront, no interference issues were reported.

Prototype smartphones could be used to receive and display 5G Broadcast signals showing satisfying performance within the expected range. Moreover, emergency alert notifications over 5G Broadcast were implemented on the occasion of the so-called German “Warntag” where all emergency systems in Germany were tested.

In summary, the following major conclusions can be drawn from the investigations carried out in 5G Media2Go:

- 5G Broadcast is capable to deliver linear TV and radio services to smartphones and infotainment systems in vehicles.
- 5G Broadcast supports delivering linear services at high speeds of up to 180 km/h.
- 5G Broadcast can be configured to distribute different data stream formats, e.g. MPEG Transport Stream and MPEG Dash.
- 5G Broadcast supports network operation in single frequency mode including both HPHT and LPLT transmitters.
- The integration of 5G Broadcast transmissions alongside with unicast communication on infotainment systems of vehicles to grant access to nonlinear services is straightforward. This allows to offer hybrid services which combine linear and nonlinear elements.
- A particular spin-off of the project is the Travelguide application. The relevance of georeferenced recommendations will increase as mobile media consumption will grow.

More information is provided at: <https://www.5g-mag.com/trials>

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