European Utilities Telecoms Council

Response to the Public Debate on future use of the radio frequencies in the 450 MHz band.

November 2020

ÚRAD PRE REGULÁCIU ELEKTRONICKÝCH KOMUNIKÁCIÍ A POŠTOVÝCH SLUŽIEB

VEREJNÁ DISKUSIA

o budúcom využívaní frekvencií z frekvenčného pásma 450 MHz

Európska rada pre telekomunikačné služby (EUTC) sa ospravedlňuje za nedodržanie termínu stanoveného pre príspevky do verejnej diskusie o navrhovanom budúcom využití frekvenčného pásma 450 MHz. EUTC si uvedomuje, že o budúcom využití pásma sa neprijali nijaké konečné rozhodnutia. V tejto situácii chce EUTC predložiť príspevok v nádeji, že pomôže vnútroštátnej správe a regulačnému orgánu elektronických komunikácií pri prijímaní rozhodnutí o budúcom využívaní tohto spektra, najmä v kontexte plnenia kritických telekomunikačných potrieb EÚ. inžinierske siete. EUTC s potešením poskytne ďalšie informácie, ak o to požiadajú slovenské orgány.

EUTC zdôrazňuje, že súkromné širokopásmové rádiové technológie slúžia na uľahčenie vývoja tradičných sietí smerom k inteligentnej sieti. Ako je uvedené v technickej správe ETSI TR 103 401, služby Smart Grid sa musia spoliehať na súkromnú, spoľahlivú, nadbytočnú, škálovateľnú a vysoko výkonnú telekomunikačnú sieť. Súkromné širokopásmové rádiové technológie, ako napríklad LTE, sú kľúčom k dosiahnutiu tejto výzvy, ktorá nevyhnutne súvisí s potrebou širokopásmového spektra vyhradeného výlučne pre verejné služby. Ako sa uvádza v správe ETSI ETSI TR103 492, pre služby a aplikácie inteligentnej siete sa vyžaduje minimálna šírka pásma 2 x 3 MHz vo frekvenčných pásmach pod 1 GHz, hoci pridelenie 2 x 5 MHz by zabezpečilo, že budúce výzvy možno splniť v rámci 400 MHz pásmo bez jeho doplnenia blokmi spektra vo vyšších frekvenčných pásmach.

EUTC sa už dlho zasadzuje za pridelenie frekvenčného spektra najmenej 2 x 3 MHz vo frekvenčnom rozsahu 400 MHz pre potreby energetických spoločností, najmä s cieľom zabezpečiť bezpečnú a spoľahlivú digitalizáciu inteligentných sietí v Európe. Minimálne 2 x 3 MHz spektrum v oblasti 400 MHz požadované pre prevádzku inteligentných pásov je iba 0,5% z 1 200 MHz spektra, ktoré bolo určené pre širokopásmové rádiové služby v programe politiky rádiového frekvenčného spektra EÚ z roku 2012.

Zvyšok príspevku je v angličtine, ale EUTC na požiadanie získa preklad.

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Background

The European Utilities Telecoms Council (EUTC) apologies for missing the deadline for contributions to the Public Debate on the proposed future use of the frequency band 450 MHz. EUTC understands that no final decisions have been made on the future use of the band. In this situation, EUTC wishes to submit a contribution in the hope that it will be of help to the national administration and electronic communications regulator in reaching decisions for the future use of this spectrum, especially in the context of meeting the critical telecommunications needs of the utilities. EUTC would be pleased to provide additional information if requested by the Slovak authorities.

EUTC highlights that private broadband radio technologies are instrumental in facilitating the evolution of traditional grids towards the Smart Grid. As pointed out in ETSI Technical Report TR 103 401[1], Smart Grid services need to rely on a private, reliable, redundant, scalable and high-performance telecommunications network. Private broadband radio technologies such as LTE are key to achieving this challenge which necessarily comes along with the need of broadband spectrum exclusively allocated to utilities. As identified in the ETSI report ETSI TR103 492[2], a minimum 2x3 MHz bandwidth in frequency bands below 1 GHz is required for smart grid services and applications, although an allocation of 2 x 5 MHz would ensure that future challenges can be met within the 400 MHz band without supplementing it with blocks of spectrum in higher frequency bands.

EUTC has long advocated the allocation of at least 2x3 MHz spectrum in the 400MHz frequency range for the requirements of the energy utilities, in particular to ensure secure and reliable digitization of smart grids in Europe. The minimum 2 x 3 MHz of spectrum in the 400 MHz region required for smart gird operations is only 0.5% of the 1200 MHz of spectrum which was identified for broadband radio services in the 2012 EU Radio Spectrum Policy Programme[3].

Over the last few years we have seen many spectrum allocations use case for critical infrastructures in the 400MHz frequency band, notably in Austria, Denmark, Ireland, Netherlands, Poland and Germany. Concentrating utility application in a common spectrum range across Europe will encourage, among other things:

- Development of higher volumes of standardised devices to reduce costs to energy consumers;
- Encourage the use of European standards to encourage long productions runs, long term availability of spare parts and avoid ‘vendor lock-in’; and
- Co-ordination of spectrum allocations in multiple European countries to enable utility services to be delivered efficiently in border regions.

[1] https://www.etsi.org/deliver/etsi_tr/103400_103499/103401/01.01.01_60/tr_103401v010101p.pdf
[2] https://www.etsi.org/deliver/etsi_tr/103400_103499/103492/01.01.01_60/tr_103492v010101p.pdf
[3] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32012D0243

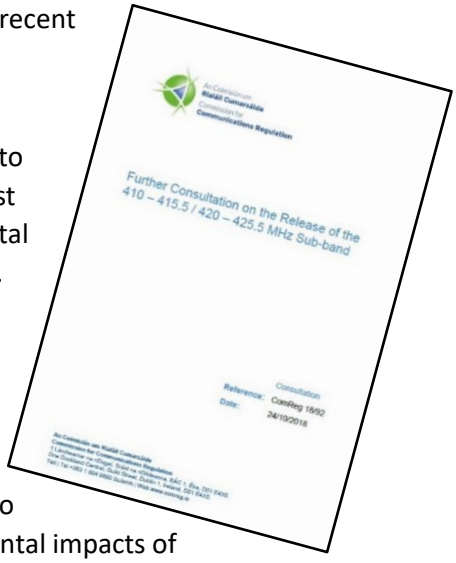
Climate Change

EUTC is of the opinion that allocation of radio spectrum can make a positive contribution to combatting Climate Change as outlined in the EU "Radio Spectrum Policy Group's work programme for 2020 and beyond"[4].

The UN Climate Action Summit in New York on 23 September 2019 declared that "Climate change is the defining issue of our time and now is the defining moment to do something about it. There is still time to tackle climate change, but it will require an unprecedented effort from all sectors of society." [Diagram below]. Energy production and use, including the energy used in transport, account for some 80% of the EU's greenhouse gas emissions. Thus, to tackle climate change effectively, Europe will have to largely 'decarbonise' its energy systems by moving away from fossil fuels.

Because of the unique propagation characteristics of spectrum in the 400 MHz region, allocating spectrum in this band for use by utility 'smart grids' will help Germany to manage the challenges of grid development in the 21st century in accordance with European Commission initiatives encouraging the use of Smart Grids in order to deliver more efficient energy generation and consumption as required under the EU Electricity Directive, and fulfil the ambitions set out by the Commission President Ursula von der Leyen in her ambitious European Green Deal Initiative.

Furthermore we would like to highlight a few of the conclusions of a recent Irish Government report on allocation of spectrum in the 400MHz frequency band for utility applications[5]:



- Smart Grids are a key component of government efforts to meet demand for increased energy requirements in a cost effective and secure way while reducing the environmental impact of consumption and associated carbon emissions. Different functions of the Smart Grid could provide substantial reductions in energy use and carbon emissions by using new technology and making renewable energy and efficiency programs more affordable and potentially more accessible.
- In particular, greater integration of renewable energy into electricity and gas grids is key to lowering the environmental impacts of generation and meeting climate change targets.

[4] https://rspg-spectrum.eu/wp-content/uploads/2019/10/RSPG19-029final-RSPG_work_programme_20_and_beyond.pdf
[5] https://www.comreg.ie/publication/further-consultation-on-the-release-of-the-410-415-5-420-425-5-mhz-sub-band/

- The International Telecommunication Union (ITU) has outlined how Smart Grids can help to mitigate climate change by building more controllable and efficient energy systems;
- The United Nations (UN) has outlined that the demands of climate change requires the development of a Smart Grid which is founded upon communications networks that can deliver centralised real time monitoring and control, eventually across the entire power distribution domain.

- A number of seminal international and national studies have estimated the potential carbon reductions arising from the use of Smart Grids:
  - the Electrical Power Research Institute (EPRI) has estimated that Smart Grid enabled electrical distribution could reduce electrical energy consumption by 5% to 10% and carbon dioxide emissions by 13% to 25%;
  - a smart electrical power grid could decrease annual electric energy use and utility sector carbon emissions by at least 12% by 2030; and
  - the Sustainable Energy Authority of Ireland estimates that by 2050, Smart Grids will see an accumulated reduction in energy related CO2 emissions of 250 million tonnes.
- At a European Level, the European Commission has been encouraging the use of Smart Grids in order to encourage more efficient energy generation and consumption. For example, under the Electricity Directive
  - *"Member States should encourage the modernisation of distribution networks, such as through the introduction of **smart grids**, which should be built in such a way that encourages decentralised generation and energy efficiency.*
  - *"In order to promote energy efficiency, Member States or, where a Member State has so provided, the regulatory authority shall strongly recommend that electricity undertakings optimise the use of electricity, for example by providing energy management services, developing innovative pricing formulas, or introducing intelligent metering systems or **smart grids**, where appropriate.*
- The European Commission has an existing policy framework for climate and energy from 2020 to 2030 which proposes new targets and measures to make the EU's economy and energy system more competitive, secure and sustainable. It includes targets for reducing greenhouse gas emissions and increasing use of renewable energies noting that *"the EU and Member States will need to develop further their policy frameworks to facilitate the transformation of energy infrastructure with more cross-border interconnections, storage potential and smart grids to manage demand to ensure a secure energy supply in a system with higher shares of variable renewable energy".*

Illustrative examples of dedicated allocation of spectrum to critical industries from EU Member States

Germany

On 16th November 2020, the German Federal Network Agency BNetzA published its decision to provide the 450 MHz frequency for applications of the critical infrastructures and opened the award procedure.[6]

BNetzA said that the provision of the 450 MHz spectrum for critical infrastructures will help to pave the way for the digitalization of the energy transition. BNetzA noted that this spectrum band is particularly suitable for building a highly available and blackout-resilient nationwide wireless network for sectors such as electricity, gas, water and district heating.

In addition, BNetzA observed that the operators of critical infrastructures have not yet had any alternative broadband frequencies or exclusive frequency ranges available. The provision of the frequencies can therefore make a significant contribution to the energy transition.

The award rules foresee that one assignment holder should build and operate the 450 MHz network for critical infrastructure operators. Interested companies were given until 18 December 2020 to submit their applications. The successful applicant has to pay a fee of around 113 million euros for the duration of the assignment (20 years). The regulator plans to allocate the whole available spectrum (2 x 4.74 MHz) in the 450 MHz band to the selected party to enable deployment of the newest technologies in the spectrum.

Poland

In Poland, on August 8, 2018, the then Ministry of Energy announced that PGE Systems, part of the Polish electricity distribution sector had received an allocation of spectrum in the 450MHz frequency band to provide services to the entire Energy sector. The conditions for the allocation included:

- Communication for both energy transmission and distribution operators;
- At least 72 hours of guaranteed operation in the event of a blackout to ensure resilience of the communication system;
- Communication for coal/cooper mines, heat production and distribution, oil & gas industry;
- Data transmission for the purposes of automatic control, smart meters (AMI) at consumers, balancing stations (network security); data transmission for operational control, demand side management and software upgrades;
- Internet of Things (IOT) in devices connected to the power grid - ensuring resilience against cyberthreats, including attacks that would result in a network disaster; and
- Broadband data transmission, enabling video transmission, transfer of photos, maps, documentation.

[6] www.Bundesnetzagentur.de/450MHz

Subsequently, Polska Grupa Energetyczna (PGE), the Polish Electricity Distribution Company announced in October 2020 that LTE450 network rollout and operations will be one of the key elements of its new strategic program until 2030.[7]

The LTE450 communication system being built will ensure the reliability of dispatcher work, but above all, it will support the integration of renewable energy sources as well as distributed energy and energy storage.

Spain

In July 2020, the Spanish administration reserved 10 MHz of spectrum in 3GPP Band 40. The 2370-2380 MHz frequency range is now reserved for networks for the exclusive use of the broadband land mobile service, preferably for the management of public service networks for the distribution of electricity, gas or water (UN50 in Spanish Regulations). The spectrum has previously been used for fixed links.

The spectrum must be shared amongst all utilities, but this is not foreseen as a problem because utility distribution companies operate in separate geographic areas, and distribution companies frequently support their related transmission companies with telecommunications facilities or visa-versa. It is considered that LTE is a particularly suitable technology if the spectrum must be shared amongst several utilities.

Ireland

In the Republic of Ireland, spectrum in the 400 MHz band has recently been awarded to facilitate telecommunications in support of SMART utility networks. The Irish National Development Plan 2018—2027 'Project Ireland 2040'[8] declared "The national objective of transitioning by 2050 to a competitive, low-carbon, climate-resilient and environmentally sustainable economy and society must influence public capital investment choices over the next ten years.". The report identified that "In addition to the public investment measures … a range of major commercial state sector energy projects will be undertaken over the period of the plan. State owned enterprises are expected to invest in excess of €13 billion in energy related investments, with a particular focus on investment in regulated energy network infrastructure to provide smart reliable electricity networks to support security of electricity supply, SMART metering and enable increased renewable generation.".

The allocation of radio spectrum to utilities is a practical commitment by the Irish Government to facilitate the achievement of these policy goals through the application of advanced telecommunications to the energy network.

The Government's National Development Plan complemented the Commission for Communications Regulation Consultation on the Release of the 410 – 415.5 / 420 – 425.5 MHz Sub-band (ComReg 18/92) published on 24 October 2018.[9]

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[7] https://www.wirtualnemedia.pl/artykul/pge-zapowiada-przyspieszenie-prac-nad-budowa-sieci-lacznosci-lte-450

[8] https://assets.gov.ie/19240/62af938dce404ed68380e268d7e9a5bb.pdf

[9] https://www.comreg.ie/publication/further-consultation-on-the-release-of-the-410-415-5-420-425-5-mhz-sub-band/

UK

UK Ofcom is undertaking a project to assess utilities' requirements for telecommunications and radio spectrum. Phase 1 of their project which involved an assessment of demand for utility spectrum was completed in July 2020. Phase 2 of the project, scheduled to last for 12 months will examine policy options, including fixed and mobile communications, public and private spectrum options. The final Phase 3 will then draw conclusions.

In parallel, the UK Energy Regulator OFGEM is conducting a regulatory price review for the period 2023-2028.[10] In their guidance, they have indicated the importance of making adequate investment available for telecommunications and highlight the role which access to spectrum will pay in the future. The specific reference in contained in paragraph 8.145:

> "For telecommunications resilience, we believe that it is appropriate to monitor the ongoing developments in relation to the replacement of the public switched telephone network and the need for utility companies to have a proportion of the radio spectrum allocated for their use."

Socio-economic considerations in allocation spectrum to utilities.

As highlighted above, if utilities do not have access to suitable and sufficient spectrum to address their needs, the pace of migration to a zero-net carbon future will be impeded.

Other solutions are available to utilities – commercial networks, wired telecoms (usually optical fibre) and simply investing in larger utility infrastructure systems – 'putting more copper in the ground'. These options have social and economic consequences in that the pace of recusing carbon emissions will be slower, at greater cost to consumers – often generating 'fuel poverty' in the less wealthy elements of society, and less resilient infrastructures as highlighted in EUTC reports on the socio-economic benefit of spectrum allocated to utilities for operational systems.[11] [12]

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[10] https://www.ofgem.gov.uk/system/files/docs/2020/12/riio_ed2_ssmd_annex_1_delivering_value_for_money_services_for_customers.pdf

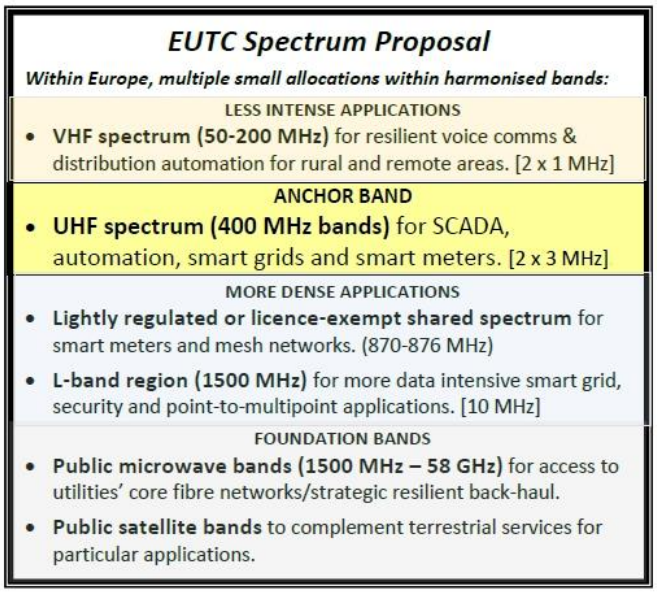
[11] https://eutc.org/wp-content/uploads/2018/08/Socio-economic-value-of-Spectrum-used-by-utilities-v1.1.pdf

[12] https://www.jrc.co.uk/Plugin/Publications/assets/pdf/ICT-The-Socio-economic-value-of-spectrum.pdf

The European Utilities Telecom Council (EUTC)

EUTC is the leading European Utilities trade association dedicated to informing its members and influencing policies on how telecommunication solutions and associated challenges can support the future smart infrastructures and the related policy objectives through the use of innovative technologies, processes, business insights and professional people.

This is combined with sharing best practices and learning from across the EUTC and the UTC global organization of telecommunication professionals within the field of utilities and other critical infrastructure environments and associated stakeholders.



If utilities are to construct their own private radio networks, it will be essential for them to be guaranteed access to a small amount of dedicated radio spectrum for their operations. THE EUTC Spectrum Proposal is summarised in the table (left). A minimum of 2 x 3 MHz of spectrum in the 400 MHz region is currently being sought by many utilities around Europe to service their operational requirements.

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