



European Utilities Telecoms Council

Response to the Draft RSPG Opinion on Spectrum Sharing – Pioneer initiatives and bands

March 2021

Introduction

The European Utilities Telecom Council (EUTC) represents the telecommunications and information technology interests of Europe's electric, gas and water utilities and other critical infrastructure organisations. These organisations are relying on telecommunication networks and services to provide the most secure, reliable and cost effective energy supply in Europe.

EUTC welcomes the opportunity to comment on the RSPG Draft Opinion and expresses the views of one of the 'vertical' sectors as described in the 5G world.

Summary

EUTC understands that in a world where access to spectrum is limited and constrained in some areas, sharing is an obvious mechanism to allow greater access to a finite resource. However, for utility applications operating 24/7/365, there is little opportunity for sharing and where latency requirements may be as demanding as 6ms end-to-end latency, medium access control (mac) for shared access may not be viable.

On the positive side, critical operational applications in utilities only require access to small amounts of spectrum, hence do not invalidate the arguments proposed in the Draft Opinion in the vast majority of cases.



At 16:52 hrs on 9th August 2019, a lightning strike on an electricity pylon triggered a series of events which resulted in over a million customers losing power and causing severe disruption to critical services including trains, an airport and a major hospital.

The incident occurred in spite of the tele-protection system disconnecting the affected transmission line in 70 ms and automatically restoring the circuit 20 seconds later.

Section 1.2 “Strengthening trust and confidence”

EUTC firmly endorses the statements in paragraph 12:

“Spectrum sharing should not be considered the answer to any shortage of frequencies when addressing conflicting demands by various spectrum users or sectoral needs. Furthermore, some sharing solutions and approaches may work well in some circumstances and not in others.”

As explained in the ‘Summary’ section, it is difficult to see how sharing can operate successfully with **some** utility operational applications. [Sharing in non-operational applications is entirely different.]

EUTC supports the objectives of paragraph 15 when it says:

“Member States should encourage industry to design receivers able to tolerate a given degree of unforeseen interference ...”

In a world where the density of radio transmitters is vastly increasing and we are increasingly dependent on wireless communications in every aspect of our lives, it is important that radio receivers (or entire radio systems) are made as resilient as economically feasible to both man-made and natural background interference (eg lightning and solar storms).

EUTC’s only qualification is that utility radio systems have a long service life, and are often embedded systems which are hard to replace, hence long lead times are essential if new radio standards are introduced to which legacy systems are vulnerable to interference.

EUTC supports the importance of both market surveillance and interference monitoring to ensure licensed radio systems can operate as intended and do not suffer degradation or interference from improperly performing systems as stated in Paragraph 16:

“In order to build confidence among spectrum users, Members States should strengthen market surveillance so as to ensure that equipment is well compliant with essential requirements.”

Background

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

<i>EUTC Spectrum Proposal</i>
<i>Within Europe, multiple small allocations within harmonised bands:</i>
LESS INTENSE APPLICATIONS
<ul style="list-style-type: none">• VHF spectrum (50-200 MHz) for resilient voice comms & distribution automation for rural and remote areas. [2 x 1 MHz]
ANCHOR BAND
<ul style="list-style-type: none">• UHF spectrum (400 MHz bands) for SCADA, automation, smart grids and smart meters. [2 x 3 MHz]
MORE DENSE APPLICATIONS
<ul style="list-style-type: none">• Lightly regulated or licence-exempt shared spectrum for smart meters and mesh networks. (870-876 MHz)• L-band region (1500 MHz) for more data intensive smart grid, security and point-to-multipoint applications. [10 MHz]
FOUNDATION BANDS
<ul style="list-style-type: none">• Public microwave bands (1500 MHz – 58 GHz) for access to utilities’ core fibre networks/strategic resilient back-haul.• Public satellite bands to complement terrestrial services for particular applications.

professionals within the field of utilities and other critical infrastructure environments and associated stakeholders.

In many countries across the world, utilities are constructing their own private radio networks or shared networks in response to societal needs for universally available reliable, affordable and environmentally sustainable utility services – electricity, water and gas.

Supporting these goals requires increasingly comprehensive and reliable operational telecoms services. Some of these needs are met by fixed networks – fibre, copper and the electrical power cables themselves – but these fixed services must be complemented by radio networks. These dedicated specialist radio networks require guaranteed access to a small amount of dedicated radio spectrum for their operations. The EUTC Spectrum Proposal is summarised in summarised in the table above. The ‘anchor band’, a minimum of 2 x 3 MHz of spectrum in the 400 MHz region is now the focus of many initiatives world-wide by utilities racing to meet the target of a zero-carbon future to avert the worse effects of climate change.



400 MHz utility LTE system

Developments since the 2012 EU Radio Spectrum Policy Programme

Utilities were very encouraged when in the 2012 EU Radio Spectrum Policy Programme¹, paragraph 2 of Article 8 declared:

“The Commission shall, in cooperation with the Member States, conduct studies on saving energy in the use of spectrum in order to contribute to a low-carbon policy, and shall consider making spectrum available for wireless technologies with a potential for improving energy saving and efficiency of other distribution networks such as water supply, including smart energy grids and smart metering systems.”

The Commission showed its future looking vision in identifying Smart Energy Grids as a critical requirement to support EU Energy Policy objectives, but the technology has not developed as quickly as was forecast. However, climate policy is now considered by many as the most important issue facing our generation. In the context of the 2012 RSPP, the minimum 2 x 3 MHz of spectrum in the vital 400 MHz anchor band required for smart grid operations is only 0.5% of the 1200 MHz of spectrum which was identified for broadband radio services. Thus, delivering dedicated spectrum for operational utility networks in no way compromises EU objectives for 5G and the provision of universal high speed data services for all EU citizens and businesses.

The privately provided 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 401², Smart Grid services need to rely on a private, reliable (with significant power autonomy), 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



¹ <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32012D0243>

² https://www.etsi.org/deliver/etsi_tr/103400_103499/103401/01.01.01_60/tr_103401v010101p.pdf

exclusively allocated to utilities. As identified in ETSI report ETSI TR103 492³, 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.

In Europe, over recent years, we have seen spectrum allocations for control of critical infrastructures in the 400MHz frequency band, notably in Austria, Denmark, Ireland, 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 production runs, long term availability of spare parts and avoid 'vendor lock-in';
- Co-ordination of spectrum allocations in multiple European countries to enable utility services to be delivered efficiently in border regions; and
- Assist European vendors to develop innovative products in their home market as a launch platform for world-wide sales.

Climate Change

EUTC is of the opinion that allocation of radio spectrum can make a positive contribution to combatting Climate Change as outlined in their submission to 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." 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.

Walham electricity transmission switching centre



Climate change and rising sea levels place a large amount of utility infrastructure at risk of flooding.

³ https://www.etsi.org/deliver/etsi_tr/103400_103499/103492/01.01.01_60/tr_103492v010101p.pdf

⁴ https://rspg-spectrum.eu/wp-content/uploads/2019/10/RSPG19-029final-RSPG_work_programme_20_and_beyond.pdf

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