ECC NEWSLETTER **December 2012**

# The Radio Spectrum Policy Programme: the ECC and the 'concrete actions'

The European Union's multi-annual Radio Spectrum Policy Programme (RSPP)[1] is a blueprint for strategic spectrum policy priorities within the European Union. It sets out a large number of strategic objectives for a wide range of sectors which depend on spectrum, notably those which relate to the EU's policy aims. The EU's public statements place particular emphasis on its 'Digital Agenda for Europe'[2] within its 'Europe 2020' initiative, although the RSPP's scope is considerably wider. After initial proposals by the European Commission, the RSPP was further developed by the EU's Parliament and Member States (the Council of Ministers) before finally coming into force in June 2012.

But what is new for us here at the ECC? Firstly, the RSPP was agreed by the 27 EU Member States, all of which are members of CEPT. The European Commission is responsible for taking forward the implementation requirements of the RSPP at the European level. This includes requests to the Radio Spectrum Policy Group (RSPG) - a body of the EU Member States - to deliver opinions and reports on strategic issues addressed by the Programme. The RSPG's work programme for 2012 and beyond reflects this.

As a pillar of the EU's Spectrum Decision, the ECC serves as the point of expertise and consensus between the 48 CEPT administrations (including all 27 EU Member States), various spectrum users and the industry (including the ECC's partners through Letters of Understanding (LoUs)). Nevertheless, at the ECC we are already busy on a range of RSPP issues simply because they are important to our members and their stakeholders.

So, what are we doing? The RSPP covers a long list of principles and objectives. The Programme itself is not explicit about priorities, although some provisions are more specific than others. This article looks briefly at seven of the issues. These are the ones highlighted by the Commission itself[3] as 'concrete actions' which it expects to take with Member States in the next three years.

## Mobile broadband

The subject which seems to attract most attention is mobile broadband (or 'wireless data' as it is termed in the RSPP). A series of ECC and EU initiatives have been underway for a few years now and some already

completed to deliver more spectrum for mobile traffic, responding to a widespread emphasis in the spectrum world on mobile broadband with the explosive demand currently observed.

The RSPP requires "every effort to be made" to identify at least 1200 MHz for this use, including existing measures, and names some specific bands (already harmonised) to be made available in 2012 and 2013.

We wrote about one of these bands (3.4-3.8 GHz) in our February 2012 Newsletter, and we have developed and delivered the technical conditions for harmonised use of the others (900/1800 MHz, 2.6 GHz, 800 MHz), as well as the 2 GHz paired bands. We are also actively analysing and developing harmonisation measures for yet more: 2.3-2.4 GHz (including use of the concept of 'Licensed Shared Access'), and the 'L-Band' (1452-1492 MHz: see Bruno Espinosa's article in this Newsletter). These bands above could offer up to 1160 MHz; so we are moving firmly towards that 1200 MHz goal.

## Spectrum inventory

The RSPP calls for the establishment of an inventory of spectrum use for commercial and public purposes in the range of 400 MHz to 6 GHz. The main objective of this inventory is to help to identify frequency bands which could be further studied with a view to using them more efficiently. This happens principally where allocations are made but not taken up as foreseen, as well as spectrum which is used by relatively inefficient older technologies. In order to respond to demands for access to spectrum and ensure a more efficient use of the resource, the ECC is already studying a number of frequency bands where spectrum could be further harmonised, reallocated or shared.

The inventory concept itself is very simple and gained high-level support in developing the RSPP. The RSPG agreed on an Opinion on "Spectrum review" giving the view of Member States on how it could be implemented in practice. The RSPG emphasized the role of the ECO's EFIS system (www.efis.dk) which already carries a lot of information on spectrum use at the European level for certain frequency bands. This is now being extended to provide a wide range of information relevant to the purposes of an inventory. For example, it is now possible to search by user-selectable criteria for strategic information such as ECC deliverables, ETSI System Reference Documents, and questionnaires etc.

In response to an EC mandate under the Radio Spectrum Decision, the ECC has recently started a public consultation on a Report (CEPT Report 46) on the inclusion of information on rights of use for all uses of spectrum between 400 MHz and 6 GHz. This report emphasizes the possibility to modernise the process of questionnaires (the ECC conducts many of these). Using an electronic format will improve the collection and presentation of inventory information in EFIS, optimised for the particular frequency bands under study in any given case. A further Report will make additional recommendations.

## Public Protection and Disaster Relief (PPDR)

The RSPP also identifies the need to make available "sufficient harmonised spectrum for the development of the internal market in wireless safety services and civil protection and disaster relief". These services are predominantly national and public sector, although greater interoperability near border areas is a goal with obvious benefits. The interest in the RSPP is principally to seek that sufficient spectrum is available for PPDR on a more harmonised basis to make equipment solutions more affordable for Europe's safety and civil protection services. Further to industry and user demands, the ECC's work in this area is already ongoing and you can find out more from our October 2011 Newsletter article, and our dedicated Project Team's webpage (PT FM49).

## Green wireless

Terminology can be mixed in this field. Sometimes the interest is in how wireless systems themselves can be more energy efficient, but this RSPP action refers to the more usual meaning of how to "support a more efficient energy production and distribution in Europe so that wireless innovations contribute to a low-carbon society". This is often included under the heading of 'smart grids', and the contribution made by wireless systems to metering and managing the more complex energy distribution systems. These systems are particularly associated with renewable energy sources, as they are more localised and intermittent in nature.

Smart grids are a large part of hopes for a low-carbon future. In response to industry demands, the ECC's main actions in this area for the time being are with short range devices (SRDs) - and generic provisions for SRDs as a whole rather than being specific to smart grids (the June 2012 edition of the ECC Newsletter looks more closely at current developments in SRDs). However for some applications, the requirements of distance communications, together with high reliability and availability and security issues may demand other approaches (e.g. mobile networks, PMR/PAMR, fixed services), where harmonised solutions and various types of network typically already exist. It remains to be seen whether and to what extent smart grids will demand specific attention.

## Wireless microphones and cameras

The February 2012 edition of our Newsletter looks at programme making and special events (PMSE). As wideband mobile broadband systems come more and more into the spectrum, this will increase the pressure on the remaining spectrum for these vital PMSE systems used for creating the cultural, news and entertainment performances which are so much a part of our daily lives.

In spectrum regulation, these services are classed as 'secondary', in other words they do not enjoy protection from the 'primary' (typically longer-range) services with which they share a particular range of frequencies. With the ever-increasing amount of spectrum being lined up for use by mobile broadband it is becoming increasingly difficult to identify areas of spectrum on which these services can rely; in some cases the performance and reliability requirements are very demanding. The users and public are concerned with the outcome, and not with the intricacies and priorities of international radio regulations. Therefore the ECC is continuing its work to examine the constraints on the services due to interference from other types of radio use, and to identify how usable the available bands might be. For example, we are currently investigating additional new resources for PMSE in 1492-1518 MHz.

Part of this work is under the Spectrum Decision mandate from the Commission which focused on harmonised frequency bands in part of 800 MHz and 1800 MHz for wireless microphones raising the coexistence issue with mobile broadband systems, notably Long Term Evolution (LTE). So far we have studied several technical compatibility aspects to refine how PMSE can operate in those bands and investigations are still ongoing to clarify usage scenarios in 1800 MHz. Additional activities are also ongoing on spectrum resources for wireless cameras. You can read more on the webpage of our project team PT FM51.

## Fostering different modes of spectrum sharing

For many years now, a large part of the ECC's work has focused on the technical arrangements for spectrum sharing between different services. This is often a faster and more efficient way to make spectrum available to new services than the complete closure or relocation of an existing service to make way for the exclusive use by another.

The RSPP action point relates more to the licensing relationship of the various services than the technical compatibility questions. Many of the 'new' ideas are more conceptual at this point in time as illustrated in the recent Communication of the European Commission on shared use of spectrum[4]. The extent to which they are genuinely distinctive and new is a matter for debate.

Nevertheless, the ECC is deeply involved in developing various forms of sharing conditions for a wide range of applications, including Short Range Devices, Ultra Wide Band systems, Mobile Communications on Board Vessels, Mobile Communications on Board Aircraft (sharing part of spectrum identified for mobile broadband), Wi-Fi systems at 2.4 GHz and 5 GHz, PMSE (as mentioned above), fixed links and satellite services, etc. Those various spectrum sharing conditions are already implemented in practice and the ECC will continue to study further possibilities and implementation issues. This requires a comprehensive understanding of the usage and deployment scenarios of the applications concerned.

The ECC is actively considering the role of licensed spectrum access (LSA) in some of its policy and technical development for new services. LSA is the means to provide some protected and exclusive status to services which are themselves secondary to existing (primary) services in the same frequency range. Normally, such secondary services are simply permitted but have no protection, and this is a valuable resource particularly for short-range devices. But LSA services would typically be of longer range and would need to be planned and managed more actively, perhaps using some of the cognitive technologies such as location databases (see our June 2011 Newsletter). The ECC has recently launched a study of the 2.3 to 2.4 GHz band as a potential additional range for mobile broadband services, but given the importance of some existing uses in many countries, part of the study will be to develop a concrete implementation of LSA. We are also establishing a new project team (PT FM53) to develop the concepts and elaborate an ECC position on reconfigurable radio systems (RRS) and LSA.

## Spectrum Trading (where flexible use available)

Trading spectrum is more of an economic regulatory concept than one routinely addressed within the ECC. However, the ECC did publish a report on the subject (ECC Report 169, May 2011). The RSPP recognises that the best opportunities for spectrum trading exist where there is flexibility in the use that can be made of a given range of spectrum. The underlying principles of the ECC's work include to support flexibility by creating as many but also as few technical conditions as are necessary for efficient spectrum use. Technological neutrality and least restrictive conditions are frequent criteria in the design of our deliverables, both for licensed and unlicensed spectrum.

## Conclusions

The RSPP sets out a wide range of policy goals. Some are underlying guidance on principles to apply in regulation and spectrum management, while others are very specific. Although there is some debate about the extent to which all of these objectives can be reached (notably where the target is not so specific), the actions underway in the ECC show how those countries, and the 21 other CEPT countries outside the EU, are working hard to deliver these important steps forward in spectrum use.

**Mark Thomas**
**Director of the ECO**

[1] (DECISION No. 243/2012/EU)

[2] http://ec.europa.eu/digital-agenda/

[3] The Commission's website page about the RSPP is at: The Commission's website page about the RSPP is at: http://ec.europa.eu/information_society/policy/ecomm/radio_spectrum/rspp/index_en.htm#concrete_actions

[4] http://ec.europa.eu/information_society/policy/ecomm/radio_spectrum/_document_storage/com/com-ssa.pdf

# A major step towards the harmonised use of the band 1452-1492 MHz: Mobile Supplemental Downlink is the way ahead

In the October 2011 Newsletter, we reported on the ECC's review of the 1452-1492 MHz band, sometimes referred to as the 'L-Band'[1]. This frequency range has good propagation characteristics for many applications but currently configured, just as a broadcasting band, its usage has been very limited. We have now completed our review and reached an important conclusion about the future use of this promising band.

The September 2012 WG FM meeting in Minsk approved for public consultation the draft ECC Report 188 which identifies, through a detailed impact analysis, the most appropriate application and associated regulatory framework for the harmonisation of the band 1452-1492 MHz in Europe.

## Impact analysis

The candidate applications considered for the future use of the band were:

1. Terrestrial Broadcasting;
2. Mobile Broadband;
3. Mobile Supplemental Downlink;
4. Satellite Digital Audio Broadcasting;
5. Programme Making and Special Events;
6. Public Protection Disaster Relief; and
7. Broadband Direct Air to Ground Communication.

These applications have been assessed against a number of criteria, namely:

1. compatibility with the existing regulatory framework (to facilitate a quicker time-to-market);
2. possibility to share with other applications/uses (for flexibility and overall efficiency);
3. extent of social and economic benefits;
4. timeframe for availability of equipment on a large scale and for application deployment, status of standardisation; and
5. potential for economy of scale (need and potential for harmonisation within and outside CEPT).

On this basis, three potential regulatory options have been identified and further assessed through a methodology specifically developed for this impact analysis.

## Proposed regulatory framework

The conclusion of this extensive work is that the most appropriate regulatory framework for the future use of the 1452-1492 MHz band in CEPT is the harmonisation of this band for 'mobile supplemental downlink', while allowing individual countries to adapt to specific national circumstances in parts of the band for terrestrial broadcasting and other terrestrial applications. We believe that this regulatory framework will bring the highest overall benefits in the CEPT countries.

## Mobile SDL

Mobile Supplemental Downlink (Mobile SDL) is a mobile broadband system, which by means of base station transmitters in the network, is able to use unpaired spectrum to provide a supplemental downlink capacity to carry efficiently comprehensive text, audio, images, sound and video content in unicasting, multicasting and/or broadcasting mode to mobile devices. Mobile SDL uses a wider channel for the downlink than for the uplink, by bonding the usual downlink of the paired (FDD) mobile bands with a supplemental downlink channel(s). The harmonisation of the 1452-1492 MHz band unpaired spectrum for Mobile SDL is important to enhance the downlink capability of mobile broadband systems and represents a strategic tool to tackle the growing mobile data traffic asymmetry.

With such an appropriate regulatory framework in place, the ECC intends to provide guidance and certainty to the industry so that the UMTS/HSPA (3GPP specification Release 9 and beyond) standard and LTE-Advanced (3GPP specification Release 10 and beyond) standard, that are capable of aggregating multiple downlink channels in multiple bands, thus allowing the use of an unpaired spectrum for SDL, specify the 1452-1492 MHz band as an SDL band to be implemented in chipsets, devices and equipment.

## The next steps

FM50, the Project Team which carried out the impact analysis contained in the draft ECC Report 188, has recently been tasked to develop the required elements for this regulatory framework. This will consist in particular of a new ECC Decision designating the band for Mobile/Fixed Communication Networks (MFCN[2]) supplemental downlink (SDL), which should include:

- a harmonised frequency arrangement, based on a block size of 5 MHz[3], resulting in the following 8 frequency blocks in 1452-1492 MHz:

| 1452 - 1457 | 1457 - 1462 | 1462 - 1467 | 1467 - 1472 | 1472 - 1477 | 1477 - 1482 | 1482 - 1487 | 1487 - 1492 |
|---|---|---|---|---|---|---|---|
| **Downlink (base station transmit)** | | | | | | | |
| 40 MHz (8 blocks of 5 MHz) | | | | | | | |

- the least restrictive technical conditions (LRTC) related to the avoidance of interference between users of spectrum. It is anticipated that these LRTC would be in the form of block-edge masks (BEMs), to address the coexistence between MFCN SDL in neighbouring blocks, and out of band (OOB) emission limits to address compatibility between MFCN SDL in the 1452-1492 MHz band and other applications in adjacent bands.

This new ECC Decision should also leave flexibility for administrations to adapt to specific national circumstances in parts of the band for terrestrial broadcasting and other terrestrial applications.

Under this new framework, it is also intended to:

- suppress the ECC/DEC/(03)02, which currently harmonises the sub-band 1479.5-1492 MHz for Satellite Digital Audio Broadcasting within CEPT;

- retain the MA02revCO07 Arrangement for administrations wishing to implement terrestrial digital sound broadcasting networks in part of the 1452-1492 MHz band.

We plan to make the final draft of the ECC Decision available to WG FM for adoption for public consultation in February 2013.

**Bruno Espinosa**
**Deputy Director of the ECO**

[1] In fact this frequency range is just a subset of the 'L-Band', terminology usually associated with satellite communications.

[2] Mobile/Fixed Communication Networks (MFCN) is a regulatory term, commonly used in recent ECC Decisions, which includes IMT and other communications networks in the mobile and fixed services.

[3] This also allows for aggregation of adjacent 5 MHz blocks where national conditions allow.